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

Analisi di stabilità dei pendii con: JANBU (1956)

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	

Coefficienti sismici [N.T.C.]

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	320.04	130.07
96	328.71	130.07
97	328.71	133.07
98	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	22.6
9	102.8	22.6
10	159.6	45.8
11	159.6	45.8
12	294.28	96.44
13	294.29	96.45
14	330.58	115.79
15	330.6	115.8
16	363.07	120.79
17	363.1	120.8
18	414.23	131.45
19	433.8	135.5 2

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	384.82	133.07

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		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	0.1	6	2	4	2800
2	124.11	51.04	0	0.1	4	3	4	2800
3	155.38	64.81	0	0.1	4	3	4	2800
4	171.47	70.89	0	0.1	4	3	4	2800
5	187.11	76.85	0	0.1	4	3	4	2800
6	202.45	82.74	0	0.1	4	3	4	2800
7	218.84	88.9	0	0.1	4	3	4	2800
8	234.47	94.86	0	0.1	4	3	4	2800
9	250.26	100.86	0	0.1	4	3	4	2800
10	266.35	106.95	0	0.1	4	3	4	2800
11	282.14	112.89	0	0.1	4	3	4	2800
12	298.23	118.95	0	0.1	4	3	4	2800
13	313.87	124.58	0	0.1	4	3	4	2800
14	67.34	24.74	0	0.1	4	3	4	2800
15	79.19	32.49	0	0.1	4	3	4	2800
16	91.85	38.78	0	0.1	4	3	4	2800
17	103.91	44.3	0	0.1	4	3	4	2800
18	140.88	58.65	0	0.1	4	3	4	2800
19	328.71	130.07	0	0.1	3	2	3	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

Superficie Nr...1 Fattore di sicurezza=1.37

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	16.81	46622.94	1445.31	745.97	0.0	21.8	758.8	32776.1	10555.9
2	16.57	9.5	16.81	335607.0	10403.82	5369.71	0.0	21.8	1304.6	302270.0	97349.6
3	16.57	9.6	16.81	422689.0	13103.36	6763.02	0.0	21.8	1845.0	377446.1	121573.8
4	16.57	9.7	16.82	572318.4	17741.87	9157.1	0.35	27.7	0.0	534413.5	274148.8
5	16.57	8.2	16.74	844351.1	26174.88	13509.62	0.35	27.7	0.0	798365.1	384385.6
6	16.57	2.4	16.59	902210.6	27968.53	14435.37	0.0	21.8	6622.8	782614.0	248804.4
7	16.57	25.1	18.31	1048371.0	32499.49	16773.93	0.0	21.8	9155.4	861930.0	302379.7
8	16.57	25.1	18.31	1038754.0	32201.38	16620.07	0.0	21.8	8153.1	868655.0	304738.9
9	16.57	21.8	17.85	1021900.0	31678.88	16350.39	0.35	27.7	0.0	925874.5	470513.2
10	16.57	17.8	17.41	1019326.0	31599.1	16309.21	0.0	21.8	7931.6	846207.1	282335.8
11	16.57	19.0	17.53	1029529.0	31915.41	16472.47	0.0	21.8	8644.8	844906.6	283835.4

12	16.57	25.7	18.39	1007643.0	31236.92	16122.28	0.0	21.8	8036.9	841730.6296677.1
13	16.57	14.6	17.13	1017747.0	31550.15	16283.95	0.35	27.7	0.0	937093.8454333.0
14	16.57	9.5	16.8	1090753.0	33813.35	17452.05	0.35	27.7	0.0	1026501.0482658.3
15	16.57	14.8	17.14	1174947.0	36423.36	18799.16	0.0	21.8	13477.7	908045.1298261.1
16	16.57	20.8	17.74	1189636.0	36878.7	19034.17	0.35	27.7	0.0	1081869.0537001.0
17	16.57	32.5	19.65	1107429.0	34330.31	17718.87	0.0	21.8	12174.5	892974.5336197.8
18	16.57	28.5	18.86	1003967.0	31122.99	16063.48	0.35	27.7	0.0	907796.4491845.6
19	16.57	18.9	17.52	909581.3	28197.02	14553.3	0.35	27.7	0.0	826455.2416765.2
20	16.57	25.2	18.31	769662.9	23859.55	12314.61	0.0	21.8	9900.8	582176.1204295.8
21	16.57	32.7	19.7	492918.8	15280.48	7886.7	0.0	21.8	3231.6	433705.7163733.0
22	16.57	32.7	19.7	160592.0	4978.35	2569.47	0.0	21.8	0.0	158526.7 59847.2

CARICO LIMITE PALI

Superficie Nr...1 Fattore di sicurezza=1.37

Micropali Base x=43.70198 Y=11.42477 Plim=21833.2 Kg Sbalzo del palo 8.97 m
Micropali Base x=41.49123 Y=11.42477 Plim=21833.2 Kg Sbalzo del palo 8.97 m