ANALISI SUPERFICIE GENERICA 3
Linea separatrice SUBSTRATO ROCCIOSO e strato COLTRE NATURALE

Analisi di stabilità dei pendii con: JANBU (1956)

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Lat./Long.	44.417087/9.129564
Normativa	NTC 2008
Numero di strati	3.0
Numero dei conci	22.0
Grado di sicurezza ritenuto accettabile	1.1
Coefficiente parziale resistenza	1.1
Analisi	Condizione drenata
Superficie di forma generica	

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Coefficienti sismici [N.T.C.]

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Dati generali

Tipo opera:	2 - Opere ordinarie
Classe d'uso:	Classe II
Vita nominale:	50.0 [anni]
Vita di riferimento:	50.0 [anni]

Parametri sismici su sito di riferimento

Categoria sottosuolo:	C
Categoria topografica:	T3

S.L. Stato limite	TR Tempo ritorno [anni]	ag [m/s²]	F0 [-]	TC* [sec]
S.L.O.	30.0	0.28	2.5	0.2
S.L.D.	50.0	0.35	2.55	0.22
S.L.V.	475.0	0.85	2.51	0.28
S.L.C.	975.0	1.13	2.48	0.29

Coefficienti sismici orizzontali e verticali

Opera: Stabilità dei pendii e Fondazioni

S.L. Stato limite	amax [m/s²]	beta [-]	kh [-]	kv [sec]
S.L.O.	0.504	0.2	0.0103	0.0051
S.L.D.	0.63	0.2	0.0128	0.0064
S.L.V.	1.53	0.2	0.0312	0.0156
S.L.C.	2.034	0.24	0.0498	0.0249

Coefficiente azione sismica orizzontale	0.031
Coefficiente azione sismica verticale	0.01 6

Vertici profilo

N	X m	y m
1	0.0	0.0
2	5.02	2.5
3	10.01	2.0
4	15.11	1.47
5	16.36	1.44
6	18.66	2.93
7	21.06	7.15
8	22.59	7.61
9	26.5	8.1
10	32.75	9.52

11	40.67	11.99
12	40.77	12.42
13	44.29	12.42
14	44.29	18.42
15	61.04	24.74
16	67.34	24.74
17	67.34	28.74
18	67.51	28.74
19	71.75	31.66
20	75.51	31.66
21	75.82	32.49
22	79.19	32.49
23	79.19	36.49
24	83.49	38.64
25	88.14	38.73
26	88.16	38.78
27	91.85	38.78
28	91.85	42.78
29	95.51	44.3
30	103.91	44.3
31	103.91	48.3
32	115.54	50.26
33	121.1	50.26
34	121.49	51.04
35	124.11	51.04
36	124.11	55.04
37	132.07	58.65
38	140.88	58.65
39	140.88	62.65
40	145.87	64.54
41	152.55	64.54
42	152.65	64.81
43	155.38	64.81
44	155.38	68.81
45	163.1	70.49
46	168.12	70.52
47	168.25	70.89
48	171.47	70.89
49	171.47	74.89
50	179.02	76.51
51	184.03	76.54
52	184.15	76.85
53	187.11	76.85
54	187.11	80.85
55	194.73	82.47
56	199.74	82.5
57	199.83	82.74
58	202.45	82.74
59	202.45	86.74
60	210.56	88.51
61	215.57	88.54
62	215.71	88.9
63	218.84	88.9
64	218.84	92.9
65	226.36	94.51
66	231.37	94.54
67	231.49	94.86
68	234.47	94.86
69	234.47	98.86
70	242.18	100.51
71	247.19	100.54

72	247.31	100.86
73	250.26	100.86
74	250.26	104.86
75	258.02	106.57
76	263.03	106.6
77	263.16	106.95
78	266.35	106.95
79	266.35	110.95
80	273.9	112.51
81	278.91	112.54
82	279.04	112.89
83	282.14	112.89
84	282.14	116.89
85	289.66	118.51
86	294.67	118.54
87	294.82	118.95
88	298.23	118.95
89	298.23	122.95
90	305.6	124.51
91	310.61	124.54
92	310.63	124.58
93	313.87	124.58
94	313.87	128.58
95	433.8	133.0 2

Falda

Nr.	X (m)	y (m)
1	0.0	0.0
2	5.02	2.5
3	10.01	2.0
4	15.11	1.47
5	16.36	1.44
6	18.66	2.93
7	20.45	6.09
8	102.78	20.1
9	102.8	20.1
10	159.6	43.29
11	159.6	43.29
12	294.28	93.94
13	294.29	93.95
14	330.58	113.29
15	330.6	113.29
16	363.07	118.29
17	363.1	118.29
18	414.23	131.4 5

Vertici strato 1

N	X (m)	y (m)
1	0.0	0.0
2	5.02	2.5
3	5.02	2.5
4	5.02	2.5
5	10.01	2.0
6	15.11	1.47
7	16.36	1.44
8	18.66	2.93
9	21.06	7.15
10	22.59	7.61
11	26.5	8.1
12	32.75	9.52
13	42.61	12.6

14	48.71	13.21
15	53.26	14.02
16	58.12	15.53
17	64.29	17.64
18	70.5	18.02
19	81.13	21.02
20	93.9	23.5
21	101.03	24.85
22	109.98	30.03
23	118.88	31.91
24	128.0	36.58
25	139.9	40.13
26	142.92	40.79
27	159.6	43.29
28	172.1	48.29
29	184.1	53.29
30	192.1	58.29
31	200.1	63.29
32	216.6	68.29
33	239.1	73.29
34	264.1	78.29
35	274.1	83.29
36	284.1	88.29
37	292.6	93.29
38	300.6	98.29
39	308.1	103.29
40	318.1	108.29
41	330.6	113.29
42	363.1	118.29
43	370.6	123.29
44	375.1	128.29
45	433.8	133.0 2

Vertici strato 2

N	X (m)	y (m)
1	0.0	0.0
2	5.02	2.5
3	5.02	2.5
4	10.01	2.0
5	15.11	1.47
6	16.36	1.44
7	18.66	2.93
8	19.56	4.52
9	22.25	5.7
10	66.68	13.34
11	100.36	19.1
12	118.09	19.1
13	161.53	39.47
14	200.09	51.87
15	224.02	63.38
16	261.26	69.58
17	289.18	80.21
18	310.9	95.71
19	344.58	107.22
20	376.94	110.76
21	433.8	116.0 5

Vertici superficie Nr...1

N	X m	y m
1	20.05	5.52
2	66.68	13.34

3	100.36	19.1
4	118.09	19.1
5	161.53	39.47
6	200.09	51.87
7	224.02	63.38
8	261.26	69.58
9	289.18	80.21
10	310.9	95.71
11	344.58	107.22
12	384.79	131.25

Coefficienti parziali per i parametri geotecnici del terreno

Tangente angolo di resistenza al taglio	1.25
Coesione efficace	1.25
Coesione non drenata	1.4
Riduzione parametri geotecnici terreno	Si

Stratigrafia

c: coesione; cu: coesione non drenata; Fi: Angolo di attrito; G: Peso Specifico; Gs: Peso Specifico Saturo; K: Modulo di Winkler

Strato	c (kg/cm²)	cu (kg/cm²)	Fi (°)	G (Kg/m³)	Gs (Kg/m³)	K (Kg/cm³)	Litologia	
1	0.0383		29.6	1837	2000	0.00		
2	0		26.51	1695	1800	0.00		
3	0.4352		33.31	2402	2500	0.00		

Muri di sostegno - Caratteristiche geometriche

N°	x (m)	y (m)	Base mensola a valle (m)	Base mensola a monte (m)	Altezza muro (m)	Spessore testa (m)	Spessore base (m)	Peso specifico (Kg/m³)
1	44.29	12.42	0	0	6	2	4	2800
2	124.11	51.04	0	0	4	3	4	2800
3	155.38	64.81	0	0	4	3	4	2800
4	171.47	70.89	0	0	4	3	4	2800
5	187.11	76.85	0	0	4	3	4	2800
6	202.45	82.74	0	0	4	3	4	2800
7	218.84	88.9	0	0	4	3	4	2800
8	234.47	94.86	0	0	4	3	4	2800
9	250.26	100.86	0	0	4	3	4	2800
10	266.35	106.95	0	0	4	3	4	2800
11	282.14	112.89	0	0	4	3	4	2800
12	298.23	118.95	0	0	4	3	4	2800
13	313.87	124.58	0	0	4	3	4	2800
14	67.34	24.74	0	0	4	3	4	2800
15	79.19	32.49	0	0	4	3	4	2800
16	91.85	38.78	0	0	4	3	4	2800
17	103.91	44.3	0	0	4	3	4	2800
18	140.88	58.65	0	0	4	3	4	280 0

Pali...

N°	x (m)	y (m)	Diametro (m)	Lunghezza (m)	Inclinazione (°)	Interasse (m)
1	43.70198	11.42477	0.2	6	90	3.6
2	41.49123	11.42477	0.2	6	90	3.6
3	45.17582	18.75877	0.22	12	90	0.5
4	39.13314	11.51615	0.22	6	90	0.5

Superficie Nr...1 Fattore di sicurezza=1.43

Nr.	B m	Alfa (°)	Li m	Wi (Kg)	Kh•Wi (Kg)	Kv•Wi (Kg)	c (kg/cm²)	Fi (°)	Ui (Kg)	N'i (Kg)	Ti (Kg)
1	16.57	9.5	16.8	46189.66	1431.88	739.03	0.0	21.8	516.2	36310.9	11187.3
2	16.57	9.5	16.8	333807.6	10348.04	5340.92	0.0	21.8	557.9	313140.3	96477.8
3	16.57	9.6	16.8	420067.5	13022.09	6721.08	0.0	21.8	594.2	395751.2	121942.9
4	16.57	9.7	16.81	568808.1	17633.05	9100.93	0.35	27.7	0.0	532957.1	261662.3
5	16.57	8.2	16.74	839694.7	26030.54	13435.12	0.35	27.7	0.0	796123.1	366813.3
6	16.57	2.4	16.59	897726.3	27829.52	14363.62	0.0	21.8	4117.4	819791.0	249317.9
7	16.57	25.1	18.3	1043421.0	32346.06	16694.74	0.0	21.8	6652.4	902143.1	302764.8
8	16.57	25.1	18.3	1033838.0	32048.99	16541.42	0.0	21.8	5649.0	908953.9	305050.6
9	16.57	21.8	17.85	1014678.0	31455.01	6234.84	0.35	27.7	0.0	925691.1	450064.3
10	16.57	17.8	17.41	1012560.0	31389.36	16200.96	0.0	21.8	5424.7	882925.1	281814.0
11	16.57	19.0	17.52	1024777.0	31768.11	6396.44	0.0	21.8	6141.1	883724.8	283975.7
12	16.57	25.7	18.39	1003193.0	31098.98	16051.09	0.0	21.8	5536.7	882423.3	297534.4
13	16.57	14.7	17.13	1012648.0	31392.08	16202.37	0.35	27.7	0.0	936720.8	434555.6
14	16.57	9.5	16.8	1083566.0	33590.55	17337.06	0.35	27.7	0.0	1022894.0	460258.7
15	16.57	14.7	17.13	1167908.0	36205.14	18686.53	0.0	21.8	10971.7	944176.3	296640.0
16	16.57	20.8	17.73	1182813.0	36667.21	18925.01	0.35	27.7	0.0	1082726.0	514075.5
17	16.57	32.4	19.63	1101160.0	34135.95	17618.55	0.0	21.8	9683.4	934159.7	336301.8
18	16.57	28.6	18.87	999174.1	30974.41	5986.79	0.35	27.7	0.0	911734.4	472572.9
19	16.57	18.9	17.51	843114.2	26136.54	13489.83	0.35	27.7	0.0	769809.6	374722.8
20	16.57	24.2	18.17	664962.4	20613.83	10639.4	0.0	21.8	7574.1	520377.1	173371.9
21	16.57	30.9	19.31	423263.0	13121.15	6772.21	0.0	21.8	1446.0	393681.2	139355.9
22	16.57	30.9	19.31	136327.0	4226.14	2181.23	0.0	21.8	0.0	134408.5	47578.1

CARICO LIMITE PALI
Superficie Nr...1 Fattore di sicurezza=1.43

Micropali Base x=43.70198 Y=11.42477 Plim=21818.9 Kg Sbalzo del palo 8.97 m
Micropali Base x=41.49123 Y=11.42477 Plim=21818.9 Kg Sbalzo del palo 8.97 m
Micropali Monte x=45.17582 Y=18.75877 Plim=5415.0 Kg Sbalzo del palo 8.97 m
Micropali Valle x=39.13314 Y=11.51615 Plim=21818.9 Kg Sbalzo del palo 8.97 m