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	1.3
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	40.76	12.37

13	44.15	12.37
14	44.15	18.37
15	61.04	24.74
16	66.08	24.74
17	66.08	28.74
18	67.51	28.74
19	71.75	31.66
20	75.51	31.66
21	75.59	31.87
22	77.96	31.87
23	77.96	35.87
24	82.4	38.1
25	90.21	38.1
26	90.21	42.1
27	94.85	44.03
28	102.28	44.03
29	102.28	48.03
30	115.54	50.26
31	121.1	50.26
32	121.42	50.91
33	123.81	50.91
34	123.81	54.91
35	132.27	58.74
36	141.12	58.74
37	141.12	62.74
38	145.87	64.54
39	152.55	64.54
40	152.55	64.56
41	154.25	64.56
42	154.25	68.56
43	163.1	70.49
44	168.12	70.52
45	168.15	70.6
46	170.12	70.6
47	170.12	74.6
48	179.02	76.51
49	184.03	76.54
50	184.06	76.62
51	186.01	76.62
52	186.01	80.62
53	194.73	82.47
54	199.74	82.5
55	199.89	82.89
56	203.14	82.89
57	203.14	86.89
58	210.56	88.51
59	215.57	88.54
60	215.67	88.8
61	218.41	88.8
62	218.41	92.8
63	226.36	94.51
64	231.37	94.54
65	231.47	94.82
66	234.31	94.82
67	234.31	98.82
68	242.18	100.51
69	247.19	100.54
70	247.19	100.54
71	267.2	100.54
72	272.02	102.54
73	276.14	102.54
74	276.14	105.14
75	277.14	105.14
76	282.79	107.56
77	287.09	107.56
78	287.09	110.16
79	288.09	110.16
80	296.09	112.54

81	299.97	112.54
82	299.97	115.14
83	300.97	115.14
84	307.85	117.6
85	315.6	117.6
86	315.6	120.2
87	316.6	120.2
88	324.51	122.58
89	329.47	122.58
90	329.47	125.18
91	330.47	125.18
92	339.18	127.6
93	344.88	127.6
94	344.88	130.2
95	345.88	130.2
96	355.93	132.19
97	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	414.33	131.46
19	433.8	135.5 1

Vertici strato 1

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	42.61	12.6
12	48.71	13.21
13	53.26	14.02
14	58.12	15.53
15	64.29	17.64
16	70.5	18.02
17	81.13	21.02
18	93.9	23.5
19	101.03	24.85
20	109.98	30.03
21	118.88	31.91
22	128.0	36.58
23	139.9	40.13
24	142.92	40.79

25	159.6	43.29
26	172.1	48.29
27	184.1	53.29
28	192.1	58.29
29	200.1	63.29
30	216.6	68.29
31	239.1	73.29
32	264.1	78.29
33	274.1	83.29
34	284.1	88.29
35	292.6	93.29
36	300.6	98.29
37	308.1	103.29
38	318.1	108.29
39	330.6	113.29
40	363.1	118.29
41	370.6	123.29
42	375.1	128.29
43	375.1	128.29
44	375.1	128.29
45	433.8	133.02
46	439.98	133.0 2

Vertici strato 2

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	19.56	4.52
8	22.25	5.7
9	66.68	13.34
10	100.36	19.1
11	118.09	19.1
12	161.53	39.47
13	200.09	51.87
14	224.02	63.38
15	261.26	69.58
16	289.18	80.21
17	310.9	95.71
18	344.58	107.22
19	376.94	110.76
20	434.11	116.08
21	439.98	116.0 8

Vertici superficie Nr...1

N	X m	y m
1	20.4	6.14
2	22.25	5.7
3	66.68	13.34
4	100.36	19.1
5	118.09	19.1
6	161.53	39.47
7	200.09	51.87
8	224.02	63.38
9	261.26	69.58
10	289.18	80.21
11	310.9	95.71
12	344.58	107.22
13	363.1	118.29
14	370.6	123.29
15	378.93	132.5

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	44.15	12.37	0	0.1	6	2	4	2800
2	77.96	31.87	0	0.1	4	3	4	2800
3	123.81	50.91	0	0.1	4	3	4	2800
4	154.25	64.56	0	0.1	4	3	4	2800
5	170.12	70.6	0	0.1	4	3	4	2800
6	186.01	76.62	0	0.1	4	3	4	2800
7	203.14	82.89	0	0.1	4	3	4	2800
8	218.41	88.8	0	0.1	4	3	4	2800
9	234.31	94.82	0	0.1	4	3	4	2800
10	66.08	24.74	0	0.1	4	3	4	2800
11	90.21	38.1	0	0.1	4	3	4	2800
12	102.28	44.03	0	0.1	4	3	4	2800
13	141.12	58.74	0	0.1	4	3	4	280 0

Pali...

N°	x (m)	y (m)	Diametro (m)	Lunghezza (m)	Inclinazione (°)	Interasse (m)
1	43.47367	11.37152	0.2	6	90	3.6
2	41.34955	11.37152	0.2	6	90	3.6

Superficie Nr...1 Fattore di sicurezza=1.40

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	16.29	7.2	16.42	40273.06	1248.47	644.37	0.0	21.8	564.6	30136.0	9422.4
2	16.29	9.8	16.53	333203.2	10329.3	5331.25	0.35	27.7	0.0	308710.3	173385.0
3	16.29	9.7	16.53	419386.7	13000.99	6710.19	0.35	27.7	0.0	390436.7	207263.5
4	16.29	9.7	16.53	548533.7	17004.54	8776.54	0.35	27.7	0.0	512999.1	258038.8
5	16.29	8.8	16.48	820140.3	25424.35	13122.24	0.35	27.7	0.0	774093.5	365203.0
6	16.29	0.2	16.29	889725.0	27581.47	14235.6	0.0	21.8	6442.4	783881.6	243134.5
7	16.29	25.1	17.99	1032283.0	32000.78	16516.54	0.0	21.8	9246.8	850120.4	291228.4
8	16.29	25.1	17.99	1025450.0	31788.94	16407.2	0.0	21.8	8261.7	859005.4	294272.1
9	16.29	22.7	17.66	1013700.0	31424.7	16219.2	0.35	27.7	0.0	921332.1	459941.2
10	16.29	17.8	17.11	1010723.0	31332.41	6171.56	0.35	27.7	0.0	925228.6	445776.3
11	16.29	17.8	17.11	1028566.0	31885.54	16457.05	0.0	21.8	8689.7	847233.9	276035.7
12	16.29	25.5	18.05	1013747.0	31426.14	16219.95	0.0	21.8	8311.3	847726.0	291304.6
13	16.29	17.9	17.11	1021029.0	31651.89	16336.46	0.35	27.7	0.0	934749.2	449928.8
14	16.29	9.5	16.52	1077119.0	33390.69	17233.9	0.35	27.7	0.0	1015425.0	465938.8
15	16.29	12.1	16.66	947941.6	29386.19	15167.07	0.0	21.8	13105.6	704350.4	223389.0
16	16.29	20.8	17.43	862850.4	26748.36	13805.61	0.35	27.7	0.0	783431.4	393016.8

17	16.29	28.8	18.58	867434.4	26890.47	13878.95	0.0	21.8	12942.7	640046.6226474.6
18	16.29	33.0	19.43	762274.9	23630.52	12196.4	0.35	27.7	0.0	691329.3399534.0
19	16.29	18.9	17.22	665463.4	20629.37	10647.41	0.0	21.8	11685.8	453951.5148795.0
20	16.29	20.2	17.36	661627.8	20510.46	10586.05	0.0	21.8	11720.4	450182.5148814.8
21	16.29	30.9	18.98	566531.8	17562.48	9064.51	0.0	21.8	6352.4	455089.3164446.7
22	16.29	41.6	21.78	213753.6	6626.36	3420.06	0.0	24.4	0.0	217585.4102768.6

CARICO LIMITE PALI

Superficie Nr...1 Fattore di sicurezza=1.40

Micropali Base x=43.47367 Y=11.37152 Plim=22941.7 Kg Sbalzo del palo 9.04 m
Micropali Base x=41.34955 Y=11.37152 Plim=22941.7 Kg Sbalzo del palo 9.04 m