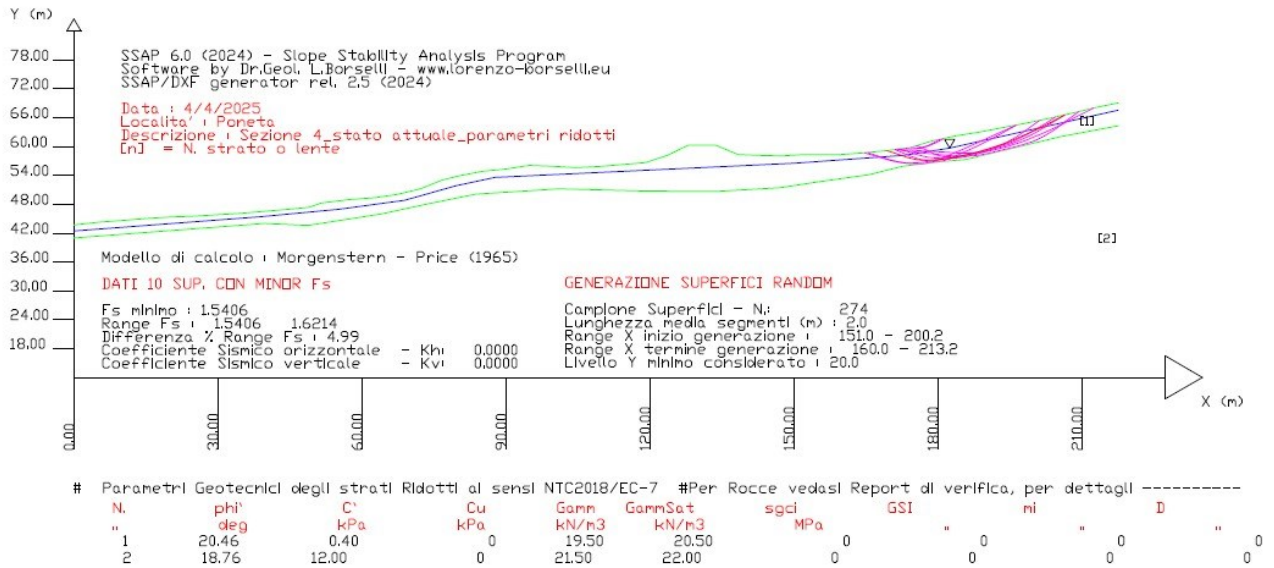


<div>COMUNE DI GREVE IN CHIANTI</div> <div>NUOVO PROGETTO PER LA COLTIVAZIONE ED IL RECUPERO AMBIENTALE DELLA CAVA DI PONETA IN LOCALITÀ FERRONE</div>	
	
<div>Elaborato</div> <div>REL.04.D</div>	<div>FASCICOLO DEI CALCOLI VERIFICHE DI STABILITÀ</div>
<div>Il proponente:</div> <div></div>	
<div>Progettazione:</div> <div><div></div><div><div>STGA - STUDIO TECNICO DI GEOLOGIA E INGEGNERIA AMBIENTALE</div><div>50121 FIRENZE – Viale Giovanni Amendola n.6/4 – www.stgassociati.it</div><div>studio@stgassociati.it – stga@pec.it - 055.9336400 – P.IVA 03740890482</div></div></div> <div><div>Gruppo di lavoro</div><div><i>geol. Giancarlo Ceccanti (STGA)</i></div><div><i>geol. Giampaolo Mariannelli (STGA)</i></div><div><i>ing. Lapo Consumi (STGA)</i></div><div><i>for. Gianluca Capecci</i></div></div> <div><div>Collaboratori</div><div><i>geol. Marco Folini (STGA)</i></div><div><i>chimico Giuseppe Sarti</i></div><div><i>biologo Alberto Conti</i></div><div><i>geol. Francesco Facchini</i></div></div>	
<div>Revisione 0 - data: aprile 2025</div>	

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1 SEZIONE 4 STATO ATTUALE - STATICO



Report Generale Risultati di Verifica di stabilità

SSAP 6.0 - Slope Stability Analysis Program (1991,2024)
WWW.SSAP.EU
Build No. 14533
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Ultima Revisione struttura tabelle del report: 21 Maggio 2024

File report: C:\Users\facco\OneDrive\Documents\Lavoro\Lavori STGA\Poneta\Sezioni\Risultati SSAP\Sez4 stato attuale_parametri ridotti.txt
Data: 4/4/2025
Località: Poneta
Descrizione: Sezione 4 stato attuale_parametri ridotti
Modello pendio: Sezione 4 stato attuale.mod
----- 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	43.69	0.00	41.00	-	-	-	-
0.66	43.77	39.65	43.99	-	-	-	-
5.50	44.31	48.83	43.59	-	-	-	-
10.34	44.65	64.02	46.02	-	-	-	-
15.18	45.05	73.44	48.04	-	-	-	-
20.02	45.35	83.72	50.14	-	-	-	-
24.86	45.52	100.99	51.23	-	-	-	-
29.70	45.81	119.43	50.76	-	-	-	-
34.54	46.13	133.95	50.72	-	-	-	-
39.38	46.51	147.06	51.46	-	-	-	-
44.22	46.93	154.64	52.59	-	-	-	-
49.06	47.36	165.75	54.16	-	-	-	-
51.48	48.27	172.65	55.92	-	-	-	-
52.80	48.43	180.83	56.92	-	-	-	-
57.64	49.00	185.77	57.33	-	-	-	-
62.48	49.36	205.53	62.05	-	-	-	-
67.32	50.03	217.58	64.32	-	-	-	-



72.16	51.19	-	-	-	-	-	-
76.78	53.10	-	-	-	-	-	-
80.30	53.97	-	-	-	-	-	-
85.14	54.88	-	-	-	-	-	-
89.98	55.33	-	-	-	-	-	-
94.82	56.07	-	-	-	-	-	-
99.66	55.93	-	-	-	-	-	-
104.50	55.61	-	-	-	-	-	-
109.34	55.88	-	-	-	-	-	-
114.18	56.27	-	-	-	-	-	-
119.02	56.69	-	-	-	-	-	-
123.64	58.16	-	-	-	-	-	-
128.04	60.36	-	-	-	-	-	-
128.26	60.36	-	-	-	-	-	-
133.54	60.36	-	-	-	-	-	-
133.76	60.26	-	-	-	-	-	-
138.38	58.38	-	-	-	-	-	-
142.56	58.18	-	-	-	-	-	-
147.40	58.06	-	-	-	-	-	-
152.24	58.36	-	-	-	-	-	-
159.72	58.36	-	-	-	-	-	-
164.56	58.71	-	-	-	-	-	-
169.40	59.19	-	-	-	-	-	-
174.24	59.79	-	-	-	-	-	-
178.86	61.20	-	-	-	-	-	-
183.70	62.26	-	-	-	-	-	-
188.54	63.00	-	-	-	-	-	-
193.38	63.92	-	-	-	-	-	-
198.22	64.85	-	-	-	-	-	-
203.06	65.85	-	-	-	-	-	-
207.90	66.96	-	-	-	-	-	-
212.74	68.12	-	-	-	-	-	-
217.58	69.11	-	-	-	-	-	-

SUP FALDA

X Y

0.00	42.45
38.79	45.44
55.32	46.97
68.89	48.85
79.57	51.87
87.70	53.57
150.23	56.53
172.87	58.21
182.46	59.67
217.58	67.57

----- GESTIONE ACQUIFERI -----

Strati esclusi da acquifero e effetto pressione dei pori:

Esclusione sovraccarico pendio sommerso: NON ATTIVATA

EFFETTO TENSION CRACK IN TESTA RIEMPITO DI ACQUA: ----> DISATTIVATO

In caso di superfici con tension crack in testa, la frattura di tensione

puo' venir viene considerata completamente riempita di acqua per la sua intera profondita'.

Viene quindi considerato una forza in testa, prodotta dalla pressione idrostatica.

La forza applicata ha un effetto destabilizzante aggiuntivo alle altre forze destabilizzanti agenti.

Peso unitario fluido (kN/m³): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A 0

Coefficiente K 0.000800

Pressione minima fluidi Uo_Min (kPa) 0.01

Coefficiente di soprapressione oltre pressione idrostatica 1.00

Limitazione dissipazione a Pressione Idrostatica = ATTIVA

STABILITE CONDIZIONI PER LA VERIFICA CON SOVRAPPRESSIONE ACQUIFERI CON DISSIPAZIONE IN DIREZIONE DELLA SUPERFICIE

CALCOLO EFFETTO DI FILTRAZIONE NON ATTIVATO



----- PARAMETRI GEOMECCANICI DI PROGETTO RIDOTTI (ai sensi NTC2018/EC-7) - Riduzione attivata in Tutti gli Strati

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	20.46	0.40	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00
STRATO 2	18.76	12.00	0.00	21.50	22.00	1.805	0.00	0.00	0.00	0.00

LEGENDA: 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)

---- SOLO Per AMMASSI ROCCIOSI FRATTURATI - Parametri Criterio di Rottura di Hoek et al.(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)

NOTA BENE:

FATTORI DI RIDUZIONE NTC2018/EC-7: gammaPHI=1.25, gammaC=1.25 e gammaCu=1.4 - ATTIVATI (Per Tutti gli Strati)

Ai sensi delle NTC2018/EC-7 i parametri di resistenza al taglio caratteristici sono stati ridotti con i fattori riduttivi (tab. 6.2.II delle NTC 2018) per ottenere i parametri di progetto.

Nel caso di ammassi rocciosi fratturati, dai parametri sopra indicati in tabella, relativi al criterio di rottura Hoek et al. (2002), sono stati ricavati i parametri equivalenti geomeccanici CARATTERISTICI locali di resistenza al taglio dell'ammasso roccioso considerato (c',Phi') tali parametri equivalenti sono stati infine RIDOTTI, per ricavare i valori di PROGETTO, tramite i coefficienti parziali riduttivi, di cui alla tab. 6.2.II delle NTC 2018

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

*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI

MOTORE DI RICERCA: SNIFF RANDOM SEARCH - Borselli (1997,2021)

FILTRAGGIO SUPERFICI : ATTIVATO

COORDINATE X1,X2,Y OSTACOLO : 0.00 0.00 0.00

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

INTERVALLO ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 151.00 200.17

LIVELLO MINIMO CONSIDERATO (Ymin): 20.00

INTERVALLO ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 160.00 213.23

TOTALE SUPERFICI GENERATE : 15000

*NOTA IMPORTANTE: La lunghezza media dei segmenti non viene considerata nel caso di uso del motore di ricerca NEW RANOM SEARCH

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

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

METODO DI ESPLORAZIONE CAMPO VALORI (lambda0,Fs0) ADOTTATO : A (rapido)

COEFFICIENTE SISMICO UTILIZZATO Kh : 0.0000

COEFFICIENTE SISMICO UTILIZZATO Kv (assunto Positivo): 0.0000

COEFFICIENTE c=Kv/Kh UTILIZZATO : 0.5000

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

X(m)	Y(m)	#Superficie N.1	- #FS_minimo	#Fattore di sicurezza(FS)= 1.4195	#Lambda= 0.2397
167.359	58.988				
169.947	57.635				
171.133	57.051				
171.905	56.725				
172.523	56.522				



173.157 56.386
 173.702 56.319
 174.308 56.299
 174.967 56.327
 175.792 56.406
 176.555 56.481
 177.274 56.554
 177.975 56.627
 178.656 56.701
 179.339 56.777
 180.023 56.855
 180.712 56.936
 181.406 57.020
 182.092 57.106
 182.774 57.194
 183.453 57.286
 184.134 57.381
 184.815 57.480
 185.500 57.582
 186.194 57.689
 186.902 57.802
 187.587 57.918
 188.264 58.039
 188.933 58.167
 189.611 58.303
 190.279 58.445
 190.954 58.595
 191.636 58.755
 192.338 58.926
 193.033 59.097
 193.722 59.267
 194.409 59.437
 195.091 59.608
 195.784 59.782
 196.484 59.959
 197.203 60.142
 197.945 60.332
 198.616 60.526
 199.268 60.737
 199.895 60.965
 200.559 61.233
 201.191 61.512
 201.851 61.830
 202.537 62.187
 203.300 62.606
 204.011 63.009
 204.698 63.410
 205.368 63.815
 206.045 64.237
 206.790 64.720
 207.631 65.282
 208.827 66.104
 211.185 67.747

X(m) Y(m) #Superficie N. 2 #Fattore di sicurezza(FS)= 1.4310 #Lambda= 0.6898
 170.965 59.384
 174.035 58.110
 175.461 57.556
 176.403 57.247
 177.172 57.054
 177.946 56.933
 178.630 56.876
 179.379 56.870
 180.185 56.915
 181.169 57.015
 182.068 57.115
 182.919 57.217
 183.742 57.326
 184.558 57.442
 185.365 57.566



186.181	57.699
187.010	57.843
187.867	58.000
188.700	58.159
189.521	58.322
190.334	58.491
191.151	58.666
191.971	58.849
192.803	59.042
193.662	59.248
194.564	59.470
195.381	59.696
196.171	59.940
196.933	60.204
197.734	60.510
198.498	60.829
199.291	61.189
200.113	61.590
201.015	62.057
201.872	62.509
202.703	62.957
203.519	63.407
204.336	63.868
205.244	64.394
206.262	64.997
207.703	65.868
210.520	67.588

X(m)	Y(m)	#Superficie N. 3	#Fattore di sicurezza(FS)= 1.4339	#Lambda= 1.2500
191.234	63.512			
192.038	63.027			
192.457	62.775			
192.755	62.595			
193.025	62.432			
193.263	62.288			
193.503	62.144			
193.742	62.000			
193.982	61.855			
194.219	61.712			
194.458	61.568			
194.697	61.425			
194.936	61.282			
195.174	61.139			
195.422	60.991			
195.677	60.838			
195.950	60.675			
196.246	60.499			
196.477	60.376			
196.683	60.286			
196.861	60.229			
197.074	60.188			
197.251	60.175			
197.458	60.186			
197.695	60.221			
198.015	60.286			
198.285	60.348			
198.530	60.411			
198.759	60.478			
198.992	60.553			
199.215	60.633			
199.445	60.722			
199.682	60.821			
199.941	60.936			
200.188	61.048			
200.430	61.159			
200.668	61.270			
200.905	61.382			
201.141	61.496			
201.378	61.612			
201.616	61.730			



201.857	61.852
202.098	61.973
202.338	62.094
202.578	62.216
202.816	62.336
203.056	62.457
203.295	62.577
203.534	62.698
203.771	62.817
204.010	62.938
204.249	63.058
204.489	63.179
204.727	63.300
204.968	63.421
205.211	63.544
205.457	63.668
205.706	63.794
205.942	63.918
206.174	64.046
206.401	64.178
206.635	64.321
206.865	64.467
207.101	64.623
207.346	64.792
207.611	64.980
207.853	65.160
208.086	65.343
208.312	65.531
208.545	65.735
208.798	65.971
209.088	66.253
209.504	66.677
210.340	67.545

X(m)	Y(m)	#Superficie N. 4	#Fattore di sicurezza(FS)= 1.4357	#Lambda= 1.2500
169.729	59.231			
170.766	58.582			
171.305	58.246			
171.689	58.007			
172.035	57.793			
172.341	57.603			
172.659	57.408			
172.985	57.208			
173.333	56.995			
173.707	56.767			
174.005	56.603			
174.274	56.478			
174.512	56.394			
174.790	56.327			
175.024	56.295			
175.294	56.290			
175.595	56.309			
175.991	56.358			
176.336	56.406			
176.654	56.456			
176.956	56.510			
177.258	56.570			
177.553	56.635			
177.856	56.708			
178.167	56.788			
178.500	56.881			
178.813	56.972			
179.118	57.066			
179.415	57.164			
179.718	57.269			
180.014	57.376			
180.314	57.491			
180.619	57.612			
180.937	57.744			
181.252	57.874			



181.563	58.003
181.873	58.132
182.180	58.259
182.488	58.387
182.796	58.514
183.104	58.642
183.409	58.768
183.717	58.896
184.024	59.023
184.333	59.151
184.639	59.278
184.948	59.406
185.255	59.534
185.563	59.661
185.869	59.788
186.176	59.915
186.484	60.043
186.792	60.171
187.099	60.298
187.409	60.427
187.720	60.556
188.036	60.686
188.354	60.818
188.658	60.950
188.958	61.086
189.254	61.225
189.556	61.374
189.852	61.525
190.153	61.685
190.459	61.853
190.778	62.035
191.093	62.215
191.403	62.393
191.712	62.571
192.018	62.748
192.363	62.949
192.747	63.173
193.286	63.490
194.324	64.101

X(m)	Y(m)	#Superficie N. 5	#Fattore di sicurezza(FS)= 1.4362	#Lambda= 1.2500
186.330	62.662			
187.215	62.079			
187.676	61.775			
188.004	61.559			
188.301	61.363			
188.563	61.190			
188.829	61.015			
189.096	60.839			
189.368	60.660			
189.645	60.478			
189.904	60.314			
190.158	60.160			
190.406	60.018			
190.663	59.878			
190.918	59.748			
191.187	59.619			
191.478	59.488			
191.812	59.344			
192.075	59.246			
192.310	59.176			
192.517	59.135			
192.757	59.112			
192.961	59.111			
193.191	59.134			
193.443	59.178			
193.762	59.252			
194.058	59.321			
194.336	59.386			
194.607	59.449			



194.869	59.511
195.131	59.573
195.394	59.636
195.657	59.699
195.918	59.763
196.182	59.826
196.445	59.890
196.709	59.954
196.971	60.017
197.234	60.081
197.497	60.145
197.760	60.209
198.021	60.272
198.284	60.336
198.547	60.399
198.811	60.463
199.073	60.527
199.339	60.592
199.609	60.657
199.885	60.724
200.168	60.793
200.425	60.863
200.675	60.941
200.915	61.025
201.170	61.124
201.412	61.227
201.663	61.344
201.922	61.474
202.206	61.626
202.481	61.774
202.749	61.919
203.015	62.063
203.276	62.206
203.541	62.352
203.808	62.500
204.082	62.653
204.364	62.811
204.623	62.966
204.875	63.126
205.118	63.293
205.374	63.479
205.620	63.668
205.874	63.875
206.136	64.099
206.422	64.354
206.694	64.601
206.959	64.845
207.219	65.090
207.479	65.339
207.769	65.623
208.094	65.947
208.553	66.413
209.451	67.332

X(m)	Y(m)	#Superficie N. 6 #Fattore di sicurezza(FS)= 1.4370 #Lambda= 0.2482
170.059	59.272	
172.218	57.954	
173.206	57.384	
173.845	57.062	
174.354	56.857	
174.878	56.712	
175.325	56.631	
175.827	56.591	
176.377	56.590	
177.078	56.629	
177.713	56.668	
178.308	56.710	
178.882	56.755	
179.447	56.805	
180.008	56.859	



180.575	56.918
181.151	56.983
181.746	57.055
182.318	57.130
182.881	57.211
183.436	57.298
183.998	57.392
184.554	57.492
185.116	57.600
185.687	57.716
186.281	57.843
186.857	57.971
187.425	58.102
187.988	58.235
188.552	58.374
189.112	58.515
189.675	58.662
190.242	58.814
190.818	58.973
191.394	59.132
191.966	59.290
192.539	59.447
193.106	59.604
193.686	59.764
194.271	59.925
194.873	60.091
195.496	60.263
196.050	60.436
196.586	60.627
197.099	60.835
197.648	61.083
198.163	61.341
198.703	61.637
199.263	61.968
199.886	62.360
200.486	62.740
201.069	63.110
201.645	63.478
202.211	63.842
202.850	64.256
203.559	64.717
204.556	65.371
206.376	66.566
206.376	66.610

X(m)	Y(m)	#Superficie N. 7	#Fattore di sicurezza(FS)= 1.4371	#Lambda= 1.2500
185.986	62.610			
187.146	61.819			
187.745	61.413			
188.169	61.129			
188.550	60.876			
188.890	60.654			
189.239	60.429			
189.600	60.198			
189.985	59.954			
190.405	59.692			
190.738	59.503			
191.038	59.360			
191.302	59.263			
191.611	59.185			
191.871	59.148			
192.172	59.140			
192.511	59.161			
192.961	59.214			
193.343	59.267			
193.692	59.325			
194.019	59.391			
194.353	59.468			
194.671	59.551			
194.999	59.647			



195.335	59.754
195.700	59.880
196.056	60.004
196.404	60.125
196.750	60.245
197.090	60.364
197.432	60.484
197.773	60.604
198.115	60.725
198.455	60.845
198.798	60.967
199.140	61.088
199.483	61.209
199.824	61.330
200.170	61.452
200.517	61.575
200.872	61.701
201.233	61.829
201.569	61.956
201.898	62.091
202.219	62.231
202.553	62.387
202.876	62.547
203.209	62.722
203.551	62.911
203.921	63.125
204.272	63.333
204.615	63.541
204.951	63.749
205.289	63.964
205.623	64.181
205.959	64.405
206.299	64.635
206.647	64.876
206.995	65.117
207.339	65.355
207.683	65.594
208.024	65.830
208.410	66.097
208.837	66.393
209.437	66.808
210.587	67.604

X(m)	Y(m)	#Superficie N. 8 #Fattore di sicurezza(FS)= 1.4391 #Lambda= 0.8859
174.328	59.817	
175.889	58.785	
176.630	58.315	
177.127	58.029	
177.541	57.821	
177.946	57.653	
178.315	57.525	
178.718	57.415	
179.153	57.321	
179.685	57.231	
180.138	57.167	
180.556	57.124	
180.949	57.099	
181.360	57.090	
181.746	57.097	
182.149	57.122	
182.568	57.162	
183.038	57.222	
183.488	57.281	
183.925	57.339	
184.356	57.398	
184.780	57.458	
185.207	57.519	
185.634	57.581	
186.066	57.646	
186.503	57.712	



186.929 57.781
 187.351 57.853
 187.770 57.927
 188.193 58.007
 188.612 58.089
 189.034 58.176
 189.460 58.267
 189.897 58.364
 190.329 58.462
 190.756 58.559
 191.183 58.658
 191.607 58.758
 192.032 58.859
 192.457 58.961
 192.883 59.065
 193.310 59.171
 193.739 59.277
 194.167 59.382
 194.596 59.488
 195.021 59.593
 195.453 59.700
 195.885 59.807
 196.324 59.915
 196.769 60.025
 197.191 60.137
 197.605 60.256
 198.012 60.381
 198.431 60.518
 198.843 60.662
 199.268 60.819
 199.710 60.992
 200.191 61.188
 200.620 61.378
 201.032 61.576
 201.427 61.783
 201.841 62.018
 202.237 62.259
 202.647 62.526
 203.073 62.820
 203.540 63.159
 203.983 63.486
 204.414 63.809
 204.837 64.133
 205.261 64.462
 205.731 64.838
 206.259 65.266
 207.005 65.881
 208.463 67.095

X(m) Y(m) #Superficie N. 9 #Fattore di sicurezza(FS)= 1.4403 #Lambda= 0.2501
 170.346 59.307
 172.913 58.010
 174.096 57.447
 174.870 57.130
 175.495 56.929
 176.130 56.794
 176.682 56.722
 177.293 56.695
 177.953 56.713
 178.772 56.777
 179.527 56.839
 180.241 56.902
 180.935 56.966
 181.613 57.033
 182.294 57.103
 182.982 57.177
 183.682 57.257
 184.402 57.342
 185.082 57.433
 185.749 57.536



186.402	57.649
187.073	57.779
187.729	57.918
188.401	58.074
189.093	58.247
189.832	58.445
190.527	58.641
191.203	58.843
191.865	59.053
192.538	59.278
193.197	59.509
193.865	59.755
194.544	60.016
195.252	60.300
195.951	60.581
196.640	60.860
197.326	61.139
198.006	61.417
198.695	61.700
199.388	61.986
200.096	62.280
200.821	62.582
201.494	62.881
202.153	63.193
202.795	63.518
203.464	63.876
204.187	64.294
205.014	64.799
206.204	65.560
208.594	67.126

X(m)	Y(m)	#Superficie N.10	#Fattore di sicurezza(FS)= 1.4407	#Lambda= 1.2500
189.601	63.202			
190.738	62.438			
191.328	62.043			
191.748	61.763			
192.127	61.512			
192.462	61.291			
192.811	61.061			
193.173	60.825			
193.562	60.571			
193.988	60.295			
194.314	60.104			
194.600	59.966			
194.843	59.882			
195.139	59.822			
195.378	59.806			
195.666	59.828			
196.001	59.888			
196.465	59.998			
196.850	60.100			
197.196	60.204			
197.516	60.312			
197.843	60.436			
198.153	60.566			
198.474	60.712			
198.805	60.874			
199.166	61.063			
199.519	61.247			
199.864	61.427			
200.206	61.605			
200.541	61.780			
200.880	61.957			
201.218	62.133			
201.557	62.310			
201.896	62.487			
202.232	62.664			
202.566	62.842			
202.899	63.023			
203.234	63.206			



203.571	63.392
203.912	63.584
204.262	63.782
204.627	63.991
204.959	64.194
205.282	64.405
205.595	64.622
205.923	64.866
206.275	65.148
206.681	65.492
207.268	66.013
208.453	67.093

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

DATI RELATIVI ALLE 10 SUPERFICIE GENERATE CON MINOR F_s *# Analisi Deficit in riferimento a $F_s(\text{progetto}) = 1.200$

Sup N.	F_s	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.420	854.0	601.6	132.1	Surplus
2	1.431	743.9	519.8	120.1	Surplus
3	1.434	283.2	197.5	46.2	Surplus
4	1.436	372.5	259.5	61.2	Surplus
5	1.436	393.1	273.7	64.6	Surplus
6	1.437	686.9	478.0	113.3	Surplus
7	1.437	393.0	273.4	64.8	Surplus
8	1.439	685.3	476.2	113.9	Surplus
9	1.440	717.7	498.3	119.7	Surplus
10	1.441	274.4	190.5	45.9	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 45.9

Note: FTR --> Forza totale Resistente lungo la superficie di scivolamento

FTA --> Forza totale Agente lungo la superficie di scivolamento

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

TABELLA PARAMETRI CONCI DELLA SUPERFICIE INDIVIDUATA CON MINOR F_s

X	dx	alpha	W	ru	U	phi'	(c',Cu)
(m)	(m)	(°)	(kN/m)	(-)	(kPa)	(°)	(kPa)
167.359	0.479	-27.60	1.39	0.00	0.00	20.46	0.40
167.837	0.479	-27.60	4.17	0.00	0.00	20.46	0.40
168.316	0.479	-27.60	6.94	0.00	0.00	20.46	0.40
168.794	0.479	-27.60	9.72	0.00	0.00	20.46	0.40
169.273	0.073	-27.60	1.74	0.00	0.00	20.46	0.40
169.346	0.054	-27.60	1.31	0.06	2.07	20.46	0.40
169.400	0.479	-27.60	13.37	0.06	2.23	20.46	0.40
169.879	0.068	-27.60	2.15	0.10	3.89	20.46	0.40
169.947	0.479	-26.21	16.76	0.11	4.17	20.46	0.40
170.425	0.479	-26.21	19.64	0.15	6.35	20.46	0.40
170.904	0.229	-26.21	10.44	0.18	8.59	20.46	0.40
171.133	0.479	-22.86	23.74	0.20	9.74	20.46	0.40
171.612	0.293	-22.86	15.82	0.23	12.15	20.46	0.40
171.905	0.479	-18.20	27.64	0.24	13.71	20.46	0.40
172.384	0.139	-18.20	8.45	0.26	15.64	20.46	0.40
172.523	0.127	-12.06	7.81	0.27	16.14	20.46	0.40
172.650	0.220	-12.06	13.83	0.27	16.53	20.46	0.40
172.870	0.287	-12.06	18.52	0.27	17.08	20.46	0.40
173.157	0.479	-7.09	31.99	0.28	17.79	20.46	0.40
173.635	0.067	-7.09	4.55	0.28	18.81	20.46	0.40
173.702	0.479	-1.84	33.11	0.28	18.93	20.46	0.40
174.180	0.060	-1.84	4.18	0.29	19.72	20.46	0.40
174.240	0.068	-1.84	4.81	0.29	19.81	20.46	0.40
174.308	0.479	2.43	34.39	0.29	19.92	20.46	0.40



174.787	0.180	2.43	13.24	0.29	20.59	20.46	0.40
174.967	0.479	5.45	35.91	0.29	20.83	20.46	0.40
175.445	0.347	5.45	26.61	0.29	21.44	20.46	0.40
175.792	0.479	5.61	37.55	0.28	21.78	20.46	0.40
176.271	0.284	5.61	22.76	0.28	22.23	20.46	0.40
176.555	0.479	5.79	39.03	0.28	22.47	20.46	0.40
177.034	0.241	5.79	19.98	0.27	22.84	20.46	0.40
177.274	0.479	5.97	40.41	0.27	22.96	20.46	0.40
177.753	0.222	5.97	19.03	0.27	23.20	20.46	0.40
177.975	0.479	6.17	41.73	0.27	23.29	20.46	0.40
178.453	0.203	6.17	17.97	0.27	23.50	20.46	0.40
178.656	0.204	6.35	18.21	0.26	23.57	20.46	0.40
178.860	0.479	6.35	43.17	0.26	23.66	20.46	0.40
179.339	0.000	6.35	0.02	0.26	23.83	20.46	0.40
179.339	0.479	6.53	43.65	0.26	23.83	20.46	0.40
179.817	0.205	6.53	18.88	0.26	23.99	20.46	0.40
180.023	0.479	6.71	44.33	0.26	24.07	20.46	0.40
180.501	0.210	6.71	19.63	0.26	24.23	20.46	0.40
180.712	0.118	6.88	11.08	0.26	24.31	20.46	0.40
180.830	0.479	6.88	45.09	0.26	24.35	20.46	0.40
181.309	0.097	6.88	9.22	0.26	24.57	20.46	0.40
181.406	0.479	7.15	45.62	0.26	24.61	20.46	0.40
181.884	0.208	7.15	19.95	0.26	24.84	20.46	0.40
182.092	0.368	7.42	35.47	0.26	24.95	20.46	0.40
182.460	0.314	7.42	30.47	0.26	25.16	20.46	0.40
182.774	0.479	7.69	46.79	0.26	25.35	20.46	0.40
183.252	0.201	7.69	19.76	0.26	25.70	20.46	0.40
183.453	0.247	7.96	24.36	0.26	25.84	20.46	0.40
183.700	0.434	7.96	42.97	0.26	26.01	20.46	0.40
184.134	0.479	8.23	47.45	0.27	26.31	20.46	0.40
184.612	0.203	8.23	20.12	0.27	26.65	20.46	0.40
184.815	0.479	8.50	47.52	0.27	26.79	20.46	0.40
185.294	0.207	8.50	20.53	0.27	27.11	20.46	0.40
185.500	0.270	8.77	26.78	0.27	27.25	20.46	0.40
185.770	0.424	8.77	42.18	0.28	27.42	20.46	0.40
186.194	0.479	9.03	47.56	0.28	27.71	20.46	0.40
186.673	0.229	9.03	22.73	0.28	27.98	20.46	0.40
186.902	0.479	9.59	47.52	0.28	28.10	20.46	0.40
187.380	0.207	9.59	20.51	0.29	28.35	20.46	0.40
187.587	0.479	10.18	47.41	0.29	28.44	20.46	0.40
188.066	0.198	10.18	19.57	0.29	28.64	20.46	0.40
188.264	0.276	10.79	27.30	0.29	28.71	20.46	0.40
188.540	0.393	10.79	38.78	0.29	28.80	20.46	0.40
188.933	0.479	11.39	47.20	0.29	28.91	20.46	0.40
189.412	0.199	11.39	19.62	0.30	29.02	20.46	0.40
189.611	0.479	11.98	47.11	0.30	29.06	20.46	0.40
190.089	0.190	11.98	18.70	0.30	29.12	20.46	0.40
190.279	0.479	12.58	46.95	0.30	29.14	20.46	0.40
190.758	0.196	12.58	19.22	0.30	29.16	20.46	0.40
190.954	0.479	13.15	46.72	0.30	29.16	20.46	0.40
191.433	0.203	13.15	19.80	0.30	29.13	20.46	0.40
191.636	0.479	13.71	46.41	0.30	29.11	20.46	0.40
192.115	0.223	13.71	21.51	0.30	29.05	20.46	0.40
192.338	0.479	13.79	46.05	0.30	29.02	20.46	0.40
192.816	0.217	13.79	20.80	0.30	28.94	20.46	0.40
193.033	0.347	13.87	33.14	0.30	28.90	20.46	0.40
193.380	0.342	13.87	32.51	0.30	28.82	20.46	0.40
193.722	0.479	13.95	45.32	0.30	28.75	20.46	0.40
194.200	0.209	13.95	19.68	0.30	28.64	20.46	0.40
194.409	0.479	14.04	44.94	0.30	28.59	20.46	0.40
194.888	0.204	14.04	19.06	0.30	28.47	20.46	0.40
195.091	0.479	14.12	44.56	0.31	28.42	20.46	0.40
195.570	0.214	14.12	19.87	0.31	28.28	20.46	0.40
195.784	0.479	14.20	44.17	0.31	28.22	20.46	0.40
196.263	0.221	14.20	20.32	0.31	28.06	20.46	0.40
196.484	0.479	14.29	43.75	0.31	27.99	20.46	0.40
196.963	0.240	14.29	21.85	0.31	27.79	20.46	0.40
197.203	0.479	14.36	43.32	0.31	27.67	20.46	0.40
197.681	0.264	14.36	23.76	0.31	27.39	20.46	0.40
197.945	0.275	16.05	24.63	0.31	27.20	20.46	0.40
198.220	0.396	16.05	35.27	0.31	26.98	20.46	0.40

198.616	0.479	17.96	42.18	0.31	26.60	20.46	0.40
199.095	0.173	17.96	15.09	0.30	26.06	20.46	0.40
199.268	0.479	20.00	41.34	0.30	25.83	20.46	0.40
199.746	0.149	20.00	12.69	0.30	25.15	20.46	0.40
199.895	0.479	21.95	40.28	0.30	24.90	20.46	0.40
200.373	0.186	21.95	15.37	0.30	24.05	20.46	0.40
200.559	0.479	23.87	38.92	0.29	23.64	20.46	0.40
201.037	0.154	23.87	12.28	0.29	22.55	20.46	0.40
201.191	0.479	25.75	37.36	0.29	22.19	20.46	0.40
201.670	0.181	25.75	13.76	0.28	20.97	20.46	0.40
201.851	0.479	27.41	35.50	0.28	20.49	20.46	0.40
202.329	0.208	27.41	14.99	0.27	19.16	20.46	0.40
202.537	0.479	28.80	33.33	0.27	18.57	20.46	0.40
203.016	0.044	28.80	3.00	0.26	17.07	20.46	0.40
203.060	0.240	28.80	16.02	0.26	16.92	20.46	0.40
203.300	0.479	29.53	30.83	0.25	16.18	20.46	0.40
203.778	0.233	29.53	14.44	0.24	14.44	20.46	0.40
204.011	0.479	30.32	28.44	0.23	13.62	20.46	0.40
204.490	0.208	30.32	11.86	0.21	11.87	20.46	0.40
204.698	0.479	31.13	26.00	0.21	11.15	20.46	0.40
205.177	0.192	31.13	9.92	0.18	9.39	20.46	0.40
205.368	0.162	31.94	8.14	0.17	8.65	20.46	0.40
205.530	0.479	31.94	22.86	0.16	8.05	20.46	0.40
206.009	0.036	31.94	1.66	0.14	6.37	20.46	0.40
206.045	0.479	32.96	20.81	0.13	6.27	20.46	0.40
206.523	0.267	32.96	10.74	0.11	4.83	20.46	0.40
206.790	0.479	33.76	17.70	0.09	4.10	20.46	0.40
207.269	0.362	33.76	12.03	0.06	2.87	20.46	0.40
207.631	0.108	34.49	3.34	0.05	2.09	20.46	0.40
207.739	0.161	34.49	4.81	0.00	0.00	20.46	0.40
207.900	0.479	34.49	12.93	0.00	0.00	20.46	0.40
208.379	0.449	34.49	10.31	0.00	0.00	20.46	0.40
208.827	0.479	34.87	9.04	0.00	0.00	20.46	0.40
209.306	0.479	34.87	7.00	0.00	0.00	20.46	0.40
209.784	0.479	34.87	4.96	0.00	0.00	20.46	0.40
210.263	0.479	34.87	2.91	0.00	0.00	20.46	0.40
210.741	0.444	34.87	0.88	0.00	0.00	20.46	0.40

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 dx(m) : Larghezza concio
 alpha() : Angolo pendenza base concio
 W(kN/m) : Forza peso concio
 ru(-) : Coefficiente locale pressione interstiziale
 U(kPa) : Pressione totale dei pori base concio
 phi'() : Angolo di attrito efficace base concio
 c'/Cu (kPa) : Coesione efficace o Resistenza al taglio in condizioni non drenate

TABELLA DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	ht (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (kN)	FS_qFEM (--)	FS_p-qPATH (--)			
167.359	0.000	58.988	-0.317	0.0000000000E+000	0.0000000000E+000	0.0000000000E+000	1.9935005852E+000	0.047	1.431	1.079		
167.837	0.098	58.836	-0.317	1.0340446271E+000	-2.4775630727E-003	2.3279890574E+000	0.047	1.431	1.079			
168.316	0.196	58.684	-0.384	2.2281618385E+000	-1.7228324842E-002	4.3565079785E+000	0.052	1.684	1.236			
168.794	0.231	58.468	-0.346	5.2037398394E+000	-1.2110933035E-001	6.6345354307E+000	0.084	2.107	1.428			
169.273	0.366	58.353	-0.243	8.5781997031E+000	-3.0101676448E-001	1.2183629313E+001	0.109	2.492	1.576			
169.346	0.386	58.334	-0.242	9.5311806267E+000	-3.5778894295E-001	1.2304395156E+001	0.113	2.590	1.610			
169.400	0.401	58.322	-0.237	1.0164634137E+001	-3.9582129388E-001	1.2221269917E+001	0.116	2.655	1.632			
169.879	0.538	58.208	-0.241	1.7737746178E+001	-9.3177405673E-001	2.1031485886E+001	0.139	3.572	1.907			
169.947	0.556	58.190	-0.280	1.9224061100E+001	-1.0565183159E+000	2.2182048041E+001	0.143	3.796	1.966			
170.425	0.656	58.055	-0.276	3.1208005945E+001	-2.1486561167E+000	2.5671462770E+001	0.175	5.747	2.475			
170.904	0.762	57.926	-0.269	4.3794697934E+001	-3.3823939554E+000	2.9055152219E+001	0.215	7.932	3.050			
171.133	0.814	57.864	-0.257	5.0761743293E+001	-4.1490540785E+000	3.0714753247E+001	0.231	9.124	3.390			
171.612	0.895	57.744	-0.247	6.5799735107E+001	-5.8964698556E+000	3.3736397016E+001	0.238	11.710	4.172			
171.905	0.948	57.673	-0.198	7.6116171773E+001	-6.8439889387E+000	3.3121937705E+001	0.212	13.254	4.745			
172.384	1.023	57.591	-0.163	9.0380575233E+001	-7.5608963626E+000	2.7507208802E+001	0.176	15.078	5.526			
172.523	1.051	57.573	-0.124	9.4122381058E+001	-7.5501063511E+000	2.5953353912E+001	0.167	15.443	5.726			



172.650	1.063	57.558	-0.090	9.7308699119E+001	-7.5149040071E+000	2.3674085116E+001	0.160	15.699	5.895
172.870	1.094	57.542	-0.069	1.0195305675E+002	-7.1566040204E+000	2.1261268794E+001	0.148	15.866	6.126
173.157	1.137	57.523	-0.047	1.0810252868E+002	-6.3955864239E+000	2.0717539023E+001	0.135	15.881	6.398
173.635	1.179	57.506	-0.033	1.1742587231E+002	-4.3239552132E+000	1.7630239476E+001	0.118	15.318	6.705
173.702	1.187	57.505	0.009	1.1858427726E+002	-3.9132152164E+000	1.7257734825E+001	0.116	15.170	6.722
174.180	1.207	57.511	0.012	1.2644998044E+002	-7.7480324478E-002	1.5669943001E+001	0.107	13.694	6.691
174.240	1.211	57.512	0.025	1.2737837403E+002	5.0281080080E-001	1.5454535949E+001	0.106	13.494	6.675
174.308	1.215	57.514	0.061	1.2842551936E+002	1.2746112664E+000	1.5245549646E+001	0.106	13.261	6.649
174.787	1.226	57.546	0.071	1.3548220883E+002	7.1483573331E+000	1.4436924359E+001	0.118	11.138	6.190
174.967	1.234	57.561	0.111	1.3805891810E+002	9.3836318968E+000	1.4336857965E+001	0.124	10.268	5.965
175.445	1.246	57.619	0.130	1.4494035115E+002	1.5622505392E+001	1.2742815386E+001	0.148	7.867	5.176
175.792	1.262	57.668	0.164	1.4894646872E+002	1.9726432607E+001	1.1685932209E+001	0.178	6.355	4.534
176.271	1.301	57.754	0.183	1.5462383465E+002	2.5296235034E+001	1.1414565780E+001	0.254	4.458	3.570
176.555	1.327	57.808	0.200	1.5779467124E+002	2.8101937037E+001	1.1164248021E+001	0.337	3.580	3.054
177.034	1.377	57.906	0.194	1.6315069787E+002	3.1959519828E+001	9.3585182775E+000	0.625	2.441	2.296
177.274	1.393	57.947	0.171	1.6518095487E+002	3.2913862245E+001	8.4547684957E+000	0.669	2.181	2.081
177.753	1.426	58.029	0.166	1.6924441534E+002	3.4769295977E+001	7.7421523480E+000	0.748	1.779	1.737
177.975	1.436	58.063	0.161	1.7088393292E+002	3.5484134840E+001	7.5845009545E+000	0.766	1.674	1.641
178.453	1.463	58.142	0.158	1.7470909147E+002	3.7084489860E+001	7.2811455569E+000	0.798	1.494	1.472
178.656	1.470	58.171	0.151	1.7612576862E+002	3.7655421441E+001	7.3493089124E+000	0.806	1.448	1.428
178.860	1.480	58.203	0.150	1.7770049737E+002	3.8270932145E+001	7.5573916126E+000	0.813	1.405	1.387
179.339	1.497	58.274	0.147	1.8113321540E+002	3.9577499068E+001	6.4215660160E+000	0.827	1.333	1.316
179.339	1.497	58.274	0.148	1.8113457152E+002	3.9577997430E+001	6.4215812429E+000	0.827	1.333	1.316
179.817	1.513	58.344	0.146	1.8458380906E+002	4.0825256799E+001	7.0460619991E+000	0.837	1.286	1.270
180.023	1.519	58.374	0.143	1.8601682466E+002	4.1330161839E+001	6.9552577084E+000	0.841	1.271	1.255
180.501	1.531	58.442	0.142	1.8932136036E+002	4.2466279951E+001	6.7899180239E+000	0.849	1.243	1.228
180.712	1.536	58.472	0.142	1.9073892171E+002	4.2944238695E+001	6.6927088578E+000	0.853	1.233	1.218
180.830	1.538	58.489	0.153	1.9152802584E+002	4.3205718927E+001	6.7749907361E+000	0.854	1.228	1.214
181.309	1.555	58.563	0.155	1.9498014278E+002	4.4341318824E+001	6.8074288289E+000	0.862	1.209	1.196
181.406	1.558	58.578	0.148	1.9563424369E+002	4.4554293132E+001	6.6924087387E+000	0.863	1.206	1.194
181.884	1.569	58.648	0.151	1.9876049382E+002	4.5556626569E+001	6.7865415947E+000	0.870	1.192	1.182
182.092	1.576	58.682	0.155	2.0019437999E+002	4.6012511438E+001	6.6939115433E+000	0.872	1.187	1.178
182.460	1.584	58.738	0.154	2.0252382281E+002	4.6742948222E+001	6.3195158104E+000	0.877	1.178	1.171
182.774	1.592	58.787	0.165	2.0450279972E+002	4.7359793112E+001	6.4258628816E+000	0.880	1.171	1.167
183.252	1.610	58.869	0.169	2.0766520121E+002	4.8335106677E+001	6.3086421672E+000	0.885	1.159	1.160
183.453	1.615	58.902	0.159	2.0890727465E+002	4.8715596123E+001	5.9169143811E+000	0.887	1.155	1.158
183.700	1.619	58.940	0.156	2.1028662287E+002	4.9133544285E+001	5.5594478335E+000	0.890	1.150	1.155
184.134	1.627	59.008	0.156	2.1267560745E+002	4.9852202062E+001	5.2760607188E+000	0.893	1.141	1.152
184.612	1.631	59.082	0.154	2.1507950045E+002	5.0564139845E+001	4.7863351738E+000	0.896	1.132	1.148
184.815	1.633	59.113	0.151	2.1602953065E+002	5.0842512993E+001	4.5687564981E+000	0.898	1.129	1.147
185.294	1.633	59.185	0.151	2.1808351607E+002	5.1436398384E+001	4.0991603649E+000	0.900	1.121	1.145
185.500	1.634	59.216	0.154	2.1891347421E+002	5.1674262233E+001	3.8863209626E+000	0.901	1.117	1.144
185.770	1.634	59.258	0.164	2.1991543475E+002	5.1958496962E+001	3.7122230282E+000	0.902	1.113	1.144
186.194	1.641	59.330	0.162	2.2148762870E+002	5.2403078810E+001	3.2703638942E+000	0.904	1.107	1.142
186.673	1.639	59.404	0.157	2.2281864091E+002	5.2774856355E+001	2.5471981648E+000	0.905	1.101	1.142
186.902	1.640	59.441	0.166	2.2337576520E+002	5.2930027144E+001	2.2941662836E+000	0.906	1.098	1.141
187.380	1.639	59.521	0.168	2.2433238038E+002	5.3196585667E+001	1.5924110701E+000	0.906	1.093	1.141
187.587	1.639	59.557	0.173	2.2462524549E+002	5.3278400028E+001	1.2719784110E+000	0.907	1.091	1.140
188.066	1.637	59.640	0.175	2.2507349418E+002	5.3404916800E+001	5.1403626375E-001	0.907	1.088	1.140
188.264	1.636	59.675	0.178	2.2514063640E+002	5.3424336780E+001	1.2869625163E-001	0.907	1.087	1.140
188.540	1.633	59.725	0.178	2.2509488394E+002	5.3412669434E+001	-3.5591274312E-001	0.908	1.085	1.140
188.933	1.628	59.795	0.187	2.2484861909E+002	5.3345349375E+001	-9.3757845631E-001	0.908	1.084	1.140
189.412	1.624	59.887	0.195	2.2421872086E+002	5.3175489136E+001	-1.6896954939E+000	0.907	1.083	1.140
189.611	1.624	59.927	0.201	2.2385148697E+002	5.3077212130E+001	-2.0059161954E+000	0.907	1.082	1.140
190.089	1.619	60.024	0.205	2.2270640976E+002	5.2773042285E+001	-2.7670768412E+000	0.907	1.082	1.141
190.279	1.619	60.064	0.215	2.2215163583E+002	5.2626500438E+001	-3.0930822282E+000	0.907	1.082	1.141
190.758	1.616	60.168	0.218	2.2045812502E+002	5.2181495080E+001	-3.7900711251E+000	0.906	1.083	1.142
190.954	1.615	60.210	0.211	2.1969384357E+002	5.1981554448E+001	-3.9643222781E+000	0.906	1.083	1.143
191.433	1.603	60.310	0.210	2.1771366252E+002	5.1466086309E+001	-4.4021753204E+000	0.905	1.084	1.144
191.636	1.598	60.353	0.219	2.1679505334E+002	5.1226318226E+001	-4.6524191086E+000	0.905	1.085	1.145
192.115	1.588	60.459	0.221	2.1441345787E+002	5.0601020738E+001	-5.1271618452E+000	0.903	1.087	1.147
192.338	1.583	60.508	0.225	2.1325646436E+002	5.0293957107E+001	-5.2951882748E+000	0.903	1.087	1.148
192.816	1.574	60.617	0.225	2.1062160085E+002	4.9584025187E+001	-5.5293861348E+000	0.901	1.090	1.150
193.033	1.569	60.665	0.226	2.0941925477E+002	4.9254533591E+001	-5.6436738505E+000	0.900	1.091	1.152
193.380	1.562	60.745	0.228	2.0740404222E+002	4.8691956246E+001	-5.8222963350E+000	0.899	1.093	1.154
193.722	1.556	60.822	0.231	2.0541000774E+002	4.8126679325E+001	-5.9300015588E+000	0.897	1.094	1.157
194.200	1.549	60.934	0.231	2.0250856747E+002	4.7282589355E+001	-5.9706478447E+000	0.894	1.098	1.161
194.409	1.544	60.981	0.231	2.0127072654E+002	4.6914399116E+001	-5.9894734805E+000	0.892	1.099	1.163
194.888	1.536	61.093	0.231	1.9833962127E+002	4.6022507801E+001	-6.0314436574E+000	0.888	1.103	1.168
195.091	1.531	61.139	0.235	1.9711824212E+002	4.5641766534E+001	-6.0967773747E+000	0.886	1.104	1.170
195.570	1.525	61.253	0.238	1.9408246923E+002	4.4663849237E+001	-6.3888997541E+000	0.880	1.108	1.175



195.784	1.522	61.304	0.231	1.9270892573E+002	4.4208133687E+001	-6.3426568465E+000	0.877	1.110	1.178
196.263	1.510	61.413	0.227	1.8974470003E+002	4.3196947855E+001	-6.2209177774E+000	0.870	1.114	1.184
196.484	1.504	61.463	0.238	1.8836577129E+002	4.2716034120E+001	-6.4633752273E+000	0.866	1.116	1.187
196.963	1.498	61.580	0.243	1.8503450843E+002	4.1529138856E+001	-7.1366509219E+000	0.857	1.120	1.193
197.203	1.495	61.638	0.251	1.8329911257E+002	4.0905151865E+001	-7.4829555941E+000	0.852	1.123	1.197
197.681	1.495	61.760	0.257	1.7947193735E+002	3.9530280186E+001	-8.5269338435E+000	0.840	1.128	1.204
197.945	1.496	61.829	0.263	1.7714531519E+002	3.8711226290E+001	-9.0448037160E+000	0.833	1.130	1.209
198.220	1.490	61.901	0.274	1.7459521692E+002	3.7825975183E+001	-9.7781877005E+000	0.826	1.134	1.214
198.616	1.487	62.012	0.284	1.7043653059E+002	3.6422763481E+001	-1.0943062220E+001	0.814	1.139	1.222
199.095	1.469	62.150	0.293	1.6494142207E+002	3.4626093627E+001	-1.2695223009E+001	0.799	1.147	1.232
199.268	1.466	62.203	0.304	1.6267224783E+002	3.3910642053E+001	-1.3180998062E+001	0.792	1.150	1.237
199.746	1.437	62.348	0.308	1.5630078826E+002	3.1944128892E+001	-1.4511482984E+001	0.776	1.160	1.250
199.895	1.431	62.396	0.326	1.5408839391E+002	3.1280586143E+001	-1.4998806628E+001	0.770	1.164	1.255
200.373	1.394	62.552	0.339	1.4673290884E+002	2.9123166962E+001	-1.7243296601E+001	0.751	1.177	1.273
200.559	1.388	62.621	0.371	1.4339821211E+002	2.8171616463E+001	-1.8026201553E+001	0.742	1.184	1.281
201.037	1.354	62.798	0.370	1.3470186524E+002	2.5740466701E+001	-1.8153542912E+001	0.719	1.204	1.305
201.191	1.342	62.855	0.379	1.3190875802E+002	2.4975674593E+001	-1.8346927538E+001	0.712	1.211	1.314
201.670	1.295	63.038	0.386	1.2283210817E+002	2.2529055485E+001	-1.9332033094E+001	0.687	1.236	1.343
201.851	1.279	63.109	0.396	1.1931591549E+002	2.1592993973E+001	-1.9435987415E+001	0.677	1.246	1.355
202.329	1.220	63.299	0.398	1.1005768985E+002	1.9188529741E+001	-1.9365180207E+001	0.650	1.279	1.392
202.537	1.196	63.382	0.418	1.0602510552E+002	1.8155034534E+001	-1.9531900063E+001	0.637	1.294	1.409
203.016	1.136	63.586	0.428	9.6503658893E+001	1.5791102491E+001	-2.0507169912E+001	0.604	1.341	1.460
203.060	1.132	63.606	0.420	9.5594295604E+001	1.5567624787E+001	-2.0298184072E+001	0.601	1.346	1.465
203.300	1.100	63.705	0.451	9.1076288536E+001	1.4470150223E+001	-1.9383680950E+001	0.584	1.372	1.493
203.778	1.053	63.930	0.464	8.1299578329E+001	1.2173869478E+001	-1.9523462372E+001	0.544	1.450	1.572
204.011	1.027	64.036	0.464	7.6853539107E+001	1.1161418109E+001	-1.9073493895E+001	0.525	1.494	1.614
204.490	0.972	64.260	0.462	6.7734461125E+001	9.1460308729E+000	-1.7810468156E+001	0.484	1.606	1.719
204.698	0.943	64.353	0.469	6.4135327312E+001	8.3831976193E+000	-1.7428002278E+001	0.467	1.662	1.769
205.177	0.883	64.583	0.491	5.5619540509E+001	6.6572998889E+000	-1.7881775481E+001	0.426	1.841	1.914
205.368	0.867	64.682	0.506	5.2185033821E+001	6.0124044525E+000	-1.7227489443E+001	0.407	1.948	1.990
205.530	0.845	64.761	0.489	4.9493994229E+001	5.5181365094E+000	-1.6441771264E+001	0.392	2.040	2.056
206.009	0.781	64.995	0.483	4.1915343703E+001	4.1989146088E+000	-1.3051937879E+001	0.352	2.362	2.266
206.045	0.773	65.010	0.454	4.1448973627E+001	4.1235432121E+000	-1.2875712116E+001	0.349	2.386	2.280
206.523	0.681	65.229	0.459	3.5065867541E+001	3.1528238759E+000	-1.2817728840E+001	0.312	2.796	2.511
206.790	0.632	65.352	0.469	3.1724372289E+001	2.6876647355E+000	-1.2312100125E+001	0.290	3.044	2.643
207.269	0.538	65.578	0.468	2.6017382048E+001	1.9557421308E+000	-1.1138931549E+001	0.246	3.507	2.880
207.631	0.463	65.746	0.469	2.2195875000E+001	1.5173629899E+000	-1.0477603196E+001	0.212	3.838	3.046
207.739	0.442	65.799	0.500	2.1069775422E+001	1.3962515671E+000	-1.0490763747E+001	0.201	3.939	3.099
207.900	0.413	65.880	0.500	1.9371448190E+001	1.2158746928E+000	-1.0152847120E+001	0.185	4.090	3.176
208.379	0.323	66.119	0.522	1.5062480037E+001	8.2060381342E-001	-9.1965230644E+000	0.144	4.630	3.423
208.827	0.260	66.364	0.588	1.0855598701E+001	4.7147043484E-001	-9.0413545281E+000	0.116	5.039	3.588
209.306	0.226	66.664	0.647	6.7000974548E+000	2.1194570945E-001	-7.9963757986E+000	0.086	5.058	3.651
209.784	0.211	66.982	0.606	3.2021179669E+000	5.2247361585E-002	-5.6024790721E+000	0.061	4.173	3.581
210.263	0.139	67.244	0.546	1.3378600208E+000	9.7364307938E-003	-2.7659189652E+000	0.048	4.938	4.554
210.741	0.067	67.505	0.546	5.5480522848E-001	1.3293091136E-003	-1.4360519079E+000	0.047	4.938	3.685

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 ht(m) : Altezza linea di thrust da nodo sinistro base concio
 yt(m) : coordinata Y linea di thrust
 yt'(-) : gradiente pendenza locale linea di thrust
 E(x)(kN/m) : Forza Normale interconcio
 T(x)(kN/m) : Forza Tangenziale interconcio
 E' (kN) : derivata Forza normale interconcio
 Rho(x) (-) : fattore mobilitazione resistenza al taglio verticale interconcio ZhU et al.(2003)
 FS_qFEM(x)(-) : fattore di sicurezza locale stimato (locale in X) by qFEM
 FS_p-qPATH(x)(-) : fattore di sicurezza locale stimato (locale in X) by p-qPATH Procedure

TABELLA SFORZI DI TAGLIO DISTRIBUITI LUNGO SUPERFICIE INDIVIDUATA CON MINOR FS

X	dx	dl	alpha	TauStress	TauF	TauStrength	TauS
(m)	(m)	(m)	(°)	(kPa)	(kN/m)	(kPa)	(kN/m)
167.359	0.479	0.540	-27.597	-1.191	-0.643	1.246	0.673
167.837	0.479	0.540	-27.597	-3.574	-1.930	2.924	1.579
168.316	0.479	0.540	-27.597	-5.957	-3.217	4.461	2.409
168.794	0.479	0.540	-27.597	-8.339	-4.503	6.022	3.252
169.273	0.073	0.083	-27.597	-9.713	-0.805	6.655	0.552
169.346	0.054	0.060	-27.597	-10.036	-0.607	6.168	0.373



169.400	0.479	0.540	-27.597	-11.474	-6.196	6.775	3.659
169.879	0.068	0.077	-27.597	-12.956	-0.998	6.596	0.508
169.947	0.479	0.533	-26.212	-13.878	-7.402	7.390	3.942
170.425	0.479	0.533	-26.212	-16.264	-8.675	8.131	4.337
170.904	0.229	0.256	-26.212	-18.029	-4.609	7.974	2.039
171.133	0.479	0.519	-22.864	-17.759	-9.224	9.466	4.916
171.612	0.293	0.318	-22.864	-19.298	-6.146	10.278	3.273
171.905	0.479	0.504	-18.203	-17.136	-8.633	13.591	6.847
172.384	0.139	0.147	-18.203	-17.983	-2.639	15.023	2.205
172.523	0.127	0.130	-12.061	-12.603	-1.633	16.564	2.146
172.650	0.220	0.225	-12.061	-12.846	-2.890	17.714	3.985
172.870	0.287	0.293	-12.061	-13.204	-3.870	18.801	5.510
173.157	0.479	0.482	-7.088	-8.185	-3.947	20.663	9.965
173.635	0.067	0.067	-7.088	-8.356	-0.561	21.786	1.464
173.702	0.479	0.479	-1.840	-2.220	-1.063	22.471	10.759
174.180	0.060	0.060	-1.840	-2.248	-0.134	23.220	1.385
174.240	0.068	0.068	-1.840	-2.258	-0.154	23.957	1.639
174.308	0.479	0.479	2.426	3.039	1.455	23.562	11.286
174.787	0.180	0.180	2.426	3.111	0.560	24.001	4.322
174.967	0.479	0.481	5.449	7.095	3.411	23.441	11.269
175.445	0.347	0.348	5.449	7.257	2.527	23.565	8.205
175.792	0.479	0.481	5.609	7.632	3.670	23.955	11.519
176.271	0.284	0.286	5.609	7.784	2.225	23.954	6.846
176.555	0.479	0.481	5.788	8.184	3.937	23.963	11.526
177.034	0.241	0.242	5.788	8.329	2.015	23.432	5.668
177.274	0.479	0.481	5.973	8.739	4.205	23.855	11.478
177.753	0.222	0.223	5.973	8.883	1.980	24.132	5.379
177.975	0.479	0.481	6.168	9.314	4.483	24.589	11.836
178.453	0.203	0.204	6.168	9.456	1.931	24.885	5.081
178.656	0.204	0.205	6.349	9.815	2.014	25.155	5.162
178.860	0.479	0.482	6.349	9.914	4.774	25.395	12.228
179.339	0.000	0.000	6.349	9.970	0.002	25.442	0.005
179.339	0.479	0.482	6.529	10.305	4.964	25.642	12.351
179.817	0.205	0.207	6.529	10.385	2.147	25.810	5.336
180.023	0.479	0.482	6.708	10.745	5.178	25.986	12.522
180.501	0.210	0.212	6.708	10.825	2.293	26.158	5.540
180.712	0.118	0.119	6.884	11.143	1.329	26.202	3.124
180.830	0.479	0.482	6.884	11.212	5.405	26.432	12.741
181.309	0.097	0.098	6.884	11.279	1.105	26.522	2.598
181.406	0.479	0.482	7.148	11.769	5.676	26.631	12.844
181.884	0.208	0.210	7.148	11.847	2.482	26.798	5.615
182.092	0.368	0.371	7.416	12.348	4.579	26.849	9.956
182.460	0.314	0.316	7.416	12.426	3.932	26.990	8.541
182.774	0.479	0.483	7.687	12.962	6.260	27.130	13.101
183.252	0.201	0.203	7.687	13.040	2.643	27.191	5.512
183.453	0.247	0.249	7.958	13.540	3.373	27.181	6.772
183.700	0.434	0.438	7.958	13.578	5.949	27.212	11.923
184.134	0.479	0.484	8.231	14.049	6.793	27.058	13.084
184.612	0.203	0.205	8.231	14.061	2.880	26.943	5.519
184.815	0.479	0.484	8.502	14.518	7.025	26.832	12.983
185.294	0.207	0.209	8.502	14.526	3.035	26.716	5.583
185.500	0.270	0.273	8.769	14.970	4.083	26.600	7.254
185.770	0.424	0.429	8.769	14.972	6.430	26.539	11.397
186.194	0.479	0.485	9.027	15.399	7.462	26.335	12.761
186.673	0.229	0.232	9.027	15.396	3.566	26.213	6.072
186.902	0.479	0.485	9.592	16.313	7.917	26.001	12.619
187.380	0.207	0.210	9.592	16.298	3.417	25.856	5.420
187.587	0.479	0.486	10.182	17.235	8.380	25.620	12.457
188.066	0.198	0.201	10.182	17.207	3.460	25.468	5.121
188.264	0.276	0.281	10.785	18.153	5.109	25.235	7.103
188.540	0.393	0.400	10.785	18.136	7.256	25.156	10.065
188.933	0.479	0.488	11.385	19.086	9.317	24.943	12.176
189.412	0.199	0.203	11.385	19.073	3.872	24.866	5.049
189.611	0.479	0.489	11.981	19.989	9.779	24.655	12.062
190.089	0.190	0.194	11.981	19.961	3.882	24.572	4.779
190.279	0.479	0.490	12.577	20.848	10.222	24.341	11.935
190.758	0.196	0.201	12.577	20.802	4.184	24.252	4.878
190.954	0.479	0.491	13.154	21.632	10.631	24.011	11.800
191.433	0.203	0.209	13.154	21.567	4.507	23.912	4.997
191.636	0.479	0.493	13.705	22.323	10.996	23.653	11.651
192.115	0.223	0.229	13.705	22.237	5.095	23.542	5.395

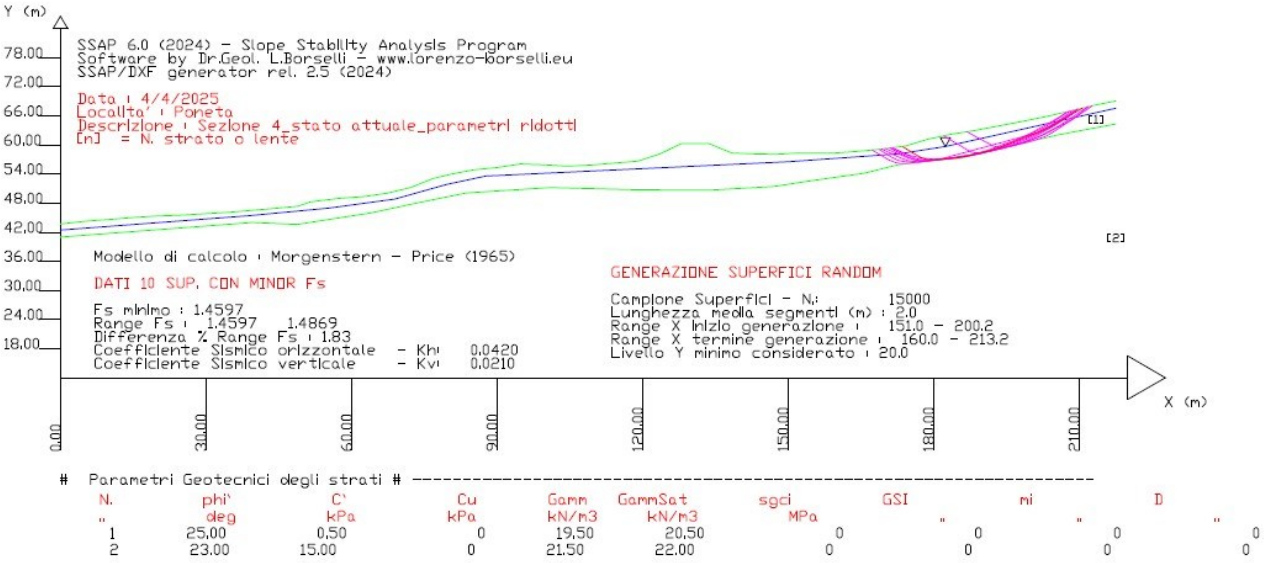


192.338	0.479	0.493	13.787	22.270	10.974	23.397	11.529
192.816	0.217	0.223	13.787	22.182	4.957	23.293	5.205
193.033	0.347	0.357	13.869	22.231	7.943	23.174	8.281
193.380	0.342	0.352	13.869	22.142	7.794	23.067	8.119
193.722	0.479	0.493	13.952	22.157	10.926	22.912	11.298
194.200	0.209	0.215	13.952	22.067	4.746	22.818	4.908
194.409	0.479	0.493	14.035	22.096	10.899	22.676	11.186
194.888	0.204	0.210	14.035	22.003	4.623	22.583	4.745
195.091	0.479	0.493	14.121	22.031	10.872	22.438	11.073
195.570	0.214	0.221	14.121	21.934	4.847	22.344	4.938
195.784	0.479	0.494	14.204	21.953	10.837	22.202	10.960
196.263	0.221	0.228	14.204	21.852	4.986	22.109	5.045
196.484	0.479	0.494	14.286	21.864	10.797	21.963	10.846
196.963	0.240	0.248	14.286	21.756	5.393	21.880	5.423
197.203	0.479	0.494	14.364	21.756	10.747	21.743	10.741
197.681	0.264	0.272	14.364	21.642	5.894	21.681	5.904
197.945	0.275	0.286	16.050	23.812	6.809	21.234	6.072
198.220	0.396	0.412	16.050	23.655	9.752	21.124	8.709
198.616	0.479	0.503	17.962	25.853	13.006	20.523	10.324
199.095	0.173	0.182	17.962	25.625	4.654	20.490	3.722
199.268	0.479	0.509	19.999	27.759	14.137	19.739	10.052
199.746	0.149	0.158	19.999	27.436	4.340	19.708	3.117
199.895	0.479	0.516	21.947	29.181	15.056	18.897	9.750
200.373	0.186	0.200	21.947	28.719	5.746	18.893	3.780
200.559	0.479	0.523	23.873	30.095	15.750	18.031	9.436
201.037	0.154	0.168	23.873	29.531	4.970	17.939	3.019
201.191	0.479	0.531	25.751	30.552	16.233	17.043	9.055
201.670	0.181	0.201	25.751	29.825	5.980	16.954	3.399
201.851	0.479	0.539	27.414	30.320	16.346	16.000	8.626
202.329	0.208	0.234	27.414	29.425	6.900	15.838	3.714
202.537	0.479	0.546	28.803	29.406	16.060	14.971	8.176
203.016	0.044	0.050	28.803	28.632	1.445	15.040	0.759
203.060	0.240	0.273	28.803	28.234	7.718	14.678	4.013
203.300	0.479	0.550	29.528	27.630	15.197	14.129	7.771
203.778	0.233	0.268	29.528	26.575	7.116	13.933	3.731
204.011	0.479	0.554	30.315	25.893	14.354	13.271	7.357
204.490	0.208	0.241	30.315	24.802	5.988	13.043	3.149
204.698	0.479	0.559	31.127	24.037	13.438	12.368	6.915
205.177	0.192	0.224	31.127	22.898	5.128	12.235	2.740
205.368	0.162	0.190	31.939	22.606	4.306	11.827	2.253
205.530	0.479	0.564	31.939	21.445	12.093	11.246	6.342
206.009	0.036	0.043	31.939	20.511	0.878	11.063	0.473
206.045	0.479	0.570	32.958	19.850	11.321	10.264	5.854
206.523	0.267	0.318	32.958	18.388	5.845	9.851	3.131
206.790	0.479	0.576	33.759	17.085	9.835	9.016	5.190
207.269	0.362	0.436	33.759	15.336	6.686	8.371	3.649
207.631	0.108	0.131	34.490	14.495	1.894	7.951	1.039
207.739	0.161	0.196	34.490	13.924	2.722	8.418	1.646
207.900	0.479	0.581	34.490	12.614	7.324	7.587	4.405
208.379	0.449	0.544	34.490	10.726	5.838	6.543	3.561
208.827	0.479	0.583	34.874	8.862	5.169	5.368	3.131
209.306	0.479	0.583	34.874	6.860	4.002	4.210	2.456
209.784	0.479	0.583	34.874	4.858	2.834	3.037	1.772
210.263	0.479	0.583	34.874	2.857	1.666	1.936	1.130
210.741	0.444	0.541	34.874	0.928	0.502	0.898	0.486

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 dx(m) : Larghezza concio
 dl(m) : lunghezza base concio
 alpha() : Angolo pendenza base concio
 TauStress(kPa) : Sforzo di taglio su base concio
 TauF (kN/m) : Forza di taglio su base concio
 TauStrength(kPa) : Resistenza al taglio su base concio
 TauS (kN/m) : Forza resistente al taglio su base concio

2 SEZIONE 4 STATO ATTUALE - SISMA



Report Generale Risultati di Verifica di stabilità'

SSAP 6.0 - Slope Stability Analysis Program (1991,2024)

WWW.SSAP.EU

Build No. 14533

BY

Dr. Geol. LORENZO BORSELLI

UASLP, San Luis Potosi, Mexico

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Ricercatore Associato CNR-IRPI, Perugia, Italia

Ultima Revisione struttura tabelle del report: 21 Maggio 2024

File report: C:\Users\facco\OneDrive\Documents\Lavoro\Lavori STGA\Poneta\Sezioni\Risultati SSAP\Sez4_stato attuale_sisma.txt

Data: 4/4/2025

Località: Poneta

Descrizione: Sezione 4 stato attuale_parametri ridotti

Modello pendio: Sezione 4 stato attuale.mod

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

___ PARAMETRI GEOMETRICI - Coordinate X,Y (in m) ___

SUP 1		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	43.69	0.00	41.00	-	-	-	-
0.66	43.77	39.65	43.99	-	-	-	-
5.50	44.31	48.83	43.59	-	-	-	-
10.34	44.65	64.02	46.02	-	-	-	-
15.18	45.05	73.44	48.04	-	-	-	-
20.02	45.35	83.72	50.14	-	-	-	-
24.86	45.52	100.99	51.23	-	-	-	-
29.70	45.81	119.43	50.76	-	-	-	-
34.54	46.13	133.95	50.72	-	-	-	-
39.38	46.51	147.06	51.46	-	-	-	-
44.22	46.93	154.64	52.59	-	-	-	-
49.06	47.36	165.75	54.16	-	-	-	-
51.48	48.27	172.65	55.92	-	-	-	-
52.80	48.43	180.83	56.92	-	-	-	-
57.64	49.00	185.77	57.33	-	-	-	-
62.48	49.36	205.53	62.05	-	-	-	-
67.32	50.03	217.58	64.32	-	-	-	-
72.16	51.19	-	-	-	-	-	-
76.78	53.10	-	-	-	-	-	-
80.30	53.97	-	-	-	-	-	-



85.14	54.88	-	-	-	-	-	-
89.98	55.33	-	-	-	-	-	-
94.82	56.07	-	-	-	-	-	-
99.66	55.93	-	-	-	-	-	-
104.50	55.61	-	-	-	-	-	-
109.34	55.88	-	-	-	-	-	-
114.18	56.27	-	-	-	-	-	-
119.02	56.69	-	-	-	-	-	-
123.64	58.16	-	-	-	-	-	-
128.04	60.36	-	-	-	-	-	-
128.26	60.36	-	-	-	-	-	-
133.54	60.36	-	-	-	-	-	-
133.76	60.26	-	-	-	-	-	-
138.38	58.38	-	-	-	-	-	-
142.56	58.18	-	-	-	-	-	-
147.40	58.06	-	-	-	-	-	-
152.24	58.36	-	-	-	-	-	-
159.72	58.36	-	-	-	-	-	-
164.56	58.71	-	-	-	-	-	-
169.40	59.19	-	-	-	-	-	-
174.24	59.79	-	-	-	-	-	-
178.86	61.20	-	-	-	-	-	-
183.70	62.26	-	-	-	-	-	-
188.54	63.00	-	-	-	-	-	-
193.38	63.92	-	-	-	-	-	-
198.22	64.85	-	-	-	-	-	-
203.06	65.85	-	-	-	-	-	-
207.90	66.96	-	-	-	-	-	-
212.74	68.12	-	-	-	-	-	-
217.58	69.11	-	-	-	-	-	-

SUP FALDA

X Y

0.00	42.45
38.79	45.44
55.32	46.97
68.89	48.85
79.57	51.87
87.70	53.57
150.23	56.53
172.87	58.21
182.46	59.67
217.58	67.57

----- GESTIONE ACQUIFERI -----

Strati esclusi da acquifero e effetto pressione dei pori:

Esclusione sovraccarico pendio sommerso: NON ATTIVATA

EFFETTO TENSION CRACK IN TESTA RIEMPITO DI ACQUA: ----> DISATTIVATO

In caso di superfici con tension crack in testa, la frattura di tensione

puo' venir viene considerata completamente riempita di acqua per la sua intera profondita'.

Viene quindi considerato una forza in testa, prodotta dalla pressione idrostatica.

La forza applicata ha un effetto destabilizzante aggiuntivo alle altre forze destabilizzanti agenti.

Peso unitario fluido (kN/m³): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A 0

Coefficiente K 0.000800

Pressione minima fluidi Uo_Min (kPa) 0.01

Coefficiente di soprapressione oltre pressione idrostatica 1.00

Limitazione dissipazione a Pressione Idrostatica = ATTIVA

STABILITE CONDIZIONI PER LA VERIFICA CON SOVRAPPRESSIONE ACQUIFERI CON DISSIPAZIONE IN DIREZIONE DELLA SUPERFICIE

CALCOLO EFFETTO DI FILTRAZIONE NON ATTIVATO

----- PARAMETRI GEOMECCANICI -----



	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	25.00	0.50	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00
STRATO 2	23.00	15.00	0.00	21.50	22.00	1.805	0.00	0.00	0.00	0.00

LEGENDA: 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)

---- SOLO Per AMMASSI ROCCIOSI FRATTURATI - Parametri Criterio di Rottura di Hoek et al.(2002)-

sgci _____ Resistenza Compressione Uniassiale Rocca Intatta (in MPa)

GSI _____ Geological Strenght Index ammasso(adimensionale)

mi _____ Indice litologico ammasso(adimensionale)

D _____ Fattore di disturbo ammasso(adimensionale)

NOTA BENE:

FATTORI DI RIDUZIONE NTC2018/EC-7: gammaPHI=1.25, gammaC=1.25 e gammaCu=1.4 - DISATTIVATI

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

*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI

MOTORE DI RICERCA: SNIFF RANDOM SEARCH - Borselli (1997,2021)

FILTRAGGIO SUPERFICI : ATTIVATO

COORDINATE X1,X2,Y OSTACOLO : 0.00 0.00 0.00

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

INTERVALLO ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 151.00 200.17

LIVELLO MINIMO CONSIDERATO (Ymin): 20.00

INTERVALLO ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 160.00 213.23

TOTALE SUPERFICI GENERATE : 15000

*NOTA IMPORTANTE: La lunghezza media dei segmenti non viene considerata nel caso di uso del motore di ricerca NEW RANOM SEARCH

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

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

METODO DI ESPLORAZIONE CAMPO VALORI (lambda0,Fs0) ADOTTATO : A (rapido)

COEFFICIENTE SISMICO UTILIZZATO Kh : 0.0420

COEFFICIENTE SISMICO UTILIZZATO Kv (assunto Positivo): 0.0210

COEFFICIENTE c=Kv/Kh UTILIZZATO : 0.5000

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

X(m)	Y(m)	#Superficie N.1 - #FS_minimo	#Fattore di sicurezza(FS)= 1.4597	#Lambda= 0.3737
173.537	59.703			
175.742	58.342			
176.749	57.753			
177.401	57.422			
177.919	57.211			
178.452	57.061			
178.908	56.978			
179.420	56.936			
179.983	56.936			
180.703	56.976			
181.351	57.018			
181.956	57.064			
182.538	57.114			
183.113	57.170			
183.682	57.232			



184.259	57.302
184.848	57.378
185.462	57.465
186.047	57.555
186.620	57.651
187.183	57.754
187.756	57.866
188.320	57.986
188.895	58.116
189.485	58.258
190.107	58.416
190.694	58.574
191.266	58.738
191.827	58.908
192.399	59.092
192.958	59.282
193.525	59.484
194.100	59.699
194.700	59.933
195.294	60.165
195.882	60.394
196.468	60.622
197.047	60.848
197.632	61.076
198.217	61.303
198.807	61.533
199.399	61.764
199.976	61.996
200.547	62.232
201.114	62.473
201.688	62.724
202.258	62.980
202.835	63.246
203.423	63.525
204.034	63.821
204.619	64.113
205.193	64.409
205.758	64.710
206.332	65.024
206.966	65.384
207.680	65.802
208.695	66.412
210.689	67.629

X(m)	Y(m)	#Superficie N. 2	#Fattore di sicurezza(FS)= 1.4683	#Lambda= 0.3045
170.956	59.383			
173.550	58.082			
174.745	57.518			
175.527	57.202			
176.157	57.002			
176.798	56.868			
177.356	56.799			
177.972	56.775			
178.640	56.797			
179.469	56.866			
180.232	56.934			
180.952	57.002			
181.651	57.072			
182.337	57.145			
183.022	57.222			
183.712	57.304			
184.414	57.391			
185.133	57.484			
185.823	57.582			
186.502	57.687			
187.172	57.800			
187.853	57.924			
188.522	58.054			
189.199	58.196			
189.885	58.348			



190.595 58.514
 191.298 58.679
 191.994 58.843
 192.688 59.008
 193.376 59.171
 194.076 59.339
 194.783 59.508
 195.511 59.684
 196.265 59.866
 196.939 60.052
 197.591 60.258
 198.215 60.484
 198.882 60.754
 199.512 61.038
 200.171 61.363
 200.859 61.731
 201.629 62.169
 202.351 62.589
 203.047 63.006
 203.728 63.423
 204.411 63.853
 205.167 64.344
 206.017 64.910
 207.222 65.732
 209.588 67.365

X(m) Y(m) #Superficie N. 3 #Fattore di sicurezza(FS)= 1.4756 #Lambda= 1.2500
 182.069 61.903
 183.362 61.135
 184.035 60.736
 184.516 60.451
 184.949 60.193
 185.332 59.966
 185.730 59.730
 186.139 59.487
 186.573 59.230
 187.038 58.954
 187.410 58.755
 187.746 58.605
 188.043 58.504
 188.390 58.424
 188.683 58.388
 189.019 58.384
 189.392 58.412
 189.879 58.476
 190.312 58.538
 190.712 58.600
 191.096 58.666
 191.475 58.736
 191.847 58.810
 192.223 58.890
 192.604 58.977
 192.999 59.071
 193.391 59.165
 193.779 59.258
 194.166 59.350
 194.549 59.442
 194.935 59.534
 195.319 59.626
 195.703 59.718
 196.085 59.810
 196.469 59.902
 196.853 59.994
 197.238 60.086
 197.622 60.178
 198.009 60.270
 198.397 60.363
 198.789 60.457
 199.183 60.551
 199.564 60.648



199.940	60.748
200.313	60.852
200.692	60.964
201.069	61.080
201.454	61.205
201.855	61.340
202.284	61.490
202.666	61.637
203.034	61.793
203.387	61.958
203.759	62.148
204.112	62.343
204.478	62.562
204.855	62.802
205.269	63.079
205.672	63.350
206.065	63.614
206.455	63.876
206.838	64.133
207.224	64.392
207.608	64.650
207.992	64.908
208.374	65.164
208.758	65.422
209.142	65.680
209.528	65.939
209.911	66.196
210.344	66.487
210.825	66.810
211.498	67.262
212.640	68.029
212.640	68.096

X(m)	Y(m)	#Superficie N. 4	#Fattore di sicurezza(FS)= 1.4776	#Lambda= 0.3177
170.029	59.268			
173.111	57.982			
174.542	57.424			
175.485	57.113			
176.254	56.921			
177.029	56.801			
177.712	56.746			
178.460	56.744			
179.265	56.793			
180.247	56.899			
181.152	57.002			
182.009	57.107			
182.841	57.215			
183.661	57.328			
184.477	57.446			
185.299	57.572			
186.133	57.706			
186.990	57.850			
187.821	57.997			
188.641	58.149			
189.453	58.307			
190.272	58.474			
191.090	58.649			
191.921	58.835			
192.777	59.033			
193.677	59.250			
194.499	59.469			
195.297	59.705			
196.069	59.958			
196.875	60.247			
197.651	60.551			
198.455	60.890			
199.290	61.267			
200.207	61.705			
201.056	62.127			
201.878	62.553			



202.677	62.986
203.491	63.446
204.382	63.976
205.393	64.601
206.835	65.524
209.689	67.386
209.689	67.389

X(m)	Y(m)	#Superficie N. 5	#Fattore di sicurezza(FS)= 1.4780	#Lambda= 1.2500
171.137	59.405			
173.141	58.592			
174.121	58.211			
174.795	57.972			
175.374	57.790			
175.922	57.644			
176.441	57.526			
176.986	57.422			
177.557	57.333			
178.203	57.252			
178.787	57.189			
179.345	57.142			
179.883	57.110			
180.434	57.090			
180.969	57.084			
181.520	57.092			
182.091	57.112			
182.713	57.147			
183.290	57.188			
183.848	57.239			
184.392	57.298			
184.946	57.368			
185.486	57.447			
186.037	57.538			
186.599	57.641			
187.193	57.759			
187.771	57.877			
188.338	57.996			
188.900	58.117			
189.460	58.240			
190.018	58.366			
190.578	58.496			
191.140	58.629			
191.708	58.766			
192.277	58.904			
192.843	59.041			
193.410	59.178			
193.972	59.314			
194.542	59.452			
195.113	59.590			
195.693	59.730			
196.280	59.872			
196.837	60.017			
197.386	60.170			
197.924	60.332			
198.478	60.509			
199.021	60.694			
199.577	60.895			
200.151	61.113			
200.765	61.357			
201.337	61.596			
201.893	61.840			
202.435	62.091			
202.989	62.360			
203.530	62.636			
204.084	62.930			
204.652	63.244			
205.256	63.591			
205.830	63.929			
206.392	64.268			
206.944	64.611			



207.502	64.966
208.119	65.372
208.813	65.842
209.799	66.523
211.615	67.796
211.615	67.850

X(m)	Y(m)	#Superficie N. 6	#Fattore di sicurezza(FS)= 1.4824	#Lambda= 0.3086
171.561	59.458			
174.063	58.194			
175.219	57.643			
175.976	57.332			
176.589	57.133			
177.211	56.997			
177.754	56.923			
178.352	56.892			
179.000	56.903			
179.803	56.957			
180.538	57.012			
181.231	57.069			
181.904	57.130			
182.565	57.196			
183.224	57.266			
183.889	57.343			
184.566	57.426			
185.265	57.518			
185.935	57.613			
186.593	57.716			
187.241	57.825			
187.900	57.945			
188.551	58.073			
189.213	58.211			
189.891	58.362			
190.603	58.528			
191.276	58.696			
191.934	58.871			
192.579	59.053			
193.236	59.251			
193.881	59.456			
194.538	59.676			
195.211	59.913			
195.921	60.173			
196.599	60.431			
197.262	60.691			
197.914	60.957			
198.574	61.234			
199.228	61.518			
199.893	61.817			
200.576	62.132			
201.295	62.473			
201.964	62.806			
202.617	63.148			
203.253	63.498			
203.908	63.878			
204.621	64.316			
205.433	64.839			
206.597	65.618			
208.760	67.096			
208.760	67.166			

X(m)	Y(m)	#Superficie N. 7	#Fattore di sicurezza(FS)= 1.4838	#Lambda= 1.2500
186.870	62.745			
188.198	62.011			
188.886	61.633			
189.374	61.365			
189.814	61.127			
190.205	60.917			
190.607	60.703			
191.021	60.483			



191.462	60.252
191.937	60.004
192.318	59.827
192.664	59.693
192.972	59.605
193.330	59.539
193.635	59.514
193.982	59.520
194.367	59.558
194.863	59.634
195.301	59.707
195.707	59.782
196.094	59.860
196.480	59.946
196.859	60.036
197.246	60.136
197.643	60.245
198.065	60.367
198.464	60.489
198.852	60.613
199.233	60.742
199.620	60.879
200.000	61.020
200.387	61.170
200.783	61.330
201.199	61.504
201.597	61.676
201.987	61.849
202.372	62.025
202.760	62.208
203.142	62.394
203.528	62.586
203.918	62.786
204.319	62.996
204.718	63.206
205.114	63.414
205.509	63.621
205.901	63.827
206.298	64.036
206.698	64.246
207.107	64.460
207.524	64.679
207.909	64.894
208.285	65.117
208.651	65.349
209.035	65.607
209.448	65.905
209.922	66.266
210.606	66.812
211.956	67.917
211.956	67.932

X(m)	Y(m)	#Superficie N. 8 #Fattore di sicurezza(FS)= 1.4842 #Lambda= 0.5499
169.293	59.179	
172.009	57.877	
173.262	57.312	
174.083	56.997	
174.746	56.798	
175.420	56.668	
176.011	56.603	
176.667	56.587	
177.385	56.618	
178.287	56.702	
179.077	56.790	
179.813	56.888	
180.514	56.998	
181.223	57.127	
181.906	57.268	
182.606	57.428	
183.320	57.608	



184.080	57.814
184.828	58.018
185.564	58.218
186.296	58.417
187.017	58.614
187.743	58.811
188.467	59.008
189.191	59.206
189.910	59.401
190.634	59.599
191.357	59.796
192.084	59.994
192.805	60.191
193.531	60.388
194.255	60.586
194.979	60.783
195.697	60.979
196.422	61.176
197.145	61.374
197.871	61.572
198.593	61.768
199.332	61.970
200.080	62.174
200.856	62.385
201.666	62.606
202.366	62.828
203.037	63.079
203.670	63.355
204.363	63.699
205.081	64.112
205.932	64.658
207.189	65.531
209.714	67.350
209.714	67.395

X(m)	Y(m)	#Superficie N. 9	#Fattore di sicurezza(FS)= 1.4850	#Lambda= 0.3099
168.726	59.123			
170.524	57.984			
171.364	57.476			
171.919	57.178			
172.372	56.972			
172.826	56.813			
173.228	56.704			
173.671	56.622			
174.152	56.565			
174.752	56.524			
175.276	56.499			
175.765	56.487			
176.229	56.487			
176.702	56.500			
177.157	56.524			
177.623	56.560			
178.099	56.608			
178.610	56.671			
179.112	56.733			
179.605	56.793			
180.095	56.853			
180.577	56.913			
181.063	56.972			
181.548	57.032			
182.034	57.091			
182.517	57.151			
183.000	57.211			
183.483	57.272			
183.965	57.335			
184.447	57.398			
184.934	57.463			
185.425	57.530			
185.926	57.599			
186.439	57.671			



186.917	57.748
187.384	57.835
187.839	57.931
188.313	58.044
188.769	58.164
189.238	58.299
189.718	58.449
190.235	58.622
190.734	58.792
191.223	58.960
191.706	59.130
192.187	59.301
192.666	59.475
193.146	59.651
193.629	59.832
194.115	60.016
194.603	60.201
195.089	60.385
195.575	60.569
196.058	60.752
196.545	60.937
197.032	61.121
197.524	61.308
198.017	61.494
198.498	61.682
198.974	61.873
199.447	62.068
199.926	62.271
200.404	62.479
200.890	62.697
201.390	62.927
201.918	63.174
202.400	63.415
202.867	63.666
203.320	63.925
203.792	64.213
204.300	64.548
204.885	64.956
205.727	65.574
207.427	66.851

X(m)	Y(m)	#Superficie N.10 #Fattore di sicurezza(FS)= 1.4869 #Lambda= 0.2923
167.279	58.980	
169.724	57.543	
170.834	56.928	
171.547	56.588	
172.109	56.380	
172.693	56.241	
173.186	56.173	
173.743	56.156	
174.356	56.189	
175.142	56.275	
175.864	56.356	
176.540	56.434	
177.196	56.512	
177.833	56.589	
178.471	56.668	
179.108	56.749	
179.747	56.832	
180.387	56.916	
181.030	57.002	
181.671	57.087	
182.314	57.172	
182.952	57.257	
183.598	57.342	
184.245	57.428	
184.901	57.515	
185.563	57.603	
186.196	57.697	
186.821	57.799	



187.436	57.910
188.066	58.034
188.686	58.166
189.318	58.312
189.968	58.472
190.659	58.653
191.307	58.833
191.938	59.020
192.554	59.214
193.184	59.425
193.801	59.644
194.431	59.879
195.077	60.132
195.763	60.413
196.414	60.688
197.048	60.967
197.672	61.251
198.303	61.549
198.924	61.853
199.553	62.171
200.192	62.504
200.857	62.860
201.508	63.213
202.150	63.564
202.788	63.917
203.424	64.272
204.138	64.676
204.934	65.131
206.054	65.778
208.224	67.038

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

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR F_s *# Analisi Deficit in riferimento a $F_s(\text{progetto}) = 1.200$

Sup N.	F_s	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.460	880.6	603.3	156.7	Surplus
2	1.468	961.8	655.0	175.7	Surplus
3	1.476	691.2	468.4	129.1	Surplus
4	1.478	961.3	650.5	180.6	Surplus
5	1.478	1003.3	678.8	188.7	Surplus
6	1.482	912.0	615.3	173.7	Surplus
7	1.484	510.3	343.9	97.6	Surplus
8	1.484	906.6	610.8	173.6	Surplus
9	1.485	935.7	630.1	179.6	Surplus
10	1.487	967.6	650.8	186.7	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 97.6

Note: FTR --> Forza totale Resistente lungo la superficie di scivolamento

FTA --> Forza totale Agente lungo la superficie di scivolamento

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

TABELLA PARAMETRI CONCI DELLA SUPERFICIE INDIVIDUATA CON MINOR F_s

X	dx	alpha	W	ru	U	phi'	(c',Cu)
(m)	(m)	(°)	(kN/m)	(-)	(kPa)	(°)	(kPa)
173.537	0.428	-31.69	1.35	0.00	0.00	0.00	25.00
173.966	0.274	-31.69	2.29	0.00	0.00	0.00	25.00
174.240	0.428	-31.69	6.13	0.00	0.00	0.00	25.00
174.668	0.428	-31.69	9.49	0.00	0.00	0.00	25.00
175.097	0.249	-31.69	7.06	0.00	0.00	0.00	25.00
175.345	0.396	-31.69	13.66	0.06	2.89	25.00	0.50



175.742	0.428	-30.32	18.08	0.10	5.23	25.00	0.50
176.170	0.428	-30.32	21.47	0.14	7.70	25.00	0.50
176.598	0.151	-30.32	8.37	0.17	10.18	25.00	0.50
176.749	0.428	-26.96	25.91	0.18	11.09	25.00	0.50
177.178	0.223	-26.96	14.73	0.20	13.50	25.00	0.50
177.401	0.428	-22.16	30.42	0.21	14.74	25.00	0.50
177.829	0.090	-22.16	6.71	0.23	16.68	25.00	0.50
177.919	0.428	-15.69	33.45	0.23	17.05	25.00	0.50
178.347	0.105	-15.69	8.56	0.24	18.61	25.00	0.50
178.452	0.408	-10.33	34.25	0.24	18.98	25.00	0.50
178.860	0.048	-10.33	4.11	0.25	20.25	25.00	0.50
178.908	0.428	-4.61	37.60	0.25	20.40	25.00	0.50
179.336	0.084	-4.61	7.52	0.25	21.42	25.00	0.50
179.420	0.428	-0.00	38.81	0.25	21.60	25.00	0.50
179.848	0.134	-0.00	12.35	0.25	22.42	25.00	0.50
179.983	0.428	3.18	39.79	0.25	22.65	25.00	0.50
180.411	0.292	3.18	27.48	0.26	23.34	25.00	0.50
180.703	0.127	3.70	12.02	0.26	23.75	25.00	0.50
180.830	0.428	3.70	40.98	0.26	23.90	25.00	0.50
181.258	0.093	3.70	8.96	0.26	24.39	25.00	0.50
181.351	0.428	4.30	41.67	0.26	24.48	25.00	0.50
181.779	0.176	4.30	17.31	0.26	24.94	25.00	0.50
181.956	0.428	4.93	42.41	0.26	25.10	25.00	0.50
182.384	0.076	4.93	7.57	0.26	25.50	25.00	0.50
182.460	0.078	4.93	7.81	0.26	25.57	25.00	0.50
182.538	0.428	5.60	43.07	0.26	25.63	25.00	0.50
182.966	0.146	5.60	14.80	0.26	26.03	25.00	0.50
183.113	0.428	6.22	43.67	0.26	26.16	25.00	0.50
183.541	0.141	6.22	14.44	0.26	26.54	25.00	0.50
183.682	0.018	6.84	1.89	0.27	26.66	25.00	0.50
183.700	0.428	6.84	44.11	0.27	26.67	25.00	0.50
184.128	0.130	6.84	13.46	0.27	27.03	25.00	0.50
184.259	0.428	7.44	44.27	0.27	27.14	25.00	0.50
184.687	0.161	7.44	16.63	0.27	27.53	25.00	0.50
184.848	0.428	8.00	44.39	0.27	27.67	25.00	0.50
185.276	0.186	8.00	19.29	0.28	28.01	25.00	0.50
185.462	0.308	8.74	31.98	0.28	28.15	25.00	0.50
185.770	0.277	8.74	28.71	0.28	28.39	25.00	0.50
186.047	0.428	9.53	44.44	0.28	28.58	25.00	0.50
186.475	0.145	9.53	15.00	0.29	28.83	25.00	0.50
186.620	0.428	10.34	44.35	0.29	28.89	25.00	0.50
187.048	0.135	10.34	13.96	0.29	29.06	25.00	0.50
187.183	0.428	11.15	44.19	0.29	29.10	25.00	0.50
187.611	0.144	11.15	14.87	0.29	29.20	25.00	0.50
187.756	0.428	11.96	43.96	0.29	29.23	25.00	0.50
188.184	0.136	11.96	13.94	0.29	29.27	25.00	0.50
188.320	0.220	12.76	22.43	0.29	29.27	25.00	0.50
188.540	0.355	12.76	36.18	0.29	29.27	25.00	0.50
188.895	0.428	13.53	43.44	0.30	29.24	25.00	0.50
189.324	0.161	13.53	16.29	0.30	29.18	25.00	0.50
189.485	0.428	14.23	43.16	0.30	29.14	25.00	0.50
189.913	0.194	14.23	19.44	0.30	29.00	25.00	0.50
190.107	0.428	15.07	42.78	0.30	28.93	25.00	0.50
190.535	0.158	15.07	15.73	0.30	28.72	25.00	0.50
190.694	0.428	15.97	42.34	0.30	28.63	25.00	0.50
191.122	0.144	15.97	14.18	0.30	28.37	25.00	0.50
191.266	0.428	16.91	41.82	0.30	28.26	25.00	0.50
191.694	0.133	16.91	12.87	0.30	27.92	25.00	0.50
191.827	0.428	17.83	41.22	0.30	27.81	25.00	0.50
192.255	0.144	17.83	13.70	0.30	27.40	25.00	0.50
192.399	0.428	18.74	40.53	0.29	27.25	25.00	0.50
192.827	0.130	18.74	12.21	0.29	26.78	25.00	0.50
192.958	0.422	19.64	39.21	0.29	26.62	25.00	0.50
193.380	0.145	19.64	13.27	0.29	26.09	25.00	0.50
193.525	0.428	20.49	38.89	0.29	25.90	25.00	0.50
193.953	0.147	20.49	13.16	0.29	25.29	25.00	0.50
194.100	0.428	21.29	37.93	0.29	25.08	25.00	0.50
194.528	0.172	21.29	15.00	0.29	24.42	25.00	0.50
194.700	0.428	21.29	36.88	0.29	24.15	25.00	0.50
195.128	0.167	21.29	14.14	0.28	23.46	25.00	0.50
195.294	0.428	21.29	35.83	0.28	23.20	25.00	0.50

195.723	0.159	21.29	13.11	0.28	22.49	25.00	0.50
195.882	0.428	21.29	34.80	0.28	22.24	25.00	0.50
196.310	0.158	21.29	12.62	0.28	21.47	25.00	0.50
196.468	0.428	21.29	33.77	0.27	21.21	25.00	0.50
196.896	0.151	21.29	11.71	0.27	20.49	25.00	0.50
197.047	0.428	21.29	32.75	0.27	20.25	25.00	0.50
197.475	0.157	21.29	11.78	0.27	19.58	25.00	0.50
197.632	0.428	21.29	31.72	0.27	19.35	25.00	0.50
198.060	0.157	21.29	11.41	0.26	18.70	25.00	0.50
198.217	0.003	21.29	0.24	0.26	18.48	25.00	0.50
198.220	0.428	21.29	30.72	0.26	18.48	25.00	0.50
198.648	0.159	21.29	11.19	0.26	17.82	25.00	0.50
198.807	0.428	21.29	29.76	0.26	17.58	25.00	0.50
199.235	0.164	21.29	11.19	0.25	16.86	25.00	0.50
199.399	0.428	21.86	28.77	0.25	16.57	25.00	0.50
199.827	0.148	21.86	9.80	0.25	15.78	25.00	0.50
199.976	0.428	22.44	27.75	0.24	15.49	25.00	0.50
200.404	0.143	22.44	9.10	0.24	14.60	25.00	0.50
200.547	0.428	23.04	26.67	0.23	14.30	25.00	0.50
200.975	0.138	23.04	8.44	0.23	13.39	25.00	0.50
201.114	0.428	23.62	25.54	0.23	13.11	25.00	0.50
201.542	0.146	23.62	8.52	0.22	12.24	25.00	0.50
201.688	0.428	24.21	24.33	0.21	11.93	25.00	0.50
202.117	0.141	24.21	7.82	0.21	10.99	25.00	0.50
202.258	0.428	24.79	23.07	0.20	10.68	25.00	0.50
202.686	0.149	24.79	7.78	0.19	9.67	25.00	0.50
202.835	0.225	25.35	11.54	0.19	9.32	25.00	0.50
203.060	0.363	25.35	18.06	0.18	8.75	25.00	0.50
203.423	0.428	25.87	20.42	0.17	7.77	25.00	0.50
203.851	0.183	25.87	8.41	0.15	6.59	25.00	0.50
204.034	0.428	26.55	18.99	0.14	6.11	25.00	0.50
204.462	0.156	26.55	6.68	0.12	4.84	25.00	0.50
204.619	0.428	27.26	17.54	0.11	4.43	25.00	0.50
205.047	0.146	27.26	5.72	0.08	3.32	25.00	0.50
205.193	0.337	27.98	12.73	0.08	2.99	25.00	0.50
205.530	0.228	27.98	8.21	0.06	2.34	25.00	0.50
205.758	0.428	28.70	14.48	0.05	1.92	25.00	0.50
206.187	0.146	28.70	4.65	0.03	1.27	25.00	0.50
206.332	0.047	29.62	1.46	0.03	1.08	25.00	0.50
206.379	0.428	29.62	12.69	0.00	0.00	25.00	0.50
206.807	0.159	29.62	4.39	0.00	0.00	25.00	0.50
206.966	0.428	30.35	10.96	0.00	0.00	25.00	0.50
207.395	0.286	30.35	6.59	0.00	0.00	25.00	0.50
207.680	0.220	31.02	4.66	0.00	0.00	25.00	0.50
207.900	0.428	31.02	8.09	0.00	0.00	25.00	0.50
208.328	0.366	31.02	5.87	0.00	0.00	25.00	0.50
208.695	0.428	31.37	5.62	0.00	0.00	25.00	0.50
209.123	0.428	31.37	4.27	0.00	0.00	25.00	0.50
209.551	0.428	31.37	2.92	0.00	0.00	25.00	0.50
209.980	0.428	31.37	1.56	0.00	0.00	25.00	0.50
210.408	0.282	31.37	0.29	0.00	0.00	25.00	0.50

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 dx(m) : Larghezza concio
 alpha() : Angolo pendenza base concio
 W(kN/m) : Forza peso concio
 ru(-) : Coefficiente locale pressione interstiziale
 U(kPa) : Pressione totale dei pori base concio
 phi'() : Angolo di attrito efficace base concio
 c'/Cu (kPa) : Coesione efficace o Resistenza al taglio in condizioni non drenate

TABELLA DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X	ht	yt	yt'	E(x)	T(x)	E'	rho(x)	FS_qFEM	FS_p-qPATH			
(m)	(m)	(m)	(--)	(kN/m)	(kN/m)		(kN)	(--)	(--)	(--)		
173.537	0.000	59.703	-0.366	0.0000000000E+000	0.0000000000E+000	0.0000000000E+000	3.0207564645E+000	0.049	2.614	2.519		
173.966	0.078	59.516	-0.366	1.2195409125E+000	-6.8397678762E-003	2.6738502156E+000	0.049	2.120	2.017			



174.240	0.177	59.446	-0.304	1.9222864779E+000	-2.0044345743E-002	3.8915582136E+000	0.052	1.848	1.726
174.668	0.298	59.303	-0.314	4.4780668264E+000	-1.3056868405E-001	6.9838027154E+000	0.078	1.623	1.437
175.097	0.437	59.177	-0.307	7.9048124815E+000	-4.7316255108E-001	1.1180900782E+001	0.116	1.603	1.320
175.345	0.508	59.095	-0.324	1.1146657502E+001	-1.0080813107E+000	1.5833918098E+001	0.143	1.664	1.285
175.742	0.626	58.968	-0.311	1.9195129956E+001	-2.4669229486E+000	2.2344401255E+001	0.189	1.869	1.259
176.170	0.747	58.839	-0.289	2.9710156547E+001	-4.5273370553E+000	2.6220935680E+001	0.271	2.169	1.234
176.598	0.880	58.721	-0.266	4.1656736609E+001	-7.0464112576E+000	3.2151326044E+001	0.398	2.588	1.235
176.749	0.932	58.685	-0.222	4.6730756583E+001	-8.2035544570E+000	3.3896746790E+001	0.430	2.801	1.246
177.178	1.057	58.592	-0.208	6.1548502830E+001	-1.1692141338E+001	3.6554406376E+001	0.493	3.428	1.281
177.401	1.128	58.549	-0.159	6.9934541048E+001	-1.3810118032E+001	3.7030711243E+001	0.490	3.804	1.305
177.829	1.242	58.489	-0.136	8.5347815527E+001	-1.7248878229E+001	3.5013518011E+001	0.442	4.472	1.356
177.919	1.268	58.479	-0.090	8.8469897015E+001	-1.7751643740E+001	3.4623124945E+001	0.429	4.604	1.368
178.347	1.351	58.442	-0.083	1.0291744029E+002	-1.9008749266E+001	3.4641260463E+001	0.375	5.179	1.425
178.452	1.374	58.435	-0.045	1.0658780481E+002	-1.8843310257E+001	3.4749645271E+001	0.363	5.300	1.440
178.860	1.432	58.419	-0.038	1.2057086393E+002	-1.5988406119E+001	3.3517989010E+001	0.325	5.619	1.503
178.908	1.440	58.417	0.004	1.2216488547E+002	-1.5571972476E+001	3.3180133282E+001	0.321	5.647	1.510
179.336	1.477	58.421	0.009	1.3543006811E+002	-8.3164673012E+000	2.9588260075E+001	0.296	5.614	1.572
179.420	1.486	58.422	0.041	1.3789787982E+002	-6.5631453300E+000	2.9218893822E+001	0.293	5.584	1.584
179.848	1.505	58.442	0.049	1.5019988030E+002	5.7667903009E+000	2.6747522387E+001	0.301	5.192	1.636
179.983	1.513	58.450	0.081	1.5371245356E+002	1.0479081879E+001	2.6332298502E+001	0.309	5.032	1.649
180.411	1.527	58.487	0.093	1.6526999637E+002	2.5802631039E+001	2.5635651380E+001	0.358	4.344	1.677
180.703	1.540	58.517	0.104	1.7248738839E+002	3.5554076676E+001	2.2700939425E+001	0.407	3.830	1.686
180.830	1.546	58.531	0.112	1.7525376346E+002	3.9250431671E+001	2.1460948229E+001	0.433	3.614	1.684
181.258	1.567	58.579	0.113	1.8391733793E+002	5.0264870097E+001	1.6825691476E+001	0.547	2.920	1.668
181.351	1.571	58.589	0.127	1.8541050040E+002	5.1985808901E+001	1.6307807106E+001	0.577	2.801	1.661
181.779	1.595	58.645	0.128	1.9282856211E+002	5.9365057786E+001	1.4833175178E+001	0.753	2.267	1.621
181.956	1.603	58.666	0.123	1.9526367559E+002	6.1034634289E+001	1.3569286330E+001	0.811	2.116	1.603
182.384	1.619	58.719	0.122	2.0082547604E+002	6.3952443073E+001	1.1060952881E+001	0.929	1.811	1.556
182.460	1.621	58.728	0.116	2.0163927480E+002	6.4231186750E+001	1.0712072808E+001	0.937	1.774	1.549
182.538	1.623	58.737	0.124	2.0247587085E+002	6.4516155847E+001	1.0698039952E+001	0.944	1.738	1.541
182.966	1.635	58.791	0.125	2.0704391147E+002	6.6032132178E+001	1.0049156864E+001	0.976	1.561	1.497
183.113	1.639	58.809	0.126	2.0848116809E+002	6.6492546890E+001	9.5800618127E+000	0.983	1.514	1.484
183.541	1.646	58.863	0.126	2.1225916574E+002	6.7668949025E+001	8.3679273885E+000	0.990	1.414	1.450
183.682	1.649	58.881	0.124	2.1341587451E+002	6.8024577409E+001	6.8229909683E+000	0.992	1.388	1.440
183.700	1.648	58.883	0.126	2.1353809090E+002	6.8061544922E+001	6.6716451313E+000	0.992	1.385	1.439
184.128	1.651	58.937	0.128	2.1670711841E+002	6.9016186223E+001	7.2205364274E+000	0.993	1.326	1.416
184.259	1.653	58.955	0.143	2.1764185835E+002	6.9296223972E+001	7.1479321853E+000	0.993	1.311	1.410
184.687	1.660	59.017	0.147	2.2067767386E+002	7.0201883092E+001	6.6685170408E+000	0.994	1.266	1.392
184.848	1.662	59.041	0.150	2.2172341039E+002	7.0513565871E+001	6.2401575743E+000	0.994	1.253	1.387
185.276	1.666	59.105	0.152	2.2408644963E+002	7.1216794078E+001	5.1128276971E+000	0.994	1.227	1.378
185.462	1.670	59.135	0.163	2.2500439581E+002	7.1491062160E+001	4.7163052671E+000	0.994	1.217	1.375
185.770	1.673	59.185	0.170	2.2634461769E+002	7.1893829894E+001	4.0736068016E+000	0.994	1.203	1.371
186.047	1.679	59.234	0.175	2.2740274452E+002	7.2214461607E+001	3.2097859594E+000	0.994	1.191	1.369
186.475	1.682	59.309	0.173	2.2836918025E+002	7.2515509949E+001	1.5875527423E+000	0.995	1.179	1.367
186.620	1.682	59.333	0.167	2.2856613067E+002	7.2577547175E+001	1.1861894409E+000	0.995	1.175	1.367
187.048	1.676	59.405	0.169	2.2885157392E+002	7.2669909834E+001	3.8721077905E-002	0.995	1.167	1.366
187.183	1.674	59.428	0.175	2.2883007632E+002	7.2664022498E+001	-3.3822366713E-001	0.995	1.164	1.366
187.611	1.665	59.503	0.177	2.2844199773E+002	7.2544821289E+001	-1.4689468201E+000	0.995	1.158	1.365
187.756	1.663	59.530	0.182	2.2820236516E+002	7.2469371529E+001	-1.8455447159E+000	0.995	1.156	1.365
188.184	1.650	59.608	0.183	2.2717473916E+002	7.2141525782E+001	-2.9125891501E+000	0.995	1.152	1.365
188.320	1.647	59.633	0.194	2.2675557270E+002	7.2005965508E+001	-3.3735855319E+000	0.995	1.151	1.365
188.540	1.641	59.677	0.206	2.2590883452E+002	7.1729392662E+001	-4.0713143018E+000	0.995	1.149	1.365
188.895	1.635	59.752	0.219	2.2433623797E+002	7.1213840690E+001	-4.9984075124E+000	0.995	1.147	1.365
189.324	1.629	59.849	0.228	2.2189874169E+002	7.0414727536E+001	-6.1644777682E+000	0.995	1.145	1.365
189.485	1.628	59.886	0.240	2.2087694298E+002	7.0080069318E+001	-6.5923670433E+000	0.995	1.144	1.365
189.913	1.623	59.990	0.245	2.1776891781E+002	6.9065323220E+001	-7.8056318045E+000	0.995	1.143	1.365
190.107	1.622	60.038	0.253	2.1620859545E+002	6.8559221046E+001	-8.2620967821E+000	0.995	1.142	1.365
190.535	1.616	60.147	0.256	2.1247281203E+002	6.7356489272E+001	-9.3273938289E+000	0.995	1.141	1.364
190.694	1.614	60.188	0.249	2.1096113009E+002	6.6875415947E+001	-9.5345432883E+000	0.995	1.141	1.364
191.122	1.597	60.293	0.249	2.0689651660E+002	6.5595173494E+001	-1.0351511789E+001	0.995	1.141	1.364
191.266	1.593	60.331	0.262	2.0536093518E+002	6.5114621865E+001	-1.0728117014E+001	0.995	1.141	1.364
191.694	1.575	60.443	0.264	2.0065621562E+002	6.3650048153E+001	-1.1640834406E+001	0.995	1.142	1.364
191.827	1.571	60.479	0.270	1.9908434993E+002	6.3163230402E+001	-1.1904771604E+001	0.995	1.142	1.364
192.255	1.548	60.595	0.271	1.9390172864E+002	6.1564673084E+001	-1.2583730449E+001	0.996	1.143	1.364
192.399	1.542	60.634	0.279	1.9207235980E+002	6.1001764598E+001	-1.2874005133E+001	0.996	1.144	1.364
192.827	1.517	60.754	0.283	1.8639438679E+002	5.9257426682E+001	-1.3768449778E+001	0.996	1.145	1.363
192.958	1.510	60.792	0.292	1.8458064622E+002	5.8699764356E+001	-1.4016749998E+001	0.997	1.146	1.363
193.380	1.483	60.916	0.296	1.7853307772E+002	5.6838309150E+001	-1.4906695540E+001	0.998	1.147	1.363
193.525	1.476	60.960	0.307	1.7634961842E+002	5.6164789613E+001	-1.5149577864E+001	0.998	1.147	1.362
193.953	1.447	61.092	0.310	1.6980858568E+002	5.4143193884E+001	-1.5696022794E+001	0.999	1.148	1.362
194.100	1.439	61.138	0.318	1.6748514946E+002	5.3422256050E+001	-1.5855776233E+001	0.999	1.148	1.362



194.528	1.409	61.275	0.320	1.6067587272E+002	5.1297810148E+001	-1.6046183266E+001	1.000	1.147	1.361
194.700	1.398	61.330	0.327	1.5790946600E+002	5.0429949909E+001	-1.6116590233E+001	1.000	1.147	1.361
195.128	1.371	61.471	0.328	1.5099483539E+002	4.8244797291E+001	-1.5973839464E+001	1.000	1.146	1.360
195.294	1.361	61.525	0.328	1.4834475056E+002	4.7403427856E+001	-1.5876303824E+001	1.000	1.145	1.359
195.723	1.335	61.666	0.326	1.4157930395E+002	4.5245987880E+001	-1.5289431029E+001	1.000	1.143	1.359
195.882	1.323	61.717	0.348	1.3917783153E+002	4.4478805781E+001	-1.5509488167E+001	1.000	1.142	1.358
196.310	1.310	61.871	0.353	1.3206426547E+002	4.2212010831E+001	-1.5670392638E+001	1.000	1.140	1.357
196.468	1.302	61.924	0.337	1.2964734167E+002	4.1445597941E+001	-1.5242150284E+001	1.000	1.139	1.357
196.896	1.279	62.068	0.332	1.2321534073E+002	3.9418841288E+001	-1.4302830765E+001	1.000	1.136	1.357
197.047	1.269	62.116	0.318	1.2109656842E+002	3.8756745474E+001	-1.3949474684E+001	1.000	1.136	1.357
197.475	1.238	62.252	0.314	1.1524582077E+002	3.6942914399E+001	-1.3025138732E+001	1.001	1.134	1.357
197.632	1.224	62.300	0.303	1.1324362008E+002	3.6326305234E+001	-1.2719418679E+001	1.001	1.134	1.357
198.060	1.187	62.429	0.299	1.0788217732E+002	3.4682063252E+001	-1.1974041491E+001	1.001	1.133	1.359
198.217	1.171	62.475	0.290	1.0603790071E+002	3.4116236517E+001	-1.0417728098E+001	1.001	1.133	1.359
198.220	1.171	62.476	0.301	1.0600369586E+002	3.4105755455E+001	-1.0401073920E+001	1.001	1.133	1.359
198.648	1.133	62.605	0.305	1.0088662103E+002	3.2524096163E+001	-1.2073151699E+001	1.000	1.133	1.362
198.807	1.121	62.655	0.321	9.8964942263E+001	3.1917756701E+001	-1.2180503167E+001	1.000	1.133	1.363
199.235	1.093	62.793	0.327	9.3677679231E+001	3.0212760331E+001	-1.2516081939E+001	0.997	1.135	1.369
199.399	1.084	62.848	0.343	9.1618104007E+001	2.9526780202E+001	-1.2634448387E+001	0.995	1.135	1.371
199.827	1.060	62.996	0.350	8.6147490232E+001	2.7655931678E+001	-1.3057845182E+001	0.988	1.139	1.380
199.976	1.055	63.050	0.369	8.4194626413E+001	2.6964343789E+001	-1.3189481653E+001	0.984	1.140	1.384
200.404	1.037	63.209	0.375	7.8504934293E+001	2.4893463690E+001	-1.3583013616E+001	0.971	1.147	1.397
200.547	1.033	63.265	0.372	7.6545311610E+001	2.4157384002E+001	-1.3412374187E+001	0.966	1.149	1.402
200.975	1.008	63.422	0.361	7.1147288739E+001	2.2043921372E+001	-1.1891645833E+001	0.945	1.159	1.420
201.114	0.997	63.469	0.345	6.9532188516E+001	2.1401589177E+001	-1.1631539679E+001	0.938	1.163	1.426
201.542	0.957	63.617	0.348	6.4590110131E+001	1.9407341016E+001	-1.1493496164E+001	0.914	1.176	1.448
201.688	0.945	63.669	0.354	6.2912004096E+001	1.8725065465E+001	-1.1431244371E+001	0.905	1.181	1.456
202.117	0.904	63.821	0.357	5.8074703226E+001	1.6747112413E+001	-1.1271928009E+001	0.873	1.199	1.483
202.258	0.892	63.872	0.367	5.6482900733E+001	1.6096756231E+001	-1.1217033721E+001	0.862	1.206	1.492
202.686	0.852	64.030	0.370	5.1740378013E+001	1.4165643884E+001	-1.0996995310E+001	0.823	1.231	1.527
202.835	0.839	64.085	0.380	5.0109414952E+001	1.3507314105E+001	-1.0898594375E+001	0.808	1.240	1.540
203.060	0.819	64.172	0.400	4.7682699762E+001	1.2541783190E+001	-1.0974420804E+001	0.782	1.258	1.563
203.423	0.796	64.321	0.411	4.3591377221E+001	1.0930892874E+001	-1.1028346213E+001	0.738	1.293	1.607
203.851	0.764	64.497	0.414	3.8991443878E+001	9.1675582209E+000	-1.0537541754E+001	0.683	1.343	1.668
204.034	0.752	64.573	0.448	3.7083166188E+001	8.4572431080E+000	-1.0578794021E+001	0.658	1.367	1.698
204.462	0.735	64.770	0.454	3.2424115684E+001	6.7979886048E+000	-1.0143901944E+001	0.594	1.446	1.793
204.619	0.725	64.839	0.439	3.0879724481E+001	6.2700639785E+000	-9.7855628268E+000	0.573	1.477	1.830
205.047	0.693	65.027	0.434	2.6794537471E+001	4.9355279941E+000	-8.8592311343E+000	0.516	1.577	1.949
205.193	0.679	65.088	0.398	2.5536838689E+001	4.5471468724E+000	-8.3337148027E+000	0.499	1.614	1.992
205.530	0.631	65.219	0.400	2.2955119673E+001	3.8005132325E+000	-7.6924068772E+000	0.462	1.708	2.102
205.758	0.605	65.314	0.403	2.1192781452E+001	3.3245965164E+000	-7.4697712942E+000	0.436	1.790	2.194
206.187	0.540	65.484	0.391	1.8194326202E+001	2.5698790379E+000	-6.4667079254E+000	0.393	1.964	2.384
206.332	0.515	65.539	0.370	1.7278472813E+001	2.3544871600E+000	-5.9603015335E+000	0.380	2.032	2.455
206.379	0.505	65.556	0.392	1.7004887918E+001	2.2926883489E+000	-5.8797884357E+000	0.376	2.053	2.477
206.807	0.431	65.725	0.402	1.4393784815E+001	1.7448367112E+000	-5.9829257204E+000	0.335	2.365	2.759
206.966	0.407	65.792	0.422	1.3449552632E+001	1.5654707253E+000	-5.8668856316E+000	0.317	2.595	2.903
207.395	0.338	65.973	0.423	1.1022089645E+001	1.1422377912E+000	-5.3389313757E+000	0.265	3.430	3.362
207.680	0.291	66.093	0.443	9.5588436280E+000	9.1578442131E-001	-5.1861254179E+000	0.229	4.216	3.733
207.900	0.263	66.197	0.477	8.4088224699E+000	7.5284562058E-001	-5.0705088826E+000	0.198	4.881	4.043
208.328	0.211	66.403	0.519	6.3762807439E+000	4.9935748026E-001	-5.1399653207E+000	0.149	6.486	4.782
208.695	0.197	66.609	0.558	4.3701734961E+000	2.6411786606E-001	-4.9432412380E+000	0.119	8.531	5.605
209.123	0.172	66.846	0.542	2.5204280349E+000	1.0481577623E-001	-3.6791138937E+000	0.087	12.449	6.822
209.551	0.139	67.074	0.510	1.2185388587E+000	2.8126890747E-002	-2.2850395169E+000	0.062	15.833	7.614
209.980	0.087	67.282	0.488	5.6299755100E-001	5.6678344731E-003	-1.0821218641E+000	0.050	4.529	4.580
210.408	0.034	67.491	0.488	2.9156218788E-001	1.1185255949E-003	-8.7624474082E-001	0.049	4.529	3.348

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 ht(m) : Altezza linea di thrust da nodo sinistro base concio
 yt(m) : coordinata Y linea di thrust
 yt'(-) : gradiente pendenza locale linea di thrust
 E(x)(kN/m) : Forza Normale interconcio
 T(x)(kN/m) : Forza Tangenziale interconcio
 E' (kN) : derivata Forza normale interconcio
 Rho(x) (-) : fattore mobilitazione resistenza al taglio verticale interconcio ZhU et al.(2003)
 FS_qFEM(x)(-) : fattore di sicurezza locale stimato (locale in X) by qFEM
 FS_p-qPATH(x)(-) : fattore di sicurezza locale stimato (locale in X) by p-qPATH Procedure



TABELLA SFORZI DI TAGLIO DISTRIBUITI LUNGO SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	dl (m)	alpha (°)	TauStress (kPa)	TauF (kN/m)	TauStrength (kPa)	TauS (kN/m)
173.537	0.428	0.503	-31.686	-1.317	-0.663	1.579	0.795
173.966	0.274	0.322	-31.686	-3.476	-1.120	3.343	1.077
174.240	0.428	0.503	-31.686	-5.957	-2.999	5.198	2.617
174.668	0.428	0.503	-31.686	-9.234	-4.648	7.387	3.718
175.097	0.249	0.292	-31.686	-11.824	-3.458	8.204	2.399
175.345	0.396	0.466	-31.686	-14.357	-6.689	7.448	3.470
175.742	0.428	0.496	-30.322	-17.078	-8.474	8.357	4.147
176.170	0.428	0.496	-30.322	-20.278	-10.062	8.972	4.452
176.598	0.151	0.175	-30.322	-22.442	-3.920	7.954	1.389
176.749	0.428	0.481	-26.964	-22.427	-10.778	10.394	4.995
177.178	0.223	0.250	-26.964	-24.466	-6.126	10.059	2.519
177.401	0.428	0.462	-22.159	-22.254	-10.292	15.216	7.037
177.829	0.090	0.097	-22.159	-23.451	-2.271	18.070	1.750
177.919	0.428	0.445	-15.688	-17.293	-7.693	24.321	10.820
178.347	0.105	0.109	-15.688	-18.008	-1.969	28.667	3.135
178.452	0.408	0.414	-10.330	-11.407	-4.726	34.824	14.429
178.860	0.048	0.048	-10.330	-11.712	-0.568	36.478	1.768
178.908	0.428	0.430	-4.615	-3.378	-1.451	41.633	17.890
179.336	0.084	0.084	-4.615	-3.439	-0.290	44.154	3.729
179.420	0.428	0.428	-0.003	3.802	1.628	46.108	19.749
179.848	0.134	0.134	-0.003	3.855	0.518	49.238	6.619
179.983	0.428	0.429	3.180	9.036	3.876	46.767	20.062
180.411	0.292	0.292	3.180	9.153	2.677	46.093	13.480
180.703	0.127	0.127	3.697	10.066	1.278	44.136	5.606
180.830	0.428	0.429	3.697	10.159	4.360	43.194	18.539
181.258	0.093	0.093	3.697	10.247	0.953	40.691	3.784
181.351	0.428	0.430	4.300	11.336	4.869	40.162	17.251
181.779	0.176	0.177	4.300	11.440	2.023	37.607	6.650
181.956	0.428	0.430	4.934	12.612	5.422	36.759	15.803
182.384	0.076	0.076	4.934	12.699	0.968	35.827	2.730
182.460	0.078	0.078	4.934	12.726	0.998	35.886	2.815
182.538	0.428	0.430	5.600	13.950	6.004	35.934	15.465
182.966	0.146	0.147	5.600	14.051	2.062	35.962	5.278
183.113	0.428	0.431	6.224	15.222	6.558	35.911	15.472
183.541	0.141	0.142	6.224	15.320	2.169	35.968	5.092
183.682	0.018	0.019	6.842	16.417	0.304	35.667	0.661
183.700	0.428	0.431	6.842	16.447	7.095	35.807	15.447
184.128	0.130	0.131	6.842	16.481	2.165	35.713	4.692
184.259	0.428	0.432	7.440	17.541	7.577	35.549	15.355
184.687	0.161	0.162	7.440	17.568	2.845	35.394	5.733
184.848	0.428	0.433	8.001	18.554	8.025	35.131	15.195
185.276	0.186	0.188	8.001	18.572	3.487	34.974	6.566
185.462	0.308	0.312	8.738	19.841	6.185	34.653	10.802
185.770	0.277	0.280	8.738	19.844	5.553	34.517	9.659
186.047	0.428	0.434	9.525	21.171	9.195	34.049	14.787
186.475	0.145	0.147	9.525	21.157	3.103	33.844	4.964
186.620	0.428	0.435	10.340	22.494	9.793	33.443	14.560
187.048	0.135	0.137	10.340	22.460	3.083	33.246	4.564
187.183	0.428	0.437	11.151	23.749	10.368	32.813	14.325
187.611	0.144	0.147	11.151	23.693	3.489	32.615	4.802
187.756	0.428	0.438	11.962	24.934	10.917	32.148	14.075
188.184	0.136	0.139	11.962	24.854	3.462	31.951	4.451
188.320	0.220	0.225	12.764	26.069	5.873	31.525	7.103
188.540	0.355	0.365	12.764	25.995	9.475	31.375	11.436
188.895	0.428	0.441	13.530	27.096	11.937	30.913	13.618
189.324	0.161	0.166	13.530	27.015	4.476	30.791	5.102
189.485	0.428	0.442	14.234	27.990	12.368	30.372	13.421
189.913	0.194	0.200	14.234	27.878	5.572	30.239	6.044
190.107	0.428	0.444	15.070	28.987	12.858	29.755	13.198
190.535	0.158	0.164	15.070	28.849	4.729	29.630	4.857
190.694	0.428	0.446	15.971	29.988	13.360	29.109	12.968
191.122	0.144	0.150	15.971	29.817	4.475	28.976	4.349
191.266	0.428	0.448	16.905	30.922	13.843	28.400	12.713
191.694	0.133	0.139	16.905	30.713	4.260	28.276	3.922
191.827	0.428	0.450	17.832	31.722	14.273	27.668	12.449
192.255	0.144	0.151	17.832	31.466	4.744	27.534	4.151
192.399	0.428	0.452	18.736	32.345	14.629	26.901	12.167



192.827	0.130	0.138	18.736	32.050	4.408	26.773	3.683
192.958	0.422	0.448	19.638	32.839	14.728	26.119	11.714
193.380	0.145	0.153	19.638	32.494	4.986	25.982	3.987
193.525	0.428	0.457	20.495	33.123	15.146	25.318	11.577
193.953	0.147	0.157	20.495	32.727	5.124	25.176	3.942
194.100	0.428	0.460	21.291	33.189	15.257	24.511	11.267
194.528	0.172	0.184	21.291	32.728	6.033	24.334	4.486
194.700	0.428	0.460	21.291	32.267	14.833	23.974	11.020
195.128	0.167	0.179	21.291	31.810	5.687	23.806	4.256
195.294	0.428	0.460	21.291	31.352	14.412	23.443	10.776
195.723	0.159	0.171	21.291	30.901	5.274	23.273	3.972
195.882	0.428	0.460	21.291	30.450	13.997	22.952	10.551
196.310	0.158	0.169	21.291	29.999	5.078	22.794	3.858
196.468	0.428	0.460	21.291	29.549	13.583	22.426	10.309
196.896	0.151	0.162	21.291	29.104	4.710	22.258	3.602
197.047	0.428	0.460	21.291	28.659	13.174	21.882	10.059
197.475	0.157	0.168	21.291	28.209	4.738	21.693	3.644
197.632	0.428	0.460	21.291	27.760	12.761	21.315	9.798
198.060	0.157	0.168	21.291	27.310	4.591	21.117	3.550
198.217	0.003	0.004	21.291	27.187	0.096	21.052	0.074
198.220	0.428	0.460	21.291	26.879	12.356	20.771	9.548
198.648	0.159	0.170	21.291	26.459	4.503	20.641	3.513
198.807	0.428	0.460	21.291	26.040	11.970	20.325	9.343
199.235	0.164	0.176	21.291	25.617	4.501	20.229	3.554
199.399	0.428	0.461	21.858	25.640	11.833	19.747	9.113
199.827	0.148	0.160	21.858	25.194	4.029	19.686	3.148
199.976	0.428	0.463	22.442	25.181	11.669	19.200	8.898
200.404	0.143	0.155	22.442	24.703	3.828	19.166	2.970
200.547	0.428	0.465	23.036	24.638	11.467	18.629	8.670
200.975	0.138	0.150	23.036	24.127	3.631	18.511	2.786
201.114	0.428	0.467	23.622	23.994	11.217	17.970	8.401
201.542	0.146	0.160	23.622	23.438	3.740	17.850	2.848
201.688	0.428	0.470	24.211	23.233	10.911	17.289	8.119
202.117	0.141	0.155	24.211	22.643	3.508	17.172	2.661
202.258	0.428	0.472	24.791	22.371	10.554	16.594	7.829
202.686	0.149	0.164	24.791	21.733	3.559	16.470	2.697
202.835	0.225	0.249	25.350	21.613	5.379	16.096	4.006
203.060	0.363	0.402	25.350	20.958	8.417	15.806	6.348
203.423	0.428	0.476	25.873	20.342	9.683	15.316	7.291
203.851	0.183	0.203	25.873	19.644	3.986	15.214	3.087
204.034	0.428	0.479	26.547	19.218	9.202	14.668	7.023
204.462	0.156	0.175	26.547	18.501	3.234	14.547	2.543
204.619	0.428	0.482	27.256	18.036	8.690	13.908	6.701
205.047	0.146	0.164	27.256	17.279	2.833	13.704	2.247
205.193	0.337	0.382	27.980	16.873	6.446	13.059	4.989
205.530	0.228	0.259	27.980	16.073	4.155	12.696	3.282
205.758	0.428	0.488	28.695	15.330	7.485	11.904	5.812
206.187	0.146	0.166	28.695	14.463	2.403	11.468	1.905
206.332	0.047	0.054	29.619	14.414	0.775	11.106	0.597
206.379	0.428	0.493	29.619	13.670	6.735	11.043	5.441
206.807	0.159	0.183	29.619	12.755	2.332	10.320	1.887
206.966	0.428	0.496	30.348	11.958	5.935	9.454	4.692
207.395	0.286	0.331	30.348	10.775	3.569	8.540	2.828
207.680	0.220	0.256	31.018	10.031	2.570	7.812	2.002
207.900	0.428	0.500	31.018	8.919	4.457	6.980	3.489
208.328	0.366	0.427	31.018	7.567	3.234	6.041	2.582
208.695	0.428	0.502	31.373	6.233	3.127	4.960	2.488
209.123	0.428	0.502	31.373	4.734	2.375	3.856	1.934
209.551	0.428	0.502	31.373	3.235	1.623	2.771	1.390
209.980	0.428	0.502	31.373	1.735	0.870	1.713	0.859
210.408	0.282	0.330	31.373	0.493	0.162	0.845	0.279

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio

dx(m) : Larghezza concio

dl(m) : lunghezza base concio

alpha() : Angolo pendenza base concio

TauStress(kPa) : Sforzo di taglio su base concio

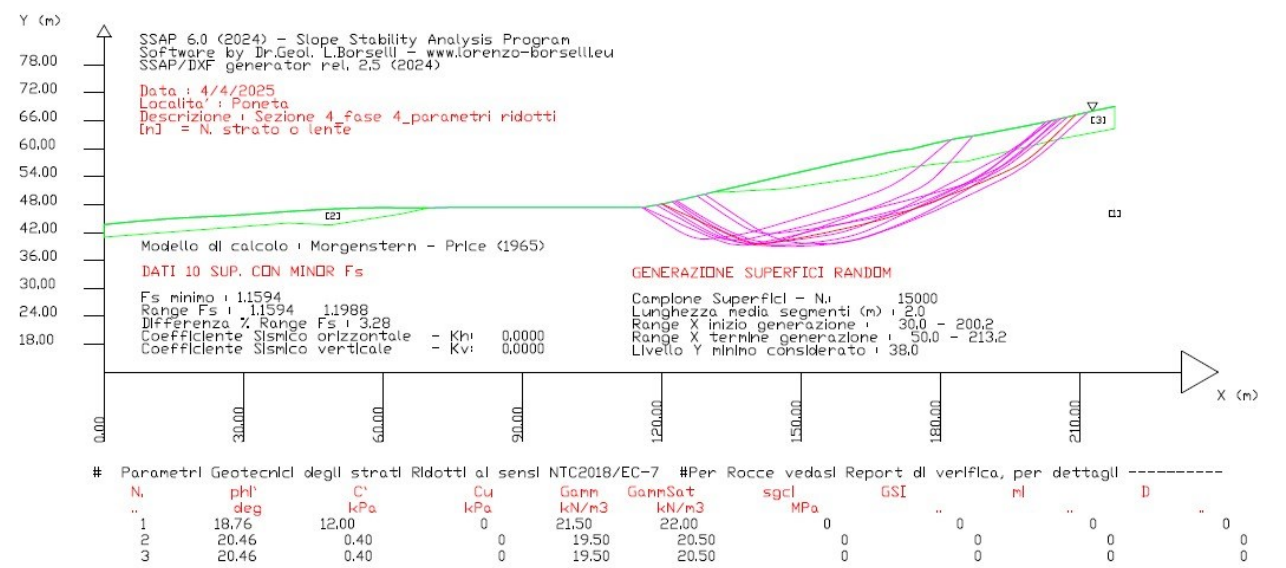
TauF (kN/m) : Forza di taglio su base concio

TauStrength(kPa) : Resistenza al taglio su base concio

TauS (kN/m) : Forza resistente al taglio su base concio



3 SEZIONE 4 FASE FINALE - STATICO



Report Generale Risultati di Verifica di stabilità'

SSAP 6.0 - Slope Stability Analysis Program (1991,2024)
WWW.SSAP.EU
Build No. 14533
BY
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Ultima Revisione struttura tabelle del report: 21 Maggio 2024

File report: C:\Users\facco\OneDrive\Documents\Lavoro\Lavori STGA\Poneta\Sezioni\Risultati SSAP\Sez4_fase4_parametri ridotti.txt
Data: 4/4/2025
Località: Poneta
Descrizione: Sezione 4_fase 4_parametri ridotti
Modello pendio: Sezione 4_fase 4.mod
----- 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	43.68	0.00	43.68	131.43	50.73	-	-		
1.98	43.91	1.98	43.91	135.30	51.62	-	-		
6.82	44.36	6.82	44.36	140.14	52.72	-	-		
11.66	44.76	11.66	44.76	144.98	53.86	-	-		
16.50	45.13	16.50	45.13	149.82	54.97	-	-		
21.34	45.36	21.34	45.36	154.66	56.11	-	-		
26.18	45.61	26.18	45.61	159.50	57.22	-	-		
31.02	45.89	31.02	45.89	164.34	58.17	-	-		
35.86	46.23	35.86	46.23	169.18	59.25	-	-		
40.70	46.58	40.70	46.58	174.02	59.99	-	-		
45.54	46.89	45.54	46.89	178.86	61.20	-	-		
50.38	47.12	50.38	47.12	183.70	62.26	-	-		
55.22	47.26	55.22	47.26	188.54	63.00	-	-		
60.06	47.30	60.06	47.30	193.38	63.92	-	-		
64.90	47.29	64.90	47.29	198.22	64.85	-	-		
69.74	47.28	69.74	47.28	203.06	65.85	-	-		
69.74	47.28	64.02	46.02	207.90	66.96	-	-		



74.58	47.36	48.83	43.59	212.74	68.12	-	-
115.94	47.36	39.65	43.99	217.58	69.11	-	-
120.78	48.26	0.00	41.00	217.58	64.32	-	-
125.62	49.37	0.00	43.68	205.53	62.05	-	-
130.46	50.51	-	-	185.77	57.33	-	-
131.43	50.73	-	-	180.83	56.92	-	-
135.30	51.62	-	-	172.65	55.92	-	-
140.14	52.72	-	-	165.75	54.16	-	-
144.98	53.86	-	-	154.64	52.59	-	-
149.82	54.97	-	-	147.06	51.46	-	-
154.66	56.11	-	-	133.95	50.72	-	-
159.50	57.22	-	-	131.43	50.73	-	-
164.34	58.17	-	-	-	-	-	-
169.18	59.25	-	-	-	-	-	-
174.02	59.99	-	-	-	-	-	-
178.86	61.20	-	-	-	-	-	-
183.70	62.26	-	-	-	-	-	-
188.54	63.00	-	-	-	-	-	-
193.38	63.92	-	-	-	-	-	-
198.22	64.85	-	-	-	-	-	-
203.06	65.85	-	-	-	-	-	-
207.90	66.96	-	-	-	-	-	-
212.74	68.12	-	-	-	-	-	-
217.58	69.11	-	-	-	-	-	-

SUP FALDA

X Y

0.00	43.68
1.98	43.91
6.82	44.36
11.66	44.76
16.50	45.13
21.34	45.36
26.18	45.61
31.02	45.89
35.86	46.23
40.70	46.58
45.54	46.89
50.38	47.12
55.22	47.26
60.06	47.30
64.90	47.29
69.74	47.28
69.74	47.28
74.58	47.36
115.94	47.36
120.78	48.26
125.62	49.37
130.46	50.51
131.43	50.73
135.30	51.62
140.14	52.72
144.98	53.86
149.82	54.97
154.66	56.11
159.50	57.22
164.34	58.17
169.18	59.25
174.02	59.99
178.86	61.20
183.70	62.26
188.54	63.00
193.38	63.92
198.22	64.85
203.06	65.85
207.90	66.96
212.74	68.12
217.58	69.11

----- GESTIONE ACQUIFERI -----



Strati esclusi da acquifero e effetto pressione dei pori:

STRATO 2

STRATO 3

Esclusione sovraccarico pendio sommerso: NON ATTIVATA

EFFETTO TENSION CRACK IN TESTA RIEMPITO DI ACQUA: ----> DISATTIVATO

In caso di superfici con tension crack in testa, la frattura di tensione

puo' venir viene considerata completamente riempita di acqua per la sua intera profondità'.

Viene quindi considerato una forza in testa, prodotta dalla pressione idrostatica.

La forza applicata ha un effetto destabilizzante aggiuntivo alle altre forze destabilizzanti agenti.

Peso unitario fluido (kN/m³): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A

0

Coefficiente K

0.000800

Pressione minima fluidi Uo_Min (kPa)

0.01

Coefficiente di soprapressione oltre pressione idrostatica

1.00

Limitazione dissipazione a Pressione Idrostatica = ATTIVA

STABILITE CONDIZIONI PER LA VERIFICA CON SOVRAPPRESSIONE ACQUIFERI CON DISSIPAZIONE IN DIREZIONE DELLA SUPERFICIE

CALCOLO EFFETTO DI FILTRAZIONE NON ATTIVATO

----- PARAMETRI GEOMECCANICI DI PROGETTO RIDOTTI (ai sensi NTC2018/EC-7) - Riduzione attivata in Tutti gli Strati

	fi'	C'	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	18.76	12.00	0.00	21.50	22.00	1.805	0.00	0.00	0.00	0.00
STRATO 2	20.46	0.40	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00
STRATO 3	20.46	0.40	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00

LEGENDA: 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/m³)

Gamm_sat _____ Peso di volume terreno immerso (in KN/m³)

STR_IDX _____ Indice di resistenza (usato in solo in 'SNIFF SEARCH') (adimensionale)

----- SOLO Per AMMASSI ROCCIOSI FRATTURATI - Parametri Criterio di Rottura di Hoek et al.(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)

NOTA BENE:

FATTORI DI RIDUZIONE NTC2018/EC-7: gammaPHI=1.25, gammaC=1.25 e gammaCu=1.4 - ATTIVATI (Per Tutti gli Strati)

Ai sensi delle NTC2018/EC-7 i parametri di resistenza al taglio caratteristici sono stati ridotti

con i fattori riduttivi (tab. 6.2.II delle NTC 2018) per ottenere i parametri di progetto.

Nel caso di ammassi rocciosi fratturati, dai parametri sopra indicati in tabella,

relativi al criterio di rottura Hoek et al. (2002), sono stati ricavati i parametri equivalenti

geomeccanici CARATTERISTICI locali di resistenza al taglio dell'ammasso roccioso considerato (c',Phi')

tali parametri equivalenti sono stati infine RIDOTTI, per ricavare i valori di PROGETTO,

tramite i coefficienti parziali riduttivi, di cui alla tab. 6.2.II delle NTC 2018

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

*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI

MOTORE DI RICERCA: SNIFF RANDOM SEARCH - Borselli (1997,2021)

FILTRAGGIO SUPERFICI : ATTIVATO

COORDINATE X1,X2,Y OSTACOLO : 0.00 0.00 0.00

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

INTERVALLO ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 30.00 200.17

LIVELLO MINIMO CONSIDERATO (Ymin): 38.00

INTERVALLO ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 50.00 213.23

TOTALE SUPERFICI GENERATE : 15000

*NOTA IMPORTANTE: La lunghezza media dei segmenti non viene considerata nel caso di uso del motore di ricerca NEW RANOM SEARCH

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

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

METODO DI ESPLORAZIONE CAMPO VALORI (lambda0,Fs0) ADOTTATO : A (rapido)

COEFFICIENTE SISMICO UTILIZZATO Kh : 0.0000



COEFFICIENTE SISMICO UTILIZZATO Kv (assunto Positivo): 0.0000
COEFFICIENTE $c=K_v/K_h$ UTILIZZATO : 0.5000
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 SUPERFICIE GENERATE CON MINOR F_s #

X(m)	Y(m)	#Superficie N.1 - #FS_minimo	#Fattore di sicurezza(FS)= 1.1594	#Lambda= 0.2923
120.099	48.133			
124.261	46.221			
126.430	45.225			
127.975	44.515			
129.372	43.874			
130.605	43.307			
131.881	42.721			
133.189	42.121			
134.573	41.485			
136.050	40.807			
137.243	40.323			
138.336	39.964			
139.317	39.734			
140.449	39.575			
141.421	39.528			
142.511	39.579			
143.701	39.726			
145.203	39.992			
146.586	40.242			
147.887	40.481			
149.151	40.719			
150.381	40.955			
151.612	41.196			
152.845	41.442			
154.088	41.695			
155.343	41.955			
156.583	42.218			
157.814	42.484			
159.041	42.756			
160.269	43.034			
161.502	43.319			
162.743	43.613			
164.005	43.917			
165.298	44.235			
166.530	44.557			
167.742	44.893			
168.934	45.245			
170.152	45.624			
171.344	46.016			
172.553	46.434			
173.780	46.878			
175.060	47.362			
176.325	47.841			
177.573	48.316			
178.817	48.790			
180.049	49.262			
181.289	49.739			
182.531	50.219			
183.783	50.704			
185.042	51.193			
186.274	51.684			



187.496	52.182
188.709	52.689
189.934	53.214
191.167	53.754
192.428	54.320
193.743	54.923
195.151	55.581
196.362	56.210
197.518	56.885
198.609	57.601
199.795	58.465
201.033	59.480
202.493	60.786
204.645	62.847
209.099	67.247

X(m)	Y(m)	#Superficie N. 2	#Fattore di sicurezza(FS)= 1.1597	#Lambda= 0.2972
116.071	47.384			
120.259	45.498			
122.427	44.527			
123.968	43.843			
125.353	43.233			
126.585	42.697			
127.850	42.152			
129.151	41.596			
130.529	41.013			
132.013	40.390			
133.213	39.949			
134.314	39.625			
135.303	39.424			
136.440	39.295			
137.424	39.271			
138.522	39.345			
139.720	39.514			
141.223	39.804			
142.601	40.077			
143.896	40.343			
145.151	40.608			
146.380	40.877			
147.601	41.152			
148.827	41.435			
150.060	41.729			
151.309	42.034			
152.559	42.339			
153.803	42.643			
155.047	42.947			
156.282	43.248			
157.524	43.552			
158.763	43.854			
160.006	44.158			
161.241	44.459			
162.478	44.764			
163.711	45.070			
164.947	45.380			
166.179	45.691			
167.424	46.009			
168.677	46.331			
169.954	46.661			
171.259	47.002			
172.482	47.347			
173.681	47.714			
174.854	48.101			
176.067	48.530			
177.240	48.974			
178.440	49.458			
179.664	49.979			
180.964	50.561			
182.241	51.133			
183.495	51.698			
184.743	52.261			



185.976	52.819
187.234	53.390
188.507	53.970
189.825	54.573
191.200	55.203
192.401	55.812
193.557	56.467
194.656	57.162
195.847	57.992
197.093	58.967
198.559	60.214
200.712	62.169
205.157	66.331

X(m)	Y(m)	#Superficie N. 3	#Fattore di sicurezza(FS)= 1.1641	#Lambda= 0.7315
122.224	48.591			
128.223	44.394			
131.002	42.539			
132.821	41.458			
134.290	40.725			
135.777	40.158			
137.070	39.784			
138.508	39.505			
140.076	39.321			
142.057	39.197			
143.817	39.111			
145.458	39.058			
147.030	39.036			
148.604	39.043			
150.156	39.077			
151.755	39.141			
153.420	39.235			
155.229	39.365			
156.834	39.526			
158.371	39.733			
159.838	39.987			
161.386	40.314			
162.853	40.678			
164.385	41.117			
165.979	41.628			
167.755	42.251			
169.426	42.854			
171.040	43.457			
172.619	44.066			
174.202	44.697			
175.765	45.340			
177.345	46.010			
178.947	46.707			
180.600	47.447			
182.221	48.181			
183.822	48.915			
185.413	49.654			
187.003	50.402			
188.609	51.168			
190.240	51.955			
191.924	52.777			
193.692	53.650			
195.260	54.493			
196.775	55.385			
198.224	56.320			
199.773	57.406			
201.410	58.673			
203.319	60.261			
206.104	62.720			
211.802	67.895			

X(m)	Y(m)	#Superficie N. 4	#Fattore di sicurezza(FS)= 1.1746	#Lambda= 0.3214
123.226	48.821			
127.150	46.360			



129.105 45.162
 130.465 44.368
 131.653 43.711
 132.753 43.147
 133.832 42.628
 134.965 42.118
 136.174 41.608
 137.544 41.062
 138.671 40.664
 139.708 40.360
 140.655 40.151
 141.706 39.996
 142.642 39.925
 143.662 39.921
 144.753 39.984
 146.074 40.120
 147.299 40.254
 148.463 40.387
 149.596 40.525
 150.710 40.667
 151.829 40.818
 152.963 40.977
 154.128 41.148
 155.342 41.333
 156.454 41.531
 157.534 41.754
 158.580 42.001
 159.674 42.293
 160.724 42.605
 161.813 42.962
 162.940 43.364
 164.177 43.836
 165.334 44.295
 166.455 44.757
 167.550 45.228
 168.656 45.723
 169.741 46.226
 170.840 46.755
 171.952 47.309
 173.107 47.902
 174.254 48.491
 175.388 49.073
 176.519 49.654
 177.639 50.229
 178.765 50.808
 179.889 51.384
 181.015 51.963
 182.134 52.537
 183.256 53.116
 184.375 53.695
 185.496 54.278
 186.613 54.861
 187.743 55.453
 188.879 56.051
 190.035 56.663
 191.215 57.289
 192.324 57.905
 193.412 58.541
 194.478 59.194
 195.580 59.901
 196.779 60.716
 198.145 61.686
 200.102 63.130
 204.005 66.067

X(m) Y(m) #Superficie N. 5 #Fattore di sicurezza(FS)= 1.1789 #Lambda= 0.2752
 118.880 47.907
 126.054 43.832
 129.253 42.125
 131.269 41.223



132.817	40.718
134.470	40.429
135.829	40.353
137.403	40.458
139.168	40.738
141.496	41.247
143.609	41.716
145.572	42.159
147.470	42.595
149.305	43.023
151.139	43.459
152.975	43.901
154.819	44.352
156.671	44.812
158.526	45.275
160.373	45.737
162.222	46.202
164.061	46.665
165.910	47.133
167.757	47.602
169.613	48.075
171.466	48.549
173.310	49.028
175.145	49.512
176.978	50.002
178.812	50.501
180.681	51.017
182.589	51.551
184.586	52.119
186.715	52.731
188.498	53.339
190.187	54.029
191.759	54.796
193.510	55.784
195.300	56.973
197.448	58.573
200.656	61.172
207.403	66.846

X(m)	Y(m)	#Superficie N. 6 #Fattore di sicurezza(FS)= 1.1799 #Lambda= 1.2500
129.213	50.216	
136.441	45.336	
139.775	43.192	
141.948	41.956	
143.696	41.132	
145.475	40.508	
147.030	40.113	
148.791	39.838	
150.768	39.683	
153.345	39.614	
155.425	39.633	
157.298	39.741	
159.007	39.939	
160.835	40.258	
162.520	40.648	
164.327	41.168	
166.255	41.819	
168.520	42.671	
170.556	43.479	
172.485	44.292	
174.339	45.121	
176.222	46.014	
178.060	46.933	
179.952	47.927	
181.911	49.005	
184.030	50.217	
185.979	51.385	
187.865	52.571	
189.695	53.782	
191.580	55.089	



193.626 56.595
 195.961 58.391
 199.308 61.068
 205.997 66.524

X(m) Y(m) #Superficie N. 7 #Fattore di sicurezza(FS)= 1.1832 #Lambda= 1.2500
 122.752 48.712
 126.791 46.045
 128.791 44.759
 130.176 43.914
 131.379 43.226
 132.501 42.636
 133.601 42.100
 134.772 41.573
 136.045 41.042
 137.530 40.461
 138.682 40.073
 139.707 39.808
 140.605 39.669
 141.648 39.614
 142.537 39.656
 143.545 39.808
 144.664 40.066
 146.095 40.474
 147.384 40.854
 148.586 41.221
 149.742 41.587
 150.879 41.961
 152.001 42.342
 153.132 42.739
 154.273 43.153
 155.443 43.589
 156.610 44.023
 157.767 44.455
 158.924 44.886
 160.070 45.312
 161.225 45.743
 162.378 46.172
 163.537 46.604
 164.694 47.035
 165.839 47.469
 166.978 47.908
 168.113 48.353
 169.253 48.807
 170.413 49.277
 171.600 49.766
 172.849 50.289
 174.196 50.861
 175.302 51.403
 176.347 52.005
 177.313 52.659
 178.398 53.501
 179.507 54.503
 180.842 55.846
 182.843 58.026
 187.056 62.773

X(m) Y(m) #Superficie N. 8 #Fattore di sicurezza(FS)= 1.1883 #Lambda= 1.2500
 120.046 48.124
 126.535 44.257
 129.566 42.538
 131.571 41.530
 133.211 40.837
 134.852 40.310
 136.308 39.956
 137.911 39.696
 139.650 39.529
 141.807 39.428
 143.699 39.374



145.463	39.366
147.143	39.400
148.852	39.480
150.518	39.600
152.254	39.769
154.082	39.989
156.121	40.276
157.884	40.584
159.553	40.947
161.128	41.364
162.809	41.890
164.378	42.454
166.022	43.123
167.731	43.890
169.646	44.819
171.500	45.718
173.299	46.591
175.078	47.454
176.821	48.300
178.594	49.160
180.379	50.026
182.208	50.913
184.085	51.824
185.794	52.714
187.460	53.651
189.070	54.628
190.772	55.733
192.590	57.019
194.690	58.602
197.733	61.018
203.861	66.010
203.861	66.034

X(m)	Y(m)	#Superficie N. 9 #Fattore di sicurezza(FS)= 1.1986 #Lambda= 0.2692
127.668	49.852	
133.720	45.708	
136.441	43.943	
138.162	42.976	
139.494	42.391	
140.901	41.990	
142.060	41.800	
143.401	41.745	
144.903	41.827	
146.897	42.056	
148.681	42.274	
150.332	42.489	
151.920	42.709	
153.471	42.939	
155.009	43.180	
156.559	43.435	
158.127	43.707	
159.732	43.998	
161.313	44.291	
162.876	44.588	
164.432	44.892	
165.987	45.202	
167.560	45.524	
169.159	45.858	
170.812	46.212	
172.549	46.590	
174.082	46.980	
175.558	47.419	
176.964	47.904	
178.471	48.496	
179.897	49.123	
181.403	49.859	
182.998	50.706	
184.823	51.739	
186.447	52.712	
187.991	53.696	



189.468 54.700
 190.997 55.804
 192.641 57.079
 194.531 58.627
 197.257 60.965
 202.750 65.786

X(m) Y(m) #Superficie N.10 #Fattore di sicurezza(FS)= 1.1988 #Lambda= 0.2933
 115.770 47.360
 121.130 43.873
 123.539 42.390
 125.067 41.580
 126.252 41.094
 127.502 40.768
 128.541 40.621
 129.746 40.595
 131.108 40.691
 132.922 40.925
 134.488 41.155
 135.922 41.396
 137.278 41.656
 138.638 41.950
 139.951 42.265
 141.294 42.617
 142.663 43.006
 144.117 43.448
 145.550 43.884
 146.959 44.312
 148.362 44.739
 149.745 45.159
 151.142 45.584
 152.538 46.009
 153.946 46.437
 155.356 46.866
 156.735 47.298
 158.103 47.741
 159.460 48.195
 160.834 48.668
 162.214 49.158
 163.626 49.674
 165.098 50.227
 166.675 50.834
 168.037 51.422
 169.338 52.057
 170.568 52.735
 171.901 53.555
 173.291 54.523
 174.930 55.772
 177.343 57.744
 182.336 61.961

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

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR FS *

Analisi Deficit in riferimento a FS(progetto) = 1.200

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.159	4293.5	3703.3	-150.4	Deficit
2	1.160	4121.6	3553.9	-143.0	Deficit
3	1.164	4853.8	4169.7	-149.8	Deficit
4	1.175	3722.3	3168.9	-80.4	Deficit
5	1.179	3903.9	3311.5	-69.8	Deficit
6	1.180	3879.6	3288.1	-66.1	Deficit
7	1.183	2873.6	2428.6	-40.7	Deficit
8	1.188	4218.4	3549.9	-41.5	Deficit
9	1.199	3491.4	2912.8	-4.0	Deficit
10	1.199	2573.3	2146.6	-2.6	Deficit

Esito analisi: DEFICIT di RESISTENZA!



Valore massimo di DEFICIT di RESISTENZA(kN/m): -150.4

Note: FTR --> Forza totale Resistente lungo la superficie di scivolamento

FTA --> Forza totale Agente lungo la superficie di scivolamento

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

TABELLA PARAMETRI CONCI DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (°)	W (kN/m)	ru (-)	U (kPa)	phi' (°)	(c',Cu) (kPa)	
120.099	0.681	-24.67	3.21	0.00	0.00	0.00	18.76	12.00
120.780	0.844	-24.67	13.55	0.45	7.16	18.76	18.76	12.00
121.624	0.844	-24.67	24.34	0.45	12.86	18.76	18.76	12.00
122.468	0.844	-24.67	35.13	0.45	19.28	18.76	18.76	12.00
123.312	0.844	-24.67	45.92	0.45	25.02	18.76	18.76	12.00
124.155	0.106	-24.67	6.52	0.45	30.00	18.76	18.76	12.00
124.261	0.844	-24.67	58.06	0.45	30.64	18.76	18.76	12.00
125.105	0.515	-24.67	40.73	0.45	35.87	18.76	18.76	12.00
125.620	0.810	-24.67	72.21	0.45	39.68	18.76	18.76	12.00
126.430	0.844	-24.67	85.93	0.45	45.44	18.76	18.76	12.00
127.273	0.702	-24.67	79.78	0.45	51.52	18.76	18.76	12.00
127.975	0.844	-24.67	105.87	0.45	56.48	18.76	18.76	12.00
128.819	0.552	-24.67	75.18	0.45	62.82	18.76	18.76	12.00
129.372	0.844	-24.67	123.88	0.45	66.81	18.76	18.76	12.00
130.215	0.245	-24.67	37.93	0.45	72.05	18.76	18.76	12.00
130.460	0.145	-24.67	22.88	0.45	73.53	18.76	18.76	12.00
130.605	0.825	-24.67	136.50	0.45	74.31	18.76	18.76	12.00
131.430	0.451	-24.67	78.93	0.45	78.90	18.76	18.76	12.00
131.881	0.844	-24.67	155.58	0.45	81.43	18.76	18.76	12.00
132.725	0.464	-24.67	89.95	0.45	86.56	18.76	18.76	12.00
133.189	0.176	-24.67	34.95	0.45	89.39	18.76	18.76	12.00
133.365	0.585	-24.67	119.40	0.45	90.49	18.76	18.76	12.00
133.950	0.623	-24.67	132.57	0.45	94.04	18.76	18.76	12.00
134.573	0.727	-24.67	162.15	0.45	98.35	18.76	18.76	12.00
135.300	0.750	-24.67	175.31	0.45	103.39	18.76	18.76	12.00
136.050	0.844	-22.05	206.70	0.45	108.46	18.76	18.76	12.00
136.894	0.349	-22.05	88.38	0.45	113.62	18.76	18.76	12.00
137.243	0.477	-18.22	123.11	0.45	115.60	18.76	18.76	12.00
137.720	0.616	-18.22	163.06	0.45	118.31	18.76	18.76	12.00
138.336	0.844	-13.17	229.83	0.45	121.59	18.76	18.76	12.00
139.180	0.137	-13.17	37.83	0.45	125.17	18.76	18.76	12.00
139.317	0.823	-8.03	231.36	0.45	125.65	18.76	18.76	12.00
140.140	0.309	-8.03	88.09	0.45	128.25	18.76	18.76	12.00
140.449	0.844	-2.76	243.85	0.45	129.12	18.76	18.76	12.00
141.293	0.129	-2.76	37.59	0.45	131.14	18.76	18.76	12.00
141.421	0.844	2.71	247.86	0.45	131.43	18.76	18.76	12.00
142.265	0.246	2.71	72.61	0.45	133.07	18.76	18.76	12.00
142.511	0.049	7.05	14.58	0.45	133.48	18.76	18.76	12.00
142.560	0.844	7.05	250.74	0.45	133.56	18.76	18.76	12.00
143.404	0.297	7.05	88.68	0.45	134.61	18.76	18.76	12.00
143.701	0.844	10.04	252.26	0.45	134.94	18.76	18.76	12.00
144.545	0.435	10.04	130.28	0.46	135.76	18.76	18.76	12.00
144.980	0.223	10.04	66.77	0.46	136.08	18.76	18.76	12.00
145.203	0.844	10.23	253.24	0.46	136.24	18.76	18.76	12.00
146.047	0.540	10.23	162.19	0.46	136.77	18.76	18.76	12.00
146.586	0.474	10.43	142.54	0.46	137.09	18.76	18.76	12.00
147.060	0.340	10.43	102.38	0.46	137.33	18.76	18.76	12.00
147.400	0.487	10.43	146.79	0.46	137.50	18.76	18.76	12.00
147.887	0.844	10.65	254.79	0.46	137.75	18.76	18.76	12.00
148.731	0.420	10.65	127.07	0.46	138.10	18.76	18.76	12.00
149.151	0.669	10.87	202.53	0.46	138.28	18.76	18.76	12.00
149.820	0.561	10.87	170.03	0.46	138.58	18.76	18.76	12.00
150.381	0.844	11.08	256.23	0.46	138.84	18.76	18.76	12.00
151.225	0.387	11.08	117.64	0.46	139.17	18.76	18.76	12.00
151.612	0.628	11.29	191.25	0.46	139.32	18.76	18.76	12.00
152.240	0.605	11.29	184.43	0.46	139.55	18.76	18.76	12.00



152.845	0.844	11.49	257.45	0.46	139.75	18.76	12.00
153.689	0.399	11.49	121.90	0.46	139.97	18.76	12.00
154.088	0.552	11.70	168.61	0.46	140.07	18.76	12.00
154.640	0.020	11.70	6.11	0.46	140.19	18.76	12.00
154.660	0.683	11.70	208.81	0.46	140.20	18.76	12.00
155.343	0.844	11.96	258.20	0.46	140.32	18.76	12.00
156.187	0.396	11.96	121.28	0.46	140.44	18.76	12.00
156.583	0.497	12.22	152.19	0.46	140.49	18.76	12.00
157.080	0.734	12.22	224.62	0.46	140.53	18.76	12.00
157.814	0.844	12.49	258.36	0.46	140.55	18.76	12.00
158.657	0.383	12.49	117.26	0.46	140.54	18.76	12.00
159.041	0.459	12.76	140.65	0.46	140.50	18.76	12.00
159.500	0.769	12.76	235.21	0.46	140.44	18.76	12.00
160.269	0.844	13.03	257.42	0.46	140.28	18.76	12.00
161.113	0.388	13.03	118.27	0.46	140.06	18.76	12.00
161.502	0.418	13.30	127.27	0.46	139.94	18.76	12.00
161.920	0.823	13.30	249.77	0.46	139.79	18.76	12.00
162.743	0.844	13.56	255.33	0.46	139.50	18.76	12.00
163.587	0.418	13.56	126.23	0.46	139.18	18.76	12.00
164.005	0.335	13.81	100.97	0.46	139.00	18.76	12.00
164.340	0.844	13.81	253.94	0.46	138.86	18.76	12.00
165.184	0.114	13.81	34.31	0.46	138.49	18.76	12.00
165.298	0.452	14.64	135.74	0.46	138.44	18.76	12.00
165.750	0.780	14.64	233.95	0.46	138.22	18.76	12.00
166.530	0.230	15.52	68.73	0.46	137.75	18.76	12.00
166.760	0.844	15.52	252.11	0.46	137.59	18.76	12.00
167.604	0.138	15.52	41.24	0.46	136.94	18.76	12.00
167.742	0.844	16.42	251.04	0.46	136.81	18.76	12.00
168.586	0.348	16.42	103.29	0.46	135.98	18.76	12.00
168.934	0.246	17.31	72.79	0.46	135.55	18.76	12.00
169.180	0.844	17.31	248.53	0.46	135.25	18.76	12.00
170.024	0.128	17.31	37.63	0.46	134.16	18.76	12.00
170.152	0.844	18.19	245.74	0.46	133.98	18.76	12.00
170.996	0.347	18.19	100.45	0.46	132.81	18.76	12.00
171.344	0.256	19.07	73.82	0.46	132.32	18.76	12.00
171.600	0.844	19.07	241.12	0.46	131.95	18.76	12.00
172.444	0.109	19.07	30.91	0.46	130.76	18.76	12.00
172.553	0.097	19.91	27.56	0.46	130.60	18.76	12.00
172.650	0.844	19.91	237.31	0.46	130.46	18.76	12.00
173.494	0.286	19.91	79.65	0.46	129.25	18.76	12.00
173.780	0.240	20.68	66.62	0.46	128.78	18.76	12.00
174.020	0.844	20.68	232.38	0.46	128.39	18.76	12.00
174.864	0.197	20.68	53.80	0.46	127.11	18.76	12.00
175.060	0.844	20.75	229.63	0.46	126.79	18.76	12.00
175.904	0.421	20.75	113.73	0.46	125.50	18.76	12.00
176.325	0.844	20.82	226.25	0.46	124.75	18.76	12.00
177.169	0.404	20.82	107.55	0.46	123.39	18.76	12.00
177.573	0.844	20.89	222.89	0.46	122.71	18.76	12.00
178.417	0.400	20.89	104.78	0.47	121.46	18.76	12.00
178.817	0.043	20.96	11.31	0.47	120.81	18.76	12.00
178.860	0.844	20.96	219.17	0.47	120.74	18.76	12.00
179.704	0.345	20.96	88.79	0.47	119.51	18.76	12.00
180.049	0.781	21.03	199.42	0.47	118.96	18.76	12.00
180.830	0.450	21.03	113.78	0.47	117.80	18.76	12.00
181.280	0.009	21.03	2.31	0.47	117.02	18.76	12.00
181.289	0.844	21.11	211.14	0.47	117.00	18.76	12.00
182.133	0.398	21.11	98.54	0.47	115.58	18.76	12.00
182.531	0.844	21.18	206.92	0.47	114.81	18.76	12.00
183.375	0.325	21.18	79.01	0.47	113.24	18.76	12.00
183.700	0.083	21.18	20.10	0.47	112.50	18.76	12.00
183.783	0.844	21.24	202.09	0.47	112.32	18.76	12.00
184.627	0.415	21.24	98.02	0.47	110.54	18.76	12.00
185.042	0.728	21.72	169.58	0.47	109.58	18.76	12.00
185.770	0.350	21.72	80.51	0.47	108.01	18.76	12.00
186.120	0.154	21.72	35.25	0.47	107.12	18.76	12.00
186.274	0.844	22.20	190.75	0.47	106.74	18.76	12.00
187.118	0.378	22.20	84.11	0.47	104.79	18.76	12.00
187.496	0.844	22.69	185.11	0.47	103.86	18.76	12.00
188.339	0.201	22.69	43.41	0.47	101.89	18.76	12.00
188.540	0.169	22.69	36.38	0.47	101.36	18.76	12.00
188.709	0.844	23.17	179.64	0.47	100.91	18.76	12.00

189.553	0.381	23.17	79.99	0.47	98.91	18.76	12.00
189.934	0.844	23.68	174.27	0.47	97.99	18.76	12.00
190.778	0.182	23.68	37.11	0.47	95.99	18.76	12.00
190.960	0.207	23.68	41.93	0.47	95.55	18.76	12.00
191.167	0.844	24.16	168.63	0.47	95.03	18.76	12.00
192.011	0.417	24.16	81.84	0.47	93.04	18.76	12.00
192.428	0.844	24.63	162.63	0.47	91.93	18.76	12.00
193.271	0.109	24.63	20.63	0.47	89.71	18.76	12.00
193.380	0.363	24.63	68.41	0.47	89.37	18.76	12.00
193.743	0.844	25.05	156.17	0.47	88.23	18.76	12.00
194.587	0.565	25.05	102.17	0.48	85.67	18.76	12.00
195.151	0.649	27.45	114.75	0.48	83.65	18.76	12.00
195.800	0.562	27.45	96.95	0.48	80.87	18.76	12.00
196.362	0.844	30.28	140.97	0.48	78.01	18.76	12.00
197.205	0.313	30.28	50.68	0.48	73.79	18.76	12.00
197.518	0.702	33.29	110.40	0.48	71.98	18.76	12.00
198.220	0.389	33.29	59.02	0.48	67.29	18.76	12.00
198.609	0.844	36.04	122.44	0.48	64.30	18.76	12.00
199.453	0.343	36.04	47.42	0.46	57.74	18.76	12.00
199.795	0.844	39.36	110.32	0.45	54.80	18.76	12.00
200.639	0.001	39.36	0.10	0.42	47.19	18.76	12.00
200.640	0.393	39.36	48.07	0.42	47.19	18.76	12.00
201.033	0.844	41.82	95.73	0.41	43.45	18.76	12.00
201.876	0.616	41.82	63.12	0.36	35.18	18.76	12.00
202.493	0.567	43.76	52.85	0.32	28.98	18.76	12.00
203.060	0.182	43.76	15.83	0.27	23.58	18.76	12.00
203.242	0.844	43.76	67.15	0.00	0.00	20.46	0.40
204.086	0.559	43.76	38.91	0.00	0.00	20.46	0.40
204.645	0.835	44.65	49.69	0.00	0.00	20.46	0.40
205.480	0.050	44.65	2.65	0.00	0.00	20.46	0.40
205.530	0.844	44.65	39.08	0.00	0.00	20.46	0.40
206.374	0.844	44.65	28.55	0.00	0.00	20.46	0.40
207.218	0.682	44.65	15.38	0.00	0.00	20.46	0.40
207.900	0.844	44.65	9.57	0.00	0.00	20.46	0.40
208.744	0.356	44.65	0.92	0.00	0.00	20.46	0.40

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 dx(m) : Larghezza concio
 alpha() : Angolo pendenza base concio
 W(kN/m) : Forza peso concio
 ru(-) : Coefficiente locale pressione interstiziale
 U(kPa) : Pressione totale dei pori base concio
 phi'() : Angolo di attrito efficace base concio
 c'/Cu (kPa) : Coesione efficace o Resistenza al taglio in condizioni non drenate

TABELLA DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	ht (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (kN)	FS_qFEM (--)	FS_p-qPATH (--)			
120.099	0.000	48.133	-0.239	0.0000000000E+000	0.0000000000E+000	0.0000000000E+000	4.4792203524E+000	0.039	3.475	2.827		
120.780	0.145	47.966	-0.239	2.7756030435E+000	-8.1124760270E-003	3.6755384313E+000	0.039	3.475	2.827			
121.624	0.337	47.770	-0.251	5.4568388941E+000	-4.1031340406E-002	4.7083783508E+000	0.039	2.035	1.617			
122.468	0.496	47.541	-0.258	1.0721863798E+001	-1.8804207156E-001	7.0215028574E+000	0.039	1.455	1.106			
123.312	0.677	47.335	-0.225	1.7306925789E+001	-5.0129446428E-001	8.1753124574E+000	0.043	1.216	0.888			
124.155	0.892	47.162	-0.204	2.4519218151E+001	-1.1882210853E+000	9.5441013129E+000	0.050	1.119	0.794			
124.261	0.919	47.140	-0.208	2.5543222203E+001	-1.3258870432E+000	9.9390997522E+000	0.051	1.112	0.787			
125.105	1.130	46.964	-0.226	3.5744715160E+001	-3.1051469436E+000	2.0487594522E+001	0.063	1.080	0.748			
125.620	1.237	46.834	-0.247	4.8931875581E+001	-5.3228020089E+000	2.6049802870E+001	0.072	1.063	0.724			
126.430	1.412	46.637	-0.244	7.0580646219E+001	-8.8766510292E+000	3.1322508468E+001	0.090	1.034	0.684			
127.273	1.592	46.430	-0.244	1.0104356394E+002	-1.3909486279E+001	4.0987857203E+001	0.117	1.049	0.680			
127.975	1.745	46.260	-0.251	1.3267121215E+002	-1.9203691037E+001	5.3677361053E+001	0.147	1.077	0.689			
128.819	1.914	46.042	-0.254	1.8671368646E+002	-2.8408813110E+001	6.9076465379E+001	0.199	1.133	0.711			
129.372	2.031	45.905	-0.229	2.2668278144E+002	-3.5215609058E+001	7.3673178430E+001	0.241	1.176	0.729			
130.215	2.236	45.723	-0.214	2.9053079299E+002	-4.6379861231E+001	7.8277429302E+001	0.290	1.248	0.757			
130.460	2.298	45.672	-0.199	3.0985804153E+002	-4.9868079865E+001	7.6731825192E+001	0.303	1.271	0.766			
130.605	2.338	45.645	-0.190	3.2076712974E+002	-5.1852913633E+001	7.6665466971E+001	0.309	1.284	0.772			
131.430	2.559	45.487	-0.192	3.9013785581E+002	-6.5086842873E+001	8.8407106439E+001	0.340	1.378	0.805			



131.881	2.679	45.400	-0.204	4.3110378718E+002	-7.3353008168E+001	9.6500641509E+001	0.357	1.442	0.826
132.725	2.890	45.223	-0.209	5.2155558564E+002	-9.3148448551E+001	1.1101993217E+002	0.388	1.622	0.878
133.189	3.006	45.127	-0.209	5.7403209651E+002	-1.0526407869E+002	1.1686853326E+002	0.404	1.743	0.910
133.365	3.050	45.089	-0.206	5.9485482694E+002	-1.1023256298E+002	1.1801636790E+002	0.410	1.796	0.923
133.950	3.199	44.970	-0.217	6.6336423796E+002	-1.2704331076E+002	1.2922622665E+002	0.428	1.982	0.969
134.573	3.342	44.827	-0.228	7.5183774650E+002	-1.4992346279E+002	1.4552351576E+002	0.441	2.259	1.034
135.300	3.511	44.663	-0.221	8.6059563359E+002	-1.7917331069E+002	1.5262009964E+002	0.435	2.626	1.119
136.050	3.693	44.500	-0.199	9.7746667995E+002	-2.1152413700E+002	1.5571025703E+002	0.404	3.040	1.217
136.894	3.881	44.346	-0.176	1.1087428120E+003	-2.3479125804E+002	1.5481727548E+002	0.349	3.490	1.334
137.243	3.967	44.290	-0.147	1.1627167989E+003	-2.3738614912E+002	1.5865698378E+002	0.328	3.658	1.383
137.720	4.058	44.224	-0.129	1.2410760579E+003	-2.2594590429E+002	1.6206317117E+002	0.304	3.855	1.455
138.336	4.186	44.150	-0.093	1.3391370656E+003	-2.0583445727E+002	1.5105373486E+002	0.276	4.074	1.546
139.180	4.322	44.088	-0.069	1.4572551743E+003	-1.5572653991E+002	1.2753801186E+002	0.250	4.222	1.653
139.317	4.348	44.082	-0.017	1.4743910000E+003	-1.4555804519E+002	1.2414384520E+002	0.246	4.230	1.667
140.140	4.454	44.072	-0.006	1.5697542362E+003	-6.8129704022E+001	1.0861297209E+002	0.232	4.165	1.745
140.449	4.501	44.075	0.026	1.6024550185E+003	-3.3560815370E+001	1.0281516763E+002	0.231	4.109	1.769
141.293	4.568	44.102	0.035	1.6820646887E+003	7.2972861339E+001	8.8310749362E+001	0.238	3.887	1.821
141.421	4.582	44.109	0.073	1.6933231591E+003	9.2076666399E+001	8.6178458244E+001	0.241	3.842	1.827
142.265	4.606	44.173	0.080	1.7593479122E+003	2.0758177160E+002	6.9245090628E+001	0.270	3.507	1.850
142.511	4.618	44.197	0.096	1.7757069505E+003	2.3823578934E+002	6.4663552323E+001	0.280	3.400	1.851
142.560	4.616	44.202	0.117	1.7788695763E+003	2.4397279307E+002	6.3468471544E+001	0.282	3.379	1.851
143.404	4.612	44.302	0.123	1.8208277519E+003	3.3037607892E+002	4.4618516354E+001	0.328	2.993	1.834
143.701	4.616	44.342	0.149	1.8335577847E+003	3.5837773248E+002	4.0799293183E+001	0.348	2.854	1.823
144.545	4.596	44.472	0.156	1.8631453122E+003	4.2878534709E+002	2.7297594733E+001	0.423	2.463	1.777
144.980	4.589	44.542	0.165	1.8732789488E+003	4.5499043092E+002	2.2109215940E+001	0.472	2.290	1.747
145.203	4.588	44.580	0.176	1.8780683928E+003	4.6758187378E+002	2.0508720391E+001	0.502	2.202	1.731
146.047	4.585	44.729	0.185	1.8921978980E+003	5.0255936684E+002	1.4181423199E+001	0.617	1.907	1.662
146.586	4.594	44.836	0.194	1.8989663423E+003	5.1714097416E+002	1.0121448532E+001	0.695	1.733	1.612
147.060	4.598	44.927	0.196	1.9027546106E+003	5.2188058867E+002	7.3074511846E+000	0.734	1.614	1.570
147.400	4.603	44.995	0.208	1.9050711632E+003	5.2477515996E+002	6.3536879874E+000	0.757	1.533	1.538
147.887	4.617	45.099	0.200	1.9078445292E+003	5.2866634617E+002	4.4934458205E+000	0.786	1.427	1.493
148.731	4.621	45.261	0.197	1.9098788543E+003	5.3327350163E+002	1.5796527239E+000	0.810	1.306	1.428
149.151	4.628	45.347	0.220	1.9103687402E+003	5.3521428515E+002	8.2047930978E-001	0.818	1.257	1.397
149.820	4.653	45.500	0.232	1.9105499281E+003	5.3805369194E+002	-1.7484391601E-001	0.828	1.187	1.350
150.381	4.677	45.633	0.223	1.9102423005E+003	5.4009954651E+002	-8.9336229876E-001	0.835	1.138	1.314
151.225	4.694	45.814	0.220	1.9090506003E+003	5.4225041287E+002	-1.9754953213E+000	0.841	1.088	1.273
151.612	4.707	45.903	0.229	1.9081863129E+003	5.4308830253E+002	-2.4452888846E+000	0.843	1.069	1.256
152.240	4.725	46.046	0.221	1.9064338492E+003	5.4418286326E+002	-3.0214535217E+000	0.847	1.043	1.232
152.845	4.733	46.176	0.201	1.9044694245E+003	5.4489652588E+002	-3.3963547096E+000	0.850	1.025	1.215
153.689	4.724	46.338	0.198	1.9014259949E+003	5.4542557833E+002	-4.2622991182E+000	0.853	1.009	1.198
154.088	4.727	46.422	0.205	1.8996008484E+003	5.4555140581E+002	-4.7398363034E+000	0.854	1.003	1.191
154.640	4.723	46.533	0.200	1.8968581163E+003	5.4553116604E+002	-4.8907832247E+000	0.856	0.996	1.183
154.660	4.723	46.536	0.197	1.8967603589E+003	5.4552728749E+002	-4.9052150099E+000	0.856	0.996	1.183
155.343	4.716	46.671	0.196	1.8930068540E+003	5.4527450836E+002	-5.7791956689E+000	0.858	0.990	1.175
156.187	4.703	46.836	0.205	1.8878362552E+003	5.4467690865E+002	-7.1794416049E+000	0.861	0.985	1.168
156.583	4.707	46.925	0.223	1.8847957174E+003	5.4421828454E+002	-7.9677361165E+000	0.862	0.982	1.164
157.080	4.710	47.035	0.219	1.8806510770E+003	5.4347678001E+002	-8.4903258250E+000	0.863	0.980	1.160
157.814	4.711	47.195	0.218	1.8742563309E+003	5.4220419243E+002	-9.0715467080E+000	0.865	0.976	1.154
158.657	4.708	47.379	0.228	1.8662568654E+003	5.4043948781E+002	-1.0923015694E+001	0.866	0.973	1.148
159.041	4.718	47.474	0.249	1.8618220548E+003	5.3937796196E+002	-1.1933032754E+001	0.867	0.971	1.145
159.500	4.729	47.589	0.244	1.8561432384E+003	5.3793551774E+002	-1.2495114610E+001	0.868	0.970	1.141
160.269	4.740	47.774	0.239	1.8463555701E+003	5.3529536955E+002	-1.3212123126E+001	0.869	0.967	1.135
161.113	4.746	47.976	0.241	1.8347541607E+003	5.3195527551E+002	-1.4522160376E+001	0.869	0.964	1.129
161.502	4.752	48.072	0.247	1.8289753813E+003	5.3024514565E+002	-1.5165076826E+001	0.870	0.962	1.126
161.920	4.756	48.175	0.237	1.8224997306E+003	5.2827894000E+002	-1.5458866278E+001	0.869	0.961	1.123
162.743	4.753	48.366	0.230	1.8098009486E+003	5.2431872409E+002	-1.5747572006E+001	0.869	0.958	1.118
163.587	4.742	48.558	0.236	1.7962369201E+003	5.2000671889E+002	-1.7968303009E+001	0.868	0.955	1.114
164.005	4.747	48.664	0.248	1.7883307747E+003	5.1746574159E+002	-1.8791792865E+001	0.868	0.953	1.112
164.340	4.745	48.745	0.231	1.7820672838E+003	5.1544077631E+002	-1.8671135855E+001	0.867	0.952	1.110
165.184	4.729	48.936	0.226	1.7663721836E+003	5.1034088897E+002	-1.9353086594E+001	0.866	0.949	1.107
165.298	4.727	48.962	0.225	1.7641514130E+003	5.0961951962E+002	-1.9486127717E+001	0.865	0.948	1.107
165.750	4.710	49.063	0.240	1.7552878385E+003	5.0674537523E+002	-2.0980393046E+001	0.865	0.947	1.106
166.530	4.700	49.257	0.249	1.7370674843E+003	5.0087246561E+002	-2.4161374397E+001	0.863	0.944	1.104
166.760	4.694	49.314	0.249	1.7314649643E+003	4.9907696963E+002	-2.4766138903E+001	0.862	0.943	1.104
167.604	4.670	49.525	0.251	1.7094332370E+003	4.9210037687E+002	-2.8692278472E+001	0.859	0.940	1.103
167.742	4.668	49.561	0.264	1.7054067010E+003	4.9083905169E+002	-2.9236630797E+001	0.859	0.939	1.103
168.586	4.642	49.784	0.273	1.6801127862E+003	4.8297567541E+002	-3.3593272812E+001	0.856	0.937	1.103
168.934	4.642	49.887	0.288	1.6678947924E+003	4.7923082450E+002	-3.4399460052E+001	0.855	0.936	1.103
169.180	4.633	49.955	0.272	1.6595587566E+003	4.7669384098E+002	-3.4006211474E+001	0.854	0.935	1.104
170.024	4.598	50.183	0.271	1.6305971258E+003	4.6796987323E+002	-3.5509751148E+001	0.852	0.933	1.105
170.152	4.593	50.218	0.265	1.6260127255E+003	4.6660196498E+002	-3.5631575324E+001	0.851	0.932	1.105



170.996	4.538	50.440	0.261	1.5962729447E+003	4.5779109028E+002	-3.5390147746E+001	0.849	0.931	1.106
171.344	4.513	50.529	0.253	1.5839539281E+003	4.5416583603E+002	-3.5066508059E+001	0.848	0.930	1.107
171.600	4.488	50.593	0.251	1.5750366211E+003	4.5155185181E+002	-3.5008227015E+001	0.848	0.929	1.107
172.444	4.409	50.806	0.253	1.5448699473E+003	4.4268932270E+002	-3.6784621743E+001	0.846	0.928	1.107
172.553	4.400	50.834	0.258	1.5408494795E+003	4.4150000210E+002	-3.7006856465E+001	0.846	0.928	1.107
172.650	4.389	50.859	0.256	1.5372426646E+003	4.4043254268E+002	-3.7082140686E+001	0.846	0.927	1.107
173.494	4.300	51.075	0.271	1.5059793236E+003	4.3113388948E+002	-4.3252837858E+001	0.844	0.926	1.106
173.780	4.286	51.164	0.313	1.4930122725E+003	4.2717281253E+002	-4.5132733299E+001	0.844	0.925	1.106
174.020	4.270	51.239	0.308	1.4822137455E+003	4.2385581431E+002	-4.4796813939E+001	0.843	0.924	1.105
174.864	4.211	51.499	0.312	1.4448547194E+003	4.1220521317E+002	-4.6937772236E+001	0.841	0.921	1.101
175.060	4.202	51.564	0.332	1.4355090237E+003	4.0924107847E+002	-4.7506465190E+001	0.840	0.921	1.100
175.904	4.162	51.844	0.353	1.3956094007E+003	3.9640472419E+002	-5.2935635371E+001	0.838	0.917	1.094
176.325	4.169	52.010	0.379	1.3721360145E+003	3.8871887889E+002	-5.4537521664E+001	0.836	0.915	1.089
177.169	4.161	52.323	0.376	1.3281752834E+003	3.7409967494E+002	-5.3246744308E+001	0.832	0.911	1.080
177.573	4.163	52.479	0.359	1.3064349524E+003	3.6680018817E+002	-5.1863036235E+001	0.830	0.909	1.076
178.417	4.133	52.771	0.356	1.2660800370E+003	3.5313214740E+002	-5.0467948400E+001	0.825	0.905	1.066
178.817	4.131	52.921	0.374	1.2454050224E+003	3.4608274080E+002	-4.7620414345E+001	0.823	0.903	1.062
178.860	4.129	52.936	0.323	1.2433640237E+003	3.4538677561E+002	-4.7017728700E+001	0.822	0.903	1.061
179.704	4.077	53.207	0.325	1.2063036601E+003	3.3273857463E+002	-4.4762589341E+001	0.817	0.900	1.053
180.049	4.060	53.322	0.311	1.1907462583E+003	3.2740637024E+002	-4.3848100003E+001	0.815	0.899	1.050
180.830	3.995	53.558	0.314	1.1587183068E+003	3.1642287025E+002	-4.3711730948E+001	0.810	0.897	1.044
181.280	3.973	53.709	0.334	1.1383439046E+003	3.0937098053E+002	-4.1890832534E+001	0.807	0.896	1.041
181.289	3.972	53.712	0.307	1.1379604944E+003	3.0923805542E+002	-4.1816824893E+001	0.807	0.896	1.041
182.133	3.906	53.971	0.316	1.1030646445E+003	2.9710002498E+002	-4.3756107673E+001	0.800	0.896	1.036
182.531	3.885	54.103	0.319	1.0852079014E+003	2.9083056181E+002	-4.3902229705E+001	0.797	0.896	1.035
183.375	3.821	54.366	0.326	1.0499271861E+003	2.7833449007E+002	-4.6698412062E+001	0.789	0.896	1.033
183.700	3.813	54.484	0.359	1.0341207542E+003	2.7266587259E+002	-4.6869499510E+001	0.785	0.897	1.032
183.783	3.810	54.513	0.321	1.0302628661E+003	2.7127761834E+002	-4.6086880838E+001	0.784	0.897	1.032
184.627	3.750	54.782	0.323	9.9432901533E+002	2.5821989204E+002	-4.3891524688E+001	0.773	0.899	1.033
185.042	3.727	54.920	0.318	9.7584031226E+002	2.5143691291E+002	-4.3307100489E+001	0.767	0.900	1.033
185.770	3.663	55.146	0.326	9.4588339554E+002	2.4035961140E+002	-4.5367617734E+001	0.757	0.903	1.036
186.120	3.649	55.271	0.353	9.2929564973E+002	2.3419365023E+002	-4.5690220142E+001	0.750	0.905	1.037
186.274	3.640	55.324	0.323	9.2236900784E+002	2.3161313936E+002	-4.4490154535E+001	0.747	0.905	1.038
187.118	3.566	55.594	0.326	8.8690510346E+002	2.1835689362E+002	-4.3422495159E+001	0.732	0.909	1.042
187.496	3.539	55.722	0.327	8.7027292771E+002	2.1212644679E+002	-4.3293855186E+001	0.724	0.911	1.044
188.339	3.458	55.993	0.330	8.3516016195E+002	1.9896304919E+002	-4.5475369156E+001	0.706	0.916	1.049
188.540	3.447	56.066	0.368	8.2585424103E+002	1.9547431647E+002	-4.7124243903E+001	0.701	0.917	1.050
188.709	3.440	56.129	0.338	8.1779238016E+002	1.9245255104E+002	-4.6736982442E+001	0.697	0.918	1.051
189.553	3.358	56.409	0.333	7.8257882511E+002	1.7926916808E+002	-4.2065884939E+001	0.677	0.922	1.055
189.934	3.324	56.538	0.336	7.6647926282E+002	1.7324480845E+002	-4.1916279004E+001	0.667	0.924	1.057
190.778	3.236	56.820	0.336	7.3167130378E+002	1.6023629242E+002	-4.1500931093E+001	0.645	0.927	1.059
190.960	3.218	56.882	0.348	7.2410432356E+002	1.5741027985E+002	-4.2312985034E+001	0.640	0.927	1.060
191.167	3.201	56.955	0.335	7.1517448868E+002	1.5407897091E+002	-4.2472402072E+001	0.633	0.928	1.060
192.011	3.100	57.233	0.341	6.8174883507E+002	1.4164558257E+002	-4.2156999600E+001	0.609	0.928	1.060
192.428	3.066	57.386	0.363	6.6365024481E+002	1.3497030509E+002	-4.3092586911E+001	0.594	0.928	1.059
193.271	2.984	57.691	0.367	6.2783702124E+002	1.2190226810E+002	-4.7007432591E+001	0.564	0.927	1.057
193.380	2.978	57.735	0.413	6.2266807442E+002	1.2005253869E+002	-4.7694079590E+001	0.560	0.927	1.057
193.743	2.962	57.885	0.394	6.0524908504E+002	1.1383756066E+002	-4.6868543699E+001	0.544	0.927	1.056
194.587	2.893	58.210	0.402	5.6796856263E+002	1.0090894835E+002	-4.6809161954E+001	0.509	0.925	1.056
195.151	2.870	58.452	0.453	5.4053537497E+002	9.1763772640E+001	-5.0757234401E+001	0.484	0.925	1.059
195.800	2.842	58.760	0.498	5.0598352352E+002	8.1002047012E+001	-5.5833964287E+001	0.453	0.928	1.069
196.362	2.844	59.055	0.496	4.7338126633E+002	7.1360616803E+001	-5.5623263796E+001	0.425	0.934	1.084
197.205	2.754	59.457	0.486	4.2952623507E+002	5.9399205740E+001	-5.3735263385E+001	0.390	0.948	1.116
197.518	2.731	59.617	0.526	4.1252655835E+002	5.5074332154E+001	-5.4629997169E+001	0.378	0.957	1.134
198.220	2.644	59.990	0.544	3.7379527016E+002	4.6004064958E+001	-5.6585280415E+001	0.352	0.984	1.186
198.609	2.609	60.210	0.532	3.5149321143E+002	4.1046521464E+001	-5.5038259176E+001	0.338	1.004	1.220
199.453	2.431	60.646	0.523	3.0931720313E+002	3.2828795905E+001	-4.9797287182E+001	0.310	1.059	1.302
199.795	2.366	60.830	0.550	2.9227568163E+002	2.9762650591E+001	-4.9335518129E+001	0.299	1.090	1.343
200.639	2.142	61.299	0.556	2.5144872159E+002	2.3115516691E+001	-4.5611352287E+001	0.269	1.203	1.481
200.640	2.142	61.300	0.562	2.5141085031E+002	2.3109881232E+001	-4.5608832298E+001	0.269	1.203	1.481
201.033	2.041	61.521	0.580	2.3346411379E+002	2.0481935029E+001	-4.5307138124E+001	0.254	1.273	1.561
201.876	1.783	62.017	0.604	1.9595627654E+002	1.5525046661E+001	-4.3884433930E+001	0.220	1.499	1.797
202.493	1.617	62.403	0.627	1.6917282169E+002	1.2300889720E+001	-4.1449141331E+001	0.191	1.701	2.004
203.060	1.430	62.759	0.622	1.4671170574E+002	9.8674067899E+000	-3.6866442777E+001	0.164	1.889	2.190
203.242	1.365	62.869	0.648	1.4016535594E+002	9.2015787797E+000	-3.6279069943E+001	0.157	1.950	2.248
204.086	1.112	63.424	0.696	1.0843847726E+002	6.1346848298E+000	-4.0019906549E+001	0.126	2.295	2.580
204.645	0.998	63.845	0.746	8.5176805557E+001	4.0580220274E+000	-3.8706299766E+001	0.110	2.618	2.890
205.480	0.791	64.463	0.736	5.6483930218E+001	1.9584699572E+000	-2.6605250305E+001	0.087	3.211	3.455
205.530	0.775	64.496	0.739	5.5176828341E+001	1.8804370676E+000	-2.6146026467E+001	0.086	3.254	3.495
206.374	0.569	65.124	0.797	3.3056888392E+001	7.5343045418E+000	-2.3946997812E+001	0.064	4.016	4.242
207.218	0.453	65.841	0.797	1.4761833046E+001	2.0543638223E+000	-1.6670154234E+001	0.045	3.899	4.227



207.900	0.278	66.340	0.749	6.1518629263E+000	4.7522000757E-002	-8.8208963385E+000	0.039	2.144	2.613
208.744	0.088	66.984	0.749	2.6719089416E+000	7.8094010187E-003	-6.5081411056E+000	0.039	1.507	1.355

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 ht(m) : Altezza linea di thrust da nodo sinistro base concio
 yt(m) : coordinata Y linea di thrust
 yt'(-) : gradiente pendenza locale linea di thrust
 E(x)(kN/m) : Forza Normale interconcio
 T(x)(kN/m) : Forza Tangenziale interconcio
 E' (kN) : derivata Forza normale interconcio
 Rho(x) (-) : fattore mobilitazione resistenza al taglio verticale interconcio ZhU et al.(2003)
 FS_qFEM(x)(-) : fattore di sicurezza locale stimato (locale in X) by qFEM
 FS_p-qPATH(x)(-) : fattore di sicurezza locale stimato (locale in X) by p-qPATH Procedure

TABELLA SFORZI DI TAGLIO DISTRIBUITI LUNGO SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	dl (m)	alpha ()	TauStress (kPa)	TauF (kN/m)	TauStrength (kPa)	TauS (kN/m)
120.099	0.681	0.749	-24.674	-1.791	-1.342	13.316	9.975
120.780	0.844	0.929	-24.674	-6.091	-5.657	14.043	13.041
121.624	0.844	0.929	-24.674	-10.942	-10.161	15.595	14.482
122.468	0.844	0.929	-24.674	-15.792	-14.665	16.859	15.656
123.312	0.844	0.929	-24.674	-20.643	-19.169	18.176	16.879
124.155	0.106	0.117	-24.674	-23.372	-2.724	18.153	2.116
124.261	0.844	0.929	-24.674	-26.101	-24.238	19.371	17.989
125.105	0.515	0.567	-24.674	-30.006	-17.002	18.897	10.707
125.620	0.810	0.891	-24.674	-33.833	-30.146	20.373	18.152
126.430	0.844	0.929	-24.673	-38.627	-35.870	20.828	19.341
127.273	0.702	0.773	-24.673	-43.109	-33.303	20.942	16.178
127.975	0.844	0.929	-24.672	-47.590	-44.192	20.147	18.709
128.819	0.552	0.608	-24.672	-51.638	-31.383	19.967	12.135
129.372	0.844	0.929	-24.670	-55.683	-51.707	20.953	19.457
130.215	0.245	0.269	-24.670	-58.839	-15.834	20.758	5.586
130.460	0.145	0.159	-24.670	-59.962	-9.551	21.487	3.422
130.605	0.825	0.908	-24.669	-62.737	-56.974	21.601	19.617
131.430	0.451	0.497	-24.669	-66.347	-32.945	21.066	10.461
131.881	0.844	0.929	-24.668	-69.925	-64.931	19.154	17.786
132.725	0.464	0.510	-24.668	-73.540	-37.540	18.170	9.275
133.189	0.176	0.194	-24.667	-75.307	-14.588	17.001	3.293
133.365	0.585	0.644	-24.667	-77.411	-49.833	17.815	11.468
133.950	0.623	0.685	-24.667	-80.767	-55.329	13.318	9.123
134.573	0.727	0.801	-24.666	-84.536	-67.672	12.155	9.730
135.300	0.750	0.825	-24.666	-88.655	-73.164	11.381	9.393
136.050	0.844	0.910	-22.045	-85.218	-77.583	27.466	25.005
136.894	0.349	0.377	-22.045	-88.017	-33.172	42.063	15.853
137.243	0.477	0.502	-18.217	-76.663	-38.486	67.457	33.865
137.720	0.616	0.649	-18.217	-78.580	-50.975	74.139	48.094
138.336	0.844	0.867	-13.174	-60.442	-52.382	92.791	80.418
139.180	0.137	0.140	-13.174	-61.500	-8.622	101.862	14.281
139.317	0.823	0.832	-8.030	-38.861	-32.318	109.263	90.865
140.140	0.309	0.312	-8.030	-39.466	-12.306	118.684	37.006
140.449	0.844	0.845	-2.763	-13.912	-11.753	115.877	97.895
141.293	0.129	0.129	-2.763	-14.048	-1.812	124.840	16.102
141.421	0.844	0.845	2.711	13.877	11.724	105.772	89.355
142.265	0.246	0.246	2.711	13.972	3.435	102.477	25.190
142.511	0.049	0.050	7.046	36.062	1.788	88.298	4.378
142.560	0.844	0.850	7.046	36.172	30.756	85.829	72.977
143.404	0.297	0.300	7.046	36.312	10.877	84.268	25.243
143.701	0.844	0.857	10.043	51.332	43.990	75.466	64.672
144.545	0.435	0.442	10.043	51.424	22.719	72.344	31.961
144.980	0.223	0.226	10.043	51.469	11.643	71.841	16.251
145.203	0.844	0.857	10.226	52.431	44.957	69.667	59.737
146.047	0.540	0.548	10.226	52.508	28.793	67.811	37.184
146.586	0.474	0.482	10.433	53.578	25.811	65.480	31.544
147.060	0.340	0.346	10.433	53.626	18.539	65.306	22.577
147.400	0.487	0.495	10.433	53.684	26.581	65.291	32.329
147.887	0.844	0.859	10.646	54.822	47.072	64.898	55.723



148.731	0.420	0.428	10.646	54.904	23.476	64.827	27.719
149.151	0.669	0.681	10.872	56.077	38.200	64.670	44.053
149.820	0.561	0.571	10.872	56.154	32.070	64.635	36.913
150.381	0.844	0.860	11.081	57.271	49.246	64.432	55.404
151.225	0.387	0.394	11.081	57.347	22.610	64.411	25.395
151.612	0.628	0.641	11.289	58.427	37.439	64.263	41.179
152.240	0.605	0.617	11.289	58.495	36.104	64.241	39.650
152.845	0.844	0.861	11.495	59.578	51.304	64.095	55.193
153.689	0.399	0.407	11.495	59.638	24.293	64.088	26.105
154.088	0.552	0.563	11.697	60.671	34.183	63.943	36.027
154.640	0.020	0.020	11.697	60.694	1.240	63.926	1.306
154.660	0.683	0.697	11.697	60.713	42.332	63.939	44.582
155.343	0.844	0.863	11.958	62.022	53.498	63.731	54.972
156.187	0.396	0.405	11.958	62.043	25.129	63.683	25.794
156.583	0.497	0.509	12.224	63.348	32.223	63.463	32.282
157.080	0.734	0.751	12.224	63.355	47.557	63.442	47.623
157.814	0.844	0.864	12.492	64.657	55.884	63.212	54.635
158.657	0.383	0.392	12.492	64.651	25.364	63.154	24.777
159.041	0.459	0.471	12.760	65.937	31.065	62.931	29.649
159.500	0.769	0.789	12.760	65.863	51.949	62.822	49.550
160.269	0.844	0.866	13.031	67.012	58.043	62.421	54.065
161.113	0.388	0.399	13.031	66.889	26.667	62.287	24.832
161.502	0.418	0.430	13.298	68.076	29.274	61.995	26.659
161.920	0.823	0.846	13.298	67.935	57.454	61.833	52.293
162.743	0.844	0.868	13.561	68.973	59.871	61.441	53.334
163.587	0.418	0.430	13.561	68.811	29.599	61.266	26.354
164.005	0.335	0.345	13.814	69.891	24.108	61.011	21.045
164.340	0.844	0.869	13.814	69.775	60.633	60.899	52.920
165.184	0.114	0.118	13.814	69.696	8.193	60.901	7.159
165.298	0.452	0.467	14.639	73.432	34.305	60.238	28.141
165.750	0.780	0.807	14.639	73.302	59.124	60.102	48.477
166.530	0.230	0.238	15.515	77.159	18.386	59.477	14.173
166.760	0.844	0.876	15.515	77.004	67.437	59.334	51.962
167.604	0.138	0.144	15.515	76.863	11.032	59.367	8.521
167.742	0.844	0.880	16.420	80.667	70.965	58.511	51.474
168.586	0.348	0.363	16.420	80.426	29.197	58.518	21.244
168.934	0.246	0.257	17.312	84.127	21.659	57.826	14.888
169.180	0.844	0.884	17.312	83.673	73.957	57.436	50.767
170.024	0.128	0.135	17.312	83.226	11.197	57.326	7.713
170.152	0.844	0.888	18.193	86.377	76.724	56.148	49.873
170.996	0.347	0.366	18.193	85.739	31.362	55.885	20.442
171.344	0.256	0.271	19.070	88.911	24.118	54.964	14.909
171.600	0.844	0.893	19.070	88.234	78.779	54.438	48.605
172.444	0.109	0.115	19.070	87.648	10.099	54.290	6.256
172.553	0.097	0.103	19.905	90.727	9.384	53.513	5.535
172.650	0.844	0.897	19.905	90.028	80.796	52.909	47.484
173.494	0.286	0.304	19.905	89.182	27.117	52.726	16.032
173.780	0.240	0.257	20.682	91.628	23.531	51.878	13.322
174.020	0.844	0.902	20.682	90.994	82.074	51.439	46.396
174.864	0.197	0.210	20.682	90.457	19.000	51.500	10.817
175.060	0.844	0.902	20.751	90.161	81.360	51.078	46.092
175.904	0.421	0.450	20.751	89.500	40.294	51.190	23.046
176.325	0.844	0.903	20.821	89.081	80.422	50.715	45.786
177.169	0.404	0.432	20.821	88.420	38.228	50.655	21.900
177.573	0.844	0.903	20.892	87.999	79.483	50.075	45.229
178.417	0.400	0.428	20.892	87.333	37.367	50.033	21.408
178.817	0.043	0.046	20.964	87.339	4.046	49.854	2.310
178.860	0.844	0.904	20.964	86.772	78.412	49.274	44.527
179.704	0.345	0.369	20.964	86.007	31.766	49.058	18.119
180.049	0.781	0.837	21.035	85.513	71.578	48.417	40.527
180.830	0.450	0.482	21.035	84.705	40.839	48.245	23.260
181.280	0.009	0.010	21.035	84.399	0.829	48.133	0.473
181.289	0.844	0.905	21.105	84.053	76.027	47.571	43.029
182.133	0.398	0.426	21.105	83.216	35.484	47.447	20.232
182.531	0.844	0.905	21.175	82.597	74.745	46.828	42.377
183.375	0.325	0.349	21.175	81.800	28.541	46.912	16.368
183.700	0.083	0.089	21.175	81.504	7.262	46.836	4.173
183.783	0.844	0.905	21.244	80.881	73.227	46.002	41.649
184.627	0.415	0.445	21.244	79.740	35.518	45.693	20.353
185.042	0.728	0.784	21.715	80.081	62.745	44.674	35.003
185.770	0.350	0.377	21.715	79.072	29.789	44.602	16.803

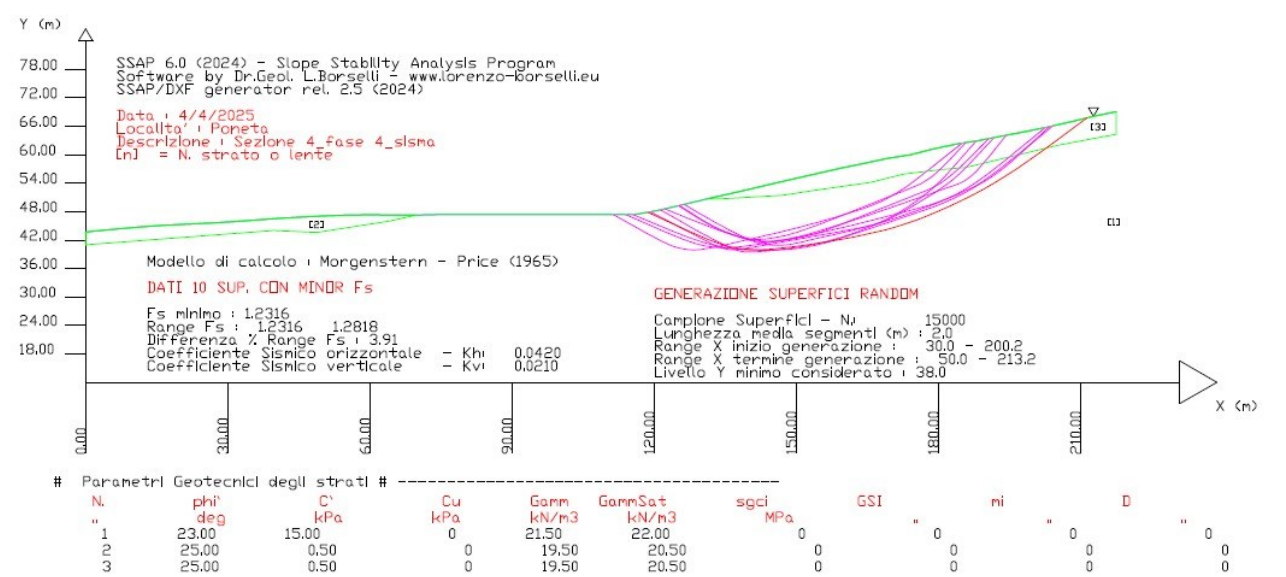
186.120	0.154	0.166	21.715	78.623	13.044	44.429	7.371
186.274	0.844	0.911	22.199	79.077	72.070	43.356	39.514
187.118	0.378	0.408	22.199	77.923	31.779	43.148	17.597
187.496	0.844	0.915	22.689	78.067	71.402	42.067	38.475
188.339	0.201	0.217	22.689	77.022	16.745	42.109	9.155
188.540	0.169	0.183	22.689	76.675	14.034	42.067	7.700
188.709	0.844	0.918	23.174	77.015	70.693	40.899	37.541
189.553	0.381	0.415	23.174	75.882	31.477	40.700	16.883
189.934	0.844	0.921	23.678	75.956	69.987	39.727	36.605
190.778	0.182	0.199	23.678	74.948	14.902	39.639	7.881
190.960	0.207	0.226	23.678	74.565	16.840	39.576	8.938
191.167	0.844	0.925	24.164	74.636	69.030	38.435	35.548
192.011	0.417	0.457	24.164	73.325	33.503	38.311	17.505
192.428	0.844	0.928	24.630	73.013	67.778	37.318	34.642
193.271	0.109	0.119	24.630	71.970	8.598	37.546	4.486
193.380	0.363	0.399	24.630	71.456	28.512	37.295	14.881
193.743	0.844	0.931	25.050	70.990	66.125	36.164	33.685
194.587	0.565	0.623	25.050	69.386	43.260	36.010	22.451
195.151	0.649	0.731	27.448	72.369	52.894	34.337	25.097
195.800	0.562	0.633	27.448	70.615	44.687	34.256	21.678
196.362	0.844	0.977	30.278	72.738	71.075	31.382	30.665
197.205	0.313	0.362	30.278	70.598	25.552	31.484	11.395
197.518	0.702	0.840	33.289	72.152	60.595	28.682	24.088
198.220	0.389	0.465	33.289	69.650	32.392	28.930	13.454
198.609	0.844	1.044	36.040	69.030	72.039	25.592	26.708
199.453	0.343	0.424	36.040	65.818	27.897	26.057	11.044
199.795	0.844	1.091	39.359	64.104	69.962	22.812	24.896
200.639	0.001	0.001	39.359	61.326	0.066	23.844	0.026
200.640	0.393	0.508	39.359	60.031	30.486	23.277	11.821
201.033	0.844	1.132	41.820	56.371	63.830	20.918	23.685
201.876	0.616	0.827	41.820	50.909	42.087	21.403	17.694
202.493	0.567	0.786	43.759	46.529	36.553	20.383	16.013
203.060	0.182	0.252	43.759	43.472	10.947	20.879	5.258
203.242	0.844	1.168	43.759	39.752	46.445	17.284	20.194
204.086	0.559	0.774	43.759	34.777	26.909	15.377	11.898
204.645	0.835	1.174	44.650	29.734	34.918	12.611	14.809
205.480	0.050	0.070	44.650	26.460	1.860	11.002	0.773
205.530	0.844	1.186	44.650	23.155	27.466	9.666	11.466
206.374	0.844	1.186	44.650	16.915	20.064	7.042	8.352
207.218	0.682	0.959	44.650	11.272	10.811	4.747	4.553
207.900	0.844	1.186	44.650	5.672	6.728	2.560	3.037
208.744	0.356	0.500	44.650	1.297	0.648	0.898	0.449

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 dx(m) : Larghezza concio
 dl(m) : lunghezza base concio
 alpha() : Angolo pendenza base concio
 TauStress(kPa) : Sforzo di taglio su base concio
 TauF (kN/m) : Forza di taglio su base concio
 TauStrength(kPa) : Resistenza al taglio su base concio
 TauS (kN/m) : Forza resistente al taglio su base concio



4 SEZIONE 4 FASE FINALE - SISMA



Report Generale Risultati di Verifica di stabilita'

SSAP 6.0 - Slope Stability Analysis Program (1991,2024)
WWW.SSAP.EU
Build No. 14533
BY
Dr. Geol. LORENZO BORSELLI
UASLP, San Luis Potosi, Mexico
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Ricercatore Associato CNR-IRPI, Perugia, Italia

Ultima Revisione struttura tabelle del report: 21 Maggio 2024

File report: C:\Users\facco\OneDrive\Documents\Lavoro\Lavori STGA\Poneta\Sezioni\Risultati SSAP\Sez4_fase4_sisma.txt
Data: 4/4/2025
Localita': Poneta
Descrizione: Sezione 4_fase 4_sisma
Modello pendio: Sezione 4_fase 4.mod
----- 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	43.68	0.00	43.68	131.43	50.73	-	-		
1.98	43.91	1.98	43.91	135.30	51.62	-	-		
6.82	44.36	6.82	44.36	140.14	52.72	-	-		
11.66	44.76	11.66	44.76	144.98	53.86	-	-		
16.50	45.13	16.50	45.13	149.82	54.97	-	-		
21.34	45.36	21.34	45.36	154.66	56.11	-	-		
26.18	45.61	26.18	45.61	159.50	57.22	-	-		
31.02	45.89	31.02	45.89	164.34	58.17	-	-		
35.86	46.23	35.86	46.23	169.18	59.25	-	-		
40.70	46.58	40.70	46.58	174.02	59.99	-	-		
45.54	46.89	45.54	46.89	178.86	61.20	-	-		
50.38	47.12	50.38	47.12	183.70	62.26	-	-		
55.22	47.26	55.22	47.26	188.54	63.00	-	-		
60.06	47.30	60.06	47.30	193.38	63.92	-	-		
64.90	47.29	64.90	47.29	198.22	64.85	-	-		



69.74	47.28	69.74	47.28	203.06	65.85	-	-
69.74	47.28	64.02	46.02	207.90	66.96	-	-
74.58	47.36	48.83	43.59	212.74	68.12	-	-
115.94	47.36	39.65	43.99	217.58	69.11	-	-
120.78	48.26	0.00	41.00	217.58	64.32	-	-
125.62	49.37	0.00	43.68	205.53	62.05	-	-
130.46	50.51	-	-	185.77	57.33	-	-
131.43	50.73	-	-	180.83	56.92	-	-
135.30	51.62	-	-	172.65	55.92	-	-
140.14	52.72	-	-	165.75	54.16	-	-
144.98	53.86	-	-	154.64	52.59	-	-
149.82	54.97	-	-	147.06	51.46	-	-
154.66	56.11	-	-	133.95	50.72	-	-
159.50	57.22	-	-	131.43	50.73	-	-
164.34	58.17	-	-	-	-	-	-
169.18	59.25	-	-	-	-	-	-
174.02	59.99	-	-	-	-	-	-
178.86	61.20	-	-	-	-	-	-
183.70	62.26	-	-	-	-	-	-
188.54	63.00	-	-	-	-	-	-
193.38	63.92	-	-	-	-	-	-
198.22	64.85	-	-	-	-	-	-
203.06	65.85	-	-	-	-	-	-
207.90	66.96	-	-	-	-	-	-
212.74	68.12	-	-	-	-	-	-
217.58	69.11	-	-	-	-	-	-

SUP FALDA

X Y

0.00	43.68
1.98	43.91
6.82	44.36
11.66	44.76
16.50	45.13
21.34	45.36
26.18	45.61
31.02	45.89
35.86	46.23
40.70	46.58
45.54	46.89
50.38	47.12
55.22	47.26
60.06	47.30
64.90	47.29
69.74	47.28
69.74	47.28
74.58	47.36
115.94	47.36
120.78	48.26
125.62	49.37
130.46	50.51
131.43	50.73
135.30	51.62
140.14	52.72
144.98	53.86
149.82	54.97
154.66	56.11
159.50	57.22
164.34	58.17
169.18	59.25
174.02	59.99
178.86	61.20
183.70	62.26
188.54	63.00
193.38	63.92
198.22	64.85
203.06	65.85
207.90	66.96
212.74	68.12
217.58	69.11

----- GESTIONE ACQUIFERI -----

Strati esclusi da acquifero e effetto pressione dei pori:

STRATO 2

STRATO 3

Esclusione sovraccarico pendio sommerso: NON ATTIVATA

EFFETTO TENSION CRACK IN TESTA RIEMPIUTO DI ACQUA: ----> DISATTIVATO

In caso di superfici con tension crack in testa, la frattura di tensione puo' venir viene considerata completamente riempita di acqua per la sua intera profondita'.

Viene quindi considerato una forza in testa, prodotta dalla pressione idrostatica.

La forza applicata ha un effetto destabilizzante aggiuntivo alle altre forze destabilizzanti agenti.

Peso unitario fluido (kN/m³): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A 0

Coefficiente K 0.000800

Pressione minima fluidi Uo_Min (kPa) 0.01

Coefficiente di soprapressione oltre pressione idrostatica 1.00

Limitazione dissipazione a Pressione Idrostatica = ATTIVA

STABILITE CONDIZIONI PER LA VERIFICA CON SOVRAPPRESSIONE ACQUIFERI CON DISSIPAZIONE IN DIREZIONE DELLA SUPERFICIE

CALCOLO EFFETTO DI FILTRAZIONE NON ATTIVATO

----- PARAMETRI GEOMECCANICI -----

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	23.00	15.00	0.00	21.50	22.00	1.805	0.00	0.00	0.00	0.00
STRATO 2	25.00	0.50	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00
STRATO 3	25.00	0.50	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00

LEGENDA: 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/m³)

Gamm_sat _____ Peso di volume terreno immerso (in KN/m³)

STR_IDX _____ Indice di resistenza (usato in solo in 'SNIFF SEARCH) (adimensionale)

---- SOLO Per AMMASSI ROCCIOSI FRATTURATI - Parametri Criterio di Rottura di Hoek et al.(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)

NOTA BENE:

FATTORI DI RIDUZIONE NTC2018/EC-7: gammaPHI=1.25, gammaC=1.25 e gammaCu=1.4 - DISATTIVATI

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

*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI

MOTORE DI RICERCA: SNIFF RANDOM SEARCH - Borselli (1997,2021)

FILTRAGGIO SUPERFICI : ATTIVATO

COORDINATE X1,X2,Y OSTACOLO : 0.00 0.00 0.00

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

INTERVALLO ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 30.00 200.17

LIVELLO MINIMO CONSIDERATO (Ymin): 38.00

INTERVALLO ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 50.00 213.23

TOTALE SUPERFICI GENERATE : 15000

*NOTA IMPORTANTE: La lunghezza media dei segmenti non viene cosiderata nel caso di uso del motore di ricerca NEW RANOM SEARCH

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

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

METODO DI ESPLORAZIONE CAMPO VALORI (lambda0,Fs0) ADOTTATO : A (rapido)

COEFFICIENTE SISMICO UTILIZZATO Kh : 0.0420

COEFFICIENTE SISMICO UTILIZZATO Kv (assunto Positivo): 0.0210

COEFFICIENTE c=Kv/Kh UTILIZZATO : 0.5000

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 F_s

X(m)	Y(m)	#Superficie N.1 - # F_s minimo	#Fattore di sicurezza(F_s)= 1.2316	#Lambda= 0.3563
118.696	47.873			
127.393	43.859			
131.405	42.122			
134.035	41.156			
136.161	40.554			
138.320	40.169			
140.209	39.986			
142.301	39.959			
144.575	40.084			
147.404	40.380			
149.947	40.677			
152.332	40.989			
154.627	41.323			
156.914	41.693			
159.177	42.092			
161.495	42.536			
163.896	43.030			
166.468	43.592			
168.789	44.162			
171.025	44.784			
173.177	45.457			
175.432	46.240			
177.598	47.068			
179.856	48.010			
182.221	49.071			
184.856	50.326			
187.234	51.525			
189.514	52.748			
191.708	54.002			
193.977	55.378			
196.423	56.972			
199.228	58.902			
203.266	61.811			
211.383	67.795			

X(m)	Y(m)	#Superficie N. 2	#Fattore di sicurezza(F_s)= 1.2343	#Lambda= 0.4040
126.354	49.543			
129.577	47.647			
131.228	46.686			
132.395	46.019			
133.437	45.437			
134.373	44.926			
135.325	44.419			
136.309	43.905			
137.356	43.370			
138.501	42.796			
139.425	42.381			
140.269	42.065			
141.027	41.853			
141.895	41.689			
142.647	41.616			
143.492	41.614			
144.423	41.681			
145.610	41.829			
146.652	41.976			



147.620	42.131
148.542	42.299
149.469	42.489
150.369	42.693
151.288	42.920
152.227	43.170
153.223	43.455
154.193	43.736
155.145	44.016
156.088	44.299
157.026	44.584
157.964	44.874
158.903	45.168
159.849	45.469
160.803	45.777
161.752	46.086
162.695	46.396
163.638	46.708
164.578	47.021
165.519	47.338
166.460	47.657
167.404	47.979
168.349	48.305
169.297	48.632
170.242	48.958
171.188	49.286
172.130	49.613
173.075	49.942
174.018	50.270
174.963	50.600
175.901	50.929
176.847	51.260
177.792	51.590
178.739	51.922
179.681	52.251
180.653	52.591
181.647	52.939
182.701	53.308
183.838	53.706
184.728	54.085
185.557	54.530
186.306	55.031
187.180	55.726
188.056	56.569
189.134	57.749
190.784	59.722
194.312	64.099

X(m)	Y(m)	#Superficie N. 3 #Fattore di sicurezza(FS)= 1.2569 #Lambda= 0.3506
119.181	47.963	
122.573	46.201	
124.341	45.283	
125.601	44.628	
126.739	44.037	
127.744	43.515	
128.786	42.974	
129.856	42.418	
130.990	41.829	
132.206	41.198	
133.179	40.748	
134.063	40.410	
134.850	40.191	
135.766	40.029	
136.543	39.970	
137.421	39.994	
138.386	40.099	
139.620	40.303	
140.757	40.493	
141.824	40.673	
142.861	40.850	



143.864	41.024
144.870	41.200
145.875	41.378
146.882	41.559
147.888	41.741
148.900	41.925
149.909	42.107
150.921	42.291
151.926	42.473
152.937	42.656
153.945	42.839
154.953	43.022
155.954	43.203
156.962	43.386
157.970	43.569
158.981	43.752
159.986	43.934
161.013	44.121
162.051	44.309
163.124	44.503
164.236	44.705
165.216	44.919
166.159	45.168
167.057	45.450
168.025	45.801
168.931	46.174
169.886	46.616
170.886	47.123
172.019	47.739
173.082	48.330
174.105	48.912
175.106	49.493
176.104	50.087
177.102	50.694
178.119	51.325
179.171	51.992
180.288	52.713
181.285	53.402
182.248	54.120
183.172	54.864
184.151	55.709
185.194	56.688
186.402	57.897
188.158	59.748
191.667	63.541
191.667	63.594

X(m)	Y(m)	#Superficie N. 4	#Fattore di sicurezza(FS)= 1.2645	#Lambda= 0.3302
113.982	47.360			
122.320	43.718			
126.150	42.156			
128.652	41.303			
130.664	40.792			
132.719	40.491			
134.508	40.380			
136.494	40.428			
138.656	40.631			
141.353	41.020			
143.795	41.396			
146.086	41.776			
148.297	42.169			
150.485	42.586			
152.643	43.023			
154.825	43.491			
157.037	43.991			
159.324	44.534			
161.571	45.076			
163.790	45.621			
165.996	46.172			
168.197	46.732			



170.438	47.313
172.727	47.916
175.124	48.557
177.684	49.253
179.824	49.946
181.851	50.740
183.735	51.627
185.835	52.774
187.979	54.160
190.555	56.031
194.404	59.077
202.507	65.736

X(m)	Y(m)	#Superficie N. 5	#Fattore di sicurezza(FS)= 1.2651	#Lambda= 0.4005
122.215	48.589			
127.182	46.595			
129.717	45.593			
131.507	44.905			
133.101	44.312			
134.538	43.799			
135.990	43.298			
137.491	42.797			
139.082	42.284			
140.822	41.739			
142.244	41.362			
143.557	41.100			
144.750	40.955			
146.099	40.897			
147.286	40.937			
148.589	41.084			
149.990	41.334			
151.699	41.720			
153.300	42.086			
154.819	42.435			
156.305	42.779			
157.750	43.117			
159.207	43.460			
160.669	43.807			
162.150	44.162			
163.652	44.523			
165.093	44.891			
166.514	45.276			
167.915	45.677			
169.346	46.108			
170.753	46.555			
172.183	47.032			
173.642	47.540			
175.173	48.096			
176.646	48.645			
178.091	49.200			
179.517	49.764			
180.953	50.348			
182.394	50.951			
183.868	51.585			
185.405	52.262			
187.052	53.005			
188.478	53.717			
189.842	54.478			
191.133	55.284			
192.529	56.247			
193.989	57.378			
195.707	58.825			
198.231	61.098			
203.443	65.938			

X(m)	Y(m)	#Superficie N. 6	#Fattore di sicurezza(FS)= 1.2662	#Lambda= 1.2500
115.515	47.360			
123.571	44.030			
127.412	42.527			



130.006	41.636
132.184	41.012
134.304	40.553
136.266	40.239
138.385	40.019
140.677	39.890
143.430	39.838
145.749	39.869
147.897	39.988
149.898	40.195
152.025	40.518
153.999	40.910
156.079	41.421
158.251	42.046
160.714	42.842
163.070	43.609
165.346	44.358
167.588	45.103
169.794	45.842
172.037	46.603
174.318	47.382
176.687	48.200
179.182	49.068
181.334	49.919
183.396	50.853
185.341	51.864
187.466	53.103
189.672	54.575
192.283	56.494
196.136	59.544
204.141	66.098

X(m)	Y(m)	#Superficie N. 7 #Fattore di sicurezza(FS)= 1.2696 #Lambda= 0.3932
121.300	48.379	
124.828	46.377	
126.652	45.347	
127.948	44.622	
129.112	43.976	
130.148	43.407	
131.210	42.830	
132.302	42.243	
133.455	41.628	
134.693	40.972	
135.707	40.489	
136.641	40.112	
137.486	39.847	
138.447	39.629	
139.283	39.513	
140.213	39.468	
141.224	39.492	
142.492	39.589	
143.645	39.687	
144.727	39.788	
145.774	39.896	
146.805	40.013	
147.832	40.139	
148.872	40.276	
149.936	40.427	
151.045	40.593	
152.089	40.767	
153.109	40.957	
154.107	41.161	
155.131	41.390	
156.133	41.634	
157.159	41.904	
158.215	42.200	
159.344	42.537	
160.402	42.869	
161.431	43.212	
162.437	43.566	



163.462	43.946
164.471	44.341
165.507	44.765
166.579	45.225
167.732	45.738
168.780	46.235
169.792	46.749
170.769	47.281
171.786	47.870
172.771	48.479
173.796	49.148
174.872	49.887
176.065	50.741
177.122	51.546
178.132	52.372
179.098	53.218
180.112	54.167
181.196	55.264
182.448	56.609
184.263	58.657
187.940	62.908

X(m)	Y(m)	#Superficie N. 8 #Fattore di sicurezza(FS)= 1.2722 #Lambda= 0.3493
111.412	47.360	
118.548	43.358	
121.735	41.679	
123.748	40.789	
125.299	40.289	
126.950	40.001	
128.313	39.923	
129.887	40.021	
131.648	40.292	
133.964	40.785	
136.065	41.241	
138.017	41.673	
139.903	42.099	
141.731	42.521	
143.559	42.952	
145.396	43.394	
147.253	43.848	
149.138	44.318	
150.979	44.791	
152.800	45.276	
154.608	45.773	
156.430	46.289	
158.267	46.827	
160.147	47.394	
162.113	48.004	
164.223	48.675	
166.020	49.332	
167.729	50.061	
169.332	50.855	
171.089	51.843	
172.905	53.024	
175.063	54.578	
178.259	57.068	
184.924	62.447	

X(m)	Y(m)	#Superficie N. 9 #Fattore di sicurezza(FS)= 1.2772 #Lambda= 1.2500
125.341	49.306	
128.685	47.149	
130.330	46.119	
131.464	45.451	
132.443	44.915	
133.363	44.459	
134.250	44.058	
135.192	43.670	
136.202	43.292	
137.374	42.887	



138.335	42.598
139.215	42.383
140.019	42.244
140.907	42.152
141.706	42.125
142.581	42.157
143.531	42.247
144.693	42.407
145.709	42.570
146.658	42.748
147.559	42.943
148.481	43.171
149.366	43.416
150.277	43.694
151.214	44.005
152.229	44.367
153.209	44.722
154.166	45.073
155.111	45.425
156.051	45.780
156.988	46.138
157.926	46.503
158.869	46.874
159.819	47.253
160.771	47.633
161.720	48.011
162.670	48.390
163.613	48.766
164.561	49.144
165.506	49.521
166.452	49.898
167.390	50.272
168.337	50.650
169.282	51.027
170.230	51.405
171.173	51.781
172.141	52.167
173.125	52.560
174.154	52.970
175.243	53.404
176.147	53.821
177.006	54.287
177.804	54.795
178.698	55.445
179.614	56.220
180.714	57.255
182.360	58.933
185.770	62.530
185.770	62.576

X(m)	Y(m)	#Superficie N.10	#Fattore di sicurezza(FS)= 1.2818	#Lambda= 1.2500
125.117	49.255			
129.327	46.657			
131.358	45.451			
132.738	44.696			
133.909	44.121			
135.034	43.647			
136.088	43.261			
137.220	42.909			
138.441	42.587			
139.895	42.259			
141.108	42.028			
142.227	41.868			
143.262	41.776			
144.377	41.739			
145.406	41.760			
146.512	41.842			
147.697	41.987			
149.101	42.209			
150.335	42.435			



151.495	42.681
152.599	42.950
153.738	43.265
154.825	43.599
155.945	43.979
157.095	44.403
158.340	44.895
159.560	45.376
160.753	45.847
161.938	46.316
163.104	46.776
164.277	47.239
165.446	47.701
166.617	48.163
167.777	48.621
168.947	49.084
170.116	49.545
171.289	50.009
172.455	50.470
173.652	50.942
174.867	51.422
176.135	51.923
177.473	52.452
178.594	52.962
179.662	53.528
180.657	54.143
181.767	54.923
182.907	55.851
184.271	57.084
186.306	59.072
190.486	63.297
190.486	63.370

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

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR F_s *

Analisi Deficit in riferimento a $F_s(\text{progetto}) = 1.200$

Sup N.	F_s	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.232	5829.9	4733.4	149.8	Surplus
2	1.234	3687.8	2987.8	102.4	Surplus
3	1.257	4358.0	3467.3	197.3	Surplus
4	1.264	5174.3	4092.0	263.9	Surplus
5	1.265	4835.2	3822.0	248.8	Surplus
6	1.266	5569.9	4398.9	291.2	Surplus
7	1.270	4184.7	3296.1	229.3	Surplus
8	1.272	3758.6	2954.3	213.4	Surplus
9	1.277	3051.0	2388.9	184.4	Surplus
10	1.282	3595.4	2804.9	229.4	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 102.4

Note: FTR --> Forza totale Resistente lungo la superficie di scivolamento

FTA --> Forza totale Agente lungo la superficie di scivolamento

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

TABELLA PARAMETRI CONCI DELLA SUPERFICIE INDIVIDUATA CON MINOR F_s

X	dx	alpha	W	ru	U	phi'	(c',Cu)	
(m)	(m)	(°)	(kN/m)	(-)	(kPa)	(°)	(kPa)	
118.696	0.875	-24.77	5.44	0.00	0.00	0.00	23.00	15.00
119.571	0.875	-24.77	16.70	0.45	8.34	23.00	23.00	15.00
120.446	0.334	-24.77	9.30	0.45	13.86	23.00	23.00	15.00
120.780	0.875	-24.77	32.45	0.45	15.75	23.00	23.00	15.00



121.655	0.875	-24.77	44.33	0.45	21.31	23.00	15.00
122.530	0.875	-24.77	56.21	0.45	27.54	23.00	15.00
123.405	0.875	-24.77	68.09	0.45	34.24	23.00	15.00
124.280	0.875	-24.77	79.98	0.45	40.48	23.00	15.00
125.155	0.465	-24.77	47.35	0.45	46.44	23.00	15.00
125.620	0.875	-24.77	98.22	0.45	49.45	23.00	15.00
126.495	0.875	-24.77	110.21	0.45	56.04	23.00	15.00
127.370	0.023	-24.77	3.05	0.45	61.78	23.00	15.00
127.393	0.875	-23.41	122.27	0.45	61.91	23.00	15.00
128.268	0.875	-23.41	133.76	0.45	67.61	23.00	15.00
129.143	0.875	-23.41	145.25	0.45	73.53	23.00	15.00
130.018	0.442	-23.41	77.78	0.45	79.01	23.00	15.00
130.460	0.875	-23.41	162.48	0.45	81.53	23.00	15.00
131.335	0.070	-23.41	13.41	0.45	86.17	23.00	15.00
131.405	0.025	-20.18	4.92	0.45	86.48	23.00	15.00
131.430	0.875	-20.18	174.26	0.45	86.59	23.00	15.00
132.305	0.875	-20.18	184.08	0.45	90.92	23.00	15.00
133.180	0.185	-20.18	40.19	0.45	95.17	23.00	15.00
133.365	0.585	-20.18	129.94	0.45	95.93	23.00	15.00
133.950	0.085	-20.18	19.27	0.45	98.47	23.00	15.00
134.035	0.875	-15.80	202.83	0.45	98.81	23.00	15.00
134.910	0.390	-15.80	93.12	0.45	102.87	23.00	15.00
135.300	0.861	-15.80	211.51	0.45	104.86	23.00	15.00
136.161	0.875	-10.12	222.48	0.45	109.34	23.00	15.00
137.036	0.684	-10.12	178.62	0.45	113.93	23.00	15.00
137.720	0.600	-10.12	159.92	0.45	116.85	23.00	15.00
138.320	0.875	-5.52	238.17	0.45	119.28	23.00	15.00
139.195	0.875	-5.52	243.41	0.45	122.56	23.00	15.00
140.070	0.070	-5.52	19.76	0.45	125.10	23.00	15.00
140.140	0.069	-5.52	19.59	0.45	125.27	23.00	15.00
140.209	0.875	-0.75	248.84	0.45	125.44	23.00	15.00
141.084	0.875	-0.75	252.76	0.45	127.41	23.00	15.00
141.959	0.341	-0.75	99.70	0.45	129.22	23.00	15.00
142.301	0.259	3.16	76.01	0.45	129.93	23.00	15.00
142.560	0.875	3.16	258.45	0.45	130.45	23.00	15.00
143.435	0.875	3.16	261.20	0.45	132.07	23.00	15.00
144.310	0.265	3.16	79.57	0.46	133.50	23.00	15.00
144.575	0.405	5.97	122.22	0.46	133.95	23.00	15.00
144.980	0.875	5.97	265.19	0.46	134.61	23.00	15.00
145.855	0.875	5.97	267.00	0.46	135.95	23.00	15.00
146.730	0.330	5.97	101.18	0.46	136.97	23.00	15.00
147.060	0.340	5.97	104.52	0.46	137.37	23.00	15.00
147.400	0.004	5.97	1.11	0.46	137.78	23.00	15.00
147.404	0.875	6.65	270.26	0.46	137.78	23.00	15.00
148.279	0.875	6.65	272.04	0.46	138.77	23.00	15.00
149.154	0.666	6.65	208.40	0.46	139.70	23.00	15.00
149.820	0.127	6.65	39.87	0.46	140.52	23.00	15.00
149.947	0.875	7.45	275.37	0.46	140.67	23.00	15.00
150.822	0.875	7.45	277.01	0.46	141.60	23.00	15.00
151.697	0.543	7.45	172.70	0.46	142.52	23.00	15.00
152.240	0.092	7.45	29.47	0.46	143.08	23.00	15.00
152.332	0.875	8.30	279.70	0.46	143.18	23.00	15.00
153.207	0.875	8.30	281.07	0.46	143.95	23.00	15.00
154.082	0.545	8.30	175.73	0.46	144.59	23.00	15.00
154.627	0.013	9.17	4.10	0.46	144.97	23.00	15.00
154.640	0.020	9.17	6.46	0.46	144.98	23.00	15.00
154.660	0.875	9.17	283.15	0.46	144.99	23.00	15.00
155.535	0.875	9.17	284.15	0.46	145.56	23.00	15.00
156.410	0.504	9.17	164.04	0.46	146.04	23.00	15.00
156.914	0.166	10.01	54.22	0.46	146.31	23.00	15.00
157.080	0.875	10.01	285.72	0.46	146.40	23.00	15.00
157.955	0.875	10.01	286.46	0.46	146.82	23.00	15.00
158.830	0.347	10.01	113.75	0.46	147.14	23.00	15.00
159.177	0.323	10.84	106.10	0.46	147.25	23.00	15.00
159.500	0.875	10.84	287.28	0.46	147.35	23.00	15.00
160.375	0.875	10.84	287.26	0.46	147.56	23.00	15.00
161.250	0.245	10.84	80.50	0.46	147.65	23.00	15.00
161.495	0.425	11.62	139.44	0.46	147.66	23.00	15.00
161.920	0.875	11.62	286.98	0.46	147.68	23.00	15.00
162.795	0.875	11.62	286.71	0.46	147.69	23.00	15.00
163.670	0.226	11.62	74.06	0.46	147.64	23.00	15.00



163.896	0.444	12.32	145.29	0.46	147.62	23.00	15.00
164.340	0.875	12.32	286.22	0.46	147.59	23.00	15.00
165.215	0.535	12.32	174.98	0.46	147.48	23.00	15.00
165.750	0.718	12.32	235.01	0.46	147.37	23.00	15.00
166.468	0.292	13.82	95.35	0.46	147.17	23.00	15.00
166.760	0.875	13.82	285.97	0.46	147.08	23.00	15.00
167.635	0.875	13.82	285.64	0.46	146.67	23.00	15.00
168.510	0.279	13.82	90.92	0.46	146.14	23.00	15.00
168.789	0.391	15.54	127.54	0.46	145.94	23.00	15.00
169.180	0.875	15.54	284.00	0.46	145.65	23.00	15.00
170.055	0.875	15.54	282.04	0.46	144.88	23.00	15.00
170.930	0.095	15.54	30.64	0.46	144.02	23.00	15.00
171.025	0.575	17.37	183.90	0.46	143.93	23.00	15.00
171.600	0.875	17.37	277.91	0.46	143.32	23.00	15.00
172.475	0.175	17.37	55.28	0.46	142.27	23.00	15.00
172.650	0.527	17.37	165.86	0.46	142.06	23.00	15.00
173.177	0.843	19.15	262.76	0.46	141.39	23.00	15.00
174.020	0.875	19.15	270.19	0.46	140.17	23.00	15.00
174.895	0.537	19.15	164.74	0.46	138.80	23.00	15.00
175.432	0.875	20.92	266.79	0.46	137.94	23.00	15.00
176.307	0.875	20.92	264.26	0.46	136.35	23.00	15.00
177.181	0.416	20.92	124.76	0.46	134.75	23.00	15.00
177.598	0.875	22.63	260.24	0.46	134.05	23.00	15.00
178.472	0.388	22.63	114.26	0.46	132.50	23.00	15.00
178.860	0.875	22.63	255.50	0.46	131.88	23.00	15.00
179.735	0.121	22.63	35.01	0.46	130.37	23.00	15.00
179.856	0.875	24.17	251.14	0.46	130.16	23.00	15.00
180.731	0.099	24.17	28.21	0.47	128.38	23.00	15.00
180.830	0.450	24.17	127.30	0.47	128.16	23.00	15.00
181.280	0.875	24.17	244.32	0.47	127.19	23.00	15.00
182.155	0.066	24.17	18.30	0.47	125.06	23.00	15.00
182.221	0.875	25.46	239.55	0.47	124.90	23.00	15.00
183.096	0.604	25.46	162.61	0.47	122.55	23.00	15.00
183.700	0.875	25.46	231.13	0.47	120.87	23.00	15.00
184.575	0.281	25.46	73.03	0.47	118.15	23.00	15.00
184.856	0.875	26.75	223.36	0.47	117.31	23.00	15.00
185.731	0.039	26.75	9.81	0.47	114.51	23.00	15.00
185.770	0.350	26.75	87.53	0.47	114.39	23.00	15.00
186.120	0.875	26.75	214.72	0.47	113.29	23.00	15.00
186.995	0.239	26.75	57.74	0.47	110.53	23.00	15.00
187.234	0.875	28.21	206.96	0.47	109.77	23.00	15.00
188.109	0.431	28.21	99.49	0.47	106.97	23.00	15.00
188.540	0.875	28.21	197.65	0.47	105.55	23.00	15.00
189.415	0.099	28.21	21.94	0.47	102.54	23.00	15.00
189.514	0.875	29.75	190.82	0.47	102.19	23.00	15.00
190.389	0.571	29.75	121.11	0.47	98.78	23.00	15.00
190.960	0.748	29.75	154.41	0.47	96.29	23.00	15.00
191.708	0.875	31.24	174.31	0.47	92.90	23.00	15.00
192.583	0.797	31.24	152.62	0.47	89.08	23.00	15.00
193.380	0.597	31.24	110.42	0.48	85.26	23.00	15.00
193.977	0.875	33.09	155.64	0.48	82.06	23.00	15.00
194.852	0.875	33.09	147.83	0.48	77.46	23.00	15.00
195.727	0.073	33.09	12.06	0.48	72.89	23.00	15.00
195.800	0.623	33.09	100.08	0.48	72.52	23.00	15.00
196.423	0.875	34.53	133.49	0.48	69.09	23.00	15.00
197.298	0.875	34.53	125.05	0.48	63.83	23.00	15.00
198.173	0.047	34.53	6.44	0.46	56.74	23.00	15.00
198.220	0.875	34.53	116.28	0.46	56.36	23.00	15.00
199.095	0.133	34.53	17.00	0.44	48.80	23.00	15.00
199.228	0.875	35.77	106.53	0.43	47.67	23.00	15.00
200.103	0.537	35.77	61.00	0.39	39.51	23.00	15.00
200.640	0.875	35.77	92.37	0.36	34.04	23.00	15.00
201.515	0.875	35.77	83.60	0.30	25.36	23.00	15.00
202.390	0.250	35.77	22.23	0.23	18.02	23.00	15.00
202.639	0.421	35.77	35.96	0.00	0.00	25.00	0.50
203.060	0.206	35.77	16.96	0.00	0.00	25.00	0.50
203.266	0.875	36.40	67.31	0.00	0.00	25.00	0.50
204.141	0.875	36.40	59.57	0.00	0.00	25.00	0.50
205.016	0.464	36.40	28.46	0.00	0.00	25.00	0.50
205.480	0.050	36.40	2.94	0.00	0.00	25.00	0.50
205.530	0.875	36.40	47.28	0.00	0.00	25.00	0.50

206.405	0.875	36.40	39.54	0.00	0.00	25.00	0.50
207.280	0.620	36.40	23.34	0.00	0.00	25.00	0.50
207.900	0.875	36.40	26.40	0.00	0.00	25.00	0.50
208.775	0.875	36.40	18.81	0.00	0.00	25.00	0.50
209.650	0.670	36.40	9.28	0.00	0.00	25.00	0.50
210.320	0.875	36.40	5.42	0.00	0.00	25.00	0.50
211.195	0.188	36.40	0.18	0.00	0.00	25.00	0.50

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 dx(m) : Larghezza concio
 alpha() : Angolo pendenza base concio
 W(kN/m) : Forza peso concio
 ru(-) : Coefficiente locale pressione interstiziale
 U(kPa) : Pressione totale dei pori base concio
 phi'() : Angolo di attrito efficace base concio
 c'/Cu (kPa) : Coesione efficace o Resistenza al taglio in condizioni non drenate

TABELLA DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	ht (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (--)	FS_qFEM (--)	FS_p-qPATH (--)		
118.696	0.000	47.873	-0.258	0.0000000000E+000	0.0000000000E+000	4.5247665368E+000	0.041	3.665	2.920		
119.571	0.187	47.656	-0.258	4.0684938115E+000	-1.4484341010E-002	4.7749213911E+000	0.041	3.665	2.920		
120.446	0.356	47.421	-0.245	8.3558666831E+000	-7.5957728314E-002	5.0169688678E+000	0.041	2.223	1.746		
120.780	0.449	47.360	-0.205	1.0044758964E+001	-1.1953863077E-001	5.8048273885E+000	0.041	2.054	1.602		
121.655	0.666	47.173	-0.229	1.6829171842E+001	-4.0969337637E-001	1.0039487247E+001	0.044	1.744	1.324		
122.530	0.855	46.958	-0.256	2.7613344943E+001	-1.2744269737E+000	1.4696453967E+001	0.053	1.570	1.152		
123.405	1.026	46.725	-0.257	4.2547209900E+001	-3.5059992737E+000	2.0480004630E+001	0.068	1.492	1.052		
124.280	1.213	46.509	-0.241	6.3452298999E+001	-7.3161037627E+000	2.5946970982E+001	0.085	1.483	1.000		
125.155	1.411	46.303	-0.230	8.7953073703E+001	-1.1742295477E+001	3.0857050837E+001	0.108	1.457	0.930		
125.620	1.523	46.200	-0.245	1.0301157973E+002	-1.4593166766E+001	3.9969393578E+001	0.124	1.476	0.916		
126.495	1.701	45.975	-0.241	1.5048390852E+002	-2.4001407142E+001	5.7065369489E+001	0.164	1.580	0.911		
127.370	1.909	45.779	-0.223	2.0287303935E+002	-3.4652213561E+001	5.9151758469E+001	0.211	1.723	0.927		
127.393	1.915	45.774	-0.217	2.0423125205E+002	-3.4927034873E+001	5.9562851361E+001	0.212	1.726	0.928		
128.268	2.104	45.584	-0.221	2.7068229984E+002	-4.8623476767E+001	8.4702711967E+001	0.261	1.920	0.952		
129.143	2.287	45.388	-0.215	3.5245663859E+002	-6.6257740609E+001	9.4848037264E+001	0.305	2.185	0.983		
130.018	2.486	45.209	-0.198	4.3666148350E+002	-8.5182488909E+001	9.3980171352E+001	0.343	2.491	1.014		
130.460	2.596	45.127	-0.175	4.7771148264E+002	-9.4680079359E+001	9.2580545700E+001	0.360	2.654	1.029		
131.335	2.826	44.979	-0.168	5.5826830177E+002	-1.1409410089E+002	8.0659302108E+001	0.392	3.021	1.059		
131.405	2.847	44.969	-0.137	5.6381855561E+002	-1.1546519857E+002	8.0156550045E+001	0.394	3.049	1.061		
131.430	2.853	44.966	-0.149	5.6586083623E+002	-1.1597535468E+002	8.0634381807E+001	0.394	3.059	1.062		
132.305	3.044	44.835	-0.145	6.4634677373E+002	-1.3740340602E+002	9.3394308368E+001	0.421	3.569	1.095		
133.180	3.242	44.712	-0.136	7.2929606915E+002	-1.6135059897E+002	8.4332488727E+001	0.447	4.248	1.135		
133.365	3.289	44.691	-0.115	7.4449217319E+002	-1.6604654903E+002	8.3478020920E+001	0.451	4.396	1.143		
133.950	3.437	44.624	-0.114	7.9584149422E+002	-1.8249484368E+002	8.3057970058E+001	0.465	4.936	1.174		
134.035	3.459	44.615	-0.109	8.0285284238E+002	-1.8485983906E+002	8.3779488649E+001	0.466	5.019	1.179		
134.910	3.611	44.519	-0.109	8.8882248168E+002	-2.1528800774E+002	1.0730307541E+002	0.479	6.036	1.248		
135.300	3.679	44.477	-0.104	9.3223300340E+002	-2.3151497176E+002	1.1337322525E+002	0.480	6.559	1.288		
136.161	3.834	44.388	-0.094	1.0336897016E+003	-2.7066032443E+002	1.2219558709E+002	0.463	7.759	1.393		
137.036	3.916	44.314	-0.068	1.1444537787E+003	-3.0593160423E+002	1.1980371122E+002	0.419	8.869	1.520		
137.720	4.007	44.283	-0.039	1.2228013381E+003	-3.0926684020E+002	1.1458043510E+002	0.375	9.360	1.620		
138.320	4.095	44.264	-0.021	1.2915755824E+003	-3.0141833903E+002	1.1412456757E+002	0.342	9.599	1.707		
139.195	4.168	44.252	0.002	1.3907547113E+003	-2.6984056362E+002	1.0720850222E+002	0.303	9.586	1.828		
140.070	4.268	44.268	0.018	1.4791849436E+003	-2.0348981702E+002	8.8690259778E+001	0.279	9.008	1.919		
140.140	4.277	44.269	0.027	1.4853425775E+003	-1.9754852307E+002	8.7880712809E+001	0.277	8.951	1.925		
140.209	4.285	44.271	0.041	1.4914611737E+003	-1.9103444928E+002	8.8090100593E+001	0.275	8.891	1.930		
141.084	4.334	44.308	0.055	1.5688431992E+003	-8.7759807757E+001	8.8116151462E+001	0.259	7.920	1.984		
141.959	4.404	44.368	0.074	1.6456599037E+003	4.6845163524E+001	8.9385370047E+001	0.260	6.733	2.005		
142.301	4.439	44.398	0.090	1.6763927519E+003	1.1130958157E+002	8.8681632701E+001	0.267	6.234	2.002		
142.560	4.449	44.422	0.098	1.6991114261E+003	1.5570455911E+002	8.6260845632E+001	0.273	5.872	1.998		
143.435	4.488	44.510	0.105	1.7704062290E+003	2.9328129076E+002	7.6536577249E+001	0.307	4.715	1.963		
144.310	4.535	44.605	0.114	1.8330464972E+003	4.1431313411E+002	7.1756197575E+001	0.356	3.722	1.906		
144.575	4.555	44.640	0.131	1.8520561847E+003	4.4935802539E+002	6.9828373310E+001	0.374	3.436	1.882		
144.980	4.566	44.693	0.135	1.8791313785E+003	4.9813414870E+002	6.5084250980E+001	0.405	3.044	1.844		
145.855	4.594	44.812	0.131	1.9328370463E+003	5.9031356711E+002	5.1637331214E+001	0.492	2.321	1.753		
146.730	4.612	44.922	0.130	1.9694940505E+003	6.3975334810E+002	3.9686762462E+001	0.603	1.937	1.664		
147.060	4.625	44.969	0.143	1.9823178060E+003	6.5258922859E+002	3.8277784022E+001	0.644	1.821	1.629		



147.400	4.638	45.018	0.142	1.9951305020E+003	6.6543902231E+002	3.7036694361E+001	0.691	1.706	1.593
147.404	4.638	45.018	0.143	1.9952638495E+003	6.6557365944E+002	3.7007752139E+001	0.691	1.704	1.593
148.279	4.661	45.143	0.146	2.0229500889E+003	6.8332058707E+002	2.8740108860E+001	0.774	1.486	1.509
149.154	4.689	45.273	0.163	2.045575608E+003	6.9590571259E+002	2.6368521451E+001	0.805	1.343	1.435
149.820	4.733	45.395	0.182	2.0634002420E+003	7.0591546508E+002	2.5721493562E+001	0.822	1.246	1.378
149.947	4.741	45.417	0.170	2.0666447289E+003	7.0773398640E+002	2.4948918110E+001	0.825	1.229	1.368
150.822	4.774	45.565	0.173	2.0850295052E+003	7.1802227024E+002	1.9994899825E+001	0.836	1.147	1.313
151.697	4.815	45.720	0.179	2.1016347745E+003	7.2723865668E+002	1.8282270760E+001	0.842	1.085	1.267
152.240	4.843	45.820	0.183	2.1113262253E+003	7.3258538687E+002	1.7577174354E+001	0.846	1.052	1.242
152.332	4.848	45.837	0.170	2.1129467998E+003	7.3347872921E+002	1.7198332511E+001	0.846	1.047	1.238
153.207	4.868	45.984	0.165	2.1252429601E+003	7.4020409055E+002	1.2294172645E+001	0.850	1.012	1.211
154.082	4.882	46.125	0.161	2.1344609692E+003	7.4520551538E+002	9.6765733024E+000	0.853	0.992	1.194
154.627	4.890	46.213	0.161	2.1394423978E+003	7.4792809370E+002	8.7707578130E+000	0.854	0.983	1.185
154.640	4.890	46.215	0.159	2.1395537300E+003	7.4798926445E+002	8.6824190106E+000	0.854	0.982	1.185
154.660	4.890	46.219	0.165	2.1397248699E+003	7.4808380556E+002	8.5323536164E+000	0.854	0.982	1.185
155.535	4.893	46.363	0.168	2.1462473758E+003	7.5177234437E+002	6.3401212651E+000	0.856	0.971	1.175
156.410	4.902	46.513	0.175	2.1508197558E+003	7.5454454337E+002	4.4379800887E+000	0.858	0.964	1.168
156.914	4.912	46.604	0.181	2.1528269351E+003	7.5588793451E+002	3.7777429885E+000	0.859	0.961	1.165
157.080	4.913	46.635	0.190	2.1534438170E+003	7.5631392153E+002	3.5427802073E+000	0.859	0.960	1.164
157.955	4.925	46.802	0.193	2.1557760995E+003	7.5822108936E+002	1.4567328434E+000	0.861	0.955	1.160
158.830	4.942	46.973	0.198	2.1559930245E+003	7.5919831314E+002	-8.1254759574E-001	0.862	0.953	1.157
159.177	4.952	47.044	0.206	2.1555654137E+003	7.5937723617E+002	-1.3747990232E+000	0.863	0.952	1.155
159.500	4.957	47.111	0.215	2.1550783108E+003	7.5951317454E+002	-1.9339366298E+000	0.863	0.951	1.154
160.375	4.980	47.302	0.205	2.1523749969E+003	7.5930133355E+002	-4.0856172522E+000	0.864	0.949	1.152
161.250	4.981	47.470	0.195	2.1479286909E+003	7.5812875804E+002	-6.3623580236E+000	0.865	0.947	1.150
161.495	4.984	47.520	0.203	2.1462805137E+003	7.5761016930E+002	-6.8164553383E+000	0.865	0.947	1.149
161.920	4.983	47.606	0.203	2.1433146067E+003	7.5666227657E+002	-7.3843095781E+000	0.865	0.947	1.149
162.795	4.980	47.783	0.203	2.1361273323E+003	7.5414560131E+002	-9.3076816871E+000	0.865	0.945	1.147
163.670	4.979	47.962	0.207	2.1270266428E+003	7.5061840374E+002	-1.1995888159E+001	0.865	0.944	1.146
163.896	4.981	48.011	0.217	2.1242204511E+003	7.4949490367E+002	-1.2500885910E+001	0.865	0.944	1.145
164.340	4.981	48.108	0.215	2.1185905505E+003	7.4723240044E+002	-1.3067285333E+001	0.864	0.944	1.145
165.215	4.976	48.294	0.216	2.1064942385E+003	7.4227580866E+002	-1.5432682509E+001	0.863	0.943	1.144
165.750	4.977	48.412	0.229	2.0977113168E+003	7.3864270564E+002	-1.7547830214E+001	0.862	0.942	1.143
166.468	4.989	48.581	0.235	2.0840110696E+003	7.3301230287E+002	-1.9686173982E+001	0.861	0.941	1.142
166.760	4.986	48.649	0.243	2.0781993638E+003	7.3064036720E+002	-2.0786634036E+001	0.860	0.940	1.142
167.635	4.985	48.864	0.243	2.0577801875E+003	7.2247127873E+002	-2.4362680406E+001	0.858	0.939	1.142
168.510	4.980	49.074	0.240	2.0355659270E+003	7.1373749164E+002	-2.6445588924E+001	0.856	0.938	1.141
168.789	4.978	49.140	0.238	2.0281011404E+003	7.1085000971E+002	-2.7028918969E+001	0.856	0.937	1.141
169.180	4.962	49.234	0.237	2.0173884041E+003	7.0673344063E+002	-2.8027370317E+001	0.855	0.936	1.141
170.055	4.925	49.440	0.233	1.9915891780E+003	6.9693210714E+002	-3.0227373581E+001	0.853	0.935	1.141
170.930	4.883	49.641	0.230	1.9644920561E+003	6.8667403654E+002	-3.2004119289E+001	0.850	0.933	1.140
171.025	4.878	49.663	0.224	1.9614278094E+003	6.8551308506E+002	-3.2112389207E+001	0.850	0.932	1.140
171.600	4.827	49.791	0.241	1.9429905712E+003	6.7855150017E+002	-3.4438252276E+001	0.849	0.931	1.139
172.475	4.774	50.012	0.249	1.9097224257E+003	6.6571262450E+002	-3.6409114281E+001	0.846	0.928	1.138
172.650	4.760	50.052	0.252	1.9034063579E+003	6.6324660298E+002	-3.7261900234E+001	0.845	0.928	1.137
173.177	4.731	50.189	0.284	1.8818952421E+003	6.5475809397E+002	-4.3686648807E+001	0.843	0.926	1.135
174.020	4.691	50.441	0.319	1.8411902072E+003	6.3846423405E+002	-5.1836821925E+001	0.839	0.922	1.132
174.895	4.682	50.736	0.342	1.7926193172E+003	6.1875263709E+002	-5.7550445658E+001	0.834	0.917	1.126
175.432	4.684	50.924	0.379	1.7610689900E+003	6.0587820656E+002	-6.2084130028E+001	0.830	0.913	1.122
176.307	4.697	51.272	0.396	1.7020624626E+003	5.8192754892E+002	-6.7768840611E+001	0.824	0.907	1.115
177.181	4.709	51.618	0.383	1.6424770068E+003	5.5792788768E+002	-6.3763222427E+001	0.817	0.901	1.108
177.598	4.697	51.766	0.359	1.6168079498E+003	5.4769986385E+002	-6.2216633018E+001	0.814	0.899	1.105
178.472	4.648	52.081	0.345	1.5614218230E+003	5.2596120603E+002	-5.7524421651E+001	0.808	0.894	1.100
178.860	4.607	52.201	0.315	1.5401212299E+003	5.1773269372E+002	-5.5532690633E+001	0.805	0.893	1.098
179.735	4.520	52.479	0.314	1.4904126490E+003	4.9874744357E+002	-5.3359868956E+001	0.800	0.890	1.095
179.856	4.505	52.514	0.333	1.4840213112E+003	4.9632785658E+002	-5.3907908049E+001	0.799	0.890	1.094
180.731	4.408	52.811	0.340	1.4303616292E+003	4.7601439843E+002	-6.3525185277E+001	0.793	0.888	1.093
180.830	4.398	52.845	0.335	1.4240356176E+003	4.7362096248E+002	-6.3157452037E+001	0.793	0.888	1.093
181.280	4.345	52.994	0.348	1.3968741796E+003	4.6335344708E+002	-6.2018131648E+001	0.790	0.888	1.093
182.155	4.265	53.307	0.356	1.3397868249E+003	4.4171205120E+002	-6.3224687625E+001	0.783	0.888	1.094
182.221	4.258	53.330	0.371	1.3356154702E+003	4.4012810397E+002	-6.3425486826E+001	0.783	0.888	1.094
183.096	4.168	53.656	0.370	1.2760280148E+003	4.1744365302E+002	-6.7291710361E+001	0.776	0.888	1.096
183.700	4.101	53.876	0.385	1.2357272671E+003	4.0202581102E+002	-6.9058339676E+001	0.771	0.889	1.098
184.575	4.033	54.225	0.392	1.1723545098E+003	3.7770556678E+002	-6.8281495692E+001	0.762	0.891	1.103
184.856	4.003	54.329	0.386	1.1535384176E+003	3.7046874944E+002	-6.7745807971E+001	0.760	0.892	1.104
185.731	3.904	54.671	0.390	1.0920935925E+003	3.4685295638E+002	-6.4990829566E+001	0.750	0.895	1.109
185.770	3.899	54.685	0.369	1.0895678749E+003	3.4588199441E+002	-6.4863060486E+001	0.750	0.895	1.109
186.120	3.852	54.815	0.369	1.0665343355E+003	3.3703981657E+002	-6.5525255003E+001	0.746	0.896	1.111
186.995	3.734	55.138	0.367	1.0098245131E+003	3.1527098195E+002	-6.2966549979E+001	0.736	0.899	1.115
187.234	3.700	55.224	0.366	9.9486840141E+002	3.0953228076E+002	-6.2523851800E+001	0.733	0.899	1.115
188.109	3.551	55.546	0.370	9.3996136383E+002	2.8848572427E+002	-6.2689290380E+001	0.721	0.901	1.118



188.540	3.482	55.707	0.387	9.1298048415E+002	2.7811135476E+002	-6.3221531423E+001	0.714	0.902	1.118
189.415	3.357	56.051	0.394	8.5666146911E+002	2.5637873790E+002	-6.3950052834E+001	0.699	0.902	1.118
189.514	3.343	56.091	0.439	8.5035036916E+002	2.5393598164E+002	-6.4519572041E+001	0.697	0.902	1.118
190.389	3.231	56.478	0.464	7.8911819447E+002	2.3018978415E+002	-7.3326675418E+001	0.676	0.902	1.115
190.960	3.188	56.762	0.508	7.4597961922E+002	2.1344774849E+002	-7.6125592875E+001	0.659	0.901	1.112
191.708	3.147	57.149	0.506	6.8843024591E+002	1.9113693736E+002	-7.4217762975E+001	0.635	0.899	1.106
192.583	3.051	57.583	0.513	6.2626812250E+002	1.6726749003E+002	-7.1752501051E+001	0.607	0.896	1.100
193.380	2.991	58.007	0.548	5.6857042505E+002	1.4571231124E+002	-7.3697565051E+001	0.578	0.896	1.097
193.977	2.969	58.346	0.550	5.2402232329E+002	1.2952360478E+002	-7.1933330521E+001	0.555	0.898	1.099
194.852	2.868	58.816	0.516	4.6459548376E+002	1.0863142760E+002	-6.3580048727E+001	0.524	0.905	1.108
195.727	2.731	59.249	0.492	4.1276051030E+002	9.1341651080E+001	-5.4274929697E+001	0.496	0.916	1.128
195.800	2.717	59.283	0.471	4.0880417146E+002	9.0051496986E+001	-5.3782248002E+001	0.494	0.917	1.130
196.423	2.605	59.578	0.470	3.7568056224E+002	7.9640914400E+001	-5.1586873481E+001	0.477	0.930	1.154
197.298	2.413	59.987	0.497	3.3245089365E+002	6.6773628838E+001	-4.9580573938E+001	0.453	0.956	1.200
198.173	2.272	60.448	0.525	2.8891710961E+002	5.4636446024E+001	-4.5354563577E+001	0.426	0.998	1.262
198.220	2.263	60.471	0.509	2.8680895344E+002	5.4065517258E+001	-4.5066481444E+001	0.425	1.001	1.265
199.095	2.107	60.917	0.505	2.4824753252E+002	4.3888118489E+001	-3.9697012460E+001	0.399	1.053	1.335
199.228	2.079	60.981	0.518	2.4304236951E+002	4.2558163279E+001	-3.9137594350E+001	0.396	1.061	1.346
200.103	1.908	61.440	0.546	2.0818182357E+002	3.3981020960E+001	-4.0048671030E+001	0.369	1.130	1.431
200.640	1.832	61.751	0.575	1.8662003134E+002	2.8905824418E+001	-3.8862878502E+001	0.350	1.185	1.495
201.515	1.703	62.252	0.541	1.5448854045E+002	2.1631735678E+001	-3.2547502880E+001	0.321	1.284	1.605
202.390	1.517	62.697	0.512	1.2966357642E+002	1.6437157854E+001	-2.7132687990E+001	0.292	1.399	1.723
202.639	1.468	62.827	0.509	1.2298177439E+002	1.5112483923E+001	-2.6140061694E+001	0.282	1.441	1.764
203.060	1.376	63.038	0.501	1.1244193093E+002	1.3074524920E+001	-2.3949429187E+001	0.267	1.512	1.835
203.266	1.330	63.141	0.515	1.0762293036E+002	1.2188867936E+001	-2.3270219525E+001	0.259	1.554	1.877
204.141	1.139	63.595	0.518	8.7760589701E+001	8.7463220261E+000	-2.1057747030E+001	0.221	1.778	2.099
205.016	0.946	64.047	0.504	7.0772956840E+001	6.182098943E+000	-1.7100962577E+001	0.179	2.006	2.326
205.480	0.827	64.270	0.480	6.3405321105E+001	5.2098304927E+000	-1.5624537094E+001	0.160	2.116	2.434
205.530	0.814	64.294	0.527	6.2625434821E+001	5.1082152350E+000	-1.5664974724E+001	0.158	2.128	2.446
206.405	0.632	64.757	0.598	4.7889294828E+001	3.2943843335E+000	-1.8008189626E+001	0.130	2.414	2.731
207.280	0.570	65.340	0.625	3.1112029804E+001	1.5818823324E+000	-1.5584549536E+001	0.102	2.863	3.192
207.900	0.465	65.692	0.637	2.3026267395E+001	9.8288938609E-001	-1.3041599235E+001	0.085	3.233	3.530
208.775	0.420	66.292	0.655	1.1613809109E+001	3.0067020751E-001	-1.0459829446E+001	0.061	3.826	3.964
209.650	0.322	66.839	0.556	4.7221042026E+000	5.9767880278E-002	-4.9799865161E+000	0.044	2.964	3.113
210.320	0.140	67.151	0.549	2.8715055871E+000	2.2067025628E-002	-2.2076044529E+000	0.041	1.367	1.666
211.195	0.031	67.687	0.549	1.5732011640E+000	5.6007906589E-003	-7.1375060168E+000	0.041	0.844	0.834

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 ht(m) : Altezza linea di thrust da nodo sinistro base concio
 yt(m) : coordinata Y linea di thrust
 yt'(-) : gradiente pendenza locale linea di thrust
 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_qFEM(x)(-) : fattore di sicurezza locale stimato (locale in X) by qFEM
 FS_p-qPATH(x)(-) : fattore di sicurezza locale stimato (locale in X) by p-qPATH Procedure

TABELLA SFORZI DI TAGLIO DISTRIBUITI LUNGO SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	dl (m)	alpha (°)	TauStress (kPa)	TauF (kN/m)	TauStrength (kPa)	TauS (kN/m)
118.696	0.875	0.964	-24.774	-2.150	-2.072	17.205	16.579
119.571	0.875	0.964	-24.774	-6.601	-6.362	18.213	17.551
120.446	0.334	0.367	-24.774	-9.641	-3.543	18.953	6.965
120.780	0.875	0.964	-24.774	-12.828	-12.362	21.274	20.501
121.655	0.875	0.964	-24.774	-17.524	-16.887	23.219	22.375
122.530	0.875	0.964	-24.774	-22.220	-21.412	24.141	23.264
123.405	0.875	0.964	-24.774	-26.916	-25.938	24.664	23.767
124.280	0.875	0.964	-24.774	-31.612	-30.463	26.283	25.327
125.155	0.465	0.512	-24.774	-35.208	-18.036	26.585	13.619
125.620	0.875	0.964	-24.774	-38.825	-37.414	25.254	24.337
126.495	0.875	0.964	-24.774	-43.563	-41.980	26.179	25.228
127.370	0.023	0.025	-24.774	-45.994	-1.164	26.420	0.668
127.393	0.875	0.953	-23.407	-46.001	-43.859	26.954	25.699
128.268	0.875	0.953	-23.407	-50.325	-47.982	25.688	24.492
129.143	0.875	0.953	-23.407	-54.650	-52.105	26.766	25.520



130.018	0.442	0.482	-23.407	-57.905	-27.899	28.159	13.567
130.460	0.875	0.953	-23.407	-61.132	-58.285	30.088	28.687
131.335	0.070	0.076	-23.407	-63.436	-4.811	32.669	2.477
131.405	0.025	0.027	-20.177	-55.452	-1.502	36.225	0.982
131.430	0.875	0.932	-20.177	-57.109	-53.236	34.948	32.578
132.305	0.875	0.932	-20.177	-60.326	-56.235	35.148	32.764
133.180	0.185	0.197	-20.177	-62.275	-12.278	37.463	7.386
133.365	0.585	0.623	-20.177	-63.691	-39.695	36.897	22.996
133.950	0.085	0.091	-20.177	-64.925	-5.888	37.713	3.420
134.035	0.875	0.909	-15.801	-51.724	-47.034	40.352	36.694
134.910	0.390	0.405	-15.801	-53.287	-21.593	36.517	14.798
135.300	0.861	0.895	-15.801	-54.828	-49.046	35.657	31.897
136.161	0.875	0.889	-10.121	-33.637	-29.897	48.797	43.371
137.036	0.684	0.695	-10.121	-34.532	-24.003	71.782	49.896
137.720	0.600	0.609	-10.121	-35.269	-21.490	84.069	51.224
138.320	0.875	0.879	-5.521	-14.743	-12.960	98.742	86.799
139.195	0.875	0.879	-5.521	-15.067	-13.245	121.281	106.613
140.070	0.070	0.071	-5.521	-15.242	-1.075	126.299	8.909
140.140	0.069	0.070	-5.521	-15.268	-1.066	131.353	9.169
140.209	0.875	0.875	-0.749	8.226	7.198	134.512	117.705
141.084	0.875	0.875	-0.749	8.356	7.312	151.350	132.439
141.959	0.341	0.341	-0.749	8.446	2.884	167.306	57.132
142.301	0.259	0.260	3.163	28.443	7.381	144.572	37.519
142.560	0.875	0.876	3.163	28.640	25.098	140.201	122.860
143.435	0.875	0.876	3.163	28.945	25.365	134.122	117.532
144.310	0.265	0.265	3.163	29.143	7.727	132.268	35.069
144.575	0.405	0.408	5.966	43.701	17.809	119.405	48.660
144.980	0.875	0.880	5.966	43.924	38.641	115.384	101.508
145.855	0.875	0.880	5.966	44.223	38.905	101.387	89.194
146.730	0.330	0.332	5.966	44.429	14.744	96.399	31.990
147.060	0.340	0.342	5.966	44.550	15.229	96.256	32.905
147.400	0.004	0.004	5.966	44.615	0.162	96.150	0.348
147.404	0.875	0.881	6.653	48.340	42.583	90.850	80.030
148.279	0.875	0.881	6.653	48.659	42.864	89.646	78.969
149.154	0.666	0.671	6.653	48.940	32.837	90.174	60.504
149.820	0.127	0.128	6.653	49.085	6.283	90.017	11.521
149.947	0.875	0.882	7.451	53.465	47.178	88.959	78.499
150.822	0.875	0.882	7.451	53.781	47.458	89.018	78.552
151.697	0.543	0.548	7.451	54.038	29.588	89.079	48.775
152.240	0.092	0.093	7.451	54.153	5.049	89.074	8.304
152.332	0.875	0.884	8.296	58.784	51.979	88.117	77.915
153.207	0.875	0.884	8.296	59.073	52.234	87.967	77.783
154.082	0.545	0.551	8.296	59.307	32.658	88.047	48.484
154.627	0.013	0.013	9.173	64.056	0.824	87.238	1.123
154.640	0.020	0.020	9.173	64.061	1.298	87.225	1.767
154.660	0.875	0.886	9.173	64.176	56.880	87.346	77.416
155.535	0.875	0.886	9.173	64.402	57.080	87.344	77.414
156.410	0.504	0.510	9.173	64.579	32.954	87.394	44.596
156.914	0.166	0.169	10.013	69.108	11.670	86.630	14.629
157.080	0.875	0.889	10.013	69.214	61.497	86.721	77.053
157.955	0.875	0.889	10.013	69.392	61.656	86.672	77.009
158.830	0.347	0.352	10.013	69.517	24.484	86.653	30.519
159.177	0.323	0.329	10.837	73.912	24.323	85.898	28.268
159.500	0.875	0.891	10.837	73.931	65.863	85.772	76.411
160.375	0.875	0.891	10.837	73.925	65.857	85.472	76.144
161.250	0.245	0.250	10.837	73.921	18.456	85.287	21.293
161.495	0.425	0.434	11.619	77.972	33.818	84.467	36.635
161.920	0.875	0.893	11.619	77.918	69.603	84.261	75.268
162.795	0.875	0.893	11.619	77.846	69.538	83.946	74.987
163.670	0.226	0.231	11.619	77.800	17.963	83.732	19.333
163.896	0.444	0.454	12.323	81.367	36.970	82.968	37.698
164.340	0.875	0.896	12.323	81.321	72.832	82.825	74.179
165.215	0.535	0.548	12.323	81.303	44.525	82.673	45.276
165.750	0.718	0.735	12.323	81.313	59.801	82.579	60.732
166.468	0.292	0.300	13.824	88.845	26.671	81.159	24.364
166.760	0.875	0.901	13.824	88.776	79.994	80.962	72.953
167.635	0.875	0.901	13.824	88.673	79.901	80.910	72.906
168.510	0.279	0.287	13.824	88.605	25.433	80.992	23.248
168.789	0.391	0.406	15.538	96.823	39.327	79.168	32.156
169.180	0.875	0.908	15.538	96.425	87.570	78.719	71.490
170.055	0.875	0.908	15.538	95.762	86.968	78.137	70.962

170.930	0.095	0.099	15.538	95.394	9.447	77.983	7.723
171.025	0.575	0.602	17.369	103.422	62.270	75.589	45.512
171.600	0.875	0.917	17.369	102.642	94.099	74.832	68.604
172.475	0.175	0.183	17.369	102.077	18.720	74.635	13.687
172.650	0.527	0.552	17.369	101.670	56.161	74.169	40.970
173.177	0.843	0.892	19.151	108.301	96.623	71.416	63.715
174.020	0.875	0.926	19.151	107.269	99.356	70.833	65.608
174.895	0.537	0.568	19.151	106.653	60.579	70.755	40.189
175.432	0.875	0.937	20.916	112.854	105.710	68.672	64.325
176.307	0.875	0.937	20.916	111.787	104.711	68.300	63.977
177.181	0.416	0.445	20.916	111.000	49.436	68.091	30.325
177.598	0.875	0.948	22.634	116.289	110.241	65.659	62.244
178.472	0.388	0.420	22.634	115.283	48.402	65.127	27.344
178.860	0.875	0.948	22.634	114.172	108.233	64.414	61.064
179.735	0.121	0.131	22.634	113.258	14.830	64.099	8.393
179.856	0.875	0.959	24.172	117.259	112.459	61.728	59.201
180.731	0.099	0.109	24.172	116.183	12.632	61.669	6.705
180.830	0.450	0.493	24.172	115.567	57.003	61.100	30.137
181.280	0.875	0.959	24.172	114.075	109.405	60.452	57.977
182.155	0.066	0.072	24.172	113.016	8.193	60.371	4.376
182.221	0.875	0.969	25.458	115.632	112.056	58.254	56.452
183.096	0.604	0.669	25.458	113.720	76.063	57.666	38.570
183.700	0.875	0.969	25.458	111.565	108.115	56.947	55.185
184.575	0.281	0.311	25.458	109.750	34.162	56.374	17.548
184.856	0.875	0.980	26.753	111.160	108.922	54.011	52.923
185.731	0.039	0.044	26.753	109.555	4.785	53.648	2.343
185.770	0.350	0.392	26.753	108.902	42.685	53.260	20.875
186.120	0.875	0.980	26.753	106.857	104.705	52.108	51.059
186.995	0.239	0.268	26.753	104.996	28.155	51.722	13.869
187.234	0.875	0.993	28.214	106.252	105.503	49.026	48.680
188.109	0.431	0.489	28.214	103.790	50.718	48.457	23.679
188.540	0.875	0.993	28.214	101.473	100.758	47.535	47.200
189.415	0.099	0.112	28.214	99.798	11.185	47.592	5.334
189.514	0.875	1.008	29.746	100.855	101.638	45.453	45.806
190.389	0.571	0.658	29.746	98.032	64.504	45.450	29.906
190.960	0.748	0.862	29.746	95.456	82.245	44.876	38.665
191.708	0.875	1.023	31.242	94.460	96.668	42.246	43.234
192.583	0.797	0.932	31.242	90.801	84.638	41.479	38.664
193.380	0.597	0.698	31.242	87.756	61.235	41.182	28.736
193.977	0.875	1.044	33.091	86.609	90.451	38.057	39.745
194.852	0.875	1.044	33.091	82.262	85.912	36.331	37.943
195.727	0.073	0.088	33.091	79.906	7.006	36.284	3.181
195.800	0.623	0.744	33.091	78.176	58.163	35.182	26.176
196.423	0.875	1.062	34.526	75.587	80.276	32.582	34.603
197.298	0.875	1.062	34.526	70.811	75.204	31.879	33.856
198.173	0.047	0.057	34.526	68.296	3.873	32.991	1.871
198.220	0.875	1.062	34.526	65.842	69.927	31.598	33.558
199.095	0.133	0.162	34.526	63.162	10.224	32.817	5.312
199.228	0.875	1.078	35.773	61.112	65.905	30.743	33.154
200.103	0.537	0.661	35.773	57.051	37.739	31.912	21.109
200.640	0.875	1.078	35.773	52.991	57.147	31.691	34.177
201.515	0.875	1.078	35.773	47.958	51.719	31.935	34.440
202.390	0.250	0.308	35.773	44.724	13.754	33.113	10.183
202.639	0.421	0.518	35.773	42.926	22.250	27.301	14.151
203.060	0.206	0.254	35.773	41.341	10.492	26.210	6.652
203.266	0.875	1.087	36.397	38.839	42.218	24.150	26.252
204.141	0.875	1.087	36.397	34.373	37.364	21.273	23.124
205.016	0.464	0.577	36.397	30.955	17.850	19.051	10.986
205.480	0.050	0.062	36.397	29.643	1.841	18.273	1.135
205.530	0.875	1.087	36.397	27.282	29.656	16.915	18.387
206.405	0.875	1.087	36.397	22.816	24.801	14.292	15.536
207.280	0.620	0.770	36.397	19.000	14.636	11.796	9.086
207.900	0.875	1.087	36.397	15.230	16.556	9.556	10.387
208.775	0.875	1.087	36.397	10.855	11.800	6.874	7.472
209.650	0.670	0.832	36.397	6.992	5.821	4.571	3.805
210.320	0.875	1.087	36.397	3.129	3.402	2.320	2.522
211.195	0.188	0.234	36.397	0.471	0.110	0.782	0.183

LEGENDA SIMBOLI

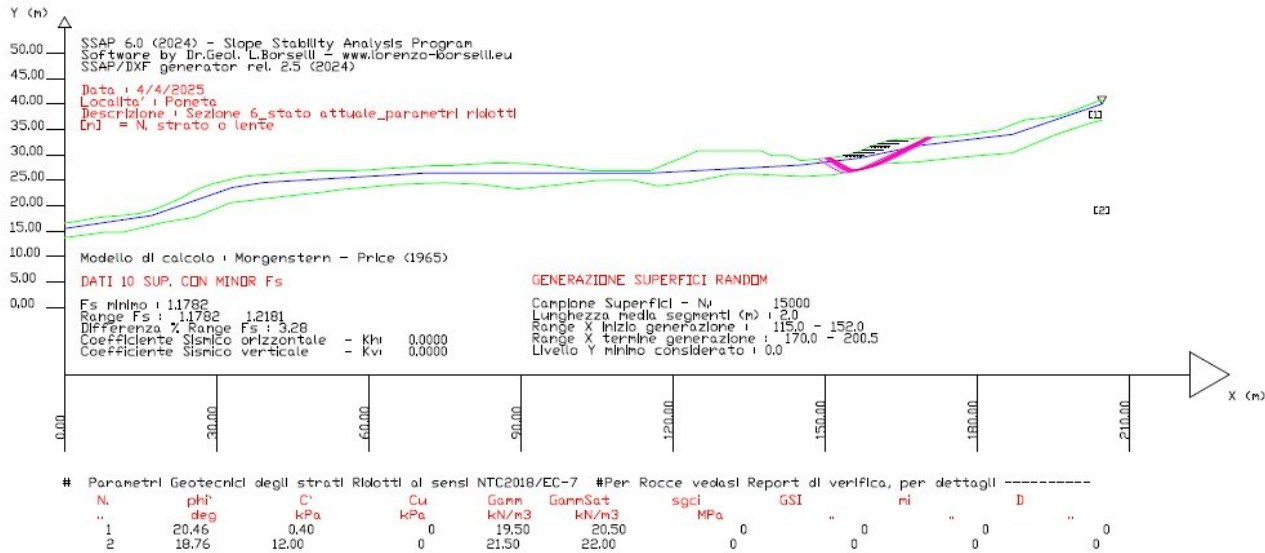
X(m) : Ascissa sinistra concio

dx(m) : Larghezza concio



dl(m) : lunghezza base concio
alpha() : Angolo pendenza base concio
TauStress(kPa) : Sforzo di taglio su base concio
TauF (kN/m) : Forza di taglio su base concio
TauStrength(kPa) : Resistenza al taglio su base concio
TauS (kN/m) : Forza resistente al taglio su base concio

5 SEZIONE 6 STATO ATTUALE - STATICO



Report Generale Risultati di Verifica di stabilita'

SSAP 6.0 - Slope Stability Analysis Program (1991,2024)
WWW.SSAP.EU
Build No. 14533
BY
Dr. Geol. LORENZO BORSELLI
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Ricercatore Associato CNR-IRPI, Perugia , Italia

Ultima Revisione struttura tabelle del report: 21 Maggio 2024

File report: C:\Users\facco\OneDrive\Documents\Lavoro\Lavori STGA\Poneta\Sezioni\Risultati SSAP\Sez6 stato attuale_parametri ridotti.txt
Data: 4/4/2025
Localita': Poneta
Descrizione: Sezione 6 stato attuale_parametri ridotti
Modello pendio: Sezione 6 stato attuale.mod
----- 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	16.56	0.00	13.73	-	-	-	-
2.64	16.96	8.31	14.79	-	-	-	-
5.72	17.53	11.34	14.77	-	-	-	-
8.80	17.87	19.63	16.72	-	-	-	-
11.88	18.13	25.65	17.71	-	-	-	-
14.96	18.56	32.69	20.55	-	-	-	-
17.82	19.31	44.90	22.03	-	-	-	-
20.46	20.42	51.33	22.70	-	-	-	-
23.10	21.57	53.93	23.11	-	-	-	-
25.74	23.08	59.96	23.67	-	-	-	-
29.04	24.27	65.37	24.18	-	-	-	-
32.12	25.02	74.94	24.54	-	-	-	-



35.20	25.74	82.41	24.19	-	-	-	-
38.28	26.01	89.50	23.28	-	-	-	-
41.36	26.28	99.42	24.34	-	-	-	-
44.44	26.51	105.38	25.00	-	-	-	-
47.52	26.72	111.74	25.04	-	-	-	-
50.60	26.87	117.15	23.85	-	-	-	-
57.20	26.87	123.05	24.53	-	-	-	-
60.28	27.07	131.43	26.24	-	-	-	-
63.36	27.28	136.51	26.22	-	-	-	-
66.44	27.50	145.65	25.75	-	-	-	-
69.52	27.71	151.54	26.06	-	-	-	-
72.60	27.87	155.34	26.72	-	-	-	-
76.12	27.87	161.67	28.26	-	-	-	-
79.20	28.12	167.75	28.57	-	-	-	-
82.28	28.30	178.78	29.72	-	-	-	-
85.36	28.40	186.89	30.36	-	-	-	-
88.44	28.36	195.13	33.86	-	-	-	-
91.52	28.23	202.04	36.17	-	-	-	-
94.60	27.97	204.60	36.80	-	-	-	-
97.68	27.63	-	-	-	-	-	-
100.76	27.31	-	-	-	-	-	-
103.84	26.87	-	-	-	-	-	-
115.50	26.87	-	-	-	-	-	-
119.46	28.54	-	-	-	-	-	-
122.10	29.56	-	-	-	-	-	-
124.96	30.87	-	-	-	-	-	-
137.28	30.87	-	-	-	-	-	-
139.48	29.87	-	-	-	-	-	-
143.00	29.87	-	-	-	-	-	-
145.20	28.87	-	-	-	-	-	-
147.62	29.09	-	-	-	-	-	-
153.78	29.81	-	-	-	-	-	-
156.64	30.68	-	-	-	-	-	-
159.28	31.77	-	-	-	-	-	-
162.58	32.89	-	-	-	-	-	-
165.66	33.10	-	-	-	-	-	-
168.74	33.31	-	-	-	-	-	-
171.82	33.52	-	-	-	-	-	-
174.90	33.72	-	-	-	-	-	-
177.98	34.00	-	-	-	-	-	-
181.06	34.43	-	-	-	-	-	-
184.14	34.85	-	-	-	-	-	-
186.78	35.88	-	-	-	-	-	-
189.42	36.87	-	-	-	-	-	-
193.38	37.33	-	-	-	-	-	-
196.46	37.77	-	-	-	-	-	-
199.32	38.77	-	-	-	-	-	-
201.96	39.85	-	-	-	-	-	-
204.60	40.89	-	-	-	-	-	-

SUP FALDA

X Y

0.00	15.53
17.16	18.07
33.05	23.58
39.35	24.59
71.23	26.44
115.72	26.44
145.20	27.97
156.50	29.33
168.51	31.85
186.95	34.03
204.60	39.99
204.60	39.99

----- GESTIONE ACQUIFERI -----

Strati esclusi da acquifero e effetto pressione dei pori:

Esclusione sovraccarico pendio sommerso: NON ATTIVATA

EFFETTO TENSION CRACK IN TESTA RIEMPITO DI ACQUA: ----> DISATTIVATO



In caso di superfici con tension crack in testa, la frattura di tensione puo' venir viene considerata completamente riempita di acqua per la sua intera profondità'. Viene quindi considerato una forza in testa, prodotta dalla pressione idrostatica. La forza applicata ha un effetto destabilizzante aggiuntivo alle altre forze destabilizzanti agenti.

Peso unitario fluido (kN/m³): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A 0
 Coefficiente K 0.000800
 Pressione minima fluidi Uo_Min (kPa) 0.01
 Coefficiente di soprapressione oltre pressione idrostatica 1.00
 Limitazione dissipazione a Pressione Idrostatica = ATTIVA
 STABILITE CONDIZIONI PER LA VERIFICA CON SOVRAPPRESSIONE ACQUIFERI CON DISSIPAZIONE IN DIREZIONE DELLA SUPERFICIE

CALCOLO EFFETTO DI FILTRAZIONE NON ATTIVATO

----- PARAMETRI GEOMECCANICI DI PROGETTO RIDOTTI (ai sensi NTC2018/EC-7) - Riduzione attivata in Tutti gli Strati

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	20.46	0.40	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00
STRATO 2	18.76	12.00	0.00	21.50	22.00	1.805	0.00	0.00	0.00	0.00

LEGENDA: 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/m³)

Gamm_sat _____ Peso di volume terreno immerso (in KN/m³)

STR_IDX _____ Indice di resistenza (usato in solo in 'SNIFF SEARCH') (adimensionale)

---- SOLO Per AMMASSI ROCCIOSI FRATTURATI - Parametri Criterio di Rottura di Hoek et al.(2002)-

sgci _____ Resistenza Compressione Uniassiale Roccia Intatta (in MPa)

GSI _____ Geological Strenght Index ammasso(adimensionale)

mi _____ Indice litologico ammasso(adimensionale)

D _____ Fattore di disturbo ammasso(adimensionale)

NOTA BENE:

FATTORI DI RIDUZIONE NTC2018/EC-7: gammaPHI=1.25, gammaC=1.25 e gammaCu=1.4 - ATTIVATI (Per Tutti gli Strati)

Ai sensi delle NTC2018/EC-7 i parametri di resistenza al taglio caratteristici sono stati ridotti con i fattori riduttivi (tab. 6.2.II delle NTC 2018) per ottenere i parametri di progetto.

Nel caso di ammassi rocciosi fratturati, dai parametri sopra indicati in tabella, relativi al criterio di rottura Hoek et al. (2002), sono stati ricavati i parametri equivalenti geomeccanici CARATTERISTICI locali di resistenza al taglio dell'ammasso roccioso considerato (c',Phi') tali parametri equivalenti sono stati infine RIDOTTI, per ricavare i valori di PROGETTO, tramite i coefficienti parziali riduttivi, di cui alla tab. 6.2.II delle NTC 2018

----- GEOSINTETICI PRESENTI -----

Nota Bene:

PROCEDURA AUTOMATICA CALCOLO MOBILIZZAZIONE FORZA GEOSINTETICI: Disattivata (vedasi manuale SSAP cap.2)

TABELLA GEOSINTETICI

Ngrid	X	Y	L	T	fb	fds	Lws	Lwd	omega
(-)	(m)	(m)	(m)	(kN/m)	(-)	(-)	(m)	(m)	(-)
1	153.5800	29.7800	4.00	40.00	0.75	0.80	0.00	0.00	0.10
2	155.6900	30.3900	4.00	40.00	0.75	0.80	0.00	0.00	0.10
3	157.5000	30.9800	4.00	40.00	0.75	0.80	0.00	0.00	0.10
4	158.8500	31.5900	4.00	40.00	0.75	0.80	0.00	0.00	0.10
5	160.5300	32.1900	4.00	40.00	0.75	0.80	0.00	0.00	0.10
6	162.2900	32.7900	4.00	40.00	0.75	0.80	0.00	0.00	0.10

LEGENDA SIMBOLI

Ngrid : Numero geosintetico

X(m) : Coordinata X Testa

Y(m) : Coordinata Y Testa

L(m) : Lunghezza geosintetico

T(kN/m) : Resistenza a trazione di progetto

fb(-) : Fattore di interazione suolo/geosintetico

fds(-) : Fattore riduzione Direct Sliding



Lws(m) : Lunghezza risolto a sinistra
 Lwd(m) : Lunghezza risolto a destra
 Omega(-) : Coefficiente di mobilitazione T come reazione orizzontale massima Th(kN/m)

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

*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI

MOTORE DI RICERCA: SNIFF RANDOM SEARCH - Borselli (1997,2021)

FILTRAGGIO SUPERFICI : ATTIVATO

COORDINATE X1,X2,Y OSTACOLO : 0.00 0.00 0.00

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

INTERVALLO ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 115.00 152.00

LIVELLO MINIMO CONSIDERATO (Ymin): 0.00

INTERVALLO ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 170.00 200.51

TOTALE SUPERFICI GENERATE : 15000

*NOTA IMPORTANTE: La lunghezza media dei segmenti non viene considerata nel caso di uso del motore di ricerca NEW RANDOM SEARCH

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

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

METODO DI ESPLORAZIONE CAMPO VALORI (lambda0,Fs0) ADOTTATO : A (rapido)

COEFFICIENTE SISMICO UTILIZZATO Kh : 0.0000

COEFFICIENTE SISMICO UTILIZZATO Kv (assunto Positivo): 0.0000

COEFFICIENTE c=Kv/Kh UTILIZZATO : 0.5000

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

X(m)	Y(m)	#Superficie N.1 - #FS_minimo	#Fattore di sicurezza(FS)= 1.1782	#Lambda= 1.2500
150.767	29.458			
151.393	29.103			
151.719	28.918			
151.952	28.786			
152.162	28.667			
152.348	28.562			
152.534	28.456			
152.720	28.351			
152.907	28.245			
153.091	28.141			
153.278	28.035			
153.464	27.930			
153.650	27.824			
153.836	27.719			
154.028	27.610			
154.226	27.498			
154.435	27.380			
154.659	27.253			
154.839	27.161			
155.003	27.091			
155.148	27.044			
155.318	27.007			
155.462	26.989			
155.626	26.987			
155.807	26.999			
156.041	27.028			
156.249	27.056			
156.442	27.085			
156.628	27.115			



156.812	27.147
156.993	27.182
157.177	27.220
157.366	27.261
157.565	27.307
157.753	27.353
157.936	27.401
158.117	27.451
158.300	27.505
158.480	27.562
158.665	27.622
158.854	27.687
159.054	27.760
159.243	27.831
159.426	27.903
159.605	27.978
159.788	28.059
159.966	28.141
160.148	28.228
160.332	28.320
160.525	28.421
160.716	28.520
160.904	28.618
161.092	28.716
161.278	28.812
161.464	28.909
161.650	29.006
161.837	29.102
162.021	29.198
162.208	29.295
162.394	29.392
162.580	29.489
162.766	29.585
162.953	29.682
163.139	29.779
163.325	29.876
163.510	29.972
163.696	30.069
163.882	30.165
164.069	30.262
164.254	30.359
164.441	30.456
164.627	30.552
164.813	30.649
164.998	30.745
165.184	30.842
165.370	30.939
165.557	31.036
165.743	31.132
165.929	31.229
166.115	31.326
166.302	31.422
166.486	31.518
166.673	31.615
166.859	31.712
167.045	31.809
167.231	31.905
167.418	32.002
167.604	32.099
167.790	32.196
167.975	32.292
168.161	32.389
168.347	32.485
168.534	32.582
168.719	32.679
168.930	32.788
169.162	32.909
169.489	33.078
170.068	33.379
170.068	33.401



X(m)	Y(m)	#Superficie N. 2 #Fattore di sicurezza(FS)= 1.1860 #Lambda= 1.2500
150.188	29.390	
150.848	28.948	
151.192	28.717	
151.437	28.553	
151.658	28.404	
151.854	28.273	
152.053	28.140	
152.253	28.006	
152.458	27.869	
152.666	27.729	
152.859	27.606	
153.047	27.492	
153.230	27.389	
153.421	27.288	
153.607	27.196	
153.806	27.107	
154.020	27.018	
154.269	26.921	
154.467	26.854	
154.645	26.807	
154.804	26.779	
154.984	26.763	
155.141	26.763	
155.314	26.778	
155.503	26.809	
155.739	26.859	
155.957	26.906	
156.164	26.951	
156.364	26.996	
156.560	27.040	
156.755	27.084	
156.950	27.129	
157.147	27.175	
157.343	27.221	
157.540	27.268	
157.736	27.314	
157.933	27.361	
158.128	27.408	
158.327	27.456	
158.526	27.504	
158.730	27.553	
158.939	27.603	
159.132	27.655	
159.320	27.711	
159.503	27.771	
159.695	27.839	
159.878	27.910	
160.068	27.989	
160.262	28.076	
160.473	28.175	
160.676	28.273	
160.874	28.369	
161.070	28.465	
161.265	28.562	
161.459	28.660	
161.654	28.759	
161.849	28.860	
162.047	28.964	
162.245	29.067	
162.441	29.171	
162.639	29.274	
162.834	29.376	
163.031	29.480	
163.227	29.582	
163.423	29.685	
163.618	29.787	
163.814	29.890	
164.010	29.993	
164.207	30.096	



164.403	30.198
164.600	30.302
164.796	30.404
164.992	30.507
165.187	30.609
165.383	30.712
165.579	30.815
165.776	30.918
165.971	31.021
166.168	31.124
166.364	31.226
166.561	31.329
166.755	31.431
166.952	31.534
167.148	31.637
167.344	31.740
167.540	31.843
167.737	31.946
167.933	32.048
168.129	32.151
168.324	32.253
168.520	32.356
168.716	32.459
168.913	32.562
169.109	32.665
169.330	32.781
169.575	32.909
169.919	33.089
170.517	33.403
170.517	33.431

X(m)	Y(m)	#Superficie N. 3	#Fattore di sicurezza(FS)= 1.1995	#Lambda= 1.2500
150.662	29.446			
151.326	28.986			
151.671	28.747			
151.918	28.577			
152.140	28.423			
152.337	28.287			
152.537	28.148			
152.740	28.008			
152.949	27.863			
153.164	27.714			
153.357	27.588			
153.543	27.476			
153.721	27.378			
153.911	27.283			
154.091	27.202			
154.285	27.126			
154.497	27.053			
154.749	26.974			
154.952	26.921			
155.135	26.884			
155.299	26.863			
155.483	26.855			
155.645	26.860			
155.823	26.878			
156.014	26.911			
156.246	26.961			
156.463	27.009			
156.669	27.055			
156.869	27.101			
157.065	27.147			
157.261	27.193			
157.457	27.240			
157.653	27.288			
157.851	27.337			
158.050	27.387			
158.247	27.436			
158.445	27.485			
158.642	27.534			



158.840	27.584
159.039	27.634
159.240	27.684
159.442	27.734
159.637	27.786
159.831	27.839
160.022	27.894
160.217	27.953
160.409	28.014
160.604	28.078
160.802	28.146
161.009	28.219
161.209	28.292
161.405	28.365
161.598	28.440
161.793	28.518
161.987	28.597
162.182	28.680
162.381	28.766
162.588	28.857
162.786	28.947
162.982	29.039
163.174	29.132
163.369	29.228
163.561	29.326
163.755	29.427
163.951	29.532
164.152	29.642
164.353	29.752
164.551	29.860
164.750	29.969
164.946	30.077
165.144	30.185
165.341	30.293
165.538	30.401
165.734	30.508
165.931	30.616
166.128	30.724
166.326	30.832
166.523	30.939
166.720	31.048
166.917	31.156
167.115	31.264
167.310	31.371
167.507	31.479
167.704	31.586
167.902	31.695
168.099	31.802
168.296	31.911
168.493	32.018
168.691	32.126
168.886	32.233
169.084	32.341
169.281	32.449
169.478	32.558
169.675	32.665
169.872	32.773
170.069	32.881
170.266	32.989
170.463	33.097
170.660	33.205
170.857	33.313
171.054	33.421
171.251	33.529
171.448	33.637
171.645	33.745
171.842	33.853
172.039	33.961
172.236	34.069
172.433	34.177
172.630	34.285
172.827	34.393
173.024	34.501
173.221	34.609
173.418	34.717
173.615	34.825
173.812	34.933
174.009	35.041
174.206	35.149
174.403	35.257
174.600	35.365
174.797	35.473
174.994	35.581
175.191	35.689
175.388	35.797
175.585	35.905
175.782	36.013
175.979	36.121
176.176	36.229
176.373	36.337
176.570	36.445
176.767	36.553
176.964	36.661
177.161	36.769
177.358	36.877
177.555	36.985
177.752	37.093
177.949	37.201
178.146	37.309
178.343	37.417
178.540	37.525
178.737	37.633
178.934	37.741
179.131	37.849
179.328	37.957
179.525	38.065
179.722	38.173
179.919	38.281
180.116	38.389
180.313	38.497
180.510	38.605
180.707	38.713
180.904	38.821
181.101	38.929
181.298	39.037
181.495	39.145
181.692	39.253
181.889	39.361
182.086	39.469
182.283	39.577
182.480	39.685
182.677	39.793
182.874	39.901
183.071	40.009
183.268	40.117
183.465	40.225
183.662	40.333
183.859	40.441
184.056	40.549
184.253	40.657
184.450	40.765
184.647	40.873
184.844	40.981
185.041	41.089
185.238	41.197
185.435	41.305
185.632	41.413
185.829	41.521
186.026	41.629
186.223	41.737
186.420	41.845
186.617	41.953
186.814	42.061
187.011	42.169
187.208	42.277
187.405	42.385
187.602	42.493
187.799	42.601
187.996	42.709
188.193	42.817
188.390	42.925
188.587	43.033
188.784	43.141
188.981	43.249
189.178	43.357
189.375	43.465
189.572	43.573
189.769	43.681
189.966	43.789
190.163	43.897
190.360	44.005
190.557	44.113
190.754	44.221
190.951	44.329
191.148	44.437
191.345	44.545
191.542	44.653
191.739	44.761
191.936	44.869
192.133	44.977
192.330	45.085
192.527	45.193
192.724	45.301
192.921	45.409
193.118	45.517
193.315	45.625
193.512	45.733
193.709	45.841
193.906	45.949
194.103	46.057
194.300	46.165
194.497	46.273
194.694	46.381
194.891	46.489
195.088	46.597
195.285	46.705
195.482	46.813
195.679	46.921
195.876	47.029
196.073	47.137
196.270	47.245
196.467	47.353
196.664	47.461
196.861	47.569
197.058	47.677
197.255	47.785
197.452	47.893
197.649	48.001
197.846	48.109
198.043	48.217
198.240	48.325
198.437	48.433
198.634	48.541
198.831	48.649
199.028	48.757
199.225	48.865
199.422	48.973
199.619	49.081
199.816	49.189
200.013	49.297
200.210	49.405
200.407	49.513
200.604	49.621
200.801	49.729
201.000	49.837
201.197	49.945
201.394	50.053
201.591	50.161
201.788	50.269
201.985	50.377
202.182	50.485
202.379	50.593
202.576	50.701
202.773	50.809
202.970	50.917
203.167	51.025
203.364	51.133
203.561	51.241
203.758	51.349
203.955	51.457
204.152	51.565
204.349	51.673
204.546	51.781
204.743	51.889
204.940	51.997
205.137	52.105
205.334	52.213
205.531	52.321
205.728	52.429
205.925	52.537
206.122	52.645
206.319	52.753
206.516	52.861
206.713	52.969
206.910	53.077
207.107	53.185
207.304	53.293
207.501	53.401
207.698	53.509
207.895	53.617
208.092	53.725
208.289	53.833
208.486	53.941
208.683	54.049
208.880	54.157
209.077	54.265
209.274	54.373
209.471	54.481
209.668	54.589
209.865	54.697
210.062	54.805
210.259	54.913
210.456	55.021
210.653	55.129
210.850	55.237
211.047	55.345
211.244	55.453
211.441	55.561
211.638	55.669
211.835	55.777
212.032	55.885
212.229	55.993
212.426	56.101
212.623	56.209
212.820	56.317
213.017	56.425
213.214	56.533
213.411	56.641
213.608	56.749
213.805	56.857
214.002	56.965
214.199	57.073
214.396	57.181
214.593	57.289
214.790	57.397
214.987	57.505
215.184	57.613
215.381	57.721
215.578	57.829
215.775	57.937
215.972	58.045
216.169	58.153
216.366	58.261
216.563	58.369
216.760	58.477
216.957	58.585
217.154	58.693
217.351	58.801
217.548	58.909
217.745	59.017
217.942	59.125
218.139	59.233
218.336	59.341
218.533	59.449
218.730	59.557
218.927	59.665
219.124	59.773
219.321	59.881
219.518	59.989
219.715	60.097
219.912	60.205
220.109	60.313
220.306	60.421
220.503	60.529
220.700	60.637
220.897	60.745
221.094	60.853
221.291	60.961
221.488	61.069
221.685	61.177
221.882	61.285
222.079	61.393
222.276	61.501
222.473	61.609
222.670	61.717
222.867	61.825
223.064	61.933
223.261	62.041
223.458	62.149
223.655	62.257
223.852	62.365
224.049	62.473
224.246	62.581
224.443	62.689
224.640	62.797
224.837	62.905
225.034	63.013
225.231	63.121
225.428	63.229
225.625	63.337
225.822	63.445
226.019	63.553
226.216	63.661
226.413	63.769
226.610	63.877
226.807	63.985
227.004	64.093
227.201	64.201
227.398	64.309
227.595	64.417
227.792	64.525
227.989	64.633
228.186	64.741
228.383	64.849
228.580	64.957
228.777	65.065
228.974	65.173
229.171	65.281
229.368	65.389
229.565	65.497
229.762	65.605
229.959	65.713
230.156	65.821
230.353	65.929
230.550	66.037
230.747	66.145
230.944	66.253
231.141	66.361
231.338	66.469
231.535	66.577
231.732	66.685
231.929	66.793
232.126	66.901
232.323	67.009
232.520	67.117
232.717	67.225
232.914	67.333
233.111	67.441
233.308	67.549
233.505	67.657
233.702	67.765
233.899	67.873
234.096	67.981
234.293	68.089
234.490	68.197
234.687	68.305
234.884	68.413
235.081	68.521
235.278	68.629
235.475	68.737
235.672	68.845
235.869	68.953
236.066	69.061
236.263	69.169
236.460	69.277
236.657	69.385
236.854	69.493
237.051	69.601
237.248	69.709
237.445	69.817
237.642	69.925
237.839	70.033
238.036	70.141
238.233	70.249
238.430	70.357
238.627	70.465
238.824	70.573
239.021	70.681
239.218	70.789
239.415	70.897
239.612	71.005
239.809	71.113
240.006	71.221
240.203	71.329
240.400	71.437
240.597	71.545
240.794	71.653
240.991	71.761
241.188	71.869
241.385	71.977
241.582	72.085
241.779	72.193
241.976	72.301
242.173	72.409
242.370	72.517
242.567	72.625
242.764	72.733
242.961	72.841
243.158	72.949
243.355	73.057
243.552	73.165
243.749	73.273
243.946	73.381
244.143	73.489
244.340	73.597
244.537	73.705
244.734	73.813
244.931	73.921
245.128	

152.121	27.967
152.328	27.825
152.541	27.677
152.730	27.554
152.911	27.447
153.082	27.355
153.267	27.266
153.440	27.194
153.627	27.127
153.828	27.066
154.070	27.002
154.271	26.956
154.456	26.922
154.627	26.900
154.811	26.887
154.981	26.884
155.164	26.891
155.360	26.908
155.592	26.937
155.796	26.967
155.988	27.001
156.170	27.039
156.358	27.084
156.538	27.133
156.725	27.190
156.918	27.255
157.131	27.331
157.331	27.406
157.524	27.481
157.714	27.557
157.905	27.636
158.092	27.717
158.282	27.801
158.474	27.889
158.672	27.983
158.869	28.076
159.064	28.168
159.258	28.259
159.451	28.350
159.645	28.442
159.838	28.533
160.031	28.624
160.223	28.715
160.417	28.806
160.610	28.897
160.804	28.988
160.996	29.079
161.190	29.171
161.383	29.262
161.577	29.353
161.768	29.444
161.962	29.535
162.155	29.626
162.349	29.717
162.541	29.808
162.735	29.900
162.928	29.991
163.122	30.082
163.314	30.172
163.507	30.264
163.700	30.355
163.894	30.446
164.087	30.537
164.281	30.629
164.474	30.720
164.667	30.811
164.859	30.901
165.052	30.993
165.245	31.084
165.439	31.175
165.632	31.266

165.826	31.358
166.019	31.449
166.212	31.540
166.404	31.630
166.597	31.722
166.791	31.813
166.984	31.904
167.177	31.995
167.371	32.087
167.564	32.178
167.758	32.269
167.949	32.359
168.143	32.451
168.336	32.542
168.530	32.633
168.722	32.724
168.941	32.827
169.182	32.941
169.521	33.101
170.113	33.380
170.113	33.404

X(m)	Y(m)	#Superficie N. 5 #Fattore di sicurezza(FS)= 1.2060 #Lambda= 1.2500
148.643	29.210	
149.343	28.770	
149.708	28.541	
149.969	28.377	
150.204	28.230	
150.411	28.100	
150.622	27.967	
150.833	27.835	
151.049	27.700	
151.267	27.563	
151.472	27.439	
151.674	27.323	
151.871	27.215	
152.075	27.109	
152.277	27.011	
152.489	26.913	
152.717	26.814	
152.977	26.708	
153.185	26.633	
153.373	26.578	
153.542	26.544	
153.734	26.522	
153.901	26.517	
154.087	26.528	
154.288	26.554	
154.539	26.600	
154.770	26.643	
154.988	26.685	
155.199	26.727	
155.406	26.769	
155.612	26.813	
155.820	26.858	
156.030	26.905	
156.245	26.954	
156.453	27.003	
156.660	27.054	
156.864	27.107	
157.071	27.161	
157.275	27.218	
157.482	27.277	
157.693	27.338	
157.909	27.404	
158.119	27.469	
158.325	27.536	
158.529	27.604	
158.735	27.675	
158.939	27.747	



159.144	27.823
159.351	27.901
159.563	27.983
159.774	28.066
159.984	28.147
160.194	28.228
160.401	28.309
160.611	28.391
160.821	28.472
161.034	28.555
161.249	28.638
161.455	28.722
161.658	28.807
161.860	28.895
162.065	28.989
162.266	29.084
162.471	29.183
162.678	29.288
162.893	29.400
163.106	29.511
163.315	29.621
163.524	29.732
163.731	29.842
163.938	29.953
164.146	30.065
164.354	30.178
164.562	30.292
164.771	30.406
164.979	30.519
165.189	30.634
165.396	30.747
165.605	30.861
165.813	30.974
166.021	31.088
166.228	31.201
166.436	31.314
166.645	31.428
166.853	31.542
167.061	31.655
167.270	31.769
167.478	31.883
167.686	31.996
167.893	32.109
168.101	32.223
168.310	32.336
168.518	32.450
168.726	32.564
168.961	32.692
169.221	32.834
169.587	33.033
170.206	33.371
170.206	33.410

X(m)	Y(m)	#Superficie N. 6 #Fattore di sicurezza(FS)= 1.2073 #Lambda= 1.2500
151.037	29.489	
151.691	29.093	
152.032	28.886	
152.275	28.738	
152.494	28.605	
152.688	28.488	
152.884	28.369	
153.081	28.249	
153.280	28.129	
153.481	28.007	
153.673	27.894	
153.863	27.786	
154.050	27.683	
154.241	27.583	
154.433	27.486	
154.634	27.388	



154.849	27.289
155.091	27.180
155.283	27.105
155.457	27.049
155.611	27.015
155.789	26.993
155.941	26.988
156.112	26.999
156.299	27.025
156.536	27.071
156.754	27.115
156.958	27.156
157.156	27.198
157.350	27.239
157.544	27.281
157.741	27.325
157.943	27.370
158.153	27.418
158.345	27.468
158.531	27.521
158.712	27.579
158.901	27.646
159.082	27.715
159.268	27.793
159.459	27.878
159.666	27.977
159.869	28.073
160.067	28.167
160.264	28.260
160.458	28.352
160.653	28.445
160.847	28.537
161.041	28.630
161.234	28.721
161.429	28.814
161.623	28.906
161.818	28.999
162.012	29.091
162.207	29.184
162.401	29.276
162.595	29.369
162.788	29.460
162.983	29.553
163.177	29.645
163.372	29.738
163.566	29.830
163.761	29.923
163.955	30.015
164.149	30.108
164.342	30.200
164.537	30.292
164.731	30.384
164.926	30.477
165.120	30.569
165.315	30.662
165.509	30.755
165.703	30.847
165.896	30.939
166.091	31.031
166.285	31.124
166.480	31.216
166.674	31.309
166.868	31.401
167.063	31.494
167.257	31.586
167.450	31.678
167.644	31.771
167.839	31.863
168.034	31.956
168.227	32.048
168.422	32.141



168.617	32.233
168.811	32.326
169.004	32.417
169.198	32.510
169.393	32.602
169.588	32.695
169.781	32.787
170.001	32.892
170.244	33.007
170.584	33.169
171.179	33.452
171.179	33.476

X(m)	Y(m)	#Superficie N. 7	#Fattore di sicurezza(FS)= 1.2086	#Lambda= 1.2500
150.566	29.434			
151.213	29.014			
151.550	28.796			
151.791	28.640			
152.008	28.499			
152.200	28.375			
152.395	28.248			
152.591	28.121			
152.791	27.991			
152.995	27.859			
153.184	27.742			
153.369	27.633			
153.549	27.534			
153.736	27.438			
153.919	27.350			
154.113	27.264			
154.322	27.179			
154.563	27.086			
154.757	27.021			
154.933	26.974			
155.091	26.945			
155.269	26.926			
155.426	26.923			
155.598	26.933			
155.784	26.957			
156.014	26.997			
156.226	27.036			
156.427	27.073			
156.622	27.110			
156.813	27.148			
157.004	27.187			
157.195	27.227			
157.387	27.268			
157.582	27.310			
157.775	27.353			
157.968	27.396			
158.160	27.440			
158.351	27.483			
158.545	27.527			
158.740	27.573			
158.939	27.619			
159.142	27.667			
159.332	27.716			
159.518	27.769			
159.699	27.824			
159.888	27.887			
160.069	27.953			
160.256	28.024			
160.447	28.103			
160.651	28.191			
160.849	28.277			
161.044	28.363			
161.236	28.448			
161.427	28.535			
161.618	28.622			
161.809	28.710			



162.001	28.799
162.194	28.890
162.388	28.981
162.580	29.071
162.774	29.162
162.965	29.252
163.158	29.343
163.351	29.433
163.543	29.524
163.734	29.613
163.926	29.704
164.119	29.794
164.312	29.885
164.503	29.975
164.696	30.066
164.889	30.156
165.081	30.247
165.272	30.336
165.464	30.427
165.657	30.517
165.850	30.608
166.041	30.698
166.235	30.789
166.428	30.880
166.622	30.971
166.815	31.062
167.007	31.153
167.198	31.246
167.388	31.339
167.579	31.433
167.771	31.530
167.966	31.629
168.165	31.732
168.372	31.840
168.562	31.945
168.748	32.055
168.927	32.168
169.115	32.294
169.317	32.439
169.549	32.616
169.884	32.883
170.559	33.434

X(m)	Y(m)	#Superficie N. 8 #Fattore di sicurezza(FS)= 1.2121 #Lambda= 1.2500
150.278	29.401	
150.949	29.020	
151.298	28.822	
151.547	28.681	
151.773	28.554	
151.971	28.441	
152.171	28.328	
152.371	28.215	
152.570	28.102	
152.768	27.990	
152.968	27.877	
153.167	27.764	
153.367	27.650	
153.566	27.538	
153.773	27.420	
153.987	27.300	
154.215	27.170	
154.462	27.030	
154.654	26.933	
154.825	26.863	
154.974	26.820	
155.151	26.790	
155.298	26.783	
155.469	26.795	
155.661	26.828	
155.918	26.886	



156.145	26.941
156.356	26.993
156.557	27.045
156.754	27.099
156.949	27.154
157.147	27.212
157.347	27.273
157.555	27.339
157.756	27.404
157.955	27.470
158.151	27.537
158.349	27.606
158.545	27.676
158.742	27.748
158.940	27.823
159.142	27.900
159.344	27.978
159.545	28.055
159.745	28.132
159.944	28.208
160.144	28.285
160.343	28.361
160.543	28.438
160.741	28.514
160.940	28.591
161.140	28.667
161.340	28.744
161.539	28.820
161.739	28.897
161.939	28.974
162.141	29.051
162.342	29.129
162.541	29.206
162.738	29.285
162.935	29.365
163.133	29.447
163.330	29.530
163.529	29.615
163.730	29.703
163.936	29.794
164.136	29.885
164.333	29.976
164.529	30.069
164.727	30.165
164.922	30.262
165.119	30.362
165.317	30.464
165.520	30.571
165.722	30.678
165.923	30.784
166.123	30.889
166.322	30.994
166.522	31.100
166.721	31.205
166.921	31.310
167.119	31.414
167.318	31.520
167.518	31.625
167.718	31.730
167.917	31.835
168.117	31.941
168.316	32.046
168.516	32.151
168.713	32.255
168.913	32.361
169.112	32.466
169.312	32.571
169.511	32.676
169.736	32.795
169.986	32.926
170.335	33.111



170.939 33.429
 170.939 33.460

X(m) Y(m) #Superficie N. 9 #Fattore di sicurezza(FS)= 1.2149 #Lambda= 1.2500
 150.894 29.473
 151.530 29.125
 151.861 28.944
 152.097 28.815
 152.310 28.699
 152.498 28.596
 152.687 28.492
 152.876 28.389
 153.065 28.286
 153.252 28.183
 153.441 28.080
 153.630 27.977
 153.819 27.873
 154.008 27.770
 154.202 27.664
 154.401 27.555
 154.611 27.440
 154.835 27.318
 155.017 27.228
 155.185 27.158
 155.337 27.109
 155.511 27.068
 155.662 27.047
 155.831 27.038
 156.017 27.043
 156.254 27.062
 156.462 27.082
 156.656 27.104
 156.840 27.130
 157.025 27.159
 157.206 27.192
 157.392 27.230
 157.585 27.273
 157.794 27.323
 157.985 27.373
 158.170 27.427
 158.349 27.483
 158.534 27.545
 158.712 27.611
 158.895 27.682
 159.082 27.760
 159.281 27.847
 159.476 27.933
 159.668 28.018
 159.857 28.103
 160.045 28.187
 160.233 28.272
 160.421 28.358
 160.610 28.444
 160.799 28.531
 160.988 28.619
 161.177 28.706
 161.367 28.793
 161.555 28.880
 161.744 28.967
 161.933 29.054
 162.122 29.141
 162.309 29.228
 162.498 29.315
 162.687 29.402
 162.876 29.489
 163.064 29.576
 163.254 29.663
 163.442 29.750
 163.631 29.837
 163.819 29.924



164.008	30.011
164.196	30.098
164.386	30.185
164.574	30.272
164.764	30.359
164.953	30.447
165.144	30.535
165.335	30.623
165.523	30.711
165.710	30.800
165.896	30.890
166.083	30.983
166.269	31.077
166.456	31.173
166.645	31.271
166.838	31.372
167.028	31.474
167.217	31.575
167.405	31.677
167.592	31.780
167.780	31.883
167.968	31.988
168.156	32.093
168.345	32.201
168.535	32.308
168.724	32.415
168.914	32.523
169.102	32.629
169.315	32.750
169.551	32.884
169.882	33.071
170.467	33.402
170.467	33.428

X(m)	Y(m)	#Superficie N.10	#Fattore di sicurezza(FS)= 1.2181	#Lambda= 1.2500
149.929	29.360			
150.597	28.969			
150.944	28.765			
151.192	28.620			
151.416	28.488			
151.613	28.372			
151.813	28.255			
152.012	28.139			
152.213	28.021			
152.414	27.903			
152.611	27.789			
152.807	27.678			
153.002	27.570			
153.198	27.462			
153.399	27.354			
153.607	27.245			
153.829	27.130			
154.073	27.006			
154.266	26.919			
154.441	26.854			
154.596	26.813			
154.776	26.783			
154.930	26.773			
155.107	26.780			
155.304	26.805			
155.562	26.850			
155.782	26.894			
155.984	26.940			
156.173	26.989			
156.366	27.046			
156.551	27.106			
156.742	27.174			
156.938	27.250			
157.152	27.338			
157.358	27.424			



157.558	27.509
157.757	27.594
157.954	27.680
158.150	27.766
158.347	27.854
158.544	27.944
158.744	28.035
158.943	28.126
159.142	28.217
159.342	28.308
159.539	28.399
159.738	28.490
159.936	28.581
160.135	28.671
160.331	28.761
160.530	28.852
160.728	28.943
160.927	29.034
161.124	29.124
161.323	29.215
161.521	29.306
161.720	29.397
161.917	29.487
162.115	29.578
162.313	29.668
162.512	29.759
162.710	29.850
162.908	29.941
163.107	30.031
163.305	30.122
163.502	30.212
163.700	30.303
163.898	30.394
164.097	30.485
164.295	30.575
164.494	30.666
164.692	30.757
164.890	30.848
165.087	30.938
165.285	31.028
165.483	31.119
165.682	31.210
165.880	31.301
166.079	31.392
166.277	31.482
166.475	31.573
166.672	31.663
166.870	31.754
167.069	31.845
167.267	31.936
167.465	32.026
167.664	32.117
167.862	32.208
168.060	32.299
168.257	32.389
168.456	32.480
168.654	32.570
168.853	32.661
169.050	32.752
169.274	32.854
169.522	32.968
169.869	33.127
170.471	33.402
170.471	33.428

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

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR F_s *

Analisi Deficit in riferimento a $F_s(\text{progetto}) = 1.200$

Sup N.	F_s	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
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1	1.178	258.8	219.7	-4.8	Deficit
2	1.186	283.2	238.8	-3.4	Deficit
3	1.200	293.8	244.9	-0.1	Deficit
4	1.203	260.1	216.2	0.7	Surplus
5	1.206	299.2	248.1	1.5	Surplus
6	1.207	272.4	225.7	1.6	Surplus
7	1.209	289.6	239.6	2.1	Surplus
8	1.212	285.7	235.7	2.9	Surplus
9	1.215	271.2	223.2	3.3	Surplus
10	1.218	265.4	217.8	3.9	Surplus

Esito analisi: DEFICIT di RESISTENZA!

Valore massimo di DEFICIT di RESISTENZA(kN/m): -4.8

Note: FTR --> Forza totale Resistente lungo la superficie di scivolamento

FTA --> Forza totale Agente lungo la superficie di scivolamento

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

TABELLA PARAMETRI CONCI DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (°)	W (kN/m)	ru (-)	U (kPa)	phi' (°)	(c',Cu) (kPa)
150.767	0.290	-29.53	0.56	0.00	0.00	0.00	0.40
151.056	0.290	-29.53	1.68	0.00	0.00	0.00	0.40
151.346	0.047	-29.53	0.38	0.00	0.00	0.00	0.40
151.393	0.147	-29.53	1.37	0.00	0.00	0.00	0.40
151.540	0.179	-29.53	2.06	0.00	0.00	0.00	0.40
151.719	0.233	-29.53	3.31	0.00	0.00	0.00	0.40
151.952	0.005	-29.53	0.08	0.00	0.00	0.00	0.40
151.957	0.205	-29.53	3.53	0.00	0.00	0.00	0.40
152.162	0.186	-29.53	3.72	0.09	1.96	20.46	0.40
152.348	0.187	-29.53	4.23	0.12	2.83	20.46	0.40
152.534	0.186	-29.53	4.70	0.15	3.91	20.46	0.40
152.720	0.186	-29.53	5.19	0.18	5.24	20.46	0.40
152.907	0.185	-29.53	5.63	0.21	6.63	20.46	0.40
153.091	0.186	-29.53	6.16	0.24	8.01	20.46	0.40
153.278	0.186	-29.53	6.64	0.26	9.32	20.46	0.40
153.464	0.187	-29.53	7.15	0.27	10.49	20.46	0.40
153.650	0.130	-29.53	5.25	0.28	11.64	20.46	0.40
153.780	0.056	-29.53	2.35	0.29	12.43	20.46	0.40
153.836	0.192	-29.53	8.48	0.29	12.78	20.46	0.40
154.028	0.197	-29.53	9.38	0.30	14.02	20.46	0.40
154.226	0.209	-29.53	10.70	0.31	15.38	20.46	0.40
154.435	0.224	-29.53	12.30	0.31	16.87	20.46	0.40
154.659	0.180	-26.97	10.51	0.32	18.31	20.46	0.40
154.839	0.164	-23.13	10.00	0.32	19.28	20.46	0.40
155.003	0.146	-17.93	9.22	0.32	20.03	20.46	0.40
155.148	0.169	-12.50	11.02	0.32	20.48	20.46	0.40
155.318	0.022	-6.81	1.47	0.32	20.89	20.46	0.40
155.340	0.122	-6.81	8.13	0.32	20.94	20.46	0.40
155.462	0.164	-0.84	11.08	0.32	21.18	20.46	0.40
155.626	0.181	3.86	12.44	0.32	21.43	20.46	0.40
155.807	0.234	7.02	16.26	0.32	21.64	20.46	0.40
156.041	0.208	7.65	14.63	0.31	21.83	20.46	0.40
156.249	0.194	8.41	13.72	0.31	21.93	20.46	0.40
156.442	0.058	9.20	4.10	0.31	21.98	20.46	0.40
156.500	0.128	9.20	9.16	0.31	22.00	20.46	0.40
156.628	0.012	10.04	0.86	0.31	22.02	20.46	0.40
156.640	0.172	10.04	12.39	0.31	22.02	20.46	0.40
156.812	0.181	10.81	13.21	0.30	22.03	20.46	0.40
156.993	0.184	11.58	13.59	0.30	22.03	20.46	0.40
157.177	0.189	12.32	14.05	0.30	22.02	20.46	0.40
157.366	0.199	13.00	14.93	0.29	21.99	20.46	0.40
157.565	0.188	13.80	14.24	0.29	21.92	20.46	0.40
157.753	0.184	14.66	14.02	0.29	21.82	20.46	0.40



157.936	0.180	15.56	13.84	0.28	21.69	20.46	0.40
158.117	0.183	16.45	14.17	0.28	21.53	20.46	0.40
158.300	0.180	17.33	14.01	0.28	21.33	20.46	0.40
158.480	0.184	18.20	14.36	0.27	21.11	20.46	0.40
158.665	0.189	19.02	14.80	0.27	20.88	20.46	0.40
158.854	0.201	19.77	15.73	0.26	20.62	20.46	0.40
159.054	0.188	20.69	14.77	0.26	20.33	20.46	0.40
159.243	0.037	21.68	2.95	0.26	20.04	20.46	0.40
159.280	0.146	21.68	11.44	0.26	19.98	20.46	0.40
159.426	0.179	22.71	14.02	0.25	19.73	20.46	0.40
159.605	0.183	23.73	14.26	0.25	19.38	20.46	0.40
159.788	0.178	24.71	13.82	0.25	18.98	20.46	0.40
159.966	0.181	25.69	13.95	0.24	18.54	20.46	0.40
160.148	0.184	26.61	14.06	0.24	18.05	20.46	0.40
160.332	0.193	27.46	14.60	0.23	17.49	20.46	0.40
160.525	0.191	27.46	14.32	0.23	16.83	20.46	0.40
160.716	0.188	27.46	13.98	0.22	16.18	20.46	0.40
160.904	0.188	27.46	13.81	0.21	15.57	20.46	0.40
161.092	0.186	27.46	13.51	0.21	14.99	20.46	0.40
161.278	0.187	27.46	13.46	0.20	14.45	20.46	0.40
161.464	0.186	27.46	13.27	0.20	13.91	20.46	0.40
161.650	0.020	27.46	1.38	0.19	13.39	20.46	0.40
161.670	0.167	27.46	11.77	0.19	13.34	20.46	0.40
161.837	0.185	27.46	12.92	0.18	12.89	20.46	0.40
162.021	0.186	27.46	12.89	0.18	12.39	20.46	0.40
162.208	0.186	27.46	12.75	0.17	11.89	20.46	0.40
162.394	0.186	27.46	12.63	0.17	11.38	20.46	0.40
162.580	0.000	27.46	0.03	0.16	10.86	20.46	0.40
162.580	0.186	27.46	12.36	0.16	10.86	20.46	0.40
162.766	0.187	27.46	12.12	0.16	10.31	20.46	0.40
162.953	0.186	27.46	11.76	0.15	9.73	20.46	0.40
163.139	0.186	27.46	11.46	0.15	9.16	20.46	0.40
163.325	0.185	27.46	11.05	0.14	8.57	20.46	0.40
163.510	0.186	27.46	10.83	0.13	7.95	20.46	0.40
163.696	0.186	27.46	10.50	0.13	7.29	20.46	0.40
163.882	0.187	27.46	10.22	0.12	6.66	20.46	0.40
164.069	0.186	27.46	9.84	0.11	6.07	20.46	0.40
164.254	0.187	27.46	9.59	0.11	5.48	20.46	0.40
164.441	0.186	27.46	9.23	0.10	4.89	20.46	0.40
164.627	0.186	27.46	8.93	0.09	4.24	20.46	0.40
164.813	0.185	27.46	8.54	0.08	3.63	20.46	0.40
164.998	0.186	27.46	8.30	0.07	3.05	20.46	0.40
165.184	0.186	27.46	7.97	0.06	2.47	20.46	0.40
165.370	0.187	27.46	7.69	0.05	1.96	20.46	0.40
165.557	0.103	27.46	4.10	0.04	1.52	20.46	0.40
165.660	0.083	27.46	3.23	0.03	1.31	20.46	0.40
165.743	0.187	27.46	7.05	0.03	1.16	20.46	0.40
165.929	0.186	27.46	6.71	0.02	0.84	20.46	0.40
166.115	0.071	27.46	2.47	0.00	0.00	20.46	0.40
166.186	0.115	27.46	3.93	0.00	0.00	20.46	0.40
166.302	0.185	27.46	6.05	0.00	0.00	20.46	0.40
166.486	0.186	27.46	5.80	0.00	0.00	20.46	0.40
166.673	0.186	27.46	5.48	0.00	0.00	20.46	0.40
166.859	0.187	27.46	5.20	0.00	0.00	20.46	0.40
167.045	0.186	27.46	4.86	0.00	0.00	20.46	0.40
167.231	0.187	27.46	4.59	0.00	0.00	20.46	0.40
167.418	0.186	27.46	4.26	0.00	0.00	20.46	0.40
167.604	0.146	27.46	3.14	0.00	0.00	20.46	0.40
167.750	0.040	27.46	0.83	0.00	0.00	20.46	0.40
167.790	0.185	27.46	3.63	0.00	0.00	20.46	0.40
167.975	0.186	27.46	3.36	0.00	0.00	20.46	0.40
168.161	0.186	27.46	3.05	0.00	0.00	20.46	0.40
168.347	0.163	27.46	2.42	0.00	0.00	20.46	0.40
168.510	0.024	27.46	0.33	0.00	0.00	20.46	0.40
168.534	0.186	27.46	2.43	0.00	0.00	20.46	0.40
168.719	0.021	27.46	0.25	0.00	0.00	20.46	0.40
168.740	0.190	27.46	2.14	0.00	0.00	20.46	0.40
168.930	0.233	27.46	2.19	0.00	0.00	20.46	0.40
169.162	0.290	27.46	2.06	0.00	0.00	20.46	0.40
169.452	0.037	27.46	0.21	0.00	0.00	20.46	0.40
169.489	0.290	27.46	1.23	0.00	0.00	20.46	0.40

169.778 0.290 27.46 0.49 0.00 0.00 20.46 0.40

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 dx(m) : Larghezza concio
 alpha() : Angolo pendenza base concio
 W(kN/m) : Forza peso concio
 ru(-) : Coefficiente locale pressione interstiziale
 U(kPa) : Pressione totale dei pori base concio
 phi'() : Angolo di attrito efficace base concio
 c'/Cu (kPa) : Coesione efficace o Resistenza al taglio in condizioni non drenate

TABELLA DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	ht (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (--)	rho(x) (kN)	FS_qFEM (--)	FS_p-qPATH (--)			
150.767	0.000	29.458	-0.368	0.0000000000E+000	0.0000000000E+000	0.0000000000E+000	1.3970454620E-001	0.039	1.217	1.200		
151.056	0.065	29.359	-0.368	1.2194658503E-001	-1.5243323129E-003	7.0234416636E-001	0.039	1.217	1.200			
151.346	0.115	29.244	-0.390	4.0685756691E-001	-2.6270422977E-002	1.4721984963E+000	0.102	1.164	1.084			
151.393	0.125	29.228	-0.331	4.7994069473E-001	-3.9387336194E-002	1.5581218259E+000	0.113	1.157	1.072			
151.540	0.160	29.180	-0.314	7.1198976485E-001	-8.6489544220E-002	1.6969692522E+000	0.150	1.140	1.037			
151.719	0.207	29.125	-0.304	1.0422639553E+000	-1.8202048882E-001	2.0104889235E+000	0.200	1.122	1.001			
151.952	0.269	29.055	-0.302	1.5609894988E+000	-4.2592389042E-001	2.6143821202E+000	0.272	1.106	0.962			
151.957	0.270	29.053	-0.290	1.5749889285E+000	-4.3411869045E-001	2.6151319887E+000	0.273	1.106	0.962			
152.162	0.327	28.994	-0.305	2.0470762911E+000	-7.0558578795E-001	2.6838160473E+000	0.374	1.099	0.934			
152.348	0.372	28.934	-0.338	2.6088679207E+000	-1.0333132319E+000	3.7010080861E+000	0.534	1.098	0.912			
152.534	0.412	28.868	-0.377	3.4264944836E+000	-1.4809733188E+000	6.1312090174E+000	0.725	1.105	0.894			
152.720	0.443	28.794	-0.389	4.8919448146E+000	-2.1490828483E+000	8.8580319493E+000	0.922	1.130	0.888			
152.907	0.478	28.723	-0.372	6.7248331896E+000	-2.9090660155E+000	1.1021470842E+001	1.038	1.171	0.893			
153.091	0.515	28.656	-0.354	8.9769192976E+000	-3.7680422609E+000	1.3416926325E+001	1.107	1.227	0.907			
153.278	0.557	28.592	-0.322	1.1705954799E+001	-4.7309831044E+000	1.5815654841E+001	1.139	1.304	0.932			
153.464	0.606	28.536	-0.295	1.4864660222E+001	-5.7573964723E+000	1.8710276213E+001	1.137	1.404	0.965			
153.650	0.658	28.482	-0.285	1.8682584269E+001	-6.9616193428E+000	2.2106292955E+001	1.120	1.554	1.011			
153.780	0.695	28.446	-0.277	2.1695070364E+001	-7.9063127745E+000	2.5557161271E+001	1.100	1.695	1.051			
153.836	0.711	28.431	-0.277	2.3183668640E+001	-8.3720261150E+000	2.7311267382E+001	1.087	1.779	1.072			
154.028	0.767	28.377	-0.286	2.8939675459E+001	-1.0179943745E+001	3.4040818441E+001	1.033	2.140	1.155			
154.226	0.821	28.319	-0.291	3.6494820377E+001	-1.2520497953E+001	4.1601502852E+001	0.924	2.697	1.269			
154.435	0.879	28.259	-0.268	4.5938663513E+001	-1.5130283379E+001	4.5386393377E+001	0.731	3.455	1.414			
154.659	0.950	28.203	-0.225	5.6158632547E+001	-1.6247574158E+001	4.3935964788E+001	0.573	4.267	1.572			
154.839	1.006	28.168	-0.176	6.3812579080E+001	-1.6080541203E+001	4.1396779555E+001	0.487	4.847	1.688			
155.003	1.051	28.143	-0.120	7.0417218003E+001	-1.4927295252E+001	3.6578920405E+001	0.430	5.274	1.785			
155.148	1.086	28.130	-0.058	7.5262179062E+001	-1.2859090090E+001	3.1914058502E+001	0.395	5.489	1.850			
155.318	1.117	28.124	-0.033	8.0409423819E+001	-9.3031115166E+000	2.8602800289E+001	0.365	5.586	1.914			
155.340	1.120	28.124	0.022	8.1041770776E+001	-8.6676432407E+000	2.8600309868E+001	0.362	5.577	1.922			
155.462	1.138	28.127	0.053	8.4683538023E+001	-4.2762697300E+000	2.8610406434E+001	0.352	5.448	1.958			
155.626	1.152	28.139	0.092	8.9086249872E+001	3.0442025912E+000	2.5439831189E+001	0.362	5.103	1.995			
155.807	1.160	28.159	0.130	9.3400379348E+001	1.0478798467E+001	2.2443799819E+001	0.392	4.604	2.019			
156.041	1.165	28.193	0.159	9.8237207171E+001	1.9231870366E+001	1.8165866668E+001	0.456	3.863	2.029			
156.249	1.173	28.229	0.179	1.0155626235E+002	2.5743941641E+001	1.3626462777E+001	0.541	3.199	2.016			
156.442	1.180	28.265	0.184	1.0377899524E+002	3.0266991913E+001	9.8652344065E+000	0.652	2.656	1.990			
156.500	1.182	28.276	0.191	1.0431872744E+002	3.1359138289E+001	8.7262767341E+000	0.691	2.512	1.981			
156.628	1.186	28.300	0.193	1.0524849584E+002	3.3003785002E+001	5.3543504974E+000	0.782	2.265	1.955			
156.640	1.186	28.303	0.196	1.0531046543E+002	3.3092237091E+001	5.1050717232E+000	0.791	2.246	1.952			
156.812	1.189	28.336	0.208	1.0601260846E+002	3.3662010406E+001	3.4272782267E+000	0.884	2.029	1.911			
156.993	1.194	28.376	0.232	1.0650711004E+002	3.3868861892E+001	2.1734362531E+000	0.941	1.856	1.860			
157.177	1.202	28.421	0.264	1.0680356554E+002	3.3992079358E+001	1.1753958784E+000	0.967	1.718	1.803			
157.366	1.214	28.475	0.303	1.0694195444E+002	3.4054355817E+001	2.1632811044E-001	0.981	1.591	1.739			
157.565	1.232	28.539	0.341	1.0687681905E+002	3.4043459576E+001	-9.3220699369E-001	0.988	1.472	1.666			
157.753	1.253	28.606	0.347	1.0659421654E+002	3.3958671477E+001	-2.1243787799E+000	0.992	1.372	1.596			
157.936	1.267	28.668	0.337	1.0609278550E+002	3.3802433316E+001	-3.4565268446E+000	0.992	1.306	1.542			
158.117	1.278	28.729	0.354	1.0534210299E+002	3.3571384202E+001	-4.9303108897E+000	0.992	1.258	1.497			
158.300	1.291	28.796	0.367	1.0429569764E+002	3.3254447896E+001	-6.1240051687E+000	0.992	1.216	1.454			
158.480	1.301	28.862	0.362	1.0311640307E+002	3.2901707028E+001	-6.9214112860E+000	0.992	1.183	1.418			
158.665	1.306	28.929	0.360	1.0176868764E+002	3.2503448458E+001	-7.7249065467E+000	0.992	1.156	1.386			
158.854	1.309	28.997	0.357	1.0022772811E+002	3.2052500303E+001	-8.4906537244E+000	0.992	1.131	1.358			
159.054	1.308	29.068	0.351	9.8450256615E+001	3.1535427058E+001	-9.1845268709E+000	0.993	1.109	1.332			
159.243	1.303	29.133	0.343	9.6664920009E+001	3.1016155103E+001	-9.2417072611E+000	0.993	1.090	1.310			
159.280	1.300	29.145	0.346	9.6320483750E+001	3.0915930331E+001	-9.4817495774E+000	0.993	1.086	1.306			



159.426	1.293	29.197	0.359	9.4773815804E+001	3.0461000864E+001	-1.1052180501E+001	0.994	1.072	1.290
159.605	1.283	29.262	0.374	9.2696419310E+001	2.9843366595E+001	-1.2229919647E+001	0.995	1.056	1.270
159.788	1.273	29.332	0.396	9.0339352213E+001	2.9132125015E+001	-1.3550332988E+001	0.995	1.038	1.249
159.966	1.264	29.405	0.421	8.7805510230E+001	2.8355844915E+001	-1.4896391268E+001	0.996	1.021	1.228
160.148	1.255	29.484	0.452	8.4977202359E+001	2.7477476052E+001	-1.6354284626E+001	0.996	1.004	1.203
160.332	1.250	29.570	0.498	8.1824025908E+001	2.6487268993E+001	-1.8231004858E+001	0.997	0.985	1.177
160.525	1.251	29.672	0.516	7.8082116124E+001	2.5303566675E+001	-1.9032291350E+001	0.997	0.966	1.146
160.716	1.248	29.768	0.496	7.4514330667E+001	2.4172259639E+001	-1.8290467388E+001	0.997	0.949	1.117
160.904	1.242	29.860	0.477	7.1139485114E+001	2.3107113912E+001	-1.7479288442E+001	0.997	0.935	1.091
161.092	1.232	29.947	0.456	6.7935754174E+001	2.2104785494E+001	-1.6558915352E+001	0.997	0.923	1.067
161.278	1.218	30.030	0.452	6.4952386708E+001	2.1182207683E+001	-1.6151448937E+001	0.997	0.913	1.046
161.464	1.207	30.116	0.451	6.1922300958E+001	2.0259024155E+001	-1.5845261230E+001	0.998	0.905	1.027
161.650	1.193	30.198	0.440	5.9045512721E+001	1.9393899885E+001	-1.4410920559E+001	0.999	0.898	1.011
161.670	1.191	30.206	0.424	5.8766513161E+001	1.9310535156E+001	-1.4336327345E+001	0.999	0.897	1.009
161.837	1.175	30.277	0.423	5.6324885964E+001	1.8583379991E+001	-1.4525354812E+001	1.000	0.892	0.997
162.021	1.156	30.355	0.418	5.3665827696E+001	1.7793901415E+001	-1.4273888273E+001	1.002	0.887	0.985
162.208	1.137	30.432	0.411	5.1030073764E+001	1.7010618584E+001	-1.4026505379E+001	1.004	0.883	0.975
162.394	1.116	30.508	0.403	4.8443620160E+001	1.6237749519E+001	-1.3748127838E+001	1.006	0.880	0.966
162.580	1.093	30.582	0.398	4.5912065919E+001	1.5473587557E+001	-1.2823070285E+001	1.009	0.877	0.958
162.580	1.093	30.582	0.396	4.5905928139E+001	1.5471720052E+001	-1.2823230553E+001	1.009	0.877	0.958
162.766	1.070	30.656	0.399	4.3371983614E+001	1.4692553356E+001	-1.3739186769E+001	1.011	0.874	0.951
162.953	1.048	30.731	0.387	4.0790553787E+001	1.3885315740E+001	-1.3275053601E+001	1.013	0.872	0.945
163.139	1.021	30.800	0.376	3.8422936888E+001	1.3130515473E+001	-1.2770050117E+001	1.014	0.870	0.941
163.325	0.995	30.871	0.386	3.6036168057E+001	1.2358580904E+001	-1.2866159337E+001	1.015	0.868	0.937
163.510	0.971	30.943	0.399	3.3650130430E+001	1.1576682010E+001	-1.2967463451E+001	1.015	0.867	0.933
163.696	0.950	31.019	0.404	3.1225463425E+001	1.0773988290E+001	-1.2695817023E+001	1.015	0.865	0.931
163.882	0.928	31.094	0.386	2.8923257613E+001	1.0007402612E+001	-1.1604410022E+001	1.014	0.864	0.929
164.069	0.901	31.163	0.371	2.6900926124E+001	9.3322731677E+000	-1.0594123598E+001	1.012	0.863	0.928
164.254	0.873	31.232	0.373	2.4978473543E+001	8.6898485007E+000	-1.0156926622E+001	1.010	0.863	0.928
164.441	0.846	31.302	0.395	2.3119893024E+001	8.0684862963E+000	-1.0177849281E+001	1.009	0.863	0.929
164.627	0.827	31.379	0.407	2.1184954349E+001	7.4238366106E+000	-9.9440855038E+000	1.007	0.863	0.932
164.813	0.804	31.453	0.394	1.9417855406E+001	6.8388999981E+000	-9.1780481784E+000	1.005	0.864	0.937
164.998	0.780	31.525	0.397	1.7779207129E+001	6.3023880368E+000	-8.7187746269E+000	1.005	0.865	0.942
165.184	0.758	31.600	0.386	1.6183923808E+001	5.7876272268E+000	-8.0451632368E+000	1.005	0.866	0.949
165.370	0.730	31.669	0.357	1.4783711801E+001	5.3415532848E+000	-7.0627197811E+000	1.007	0.868	0.956
165.557	0.697	31.733	0.337	1.3551900638E+001	4.9543092490E+000	-6.2498267902E+000	1.009	0.869	0.963
165.660	0.678	31.767	0.321	1.2928792734E+001	4.7599038004E+000	-5.7709196706E+000	1.010	0.870	0.967
165.743	0.661	31.793	0.317	1.2470421058E+001	4.6178698694E+000	-5.5045104658E+000	1.011	0.871	0.970
165.929	0.623	31.852	0.319	1.1457477840E+001	4.3036269965E+000	-5.2653900196E+000	1.014	0.873	0.976
166.115	0.586	31.912	0.316	1.0507519860E+001	4.0059433135E+000	-4.8313680291E+000	1.016	0.875	0.983
166.186	0.571	31.933	0.322	1.0172814384E+001	3.8997614777E+000	-4.7715596305E+000	1.017	0.875	0.985
166.302	0.549	31.971	0.339	9.6134846562E+000	3.7174935174E+000	-4.8281266370E+000	1.017	0.877	0.988
166.486	0.517	32.035	0.377	8.7265669976E+000	3.4210289340E+000	-5.0459100233E+000	1.016	0.879	0.993
166.673	0.496	32.111	0.423	7.7408348947E+000	3.0732737962E+000	-5.3124484832E+000	1.008	0.883	0.998
166.859	0.481	32.192	0.421	6.7487197540E+000	2.7074339410E+000	-4.9764142477E+000	0.994	0.887	1.003
167.045	0.459	32.268	0.402	5.8863431013E+000	2.3706002397E+000	-4.4305392360E+000	0.973	0.892	1.007
167.231	0.437	32.342	0.414	5.0987841236E+000	2.0478308029E+000	-4.2380806527E+000	0.944	0.899	1.011
167.418	0.420	32.422	0.409	4.3084923234E+000	1.7082473040E+000	-3.8379507896E+000	0.899	0.908	1.017
167.604	0.396	32.495	0.381	3.6676497906E+000	1.4178962837E+000	-3.2336106112E+000	0.842	0.920	1.025
167.750	0.374	32.549	0.366	3.2192312004E+000	1.2083321916E+000	-2.7928922700E+000	0.795	0.931	1.033
167.790	0.367	32.563	0.341	3.1102702296E+000	1.1566695185E+000	-2.6910464432E+000	0.781	0.934	1.035
167.975	0.334	32.625	0.331	2.6357074357E+000	9.3066055595E-001	-2.4160839948E+000	0.718	0.949	1.046
168.161	0.297	32.685	0.325	2.2144535818E+000	7.3201829765E-001	-2.1592190456E+000	0.653	0.967	1.060
168.347	0.261	32.746	0.322	1.8317713626E+000	5.5868009558E-001	-1.9295904562E+000	0.523	0.989	1.077
168.510	0.228	32.798	0.312	1.5356251762E+000	4.3075434818E-001	-1.5770138042E+000	0.417	1.013	1.095
168.534	0.222	32.804	0.313	1.4989008677E+000	4.1542097932E-001	-1.5457212602E+000	0.405	1.017	1.098
168.719	0.185	32.863	0.315	1.2063054026E+000	3.0025414007E-001	-1.4190080747E+000	0.289	1.045	1.120
168.740	0.180	32.869	0.337	1.1774533328E+000	2.8940001641E-001	-1.4220669635E+000	0.280	1.049	1.123
168.930	0.146	32.934	0.347	8.7206905066E-001	1.7551095278E-001	-1.4967722458E+000	0.211	1.085	1.151
169.162	0.107	33.016	0.418	5.5647971634E-001	8.9148667549E-002	-1.3630483905E+000	0.146	1.171	1.216
169.452	0.093	33.153	0.457	1.5929442192E-001	1.2557630187E-002	-7.8164610431E-001	0.076	1.310	1.312
169.489	0.087	33.165	0.387	1.3334215110E-001	8.9798774537E-003	-6.6273508977E-001	0.071	1.320	1.318
169.778	0.050	33.279	0.387	4.2326512787E-002	5.2908140984E-004	-2.3018395028E-001	0.039	1.327	1.660

LEGENDA SIMBOLI

$X(m)$: Ascissa sinistra concio
 $ht(m)$: Altezza linea di thrust da nodo sinistro base concio
 $yt(m)$: coordinata Y linea di thrust
 $yt'(-)$: gradiente pendenza locale linea di thrust
 $E(x)(kN/m)$: Forza Normale interconcio



$T(x)(\text{kN/m})$: Forza Tangenziale interconcio

$E'(\text{kN})$: derivata Forza normale interconcio

$\text{Rho}(x)(-)$: fattore mobilitazione resistenza al taglio verticale interconcio ZhU et al.(2003)

$\text{FS_qFEM}(x)(-)$: fattore di sicurezza locale stimato (locale in X) by qFEM

$\text{FS_p-qPATH}(x)(-)$: fattore di sicurezza locale stimato (locale in X) by p-qPATH Procedure

TABELLA SFORZI DI TAGLIO DISTRIBUITI LUNGO SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	dl (m)	alpha (°)	TauStress (kPa)	TauF (kN/m)	TauStrength (kPa)	TauS (kN/m)
150.767	0.290	0.333	-29.530	-0.828	-0.275	0.941	0.313
151.056	0.290	0.333	-29.530	-2.483	-0.826	1.968	0.655
151.346	0.047	0.054	-29.530	-3.445	-0.186	2.449	0.133
151.393	0.147	0.169	-29.530	-4.000	-0.676	2.782	0.470
151.540	0.179	0.206	-29.530	-4.932	-1.017	3.228	0.665
151.719	0.233	0.267	-29.530	-6.109	-1.634	3.598	0.962
151.952	0.005	0.006	-29.530	-6.789	-0.042	3.662	0.022
151.957	0.205	0.235	-29.530	-7.390	-1.739	4.222	0.994
152.162	0.186	0.213	-29.530	-8.593	-1.833	3.937	0.840
152.348	0.187	0.215	-29.530	-9.711	-2.084	3.851	0.826
152.534	0.186	0.214	-29.530	-10.831	-2.316	3.246	0.694
152.720	0.186	0.214	-29.530	-11.950	-2.558	3.100	0.664
152.907	0.185	0.212	-29.530	-13.065	-2.773	2.867	0.609
153.091	0.186	0.214	-29.530	-14.179	-3.035	2.676	0.573
153.278	0.186	0.214	-29.530	-15.298	-3.271	2.652	0.567
153.464	0.187	0.215	-29.530	-16.418	-3.523	2.218	0.476
153.650	0.130	0.149	-29.530	-17.368	-2.586	1.749	0.260
153.780	0.056	0.064	-29.530	-17.970	-1.158	1.052	0.068
153.836	0.192	0.221	-29.530	-18.911	-4.182	0.685	0.152
154.028	0.197	0.227	-29.530	-20.387	-4.625	0.000	0.000
154.226	0.209	0.241	-29.530	-21.928	-5.274	0.000	0.000
154.435	0.224	0.257	-29.530	-23.568	-6.063	5.697	1.465
154.659	0.180	0.202	-26.968	-23.610	-4.765	11.598	2.341
154.839	0.164	0.178	-23.135	-22.079	-3.930	17.708	3.152
155.003	0.146	0.153	-17.930	-18.526	-2.840	23.970	3.674
155.148	0.169	0.173	-12.499	-13.749	-2.385	28.593	4.959
155.318	0.022	0.022	-6.814	-7.783	-0.175	31.344	0.704
155.340	0.122	0.123	-6.814	-7.855	-0.964	35.362	4.341
155.462	0.164	0.164	-0.839	-0.992	-0.162	35.211	5.762
155.626	0.181	0.182	3.862	4.613	0.838	29.890	5.427
155.807	0.234	0.236	7.018	8.426	1.986	26.268	6.192
156.041	0.208	0.210	7.654	9.273	1.949	24.589	5.169
156.249	0.194	0.196	8.406	10.250	2.005	22.646	4.431
156.442	0.058	0.058	9.201	11.247	0.655	21.471	1.251
156.500	0.128	0.130	9.201	11.288	1.464	20.470	2.655
156.628	0.012	0.012	10.036	12.306	0.150	19.304	0.235
156.640	0.172	0.174	10.036	12.377	2.158	18.804	3.279
156.812	0.181	0.184	10.814	13.437	2.478	18.587	3.428
156.993	0.184	0.188	11.584	14.493	2.728	18.643	3.510
157.177	0.189	0.193	12.320	15.512	2.997	18.717	3.617
157.366	0.199	0.204	13.000	16.465	3.359	18.798	3.835
157.565	0.188	0.194	13.802	17.555	3.397	18.847	3.647
157.753	0.184	0.190	14.665	18.698	3.549	18.864	3.580
157.936	0.180	0.187	15.558	19.854	3.712	18.857	3.525
158.117	0.183	0.191	16.446	20.981	4.012	18.842	3.603
158.300	0.180	0.189	17.329	22.076	4.173	18.828	3.559
158.480	0.184	0.194	18.199	23.128	4.485	18.794	3.644
158.665	0.189	0.200	19.024	24.099	4.823	18.755	3.753
158.854	0.201	0.213	19.774	24.961	5.323	18.723	3.993
159.054	0.188	0.201	20.691	25.961	5.220	18.632	3.746
159.243	0.037	0.040	21.684	26.985	1.088	18.462	0.744
159.280	0.146	0.157	21.684	26.952	4.228	18.490	2.901
159.426	0.179	0.194	22.713	27.869	5.412	18.231	3.540
159.605	0.183	0.200	23.728	28.693	5.737	17.994	3.598
159.788	0.178	0.196	24.712	29.416	5.776	17.772	3.489
159.966	0.181	0.201	25.689	30.060	6.049	17.556	3.533
160.148	0.184	0.206	26.610	30.579	6.298	17.371	3.578
160.332	0.193	0.217	27.456	30.960	6.732	17.259	3.753
160.525	0.191	0.215	27.456	30.660	6.601	17.249	3.714

160.716	0.188	0.212	27.456	30.363	6.447	17.226	3.658
160.904	0.188	0.212	27.456	30.069	6.367	17.183	3.639
161.092	0.186	0.209	27.456	29.777	6.228	17.122	3.581
161.278	0.187	0.210	27.456	29.485	6.204	17.109	3.600
161.464	0.186	0.210	27.456	29.194	6.121	17.046	3.574
161.650	0.020	0.022	27.456	29.033	0.638	17.054	0.375
161.670	0.167	0.188	27.456	28.887	5.429	16.985	3.192
161.837	0.185	0.208	27.456	28.612	5.956	16.939	3.526
162.021	0.186	0.210	27.456	28.322	5.945	16.902	3.548
162.208	0.186	0.210	27.456	28.031	5.877	16.871	3.537
162.394	0.186	0.210	27.456	27.740	5.822	16.842	3.535
162.580	0.000	0.001	27.456	27.593	0.015	16.893	0.009
162.580	0.186	0.209	27.456	27.246	5.699	16.700	3.493
162.766	0.187	0.210	27.456	26.552	5.587	16.431	3.457
162.953	0.186	0.210	27.456	25.857	5.421	16.099	3.375
163.139	0.186	0.210	27.456	25.163	5.282	15.829	3.323
163.325	0.185	0.208	27.456	24.472	5.094	15.571	3.241
163.510	0.186	0.210	27.456	23.780	4.992	15.320	3.216
163.696	0.186	0.210	27.456	23.086	4.840	15.030	3.151
163.882	0.187	0.210	27.456	22.391	4.711	14.673	3.087
164.069	0.186	0.209	27.456	21.697	4.538	14.366	3.005
164.254	0.187	0.210	27.456	21.003	4.419	14.062	2.959
164.441	0.186	0.210	27.456	20.309	4.258	13.808	2.895
164.627	0.186	0.210	27.456	19.615	4.117	13.491	2.832
164.813	0.185	0.208	27.456	18.923	3.939	13.178	2.743
164.998	0.186	0.210	27.456	18.232	3.827	12.871	2.702
165.184	0.186	0.210	27.456	17.537	3.677	12.522	2.625
165.370	0.187	0.210	27.456	16.843	3.544	12.152	2.557
165.557	0.103	0.116	27.456	16.303	1.890	11.893	1.378
165.660	0.083	0.093	27.456	15.957	1.488	11.692	1.090
165.743	0.187	0.210	27.456	15.455	3.252	11.381	2.395
165.929	0.186	0.210	27.456	14.760	3.094	10.984	2.303
166.115	0.071	0.080	27.456	14.276	1.139	10.932	0.872
166.186	0.115	0.130	27.456	13.941	1.814	10.706	1.393
166.302	0.185	0.208	27.456	13.401	2.789	10.323	2.149
166.486	0.186	0.210	27.456	12.733	2.673	9.893	2.077
166.673	0.186	0.210	27.456	12.062	2.529	9.430	1.977
166.859	0.187	0.210	27.456	11.391	2.397	8.918	1.876
167.045	0.186	0.209	27.456	10.720	2.242	8.424	1.762
167.231	0.187	0.210	27.456	10.050	2.115	7.958	1.674
167.418	0.186	0.210	27.456	9.379	1.966	7.427	1.557
167.604	0.146	0.165	27.456	8.781	1.446	6.974	1.149
167.750	0.040	0.045	27.456	8.445	0.382	6.706	0.303
167.790	0.185	0.208	27.456	8.040	1.674	6.403	1.333
167.975	0.186	0.210	27.456	7.372	1.548	5.894	1.237
168.161	0.186	0.210	27.456	6.702	1.405	5.387	1.129
168.347	0.163	0.184	27.456	6.074	1.115	4.908	0.901
168.510	0.024	0.027	27.456	5.737	0.154	4.640	0.125
168.534	0.186	0.209	27.456	5.360	1.121	4.365	0.913
168.719	0.021	0.023	27.456	4.989	0.116	4.081	0.095
168.740	0.190	0.214	27.456	4.611	0.985	3.823	0.817
168.930	0.233	0.262	27.456	3.850	1.010	3.234	0.848
169.162	0.290	0.326	27.456	2.910	0.950	2.539	0.829
169.452	0.037	0.041	27.456	2.322	0.096	2.085	0.086
169.489	0.290	0.326	27.456	1.734	0.566	1.651	0.539
169.778	0.290	0.326	27.456	0.691	0.226	0.897	0.293

LEGENDA SIMBOLI

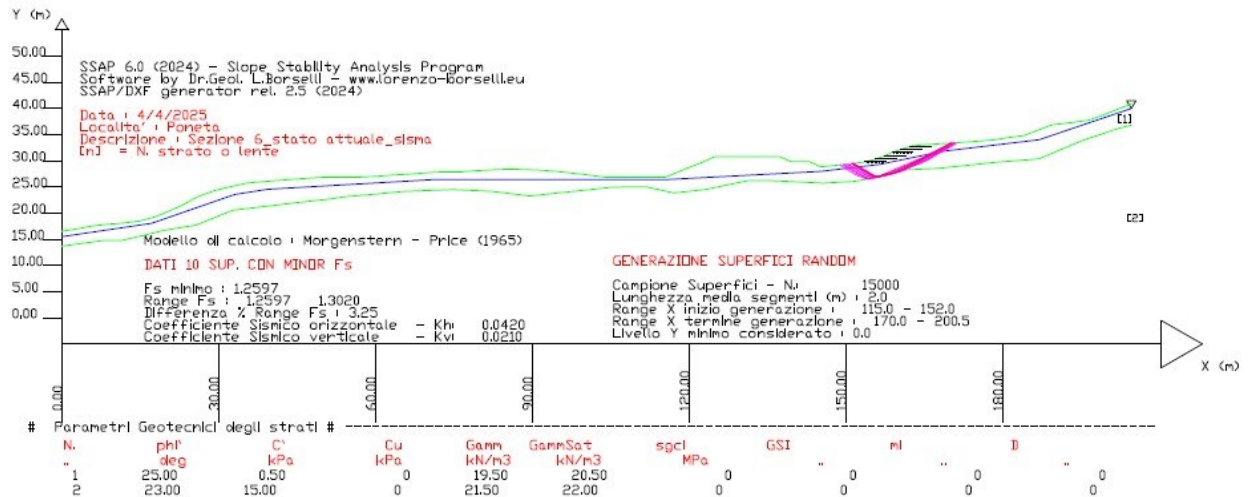
X(m) : Ascissa sinistra concio
 dx(m) : Larghezza concio
 dl(m) : lunghezza base concio
 alpha() : Angolo pendenza base concio
 TauStress(kPa) : Sforzo di taglio su base concio
 TauF (kN/m) : Forza di taglio su base concio
 TauStrength(kPa) : Resistenza al taglio su base concio
 TauS (kN/m) : Forza resistente al taglio su base concio

RISULTATI INTERAZIONI CON SISTEMA DI GEOGRIGLIE/GEOSINTETICI



Nessuna Intersezione e interazione tra superficie con FS minimo e Sistema di Geogriglie/Geosintetici

6 SEZIONE 6 STATO ATTUALE - SISMA



Report Generale Risultati di Verifica di stabilità'

SSAP 6.0 - Slope Stability Analysis Program (1991,2024)
WWW.SSAP.EU
Build No. 14533
BY
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UASLP, San Luis Potosi, Mexico
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Ricercatore Associato CNR-IRPI, Perugia, Italia

Ultima Revisione struttura tabelle del report: 21 Maggio 2024

File report: C:\Users\facco\OneDrive\Documents\Lavoro\Lavori STGA\Poneta\Sezioni\Risultati SSAP\Sez6_stato attuale_sisma.txt

Data: 4/4/2025

Località: Poneta

Descrizione: Sezione 6 stato attuale_sisma

Modello pendio: Sezione 6 stato attuale.mod

----- 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	16.56	0.00	13.73	-	-	-	-
2.64	16.96	8.31	14.79	-	-	-	-
5.72	17.53	11.34	14.77	-	-	-	-
8.80	17.87	19.63	16.72	-	-	-	-
11.88	18.13	25.65	17.71	-	-	-	-
14.96	18.56	32.69	20.55	-	-	-	-
17.82	19.31	44.90	22.03	-	-	-	-
20.46	20.42	51.33	22.70	-	-	-	-
23.10	21.57	53.93	23.11	-	-	-	-
25.74	23.08	59.96	23.67	-	-	-	-
29.04	24.27	65.37	24.18	-	-	-	-
32.12	25.02	74.94	24.54	-	-	-	-
35.20	25.74	82.41	24.19	-	-	-	-
38.28	26.01	89.50	23.28	-	-	-	-
41.36	26.28	99.42	24.34	-	-	-	-



44.44	26.51	105.38	25.00	-	-	-	-
47.52	26.72	111.74	25.04	-	-	-	-
50.60	26.87	117.15	23.85	-	-	-	-
57.20	26.87	123.05	24.53	-	-	-	-
60.28	27.07	131.43	26.24	-	-	-	-
63.36	27.28	136.51	26.22	-	-	-	-
66.44	27.50	145.65	25.75	-	-	-	-
69.52	27.71	151.54	26.06	-	-	-	-
72.60	27.87	155.34	26.72	-	-	-	-
76.12	27.87	161.67	28.26	-	-	-	-
79.20	28.12	167.75	28.57	-	-	-	-
82.28	28.30	178.78	29.72	-	-	-	-
85.36	28.40	186.89	30.36	-	-	-	-
88.44	28.36	195.13	33.86	-	-	-	-
91.52	28.23	202.04	36.17	-	-	-	-
94.60	27.97	204.60	36.80	-	-	-	-
97.68	27.63	-	-	-	-	-	-
100.76	27.31	-	-	-	-	-	-
103.84	26.87	-	-	-	-	-	-
115.50	26.87	-	-	-	-	-	-
119.46	28.54	-	-	-	-	-	-
122.10	29.56	-	-	-	-	-	-
124.96	30.87	-	-	-	-	-	-
137.28	30.87	-	-	-	-	-	-
139.48	29.87	-	-	-	-	-	-
143.00	29.87	-	-	-	-	-	-
145.20	28.87	-	-	-	-	-	-
147.62	29.09	-	-	-	-	-	-
153.78	29.81	-	-	-	-	-	-
156.64	30.68	-	-	-	-	-	-
159.28	31.77	-	-	-	-	-	-
162.58	32.89	-	-	-	-	-	-
165.66	33.10	-	-	-	-	-	-
168.74	33.31	-	-	-	-	-	-
171.82	33.52	-	-	-	-	-	-
174.90	33.72	-	-	-	-	-	-
177.98	34.00	-	-	-	-	-	-
181.06	34.43	-	-	-	-	-	-
184.14	34.85	-	-	-	-	-	-
186.78	35.88	-	-	-	-	-	-
189.42	36.87	-	-	-	-	-	-
193.38	37.33	-	-	-	-	-	-
196.46	37.77	-	-	-	-	-	-
199.32	38.77	-	-	-	-	-	-
201.96	39.85	-	-	-	-	-	-
204.60	40.89	-	-	-	-	-	-

SUP FALDA

X Y

0.00	15.53
17.16	18.07
33.05	23.58
39.35	24.59
71.23	26.44
115.72	26.44
145.20	27.97
156.50	29.33
168.51	31.85
186.95	34.03
204.60	39.99
204.60	39.99

----- GESTIONE ACQUIFERI -----

Strati esclusi da acquifero e effetto pressione dei pori:

Esclusione sovraccarico pendio sommerso: NON ATTIVATA

EFFETTO TENSION CRACK IN TESTA RIEMPITO DI ACQUA: ----> DISATTIVATO

In caso di superfici con tension crack in testa, la frattura di tensione

puo' venir viene considerata completamente riempita di acqua per la sua intera profondita'.

Viene quindi considerato una forza in testa, prodotta dalla pressione idrostatica.



La forza applicata ha un effetto destabilizzante aggiuntivo alle altre forze destabilizzanti agenti.

Peso unitario fluido (kN/m³): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A 0
 Coefficiente K 0.000800
 Pressione minima fluidi Uo_Min (kPa) 0.01
 Coefficiente di sovrappressione oltre pressione idrostatica 1.00
 Limitazione dissipazione a Pressione Idrostatica = ATTIVA
 STABILITE CONDIZIONI PER LA VERIFICA CON SOVRAPPRESSIONE ACQUIFERI CON DISSIPAZIONE IN DIREZIONE DELLA SUPERFICIE

CALCOLO EFFETTO DI FILTRAZIONE NON ATTIVATO

----- PARAMETRI GEOMECCANICI -----

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	25.00	0.50	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00
STRATO 2	23.00	15.00	0.00	21.50	22.00	1.805	0.00	0.00	0.00	0.00

LEGENDA: 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/m³)

Gamm_sat _____ Peso di volume terreno immerso (in KN/m³)

STR_IDX _____ Indice di resistenza (usato in solo in 'SNIFF SEARCH') (adimensionale)

---- SOLO Per AMMASSI ROCCIOSI FRATTURATI - Parametri Criterio di Rottura di Hoek et al.(2002)-

sgci _____ Resistenza Compressione Uniassiale Roccia Intatta (in MPa)

GSI _____ Geological Strenght Index ammasso(adimensionale)

mi _____ Indice litologico ammasso(adimensionale)

D _____ Fattore di disturbo ammasso(adimensionale)

NOTA BENE:

FATTORI DI RIDUZIONE NTC2018/EC-7: gammaPHI=1.25, gammaC=1.25 e gammaCu=1.4 - DISATTIVATI

----- GEOSINTETICI PRESENTI -----

Nota Bene:

PROCEDURA AUTOMATICA CALCOLO MOBILIZZAZIONE FORZA GEOSINTETICI: Disattivata (vedasi manuale SSAP cap.2)

TABELLA GEOSINTETICI

Ngrid	X	Y	L	T	fb	fds	Lws	Lwd	omega
(-)	(m)	(m)	(m)	(kN/m)	(-)	(-)	(m)	(m)	(-)
1	153.5800	29.7800	4.00	40.00	0.75	0.80	0.00	0.00	0.10
2	155.6900	30.3900	4.00	40.00	0.75	0.80	0.00	0.00	0.10
3	157.5000	30.9800	4.00	40.00	0.75	0.80	0.00	0.00	0.10
4	158.8500	31.5900	4.00	40.00	0.75	0.80	0.00	0.00	0.10
5	160.5300	32.1900	4.00	40.00	0.75	0.80	0.00	0.00	0.10
6	162.2900	32.7900	4.00	40.00	0.75	0.80	0.00	0.00	0.10

LEGENDA SIMBOLI

Ngrid : Numero geosintetico

X(m) : Coordinata X Testa

Y(m) : Coordinata Y Testa

L(m) : Lunghezza geosintetico

T(kN/m) : Resistenza a trazione di progetto

fb(-) : Fattore di interazione suolo/geosintetico

fds(-) : Fattore riduzione Direct Sliding

Lws(m) : Lunghezza risolto a sinistra

Lwd(m) : Lunghezza risolto a destra

Omega(-) : Coefficiente di mobilitazione T come reazione orizzontale massima Th(kN/m)

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

*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI

MOTORE DI RICERCA: SNIFF RANDOM SEARCH - Borselli (1997,2021)

FILTRAGGIO SUPERFICI : ATTIVATO

COORDINATE X1,X2,Y OSTACOLO : 0.00 0.00 0.00



LUNGHEZZA MEDIA SEGMENTI (m)*: 2.0 (+/-) 50%
 INTERVALLO ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 115.00 152.00
 LIVELLO MINIMO CONSIDERATO (Ymin): 0.00
 INTERVALLO ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 170.00 200.51
 TOTALE SUPERFICI GENERATE : 15000

*NOTA IMPORTANTE: La lunghezza media dei segmenti non viene considerata nel caso di uso del motore di ricerca NEW RANDOM SEARCH

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

METODO DI CALCOLO : MORGENSTERN - PRICE (Morgenstern & Price, 1965)
 METODO DI ESPLORAZIONE CAMPO VALORI (λ_0, F_{s0}) ADOTTATO : A (rapido)
 COEFFICIENTE SISMICO UTILIZZATO K_h : 0.0420
 COEFFICIENTE SISMICO UTILIZZATO K_v (assunto Positivo): 0.0210
 COEFFICIENTE $c=K_v/K_h$ UTILIZZATO : 0.5000
 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 F_s

X(m)	Y(m)	#Superficie N.1 - #FS_minimo	#Fattore di sicurezza(FS)= 1.2597	#Lambda= 1.2500
151.297	29.520			
151.908	29.149			
152.226	28.956			
152.452	28.819			
152.657	28.695			
152.838	28.585			
153.020	28.474			
153.202	28.364			
153.385	28.253			
153.567	28.143			
153.748	28.034			
153.928	27.926			
154.108	27.820			
154.288	27.714			
154.475	27.606			
154.667	27.495			
154.874	27.377			
155.100	27.249			
155.276	27.160			
155.432	27.095			
155.569	27.055			
155.731	27.026			
155.865	27.018			
156.019	27.028			
156.192	27.054			
156.418	27.102			
156.626	27.146			
156.820	27.187			
157.008	27.227			
157.189	27.266			
157.372	27.305			
157.555	27.344			
157.740	27.383			
157.926	27.423			
158.106	27.463			
158.284	27.505			
158.460	27.550			
158.639	27.597			
158.816	27.647			



158.997	27.700
159.183	27.757
159.381	27.820
159.563	27.882
159.739	27.947
159.911	28.015
160.088	28.090
160.259	28.168
160.434	28.252
160.613	28.342
160.804	28.444
160.992	28.543
161.176	28.641
161.360	28.739
161.540	28.835
161.722	28.931
161.904	29.027
162.085	29.124
162.265	29.219
162.447	29.316
162.628	29.412
162.810	29.509
162.991	29.605
163.173	29.701
163.354	29.797
163.536	29.894
163.716	29.989
163.897	30.086
164.078	30.182
164.260	30.279
164.441	30.375
164.623	30.471
164.804	30.567
164.986	30.664
165.166	30.759
165.347	30.856
165.529	30.952
165.711	31.048
165.892	31.144
166.074	31.241
166.255	31.337
166.436	31.434
166.616	31.529
166.798	31.626
166.979	31.722
167.161	31.818
167.342	31.914
167.524	32.011
167.705	32.107
167.887	32.204
168.067	32.299
168.248	32.396
168.430	32.492
168.611	32.588
168.792	32.684
168.997	32.793
169.224	32.913
169.542	33.082
170.112	33.385
170.112	33.404

X(m)	Y(m)	#Superficie N. 2	#Fattore di sicurezza(FS)= 1.2785	#Lambda= 1.2500
151.004	29.486			
151.643	29.085			
151.976	28.876			
152.213	28.727			
152.428	28.592			
152.617	28.473			
152.809	28.353			
153.001	28.232			



153.197	28.110
153.394	27.986
153.582	27.872
153.766	27.765
153.948	27.663
154.134	27.564
154.320	27.469
154.515	27.375
154.723	27.279
154.958	27.176
155.147	27.102
155.319	27.048
155.472	27.012
155.647	26.988
155.799	26.980
155.969	26.986
156.154	27.006
156.385	27.043
156.596	27.078
156.793	27.113
156.983	27.149
157.171	27.187
157.357	27.226
157.544	27.267
157.734	27.311
157.930	27.359
158.122	27.406
158.312	27.453
158.501	27.501
158.690	27.550
158.880	27.600
159.073	27.651
159.270	27.705
159.474	27.761
159.662	27.817
159.844	27.878
160.021	27.942
160.206	28.016
160.383	28.092
160.565	28.176
160.752	28.267
160.954	28.372
161.151	28.474
161.345	28.575
161.537	28.675
161.727	28.773
161.917	28.871
162.107	28.970
162.297	29.068
162.485	29.166
162.675	29.265
162.865	29.363
163.056	29.462
163.245	29.560
163.436	29.659
163.625	29.757
163.815	29.855
164.004	29.953
164.194	30.052
164.384	30.150
164.574	30.249
164.763	30.347
164.954	30.446
165.144	30.544
165.334	30.643
165.522	30.740
165.712	30.839
165.902	30.937
166.092	31.036
166.282	31.134
166.472	31.233



166.662	31.331
166.852	31.430
167.040	31.527
167.230	31.626
167.420	31.724
167.611	31.823
167.800	31.921
167.990	32.020
168.180	32.118
168.370	32.217
168.559	32.314
168.749	32.413
168.938	32.511
169.129	32.610
169.318	32.708
169.533	32.819
169.770	32.943
170.103	33.115
170.689	33.419
170.689	33.443

X(m)	Y(m)	#Superficie N. 3 #Fattore di sicurezza(FS)= 1.2817 #Lambda= 1.2500
151.107	29.498	
151.763	29.083	
152.104	28.866	
152.348	28.712	
152.568	28.573	
152.762	28.450	
152.959	28.325	
153.156	28.200	
153.357	28.073	
153.560	27.945	
153.753	27.827	
153.942	27.716	
154.127	27.612	
154.318	27.510	
154.509	27.414	
154.710	27.318	
154.926	27.219	
155.172	27.112	
155.366	27.038	
155.539	26.985	
155.692	26.954	
155.869	26.936	
156.020	26.936	
156.190	26.952	
156.377	26.985	
156.614	27.040	
156.834	27.092	
157.040	27.140	
157.241	27.187	
157.435	27.233	
157.631	27.280	
157.827	27.327	
158.027	27.375	
158.229	27.424	
158.422	27.474	
158.612	27.527	
158.799	27.582	
158.991	27.642	
159.178	27.703	
159.368	27.770	
159.561	27.840	
159.763	27.917	
159.963	27.993	
160.160	28.069	
160.356	28.144	
160.550	28.219	
160.745	28.294	
160.939	28.369	



161.134	28.445
161.328	28.520
161.523	28.596
161.718	28.672
161.913	28.747
162.108	28.823
162.304	28.899
162.499	28.975
162.696	29.052
162.893	29.128
163.087	29.205
163.280	29.283
163.471	29.362
163.665	29.443
163.857	29.526
164.049	29.610
164.244	29.697
164.442	29.787
164.639	29.876
164.834	29.966
165.029	30.055
165.223	30.145
165.418	30.236
165.613	30.327
165.810	30.419
166.008	30.512
166.202	30.605
166.395	30.699
166.587	30.795
166.780	30.892
166.972	30.991
167.165	31.092
167.360	31.196
167.559	31.304
167.756	31.411
167.950	31.518
168.144	31.626
168.338	31.735
168.531	31.845
168.725	31.955
168.919	32.068
169.114	32.182
169.310	32.296
169.506	32.410
169.701	32.524
169.896	32.637
170.116	32.765
170.359	32.907
170.701	33.106
171.296	33.453
171.296	33.484

X(m)	Y(m)	#Superficie N. 4 #Fattore di sicurezza(FS)= 1.2843 #Lambda= 1.2500
149.424	29.301	
150.097	28.879	
150.447	28.659	
150.697	28.502	
150.923	28.361	
151.123	28.236	
151.325	28.109	
151.527	27.982	
151.732	27.854	
151.939	27.724	
152.137	27.604	
152.332	27.489	
152.524	27.381	
152.721	27.274	
152.918	27.171	
153.125	27.069	
153.347	26.963	



153.597	26.848
153.794	26.768
153.973	26.710
154.131	26.673
154.314	26.649
154.471	26.644
154.649	26.655
154.848	26.683
155.105	26.733
155.326	26.781
155.530	26.830
155.723	26.882
155.918	26.941
156.106	27.002
156.299	27.071
156.497	27.147
156.709	27.233
156.916	27.317
157.119	27.401
157.320	27.484
157.520	27.567
157.719	27.651
157.918	27.735
158.118	27.820
158.318	27.905
158.519	27.991
158.719	28.077
158.920	28.163
159.119	28.248
159.320	28.334
159.520	28.420
159.720	28.505
159.918	28.590
160.118	28.676
160.318	28.762
160.519	28.847
160.718	28.933
160.919	29.019
161.119	29.104
161.319	29.190
161.517	29.275
161.718	29.360
161.917	29.446
162.118	29.532
162.318	29.617
162.518	29.703
162.719	29.789
162.919	29.875
163.119	29.960
163.319	30.046
163.518	30.132
163.718	30.219
163.917	30.306
164.117	30.394
164.317	30.482
164.519	30.572
164.722	30.662
164.922	30.753
165.120	30.844
165.317	30.937
165.516	31.031
165.713	31.127
165.911	31.225
166.110	31.324
166.312	31.427
166.514	31.530
166.715	31.632
166.916	31.734
167.115	31.835
167.316	31.937
167.516	32.039



167.716	32.141
167.914	32.242
168.115	32.343
168.315	32.445
168.515	32.547
168.715	32.648
168.940	32.763
169.190	32.890
169.541	33.068
170.146	33.376
170.146	33.406

X(m)	Y(m)	#Superficie N. 5	#Fattore di sicurezza(FS)= 1.2873	#Lambda= 1.2500
150.410	29.416			
151.071	29.001			
151.416	28.785			
151.661	28.631			
151.883	28.492			
152.079	28.369			
152.278	28.244			
152.477	28.119			
152.680	27.992			
152.886	27.863			
153.080	27.746			
153.270	27.636			
153.456	27.533			
153.649	27.432			
153.840	27.338			
154.042	27.244			
154.259	27.148			
154.506	27.045			
154.702	26.973			
154.878	26.921			
155.034	26.891			
155.214	26.872			
155.370	26.871			
155.545	26.886			
155.740	26.918			
155.989	26.972			
156.206	27.022			
156.407	27.074			
156.598	27.128			
156.791	27.187			
156.977	27.248			
157.167	27.316			
157.361	27.389			
157.567	27.472			
157.770	27.553			
157.970	27.633			
158.168	27.712			
158.364	27.790			
158.561	27.869			
158.758	27.948			
158.954	28.026			
159.149	28.104			
159.346	28.183			
159.542	28.261			
159.740	28.340			
159.935	28.419			
160.133	28.497			
160.329	28.576			
160.526	28.655			
160.721	28.732			
160.917	28.811			
161.114	28.890			
161.311	28.968			
161.507	29.047			
161.704	29.126			
161.900	29.204			
162.097	29.283			



162.292	29.361
162.489	29.439
162.685	29.518
162.882	29.597
163.078	29.675
163.275	29.754
163.472	29.832
163.668	29.911
163.863	29.989
164.060	30.067
164.256	30.146
164.453	30.225
164.649	30.303
164.846	30.382
165.043	30.460
165.239	30.539
165.434	30.617
165.631	30.696
165.828	30.774
166.025	30.853
166.221	30.931
166.419	31.010
166.617	31.090
166.819	31.170
167.021	31.251
167.216	31.332
167.408	31.416
167.597	31.502
167.791	31.593
167.981	31.686
168.175	31.785
168.373	31.890
168.583	32.004
168.782	32.115
168.977	32.228
169.168	32.342
169.362	32.461
169.576	32.598
169.817	32.757
170.161	32.989
170.759	33.400
170.759	33.448

X(m)	Y(m)	#Superficie N. 6 #Fattore di sicurezza(FS)= 1.2906 #Lambda= 1.2500
151.461	29.539	
152.074	29.179	
152.393	28.992	
152.621	28.858	
152.827	28.738	
153.009	28.631	
153.191	28.524	
153.374	28.417	
153.556	28.310	
153.737	28.204	
153.919	28.097	
154.101	27.990	
154.284	27.883	
154.466	27.777	
154.655	27.666	
154.849	27.552	
155.055	27.431	
155.277	27.301	
155.453	27.208	
155.612	27.138	
155.752	27.093	
155.916	27.058	
156.053	27.043	
156.211	27.045	
156.388	27.062	
156.619	27.099	



156.825	27.133
157.016	27.167
157.199	27.202
157.379	27.238
157.557	27.277
157.736	27.317
157.918	27.361
158.106	27.407
158.291	27.454
158.473	27.501
158.656	27.548
158.837	27.595
159.020	27.644
159.204	27.693
159.393	27.744
159.587	27.797
159.767	27.851
159.943	27.908
160.114	27.968
160.292	28.036
160.464	28.106
160.640	28.182
160.819	28.265
161.011	28.358
161.200	28.449
161.385	28.539
161.570	28.628
161.751	28.716
161.934	28.805
162.117	28.893
162.300	28.982
162.482	29.070
162.664	29.159
162.845	29.248
163.027	29.338
163.208	29.428
163.390	29.519
163.571	29.610
163.753	29.702
163.935	29.795
164.118	29.888
164.301	29.981
164.484	30.074
164.666	30.167
164.848	30.260
165.031	30.353
165.213	30.446
165.394	30.538
165.576	30.631
165.758	30.723
165.941	30.816
166.123	30.909
166.306	31.002
166.489	31.096
166.674	31.190
166.859	31.284
167.040	31.378
167.220	31.474
167.399	31.571
167.579	31.671
167.758	31.772
167.939	31.876
168.121	31.983
168.309	32.095
168.493	32.206
168.675	32.317
168.856	32.429
169.037	32.542
169.240	32.670
169.466	32.815
169.785	33.021



170.357 33.393
170.357 33.420

X(m) Y(m) #Superficie N. 7 #Fattore di sicurezza(FS)= 1.2977 #Lambda= 1.2500
149.640 29.326
150.315 28.917
150.666 28.704
150.916 28.552
151.143 28.415
151.342 28.293
151.544 28.171
151.746 28.048
151.951 27.924
152.156 27.800
152.355 27.682
152.551 27.569
152.746 27.461
152.944 27.353
153.143 27.249
153.351 27.143
153.574 27.034
153.822 26.916
154.019 26.833
154.197 26.771
154.356 26.732
154.539 26.704
154.696 26.696
154.872 26.703
155.066 26.727
155.313 26.770
155.537 26.811
155.747 26.851
155.949 26.892
156.148 26.934
156.344 26.977
156.542 27.022
156.741 27.069
156.945 27.118
157.148 27.168
157.349 27.217
157.551 27.266
157.750 27.315
157.952 27.364
158.154 27.414
158.357 27.463
158.561 27.513
158.760 27.564
158.958 27.616
159.153 27.670
159.352 27.727
159.548 27.785
159.746 27.846
159.948 27.910
160.156 27.978
160.358 28.046
160.558 28.115
160.755 28.185
160.954 28.257
161.151 28.330
161.349 28.405
161.548 28.483
161.751 28.563
161.954 28.644
162.155 28.724
162.357 28.804
162.556 28.883
162.758 28.964
162.960 29.044
163.163 29.124
163.366 29.205



163.565	29.286
163.763	29.369
163.959	29.453
164.158	29.539
164.355	29.628
164.555	29.720
164.760	29.815
164.972	29.917
165.172	30.016
165.369	30.118
165.562	30.222
165.759	30.333
165.951	30.445
166.147	30.564
166.345	30.688
166.552	30.821
166.758	30.954
166.960	31.085
167.163	31.215
167.362	31.344
167.564	31.474
167.765	31.604
167.967	31.734
168.168	31.864
168.367	31.994
168.566	32.125
168.765	32.257
168.964	32.390
169.188	32.542
169.437	32.713
169.787	32.955
170.393	33.376
170.393	33.423

X(m)	Y(m)	#Superficie N. 8 #Fattore di sicurezza(FS)= 1.2986 #Lambda= 1.2500
148.819	29.230	
149.530	28.799	
149.900	28.574	
150.164	28.414	
150.402	28.270	
150.612	28.142	
150.826	28.012	
151.041	27.882	
151.259	27.750	
151.480	27.615	
151.689	27.494	
151.893	27.381	
152.092	27.275	
152.299	27.172	
152.503	27.076	
152.718	26.982	
152.947	26.887	
153.207	26.785	
153.418	26.713	
153.611	26.659	
153.786	26.624	
153.982	26.601	
154.155	26.594	
154.346	26.601	
154.553	26.623	
154.808	26.662	
155.039	26.700	
155.257	26.738	
155.467	26.778	
155.676	26.819	
155.882	26.863	
156.092	26.910	
156.305	26.960	
156.527	27.015	
156.741	27.070	



156.950 27.127
 157.156 27.186
 157.364 27.247
 157.571 27.311
 157.780 27.379
 157.995 27.451
 158.219 27.529
 158.431 27.606
 158.640 27.684
 158.844 27.765
 159.052 27.851
 159.256 27.939
 159.462 28.031
 159.672 28.128
 159.889 28.233
 160.105 28.336
 160.318 28.438
 160.531 28.541
 160.742 28.641
 160.954 28.743
 161.165 28.844
 161.376 28.946
 161.585 29.046
 161.797 29.147
 162.008 29.248
 162.219 29.350
 162.430 29.451
 162.642 29.553
 162.853 29.654
 163.064 29.755
 163.274 29.855
 163.485 29.957
 163.696 30.058
 163.908 30.160
 164.118 30.260
 164.330 30.362
 164.541 30.463
 164.752 30.565
 164.962 30.665
 165.173 30.766
 165.384 30.868
 165.596 30.969
 165.806 31.070
 166.018 31.172
 166.229 31.273
 166.440 31.374
 166.650 31.475
 166.861 31.576
 167.072 31.677
 167.284 31.779
 167.495 31.880
 167.706 31.981
 167.917 32.082
 168.129 32.184
 168.338 32.284
 168.549 32.385
 168.760 32.487
 168.972 32.588
 169.183 32.689
 169.421 32.803
 169.685 32.930
 170.055 33.107
 170.679 33.407
 170.679 33.442

X(m) Y(m) #Superficie N. 9 #Fattore di sicurezza(FS)= 1.3001 #Lambda= 1.2500
 151.258 29.515
 151.872 29.142
 152.192 28.948
 152.421 28.809



152.627	28.684
152.809	28.574
152.993	28.463
153.176	28.351
153.360	28.240
153.543	28.128
153.725	28.019
153.907	27.911
154.088	27.805
154.269	27.699
154.456	27.592
154.648	27.482
154.854	27.366
155.078	27.241
155.255	27.153
155.416	27.086
155.557	27.042
155.723	27.009
155.862	26.996
156.022	26.998
156.200	27.015
156.431	27.051
156.636	27.085
156.826	27.119
157.009	27.154
157.189	27.192
157.366	27.232
157.547	27.275
157.731	27.321
157.924	27.372
158.109	27.423
158.290	27.476
158.469	27.529
158.649	27.586
158.827	27.644
159.006	27.705
159.188	27.768
159.374	27.836
159.560	27.904
159.744	27.971
159.928	28.037
160.110	28.103
160.294	28.170
160.476	28.236
160.659	28.303
160.840	28.368
161.023	28.435
161.205	28.501
161.389	28.568
161.571	28.634
161.754	28.700
161.936	28.767
162.119	28.833
162.300	28.899
162.483	28.965
162.666	29.032
162.849	29.098
163.031	29.165
163.215	29.231
163.398	29.298
163.583	29.365
163.768	29.433
163.950	29.500
164.130	29.569
164.310	29.639
164.491	29.711
164.672	29.785
164.855	29.862
165.044	29.943
165.241	30.029
165.423	30.113



165.599	30.201
165.771	30.292
165.949	30.392
166.121	30.494
166.297	30.605
166.477	30.724
166.669	30.857
166.859	30.988
167.045	31.116
167.230	31.244
167.412	31.370
167.595	31.496
167.778	31.623
167.963	31.750
168.146	31.877
168.328	32.004
168.509	32.131
168.690	32.260
168.872	32.391
169.075	32.540
169.302	32.707
169.621	32.946
170.194	33.377
170.194	33.409

X(m)	Y(m)	#Superficie N.10	#Fattore di sicurezza(FS)= 1.3020	#Lambda= 1.2500
150.036	29.372			
150.685	29.018			
151.023	28.833			
151.264	28.701			
151.481	28.582			
151.674	28.477			
151.867	28.371			
152.060	28.266			
152.254	28.160			
152.447	28.054			
152.640	27.950			
152.831	27.846			
153.023	27.744			
153.215	27.643			
153.411	27.540			
153.612	27.435			
153.824	27.326			
154.049	27.210			
154.237	27.123			
154.412	27.054			
154.571	27.004			
154.751	26.962			
154.910	26.937			
155.086	26.924			
155.278	26.922			
155.517	26.932			
155.727	26.945			
155.922	26.961			
156.107	26.981			
156.295	27.007			
156.477	27.036			
156.663	27.070			
156.853	27.110			
157.057	27.157			
157.256	27.203			
157.452	27.249			
157.647	27.295			
157.839	27.340			
158.031	27.386			
158.224	27.432			
158.416	27.478			
158.609	27.524			
158.802	27.571			
158.994	27.617			



159.188	27.664
159.380	27.711
159.575	27.758
159.772	27.806
159.974	27.855
160.180	27.905
160.369	27.956
160.553	28.012
160.731	28.073
160.918	28.143
161.098	28.216
161.283	28.299
161.475	28.391
161.685	28.497
161.885	28.600
162.080	28.703
162.271	28.806
162.462	28.910
162.651	29.016
162.841	29.125
163.033	29.236
163.229	29.352
163.424	29.467
163.618	29.582
163.812	29.697
164.004	29.810
164.197	29.925
164.390	30.039
164.583	30.153
164.774	30.266
164.967	30.380
165.160	30.494
165.353	30.609
165.545	30.722
165.738	30.837
165.931	30.951
166.124	31.065
166.315	31.178
166.508	31.292
166.701	31.406
166.894	31.520
167.086	31.634
167.280	31.748
167.472	31.862
167.665	31.977
167.857	32.090
168.049	32.204
168.242	32.318
168.436	32.432
168.628	32.546
168.845	32.675
169.086	32.817
169.424	33.017
170.016	33.367
170.016	33.397

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

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR F_s *# Analisi Deficit in riferimento a $F_s(\text{progetto}) = 1.200$

Sup N.	F_s	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.260	326.7	259.3	15.5	Surplus
2	1.279	348.6	272.7	21.4	Surplus
3	1.282	366.0	285.5	23.3	Surplus
4	1.284	343.4	267.4	22.5	Surplus
5	1.287	350.4	272.2	23.8	Surplus
6	1.291	347.1	269.0	24.4	Surplus
7	1.298	391.1	301.4	29.4	Surplus
8	1.299	374.6	288.5	28.4	Surplus
9	1.300	358.1	275.4	27.6	Surplus



10 1.302 365.9 281.0 28.7 Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 15.5

Note: FTR --> Forza totale Resistente lungo la superficie di scivolamento

FTA --> Forza totale Agente lungo la superficie di scivolamento

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

TABELLA PARAMETRI CONCI DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (°)	W (kN/m)	ru (-)	U (kPa)	phi' (°)	(c',Cu) (kPa)
151.297	0.243	-31.25	0.42	0.00	0.00	0.00	25.00
151.540	0.285	-31.25	1.58	0.00	0.00	0.00	25.00
151.825	0.083	-31.25	0.68	0.00	0.00	0.00	25.00
151.908	0.285	-31.25	3.09	0.00	0.00	0.00	25.00
152.193	0.033	-31.25	0.43	0.00	0.00	0.00	25.00
152.226	0.194	-31.25	2.86	0.00	0.00	0.00	25.00
152.419	0.033	-31.25	0.54	0.06	1.44	25.00	0.50
152.452	0.205	-31.25	3.73	0.07	1.59	25.00	0.50
152.657	0.181	-31.25	3.82	0.10	2.46	25.00	0.50
152.838	0.182	-31.25	4.35	0.13	3.46	25.00	0.50
153.020	0.182	-31.25	4.85	0.16	4.63	25.00	0.50
153.202	0.183	-31.25	5.37	0.19	5.84	25.00	0.50
153.385	0.182	-31.25	5.85	0.22	7.20	25.00	0.50
153.567	0.181	-31.04	6.32	0.25	8.46	25.00	0.50
153.748	0.032	-30.83	1.19	0.26	9.59	25.00	0.50
153.780	0.148	-30.83	5.64	0.26	9.80	25.00	0.50
153.928	0.180	-30.61	7.42	0.27	10.69	25.00	0.50
154.108	0.180	-30.39	8.03	0.28	11.85	25.00	0.50
154.288	0.186	-30.15	8.92	0.29	13.20	25.00	0.50
154.475	0.193	-29.93	9.90	0.30	14.67	25.00	0.50
154.667	0.207	-29.71	11.36	0.30	16.16	25.00	0.50
154.874	0.226	-29.52	13.28	0.31	17.69	25.00	0.50
155.100	0.176	-26.82	10.98	0.31	19.01	25.00	0.50
155.276	0.064	-22.54	4.15	0.31	19.74	25.00	0.50
155.340	0.092	-22.54	6.05	0.32	19.96	25.00	0.50
155.432	0.136	-16.45	9.15	0.32	20.25	25.00	0.50
155.569	0.162	-10.03	11.13	0.32	20.63	25.00	0.50
155.731	0.134	-3.44	9.37	0.31	20.99	25.00	0.50
155.865	0.155	3.48	10.95	0.31	21.22	25.00	0.50
156.019	0.173	8.68	12.34	0.31	21.40	25.00	0.50
156.192	0.226	12.00	16.29	0.31	21.54	25.00	0.50
156.418	0.082	12.00	5.90	0.31	21.67	25.00	0.50
156.500	0.126	12.00	9.14	0.31	21.71	25.00	0.50
156.626	0.014	12.00	1.00	0.30	21.72	25.00	0.50
156.640	0.180	12.00	13.14	0.30	21.72	25.00	0.50
156.820	0.188	12.00	13.87	0.30	21.73	25.00	0.50
157.008	0.181	12.00	13.45	0.30	21.72	25.00	0.50
157.189	0.183	12.00	13.73	0.30	21.71	25.00	0.50
157.372	0.183	12.00	13.88	0.29	21.69	25.00	0.50
157.555	0.185	12.00	14.16	0.29	21.66	25.00	0.50
157.740	0.186	12.00	14.38	0.29	21.62	25.00	0.50
157.926	0.180	12.69	14.03	0.28	21.57	25.00	0.50
158.106	0.178	13.40	13.99	0.28	21.50	25.00	0.50
158.284	0.176	14.14	13.94	0.28	21.41	25.00	0.50
158.460	0.179	14.87	14.29	0.27	21.31	25.00	0.50
158.639	0.177	15.61	14.24	0.27	21.19	25.00	0.50
158.816	0.181	16.33	14.61	0.27	21.06	25.00	0.50
158.997	0.186	17.03	15.11	0.26	20.90	25.00	0.50
159.183	0.097	17.66	7.86	0.26	20.72	25.00	0.50
159.280	0.101	17.66	8.21	0.26	20.61	25.00	0.50
159.381	0.182	18.88	14.82	0.26	20.49	25.00	0.50
159.563	0.177	20.22	14.37	0.26	20.23	25.00	0.50



159.739	0.171	21.63	13.92	0.25	19.94	25.00	0.50
159.911	0.177	23.01	14.36	0.25	19.60	25.00	0.50
160.088	0.171	24.34	13.78	0.24	19.20	25.00	0.50
160.259	0.175	25.66	14.02	0.24	18.77	25.00	0.50
160.434	0.179	26.88	14.21	0.24	18.27	25.00	0.50
160.613	0.191	27.96	15.02	0.23	17.70	25.00	0.50
160.804	0.188	27.96	14.64	0.22	17.07	25.00	0.50
160.992	0.184	27.96	14.24	0.22	16.46	25.00	0.50
161.176	0.184	27.96	14.03	0.21	15.89	25.00	0.50
161.360	0.181	27.96	13.69	0.21	15.35	25.00	0.50
161.540	0.130	27.96	9.72	0.20	14.80	25.00	0.50
161.670	0.052	27.96	3.91	0.20	14.43	25.00	0.50
161.722	0.181	27.96	13.45	0.20	14.29	25.00	0.50
161.904	0.182	27.96	13.33	0.19	13.78	25.00	0.50
162.085	0.180	27.96	13.08	0.19	13.27	25.00	0.50
162.265	0.182	27.96	13.06	0.18	12.77	25.00	0.50
162.447	0.133	27.96	9.50	0.18	12.25	25.00	0.50
162.580	0.048	27.96	3.40	0.17	11.86	25.00	0.50
162.628	0.182	27.96	12.68	0.17	11.72	25.00	0.50
162.810	0.181	27.96	12.29	0.17	11.14	25.00	0.50
162.991	0.182	27.96	12.05	0.16	10.57	25.00	0.50
163.173	0.181	27.96	11.69	0.16	9.99	25.00	0.50
163.354	0.182	27.96	11.39	0.15	9.38	25.00	0.50
163.536	0.180	27.96	10.98	0.14	8.75	25.00	0.50
163.716	0.182	27.96	10.76	0.14	8.09	25.00	0.50
163.897	0.181	27.96	10.44	0.13	7.47	25.00	0.50
164.078	0.182	27.96	10.16	0.13	6.88	25.00	0.50
164.260	0.181	27.96	9.79	0.12	6.28	25.00	0.50
164.441	0.182	27.96	9.53	0.11	5.70	25.00	0.50
164.623	0.181	27.96	9.18	0.10	5.04	25.00	0.50
164.804	0.182	27.96	8.88	0.09	4.41	25.00	0.50
164.986	0.180	27.96	8.49	0.08	3.82	25.00	0.50
165.166	0.182	27.96	8.25	0.07	3.28	25.00	0.50
165.347	0.181	27.96	7.93	0.06	2.72	25.00	0.50
165.529	0.131	27.96	5.54	0.05	2.21	25.00	0.50
165.660	0.051	27.96	2.10	0.05	1.89	25.00	0.50
165.711	0.181	27.96	7.28	0.04	1.78	25.00	0.50
165.892	0.182	27.96	7.01	0.03	1.39	25.00	0.50
166.074	0.181	27.96	6.67	0.03	1.04	25.00	0.50
166.255	0.123	27.96	4.35	0.02	0.74	25.00	0.50
166.378	0.058	27.96	2.02	0.00	0.00	25.00	0.50
166.436	0.180	27.96	6.01	0.00	0.00	25.00	0.50
166.616	0.182	27.96	5.76	0.00	0.00	25.00	0.50
166.798	0.181	27.96	5.45	0.00	0.00	25.00	0.50
166.979	0.182	27.96	5.17	0.00	0.00	25.00	0.50
167.161	0.181	27.96	4.83	0.00	0.00	25.00	0.50
167.342	0.182	27.96	4.56	0.00	0.00	25.00	0.50
167.524	0.181	27.96	4.24	0.00	0.00	25.00	0.50
167.705	0.045	27.96	1.00	0.00	0.00	25.00	0.50
167.750	0.137	27.96	2.94	0.00	0.00	25.00	0.50
167.887	0.180	27.96	3.61	0.00	0.00	25.00	0.50
168.067	0.182	27.96	3.34	0.00	0.00	25.00	0.50
168.248	0.181	27.96	3.03	0.00	0.00	25.00	0.50
168.430	0.080	27.96	1.25	0.00	0.00	25.00	0.50
168.510	0.101	27.96	1.49	0.00	0.00	25.00	0.50
168.611	0.129	27.96	1.75	0.00	0.00	25.00	0.50
168.740	0.052	27.96	0.67	0.00	0.00	25.00	0.50
168.792	0.205	27.96	2.37	0.00	0.00	25.00	0.50
168.997	0.227	27.96	2.18	0.00	0.00	25.00	0.50
169.224	0.285	27.96	2.06	0.00	0.00	25.00	0.50
169.509	0.033	27.96	0.19	0.00	0.00	25.00	0.50
169.542	0.285	27.96	1.23	0.00	0.00	25.00	0.50
169.827	0.285	27.96	0.48	0.00	0.00	25.00	0.50

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio

dx(m) : Larghezza concio

alpha() : Angolo pendenza base concio

W(kN/m) : Forza peso concio

ru(-) : Coefficiente locale pressione interstiziale



U(kPa) : Pressione totale dei pori base concio
 $\phi'(\)$: Angolo di attrito efficace base concio
 c'/Cu (kPa) : Coesione efficace o Resistenza al taglio in condizioni non drenate

TABELLA DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	ht (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (kN)	FS_qFEM (--)	FS_p-qPATH (--)			
151.297	0.000	29.520	-0.404	0.0000000000E+000	0.0000000000E+000	0.0000000000E+000	1.1801630536E-001	0.042	1.381	1.380		
151.540	0.058	29.431	-0.404	5.9243390060E-002	-7.4054237576E-004	3.7020508584E-001	0.042	1.381	1.380			
151.825	0.107	29.307	-0.432	2.0705604079E-001	-1.5315524796E-002	7.6821423679E-001	0.077	1.279	1.217			
151.908	0.122	29.272	-0.362	2.7646048501E-001	-2.7408100348E-002	8.4536055400E-001	0.093	1.253	1.179			
152.193	0.197	29.174	-0.338	5.2224387687E-001	-9.0926602542E-002	8.9022729506E-001	0.161	1.183	1.080			
152.226	0.208	29.164	-0.304	5.5162153799E-001	-1.0211683357E-001	9.1908522165E-001	0.169	1.177	1.072			
152.419	0.266	29.105	-0.309	7.5888905772E-001	-2.2113963122E-001	1.2137702448E+000	0.219	1.144	1.023			
152.452	0.275	29.094	-0.327	7.9975576798E-001	-2.5377182272E-001	1.2390321760E+000	0.228	1.139	1.015			
152.657	0.332	29.027	-0.348	1.0544353617E+000	-4.7485920384E-001	1.5410030121E+000	0.316	1.110	0.968			
152.838	0.375	28.960	-0.383	1.3806357912E+000	-7.6379129516E-001	2.3389809400E+000	0.445	1.089	0.928			
153.020	0.413	28.888	-0.384	1.9051146984E+000	-1.1514912848E+000	3.6185814321E+000	0.649	1.076	0.892			
153.202	0.456	28.820	-0.381	2.6973406995E+000	-1.6438268746E+000	5.4590669185E+000	0.834	1.077	0.869			
153.385	0.495	28.749	-0.369	3.8959463486E+000	-2.3035514700E+000	7.6810232135E+000	1.046	1.094	0.853			
153.567	0.543	28.685	-0.326	5.4944650926E+000	-3.0996865462E+000	1.0007652438E+001	1.168	1.135	0.854			
153.748	0.596	28.630	-0.301	7.5249627511E+000	-4.0366034471E+000	1.3234822210E+001	1.218	1.200	0.870			
153.780	0.607	28.621	-0.273	7.9662945060E+000	-4.2282196963E+000	1.3956508094E+001	1.220	1.216	0.875			
153.928	0.655	28.581	-0.276	1.0271300008E+001	-5.1770385488E+000	1.8085460001E+001	1.217	1.296	0.901			
154.108	0.711	28.531	-0.300	1.4075410323E+001	-6.7117236679E+000	2.6956828080E+001	1.182	1.446	0.952			
154.288	0.759	28.473	-0.325	1.9991264833E+001	-9.0299819817E+000	3.6794274429E+001	1.089	1.706	1.039			
154.475	0.806	28.412	-0.322	2.7615898795E+001	-1.1937498858E+001	4.3786912565E+001	0.938	2.060	1.158			
154.667	0.856	28.351	-0.307	3.6629146878E+001	-1.5240298825E+001	5.0117732755E+001	0.761	2.474	1.298			
154.874	0.912	28.289	-0.263	4.7727991701E+001	-1.7076374202E+001	5.2630625646E+001	0.593	2.944	1.464			
155.100	0.988	28.237	-0.195	5.9329948010E+001	-1.6726860548E+001	4.6991624397E+001	0.481	3.377	1.630			
155.276	1.051	28.211	-0.139	6.6989192897E+001	-1.5015974966E+001	4.3326250579E+001	0.428	3.615	1.735			
155.340	1.070	28.204	-0.091	6.9778361044E+001	-1.3775939108E+001	4.2468064651E+001	0.413	3.673	1.770			
155.432	1.101	28.197	-0.051	7.3598004111E+001	-1.1539353612E+001	4.1930133614E+001	0.395	3.735	1.819			
155.569	1.137	28.192	-0.009	7.9437478306E+001	-6.5443539744E+000	4.0620585620E+001	0.378	3.755	1.887			
155.731	1.168	28.194	0.027	8.5598403651E+001	4.3597936037E-001	3.5536064158E+001	0.374	3.712	1.955			
155.865	1.182	28.200	0.070	9.0081273842E+001	7.2331910565E+000	3.0519105160E+001	0.382	3.629	2.001			
156.019	1.186	28.214	0.109	9.4272120434E+001	1.4272051186E+001	2.5150390557E+001	0.410	3.477	2.039			
156.192	1.182	28.236	0.151	9.8233788167E+001	2.1433882258E+001	2.1148027143E+001	0.454	3.260	2.067			
156.418	1.172	28.274	0.174	1.0248346875E+002	2.9903815011E+001	1.6127398998E+001	0.538	2.925	2.082			
156.500	1.170	28.290	0.197	1.0372346658E+002	3.2573544692E+001	1.3125295996E+001	0.576	2.801	2.081			
156.626	1.169	28.315	0.201	1.0498118179E+002	3.5636004642E+001	7.2178841726E+000	0.645	2.624	2.068			
156.640	1.169	28.318	0.215	1.0507613098E+002	3.5886038622E+001	6.7899392549E+000	0.653	2.607	2.066			
156.820	1.169	28.357	0.231	1.0599180724E+002	3.8355563369E+001	4.1421371030E+000	0.761	2.381	2.030			
157.008	1.176	28.403	0.255	1.0658652577E+002	3.9533224743E+001	2.4725288692E+000	0.871	2.159	1.977			
157.189	1.185	28.451	0.275	1.0691445202E+002	3.9807990152E+001	1.4656293575E+000	0.935	1.973	1.917			
157.372	1.198	28.503	0.296	1.0711817362E+002	3.9979999521E+001	9.0013013944E-001	0.965	1.812	1.849			
157.555	1.215	28.559	0.320	1.0724365387E+002	4.0075459500E+001	5.0166722142E-001	0.981	1.672	1.777			
157.740	1.238	28.621	0.321	1.0730205278E+002	4.0124088657E+001	-1.7714427189E-003	0.991	1.547	1.705			
157.926	1.256	28.678	0.302	1.0724231987E+002	4.0102659589E+001	-6.7422313106E-001	0.994	1.464	1.646			
158.106	1.269	28.732	0.314	1.0705968738E+002	4.0029336197E+001	-1.5238055302E+000	0.995	1.410	1.600			
158.284	1.285	28.791	0.328	1.0669930255E+002	3.9893573326E+001	-2.3508946502E+000	0.995	1.365	1.558			
158.460	1.298	28.848	0.322	1.0622943027E+002	3.9721503456E+001	-3.0329526373E+000	0.994	1.331	1.524			
158.639	1.307	28.905	0.318	1.0562043600E+002	3.9503134465E+001	-3.8087037195E+000	0.994	1.303	1.494			
158.816	1.314	28.961	0.315	1.0487294436E+002	3.9238306139E+001	-4.6252996573E+000	0.993	1.280	1.470			
158.997	1.318	29.018	0.313	1.0395973413E+002	3.8916140751E+001	-5.4996972076E+000	0.993	1.259	1.448			
159.183	1.319	29.076	0.313	1.0284824041E+002	3.8522978689E+001	-6.4972852137E+000	0.993	1.238	1.428			
159.280	1.319	29.106	0.311	1.0219411829E+002	3.8290053679E+001	-7.0180256163E+000	0.993	1.227	1.418			
159.381	1.318	29.137	0.323	1.0146138009E+002	3.8027528166E+001	-7.7471415928E+000	0.993	1.216	1.408			
159.563	1.316	29.197	0.339	9.9897220603E+001	3.7463456081E+001	-9.3570721091E+000	0.993	1.195	1.390			
159.739	1.312	29.259	0.359	9.8115237930E+001	3.6817484582E+001	-1.0904612050E+001	0.993	1.174	1.372			
159.911	1.307	29.322	0.383	9.6110113711E+001	3.6087814858E+001	-1.2527220295E+001	0.993	1.152	1.353			
160.088	1.302	29.392	0.409	9.3734523267E+001	3.5220739616E+001	-1.4304925347E+001	0.993	1.130	1.332			
160.259	1.297	29.465	0.442	9.1136967695E+001	3.4271133376E+001	-1.6124717990E+001	0.993	1.108	1.310			
160.434	1.294	29.545	0.480	8.8144621811E+001	3.3176869585E+001	-1.8211466816E+001	0.994	1.085	1.286			
160.613	1.292	29.635	0.497	8.4681113453E+001	3.1914285388E+001	-1.9433153626E+001	0.994	1.063	1.260			
160.804	1.285	29.729	0.489	8.0959829174E+001	3.0564445779E+001	-1.9333628452E+001	0.994	1.043	1.233			
160.992	1.276	29.820	0.475	7.7362152277E+001	2.9266707224E+001	-1.8812022925E+001	0.995	1.026	1.209			
161.176	1.265	29.906	0.458	7.3956238196E+001	2.8046734133E+001	-1.8050829920E+001	0.995	1.012	1.186			



161.360	1.249	29.988	0.461	7.0719888617E+001	2.6896461948E+001	-1.7978049441E+001	0.996	1.001	1.166
161.540	1.239	30.074	0.464	6.7407212531E+001	2.5729686008E+001	-1.7672598872E+001	0.997	0.992	1.148
161.670	1.229	30.132	0.442	6.5177031264E+001	2.4948977901E+001	-1.6392461725E+001	0.998	0.986	1.137
161.722	1.223	30.154	0.428	6.4335796561E+001	2.4655867482E+001	-1.6101004594E+001	0.999	0.985	1.133
161.904	1.205	30.232	0.428	6.1391848599E+001	2.3631714415E+001	-1.6122063104E+001	1.001	0.979	1.119
162.085	1.186	30.310	0.424	5.8486562587E+001	2.2621188097E+001	-1.5881463207E+001	1.003	0.974	1.107
162.265	1.166	30.385	0.417	5.5650144820E+001	2.1631685166E+001	-1.5611370021E+001	1.005	0.970	1.096
162.447	1.145	30.460	0.412	5.2843324961E+001	2.0645916424E+001	-1.5421656774E+001	1.007	0.966	1.087
162.580	1.129	30.515	0.404	5.0791690107E+001	1.9918477590E+001	-1.4748897192E+001	1.008	0.964	1.080
162.628	1.122	30.534	0.406	5.0094887126E+001	1.9669220679E+001	-1.4730761214E+001	1.009	0.963	1.078
162.810	1.100	30.608	0.402	4.7267626590E+001	1.8647844919E+001	-1.5166999731E+001	1.011	0.960	1.070
162.991	1.075	30.679	0.387	4.4591304347E+001	1.7663747284E+001	-1.4528288280E+001	1.013	0.958	1.064
163.173	1.048	30.749	0.387	4.1997171342E+001	1.6693729948E+001	-1.4329075301E+001	1.014	0.955	1.058
163.354	1.022	30.820	0.398	3.9386396642E+001	1.5704218950E+001	-1.4453957378E+001	1.015	0.953	1.053
163.536	0.999	30.893	0.412	3.6753072650E+001	1.4694407015E+001	-1.4574943851E+001	1.015	0.951	1.048
163.716	0.979	30.969	0.408	3.4117594755E+001	1.3675418719E+001	-1.3957895314E+001	1.015	0.950	1.043
163.897	0.955	31.041	0.388	3.1709224220E+001	1.2740225222E+001	-1.2663444254E+001	1.014	0.948	1.040
164.078	0.927	31.109	0.378	2.9522875626E+001	1.1890713175E+001	-1.1795400741E+001	1.012	0.947	1.038
164.260	0.900	31.178	0.378	2.7424919850E+001	1.1075837431E+001	-1.1273956279E+001	1.011	0.947	1.036
164.441	0.872	31.247	0.400	2.5431987527E+001	1.0302327010E+001	-1.1276175742E+001	1.009	0.946	1.036
164.623	0.852	31.323	0.415	2.3333221654E+001	9.4902795248E+000	-1.1112092733E+001	1.007	0.946	1.036
164.804	0.830	31.397	0.400	2.1394995524E+001	8.7445781603E+000	-1.0218103765E+001	1.006	0.946	1.039
164.986	0.805	31.468	0.383	1.9626173480E+001	8.0691066948E+000	-9.3137040460E+000	1.005	0.947	1.042
165.166	0.776	31.536	0.387	1.8026682013E+001	7.4629168143E+000	-8.8553635456E+000	1.006	0.948	1.046
165.347	0.752	31.608	0.385	1.6424954248E+001	6.8632070704E+000	-8.3158753692E+000	1.007	0.949	1.052
165.529	0.724	31.675	0.363	1.5009356999E+001	6.3387638626E+000	-7.3827159966E+000	1.008	0.951	1.058
165.660	0.700	31.722	0.345	1.4080897794E+001	5.9973896066E+000	-6.5035137022E+000	1.010	0.952	1.063
165.711	0.690	31.738	0.338	1.3762268202E+001	5.8811297704E+000	-6.2949653152E+000	1.010	0.952	1.064
165.892	0.655	31.800	0.341	1.2615882346E+001	5.4625752765E+000	-6.1521193202E+000	1.013	0.954	1.071
166.074	0.621	31.862	0.341	1.1530609887E+001	5.0642802144E+000	-5.7861022427E+000	1.015	0.956	1.078
166.255	0.586	31.924	0.343	1.0513861930E+001	4.6862341098E+000	-5.4801895536E+000	1.016	0.958	1.085
166.378	0.563	31.966	0.341	9.8502919391E+000	4.4352739291E+000	-5.0714565849E+000	1.016	0.960	1.090
166.436	0.552	31.985	0.366	9.5626596676E+000	4.3241755354E+000	-5.0231818414E+000	1.015	0.961	1.092
166.616	0.524	32.053	0.402	8.6004975011E+000	3.9387098774E+000	-5.4998506684E+000	1.009	0.964	1.098
166.798	0.505	32.131	0.418	7.5739305314E+000	3.5043369634E+000	-5.3438523844E+000	0.996	0.969	1.105
166.979	0.483	32.205	0.401	6.6615452722E+000	3.0959539265E+000	-4.7641585123E+000	0.975	0.976	1.111
167.161	0.458	32.276	0.397	5.8437132157E+000	2.7084665185E+000	-4.3946645107E+000	0.947	0.983	1.117
167.342	0.435	32.349	0.416	5.0668889714E+000	2.3217026928E+000	-4.2803378921E+000	0.908	0.993	1.123
167.524	0.416	32.427	0.421	4.2907857461E+000	1.9162438633E+000	-3.9761990674E+000	0.852	1.007	1.132
167.705	0.395	32.502	0.402	3.6221669412E+000	1.5510825813E+000	-3.2074264289E+000	0.786	1.024	1.142
167.750	0.387	32.518	0.364	3.4838173724E+000	1.4742063927E+000	-3.0567701993E+000	0.771	1.029	1.145
167.887	0.364	32.568	0.352	3.0792105520E+000	1.2500058096E+000	-2.8140681430E+000	0.720	1.043	1.154
168.067	0.331	32.630	0.334	2.6071074837E+000	9.9085933062E-001	-2.4654764582E+000	0.656	1.063	1.166
168.248	0.293	32.689	0.327	2.1883934501E+000	7.6746536204E-001	-2.2005173828E+000	0.592	1.085	1.181
168.430	0.257	32.749	0.330	1.8086860107E+000	5.7693414950E-001	-1.9940153417E+000	0.469	1.113	1.200
168.510	0.241	32.775	0.317	1.6518157508E+000	5.0260682641E-001	-1.8435736720E+000	0.412	1.129	1.210
168.611	0.218	32.806	0.322	1.4782778691E+000	4.2427789768E-001	-1.7106343752E+000	0.356	1.147	1.223
168.740	0.193	32.849	0.329	1.2583330558E+000	3.3149654601E-001	-1.5434768938E+000	0.281	1.172	1.240
168.792	0.181	32.866	0.333	1.1811212780E+000	3.0171740979E-001	-1.4951504852E+000	0.257	1.183	1.248
168.997	0.142	32.935	0.362	8.5887562271E-001	1.8194961307E-001	-1.5293845150E+000	0.188	1.232	1.282
169.224	0.109	33.022	0.434	5.2322972149E-001	8.9244324441E-002	-1.4322618556E+000	0.129	1.339	1.357
169.509	0.093	33.157	0.460	1.3207115406E-001	1.1652061977E-002	-7.5681735694E-001	0.068	1.499	1.464
169.542	0.086	33.169	0.396	1.0951856009E-001	8.4533412735E-003	-6.4353535754E-001	0.065	1.509	1.471
169.827	0.050	33.283	0.396	3.0812654312E-002	3.8515817890E-004	-1.9203443083E-001	0.042	1.518	1.877

LEGENDA SIMBOLI

$X(m)$: Ascissa sinistra concio
 $ht(m)$: Altezza linea di thrust da nodo sinistro base concio
 $yt(m)$: coordinata Y linea di thrust
 $yt'(-)$: gradiente pendenza locale linea di thrust
 $E(x)(kN/m)$: 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)
 $FS_qFEM(x)(-)$: fattore di sicurezza locale stimato (locale in X) by qFEM
 $FS_p-qPATH(x)(-)$: fattore di sicurezza locale stimato (locale in X) by p-qPATH Procedure

TABELLA SFORZI DI TAGLIO DISTRIBUITI LUNGO SUPERFICIE INDIVIDUATA CON MINOR FS



X (m)	dx (m)	dl (m)	alpha (°)	TauStress (kPa)	TauF (kN/m)	TauStrength (kPa)	TauS (kN/m)
151.297	0.243	0.284	-31.249	-0.722	-0.205	1.108	0.315
151.540	0.285	0.334	-31.249	-2.291	-0.764	2.394	0.799
151.825	0.083	0.097	-31.249	-3.385	-0.327	3.234	0.312
151.908	0.285	0.334	-31.249	-4.478	-1.494	4.091	1.365
152.193	0.033	0.038	-31.249	-5.424	-0.209	4.786	0.184
152.226	0.194	0.227	-31.249	-6.098	-1.382	5.110	1.158
152.419	0.033	0.039	-31.249	-6.777	-0.262	4.677	0.181
152.452	0.205	0.240	-31.249	-7.521	-1.801	5.156	1.235
152.657	0.181	0.212	-31.249	-8.727	-1.846	5.304	1.122
152.838	0.182	0.213	-31.249	-9.862	-2.102	5.323	1.134
153.020	0.182	0.213	-31.249	-11.001	-2.340	5.219	1.110
153.202	0.183	0.214	-31.249	-12.140	-2.592	4.803	1.026
153.385	0.182	0.213	-31.249	-13.279	-2.824	4.446	0.946
153.567	0.181	0.211	-31.039	-14.346	-3.031	4.156	0.878
153.748	0.032	0.038	-30.825	-14.936	-0.565	3.594	0.136
153.780	0.148	0.172	-30.825	-15.599	-2.685	3.606	0.621
153.928	0.180	0.209	-30.609	-16.767	-3.509	2.449	0.512
154.108	0.180	0.209	-30.392	-18.038	-3.771	0.000	0.000
154.288	0.186	0.215	-30.152	-19.298	-4.159	0.000	0.000
154.475	0.193	0.222	-29.927	-20.586	-4.579	0.000	0.000
154.667	0.207	0.238	-29.710	-21.928	-5.216	4.827	1.148
154.874	0.226	0.259	-29.520	-23.379	-6.060	14.926	3.869
155.100	0.176	0.197	-26.822	-23.041	-4.544	23.844	4.702
155.276	0.064	0.070	-22.540	-20.479	-1.430	33.571	2.344
155.340	0.092	0.100	-22.540	-20.850	-2.086	38.138	3.815
155.432	0.136	0.142	-16.448	-15.619	-2.222	48.399	6.885
155.569	0.162	0.164	-10.028	-8.982	-1.478	50.964	8.384
155.731	0.134	0.134	-3.435	-1.257	-0.169	50.720	6.805
155.865	0.155	0.155	3.484	7.264	1.125	41.125	6.369
156.019	0.173	0.175	8.675	13.598	2.373	34.017	5.937
156.192	0.226	0.231	12.000	17.526	4.057	29.379	6.800
156.418	0.082	0.084	12.000	17.591	1.470	28.536	2.384
156.500	0.126	0.129	12.000	17.637	2.277	27.005	3.486
156.626	0.014	0.014	12.000	17.668	0.248	25.907	0.363
156.640	0.180	0.184	12.000	17.758	3.271	25.213	4.644
156.820	0.188	0.192	12.000	17.937	3.452	24.120	4.642
157.008	0.181	0.185	12.000	18.116	3.350	23.548	4.354
157.189	0.183	0.187	12.000	18.293	3.419	23.765	4.442
157.372	0.183	0.187	12.000	18.470	3.456	24.016	4.493
157.555	0.185	0.189	12.000	18.649	3.527	24.304	4.596
157.740	0.186	0.190	12.000	18.829	3.581	24.578	4.675
157.926	0.180	0.184	12.687	19.834	3.656	24.668	4.547
158.106	0.178	0.183	13.404	20.863	3.814	24.712	4.518
158.284	0.176	0.181	14.140	21.901	3.972	24.756	4.490
158.460	0.179	0.185	14.867	22.913	4.245	24.777	4.591
158.639	0.177	0.184	15.606	23.924	4.407	24.771	4.563
158.816	0.181	0.189	16.332	24.900	4.696	24.750	4.668
158.997	0.186	0.195	17.025	25.819	5.030	24.727	4.817
159.183	0.097	0.101	17.659	26.624	2.699	24.688	2.502
159.280	0.101	0.106	17.659	26.657	2.818	24.768	2.618
159.381	0.182	0.192	18.875	28.003	5.382	24.373	4.684
159.563	0.177	0.188	20.221	29.407	5.534	23.961	4.509
159.739	0.171	0.184	21.630	30.775	5.676	23.505	4.335
159.911	0.177	0.193	23.006	31.993	6.167	23.046	4.442
160.088	0.171	0.188	24.339	33.053	6.204	22.608	4.244
160.259	0.175	0.194	25.659	33.981	6.603	22.173	4.309
160.434	0.179	0.201	26.876	34.698	6.958	21.804	4.373
160.613	0.191	0.216	27.962	35.192	7.600	21.374	4.616
160.804	0.188	0.213	27.962	34.842	7.406	21.361	4.541
160.992	0.184	0.209	27.962	34.497	7.203	21.323	4.452
161.176	0.184	0.208	27.962	34.157	7.097	21.263	4.418
161.360	0.181	0.205	27.962	33.820	6.925	21.276	4.357
161.540	0.130	0.147	27.962	33.533	4.919	21.236	3.115
161.670	0.052	0.059	27.962	33.365	1.978	21.208	1.258
161.722	0.181	0.205	27.962	33.148	6.804	21.112	4.333
161.904	0.182	0.206	27.962	32.813	6.743	21.067	4.329
162.085	0.180	0.204	27.962	32.478	6.619	21.026	4.285
162.265	0.182	0.206	27.962	32.144	6.606	20.986	4.313

162.447	0.133	0.151	27.962	31.853	4.807	21.001	3.169
162.580	0.048	0.054	27.962	31.627	1.719	20.961	1.139
162.628	0.182	0.206	27.962	31.137	6.414	20.704	4.265
162.810	0.181	0.205	27.962	30.364	6.217	20.331	4.163
162.991	0.182	0.206	27.962	29.590	6.096	19.962	4.112
163.173	0.181	0.205	27.962	28.816	5.915	19.637	4.031
163.354	0.182	0.206	27.962	28.043	5.763	19.322	3.971
163.536	0.180	0.204	27.962	27.272	5.558	19.021	3.876
163.716	0.182	0.206	27.962	26.501	5.446	18.635	3.830
163.897	0.181	0.205	27.962	25.728	5.281	18.233	3.743
164.078	0.182	0.206	27.962	24.954	5.140	17.860	3.679
164.260	0.181	0.205	27.962	24.180	4.951	17.489	3.581
164.441	0.182	0.206	27.962	23.407	4.822	17.178	3.539
164.623	0.181	0.205	27.962	22.633	4.646	16.810	3.450
164.804	0.182	0.206	27.962	21.859	4.492	16.426	3.376
164.986	0.180	0.204	27.962	21.089	4.298	16.033	3.267
165.166	0.182	0.206	27.962	20.318	4.175	15.664	3.219
165.347	0.181	0.205	27.962	19.545	4.012	15.244	3.129
165.529	0.131	0.149	27.962	18.879	2.805	14.903	2.214
165.660	0.051	0.057	27.962	18.491	1.062	14.696	0.844
165.711	0.181	0.205	27.962	17.997	3.685	14.360	2.940
165.892	0.182	0.206	27.962	17.224	3.548	13.905	2.864
166.074	0.181	0.205	27.962	16.449	3.376	13.434	2.757
166.255	0.123	0.139	27.962	15.801	2.201	13.050	1.818
166.378	0.058	0.066	27.962	15.418	1.021	13.071	0.865
166.436	0.180	0.204	27.962	14.927	3.042	12.718	2.592
166.616	0.182	0.206	27.962	14.183	2.915	12.166	2.500
166.798	0.181	0.205	27.962	13.436	2.758	11.549	2.371
166.979	0.182	0.206	27.962	12.689	2.614	10.935	2.253
167.161	0.181	0.205	27.962	11.942	2.445	10.342	2.118
167.342	0.182	0.206	27.962	11.195	2.306	9.761	2.011
167.524	0.181	0.205	27.962	10.447	2.144	9.133	1.875
167.705	0.045	0.051	27.962	9.982	0.506	8.715	0.442
167.750	0.137	0.155	27.962	9.608	1.487	8.406	1.301
167.887	0.180	0.204	27.962	8.956	1.825	7.855	1.601
168.067	0.182	0.206	27.962	8.212	1.688	7.230	1.486
168.248	0.181	0.205	27.962	7.465	1.532	6.607	1.356
168.430	0.080	0.091	27.962	6.927	0.631	6.158	0.561
168.510	0.101	0.115	27.962	6.552	0.753	5.836	0.671
168.611	0.129	0.146	27.962	6.079	0.884	5.452	0.793
168.740	0.052	0.059	27.962	5.706	0.338	5.131	0.304
168.792	0.205	0.232	27.962	5.177	1.200	4.713	1.093
168.997	0.227	0.257	27.962	4.289	1.101	3.978	1.021
169.224	0.285	0.323	27.962	3.235	1.044	3.118	1.007
169.509	0.033	0.037	27.962	2.581	0.096	2.569	0.096
169.542	0.285	0.323	27.962	1.926	0.622	2.037	0.658
169.827	0.285	0.323	27.962	0.752	0.243	1.099	0.355

LEGENDA SIMBOLI

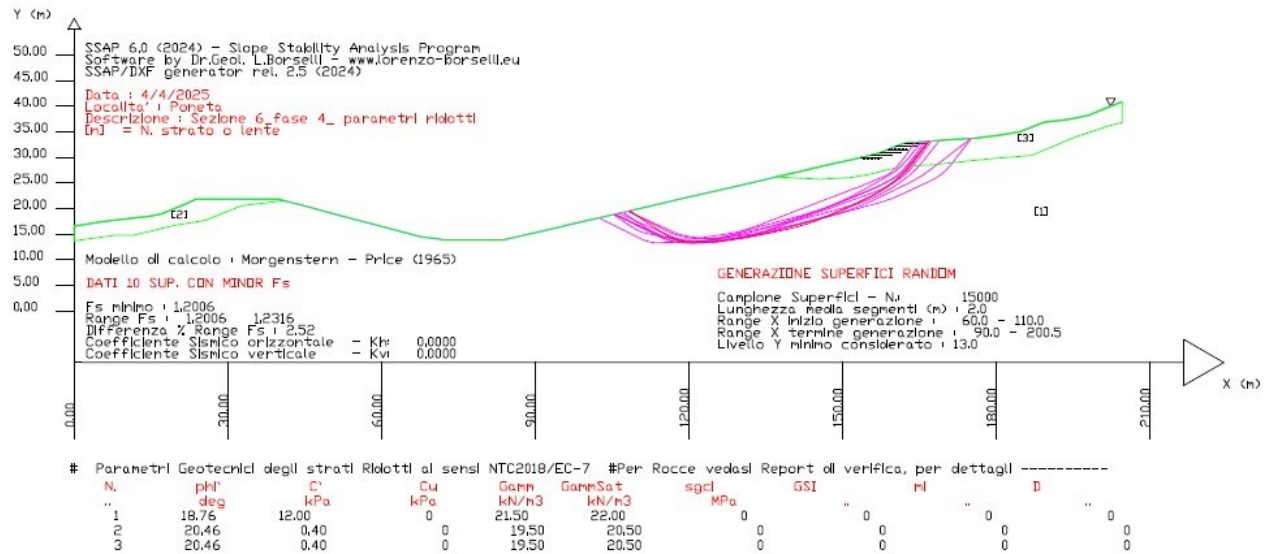
X(m) : Ascissa sinistra concio
 dx(m) : Larghezza concio
 dl(m) : lunghezza base concio
 alpha () : Angolo pendenza base concio
 TauStress(kPa) : Sforzo di taglio su base concio
 TauF (kN/m) : Forza di taglio su base concio
 TauStrength(kPa) : Resistenza al taglio su base concio
 TauS (kN/m) : Forza resistente al taglio su base concio

RISULTATI INTERAZIONI CON SISTEMA DI GEOGRIGLIE/GEOSINTETICI

Nessuna Intersezione e interazione tra superficie con FS minimo e Sistema di Geogriglie/Geosintetici



7 SEZIONE 6 FASE FINALE - STATICO



Report Generale Risultati di Verifica di stabilità'

SSAP 6.0 - Slope Stability Analysis Program (1991,2024)
WWW.SSAP.EU
Build No. 14533
BY
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Ricercatore Associato CNR-IRPI, Perugia, Italia

Ultima Revisione struttura tabelle del report: 21 Maggio 2024

File report: C:\Users\facco\OneDrive\Documents\Lavoro\Lavori STGA\Poneta\Sezioni\Risultati SSAP\Sez6_fase4_parametri ridotti.txt
Data: 4/4/2025

Località: Poneta
Descrizione: Sezione 6_fase 4_parametri ridotti
Modello pendio: Sezione 6_fase 4.mod

----- 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	16.56	0.00	16.56	137.06	26.20	-	-		
4.84	17.37	4.84	17.37	141.90	27.31	-	-		
9.68	17.93	9.68	17.93	146.74	28.44	-	-		
14.52	18.47	14.52	18.47	151.58	29.49	-	-		
16.94	18.94	16.94	18.94	156.42	30.68	-	-		
21.34	20.75	21.34	20.75	157.30	30.88	-	-		
23.76	21.87	23.76	21.87	161.92	32.77	-	-		
39.82	21.87	39.82	21.87	166.76	33.18	-	-		
44.44	20.66	41.01	21.56	171.60	33.50	-	-		
49.06	19.40	32.69	20.55	176.44	33.83	-	-		
53.68	18.18	25.65	17.71	181.28	34.46	-	-		
58.30	16.95	19.63	16.72	184.80	35.07	-	-		
62.92	15.73	11.34	14.77	189.42	36.87	-	-		
67.54	14.50	8.31	14.79	194.26	37.45	-	-		
72.38	13.87	0.00	13.73	198.00	38.21	-	-		
83.82	13.87	0.00	16.56	202.40	40.01	-	-		
88.66	14.99	-	-	204.60	40.89	-	-		
93.50	16.10	-	-	204.60	36.80	-	-		
98.34	17.23	-	-	202.04	36.17	-	-		



103.18	18.35	-	-	195.13	33.86	-	-
108.02	19.46	-	-	186.89	30.36	-	-
112.86	20.59	-	-	178.78	29.72	-	-
117.70	21.70	-	-	167.75	28.57	-	-
122.54	22.84	-	-	161.67	28.26	-	-
127.38	23.95	-	-	155.34	26.72	-	-
132.22	25.06	-	-	151.54	26.06	-	-
137.06	26.20	-	-	145.65	25.75	-	-
141.90	27.31	-	-	137.06	26.20	-	-
146.74	28.44	-	-	-	-	-	-
151.58	29.49	-	-	-	-	-	-
156.42	30.68	-	-	-	-	-	-
157.30	30.88	-	-	-	-	-	-
161.92	32.77	-	-	-	-	-	-
166.76	33.18	-	-	-	-	-	-
171.60	33.50	-	-	-	-	-	-
176.44	33.83	-	-	-	-	-	-
181.28	34.46	-	-	-	-	-	-
184.80	35.07	-	-	-	-	-	-
189.42	36.87	-	-	-	-	-	-
194.26	37.45	-	-	-	-	-	-
198.00	38.21	-	-	-	-	-	-
202.40	40.01	-	-	-	-	-	-
204.60	40.89	-	-	-	-	-	-

SUP FALDA

X Y

0.00	16.56
4.84	17.37
9.68	17.93
14.52	18.47
16.94	18.94
21.34	20.75
23.76	21.87
39.82	21.87
44.44	20.66
49.06	19.40
53.68	18.18
58.30	16.95
62.92	15.73
67.54	14.50
72.38	13.87
83.82	13.87
88.66	14.99
93.50	16.10
98.34	17.23
103.18	18.35
108.02	19.46
112.86	20.59
117.70	21.70
122.54	22.84
127.38	23.95
132.22	25.06
137.06	26.20
141.90	27.31
146.74	28.44
151.58	29.49
156.42	30.68
157.30	30.88
161.92	32.77
166.76	33.18
171.60	33.50
176.44	33.83
181.28	34.46
184.80	35.07
189.42	36.87
194.26	37.45
198.00	38.21
202.40	40.01
204.60	40.89



----- GESTIONE ACQUIFERI -----

Strati esclusi da acquifero e effetto pressione dei pori:

STRATO 2

STRATO 3

Esclusione sovraccarico pendio sommerso: NON ATTIVATA

EFFETTO TENSION CRACK IN TESTA RIEMPIUTO DI ACQUA: ----> DISATTIVATO

In caso di superfici con tension crack in testa, la frattura di tensione puo' venir viene considerata completamente riempita di acqua per la sua intera profondita'.

Viene quindi considerato una forza in testa, prodotta dalla pressione idrostatica.

La forza applicata ha un effetto destabilizzante aggiuntivo alle altre forze destabilizzanti agenti.

Peso unitario fluido (kN/m³): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A 0

Coefficiente K 0.000800

Pressione minima fluidi Uo_Min (kPa) 0.01

Coefficiente di soprapressione oltre pressione idrostatica 1.00

Limitazione dissipazione a Pressione Idrostatica = ATTIVA

STABILITE CONDIZIONI PER LA VERIFICA CON SOVRAPPRESSIONE ACQUIFERI CON DISSIPAZIONE IN DIREZIONE DELLA SUPERFICIE

CALCOLO EFFETTO DI FILTRAZIONE NON ATTIVATO

----- PARAMETRI GEOMECCANICI DI PROGETTO RIDOTTI (ai sensi NTC2018/EC-7) - Riduzione attivata in Tutti gli Strati

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	18.76	12.00	0.00	21.50	22.00	1.805	0.00	0.00	0.00	0.00
STRATO 2	20.46	0.40	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00
STRATO 3	20.46	0.40	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00

LEGENDA: 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/m³)

Gamm_sat _____ Peso di volume terreno immerso (in KN/m³)

STR_IDX _____ Indice di resistenza (usato in solo in 'SNIFF SEARCH') (adimensionale)

---- SOLO Per AMMASSI ROCCIOSI FRATTURATI - Parametri Criterio di Rottura di Hoek et al.(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)

NOTA BENE:

FATTORI DI RIDUZIONE NTC2018/EC-7: gammaPHI=1.25, gammaC=1.25 e gammaCu=1.4 - ATTIVATI (Per Tutti gli Strati)

Ai sensi delle NTC2018/EC-7 i parametri di resistenza al taglio caratteristici sono stati ridotti

con i fattori riduttivi (tab. 6.2.II delle NTC 2018) per ottenere i parametri di progetto.

Nel caso di ammassi rocciosi fratturati, dai parametri sopra indicati in tabella, relativi al criterio di rottura Hoek et al. (2002), sono stati ricavati i parametri equivalenti geomeccanici CARATTERISTICI locali di resistenza al taglio dell'ammasso roccioso considerato (c',Phi') tali parametri equivalenti sono stati infine RIDOTTI, per ricavare i valori di PROGETTO, tramite i coefficienti parziali riduttivi, di cui alla tab. 6.2.II delle NTC 2018

----- GEOSINTETICI PRESENTI -----

Nota Bene:

PROCEDURA AUTOMATICA CALCOLO MOBILIZZAZIONE FORZA GEOSINTETICI: Disattivata (vedasi manuale SSAP cap.2)

TABELLA GEOSINTETICI

Ngrid	X	Y	L	T	fb	fds	Lws	Lwd	omega
(-)	(m)	(m)	(m)	(kN/m)	(-)	(-)	(m)	(m)	(-)
1	153.5800	29.7800	4.00	40.00	0.75	0.80	0.00	0.00	0.10
2	155.6900	30.3900	4.00	40.00	0.75	0.80	0.00	0.00	0.10
3	157.5000	30.9600	4.00	40.00	0.75	0.80	0.00	0.00	0.10
4	158.8800	31.5200	4.00	40.00	0.75	0.80	0.00	0.00	0.10
5	160.5300	32.1900	4.00	40.00	0.75	0.80	0.00	0.00	0.10
6	162.2900	32.7900	4.00	40.00	0.75	0.80	0.00	0.00	0.10



LEGENDA SIMBOLI

Ngrid : Numero geosintetico
 X(m) : Coordinata X Testa
 Y(m) : Coordinata Y Testa
 L(m) : Lunghezza geosintetico
 T(kN/m) : Resistenza a trazione di progetto
 fb(-) : Fattore di interazione suolo/geosintetico
 fds(-) : Fattore riduzione Direct Sliding
 Lws(m) : Lunghezza risolto a sinistra
 Lwd(m) : Lunghezza risolto a destra
 Omega(-) : Coefficiente di mobilitazione T come reazione orizzontale massima Th(kN/m)

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

*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI

MOTORE DI RICERCA: SNIFF RANDOM SEARCH - Borselli (1997,2021)

FILTRAGGIO SUPERFICI : ATTIVATO

COORDINATE X1,X2,Y OSTACOLO : 0.00 0.00 0.00

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

INTERVALLO ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 60.00 110.00

LIVELLO MINIMO CONSIDERATO (Ymin): 13.00

INTERVALLO ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 90.00 200.51

TOTALE SUPERFICI GENERATE : 15000

*NOTA IMPORTANTE: La lunghezza media dei segmenti non viene considerata nel caso di uso del motore di ricerca NEW RANDOM SEARCH

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

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

METODO DI ESPLORAZIONE CAMPO VALORI (λ_0, F_{s0}) ADOTTATO : A (rapido)COEFFICIENTE SISMICO UTILIZZATO K_h : 0.0000COEFFICIENTE SISMICO UTILIZZATO K_v (assunto Positivo): 0.0000COEFFICIENTE $c=K_v/K_h$ UTILIZZATO : 0.5000

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 F_s

X(m)	Y(m)	#Superficie N.1 - #FS_minimo	#Fattore di sicurezza(FS)= 1.2006	#Lambda= 0.3035
108.522	19.577			
110.436	18.242			
111.416	17.564			
112.110	17.092			
112.730	16.679			
113.286	16.316			
113.849	15.955			
114.429	15.591			
115.039	15.214			
115.698	14.815			
116.250	14.507			
116.763	14.256			
117.235	14.062			
117.760	13.887			
118.226	13.768			
118.737	13.679			
119.286	13.620			
119.961	13.580			
120.571	13.551			
121.147	13.532			



121.702	13.520
122.256	13.517
122.801	13.521
123.355	13.532
123.919	13.551
124.511	13.578
125.079	13.610
125.637	13.646
126.187	13.688
126.742	13.736
127.292	13.789
127.848	13.849
128.414	13.915
129.000	13.990
129.566	14.067
130.123	14.148
130.673	14.234
131.228	14.327
131.776	14.423
132.329	14.527
132.886	14.636
133.457	14.754
134.027	14.872
134.592	14.988
135.157	15.105
135.716	15.220
136.281	15.337
136.846	15.453
137.415	15.571
137.986	15.689
138.544	15.809
139.096	15.934
139.644	16.064
140.200	16.201
140.752	16.343
141.311	16.492
141.884	16.651
142.481	16.823
143.043	16.994
143.593	17.172
144.132	17.358
144.683	17.559
145.221	17.765
145.768	17.986
146.324	18.222
146.908	18.480
147.484	18.735
148.050	18.988
148.614	19.240
149.173	19.491
149.733	19.744
150.293	19.998
150.853	20.254
151.412	20.509
151.975	20.767
152.537	21.024
153.100	21.281
153.659	21.537
154.229	21.798
154.804	22.061
155.395	22.331
156.004	22.610
156.551	22.882
157.082	23.171
157.591	23.475
158.134	23.826
158.653	24.188
159.198	24.597
159.775	25.056
160.429	25.602
161.004	26.112



161.552	26.631
162.075	27.162
162.621	27.754
163.206	28.439
163.881	29.276
164.859	30.549
166.837	33.185

X(m)	Y(m)	#Superficie N. 2	#Fattore di sicurezza(FS)= 1.2044	#Lambda= 0.2735
107.154	19.261			
109.117	17.923			
110.122	17.244			
110.833	16.773			
111.467	16.360			
112.037	15.998			
112.615	15.638			
113.213	15.274			
113.845	14.896			
114.534	14.491			
115.099	14.189			
115.618	13.949			
116.088	13.774			
116.620	13.622			
117.083	13.531			
117.597	13.477			
118.154	13.458			
118.851	13.472			
119.487	13.489			
120.084	13.510			
120.662	13.535			
121.232	13.566			
121.796	13.601			
122.363	13.641			
122.935	13.686			
123.518	13.737			
124.101	13.788			
124.679	13.839			
125.258	13.890			
125.831	13.940			
126.410	13.990			
126.988	14.041			
127.571	14.092			
128.155	14.143			
128.727	14.198			
129.294	14.257			
129.858	14.320			
130.427	14.390			
130.994	14.464			
131.569	14.543			
132.154	14.630			
132.763	14.725			
133.339	14.823			
133.903	14.929			
134.457	15.042			
135.023	15.167			
135.575	15.299			
136.136	15.443			
136.705	15.598			
137.300	15.769			
137.889	15.938			
138.471	16.106			
139.051	16.273			
139.624	16.438			
140.201	16.604			
140.776	16.769			
141.351	16.935			
141.922	17.099			
142.497	17.264			
143.072	17.430			
143.649	17.596			



144.222	17.761
144.802	17.928
145.384	18.095
145.974	18.265
146.570	18.436
147.139	18.610
147.699	18.791
148.250	18.979
148.816	19.184
149.370	19.395
149.937	19.622
150.519	19.865
151.137	20.134
151.721	20.397
152.289	20.664
152.847	20.937
153.414	21.224
153.970	21.517
154.537	21.826
155.115	22.151
155.722	22.503
156.306	22.849
156.879	23.196
157.444	23.545
158.013	23.906
158.584	24.275
159.169	24.662
159.781	25.075
160.440	25.527
161.002	25.951
161.539	26.404
162.045	26.879
162.596	27.450
163.173	28.120
163.852	28.977
164.855	30.325
166.924	33.191

X(m)	Y(m)	#Superficie N. 3 #Fattore di sicurezza(FS)= 1.2132 #Lambda= 0.2996
105.551	18.894	
107.603	17.947	
108.673	17.454	
109.435	17.102	
110.124	16.784	
110.732	16.504	
111.348	16.220	
111.967	15.934	
112.596	15.644	
113.234	15.350	
113.836	15.085	
114.427	14.838	
115.006	14.610	
115.604	14.388	
116.195	14.184	
116.813	13.986	
117.471	13.790	
118.211	13.583	
118.820	13.440	
119.382	13.341	
119.895	13.287	
120.467	13.267	
120.977	13.285	
121.530	13.342	
122.121	13.439	
122.830	13.588	
123.497	13.728	
124.132	13.864	
124.754	13.999	
125.361	14.132	
125.969	14.267	

126.576	14.403
127.185	14.541
127.794	14.681
128.407	14.821
129.018	14.961
129.630	15.101
130.238	15.241
130.850	15.381
131.459	15.521
132.070	15.661
132.675	15.799
133.285	15.939
133.895	16.079
134.506	16.219
135.115	16.359
135.727	16.499
136.337	16.639
136.948	16.779
137.555	16.918
138.165	17.058
138.773	17.199
139.383	17.341
139.991	17.483
140.602	17.626
141.213	17.770
141.828	17.916
142.443	18.062
143.052	18.210
143.657	18.361
144.261	18.514
144.866	18.671
145.470	18.832
146.075	18.995
146.683	19.164
147.296	19.337
147.911	19.510
148.523	19.683
149.136	19.855
149.744	20.027
150.361	20.201
150.981	20.375
151.612	20.553
152.254	20.734
152.855	20.917
153.443	21.112
154.018	21.317
154.615	21.545
155.195	21.783
155.793	22.045
156.413	22.331
157.088	22.658
157.710	22.974
158.310	23.295
158.893	23.623
159.492	23.977
160.079	24.341
160.688	24.736
161.327	25.167
162.032	25.659
162.641	26.120
163.222	26.601
163.771	27.101
164.360	27.683
164.981	28.361
165.707	29.214
166.770	30.537
168.947	33.325

X(m) Y(m) #Superficie N. 4 #Fattore di sicurezza(FS)= 1.2194 #Lambda= 0.3137
 106.422 19.094



108.344	18.212
109.340	17.757
110.047	17.436
110.684	17.150
111.250	16.898
111.815	16.648
112.381	16.400
112.948	16.154
113.517	15.909
114.088	15.662
114.657	15.417
115.228	15.171
115.795	14.926
116.381	14.674
116.980	14.415
117.613	14.142
118.287	13.852
118.836	13.644
119.341	13.489
119.797	13.390
120.320	13.323
120.773	13.304
121.277	13.328
121.824	13.394
122.507	13.512
123.140	13.623
123.737	13.730
124.318	13.835
124.884	13.939
125.451	14.045
126.017	14.152
126.587	14.262
127.159	14.373
127.729	14.486
128.296	14.599
128.863	14.714
129.429	14.829
129.999	14.947
130.571	15.067
131.150	15.190
131.739	15.316
132.304	15.445
132.861	15.580
133.410	15.721
133.971	15.874
134.520	16.032
135.077	16.201
135.641	16.380
136.227	16.574
136.807	16.767
137.380	16.958
137.952	17.149
138.519	17.338
139.088	17.529
139.655	17.720
140.224	17.912
140.789	18.102
141.358	18.295
141.927	18.487
142.497	18.680
143.064	18.871
143.637	19.065
144.211	19.259
144.792	19.455
145.377	19.653
145.940	19.852
146.496	20.057
147.045	20.268
147.605	20.494
148.156	20.724
148.717	20.968



149.288	21.225
149.887	21.504
150.464	21.779
151.030	22.055
151.589	22.335
152.151	22.622
152.708	22.914
153.268	23.213
153.834	23.522
154.412	23.845
154.989	24.166
155.560	24.486
156.132	24.805
156.698	25.122
157.278	25.447
157.866	25.777
158.478	26.120
159.121	26.482
159.667	26.824
160.190	27.196
160.683	27.591
161.225	28.075
161.789	28.645
162.457	29.384
163.448	30.558
165.505	33.074

X(m)	Y(m)	#Superficie N. 5 #Fattore di sicurezza(FS)= 1.2239 #Lambda= 0.2687
102.480	18.188	
104.562	17.143	
105.646	16.599	
106.418	16.212	
107.115	15.863	
107.731	15.556	
108.366	15.239	
109.013	14.917	
109.691	14.579	
110.408	14.223	
111.008	13.955	
111.568	13.741	
112.082	13.584	
112.658	13.453	
113.167	13.376	
113.723	13.335	
114.316	13.331	
115.039	13.361	
115.719	13.389	
116.367	13.416	
117.002	13.442	
117.618	13.467	
118.239	13.493	
118.857	13.519	
119.475	13.544	
120.089	13.570	
120.707	13.596	
121.325	13.621	
121.946	13.647	
122.562	13.673	
123.185	13.698	
123.809	13.724	
124.439	13.750	
125.072	13.777	
125.685	13.809	
126.292	13.849	
126.892	13.895	
127.502	13.950	
128.109	14.013	
128.729	14.084	
129.370	14.166	
130.052	14.260	



130.669	14.362
131.265	14.478
131.839	14.608
132.440	14.765
133.013	14.932
133.604	15.124
134.212	15.340
134.872	15.592
135.518	15.838
136.149	16.079
136.776	16.318
137.392	16.554
138.013	16.790
138.630	17.026
139.249	17.263
139.863	17.497
140.481	17.733
141.099	17.969
141.719	18.206
142.336	18.441
142.956	18.678
143.575	18.914
144.195	19.151
144.811	19.387
145.429	19.624
146.045	19.861
146.663	20.101
147.279	20.340
147.897	20.581
148.514	20.823
149.134	21.067
149.752	21.312
150.372	21.558
150.989	21.804
151.607	22.052
152.222	22.300
152.844	22.551
153.467	22.804
154.100	23.062
154.742	23.325
155.355	23.587
155.959	23.857
156.553	24.134
157.162	24.430
157.768	24.736
158.394	25.065
159.055	25.426
159.784	25.835
160.391	26.216
160.965	26.626
161.500	27.061
162.089	27.596
162.699	28.227
163.425	29.050
164.502	30.361
166.745	33.179

X(m)	Y(m)	#Superficie N. 6 #Fattore di sicurezza(FS)= 1.2251 #Lambda= 0.2795
105.577	18.900	
107.829	17.767	
109.003	17.177	
109.840	16.756	
110.596	16.376	
111.263	16.041	
111.947	15.697	
112.642	15.347	
113.364	14.985	
114.116	14.606	
114.768	14.307	
115.387	14.055	



115.967	13.855
116.603	13.675
117.183	13.546
117.809	13.446
118.476	13.374
119.273	13.322
119.987	13.288
120.660	13.270
121.307	13.266
121.963	13.277
122.600	13.301
123.255	13.340
123.930	13.394
124.656	13.465
125.340	13.541
126.005	13.624
126.657	13.715
127.317	13.816
127.965	13.925
128.620	14.044
129.283	14.174
129.972	14.318
130.656	14.461
131.332	14.602
132.007	14.743
132.674	14.882
133.347	15.023
134.019	15.163
134.694	15.305
135.368	15.445
136.035	15.589
136.699	15.735
137.361	15.884
138.025	16.038
138.688	16.195
139.353	16.356
140.023	16.522
140.700	16.693
141.375	16.866
142.044	17.039
142.713	17.213
143.379	17.389
144.046	17.566
144.713	17.745
145.382	17.926
146.050	18.109
146.722	18.292
147.393	18.475
148.065	18.659
148.732	18.842
149.404	19.025
150.073	19.208
150.743	19.391
151.407	19.573
152.077	19.756
152.746	19.939
153.418	20.122
154.085	20.304
154.762	20.489
155.441	20.675
156.132	20.864
156.832	21.055
157.492	21.249
158.140	21.455
158.775	21.671
159.432	21.909
160.068	22.156
160.718	22.423
161.382	22.711
162.087	23.031
162.776	23.346



163.452	23.658
164.124	23.970
164.790	24.281
165.471	24.603
166.168	24.933
166.902	25.284
167.691	25.664
168.329	26.020
168.931	26.418
169.484	26.851
170.113	27.417
170.754	28.093
171.530	29.005
172.698	30.493
175.162	33.743

X(m)	Y(m)	#Superficie N. 7	#Fattore di sicurezza(FS)= 1.2289	#Lambda= 0.3006
105.583	18.901			
107.542	17.957			
108.563	17.465			
109.290	17.115			
109.948	16.798			
110.528	16.518			
111.121	16.233			
111.722	15.943			
112.342	15.645			
112.984	15.335			
113.553	15.083			
114.098	14.866			
114.616	14.686			
115.173	14.520			
115.695	14.392			
116.251	14.283			
116.846	14.195			
117.545	14.115			
118.153	14.062			
118.724	14.031			
119.265	14.020			
119.829	14.029			
120.362	14.056			
120.915	14.103			
121.485	14.171			
122.113	14.262			
122.724	14.352			
123.321	14.439			
123.912	14.525			
124.492	14.610			
125.079	14.695			
125.667	14.781			
126.260	14.868			
126.858	14.955			
127.435	15.046			
128.006	15.144			
128.569	15.249			
129.144	15.363			
129.708	15.483			
130.280	15.612			
130.858	15.750			
131.458	15.901			
132.051	16.051			
132.637	16.200			
133.222	16.350			
133.801	16.499			
134.383	16.650			
134.964	16.801			
135.546	16.954			
136.125	17.107			
136.709	17.261			
137.292	17.415			
137.876	17.569			



138.456	17.722
139.042	17.876
139.626	18.031
140.214	18.186
140.800	18.340
141.380	18.497
141.957	18.656
142.532	18.818
143.110	18.985
143.688	19.155
144.269	19.330
144.860	19.511
145.464	19.700
146.047	19.890
146.621	20.083
147.188	20.282
147.763	20.492
148.329	20.705
148.901	20.929
149.479	21.162
150.074	21.409
150.667	21.655
151.254	21.899
151.840	22.143
152.421	22.384
153.007	22.627
153.595	22.871
154.188	23.118
154.785	23.366
155.362	23.614
155.933	23.868
156.498	24.127
157.072	24.400
157.650	24.684
158.246	24.986
158.878	25.316
159.576	25.689
160.140	26.034
160.669	26.414
161.156	26.823
161.705	27.349
162.267	27.975
162.944	28.812
163.960	30.171
166.095	33.124

X(m)	Y(m)	#Superficie N. 8 #Fattore di sicurezza(FS)= 1.2296 #Lambda= 1.2500
108.204	19.503	
110.018	18.557	
110.963	18.064	
111.636	17.713	
112.245	17.396	
112.782	17.115	
113.330	16.830	
113.882	16.542	
114.449	16.246	
115.031	15.943	
115.560	15.684	
116.071	15.453	
116.563	15.252	
117.085	15.059	
117.580	14.897	
118.100	14.748	
118.648	14.612	
119.272	14.477	
119.830	14.368	
120.361	14.279	
120.869	14.208	
121.395	14.150	
121.903	14.108	



122.434	14.080
122.993	14.065
123.619	14.063
124.167	14.077
124.687	14.108
125.180	14.157
125.701	14.230
126.192	14.317
126.706	14.429
127.243	14.564
127.845	14.735
128.409	14.900
128.953	15.067
129.484	15.236
130.016	15.413
130.541	15.594
131.070	15.784
131.605	15.982
132.156	16.193
132.705	16.402
133.248	16.610
133.791	16.818
134.328	17.023
134.869	17.230
135.407	17.436
135.947	17.642
136.482	17.847
137.021	18.053
137.560	18.259
138.100	18.466
138.638	18.671
139.178	18.878
139.717	19.084
140.256	19.291
140.791	19.495
141.330	19.701
141.869	19.908
142.409	20.114
142.947	20.320
143.487	20.527
144.026	20.733
144.565	20.939
145.100	21.144
145.639	21.350
146.178	21.556
146.719	21.763
147.256	21.969
147.797	22.175
148.335	22.382
148.875	22.588
149.409	22.793
149.949	22.999
150.487	23.205
151.028	23.412
151.565	23.618
152.107	23.826
152.648	24.033
153.193	24.241
153.736	24.450
154.273	24.659
154.807	24.871
155.338	25.086
155.873	25.307
156.418	25.535
156.979	25.775
157.574	26.034
158.227	26.322
158.740	26.590
159.219	26.894
159.654	27.231
160.155	27.684



160.662 28.231
 161.282 28.983
 162.224 30.227
 164.224 32.965

X(m) Y(m) #Superficie N. 9 #Fattore di sicurezza(FS)= 1.2310 #Lambda= 1.2500
 105.365 18.851
 107.552 17.299
 108.589 16.593
 109.283 16.162
 109.860 15.847
 110.426 15.591
 110.934 15.396
 111.481 15.228
 112.058 15.086
 112.747 14.951
 113.393 14.826
 114.011 14.709
 114.616 14.596
 115.210 14.488
 115.805 14.381
 116.402 14.277
 117.004 14.173
 117.613 14.071
 118.211 13.974
 118.803 13.883
 119.391 13.797
 119.983 13.714
 120.580 13.636
 121.188 13.560
 121.819 13.486
 122.488 13.412
 123.076 13.366
 123.639 13.345
 124.174 13.348
 124.747 13.377
 125.281 13.427
 125.841 13.504
 126.424 13.607
 127.080 13.745
 127.714 13.879
 128.329 14.008
 128.937 14.136
 129.533 14.262
 130.135 14.389
 130.740 14.516
 131.353 14.645
 131.973 14.776
 132.563 14.910
 133.144 15.053
 133.715 15.204
 134.302 15.371
 134.874 15.544
 135.455 15.731
 136.046 15.932
 136.666 16.153
 137.279 16.372
 137.883 16.588
 138.485 16.804
 139.080 17.017
 139.679 17.232
 140.275 17.446
 140.872 17.661
 141.465 17.875
 142.063 18.091
 142.660 18.306
 143.259 18.522
 143.854 18.736
 144.453 18.952
 145.050 19.167



145.647	19.382
146.240	19.596
146.837	19.811
147.434	20.027
148.033	20.242
148.628	20.457
149.227	20.673
149.824	20.888
150.421	21.104
151.014	21.317
151.611	21.533
152.208	21.748
152.807	21.964
153.402	22.179
154.007	22.397
154.615	22.616
155.235	22.839
155.867	23.067
156.454	23.295
157.027	23.534
157.586	23.785
158.169	24.065
158.740	24.358
159.337	24.684
159.975	25.051
160.698	25.485
161.290	25.884
161.846	26.311
162.361	26.763
162.928	27.324
163.515	27.986
164.215	28.853
165.256	30.240
167.426	33.224

X(m)	Y(m)	#Superficie N.10 #Fattore di sicurezza(FS)= 1.2316 #Lambda= 0.2844
108.114	19.482	
110.284	18.485	
111.415	17.965	
112.221	17.594	
112.949	17.260	
113.592	16.964	
114.248	16.663	
114.911	16.358	
115.593	16.044	
116.297	15.721	
116.928	15.453	
117.536	15.219	
118.118	15.021	
118.739	14.836	
119.324	14.690	
119.943	14.562	
120.598	14.453	
121.353	14.353	
122.024	14.279	
122.660	14.225	
123.268	14.192	
123.897	14.176	
124.498	14.177	
125.121	14.196	
125.762	14.233	
126.463	14.290	
127.131	14.350	
127.780	14.413	
128.419	14.481	
129.058	14.554	
129.693	14.632	
130.335	14.717	
130.987	14.809	
131.661	14.909	



132.309	15.012
132.947	15.121
133.576	15.236
134.213	15.361
134.841	15.491
135.474	15.629
136.114	15.777
136.773	15.936
137.430	16.095
138.080	16.252
138.729	16.409
139.372	16.564
140.019	16.721
140.664	16.877
141.310	17.033
141.950	17.188
142.596	17.344
143.240	17.500
143.886	17.657
144.528	17.814
145.178	17.972
145.829	18.131
146.488	18.293
147.153	18.456
147.792	18.622
148.423	18.795
149.045	18.976
149.681	19.171
150.306	19.373
150.943	19.589
151.594	19.819
152.279	20.071
152.932	20.320
153.572	20.572
154.201	20.830
154.837	21.101
155.463	21.376
156.096	21.663
156.736	21.963
157.397	22.282
158.054	22.598
158.705	22.912
159.354	23.225
159.997	23.536
160.649	23.851
161.305	24.168
161.975	24.492
162.657	24.822
163.291	25.147
163.911	25.486
164.515	25.837
165.145	26.224
165.752	26.618
166.375	27.044
167.013	27.501
167.698	28.012
168.365	28.512
169.019	29.005
169.667	29.497
170.309	29.986
171.031	30.542
171.834	31.163
172.964	32.041
175.144	33.742

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

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR F_s *

Analisi Deficit in riferimento a $F_s(\text{progetto}) = 1.200$

Sup N.	F_s	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
--------	-------	-----------	-----------	----------------	-------



1	1.201	2453.5	2043.6	1.2	Surplus
2	1.204	2511.8	2085.6	9.1	Surplus
3	1.213	2523.8	2080.3	27.4	Surplus
4	1.219	2245.2	1841.3	35.6	Surplus
5	1.224	2560.3	2091.9	50.0	Surplus
6	1.225	2965.2	2420.4	60.7	Surplus
7	1.229	2286.4	1860.6	53.7	Surplus
8	1.230	1958.5	1592.8	47.1	Surplus
9	1.231	2521.8	2048.6	63.5	Surplus
10	1.232	2688.9	2183.2	69.0	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 1.2

Note: FTR --> Forza totale Resistente lungo la superficie di scivolamento

FTA --> Forza totale Agente lungo la superficie di scivolamento

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

TABELLA PARAMETRI CONCI DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (°)	W (kN/m)	ru (-)	U (kPa)	phi' (°)	(c',Cu) (kPa)	
108.522	0.591	-34.90	3.58	0.45	2.70	18.76	12.00	
109.113	0.591	-34.90	10.75	0.45	8.10	18.76	12.00	
109.705	0.591	-34.90	17.91	0.45	14.14	18.76	12.00	
110.296	0.140	-34.90	5.27	0.45	18.76	18.76	12.00	
110.436	0.591	-34.66	26.74	0.45	20.28	18.76	12.00	
111.027	0.389	-34.66	21.50	0.45	26.48	18.76	12.00	
111.416	0.591	-34.21	38.50	0.45	29.67	18.76	12.00	
112.008	0.102	-34.21	7.37	0.45	34.08	18.76	12.00	
112.110	0.591	-33.73	46.69	0.45	34.83	18.76	12.00	
112.701	0.028	-33.73	2.39	0.45	39.35	18.76	12.00	
112.730	0.130	-33.12	11.31	0.45	39.56	18.76	12.00	
112.860	0.426	-33.12	39.19	0.45	40.52	18.76	12.00	
113.286	0.563	-32.62	57.22	0.45	43.82	18.76	12.00	
113.849	0.580	-32.14	65.18	0.45	48.39	18.76	12.00	
114.429	0.591	-31.68	72.98	0.45	53.14	18.76	12.00	
115.020	0.019	-31.68	2.45	0.45	58.08	18.76	12.00	
115.039	0.591	-31.26	79.66	0.45	58.22	18.76	12.00	
115.631	0.067	-31.26	9.49	0.45	62.94	18.76	12.00	
115.698	0.552	-29.10	80.68	0.45	63.44	18.76	12.00	
116.250	0.513	-26.13	79.52	0.45	67.48	18.76	12.00	
116.763	0.472	-22.35	76.59	0.45	70.70	18.76	12.00	
117.235	0.465	-18.41	78.40	0.45	73.34	18.76	12.00	
117.700	0.060	-18.41	10.28	0.45	75.78	18.76	12.00	
117.760	0.466	-14.29	81.47	0.45	76.08	18.76	12.00	
118.226	0.510	-9.91	91.65	0.45	78.34	18.76	12.00	
118.737	0.549	-6.16	101.02	0.45	80.68	18.76	12.00	
119.286	0.591	-3.35	111.12	0.45	82.88	18.76	12.00	
119.877	0.083	-3.35	15.85	0.45	84.76	18.76	12.00	
119.961	0.591	-2.71	113.66	0.45	84.99	18.76	12.00	
120.552	0.019	-2.71	3.76	0.45	86.64	18.76	12.00	
120.571	0.575	-1.97	112.69	0.45	86.69	18.76	12.00	
121.147	0.555	-1.18	110.61	0.45	88.27	18.76	12.00	
121.702	0.554	-0.36	111.92	0.45	89.66	18.76	12.00	
122.256	0.284	0.41	58.06	0.45	90.88	18.76	12.00	
122.540	0.261	0.41	53.66	0.45	91.46	18.76	12.00	
122.801	0.554	1.19	114.97	0.45	92.02	18.76	12.00	
123.355	0.565	1.93	118.64	0.45	93.19	18.76	12.00	
123.919	0.591	2.63	125.68	0.45	94.31	18.76	12.00	
124.511	0.000	2.63	0.06	0.45	95.41	18.76	12.00	
124.511	0.568	3.17	122.10	0.45	95.41	18.76	12.00	
125.079	0.558	3.75	120.94	0.45	96.35	18.76	12.00	
125.637	0.550	4.34	120.40	0.45	97.25	18.76	12.00	
126.187	0.555	4.94	122.43	0.45	98.11	18.76	12.00	



126.742	0.550	5.53	122.17	0.45	98.82	18.76	12.00
127.292	0.088	6.12	19.67	0.45	99.48	18.76	12.00
127.380	0.468	6.12	104.84	0.45	99.59	18.76	12.00
127.848	0.566	6.69	127.42	0.45	100.13	18.76	12.00
128.414	0.586	7.23	132.92	0.45	100.73	18.76	12.00
129.000	0.566	7.76	128.98	0.45	101.32	18.76	12.00
129.566	0.557	8.32	127.46	0.45	101.85	18.76	12.00
130.123	0.550	8.89	126.49	0.45	102.33	18.76	12.00
130.673	0.555	9.46	128.09	0.45	102.75	18.76	12.00
131.228	0.548	10.02	126.87	0.45	103.09	18.76	12.00
131.776	0.444	10.58	102.94	0.45	103.35	18.76	12.00
132.220	0.109	10.58	25.24	0.45	103.53	18.76	12.00
132.329	0.557	11.13	129.62	0.45	103.57	18.76	12.00
132.886	0.571	11.66	133.06	0.45	103.77	18.76	12.00
133.457	0.570	11.66	132.93	0.45	103.97	18.76	12.00
134.027	0.565	11.66	132.00	0.45	104.18	18.76	12.00
134.592	0.565	11.66	132.20	0.45	104.38	18.76	12.00
135.157	0.559	11.66	131.12	0.45	104.58	18.76	12.00
135.716	0.565	11.66	132.60	0.45	104.76	18.76	12.00
136.281	0.565	11.66	132.80	0.45	104.92	18.76	12.00
136.846	0.214	11.66	50.46	0.45	105.03	18.76	12.00
137.060	0.355	11.66	83.63	0.45	105.07	18.76	12.00
137.415	0.571	11.66	134.38	0.45	105.11	18.76	12.00
137.986	0.557	12.19	131.07	0.45	105.16	18.76	12.00
138.544	0.553	12.74	129.77	0.45	105.16	18.76	12.00
139.096	0.384	13.30	90.02	0.45	105.13	18.76	12.00
139.480	0.164	13.30	38.53	0.45	105.08	18.76	12.00
139.644	0.555	13.86	129.86	0.45	105.05	18.76	12.00
140.200	0.552	14.42	128.75	0.45	104.92	18.76	12.00
140.752	0.560	14.98	130.14	0.45	104.75	18.76	12.00
141.311	0.572	15.51	132.51	0.45	104.49	18.76	12.00
141.884	0.016	16.02	3.74	0.45	104.18	18.76	12.00
141.900	0.581	16.02	133.89	0.45	104.17	18.76	12.00
142.481	0.562	16.95	128.91	0.45	103.72	18.76	12.00
143.043	0.550	17.95	125.29	0.45	103.19	18.76	12.00
143.593	0.538	18.99	121.83	0.46	102.59	18.76	12.00
144.132	0.188	20.02	42.38	0.46	101.97	18.76	12.00
144.320	0.363	20.02	81.40	0.46	101.74	18.76	12.00
144.683	0.537	21.02	119.49	0.46	101.27	18.76	12.00
145.221	0.429	22.02	94.59	0.46	100.52	18.76	12.00
145.650	0.118	22.02	25.76	0.46	99.88	18.76	12.00
145.768	0.556	22.96	121.02	0.46	99.68	18.76	12.00
146.324	0.416	23.83	89.56	0.46	98.71	18.76	12.00
146.740	0.168	23.83	36.00	0.46	97.95	18.76	12.00
146.908	0.575	23.92	121.81	0.46	97.62	18.76	12.00
147.484	0.567	24.02	118.21	0.46	96.42	18.76	12.00
148.050	0.564	24.11	115.90	0.46	95.11	18.76	12.00
148.614	0.546	24.21	110.50	0.46	93.64	18.76	12.00
149.160	0.013	24.21	2.60	0.46	92.26	18.76	12.00
149.173	0.560	24.30	111.68	0.46	92.22	18.76	12.00
149.733	0.559	24.40	109.74	0.46	90.93	18.76	12.00
150.293	0.561	24.49	108.24	0.46	89.67	18.76	12.00
150.853	0.559	24.58	106.17	0.47	88.48	18.76	12.00
151.412	0.128	24.58	23.98	0.47	87.38	18.76	12.00
151.540	0.040	24.58	7.50	0.47	87.13	18.76	12.00
151.580	0.395	24.58	73.65	0.47	87.05	18.76	12.00
151.975	0.561	24.58	103.34	0.47	86.25	18.76	12.00
152.537	0.563	24.58	102.11	0.47	85.00	18.76	12.00
153.100	0.559	24.58	99.92	0.47	83.69	18.76	12.00
153.659	0.341	24.58	60.16	0.47	82.37	18.76	12.00
154.000	0.229	24.58	40.09	0.47	81.53	18.76	12.00
154.229	0.575	24.58	99.55	0.47	80.96	18.76	12.00
154.804	0.536	24.58	91.36	0.47	79.61	18.76	12.00
155.340	0.055	24.58	9.30	0.47	78.49	18.76	12.00
155.395	0.591	24.58	99.06	0.47	78.39	18.76	12.00
155.986	0.018	24.58	2.99	0.47	77.35	18.76	12.00
156.004	0.416	26.46	68.52	0.47	77.32	18.76	12.00
156.420	0.131	26.46	21.40	0.47	76.57	18.76	12.00
156.551	0.309	28.57	50.02	0.47	76.32	18.76	12.00
156.860	0.222	28.57	35.46	0.47	75.70	18.76	12.00
157.082	0.218	30.79	34.60	0.47	75.13	18.76	12.00



157.300	0.291	30.79	45.69	0.47	74.55	18.76	12.00
157.591	0.543	32.87	83.95	0.47	73.68	18.76	12.00
158.134	0.519	34.92	78.55	0.47	71.79	18.76	12.00
158.653	0.545	36.85	80.42	0.48	68.75	18.76	12.00
159.198	0.577	38.52	82.38	0.48	64.74	18.76	12.00
159.775	0.591	39.85	81.18	0.47	59.30	18.76	12.00
160.367	0.062	39.85	8.33	0.46	52.54	18.76	12.00
160.429	0.576	41.55	75.19	0.45	51.70	18.76	12.00
161.004	0.548	43.48	68.02	0.42	44.32	18.76	12.00
161.552	0.118	45.45	14.10	0.38	37.80	18.76	12.00
161.670	0.250	45.45	29.34	0.37	36.41	18.76	12.00
161.920	0.155	45.45	17.67	0.35	33.51	18.76	12.00
162.075	0.546	47.30	58.10	0.34	31.60	18.76	12.00
162.621	0.495	49.49	46.75	0.28	24.89	18.76	12.00
163.116	0.090	49.49	7.86	0.00	0.00	20.46	0.40
163.206	0.591	51.12	47.26	0.00	0.00	20.46	0.40
163.798	0.084	51.12	6.05	0.00	0.00	20.46	0.40
163.881	0.459	52.47	30.25	0.00	0.00	20.46	0.40
164.340	0.519	52.47	28.19	0.00	0.00	20.46	0.40
164.859	0.591	53.12	24.23	0.00	0.00	20.46	0.40
165.450	0.591	53.12	15.71	0.00	0.00	20.46	0.40
166.042	0.591	53.12	7.20	0.00	0.00	20.46	0.40
166.633	0.127	53.12	0.44	0.00	0.00	20.46	0.40
166.760	0.077	53.12	0.07	0.00	0.00	20.46	0.40

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 dx(m) : Larghezza concio
 alpha () : Angolo pendenza base concio
 W(kN/m) : Forza peso concio
 ru(-) : Coefficiente locale pressione interstiziale
 U(kPa) : Pressione totale dei pori base concio
 phi'() : Angolo di attrito efficace base concio
 c'/Cu (kPa) : Coesione efficace o Resistenza al taglio in condizioni non drenate

TABELLA DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	ht (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (kN)	FS_qFEM (--)	FS_p-qPATH (--)		
108.522	0.000	19.577	-0.429	0.0000000000E+000	0.0000000000E+000	0.0000000000E+000	3.1584369103E+000	0.040	1.702	1.674	
109.113	0.182	19.346	-0.429	2.2307270156E+000	-6.7695616106E-003	4.3855969370E+000	0.040	1.702	1.674		
109.705	0.318	19.070	-0.410	5.1871822238E+000	-5.1503404098E-002	5.4757727615E+000	0.040	1.150	1.074		
110.296	0.522	18.861	-0.373	8.7073438908E+000	-1.8313871251E-001	9.9080115112E+000	0.043	1.016	0.914		
110.436	0.555	18.797	-0.460	1.0220177577E+001	-3.0047424652E-001	1.1597362762E+001	0.045	1.002	0.893		
111.027	0.691	18.525	-0.417	1.8973478949E+001	-1.2343124829E+000	1.8172211272E+001	0.057	0.983	0.847		
111.416	0.824	18.388	-0.330	2.6915340270E+001	-2.0274164710E+000	2.6421850530E+001	0.067	0.987	0.837		
112.008	1.039	18.201	-0.315	4.7955722312E+001	-4.2329140979E+000	4.4993379901E+001	0.081	1.019	0.840		
112.110	1.077	18.169	-0.323	5.2723228354E+001	-4.7690041443E+000	4.6496802765E+001	0.083	1.028	0.843		
112.701	1.279	17.977	-0.325	7.9794589287E+001	-7.9709207157E+000	5.2871458416E+001	0.102	1.073	0.845		
112.730	1.289	17.968	-0.306	8.1287392862E+001	-8.1545019664E+000	5.3557316612E+001	0.103	1.076	0.846		
112.860	1.334	17.928	-0.316	8.8488289457E+001	-9.0310271963E+000	5.6709831507E+001	0.108	1.093	0.851		
113.286	1.476	17.792	-0.328	1.1475712309E+002	-1.2271370838E+001	6.7407855211E+001	0.126	1.157	0.869		
113.849	1.648	17.604	-0.335	1.5699013690E+002	-1.7899476112E+001	8.2104522661E+001	0.156	1.279	0.904		
114.429	1.818	17.409	-0.337	2.0885431676E+002	-2.5690808142E+001	9.5064240198E+001	0.192	1.476	0.951		
115.020	1.983	17.209	-0.337	2.6845975013E+002	-3.5599729412E+001	9.3780042947E+001	0.235	1.762	1.009		
115.039	1.990	17.204	-0.312	2.7023279551E+002	-3.5910375935E+001	9.3873672560E+001	0.236	1.772	1.011		
115.631	2.164	17.019	-0.310	3.3162145806E+002	-4.7306139268E+001	9.9967672657E+001	0.279	2.154	1.075		
115.698	2.185	17.000	-0.274	3.3833262469E+002	-4.8613520768E+001	9.9806282471E+001	0.283	2.200	1.082		
116.250	2.342	16.849	-0.246	3.9467707216E+002	-6.0530934638E+001	9.7685118366E+001	0.323	2.675	1.148		
116.763	2.483	16.738	-0.195	4.4270813127E+002	-7.2575312963E+001	9.0241515698E+001	0.353	3.237	1.218		
117.235	2.596	16.657	-0.158	4.8381339641E+002	-8.4238011002E+001	8.5554157819E+001	0.374	3.821	1.289		
117.700	2.683	16.590	-0.142	5.2287438294E+002	-9.6218787845E+001	8.1772450471E+001	0.387	4.434	1.367		
117.760	2.696	16.583	-0.110	5.2775052153E+002	-9.7789846164E+001	8.1262027818E+001	0.388	4.514	1.378		
118.226	2.764	16.532	-0.095	5.6482505692E+002	-1.1017314569E+002	7.8858091714E+001	0.387	5.141	1.463		
118.737	2.811	16.490	-0.060	6.0471815104E+002	-1.2323575867E+002	7.6618599382E+001	0.375	5.799	1.566		
119.286	2.849	16.469	-0.018	6.4590012815E+002	-1.2495651324E+002	7.0517193760E+001	0.351	6.332	1.682		
119.877	2.884	16.469	0.003	6.8476618016E+002	-1.1374639724E+002	6.2280681966E+001	0.324	6.611	1.796		
119.961	2.890	16.471	0.024	6.8992002800E+002	-1.1109040287E+002	6.1941386930E+001	0.321	6.622	1.811		



120.552	2.933	16.485	0.025	7.2716260680E+002	-8.7554868880E+001	6.2273661207E+001	0.297	6.585	1.911
120.571	2.934	16.486	0.045	7.2836749099E+002	-8.6538056792E+001	6.2403665431E+001	0.297	6.579	1.914
121.147	2.980	16.512	0.054	7.6688882478E+002	-4.6699989635E+001	6.7010546815E+001	0.281	6.227	1.990
121.702	3.026	16.546	0.066	8.0414143764E+002	5.9806664288E+000	6.4808258023E+001	0.283	5.647	2.032
122.256	3.068	16.585	0.070	8.3877283022E+002	6.8275465664E+001	5.9738641261E+001	0.298	4.970	2.043
122.540	3.086	16.605	0.076	8.5533529185E+002	9.7016127790E+001	5.9625746659E+001	0.310	4.621	2.037
122.801	3.105	16.626	0.085	8.7120949393E+002	1.2239921993E+002	6.0387994973E+001	0.325	4.287	2.024
123.355	3.142	16.674	0.092	9.0410761894E+002	1.7222398044E+002	5.7650200186E+001	0.365	3.592	1.976
123.919	3.178	16.729	0.103	9.3565034170E+002	2.1597052392E+002	5.2902906878E+001	0.425	2.955	1.899
124.511	3.215	16.794	0.109	9.6510687007E+002	2.5003494211E+002	4.3791233033E+001	0.510	2.427	1.797
124.511	3.215	16.794	0.112	9.6511913895E+002	2.5004758923E+002	4.3787248320E+001	0.510	2.427	1.797
125.079	3.247	16.857	0.116	9.8870342656E+002	2.7087348114E+002	4.0019950136E+001	0.595	2.069	1.696
125.637	3.278	16.925	0.126	1.0102175930E+003	2.8324585713E+002	3.7091142919E+001	0.672	1.783	1.596
126.187	3.308	16.996	0.127	1.0298179344E+003	2.9184064051E+002	3.1589538779E+001	0.731	1.554	1.503
126.742	3.330	17.066	0.128	1.0450916181E+003	2.9866801573E+002	2.6061480780E+001	0.755	1.414	1.431
127.292	3.348	17.137	0.131	1.0586190261E+003	3.0474950988E+002	2.3785558443E+001	0.769	1.310	1.371
127.380	3.351	17.149	0.141	1.0607031920E+003	3.0568837295E+002	2.3412215642E+001	0.771	1.295	1.363
127.848	3.367	17.216	0.146	1.0710647236E+003	3.1036005074E+002	2.1090695006E+001	0.779	1.230	1.321
128.414	3.385	17.300	0.161	1.0822805626E+003	3.1542948656E+002	1.8755599470E+001	0.786	1.171	1.282
129.000	3.411	17.401	0.179	1.0926273946E+003	3.2014807887E+002	1.6763244312E+001	0.792	1.129	1.251
129.566	3.440	17.506	0.189	1.1016349588E+003	3.2431313331E+002	1.4722100501E+001	0.797	1.098	1.228
130.123	3.465	17.613	0.194	1.1091769263E+003	3.2788282355E+002	1.2415369924E+001	0.801	1.075	1.210
130.673	3.487	17.721	0.192	1.1153911818E+003	3.3093283287E+002	9.7551929548E+000	0.805	1.058	1.196
131.228	3.499	17.825	0.182	1.1199435439E+003	3.3330851420E+002	6.5623617386E+000	0.807	1.046	1.187
131.776	3.497	17.921	0.173	1.1226536547E+003	3.3490385888E+002	3.9980509941E+000	0.810	1.039	1.181
132.220	3.491	17.997	0.173	1.1240879419E+003	3.3589090953E+002	2.3793260353E+000	0.811	1.035	1.177
132.329	3.490	18.016	0.181	1.1243238508E+003	3.3609086245E+002	2.0431428130E+000	0.811	1.034	1.176
132.886	3.481	18.118	0.189	1.1250988858E+003	3.3695717910E+002	7.8849754412E-001	0.813	1.030	1.172
133.457	3.475	18.229	0.214	1.1251969986E+003	3.3759220646E+002	-4.4554791291E-001	0.814	1.026	1.169
134.027	3.490	18.362	0.235	1.1245923500E+003	3.3799010274E+002	-1.3996935286E+000	0.815	1.023	1.165
134.592	3.507	18.495	0.236	1.1236121997E+003	3.3817292330E+002	-1.9628641285E+000	0.815	1.020	1.162
135.157	3.524	18.629	0.238	1.1223749461E+003	3.3817313140E+002	-2.3629018881E+000	0.816	1.018	1.158
135.716	3.542	18.762	0.233	1.1209577141E+003	3.3800345199E+002	-2.7613643512E+000	0.816	1.015	1.155
136.281	3.554	18.891	0.221	1.1192682595E+003	3.3756357181E+002	-3.1350442082E+000	0.817	1.012	1.151
136.846	3.558	19.012	0.212	1.1174164220E+003	3.3694898118E+002	-3.4194331736E+000	0.817	1.010	1.148
137.060	3.558	19.056	0.202	1.1166719835E+003	3.3668204911E+002	-3.6260346682E+000	0.818	1.009	1.147
137.415	3.556	19.127	0.202	1.1152936388E+003	3.3614955900E+002	-4.1494797346E+000	0.819	1.007	1.145
137.986	3.554	19.243	0.211	1.1126767632E+003	3.3511844566E+002	-5.4367215372E+000	0.820	1.004	1.142
138.544	3.555	19.365	0.223	1.1091819417E+003	3.3375632060E+002	-7.1811163284E+000	0.822	1.001	1.138
139.096	3.557	19.491	0.226	1.1047153643E+003	3.3204727462E+002	-8.5436168113E+000	0.823	0.998	1.134
139.480	3.552	19.576	0.226	1.1013134303E+003	3.3076025278E+002	-1.0013520180E+001	0.825	0.995	1.132
139.644	3.551	19.615	0.237	1.0995854905E+003	3.3011005276E+002	-1.0734314199E+001	0.825	0.994	1.131
140.200	3.546	19.747	0.244	1.0931991571E+003	3.2772256218E+002	-1.2703210852E+001	0.827	0.990	1.127
140.752	3.543	19.885	0.259	1.0855289492E+003	3.2487301772E+002	-1.5756966718E+001	0.829	0.986	1.123
141.311	3.542	20.034	0.266	1.0756506276E+003	3.2124765530E+002	-1.8437048336E+001	0.830	0.981	1.118
141.884	3.535	20.186	0.265	1.0646342698E+003	3.1723883765E+002	-2.0135358727E+001	0.831	0.977	1.114
141.900	3.535	20.191	0.299	1.0643079784E+003	3.1712053889E+002	-2.0277771248E+001	0.831	0.977	1.114
142.481	3.542	20.365	0.308	1.0500792200E+003	3.1203617151E+002	-2.6159719586E+001	0.833	0.973	1.110
143.043	3.548	20.543	0.314	1.0344591256E+003	3.0655564291E+002	-2.9002669848E+001	0.834	0.970	1.106
143.593	3.542	20.714	0.306	1.0178519596E+003	3.0091689469E+002	-3.0513450054E+001	0.835	0.968	1.104
144.132	3.518	20.876	0.300	1.0012573458E+003	2.9541051923E+002	-3.1245805834E+001	0.836	0.967	1.102
144.320	3.506	20.932	0.295	9.9534583357E+002	2.9347465833E+002	-3.1566557915E+001	0.836	0.967	1.101
144.683	3.480	21.039	0.298	9.8375946332E+002	2.8973212506E+002	-3.2697196932E+001	0.836	0.966	1.101
145.221	3.436	21.201	0.303	9.6555155018E+002	2.8389132703E+002	-3.4585086440E+001	0.837	0.966	1.100
145.650	3.393	21.332	0.308	9.5046091787E+002	2.7905450177E+002	-3.7887487857E+001	0.837	0.967	1.100
145.768	3.383	21.370	0.325	9.4591775872E+002	2.7758020064E+002	-3.8725011313E+001	0.837	0.967	1.100
146.324	3.328	21.550	0.327	9.2414588780E+002	2.7048545084E+002	-3.9764583251E+001	0.836	0.968	1.101
146.740	3.282	21.688	0.334	9.0740357262E+002	2.6496281725E+002	-4.1504233318E+001	0.835	0.968	1.102
146.908	3.265	21.746	0.354	9.0032600109E+002	2.6258451107E+002	-4.2430049081E+001	0.835	0.969	1.102
147.484	3.216	21.951	0.374	8.7510616827E+002	2.5398951454E+002	-4.5888200095E+001	0.832	0.970	1.104
148.050	3.185	22.173	0.415	8.4796000819E+002	2.4448463307E+002	-5.0642604604E+001	0.828	0.971	1.107
148.614	3.181	22.421	0.431	8.1786872870E+002	2.3361985170E+002	-5.2111416772E+001	0.822	0.972	1.110
149.160	3.166	22.652	0.423	7.9009127061E+002	2.2346354509E+002	-5.0780810279E+001	0.815	0.973	1.113
149.173	3.166	22.657	0.381	7.8943338240E+002	2.2322215073E+002	-5.0648011787E+001	0.815	0.973	1.113
149.733	3.125	22.870	0.377	7.6420555643E+002	2.1386345810E+002	-4.4388926311E+001	0.808	0.973	1.116
150.293	3.081	23.079	0.367	7.3973584423E+002	2.0467964280E+002	-4.2369956655E+001	0.800	0.974	1.119
150.853	3.027	23.281	0.351	7.1675528500E+002	1.9586392984E+002	-3.9618278909E+001	0.790	0.974	1.122
151.412	2.962	23.472	0.341	6.9536532037E+002	1.8752333979E+002	-3.7453997951E+001	0.779	0.975	1.125
151.540	2.947	23.515	0.337	6.9060826226E+002	1.8564371222E+002	-3.7128344057E+001	0.777	0.975	1.125
151.580	2.942	23.528	0.352	6.8912492187E+002	1.8505471502E+002	-3.7198142706E+001	0.776	0.975	1.126
151.975	2.901	23.668	0.380	6.7397753901E+002	1.7891358176E+002	-4.0012102059E+001	0.766	0.976	1.127



152.537	2.868	23.891	0.414	6.5017264629E+002	1.6902603230E+002	-4.3519502374E+001	0.747	0.977	1.130
153.100	2.852	24.133	0.435	6.2503536702E+002	1.5825759247E+002	-4.4775506902E+001	0.725	0.978	1.132
153.659	2.843	24.380	0.445	5.9991477405E+002	1.4730320450E+002	-4.5431910541E+001	0.701	0.979	1.134
154.000	2.841	24.534	0.452	5.8431668478E+002	1.4048707791E+002	-4.5451595025E+001	0.686	0.980	1.135
154.229	2.840	24.638	0.435	5.7395498901E+002	1.3596557944E+002	-4.4583790497E+001	0.676	0.980	1.135
154.804	2.823	24.884	0.407	5.4928163751E+002	1.2523259766E+002	-4.0396746234E+001	0.652	0.980	1.135
155.340	2.783	25.090	0.377	5.2888420393E+002	1.1649830374E+002	-3.2258662475E+001	0.632	0.979	1.133
155.395	2.776	25.107	0.317	5.2714203366E+002	1.1576498575E+002	-3.1633940859E+001	0.631	0.979	1.133
155.986	2.693	25.295	0.317	5.0862321268E+002	1.0814215857E+002	-3.0796067417E+001	0.613	0.976	1.128
156.004	2.690	25.300	0.318	5.0806854517E+002	1.0791728780E+002	-3.0807042467E+001	0.612	0.976	1.128
156.420	2.615	25.432	0.320	4.9500958228E+002	1.0276007515E+002	-3.2136280560E+001	0.599	0.973	1.124
156.551	2.593	25.475	0.334	4.9077016145E+002	1.0111360158E+002	-3.2634428142E+001	0.595	0.972	1.122
156.860	2.529	25.579	0.371	4.8048683294E+002	9.7204217620E+001	-3.7849713625E+001	0.584	0.968	1.117
157.082	2.501	25.672	0.422	4.7137397261E+002	9.3868841669E+001	-4.1357249165E+001	0.572	0.965	1.113
157.300	2.463	25.765	0.444	4.6229109000E+002	9.0567332628E+001	-4.2835755167E+001	0.562	0.961	1.108
157.591	2.423	25.898	0.483	4.4932771985E+002	8.5985743260E+001	-4.5648930297E+001	0.545	0.955	1.101
158.134	2.342	26.168	0.596	4.2339290102E+002	7.7222694394E+001	-5.7189710835E+001	0.511	0.943	1.088
158.653	2.343	26.531	0.745	3.8905154077E+002	6.6416049502E+001	-6.9660842158E+001	0.465	0.930	1.077
159.198	2.364	26.961	0.813	3.4907355200E+002	5.4453709993E+001	-7.4842841240E+001	0.416	0.918	1.071
159.775	2.388	27.444	0.826	3.0494569165E+002	4.2157574181E+001	-7.4332252065E+001	0.369	0.910	1.071
160.367	2.376	27.926	0.818	2.6227574695E+002	3.1407427334E+001	-7.2760324320E+001	0.328	0.912	1.077
160.429	2.377	27.979	0.757	2.5775028996E+002	3.0368288048E+001	-7.1823126388E+001	0.324	0.914	1.078
161.004	2.297	28.409	0.694	2.2174688311E+002	2.2812746040E+001	-5.6475873245E+001	0.289	0.936	1.101
161.552	2.126	28.758	0.634	1.9396772414E+002	1.7843980911E+001	-4.8552838401E+001	0.262	0.970	1.135
161.670	2.080	28.831	0.596	1.8831584722E+002	1.6894498912E+001	-4.6839332290E+001	0.256	0.979	1.143
161.920	1.972	28.977	0.601	1.7727327773E+002	1.5196055065E+001	-4.5088274684E+001	0.245	1.003	1.165
162.075	1.912	29.074	0.623	1.7019716690E+002	1.4180851355E+001	-4.5207594116E+001	0.236	1.026	1.185
162.621	1.660	29.414	0.633	1.4637078569E+002	1.1055678334E+001	-4.2711819378E+001	0.204	1.125	1.272
163.116	1.400	29.733	0.661	1.2563291876E+002	8.6734758112E+000	-4.3853205706E+001	0.174	1.261	1.395
163.206	1.362	29.801	0.762	1.2166122750E+002	8.2562265119E+000	-4.4831310081E+001	0.167	1.293	1.426
163.798	1.080	30.253	0.772	9.2730086223E+001	5.1975281324E+000	-4.9635406950E+001	0.141	1.462	1.578
163.881	1.045	30.322	0.928	8.8571611846E+001	4.8158524268E+000	-5.0268283642E+001	0.137	1.496	1.609
164.340	0.882	30.756	0.922	6.4164620733E+001	2.7915242104E+000	-4.7315262571E+001	0.113	1.752	1.853
164.859	0.674	31.223	1.047	4.3056354807E+001	1.4656883974E+000	-4.1057254650E+001	0.088	2.204	2.333
165.450	0.581	31.919	1.074	1.8517771135E+001	3.6057419969E-001	-3.1603401007E+001	0.058	3.288	3.468
166.042	0.368	32.493	0.940	5.6765859250E+000	5.3496759185E-002	-1.5465352921E+001	0.042	4.477	4.844
166.633	0.116	33.030	0.866	2.2571080410E-001	7.4065526544E-004	-1.7709129386E+000	0.040	8.742	10.177
166.760	0.032	33.115	0.866	2.0371671834E-001	6.1821678147E-004	-1.7225685638E+000	0.040	8.742	12.090

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 ht(m) : Altezza linea di thrust da nodo sinistro base concio
 yt(m) : coordinata Y linea di thrust
 yt'(-) : gradiente pendenza locale linea di thrust
 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_qFEM(x)(-) : fattore di sicurezza locale stimato (locale in X) by qFEM
 FS_p-qPATH(x)(-) : fattore di sicurezza locale stimato (locale in X) by p-qPATH Procedure

TABELLA SFORZI DI TAGLIO DISTRIBUITI LUNGO SUPERFICIE INDIVIDUATA CON MINOR FS

X	dx	dl	alpha	TauStress	TauF	TauStrength	TauS
(m)	(m)	(m)	(°)	(kPa)	(kN/m)	(kPa)	(kN/m)
108.522	0.591	0.721	-34.901	-2.842	-2.049	12.457	8.983
109.113	0.591	0.721	-34.901	-8.527	-6.148	13.339	9.619
109.705	0.591	0.721	-34.901	-14.211	-10.247	13.940	10.052
110.296	0.140	0.170	-34.901	-17.724	-3.016	13.590	2.312
110.436	0.591	0.719	-34.659	-21.151	-15.207	14.254	10.248
111.027	0.389	0.473	-34.659	-25.819	-12.225	14.077	6.665
111.416	0.591	0.715	-34.209	-30.267	-21.644	14.096	10.080
112.008	0.102	0.124	-34.209	-33.507	-4.143	13.022	1.610
112.110	0.591	0.711	-33.727	-36.461	-25.926	14.446	10.272
112.701	0.028	0.034	-33.727	-39.296	-1.326	13.461	0.454
112.730	0.130	0.156	-33.118	-39.650	-6.178	13.916	2.168
112.860	0.426	0.508	-33.118	-42.121	-21.413	14.172	7.205
113.286	0.563	0.669	-32.623	-46.116	-30.846	13.734	9.186



113.849	0.580	0.685	-32.143	-50.644	-34.679	12.398	8.489
114.429	0.591	0.695	-31.678	-55.148	-38.324	11.190	7.777
115.020	0.019	0.022	-31.678	-57.687	-1.285	11.195	0.249
115.039	0.591	0.692	-31.260	-59.750	-41.337	10.609	7.340
115.631	0.067	0.079	-31.260	-62.439	-4.925	10.418	0.822
115.698	0.552	0.632	-29.102	-62.110	-39.241	11.736	7.415
116.250	0.513	0.571	-26.125	-61.274	-35.016	13.942	7.967
116.763	0.472	0.510	-22.350	-57.107	-29.125	17.534	8.943
117.235	0.465	0.490	-18.408	-50.508	-24.757	21.488	10.533
117.700	0.060	0.063	-18.408	-51.482	-3.247	21.326	1.345
117.760	0.466	0.481	-14.290	-41.790	-20.109	25.785	12.408
118.226	0.510	0.518	-9.910	-30.436	-15.772	30.917	16.022
118.737	0.549	0.552	-6.160	-19.621	-10.840	44.884	24.797
119.286	0.591	0.592	-3.352	-10.966	-6.496	55.186	32.692
119.877	0.083	0.084	-3.352	-11.094	-0.927	60.554	5.059
119.961	0.591	0.592	-2.708	-9.071	-5.370	63.996	37.889
120.552	0.019	0.019	-2.708	-9.161	-0.178	69.117	1.339
120.571	0.575	0.576	-1.965	-6.712	-3.864	75.325	43.365
121.147	0.555	0.556	-1.180	-4.098	-2.277	84.156	46.754
121.702	0.554	0.554	-0.362	-1.278	-0.707	89.267	49.420
122.256	0.284	0.284	0.413	1.473	0.418	84.003	23.868
122.540	0.261	0.261	0.413	1.482	0.387	82.989	21.650
122.801	0.554	0.554	1.187	4.301	2.382	79.525	44.047
123.355	0.565	0.565	1.933	7.083	4.002	74.762	42.242
123.919	0.591	0.592	2.629	9.738	5.765	68.334	40.455
124.511	0.000	0.000	2.629	9.793	0.003	64.830	0.018
124.511	0.568	0.569	3.173	11.872	6.759	62.288	35.463
125.079	0.558	0.559	3.749	14.152	7.909	58.380	32.625
125.637	0.550	0.552	4.342	16.519	9.115	56.713	31.296
126.187	0.555	0.557	4.937	18.915	10.536	55.927	31.152
126.742	0.550	0.552	5.528	21.315	11.769	55.675	30.741
127.292	0.088	0.089	6.117	23.650	2.096	55.376	4.907
127.380	0.468	0.471	6.117	23.729	11.172	55.450	26.106
127.848	0.566	0.569	6.688	26.059	14.840	55.220	31.447
128.414	0.586	0.591	7.228	28.290	16.725	55.021	32.528
129.000	0.566	0.571	7.758	30.482	17.411	54.840	31.325
129.566	0.557	0.563	8.316	32.768	18.434	54.571	30.700
130.123	0.550	0.557	8.887	35.094	19.542	54.287	30.229
130.673	0.555	0.563	9.458	37.403	21.048	53.931	30.349
131.228	0.548	0.557	10.021	39.661	22.077	53.566	29.817
131.776	0.444	0.451	10.585	41.887	18.909	53.268	24.047
132.220	0.109	0.111	10.585	41.934	4.637	53.252	5.888
132.329	0.557	0.568	11.133	44.055	25.029	53.005	30.113
132.886	0.571	0.583	11.660	46.108	26.890	52.736	30.756
133.457	0.570	0.582	11.660	46.181	26.864	52.752	30.687
134.027	0.565	0.577	11.660	46.253	26.677	52.765	30.433
134.592	0.565	0.577	11.660	46.325	26.717	52.785	30.442
135.157	0.559	0.571	11.660	46.396	26.499	52.809	30.162
135.716	0.565	0.577	11.660	46.468	26.797	52.823	30.462
136.281	0.565	0.577	11.660	46.539	26.839	52.862	30.485
136.846	0.214	0.219	11.660	46.589	10.197	52.890	11.576
137.060	0.355	0.363	11.660	46.596	16.902	52.866	19.176
137.415	0.571	0.583	11.660	46.577	27.157	52.795	30.783
137.986	0.557	0.570	12.192	48.542	27.680	52.395	29.877
138.544	0.553	0.566	12.742	50.527	28.622	51.964	29.436
139.096	0.384	0.394	13.303	52.515	20.713	51.548	20.332
139.480	0.164	0.169	13.303	52.462	8.866	51.455	8.696
139.644	0.555	0.572	13.858	54.397	31.105	51.027	29.178
140.200	0.552	0.570	14.422	56.262	32.065	50.514	28.789
140.752	0.560	0.580	14.977	58.034	33.634	49.982	28.967
141.311	0.572	0.594	15.514	59.669	35.443	49.470	29.385
141.884	0.016	0.017	16.016	61.259	1.032	49.127	0.827
141.900	0.581	0.604	16.016	61.109	36.940	48.960	29.596
142.481	0.562	0.588	16.947	63.919	37.576	48.245	28.362
143.043	0.550	0.578	17.952	66.808	38.617	47.440	27.422
143.593	0.538	0.569	18.993	69.629	39.651	46.529	26.496
144.132	0.188	0.200	20.019	72.395	14.508	45.734	9.165
144.320	0.363	0.387	20.019	72.076	27.864	45.517	17.597
144.683	0.537	0.576	21.024	74.458	42.868	44.549	25.649
145.221	0.429	0.463	22.023	76.579	35.467	43.569	20.178
145.650	0.118	0.127	22.023	76.159	9.660	43.594	5.529



145.768	0.556	0.604	22.964	78.154	47.218	42.610	25.744
146.324	0.416	0.455	23.829	79.536	36.182	41.751	18.993
146.740	0.168	0.184	23.829	78.983	14.544	41.720	7.682
146.908	0.575	0.629	23.921	78.472	49.390	41.334	26.015
147.484	0.567	0.620	24.016	77.557	48.109	41.100	25.495
148.050	0.564	0.618	24.111	76.637	47.347	41.023	25.344
148.614	0.546	0.598	24.208	75.725	45.309	40.499	24.232
149.160	0.013	0.014	24.208	75.148	1.067	40.535	0.576
149.173	0.560	0.615	24.303	74.769	45.963	39.719	24.417
149.733	0.559	0.614	24.397	73.807	45.328	39.173	24.058
150.293	0.561	0.616	24.491	72.828	44.871	38.540	23.745
150.853	0.559	0.615	24.585	71.832	44.169	37.855	23.277
151.412	0.128	0.140	24.585	71.091	9.978	37.646	5.284
151.540	0.040	0.044	24.585	70.912	3.119	37.598	1.654
151.580	0.395	0.435	24.585	70.510	30.642	37.467	16.282
151.975	0.561	0.617	24.585	69.634	42.992	37.448	23.120
152.537	0.563	0.619	24.585	68.606	42.483	37.372	23.142
153.100	0.559	0.615	24.585	67.579	41.570	37.136	22.843
153.659	0.341	0.375	24.585	66.755	25.028	37.044	13.889
154.000	0.229	0.252	24.585	66.234	16.678	36.899	9.292
154.229	0.575	0.632	24.585	65.498	41.417	36.358	22.990
154.804	0.536	0.589	24.585	64.481	38.008	35.651	21.014
155.340	0.055	0.061	24.585	63.942	3.869	35.118	2.125
155.395	0.591	0.650	24.585	63.372	41.214	34.652	22.535
155.986	0.018	0.020	24.585	62.835	1.245	34.534	0.684
156.004	0.416	0.464	26.463	65.779	30.535	33.185	15.405
156.420	0.131	0.146	26.463	65.165	9.536	33.055	4.837
156.551	0.309	0.352	28.575	68.002	23.927	31.549	11.101
156.860	0.222	0.252	28.575	67.229	16.963	31.857	8.038
157.082	0.218	0.254	30.793	69.660	17.712	30.374	7.723
157.300	0.291	0.339	30.793	68.982	23.391	30.353	10.292
157.591	0.543	0.646	32.868	70.504	45.561	29.001	18.741
158.134	0.519	0.633	34.917	71.054	44.963	29.166	18.456
158.653	0.545	0.681	36.853	70.776	48.231	28.589	19.482
159.198	0.577	0.738	38.520	69.554	51.307	27.722	20.450
159.775	0.591	0.770	39.853	67.534	52.024	26.434	20.363
160.367	0.062	0.081	39.853	65.962	5.339	27.524	2.228
160.429	0.576	0.769	41.553	64.846	49.877	24.613	18.931
161.004	0.548	0.755	43.476	61.978	46.803	22.963	17.340
161.552	0.118	0.168	45.451	59.973	10.047	22.710	3.804
161.670	0.250	0.356	45.451	58.679	20.911	22.192	7.909
161.920	0.155	0.221	45.451	56.992	12.591	22.507	4.972
162.075	0.546	0.805	47.303	53.017	42.703	20.409	16.439
162.621	0.495	0.762	49.492	46.630	35.542	19.241	14.665
163.116	0.090	0.138	49.492	43.229	5.979	16.200	2.241
163.206	0.591	0.942	51.121	39.050	36.793	14.420	13.586
163.798	0.084	0.133	51.121	35.334	4.707	13.035	1.736
163.881	0.459	0.753	52.470	31.849	23.991	11.474	8.644
164.340	0.519	0.852	52.470	26.243	22.356	9.048	7.708
164.859	0.591	0.985	53.121	19.666	19.379	6.730	6.632
165.450	0.591	0.985	53.121	12.756	12.570	4.200	4.138
166.042	0.591	0.985	53.121	5.846	5.761	2.076	2.045
166.633	0.127	0.211	53.121	1.650	0.349	0.862	0.182
166.760	0.077	0.128	53.121	0.454	0.058	0.531	0.068

LEGENDA SIMBOLI

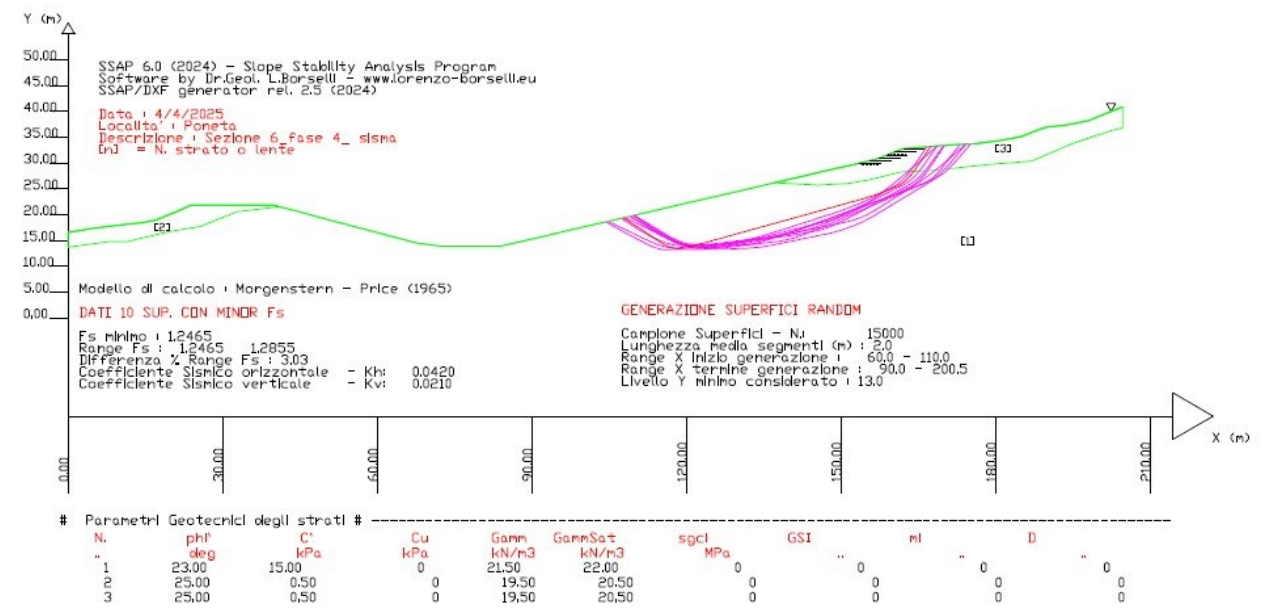
X(m)	: Ascissa sinistra concio
dx(m)	: Larghezza concio
dl(m)	: lunghezza base concio
alpha()	: Angolo pendenza base concio
TauStress(kPa)	: Sforzo di taglio su base concio
TauF (kN/m)	: Forza di taglio su base concio
TauStrength(kPa)	: Resistenza al taglio su base concio
TauS (kN/m)	: Forza resistente al taglio su base concio

RISULTATI INTERAZIONI CON SISTEMA DI GEOGRIGLIE/GEOSINTETICI

Nessuna Intersezione e interazione tra superficie con FS minimo e Sistema di Geogriglie/Geosintetici



8 SEZIONE 6 FASE FINALE - SISMA



Report Generale Risultati di Verifica di stabilita'

SSAP 6.0 - Slope Stability Analysis Program (1991,2024)
WWW.SSAP.EU
Build No. 14533
BY
Dr. Geol. LORENZO BORSELLI
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Ricercatore Associato CNR-IRPI, Perugia , Italia

Ultima Revisione struttura tabelle del report: 21 Maggio 2024

File report: C:\Users\facco\OneDrive\Documents\Lavoro\Lavori STGA\Poneta\Sezioni\Risultati SSAP\Sez6_fase4_ sisma.txt

Data: 4/4/2025

Localita': Poneta

Descrizione: Sezione 6_fase 4_ sisma

Modello pendio: Sezione 6_fase 4.mod

----- 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	16.56	0.00	16.56	137.06	26.20	-	-		
4.84	17.37	4.84	17.37	141.90	27.31	-	-		
9.68	17.93	9.68	17.93	146.74	28.44	-	-		
14.52	18.47	14.52	18.47	151.58	29.49	-	-		
16.94	18.94	16.94	18.94	156.42	30.68	-	-		
21.34	20.75	21.34	20.75	157.30	30.88	-	-		
23.76	21.87	23.76	21.87	161.92	32.77	-	-		
39.82	21.87	39.82	21.87	166.76	33.18	-	-		
44.44	20.66	41.01	21.56	171.60	33.50	-	-		
49.06	19.40	32.69	20.55	176.44	33.83	-	-		
53.68	18.18	25.65	17.71	181.28	34.46	-	-		
58.30	16.95	19.63	16.72	184.80	35.07	-	-		
62.92	15.73	11.34	14.77	189.42	36.87	-	-		
67.54	14.50	8.31	14.79	194.26	37.45	-	-		



72.38	13.87	0.00	13.73	198.00	38.21	-	-
83.82	13.87	0.00	16.56	202.40	40.01	-	-
88.66	14.99	-	-	204.60	40.89	-	-
93.50	16.10	-	-	204.60	36.80	-	-
98.34	17.23	-	-	202.04	36.17	-	-
103.18	18.35	-	-	195.13	33.86	-	-
108.02	19.46	-	-	186.89	30.36	-	-
112.86	20.59	-	-	178.78	29.72	-	-
117.70	21.70	-	-	167.75	28.57	-	-
122.54	22.84	-	-	161.67	28.26	-	-
127.38	23.95	-	-	155.34	26.72	-	-
132.22	25.06	-	-	151.54	26.06	-	-
137.06	26.20	-	-	145.65	25.75	-	-
141.90	27.31	-	-	137.06	26.20	-	-
146.74	28.44	-	-	-	-	-	-
151.58	29.49	-	-	-	-	-	-
156.42	30.68	-	-	-	-	-	-
157.30	30.88	-	-	-	-	-	-
161.92	32.77	-	-	-	-	-	-
166.76	33.18	-	-	-	-	-	-
171.60	33.50	-	-	-	-	-	-
176.44	33.83	-	-	-	-	-	-
181.28	34.46	-	-	-	-	-	-
184.80	35.07	-	-	-	-	-	-
189.42	36.87	-	-	-	-	-	-
194.26	37.45	-	-	-	-	-	-
198.00	38.21	-	-	-	-	-	-
202.40	40.01	-	-	-	-	-	-
204.60	40.89	-	-	-	-	-	-

SUP FALDA

X Y

0.00	16.56
4.84	17.37
9.68	17.93
14.52	18.47
16.94	18.94
21.34	20.75
23.76	21.87
39.82	21.87
44.44	20.66
49.06	19.40
53.68	18.18
58.30	16.95
62.92	15.73
67.54	14.50
72.38	13.87
83.82	13.87
88.66	14.99
93.50	16.10
98.34	17.23
103.18	18.35
108.02	19.46
112.86	20.59
117.70	21.70
122.54	22.84
127.38	23.95
132.22	25.06
137.06	26.20
141.90	27.31
146.74	28.44
151.58	29.49
156.42	30.68
157.30	30.88
161.92	32.77
166.76	33.18
171.60	33.50
176.44	33.83
181.28	34.46
184.80	35.07
189.42	36.87



194.26 37.45
 198.00 38.21
 202.40 40.01
 204.60 40.89

----- GESTIONE ACQUIFERI -----

Strati esclusi da acquifero e effetto pressione dei pori:

STRATO 2

STRATO 3

Esclusione sovraccarico pendio sommerso: NON ATTIVATA

EFFETTO TENSION CRACK IN TESTA RIEMPITO DI ACQUA: ----> DISATTIVATO

In caso di superfici con tension crack in testa, la frattura di tensione puo' venir considerata completamente riempita di acqua per la sua intera profondita'.

Viene quindi considerato una forza in testa, prodotta dalla pressione idrostatica.

La forza applicata ha un effetto destabilizzante aggiuntivo alle altre forze destabilizzanti agenti.

Peso unitario fluido (kN/m³): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A 0

Coefficiente K 0.000800

Pressione minima fluidi Uo_Min (kPa) 0.01

Coefficiente di soprapressione oltre pressione idrostatica 1.00

Limitazione dissipazione a Pressione Idrostatica = ATTIVA

STABILITE CONDIZIONI PER LA VERIFICA CON SOVRAPPRESSIONE ACQUIFERI CON DISSIPAZIONE IN DIREZIONE DELLA SUPERFICIE

CALCOLO EFFETTO DI FILTRAZIONE NON ATTIVATO

----- PARAMETRI GEOMECCANICI -----

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	23.00	15.00	0.00	21.50	22.00	1.805	0.00	0.00	0.00	0.00
STRATO 2	25.00	0.50	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00
STRATO 3	25.00	0.50	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00

LEGENDA: 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/m³)

Gamm_sat _____ Peso di volume terreno immerso (in KN/m³)

STR_IDX _____ Indice di resistenza (usato in solo in 'SNIFF SEARCH') (adimensionale)

---- SOLO Per AMMASSI ROCCIOSI FRATTURATI - Parametri Criterio di Rottura di Hoek et al.(2002)-

sigci _____ Resistenza Compressione Uniaassiale Roccia Intatta (in MPa)

GSI _____ Geological Strenght Index ammasso(adimensionale)

mi _____ Indice litologico ammasso(adimensionale)

D _____ Fattore di disturbo ammasso(adimensionale)

NOTA BENE:

FATTORI DI RIDUZIONE NTC2018/EC-7: gammaPHI=1.25, gammaC=1.25 e gammaCu=1.4 - DISATTIVATI

----- GEOSINTETICI PRESENTI -----

Nota Bene:

PROCEDURA AUTOMATICA CALCOLO MOBILIZZAZIONE FORZA GEOSINTETICI: Disattivata (vedasi manuale SSAP cap.2)

TABELLA GEOSINTETICI

Ngrid	X	Y	L	T	fb	fds	Lws	Lwd	omega
(-)	(m)	(m)	(m)	(kN/m)	(-)	(-)	(m)	(m)	(-)
1	153.5800	29.7800	4.00	40.00	0.75	0.80	0.00	0.00	0.10
2	155.6900	30.3900	4.00	40.00	0.75	0.80	0.00	0.00	0.10
3	157.5000	30.9600	4.00	40.00	0.75	0.80	0.00	0.00	0.10
4	158.8800	31.5200	4.00	40.00	0.75	0.80	0.00	0.00	0.10
5	160.5300	32.1900	4.00	40.00	0.75	0.80	0.00	0.00	0.10
6	162.2900	32.7900	4.00	40.00	0.75	0.80	0.00	0.00	0.10

LEGENDA SIMBOLI



Ngrid : Numero geosintetico
X(m) : Coordinata X Testa
Y(m) : Coordinata Y Testa
L(m) : Lunghezza geosintetico
T(kN/m) : Resistenza a trazione di progetto
fb(-) : Fattore di interazione suolo/geosintetico
fds(-) : Fattore riduzione Direct Sliding
Lws(m) : Lunghezza risolto a sinistra
Lwd(m) : Lunghezza risolto a destra
Omega(-) : Coefficiente di mobilitazione T come reazione orizzontale massima Th(kN/m)

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

*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
MOTORE DI RICERCA: SNIFF RANDOM SEARCH - Borselli (1997,2021)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 0.00 0.00 0.00
LUNGHEZZA MEDIA SEGMENTI (m)*: 2.0 (+/-) 50%
INTERVALLO ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 60.00 110.00
LIVELLO MINIMO CONSIDERATO (Ymin): 13.00
INTERVALLO ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 90.00 200.51
TOTALE SUPERFICI GENERATE : 15000
*NOTA IMPORTANTE: La lunghezza media dei segmenti non viene considerata nel caso di uso del motore di ricerca NEW RANOM SEARCH

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

METODO DI CALCOLO : MORGENSTERN - PRICE (Morgenstern & Price, 1965)
METODO DI ESPLORAZIONE CAMPO VALORI (lambda0,Fs0) ADOTTATO : A (rapido)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.0420
COEFFICIENTE SISMICO UTILIZZATO Kv (assunto Positivo): 0.0210
COEFFICIENTE c=Kv/Kh UTILIZZATO : 0.5000
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

X(m)	Y(m)	#Superficie N.1 - #FS_minimo	#Fattore di sicurezza(FS)= 1.2465	#Lambda= 0.3730
107.790	19.407			
109.720	18.133			
110.725	17.470			
111.441	16.996			
112.089	16.569			
112.660	16.192			
113.255	15.799			
113.868	15.394			
114.523	14.962			
115.227	14.497			
115.782	14.165			
116.277	13.916			
116.709	13.752			
117.221	13.620			
117.645	13.562			
118.138	13.557			
118.696	13.604			
119.442	13.711			
120.093	13.814			
120.691	13.918			
121.261	14.027			
121.825	14.146			



122.375	14.272
122.935	14.409
123.502	14.557
124.095	14.721
124.683	14.884
125.263	15.045
125.841	15.205
126.413	15.364
126.988	15.523
127.561	15.682
128.135	15.841
128.704	15.999
129.278	16.158
129.851	16.317
130.426	16.476
130.997	16.634
131.572	16.794
132.145	16.953
132.719	17.112
133.288	17.269
133.862	17.428
134.435	17.587
135.010	17.746
135.582	17.905
136.157	18.064
136.730	18.223
137.303	18.382
137.872	18.540
138.446	18.699
139.019	18.858
139.594	19.017
140.166	19.176
140.741	19.335
141.314	19.494
141.888	19.653
142.457	19.811
143.030	19.970
143.603	20.129
144.178	20.288
144.750	20.447
145.325	20.606
145.898	20.765
146.472	20.924
147.041	21.082
147.615	21.241
148.188	21.400
148.763	21.560
149.334	21.718
149.910	21.878
150.485	22.037
151.061	22.197
151.635	22.356
152.207	22.517
152.778	22.679
153.348	22.843
153.918	23.009
154.492	23.179
155.069	23.351
155.656	23.528
156.255	23.712
156.824	23.895
157.384	24.087
157.935	24.285
158.499	24.500
159.063	24.726
159.652	24.974
160.286	25.252
161.005	25.579
161.557	25.878
162.066	26.218
162.523	26.594

163.053 27.109
 163.589 27.733
 164.246 28.599
 165.250 30.041
 167.362 33.186
 167.362 33.220

X(m) Y(m) #Superficie N. 2 #Fattore di sicurezza(FS)= 1.2649 #Lambda= 0.3798
 108.098 19.478
 109.993 18.529
 110.980 18.034
 111.684 17.681
 112.319 17.363
 112.881 17.081
 113.448 16.797
 114.017 16.512
 114.591 16.224
 115.169 15.935
 115.727 15.663
 116.279 15.402
 116.824 15.154
 117.380 14.909
 117.939 14.672
 118.519 14.435
 119.136 14.193
 119.817 13.935
 120.372 13.751
 120.882 13.616
 121.344 13.531
 121.866 13.478
 122.324 13.467
 122.827 13.496
 123.368 13.564
 124.031 13.680
 124.654 13.788
 125.246 13.892
 125.825 13.993
 126.386 14.091
 126.953 14.190
 127.520 14.289
 128.092 14.388
 128.665 14.488
 129.224 14.591
 129.779 14.699
 130.329 14.811
 130.886 14.931
 131.438 15.055
 131.996 15.186
 132.562 15.324
 133.147 15.473
 133.715 15.622
 134.275 15.774
 134.830 15.929
 135.388 16.089
 135.941 16.253
 136.497 16.423
 137.058 16.598
 137.628 16.782
 138.198 16.965
 138.764 17.147
 139.331 17.330
 139.892 17.510
 140.457 17.692
 141.019 17.873
 141.583 18.054
 142.142 18.234
 142.705 18.415
 143.268 18.596
 143.832 18.778
 144.394 18.958



144.959	19.140
145.524	19.322
146.090	19.504
146.654	19.685
147.216	19.868
147.776	20.053
148.335	20.239
148.895	20.429
149.457	20.621
150.023	20.816
150.597	21.017
151.183	21.224
151.744	21.431
152.295	21.644
152.839	21.863
153.394	22.096
153.938	22.334
154.490	22.585
155.050	22.850
155.635	23.135
156.209	23.416
156.776	23.697
157.339	23.977
157.899	24.259
158.473	24.549
159.060	24.849
159.681	25.168
160.354	25.517
160.888	25.839
161.389	26.203
161.846	26.601
162.372	27.130
162.907	27.766
163.557	28.631
164.542	30.054
166.623	33.168

X(m)	Y(m)	#Superficie N. 3 #Fattore di sicurezza(FS)= 1.2685 #Lambda= 0.3506
109.023	19.694	
110.995	18.534	
112.022	17.929	
112.754	17.498	
113.416	17.108	
114.000	16.764	
114.599	16.411	
115.208	16.053	
115.842	15.680	
116.504	15.290	
117.074	14.980	
117.614	14.719	
118.118	14.509	
118.673	14.315	
119.178	14.172	
119.727	14.054	
120.319	13.962	
121.040	13.881	
121.663	13.827	
122.243	13.794	
122.792	13.781	
123.360	13.788	
123.899	13.812	
124.456	13.856	
125.030	13.919	
125.660	14.004	
126.275	14.088	
126.874	14.169	
127.469	14.250	
128.053	14.330	
128.640	14.410	
129.226	14.489	



129.812 14.569
 130.393 14.648
 130.980 14.728
 131.565 14.807
 132.153 14.887
 132.737 14.967
 133.325 15.047
 133.910 15.126
 134.496 15.206
 135.078 15.285
 135.664 15.365
 136.249 15.445
 136.837 15.524
 137.421 15.604
 138.010 15.684
 138.599 15.764
 139.191 15.845
 139.782 15.925
 140.365 16.008
 140.945 16.095
 141.523 16.184
 142.104 16.279
 142.688 16.377
 143.281 16.482
 143.892 16.593
 144.531 16.714
 145.110 16.839
 145.671 16.979
 146.212 17.133
 146.781 17.314
 147.324 17.507
 147.887 17.726
 148.471 17.973
 149.113 18.262
 149.722 18.543
 150.312 18.821
 150.892 19.102
 151.472 19.389
 152.045 19.681
 152.623 19.981
 153.207 20.290
 153.804 20.614
 154.398 20.937
 154.987 21.257
 155.574 21.579
 156.158 21.898
 156.744 22.220
 157.328 22.542
 157.914 22.866
 158.497 23.189
 159.084 23.514
 159.670 23.839
 160.258 24.165
 160.843 24.489
 161.443 24.821
 162.053 25.159
 162.692 25.513
 163.370 25.889
 163.927 26.241
 164.458 26.631
 164.949 27.050
 165.503 27.585
 166.071 28.221
 166.754 29.066
 167.777 30.431
 169.919 33.389

X(m) Y(m) #Superficie N. 4 #Fattore di sicurezza(FS)= 1.2736 #Lambda= 0.3188
 104.356 18.620
 106.610 17.340



107.766	16.690
108.584	16.239
109.314	15.843
109.970	15.497
110.637	15.152
111.324	14.803
112.053	14.440
112.844	14.053
113.492	13.769
114.087	13.551
114.626	13.399
115.237	13.279
115.770	13.220
116.359	13.205
116.996	13.235
117.786	13.312
118.518	13.385
119.211	13.457
119.885	13.529
120.543	13.601
121.201	13.676
121.858	13.753
122.518	13.832
123.180	13.913
123.844	13.995
124.507	14.077
125.171	14.158
125.830	14.240
126.493	14.321
127.154	14.403
127.815	14.484
128.471	14.565
129.133	14.646
129.794	14.728
130.457	14.809
131.116	14.890
131.783	14.972
132.452	15.055
133.130	15.138
133.814	15.223
134.468	15.313
135.113	15.413
135.747	15.522
136.397	15.646
137.035	15.778
137.686	15.924
138.354	16.084
139.062	16.265
139.733	16.446
140.388	16.632
141.032	16.824
141.684	17.028
142.324	17.238
142.972	17.460
143.627	17.694
144.306	17.945
144.981	18.195
145.648	18.443
146.315	18.690
146.974	18.934
147.637	19.180
148.298	19.424
148.959	19.669
149.615	19.913
150.277	20.158
150.938	20.402
151.601	20.648
152.260	20.892
152.923	21.138
153.584	21.383
154.245	21.628



154.901	21.871
155.563	22.116
156.224	22.361
156.887	22.607
157.546	22.851
158.209	23.097
158.870	23.342
159.531	23.587
160.187	23.830
160.849	24.075
161.510	24.320
162.173	24.565
162.832	24.810
163.513	25.062
164.209	25.320
164.949	25.594
165.748	25.890
166.370	26.171
166.948	26.499
167.469	26.868
168.080	27.382
168.692	28.007
169.446	28.883
170.602	30.349
173.074	33.601

X(m)	Y(m)	#Superficie N. 5 #Fattore di sicurezza(FS)= 1.2738 #Lambda= 0.3617
109.714	19.855	
111.902	18.413	
113.000	17.704	
113.766	17.228	
114.439	16.829	
115.058	16.484	
115.662	16.164	
116.287	15.849	
116.937	15.538	
117.647	15.214	
118.284	14.941	
118.893	14.701	
119.478	14.491	
120.089	14.294	
120.676	14.127	
121.293	13.973	
121.946	13.833	
122.691	13.692	
123.335	13.591	
123.942	13.518	
124.514	13.474	
125.120	13.454	
125.685	13.458	
126.277	13.487	
126.892	13.540	
127.581	13.623	
128.249	13.702	
128.896	13.780	
129.537	13.856	
130.165	13.931	
130.797	14.006	
131.426	14.082	
132.056	14.157	
132.681	14.232	
133.311	14.307	
133.940	14.382	
134.572	14.458	
135.199	14.533	
135.838	14.609	
136.482	14.686	
137.142	14.765	
137.819	14.846	
138.435	14.937	

139.035	15.045
139.614	15.169
140.225	15.321
140.806	15.485
141.409	15.677
142.033	15.895
142.718	16.154
143.375	16.406
144.013	16.655
144.642	16.905
145.267	17.158
145.889	17.413
146.512	17.674
147.140	17.941
147.774	18.214
148.410	18.488
149.042	18.761
149.675	19.034
150.303	19.305
150.934	19.577
151.563	19.849
152.194	20.120
152.818	20.390
153.448	20.662
154.078	20.933
154.709	21.206
155.337	21.476
155.969	21.749
156.598	22.020
157.228	22.292
157.853	22.562
158.483	22.833
159.112	23.105
159.744	23.377
160.371	23.648
161.003	23.921
161.632	24.192
162.262	24.464
162.887	24.733
163.517	25.005
164.147	25.277
164.778	25.549
165.406	25.820
166.051	26.099
166.708	26.382
167.397	26.679
168.128	26.995
168.728	27.295
169.296	27.631
169.821	27.997
170.415	28.472
171.020	29.038
171.751	29.800
172.848	31.039
175.161	33.743

X(m)	Y(m)	#Superficie N. 6 #Fattore di sicurezza(FS)= 1.2787 #Lambda= 0.3132
109.120	19.717	
111.268	18.352	
112.362	17.666	
113.132	17.195	
113.817	16.788	
114.436	16.433	
115.060	16.085	
115.705	15.735	
116.389	15.375	
117.140	14.990	
117.758	14.704	
118.327	14.479	
118.845	14.316	



119.427	14.181
119.940	14.103
120.504	14.064
121.113	14.063
121.865	14.099
122.553	14.138
123.201	14.181
123.829	14.228
124.449	14.280
125.062	14.338
125.679	14.401
126.301	14.471
126.938	14.548
127.573	14.625
128.203	14.701
128.833	14.778
129.458	14.853
130.086	14.929
130.714	15.005
131.343	15.082
131.969	15.157
132.594	15.235
133.217	15.314
133.840	15.394
134.463	15.477
135.089	15.561
135.715	15.648
136.347	15.736
136.985	15.828
137.611	15.922
138.231	16.020
138.848	16.122
139.469	16.229
140.085	16.341
140.704	16.457
141.327	16.579
141.960	16.707
142.594	16.835
143.223	16.963
143.853	17.090
144.477	17.216
145.106	17.344
145.734	17.471
146.366	17.599
146.996	17.727
147.620	17.857
148.241	17.989
148.860	18.125
149.482	18.264
150.111	18.409
150.750	18.560
151.413	18.720
152.111	18.892
152.725	19.067
153.314	19.262
153.874	19.475
154.476	19.736
155.039	20.007
155.628	20.322
156.242	20.677
156.927	21.101
157.591	21.511
158.235	21.910
158.872	22.304
159.496	22.691
160.126	23.081
160.755	23.472
161.390	23.867
162.027	24.263
162.650	24.658
163.267	25.057



163.880	25.462
164.500	25.880
165.116	26.303
165.739	26.739
166.374	27.192
167.031	27.668
167.660	28.137
168.278	28.609
168.887	29.087
169.506	29.586
170.189	30.155
170.959	30.814
172.052	31.771
174.203	33.677

X(m)	Y(m)	#Superficie N. 7	#Fattore di sicurezza(FS)= 1.2794	#Lambda= 0.8555
107.356	19.308			
109.415	17.949			
110.443	17.284			
111.160	16.842			
111.787	16.473			
112.366	16.155			
112.932	15.861			
113.522	15.573			
114.144	15.286			
114.836	14.983			
115.431	14.745			
115.990	14.547			
116.515	14.389			
117.079	14.250			
117.597	14.149			
118.146	14.072			
118.719	14.018			
119.379	13.981			
120.011	13.947			
120.620	13.914			
121.221	13.882			
121.809	13.852			
122.405	13.821			
123.004	13.791			
123.616	13.761			
124.240	13.731			
124.822	13.715			
125.391	13.713			
125.946	13.725			
126.523	13.751			
127.079	13.791			
127.653	13.845			
128.243	13.915			
128.882	14.004			
129.490	14.095			
130.081	14.189			
130.662	14.288			
131.246	14.394			
131.822	14.505			
132.402	14.622			
132.989	14.747			
133.590	14.881			
134.190	15.015			
134.785	15.147			
135.379	15.280			
135.967	15.411			
136.560	15.543			
137.149	15.675			
137.740	15.807			
138.326	15.937			
138.917	16.069			
139.506	16.200			
140.098	16.333			
140.687	16.464			



141.286	16.597
141.889	16.732
142.506	16.870
143.139	17.011
143.717	17.156
144.280	17.317
144.824	17.490
145.398	17.694
145.944	17.906
146.509	18.145
147.089	18.410
147.721	18.716
148.338	19.016
148.940	19.309
149.538	19.600
150.126	19.888
150.717	20.177
151.306	20.467
151.896	20.757
152.483	21.046
153.074	21.337
153.665	21.628
154.257	21.920
154.845	22.210
155.437	22.502
156.027	22.793
156.618	23.084
157.204	23.373
157.794	23.664
158.384	23.955
158.976	24.246
159.565	24.536
160.171	24.835
160.789	25.140
161.439	25.460
162.136	25.804
162.694	26.125
163.221	26.486
163.703	26.881
164.256	27.403
164.818	28.028
165.500	28.876
166.531	30.267
168.710	33.309

X(m)	Y(m)	#Superficie N. 8	#Fattore di sicurezza(FS)= 1.2832	#Lambda= 0.8326
109.695	19.851			
111.823	18.449			
112.906	17.743			
113.670	17.258			
114.349	16.838			
114.962	16.471			
115.578	16.112			
116.212	15.753			
116.878	15.386			
117.601	14.997			
118.216	14.694			
118.791	14.443			
119.325	14.246			
119.912	14.069			
120.440	13.944			
121.008	13.848			
121.609	13.782			
122.323	13.735			
122.995	13.692			
123.638	13.654			
124.267	13.618			
124.884	13.585			
125.504	13.555			
126.126	13.526			



126.757	13.498
127.397	13.473
128.016	13.455
128.626	13.444
129.229	13.441
129.842	13.446
130.449	13.458
131.066	13.477
131.700	13.505
132.367	13.541
132.990	13.586
133.598	13.641
134.191	13.706
134.800	13.786
135.391	13.874
135.993	13.977
136.606	14.092
137.253	14.226
137.891	14.358
138.520	14.488
139.147	14.617
139.765	14.745
140.388	14.873
141.008	15.001
141.628	15.129
142.244	15.256
142.865	15.384
143.485	15.512
144.107	15.641
144.725	15.768
145.352	15.898
145.981	16.028
146.620	16.160
147.267	16.293
147.880	16.431
148.481	16.579
149.072	16.736
149.680	16.912
150.276	17.097
150.890	17.300
151.525	17.524
152.213	17.778
152.841	18.026
153.446	18.284
154.032	18.550
154.639	18.845
155.222	19.147
155.820	19.474
156.432	19.827
157.085	20.221
157.728	20.608
158.360	20.988
158.987	21.367
159.606	21.739
160.228	22.114
160.848	22.488
161.469	22.862
162.085	23.233
162.705	23.608
163.325	23.981
163.948	24.356
164.566	24.729
165.199	25.111
165.839	25.497
166.504	25.898
167.199	26.317
167.797	26.715
168.371	27.143
168.914	27.597
169.508	28.144
170.129	28.785



170.861 29.609
 171.942 30.908
 174.177 33.676

X(m) Y(m) #Superficie N. 9 #Fattore di sicurezza(FS)= 1.2842 #Lambda= 0.3698
 104.780 18.717
 106.846 17.722
 107.922 17.203
 108.689 16.833
 109.382 16.500
 109.994 16.205
 110.618 15.904
 111.249 15.600
 111.897 15.288
 112.564 14.966
 113.165 14.697
 113.745 14.460
 114.301 14.257
 114.894 14.066
 115.452 13.911
 116.042 13.773
 116.664 13.652
 117.377 13.537
 118.016 13.447
 118.622 13.377
 119.204 13.325
 119.803 13.288
 120.381 13.268
 120.979 13.263
 121.599 13.274
 122.280 13.300
 122.910 13.335
 123.518 13.379
 124.110 13.434
 124.713 13.501
 125.300 13.577
 125.901 13.667
 126.514 13.769
 127.165 13.889
 127.793 14.009
 128.408 14.131
 129.015 14.257
 129.623 14.388
 130.226 14.523
 130.833 14.664
 131.443 14.810
 132.065 14.964
 132.686 15.117
 133.303 15.270
 133.921 15.422
 134.533 15.574
 135.148 15.726
 135.762 15.878
 136.376 16.029
 136.985 16.180
 137.599 16.332
 138.213 16.484
 138.828 16.636
 139.440 16.787
 140.056 16.939
 140.670 17.091
 141.284 17.243
 141.893 17.393
 142.507 17.545
 143.121 17.697
 143.736 17.849
 144.348 18.000
 144.969 18.154
 145.591 18.308
 146.225 18.464



146.867	18.623
147.472	18.785
148.066	18.957
148.648	19.140
149.250	19.342
149.840	19.554
150.448	19.787
151.082	20.044
151.775	20.339
152.394	20.622
152.988	20.917
153.557	21.224
154.154	21.571
154.723	21.926
155.313	22.318
155.923	22.748
156.590	23.240
157.228	23.717
157.849	24.188
158.461	24.658
159.070	25.133
159.676	25.613
160.286	26.102
160.903	26.602
161.532	27.119
162.149	27.633
162.761	28.147
163.368	28.664
163.978	29.189
164.660	29.786
165.421	30.460
166.495	31.421
168.581	33.300

X(m)	Y(m)	#Superficie N.10	#Fattore di sicurezza(FS)= 1.2855	#Lambda= 1.2500
109.863	19.890			
111.813	18.719			
112.829	18.108			
113.553	17.673			
114.207	17.280			
114.785	16.933			
115.380	16.575			
115.988	16.210			
116.625	15.827			
117.297	15.423			
117.860	15.115			
118.383	14.864			
118.863	14.674			
119.403	14.505			
119.876	14.395			
120.395	14.318			
120.949	14.275			
121.630	14.257			
122.270	14.240			
122.877	14.224			
123.473	14.208			
124.051	14.193			
124.633	14.177			
125.216	14.162			
125.802	14.146			
126.389	14.131			
126.965	14.120			
127.538	14.113			
128.107	14.111			
128.682	14.113			
129.259	14.119			
129.848	14.131			
130.457	14.147			
131.102	14.168			
131.674	14.205			



132.223	14.261
132.747	14.337
133.306	14.440
133.830	14.558
134.377	14.704
134.943	14.877
135.574	15.089
136.187	15.295
136.782	15.496
137.371	15.694
137.949	15.888
138.531	16.084
139.110	16.279
139.691	16.475
140.269	16.669
140.848	16.865
141.426	17.061
142.005	17.259
142.582	17.457
143.161	17.656
143.739	17.857
144.320	18.059
144.899	18.261
145.479	18.465
146.058	18.669
146.637	18.874
147.215	19.079
147.794	19.286
148.372	19.493
148.951	19.702
149.528	19.910
150.109	20.120
150.688	20.330
151.270	20.540
151.848	20.749
152.429	20.959
153.008	21.169
153.588	21.378
154.163	21.586
154.742	21.796
155.322	22.005
155.903	22.216
156.480	22.425
157.066	22.636
157.654	22.849
158.251	23.065
158.856	23.284
159.427	23.502
159.989	23.730
160.540	23.967
161.108	24.225
161.672	24.496
162.261	24.792
162.891	25.125
163.603	25.514
164.168	25.870
164.695	26.262
165.175	26.685
165.718	27.237
166.274	27.897
166.945	28.786
167.958	30.237
170.090	33.400

----- ANALISI DEFICIT DI RESISTENZA -----
DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR F_s *
Analisi Deficit in riferimento a $F_s(\text{progetto}) = 1.200$

Sup N.	F_s	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.246	2752.7	2208.5	102.6	Surplus



2	1.265	2926.0	2313.2	150.2	Surplus
3	1.269	3290.8	2594.1	177.8	Surplus
4	1.274	3615.5	2838.8	208.9	Surplus
5	1.274	3553.4	2789.6	206.0	Surplus
6	1.279	3480.6	2721.9	214.3	Surplus
7	1.279	3280.7	2564.2	203.7	Surplus
8	1.283	3801.4	2962.5	246.4	Surplus
9	1.284	3295.3	2566.1	216.0	Surplus
10	1.285	3213.8	2500.1	213.7	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 102.6

Note: FTR --> Forza totale Resistente lungo la superficie di scivolamento
FTA --> Forza totale Agente lungo la superficie di scivolamento

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

TABELLA PARAMETRI CONCI DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (°)	W (kN/m)	ru (-)	U (kPa)	phi' (°)	(c',Cu) (kPa)
107.790	0.230	-33.44	0.53	0.45	1.00	23.00	15.00
108.020	0.602	-33.44	6.39	0.45	4.64	23.00	15.00
108.622	0.602	-33.44	13.66	0.45	9.83	23.00	15.00
109.223	0.496	-33.44	16.74	0.45	15.07	23.00	15.00
109.720	0.602	-33.44	26.92	0.45	19.91	23.00	15.00
110.321	0.404	-33.44	22.13	0.45	25.78	23.00	15.00
110.725	0.602	-33.44	39.06	0.45	29.59	23.00	15.00
111.326	0.115	-33.44	8.30	0.45	34.91	23.00	15.00
111.441	0.602	-33.44	47.72	0.45	35.83	23.00	15.00
112.043	0.046	-33.44	3.92	0.45	40.54	23.00	15.00
112.089	0.572	-33.44	52.60	0.45	40.88	23.00	15.00
112.660	0.200	-33.44	19.91	0.45	45.13	23.00	15.00
112.860	0.395	-33.44	41.81	0.45	46.69	23.00	15.00
113.255	0.602	-33.44	69.59	0.45	49.58	23.00	15.00
113.857	0.011	-33.44	1.37	0.45	53.95	23.00	15.00
113.868	0.602	-33.44	76.96	0.45	54.04	23.00	15.00
114.470	0.053	-33.44	7.08	0.45	58.65	23.00	15.00
114.523	0.602	-33.44	84.82	0.45	59.05	23.00	15.00
115.124	0.103	-33.44	15.28	0.45	63.70	23.00	15.00
115.227	0.554	-30.84	85.50	0.45	64.41	23.00	15.00
115.782	0.495	-26.74	80.96	0.45	68.27	23.00	15.00
116.277	0.432	-20.82	73.64	0.45	71.43	23.00	15.00
116.709	0.512	-14.47	90.20	0.45	73.87	23.00	15.00
117.221	0.424	-7.74	76.58	0.45	76.34	23.00	15.00
117.645	0.055	-0.59	10.09	0.45	78.09	23.00	15.00
117.700	0.438	-0.59	80.62	0.45	78.27	23.00	15.00
118.138	0.558	4.80	103.82	0.45	79.66	23.00	15.00
118.696	0.602	8.20	112.95	0.45	80.86	23.00	15.00
119.297	0.144	8.20	27.19	0.45	81.76	23.00	15.00
119.442	0.602	8.96	113.81	0.45	81.95	23.00	15.00
120.043	0.050	8.96	9.48	0.45	82.51	23.00	15.00
120.093	0.598	9.88	113.80	0.45	82.55	23.00	15.00
120.691	0.569	10.86	108.64	0.45	82.92	23.00	15.00
121.261	0.564	11.89	107.99	0.45	83.19	23.00	15.00
121.825	0.551	12.83	105.45	0.45	83.30	23.00	15.00
122.375	0.165	13.77	31.52	0.45	83.33	23.00	15.00
122.540	0.395	13.77	75.57	0.45	83.33	23.00	15.00
122.935	0.567	14.66	108.48	0.45	83.29	23.00	15.00
123.502	0.593	15.49	113.12	0.45	83.18	23.00	15.00
124.095	0.588	15.49	111.70	0.45	82.97	23.00	15.00
124.683	0.580	15.49	109.87	0.45	82.72	23.00	15.00
125.263	0.579	15.49	109.24	0.45	82.44	23.00	15.00
125.841	0.572	15.49	107.58	0.45	82.15	23.00	15.00
126.413	0.575	15.49	107.87	0.45	81.88	23.00	15.00



126.988	0.392	15.49	73.28	0.45	81.64	23.00	15.00
127.380	0.181	15.49	33.85	0.45	81.49	23.00	15.00
127.561	0.574	15.49	106.91	0.45	81.41	23.00	15.00
128.135	0.569	15.49	105.66	0.45	81.17	23.00	15.00
128.704	0.574	15.49	106.20	0.45	80.91	23.00	15.00
129.278	0.573	15.49	105.72	0.45	80.61	23.00	15.00
129.851	0.575	15.49	105.75	0.45	80.32	23.00	15.00
130.426	0.572	15.49	104.76	0.45	80.03	23.00	15.00
130.997	0.575	15.49	105.04	0.45	79.75	23.00	15.00
131.572	0.573	15.49	104.31	0.45	79.51	23.00	15.00
132.145	0.075	15.49	13.54	0.45	79.29	23.00	15.00
132.220	0.499	15.49	90.56	0.45	79.26	23.00	15.00
132.719	0.569	15.49	102.93	0.45	79.07	23.00	15.00
133.288	0.574	15.49	103.49	0.45	78.85	23.00	15.00
133.862	0.573	15.49	103.05	0.45	78.61	23.00	15.00
134.435	0.575	15.49	103.12	0.45	78.37	23.00	15.00
135.010	0.572	15.49	102.19	0.45	78.13	23.00	15.00
135.582	0.575	15.49	102.50	0.45	77.88	23.00	15.00
136.157	0.573	15.49	101.83	0.45	77.63	23.00	15.00
136.730	0.330	15.49	58.55	0.45	77.39	23.00	15.00
137.060	0.243	15.49	43.07	0.45	77.26	23.00	15.00
137.303	0.569	15.49	100.23	0.45	77.16	23.00	15.00
137.872	0.574	15.49	100.49	0.45	76.91	23.00	15.00
138.446	0.573	15.49	99.77	0.45	76.65	23.00	15.00
139.019	0.461	15.50	79.82	0.45	76.37	23.00	15.00
139.480	0.114	15.50	19.72	0.45	76.15	23.00	15.00
139.594	0.572	15.50	98.36	0.45	76.10	23.00	15.00
140.166	0.575	15.50	98.35	0.45	75.82	23.00	15.00
140.741	0.573	15.50	97.41	0.45	75.54	23.00	15.00
141.314	0.574	15.50	96.94	0.45	75.27	23.00	15.00
141.888	0.012	15.50	2.08	0.46	75.02	23.00	15.00
141.900	0.557	15.50	93.48	0.46	75.02	23.00	15.00
142.457	0.574	15.50	95.81	0.46	74.75	23.00	15.00
143.030	0.573	15.50	95.13	0.46	74.47	23.00	15.00
143.603	0.575	15.50	94.90	0.46	74.21	23.00	15.00
144.178	0.142	15.50	23.27	0.46	73.96	23.00	15.00
144.320	0.430	15.50	70.50	0.46	73.90	23.00	15.00
144.750	0.575	15.50	93.77	0.46	73.71	23.00	15.00
145.325	0.325	15.50	52.71	0.46	73.46	23.00	15.00
145.650	0.248	15.50	40.17	0.46	73.32	23.00	15.00
145.898	0.574	15.50	92.50	0.46	73.21	23.00	15.00
146.472	0.268	15.50	43.05	0.46	72.94	23.00	15.00
146.740	0.301	15.50	48.19	0.46	72.82	23.00	15.00
147.041	0.574	15.50	91.44	0.47	72.67	23.00	15.00
147.615	0.573	15.50	90.75	0.47	72.36	23.00	15.00
148.188	0.575	15.50	90.49	0.47	72.00	23.00	15.00
148.763	0.397	15.50	62.17	0.47	71.63	23.00	15.00
149.160	0.174	15.50	27.20	0.47	71.38	23.00	15.00
149.334	0.576	15.50	89.43	0.47	71.27	23.00	15.00
149.910	0.574	15.50	88.63	0.47	70.95	23.00	15.00
150.485	0.577	15.50	88.37	0.47	70.63	23.00	15.00
151.061	0.479	15.50	72.93	0.47	70.35	23.00	15.00
151.540	0.040	15.50	6.07	0.47	70.14	23.00	15.00
151.580	0.055	15.50	8.37	0.47	70.12	23.00	15.00
151.635	0.572	15.69	86.71	0.47	70.10	23.00	15.00
152.207	0.570	15.87	86.06	0.47	69.84	23.00	15.00
152.778	0.570	16.06	85.69	0.47	69.57	23.00	15.00
153.348	0.570	16.25	85.34	0.47	69.29	23.00	15.00
153.918	0.082	16.44	12.26	0.47	68.98	23.00	15.00
154.000	0.492	16.44	73.18	0.47	68.93	23.00	15.00
154.492	0.577	16.63	85.54	0.47	68.66	23.00	15.00
155.069	0.271	16.81	40.02	0.47	68.35	23.00	15.00
155.340	0.316	16.81	46.46	0.47	68.22	23.00	15.00
155.656	0.599	16.99	87.86	0.47	68.10	23.00	15.00
156.255	0.165	17.89	24.10	0.47	67.88	23.00	15.00
156.420	0.404	17.89	58.84	0.47	67.82	23.00	15.00
156.824	0.036	18.85	5.15	0.48	67.70	23.00	15.00
156.860	0.440	18.85	63.53	0.48	67.69	23.00	15.00
157.300	0.084	18.85	12.15	0.48	67.57	23.00	15.00
157.384	0.550	19.84	79.29	0.48	67.55	23.00	15.00
157.935	0.564	20.82	81.44	0.48	67.37	23.00	15.00

158.499	0.564	21.84	81.47	0.48	66.89	23.00	15.00
159.063	0.589	22.81	84.84	0.48	65.96	23.00	15.00
159.652	0.602	23.71	86.36	0.48	64.58	23.00	15.00
160.254	0.032	23.71	4.61	0.48	62.57	23.00	15.00
160.286	0.602	24.45	85.88	0.48	62.45	23.00	15.00
160.887	0.118	24.45	16.72	0.47	58.51	23.00	15.00
161.005	0.552	28.44	77.96	0.47	57.49	23.00	15.00
161.557	0.113	33.74	15.80	0.44	52.48	23.00	15.00
161.670	0.250	33.74	34.68	0.44	51.31	23.00	15.00
161.920	0.146	33.74	20.01	0.42	48.55	23.00	15.00
162.066	0.456	39.46	60.32	0.41	46.87	23.00	15.00
162.523	0.531	44.18	65.30	0.38	41.18	23.00	15.00
163.053	0.535	49.37	59.53	0.33	33.98	23.00	15.00
163.589	0.493	52.82	48.21	0.27	24.57	23.00	15.00
164.081	0.164	52.82	14.61	0.00	0.00	25.00	0.50
164.246	0.094	55.15	8.08	0.00	0.00	25.00	0.50
164.340	0.602	55.15	45.92	0.00	0.00	25.00	0.50
164.942	0.308	55.15	19.74	0.00	0.00	25.00	0.50
165.250	0.602	56.11	31.00	0.00	0.00	25.00	0.50
165.851	0.602	56.11	20.89	0.00	0.00	25.00	0.50
166.453	0.307	56.11	6.76	0.00	0.00	25.00	0.50
166.760	0.602	56.11	5.53	0.00	0.00	25.00	0.50

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 dx(m) : Larghezza concio
 alpha() : Angolo pendenza base concio
 W(kN/m) : Forza peso concio
 ru(-) : Coefficiente locale pressione interstiziale
 U(kPa) : Pressione totale dei pori base concio
 phi'() : Angolo di attrito efficace base concio
 c'/Cu (kPa) : Coesione efficace o Resistenza al taglio in condizioni non drenate

TABELLA DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	ht (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (--)	FS_qFEM (--)	FS_p-qPATH (--)			
107.790	0.000	19.407	-0.366	0.0000000000E+000	0.0000000000E+000	0.0000000000E+000	7.9628680897E+000	0.042	11.552	9.041		
108.020	0.067	19.323	-0.366	1.5687438963E+000	-5.8480330886E-003	5.6968622739E+000	0.042	11.552	9.041			
108.622	0.245	19.103	-0.370	3.2106939496E+000	-2.9701181468E-002	3.6516804063E+000	0.042	3.747	3.191			
109.223	0.417	18.878	-0.393	5.9624628167E+000	-1.2279428359E-001	6.1943186376E+000	0.042	2.097	1.803			
109.720	0.539	18.672	-0.420	9.7013925177E+000	-4.2370603763E-001	8.6500721098E+000	0.048	1.608	1.364			
110.321	0.680	18.416	-0.417	1.5720866659E+001	-1.4415043830E+000	1.1961358815E+001	0.063	1.344	1.113			
110.725	0.783	18.253	-0.389	2.1078119951E+001	-2.7647766843E+000	2.0427977511E+001	0.076	1.264	1.030			
111.326	0.953	18.025	-0.372	3.9783337275E+001	-6.2480877929E+000	3.6929951102E+001	0.097	1.223	0.972			
111.441	0.990	17.986	-0.336	4.4159624896E+001	-7.0331823972E+000	3.8109376941E+001	0.101	1.220	0.964			
112.043	1.186	17.785	-0.333	6.7285413204E+001	-1.1300039360E+001	3.8412263429E+001	0.127	1.163	0.891			
112.089	1.202	17.771	-0.315	6.9038345937E+001	-1.1623291599E+001	3.9171381431E+001	0.129	1.165	0.890			
112.660	1.399	17.590	-0.318	9.6881675985E+001	-1.683359551E+001	5.6537484372E+001	0.159	1.211	0.897			
112.860	1.466	17.526	-0.312	1.0871329094E+002	-1.9060406138E+001	6.1718141169E+001	0.171	1.237	0.904			
113.255	1.606	17.404	-0.304	1.3503948434E+002	-2.4017207341E+001	7.0840763833E+001	0.193	1.301	0.927			
113.857	1.821	17.222	-0.303	1.8157041232E+002	-3.3065410250E+001	8.2866173540E+001	0.219	1.429	0.972			
113.868	1.825	17.219	-0.315	1.8250562045E+002	-3.3252421825E+001	8.3312853193E+001	0.220	1.432	0.973			
114.470	2.032	17.029	-0.314	2.4364781032E+002	-4.6259047081E+001	1.1235168248E+002	0.206	1.644	1.046			
114.523	2.051	17.013	-0.305	2.4961379268E+002	-4.7115609640E+001	1.1367379024E+002	0.204	1.667	1.054			
115.124	2.265	16.830	-0.298	3.2063784250E+002	-5.6550144091E+001	1.1625109478E+002	0.176	1.956	1.153			
115.227	2.307	16.803	-0.259	3.3260852429E+002	-5.7343315485E+001	1.1709479482E+002	0.171	2.009	1.172			
115.782	2.494	16.660	-0.236	4.0096824619E+002	-6.0172348797E+001	1.2441584199E+002	0.147	2.318	1.282			
116.277	2.640	16.556	-0.188	4.6309802803E+002	-5.4156234300E+001	1.2385085209E+002	0.131	2.613	1.399			
116.709	2.734	16.486	-0.133	5.1601003836E+002	-4.1696360300E+001	1.1654334347E+002	0.120	2.855	1.508			
117.221	2.811	16.430	-0.090	5.7205618330E+002	-2.0177644787E+001	1.0372771397E+002	0.111	3.105	1.637			
117.645	2.840	16.402	-0.061	6.1397276419E+002	3.1082850623E+000	8.2236152109E+001	0.107	3.272	1.739			
117.700	2.839	16.401	-0.005	6.1839546986E+002	6.9487090985E+000	7.9978611306E+001	0.107	3.285	1.750			
118.138	2.842	16.399	0.028	6.5316033891E+002	4.2632409153E+001	7.0591567960E+001	0.115	3.371	1.843			
118.696	2.825	16.429	0.083	6.8630729662E+002	8.6468510051E+001	5.2245644314E+001	0.132	3.368	1.933			
119.297	2.805	16.495	0.117	7.1306950628E+002	1.3183353007E+002	3.9688454782E+001	0.162	3.233	1.992			
119.442	2.805	16.516	0.152	7.1862745045E+002	1.4220342937E+002	3.6503091465E+001	0.171	3.184	1.999			
120.043	2.803	16.609	0.155	7.3547940966E+002	1.7934074459E+002	2.1644870462E+001	0.223	2.937	2.005			



120.093	2.803	16.617	0.180	7.3653450694E+002	1.8201567564E+002	2.0888601219E+001	0.229	2.914	2.003
120.691	2.808	16.726	0.194	7.4740256367E+002	2.1140430757E+002	1.5393639699E+001	0.322	2.619	1.967
121.261	2.817	16.844	0.207	7.5466268387E+002	2.3416484715E+002	8.9297111807E+000	0.503	2.313	1.906
121.825	2.814	16.961	0.210	7.5755996689E+002	2.4272395417E+002	2.8553487167E+000	0.612	2.053	1.825
122.375	2.806	17.078	0.212	7.5790872582E+002	2.4770397835E+002	-1.2699781315E+000	0.658	1.834	1.737
122.540	2.800	17.112	0.228	7.5760621209E+002	2.4887774608E+002	-2.2051995405E+000	0.667	1.779	1.711
122.935	2.797	17.205	0.238	7.5638915809E+002	2.5171930859E+002	-4.3264017210E+000	0.691	1.643	1.645
123.502	2.784	17.341	0.256	7.5292152312E+002	2.5458486927E+002	-7.9390805237E+000	0.714	1.498	1.559
124.095	2.781	17.502	0.276	7.4707886574E+002	2.5643918818E+002	-1.0931979017E+001	0.730	1.382	1.478
124.683	2.783	17.667	0.283	7.4002341587E+002	2.5727761577E+002	-1.2484197159E+001	0.741	1.298	1.411
125.263	2.787	17.832	0.285	7.3250813020E+002	2.5749536380E+002	-1.3209912137E+001	0.750	1.234	1.357
125.841	2.792	17.998	0.279	7.2471912386E+002	2.5723999152E+002	-1.3237666086E+001	0.757	1.185	1.314
126.413	2.789	18.153	0.254	7.1727840871E+002	2.5660918100E+002	-1.2260103408E+001	0.762	1.150	1.283
126.988	2.766	18.289	0.232	7.1066511834E+002	2.5569370367E+002	-1.1121136348E+001	0.766	1.131	1.266
127.380	2.745	18.377	0.227	7.0640904557E+002	2.5498513262E+002	-1.1146466838E+001	0.768	1.121	1.258
127.561	2.737	18.419	0.233	7.0436505871E+002	2.5459766363E+002	-1.1265476613E+001	0.768	1.118	1.255
128.135	2.712	18.553	0.243	6.9792355388E+002	2.5326781207E+002	-1.1705162163E+001	0.770	1.109	1.247
128.704	2.699	18.697	0.269	6.9099491773E+002	2.5164434588E+002	-1.2862231597E+001	0.772	1.102	1.241
129.278	2.703	18.860	0.284	6.8322014364E+002	2.4963877195E+002	-1.3537198391E+001	0.773	1.096	1.237
129.851	2.707	19.024	0.285	6.7547116925E+002	2.4752122040E+002	-1.3489154890E+001	0.774	1.092	1.234
130.426	2.712	19.187	0.285	6.6773309705E+002	2.4531175429E+002	-1.3424784488E+001	0.774	1.089	1.232
130.997	2.716	19.350	0.266	6.6007614122E+002	2.4305344581E+002	-1.2460154813E+001	0.775	1.087	1.230
131.572	2.699	19.492	0.240	6.5345090465E+002	2.4102981325E+002	-1.1161666660E+001	0.774	1.085	1.229
132.145	2.674	19.626	0.233	6.4725968659E+002	2.3909353297E+002	-1.0701903878E+001	0.774	1.085	1.228
132.220	2.670	19.643	0.231	6.4646333580E+002	2.3884087949E+002	-1.0676610334E+001	0.774	1.084	1.228
132.719	2.647	19.759	0.236	6.4117343364E+002	2.3713804421E+002	-1.0784649860E+001	0.773	1.084	1.227
133.288	2.626	19.896	0.260	6.3491576521E+002	2.3506717843E+002	-1.1835614894E+001	0.773	1.084	1.226
133.862	2.628	20.056	0.283	6.2764155772E+002	2.3256326878E+002	-1.2804872222E+001	0.771	1.083	1.225
134.435	2.633	20.220	0.287	6.2023206864E+002	2.2994685103E+002	-1.2898777430E+001	0.770	1.083	1.224
135.010	2.639	20.385	0.287	6.1283244910E+002	2.2727934475E+002	-1.2838146965E+001	0.768	1.083	1.223
135.582	2.644	20.549	0.287	6.0550987573E+002	2.2459557551E+002	-1.2789979193E+001	0.767	1.083	1.221
136.157	2.650	20.715	0.274	5.9816577381E+002	2.2186234459E+002	-1.2118375260E+001	0.766	1.082	1.220
136.730	2.640	20.863	0.253	5.9159380112E+002	2.1939159546E+002	-1.0890212805E+001	0.765	1.082	1.218
137.060	2.628	20.943	0.241	5.8810733280E+002	2.1807956074E+002	-1.0608835946E+001	0.765	1.082	1.217
137.303	2.620	21.002	0.240	5.8551501712E+002	2.1710053029E+002	-1.0584070829E+001	0.765	1.081	1.217
137.872	2.598	21.138	0.245	5.7957718743E+002	2.1485233037E+002	-1.0669854237E+001	0.765	1.081	1.215
138.446	2.583	21.282	0.257	5.7332074354E+002	2.1245796750E+002	-1.1138775255E+001	0.766	1.080	1.213
139.019	2.575	21.432	0.259	5.6680437313E+002	2.0993174957E+002	-1.1102787117E+001	0.768	1.079	1.211
139.480	2.563	21.549	0.253	5.6178746691E+002	2.0796603309E+002	-1.0920765898E+001	0.769	1.078	1.209
139.594	2.561	21.578	0.256	5.6053915654E+002	2.0747184729E+002	-1.0939183032E+001	0.769	1.078	1.208
140.166	2.549	21.725	0.265	5.5425765912E+002	2.0496087906E+002	-1.1290029358E+001	0.771	1.077	1.206
140.741	2.546	21.881	0.269	5.4759068769E+002	2.0224600804E+002	-1.1395888262E+001	0.773	1.075	1.203
141.314	2.540	22.034	0.260	5.4117347854E+002	1.9956383206E+002	-1.0949074361E+001	0.774	1.074	1.200
141.888	2.527	22.180	0.255	5.3503548751E+002	1.9696483665E+002	-1.0593187819E+001	0.775	1.073	1.197
141.900	2.527	22.183	0.279	5.3490468764E+002	1.9690897981E+002	-1.0613141397E+001	0.775	1.073	1.197
142.457	2.528	22.339	0.282	5.2843997093E+002	1.9411904558E+002	-1.1677539521E+001	0.777	1.072	1.195
143.030	2.532	22.501	0.282	5.2170307393E+002	1.9118236569E+002	-1.1617885941E+001	0.778	1.070	1.192
143.603	2.533	22.662	0.268	5.1511675859E+002	1.8827417304E+002	-1.0949044903E+001	0.779	1.070	1.190
144.178	2.521	22.809	0.254	5.0913436362E+002	1.8561245902E+002	-1.0156085053E+001	0.780	1.069	1.188
144.320	2.517	22.844	0.244	5.0770544594E+002	1.8497406137E+002	-1.0019569494E+001	0.780	1.069	1.188
144.750	2.501	22.948	0.243	5.0349510680E+002	1.8307736809E+002	-9.7952768880E+000	0.780	1.069	1.187
145.325	2.482	23.088	0.245	4.9785703395E+002	1.8049981704E+002	-9.9028384541E+000	0.781	1.070	1.186
145.650	2.472	23.168	0.245	4.9462246923E+002	1.7898667057E+002	-9.8031531386E+000	0.781	1.070	1.186
145.898	2.463	23.229	0.239	4.9221853262E+002	1.7782234164E+002	-9.6273910232E+000	0.781	1.071	1.186
146.472	2.441	23.365	0.238	4.8677043957E+002	1.7513940426E+002	-9.4969090750E+000	0.780	1.073	1.187
146.740	2.430	23.429	0.239	4.8422470719E+002	1.7385940094E+002	-9.5030199689E+000	0.779	1.074	1.188
147.041	2.419	23.501	0.248	4.8136363011E+002	1.7237457336E+002	-9.6948603705E+000	0.778	1.075	1.188
147.615	2.405	23.646	0.273	4.7559867747E+002	1.6930129380E+002	-1.0806656206E+001	0.776	1.079	1.190
148.188	2.413	23.814	0.294	4.6897218708E+002	1.6555758055E+002	-1.1588492416E+001	0.772	1.084	1.194
148.763	2.424	23.984	0.291	4.6229358101E+002	1.6158669307E+002	-1.1346357580E+001	0.766	1.091	1.198
149.160	2.427	24.097	0.286	4.5785894769E+002	1.5888368794E+002	-1.1235163561E+001	0.762	1.095	1.201
149.334	2.429	24.147	0.264	4.5589441053E+002	1.5765716453E+002	-1.0970125355E+001	0.760	1.098	1.202
149.910	2.417	24.295	0.260	4.5014266138E+002	1.5395194516E+002	-1.0085952401E+001	0.753	1.105	1.207
150.485	2.409	24.446	0.254	4.4429315167E+002	1.5003085145E+002	-9.8548425894E+000	0.745	1.114	1.212
151.061	2.390	24.588	0.239	4.3880077092E+002	1.46144459744E+002	-9.2204199966E+000	0.735	1.123	1.217
151.540	2.368	24.698	0.230	4.3450748841E+002	1.4301334408E+002	-8.9832590033E+000	0.726	1.130	1.221
151.580	2.366	24.707	0.230	4.3414810329E+002	1.4274525102E+002	-8.9967357653E+000	0.726	1.131	1.222
151.635	2.363	24.720	0.259	4.3365137171E+002	1.4237264627E+002	-9.1305077052E+000	0.724	1.132	1.222
152.207	2.353	24.870	0.269	4.2773021545E+002	1.3780330961E+002	-1.0677958456E+001	0.710	1.143	1.227
152.778	2.348	25.027	0.283	4.2145358225E+002	1.3283090321E+002	-1.1457439125E+001	0.693	1.155	1.232
153.348	2.349	25.192	0.300	4.1466590067E+002	1.2724618399E+002	-1.2482971377E+001	0.672	1.167	1.235



153.918	2.360	25.369	0.311	4.0721891028E+002	1.2100944603E+002	-1.3431246522E+001	0.649	1.179	1.236
154.000	2.361	25.395	0.309	4.0611164779E+002	1.2007733664E+002	-1.3461256727E+001	0.645	1.180	1.235
154.492	2.368	25.546	0.306	3.9956424302E+002	1.1454574533E+002	-1.3367060660E+001	0.625	1.188	1.233
155.069	2.371	25.722	0.296	3.9181575175E+002	1.0800807785E+002	-1.2831292177E+001	0.601	1.194	1.227
155.340	2.364	25.797	0.258	3.8841158576E+002	1.0514567166E+002	-1.1943659535E+001	0.590	1.196	1.223
155.656	2.344	25.873	0.239	3.8486603772E+002	1.0220335815E+002	-1.1316541572E+001	0.579	1.195	1.216
156.255	2.305	26.016	0.240	3.7798857629E+002	9.6589196062E+001	-1.1768721131E+001	0.556	1.191	1.200
156.420	2.291	26.056	0.256	3.7603326142E+002	9.5020175872E+001	-1.2282196356E+001	0.550	1.189	1.194
156.824	2.266	26.162	0.264	3.7063635075E+002	9.0864609207E+001	-1.4922649222E+001	0.530	1.181	1.178
156.860	2.264	26.172	0.289	3.7010155618E+002	9.0461992637E+001	-1.5077093679E+001	0.528	1.180	1.176
157.300	2.241	26.299	0.298	3.6338188294E+002	8.5488198515E+001	-1.8267995203E+001	0.503	1.167	1.153
157.384	2.242	26.328	0.352	3.6179102406E+002	8.4358378429E+001	-1.8931168985E+001	0.497	1.164	1.147
157.935	2.237	26.523	0.399	3.5105837932E+002	7.6939296785E+001	-2.2643299211E+001	0.456	1.137	1.108
158.499	2.273	26.773	0.473	3.3646895258E+002	6.7775987510E+001	-2.8150671458E+001	0.404	1.100	1.062
159.063	2.331	27.056	0.491	3.1928760728E+002	5.7788599405E+001	-3.0432001722E+001	0.354	1.058	1.016
159.652	2.365	27.339	0.478	3.0137534927E+002	4.8322590918E+001	-3.0972774072E+001	0.312	1.018	0.979
160.254	2.387	27.625	0.474	2.8240290554E+002	3.9360433655E+001	-3.0051864016E+001	0.277	0.984	0.955
160.286	2.387	27.639	0.490	2.8143776316E+002	3.8940336676E+001	-3.0234895802E+001	0.276	0.982	0.954
160.887	2.410	27.935	0.495	2.6029801123E+002	3.1363797278E+001	-3.7073945290E+001	0.246	0.964	0.953
161.005	2.416	27.995	0.470	2.5589581626E+002	3.0009408888E+001	-3.6995042668E+001	0.241	0.963	0.955
161.557	2.372	28.250	0.471	2.3665613853E+002	2.4985725343E+001	-3.8138203764E+001	0.219	0.965	0.975
161.670	2.355	28.308	0.507	2.3227229744E+002	2.4009277371E+001	-3.8635593864E+001	0.214	0.967	0.982
161.920	2.313	28.434	0.505	2.2271055849E+002	2.2038258595E+001	-3.8604930952E+001	0.203	0.976	0.999
162.066	2.290	28.508	0.542	2.1703688855E+002	2.0906263414E+001	-3.9522800356E+001	0.198	0.981	1.010
162.523	2.167	28.761	0.585	1.9798789073E+002	1.7588859802E+001	-4.3117765118E+001	0.177	1.013	1.057
163.053	1.976	29.085	0.673	1.7425125024E+002	1.3979768569E+001	-4.7236226250E+001	0.152	1.080	1.142
163.589	1.744	29.478	0.769	1.4760758127E+002	1.0500395757E+001	-5.3671249491E+001	0.127	1.145	1.227
164.081	1.494	29.877	0.823	1.1938893902E+002	6.9077309289E+000	-5.9513250942E+001	0.110	1.232	1.319
164.246	1.419	30.019	0.867	1.0949320553E+002	5.8085603185E+000	-5.9208600222E+001	0.105	1.271	1.359
164.340	1.366	30.101	0.889	1.0396481656E+002	5.2490651245E+000	-5.8047906621E+001	0.102	1.295	1.384
164.942	1.038	30.637	0.867	7.1172146312E+001	2.4564945108E+000	-4.5048387008E+001	0.082	1.483	1.574
165.250	0.848	30.889	1.117	5.8790548821E+001	1.7531772816E+000	-4.4250611442E+001	0.072	1.659	1.761
165.851	0.716	31.653	1.146	2.7415405269E+001	4.5747362949E+000	-4.0326133152E+001	0.049	2.528	2.648
166.453	0.436	32.269	0.910	1.0269957066E+001	7.7821528689E+000	-1.6867740508E+001	0.042	3.906	3.968
166.760	0.190	32.480	0.910	6.9126736503E+000	3.4770990830E+000	-1.1117719917E+001	0.042	3.906	4.841

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 ht(m) : Altezza linea di thrust da nodo sinistro base concio
 yt(m) : coordinata Y linea di thrust
 yt'(-) : gradiente pendenza locale linea di thrust
 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_qFEM(x)(-) : fattore di sicurezza locale stimato (locale in X) by qFEM
 FS_p-qPATH(x)(-) : fattore di sicurezza locale stimato (locale in X) by p-qPATH Procedure

TABELLA SFORZI DI TAGLIO DISTRIBUITI LUNGO SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	dl (m)	alpha (°)	TauStress (kPa)	TauF (kN/m)	TauStrength (kPa)	TauS (kN/m)
107.790	0.230	0.275	-33.437	-0.988	-0.272	15.250	4.197
108.020	0.602	0.721	-33.437	-4.576	-3.299	16.224	11.696
108.622	0.602	0.721	-33.437	-9.777	-7.048	17.589	12.680
109.223	0.496	0.595	-33.437	-14.523	-8.640	18.323	10.901
109.720	0.602	0.721	-33.437	-19.268	-13.891	18.672	13.461
110.321	0.404	0.484	-33.437	-23.613	-11.421	17.867	8.642
110.725	0.602	0.721	-33.437	-27.957	-20.155	17.134	12.352
111.326	0.115	0.138	-33.437	-31.055	-4.281	16.163	2.228
111.441	0.602	0.721	-33.437	-34.152	-24.621	17.727	12.780
112.043	0.046	0.055	-33.437	-36.949	-2.021	17.708	0.968
112.089	0.572	0.685	-33.437	-39.617	-27.139	17.682	12.113
112.660	0.200	0.239	-33.437	-42.951	-10.274	16.455	3.936
112.860	0.395	0.474	-33.437	-45.515	-21.571	16.405	7.775
113.255	0.602	0.721	-33.437	-49.805	-35.905	16.026	11.553
113.857	0.011	0.014	-33.437	-52.441	-0.708	14.685	0.198
113.868	0.602	0.721	-33.437	-55.078	-39.707	12.141	8.752



114.470	0.053	0.063	-33.437	-57.892	-3.653	16.820	1.061
114.523	0.602	0.721	-33.437	-60.707	-43.765	19.144	13.801
115.124	0.103	0.124	-33.437	-63.739	-7.886	26.261	3.249
115.227	0.554	0.646	-30.845	-63.109	-40.756	32.726	21.134
115.782	0.495	0.555	-26.737	-60.193	-33.388	52.720	29.242
116.277	0.432	0.462	-20.821	-50.383	-23.286	71.550	33.069
116.709	0.512	0.529	-14.471	-35.702	-18.871	83.954	44.375
117.221	0.424	0.428	-7.736	-16.656	-7.121	90.415	38.656
117.645	0.055	0.055	-0.595	5.775	0.319	89.815	4.962
117.700	0.438	0.438	-0.595	5.818	2.549	95.535	41.857
118.138	0.558	0.560	4.804	23.303	13.041	84.337	47.197
118.696	0.602	0.608	8.202	34.235	20.809	76.356	46.411
119.297	0.144	0.146	8.202	34.375	5.009	75.451	10.994
119.442	0.602	0.609	8.959	36.855	22.446	71.782	43.717
120.043	0.050	0.051	8.959	36.966	1.870	69.955	3.539
120.093	0.598	0.607	9.878	39.900	24.231	67.639	41.077
120.691	0.569	0.579	10.860	43.057	24.950	64.476	37.361
121.261	0.564	0.577	11.895	46.286	26.698	59.119	34.100
121.825	0.551	0.565	12.831	49.124	27.737	57.406	32.413
122.375	0.165	0.169	13.768	51.875	8.787	56.351	9.545
122.540	0.395	0.406	13.768	51.851	21.067	56.327	22.886
122.935	0.567	0.586	14.661	54.336	31.863	55.239	32.393
123.502	0.593	0.616	15.490	56.516	34.790	54.217	33.374
124.095	0.588	0.610	15.490	56.328	34.353	53.932	32.892
124.683	0.580	0.602	15.490	56.142	33.790	53.720	32.332
125.263	0.579	0.600	15.490	55.958	33.597	53.534	32.142
125.841	0.572	0.593	15.490	55.775	33.085	53.367	31.657
126.413	0.575	0.597	15.490	55.592	33.176	53.206	31.752
126.988	0.392	0.407	15.490	55.438	22.538	53.090	21.584
127.380	0.181	0.188	15.490	55.347	10.410	53.012	9.970
127.561	0.574	0.595	15.490	55.227	32.879	52.874	31.478
128.135	0.569	0.590	15.490	55.045	32.496	52.699	31.111
128.704	0.574	0.595	15.490	54.863	32.663	52.523	31.269
129.278	0.573	0.595	15.490	54.681	32.515	52.392	31.154
129.851	0.575	0.597	15.490	54.498	32.523	52.265	31.190
130.426	0.572	0.593	15.490	54.316	32.220	52.141	30.930
130.997	0.575	0.597	15.490	54.133	32.305	52.054	31.064
131.572	0.573	0.595	15.490	53.951	32.081	51.925	30.876
132.145	0.075	0.077	15.490	53.848	4.163	51.883	4.011
132.220	0.499	0.518	15.490	53.767	27.853	51.787	26.828
132.719	0.569	0.590	15.490	53.619	31.655	51.655	30.496
133.288	0.574	0.595	15.490	53.461	31.828	51.486	30.652
133.862	0.573	0.595	15.491	53.303	31.695	51.364	30.542
134.435	0.575	0.597	15.491	53.144	31.715	51.253	30.586
135.010	0.572	0.593	15.491	52.986	31.431	51.144	30.338
135.582	0.575	0.597	15.491	52.828	31.526	51.034	30.456
136.157	0.573	0.595	15.492	52.669	31.319	50.963	30.304
136.730	0.330	0.343	15.492	52.545	18.008	50.924	17.452
137.060	0.243	0.253	15.492	52.434	13.248	50.831	12.843
137.303	0.569	0.590	15.492	52.219	30.830	50.597	29.872
137.872	0.574	0.595	15.493	51.918	30.909	50.285	29.937
138.446	0.573	0.595	15.494	51.615	30.692	49.979	29.718
139.019	0.461	0.478	15.495	51.343	24.554	49.746	23.790
139.480	0.114	0.119	15.495	51.190	6.067	49.632	5.883
139.594	0.572	0.593	15.496	51.010	30.260	49.410	29.311
140.166	0.575	0.597	15.497	50.707	30.260	49.101	29.302
140.741	0.573	0.595	15.498	50.404	29.972	48.822	29.031
141.314	0.574	0.595	15.499	50.101	29.828	48.543	28.901
141.888	0.012	0.013	15.500	49.948	0.640	48.444	0.621
141.900	0.557	0.578	15.500	49.803	28.766	48.220	27.852
142.457	0.574	0.595	15.500	49.516	29.481	47.948	28.548
143.030	0.573	0.595	15.500	49.224	29.272	47.686	28.357
143.603	0.575	0.597	15.500	48.932	29.203	47.448	28.317
144.178	0.142	0.147	15.500	48.750	7.161	47.323	6.951
144.320	0.430	0.446	15.500	48.605	21.694	47.166	21.052
144.750	0.575	0.597	15.500	48.349	28.855	46.902	27.991
145.325	0.325	0.337	15.500	48.120	16.219	46.695	15.739
145.650	0.248	0.258	15.500	47.984	12.361	46.576	11.998
145.898	0.574	0.595	15.500	47.808	28.464	46.394	27.622
146.472	0.268	0.278	15.500	47.628	13.248	46.261	12.868
146.740	0.301	0.312	15.500	47.491	14.828	46.124	14.401

147.041	0.574	0.595	15.500	47.261	28.138	45.853	27.300
147.615	0.573	0.595	15.500	46.959	27.924	45.501	27.057
148.188	0.575	0.597	15.500	46.656	27.844	45.227	26.992
148.763	0.397	0.412	15.500	46.400	19.130	45.056	18.576
149.160	0.174	0.181	15.500	46.250	8.368	44.947	8.133
149.334	0.576	0.598	15.500	46.052	27.518	44.778	26.757
149.910	0.574	0.596	15.500	45.749	27.273	44.491	26.522
150.485	0.577	0.598	15.500	45.446	27.193	44.233	26.466
151.061	0.479	0.497	15.500	45.169	22.443	44.002	21.863
151.540	0.040	0.042	15.500	45.034	1.869	43.901	1.822
151.580	0.055	0.057	15.500	45.018	2.575	43.883	2.510
151.635	0.572	0.594	15.686	45.338	26.950	43.604	25.919
152.207	0.570	0.593	15.873	45.575	27.016	43.361	25.703
152.778	0.570	0.593	16.061	45.795	27.167	43.088	25.561
153.348	0.570	0.594	16.249	45.995	27.319	42.806	25.425
153.918	0.082	0.086	16.439	46.279	3.962	42.687	3.655
154.000	0.492	0.512	16.439	46.165	23.658	42.570	21.816
154.492	0.577	0.603	16.627	46.340	27.920	42.335	25.507
155.069	0.271	0.283	16.813	46.542	13.184	42.200	11.954
155.340	0.316	0.330	16.813	46.417	15.305	42.156	13.900
155.656	0.599	0.627	16.992	46.596	29.203	41.897	26.257
156.255	0.165	0.173	17.893	48.252	8.367	41.372	7.174
156.420	0.404	0.425	17.893	48.064	20.429	41.165	17.497
156.824	0.036	0.038	18.853	49.793	1.868	40.605	1.524
156.860	0.440	0.465	18.853	49.587	23.055	40.384	18.776
157.300	0.084	0.089	18.853	49.412	4.408	40.245	3.590
157.384	0.550	0.585	19.843	51.370	30.048	39.934	23.359
157.935	0.564	0.604	20.815	53.247	32.139	39.788	24.015
158.499	0.564	0.608	21.842	55.076	33.488	39.659	24.114
159.063	0.589	0.639	22.812	56.637	36.178	39.414	25.177
159.652	0.602	0.657	23.710	57.908	38.049	39.262	25.798
160.254	0.032	0.035	23.710	57.767	2.032	39.804	1.400
160.286	0.602	0.661	24.454	58.762	38.835	39.232	25.928
160.887	0.118	0.129	24.454	58.548	7.560	40.595	5.242
161.005	0.552	0.628	28.442	63.721	40.009	37.652	23.640
161.557	0.113	0.136	33.737	68.686	9.329	35.083	4.765
161.670	0.250	0.301	33.737	68.100	20.473	35.023	10.529
161.920	0.146	0.176	33.737	67.214	11.815	35.644	6.265
162.066	0.456	0.591	39.460	68.153	40.290	29.994	17.731
162.523	0.531	0.740	44.182	64.151	47.475	26.036	19.268
163.053	0.535	0.822	49.367	56.939	46.808	22.449	18.455
163.589	0.493	0.815	52.815	48.611	39.635	22.146	18.057
164.081	0.164	0.272	52.815	44.206	12.011	17.694	4.807
164.246	0.094	0.165	55.150	41.358	6.828	15.324	2.530
164.340	0.602	1.053	55.150	36.839	38.784	13.428	14.136
164.942	0.308	0.539	55.150	30.933	16.671	10.657	5.743
165.250	0.602	1.079	56.113	24.527	26.464	8.434	9.100
165.851	0.602	1.079	56.113	16.522	17.828	5.491	5.924
166.453	0.307	0.551	56.113	10.476	5.773	3.552	1.957
166.760	0.602	1.079	56.113	4.378	4.723	1.775	1.915

LEGENDA SIMBOLI

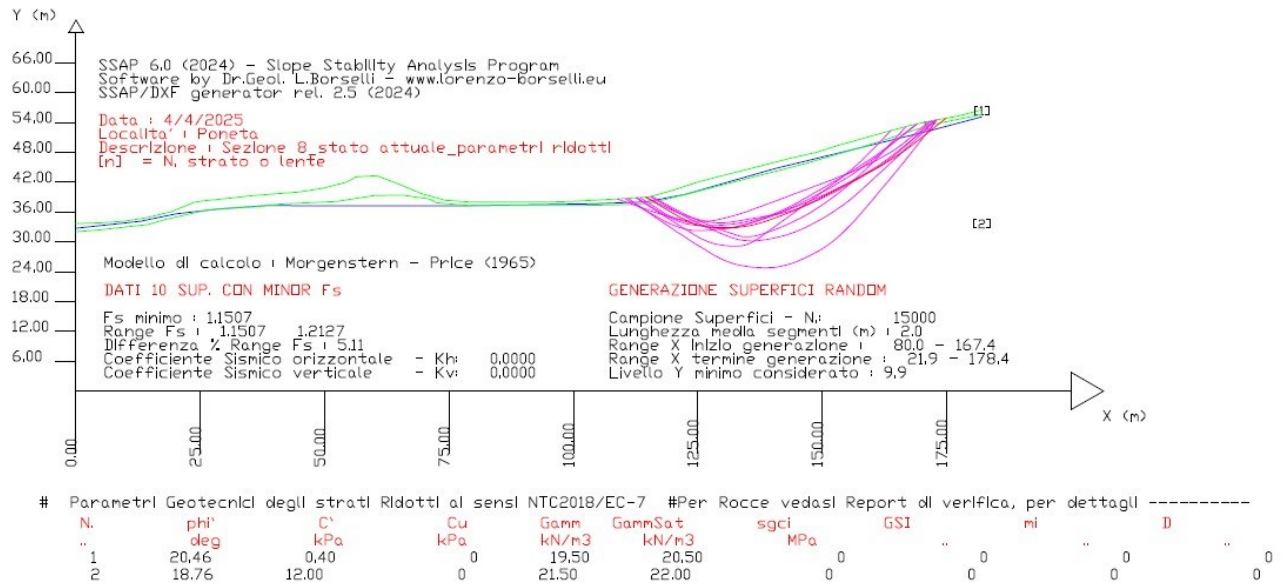
X(m) : Ascissa sinistra concio
 dx(m) : Larghezza concio
 dl(m) : lunghezza base concio
 alpha() : Angolo pendenza base concio
 TauStress(kPa) : Sforzo di taglio su base concio
 TauF (kN/m) : Forza di taglio su base concio
 TauStrength(kPa) : Resistenza al taglio su base concio
 TauS (kN/m) : Forza resistente al taglio su base concio

RISULTATI INTERAZIONI CON SISTEMA DI GEOGRIGLIE/GEOSINTETICI

Nessuna Intersezione e interazione tra superficie con FS minimo e Sistema di Geogriglie/Geosintetici



9 SEZIONE 8 STATO ATTUALE - STATICO



Report Generale Risultati di Verifica di stabilità'

SSAP 6.0 - Slope Stability Analysis Program (1991,2024)

WWW.SSAP.EU

Build No. 14533

BY

Dr. Geol. LORENZO BORSELLI

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Ricercatore Associato CNR-IRPI, Perugia, Italia

Ultima Revisione struttura tabelle del report: 21 Maggio 2024

File report: C:\Users\facco\OneDrive\Documents\Lavoro\Lavori STGA\Poneta\Sezioni\Risultati SSAP\Sez8_stato attuale_parametri ridotti.txt

Data: 4/4/2025

Localita' : Poneta

Descrizione: Sezione 8 stato attuale_parametri ridotti

Modello pendio: Sezione 8 stato attuale.mod

----- 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
0.03 33.64	0.03 32.00	- -	- -
1.00 33.71	4.30 32.35	- -	- -
4.80 33.80	14.50 33.50	- -	- -
9.60 34.14	18.02 34.49	- -	- -
14.40 34.88	26.29 36.40	- -	- -
19.20 36.07	30.08 36.71	- -	- -
23.80 37.95	36.20 37.06	- -	- -
25.60 38.22	41.05 37.57	- -	- -
30.40 38.73	52.44 38.12	- -	- -
35.20 39.23	59.98 39.29	- -	- -
40.00 39.64	65.77 39.38	- -	- -
44.80 40.03	71.00 38.60	- -	- -
49.60 40.77	72.46 37.84	- -	- -
54.40 42.01	79.19 37.26	- -	- -
56.20 43.01	102.00 37.30	- -	- -
60.40 43.32	114.36 37.54	- -	- -
64.80 41.64	122.07 39.43	- -	- -
69.40 39.69	146.42 45.68	- -	- -



74.20	38.31	158.28	49.13	-	-	-	-
79.00	38.01	171.51	53.44	-	-	-	-
86.40	38.01	182.00	55.59	-	-	-	-
91.20	38.02	-	-	-	-	-	-
96.00	38.03	-	-	-	-	-	-
100.80	38.16	-	-	-	-	-	-
105.60	38.42	-	-	-	-	-	-
110.40	38.71	-	-	-	-	-	-
115.20	39.01	-	-	-	-	-	-
120.00	40.37	-	-	-	-	-	-
124.60	41.92	-	-	-	-	-	-
129.40	43.17	-	-	-	-	-	-
134.20	44.38	-	-	-	-	-	-
139.00	45.64	-	-	-	-	-	-
143.80	46.86	-	-	-	-	-	-
148.60	47.93	-	-	-	-	-	-
153.20	49.38	-	-	-	-	-	-
158.00	50.74	-	-	-	-	-	-
162.80	52.11	-	-	-	-	-	-
167.60	53.36	-	-	-	-	-	-
172.40	54.43	-	-	-	-	-	-
177.20	55.30	-	-	-	-	-	-
182.00	56.54	-	-	-	-	-	-

SUP FALDA

X Y

0.03	32.71
12.92	34.11
20.22	35.61
28.92	36.62
38.62	37.31
43.39	37.26
65.29	37.26
79.19	37.26
104.00	37.64
114.40	38.01
122.40	39.52
140.40	44.70
171.51	52.31
182.00	55.10

----- GESTIONE ACQUIFERI -----

Strati esclusi da acquifero e effetto pressione dei pori:

Esclusione sovraccarico pendio sommerso: NON ATTIVATA

EFFETTO TENSION CRACK IN TESTA RIEMPITO DI ACQUA: ----> DISATTIVATO

In caso di superfici con tension crack in testa, la frattura di tensione

puo' venir viene considerata completamente riempita di acqua per la sua intera profondita'.

Viene quindi considerato una forza in testa, prodotta dalla pressione idrostatica.

La forza applicata ha un effetto destabilizzante aggiuntivo alle altre forze destabilizzanti agenti.

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

Coefficiente di soprapressione oltre pressione idrostatica 1.00

Limitazione dissipazione a Pressione Idrostatica = ATTIVA

STABILITE CONDIZIONI PER LA VERIFICA CON SOVRAPPRESSIONE ACQUIFERI CON DISSIPAZIONE IN DIREZIONE DELLA SUPERFICIE

CALCOLO EFFETTO DI FILTRAZIONE NON ATTIVATO

----- PARAMETRI GEOMECCANICI DI PROGETTO RIDOTTI (ai sensi NTC2018/EC-7) - Riduzione attivata in Tutti gli Strati

	fi'	C'	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	20.46	0.40	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00
STRATO 2	18.76	12.00	0.00	21.50	22.00	1.805	0.00	0.00	0.00	0.00



LEGENDA: ϕ_i _____ Angolo di attrito interno efficace(in gradi)

C' _____ Coesione efficace (in Kpa)

C_u _____ Resistenza al taglio Non drenata (in Kpa)

γ_{mm} _____ Peso di volume terreno fuori falda (in KN/m³)

γ_{sat} _____ Peso di volume terreno immerso (in KN/m³)

STR_IDX _____ Indice di resistenza (usato in solo in 'SNIFF SEARCH) (adimensionale)

---- SOLO Per AMMASSI ROCCIOSI FRATTURATI - Parametri Criterio di Rottura di Hoek et al.(2002)-

σ_{ci} _____ Resistenza Compressione Uniassiale Roccia Intatta (in MPa)

GSI _____ Geological Strenght Index ammasso(adimensionale)

m_i _____ Indice litologico ammasso(adimensionale)

D _____ Fattore di disturbo ammasso(adimensionale)

NOTA BENE:

FATTORI DI RIDUZIONE NTC2018/EC-7: $\gamma_{mm} = 1.25$, $\gamma_{sat} = 1.25$ e $\gamma_{cu} = 1.4$ - ATTIVATI (Per Tutti gli Strati)

Ai sensi delle NTC2018/EC-7 i parametri di resistenza al taglio caratteristici sono stati ridotti con i fattori riduttivi (tab. 6.2.II delle NTC 2018) per ottenere i parametri di progetto.

Nel caso di ammassi rocciosi fratturati, dai parametri sopra indicati in tabella, relativi al criterio di rottura Hoek et al. (2002), sono stati ricavati i parametri equivalenti geomeccanici CARATTERISTICI locali di resistenza al taglio dell'ammasso roccioso considerato (c' , ϕ_i) tali parametri equivalenti sono stati infine RIDOTTI, per ricavare i valori di PROGETTO, tramite i coefficienti parziali riduttivi, di cui alla tab. 6.2.II delle NTC 2018

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

*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI

MOTORE DI RICERCA: SNIFF RANDOM SEARCH - Borselli (1997,2021)

FILTRAGGIO SUPERFICI : ATTIVATO

COORDINATE X1,X2,Y OSTACOLO : 0.00 0.00 0.00

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

INTERVALLO ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 80.00 167.44

LIVELLO MINIMO CONSIDERATO (Ymin): 9.91

INTERVALLO ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 21.87 178.36

TOTALE SUPERFICI GENERATE : 15000

*NOTA IMPORTANTE: La lunghezza media dei segmenti non viene considerata nel caso di uso del motore di ricerca NEW RANOM SEARCH

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

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

METODO DI ESPLORAZIONE CAMPO VALORI (λ_0 , F_{s0}) ADOTTATO : A (rapido)

COEFFICIENTE SISMICO UTILIZZATO K_h : 0.0000

COEFFICIENTE SISMICO UTILIZZATO K_v (assunto Positivo): 0.0000

COEFFICIENTE $c = K_v/K_h$ UTILIZZATO : 0.5000

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 F_s

X(m)	Y(m)	#Superficie N.1 - #FS_minimo	#Fattore di sicurezza(FS)= 1.1507	#Lambda= 1.2500
114.506	38.967			
119.204	36.158			
121.387	34.917			
122.824	34.196			
123.993	33.710			
125.170	33.345			
126.214	33.110			
127.381	32.947			
128.676	32.856			
130.325	32.819			
131.677	32.835			



132.906	32.905
134.037	33.029
135.240	33.227
136.355	33.468
137.544	33.787
138.806	34.184
140.271	34.698
141.601	35.189
142.867	35.683
144.089	36.187
145.326	36.726
146.530	37.277
147.756	37.865
149.003	38.490
150.317	39.173
151.610	39.848
152.882	40.515
154.149	41.181
155.403	41.843
156.672	42.515
157.950	43.194
159.253	43.889
160.586	44.602
161.826	45.301
163.041	46.026
164.225	46.773
165.459	47.594
166.792	48.540
168.319	49.679
170.512	51.387
174.860	54.845
174.860	54.876

X(m)	Y(m)	#Superficie N. 2 #Fattore di sicurezza(FS)= 1.1582 #Lambda= 1.2500
112.749	38.857	
115.841	36.791	
117.436	35.731	
118.568	34.987	
119.583	34.327	
120.488	33.746	
121.411	33.161	
122.355	32.569	
123.345	31.955	
124.399	31.308	
125.292	30.803	
126.128	30.385	
126.900	30.056	
127.757	29.755	
128.544	29.542	
129.427	29.371	
130.434	29.240	
131.739	29.126	
132.687	29.097	
133.500	29.148	
134.188	29.278	
135.005	29.535	
135.700	29.838	
136.492	30.281	
137.377	30.859	
138.494	31.660	
139.529	32.403	
140.500	33.103	
141.441	33.784	
142.349	34.442	
143.260	35.104	
144.169	35.767	
145.080	36.434	
145.987	37.100	
146.901	37.770	
147.813	38.439	



148.727	39.111
149.636	39.777
150.557	40.454
151.483	41.133
152.426	41.825
153.384	42.529
154.280	43.218
155.160	43.927
156.020	44.655
156.913	45.447
157.883	46.357
158.989	47.442
160.578	49.060
163.755	52.359

X(m)	Y(m)	#Superficie N. 3 #Fattore di sicurezza(FS)= 1.1706 #Lambda= 1.2500
115.419	39.072	
119.561	36.698	
121.648	35.524	
123.111	34.731	
124.402	34.061	
125.581	33.481	
126.759	32.929	
127.990	32.379	
129.307	31.816	
130.785	31.211	
131.971	30.785	
133.049	30.475	
134.015	30.283	
135.118	30.162	
136.086	30.142	
137.179	30.218	
138.401	30.390	
139.968	30.687	
141.269	30.976	
142.456	31.291	
143.554	31.637	
144.707	32.059	
145.795	32.511	
146.949	33.046	
148.178	33.669	
149.594	34.437	
150.834	35.156	
152.006	35.890	
153.121	36.643	
154.283	37.486	
155.390	38.344	
156.536	39.289	
157.720	40.318	
159.011	41.492	
160.260	42.636	
161.479	43.757	
162.684	44.873	
163.875	45.983	
165.215	47.242	
166.705	48.652	
168.802	50.646	
172.851	54.512	

X(m)	Y(m)	#Superficie N. 4 #Fattore di sicurezza(FS)= 1.1823 #Lambda= 0.3538
110.331	38.706	
115.888	35.481	
118.424	34.089	
120.065	33.313	
121.369	32.826	
122.714	32.491	
123.873	32.317	
125.191	32.252	
126.669	32.296	



128.595	32.455
130.202	32.633
131.664	32.849
133.023	33.108
134.436	33.439
135.771	33.808
137.174	34.253
138.647	34.776
140.314	35.420
141.839	36.039
143.300	36.664
144.713	37.302
146.151	37.984
147.560	38.687
149.007	39.442
150.504	40.256
152.117	41.165
153.597	42.041
155.028	42.936
156.415	43.850
157.849	44.845
159.403	45.993
161.178	47.368
163.728	49.426
168.786	53.594
168.786	53.624

X(m)	Y(m)	#Superficie N. 5 #Fattore di sicurezza(FS)= 1.1936 #Lambda= 1.2500
115.628	39.131	
118.373	37.621	
119.768	36.864	
120.752	36.345	
121.624	35.898	
122.415	35.510	
123.193	35.139	
123.983	34.775	
124.786	34.416	
125.623	34.053	
126.433	33.710	
127.228	33.381	
128.015	33.064	
128.807	32.752	
129.614	32.444	
130.452	32.132	
131.348	31.808	
132.337	31.458	
133.116	31.225	
133.819	31.071	
134.440	30.997	
135.166	30.983	
135.789	31.034	
136.497	31.164	
137.287	31.371	
138.301	31.692	
139.192	31.989	
140.016	32.281	
140.800	32.577	
141.586	32.893	
142.353	33.220	
143.142	33.573	
143.957	33.955	
144.835	34.384	
145.645	34.800	
146.430	35.223	
147.192	35.657	
147.976	36.125	
148.739	36.603	
149.523	37.116	
150.331	37.667	
151.200	38.281	

152.015	38.874
152.807	39.470
153.582	40.073
154.370	40.706
155.144	41.348
155.933	42.022
156.742	42.733
157.597	43.502
158.406	44.251
159.197	45.005
159.973	45.767
160.762	46.563
161.632	47.472
162.613	48.528
164.009	50.067
166.760	53.141

X(m)	Y(m)	#Superficie N. 6 #Fattore di sicurezza(FS)= 1.2012 #Lambda= 0.9438
112.444	38.838	
116.854	36.242	
118.900	35.098	
120.245	34.436	
121.337	33.993	
122.439	33.664	
123.410	33.456	
124.491	33.318	
125.678	33.248	
127.176	33.235	
128.456	33.255	
129.636	33.311	
130.745	33.402	
131.891	33.537	
132.989	33.704	
134.142	33.920	
135.363	34.186	
136.748	34.525	
137.956	34.859	
139.099	35.220	
140.182	35.609	
141.324	36.069	
142.401	36.550	
143.523	37.098	
144.685	37.712	
145.971	38.435	
147.211	39.136	
148.416	39.822	
149.607	40.505	
150.781	41.182	
151.964	41.868	
153.152	42.563	
154.359	43.273	
155.590	44.000	
156.761	44.718	
157.915	45.451	
159.050	46.199	
160.213	46.992	
161.489	47.902	
162.933	48.969	
164.992	50.536	
169.069	53.688	

X(m)	Y(m)	#Superficie N. 7 #Fattore di sicurezza(FS)= 1.2042 #Lambda= 1.2500
108.749	38.610	
113.327	36.989	
115.657	36.179	
117.299	35.629	
118.758	35.159	
120.078	34.757	
121.409	34.369	



122.790	33.984
124.259	33.592
125.880	33.178
127.187	32.908
128.386	32.742
129.468	32.683
130.702	32.719
131.785	32.839
132.985	33.073
134.293	33.418
135.908	33.923
137.378	34.398
138.760	34.861
140.094	35.324
141.414	35.799
142.721	36.286
144.047	36.797
145.401	37.333
146.812	37.909
148.155	38.477
149.470	39.056
150.764	39.647
152.080	40.272
153.382	40.912
154.713	41.591
156.089	42.314
157.556	43.108
158.892	43.875
160.186	44.664
161.437	45.477
162.741	46.376
164.144	47.415
165.756	48.675
168.080	50.577
172.760	54.495

X(m)	Y(m)	#Superficie N. 8	#Fattore di sicurezza(FS)= 1.2056	#Lambda= 1.2500
110.922	38.743			
115.330	35.692			
117.596	34.135			
119.201	33.047			
120.637	32.088			
121.923	31.245			
123.230	30.402			
124.573	29.548			
125.986	28.662			
127.505	27.723			
128.777	27.001			
129.958	26.411			
131.043	25.957			
132.254	25.547			
133.346	25.269			
134.569	25.059			
135.943	24.915			
137.706	24.813			
139.079	24.794			
140.299	24.857			
141.385	25.001			
142.594	25.259			
143.687	25.581			
144.903	26.037			
146.264	26.636			
147.973	27.466			
149.343	28.211			
150.589	28.988			
151.723	29.802			
152.953	30.802			
154.088	31.829			
155.298	33.035			
156.580	34.415			



158.052	36.094
159.438	37.696
160.769	39.254
162.069	40.799
163.355	42.348
164.791	44.109
166.396	46.105
168.662	48.959
173.022	54.490
173.022	54.543

X(m)	Y(m)	#Superficie N. 9 #Fattore di sicurezza(FS)= 1.2070 #Lambda= 0.3416
114.421	38.961	
117.577	37.394	
119.141	36.640	
120.226	36.148	
121.170	35.751	
122.048	35.416	
122.903	35.118	
123.802	34.833	
124.758	34.557	
125.845	34.270	
126.752	34.066	
127.593	33.921	
128.371	33.835	
129.221	33.792	
129.990	33.800	
130.814	33.858	
131.685	33.966	
132.706	34.134	
133.680	34.295	
134.615	34.449	
135.534	34.601	
136.431	34.748	
137.342	34.899	
138.260	35.050	
139.200	35.205	
140.163	35.364	
141.044	35.534	
141.902	35.725	
142.732	35.939	
143.605	36.192	
144.441	36.463	
145.310	36.774	
146.213	37.124	
147.209	37.538	
148.138	37.939	
149.037	38.341	
149.913	38.750	
150.799	39.179	
151.669	39.616	
152.553	40.076	
153.452	40.559	
154.392	41.080	
155.306	41.593	
156.206	42.106	
157.098	42.621	
157.990	43.143	
158.887	43.676	
159.796	44.224	
160.731	44.795	
161.709	45.399	
162.596	45.982	
163.458	46.588	
164.291	47.214	
165.167	47.915	
166.105	48.725	
167.188	49.714	
168.753	51.215	
171.919	54.323	



X(m)	Y(m)	#Superficie N.10	#Fattore di sicurezza(FS)= 1.2127	#Lambda= 0.3486
113.408	38.898			
116.394	36.916			
117.795	36.027			
118.725	35.497			
119.490	35.123			
120.250	34.827			
120.932	34.616			
121.686	34.444			
122.513	34.310			
123.548	34.191			
124.410	34.120			
125.201	34.087			
125.934	34.090			
126.709	34.131			
127.432	34.203			
128.198	34.314			
129.007	34.466			
129.939	34.671			
130.788	34.872			
131.599	35.080			
132.382	35.296			
133.176	35.532			
133.948	35.776			
134.733	36.040			
135.532	36.324			
136.371	36.637			
137.200	36.947			
138.018	37.252			
138.834	37.557			
139.639	37.857			
140.449	38.159			
141.256	38.461			
142.064	38.762			
142.866	39.061			
143.674	39.363			
144.481	39.664			
145.291	39.967			
146.096	40.267			
146.907	40.570			
147.717	40.872			
148.529	41.175			
149.337	41.477			
150.143	41.780			
150.946	42.086			
151.749	42.395			
152.553	42.706			
153.360	43.023			
154.173	43.344			
154.998	43.673			
155.839	44.012			
156.642	44.350			
157.432	44.696			
158.210	45.052			
159.005	45.431			
159.790	45.821			
160.595	46.236			
161.428	46.680			
162.321	47.172			
163.131	47.645			
163.914	48.133			
164.669	48.634			
165.458	49.191			
166.306	49.834			
167.280	50.615			
168.687	51.797			
171.510	54.224			
171.510	54.232			



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

DATI RELATIVI ALLE 10 SUPERFICIE GENERATE CON MINOR F_s *# Analisi Deficit in riferimento a $F_s(\text{progetto}) = 1.200$

Sup N.	F_s	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.151	2665.1	2316.1	-114.3	Deficit
2	1.158	2289.8	1977.0	-82.6	Deficit
3	1.171	2924.6	2498.3	-73.3	Deficit
4	1.182	2511.9	2124.6	-37.6	Deficit
5	1.194	2379.6	1993.5	-12.7	Deficit
6	1.201	2327.8	1937.9	2.3	Surplus
7	1.204	2698.9	2241.2	9.5	Surplus
8	1.206	3745.9	3107.0	17.5	Surplus
9	1.207	2544.8	2108.4	14.7	Surplus
10	1.213	2236.6	1844.4	23.3	Surplus

Esito analisi: DEFICIT di RESISTENZA!

Valore massimo di DEFICIT di RESISTENZA(kN/m): -114.3

Note: FTR --> Forza totale Resistente lungo la superficie di scivolamento

FTA --> Forza totale Agente lungo la superficie di scivolamento

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

TABELLA PARAMETRI CONCI DELLA SUPERFICIE INDIVIDUATA CON MINOR F_s

X	dx	alpha	W	ru	U	phi'	(c',Cu)
(m)	(m)	(°)	(kN/m)	(-)	(kPa)	(°)	(kPa)
114.506	0.608	-30.88	2.38	0.00	0.00	20.46	0.40
115.114	0.086	-30.88	0.72	0.00	0.00	20.46	0.40
115.200	0.497	-30.88	6.56	0.00	0.00	20.46	0.40
115.697	0.459	-30.88	9.92	0.08	1.88	20.46	0.40
116.156	0.608	-30.88	19.20	0.14	4.24	18.76	12.00
116.764	0.608	-30.88	26.31	0.20	8.30	18.76	12.00
117.372	0.608	-30.88	33.42	0.24	14.11	18.76	12.00
117.980	0.608	-30.88	40.54	0.27	19.26	18.76	12.00
118.588	0.608	-30.88	47.65	0.30	24.36	18.76	12.00
119.196	0.008	-30.88	0.65	0.32	29.31	18.76	12.00
119.204	0.608	-29.61	54.73	0.32	29.37	18.76	12.00
119.812	0.188	-29.61	18.30	0.33	33.74	18.76	12.00
120.000	0.608	-29.61	63.92	0.33	34.98	18.76	12.00
120.608	0.608	-29.61	71.18	0.34	38.95	18.76	12.00
121.216	0.171	-29.61	21.32	0.34	42.73	18.76	12.00
121.387	0.608	-26.63	80.20	0.34	43.73	18.76	12.00
121.995	0.075	-26.63	10.32	0.35	47.42	18.76	12.00
122.070	0.330	-26.63	46.79	0.35	47.86	18.76	12.00
122.400	0.424	-26.63	63.04	0.35	49.97	18.76	12.00
122.824	0.608	-22.59	95.78	0.35	52.87	18.76	12.00
123.432	0.561	-22.59	93.68	0.35	56.82	18.76	12.00
123.993	0.607	-17.23	106.85	0.36	60.37	18.76	12.00
124.600	0.570	-17.23	104.72	0.36	64.30	18.76	12.00
125.170	0.608	-12.68	115.93	0.37	68.16	18.76	12.00
125.778	0.436	-12.68	85.60	0.37	72.13	18.76	12.00
126.214	0.608	-7.96	122.38	0.37	74.46	18.76	12.00
126.822	0.559	-7.96	115.35	0.37	77.26	18.76	12.00
127.381	0.608	-4.04	128.36	0.38	79.51	18.76	12.00
127.989	0.608	-4.04	131.06	0.38	81.62	18.76	12.00
128.597	0.078	-4.04	17.11	0.38	83.57	18.76	12.00
128.676	0.608	-1.28	133.91	0.38	83.81	18.76	12.00
129.284	0.116	-1.28	25.89	0.38	85.51	18.76	12.00
129.400	0.608	-1.28	136.63	0.38	85.88	18.76	12.00
130.008	0.316	-1.28	71.99	0.39	87.53	18.76	12.00
130.325	0.608	0.67	139.91	0.39	88.32	18.76	12.00
130.933	0.608	0.67	141.88	0.39	89.93	18.76	12.00
131.541	0.136	0.67	32.08	0.39	91.41	18.76	12.00



131.677	0.608	3.27	144.11	0.39	91.77	18.76	12.00
132.285	0.608	3.27	145.71	0.39	93.17	18.76	12.00
132.893	0.013	3.27	3.14	0.39	94.35	18.76	12.00
132.906	0.608	6.28	147.13	0.39	94.38	18.76	12.00
133.514	0.522	6.28	127.34	0.39	95.33	18.76	12.00
134.037	0.163	9.33	39.97	0.39	96.05	18.76	12.00
134.200	0.608	9.33	149.32	0.39	96.23	18.76	12.00
134.808	0.432	9.33	106.55	0.40	96.92	18.76	12.00
135.240	0.608	12.20	150.49	0.40	97.38	18.76	12.00
135.848	0.507	12.20	125.86	0.40	97.87	18.76	12.00
136.355	0.608	15.03	150.98	0.40	98.18	18.76	12.00
136.964	0.581	15.03	144.11	0.40	98.38	18.76	12.00
137.544	0.608	17.44	150.71	0.40	98.41	18.76	12.00
138.152	0.608	17.44	150.30	0.40	98.32	18.76	12.00
138.760	0.045	17.44	11.18	0.40	98.13	18.76	12.00
138.806	0.194	19.33	47.95	0.40	98.11	18.76	12.00
139.000	0.608	19.33	149.44	0.40	98.03	18.76	12.00
139.608	0.608	19.33	148.67	0.40	97.66	18.76	12.00
140.216	0.055	19.33	13.29	0.40	97.20	18.76	12.00
140.271	0.129	20.26	31.50	0.40	97.16	18.76	12.00
140.400	0.608	20.26	147.55	0.40	97.04	18.76	12.00
141.008	0.593	20.26	142.98	0.40	96.41	18.76	12.00
141.601	0.608	21.32	145.61	0.40	95.70	18.76	12.00
142.209	0.608	21.32	144.50	0.40	94.79	18.76	12.00
142.817	0.050	21.32	11.83	0.40	93.85	18.76	12.00
142.867	0.608	22.42	143.21	0.40	93.77	18.76	12.00
143.475	0.325	22.42	75.94	0.40	92.74	18.76	12.00
143.800	0.289	22.42	67.23	0.40	92.15	18.76	12.00
144.089	0.608	23.54	140.31	0.40	91.65	18.76	12.00
144.697	0.608	23.54	138.60	0.40	90.54	18.76	12.00
145.305	0.021	23.54	4.76	0.40	89.35	18.76	12.00
145.326	0.608	24.59	136.75	0.40	89.31	18.76	12.00
145.934	0.486	24.59	107.91	0.40	88.03	18.76	12.00
146.420	0.110	24.59	24.19	0.40	86.98	18.76	12.00
146.530	0.608	25.63	132.95	0.40	86.74	18.76	12.00
147.138	0.608	25.63	130.90	0.40	85.33	18.76	12.00
147.746	0.010	25.63	2.08	0.40	83.95	18.76	12.00
147.756	0.608	26.60	128.74	0.40	83.93	18.76	12.00
148.364	0.236	26.60	49.44	0.39	82.46	18.76	12.00
148.600	0.403	26.60	83.72	0.39	81.89	18.76	12.00
149.003	0.608	27.49	124.89	0.39	80.82	18.76	12.00
149.611	0.608	27.49	123.18	0.39	79.17	18.76	12.00
150.219	0.097	27.49	19.56	0.39	77.46	18.76	12.00
150.317	0.608	27.57	121.19	0.39	77.22	18.76	12.00
150.925	0.608	27.57	119.47	0.38	75.57	18.76	12.00
151.533	0.077	27.57	14.95	0.38	73.94	18.76	12.00
151.610	0.608	27.65	117.52	0.38	73.77	18.76	12.00
152.218	0.608	27.65	115.78	0.38	72.11	18.76	12.00
152.826	0.057	27.65	10.71	0.38	70.61	18.76	12.00
152.882	0.318	27.74	59.69	0.38	70.48	18.76	12.00
153.200	0.608	27.74	112.85	0.37	69.62	18.76	12.00
153.808	0.341	27.74	62.44	0.37	67.85	18.76	12.00
154.149	0.608	27.82	109.74	0.37	66.90	18.76	12.00
154.757	0.608	27.82	107.75	0.37	64.99	18.76	12.00
155.365	0.038	27.82	6.65	0.36	63.13	18.76	12.00
155.403	0.608	27.90	105.62	0.36	63.03	18.76	12.00
156.011	0.608	27.90	103.60	0.36	61.32	18.76	12.00
156.619	0.053	27.90	8.92	0.36	59.68	18.76	12.00
156.672	0.392	27.98	65.56	0.36	59.56	18.76	12.00
157.064	0.608	27.98	100.11	0.36	58.62	18.76	12.00
157.672	0.278	27.98	45.04	0.35	57.13	18.76	12.00
157.950	0.050	28.06	8.09	0.35	56.49	18.76	12.00
158.000	0.280	28.06	44.92	0.35	56.38	18.76	12.00
158.280	0.608	28.06	96.08	0.35	55.67	18.76	12.00
158.888	0.365	28.06	56.72	0.35	53.95	18.76	12.00
159.253	0.608	28.14	92.89	0.34	52.86	18.76	12.00
159.861	0.608	28.14	90.88	0.34	50.90	18.76	12.00
160.469	0.117	28.14	17.26	0.33	48.88	18.76	12.00
160.586	0.608	29.43	88.37	0.33	48.51	18.76	12.00
161.194	0.608	29.43	86.12	0.33	46.55	18.76	12.00
161.802	0.024	29.43	3.36	0.32	44.53	18.76	12.00



161.826	0.608	30.82	83.66	0.32	44.44	18.76	12.00
162.435	0.365	30.82	49.08	0.32	42.40	18.76	12.00
162.800	0.241	30.82	31.86	0.31	41.12	18.76	12.00
163.041	0.608	32.25	78.34	0.31	40.29	18.76	12.00
163.649	0.576	32.25	71.49	0.30	37.80	18.76	12.00
164.225	0.608	33.63	72.42	0.30	35.10	18.76	12.00
164.833	0.608	33.63	69.17	0.29	32.28	18.76	12.00
165.442	0.017	33.63	1.89	0.28	29.36	18.76	12.00
165.459	0.608	35.37	65.66	0.28	29.28	18.76	12.00
166.067	0.608	35.37	62.04	0.27	26.60	18.76	12.00
166.675	0.118	35.37	11.60	0.25	24.00	18.76	12.00
166.792	0.608	36.72	57.59	0.25	23.54	18.76	12.00
167.401	0.199	36.72	18.04	0.24	20.99	18.76	12.00
167.600	0.608	36.72	52.27	0.23	20.14	18.76	12.00
168.208	0.111	36.72	9.05	0.21	17.28	18.76	12.00
168.319	0.608	37.90	47.20	0.21	16.71	18.76	12.00
168.927	0.608	37.90	42.76	0.18	13.47	18.76	12.00
169.535	0.608	37.90	38.32	0.15	10.29	18.76	12.00
170.143	0.369	37.90	21.11	0.11	7.37	18.76	12.00
170.512	0.608	38.49	31.12	0.09	5.72	18.76	12.00
171.120	0.390	38.49	17.54	0.06	3.06	18.76	12.00
171.510	0.245	38.49	10.05	0.00	0.00	18.76	12.00
171.755	0.608	38.49	21.73	0.00	0.00	18.76	12.00
172.363	0.037	38.49	1.17	0.00	0.00	18.76	12.00
172.400	0.608	38.49	16.75	0.00	0.00	18.76	12.00
173.008	0.608	38.49	11.88	0.00	0.00	18.76	12.00
173.616	0.028	38.49	0.43	0.00	0.00	18.76	12.00
173.644	0.608	38.49	7.01	0.00	0.00	20.46	0.40
174.252	0.608	38.49	2.59	0.00	0.00	20.46	0.40

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 dx(m) : Larghezza concio
 alpha() : Angolo pendenza base concio
 W(kN/m) : Forza peso concio
 ru(-) : Coefficiente locale pressione interstiziale
 U(kPa) : Pressione totale dei pori base concio
 phi'() : Angolo di attrito efficace base concio
 c'/Cu (kPa) : Coesione efficace o Resistenza al taglio in condizioni non drenate

TABELLA DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	ht (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (kN)	FS_qFEM (--)	FS_p-qPATH (--)			
114.506	0.000	38.967	-0.390	0.0000000000E+000	0.0000000000E+000	0.0000000000E+000	3.1361937452E+000	0.038	1.637	1.717		
115.114	0.114	38.717	-0.390	1.5194203846E+000	-2.1860873876E-002	1.8612302175E+000	0.039	1.379	1.409			
115.200	0.144	38.696	-0.247	1.6713029695E+000	-2.7384970832E-002	1.8518147308E+000	0.042	1.361	1.332			
115.697	0.318	38.573	-0.260	2.8228359974E+000	-9.1049108313E-002	3.0673686492E+000	0.063	1.345	1.327			
116.156	0.467	38.447	-0.288	4.5491555653E+000	-2.8781182026E-001	4.6721766505E+000	0.083	1.327	1.439			
116.764	0.648	38.265	-0.347	8.1248965543E+000	-1.2153214944E+000	8.3343519783E+000	0.119	1.282	1.333			
117.372	0.772	38.025	-0.365	1.4685085103E+001	-5.3417658498E+000	1.3061693246E+001	0.176	1.253	1.185			
117.980	0.932	37.821	-0.332	2.4010043081E+001	-1.2178686163E+001	2.1396707129E+001	0.240	1.252	1.083			
118.588	1.095	37.621	-0.323	4.0706966151E+001	-2.2263713117E+001	3.1278840975E+001	0.361	1.271	1.005			
119.196	1.267	37.429	-0.316	6.2050208526E+001	-3.3948398913E+001	4.0567129350E+001	0.576	1.309	0.941			
119.204	1.269	37.427	-0.264	6.2364278531E+001	-3.4112150968E+001	4.0648490519E+001	0.578	1.309	0.941			
119.812	1.455	37.267	-0.257	8.7649524095E+001	-4.7163028869E+001	4.5915282249E+001	0.734	1.370	0.892			
120.000	1.516	37.222	-0.232	9.6527540007E+001	-5.1452578276E+001	4.8710781238E+001	0.769	1.395	0.882			
120.608	1.722	37.082	-0.222	1.2901450048E+002	-6.6303772947E+001	5.6785225249E+001	0.854	1.495	0.862			
121.216	1.938	36.952	-0.208	1.6558762331E+002	-8.1993010343E+001	6.0514882513E+001	0.895	1.631	0.853			
121.387	2.003	36.920	-0.195	1.7595364364E+002	-8.6216002528E+001	6.2477883694E+001	0.902	1.674	0.853			
121.995	2.188	36.801	-0.195	2.1796506107E+002	-1.0252248603E+002	6.9848093259E+001	0.923	1.882	0.855			
122.070	2.212	36.787	-0.191	2.2319335987E+002	-1.0450345029E+002	7.1479530632E+001	0.925	1.909	0.856			
122.400	2.314	36.723	-0.194	2.4902225670E+002	-1.1414335169E+002	8.1955956749E+001	0.934	2.072	0.862			
122.824	2.444	36.641	-0.182	2.8578672929E+002	-1.2762683206E+002	8.7529830840E+001	0.944	2.339	0.875			
123.432	2.592	36.536	-0.164	3.3974123994E+002	-1.4695769717E+002	8.9858079354E+001	0.955	2.797	0.902			
123.993	2.740	36.450	-0.145	3.9070196705E+002	-1.6518689775E+002	9.2457971803E+001	0.962	3.305	0.939			
124.600	2.844	36.366	-0.133	4.4786903465E+002	-1.8593102599E+002	9.9067290058E+001	0.966	3.947	0.992			
125.170	2.948	36.293	-0.111	5.0693688308E+002	-2.0777386792E+002	1.0446538851E+002	0.956	4.636	1.062			



125.778	3.027	36.235	-0.078	5.7096752038E+002	-2.3192508612E+002	9.8625036938E+001	0.911	5.384	1.158
126.214	3.102	36.212	-0.035	6.1190172153E+002	-2.4738185185E+002	9.1705453636E+001	0.847	5.815	1.234
126.822	3.174	36.199	-0.012	6.6585937912E+002	-2.6131077528E+002	8.6597190707E+001	0.711	6.258	1.342
127.381	3.251	36.198	0.007	7.1315731146E+002	-2.5920236460E+002	8.2710967173E+001	0.602	6.525	1.441
127.989	3.303	36.207	0.025	7.6218054831E+002	-2.4013088089E+002	8.2122360372E+001	0.515	6.641	1.540
128.597	3.366	36.228	0.035	8.1303147808E+002	-1.9759294850E+002	8.4139737196E+001	0.456	6.529	1.630
128.676	3.375	36.231	0.048	8.1963772846E+002	-1.9034778744E+002	8.3884323350E+001	0.450	6.497	1.641
129.284	3.418	36.261	0.051	8.6912953962E+002	-1.2668170061E+002	9.0624783476E+001	0.409	6.170	1.710
129.400	3.429	36.268	0.067	8.7988053358E+002	-1.1004823848E+002	9.1487016193E+001	0.404	6.072	1.722
130.008	3.483	36.309	0.069	9.3263654455E+002	-1.3805330026E+001	8.2791092770E+001	0.388	5.498	1.765
130.325	3.513	36.332	0.085	9.5818164300E+002	4.3322328495E+001	8.2831989787E+001	0.394	5.170	1.778
130.933	3.562	36.388	0.096	1.0110103113E+003	1.4923821095E+002	8.3348360565E+001	0.428	4.434	1.783
131.541	3.616	36.449	0.104	1.0595468256E+003	2.4180407628E+002	8.0347487409E+001	0.480	3.710	1.768
131.677	3.631	36.465	0.119	1.0705180678E+003	2.6146500506E+002	7.8814855423E+001	0.494	3.544	1.762
132.285	3.668	36.538	0.123	1.1139662126E+003	3.3619554969E+002	6.4138058073E+001	0.571	2.872	1.722
132.893	3.710	36.614	0.126	1.1485203935E+003	3.8887954071E+002	5.3732759054E+001	0.677	2.337	1.669
132.906	3.711	36.616	0.135	1.1492198098E+003	3.8991832166E+002	5.3391534724E+001	0.679	2.326	1.667
133.514	3.726	36.698	0.142	1.1738852610E+003	4.1788719241E+002	3.6020120284E+001	0.798	1.952	1.608
134.037	3.748	36.777	0.150	1.1906633696E+003	4.2839624957E+002	2.4144748866E+001	0.893	1.698	1.556
134.200	3.745	36.801	0.168	1.1941991565E+003	4.2962810706E+002	2.1188173969E+001	0.907	1.645	1.541
134.808	3.750	36.907	0.190	1.2060318999E+003	4.3385807129E+002	1.6504715924E+001	0.951	1.453	1.482
135.240	3.772	36.999	0.242	1.2122540017E+003	4.3625347687E+002	1.0219187926E+001	0.971	1.331	1.438
135.848	3.799	37.158	0.269	1.2148834234E+003	4.3778943017E+002	1.0390136674E+000	0.983	1.209	1.384
136.355	3.831	37.299	0.301	1.2140199305E+003	4.3812785888E+002	-5.5923050810E+000	0.988	1.128	1.343
136.964	3.862	37.494	0.317	1.2077840481E+003	4.3700880260E+002	-1.3000842375E+001	0.990	1.057	1.304
137.544	3.889	37.677	0.300	1.1987143275E+003	4.3494680864E+002	-1.6714548073E+001	0.992	1.011	1.276
138.152	3.871	37.850	0.269	1.1878549182E+003	4.3230091781E+002	-1.8352288939E+001	0.993	0.982	1.257
138.760	3.835	38.004	0.253	1.1763949549E+003	4.2935959123E+002	-1.9251377525E+001	0.994	0.965	1.246
138.806	3.831	38.015	0.239	1.1755212426E+003	4.2912970531E+002	-1.9332692082E+001	0.994	0.965	1.245
139.000	3.809	38.061	0.262	1.1717191249E+003	4.2812520467E+002	-2.0678824186E+001	0.994	0.961	1.243
139.608	3.760	38.225	0.273	1.1570021781E+003	4.2401532134E+002	-2.5291156271E+001	0.995	0.954	1.237
140.216	3.715	38.393	0.276	1.1409609594E+003	4.1933871071E+002	-2.7486108375E+001	0.995	0.949	1.233
140.271	3.711	38.408	0.286	1.1394572946E+003	4.1888579362E+002	-2.7964356336E+001	0.996	0.949	1.232
140.400	3.700	38.446	0.308	1.1357244160E+003	4.1774762669E+002	-2.9349845655E+001	0.996	0.948	1.232
141.008	3.665	38.635	0.321	1.1164876230E+003	4.1175397130E+002	-3.3033303653E+001	0.996	0.945	1.228
141.601	3.642	38.831	0.359	1.0960910333E+003	4.0523782399E+002	-3.7871923545E+001	0.997	0.943	1.225
142.209	3.640	39.066	0.384	1.0708947674E+003	3.9703856847E+002	-4.1554951460E+001	0.997	0.940	1.222
142.817	3.634	39.297	0.380	1.0455534437E+003	3.8870086823E+002	-4.2223913416E+001	0.997	0.938	1.218
142.867	3.633	39.316	0.371	1.0434396884E+003	3.8800130176E+002	-4.2241908997E+001	0.997	0.938	1.218
143.475	3.608	39.541	0.372	1.0179543586E+003	3.7958000065E+002	-4.2626411447E+001	0.997	0.937	1.215
143.800	3.595	39.663	0.372	1.0039901587E+003	3.7498005629E+002	-4.2740700735E+001	0.997	0.936	1.213
144.089	3.582	39.769	0.354	9.9171213729E+002	3.7095781543E+002	-4.2101090572E+001	0.997	0.935	1.212
144.697	3.529	39.981	0.356	9.6662510305E+002	3.6285228027E+002	-4.2449607273E+001	0.997	0.934	1.209
145.305	3.486	40.202	0.365	9.4008650048E+002	3.5435525746E+002	-4.8312791604E+001	0.997	0.934	1.207
145.326	3.485	40.211	0.369	9.3906759374E+002	3.5402949362E+002	-4.8342780115E+001	0.997	0.934	1.207
145.934	3.430	40.435	0.368	9.1198321659E+002	3.4540890148E+002	-4.4657498760E+001	0.998	0.933	1.204
146.420	3.387	40.614	0.372	8.9024064049E+002	3.3849694552E+002	-4.6504705604E+001	0.998	0.932	1.201
146.530	3.380	40.656	0.388	8.8509802131E+002	3.3686090636E+002	-4.6913018686E+001	0.998	0.932	1.201
147.138	3.324	40.892	0.384	8.5652895924E+002	3.2774402521E+002	-4.6396057225E+001	0.999	0.930	1.197
147.746	3.264	41.124	0.380	8.2867285855E+002	3.1881264468E+002	-4.2199772471E+001	0.999	0.928	1.193
147.756	3.262	41.127	0.401	8.2826192644E+002	3.1868047678E+002	-4.2226720586E+001	0.999	0.928	1.193
148.364	3.202	41.371	0.403	7.9936756887E+002	3.0928262625E+002	-4.7584616224E+001	1.000	0.924	1.187
148.600	3.180	41.467	0.424	7.8811451707E+002	3.0559394508E+002	-4.8679206807E+001	1.000	0.922	1.185
149.003	3.153	41.642	0.451	7.6775267266E+002	2.9888173563E+002	-5.1294379111E+001	1.000	0.919	1.180
149.611	3.117	41.923	0.470	7.3583461460E+002	2.8827131491E+002	-5.3029730209E+001	1.001	0.912	1.171
150.219	3.091	42.214	0.472	7.0325988304E+002	2.7739841733E+002	-4.8839120282E+001	1.001	0.905	1.161
150.317	3.083	42.256	0.454	6.9857909981E+002	2.7583002314E+002	-4.8344584947E+001	1.001	0.903	1.159
150.925	3.043	42.534	0.457	6.6818346345E+002	2.6563722026E+002	-4.9589171326E+001	1.001	0.895	1.148
151.533	3.003	42.812	0.447	6.3827059020E+002	2.5558303787E+002	-4.0584671506E+001	1.001	0.885	1.136
151.610	2.992	42.840	0.448	6.3524006622E+002	2.5456460301E+002	-4.0444598814E+001	1.001	0.884	1.134
152.218	2.951	43.118	0.435	6.0608742658E+002	2.4472166159E+002	-4.5258485382E+001	1.001	0.875	1.121
152.826	2.884	43.369	0.408	5.8019837612E+002	2.3597201956E+002	-3.6980480143E+001	1.001	0.866	1.108
152.882	2.874	43.390	0.433	5.7813150680E+002	2.3527151223E+002	-3.7761572687E+001	1.001	0.865	1.107
153.200	2.849	43.532	0.459	5.6382295684E+002	2.3038840434E+002	-4.5497145067E+001	1.001	0.860	1.099
153.808	2.812	43.814	0.461	5.3564622207E+002	2.2073002609E+002	-4.5299661011E+001	1.001	0.850	1.084
154.149	2.788	43.970	0.488	5.2039119612E+002	2.1548242682E+002	-4.6119008502E+001	1.001	0.845	1.075
154.757	2.775	44.277	0.500	4.9082814015E+002	2.0533342692E+002	-4.7626472483E+001	1.000	0.834	1.059
155.365	2.754	44.577	0.489	4.6246964799E+002	1.9562895520E+002	-3.9539951264E+001	1.001	0.825	1.043
155.403	2.750	44.593	0.448	4.6098687690E+002	1.9512354581E+002	-3.9234489440E+001	1.001	0.824	1.042
156.011	2.701	44.867	0.442	4.3579233137E+002	1.8657940132E+002	-4.0426432023E+001	1.001	0.816	1.028
156.619	2.644	45.131	0.428	4.1182175074E+002	1.7848918240E+002	-3.1645974886E+001	1.002	0.809	1.015



156.672	2.634	45.149	0.388	4.1018254123E+002	1.7794193350E+002	-3.1385341666E+001	1.002	0.808	1.014
157.064	2.580	45.303	0.393	3.9668204799E+002	1.7343254659E+002	-3.4200773252E+001	1.003	0.804	1.007
157.672	2.496	45.543	0.386	3.7613409061E+002	1.6657381922E+002	-3.2009869086E+001	1.004	0.798	0.996
157.950	2.451	45.645	0.364	3.6747206025E+002	1.6367813060E+002	-2.8399245875E+001	1.004	0.795	0.991
158.000	2.441	45.662	0.394	3.6607368927E+002	1.6320998500E+002	-2.8706889405E+001	1.004	0.795	0.990
158.280	2.405	45.775	0.428	3.5676484885E+002	1.6005181816E+002	-3.3974166452E+001	1.005	0.791	0.985
158.888	2.348	46.042	0.451	3.3514399837E+002	1.5264471829E+002	-3.6623326679E+001	1.006	0.783	0.972
159.253	2.325	46.214	0.482	3.2154227784E+002	1.4792868555E+002	-3.7484753833E+001	1.006	0.778	0.963
159.861	2.298	46.511	0.496	2.9852496211E+002	1.3984412308E+002	-3.8034232624E+001	1.006	0.768	0.947
160.469	2.278	46.817	0.497	2.7528645580E+002	1.3161048070E+002	-3.5424227848E+001	1.006	0.757	0.931
160.586	2.270	46.872	0.471	2.7120485652E+002	1.3014930756E+002	-3.4853496552E+001	1.006	0.755	0.928
161.194	2.214	47.158	0.478	2.5011720527E+002	1.2258040121E+002	-3.4838665317E+001	1.004	0.745	0.913
161.802	2.166	47.454	0.486	2.2883536483E+002	1.1487896227E+002	-3.3544192955E+001	1.001	0.734	0.898
161.826	2.164	47.465	0.459	2.2803114283E+002	1.1458252923E+002	-3.3409644681E+001	1.000	0.734	0.898
162.435	2.080	47.744	0.462	2.0890268498E+002	1.0749714307E+002	-3.1441225215E+001	0.992	0.724	0.885
162.800	2.033	47.915	0.464	1.9741465232E+002	1.0310477580E+002	-3.0663236931E+001	0.984	0.719	0.878
163.041	1.999	48.025	0.506	1.9014379784E+002	1.0024718649E+002	-3.1068351914E+001	0.978	0.715	0.875
163.649	1.935	48.345	0.558	1.6985297197E+002	9.1644481063E+001	-3.4769786404E+001	0.954	0.707	0.865
164.225	1.913	48.686	0.585	1.4905455637E+002	8.2105185361E+001	-3.4729698126E+001	0.919	0.699	0.859
164.833	1.860	49.037	0.582	1.2881383432E+002	7.1978742832E+001	-3.2764598310E+001	0.872	0.695	0.856
165.442	1.812	49.394	0.587	1.0920746800E+002	6.1464757735E+001	-3.2500820674E+001	0.817	0.693	0.858
165.459	1.811	49.405	0.535	1.0865344673E+002	6.1157574127E+001	-3.2363550495E+001	0.816	0.693	0.858
166.067	1.703	49.728	0.522	9.2108822338E+001	5.1287611562E+001	-2.5813332366E+001	0.756	0.695	0.866
166.675	1.582	50.039	0.505	7.7260230000E+001	4.2077671523E+001	-2.1818505318E+001	0.691	0.702	0.879
166.792	1.555	50.095	0.485	7.4750380780E+001	4.0496456193E+001	-2.1162692920E+001	0.677	0.704	0.883
167.401	1.397	50.391	0.489	6.2359975005E+001	3.2695189578E+001	-1.9144382873E+001	0.597	0.719	0.908
167.600	1.347	50.490	0.534	5.8622424223E+001	3.0366974359E+001	-1.8825551038E+001	0.566	0.726	0.919
168.208	1.226	50.823	0.552	4.7017014727E+001	2.3291579635E+001	-1.8535038774E+001	0.447	0.757	0.966
168.319	1.208	50.887	0.623	4.4978784628E+001	2.2074577203E+001	-1.8389400298E+001	0.423	0.765	0.978
168.927	1.118	51.270	0.644	3.3949002898E+001	1.5687364149E+001	-1.6916620252E+001	0.290	0.817	1.056
169.535	1.044	51.670	0.658	2.4405418956E+001	1.0535603308E+001	-1.4163362976E+001	0.194	0.887	1.163
170.143	0.971	52.071	0.668	1.6724046535E+001	6.6910289224E+000	-1.1583362734E+001	0.136	0.973	1.294
170.512	0.936	52.322	0.641	1.2681471957E+001	4.7180993753E+000	-9.6128213092E+000	0.112	1.033	1.382
171.120	0.827	52.697	0.609	8.1713287979E+000	2.6422431124E+000	-7.2159812091E+000	0.085	1.126	1.523
171.510	0.750	52.930	0.559	5.4093018476E+000	1.4062065037E+000	-5.2583083161E+000	0.073	1.188	1.616
171.755	0.677	53.052	0.499	4.4021429018E+000	9.7835118926E-001	-3.6369678991E+000	0.067	1.227	1.675
172.363	0.497	53.356	0.501	2.9005352820E+000	3.8317386237E-001	-1.7977265135E+000	0.054	1.345	1.855
172.400	0.487	53.375	0.562	2.8359902497E+000	3.5941720320E-001	-1.7484731170E+000	0.053	1.352	1.865
173.008	0.347	53.718	0.611	1.8601320953E+000	1.2007832547E-001	-1.4985378710E+000	0.044	1.496	2.089
173.616	0.262	54.118	0.645	1.0135241109E+000	2.8614627447E-002	-7.3848252563E-001	0.042	1.574	2.084
173.644	0.251	54.129	0.593	9.9373160697E-001	2.7058183053E-002	-7.1016424206E-001	0.042	1.573	2.021
174.252	0.134	54.495	0.593	5.3914023315E-001	6.6877418923E-003	-8.1710404101E-001	0.038	0.643	0.916

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 ht(m) : Altezza linea di thrust da nodo sinistro base concio
 yt(m) : coordinata Y linea di thrust
 yt'(-) : gradiente pendenza locale linea di thrust
 E(x)(kN/m) : Forza Normale interconcio
 T(x)(kN/m) : Forza Tangenziale interconcio
 E' (kN) : derivata Forza normale interconcio
 Rho(x) (-) : fattore mobilitazione resistenza al taglio verticale interconcio ZhU et al.(2003)
 FS_qFEM(x)(-) : fattore di sicurezza locale stimato (locale in X) by qFEM
 FS_p-qPATH(x)(-) : fattore di sicurezza locale stimato (locale in X) by p-qPATH Procedure

TABELLA SFORZI DI TAGLIO DISTRIBUITI LUNGO SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	dl (m)	alpha (°)	TauStress (kPa)	TauF (kN/m)	TauStrength (kPa)	TauS (kN/m)
114.506	0.608	0.708	-30.876	-1.725	-1.222	1.448	1.026
115.114	0.086	0.100	-30.876	-3.692	-0.369	2.653	0.265
115.200	0.497	0.579	-30.876	-5.815	-3.366	3.928	2.274
115.697	0.459	0.535	-30.876	-9.513	-5.089	5.300	2.835
116.156	0.608	0.708	-30.876	-13.906	-9.852	17.302	12.258
116.764	0.608	0.708	-30.876	-19.057	-13.502	14.867	10.533
117.372	0.608	0.708	-30.876	-24.209	-17.152	12.447	8.819
117.980	0.608	0.708	-30.876	-29.361	-20.802	9.580	6.787
118.588	0.608	0.708	-30.876	-34.513	-24.452	8.785	6.224



119.196	0.008	0.009	-30.876	-37.122	-0.334	7.091	0.064
119.204	0.608	0.699	-29.609	-38.663	-27.041	9.011	6.302
119.812	0.188	0.216	-29.609	-41.840	-9.041	8.400	1.815
120.000	0.608	0.699	-29.609	-45.154	-31.581	8.762	6.128
120.608	0.608	0.699	-29.609	-50.281	-35.167	9.443	6.605
121.216	0.171	0.197	-29.609	-53.566	-10.536	10.953	2.154
121.387	0.608	0.680	-26.634	-52.855	-35.955	13.299	9.047
121.995	0.075	0.084	-26.634	-55.339	-4.628	13.959	1.167
122.070	0.330	0.369	-26.634	-56.813	-20.974	12.822	4.734
122.400	0.424	0.474	-26.634	-59.568	-28.260	12.077	5.729
122.824	0.608	0.659	-22.591	-55.866	-36.794	17.463	11.502
123.432	0.561	0.607	-22.591	-59.264	-35.987	18.392	11.168
123.993	0.607	0.636	-17.229	-49.779	-31.646	24.305	15.452
124.600	0.570	0.596	-17.229	-52.000	-31.016	22.749	13.569
125.170	0.608	0.623	-12.679	-40.825	-25.445	27.852	17.359
125.778	0.436	0.447	-12.679	-42.021	-18.789	30.750	13.749
126.214	0.608	0.614	-7.962	-27.606	-16.950	42.500	26.095
126.822	0.559	0.564	-7.962	-28.313	-15.977	56.363	31.805
127.381	0.608	0.610	-4.037	-14.825	-9.038	69.457	42.341
127.989	0.608	0.610	-4.037	-15.137	-9.228	86.401	52.670
128.597	0.078	0.079	-4.037	-15.313	-1.204	95.964	7.547
128.676	0.608	0.608	-1.277	-4.907	-2.985	96.505	58.698
129.284	0.116	0.116	-1.277	-4.958	-0.577	110.656	12.880
129.400	0.608	0.608	-1.277	-5.007	-3.045	116.879	71.090
130.008	0.316	0.317	-1.277	-5.070	-1.605	125.396	39.690
130.325	0.608	0.608	0.670	2.688	1.635	116.928	71.107
130.933	0.608	0.608	0.670	2.726	1.658	110.323	67.090
131.541	0.136	0.136	0.670	2.749	0.375	107.876	14.709
131.677	0.608	0.609	3.272	13.507	8.227	94.592	57.614
132.285	0.608	0.609	3.272	13.657	8.318	85.111	51.839
132.893	0.013	0.013	3.272	13.733	0.179	83.275	1.087
132.906	0.608	0.612	6.280	26.311	16.096	70.812	43.319
133.514	0.522	0.526	6.280	26.505	13.930	65.645	34.500
134.037	0.163	0.165	9.329	39.148	6.478	61.414	10.163
134.200	0.608	0.616	9.329	39.280	24.205	61.538	37.922
134.808	0.432	0.438	9.329	39.461	17.272	61.475	26.907
135.240	0.608	0.622	12.199	51.116	31.801	59.439	36.979
135.848	0.507	0.519	12.199	51.235	26.595	59.299	30.781
136.355	0.608	0.630	15.027	62.175	39.146	57.252	36.047
136.964	0.581	0.601	15.027	62.158	37.364	57.114	34.332
137.544	0.608	0.637	17.442	70.874	45.174	55.269	35.228
138.152	0.608	0.637	17.442	70.679	45.050	55.101	35.120
138.760	0.045	0.047	17.442	70.575	3.352	55.056	2.615
138.806	0.194	0.206	19.333	77.030	15.875	53.536	11.033
139.000	0.608	0.644	19.333	76.773	49.474	53.406	34.416
139.608	0.608	0.644	19.333	76.377	49.219	53.202	34.284
140.216	0.055	0.058	19.333	76.160	4.400	53.181	3.072
140.271	0.129	0.138	20.262	79.136	10.910	52.462	7.232
140.400	0.608	0.648	20.262	78.833	51.099	52.302	33.902
141.008	0.593	0.632	20.262	78.338	49.517	52.146	32.961
141.601	0.608	0.653	21.316	81.093	52.933	51.353	33.520
142.209	0.608	0.653	21.316	80.476	52.529	51.148	33.386
142.817	0.050	0.054	21.316	80.142	4.302	51.203	2.749
142.867	0.608	0.658	22.424	83.046	54.629	50.099	32.956
143.475	0.325	0.351	22.424	82.471	28.968	50.012	17.566
143.800	0.289	0.313	22.424	82.063	25.645	49.847	15.578
144.089	0.608	0.663	23.540	84.483	56.036	48.545	32.199
144.697	0.608	0.663	23.540	83.457	55.355	48.208	31.975
145.305	0.021	0.023	23.540	82.927	1.901	48.407	1.110
145.326	0.608	0.669	24.589	85.090	56.902	47.010	31.437
145.934	0.486	0.534	24.589	84.037	44.902	46.668	24.935
146.420	0.110	0.121	24.589	83.464	10.064	46.709	5.632
146.530	0.608	0.674	25.628	85.263	57.504	45.488	30.679
147.138	0.608	0.674	25.628	83.952	56.620	44.986	30.340
147.746	0.010	0.011	25.628	83.287	0.901	44.788	0.484
147.756	0.608	0.680	26.604	84.773	57.653	43.902	29.857
148.364	0.236	0.264	26.604	83.760	22.141	43.743	11.563
148.600	0.403	0.451	26.604	83.139	37.490	43.712	19.711
149.003	0.608	0.686	27.494	84.108	57.656	42.997	29.474
149.611	0.608	0.686	27.494	82.957	56.867	42.892	29.402
150.219	0.097	0.110	27.494	82.290	9.031	42.676	4.683



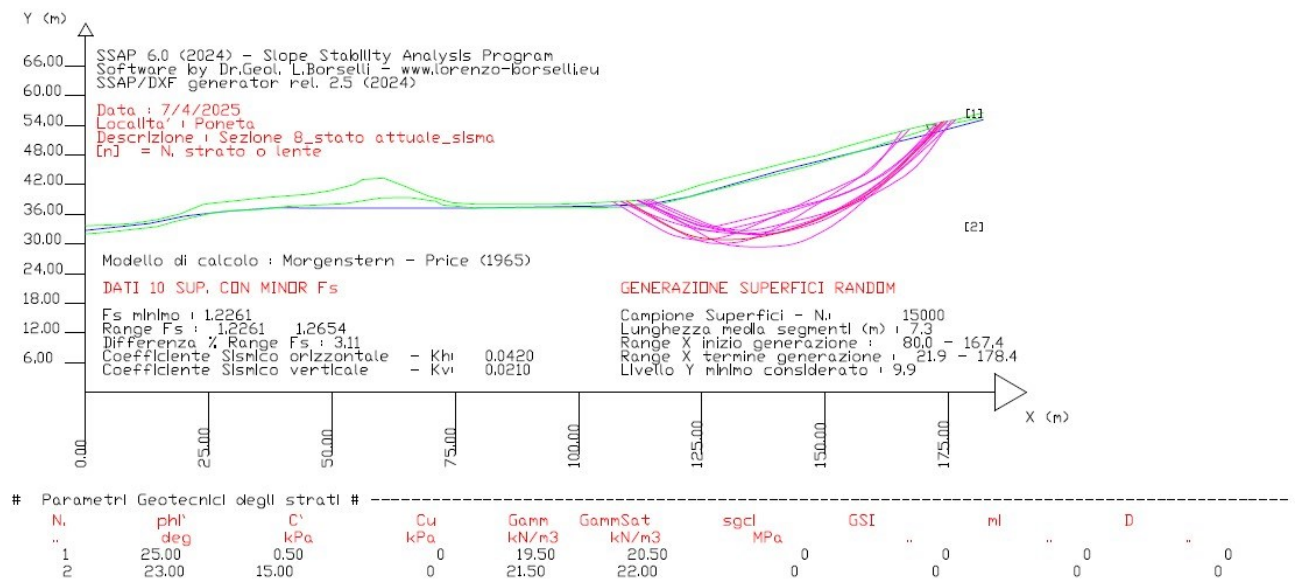
150.317	0.608	0.686	27.573	81.775	56.097	42.398	29.085
150.925	0.608	0.686	27.573	80.612	55.299	42.154	28.917
151.533	0.077	0.087	27.573	79.957	6.921	41.614	3.602
151.610	0.608	0.687	27.654	79.453	54.545	41.787	28.687
152.218	0.608	0.687	27.654	78.279	53.738	41.215	28.294
152.826	0.057	0.064	27.654	77.636	4.969	40.889	2.617
152.882	0.318	0.359	27.735	77.424	27.778	41.266	14.805
153.200	0.608	0.687	27.735	76.443	52.517	41.032	28.190
153.808	0.341	0.385	27.735	75.394	29.059	40.849	15.744
154.149	0.608	0.688	27.818	74.488	51.213	40.714	27.993
154.757	0.608	0.688	27.818	73.132	50.281	40.337	27.733
155.365	0.038	0.043	27.818	72.412	3.105	39.956	1.713
155.403	0.608	0.688	27.901	71.829	49.423	39.623	27.263
156.011	0.608	0.688	27.901	70.460	48.481	39.169	26.951
156.619	0.053	0.060	27.901	69.716	4.175	38.624	2.313
156.672	0.392	0.444	27.982	69.345	30.760	38.536	17.094
157.064	0.608	0.689	27.982	68.213	46.970	38.083	26.223
157.672	0.278	0.314	27.982	67.211	21.132	37.768	11.875
157.950	0.050	0.057	28.063	66.966	3.804	37.466	2.128
158.000	0.280	0.317	28.063	66.592	21.130	37.678	11.955
158.280	0.608	0.689	28.063	65.594	45.201	37.476	25.825
158.888	0.365	0.414	28.063	64.506	26.682	37.523	15.521
159.253	0.608	0.690	28.140	63.528	43.808	37.237	25.678
159.861	0.608	0.690	28.140	62.155	42.862	37.082	25.571
160.469	0.117	0.133	28.140	61.337	8.138	37.024	4.912
160.586	0.608	0.698	29.430	62.191	43.420	35.883	25.052
161.194	0.608	0.698	29.430	60.611	42.317	35.649	24.889
161.802	0.024	0.028	29.430	59.790	1.649	35.766	0.986
161.826	0.608	0.708	30.821	60.533	42.862	34.343	24.318
162.435	0.365	0.426	30.821	59.079	25.144	34.302	14.599
162.800	0.241	0.281	30.821	58.148	16.325	34.167	9.592
163.041	0.608	0.719	32.255	58.147	41.810	33.518	24.101
163.649	0.576	0.681	32.255	56.001	38.154	33.876	23.080
164.225	0.608	0.730	33.626	54.917	40.105	33.036	24.125
164.833	0.608	0.730	33.626	52.455	38.307	32.924	24.043
165.442	0.017	0.020	33.626	51.190	1.048	33.486	0.685
165.459	0.608	0.746	35.371	50.964	38.005	31.588	23.556
166.067	0.608	0.746	35.371	48.161	35.915	30.813	22.978
166.675	0.118	0.144	35.371	46.489	6.713	30.349	4.383
166.792	0.608	0.759	36.723	45.389	34.434	28.944	21.958
167.401	0.199	0.249	36.723	43.345	10.785	28.493	7.090
167.600	0.608	0.759	36.723	41.195	31.253	27.790	21.083
168.208	0.111	0.138	36.723	39.251	5.414	27.669	3.817
168.319	0.608	0.771	37.902	37.625	28.995	26.375	20.325
168.927	0.608	0.771	37.902	34.086	26.268	25.227	19.441
169.535	0.608	0.771	37.902	30.547	23.541	24.020	18.511
170.143	0.369	0.468	37.902	27.703	12.966	23.430	10.966
170.512	0.608	0.777	38.494	24.929	19.368	21.907	17.020
171.120	0.390	0.498	38.494	21.921	10.915	21.438	10.675
171.510	0.245	0.313	38.494	19.978	6.258	21.146	6.624
171.755	0.608	0.777	38.494	17.413	13.528	19.780	15.368
172.363	0.037	0.047	38.494	15.474	0.726	18.836	0.884
172.400	0.608	0.777	38.494	13.416	10.423	17.867	13.882
173.008	0.608	0.777	38.494	9.519	7.396	16.118	12.522
173.616	0.028	0.036	38.494	7.481	0.267	15.214	0.543
173.644	0.608	0.777	38.494	5.618	4.365	3.047	2.367
174.252	0.608	0.777	38.494	2.071	1.609	1.375	1.068

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 dx(m) : Larghezza concio
 dl(m) : lunghezza base concio
 alpha() : Angolo pendenza base concio
 TauStress(kPa) : Sforzo di taglio su base concio
 TauF (kN/m) : Forza di taglio su base concio
 TauStrength(kPa) : Resistenza al taglio su base concio
 TauS (kN/m) : Forza resistente al taglio su base concio



10 SEZIONE 8 STATO ATTUALE - SISMA



Report Generale Risultati di Verifica di stabilita'

SSAP 6.0 - Slope Stability Analysis Program (1991,2024)

WWW.SSAP.EU

Build No. 14533

BY

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Ricercatore Associato CNR-IRPI, Perugia, Italia

Ultima Revisione struttura tabelle del report: 21 Maggio 2024

File report: C:\Users\facco\OneDrive\Documents\Lavoro\Lavori STGA\Poneta\Sezioni\Risultati SSAP\Sez8 stato attuale_sisma.txt

Data: 7/4/2025

Localita' : Poneta

Descrizione: Sezione 8 stato attuale_sisma

Modello pendio: Sezione 8 stato attuale.mod

----- 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			
0.03 33.64	0.03 32.00	- -	- -
1.00 33.71	4.30 32.35	- -	- -
4.80 33.80	14.50 33.50	- -	- -
9.60 34.14	18.02 34.49	- -	- -
14.40 34.88	26.29 36.40	- -	- -
19.20 36.07	30.08 36.71	- -	- -
23.80 37.95	36.20 37.06	- -	- -
25.60 38.22	41.05 37.57	- -	- -
30.40 38.73	52.44 38.12	- -	- -
35.20 39.23	59.98 39.29	- -	- -
40.00 39.64	65.77 39.38	- -	- -
44.80 40.03	71.00 38.60	- -	- -
49.60 40.77	72.46 37.84	- -	- -
54.40 42.01	79.19 37.26	- -	- -
56.20 43.01	102.00 37.30	- -	- -
60.40 43.32	114.36 37.54	- -	- -
64.80 41.64	122.07 39.43	- -	- -
69.40 39.69	146.42 45.68	- -	- -



74.20	38.31	158.28	49.13	-	-	-	-
79.00	38.01	171.51	53.44	-	-	-	-
86.40	38.01	182.00	55.59	-	-	-	-
91.20	38.02	-	-	-	-	-	-
96.00	38.03	-	-	-	-	-	-
100.80	38.16	-	-	-	-	-	-
105.60	38.42	-	-	-	-	-	-
110.40	38.71	-	-	-	-	-	-
115.20	39.01	-	-	-	-	-	-
120.00	40.37	-	-	-	-	-	-
124.60	41.92	-	-	-	-	-	-
129.40	43.17	-	-	-	-	-	-
134.20	44.38	-	-	-	-	-	-
139.00	45.64	-	-	-	-	-	-
143.80	46.86	-	-	-	-	-	-
148.60	47.93	-	-	-	-	-	-
153.20	49.38	-	-	-	-	-	-
158.00	50.74	-	-	-	-	-	-
162.80	52.11	-	-	-	-	-	-
167.60	53.36	-	-	-	-	-	-
172.40	54.43	-	-	-	-	-	-
177.20	55.30	-	-	-	-	-	-
182.00	56.54	-	-	-	-	-	-

SUP FALDA

X Y

0.03	32.71
12.92	34.11
20.22	35.61
28.92	36.62
38.62	37.31
43.39	37.26
65.29	37.26
79.19	37.26
104.00	37.64
114.40	38.01
122.40	39.52
140.40	44.70
171.51	52.31
182.00	55.10

----- GESTIONE ACQUIFERI -----

Strati esclusi da acquifero e effetto pressione dei pori:

Esclusione sovraccarico pendio sommerso: NON ATTIVATA

EFFETTO TENSION CRACK IN TESTA RIEMPITO DI ACQUA: ----> DISATTIVATO

In caso di superfici con tension crack in testa, la frattura di tensione

puo' venir viene considerata completamente riempita di acqua per la sua intera profondita'.

Viene quindi considerato una forza in testa, prodotta dalla pressione idrostatica.

La forza applicata ha un effetto destabilizzante aggiuntivo alle altre forze destabilizzanti agenti.

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

Coefficiente di soprapressione oltre pressione idrostatica 1.00

Limitazione dissipazione a Pressione Idrostatica = ATTIVA

STABILITE CONDIZIONI PER LA VERIFICA CON SOVRAPPRESSIONE ACQUIFERI CON DISSIPAZIONE IN DIREZIONE DELLA SUPERFICIE

CALCOLO EFFETTO DI FILTRAZIONE NON ATTIVATO

----- PARAMETRI GEOMECCANICI -----

	fi'	C'	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	25.00	0.50	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00
STRATO 2	23.00	15.00	0.00	21.50	22.00	1.805	0.00	0.00	0.00	0.00



LEGENDA: 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)
 ---- SOLO Per AMMASSI ROCCIOSI FRATTURATI - Parametri Criterio di Rottura di Hoek et al.(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)

NOTA BENE:

FATTORI DI RIDUZIONE NTC2018/EC-7: gammaPHI=1.25, gammaC=1.25 e gammaCu=1.4 - DISATTIVATI

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

*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI

MOTORE DI RICERCA: SNIFF RANDOM SEARCH - Borselli (1997,2021)

FILTRAGGIO SUPERFICI : ATTIVATO

COORDINATE X1,X2,Y OSTACOLO : 0.00 0.00 0.00

LUNGHEZZA MEDIA SEGMENTI (m)*: 7.3 (+/-) 50%

INTERVALLO ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 80.00 167.44

LIVELLO MINIMO CONSIDERATO (Ymin): 9.91

INTERVALLO ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 21.87 178.36

TOTALE SUPERFICI GENERATE : 15000

*NOTA IMPORTANTE: La lunghezza media dei segmenti non viene cosiderata nel caso di uso del motore di ricerca NEW RANOM SEARCH

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

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

METODO DI ESPLORAZIONE CAMPO VALORI (lambda0,Fs0) ADOTTATO : A (rapido)

COEFFICIENTE SISMICO UTILIZZATO Kh : 0.0420

COEFFICIENTE SISMICO UTILIZZATO Kv (assunto Positivo): 0.0210

COEFFICIENTE c=Kv/Kh UTILIZZATO : 0.5000

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

X(m)	Y(m)	#Superficie N.1 - #FS_minimo	#Fattore di sicurezza(FS)= 1.2261	#Lambda= 1.2500
109.739	38.670			
115.750	35.067			
118.539	33.478			
120.371	32.558			
121.858	31.941			
123.359	31.481			
124.684	31.188			
126.162	30.989			
127.794	30.885			
129.867	30.854			
131.605	30.879			
133.198	30.961			
134.681	31.100			
136.232	31.313			
137.696	31.576			
139.243	31.918			
140.879	32.341			
142.752	32.882			



144.422	33.407
146.010	33.953
147.531	34.524
149.101	35.163
150.628	35.835
152.223	36.588
153.911	37.434
155.809	38.433
157.426	39.367
158.956	40.349
160.394	41.376
161.941	42.593
163.561	44.018
165.466	45.834
168.266	48.680
174.038	54.727

X(m)	Y(m)	#Superficie N. 2 #Fattore di sicurezza(FS)= 1.2378 #Lambda= 1.2500
108.701	38.607	
112.238	36.700	
114.066	35.720	
115.364	35.030	
116.530	34.417	
117.568	33.878	
118.629	33.333	
119.717	32.780	
120.860	32.204	
122.082	31.593	
123.100	31.135	
124.047	30.771	
124.915	30.506	
125.890	30.283	
126.763	30.154	
127.736	30.087	
128.818	30.084	
130.190	30.142	
131.305	30.231	
132.317	30.362	
133.243	30.537	
134.237	30.784	
135.154	31.065	
136.134	31.423	
137.178	31.857	
138.398	32.412	
139.506	32.938	
140.560	33.460	
141.577	33.988	
142.604	34.544	
143.605	35.109	
144.622	35.706	
145.655	36.335	
146.737	37.015	
147.809	37.689	
148.865	38.353	
149.919	39.016	
150.960	39.670	
152.020	40.336	
153.087	41.007	
154.182	41.696	
155.308	42.404	
156.326	43.089	
157.318	43.807	
158.276	44.552	
159.291	45.397	
160.374	46.376	
161.627	47.579	
163.445	49.417	
167.135	53.239	



X(m)	Y(m)	#Superficie N. 3	#Fattore di sicurezza(FS)= 1.2429	#Lambda= 1.2500
106.901	38.499			
109.370	37.073			
110.656	36.329			
111.573	35.800			
112.401	35.321			
113.132	34.899			
113.880	34.467			
114.636	34.030			
115.416	33.580			
116.223	33.114			
116.940	32.727			
117.628	32.389			
118.283	32.101			
118.987	31.827			
119.649	31.606			
120.358	31.406			
121.121	31.227			
122.026	31.047			
122.787	30.922			
123.492	30.836			
124.147	30.791			
124.849	30.777			
125.501	30.798			
126.200	30.855			
126.948	30.949			
127.829	31.091			
128.598	31.235			
129.321	31.394			
130.006	31.569			
130.718	31.778			
131.395	31.999			
132.097	32.254			
132.821	32.541			
133.615	32.878			
134.381	33.206			
135.127	33.528			
135.865	33.850			
136.594	34.172			
137.323	34.497			
138.052	34.826			
138.784	35.158			
139.519	35.496			
140.257	35.834			
140.992	36.172			
141.729	36.510			
142.461	36.845			
143.197	37.183			
143.930	37.519			
144.664	37.856			
145.392	38.190			
146.126	38.527			
146.859	38.863			
147.595	39.201			
148.326	39.536			
149.062	39.874			
149.795	40.210			
150.530	40.547			
151.258	40.881			
151.992	41.218			
152.725	41.554			
153.461	41.892			
154.192	42.228			
154.946	42.573			
155.715	42.926			
156.527	43.299			
157.399	43.699			
158.092	44.073			
158.742	44.499			
159.336	44.967			
160.020	45.595			



160.714	46.349
161.558	47.383
162.841	49.087
165.558	52.828

X(m)	Y(m)	#Superficie N. 4	#Fattore di sicurezza(FS)= 1.2477	#Lambda= 1.2500
113.189	38.884			
116.431	36.978			
118.121	35.984			
119.325	35.276			
120.413	34.636			
121.374	34.071			
122.361	33.491			
123.366	32.900			
124.415	32.283			
125.514	31.637			
126.451	31.131			
127.332	30.711			
128.151	30.380			
129.057	30.079			
129.871	29.868			
130.758	29.704			
131.710	29.586			
132.871	29.498			
133.911	29.435			
134.889	29.392			
135.828	29.369			
136.775	29.365			
137.712	29.379			
138.685	29.411			
139.712	29.464			
140.850	29.540			
141.807	29.644			
142.707	29.788			
143.544	29.974			
144.460	30.232			
145.306	30.522			
146.218	30.890			
147.201	31.338			
148.364	31.916			
149.379	32.454			
150.334	32.999			
151.238	33.556			
152.175	34.176			
153.070	34.807			
153.994	35.500			
154.948	36.254			
155.985	37.111			
156.988	37.946			
157.967	38.767			
158.935	39.584			
159.894	40.399			
160.856	41.223			
161.823	42.057			
162.803	42.908			
163.800	43.780			
164.760	44.640			
165.707	45.512			
166.642	46.395			
167.594	47.317			
168.646	48.369			
169.831	49.585			
171.513	51.352			
174.823	54.869			

X(m)	Y(m)	#Superficie N. 5	#Fattore di sicurezza(FS)= 1.2522	#Lambda= 1.2500
114.540	38.969			
117.398	37.745			
118.887	37.107			



119.948 36.652
 120.907 36.242
 121.754 35.879
 122.618 35.509
 123.492 35.135
 124.391 34.750
 125.320 34.352
 126.150 34.025
 126.950 33.742
 127.714 33.507
 128.531 33.291
 129.304 33.123
 130.128 32.982
 131.010 32.866
 132.043 32.763
 132.921 32.705
 133.739 32.685
 134.503 32.702
 135.317 32.758
 136.072 32.846
 136.866 32.975
 137.694 33.144
 138.632 33.368
 139.536 33.584
 140.412 33.794
 141.277 34.001
 142.124 34.203
 142.978 34.407
 143.832 34.611
 144.692 34.817
 145.553 35.023
 146.398 35.232
 147.236 35.446
 148.070 35.667
 148.912 35.896
 149.752 36.133
 150.603 36.380
 151.474 36.640
 152.381 36.918
 153.228 37.195
 154.056 37.485
 154.864 37.788
 155.697 38.120
 156.508 38.463
 157.341 38.835
 158.200 39.239
 159.123 39.692
 159.989 40.132
 160.830 40.578
 161.652 41.030
 162.489 41.508
 163.320 42.002
 164.179 42.530
 165.084 43.105
 166.080 43.755
 166.914 44.359
 167.706 45.005
 168.446 45.685
 169.257 46.514
 170.102 47.490
 171.102 48.751
 172.583 50.749
 175.650 55.017
 175.650 55.019

X(m) Y(m) #Superficie N. 6 #Fattore di sicurezza(FS)= 1.2522 #Lambda= 0.3886
 112.022 38.811
 114.907 37.578
 116.408 36.937
 117.477 36.482



118.442	36.072
119.295	35.711
120.178	35.337
121.085	34.955
122.048	34.550
123.083	34.115
123.908	33.814
124.660	33.599
125.328	33.474
126.107	33.405
126.771	33.411
127.519	33.493
128.339	33.647
129.377	33.899
130.342	34.133
131.250	34.354
132.135	34.569
132.989	34.776
133.848	34.985
134.703	35.193
135.560	35.401
136.410	35.607
137.267	35.815
138.123	36.023
138.982	36.232
139.835	36.439
140.694	36.648
141.550	36.856
142.407	37.064
143.257	37.270
144.113	37.478
144.969	37.686
145.828	37.895
146.682	38.102
147.549	38.313
148.422	38.525
149.313	38.742
150.224	38.963
151.064	39.189
151.885	39.433
152.683	39.696
153.518	39.996
154.325	40.312
155.163	40.666
156.038	41.061
157.006	41.522
157.881	41.964
158.720	42.416
159.528	42.880
160.364	43.391
161.173	43.913
162.008	44.483
162.874	45.102
163.817	45.804
164.695	46.479
165.544	47.157
166.372	47.842
167.216	48.564
168.140	49.391
169.187	50.361
170.681	51.786
173.642	54.655

X(m) Y(m) #Superficie N. 7 #Fattore di sicurezza(FS)= 1.2573 #Lambda= 1.2500

113.744	38.919
119.057	36.487
121.661	35.339
123.455	34.609
125.001	34.040
126.458	33.575



127.862	33.181
129.355	32.818
130.967	32.482
132.847	32.140
134.365	31.932
135.752	31.827
137.008	31.825
138.410	31.925
139.668	32.109
141.052	32.413
142.565	32.838
144.423	33.442
146.036	34.010
147.539	34.588
148.961	35.185
150.421	35.852
151.834	36.547
153.309	37.326
154.866	38.198
156.611	39.224
158.130	40.187
159.575	41.184
160.945	42.214
162.397	43.395
163.934	44.768
165.724	46.480
168.333	49.120
173.662	54.659

X(m)	Y(m)	#Superficie N. 8 #Fattore di sicurezza(FS)= 1.2627 #Lambda= 1.2500
111.781	38.796	
117.536	35.921	
120.262	34.625	
122.091	33.854	
123.615	33.310	
125.111	32.896	
126.479	32.605	
127.967	32.384	
129.582	32.231	
131.547	32.126	
133.207	32.087	
134.743	32.112	
136.177	32.199	
137.690	32.359	
139.118	32.573	
140.637	32.868	
142.261	33.248	
144.149	33.748	
145.776	34.234	
147.305	34.754	
148.747	35.311	
150.266	35.969	
151.710	36.662	
153.232	37.462	
154.844	38.377	
156.681	39.482	
158.303	40.519	
159.846	41.574	
161.318	42.652	
162.851	43.851	
164.492	45.238	
166.385	46.932	
169.124	49.507	
174.666	54.841	

X(m)	Y(m)	#Superficie N. 9 #Fattore di sicurezza(FS)= 1.2637 #Lambda= 1.2500
111.935	38.806	
117.672	36.356	
120.478	35.206	



122.408	34.481
124.068	33.924
125.636	33.474
127.138	33.103
128.730	32.770
130.434	32.474
132.408	32.185
134.056	32.006
135.584	31.915
136.997	31.912
138.532	31.997
139.953	32.158
141.492	32.420
143.166	32.787
145.184	33.304
146.875	33.802
148.441	34.340
149.899	34.922
151.449	35.629
152.903	36.372
154.444	37.245
156.078	38.251
157.953	39.480
159.643	40.637
161.253	41.793
162.802	42.963
164.387	44.218
166.106	45.660
168.068	47.381
170.884	49.947
176.513	55.175

X(m)	Y(m)	#Superficie N.10	#Fattore di sicurezza(FS)= 1.2654	#Lambda= 0.4446
108.467	38.593			
112.448	36.868			
114.444	36.025			
115.839	35.466			
117.064	35.004			
118.190	34.612			
119.304	34.251			
120.466	33.900			
121.703	33.554			
123.088	33.190			
124.229	32.940			
125.284	32.771			
126.250	32.685			
127.325	32.663			
128.288	32.710			
129.337	32.835			
130.465	33.035			
131.829	33.338			
133.071	33.628			
134.246	33.918			
135.381	34.214			
136.512	34.526			
137.623	34.847			
138.747	35.188			
139.883	35.547			
141.057	35.934			
142.226	36.318			
143.382	36.698			
144.536	37.078			
145.678	37.454			
146.834	37.834			
147.992	38.215			
149.165	38.601			
150.347	38.990			
151.481	39.381			
152.600	39.787			
153.703	40.205			



154.831	40.654
155.956	41.121
157.117	41.625
158.342	42.177
159.690	42.804
160.816	43.395
161.880	44.034
162.871	44.716
163.962	45.561
165.090	46.559
166.432	47.867
168.427	49.958
172.588	54.464

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

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR FS *

Analisi Deficit in riferimento a FS(progetto) = 1.200

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.226	4272.3	3484.4	91.0	Surplus
2	1.238	3452.5	2789.1	105.5	Surplus
3	1.243	3291.7	2648.3	113.7	Surplus
4	1.248	4384.3	3513.8	167.7	Surplus
5	1.252	3972.5	3172.6	165.5	Surplus
6	1.252	3333.6	2662.2	139.0	Surplus
7	1.257	3797.7	3020.5	173.2	Surplus
8	1.263	4016.1	3180.5	199.5	Surplus
9	1.264	4132.1	3269.9	208.2	Surplus
10	1.265	3599.0	2844.1	186.1	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 91.0

Note: FTR --> Forza totale Resistente lungo la superficie di scivolamento

FTA --> Forza totale Agente lungo la superficie di scivolamento

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

TABELLA PARAMETRI CONCI DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X	dx	alpha	W	ru	U	phi'	(c',Cu)
(m)	(m)	()	(kN/m)	(-)	(kPa)	()	(kPa)
109.739	0.639	-30.94	2.69	0.00	0.00	0.00	25.00
110.378	0.022	-30.94	0.18	0.00	0.00	0.00	25.00
110.400	0.639	-30.94	8.25	0.00	0.00	0.00	25.00
111.039	0.000	-30.94	0.00	0.00	0.00	0.00	25.00
111.039	0.639	-30.94	13.64	0.00	0.00	0.00	25.00
111.679	0.031	-30.94	0.81	0.12	3.18	25.00	0.50
111.710	0.639	-30.94	19.89	0.13	3.33	23.00	15.00
112.349	0.639	-30.94	25.93	0.19	7.39	23.00	15.00
112.989	0.639	-30.94	31.97	0.24	12.26	23.00	15.00
113.628	0.639	-30.94	38.02	0.27	16.24	23.00	15.00
114.268	0.092	-30.94	6.00	0.30	20.18	23.00	15.00
114.360	0.040	-30.94	2.63	0.31	20.80	23.00	15.00
114.400	0.639	-30.94	45.42	0.31	21.06	23.00	15.00
115.039	0.161	-30.94	12.39	0.33	25.56	23.00	15.00
115.200	0.550	-30.94	46.07	0.34	26.56	23.00	15.00
115.750	0.639	-29.67	60.91	0.35	30.53	23.00	15.00
116.389	0.639	-29.67	68.68	0.36	35.35	23.00	15.00
117.029	0.639	-29.67	76.45	0.36	40.69	23.00	15.00
117.668	0.639	-29.67	84.22	0.37	46.18	23.00	15.00
118.308	0.231	-29.67	32.33	0.37	52.23	23.00	15.00
118.539	0.639	-26.65	94.49	0.37	54.09	23.00	15.00
119.178	0.639	-26.65	101.64	0.37	58.89	23.00	15.00
119.817	0.183	-26.65	30.34	0.38	62.87	23.00	15.00



120.000	0.371	-26.65	63.50	0.38	63.85	23.00	15.00
120.371	0.639	-22.54	115.05	0.38	66.04	23.00	15.00
121.010	0.639	-22.54	121.83	0.38	69.65	23.00	15.00
121.650	0.208	-22.54	41.18	0.38	73.09	23.00	15.00
121.858	0.212	-17.07	42.52	0.38	74.09	23.00	15.00
122.070	0.330	-17.07	67.53	0.38	75.15	23.00	15.00
122.400	0.639	-17.07	135.27	0.38	76.97	23.00	15.00
123.039	0.320	-17.07	69.81	0.38	80.12	23.00	15.00
123.359	0.639	-12.46	143.64	0.38	81.67	23.00	15.00
123.998	0.602	-12.46	139.74	0.38	84.91	23.00	15.00
124.600	0.084	-12.46	19.81	0.38	87.53	23.00	15.00
124.684	0.639	-7.65	153.32	0.38	87.89	23.00	15.00
125.323	0.639	-7.65	156.96	0.38	90.65	23.00	15.00
125.963	0.199	-7.65	49.71	0.38	93.56	23.00	15.00
126.162	0.639	-3.66	161.40	0.39	94.35	23.00	15.00
126.802	0.639	-3.66	164.39	0.39	96.64	23.00	15.00
127.441	0.353	-3.66	92.15	0.39	98.86	23.00	15.00
127.794	0.639	-0.84	168.80	0.39	100.02	23.00	15.00
128.434	0.639	-0.84	171.34	0.39	102.14	23.00	15.00
129.073	0.327	-0.84	88.54	0.39	104.04	23.00	15.00
129.400	0.467	-0.84	127.62	0.39	105.03	23.00	15.00
129.867	0.639	0.81	176.80	0.39	106.39	23.00	15.00
130.506	0.639	0.81	179.00	0.40	108.18	23.00	15.00
131.146	0.459	0.81	129.98	0.40	109.90	23.00	15.00
131.605	0.639	2.95	182.62	0.40	111.10	23.00	15.00
132.245	0.639	2.95	184.48	0.40	112.56	23.00	15.00
132.884	0.314	2.95	91.27	0.40	114.00	23.00	15.00
133.198	0.639	5.36	187.06	0.40	114.68	23.00	15.00
133.837	0.363	5.36	106.73	0.40	115.87	23.00	15.00
134.200	0.481	5.36	142.36	0.40	116.48	23.00	15.00
134.681	0.639	7.82	190.38	0.40	117.26	23.00	15.00
135.321	0.639	7.82	191.53	0.40	118.27	23.00	15.00
135.960	0.272	7.82	81.87	0.41	119.17	23.00	15.00
136.232	0.639	10.16	192.99	0.41	119.53	23.00	15.00
136.872	0.639	10.16	193.76	0.41	120.25	23.00	15.00
137.511	0.186	10.16	56.37	0.41	120.81	23.00	15.00
137.696	0.639	12.47	194.56	0.41	120.95	23.00	15.00
138.336	0.639	12.47	194.95	0.41	121.35	23.00	15.00
138.975	0.025	12.47	7.53	0.41	121.60	23.00	15.00
139.000	0.243	12.47	74.25	0.41	121.61	23.00	15.00
139.243	0.639	14.50	195.27	0.41	121.68	23.00	15.00
139.883	0.517	14.50	157.98	0.41	121.81	23.00	15.00
140.400	0.479	14.50	146.26	0.41	121.84	23.00	15.00
140.879	0.639	16.13	195.04	0.41	121.81	23.00	15.00
141.518	0.639	16.13	194.72	0.41	121.69	23.00	15.00
142.158	0.594	16.13	180.51	0.41	121.46	23.00	15.00
142.752	0.639	17.44	193.98	0.41	121.12	23.00	15.00
143.391	0.409	17.44	123.77	0.41	120.70	23.00	15.00
143.800	0.622	17.44	187.80	0.41	120.38	23.00	15.00
144.422	0.639	18.96	192.02	0.41	119.84	23.00	15.00
145.062	0.639	18.96	190.94	0.41	119.21	23.00	15.00
145.701	0.309	18.96	91.94	0.41	118.51	23.00	15.00
146.010	0.410	20.58	121.37	0.41	118.15	23.00	15.00
146.420	0.639	20.58	188.33	0.41	117.67	23.00	15.00
147.059	0.472	20.58	138.10	0.41	116.76	23.00	15.00
147.531	0.639	22.18	185.84	0.41	116.05	23.00	15.00
148.171	0.429	22.18	123.86	0.41	115.07	23.00	15.00
148.600	0.501	22.18	143.74	0.41	114.33	23.00	15.00
149.101	0.639	23.75	182.62	0.41	113.44	23.00	15.00
149.740	0.639	23.75	181.43	0.40	112.18	23.00	15.00
150.380	0.248	23.75	70.05	0.40	110.84	23.00	15.00
150.628	0.639	25.26	179.63	0.40	110.35	23.00	15.00
151.267	0.639	25.26	178.14	0.40	109.00	23.00	15.00
151.906	0.316	25.26	87.54	0.40	107.66	23.00	15.00
152.223	0.639	26.62	175.79	0.40	106.96	23.00	15.00
152.862	0.338	26.62	92.22	0.40	105.57	23.00	15.00
153.200	0.639	26.62	172.98	0.40	104.83	23.00	15.00
153.839	0.072	26.62	19.25	0.39	103.24	23.00	15.00
153.911	0.639	27.75	170.63	0.39	103.07	23.00	15.00
154.550	0.639	27.75	168.39	0.39	101.17	23.00	15.00
155.190	0.619	27.75	160.80	0.39	99.11	23.00	15.00



155.809	0.639	30.00	163.74	0.39	96.87	23.00	15.00
156.448	0.616	30.00	155.20	0.39	94.57	23.00	15.00
157.064	0.362	30.00	90.06	0.38	92.19	23.00	15.00
157.426	0.574	32.70	140.65	0.38	90.84	23.00	15.00
158.000	0.280	32.70	67.69	0.38	88.73	23.00	15.00
158.280	0.639	32.70	152.23	0.38	87.70	23.00	15.00
158.919	0.037	32.70	8.65	0.38	85.30	23.00	15.00
158.956	0.639	35.55	148.46	0.38	85.14	23.00	15.00
159.596	0.639	35.55	144.54	0.37	82.42	23.00	15.00
160.235	0.159	35.55	35.32	0.37	79.33	23.00	15.00
160.394	0.639	38.19	139.32	0.37	78.48	23.00	15.00
161.033	0.639	38.19	134.74	0.36	75.15	23.00	15.00
161.673	0.268	38.19	55.17	0.36	71.73	23.00	15.00
161.941	0.639	41.32	127.82	0.36	70.21	23.00	15.00
162.581	0.219	41.32	42.62	0.35	66.64	23.00	15.00
162.800	0.639	41.32	120.42	0.35	65.36	23.00	15.00
163.439	0.122	41.32	22.35	0.35	61.67	23.00	15.00
163.561	0.639	43.64	113.38	0.35	60.87	23.00	15.00
164.201	0.639	43.64	107.06	0.34	56.31	23.00	15.00
164.840	0.626	43.64	98.67	0.33	51.13	23.00	15.00
165.466	0.639	45.48	94.28	0.32	45.80	23.00	15.00
166.106	0.639	45.48	87.38	0.30	40.33	23.00	15.00
166.745	0.639	45.48	80.49	0.29	35.01	23.00	15.00
167.384	0.216	45.48	25.58	0.27	30.20	23.00	15.00
167.600	0.639	45.48	71.12	0.27	28.63	23.00	15.00
168.239	0.026	45.48	2.76	0.24	23.80	23.00	15.00
168.266	0.639	46.33	63.48	0.24	23.63	23.00	15.00
168.905	0.639	46.33	56.00	0.21	19.05	23.00	15.00
169.544	0.639	46.33	48.52	0.17	14.57	23.00	15.00
170.184	0.639	46.33	41.04	0.14	10.17	23.00	15.00
170.823	0.639	46.33	33.56	0.09	5.32	23.00	15.00
171.463	0.047	46.33	2.19	0.04	2.09	23.00	15.00
171.510	0.296	46.33	12.72	0.00	0.00	23.00	15.00
171.806	0.594	46.33	20.72	0.00	0.00	23.00	15.00
172.400	0.639	46.33	14.99	0.00	0.00	23.00	15.00
173.039	0.087	46.33	1.43	0.00	0.00	23.00	15.00
173.126	0.639	46.33	6.54	0.00	0.00	25.00	0.50
173.765	0.273	46.33	0.64	0.00	0.00	25.00	0.50

LEGENDA SIMBOLI

$X(m)$: Ascissa sinistra concio
 $dx(m)$: Larghezza concio
 $\alpha(^{\circ})$: Angolo pendenza base concio
 $W(kN/m)$: Forza peso concio
 $ru(-)$: Coefficiente locale pressione interstiziale
 $U(kPa)$: Pressione totale dei pori base concio
 $\phi'(^{\circ})$: Angolo di attrito efficace base concio
 $c'/Cu (kPa)$: Coesione efficace o Resistenza al taglio in condizioni non drenate

TABELLA DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	ht (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (kN)	FS_qFEM (--)	FS_p-qPATH (--)			
109.739	0.000	38.670	-0.388	0.0000000000E+000	0.0000000000E+000	0.0000000000E+000	4.3139652263E+000	0.041	10.664	9.649		
110.378	0.135	38.422	-0.388	2.3911134362E+000	-3.0647705090E-002	3.1650218467E+000	0.041	8.579	8.094			
110.400	0.140	38.414	-0.375	2.4589796608E+000	-3.3307994224E-002	3.1605758034E+000	0.041	8.337	7.862			
111.039	0.284	38.174	-0.375	4.7629936625E+000	-1.4068044387E-001	2.1736248663E+000	0.064	3.598	3.341			
111.039	0.284	38.174	-0.282	4.7630601243E+000	-1.4068405492E-001	2.1736526469E+000	0.064	3.598	3.341			
111.679	0.487	37.994	-0.284	7.4385550011E+000	-4.1659705695E-001	6.3571160996E+000	0.090	2.755	2.728			
111.710	0.495	37.984	-0.407	7.6386903044E+000	-4.4924933593E-001	6.6073180506E+000	0.091	2.728	2.711			
112.349	0.616	37.721	-0.435	1.3777352847E+001	-1.7452692983E+000	1.1374023116E+001	0.120	2.272	2.278			
112.989	0.706	37.428	-0.399	2.2184285440E+001	-4.2720557143E+000	1.2376026540E+001	0.160	1.953	1.899			
113.628	0.872	37.211	-0.338	2.9604353513E+001	-7.7195331414E+000	1.2112577092E+001	0.199	1.793	1.676			
114.268	1.041	36.996	-0.339	3.7674375501E+001	-1.1980239126E+001	1.4825182638E+001	0.279	1.540	1.376			
114.360	1.063	36.963	-0.358	3.9074732380E+001	-1.2775786328E+001	1.6148413753E+001	0.297	1.500	1.329			
114.400	1.073	36.949	-0.337	3.9738048863E+001	-1.3183857086E+001	1.6772668915E+001	0.304	1.494	1.319			
115.039	1.241	36.733	-0.325	5.2402458310E+001	-2.1705032153E+001	1.9985624647E+001	0.409	1.493	1.226			
115.200	1.292	36.689	-0.304	5.5618957423E+001	-2.4033025601E+001	2.1533127986E+001	0.426	1.499	1.206			



115.750	1.451	36.517	-0.309	7.0288103031E+001	-3.4774356951E+001	3.2031351187E+001	0.503	1.546	1.136
116.389	1.619	36.321	-0.317	9.4750386874E+001	-5.2295056399E+001	4.5246545817E+001	0.587	1.678	1.083
117.029	1.774	36.112	-0.326	1.2815135247E+002	-7.5059872190E+001	5.8139387685E+001	0.680	1.891	1.047
117.668	1.930	35.904	-0.339	1.6910156289E+002	-1.0133752700E+002	7.5577144427E+001	0.781	2.180	1.022
118.308	2.070	35.679	-0.335	2.2480268974E+002	-1.3382242464E+002	9.0172897790E+001	0.892	2.648	1.004
118.539	2.134	35.612	-0.271	2.4588606946E+002	-1.4497924952E+002	9.1451539540E+001	0.918	2.847	1.002
119.178	2.286	35.443	-0.237	3.0466814337E+002	-1.7444717641E+002	9.0994119242E+001	0.972	3.427	1.000
119.817	2.473	35.309	-0.201	3.6225330423E+002	-2.0057562492E+002	8.3230577002E+001	0.994	4.007	1.004
120.000	2.533	35.277	-0.179	3.7709735683E+002	-2.0698214856E+002	8.4778643184E+001	0.996	4.161	1.006
120.371	2.651	35.210	-0.169	4.1118351853E+002	-2.2140612736E+002	9.2653681886E+001	1.001	4.498	1.010
121.010	2.813	35.106	-0.151	4.7127623878E+002	-2.4571320468E+002	9.3774957894E+001	1.003	5.039	1.020
121.650	2.989	35.016	-0.135	5.3110701063E+002	-2.6916643751E+002	8.7179383325E+001	1.000	5.496	1.032
121.858	3.051	34.992	-0.115	5.4884221718E+002	-2.7597624655E+002	8.6814516667E+001	0.999	5.611	1.037
122.070	3.092	34.968	-0.114	5.6759710443E+002	-2.8321992923E+002	9.2285070270E+001	0.998	5.713	1.042
122.400	3.156	34.931	-0.097	5.9996651255E+002	-2.9586876675E+002	9.5351281435E+001	0.996	5.833	1.053
123.039	3.296	34.875	-0.084	6.5754409942E+002	-3.1848858975E+002	8.9022596530E+001	0.992	5.923	1.078
123.359	3.370	34.850	-0.069	6.8583655400E+002	-3.2974823574E+002	9.0879634693E+001	0.990	5.924	1.092
123.998	3.469	34.808	-0.052	7.4697688727E+002	-3.5455448034E+002	9.0394949189E+001	0.979	5.863	1.132
124.600	3.579	34.786	-0.037	7.9839456452E+002	-3.7590564878E+002	8.5639325581E+001	0.960	5.724	1.178
124.684	3.596	34.783	-0.021	8.0557134439E+002	-3.7891966809E+002	8.5947956202E+001	0.955	5.706	1.186
125.323	3.669	34.770	-0.012	8.6192717292E+002	-4.0278551034E+002	9.5166310146E+001	0.901	5.579	1.251
125.963	3.752	34.768	0.001	9.2727415822E+002	-4.2688030180E+002	9.9202962952E+001	0.768	5.500	1.341
126.162	3.782	34.771	0.022	9.4687832641E+002	-4.2759510692E+002	9.7660163973E+001	0.724	5.497	1.372
126.802	3.838	34.786	0.031	1.0080768876E+003	-4.1665794948E+002	9.9656511758E+001	0.603	5.534	1.473
127.441	3.903	34.810	0.041	1.0743234052E+003	-3.7951864587E+002	1.0765657099E+002	0.511	5.583	1.582
127.794	3.943	34.827	0.055	1.1131641372E+003	-3.4270855173E+002	1.1324511732E+002	0.471	5.590	1.641
128.434	3.989	34.865	0.062	1.1894491264E+003	-2.5133087716E+002	1.1951347570E+002	0.412	5.538	1.747
129.073	4.041	34.907	0.070	1.2660031646E+003	-1.2972190354E+002	1.2624430117E+002	0.374	5.364	1.831
129.400	4.071	34.932	0.080	1.3083440722E+003	-4.8027984128E+001	1.2878253745E+002	0.366	5.194	1.863
129.867	4.116	34.970	0.089	1.3679372570E+003	8.8410510785E+001	1.2769604501E+002	0.372	4.885	1.895
130.506	4.167	35.030	0.098	1.4496307276E+003	2.6088929497E+002	1.2463549296E+002	0.405	4.316	1.902
131.146	4.223	35.096	0.106	1.5273265428E+003	4.1285259967E+002	1.1667162865E+002	0.458	3.686	1.875
131.605	4.267	35.146	0.110	1.5793327681E+003	5.0749671098E+002	1.0543670609E+002	0.508	3.237	1.841
132.245	4.305	35.217	0.119	1.6398465994E+003	6.0743367889E+002	8.9558167421E+001	0.601	2.674	1.773
132.884	4.354	35.299	0.130	1.6938636452E+003	6.8323868079E+002	7.7895462210E+001	0.729	2.166	1.690
133.198	4.381	35.342	0.137	1.7173082035E+003	7.1107417913E+002	6.8705045000E+001	0.802	1.950	1.648
133.837	4.409	35.430	0.140	1.7534820329E+003	7.3326903792E+002	4.7595228712E+001	0.907	1.633	1.567
134.200	4.427	35.482	0.151	1.7688938854E+003	7.3986160134E+002	4.0618975449E+001	0.935	1.511	1.526
134.681	4.457	35.557	0.169	1.7872318821E+003	7.4786657373E+002	3.4983574187E+001	0.963	1.370	1.475
135.321	4.483	35.671	0.188	1.8069378472E+003	7.5689278014E+002	2.6430142393E+001	0.982	1.227	1.414
135.960	4.522	35.798	0.200	1.8210318970E+003	7.6373265243E+002	1.9096336879E+001	0.990	1.128	1.366
136.232	4.540	35.854	0.205	1.8258878039E+003	7.6617815353E+002	1.6107714864E+001	0.992	1.093	1.348
136.872	4.557	35.985	0.203	1.8335809819E+003	7.7035899001E+002	8.8969478223E+000	0.993	1.035	1.315
137.511	4.570	36.113	0.203	1.8372656075E+003	7.7275062465E+002	3.1177248643E+000	0.994	0.998	1.294
137.696	4.576	36.152	0.203	1.8377016890E+003	7.7318106262E+002	1.6676682540E+000	0.995	0.990	1.289
138.336	4.563	36.280	0.198	1.8372637866E+003	7.7381751410E+002	-2.8856840807E+000	0.995	0.968	1.276
138.975	4.547	36.405	0.195	1.8340113508E+003	7.7318685869E+002	-7.1899096531E+000	0.996	0.956	1.268
139.000	4.546	36.410	0.200	1.8338318814E+003	7.7313778973E+002	-7.3222908810E+000	0.996	0.956	1.268
139.243	4.541	36.459	0.215	1.8319284124E+003	7.7259582728E+002	-8.8772407118E+000	0.996	0.953	1.266
139.883	4.517	36.600	0.228	1.8244859273E+003	7.7016711794E+002	-1.3894910717E+001	0.996	0.946	1.261
140.400	4.506	36.723	0.249	1.8163528394E+003	7.6727883290E+002	-1.7780764048E+001	0.996	0.943	1.259
140.879	4.507	36.848	0.272	1.8069203778E+003	7.6377922345E+002	-2.1349524599E+001	0.997	0.941	1.258
141.518	4.501	37.027	0.288	1.7918519026E+003	7.5807975844E+002	-2.5759851566E+001	0.997	0.939	1.256
142.158	4.506	37.216	0.318	1.7739775600E+003	7.5118194248E+002	-3.1511544617E+001	0.997	0.937	1.255
142.752	4.537	37.419	0.331	1.7533074770E+003	7.4319457583E+002	-3.5031863453E+001	0.997	0.936	1.254
143.391	4.542	37.625	0.316	1.7307579056E+003	7.3455185967E+002	-3.5650608528E+001	0.997	0.935	1.253
143.800	4.538	37.750	0.303	1.7160779226E+003	7.2897708455E+002	-3.6241934071E+001	0.997	0.934	1.253
144.422	4.530	37.937	0.298	1.6931963317E+003	7.2038403131E+002	-3.7601324887E+001	0.997	0.933	1.251
145.062	4.499	38.126	0.296	1.6686051391E+003	7.1131036587E+002	-3.9257773269E+001	0.996	0.932	1.250
145.701	4.469	38.315	0.297	1.6429917849E+003	7.0192101245E+002	-4.1244530576E+001	0.996	0.930	1.248
146.010	4.456	38.408	0.292	1.6300625997E+003	6.9718751537E+002	-4.1292866469E+001	0.996	0.930	1.247
146.420	4.419	38.526	0.313	1.6134325958E+003	6.9111604852E+002	-4.3501328367E+001	0.996	0.929	1.246
147.059	4.390	38.737	0.334	1.5827172953E+003	6.7980000467E+002	-4.9305820450E+001	0.996	0.927	1.243
147.531	4.373	38.897	0.336	1.5590128462E+003	6.7101767686E+002	-5.0189014491E+001	0.996	0.925	1.240
148.171	4.326	39.110	0.348	1.5269674374E+003	6.5909991216E+002	-5.3849886536E+001	0.996	0.923	1.236
148.600	4.310	39.269	0.375	1.5027701388E+003	6.5004154573E+002	-5.6907260171E+001	0.996	0.920	1.233
149.101	4.295	39.458	0.397	1.4739550694E+003	6.3922333256E+002	-6.0094675427E+001	0.996	0.918	1.228
149.740	4.277	39.722	0.421	1.4334505177E+003	6.2406415344E+002	-6.5020567652E+001	0.996	0.913	1.222
150.380	4.271	39.997	0.420	1.3908039414E+003	6.0821621148E+002	-6.2919241155E+001	0.997	0.908	1.214
150.628	4.259	40.095	0.407	1.3755632311E+003	6.0259016137E+002	-6.2325242978E+001	0.997	0.906	1.211
151.267	4.221	40.358	0.405	1.3342757552E+003	5.8742795440E+002	-6.3669521414E+001	0.997	0.900	1.203



151.906	4.174	40.613	0.402	1.2941398797E+003	5.7271784654E+002	-6.3950283448E+001	0.997	0.894	1.194
152.223	4.154	40.742	0.393	1.2737352438E+003	5.6520924416E+002	-6.3406258443E+001	0.997	0.891	1.189
152.862	4.080	40.988	0.383	1.2346507166E+003	5.5080119981E+002	-6.0763462728E+001	0.997	0.884	1.179
153.200	4.039	41.117	0.400	1.2141769435E+003	5.4317078618E+002	-6.2279799321E+001	0.997	0.880	1.174
153.839	3.981	41.379	0.408	1.1722886336E+003	5.2723122973E+002	-6.1958851194E+001	0.997	0.872	1.161
153.911	3.972	41.407	0.457	1.1678787138E+003	5.2552962462E+002	-6.2836742113E+001	0.997	0.871	1.160
154.550	3.933	41.704	0.476	1.1204184506E+003	5.0694308022E+002	-7.5957278219E+001	0.996	0.860	1.144
155.190	3.908	42.016	0.508	1.0707412449E+003	4.8713296508E+002	-8.1039400743E+001	0.995	0.848	1.126
155.809	3.911	42.343	0.524	1.0185959052E+003	4.6622295682E+002	-8.3362183234E+001	0.994	0.835	1.108
156.448	3.874	42.675	0.529	9.6589852679E+002	4.4511488449E+002	-8.3820735850E+001	0.993	0.823	1.089
157.064	3.850	43.007	0.527	9.1342284074E+002	4.2423766218E+002	-8.1649983879E+001	0.992	0.811	1.071
157.426	3.824	43.191	0.499	8.8460231240E+002	4.1288958521E+002	-7.8757826575E+001	0.992	0.806	1.062
158.000	3.739	43.474	0.488	8.4016329319E+002	3.9558478753E+002	-7.4763941489E+001	0.992	0.797	1.048
158.280	3.692	43.607	0.478	8.1959781122E+002	3.8768671215E+002	-7.3566368745E+001	0.992	0.794	1.043
158.919	3.589	43.914	0.483	7.7238525135E+002	3.6966091711E+002	-8.0292610213E+001	0.993	0.787	1.032
158.956	3.584	43.933	0.522	7.6942105908E+002	3.6853034121E+002	-8.0564413051E+001	0.994	0.786	1.031
159.596	3.461	44.266	0.550	7.1901057377E+002	3.4934614699E+002	-8.2324697634E+001	0.996	0.780	1.021
160.235	3.374	44.637	0.588	6.6414065748E+002	3.2842186389E+002	-8.9759178683E+001	0.998	0.774	1.011
160.394	3.359	44.736	0.606	6.4971812235E+002	3.2290131402E+002	-8.9933128908E+001	0.999	0.772	1.009
161.033	3.241	45.120	0.603	5.9428951375E+002	3.0162979355E+002	-8.5661171058E+001	1.002	0.767	1.001
161.673	3.125	45.507	0.609	5.4017089352E+002	2.8062757746E+002	-8.4798223339E+001	1.004	0.762	0.994
161.941	3.080	45.673	0.612	5.1740116150E+002	2.7170943192E+002	-8.3518491695E+001	1.004	0.760	0.992
162.581	2.907	46.062	0.611	4.6605098504E+002	2.5102897622E+002	-7.9695346192E+001	1.001	0.756	0.987
162.800	2.850	46.198	0.607	4.4860579281E+002	2.4382679324E+002	-7.7928465064E+001	1.000	0.754	0.986
163.439	2.673	46.584	0.614	4.0167689451E+002	2.2335907471E+002	-7.6995091480E+001	0.988	0.750	0.983
163.561	2.647	46.665	0.709	3.9219582099E+002	2.1898728345E+002	-7.7846599105E+001	0.984	0.749	0.983
164.201	2.496	47.124	0.761	3.4186992122E+002	1.9430396894E+002	-7.9227689570E+001	0.952	0.745	0.983
164.840	2.401	47.638	0.818	2.9087600792E+002	1.6656362625E+002	-7.8335483729E+001	0.894	0.742	0.988
165.466	2.325	48.159	0.831	2.4271823456E+002	1.3855550823E+002	-7.4063840760E+001	0.827	0.741	0.996
166.106	2.205	48.690	0.817	1.9724643128E+002	1.1033412360E+002	-6.7010862203E+001	0.752	0.743	1.010
166.745	2.070	49.204	0.767	1.5702183133E+002	8.4361252969E+001	-5.6836161869E+001	0.672	0.749	1.030
167.384	1.886	49.670	0.728	1.2456187709E+002	6.3028482750E+001	-4.6479288180E+001	0.582	0.762	1.059
167.600	1.823	49.827	0.746	1.1485259354E+002	5.6797950146E+001	-4.3696218702E+001	0.530	0.770	1.074
168.239	1.654	50.308	0.749	8.9450032839E+001	4.1182567548E+001	-3.2341613204E+001	0.348	0.810	1.142
168.266	1.645	50.325	0.736	8.8612166720E+001	4.0690330327E+001	-3.2078026375E+001	0.343	0.812	1.145
168.905	1.448	50.798	0.768	6.7499221856E+001	2.8750571424E+001	-3.1048488997E+001	0.229	0.868	1.238
169.544	1.288	51.308	0.794	4.8906009462E+001	1.9215087642E+001	-2.6960276595E+001	0.154	0.952	1.372
170.184	1.123	51.813	0.836	3.3021248313E+001	1.1897558781E+001	-2.5689865616E+001	0.112	1.038	1.506
170.823	1.017	52.377	0.812	1.6052692697E+001	4.8220428562E+000	-2.0725902552E+001	0.085	1.150	1.682
171.463	0.822	52.851	0.725	6.5160632739E+000	1.3870722417E+000	-6.8217341323E+000	0.065	1.269	1.867
171.510	0.796	52.875	0.581	6.2216064415E+000	1.2874334158E+000	-6.1803110810E+000	0.063	1.277	1.880
171.806	0.661	53.050	0.625	4.4706323784E+000	7.1040651391E-001	-4.8573483164E+000	0.057	1.336	1.971
172.400	0.420	53.431	0.754	2.8448119152E+000	2.2066111140E-001	-2.4311600342E+000	0.046	1.506	2.228
173.039	0.300	53.980	0.813	1.5010744935E+000	4.4436021228E-002	-1.0220125744E+000	0.041	1.803	2.561
173.126	0.250	54.021	0.742	1.4252808102E+000	3.9059588960E-002	-8.9939085347E-001	0.041	1.815	2.378
173.765	0.078	54.519	0.742	7.3935296670E-001	9.2419120838E-003	-2.2181683229E+000	0.041	0.731	1.535

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 ht(m) : Altezza linea di thrust da nodo sinistro base concio
 yt(m) : coordinata Y linea di thrust
 yt'(-) : gradiente pendenza locale linea di thrust
 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_qFEM(x)(-) : fattore di sicurezza locale stimato (locale in X) by qFEM
 FS_p-qPATH(x)(-) : fattore di sicurezza locale stimato (locale in X) by p-qPATH Procedure

TABELLA SFORZI DI TAGLIO DISTRIBUITI LUNGO SUPERFICIE INDIVIDUATA CON MINOR FS

X	dx	dl	alpha	TauStress	TauF	TauStrength	TauS
(m)	(m)	(m)	(°)	(kPa)	(kN/m)	(kPa)	(kN/m)
109.739	0.639	0.746	-30.943	-1.723	-1.284	1.935	1.442
110.378	0.022	0.025	-30.943	-3.504	-0.088	3.395	0.085
110.400	0.639	0.746	-30.943	-5.290	-3.944	4.887	3.644
111.039	0.000	0.000	-30.943	-7.018	-0.000	6.413	0.000
111.039	0.639	0.746	-30.943	-8.746	-6.520	7.618	5.680



111.679	0.031	0.036	-30.943	-10.732	-0.388	7.290	0.263
111.710	0.639	0.746	-30.943	-12.757	-9.511	21.816	16.264
112.349	0.639	0.746	-30.943	-16.632	-12.400	21.474	16.009
112.989	0.639	0.746	-30.943	-20.507	-15.289	21.204	15.808
113.628	0.639	0.746	-30.943	-24.382	-18.177	21.456	15.996
114.268	0.092	0.108	-30.943	-26.600	-2.868	19.859	2.141
114.360	0.040	0.047	-30.943	-27.004	-1.259	18.549	0.865
114.400	0.639	0.746	-30.943	-29.131	-21.718	17.433	12.997
115.039	0.161	0.187	-30.943	-31.637	-5.923	16.480	3.085
115.200	0.550	0.641	-30.943	-34.359	-22.028	13.884	8.901
115.750	0.639	0.736	-29.665	-37.949	-27.926	10.074	7.413
116.389	0.639	0.736	-29.665	-42.789	-31.487	5.059	3.723
117.029	0.639	0.736	-29.665	-47.630	-35.049	2.123	1.562
117.668	0.639	0.736	-29.665	-52.470	-38.611	0.000	0.000
118.308	0.231	0.266	-29.665	-55.765	-14.823	0.000	0.000
118.539	0.639	0.715	-26.652	-54.285	-38.837	4.922	3.521
119.178	0.639	0.715	-26.652	-58.391	-41.775	11.091	7.935
119.817	0.183	0.204	-26.652	-61.031	-12.471	16.693	3.411
120.000	0.371	0.415	-26.652	-62.882	-26.100	14.865	6.170
120.371	0.639	0.692	-22.536	-57.244	-39.629	22.993	15.917
121.010	0.639	0.692	-22.536	-60.621	-41.967	26.434	18.300
121.650	0.208	0.226	-22.536	-62.859	-14.184	30.753	6.939
121.858	0.212	0.222	-17.069	-48.637	-10.775	37.410	8.288
122.070	0.330	0.345	-17.069	-49.567	-17.111	35.449	12.237
122.400	0.639	0.669	-17.069	-51.241	-34.275	39.556	26.459
123.039	0.320	0.334	-17.069	-52.902	-17.689	41.021	13.717
123.359	0.639	0.655	-12.462	-38.338	-25.106	46.371	30.366
123.998	0.602	0.616	-12.462	-39.647	-24.423	50.314	30.995
124.600	0.084	0.086	-12.462	-40.359	-3.463	50.588	4.341
124.684	0.639	0.645	-7.654	-21.762	-14.040	56.629	36.535
125.323	0.639	0.645	-7.654	-22.278	-14.373	57.635	37.185
125.963	0.199	0.201	-7.654	-22.616	-4.552	77.700	15.640
126.162	0.639	0.641	-3.659	-5.518	-3.536	90.513	57.994
126.802	0.639	0.641	-3.659	-5.620	-3.601	112.043	71.789
127.441	0.353	0.354	-3.659	-5.700	-2.019	135.714	48.063
127.794	0.639	0.639	-0.836	7.232	4.625	147.852	94.550
128.434	0.639	0.639	-0.836	7.341	4.694	169.544	108.422
129.073	0.327	0.327	-0.836	7.423	2.426	196.467	64.205
129.400	0.467	0.467	-0.836	7.489	3.497	215.758	100.738
129.867	0.639	0.639	0.815	15.542	9.939	196.889	125.908
130.506	0.639	0.639	0.815	15.736	10.063	184.531	118.005
131.146	0.459	0.459	0.815	15.902	7.307	172.172	79.110
131.605	0.639	0.640	2.947	26.629	17.049	144.817	92.721
132.245	0.639	0.640	2.947	26.900	17.223	131.823	84.402
132.884	0.314	0.314	2.947	27.102	8.521	121.350	38.155
133.198	0.639	0.642	5.357	39.373	25.286	99.579	63.952
133.837	0.363	0.364	5.357	39.616	14.427	94.758	34.509
134.200	0.481	0.483	5.357	39.827	19.244	94.685	45.752
134.681	0.639	0.645	7.819	52.403	33.822	92.098	59.442
135.321	0.639	0.645	7.819	52.721	34.027	91.562	59.096
135.960	0.272	0.275	7.819	52.948	14.545	91.282	25.076
136.232	0.639	0.650	10.162	64.696	42.027	88.751	57.654
136.872	0.639	0.650	10.162	64.954	42.195	88.382	57.414
137.511	0.186	0.188	10.162	65.121	12.275	88.181	16.622
137.696	0.639	0.655	12.468	76.327	49.984	85.799	56.187
138.336	0.639	0.655	12.468	76.479	50.083	85.586	56.047
138.975	0.025	0.025	12.468	76.557	1.935	85.456	2.160
139.000	0.243	0.249	12.468	76.584	19.075	85.460	21.286
139.243	0.639	0.660	14.495	86.026	56.815	83.152	54.917
139.883	0.517	0.534	14.495	86.016	45.966	82.906	44.304
140.400	0.479	0.495	14.495	86.005	42.557	82.705	40.924
140.879	0.639	0.666	16.133	93.240	62.064	80.751	53.751
141.518	0.639	0.666	16.133	93.085	61.960	80.485	53.574
142.158	0.594	0.618	16.133	92.935	57.439	80.222	49.581
142.752	0.639	0.670	17.441	98.342	65.913	78.760	52.788
143.391	0.409	0.429	17.441	98.112	42.056	78.665	33.720
143.800	0.622	0.652	17.441	97.823	63.813	78.455	51.179
144.422	0.639	0.676	18.958	103.552	70.011	76.463	51.696
145.062	0.639	0.676	18.958	102.971	69.619	76.098	51.450
145.701	0.309	0.327	18.958	102.540	33.521	75.923	24.820
146.010	0.410	0.438	20.575	108.387	47.425	73.805	32.294



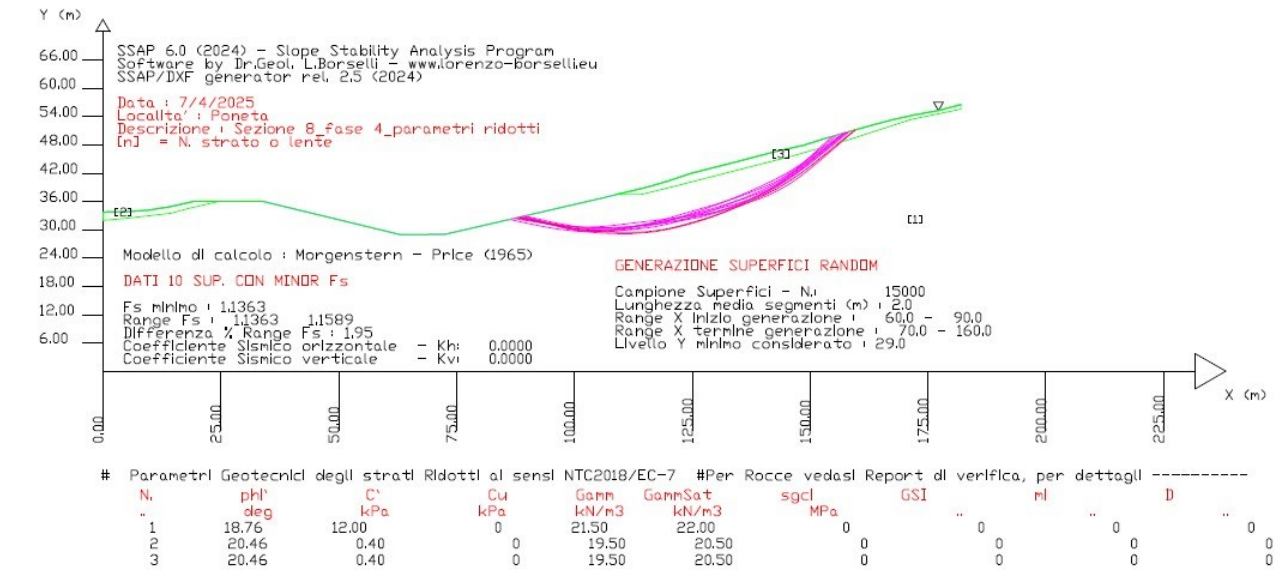
146.420	0.639	0.683	20.575	107.750	73.592	73.462	50.173
147.059	0.472	0.504	20.575	107.080	53.962	73.205	36.891
147.531	0.639	0.691	22.178	112.063	77.381	70.923	48.973
148.171	0.429	0.464	22.178	111.234	51.575	70.727	32.793
148.600	0.501	0.541	22.178	110.690	59.851	70.570	38.158
149.101	0.639	0.699	23.754	115.344	80.580	68.816	48.075
149.740	0.639	0.699	23.754	114.592	80.054	68.805	48.068
150.380	0.248	0.271	23.754	114.069	30.907	68.722	18.620
150.628	0.639	0.707	25.264	118.076	83.486	66.740	47.189
151.267	0.639	0.707	25.264	117.100	82.796	66.433	46.972
151.906	0.316	0.350	25.264	116.372	40.686	66.506	23.252
152.223	0.639	0.715	26.622	119.361	85.374	64.324	46.008
152.862	0.338	0.378	26.622	118.452	44.785	64.221	24.281
153.200	0.639	0.715	26.622	117.454	84.009	64.132	45.870
153.839	0.072	0.080	26.622	116.694	9.351	64.046	5.132
153.911	0.639	0.722	27.747	118.728	85.781	63.030	45.539
154.550	0.639	0.722	27.747	117.169	84.654	63.027	45.537
155.190	0.619	0.699	27.747	115.635	80.841	63.267	44.231
155.809	0.639	0.738	30.005	118.963	87.840	60.439	44.627
156.448	0.616	0.711	30.005	117.029	83.258	60.310	42.906
157.064	0.362	0.418	30.005	115.523	48.314	59.770	24.997
157.426	0.574	0.682	32.695	118.741	80.948	55.902	38.109
158.000	0.280	0.333	32.695	117.078	38.954	55.290	18.396
158.280	0.639	0.760	32.695	115.304	87.609	54.652	41.525
158.919	0.037	0.044	32.695	114.003	4.978	55.547	2.426
158.956	0.639	0.786	35.551	116.286	91.392	51.111	40.169
159.596	0.639	0.786	35.551	113.218	88.980	51.406	40.401
160.235	0.159	0.195	35.551	111.302	21.744	52.280	10.213
160.394	0.639	0.814	38.193	111.534	90.742	48.027	39.074
161.033	0.639	0.814	38.193	107.868	87.760	47.486	38.634
161.673	0.268	0.341	38.193	105.267	35.936	47.779	16.311
161.941	0.639	0.851	41.320	103.859	88.425	43.209	36.788
162.581	0.219	0.292	41.320	100.897	29.486	43.587	12.738
162.800	0.639	0.851	41.320	97.853	83.311	42.480	36.167
163.439	0.122	0.163	41.320	95.128	15.459	44.242	7.190
163.561	0.639	0.884	43.638	92.456	81.687	42.061	37.162
164.201	0.639	0.884	43.638	87.307	77.138	43.752	38.656
164.840	0.626	0.865	43.638	82.213	71.092	44.401	38.395
165.466	0.639	0.912	45.475	76.756	69.992	42.861	39.084
166.106	0.639	0.912	45.475	71.143	64.874	41.605	37.938
166.745	0.639	0.912	45.475	65.530	59.755	38.778	35.361
167.384	0.216	0.307	45.475	61.777	18.994	37.575	11.553
167.600	0.639	0.912	45.475	57.900	52.798	34.943	31.863
168.239	0.026	0.037	45.475	54.849	2.046	33.557	1.251
168.266	0.639	0.926	46.326	51.576	47.757	31.838	29.481
168.905	0.639	0.926	46.326	45.497	42.129	29.974	27.755
169.544	0.639	0.926	46.326	39.419	36.500	28.190	26.103
170.184	0.639	0.926	46.326	33.341	30.872	27.641	25.594
170.823	0.639	0.926	46.326	27.262	25.244	25.100	23.242
171.463	0.047	0.069	46.326	23.998	1.644	23.915	1.639
171.510	0.296	0.429	46.326	22.317	9.568	24.112	10.338
171.806	0.594	0.860	46.326	18.125	15.589	22.089	18.999
172.400	0.639	0.926	46.326	12.177	11.276	19.649	18.194
173.039	0.087	0.125	46.326	8.601	1.078	18.229	2.284
173.126	0.639	0.926	46.326	5.311	4.917	2.691	2.492
173.765	0.273	0.395	46.326	1.223	0.484	1.014	0.401

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 dx(m) : Larghezza concio
 dl(m) : lunghezza base concio
 alpha() : Angolo pendenza base concio
 TauStress(kPa) : Sforzo di taglio su base concio
 TauF (kN/m) : Forza di taglio su base concio
 TauStrength(kPa) : Resistenza al taglio su base concio
 TauS (kN/m) : Forza resistente al taglio su base concio



11 SEZIONE 8 FASE FINALE - STATICO



Report Generale Risultati di Verifica di stabilità'

SSAP 6.0 - Slope Stability Analysis Program (1991,2024)

WWW.SSAP.EU

Build No. 14533

BY

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Ricercatore Associato CNR-IRPI, Perugia, Italia

Ultima Revisione struttura tabelle del report: 21 Maggio 2024

File report: C:\Users\facco\OneDrive\Documents\Lavoro\Lavori STGA\Poneta\Sezioni\Risultati SSAP\Sez8_fase4_parametri ridotti.txt

Data: 7/4/2025

Località: Poneta

Descrizione: Sezione 8_fase 4_parametri ridotti

Modello pendio: Sezione 8_fase 4.mod

----- 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
0.03 33.71	0.03 33.71	108.84 37.43	- -
1.00 33.80	1.00 33.80	110.60 37.85	- -
4.80 33.80	4.80 33.80	115.40 39.00	- -
9.60 34.14	9.60 34.14	120.00 40.37	- -
14.40 34.88	14.40 34.88	124.60 41.92	- -
19.20 36.01	19.20 36.01	129.40 43.17	- -
24.58 36.01	24.58 36.01	134.20 44.38	- -
29.20 36.01	18.02 34.49	139.00 45.64	- -
34.00 36.00	14.50 33.50	143.80 46.86	- -
58.20 30.15	4.30 32.35	148.60 47.93	- -
63.00 29.01	0.03 32.00	153.20 49.38	- -
67.80 29.01	0.03 33.71	158.00 50.74	- -
72.60 29.03	- -	162.80 52.11	- -
105.80 36.71	- -	167.60 53.36	- -
108.84 37.43	- -	172.40 54.43	- -
110.60 37.85	- -	177.20 55.30	- -
115.40 39.00	- -	182.00 56.54	- -
120.00 40.37	- -	182.00 55.59	- -



124.60	41.92	-	-	171.51	53.44	-	-
129.40	43.17	-	-	158.28	49.13	-	-
134.20	44.38	-	-	146.42	45.68	-	-
139.00	45.64	-	-	122.07	39.43	-	-
143.80	46.86	-	-	114.36	37.54	-	-
148.60	47.93	-	-	108.84	37.43	-	-
153.20	49.38	-	-	-	-	-	-
158.00	50.74	-	-	-	-	-	-
162.80	52.11	-	-	-	-	-	-
167.60	53.36	-	-	-	-	-	-
172.40	54.43	-	-	-	-	-	-
177.20	55.30	-	-	-	-	-	-
182.00	56.54	-	-	-	-	-	-

SUP FALDA

X Y

0.03	33.71
1.00	33.80
4.80	33.80
9.60	34.14
14.40	34.88
19.20	36.01
24.58	36.01
29.20	36.01
34.00	36.00
58.20	30.15
63.00	29.01
67.80	29.01
72.60	29.03
105.80	36.71
108.84	37.43
110.60	37.85
115.40	39.00
120.00	40.37
124.60	41.92
129.40	43.17
134.20	44.38
139.00	45.64
143.80	46.86
148.60	47.93
153.20	49.38
158.00	50.74
162.80	52.11
167.60	53.36
172.40	54.43
177.20	55.30
182.00	56.54

----- GESTIONE ACQUIFERI -----

Strati esclusi da acquifero e effetto pressione dei pori:

STRATO 2

STRATO 3

Esclusione sovraccarico pendio sommerso: NON ATTIVATA

EFFETTO TENSION CRACK IN TESTA RIEMPITO DI ACQUA: ----> DISATTIVATO

In caso di superfici con tension crack in testa, la frattura di tensione puo' venir viene considerata completamente riempita di acqua per la sua intera profondita'.

Viene quindi considerato una forza in testa, prodotta dalla pressione idrostatica.

La forza applicata ha un effetto destabilizzante aggiuntivo alle altre forze destabilizzanti agenti.

Peso unitario fluido (kN/m³): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A 0

Coefficiente K 0.000800

Pressione minima fluidi Uo_Min (kPa) 0.01

Coefficiente di soprapressione oltre pressione idrostatica 1.00

Limitazione dissipazione a Pressione Idrostatica = ATTIVA



STABILITE CONDIZIONI PER LA VERIFICA CON SOVRAPPRESSIONE ACQUIFERI CON DISSIPAZIONE IN DIREZIONE DELLA SUPERFICIE

CALCOLO EFFETTO DI FILTRAZIONE NON ATTIVATO

----- PARAMETRI GEOMECCANICI DI PROGETTO RIDOTTI (ai sensi NTC2018/EC-7) - Riduzione attivata in Tutti gli Strati

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	18.76	12.00	0.00	21.50	22.00	1.805	0.00	0.00	0.00	0.00
STRATO 2	20.46	0.40	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00
STRATO 3	20.46	0.40	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00

LEGENDA: 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)

---- SOLO Per AMMASSI ROCCIOSI FRATTURATI - Parametri Criterio di Rottura di Hoek et al.(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)

NOTA BENE:

FATTORI DI RIDUZIONE NTC2018/EC-7: gammaPHI=1.25, gammaC=1.25 e gammaCu=1.4 - ATTIVATI (Per Tutti gli Strati)

Ai sensi delle NTC2018/EC-7 i parametri di resistenza al taglio caratteristici sono stati ridotti

con i fattori riduttivi (tab. 6.2.II delle NTC 2018) per ottenere i parametri di progetto.

Nel caso di ammassi rocciosi fratturati, dai parametri sopra indicati in tabella,

relativi al criterio di rottura Hoek et al. (2002), sono stati ricavati i parametri equivalenti

geomeccanici CARATTERISTICI locali di resistenza al taglio dell'ammasso roccioso considerato (c',Phi')

tali parametri equivalenti sono stati infine RIDOTTI, per ricavare i valori di PROGETTO,

tramite i coefficienti parziali riduttivi, di cui alla tab. 6.2.II delle NTC 2018

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

*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI

MOTORE DI RICERCA: SNIFF RANDOM SEARCH - Borselli (1997,2021)

FILTRAGGIO SUPERFICI : ATTIVATO

COORDINATE X1,X2,Y OSTACOLO : 0.00 0.00 0.00

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

INTERVALLO ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 60.00 90.00

LIVELLO MINIMO CONSIDERATO (Ymin): 29.00

INTERVALLO ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 70.00 160.00

TOTALE SUPERFICI GENERATE : 15000

*NOTA IMPORTANTE: La lunghezza media dei segmenti non viene considerata nel caso

di uso del motore di ricerca NEW RANOM SEARCH

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

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

METODO DI ESPLORAZIONE CAMPO VALORI (lambda0,Fs0) ADOTTATO : A (rapido)

COEFFICIENTE SISMICO UTILIZZATO Kh : 0.0000

COEFFICIENTE SISMICO UTILIZZATO Kv (assunto Positivo): 0.0000

COEFFICIENTE c=Kv/Kh UTILIZZATO : 0.5000

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

X(m) Y(m) #Superficie N.1 - #FS_minimo #Fattore di sicurezza(FS)= 1.1363 #Lambda= 0.3707
 88.079 32.611



94.327	31.321
97.440	30.714
99.609	30.340
101.504	30.060
103.258	29.854
104.968	29.695
106.744	29.572
108.609	29.484
110.674	29.427
112.480	29.431
114.194	29.499
115.819	29.631
117.544	29.842
119.170	30.108
120.883	30.458
122.685	30.894
124.735	31.453
126.600	31.997
128.384	32.555
130.106	33.135
131.862	33.767
133.584	34.427
135.364	35.151
137.224	35.948
139.259	36.859
141.056	37.731
142.775	38.644
144.414	39.596
146.150	40.690
147.990	41.968
150.128	43.564
153.240	46.027
159.590	51.194

X(m)	Y(m)	#Superficie N. 2 #Fattore di sicurezza(FS)= 1.1413 #Lambda= 0.2880
89.415	32.920	
95.608	31.543	
98.596	30.934	
100.635	30.596	
102.368	30.387	
104.031	30.279	
105.581	30.244	
107.214	30.279	
108.924	30.381	
110.871	30.560	
112.686	30.746	
114.431	30.943	
116.134	31.156	
117.838	31.389	
119.535	31.641	
121.268	31.918	
123.059	32.225	
124.961	32.570	
126.678	32.929	
128.336	33.329	
129.931	33.769	
131.607	34.289	
133.220	34.847	
134.909	35.490	
136.694	36.226	
138.706	37.111	
140.464	37.949	
142.132	38.822	
143.716	39.730	
145.388	40.774	
147.159	41.994	
149.218	43.521	
152.218	45.881	
158.280	50.787	
158.280	50.820	



X(m)	Y(m)	#Superficie N. 3 #Fattore di sicurezza(FS)= 1.1433 #Lambda= 0.2995
88.457	32.698	
94.694	31.224	
97.677	30.580	
99.700	30.229	
101.406	30.021	
103.059	29.922	
104.589	29.905	
106.215	29.967	
107.933	30.108	
109.927	30.341	
111.748	30.580	
113.483	30.837	
115.162	31.115	
116.858	31.427	
118.517	31.761	
120.210	32.132	
121.941	32.540	
123.772	33.000	
125.527	33.459	
127.243	33.926	
128.935	34.406	
130.640	34.908	
132.351	35.432	
134.106	35.990	
135.944	36.594	
137.927	37.264	
139.616	37.917	
141.223	38.634	
142.730	39.411	
144.378	40.370	
146.085	41.513	
148.110	43.010	
151.105	45.401	
157.342	50.553	

X(m)	Y(m)	#Superficie N. 4 #Fattore di sicurezza(FS)= 1.1449 #Lambda= 0.9111
88.394	32.684	
94.465	31.199	
97.457	30.510	
99.527	30.091	
101.320	29.785	
102.999	29.564	
104.615	29.401	
106.305	29.282	
108.083	29.206	
110.081	29.169	
111.838	29.185	
113.506	29.255	
115.091	29.381	
116.758	29.575	
118.345	29.819	
120.015	30.136	
121.776	30.531	
123.775	31.033	
125.550	31.527	
127.238	32.051	
128.850	32.607	
130.526	33.243	
132.138	33.912	
133.819	34.667	
135.581	35.515	
137.543	36.512	
139.305	37.462	
140.992	38.433	
142.613	39.428	
144.295	40.528	
146.103	41.801	

148.182 43.349
 151.180 45.690
 157.223 50.520

X(m) Y(m) #Superficie N. 5 #Fattore di sicurezza(FS)= 1.1494 #Lambda= 0.3003
 89.248 32.881
 94.244 31.373
 96.642 30.697
 98.270 30.307
 99.646 30.045
 100.976 29.875
 102.214 29.776
 103.534 29.734
 104.942 29.750
 106.590 29.824
 108.037 29.925
 109.402 30.060
 110.700 30.230
 112.045 30.451
 113.325 30.702
 114.647 31.003
 116.007 31.352
 117.490 31.772
 118.935 32.183
 120.347 32.585
 121.747 32.986
 123.126 33.381
 124.516 33.781
 125.910 34.184
 127.318 34.592
 128.737 35.004
 130.111 35.420
 131.470 35.849
 132.815 36.291
 134.182 36.759
 135.548 37.245
 136.949 37.762
 138.412 38.321
 139.990 38.942
 141.355 39.541
 142.658 40.185
 143.889 40.871
 145.220 41.694
 146.611 42.664
 148.248 43.912
 150.653 45.876
 155.600 50.046
 155.600 50.060

X(m) Y(m) #Superficie N. 6 #Fattore di sicurezza(FS)= 1.1507 #Lambda= 0.3342
 88.582 32.727
 94.645 31.472
 97.635 30.895
 99.706 30.551
 101.502 30.308
 103.181 30.144
 104.801 30.035
 106.494 29.971
 108.278 29.952
 110.284 29.976
 112.036 30.050
 113.696 30.179
 115.269 30.364
 116.931 30.626
 118.499 30.935
 120.141 31.324
 121.857 31.792
 123.784 32.377
 125.585 32.944



127.319	33.514
129.012	34.094
130.712	34.701
132.405	35.329
134.138	35.997
135.938	36.714
137.867	37.505
139.574	38.272
141.216	39.083
142.783	39.937
144.451	40.927
146.215	42.088
148.269	43.547
151.262	45.807
157.383	50.565

X(m)	Y(m)	#Superficie N. 7 #Fattore di sicurezza(FS)= 1.1522 #Lambda= 0.2977
89.296	32.892	
95.304	31.170	
98.129	30.427	
100.019	30.028	
101.586	29.797	
103.135	29.690	
104.534	29.678	
106.040	29.760	
107.640	29.931	
109.535	30.213	
111.298	30.487	
112.978	30.761	
114.616	31.042	
116.235	31.334	
117.846	31.637	
119.471	31.956	
121.119	32.292	
122.812	32.650	
124.456	33.012	
126.076	33.385	
127.681	33.769	
129.299	34.171	
130.936	34.595	
132.621	35.047	
134.402	35.542	
136.347	36.098	
137.929	36.643	
139.410	37.272	
140.769	37.976	
142.306	38.913	
143.861	40.046	
145.748	41.598	
148.591	44.154	
154.620	49.782	

X(m)	Y(m)	#Superficie N. 8 #Fattore di sicurezza(FS)= 1.1575 #Lambda= 0.3205
86.299	32.199	
90.679	31.248	
92.877	30.792	
94.415	30.502	
95.767	30.274	
97.008	30.097	
98.223	29.948	
99.475	29.818	
100.774	29.708	
102.183	29.612	
103.457	29.554	
104.682	29.533	
105.862	29.547	
107.090	29.597	
108.271	29.680	
109.497	29.803	



110.774	29.965
112.186	30.178
113.484	30.397
114.733	30.632
115.945	30.887
117.183	31.173
118.387	31.477
119.619	31.814
120.879	32.185
122.222	32.604
123.514	33.017
124.779	33.433
126.028	33.854
127.279	34.286
128.525	34.727
129.783	35.184
131.061	35.659
132.379	36.159
133.645	36.655
134.890	37.162
136.119	37.679
137.365	38.221
138.602	38.778
139.863	39.364
141.163	39.987
142.540	40.664
143.802	41.321
145.026	41.999
146.212	42.699
147.446	43.471
148.777	44.365
150.303	45.447
152.501	47.078
156.920	50.434

X(m)	Y(m)	#Superficie N. 9	#Fattore di sicurezza(FS)= 1.1577	#Lambda= 0.2931
87.513	32.480			
93.692	31.483			
96.752	31.029			
98.875	30.767			
100.723	30.591			
102.443	30.486			
104.097	30.430			
105.809	30.419			
107.581	30.451			
109.522	30.528			
111.331	30.626			
113.081	30.748			
114.788	30.896			
116.521	31.074			
118.231	31.278			
119.988	31.517			
121.811	31.793			
123.777	32.119			
125.542	32.460			
127.239	32.843			
128.868	33.267			
130.577	33.773			
132.223	34.318			
133.950	34.951			
135.778	35.680			
137.849	36.561			
139.640	37.395			
141.335	38.269			
142.938	39.182			
144.639	40.247			
146.433	41.494			
148.528	43.070			
151.589	45.522			
157.867	50.702			



X(m)	Y(m)	#Superficie N.10	#Fattore di sicurezza(FS)= 1.1589	#Lambda= 0.2706
87.120	32.389			
93.583	31.382			
96.728	30.945			
98.886	30.717			
100.736	30.594			
102.492	30.561			
104.141	30.591			
105.858	30.686			
107.630	30.844			
109.597	31.077			
111.507	31.304			
113.366	31.524			
115.208	31.743			
117.015	31.957			
118.853	32.176			
120.702	32.395			
122.593	32.620			
124.526	32.849			
126.304	33.105			
128.040	33.405			
129.723	33.747			
131.488	34.159			
133.204	34.614			
135.006	35.147			
136.926	35.770			
139.112	36.531			
140.934	37.255			
142.640	38.042			
144.225	38.889			
145.955	39.941			
147.742	41.194			
149.867	42.843			
153.019	45.486			
159.599	51.196			

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

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR FS *
 # Analisi Deficit in riferimento a FS(progetto) = 1.200

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.136	2731.0	2403.5	-153.2	Deficit
2	1.141	2451.5	2147.9	-126.0	Deficit
3	1.143	2392.6	2092.7	-118.6	Deficit
4	1.145	2634.0	2300.6	-126.7	Deficit
5	1.149	2260.4	1966.6	-99.5	Deficit
6	1.151	2427.4	2109.4	-103.9	Deficit
7	1.152	2341.0	2031.8	-97.2	Deficit
8	1.158	2394.3	2068.5	-87.9	Deficit
9	1.158	2514.6	2172.1	-91.9	Deficit
10	1.159	2566.3	2214.4	-91.0	Deficit

Esito analisi: DEFICIT di RESISTENZA!

Valore massimo di DEFICIT di RESISTENZA(kN/m): -153.2

Note: FTR --> Forza totale Resistente lungo la superficie di scivolamento
 FTA --> Forza totale Agente lungo la superficie di scivolamento

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

TABELLA PARAMETRI CONCI DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X	dx	alpha	W	ru	U	phi'	(c',Cu)
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(m)	(m)	(°)	(kN/m)	(-)	(kPa)	(°)	(kPa)
88.079	0.698	-11.66	2.29	0.00	0.00	18.76	12.00
88.777	0.698	-11.66	7.04	0.45	4.50	18.76	12.00
89.475	0.698	-11.66	11.74	0.45	7.50	18.76	12.00
90.174	0.698	-11.66	16.43	0.45	10.49	18.76	12.00
90.872	0.698	-11.66	21.12	0.45	13.49	18.76	12.00
91.570	0.698	-11.66	25.82	0.45	16.53	18.76	12.00
92.268	0.698	-11.66	30.51	0.45	19.51	18.76	12.00
92.966	0.698	-11.66	35.21	0.45	22.46	18.76	12.00
93.665	0.663	-11.66	37.77	0.45	25.59	18.76	12.00
94.327	0.698	-11.03	44.30	0.45	28.47	18.76	12.00
95.026	0.698	-11.03	48.87	0.45	31.41	18.76	12.00
95.724	0.698	-11.03	53.44	0.45	34.50	18.76	12.00
96.422	0.698	-11.03	58.01	0.45	37.44	18.76	12.00
97.120	0.320	-11.03	28.13	0.45	40.16	18.76	12.00
97.440	0.698	-9.79	64.56	0.45	41.46	18.76	12.00
98.139	0.698	-9.79	68.89	0.45	44.07	18.76	12.00
98.837	0.698	-9.79	73.22	0.45	46.55	18.76	12.00
99.535	0.074	-9.79	7.96	0.45	49.04	18.76	12.00
99.609	0.698	-8.41	77.88	0.45	49.28	18.76	12.00
100.307	0.698	-8.41	81.94	0.45	51.72	18.76	12.00
101.005	0.499	-8.41	61.06	0.45	54.31	18.76	12.00
101.504	0.698	-6.68	88.75	0.45	56.21	18.76	12.00
102.202	0.698	-6.68	92.49	0.45	58.74	18.76	12.00
102.900	0.357	-6.68	48.76	0.45	61.29	18.76	12.00
103.258	0.698	-5.32	98.01	0.45	62.57	18.76	12.00
103.956	0.698	-5.32	101.49	0.45	64.93	18.76	12.00
104.654	0.314	-5.32	46.74	0.45	67.01	18.76	12.00
104.968	0.698	-3.96	106.40	0.45	67.90	18.76	12.00
105.666	0.134	-3.96	20.81	0.45	69.94	18.76	12.00
105.800	0.698	-3.96	110.28	0.45	70.32	18.76	12.00
106.498	0.246	-3.96	39.64	0.45	72.35	18.76	12.00
106.744	0.698	-2.70	114.60	0.45	73.08	18.76	12.00
107.442	0.698	-2.70	117.64	0.45	75.12	18.76	12.00
108.141	0.468	-2.70	80.56	0.45	76.94	18.76	12.00
108.609	0.231	-1.60	40.33	0.45	78.13	18.76	12.00
108.840	0.698	-1.60	123.44	0.45	78.74	18.76	12.00
109.538	0.182	-1.60	32.57	0.45	80.40	18.76	12.00
109.720	0.698	-1.60	126.71	0.45	80.80	18.76	12.00
110.418	0.182	-1.60	33.42	0.45	82.41	18.76	12.00
110.600	0.074	-1.60	13.67	0.45	82.78	18.76	12.00
110.674	0.698	0.15	130.10	0.45	82.94	18.76	12.00
111.372	0.698	0.15	132.37	0.45	84.45	18.76	12.00
112.070	0.410	0.15	78.70	0.45	85.95	18.76	12.00
112.480	0.520	2.27	100.94	0.45	86.86	18.76	12.00
113.000	0.698	2.27	137.18	0.45	87.97	18.76	12.00
113.698	0.496	2.27	98.62	0.45	89.47	18.76	12.00
114.194	0.166	4.63	33.13	0.45	90.50	18.76	12.00
114.360	0.698	4.63	140.64	0.45	90.81	18.76	12.00
115.058	0.342	4.63	69.47	0.45	92.19	18.76	12.00
115.400	0.419	4.63	85.89	0.45	92.73	18.76	12.00
115.819	0.698	6.97	144.60	0.45	93.45	18.76	12.00
116.518	0.698	6.97	146.42	0.45	94.62	18.76	12.00
117.216	0.328	6.97	69.46	0.45	95.71	18.76	12.00
117.544	0.156	9.28	33.15	0.45	96.18	18.76	12.00
117.700	0.698	9.28	149.18	0.45	96.39	18.76	12.00
118.398	0.698	9.28	150.56	0.45	97.40	18.76	12.00
119.096	0.074	9.28	15.98	0.45	98.27	18.76	12.00
119.170	0.698	11.57	151.86	0.45	98.36	18.76	12.00
119.868	0.132	11.57	28.74	0.45	99.11	18.76	12.00
120.000	0.698	11.57	153.15	0.45	99.23	18.76	12.00
120.698	0.185	11.57	40.74	0.45	99.90	18.76	12.00
120.883	0.698	13.60	154.60	0.45	100.07	18.76	12.00
121.581	0.489	13.60	108.79	0.45	100.70	18.76	12.00
122.070	0.230	13.60	51.34	0.45	101.09	18.76	12.00
122.300	0.385	13.60	86.20	0.45	101.24	18.76	12.00
122.685	0.698	15.25	156.80	0.45	101.49	18.76	12.00
123.383	0.698	15.25	157.40	0.45	101.89	18.76	12.00
124.082	0.518	15.25	117.26	0.45	102.18	18.76	12.00
124.600	0.135	15.25	30.54	0.45	102.31	18.76	12.00
124.735	0.698	16.25	157.94	0.45	102.33	18.76	12.00



125.433	0.698	16.25	157.60	0.45	102.33	18.76	12.00
126.131	0.469	16.25	105.71	0.46	102.20	18.76	12.00
126.600	0.400	17.39	89.88	0.46	102.04	18.76	12.00
127.000	0.698	17.39	156.59	0.46	101.87	18.76	12.00
127.698	0.686	17.39	153.22	0.46	101.46	18.76	12.00
128.384	0.698	18.60	155.33	0.46	100.96	18.76	12.00
129.082	0.318	18.60	70.47	0.46	100.43	18.76	12.00
129.400	0.698	18.60	154.10	0.46	100.18	18.76	12.00
130.098	0.008	18.60	1.82	0.46	99.60	18.76	12.00
130.106	0.698	19.80	153.06	0.46	99.59	18.76	12.00
130.805	0.698	19.80	151.91	0.46	98.96	18.76	12.00
131.503	0.297	19.80	64.30	0.46	98.29	18.76	12.00
131.800	0.062	19.80	13.35	0.46	98.01	18.76	12.00
131.862	0.698	20.98	150.04	0.46	97.95	18.76	12.00
132.560	0.698	20.98	148.64	0.46	97.17	18.76	12.00
133.258	0.326	20.98	68.91	0.46	96.29	18.76	12.00
133.584	0.616	22.13	129.26	0.46	95.85	18.76	12.00
134.200	0.698	22.13	145.05	0.46	94.98	18.76	12.00
134.898	0.466	22.13	95.87	0.46	93.87	18.76	12.00
135.364	0.698	23.19	142.34	0.46	93.04	18.76	12.00
136.062	0.538	23.19	108.46	0.46	91.73	18.76	12.00
136.600	0.624	23.19	124.38	0.46	90.81	18.76	12.00
137.224	0.698	24.11	137.48	0.46	89.62	18.76	12.00
137.922	0.698	24.11	135.49	0.46	88.25	18.76	12.00
138.620	0.380	24.11	72.92	0.46	86.95	18.76	12.00
139.000	0.259	24.11	49.40	0.46	86.27	18.76	12.00
139.259	0.698	25.90	131.41	0.46	85.74	18.76	12.00
139.957	0.698	25.90	128.93	0.46	84.25	18.76	12.00
140.656	0.400	25.90	72.77	0.46	82.66	18.76	12.00
141.056	0.344	27.96	61.89	0.46	81.69	18.76	12.00
141.400	0.698	27.96	123.32	0.46	80.88	18.76	12.00
142.098	0.677	27.96	116.69	0.46	78.76	18.76	12.00
142.775	0.698	30.15	117.22	0.46	76.30	18.76	12.00
143.473	0.327	30.15	53.69	0.46	73.74	18.76	12.00
143.800	0.614	30.15	98.70	0.46	72.52	18.76	12.00
144.414	0.698	32.23	108.32	0.46	70.21	18.76	12.00
145.113	0.698	32.23	103.99	0.46	67.60	18.76	12.00
145.811	0.339	32.23	48.89	0.46	65.14	18.76	12.00
146.150	0.050	34.79	7.19	0.46	63.94	18.76	12.00
146.200	0.220	34.79	31.06	0.46	63.77	18.76	12.00
146.420	0.698	34.79	95.29	0.46	62.98	18.76	12.00
147.118	0.698	34.79	90.31	0.46	60.08	18.76	12.00
147.816	0.173	34.79	21.64	0.46	57.12	18.76	12.00
147.990	0.610	36.73	73.58	0.46	56.39	18.76	12.00
148.600	0.698	36.73	79.43	0.46	53.85	18.76	12.00
149.298	0.698	36.73	74.78	0.46	50.35	18.76	12.00
149.996	0.132	36.73	13.58	0.47	46.71	18.76	12.00
150.128	0.698	38.36	69.01	0.47	46.01	18.76	12.00
150.826	0.074	38.36	6.98	0.47	42.46	18.76	12.00
150.900	0.698	38.36	63.33	0.47	42.16	18.76	12.00
151.598	0.698	38.36	58.19	0.47	38.62	18.76	12.00
152.296	0.698	38.36	53.06	0.47	34.57	18.76	12.00
152.995	0.205	38.36	14.63	0.46	30.47	18.76	12.00
153.200	0.040	38.36	2.79	0.46	29.31	18.76	12.00
153.240	0.698	39.14	45.83	0.45	29.08	18.76	12.00
153.938	0.698	39.14	40.15	0.43	24.39	18.76	12.00
154.636	0.698	39.14	34.47	0.39	19.32	18.76	12.00
155.334	0.266	39.14	11.62	0.35	14.41	18.76	12.00
155.600	0.698	39.14	26.63	0.33	12.41	18.76	12.00
156.298	0.073	39.14	2.47	0.25	6.75	18.76	12.00
156.372	0.698	39.14	20.68	0.00	0.00	20.46	0.40
157.070	0.698	39.14	15.63	0.00	0.00	20.46	0.40
157.768	0.232	39.14	4.08	0.00	0.00	20.46	0.40
158.000	0.280	39.14	4.18	0.00	0.00	20.46	0.40
158.280	0.698	39.14	6.91	0.00	0.00	20.46	0.40
158.978	0.612	39.14	1.93	0.00	0.00	20.46	0.40

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio

dx(m) : Larghezza concio



α () : Angolo pendenza base concio
 W (kN/m) : Forza peso concio
 ru (-) : Coefficiente locale pressione interstiziale
 U (kPa) : Pressione totale dei pori base concio
 ϕ i'() : Angolo di attrito efficace base concio
 c'/Cu (kPa) : Coesione efficace o Resistenza al taglio in condizioni non drenate

TABELLA DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	ht (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (--)	FS_qFEM (--)	FS_p-qPATH (--)			
88.079	0.000	32.611	-0.062	0.0000000000E+000	0.0000000000E+000	0.0000000000E+000	4.0783961704E+000	0.038	11.758	10.585		
88.777	0.101	32.567	-0.062	2.7259669160E+000	-1.0086123425E-002	3.7301554326E+000	0.038	11.758	10.585			
89.475	0.202	32.524	-0.062	5.2087920106E+000	-4.5574604004E-002	4.6019567933E+000	0.038	16.300	13.071			
90.174	0.303	32.481	-0.062	9.1521430396E+000	-1.7909264362E-001	7.2962009979E+000	0.040	14.844	11.837			
90.872	0.403	32.438	-0.062	1.5397212883E+001	-5.8147780414E-001	1.2283785160E+001	0.048	11.677	9.849			
91.570	0.504	32.394	-0.062	2.6305230399E+001	-1.4869089398E+000	1.8263604236E+001	0.061	9.180	8.096			
92.268	0.605	32.351	-0.060	4.0900524353E+001	-3.0735840831E+000	2.1786530763E+001	0.076	7.435	6.768			
92.966	0.707	32.309	-0.061	5.6727959271E+001	-5.1094023951E+000	2.4714681502E+001	0.094	6.008	5.655			
93.665	0.807	32.265	-0.062	7.5412125244E+001	-7.8679427497E+000	2.8041405532E+001	0.122	4.647	4.584			
94.327	0.904	32.225	-0.059	9.4803526020E+001	-1.1120881206E+001	3.0200940837E+001	0.156	3.636	3.771			
95.026	1.001	32.186	-0.058	1.1658383218E+002	-1.5248628472E+001	3.3829317711E+001	0.202	2.926	3.144			
95.724	1.096	32.145	-0.056	1.4204281216E+002	-2.0862572222E+001	3.6575896280E+001	0.251	2.469	2.689			
96.422	1.195	32.108	-0.050	1.6765844282E+002	-2.7087647073E+001	3.6389760504E+001	0.295	2.171	2.372			
97.120	1.298	32.075	-0.047	1.9285750265E+002	-3.3808930121E+001	3.7672575706E+001	0.336	1.965	2.146			
97.440	1.346	32.060	-0.042	2.0515031817E+002	-3.7333427129E+001	3.7809906346E+001	0.355	1.886	2.057			
98.139	1.438	32.032	-0.037	2.3065437482E+002	-4.5092885902E+001	3.6349173387E+001	0.393	1.755	1.907			
98.837	1.535	32.008	-0.033	2.5590833277E+002	-5.3328840417E+001	3.7002019557E+001	0.429	1.656	1.790			
99.535	1.634	31.986	-0.030	2.8232402434E+002	-6.2577946066E+001	3.7795379042E+001	0.464	1.576	1.696			
99.609	1.644	31.985	-0.024	2.8510269976E+002	-6.3602845591E+001	3.7803161078E+001	0.467	1.569	1.688			
100.307	1.731	31.968	-0.022	3.1157541974E+002	-7.3523357231E+001	3.9907636761E+001	0.501	1.510	1.615			
101.005	1.820	31.954	-0.018	3.4082975545E+002	-8.5085836559E+001	4.3137938056E+001	0.537	1.464	1.558			
101.504	1.887	31.947	-0.011	3.6279989623E+002	-9.4077772134E+001	4.3860949410E+001	0.564	1.442	1.527			
102.202	1.963	31.941	-0.004	3.9326527935E+002	-1.0705007685E+002	4.4341595190E+001	0.600	1.435	1.510			
102.900	2.045	31.941	0.001	4.2471853499E+002	-1.2085555202E+002	4.5141837112E+001	0.636	1.461	1.521			
103.258	2.088	31.942	0.007	4.4085780198E+002	-1.2803877124E+002	4.4526826820E+001	0.654	1.485	1.537			
103.956	2.159	31.948	0.012	4.7104220796E+002	-1.4166008742E+002	4.2180888672E+001	0.685	1.561	1.592			
104.654	2.235	31.960	0.017	4.9975922845E+002	-1.5476556630E+002	4.0373468244E+001	0.701	1.706	1.697			
104.968	2.271	31.966	0.024	5.1231879017E+002	-1.6050534280E+002	4.1161695499E+001	0.703	1.791	1.759			
105.666	2.337	31.984	0.026	5.4281093886E+002	-1.7432073498E+002	4.3039801029E+001	0.688	2.055	1.939			
105.800	2.350	31.988	0.034	5.4856803933E+002	-1.7691390756E+002	4.3823702964E+001	0.683	2.114	1.978			
106.498	2.423	32.012	0.037	5.8245629633E+002	-1.8826416202E+002	5.1845200878E+001	0.499	2.501	2.220			
106.744	2.450	32.022	0.043	5.9549709797E+002	-1.9036929490E+002	5.3287587888E+001	0.419	2.664	2.317			
107.442	2.513	32.052	0.044	6.3325070050E+002	-1.8920880368E+002	5.3636901677E+001	0.285	3.144	2.594			
108.141	2.577	32.084	0.046	6.7039571009E+002	-1.7628463507E+002	5.4860628237E+001	0.218	3.588	2.838			
108.609	2.622	32.107	0.050	6.9659014454E+002	-1.5958153613E+002	5.8196044389E+001	0.190	3.853	2.973			
108.840	2.641	32.119	0.053	7.1031186780E+002	-1.4806274920E+002	5.8953468944E+001	0.178	3.968	3.027			
109.538	2.697	32.156	0.053	7.5075306118E+002	-1.0759656596E+002	5.6308486551E+001	0.150	4.252	3.147			
109.720	2.712	32.165	0.061	7.6091353985E+002	-9.4810259610E+001	5.7397955083E+001	0.144	4.300	3.161			
110.418	2.776	32.210	0.063	8.0503673951E+002	-9.9356793124E+001	5.8667501378E+001	0.127	4.345	3.131			
110.600	2.792	32.221	0.062	8.1548811841E+002	-1.0382103831E+001	5.9661676419E+001	0.125	4.327	3.107			
110.674	2.799	32.226	0.074	8.1997447466E+002	-1.3542737622E+000	6.0817861601E+001	0.125	4.315	3.095			
111.372	2.849	32.278	0.080	8.6421676794E+002	8.0548472720E+001	6.3744707856E+001	0.139	4.041	2.892			
112.070	2.907	32.337	0.089	9.0898763537E+002	1.5917729590E+002	6.4414722113E+001	0.164	3.627	2.613			
112.480	2.945	32.376	0.098	9.3543687934E+002	2.0293459890E+002	6.3359032691E+001	0.183	3.348	2.429			
113.000	2.976	32.428	0.112	9.6757248491E+002	2.5357666496E+002	6.0361080129E+001	0.215	2.972	2.188			
113.698	3.033	32.512	0.124	1.0083662065E+003	3.1070996218E+002	5.5644494910E+001	0.291	2.430	1.852			
114.194	3.077	32.576	0.128	1.0349931932E+003	3.4442792230E+002	4.6449662675E+001	0.388	2.068	1.631			
114.360	3.084	32.597	0.141	1.0422884033E+003	3.5209704193E+002	4.4085417965E+001	0.434	1.965	1.568			
115.058	3.129	32.698	0.141	1.0732027492E+003	3.8107937949E+002	3.4526743390E+001	0.813	1.552	1.316			
115.400	3.147	32.744	0.150	1.0833724761E+003	3.8557629189E+002	3.0098217013E+001	0.865	1.435	1.243			
115.819	3.181	32.812	0.168	1.0961707515E+003	3.9129071012E+002	2.8760552276E+001	0.912	1.296	1.154			
116.518	3.216	32.932	0.177	1.1142046092E+003	3.9953441046E+002	2.3158458534E+001	0.953	1.117	1.038			
117.216	3.258	33.059	0.183	1.1285092414E+003	4.0617596224E+002	1.7787804746E+001	0.973	0.996	0.956			
117.544	3.278	33.120	0.183	1.1339311011E+003	4.0871886471E+002	1.4733368381E+001	0.979	0.954	0.927			
117.700	3.281	33.148	0.210	1.1360977331E+003	4.0974614547E+002	1.3713347508E+001	0.980	0.939	0.916			
118.398	3.318	33.299	0.214	1.1451370886E+003	4.1409679787E+002	1.0685864880E+001	0.987	0.875	0.871			
119.096	3.351	33.446	0.211	1.1510194833E+003	4.1698576765E+002	6.0330362702E+000	0.990	0.837	0.843			
119.170	3.354	33.462	0.210	1.1514456459E+003	4.1720401688E+002	5.6360995601E+000	0.990	0.834	0.841			



119.868	3.358	33.609	0.209	1.1544262696E+003	4.1882076395E+002	2.0221013839E+000	0.992	0.813	0.825
120.000	3.358	33.635	0.223	1.1546367315E+003	4.1897016151E+002	1.2752325785E+000	0.992	0.811	0.823
120.698	3.373	33.794	0.229	1.1543308325E+003	4.1921243150E+002	-1.4564675869E+000	0.993	0.803	0.817
120.883	3.380	33.838	0.247	1.1540119767E+003	4.1918734888E+002	-2.1492600956E+000	0.993	0.801	0.816
121.581	3.385	34.012	0.253	1.1513943095E+003	4.1857156843E+002	-4.9382785910E+000	0.995	0.799	0.814
122.070	3.392	34.138	0.253	1.1485732041E+003	4.1776879245E+002	-6.9052160126E+000	0.995	0.799	0.815
122.300	3.393	34.194	0.256	1.1468622525E+003	4.1723293225E+002	-8.0373409561E+000	0.995	0.799	0.815
122.685	3.401	34.295	0.278	1.1433806182E+003	4.1612116275E+002	-9.7961822555E+000	0.996	0.801	0.817
123.383	3.410	34.494	0.286	1.1355831620E+003	4.1360024471E+002	-1.2100586451E+001	0.996	0.804	0.821
124.082	3.419	34.694	0.283	1.1264833497E+003	4.1058789045E+002	-1.3673233429E+001	0.996	0.808	0.826
124.600	3.423	34.839	0.277	1.1191482299E+003	4.0810670239E+002	-1.4583012980E+001	0.996	0.811	0.830
124.735	3.422	34.875	0.293	1.1171665096E+003	4.0742597029E+002	-1.5155667954E+001	0.996	0.812	0.831
125.433	3.426	35.083	0.308	1.1049232333E+003	4.0313053960E+002	-1.9078614333E+001	0.995	0.815	0.836
126.131	3.444	35.304	0.321	1.0905251174E+003	3.9791936803E+002	-2.1724046301E+001	0.994	0.819	0.842
126.600	3.461	35.458	0.313	1.0799854989E+003	3.9404029425E+002	-2.1939601555E+001	0.992	0.821	0.846
127.000	3.455	35.577	0.313	1.0713973910E+003	3.9083851160E+002	-2.2704714626E+001	0.991	0.823	0.848
127.698	3.461	35.802	0.330	1.0540658924E+003	3.8429078115E+002	-2.5971128252E+001	0.988	0.826	0.853
128.384	3.478	36.033	0.330	1.0354859616E+003	3.7723404913E+002	-2.7018265197E+001	0.985	0.829	0.858
129.082	3.469	36.259	0.315	1.0166788511E+003	3.7011759466E+002	-2.6151185714E+001	0.982	0.831	0.862
129.400	3.456	36.353	0.292	1.0084776619E+003	3.6702983711E+002	-2.5814382651E+001	0.980	0.833	0.863
130.098	3.424	36.556	0.291	9.9042208847E+002	3.6026499297E+002	-2.5298577096E+001	0.977	0.835	0.866
130.106	3.423	36.558	0.289	9.9021300209E+002	3.6018711248E+002	-2.5307381100E+001	0.977	0.835	0.866
130.805	3.374	36.760	0.289	9.7163212716E+002	3.5328895928E+002	-2.6956110431E+001	0.974	0.837	0.869
131.503	3.324	36.961	0.283	9.5257146807E+002	3.4618452796E+002	-2.6452169145E+001	0.971	0.840	0.871
131.800	3.297	37.041	0.272	9.4481885490E+002	3.4327821395E+002	-2.7536022751E+001	0.970	0.840	0.872
131.862	3.292	37.059	0.297	9.4309814371E+002	3.4262827660E+002	-2.7957575922E+001	0.970	0.841	0.873
132.560	3.232	37.267	0.311	9.2262365083E+002	3.3483239515E+002	-3.0909896398E+001	0.966	0.843	0.875
133.258	3.191	37.494	0.331	8.9993553981E+002	3.2600625554E+002	-3.3842252589E+001	0.961	0.844	0.878
133.584	3.178	37.605	0.343	8.8869891205E+002	3.2156579276E+002	-3.4629950675E+001	0.959	0.845	0.879
134.200	3.139	37.817	0.366	8.6718864772E+002	3.1287994770E+002	-3.7049795612E+001	0.953	0.846	0.881
134.898	3.124	38.086	0.396	8.3964231455E+002	3.0142711894E+002	-4.1291252647E+001	0.945	0.847	0.884
135.364	3.127	38.279	0.420	8.1984523739E+002	2.9302822999E+002	-4.3059047417E+001	0.938	0.847	0.886
136.062	3.125	38.575	0.408	7.8921385639E+002	2.7992239361E+002	-4.1627729268E+001	0.927	0.847	0.888
136.600	3.102	38.782	0.401	7.6774956901E+002	2.7064604500E+002	-4.1313980636E+001	0.918	0.847	0.889
137.224	3.093	39.040	0.412	7.4096592301E+002	2.5906667039E+002	-4.2832837722E+001	0.906	0.846	0.891
137.922	3.067	39.327	0.393	7.1115514624E+002	2.4624175654E+002	-4.0889254792E+001	0.892	0.845	0.892
138.620	3.016	39.589	0.363	6.8386813512E+002	2.3456851111E+002	-3.6746959412E+001	0.879	0.845	0.893
139.000	2.975	39.718	0.357	6.7038500694E+002	2.2883047226E+002	-3.8029122065E+001	0.872	0.845	0.894
139.259	2.958	39.817	0.384	6.6007444303E+002	2.2443403286E+002	-3.9896556867E+001	0.867	0.844	0.894
139.957	2.888	40.086	0.388	6.3198201738E+002	2.1246648083E+002	-4.0556935555E+001	0.850	0.844	0.895
140.656	2.823	40.359	0.396	6.0344070599E+002	2.0025076610E+002	-4.1551993632E+001	0.833	0.845	0.896
141.056	2.790	40.520	0.387	5.8665976033E+002	1.9303868496E+002	-4.0002207760E+001	0.821	0.845	0.897
141.400	2.734	40.647	0.438	5.7346371258E+002	1.8735212692E+002	-4.1756081916E+001	0.812	0.846	0.898
142.098	2.692	40.977	0.500	5.3946731002E+002	1.7270326768E+002	-5.1503651315E+001	0.786	0.849	0.902
142.775	2.692	41.335	0.526	5.0277362993E+002	1.5694857955E+002	-5.3625263628E+001	0.756	0.854	0.908
143.473	2.650	41.699	0.518	4.6576741278E+002	1.4120680692E+002	-5.1639517861E+001	0.726	0.860	0.915
143.800	2.627	41.866	0.501	4.4909220556E+002	1.3425973170E+002	-5.0395873109E+001	0.712	0.864	0.919
144.414	2.575	42.171	0.488	4.1882516698E+002	1.2182889580E+002	-4.8197937703E+001	0.686	0.872	0.928
145.113	2.471	42.507	0.466	3.8601432832E+002	1.0867114937E+002	-4.4954129007E+001	0.658	0.882	0.939
145.811	2.346	42.822	0.446	3.5605118551E+002	9.7032471465E+001	-4.0736486557E+001	0.632	0.893	0.951
146.150	2.279	42.969	0.433	3.4261144303E+002	9.2019439765E+001	-3.8804071101E+001	0.619	0.900	0.958
146.200	2.266	42.991	0.433	3.4066096756E+002	9.1259767353E+001	-3.8780715106E+001	0.617	0.901	0.959
146.420	2.208	43.086	0.492	3.3202649193E+002	8.8107944672E+001	-4.0404654631E+001	0.609	0.905	0.964
147.118	2.080	43.443	0.517	3.0125213998E+002	7.7101379680E+001	-4.3775436958E+001	0.575	0.923	0.983
147.816	1.960	43.808	0.526	2.7089843697E+002	6.6517596350E+001	-4.3330144874E+001	0.542	0.942	1.004
147.990	1.933	43.901	0.524	2.6339741713E+002	6.3951652884E+001	-4.2641125099E+001	0.533	0.947	1.009
148.600	1.795	44.219	0.583	2.3877630692E+002	5.5702908354E+001	-4.2805013339E+001	0.503	0.966	1.030
149.298	1.719	44.664	0.649	2.0692084275E+002	4.5525419887E+001	-4.5122546727E+001	0.458	0.997	1.065
149.996	1.658	45.124	0.658	1.7576714681E+002	3.5898848776E+001	-4.3582487631E+001	0.416	1.031	1.106
150.128	1.646	45.211	0.640	1.7005265095E+002	3.4164060454E+001	-4.2802397301E+001	0.409	1.038	1.114
150.826	1.539	45.656	0.624	1.4233086494E+002	2.6111432337E+001	-2.9806273863E+001	0.371	1.075	1.163
150.900	1.517	45.692	0.589	1.4021147316E+002	2.5534003827E+001	-2.9078542637E+001	0.368	1.079	1.167
151.598	1.383	46.111	0.622	1.1781208748E+002	1.9758265998E+001	-3.1583611144E+001	0.333	1.126	1.236
152.296	1.280	46.560	0.625	9.6108093454E+001	1.4545099481E+001	-2.8311517561E+001	0.298	1.189	1.329
152.995	1.150	46.983	0.592	7.8277861852E+001	1.0678879946E+001	-2.2248299524E+001	0.264	1.265	1.428
153.200	1.100	47.096	0.548	7.3906831890E+001	9.7988339163E+000	-2.0417747891E+001	0.254	1.288	1.456
153.240	1.090	47.117	0.635	7.3099271041E+001	9.6395084923E+000	-2.0329889546E+001	0.253	1.293	1.462
153.938	0.969	47.564	0.667	5.7930832390E+001	6.8198513360E+000	-2.1067369636E+001	0.202	1.462	1.648
154.636	0.886	48.048	0.666	4.3680779339E+001	4.4188885039E+000	-1.8299125402E+001	0.152	1.822	1.996
155.334	0.762	48.493	0.629	3.2377919137E+001	2.7137296261E+000	-1.5123289077E+001	0.120	2.065	2.252
155.600	0.708	48.655	0.665	2.8469954351E+001	2.1545296647E+000	-1.4508722715E+001	0.112	2.187	2.371



156.298	0.619	49.134	0.692	1.8724504637E+001	9.2704331625E-001	-1.3614596229E+001	0.090	2.632	2.754
156.372	0.613	49.188	0.568	1.7729161387E+001	8.1237359659E-001	-1.3031905864E+001	0.088	2.686	2.789
157.070	0.429	49.572	0.595	1.2265606631E+001	3.6270149492E-001	-7.8674953885E+000	0.067	3.526	3.427
157.768	0.308	50.019	0.655	6.7429845735E+000	1.1372887251E-001	-8.3552586873E+000	0.047	5.528	5.255
158.000	0.282	50.181	0.532	4.7693918646E+000	5.9948067379E-002	-6.2569058348E+000	0.042	6.477	6.133
158.280	0.164	50.291	0.635	3.7762834590E+000	4.0360254487E-002	-3.4697370533E+000	0.040	7.989	7.234
158.978	0.107	50.803	0.635	1.4879066979E+000	5.5052798006E-003	-2.8265235532E+000	0.038	50.000	2.001

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 ht(m) : Altezza linea di thrust da nodo sinistro base concio
 yt(m) : coordinata Y linea di thrust
 yt'(-) : gradiente pendenza locale linea di thrust
 E(x)(kN/m) : Forza Normale interconcio
 T(x)(kN/m) : Forza Tangenziale interconcio
 E' (kN) : derivata Forza normale interconcio
 Rho(x) (-) : fattore mobilitazione resistenza al taglio verticale interconcio ZhU et al.(2003)
 FS_qFEM(x)(-) : fattore di sicurezza locale stimato (locale in X) by qFEM
 FS_p-qPATH(x)(-) : fattore di sicurezza locale stimato (locale in X) by p-qPATH Procedure

TABELLA SFORZI DI TAGLIO DISTRIBUITI LUNGO SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	dl (m)	alpha (°)	TauStress (kPa)	TauF (kN/m)	TauStrength (kPa)	TauS (kN/m)
88.079	0.698	0.713	-11.662	-0.650	-0.464	13.062	9.312
88.777	0.698	0.713	-11.662	-1.997	-1.423	13.730	9.788
89.475	0.698	0.713	-11.662	-3.328	-2.372	14.824	10.568
90.174	0.698	0.713	-11.662	-4.659	-3.321	15.784	11.253
90.872	0.698	0.713	-11.662	-5.990	-4.270	16.559	11.805
91.570	0.698	0.713	-11.662	-7.321	-5.219	17.180	12.248
92.268	0.698	0.713	-11.662	-8.652	-6.168	18.003	12.834
92.966	0.698	0.713	-11.662	-9.983	-7.117	18.621	13.275
93.665	0.663	0.677	-11.662	-11.280	-7.634	19.165	12.970
94.327	0.698	0.711	-11.029	-11.913	-8.474	19.892	14.150
95.026	0.698	0.711	-11.029	-13.143	-9.349	19.885	14.145
95.724	0.698	0.711	-11.029	-14.372	-10.223	20.505	14.586
96.422	0.698	0.711	-11.029	-15.601	-11.098	21.266	15.127
97.120	0.320	0.326	-11.029	-16.498	-5.381	21.157	6.901
97.440	0.698	0.709	-9.792	-15.497	-10.980	22.631	16.035
98.139	0.698	0.709	-9.792	-16.537	-11.717	23.435	16.604
98.837	0.698	0.709	-9.792	-17.576	-12.453	23.884	16.923
99.535	0.074	0.075	-9.792	-18.151	-1.354	23.811	1.777
99.609	0.698	0.706	-8.411	-16.140	-11.391	25.273	17.838
100.307	0.698	0.706	-8.411	-16.982	-11.986	25.214	17.796
101.005	0.499	0.504	-8.411	-17.705	-8.932	25.269	12.748
101.504	0.698	0.703	-6.684	-14.696	-10.331	26.829	18.860
102.202	0.698	0.703	-6.684	-15.315	-10.766	27.206	19.125
102.900	0.357	0.360	-6.684	-15.783	-5.675	27.538	9.902
103.258	0.698	0.701	-5.315	-12.948	-9.079	29.400	20.616
103.956	0.698	0.701	-5.315	-13.407	-9.401	30.601	21.458
104.654	0.314	0.315	-5.315	-13.740	-4.329	31.319	9.868
104.968	0.698	0.700	-3.961	-10.502	-7.350	32.209	22.542
105.666	0.134	0.134	-3.961	-10.691	-1.438	32.637	4.388
105.800	0.698	0.700	-3.961	-10.884	-7.617	34.732	24.308
106.498	0.246	0.247	-3.961	-11.103	-2.738	38.324	9.450
106.744	0.698	0.699	-2.697	-7.715	-5.392	43.446	30.368
107.442	0.698	0.699	-2.697	-7.920	-5.536	50.840	35.536
108.141	0.468	0.469	-2.697	-8.091	-3.791	58.196	27.265
108.609	0.231	0.232	-1.604	-4.875	-1.129	63.072	14.601
108.840	0.698	0.698	-1.604	-4.946	-3.455	66.763	46.632
109.538	0.182	0.182	-1.604	-5.012	-0.911	71.584	13.019
109.720	0.698	0.698	-1.604	-5.077	-3.546	80.931	56.528
110.418	0.182	0.182	-1.604	-5.143	-0.935	85.121	15.481
110.600	0.074	0.074	-1.604	-5.162	-0.383	91.708	6.798
110.674	0.698	0.698	0.146	0.475	0.331	86.605	60.468
111.372	0.698	0.698	0.146	0.483	0.337	85.620	59.780
112.070	0.410	0.410	0.146	0.490	0.200	84.044	34.418
112.480	0.520	0.520	2.270	7.682	3.997	76.964	40.051



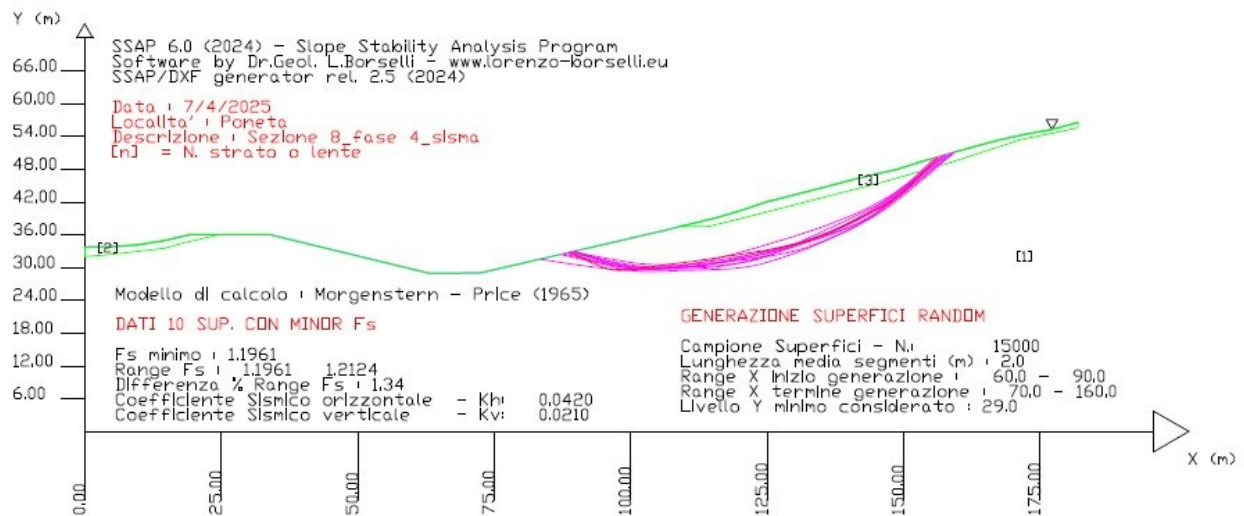
113.000	0.698	0.699	2.270	7.775	5.432	72.805	50.872
113.698	0.496	0.497	2.270	7.866	3.906	68.997	34.259
114.194	0.166	0.166	4.633	16.098	2.675	60.115	9.991
114.360	0.698	0.700	4.633	16.216	11.359	59.326	41.557
115.058	0.342	0.343	4.633	16.363	5.611	52.502	18.004
115.400	0.419	0.421	4.633	16.490	6.937	52.965	22.282
115.819	0.698	0.703	6.972	24.952	17.551	51.891	36.500
116.518	0.698	0.703	6.972	25.266	17.772	51.914	36.516
117.216	0.328	0.331	6.972	25.497	8.431	51.835	17.141
117.544	0.156	0.158	9.284	33.826	5.348	50.593	8.000
117.700	0.698	0.707	9.284	34.018	24.066	50.869	35.988
118.398	0.698	0.707	9.284	34.332	24.288	50.863	35.984
119.096	0.074	0.075	9.284	34.505	2.578	50.752	3.791
119.170	0.698	0.713	11.574	42.749	30.467	49.721	35.436
119.868	0.132	0.134	11.574	42.906	5.767	49.604	6.667
120.000	0.698	0.713	11.574	43.114	30.727	49.827	35.511
120.698	0.185	0.189	11.574	43.346	8.174	49.938	9.417
120.883	0.698	0.718	13.596	50.594	36.343	49.002	35.199
121.581	0.489	0.503	13.596	50.846	25.573	49.098	24.694
122.070	0.230	0.237	13.596	51.000	12.068	49.138	11.628
122.300	0.385	0.396	13.596	51.133	20.262	49.241	19.512
122.685	0.698	0.724	15.246	56.979	41.234	48.426	35.045
123.383	0.698	0.724	15.246	57.195	41.390	48.537	35.125
124.082	0.518	0.537	15.246	57.382	30.835	48.659	26.147
124.600	0.135	0.140	15.246	57.458	8.031	48.702	6.807
124.735	0.698	0.727	16.254	60.782	44.205	48.001	34.909
125.433	0.698	0.727	16.254	60.652	44.110	47.838	34.791
126.131	0.469	0.489	16.254	60.543	29.587	47.752	23.336
126.600	0.400	0.419	17.394	64.162	26.867	47.022	19.690
127.000	0.698	0.732	17.394	63.978	46.810	46.901	34.316
127.698	0.686	0.718	17.394	63.747	45.802	46.803	33.628
128.384	0.698	0.737	18.595	67.239	49.532	45.973	33.866
129.082	0.318	0.335	18.595	66.981	22.470	45.875	15.390
129.400	0.698	0.737	18.595	66.706	49.139	45.681	33.651
130.098	0.008	0.009	18.595	66.509	0.580	45.668	0.398
130.106	0.698	0.742	19.799	69.868	51.847	44.691	33.164
130.805	0.698	0.742	19.799	69.342	51.457	44.427	32.968
131.503	0.297	0.316	19.799	68.967	21.780	44.276	13.983
131.800	0.062	0.066	19.799	68.832	4.522	44.290	2.910
131.862	0.698	0.748	20.982	71.847	53.726	43.294	32.374
132.560	0.698	0.748	20.982	71.174	53.223	43.086	32.219
133.258	0.326	0.349	20.982	70.681	24.676	43.031	15.023
133.584	0.616	0.665	22.128	73.242	48.690	42.098	27.986
134.200	0.698	0.754	22.128	72.490	54.637	42.007	31.662
134.898	0.466	0.503	22.128	71.843	36.112	42.014	21.119
135.364	0.698	0.760	23.189	73.790	56.048	41.236	31.321
136.062	0.538	0.585	23.189	72.971	42.706	40.839	23.901
136.600	0.624	0.678	23.189	72.201	48.976	40.707	27.613
137.224	0.698	0.765	24.106	73.411	56.152	39.863	30.492
137.922	0.698	0.765	24.106	72.348	55.339	39.291	30.054
138.620	0.380	0.416	24.106	71.527	29.782	38.880	16.189
139.000	0.259	0.284	24.106	71.032	20.175	38.998	11.076
139.259	0.698	0.776	25.897	73.945	57.392	37.545	29.140
139.957	0.698	0.776	25.897	72.551	56.309	37.135	28.822
140.656	0.400	0.445	25.897	71.454	31.783	36.999	16.457
141.056	0.344	0.390	27.964	74.468	29.021	35.289	13.753
141.400	0.698	0.790	27.964	73.155	57.829	35.640	28.174
142.098	0.677	0.766	27.964	71.423	54.717	35.729	27.372
142.775	0.698	0.807	30.153	72.920	58.880	34.118	27.549
143.473	0.327	0.378	30.153	71.321	26.968	33.742	12.758
143.800	0.614	0.711	30.153	69.771	49.580	33.006	23.455
144.414	0.698	0.825	32.235	69.996	57.776	30.936	25.535
145.113	0.698	0.825	32.235	67.197	55.466	29.728	24.538
145.811	0.339	0.400	32.235	65.119	26.075	28.940	11.588
146.150	0.050	0.061	34.785	66.800	4.102	27.294	1.676
146.200	0.220	0.268	34.785	66.148	17.719	27.078	7.253
146.420	0.698	0.850	34.785	63.948	54.363	26.657	22.662
147.118	0.698	0.850	34.785	60.608	51.525	25.824	21.954
147.816	0.173	0.211	34.785	58.524	12.346	25.704	5.422
147.990	0.610	0.762	36.734	57.787	44.010	23.558	17.941
148.600	0.698	0.871	36.734	54.531	47.507	23.285	20.286

149.298	0.698	0.871	36.734	51.336	44.725	22.762	19.831
149.996	0.132	0.164	36.734	49.438	8.125	22.933	3.769
150.128	0.698	0.890	38.355	48.093	42.820	20.981	18.681
150.826	0.074	0.094	38.355	46.115	4.333	20.066	1.886
150.900	0.698	0.890	38.355	44.136	39.297	19.468	17.334
151.598	0.698	0.890	38.355	40.557	36.110	18.858	16.790
152.296	0.698	0.890	38.355	36.978	32.923	18.033	16.056
152.995	0.205	0.262	38.355	34.662	9.079	18.003	4.716
153.200	0.040	0.051	38.355	34.027	1.730	18.024	0.917
153.240	0.698	0.900	39.135	32.133	28.924	16.956	15.263
153.938	0.698	0.900	39.135	28.151	25.340	16.675	15.010
154.636	0.698	0.900	39.135	24.170	21.756	16.385	14.749
155.334	0.266	0.342	39.135	21.422	7.333	16.789	5.747
155.600	0.698	0.900	39.135	18.674	16.809	16.198	14.580
156.298	0.073	0.095	39.135	16.474	1.557	17.132	1.619
156.372	0.698	0.900	39.135	14.497	13.050	7.260	6.535
157.070	0.698	0.900	39.135	10.962	9.868	5.544	4.990
157.768	0.232	0.299	39.135	8.607	2.575	4.423	1.323
158.000	0.280	0.361	39.135	7.314	2.640	3.776	1.363
158.280	0.698	0.900	39.135	4.847	4.363	2.639	2.375
158.978	0.612	0.789	39.135	1.543	1.218	1.110	0.876

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
dx(m) : Larghezza concio
dl(m) : lunghezza base concio
alpha() : Angolo pendenza base concio
TauStress(kPa) : Sforzo di taglio su base concio
TauF (kN/m) : Forza di taglio su base concio
TauStrength(kPa) : Resistenza al taglio su base concio
TauS (kN/m) : Forza resistente al taglio su base concio

12 SEZIONE 8 FASE FINALE - SISMA



Report Generale Risultati di Verifica di stabilità'

SSAP 6.0 - Slope Stability Analysis Program (1991,2024)

WWW.SSAP.EU

Build No. 14533

BY

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Ricercatore Associato CNR-IRPI, Perugia, Italia

Ultima Revisione struttura tabelle del report: 21 Maggio 2024



File report: C:\Users\facco\OneDrive\Documents\Lavoro\Lavori STGA\Poneta\Sezioni\Risultati SSAP\Sez8_fase4_sisma.txt

Data: 7/4/2025

Localita': Poneta

Descrizione: Sezione 8_fase 4_sisma

Modello pendio: Sezione 8_fase 4.mod

----- 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		
0.03	33.71	0.03	33.71	108.84	37.43	-	-	-	-
1.00	33.80	1.00	33.80	110.60	37.85	-	-	-	-
4.80	33.80	4.80	33.80	115.40	39.00	-	-	-	-
9.60	34.14	9.60	34.14	120.00	40.37	-	-	-	-
14.40	34.88	14.40	34.88	124.60	41.92	-	-	-	-
19.20	36.01	19.20	36.01	129.40	43.17	-	-	-	-
24.58	36.01	24.58	36.01	134.20	44.38	-	-	-	-
29.20	36.01	18.02	34.49	139.00	45.64	-	-	-	-
34.00	36.00	14.50	33.50	143.80	46.86	-	-	-	-
58.20	30.15	4.30	32.35	148.60	47.93	-	-	-	-
63.00	29.01	0.03	32.00	153.20	49.38	-	-	-	-
67.80	29.01	0.03	33.71	158.00	50.74	-	-	-	-
72.60	29.03	-	-	162.80	52.11	-	-	-	-
105.80	36.71	-	-	167.60	53.36	-	-	-	-
108.84	37.43	-	-	172.40	54.43	-	-	-	-
110.60	37.85	-	-	177.20	55.30	-	-	-	-
115.40	39.00	-	-	182.00	56.54	-	-	-	-
120.00	40.37	-	-	182.00	55.59	-	-	-	-
124.60	41.92	-	-	171.51	53.44	-	-	-	-
129.40	43.17	-	-	158.28	49.13	-	-	-	-
134.20	44.38	-	-	146.42	45.68	-	-	-	-
139.00	45.64	-	-	122.07	39.43	-	-	-	-
143.80	46.86	-	-	114.36	37.54	-	-	-	-
148.60	47.93	-	-	108.84	37.43	-	-	-	-
153.20	49.38	-	-	-	-	-	-	-	-
158.00	50.74	-	-	-	-	-	-	-	-
162.80	52.11	-	-	-	-	-	-	-	-
167.60	53.36	-	-	-	-	-	-	-	-
172.40	54.43	-	-	-	-	-	-	-	-
177.20	55.30	-	-	-	-	-	-	-	-
182.00	56.54	-	-	-	-	-	-	-	-

SUP FALDA

X Y

0.03 33.71
 1.00 33.80
 4.80 33.80
 9.60 34.14
 14.40 34.88
 19.20 36.01
 24.58 36.01
 29.20 36.01
 34.00 36.00
 58.20 30.15
 63.00 29.01
 67.80 29.01
 72.60 29.03
 105.80 36.71
 108.84 37.43
 110.60 37.85
 115.40 39.00
 120.00 40.37
 124.60 41.92
 129.40 43.17
 134.20 44.38
 139.00 45.64
 143.80 46.86
 148.60 47.93
 153.20 49.38



158.00 50.74
 162.80 52.11
 167.60 53.36
 172.40 54.43
 177.20 55.30
 182.00 56.54

----- GESTIONE ACQUIFERI -----

Strati esclusi da acquifero e effetto pressione dei pori:

STRATO 2

STRATO 3

Esclusione sovraccarico pendio sommerso: NON ATTIVATA

EFFETTO TENSION CRACK IN TESTA RIEMPITO DI ACQUA: ----> DISATTIVATO

In caso di superfici con tension crack in testa, la frattura di tensione

puo' venir viene considerata completamente riempita di acqua per la sua intera profondita'.

Viene quindi considerato una forza in testa, prodotta dalla pressione idrostatica.

La forza applicata ha un effetto destabilizzante aggiuntivo alle altre forze destabilizzanti agenti.

Peso unitario fluido (kN/m³): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A 0

Coefficiente K 0.000800

Pressione minima fluidi Uo_Min (kPa) 0.01

Coefficiente di soprapressione oltre pressione idrostatica 1.00

Limitazione dissipazione a Pressione Idrostatica = ATTIVA

STABILITE CONDIZIONI PER LA VERIFICA CON SOVRAPPRESSIONE ACQUIFERI CON DISSIPAZIONE IN DIREZIONE DELLA SUPERFICIE

CALCOLO EFFETTO DI FILTRAZIONE NON ATTIVATO

----- PARAMETRI GEOMECCANICI -----

	fi'	C'	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	23.00	15.00	0.00	21.50	22.00	1.805	0.00	0.00	0.00	0.00
STRATO 2	25.00	0.50	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00
STRATO 3	25.00	0.50	0.00	19.50	20.50	1.414	0.00	0.00	0.00	0.00

LEGENDA: 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/m³)

Gamm_sat _____ Peso di volume terreno immerso (in KN/m³)

STR_IDX _____ Indice di resistenza (usato in solo in 'SNIFF SEARCH') (adimensionale)

---- SOLO Per AMMASSI ROCCIOSI FRATTURATI - Parametri Criterio di Rottura di Hoek et al.(2002)-

sgci _____ Resistenza Compressione Uniassiale Rocca Intatta (in MPa)

GSI _____ Geological Strenght Index ammasso(adimensionale)

mi _____ Indice litologico ammasso(adimensionale)

D _____ Fattore di disturbo ammasso(adimensionale)

NOTA BENE:

FATTORI DI RIDUZIONE NTC2018/EC-7: gammaPHI=1.25, gammaC=1.25 e gammaCu=1.4 - DISATTIVATI

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

*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI

MOTORE DI RICERCA: SNIFF RANDOM SEARCH - Borselli (1997,2021)

FILTRAGGIO SUPERFICI : ATTIVATO

COORDINATE X1,X2,Y OSTACOLO : 0.00 0.00 0.00

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

INTERVALLO ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 60.00 90.00

LIVELLO MINIMO CONSIDERATO (Ymin): 29.00

INTERVALLO ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 70.00 160.00

TOTALE SUPERFICI GENERATE : 15000

*NOTA IMPORTANTE: La lunghezza media dei segmenti non viene considerata nel caso di uso del motore di ricerca NEW RANOM SEARCH

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

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



METODO DI ESPLORAZIONE CAMPO VALORI (λ_0, F_{s0}) ADOTTATO : A (rapido)
COEFFICIENTE SISMICO UTILIZZATO K_h : 0.0420
COEFFICIENTE SISMICO UTILIZZATO K_v (assunto Positivo): 0.0210
COEFFICIENTE $c=K_v/K_h$ UTILIZZATO : 0.5000
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 F_s #

X(m)	Y(m)	#Superficie N.1 - #FS_minimo	#Fattore di sicurezza(FS)= 1.1961	#Lambda= 0.3220
88.975	32.818			
92.515	31.100			
94.135	30.363			
95.188	29.958			
96.029	29.712			
96.894	29.559			
97.637	29.493			
98.463	29.495			
99.359	29.564			
100.478	29.709			
101.523	29.845			
102.510	29.974			
103.475	30.099			
104.408	30.220			
105.348	30.343			
106.285	30.464			
107.225	30.587			
108.159	30.708			
109.094	30.832			
110.026	30.957			
110.960	31.085			
111.891	31.214			
112.825	31.346			
113.758	31.480			
114.695	31.617			
115.633	31.755			
116.571	31.895			
117.506	32.036			
118.443	32.178			
119.375	32.321			
120.314	32.466			
121.254	32.612			
122.203	32.762			
123.158	32.913			
124.090	33.069			
125.013	33.233			
125.929	33.404			
126.856	33.587			
127.781	33.778			
128.723	33.982			
129.693	34.201			
130.717	34.442			
131.647	34.685			
132.549	34.949			
133.419	35.234			
134.330	35.561			
135.199	35.903			
136.096	36.285			
137.016	36.706			



138.013 37.189
 138.989 37.662
 139.944 38.125
 140.893 38.585
 141.826 39.037
 142.781 39.500
 143.748 39.969
 144.752 40.456
 145.801 40.965
 146.704 41.453
 147.570 41.982
 148.387 42.546
 149.283 43.232
 150.216 44.038
 151.318 45.081
 152.947 46.732
 156.264 50.201
 156.264 50.248

X(m) Y(m) #Superficie N. 2 #Fattore di sicurezza(FS)= 1.1975 #Lambda= 0.3350
 88.435 32.693
 93.499 31.079
 95.927 30.354
 97.575 29.933
 98.967 29.648
 100.311 29.456
 101.549 29.340
 102.856 29.281
 104.217 29.278
 105.773 29.332
 107.269 29.383
 108.715 29.433
 110.144 29.482
 111.541 29.530
 112.966 29.579
 114.405 29.629
 115.887 29.680
 117.417 29.733
 118.784 29.824
 120.104 29.961
 121.368 30.145
 122.719 30.396
 123.993 30.686
 125.331 31.046
 126.734 31.476
 128.320 32.011
 129.784 32.528
 131.191 33.049
 132.558 33.580
 133.938 34.142
 135.309 34.726
 136.722 35.353
 138.204 36.037
 139.821 36.808
 141.208 37.539
 142.527 38.318
 143.770 39.141
 145.116 40.126
 146.522 41.283
 148.178 42.766
 150.616 45.100
 155.600 50.021
 155.600 50.060

X(m) Y(m) #Superficie N. 3 #Fattore di sicurezza(FS)= 1.2015 #Lambda= 0.3213
 89.799 33.009
 93.636 31.645
 95.472 31.030
 96.717 30.669



97.767	30.419
98.784	30.243
99.717	30.128
100.703	30.056
101.732	30.027
102.912	30.038
104.046	30.048
105.141	30.059
106.222	30.068
107.279	30.078
108.349	30.088
109.422	30.098
110.509	30.108
111.608	30.118
112.656	30.144
113.689	30.186
114.704	30.246
115.747	30.325
116.777	30.421
117.838	30.539
118.946	30.681
120.152	30.853
121.212	31.038
122.224	31.255
123.187	31.502
124.210	31.808
125.171	32.136
126.173	32.521
127.211	32.960
128.363	33.486
129.482	33.996
130.571	34.493
131.649	34.985
132.705	35.467
133.771	35.953
134.835	36.438
135.905	36.927
136.972	37.414
138.029	37.903
139.079	38.397
140.126	38.896
141.179	39.405
142.238	39.925
143.311	40.460
144.416	41.018
145.570	41.609
146.616	42.181
147.630	42.780
148.609	43.402
149.641	44.104
150.744	44.920
152.018	45.922
153.863	47.450
157.604	50.628

X(m)	Y(m)	#Superficie N. 4 #Fattore di sicurezza(FS)= 1.2068 #Lambda= 0.3546
89.460	32.930	
94.779	31.157	
97.264	30.391	
98.918	29.974	
100.278	29.724	
101.635	29.592	
102.852	29.554	
104.176	29.604	
105.601	29.739	
107.324	29.976	
108.875	30.213	
110.337	30.461	
111.743	30.726	
113.158	31.019	



114.537	31.330
115.942	31.672
117.372	32.045
118.876	32.461
120.347	32.874
121.795	33.286
123.232	33.700
124.661	34.118
126.097	34.543
127.541	34.977
129.005	35.422
130.498	35.882
131.930	36.344
133.341	36.820
134.733	37.311
136.151	37.834
137.556	38.375
138.996	38.952
140.486	39.573
142.082	40.259
143.518	40.924
144.903	41.618
146.234	42.342
147.634	43.162
149.129	44.118
150.857	45.298
153.358	47.103
158.280	50.750
158.280	50.820

X(m) Y(m) #Superficie N. 5 #Fattore di sicurezza(FS)= 1.2089 #Lambda= 0.3549

89.753	32.998
94.734	31.532
97.142	30.868
98.785	30.479
100.184	30.209
101.524	30.026
102.781	29.909
104.113	29.842
105.525	29.827
107.155	29.860
108.600	29.923
109.970	30.020
111.278	30.151
112.630	30.328
113.920	30.535
115.251	30.787
116.615	31.082
118.093	31.439
119.540	31.788
120.957	32.130
122.364	32.469
123.748	32.803
125.147	33.140
126.547	33.478
127.963	33.820
129.386	34.163
130.762	34.512
132.124	34.876
133.471	35.253
134.842	35.656
136.218	36.080
137.640	36.538
139.145	37.042
140.801	37.616
142.153	38.166
143.421	38.784
144.587	39.462
145.897	40.345
147.230	41.402



148.840 42.833
 151.257 45.167
 156.258 50.174
 156.258 50.246

X(m) Y(m) #Superficie N. 6 #Fattore di sicurezza(FS)= 1.2101 #Lambda= 0.4491
 88.593 32.730
 94.788 31.448
 97.853 30.854
 99.979 30.497
 101.828 30.240
 103.551 30.061
 105.218 29.936
 106.958 29.853
 108.789 29.812
 110.837 29.812
 112.628 29.864
 114.325 29.976
 115.933 30.147
 117.635 30.397
 119.240 30.697
 120.926 31.080
 122.692 31.545
 124.687 32.131
 126.528 32.700
 128.296 33.277
 130.013 33.868
 131.749 34.499
 133.466 35.154
 135.229 35.859
 137.064 36.623
 139.045 37.480
 140.807 38.306
 142.499 39.173
 144.118 40.078
 145.829 41.116
 147.648 42.330
 149.758 43.841
 152.825 46.169
 158.970 50.965
 158.970 51.017

X(m) Y(m) #Superficie N. 7 #Fattore di sicurezza(FS)= 1.2112 #Lambda= 0.3412
 87.104 32.385
 93.370 31.031
 96.408 30.427
 98.488 30.089
 100.264 29.874
 101.958 29.756
 103.551 29.708
 105.226 29.726
 106.985 29.808
 108.985 29.962
 110.814 30.131
 112.564 30.326
 114.258 30.547
 115.980 30.805
 117.666 31.091
 119.397 31.418
 121.186 31.788
 123.112 32.219
 124.886 32.652
 126.602 33.111
 128.268 33.599
 129.984 34.143
 131.663 34.719
 133.404 35.359
 135.231 36.073
 137.248 36.903



139.009	37.697
140.688	38.534
142.281	39.413
143.976	40.437
145.765	41.640
147.852	43.157
150.898	45.516
157.143	50.497

X(m)	Y(m)	#Superficie N. 8	#Fattore di sicurezza(FS)= 1.2118	#Lambda= 0.3440
87.656	32.513			
93.987	31.151			
97.024	30.557			
99.089	30.238			
100.835	30.053			
102.521	29.975			
104.082	29.974			
105.731	30.051			
107.458	30.203			
109.433	30.445			
111.293	30.685			
113.081	30.929			
114.833	31.182			
116.572	31.447			
118.313	31.726			
120.080	32.023			
121.893	32.341			
123.789	32.686			
125.531	33.046			
127.225	33.441			
128.868	33.872			
130.580	34.370			
132.244	34.903			
133.980	35.510			
135.811	36.199			
137.858	37.017			
139.629	37.797			
141.308	38.621			
142.895	39.488			
144.589	40.509			
146.369	41.710			
148.453	43.236			
151.502	45.620			
157.660	50.585			
157.660	50.644			

X(m)	Y(m)	#Superficie N. 9	#Fattore di sicurezza(FS)= 1.2120	#Lambda= 0.3313
83.404	31.529			
90.078	30.520			
93.365	30.069			
95.638	29.821			
97.606	29.667			
99.450	29.596			
101.213	29.580			
103.043	29.619			
104.944	29.712			
107.042	29.865			
108.996	30.035			
110.883	30.227			
112.723	30.444			
114.587	30.694			
116.420	30.969			
118.294	31.280			
120.219	31.628			
122.266	32.027			
124.177	32.433			
126.036	32.864			
127.851	33.321			
129.710	33.827			



131.546 34.365
 133.447 34.962
 135.450 35.629
 137.661 36.402
 139.542 37.146
 141.321 37.955
 142.990 38.824
 144.803 39.887
 146.685 41.149
 148.912 42.794
 152.201 45.411
 159.012 51.018
 159.012 51.029

X(m) Y(m) #Superficie N.10 #Fattore di sicurezza(FS)= 1.2124 #Lambda= 0.3455
 89.204 32.871
 95.419 31.698
 98.470 31.166
 100.577 30.861
 102.397 30.659
 104.108 30.539
 105.736 30.476
 107.428 30.466
 109.183 30.506
 111.125 30.601
 112.948 30.709
 114.711 30.836
 116.435 30.981
 118.171 31.150
 119.899 31.340
 121.670 31.557
 123.510 31.805
 125.483 32.092
 127.229 32.403
 128.903 32.764
 130.500 33.176
 132.197 33.684
 133.813 34.238
 135.521 34.895
 137.338 35.663
 139.422 36.608
 141.228 37.498
 142.932 38.420
 144.544 39.378
 146.246 40.480
 148.047 41.770
 150.143 43.386
 153.200 45.889
 159.452 51.154

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

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR FS *

Analisi Deficit in riferimento a FS(progetto) = 1.200

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.196	3043.8	2544.7	-9.8	Deficit
2	1.198	3391.4	2832.0	-7.0	Deficit
3	1.202	3097.5	2578.0	3.9	Surplus
4	1.207	2861.2	2370.9	16.1	Surplus
5	1.209	3099.6	2563.9	22.9	Surplus
6	1.210	3255.8	2690.5	27.3	Surplus
7	1.211	3146.4	2597.9	29.0	Surplus
8	1.212	3099.6	2557.8	30.3	Surplus
9	1.212	3432.4	2832.0	34.1	Surplus
10	1.212	3287.3	2711.3	33.7	Surplus

Esito analisi: DEFICIT di RESISTENZA!

Valore massimo di DEFICIT di RESISTENZA(kN/m): -9.8



Note: FTR --> Forza totale Resistente lungo la superficie di scivolamento

FTA --> Forza totale Agente lungo la superficie di scivolamento

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

TABELLA PARAMETRI CONCI DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (°)	W (kN/m)	ru (-)	U (kPa)	phi' (°)	(c',Cu) (kPa)	
88.975	0.664	-25.88	3.47	0.00	0.00	0.00	23.00	15.00
89.639	0.664	-25.88	10.65	0.45	7.00	23.00	15.00	
90.303	0.664	-25.88	17.75	0.45	11.67	23.00	15.00	
90.967	0.664	-25.88	24.85	0.45	16.93	23.00	15.00	
91.632	0.664	-25.88	31.95	0.45	21.54	23.00	15.00	
92.296	0.219	-25.88	12.10	0.45	25.98	23.00	15.00	
92.515	0.664	-24.47	41.24	0.45	27.34	23.00	15.00	
93.179	0.664	-24.47	48.04	0.45	31.71	23.00	15.00	
93.843	0.291	-24.47	23.22	0.45	35.68	23.00	15.00	
94.135	0.664	-21.05	57.48	0.45	37.33	23.00	15.00	
94.799	0.389	-21.05	36.48	0.45	40.93	23.00	15.00	
95.188	0.664	-16.29	66.70	0.45	42.82	23.00	15.00	
95.852	0.177	-16.29	18.69	0.45	45.82	23.00	15.00	
96.029	0.664	-10.07	72.71	0.45	46.52	23.00	15.00	
96.693	0.200	-10.07	22.72	0.45	48.94	23.00	15.00	
96.894	0.664	-5.08	77.54	0.45	49.52	23.00	15.00	
97.558	0.079	-5.08	9.44	0.45	51.31	23.00	15.00	
97.637	0.664	0.17	80.64	0.45	51.51	23.00	15.00	
98.301	0.162	0.17	20.02	0.45	53.00	23.00	15.00	
98.463	0.664	4.41	83.08	0.45	53.30	23.00	15.00	
99.127	0.232	4.41	29.32	0.45	54.51	23.00	15.00	
99.359	0.664	7.40	84.88	0.45	54.88	23.00	15.00	
100.023	0.455	7.40	58.72	0.45	55.92	23.00	15.00	
100.478	0.664	7.41	86.58	0.45	56.52	23.00	15.00	
101.142	0.381	7.41	50.09	0.45	57.37	23.00	15.00	
101.523	0.664	7.41	88.16	0.45	57.85	23.00	15.00	
102.187	0.323	7.41	43.26	0.45	58.59	23.00	15.00	
102.510	0.664	7.41	89.65	0.45	58.95	23.00	15.00	
103.175	0.301	7.41	40.92	0.45	59.60	23.00	15.00	
103.475	0.664	7.41	91.11	0.45	59.90	23.00	15.00	
104.139	0.269	7.41	37.18	0.45	60.53	23.00	15.00	
104.408	0.664	7.41	92.52	0.45	60.80	23.00	15.00	
105.073	0.275	7.41	38.65	0.45	61.46	23.00	15.00	
105.348	0.452	7.41	63.82	0.45	61.78	23.00	15.00	
105.800	0.485	7.41	69.00	0.45	62.25	23.00	15.00	
106.285	0.664	7.41	95.42	0.45	62.80	23.00	15.00	
106.949	0.275	7.41	39.89	0.45	63.48	23.00	15.00	
107.225	0.664	7.41	96.92	0.45	63.78	23.00	15.00	
107.889	0.270	7.41	39.70	0.45	64.42	23.00	15.00	
108.159	0.664	7.54	98.39	0.45	64.71	23.00	15.00	
108.823	0.017	7.54	2.53	0.45	65.31	23.00	15.00	
108.840	0.254	7.54	37.87	0.45	65.32	23.00	15.00	
109.094	0.626	7.66	93.91	0.45	65.59	23.00	15.00	
109.720	0.306	7.66	46.17	0.45	66.18	23.00	15.00	
110.026	0.574	7.79	86.98	0.45	66.48	23.00	15.00	
110.600	0.360	7.79	54.79	0.45	67.03	23.00	15.00	
110.960	0.664	7.91	101.80	0.45	67.40	23.00	15.00	
111.624	0.267	7.91	41.20	0.45	68.05	23.00	15.00	
111.891	0.664	8.04	102.84	0.45	68.35	23.00	15.00	
112.555	0.270	8.04	41.96	0.45	69.01	23.00	15.00	
112.825	0.175	8.16	27.30	0.45	69.30	23.00	15.00	
113.000	0.664	8.16	104.04	0.45	69.46	23.00	15.00	
113.664	0.094	8.16	14.79	0.45	70.07	23.00	15.00	
113.758	0.602	8.29	94.95	0.45	70.18	23.00	15.00	
114.360	0.335	8.29	53.16	0.45	70.78	23.00	15.00	
114.695	0.664	8.41	106.04	0.45	71.16	23.00	15.00	
115.359	0.041	8.41	6.52	0.45	71.88	23.00	15.00	

115.400	0.233	8.41	37.40	0.45	71.93	23.00	15.00
115.633	0.664	8.48	107.76	0.45	72.23	23.00	15.00
116.297	0.275	8.48	44.96	0.45	73.04	23.00	15.00
116.571	0.664	8.56	109.75	0.45	73.43	23.00	15.00
117.235	0.271	8.56	45.17	0.45	74.30	23.00	15.00
117.506	0.194	8.63	32.42	0.45	74.68	23.00	15.00
117.700	0.664	8.63	112.12	0.45	74.96	23.00	15.00
118.364	0.079	8.63	13.35	0.46	75.95	23.00	15.00
118.443	0.664	8.71	113.67	0.46	76.09	23.00	15.00
119.107	0.268	8.71	46.27	0.46	77.21	23.00	15.00
119.375	0.625	8.79	108.74	0.46	77.72	23.00	15.00
120.000	0.314	8.79	55.08	0.46	78.73	23.00	15.00
120.314	0.664	8.86	117.84	0.46	79.27	23.00	15.00
120.978	0.276	8.86	49.45	0.46	80.34	23.00	15.00
121.254	0.664	8.94	120.23	0.46	80.81	23.00	15.00
121.918	0.152	8.94	27.73	0.46	81.77	23.00	15.00
122.070	0.133	8.94	24.31	0.46	81.98	23.00	15.00
122.203	0.097	9.01	17.85	0.46	82.17	23.00	15.00
122.300	0.664	9.01	122.87	0.46	82.31	23.00	15.00
122.964	0.194	9.01	36.15	0.46	83.19	23.00	15.00
123.158	0.664	9.52	124.99	0.46	83.48	23.00	15.00
123.822	0.268	9.52	50.84	0.46	84.35	23.00	15.00
124.090	0.510	10.05	97.55	0.46	84.72	23.00	15.00
124.600	0.413	10.05	79.49	0.46	85.33	23.00	15.00
125.013	0.664	10.59	128.44	0.46	85.83	23.00	15.00
125.677	0.252	10.59	48.89	0.46	86.54	23.00	15.00
125.929	0.664	11.13	129.39	0.46	86.82	23.00	15.00
126.593	0.262	11.13	51.27	0.46	87.34	23.00	15.00
126.856	0.144	11.68	28.28	0.46	87.50	23.00	15.00
127.000	0.664	11.68	130.33	0.46	87.59	23.00	15.00
127.664	0.117	11.68	22.94	0.46	87.90	23.00	15.00
127.781	0.664	12.22	130.91	0.46	87.95	23.00	15.00
128.445	0.278	12.22	54.87	0.46	88.20	23.00	15.00
128.723	0.664	12.74	131.47	0.46	88.29	23.00	15.00
129.387	0.013	12.74	2.59	0.46	88.44	23.00	15.00
129.400	0.293	12.74	58.18	0.46	88.44	23.00	15.00
129.693	0.664	13.22	131.85	0.46	88.48	23.00	15.00
130.358	0.359	13.22	71.39	0.46	88.52	23.00	15.00
130.717	0.664	14.68	131.98	0.46	88.48	23.00	15.00
131.381	0.266	14.68	52.90	0.46	88.34	23.00	15.00
131.647	0.153	16.33	30.29	0.46	88.26	23.00	15.00
131.800	0.664	16.33	131.61	0.46	88.21	23.00	15.00
132.464	0.085	16.33	16.72	0.46	87.87	23.00	15.00
132.549	0.664	18.09	130.99	0.46	87.83	23.00	15.00
133.213	0.206	18.09	40.45	0.46	87.35	23.00	15.00
133.419	0.664	19.79	129.87	0.46	87.17	23.00	15.00
134.083	0.117	19.79	22.78	0.46	86.58	23.00	15.00
134.200	0.130	19.79	25.18	0.46	86.46	23.00	15.00
134.330	0.664	21.44	128.31	0.46	86.32	23.00	15.00
134.994	0.205	21.44	39.39	0.46	85.53	23.00	15.00
135.199	0.664	23.08	126.45	0.46	85.20	23.00	15.00
135.863	0.232	23.08	43.84	0.46	84.08	23.00	15.00
136.096	0.504	24.57	94.43	0.46	83.66	23.00	15.00
136.600	0.416	24.57	77.00	0.46	82.71	23.00	15.00
137.016	0.664	25.86	121.28	0.46	81.87	23.00	15.00
137.680	0.333	25.86	59.93	0.46	80.45	23.00	15.00
138.013	0.664	25.86	117.96	0.46	79.70	23.00	15.00
138.677	0.312	25.86	54.64	0.46	78.34	23.00	15.00
138.989	0.011	25.86	1.93	0.46	77.67	23.00	15.00
139.000	0.664	25.86	114.64	0.46	77.64	23.00	15.00
139.664	0.280	25.86	47.63	0.46	76.31	23.00	15.00
139.944	0.664	25.86	111.40	0.46	75.64	23.00	15.00
140.608	0.284	25.86	47.02	0.46	74.13	23.00	15.00
140.893	0.507	25.87	82.79	0.46	73.47	23.00	15.00
141.400	0.426	25.87	68.49	0.46	72.34	23.00	15.00
141.826	0.664	25.87	104.93	0.46	71.31	23.00	15.00
142.490	0.291	25.87	45.19	0.46	69.67	23.00	15.00
142.781	0.664	25.87	101.65	0.46	68.86	23.00	15.00
143.445	0.303	25.87	45.63	0.46	67.24	23.00	15.00
143.748	0.052	25.87	7.78	0.46	66.45	23.00	15.00
143.800	0.664	25.87	98.00	0.46	66.32	23.00	15.00



144.464	0.288	25.87	41.64	0.46	64.66	23.00	15.00
144.752	0.664	25.87	94.34	0.46	63.80	23.00	15.00
145.416	0.386	25.87	53.59	0.46	61.83	23.00	15.00
145.801	0.399	28.42	54.38	0.46	60.64	23.00	15.00
146.200	0.220	28.42	29.54	0.46	59.41	23.00	15.00
146.420	0.284	28.42	37.59	0.46	58.62	23.00	15.00
146.704	0.664	31.41	85.48	0.46	57.63	23.00	15.00
147.368	0.202	31.41	25.26	0.46	55.00	23.00	15.00
147.570	0.664	34.58	80.18	0.46	54.09	23.00	15.00
148.234	0.153	34.58	17.87	0.46	51.32	23.00	15.00
148.387	0.213	37.43	24.32	0.46	50.67	23.00	15.00
148.600	0.664	37.43	72.92	0.46	49.77	23.00	15.00
149.264	0.019	37.43	2.05	0.47	46.45	23.00	15.00
149.283	0.664	40.87	67.80	0.47	46.34	23.00	15.00
149.948	0.268	40.87	25.79	0.47	42.33	23.00	15.00
150.216	0.664	43.41	59.71	0.46	40.52	23.00	15.00
150.880	0.020	43.41	1.73	0.45	36.07	23.00	15.00
150.900	0.418	43.41	34.25	0.45	35.94	23.00	15.00
151.318	0.664	45.38	48.96	0.44	32.86	23.00	15.00
151.982	0.664	45.38	42.01	0.42	27.11	23.00	15.00
152.646	0.301	45.38	16.73	0.39	20.84	23.00	15.00
152.947	0.253	46.28	12.95	0.37	17.68	23.00	15.00
153.200	0.664	46.28	28.86	0.35	14.76	23.00	15.00
153.864	0.664	46.28	21.47	0.00	0.00	25.00	0.50
154.528	0.664	46.28	14.78	0.00	0.00	25.00	0.50
155.193	0.407	46.28	5.75	0.00	0.00	25.00	0.50
155.600	0.664	46.28	3.97	0.00	0.00	25.00	0.50

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 dx(m) : Larghezza concio
 alpha() : Angolo pendenza base concio
 W(kN/m) : Forza peso concio
 ru(-) : Coefficiente locale pressione interstiziale
 U(kPa) : Pressione totale dei pori base concio
 phi'() : Angolo di attrito efficace base concio
 c'/Cu (kPa) : Coesione efficace o Resistenza al taglio in condizioni non drenate

TABELLA DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	ht (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (--)	FS_qFEM (--)	FS_p-qPATH (--)			
88.975	0.000	32.818	-0.249	0.0000000000E+000	0.0000000000E+000	0.0000000000E+000	7.7769714444E+000	0.040	19.112	8.494		
89.639	0.157	32.653	-0.249	4.9555783364E+000	-1.5934164665E-002	7.1452647063E+000	0.040	19.112	8.494			
90.303	0.314	32.487	-0.269	9.4915852099E+000	-7.6265694095E-002	1.0027520605E+001	0.040	11.513	5.965			
90.967	0.444	32.296	-0.271	1.8275877889E+001	-4.3911324721E-001	1.8158835883E+001	0.043	13.646	6.289			
91.632	0.599	32.128	-0.246	3.3613314101E+001	-1.3381143623E+000	3.1260232253E+001	0.052	17.335	7.359			
92.296	0.763	31.969	-0.232	5.9801163558E+001	-3.1785958136E+000	4.4166467714E+001	0.063	20.257	8.499			
92.515	0.823	31.923	-0.217	6.9823434483E+001	-3.9927000515E+000	4.8627150072E+001	0.065	20.784	8.768			
93.179	0.979	31.777	-0.207	1.0795276679E+002	-7.6418543899E+000	5.5271340384E+001	0.068	21.314	9.245			
93.843	1.153	31.648	-0.187	1.4324445644E+002	-1.0615684070E+001	5.4594334069E+001	0.070	21.401	9.488			
94.135	1.235	31.599	-0.159	1.5933594800E+002	-1.1682454951E+001	5.6700137320E+001	0.070	21.161	9.497			
94.799	1.388	31.496	-0.144	1.9921497089E+002	-1.2067224213E+001	5.8956233609E+001	0.070	19.807	9.213			
95.188	1.489	31.447	-0.109	2.2189137293E+002	-1.1447201084E+001	5.8581015346E+001	0.070	18.719	8.910			
95.852	1.617	31.381	-0.093	2.6109547112E+002	-7.8523120737E+000	5.5099189006E+001	0.069	16.329	8.123			
96.029	1.657	31.369	-0.053	2.7068108484E+002	-6.5348067201E+000	5.3802988337E+001	0.069	15.684	7.895			
96.693	1.742	31.337	-0.041	3.0579996575E+002	6.6236401882E-001	4.6084592875E+001	0.071	13.134	6.921			
96.894	1.775	31.333	-0.001	3.1461865987E+002	3.3976975149E+000	4.3845084218E+001	0.072	12.417	6.629			
97.558	1.836	31.335	0.006	3.4331665051E+002	1.5098087919E+001	4.2170360093E+001	0.081	10.116	5.650			
97.637	1.845	31.338	0.040	3.4663980549E+002	1.6914323321E+001	4.1639709181E+001	0.083	9.846	5.531			
98.301	1.871	31.365	0.046	3.7202342405E+002	3.1491570755E+001	3.3548660151E+001	0.098	7.863	4.620			
98.463	1.881	31.376	0.082	3.7727505852E+002	3.4975715689E+001	3.2529274565E+001	0.102	7.464	4.424			
99.127	1.887	31.433	0.092	3.9920638706E+002	4.9878670385E+001	3.0760536275E+001	0.128	5.879	3.630			
99.359	1.894	31.458	0.124	4.0614635962E+002	5.5046622570E+001	2.9815664329E+001	0.140	5.431	3.396			
100.023	1.894	31.544	0.137	4.2564989737E+002	7.0205150319E+001	2.7104291011E+001	0.190	4.228	2.758			
100.478	1.902	31.612	0.157	4.3727653421E+002	7.9718158706E+001	2.5165056308E+001	0.236	3.625	2.429			
101.142	1.924	31.720	0.168	4.5361165029E+002	9.2630375815E+001	2.4013752448E+001	0.319	2.868	2.012			
101.523	1.942	31.787	0.175	4.6263008995E+002	9.9285309218E+001	2.2733625648E+001	0.362	2.509	1.813			



102.187	1.971	31.903	0.175	4.7663209650E+002	1.0857779406E+002	2.0922143705E+001	0.418	2.066	1.565
102.510	1.987	31.961	0.167	4.8336954198E+002	1.1295108222E+002	1.9881481755E+001	0.442	1.890	1.466
103.175	2.007	32.067	0.162	4.9526002339E+002	1.2066594064E+002	1.7989568207E+001	0.476	1.643	1.327
103.475	2.018	32.117	0.158	5.0068140184E+002	1.2410141619E+002	1.7634475109E+001	0.489	1.559	1.279
104.139	2.034	32.219	0.156	5.1181509607E+002	1.3101894600E+002	1.7164984987E+001	0.511	1.417	1.198
104.408	2.042	32.263	0.162	5.1647609451E+002	1.3383460323E+002	1.7350575510E+001	0.519	1.369	1.171
105.073	2.064	32.371	0.168	5.2803742560E+002	1.4065071384E+002	1.8710233322E+001	0.537	1.276	1.117
105.348	2.078	32.421	0.172	5.3333828703E+002	1.4368366413E+002	1.8633525910E+001	0.544	1.241	1.097
105.800	2.095	32.496	0.172	5.4130301835E+002	1.4815834009E+002	1.8100536005E+001	0.554	1.197	1.071
106.285	2.118	32.582	0.170	5.5033064731E+002	1.5311111055E+002	1.7991743648E+001	0.565	1.154	1.045
106.949	2.141	32.691	0.167	5.6171308409E+002	1.5917135064E+002	1.7758013354E+001	0.578	1.110	1.019
107.225	2.153	32.739	0.161	5.6667600712E+002	1.6175932320E+002	1.7395531260E+001	0.583	1.093	1.008
107.889	2.169	32.842	0.158	5.7723722519E+002	1.6712525731E+002	1.6591562002E+001	0.594	1.063	0.990
108.159	2.179	32.887	0.154	5.8179279844E+002	1.6939470139E+002	1.6314129491E+001	0.598	1.051	0.982
108.823	2.191	32.987	0.150	5.9171646638E+002	1.7422545007E+002	1.5846971115E+001	0.608	1.029	0.969
108.840	2.191	32.989	0.172	5.9198629875E+002	1.7435472164E+002	1.5934311046E+001	0.608	1.029	0.968
109.094	2.201	33.033	0.164	5.9627411238E+002	1.7639927283E+002	1.6506993994E+001	0.612	1.020	0.963
109.720	2.218	33.134	0.165	6.0601545803E+002	1.8096229391E+002	1.6101694798E+001	0.620	1.003	0.952
110.026	2.230	33.187	0.169	6.1102688955E+002	1.8326490537E+002	1.6103196893E+001	0.624	0.996	0.947
110.600	2.247	33.283	0.173	6.1998260959E+002	1.8733510505E+002	1.6262720128E+001	0.632	0.983	0.939
110.960	2.263	33.348	0.179	6.2597718997E+002	1.9002882136E+002	1.6422865554E+001	0.637	0.975	0.934
111.624	2.289	33.466	0.184	6.3657745991E+002	1.9472278148E+002	1.7060534462E+001	0.646	0.963	0.926
111.891	2.305	33.519	0.187	6.4125888799E+002	1.9676526867E+002	1.6991009453E+001	0.649	0.957	0.923
112.555	2.332	33.640	0.185	6.5169830350E+002	2.0126605200E+002	1.6120537767E+001	0.657	0.947	0.918
112.825	2.346	33.692	0.184	6.5608904781E+002	2.0313159617E+002	1.5046644943E+001	0.660	0.943	0.916
113.000	2.351	33.722	0.165	6.5858184029E+002	2.0417957183E+002	1.4033386766E+001	0.662	0.941	0.915
113.664	2.364	33.831	0.167	6.6737320782E+002	2.0779299297E+002	1.4793072714E+001	0.667	0.935	0.913
113.758	2.369	33.849	0.171	6.6878547445E+002	2.0836505037E+002	1.4735515808E+001	0.668	0.934	0.913
114.360	2.382	33.950	0.175	6.7658223779E+002	2.1147808831E+002	1.3644269252E+001	0.672	0.930	0.913
114.695	2.396	34.012	0.177	6.8128335714E+002	2.1332579393E+002	1.3536023804E+001	0.674	0.928	0.913
115.359	2.412	34.127	0.173	6.8962740153E+002	2.1655580280E+002	1.3297193727E+001	0.678	0.926	0.916
115.400	2.414	34.134	0.188	6.9016999626E+002	2.1676418640E+002	1.3346633671E+001	0.678	0.925	0.916
115.633	2.423	34.178	0.183	6.9328000991E+002	2.1795707882E+002	1.3155122638E+001	0.679	0.925	0.918
116.297	2.444	34.298	0.187	7.0160569224E+002	2.2111656397E+002	1.3311575979E+001	0.681	0.924	0.923
116.571	2.458	34.353	0.191	7.0534850432E+002	2.2253009467E+002	1.3267994098E+001	0.683	0.924	0.926
117.235	2.482	34.477	0.188	7.1357521320E+002	2.2561779864E+002	1.2432427941E+001	0.685	0.925	0.933
117.506	2.494	34.529	0.193	7.1694861664E+002	2.2687812809E+002	1.2483355955E+001	0.685	0.926	0.937
117.700	2.502	34.567	0.202	7.1936951717E+002	2.2778299596E+002	1.2561675276E+001	0.686	0.927	0.940
118.364	2.537	34.703	0.208	7.2783912856E+002	2.3091938099E+002	1.4384531972E+001	0.687	0.930	0.951
118.443	2.544	34.722	0.225	7.2898393274E+002	2.3134020844E+002	1.4457472246E+001	0.688	0.930	0.952
119.107	2.590	34.870	0.231	7.3791172448E+002	2.3460928030E+002	1.4348140620E+001	0.689	0.935	0.965
119.375	2.616	34.937	0.223	7.4185617162E+002	2.3603528516E+002	1.3956506217E+001	0.689	0.937	0.971
120.000	2.652	35.069	0.216	7.4947540990E+002	2.3875627548E+002	1.2468673699E+001	0.690	0.941	0.984
120.314	2.673	35.139	0.214	7.5343172538E+002	2.4014398524E+002	1.2224168298E+001	0.691	0.943	0.990
120.978	2.708	35.278	0.211	7.6101070666E+002	2.4275701934E+002	1.1562201899E+001	0.691	0.948	1.002
121.254	2.726	35.338	0.201	7.6421852949E+002	2.4384464747E+002	1.1130769905E+001	0.691	0.951	1.007
121.918	2.749	35.466	0.193	7.7082123117E+002	2.4603527233E+002	9.3975277754E+000	0.691	0.955	1.018
122.070	2.754	35.495	0.190	7.7222984135E+002	2.4649126200E+002	9.2223664924E+000	0.691	0.956	1.020
122.203	2.759	35.520	0.190	7.7344835687E+002	2.4688414216E+002	9.1776109617E+000	0.691	0.957	1.022
122.300	2.762	35.539	0.188	7.7434071036E+002	2.4717091330E+002	9.0923348700E+000	0.691	0.958	1.023
122.964	2.781	35.663	0.196	7.7999382734E+002	2.4894403118E+002	9.1962177553E+000	0.691	0.963	1.032
123.158	2.794	35.707	0.212	7.8181368201E+002	2.4950939298E+002	9.1113294345E+000	0.691	0.964	1.034
123.822	2.820	35.845	0.215	7.8721707256E+002	2.5116338426E+002	8.2691516457E+000	0.691	0.969	1.042
124.090	2.838	35.907	0.223	7.8944584133E+002	2.5183996307E+002	7.9360854241E+000	0.691	0.971	1.046
124.600	2.858	36.018	0.228	7.9311836287E+002	2.5294421881E+002	7.1629201773E+000	0.690	0.975	1.051
125.013	2.885	36.118	0.243	7.9606474901E+002	2.5381402580E+002	6.7146281922E+000	0.690	0.979	1.056
125.677	2.923	36.280	0.253	8.0007669276E+002	2.5496329389E+002	5.7658496692E+000	0.689	0.984	1.063
125.929	2.945	36.350	0.243	8.0150256400E+002	2.5534973841E+002	5.1072226533E+000	0.689	0.986	1.066
126.593	2.968	36.503	0.227	8.0392336095E+002	2.5594887524E+002	2.5787843144E+000	0.687	0.990	1.071
126.856	2.973	36.560	0.219	8.0448932568E+002	2.5604249300E+002	2.0251913822E+000	0.687	0.992	1.072
127.000	2.975	36.592	0.206	8.0477138322E+002	2.5608049693E+002	1.7366871948E+000	0.687	0.993	1.073
127.664	2.973	36.727	0.207	8.0526712991E+002	2.5596490587E+002	-1.0244554896E-001	0.685	0.995	1.076
127.781	2.976	36.754	0.223	8.0523779934E+002	2.5588655824E+002	-3.8720633542E-001	0.685	0.996	1.077
128.445	2.979	36.901	0.227	8.0446727987E+002	2.5520875374E+002	-2.3024349779E+000	0.683	0.998	1.079
128.723	2.986	36.968	0.230	8.0369505546E+002	2.5473059174E+002	-3.0120293628E+000	0.682	0.998	1.080
129.387	2.985	37.117	0.226	8.0132624933E+002	2.5340696795E+002	-5.3493055579E+000	0.679	1.000	1.081
129.400	2.986	37.121	0.252	8.0125597790E+002	2.5337127315E+002	-5.3930473746E+000	0.679	1.000	1.081
129.693	2.993	37.195	0.252	7.9961608846E+002	2.5253976638E+002	-6.0882823218E+000	0.678	1.000	1.082
130.358	3.005	37.362	0.266	7.9482147703E+002	2.5027843049E+002	-9.2807129852E+000	0.675	1.001	1.083
130.717	3.025	37.467	0.280	7.9108633460E+002	2.4863883505E+002	-1.0902545982E+001	0.673	1.001	1.084
131.381	3.033	37.649	0.273	7.8322316116E+002	2.4537636081E+002	-1.2849778698E+001	0.669	1.002	1.085



131.647	3.036	37.721	0.269	7.7969260333E+002	2.4396249753E+002	-1.3280172655E+001	0.668	1.002	1.085
131.800	3.031	37.761	0.275	7.7766427699E+002	2.4316213185E+002	-1.3900701813E+001	0.667	1.002	1.085
132.464	3.021	37.946	0.277	7.6667874040E+002	2.3900355250E+002	-1.7263196502E+001	0.663	1.003	1.086
132.549	3.019	37.969	0.291	7.6521204340E+002	2.3845700686E+002	-1.7694941985E+001	0.663	1.003	1.086
133.213	2.997	38.163	0.296	7.5168603288E+002	2.3353157245E+002	-2.1697360815E+001	0.659	1.004	1.087
133.419	2.993	38.226	0.284	7.4713440338E+002	2.3188848590E+002	-2.2169273504E+001	0.657	1.004	1.088
134.083	2.938	38.411	0.281	7.3228367316E+002	2.2664644299E+002	-2.4688109570E+001	0.654	1.005	1.089
134.200	2.931	38.446	0.298	7.2934540442E+002	2.2561102079E+002	-2.5274938415E+001	0.653	1.005	1.089
134.330	2.923	38.484	0.308	7.2604433832E+002	2.2444706305E+002	-2.5815517900E+001	0.652	1.005	1.089
134.994	2.868	38.690	0.327	7.0772252266E+002	2.1800121303E+002	-3.3706606600E+001	0.647	1.006	1.091
135.199	2.866	38.768	0.386	7.0041610681E+002	2.1541382805E+002	-3.5850479615E+001	0.645	1.006	1.091
135.863	2.839	39.025	0.387	6.7606245241E+002	2.0676832572E+002	-3.7682917434E+001	0.638	1.006	1.092
136.096	2.830	39.115	0.396	6.6722561478E+002	2.0361550665E+002	-3.8483358747E+001	0.636	1.006	1.093
136.600	2.801	39.317	0.401	6.4732479630E+002	1.9650637998E+002	-3.9973629407E+001	0.630	1.006	1.094
137.016	2.779	39.485	0.416	6.3052179309E+002	1.9045341150E+002	-4.1274691461E+001	0.624	1.006	1.094
137.680	2.739	39.766	0.428	6.0218561647E+002	1.8018645894E+002	-4.3498462506E+001	0.614	1.005	1.094
138.013	2.723	39.912	0.407	5.8757135572E+002	1.7484798437E+002	-4.2418417914E+001	0.609	1.004	1.094
138.677	2.661	40.172	0.395	5.6138431997E+002	1.6521701937E+002	-3.9699836111E+001	0.598	1.003	1.093
138.989	2.635	40.297	0.401	5.4896107633E+002	1.6058406467E+002	-4.0029678459E+001	0.592	1.002	1.092
139.000	2.634	40.302	0.369	5.4851772759E+002	1.6041835313E+002	-3.9974014032E+001	0.592	1.002	1.092
139.664	2.557	40.547	0.392	5.2447045483E+002	1.5135106274E+002	-4.1035617404E+001	0.580	1.000	1.089
139.944	2.547	40.672	0.422	5.1241502035E+002	1.4670978100E+002	-4.1817870935E+001	0.572	0.998	1.087
140.608	2.498	40.945	0.413	4.8661527577E+002	1.3663001433E+002	-3.8803416742E+001	0.555	0.996	1.080
140.893	2.479	41.064	0.406	4.7558092750E+002	1.3224421313E+002	-3.7993039239E+001	0.547	0.994	1.077
141.400	2.435	41.266	0.412	4.5702660872E+002	1.2479271202E+002	-3.7611249572E+001	0.532	0.992	1.071
141.826	2.411	41.448	0.431	4.4063744145E+002	1.1812202561E+002	-3.8361161960E+001	0.518	0.989	1.064
142.490	2.377	41.736	0.447	4.1527930616E+002	1.0760826949E+002	-4.0436145601E+001	0.494	0.985	1.053
142.781	2.375	41.875	0.433	4.0324211105E+002	1.0257409649E+002	-3.9482703570E+001	0.481	0.983	1.047
143.445	2.328	42.150	0.417	3.7996466931E+002	9.2737793257E+001	-3.5256827689E+001	0.456	0.979	1.036
143.748	2.309	42.279	0.419	3.6924916157E+002	8.8216095991E+001	-3.2557554501E+001	0.443	0.978	1.032
143.800	2.304	42.299	0.391	3.6758116760E+002	8.7511683569E+001	-3.2070420601E+001	0.441	0.977	1.031
144.464	2.242	42.559	0.411	3.4634489098E+002	7.8609304242E+001	-3.5268811543E+001	0.414	0.974	1.024
144.752	2.234	42.690	0.437	3.3579292848E+002	7.4303283307E+001	-3.5964711703E+001	0.400	0.974	1.022
145.416	2.197	42.975	0.430	3.1302684514E+002	6.5232055031E+001	-3.4029088832E+001	0.371	0.974	1.020
145.801	2.176	43.141	0.429	2.9996219462E+002	6.0239756660E+001	-3.3719133922E+001	0.354	0.976	1.022
146.200	2.131	43.312	0.444	2.8659301296E+002	5.5349025004E+001	-3.5449510067E+001	0.338	0.979	1.027
146.420	2.115	43.415	0.460	2.7856309394E+002	5.2527310735E+001	-3.5844646604E+001	0.328	0.982	1.032
146.704	2.090	43.543	0.489	2.6863428981E+002	4.9100746585E+001	-3.5978419776E+001	0.316	0.986	1.038
147.368	2.020	43.879	0.515	2.4321648162E+002	4.1074900307E+001	-4.0236623832E+001	0.288	1.005	1.065
147.570	2.008	43.990	0.511	2.3496567105E+002	3.8611166981E+001	-3.9841998754E+001	0.279	1.013	1.076
148.234	1.882	44.322	0.499	2.1067156316E+002	3.1886866468E+001	-3.5559812519E+001	0.255	1.044	1.118
148.387	1.852	44.398	0.490	2.0525299020E+002	3.0470773127E+001	-3.5090448207E+001	0.250	1.052	1.129
148.600	1.793	44.502	0.542	1.9786520175E+002	2.8595161604E+001	-3.5374308862E+001	0.243	1.064	1.146
149.264	1.656	44.873	0.561	1.7310664759E+002	2.2999584738E+001	-4.0288049432E+001	0.219	1.130	1.233
149.283	1.653	44.885	0.631	1.7232873013E+002	2.2833953307E+001	-4.0345561884E+001	0.218	1.133	1.236
149.948	1.498	45.304	0.637	1.4621515764E+002	1.7547459254E+001	-3.8682136187E+001	0.193	1.238	1.371
150.216	1.441	45.479	0.641	1.3592194560E+002	1.5617651471E+001	-3.7412950433E+001	0.183	1.293	1.432
150.880	1.235	45.902	0.635	1.1274152771E+002	1.1687995254E+001	-3.0826423890E+001	0.159	1.457	1.608
150.900	1.228	45.914	0.655	1.1211820623E+002	1.1591342061E+001	-3.0779209429E+001	0.158	1.463	1.614
151.318	1.108	46.189	0.707	9.8584313778E+001	9.5490542702E+000	-3.2261879429E+001	0.142	1.647	1.788
151.982	0.924	46.679	0.774	7.7271927821E+001	6.6542869414E+000	-3.3148619035E+001	0.116	2.031	2.146
152.646	0.789	47.217	0.810	5.4550543848E+001	3.7536404750E+000	-3.1690328659E+001	0.097	2.453	2.553
152.947	0.728	47.460	0.830	4.5365421123E+001	2.7289489829E+000	-2.9622511556E+001	0.089	2.716	2.790
153.200	0.679	47.676	0.831	3.8071606358E+001	1.9915864533E+000	-2.6903756782E+001	0.082	2.999	3.024
153.864	0.531	48.222	0.866	2.3584235570E+001	7.6684773342E-001	-1.8911319183E+001	0.065	3.992	3.635
154.528	0.441	48.826	0.860	1.2950298074E+001	2.2749680145E-001	-1.3886399146E+001	0.048	6.637	5.571
155.193	0.285	49.365	0.738	5.1379013648E+000	3.7709072750E-002	-7.4086639730E+000	0.040	16.090	12.092
155.600	0.111	49.617	0.738	3.2074794396E+000	1.4436299989E-002	-4.7726328778E+000	0.040	16.090	17.527

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio
 ht(m) : Altezza linea di thrust da nodo sinistro base concio
 yt(m) : coordinata Y linea di thrust
 yt'(-) : gradiente pendenza locale linea di thrust
 E(x)(kN/m) : Forza Normale interconcio
 T(x)(kN/m) : Forza Tangenziale interconcio
 E' (kN) : derivata Forza normale interconcio
 Rho(x) (-) : fattore mobilitazione resistenza al taglio verticale interconcio ZhU et al.(2003)
 FS_qFEM(x)(-) : fattore di sicurezza locale stimato (locale in X) by qFEM
 FS_p-qPATH(x)(-) : fattore di sicurezza locale stimato (locale in X) by p-qPATH Procedure



TABELLA SFORZI DI TAGLIO DISTRIBUITI LUNGO SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	dl (m)	alpha (°)	TauStress (kPa)	TauF (kN/m)	TauStrength (kPa)	TauS (kN/m)
88.975	0.664	0.738	-25.882	-1.874	-1.383	16.812	12.411
89.639	0.664	0.738	-25.882	-5.752	-4.246	17.575	12.975
90.303	0.664	0.738	-25.882	-9.587	-7.077	18.971	14.005
90.967	0.664	0.738	-25.882	-13.422	-9.908	19.832	14.641
91.632	0.664	0.738	-25.882	-17.257	-12.739	20.466	15.109
92.296	0.219	0.244	-25.882	-19.807	-4.825	20.306	4.946
92.515	0.664	0.730	-24.468	-21.249	-15.506	21.238	15.498
93.179	0.664	0.730	-24.468	-24.753	-18.063	23.869	17.417
93.843	0.291	0.320	-24.468	-27.273	-8.730	25.477	8.155
94.135	0.664	0.712	-21.047	-25.841	-18.390	31.223	22.220
94.799	0.389	0.417	-21.047	-28.017	-11.672	34.107	14.210
95.188	0.664	0.692	-16.292	-23.156	-16.023	40.441	27.984
95.852	0.177	0.185	-16.292	-24.297	-4.489	42.562	7.864
96.029	0.664	0.675	-10.071	-14.391	-9.708	47.324	31.924
96.693	0.200	0.203	-10.071	-14.913	-3.033	49.689	10.106
96.894	0.664	0.667	-5.077	-5.426	-3.618	52.609	35.080
97.558	0.079	0.079	-5.077	-5.550	-0.440	55.803	4.428
97.637	0.664	0.664	0.169	5.457	3.624	53.900	35.800
98.301	0.162	0.162	0.169	5.552	0.900	53.982	8.747
98.463	0.664	0.666	4.405	14.803	9.861	52.404	34.909
99.127	0.232	0.232	4.405	14.986	3.480	52.502	12.192
99.359	0.664	0.670	7.405	21.612	14.475	50.799	34.024
100.023	0.455	0.459	7.405	21.828	10.014	50.379	23.113
100.478	0.664	0.670	7.406	22.045	14.765	50.263	33.665
101.142	0.381	0.384	7.406	22.246	8.543	49.877	19.154
101.523	0.664	0.670	7.407	22.449	15.036	49.244	32.983
102.187	0.323	0.326	7.407	22.639	7.379	49.275	16.061
102.510	0.664	0.670	7.408	22.832	15.292	49.082	32.874
103.175	0.301	0.303	7.408	23.017	6.980	49.211	14.922
103.475	0.664	0.670	7.409	23.205	15.542	49.272	33.002
104.139	0.269	0.271	7.409	23.385	6.343	49.462	13.417
104.408	0.664	0.670	7.410	23.567	15.784	49.732	33.309
105.073	0.275	0.278	7.410	23.747	6.594	50.092	13.910
105.348	0.452	0.456	7.410	23.889	10.889	50.007	22.794
105.800	0.485	0.489	7.410	24.075	11.773	50.343	24.620
106.285	0.664	0.670	7.411	24.310	16.283	50.397	33.755
106.949	0.275	0.278	7.411	24.501	6.806	50.645	14.069
107.225	0.664	0.670	7.412	24.694	16.539	50.636	33.915
107.889	0.270	0.272	7.412	24.883	6.775	50.915	13.863
108.159	0.664	0.670	7.537	25.377	17.002	50.893	34.097
108.823	0.017	0.017	7.537	25.514	0.438	51.057	0.876
108.840	0.254	0.256	7.537	25.557	6.544	51.273	13.128
109.094	0.626	0.632	7.661	26.004	16.429	51.225	32.364
109.720	0.306	0.309	7.661	26.148	8.078	51.379	15.873
110.026	0.574	0.579	7.786	26.596	15.403	51.395	29.766
110.600	0.360	0.363	7.786	26.738	9.702	51.600	18.724
110.960	0.664	0.671	7.911	27.210	18.246	51.634	34.624
111.624	0.267	0.270	7.911	27.351	7.385	51.833	13.996
111.891	0.664	0.671	8.036	27.810	18.654	51.745	34.709
112.555	0.270	0.272	8.036	27.948	7.610	51.819	14.111
112.825	0.175	0.177	8.161	28.335	5.010	51.548	9.114
113.000	0.664	0.671	8.161	28.457	19.094	51.621	34.637
113.664	0.094	0.095	8.161	28.567	2.715	51.772	4.920
113.758	0.602	0.608	8.285	28.990	17.628	51.666	31.418
114.360	0.335	0.339	8.285	29.141	9.869	51.835	17.555
114.695	0.664	0.671	8.409	29.658	19.913	51.883	34.834
115.359	0.041	0.041	8.409	29.794	1.225	51.942	2.135
115.400	0.233	0.235	8.409	29.872	7.023	52.094	12.247
115.633	0.664	0.672	8.484	30.340	20.374	52.435	35.212
116.297	0.275	0.278	8.484	30.621	8.500	52.806	14.658
116.571	0.664	0.672	8.559	31.105	20.892	53.098	35.664
117.235	0.271	0.274	8.559	31.385	8.599	53.344	14.615
117.506	0.194	0.196	8.634	31.730	6.213	53.449	10.465
117.700	0.664	0.672	8.634	31.986	21.488	53.899	36.209



118.364	0.079	0.079	8.634	32.207	2.558	54.111	4.298
118.443	0.664	0.672	8.709	32.639	21.931	54.385	36.544
119.107	0.268	0.271	8.709	32.915	8.927	54.600	14.808
119.375	0.625	0.632	8.785	33.396	21.121	54.683	34.584
120.000	0.314	0.318	8.785	33.697	10.699	54.920	17.438
120.314	0.664	0.672	8.861	34.277	23.042	55.307	37.178
120.978	0.276	0.279	8.861	34.625	9.670	55.599	15.527
121.254	0.664	0.672	8.936	35.194	23.663	55.948	37.616
121.918	0.152	0.154	8.936	35.496	5.458	56.111	8.628
122.070	0.133	0.134	8.936	35.601	4.785	56.232	7.557
122.203	0.097	0.098	9.010	35.909	3.535	56.290	5.542
122.300	0.664	0.672	9.010	36.192	24.339	56.762	38.172
122.964	0.194	0.196	9.010	36.511	7.160	57.117	11.201
123.158	0.664	0.673	9.522	38.389	25.854	57.255	38.560
123.822	0.268	0.272	9.522	38.731	10.516	57.581	15.634
124.090	0.510	0.518	10.052	40.647	21.059	57.591	29.839
124.600	0.413	0.419	10.052	40.912	17.160	57.830	24.257
125.013	0.664	0.676	10.592	42.789	28.912	57.594	38.916
125.677	0.252	0.256	10.592	42.955	11.005	57.559	14.747
125.929	0.664	0.677	11.129	44.772	30.307	57.265	38.763
126.593	0.262	0.267	11.129	44.923	12.008	57.215	15.294
126.856	0.144	0.148	11.679	46.688	6.888	56.896	8.395
127.000	0.664	0.678	11.679	46.804	31.743	56.979	38.644
127.664	0.117	0.119	11.679	46.915	5.587	56.951	6.782
127.781	0.664	0.680	12.218	48.673	33.077	56.691	38.526
128.445	0.278	0.284	12.218	48.786	13.865	56.660	16.103
128.723	0.664	0.681	12.738	50.478	34.373	56.409	38.412
129.387	0.013	0.013	12.738	50.544	0.676	56.340	0.754
129.400	0.293	0.301	12.738	50.567	15.212	56.361	16.955
129.693	0.664	0.682	13.217	52.087	35.537	56.047	38.239
130.358	0.359	0.369	13.217	52.140	19.243	55.958	20.652
130.717	0.664	0.687	14.680	56.526	38.811	54.994	37.759
131.381	0.266	0.275	14.680	56.498	15.556	54.973	15.136
131.647	0.153	0.159	16.332	61.250	9.738	53.826	8.558
131.800	0.664	0.692	16.332	61.136	42.313	53.636	37.122
132.464	0.085	0.088	16.332	61.031	5.375	53.633	4.723
132.549	0.664	0.699	18.086	65.685	45.895	52.102	36.404
133.213	0.206	0.217	18.086	65.445	14.173	52.016	11.264
133.419	0.664	0.706	19.789	69.558	49.099	50.411	35.584
134.083	0.117	0.124	19.789	69.223	8.612	50.318	6.260
134.200	0.130	0.138	19.789	69.122	9.521	50.267	6.924
134.330	0.664	0.714	21.443	72.763	51.922	48.612	34.689
134.994	0.205	0.221	21.443	72.281	15.939	48.597	10.716
135.199	0.664	0.722	23.082	75.428	54.458	46.942	33.891
135.863	0.232	0.253	23.082	74.773	18.882	46.870	11.836
136.096	0.504	0.555	24.568	77.284	42.868	45.373	25.167
136.600	0.416	0.457	24.568	76.451	34.958	45.129	20.636
137.016	0.664	0.738	25.861	77.879	57.483	43.673	32.235
137.680	0.333	0.370	25.861	76.815	28.406	43.509	16.090
138.013	0.664	0.738	25.862	75.752	55.914	42.795	31.588
138.677	0.312	0.347	25.862	74.710	25.898	42.593	14.764
138.989	0.011	0.012	25.864	74.367	0.915	42.618	0.524
139.000	0.664	0.738	25.864	73.622	54.342	41.876	30.909
139.664	0.280	0.311	25.864	72.580	22.576	41.988	13.060
139.944	0.664	0.738	25.865	71.541	52.806	41.274	30.466
140.608	0.284	0.316	25.865	70.494	22.288	41.117	13.000
140.893	0.507	0.564	25.866	69.622	39.246	40.614	22.895
141.400	0.426	0.473	25.866	68.592	32.469	40.405	19.126
141.826	0.664	0.738	25.867	67.390	49.744	39.912	29.461
142.490	0.291	0.323	25.867	66.336	21.423	39.967	12.907
142.781	0.664	0.738	25.868	65.284	48.189	39.160	28.906
143.445	0.303	0.337	25.868	64.216	21.632	39.020	13.144
143.748	0.052	0.058	25.869	63.826	3.688	38.870	2.246
143.800	0.664	0.738	25.869	62.947	46.465	38.213	28.207
144.464	0.288	0.320	25.869	61.770	19.740	38.186	12.204
144.752	0.664	0.738	25.870	60.594	44.728	37.459	27.651
145.416	0.386	0.428	25.870	59.296	25.408	37.178	15.930
145.801	0.399	0.453	28.420	61.555	27.892	35.161	15.933
146.200	0.220	0.250	28.420	60.570	15.151	35.079	8.775
146.420	0.284	0.323	28.420	59.773	19.280	34.720	11.199
146.704	0.664	0.778	31.410	61.178	47.610	31.999	24.902



147.368	0.202	0.237	31.410	59.421	14.067	32.027	7.582
147.570	0.664	0.807	34.576	59.842	48.272	28.516	23.003
148.234	0.153	0.186	34.576	57.755	10.760	28.273	5.267
148.387	0.213	0.268	37.428	58.262	15.591	25.875	6.924
148.600	0.664	0.836	37.428	55.892	46.748	24.924	20.846
149.264	0.019	0.024	37.428	54.123	1.313	25.485	0.618
149.283	0.664	0.878	40.873	52.964	46.522	21.985	19.311
149.948	0.268	0.354	40.873	49.961	17.699	22.069	7.818
150.216	0.664	0.914	43.408	46.876	42.857	19.349	17.690
150.880	0.020	0.028	43.408	44.337	1.239	19.758	0.552
150.900	0.418	0.575	43.408	42.711	24.580	19.191	11.045
151.318	0.664	0.946	45.381	38.381	36.294	17.525	16.572
151.982	0.664	0.946	45.381	32.936	31.145	17.873	16.901
152.646	0.301	0.428	45.381	28.981	12.406	18.638	7.978
152.947	0.253	0.366	46.281	26.608	9.736	18.575	6.797
153.200	0.664	0.961	46.281	22.574	21.694	17.884	17.187
153.864	0.664	0.961	46.281	16.799	16.144	7.690	7.390
154.528	0.664	0.961	46.281	11.561	11.110	5.345	5.137
155.193	0.407	0.590	46.281	7.335	4.324	3.528	2.080
155.600	0.664	0.961	46.281	3.109	2.988	1.783	1.713

LEGENDA SIMBOLI

X(m) : Ascissa sinistra concio

dx(m) : Larghezza concio

dl(m) : lunghezza base concio

alpha() : Angolo pendenza base concio

TauStress(kPa) : Sforzo di taglio su base concio

TauF (kN/m) : Forza di taglio su base concio

TauStrength(kPa) : Resistenza al taglio su base concio

TauS (kN/m) : Forza resistente al taglio su base concio