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	40.78	12.48
13	44.43	12.48
14	44.43	18.48
15	61.04	24.74
16	67.46	24.74
17	67.46	28.74
18	67.51	28.74
19	71.75	31.66
20	75.51	31.66
21	75.76	32.31
22	78.83	32.31
23	78.83	36.31
24	83.49	38.64
25	88.14	38.73
26	88.17	38.8
27	91.9	38.8
28	91.9	42.8
29	95.26	44.2
30	103.27	44.2
31	103.27	48.2
32	115.54	50.26
33	121.1	50.26
34	121.47	51.0
35	124.03	51.0
36	124.03	55.0
37	131.76	58.51
38	140.51	58.51
39	140.51	62.51
40	145.87	64.54
41	152.55	64.54
42	193.09	64.54
43	193.09	65.24
44	194.09	65.24
45	200.34	67.49
46	203.83	67.49
47	203.83	70.09
48	204.83	70.09
49	211.16	72.53
50	214.58	72.53
51	214.58	75.13
52	215.58	75.13
53	221.76	77.58
54	225.19	77.58
55	225.19	80.18
56	226.19	80.18
57	232.35	82.54
58	235.79	82.54
59	235.79	85.14
60	236.79	85.14
61	242.59	87.91
62	246.31	87.87
63	246.38	90.51
64	247.41	90.51
65	252.88	92.62
66	254.69	92.62
67	254.7	95.22
68	255.7	95.22
69	261.93	97.54
70	265.24	97.54

71	265.24	100.14
72	266.24	100.14
73	272.02	102.54
74	276.14	102.54
75	276.14	105.14
76	277.14	105.14
77	282.79	107.56
78	287.09	107.56
79	287.09	110.16
80	288.09	110.16
81	296.09	112.54
82	299.97	112.54
83	299.97	115.14
84	300.97	115.14
85	307.85	117.6
86	315.6	117.6
87	315.6	120.2
88	316.6	120.2
89	324.51	122.58
90	329.47	122.58
91	329.47	125.18
92	330.47	125.18
93	339.18	127.6
94	344.88	127.6
95	344.88	130.2
96	345.88	130.2
97	355.93	132.19
98	355.93	132.19
99	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	239.69	73.41
13	264.1	78.29
14	294.34	93.97
15	330.58	113.29
16	330.6	113.29
17	363.07	118.29
18	363.1	118.29
19	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	10.01	2.0
5	15.11	1.47
6	16.36	1.44

7	18.66	2.93
8	21.06	7.15
9	22.59	7.61
10	26.5	8.1
11	32.75	9.52
12	42.61	12.6
13	48.71	13.21
14	53.26	14.02
15	58.12	15.53
16	64.29	17.64
17	70.5	18.02
18	81.13	21.02
19	93.9	23.5
20	101.03	24.85
21	109.98	30.03
22	118.88	31.91
23	128.0	36.58
24	139.9	40.13
25	142.92	40.79
26	159.6	43.29
27	172.1	48.29
28	184.1	53.29
29	192.1	58.29
30	200.1	63.29
31	216.6	68.29
32	239.1	73.29
33	264.1	78.29
34	274.1	83.29
35	284.1	88.29
36	292.6	93.29
37	300.6	98.29
38	308.1	103.29
39	318.1	108.29
40	330.6	113.29
41	363.1	118.29
42	370.6	123.29
43	375.1	128.29
44	375.1	128.29
45	375.1	128.29
46	433.8	133.02
47	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	20.2	5.8
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	378.99	132.5

Coefficienti parziali per i parametri geotecnici del terreno

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

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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	44.43	12.48	0	0	6	2	4	2800
2	67.46	24.74	0	0	4	3	4	2800
3	78.83	32.31	0	0	4	3	4	2800
4	91.9	38.8	0	0	4	3	4	2800
5	124.03	51	0	0	4	3	4	2800
6	140.51	58.51	0	0	4	3	4	2800
7	103.27	44.2	0	0	4	3	4	280 0

Pali...

N°	x (m)	y (m)	Diametro (m)	Lunghezza (m)	Inclinazione (°)	Interasse (m)
1	41.44008	10.97868	0.2	6	90	3.6
2	43.54914	10.97868	0.2	6	90	3.6
3	45.72998	18.96775	0.22	12	90	0.5
4	39.56934	11.65233	0.22	6	90	0.5

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	16.3	8.3	16.47	43995.18	1363.85	703.92	0.0	21.8	466.5	35185.0	11023.6
2	16.3	9.8	16.54	330591.5	10248.34	5289.46	0.35	27.7	0.0	306240.7	172319.8
3	16.3	9.7	16.54	417982.0	12957.44	6687.71	0.35	27.7	0.0	389112.7	206659.2
4	16.3	9.7	16.54	559352.4	17339.92	8949.64	0.35	27.7	0.0	523270.4	262217.8
5	16.3	8.9	16.5	814792.2	25258.56	13036.68	0.35	27.7	0.0	768710.3	362942.9
6	16.3	0.0	16.3	886233.4	27473.23	14179.73	0.0	21.8	3916.1	822347.4	254956.8
7	16.3	25.1	18.01	1028311.0	31877.64	16452.97	0.0	21.8	6749.8	885488.9	303217.5
8	16.3	25.1	18.01	1021670.0	31671.76	16346.71	0.0	21.8	5762.7	894601.6	306338.0
9	16.3	22.8	17.68	801603.4	24849.71	12825.66	0.35	27.7	0.0	724997.3	372974.8
10	16.3	17.8	17.12	615511.4	19080.85	9848.18	0.35	27.7	0.0	558324.3	288204.0
11	16.3	17.8	17.12	452904.5	14040.04	7246.47	0.0	21.8	6181.0	336365.8	109544.8
12	16.3	25.5	18.06	454653.9	14094.27	7274.46	0.0	21.8	5808.3	347408.7	119300.2
13	16.3	17.9	17.13	468999.5	14538.98	7503.99	0.35	27.7	0.0	422191.5	229912.0
14	16.3	9.5	16.53	616800.2	19120.8	9868.8	0.35	27.7	0.0	578508.1	284861.2
15	16.3	12.0	16.67	785564.9	24352.51	12569.04	0.0	21.8	7611.8	634411.6	201110.0
16	16.3	20.8	17.44	848923.6	26316.63	13582.78	0.35	27.7	0.0	770575.1	387267.5
17	16.3	28.8	18.6	859501.8	26644.55	13752.03	0.0	21.8	9729.2	683270.3	241656.4
18	16.3	33.0	19.44	757722.6	23489.41	12123.56	0.35	27.7	0.0	687082.0	397295.5
19	16.3	18.9	17.23	660343.2	20470.64	10565.49	0.0	21.8	9184.7	487913.0	159859.8
20	16.3	20.3	17.38	655246.3	20312.63	10483.94	0.0	21.8	9206.1	483189.5	159685.2
21	16.3	30.9	18.99	559813.9	17354.23	8957.02	0.0	21.8	3833.3	488809.0	176557.2
22	16.3	41.5	21.77	213500.1	6618.5	3416.0	0.03	24.4	0.0	213742.9	107722.4

CARICO LIMITE PALI

Superficie Nr...1 Fattore di sicurezza=1.40

Micropali Base x=41.44008 Y=10.97868 Plim=22405.5 Kg Sbalzo del palo 9.01 m
Micropali Base x=43.54914 Y=10.97868 Plim=22405.5 Kg Sbalzo del palo 9.01 m
Micropali Monte x=45.72998 Y=18.96775 Plim=6449.0 Kg Sbalzo del palo 9.01 m
Micropali Valle x=39.56934 Y=11.65233 Plim=24646.0 Kg Sbalzo del palo 9.01 m