PROGETTO DEFINITIVO

COMUNE DI PISTOIA
Provincia Di Pistoia

INTERVENTI DI ADEGUAMENTO DELLA DIGA DI GIUDEA A GELLO NEL COMUNE DI PISTOIA (PT)

Elaborato	Nome Elaborato:	Scala:
ET12a	*TABULATI VERIFICHE STABILIZZAZIONE SPONDA SINISTRA*	-
		Data: *09/10/2020*

Settore:

INGEGNERIE TOSCANE — Sede Firenze Via de Sanctis, 49 Cod. Fiscale e P.I. 06111950488

Organizzazione dotata di Sistema di Gestione Integrato certificato in conformità alla normativa ISO9001 – ISO14001 – OHSAS18001 – SA8000

PROGETTAZIONE :

PROGETTISTA - PROJECT MANAG

Firmato digitalmente da
Giovanni Simonelli
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Data e ora della firma:
04/04/2022 15:19:26

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Rev.	Data	Descrizione / Motivo della revisione	Redatto	Controllato / Approvato
01	09/10/2020	Prima Emissione	Pianigiani	Settesoldi

INDICE

ELENCO FIGURE

1 DATI NORMATIVA

Normativa: Norme Tecniche sulle Costruzioni 17/01/2018

Carichi	Effetto	Simbologia	A2 Statico	A2 Sismico
Permanenti	Favorevole	γ_{Gfav}	1.00	1.00
Permanenti	Sfavorevole	γ_{Gsfav}	1.00	1.00
Variabili	Favorevole	γ_{Qfav}	0.00	0.00
Variabili	Sfavorevole	γ_{Qsfav}	1.30	1.00

Tabella 1-1 – Coefficienti parziali per le azioni o per l'effetto delle azioni

Parametri	Simbologia	M2 Statico	M2 Sismico
Tangente dell'angolo di attrito	$\gamma_{tan\phi'}$	1.25	1.00
Coesione efficace	$\gamma_{c'}$	1.25	1.00
Resistenza non drenata	γ_{cu}	1.40	1.00
Peso dell'unità di volume	γ_{γ}	1.00	1.00

Tabella 1-2 – Coefficienti parziali per i parametri geotecnici del terreno

2 DATI ZONA SISMICA

Identificazione del sito

Latitudine	43.960117
Longitudine	10.883661
Punti di interpolazione del reticolo	19165 - 19166 - 18944 - 18943

Tipo di opera

Tipo di costruzione	Opera di importanza strategica
Vita nominale	100 anni
Classe d'uso	IV - Opere strategiche
Vita di riferimento	200 anni

Stato limite SLD

Accelerazione al suolo a_g	1.236 [m/s^2]
Massimo fattore amplificazione spettro orizzontale F0	2.41
Periodo inizio tratto spettro a velocità costante Tc*	0.28
Coefficiente di amplificazione per tipo di sottosuolo (Ss)	1.47
Coefficiente di amplificazione topografica (St)	1.00
Coefficiente riduzione (β_s)	0.47
Rapporto intensità sismica verticale/orizzontale	0.50
Coefficiente di intensità sismica orizzontale (percento)	$k_h=(a_g/g*\beta_s*St*S)$ = 8.72
Coefficiente di intensità sismica verticale (percento)	$k_v=0.50 * k_h$ = 4.36

Stato limite SLV

Accelerazione al suolo a_g	2.687 [m/s^2]
Massimo fattore amplificazione spettro orizzontale F0	2.40
Periodo inizio tratto spettro a velocità costante Tc*	0.31
Coefficiente di amplificazione per tipo di sottosuolo (Ss)	1.38
Coefficiente di amplificazione topografica (St)	1.00
Coefficiente riduzione pendio naturale (β_s)	0.38
Rapporto intensità sismica verticale/orizzontale	0.50
Coefficiente di intensità sismica orizzontale (percento)	$k_h=(a_g/g*\beta_s*St*S)$ = 14.33
Coefficiente di intensità sismica verticale (percento)	$k_v=0.50 * k_h$ = 7.17

3 CONDIZIONI DI VERIFICA DELLO STATO ATTUALE

Le verifiche di stabilità sono condotte in n. **3 sezioni**, per ciascuna della quale sono individuate n. **4 verifiche**:

- **Verifica 01**: verifica a lungo termine tensioni efficaci; carico in corrispondenza della strada 2000 kg/m²; senza sisma; invaso alla quota di massima regolazione.
- **Verifica 02**: verifica a breve termine tensioni totali; carico in corrispondenza della strada 2000 kg/m²; con sisma SLD; invaso alla quota di massima regolazione.
- **Verifica 03**: verifica a breve termine tensioni totali; carico in corrispondenza della strada 2000 kg/m²; con sisma SLV; invaso alla quota di massima regolazione.
- **Verifica 04**: verifica a breve termine tensioni totali; carico in corrispondenza della strada 2000 kg/m²; senza sisma; svaso rapido del serbatoio.

n. [#]	Sponda	Cond. idrauliche	Sisma	Condizioni	*Fs Bishop*	N.T.C. 2018
						γ_R
01	Sinistra	Massimo invaso	Senza	Drenate	**0.378**	1.1
02	Sinistra	Massimo invaso	SLD	Non drenate	1.986	1.2
03	Sinistra	Massimo invaso	SLV	Non drenate	1.623	1.2
04	Sinistra	Svaso rapido	Senza	Non drenate	1.689	1.1

Tabella 3-1 – Verifiche di stabilità dello stato di progetto condotte secondo N.T.C. 2018 per la sezione **VS_02**

n. [#]	Sponda	Cond. idrauliche	Sisma	Condizioni	*Fs Bishop*	N.T.C. 2018
						γ_R
01	Sinistra	Massimo invaso	Senza	Drenate	**0.460**	1.1
02	Sinistra	Massimo invaso	SLD	Non drenate	2.110	1.2
03	Sinistra	Massimo invaso	SLV	Non drenate	1.599	1.2
04	Sinistra	Svaso rapido	Senza	Non drenate	1.634	1.1

Tabella 3-2 – Verifiche di stabilità dello stato di progetto condotte secondo N.T.C. 2018 per la sezione **VS_03**

n. [#]	Sponda	Cond. idrauliche	Sisma	Condizioni	*Fs Bishop*	N.T.C. 2018
						γ_R
01	Sinistra	Massimo invaso	Senza	Drenate	**0.471**	1.1
02	Sinistra	Massimo invaso	SLD	Non drenate	1.986	1.2
03	Sinistra	Massimo invaso	SLV	Non drenate	1.600	1.2
04	Sinistra	Svaso rapido	Senza	Non drenate	1.524	1.1

Tabella 3-3 – Verifiche di stabilità dello stato di progetto condotte secondo N.T.C. 2018 per la sezione **VS_04**

4 VERIFICHE STATO ATTUALE SEZIONE VS_02

4.1 PARAMETRI GEOTECNICI

n°	Descrizione	γ	γ_{sat}	ϕ'	c'	Retino
		[kN/mc]	*[kN/mc]*	*[°]*	*[kPa]*	
1	Substrato	21.27	21.27	23.60	24.0	
2	Substrato alterato	20.68	20.68	23.40	22.0	
3	Frana	18.30	18.30	14.30	0.0	

Tabella 4-1 – Parametri geotecnici condizioni drenate

n°	Descrizione	γ	γ_{sat}	ϕ_u	C_u	Retino
		[kN/mc]	*[kN/mc]*	*[°]*	*[kPa]*	
1	Substrato	21.27	21.27	0.00	146.0	
2	Substrato alterato	20.68	20.68	0.00	100.0	
3	Frana	18.30	18.30	0.00	40.0	

Tabella 4-2 – Parametri geotecnici condizioni non drenate

4.2 DESCRIZIONE SEZIONE E IMPOSTAZIONE ANALISI

4.2.1 PROFILO TERRENO E DESCRIZIONE STRATIGRAFIA

n°	X	Y
	[m]	*[m]*
1	0.00	81.93
2	7.51	81.98
3	8.51	81.99
4	9.51	82.00
5	10.51	82.00
6	11.51	82.01
7	12.51	82.01
8	13.51	82.00
9	14.52	81.98
10	15.52	81.96
11	16.52	81.95
12	17.52	81.96
13	18.52	81.96
14	19.52	81.96
15	20.52	81.96
16	21.52	81.96
17	22.52	81.95
18	23.52	81.98
19	24.52	82.10
20	25.53	82.20
21	26.53	82.40
22	27.53	82.56
23	28.53	82.68
24	29.53	82.89
25	30.53	83.13
26	31.53	83.32
27	32.53	83.47
28	33.53	83.67
29	34.53	83.80

n°	X	Y
	[m]	*[m]*
30	35.53	83.98
31	36.54	84.20
32	37.54	84.41
33	38.54	84.79
34	39.54	85.05
35	40.54	85.23
36	41.54	85.49
37	42.54	85.74
38	43.54	85.82
39	44.54	85.92
40	45.54	86.00
41	46.55	86.05
42	47.55	86.19
43	48.55	86.26
44	49.55	86.34
45	50.55	86.50
46	51.55	86.95
47	52.55	87.10
48	53.55	87.22
49	54.55	87.60
50	55.55	88.01
51	56.55	88.39
52	57.56	88.70
53	58.56	88.86
54	59.56	89.23
55	60.56	89.53
56	61.56	89.76
57	62.56	90.13
58	63.56	90.47
59	64.56	90.71
60	65.56	90.86
61	66.56	90.98
62	67.56	91.03
63	68.57	91.04
64	69.57	91.08
65	70.57	91.15
66	71.57	91.30
67	72.57	91.39
68	73.57	91.49
69	74.57	91.58
70	75.57	91.74
71	76.57	91.84
72	77.57	91.97
73	78.58	92.03
74	79.58	92.12
75	80.58	92.17
76	81.58	92.19
77	82.58	92.36
78	83.58	92.43
79	84.58	92.43
80	85.58	92.53
81	86.58	92.62
82	87.58	92.64
83	88.58	92.74
84	89.59	92.82
85	90.59	92.78
86	91.59	92.79

n°	X	Y
	[m]	*[m]*
87	92.59	92.89
88	93.59	92.94
89	94.59	93.03
90	95.59	93.15
91	96.59	93.30
92	97.59	93.43
93	98.59	93.46
94	99.59	93.49
95	100.60	93.65
96	101.60	93.93
97	102.60	94.08
98	103.60	94.31
99	104.60	94.53
100	105.60	94.64
101	106.60	94.99
102	107.60	95.26
103	108.60	95.45
104	109.60	95.74
105	110.61	96.05
106	111.61	96.27
107	112.61	96.66
108	113.61	97.02
109	114.61	97.29
110	115.61	97.50
111	116.61	97.53
112	117.61	97.52
113	118.61	97.54
114	119.61	98.02
115	120.26	98.27
116	120.61	98.41
117	121.62	98.93
118	122.62	99.29
119	123.62	99.51
120	124.62	99.99
121	125.62	100.42
122	126.62	100.99
123	127.62	101.59
124	128.62	102.20
125	129.62	102.45
126	130.62	102.70
127	131.33	102.83
128	131.62	102.89
129	132.63	102.87
130	133.63	102.79
131	134.63	102.84
132	135.63	103.03
133	136.63	103.56
134	137.63	103.98
135	138.63	104.10
136	139.63	104.15
137	140.63	104.26
138	141.63	104.38
139	142.64	104.65
140	143.64	104.62
141	144.64	104.73
142	145.64	104.79
143	146.64	104.80

n°	X	Y
	[m]	*[m]*
144	147.64	104.82
145	148.64	104.89
146	149.64	104.94
147	150.64	105.02
148	151.64	105.20
149	152.64	105.26
150	153.65	105.34
151	154.65	105.40
152	155.65	105.44
153	166.00	106.05

Tabella 4-3 – Profilo del piano campagna

n°	X	Y
	[m]	*[m]*
1	0.00	78.21
2	0.00	0.00
3	166.00	0.00
4	166.00	97.85
5	158.47	96.22
6	146.37	93.61
7	138.21	92.25
8	132.92	90.88
9	129.42	89.23
10	125.89	87.38
11	119.93	85.53
12	114.27	84.94
13	109.29	84.26
14	106.65	83.87
15	103.23	82.40
16	100.69	80.84
17	97.95	80.45
18	94.44	80.55
19	91.90	80.35
20	87.35	79.47
21	84.12	78.89
22	81.22	78.70
23	76.58	77.99
24	71.49	78.06
25	67.11	77.93
26	61.96	78.25
27	55.06	76.96
28	48.87	77.15
29	43.46	76.83
30	37.09	76.94
31	25.19	75.85
32	17.96	75.44
33	12.02	75.44
34	7.81	75.50
35	5.89	75.69

Tabella 4-4 – Coordinate dei vertici dello strato n° 1 costituito da terreno n° 1 (Substrato)

n°	X	Y
	[m]	*[m]*
1	131.33	102.83
2	130.62	102.70
3	129.62	102.45

n°	X	Y
	[m]	*[m]*
4	128.62	102.20
5	127.62	101.59
6	126.62	100.99
7	125.62	100.42
8	124.62	99.99
9	123.62	99.51
10	122.62	99.29
11	121.62	98.93
12	120.61	98.41
13	120.26	98.27
14	119.61	98.02
15	118.61	97.54
16	117.61	97.52
17	116.61	97.53
18	115.61	97.50
19	114.61	97.29
20	113.61	97.02
21	112.61	96.66
22	111.61	96.27
23	110.61	96.05
24	109.60	95.74
25	108.60	95.45
26	107.60	95.26
27	106.60	94.99
28	105.60	94.64
29	104.60	94.53
30	103.60	94.31
31	102.60	94.08
32	101.60	93.93
33	100.60	93.65
34	99.59	93.49
35	98.59	93.46
36	97.59	93.43
37	96.59	93.30
38	95.59	93.15
39	94.59	93.03
40	93.59	92.94
41	92.59	92.89
42	91.59	92.79
43	90.59	92.78
44	89.59	92.82
45	88.58	92.74
46	87.58	92.64
47	86.58	92.62
48	85.58	92.53
49	84.58	92.43
50	83.58	92.43
51	82.58	92.36
52	81.58	92.19
53	80.58	92.17
54	79.58	92.12
55	78.58	92.03
56	77.57	91.97
57	76.57	91.84
58	75.57	91.74
59	74.57	91.58
60	73.57	91.49

n°	X	Y
	[m]	*[m]*
61	72.57	91.39
62	71.57	91.30
63	70.57	91.15
64	69.57	91.08
65	68.57	91.04
66	67.56	91.03
67	66.56	90.98
68	65.56	90.86
69	64.56	90.71
70	63.56	90.47
71	62.56	90.13
72	61.56	89.76
73	60.56	89.53
74	59.56	89.23
75	58.56	88.86
76	57.56	88.70
77	56.55	88.39
78	55.55	88.01
79	54.55	87.60
80	53.55	87.22
81	52.55	87.10
82	51.55	86.95
83	53.63	86.80
84	58.62	87.72
85	64.80	89.03
86	69.79	89.95
87	72.75	90.34
88	76.17	90.61
89	81.75	90.72
90	82.93	90.74
91	84.84	91.00
92	86.87	91.20
93	89.44	91.33
94	91.67	91.33
95	92.03	91.34
96	92.66	91.46
97	94.89	91.85
98	97.45	92.12
99	99.92	92.54
100	103.10	92.91
101	106.91	93.69
102	107.53	93.74
103	108.29	93.89
104	110.72	94.42
105	113.29	95.01
106	115.91	95.27
107	120.26	95.77
108	121.70	96.19
109	126.10	98.42
110	128.73	100.13
111	130.11	101.38

Tabella 4-5 – Coordinate dei vertici dello strato n° 2 costituito da terreno n° 3 (Frana)

n°	X	Y
	[m]	*[m]*
1	166.00	97.85
2	166.00	106.05

n°	X	Y
	[m]	*[m]*
3	155.65	105.44
4	154.65	105.40
5	153.65	105.34
6	152.64	105.26
7	151.64	105.20
8	150.64	105.02
9	149.64	104.94
10	148.64	104.89
11	147.64	104.82
12	146.64	104.80
13	145.64	104.79
14	144.64	104.73
15	143.64	104.62
16	142.64	104.65
17	141.63	104.38
18	140.63	104.26
19	139.63	104.15
20	138.63	104.10
21	137.63	103.98
22	136.63	103.56
23	135.63	103.03
24	134.63	102.84
25	133.63	102.79
26	132.63	102.87
27	131.62	102.89
28	131.33	102.83
29	130.11	101.38
30	128.73	100.13
31	126.10	98.42
32	121.70	96.19
33	120.26	95.77
34	115.91	95.27
35	113.29	95.01
36	110.72	94.42
37	108.29	93.89
38	107.53	93.74
39	106.91	93.69
40	103.10	92.91
41	99.92	92.54
42	97.45	92.12
43	94.89	91.85
44	92.66	91.46
45	92.03	91.34
46	91.67	91.33
47	89.44	91.33
48	86.87	91.20
49	84.84	91.00
50	82.93	90.74
51	81.75	90.72
52	76.17	90.61
53	72.75	90.34
54	69.79	89.95
55	64.80	89.03
56	58.62	87.72
57	53.63	86.80
58	51.55	86.95
59	50.55	86.50

n°	X	Y
	[m]	*[m]*
60	49.55	86.34
61	48.55	86.26
62	47.55	86.19
63	46.55	86.05
64	45.54	86.00
65	44.54	85.92
66	43.54	85.82
67	42.54	85.74
68	41.54	85.49
69	40.54	85.23
70	39.54	85.05
71	38.54	84.79
72	37.54	84.41
73	36.54	84.20
74	35.53	83.98
75	34.53	83.80
76	33.53	83.67
77	32.53	83.47
78	31.53	83.32
79	30.53	83.13
80	29.53	82.89
81	28.53	82.68
82	27.53	82.56
83	26.53	82.40
84	25.53	82.20
85	24.52	82.10
86	23.52	81.98
87	22.52	81.95
88	21.52	81.96
89	20.52	81.96
90	19.52	81.96
91	18.52	81.96
92	17.52	81.96
93	16.52	81.95
94	15.52	81.96
95	14.52	81.98
96	13.51	82.00
97	12.51	82.01
98	11.51	82.01
99	10.51	82.00
100	9.51	82.00
101	8.51	81.99
102	7.51	81.98
103	0.00	81.93
104	0.00	78.21
105	5.89	75.69
106	7.81	75.50
107	12.02	75.44
108	17.96	75.44
109	25.19	75.85
110	37.09	76.94
111	43.46	76.83
112	48.87	77.15
113	55.06	76.96
114	61.96	78.25
115	67.11	77.93
116	71.49	78.06

n°	X	Y
	[m]	*[m]*
117	76.58	77.99
118	81.22	78.70
119	84.12	78.89
120	87.35	79.47
121	91.90	80.35
122	94.44	80.55
123	97.95	80.45
124	100.69	80.84
125	103.23	82.40
126	106.65	83.87
127	109.29	84.26
128	114.27	84.94
129	119.93	85.53
130	125.89	87.38
131	129.42	89.23
132	132.92	90.88
133	138.21	92.25
134	146.37	93.61
135	158.47	96.22

Tabella 4-6 – Coordinate dei vertici dello strato n° 3 costituito da terreno n° 2 (Substrato alterato)

4.2.2 DESCRIZIONE FALDA

n°	X	Y
	[m]	*[m]*
1	0.00	101.25
2	166.00	101.25

Tabella 4-7 – Livello falda massima regolazione

n°	X	Y
	[m]	*[m]*
1	0.00	81.94
2	7.51	81.98
3	8.51	81.99
4	9.51	82.00
5	10.51	82.00
6	11.51	82.01
7	12.51	82.01
8	13.51	82.00
9	14.52	81.98
10	15.52	81.96
11	16.52	81.95
12	17.52	81.96
13	18.52	81.96
14	19.52	81.96
15	20.52	81.96
16	21.52	81.96
17	22.52	81.95
18	23.52	81.98
19	24.52	82.10
20	25.53	82.20
21	26.53	82.40
22	27.53	82.56
23	28.53	82.68
24	29.53	82.89
25	30.53	83.13
26	31.53	83.32

n°	X	Y
	[m]	*[m]*
27	32.53	83.47
28	33.53	83.67
29	34.53	83.80
30	35.53	83.98
31	36.54	84.20
32	37.54	84.41
33	38.54	84.79
34	39.54	85.05
35	40.54	85.23
36	41.54	85.49
37	42.54	85.74
38	43.54	85.82
39	44.54	85.92
40	45.54	86.00
41	46.55	86.05
42	47.55	86.19
43	48.55	86.26
44	49.55	86.34
45	50.55	86.50
46	51.55	86.95
47	52.55	87.10
48	53.55	87.22
49	54.55	87.60
50	55.55	88.01
51	56.55	88.39
52	57.56	88.70
53	58.56	88.86
54	59.56	89.23
55	60.56	89.53
56	61.56	89.76
57	62.56	90.13
58	63.56	90.47
59	64.56	90.71
60	65.56	90.86
61	66.56	90.98
62	67.56	91.03
63	68.57	91.04
64	69.57	91.08
65	70.57	91.15
66	71.57	91.30
67	72.57	91.39
68	73.57	91.49
69	74.57	91.58
70	75.57	91.74
71	76.57	91.84
72	77.57	91.97
73	78.58	92.03
74	79.58	92.12
75	80.58	92.17
76	81.58	92.19
77	82.58	92.36
78	83.58	92.43
79	84.58	92.43
80	85.58	92.53
81	86.58	92.62
82	87.58	92.64
83	88.58	92.74

n°	X	Y
	[m]	*[m]*
84	89.59	92.82
85	90.59	92.78
86	91.59	92.79
87	92.59	92.89
88	93.59	92.94
89	94.59	93.03
90	95.59	93.15
91	96.59	93.30
92	97.59	93.43
93	98.59	93.46
94	99.59	93.49
95	100.60	93.65
96	101.60	93.93
97	102.60	94.08
98	103.60	94.31
99	104.60	94.53
100	105.60	94.64
101	106.60	94.99
102	107.60	95.26
103	108.60	95.45
104	109.60	95.74
105	110.61	96.05
106	111.61	96.27
107	112.61	96.66
108	113.61	97.02
109	114.61	97.29
110	115.61	97.50
111	116.61	97.53
112	117.61	97.52
113	118.61	97.54
114	119.61	98.02
115	120.26	98.27
116	120.61	98.41
117	121.62	98.93
118	122.62	99.29
119	123.62	99.51
120	124.62	99.99
121	125.62	100.42
122	126.62	100.99
123	127.05	101.25
124	166.00	101.25

Tabella 4-8 – Livello falda svaso rapido

4.2.3 CARICHI SUL PROFILO

n°	Descrizione	Tipo	Ψ_2	P_i	P_f	Vy	Vx
				[m]	*[m]*	*[kN/m]*	*[kN/m]*
1	Strada	Variabile	1.00	131.88	134.03	20.00	0.00
				102.88	102.88	20.00	0.00

Tabella 4-9 – Carichi distribuiti verifica di stabilità 01

4.2.4 IMPOSTAZIONE DELLE SUPERFICI DI ROTTURA

Superfici di rottura circolari

Si considerano delle superfici di rottura circolari generate tramite la seguente maglia dei centri

Origine maglia	[m]	X_0 = 36.30	Y_0 = 85.10
Passo maglia	[m]	dX = 2.00	dY = 2.00
Numero passi		Nx = 65	Ny = 50
Raggio	[m]	R = 1.50	

Si utilizza un raggio variabile con passo dR=1.00 [m] ed un numero di incrementi pari a 110.

4.2.5 CONDIZIONI DI ESCLUSIONE

Sono state escluse dall'analisi le superfici aventi:

- lunghezza di corda inferiore a	1.00	m
- freccia inferiore a	0.50	m
- volume inferiore a	2.00	mc
- pendenza media della superficie inferiore a	1.00	[%]

4.3 VERIFICA DI STABILITÀ 01

4.3.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate in condizioni **statiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni efficaci**
Presenza di falda
Presenza di carichi distribuiti

4.3.2 RISULTATI ANALISI

Numero di superfici analizzate	73063
Coefficiente di sicurezza minimo	0.378
Superficie con coefficiente di sicurezza minimo	1

4.3.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO L'ALTO

Numero di strisce	21	
Coordinate del centro	X[m]= 124.30	Y[m]= 105.10
Raggio del cerchio	R[m]= 5.50	
Intersezione a valle con il profilo topografico	X_v[m]= 123.85	Y_v[m]= 99.62

Intersezione a monte con il profilo topograficoX$_m$[m]= 129.04 Y$_m$[m]= 102.30
Coefficiente di sicurezza F$_S$= **0.378**

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	123.85	99.62	99.62	124.10	99.74	99.60	124.02	99.65	0.26	-3.38	11.53	0
2	124.10	99.74	99.60	124.36	99.87	99.60	124.25	99.71	0.26	-0.70	11.53	0
3	124.36	99.87	99.60	124.62	99.99	99.61	124.50	99.77	0.26	1.99	11.53	0
4	124.62	99.99	99.61	124.87	100.10	99.63	124.75	99.83	0.25	4.64	11.53	0
5	124.87	100.10	99.63	125.12	100.20	99.66	125.00	99.90	0.25	7.26	11.53	0
6	125.12	100.20	99.66	125.37	100.31	99.71	125.25	99.97	0.25	9.90	11.53	0
7	125.37	100.31	99.71	125.62	100.42	99.76	125.50	100.05	0.26	12.55	11.53	0
8	125.62	100.42	99.76	125.87	100.56	99.83	125.75	100.14	0.26	15.24	11.53	0
9	125.87	100.56	99.83	126.12	100.70	99.91	126.00	100.25	0.26	17.95	11.53	0
10	126.12	100.70	99.91	126.37	100.85	100.00	126.25	100.37	0.27	20.72	11.53	0
11	126.37	100.85	100.00	126.62	100.99	100.11	126.50	100.49	0.27	23.53	11.53	0
12	126.62	100.99	100.11	126.87	101.14	100.24	126.75	100.62	0.28	26.40	11.53	0
13	126.87	101.14	100.24	127.12	101.29	100.38	127.00	100.76	0.29	29.35	11.53	0
14	127.12	101.29	100.38	127.37	101.44	100.54	127.24	100.91	0.30	32.39	11.53	0
15	127.37	101.44	100.54	127.62	101.59	100.72	127.49	101.07	0.31	35.53	11.53	0
16	127.62	101.59	100.72	127.87	101.74	100.92	127.74	101.24	0.32	38.80	11.53	0
17	127.87	101.74	100.92	128.12	101.90	101.14	127.99	101.42	0.34	42.23	11.53	0
18	128.12	101.90	101.14	128.37	102.05	101.40	128.24	101.62	0.36	45.86	11.53	0
19	128.37	102.05	101.40	128.62	102.20	101.70	128.49	101.83	0.39	49.75	11.53	0
20	128.62	102.20	101.70	128.83	102.25	101.98	128.71	102.02	0.35	53.59	11.53	0
21	128.83	102.25	101.98	129.04	102.30	102.30	128.90	102.18	0.39	57.43	11.53	0

Tabella 4-10 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 01

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	0.33	3.97	0.16	0.08	4.15	0.00	2.24	0.00	0.00	
2	0.96	3.66	0.45	0.24	4.17	2.24	4.29	0.00	0.00	
3	1.53	3.34	0.70	0.37	4.16	4.29	6.11	0.00	0.00	
4	1.94	2.96	0.87	0.47	4.01	6.11	7.45	0.00	0.00	
5	2.31	2.69	1.01	0.55	3.97	7.45	8.52	0.00	0.00	
6	2.63	2.43	1.13	0.61	3.90	8.52	9.30	0.00	0.00	
7	2.90	2.17	1.23	0.66	3.81	9.30	9.78	0.00	0.00	
8	3.19	1.86	1.34	0.72	3.70	9.78	10.22	0.00	0.00	
9	3.50	1.51	1.45	0.78	3.56	10.22	10.28	0.00	0.00	
10	3.75	1.16	1.54	0.83	3.39	10.28	9.97	0.00	0.00	
11	3.93	0.81	1.61	0.87	3.19	9.97	9.32	0.00	0.00	
12	4.07	0.45	1.66	0.90	2.94	9.32	8.35	0.00	0.00	
13	4.15	0.10	1.71	0.92	2.65	8.35	7.07	0.00	0.00	
14	4.15	0.00	1.95	1.05	2.30	7.07	5.68	0.00	0.00	
15	4.07	0.00	2.25	1.21	1.88	5.68	4.27	0.00	0.00	
16	3.89	0.00	2.53	1.36	1.37	4.27	2.89	0.00	0.00	
17	3.61	0.00	2.78	1.50	0.73	2.89	1.64	0.00	0.00	
18	3.20	0.00	2.95	1.59	0.00	1.64	0.63	0.00	0.00	
19	2.63	0.00	2.49	1.34	0.00	0.63	-0.40	0.00	0.00	
20	1.48	0.00	1.44	0.78	0.00	-0.40	-1.10	0.00	0.00	
21	0.52	0.00	0.53	0.28	0.00	-1.10	-1.39	0.00	0.00	

Tabella 4-11 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 01

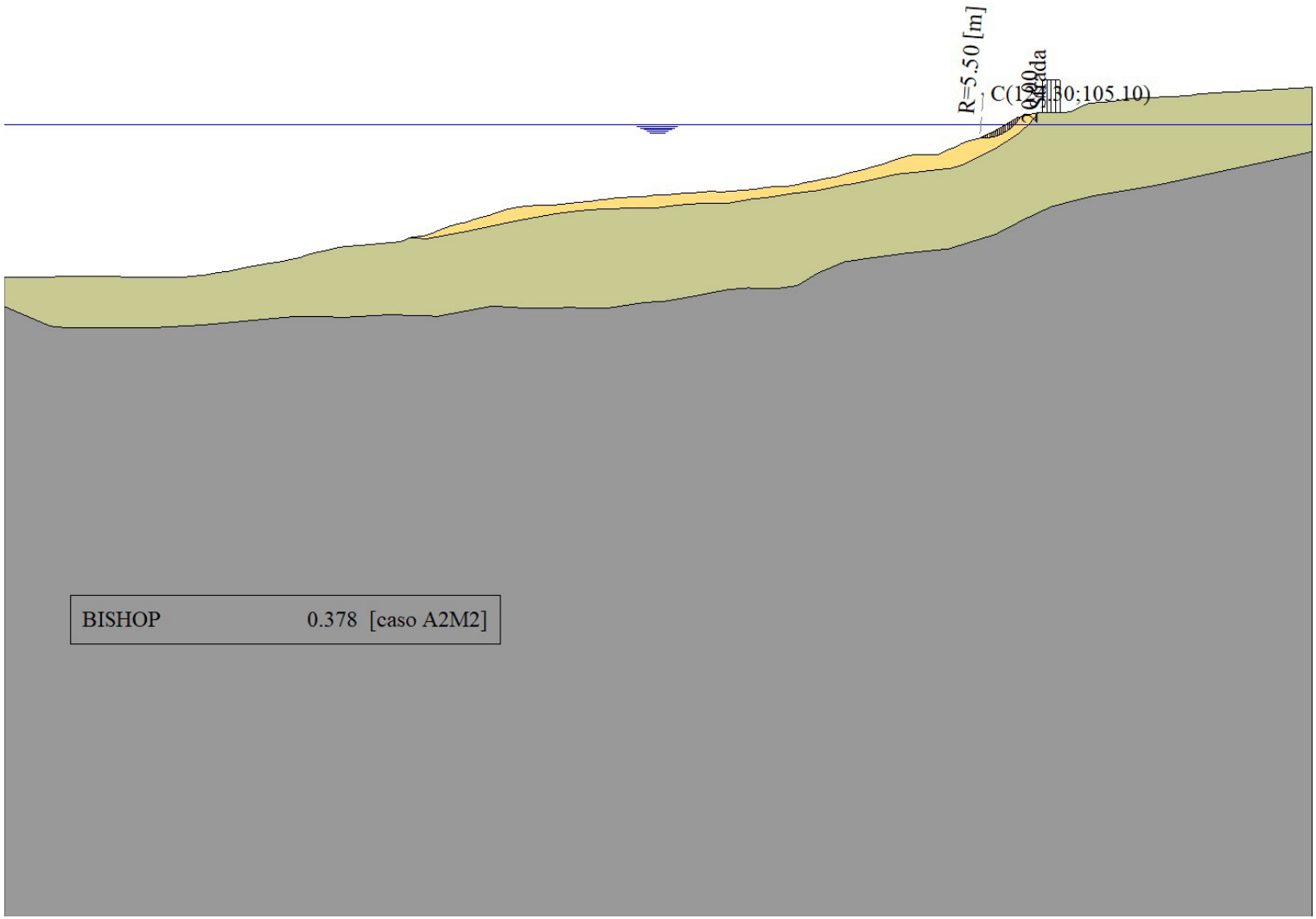

Figura 4-1 – Superficie critica (1) della sezione VS_02 per la verifica di stabilità 01

4.4 VERIFICA DI STABILITÀ 02

4.4.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate solo in condizioni **sismiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni totali**
Presenza di carichi distribuiti

4.4.2 RISULTATI ANALISI

Numero di superfici analizzate	143014
Coefficiente di sicurezza minimo	1.986
Superficie con coefficiente di sicurezza minimo	1

4.4.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO IL BASSO

Numero di strisce	141	
Coordinate del centro	X[m]= 78.30	Y[m]= 129.10
Raggio del cerchio	R[m]= 89.50	
Intersezione a valle con il profilo topografico	X_v[m]= 2.30	Y_v[m]= 81.83
Intersezione a monte con il profilo topografico	X_m[m]= 165.57	Y_m[m]= 109.23
Coefficiente di sicurezza	F_S= 1.986	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	2.30	81.83	81.83	6.78	81.88	75.29	5.29	79.67	7.92	-55.58	0.00	119
2	6.78	81.88	75.29	11.26	81.94	69.81	9.24	77.10	7.08	-50.78	0.00	146
3	11.26	81.94	69.81	12.26	81.94	68.69	11.77	75.59	1.50	-48.03	0.00	146
4	12.26	81.94	68.69	16.26	81.98	64.59	14.35	74.26	5.73	-45.72	0.00	146
5	16.26	81.98	64.59	17.26	81.98	63.64	16.76	73.05	1.38	-43.44	0.00	146
6	17.26	81.98	63.64	21.26	82.02	60.13	19.32	71.92	5.32	-41.30	0.00	146
7	21.26	82.02	60.13	22.26	82.04	59.32	21.76	70.88	1.29	-39.18	0.00	146
8	22.26	82.04	59.32	23.26	82.13	58.52	22.76	70.50	1.28	-38.36	0.00	146
9	23.26	82.13	58.52	24.26	82.20	57.76	23.76	70.15	1.26	-37.55	0.00	146
10	24.26	82.20	57.76	25.26	82.32	57.01	24.76	69.82	1.25	-36.74	0.00	146
11	25.26	82.32	57.01	26.26	82.42	56.28	25.76	69.51	1.24	-35.95	0.00	146
12	26.26	82.42	56.28	27.26	82.48	55.58	26.76	69.19	1.22	-35.16	0.00	146
13	27.26	82.48	55.58	28.26	82.59	54.90	27.76	68.89	1.21	-34.38	0.00	146
14	28.26	82.59	54.90	29.26	82.66	54.23	28.76	68.59	1.20	-33.61	0.00	146
15	29.26	82.66	54.23	30.26	82.79	53.59	29.76	68.32	1.19	-32.84	0.00	146
16	30.26	82.79	53.59	31.26	82.89	52.96	30.76	68.06	1.18	-32.09	0.00	146
17	31.26	82.89	52.96	32.26	82.95	52.35	31.76	67.79	1.17	-31.33	0.00	146
18	32.26	82.95	52.35	33.26	83.05	51.76	32.76	67.53	1.16	-30.59	0.00	146
19	33.26	83.05	51.76	34.26	83.13	51.19	33.76	67.28	1.15	-29.85	0.00	146
20	34.26	83.13	51.19	35.26	83.26	50.63	34.76	67.05	1.14	-29.11	0.00	146
21	35.26	83.26	50.63	36.26	83.36	50.09	35.76	66.83	1.14	-28.38	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
22	36.26	83.36	50.09	37.26	83.51	49.56	36.76	66.63	1.13	-27.65	0.00	146
23	37.26	83.51	49.56	38.26	83.84	49.06	37.76	66.49	1.12	-26.93	0.00	146
24	38.26	83.84	49.06	39.26	84.07	48.56	38.76	66.38	1.11	-26.22	0.00	146
25	39.26	84.07	48.56	40.26	84.49	48.09	39.76	66.30	1.11	-25.51	0.00	146
26	40.26	84.49	48.09	41.26	84.79	47.62	40.76	66.25	1.10	-24.80	0.00	146
27	41.26	84.79	47.62	42.26	84.98	47.18	41.76	66.14	1.10	-24.10	0.00	146
28	42.26	84.98	47.18	43.26	85.31	46.74	42.76	66.05	1.09	-23.40	0.00	146
29	43.26	85.31	46.74	44.26	85.54	46.33	43.76	65.98	1.08	-22.70	0.00	146
30	44.26	85.54	46.33	45.26	85.92	45.92	44.76	65.93	1.08	-22.01	0.00	146
31	45.26	85.92	45.92	46.26	86.04	45.53	45.76	65.85	1.07	-21.32	0.00	146
32	46.26	86.04	45.53	47.26	86.08	45.15	46.76	65.70	1.07	-20.63	0.00	146
33	47.26	86.08	45.15	49.26	86.24	44.44	48.26	65.48	2.12	-19.61	0.00	146
34	49.26	86.24	44.44	49.53	86.26	44.35	49.39	65.32	0.29	-18.84	0.00	146
35	49.53	86.26	44.35	50.26	86.31	44.11	49.90	65.26	0.77	-18.50	0.00	146
36	50.26	86.31	44.11	51.26	86.38	43.78	50.76	65.14	1.05	-17.92	0.00	146
37	51.26	86.38	43.78	52.26	86.42	43.47	51.76	65.01	1.05	-17.25	0.00	146
38	52.26	86.42	43.47	53.26	86.61	43.17	52.76	64.92	1.04	-16.58	0.00	146
39	53.26	86.61	43.17	54.26	86.95	42.89	53.76	64.91	1.04	-15.91	0.00	146
40	54.26	86.95	42.89	55.26	87.09	42.62	54.76	64.89	1.04	-15.25	0.00	146
41	55.26	87.09	42.62	56.26	87.43	42.36	55.76	64.87	1.03	-14.59	0.00	146
42	56.26	87.43	42.36	57.27	87.65	42.11	56.77	64.89	1.04	-13.92	0.00	146
43	57.27	87.65	42.11	58.27	88.01	41.87	57.77	64.91	1.03	-13.26	0.00	146
44	58.27	88.01	41.87	59.27	88.47	41.65	58.77	65.00	1.02	-12.60	0.00	146
45	59.27	88.47	41.65	60.27	88.76	41.43	59.77	65.08	1.02	-11.95	0.00	146
46	60.27	88.76	41.43	61.27	89.13	41.24	60.77	65.14	1.02	-11.30	0.00	146
47	61.27	89.13	41.24	62.27	89.26	41.05	61.77	65.17	1.02	-10.64	0.00	146
48	62.27	89.26	41.05	63.27	89.54	40.87	62.77	65.18	1.02	-9.99	0.00	146
49	63.27	89.54	40.87	64.27	89.91	40.71	63.77	65.26	1.01	-9.34	0.00	146
50	64.27	89.91	40.71	65.27	90.07	40.55	64.77	65.31	1.01	-8.70	0.00	146
51	65.27	90.07	40.55	66.27	90.21	40.41	65.77	65.31	1.01	-8.05	0.00	146
52	66.27	90.21	40.41	67.27	90.31	40.28	66.77	65.30	1.01	-7.40	0.00	146
53	67.27	90.31	40.28	68.27	90.42	40.16	67.77	65.29	1.01	-6.76	0.00	146
54	68.27	90.42	40.16	69.27	90.54	40.06	68.77	65.30	1.01	-6.11	0.00	146
55	69.27	90.54	40.06	70.27	90.68	39.96	69.77	65.31	1.00	-5.47	0.00	146
56	70.27	90.68	39.96	71.27	90.84	39.88	70.77	65.34	1.00	-4.83	0.00	146
57	71.27	90.84	39.88	72.27	90.95	39.80	71.77	65.37	1.00	-4.18	0.00	146
58	72.27	90.95	39.80	73.27	91.01	39.74	72.77	65.38	1.00	-3.54	0.00	146
59	73.27	91.01	39.74	74.27	91.11	39.69	73.77	65.39	1.00	-2.90	0.00	146
60	74.27	91.11	39.69	75.27	91.16	39.65	74.77	65.40	1.00	-2.26	0.00	146
61	75.27	91.16	39.65	76.27	91.22	39.62	75.77	65.41	1.00	-1.62	0.00	146
62	76.27	91.22	39.62	77.27	91.24	39.61	76.77	65.42	1.00	-0.98	0.00	146
63	77.27	91.24	39.61	78.27	91.29	39.60	77.77	65.43	1.00	-0.34	0.00	146
64	78.27	91.29	39.60	79.27	91.29	39.61	78.77	65.45	1.00	0.30	0.00	146
65	79.27	91.29	39.61	81.27	91.39	39.65	80.27	65.48	2.00	1.26	0.00	146
66	81.27	91.39	39.65	82.27	91.46	39.69	81.77	65.55	1.00	2.22	0.00	146
67	82.27	91.46	39.69	83.27	91.51	39.74	82.77	65.60	1.00	2.86	0.00	146
68	83.27	91.51	39.74	84.27	91.64	39.80	83.77	65.67	1.00	3.50	0.00	146
69	84.27	91.64	39.80	86.27	91.78	39.96	85.27	65.79	2.01	4.47	0.00	146
70	86.27	91.78	39.96	87.27	91.89	40.05	86.77	65.92	1.00	5.43	0.00	146
71	87.27	91.89	40.05	88.27	92.11	40.16	87.77	66.05	1.01	6.07	0.00	146
72	88.27	92.11	40.16	89.27	92.28	40.27	88.77	66.21	1.01	6.72	0.00	146
73	89.27	92.28	40.27	90.27	92.58	40.40	89.77	66.38	1.01	7.36	0.00	146
74	90.27	92.58	40.40	91.27	92.93	40.54	90.77	66.61	1.01	8.01	0.00	146
75	91.27	92.93	40.54	92.27	93.11	40.70	91.77	66.82	1.01	8.66	0.00	146
76	92.27	93.11	40.70	93.27	93.54	40.86	92.77	67.05	1.01	9.30	0.00	146
77	93.27	93.54	40.86	94.27	93.95	41.04	93.77	67.35	1.02	9.95	0.00	146
78	94.27	93.95	41.04	95.27	94.32	41.22	94.77	67.63	1.02	10.60	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
79	95.27	94.32	41.22	96.27	94.49	41.42	95.77	67.86	1.02	11.26	0.00	146
80	96.27	94.49	41.42	97.27	94.56	41.63	96.77	68.03	1.02	11.91	0.00	146
81	97.27	94.56	41.63	98.27	94.53	41.86	97.77	68.14	1.02	12.56	0.00	146
82	98.27	94.53	41.86	99.27	94.48	42.09	98.77	68.24	1.03	13.22	0.00	146
83	99.27	94.48	42.09	100.27	94.67	42.34	99.77	68.39	1.03	13.88	0.00	146
84	100.27	94.67	42.34	101.27	95.16	42.60	100.77	68.69	1.03	14.54	0.00	146
85	101.27	95.16	42.60	102.27	95.44	42.87	101.77	69.02	1.04	15.20	0.00	146
86	102.27	95.44	42.87	103.27	96.00	43.15	102.77	69.37	1.04	15.87	0.00	146
87	103.27	96.00	43.15	104.27	96.34	43.45	103.77	69.74	1.04	16.53	0.00	146
88	104.27	96.34	43.45	105.27	96.34	43.76	104.77	69.97	1.05	17.20	0.00	146
89	105.27	96.34	43.76	106.27	96.41	44.08	105.77	70.15	1.05	17.87	0.00	146
90	106.27	96.41	44.08	107.27	96.40	44.42	106.77	70.33	1.05	18.55	0.00	146
91	107.27	96.40	44.42	108.27	96.52	44.77	107.77	70.53	1.06	19.22	0.00	146
92	108.27	96.52	44.77	109.27	96.72	45.13	108.77	70.78	1.06	19.90	0.00	146
93	109.27	96.72	45.13	110.27	97.20	45.50	109.77	71.14	1.07	20.59	0.00	146
94	110.27	97.20	45.50	111.27	97.46	45.89	110.77	71.51	1.07	21.27	0.00	146
95	111.27	97.46	45.89	112.27	97.47	46.30	111.77	71.78	1.08	21.96	0.00	146
96	112.27	97.47	46.30	113.27	97.82	46.71	112.77	72.08	1.08	22.65	0.00	146
97	113.27	97.82	46.71	114.27	97.73	47.15	113.77	72.35	1.09	23.35	0.00	146
98	114.27	97.73	47.15	115.27	97.87	47.59	114.77	72.58	1.10	24.05	0.00	146
99	115.27	97.87	47.59	116.27	98.41	48.05	115.77	72.98	1.10	24.75	0.00	146
100	116.27	98.41	48.05	117.27	98.90	48.53	116.77	73.47	1.11	25.46	0.00	146
101	117.27	98.90	48.53	118.27	99.23	49.02	117.77	73.92	1.11	26.17	0.00	146
102	118.27	99.23	49.02	119.27	99.38	49.53	118.77	74.29	1.12	26.88	0.00	146
103	119.27	99.38	49.53	120.27	99.57	50.05	119.77	74.63	1.13	27.60	0.00	146
104	120.27	99.57	50.05	121.27	100.04	50.59	120.77	75.06	1.14	28.33	0.00	146
105	121.27	100.04	50.59	122.27	100.40	51.15	121.77	75.54	1.14	29.06	0.00	146
106	122.27	100.40	51.15	123.28	100.99	51.72	122.77	76.06	1.16	29.80	0.00	146
107	123.28	100.99	51.72	124.28	101.43	52.31	123.78	76.61	1.16	30.54	0.00	146
108	124.28	101.43	52.31	125.28	101.65	52.92	124.78	77.08	1.17	31.29	0.00	146
109	125.28	101.65	52.92	127.28	101.87	54.19	126.28	77.66	2.37	32.42	0.00	146
110	127.28	101.87	54.19	128.28	102.17	54.86	127.78	78.27	1.20	33.56	0.00	146
111	128.28	102.17	54.86	129.28	102.61	55.54	128.78	78.79	1.21	34.34	0.00	146
112	129.28	102.61	55.54	130.28	102.92	56.24	129.78	79.33	1.22	35.11	0.00	146
113	130.28	102.92	56.24	131.28	103.14	56.97	130.78	79.82	1.23	35.90	0.00	146
114	131.28	103.14	56.97	132.28	103.66	57.71	131.78	80.37	1.25	36.70	0.00	146
115	132.28	103.66	57.71	133.28	104.34	58.48	132.78	81.05	1.26	37.50	0.00	146
116	133.28	104.34	58.48	134.28	104.53	59.27	133.78	81.65	1.27	38.31	0.00	146
117	134.28	104.53	59.27	136.28	105.05	60.92	135.28	82.44	2.59	39.55	0.00	146
118	136.28	105.05	60.92	137.28	105.57	61.78	136.78	83.33	1.32	40.80	0.00	146
119	137.28	105.57	61.78	138.28	106.57	62.67	137.78	84.15	1.34	41.65	0.00	146
120	138.28	106.57	62.67	139.28	106.76	63.59	138.78	84.90	1.36	42.51	0.00	146
121	139.28	106.76	63.59	140.28	107.18	64.53	139.78	85.52	1.38	43.39	0.00	146
122	140.28	107.18	64.53	140.41	107.21	64.66	140.34	85.90	0.18	43.89	0.00	146
123	140.41	107.21	64.66	141.28	107.40	65.51	140.84	86.19	1.22	44.33	0.00	146
124	141.28	107.40	65.51	142.28	107.52	66.52	141.78	86.74	1.42	45.18	0.00	146
125	142.28	107.52	66.52	143.28	107.21	67.55	142.78	87.20	1.44	46.09	0.00	146
126	143.28	107.21	67.55	144.28	107.09	68.63	143.78	87.62	1.47	47.02	0.00	146
127	144.28	107.09	68.63	145.28	106.96	69.74	144.78	88.10	1.49	47.97	0.00	146
128	145.28	106.96	69.74	146.28	106.97	70.89	145.78	88.64	1.52	48.94	0.00	146
129	146.28	106.97	70.89	147.28	107.04	72.07	146.78	89.24	1.55	49.92	0.00	146
130	147.28	107.04	72.07	148.28	107.46	73.31	147.78	89.97	1.59	50.93	0.00	146
131	148.28	107.46	73.31	149.28	107.89	74.58	148.78	90.81	1.62	51.95	0.00	146
132	149.28	107.89	74.58	150.28	108.26	75.91	149.78	91.66	1.66	53.01	0.00	146
133	150.28	108.26	75.91	151.28	108.32	77.29	150.78	92.44	1.70	54.08	0.00	146
134	151.28	108.32	77.29	152.28	108.24	78.73	151.78	93.14	1.75	55.19	0.00	146
135	152.28	108.24	78.73	154.28	108.30	81.80	153.26	94.25	3.66	56.92	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
136	154.28	108.30	81.80	155.28	108.28	83.45	154.77	95.45	1.93	58.71	0.00	146
137	155.28	108.28	83.45	156.28	108.31	85.18	155.77	96.30	2.00	59.97	0.00	146
138	156.28	108.31	85.18	157.28	108.40	87.00	156.77	97.22	2.08	61.27	0.00	146
139	157.28	108.40	87.00	158.28	108.43	88.93	157.77	98.18	2.18	62.64	0.00	146
140	158.28	108.43	88.93	160.83	108.71	94.47	159.49	100.06	6.10	65.29	0.00	146
141	160.83	108.71	94.47	165.57	109.23	109.23	162.41	104.14	15.50	72.21	0.00	114

Tabella 4-12 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 02

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	270.11	851.77	2700.36	476.10	0.00	0.00	2483.93	0.00	0.00	
2	767.35	849.28	3247.03	520.49	0.00	2483.93	5272.34	0.00	0.00	
3	232.24	189.37	767.77	109.90	0.00	5272.34	5896.42	0.00	0.00	
4	1121.23	756.69	3191.37	421.07	0.00	5896.42	8384.94	0.00	0.00	
5	326.87	188.98	825.94	101.23	0.00	8384.94	8997.88	0.00	0.00	
6	1472.19	755.12	3393.74	391.31	0.00	8997.88	11410.82	0.00	0.00	
7	408.20	188.49	869.97	94.81	0.00	11410.82	12002.11	0.00	0.00	
8	423.91	187.95	878.02	93.73	0.00	12002.11	12600.45	0.00	0.00	
9	439.65	187.16	885.98	92.70	0.00	12600.45	13188.65	0.00	0.00	
10	455.25	186.23	893.76	91.72	0.00	13188.65	13779.48	0.00	0.00	
11	470.73	185.15	901.36	90.79	0.00	13779.48	14359.61	0.00	0.00	
12	485.27	184.37	908.30	89.90	0.00	14359.61	14924.94	0.00	0.00	
13	499.53	183.53	914.99	89.06	0.00	14924.94	15491.78	0.00	0.00	
14	513.52	182.65	921.45	88.25	0.00	15491.78	16043.35	0.00	0.00	
15	527.34	181.67	927.75	87.48	0.00	16043.35	16597.67	0.00	0.00	
16	541.09	180.54	933.95	86.75	0.00	16597.67	17138.16	0.00	0.00	
17	553.86	179.76	939.53	86.05	0.00	17138.16	17662.73	0.00	0.00	
18	566.30	178.97	944.87	85.38	0.00	17662.73	18185.55	0.00	0.00	
19	578.61	178.09	950.10	84.74	0.00	18185.55	18695.69	0.00	0.00	
20	590.87	177.06	955.28	84.12	0.00	18695.69	19205.44	0.00	0.00	
21	603.02	175.93	960.36	83.54	0.00	19205.44	19700.44	0.00	0.00	
22	615.04	174.71	965.35	82.98	0.00	19700.44	20194.60	0.00	0.00	
23	628.88	172.35	971.35	82.44	0.00	20194.60	20710.15	0.00	0.00	
24	643.16	169.61	977.57	81.93	0.00	20710.15	21198.48	0.00	0.00	
25	657.98	166.42	984.06	81.44	0.00	21198.48	21708.28	0.00	0.00	
26	673.16	162.89	990.71	80.96	0.00	21708.28	22187.52	0.00	0.00	
27	685.96	160.49	996.01	80.51	0.00	22187.52	22638.37	0.00	0.00	
28	698.77	157.94	1001.30	80.08	0.00	22638.37	23100.70	0.00	0.00	
29	711.68	155.19	1006.63	79.67	0.00	23100.70	23536.34	0.00	0.00	
30	724.79	152.20	1012.04	79.28	0.00	23536.34	23983.77	0.00	0.00	
31	736.64	149.75	1016.76	78.90	0.00	23983.77	24380.70	0.00	0.00	
32	745.12	148.97	1019.65	78.54	0.00	24380.70	24754.54	0.00	0.00	
33	1513.83	295.97	2046.91	156.05	0.00	24754.54	25480.34	0.00	0.00	
34	206.80	39.72	277.15	20.97	0.00	25480.34	25574.61	0.00	0.00	
35	561.84	107.13	750.20	56.58	0.00	25574.61	25824.73	0.00	0.00	
36	775.94	146.17	1029.65	77.25	0.00	25824.73	26157.66	0.00	0.00	
37	782.74	145.63	1031.72	76.96	0.00	26157.66	26474.70	0.00	0.00	
38	790.41	144.50	1034.26	76.69	0.00	26474.70	26801.90	0.00	0.00	
39	800.60	141.90	1038.14	76.43	0.00	26801.90	27138.51	0.00	0.00	
40	810.09	139.55	1041.66	76.18	0.00	27138.51	27434.92	0.00	0.00	
41	819.36	137.20	1045.08	75.95	0.00	27434.92	27746.84	0.00	0.00	
42	837.45	135.80	1059.27	76.48	0.00	27746.84	28032.53	0.00	0.00	
43	838.91	131.61	1052.46	75.51	0.00	28032.53	28321.71	0.00	0.00	
44	850.61	127.59	1057.19	75.31	0.00	28321.71	28610.45	0.00	0.00	
45	861.46	123.91	1061.47	75.13	0.00	28610.45	28864.56	0.00	0.00	
46	871.26	120.67	1065.22	74.95	0.00	28864.56	29115.40	0.00	0.00	
47	879.38	118.22	1068.12	74.78	0.00	29115.40	29324.90	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
48	886.47	116.21	1070.50	74.63	0.00	29324.90	29539.42	0.00	0.00	
49	895.53	113.02	1073.93	74.49	0.00	29539.42	29751.03	0.00	0.00	
50	903.29	110.42	1076.70	74.35	0.00	29751.03	29926.23	0.00	0.00	
51	908.73	108.95	1078.30	74.23	0.00	29926.23	30086.73	0.00	0.00	
52	913.40	107.78	1079.53	74.12	0.00	30086.73	30230.46	0.00	0.00	
53	917.60	106.75	1080.55	74.01	0.00	30230.46	30362.85	0.00	0.00	
54	921.77	105.62	1081.58	73.92	0.00	30362.85	30483.85	0.00	0.00	
55	926.00	104.34	1082.67	73.83	0.00	30483.85	30594.42	0.00	0.00	
56	930.39	102.87	1083.87	73.76	0.00	30594.42	30694.47	0.00	0.00	
57	934.31	101.55	1084.85	73.69	0.00	30694.47	30776.85	0.00	0.00	
58	937.10	100.72	1085.28	73.64	0.00	30776.85	30841.77	0.00	0.00	
59	939.59	99.93	1085.59	73.59	0.00	30841.77	30898.31	0.00	0.00	
60	941.79	99.20	1085.78	73.56	0.00	30898.31	30937.50	0.00	0.00	
61	943.42	98.66	1085.70	73.53	0.00	30937.50	30965.37	0.00	0.00	
62	944.56	98.26	1085.41	73.51	0.00	30965.37	30977.06	0.00	0.00	
63	945.42	97.92	1085.00	73.50	0.00	30977.06	30979.47	0.00	0.00	
64	945.88	97.68	1084.41	73.50	0.00	30979.47	30964.82	0.00	0.00	
65	1892.69	194.37	2166.84	147.03	0.00	30964.82	30908.86	0.00	0.00	
66	947.14	96.35	1082.73	73.55	0.00	30908.86	30864.56	0.00	0.00	
67	947.43	95.76	1082.16	73.59	0.00	30864.56	30806.22	0.00	0.00	
68	948.06	94.88	1081.78	73.64	0.00	30806.22	30743.30	0.00	0.00	
69	1897.07	187.11	2161.95	147.44	0.00	30743.30	30569.65	0.00	0.00	
70	948.52	92.33	1080.06	73.83	0.00	30569.65	30468.41	0.00	0.00	
71	949.70	90.71	1080.05	73.91	0.00	30468.41	30364.80	0.00	0.00	
72	951.22	88.80	1080.23	74.01	0.00	30364.80	30244.11	0.00	0.00	
73	953.26	86.50	1080.71	74.11	0.00	30244.11	30121.96	0.00	0.00	
74	956.73	83.31	1081.95	74.22	0.00	30121.96	29990.47	0.00	0.00	
75	958.90	80.71	1082.55	74.34	0.00	29990.47	29831.99	0.00	0.00	
76	961.59	77.72	1083.43	74.48	0.00	29831.99	29679.92	0.00	0.00	
77	966.17	73.60	1085.32	74.62	0.00	29679.92	29511.77	0.00	0.00	
78	969.99	69.78	1086.85	74.78	0.00	29511.77	29326.53	0.00	0.00	
79	971.40	67.13	1087.15	74.94	0.00	29326.53	29114.55	0.00	0.00	
80	969.84	65.95	1085.94	75.11	0.00	29114.55	28884.02	0.00	0.00	
81	966.24	65.75	1083.68	75.30	0.00	28884.02	28635.57	0.00	0.00	
82	961.32	66.15	1080.74	75.50	0.00	28635.57	28374.78	0.00	0.00	
83	958.19	65.46	1078.75	75.71	0.00	28374.78	28118.41	0.00	0.00	
84	959.78	62.13	1079.24	75.93	0.00	28118.41	27867.73	0.00	0.00	
85	961.96	58.35	1080.07	76.16	0.00	27867.73	27590.48	0.00	0.00	
86	964.56	54.23	1081.14	76.41	0.00	27590.48	27314.68	0.00	0.00	
87	967.48	49.82	1082.40	76.67	0.00	27314.68	27012.74	0.00	0.00	
88	965.04	48.15	1080.85	76.94	0.00	27012.74	26682.45	0.00	0.00	
89	959.90	47.81	1077.87	77.23	0.00	26682.45	26344.79	0.00	0.00	
90	954.43	47.51	1074.70	77.53	0.00	26344.79	25992.75	0.00	0.00	
91	949.17	46.97	1071.65	77.84	0.00	25992.75	25636.28	0.00	0.00	
92	945.60	45.41	1069.49	78.17	0.00	25636.28	25272.32	0.00	0.00	
93	945.07	42.07	1068.99	78.51	0.00	25272.32	24907.75	0.00	0.00	
94	944.84	38.44	1068.66	78.87	0.00	24907.75	24521.17	0.00	0.00	
95	940.06	37.12	1065.85	79.25	0.00	24521.17	24114.50	0.00	0.00	
96	935.85	35.35	1063.34	79.64	0.00	24114.50	23709.26	0.00	0.00	
97	930.46	34.08	1060.18	80.05	0.00	23709.26	23278.41	0.00	0.00	
98	922.88	33.83	1055.77	80.48	0.00	23278.41	22845.98	0.00	0.00	
99	920.80	30.50	1054.41	80.93	0.00	22845.98	22414.24	0.00	0.00	
100	921.65	25.45	1054.68	81.40	0.00	22414.24	21966.53	0.00	0.00	
101	920.30	21.43	1053.73	81.89	0.00	21966.53	21502.17	0.00	0.00	
102	915.56	19.07	1050.85	82.40	0.00	21502.17	21023.54	0.00	0.00	
103	909.25	17.41	1047.04	82.94	0.00	21023.54	20535.93	0.00	0.00	
104	905.57	14.17	1044.70	83.50	0.00	20535.93	20041.41	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
105	903.15	10.10	1043.07	84.08	0.00	20041.41	19533.19	0.00	0.00	
106	910.48	5.50	1052.27	85.54	0.00	19533.19	19008.36	0.00	0.00	
107	900.20	0.75	1041.29	85.34	0.00	19008.36	18474.57	0.00	0.00	
108	895.28	0.00	1041.03	86.01	0.00	18474.57	17929.38	0.00	0.00	
109	1764.24	0.00	2070.49	174.14	0.00	17929.38	16812.53	0.00	0.00	
110	869.18	0.00	1030.03	88.20	0.00	16812.53	16240.80	0.00	0.00	
111	863.63	0.00	1030.66	89.01	0.00	16240.80	15657.69	0.00	0.00	
112	857.81	0.00	1031.18	89.85	0.00	15657.69	15063.27	0.00	0.00	
113	849.60	0.00	1028.88	90.73	0.00	15063.27	14459.39	0.00	0.00	
114	842.93	0.00	1028.77	91.66	0.00	14459.39	13844.67	0.00	0.00	
115	840.07	0.00	1033.92	92.64	0.00	13844.67	13215.56	0.00	0.00	
116	833.78	0.00	1034.89	93.67	0.00	13215.56	12574.84	0.00	0.00	
117	1635.88	0.00	2056.54	190.63	0.00	12574.84	11269.81	0.00	0.00	
118	804.45	0.00	1025.20	97.09	0.00	11269.81	10603.30	0.00	0.00	
119	802.32	0.00	1033.08	98.36	0.00	10603.30	9920.28	0.00	0.00	
120	796.68	0.00	1036.51	99.71	0.00	9920.28	9223.89	0.00	0.00	
121	785.22	0.00	1032.01	101.14	0.00	9223.89	8520.01	0.00	0.00	
122	101.34	0.00	133.99	13.26	0.00	8520.01	8427.84	0.00	0.00	
123	672.20	0.00	893.39	89.40	0.00	8427.84	7808.85	0.00	0.00	
124	758.49	0.00	1017.99	104.27	0.00	7808.85	7094.18	0.00	0.00	
125	738.04	0.00	1000.52	105.98	0.00	7094.18	6382.50	0.00	0.00	
126	714.78	8.00	990.77	107.82	0.00	6382.50	5668.10	0.00	0.00	
127	692.52	20.00	988.85	109.78	0.00	5668.10	4944.96	0.00	0.00	
128	670.77	12.00	956.28	111.89	0.00	4944.96	4237.92	0.00	0.00	
129	650.12	0.00	918.11	114.16	0.00	4237.92	3552.24	0.00	0.00	
130	632.46	0.00	903.52	116.61	0.00	3552.24	2869.17	0.00	0.00	
131	617.28	0.00	892.86	119.26	0.00	2869.17	2185.72	0.00	0.00	
132	600.76	0.00	879.76	122.14	0.00	2185.72	1504.19	0.00	0.00	
133	579.92	0.00	858.69	125.29	0.00	1504.19	831.71	0.00	0.00	
134	553.94	0.00	827.47	128.75	0.00	831.71	177.53	0.00	0.00	
135	1025.00	0.00	1546.43	269.34	0.00	177.53	-1060.64	0.00	0.00	
136	469.71	0.00	711.00	141.52	0.00	-1060.64	-1635.68	0.00	0.00	
137	438.92	0.00	661.19	146.86	0.00	-1635.68	-2172.87	0.00	0.00	
138	407.49	0.00	605.78	152.92	0.00	-2172.87	-2666.12	0.00	0.00	
139	374.22	0.00	540.68	159.91	0.00	-2666.12	-3105.42	0.00	0.00	
140	787.15	0.00	990.79	448.27	0.00	-3105.42	-3886.65	0.00	0.00	
141	617.14	0.00	-653.10	886.01	0.00	-3886.65	-3047.84	0.00	0.00	

Tabella 4-13 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 02

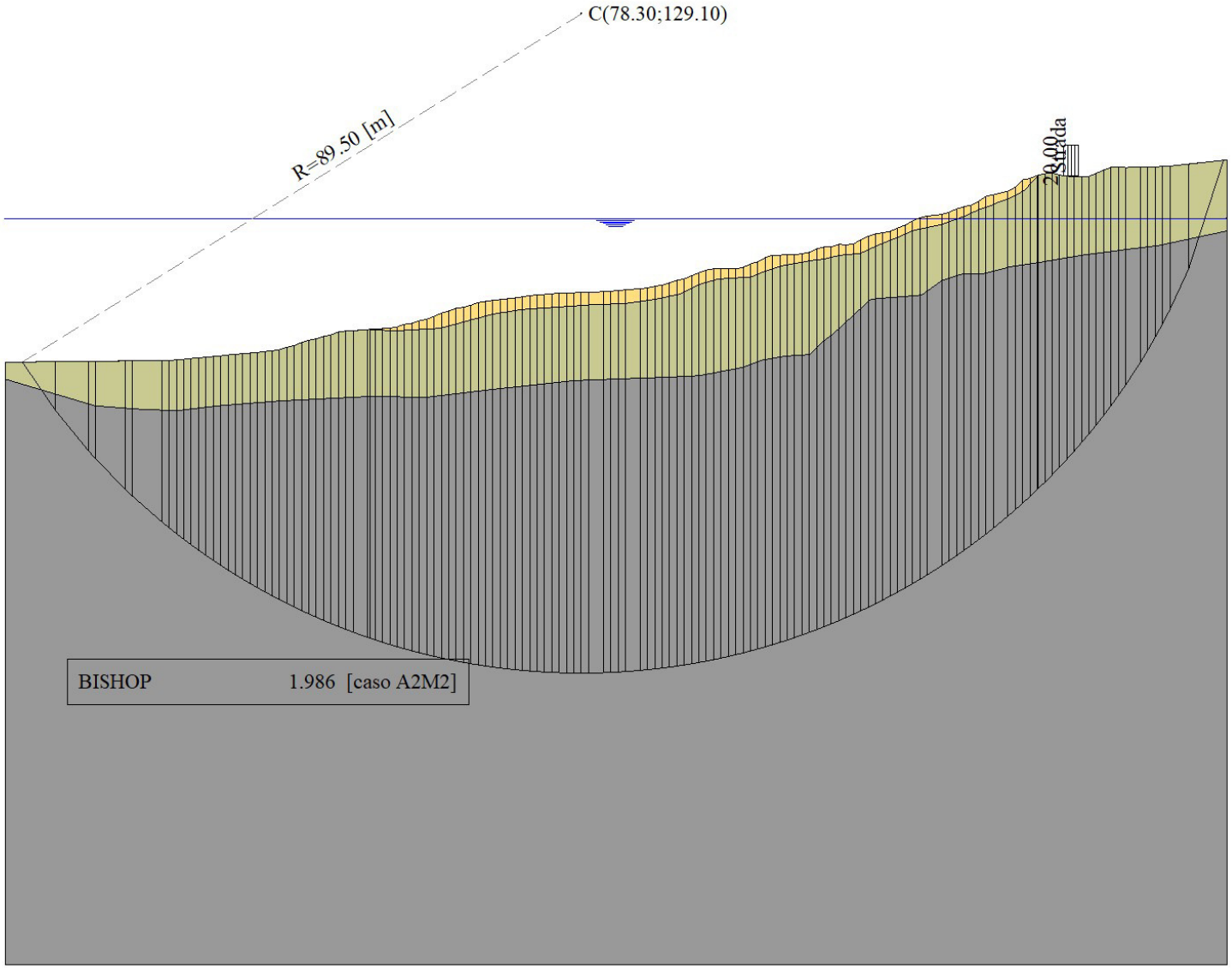

Figura 4-2 – Superficie critica (1) della sezione VS_02 per la verifica di stabilità 02

4.5 VERIFICA DI STABILITÀ 03

4.5.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate solo in condizioni **sismiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni totali**
Presenza di carichi distribuiti

4.5.2 RISULTATI ANALISI

Numero di superfici analizzate	146128
Coefficiente di sicurezza minimo	1.623
Superficie con coefficiente di sicurezza minimo	1

4.5.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO IL BASSO

Numero di strisce	149	
Coordinate del centro	X[m]= 78.30	Y[m]= 129.10
Raggio del cerchio	R[m]= 90.50	
Intersezione a valle con il profilo topografico	X_v[m]= 1.06	Y_v[m]= 81.94
Intersezione a monte con il profilo topografico	X_m[m]= 165.81	Y_m[m]= 106.04
Coefficiente di sicurezza	F_S= 1.623	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	1.06	81.94	81.94	5.89	81.97	74.81	4.28	79.57	8.61	-55.87	0.00	108
2	5.89	81.97	74.81	7.51	81.98	72.72	6.73	77.85	2.65	-52.30	0.00	146
3	7.51	81.98	72.72	7.81	81.98	72.34	7.66	77.26	0.48	-51.31	0.00	146
4	7.81	81.98	72.34	9.51	82.00	70.29	8.69	76.64	2.66	-50.32	0.00	146
5	9.51	82.00	70.29	10.51	82.00	69.14	10.02	75.85	1.52	-48.99	0.00	146
6	10.51	82.00	69.14	11.51	82.01	68.03	11.02	75.29	1.50	-48.04	0.00	146
7	11.51	82.01	68.03	12.51	82.01	66.96	12.02	74.75	1.47	-47.10	0.00	146
8	12.51	82.01	66.96	13.51	82.00	65.91	13.02	74.22	1.44	-46.18	0.00	146
9	13.51	82.00	65.91	14.52	81.98	64.89	14.02	73.69	1.43	-45.26	0.00	146
10	14.52	81.98	64.89	15.52	81.96	63.92	15.02	73.19	1.40	-44.37	0.00	146
11	15.52	81.96	63.92	16.52	81.95	62.97	16.02	72.70	1.38	-43.49	0.00	146
12	16.52	81.95	62.97	17.52	81.96	62.05	17.02	72.23	1.36	-42.62	0.00	146
13	17.52	81.96	62.05	21.52	81.96	58.63	19.57	71.13	5.26	-40.52	0.00	146
14	21.52	81.96	58.63	22.52	81.95	57.83	22.02	70.09	1.28	-38.45	0.00	146
15	22.52	81.95	57.83	23.52	81.98	57.06	23.02	69.71	1.26	-37.65	0.00	146
16	23.52	81.98	57.06	24.52	82.10	56.31	24.02	69.36	1.25	-36.86	0.00	146
17	24.52	82.10	56.31	25.53	82.20	55.58	25.03	69.05	1.25	-36.06	0.00	146
18	25.53	82.20	55.58	26.53	82.40	54.87	26.03	68.76	1.22	-35.28	0.00	146
19	26.53	82.40	54.87	27.53	82.56	54.18	27.03	68.50	1.21	-34.51	0.00	146
20	27.53	82.56	54.18	28.53	82.68	53.51	28.03	68.23	1.20	-33.74	0.00	146
21	28.53	82.68	53.51	29.53	82.89	52.87	29.03	67.99	1.19	-32.99	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
22	29.53	82.89	52.87	30.53	83.13	52.23	30.03	67.78	1.18	-32.23	0.00	146
23	30.53	83.13	52.23	31.53	83.32	51.62	31.03	67.58	1.17	-31.49	0.00	146
24	31.53	83.32	51.62	32.53	83.47	51.03	32.03	67.36	1.16	-30.75	0.00	146
25	32.53	83.47	51.03	33.53	83.67	50.45	33.03	67.15	1.15	-30.02	0.00	146
26	33.53	83.67	50.45	34.53	83.80	49.89	34.03	66.95	1.15	-29.29	0.00	146
27	34.53	83.80	49.89	35.53	83.98	49.34	35.03	66.75	1.14	-28.56	0.00	146
28	35.53	83.98	49.34	36.54	84.20	48.81	36.04	66.58	1.14	-27.84	0.00	146
29	36.54	84.20	48.81	37.54	84.41	48.30	37.04	66.43	1.12	-27.12	0.00	146
30	37.54	84.41	48.30	38.54	84.79	47.80	38.04	66.32	1.12	-26.42	0.00	146
31	38.54	84.79	47.80	39.54	85.05	47.32	39.04	66.24	1.11	-25.71	0.00	146
32	39.54	85.05	47.32	40.54	85.23	46.85	40.04	66.11	1.10	-25.01	0.00	146
33	40.54	85.23	46.85	41.54	85.49	46.40	41.04	65.99	1.10	-24.31	0.00	146
34	41.54	85.49	46.40	42.54	85.74	45.96	42.04	65.90	1.09	-23.62	0.00	146
35	42.54	85.74	45.96	43.54	85.82	45.54	43.04	65.77	1.09	-22.93	0.00	146
36	43.54	85.82	45.54	44.54	85.92	45.13	44.04	65.60	1.08	-22.25	0.00	146
37	44.54	85.92	45.13	45.54	86.00	44.74	45.04	65.45	1.08	-21.56	0.00	146
38	45.54	86.00	44.74	46.55	86.05	44.35	46.05	65.28	1.08	-20.88	0.00	146
39	46.55	86.05	44.35	47.55	86.19	43.98	47.05	65.14	1.07	-20.20	0.00	146
40	47.55	86.19	43.98	48.55	86.26	43.63	48.05	65.02	1.06	-19.53	0.00	146
41	48.55	86.26	43.63	49.55	86.34	43.29	49.05	64.88	1.06	-18.86	0.00	146
42	49.55	86.34	43.29	50.55	86.50	42.96	50.05	64.77	1.05	-18.19	0.00	146
43	50.55	86.50	42.96	51.55	86.95	42.64	51.05	64.76	1.05	-17.52	0.00	146
44	51.55	86.95	42.64	52.55	87.10	42.34	52.05	64.76	1.04	-16.86	0.00	146
45	52.55	87.10	42.34	53.55	87.22	42.05	53.05	64.68	1.04	-16.20	0.00	146
46	53.55	87.22	42.05	54.55	87.60	41.77	54.05	64.66	1.04	-15.54	0.00	146
47	54.55	87.60	41.77	55.55	88.01	41.51	55.05	64.72	1.03	-14.89	0.00	146
48	55.55	88.01	41.51	56.55	88.39	41.25	56.05	64.79	1.03	-14.23	0.00	146
49	56.55	88.39	41.25	57.56	88.70	41.01	57.06	64.84	1.04	-13.58	0.00	146
50	57.56	88.70	41.01	58.56	88.86	40.78	58.06	64.84	1.03	-12.92	0.00	146
51	58.56	88.86	40.78	59.56	89.23	40.56	59.06	64.86	1.02	-12.27	0.00	146
52	59.56	89.23	40.56	60.56	89.53	40.36	60.06	64.92	1.02	-11.63	0.00	146
53	60.56	89.53	40.36	61.56	89.76	40.16	61.06	64.95	1.02	-10.98	0.00	146
54	61.56	89.76	40.16	62.56	90.13	39.98	62.06	65.01	1.02	-10.34	0.00	146
55	62.56	90.13	39.98	63.56	90.47	39.81	63.06	65.10	1.01	-9.69	0.00	146
56	63.56	90.47	39.81	64.56	90.71	39.65	64.06	65.16	1.01	-9.05	0.00	146
57	64.56	90.71	39.65	65.56	90.86	39.50	65.06	65.18	1.01	-8.41	0.00	146
58	65.56	90.86	39.50	66.56	90.98	39.36	66.06	65.18	1.01	-7.77	0.00	146
59	66.56	90.98	39.36	67.56	91.03	39.24	67.06	65.15	1.01	-7.13	0.00	146
60	67.56	91.03	39.24	68.57	91.04	39.12	68.07	65.11	1.02	-6.49	0.00	146
61	68.57	91.04	39.12	69.57	91.08	39.02	69.07	65.07	1.01	-5.85	0.00	146
62	69.57	91.08	39.02	70.57	91.15	38.93	70.07	65.05	1.00	-5.22	0.00	146
63	70.57	91.15	38.93	71.57	91.30	38.85	71.07	65.06	1.00	-4.58	0.00	146
64	71.57	91.30	38.85	72.57	91.39	38.78	72.07	65.08	1.00	-3.95	0.00	146
65	72.57	91.39	38.78	73.57	91.49	38.72	73.07	65.10	1.00	-3.31	0.00	146
66	73.57	91.49	38.72	74.57	91.58	38.68	74.07	65.12	1.00	-2.68	0.00	146
67	74.57	91.58	38.68	75.57	91.74	38.64	75.07	65.16	1.00	-2.05	0.00	146
68	75.57	91.74	38.64	76.57	91.84	38.62	76.07	65.21	1.00	-1.41	0.00	146
69	76.57	91.84	38.62	77.57	91.97	38.60	77.07	65.26	1.00	-0.78	0.00	146
70	77.57	91.97	38.60	78.58	92.03	38.60	78.08	65.30	1.01	-0.14	0.00	146
71	78.58	92.03	38.60	79.58	92.12	38.61	79.08	65.34	1.00	0.49	0.00	146
72	79.58	92.12	38.61	80.58	92.17	38.63	80.08	65.38	1.00	1.13	0.00	146
73	80.58	92.17	38.63	81.58	92.19	38.66	81.08	65.41	1.00	1.76	0.00	146
74	81.58	92.19	38.66	82.58	92.36	38.70	82.08	65.48	1.00	2.39	0.00	146
75	82.58	92.36	38.70	83.58	92.43	38.75	83.08	65.56	1.00	3.03	0.00	146
76	83.58	92.43	38.75	84.58	92.43	38.82	84.08	65.61	1.00	3.66	0.00	146
77	84.58	92.43	38.82	85.58	92.53	38.89	85.08	65.67	1.00	4.30	0.00	146
78	85.58	92.53	38.89	86.58	92.62	38.98	86.08	65.76	1.00	4.93	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
79	86.58	92.62	38.98	87.58	92.64	39.08	87.08	65.83	1.00	5.57	0.00	146
80	87.58	92.64	39.08	88.58	92.74	39.19	88.08	65.91	1.01	6.20	0.00	146
81	88.58	92.74	39.19	89.59	92.82	39.31	89.08	66.01	1.02	6.84	0.00	146
82	89.59	92.82	39.31	90.59	92.78	39.44	90.09	66.09	1.01	7.49	0.00	146
83	90.59	92.78	39.44	91.59	92.79	39.58	91.09	66.15	1.01	8.12	0.00	146
84	91.59	92.79	39.58	92.59	92.89	39.74	92.09	66.25	1.01	8.76	0.00	146
85	92.59	92.89	39.74	93.59	92.94	39.90	93.09	66.37	1.01	9.41	0.00	146
86	93.59	92.94	39.90	94.59	93.03	40.08	94.09	66.49	1.02	10.05	0.00	146
87	94.59	93.03	40.08	95.59	93.15	40.27	95.09	66.63	1.02	10.69	0.00	146
88	95.59	93.15	40.27	96.59	93.30	40.47	96.09	66.80	1.02	11.34	0.00	146
89	96.59	93.30	40.47	97.59	93.43	40.68	97.09	66.97	1.02	11.98	0.00	146
90	97.59	93.43	40.68	99.59	93.49	41.14	98.59	67.18	2.05	12.96	0.00	146
91	99.59	93.49	41.14	100.60	93.65	41.39	100.09	67.42	1.04	13.94	0.00	146
92	100.60	93.65	41.39	101.60	93.93	41.65	101.10	67.66	1.03	14.59	0.00	146
93	101.60	93.93	41.65	102.60	94.08	41.92	102.10	67.90	1.04	15.25	0.00	146
94	102.60	94.08	41.92	103.60	94.31	42.21	103.10	68.13	1.04	15.90	0.00	146
95	103.60	94.31	42.21	104.60	94.53	42.51	104.10	68.39	1.04	16.56	0.00	146
96	104.60	94.53	42.51	105.60	94.64	42.82	105.10	68.62	1.05	17.23	0.00	146
97	105.60	94.64	42.82	106.60	94.99	43.14	106.10	68.90	1.05	17.89	0.00	146
98	106.60	94.99	43.14	107.60	95.26	43.47	107.10	69.22	1.05	18.56	0.00	146
99	107.60	95.26	43.47	108.60	95.45	43.82	108.10	69.50	1.06	19.23	0.00	146
100	108.60	95.45	43.82	109.60	95.74	44.18	109.10	69.80	1.06	19.90	0.00	146
101	109.60	95.74	44.18	110.61	96.05	44.56	110.10	70.13	1.08	20.58	0.00	146
102	110.61	96.05	44.56	111.61	96.27	44.95	111.11	70.46	1.07	21.26	0.00	146
103	111.61	96.27	44.95	112.61	96.66	45.36	112.11	70.81	1.08	21.94	0.00	146
104	112.61	96.66	45.36	113.61	97.02	45.77	113.11	71.20	1.08	22.62	0.00	146
105	113.61	97.02	45.77	114.61	97.29	46.20	114.11	71.57	1.09	23.31	0.00	146
106	114.61	97.29	46.20	115.61	97.50	46.65	115.11	71.91	1.09	24.00	0.00	146
107	115.61	97.50	46.65	116.61	97.53	47.11	116.11	72.20	1.10	24.70	0.00	146
108	116.61	97.53	47.11	117.61	97.52	47.58	117.11	72.44	1.11	25.39	0.00	146
109	117.61	97.52	47.58	118.61	97.54	48.07	118.11	72.68	1.11	26.10	0.00	146
110	118.61	97.54	48.07	119.61	98.02	48.58	119.11	73.05	1.12	26.80	0.00	146
111	119.61	98.02	48.58	120.26	98.27	48.92	119.93	73.45	0.73	27.39	0.00	146
112	120.26	98.27	48.92	120.61	98.41	49.10	120.43	73.67	0.40	27.75	0.00	146
113	120.61	98.41	49.10	121.62	98.93	49.64	121.11	74.02	1.15	28.24	0.00	146
114	121.62	98.93	49.64	122.62	99.29	50.20	122.12	74.51	1.14	28.96	0.00	146
115	122.62	99.29	50.20	123.62	99.51	50.77	123.12	74.94	1.15	29.69	0.00	146
116	123.62	99.51	50.77	124.62	99.99	51.35	124.12	75.40	1.16	30.42	0.00	146
117	124.62	99.99	51.35	125.62	100.42	51.96	125.12	75.93	1.17	31.16	0.00	146
118	125.62	100.42	51.96	126.62	100.99	52.58	126.12	76.49	1.18	31.90	0.00	146
119	126.62	100.99	52.58	127.62	101.59	53.22	127.12	77.09	1.19	32.65	0.00	146
120	127.62	101.59	53.22	128.62	102.20	53.88	128.12	77.72	1.20	33.40	0.00	146
121	128.62	102.20	53.88	130.62	102.70	55.26	129.62	78.51	2.43	34.55	0.00	146
122	130.62	102.70	55.26	131.33	102.83	55.76	130.97	79.14	0.87	35.59	0.00	146
123	131.33	102.83	55.76	131.62	102.89	55.98	131.47	79.36	0.36	35.98	0.00	146
124	131.62	102.89	55.98	132.63	102.87	56.72	132.12	79.61	1.26	36.50	0.00	146
125	132.63	102.87	56.72	133.63	102.79	57.48	133.13	79.97	1.26	37.29	0.00	146
126	133.63	102.79	57.48	134.63	102.84	58.27	134.13	80.34	1.27	38.09	0.00	146
127	134.63	102.84	58.27	135.63	103.03	59.07	135.13	80.80	1.28	38.90	0.00	146
128	135.63	103.03	59.07	136.63	103.56	59.91	136.13	81.39	1.30	39.72	0.00	146
129	136.63	103.56	59.91	137.63	103.98	60.76	137.13	82.05	1.32	40.55	0.00	146
130	137.63	103.98	60.76	138.63	104.10	61.64	138.13	82.62	1.33	41.39	0.00	146
131	138.63	104.10	61.64	139.63	104.15	62.55	139.13	83.11	1.35	42.24	0.00	146
132	139.63	104.15	62.55	140.63	104.26	63.49	140.13	83.61	1.37	43.10	0.00	146
133	140.63	104.26	63.49	141.63	104.38	64.45	141.13	84.14	1.39	43.97	0.00	146
134	141.63	104.38	64.45	142.64	104.65	65.46	142.13	84.73	1.42	44.86	0.00	146
135	142.64	104.65	65.46	143.64	104.62	66.48	143.14	85.30	1.43	45.77	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
136	143.64	104.62	66.48	144.64	104.73	67.54	144.14	85.84	1.46	46.68	0.00	146
137	144.64	104.73	67.54	145.64	104.79	68.64	145.14	86.42	1.48	47.61	0.00	146
138	145.64	104.79	68.64	146.64	104.80	69.77	146.14	87.00	1.51	48.56	0.00	146
139	146.64	104.80	69.77	147.64	104.82	70.94	147.14	87.58	1.54	49.53	0.00	146
140	147.64	104.82	70.94	148.64	104.89	72.16	148.14	88.20	1.57	50.51	0.00	146
141	148.64	104.89	72.16	149.64	104.94	73.41	149.14	88.85	1.61	51.52	0.00	146
142	149.64	104.94	73.41	150.64	105.02	74.72	150.14	89.52	1.64	52.55	0.00	146
143	150.64	105.02	74.72	151.64	105.20	76.08	151.14	90.25	1.69	53.60	0.00	146
144	151.64	105.20	76.08	152.64	105.26	77.49	152.14	91.00	1.73	54.68	0.00	146
145	152.64	105.26	77.49	153.65	105.34	78.97	153.14	91.76	1.80	55.80	0.00	146
146	153.65	105.34	78.97	154.65	105.40	80.51	154.15	92.55	1.83	56.95	0.00	146
147	154.65	105.40	80.51	155.65	105.44	82.12	155.14	93.36	1.89	58.13	0.00	146
148	155.65	105.44	82.12	160.73	105.74	91.75	157.98	96.05	10.89	62.17	0.00	146
149	160.73	105.74	91.75	165.81	106.04	106.04	162.42	101.17	15.17	70.43	0.00	117

Tabella 4-14 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 03

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	316.37	914.18	3078.35	572.74	0.00	0.00	2829.72	0.00	0.00	
2	243.39	306.22	1235.66	238.30	0.00	2829.72	3920.16	0.00	0.00	
3	51.89	56.69	233.56	43.17	0.00	3920.16	4122.58	0.00	0.00	
4	332.05	321.07	1348.72	239.48	0.00	4122.58	5269.08	0.00	0.00	
5	224.75	188.78	812.41	137.09	0.00	5269.08	5939.87	0.00	0.00	
6	245.54	188.73	825.36	134.52	0.00	5939.87	6610.23	0.00	0.00	
7	265.65	188.68	837.54	132.14	0.00	6610.23	7275.62	0.00	0.00	
8	284.94	188.73	848.87	129.90	0.00	7275.62	7935.27	0.00	0.00	
9	306.56	190.77	868.07	129.08	0.00	7935.27	8595.05	0.00	0.00	
10	321.43	189.08	869.42	125.83	0.00	8595.05	9243.09	0.00	0.00	
11	338.79	189.22	878.83	123.98	0.00	9243.09	9887.40	0.00	0.00	
12	355.89	189.22	887.94	122.24	0.00	9887.40	10529.50	0.00	0.00	
13	1582.74	756.69	3631.56	473.36	0.00	10529.50	13022.17	0.00	0.00	
14	434.15	189.22	926.98	114.87	0.00	13022.17	13624.49	0.00	0.00	
15	448.66	189.12	933.79	113.61	0.00	13624.49	14226.22	0.00	0.00	
16	463.95	188.39	941.08	112.42	0.00	14226.22	14836.74	0.00	0.00	
17	484.34	189.18	957.99	112.39	0.00	14836.74	15440.86	0.00	0.00	
18	495.50	185.84	956.09	110.19	0.00	15440.86	16049.18	0.00	0.00	
19	511.56	184.07	963.71	109.16	0.00	16049.18	16641.24	0.00	0.00	
20	526.52	182.70	970.56	108.18	0.00	16641.24	17216.78	0.00	0.00	
21	541.59	181.08	977.43	107.24	0.00	17216.78	17799.28	0.00	0.00	
22	557.42	178.88	984.73	106.34	0.00	17799.28	18377.51	0.00	0.00	
23	572.73	176.77	991.67	105.49	0.00	18377.51	18936.94	0.00	0.00	
24	586.89	175.10	997.84	104.67	0.00	18936.94	19479.22	0.00	0.00	
25	600.82	173.38	1003.85	103.88	0.00	19479.22	20019.90	0.00	0.00	
26	614.26	171.77	1009.53	103.13	0.00	20019.90	20537.99	0.00	0.00	
27	627.21	170.25	1014.89	102.42	0.00	20537.99	21053.94	0.00	0.00	
28	647.14	169.97	1030.78	102.75	0.00	21053.94	21570.47	0.00	0.00	
29	654.23	166.18	1026.23	101.07	0.00	21570.47	22069.43	0.00	0.00	
30	668.86	163.28	1032.56	100.44	0.00	22069.43	22584.93	0.00	0.00	
31	683.67	160.15	1038.98	99.84	0.00	22584.93	23069.26	0.00	0.00	
32	696.37	157.99	1044.12	99.26	0.00	23069.26	23529.27	0.00	0.00	
33	708.80	155.83	1049.10	98.71	0.00	23529.27	23990.09	0.00	0.00	
34	721.60	153.33	1054.30	98.18	0.00	23990.09	24437.38	0.00	0.00	
35	732.49	151.71	1058.39	97.67	0.00	24437.38	24846.85	0.00	0.00	
36	741.75	150.83	1061.53	97.19	0.00	24846.85	25247.45	0.00	0.00	
37	750.76	149.95	1064.55	96.72	0.00	25247.45	25633.04	0.00	0.00	
38	766.68	150.80	1077.86	97.24	0.00	25633.04	26005.64	0.00	0.00	
39	767.72	148.38	1070.03	95.85	0.00	26005.64	26375.82	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
40	776.25	147.35	1072.84	95.44	0.00	26375.82	26723.44	0.00	0.00	
41	783.99	146.61	1075.22	95.05	0.00	26723.44	27060.28	0.00	0.00	
42	792.32	145.43	1077.96	94.68	0.00	27060.28	27396.44	0.00	0.00	
43	803.80	142.44	1082.49	94.33	0.00	27396.44	27761.24	0.00	0.00	
44	814.95	139.50	1086.84	93.99	0.00	27761.24	28070.56	0.00	0.00	
45	822.85	138.18	1089.40	93.67	0.00	28070.56	28363.12	0.00	0.00	
46	832.63	135.73	1093.02	93.37	0.00	28363.12	28678.19	0.00	0.00	
47	844.84	131.85	1098.00	93.08	0.00	28678.19	28983.21	0.00	0.00	
48	856.82	127.98	1102.87	92.80	0.00	28983.21	29270.14	0.00	0.00	
49	876.36	125.84	1118.19	93.46	0.00	29270.14	29536.52	0.00	0.00	
50	876.32	122.29	1110.17	92.29	0.00	29536.52	29768.73	0.00	0.00	
51	885.26	119.69	1113.41	92.06	0.00	29768.73	30012.80	0.00	0.00	
52	895.26	116.41	1117.26	91.84	0.00	30012.80	30234.55	0.00	0.00	
53	903.77	113.81	1120.31	91.63	0.00	30234.55	30434.57	0.00	0.00	
54	912.70	110.87	1123.62	91.44	0.00	30434.57	30636.36	0.00	0.00	
55	922.43	107.38	1127.39	91.26	0.00	30636.36	30820.47	0.00	0.00	
56	930.76	104.54	1130.42	91.09	0.00	30820.47	30979.99	0.00	0.00	
57	937.14	102.63	1132.41	90.93	0.00	30979.99	31116.69	0.00	0.00	
58	942.21	101.30	1133.73	90.79	0.00	31116.69	31237.10	0.00	0.00	
59	946.16	100.47	1134.48	90.65	0.00	31237.10	31337.37	0.00	0.00	
60	958.40	101.18	1145.95	91.44	0.00	31337.37	31421.47	0.00	0.00	
61	951.36	99.93	1134.60	90.42	0.00	31421.47	31494.79	0.00	0.00	
62	954.14	99.39	1134.82	90.33	0.00	31494.79	31558.15	0.00	0.00	
63	957.72	98.31	1135.50	90.24	0.00	31558.15	31616.30	0.00	0.00	
64	961.28	97.14	1136.20	90.17	0.00	31616.30	31655.44	0.00	0.00	
65	964.18	96.20	1136.58	90.10	0.00	31655.44	31682.51	0.00	0.00	
66	966.88	95.27	1136.89	90.05	0.00	31682.51	31695.60	0.00	0.00	
67	969.92	94.05	1137.41	90.01	0.00	31695.60	31702.18	0.00	0.00	
68	972.85	92.77	1137.90	89.98	0.00	31702.18	31690.02	0.00	0.00	
69	975.30	91.64	1138.17	89.96	0.00	31690.02	31667.57	0.00	0.00	
70	986.96	91.62	1149.54	90.85	0.00	31667.57	31625.27	0.00	0.00	
71	978.51	89.98	1137.87	89.96	0.00	31625.27	31573.27	0.00	0.00	
72	979.53	89.29	1137.46	89.97	0.00	31573.27	31504.93	0.00	0.00	
73	979.71	88.95	1136.63	89.99	0.00	31504.93	31421.33	0.00	0.00	
74	980.78	88.02	1136.31	90.03	0.00	31421.33	31338.21	0.00	0.00	
75	982.11	86.84	1136.16	90.08	0.00	31338.21	31233.48	0.00	0.00	
76	981.68	86.50	1135.09	90.14	0.00	31233.48	31110.23	0.00	0.00	
77	981.32	86.01	1134.08	90.21	0.00	31110.23	30983.18	0.00	0.00	
78	981.59	85.07	1133.44	90.29	0.00	30983.18	30842.66	0.00	0.00	
79	980.91	84.53	1132.31	90.38	0.00	30842.66	30683.87	0.00	0.00	
80	980.12	83.95	1131.15	90.48	0.00	30683.87	30519.50	0.00	0.00	
81	989.46	83.89	1141.49	91.50	0.00	30519.50	30339.15	0.00	0.00	
82	977.72	82.87	1128.45	90.73	0.00	30339.15	30138.64	0.00	0.00	
83	974.94	83.01	1126.28	90.86	0.00	30138.64	29930.52	0.00	0.00	
84	973.23	82.48	1124.71	91.02	0.00	29930.52	29717.85	0.00	0.00	
85	971.67	81.74	1123.24	91.18	0.00	29717.85	29489.06	0.00	0.00	
86	969.82	81.05	1121.63	91.35	0.00	29489.06	29251.61	0.00	0.00	
87	968.39	80.02	1120.27	91.54	0.00	29251.61	29004.53	0.00	0.00	
88	967.30	78.70	1119.12	91.74	0.00	29004.53	28747.66	0.00	0.00	
89	966.08	77.33	1117.91	91.96	0.00	28747.66	28477.09	0.00	0.00	
90	1923.34	152.79	2229.32	184.60	0.00	28477.09	27886.08	0.00	0.00	
91	966.75	76.07	1122.60	93.61	0.00	27886.08	27580.07	0.00	0.00	
92	956.53	73.16	1110.64	92.95	0.00	27580.07	27273.60	0.00	0.00	
93	955.59	71.05	1109.66	93.23	0.00	27273.60	26945.42	0.00	0.00	
94	953.96	69.19	1108.31	93.53	0.00	26945.42	26610.85	0.00	0.00	
95	952.75	66.98	1107.20	93.85	0.00	26610.85	26263.33	0.00	0.00	
96	950.21	65.36	1105.36	94.18	0.00	26263.33	25896.95	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
97	948.63	63.11	1104.07	94.52	0.00	25896.95	25533.87	0.00	0.00	
98	948.28	60.07	1103.47	94.89	0.00	25533.87	25152.97	0.00	0.00	
99	946.23	57.81	1101.93	95.27	0.00	25152.97	24755.44	0.00	0.00	
100	944.12	55.46	1100.36	95.66	0.00	24755.44	24351.67	0.00	0.00	
101	952.25	53.04	1110.25	97.04	0.00	24351.67	23932.13	0.00	0.00	
102	940.65	49.92	1097.66	96.52	0.00	23932.13	23500.29	0.00	0.00	
103	938.98	46.93	1096.35	96.97	0.00	23500.29	23064.37	0.00	0.00	
104	938.35	43.25	1095.65	97.45	0.00	23064.37	22613.97	0.00	0.00	
105	936.36	40.16	1094.16	97.95	0.00	22613.97	22147.61	0.00	0.00	
106	932.73	37.81	1091.72	98.47	0.00	22147.61	21667.76	0.00	0.00	
107	926.65	36.63	1087.80	99.01	0.00	21667.76	21171.52	0.00	0.00	
108	918.28	36.53	1082.51	99.57	0.00	21171.52	20665.27	0.00	0.00	
109	909.54	36.48	1076.94	100.16	0.00	20665.27	20151.85	0.00	0.00	
110	905.01	34.03	1073.83	100.78	0.00	20151.85	19644.19	0.00	0.00	
111	587.59	19.79	697.38	65.85	0.00	19644.19	19305.22	0.00	0.00	
112	315.98	9.99	375.19	35.57	0.00	19305.22	19120.73	0.00	0.00	
113	911.20	25.55	1082.02	103.12	0.00	19120.73	18582.23	0.00	0.00	
114	900.21	20.99	1069.68	102.81	0.00	18582.23	18032.77	0.00	0.00	
115	895.23	18.14	1066.19	103.54	0.00	18032.77	17470.36	0.00	0.00	
116	891.05	14.71	1063.14	104.31	0.00	17470.36	16901.39	0.00	0.00	
117	888.47	10.25	1061.05	105.11	0.00	16901.39	16319.47	0.00	0.00	
118	886.40	5.34	1059.23	105.95	0.00	16319.47	15725.72	0.00	0.00	
119	885.55	0.55	1059.28	106.83	0.00	15725.72	15117.65	0.00	0.00	
120	884.72	0.00	1064.65	107.75	0.00	15117.65	14494.70	0.00	0.00	
121	1752.49	0.00	2129.83	218.43	0.00	14494.70	13215.56	0.00	0.00	
122	613.98	0.00	752.95	78.54	0.00	13215.56	12753.18	0.00	0.00	
123	249.38	0.00	306.86	32.24	0.00	12753.18	12563.22	0.00	0.00	
124	860.03	15.00	1082.88	113.01	0.00	12563.22	11884.60	0.00	0.00	
125	836.80	20.00	1068.04	113.07	0.00	11884.60	11204.66	0.00	0.00	
126	822.38	8.00	1041.11	114.29	0.00	11204.66	10533.32	0.00	0.00	
127	810.02	0.00	1022.17	115.59	0.00	10533.32	9865.28	0.00	0.00	
128	801.63	0.00	1019.70	116.94	0.00	9865.28	9188.73	0.00	0.00	
129	794.89	0.00	1019.78	118.38	0.00	9188.73	8501.83	0.00	0.00	
130	783.94	0.00	1014.10	119.89	0.00	8501.83	7808.98	0.00	0.00	
131	769.13	0.00	1002.95	121.49	0.00	7808.98	7114.54	0.00	0.00	
132	753.72	0.00	990.91	123.19	0.00	7114.54	6419.46	0.00	0.00	
133	738.44	0.00	978.98	124.98	0.00	6419.46	5723.89	0.00	0.00	
134	731.22	0.00	977.97	128.17	0.00	5723.89	5020.10	0.00	0.00	
135	707.59	0.00	954.56	128.95	0.00	5020.10	4324.70	0.00	0.00	
136	689.22	0.00	937.54	131.11	0.00	4324.70	3633.78	0.00	0.00	
137	671.05	0.00	920.53	133.43	0.00	3633.78	2947.66	0.00	0.00	
138	651.30	0.00	900.64	135.91	0.00	2947.66	2269.11	0.00	0.00	
139	630.49	0.00	878.51	138.58	0.00	2269.11	1600.43	0.00	0.00	
140	609.48	0.00	855.43	141.45	0.00	1600.43	942.86	0.00	0.00	
141	587.97	0.00	830.73	144.55	0.00	942.86	298.25	0.00	0.00	
142	565.70	0.00	803.81	147.92	0.00	298.25	-330.98	0.00	0.00	
143	543.72	0.00	776.32	151.58	0.00	-330.98	-943.81	0.00	0.00	
144	520.60	0.00	745.42	155.59	0.00	-943.81	-1536.69	0.00	0.00	
145	500.32	0.00	716.04	161.62	0.00	-1536.69	-2109.76	0.00	0.00	
146	468.99	0.00	668.04	164.92	0.00	-2109.76	-2646.95	0.00	0.00	
147	441.13	0.00	621.30	170.35	0.00	-2646.95	-3147.84	0.00	0.00	
148	1734.90	0.00	2127.87	979.19	0.00	-3147.84	-4821.25	0.00	0.00	
149	650.62	0.00	-1002.46	1096.37	0.00	-4821.25	-3602.71	0.00	0.00	

Tabella 4-15 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 03

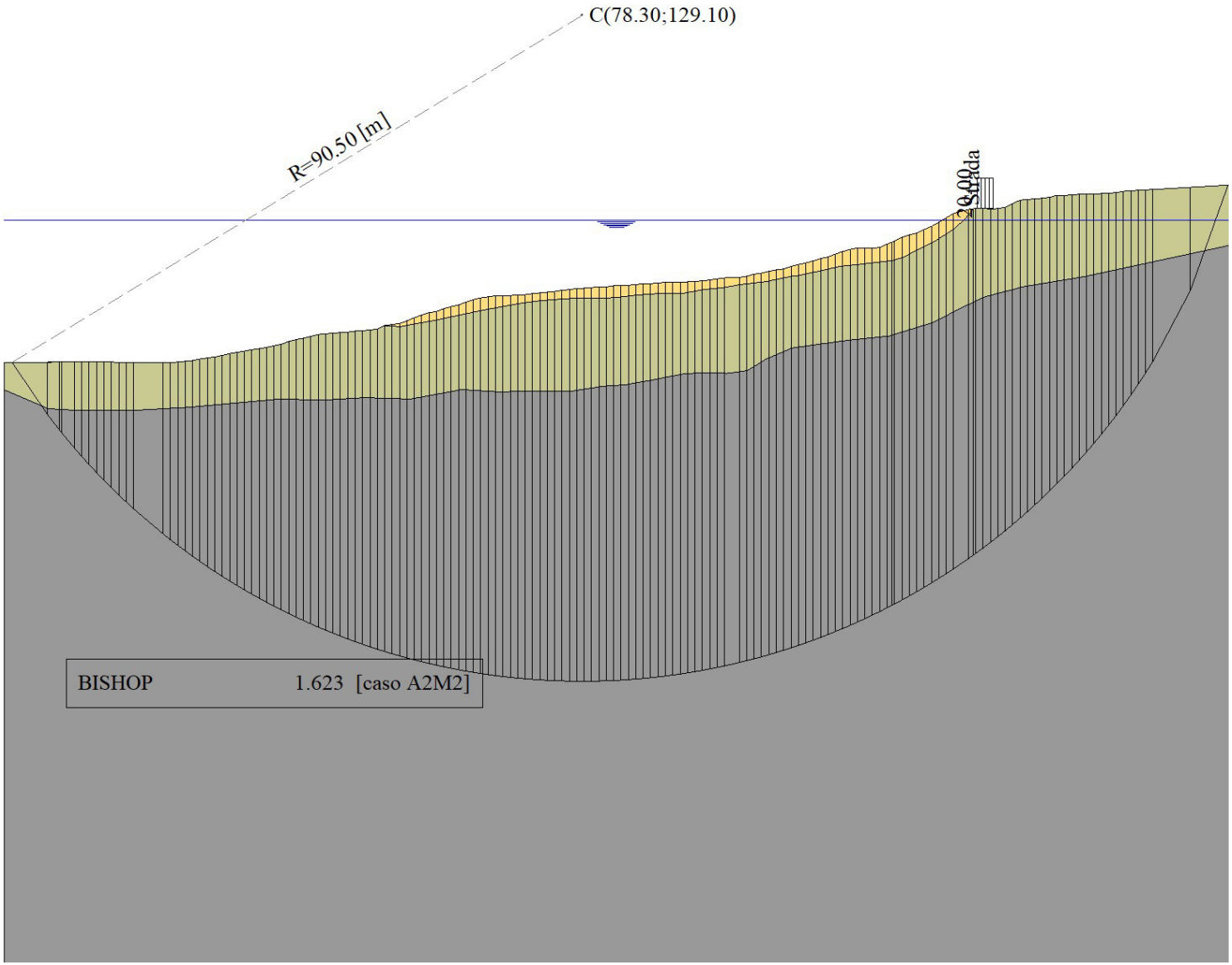

Figura 4-3 – Superficie critica (1) della sezione VS_02 per la verifica di stabilità 03

4.6 VERIFICA DI STABILITÀ 04

4.6.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate in condizioni **statiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni totali**
Presenza di carichi distribuiti

4.6.2 RISULTATI ANALISI

Numero di superfici analizzate	73064
Coefficiente di sicurezza minimo	1.689
Superficie con coefficiente di sicurezza minimo	1

4.6.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO L'ALTO

Numero di strisce	155	
Coordinate del centro	X[m]= 78.30	Y[m]= 129.10
Raggio del cerchio	R[m]= 90.50	
Intersezione a valle con il profilo topografico	X_v[m]= 1.06	Y_v[m]= 81.94
Intersezione a monte con il profilo topografico	X_m[m]= 165.81	Y_m[m]= 106.04
Coefficiente di sicurezza	F_S= 1.689	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	1.06	81.94	81.94	5.89	81.97	74.81	4.28	79.57	8.61	-55.87	0.00	77
2	5.89	81.97	74.81	7.51	81.98	72.72	6.73	77.85	2.65	-52.30	0.00	104
3	7.51	81.98	72.72	7.81	81.98	72.34	7.66	77.26	0.48	-51.31	0.00	104
4	7.81	81.98	72.34	8.51	81.99	71.48	8.16	76.95	1.11	-50.81	0.00	104
5	8.51	81.99	71.48	9.51	82.00	70.29	9.02	76.44	1.55	-49.97	0.00	104
6	9.51	82.00	70.29	10.51	82.00	69.14	10.02	75.85	1.52	-48.99	0.00	104
7	10.51	82.00	69.14	11.51	82.01	68.03	11.02	75.29	1.50	-48.04	0.00	104
8	11.51	82.01	68.03	12.51	82.01	66.96	12.02	74.75	1.47	-47.10	0.00	104
9	12.51	82.01	66.96	13.51	82.00	65.91	13.02	74.22	1.44	-46.18	0.00	104
10	13.51	82.00	65.91	14.52	81.98	64.89	14.02	73.69	1.43	-45.26	0.00	104
11	14.52	81.98	64.89	15.52	81.96	63.92	15.02	73.19	1.40	-44.37	0.00	104
12	15.52	81.96	63.92	16.52	81.95	62.97	16.02	72.70	1.38	-43.49	0.00	104
13	16.52	81.95	62.97	17.52	81.96	62.05	17.02	72.23	1.36	-42.62	0.00	104
14	17.52	81.96	62.05	18.52	81.96	61.15	18.02	71.78	1.34	-41.77	0.00	104
15	18.52	81.96	61.15	19.52	81.96	60.29	19.02	71.34	1.32	-40.92	0.00	104
16	19.52	81.96	60.29	20.52	81.96	59.45	20.02	70.91	1.31	-40.09	0.00	104
17	20.52	81.96	59.45	21.52	81.96	58.63	21.02	70.50	1.29	-39.27	0.00	104
18	21.52	81.96	58.63	22.52	81.95	57.83	22.02	70.09	1.28	-38.45	0.00	104
19	22.52	81.95	57.83	23.52	81.98	57.06	23.02	69.71	1.26	-37.65	0.00	104
20	23.52	81.98	57.06	24.52	82.10	56.31	24.02	69.36	1.25	-36.86	0.00	104
21	24.52	82.10	56.31	25.53	82.20	55.58	25.03	69.05	1.25	-36.06	0.00	104

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
22	25.53	82.20	55.58	26.53	82.40	54.87	26.03	68.76	1.22	-35.28	0.00	104
23	26.53	82.40	54.87	27.53	82.56	54.18	27.03	68.50	1.21	-34.51	0.00	104
24	27.53	82.56	54.18	28.53	82.68	53.51	28.03	68.23	1.20	-33.74	0.00	104
25	28.53	82.68	53.51	29.53	82.89	52.87	29.03	67.99	1.19	-32.99	0.00	104
26	29.53	82.89	52.87	30.53	83.13	52.23	30.03	67.78	1.18	-32.23	0.00	104
27	30.53	83.13	52.23	31.53	83.32	51.62	31.03	67.58	1.17	-31.49	0.00	104
28	31.53	83.32	51.62	32.53	83.47	51.03	32.03	67.36	1.16	-30.75	0.00	104
29	32.53	83.47	51.03	33.53	83.67	50.45	33.03	67.15	1.15	-30.02	0.00	104
30	33.53	83.67	50.45	34.53	83.80	49.89	34.03	66.95	1.15	-29.29	0.00	104
31	34.53	83.80	49.89	35.53	83.98	49.34	35.03	66.75	1.14	-28.56	0.00	104
32	35.53	83.98	49.34	36.54	84.20	48.81	36.04	66.58	1.14	-27.84	0.00	104
33	36.54	84.20	48.81	37.54	84.41	48.30	37.04	66.43	1.12	-27.12	0.00	104
34	37.54	84.41	48.30	38.54	84.79	47.80	38.04	66.32	1.12	-26.42	0.00	104
35	38.54	84.79	47.80	39.54	85.05	47.32	39.04	66.24	1.11	-25.71	0.00	104
36	39.54	85.05	47.32	40.54	85.23	46.85	40.04	66.11	1.10	-25.01	0.00	104
37	40.54	85.23	46.85	41.54	85.49	46.40	41.04	65.99	1.10	-24.31	0.00	104
38	41.54	85.49	46.40	42.54	85.74	45.96	42.04	65.90	1.09	-23.62	0.00	104
39	42.54	85.74	45.96	43.54	85.82	45.54	43.04	65.77	1.09	-22.93	0.00	104
40	43.54	85.82	45.54	44.54	85.92	45.13	44.04	65.60	1.08	-22.25	0.00	104
41	44.54	85.92	45.13	45.54	86.00	44.74	45.04	65.45	1.08	-21.56	0.00	104
42	45.54	86.00	44.74	46.55	86.05	44.35	46.05	65.28	1.08	-20.88	0.00	104
43	46.55	86.05	44.35	47.55	86.19	43.98	47.05	65.14	1.07	-20.20	0.00	104
44	47.55	86.19	43.98	48.55	86.26	43.63	48.05	65.02	1.06	-19.53	0.00	104
45	48.55	86.26	43.63	49.55	86.34	43.29	49.05	64.88	1.06	-18.86	0.00	104
46	49.55	86.34	43.29	50.55	86.50	42.96	50.05	64.77	1.05	-18.19	0.00	104
47	50.55	86.50	42.96	51.55	86.95	42.64	51.05	64.76	1.05	-17.52	0.00	104
48	51.55	86.95	42.64	52.55	87.10	42.34	52.05	64.76	1.04	-16.86	0.00	104
49	52.55	87.10	42.34	53.55	87.22	42.05	53.05	64.68	1.04	-16.20	0.00	104
50	53.55	87.22	42.05	54.55	87.60	41.77	54.05	64.66	1.04	-15.54	0.00	104
51	54.55	87.60	41.77	55.55	88.01	41.51	55.05	64.72	1.03	-14.89	0.00	104
52	55.55	88.01	41.51	56.55	88.39	41.25	56.05	64.79	1.03	-14.23	0.00	104
53	56.55	88.39	41.25	57.56	88.70	41.01	57.06	64.84	1.04	-13.58	0.00	104
54	57.56	88.70	41.01	58.56	88.86	40.78	58.06	64.84	1.03	-12.92	0.00	104
55	58.56	88.86	40.78	59.56	89.23	40.56	59.06	64.86	1.02	-12.27	0.00	104
56	59.56	89.23	40.56	60.56	89.53	40.36	60.06	64.92	1.02	-11.63	0.00	104
57	60.56	89.53	40.36	61.56	89.76	40.16	61.06	64.95	1.02	-10.98	0.00	104
58	61.56	89.76	40.16	62.56	90.13	39.98	62.06	65.01	1.02	-10.34	0.00	104
59	62.56	90.13	39.98	63.56	90.47	39.81	63.06	65.10	1.01	-9.69	0.00	104
60	63.56	90.47	39.81	64.56	90.71	39.65	64.06	65.16	1.01	-9.05	0.00	104
61	64.56	90.71	39.65	65.56	90.86	39.50	65.06	65.18	1.01	-8.41	0.00	104
62	65.56	90.86	39.50	66.56	90.98	39.36	66.06	65.18	1.01	-7.77	0.00	104
63	66.56	90.98	39.36	67.56	91.03	39.24	67.06	65.15	1.01	-7.13	0.00	104
64	67.56	91.03	39.24	68.57	91.04	39.12	68.07	65.11	1.02	-6.49	0.00	104
65	68.57	91.04	39.12	69.57	91.08	39.02	69.07	65.07	1.01	-5.85	0.00	104
66	69.57	91.08	39.02	70.57	91.15	38.93	70.07	65.05	1.00	-5.22	0.00	104
67	70.57	91.15	38.93	71.57	91.30	38.85	71.07	65.06	1.00	-4.58	0.00	104
68	71.57	91.30	38.85	72.57	91.39	38.78	72.07	65.08	1.00	-3.95	0.00	104
69	72.57	91.39	38.78	73.57	91.49	38.72	73.07	65.10	1.00	-3.31	0.00	104
70	73.57	91.49	38.72	74.57	91.58	38.68	74.07	65.12	1.00	-2.68	0.00	104
71	74.57	91.58	38.68	75.57	91.74	38.64	75.07	65.16	1.00	-2.05	0.00	104
72	75.57	91.74	38.64	76.57	91.84	38.62	76.07	65.21	1.00	-1.41	0.00	104
73	76.57	91.84	38.62	77.57	91.97	38.60	77.07	65.26	1.00	-0.78	0.00	104
74	77.57	91.97	38.60	78.58	92.03	38.60	78.08	65.30	1.01	-0.14	0.00	104
75	78.58	92.03	38.60	79.58	92.12	38.61	79.08	65.34	1.00	0.49	0.00	104
76	79.58	92.12	38.61	80.58	92.17	38.63	80.08	65.38	1.00	1.13	0.00	104
77	80.58	92.17	38.63	81.58	92.19	38.66	81.08	65.41	1.00	1.76	0.00	104
78	81.58	92.19	38.66	82.58	92.36	38.70	82.08	65.48	1.00	2.39	0.00	104

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
79	82.58	92.36	38.70	83.58	92.43	38.75	83.08	65.56	1.00	3.03	0.00	104
80	83.58	92.43	38.75	84.58	92.43	38.82	84.08	65.61	1.00	3.66	0.00	104
81	84.58	92.43	38.82	85.58	92.53	38.89	85.08	65.67	1.00	4.30	0.00	104
82	85.58	92.53	38.89	86.58	92.62	38.98	86.08	65.76	1.00	4.93	0.00	104
83	86.58	92.62	38.98	87.58	92.64	39.08	87.08	65.83	1.00	5.57	0.00	104
84	87.58	92.64	39.08	88.58	92.74	39.19	88.08	65.91	1.01	6.20	0.00	104
85	88.58	92.74	39.19	89.59	92.82	39.31	89.08	66.01	1.02	6.84	0.00	104
86	89.59	92.82	39.31	90.59	92.78	39.44	90.09	66.09	1.01	7.49	0.00	104
87	90.59	92.78	39.44	91.59	92.79	39.58	91.09	66.15	1.01	8.12	0.00	104
88	91.59	92.79	39.58	92.59	92.89	39.74	92.09	66.25	1.01	8.76	0.00	104
89	92.59	92.89	39.74	93.59	92.94	39.90	93.09	66.37	1.01	9.41	0.00	104
90	93.59	92.94	39.90	94.59	93.03	40.08	94.09	66.49	1.02	10.05	0.00	104
91	94.59	93.03	40.08	95.59	93.15	40.27	95.09	66.63	1.02	10.69	0.00	104
92	95.59	93.15	40.27	96.59	93.30	40.47	96.09	66.80	1.02	11.34	0.00	104
93	96.59	93.30	40.47	97.59	93.43	40.68	97.09	66.97	1.02	11.98	0.00	104
94	97.59	93.43	40.68	98.59	93.46	40.90	98.09	67.12	1.02	12.63	0.00	104
95	98.59	93.46	40.90	99.59	93.49	41.14	99.09	67.25	1.03	13.28	0.00	104
96	99.59	93.49	41.14	100.60	93.65	41.39	100.09	67.42	1.04	13.94	0.00	104
97	100.60	93.65	41.39	101.60	93.93	41.65	101.10	67.66	1.03	14.59	0.00	104
98	101.60	93.93	41.65	102.60	94.08	41.92	102.10	67.90	1.04	15.25	0.00	104
99	102.60	94.08	41.92	103.60	94.31	42.21	103.10	68.13	1.04	15.90	0.00	104
100	103.60	94.31	42.21	104.60	94.53	42.51	104.10	68.39	1.04	16.56	0.00	104
101	104.60	94.53	42.51	105.60	94.64	42.82	105.10	68.62	1.05	17.23	0.00	104
102	105.60	94.64	42.82	106.60	94.99	43.14	106.10	68.90	1.05	17.89	0.00	104
103	106.60	94.99	43.14	107.60	95.26	43.47	107.10	69.22	1.05	18.56	0.00	104
104	107.60	95.26	43.47	108.60	95.45	43.82	108.10	69.50	1.06	19.23	0.00	104
105	108.60	95.45	43.82	109.60	95.74	44.18	109.10	69.80	1.06	19.90	0.00	104
106	109.60	95.74	44.18	110.61	96.05	44.56	110.10	70.13	1.08	20.58	0.00	104
107	110.61	96.05	44.56	111.61	96.27	44.95	111.11	70.46	1.07	21.26	0.00	104
108	111.61	96.27	44.95	112.61	96.66	45.36	112.11	70.81	1.08	21.94	0.00	104
109	112.61	96.66	45.36	113.61	97.02	45.77	113.11	71.20	1.08	22.62	0.00	104
110	113.61	97.02	45.77	114.61	97.29	46.20	114.11	71.57	1.09	23.31	0.00	104
111	114.61	97.29	46.20	115.61	97.50	46.65	115.11	71.91	1.09	24.00	0.00	104
112	115.61	97.50	46.65	116.61	97.53	47.11	116.11	72.20	1.10	24.70	0.00	104
113	116.61	97.53	47.11	117.61	97.52	47.58	117.11	72.44	1.11	25.39	0.00	104
114	117.61	97.52	47.58	118.61	97.54	48.07	118.11	72.68	1.11	26.10	0.00	104
115	118.61	97.54	48.07	119.61	98.02	48.58	119.11	73.05	1.12	26.80	0.00	104
116	119.61	98.02	48.58	120.26	98.27	48.92	119.93	73.45	0.73	27.39	0.00	104
117	120.26	98.27	48.92	120.61	98.41	49.10	120.43	73.67	0.40	27.75	0.00	104
118	120.61	98.41	49.10	121.62	98.93	49.64	121.11	74.02	1.15	28.24	0.00	104
119	121.62	98.93	49.64	122.62	99.29	50.20	122.12	74.51	1.14	28.96	0.00	104
120	122.62	99.29	50.20	123.62	99.51	50.77	123.12	74.94	1.15	29.69	0.00	104
121	123.62	99.51	50.77	124.62	99.99	51.35	124.12	75.40	1.16	30.42	0.00	104
122	124.62	99.99	51.35	125.62	100.42	51.96	125.12	75.93	1.17	31.16	0.00	104
123	125.62	100.42	51.96	126.62	100.99	52.58	126.12	76.49	1.18	31.90	0.00	104
124	126.62	100.99	52.58	127.05	101.25	52.85	126.83	76.92	0.51	32.43	0.00	104
125	127.05	101.25	52.85	127.62	101.59	53.22	127.33	77.23	0.68	32.81	0.00	104
126	127.62	101.59	53.22	128.62	102.20	53.88	128.12	77.72	1.20	33.40	0.00	104
127	128.62	102.20	53.88	130.62	102.70	55.26	129.62	78.51	2.43	34.55	0.00	104
128	130.62	102.70	55.26	131.33	102.83	55.76	130.97	79.14	0.87	35.59	0.00	104
129	131.33	102.83	55.76	131.62	102.89	55.98	131.47	79.36	0.36	35.98	0.00	104
130	131.62	102.89	55.98	132.63	102.87	56.72	132.12	79.61	1.26	36.50	0.00	104
131	132.63	102.87	56.72	133.63	102.79	57.48	133.13	79.97	1.26	37.29	0.00	104
132	133.63	102.79	57.48	134.63	102.84	58.27	134.13	80.34	1.27	38.09	0.00	104
133	134.63	102.84	58.27	135.63	103.03	59.07	135.13	80.80	1.28	38.90	0.00	104
134	135.63	103.03	59.07	136.63	103.56	59.91	136.13	81.39	1.30	39.72	0.00	104
135	136.63	103.56	59.91	137.63	103.98	60.76	137.13	82.05	1.32	40.55	0.00	104

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
136	137.63	103.98	60.76	138.63	104.10	61.64	138.13	82.62	1.33	41.39	0.00	104
137	138.63	104.10	61.64	139.63	104.15	62.55	139.13	83.11	1.35	42.24	0.00	104
138	139.63	104.15	62.55	140.63	104.26	63.49	140.13	83.61	1.37	43.10	0.00	104
139	140.63	104.26	63.49	141.63	104.38	64.45	141.13	84.14	1.39	43.97	0.00	104
140	141.63	104.38	64.45	142.64	104.65	65.46	142.13	84.73	1.42	44.86	0.00	104
141	142.64	104.65	65.46	143.64	104.62	66.48	143.14	85.30	1.43	45.77	0.00	104
142	143.64	104.62	66.48	144.64	104.73	67.54	144.14	85.84	1.46	46.68	0.00	104
143	144.64	104.73	67.54	145.64	104.79	68.64	145.14	86.42	1.48	47.61	0.00	104
144	145.64	104.79	68.64	146.64	104.80	69.77	146.14	87.00	1.51	48.56	0.00	104
145	146.64	104.80	69.77	147.64	104.82	70.94	147.14	87.58	1.54	49.53	0.00	104
146	147.64	104.82	70.94	148.64	104.89	72.16	148.14	88.20	1.57	50.51	0.00	104
147	148.64	104.89	72.16	149.64	104.94	73.41	149.14	88.85	1.61	51.52	0.00	104
148	149.64	104.94	73.41	150.64	105.02	74.72	150.14	89.52	1.64	52.55	0.00	104
149	150.64	105.02	74.72	151.64	105.20	76.08	151.14	90.25	1.69	53.60	0.00	104
150	151.64	105.20	76.08	152.64	105.26	77.49	152.14	91.00	1.73	54.68	0.00	104
151	152.64	105.26	77.49	153.65	105.34	78.97	153.14	91.76	1.80	55.80	0.00	104
152	153.65	105.34	78.97	154.65	105.40	80.51	154.15	92.55	1.83	56.95	0.00	104
153	154.65	105.40	80.51	155.65	105.44	82.12	155.14	93.36	1.89	58.13	0.00	104
154	155.65	105.44	82.12	160.73	105.74	91.75	157.98	96.05	10.89	62.17	0.00	104
155	160.73	105.74	91.75	165.81	106.04	106.04	162.42	101.17	15.17	70.43	0.00	84

Tabella 4-16 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 04

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	316.37	0.16	1144.04	393.13	0.00	0.00	1167.56	0.00	0.00	
2	243.39	0.01	609.68	163.57	0.00	1167.56	1749.99	0.00	0.00	
3	51.89	0.00	120.01	29.63	0.00	1749.99	1862.19	0.00	0.00	
4	129.04	0.00	288.09	68.40	0.00	1862.19	2128.69	0.00	0.00	
5	203.24	0.00	430.22	95.99	0.00	2128.69	2519.84	0.00	0.00	
6	224.75	0.00	450.73	94.10	0.00	2519.84	2921.71	0.00	0.00	
7	245.54	0.00	469.88	92.34	0.00	2921.71	3332.84	0.00	0.00	
8	265.65	0.00	487.82	90.70	0.00	3332.84	3751.92	0.00	0.00	
9	284.94	0.00	504.39	89.16	0.00	3751.92	4177.55	0.00	0.00	
10	306.56	0.00	524.97	88.60	0.00	4177.55	4612.83	0.00	0.00	
11	321.43	0.00	534.11	86.37	0.00	4612.83	5048.05	0.00	0.00	
12	338.79	0.00	547.68	85.10	0.00	5048.05	5486.70	0.00	0.00	
13	355.89	0.00	560.86	83.91	0.00	5486.70	5928.22	0.00	0.00	
14	372.57	0.00	573.44	82.78	0.00	5928.22	6371.93	0.00	0.00	
15	388.67	0.00	585.24	81.71	0.00	6371.93	6817.03	0.00	0.00	
16	404.31	0.00	596.43	80.71	0.00	6817.03	7262.87	0.00	0.00	
17	419.49	0.00	607.04	79.75	0.00	7262.87	7708.84	0.00	0.00	
18	434.15	0.00	617.01	78.84	0.00	7708.84	8154.30	0.00	0.00	
19	448.66	0.00	626.83	77.98	0.00	8154.30	8598.93	0.00	0.00	
20	463.95	0.00	637.66	77.16	0.00	8598.93	9043.14	0.00	0.00	
21	484.34	0.00	655.35	77.14	0.00	9043.14	9491.30	0.00	0.00	
22	495.50	0.00	660.49	75.63	0.00	9491.30	9934.53	0.00	0.00	
23	511.56	0.00	672.30	74.93	0.00	9934.53	10377.15	0.00	0.00	
24	526.52	0.00	682.80	74.25	0.00	10377.15	10818.18	0.00	0.00	
25	541.59	0.00	693.45	73.61	0.00	10818.18	11257.46	0.00	0.00	
26	557.42	0.00	705.01	72.99	0.00	11257.46	11695.24	0.00	0.00	
27	572.73	0.00	715.98	72.41	0.00	11695.24	12130.96	0.00	0.00	
28	586.89	0.00	725.63	71.84	0.00	12130.96	12563.71	0.00	0.00	
29	600.82	0.00	735.07	71.31	0.00	12563.71	12993.15	0.00	0.00	
30	614.26	0.00	743.98	70.79	0.00	12993.15	13418.84	0.00	0.00	
31	627.21	0.00	752.39	70.30	0.00	13418.84	13840.32	0.00	0.00	
32	647.14	0.00	769.10	70.52	0.00	13840.32	14261.87	0.00	0.00	
33	654.23	0.00	770.61	69.37	0.00	14261.87	14674.95	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
34	668.86	0.00	781.08	68.94	0.00	14674.95	15084.18	0.00	0.00	
35	683.67	0.00	791.78	68.53	0.00	15084.18	15489.41	0.00	0.00	
36	696.37	0.00	800.20	68.13	0.00	15489.41	15889.45	0.00	0.00	
37	708.80	0.00	808.39	67.75	0.00	15889.45	16284.03	0.00	0.00	
38	721.60	0.00	817.05	67.39	0.00	16284.03	16673.14	0.00	0.00	
39	732.49	0.00	823.70	67.04	0.00	16673.14	17055.81	0.00	0.00	
40	741.75	0.00	828.68	66.71	0.00	17055.81	17431.27	0.00	0.00	
41	750.76	0.00	833.49	66.39	0.00	17431.27	17799.33	0.00	0.00	
42	766.68	0.00	846.03	66.74	0.00	17799.33	18163.23	0.00	0.00	
43	767.72	0.00	842.24	65.79	0.00	18163.23	18515.81	0.00	0.00	
44	776.25	0.00	846.86	65.51	0.00	18515.81	18860.62	0.00	0.00	
45	783.99	0.00	850.74	65.24	0.00	18860.62	19197.33	0.00	0.00	
46	792.32	0.00	855.35	64.99	0.00	19197.33	19526.08	0.00	0.00	
47	803.80	0.00	863.36	64.75	0.00	19526.08	19847.79	0.00	0.00	
48	814.95	0.00	871.11	64.52	0.00	19847.79	20162.21	0.00	0.00	
49	822.85	0.00	875.56	64.30	0.00	20162.21	20468.25	0.00	0.00	
50	832.63	0.00	882.06	64.09	0.00	20468.25	20766.35	0.00	0.00	
51	844.84	0.00	891.16	63.89	0.00	20766.35	21057.04	0.00	0.00	
52	856.82	0.00	900.11	63.70	0.00	21057.04	21340.08	0.00	0.00	
53	876.36	0.00	917.05	64.15	0.00	21340.08	21617.73	0.00	0.00	
54	876.32	0.00	913.63	63.35	0.00	21617.73	21883.80	0.00	0.00	
55	885.26	0.00	919.72	63.19	0.00	21883.80	22141.08	0.00	0.00	
56	895.26	0.00	926.99	63.04	0.00	22141.08	22389.65	0.00	0.00	
57	903.77	0.00	932.83	62.89	0.00	22389.65	22629.10	0.00	0.00	
58	912.70	0.00	939.21	62.76	0.00	22629.10	22859.39	0.00	0.00	
59	922.43	0.00	946.50	62.64	0.00	22859.39	23080.52	0.00	0.00	
60	930.76	0.00	952.46	62.52	0.00	23080.52	23292.13	0.00	0.00	
61	937.14	0.00	956.56	62.41	0.00	23292.13	23493.82	0.00	0.00	
62	942.21	0.00	959.46	62.32	0.00	23493.82	23685.33	0.00	0.00	
63	946.16	0.00	961.33	62.22	0.00	23685.33	23866.47	0.00	0.00	
64	958.40	0.00	971.73	62.76	0.00	23866.47	24038.73	0.00	0.00	
65	951.36	0.00	962.71	62.07	0.00	24038.73	24198.66	0.00	0.00	
66	954.14	0.00	963.77	62.00	0.00	24198.66	24348.05	0.00	0.00	
67	957.72	0.00	965.75	61.94	0.00	24348.05	24486.95	0.00	0.00	
68	961.28	0.00	967.84	61.89	0.00	24486.95	24615.32	0.00	0.00	
69	964.18	0.00	969.37	61.85	0.00	24615.32	24733.08	0.00	0.00	
70	966.88	0.00	970.83	61.81	0.00	24733.08	24840.20	0.00	0.00	
71	969.92	0.00	972.74	61.78	0.00	24840.20	24936.67	0.00	0.00	
72	972.85	0.00	974.67	61.76	0.00	24936.67	25022.43	0.00	0.00	
73	975.30	0.00	976.23	61.75	0.00	25022.43	25097.44	0.00	0.00	
74	986.96	0.00	987.12	62.36	0.00	25097.44	25162.25	0.00	0.00	
75	978.51	0.00	978.01	61.75	0.00	25162.25	25215.56	0.00	0.00	
76	979.53	0.00	978.50	61.75	0.00	25215.56	25258.06	0.00	0.00	
77	979.71	0.00	978.27	61.77	0.00	25258.06	25289.75	0.00	0.00	
78	980.78	0.00	979.06	61.80	0.00	25289.75	25310.60	0.00	0.00	
79	982.11	0.00	980.21	61.83	0.00	25310.60	25320.57	0.00	0.00	
80	981.68	0.00	979.73	61.87	0.00	25320.57	25319.74	0.00	0.00	
81	981.32	0.00	979.44	61.92	0.00	25319.74	25308.11	0.00	0.00	
82	981.59	0.00	979.89	61.97	0.00	25308.11	25285.61	0.00	0.00	
83	980.91	0.00	979.51	62.04	0.00	25285.61	25252.32	0.00	0.00	
84	980.12	0.00	979.15	62.11	0.00	25252.32	25208.25	0.00	0.00	
85	989.46	0.00	989.03	62.81	0.00	25208.25	25152.75	0.00	0.00	
86	977.72	0.00	977.94	62.27	0.00	25152.75	25087.09	0.00	0.00	
87	974.94	0.00	975.92	62.37	0.00	25087.09	25010.90	0.00	0.00	
88	973.23	0.00	975.09	62.47	0.00	25010.90	24924.06	0.00	0.00	
89	971.67	0.00	974.55	62.58	0.00	24924.06	24826.54	0.00	0.00	
90	969.82	0.00	973.81	62.70	0.00	24826.54	24718.37	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
91	968.39	0.00	973.63	62.83	0.00	24718.37	24599.48	0.00	0.00	
92	967.30	0.00	973.92	62.97	0.00	24599.48	24469.77	0.00	0.00	
93	966.08	0.00	974.21	63.12	0.00	24469.77	24329.24	0.00	0.00	
94	963.55	0.00	973.27	63.27	0.00	24329.24	24178.15	0.00	0.00	
95	959.89	0.00	971.30	63.44	0.00	24178.15	24016.76	0.00	0.00	
96	966.75	0.00	980.12	64.25	0.00	24016.76	23843.08	0.00	0.00	
97	956.53	0.00	971.80	63.80	0.00	23843.08	23659.99	0.00	0.00	
98	955.59	0.00	973.01	64.00	0.00	23659.99	23465.84	0.00	0.00	
99	953.96	0.00	973.64	64.20	0.00	23465.84	23260.77	0.00	0.00	
100	952.75	0.00	974.84	64.42	0.00	23260.77	23044.60	0.00	0.00	
101	950.21	0.00	974.79	64.64	0.00	23044.60	22817.67	0.00	0.00	
102	948.63	0.00	975.89	64.88	0.00	22817.67	22579.63	0.00	0.00	
103	948.28	0.00	978.42	65.13	0.00	22579.63	22330.00	0.00	0.00	
104	946.23	0.00	979.31	65.39	0.00	22330.00	22069.27	0.00	0.00	
105	944.12	0.00	980.29	65.66	0.00	22069.27	21797.38	0.00	0.00	
106	952.25	0.00	992.13	66.61	0.00	21797.38	21511.07	0.00	0.00	
107	940.65	0.00	983.54	66.25	0.00	21511.07	21216.23	0.00	0.00	
108	938.98	0.00	985.47	66.56	0.00	21216.23	20909.80	0.00	0.00	
109	938.35	0.00	988.68	66.89	0.00	20909.80	20591.25	0.00	0.00	
110	936.36	0.00	990.61	67.23	0.00	20591.25	20261.01	0.00	0.00	
111	932.73	0.00	990.91	67.59	0.00	20261.01	19919.70	0.00	0.00	
112	926.65	0.00	988.68	67.96	0.00	19919.70	19568.38	0.00	0.00	
113	918.28	0.00	984.05	68.35	0.00	19568.38	19208.12	0.00	0.00	
114	909.54	0.00	979.12	68.75	0.00	19208.12	18839.15	0.00	0.00	
115	905.01	0.00	979.01	69.18	0.00	18839.15	18459.40	0.00	0.00	
116	587.59	0.00	638.37	45.20	0.00	18459.40	18205.85	0.00	0.00	
117	315.98	0.00	344.19	24.42	0.00	18205.85	18067.21	0.00	0.00	
118	911.20	0.00	996.26	70.78	0.00	18067.21	17658.24	0.00	0.00	
119	900.21	0.00	989.81	70.57	0.00	17658.24	17240.71	0.00	0.00	
120	895.23	0.00	989.97	71.07	0.00	17240.71	16812.16	0.00	0.00	
121	891.05	0.00	991.24	71.60	0.00	16812.16	16372.03	0.00	0.00	
122	888.47	0.00	994.60	72.15	0.00	16372.03	15919.20	0.00	0.00	
123	886.40	0.00	998.80	72.73	0.00	15919.20	15453.17	0.00	0.00	
124	380.88	0.00	431.29	31.46	0.00	15453.17	15248.43	0.00	0.00	
125	504.68	0.00	573.47	41.87	0.00	15248.43	14972.90	0.00	0.00	
126	884.72	0.00	1010.99	73.96	0.00	14972.90	14478.08	0.00	0.00	
127	1752.49	0.00	2024.51	149.93	0.00	14478.08	13453.42	0.00	0.00	
128	613.98	0.00	716.47	53.91	0.00	13453.42	13080.24	0.00	0.00	
129	249.38	0.00	292.12	22.13	0.00	13080.24	12926.50	0.00	0.00	
130	860.03	19.50	1036.69	77.57	0.00	12926.50	12372.27	0.00	0.00	
131	836.80	26.00	1025.41	77.61	0.00	12372.27	11812.75	0.00	0.00	
132	822.38	10.40	996.65	78.45	0.00	11812.75	11259.64	0.00	0.00	
133	810.02	0.00	976.83	79.34	0.00	11259.64	10707.96	0.00	0.00	
134	801.63	0.00	975.49	80.27	0.00	10707.96	10146.35	0.00	0.00	
135	794.89	0.00	976.57	81.25	0.00	10146.35	9573.25	0.00	0.00	
136	783.94	0.00	972.35	82.29	0.00	9573.25	8992.15	0.00	0.00	
137	769.13	0.00	963.10	83.39	0.00	8992.15	8406.52	0.00	0.00	
138	753.72	0.00	953.09	84.55	0.00	8406.52	7817.09	0.00	0.00	
139	738.44	0.00	943.27	85.79	0.00	7817.09	7223.95	0.00	0.00	
140	731.22	0.00	944.05	87.98	0.00	7223.95	6620.40	0.00	0.00	
141	707.59	0.00	923.41	88.51	0.00	6620.40	6020.53	0.00	0.00	
142	689.22	0.00	909.16	90.00	0.00	6020.53	5420.83	0.00	0.00	
143	671.05	0.00	895.05	91.59	0.00	5420.83	4821.50	0.00	0.00	
144	651.30	0.00	878.40	93.29	0.00	4821.50	4224.76	0.00	0.00	
145	630.49	0.00	859.83	95.12	0.00	4224.76	3632.44	0.00	0.00	
146	609.48	0.00	840.58	97.09	0.00	3632.44	3045.47	0.00	0.00	
147	587.97	0.00	820.04	99.22	0.00	3045.47	2465.29	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
148	565.70	0.00	797.71	101.53	0.00	2465.29	1893.78	0.00	0.00	
149	543.72	0.00	775.14	104.05	0.00	1893.78	1331.61	0.00	0.00	
150	520.60	0.00	749.76	106.80	0.00	1331.61	781.59	0.00	0.00	
151	500.32	0.00	726.84	110.94	0.00	781.59	242.82	0.00	0.00	
152	468.99	0.00	685.91	113.20	0.00	242.82	-270.34	0.00	0.00	
153	441.13	0.00	647.35	116.93	0.00	-270.34	-758.34	0.00	0.00	
154	1734.90	0.00	2443.32	672.11	0.00	-758.34	-2605.41	0.00	0.00	
155	650.62	0.00	-174.49	752.54	0.00	-2605.41	-2188.93	0.00	0.00	

Tabella 4-17 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 04

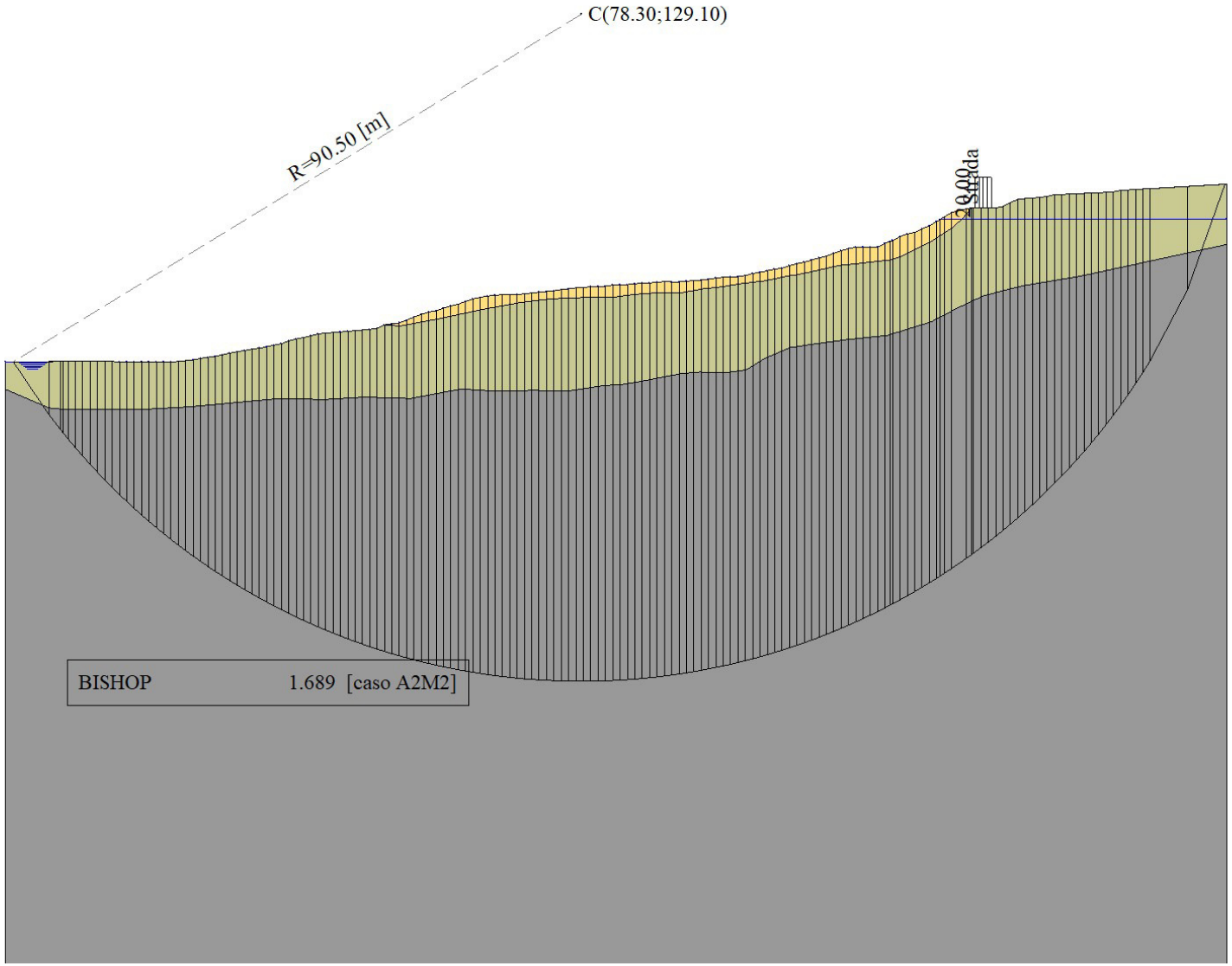

Figura 4-4 – Superficie critica (1) della sezione VS_02 per la verifica di stabilità 04

5 VERIFICHE STATO ATTUALE SEZIONE VS_03

5.1 PARAMETRI GEOTECNICI

n°	Descrizione	γ	γ_{sat}	ϕ'	c'	Retino
		[kN/mc]	*[kN/mc]*	*[°]*	*[kPa]*	
1	Substrato	21.27	21.27	23.60	24.0	
2	Substrato alterato	20.68	20.68	23.40	22.0	
3	Frana	18.30	18.30	14.30	0.0	

Tabella 5-1 – Parametri geotecnici condizioni drenate

n°	Descrizione	γ	γ_{sat}	ϕ_u	C_u	Retino
		[kN/mc]	*[kN/mc]*	*[°]*	*[kPa]*	
1	Substrato	21.27	21.27	0.00	146.0	
2	Substrato alterato	20.68	20.68	0.00	100.0	
3	Frana	18.30	18.30	0.00	40.0	

Tabella 5-2 – Parametri geotecnici condizioni non drenate

5.2 DESCRIZIONE SEZIONE E IMPOSTAZIONE ANALISI

5.2.1 PROFILO TERRENO E DESCRIZIONE STRATIGRAFIA

n°	X	Y
	[m]	*[m]*
1	0.00	81.93
2	8.72	81.94
3	9.72	81.94
4	10.72	81.94
5	11.72	81.95
6	12.72	81.95
7	13.72	81.95
8	14.72	81.96
9	15.72	81.97
10	16.72	81.99
11	17.72	82.01
12	18.72	82.02
13	19.72	82.02
14	20.72	82.06
15	21.72	82.15
16	22.72	82.38
17	23.72	82.48
18	24.72	82.64
19	25.72	82.81
20	26.72	82.91
21	27.72	83.08
22	28.72	83.24
23	29.72	83.41
24	30.72	83.51
25	31.72	83.69
26	32.72	83.81
27	33.72	83.96
28	34.72	84.08
29	35.72	84.25

n°	X	Y
	[m]	*[m]*
30	36.72	84.53
31	37.72	84.68
32	38.72	84.79
33	39.72	84.98
34	40.72	85.12
35	41.72	85.22
36	42.72	85.48
37	43.72	85.58
38	44.72	85.79
39	45.72	85.94
40	46.72	86.15
41	47.72	86.32
42	48.72	86.93
43	49.72	87.18
44	50.72	87.12
45	51.72	87.24
46	52.72	87.57
47	53.72	87.91
48	54.72	88.25
49	55.72	88.63
50	56.72	88.98
51	57.72	89.32
52	58.72	89.69
53	59.72	89.96
54	60.72	90.14
55	61.72	90.59
56	62.72	90.70
57	63.72	90.71
58	64.72	90.70
59	65.72	90.87
60	66.72	90.99
61	67.29	91.04
62	67.72	91.08
63	68.72	91.15
64	69.72	91.21
65	70.72	91.31
66	71.72	91.36
67	72.72	91.42
68	73.72	91.47
69	74.72	91.54
70	75.72	91.59
71	76.72	91.69
72	77.72	91.74
73	78.72	91.79
74	79.72	91.86
75	80.72	91.90
76	81.72	91.93
77	82.72	92.00
78	83.72	92.14
79	84.72	92.21
80	85.72	92.29
81	86.72	92.33
82	87.72	92.45
83	88.72	92.49
84	89.72	92.54
85	90.18	92.57
86	90.72	92.59

n°	X	Y
	[m]	*[m]*
87	91.72	92.76
88	92.72	92.81
89	93.72	92.88
90	94.72	92.95
91	95.72	93.04
92	96.72	93.15
93	97.72	93.48
94	98.72	93.88
95	98.87	93.90
96	99.72	94.04
97	100.72	94.82
98	101.72	95.13
99	102.72	95.39
100	103.71	95.53
101	104.71	95.73
102	105.71	95.94
103	106.71	96.34
104	106.82	96.37
105	107.71	96.65
106	108.71	97.21
107	109.71	97.46
108	110.71	97.86
109	111.71	98.44
110	112.71	98.65
111	113.61	98.85
112	113.71	98.88
113	114.71	99.25
114	115.21	99.37
115	115.71	99.49
116	116.71	99.52
117	117.71	99.52
118	118.71	99.51
119	119.71	99.70
120	120.71	99.73
121	121.46	99.77
122	121.71	99.78
123	122.71	100.07
124	123.71	100.20
125	124.71	100.42
126	125.71	100.75
127	126.71	101.22
128	127.71	101.54
129	128.71	102.16
130	129.71	102.44
131	130.71	102.64
132	131.71	102.69
133	132.71	102.75
134	133.71	102.62
135	134.71	102.64
136	135.71	102.67
137	136.71	102.96
138	137.71	103.01
139	138.56	103.19
140	138.71	103.22
141	139.71	104.22
142	140.71	104.53
143	141.10	104.78

n°	X	Y
	[m]	*[m]*
144	141.71	105.18
145	142.71	105.41
146	143.71	105.67
147	144.71	105.79
148	145.71	105.86
149	146.71	105.91
150	147.71	106.02
151	148.71	106.05
152	149.71	106.03
153	150.71	106.13
154	151.71	106.26
155	152.71	106.40
156	153.71	106.46
157	154.71	106.59
158	155.71	106.83
159	165.00	107.84

Tabella 5-3 – Profilo del piano campagna

n°	X	Y
	[m]	*[m]*
1	0.00	75.00
2	0.00	0.00
3	165.00	0.00
4	165.00	96.86
5	158.26	96.86
6	153.72	95.62
7	146.25	95.26
8	138.56	94.19
9	135.86	93.75
10	134.34	93.47
11	131.54	92.79
12	129.63	92.49
13	126.10	91.93
14	124.72	91.04
15	123.18	90.06
16	121.75	89.76
17	119.80	89.59
18	118.60	89.44
19	114.02	88.01
20	113.04	87.30
21	112.02	86.09
22	110.92	84.16
23	110.36	83.51
24	109.83	82.30
25	108.65	81.81
26	107.29	81.51
27	106.38	81.47
28	104.00	81.17
29	103.05	80.83
30	101.54	80.79
31	100.42	80.28
32	99.14	80.04
33	96.71	79.43
34	93.62	77.91
35	88.95	77.85
36	85.30	77.49
37	77.31	75.87

n°	X	Y
	[m]	*[m]*
38	70.96	76.37
39	65.56	75.78
40	60.95	76.27
41	51.99	74.61
42	49.87	74.46
43	47.75	74.31
44	44.49	74.01
45	41.14	74.11
46	38.08	74.01
47	30.69	74.41
48	20.43	73.72
49	10.77	73.42
50	4.95	75.00

Tabella 5-4 – Coordinate dei vertici dello strato n° 1 costituito da terreno n° 1 (Substrato)

n°	X	Y
	[m]	*[m]*
1	67.29	91.04
2	66.72	90.99
3	65.72	90.87
4	64.72	90.70
5	63.72	90.71
6	62.72	90.70
7	61.72	90.59
8	60.72	90.14
9	59.72	89.96
10	58.72	89.69
11	57.72	89.32
12	56.72	88.98
13	55.72	88.63
14	54.72	88.25
15	53.72	87.91
16	52.72	87.57
17	51.72	87.24
18	50.72	87.12
19	49.72	87.18
20	48.72	86.93
21	47.72	86.32
22	46.72	86.15
23	45.72	85.94
24	44.72	85.79
25	43.72	85.58
26	42.72	85.48
27	41.72	85.22
28	40.72	85.12
29	39.72	84.98
30	38.72	84.79
31	37.72	84.68
32	36.72	84.53
33	35.72	84.25
34	34.72	84.08
35	33.72	83.96
36	32.72	83.81
37	31.72	83.69
38	30.72	83.51
39	29.72	83.41
40	28.72	83.24

n°	X	Y
	[m]	*[m]*
41	27.72	83.08
42	26.72	82.91
43	25.72	82.81
44	24.72	82.64
45	23.72	82.48
46	22.72	82.38
47	21.72	82.15
48	20.72	82.06
49	19.72	82.02
50	18.72	82.02
51	17.72	82.01
52	16.72	81.99
53	15.72	81.97
54	14.72	81.96
55	13.72	81.95
56	12.72	81.95
57	11.72	81.95
58	10.72	81.94
59	9.72	81.94
60	8.72	81.94
61	0.00	81.93
62	0.00	75.00
63	4.95	75.00
64	10.77	73.42
65	20.43	73.72
66	30.69	74.41
67	38.08	74.01
68	41.14	74.11
69	44.49	74.01
70	47.75	74.31
71	49.87	74.46
72	51.99	74.61
73	60.95	76.27
74	65.56	75.78
75	70.96	76.37
76	77.31	75.87
77	85.30	77.49
78	88.95	77.85
79	93.62	77.91
80	96.71	79.43
81	99.14	80.04
82	100.42	80.28
83	101.54	80.79
84	103.05	80.83
85	104.00	81.17
86	106.38	81.47
87	107.29	81.51
88	108.65	81.81
89	109.83	82.30
90	110.36	83.51
91	110.92	84.16
92	112.02	86.09
93	113.04	87.30
94	114.02	88.01
95	118.60	89.44
96	119.80	89.59
97	121.75	89.76

n°	X	Y
	[m]	*[m]*
98	123.18	90.06
99	124.72	91.04
100	126.10	91.93
101	129.63	92.49
102	131.54	92.79
103	134.34	93.47
104	135.86	93.75
105	138.56	94.19
106	146.25	95.26
107	153.72	95.62
108	158.26	96.86
109	165.00	96.86
110	165.00	107.84
111	155.71	106.83
112	154.71	106.59
113	153.71	106.46
114	152.71	106.40
115	151.71	106.26
116	150.71	106.13
117	149.71	106.03
118	148.71	106.05
119	147.71	106.02
120	146.71	105.91
121	145.71	105.86
122	144.71	105.79
123	143.71	105.67
124	142.71	105.41
125	141.71	105.18
126	141.10	104.78
127	140.65	103.81
128	139.87	102.85
129	139.03	102.16
130	138.62	101.88
131	137.29	101.51
132	135.82	101.14
133	134.89	101.04
134	133.80	100.86
135	132.21	100.48
136	130.90	100.30
137	130.00	100.17
138	129.44	100.05
139	127.13	99.98
140	125.79	99.98
141	124.83	99.77
142	124.14	99.49
143	123.21	99.11
144	122.18	98.58
145	121.59	98.12
146	120.50	97.90
147	119.28	97.87
148	116.35	97.62
149	114.80	97.40
150	113.52	97.18
151	111.66	96.87
152	110.50	96.40
153	109.66	95.84
154	108.43	95.15

n°	X	Y
	[m]	*[m]*
155	107.21	94.59
156	105.25	93.60
157	104.19	92.65
158	103.14	92.00
159	101.19	91.40
160	99.04	91.20
161	97.13	90.80
162	92.91	90.36
163	90.20	89.96
164	82.67	89.83
165	79.42	89.91
166	74.88	90.16
167	69.20	90.48

Tabella 5-5 – Coordinate dei vertici dello strato n° 2 costituito da terreno n° 3 (Frana)

n°	X	Y
	[m]	*[m]*
1	141.10	104.78
2	140.71	104.53
3	139.71	104.22
4	138.71	103.22
5	138.56	103.19
6	137.71	103.01
7	136.71	102.96
8	135.71	102.67
9	134.71	102.64
10	133.71	102.62
11	132.71	102.75
12	131.71	102.69
13	130.71	102.64
14	129.71	102.44
15	128.71	102.16
16	127.71	101.54
17	126.71	101.22
18	125.71	100.75
19	124.71	100.42
20	123.71	100.20
21	122.71	100.07
22	121.71	99.78
23	121.46	99.77
24	120.71	99.73
25	119.71	99.70
26	118.71	99.51
27	117.71	99.52
28	116.71	99.52
29	115.71	99.49
30	115.21	99.37
31	114.71	99.25
32	113.71	98.88
33	113.61	98.85
34	112.71	98.65
35	111.71	98.44
36	110.71	97.86
37	109.71	97.46
38	108.71	97.21
39	107.71	96.65
40	106.82	96.37

n°	X	Y
	[m]	*[m]*
41	106.71	96.34
42	105.71	95.94
43	104.71	95.73
44	103.71	95.53
45	102.72	95.39
46	101.72	95.13
47	100.72	94.82
48	99.72	94.04
49	98.87	93.90
50	98.72	93.88
51	97.72	93.48
52	96.72	93.15
53	95.72	93.04
54	94.72	92.95
55	93.72	92.88
56	92.72	92.81
57	91.72	92.76
58	90.72	92.59
59	90.18	92.57
60	89.72	92.54
61	88.72	92.49
62	87.72	92.45
63	86.72	92.33
64	85.72	92.29
65	84.72	92.21
66	83.72	92.14
67	82.72	92.00
68	81.72	91.93
69	80.72	91.90
70	79.72	91.86
71	78.72	91.79
72	77.72	91.74
73	76.72	91.69
74	75.72	91.59
75	74.72	91.54
76	73.72	91.47
77	72.72	91.42
78	71.72	91.36
79	70.72	91.31
80	69.72	91.21
81	68.72	91.15
82	67.72	91.08
83	67.29	91.04
84	69.20	90.48
85	74.88	90.16
86	79.42	89.91
87	82.67	89.83
88	90.20	89.96
89	92.91	90.36
90	97.13	90.80
91	99.04	91.20
92	101.19	91.40
93	103.14	92.00
94	104.19	92.65
95	105.25	93.60
96	107.21	94.59
97	108.43	95.15

n°	X	Y
	[m]	*[m]*
98	109.66	95.84
99	110.50	96.40
100	111.66	96.87
101	113.52	97.18
102	114.80	97.40
103	116.35	97.62
104	119.28	97.87
105	120.50	97.90
106	121.59	98.12
107	122.18	98.58
108	123.21	99.11
109	124.14	99.49
110	124.83	99.77
111	125.79	99.98
112	127.13	99.98
113	129.44	100.05
114	130.00	100.17
115	130.90	100.30
116	132.21	100.48
117	133.80	100.86
118	134.89	101.04
119	135.82	101.14
120	137.29	101.51
121	138.62	101.88
122	139.03	102.16
123	139.87	102.85
124	140.65	103.81

Tabella 5-6 – Coordinate dei vertici dello strato n° 3 costituito da terreno n° 2 (Substrato alterato)

5.2.2 DESCRIZIONE FALDA

n°	X	Y
	[m]	*[m]*
1	0.00	101.25
2	165.00	101.25

Tabella 5-7 – Livello falda massima regolazione

n°	X	Y
	[m]	*[m]*
1	0.00	81.93
2	8.72	81.94
3	9.72	81.94
4	10.72	81.94
5	11.72	81.95
6	12.72	81.95
7	13.72	81.95
8	14.72	81.96
9	15.72	81.97
10	16.72	81.99
11	17.72	82.01
12	18.72	82.02
13	19.72	82.02
14	20.72	82.06
15	21.72	82.15
16	22.72	82.38
17	24.72	82.64
18	25.72	82.81

n°	X	Y
	[m]	*[m]*
19	26.72	82.91
20	27.72	83.08
21	28.72	83.24
22	29.72	83.41
23	30.72	83.51
24	31.72	83.69
25	32.72	83.81
26	33.72	83.96
27	34.72	84.08
28	35.72	84.25
29	36.72	84.53
30	37.72	84.68
31	38.72	84.79
32	39.72	84.98
33	40.72	85.12
34	41.72	85.22
35	42.72	85.48
36	43.72	85.58
37	44.72	85.79
38	45.72	85.94
39	46.72	86.15
40	47.72	86.32
41	48.72	86.93
42	49.72	87.18
43	50.72	87.12
44	51.72	87.24
45	53.72	87.91
46	54.72	88.25
47	55.72	88.63
48	56.72	88.98
49	57.72	89.32
50	58.72	89.69
51	59.72	89.96
52	60.72	90.14
53	61.72	90.59
54	62.72	90.70
55	63.72	90.71
56	64.72	90.70
57	65.72	90.87
58	66.72	90.99
59	67.29	91.04
60	67.72	91.08
61	68.72	91.15
62	69.72	91.21
63	70.72	91.31
64	71.72	91.36
65	72.72	91.42
66	73.72	91.47
67	74.72	91.54
68	75.72	91.59
69	76.72	91.69
70	77.72	91.74
71	78.72	91.79
72	79.72	91.86
73	80.72	91.90
74	81.72	91.93
75	82.72	92.00

n°	X	Y
	[m]	*[m]*
76	83.72	92.14
77	84.72	92.21
78	85.72	92.29
79	86.72	92.33
80	87.72	92.45
81	88.72	92.49
82	89.72	92.54
83	90.18	92.57
84	90.72	92.59
85	91.72	92.76
86	92.72	92.81
87	93.72	92.88
88	94.72	92.95
89	95.72	93.04
90	96.72	93.15
91	97.72	93.48
92	98.72	93.88
93	98.87	93.90
94	99.72	94.04
95	100.72	94.82
96	101.72	95.13
97	103.71	95.53
98	104.71	95.73
99	105.71	95.94
100	106.71	96.34
101	106.82	96.37
102	107.71	96.65
103	108.71	97.21
104	109.71	97.46
105	110.71	97.86
106	111.71	98.44
107	112.71	98.65
108	113.61	98.85
109	113.71	98.88
110	114.71	99.25
111	115.21	99.37
112	115.71	99.49
113	116.71	99.52
114	117.71	99.52
115	118.71	99.51
116	119.71	99.70
117	120.71	99.73
118	121.46	99.77
119	121.71	99.78
120	122.71	100.07
121	123.71	100.20
122	124.71	100.42
123	125.71	100.75
124	126.71	101.22
125	126.80	101.25
126	165.00	101.25

Tabella 5-8 – Livello falda svaso rapido

5.2.3 CARICHI SUL PROFILO

n°	Descrizione	Tipo	Ψ_2	P_i	P_f	Vy	Vx
				[m]	*[m]*	*[kN/m]*	*[kN/m]*
1	Strada	Variabile	1.00	135.48	137.71	20.00	0.00
				102.66	103.01	20.00	0.00

Tabella 5-9 – Carichi distribuiti verifica di stabilità 01

5.2.4 IMPOSTAZIONE DELLE SUPERFICI DI ROTTURA

Superfici di rottura circolari

Si considerano delle superfici di rottura circolari generate tramite la seguente maglia dei centri

Origine maglia	[m]	X_0 = 36.30	Y_0 = 85.10
Passo maglia	[m]	dX = 2.00	dY = 2.00
Numero passi		Nx = 65	Ny = 50
Raggio	[m]	R = 1.50	

Si utilizza un raggio variabile con passo dR=1.00 [m] ed un numero di incrementi pari a 110.

5.2.5 CONDIZIONI DI ESCLUSIONE

Sono state escluse dall'analisi le superfici aventi:

- lunghezza di corda inferiore a	1.00	m
- freccia inferiore a	0.50	m
- volume inferiore a	2.00	mc
- pendenza media della superficie inferiore a	1.00	[%]

5.3 VERIFICA DI STABILITÀ 01

5.3.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate in condizioni **statiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni efficaci**
Presenza di falda
Presenza di carichi distribuiti

5.3.2 RISULTATI ANALISI

Numero di superfici analizzate	70749
Coefficiente di sicurezza minimo	0.460
Superficie con coefficiente di sicurezza minimo	1

5.3.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO L'ALTO

Numero di strisce	24	
Coordinate del centro	X[m]= 126.30	Y[m]= 105.10
Raggio del cerchio	R[m]= 4.50	
Intersezione a valle con il profilo topografico	X_v[m]= 125.48	Y_v[m]= 100.67
Intersezione a monte con il profilo topografico	X_m[m]= 129.97	Y_m[m]= 102.49
Coefficiente di sicurezza	F_S= **0.460**	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	125.48	100.67	100.67	125.60	100.71	100.66	125.56	100.68	0.12	-9.73	11.53	0
2	125.60	100.71	100.66	125.71	100.75	100.64	125.66	100.69	0.11	-8.27	11.53	0
3	125.71	100.75	100.64	125.91	100.84	100.62	125.82	100.71	0.20	-6.25	11.53	0
4	125.91	100.84	100.62	126.11	100.94	100.60	126.02	100.75	0.20	-3.70	11.53	0
5	126.11	100.94	100.60	126.31	101.03	100.60	126.21	100.79	0.20	-1.15	11.53	0
6	126.31	101.03	100.60	126.51	101.13	100.60	126.41	100.84	0.20	1.40	11.53	0
7	126.51	101.13	100.60	126.71	101.22	100.62	126.61	100.89	0.20	3.95	11.53	0
8	126.71	101.22	100.62	126.91	101.28	100.64	126.81	100.94	0.20	6.51	11.53	0
9	126.91	101.28	100.64	127.11	101.35	100.67	127.01	100.99	0.20	9.08	11.53	0
10	127.11	101.35	100.67	127.31	101.41	100.71	127.21	101.04	0.20	11.67	11.53	0
11	127.31	101.41	100.71	127.51	101.48	100.77	127.41	101.09	0.21	14.28	11.53	0
12	127.51	101.48	100.77	127.71	101.54	100.83	127.61	101.15	0.21	16.93	11.53	0
13	127.71	101.54	100.83	127.91	101.66	100.90	127.81	101.23	0.21	19.61	11.53	0
14	127.91	101.66	100.90	128.11	101.79	100.98	128.01	101.33	0.22	22.34	11.53	0
15	128.11	101.79	100.98	128.31	101.91	101.07	128.21	101.44	0.22	25.12	11.53	0
16	128.31	101.91	101.07	128.51	102.04	101.18	128.41	101.55	0.23	27.97	11.53	0
17	128.51	102.04	101.18	128.71	102.16	101.30	128.61	101.67	0.23	30.90	11.53	0
18	128.71	102.16	101.30	128.91	102.22	101.43	128.81	101.78	0.24	33.92	11.53	0
19	128.91	102.22	101.43	129.11	102.27	101.59	129.01	101.88	0.25	37.05	11.53	0
20	129.11	102.27	101.59	129.31	102.33	101.75	129.21	101.98	0.26	40.31	11.53	0
21	129.31	102.33	101.75	129.51	102.38	101.95	129.41	102.10	0.28	43.74	11.53	0
22	129.51	102.38	101.95	129.71	102.44	102.16	129.60	102.23	0.30	47.39	11.53	0
23	129.71	102.44	102.16	129.84	102.47	102.32	129.77	102.34	0.20	50.56	11.53	0
24	129.84	102.47	102.32	129.97	102.49	102.49	129.88	102.43	0.21	53.21	11.53	0

Tabella 5-10 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 01

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	0.06	0.62	0.03	0.01	0.66	0.00	0.34	0.00	0.00	
2	0.18	0.58	0.09	0.04	0.68	0.34	0.68	0.00	0.00	
3	0.62	0.89	0.30	0.13	1.23	0.68	1.39	0.00	0.00	
4	1.03	0.70	0.49	0.22	1.26	1.39	2.05	0.00	0.00	
5	1.40	0.52	0.66	0.29	1.27	2.05	2.63	0.00	0.00	
6	1.74	0.34	0.80	0.36	1.27	2.63	3.09	0.00	0.00	
7	2.05	0.15	0.93	0.41	1.25	3.09	3.42	0.00	0.00	
8	2.28	0.01	1.03	0.46	1.22	3.42	3.62	0.00	0.00	
9	2.41	0.00	1.18	0.52	1.18	3.62	3.77	0.00	0.00	
10	2.51	0.00	1.33	0.59	1.11	3.77	3.85	0.00	0.00	
11	2.58	0.00	1.46	0.65	1.03	3.85	3.86	0.00	0.00	
12	2.61	0.00	1.58	0.70	0.93	3.86	3.80	0.00	0.00	
13	2.71	0.00	1.78	0.79	0.81	3.80	3.68	0.00	0.00	
14	2.88	0.00	2.08	0.92	0.66	3.68	3.49	0.00	0.00	
15	3.01	0.00	2.35	1.04	0.48	3.49	3.23	0.00	0.00	
16	3.10	0.00	2.62	1.16	0.27	3.23	2.90	0.00	0.00	
17	3.14	0.00	2.87	1.27	0.02	2.90	2.51	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
18	3.00	0.00	2.79	1.24	0.00	2.51	1.98	0.00	0.00	
19	2.69	0.00	2.52	1.12	0.00	1.98	1.35	0.00	0.00	
20	2.31	0.00	2.20	0.97	0.00	1.35	0.67	0.00	0.00	
21	1.85	0.00	1.80	0.80	0.00	0.67	0.00	0.00	0.00	
22	1.31	0.00	1.30	0.58	0.00	0.00	-0.57	0.00	0.00	
23	0.50	0.00	0.51	0.22	0.00	-0.57	-0.81	0.00	0.00	
24	0.17	0.00	0.18	0.08	0.00	-0.81	-0.91	0.00	0.00	

Tabella 5-11 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 01

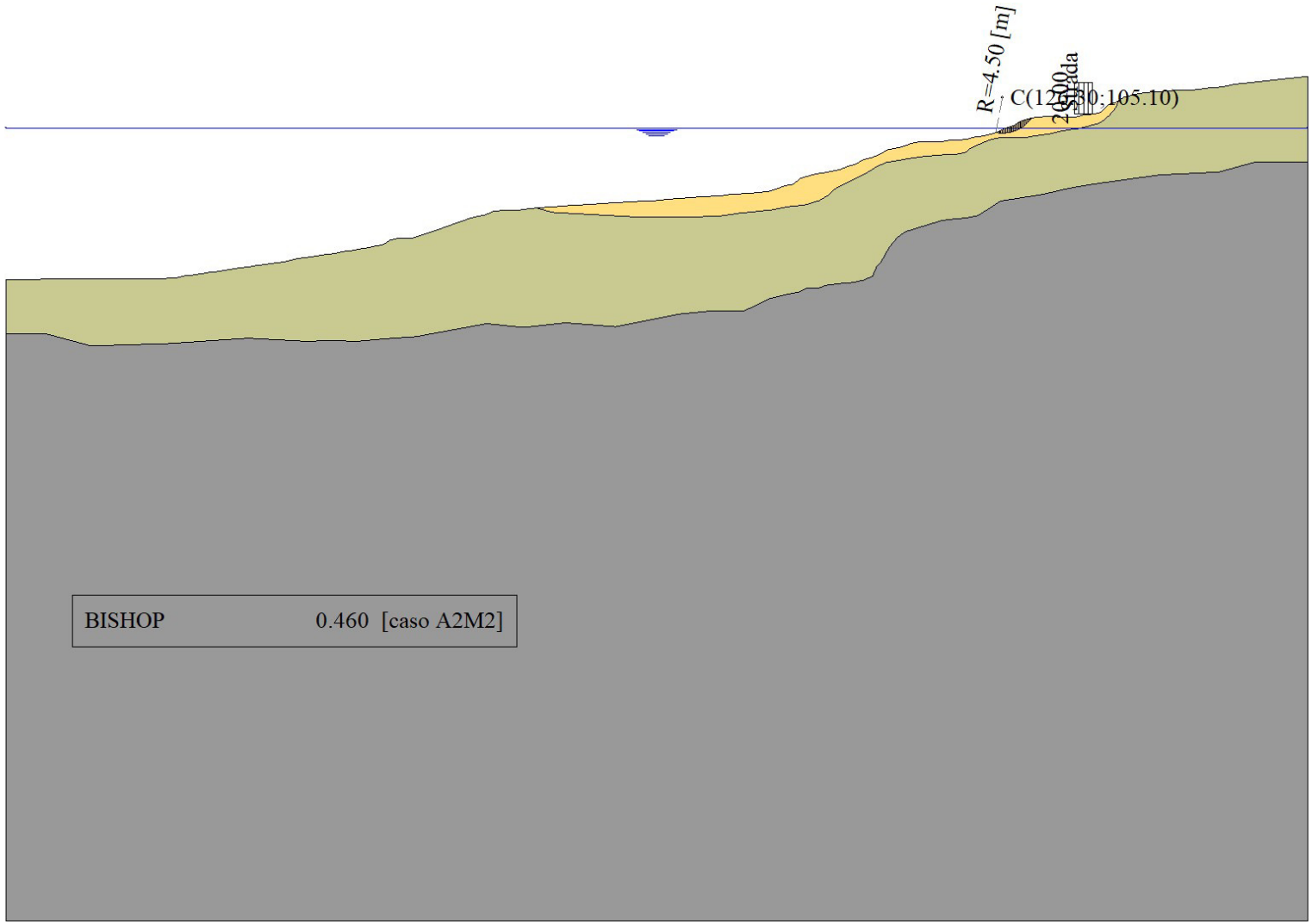

Figura 5-1 – Superficie critica (1) della sezione VS_03 per la verifica di stabilità 01

5.4 VERIFICA DI STABILITÀ 02

5.4.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate solo in condizioni **sismiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni totali**
Presenza di carichi distribuiti

5.4.2 RISULTATI ANALISI

Numero di superfici analizzate	141498
Coefficiente di sicurezza minimo	2.110
Superficie con coefficiente di sicurezza minimo	1

5.4.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO IL BASSO

Numero di strisce	153	
Coordinate del centro	X[m]= 76.30	Y[m]= 135.10
Raggio del cerchio	R[m]= 92.50	
Intersezione a valle con il profilo topografico	X_v[m]= 0.61	Y_v[m]= 81.93
Intersezione a monte con il profilo topografico	X_m[m]= 164.68	Y_m[m]= 107.81
Coefficiente di sicurezza	F_S= 2.110	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	0.61	81.93	81.93	4.95	81.94	76.23	3.50	80.03	7.16	-52.69	0.00	100
2	4.95	81.94	76.23	8.72	81.94	71.94	7.01	77.91	5.71	-48.71	0.00	129
3	8.72	81.94	71.94	10.72	81.94	69.87	9.75	76.41	2.88	-46.04	0.00	146
4	10.72	81.94	69.87	10.77	81.94	69.82	10.75	75.89	0.07	-45.13	0.00	146
5	10.77	81.94	69.82	11.72	81.95	68.88	11.25	75.64	1.34	-44.69	0.00	146
6	11.72	81.95	68.88	13.72	81.95	66.98	12.74	74.93	2.75	-43.43	0.00	146
7	13.72	81.95	66.98	15.72	81.97	65.20	14.74	74.02	2.68	-41.74	0.00	146
8	15.72	81.97	65.20	17.72	82.01	63.51	16.74	73.17	2.61	-40.10	0.00	146
9	17.72	82.01	63.51	18.72	82.02	62.71	18.22	72.56	1.28	-38.90	0.00	146
10	18.72	82.02	62.71	19.72	82.02	61.92	19.22	72.17	1.27	-38.10	0.00	146
11	19.72	82.02	61.92	20.72	82.06	61.16	20.22	71.79	1.26	-37.32	0.00	146
12	20.72	82.06	61.16	21.72	82.15	60.42	21.22	71.45	1.24	-36.55	0.00	146
13	21.72	82.15	60.42	22.72	82.38	59.70	22.22	71.16	1.23	-35.78	0.00	146
14	22.72	82.38	59.70	23.72	82.48	59.00	23.22	70.89	1.22	-35.02	0.00	146
15	23.72	82.48	59.00	24.72	82.64	58.32	24.22	70.61	1.21	-34.27	0.00	146
16	24.72	82.64	58.32	25.72	82.81	57.65	25.22	70.35	1.20	-33.52	0.00	146
17	25.72	82.81	57.65	26.72	82.91	57.01	26.22	70.10	1.19	-32.78	0.00	146
18	26.72	82.91	57.01	27.72	83.08	56.38	27.22	69.85	1.18	-32.05	0.00	146
19	27.72	83.08	56.38	28.72	83.24	55.78	28.22	69.62	1.17	-31.32	0.00	146
20	28.72	83.24	55.78	29.72	83.41	55.18	29.22	69.40	1.16	-30.60	0.00	146
21	29.72	83.41	55.18	30.72	83.51	54.61	30.22	69.18	1.15	-29.88	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
22	30.72	83.51	54.61	31.72	83.69	54.05	31.22	68.96	1.15	-29.17	0.00	146
23	31.72	83.69	54.05	32.72	83.81	53.51	32.22	68.76	1.14	-28.46	0.00	146
24	32.72	83.81	53.51	33.72	83.96	52.98	33.22	68.57	1.13	-27.76	0.00	146
25	33.72	83.96	52.98	34.72	84.08	52.47	34.22	68.37	1.12	-27.06	0.00	146
26	34.72	84.08	52.47	35.72	84.25	51.98	35.22	68.19	1.12	-26.37	0.00	146
27	35.72	84.25	51.98	36.72	84.53	51.50	36.22	68.06	1.11	-25.68	0.00	146
28	36.72	84.53	51.50	37.72	84.68	51.03	37.22	67.93	1.10	-24.99	0.00	146
29	37.72	84.68	51.03	38.72	84.79	50.58	38.22	67.77	1.10	-24.31	0.00	146
30	38.72	84.79	50.58	39.72	84.98	50.14	39.22	67.62	1.09	-23.63	0.00	146
31	39.72	84.98	50.14	40.72	85.12	49.72	40.22	67.49	1.09	-22.96	0.00	146
32	40.72	85.12	49.72	41.72	85.22	49.31	41.22	67.34	1.08	-22.29	0.00	146
33	41.72	85.22	49.31	42.72	85.48	48.91	42.22	67.23	1.08	-21.62	0.00	146
34	42.72	85.48	48.91	43.72	85.58	48.53	43.22	67.12	1.07	-20.95	0.00	146
35	43.72	85.58	48.53	44.72	85.79	48.16	44.22	67.01	1.07	-20.29	0.00	146
36	44.72	85.79	48.16	45.72	85.94	47.80	45.22	66.92	1.06	-19.63	0.00	146
37	45.72	85.94	47.80	46.72	86.15	47.46	46.22	66.84	1.06	-18.98	0.00	146
38	46.72	86.15	47.46	47.72	86.32	47.13	47.22	66.76	1.05	-18.32	0.00	146
39	47.72	86.32	47.13	48.72	86.93	46.81	48.22	66.80	1.05	-17.67	0.00	146
40	48.72	86.93	46.81	49.72	87.18	46.50	49.22	66.85	1.05	-17.02	0.00	146
41	49.72	87.18	46.50	50.72	87.12	46.21	50.22	66.75	1.04	-16.38	0.00	146
42	50.72	87.12	46.21	51.72	87.24	45.93	51.22	66.62	1.04	-15.73	0.00	146
43	51.72	87.24	45.93	52.72	87.57	45.66	52.22	66.60	1.04	-15.09	0.00	146
44	52.72	87.57	45.66	54.72	88.25	45.15	53.72	66.66	2.06	-14.13	0.00	146
45	54.72	88.25	45.15	55.72	88.63	44.92	55.22	66.74	1.03	-13.17	0.00	146
46	55.72	88.63	44.92	56.72	88.98	44.70	56.22	66.81	1.02	-12.54	0.00	146
47	56.72	88.98	44.70	57.72	89.32	44.49	57.22	66.87	1.02	-11.90	0.00	146
48	57.72	89.32	44.49	58.72	89.69	44.29	58.22	66.95	1.02	-11.27	0.00	146
49	58.72	89.69	44.29	59.72	89.96	44.10	59.22	67.01	1.02	-10.64	0.00	146
50	59.72	89.96	44.10	60.72	90.14	43.92	60.22	67.03	1.02	-10.01	0.00	146
51	60.72	90.14	43.92	61.72	90.59	43.76	61.22	67.10	1.01	-9.38	0.00	146
52	61.72	90.59	43.76	62.72	90.70	43.60	62.22	67.16	1.01	-8.76	0.00	146
53	62.72	90.70	43.60	63.72	90.71	43.46	63.22	67.12	1.01	-8.13	0.00	146
54	63.72	90.71	43.46	64.72	90.70	43.33	64.22	67.05	1.01	-7.50	0.00	146
55	64.72	90.70	43.33	65.72	90.87	43.21	65.22	67.03	1.01	-6.88	0.00	146
56	65.72	90.87	43.21	66.72	90.99	43.10	66.22	67.04	1.01	-6.26	0.00	146
57	66.72	90.99	43.10	67.29	91.04	43.04	67.01	67.04	0.57	-5.77	0.00	146
58	67.29	91.04	43.04	67.72	91.08	43.00	67.51	67.04	0.43	-5.46	0.00	146
59	67.72	91.08	43.00	68.72	91.15	42.91	68.22	67.03	1.00	-5.01	0.00	146
60	68.72	91.15	42.91	69.72	91.21	42.83	69.22	67.03	1.00	-4.39	0.00	146
61	69.72	91.21	42.83	70.72	91.31	42.77	70.22	67.03	1.00	-3.77	0.00	146
62	70.72	91.31	42.77	71.72	91.36	42.71	71.22	67.04	1.00	-3.15	0.00	146
63	71.72	91.36	42.71	72.72	91.42	42.67	72.22	67.04	1.00	-2.53	0.00	146
64	72.72	91.42	42.67	73.72	91.47	42.64	73.22	67.05	1.00	-1.91	0.00	146
65	73.72	91.47	42.64	74.72	91.54	42.61	74.22	67.06	1.00	-1.29	0.00	146
66	74.72	91.54	42.61	75.72	91.59	42.60	75.22	67.09	1.00	-0.67	0.00	146
67	75.72	91.59	42.60	76.72	91.69	42.60	76.22	67.12	1.00	-0.05	0.00	146
68	76.72	91.69	42.60	78.72	91.79	42.63	77.72	67.18	2.00	0.88	0.00	146
69	78.72	91.79	42.63	79.72	91.86	42.66	79.22	67.24	1.00	1.81	0.00	146
70	79.72	91.86	42.66	80.72	91.90	42.71	80.22	67.28	1.00	2.43	0.00	146
71	80.72	91.90	42.71	81.72	91.93	42.76	81.22	67.32	1.00	3.05	0.00	146
72	81.72	91.93	42.76	82.72	92.00	42.82	82.22	67.38	1.00	3.67	0.00	146
73	82.72	92.00	42.82	83.72	92.14	42.90	83.22	67.47	1.00	4.29	0.00	146
74	83.72	92.14	42.90	84.72	92.21	42.98	84.22	67.56	1.00	4.91	0.00	146
75	84.72	92.21	42.98	85.72	92.29	43.08	85.22	67.64	1.00	5.53	0.00	146
76	85.72	92.29	43.08	86.72	92.33	43.19	86.22	67.72	1.01	6.16	0.00	146
77	86.72	92.33	43.19	87.72	92.45	43.31	87.22	67.82	1.01	6.78	0.00	146
78	87.72	92.45	43.31	88.72	92.49	43.44	88.22	67.92	1.01	7.40	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
79	88.72	92.49	43.44	89.72	92.54	43.58	89.22	68.01	1.01	8.03	0.00	146
80	89.72	92.54	43.58	90.18	92.57	43.65	89.95	68.08	0.47	8.49	0.00	146
81	90.18	92.57	43.65	90.72	92.59	43.73	90.45	68.13	0.55	8.80	0.00	146
82	90.72	92.59	43.73	91.72	92.76	43.89	91.22	68.24	1.01	9.28	0.00	146
83	91.72	92.76	43.89	92.72	92.81	44.07	92.22	68.38	1.02	9.91	0.00	146
84	92.72	92.81	44.07	94.72	92.95	44.45	93.72	68.57	2.04	10.86	0.00	146
85	94.72	92.95	44.45	95.72	93.04	44.66	95.22	68.78	1.02	11.80	0.00	146
86	95.72	93.04	44.66	96.72	93.15	44.88	96.22	68.93	1.02	12.44	0.00	146
87	96.72	93.15	44.88	97.72	93.48	45.11	97.22	69.16	1.03	13.07	0.00	146
88	97.72	93.48	45.11	98.72	93.88	45.36	98.22	69.46	1.03	13.71	0.00	146
89	98.72	93.88	45.36	98.87	93.90	45.40	98.79	69.63	0.15	14.07	0.00	146
90	98.87	93.90	45.40	99.72	94.04	45.61	99.29	69.74	0.88	14.39	0.00	146
91	99.72	94.04	45.61	100.72	94.82	45.88	100.22	70.09	1.04	14.99	0.00	146
92	100.72	94.82	45.88	101.72	95.13	46.16	101.22	70.50	1.04	15.63	0.00	146
93	101.72	95.13	46.16	102.72	95.39	46.45	102.22	70.78	1.04	16.27	0.00	146
94	102.72	95.39	46.45	103.71	95.53	46.75	103.21	71.03	1.03	16.92	0.00	146
95	103.71	95.53	46.75	104.71	95.73	47.07	104.21	71.27	1.05	17.56	0.00	146
96	104.71	95.73	47.07	105.71	95.94	47.40	105.21	71.54	1.05	18.21	0.00	146
97	105.71	95.94	47.40	106.71	96.34	47.74	106.21	71.86	1.06	18.87	0.00	146
98	106.71	96.34	47.74	106.82	96.37	47.78	106.76	72.06	0.12	19.23	0.00	146
99	106.82	96.37	47.78	107.71	96.65	48.10	107.26	72.22	0.94	19.56	0.00	146
100	107.71	96.65	48.10	108.71	97.21	48.46	108.21	72.61	1.07	20.18	0.00	146
101	108.71	97.21	48.46	109.71	97.46	48.84	109.21	72.99	1.07	20.84	0.00	146
102	109.71	97.46	48.84	110.71	97.86	49.24	110.21	73.35	1.07	21.51	0.00	146
103	110.71	97.86	49.24	111.71	98.44	49.65	111.21	73.80	1.08	22.17	0.00	146
104	111.71	98.44	49.65	112.71	98.65	50.07	112.21	74.20	1.09	22.84	0.00	146
105	112.71	98.65	50.07	113.61	98.85	50.46	113.16	74.51	0.98	23.48	0.00	146
106	113.61	98.85	50.46	113.71	98.88	50.50	113.66	74.67	0.11	23.82	0.00	146
107	113.71	98.88	50.50	114.71	99.25	50.95	114.21	74.90	1.10	24.20	0.00	146
108	114.71	99.25	50.95	115.71	99.49	51.42	115.21	75.28	1.10	24.88	0.00	146
109	115.71	99.49	51.42	116.71	99.52	51.89	116.21	75.58	1.11	25.56	0.00	146
110	116.71	99.52	51.89	117.71	99.52	52.39	117.21	75.83	1.11	26.25	0.00	146
111	117.71	99.52	52.39	118.71	99.51	52.90	118.21	76.08	1.12	26.94	0.00	146
112	118.71	99.51	52.90	119.71	99.70	53.42	119.21	76.38	1.13	27.64	0.00	146
113	119.71	99.70	53.42	120.71	99.73	53.96	120.21	76.70	1.14	28.34	0.00	146
114	120.71	99.73	53.96	121.46	99.77	54.37	121.08	76.96	0.86	28.96	0.00	146
115	121.46	99.77	54.37	121.71	99.78	54.51	121.58	77.11	0.29	29.31	0.00	146
116	121.71	99.78	54.51	122.71	100.07	55.09	122.21	77.36	1.15	29.76	0.00	146
117	122.71	100.07	55.09	123.71	100.20	55.67	123.21	77.76	1.16	30.47	0.00	146
118	123.71	100.20	55.67	124.71	100.42	56.28	124.21	78.14	1.17	31.20	0.00	146
119	124.71	100.42	56.28	125.71	100.75	56.90	125.21	78.59	1.18	31.92	0.00	146
120	125.71	100.75	56.90	126.71	101.22	57.54	126.21	79.10	1.19	32.65	0.00	146
121	126.71	101.22	57.54	127.71	101.54	58.20	127.21	79.63	1.20	33.39	0.00	146
122	127.71	101.54	58.20	128.71	102.16	58.88	128.21	80.20	1.21	34.14	0.00	146
123	128.71	102.16	58.88	129.71	102.44	59.58	129.21	80.76	1.22	34.89	0.00	146
124	129.71	102.44	59.58	130.71	102.64	60.29	130.21	81.24	1.23	35.65	0.00	146
125	130.71	102.64	60.29	131.71	102.69	61.03	131.21	81.66	1.24	36.42	0.00	146
126	131.71	102.69	61.03	132.71	102.75	61.79	132.21	82.07	1.26	37.19	0.00	146
127	132.71	102.75	61.79	133.71	102.62	62.57	133.21	82.43	1.27	37.97	0.00	146
128	133.71	102.62	62.57	134.71	102.64	63.37	134.21	82.80	1.28	38.76	0.00	146
129	134.71	102.64	63.37	135.71	102.67	64.20	135.21	83.22	1.30	39.56	0.00	146
130	135.71	102.67	64.20	136.71	102.96	65.05	136.21	83.72	1.31	40.37	0.00	146
131	136.71	102.96	65.05	137.71	103.01	65.93	137.21	84.24	1.33	41.19	0.00	146
132	137.71	103.01	65.93	138.56	103.19	66.69	138.13	84.70	1.14	41.95	0.00	146
133	138.56	103.19	66.69	138.71	103.22	66.83	138.63	84.98	0.20	42.37	0.00	146
134	138.71	103.22	66.83	139.71	104.22	67.75	139.21	85.51	1.36	42.85	0.00	146
135	139.71	104.22	67.75	140.71	104.53	68.71	140.21	86.30	1.38	43.70	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
136	140.71	104.53	68.71	141.10	104.78	69.09	140.90	86.78	0.54	44.30	0.00	146
137	141.10	104.78	69.09	141.71	105.18	69.70	141.40	87.19	0.86	44.74	0.00	146
138	141.71	105.18	69.70	142.71	105.41	70.71	142.21	87.75	1.43	45.44	0.00	146
139	142.71	105.41	70.71	143.71	105.67	71.76	143.21	88.39	1.45	46.33	0.00	146
140	143.71	105.67	71.76	144.71	105.79	72.84	144.21	89.01	1.47	47.24	0.00	146
141	144.71	105.79	72.84	145.71	105.86	73.96	145.21	89.61	1.50	48.16	0.00	146
142	145.71	105.86	73.96	146.71	105.91	75.11	146.21	90.21	1.53	49.10	0.00	146
143	146.71	105.91	75.11	147.71	106.02	76.30	147.21	90.83	1.56	50.05	0.00	146
144	147.71	106.02	76.30	148.71	106.05	77.54	148.21	91.48	1.59	51.03	0.00	146
145	148.71	106.05	77.54	149.71	106.03	78.82	149.21	92.11	1.63	52.02	0.00	146
146	149.71	106.03	78.82	150.71	106.13	80.15	150.21	92.78	1.66	53.04	0.00	146
147	150.71	106.13	80.15	151.71	106.26	81.53	151.21	93.52	1.70	54.08	0.00	146
148	151.71	106.26	81.53	152.71	106.40	82.97	152.21	94.29	1.75	55.15	0.00	146
149	152.71	106.40	82.97	153.71	106.46	84.46	153.20	95.07	1.80	56.25	0.00	146
150	153.71	106.46	84.46	154.71	106.59	86.03	154.20	95.88	1.86	57.39	0.00	146
151	154.71	106.59	86.03	155.71	106.83	87.66	155.20	96.77	1.92	58.55	0.00	146
152	155.71	106.83	87.66	160.20	107.32	96.14	157.76	99.29	9.59	62.12	0.00	146
153	160.20	107.32	96.14	164.68	107.81	107.81	161.69	103.75	12.50	68.96	0.00	103

Tabella 5-12 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 02

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	226.60	826.71	2199.97	339.60	0.00	0.00	1936.91	0.00	0.00	
2	541.70	717.55	2340.62	348.41	0.00	1936.91	3879.02	0.00	0.00	
3	403.96	380.58	1362.48	199.42	0.00	3879.02	4963.03	0.00	0.00	
4	11.07	9.51	34.79	4.90	0.00	4963.03	4990.28	0.00	0.00	
5	219.05	180.72	667.29	92.49	0.00	4990.28	5508.05	0.00	0.00	
6	513.17	380.35	1441.51	190.59	0.00	5508.05	6592.67	0.00	0.00	
7	580.84	380.13	1487.40	185.51	0.00	6592.67	7674.57	0.00	0.00	
8	645.42	379.52	1529.18	180.96	0.00	7674.57	8749.37	0.00	0.00	
9	345.96	189.51	779.12	88.92	0.00	8749.37	9279.54	0.00	0.00	
10	360.61	189.45	787.98	87.95	0.00	9279.54	9803.57	0.00	0.00	
11	375.13	189.25	796.59	87.03	0.00	9803.57	10330.61	0.00	0.00	
12	390.07	188.61	805.33	86.15	0.00	10330.61	10862.34	0.00	0.00	
13	406.38	187.03	814.76	85.31	0.00	10862.34	11415.50	0.00	0.00	
14	422.40	185.41	823.87	84.51	0.00	11415.50	11939.21	0.00	0.00	
15	437.43	184.13	832.22	83.74	0.00	11939.21	12468.31	0.00	0.00	
16	452.74	182.50	840.62	83.01	0.00	12468.31	12993.30	0.00	0.00	
17	467.17	181.17	848.36	82.32	0.00	12993.30	13499.22	0.00	0.00	
18	481.26	179.84	855.81	81.65	0.00	13499.22	14011.14	0.00	0.00	
19	495.57	178.22	863.29	81.01	0.00	14011.14	14514.40	0.00	0.00	
20	509.57	176.59	870.49	80.40	0.00	14514.40	15012.27	0.00	0.00	
21	522.71	175.26	877.10	79.82	0.00	15012.27	15490.39	0.00	0.00	
22	535.63	173.89	883.52	79.26	0.00	15490.39	15974.80	0.00	0.00	
23	548.44	172.41	889.81	78.72	0.00	15974.80	16440.93	0.00	0.00	
24	560.69	171.08	895.71	78.21	0.00	16440.93	16904.09	0.00	0.00	
25	572.65	169.75	901.39	77.72	0.00	16904.09	17353.81	0.00	0.00	
26	584.51	168.32	906.97	77.24	0.00	17353.81	17803.49	0.00	0.00	
27	597.57	166.11	913.17	76.79	0.00	17803.49	18262.80	0.00	0.00	
28	610.16	163.99	919.07	76.36	0.00	18262.80	18691.72	0.00	0.00	
29	620.94	162.71	923.91	75.94	0.00	18691.72	19105.05	0.00	0.00	
30	631.82	161.24	928.77	75.54	0.00	19105.05	19522.14	0.00	0.00	
31	642.72	159.61	933.62	75.16	0.00	19522.14	19921.84	0.00	0.00	
32	652.55	158.43	937.84	74.80	0.00	19921.84	20305.69	0.00	0.00	
33	663.22	156.66	942.51	74.44	0.00	20305.69	20705.07	0.00	0.00	
34	673.64	154.89	947.02	74.11	0.00	20705.07	21069.73	0.00	0.00	
35	683.37	153.36	951.13	73.79	0.00	21069.73	21441.45	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
36	693.31	151.59	955.35	73.48	0.00	21441.45	21793.96	0.00	0.00	
37	703.01	149.82	959.42	73.19	0.00	21793.96	22145.35	0.00	0.00	
38	712.67	147.95	963.45	72.90	0.00	22145.35	22480.48	0.00	0.00	
39	725.75	144.12	969.29	72.64	0.00	22480.48	22868.58	0.00	0.00	
40	739.33	139.90	975.38	72.38	0.00	22868.58	23193.87	0.00	0.00	
41	746.56	138.96	978.08	72.13	0.00	23193.87	23465.44	0.00	0.00	
42	752.38	138.66	980.03	71.90	0.00	23465.44	23751.43	0.00	0.00	
43	761.54	136.45	983.76	71.68	0.00	23751.43	24055.38	0.00	0.00	
44	1555.71	262.97	1981.27	142.73	0.00	24055.38	24631.27	0.00	0.00	
45	794.30	126.28	997.65	71.08	0.00	24631.27	24906.59	0.00	0.00	
46	805.16	122.69	1002.23	70.90	0.00	24906.59	25166.12	0.00	0.00	
47	815.44	119.30	1006.51	70.73	0.00	25166.12	25412.43	0.00	0.00	
48	825.69	115.82	1010.78	70.57	0.00	25412.43	25650.09	0.00	0.00	
49	835.08	112.67	1014.60	70.42	0.00	25650.09	25864.27	0.00	0.00	
50	842.54	110.46	1017.42	70.28	0.00	25864.27	26056.79	0.00	0.00	
51	851.43	107.36	1021.00	70.15	0.00	26056.79	26266.55	0.00	0.00	
52	859.47	104.61	1024.14	70.02	0.00	26266.55	26428.24	0.00	0.00	
53	863.29	104.02	1025.12	69.91	0.00	26428.24	26568.19	0.00	0.00	
54	865.80	104.01	1025.44	69.81	0.00	26568.19	26694.81	0.00	0.00	
55	869.57	103.22	1026.43	69.71	0.00	26694.81	26828.72	0.00	0.00	
56	874.33	101.79	1027.94	69.62	0.00	26828.72	26945.95	0.00	0.00	
57	500.13	57.54	586.42	39.65	0.00	26945.95	27005.78	0.00	0.00	
58	378.03	43.22	442.58	29.89	0.00	27005.78	27048.68	0.00	0.00	
59	881.33	99.97	1029.71	69.47	0.00	27048.68	27138.01	0.00	0.00	
60	884.02	99.32	1030.21	69.41	0.00	27138.01	27214.98	0.00	0.00	
61	886.79	98.53	1030.76	69.36	0.00	27214.98	27284.49	0.00	0.00	
62	889.27	97.79	1031.18	69.31	0.00	27284.49	27337.71	0.00	0.00	
63	891.18	97.25	1031.33	69.28	0.00	27337.71	27380.56	0.00	0.00	
64	892.90	96.70	1031.39	69.25	0.00	27380.56	27411.11	0.00	0.00	
65	894.51	96.11	1031.42	69.23	0.00	27411.11	27432.27	0.00	0.00	
66	895.92	95.51	1031.36	69.21	0.00	27432.27	27440.20	0.00	0.00	
67	897.41	94.77	1031.35	69.21	0.00	27440.20	27441.55	0.00	0.00	
68	1797.93	187.56	2061.97	138.43	0.00	27441.55	27400.97	0.00	0.00	
69	899.95	92.94	1030.44	69.24	0.00	27400.97	27365.71	0.00	0.00	
70	900.28	92.39	1029.90	69.27	0.00	27365.71	27316.49	0.00	0.00	
71	900.04	92.04	1029.09	69.31	0.00	27316.49	27255.26	0.00	0.00	
72	899.88	91.55	1028.32	69.35	0.00	27255.26	27186.63	0.00	0.00	
73	900.53	90.51	1027.98	69.40	0.00	27186.63	27113.10	0.00	0.00	
74	900.98	89.48	1027.55	69.46	0.00	27113.10	27022.06	0.00	0.00	
75	900.68	88.74	1026.75	69.53	0.00	27022.06	26920.84	0.00	0.00	
76	899.91	88.14	1025.72	69.61	0.00	26920.84	26805.13	0.00	0.00	
77	899.29	87.35	1024.78	69.70	0.00	26805.13	26685.45	0.00	0.00	
78	898.48	86.56	1023.74	69.79	0.00	26685.45	26547.87	0.00	0.00	
79	896.83	86.11	1022.28	69.89	0.00	26547.87	26400.42	0.00	0.00	
80	411.99	39.43	469.77	32.19	0.00	26400.42	26329.59	0.00	0.00	
81	483.14	46.15	551.05	37.82	0.00	26329.59	26242.26	0.00	0.00	
82	894.18	84.53	1019.73	70.13	0.00	26242.26	26083.42	0.00	0.00	
83	893.10	83.45	1018.58	70.26	0.00	26083.42	25903.64	0.00	0.00	
84	1779.46	165.01	2031.85	140.94	0.00	25903.64	25515.82	0.00	0.00	
85	886.41	81.37	1013.38	70.70	0.00	25515.82	25307.81	0.00	0.00	
86	884.31	80.38	1011.72	70.87	0.00	25307.81	25090.90	0.00	0.00	
87	884.20	78.22	1011.08	71.05	0.00	25090.90	24880.17	0.00	0.00	
88	886.52	74.63	1011.73	71.24	0.00	24880.17	24662.20	0.00	0.00	
89	133.17	10.89	151.81	10.70	0.00	24662.20	24625.50	0.00	0.00	
90	753.88	61.02	859.64	60.73	0.00	24625.50	24414.96	0.00	0.00	
91	890.88	67.27	1012.91	71.64	0.00	24414.96	24197.05	0.00	0.00	
92	895.85	61.92	1014.98	71.86	0.00	24197.05	23933.92	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
93	895.83	59.12	1014.43	72.10	0.00	23933.92	23656.14	0.00	0.00	
94	885.13	56.58	1002.84	71.61	0.00	23656.14	23363.70	0.00	0.00	
95	891.53	55.48	1011.08	72.59	0.00	23363.70	23061.21	0.00	0.00	
96	889.37	53.46	1009.39	72.86	0.00	23061.21	22748.64	0.00	0.00	
97	888.82	50.46	1008.55	73.14	0.00	22748.64	22434.44	0.00	0.00	
98	97.82	5.32	110.94	8.06	0.00	22434.44	22398.44	0.00	0.00	
99	791.09	41.68	897.12	65.37	0.00	22398.44	22103.86	0.00	0.00	
100	890.30	42.70	1008.26	73.73	0.00	22103.86	21771.55	0.00	0.00	
101	890.86	38.73	1008.02	74.05	0.00	21771.55	21414.14	0.00	0.00	
102	889.72	35.53	1006.86	74.39	0.00	21414.14	21050.89	0.00	0.00	
103	891.35	30.72	1007.20	74.73	0.00	21050.89	20680.09	0.00	0.00	
104	891.00	26.84	1006.46	75.10	0.00	20680.09	20286.54	0.00	0.00	
105	798.58	22.34	903.51	67.91	0.00	20286.54	19924.14	0.00	0.00	
106	88.54	2.37	100.26	7.57	0.00	19924.14	19883.56	0.00	0.00	
107	884.58	21.73	1001.77	75.87	0.00	19883.56	19473.13	0.00	0.00	
108	881.81	18.73	999.63	76.29	0.00	19473.13	19049.47	0.00	0.00	
109	875.66	17.40	995.57	76.72	0.00	19049.47	18613.32	0.00	0.00	
110	867.05	17.25	990.06	77.17	0.00	18613.32	18169.07	0.00	0.00	
111	857.79	17.29	984.11	77.63	0.00	18169.07	17717.44	0.00	0.00	
112	850.00	16.40	978.92	78.12	0.00	17717.44	17261.55	0.00	0.00	
113	842.29	15.32	973.69	78.63	0.00	17261.55	16795.58	0.00	0.00	
114	625.65	11.23	726.21	59.32	0.00	16795.58	16441.94	0.00	0.00	
115	207.39	3.68	241.29	19.84	0.00	16441.94	16323.18	0.00	0.00	
116	825.80	13.25	962.38	79.72	0.00	16323.18	15846.58	0.00	0.00	
117	819.03	11.18	957.44	80.30	0.00	15846.58	15360.29	0.00	0.00	
118	811.30	9.46	951.85	80.91	0.00	15360.29	14867.84	0.00	0.00	
119	805.10	6.76	947.05	81.54	0.00	14867.84	14368.33	0.00	0.00	
120	800.85	2.83	943.34	82.20	0.00	14368.33	13860.06	0.00	0.00	
121	796.18	0.04	940.59	82.89	0.00	13860.06	13342.18	0.00	0.00	
122	792.55	0.00	942.59	83.62	0.00	13342.18	12813.32	0.00	0.00	
123	788.20	0.00	943.97	84.37	0.00	12813.32	12273.86	0.00	0.00	
124	779.65	0.00	940.18	85.17	0.00	12273.86	11727.15	0.00	0.00	
125	768.62	0.00	933.31	86.00	0.00	11727.15	11175.31	0.00	0.00	
126	755.94	0.00	924.34	86.87	0.00	11175.31	10619.91	0.00	0.00	
127	741.21	0.00	912.70	87.79	0.00	10619.91	10062.96	0.00	0.00	
128	725.72	0.00	899.99	88.75	0.00	10062.96	9505.46	0.00	0.00	
129	711.27	14.20	907.85	89.77	0.00	9505.46	8933.23	0.00	0.00	
130	698.86	20.00	907.41	90.84	0.00	8933.23	8352.06	0.00	0.00	
131	686.19	20.00	898.79	91.96	0.00	8352.06	7767.85	0.00	0.00	
132	572.30	0.00	731.96	79.10	0.00	7767.85	7287.48	0.00	0.00	
133	100.05	0.00	128.50	14.05	0.00	7287.48	7202.54	0.00	0.00	
134	666.66	0.00	861.43	94.40	0.00	7202.54	6627.76	0.00	0.00	
135	661.41	0.00	863.30	95.73	0.00	6627.76	6042.83	0.00	0.00	
136	255.18	0.00	335.29	37.71	0.00	6042.83	5813.40	0.00	0.00	
137	397.26	0.00	524.73	59.43	0.00	5813.40	5451.66	0.00	0.00	
138	642.18	0.00	855.01	98.64	0.00	5451.66	4855.64	0.00	0.00	
139	627.79	0.00	843.85	100.23	0.00	4855.64	4259.71	0.00	0.00	
140	611.78	0.00	830.12	101.93	0.00	4259.71	3666.13	0.00	0.00	
141	593.41	0.00	812.48	103.75	0.00	3666.13	3078.31	0.00	0.00	
142	573.73	0.00	792.38	105.69	0.00	3078.31	2498.62	0.00	0.00	
143	553.70	0.00	771.23	107.78	0.00	2498.62	1928.32	0.00	0.00	
144	532.75	0.00	747.94	110.03	0.00	1928.32	1369.62	0.00	0.00	
145	509.81	0.00	720.52	112.47	0.00	1369.62	826.44	0.00	0.00	
146	486.66	0.00	691.72	115.11	0.00	826.44	300.50	0.00	0.00	
147	463.97	0.00	662.54	117.98	0.00	300.50	-207.30	0.00	0.00	
148	440.67	0.00	630.88	121.12	0.00	-207.30	-694.26	0.00	0.00	
149	415.66	0.00	594.37	124.58	0.00	-694.26	-1155.50	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
150	389.41	0.00	553.30	128.40	0.00	-1155.50	-1586.29	0.00	0.00	
151	363.53	0.00	510.25	132.66	0.00	-1586.29	-1984.08	0.00	0.00	
152	1245.41	0.00	1524.47	663.86	0.00	-1984.08	-3129.71	0.00	0.00	
153	458.71	0.00	-250.35	609.16	0.00	-3129.71	-2717.37	0.00	0.00	

Tabella 5-13 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 02

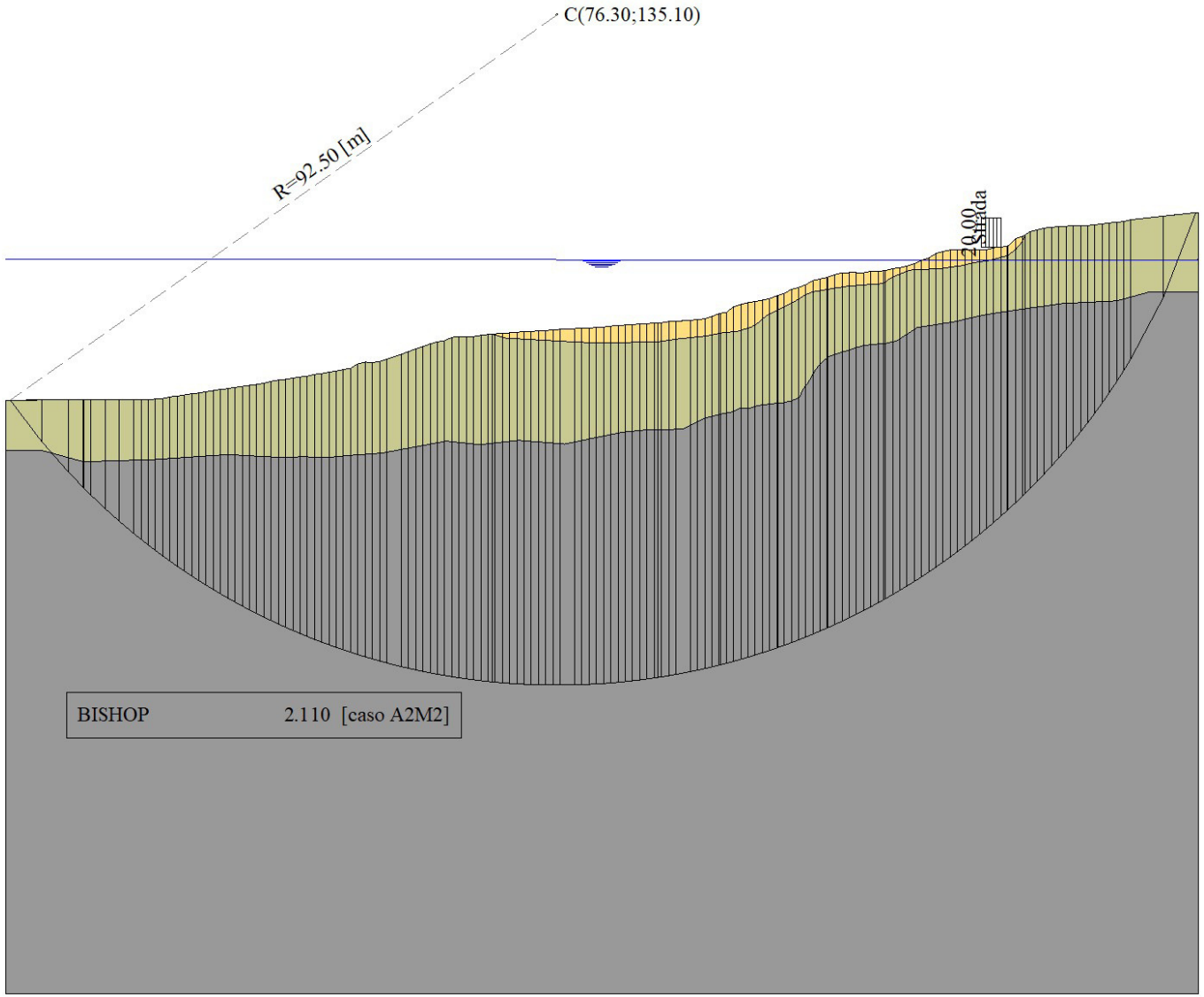

Figura 5-2 – Superficie critica (1) della sezione VS_03 per la verifica di stabilità 02

5.5 VERIFICA DI STABILITÀ 03

5.5.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate solo in condizioni **sismiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni totali**
Presenza di carichi distribuiti

5.5.2 RISULTATI ANALISI

Numero di superfici analizzate	141498
Coefficiente di sicurezza minimo	1.599
Superficie con coefficiente di sicurezza minimo	1

5.5.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO IL BASSO

Numero di strisce	161	
Coordinate del centro	X[m]= 76.30	Y[m]= 135.10
Raggio del cerchio	R[m]= 92.50	
Intersezione a valle con il profilo topografico	X_v[m]= 0.61	Y_v[m]= 81.93
Intersezione a monte con il profilo topografico	X_m[m]= 164.68	Y_m[m]= 107.81
Coefficiente di sicurezza	F_S= 1.599	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	0.61	81.93	81.93	4.95	81.94	76.23	3.50	80.03	7.16	-52.69	0.00	100
2	4.95	81.94	76.23	8.72	81.94	71.94	7.01	77.91	5.71	-48.71	0.00	129
3	8.72	81.94	71.94	9.72	81.94	70.89	9.23	76.67	1.45	-46.49	0.00	146
4	9.72	81.94	70.89	10.72	81.94	69.87	10.23	76.15	1.43	-45.59	0.00	146
5	10.72	81.94	69.87	10.77	81.94	69.82	10.75	75.89	0.07	-45.13	0.00	146
6	10.77	81.94	69.82	11.72	81.95	68.88	11.25	75.64	1.34	-44.69	0.00	146
7	11.72	81.95	68.88	12.72	81.95	67.91	12.23	75.17	1.39	-43.85	0.00	146
8	12.72	81.95	67.91	13.72	81.95	66.98	13.23	74.70	1.37	-43.00	0.00	146
9	13.72	81.95	66.98	14.72	81.96	66.08	14.22	74.24	1.35	-42.16	0.00	146
10	14.72	81.96	66.08	15.72	81.97	65.20	15.22	73.80	1.33	-41.33	0.00	146
11	15.72	81.97	65.20	16.72	81.99	64.34	16.22	73.37	1.32	-40.51	0.00	146
12	16.72	81.99	64.34	17.72	82.01	63.51	17.22	72.96	1.30	-39.70	0.00	146
13	17.72	82.01	63.51	18.72	82.02	62.71	18.22	72.56	1.28	-38.90	0.00	146
14	18.72	82.02	62.71	19.72	82.02	61.92	19.22	72.17	1.27	-38.10	0.00	146
15	19.72	82.02	61.92	20.72	82.06	61.16	20.22	71.79	1.26	-37.32	0.00	146
16	20.72	82.06	61.16	21.72	82.15	60.42	21.22	71.45	1.24	-36.55	0.00	146
17	21.72	82.15	60.42	22.72	82.38	59.70	22.22	71.16	1.23	-35.78	0.00	146
18	22.72	82.38	59.70	23.72	82.48	59.00	23.22	70.89	1.22	-35.02	0.00	146
19	23.72	82.48	59.00	24.72	82.64	58.32	24.22	70.61	1.21	-34.27	0.00	146
20	24.72	82.64	58.32	25.72	82.81	57.65	25.22	70.35	1.20	-33.52	0.00	146
21	25.72	82.81	57.65	26.72	82.91	57.01	26.22	70.10	1.19	-32.78	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
22	26.72	82.91	57.01	27.72	83.08	56.38	27.22	69.85	1.18	-32.05	0.00	146
23	27.72	83.08	56.38	28.72	83.24	55.78	28.22	69.62	1.17	-31.32	0.00	146
24	28.72	83.24	55.78	29.72	83.41	55.18	29.22	69.40	1.16	-30.60	0.00	146
25	29.72	83.41	55.18	30.72	83.51	54.61	30.22	69.18	1.15	-29.88	0.00	146
26	30.72	83.51	54.61	31.72	83.69	54.05	31.22	68.96	1.15	-29.17	0.00	146
27	31.72	83.69	54.05	32.72	83.81	53.51	32.22	68.76	1.14	-28.46	0.00	146
28	32.72	83.81	53.51	33.72	83.96	52.98	33.22	68.57	1.13	-27.76	0.00	146
29	33.72	83.96	52.98	34.72	84.08	52.47	34.22	68.37	1.12	-27.06	0.00	146
30	34.72	84.08	52.47	35.72	84.25	51.98	35.22	68.19	1.12	-26.37	0.00	146
31	35.72	84.25	51.98	36.72	84.53	51.50	36.22	68.06	1.11	-25.68	0.00	146
32	36.72	84.53	51.50	37.72	84.68	51.03	37.22	67.93	1.10	-24.99	0.00	146
33	37.72	84.68	51.03	38.72	84.79	50.58	38.22	67.77	1.10	-24.31	0.00	146
34	38.72	84.79	50.58	39.72	84.98	50.14	39.22	67.62	1.09	-23.63	0.00	146
35	39.72	84.98	50.14	40.72	85.12	49.72	40.22	67.49	1.09	-22.96	0.00	146
36	40.72	85.12	49.72	41.72	85.22	49.31	41.22	67.34	1.08	-22.29	0.00	146
37	41.72	85.22	49.31	42.72	85.48	48.91	42.22	67.23	1.08	-21.62	0.00	146
38	42.72	85.48	48.91	43.72	85.58	48.53	43.22	67.12	1.07	-20.95	0.00	146
39	43.72	85.58	48.53	44.72	85.79	48.16	44.22	67.01	1.07	-20.29	0.00	146
40	44.72	85.79	48.16	45.72	85.94	47.80	45.22	66.92	1.06	-19.63	0.00	146
41	45.72	85.94	47.80	46.72	86.15	47.46	46.22	66.84	1.06	-18.98	0.00	146
42	46.72	86.15	47.46	47.72	86.32	47.13	47.22	66.76	1.05	-18.32	0.00	146
43	47.72	86.32	47.13	48.72	86.93	46.81	48.22	66.80	1.05	-17.67	0.00	146
44	48.72	86.93	46.81	49.72	87.18	46.50	49.22	66.85	1.05	-17.02	0.00	146
45	49.72	87.18	46.50	50.72	87.12	46.21	50.22	66.75	1.04	-16.38	0.00	146
46	50.72	87.12	46.21	51.72	87.24	45.93	51.22	66.62	1.04	-15.73	0.00	146
47	51.72	87.24	45.93	52.72	87.57	45.66	52.22	66.60	1.04	-15.09	0.00	146
48	52.72	87.57	45.66	53.72	87.91	45.40	53.22	66.63	1.03	-14.45	0.00	146
49	53.72	87.91	45.40	54.72	88.25	45.15	54.22	66.68	1.03	-13.81	0.00	146
50	54.72	88.25	45.15	55.72	88.63	44.92	55.22	66.74	1.03	-13.17	0.00	146
51	55.72	88.63	44.92	56.72	88.98	44.70	56.22	66.81	1.02	-12.54	0.00	146
52	56.72	88.98	44.70	57.72	89.32	44.49	57.22	66.87	1.02	-11.90	0.00	146
53	57.72	89.32	44.49	58.72	89.69	44.29	58.22	66.95	1.02	-11.27	0.00	146
54	58.72	89.69	44.29	59.72	89.96	44.10	59.22	67.01	1.02	-10.64	0.00	146
55	59.72	89.96	44.10	60.72	90.14	43.92	60.22	67.03	1.02	-10.01	0.00	146
56	60.72	90.14	43.92	61.72	90.59	43.76	61.22	67.10	1.01	-9.38	0.00	146
57	61.72	90.59	43.76	62.72	90.70	43.60	62.22	67.16	1.01	-8.76	0.00	146
58	62.72	90.70	43.60	63.72	90.71	43.46	63.22	67.12	1.01	-8.13	0.00	146
59	63.72	90.71	43.46	64.72	90.70	43.33	64.22	67.05	1.01	-7.50	0.00	146
60	64.72	90.70	43.33	65.72	90.87	43.21	65.22	67.03	1.01	-6.88	0.00	146
61	65.72	90.87	43.21	66.72	90.99	43.10	66.22	67.04	1.01	-6.26	0.00	146
62	66.72	90.99	43.10	67.29	91.04	43.04	67.01	67.04	0.57	-5.77	0.00	146
63	67.29	91.04	43.04	67.72	91.08	43.00	67.51	67.04	0.43	-5.46	0.00	146
64	67.72	91.08	43.00	68.72	91.15	42.91	68.22	67.03	1.00	-5.01	0.00	146
65	68.72	91.15	42.91	69.72	91.21	42.83	69.22	67.03	1.00	-4.39	0.00	146
66	69.72	91.21	42.83	70.72	91.31	42.77	70.22	67.03	1.00	-3.77	0.00	146
67	70.72	91.31	42.77	71.72	91.36	42.71	71.22	67.04	1.00	-3.15	0.00	146
68	71.72	91.36	42.71	72.72	91.42	42.67	72.22	67.04	1.00	-2.53	0.00	146
69	72.72	91.42	42.67	73.72	91.47	42.64	73.22	67.05	1.00	-1.91	0.00	146
70	73.72	91.47	42.64	74.72	91.54	42.61	74.22	67.06	1.00	-1.29	0.00	146
71	74.72	91.54	42.61	75.72	91.59	42.60	75.22	67.09	1.00	-0.67	0.00	146
72	75.72	91.59	42.60	76.72	91.69	42.60	76.22	67.12	1.00	-0.05	0.00	146
73	76.72	91.69	42.60	77.72	91.74	42.61	77.22	67.16	1.00	0.57	0.00	146
74	77.72	91.74	42.61	78.72	91.79	42.63	78.22	67.19	1.00	1.19	0.00	146
75	78.72	91.79	42.63	79.72	91.86	42.66	79.22	67.24	1.00	1.81	0.00	146
76	79.72	91.86	42.66	80.72	91.90	42.71	80.22	67.28	1.00	2.43	0.00	146
77	80.72	91.90	42.71	81.72	91.93	42.76	81.22	67.32	1.00	3.05	0.00	146
78	81.72	91.93	42.76	82.72	92.00	42.82	82.22	67.38	1.00	3.67	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
79	82.72	92.00	42.82	83.72	92.14	42.90	83.22	67.47	1.00	4.29	0.00	146
80	83.72	92.14	42.90	84.72	92.21	42.98	84.22	67.56	1.00	4.91	0.00	146
81	84.72	92.21	42.98	85.72	92.29	43.08	85.22	67.64	1.00	5.53	0.00	146
82	85.72	92.29	43.08	86.72	92.33	43.19	86.22	67.72	1.01	6.16	0.00	146
83	86.72	92.33	43.19	87.72	92.45	43.31	87.22	67.82	1.01	6.78	0.00	146
84	87.72	92.45	43.31	88.72	92.49	43.44	88.22	67.92	1.01	7.40	0.00	146
85	88.72	92.49	43.44	89.72	92.54	43.58	89.22	68.01	1.01	8.03	0.00	146
86	89.72	92.54	43.58	90.18	92.57	43.65	89.95	68.08	0.47	8.49	0.00	146
87	90.18	92.57	43.65	90.72	92.59	43.73	90.45	68.13	0.55	8.80	0.00	146
88	90.72	92.59	43.73	91.72	92.76	43.89	91.22	68.24	1.01	9.28	0.00	146
89	91.72	92.76	43.89	92.72	92.81	44.07	92.22	68.38	1.02	9.91	0.00	146
90	92.72	92.81	44.07	93.72	92.88	44.26	93.22	68.50	1.02	10.54	0.00	146
91	93.72	92.88	44.26	94.72	92.95	44.45	94.22	68.63	1.02	11.17	0.00	146
92	94.72	92.95	44.45	95.72	93.04	44.66	95.22	68.78	1.02	11.80	0.00	146
93	95.72	93.04	44.66	96.72	93.15	44.88	96.22	68.93	1.02	12.44	0.00	146
94	96.72	93.15	44.88	97.72	93.48	45.11	97.22	69.16	1.03	13.07	0.00	146
95	97.72	93.48	45.11	98.72	93.88	45.36	98.22	69.46	1.03	13.71	0.00	146
96	98.72	93.88	45.36	98.87	93.90	45.40	98.79	69.63	0.15	14.07	0.00	146
97	98.87	93.90	45.40	99.72	94.04	45.61	99.29	69.74	0.88	14.39	0.00	146
98	99.72	94.04	45.61	100.72	94.82	45.88	100.22	70.09	1.04	14.99	0.00	146
99	100.72	94.82	45.88	101.72	95.13	46.16	101.22	70.50	1.04	15.63	0.00	146
100	101.72	95.13	46.16	102.72	95.39	46.45	102.22	70.78	1.04	16.27	0.00	146
101	102.72	95.39	46.45	103.71	95.53	46.75	103.21	71.03	1.03	16.92	0.00	146
102	103.71	95.53	46.75	104.71	95.73	47.07	104.21	71.27	1.05	17.56	0.00	146
103	104.71	95.73	47.07	105.71	95.94	47.40	105.21	71.54	1.05	18.21	0.00	146
104	105.71	95.94	47.40	106.71	96.34	47.74	106.21	71.86	1.06	18.87	0.00	146
105	106.71	96.34	47.74	106.82	96.37	47.78	106.76	72.06	0.12	19.23	0.00	146
106	106.82	96.37	47.78	107.71	96.65	48.10	107.26	72.22	0.94	19.56	0.00	146
107	107.71	96.65	48.10	108.71	97.21	48.46	108.21	72.61	1.07	20.18	0.00	146
108	108.71	97.21	48.46	109.71	97.46	48.84	109.21	72.99	1.07	20.84	0.00	146
109	109.71	97.46	48.84	110.71	97.86	49.24	110.21	73.35	1.07	21.51	0.00	146
110	110.71	97.86	49.24	111.71	98.44	49.65	111.21	73.80	1.08	22.17	0.00	146
111	111.71	98.44	49.65	112.71	98.65	50.07	112.21	74.20	1.09	22.84	0.00	146
112	112.71	98.65	50.07	113.61	98.85	50.46	113.16	74.51	0.98	23.48	0.00	146
113	113.61	98.85	50.46	113.71	98.88	50.50	113.66	74.67	0.11	23.82	0.00	146
114	113.71	98.88	50.50	114.71	99.25	50.95	114.21	74.90	1.10	24.20	0.00	146
115	114.71	99.25	50.95	115.21	99.37	51.18	114.96	75.19	0.55	24.71	0.00	146
116	115.21	99.37	51.18	115.71	99.49	51.42	115.46	75.36	0.55	25.05	0.00	146
117	115.71	99.49	51.42	116.71	99.52	51.89	116.21	75.58	1.11	25.56	0.00	146
118	116.71	99.52	51.89	117.71	99.52	52.39	117.21	75.83	1.11	26.25	0.00	146
119	117.71	99.52	52.39	118.71	99.51	52.90	118.21	76.08	1.12	26.94	0.00	146
120	118.71	99.51	52.90	119.71	99.70	53.42	119.21	76.38	1.13	27.64	0.00	146
121	119.71	99.70	53.42	120.71	99.73	53.96	120.21	76.70	1.14	28.34	0.00	146
122	120.71	99.73	53.96	121.46	99.77	54.37	121.08	76.96	0.86	28.96	0.00	146
123	121.46	99.77	54.37	121.71	99.78	54.51	121.58	77.11	0.29	29.31	0.00	146
124	121.71	99.78	54.51	122.71	100.07	55.09	122.21	77.36	1.15	29.76	0.00	146
125	122.71	100.07	55.09	123.71	100.20	55.67	123.21	77.76	1.16	30.47	0.00	146
126	123.71	100.20	55.67	124.71	100.42	56.28	124.21	78.14	1.17	31.20	0.00	146
127	124.71	100.42	56.28	125.71	100.75	56.90	125.21	78.59	1.18	31.92	0.00	146
128	125.71	100.75	56.90	126.71	101.22	57.54	126.21	79.10	1.19	32.65	0.00	146
129	126.71	101.22	57.54	127.71	101.54	58.20	127.21	79.63	1.20	33.39	0.00	146
130	127.71	101.54	58.20	128.71	102.16	58.88	128.21	80.20	1.21	34.14	0.00	146
131	128.71	102.16	58.88	129.71	102.44	59.58	129.21	80.76	1.22	34.89	0.00	146
132	129.71	102.44	59.58	130.71	102.64	60.29	130.21	81.24	1.23	35.65	0.00	146
133	130.71	102.64	60.29	131.71	102.69	61.03	131.21	81.66	1.24	36.42	0.00	146
134	131.71	102.69	61.03	132.71	102.75	61.79	132.21	82.07	1.26	37.19	0.00	146
135	132.71	102.75	61.79	133.71	102.62	62.57	133.21	82.43	1.27	37.97	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
136	133.71	102.62	62.57	134.71	102.64	63.37	134.21	82.80	1.28	38.76	0.00	146
137	134.71	102.64	63.37	135.71	102.67	64.20	135.21	83.22	1.30	39.56	0.00	146
138	135.71	102.67	64.20	136.71	102.96	65.05	136.21	83.72	1.31	40.37	0.00	146
139	136.71	102.96	65.05	137.71	103.01	65.93	137.21	84.24	1.33	41.19	0.00	146
140	137.71	103.01	65.93	138.56	103.19	66.69	138.13	84.70	1.14	41.95	0.00	146
141	138.56	103.19	66.69	138.71	103.22	66.83	138.63	84.98	0.20	42.37	0.00	146
142	138.71	103.22	66.83	139.71	104.22	67.75	139.21	85.51	1.36	42.85	0.00	146
143	139.71	104.22	67.75	140.71	104.53	68.71	140.21	86.30	1.38	43.70	0.00	146
144	140.71	104.53	68.71	141.10	104.78	69.09	140.90	86.78	0.54	44.30	0.00	146
145	141.10	104.78	69.09	141.71	105.18	69.70	141.40	87.19	0.86	44.74	0.00	146
146	141.71	105.18	69.70	142.71	105.41	70.71	142.21	87.75	1.43	45.44	0.00	146
147	142.71	105.41	70.71	143.71	105.67	71.76	143.21	88.39	1.45	46.33	0.00	146
148	143.71	105.67	71.76	144.71	105.79	72.84	144.21	89.01	1.47	47.24	0.00	146
149	144.71	105.79	72.84	145.71	105.86	73.96	145.21	89.61	1.50	48.16	0.00	146
150	145.71	105.86	73.96	146.71	105.91	75.11	146.21	90.21	1.53	49.10	0.00	146
151	146.71	105.91	75.11	147.71	106.02	76.30	147.21	90.83	1.56	50.05	0.00	146
152	147.71	106.02	76.30	148.71	106.05	77.54	148.21	91.48	1.59	51.03	0.00	146
153	148.71	106.05	77.54	149.71	106.03	78.82	149.21	92.11	1.63	52.02	0.00	146
154	149.71	106.03	78.82	150.71	106.13	80.15	150.21	92.78	1.66	53.04	0.00	146
155	150.71	106.13	80.15	151.71	106.26	81.53	151.21	93.52	1.70	54.08	0.00	146
156	151.71	106.26	81.53	152.71	106.40	82.97	152.21	94.29	1.75	55.15	0.00	146
157	152.71	106.40	82.97	153.71	106.46	84.46	153.20	95.07	1.80	56.25	0.00	146
158	153.71	106.46	84.46	154.71	106.59	86.03	154.20	95.88	1.86	57.39	0.00	146
159	154.71	106.59	86.03	155.71	106.83	87.66	155.20	96.77	1.92	58.55	0.00	146
160	155.71	106.83	87.66	160.20	107.32	96.14	157.76	99.29	9.59	62.12	0.00	146
161	160.20	107.32	96.14	164.68	107.81	107.81	161.69	103.75	12.50	68.96	0.00	103

Tabella 5-14 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 03

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	226.60	826.71	2352.75	448.02	0.00	0.00	2111.42	0.00	0.00	
2	541.70	717.55	2490.30	459.64	0.00	2111.42	4208.97	0.00	0.00	
3	192.64	190.30	715.88	132.60	0.00	4208.97	4791.83	0.00	0.00	
4	211.62	190.29	729.25	130.48	0.00	4791.83	5373.78	0.00	0.00	
5	11.07	9.51	36.80	6.47	0.00	5373.78	5402.93	0.00	0.00	
6	219.05	180.72	705.15	122.01	0.00	5402.93	5956.03	0.00	0.00	
7	248.05	190.18	753.95	126.60	0.00	5956.03	6534.10	0.00	0.00	
8	265.37	190.17	765.25	124.83	0.00	6534.10	7109.24	0.00	0.00	
9	282.28	190.12	776.03	123.16	0.00	7109.24	7682.82	0.00	0.00	
10	298.79	190.01	786.33	121.58	0.00	7682.82	8252.44	0.00	0.00	
11	314.93	189.86	796.17	120.08	0.00	8252.44	8819.54	0.00	0.00	
12	330.71	189.66	805.59	118.66	0.00	8819.54	9381.78	0.00	0.00	
13	345.96	189.51	814.50	117.31	0.00	9381.78	9936.83	0.00	0.00	
14	360.61	189.45	822.87	116.03	0.00	9936.83	10484.23	0.00	0.00	
15	375.13	189.25	831.02	114.81	0.00	10484.23	11033.17	0.00	0.00	
16	390.07	188.61	839.34	113.65	0.00	11033.17	11585.35	0.00	0.00	
17	406.38	187.03	848.45	112.54	0.00	11585.35	12157.48	0.00	0.00	
18	422.40	185.41	857.25	111.48	0.00	12157.48	12698.71	0.00	0.00	
19	437.43	184.13	865.29	110.48	0.00	12698.71	13243.97	0.00	0.00	
20	452.74	182.50	873.42	109.51	0.00	13243.97	13783.74	0.00	0.00	
21	467.17	181.17	880.89	108.59	0.00	13783.74	14303.13	0.00	0.00	
22	481.26	179.84	888.06	107.71	0.00	14303.13	14827.24	0.00	0.00	
23	495.57	178.22	895.31	106.87	0.00	14827.24	15341.41	0.00	0.00	
24	509.57	176.59	902.28	106.07	0.00	15341.41	15848.94	0.00	0.00	
25	522.71	175.26	908.67	105.30	0.00	15848.94	16335.53	0.00	0.00	
26	535.63	173.89	914.86	104.56	0.00	16335.53	16827.23	0.00	0.00	
27	548.44	172.41	920.94	103.85	0.00	16827.23	17299.49	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
28	560.69	171.08	926.64	103.17	0.00	17299.49	17767.66	0.00	0.00	
29	572.65	169.75	932.12	102.52	0.00	17767.66	18221.30	0.00	0.00	
30	584.51	168.32	937.51	101.90	0.00	18221.30	18673.81	0.00	0.00	
31	597.57	166.11	943.57	101.31	0.00	18673.81	19134.83	0.00	0.00	
32	610.16	163.99	949.33	100.73	0.00	19134.83	19564.37	0.00	0.00	
33	620.94	162.71	953.99	100.18	0.00	19564.37	19977.31	0.00	0.00	
34	631.82	161.24	958.69	99.66	0.00	19977.31	20393.01	0.00	0.00	
35	642.72	159.61	963.38	99.16	0.00	20393.01	20790.31	0.00	0.00	
36	652.55	158.43	967.43	98.67	0.00	20790.31	21170.83	0.00	0.00	
37	663.22	156.66	971.96	98.21	0.00	21170.83	21565.92	0.00	0.00	
38	673.64	154.89	976.34	97.77	0.00	21565.92	21925.32	0.00	0.00	
39	683.37	153.36	980.30	97.34	0.00	21925.32	22290.87	0.00	0.00	
40	693.31	151.59	984.38	96.94	0.00	22290.87	22636.30	0.00	0.00	
41	703.01	149.82	988.32	96.55	0.00	22636.30	22979.71	0.00	0.00	
42	712.67	147.95	992.23	96.18	0.00	22979.71	23305.96	0.00	0.00	
43	725.75	144.12	998.06	95.82	0.00	23305.96	23684.14	0.00	0.00	
44	739.33	139.90	1004.16	95.48	0.00	23684.14	23998.43	0.00	0.00	
45	746.56	138.96	1006.69	95.16	0.00	23998.43	24258.23	0.00	0.00	
46	752.38	138.66	1008.45	94.85	0.00	24258.23	24531.77	0.00	0.00	
47	761.54	136.45	1012.07	94.56	0.00	24531.77	24822.42	0.00	0.00	
48	772.50	133.15	1016.69	94.28	0.00	24822.42	25101.96	0.00	0.00	
49	783.32	129.81	1021.24	94.02	0.00	25101.96	25368.91	0.00	0.00	
50	794.30	126.28	1025.87	93.77	0.00	25368.91	25628.14	0.00	0.00	
51	805.16	122.69	1030.43	93.53	0.00	25628.14	25870.68	0.00	0.00	
52	815.44	119.30	1034.67	93.31	0.00	25870.68	26099.10	0.00	0.00	
53	825.69	115.82	1038.91	93.10	0.00	26099.10	26317.98	0.00	0.00	
54	835.08	112.67	1042.68	92.90	0.00	26317.98	26512.55	0.00	0.00	
55	842.54	110.46	1045.41	92.71	0.00	26512.55	26684.71	0.00	0.00	
56	851.43	107.36	1048.93	92.54	0.00	26684.71	26873.30	0.00	0.00	
57	859.47	104.61	1052.00	92.38	0.00	26873.30	27013.06	0.00	0.00	
58	863.29	104.02	1052.79	92.23	0.00	27013.06	27130.55	0.00	0.00	
59	865.80	104.01	1052.90	92.09	0.00	27130.55	27234.22	0.00	0.00	
60	869.57	103.22	1053.71	91.96	0.00	27234.22	27344.66	0.00	0.00	
61	874.33	101.79	1055.07	91.85	0.00	27344.66	27437.84	0.00	0.00	
62	500.13	57.54	601.82	52.31	0.00	27437.84	27483.73	0.00	0.00	
63	378.03	43.22	454.15	39.44	0.00	27483.73	27516.01	0.00	0.00	
64	881.33	99.97	1056.50	91.65	0.00	27516.01	27580.28	0.00	0.00	
65	884.02	99.32	1056.81	91.57	0.00	27580.28	27631.73	0.00	0.00	
66	886.79	98.53	1057.18	91.50	0.00	27631.73	27675.27	0.00	0.00	
67	889.27	97.79	1057.41	91.44	0.00	27675.27	27702.08	0.00	0.00	
68	891.18	97.25	1057.36	91.39	0.00	27702.08	27718.13	0.00	0.00	
69	892.90	96.70	1057.22	91.35	0.00	27718.13	27721.50	0.00	0.00	
70	894.51	96.11	1057.04	91.32	0.00	27721.50	27715.09	0.00	0.00	
71	895.92	95.51	1056.77	91.31	0.00	27715.09	27695.10	0.00	0.00	
72	897.41	94.77	1056.57	91.30	0.00	27695.10	27668.17	0.00	0.00	
73	898.70	94.03	1056.27	91.31	0.00	27668.17	27624.87	0.00	0.00	
74	899.33	93.53	1055.64	91.32	0.00	27624.87	27570.04	0.00	0.00	
75	899.95	92.94	1055.02	91.35	0.00	27570.04	27505.56	0.00	0.00	
76	900.28	92.39	1054.26	91.38	0.00	27505.56	27426.84	0.00	0.00	
77	900.04	92.04	1053.21	91.43	0.00	27426.84	27335.89	0.00	0.00	
78	899.88	91.55	1052.22	91.49	0.00	27335.89	27237.28	0.00	0.00	
79	900.53	90.51	1051.68	91.56	0.00	27237.28	27133.51	0.00	0.00	
80	900.98	89.48	1051.04	91.64	0.00	27133.51	27011.95	0.00	0.00	
81	900.68	88.74	1050.01	91.73	0.00	27011.95	26880.01	0.00	0.00	
82	899.91	88.14	1048.74	91.83	0.00	26880.01	26733.38	0.00	0.00	
83	899.29	87.35	1047.56	91.94	0.00	26733.38	26582.61	0.00	0.00	
84	898.48	86.56	1046.29	92.07	0.00	26582.61	26413.76	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
85	896.83	86.11	1044.57	92.21	0.00	26413.76	26234.93	0.00	0.00	
86	411.99	39.43	479.94	42.46	0.00	26234.93	26149.63	0.00	0.00	
87	483.14	46.15	562.91	49.89	0.00	26149.63	26045.29	0.00	0.00	
88	894.18	84.53	1041.51	92.51	0.00	26045.29	25854.81	0.00	0.00	
89	893.10	83.45	1040.12	92.68	0.00	25854.81	25643.26	0.00	0.00	
90	890.90	82.85	1038.12	92.87	0.00	25643.26	25422.78	0.00	0.00	
91	888.67	82.16	1036.11	93.06	0.00	25422.78	25191.74	0.00	0.00	
92	886.41	81.37	1034.09	93.27	0.00	25191.74	24951.80	0.00	0.00	
93	884.31	80.38	1032.15	93.49	0.00	24951.80	24702.93	0.00	0.00	
94	884.20	78.22	1031.30	93.73	0.00	24702.93	24460.07	0.00	0.00	
95	886.52	74.63	1031.81	93.98	0.00	24460.07	24209.65	0.00	0.00	
96	133.17	10.89	154.81	14.12	0.00	24209.65	24168.06	0.00	0.00	
97	753.88	61.02	876.51	80.12	0.00	24168.06	23929.77	0.00	0.00	
98	890.88	67.27	1032.68	94.52	0.00	23929.77	23678.81	0.00	0.00	
99	895.85	61.92	1034.68	94.81	0.00	23678.81	23382.16	0.00	0.00	
100	895.83	59.12	1033.92	95.11	0.00	23382.16	23070.71	0.00	0.00	
101	885.13	56.58	1021.86	94.48	0.00	23070.71	22744.90	0.00	0.00	
102	891.53	55.48	1030.00	95.76	0.00	22744.90	22408.73	0.00	0.00	
103	889.37	53.46	1028.03	96.12	0.00	22408.73	22062.49	0.00	0.00	
104	888.82	50.46	1026.94	96.48	0.00	22062.49	21714.52	0.00	0.00	
105	97.82	5.32	112.95	10.64	0.00	21714.52	21674.79	0.00	0.00	
106	791.09	41.68	913.28	86.23	0.00	21674.79	21350.05	0.00	0.00	
107	890.30	42.70	1026.24	97.27	0.00	21350.05	20983.63	0.00	0.00	
108	890.86	38.73	1025.79	97.69	0.00	20983.63	20591.97	0.00	0.00	
109	889.72	35.53	1024.35	98.13	0.00	20591.97	20194.44	0.00	0.00	
110	891.35	30.72	1024.51	98.59	0.00	20194.44	19789.14	0.00	0.00	
111	891.00	26.84	1023.50	99.07	0.00	19789.14	19361.03	0.00	0.00	
112	798.58	22.34	918.53	89.59	0.00	19361.03	18967.69	0.00	0.00	
113	88.54	2.37	101.91	9.98	0.00	18967.69	18923.68	0.00	0.00	
114	884.58	21.73	1018.12	100.09	0.00	18923.68	18478.97	0.00	0.00	
115	441.43	9.66	508.24	50.25	0.00	18478.97	18251.25	0.00	0.00	
116	440.40	9.07	507.42	50.39	0.00	18251.25	18021.14	0.00	0.00	
117	875.66	17.40	1011.11	101.21	0.00	18021.14	17551.21	0.00	0.00	
118	867.05	17.25	1005.05	101.80	0.00	17551.21	17073.73	0.00	0.00	
119	857.79	17.29	998.53	102.42	0.00	17073.73	16589.49	0.00	0.00	
120	850.00	16.40	992.80	103.06	0.00	16589.49	16101.52	0.00	0.00	
121	842.29	15.32	987.02	103.73	0.00	16101.52	15604.01	0.00	0.00	
122	625.65	11.23	735.81	78.26	0.00	15604.01	15227.16	0.00	0.00	
123	207.39	3.68	244.41	26.18	0.00	15227.16	15100.75	0.00	0.00	
124	825.80	13.25	974.54	105.17	0.00	15100.75	14593.85	0.00	0.00	
125	819.03	11.18	969.04	105.93	0.00	14593.85	14077.77	0.00	0.00	
126	811.30	9.46	962.84	106.73	0.00	14077.77	13556.17	0.00	0.00	
127	805.10	6.76	957.47	107.57	0.00	13556.17	13028.03	0.00	0.00	
128	800.85	2.83	953.23	108.44	0.00	13028.03	12491.54	0.00	0.00	
129	796.18	0.04	949.92	109.35	0.00	12491.54	11945.91	0.00	0.00	
130	792.55	0.00	951.38	110.31	0.00	11945.91	11389.71	0.00	0.00	
131	788.20	0.00	952.17	111.31	0.00	11389.71	10823.39	0.00	0.00	
132	779.65	0.00	947.62	112.36	0.00	10823.39	10250.65	0.00	0.00	
133	768.62	0.00	939.88	113.46	0.00	10250.65	9673.85	0.00	0.00	
134	755.94	0.00	929.94	114.61	0.00	9673.85	9094.71	0.00	0.00	
135	741.21	0.00	917.23	115.82	0.00	9094.71	8515.44	0.00	0.00	
136	725.72	0.00	903.37	117.09	0.00	8515.44	7937.16	0.00	0.00	
137	711.27	14.20	910.60	118.42	0.00	7937.16	7344.54	0.00	0.00	
138	698.86	20.00	909.25	119.83	0.00	7344.54	6743.90	0.00	0.00	
139	686.19	20.00	899.45	121.32	0.00	6743.90	6141.69	0.00	0.00	
140	572.30	0.00	730.87	104.35	0.00	6141.69	5648.69	0.00	0.00	
141	100.05	0.00	128.21	18.54	0.00	5648.69	5561.65	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
142	666.66	0.00	859.00	124.54	0.00	5561.65	4973.17	0.00	0.00	
143	661.41	0.00	859.78	126.30	0.00	4973.17	4375.63	0.00	0.00	
144	255.18	0.00	333.56	49.75	0.00	4375.63	4141.69	0.00	0.00	
145	397.26	0.00	521.63	78.40	0.00	4141.69	3773.30	0.00	0.00	
146	642.18	0.00	848.73	130.13	0.00	3773.30	3167.79	0.00	0.00	
147	627.79	0.00	835.85	132.23	0.00	3167.79	2564.48	0.00	0.00	
148	611.78	0.00	820.23	134.47	0.00	2564.48	1965.90	0.00	0.00	
149	593.41	0.00	800.47	136.87	0.00	1965.90	1375.81	0.00	0.00	
150	573.73	0.00	778.04	139.44	0.00	1375.81	796.83	0.00	0.00	
151	553.70	0.00	754.36	142.19	0.00	796.83	230.46	0.00	0.00	
152	532.75	0.00	728.30	145.16	0.00	230.46	-320.80	0.00	0.00	
153	509.81	0.00	697.79	148.37	0.00	-320.80	-852.60	0.00	0.00	
154	486.66	0.00	665.61	151.85	0.00	-852.60	-1362.91	0.00	0.00	
155	463.97	0.00	632.75	155.64	0.00	-1362.91	-1850.55	0.00	0.00	
156	440.67	0.00	596.99	159.79	0.00	-1850.55	-2312.35	0.00	0.00	
157	415.66	0.00	555.85	164.35	0.00	-2312.35	-2742.81	0.00	0.00	
158	389.41	0.00	509.53	169.39	0.00	-2742.81	-3136.50	0.00	0.00	
159	363.53	0.00	460.56	175.01	0.00	-3136.50	-3490.22	0.00	0.00	
160	1245.41	0.00	1198.67	875.78	0.00	-3490.22	-4318.71	0.00	0.00	
161	458.71	0.00	-720.13	803.63	0.00	-4318.71	-3423.85	0.00	0.00	

Tabella 5-15 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 03

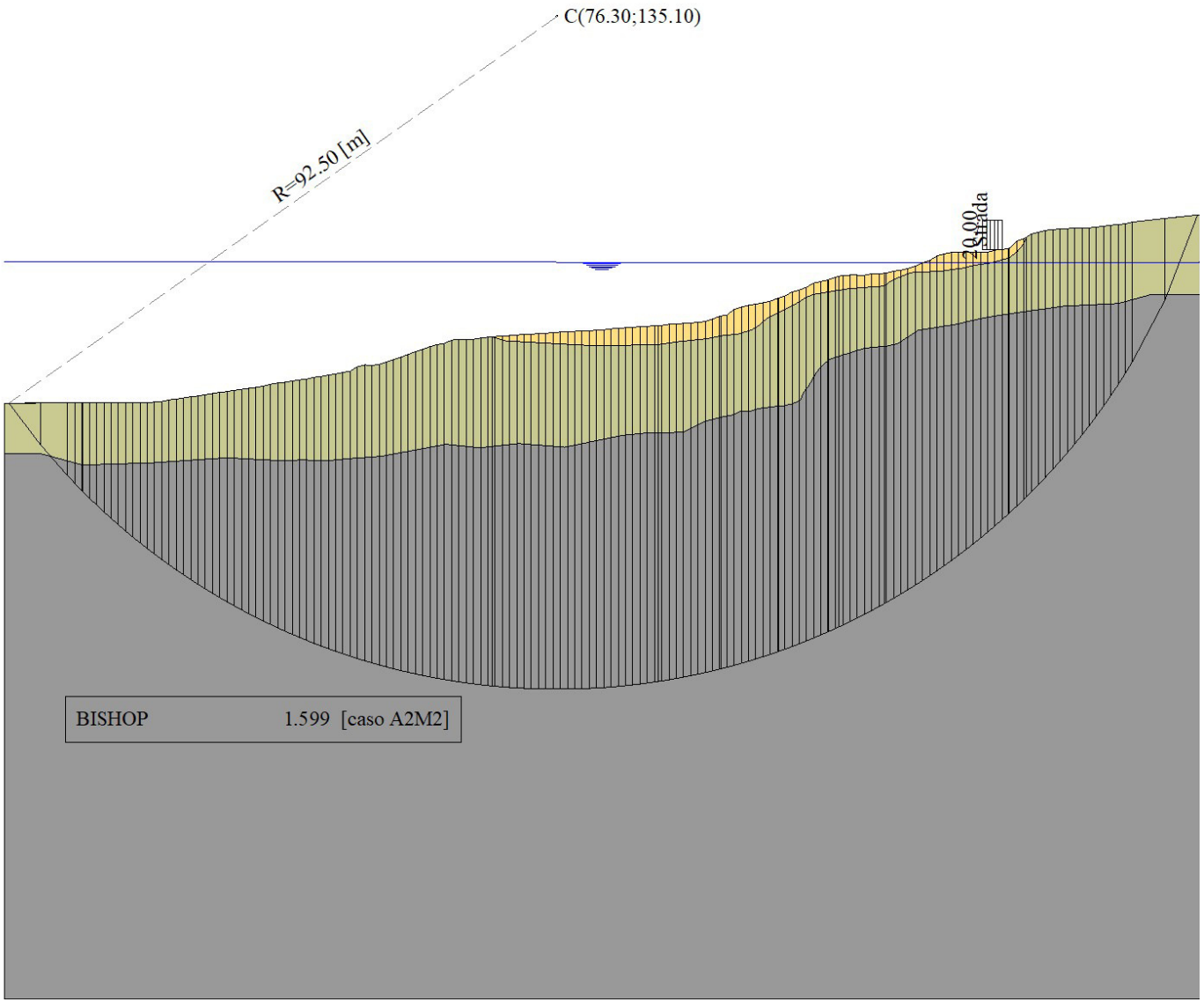

Figura 5-3 – Superficie critica (1) della sezione VS_03 per la verifica di stabilità 03

5.6 VERIFICA DI STABILITÀ 04

5.6.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate in condizioni **statiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni totali**
Presenza di carichi distribuiti

5.6.2 RISULTATI ANALISI

Numero di superfici analizzate	70749
Coefficiente di sicurezza minimo	1.634
Superficie con coefficiente di sicurezza minimo	1

5.6.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO L'ALTO

Numero di strisce	161	
Coordinate del centro	X[m]= 78.30	Y[m]= 131.10
Raggio del cerchio	R[m]= 89.50	
Intersezione a valle con il profilo topografico	X_v[m]= 3.51	Y_v[m]= 81.93
Intersezione a monte con il profilo topografico	X_m[m]= 164.72	Y_m[m]= 107.81
Coefficiente di sicurezza	F_S= 1.634	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	3.51	81.93	81.93	8.72	81.94	74.81	6.98	79.56	8.83	-53.85	0.00	71
2	8.72	81.94	74.81	9.72	81.94	73.59	9.23	78.06	1.57	-50.52	0.00	75
3	9.72	81.94	73.59	10.72	81.94	72.42	10.23	77.47	1.54	-49.53	0.00	104
4	10.72	81.94	72.42	10.77	81.94	72.36	10.75	77.17	0.08	-49.01	0.00	104
5	10.77	81.94	72.36	11.72	81.95	71.29	11.25	76.88	1.43	-48.52	0.00	104
6	11.72	81.95	71.29	12.72	81.95	70.19	12.23	76.34	1.48	-47.59	0.00	104
7	12.72	81.95	70.19	13.72	81.95	69.13	13.23	75.80	1.46	-46.65	0.00	104
8	13.72	81.95	69.13	14.72	81.96	68.11	14.23	75.29	1.43	-45.73	0.00	104
9	14.72	81.96	68.11	15.72	81.97	67.12	15.23	74.79	1.41	-44.82	0.00	104
10	15.72	81.97	67.12	16.72	81.99	66.15	16.23	74.30	1.39	-43.92	0.00	104
11	16.72	81.99	66.15	17.72	82.01	65.22	17.22	73.84	1.37	-43.04	0.00	104
12	17.72	82.01	65.22	18.72	82.02	64.31	18.22	73.39	1.35	-42.17	0.00	104
13	18.72	82.02	64.31	19.72	82.02	63.43	19.22	72.95	1.33	-41.31	0.00	104
14	19.72	82.02	63.43	20.72	82.06	62.58	20.22	72.52	1.31	-40.46	0.00	104
15	20.72	82.06	62.58	21.72	82.15	61.75	21.22	72.13	1.30	-39.63	0.00	104
16	21.72	82.15	61.75	22.72	82.38	60.95	22.22	71.81	1.28	-38.80	0.00	104
17	22.72	82.38	60.95	23.72	82.48	60.17	23.22	71.49	1.27	-37.98	0.00	104
18	23.72	82.48	60.17	24.72	82.64	59.41	24.22	71.17	1.26	-37.18	0.00	104
19	24.72	82.64	59.41	25.72	82.81	58.67	25.22	70.88	1.24	-36.38	0.00	104
20	25.72	82.81	58.67	26.72	82.91	57.96	26.22	70.59	1.23	-35.59	0.00	104
21	26.72	82.91	57.96	27.72	83.08	57.26	27.22	70.30	1.22	-34.80	0.00	104

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
22	27.72	83.08	57.26	28.72	83.24	56.59	28.22	70.04	1.21	-34.03	0.00	104
23	28.72	83.24	56.59	29.72	83.41	55.93	29.22	69.79	1.20	-33.26	0.00	104
24	29.72	83.41	55.93	30.72	83.51	55.30	30.22	69.54	1.19	-32.49	0.00	104
25	30.72	83.51	55.30	31.72	83.69	54.68	31.22	69.29	1.18	-31.74	0.00	104
26	31.72	83.69	54.68	32.72	83.81	54.08	32.22	69.06	1.17	-30.99	0.00	104
27	32.72	83.81	54.08	33.72	83.96	53.49	33.22	68.83	1.16	-30.24	0.00	104
28	33.72	83.96	53.49	34.72	84.08	52.93	34.22	68.61	1.15	-29.51	0.00	104
29	34.72	84.08	52.93	35.72	84.25	52.38	35.22	68.41	1.14	-28.77	0.00	104
30	35.72	84.25	52.38	36.72	84.53	51.85	36.22	68.25	1.13	-28.05	0.00	104
31	36.72	84.53	51.85	37.72	84.68	51.33	37.22	68.10	1.13	-27.32	0.00	104
32	37.72	84.68	51.33	38.72	84.79	50.83	38.22	67.91	1.12	-26.60	0.00	104
33	38.72	84.79	50.83	39.72	84.98	50.34	39.22	67.73	1.11	-25.89	0.00	104
34	39.72	84.98	50.34	40.72	85.12	49.87	40.22	67.58	1.11	-25.18	0.00	104
35	40.72	85.12	49.87	41.72	85.22	49.42	41.22	67.41	1.10	-24.48	0.00	104
36	41.72	85.22	49.42	42.72	85.48	48.98	42.22	67.27	1.09	-23.77	0.00	104
37	42.72	85.48	48.98	43.72	85.58	48.55	43.22	67.15	1.09	-23.08	0.00	104
38	43.72	85.58	48.55	44.72	85.79	48.14	44.22	67.01	1.08	-22.38	0.00	104
39	44.72	85.79	48.14	45.72	85.94	47.74	45.22	66.90	1.08	-21.69	0.00	104
40	45.72	85.94	47.74	46.72	86.15	47.36	46.22	66.80	1.07	-21.00	0.00	104
41	46.72	86.15	47.36	47.72	86.32	46.99	47.22	66.70	1.07	-20.32	0.00	104
42	47.72	86.32	46.99	48.72	86.93	46.63	48.22	66.72	1.06	-19.64	0.00	104
43	48.72	86.93	46.63	49.72	87.18	46.29	49.22	66.76	1.06	-18.96	0.00	104
44	49.72	87.18	46.29	50.72	87.12	45.96	50.22	66.64	1.05	-18.29	0.00	104
45	50.72	87.12	45.96	51.72	87.24	45.64	51.22	66.49	1.05	-17.61	0.00	104
46	51.72	87.24	45.64	52.72	87.57	45.33	52.22	66.45	1.05	-16.94	0.00	104
47	52.72	87.57	45.33	53.72	87.91	45.04	53.22	66.46	1.04	-16.27	0.00	104
48	53.72	87.91	45.04	54.72	88.25	44.76	54.22	66.49	1.04	-15.61	0.00	104
49	54.72	88.25	44.76	55.72	88.63	44.50	55.22	66.53	1.04	-14.94	0.00	104
50	55.72	88.63	44.50	56.72	88.98	44.24	56.22	66.59	1.03	-14.28	0.00	104
51	56.72	88.98	44.24	57.72	89.32	44.00	57.22	66.63	1.03	-13.62	0.00	104
52	57.72	89.32	44.00	58.72	89.69	43.77	58.22	66.69	1.03	-12.97	0.00	104
53	58.72	89.69	43.77	59.72	89.96	43.55	59.22	66.74	1.02	-12.31	0.00	104
54	59.72	89.96	43.55	60.72	90.14	43.34	60.22	66.75	1.02	-11.65	0.00	104
55	60.72	90.14	43.34	61.72	90.59	43.15	61.22	66.81	1.02	-11.00	0.00	104
56	61.72	90.59	43.15	62.72	90.70	42.97	62.22	66.85	1.02	-10.35	0.00	104
57	62.72	90.70	42.97	63.72	90.71	42.80	63.22	66.79	1.01	-9.70	0.00	104
58	63.72	90.71	42.80	64.72	90.70	42.64	64.22	66.71	1.01	-9.05	0.00	104
59	64.72	90.70	42.64	65.72	90.87	42.49	65.22	66.67	1.01	-8.40	0.00	104
60	65.72	90.87	42.49	66.72	90.99	42.35	66.22	66.68	1.01	-7.76	0.00	104
61	66.72	90.99	42.35	67.29	91.04	42.28	67.01	66.67	0.57	-7.25	0.00	104
62	67.29	91.04	42.28	67.72	91.08	42.23	67.51	66.66	0.43	-6.93	0.00	104
63	67.72	91.08	42.23	68.72	91.15	42.11	68.22	66.64	1.01	-6.47	0.00	104
64	68.72	91.15	42.11	69.72	91.21	42.01	69.22	66.62	1.01	-5.82	0.00	104
65	69.72	91.21	42.01	70.72	91.31	41.92	70.22	66.61	1.00	-5.18	0.00	104
66	70.72	91.31	41.92	71.72	91.36	41.84	71.22	66.61	1.00	-4.54	0.00	104
67	71.72	91.36	41.84	72.72	91.42	41.77	72.22	66.60	1.00	-3.90	0.00	104
68	72.72	91.42	41.77	73.72	91.47	41.72	73.22	66.60	1.00	-3.25	0.00	104
69	73.72	91.47	41.72	74.72	91.54	41.67	74.22	66.60	1.00	-2.61	0.00	104
70	74.72	91.54	41.67	75.72	91.59	41.64	75.22	66.61	1.00	-1.97	0.00	104
71	75.72	91.59	41.64	76.72	91.69	41.61	76.22	66.63	1.00	-1.33	0.00	104
72	76.72	91.69	41.61	77.72	91.74	41.60	77.22	66.66	1.00	-0.69	0.00	104
73	77.72	91.74	41.60	78.72	91.79	41.60	78.22	66.68	1.00	-0.05	0.00	104
74	78.72	91.79	41.60	79.72	91.86	41.61	79.22	66.72	1.00	0.59	0.00	104
75	79.72	91.86	41.61	80.72	91.90	41.63	80.22	66.75	1.00	1.23	0.00	104
76	80.72	91.90	41.63	81.72	91.93	41.67	81.22	66.78	1.00	1.87	0.00	104
77	81.72	91.93	41.67	82.72	92.00	41.71	82.22	66.83	1.00	2.51	0.00	104
78	82.72	92.00	41.71	83.72	92.14	41.76	83.22	66.90	1.00	3.15	0.00	104

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
79	83.72	92.14	41.76	84.72	92.21	41.83	84.22	66.99	1.00	3.79	0.00	104
80	84.72	92.21	41.83	85.72	92.29	41.91	85.22	67.06	1.00	4.43	0.00	104
81	85.72	92.29	41.91	86.72	92.33	42.00	86.22	67.13	1.00	5.08	0.00	104
82	86.72	92.33	42.00	87.72	92.45	42.10	87.22	67.22	1.01	5.72	0.00	104
83	87.72	92.45	42.10	88.72	92.49	42.21	88.22	67.31	1.01	6.36	0.00	104
84	88.72	92.49	42.21	89.72	92.54	42.33	89.22	67.39	1.01	7.01	0.00	104
85	89.72	92.54	42.33	90.18	92.57	42.39	89.95	67.46	0.46	7.48	0.00	104
86	90.18	92.57	42.39	90.72	92.59	42.47	90.45	67.50	0.55	7.80	0.00	104
87	90.72	92.59	42.47	91.72	92.76	42.61	91.22	67.61	1.01	8.30	0.00	104
88	91.72	92.76	42.61	92.72	92.81	42.77	92.22	67.74	1.01	8.95	0.00	104
89	92.72	92.81	42.77	93.72	92.88	42.94	93.22	67.85	1.01	9.60	0.00	104
90	93.72	92.88	42.94	94.72	92.95	43.12	94.22	67.97	1.02	10.25	0.00	104
91	94.72	92.95	43.12	95.72	93.04	43.31	95.22	68.11	1.02	10.90	0.00	104
92	95.72	93.04	43.31	96.72	93.15	43.52	96.22	68.25	1.02	11.55	0.00	104
93	96.72	93.15	43.52	97.72	93.48	43.73	97.22	68.47	1.02	12.20	0.00	104
94	97.72	93.48	43.73	98.72	93.88	43.96	98.22	68.76	1.03	12.86	0.00	104
95	98.72	93.88	43.96	98.87	93.90	44.00	98.79	68.93	0.15	13.24	0.00	104
96	98.87	93.90	44.00	99.72	94.04	44.20	99.29	69.03	0.87	13.57	0.00	104
97	99.72	94.04	44.20	100.72	94.82	44.45	100.22	69.38	1.03	14.18	0.00	104
98	100.72	94.82	44.45	101.72	95.13	44.72	101.22	69.78	1.03	14.84	0.00	104
99	101.72	95.13	44.72	102.72	95.39	45.00	102.22	70.06	1.04	15.50	0.00	104
100	102.72	95.39	45.00	103.71	95.53	45.28	103.21	70.30	1.03	16.16	0.00	104
101	103.71	95.53	45.28	104.71	95.73	45.59	104.21	70.53	1.04	16.83	0.00	104
102	104.71	95.73	45.59	105.71	95.94	45.90	105.21	70.79	1.05	17.50	0.00	104
103	105.71	95.94	45.90	106.71	96.34	46.23	106.21	71.10	1.05	18.17	0.00	104
104	106.71	96.34	46.23	106.82	96.37	46.27	106.76	71.30	0.12	18.54	0.00	104
105	106.82	96.37	46.27	107.71	96.65	46.57	107.26	71.46	0.94	18.88	0.00	104
106	107.71	96.65	46.57	108.71	97.21	46.92	108.21	71.84	1.06	19.52	0.00	104
107	108.71	97.21	46.92	109.71	97.46	47.29	109.21	72.22	1.07	20.20	0.00	104
108	109.71	97.46	47.29	110.71	97.86	47.67	110.21	72.57	1.07	20.89	0.00	104
109	110.71	97.86	47.67	111.71	98.44	48.07	111.21	73.01	1.08	21.57	0.00	104
110	111.71	98.44	48.07	112.71	98.65	48.48	112.21	73.41	1.08	22.26	0.00	104
111	112.71	98.65	48.48	113.61	98.85	48.86	113.16	73.71	0.98	22.92	0.00	104
112	113.61	98.85	48.86	113.71	98.88	48.90	113.66	73.87	0.11	23.27	0.00	104
113	113.71	98.88	48.90	114.71	99.25	49.34	114.21	74.09	1.09	23.66	0.00	104
114	114.71	99.25	49.34	115.21	99.37	49.57	114.96	74.38	0.55	24.18	0.00	104
115	115.21	99.37	49.57	115.71	99.49	49.79	115.46	74.55	0.55	24.53	0.00	104
116	115.71	99.49	49.79	116.71	99.52	50.26	116.21	74.77	1.10	25.06	0.00	104
117	116.71	99.52	50.26	117.71	99.52	50.74	117.21	75.01	1.11	25.77	0.00	104
118	117.71	99.52	50.74	118.71	99.51	51.24	118.21	75.25	1.12	26.48	0.00	104
119	118.71	99.51	51.24	119.71	99.70	51.76	119.21	75.55	1.12	27.20	0.00	104
120	119.71	99.70	51.76	120.71	99.73	52.29	120.21	75.87	1.13	27.92	0.00	104
121	120.71	99.73	52.29	121.46	99.77	52.69	121.08	76.12	0.85	28.56	0.00	104
122	121.46	99.77	52.69	121.71	99.78	52.83	121.58	76.27	0.29	28.92	0.00	104
123	121.71	99.78	52.83	122.71	100.07	53.40	122.21	76.52	1.15	29.38	0.00	104
124	122.71	100.07	53.40	123.71	100.20	53.98	123.21	76.91	1.16	30.12	0.00	104
125	123.71	100.20	53.98	124.71	100.42	54.57	124.21	77.29	1.16	30.86	0.00	104
126	124.71	100.42	54.57	125.71	100.75	55.19	125.21	77.73	1.17	31.61	0.00	104
127	125.71	100.75	55.19	126.71	101.22	55.82	126.21	78.25	1.18	32.37	0.00	104
128	126.71	101.22	55.82	126.80	101.25	55.88	126.75	78.54	0.11	32.78	0.00	104
129	126.80	101.25	55.88	127.71	101.54	56.47	127.25	78.79	1.09	33.16	0.00	104
130	127.71	101.54	56.47	128.71	102.16	57.15	128.21	79.33	1.20	33.89	0.00	104
131	128.71	102.16	57.15	129.71	102.44	57.84	129.21	79.90	1.22	34.67	0.00	104
132	129.71	102.44	57.84	130.71	102.64	58.55	130.21	80.37	1.23	35.45	0.00	104
133	130.71	102.64	58.55	131.71	102.69	59.28	131.21	80.79	1.24	36.24	0.00	104
134	131.71	102.69	59.28	132.71	102.75	60.04	132.21	81.19	1.25	37.04	0.00	104
135	132.71	102.75	60.04	133.71	102.62	60.81	133.21	81.56	1.27	37.85	0.00	104

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
136	133.71	102.62	60.81	134.71	102.64	61.62	134.21	81.92	1.28	38.66	0.00	104
137	134.71	102.64	61.62	135.71	102.67	62.44	135.21	82.34	1.30	39.49	0.00	104
138	135.71	102.67	62.44	136.71	102.96	63.29	136.21	82.84	1.31	40.32	0.00	104
139	136.71	102.96	63.29	137.71	103.01	64.16	137.21	83.35	1.33	41.17	0.00	104
140	137.71	103.01	64.16	138.56	103.19	64.93	138.13	83.82	1.14	41.96	0.00	104
141	138.56	103.19	64.93	138.71	103.22	65.06	138.63	84.10	0.20	42.39	0.00	104
142	138.71	103.22	65.06	139.71	104.22	65.99	139.21	84.62	1.36	42.89	0.00	104
143	139.71	104.22	65.99	140.71	104.53	66.95	140.21	85.42	1.38	43.77	0.00	104
144	140.71	104.53	66.95	141.10	104.78	67.33	140.90	85.90	0.55	44.39	0.00	104
145	141.10	104.78	67.33	141.71	105.18	67.94	141.40	86.31	0.86	44.84	0.00	104
146	141.71	105.18	67.94	142.71	105.41	68.96	142.21	86.87	1.43	45.57	0.00	104
147	142.71	105.41	68.96	143.71	105.67	70.01	143.21	87.51	1.45	46.49	0.00	104
148	143.71	105.67	70.01	144.71	105.79	71.10	144.21	88.14	1.48	47.43	0.00	104
149	144.71	105.79	71.10	145.71	105.86	72.23	145.21	88.74	1.51	48.38	0.00	104
150	145.71	105.86	72.23	146.71	105.91	73.39	146.21	89.35	1.54	49.36	0.00	104
151	146.71	105.91	73.39	147.71	106.02	74.60	147.21	89.98	1.57	50.35	0.00	104
152	147.71	106.02	74.60	148.71	106.05	75.85	148.21	90.63	1.60	51.37	0.00	104
153	148.71	106.05	75.85	149.71	106.03	77.15	149.21	91.27	1.64	52.40	0.00	104
154	149.71	106.03	77.15	150.71	106.13	78.50	150.21	91.95	1.68	53.47	0.00	104
155	150.71	106.13	78.50	151.71	106.26	79.90	151.21	92.69	1.72	54.56	0.00	104
156	151.71	106.26	79.90	152.71	106.40	81.37	152.21	93.48	1.77	55.67	0.00	104
157	152.71	106.40	81.37	153.71	106.46	82.90	153.20	94.28	1.83	56.83	0.00	104
158	153.71	106.46	82.90	154.71	106.59	84.50	154.20	95.11	1.89	58.02	0.00	104
159	154.71	106.59	84.50	155.71	106.83	86.18	155.20	96.02	1.96	59.25	0.00	104
160	155.71	106.83	86.18	160.21	107.32	95.04	157.77	98.64	9.94	63.06	0.00	104
161	160.21	107.32	95.04	164.72	107.81	107.81	161.71	103.39	13.54	70.58	0.00	76

Tabella 5-16 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 04

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	339.77	0.00	1104.11	385.78	0.00	0.00	1119.13	0.00	0.00	
2	141.64	0.00	310.80	72.50	0.00	1119.13	1405.13	0.00	0.00	
3	163.47	0.00	367.06	98.32	0.00	1405.13	1748.16	0.00	0.00	
4	8.74	0.00	18.92	4.86	0.00	1748.16	1765.63	0.00	0.00	
5	175.92	0.00	369.17	91.54	0.00	1765.63	2102.86	0.00	0.00	
6	205.11	0.00	407.73	94.63	0.00	2102.86	2467.72	0.00	0.00	
7	224.82	0.00	426.00	92.97	0.00	2467.72	2841.31	0.00	0.00	
8	243.99	0.00	443.27	91.42	0.00	2841.31	3222.51	0.00	0.00	
9	262.65	0.00	459.64	89.96	0.00	3222.51	3610.29	0.00	0.00	
10	280.83	0.00	475.19	88.60	0.00	3610.29	4003.72	0.00	0.00	
11	298.55	0.00	489.99	87.31	0.00	4003.72	4401.95	0.00	0.00	
12	315.66	0.00	503.86	86.10	0.00	4401.95	4804.01	0.00	0.00	
13	332.08	0.00	516.75	84.96	0.00	4804.01	5208.95	0.00	0.00	
14	348.29	0.00	529.32	83.88	0.00	5208.95	5616.28	0.00	0.00	
15	364.86	0.00	542.32	82.86	0.00	5616.28	6025.97	0.00	0.00	
16	382.72	0.00	556.92	81.89	0.00	6025.97	6438.76	0.00	0.00	
17	400.24	0.15	571.21	80.97	0.00	6438.76	6854.14	0.00	0.00	
18	416.70	0.15	583.90	80.09	0.00	6854.14	7270.81	0.00	0.00	
19	433.40	0.00	596.68	79.26	0.00	7270.81	7688.51	0.00	0.00	
20	449.16	0.00	608.45	78.47	0.00	7688.51	8106.39	0.00	0.00	
21	464.54	0.00	619.75	77.72	0.00	8106.39	8523.92	0.00	0.00	
22	480.09	0.00	631.26	77.00	0.00	8523.92	8940.97	0.00	0.00	
23	495.29	0.00	642.35	76.32	0.00	8940.97	9357.04	0.00	0.00	
24	509.59	0.00	652.37	75.66	0.00	9357.04	9771.33	0.00	0.00	
25	523.64	0.00	662.13	75.04	0.00	9771.33	10183.46	0.00	0.00	
26	537.54	0.00	671.75	74.44	0.00	10183.46	10593.14	0.00	0.00	
27	550.84	0.00	680.71	73.87	0.00	10593.14	10999.83	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
28	563.83	0.00	689.35	73.33	0.00	10999.83	11403.16	0.00	0.00	
29	576.68	0.00	697.90	72.81	0.00	11403.16	11802.92	0.00	0.00	
30	590.70	0.00	707.81	72.31	0.00	11802.92	12199.53	0.00	0.00	
31	604.24	0.00	717.22	71.83	0.00	12199.53	12592.56	0.00	0.00	
32	615.92	0.00	724.61	71.37	0.00	12592.56	12980.87	0.00	0.00	
33	627.69	0.00	732.16	70.94	0.00	12980.87	13364.39	0.00	0.00	
34	639.46	0.00	739.76	70.52	0.00	13364.39	13742.97	0.00	0.00	
35	650.12	0.00	746.23	70.12	0.00	13742.97	14115.95	0.00	0.00	
36	661.61	0.00	753.68	69.73	0.00	14115.95	14483.60	0.00	0.00	
37	672.83	0.00	760.91	69.37	0.00	14483.60	14845.67	0.00	0.00	
38	683.34	0.00	767.43	69.02	0.00	14845.67	15201.72	0.00	0.00	
39	694.04	0.00	774.25	68.68	0.00	15201.72	15551.71	0.00	0.00	
40	704.48	0.00	780.87	68.36	0.00	15551.71	15895.42	0.00	0.00	
41	714.86	0.00	787.50	68.05	0.00	15895.42	16232.72	0.00	0.00	
42	728.65	0.00	797.84	67.76	0.00	16232.72	16564.68	0.00	0.00	
43	742.93	0.00	808.74	67.48	0.00	16564.68	16891.28	0.00	0.00	
44	750.84	0.00	812.97	67.21	0.00	16891.28	17210.16	0.00	0.00	
45	757.31	0.00	815.81	66.96	0.00	17210.16	17520.83	0.00	0.00	
46	767.12	0.02	822.27	66.71	0.00	17520.83	17824.26	0.00	0.00	
47	778.71	0.02	830.65	66.48	0.00	17824.26	18120.86	0.00	0.00	
48	790.16	0.00	838.92	66.26	0.00	18120.86	18410.39	0.00	0.00	
49	801.75	0.00	847.44	66.05	0.00	18410.39	18692.75	0.00	0.00	
50	813.20	0.00	855.90	65.85	0.00	18692.75	18967.72	0.00	0.00	
51	824.06	0.00	863.83	65.66	0.00	18967.72	19235.00	0.00	0.00	
52	834.88	0.00	871.80	65.49	0.00	19235.00	19494.42	0.00	0.00	
53	844.84	0.00	878.97	65.32	0.00	19494.42	19745.62	0.00	0.00	
54	852.84	0.00	884.23	65.16	0.00	19745.62	19988.07	0.00	0.00	
55	862.27	0.00	891.06	65.01	0.00	19988.07	20221.93	0.00	0.00	
56	870.85	0.00	897.10	64.87	0.00	20221.93	20446.93	0.00	0.00	
57	875.18	0.00	898.94	64.74	0.00	20446.93	20662.21	0.00	0.00	
58	878.20	0.00	899.57	64.62	0.00	20662.21	20867.55	0.00	0.00	
59	882.47	0.00	901.58	64.51	0.00	20867.55	21063.13	0.00	0.00	
60	887.73	0.00	904.70	64.41	0.00	21063.13	21249.06	0.00	0.00	
61	507.98	0.00	516.74	36.67	0.00	21249.06	21350.65	0.00	0.00	
62	384.06	0.00	390.24	27.64	0.00	21350.65	21425.16	0.00	0.00	
63	895.68	0.00	908.69	64.23	0.00	21425.16	21591.32	0.00	0.00	
64	898.84	0.00	910.04	64.15	0.00	21591.32	21747.46	0.00	0.00	
65	902.06	0.00	911.57	64.08	0.00	21747.46	21893.58	0.00	0.00	
66	904.99	0.00	912.92	64.02	0.00	21893.58	22029.61	0.00	0.00	
67	907.35	0.00	913.80	63.96	0.00	22029.61	22155.51	0.00	0.00	
68	909.50	0.00	914.60	63.92	0.00	22155.51	22271.24	0.00	0.00	
69	911.53	0.00	915.40	63.88	0.00	22271.24	22376.79	0.00	0.00	
70	913.36	0.00	916.10	63.85	0.00	22376.79	22472.13	0.00	0.00	
71	915.26	0.00	917.00	63.83	0.00	22472.13	22557.26	0.00	0.00	
72	916.96	0.00	917.80	63.82	0.00	22557.26	22632.15	0.00	0.00	
73	917.99	0.00	918.05	63.82	0.00	22632.15	22696.79	0.00	0.00	
74	919.01	0.00	918.40	63.82	0.00	22696.79	22751.17	0.00	0.00	
75	919.72	0.00	918.56	63.83	0.00	22751.17	22795.28	0.00	0.00	
76	919.87	0.00	918.27	63.85	0.00	22795.28	22829.13	0.00	0.00	
77	920.08	0.00	918.17	63.88	0.00	22829.13	22852.74	0.00	0.00	
78	921.10	0.00	918.97	63.91	0.00	22852.74	22866.03	0.00	0.00	
79	921.91	0.00	919.69	63.96	0.00	22866.03	22869.02	0.00	0.00	
80	921.97	0.00	919.77	64.01	0.00	22869.02	22861.72	0.00	0.00	
81	921.54	0.00	919.48	64.07	0.00	22861.72	22844.17	0.00	0.00	
82	921.28	0.00	919.46	64.14	0.00	22844.17	22816.34	0.00	0.00	
83	920.80	0.00	919.35	64.21	0.00	22816.34	22778.26	0.00	0.00	
84	919.48	0.00	918.50	64.30	0.00	22778.26	22730.01	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
85	422.53	0.00	422.27	29.61	0.00	22730.01	22704.40	0.00	0.00	
86	495.59	0.00	495.46	34.78	0.00	22704.40	22671.60	0.00	0.00	
87	917.49	0.00	917.79	64.49	0.00	22671.60	22602.92	0.00	0.00	
88	916.73	0.00	917.85	64.60	0.00	22602.92	22523.98	0.00	0.00	
89	914.84	0.00	916.88	64.72	0.00	22523.98	22434.95	0.00	0.00	
90	912.92	0.00	915.99	64.85	0.00	22434.95	22335.83	0.00	0.00	
91	910.97	0.00	915.18	64.99	0.00	22335.83	22226.63	0.00	0.00	
92	909.17	0.00	914.65	65.14	0.00	22226.63	22107.31	0.00	0.00	
93	909.34	0.00	916.25	65.29	0.00	22107.31	21977.43	0.00	0.00	
94	911.95	0.00	920.47	65.46	0.00	21977.43	21836.38	0.00	0.00	
95	137.01	0.00	138.43	9.83	0.00	21836.38	21814.25	0.00	0.00	
96	775.75	0.00	784.55	55.80	0.00	21814.25	21684.45	0.00	0.00	
97	916.88	0.00	929.05	65.82	0.00	21684.45	21520.72	0.00	0.00	
98	922.12	0.00	936.44	66.02	0.00	21520.72	21344.72	0.00	0.00	
99	922.37	0.00	938.82	66.23	0.00	21344.72	21157.62	0.00	0.00	
100	911.66	0.00	930.11	65.78	0.00	21157.62	20961.87	0.00	0.00	
101	918.59	0.00	939.52	66.67	0.00	20961.87	20753.70	0.00	0.00	
102	916.68	0.00	940.07	66.91	0.00	20753.70	20534.86	0.00	0.00	
103	916.38	0.00	942.43	67.17	0.00	20534.86	20304.78	0.00	0.00	
104	100.87	0.00	103.91	7.40	0.00	20304.78	20278.76	0.00	0.00	
105	815.85	0.00	841.72	60.03	0.00	20278.76	20063.14	0.00	0.00	
106	918.34	0.00	950.36	67.71	0.00	20063.14	19809.35	0.00	0.00	
107	919.14	0.00	954.38	68.00	0.00	19809.35	19543.56	0.00	0.00	
108	918.23	0.00	956.75	68.31	0.00	19543.56	19266.25	0.00	0.00	
109	920.09	0.00	962.27	68.62	0.00	19266.25	18976.22	0.00	0.00	
110	919.95	0.00	965.83	68.96	0.00	18976.22	18674.10	0.00	0.00	
111	824.83	0.00	869.18	62.36	0.00	18674.10	18392.98	0.00	0.00	
112	91.47	0.00	96.58	6.95	0.00	18392.98	18361.21	0.00	0.00	
113	913.96	0.00	967.28	69.67	0.00	18361.21	18036.91	0.00	0.00	
114	456.19	0.00	484.36	34.98	0.00	18036.91	17870.42	0.00	0.00	
115	455.22	0.00	484.38	35.07	0.00	17870.42	17701.22	0.00	0.00	
116	905.44	0.00	966.60	70.45	0.00	17701.22	17355.60	0.00	0.00	
117	897.02	0.00	961.87	70.86	0.00	17355.60	17001.24	0.00	0.00	
118	887.95	0.00	956.53	71.30	0.00	17001.24	16638.51	0.00	0.00	
119	880.34	0.00	952.92	71.75	0.00	16638.51	16266.74	0.00	0.00	
120	872.80	0.00	949.52	72.23	0.00	16266.74	15885.92	0.00	0.00	
121	648.64	0.00	708.83	54.49	0.00	15885.92	15594.93	0.00	0.00	
122	215.08	0.00	235.66	18.23	0.00	15594.93	15496.91	0.00	0.00	
123	856.64	0.00	941.86	73.24	0.00	15496.91	15098.63	0.00	0.00	
124	850.03	0.00	939.91	73.78	0.00	15098.63	14690.80	0.00	0.00	
125	842.45	0.00	936.99	74.34	0.00	14690.80	14273.97	0.00	0.00	
126	836.39	0.00	935.98	74.94	0.00	14273.97	13847.19	0.00	0.00	
127	832.28	0.00	937.46	75.55	0.00	13847.19	13409.17	0.00	0.00	
128	74.75	0.00	84.50	6.83	0.00	13409.17	13369.16	0.00	0.00	
129	752.99	0.00	854.16	69.37	0.00	13369.16	12960.02	0.00	0.00	
130	824.22	0.00	941.30	76.88	0.00	12960.02	12498.90	0.00	0.00	
131	819.98	0.00	943.33	77.59	0.00	12498.90	12026.12	0.00	0.00	
132	811.52	0.00	940.44	78.34	0.00	12026.12	11544.47	0.00	0.00	
133	800.59	0.00	934.63	79.12	0.00	11544.47	11055.74	0.00	0.00	
134	787.98	0.00	926.84	79.95	0.00	11055.74	10561.27	0.00	0.00	
135	773.33	0.00	916.52	80.82	0.00	10561.27	10062.76	0.00	0.00	
136	757.89	0.00	905.21	81.73	0.00	10062.76	9561.09	0.00	0.00	
137	743.49	18.46	919.13	82.69	0.00	9561.09	9040.45	0.00	0.00	
138	731.12	26.00	921.98	83.70	0.00	9040.45	8507.69	0.00	0.00	
139	718.46	26.00	914.78	84.77	0.00	8507.69	7969.37	0.00	0.00	
140	599.74	0.00	740.89	72.94	0.00	7969.37	7528.28	0.00	0.00	
141	104.89	0.00	130.18	12.96	0.00	7528.28	7450.10	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
142	698.92	0.00	873.03	87.10	0.00	7450.10	6919.75	0.00	0.00	
143	693.65	0.00	875.89	88.37	0.00	6919.75	6377.67	0.00	0.00	
144	267.74	0.00	340.56	34.83	0.00	6377.67	6164.33	0.00	0.00	
145	416.88	0.00	533.31	54.90	0.00	6164.33	5827.23	0.00	0.00	
146	674.30	0.00	870.23	91.16	0.00	5827.23	5269.61	0.00	0.00	
147	659.81	0.00	860.73	92.70	0.00	5269.61	4709.16	0.00	0.00	
148	643.68	0.00	848.81	94.34	0.00	4709.16	4147.88	0.00	0.00	
149	625.16	0.00	833.16	96.09	0.00	4147.88	3588.80	0.00	0.00	
150	605.30	0.00	815.19	97.98	0.00	3588.80	3034.06	0.00	0.00	
151	585.06	0.00	796.23	100.01	0.00	3034.06	2484.80	0.00	0.00	
152	563.85	0.00	775.23	102.21	0.00	2484.80	1943.05	0.00	0.00	
153	540.61	0.00	750.26	104.60	0.00	1943.05	1412.42	0.00	0.00	
154	517.11	0.00	723.96	107.20	0.00	1412.42	894.53	0.00	0.00	
155	494.01	0.00	697.28	110.04	0.00	894.53	390.30	0.00	0.00	
156	470.23	0.00	668.16	113.17	0.00	390.30	-97.68	0.00	0.00	
157	444.66	0.00	634.25	116.63	0.00	-97.68	-564.75	0.00	0.00	
158	417.75	0.00	595.76	120.48	0.00	-564.75	-1006.26	0.00	0.00	
159	391.10	0.00	555.11	124.80	0.00	-1006.26	-1419.49	0.00	0.00	
160	1356.99	0.00	1747.01	634.22	0.00	-1419.49	-2689.49	0.00	0.00	
161	506.06	0.00	-267.10	630.77	0.00	-2689.49	-2227.84	0.00	0.00	

Tabella 5-17 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 04

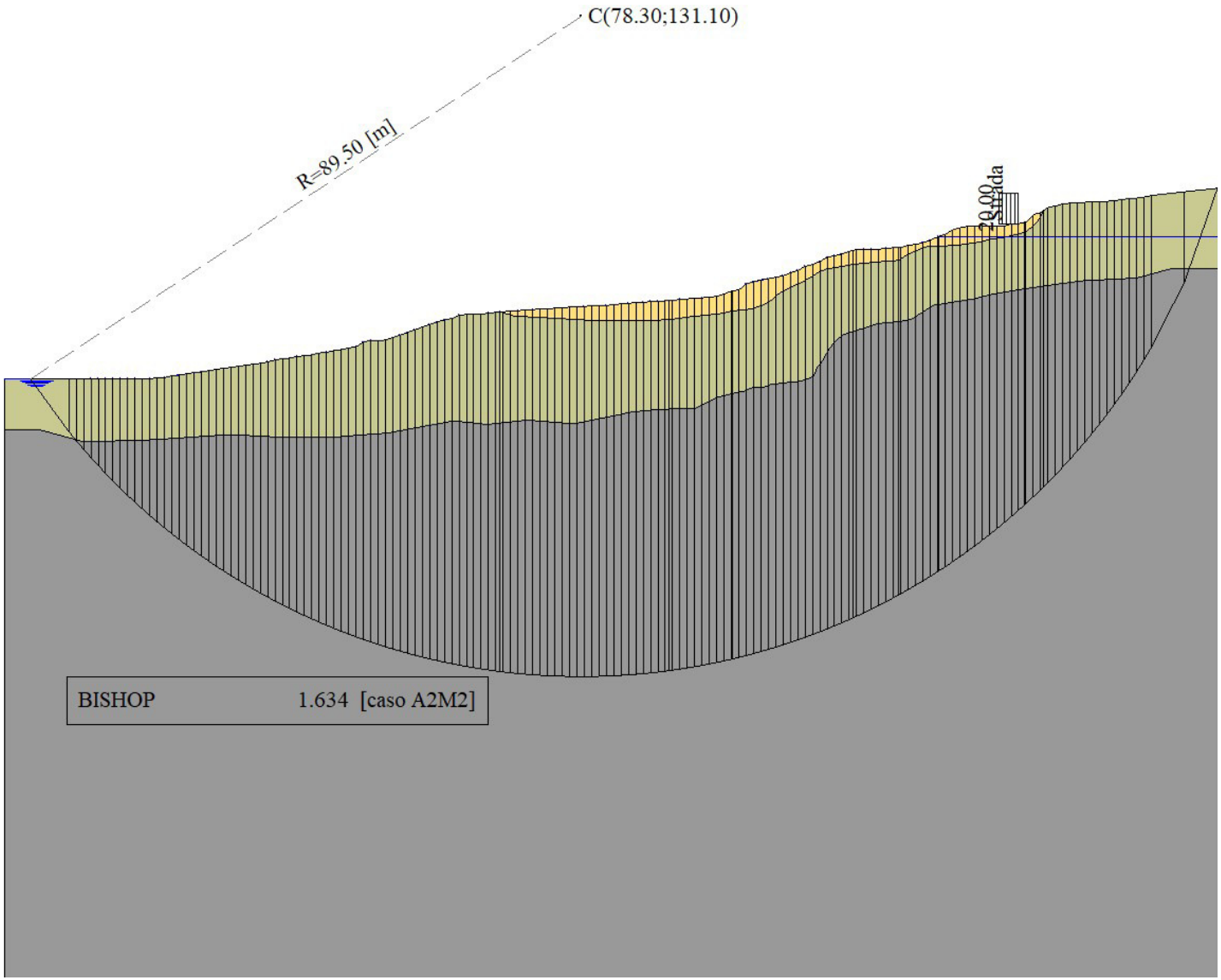

Figura 5-4 – Superficie critica (1) della sezione VS_03 per la verifica di stabilità 04

6 VERIFICHE STATO ATTUALE SEZIONE VS_04

6.1 PARAMETRI GEOTECNICI

n°	Descrizione	γ	γ_{sat}	ϕ'	c'	Retino
		[kN/mc]	*[kN/mc]*	*[°]*	*[kPa]*	
1	Substrato	21.27	21.27	23.60	24.0	
2	Substrato alterato	20.68	20.68	23.40	22.0	
3	Frana	18.30	18.30	14.30	0.0	

Tabella 6-1 – Parametri geotecnici condizioni drenate

n°	Descrizione	γ	γ_{sat}	ϕ_u	C_u	Retino
		[kN/mc]	*[kN/mc]*	*[°]*	*[kPa]*	
1	Substrato	21.27	21.27	0.00	146.0	
2	Substrato alterato	20.68	20.68	0.00	100.0	
3	Frana	18.30	18.30	0.00	40.0	

Tabella 6-2 – Parametri geotecnici condizioni non drenate

6.2 DESCRIZIONE SEZIONE E IMPOSTAZIONE ANALISI

6.2.1 PROFILO TERRENO E DESCRIZIONE STRATIGRAFIA

n°	X	Y
	[m]	*[m]*
1	0.00	81.80
2	11.26	81.94
3	12.26	81.94
4	13.26	81.95
5	14.26	81.96
6	15.26	81.97
7	16.26	81.98
8	17.26	81.98
9	18.26	81.99
10	19.26	82.00
11	20.26	82.01
12	21.26	82.02
13	22.26	82.04
14	23.26	82.13
15	24.26	82.20
16	25.26	82.32
17	26.26	82.42
18	27.26	82.48
19	28.26	82.59
20	29.26	82.66
21	30.26	82.79
22	31.26	82.89
23	32.26	82.95
24	33.26	83.05
25	34.26	83.13
26	35.26	83.26
27	36.26	83.36
28	37.26	83.51
29	38.26	83.84

n°	X	Y
	[m]	*[m]*
30	39.26	84.07
31	40.26	84.49
32	41.26	84.79
33	42.26	84.98
34	43.26	85.31
35	44.26	85.54
36	45.26	85.92
37	46.26	86.04
38	47.26	86.08
39	48.26	86.16
40	49.26	86.24
41	49.53	86.26
42	50.26	86.31
43	51.26	86.38
44	52.26	86.42
45	53.26	86.61
46	54.26	86.95
47	55.26	87.09
48	56.26	87.43
49	57.27	87.65
50	58.27	88.01
51	59.27	88.47
52	60.27	88.76
53	61.27	89.13
54	62.27	89.26
55	63.27	89.54
56	64.27	89.91
57	65.27	90.07
58	66.27	90.21
59	67.27	90.31
60	68.27	90.42
61	69.27	90.54
62	70.27	90.68
63	71.27	90.84
64	72.27	90.95
65	73.27	91.01
66	74.27	91.11
67	75.27	91.16
68	76.27	91.22
69	77.27	91.24
70	78.27	91.29
71	79.27	91.29
72	80.27	91.34
73	81.27	91.39
74	82.27	91.46
75	83.27	91.51
76	84.27	91.64
77	85.27	91.71
78	86.27	91.78
79	87.27	91.89
80	88.27	92.11
81	89.27	92.28
82	90.27	92.58
83	91.27	92.93
84	92.27	93.11
85	93.27	93.54
86	94.27	93.95

n°	X	Y
	[m]	*[m]*
87	95.27	94.32
88	96.27	94.49
89	97.27	94.56
90	98.27	94.53
91	99.27	94.48
92	100.27	94.67
93	101.27	95.16
94	102.27	95.44
95	103.27	96.00
96	104.27	96.34
97	105.27	96.34
98	106.27	96.41
99	107.27	96.40
100	108.27	96.52
101	109.27	96.72
102	110.27	97.20
103	111.27	97.46
104	112.27	97.47
105	113.27	97.82
106	114.27	97.73
107	115.27	97.87
108	116.27	98.41
109	117.27	98.90
110	118.27	99.23
111	119.27	99.38
112	120.27	99.57
113	121.27	100.04
114	122.27	100.40
115	123.28	100.99
116	124.28	101.43
117	125.28	101.65
118	126.28	101.76
119	127.28	101.87
120	128.28	102.17
121	129.28	102.61
122	130.28	102.92
123	131.28	103.14
124	132.28	103.66
125	133.28	104.34
126	134.28	104.53
127	135.28	104.79
128	136.28	105.05
129	137.28	105.57
130	138.28	106.57
131	139.28	106.76
132	140.28	107.18
133	140.41	107.21
134	141.28	107.40
135	142.28	107.52
136	143.28	107.21
137	144.28	107.09
138	145.28	106.96
139	146.28	106.97
140	147.28	107.04
141	148.28	107.46
142	149.28	107.89
143	150.28	108.26

n°	X	Y
	[m]	*[m]*
144	151.28	108.32
145	152.28	108.24
146	153.28	108.27
147	154.28	108.30
148	155.28	108.28
149	156.28	108.31
150	157.28	108.40
151	158.28	108.43
152	166.00	109.28

Tabella 6-3 – Profilo del piano campagna

n°	X	Y
	[m]	*[m]*
1	0.00	79.50
2	0.00	0.00
3	166.00	0.00
4	166.00	99.62
5	160.83	98.52
6	156.83	97.66
7	152.29	97.11
8	146.32	96.33
9	140.46	95.34
10	136.70	94.79
11	132.83	93.79
12	130.06	93.79
13	127.30	92.91
14	124.54	90.92
15	117.65	90.37
16	115.36	88.27
17	112.59	85.72
18	111.15	84.62
19	109.39	82.85
20	105.96	82.63
21	102.86	82.08
22	100.10	81.08
23	94.35	79.98
24	89.59	79.76
25	87.36	79.68
26	77.32	79.31
27	66.15	78.10
28	56.75	76.99
29	50.55	77.21
30	37.39	76.55
31	28.88	75.89
32	23.24	75.22
33	17.82	75.45
34	12.18	75.89
35	9.19	76.77

Tabella 6-4 – Coordinate dei vertici dello strato n° 1 costituito da terreno n° 1 (Substrato)

n°	X	Y
	[m]	*[m]*
1	140.41	107.21
2	140.28	107.18
3	139.28	106.76
4	138.28	106.57

n°	X	Y
	[m]	*[m]*
5	137.28	105.57
6	136.28	105.05
7	135.28	104.79
8	134.28	104.53
9	133.28	104.34
10	132.28	103.66
11	131.28	103.14
12	130.28	102.92
13	129.28	102.61
14	128.28	102.17
15	127.28	101.87
16	126.28	101.76
17	125.28	101.65
18	124.28	101.43
19	123.28	100.99
20	122.27	100.40
21	121.27	100.04
22	120.27	99.57
23	119.27	99.38
24	118.27	99.23
25	117.27	98.90
26	116.27	98.41
27	115.27	97.87
28	114.27	97.73
29	113.27	97.82
30	112.27	97.47
31	111.27	97.46
32	110.27	97.20
33	109.27	96.72
34	108.27	96.52
35	107.27	96.40
36	106.27	96.41
37	105.27	96.34
38	104.27	96.34
39	103.27	96.00
40	102.27	95.44
41	101.27	95.16
42	100.27	94.67
43	99.27	94.48
44	98.27	94.53
45	97.27	94.56
46	96.27	94.49
47	95.27	94.32
48	94.27	93.95
49	93.27	93.54
50	92.27	93.11
51	91.27	92.93
52	90.27	92.58
53	89.27	92.28
54	88.27	92.11
55	87.27	91.89
56	86.27	91.78
57	85.27	91.71
58	84.27	91.64
59	83.27	91.51
60	82.27	91.46
61	81.27	91.39

n°	X	Y
	[m]	*[m]*
62	80.27	91.34
63	79.27	91.29
64	78.27	91.29
65	77.27	91.24
66	76.27	91.22
67	75.27	91.16
68	74.27	91.11
69	73.27	91.01
70	72.27	90.95
71	71.27	90.84
72	70.27	90.68
73	69.27	90.54
74	68.27	90.42
75	67.27	90.31
76	66.27	90.21
77	65.27	90.07
78	64.27	89.91
79	63.27	89.54
80	62.27	89.26
81	61.27	89.13
82	60.27	88.76
83	59.27	88.47
84	58.27	88.01
85	57.27	87.65
86	56.26	87.43
87	55.26	87.09
88	54.26	86.95
89	53.26	86.61
90	52.26	86.42
91	51.26	86.38
92	50.26	86.31
93	49.53	86.26
94	52.75	86.05
95	59.06	86.41
96	66.22	88.33
97	70.20	88.96
98	80.38	89.65
99	84.22	89.76
100	88.54	90.39
101	91.62	91.05
102	94.27	92.35
103	96.86	93.10
104	101.34	93.37
105	102.80	93.97
106	105.50	94.89
107	109.98	95.68
108	111.10	95.79
109	113.44	96.32
110	116.16	96.58
111	119.03	97.86
112	121.16	98.71
113	123.50	99.72
114	127.12	100.47
115	130.53	101.69
116	132.31	102.53
117	134.02	103.09
118	135.08	103.57

n°	X	Y
	[m]	*[m]*
119	136.59	104.09
120	138.51	105.13

Tabella 6-5 – Coordinate dei vertici dello strato n° 2 costituito da terreno n° 3 (Frana)

n°	X	Y
	[m]	*[m]*
1	166.00	99.62
2	166.00	109.28
3	158.28	108.43
4	157.28	108.40
5	156.28	108.31
6	155.28	108.28
7	154.28	108.30
8	153.28	108.27
9	152.28	108.24
10	151.28	108.32
11	150.28	108.26
12	149.28	107.89
13	148.28	107.46
14	147.28	107.04
15	146.28	106.97
16	145.28	106.96
17	144.28	107.09
18	143.28	107.21
19	142.28	107.52
20	141.28	107.40
21	140.41	107.21
22	138.51	105.13
23	136.59	104.09
24	135.08	103.57
25	134.02	103.09
26	132.31	102.53
27	130.53	101.69
28	127.12	100.47
29	123.50	99.72
30	121.16	98.71
31	119.03	97.86
32	116.16	96.58
33	113.44	96.32
34	111.10	95.79
35	109.98	95.68
36	105.50	94.89
37	102.80	93.97
38	101.34	93.37
39	96.86	93.10
40	94.27	92.35
41	91.62	91.05
42	88.54	90.39
43	84.22	89.76
44	80.38	89.65
45	70.20	88.96
46	66.22	88.33
47	59.06	86.41
48	52.75	86.05
49	49.53	86.26
50	49.26	86.24
51	48.26	86.16

n°	X	Y
	[m]	*[m]*
52	47.26	86.08
53	46.26	86.04
54	45.26	85.92
55	44.26	85.54
56	43.26	85.31
57	42.26	84.98
58	41.26	84.79
59	40.26	84.49
60	39.26	84.07
61	38.26	83.84
62	37.26	83.51
63	36.26	83.36
64	35.26	83.26
65	34.26	83.13
66	33.26	83.05
67	32.26	82.95
68	31.26	82.89
69	30.26	82.79
70	29.26	82.66
71	28.26	82.59
72	27.26	82.48
73	26.26	82.42
74	25.26	82.32
75	24.26	82.20
76	23.26	82.13
77	22.26	82.04
78	21.26	82.02
79	20.26	82.01
80	19.26	82.00
81	18.26	81.99
82	17.26	81.98
83	16.26	81.98
84	15.26	81.97
85	14.26	81.96
86	13.26	81.95
87	12.26	81.94
88	11.26	81.94
89	0.00	81.80
90	0.00	79.50
91	9.19	76.77
92	12.18	75.89
93	17.82	75.45
94	23.24	75.22
95	28.88	75.89
96	37.39	76.55
97	50.55	77.21
98	56.75	76.99
99	66.15	78.10
100	77.32	79.31
101	87.36	79.68
102	89.59	79.76
103	94.35	79.98
104	100.10	81.08
105	102.86	82.08
106	105.96	82.63
107	109.39	82.85
108	111.15	84.62

n°	X	Y
	[m]	*[m]*
109	112.59	85.72
110	115.36	88.27
111	117.65	90.37
112	124.54	90.92
113	127.30	92.91
114	130.06	93.79
115	132.83	93.79
116	136.70	94.79
117	140.46	95.34
118	146.32	96.33
119	152.29	97.11
120	156.83	97.66
121	160.83	98.52

Tabella 6-6 – Coordinate dei vertici dello strato n° 3 costituito da terreno n° 2 (Substrato alterato)

6.2.2 DESCRIZIONE FALDA

n°	X	Y
	[m]	*[m]*
1	0.00	101.25
2	166.00	101.25

Tabella 6-7 – Livello falda massima regolazione

n°	X	Y
	[m]	*[m]*
1	0.00	81.81
2	11.26	81.94
3	12.26	81.94
4	13.26	81.95
5	14.26	81.96
6	15.26	81.97
7	16.26	81.98
8	17.26	81.98
9	18.26	81.99
10	19.26	82.00
11	20.26	82.01
12	21.26	82.02
13	22.26	82.04
14	23.26	82.13
15	24.26	82.20
16	25.26	82.32
17	26.26	82.42
18	27.26	82.48
19	28.26	82.59
20	29.26	82.66
21	30.26	82.79
22	31.26	82.89
23	32.26	82.95
24	33.26	83.05
25	34.26	83.13
26	35.26	83.26
27	36.26	83.36
28	37.26	83.51
29	38.26	83.84
30	39.26	84.07
31	40.26	84.49
32	41.26	84.79

n°	X	Y
	[m]	*[m]*
33	42.26	84.98
34	43.26	85.31
35	44.26	85.54
36	45.26	85.92
37	46.26	86.04
38	47.26	86.08
39	48.26	86.16
40	49.26	86.24
41	49.53	86.26
42	50.26	86.31
43	51.26	86.38
44	52.26	86.42
45	53.26	86.61
46	54.26	86.95
47	55.26	87.09
48	56.26	87.43
49	57.27	87.65
50	58.27	88.01
51	59.27	88.47
52	60.27	88.76
53	61.27	89.13
54	62.27	89.26
55	63.27	89.54
56	64.27	89.91
57	65.27	90.07
58	66.27	90.21
59	67.27	90.31
60	68.27	90.42
61	69.27	90.54
62	70.27	90.68
63	71.27	90.84
64	72.27	90.95
65	73.27	91.01
66	74.27	91.11
67	75.27	91.16
68	76.27	91.22
69	77.27	91.24
70	78.27	91.29
71	79.27	91.29
72	80.27	91.34
73	81.27	91.39
74	82.27	91.46
75	83.27	91.51
76	84.27	91.64
77	85.27	91.71
78	86.27	91.78
79	87.27	91.89
80	88.27	92.11
81	89.27	92.28
82	90.27	92.58
83	91.27	92.93
84	92.27	93.11
85	93.27	93.54
86	94.27	93.95
87	95.27	94.32
88	96.27	94.49
89	97.27	94.56

n°	X	Y
	[m]	*[m]*
90	98.27	94.53
91	99.27	94.48
92	100.27	94.67
93	101.27	95.16
94	102.27	95.44
95	103.27	96.00
96	104.27	96.34
97	105.27	96.34
98	106.27	96.41
99	107.27	96.40
100	108.27	96.52
101	109.27	96.72
102	110.27	97.20
103	111.27	97.46
104	112.27	97.47
105	113.27	97.82
106	114.27	97.73
107	115.27	97.87
108	116.27	98.41
109	117.27	98.90
110	118.27	99.23
111	119.27	99.38
112	120.27	99.57
113	121.27	100.04
114	122.27	100.40
115	123.28	100.99
116	123.86	101.25
117	166.00	101.25

Tabella 6-8 – Livello falda svaso rapido

6.2.3 CARICHI SUL PROFILO

n°	Descrizione	Tipo	Ψ_2	P_i	P_f	Vy	Vx
				[m]	*[m]*	*[kN/m]*	*[kN/m]*
1	Strada	Variabile	1.00	143.88	145.88	20.00	0.00
				107.14	107.14	20.00	0.00

Tabella 6-9 – Carichi distribuiti verifica di stabilità 01

6.2.4 IMPOSTAZIONE DELLE SUPERFICI DI ROTTURA

Superfici di rottura circolari

Si considerano delle superfici di rottura circolari generate tramite la seguente maglia dei centri

Origine maglia	[m]	X_0 = 36.30	Y_0 = 85.10
Passo maglia	[m]	dX = 2.00	dY = 2.00
Numero passi		Nx = 65	Ny = 50
Raggio	[m]	R = 1.50	

Si utilizza un raggio variabile con passo dR=1.00 [m] ed un numero di incrementi pari a 110.

6.2.5 CONDIZIONI DI ESCLUSIONE

Sono state escluse dall'analisi le superfici aventi:

- lunghezza di corda inferiore a	1.00	m
- freccia inferiore a	0.50	m
- volume inferiore a	2.00	mc
- pendenza media della superficie inferiore a	1.00	[%]

6.3 VERIFICA DI STABILITÀ 01

6.3.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate in condizioni **statiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni efficaci**
Presenza di falda
Presenza di carichi distribuiti

6.3.2 RISULTATI ANALISI

Numero di superfici analizzate	71507
Coefficiente di sicurezza minimo	0.471
Superficie con coefficiente di sicurezza minimo	1

6.3.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO L'ALTO

Numero di strisce	21	
Coordinate del centro	X[m]= 136.30	Y[m]= 107.10
Raggio del cerchio	R[m]= 2.50	
Intersezione a valle con il profilo topografico	X_v[m]= 135.32	Y_v[m]= 104.80

Intersezione a monte con il profilo topograficoX$_m$[m]= 138.76 Y$_m$[m]= 106.66
Coefficiente di sicurezza F$_S$= **0.471**

N°	X$_s$	Y$_{ss}$	Y$_{si}$	X$_d$	Y$_{ds}$	Y$_{di}$	X$_g$	Y$_g$	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	135.32	104.80	104.80	135.48	104.84	104.74	135.43	104.79	0.17	-21.12	11.53	0
2	135.48	104.84	104.74	135.64	104.88	104.69	135.57	104.79	0.17	-17.24	11.53	0
3	135.64	104.88	104.69	135.80	104.93	104.65	135.72	104.79	0.16	-13.43	11.53	0
4	135.80	104.93	104.65	135.96	104.97	104.62	135.88	104.79	0.16	-9.68	11.53	0
5	135.96	104.97	104.62	136.12	105.01	104.61	136.04	104.80	0.16	-5.98	11.53	0
6	136.12	105.01	104.61	136.28	105.05	104.60	136.20	104.82	0.16	-2.30	11.53	0
7	136.28	105.05	104.60	136.45	105.14	104.60	136.37	104.85	0.17	1.45	11.53	0
8	136.45	105.14	104.60	136.61	105.22	104.62	136.53	104.90	0.17	5.28	11.53	0
9	136.61	105.22	104.62	136.78	105.31	104.65	136.70	104.95	0.17	9.13	11.53	0
10	136.78	105.31	104.65	136.95	105.40	104.69	136.86	105.01	0.17	13.03	11.53	0
11	136.95	105.40	104.69	137.11	105.48	104.74	137.03	105.08	0.17	16.99	11.53	0
12	137.11	105.48	104.74	137.28	105.57	104.80	137.20	105.15	0.18	21.03	11.53	0
13	137.28	105.57	104.80	137.45	105.74	104.88	137.36	105.25	0.18	25.19	11.53	0
14	137.45	105.74	104.88	137.61	105.90	104.97	137.53	105.37	0.19	29.49	11.53	0
15	137.61	105.90	104.97	137.78	106.07	105.09	137.70	105.51	0.20	33.99	11.53	0
16	137.78	106.07	105.09	137.95	106.24	105.22	137.86	105.65	0.21	38.75	11.53	0
17	137.95	106.24	105.22	138.11	106.40	105.38	138.03	105.81	0.23	43.84	11.53	0
18	138.11	106.40	105.38	138.28	106.57	105.57	138.20	105.98	0.26	49.43	11.53	0
19	138.28	106.57	105.57	138.44	106.60	105.81	138.36	106.14	0.28	55.63	11.53	0
20	138.44	106.60	105.81	138.60	106.63	106.12	138.51	106.28	0.35	62.93	11.53	0
21	138.60	106.63	106.12	138.76	106.66	106.66	138.65	106.47	0.56	73.43	11.53	0

Tabella 6-10 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 01

N°	W	Q	N	T	U	E$_s$	E$_d$	X$_s$	X$_d$	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	0.15	0.00	0.20	0.08	0.00	0.00	0.15	0.00	0.00	
2	0.44	0.00	0.53	0.23	0.00	0.15	0.52	0.00	0.00	
3	0.69	0.00	0.79	0.34	0.00	0.52	1.04	0.00	0.00	
4	0.91	0.00	0.99	0.43	0.00	1.04	1.63	0.00	0.00	
5	1.09	0.00	1.15	0.50	0.00	1.63	2.24	0.00	0.00	
6	1.25	0.00	1.27	0.55	0.00	2.24	2.84	0.00	0.00	
7	1.50	0.00	1.48	0.64	0.00	2.84	3.45	0.00	0.00	
8	1.73	0.00	1.67	0.72	0.00	3.45	4.02	0.00	0.00	
9	1.93	0.00	1.83	0.79	0.00	4.02	4.51	0.00	0.00	
10	2.10	0.00	1.96	0.85	0.00	4.51	4.89	0.00	0.00	
11	2.22	0.00	2.05	0.89	0.00	4.89	5.14	0.00	0.00	
12	2.31	0.00	2.13	0.92	0.00	5.14	5.24	0.00	0.00	
13	2.48	0.00	2.28	0.99	0.00	5.24	5.16	0.00	0.00	
14	2.73	0.00	2.52	1.09	0.00	5.16	4.87	0.00	0.00	
15	2.92	0.00	2.73	1.18	0.00	4.87	4.32	0.00	0.00	
16	3.05	0.00	2.91	1.26	0.00	4.32	3.49	0.00	0.00	
17	3.11	0.00	3.05	1.32	0.00	3.49	2.33	0.00	0.00	
18	3.08	0.00	3.15	1.36	0.00	2.33	0.82	0.00	0.00	
19	2.63	0.00	2.85	1.23	0.00	0.82	-0.83	0.00	0.00	
20	1.91	0.00	2.27	0.98	0.00	-0.83	-2.41	0.00	0.00	
21	0.75	0.00	1.07	0.46	0.00	-2.41	-3.30	0.00	0.00	

Tabella 6-11 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 01

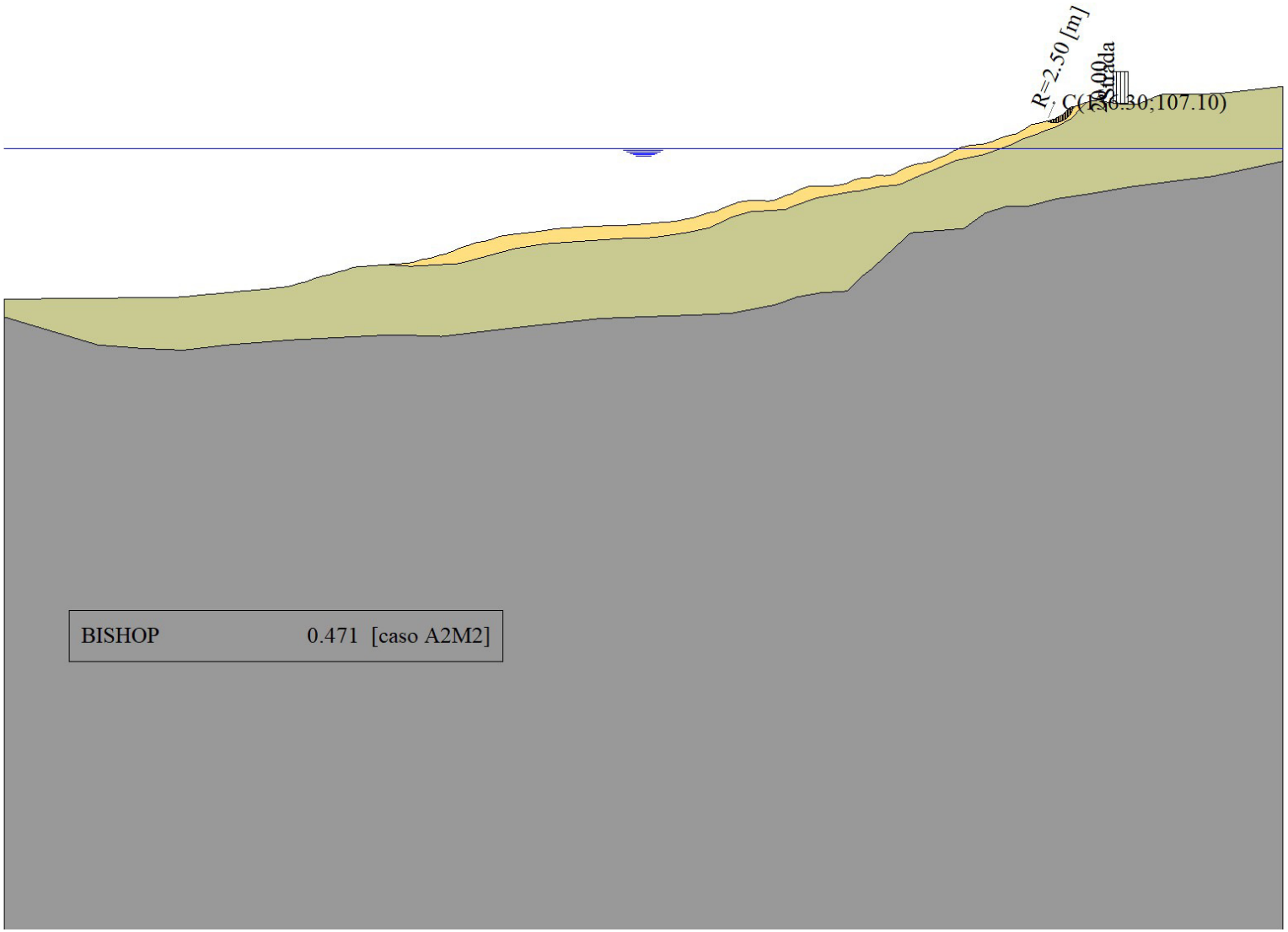

Figura 6-1 – Superficie critica (1) della sezione VS_04 per la verifica di stabilità 01

6.4 VERIFICA DI STABILITÀ 02

6.4.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate solo in condizioni **sismiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni totali**
Presenza di carichi distribuiti

6.4.2 RISULTATI ANALISI

Numero di superfici analizzate	143014
Coefficiente di sicurezza minimo	1.986
Superficie con coefficiente di sicurezza minimo	1

6.4.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO IL BASSO

Numero di strisce	141	
Coordinate del centro	X[m]= 78.30	Y[m]= 129.10
Raggio del cerchio	R[m]= 89.50	
Intersezione a valle con il profilo topografico	X_v[m]= 2.30	Y_v[m]= 81.83
Intersezione a monte con il profilo topografico	X_m[m]= 165.57	Y_m[m]= 109.23
Coefficiente di sicurezza	F_S= 1.986	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	2.30	81.83	81.83	6.78	81.88	75.29	5.29	79.67	7.92	-55.58	0.00	119
2	6.78	81.88	75.29	11.26	81.94	69.81	9.24	77.10	7.08	-50.78	0.00	146
3	11.26	81.94	69.81	12.26	81.94	68.69	11.77	75.59	1.50	-48.03	0.00	146
4	12.26	81.94	68.69	16.26	81.98	64.59	14.35	74.26	5.73	-45.72	0.00	146
5	16.26	81.98	64.59	17.26	81.98	63.64	16.76	73.05	1.38	-43.44	0.00	146
6	17.26	81.98	63.64	21.26	82.02	60.13	19.32	71.92	5.32	-41.30	0.00	146
7	21.26	82.02	60.13	22.26	82.04	59.32	21.76	70.88	1.29	-39.18	0.00	146
8	22.26	82.04	59.32	23.26	82.13	58.52	22.76	70.50	1.28	-38.36	0.00	146
9	23.26	82.13	58.52	24.26	82.20	57.76	23.76	70.15	1.26	-37.55	0.00	146
10	24.26	82.20	57.76	25.26	82.32	57.01	24.76	69.82	1.25	-36.74	0.00	146
11	25.26	82.32	57.01	26.26	82.42	56.28	25.76	69.51	1.24	-35.95	0.00	146
12	26.26	82.42	56.28	27.26	82.48	55.58	26.76	69.19	1.22	-35.16	0.00	146
13	27.26	82.48	55.58	28.26	82.59	54.90	27.76	68.89	1.21	-34.38	0.00	146
14	28.26	82.59	54.90	29.26	82.66	54.23	28.76	68.59	1.20	-33.61	0.00	146
15	29.26	82.66	54.23	30.26	82.79	53.59	29.76	68.32	1.19	-32.84	0.00	146
16	30.26	82.79	53.59	31.26	82.89	52.96	30.76	68.06	1.18	-32.09	0.00	146
17	31.26	82.89	52.96	32.26	82.95	52.35	31.76	67.79	1.17	-31.33	0.00	146
18	32.26	82.95	52.35	33.26	83.05	51.76	32.76	67.53	1.16	-30.59	0.00	146
19	33.26	83.05	51.76	34.26	83.13	51.19	33.76	67.28	1.15	-29.85	0.00	146
20	34.26	83.13	51.19	35.26	83.26	50.63	34.76	67.05	1.14	-29.11	0.00	146
21	35.26	83.26	50.63	36.26	83.36	50.09	35.76	66.83	1.14	-28.38	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
22	36.26	83.36	50.09	37.26	83.51	49.56	36.76	66.63	1.13	-27.65	0.00	146
23	37.26	83.51	49.56	38.26	83.84	49.06	37.76	66.49	1.12	-26.93	0.00	146
24	38.26	83.84	49.06	39.26	84.07	48.56	38.76	66.38	1.11	-26.22	0.00	146
25	39.26	84.07	48.56	40.26	84.49	48.09	39.76	66.30	1.11	-25.51	0.00	146
26	40.26	84.49	48.09	41.26	84.79	47.62	40.76	66.25	1.10	-24.80	0.00	146
27	41.26	84.79	47.62	42.26	84.98	47.18	41.76	66.14	1.10	-24.10	0.00	146
28	42.26	84.98	47.18	43.26	85.31	46.74	42.76	66.05	1.09	-23.40	0.00	146
29	43.26	85.31	46.74	44.26	85.54	46.33	43.76	65.98	1.08	-22.70	0.00	146
30	44.26	85.54	46.33	45.26	85.92	45.92	44.76	65.93	1.08	-22.01	0.00	146
31	45.26	85.92	45.92	46.26	86.04	45.53	45.76	65.85	1.07	-21.32	0.00	146
32	46.26	86.04	45.53	47.26	86.08	45.15	46.76	65.70	1.07	-20.63	0.00	146
33	47.26	86.08	45.15	49.26	86.24	44.44	48.26	65.48	2.12	-19.61	0.00	146
34	49.26	86.24	44.44	49.53	86.26	44.35	49.39	65.32	0.29	-18.84	0.00	146
35	49.53	86.26	44.35	50.26	86.31	44.11	49.90	65.26	0.77	-18.50	0.00	146
36	50.26	86.31	44.11	51.26	86.38	43.78	50.76	65.14	1.05	-17.92	0.00	146
37	51.26	86.38	43.78	52.26	86.42	43.47	51.76	65.01	1.05	-17.25	0.00	146
38	52.26	86.42	43.47	53.26	86.61	43.17	52.76	64.92	1.04	-16.58	0.00	146
39	53.26	86.61	43.17	54.26	86.95	42.89	53.76	64.91	1.04	-15.91	0.00	146
40	54.26	86.95	42.89	55.26	87.09	42.62	54.76	64.89	1.04	-15.25	0.00	146
41	55.26	87.09	42.62	56.26	87.43	42.36	55.76	64.87	1.03	-14.59	0.00	146
42	56.26	87.43	42.36	57.27	87.65	42.11	56.77	64.89	1.04	-13.92	0.00	146
43	57.27	87.65	42.11	58.27	88.01	41.87	57.77	64.91	1.03	-13.26	0.00	146
44	58.27	88.01	41.87	59.27	88.47	41.65	58.77	65.00	1.02	-12.60	0.00	146
45	59.27	88.47	41.65	60.27	88.76	41.43	59.77	65.08	1.02	-11.95	0.00	146
46	60.27	88.76	41.43	61.27	89.13	41.24	60.77	65.14	1.02	-11.30	0.00	146
47	61.27	89.13	41.24	62.27	89.26	41.05	61.77	65.17	1.02	-10.64	0.00	146
48	62.27	89.26	41.05	63.27	89.54	40.87	62.77	65.18	1.02	-9.99	0.00	146
49	63.27	89.54	40.87	64.27	89.91	40.71	63.77	65.26	1.01	-9.34	0.00	146
50	64.27	89.91	40.71	65.27	90.07	40.55	64.77	65.31	1.01	-8.70	0.00	146
51	65.27	90.07	40.55	66.27	90.21	40.41	65.77	65.31	1.01	-8.05	0.00	146
52	66.27	90.21	40.41	67.27	90.31	40.28	66.77	65.30	1.01	-7.40	0.00	146
53	67.27	90.31	40.28	68.27	90.42	40.16	67.77	65.29	1.01	-6.76	0.00	146
54	68.27	90.42	40.16	69.27	90.54	40.06	68.77	65.30	1.01	-6.11	0.00	146
55	69.27	90.54	40.06	70.27	90.68	39.96	69.77	65.31	1.00	-5.47	0.00	146
56	70.27	90.68	39.96	71.27	90.84	39.88	70.77	65.34	1.00	-4.83	0.00	146
57	71.27	90.84	39.88	72.27	90.95	39.80	71.77	65.37	1.00	-4.18	0.00	146
58	72.27	90.95	39.80	73.27	91.01	39.74	72.77	65.38	1.00	-3.54	0.00	146
59	73.27	91.01	39.74	74.27	91.11	39.69	73.77	65.39	1.00	-2.90	0.00	146
60	74.27	91.11	39.69	75.27	91.16	39.65	74.77	65.40	1.00	-2.26	0.00	146
61	75.27	91.16	39.65	76.27	91.22	39.62	75.77	65.41	1.00	-1.62	0.00	146
62	76.27	91.22	39.62	77.27	91.24	39.61	76.77	65.42	1.00	-0.98	0.00	146
63	77.27	91.24	39.61	78.27	91.29	39.60	77.77	65.43	1.00	-0.34	0.00	146
64	78.27	91.29	39.60	79.27	91.29	39.61	78.77	65.45	1.00	0.30	0.00	146
65	79.27	91.29	39.61	81.27	91.39	39.65	80.27	65.48	2.00	1.26	0.00	146
66	81.27	91.39	39.65	82.27	91.46	39.69	81.77	65.55	1.00	2.22	0.00	146
67	82.27	91.46	39.69	83.27	91.51	39.74	82.77	65.60	1.00	2.86	0.00	146
68	83.27	91.51	39.74	84.27	91.64	39.80	83.77	65.67	1.00	3.50	0.00	146
69	84.27	91.64	39.80	86.27	91.78	39.96	85.27	65.79	2.01	4.47	0.00	146
70	86.27	91.78	39.96	87.27	91.89	40.05	86.77	65.92	1.00	5.43	0.00	146
71	87.27	91.89	40.05	88.27	92.11	40.16	87.77	66.05	1.01	6.07	0.00	146
72	88.27	92.11	40.16	89.27	92.28	40.27	88.77	66.21	1.01	6.72	0.00	146
73	89.27	92.28	40.27	90.27	92.58	40.40	89.77	66.38	1.01	7.36	0.00	146
74	90.27	92.58	40.40	91.27	92.93	40.54	90.77	66.61	1.01	8.01	0.00	146
75	91.27	92.93	40.54	92.27	93.11	40.70	91.77	66.82	1.01	8.66	0.00	146
76	92.27	93.11	40.70	93.27	93.54	40.86	92.77	67.05	1.01	9.30	0.00	146
77	93.27	93.54	40.86	94.27	93.95	41.04	93.77	67.35	1.02	9.95	0.00	146
78	94.27	93.95	41.04	95.27	94.32	41.22	94.77	67.63	1.02	10.60	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
79	95.27	94.32	41.22	96.27	94.49	41.42	95.77	67.86	1.02	11.26	0.00	146
80	96.27	94.49	41.42	97.27	94.56	41.63	96.77	68.03	1.02	11.91	0.00	146
81	97.27	94.56	41.63	98.27	94.53	41.86	97.77	68.14	1.02	12.56	0.00	146
82	98.27	94.53	41.86	99.27	94.48	42.09	98.77	68.24	1.03	13.22	0.00	146
83	99.27	94.48	42.09	100.27	94.67	42.34	99.77	68.39	1.03	13.88	0.00	146
84	100.27	94.67	42.34	101.27	95.16	42.60	100.77	68.69	1.03	14.54	0.00	146
85	101.27	95.16	42.60	102.27	95.44	42.87	101.77	69.02	1.04	15.20	0.00	146
86	102.27	95.44	42.87	103.27	96.00	43.15	102.77	69.37	1.04	15.87	0.00	146
87	103.27	96.00	43.15	104.27	96.34	43.45	103.77	69.74	1.04	16.53	0.00	146
88	104.27	96.34	43.45	105.27	96.34	43.76	104.77	69.97	1.05	17.20	0.00	146
89	105.27	96.34	43.76	106.27	96.41	44.08	105.77	70.15	1.05	17.87	0.00	146
90	106.27	96.41	44.08	107.27	96.40	44.42	106.77	70.33	1.05	18.55	0.00	146
91	107.27	96.40	44.42	108.27	96.52	44.77	107.77	70.53	1.06	19.22	0.00	146
92	108.27	96.52	44.77	109.27	96.72	45.13	108.77	70.78	1.06	19.90	0.00	146
93	109.27	96.72	45.13	110.27	97.20	45.50	109.77	71.14	1.07	20.59	0.00	146
94	110.27	97.20	45.50	111.27	97.46	45.89	110.77	71.51	1.07	21.27	0.00	146
95	111.27	97.46	45.89	112.27	97.47	46.30	111.77	71.78	1.08	21.96	0.00	146
96	112.27	97.47	46.30	113.27	97.82	46.71	112.77	72.08	1.08	22.65	0.00	146
97	113.27	97.82	46.71	114.27	97.73	47.15	113.77	72.35	1.09	23.35	0.00	146
98	114.27	97.73	47.15	115.27	97.87	47.59	114.77	72.58	1.10	24.05	0.00	146
99	115.27	97.87	47.59	116.27	98.41	48.05	115.77	72.98	1.10	24.75	0.00	146
100	116.27	98.41	48.05	117.27	98.90	48.53	116.77	73.47	1.11	25.46	0.00	146
101	117.27	98.90	48.53	118.27	99.23	49.02	117.77	73.92	1.11	26.17	0.00	146
102	118.27	99.23	49.02	119.27	99.38	49.53	118.77	74.29	1.12	26.88	0.00	146
103	119.27	99.38	49.53	120.27	99.57	50.05	119.77	74.63	1.13	27.60	0.00	146
104	120.27	99.57	50.05	121.27	100.04	50.59	120.77	75.06	1.14	28.33	0.00	146
105	121.27	100.04	50.59	122.27	100.40	51.15	121.77	75.54	1.14	29.06	0.00	146
106	122.27	100.40	51.15	123.28	100.99	51.72	122.77	76.06	1.16	29.80	0.00	146
107	123.28	100.99	51.72	124.28	101.43	52.31	123.78	76.61	1.16	30.54	0.00	146
108	124.28	101.43	52.31	125.28	101.65	52.92	124.78	77.08	1.17	31.29	0.00	146
109	125.28	101.65	52.92	127.28	101.87	54.19	126.28	77.66	2.37	32.42	0.00	146
110	127.28	101.87	54.19	128.28	102.17	54.86	127.78	78.27	1.20	33.56	0.00	146
111	128.28	102.17	54.86	129.28	102.61	55.54	128.78	78.79	1.21	34.34	0.00	146
112	129.28	102.61	55.54	130.28	102.92	56.24	129.78	79.33	1.22	35.11	0.00	146
113	130.28	102.92	56.24	131.28	103.14	56.97	130.78	79.82	1.23	35.90	0.00	146
114	131.28	103.14	56.97	132.28	103.66	57.71	131.78	80.37	1.25	36.70	0.00	146
115	132.28	103.66	57.71	133.28	104.34	58.48	132.78	81.05	1.26	37.50	0.00	146
116	133.28	104.34	58.48	134.28	104.53	59.27	133.78	81.65	1.27	38.31	0.00	146
117	134.28	104.53	59.27	136.28	105.05	60.92	135.28	82.44	2.59	39.55	0.00	146
118	136.28	105.05	60.92	137.28	105.57	61.78	136.78	83.33	1.32	40.80	0.00	146
119	137.28	105.57	61.78	138.28	106.57	62.67	137.78	84.15	1.34	41.65	0.00	146
120	138.28	106.57	62.67	139.28	106.76	63.59	138.78	84.90	1.36	42.51	0.00	146
121	139.28	106.76	63.59	140.28	107.18	64.53	139.78	85.52	1.38	43.39	0.00	146
122	140.28	107.18	64.53	140.41	107.21	64.66	140.34	85.90	0.18	43.89	0.00	146
123	140.41	107.21	64.66	141.28	107.40	65.51	140.84	86.19	1.22	44.33	0.00	146
124	141.28	107.40	65.51	142.28	107.52	66.52	141.78	86.74	1.42	45.18	0.00	146
125	142.28	107.52	66.52	143.28	107.21	67.55	142.78	87.20	1.44	46.09	0.00	146
126	143.28	107.21	67.55	144.28	107.09	68.63	143.78	87.62	1.47	47.02	0.00	146
127	144.28	107.09	68.63	145.28	106.96	69.74	144.78	88.10	1.49	47.97	0.00	146
128	145.28	106.96	69.74	146.28	106.97	70.89	145.78	88.64	1.52	48.94	0.00	146
129	146.28	106.97	70.89	147.28	107.04	72.07	146.78	89.24	1.55	49.92	0.00	146
130	147.28	107.04	72.07	148.28	107.46	73.31	147.78	89.97	1.59	50.93	0.00	146
131	148.28	107.46	73.31	149.28	107.89	74.58	148.78	90.81	1.62	51.95	0.00	146
132	149.28	107.89	74.58	150.28	108.26	75.91	149.78	91.66	1.66	53.01	0.00	146
133	150.28	108.26	75.91	151.28	108.32	77.29	150.78	92.44	1.70	54.08	0.00	146
134	151.28	108.32	77.29	152.28	108.24	78.73	151.78	93.14	1.75	55.19	0.00	146
135	152.28	108.24	78.73	154.28	108.30	81.80	153.26	94.25	3.66	56.92	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
136	154.28	108.30	81.80	155.28	108.28	83.45	154.77	95.45	1.93	58.71	0.00	146
137	155.28	108.28	83.45	156.28	108.31	85.18	155.77	96.30	2.00	59.97	0.00	146
138	156.28	108.31	85.18	157.28	108.40	87.00	156.77	97.22	2.08	61.27	0.00	146
139	157.28	108.40	87.00	158.28	108.43	88.93	157.77	98.18	2.18	62.64	0.00	146
140	158.28	108.43	88.93	160.83	108.71	94.47	159.49	100.06	6.10	65.29	0.00	146
141	160.83	108.71	94.47	165.57	109.23	109.23	162.41	104.14	15.50	72.21	0.00	114

Tabella 6-12 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 02

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	270.11	851.77	2700.36	476.10	0.00	0.00	2483.93	0.00	0.00	
2	767.35	849.28	3247.03	520.49	0.00	2483.93	5272.34	0.00	0.00	
3	232.24	189.37	767.77	109.90	0.00	5272.34	5896.42	0.00	0.00	
4	1121.23	756.69	3191.37	421.07	0.00	5896.42	8384.94	0.00	0.00	
5	326.87	188.98	825.94	101.23	0.00	8384.94	8997.88	0.00	0.00	
6	1472.19	755.12	3393.74	391.31	0.00	8997.88	11410.82	0.00	0.00	
7	408.20	188.49	869.97	94.81	0.00	11410.82	12002.11	0.00	0.00	
8	423.91	187.95	878.02	93.73	0.00	12002.11	12600.45	0.00	0.00	
9	439.65	187.16	885.98	92.70	0.00	12600.45	13188.65	0.00	0.00	
10	455.25	186.23	893.76	91.72	0.00	13188.65	13779.48	0.00	0.00	
11	470.73	185.15	901.36	90.79	0.00	13779.48	14359.61	0.00	0.00	
12	485.27	184.37	908.30	89.90	0.00	14359.61	14924.94	0.00	0.00	
13	499.53	183.53	914.99	89.06	0.00	14924.94	15491.78	0.00	0.00	
14	513.52	182.65	921.45	88.25	0.00	15491.78	16043.35	0.00	0.00	
15	527.34	181.67	927.75	87.48	0.00	16043.35	16597.67	0.00	0.00	
16	541.09	180.54	933.95	86.75	0.00	16597.67	17138.16	0.00	0.00	
17	553.86	179.76	939.53	86.05	0.00	17138.16	17662.73	0.00	0.00	
18	566.30	178.97	944.87	85.38	0.00	17662.73	18185.55	0.00	0.00	
19	578.61	178.09	950.10	84.74	0.00	18185.55	18695.69	0.00	0.00	
20	590.87	177.06	955.28	84.12	0.00	18695.69	19205.44	0.00	0.00	
21	603.02	175.93	960.36	83.54	0.00	19205.44	19700.44	0.00	0.00	
22	615.04	174.71	965.35	82.98	0.00	19700.44	20194.60	0.00	0.00	
23	628.88	172.35	971.35	82.44	0.00	20194.60	20710.15	0.00	0.00	
24	643.16	169.61	977.57	81.93	0.00	20710.15	21198.48	0.00	0.00	
25	657.98	166.42	984.06	81.44	0.00	21198.48	21708.28	0.00	0.00	
26	673.16	162.89	990.71	80.96	0.00	21708.28	22187.52	0.00	0.00	
27	685.96	160.49	996.01	80.51	0.00	22187.52	22638.37	0.00	0.00	
28	698.77	157.94	1001.30	80.08	0.00	22638.37	23100.70	0.00	0.00	
29	711.68	155.19	1006.63	79.67	0.00	23100.70	23536.34	0.00	0.00	
30	724.79	152.20	1012.04	79.28	0.00	23536.34	23983.77	0.00	0.00	
31	736.64	149.75	1016.76	78.90	0.00	23983.77	24380.70	0.00	0.00	
32	745.12	148.97	1019.65	78.54	0.00	24380.70	24754.54	0.00	0.00	
33	1513.83	295.97	2046.91	156.05	0.00	24754.54	25480.34	0.00	0.00	
34	206.80	39.72	277.15	20.97	0.00	25480.34	25574.61	0.00	0.00	
35	561.84	107.13	750.20	56.58	0.00	25574.61	25824.73	0.00	0.00	
36	775.94	146.17	1029.65	77.25	0.00	25824.73	26157.66	0.00	0.00	
37	782.74	145.63	1031.72	76.96	0.00	26157.66	26474.70	0.00	0.00	
38	790.41	144.50	1034.26	76.69	0.00	26474.70	26801.90	0.00	0.00	
39	800.60	141.90	1038.14	76.43	0.00	26801.90	27138.51	0.00	0.00	
40	810.09	139.55	1041.66	76.18	0.00	27138.51	27434.92	0.00	0.00	
41	819.36	137.20	1045.08	75.95	0.00	27434.92	27746.84	0.00	0.00	
42	837.45	135.80	1059.27	76.48	0.00	27746.84	28032.53	0.00	0.00	
43	838.91	131.61	1052.46	75.51	0.00	28032.53	28321.71	0.00	0.00	
44	850.61	127.59	1057.19	75.31	0.00	28321.71	28610.45	0.00	0.00	
45	861.46	123.91	1061.47	75.13	0.00	28610.45	28864.56	0.00	0.00	
46	871.26	120.67	1065.22	74.95	0.00	28864.56	29115.40	0.00	0.00	
47	879.38	118.22	1068.12	74.78	0.00	29115.40	29324.90	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
48	886.47	116.21	1070.50	74.63	0.00	29324.90	29539.42	0.00	0.00	
49	895.53	113.02	1073.93	74.49	0.00	29539.42	29751.03	0.00	0.00	
50	903.29	110.42	1076.70	74.35	0.00	29751.03	29926.23	0.00	0.00	
51	908.73	108.95	1078.30	74.23	0.00	29926.23	30086.73	0.00	0.00	
52	913.40	107.78	1079.53	74.12	0.00	30086.73	30230.46	0.00	0.00	
53	917.60	106.75	1080.55	74.01	0.00	30230.46	30362.85	0.00	0.00	
54	921.77	105.62	1081.58	73.92	0.00	30362.85	30483.85	0.00	0.00	
55	926.00	104.34	1082.67	73.83	0.00	30483.85	30594.42	0.00	0.00	
56	930.39	102.87	1083.87	73.76	0.00	30594.42	30694.47	0.00	0.00	
57	934.31	101.55	1084.85	73.69	0.00	30694.47	30776.85	0.00	0.00	
58	937.10	100.72	1085.28	73.64	0.00	30776.85	30841.77	0.00	0.00	
59	939.59	99.93	1085.59	73.59	0.00	30841.77	30898.31	0.00	0.00	
60	941.79	99.20	1085.78	73.56	0.00	30898.31	30937.50	0.00	0.00	
61	943.42	98.66	1085.70	73.53	0.00	30937.50	30965.37	0.00	0.00	
62	944.56	98.26	1085.41	73.51	0.00	30965.37	30977.06	0.00	0.00	
63	945.42	97.92	1085.00	73.50	0.00	30977.06	30979.47	0.00	0.00	
64	945.88	97.68	1084.41	73.50	0.00	30979.47	30964.82	0.00	0.00	
65	1892.69	194.37	2166.84	147.03	0.00	30964.82	30908.86	0.00	0.00	
66	947.14	96.35	1082.73	73.55	0.00	30908.86	30864.56	0.00	0.00	
67	947.43	95.76	1082.16	73.59	0.00	30864.56	30806.22	0.00	0.00	
68	948.06	94.88	1081.78	73.64	0.00	30806.22	30743.30	0.00	0.00	
69	1897.07	187.11	2161.95	147.44	0.00	30743.30	30569.65	0.00	0.00	
70	948.52	92.33	1080.06	73.83	0.00	30569.65	30468.41	0.00	0.00	
71	949.70	90.71	1080.05	73.91	0.00	30468.41	30364.80	0.00	0.00	
72	951.22	88.80	1080.23	74.01	0.00	30364.80	30244.11	0.00	0.00	
73	953.26	86.50	1080.71	74.11	0.00	30244.11	30121.96	0.00	0.00	
74	956.73	83.31	1081.95	74.22	0.00	30121.96	29990.47	0.00	0.00	
75	958.90	80.71	1082.55	74.34	0.00	29990.47	29831.99	0.00	0.00	
76	961.59	77.72	1083.43	74.48	0.00	29831.99	29679.92	0.00	0.00	
77	966.17	73.60	1085.32	74.62	0.00	29679.92	29511.77	0.00	0.00	
78	969.99	69.78	1086.85	74.78	0.00	29511.77	29326.53	0.00	0.00	
79	971.40	67.13	1087.15	74.94	0.00	29326.53	29114.55	0.00	0.00	
80	969.84	65.95	1085.94	75.11	0.00	29114.55	28884.02	0.00	0.00	
81	966.24	65.75	1083.68	75.30	0.00	28884.02	28635.57	0.00	0.00	
82	961.32	66.15	1080.74	75.50	0.00	28635.57	28374.78	0.00	0.00	
83	958.19	65.46	1078.75	75.71	0.00	28374.78	28118.41	0.00	0.00	
84	959.78	62.13	1079.24	75.93	0.00	28118.41	27867.73	0.00	0.00	
85	961.96	58.35	1080.07	76.16	0.00	27867.73	27590.48	0.00	0.00	
86	964.56	54.23	1081.14	76.41	0.00	27590.48	27314.68	0.00	0.00	
87	967.48	49.82	1082.40	76.67	0.00	27314.68	27012.74	0.00	0.00	
88	965.04	48.15	1080.85	76.94	0.00	27012.74	26682.45	0.00	0.00	
89	959.90	47.81	1077.87	77.23	0.00	26682.45	26344.79	0.00	0.00	
90	954.43	47.51	1074.70	77.53	0.00	26344.79	25992.75	0.00	0.00	
91	949.17	46.97	1071.65	77.84	0.00	25992.75	25636.28	0.00	0.00	
92	945.60	45.41	1069.49	78.17	0.00	25636.28	25272.32	0.00	0.00	
93	945.07	42.07	1068.99	78.51	0.00	25272.32	24907.75	0.00	0.00	
94	944.84	38.44	1068.66	78.87	0.00	24907.75	24521.17	0.00	0.00	
95	940.06	37.12	1065.85	79.25	0.00	24521.17	24114.50	0.00	0.00	
96	935.85	35.35	1063.34	79.64	0.00	24114.50	23709.26	0.00	0.00	
97	930.46	34.08	1060.18	80.05	0.00	23709.26	23278.41	0.00	0.00	
98	922.88	33.83	1055.77	80.48	0.00	23278.41	22845.98	0.00	0.00	
99	920.80	30.50	1054.41	80.93	0.00	22845.98	22414.24	0.00	0.00	
100	921.65	25.45	1054.68	81.40	0.00	22414.24	21966.53	0.00	0.00	
101	920.30	21.43	1053.73	81.89	0.00	21966.53	21502.17	0.00	0.00	
102	915.56	19.07	1050.85	82.40	0.00	21502.17	21023.54	0.00	0.00	
103	909.25	17.41	1047.04	82.94	0.00	21023.54	20535.93	0.00	0.00	
104	905.57	14.17	1044.70	83.50	0.00	20535.93	20041.41	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
105	903.15	10.10	1043.07	84.08	0.00	20041.41	19533.19	0.00	0.00	
106	910.48	5.50	1052.27	85.54	0.00	19533.19	19008.36	0.00	0.00	
107	900.20	0.75	1041.29	85.34	0.00	19008.36	18474.57	0.00	0.00	
108	895.28	0.00	1041.03	86.01	0.00	18474.57	17929.38	0.00	0.00	
109	1764.24	0.00	2070.49	174.14	0.00	17929.38	16812.53	0.00	0.00	
110	869.18	0.00	1030.03	88.20	0.00	16812.53	16240.80	0.00	0.00	
111	863.63	0.00	1030.66	89.01	0.00	16240.80	15657.69	0.00	0.00	
112	857.81	0.00	1031.18	89.85	0.00	15657.69	15063.27	0.00	0.00	
113	849.60	0.00	1028.88	90.73	0.00	15063.27	14459.39	0.00	0.00	
114	842.93	0.00	1028.77	91.66	0.00	14459.39	13844.67	0.00	0.00	
115	840.07	0.00	1033.92	92.64	0.00	13844.67	13215.56	0.00	0.00	
116	833.78	0.00	1034.89	93.67	0.00	13215.56	12574.84	0.00	0.00	
117	1635.88	0.00	2056.54	190.63	0.00	12574.84	11269.81	0.00	0.00	
118	804.45	0.00	1025.20	97.09	0.00	11269.81	10603.30	0.00	0.00	
119	802.32	0.00	1033.08	98.36	0.00	10603.30	9920.28	0.00	0.00	
120	796.68	0.00	1036.51	99.71	0.00	9920.28	9223.89	0.00	0.00	
121	785.22	0.00	1032.01	101.14	0.00	9223.89	8520.01	0.00	0.00	
122	101.34	0.00	133.99	13.26	0.00	8520.01	8427.84	0.00	0.00	
123	672.20	0.00	893.39	89.40	0.00	8427.84	7808.85	0.00	0.00	
124	758.49	0.00	1017.99	104.27	0.00	7808.85	7094.18	0.00	0.00	
125	738.04	0.00	1000.52	105.98	0.00	7094.18	6382.50	0.00	0.00	
126	714.78	8.00	990.77	107.82	0.00	6382.50	5668.10	0.00	0.00	
127	692.52	20.00	988.85	109.78	0.00	5668.10	4944.96	0.00	0.00	
128	670.77	12.00	956.28	111.89	0.00	4944.96	4237.92	0.00	0.00	
129	650.12	0.00	918.11	114.16	0.00	4237.92	3552.24	0.00	0.00	
130	632.46	0.00	903.52	116.61	0.00	3552.24	2869.17	0.00	0.00	
131	617.28	0.00	892.86	119.26	0.00	2869.17	2185.72	0.00	0.00	
132	600.76	0.00	879.76	122.14	0.00	2185.72	1504.19	0.00	0.00	
133	579.92	0.00	858.69	125.29	0.00	1504.19	831.71	0.00	0.00	
134	553.94	0.00	827.47	128.75	0.00	831.71	177.53	0.00	0.00	
135	1025.00	0.00	1546.43	269.34	0.00	177.53	-1060.64	0.00	0.00	
136	469.71	0.00	711.00	141.52	0.00	-1060.64	-1635.68	0.00	0.00	
137	438.92	0.00	661.19	146.86	0.00	-1635.68	-2172.87	0.00	0.00	
138	407.49	0.00	605.78	152.92	0.00	-2172.87	-2666.12	0.00	0.00	
139	374.22	0.00	540.68	159.91	0.00	-2666.12	-3105.42	0.00	0.00	
140	787.15	0.00	990.79	448.27	0.00	-3105.42	-3886.65	0.00	0.00	
141	617.14	0.00	-653.10	886.01	0.00	-3886.65	-3047.84	0.00	0.00	

Tabella 6-13 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 02

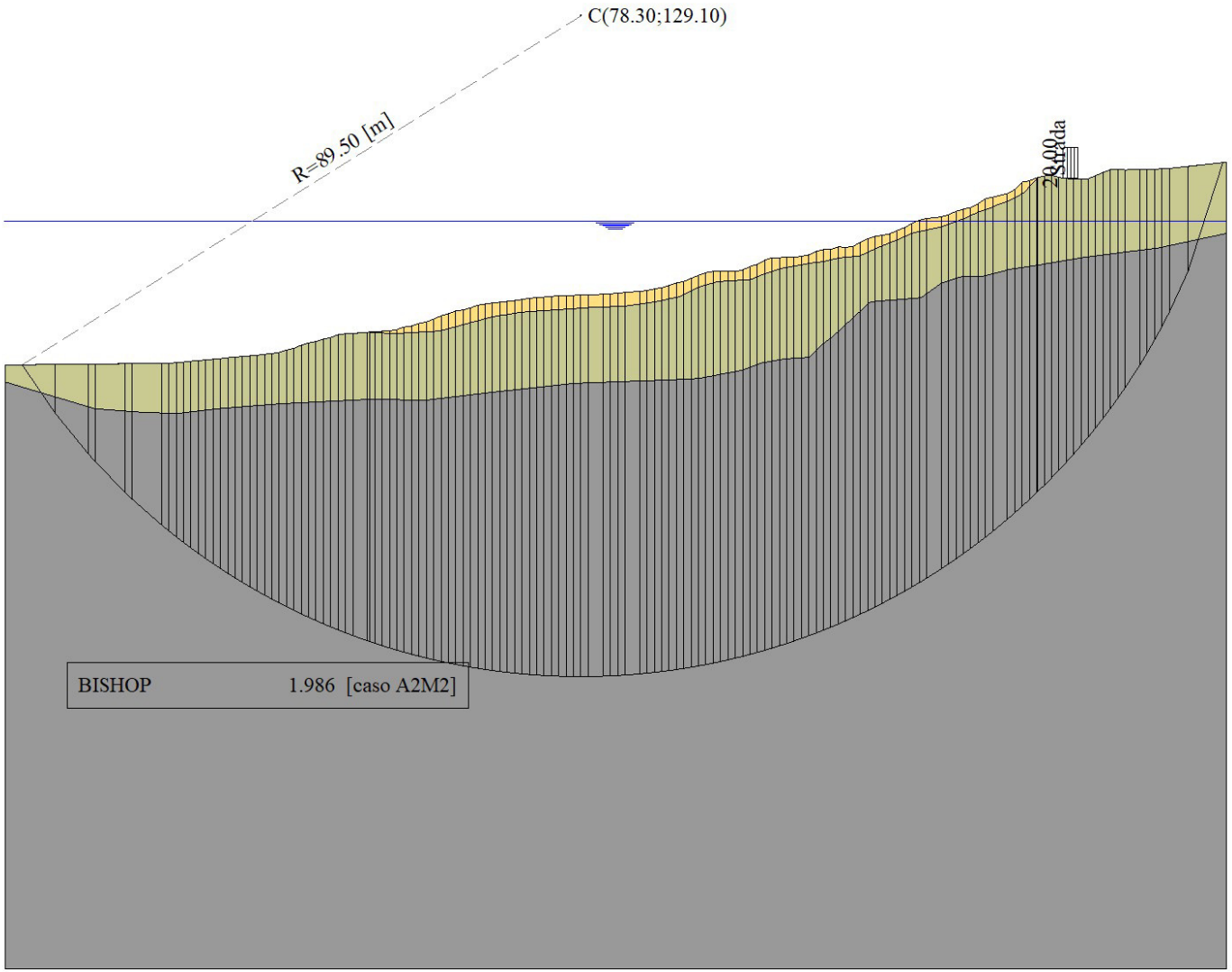

Figura 6-2 – Superficie critica (1) della sezione VS_04 per la verifica di stabilità 02

6.5 VERIFICA DI STABILITÀ 03

6.5.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate solo in condizioni **sismiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni totali**
Presenza di carichi distribuiti

6.5.2 RISULTATI ANALISI

Numero di superfici analizzate	141498
Coefficiente di sicurezza minimo	1.600
Superficie con coefficiente di sicurezza minimo	1

6.5.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO IL BASSO

Numero di strisce	153	
Coordinate del centro	X[m]= 76.30	Y[m]= 135.10
Raggio del cerchio	R[m]= 92.50	
Intersezione a valle con il profilo topografico	X_v[m]= 0.61	Y_v[m]= 81.93
Intersezione a monte con il profilo topografico	X_m[m]= 164.68	Y_m[m]= 107.81
Coefficiente di sicurezza	F_S= 1.600	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	0.61	81.93	81.93	4.95	81.94	76.23	3.50	80.03	7.16	-52.69	0.00	100
2	4.95	81.94	76.23	8.72	81.94	71.94	7.01	77.91	5.71	-48.71	0.00	129
3	8.72	81.94	71.94	10.72	81.94	69.87	9.75	76.41	2.88	-46.04	0.00	146
4	10.72	81.94	69.87	10.77	81.94	69.82	10.75	75.89	0.07	-45.13	0.00	146
5	10.77	81.94	69.82	11.72	81.95	68.88	11.25	75.64	1.34	-44.69	0.00	146
6	11.72	81.95	68.88	13.72	81.95	66.98	12.74	74.93	2.75	-43.43	0.00	146
7	13.72	81.95	66.98	15.72	81.97	65.20	14.74	74.02	2.68	-41.74	0.00	146
8	15.72	81.97	65.20	17.72	82.01	63.51	16.74	73.17	2.61	-40.10	0.00	146
9	17.72	82.01	63.51	18.72	82.02	62.71	18.22	72.56	1.28	-38.90	0.00	146
10	18.72	82.02	62.71	19.72	82.02	61.92	19.22	72.17	1.27	-38.10	0.00	146
11	19.72	82.02	61.92	20.72	82.06	61.16	20.22	71.79	1.26	-37.32	0.00	146
12	20.72	82.06	61.16	21.72	82.15	60.42	21.22	71.45	1.24	-36.55	0.00	146
13	21.72	82.15	60.42	22.72	82.38	59.70	22.22	71.16	1.23	-35.78	0.00	146
14	22.72	82.38	59.70	23.72	82.48	59.00	23.22	70.89	1.22	-35.02	0.00	146
15	23.72	82.48	59.00	24.72	82.64	58.32	24.22	70.61	1.21	-34.27	0.00	146
16	24.72	82.64	58.32	25.72	82.81	57.65	25.22	70.35	1.20	-33.52	0.00	146
17	25.72	82.81	57.65	26.72	82.91	57.01	26.22	70.10	1.19	-32.78	0.00	146
18	26.72	82.91	57.01	27.72	83.08	56.38	27.22	69.85	1.18	-32.05	0.00	146
19	27.72	83.08	56.38	28.72	83.24	55.78	28.22	69.62	1.17	-31.32	0.00	146
20	28.72	83.24	55.78	29.72	83.41	55.18	29.22	69.40	1.16	-30.60	0.00	146
21	29.72	83.41	55.18	30.72	83.51	54.61	30.22	69.18	1.15	-29.88	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
22	30.72	83.51	54.61	31.72	83.69	54.05	31.22	68.96	1.15	-29.17	0.00	146
23	31.72	83.69	54.05	32.72	83.81	53.51	32.22	68.76	1.14	-28.46	0.00	146
24	32.72	83.81	53.51	33.72	83.96	52.98	33.22	68.57	1.13	-27.76	0.00	146
25	33.72	83.96	52.98	34.72	84.08	52.47	34.22	68.37	1.12	-27.06	0.00	146
26	34.72	84.08	52.47	35.72	84.25	51.98	35.22	68.19	1.12	-26.37	0.00	146
27	35.72	84.25	51.98	36.72	84.53	51.50	36.22	68.06	1.11	-25.68	0.00	146
28	36.72	84.53	51.50	37.72	84.68	51.03	37.22	67.93	1.10	-24.99	0.00	146
29	37.72	84.68	51.03	38.72	84.79	50.58	38.22	67.77	1.10	-24.31	0.00	146
30	38.72	84.79	50.58	39.72	84.98	50.14	39.22	67.62	1.09	-23.63	0.00	146
31	39.72	84.98	50.14	40.72	85.12	49.72	40.22	67.49	1.09	-22.96	0.00	146
32	40.72	85.12	49.72	41.72	85.22	49.31	41.22	67.34	1.08	-22.29	0.00	146
33	41.72	85.22	49.31	42.72	85.48	48.91	42.22	67.23	1.08	-21.62	0.00	146
34	42.72	85.48	48.91	43.72	85.58	48.53	43.22	67.12	1.07	-20.95	0.00	146
35	43.72	85.58	48.53	44.72	85.79	48.16	44.22	67.01	1.07	-20.29	0.00	146
36	44.72	85.79	48.16	45.72	85.94	47.80	45.22	66.92	1.06	-19.63	0.00	146
37	45.72	85.94	47.80	46.72	86.15	47.46	46.22	66.84	1.06	-18.98	0.00	146
38	46.72	86.15	47.46	47.72	86.32	47.13	47.22	66.76	1.05	-18.32	0.00	146
39	47.72	86.32	47.13	48.72	86.93	46.81	48.22	66.80	1.05	-17.67	0.00	146
40	48.72	86.93	46.81	49.72	87.18	46.50	49.22	66.85	1.05	-17.02	0.00	146
41	49.72	87.18	46.50	50.72	87.12	46.21	50.22	66.75	1.04	-16.38	0.00	146
42	50.72	87.12	46.21	51.72	87.24	45.93	51.22	66.62	1.04	-15.73	0.00	146
43	51.72	87.24	45.93	52.72	87.57	45.66	52.22	66.60	1.04	-15.09	0.00	146
44	52.72	87.57	45.66	54.72	88.25	45.15	53.72	66.66	2.06	-14.13	0.00	146
45	54.72	88.25	45.15	55.72	88.63	44.92	55.22	66.74	1.03	-13.17	0.00	146
46	55.72	88.63	44.92	56.72	88.98	44.70	56.22	66.81	1.02	-12.54	0.00	146
47	56.72	88.98	44.70	57.72	89.32	44.49	57.22	66.87	1.02	-11.90	0.00	146
48	57.72	89.32	44.49	58.72	89.69	44.29	58.22	66.95	1.02	-11.27	0.00	146
49	58.72	89.69	44.29	59.72	89.96	44.10	59.22	67.01	1.02	-10.64	0.00	146
50	59.72	89.96	44.10	60.72	90.14	43.92	60.22	67.03	1.02	-10.01	0.00	146
51	60.72	90.14	43.92	61.72	90.59	43.76	61.22	67.10	1.01	-9.38	0.00	146
52	61.72	90.59	43.76	62.72	90.70	43.60	62.22	67.16	1.01	-8.76	0.00	146
53	62.72	90.70	43.60	63.72	90.71	43.46	63.22	67.12	1.01	-8.13	0.00	146
54	63.72	90.71	43.46	64.72	90.70	43.33	64.22	67.05	1.01	-7.50	0.00	146
55	64.72	90.70	43.33	65.72	90.87	43.21	65.22	67.03	1.01	-6.88	0.00	146
56	65.72	90.87	43.21	66.72	90.99	43.10	66.22	67.04	1.01	-6.26	0.00	146
57	66.72	90.99	43.10	67.29	91.04	43.04	67.01	67.04	0.57	-5.77	0.00	146
58	67.29	91.04	43.04	67.72	91.08	43.00	67.51	67.04	0.43	-5.46	0.00	146
59	67.72	91.08	43.00	68.72	91.15	42.91	68.22	67.03	1.00	-5.01	0.00	146
60	68.72	91.15	42.91	69.72	91.21	42.83	69.22	67.03	1.00	-4.39	0.00	146
61	69.72	91.21	42.83	70.72	91.31	42.77	70.22	67.03	1.00	-3.77	0.00	146
62	70.72	91.31	42.77	71.72	91.36	42.71	71.22	67.04	1.00	-3.15	0.00	146
63	71.72	91.36	42.71	72.72	91.42	42.67	72.22	67.04	1.00	-2.53	0.00	146
64	72.72	91.42	42.67	73.72	91.47	42.64	73.22	67.05	1.00	-1.91	0.00	146
65	73.72	91.47	42.64	74.72	91.54	42.61	74.22	67.06	1.00	-1.29	0.00	146
66	74.72	91.54	42.61	75.72	91.59	42.60	75.22	67.09	1.00	-0.67	0.00	146
67	75.72	91.59	42.60	76.72	91.69	42.60	76.22	67.12	1.00	-0.05	0.00	146
68	76.72	91.69	42.60	78.72	91.79	42.63	77.72	67.18	2.00	0.88	0.00	146
69	78.72	91.79	42.63	79.72	91.86	42.66	79.22	67.24	1.00	1.81	0.00	146
70	79.72	91.86	42.66	80.72	91.90	42.71	80.22	67.28	1.00	2.43	0.00	146
71	80.72	91.90	42.71	81.72	91.93	42.76	81.22	67.32	1.00	3.05	0.00	146
72	81.72	91.93	42.76	82.72	92.00	42.82	82.22	67.38	1.00	3.67	0.00	146
73	82.72	92.00	42.82	83.72	92.14	42.90	83.22	67.47	1.00	4.29	0.00	146
74	83.72	92.14	42.90	84.72	92.21	42.98	84.22	67.56	1.00	4.91	0.00	146
75	84.72	92.21	42.98	85.72	92.29	43.08	85.22	67.64	1.00	5.53	0.00	146
76	85.72	92.29	43.08	86.72	92.33	43.19	86.22	67.72	1.01	6.16	0.00	146
77	86.72	92.33	43.19	87.72	92.45	43.31	87.22	67.82	1.01	6.78	0.00	146
78	87.72	92.45	43.31	88.72	92.49	43.44	88.22	67.92	1.01	7.40	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
79	88.72	92.49	43.44	89.72	92.54	43.58	89.22	68.01	1.01	8.03	0.00	146
80	89.72	92.54	43.58	90.18	92.57	43.65	89.95	68.08	0.47	8.49	0.00	146
81	90.18	92.57	43.65	90.72	92.59	43.73	90.45	68.13	0.55	8.80	0.00	146
82	90.72	92.59	43.73	91.72	92.76	43.89	91.22	68.24	1.01	9.28	0.00	146
83	91.72	92.76	43.89	92.72	92.81	44.07	92.22	68.38	1.02	9.91	0.00	146
84	92.72	92.81	44.07	94.72	92.95	44.45	93.72	68.57	2.04	10.86	0.00	146
85	94.72	92.95	44.45	95.72	93.04	44.66	95.22	68.78	1.02	11.80	0.00	146
86	95.72	93.04	44.66	96.72	93.15	44.88	96.22	68.93	1.02	12.44	0.00	146
87	96.72	93.15	44.88	97.72	93.48	45.11	97.22	69.16	1.03	13.07	0.00	146
88	97.72	93.48	45.11	98.72	93.88	45.36	98.22	69.46	1.03	13.71	0.00	146
89	98.72	93.88	45.36	98.87	93.90	45.40	98.79	69.63	0.15	14.07	0.00	146
90	98.87	93.90	45.40	99.72	94.04	45.61	99.29	69.74	0.88	14.39	0.00	146
91	99.72	94.04	45.61	100.72	94.82	45.88	100.22	70.09	1.04	14.99	0.00	146
92	100.72	94.82	45.88	101.72	95.13	46.16	101.22	70.50	1.04	15.63	0.00	146
93	101.72	95.13	46.16	102.72	95.39	46.45	102.22	70.78	1.04	16.27	0.00	146
94	102.72	95.39	46.45	103.71	95.53	46.75	103.21	71.03	1.03	16.92	0.00	146
95	103.71	95.53	46.75	104.71	95.73	47.07	104.21	71.27	1.05	17.56	0.00	146
96	104.71	95.73	47.07	105.71	95.94	47.40	105.21	71.54	1.05	18.21	0.00	146
97	105.71	95.94	47.40	106.71	96.34	47.74	106.21	71.86	1.06	18.87	0.00	146
98	106.71	96.34	47.74	106.82	96.37	47.78	106.76	72.06	0.12	19.23	0.00	146
99	106.82	96.37	47.78	107.71	96.65	48.10	107.26	72.22	0.94	19.56	0.00	146
100	107.71	96.65	48.10	108.71	97.21	48.46	108.21	72.61	1.07	20.18	0.00	146
101	108.71	97.21	48.46	109.71	97.46	48.84	109.21	72.99	1.07	20.84	0.00	146
102	109.71	97.46	48.84	110.71	97.86	49.24	110.21	73.35	1.07	21.51	0.00	146
103	110.71	97.86	49.24	111.71	98.44	49.65	111.21	73.80	1.08	22.17	0.00	146
104	111.71	98.44	49.65	112.71	98.65	50.07	112.21	74.20	1.09	22.84	0.00	146
105	112.71	98.65	50.07	113.61	98.85	50.46	113.16	74.51	0.98	23.48	0.00	146
106	113.61	98.85	50.46	113.71	98.88	50.50	113.66	74.67	0.11	23.82	0.00	146
107	113.71	98.88	50.50	114.71	99.25	50.95	114.21	74.90	1.10	24.20	0.00	146
108	114.71	99.25	50.95	115.71	99.49	51.42	115.21	75.28	1.10	24.88	0.00	146
109	115.71	99.49	51.42	116.71	99.52	51.89	116.21	75.58	1.11	25.56	0.00	146
110	116.71	99.52	51.89	117.71	99.52	52.39	117.21	75.83	1.11	26.25	0.00	146
111	117.71	99.52	52.39	118.71	99.51	52.90	118.21	76.08	1.12	26.94	0.00	146
112	118.71	99.51	52.90	119.71	99.70	53.42	119.21	76.38	1.13	27.64	0.00	146
113	119.71	99.70	53.42	120.71	99.73	53.96	120.21	76.70	1.14	28.34	0.00	146
114	120.71	99.73	53.96	121.46	99.77	54.37	121.08	76.96	0.86	28.96	0.00	146
115	121.46	99.77	54.37	121.71	99.78	54.51	121.58	77.11	0.29	29.31	0.00	146
116	121.71	99.78	54.51	122.71	100.07	55.09	122.21	77.36	1.15	29.76	0.00	146
117	122.71	100.07	55.09	123.71	100.20	55.67	123.21	77.76	1.16	30.47	0.00	146
118	123.71	100.20	55.67	124.71	100.42	56.28	124.21	78.14	1.17	31.20	0.00	146
119	124.71	100.42	56.28	125.71	100.75	56.90	125.21	78.59	1.18	31.92	0.00	146
120	125.71	100.75	56.90	126.71	101.22	57.54	126.21	79.10	1.19	32.65	0.00	146
121	126.71	101.22	57.54	127.71	101.54	58.20	127.21	79.63	1.20	33.39	0.00	146
122	127.71	101.54	58.20	128.71	102.16	58.88	128.21	80.20	1.21	34.14	0.00	146
123	128.71	102.16	58.88	129.71	102.44	59.58	129.21	80.76	1.22	34.89	0.00	146
124	129.71	102.44	59.58	130.71	102.64	60.29	130.21	81.24	1.23	35.65	0.00	146
125	130.71	102.64	60.29	131.71	102.69	61.03	131.21	81.66	1.24	36.42	0.00	146
126	131.71	102.69	61.03	132.71	102.75	61.79	132.21	82.07	1.26	37.19	0.00	146
127	132.71	102.75	61.79	133.71	102.62	62.57	133.21	82.43	1.27	37.97	0.00	146
128	133.71	102.62	62.57	134.71	102.64	63.37	134.21	82.80	1.28	38.76	0.00	146
129	134.71	102.64	63.37	135.71	102.67	64.20	135.21	83.22	1.30	39.56	0.00	146
130	135.71	102.67	64.20	136.71	102.96	65.05	136.21	83.72	1.31	40.37	0.00	146
131	136.71	102.96	65.05	137.71	103.01	65.93	137.21	84.24	1.33	41.19	0.00	146
132	137.71	103.01	65.93	138.56	103.19	66.69	138.13	84.70	1.14	41.95	0.00	146
133	138.56	103.19	66.69	138.71	103.22	66.83	138.63	84.98	0.20	42.37	0.00	146
134	138.71	103.22	66.83	139.71	104.22	67.75	139.21	85.51	1.36	42.85	0.00	146
135	139.71	104.22	67.75	140.71	104.53	68.71	140.21	86.30	1.38	43.70	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
136	140.71	104.53	68.71	141.10	104.78	69.09	140.90	86.78	0.54	44.30	0.00	146
137	141.10	104.78	69.09	141.71	105.18	69.70	141.40	87.19	0.86	44.74	0.00	146
138	141.71	105.18	69.70	142.71	105.41	70.71	142.21	87.75	1.43	45.44	0.00	146
139	142.71	105.41	70.71	143.71	105.67	71.76	143.21	88.39	1.45	46.33	0.00	146
140	143.71	105.67	71.76	144.71	105.79	72.84	144.21	89.01	1.47	47.24	0.00	146
141	144.71	105.79	72.84	145.71	105.86	73.96	145.21	89.61	1.50	48.16	0.00	146
142	145.71	105.86	73.96	146.71	105.91	75.11	146.21	90.21	1.53	49.10	0.00	146
143	146.71	105.91	75.11	147.71	106.02	76.30	147.21	90.83	1.56	50.05	0.00	146
144	147.71	106.02	76.30	148.71	106.05	77.54	148.21	91.48	1.59	51.03	0.00	146
145	148.71	106.05	77.54	149.71	106.03	78.82	149.21	92.11	1.63	52.02	0.00	146
146	149.71	106.03	78.82	150.71	106.13	80.15	150.21	92.78	1.66	53.04	0.00	146
147	150.71	106.13	80.15	151.71	106.26	81.53	151.21	93.52	1.70	54.08	0.00	146
148	151.71	106.26	81.53	152.71	106.40	82.97	152.21	94.29	1.75	55.15	0.00	146
149	152.71	106.40	82.97	153.71	106.46	84.46	153.20	95.07	1.80	56.25	0.00	146
150	153.71	106.46	84.46	154.71	106.59	86.03	154.20	95.88	1.86	57.39	0.00	146
151	154.71	106.59	86.03	155.71	106.83	87.66	155.20	96.77	1.92	58.55	0.00	146
152	155.71	106.83	87.66	160.20	107.32	96.14	157.76	99.29	9.59	62.12	0.00	146
153	160.20	107.32	96.14	164.68	107.81	107.81	161.69	103.75	12.50	68.96	0.00	103

Tabella 6-14 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 03

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	226.60	826.71	2352.51	447.84	0.00	0.00	2111.12	0.00	0.00	
2	541.70	717.55	2490.09	459.45	0.00	2111.12	4208.39	0.00	0.00	
3	403.96	380.58	1444.73	262.97	0.00	4208.39	5373.04	0.00	0.00	
4	11.07	9.51	36.80	6.47	0.00	5373.04	5402.19	0.00	0.00	
5	219.05	180.72	705.10	121.96	0.00	5402.19	5955.21	0.00	0.00	
6	513.17	380.35	1518.84	251.33	0.00	5955.21	7108.29	0.00	0.00	
7	580.84	380.13	1562.02	244.63	0.00	7108.29	8251.36	0.00	0.00	
8	645.42	379.52	1601.44	238.64	0.00	8251.36	9380.58	0.00	0.00	
9	345.96	189.51	814.47	117.26	0.00	9380.58	9935.56	0.00	0.00	
10	360.61	189.45	822.83	115.98	0.00	9935.56	10482.91	0.00	0.00	
11	375.13	189.25	830.98	114.76	0.00	10482.91	11031.79	0.00	0.00	
12	390.07	188.61	839.31	113.60	0.00	11031.79	11583.91	0.00	0.00	
13	406.38	187.03	848.42	112.49	0.00	11583.91	12155.98	0.00	0.00	
14	422.40	185.41	857.22	111.44	0.00	12155.98	12697.16	0.00	0.00	
15	437.43	184.13	865.26	110.43	0.00	12697.16	13242.37	0.00	0.00	
16	452.74	182.50	873.39	109.47	0.00	13242.37	13782.08	0.00	0.00	
17	467.17	181.17	880.86	108.55	0.00	13782.08	14301.42	0.00	0.00	
18	481.26	179.84	888.04	107.67	0.00	14301.42	14825.48	0.00	0.00	
19	495.57	178.22	895.28	106.83	0.00	14825.48	15339.60	0.00	0.00	
20	509.57	176.59	902.26	106.03	0.00	15339.60	15847.08	0.00	0.00	
21	522.71	175.26	908.64	105.25	0.00	15847.08	16333.62	0.00	0.00	
22	535.63	173.89	914.84	104.52	0.00	16333.62	16825.27	0.00	0.00	
23	548.44	172.41	920.92	103.81	0.00	16825.27	17297.48	0.00	0.00	
24	560.69	171.08	926.61	103.13	0.00	17297.48	17765.61	0.00	0.00	
25	572.65	169.75	932.10	102.48	0.00	17765.61	18219.20	0.00	0.00	
26	584.51	168.32	937.49	101.86	0.00	18219.20	18671.66	0.00	0.00	
27	597.57	166.11	943.55	101.26	0.00	18671.66	19132.64	0.00	0.00	
28	610.16	163.99	949.31	100.69	0.00	19132.64	19562.13	0.00	0.00	
29	620.94	162.71	953.97	100.14	0.00	19562.13	19975.03	0.00	0.00	
30	631.82	161.24	958.67	99.62	0.00	19975.03	20390.68	0.00	0.00	
31	642.72	159.61	963.36	99.12	0.00	20390.68	20787.94	0.00	0.00	
32	652.55	158.43	967.42	98.63	0.00	20787.94	21168.42	0.00	0.00	
33	663.22	156.66	971.95	98.17	0.00	21168.42	21563.46	0.00	0.00	
34	673.64	154.89	976.32	97.73	0.00	21563.46	21922.82	0.00	0.00	
35	683.37	153.36	980.29	97.30	0.00	21922.82	22288.33	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
36	693.31	151.59	984.37	96.90	0.00	22288.33	22633.72	0.00	0.00	
37	703.01	149.82	988.31	96.51	0.00	22633.72	22977.08	0.00	0.00	
38	712.67	147.95	992.22	96.14	0.00	22977.08	23303.29	0.00	0.00	
39	725.75	144.12	998.05	95.78	0.00	23303.29	23681.44	0.00	0.00	
40	739.33	139.90	1004.15	95.45	0.00	23681.44	23995.69	0.00	0.00	
41	746.56	138.96	1006.68	95.12	0.00	23995.69	24255.45	0.00	0.00	
42	752.38	138.66	1008.44	94.82	0.00	24255.45	24528.94	0.00	0.00	
43	761.54	136.45	1012.06	94.52	0.00	24528.94	24819.56	0.00	0.00	
44	1555.71	262.97	2037.77	188.22	0.00	24819.56	25365.99	0.00	0.00	
45	794.30	126.28	1025.86	93.73	0.00	25365.99	25625.19	0.00	0.00	
46	805.16	122.69	1030.42	93.49	0.00	25625.19	25867.69	0.00	0.00	
47	815.44	119.30	1034.66	93.27	0.00	25867.69	26096.07	0.00	0.00	
48	825.69	115.82	1038.90	93.06	0.00	26096.07	26314.91	0.00	0.00	
49	835.08	112.67	1042.68	92.86	0.00	26314.91	26509.44	0.00	0.00	
50	842.54	110.46	1045.40	92.68	0.00	26509.44	26681.56	0.00	0.00	
51	851.43	107.36	1048.92	92.50	0.00	26681.56	26870.12	0.00	0.00	
52	859.47	104.61	1051.99	92.34	0.00	26870.12	27009.84	0.00	0.00	
53	863.29	104.02	1052.78	92.19	0.00	27009.84	27127.28	0.00	0.00	
54	865.80	104.01	1052.89	92.05	0.00	27127.28	27230.92	0.00	0.00	
55	869.57	103.22	1053.71	91.93	0.00	27230.92	27341.33	0.00	0.00	
56	874.33	101.79	1055.07	91.81	0.00	27341.33	27434.47	0.00	0.00	
57	500.13	57.54	601.81	52.29	0.00	27434.47	27480.33	0.00	0.00	
58	378.03	43.22	454.15	39.42	0.00	27480.33	27512.60	0.00	0.00	
59	881.33	99.97	1056.49	91.61	0.00	27512.60	27576.83	0.00	0.00	
60	884.02	99.32	1056.80	91.53	0.00	27576.83	27628.24	0.00	0.00	
61	886.79	98.53	1057.17	91.46	0.00	27628.24	27671.75	0.00	0.00	
62	889.27	97.79	1057.41	91.40	0.00	27671.75	27698.52	0.00	0.00	
63	891.18	97.25	1057.35	91.35	0.00	27698.52	27714.53	0.00	0.00	
64	892.90	96.70	1057.21	91.31	0.00	27714.53	27717.86	0.00	0.00	
65	894.51	96.11	1057.04	91.29	0.00	27717.86	27711.42	0.00	0.00	
66	895.92	95.51	1056.77	91.27	0.00	27711.42	27691.39	0.00	0.00	
67	897.41	94.77	1056.57	91.26	0.00	27691.39	27664.43	0.00	0.00	
68	1797.93	187.56	2111.78	182.55	0.00	27664.43	27566.23	0.00	0.00	
69	899.95	92.94	1055.02	91.31	0.00	27566.23	27501.71	0.00	0.00	
70	900.28	92.39	1054.26	91.35	0.00	27501.71	27422.96	0.00	0.00	
71	900.04	92.04	1053.22	91.39	0.00	27422.96	27331.97	0.00	0.00	
72	899.88	91.55	1052.22	91.45	0.00	27331.97	27233.33	0.00	0.00	
73	900.53	90.51	1051.68	91.52	0.00	27233.33	27129.52	0.00	0.00	
74	900.98	89.48	1051.04	91.60	0.00	27129.52	27007.92	0.00	0.00	
75	900.68	88.74	1050.01	91.69	0.00	27007.92	26875.94	0.00	0.00	
76	899.91	88.14	1048.74	91.79	0.00	26875.94	26729.28	0.00	0.00	
77	899.29	87.35	1047.57	91.91	0.00	26729.28	26578.46	0.00	0.00	
78	898.48	86.56	1046.29	92.03	0.00	26578.46	26409.58	0.00	0.00	
79	896.83	86.11	1044.57	92.17	0.00	26409.58	26230.71	0.00	0.00	
80	411.99	39.43	479.94	42.45	0.00	26230.71	26145.40	0.00	0.00	
81	483.14	46.15	562.91	49.87	0.00	26145.40	26041.03	0.00	0.00	
82	894.18	84.53	1041.51	92.48	0.00	26041.03	25850.51	0.00	0.00	
83	893.10	83.45	1040.12	92.65	0.00	25850.51	25638.93	0.00	0.00	
84	1779.46	165.01	2074.11	185.85	0.00	25638.93	25187.34	0.00	0.00	
85	886.41	81.37	1034.10	93.24	0.00	25187.34	24947.37	0.00	0.00	
86	884.31	80.38	1032.16	93.46	0.00	24947.37	24698.45	0.00	0.00	
87	884.20	78.22	1031.31	93.69	0.00	24698.45	24455.56	0.00	0.00	
88	886.52	74.63	1031.81	93.94	0.00	24455.56	24205.10	0.00	0.00	
89	133.17	10.89	154.81	14.11	0.00	24205.10	24163.51	0.00	0.00	
90	753.88	61.02	876.52	80.09	0.00	24163.51	23925.18	0.00	0.00	
91	890.88	67.27	1032.69	94.48	0.00	23925.18	23674.18	0.00	0.00	
92	895.85	61.92	1034.69	94.77	0.00	23674.18	23377.49	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
93	895.83	59.12	1033.93	95.07	0.00	23377.49	23066.00	0.00	0.00	
94	885.13	56.58	1021.87	94.44	0.00	23066.00	22740.15	0.00	0.00	
95	891.53	55.48	1030.01	95.73	0.00	22740.15	22403.94	0.00	0.00	
96	889.37	53.46	1028.04	96.08	0.00	22403.94	22057.66	0.00	0.00	
97	888.82	50.46	1026.96	96.45	0.00	22057.66	21709.64	0.00	0.00	
98	97.82	5.32	112.95	10.63	0.00	21709.64	21669.91	0.00	0.00	
99	791.09	41.68	913.30	86.20	0.00	21669.91	21345.13	0.00	0.00	
100	890.30	42.70	1026.26	97.23	0.00	21345.13	20978.67	0.00	0.00	
101	890.86	38.73	1025.80	97.65	0.00	20978.67	20586.97	0.00	0.00	
102	889.72	35.53	1024.37	98.09	0.00	20586.97	20189.39	0.00	0.00	
103	891.35	30.72	1024.52	98.55	0.00	20189.39	19784.06	0.00	0.00	
104	891.00	26.84	1023.52	99.03	0.00	19784.06	19355.90	0.00	0.00	
105	798.58	22.34	918.55	89.56	0.00	19355.90	18962.52	0.00	0.00	
106	88.54	2.37	101.91	9.98	0.00	18962.52	18918.50	0.00	0.00	
107	884.58	21.73	1018.13	100.05	0.00	18918.50	18473.75	0.00	0.00	
108	881.81	18.73	1015.65	100.60	0.00	18473.75	18015.88	0.00	0.00	
109	875.66	17.40	1011.13	101.17	0.00	18015.88	17545.90	0.00	0.00	
110	867.05	17.25	1005.07	101.76	0.00	17545.90	17068.37	0.00	0.00	
111	857.79	17.29	998.55	102.38	0.00	17068.37	16584.09	0.00	0.00	
112	850.00	16.40	992.82	103.02	0.00	16584.09	16096.08	0.00	0.00	
113	842.29	15.32	987.05	103.69	0.00	16096.08	15598.52	0.00	0.00	
114	625.65	11.23	735.83	78.23	0.00	15598.52	15221.63	0.00	0.00	
115	207.39	3.68	244.42	26.17	0.00	15221.63	15095.21	0.00	0.00	
116	825.80	13.25	974.56	105.13	0.00	15095.21	14588.26	0.00	0.00	
117	819.03	11.18	969.07	105.89	0.00	14588.26	14072.13	0.00	0.00	
118	811.30	9.46	962.87	106.69	0.00	14072.13	13550.48	0.00	0.00	
119	805.10	6.76	957.50	107.53	0.00	13550.48	13022.29	0.00	0.00	
120	800.85	2.83	953.26	108.40	0.00	13022.29	12485.74	0.00	0.00	
121	796.18	0.04	949.95	109.31	0.00	12485.74	11940.07	0.00	0.00	
122	792.55	0.00	951.41	110.27	0.00	11940.07	11383.81	0.00	0.00	
123	788.20	0.00	952.20	111.26	0.00	11383.81	10817.43	0.00	0.00	
124	779.65	0.00	947.65	112.31	0.00	10817.43	10244.64	0.00	0.00	
125	768.62	0.00	939.91	113.41	0.00	10244.64	9667.78	0.00	0.00	
126	755.94	0.00	929.98	114.56	0.00	9667.78	9088.58	0.00	0.00	
127	741.21	0.00	917.26	115.77	0.00	9088.58	8509.26	0.00	0.00	
128	725.72	0.00	903.41	117.04	0.00	8509.26	7930.91	0.00	0.00	
129	711.27	0.00	890.90	118.38	0.00	7930.91	7352.84	0.00	0.00	
130	698.86	0.00	881.16	119.78	0.00	7352.84	6773.22	0.00	0.00	
131	686.19	0.00	871.01	121.27	0.00	6773.22	6192.57	0.00	0.00	
132	572.30	0.00	730.91	104.31	0.00	6192.57	5699.51	0.00	0.00	
133	100.05	0.00	128.22	18.53	0.00	5699.51	5612.46	0.00	0.00	
134	666.66	0.00	859.05	124.49	0.00	5612.46	5023.91	0.00	0.00	
135	661.41	0.00	859.83	126.24	0.00	5023.91	4426.29	0.00	0.00	
136	255.18	0.00	333.57	49.73	0.00	4426.29	4192.33	0.00	0.00	
137	397.26	0.00	521.66	78.37	0.00	4192.33	3823.90	0.00	0.00	
138	642.18	0.00	848.78	130.08	0.00	3823.90	3218.31	0.00	0.00	
139	627.79	0.00	835.91	132.18	0.00	3218.31	2614.93	0.00	0.00	
140	611.78	16.60	846.49	134.42	0.00	2614.93	1994.65	0.00	0.00	
141	593.41	20.00	832.66	136.81	0.00	1994.65	1377.66	0.00	0.00	
142	573.73	3.40	783.67	139.38	0.00	1377.66	793.91	0.00	0.00	
143	553.70	0.00	754.43	142.13	0.00	793.91	227.45	0.00	0.00	
144	532.75	0.00	728.37	145.10	0.00	227.45	-323.90	0.00	0.00	
145	509.81	0.00	697.87	148.31	0.00	-323.90	-855.80	0.00	0.00	
146	486.66	0.00	665.69	151.79	0.00	-855.80	-1366.21	0.00	0.00	
147	463.97	0.00	632.83	155.58	0.00	-1366.21	-1853.96	0.00	0.00	
148	440.67	0.00	597.09	159.73	0.00	-1853.96	-2315.87	0.00	0.00	
149	415.66	0.00	555.95	164.28	0.00	-2315.87	-2746.46	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
150	389.41	0.00	509.63	169.32	0.00	-2746.46	-3140.28	0.00	0.00	
151	363.53	0.00	460.68	174.93	0.00	-3140.28	-3494.13	0.00	0.00	
152	1245.41	0.00	1199.34	875.43	0.00	-3494.13	-4323.37	0.00	0.00	
153	458.71	0.00	-719.29	803.30	0.00	-4323.37	-3429.42	0.00	0.00	

Tabella 6-15 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 03

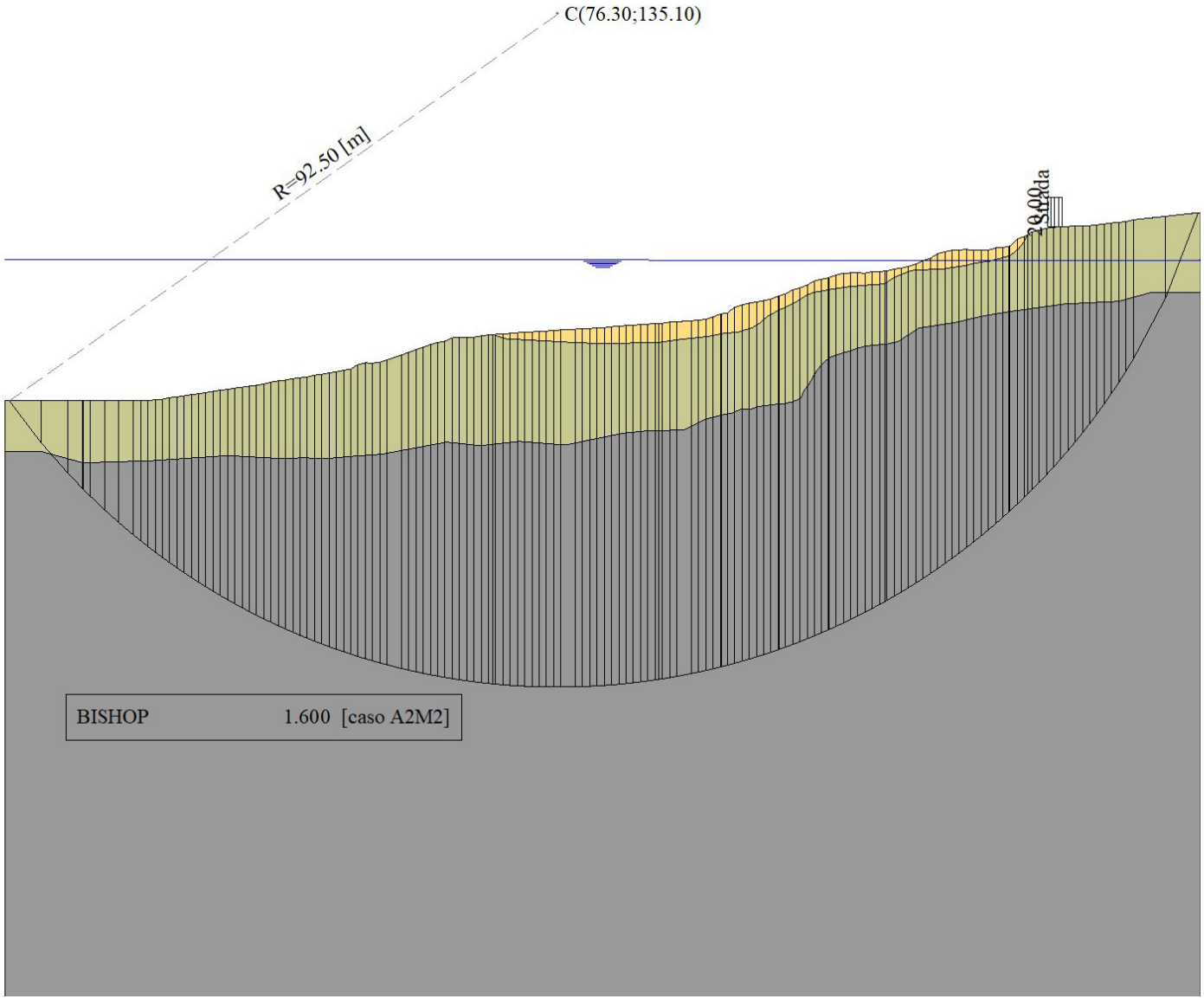

Figura 6-3 – Superficie critica (1) della sezione VS_04 per la verifica di stabilità 03

6.6 VERIFICA DI STABILITÀ 04

6.6.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate in condizioni **statiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni totali**
Presenza di carichi distribuiti

6.6.2 RISULTATI ANALISI

Numero di superfici analizzate	71507
Coefficiente di sicurezza minimo	1.524
Superficie con coefficiente di sicurezza minimo	1

6.6.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO L'ALTO

Numero di strisce	151	
Coordinate del centro	X[m]= 78.30	Y[m]= 129.10
Raggio del cerchio	R[m]= 89.50	
Intersezione a valle con il profilo topografico	X_v[m]= 2.30	Y_v[m]= 81.83
Intersezione a monte con il profilo topografico	X_m[m]= 165.57	Y_m[m]= 109.23
Coefficiente di sicurezza	F_S= 1.524	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	2.30	81.83	81.83	6.78	81.88	75.29	5.29	79.67	7.92	-55.58	0.00	85
2	6.78	81.88	75.29	11.26	81.94	69.81	9.24	77.10	7.08	-50.78	0.00	104
3	11.26	81.94	69.81	12.26	81.94	68.69	11.77	75.59	1.50	-48.03	0.00	104
4	12.26	81.94	68.69	13.26	81.95	67.62	12.77	75.05	1.47	-47.08	0.00	104
5	13.26	81.95	67.62	14.26	81.96	66.58	13.77	74.52	1.44	-46.15	0.00	104
6	14.26	81.96	66.58	15.26	81.97	65.57	14.77	74.02	1.42	-45.23	0.00	104
7	15.26	81.97	65.57	16.26	81.98	64.59	15.76	73.53	1.40	-44.33	0.00	104
8	16.26	81.98	64.59	17.26	81.98	63.64	16.76	73.05	1.38	-43.44	0.00	104
9	17.26	81.98	63.64	18.26	81.99	62.73	17.76	72.58	1.36	-42.57	0.00	104
10	18.26	81.99	62.73	19.26	82.00	61.84	18.76	72.14	1.34	-41.70	0.00	104
11	19.26	82.00	61.84	20.26	82.01	60.97	19.76	71.70	1.32	-40.85	0.00	104
12	20.26	82.01	60.97	21.26	82.02	60.13	20.76	71.28	1.31	-40.01	0.00	104
13	21.26	82.02	60.13	22.26	82.04	59.32	21.76	70.88	1.29	-39.18	0.00	104
14	22.26	82.04	59.32	23.26	82.13	58.52	22.76	70.50	1.28	-38.36	0.00	104
15	23.26	82.13	58.52	24.26	82.20	57.76	23.76	70.15	1.26	-37.55	0.00	104
16	24.26	82.20	57.76	25.26	82.32	57.01	24.76	69.82	1.25	-36.74	0.00	104
17	25.26	82.32	57.01	26.26	82.42	56.28	25.76	69.51	1.24	-35.95	0.00	104
18	26.26	82.42	56.28	27.26	82.48	55.58	26.76	69.19	1.22	-35.16	0.00	104
19	27.26	82.48	55.58	28.26	82.59	54.90	27.76	68.89	1.21	-34.38	0.00	104
20	28.26	82.59	54.90	29.26	82.66	54.23	28.76	68.59	1.20	-33.61	0.00	104
21	29.26	82.66	54.23	30.26	82.79	53.59	29.76	68.32	1.19	-32.84	0.00	104

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
22	30.26	82.79	53.59	31.26	82.89	52.96	30.76	68.06	1.18	-32.09	0.00	104
23	31.26	82.89	52.96	32.26	82.95	52.35	31.76	67.79	1.17	-31.33	0.00	104
24	32.26	82.95	52.35	33.26	83.05	51.76	32.76	67.53	1.16	-30.59	0.00	104
25	33.26	83.05	51.76	34.26	83.13	51.19	33.76	67.28	1.15	-29.85	0.00	104
26	34.26	83.13	51.19	35.26	83.26	50.63	34.76	67.05	1.14	-29.11	0.00	104
27	35.26	83.26	50.63	36.26	83.36	50.09	35.76	66.83	1.14	-28.38	0.00	104
28	36.26	83.36	50.09	37.26	83.51	49.56	36.76	66.63	1.13	-27.65	0.00	104
29	37.26	83.51	49.56	38.26	83.84	49.06	37.76	66.49	1.12	-26.93	0.00	104
30	38.26	83.84	49.06	39.26	84.07	48.56	38.76	66.38	1.11	-26.22	0.00	104
31	39.26	84.07	48.56	40.26	84.49	48.09	39.76	66.30	1.11	-25.51	0.00	104
32	40.26	84.49	48.09	41.26	84.79	47.62	40.76	66.25	1.10	-24.80	0.00	104
33	41.26	84.79	47.62	42.26	84.98	47.18	41.76	66.14	1.10	-24.10	0.00	104
34	42.26	84.98	47.18	43.26	85.31	46.74	42.76	66.05	1.09	-23.40	0.00	104
35	43.26	85.31	46.74	44.26	85.54	46.33	43.76	65.98	1.08	-22.70	0.00	104
36	44.26	85.54	46.33	45.26	85.92	45.92	44.76	65.93	1.08	-22.01	0.00	104
37	45.26	85.92	45.92	46.26	86.04	45.53	45.76	65.85	1.07	-21.32	0.00	104
38	46.26	86.04	45.53	47.26	86.08	45.15	46.76	65.70	1.07	-20.63	0.00	104
39	47.26	86.08	45.15	48.26	86.16	44.79	47.76	65.55	1.06	-19.95	0.00	104
40	48.26	86.16	44.79	49.26	86.24	44.44	48.76	65.41	1.06	-19.27	0.00	104
41	49.26	86.24	44.44	49.53	86.26	44.35	49.39	65.32	0.29	-18.84	0.00	104
42	49.53	86.26	44.35	50.26	86.31	44.11	49.90	65.26	0.77	-18.50	0.00	104
43	50.26	86.31	44.11	51.26	86.38	43.78	50.76	65.14	1.05	-17.92	0.00	104
44	51.26	86.38	43.78	52.26	86.42	43.47	51.76	65.01	1.05	-17.25	0.00	104
45	52.26	86.42	43.47	53.26	86.61	43.17	52.76	64.92	1.04	-16.58	0.00	104
46	53.26	86.61	43.17	54.26	86.95	42.89	53.76	64.91	1.04	-15.91	0.00	104
47	54.26	86.95	42.89	55.26	87.09	42.62	54.76	64.89	1.04	-15.25	0.00	104
48	55.26	87.09	42.62	56.26	87.43	42.36	55.76	64.87	1.03	-14.59	0.00	104
49	56.26	87.43	42.36	57.27	87.65	42.11	56.77	64.89	1.04	-13.92	0.00	104
50	57.27	87.65	42.11	58.27	88.01	41.87	57.77	64.91	1.03	-13.26	0.00	104
51	58.27	88.01	41.87	59.27	88.47	41.65	58.77	65.00	1.02	-12.60	0.00	104
52	59.27	88.47	41.65	60.27	88.76	41.43	59.77	65.08	1.02	-11.95	0.00	104
53	60.27	88.76	41.43	61.27	89.13	41.24	60.77	65.14	1.02	-11.30	0.00	104
54	61.27	89.13	41.24	62.27	89.26	41.05	61.77	65.17	1.02	-10.64	0.00	104
55	62.27	89.26	41.05	63.27	89.54	40.87	62.77	65.18	1.02	-9.99	0.00	104
56	63.27	89.54	40.87	64.27	89.91	40.71	63.77	65.26	1.01	-9.34	0.00	104
57	64.27	89.91	40.71	65.27	90.07	40.55	64.77	65.31	1.01	-8.70	0.00	104
58	65.27	90.07	40.55	66.27	90.21	40.41	65.77	65.31	1.01	-8.05	0.00	104
59	66.27	90.21	40.41	67.27	90.31	40.28	66.77	65.30	1.01	-7.40	0.00	104
60	67.27	90.31	40.28	68.27	90.42	40.16	67.77	65.29	1.01	-6.76	0.00	104
61	68.27	90.42	40.16	69.27	90.54	40.06	68.77	65.30	1.01	-6.11	0.00	104
62	69.27	90.54	40.06	70.27	90.68	39.96	69.77	65.31	1.00	-5.47	0.00	104
63	70.27	90.68	39.96	71.27	90.84	39.88	70.77	65.34	1.00	-4.83	0.00	104
64	71.27	90.84	39.88	72.27	90.95	39.80	71.77	65.37	1.00	-4.18	0.00	104
65	72.27	90.95	39.80	73.27	91.01	39.74	72.77	65.38	1.00	-3.54	0.00	104
66	73.27	91.01	39.74	74.27	91.11	39.69	73.77	65.39	1.00	-2.90	0.00	104
67	74.27	91.11	39.69	75.27	91.16	39.65	74.77	65.40	1.00	-2.26	0.00	104
68	75.27	91.16	39.65	76.27	91.22	39.62	75.77	65.41	1.00	-1.62	0.00	104
69	76.27	91.22	39.62	77.27	91.24	39.61	76.77	65.42	1.00	-0.98	0.00	104
70	77.27	91.24	39.61	78.27	91.29	39.60	77.77	65.43	1.00	-0.34	0.00	104
71	78.27	91.29	39.60	79.27	91.29	39.61	78.77	65.45	1.00	0.30	0.00	104
72	79.27	91.29	39.61	80.27	91.34	39.62	79.77	65.46	1.00	0.94	0.00	104
73	80.27	91.34	39.62	81.27	91.39	39.65	80.77	65.50	1.00	1.58	0.00	104
74	81.27	91.39	39.65	82.27	91.46	39.69	81.77	65.55	1.00	2.22	0.00	104
75	82.27	91.46	39.69	83.27	91.51	39.74	82.77	65.60	1.00	2.86	0.00	104
76	83.27	91.51	39.74	84.27	91.64	39.80	83.77	65.67	1.00	3.50	0.00	104
77	84.27	91.64	39.80	85.27	91.71	39.87	84.77	65.76	1.00	4.15	0.00	104
78	85.27	91.71	39.87	86.27	91.78	39.96	85.77	65.83	1.00	4.79	0.00	104

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
79	86.27	91.78	39.96	87.27	91.89	40.05	86.77	65.92	1.00	5.43	0.00	104
80	87.27	91.89	40.05	88.27	92.11	40.16	87.77	66.05	1.01	6.07	0.00	104
81	88.27	92.11	40.16	89.27	92.28	40.27	88.77	66.21	1.01	6.72	0.00	104
82	89.27	92.28	40.27	90.27	92.58	40.40	89.77	66.38	1.01	7.36	0.00	104
83	90.27	92.58	40.40	91.27	92.93	40.54	90.77	66.61	1.01	8.01	0.00	104
84	91.27	92.93	40.54	92.27	93.11	40.70	91.77	66.82	1.01	8.66	0.00	104
85	92.27	93.11	40.70	93.27	93.54	40.86	92.77	67.05	1.01	9.30	0.00	104
86	93.27	93.54	40.86	94.27	93.95	41.04	93.77	67.35	1.02	9.95	0.00	104
87	94.27	93.95	41.04	95.27	94.32	41.22	94.77	67.63	1.02	10.60	0.00	104
88	95.27	94.32	41.22	96.27	94.49	41.42	95.77	67.86	1.02	11.26	0.00	104
89	96.27	94.49	41.42	97.27	94.56	41.63	96.77	68.03	1.02	11.91	0.00	104
90	97.27	94.56	41.63	98.27	94.53	41.86	97.77	68.14	1.02	12.56	0.00	104
91	98.27	94.53	41.86	99.27	94.48	42.09	98.77	68.24	1.03	13.22	0.00	104
92	99.27	94.48	42.09	100.27	94.67	42.34	99.77	68.39	1.03	13.88	0.00	104
93	100.27	94.67	42.34	101.27	95.16	42.60	100.77	68.69	1.03	14.54	0.00	104
94	101.27	95.16	42.60	102.27	95.44	42.87	101.77	69.02	1.04	15.20	0.00	104
95	102.27	95.44	42.87	103.27	96.00	43.15	102.77	69.37	1.04	15.87	0.00	104
96	103.27	96.00	43.15	104.27	96.34	43.45	103.77	69.74	1.04	16.53	0.00	104
97	104.27	96.34	43.45	105.27	96.34	43.76	104.77	69.97	1.05	17.20	0.00	104
98	105.27	96.34	43.76	106.27	96.41	44.08	105.77	70.15	1.05	17.87	0.00	104
99	106.27	96.41	44.08	107.27	96.40	44.42	106.77	70.33	1.05	18.55	0.00	104
100	107.27	96.40	44.42	108.27	96.52	44.77	107.77	70.53	1.06	19.22	0.00	104
101	108.27	96.52	44.77	109.27	96.72	45.13	108.77	70.78	1.06	19.90	0.00	104
102	109.27	96.72	45.13	110.27	97.20	45.50	109.77	71.14	1.07	20.59	0.00	104
103	110.27	97.20	45.50	111.27	97.46	45.89	110.77	71.51	1.07	21.27	0.00	104
104	111.27	97.46	45.89	112.27	97.47	46.30	111.77	71.78	1.08	21.96	0.00	104
105	112.27	97.47	46.30	113.27	97.82	46.71	112.77	72.08	1.08	22.65	0.00	104
106	113.27	97.82	46.71	114.27	97.73	47.15	113.77	72.35	1.09	23.35	0.00	104
107	114.27	97.73	47.15	115.27	97.87	47.59	114.77	72.58	1.10	24.05	0.00	104
108	115.27	97.87	47.59	116.27	98.41	48.05	115.77	72.98	1.10	24.75	0.00	104
109	116.27	98.41	48.05	117.27	98.90	48.53	116.77	73.47	1.11	25.46	0.00	104
110	117.27	98.90	48.53	118.27	99.23	49.02	117.77	73.92	1.11	26.17	0.00	104
111	118.27	99.23	49.02	119.27	99.38	49.53	118.77	74.29	1.12	26.88	0.00	104
112	119.27	99.38	49.53	120.27	99.57	50.05	119.77	74.63	1.13	27.60	0.00	104
113	120.27	99.57	50.05	121.27	100.04	50.59	120.77	75.06	1.14	28.33	0.00	104
114	121.27	100.04	50.59	122.27	100.40	51.15	121.77	75.54	1.14	29.06	0.00	104
115	122.27	100.40	51.15	123.28	100.99	51.72	122.77	76.06	1.16	29.80	0.00	104
116	123.28	100.99	51.72	123.86	101.25	52.06	123.57	76.51	0.67	30.39	0.00	104
117	123.86	101.25	52.06	124.28	101.43	52.31	124.07	76.76	0.49	30.76	0.00	104
118	124.28	101.43	52.31	125.28	101.65	52.92	124.78	77.08	1.17	31.29	0.00	104
119	125.28	101.65	52.92	127.28	101.87	54.19	126.28	77.66	2.37	32.42	0.00	104
120	127.28	101.87	54.19	128.28	102.17	54.86	127.78	78.27	1.20	33.56	0.00	104
121	128.28	102.17	54.86	129.28	102.61	55.54	128.78	78.79	1.21	34.34	0.00	104
122	129.28	102.61	55.54	130.28	102.92	56.24	129.78	79.33	1.22	35.11	0.00	104
123	130.28	102.92	56.24	131.28	103.14	56.97	130.78	79.82	1.23	35.90	0.00	104
124	131.28	103.14	56.97	132.28	103.66	57.71	131.78	80.37	1.25	36.70	0.00	104
125	132.28	103.66	57.71	133.28	104.34	58.48	132.78	81.05	1.26	37.50	0.00	104
126	133.28	104.34	58.48	134.28	104.53	59.27	133.78	81.65	1.27	38.31	0.00	104
127	134.28	104.53	59.27	136.28	105.05	60.92	135.28	82.44	2.59	39.55	0.00	104
128	136.28	105.05	60.92	137.28	105.57	61.78	136.78	83.33	1.32	40.80	0.00	104
129	137.28	105.57	61.78	138.28	106.57	62.67	137.78	84.15	1.34	41.65	0.00	104
130	138.28	106.57	62.67	139.28	106.76	63.59	138.78	84.90	1.36	42.51	0.00	104
131	139.28	106.76	63.59	140.28	107.18	64.53	139.78	85.52	1.38	43.39	0.00	104
132	140.28	107.18	64.53	140.41	107.21	64.66	140.34	85.90	0.18	43.89	0.00	104
133	140.41	107.21	64.66	141.28	107.40	65.51	140.84	86.19	1.22	44.33	0.00	104
134	141.28	107.40	65.51	142.28	107.52	66.52	141.78	86.74	1.42	45.18	0.00	104
135	142.28	107.52	66.52	143.28	107.21	67.55	142.78	87.20	1.44	46.09	0.00	104

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
136	143.28	107.21	67.55	144.28	107.09	68.63	143.78	87.62	1.47	47.02	0.00	104
137	144.28	107.09	68.63	145.28	106.96	69.74	144.78	88.10	1.49	47.97	0.00	104
138	145.28	106.96	69.74	146.28	106.97	70.89	145.78	88.64	1.52	48.94	0.00	104
139	146.28	106.97	70.89	147.28	107.04	72.07	146.78	89.24	1.55	49.92	0.00	104
140	147.28	107.04	72.07	148.28	107.46	73.31	147.78	89.97	1.59	50.93	0.00	104
141	148.28	107.46	73.31	149.28	107.89	74.58	148.78	90.81	1.62	51.95	0.00	104
142	149.28	107.89	74.58	150.28	108.26	75.91	149.78	91.66	1.66	53.01	0.00	104
143	150.28	108.26	75.91	151.28	108.32	77.29	150.78	92.44	1.70	54.08	0.00	104
144	151.28	108.32	77.29	152.28	108.24	78.73	151.78	93.14	1.75	55.19	0.00	104
145	152.28	108.24	78.73	154.28	108.30	81.80	153.26	94.25	3.66	56.92	0.00	104
146	154.28	108.30	81.80	155.28	108.28	83.45	154.77	95.45	1.93	58.71	0.00	104
147	155.28	108.28	83.45	156.28	108.31	85.18	155.77	96.30	2.00	59.97	0.00	104
148	156.28	108.31	85.18	157.28	108.40	87.00	156.77	97.22	2.08	61.27	0.00	104
149	157.28	108.40	87.00	158.28	108.43	88.93	157.77	98.18	2.18	62.64	0.00	104
150	158.28	108.43	88.93	160.83	108.71	94.47	159.49	100.06	6.10	65.29	0.00	104
151	160.83	108.71	94.47	165.57	109.23	109.23	162.41	104.14	15.50	72.21	0.00	81

Tabella 6-16 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 04

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	270.11	0.33	1125.26	443.22	0.00	0.00	1178.78	0.00	0.00	
2	767.35	0.11	1807.24	484.55	0.00	1178.78	2885.21	0.00	0.00	
3	232.24	0.00	461.03	102.31	0.00	2885.21	3296.40	0.00	0.00	
4	252.34	0.00	478.62	100.48	0.00	3296.40	3715.33	0.00	0.00	
5	271.89	0.00	495.27	98.76	0.00	3715.33	4140.91	0.00	0.00	
6	290.82	0.00	510.91	97.16	0.00	4140.91	4572.06	0.00	0.00	
7	309.17	0.00	525.65	95.65	0.00	4572.06	5007.80	0.00	0.00	
8	326.87	0.00	539.43	94.24	0.00	5007.80	5447.15	0.00	0.00	
9	344.03	0.00	552.44	92.90	0.00	5447.15	5889.27	0.00	0.00	
10	360.77	0.00	564.87	91.64	0.00	5889.27	6333.48	0.00	0.00	
11	377.02	0.00	576.65	90.46	0.00	6333.48	6779.09	0.00	0.00	
12	392.79	0.00	587.81	89.33	0.00	6779.09	7225.43	0.00	0.00	
13	408.20	0.00	598.53	88.27	0.00	7225.43	7671.97	0.00	0.00	
14	423.91	0.00	609.65	87.26	0.00	7671.97	8118.73	0.00	0.00	
15	439.65	0.00	620.83	86.30	0.00	8118.73	8565.49	0.00	0.00	
16	455.25	0.00	631.86	85.39	0.00	8565.49	9011.90	0.00	0.00	
17	470.73	0.00	642.76	84.52	0.00	9011.90	9457.66	0.00	0.00	
18	485.27	0.00	652.53	83.69	0.00	9457.66	9901.86	0.00	0.00	
19	499.53	0.00	662.01	82.91	0.00	9901.86	10344.13	0.00	0.00	
20	513.52	0.00	671.21	82.16	0.00	10344.13	10784.08	0.00	0.00	
21	527.34	0.00	680.25	81.44	0.00	10784.08	11221.45	0.00	0.00	
22	541.09	0.00	689.27	80.76	0.00	11221.45	11656.00	0.00	0.00	
23	553.86	0.00	697.20	80.10	0.00	11656.00	12086.97	0.00	0.00	
24	566.30	0.00	704.81	79.48	0.00	12086.97	12514.03	0.00	0.00	
25	578.61	0.00	712.35	78.88	0.00	12514.03	12936.96	0.00	0.00	
26	590.87	0.00	719.91	78.31	0.00	12936.96	13355.61	0.00	0.00	
27	603.02	0.00	727.41	77.77	0.00	13355.61	13769.78	0.00	0.00	
28	615.04	0.00	734.85	77.25	0.00	13769.78	14179.28	0.00	0.00	
29	628.88	0.00	744.39	76.75	0.00	14179.28	14584.89	0.00	0.00	
30	643.16	0.00	754.48	76.27	0.00	14584.89	14986.63	0.00	0.00	
31	657.98	0.00	765.21	75.81	0.00	14986.63	15384.57	0.00	0.00	
32	673.16	0.00	776.37	75.37	0.00	15384.57	15778.64	0.00	0.00	
33	685.96	0.00	784.97	74.95	0.00	15778.64	16167.55	0.00	0.00	
34	698.77	0.00	793.63	74.55	0.00	16167.55	16551.12	0.00	0.00	
35	711.68	0.00	802.48	74.17	0.00	16551.12	16929.25	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
36	724.79	0.00	811.59	73.80	0.00	16929.25	17301.82	0.00	0.00	
37	736.64	0.00	819.42	73.45	0.00	17301.82	17668.17	0.00	0.00	
38	745.12	0.00	823.73	73.11	0.00	17668.17	18026.88	0.00	0.00	
39	752.98	0.00	827.49	72.79	0.00	18026.88	18377.67	0.00	0.00	
40	760.97	0.00	831.49	72.48	0.00	18377.67	18720.53	0.00	0.00	
41	206.80	0.00	225.17	19.52	0.00	18720.53	18811.73	0.00	0.00	
42	561.84	0.00	610.10	52.67	0.00	18811.73	19055.31	0.00	0.00	
43	775.94	0.00	838.76	71.91	0.00	19055.31	19381.83	0.00	0.00	
44	782.74	0.00	841.85	71.64	0.00	19381.83	19699.90	0.00	0.00	
45	790.41	0.00	845.96	71.39	0.00	19699.90	20009.73	0.00	0.00	
46	800.60	0.00	852.79	71.15	0.00	20009.73	20311.98	0.00	0.00	
47	810.09	0.00	858.99	70.92	0.00	20311.98	20606.34	0.00	0.00	
48	819.36	0.00	865.05	70.70	0.00	20606.34	20892.62	0.00	0.00	
49	837.45	0.00	880.45	71.20	0.00	20892.62	21173.58	0.00	0.00	
50	838.91	0.00	878.46	70.30	0.00	21173.58	21443.51	0.00	0.00	
51	850.61	0.00	887.30	70.11	0.00	21443.51	21705.55	0.00	0.00	
52	861.46	0.00	895.34	69.94	0.00	21705.55	21959.35	0.00	0.00	
53	871.26	0.00	902.41	69.77	0.00	21959.35	22204.53	0.00	0.00	
54	879.38	0.00	907.86	69.62	0.00	22204.53	22440.63	0.00	0.00	
55	886.47	0.00	912.36	69.48	0.00	22440.63	22667.37	0.00	0.00	
56	895.53	0.00	918.98	69.34	0.00	22667.37	22884.98	0.00	0.00	
57	903.29	0.00	924.38	69.22	0.00	22884.98	23093.15	0.00	0.00	
58	908.73	0.00	927.53	69.10	0.00	23093.15	23291.43	0.00	0.00	
59	913.40	0.00	930.04	69.00	0.00	23291.43	23479.67	0.00	0.00	
60	917.60	0.00	932.18	68.90	0.00	23479.67	23657.77	0.00	0.00	
61	921.77	0.00	934.41	68.81	0.00	23657.77	23825.69	0.00	0.00	
62	926.00	0.00	936.82	68.73	0.00	23825.69	23983.40	0.00	0.00	
63	930.39	0.00	939.50	68.67	0.00	23983.40	24130.87	0.00	0.00	
64	934.31	0.00	941.82	68.60	0.00	24130.87	24268.01	0.00	0.00	
65	937.10	0.00	943.14	68.55	0.00	24268.01	24394.70	0.00	0.00	
66	939.59	0.00	944.27	68.51	0.00	24394.70	24510.92	0.00	0.00	
67	941.79	0.00	945.23	68.48	0.00	24510.92	24616.62	0.00	0.00	
68	943.42	0.00	945.73	68.45	0.00	24616.62	24711.78	0.00	0.00	
69	944.56	0.00	945.87	68.43	0.00	24711.78	24796.37	0.00	0.00	
70	945.42	0.00	945.84	68.42	0.00	24796.37	24870.40	0.00	0.00	
71	945.88	0.00	945.53	68.42	0.00	24870.40	24933.86	0.00	0.00	
72	946.14	0.00	945.14	68.43	0.00	24933.86	24986.75	0.00	0.00	
73	946.65	0.00	945.12	68.45	0.00	24986.75	25029.09	0.00	0.00	
74	947.14	0.00	945.20	68.47	0.00	25029.09	25060.87	0.00	0.00	
75	947.43	0.00	945.18	68.51	0.00	25060.87	25082.08	0.00	0.00	
76	948.06	0.00	945.63	68.55	0.00	25082.08	25092.71	0.00	0.00	
77	948.66	0.00	946.18	68.60	0.00	25092.71	25092.73	0.00	0.00	
78	948.51	0.00	946.08	68.66	0.00	25092.73	25082.19	0.00	0.00	
79	948.52	0.00	946.27	68.73	0.00	25082.19	25061.06	0.00	0.00	
80	949.70	0.00	947.74	68.81	0.00	25061.06	25029.20	0.00	0.00	
81	951.22	0.00	949.68	68.89	0.00	25029.20	24986.53	0.00	0.00	
82	953.26	0.00	952.27	68.99	0.00	24986.53	24932.91	0.00	0.00	
83	956.73	0.00	956.44	69.10	0.00	24932.91	24868.07	0.00	0.00	
84	958.90	0.00	959.42	69.21	0.00	24868.07	24792.09	0.00	0.00	
85	961.59	0.00	963.05	69.33	0.00	24792.09	24704.81	0.00	0.00	
86	966.17	0.00	968.75	69.47	0.00	24704.81	24605.78	0.00	0.00	
87	969.99	0.00	973.81	69.61	0.00	24605.78	24495.00	0.00	0.00	
88	971.40	0.00	976.57	69.76	0.00	24495.00	24372.80	0.00	0.00	
89	969.84	0.00	976.43	69.93	0.00	24372.80	24239.71	0.00	0.00	
90	966.24	0.00	974.33	70.10	0.00	24239.71	24096.18	0.00	0.00	
91	961.32	0.00	970.98	70.28	0.00	24096.18	23942.52	0.00	0.00	
92	958.19	0.00	969.60	70.48	0.00	23942.52	23778.34	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
93	959.78	0.00	973.20	70.69	0.00	23778.34	23602.42	0.00	0.00	
94	961.96	0.00	977.58	70.90	0.00	23602.42	23414.49	0.00	0.00	
95	964.56	0.00	982.55	71.13	0.00	23414.49	23214.27	0.00	0.00	
96	967.48	0.00	988.02	71.37	0.00	23214.27	23001.51	0.00	0.00	
97	965.04	0.00	988.06	71.63	0.00	23001.51	22777.71	0.00	0.00	
98	959.90	0.00	985.40	71.89	0.00	22777.71	22543.68	0.00	0.00	
99	954.43	0.00	982.51	72.17	0.00	22543.68	22299.56	0.00	0.00	
100	949.17	0.00	979.96	72.46	0.00	22299.56	22045.30	0.00	0.00	
101	945.60	0.00	979.33	72.77	0.00	22045.30	21780.31	0.00	0.00	
102	945.07	0.00	982.08	73.09	0.00	21780.31	21503.41	0.00	0.00	
103	944.84	0.00	985.34	73.42	0.00	21503.41	21214.35	0.00	0.00	
104	940.06	0.00	983.86	73.77	0.00	21214.35	20914.84	0.00	0.00	
105	935.85	0.00	983.13	74.14	0.00	20914.84	20604.61	0.00	0.00	
106	930.46	0.00	981.27	74.52	0.00	20604.61	20284.13	0.00	0.00	
107	922.88	0.00	977.16	74.92	0.00	20284.13	19954.37	0.00	0.00	
108	920.80	0.00	979.21	75.34	0.00	19954.37	19612.83	0.00	0.00	
109	921.65	0.00	984.69	75.78	0.00	19612.83	19258.00	0.00	0.00	
110	920.30	0.00	987.95	76.24	0.00	19258.00	18890.72	0.00	0.00	
111	915.56	0.00	987.61	76.71	0.00	18890.72	18512.56	0.00	0.00	
112	909.25	0.00	985.67	77.21	0.00	18512.56	18124.26	0.00	0.00	
113	905.57	0.00	986.87	77.73	0.00	18124.26	17724.38	0.00	0.00	
114	903.15	0.00	989.71	78.27	0.00	17724.38	17312.09	0.00	0.00	
115	910.48	0.00	1003.59	79.63	0.00	17312.09	16882.47	0.00	0.00	
116	522.46	0.01	578.69	46.00	0.00	16882.47	16629.45	0.00	0.00	
117	377.76	0.00	419.69	33.44	0.00	16629.45	16443.56	0.00	0.00	
118	895.28	0.00	998.98	80.07	0.00	16443.56	15993.18	0.00	0.00	
119	1764.24	0.00	1987.04	162.11	0.00	15993.18	15064.70	0.00	0.00	
120	869.18	0.00	988.61	82.11	0.00	15064.70	14586.56	0.00	0.00	
121	863.63	0.00	989.28	82.86	0.00	14586.56	14096.99	0.00	0.00	
122	857.81	0.00	989.84	83.64	0.00	14096.99	13596.05	0.00	0.00	
123	849.60	0.00	987.70	84.47	0.00	13596.05	13085.30	0.00	0.00	
124	842.93	0.00	987.67	85.33	0.00	13085.30	12563.53	0.00	0.00	
125	840.07	0.00	992.69	86.24	0.00	12563.53	12027.68	0.00	0.00	
126	833.78	0.00	993.69	87.20	0.00	12027.68	11480.11	0.00	0.00	
127	1635.88	0.00	1974.95	177.47	0.00	11480.11	10359.47	0.00	0.00	
128	804.45	0.00	984.67	90.39	0.00	10359.47	9784.48	0.00	0.00	
129	802.32	0.00	992.32	91.57	0.00	9784.48	9193.41	0.00	0.00	
130	796.68	0.00	995.72	92.82	0.00	9193.41	8588.96	0.00	0.00	
131	785.22	0.00	991.52	94.15	0.00	8588.96	7976.26	0.00	0.00	
132	101.34	0.00	128.74	12.34	0.00	7976.26	7895.90	0.00	0.00	
133	672.20	0.00	858.46	83.22	0.00	7895.90	7355.50	0.00	0.00	
134	758.49	0.00	978.34	97.06	0.00	7355.50	6729.99	0.00	0.00	
135	738.04	0.00	961.74	98.66	0.00	6729.99	6105.50	0.00	0.00	
136	714.78	10.40	956.07	100.37	0.00	6105.50	5474.42	0.00	0.00	
137	692.52	26.00	959.84	102.20	0.00	5474.42	4829.86	0.00	0.00	
138	670.77	15.60	925.33	104.16	0.00	4829.86	4200.59	0.00	0.00	
139	650.12	0.00	883.47	106.27	0.00	4200.59	3593.02	0.00	0.00	
140	632.46	0.00	869.71	108.55	0.00	3593.02	2986.25	0.00	0.00	
141	617.28	0.00	859.73	111.02	0.00	2986.25	2377.62	0.00	0.00	
142	600.76	0.00	847.45	113.71	0.00	2377.62	1769.19	0.00	0.00	
143	579.92	0.00	827.55	116.64	0.00	1769.19	1167.40	0.00	0.00	
144	553.94	0.00	797.97	119.86	0.00	1167.40	580.66	0.00	0.00	
145	1025.00	0.00	1493.14	250.74	0.00	580.66	-533.66	0.00	0.00	
146	469.71	0.00	687.66	131.75	0.00	-533.66	-1052.89	0.00	0.00	
147	438.92	0.00	640.51	136.71	0.00	-1052.89	-1538.99	0.00	0.00	
148	407.49	0.00	588.10	142.36	0.00	-1538.99	-1986.30	0.00	0.00	
149	374.22	0.00	526.53	148.86	0.00	-1986.30	-2385.49	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
150	787.15	0.00	976.00	417.31	0.00	-2385.49	-3097.62	0.00	0.00	
151	617.14	0.00	-550.45	824.81	0.00	-3097.62	-2321.45	0.00	0.00	

Tabella 6-17 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 04

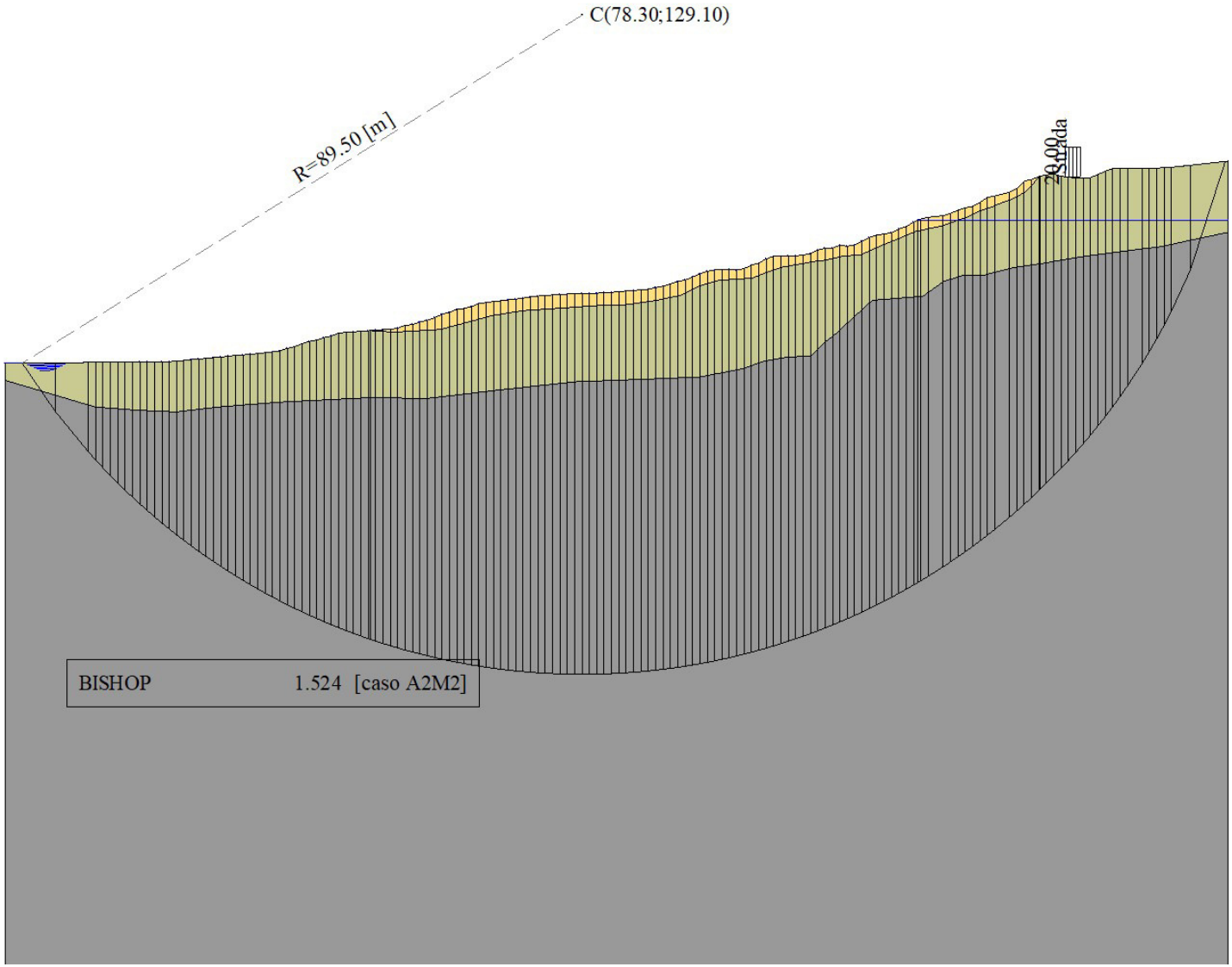

Figura 6-4 – Superficie critica (1) della sezione VS_04 per la verifica di stabilità 04

7 CONDIZIONI DI VERIFICA DELLO STATO DI PROGETTO

Le verifiche di stabilità sono condotte in n. **3 sezioni**, per ciascuna della quale sono individuate n. **4 verifiche**:

- **Verifica 01**: verifica a lungo termine tensioni efficaci; carico in corrispondenza della strada 2000 kg/m²; senza sisma; invaso alla quota di massima regolazione.
- **Verifica 02**: verifica a breve termine tensioni totali; carico in corrispondenza della strada 2000 kg/m²; con sisma SLD; invaso alla quota di massima regolazione.
- **Verifica 03**: verifica a breve termine tensioni totali; carico in corrispondenza della strada 2000 kg/m²; con sisma SLV; invaso alla quota di massima regolazione.
- **Verifica 04**: verifica a breve termine tensioni totali; carico in corrispondenza della strada 2000 kg/m²; senza sisma; svaso rapido del serbatoio.

n. [#]	Sponda	Cond. idrauliche	Sisma	Condizioni	*Fs Bishop*	N.T.C. 2018
						γ_R
01	Sinistra	Massimo invaso	Senza	Drenate	2.254	1.1
02	Sinistra	Massimo invaso	SLD	Non drenate	1.891	1.2
03	Sinistra	Massimo invaso	SLV	Non drenate	1.491	1.2
04	Sinistra	Svaso rapido	Senza	Non drenate	1.737	1.1

Tabella 7-1 – Verifiche di stabilità dello stato di progetto condotte secondo N.T.C. 2018 per la sezione **VS_02**

n. [#]	Sponda	Cond. idrauliche	Sisma	Condizioni	*Fs Bishop*	N.T.C. 2018
						γ_R
01	Sinistra	Massimo invaso	Senza	Drenate	2.156	1.1
02	Sinistra	Massimo invaso	SLD	Non drenate	1.646	1.2
03	Sinistra	Massimo invaso	SLV	Non drenate	1.496	1.2
04	Sinistra	Svaso rapido	Senza	Non drenate	1.708	1.1

Tabella 7-2 – Verifiche di stabilità dello stato di progetto condotte secondo N.T.C. 2018 per la sezione **VS_03**

n. [#]	Sponda	Cond. idrauliche	Sisma	Condizioni	*Fs Bishop*	N.T.C. 2018
						γ_R
01	Sinistra	Massimo invaso	Senza	Drenate	1.973	1.1
02	Sinistra	Massimo invaso	SLD	Non drenate	1.584	1.2
03	Sinistra	Massimo invaso	SLV	Non drenate	1.457	1.2
04	Sinistra	Svaso rapido	Senza	Non drenate	1.636	1.1

Tabella 7-3 – Verifiche di stabilità dello stato di progetto condotte secondo N.T.C. 2018 per la sezione **VS_04**

8 VERIFICHE STATO DI PROGETTO SEZIONE VS_02

8.1 PARAMETRI GEOTECNICI

n°	Descrizione	γ	γ_{sat}	ϕ'	c'	Retino
		[kN/mc]	*[kN/mc]*	*[°]*	*[kPa]*	
1	Substrato	21.27	21.27	23.60	24.0	
2	Substrato alterato	20.68	20.68	23.40	22.0	
3	Terreno di riporto	18.99	18.99	24.20	23.0	

Tabella 8-1 – Parametri geotecnici condizioni drenate

n°	Descrizione	γ	γ_{sat}	ϕ_u	C_u	Retino
		[kN/mc]	*[kN/mc]*	*[°]*	*[kPa]*	
1	Substrato	21.27	21.27	0.00	146.0	
2	Substrato alterato	20.68	20.68	0.00	100.0	
3	Terreno di riporto	18.99	18.99	0.00	76.0	

Tabella 8-2 – Parametri geotecnici condizioni non drenate

8.2 DESCRIZIONE SEZIONE E IMPOSTAZIONE ANALISI

8.2.1 PROFILO TERRENO E DESCRIZIONE STRATIGRAFIA

n°	X	Y
	[m]	*[m]*
1	0.00	45.09
2	0.86	45.09
3	1.86	45.10
4	2.86	45.11
5	3.86	45.11
6	4.86	45.12
7	5.86	45.12
8	6.86	45.11
9	7.86	45.09
10	8.86	45.07
11	9.86	45.07
12	10.86	45.07
13	11.54	45.07
14	11.55	45.08
15	124.88	65.68
16	125.97	65.88
17	126.97	65.90
18	127.97	65.95
19	128.52	66.06
20	129.90	66.83
21	130.44	67.06
22	130.98	67.09
23	131.98	67.21
24	132.98	67.26
25	133.98	67.38
26	134.98	67.49
27	135.98	67.76
28	136.98	67.73
29	137.98	67.84

n°	X	Y
	[m]	*[m]*
30	138.98	67.90
31	139.99	67.91
32	140.99	67.93
33	141.99	68.00
34	142.99	68.06
35	143.99	68.14
36	144.99	68.31
37	145.99	68.38
38	146.99	68.45
39	147.99	68.52
40	148.99	68.55
41	151.00	68.67

Tabella 8-3 – Profilo del piano campagna

n°	X	Y
	[m]	*[m]*
1	0.00	38.49
2	0.00	0.00
3	151.00	0.00
4	151.00	58.64
5	139.92	56.47
6	131.77	55.11
7	126.47	53.73
8	122.97	52.08
9	119.45	50.24
10	113.49	48.38
11	107.82	47.80
12	102.84	47.11
13	100.20	46.72
14	96.79	45.26
15	94.25	43.69
16	91.51	43.30
17	87.99	43.40
18	85.45	43.21
19	77.68	41.75
20	74.78	41.55
21	70.14	40.85
22	65.05	40.91
23	60.67	40.78
24	55.51	41.10
25	48.62	39.82
26	42.43	40.01
27	37.02	39.69
28	30.65	39.79
29	18.75	38.70
30	11.52	38.30
31	5.57	38.30
32	1.36	38.36

Tabella 8-4 – Coordinate dei vertici dello strato n° 1 costituito da terreno n° 1 (Substrato)

n°	X	Y
	[m]	*[m]*
1	124.88	65.68
2	11.55	45.08
3	12.79	45.07
4	13.79	45.08

n°	X	Y
	[m]	*[m]*
5	14.80	45.07
6	15.80	45.06
7	16.80	45.10
8	22.30	45.10
9	23.30	46.10
10	27.80	46.10
11	28.80	47.10
12	33.30	47.10
13	34.30	48.10
14	38.80	48.10
15	39.80	49.10
16	44.30	49.10
17	45.30	50.10
18	52.30	50.10
19	53.30	51.10
20	57.80	51.10
21	58.80	52.10
22	63.30	52.10
23	64.30	53.10
24	77.30	53.10
25	78.30	54.10
26	88.80	54.10
27	89.80	55.10
28	96.30	55.10
29	97.30	56.10
30	101.80	56.10
31	102.80	57.10
32	107.30	57.10
33	108.30	58.10
34	112.80	58.10
35	113.80	59.10
36	118.30	59.10

Tabella 8-5 – Coordinate dei vertici dello strato n° 2 costituito da terreno n° 3 (Frana)

n°	X	Y
	[m]	*[m]*
1	151.00	58.64
2	151.00	68.67
3	148.99	68.55
4	147.99	68.52
5	146.99	68.45
6	145.99	68.38
7	144.99	68.31
8	143.99	68.14
9	142.99	68.06
10	141.99	68.00
11	140.99	67.93
12	139.99	67.91
13	138.98	67.90
14	137.98	67.84
15	136.98	67.73
16	135.98	67.76
17	134.98	67.49
18	133.98	67.38
19	132.98	67.26
20	131.98	67.21
21	130.98	67.09

n°	X	Y
	[m]	*[m]*
22	130.44	67.06
23	129.90	66.83
24	128.52	66.06
25	127.97	65.95
26	126.97	65.90
27	125.97	65.88
28	124.88	65.68
29	118.30	59.10
30	113.80	59.10
31	112.80	58.10
32	108.30	58.10
33	107.30	57.10
34	102.80	57.10
35	101.80	56.10
36	97.30	56.10
37	96.30	55.10
38	89.80	55.10
39	88.80	54.10
40	78.30	54.10
41	77.30	53.10
42	64.30	53.10
43	63.30	52.10
44	58.80	52.10
45	57.80	51.10
46	53.30	51.10
47	52.30	50.10
48	45.30	50.10
49	44.30	49.10
50	39.80	49.10
51	38.80	48.10
52	34.30	48.10
53	33.30	47.10
54	28.80	47.10
55	27.80	46.10
56	23.30	46.10
57	22.30	45.10
58	16.80	45.10
59	15.80	45.06
60	14.80	45.07
61	13.79	45.08
62	12.79	45.07
63	11.55	45.08
64	11.54	45.07
65	10.86	45.07
66	9.86	45.07
67	8.86	45.07
68	7.86	45.09
69	6.86	45.11
70	5.86	45.12
71	4.86	45.12
72	3.86	45.11
73	2.86	45.11
74	1.86	45.10
75	0.86	45.09
76	0.00	45.09
77	0.00	38.49
78	1.36	38.36

n°	X	Y
	[m]	*[m]*
79	5.57	38.30
80	11.52	38.30
81	18.75	38.70
82	30.65	39.79
83	37.02	39.69
84	42.43	40.01
85	48.62	39.82
86	55.51	41.10
87	60.67	40.78
88	65.05	40.91
89	70.14	40.85
90	74.78	41.55
91	77.68	41.75
92	85.45	43.21
93	87.99	43.40
94	91.51	43.30
95	94.25	43.69
96	96.79	45.26
97	100.20	46.72
98	102.84	47.11
99	107.82	47.80
100	113.49	48.38
101	119.45	50.24
102	122.97	52.08
103	126.47	53.73
104	131.77	55.11
105	139.92	56.47

Tabella 8-6 – Coordinate dei vertici dello strato n° 3 costituito da terreno n° 2 (Substrato alterato)

8.2.2 DESCRIZIONE FALDA

n°	X	Y
	[m]	*[m]*
1	0.00	56.36
2	151.00	56.36

Tabella 8-7 – Livello falda massima regolazione

n°	X	Y
	[m]	*[m]*
1	0.00	45.04
2	3.02	45.04
3	4.02	45.05
4	5.02	45.05
5	6.02	45.05
6	7.02	45.06
7	8.02	45.06
8	9.02	45.07
9	11.30	45.07
10	73.61	56.36
11	151.00	56.36

Tabella 8-8 – Livello falda svaso rapido

8.2.3 CARICHI SUL PROFILO

n°	Descrizione	Tipo	Ψ_2	P_i	P_f	Vy	Vx
				[m]	*[m]*	*[kN/m]*	*[kN/m]*
1	Strada	Variabile	1.00	125.97 65.88	128.19 65.99	20.00 20.00	0.00 0.00

Tabella 8-9 – Carichi distribuiti verifica di stabilità 01

8.2.4 IMPOSTAZIONE DELLE SUPERFICI DI ROTTURA

Superfici di rottura circolari

Si considerano delle superfici di rottura circolari generate tramite la seguente maglia dei centri

Origine maglia	[m]	X_0 = 15.00	Y_0 = 44.80
Passo maglia	[m]	dX = 2.00	dY = 2.00
Numero passi		Nx = 70	Ny = 70
Raggio	[m]	R = 1.50	

Si utilizza un raggio variabile con passo dR=1.00 [m] ed un numero di incrementi pari a 100.

8.2.5 CONDIZIONI DI ESCLUSIONE

Sono state escluse dall'analisi le superfici aventi:

- lunghezza di corda inferiore a	1.00	m
- freccia inferiore a	0.50	m
- volume inferiore a	2.00	mc
- pendenza media della superficie inferiore a	1.00	[%]

8.3 VERIFICA DI STABILITÀ 01

8.3.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate in condizioni **statiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni efficaci**
Presenza di falda
Presenza di carichi distribuiti

8.3.2 RISULTATI ANALISI

Numero di superfici analizzate	62212
Coefficiente di sicurezza minimo	2.254

Superficie con coefficiente di sicurezza minimo 1

8.3.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO L'ALTO

Numero di strisce 44
Coordinate del centro X[m]= 75.00 Y[m]= 136.80
Raggio del cerchio R[m]= 100.50
Intersezione a valle con il profilo topografico X_v[m]= 27.86 Y_v[m]= 48.04
Intersezione a monte con il profilo topografico X_m[m]= 148.76 Y_m[m]= 68.54
Coefficiente di sicurezza F_S= 2.254

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	27.86	48.04	48.04	28.80	48.22	47.55	28.49	47.94	1.07	-27.67	19.78	18
2	28.80	48.22	47.55	33.30	49.03	45.36	31.57	47.46	5.00	-25.94	19.23	18
3	33.30	49.03	45.36	37.86	49.86	43.41	35.79	46.89	4.96	-23.10	19.10	18
4	37.86	49.86	43.41	42.43	50.69	41.72	40.27	46.41	4.87	-20.30	19.10	18
5	42.43	50.69	41.72	45.52	51.26	40.72	44.02	46.10	3.25	-17.98	19.10	18
6	45.52	51.26	40.72	48.62	51.82	39.82	47.11	45.90	3.22	-16.14	19.10	18
7	48.62	51.82	39.82	52.06	52.44	38.95	50.38	45.76	3.55	-14.20	19.26	19
8	52.06	52.44	38.95	55.51	53.07	38.21	53.82	45.67	3.52	-12.19	19.27	19
9	55.51	53.07	38.21	61.29	54.12	37.24	58.46	45.66	5.86	-9.51	19.27	19
10	61.29	54.12	37.24	67.07	55.17	36.61	64.23	45.79	5.81	-6.18	19.27	19
11	67.07	55.17	36.61	72.85	56.22	36.32	70.00	46.09	5.79	-2.87	19.27	19
12	72.85	56.22	36.32	78.63	57.27	36.37	75.77	46.55	5.78	0.42	19.27	19
13	78.63	57.27	36.37	84.41	58.32	36.74	81.54	47.18	5.79	3.72	19.27	19
14	84.41	58.32	36.74	90.19	59.38	37.46	87.31	47.98	5.82	7.04	19.27	19
15	90.19	59.38	37.46	95.98	60.43	38.51	93.09	48.94	5.88	10.37	19.27	19
16	95.98	60.43	38.51	101.76	61.48	39.93	98.86	50.08	5.95	13.74	19.27	19
17	101.76	61.48	39.93	107.54	62.53	41.71	104.63	51.41	6.05	17.17	19.27	19
18	107.54	62.53	41.71	113.32	63.58	43.89	110.40	52.92	6.18	20.65	19.27	19
19	113.32	63.58	43.89	119.10	64.63	46.49	116.17	54.64	6.34	24.22	19.27	19
20	119.10	64.63	46.49	124.88	65.68	49.55	121.93	56.57	6.54	27.89	19.27	19
21	124.88	65.68	49.55	125.97	65.88	50.18	125.42	57.82	1.26	30.12	19.27	19
22	125.97	65.88	50.18	126.97	65.90	50.78	126.47	58.19	1.16	30.81	19.27	19
23	126.97	65.90	50.78	127.97	65.95	51.39	127.47	58.50	1.17	31.47	19.27	19
24	127.97	65.95	51.39	128.52	66.06	51.74	128.24	58.78	0.65	31.99	19.27	19
25	128.52	66.06	51.74	129.90	66.83	52.62	129.21	59.31	1.64	32.64	19.27	19
26	129.90	66.83	52.62	130.44	67.06	52.97	130.17	59.87	0.65	33.30	19.27	19
27	130.44	67.06	52.97	130.98	67.09	53.33	130.71	60.11	0.65	33.66	19.27	19
28	130.98	67.09	53.33	131.77	67.18	53.87	131.37	60.37	0.95	34.12	19.27	19
29	131.77	67.18	53.87	131.98	67.21	54.01	131.87	60.57	0.25	34.47	19.27	19
30	131.98	67.21	54.01	132.98	67.26	54.71	132.48	60.80	1.22	34.89	19.27	19
31	132.98	67.26	54.71	133.98	67.38	55.43	133.48	61.19	1.23	35.58	19.27	19
32	133.98	67.38	55.43	134.98	67.49	56.16	134.48	61.61	1.24	36.29	19.11	18
33	134.98	67.49	56.16	135.98	67.76	56.91	135.48	62.08	1.25	37.00	19.10	18
34	135.98	67.76	56.91	136.98	67.73	57.69	136.47	62.52	1.26	37.72	19.10	18
35	136.98	67.73	57.69	137.98	67.84	58.48	137.47	62.93	1.28	38.44	19.10	18
36	137.98	67.84	58.48	138.98	67.90	59.30	138.47	63.38	1.29	39.17	19.10	18
37	138.98	67.90	59.30	139.99	67.91	60.14	139.48	63.81	1.32	39.92	19.10	18
38	139.99	67.91	60.14	140.99	67.93	61.00	140.48	64.24	1.32	40.67	19.10	18
39	140.99	67.93	61.00	141.99	68.00	61.88	141.48	64.70	1.33	41.42	19.10	18
40	141.99	68.00	61.88	142.99	68.06	62.79	142.48	65.18	1.35	42.19	19.10	18
41	142.99	68.06	62.79	143.99	68.14	63.72	143.48	65.67	1.37	42.96	19.10	18

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
42	143.99	68.14	63.72	144.99	68.31	64.68	144.47	66.20	1.38	43.75	19.10	18
43	144.99	68.31	64.68	147.99	68.52	67.72	146.17	67.13	4.27	45.36	19.10	18
44	147.99	68.52	67.72	148.76	68.54	68.54	148.25	68.26	1.13	46.90	19.10	18

Tabella 8-10 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 01

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	5.98	76.23	8.55	10.07	89.56	0.00	68.34	0.00	0.00	
2	183.33	341.37	126.03	58.96	486.14	68.34	451.20	0.00	0.00	
3	427.50	309.42	251.38	77.38	582.78	451.20	905.89	0.00	0.00	
4	648.79	272.27	358.14	93.03	658.31	905.89	1395.23	0.00	0.00	
5	555.88	163.47	296.23	70.92	483.08	1395.23	1732.98	0.00	0.00	
6	641.11	146.39	333.57	76.40	508.34	1732.98	2066.97	0.00	0.00	
7	808.21	142.86	413.49	94.40	591.47	2066.97	2431.05	0.00	0.00	
8	898.25	121.71	450.51	99.90	614.54	2431.05	2775.66	0.00	0.00	
9	1687.01	156.70	828.04	178.36	1071.25	2775.66	3293.89	0.00	0.00	
10	1882.54	97.12	903.62	189.68	1108.17	3293.89	3716.78	0.00	0.00	
11	2044.63	37.55	965.68	199.08	1129.12	3716.78	4027.49	0.00	0.00	
12	2172.50	0.51	1036.77	210.05	1134.75	4027.49	4221.57	0.00	0.00	
13	2262.28	0.00	1127.26	224.18	1125.22	4221.57	4299.00	0.00	0.00	
14	2319.38	0.00	1207.50	236.90	1100.24	4299.00	4251.45	0.00	0.00	
15	2337.66	0.00	1272.17	247.37	1059.05	4251.45	4075.09	0.00	0.00	
16	2318.85	0.00	1324.25	256.08	1000.32	4075.09	3771.57	0.00	0.00	
17	2260.76	0.00	1362.89	262.92	922.05	3771.57	3348.43	0.00	0.00	
18	2162.18	0.00	1388.28	267.94	821.39	3348.43	2819.85	0.00	0.00	
19	2020.50	0.00	1399.35	271.03	694.25	2819.85	2208.14	0.00	0.00	
20	1821.88	0.00	1383.46	270.29	534.82	2208.14	1549.65	0.00	0.00	
21	317.40	0.00	257.33	50.64	80.23	1549.65	1424.09	0.00	0.00	
22	281.96	26.00	261.36	50.45	67.11	1424.09	1299.20	0.00	0.00	
23	271.54	26.00	257.65	49.95	60.64	1299.20	1175.62	0.00	0.00	
24	145.35	5.72	131.43	25.91	30.50	1175.62	1111.80	0.00	0.00	
25	360.29	0.00	319.94	63.58	67.21	1111.80	956.50	0.00	0.00	
26	139.81	0.00	128.03	25.36	22.57	956.50	895.03	0.00	0.00	
27	137.56	0.00	127.98	25.38	20.39	895.03	833.90	0.00	0.00	
28	195.68	0.00	185.55	36.91	25.81	833.90	745.89	0.00	0.00	
29	50.94	0.00	49.04	9.78	6.04	745.89	722.78	0.00	0.00	
30	235.57	0.00	231.07	46.22	23.88	722.78	614.88	0.00	0.00	
31	224.19	0.00	227.38	45.74	15.57	614.88	510.71	0.00	0.00	
32	213.03	0.00	224.85	44.34	6.89	510.71	409.29	0.00	0.00	
33	202.90	0.00	221.09	43.74	0.00	409.29	311.18	0.00	0.00	
34	191.12	0.00	209.13	42.00	0.00	311.18	216.47	0.00	0.00	
35	177.51	0.00	194.95	39.92	0.00	216.47	126.53	0.00	0.00	
36	164.35	0.00	181.12	37.90	0.00	126.53	41.50	0.00	0.00	
37	151.30	0.00	167.18	35.97	0.00	41.50	-38.18	0.00	0.00	
38	134.49	0.00	148.82	33.16	0.00	-38.18	-110.01	0.00	0.00	
39	119.38	0.00	132.11	30.71	0.00	-110.01	-174.39	0.00	0.00	
40	104.20	0.00	115.06	28.22	0.00	-174.39	-230.75	0.00	0.00	
41	88.67	0.00	97.30	25.62	0.00	-230.75	-278.31	0.00	0.00	
42	73.68	0.00	79.89	23.08	0.00	-278.31	-316.88	0.00	0.00	
43	121.80	0.00	120.79	51.90	0.00	-316.88	-366.35	0.00	0.00	
44	5.71	0.00	-0.96	8.71	0.00	-366.35	-359.70	0.00	0.00	

Tabella 8-11 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 01

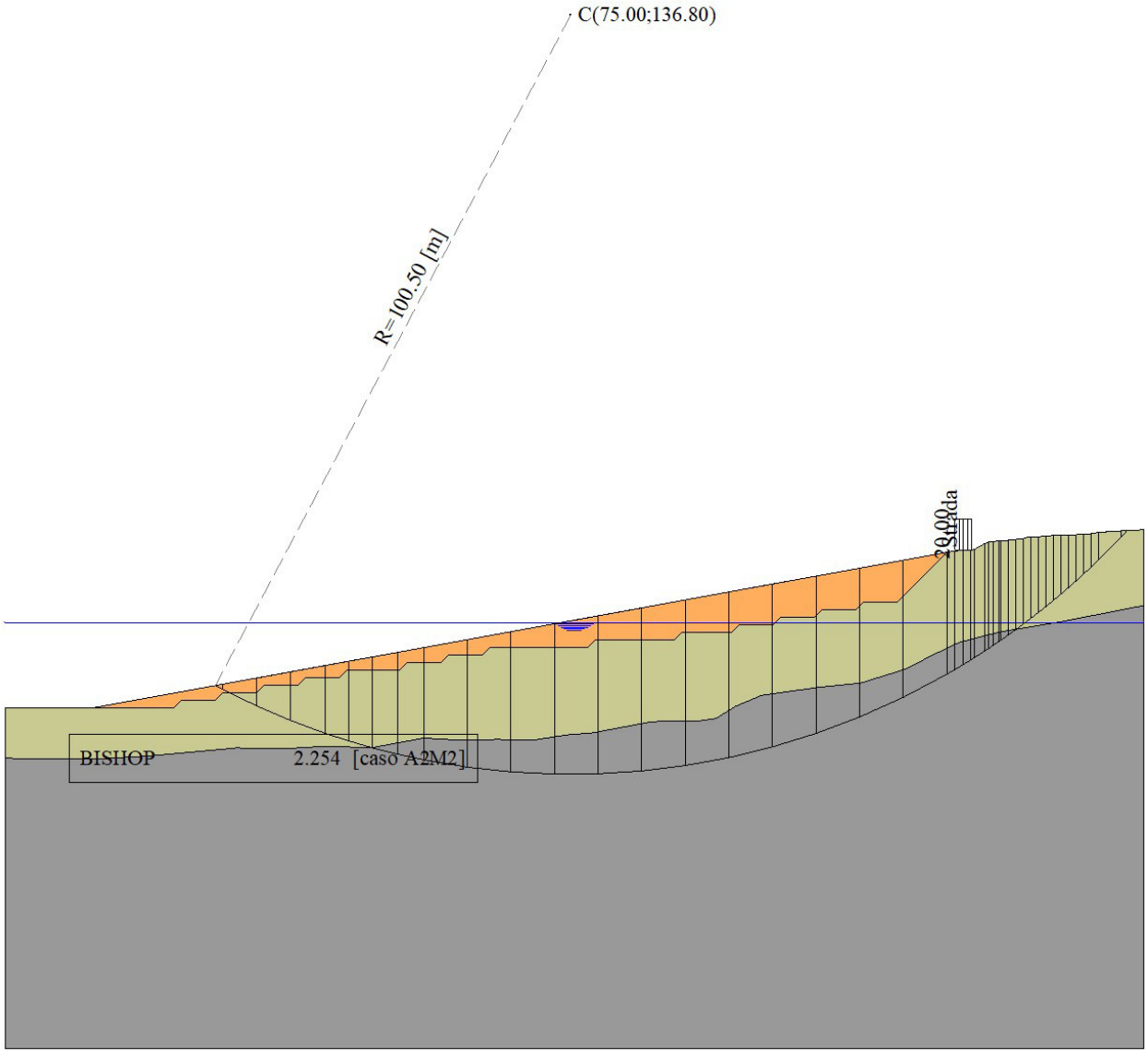

Figura 8-1 – Superficie critica (1) della sezione VS_02 per la verifica di stabilità 01

8.4 VERIFICA DI STABILITÀ 02

8.4.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate solo in condizioni **sismiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni totali**
Presenza di carichi distribuiti

8.4.2 RISULTATI ANALISI

Numero di superfici analizzate	124424
Coefficiente di sicurezza minimo	1.891
Superficie con coefficiente di sicurezza minimo	1

8.4.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO IL BASSO

Numero di strisce	49	
Coordinate del centro	X[m]= 71.00	Y[m]= 92.80
Raggio del cerchio	R[m]= 83.50	
Intersezione a valle con il profilo topografico	X_v[m]= 2.46	Y_v[m]= 45.11
Intersezione a monte con il profilo topografico	X_m[m]= 150.94	Y_m[m]= 68.67
Coefficiente di sicurezza	F_S= 1.891	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	2.46	45.11	45.11	2.86	45.11	44.54	2.73	44.92	0.69	-54.93	0.00	100
2	2.86	45.11	44.54	3.86	45.11	43.16	3.45	44.42	1.71	-54.11	0.00	100
3	3.86	45.11	43.16	4.86	45.12	41.83	4.40	43.78	1.66	-52.95	0.00	100
4	4.86	45.12	41.83	5.57	45.12	40.92	5.23	43.24	1.15	-51.99	0.00	100
5	5.57	45.12	40.92	5.86	45.12	40.56	5.72	42.93	0.47	-51.43	0.00	100
6	5.86	45.12	40.56	6.86	45.11	39.34	6.38	42.52	1.58	-50.73	0.00	100
7	6.86	45.11	39.34	8.86	45.07	37.02	7.91	41.60	3.06	-49.14	0.00	125
8	8.86	45.07	37.02	11.54	45.07	34.18	10.27	40.30	3.91	-46.75	0.00	146
9	11.54	45.07	34.18	11.55	45.08	34.17	11.55	39.62	0.01	-45.40	0.00	146
10	11.55	45.08	34.17	18.63	46.37	27.76	15.40	38.23	9.55	-42.12	0.00	146
11	18.63	46.37	27.76	25.72	47.66	22.65	22.35	36.06	8.74	-35.84	0.00	146
12	25.72	47.66	22.65	32.80	48.94	18.55	29.37	34.43	8.18	-30.03	0.00	146
13	32.80	48.94	18.55	39.88	50.23	15.31	36.42	33.25	7.79	-24.55	0.00	146
14	39.88	50.23	15.31	46.97	51.52	12.83	43.48	32.47	7.51	-19.30	0.00	146
15	46.97	51.52	12.83	54.05	52.80	11.04	50.55	32.05	7.31	-14.22	0.00	146
16	54.05	52.80	11.04	61.13	54.09	9.89	57.62	31.96	7.18	-9.25	0.00	146
17	61.13	54.09	9.89	68.22	55.38	9.35	64.70	32.18	7.10	-4.35	0.00	146
18	68.22	55.38	9.35	75.30	56.67	9.41	71.77	32.70	7.08	0.52	0.00	146
19	75.30	56.67	9.41	82.38	57.96	10.08	78.85	33.53	7.11	5.39	0.00	146
20	82.38	57.96	10.08	89.46	59.24	11.37	85.92	34.66	7.20	10.30	0.00	146
21	89.46	59.24	11.37	96.55	60.53	13.30	93.00	36.11	7.34	15.30	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
22	96.55	60.53	13.30	103.63	61.82	15.94	100.07	37.89	7.56	20.41	0.00	146
23	103.63	61.82	15.94	110.71	63.11	19.35	107.14	40.04	7.86	25.70	0.00	146
24	110.71	63.11	19.35	117.80	64.39	23.65	114.21	42.61	8.28	31.24	0.00	146
25	117.80	64.39	23.65	124.88	65.68	29.01	121.28	45.65	8.88	37.14	0.00	146
26	124.88	65.68	29.01	125.97	65.88	29.95	125.42	47.63	1.44	40.68	0.00	146
27	125.97	65.88	29.95	126.97	65.90	30.84	126.47	48.14	1.34	41.63	0.00	146
28	126.97	65.90	30.84	127.97	65.95	31.75	127.47	48.61	1.36	42.56	0.00	146
29	127.97	65.95	31.75	128.52	66.06	32.27	128.24	49.01	0.76	43.28	0.00	146
30	128.52	66.06	32.27	129.90	66.83	33.61	129.21	49.69	1.92	44.20	0.00	146
31	129.90	66.83	33.61	130.44	67.06	34.16	130.17	50.41	0.77	45.12	0.00	146
32	130.44	67.06	34.16	130.98	67.09	34.71	130.71	50.75	0.77	45.65	0.00	146
33	130.98	67.09	34.71	131.98	67.21	35.76	131.48	51.19	1.45	46.41	0.00	146
34	131.98	67.21	35.76	132.98	67.26	36.85	132.48	51.77	1.48	47.42	0.00	146
35	132.98	67.26	36.85	133.98	67.38	37.98	133.48	52.36	1.51	48.44	0.00	146
36	133.98	67.38	37.98	134.98	67.49	39.15	134.48	53.00	1.54	49.49	0.00	146
37	134.98	67.49	39.15	135.98	67.76	40.36	135.48	53.69	1.57	50.56	0.00	146
38	135.98	67.76	40.36	136.98	67.73	41.62	136.48	54.37	1.61	51.65	0.00	146
39	136.98	67.73	41.62	137.98	67.84	42.94	137.48	55.03	1.65	52.77	0.00	146
40	137.98	67.84	42.94	138.98	67.90	44.31	138.48	55.75	1.70	53.92	0.00	146
41	138.98	67.90	44.31	139.99	67.91	45.76	139.48	56.47	1.77	55.11	0.00	146
42	139.99	67.91	45.76	140.99	67.93	47.26	140.48	57.21	1.80	56.33	0.00	146
43	140.99	67.93	47.26	141.99	68.00	48.84	141.48	58.00	1.87	57.59	0.00	146
44	141.99	68.00	48.84	142.99	68.06	50.50	142.48	58.84	1.94	58.90	0.00	146
45	142.99	68.06	50.50	143.99	68.14	52.24	143.48	59.73	2.02	60.25	0.00	146
46	143.99	68.14	52.24	144.99	68.31	54.10	144.48	60.69	2.11	61.67	0.00	146
47	144.99	68.31	54.10	147.99	68.52	60.48	146.35	62.70	7.05	64.81	0.00	127
48	147.99	68.52	60.48	148.99	68.55	62.97	148.46	65.09	2.69	68.15	0.00	100
49	148.99	68.55	62.97	150.94	68.67	68.67	149.64	66.73	6.02	71.13	0.00	100

Tabella 8-12 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 02

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	2.08	43.98	132.58	36.68	0.00	0.00	129.84	0.00	0.00	
2	23.10	110.33	353.94	90.20	0.00	129.84	467.45	0.00	0.00	
3	47.96	110.28	382.39	87.78	0.00	467.45	822.45	0.00	0.00	
4	48.62	78.26	287.48	60.97	0.00	822.45	1082.25	0.00	0.00	
5	23.24	31.97	121.02	24.60	0.00	1082.25	1190.18	0.00	0.00	
6	94.55	110.28	432.29	83.55	0.00	1190.18	1568.38	0.00	0.00	
7	252.88	221.05	975.55	202.69	0.00	1568.38	2412.33	0.00	0.00	
8	464.42	296.73	1461.37	302.00	0.00	2412.33	3643.16	0.00	0.00	
9	2.00	1.11	5.66	1.10	0.00	3643.16	3648.89	0.00	0.00	
10	1916.33	738.82	4358.74	737.31	0.00	3648.89	7086.29	0.00	0.00	
11	2834.04	649.39	4936.79	674.66	0.00	7086.29	10394.87	0.00	0.00	
12	3598.22	559.96	5349.45	631.73	0.00	10394.87	13407.36	0.00	0.00	
13	4240.14	470.52	5656.81	601.28	0.00	13407.36	16020.78	0.00	0.00	
14	4777.16	381.09	5889.14	579.49	0.00	16020.78	18167.41	0.00	0.00	
15	5223.22	291.66	6067.05	564.20	0.00	18167.41	19802.46	0.00	0.00	
16	5581.53	202.22	6196.66	554.12	0.00	19802.46	20895.68	0.00	0.00	
17	5858.40	112.79	6286.22	548.49	0.00	20895.68	21429.15	0.00	0.00	
18	6060.49	25.91	6345.84	546.94	0.00	21429.15	21394.94	0.00	0.00	
19	6183.02	0.00	6429.32	549.34	0.00	21394.94	20798.71	0.00	0.00	
20	6227.52	0.00	6504.42	555.88	0.00	20798.71	19639.26	0.00	0.00	
21	6186.97	0.00	6538.67	567.00	0.00	19639.26	17921.97	0.00	0.00	
22	6058.17	0.00	6528.54	583.55	0.00	17921.97	15664.11	0.00	0.00	
23	5833.41	0.00	6463.93	606.96	0.00	15664.11	12899.26	0.00	0.00	
24	5501.18	0.00	6326.68	639.68	0.00	12899.26	9685.22	0.00	0.00	
25	5031.51	0.00	6067.00	686.04	0.00	9685.22	6130.83	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
26	724.11	0.00	901.05	110.98	0.00	6130.83	5564.55	0.00	0.00	
27	649.63	20.00	843.13	103.30	0.00	5564.55	5023.27	0.00	0.00	
28	633.74	20.00	829.93	104.82	0.00	5023.27	4482.21	0.00	0.00	
29	342.13	4.40	441.82	58.33	0.00	4482.21	4191.57	0.00	0.00	
30	846.07	0.00	1087.07	148.63	0.00	4191.57	3466.50	0.00	0.00	
31	326.70	0.00	423.86	59.09	0.00	3466.50	3179.36	0.00	0.00	
32	322.58	0.00	420.56	59.65	0.00	3179.36	2892.20	0.00	0.00	
33	584.07	0.00	766.42	111.99	0.00	2892.20	2363.35	0.00	0.00	
34	566.06	0.00	748.85	114.11	0.00	2363.35	1839.83	0.00	0.00	
35	547.33	0.00	729.75	116.40	0.00	1839.83	1323.27	0.00	0.00	
36	528.41	0.00	709.77	118.86	0.00	1323.27	814.80	0.00	0.00	
37	510.05	0.00	690.09	121.54	0.00	814.80	314.63	0.00	0.00	
38	489.56	0.00	666.12	124.44	0.00	314.63	-173.21	0.00	0.00	
39	466.69	0.00	637.03	127.62	0.00	-173.21	-643.89	0.00	0.00	
40	443.65	0.00	606.22	131.11	0.00	-643.89	-1095.28	0.00	0.00	
41	422.66	0.00	575.60	136.33	0.00	-1095.28	-1526.26	0.00	0.00	
42	391.77	0.00	528.38	139.28	0.00	-1526.26	-1922.95	0.00	0.00	
43	364.44	0.00	482.68	144.07	0.00	-1922.95	-2285.00	0.00	0.00	
44	336.05	0.00	431.13	149.46	0.00	-2285.00	-2606.22	0.00	0.00	
45	306.16	0.00	371.62	155.61	0.00	-2606.22	-2878.34	0.00	0.00	
46	275.47	0.00	303.99	162.68	0.00	-2878.34	-3092.71	0.00	0.00	
47	610.86	0.00	493.54	472.33	0.00	-3092.71	-3391.48	0.00	0.00	
48	124.65	0.00	-4.81	142.08	0.00	-3391.48	-3345.00	0.00	0.00	
49	99.36	0.00	-610.84	318.30	0.00	-3345.00	-2672.71	0.00	0.00	

Tabella 8-13 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 02

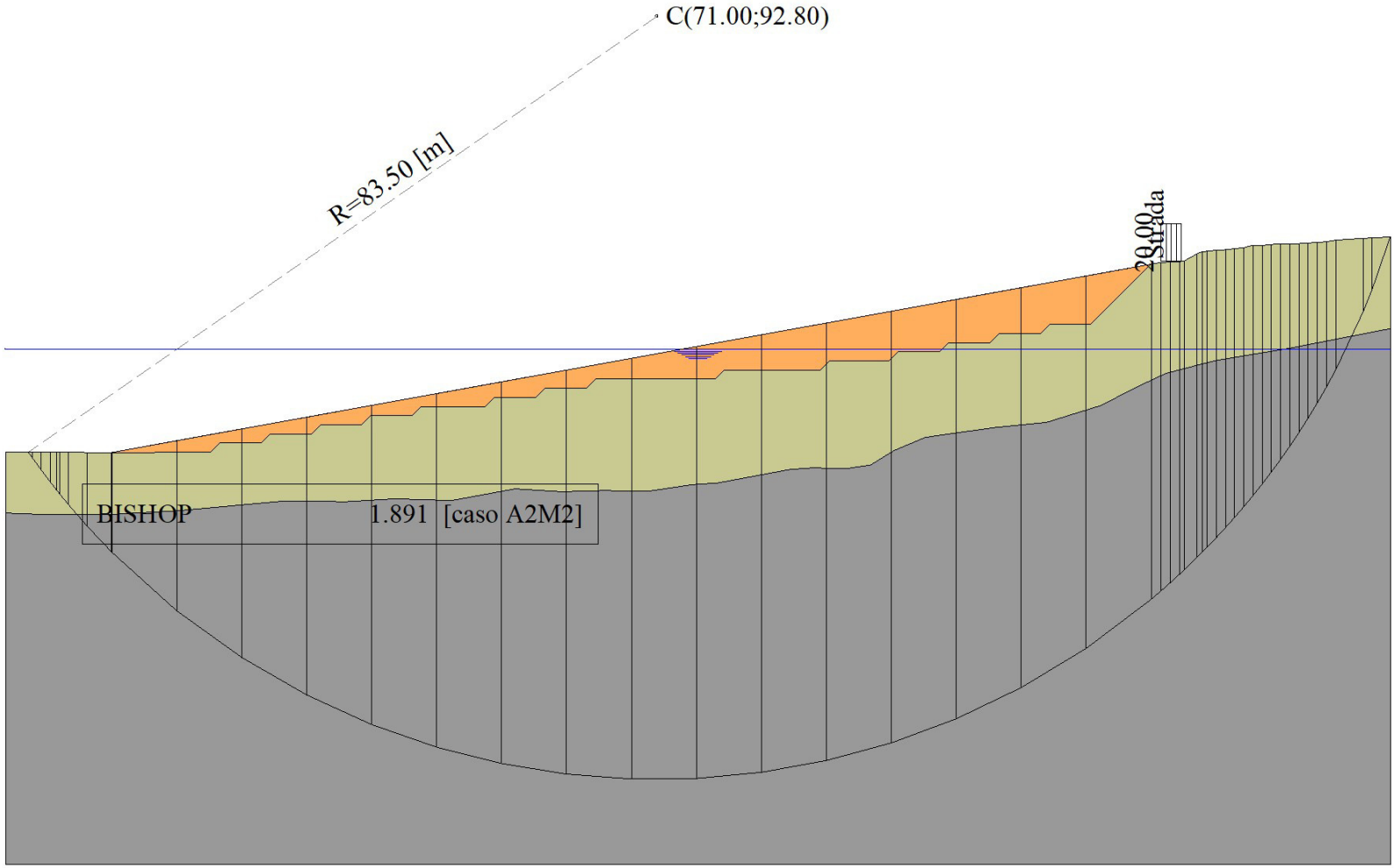

Figura 8-2 – Superficie critica (1) della sezione VS_02 per la verifica di stabilità 02

8.5 VERIFICA DI STABILITÀ 03

8.5.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate solo in condizioni **sismiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni totali**
Presenza di carichi distribuiti

8.5.2 RISULTATI ANALISI

Numero di superfici analizzate	124424
Coefficiente di sicurezza minimo	1.491
Superficie con coefficiente di sicurezza minimo	1

8.5.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO IL BASSO

Numero di strisce	49	
Coordinate del centro	X[m]= 71.00	Y[m]= 92.80
Raggio del cerchio	R[m]= 83.50	
Intersezione a valle con il profilo topografico	X_v[m]= 2.46	Y_v[m]= 45.11
Intersezione a monte con il profilo topografico	X_m[m]= 150.94	Y_m[m]= 68.67
Coefficiente di sicurezza	F_S= 1.491	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	2.46	45.11	45.11	2.86	45.11	44.54	2.73	44.92	0.69	-54.93	0.00	100
2	2.86	45.11	44.54	3.86	45.11	43.16	3.45	44.42	1.71	-54.11	0.00	100
3	3.86	45.11	43.16	4.86	45.12	41.83	4.40	43.78	1.66	-52.95	0.00	100
4	4.86	45.12	41.83	5.57	45.12	40.92	5.23	43.24	1.15	-51.99	0.00	100
5	5.57	45.12	40.92	5.86	45.12	40.56	5.72	42.93	0.47	-51.43	0.00	100
6	5.86	45.12	40.56	6.86	45.11	39.34	6.38	42.52	1.58	-50.73	0.00	100
7	6.86	45.11	39.34	8.86	45.07	37.02	7.91	41.60	3.06	-49.14	0.00	125
8	8.86	45.07	37.02	11.54	45.07	34.18	10.27	40.30	3.91	-46.75	0.00	146
9	11.54	45.07	34.18	11.55	45.08	34.17	11.55	39.62	0.01	-45.40	0.00	146
10	11.55	45.08	34.17	18.63	46.37	27.76	15.40	38.23	9.55	-42.12	0.00	146
11	18.63	46.37	27.76	25.72	47.66	22.65	22.35	36.06	8.74	-35.84	0.00	146
12	25.72	47.66	22.65	32.80	48.94	18.55	29.37	34.43	8.18	-30.03	0.00	146
13	32.80	48.94	18.55	39.88	50.23	15.31	36.42	33.25	7.79	-24.55	0.00	146
14	39.88	50.23	15.31	46.97	51.52	12.83	43.48	32.47	7.51	-19.30	0.00	146
15	46.97	51.52	12.83	54.05	52.80	11.04	50.55	32.05	7.31	-14.22	0.00	146
16	54.05	52.80	11.04	61.13	54.09	9.89	57.62	31.96	7.18	-9.25	0.00	146
17	61.13	54.09	9.89	68.22	55.38	9.35	64.70	32.18	7.10	-4.35	0.00	146
18	68.22	55.38	9.35	75.30	56.67	9.41	71.77	32.70	7.08	0.52	0.00	146
19	75.30	56.67	9.41	82.38	57.96	10.08	78.85	33.53	7.11	5.39	0.00	146
20	82.38	57.96	10.08	89.46	59.24	11.37	85.92	34.66	7.20	10.30	0.00	146
21	89.46	59.24	11.37	96.55	60.53	13.30	93.00	36.11	7.34	15.30	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
22	96.55	60.53	13.30	103.63	61.82	15.94	100.07	37.89	7.56	20.41	0.00	146
23	103.63	61.82	15.94	110.71	63.11	19.35	107.14	40.04	7.86	25.70	0.00	146
24	110.71	63.11	19.35	117.80	64.39	23.65	114.21	42.61	8.28	31.24	0.00	146
25	117.80	64.39	23.65	124.88	65.68	29.01	121.28	45.65	8.88	37.14	0.00	146
26	124.88	65.68	29.01	125.97	65.88	29.95	125.42	47.63	1.44	40.68	0.00	146
27	125.97	65.88	29.95	126.97	65.90	30.84	126.47	48.14	1.34	41.63	0.00	146
28	126.97	65.90	30.84	127.97	65.95	31.75	127.47	48.61	1.36	42.56	0.00	146
29	127.97	65.95	31.75	128.52	66.06	32.27	128.24	49.01	0.76	43.28	0.00	146
30	128.52	66.06	32.27	129.90	66.83	33.61	129.21	49.69	1.92	44.20	0.00	146
31	129.90	66.83	33.61	130.44	67.06	34.16	130.17	50.41	0.77	45.12	0.00	146
32	130.44	67.06	34.16	130.98	67.09	34.71	130.71	50.75	0.77	45.65	0.00	146
33	130.98	67.09	34.71	131.98	67.21	35.76	131.48	51.19	1.45	46.41	0.00	146
34	131.98	67.21	35.76	132.98	67.26	36.85	132.48	51.77	1.48	47.42	0.00	146
35	132.98	67.26	36.85	133.98	67.38	37.98	133.48	52.36	1.51	48.44	0.00	146
36	133.98	67.38	37.98	134.98	67.49	39.15	134.48	53.00	1.54	49.49	0.00	146
37	134.98	67.49	39.15	135.98	67.76	40.36	135.48	53.69	1.57	50.56	0.00	146
38	135.98	67.76	40.36	136.98	67.73	41.62	136.48	54.37	1.61	51.65	0.00	146
39	136.98	67.73	41.62	137.98	67.84	42.94	137.48	55.03	1.65	52.77	0.00	146
40	137.98	67.84	42.94	138.98	67.90	44.31	138.48	55.75	1.70	53.92	0.00	146
41	138.98	67.90	44.31	139.99	67.91	45.76	139.48	56.47	1.77	55.11	0.00	146
42	139.99	67.91	45.76	140.99	67.93	47.26	140.48	57.21	1.80	56.33	0.00	146
43	140.99	67.93	47.26	141.99	68.00	48.84	141.48	58.00	1.87	57.59	0.00	146
44	141.99	68.00	48.84	142.99	68.06	50.50	142.48	58.84	1.94	58.90	0.00	146
45	142.99	68.06	50.50	143.99	68.14	52.24	143.48	59.73	2.02	60.25	0.00	146
46	143.99	68.14	52.24	144.99	68.31	54.10	144.48	60.69	2.11	61.67	0.00	146
47	144.99	68.31	54.10	147.99	68.52	60.48	146.35	62.70	7.05	64.81	0.00	127
48	147.99	68.52	60.48	148.99	68.55	62.97	148.46	65.09	2.69	68.15	0.00	100
49	148.99	68.55	62.97	150.94	68.67	68.67	149.64	66.73	6.02	71.13	0.00	100

Tabella 8-14 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 03

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	2.08	43.98	146.68	46.51	0.00	0.00	146.92	0.00	0.00	
2	23.10	110.33	388.45	114.38	0.00	146.92	525.35	0.00	0.00	
3	47.96	110.28	415.78	111.30	0.00	525.35	918.49	0.00	0.00	
4	48.62	78.26	310.60	77.31	0.00	918.49	1203.84	0.00	0.00	
5	23.24	31.97	130.33	31.19	0.00	1203.84	1321.86	0.00	0.00	
6	94.55	110.28	463.87	105.94	0.00	1321.86	1733.37	0.00	0.00	
7	252.88	221.05	1049.20	257.01	0.00	1733.37	2654.36	0.00	0.00	
8	464.42	296.73	1566.43	382.93	0.00	2654.36	3991.08	0.00	0.00	
9	2.00	1.11	6.04	1.39	0.00	3991.08	3997.18	0.00	0.00	
10	1916.33	738.82	4609.93	934.91	0.00	3997.18	7641.99	0.00	0.00	
11	2834.04	649.39	5165.55	855.47	0.00	7641.99	11071.95	0.00	0.00	
12	3598.22	559.96	5564.03	801.04	0.00	11071.95	14136.34	0.00	0.00	
13	4240.14	470.52	5861.31	762.42	0.00	14136.34	16743.20	0.00	0.00	
14	4777.16	381.09	6085.66	734.80	0.00	16743.20	18833.10	0.00	0.00	
15	5223.22	291.66	6256.66	715.40	0.00	18833.10	20367.99	0.00	0.00	
16	5581.53	202.22	6379.63	702.62	0.00	20367.99	21323.75	0.00	0.00	
17	5858.40	112.79	6462.37	695.48	0.00	21323.75	21688.17	0.00	0.00	
18	6060.49	25.91	6514.68	693.51	0.00	21688.17	21458.67	0.00	0.00	
19	6183.02	0.00	6589.80	696.56	0.00	21458.67	20646.71	0.00	0.00	
20	6227.52	0.00	6655.05	704.85	0.00	20646.71	19257.18	0.00	0.00	
21	6186.97	0.00	6677.20	718.95	0.00	19257.18	17302.48	0.00	0.00	
22	6058.17	0.00	6651.85	739.93	0.00	17302.48	14807.99	0.00	0.00	
23	5833.41	0.00	6567.41	769.62	0.00	14807.99	11817.25	0.00	0.00	
24	5501.18	0.00	6403.34	811.11	0.00	11817.25	8401.09	0.00	0.00	
25	5031.51	0.00	6104.98	869.89	0.00	8401.09	4687.80	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
26	724.11	0.00	902.30	140.72	0.00	4687.80	4102.60	0.00	0.00	
27	649.63	20.00	843.68	130.99	0.00	4102.60	3544.04	0.00	0.00	
28	633.74	20.00	829.05	132.91	0.00	3544.04	2987.56	0.00	0.00	
29	342.13	4.40	440.46	73.97	0.00	2987.56	2689.77	0.00	0.00	
30	846.07	0.00	1081.47	188.46	0.00	2689.77	1949.65	0.00	0.00	
31	326.70	0.00	420.95	74.93	0.00	1949.65	1657.39	0.00	0.00	
32	322.58	0.00	417.17	75.63	0.00	1657.39	1365.71	0.00	0.00	
33	584.07	0.00	758.68	142.01	0.00	1365.71	830.37	0.00	0.00	
34	566.06	0.00	739.06	144.70	0.00	830.37	302.96	0.00	0.00	
35	547.33	0.00	717.72	147.59	0.00	302.96	-214.64	0.00	0.00	
36	528.41	0.00	695.33	150.72	0.00	-214.64	-721.11	0.00	0.00	
37	510.05	0.00	673.04	154.11	0.00	-721.11	-1216.06	0.00	0.00	
38	489.56	0.00	646.12	157.79	0.00	-1216.06	-1695.03	0.00	0.00	
39	466.69	0.00	613.67	161.82	0.00	-1695.03	-2152.62	0.00	0.00	
40	443.65	0.00	579.16	166.24	0.00	-2152.62	-2586.36	0.00	0.00	
41	422.66	0.00	543.96	172.86	0.00	-2586.36	-2994.22	0.00	0.00	
42	391.77	0.00	492.19	176.61	0.00	-2994.22	-3362.10	0.00	0.00	
43	364.44	0.00	440.96	182.68	0.00	-3362.10	-3688.70	0.00	0.00	
44	336.05	0.00	383.01	189.52	0.00	-3688.70	-3966.89	0.00	0.00	
45	306.16	0.00	315.98	197.31	0.00	-3966.89	-4187.20	0.00	0.00	
46	275.47	0.00	239.43	206.28	0.00	-4187.20	-4339.52	0.00	0.00	
47	610.86	0.00	264.75	598.92	0.00	-4339.52	-4411.69	0.00	0.00	
48	124.65	0.00	-90.35	180.16	0.00	-4411.69	-4278.63	0.00	0.00	
49	99.36	0.00	-851.85	403.60	0.00	-4278.63	-3356.28	0.00	0.00	

Tabella 8-15 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 03

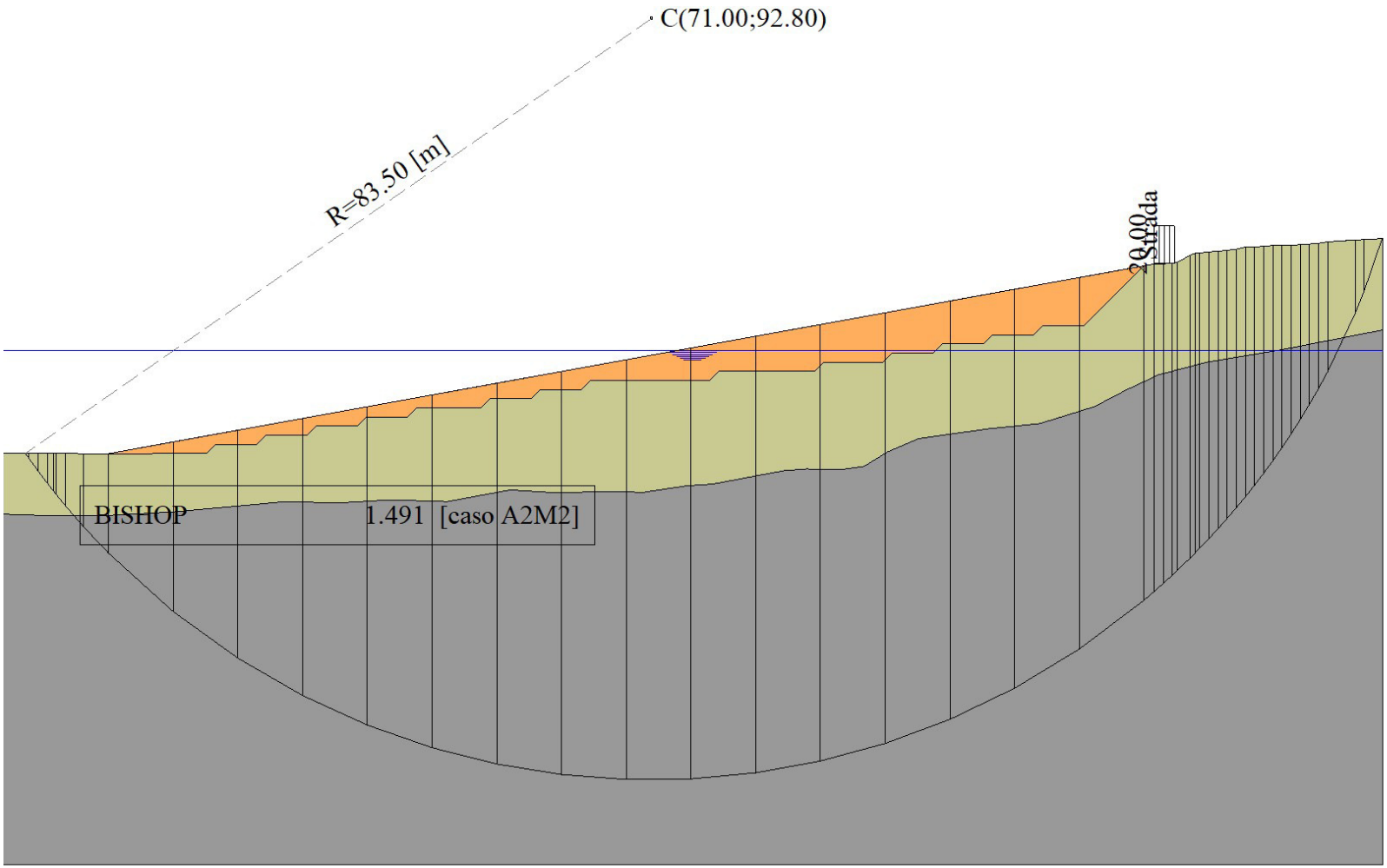

Figura 8-3 – Superficie critica (1) della sezione VA_02 per la verifica di stabilità 03

8.6 VERIFICA DI STABILITÀ 04

8.6.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate in condizioni **statiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni totali**
Presenza di carichi distribuiti

8.6.2 RISULTATI ANALISI

Numero di superfici analizzate	62212
Coefficiente di sicurezza minimo	1.737
Superficie con coefficiente di sicurezza minimo	1

8.6.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO L'ALTO

Numero di strisce	57	
Coordinate del centro	X[m]= 71.00	Y[m]= 86.80
Raggio del cerchio	R[m]= 81.50	
Intersezione a valle con il profilo topografico	X_v[m]= 0.98	Y_v[m]= 45.09
Intersezione a monte con il profilo topografico	X_m[m]= 150.45	Y_m[m]= 68.64
Coefficiente di sicurezza	F_S= 1.737	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	0.98	45.09	45.09	2.86	45.11	42.09	2.23	44.10	3.54	-57.97	0.00	71
2	2.86	45.11	42.09	3.02	45.11	41.84	2.94	43.54	0.29	-56.63	0.00	71
3	3.02	45.11	41.84	3.86	45.11	40.60	3.46	43.15	1.50	-56.00	0.00	71
4	3.86	45.11	40.60	4.02	45.11	40.37	3.94	42.80	0.28	-55.37	0.00	71
5	4.02	45.11	40.37	4.86	45.12	39.18	4.46	42.43	1.46	-54.76	0.00	71
6	4.86	45.12	39.18	5.02	45.12	38.96	4.94	42.09	0.27	-54.15	0.00	71
7	5.02	45.12	38.96	5.57	45.12	38.21	5.30	41.85	0.93	-53.73	0.00	75
8	5.57	45.12	38.21	5.86	45.12	37.82	5.72	41.57	0.48	-53.23	0.00	104
9	5.86	45.12	37.82	6.02	45.12	37.61	5.94	41.42	0.27	-52.97	0.00	104
10	6.02	45.12	37.61	6.86	45.11	36.52	6.45	41.08	1.38	-52.39	0.00	104
11	6.86	45.11	36.52	7.02	45.11	36.31	6.94	40.76	0.26	-51.81	0.00	104
12	7.02	45.11	36.31	8.02	45.09	35.07	7.53	40.39	1.59	-51.16	0.00	104
13	8.02	45.09	35.07	8.86	45.07	34.07	8.45	39.82	1.31	-50.14	0.00	104
14	8.86	45.07	34.07	9.02	45.07	33.88	8.94	39.52	0.25	-49.59	0.00	104
15	9.02	45.07	33.88	11.30	45.07	31.32	10.20	38.81	3.43	-48.30	0.00	104
16	11.30	45.07	31.32	11.54	45.07	31.06	11.42	38.13	0.35	-46.97	0.00	104
17	11.54	45.07	31.06	11.55	45.08	31.05	11.55	38.07	0.01	-46.85	0.00	104
18	11.55	45.08	31.05	18.45	46.33	24.51	15.25	36.65	9.51	-43.50	0.00	104
19	18.45	46.33	24.51	25.34	47.59	19.29	22.04	34.39	8.65	-37.11	0.00	104
20	25.34	47.59	19.29	32.24	48.84	15.11	28.89	32.69	8.06	-31.24	0.00	104
21	32.24	48.84	15.11	39.13	50.09	11.79	35.76	31.45	7.65	-25.71	0.00	104

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
22	39.13	50.09	11.79	46.03	51.35	9.22	42.63	30.61	7.36	-20.43	0.00	104
23	46.03	51.35	9.22	52.92	52.60	7.33	49.52	30.12	7.15	-15.33	0.00	104
24	52.92	52.60	7.33	59.82	53.85	6.07	56.40	29.96	7.01	-10.35	0.00	104
25	59.82	53.85	6.07	66.71	55.11	5.41	63.29	30.11	6.93	-5.45	0.00	104
26	66.71	55.11	5.41	73.61	56.36	5.34	70.18	30.56	6.90	-0.59	0.00	104
27	73.61	56.36	5.34	80.93	57.69	5.91	77.28	31.33	7.35	4.42	0.00	104
28	80.93	57.69	5.91	88.26	59.02	7.15	84.60	32.44	7.43	9.61	0.00	104
29	88.26	59.02	7.15	95.58	60.35	9.10	91.91	33.90	7.58	14.89	0.00	104
30	95.58	60.35	9.10	102.91	61.69	11.81	99.23	35.73	7.81	20.30	0.00	104
31	102.91	61.69	11.81	110.23	63.02	15.36	106.54	37.96	8.14	25.91	0.00	104
32	110.23	63.02	15.36	117.56	64.35	19.91	113.85	40.64	8.62	31.81	0.00	104
33	117.56	64.35	19.91	124.88	65.68	25.65	121.15	43.87	9.31	38.11	0.00	104
34	124.88	65.68	25.65	125.97	65.88	26.63	125.42	45.96	1.46	41.90	0.00	104
35	125.97	65.88	26.63	126.97	65.90	27.56	126.47	46.49	1.36	42.89	0.00	104
36	126.97	65.90	27.56	127.97	65.95	28.52	127.47	46.98	1.39	43.86	0.00	104
37	127.97	65.95	28.52	128.52	66.06	29.06	128.24	47.40	0.77	44.62	0.00	104
38	128.52	66.06	29.06	129.90	66.83	30.47	129.21	48.10	1.97	45.58	0.00	104
39	129.90	66.83	30.47	130.44	67.06	31.04	130.17	48.85	0.79	46.55	0.00	104
40	130.44	67.06	31.04	130.98	67.09	31.62	130.71	49.20	0.79	47.11	0.00	104
41	130.98	67.09	31.62	131.98	67.21	32.73	131.48	49.66	1.49	47.91	0.00	104
42	131.98	67.21	32.73	132.98	67.26	33.88	132.48	50.27	1.52	48.97	0.00	104
43	132.98	67.26	33.88	133.98	67.38	35.07	133.48	50.90	1.56	50.05	0.00	104
44	133.98	67.38	35.07	134.98	67.49	36.31	134.48	51.56	1.59	51.16	0.00	104
45	134.98	67.49	36.31	135.98	67.76	37.61	135.48	52.29	1.64	52.30	0.00	104
46	135.98	67.76	37.61	136.98	67.73	38.96	136.48	53.01	1.68	53.46	0.00	104
47	136.98	67.73	38.96	137.98	67.84	40.37	137.48	53.72	1.73	54.66	0.00	104
48	137.98	67.84	40.37	138.98	67.90	41.84	138.48	54.48	1.78	55.90	0.00	104
49	138.98	67.90	41.84	139.99	67.91	43.41	139.48	55.26	1.86	57.18	0.00	104
50	139.99	67.91	43.41	140.99	67.93	45.04	140.48	56.07	1.91	58.51	0.00	104
51	140.99	67.93	45.04	141.99	68.00	46.77	141.48	56.93	1.99	59.88	0.00	104
52	141.99	68.00	46.77	142.99	68.06	48.59	142.48	57.85	2.08	61.31	0.00	104
53	142.99	68.06	48.59	143.99	68.14	50.54	143.48	58.83	2.19	62.81	0.00	104
54	143.99	68.14	50.54	144.99	68.31	52.63	144.48	59.89	2.31	64.40	0.00	104
55	144.99	68.31	52.63	147.99	68.52	60.06	146.34	62.19	8.02	68.03	0.00	95
56	147.99	68.52	60.06	148.99	68.55	63.14	148.45	65.01	3.23	71.99	0.00	71
57	148.99	68.55	63.14	150.45	68.64	68.64	149.48	66.78	5.69	75.12	0.00	71

Tabella 8-16 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 04

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	51.96	0.00	330.85	145.67	0.00	0.00	357.75	0.00	0.00	
2	9.20	0.00	34.89	11.96	0.00	357.75	393.46	0.00	0.00	
3	59.76	0.00	198.41	61.76	0.00	393.46	592.47	0.00	0.00	
4	13.55	0.00	40.60	11.58	0.00	592.47	632.46	0.00	0.00	
5	82.12	0.00	227.03	59.86	0.00	632.46	852.42	0.00	0.00	
6	17.72	0.00	45.80	11.23	0.00	852.42	896.13	0.00	0.00	
7	65.80	0.00	166.27	40.40	0.00	896.13	1054.07	0.00	0.00	
8	37.71	0.00	101.92	29.08	0.00	1054.07	1153.12	0.00	0.00	
9	21.68	0.00	57.14	15.95	0.00	1153.12	1208.34	0.00	0.00	
10	123.77	0.00	310.05	82.63	0.00	1208.34	1504.38	0.00	0.00	
11	25.45	0.00	60.92	15.54	0.00	1504.38	1561.88	0.00	0.00	
12	172.09	0.00	393.32	95.73	0.00	1561.88	1928.28	0.00	0.00	
13	161.55	0.00	346.31	78.68	0.00	1928.28	2244.54	0.00	0.00	
14	32.49	0.00	67.54	14.82	0.00	2244.54	2305.58	0.00	0.00	
15	520.36	0.00	1013.24	205.76	0.00	2305.58	3199.00	0.00	0.00	
16	60.96	0.05	112.04	21.12	0.00	3199.00	3295.32	0.00	0.00	
17	2.57	0.00	4.69	0.88	0.00	3295.32	3299.34	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
18	2265.18	2.25	3667.19	570.65	0.00	3299.34	6237.89	0.00	0.00	
19	3169.48	1.98	4369.78	519.10	0.00	6237.89	9288.87	0.00	0.00	
20	3920.94	1.71	4881.31	484.14	0.00	9288.87	12234.40	0.00	0.00	
21	4552.64	1.44	5275.62	459.44	0.00	12234.40	14937.18	0.00	0.00	
22	5081.81	1.17	5588.72	441.74	0.00	14937.18	17302.19	0.00	0.00	
23	5523.06	0.90	5845.38	429.23	0.00	17302.19	19261.58	0.00	0.00	
24	5880.28	0.63	6055.04	420.80	0.00	19261.58	20763.51	0.00	0.00	
25	6159.61	0.36	6227.61	415.84	0.00	20763.51	21768.99	0.00	0.00	
26	6366.97	0.09	6371.66	413.98	0.00	21768.99	22248.52	0.00	0.00	
27	6907.26	0.00	6893.77	441.01	0.00	22248.52	22157.14	0.00	0.00	
28	6968.47	0.00	6992.19	445.96	0.00	22157.14	21429.14	0.00	0.00	
29	6935.65	0.00	7055.68	454.97	0.00	21429.14	20055.71	0.00	0.00	
30	6803.36	0.00	7080.55	468.82	0.00	20055.71	18038.71	0.00	0.00	
31	6561.33	0.00	7057.16	488.84	0.00	18038.71	15394.58	0.00	0.00	
32	6197.32	0.00	6971.46	517.38	0.00	15394.58	12160.04	0.00	0.00	
33	5676.01	0.00	6775.49	558.82	0.00	12160.04	8418.06	0.00	0.00	
34	790.70	0.00	983.43	87.91	0.00	8418.06	7826.75	0.00	0.00	
35	709.98	26.00	928.45	81.94	0.00	7826.75	7254.84	0.00	0.00	
36	693.32	26.00	917.62	83.26	0.00	7254.84	6679.04	0.00	0.00	
37	374.56	5.72	488.50	46.39	0.00	6679.04	6368.94	0.00	0.00	
38	926.29	0.00	1202.73	118.37	0.00	6368.94	5592.69	0.00	0.00	
39	357.63	0.00	470.28	47.14	0.00	5592.69	5283.67	0.00	0.00	
40	353.22	0.00	467.71	47.63	0.00	5283.67	4973.43	0.00	0.00	
41	640.04	0.00	855.73	89.56	0.00	4973.43	4398.41	0.00	0.00	
42	620.95	0.00	840.85	91.45	0.00	4398.41	3824.11	0.00	0.00	
43	601.06	0.00	824.51	93.50	0.00	3824.11	3252.03	0.00	0.00	
44	580.87	0.00	807.37	95.73	0.00	3252.03	2683.17	0.00	0.00	
45	561.15	0.00	790.58	98.16	0.00	2683.17	2117.69	0.00	0.00	
46	539.16	0.00	769.54	100.84	0.00	2117.69	1559.41	0.00	0.00	
47	514.64	0.00	743.37	103.79	0.00	1559.41	1013.04	0.00	0.00	
48	489.77	0.00	715.40	107.07	0.00	1013.04	480.70	0.00	0.00	
49	467.20	0.00	688.52	111.86	0.00	480.70	-37.27	0.00	0.00	
50	433.58	0.00	642.41	114.92	0.00	-37.27	-525.01	0.00	0.00	
51	403.70	0.00	598.27	119.63	0.00	-525.01	-982.47	0.00	0.00	
52	372.40	0.00	547.23	125.06	0.00	-982.47	-1402.50	0.00	0.00	
53	339.14	0.00	486.48	131.40	0.00	-1402.50	-1775.20	0.00	0.00	
54	304.52	0.00	414.78	138.92	0.00	-1775.20	-2089.22	0.00	0.00	
55	662.58	0.00	688.29	436.80	0.00	-2089.22	-2564.11	0.00	0.00	
56	126.87	0.00	1.37	132.97	0.00	-2564.11	-2524.30	0.00	0.00	
57	72.29	0.00	-598.80	233.87	0.00	-2524.30	-1885.52	0.00	0.00	

Tabella 8-17 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 04

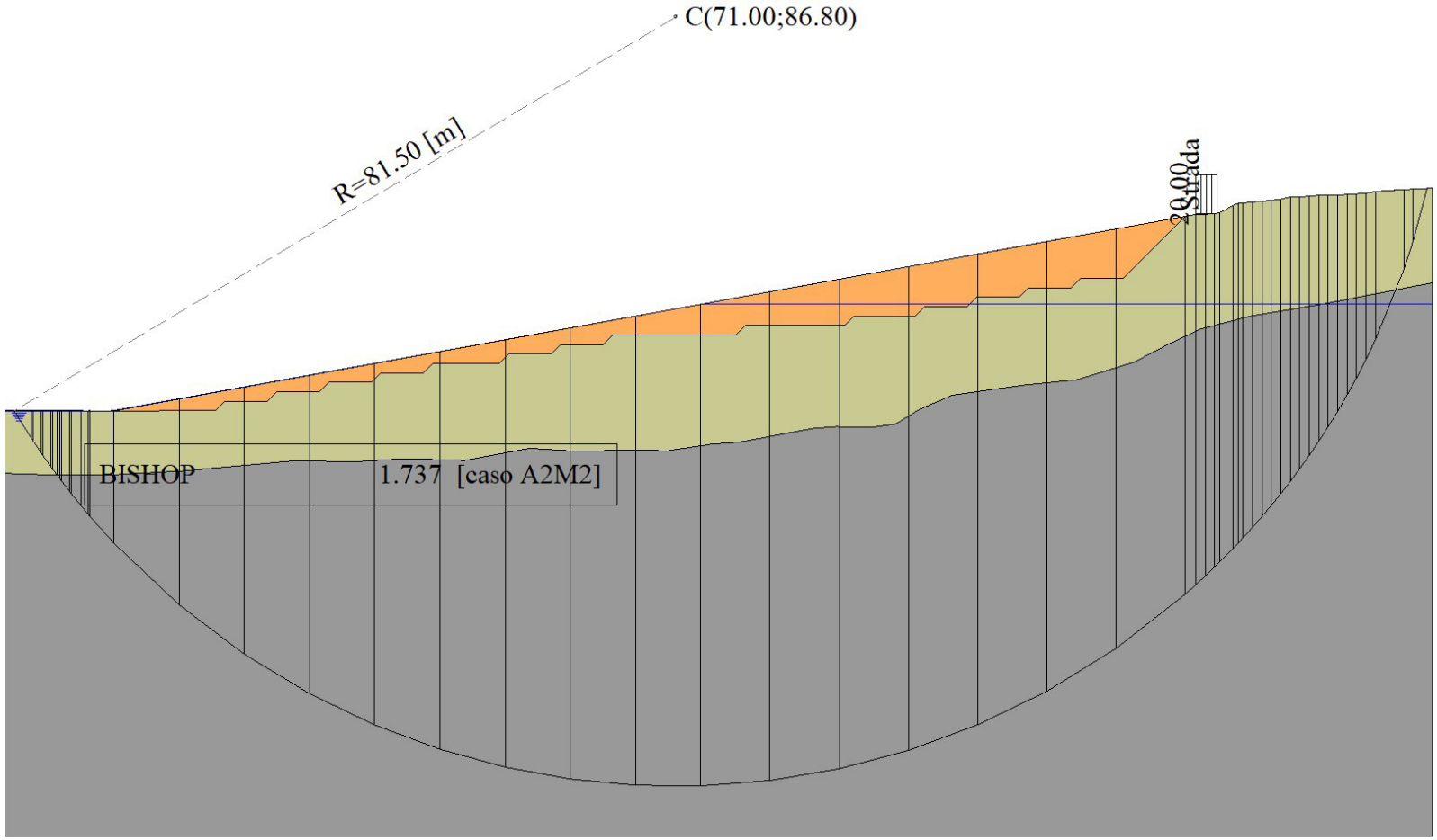

Figura 8-4 – Superficie critica (1) della sezione VS_02 per la verifica di stabilità 04

9 VERIFICHE STATO DI PROGETTO SEZIONE VS_03

9.1 PARAMETRI GEOTECNICI

n°	Descrizione	γ	γ_{sat}	ϕ'	c'	Retino
		[kN/mc]	*[kN/mc]*	*[°]*	*[kPa]*	
1	Substrato	21.27	21.27	23.60	24.0	
2	Substrato alterato	20.68	20.68	23.40	22.0	
3	Terreno di riporto	18.99	18.99	24.20	23.0	

Tabella 9-1 – Parametri geotecnici condizioni drenate

n°	Descrizione	γ	γ_{sat}	ϕ_u	C_u	Retino
		[kN/mc]	*[kN/mc]*	*[°]*	*[kPa]*	
1	Substrato	21.27	21.27	0.00	146.0	
2	Substrato alterato	20.68	20.68	0.00	100.0	
3	Terreno di riporto	18.99	18.99	0.00	76.0	

Tabella 9-2 – Parametri geotecnici condizioni non drenate

9.2 DESCRIZIONE SEZIONE E IMPOSTAZIONE ANALISI

9.2.1 PROFILO TERRENO E DESCRIZIONE STRATIGRAFIA

n°	X	Y
	[m]	*[m]*
1	0.00	45.04
2	3.02	45.04
3	4.02	45.05
4	5.02	45.05
5	6.02	45.05
6	7.02	45.06
7	8.02	45.06
8	9.02	45.07
9	10.02	45.07
10	11.02	45.09
11	12.02	45.12
12	13.02	45.12
13	14.02	45.13
14	15.02	45.17
15	16.02	45.26
16	17.02	45.48
17	18.02	45.59
18	19.02	45.74
19	20.02	45.92
20	20.13	45.93
21	43.78	50.23
22	59.03	53.00
23	129.77	65.86
24	130.01	65.88
25	132.01	65.99
26	133.01	66.33
27	134.01	66.98
28	135.01	67.63
29	135.39	67.89

n°	X	Y
	[m]	*[m]*
30	136.01	68.28
31	137.01	68.51
32	138.01	68.77
33	139.01	68.90
34	140.01	68.97
35	141.01	69.02
36	142.01	69.13
37	143.01	69.16
38	144.01	69.14
39	145.01	69.24
40	146.00	69.37
41	147.00	69.50
42	148.00	69.57
43	149.00	69.70
44	150.00	69.94
45	151.00	69.99

Tabella 9-3 – Profilo del piano campagna

n°	X	Y
	[m]	*[m]*
1	0.00	37.90
2	0.00	0.00
3	151.00	0.00
4	151.00	59.55
5	148.01	58.73
6	140.55	58.37
7	132.86	57.29
8	130.16	56.86
9	128.64	56.58
10	125.84	55.90
11	123.92	55.60
12	120.39	55.04
13	119.01	54.15
14	117.47	53.17
15	116.05	52.87
16	114.10	52.70
17	112.90	52.55
18	108.31	51.12
19	107.34	50.40
20	106.32	49.19
21	105.22	47.26
22	104.65	46.62
23	104.12	45.41
24	102.95	44.92
25	101.58	44.61
26	100.68	44.58
27	98.29	44.27
28	97.35	43.93
29	95.83	43.90
30	94.71	43.38
31	93.44	43.14
32	91.01	42.53
33	87.91	41.02
34	83.24	40.96
35	79.60	40.59
36	71.60	38.98
37	65.25	39.48

n°	X	Y
	[m]	*[m]*
38	59.86	38.89
39	55.25	39.38
40	46.28	37.71
41	42.04	37.42
42	38.79	37.12
43	35.43	37.22
44	32.38	37.12
45	24.98	37.52
46	14.73	36.83
47	5.07	36.53

Tabella 9-4 – Coordinate dei vertici dello strato n° 1 costituito da terreno n° 1 (Substrato)

n°	X	Y
	[m]	*[m]*
1	135.39	67.89
2	135.01	67.63
3	134.01	66.98
4	133.01	66.33
5	132.01	65.99
6	130.01	65.88
7	129.77	65.86
8	59.03	53.00
9	90.89	53.00
10	91.89	54.00
11	96.89	54.00
12	98.89	56.00
13	103.39	56.00
14	105.39	58.00
15	109.89	58.00
16	111.89	60.00
17	116.39	60.00
18	118.39	62.00
19	122.89	62.00
20	123.89	63.00
21	128.39	63.00
22	132.92	64.99
23	133.32	65.27
24	134.17	65.95
25	134.94	66.92

Tabella 9-5 – Coordinate dei vertici dello strato n° 2 costituito da terreno n° 3 (Frana)

n°	X	Y
	[m]	*[m]*
1	151.00	59.55
2	151.00	69.99
3	150.00	69.94
4	149.00	69.70
5	148.00	69.57
6	147.00	69.50
7	146.00	69.37
8	145.01	69.24
9	144.01	69.14
10	143.01	69.16
11	142.01	69.13
12	141.01	69.02
13	140.01	68.97

n°	X	Y
	[m]	*[m]*
14	139.01	68.90
15	138.01	68.77
16	137.01	68.51
17	136.01	68.28
18	135.39	67.89
19	134.94	66.92
20	134.17	65.95
21	133.32	65.27
22	132.92	64.99
23	128.39	63.00
24	123.89	63.00
25	122.89	62.00
26	118.39	62.00
27	116.39	60.00
28	111.89	60.00
29	109.89	58.00
30	105.39	58.00
31	103.39	56.00
32	98.89	56.00
33	96.89	54.00
34	91.89	54.00
35	90.89	53.00
36	59.03	53.00
37	43.78	50.23
38	20.13	45.93
39	20.02	45.92
40	19.02	45.74
41	18.02	45.59
42	17.02	45.48
43	16.02	45.26
44	15.02	45.17
45	14.02	45.13
46	13.02	45.12
47	12.02	45.12
48	11.02	45.09
49	10.02	45.07
50	9.02	45.07
51	8.02	45.06
52	7.02	45.06
53	6.02	45.05
54	5.02	45.05
55	4.02	45.05
56	3.02	45.04
57	0.00	45.04
58	0.00	37.90
59	5.07	36.53
60	14.73	36.83
61	24.98	37.52
62	32.38	37.12
63	35.43	37.22
64	38.79	37.12
65	42.04	37.42
66	46.28	37.71
67	55.25	39.38
68	59.86	38.89
69	65.25	39.48
70	71.60	38.98

n°	X	Y
	[m]	*[m]*
71	79.60	40.59
72	83.24	40.96
73	87.91	41.02
74	91.01	42.53
75	93.44	43.14
76	94.71	43.38
77	95.83	43.90
78	97.35	43.93
79	98.29	44.27
80	100.68	44.58
81	101.58	44.61
82	102.95	44.92
83	104.12	45.41
84	104.65	46.62
85	105.22	47.26
86	106.32	49.19
87	107.34	50.40
88	108.31	51.12
89	112.90	52.55
90	114.10	52.70
91	116.05	52.87
92	117.47	53.17
93	119.01	54.15
94	120.39	55.04
95	123.92	55.60
96	125.84	55.90
97	128.64	56.58
98	130.16	56.86
99	132.86	57.29
100	140.55	58.37
101	148.01	58.73

Tabella 9-6 – Coordinate dei vertici dello strato n° 3 costituito da terreno n° 2 (Substrato alterato)

9.2.2 DESCRIZIONE FALDA

n°	X	Y
	[m]	*[m]*
1	0.00	56.36
2	151.00	56.36

Tabella 9-7 – Livello falda massima regolazione

n°	X	Y
	[m]	*[m]*
1	0.00	45.04
2	3.02	45.04
3	4.02	45.05
4	5.02	45.05
5	6.02	45.05
6	7.02	45.06
7	8.02	45.06
8	9.02	45.07
9	10.02	45.07
10	11.02	45.09
11	12.02	45.12
12	13.02	45.12
13	14.02	45.13
14	15.02	45.17

n°	X	Y
	[m]	*[m]*
15	16.02	45.26
16	17.02	45.48
17	18.02	45.59
18	19.02	45.74
19	20.02	45.92
20	20.13	45.93
21	77.49	56.36
22	151.00	56.36

Tabella 9-8 – Livello falda svaso rapido

9.2.3 CARICHI SUL PROFILO

n°	Descrizione	Tipo	Ψ_2	P_i	P_f	Vy	Vx
				[m]	*[m]*	*[kN/m]*	*[kN/m]*
1	Strada	Variabile	1.00	129.77 65.86	132.00 65.99	20.00 20.00	0.00 0.00

Tabella 9-9 – Carichi distribuiti verifica di stabilità 01

9.2.4 IMPOSTAZIONE DELLE SUPERFICI DI ROTTURA

Superfici di rottura circolari

Si considerano delle superfici di rottura circolari generate tramite la seguente maglia dei centri

Origine maglia	[m]	X_0 = 15.00	Y_0 = 44.80
Passo maglia	[m]	dX = 2.00	dY = 2.00
Numero passi		Nx = 70	Ny = 50
Raggio	[m]	R = 1.50	

Si utilizza un raggio variabile con passo dR=1.00 [m] ed un numero di incrementi pari a 100.

9.2.5 CONDIZIONI DI ESCLUSIONE

Sono state escluse dall'analisi le superfici aventi:

- lunghezza di corda inferiore a	1.00	m
- freccia inferiore a	0.50	m
- volume inferiore a	2.00	mc
- pendenza media della superficie inferiore a	1.00	[%]

9.3 VERIFICA DI STABILITÀ 01

9.3.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate in condizioni **statiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni efficaci**
Presenza di falda
Presenza di carichi distribuiti

9.3.2 RISULTATI ANALISI

Numero di superfici analizzate	58243
Coefficiente di sicurezza minimo	2.156
Superficie con coefficiente di sicurezza minimo	1

9.3.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO L'ALTO

Numero di strisce	42	
Coordinate del centro	X[m]= 83.00	Y[m]= 126.80
Raggio del cerchio	R[m]= 88.50	
Intersezione a valle con il profilo topografico	X_v[m]= 39.87	Y_v[m]= 49.52
Intersezione a monte con il profilo topografico	X_m[m]= 150.85	Y_m[m]= 69.98
Coefficiente di sicurezza	F_S= 2.156	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	39.87	49.52	49.52	43.78	50.23	47.47	42.48	49.07	4.41	-27.74	19.10	18
2	43.78	50.23	47.47	48.86	51.15	45.15	46.63	48.46	5.59	-24.50	19.10	18
3	48.86	51.15	45.15	53.95	52.08	43.20	51.57	47.88	5.44	-20.93	19.10	18
4	53.95	52.08	43.20	59.03	53.00	41.61	56.59	47.47	5.33	-17.44	19.10	18
5	59.03	53.00	41.61	59.86	53.15	41.38	59.45	47.28	0.86	-15.44	19.10	18
6	59.86	53.15	41.38	65.25	54.13	40.10	62.63	47.19	5.54	-13.36	19.10	18
7	65.25	54.13	40.10	68.42	54.71	39.51	66.86	47.11	3.23	-10.52	19.10	18
8	68.42	54.71	39.51	71.60	55.29	39.04	70.03	47.13	3.21	-8.44	19.10	18
9	71.60	55.29	39.04	75.60	56.01	38.61	73.62	47.24	4.02	-6.10	19.26	19
10	75.60	56.01	38.61	79.60	56.74	38.37	77.62	47.43	4.01	-3.50	19.27	19
11	79.60	56.74	38.37	83.24	57.40	38.30	81.43	47.70	3.64	-1.02	19.27	19
12	83.24	57.40	38.30	87.91	58.25	38.44	85.59	48.10	4.67	1.67	19.27	19
13	87.91	58.25	38.44	93.14	59.20	38.88	90.54	48.69	5.25	4.88	19.27	19
14	93.14	59.20	38.88	98.38	60.15	39.65	95.76	49.47	5.29	8.29	19.27	19
15	98.38	60.15	39.65	103.61	61.10	40.73	100.99	50.41	5.34	11.73	19.27	19
16	103.61	61.10	40.73	108.84	62.06	42.16	106.21	51.51	5.42	15.22	19.27	19
17	108.84	62.06	42.16	114.07	63.01	43.93	111.44	52.78	5.53	18.77	19.27	19
18	114.07	63.01	43.93	119.30	63.96	46.09	116.66	54.24	5.66	22.39	19.27	19
19	119.30	63.96	46.09	124.54	64.91	48.65	121.88	55.89	5.83	26.11	19.27	19
20	124.54	64.91	48.65	129.77	65.86	51.67	127.09	57.75	6.04	29.95	19.27	19
21	129.77	65.86	51.67	130.01	65.88	51.82	129.89	58.81	0.28	31.99	19.27	19
22	130.01	65.88	51.82	132.01	65.99	53.11	131.00	59.19	2.38	32.86	19.27	19
23	132.01	65.99	53.11	133.01	66.33	53.78	132.51	59.80	1.21	34.02	19.27	19
24	133.01	66.33	53.78	135.01	67.63	55.20	134.01	60.73	2.45	35.20	19.27	19
25	135.01	67.63	55.20	135.39	67.89	55.47	135.20	61.55	0.47	36.15	19.27	19
26	135.39	67.89	55.47	136.01	68.28	55.93	135.70	61.89	0.77	36.55	19.27	19
27	136.01	68.28	55.93	137.01	68.51	56.69	136.51	62.35	1.26	37.20	19.27	19
28	137.01	68.51	56.69	138.01	68.77	57.47	137.51	62.86	1.27	38.02	19.27	19
29	138.01	68.77	57.47	139.01	68.90	58.28	138.50	63.35	1.28	38.85	19.23	19
30	139.01	68.90	58.28	140.01	68.97	59.11	139.50	63.81	1.30	39.68	19.10	18
31	140.01	68.97	59.11	140.55	69.00	59.57	140.28	64.16	0.71	40.33	19.10	18
32	140.55	69.00	59.57	141.01	69.02	59.96	140.78	64.39	0.61	40.76	19.10	18
33	141.01	69.02	59.96	142.01	69.13	60.84	141.50	64.74	1.33	41.39	19.10	18

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
34	142.01	69.13	60.84	143.01	69.16	61.75	142.50	65.22	1.35	42.26	19.10	18
35	143.01	69.16	61.75	144.01	69.14	62.69	143.50	65.68	1.37	43.14	19.10	18
36	144.01	69.14	62.69	145.01	69.24	63.66	144.50	66.18	1.39	44.03	19.10	18
37	145.01	69.24	63.66	146.00	69.37	64.64	145.49	66.72	1.40	44.93	19.10	18
38	146.00	69.37	64.64	147.00	69.50	65.68	146.48	67.29	1.44	45.85	19.10	18
39	147.00	69.50	65.68	148.00	69.57	66.74	147.48	67.86	1.46	46.79	19.10	18
40	148.00	69.57	66.74	149.00	69.70	67.84	148.47	68.44	1.49	47.74	19.10	18
41	149.00	69.70	67.84	150.00	69.94	68.98	149.45	69.08	1.52	48.72	19.10	18
42	150.00	69.94	68.98	150.85	69.98	69.98	150.28	69.63	1.32	49.63	19.10	18

Tabella 9-10 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 01

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	98.86	248.51	77.31	48.44	340.63	0.00	282.56	0.00	0.00	
2	407.90	282.57	246.87	85.23	550.74	282.56	742.17	0.00	0.00	
3	691.94	236.54	384.40	106.13	650.24	742.17	1253.82	0.00	0.00	
4	942.53	190.51	497.25	123.32	729.12	1253.82	1773.62	0.00	0.00	
5	175.96	26.74	90.71	21.59	125.54	1773.62	1856.85	0.00	0.00	
6	1275.03	143.73	644.87	148.74	848.71	1856.85	2372.90	0.00	0.00	
7	852.34	60.43	421.51	94.03	524.34	2372.90	2649.10	0.00	0.00	
8	917.96	42.45	447.62	98.06	537.86	2649.10	2898.46	0.00	0.00	
9	1238.91	27.90	596.34	132.29	691.82	2898.46	3171.93	0.00	0.00	
10	1318.74	3.26	630.51	137.87	702.39	3171.93	3391.49	0.00	0.00	
11	1258.37	0.00	617.32	132.47	643.61	3391.49	3546.46	0.00	0.00	
12	1678.40	0.00	849.56	179.30	824.33	3546.46	3676.96	0.00	0.00	
13	1940.89	0.00	1018.28	211.80	911.58	3676.96	3723.80	0.00	0.00	
14	1974.34	0.00	1076.39	221.54	886.51	3723.80	3659.91	0.00	0.00	
15	1973.92	0.00	1120.93	229.27	847.50	3659.91	3484.04	0.00	0.00	
16	1942.04	0.00	1155.35	235.54	793.20	3484.04	3199.75	0.00	0.00	
17	1877.79	0.00	1179.93	240.45	721.59	3199.75	2815.71	0.00	0.00	
18	1778.53	0.00	1193.29	243.80	629.79	2815.71	2346.80	0.00	0.00	
19	1641.73	0.00	1194.32	245.46	513.64	2346.80	1815.67	0.00	0.00	
20	1466.06	0.00	1183.36	245.57	367.13	1815.67	1254.44	0.00	0.00	
21	62.41	6.24	60.44	12.32	12.81	1254.44	1226.07	0.00	0.00	
22	495.51	51.74	494.98	101.43	90.97	1226.07	993.37	0.00	0.00	
23	233.58	0.00	216.41	45.82	34.46	993.37	891.00	0.00	0.00	
24	458.61	0.00	449.58	94.66	44.88	891.00	683.32	0.00	0.00	
25	86.48	0.00	88.79	18.58	4.73	683.32	643.16	0.00	0.00	
26	140.49	0.00	147.13	30.72	4.97	643.16	577.26	0.00	0.00	
27	221.12	0.00	239.12	49.93	0.59	577.26	472.10	0.00	0.00	
28	211.50	0.00	230.43	48.65	0.00	472.10	368.49	0.00	0.00	
29	200.54	0.00	219.79	46.81	0.00	368.49	267.08	0.00	0.00	
30	187.41	0.00	207.13	43.86	0.00	267.08	168.57	0.00	0.00	
31	95.32	0.00	105.72	22.75	0.00	168.57	117.49	0.00	0.00	
32	77.81	0.00	86.48	18.84	0.00	117.49	75.30	0.00	0.00	
33	158.67	0.00	176.88	39.28	0.00	75.30	-12.18	0.00	0.00	
34	143.58	0.00	160.55	36.80	0.00	-12.18	-92.90	0.00	0.00	
35	126.78	0.00	141.91	33.97	0.00	-92.90	-165.15	0.00	0.00	
36	110.10	0.00	123.06	31.11	0.00	-165.15	-228.31	0.00	0.00	
37	93.37	0.00	103.87	28.09	0.00	-228.31	-281.79	0.00	0.00	
38	78.23	0.00	86.02	25.53	0.00	-281.79	-325.74	0.00	0.00	
39	60.90	0.00	65.12	22.38	0.00	-325.74	-357.88	0.00	0.00	
40	42.91	0.00	42.88	19.02	0.00	-357.88	-376.83	0.00	0.00	
41	25.81	0.00	21.16	15.77	0.00	-376.83	-382.32	0.00	0.00	
42	7.50	0.00	-0.90	10.61	0.00	-382.32	-374.77	0.00	0.00	

Tabella 9-11 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 01

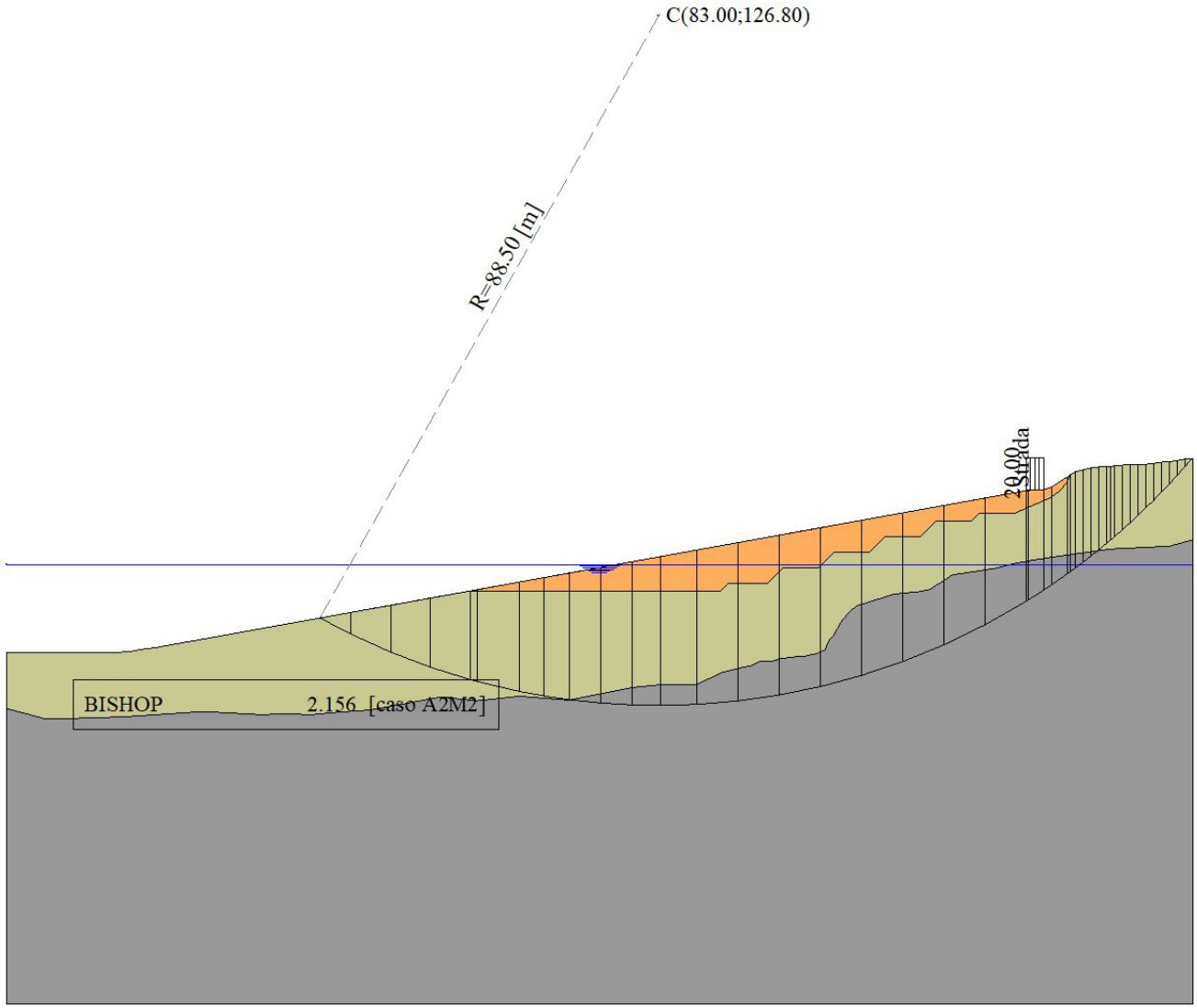

Figura 9-1 – Superficie critica (1) della sezione VS_03 per la verifica di stabilità 01

9.4 VERIFICA DI STABILITÀ 02

9.4.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate solo in condizioni **sismiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni efficaci**
Presenza di falda
Presenza di carichi distribuiti

9.4.2 RISULTATI ANALISI

Numero di superfici analizzate	116486
Coefficiente di sicurezza minimo	1.646
Superficie con coefficiente di sicurezza minimo	1

9.4.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO L'ALTO

Numero di strisce	43	
Coordinate del centro	X[m]= 71.00	Y[m]= 130.80
Raggio del cerchio	R[m]= 99.50	
Intersezione a valle con il profilo topografico	X_v[m]= 19.29	Y_v[m]= 45.79
Intersezione a monte con il profilo topografico	X_m[m]= 149.65	Y_m[m]= 69.86
Coefficiente di sicurezza	F_S= 1.646	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	19.29	45.79	45.79	20.02	45.92	45.35	19.78	45.69	0.85	-31.07	23.40	22
2	20.02	45.92	45.35	20.13	45.93	45.29	20.08	45.62	0.13	-30.78	23.40	22
3	20.13	45.93	45.29	26.25	47.04	41.93	23.99	44.90	6.99	-28.74	23.40	22
4	26.25	47.04	41.93	32.38	48.16	39.10	29.60	44.02	6.75	-24.78	23.40	22
5	32.38	48.16	39.10	35.43	48.71	37.88	33.95	43.46	3.29	-21.89	23.40	22
6	35.43	48.71	37.88	38.79	49.32	36.66	37.15	43.14	3.57	-19.92	23.48	23
7	38.79	49.32	36.66	42.04	49.91	35.61	40.45	42.87	3.42	-17.90	23.60	24
8	42.04	49.91	35.61	43.78	50.23	35.10	42.92	42.71	1.81	-16.40	23.60	24
9	43.78	50.23	35.10	48.86	51.15	33.79	46.38	42.57	5.25	-14.37	23.60	24
10	48.86	51.15	33.79	53.95	52.08	32.77	51.45	42.45	5.18	-11.36	23.60	24
11	53.95	52.08	32.77	59.03	53.00	32.02	56.52	42.47	5.14	-8.39	23.60	24
12	59.03	53.00	32.02	65.46	54.17	31.45	62.29	42.66	6.46	-5.05	23.60	24
13	65.46	54.17	31.45	71.89	55.34	31.30	68.71	43.07	6.43	-1.34	23.60	24
14	71.89	55.34	31.30	78.32	56.51	31.57	75.13	43.68	6.44	2.37	23.60	24
15	78.32	56.51	31.57	84.75	57.68	32.26	81.55	44.50	6.47	6.08	23.60	24
16	84.75	57.68	32.26	91.18	58.85	33.37	87.97	45.54	6.53	9.82	23.60	24
17	91.18	58.85	33.37	97.62	60.01	34.93	94.39	46.79	6.62	13.61	23.60	24
18	97.62	60.01	34.93	104.05	61.18	36.95	100.81	48.26	6.74	17.46	23.60	24
19	104.05	61.18	36.95	110.48	62.35	39.47	107.23	49.98	6.91	21.39	23.60	24
20	110.48	62.35	39.47	116.91	63.52	42.52	113.65	51.95	7.12	25.43	23.60	24

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
21	116.91	63.52	42.52	123.34	64.69	46.18	120.06	54.20	7.40	29.61	23.60	24
22	123.34	64.69	46.18	129.77	65.86	50.51	126.45	56.77	7.75	33.97	23.60	24
23	129.77	65.86	50.51	130.01	65.88	50.69	129.89	58.23	0.30	36.29	23.60	24
24	130.01	65.88	50.69	132.01	65.99	52.20	130.99	58.68	2.51	37.10	23.60	24
25	132.01	65.99	52.20	133.01	66.33	52.99	132.51	59.37	1.27	38.19	23.60	24
26	133.01	66.33	52.99	135.01	67.63	54.62	134.01	60.39	2.58	39.30	23.60	24
27	135.01	67.63	54.62	135.39	67.89	54.94	135.20	61.27	0.50	40.18	23.60	24
28	135.39	67.89	54.94	136.01	68.28	55.47	135.70	61.65	0.82	40.56	23.60	24
29	136.01	68.28	55.47	137.01	68.51	56.35	136.51	62.15	1.33	41.18	23.60	24
30	137.01	68.51	56.35	138.01	68.77	57.25	137.51	62.72	1.34	41.95	23.60	24
31	138.01	68.77	57.25	139.01	68.90	58.17	138.50	63.27	1.36	42.73	23.60	24
32	139.01	68.90	58.17	140.01	68.97	59.12	139.50	63.79	1.38	43.52	23.40	22
33	140.01	68.97	59.12	140.55	69.00	59.64	140.28	64.18	0.75	44.13	23.40	22
34	140.55	69.00	59.64	141.01	69.02	60.10	140.78	64.44	0.65	44.53	23.40	22
35	141.01	69.02	60.10	142.01	69.13	61.10	141.50	64.83	1.42	45.13	23.40	22
36	142.01	69.13	61.10	143.01	69.16	62.14	142.50	65.38	1.44	45.95	23.40	22
37	143.01	69.16	62.14	144.01	69.14	63.20	143.50	65.90	1.46	46.78	23.40	22
38	144.01	69.14	63.20	145.01	69.24	64.30	144.49	66.46	1.48	47.63	23.40	22
39	145.01	69.24	64.30	146.00	69.37	65.41	145.49	67.07	1.49	48.49	23.40	22
40	146.00	69.37	65.41	147.00	69.50	66.58	146.47	67.70	1.54	49.36	23.40	22
41	147.00	69.50	66.58	148.00	69.57	67.78	147.46	68.33	1.56	50.25	23.40	22
42	148.00	69.57	67.78	149.00	69.70	69.02	148.42	68.97	1.59	51.16	23.40	22
43	149.00	69.70	69.02	149.65	69.86	69.86	149.22	69.53	1.06	51.93	23.40	22

Tabella 9-12 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 02

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	3.77	74.74	10.30	14.02	89.61	0.00	76.69	0.00	0.00	
2	1.22	11.26	1.92	2.21	13.86	76.69	87.58	0.00	0.00	
3	322.71	593.05	240.62	156.58	873.57	87.58	840.25	0.00	0.00	
4	794.23	526.16	466.03	212.63	1048.31	840.25	1694.48	0.00	0.00	
5	555.17	237.06	301.05	123.04	576.11	1694.48	2130.43	0.00	0.00	
6	722.53	241.95	377.19	149.08	669.17	2130.43	2608.05	0.00	0.00	
7	802.05	214.88	405.27	157.32	677.50	2608.05	3059.78	0.00	0.00	
8	468.72	107.30	231.31	87.82	373.68	3059.78	3293.48	0.00	0.00	
9	1511.38	282.57	724.94	268.85	1127.77	3293.48	3933.19	0.00	0.00	
10	1705.33	236.54	788.71	284.86	1173.41	3933.19	4493.32	0.00	0.00	
11	1873.61	190.51	840.35	297.88	1207.48	4493.32	4958.07	0.00	0.00	
12	2573.56	175.04	1122.50	391.96	1558.85	4958.07	5392.04	0.00	0.00	
13	2758.62	101.31	1174.03	405.29	1575.89	5392.04	5639.43	0.00	0.00	
14	2894.60	28.16	1208.70	414.54	1573.16	5639.43	5691.53	0.00	0.00	
15	2981.40	0.00	1271.07	431.54	1550.55	5691.53	5561.76	0.00	0.00	
16	3018.29	0.00	1344.26	451.83	1507.20	5561.76	5257.31	0.00	0.00	
17	2999.50	0.00	1397.18	467.19	1441.35	5257.31	4781.99	0.00	0.00	
18	2923.20	0.00	1430.33	477.80	1350.20	4781.99	4148.87	0.00	0.00	
19	2790.00	0.00	1446.50	484.50	1229.49	4148.87	3380.98	0.00	0.00	
20	2595.90	0.00	1444.54	487.10	1072.93	3380.98	2513.75	0.00	0.00	
21	2334.96	0.00	1421.81	485.09	871.11	2513.75	1599.16	0.00	0.00	
22	2002.44	0.00	1377.36	478.51	609.54	1599.16	711.25	0.00	0.00	
23	67.44	4.80	54.99	18.93	16.82	711.25	677.71	0.00	0.00	
24	532.86	39.80	448.19	155.48	120.90	677.71	408.55	0.00	0.00	
25	249.21	0.00	199.93	71.59	47.00	408.55	290.45	0.00	0.00	
26	483.71	0.00	412.60	147.15	64.77	290.45	59.84	0.00	0.00	
27	90.31	0.00	81.08	28.76	7.69	59.84	16.66	0.00	0.00	
28	146.09	0.00	134.07	47.47	9.21	16.66	-53.18	0.00	0.00	
29	228.44	0.00	217.11	76.98	5.84	-53.18	-161.95	0.00	0.00	
30	216.70	0.00	210.78	75.53	0.00	-161.95	-265.56	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
31	203.59	0.00	198.21	72.39	0.00	-265.56	-364.61	0.00	0.00	
32	188.28	0.00	184.73	66.98	0.00	-364.61	-459.65	0.00	0.00	
33	94.87	0.00	92.96	34.49	0.00	-459.65	-507.90	0.00	0.00	
34	76.92	0.00	75.26	28.40	0.00	-507.90	-547.14	0.00	0.00	
35	155.10	0.00	151.29	58.70	0.00	-547.14	-626.45	0.00	0.00	
36	137.73	0.00	133.36	54.27	0.00	-626.45	-696.57	0.00	0.00	
37	118.63	0.00	113.24	49.28	0.00	-696.57	-755.70	0.00	0.00	
38	99.59	0.00	92.85	44.23	0.00	-755.70	-803.17	0.00	0.00	
39	80.61	0.00	72.31	38.96	0.00	-803.17	-838.52	0.00	0.00	
40	62.91	0.00	52.43	34.30	0.00	-838.52	-861.45	0.00	0.00	
41	43.08	0.00	29.87	28.75	0.00	-861.45	-869.79	0.00	0.00	
42	22.54	0.00	5.97	22.87	0.00	-869.79	-862.06	0.00	0.00	
43	4.03	0.00	-8.82	11.81	0.00	-862.06	-848.18	0.00	0.00	

Tabella 9-13 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 02

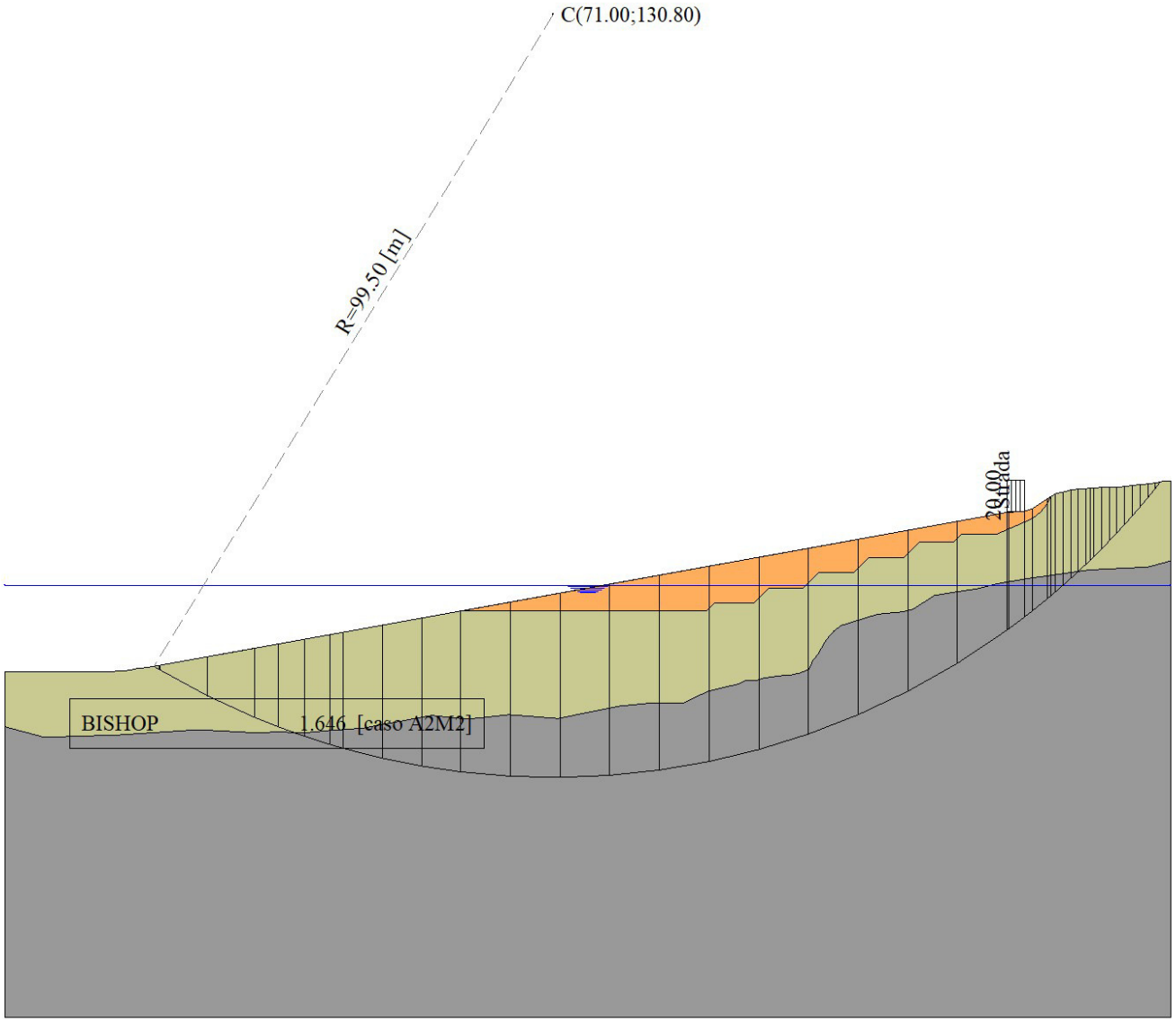

Figura 9-2 – Superficie critica (1) della sezione VS_03 per la verifica di stabilità 02

9.5 VERIFICA DI STABILITÀ 03

9.5.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate solo in condizioni **sismiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni totali**
Presenza di carichi distribuiti

9.5.2 RISULTATI ANALISI

Numero di superfici analizzate	116486
Coefficiente di sicurezza minimo	1.496
Superficie con coefficiente di sicurezza minimo	1

9.5.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO IL BASSO

Numero di strisce	58	
Coordinate del centro	X[m]= 71.00	Y[m]= 86.80
Raggio del cerchio	R[m]= 81.50	
Intersezione a valle con il profilo topografico	X_v[m]= 1.01	Y_v[m]= 45.04
Intersezione a monte con il profilo topografico	X_m[m]= 150.74	Y_m[m]= 69.98
Coefficiente di sicurezza	F_S= 1.496	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	1.01	45.04	45.04	3.02	45.04	41.84	2.35	43.97	3.77	-57.85	0.00	100
2	3.02	45.04	41.84	4.02	45.05	40.37	3.55	43.05	1.78	-55.90	0.00	100
3	4.02	45.05	40.37	5.07	45.05	38.89	4.57	42.32	1.81	-54.63	0.00	100
4	5.07	45.05	38.89	6.02	45.05	37.61	5.56	41.64	1.59	-53.43	0.00	100
5	6.02	45.05	37.61	7.02	45.06	36.31	6.53	41.00	1.64	-52.30	0.00	110
6	7.02	45.06	36.31	8.02	45.06	35.07	7.53	40.37	1.59	-51.16	0.00	146
7	8.02	45.06	35.07	9.02	45.07	33.88	8.53	39.76	1.56	-50.05	0.00	146
8	9.02	45.07	33.88	10.02	45.07	32.73	9.53	39.18	1.52	-48.97	0.00	146
9	10.02	45.07	32.73	11.02	45.09	31.62	10.53	38.62	1.49	-47.91	0.00	146
10	11.02	45.09	31.62	12.02	45.12	30.55	11.53	38.09	1.46	-46.87	0.00	146
11	12.02	45.12	30.55	13.02	45.12	29.52	12.53	37.58	1.44	-45.85	0.00	146
12	13.02	45.12	29.52	14.02	45.13	28.53	13.53	37.07	1.41	-44.85	0.00	146
13	14.02	45.13	28.53	15.02	45.17	27.57	14.52	36.60	1.39	-43.87	0.00	146
14	15.02	45.17	27.57	16.02	45.26	26.64	15.52	36.16	1.37	-42.90	0.00	146
15	16.02	45.26	26.64	17.02	45.48	25.74	16.52	35.78	1.34	-41.95	0.00	146
16	17.02	45.48	25.74	18.02	45.59	24.87	17.52	35.42	1.33	-41.01	0.00	146
17	18.02	45.59	24.87	19.02	45.74	24.03	18.52	35.06	1.31	-40.09	0.00	146
18	19.02	45.74	24.03	20.02	45.92	23.21	19.52	34.72	1.29	-39.17	0.00	146
19	20.02	45.92	23.21	20.13	45.93	23.13	20.08	34.55	0.14	-38.67	0.00	146
20	20.13	45.93	23.13	26.04	47.00	18.82	23.19	33.69	7.31	-36.05	0.00	146
21	26.04	47.00	18.82	31.95	48.08	15.26	29.07	32.28	6.90	-31.05	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
22	31.95	48.08	15.26	37.87	49.16	12.34	34.97	31.20	6.60	-26.31	0.00	146
23	37.87	49.16	12.34	43.78	50.23	9.98	40.87	30.42	6.37	-21.75	0.00	146
24	43.78	50.23	9.98	48.86	51.15	8.36	46.35	29.93	5.33	-17.64	0.00	146
25	48.86	51.15	8.36	53.95	52.08	7.10	51.43	29.67	5.24	-13.92	0.00	146
26	53.95	52.08	7.10	59.03	53.00	6.18	56.51	29.59	5.17	-10.26	0.00	146
27	59.03	53.00	6.18	66.10	54.29	5.45	62.59	29.73	7.11	-5.94	0.00	146
28	66.10	54.29	5.45	73.18	55.57	5.33	69.66	30.16	7.07	-0.96	0.00	146
29	73.18	55.57	5.33	80.25	56.86	5.83	76.72	30.90	7.09	4.02	0.00	146
30	80.25	56.86	5.83	87.33	58.14	6.95	83.79	31.95	7.16	9.04	0.00	146
31	87.33	58.14	6.95	94.40	59.43	8.73	90.86	33.31	7.29	14.12	0.00	146
32	94.40	59.43	8.73	101.47	60.72	11.21	97.92	35.02	7.50	19.32	0.00	146
33	101.47	60.72	11.21	108.55	62.00	14.46	104.99	37.09	7.79	24.70	0.00	146
34	108.55	62.00	14.46	115.62	63.29	18.60	112.05	39.57	8.19	30.31	0.00	146
35	115.62	63.29	18.60	122.70	64.57	23.79	119.11	42.54	8.78	36.28	0.00	146
36	122.70	64.57	23.79	129.77	65.86	30.33	126.15	46.10	9.63	42.76	0.00	146
37	129.77	65.86	30.33	130.01	65.88	30.59	129.89	48.16	0.35	46.27	0.00	146
38	130.01	65.88	30.59	132.01	65.99	32.76	131.00	48.80	2.96	47.43	0.00	146
39	132.01	65.99	32.76	133.01	66.33	33.91	132.51	49.75	1.52	49.00	0.00	146
40	133.01	66.33	33.91	135.01	67.63	36.35	134.00	51.05	3.15	50.65	0.00	146
41	135.01	67.63	36.35	135.39	67.89	36.84	135.20	52.18	0.62	51.97	0.00	146
42	135.39	67.89	36.84	136.01	68.28	37.65	135.70	52.66	1.02	52.55	0.00	146
43	136.01	68.28	37.65	137.01	68.51	39.00	136.51	53.36	1.68	53.50	0.00	146
44	137.01	68.51	39.00	138.01	68.77	40.41	137.51	54.17	1.73	54.70	0.00	146
45	138.01	68.77	40.41	139.01	68.90	41.89	138.51	54.99	1.79	55.93	0.00	146
46	139.01	68.90	41.89	140.01	68.97	43.44	139.51	55.80	1.85	57.21	0.00	146
47	140.01	68.97	43.44	141.01	69.02	45.08	140.50	56.62	1.92	58.53	0.00	146
48	141.01	69.02	45.08	142.01	69.13	46.80	141.50	57.50	1.99	59.91	0.00	146
49	142.01	69.13	46.80	143.01	69.16	48.63	142.50	58.42	2.09	61.34	0.00	146
50	143.01	69.16	48.63	144.01	69.14	50.58	143.50	59.37	2.19	62.84	0.00	146
51	144.01	69.14	50.58	145.01	69.24	52.67	144.50	60.40	2.32	64.43	0.00	146
52	145.01	69.24	52.67	146.00	69.37	54.91	145.49	61.53	2.44	66.10	0.00	146
53	146.00	69.37	54.91	147.00	69.50	57.37	146.49	62.77	2.66	67.90	0.00	146
54	147.00	69.50	57.37	148.00	69.57	60.09	147.48	64.10	2.90	69.85	0.00	123
55	148.00	69.57	60.09	148.01	69.57	60.12	148.00	64.84	0.03	70.88	0.00	100
56	148.01	69.57	60.12	149.00	69.70	63.17	148.47	65.59	3.21	72.02	0.00	100
57	149.00	69.70	63.17	150.00	69.94	66.77	149.44	67.28	3.73	74.46	0.00	100
58	150.00	69.94	66.77	150.74	69.98	69.98	150.25	68.90	3.29	76.93	0.00	100

Tabella 9-14 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 03

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	58.71	222.94	938.62	252.30	0.00	0.00	920.53	0.00	0.00	
2	72.08	110.96	511.75	119.24	0.00	920.53	1401.91	0.00	0.00	
3	104.18	116.46	564.93	121.27	0.00	1401.91	1917.85	0.00	0.00	
4	118.25	105.37	533.29	106.61	0.00	1917.85	2392.74	0.00	0.00	
5	148.12	110.87	595.85	119.81	0.00	2392.74	2917.32	0.00	0.00	
6	171.41	110.82	662.97	155.65	0.00	2917.32	3506.77	0.00	0.00	
7	193.79	110.77	677.52	152.02	0.00	3506.77	4097.13	0.00	0.00	
8	215.33	110.72	691.09	148.70	0.00	4097.13	4685.23	0.00	0.00	
9	236.16	110.62	703.85	145.62	0.00	4685.23	5273.55	0.00	0.00	
10	256.51	110.38	716.02	142.78	0.00	5273.55	5860.28	0.00	0.00	
11	275.98	110.23	727.30	140.14	0.00	5860.28	6440.23	0.00	0.00	
12	294.61	110.18	737.77	137.69	0.00	6440.23	7017.07	0.00	0.00	
13	312.96	109.93	747.89	135.40	0.00	7017.07	7592.53	0.00	0.00	
14	331.45	109.30	757.97	133.25	0.00	7592.53	8168.46	0.00	0.00	
15	351.02	107.78	768.68	131.24	0.00	8168.46	8753.32	0.00	0.00	
16	370.22	106.16	778.98	129.36	0.00	8753.32	9320.72	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
17	388.26	104.88	788.32	127.58	0.00	9320.72	9886.05	0.00	0.00	
18	406.43	103.27	797.64	125.91	0.00	9886.05	10447.85	0.00	0.00	
19	45.81	11.26	88.30	13.75	0.00	10447.85	10508.22	0.00	0.00	
20	2758.44	573.59	4885.28	713.79	0.00	10508.22	13669.21	0.00	0.00	
21	3300.16	511.26	5130.61	673.64	0.00	13669.21	16512.73	0.00	0.00	
22	3767.19	448.93	5322.61	643.78	0.00	16512.73	18990.35	0.00	0.00	
23	4169.24	386.60	5474.55	621.33	0.00	18990.35	21068.76	0.00	0.00	
24	3862.37	282.57	4805.31	520.64	0.00	21068.76	22518.53	0.00	0.00	
25	4082.03	236.54	4877.28	511.18	0.00	22518.53	23645.86	0.00	0.00	
26	4269.32	190.51	4934.55	504.24	0.00	23645.86	24443.82	0.00	0.00	
27	6194.61	188.49	6936.21	694.21	0.00	24443.82	24999.12	0.00	0.00	
28	6422.69	99.27	6994.72	690.57	0.00	24999.12	24903.87	0.00	0.00	
29	6570.87	16.75	7027.24	692.18	0.00	24903.87	24162.40	0.00	0.00	
30	6638.58	0.00	7092.53	699.16	0.00	24162.40	22787.38	0.00	0.00	
31	6621.25	0.00	7137.71	711.99	0.00	22787.38	20787.55	0.00	0.00	
32	6510.53	0.00	7136.96	731.69	0.00	20787.55	18183.54	0.00	0.00	
33	6301.64	0.00	7083.55	759.98	0.00	18183.54	15011.41	0.00	0.00	
34	5985.57	0.00	6962.84	799.84	0.00	15011.41	11329.54	0.00	0.00	
35	5543.92	0.00	6741.42	856.55	0.00	11329.54	7236.10	0.00	0.00	
36	4950.05	0.00	6355.36	940.40	0.00	7236.10	2902.51	0.00	0.00	
37	155.89	4.80	213.68	33.89	0.00	2902.51	2748.51	0.00	0.00	
38	1256.41	39.80	1739.22	288.57	0.00	2748.51	1477.11	0.00	0.00	
39	601.57	0.00	811.55	148.79	0.00	1477.11	875.98	0.00	0.00	
40	1167.09	0.00	1597.06	307.88	0.00	875.98	-331.04	0.00	0.00	
41	216.79	0.00	300.15	60.21	0.00	-331.04	-561.47	0.00	0.00	
42	349.93	0.00	486.79	99.52	0.00	-561.47	-937.55	0.00	0.00	
43	550.31	0.00	769.69	164.09	0.00	-937.55	-1537.53	0.00	0.00	
44	529.51	0.00	743.41	168.91	0.00	-1537.53	-2122.53	0.00	0.00	
45	506.62	0.00	711.56	174.25	0.00	-2122.53	-2686.98	0.00	0.00	
46	480.72	0.00	671.49	180.24	0.00	-2686.98	-3222.77	0.00	0.00	
47	452.66	0.00	623.77	186.99	0.00	-3222.77	-3722.08	0.00	0.00	
48	423.38	0.00	568.99	194.67	0.00	-3722.08	-4177.45	0.00	0.00	
49	392.13	0.00	503.85	203.53	0.00	-4177.45	-4578.17	0.00	0.00	
50	357.64	0.00	422.84	213.86	0.00	-4578.17	-4908.05	0.00	0.00	
51	321.42	0.00	325.42	226.14	0.00	-4908.05	-5150.06	0.00	0.00	
52	281.11	0.00	205.30	238.54	0.00	-5150.06	-5281.42	0.00	0.00	
53	243.36	0.00	54.39	259.40	0.00	-5281.42	-5269.08	0.00	0.00	
54	197.72	0.00	-33.19	237.88	0.00	-5269.08	-5184.31	0.00	0.00	
55	1.73	0.00	-0.22	2.04	0.00	-5184.31	-5183.68	0.00	0.00	
56	144.72	0.00	-158.26	214.42	0.00	-5183.68	-4987.71	0.00	0.00	
57	88.74	0.00	-542.39	249.54	0.00	-4987.71	-4411.01	0.00	0.00	
58	21.61	0.00	-846.09	220.21	0.00	-4411.01	-3540.14	0.00	0.00	

Tabella 9-15 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 03

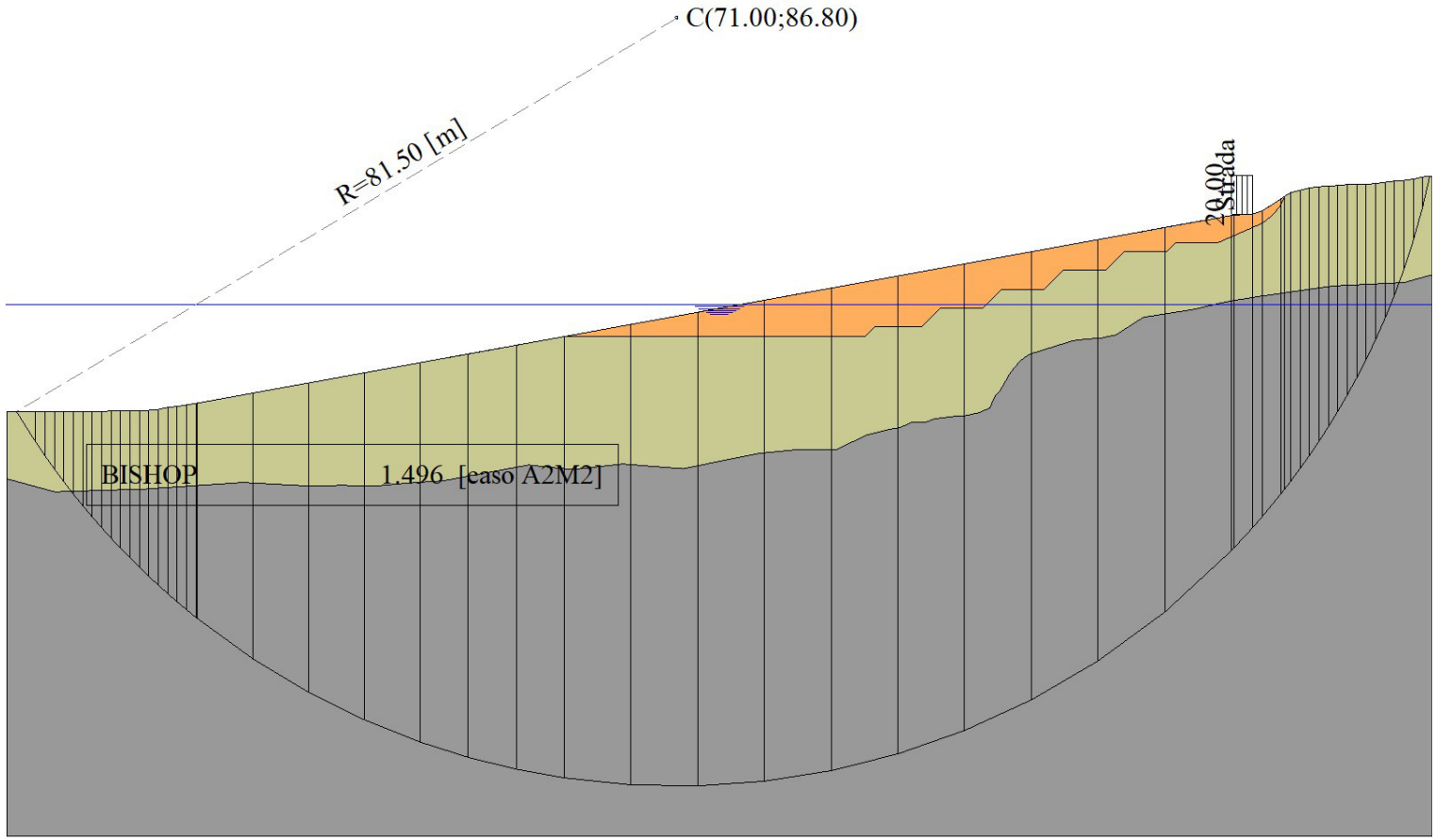

Figura 9-3 – Superficie critica (1) della sezione VS_03 per la verifica di stabilità 03

9.6 VERIFICA DI STABILITÀ 04

9.6.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate in condizioni **statiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni totali**
Presenza di carichi distribuiti

9.6.2 RISULTATI ANALISI

Numero di superfici analizzate	58243
Coefficiente di sicurezza minimo	1.708
Superficie con coefficiente di sicurezza minimo	1

9.6.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO L'ALTO

Numero di strisce	60	
Coordinate del centro	X[m]= 71.00	Y[m]= 86.80
Raggio del cerchio	R[m]= 81.50	
Intersezione a valle con il profilo topografico	X_v[m]= 1.01	Y_v[m]= 45.04
Intersezione a monte con il profilo topografico	X_m[m]= 150.74	Y_m[m]= 69.98
Coefficiente di sicurezza	F_S= 1.708	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	1.01	45.04	45.04	3.02	45.04	41.84	2.35	43.97	3.77	-57.85	0.00	71
2	3.02	45.04	41.84	4.02	45.05	40.37	3.55	43.05	1.78	-55.90	0.00	71
3	4.02	45.05	40.37	5.02	45.05	38.96	4.54	42.34	1.73	-54.66	0.00	71
4	5.02	45.05	38.96	5.07	45.05	38.89	5.05	41.99	0.09	-54.02	0.00	71
5	5.07	45.05	38.89	6.02	45.05	37.61	5.56	41.64	1.59	-53.43	0.00	71
6	6.02	45.05	37.61	7.02	45.06	36.31	6.53	41.00	1.64	-52.30	0.00	78
7	7.02	45.06	36.31	8.02	45.06	35.07	7.53	40.37	1.59	-51.16	0.00	104
8	8.02	45.06	35.07	9.02	45.07	33.88	8.53	39.76	1.56	-50.05	0.00	104
9	9.02	45.07	33.88	10.02	45.07	32.73	9.53	39.18	1.52	-48.97	0.00	104
10	10.02	45.07	32.73	11.02	45.09	31.62	10.53	38.62	1.49	-47.91	0.00	104
11	11.02	45.09	31.62	12.02	45.12	30.55	11.53	38.09	1.46	-46.87	0.00	104
12	12.02	45.12	30.55	13.02	45.12	29.52	12.53	37.58	1.44	-45.85	0.00	104
13	13.02	45.12	29.52	14.02	45.13	28.53	13.53	37.07	1.41	-44.85	0.00	104
14	14.02	45.13	28.53	15.02	45.17	27.57	14.52	36.60	1.39	-43.87	0.00	104
15	15.02	45.17	27.57	16.02	45.26	26.64	15.52	36.16	1.37	-42.90	0.00	104
16	16.02	45.26	26.64	17.02	45.48	25.74	16.52	35.78	1.34	-41.95	0.00	104
17	17.02	45.48	25.74	18.02	45.59	24.87	17.52	35.42	1.33	-41.01	0.00	104
18	18.02	45.59	24.87	19.02	45.74	24.03	18.52	35.06	1.31	-40.09	0.00	104
19	19.02	45.74	24.03	20.02	45.92	23.21	19.52	34.72	1.29	-39.17	0.00	104
20	20.02	45.92	23.21	20.13	45.93	23.13	20.08	34.55	0.14	-38.67	0.00	104
21	20.13	45.93	23.13	26.04	47.00	18.82	23.19	33.69	7.31	-36.05	0.00	104

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
22	26.04	47.00	18.82	31.95	48.08	15.26	29.07	32.28	6.90	-31.05	0.00	104
23	31.95	48.08	15.26	37.87	49.16	12.34	34.97	31.20	6.60	-26.31	0.00	104
24	37.87	49.16	12.34	43.78	50.23	9.98	40.87	30.42	6.37	-21.75	0.00	104
25	43.78	50.23	9.98	48.86	51.15	8.36	46.35	29.93	5.33	-17.64	0.00	104
26	48.86	51.15	8.36	53.95	52.08	7.10	51.43	29.67	5.24	-13.92	0.00	104
27	53.95	52.08	7.10	59.03	53.00	6.18	56.51	29.59	5.17	-10.26	0.00	104
28	59.03	53.00	6.18	65.18	54.12	5.51	62.13	29.70	6.19	-6.27	0.00	104
29	65.18	54.12	5.51	71.34	55.24	5.30	68.27	30.04	6.16	-1.93	0.00	104
30	71.34	55.24	5.30	77.49	56.36	5.56	74.42	30.61	6.16	2.40	0.00	104
31	77.49	56.36	5.56	84.96	57.71	6.50	81.23	31.53	7.53	7.21	0.00	104
32	84.96	57.71	6.50	92.43	59.07	8.17	88.69	32.86	7.65	12.55	0.00	104
33	92.43	59.07	8.17	99.90	60.43	10.59	96.15	34.56	7.85	18.00	0.00	104
34	99.90	60.43	10.59	107.36	61.79	13.86	103.61	36.66	8.15	23.63	0.00	104
35	107.36	61.79	13.86	114.83	63.14	18.09	111.06	39.21	8.58	29.52	0.00	104
36	114.83	63.14	18.09	122.30	64.50	23.47	118.51	42.28	9.21	35.77	0.00	104
37	122.30	64.50	23.47	129.77	65.86	30.33	125.95	45.99	10.14	42.58	0.00	104
38	129.77	65.86	30.33	130.01	65.88	30.59	129.89	48.16	0.35	46.27	0.00	104
39	130.01	65.88	30.59	132.01	65.99	32.76	131.00	48.80	2.96	47.43	0.00	104
40	132.01	65.99	32.76	133.01	66.33	33.91	132.51	49.75	1.52	49.00	0.00	104
41	133.01	66.33	33.91	134.01	66.98	35.11	133.51	50.58	1.56	50.09	0.00	104
42	134.01	66.98	35.11	135.01	67.63	36.35	134.51	51.52	1.60	51.20	0.00	104
43	135.01	67.63	36.35	135.39	67.89	36.84	135.20	52.18	0.62	51.97	0.00	104
44	135.39	67.89	36.84	136.01	68.28	37.65	135.70	52.66	1.02	52.55	0.00	104
45	136.01	68.28	37.65	137.01	68.51	39.00	136.51	53.36	1.68	53.50	0.00	104
46	137.01	68.51	39.00	138.01	68.77	40.41	137.51	54.17	1.73	54.70	0.00	104
47	138.01	68.77	40.41	139.01	68.90	41.89	138.51	54.99	1.79	55.93	0.00	104
48	139.01	68.90	41.89	140.01	68.97	43.44	139.51	55.80	1.85	57.21	0.00	104
49	140.01	68.97	43.44	141.01	69.02	45.08	140.50	56.62	1.92	58.53	0.00	104
50	141.01	69.02	45.08	142.01	69.13	46.80	141.50	57.50	1.99	59.91	0.00	104
51	142.01	69.13	46.80	143.01	69.16	48.63	142.50	58.42	2.09	61.34	0.00	104
52	143.01	69.16	48.63	144.01	69.14	50.58	143.50	59.37	2.19	62.84	0.00	104
53	144.01	69.14	50.58	145.01	69.24	52.67	144.50	60.40	2.32	64.43	0.00	104
54	145.01	69.24	52.67	146.00	69.37	54.91	145.49	61.53	2.44	66.10	0.00	104
55	146.00	69.37	54.91	147.00	69.50	57.37	146.49	62.77	2.66	67.90	0.00	104
56	147.00	69.50	57.37	148.00	69.57	60.09	147.48	64.10	2.90	69.85	0.00	88
57	148.00	69.57	60.09	148.01	69.57	60.12	148.00	64.84	0.03	70.88	0.00	71
58	148.01	69.57	60.12	149.00	69.70	63.17	148.47	65.59	3.21	72.02	0.00	71
59	149.00	69.70	63.17	150.00	69.94	66.77	149.44	67.28	3.73	74.46	0.00	71
60	150.00	69.94	66.77	150.74	69.98	69.98	150.25	68.90	3.29	76.93	0.00	71

Tabella 9-16 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 04

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	58.71	0.00	361.46	157.83	0.00	0.00	390.02	0.00	0.00	
2	72.08	0.00	238.70	74.59	0.00	390.02	629.49	0.00	0.00	
3	98.59	0.00	272.42	72.31	0.00	629.49	893.55	0.00	0.00	
4	5.61	0.00	14.45	3.56	0.00	893.55	907.33	0.00	0.00	
5	118.25	0.00	288.39	66.69	0.00	907.33	1178.69	0.00	0.00	
6	148.12	0.00	339.17	74.95	0.00	1178.69	1492.87	0.00	0.00	
7	171.41	0.00	394.28	97.37	0.00	1492.87	1861.05	0.00	0.00	
8	193.79	0.00	415.40	95.10	0.00	1861.05	2240.58	0.00	0.00	
9	215.33	0.00	434.93	93.02	0.00	2240.58	2629.75	0.00	0.00	
10	236.16	0.00	453.19	91.10	0.00	2629.75	3027.13	0.00	0.00	
11	256.51	0.00	470.60	89.32	0.00	3027.13	3431.66	0.00	0.00	
12	275.98	0.00	486.58	87.67	0.00	3431.66	3841.87	0.00	0.00	
13	294.61	0.00	501.28	86.13	0.00	3841.87	4256.49	0.00	0.00	
14	312.96	0.00	515.55	84.70	0.00	4256.49	4674.84	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
15	331.45	0.00	529.96	83.36	0.00	4674.84	5096.68	0.00	0.00	
16	351.02	0.00	545.77	82.10	0.00	5096.68	5522.58	0.00	0.00	
17	370.22	0.00	561.01	80.92	0.00	5522.58	5951.78	0.00	0.00	
18	388.26	0.00	574.65	79.81	0.00	5951.78	6382.89	0.00	0.00	
19	406.43	0.00	588.45	78.76	0.00	6382.89	6815.66	0.00	0.00	
20	45.81	0.00	65.56	8.60	0.00	6815.66	6863.34	0.00	0.00	
21	2758.44	0.00	3736.81	446.53	0.00	6863.34	9423.45	0.00	0.00	
22	3300.16	0.01	4105.92	421.41	0.00	9423.45	11902.37	0.00	0.00	
23	3767.19	0.01	4401.52	402.73	0.00	11902.37	14214.01	0.00	0.00	
24	4169.24	0.02	4643.86	388.69	0.00	14214.01	16295.79	0.00	0.00	
25	3862.37	0.04	4156.44	325.70	0.00	16295.79	17865.44	0.00	0.00	
26	4082.03	0.09	4284.87	319.78	0.00	17865.44	19206.60	0.00	0.00	
27	4269.32	0.14	4395.98	315.44	0.00	19206.60	20300.14	0.00	0.00	
28	5375.20	0.21	5449.27	377.99	0.00	20300.14	21270.97	0.00	0.00	
29	5555.64	0.22	5571.66	375.94	0.00	21270.97	21834.19	0.00	0.00	
30	5683.48	0.24	5672.94	376.06	0.00	21834.19	21972.20	0.00	0.00	
31	6991.65	0.00	6989.26	459.68	0.00	21972.20	21550.49	0.00	0.00	
32	7005.25	0.00	7072.77	467.21	0.00	21550.49	20469.41	0.00	0.00	
33	6911.10	0.00	7111.09	479.52	0.00	20469.41	18727.49	0.00	0.00	
34	6702.82	0.00	7098.59	497.79	0.00	18727.49	16337.92	0.00	0.00	
35	6371.45	0.00	7025.07	524.06	0.00	16337.92	13332.78	0.00	0.00	
36	5895.66	0.00	6861.61	562.08	0.00	13332.78	9777.66	0.00	0.00	
37	5243.31	0.00	6551.57	619.32	0.00	9777.66	5800.93	0.00	0.00	
38	155.89	6.24	212.37	21.20	0.00	5800.93	5662.14	0.00	0.00	
39	1256.41	51.74	1737.18	180.52	0.00	5662.14	4504.93	0.00	0.00	
40	601.57	0.00	809.94	93.08	0.00	4504.93	3954.68	0.00	0.00	
41	589.08	0.00	804.36	95.17	0.00	3954.68	3398.78	0.00	0.00	
42	578.45	0.00	801.90	97.44	0.00	3398.78	2834.92	0.00	0.00	
43	216.79	0.00	303.76	37.67	0.00	2834.92	2618.84	0.00	0.00	
44	349.93	0.00	494.20	62.26	0.00	2618.84	2264.36	0.00	0.00	
45	550.31	0.00	786.42	102.65	0.00	2264.36	1693.26	0.00	0.00	
46	529.51	0.00	767.06	105.66	0.00	1693.26	1128.30	0.00	0.00	
47	506.62	0.00	743.23	109.01	0.00	1128.30	573.67	0.00	0.00	
48	480.72	0.00	712.64	112.75	0.00	573.67	35.65	0.00	0.00	
49	452.66	0.00	676.02	116.97	0.00	35.65	-479.90	0.00	0.00	
50	423.38	0.00	634.26	121.78	0.00	-479.90	-967.61	0.00	0.00	
51	392.13	0.00	584.69	127.32	0.00	-967.61	-1419.62	0.00	0.00	
52	357.64	0.00	522.79	133.79	0.00	-1419.62	-1823.72	0.00	0.00	
53	321.42	0.00	449.01	141.47	0.00	-1823.72	-2167.69	0.00	0.00	
54	281.11	0.00	357.15	149.23	0.00	-2167.69	-2433.78	0.00	0.00	
55	243.36	0.00	247.18	162.27	0.00	-2433.78	-2601.73	0.00	0.00	
56	197.72	0.00	168.42	148.81	0.00	-2601.73	-2708.58	0.00	0.00	
57	1.73	0.00	1.60	1.28	0.00	-2708.58	-2709.68	0.00	0.00	
58	144.72	0.00	55.53	134.13	0.00	-2709.68	-2721.09	0.00	0.00	
59	88.74	0.00	-230.13	156.10	0.00	-2721.09	-2457.55	0.00	0.00	
60	21.61	0.00	-497.79	137.76	0.00	-2457.55	-1941.50	0.00	0.00	

Tabella 9-17 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 04

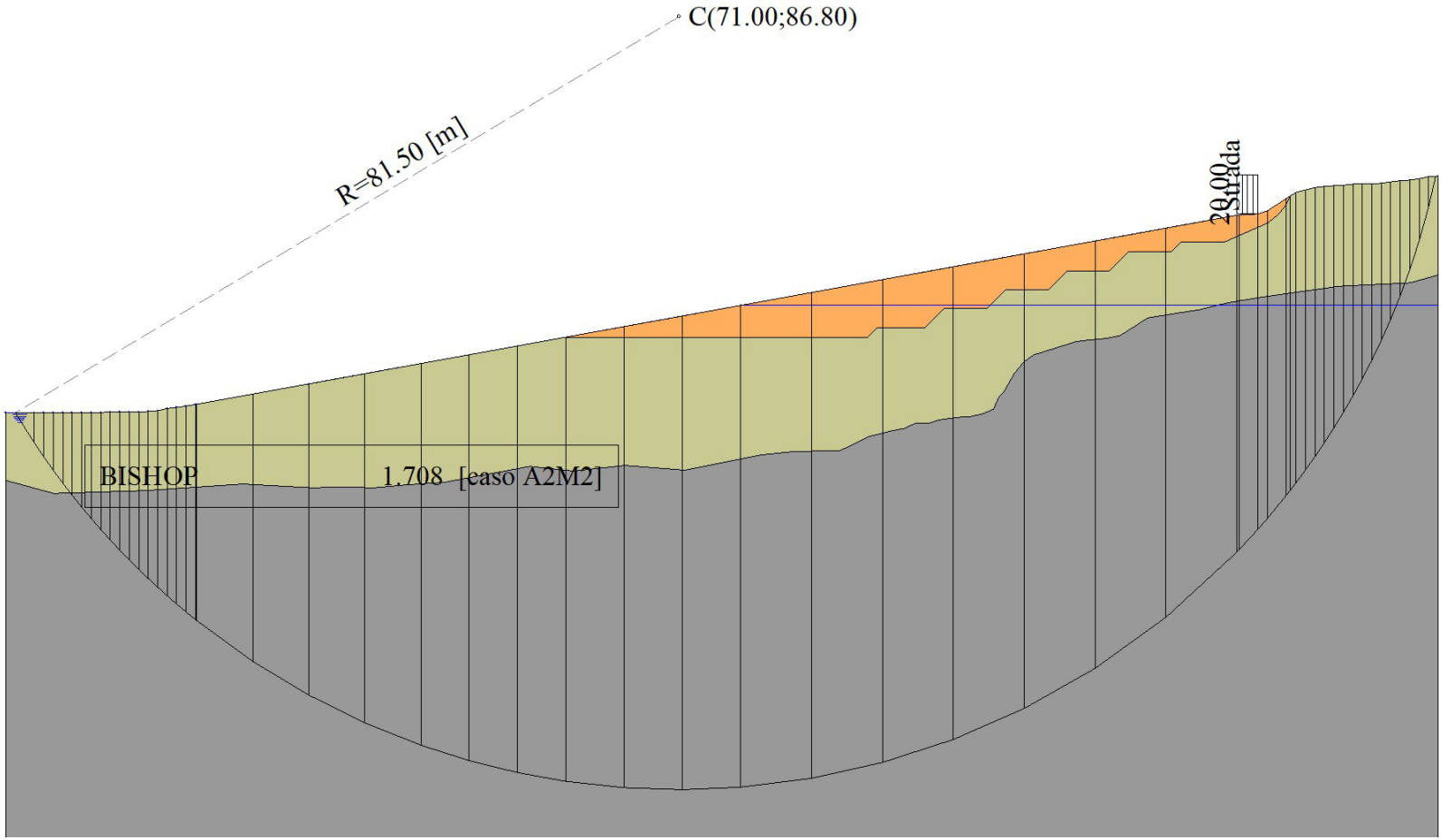

Figura 9-4 – Superficie critica (1) della sezione CR_04 per la verifica di stabilità 04

10 VERIFICHE STATO DI PROGETTO SEZIONE VS_04

10.1 PARAMETRI GEOTECNICI

n°	Descrizione	γ	γ_{sat}	ϕ'	c'	Retino
		[kN/mc]	*[kN/mc]*	*[°]*	*[kPa]*	
1	Substrato	21.27	21.27	23.60	24.0	
2	Substrato alterato	20.68	20.68	23.40	22.0	
3	Terreno di riporto	18.99	18.99	24.20	23.0	

Tabella 10-1 – Parametri geotecnici condizioni drenate

n°	Descrizione	γ	γ_{sat}	ϕ_u	C_u	Retino
		[kN/mc]	*[kN/mc]*	*[°]*	*[kPa]*	
1	Substrato	21.27	21.27	0.00	146.0	
2	Substrato alterato	20.68	20.68	0.00	100.0	
3	Terreno di riporto	18.99	18.99	0.00	76.0	

Tabella 10-2 – Parametri geotecnici condizioni non drenate

10.2 DESCRIZIONE SEZIONE E IMPOSTAZIONE ANALISI

10.2.1 PROFILO TERRENO E DESCRIZIONE STRATIGRAFIA

n°	X	Y
	[m]	*[m]*
1	0.00	45.04
2	1.00	45.05
3	2.00	45.06
4	3.00	45.07
5	4.00	45.07
6	5.00	45.08
7	6.00	45.09
8	7.00	45.10
9	8.00	45.11
10	9.00	45.11
11	10.00	45.12
12	11.00	45.13
13	12.00	45.16
14	13.00	45.25
15	14.00	45.31
16	15.00	45.44
17	16.00	45.54
18	16.34	45.56
19	16.35	45.56
20	119.65	64.34
21	133.95	70.06
22	136.02	70.03
23	137.52	70.06
24	138.02	70.58
25	139.02	71.00
26	140.02	71.38
27	141.02	71.44
28	142.02	71.36
29	143.02	71.39

n°	X	Y
	[m]	*[m]*
30	144.02	71.41
31	145.02	71.40
32	146.02	71.43
33	147.02	71.52
34	148.02	71.55
35	150.02	71.77

Tabella 10-3 – Profilo del piano campagna

n°	X	Y
	[m]	*[m]*
1	0.00	39.57
2	0.00	0.00
3	150.02	0.00
4	150.02	61.51
5	146.57	60.78
6	142.03	60.22
7	136.06	59.45
8	130.20	58.46
9	126.44	57.90
10	122.57	56.91
11	119.81	56.91
12	117.04	56.02
13	114.28	54.04
14	107.39	53.49
15	105.10	51.38
16	102.33	48.84
17	100.90	47.74
18	99.13	45.97
19	95.70	45.75
20	92.60	45.19
21	89.84	44.20
22	84.09	43.09
23	79.33	42.87
24	67.06	42.43
25	55.89	41.21
26	46.49	40.11
27	40.30	40.33
28	27.14	39.67
29	18.62	39.00
30	12.98	38.34
31	7.56	38.56
32	1.92	39.00

Tabella 10-4 – Coordinate dei vertici dello strato n° 1 costituito da terreno n° 1 (Substrato)

n°	X	Y
	[m]	*[m]*
1	119.65	64.34
2	16.35	45.56
3	16.34	45.56
4	25.85	45.56
5	26.85	46.56
6	31.35	46.56
7	33.28	48.49
8	47.24	48.49
9	48.24	49.49
10	52.74	49.49

n°	X	Y
	[m]	*[m]*
11	53.74	50.49
12	58.24	50.49
13	59.24	51.49
14	72.22	51.49
15	73.22	52.49
16	77.72	52.49
17	78.72	53.49
18	83.22	53.49
19	85.22	55.49
20	89.72	55.49
21	90.72	56.49
22	95.22	56.49
23	96.22	57.49
24	100.72	57.49
25	101.72	58.49
26	106.22	58.49
27	107.22	59.49
28	111.72	59.49

Tabella 10-5 – Coordinate dei vertici dello strato n° 2 costituito da terreno n° 3 (Frana)

n°	X	Y
	[m]	*[m]*
1	150.02	61.51
2	150.02	71.77
3	148.02	71.55
4	147.02	71.52
5	146.02	71.43
6	145.02	71.40
7	144.02	71.41
8	143.02	71.39
9	142.02	71.36
10	141.02	71.44
11	140.02	71.38
12	139.02	71.00
13	138.02	70.58
14	137.52	70.06
15	136.02	70.03
16	133.95	70.06
17	119.65	64.34
18	111.72	59.49
19	107.22	59.49
20	106.22	58.49
21	101.72	58.49
22	100.72	57.49
23	96.22	57.49
24	95.22	56.49
25	90.72	56.49
26	89.72	55.49
27	85.22	55.49
28	83.22	53.49
29	78.72	53.49
30	77.72	52.49
31	73.22	52.49
32	72.22	51.49
33	59.24	51.49
34	58.24	50.49
35	53.74	50.49

n°	X	Y
	[m]	*[m]*
36	52.74	49.49
37	48.24	49.49
38	47.24	48.49
39	33.28	48.49
40	31.35	46.56
41	26.85	46.56
42	25.85	45.56
43	16.34	45.56
44	16.00	45.54
45	15.00	45.44
46	14.00	45.31
47	13.00	45.25
48	12.00	45.16
49	11.00	45.13
50	10.00	45.12
51	9.00	45.11
52	8.00	45.11
53	7.00	45.10
54	6.00	45.09
55	5.00	45.08
56	4.00	45.07
57	3.00	45.07
58	2.00	45.06
59	1.00	45.05
60	0.00	45.04
61	0.00	39.57
62	1.92	39.00
63	7.56	38.56
64	12.98	38.34
65	18.62	39.00
66	27.14	39.67
67	40.30	40.33
68	46.49	40.11
69	55.89	41.21
70	67.06	42.43
71	79.33	42.87
72	84.09	43.09
73	89.84	44.20
74	92.60	45.19
75	95.70	45.75
76	99.13	45.97
77	100.90	47.74
78	102.33	48.84
79	105.10	51.38
80	107.39	53.49
81	114.28	54.04
82	117.04	56.02
83	119.81	56.91
84	122.57	56.91
85	126.44	57.90
86	130.20	58.46
87	136.06	59.45
88	142.03	60.22
89	146.57	60.78

Tabella 10-6 – Coordinate dei vertici dello strato n° 3 costituito da terreno n° 2 (Substrato alterato)

10.2.2 DESCRIZIONE FALDA

n°	X	Y
	[m]	*[m]*
1	0.00	56.36
2	150.02	56.36

Tabella 10-7 – Livello falda massima regolazione

n°	X	Y
	[m]	*[m]*
1	0.00	45.04
2	1.00	45.05
3	2.00	45.05
4	3.00	45.06
5	4.00	45.07
6	5.00	45.08
7	6.00	45.09
8	7.00	45.10
9	8.00	45.11
10	9.00	45.11
11	10.00	45.12
12	11.00	45.13
13	12.00	45.15
14	13.00	45.25
15	14.00	45.31
16	15.00	45.44
17	16.00	45.54
18	16.34	45.56
19	16.35	45.56
20	75.77	56.36
21	150.02	56.36

Tabella 10-8 – Livello falda svaso rapido

10.2.3 CARICHI SUL PROFILO

n°	Descrizione	Tipo	Ψ_2	P_i	P_f	Vy	Vx
				[m]	*[m]*	*[kN/m]*	*[kN/m]*
1	Strada	Variabile	1.00	135.00	137.00	20.00	0.00
				70.04	70.05	20.00	0.00

Tabella 10-9 – Carichi distribuiti verifica di stabilità 01

10.2.4 IMPOSTAZIONE DELLE SUPERFICI DI ROTTURA

Superfici di rottura circolari

Si considerano delle superfici di rottura circolari generate tramite la seguente maglia dei centri

Origine maglia	[m]	X_0 = 15.00	Y_0 = 44.80
Passo maglia	[m]	dX = 2.00	dY = 2.00
Numero passi		Nx = 70	Ny = 50
Raggio	[m]	R = 1.50	

Si utilizza un raggio variabile con passo dR=1.00 [m] ed un numero di incrementi pari a 100.

10.2.5 CONDIZIONI DI ESCLUSIONE

Sono state escluse dall'analisi le superfici aventi:

- lunghezza di corda inferiore a	1.00	m
- freccia inferiore a	0.50	m
- volume inferiore a	2.00	mc
- pendenza media della superficie inferiore a	1.00	[%]

10.3 VERIFICA DI STABILITÀ 01

10.3.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate in condizioni **statiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni efficaci**
Presenza di falda
Presenza di carichi distribuiti

10.3.2 RISULTATI ANALISI

Numero di superfici analizzate	57314
Coefficiente di sicurezza minimo	1.973
Superficie con coefficiente di sicurezza minimo	1

10.3.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO L'ALTO

Numero di strisce	36	
Coordinate del centro	X[m]= 91.00	Y[m]= 114.80
Raggio del cerchio	R[m]= 72.50	
Intersezione a valle con il profilo topografico	X_v[m]= 54.06	Y_v[m]= 52.42
Intersezione a monte con il profilo topografico	X_m[m]= 149.29	Y_m[m]= 71.69
Coefficiente di sicurezza	F_S= 1.973	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	54.06	52.42	52.42	58.24	53.18	50.12	56.85	51.90	4.77	-28.74	19.67	18
2	58.24	53.18	50.12	59.24	53.36	49.62	58.76	51.57	1.12	-26.42	19.10	18
3	59.24	53.36	49.62	63.26	54.09	47.82	61.42	51.20	4.41	-24.24	19.10	18
4	63.26	54.09	47.82	67.28	54.82	46.29	65.37	50.74	4.30	-20.80	19.10	18
5	67.28	54.82	46.29	71.30	55.55	45.03	69.36	50.42	4.21	-17.43	19.10	18
6	71.30	55.55	45.03	75.31	56.28	44.02	73.36	50.22	4.14	-14.13	19.10	18
7	75.31	56.28	44.02	79.33	57.01	43.24	77.36	50.14	4.09	-10.88	19.10	18
8	79.33	57.01	43.24	84.09	57.87	42.63	81.75	50.19	4.79	-7.37	19.19	18
9	84.09	57.87	42.63	86.96	58.40	42.41	85.54	50.33	2.88	-4.33	19.27	19
10	86.96	58.40	42.41	89.84	58.92	42.31	88.41	50.51	2.88	-2.06	19.27	19

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
11	89.84	58.92	42.31	94.10	59.69	42.37	91.98	50.82	4.26	0.77	19.27	19
12	94.10	59.69	42.37	98.36	60.47	42.67	96.24	51.30	4.27	4.14	19.27	19
13	98.36	60.47	42.67	102.62	61.24	43.24	100.49	51.91	4.30	7.52	19.27	19
14	102.62	61.24	43.24	106.87	62.02	44.06	104.74	52.64	4.34	10.93	19.27	19
15	106.87	62.02	44.06	111.13	62.79	45.15	109.00	53.50	4.40	14.39	19.27	19
16	111.13	62.79	45.15	115.39	63.57	46.53	113.25	54.51	4.48	17.89	19.27	19
17	115.39	63.57	46.53	119.65	64.34	48.20	117.50	55.65	4.58	21.47	19.27	19
18	119.65	64.34	48.20	123.23	65.77	49.86	121.43	57.04	3.94	24.83	19.27	19
19	123.23	65.77	49.86	126.80	67.20	51.76	125.00	58.64	4.05	27.99	19.27	19
20	126.80	67.20	51.76	130.38	68.63	53.92	128.57	60.37	4.18	31.24	19.27	19
21	130.38	68.63	53.92	133.95	70.06	56.39	132.14	62.24	4.34	34.61	19.27	19
22	133.95	70.06	56.39	136.02	70.03	57.97	134.96	63.61	2.61	37.36	19.27	19
23	136.02	70.03	57.97	136.06	70.03	58.01	136.04	64.01	0.05	38.41	19.27	19
24	136.06	70.03	58.01	137.52	70.06	59.19	136.78	64.32	1.88	39.17	19.27	19
25	137.52	70.06	59.19	138.02	70.58	59.62	137.77	64.86	0.66	40.17	19.27	19
26	138.02	70.58	59.62	139.02	71.00	60.48	138.52	65.42	1.32	40.96	19.12	18
27	139.02	71.00	60.48	140.02	71.38	61.39	139.52	66.06	1.35	42.01	19.10	18
28	140.02	71.38	61.39	141.02	71.44	62.32	140.51	66.63	1.37	43.09	19.10	18
29	141.02	71.44	62.32	142.02	71.36	63.29	141.51	67.10	1.39	44.18	19.10	18
30	142.02	71.36	63.29	143.02	71.39	64.30	142.51	67.58	1.42	45.29	19.10	18
31	143.02	71.39	64.30	144.02	71.41	65.35	143.51	68.11	1.45	46.43	19.10	18
32	144.02	71.41	65.35	145.02	71.40	66.45	144.51	68.64	1.48	47.58	19.10	18
33	145.02	71.40	66.45	146.02	71.43	67.59	145.50	69.20	1.52	48.77	19.10	18
34	146.02	71.43	67.59	147.02	71.52	68.78	146.50	69.81	1.56	49.99	19.10	18
35	147.02	71.52	68.78	148.02	71.55	70.03	147.48	70.44	1.60	51.23	19.10	18
36	148.02	71.55	70.03	149.29	71.69	71.69	148.44	71.09	2.09	52.69	19.10	18

Tabella 10-10 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 01

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	121.21	146.21	101.07	62.48	238.20	0.00	244.52	0.00	0.00	
2	63.68	30.34	42.60	17.43	71.04	244.52	316.20	0.00	0.00	
3	373.98	103.91	229.82	79.62	330.10	316.20	637.53	0.00	0.00	
4	552.27	75.14	314.39	93.49	392.24	637.53	989.47	0.00	0.00	
5	710.46	46.36	384.33	104.98	441.89	989.47	1345.59	0.00	0.00	
6	847.96	17.58	440.38	114.21	480.93	1345.59	1684.48	0.00	0.00	
7	967.50	0.18	498.52	123.95	510.68	1684.48	1996.68	0.00	0.00	
8	1274.87	0.00	675.55	164.07	631.14	1996.68	2326.92	0.00	0.00	
9	827.27	0.00	446.43	107.13	391.33	2326.92	2497.02	0.00	0.00	
10	863.80	0.00	473.39	111.84	394.99	2497.02	2639.93	0.00	0.00	
11	1331.11	0.00	743.20	173.08	585.72	2639.93	2795.24	0.00	0.00	
12	1377.43	0.00	788.37	181.19	579.56	2795.24	2877.30	0.00	0.00	
13	1404.06	0.00	826.67	188.22	564.73	2877.30	2881.77	0.00	0.00	
14	1410.59	0.00	858.38	194.24	540.76	2881.77	2807.12	0.00	0.00	
15	1395.84	0.00	883.08	199.19	506.85	2807.12	2654.76	0.00	0.00	
16	1359.43	0.00	901.17	203.16	461.76	2654.76	2429.38	0.00	0.00	
17	1295.62	0.00	907.72	205.31	403.75	2429.38	2140.45	0.00	0.00	
18	1048.48	0.00	789.63	178.19	283.22	2140.45	1851.56	0.00	0.00	
19	1025.76	0.00	841.02	188.36	220.52	1851.56	1519.67	0.00	0.00	
20	986.21	0.00	888.98	198.14	144.32	1519.67	1153.12	0.00	0.00	
21	928.11	0.00	933.27	207.57	51.18	1153.12	764.76	0.00	0.00	
22	487.45	26.57	552.61	123.23	0.00	764.76	527.38	0.00	0.00	
23	9.10	1.07	11.03	2.47	0.00	527.38	522.46	0.00	0.00	
24	304.51	24.35	357.71	81.60	0.00	522.46	359.78	0.00	0.00	
25	100.67	0.00	109.90	25.88	0.00	359.78	308.66	0.00	0.00	
26	196.53	0.00	216.82	50.02	0.00	308.66	204.31	0.00	0.00	
27	187.87	0.00	209.00	48.68	0.00	204.31	100.61	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
28	174.82	0.00	195.82	46.57	0.00	100.61	0.85	0.00	0.00	
29	157.19	0.00	176.93	43.48	0.00	0.85	-91.27	0.00	0.00	
30	138.64	0.00	156.52	40.14	0.00	-91.27	-174.27	0.00	0.00	
31	120.27	0.00	135.83	36.77	0.00	-174.27	-247.33	0.00	0.00	
32	100.73	0.00	113.14	33.07	0.00	-247.33	-308.55	0.00	0.00	
33	80.51	0.00	88.90	29.14	0.00	-308.55	-356.20	0.00	0.00	
34	60.17	0.00	63.74	25.05	0.00	-356.20	-388.91	0.00	0.00	
35	38.98	0.00	36.54	20.65	0.00	-388.91	-404.46	0.00	0.00	
36	17.64	0.00	3.79	19.29	0.00	-404.46	-395.79	0.00	0.00	

Tabella 10-11 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 01

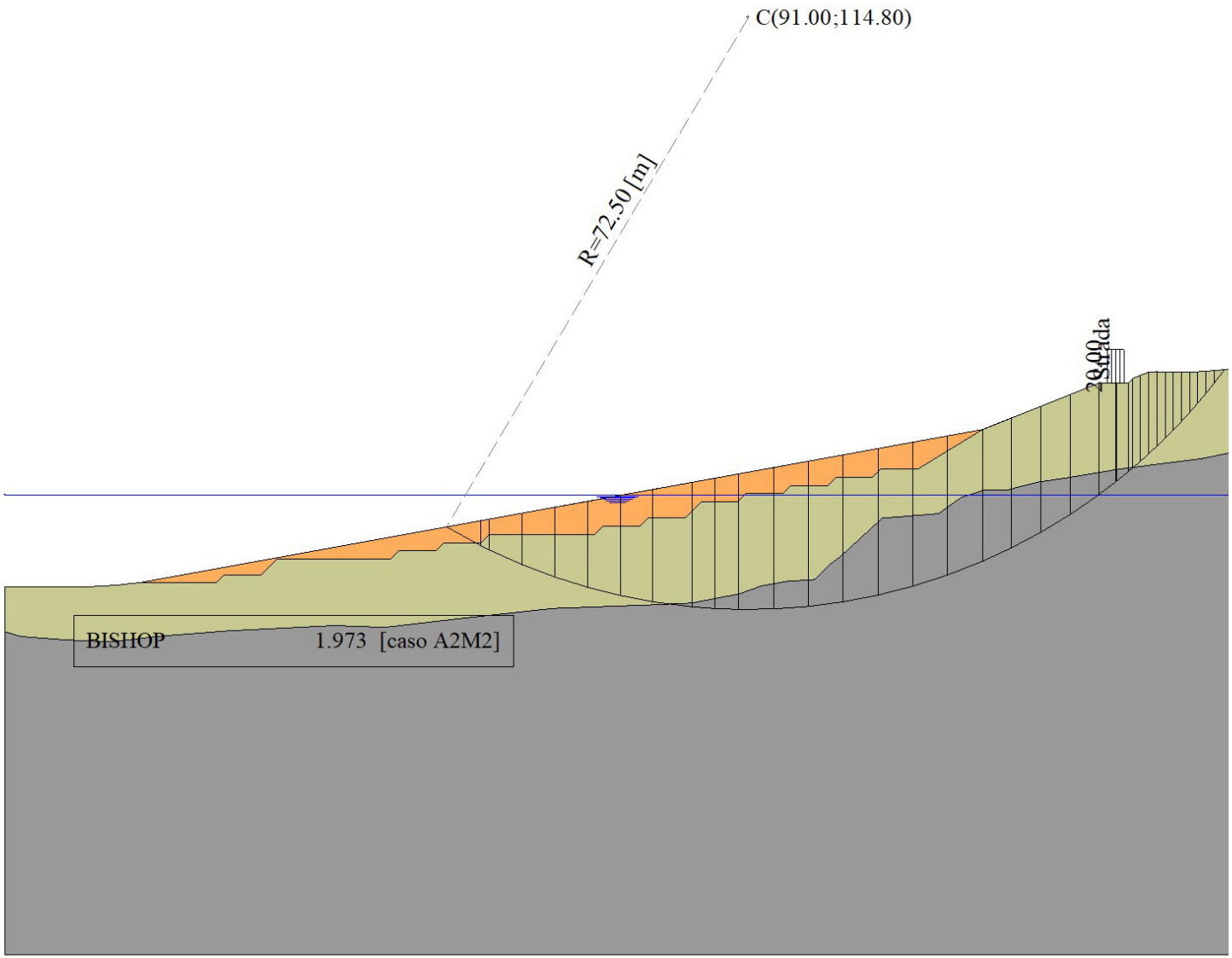

Figura 10-1 – Superficie critica (1) della sezione VS_04 per la verifica di stabilità 01

10.4 VERIFICA DI STABILITÀ 02

10.4.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate solo in condizioni **sismiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni efficaci**
Presenza di falda
Presenza di carichi distribuiti

10.4.2 RISULTATI ANALISI

Numero di superfici analizzate	114616
Coefficiente di sicurezza minimo	1.584
Superficie con coefficiente di sicurezza minimo	1

10.4.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO L'ALTO

Numero di strisce	37	
Coordinate del centro	X[m]= 71.00	Y[m]= 130.80
Raggio del cerchio	R[m]= 98.50	
Intersezione a valle con il profilo topografico	X_v[m]= 20.39	Y_v[m]= 46.29
Intersezione a monte con il profilo topografico	X_m[m]= 149.84	Y_m[m]= 71.75
Coefficiente di sicurezza	F_S= 1.584	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	20.39	46.29	46.29	25.85	47.29	43.26	24.03	45.61	6.24	-29.10	23.59	22
2	25.85	47.29	43.26	27.14	47.52	42.61	26.51	45.16	1.44	-26.86	23.40	22
3	27.14	47.52	42.61	31.52	48.32	40.56	29.49	44.73	4.84	-25.04	23.40	22
4	31.52	48.32	40.56	35.91	49.11	38.76	33.82	44.18	4.74	-22.25	23.53	23
5	35.91	49.11	38.76	40.30	49.91	37.21	38.18	43.74	4.65	-19.52	23.60	24
6	40.30	49.91	37.21	46.40	51.02	35.42	43.45	43.39	6.36	-16.31	23.60	24
7	46.40	51.02	35.42	52.50	52.13	34.05	49.53	43.16	6.26	-12.64	23.60	24
8	52.50	52.13	34.05	58.61	53.24	33.08	55.61	43.13	6.18	-9.03	23.60	24
9	58.61	53.24	33.08	64.71	54.35	32.50	61.70	43.30	6.13	-5.44	23.60	24
10	64.71	54.35	32.50	70.82	55.46	32.30	67.79	43.66	6.11	-1.88	23.60	24
11	70.82	55.46	32.30	76.92	56.57	32.48	73.89	44.20	6.11	1.67	23.60	24
12	76.92	56.57	32.48	83.03	57.68	33.04	79.98	44.94	6.13	5.23	23.60	24
13	83.03	57.68	33.04	89.13	58.79	33.98	86.08	45.87	6.18	8.81	23.60	24
14	89.13	58.79	33.98	95.23	59.90	35.33	92.18	47.00	6.25	12.42	23.60	24
15	95.23	59.90	35.33	101.34	61.01	37.09	98.27	48.33	6.35	16.09	23.60	24
16	101.34	61.01	37.09	107.44	62.12	39.29	104.37	49.87	6.49	19.83	23.60	24
17	107.44	62.12	39.29	113.55	63.23	41.96	110.46	51.64	6.66	23.65	23.60	24
18	113.55	63.23	41.96	119.65	64.34	45.15	116.55	53.65	6.89	27.59	23.60	24
19	119.65	64.34	45.15	124.42	66.25	48.04	122.01	55.94	5.57	31.22	23.60	24
20	124.42	66.25	48.04	129.18	68.15	51.32	126.77	58.42	5.79	34.52	23.60	24

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
21	129.18	68.15	51.32	133.95	70.06	55.04	131.52	61.12	6.05	37.97	23.60	24
22	133.95	70.06	55.04	136.02	70.03	56.81	134.96	62.98	2.72	40.52	23.60	24
23	136.02	70.03	56.81	136.06	70.03	56.85	136.04	63.43	0.05	41.33	23.60	24
24	136.06	70.03	56.85	137.52	70.06	58.15	136.78	63.77	1.95	41.91	23.60	24
25	137.52	70.06	58.15	138.02	70.58	58.62	137.77	64.35	0.69	42.68	23.60	24
26	138.02	70.58	58.62	139.02	71.00	59.56	138.52	64.94	1.37	43.28	23.60	24
27	139.02	71.00	59.56	140.02	71.38	60.53	139.52	65.61	1.39	44.08	23.47	23
28	140.02	71.38	60.53	141.02	71.44	61.52	140.51	66.21	1.41	44.90	23.40	22
29	141.02	71.44	61.52	142.02	71.36	62.55	141.51	66.71	1.43	45.72	23.40	22
30	142.02	71.36	62.55	142.03	71.36	62.56	142.03	66.96	0.02	46.15	23.40	22
31	142.03	71.36	62.56	143.02	71.39	63.61	142.52	67.22	1.44	46.57	23.40	22
32	143.02	71.39	63.61	144.02	71.41	64.69	143.51	67.77	1.48	47.42	23.40	22
33	144.02	71.41	64.69	145.02	71.40	65.82	144.51	68.32	1.50	48.28	23.40	22
34	145.02	71.40	65.82	146.02	71.43	66.97	145.50	68.89	1.53	49.17	23.40	22
35	146.02	71.43	66.97	147.02	71.52	68.17	146.50	69.51	1.56	50.06	23.40	22
36	147.02	71.52	68.17	148.02	71.55	69.40	147.49	70.14	1.59	50.98	23.40	22
37	148.02	71.55	69.40	149.84	71.75	71.75	148.63	70.90	2.96	52.30	23.40	22

Tabella 10-12 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 02

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	205.25	511.86	177.41	136.55	709.04	0.00	625.59	0.00	0.00	
2	106.44	113.13	70.78	39.38	190.10	625.59	789.90	0.00	0.00	
3	512.77	363.15	311.58	152.35	701.67	789.90	1378.05	0.00	0.00	
4	728.70	328.84	406.36	181.53	776.20	1378.05	1990.08	0.00	0.00	
5	928.50	294.54	488.80	205.31	838.63	1990.08	2599.68	0.00	0.00	
6	1589.27	352.78	793.24	315.12	1250.32	2599.68	3401.71	0.00	0.00	
7	1890.90	286.34	897.02	342.16	1326.61	3401.71	4109.50	0.00	0.00	
8	2145.51	219.90	976.48	362.93	1381.55	4109.50	4690.80	0.00	0.00	
9	2356.27	153.46	1036.77	378.82	1417.27	4690.80	5123.22	0.00	0.00	
10	2528.48	87.02	1084.46	391.60	1435.07	5123.22	5392.83	0.00	0.00	
11	2655.51	21.79	1115.40	400.12	1435.59	5392.83	5490.93	0.00	0.00	
12	2738.39	0.00	1173.05	416.37	1418.83	5490.93	5430.63	0.00	0.00	
13	2775.33	0.00	1234.57	434.05	1384.22	5430.63	5216.59	0.00	0.00	
14	2770.92	0.00	1284.33	448.89	1330.48	5216.59	4850.85	0.00	0.00	
15	2721.35	0.00	1320.50	460.42	1255.55	4850.85	4342.04	0.00	0.00	
16	2623.86	0.00	1342.39	468.51	1156.32	4342.04	3706.57	0.00	0.00	
17	2475.79	0.00	1349.55	473.14	1028.26	3706.57	2970.20	0.00	0.00	
18	2265.04	0.00	1332.98	471.96	864.73	2970.20	2173.02	0.00	0.00	
19	1630.80	0.00	1061.60	377.21	533.61	2173.02	1526.62	0.00	0.00	
20	1528.10	0.00	1121.88	397.04	378.90	1526.62	869.97	0.00	0.00	
21	1389.17	0.00	1172.90	415.06	188.48	869.97	238.59	0.00	0.00	
22	535.08	20.44	527.67	186.79	11.60	238.59	-18.17	0.00	0.00	
23	9.98	0.83	10.48	3.72	0.00	-18.17	-23.24	0.00	0.00	
24	333.74	18.73	341.82	123.86	0.00	-23.24	-190.10	0.00	0.00	
25	110.07	0.00	106.52	39.76	0.00	-190.10	-242.67	0.00	0.00	
26	214.15	0.00	207.77	78.11	0.00	-242.67	-346.90	0.00	0.00	
27	204.21	0.00	199.61	74.63	0.00	-346.90	-449.95	0.00	0.00	
28	189.97	0.00	186.25	70.48	0.00	-449.95	-548.05	0.00	0.00	
29	171.28	0.00	167.37	65.61	0.00	-548.05	-637.01	0.00	0.00	
30	2.08	0.00	2.02	0.81	0.00	-637.01	-638.08	0.00	0.00	
31	149.74	0.00	145.32	59.64	0.00	-638.08	-715.67	0.00	0.00	
32	132.69	0.00	127.36	55.31	0.00	-715.67	-783.58	0.00	0.00	
33	112.56	0.00	105.92	49.80	0.00	-783.58	-839.31	0.00	0.00	
34	91.96	0.00	83.51	44.07	0.00	-839.31	-881.69	0.00	0.00	
35	71.44	0.00	60.77	38.23	0.00	-881.69	-909.97	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
36	50.31	0.00	36.81	32.11	0.00	-909.97	-922.73	0.00	0.00	
37	35.63	0.00	1.81	41.66	0.00	-922.73	-901.80	0.00	0.00	

Tabella 10-13 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 02

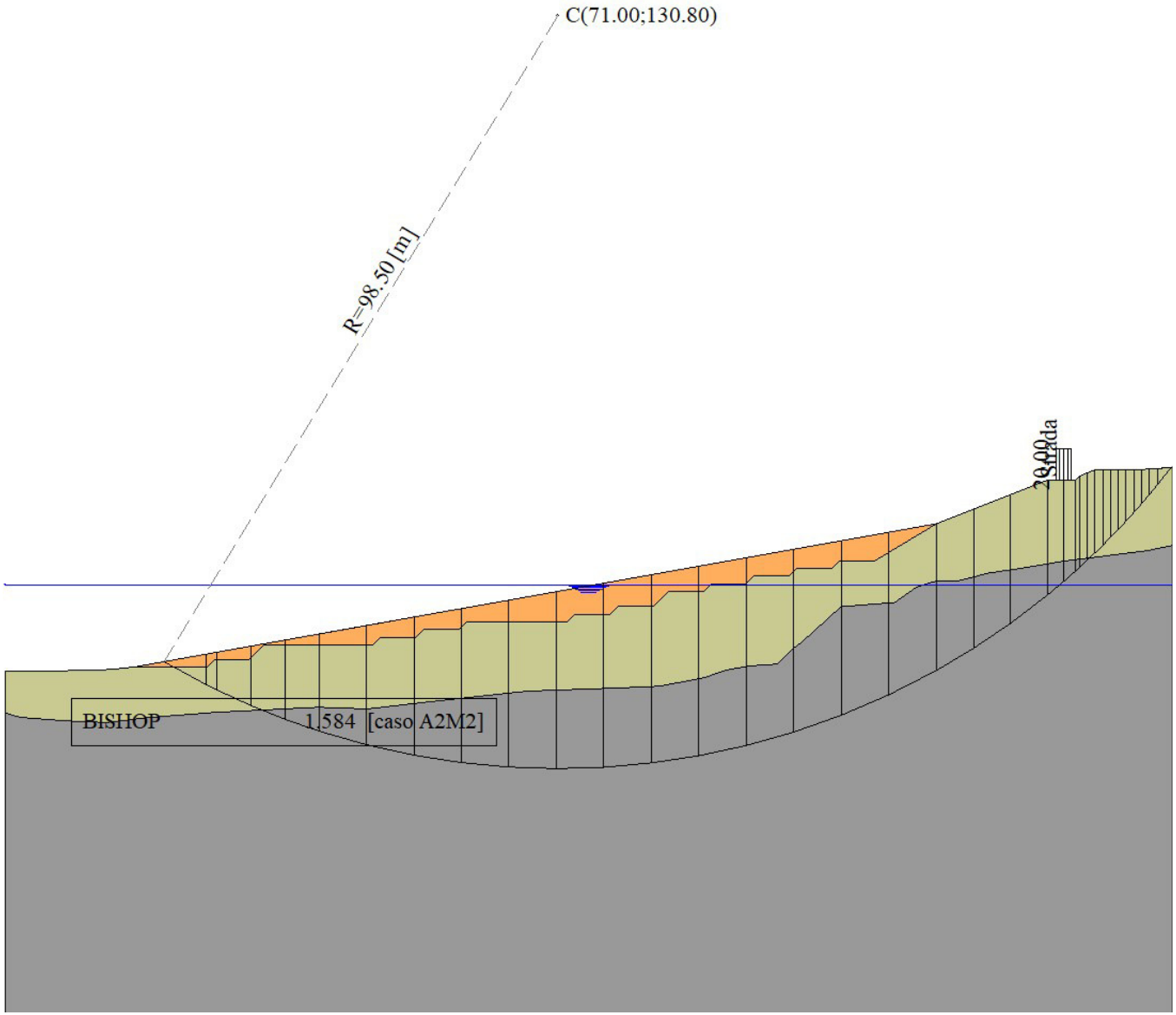

Figura 10-2 – Superficie critica (1) della sezione VS_04 per la verifica di stabilità 02

10.5 VERIFICA DI STABILITÀ 03

10.5.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate solo in condizioni **sismiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni totali**
Presenza di carichi distribuiti

10.5.2 RISULTATI ANALISI

Numero di superfici analizzate	114616
Coefficiente di sicurezza minimo	1.457
Superficie con coefficiente di sicurezza minimo	1

10.5.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO IL BASSO

Numero di strisce	50	
Coordinate del centro	X[m]= 69.00	Y[m]= 92.80
Raggio del cerchio	R[m]= 83.50	
Intersezione a valle con il profilo topografico	X_v[m]= 0.50	Y_v[m]= 45.05
Intersezione a monte con il profilo topografico	X_m[m]= 149.80	Y_m[m]= 71.74
Coefficiente di sicurezza	F_S= 1.457	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	0.50	45.05	45.05	1.00	45.05	44.34	0.83	44.81	0.87	-54.82	0.00	100
2	1.00	45.05	44.34	2.00	45.06	42.97	1.58	44.30	1.70	-53.94	0.00	100
3	2.00	45.06	42.97	3.00	45.07	41.65	2.54	43.66	1.65	-52.79	0.00	100
4	3.00	45.07	41.65	4.00	45.07	40.38	3.53	43.03	1.61	-51.67	0.00	100
5	4.00	45.07	40.38	5.00	45.08	39.17	4.52	42.42	1.57	-50.58	0.00	100
6	5.00	45.08	39.17	6.00	45.09	38.00	5.52	41.83	1.54	-49.51	0.00	129
7	6.00	45.09	38.00	7.00	45.10	36.87	6.51	41.26	1.51	-48.46	0.00	146
8	7.00	45.10	36.87	7.56	45.10	36.25	7.28	40.83	0.83	-47.66	0.00	146
9	7.56	45.10	36.25	8.00	45.11	35.78	7.78	40.56	0.65	-47.15	0.00	146
10	8.00	45.11	35.78	9.00	45.11	34.73	8.51	40.18	1.45	-46.43	0.00	146
11	9.00	45.11	34.73	10.00	45.12	33.71	9.51	39.66	1.43	-45.44	0.00	146
12	10.00	45.12	33.71	11.00	45.13	32.73	10.51	39.17	1.40	-44.48	0.00	146
13	11.00	45.13	32.73	12.00	45.16	31.78	11.51	38.70	1.38	-43.52	0.00	146
14	12.00	45.16	31.78	13.00	45.25	30.86	12.51	38.26	1.36	-42.58	0.00	146
15	13.00	45.25	30.86	14.00	45.31	29.97	13.51	37.85	1.34	-41.66	0.00	146
16	14.00	45.31	29.97	15.00	45.44	29.11	14.51	37.46	1.32	-40.74	0.00	146
17	15.00	45.44	29.11	16.00	45.54	28.27	15.51	37.09	1.30	-39.84	0.00	146
18	16.00	45.54	28.27	16.34	45.56	28.00	16.17	36.84	0.44	-39.25	0.00	146
19	16.34	45.56	28.00	16.35	45.56	27.99	16.34	36.78	0.01	-39.09	0.00	146
20	16.35	45.56	27.99	23.73	46.90	22.64	20.23	35.72	9.12	-35.96	0.00	146
21	23.73	46.90	22.64	31.11	48.24	18.39	27.54	34.02	8.51	-29.91	0.00	146

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
22	31.11	48.24	18.39	38.48	49.58	15.08	34.88	32.81	8.09	-24.21	0.00	146
23	38.48	49.58	15.08	45.86	50.92	12.57	42.24	32.03	7.79	-18.76	0.00	146
24	45.86	50.92	12.57	53.24	52.27	10.80	49.60	31.64	7.59	-13.48	0.00	146
25	53.24	52.27	10.80	60.62	53.61	9.72	56.97	31.60	7.46	-8.32	0.00	146
26	60.62	53.61	9.72	68.00	54.95	9.31	64.33	31.90	7.39	-3.22	0.00	146
27	68.00	54.95	9.31	75.38	56.29	9.54	71.70	32.52	7.38	1.85	0.00	146
28	75.38	56.29	9.54	82.76	57.63	10.44	79.07	33.48	7.43	6.93	0.00	146
29	82.76	57.63	10.44	90.14	58.97	12.02	86.44	34.77	7.55	12.07	0.00	146
30	90.14	58.97	12.02	97.51	60.32	14.32	93.81	36.40	7.73	17.32	0.00	146
31	97.51	60.32	14.32	104.89	61.66	17.41	101.18	38.42	8.00	22.71	0.00	146
32	104.89	61.66	17.41	112.27	63.00	21.39	108.55	40.85	8.38	28.34	0.00	146
33	112.27	63.00	21.39	119.65	64.34	26.42	115.90	43.76	8.93	34.28	0.00	146
34	119.65	64.34	26.42	126.80	67.20	32.54	123.17	47.59	9.41	40.58	0.00	146
35	126.80	67.20	32.54	133.95	70.06	40.33	130.28	52.46	10.57	47.44	0.00	146
36	133.95	70.06	40.33	136.02	70.03	43.00	134.97	55.84	3.38	52.22	0.00	146
37	136.02	70.03	43.00	137.52	70.06	45.08	136.76	57.03	2.56	54.26	0.00	146
38	137.52	70.06	45.08	138.02	70.58	45.81	137.77	57.88	0.89	55.45	0.00	146
39	138.02	70.58	45.81	139.02	71.00	47.31	138.52	58.67	1.81	56.37	0.00	146
40	139.02	71.00	47.31	140.02	71.38	48.89	139.52	59.64	1.87	57.63	0.00	146
41	140.02	71.38	48.89	141.02	71.44	50.55	140.52	60.56	1.94	58.94	0.00	146
42	141.02	71.44	50.55	142.02	71.36	52.30	141.51	61.40	2.02	60.30	0.00	146
43	142.02	71.36	52.30	143.02	71.39	54.16	142.51	62.29	2.11	61.71	0.00	146
44	143.02	71.39	54.16	144.02	71.41	56.14	143.51	63.27	2.22	63.20	0.00	146
45	144.02	71.41	56.14	145.02	71.40	58.26	144.51	64.29	2.35	64.76	0.00	146
46	145.02	71.40	58.26	146.02	71.43	60.56	145.51	65.39	2.50	66.43	0.00	146
47	146.02	71.43	60.56	146.57	71.48	61.89	146.29	66.33	1.44	67.78	0.00	106
48	146.57	71.48	61.89	147.02	71.52	63.06	146.79	66.98	1.25	68.70	0.00	100
49	147.02	71.52	63.06	148.02	71.55	65.83	147.49	67.94	2.94	70.14	0.00	100
50	148.02	71.55	65.83	149.80	71.74	71.74	148.62	69.71	6.18	73.27	0.00	100

Tabella 10-14 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 03

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	3.25	55.29	186.25	59.37	0.00	0.00	186.63	0.00	0.00	
2	25.66	110.86	395.19	116.59	0.00	186.63	571.61	0.00	0.00	
3	50.40	110.80	421.99	113.48	0.00	571.61	969.98	0.00	0.00	
4	74.16	110.72	446.64	110.65	0.00	969.98	1379.12	0.00	0.00	
5	97.03	110.64	469.41	108.06	0.00	1379.12	1797.66	0.00	0.00	
6	119.05	110.54	526.30	136.26	0.00	1797.66	2270.22	0.00	0.00	
7	140.21	110.48	563.76	151.09	0.00	2270.22	2772.85	0.00	0.00	
8	87.67	61.95	323.04	83.45	0.00	2772.85	3055.83	0.00	0.00	
9	73.18	48.57	256.63	64.82	0.00	3055.83	3278.01	0.00	0.00	
10	180.37	110.34	593.38	145.37	0.00	3278.01	3782.95	0.00	0.00	
11	199.45	110.25	606.84	142.81	0.00	3782.95	4288.29	0.00	0.00	
12	217.91	110.15	619.50	140.41	0.00	4288.29	4792.16	0.00	0.00	
13	235.88	109.99	631.51	138.17	0.00	4792.16	5296.06	0.00	0.00	
14	254.03	109.43	643.39	136.07	0.00	5296.06	5805.14	0.00	0.00	
15	272.28	108.77	655.55	134.23	0.00	5805.14	6309.19	0.00	0.00	
16	289.81	107.72	666.03	132.24	0.00	6309.19	6816.34	0.00	0.00	
17	307.38	106.61	676.79	130.49	0.00	6816.34	7316.44	0.00	0.00	
18	107.57	35.80	230.76	43.68	0.00	7316.44	7483.03	0.00	0.00	
19	2.38	0.78	5.07	0.96	0.00	7483.03	7486.67	0.00	0.00	
20	2827.35	733.12	5311.91	913.38	0.00	7486.67	11073.46	0.00	0.00	
21	3660.11	636.04	5749.60	852.90	0.00	11073.46	14270.90	0.00	0.00	
22	4348.69	538.96	6065.30	810.60	0.00	14270.90	16972.43	0.00	0.00	
23	4928.32	441.88	6309.73	780.78	0.00	16972.43	19115.07	0.00	0.00	
24	5401.08	344.80	6489.00	760.24	0.00	19115.07	20655.83	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
25	5773.84	247.72	6613.00	747.15	0.00	20655.83	21569.40	0.00	0.00	
26	6058.84	150.64	6695.89	740.46	0.00	21569.40	21844.16	0.00	0.00	
27	6256.98	53.56	6738.59	739.68	0.00	21844.16	21479.21	0.00	0.00	
28	6361.94	0.13	6777.64	744.73	0.00	21479.21	20488.71	0.00	0.00	
29	6372.62	0.00	6822.06	756.01	0.00	20488.71	18887.81	0.00	0.00	
30	6290.57	0.00	6819.95	774.38	0.00	18887.81	16695.71	0.00	0.00	
31	6108.20	0.00	6760.78	801.44	0.00	16695.71	13949.08	0.00	0.00	
32	5812.55	0.00	6624.14	839.93	0.00	13949.08	10711.19	0.00	0.00	
33	5377.91	0.00	6364.94	894.69	0.00	10711.19	7094.84	0.00	0.00	
34	4748.59	0.00	5892.18	943.15	0.00	7094.84	3298.07	0.00	0.00	
35	4212.89	0.00	5521.41	1059.06	0.00	3298.07	-655.98	0.00	0.00	
36	1075.71	20.44	1480.59	338.73	0.00	-655.98	-1775.87	0.00	0.00	
37	711.55	19.56	985.05	256.45	0.00	-1775.87	-2530.44	0.00	0.00	
38	229.45	0.00	304.25	89.03	0.00	-2530.44	-2763.41	0.00	0.00	
39	443.43	0.00	586.06	180.91	0.00	-2763.41	-3214.74	0.00	0.00	
40	422.98	0.00	551.15	187.33	0.00	-3214.74	-3640.58	0.00	0.00	
41	396.87	0.00	501.91	194.18	0.00	-3640.58	-4027.22	0.00	0.00	
42	365.46	0.00	435.95	202.19	0.00	-4027.22	-4358.06	0.00	0.00	
43	332.00	0.00	357.92	211.41	0.00	-4358.06	-4620.63	0.00	0.00	
44	297.38	0.00	266.94	222.19	0.00	-4620.63	-4801.32	0.00	0.00	
45	259.95	0.00	154.84	234.98	0.00	-4801.32	-4878.45	0.00	0.00	
46	219.93	0.00	14.64	250.76	0.00	-4878.45	-4823.09	0.00	0.00	
47	102.20	0.00	33.49	104.63	0.00	-4823.09	-4829.18	0.00	0.00	
48	74.99	0.00	1.17	85.80	0.00	-4829.18	-4809.86	0.00	0.00	
49	129.81	0.00	-149.86	202.03	0.00	-4809.86	-4618.88	0.00	0.00	
50	93.16	0.00	-1064.27	424.08	0.00	-4618.88	-3490.95	0.00	0.00	

Tabella 10-15 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 03

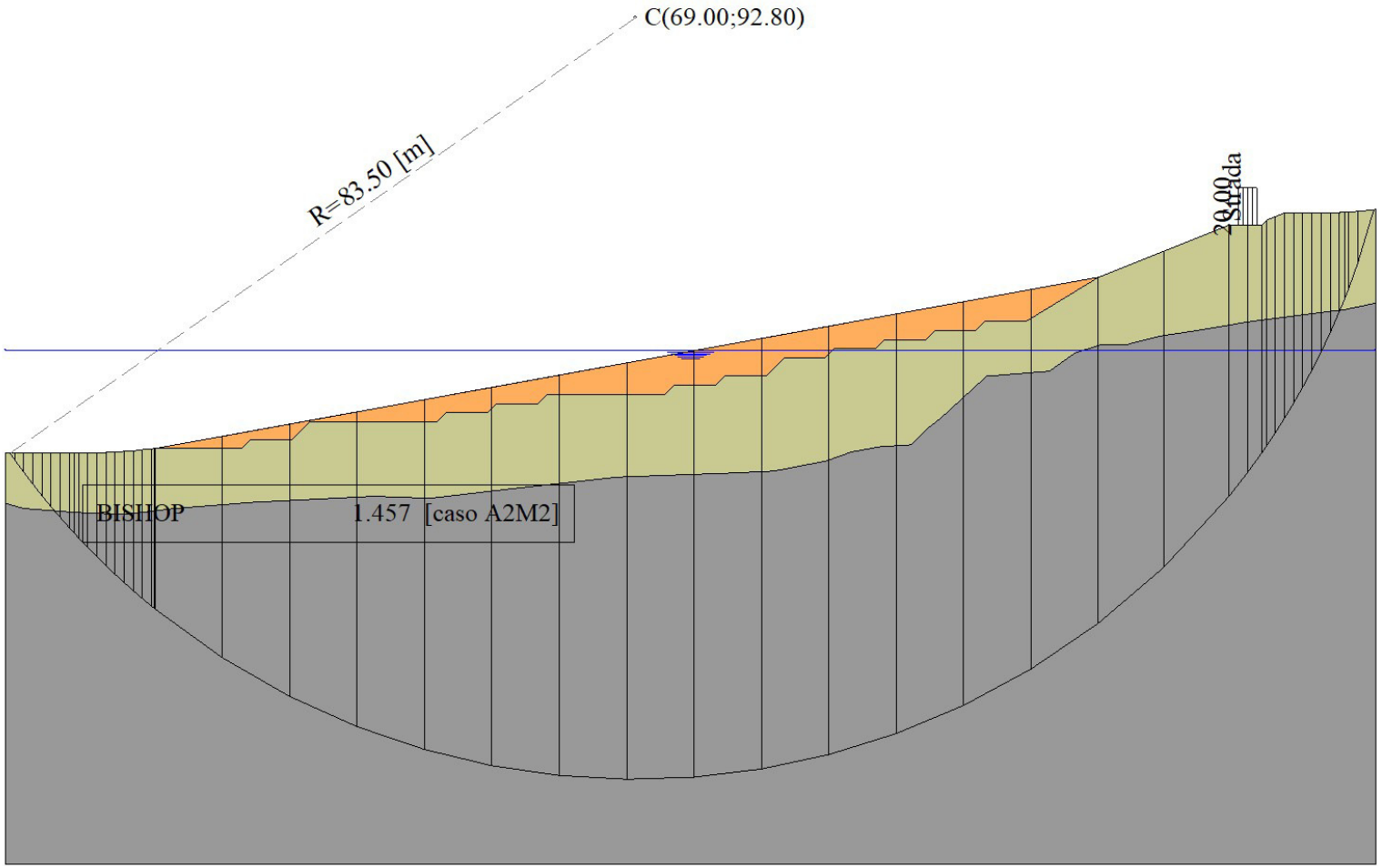

Figura 10-3 – Superficie critica (1) della sezione VS_04 per la verifica di stabilità 03

10.6 VERIFICA DI STABILITÀ 04

10.6.1 OPZIONI DI CALCOLO

Per l'analisi sono stati utilizzati i seguenti metodi di calcolo:
- BISHOP

Le superfici sono state analizzate in condizioni **statiche**.
Le superfici sono state analizzate per i casi:
- Parametri di progetto [A2-M2]
- Sisma orizzontale e Sisma verticale (verso il basso e verso l'alto)

Analisi condotta in termini di **tensioni totali**
Presenza di carichi distribuiti

10.6.2 RISULTATI ANALISI

Numero di superfici analizzate	57307
Coefficiente di sicurezza minimo	1.636
Superficie con coefficiente di sicurezza minimo	1

10.6.3 ANALISI DELLA SUPERFICIE 1 - COEFFICIENTI PARZIALI CASO A2M2 E SISMA VERSO L'ALTO

Numero di strisce	64	
Coordinate del centro	X[m]= 69.00	Y[m]= 92.80
Raggio del cerchio	R[m]= 83.50	
Intersezione a valle con il profilo topografico	X_v[m]= 0.50	Y_v[m]= 45.05
Intersezione a monte con il profilo topografico	X_m[m]= 149.80	Y_m[m]= 71.74
Coefficiente di sicurezza	F_S= 1.636	

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
1	0.50	45.05	45.05	1.00	45.05	44.34	0.83	44.81	0.87	-54.82	0.00	71
2	1.00	45.05	44.34	2.00	45.06	42.97	1.58	44.30	1.70	-53.94	0.00	71
3	2.00	45.06	42.97	3.00	45.07	41.65	2.54	43.66	1.65	-52.79	0.00	71
4	3.00	45.07	41.65	4.00	45.07	40.39	3.53	43.03	1.61	-51.67	0.00	71
5	4.00	45.07	40.39	4.00	45.07	40.38	4.00	42.73	0.00	-51.12	0.00	71
6	4.00	45.07	40.38	5.00	45.08	39.17	4.52	42.42	1.57	-50.58	0.00	71
7	5.00	45.08	39.17	5.00	45.08	39.17	5.00	42.13	0.00	-50.04	0.00	71
8	5.00	45.08	39.17	6.00	45.09	38.00	5.52	41.83	1.54	-49.51	0.00	92
9	6.00	45.09	38.00	6.00	45.09	38.00	6.00	41.54	0.00	-48.98	0.00	104
10	6.00	45.09	38.00	7.00	45.10	36.87	6.51	41.26	1.51	-48.46	0.00	104
11	7.00	45.10	36.87	7.00	45.10	36.87	7.00	40.98	0.00	-47.95	0.00	104
12	7.00	45.10	36.87	7.56	45.10	36.25	7.28	40.83	0.83	-47.66	0.00	104
13	7.56	45.10	36.25	8.00	45.11	35.78	7.78	40.56	0.64	-47.15	0.00	104
14	8.00	45.11	35.78	8.00	45.11	35.78	8.00	40.44	0.00	-46.93	0.00	104
15	8.00	45.11	35.78	9.00	45.11	34.73	8.51	40.18	1.45	-46.43	0.00	104
16	9.00	45.11	34.73	9.00	45.11	34.73	9.00	39.92	0.00	-45.93	0.00	104
17	9.00	45.11	34.73	10.00	45.12	33.71	9.51	39.67	1.42	-45.45	0.00	104
18	10.00	45.12	33.71	10.00	45.12	33.71	10.00	39.42	0.00	-44.96	0.00	104
19	10.00	45.12	33.71	11.00	45.13	32.73	10.51	39.17	1.40	-44.48	0.00	104
20	11.00	45.13	32.73	11.00	45.13	32.73	11.00	38.93	0.00	-44.00	0.00	104
21	11.00	45.13	32.73	12.00	45.16	31.78	11.51	38.70	1.38	-43.52	0.00	104

N°	X_s	Y_{ss}	Y_{si}	X_d	Y_{ds}	Y_{di}	X_g	Y_g	L	α	ϕ	c
	[m]	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[m]*	*[°]*	*[°]*	*[kPa]*
22	12.00	45.16	31.78	12.00	45.16	31.78	12.00	38.47	0.00	-43.05	0.00	104
23	12.00	45.16	31.78	13.00	45.25	30.86	12.51	38.26	1.36	-42.58	0.00	104
24	13.00	45.25	30.86	13.00	45.25	30.86	13.00	38.05	0.00	-42.12	0.00	104
25	13.00	45.25	30.86	14.00	45.31	29.97	13.51	37.85	1.34	-41.66	0.00	104
26	14.00	45.31	29.97	14.00	45.31	29.97	14.00	37.64	0.00	-41.20	0.00	104
27	14.00	45.31	29.97	15.00	45.44	29.11	14.51	37.46	1.32	-40.75	0.00	104
28	15.00	45.44	29.11	15.00	45.44	29.11	15.00	37.27	0.00	-40.29	0.00	104
29	15.00	45.44	29.11	16.00	45.54	28.28	15.51	37.09	1.30	-39.85	0.00	104
30	16.00	45.54	28.28	16.00	45.54	28.27	16.00	36.91	0.00	-39.40	0.00	104
31	16.00	45.54	28.27	16.34	45.56	28.00	16.17	36.84	0.44	-39.25	0.00	104
32	16.34	45.56	28.00	16.35	45.56	27.99	16.34	36.78	0.01	-39.09	0.00	104
33	16.35	45.56	27.99	16.35	45.56	27.99	16.35	36.77	0.00	-39.09	0.00	104
34	16.35	45.56	27.99	23.78	46.91	22.61	20.26	35.71	9.17	-35.94	0.00	104
35	23.78	46.91	22.61	31.20	48.26	18.34	27.62	34.00	8.56	-29.85	0.00	104
36	31.20	48.26	18.34	38.63	49.61	15.02	35.01	32.80	8.14	-24.12	0.00	104
37	38.63	49.61	15.02	46.06	50.96	12.51	42.41	32.02	7.84	-18.64	0.00	104
38	46.06	50.96	12.51	53.49	52.31	10.75	49.82	31.63	7.63	-13.33	0.00	104
39	53.49	52.31	10.75	60.91	53.66	9.69	57.24	31.61	7.50	-8.13	0.00	104
40	60.91	53.66	9.69	68.34	55.01	9.30	64.65	31.92	7.44	-3.00	0.00	104
41	68.34	55.01	9.30	75.77	56.36	9.57	72.07	32.56	7.43	2.10	0.00	104
42	75.77	56.36	9.57	83.08	57.69	10.50	79.43	33.53	7.37	7.18	0.00	104
43	83.08	57.69	10.50	90.40	59.02	12.09	86.74	34.82	7.48	12.28	0.00	104
44	90.40	59.02	12.09	97.71	60.35	14.39	94.04	36.46	7.67	17.48	0.00	104
45	97.71	60.35	14.39	105.02	61.68	17.47	101.34	38.47	7.94	22.83	0.00	104
46	105.02	61.68	17.47	112.34	63.01	21.43	108.64	40.88	8.32	28.41	0.00	104
47	112.34	63.01	21.43	119.65	64.34	26.42	115.94	43.77	8.85	34.30	0.00	104
48	119.65	64.34	26.42	126.80	67.20	32.54	123.17	47.59	9.41	40.58	0.00	104
49	126.80	67.20	32.54	133.95	70.06	40.33	130.28	52.46	10.57	47.44	0.00	104
50	133.95	70.06	40.33	136.02	70.03	43.00	134.97	55.84	3.38	52.22	0.00	104
51	136.02	70.03	43.00	137.52	70.06	45.08	136.76	57.03	2.56	54.26	0.00	104
52	137.52	70.06	45.08	138.02	70.58	45.81	137.77	57.88	0.89	55.45	0.00	104
53	138.02	70.58	45.81	139.02	71.00	47.31	138.52	58.67	1.81	56.37	0.00	104
54	139.02	71.00	47.31	140.02	71.38	48.89	139.52	59.64	1.87	57.63	0.00	104
55	140.02	71.38	48.89	141.02	71.44	50.55	140.52	60.56	1.94	58.94	0.00	104
56	141.02	71.44	50.55	142.02	71.36	52.30	141.51	61.40	2.02	60.30	0.00	104
57	142.02	71.36	52.30	143.02	71.39	54.16	142.51	62.29	2.11	61.71	0.00	104
58	143.02	71.39	54.16	144.02	71.41	56.14	143.51	63.27	2.22	63.20	0.00	104
59	144.02	71.41	56.14	145.02	71.40	58.26	144.51	64.29	2.35	64.76	0.00	104
60	145.02	71.40	58.26	146.02	71.43	60.56	145.51	65.39	2.50	66.43	0.00	104
61	146.02	71.43	60.56	146.57	71.48	61.89	146.29	66.33	1.44	67.78	0.00	75
62	146.57	71.48	61.89	147.02	71.52	63.06	146.79	66.98	1.25	68.70	0.00	71
63	147.02	71.52	63.06	148.02	71.55	65.83	147.49	67.94	2.94	70.14	0.00	71
64	148.02	71.55	65.83	149.80	71.74	71.74	148.62	69.71	6.18	73.27	0.00	71

Tabella 10-16 – Geometria e caratteristiche strisce della superficie 1 della verifica di stabilità 04

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
1	3.25	0.00	59.24	37.78	0.00	0.00	70.19	0.00	0.00	
2	25.66	0.00	145.49	74.19	0.00	70.19	231.47	0.00	0.00	
3	50.40	0.00	178.44	72.21	0.00	231.47	417.26	0.00	0.00	
4	74.08	0.00	208.42	70.34	0.00	417.26	624.37	0.00	0.00	
5	0.09	0.00	0.22	0.07	0.00	624.37	624.59	0.00	0.00	
6	96.92	0.00	236.19	68.69	0.00	624.59	850.66	0.00	0.00	
7	0.11	0.00	0.25	0.07	0.00	850.66	850.90	0.00	0.00	
8	118.92	0.00	284.58	86.61	0.00	850.90	1123.56	0.00	0.00	
9	0.13	0.00	0.31	0.10	0.00	1123.56	1123.85	0.00	0.00	
10	140.06	0.01	319.66	96.05	0.00	1123.85	1426.82	0.00	0.00	

N°	W	Q	N	T	U	E_s	E_d	X_s	X_d	ID
	[kN]	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	*[kN]*	
11	0.15	0.00	0.33	0.10	0.00	1426.82	1427.13	0.00	0.00	
12	87.67	0.02	188.46	53.10	0.00	1427.13	1602.19	0.00	0.00	
13	72.84	0.02	151.40	41.06	0.00	1602.19	1741.12	0.00	0.00	
14	0.34	0.00	0.70	0.19	0.00	1741.12	1741.76	0.00	0.00	
15	179.99	0.01	358.24	92.32	0.00	1741.76	2064.95	0.00	0.00	
16	0.38	0.00	0.74	0.18	0.00	2064.95	2065.61	0.00	0.00	
17	199.03	0.00	375.80	90.69	0.00	2065.61	2397.03	0.00	0.00	
18	0.42	0.00	0.77	0.18	0.00	2397.03	2397.70	0.00	0.00	
19	217.46	0.00	392.31	89.17	0.00	2397.70	2736.18	0.00	0.00	
20	0.45	0.00	0.80	0.18	0.00	2736.18	2736.87	0.00	0.00	
21	235.39	0.00	407.96	87.75	0.00	2736.87	3081.43	0.00	0.00	
22	0.49	0.00	0.83	0.17	0.00	3081.43	3082.12	0.00	0.00	
23	253.50	0.01	423.71	86.41	0.00	3082.12	3432.46	0.00	0.00	
24	0.53	0.00	0.87	0.17	0.00	3432.46	3433.16	0.00	0.00	
25	271.44	0.01	439.09	85.16	0.00	3433.16	3788.65	0.00	0.00	
26	0.84	0.00	1.34	0.25	0.00	3788.65	3789.72	0.00	0.00	
27	288.91	0.00	453.62	83.90	0.00	3789.72	4149.36	0.00	0.00	
28	0.90	0.00	1.39	0.25	0.00	4149.36	4150.45	0.00	0.00	
29	306.44	0.02	468.23	82.79	0.00	4150.45	4514.02	0.00	0.00	
30	0.95	0.00	1.43	0.25	0.00	4514.02	4515.12	0.00	0.00	
31	107.57	0.01	161.62	27.79	0.00	4515.12	4638.89	0.00	0.00	
32	2.38	0.00	3.56	0.61	0.00	4638.89	4641.61	0.00	0.00	
33	0.64	0.00	0.96	0.16	0.00	4641.61	4642.34	0.00	0.00	
34	2849.03	0.10	3943.10	584.87	0.00	4642.34	7430.29	0.00	0.00	
35	3691.81	0.07	4570.04	545.97	0.00	7430.29	10178.64	0.00	0.00	
36	4387.81	0.04	5039.88	518.82	0.00	10178.64	12711.69	0.00	0.00	
37	4973.06	0.01	5416.78	499.73	0.00	12711.69	14916.20	0.00	0.00	
38	5449.19	0.00	5715.24	486.63	0.00	14916.20	16707.07	0.00	0.00	
39	5823.78	0.00	5951.28	478.34	0.00	16707.07	18022.38	0.00	0.00	
40	6109.22	0.00	6142.51	474.18	0.00	18022.38	18817.79	0.00	0.00	
41	6305.58	0.00	6292.44	473.85	0.00	18817.79	19060.77	0.00	0.00	
42	6308.70	0.00	6299.36	469.95	0.00	19060.77	18739.65	0.00	0.00	
43	6314.83	0.00	6358.82	477.18	0.00	18739.65	17853.57	0.00	0.00	
44	6231.07	0.00	6378.78	488.83	0.00	17853.57	16403.89	0.00	0.00	
45	6049.22	0.00	6350.59	505.91	0.00	16403.89	14405.68	0.00	0.00	
46	5756.68	0.00	6258.27	530.11	0.00	14405.68	11894.20	0.00	0.00	
47	5328.40	0.00	6065.35	564.45	0.00	11894.20	8942.04	0.00	0.00	
48	4748.59	0.00	5737.90	600.14	0.00	8942.04	5665.68	0.00	0.00	
49	4212.89	0.00	5494.47	673.90	0.00	5665.68	2074.74	0.00	0.00	
50	1075.71	26.57	1521.32	215.54	0.00	2074.74	1004.29	0.00	0.00	
51	711.55	25.43	1035.01	163.19	0.00	1004.29	259.47	0.00	0.00	
52	229.45	0.00	322.27	56.65	0.00	259.47	26.18	0.00	0.00	
53	443.43	0.00	627.60	115.12	0.00	26.18	-432.63	0.00	0.00	
54	422.98	0.00	602.02	119.20	0.00	-432.63	-877.29	0.00	0.00	
55	396.87	0.00	564.04	123.56	0.00	-877.29	-1296.69	0.00	0.00	
56	365.46	0.00	511.99	128.66	0.00	-1296.69	-1677.65	0.00	0.00	
57	332.00	0.00	450.58	134.53	0.00	-1677.65	-2010.67	0.00	0.00	
58	297.38	0.00	379.63	141.38	0.00	-2010.67	-2285.75	0.00	0.00	
59	259.95	0.00	292.45	149.52	0.00	-2285.75	-2486.53	0.00	0.00	
60	219.93	0.00	184.23	159.57	0.00	-2486.53	-2591.57	0.00	0.00	
61	102.20	0.00	107.28	66.58	0.00	-2591.57	-2665.70	0.00	0.00	
62	74.99	0.00	66.43	54.60	0.00	-2665.70	-2707.76	0.00	0.00	
63	129.81	0.00	26.20	128.55	0.00	-2707.76	-2688.73	0.00	0.00	
64	93.16	0.00	-574.25	269.85	0.00	-2688.73	-2061.12	0.00	0.00	

Tabella 10-17 – Forze applicate sulle strisce [BISHOP] della superficie 1 della verifica di stabilità 04

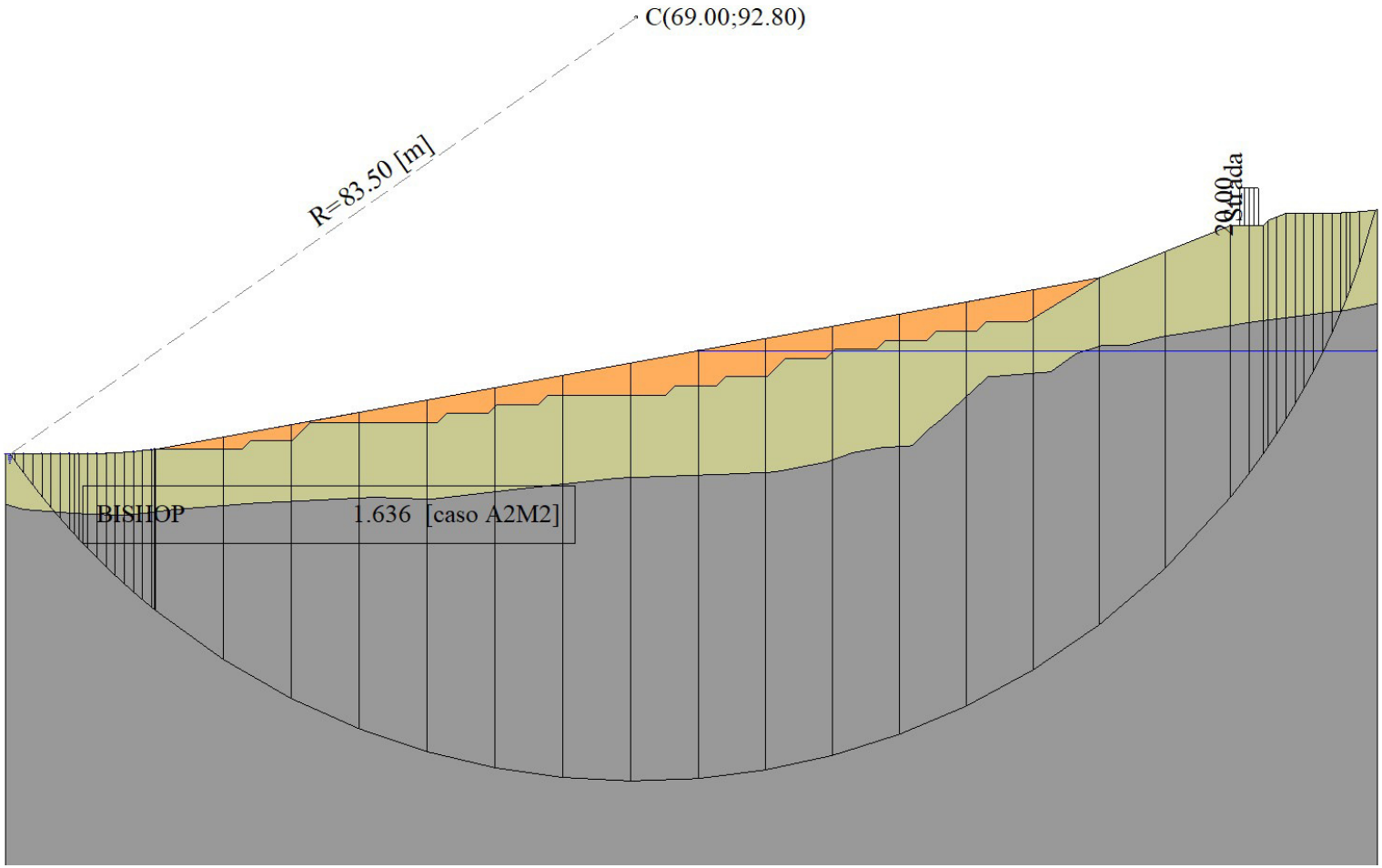

Figura 10-4 – Superficie critica (1) della sezione VS_04 per la verifica di stabilità 04

11 DICHIARAZIONI SECONDO N.T.C. 2018 (PUNTO 10.2)

Analisi e verifiche svolte con l'ausilio di codici di calcolo
Il sottoscritto, in qualità di calcolatore delle opere in progetto, dichiara quanto segue.

Tipo di analisi svolta
L'analisi e le verifiche di stabilità sono condotte con l'ausilio di un codice di calcolo automatico.
I metodi di calcolo implementati sono i classici metodi delle strisce. basati sul concetto dell'equilibrio limite globale. La superficie di rottura è suddivisa in un determinato numero di strisce che consentono di calcolare le grandezze che entrano in gioco nelle equazioni risolutive.
Nel modulo terreni si adotta il criterio di rottura di Mohr-Coulomb. Nel modulo rocce si può adottare il criterio di rottura di Hoek-Brown o di Barton.
Il programma consente di inserire degli interventi di stabilizzazione. che possono intervenire secondo sue modalità diverse: variazione delle forze di interstriscia o resistenza a taglio equivalente.
L'analisi sotto le azioni sismiche è condotta con il metodo dell'analisi statica equivalente secondo le disposizioni del capitolo 7 del DM 17/01/2018.

Origine e caratteristiche dei codici di calcolo

Titolo	STAP - Stabilità Pendii Terreni
Versione	14.0
Produttore	Aztec Informatica srl. Casali del Manco - Loc. Casole Bruzio (CS)
Utente	WEST SYSTEMS S.R.L.
Licenza	AIU11705Y

Affidabilità dei codici di calcolo
Un attento esame preliminare della documentazione a corredo del software ha consentito di valutarne l'affidabilità. La documentazione fornita dal produttore del software contiene un'esauriente descrizione delle basi teoriche. degli algoritmi impiegati e l'individuazione dei campi d'impiego. La società produttrice Aztec Informatica srl ha verificato l'affidabilità e la robustezza del codice di calcolo attraverso un numero significativo di casi prova in cui i risultati dell'analisi numerica sono stati confrontati con soluzioni teoriche.

Modalità di presentazione dei risultati
La relazione di calcolo strutturale presenta i dati di calcolo tale da garantirne la leggibilità. la corretta interpretazione e la riproducibilità. La relazione di calcolo illustra in modo esaustivo i dati in ingresso ed i risultati delle analisi in forma tabellare.

Informazioni generali sull'elaborazione
Il software prevede una serie di controlli automatici che consentono l'individuazione di errori di modellazione. di non rispetto di limitazioni geometriche e di armatura e di presenza di elementi non verificati. Il codice di calcolo consente di visualizzare e controllare. sia in forma grafica che tabellare. i dati del modello strutturale. in modo da avere una visione consapevole del comportamento corretto del modello strutturale.

Giudizio motivato di accettabilità dei risultati
I risultati delle elaborazioni sono stati sottoposti a controlli dal sottoscritto utente del software. Tale valutazione ha compreso il confronto con i risultati di semplici calcoli. eseguiti con metodi tradizionali. Inoltre sulla base di considerazioni riguardanti gli stati tensionali e deformativi determinati. si è valutata la validità delle scelte operate in sede di schematizzazione e di modellazione della struttura e delle azioni.
In base a quanto sopra. io sottoscritto asserisco che l'elaborazione è corretta ed idonea al caso specifico. pertanto i risultati di calcolo sono da ritenersi validi ed accettabili.