



**ASSOCIAÇÃO BRASILEIRA DOS
FABRICANTES DE TUBOS DE CONCRETO**

**RELATÓRIO DE DIMENSIONAMENTO DE
ASSOCIAÇÃO DE TRÊS ADUELAS
RETANGULARES MONOLÍTICAS DE CONCRETO**

segunda-feira, 7 de outubro de 2019



ASSOCIAÇÃO BRASILEIRA
DOS FABRICANTES DE
TUBOS DE CONCRETO

DADOS DO FABRICANTE



NOME:
CPF/CNPJ:
ENDEREÇO: ,
BAIRRO:
CIDADE:
ESTADO: Não Informado
CEP:
TEL.:
CEL.:
E-MAIL:
SITE:

DADOS DO CLIENTE



NOME: DEFESA CIVIL DO ESTADO DE SÃO PAULO
CPF/CNPJ:
ENDEREÇO: ,
BAIRRO:
CIDADE:
ESTADO: Não Informado
CEP:
TEL.:
CEL.:
E-MAIL:
SITE:

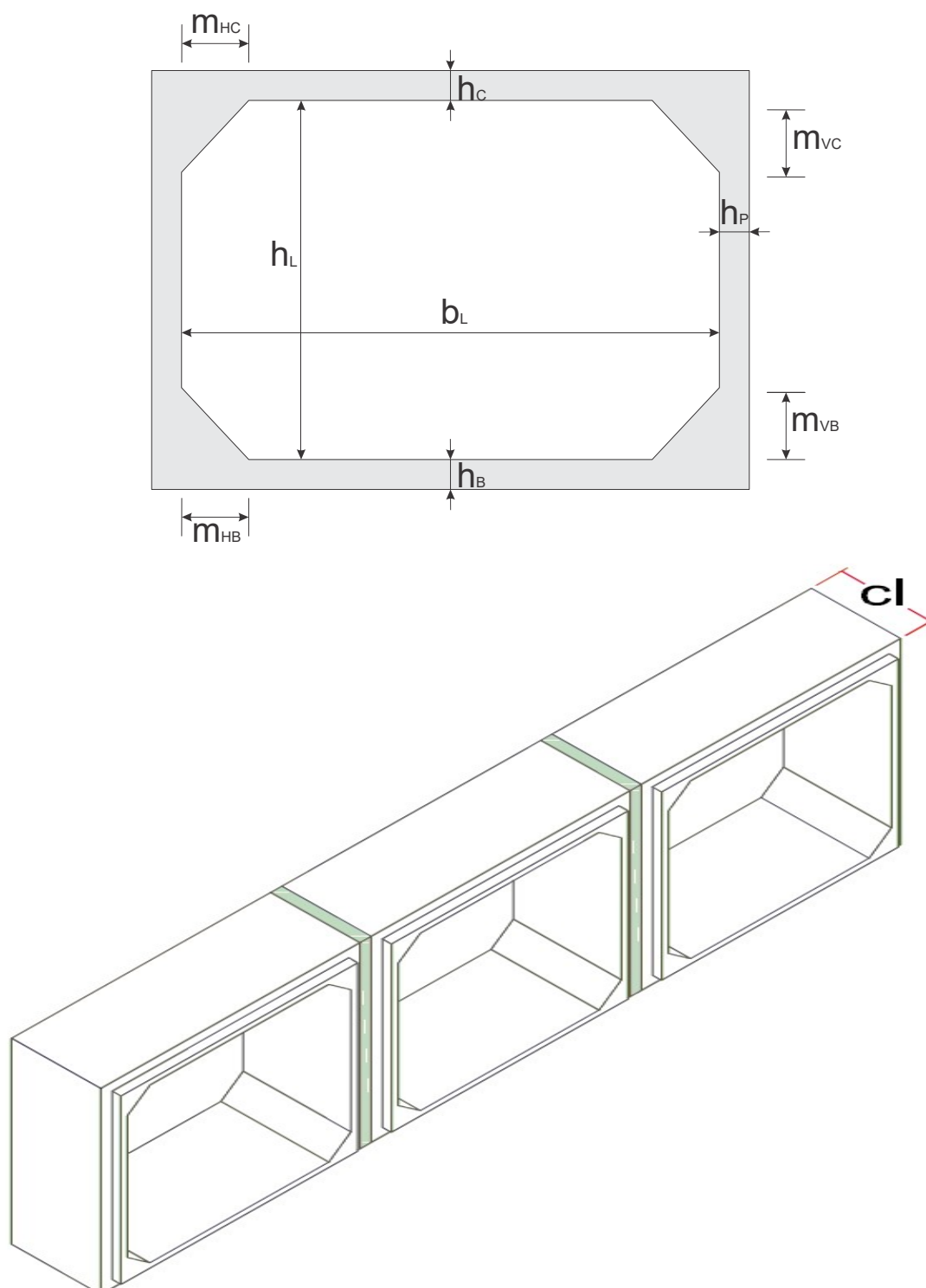
DADOS DA OBRA



NOME: ADUELA 2,50 X 2,50 M PARA ATERRO DE 5,00 M - LINHA TRIPLA
ENDEREÇO: ,
BAIRRO:
CIDADE:
ESTADO: Não Informado
CEP:
TEL.:
CEL.:
E-MAIL:
SITE:

GEOMETRIA

SEÇÃO CONSTANTE.....	: SIM
FINALIDADE.....	: ÁGUAS PLUVIAIS
COMPRIMENTO (c_l).....	: 1.00 m
LARGURA LIVRE (b_l).....	: 2.50 m
ALTURA LIVRE (h_l).....	: 2.50 m
ALTURA DA LAJE DA COBERTURA (h_c).....	: 0.20 m
ESPESSURA DAS PAREDES LATERAIS (h_p).....	: 0.20 m
ALTURA DA LAJE DA BASE (h_b).....	: 0.20 m
MÍSULA HOR. DA COBERTURA.....	: 0.20 m
MÍSULA VERT. DA COBERTURA.....	: 0.20 m
MÍSULA VERT. DA BASE.....	: 0.20 m
MÍSULA HOR. DA BASE.....	: 0.20 m



INSTALAÇÃO E MANUSEIO

ESPECIFICAÇÃO DO SOLO

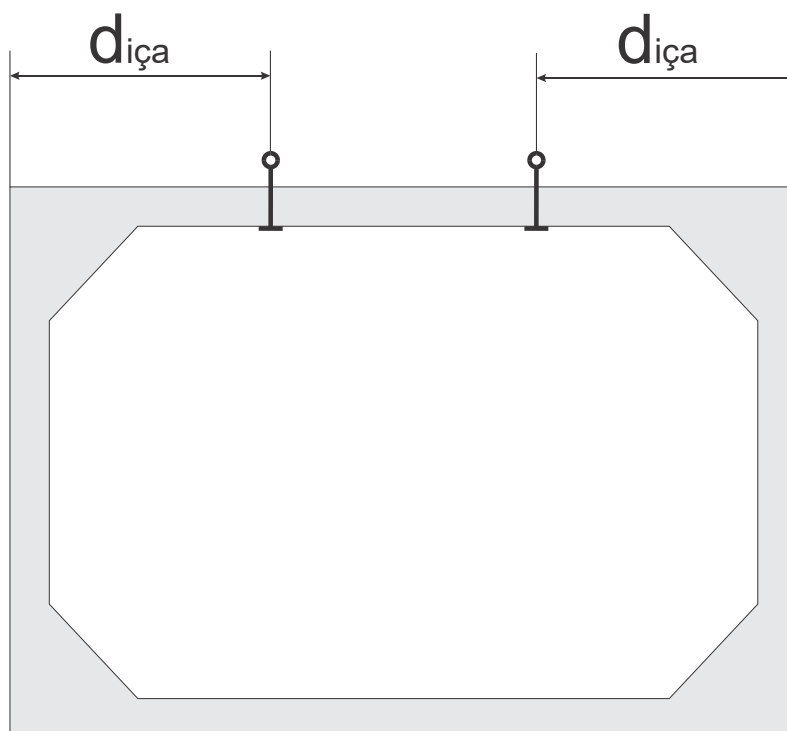
PESO ESPECÍFICO.....	: 18.00 kN/m ³
ÂNGULO DE ATRITO.....	: 30.00 graus
COEFICIENTE DE ATRITO ATIVO.....	: 0.33
COEFICIENTE DE ATRITO ESTÁTICO.....	: 0.50
COEFICIENTE DE ATRITO.....	: 0.58

DADOS DE INSTALAÇÃO

ALTURA DE TERRA.....	: 5.00 m
ESPESSURA DO PAVIMENTO.....	: 0.30 m
EFEITO DO ARQUEAMENTO.....	: NÃO CONSIDERADO
TIPO DE INSTALAÇÃO.....	: ---
LARGURA DA VALA.....	: ---
0.80 x Ka x COEFICIENTE DE ATRITO.....	: 0.15
RAZÃO DE RECALQUE.....	: ---

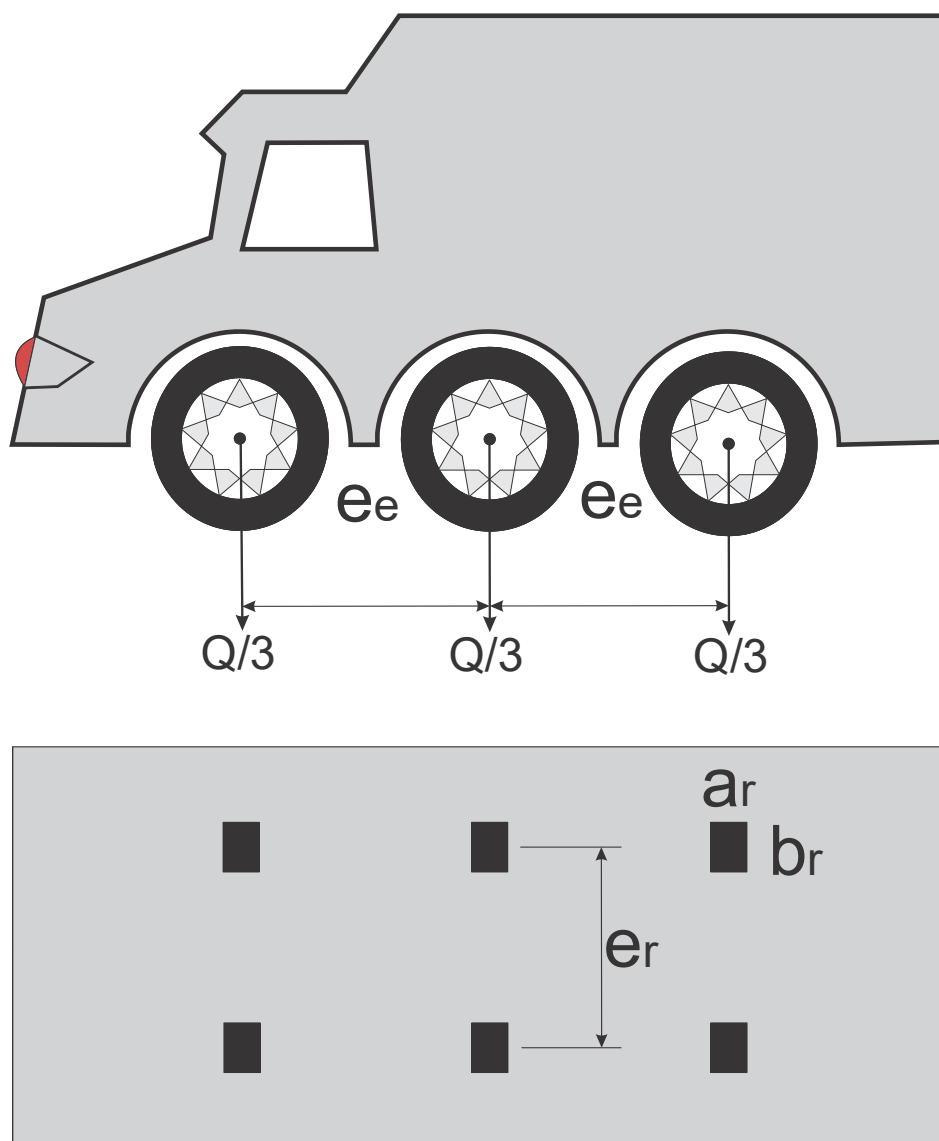
INFORMAÇÕES DE MANUSEIO

RESISTÊNCIA DO CONCRETO (fcj).....	: 20.00 MPa
COEFICIENTE DE IMPACTO.....	: 1.20
DISTÂNCIA DE IÇAMENTO.....	: 50.00 cm



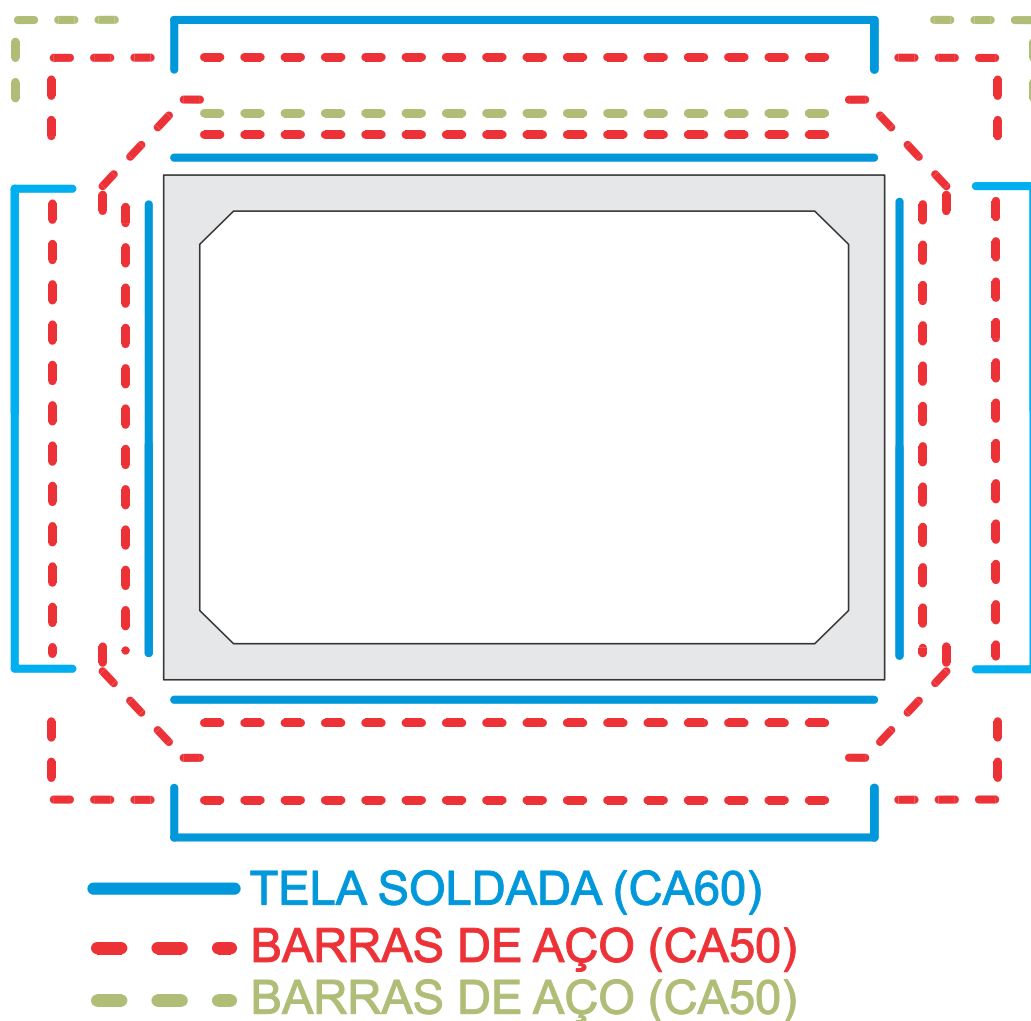
SOBRECARGA

TIPO DE SOBRECARGA.....: RODOVIÁRIO
TIPO DE TRÁFEGO.....: CLASSE 45
PESO DO VEÍCULO (Q).....: 450.00 kN
DISTÂNCIA ENTRE EIXOS (e_e).....: 1.50 m
DISTÂNCIA ENTRE RODAS (e_r).....: 2.00 m
ÁREA DE CONTATO DA RODA (a_r).....: 0.20 m
ÁREA DE CONTATO DA RODA (b_r).....: 0.50 m
COEF. DE IMPACTO ADICIONAL.....: 1.25
COEF. DE IMPACTO EMPREGADO.....: 1.00



PARÂMETROS DA ARMADURA

ABERTURA MÁX. DAS FISSURAS.....	: 0.20 mm
DIMINUIÇÃO DA RIGIDEZ.....	: 1.00
RESISTÊNCIA DA ARMADURA DO COROAMENTO.....	: 190.00 MPa
RESISTÊNCIA DA ARMADURA DA QUINA.....	: 105.00 MPa
COEF. DE PONDERAÇÃO DO CONCRETO.....	: 1.30
COEF. DE PONDERAÇÃO DO AÇO.....	: 1.15
ESPAÇAMENTO MÍN. ENTRE ARMADURAS.....	: 5.00 cm
ESPAÇAMENTO MÁX. ENTRE ARMADURAS.....	: 35.00 cm
COBRIMENTO DAS ARMADURAS.....	: 4.00 cm
TELA PADRÃO INTERNA.....	: L283
TELA PADRÃO EXTERNA.....	: L283
CONSIDERAR ANCOR. DA ARM. INT. P/ CORTANTE..	: SIM



CRITÉRIOS E CONSTANTES

RESISTÊNCIA CARACTERÍSTICA DO CONCRETO...	30.00 MPa
PESO ESPECÍFICO DO CONCRETO.....	25.00 kN/m ³
PESO ESPECÍFICO DO AÇO.....	78.00 kN/m ³
MÓDULO DE DEFORMAÇÃO LONGITUDINAL.....	26071.59 MPa
MÓDULO DE REAÇÃO DO SOLO.....	25.00 MPa/m
COMPRIMENTO DO ELEMENTO FINITO.....	20.00 cm

ELS:

COEFICIENTE DE PONDERAÇÃO PESO PRÓPRIO...	1.00
COEFICIENTE DE PONDERAÇÃO SOLO.....	1.00
COEFICIENTE DE PONDERAÇÃO FISSURAÇÃO.....	0.50
COEFICIENTE DE PONDERAÇÃO FADIGA.....	0.80

ELU:

- VmaxHmin:

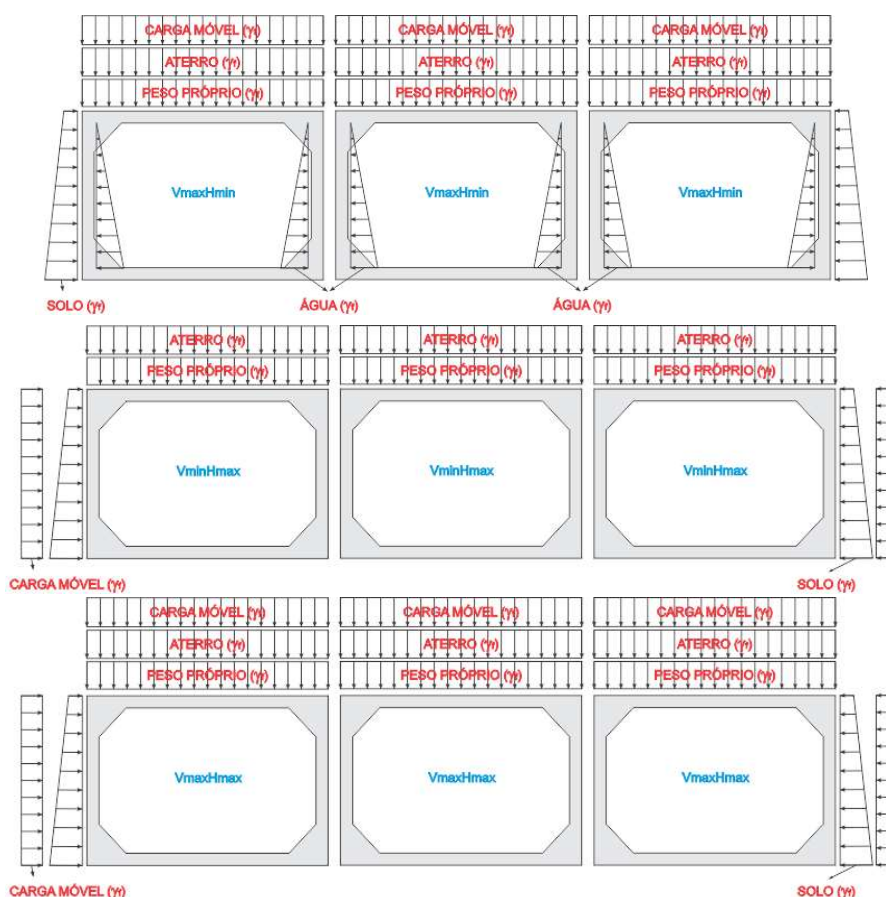
COEFICIENTE DE PONDERAÇÃO CARGA MÓVEL V.:	1.50
COEFICIENTE DE PONDERAÇÃO ATERRO.....	1.35
COEFICIENTE DE PONDERAÇÃO PESO PRÓPRIO...	1.30
COEFICIENTE DE PONDERAÇÃO SOLO.....	1.00
COEFICIENTE DE PONDERAÇÃO ÁGUA.....	1.20

- VminHmax:

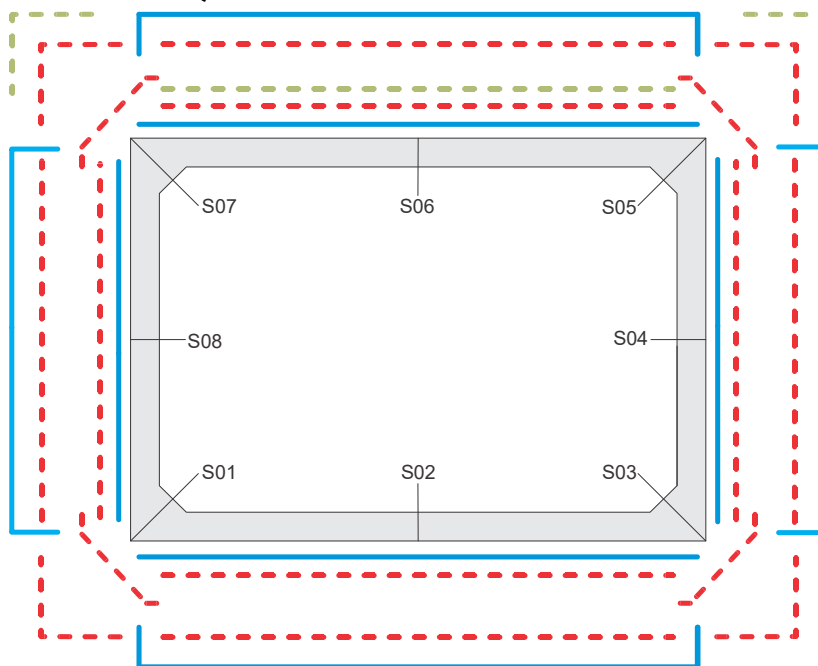
COEFICIENTE DE PONDERAÇÃO ATERRO.....	1.00
COEFICIENTE DE PONDERAÇÃO PESO PRÓPRIO...	1.00
COEFICIENTE DE PONDERAÇÃO SOLO.....	1.35
COEFICIENTE DE PONDERAÇÃO CARGA MÓVEL H.:	1.50

- VmaxHmax:

COEFICIENTE DE PONDERAÇÃO CARGA MÓVEL V.:	1.50
COEFICIENTE DE PONDERAÇÃO ATERRO.....	1.35
COEFICIENTE DE PONDERAÇÃO PESO PRÓPRIO...	1.30
COEFICIENTE DE PONDERAÇÃO SOLO.....	1.35
COEFICIENTE DE PONDERAÇÃO CARGA MÓVEL H.:	1.50



ESQUEMA P/ DETALHAMENTO



— TELA SOLDADA (CA60) ARMADURA BÁSICA

- - - BARRAS DE AÇO (CA50) ARMADURA COMPLEMENTAR

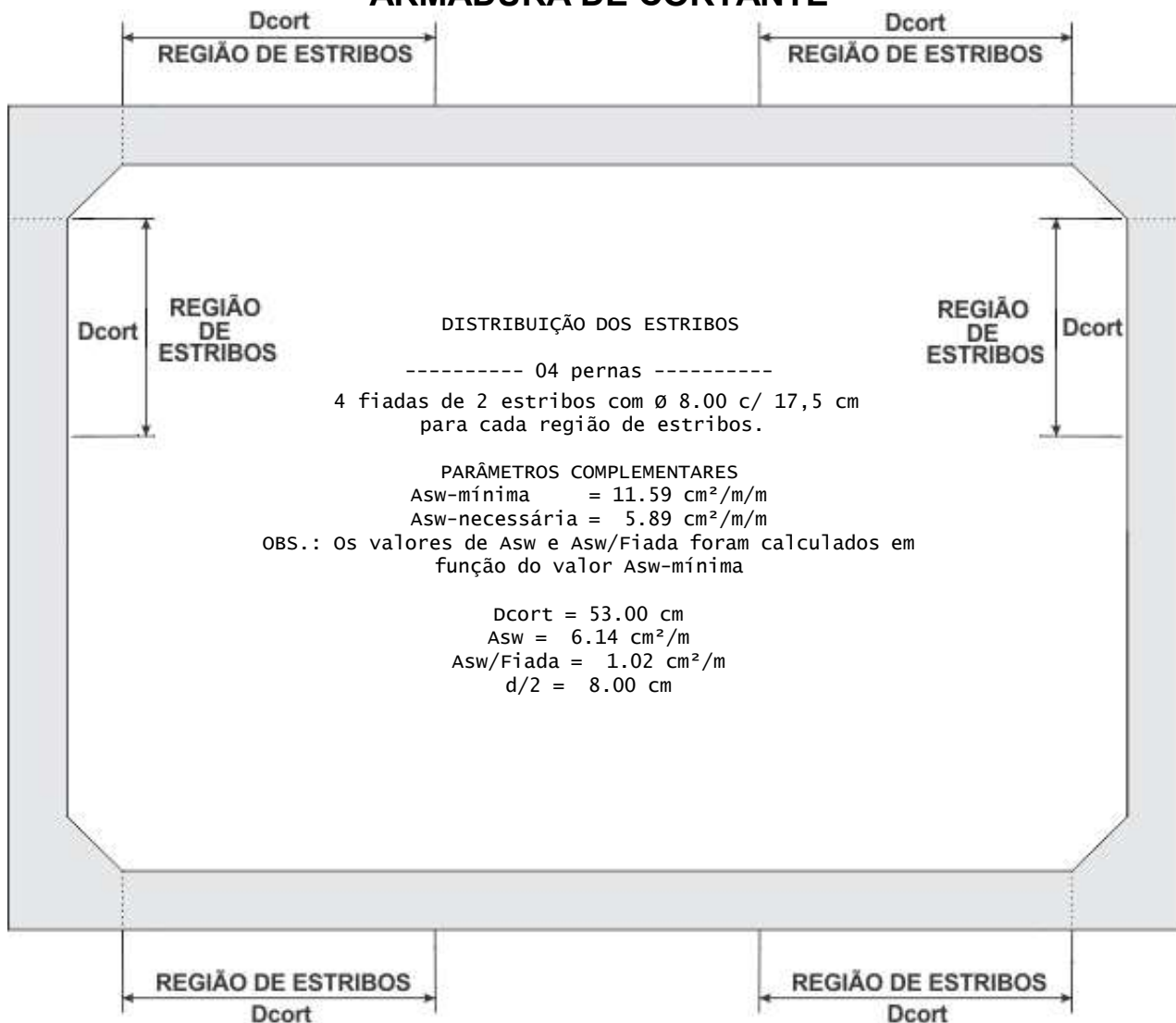
- - - BARRAS DE AÇO (CA50) ARMADURA DE FADIGA

OBS.: VALORES POR METRO DE ADUELA.

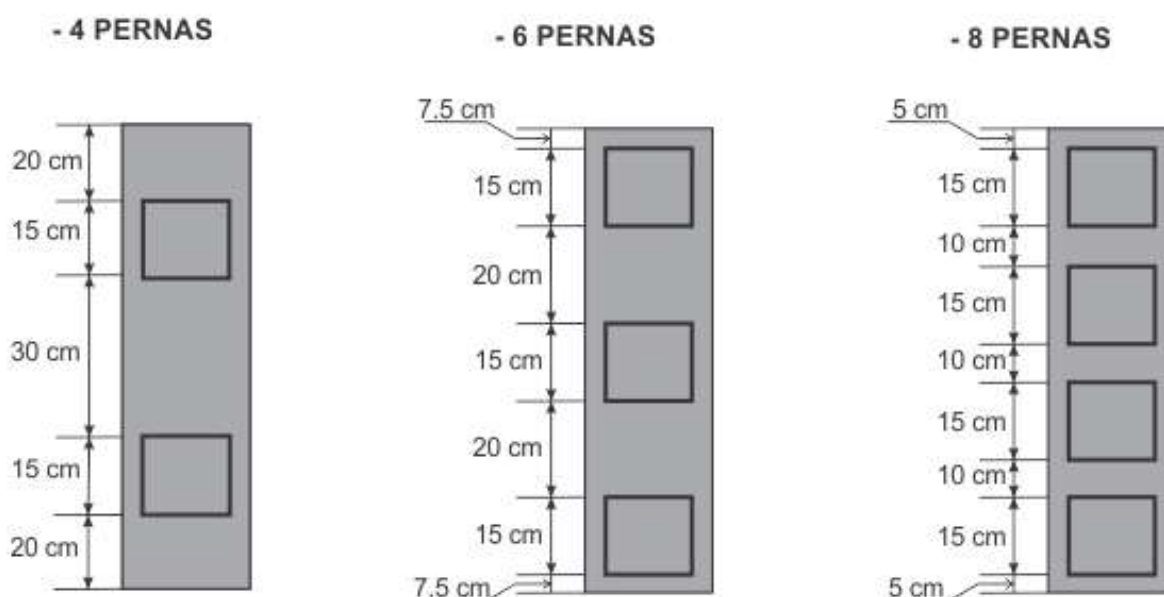
	TELA	ARMADURA COMPLEMENTAR	ARMADURA DE FADIGA
LADO EXTERNO	T-S02: L283	B-S01: 4 Ø6.30 c/ 31 cm (13.53%)	B-S05: 0.00 cm ² de área acima
	T-S04: L283	B-S02: 4 Ø6.30 c/ 31 cm (74.65%)	B-S07: 0.00 cm ² de área acima
	T-S06: L283	B-S03: 4 Ø6.30 c/ 31 cm (13.53%)	
	T-S08: L283	B-S04: 4 Ø6.30 c/ 31 cm (74.65%)	
		B-S05: 4 Ø6.30 c/ 31 cm (13.53%)	
		B-S06: 4 Ø6.30 c/ 31 cm (74.65%)	
		B-S07: 4 Ø6.30 c/ 31 cm (13.53%)	
		B-S08: 4 Ø6.30 c/ 31 cm (74.65%)	
LADO INTERNO	T-S02: L283	B-S01: 4 Ø6.30 c/ 31 cm (0.00%)	B-S06: 0.00 cm ² de área acima
	T-S04: L283	B-S02: 8 Ø10.00 c/ 13 cm (2.21%)	
	T-S06: L283	B-S03: 4 Ø6.30 c/ 31 cm (0.00%)	
	T-S08: L283	B-S04: 4 Ø6.30 c/ 31 cm (74.65%)	
		B-S05: 4 Ø6.30 c/ 31 cm (0.00%)	
		B-S06: 6 Ø10.00 c/ 18 cm (7.08%)	
		B-S07: 4 Ø6.30 c/ 31 cm (0.00%)	
		B-S08: 4 Ø6.30 c/ 31 cm (74.65%)	

NOTA: Os valores entre parênteses representam a percentagem de área de aço que a seção apresenta acima (porcentagem positiva) ou a menos (porcentagem negativa) em relação ao necessário (calculado) para o tipo de armadura correspondente (armadura complementar ou armadura de fadiga) e não em relação a área total de aço na seção que é o resultado das áreas de tela, armadura complementar e armadura de fadiga. Assim sendo, se uma seção apresenta (X %) de área acima ou abaixo para armadura complementar, esta percentagem é calculada em função da área de armadura complementar necessária e não em relação a área total de aço.

ARMADURA DE CORTANTE



DISTRIBUIÇÃO (POR METRO LONGITUDINAL) DOS ESTRIBOS AO LONGO DE UMA FIADA:

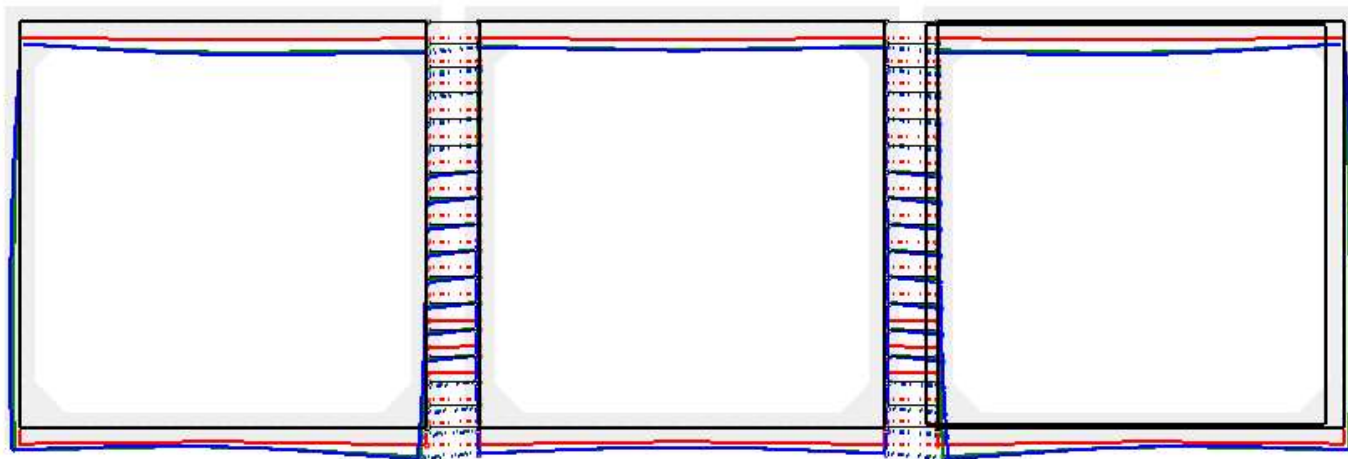
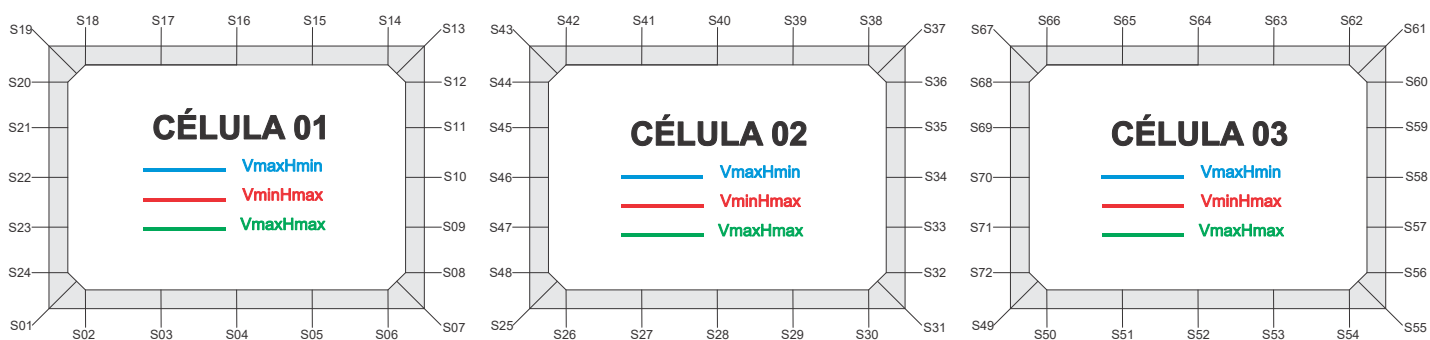


OBSERVAÇÃO:

Quando houver necessidade de armadura transversal, esta deve necessariamente ser colocada na laje de cobertura e na laje de fundo nas regiões apontadas na figura esquemática acima (REGIÃO DE ESTRIBOS). É RECOMENDADO ainda a colocação de armadura transversal nas partes superiores das paredes, repedindo o arranjo da armadura transversal das lajes de cobertura, a partir das quinas, em função de possíveis concentrações de pressões mútuas entre as células.

DESLOCAMENTOS

NOMENCLATURA DAS SEÇÕES PARA VERSÃO COMPLETA DO RELATÓRIO



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#####
#          SOLICITAÇÕES NORMAIS (ELU)          #
#          VmaxHmin                             #
#####
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DESLOCAMENTOS NAS SEÇÕES DE INTERESSE NAS DIR. X E Y

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-2.61E-003	-6.80E-003
2	-2.61E-003	-6.39E-003
3	-2.62E-003	-5.75E-003
4	-2.62E-003	-5.83E-003
5	-2.63E-003	-6.91E-003
6	-2.63E-003	-8.69E-003
7	-2.63E-003	-9.71E-003
8	-1.66E-003	-9.72E-003
9	-5.35E-004	-9.75E-003
10	-1.17E-004	-9.77E-003
11	-2.47E-005	-9.79E-003
12	1.20E-004	-9.82E-003
13	1.62E-004	-9.82E-003
14	1.63E-004	-9.85E-003
15	1.66E-004	-1.02E-002
16	1.69E-004	-1.02E-002
17	1.73E-004	-9.37E-003
18	1.76E-004	-7.84E-003
19	1.77E-004	-6.88E-003
20	-7.49E-004	-6.88E-003
21	-2.05E-003	-6.86E-003
22	-2.87E-003	-6.84E-003
23	-3.22E-003	-6.82E-003
24	-2.98E-003	-6.80E-003
25	1.00E-005	-7.97E-003
26	8.58E-006	-7.41E-003
27	4.29E-006	-6.40E-003
28	6.52E-010	-5.96E-003
29	-4.29E-006	-6.41E-003
30	-8.58E-006	-7.44E-003
31	-1.00E-005	-8.00E-003
32	5.03E-004	-8.01E-003
33	8.74E-004	-8.03E-003
34	6.91E-004	-8.05E-003
35	4.34E-004	-8.08E-003
36	2.80E-004	-8.10E-003
37	1.87E-004	-8.10E-003
38	1.88E-004	-8.25E-003
39	1.91E-004	-8.74E-003
40	1.94E-004	-9.01E-003
41	1.97E-004	-8.73E-003
42	1.99E-004	-8.23E-003
43	2.00E-004	-8.07E-003
44	1.01E-004	-8.07E-003
45	-1.23E-004	-8.05E-003
46	-5.79E-004	-8.02E-003
47	-8.45E-004	-8.00E-003
48	-4.94E-004	-7.98E-003
49	3.21E-003	-9.71E-003

50	3.21E-003	-8.69E-003
51	3.21E-003	-6.92E-003
52	3.20E-003	-5.84E-003
53	3.20E-003	-5.75E-003
54	3.20E-003	-6.37E-003
55	3.20E-003	-6.76E-003
56	3.55E-003	-6.77E-003
57	3.75E-003	-6.79E-003
58	3.36E-003	-6.81E-003
59	2.50E-003	-6.82E-003
60	1.16E-003	-6.84E-003
61	2.12E-004	-6.85E-003
62	2.13E-004	-7.82E-003
63	2.16E-004	-9.38E-003
64	2.19E-004	-1.02E-002
65	2.23E-004	-1.02E-002
66	2.26E-004	-9.86E-003
67	2.27E-004	-9.82E-003
68	2.57E-004	-9.81E-003
69	4.33E-004	-9.79E-003
70	6.82E-004	-9.76E-003
71	1.14E-003	-9.74E-003
72	2.25E-003	-9.72E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.31E-003
2	1.42E-003
3	7.25E-004
4	-1.11E-003
5	-2.94E-003
6	-3.49E-003
7	-3.34E-003
8	-3.07E-003
9	-1.36E-003
10	-3.54E-004
11	-1.37E-004
12	-2.43E-004
13	-3.16E-005
14	2.43E-004
15	5.91E-004
16	-6.95E-004
17	-2.38E-003
18	-3.21E-003
19	-3.15E-003
20	-3.00E-003
21	-2.00E-003
22	-1.13E-003
23	-1.58E-004
24	1.12E-003
25	1.79E-003
26	1.95E-003
27	1.59E-003
28	-8.19E-006
29	-1.61E-003

30	-1.98E-003
31	-1.82E-003
32	-1.56E-003
33	-1.16E-005
34	5.28E-004
35	4.14E-004
36	2.40E-004
37	3.95E-004
38	6.30E-004
39	9.30E-004
40	-1.08E-005
41	-9.52E-004
42	-6.52E-004
43	-4.18E-004
44	-2.61E-004
45	-7.50E-004
46	-8.33E-004
47	-4.56E-005
48	1.53E-003
49	3.31E-003
50	3.47E-003
51	2.93E-003
52	1.12E-003
53	-6.97E-004
54	-1.36E-003
55	-1.26E-003
56	-1.06E-003
57	2.34E-004
58	1.21E-003
59	2.08E-003
60	3.06E-003
61	3.21E-003
62	3.27E-003
63	2.41E-003
64	7.06E-004
65	-6.04E-004
66	-2.79E-004
67	-7.03E-006
68	1.99E-004
69	3.95E-004
70	5.77E-004
71	1.34E-003
72	3.04E-003

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#####
#          SOLICITAÇÕES NORMAIS (ELU)          #
#          VminHmax                             #
#####
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DESLOCAMENTOS NAS SEÇÕES DE INTERESSE NAS DIR. X E Y

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-1.41E-004	-4.96E-003
2	-1.45E-004	-4.86E-003
3	-1.58E-004	-4.53E-003
4	-1.71E-004	-4.38E-003
5	-1.84E-004	-4.65E-003
6	-1.97E-004	-5.09E-003
7	-2.02E-004	-5.26E-003
8	-8.26E-005	-5.26E-003
9	-3.77E-005	-5.28E-003
10	-2.00E-005	-5.29E-003
11	-2.37E-007	-5.31E-003
12	2.18E-005	-5.32E-003
13	8.93E-006	-5.33E-003
14	1.26E-005	-5.38E-003
15	2.36E-005	-5.66E-003
16	3.47E-005	-5.80E-003
17	4.57E-005	-5.57E-003
18	5.68E-005	-5.18E-003
19	6.04E-005	-5.03E-003
20	-4.20E-005	-5.03E-003
21	-5.18E-006	-5.01E-003
22	5.09E-005	-5.00E-003
23	-7.47E-005	-4.98E-003
24	-1.96E-004	-4.97E-003
25	3.04E-005	-5.10E-003
26	2.61E-005	-4.97E-003
27	1.30E-005	-4.59E-003
28	3.30E-010	-4.39E-003
29	-1.30E-005	-4.59E-003
30	-2.61E-005	-4.97E-003
31	-3.04E-005	-5.10E-003
32	5.23E-005	-5.11E-003
33	4.03E-005	-5.12E-003
34	1.34E-005	-5.14E-003
35	-3.03E-006	-5.15E-003
36	-5.15E-006	-5.17E-003
37	-2.54E-005	-5.17E-003
38	-2.17E-005	-5.23E-003
39	-1.07E-005	-5.52E-003
40	3.62E-007	-5.69E-003
41	1.14E-005	-5.52E-003
42	2.24E-005	-5.23E-003
43	2.61E-005	-5.17E-003
44	5.71E-006	-5.17E-003
45	6.23E-006	-5.15E-003
46	-9.20E-006	-5.14E-003
47	-3.89E-005	-5.12E-003
48	-5.21E-005	-5.11E-003
49	2.03E-004	-5.26E-003

50	1.98E-004	-5.09E-003
51	1.85E-004	-4.65E-003
52	1.72E-004	-4.38E-003
53	1.59E-004	-4.53E-003
54	1.46E-004	-4.86E-003
55	1.42E-004	-4.96E-003
56	1.97E-004	-4.97E-003
57	7.57E-005	-4.98E-003
58	-5.00E-005	-5.00E-003
59	6.05E-006	-5.01E-003
60	4.28E-005	-5.03E-003
61	-5.97E-005	-5.03E-003
62	-5.61E-005	-5.18E-003
63	-4.50E-005	-5.57E-003
64	-3.40E-005	-5.80E-003
65	-2.30E-005	-5.66E-003
66	-1.19E-005	-5.38E-003
67	-8.24E-006	-5.33E-003
68	-2.10E-005	-5.32E-003
69	-1.73E-006	-5.31E-003
70	1.70E-005	-5.29E-003
71	3.74E-005	-5.28E-003
72	8.34E-005	-5.26E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	2.64E-004
2	4.29E-004
3	6.04E-004
4	-1.09E-004
5	-8.25E-004
6	-6.45E-004
7	-4.77E-004
8	-3.01E-004
9	-3.29E-005
10	-3.51E-005
11	-4.07E-005
12	-9.39E-006
13	1.04E-004
14	2.76E-004
15	5.44E-004
16	-7.39E-005
17	-7.28E-004
18	-5.68E-004
19	-4.16E-004
20	-2.49E-004
21	2.11E-004
22	-6.20E-005
23	-3.58E-004
24	8.67E-005
25	3.54E-004
26	5.23E-004
27	7.07E-004
28	-1.89E-007
29	-7.08E-004

30	-5.23E-004
31	-3.55E-004
32	-1.82E-004
33	6.31E-005
34	4.02E-005
35	2.33E-005
36	1.72E-005
37	1.27E-004
38	2.96E-004
39	5.73E-004
40	-3.16E-007
41	-5.74E-004
42	-2.97E-004
43	-1.28E-004
44	-1.77E-005
45	-1.37E-005
46	-4.40E-005
47	-6.80E-005
48	1.81E-004
49	4.77E-004
50	6.46E-004
51	8.25E-004
52	1.09E-004
53	-6.04E-004
54	-4.29E-004
55	-2.64E-004
56	-8.66E-005
57	3.58E-004
58	6.21E-005
59	-2.11E-004
60	2.49E-004
61	4.16E-004
62	5.68E-004
63	7.29E-004
64	7.42E-005
65	-5.44E-004
66	-2.75E-004
67	-1.04E-004
68	9.69E-006
69	3.10E-005
70	3.87E-005
71	3.77E-005
72	3.02E-004

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#####
#          SOLICITAÇÕES NORMAIS (ELU)          #
#          VmaxHmax                             #
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DESLOCAMENTOS NAS SEÇÕES DE INTERESSE NAS DIR. X E Y

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-1.71E-003	-6.99E-003
2	-1.71E-003	-6.65E-003
3	-1.72E-003	-6.03E-003
4	-1.73E-003	-5.99E-003
5	-1.74E-003	-6.81E-003
6	-1.75E-003	-8.16E-003
7	-1.75E-003	-8.89E-003
8	-1.08E-003	-8.90E-003
9	-3.86E-004	-8.92E-003
10	-1.50E-004	-8.95E-003
11	-1.04E-004	-8.97E-003
12	-3.32E-005	-8.99E-003
13	-3.55E-005	-9.00E-003
14	-3.31E-005	-9.07E-003
15	-2.60E-005	-9.45E-003
16	-1.89E-005	-9.57E-003
17	-1.18E-005	-8.95E-003
18	-4.68E-006	-7.77E-003
19	-2.31E-006	-7.08E-003
20	-6.52E-004	-7.08E-003
21	-1.46E-003	-7.06E-003
22	-1.93E-003	-7.04E-003
23	-2.16E-003	-7.02E-003
24	-2.01E-003	-7.00E-003
25	2.15E-005	-7.76E-003
26	1.84E-005	-7.33E-003
27	9.21E-006	-6.48E-003
28	6.00E-010	-6.08E-003
29	-9.21E-006	-6.47E-003
30	-1.84E-005	-7.32E-003
31	-2.15E-005	-7.74E-003
32	3.41E-004	-7.75E-003
33	5.35E-004	-7.77E-003
34	3.47E-004	-7.79E-003
35	1.06E-004	-7.81E-003
36	2.45E-005	-7.83E-003
37	-3.24E-005	-7.84E-003
38	-3.02E-005	-7.96E-003
39	-2.33E-005	-8.41E-003
40	-1.65E-005	-8.67E-003
41	-9.66E-006	-8.42E-003
42	-2.82E-006	-7.98E-003
43	-5.44E-007	-7.86E-003
44	-5.43E-005	-7.86E-003
45	-1.54E-004	-7.84E-003
46	-4.05E-004	-7.82E-003
47	-5.69E-004	-7.79E-003
48	-3.50E-004	-7.77E-003
49	1.70E-003	-8.87E-003

50	1.70E-003	-8.15E-003
51	1.69E-003	-6.81E-003
52	1.68E-003	-5.99E-003
53	1.67E-003	-6.04E-003
54	1.66E-003	-6.65E-003
55	1.66E-003	-7.00E-003
56	1.96E-003	-7.00E-003
57	2.11E-003	-7.02E-003
58	1.88E-003	-7.04E-003
59	1.42E-003	-7.06E-003
60	6.15E-004	-7.08E-003
61	-3.02E-005	-7.09E-003
62	-2.79E-005	-7.77E-003
63	-2.08E-005	-8.95E-003
64	-1.37E-005	-9.56E-003
65	-6.57E-006	-9.43E-003
66	5.34E-007	-9.05E-003
67	2.90E-006	-8.98E-003
68	1.49E-006	-8.97E-003
69	9.68E-005	-8.95E-003
70	1.57E-004	-8.93E-003
71	3.70E-004	-8.90E-003
72	1.04E-003	-8.88E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.08E-003
2	1.22E-003
3	8.25E-004
4	-7.45E-004
5	-2.29E-003
6	-2.53E-003
7	-2.34E-003
8	-2.07E-003
9	-7.87E-004
10	-1.88E-004
11	-6.57E-005
12	-8.63E-005
13	1.09E-004
14	3.75E-004
15	7.34E-004
16	-4.29E-004
17	-1.87E-003
18	-2.36E-003
19	-2.24E-003
20	-2.06E-003
21	-1.14E-003
22	-6.64E-004
23	-1.65E-004
24	8.69E-004
25	1.35E-003
26	1.54E-003
27	1.40E-003
28	3.96E-006
29	-1.38E-003

30	-1.51E-003
31	-1.32E-003
32	-1.06E-003
33	1.13E-004
34	5.05E-004
35	3.13E-004
36	1.16E-004
37	2.77E-004
38	5.20E-004
39	8.88E-004
40	1.21E-005
41	-8.67E-004
42	-5.08E-004
43	-2.67E-004
44	-1.06E-004
45	-3.86E-004
46	-4.81E-004
47	-5.77E-005
48	1.09E-003
49	2.31E-003
50	2.50E-003
51	2.27E-003
52	7.41E-004
53	-8.24E-004
54	-1.22E-003
55	-1.08E-003
56	-8.68E-004
57	1.62E-004
58	6.58E-004
59	1.13E-003
60	2.05E-003
61	2.23E-003
62	2.34E-003
63	1.86E-003
64	4.16E-004
65	-7.41E-004
66	-3.74E-004
67	-1.06E-004
68	8.94E-005
69	1.48E-004
70	1.70E-004
71	7.34E-004
72	2.03E-003

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#####
#          SOLICITAÇÕES TANGENCIAIS (ELU)          #
#          VmaxHmin                                #
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DESLOCAMENTOS NAS SEÇÕES DE INTERESSE NAS DIR. X E Y

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-3.33E-003	-6.80E-003
2	-3.33E-003	-6.35E-003
3	-3.33E-003	-5.67E-003
4	-3.34E-003	-5.73E-003
5	-3.34E-003	-6.89E-003
6	-3.34E-003	-8.88E-003
7	-3.35E-003	-1.01E-002
8	-2.21E-003	-1.01E-002
9	-1.11E-003	-1.01E-002
10	-8.78E-004	-1.02E-002
11	-7.07E-004	-1.02E-002
12	-4.94E-004	-1.03E-002
13	-4.40E-004	-1.03E-002
14	-4.38E-004	-1.03E-002
15	-4.35E-004	-1.06E-002
16	-4.32E-004	-1.05E-002
17	-4.28E-004	-9.57E-003
18	-4.25E-004	-7.91E-003
19	-4.24E-004	-6.88E-003
20	-1.41E-003	-6.88E-003
21	-2.80E-003	-6.86E-003
22	-3.66E-003	-6.84E-003
23	-4.00E-003	-6.82E-003
24	-3.73E-003	-6.80E-003
25	1.01E-005	-8.05E-003
26	8.62E-006	-7.44E-003
27	4.31E-006	-6.35E-003
28	3.88E-010	-5.88E-003
29	-4.31E-006	-6.37E-003
30	-8.62E-006	-7.54E-003
31	-1.01E-005	-8.24E-003
32	6.11E-004	-8.25E-003
33	8.34E-004	-8.30E-003
34	2.78E-004	-8.34E-003
35	-1.53E-004	-8.38E-003
36	-3.30E-004	-8.42E-003
37	-4.09E-004	-8.43E-003
38	-4.08E-004	-8.59E-003
39	-4.05E-004	-9.05E-003
40	-4.02E-004	-9.26E-003
41	-4.00E-004	-8.90E-003
42	-3.97E-004	-8.33E-003
43	-3.96E-004	-8.15E-003
44	-5.21E-004	-8.14E-003
45	-6.98E-004	-8.12E-003
46	-8.88E-004	-8.10E-003
47	-9.92E-004	-8.08E-003
48	-5.45E-004	-8.06E-003
49	3.31E-003	-1.01E-002

50	3.31E-003	-8.92E-003
51	3.31E-003	-6.96E-003
52	3.30E-003	-5.74E-003
53	3.30E-003	-5.61E-003
54	3.29E-003	-6.30E-003
55	3.29E-003	-6.79E-003
56	3.73E-003	-6.80E-003
57	3.91E-003	-6.84E-003
58	3.35E-003	-6.87E-003
59	2.29E-003	-6.91E-003
60	7.21E-004	-6.94E-003
61	-3.81E-004	-6.95E-003
62	-3.80E-004	-8.08E-003
63	-3.77E-004	-9.81E-003
64	-3.74E-004	-1.07E-002
65	-3.71E-004	-1.06E-002
66	-3.67E-004	-1.02E-002
67	-3.66E-004	-1.02E-002
68	-3.56E-004	-1.02E-002
69	-1.50E-004	-1.01E-002
70	2.66E-004	-1.01E-002
71	9.23E-004	-1.01E-002
72	2.24E-003	-1.01E-002

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.42E-003
2	1.52E-003
3	7.98E-004
4	-1.15E-003
5	-3.19E-003
6	-4.07E-003
7	-3.96E-003
8	-3.52E-003
9	-9.67E-004
10	-2.30E-004
11	-3.87E-004
12	-3.34E-004
13	2.05E-006
14	2.52E-004
15	4.41E-004
16	-9.38E-004
17	-2.65E-003
18	-3.44E-003
19	-3.37E-003
20	-3.21E-003
21	-2.11E-003
22	-1.16E-003
23	-1.18E-004
24	1.22E-003
25	1.96E-003
26	2.12E-003
27	1.69E-003
28	-7.92E-006
29	-1.77E-003

30	-2.38E-003
31	-2.25E-003
32	-1.81E-003
33	6.53E-004
34	1.10E-003
35	5.85E-004
36	1.52E-004
37	4.12E-004
38	6.31E-004
39	8.35E-004
40	-1.53E-004
41	-1.09E-003
42	-7.46E-004
43	-5.02E-004
44	-3.46E-004
45	-3.56E-004
46	-3.71E-004
47	1.59E-004
48	1.70E-003
49	3.70E-003
50	3.85E-003
51	3.25E-003
52	1.30E-003
53	-7.05E-004
54	-1.65E-003
55	-1.59E-003
56	-1.30E-003
57	4.73E-004
58	1.59E-003
59	2.47E-003
60	3.57E-003
61	3.75E-003
62	3.76E-003
63	2.59E-003
64	6.80E-004
65	-7.17E-004
66	-3.62E-004
67	-7.66E-005
68	1.41E-004
69	6.01E-004
70	9.53E-004
71	1.72E-003
72	3.42E-003

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#####
#          SOLICITAÇÕES TANGENCIAIS (ELU)          #
#          VminHmax                                #
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DESLOCAMENTOS NAS SEÇÕES DE INTERESSE NAS DIR. X E Y

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-2.01E-004	-4.97E-003
2	-2.05E-004	-4.86E-003
3	-2.18E-004	-4.51E-003
4	-2.31E-004	-4.36E-003
5	-2.44E-004	-4.64E-003
6	-2.57E-004	-5.14E-003
7	-2.62E-004	-5.36E-003
8	-1.12E-004	-5.37E-003
9	-1.15E-004	-5.40E-003
10	-1.23E-004	-5.43E-003
11	-9.65E-005	-5.46E-003
12	-3.91E-005	-5.49E-003
13	-3.44E-005	-5.50E-003
14	-3.07E-005	-5.55E-003
15	-1.97E-005	-5.80E-003
16	-8.59E-006	-5.91E-003
17	2.48E-006	-5.64E-003
18	1.35E-005	-5.20E-003
19	1.72E-005	-5.04E-003
20	-1.03E-004	-5.03E-003
21	-8.86E-005	-5.02E-003
22	-3.97E-005	-5.01E-003
23	-1.60E-004	-4.99E-003
24	-2.67E-004	-4.98E-003
25	3.04E-005	-5.14E-003
26	2.61E-005	-4.99E-003
27	1.30E-005	-4.57E-003
28	2.67E-010	-4.35E-003
29	-1.30E-005	-4.58E-003
30	-2.61E-005	-5.01E-003
31	-3.04E-005	-5.19E-003
32	7.92E-005	-5.20E-003
33	9.47E-006	-5.23E-003
34	-5.23E-005	-5.26E-003
35	-7.46E-005	-5.29E-003
36	-5.62E-005	-5.31E-003
37	-6.66E-005	-5.32E-003
38	-6.29E-005	-5.39E-003
39	-5.19E-005	-5.67E-003
40	-4.09E-005	-5.82E-003
41	-2.98E-005	-5.61E-003
42	-1.88E-005	-5.29E-003
43	-1.51E-005	-5.21E-003
44	-5.66E-005	-5.21E-003
45	-8.93E-005	-5.19E-003
46	-1.08E-004	-5.18E-003
47	-1.12E-004	-5.16E-003
48	-7.79E-005	-5.15E-003
49	2.64E-004	-5.34E-003

50	2.60E-004	-5.15E-003
51	2.46E-004	-4.66E-003
52	2.33E-004	-4.36E-003
53	2.20E-004	-4.50E-003
54	2.07E-004	-4.84E-003
55	2.03E-004	-4.95E-003
56	2.49E-004	-4.96E-003
57	-7.35E-005	-4.99E-003
58	-3.41E-004	-5.02E-003
59	-1.80E-004	-5.05E-003
60	1.38E-005	-5.08E-003
61	-9.88E-005	-5.09E-003
62	-9.52E-005	-5.26E-003
63	-8.41E-005	-5.69E-003
64	-7.31E-005	-5.93E-003
65	-6.21E-005	-5.77E-003
66	-5.11E-005	-5.48E-003
67	-4.74E-005	-5.41E-003
68	-7.34E-005	-5.41E-003
69	-7.35E-005	-5.39E-003
70	-4.60E-005	-5.38E-003
71	1.08E-005	-5.36E-003
72	1.14E-004	-5.35E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	3.00E-004
2	4.66E-004
3	6.30E-004
4	-1.16E-004
5	-8.93E-004
6	-8.05E-004
7	-6.49E-004
8	-3.27E-004
9	5.21E-005
10	-2.02E-005
11	-7.99E-005
12	-1.02E-004
13	9.65E-005
14	2.61E-004
15	4.88E-004
16	-1.53E-004
17	-8.10E-004
18	-6.34E-004
19	-4.78E-004
20	-3.07E-004
21	1.84E-004
22	-6.32E-005
23	-3.39E-004
24	1.21E-004
25	4.39E-004
26	6.04E-004
27	7.53E-004
28	-8.54E-007
29	-7.71E-004

30	-6.71E-004
31	-5.14E-004
32	-1.92E-004
33	1.65E-004
34	7.51E-005
35	1.51E-005
36	-4.99E-005
37	1.45E-004
38	3.08E-004
39	5.46E-004
40	-5.46E-005
41	-6.42E-004
42	-3.67E-004
43	-1.96E-004
44	-9.12E-005
45	-5.07E-005
46	-2.19E-005
47	7.35E-006
48	2.69E-004
49	5.80E-004
50	7.45E-004
51	8.94E-004
52	1.47E-004
53	-6.00E-004
54	-4.65E-004
55	-3.06E-004
56	3.53E-005
57	8.10E-004
58	9.38E-005
59	-5.82E-004
60	2.00E-004
61	5.17E-004
62	6.61E-004
63	7.66E-004
64	6.99E-005
65	-5.75E-004
66	-3.17E-004
67	-1.46E-004
68	-3.78E-005
69	2.01E-005
70	8.25E-005
71	1.32E-004
72	4.07E-004

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#####
#          SOLICITAÇÕES TANGENCIAIS (ELU)          #
#          VmaxHmax                                #
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DESLOCAMENTOS NAS SEÇÕES DE INTERESSE NAS DIR. X E Y

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-2.02E-003	-7.01E-003
2	-2.02E-003	-6.63E-003
3	-2.03E-003	-5.96E-003
4	-2.04E-003	-5.90E-003
5	-2.05E-003	-6.78E-003
6	-2.06E-003	-8.33E-003
7	-2.06E-003	-9.22E-003
8	-1.25E-003	-9.24E-003
9	-5.39E-004	-9.29E-003
10	-4.21E-004	-9.33E-003
11	-4.75E-004	-9.38E-003
12	-3.82E-004	-9.42E-003
13	-3.63E-004	-9.43E-003
14	-3.60E-004	-9.50E-003
15	-3.53E-004	-9.84E-003
16	-3.46E-004	-9.87E-003
17	-3.39E-004	-9.13E-003
18	-3.31E-004	-7.85E-003
19	-3.29E-004	-7.11E-003
20	-1.02E-003	-7.10E-003
21	-1.89E-003	-7.08E-003
22	-2.36E-003	-7.06E-003
23	-2.56E-003	-7.04E-003
24	-2.36E-003	-7.02E-003
25	2.15E-005	-7.85E-003
26	1.84E-005	-7.36E-003
27	9.21E-006	-6.43E-003
28	3.91E-010	-6.01E-003
29	-9.21E-006	-6.44E-003
30	-1.84E-005	-7.41E-003
31	-2.15E-005	-7.94E-003
32	4.26E-004	-7.96E-003
33	4.78E-004	-8.00E-003
34	3.80E-005	-8.04E-003
35	-2.52E-004	-8.08E-003
36	-3.18E-004	-8.12E-003
37	-3.56E-004	-8.14E-003
38	-3.54E-004	-8.26E-003
39	-3.47E-004	-8.69E-003
40	-3.40E-004	-8.90E-003
41	-3.33E-004	-8.59E-003
42	-3.27E-004	-8.09E-003
43	-3.24E-004	-7.95E-003
44	-4.07E-004	-7.94E-003
45	-5.25E-004	-7.92E-003
46	-7.00E-004	-7.90E-003
47	-7.42E-004	-7.88E-003
48	-4.08E-004	-7.86E-003
49	1.91E-003	-9.13E-003

50	1.91E-003	-8.33E-003
51	1.90E-003	-6.85E-003
52	1.89E-003	-5.93E-003
53	1.88E-003	-5.93E-003
54	1.87E-003	-6.58E-003
55	1.87E-003	-6.99E-003
56	2.21E-003	-7.00E-003
57	2.25E-003	-7.04E-003
58	1.84E-003	-7.08E-003
59	1.30E-003	-7.12E-003
60	4.14E-004	-7.15E-003
61	-3.50E-004	-7.17E-003
62	-3.48E-004	-7.98E-003
63	-3.41E-004	-9.29E-003
64	-3.34E-004	-9.93E-003
65	-3.27E-004	-9.78E-003
66	-3.20E-004	-9.34E-003
67	-3.17E-004	-9.24E-003
68	-3.44E-004	-9.23E-003
69	-2.46E-004	-9.21E-003
70	-2.32E-005	-9.19E-003
71	3.47E-004	-9.16E-003
72	1.17E-003	-9.14E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.20E-003
2	1.35E-003
3	9.06E-004
4	-7.75E-004
5	-2.52E-003
6	-3.05E-003
7	-2.91E-003
8	-2.46E-003
9	-6.20E-004
10	5.49E-005
11	3.21E-005
12	-2.12E-004
13	1.12E-004
14	3.57E-004
15	5.90E-004
16	-6.40E-004
17	-2.09E-003
18	-2.53E-003
19	-2.40E-003
20	-2.21E-003
21	-1.19E-003
22	-6.41E-004
23	-8.39E-005
24	9.90E-004
25	1.54E-003
26	1.72E-003
27	1.50E-003
28	-1.37E-006
29	-1.53E-003

30	-1.86E-003
31	-1.69E-003
32	-1.23E-003
33	6.18E-004
34	8.51E-004
35	2.99E-004
36	1.01E-005
37	2.87E-004
38	5.18E-004
39	8.17E-004
40	-9.72E-005
41	-9.85E-004
42	-6.06E-004
43	-3.60E-004
44	-2.03E-004
45	-3.25E-004
46	-2.75E-004
47	1.85E-004
48	1.29E-003
49	2.59E-003
50	2.78E-003
51	2.51E-003
52	8.86E-004
53	-8.11E-004
54	-1.40E-003
55	-1.29E-003
56	-9.39E-004
57	5.33E-004
58	9.11E-004
59	1.21E-003
60	2.39E-003
61	2.67E-003
62	2.75E-003
63	2.01E-003
64	3.99E-004
65	-8.39E-004
66	-4.66E-004
67	-1.90E-004
68	6.97E-006
69	3.30E-004
70	4.92E-004
71	1.02E-003
72	2.32E-003

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#####
#                VERIFICAÇÃO DA FADIGA (ELS)                #
#                VmaxHmin                                    #
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DESLOCAMENTOS NAS SEÇÕES DE INTERESSE NAS DIR. X E Y

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-1.29E-003	-5.11E-003
2	-1.30E-003	-4.85E-003
3	-1.30E-003	-4.40E-003
4	-1.31E-003	-4.37E-003
5	-1.32E-003	-4.99E-003
6	-1.32E-003	-5.99E-003
7	-1.32E-003	-6.54E-003
8	-8.22E-004	-6.55E-003
9	-2.92E-004	-6.56E-003
10	-1.14E-004	-6.58E-003
11	-8.05E-005	-6.60E-003
12	-2.68E-005	-6.61E-003
13	-2.74E-005	-6.62E-003
14	-2.58E-005	-6.67E-003
15	-2.09E-005	-6.94E-003
16	-1.60E-005	-7.03E-003
17	-1.12E-005	-6.57E-003
18	-6.27E-006	-5.69E-003
19	-4.65E-006	-5.18E-003
20	-4.92E-004	-5.17E-003
21	-1.11E-003	-5.16E-003
22	-1.46E-003	-5.14E-003
23	-1.63E-003	-5.13E-003
24	-1.52E-003	-5.11E-003
25	1.51E-005	-5.69E-003
26	1.30E-005	-5.37E-003
27	6.49E-006	-4.74E-003
28	4.42E-010	-4.45E-003
29	-6.49E-006	-4.73E-003
30	-1.30E-005	-5.36E-003
31	-1.51E-005	-5.67E-003
32	2.56E-004	-5.68E-003
33	4.06E-004	-5.69E-003
34	2.64E-004	-5.71E-003
35	8.18E-005	-5.72E-003
36	1.91E-005	-5.74E-003
37	-2.36E-005	-5.74E-003
38	-2.21E-005	-5.83E-003
39	-1.74E-005	-6.16E-003
40	-1.27E-005	-6.35E-003
41	-8.04E-006	-6.17E-003
42	-3.36E-006	-5.85E-003
43	-1.80E-006	-5.76E-003
44	-4.21E-005	-5.76E-003
45	-1.19E-004	-5.74E-003
46	-3.09E-004	-5.73E-003
47	-4.32E-004	-5.71E-003
48	-2.64E-004	-5.70E-003
49	1.29E-003	-6.52E-003

50	1.28E-003	-5.98E-003
51	1.28E-003	-4.99E-003
52	1.27E-003	-4.38E-003
53	1.26E-003	-4.40E-003
54	1.26E-003	-4.86E-003
55	1.26E-003	-5.11E-003
56	1.48E-003	-5.12E-003
57	1.59E-003	-5.13E-003
58	1.43E-003	-5.15E-003
59	1.07E-003	-5.16E-003
60	4.64E-004	-5.17E-003
61	-2.05E-005	-5.18E-003
62	-1.88E-005	-5.69E-003
63	-1.40E-005	-6.56E-003
64	-9.07E-006	-7.02E-003
65	-4.19E-006	-6.93E-003
66	6.95E-007	-6.65E-003
67	2.32E-006	-6.60E-003
68	2.40E-006	-6.60E-003
69	7.45E-005	-6.58E-003
70	1.19E-004	-6.56E-003
71	2.81E-004	-6.55E-003
72	7.92E-004	-6.53E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	8.04E-004
2	9.07E-004
3	6.00E-004
4	-5.60E-004
5	-1.70E-003
6	-1.89E-003
7	-1.76E-003
8	-1.56E-003
9	-5.98E-004
10	-1.41E-004
11	-4.81E-005
12	-6.67E-005
13	7.60E-005
14	2.70E-004
15	5.29E-004
16	-3.24E-004
17	-1.39E-003
18	-1.76E-003
19	-1.68E-003
20	-1.55E-003
21	-8.72E-004
22	-5.03E-004
23	-1.14E-004
24	6.52E-004
25	1.01E-003
26	1.15E-003
27	1.03E-003
28	3.05E-006
29	-1.02E-003

30	-1.13E-003
31	-9.87E-004
32	-7.96E-004
33	8.11E-005
34	3.83E-004
35	2.38E-004
36	8.90E-005
37	2.06E-004
38	3.82E-004
39	6.47E-004
40	9.33E-006
41	-6.31E-004
42	-3.73E-004
43	-1.98E-004
44	-8.13E-005
45	-2.95E-004
46	-3.64E-004
47	-3.85E-005
48	8.22E-004
49	1.73E-003
50	1.87E-003
51	1.69E-003
52	5.57E-004
53	-5.99E-004
54	-9.06E-004
55	-8.03E-004
56	-6.51E-004
57	1.12E-004
58	4.98E-004
59	8.65E-004
60	1.54E-003
61	1.67E-003
62	1.75E-003
63	1.38E-003
64	3.14E-004
65	-5.34E-004
66	-2.68E-004
67	-7.39E-005
68	6.91E-005
69	1.12E-004
70	1.27E-004
71	5.57E-004
72	1.53E-003

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#####
#                VERIFICAÇÃO DA FADIGA (ELS)                #
#                VminHmax                                    #
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DESLOCAMENTOS NAS SEÇÕES DE INTERESSE NAS DIR. X E Y

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-5.26E-004	-4.96E-003
2	-5.29E-004	-4.78E-003
3	-5.39E-004	-4.39E-003
4	-5.48E-004	-4.29E-003
5	-5.58E-004	-4.68E-003
6	-5.68E-004	-5.33E-003
7	-5.71E-004	-5.64E-003
8	-3.13E-004	-5.64E-003
9	-1.10E-004	-5.66E-003
10	-3.98E-005	-5.67E-003
11	-1.35E-005	-5.69E-003
12	1.17E-005	-5.70E-003
13	-4.38E-006	-5.71E-003
14	-1.73E-006	-5.77E-003
15	6.21E-006	-6.06E-003
16	1.42E-005	-6.19E-003
17	2.21E-005	-5.89E-003
18	3.00E-005	-5.32E-003
19	3.27E-005	-5.03E-003
20	-2.25E-004	-5.02E-003
21	-4.57E-004	-5.01E-003
22	-5.61E-004	-5.00E-003
23	-6.78E-004	-4.98E-003
24	-6.66E-004	-4.97E-003
25	2.26E-005	-5.21E-003
26	1.93E-005	-5.02E-003
27	9.67E-006	-4.56E-003
28	3.61E-010	-4.33E-003
29	-9.67E-006	-4.56E-003
30	-1.93E-005	-5.02E-003
31	-2.26E-005	-5.21E-003
32	1.23E-004	-5.22E-003
33	1.48E-004	-5.23E-003
34	7.87E-005	-5.25E-003
35	1.37E-005	-5.26E-003
36	6.75E-007	-5.27E-003
37	-2.02E-005	-5.28E-003
38	-1.76E-005	-5.34E-003
39	-9.73E-006	-5.63E-003
40	-1.87E-006	-5.80E-003
41	5.98E-006	-5.63E-003
42	1.38E-005	-5.34E-003
43	1.65E-005	-5.28E-003
44	-4.06E-006	-5.28E-003
45	-1.92E-005	-5.26E-003
46	-8.52E-005	-5.25E-003
47	-1.52E-004	-5.23E-003
48	-1.25E-004	-5.22E-003
49	5.65E-004	-5.63E-003

50	5.62E-004	-5.33E-003
51	5.52E-004	-4.68E-003
52	5.43E-004	-4.29E-003
53	5.33E-004	-4.39E-003
54	5.24E-004	-4.78E-003
55	5.20E-004	-4.96E-003
56	6.61E-004	-4.97E-003
57	6.73E-004	-4.98E-003
58	5.56E-004	-5.00E-003
59	4.52E-004	-5.01E-003
60	2.21E-004	-5.02E-003
61	-3.64E-005	-5.03E-003
62	-3.37E-005	-5.32E-003
63	-2.58E-005	-5.89E-003
64	-1.79E-005	-6.19E-003
65	-9.91E-006	-6.05E-003
66	-1.97E-006	-5.76E-003
67	6.80E-007	-5.70E-003
68	-1.53E-005	-5.70E-003
69	1.27E-005	-5.68E-003
70	4.05E-005	-5.67E-003
71	1.08E-004	-5.65E-003
72	3.08E-004	-5.64E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	5.39E-004
2	6.70E-004
3	6.13E-004
4	-2.80E-004
5	-1.15E-003
6	-1.10E-003
7	-9.42E-004
8	-7.54E-004
9	-2.09E-004
10	-7.56E-005
11	-4.08E-005
12	-4.94E-006
13	1.20E-004
14	2.98E-004
15	5.67E-004
16	-1.34E-004
17	-9.52E-004
18	-1.04E-003
19	-9.23E-004
20	-7.77E-004
21	-2.33E-004
22	-2.10E-004
23	-1.92E-004
24	3.79E-004
25	5.70E-004
26	7.25E-004
27	8.04E-004
28	4.50E-007
29	-8.03E-004

30	-7.22E-004
31	-5.67E-004
32	-3.85E-004
33	9.72E-005
34	1.48E-004
35	7.95E-005
36	1.92E-005
37	1.30E-004
38	2.99E-004
39	5.76E-004
40	1.37E-006
41	-5.73E-004
42	-2.98E-004
43	-1.29E-004
44	-1.80E-005
45	-8.78E-005
46	-1.45E-004
47	-9.09E-005
48	3.89E-004
49	9.39E-004
50	1.10E-003
51	1.15E-003
52	2.79E-004
53	-6.13E-004
54	-6.70E-004
55	-5.38E-004
56	-3.79E-004
57	1.92E-004
58	2.10E-004
59	2.32E-004
60	7.75E-004
61	9.21E-004
62	1.04E-003
63	9.50E-004
64	1.32E-004
65	-5.68E-004
66	-2.98E-004
67	-1.19E-004
68	5.30E-006
69	5.02E-005
70	7.35E-005
71	2.03E-004
72	7.50E-004

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#####
#                VERIFICAÇÃO DA FADIGA (ELS)                #
#                VmaxHmax                                    #
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DESLOCAMENTOS NAS SEÇÕES DE INTERESSE NAS DIR. X E Y

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-1.25E-003	-5.12E-003
2	-1.25E-003	-4.86E-003
3	-1.25E-003	-4.41E-003
4	-1.26E-003	-4.38E-003
5	-1.27E-003	-4.98E-003
6	-1.27E-003	-5.97E-003
7	-1.28E-003	-6.50E-003
8	-7.90E-004	-6.50E-003
9	-2.81E-004	-6.52E-003
10	-1.10E-004	-6.54E-003
11	-7.64E-005	-6.56E-003
12	-2.43E-005	-6.57E-003
13	-2.58E-005	-6.58E-003
14	-2.41E-005	-6.63E-003
15	-1.90E-005	-6.91E-003
16	-1.38E-005	-6.99E-003
17	-8.65E-006	-6.54E-003
18	-3.50E-006	-5.68E-003
19	-1.78E-006	-5.18E-003
20	-4.74E-004	-5.18E-003
21	-1.06E-003	-5.16E-003
22	-1.40E-003	-5.15E-003
23	-1.57E-003	-5.14E-003
24	-1.46E-003	-5.12E-003
25	1.57E-005	-5.68E-003
26	1.35E-005	-5.36E-003
27	6.73E-006	-4.74E-003
28	4.38E-010	-4.45E-003
29	-6.73E-006	-4.74E-003
30	-1.35E-005	-5.35E-003
31	-1.57E-005	-5.66E-003
32	2.48E-004	-5.67E-003
33	3.90E-004	-5.68E-003
34	2.53E-004	-5.70E-003
35	7.77E-005	-5.71E-003
36	1.79E-005	-5.73E-003
37	-2.36E-005	-5.73E-003
38	-2.19E-005	-5.82E-003
39	-1.70E-005	-6.14E-003
40	-1.20E-005	-6.34E-003
41	-7.07E-006	-6.15E-003
42	-2.11E-006	-5.83E-003
43	-4.60E-007	-5.75E-003
44	-3.97E-005	-5.74E-003
45	-1.13E-004	-5.73E-003
46	-2.95E-004	-5.71E-003
47	-4.15E-004	-5.70E-003
48	-2.56E-004	-5.68E-003
49	1.24E-003	-6.48E-003

50	1.24E-003	-5.96E-003
51	1.23E-003	-4.98E-003
52	1.23E-003	-4.38E-003
53	1.22E-003	-4.42E-003
54	1.21E-003	-4.87E-003
55	1.21E-003	-5.12E-003
56	1.43E-003	-5.12E-003
57	1.54E-003	-5.14E-003
58	1.37E-003	-5.15E-003
59	1.03E-003	-5.17E-003
60	4.48E-004	-5.18E-003
61	-2.20E-005	-5.19E-003
62	-2.02E-005	-5.68E-003
63	-1.51E-005	-6.54E-003
64	-9.93E-006	-6.98E-003
65	-4.78E-006	-6.89E-003
66	3.71E-007	-6.61E-003
67	2.09E-006	-6.56E-003
68	1.22E-006	-6.56E-003
69	7.08E-005	-6.54E-003
70	1.15E-004	-6.52E-003
71	2.70E-004	-6.51E-003
72	7.62E-004	-6.49E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	7.88E-004
2	8.93E-004
3	6.03E-004
4	-5.42E-004
5	-1.67E-003
6	-1.84E-003
7	-1.71E-003
8	-1.51E-003
9	-5.73E-004
10	-1.37E-004
11	-4.81E-005
12	-6.32E-005
13	7.87E-005
14	2.72E-004
15	5.33E-004
16	-3.12E-004
17	-1.36E-003
18	-1.72E-003
19	-1.63E-003
20	-1.50E-003
21	-8.30E-004
22	-4.85E-004
23	-1.21E-004
24	6.34E-004
25	9.85E-004
26	1.12E-003
27	1.02E-003
28	2.89E-006
29	-1.01E-003

30	-1.10E-003
31	-9.62E-004
32	-7.71E-004
33	8.23E-005
34	3.68E-004
35	2.29E-004
36	8.50E-005
37	2.02E-004
38	3.78E-004
39	6.45E-004
40	8.82E-006
41	-6.30E-004
42	-3.69E-004
43	-1.94E-004
44	-7.77E-005
45	-2.82E-004
46	-3.51E-004
47	-4.20E-005
48	7.96E-004
49	1.68E-003
50	1.82E-003
51	1.66E-003
52	5.39E-004
53	-6.02E-004
54	-8.92E-004
55	-7.87E-004
56	-6.33E-004
57	1.19E-004
58	4.81E-004
59	8.23E-004
60	1.49E-003
61	1.62E-003
62	1.71E-003
63	1.35E-003
64	3.03E-004
65	-5.38E-004
66	-2.71E-004
67	-7.67E-005
68	6.55E-005
69	1.08E-004
70	1.24E-004
71	5.35E-004
72	1.48E-003

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#####
#                VERIFICAÇÃO DA FADIGA (ELS)                #
#                VminHmin                                    #
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DESLOCAMENTOS NAS SEÇÕES DE INTERESSE NAS DIR. X E Y

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-1.17E-003	-4.87E-003
2	-1.17E-003	-4.63E-003
3	-1.18E-003	-4.21E-003
4	-1.18E-003	-4.17E-003
5	-1.19E-003	-4.74E-003
6	-1.20E-003	-5.67E-003
7	-1.20E-003	-6.17E-003
8	-7.40E-004	-6.17E-003
9	-2.64E-004	-6.19E-003
10	-1.03E-004	-6.21E-003
11	-7.13E-005	-6.22E-003
12	-2.25E-005	-6.24E-003
13	-2.42E-005	-6.24E-003
14	-2.25E-005	-6.29E-003
15	-1.76E-005	-6.55E-003
16	-1.27E-005	-6.64E-003
17	-7.84E-006	-6.21E-003
18	-2.95E-006	-5.41E-003
19	-1.31E-006	-4.93E-003
20	-4.45E-004	-4.93E-003
21	-9.99E-004	-4.92E-003
22	-1.32E-003	-4.90E-003
23	-1.47E-003	-4.89E-003
24	-1.37E-003	-4.88E-003
25	1.51E-005	-5.40E-003
26	1.29E-005	-5.10E-003
27	6.46E-006	-4.51E-003
28	4.16E-010	-4.24E-003
29	-6.46E-006	-4.51E-003
30	-1.29E-005	-5.09E-003
31	-1.51E-005	-5.38E-003
32	2.33E-004	-5.39E-003
33	3.65E-004	-5.40E-003
34	2.37E-004	-5.41E-003
35	7.25E-005	-5.43E-003
36	1.67E-005	-5.44E-003
37	-2.22E-005	-5.45E-003
38	-2.06E-005	-5.53E-003
39	-1.59E-005	-5.84E-003
40	-1.12E-005	-6.02E-003
41	-6.50E-006	-5.85E-003
42	-1.79E-006	-5.54E-003
43	-2.20E-007	-5.47E-003
44	-3.70E-005	-5.46E-003
45	-1.05E-004	-5.45E-003
46	-2.76E-004	-5.43E-003
47	-3.88E-004	-5.42E-003
48	-2.40E-004	-5.40E-003
49	1.16E-003	-6.15E-003

50	1.16E-003	-5.66E-003
51	1.16E-003	-4.74E-003
52	1.15E-003	-4.17E-003
53	1.14E-003	-4.21E-003
54	1.14E-003	-4.64E-003
55	1.13E-003	-4.87E-003
56	1.34E-003	-4.88E-003
57	1.44E-003	-4.89E-003
58	1.28E-003	-4.91E-003
59	9.70E-004	-4.92E-003
60	4.21E-004	-4.93E-003
61	-2.08E-005	-4.94E-003
62	-1.92E-005	-5.41E-003
63	-1.43E-005	-6.21E-003
64	-9.40E-006	-6.63E-003
65	-4.51E-006	-6.54E-003
66	3.88E-007	-6.27E-003
67	2.02E-006	-6.23E-003
68	9.29E-007	-6.22E-003
69	6.61E-005	-6.21E-003
70	1.07E-004	-6.19E-003
71	2.53E-004	-6.18E-003
72	7.14E-004	-6.16E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	7.44E-004
2	8.45E-004
3	5.74E-004
4	-5.09E-004
5	-1.57E-003
6	-1.74E-003
7	-1.60E-003
8	-1.42E-003
9	-5.37E-004
10	-1.29E-004
11	-4.54E-005
12	-5.88E-005
13	7.52E-005
14	2.58E-004
15	5.04E-004
16	-2.92E-004
17	-1.28E-003
18	-1.61E-003
19	-1.53E-003
20	-1.41E-003
21	-7.77E-004
22	-4.56E-004
23	-1.16E-004
24	5.98E-004
25	9.27E-004
26	1.06E-003
27	9.63E-004
28	2.69E-006
29	-9.54E-004

30	-1.04E-003
31	-9.05E-004
32	-7.24E-004
33	7.85E-005
34	3.45E-004
35	2.14E-004
36	7.93E-005
37	1.90E-004
38	3.56E-004
39	6.09E-004
40	8.22E-006
41	-5.94E-004
42	-3.48E-004
43	-1.82E-004
44	-7.25E-005
45	-2.64E-004
46	-3.29E-004
47	-4.10E-005
48	7.47E-004
49	1.58E-003
50	1.72E-003
51	1.56E-003
52	5.06E-004
53	-5.73E-004
54	-8.44E-004
55	-7.43E-004
56	-5.97E-004
57	1.14E-004
58	4.52E-004
59	7.71E-004
60	1.40E-003
61	1.52E-003
62	1.60E-003
63	1.27E-003
64	2.84E-004
65	-5.09E-004
66	-2.57E-004
67	-7.33E-005
68	6.09E-005
69	1.02E-004
70	1.17E-004
71	5.01E-004
72	1.39E-003

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#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VmaxHmin          #
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DESLOCAMENTOS NAS SEÇÕES DE INTERESSE NAS DIR. X E Y

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-1.25E-003	-5.02E-003
2	-1.25E-003	-4.77E-003
3	-1.26E-003	-4.33E-003
4	-1.26E-003	-4.30E-003
5	-1.27E-003	-4.89E-003
6	-1.27E-003	-5.87E-003
7	-1.28E-003	-6.40E-003
8	-7.91E-004	-6.41E-003
9	-2.82E-004	-6.42E-003
10	-1.10E-004	-6.44E-003
11	-7.70E-005	-6.46E-003
12	-2.52E-005	-6.47E-003
13	-2.62E-005	-6.48E-003
14	-2.46E-005	-6.53E-003
15	-1.97E-005	-6.80E-003
16	-1.48E-005	-6.88E-003
17	-9.91E-006	-6.43E-003
18	-5.03E-006	-5.58E-003
19	-3.40E-006	-5.08E-003
20	-4.75E-004	-5.08E-003
21	-1.07E-003	-5.07E-003
22	-1.41E-003	-5.05E-003
23	-1.57E-003	-5.04E-003
24	-1.46E-003	-5.02E-003
25	1.51E-005	-5.58E-003
26	1.30E-005	-5.27E-003
27	6.48E-006	-4.65E-003
28	4.32E-010	-4.37E-003
29	-6.48E-006	-4.65E-003
30	-1.30E-005	-5.26E-003
31	-1.51E-005	-5.56E-003
32	2.48E-004	-5.57E-003
33	3.91E-004	-5.58E-003
34	2.54E-004	-5.60E-003
35	7.83E-005	-5.61E-003
36	1.82E-005	-5.63E-003
37	-2.31E-005	-5.63E-003
38	-2.15E-005	-5.72E-003
39	-1.68E-005	-6.04E-003
40	-1.22E-005	-6.23E-003
41	-7.46E-006	-6.05E-003
42	-2.77E-006	-5.73E-003
43	-1.21E-006	-5.65E-003
44	-4.02E-005	-5.65E-003
45	-1.14E-004	-5.63E-003
46	-2.97E-004	-5.62E-003
47	-4.16E-004	-5.60E-003
48	-2.55E-004	-5.59E-003
49	1.24E-003	-6.38E-003

50	1.24E-003	-5.86E-003
51	1.23E-003	-4.89E-003
52	1.23E-003	-4.30E-003
53	1.22E-003	-4.33E-003
54	1.21E-003	-4.77E-003
55	1.21E-003	-5.02E-003
56	1.43E-003	-5.03E-003
57	1.54E-003	-5.04E-003
58	1.37E-003	-5.06E-003
59	1.04E-003	-5.07E-003
60	4.48E-004	-5.08E-003
61	-2.06E-005	-5.09E-003
62	-1.90E-005	-5.58E-003
63	-1.41E-005	-6.43E-003
64	-9.20E-006	-6.87E-003
65	-4.31E-006	-6.78E-003
66	5.80E-007	-6.51E-003
67	2.21E-006	-6.46E-003
68	1.85E-006	-6.46E-003
69	7.14E-005	-6.44E-003
70	1.15E-004	-6.42E-003
71	2.70E-004	-6.41E-003
72	7.63E-004	-6.39E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	7.82E-004
2	8.84E-004
3	5.90E-004
4	-5.41E-004
5	-1.65E-003
6	-1.83E-003
7	-1.70E-003
8	-1.50E-003
9	-5.75E-004
10	-1.37E-004
11	-4.71E-005
12	-6.37E-005
13	7.57E-005
14	2.65E-004
15	5.20E-004
16	-3.12E-004
17	-1.35E-003
18	-1.71E-003
19	-1.63E-003
20	-1.50E-003
21	-8.37E-004
22	-4.85E-004
23	-1.15E-004
24	6.31E-004
25	9.80E-004
26	1.11E-003
27	1.01E-003
28	2.92E-006
29	-9.95E-004

30	-1.09E-003
31	-9.56E-004
32	-7.69E-004
33	8.01E-005
34	3.69E-004
35	2.29E-004
36	8.54E-005
37	2.00E-004
38	3.72E-004
39	6.33E-004
40	8.91E-006
41	-6.17E-004
42	-3.63E-004
43	-1.92E-004
44	-7.80E-005
45	-2.83E-004
46	-3.51E-004
47	-3.94E-005
48	7.94E-004
49	1.67E-003
50	1.81E-003
51	1.64E-003
52	5.38E-004
53	-5.90E-004
54	-8.83E-004
55	-7.81E-004
56	-6.31E-004
57	1.13E-004
58	4.81E-004
59	8.30E-004
60	1.49E-003
61	1.62E-003
62	1.70E-003
63	1.34E-003
64	3.03E-004
65	-5.25E-004
66	-2.64E-004
67	-7.37E-005
68	6.60E-005
69	1.08E-004
70	1.23E-004
71	5.36E-004
72	1.48E-003

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#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VminHmax          #
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DESLOCAMENTOS NAS SEÇÕES DE INTERESSE NAS DIR. X E Y

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-5.53E-004	-4.96E-003
2	-5.56E-004	-4.78E-003
3	-5.66E-004	-4.38E-003
4	-5.75E-004	-4.28E-003
5	-5.85E-004	-4.68E-003
6	-5.94E-004	-5.35E-003
7	-5.97E-004	-5.66E-003
8	-3.31E-004	-5.66E-003
9	-1.16E-004	-5.68E-003
10	-4.22E-005	-5.69E-003
11	-1.58E-005	-5.71E-003
12	1.03E-005	-5.73E-003
13	-5.29E-006	-5.73E-003
14	-2.69E-006	-5.79E-003
15	5.10E-006	-6.08E-003
16	1.29E-005	-6.21E-003
17	2.07E-005	-5.91E-003
18	2.85E-005	-5.33E-003
19	3.11E-005	-5.02E-003
20	-2.35E-004	-5.02E-003
21	-4.81E-004	-5.01E-003
22	-5.94E-004	-4.99E-003
23	-7.13E-004	-4.98E-003
24	-6.96E-004	-4.96E-003
25	2.23E-005	-5.22E-003
26	1.91E-005	-5.02E-003
27	9.54E-006	-4.56E-003
28	3.64E-010	-4.33E-003
29	-9.54E-006	-4.56E-003
30	-1.91E-005	-5.02E-003
31	-2.23E-005	-5.22E-003
32	1.28E-004	-5.22E-003
33	1.57E-004	-5.24E-003
34	8.51E-005	-5.25E-003
35	1.61E-005	-5.27E-003
36	1.33E-006	-5.28E-003
37	-2.02E-005	-5.29E-003
38	-1.77E-005	-5.35E-003
39	-9.97E-006	-5.64E-003
40	-2.27E-006	-5.81E-003
41	5.44E-006	-5.64E-003
42	1.31E-005	-5.35E-003
43	1.57E-005	-5.29E-003
44	-5.43E-006	-5.28E-003
45	-2.27E-005	-5.27E-003
46	-9.31E-005	-5.26E-003
47	-1.62E-004	-5.24E-003
48	-1.29E-004	-5.23E-003
49	5.90E-004	-5.66E-003

50	5.87E-004	-5.34E-003
51	5.78E-004	-4.68E-003
52	5.68E-004	-4.28E-003
53	5.59E-004	-4.38E-003
54	5.50E-004	-4.78E-003
55	5.46E-004	-4.96E-003
56	6.90E-004	-4.96E-003
57	7.06E-004	-4.98E-003
58	5.88E-004	-4.99E-003
59	4.75E-004	-5.01E-003
60	2.30E-004	-5.02E-003
61	-3.56E-005	-5.02E-003
62	-3.30E-005	-5.33E-003
63	-2.52E-005	-5.91E-003
64	-1.74E-005	-6.21E-003
65	-9.58E-006	-6.07E-003
66	-1.78E-006	-5.79E-003
67	8.13E-007	-5.73E-003
68	-1.47E-005	-5.72E-003
69	1.48E-005	-5.71E-003
70	4.31E-005	-5.69E-003
71	1.14E-004	-5.68E-003
72	3.25E-004	-5.66E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	5.48E-004
2	6.78E-004
3	6.11E-004
4	-2.90E-004
5	-1.17E-003
6	-1.13E-003
7	-9.71E-004
8	-7.82E-004
9	-2.23E-004
10	-7.78E-005
11	-4.08E-005
12	-6.90E-006
13	1.18E-004
14	2.97E-004
15	5.65E-004
16	-1.40E-004
17	-9.66E-004
18	-1.06E-003
19	-9.50E-004
20	-8.05E-004
21	-2.57E-004
22	-2.20E-004
23	-1.88E-004
24	3.89E-004
25	5.85E-004
26	7.39E-004
27	8.11E-004
28	5.44E-007
29	-8.09E-004

30	-7.35E-004
31	-5.81E-004
32	-3.99E-004
33	9.65E-005
34	1.56E-004
35	8.50E-005
36	2.15E-005
37	1.32E-004
38	3.01E-004
39	5.77E-004
40	1.66E-006
41	-5.74E-004
42	-3.00E-004
43	-1.31E-004
44	-2.01E-005
45	-9.51E-005
46	-1.53E-004
47	-8.89E-005
48	4.04E-004
49	9.66E-004
50	1.12E-003
51	1.16E-003
52	2.89E-004
53	-6.11E-004
54	-6.77E-004
55	-5.48E-004
56	-3.89E-004
57	1.87E-004
58	2.19E-004
59	2.55E-004
60	8.03E-004
61	9.48E-004
62	1.06E-003
63	9.64E-004
64	1.38E-004
65	-5.65E-004
66	-2.97E-004
67	-1.18E-004
68	7.33E-006
69	5.22E-005
70	7.53E-005
71	2.15E-004
72	7.77E-004

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#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VmaxHmax          #
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DESLOCAMENTOS NAS SEÇÕES DE INTERESSE NAS DIR. X E Y

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-1.22E-003	-5.02E-003
2	-1.22E-003	-4.78E-003
3	-1.23E-003	-4.34E-003
4	-1.23E-003	-4.30E-003
5	-1.24E-003	-4.89E-003
6	-1.24E-003	-5.85E-003
7	-1.25E-003	-6.37E-003
8	-7.71E-004	-6.38E-003
9	-2.75E-004	-6.40E-003
10	-1.07E-004	-6.41E-003
11	-7.45E-005	-6.43E-003
12	-2.36E-005	-6.45E-003
13	-2.52E-005	-6.45E-003
14	-2.35E-005	-6.50E-003
15	-1.85E-005	-6.77E-003
16	-1.34E-005	-6.86E-003
17	-8.35E-006	-6.42E-003
18	-3.29E-006	-5.58E-003
19	-1.61E-006	-5.09E-003
20	-4.64E-004	-5.08E-003
21	-1.04E-003	-5.07E-003
22	-1.37E-003	-5.06E-003
23	-1.54E-003	-5.04E-003
24	-1.43E-003	-5.03E-003
25	1.55E-005	-5.57E-003
26	1.33E-005	-5.26E-003
27	6.63E-006	-4.65E-003
28	4.30E-010	-4.37E-003
29	-6.63E-006	-4.65E-003
30	-1.33E-005	-5.25E-003
31	-1.55E-005	-5.55E-003
32	2.43E-004	-5.56E-003
33	3.81E-004	-5.58E-003
34	2.47E-004	-5.59E-003
35	7.57E-005	-5.61E-003
36	1.75E-005	-5.62E-003
37	-2.31E-005	-5.63E-003
38	-2.14E-005	-5.71E-003
39	-1.66E-005	-6.03E-003
40	-1.17E-005	-6.22E-003
41	-6.85E-006	-6.04E-003
42	-1.99E-006	-5.72E-003
43	-3.70E-007	-5.64E-003
44	-3.87E-005	-5.64E-003
45	-1.10E-004	-5.62E-003
46	-2.88E-004	-5.61E-003
47	-4.05E-004	-5.59E-003
48	-2.50E-004	-5.58E-003
49	1.21E-003	-6.36E-003

50	1.21E-003	-5.85E-003
51	1.20E-003	-4.89E-003
52	1.20E-003	-4.31E-003
53	1.19E-003	-4.34E-003
54	1.18E-003	-4.78E-003
55	1.18E-003	-5.03E-003
56	1.39E-003	-5.03E-003
57	1.50E-003	-5.05E-003
58	1.34E-003	-5.06E-003
59	1.01E-003	-5.07E-003
60	4.38E-004	-5.09E-003
61	-2.15E-005	-5.09E-003
62	-1.98E-005	-5.58E-003
63	-1.48E-005	-6.41E-003
64	-9.73E-006	-6.85E-003
65	-4.68E-006	-6.76E-003
66	3.77E-007	-6.48E-003
67	2.06E-006	-6.44E-003
68	1.11E-006	-6.43E-003
69	6.90E-005	-6.41E-003
70	1.12E-004	-6.40E-003
71	2.64E-004	-6.38E-003
72	7.44E-004	-6.37E-003

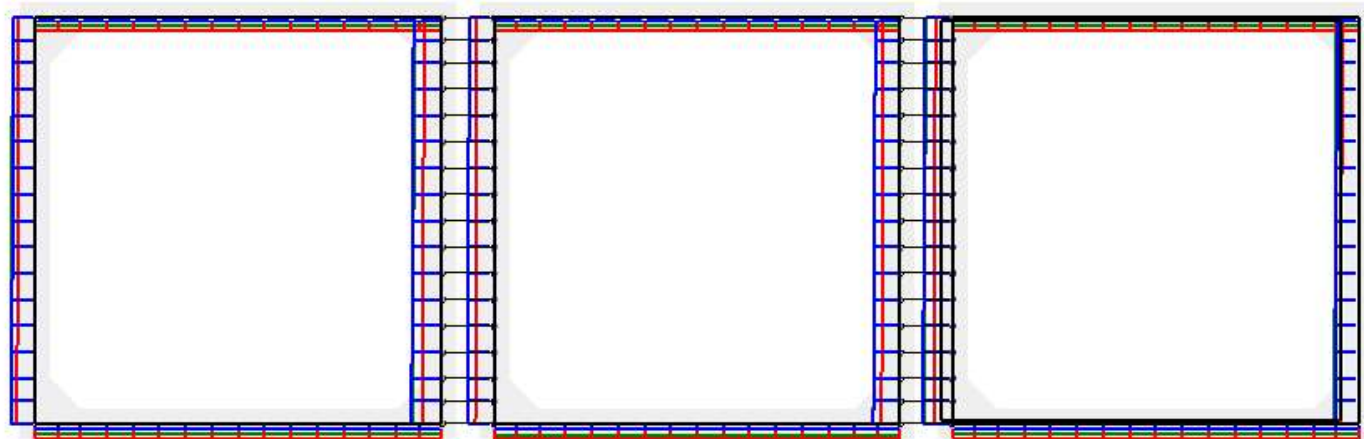
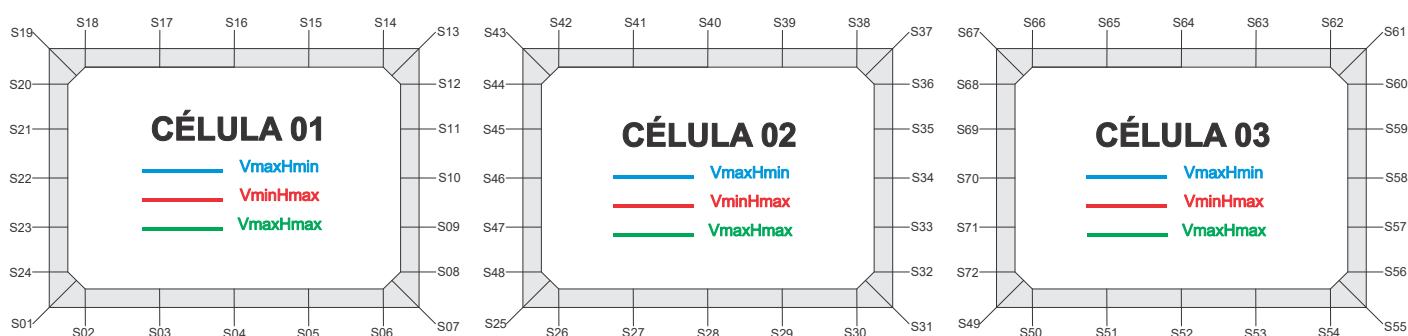
DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	7.71E-004
2	8.75E-004
3	5.92E-004
4	-5.29E-004
5	-1.63E-003
6	-1.80E-003
7	-1.67E-003
8	-1.47E-003
9	-5.59E-004
10	-1.34E-004
11	-4.71E-005
12	-6.15E-005
13	7.74E-005
14	2.67E-004
15	5.22E-004
16	-3.05E-004
17	-1.33E-003
18	-1.68E-003
19	-1.60E-003
20	-1.47E-003
21	-8.10E-004
22	-4.74E-004
23	-1.19E-004
24	6.20E-004
25	9.63E-004
26	1.10E-003
27	9.98E-004
28	2.81E-006
29	-9.88E-004

30	-1.08E-003
31	-9.41E-004
32	-7.53E-004
33	8.08E-005
34	3.60E-004
35	2.23E-004
36	8.28E-005
37	1.97E-004
38	3.70E-004
39	6.31E-004
40	8.59E-006
41	-6.16E-004
42	-3.61E-004
43	-1.90E-004
44	-7.58E-005
45	-2.75E-004
46	-3.42E-004
47	-4.16E-005
48	7.78E-004
49	1.64E-003
50	1.78E-003
51	1.62E-003
52	5.27E-004
53	-5.91E-004
54	-8.74E-004
55	-7.71E-004
56	-6.20E-004
57	1.18E-004
58	4.70E-004
59	8.04E-004
60	1.46E-003
61	1.59E-003
62	1.67E-003
63	1.32E-003
64	2.96E-004
65	-5.27E-004
66	-2.65E-004
67	-7.54E-005
68	6.38E-005
69	1.06E-004
70	1.21E-004
71	5.22E-004
72	1.45E-003

ESFORÇO NORMAL

NOMENCLATURA DAS SEÇÕES PARA VERSÃO COMPLETA DO RELATÓRIO



```
#####
#          SOLICITAÇÕES NORMAIS (ELU)          #
#          VmaxHmin                             #
#####
```

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-194.81	-37.42
2	-37.42	-37.42
3	-37.42	-37.42
4	-37.42	-37.42
5	-37.42	-37.42
6	-37.42	-37.42
7	-37.42	-244.52
8	-242.24	-242.24
9	-238.83	-238.83
10	-235.42	-235.42
11	-232.01	-232.01
12	-228.59	-228.59
13	-226.32	-33.05
14	-33.05	-33.05
15	-33.05	-33.05
16	-33.05	-33.05
17	-33.05	-33.05
18	-33.05	-33.05
19	-33.05	-176.61
20	-178.88	-178.88
21	-182.29	-182.29
22	-185.71	-185.71
23	-189.12	-189.12
24	-192.53	-192.53
25	-194.81	-42.63
26	-42.63	-42.63
27	-42.63	-42.63
28	-42.63	-42.63
29	-42.63	-42.63
30	-42.63	-42.63
31	-42.63	-219.68
32	-217.41	-217.41
33	-214.00	-214.00
34	-210.58	-210.58
35	-207.17	-207.17
36	-203.76	-203.76
37	-201.48	-27.84
38	-27.84	-27.84
39	-27.84	-27.84
40	-27.84	-27.84
41	-27.84	-27.84
42	-27.84	-27.84
43	-27.84	-201.44
44	-203.72	-203.72
45	-207.13	-207.13
46	-210.54	-210.54
47	-213.95	-213.95
48	-217.37	-217.37
49	-219.64	-38.05

50	-38.05	-38.05
51	-38.05	-38.05
52	-38.05	-38.05
53	-38.05	-38.05
54	-38.05	-38.05
55	-38.05	-194.78
56	-192.51	-192.51
57	-189.10	-189.10
58	-185.68	-185.68
59	-182.27	-182.27
60	-178.86	-178.86
61	-176.58	-32.42
62	-32.42	-32.42
63	-32.42	-32.42
64	-32.42	-32.42
65	-32.42	-32.42
66	-32.42	-32.42
67	-32.42	-226.34
68	-228.62	-228.62
69	-232.03	-232.03
70	-235.44	-235.44
71	-238.85	-238.85
72	-242.27	-242.27

```
#####
#          SOLICITAÇÕES NORMAIS (ELU)          #
#          VminHmax                             #
#####
```

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-149.94	-129.40
2	-129.40	-129.40
3	-129.40	-129.40
4	-129.40	-129.40
5	-129.40	-129.40
6	-129.40	-129.40
7	-129.40	-154.50
8	-152.75	-152.75
9	-150.12	-150.12
10	-147.50	-147.50
11	-144.87	-144.87
12	-142.25	-142.25
13	-140.50	-109.63
14	-109.63	-109.63
15	-109.63	-109.63
16	-109.63	-109.63
17	-109.63	-109.63
18	-109.63	-109.63
19	-109.63	-135.94
20	-137.69	-137.69
21	-140.32	-140.32
22	-142.94	-142.94
23	-145.57	-145.57
24	-148.19	-148.19
25	-149.94	-129.58
26	-129.58	-129.58
27	-129.58	-129.58
28	-129.58	-129.58
29	-129.58	-129.58
30	-129.58	-129.58
31	-129.58	-152.22
32	-150.47	-150.47
33	-147.84	-147.84
34	-145.22	-145.22
35	-142.59	-142.59
36	-139.97	-139.97
37	-138.22	-109.45
38	-109.45	-109.45
39	-109.45	-109.45
40	-109.45	-109.45
41	-109.45	-109.45
42	-109.45	-109.45
43	-109.45	-138.22
44	-139.97	-139.97
45	-142.60	-142.60
46	-145.22	-145.22
47	-147.85	-147.85
48	-150.47	-150.47
49	-152.22	-129.40

	50	-129.40	-129.40
	51	-129.40	-129.40
	52	-129.40	-129.40
	53	-129.40	-129.40
	54	-129.40	-129.40
	55	-129.40	-149.94
	56	-148.19	-148.19
	57	-145.57	-145.57
	58	-142.94	-142.94
	59	-140.32	-140.32
	60	-137.69	-137.69
	61	-135.94	-109.63
	62	-109.63	-109.63
	63	-109.63	-109.63
	64	-109.63	-109.63
	65	-109.63	-109.63
	66	-109.63	-109.63
	67	-109.63	-140.50
	68	-142.25	-142.25
	69	-144.87	-144.87
	70	-147.50	-147.50
	71	-150.12	-150.12
	72	-152.75	-152.75

```
#####
#          SOLICITAÇÕES NORMAIS (ELU)          #
#          VmaxHmax                             #
#####
```

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-201.91	-88.81
2	-88.81	-88.81
3	-88.81	-88.81
4	-88.81	-88.81
5	-88.81	-88.81
6	-88.81	-88.81
7	-88.81	-237.41
8	-235.14	-235.14
9	-231.73	-231.73
10	-228.31	-228.31
11	-224.90	-224.90
12	-221.49	-221.49
13	-219.21	-70.54
14	-70.54	-70.54
15	-70.54	-70.54
16	-70.54	-70.54
17	-70.54	-70.54
18	-70.54	-70.54
19	-70.54	-183.71
20	-185.99	-185.99
21	-189.40	-189.40
22	-192.81	-192.81
23	-196.22	-196.22
24	-199.64	-199.64
25	-201.91	-91.48
26	-91.48	-91.48
27	-91.48	-91.48
28	-91.48	-91.48
29	-91.48	-91.48
30	-91.48	-91.48
31	-91.48	-219.85
32	-217.57	-217.57
33	-214.16	-214.16
34	-210.75	-210.75
35	-207.34	-207.34
36	-203.92	-203.92
37	-201.65	-67.87
38	-67.87	-67.87
39	-67.87	-67.87
40	-67.87	-67.87
41	-67.87	-67.87
42	-67.87	-67.87
43	-67.87	-201.28
44	-203.55	-203.55
45	-206.96	-206.96
46	-210.38	-210.38
47	-213.79	-213.79
48	-217.20	-217.20
49	-219.48	-88.82

	50	-88.82	-88.82
	51	-88.82	-88.82
	52	-88.82	-88.82
	53	-88.82	-88.82
	54	-88.82	-88.82
	55	-88.82	-201.73
	56	-199.45	-199.45
	57	-196.04	-196.04
	58	-192.63	-192.63
	59	-189.21	-189.21
	60	-185.80	-185.80
	61	-183.53	-70.54
	62	-70.54	-70.54
	63	-70.54	-70.54
	64	-70.54	-70.54
	65	-70.54	-70.54
	66	-70.54	-70.54
	67	-70.54	-219.40
	68	-221.67	-221.67
	69	-225.09	-225.09
	70	-228.50	-228.50
	71	-231.91	-231.91
	72	-235.32	-235.32

```
#####
#          SOLICITAÇÕES TANGENCIAIS (ELU)          #
#          VmaxHmin                                #
#####
```

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-198.97	-36.58
2	-36.58	-36.58
3	-36.58	-36.58
4	-36.58	-36.58
5	-36.58	-36.58
6	-36.58	-36.58
7	-36.58	-240.36
8	-238.08	-238.08
9	-234.67	-234.67
10	-231.26	-231.26
11	-227.85	-227.85
12	-224.43	-224.43
13	-222.16	-33.89
14	-33.89	-33.89
15	-33.89	-33.89
16	-33.89	-33.89
17	-33.89	-33.89
18	-33.89	-33.89
19	-33.89	-180.77
20	-183.04	-183.04
21	-186.45	-186.45
22	-189.87	-189.87
23	-193.28	-193.28
24	-196.69	-196.69
25	-198.97	-42.82
26	-42.82	-42.82
27	-42.82	-42.82
28	-42.82	-42.82
29	-42.82	-42.82
30	-42.82	-42.82
31	-42.82	-216.65
32	-214.37	-214.37
33	-210.96	-210.96
34	-207.55	-207.55
35	-204.13	-204.13
36	-200.72	-200.72
37	-198.45	-27.65
38	-27.65	-27.65
39	-27.65	-27.65
40	-27.65	-27.65
41	-27.65	-27.65
42	-27.65	-27.65
43	-27.65	-204.48
44	-206.76	-206.76
45	-210.17	-210.17
46	-213.58	-213.58
47	-216.99	-216.99
48	-220.41	-220.41
49	-222.68	-38.57

	50	-38.57	-38.57
	51	-38.57	-38.57
	52	-38.57	-38.57
	53	-38.57	-38.57
	54	-38.57	-38.57
	55	-38.57	-187.44
	56	-185.17	-185.17
	57	-181.76	-181.76
	58	-178.34	-178.34
	59	-174.93	-174.93
	60	-171.52	-171.52
	61	-169.24	-31.90
	62	-31.90	-31.90
	63	-31.90	-31.90
	64	-31.90	-31.90
	65	-31.90	-31.90
	66	-31.90	-31.90
	67	-31.90	-233.68
	68	-235.96	-235.96
	69	-239.37	-239.37
	70	-242.78	-242.78
	71	-246.19	-246.19
	72	-249.61	-249.61

```
#####
#          SOLICITAÇÕES TANGENCIAIS (ELU)          #
#          VminHmax                                #
#####
```

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-151.16	-129.07
2	-129.07	-129.07
3	-129.07	-129.07
4	-129.07	-129.07
5	-129.07	-129.07
6	-129.07	-129.07
7	-129.07	-153.28
8	-151.53	-151.53
9	-148.91	-148.91
10	-146.28	-146.28
11	-143.66	-143.66
12	-141.03	-141.03
13	-139.28	-109.96
14	-109.96	-109.96
15	-109.96	-109.96
16	-109.96	-109.96
17	-109.96	-109.96
18	-109.96	-109.96
19	-109.96	-137.16
20	-138.91	-138.91
21	-141.53	-141.53
22	-144.16	-144.16
23	-146.78	-146.78
24	-149.41	-149.41
25	-151.16	-129.50
26	-129.50	-129.50
27	-129.50	-129.50
28	-129.50	-129.50
29	-129.50	-129.50
30	-129.50	-129.50
31	-129.50	-151.41
32	-149.66	-149.66
33	-147.04	-147.04
34	-144.41	-144.41
35	-141.79	-141.79
36	-139.16	-139.16
37	-137.41	-109.53
38	-109.53	-109.53
39	-109.53	-109.53
40	-109.53	-109.53
41	-109.53	-109.53
42	-109.53	-109.53
43	-109.53	-139.03
44	-140.78	-140.78
45	-143.40	-143.40
46	-146.03	-146.03
47	-148.65	-148.65
48	-151.28	-151.28
49	-153.03	-129.63

	50	-129.63	-129.63
	51	-129.63	-129.63
	52	-129.63	-129.63
	53	-129.63	-129.63
	54	-129.63	-129.63
	55	-129.63	-149.00
	56	-147.25	-147.25
	57	-144.62	-144.62
	58	-142.00	-142.00
	59	-139.37	-139.37
	60	-136.75	-136.75
	61	-135.00	-109.40
	62	-109.40	-109.40
	63	-109.40	-109.40
	64	-109.40	-109.40
	65	-109.40	-109.40
	66	-109.40	-109.40
	67	-109.40	-141.44
	68	-143.19	-143.19
	69	-145.82	-145.82
	70	-148.44	-148.44
	71	-151.07	-151.07
	72	-153.69	-153.69

```
#####
#          SOLICITAÇÕES TANGENCIAIS (ELU)          #
#          VmaxHmax                                #
#####
-----
                ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE
-----
| SEÇÃO |          ESQUERDA (kN) |          DIREITA (kN) |
-----
|  1 |          -205.62 |          -87.68 |
|  2 |          -87.68 |          -87.68 |
|  3 |          -87.68 |          -87.68 |
|  4 |          -87.68 |          -87.68 |
|  5 |          -87.68 |          -87.68 |
|  6 |          -87.68 |          -87.68 |
|  7 |          -87.68 |         -233.71 |
|  8 |         -231.43 |         -231.43 |
|  9 |         -228.02 |         -228.02 |
| 10 |         -224.61 |         -224.61 |
| 11 |         -221.19 |         -221.19 |
| 12 |         -217.78 |         -217.78 |
| 13 |         -215.51 |          -71.67 |
| 14 |          -71.67 |          -71.67 |
| 15 |          -71.67 |          -71.67 |
| 16 |          -71.67 |          -71.67 |
| 17 |          -71.67 |          -71.67 |
| 18 |          -71.67 |          -71.67 |
| 19 |          -71.67 |         -187.42 |
| 20 |         -189.69 |         -189.69 |
| 21 |         -193.11 |         -193.11 |
| 22 |         -196.52 |         -196.52 |
| 23 |         -199.93 |         -199.93 |
| 24 |         -203.34 |         -203.34 |
| 25 |         -205.62 |          -91.50 |
| 26 |          -91.50 |          -91.50 |
| 27 |          -91.50 |          -91.50 |
| 28 |          -91.50 |          -91.50 |
| 29 |          -91.50 |          -91.50 |
| 30 |          -91.50 |          -91.50 |
| 31 |          -91.50 |         -217.98 |
| 32 |         -215.71 |         -215.71 |
| 33 |         -212.29 |         -212.29 |
| 34 |         -208.88 |         -208.88 |
| 35 |         -205.47 |         -205.47 |
| 36 |         -202.06 |         -202.06 |
| 37 |         -199.78 |          -67.86 |
| 38 |          -67.86 |          -67.86 |
| 39 |          -67.86 |          -67.86 |
| 40 |          -67.86 |          -67.86 |
| 41 |          -67.86 |          -67.86 |
| 42 |          -67.86 |          -67.86 |
| 43 |          -67.86 |         -203.14 |
| 44 |         -205.42 |         -205.42 |
| 45 |         -208.83 |         -208.83 |
| 46 |         -212.24 |         -212.24 |
| 47 |         -215.66 |         -215.66 |
| 48 |         -219.07 |         -219.07 |
| 49 |         -221.34 |          -89.60 |
```

	50	-89.60	-89.60
	51	-89.60	-89.60
	52	-89.60	-89.60
	53	-89.60	-89.60
	54	-89.60	-89.60
	55	-89.60	-196.29
	56	-194.02	-194.02
	57	-190.61	-190.61
	58	-187.19	-187.19
	59	-183.78	-183.78
	60	-180.37	-180.37
	61	-178.09	-69.75
	62	-69.75	-69.75
	63	-69.75	-69.75
	64	-69.75	-69.75
	65	-69.75	-69.75
	66	-69.75	-69.75
	67	-69.75	-224.83
	68	-227.11	-227.11
	69	-230.52	-230.52
	70	-233.93	-233.93
	71	-237.35	-237.35
	72	-240.76	-240.76

```
#####
#          VERIFICAÇÃO DA FADIGA (ELS)          #
#          VmaxHmin                             #
#####
```

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-147.03	-62.45
2	-62.45	-62.45
3	-62.45	-62.45
4	-62.45	-62.45
5	-62.45	-62.45
6	-62.45	-62.45
7	-62.45	-173.64
8	-171.89	-171.89
9	-169.26	-169.26
10	-166.64	-166.64
11	-164.01	-164.01
12	-161.39	-161.39
13	-159.64	-48.52
14	-48.52	-48.52
15	-48.52	-48.52
16	-48.52	-48.52
17	-48.52	-48.52
18	-48.52	-48.52
19	-48.52	-133.03
20	-134.78	-134.78
21	-137.41	-137.41
22	-140.03	-140.03
23	-142.66	-142.66
24	-145.28	-145.28
25	-147.03	-64.48
26	-64.48	-64.48
27	-64.48	-64.48
28	-64.48	-64.48
29	-64.48	-64.48
30	-64.48	-64.48
31	-64.48	-160.48
32	-158.73	-158.73
33	-156.10	-156.10
34	-153.48	-153.48
35	-150.85	-150.85
36	-148.23	-148.23
37	-146.48	-46.49
38	-46.49	-46.49
39	-46.49	-46.49
40	-46.49	-46.49
41	-46.49	-46.49
42	-46.49	-46.49
43	-46.49	-146.19
44	-147.94	-147.94
45	-150.57	-150.57
46	-153.19	-153.19
47	-155.82	-155.82
48	-158.44	-158.44
49	-160.19	-62.46

50	-62.46	-62.46
51	-62.46	-62.46
52	-62.46	-62.46
53	-62.46	-62.46
54	-62.46	-62.46
55	-62.46	-146.89
56	-145.14	-145.14
57	-142.52	-142.52
58	-139.89	-139.89
59	-137.27	-137.27
60	-134.64	-134.64
61	-132.89	-48.51
62	-48.51	-48.51
63	-48.51	-48.51
64	-48.51	-48.51
65	-48.51	-48.51
66	-48.51	-48.51
67	-48.51	-159.78
68	-161.53	-161.53
69	-164.16	-164.16
70	-166.78	-166.78
71	-169.41	-169.41
72	-172.03	-172.03

```
#####
#          VERIFICAÇÃO DA FADIGA (ELS)          #
#          VminHmax                             #
#####
```

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-144.77	-95.21
2	-95.21	-95.21
3	-95.21	-95.21
4	-95.21	-95.21
5	-95.21	-95.21
6	-95.21	-95.21
7	-95.21	-159.67
8	-157.92	-157.92
9	-155.30	-155.30
10	-152.67	-152.67
11	-150.05	-150.05
12	-147.42	-147.42
13	-145.67	-78.88
14	-78.88	-78.88
15	-78.88	-78.88
16	-78.88	-78.88
17	-78.88	-78.88
18	-78.88	-78.88
19	-78.88	-130.77
20	-132.52	-132.52
21	-135.14	-135.14
22	-137.77	-137.77
23	-140.39	-140.39
24	-143.02	-143.02
25	-144.77	-96.05
26	-96.05	-96.05
27	-96.05	-96.05
28	-96.05	-96.05
29	-96.05	-96.05
30	-96.05	-96.05
31	-96.05	-152.24
32	-150.49	-150.49
33	-147.87	-147.87
34	-145.24	-145.24
35	-142.62	-142.62
36	-139.99	-139.99
37	-138.24	-78.04
38	-78.04	-78.04
39	-78.04	-78.04
40	-78.04	-78.04
41	-78.04	-78.04
42	-78.04	-78.04
43	-78.04	-138.20
44	-139.95	-139.95
45	-142.57	-142.57
46	-145.20	-145.20
47	-147.82	-147.82
48	-150.45	-150.45
49	-152.20	-95.21

	50	-95.21	-95.21
	51	-95.21	-95.21
	52	-95.21	-95.21
	53	-95.21	-95.21
	54	-95.21	-95.21
	55	-95.21	-144.75
	56	-143.00	-143.00
	57	-140.37	-140.37
	58	-137.75	-137.75
	59	-135.12	-135.12
	60	-132.50	-132.50
	61	-130.75	-78.88
	62	-78.88	-78.88
	63	-78.88	-78.88
	64	-78.88	-78.88
	65	-78.88	-78.88
	66	-78.88	-78.88
	67	-78.88	-145.69
	68	-147.44	-147.44
	69	-150.07	-150.07
	70	-152.69	-152.69
	71	-155.32	-155.32
	72	-157.94	-157.94

```
#####
#          VERIFICAÇÃO DA FADIGA (ELS)          #
#          VmaxHmax                             #
#####
```

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-147.42	-64.89
2	-64.89	-64.89
3	-64.89	-64.89
4	-64.89	-64.89
5	-64.89	-64.89
6	-64.89	-64.89
7	-64.89	-173.25
8	-171.50	-171.50
9	-168.87	-168.87
10	-166.25	-166.25
11	-163.62	-163.62
12	-161.00	-161.00
13	-159.25	-51.17
14	-51.17	-51.17
15	-51.17	-51.17
16	-51.17	-51.17
17	-51.17	-51.17
18	-51.17	-51.17
19	-51.17	-133.42
20	-135.17	-135.17
21	-137.80	-137.80
22	-140.42	-140.42
23	-143.05	-143.05
24	-145.67	-145.67
25	-147.42	-66.84
26	-66.84	-66.84
27	-66.84	-66.84
28	-66.84	-66.84
29	-66.84	-66.84
30	-66.84	-66.84
31	-66.84	-160.47
32	-158.72	-158.72
33	-156.10	-156.10
34	-153.47	-153.47
35	-150.85	-150.85
36	-148.22	-148.22
37	-146.47	-49.22
38	-49.22	-49.22
39	-49.22	-49.22
40	-49.22	-49.22
41	-49.22	-49.22
42	-49.22	-49.22
43	-49.22	-146.20
44	-147.95	-147.95
45	-150.57	-150.57
46	-153.20	-153.20
47	-155.82	-155.82
48	-158.45	-158.45
49	-160.20	-64.90

	50	-64.90	-64.90
	51	-64.90	-64.90
	52	-64.90	-64.90
	53	-64.90	-64.90
	54	-64.90	-64.90
	55	-64.90	-147.29
	56	-145.54	-145.54
	57	-142.91	-142.91
	58	-140.29	-140.29
	59	-137.66	-137.66
	60	-135.04	-135.04
	61	-133.29	-51.16
	62	-51.16	-51.16
	63	-51.16	-51.16
	64	-51.16	-51.16
	65	-51.16	-51.16
	66	-51.16	-51.16
	67	-51.16	-159.38
	68	-161.13	-161.13
	69	-163.76	-163.76
	70	-166.38	-166.38
	71	-169.01	-169.01
	72	-171.63	-171.63

```
#####
#          VERIFICAÇÃO DA FADIGA (ELS)          #
#          VminHmin                             #
#####
```

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-140.07	-62.36
2	-62.36	-62.36
3	-62.36	-62.36
4	-62.36	-62.36
5	-62.36	-62.36
6	-62.36	-62.36
7	-62.36	-164.37
8	-162.62	-162.62
9	-159.99	-159.99
10	-157.37	-157.37
11	-154.74	-154.74
12	-152.12	-152.12
13	-150.37	-48.61
14	-48.61	-48.61
15	-48.61	-48.61
16	-48.61	-48.61
17	-48.61	-48.61
18	-48.61	-48.61
19	-48.61	-126.07
20	-127.82	-127.82
21	-130.45	-130.45
22	-133.07	-133.07
23	-135.70	-135.70
24	-138.32	-138.32
25	-140.07	-64.19
26	-64.19	-64.19
27	-64.19	-64.19
28	-64.19	-64.19
29	-64.19	-64.19
30	-64.19	-64.19
31	-64.19	-152.35
32	-150.60	-150.60
33	-147.97	-147.97
34	-145.35	-145.35
35	-142.72	-142.72
36	-140.10	-140.10
37	-138.35	-46.78
38	-46.78	-46.78
39	-46.78	-46.78
40	-46.78	-46.78
41	-46.78	-46.78
42	-46.78	-46.78
43	-46.78	-138.09
44	-139.84	-139.84
45	-142.47	-142.47
46	-145.09	-145.09
47	-147.72	-147.72
48	-150.34	-150.34
49	-152.09	-62.37

	50	-62.37	-62.37
	51	-62.37	-62.37
	52	-62.37	-62.37
	53	-62.37	-62.37
	54	-62.37	-62.37
	55	-62.37	-139.95
	56	-138.20	-138.20
	57	-135.57	-135.57
	58	-132.95	-132.95
	59	-130.32	-130.32
	60	-127.70	-127.70
	61	-125.95	-48.60
	62	-48.60	-48.60
	63	-48.60	-48.60
	64	-48.60	-48.60
	65	-48.60	-48.60
	66	-48.60	-48.60
	67	-48.60	-150.49
	68	-152.24	-152.24
	69	-154.87	-154.87
	70	-157.49	-157.49
	71	-160.12	-160.12
	72	-162.74	-162.74

```
#####
#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VmaxHmin                                  #
#####
```

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-144.42	-62.42
2	-62.42	-62.42
3	-62.42	-62.42
4	-62.42	-62.42
5	-62.42	-62.42
6	-62.42	-62.42
7	-62.42	-170.16
8	-168.41	-168.41
9	-165.79	-165.79
10	-163.16	-163.16
11	-160.54	-160.54
12	-157.91	-157.91
13	-156.16	-48.55
14	-48.55	-48.55
15	-48.55	-48.55
16	-48.55	-48.55
17	-48.55	-48.55
18	-48.55	-48.55
19	-48.55	-130.42
20	-132.17	-132.17
21	-134.80	-134.80
22	-137.42	-137.42
23	-140.05	-140.05
24	-142.67	-142.67
25	-144.42	-64.37
26	-64.37	-64.37
27	-64.37	-64.37
28	-64.37	-64.37
29	-64.37	-64.37
30	-64.37	-64.37
31	-64.37	-157.43
32	-155.68	-155.68
33	-153.05	-153.05
34	-150.43	-150.43
35	-147.80	-147.80
36	-145.18	-145.18
37	-143.43	-46.60
38	-46.60	-46.60
39	-46.60	-46.60
40	-46.60	-46.60
41	-46.60	-46.60
42	-46.60	-46.60
43	-46.60	-143.16
44	-144.91	-144.91
45	-147.53	-147.53
46	-150.16	-150.16
47	-152.78	-152.78
48	-155.41	-155.41
49	-157.16	-62.42

	50	-62.42	-62.42
	51	-62.42	-62.42
	52	-62.42	-62.42
	53	-62.42	-62.42
	54	-62.42	-62.42
	55	-62.42	-144.29
	56	-142.54	-142.54
	57	-139.91	-139.91
	58	-137.29	-137.29
	59	-134.66	-134.66
	60	-132.04	-132.04
	61	-130.29	-48.55
	62	-48.55	-48.55
	63	-48.55	-48.55
	64	-48.55	-48.55
	65	-48.55	-48.55
	66	-48.55	-48.55
	67	-48.55	-156.30
	68	-158.05	-158.05
	69	-160.67	-160.67
	70	-163.30	-163.30
	71	-165.92	-165.92
	72	-168.55	-168.55

```
#####
#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VminHmax                                  #
#####
```

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-144.55	-93.84
2	-93.84	-93.84
3	-93.84	-93.84
4	-93.84	-93.84
5	-93.84	-93.84
6	-93.84	-93.84
7	-93.84	-159.89
8	-158.14	-158.14
9	-155.51	-155.51
10	-152.89	-152.89
11	-150.26	-150.26
12	-147.64	-147.64
13	-145.89	-77.39
14	-77.39	-77.39
15	-77.39	-77.39
16	-77.39	-77.39
17	-77.39	-77.39
18	-77.39	-77.39
19	-77.39	-130.55
20	-132.30	-132.30
21	-134.93	-134.93
22	-137.55	-137.55
23	-140.18	-140.18
24	-142.80	-142.80
25	-144.55	-94.72
26	-94.72	-94.72
27	-94.72	-94.72
28	-94.72	-94.72
29	-94.72	-94.72
30	-94.72	-94.72
31	-94.72	-152.25
32	-150.50	-150.50
33	-147.87	-147.87
34	-145.25	-145.25
35	-142.62	-142.62
36	-140.00	-140.00
37	-138.25	-76.51
38	-76.51	-76.51
39	-76.51	-76.51
40	-76.51	-76.51
41	-76.51	-76.51
42	-76.51	-76.51
43	-76.51	-138.19
44	-139.94	-139.94
45	-142.57	-142.57
46	-145.19	-145.19
47	-147.82	-147.82
48	-150.44	-150.44
49	-152.19	-93.84

	50	-93.84	-93.84
	51	-93.84	-93.84
	52	-93.84	-93.84
	53	-93.84	-93.84
	54	-93.84	-93.84
	55	-93.84	-144.53
	56	-142.78	-142.78
	57	-140.15	-140.15
	58	-137.53	-137.53
	59	-134.90	-134.90
	60	-132.28	-132.28
	61	-130.53	-77.39
	62	-77.39	-77.39
	63	-77.39	-77.39
	64	-77.39	-77.39
	65	-77.39	-77.39
	66	-77.39	-77.39
	67	-77.39	-145.91
	68	-147.66	-147.66
	69	-150.29	-150.29
	70	-152.91	-152.91
	71	-155.54	-155.54
	72	-158.16	-158.16

```
#####
#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VmaxHmax                                  #
#####
```

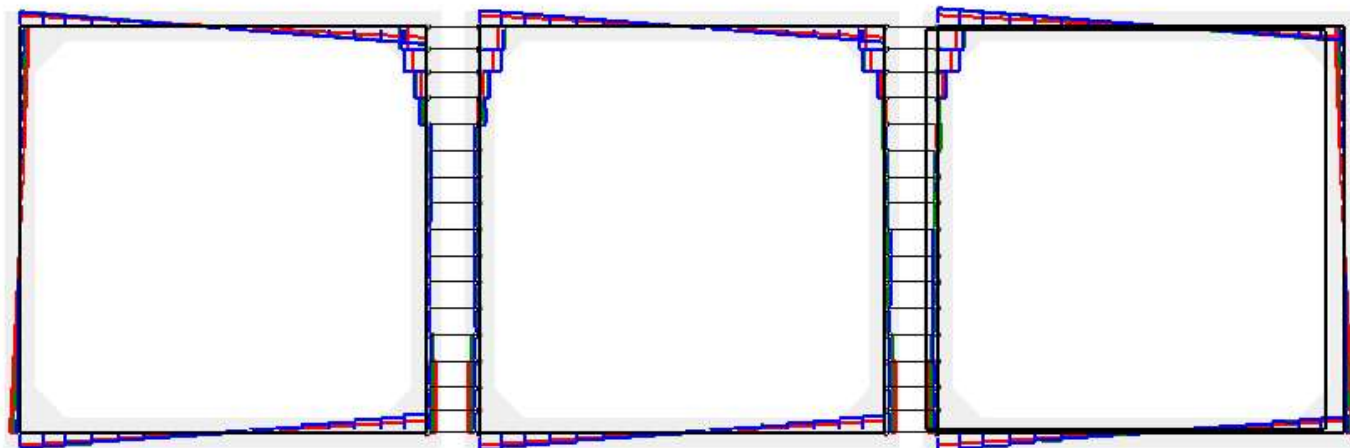
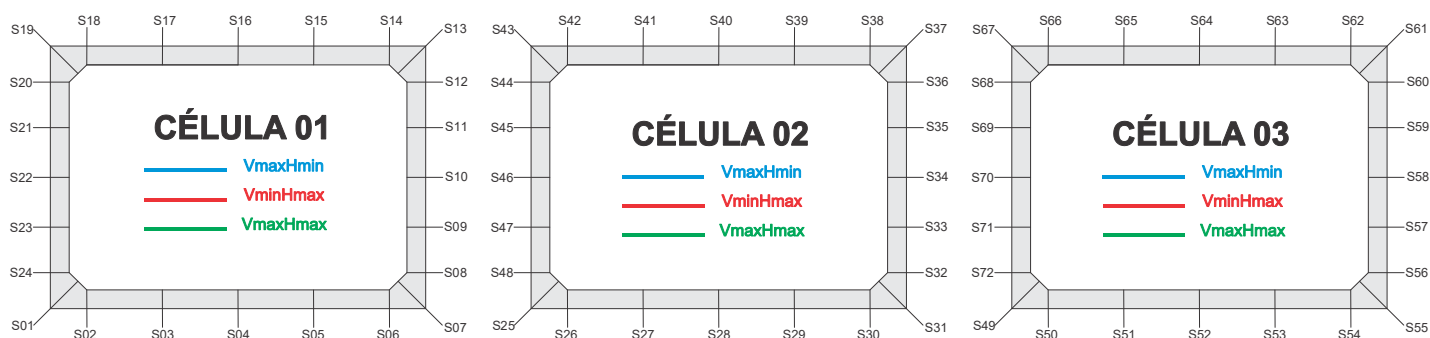
ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-144.67	-63.94
2	-63.94	-63.94
3	-63.94	-63.94
4	-63.94	-63.94
5	-63.94	-63.94
6	-63.94	-63.94
7	-63.94	-169.92
8	-168.17	-168.17
9	-165.54	-165.54
10	-162.92	-162.92
11	-160.29	-160.29
12	-157.67	-157.67
13	-155.92	-50.21
14	-50.21	-50.21
15	-50.21	-50.21
16	-50.21	-50.21
17	-50.21	-50.21
18	-50.21	-50.21
19	-50.21	-130.67
20	-132.42	-132.42
21	-135.04	-135.04
22	-137.67	-137.67
23	-140.29	-140.29
24	-142.92	-142.92
25	-144.67	-65.85
26	-65.85	-65.85
27	-65.85	-65.85
28	-65.85	-65.85
29	-65.85	-65.85
30	-65.85	-65.85
31	-65.85	-157.42
32	-155.67	-155.67
33	-153.05	-153.05
34	-150.42	-150.42
35	-147.80	-147.80
36	-145.17	-145.17
37	-143.42	-48.30
38	-48.30	-48.30
39	-48.30	-48.30
40	-48.30	-48.30
41	-48.30	-48.30
42	-48.30	-48.30
43	-48.30	-143.16
44	-144.91	-144.91
45	-147.54	-147.54
46	-150.16	-150.16
47	-152.79	-152.79
48	-155.41	-155.41
49	-157.16	-63.95

	50	-63.95	-63.95
	51	-63.95	-63.95
	52	-63.95	-63.95
	53	-63.95	-63.95
	54	-63.95	-63.95
	55	-63.95	-144.53
	56	-142.78	-142.78
	57	-140.16	-140.16
	58	-137.53	-137.53
	59	-134.91	-134.91
	60	-132.28	-132.28
	61	-130.53	-50.20
	62	-50.20	-50.20
	63	-50.20	-50.20
	64	-50.20	-50.20
	65	-50.20	-50.20
	66	-50.20	-50.20
	67	-50.20	-156.05
	68	-157.80	-157.80
	69	-160.43	-160.43
	70	-163.05	-163.05
	71	-165.68	-165.68
	72	-168.30	-168.30

ESFORÇO CORTANTE

NOMENCLATURA DAS SEÇÕES PARA VERSÃO COMPLETA DO RELATÓRIO



```
#####
# SOLICITAÇÕES NORMAIS (ELU) #
# VmaxHmin #
#####
```

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	37.42	-182.06
2	-159.60	-133.65
3	-84.34	-59.18
4	-12.91	12.58
5	63.95	94.20
6	158.76	194.06
7	226.31	-37.42
8	-45.92	-45.92
9	-40.49	-40.49
10	-49.90	-49.90
11	-56.24	-56.24
12	143.53	283.10
13	316.76	-226.32
14	-181.30	-181.30
15	-103.08	-103.08
16	-24.86	-24.86
17	53.36	53.36
18	131.58	131.58
19	176.61	-33.05
20	-23.54	-23.54
21	-7.91	-7.91
22	6.43	6.43
23	19.49	19.49
24	31.27	31.27
25	37.42	-204.69
26	-178.09	-147.97
27	-91.12	-63.11
28	-13.24	12.84
29	62.74	90.80
30	147.77	177.98
31	204.68	-42.63
32	-51.13	-51.13
33	-63.60	-63.60
34	-73.01	-9.98
35	-16.32	-9.23
36	101.35	273.83
37	318.39	-201.48
38	-156.46	-156.46
39	-78.24	-78.24
40	-0.02	-0.02
41	78.20	78.20
42	156.42	156.42
43	201.44	-311.55
44	-277.89	-138.32
45	61.45	61.45
46	55.11	55.11
47	45.70	45.71
48	51.13	51.13
49	42.63	-226.34

	50	-194.10	-158.79
	51	-94.17	-63.88
	52	-12.40	13.13
	53	59.47	84.63
	54	133.88	159.75
	55	182.11	-38.05
	56	-31.90	-31.90
	57	-20.13	-20.13
	58	-7.07	-7.07
	59	7.28	7.28
	60	22.91	22.91
	61	32.42	-176.58
	62	-131.56	-131.56
	63	-53.34	-53.34
	64	24.88	24.88
	65	103.10	103.10
	66	181.32	181.32
	67	226.34	-322.96
	68	-278.41	-105.92
	69	4.65	11.74
	70	5.40	68.43
	71	59.02	59.02
	72	46.56	46.55

```
#####
# SOLICITAÇÕES NORMAIS (ELU) #
# VminHmax #
#####
```

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	129.40	-140.63
2	-123.94	-104.19
3	-65.63	-45.81
4	-9.80	9.37
5	45.87	66.20
6	106.27	126.96
7	144.64	-129.40
8	-129.40	-129.40
9	-0.22	-0.22
10	-0.22	-0.22
11	-0.22	-0.22
12	57.16	174.83
13	234.97	-140.50
14	-109.59	-109.59
15	-55.93	-55.93
16	-2.28	-2.28
17	51.38	51.38
18	105.03	105.03
19	135.94	-109.63
20	-87.68	-87.68
21	-46.49	-46.49
22	-1.78	-1.78
23	46.46	46.46
24	98.24	98.24
25	129.40	-142.65
26	-125.48	-105.28
27	-65.97	-45.89
28	-9.60	9.59
29	45.87	65.96
30	105.27	125.48
31	142.65	-129.58
32	-129.58	-129.58
33	0.37	0.37
34	0.37	0.37
35	0.37	-9.12
36	59.10	175.13
37	234.57	-138.22
38	-107.31	-107.31
39	-53.65	-53.65
40	0.00	0.00
41	53.66	53.66
42	107.31	107.31
43	138.22	-234.79
44	-174.66	-56.99
45	0.39	0.39
46	0.39	0.39
47	0.39	0.39
48	129.58	129.58
49	129.58	-144.64

	50	-126.95	-106.26
	51	-66.20	-45.87
	52	-9.36	9.81
	53	45.81	65.64
	54	104.19	123.94
	55	140.64	-129.40
	56	-98.24	-98.24
	57	-46.46	-46.46
	58	1.78	1.78
	59	46.49	46.49
	60	87.68	87.68
	61	109.63	-135.94
	62	-105.03	-105.03
	63	-51.38	-51.38
	64	2.28	2.28
	65	55.93	55.93
	66	109.59	109.59
	67	140.50	-234.75
	68	-175.30	-59.28
	69	8.95	-0.55
	70	-0.55	-0.55
	71	-0.55	-0.55
	72	129.40	129.40

```
#####
# SOLICITAÇÕES NORMAIS (ELU) #
# VmaxHmax #
#####
```

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	88.81	-188.80
2	-165.48	-138.47
3	-86.62	-60.23
4	-11.87	14.32
5	66.10	95.89
6	157.85	191.01
7	220.74	-88.81
8	-88.81	-88.81
9	-29.99	-29.99
10	-29.99	-29.99
11	-29.99	-29.99
12	119.10	273.81
13	325.80	-219.21
14	-174.19	-174.19
15	-95.97	-95.97
16	-17.75	-17.75
17	60.47	60.47
18	138.69	138.69
19	183.71	-70.54
20	-55.91	-55.91
21	-28.45	-28.45
22	1.36	1.36
23	33.52	33.52
24	68.03	68.03
25	88.81	-204.92
26	-178.86	-149.07
27	-92.14	-63.80
28	-12.97	13.65
29	64.46	92.79
30	149.63	179.35
31	205.34	-91.48
32	-91.49	-91.49
33	-36.85	-36.85
34	-36.85	-36.85
35	-36.85	32.21
36	100.47	268.75
37	326.20	-201.65
38	-156.63	-156.63
39	-78.41	-78.41
40	-0.19	-0.19
41	78.03	78.03
42	156.26	156.26
43	201.28	-323.13
44	-271.14	-116.43
45	32.66	32.66
46	32.66	32.66
47	32.66	32.66
48	91.49	91.49
49	91.48	-220.97

	50	-191.30	-158.18
	51	-96.27	-66.47
	52	-14.68	11.54
	53	59.94	86.35
	54	138.24	165.27
	55	188.61	-88.82
	56	-68.04	-68.04
	57	-33.53	-33.53
	58	-1.36	-1.36
	59	28.45	28.45
	60	55.90	55.90
	61	70.54	-183.53
	62	-138.50	-138.50
	63	-60.28	-60.28
	64	17.94	17.94
	65	96.16	96.16
	66	174.38	174.38
	67	219.40	-328.87
	68	-271.41	-103.13
	69	-34.88	34.18
	70	34.18	34.18
	71	34.18	34.18
	72	88.82	88.82

```
#####
#          SOLICITAÇÕES TANGENCIAIS (ELU)          #
#          VmaxHmin                                #
#####
```

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	36.58	-186.23
2	-163.83	-138.02
3	-89.23	-64.44
4	-19.00	6.07
5	56.82	86.97
6	152.09	188.15
7	221.45	-36.59
8	-45.09	-45.09
9	-57.56	-57.56
10	-66.96	10.10
11	3.76	3.76
12	79.06	274.31
13	353.10	-222.16
14	-177.14	-177.14
15	-98.92	-98.92
16	-20.70	-20.70
17	57.52	57.52
18	135.75	135.75
19	180.77	-33.89
20	-24.38	-24.38
21	-8.74	-8.74
22	5.60	5.60
23	18.66	18.66
24	30.43	30.43
25	36.58	-207.59
26	-180.80	-150.58
27	-93.88	-66.08
28	-16.84	8.90
29	58.19	86.07
30	143.22	173.86
31	201.20	-42.83
32	-51.33	-51.33
33	-63.80	-63.80
34	-73.20	11.94
35	5.60	-12.87
36	75.57	263.49
37	338.78	-198.45
38	-153.42	-153.42
39	-75.20	-75.20
40	3.02	3.02
41	81.24	81.24
42	159.46	159.46
43	204.48	-346.86
44	-268.07	-72.82
45	2.48	2.48
46	-3.86	73.20
47	63.80	63.80
48	51.33	51.33
49	42.83	-233.04

	50	-199.73	-163.50
	51	-97.76	-67.29
	52	-16.12	8.99
	53	54.19	78.71
	54	126.88	152.46
	55	174.72	-38.57
	56	-32.42	-32.42
	57	-20.64	-20.64
	58	-7.58	-7.58
	59	6.76	6.76
	60	22.39	22.39
	61	31.90	-169.24
	62	-124.22	-124.22
	63	-46.00	-46.00
	64	32.22	32.22
	65	110.44	110.44
	66	188.66	188.66
	67	233.68	-343.04
	68	-267.75	-79.83
	69	8.61	-9.85
	70	-16.20	68.95
	71	59.54	59.54
	72	47.07	47.07

```
#####
#          SOLICITAÇÕES TANGENCIAIS (ELU)          #
#          VmínHmax                                #
#####
```

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	129.07	-141.84
2	-125.14	-105.40
3	-66.97	-47.24
4	-11.46	7.59
5	43.90	64.19
6	104.39	125.28
7	143.24	-129.07
8	-129.07	-129.07
9	0.40	0.40
10	0.40	0.40
11	0.40	0.40
12	43.23	170.90
13	250.96	-139.28
14	-108.37	-108.37
15	-54.72	-54.72
16	-1.06	-1.06
17	52.59	52.59
18	106.25	106.25
19	137.16	-109.96
20	-88.01	-88.01
21	-46.82	-46.82
22	-2.11	-2.11
23	46.14	46.14
24	97.91	97.91
25	129.07	-143.38
26	-126.12	-105.85
27	-66.59	-46.59
28	-10.55	8.50
29	44.54	64.56
30	103.92	124.29
31	141.68	-129.50
32	-129.50	-129.50
33	0.95	0.95
34	0.95	0.95
35	0.95	-7.54
36	44.72	170.42
37	249.73	-137.41
38	-106.50	-106.50
39	-52.85	-52.85
40	0.81	0.81
41	54.46	54.46
42	108.12	108.12
43	139.03	-250.53
44	-170.47	-42.81
45	0.03	0.03
46	0.03	0.03
47	0.03	0.03
48	129.50	129.50
49	129.50	-145.42

	50	-127.48	-106.58
	51	-66.25	-45.88
	52	-9.44	9.66
	53	45.42	65.12
	54	103.42	123.08
	55	139.71	-129.63
	56	-98.46	-98.46
	57	-46.69	-46.69
	58	1.56	1.56
	59	46.27	46.27
	60	87.45	87.45
	61	109.40	-135.00
	62	-104.09	-104.09
	63	-50.43	-50.43
	64	3.22	3.22
	65	56.88	56.88
	66	110.53	110.53
	67	141.44	-249.61
	68	-170.30	-44.59
	69	7.66	-0.82
	70	-0.82	-0.82
	71	-0.82	-0.82
	72	129.63	129.63

```
#####
#          SOLICITAÇÕES TANGENCIAIS (ELU)          #
#          VmaxHmax                                #
#####
```

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	87.68	-192.47
2	-169.14	-142.20
3	-90.77	-64.70
4	-17.12	8.67
5	59.83	89.51
6	151.92	185.76
7	216.41	-87.68
8	-87.69	-87.69
9	-22.01	-22.01
10	-22.01	-22.01
11	-22.01	-22.01
12	88.70	265.28
13	351.64	-215.51
14	-170.48	-170.48
15	-92.26	-92.26
16	-14.04	-14.04
17	64.18	64.18
18	142.40	142.40
19	187.42	-71.67
20	-57.04	-57.04
21	-29.58	-29.58
22	0.23	0.23
23	32.39	32.39
24	66.90	66.90
25	87.68	-206.63
26	-180.36	-150.46
27	-93.66	-65.53
28	-15.28	11.02
29	61.28	89.45
30	146.45	176.56
31	203.09	-91.50
32	-91.50	-91.50
33	-39.21	-39.21
34	-39.21	-39.21
35	25.80	-11.66
36	73.52	263.03
37	351.79	-199.78
38	-154.76	-154.76
39	-76.54	-76.54
40	1.68	1.68
41	79.90	79.90
42	158.12	158.12
43	203.14	-347.83
44	-261.46	-84.89
45	25.82	25.82
46	25.82	25.82
47	25.82	25.82
48	91.50	91.50
49	91.50	-225.91

	50	-195.43	-161.60
	51	-98.79	-68.84
	52	-17.21	8.72
	53	56.29	82.23
	54	133.24	159.99
	55	183.19	-89.60
	56	-68.83	-68.83
	57	-34.31	-34.31
	58	-2.15	-2.15
	59	27.66	27.66
	60	55.12	55.12
	61	69.75	-178.09
	62	-133.07	-133.07
	63	-54.85	-54.85
	64	23.37	23.37
	65	101.59	101.59
	66	179.81	179.81
	67	224.83	-353.68
	68	-264.92	-75.42
	69	9.77	-27.69
	70	37.32	37.32
	71	37.32	37.32
	72	89.61	89.61

```
#####
#          VERIFICAÇÃO DA FADIGA (ELS)          #
#          VmaxHmin                             #
#####
```

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	62.45	-137.45
2	-120.51	-100.79
3	-63.10	-43.85
4	-8.70	10.43
5	48.15	69.96
6	115.26	139.61
7	161.38	-62.46
8	-62.46	-62.46
9	-22.91	-22.91
10	-22.91	-22.91
11	-22.91	-22.91
12	87.73	199.38
13	235.99	-159.64
14	-126.92	-126.92
15	-70.11	-70.11
16	-13.30	-13.30
17	43.51	43.51
18	100.32	100.32
19	133.03	-48.52
20	-38.51	-38.51
21	-19.59	-19.59
22	1.10	1.10
23	23.56	23.56
24	47.80	47.80
25	62.45	-149.52
26	-130.51	-108.70
27	-67.19	-46.47
28	-9.46	9.99
29	46.98	67.69
30	109.13	130.89
31	149.84	-64.48
32	-64.48	-64.48
33	-28.17	-28.17
34	-28.17	-28.17
35	-28.17	25.11
36	73.39	195.51
37	236.34	-146.48
38	-113.76	-113.76
39	-56.95	-56.95
40	-0.14	-0.14
41	56.67	56.67
42	113.48	113.48
43	146.19	-233.96
44	-197.35	-85.71
45	24.94	24.94
46	24.94	24.94
47	24.94	24.94
48	64.48	64.48
49	64.48	-161.55

	50	-139.83	-115.52
	51	-70.25	-48.44
	52	-10.70	8.44
	53	43.63	62.90
	54	100.62	120.35
	55	137.30	-62.46
	56	-47.81	-47.81
	57	-23.57	-23.57
	58	-1.10	-1.10
	59	19.59	19.59
	60	38.50	38.50
	61	48.51	-132.89
	62	-100.18	-100.18
	63	-43.37	-43.37
	64	13.44	13.44
	65	70.26	70.26
	66	127.07	127.07
	67	159.78	-238.36
	68	-197.53	-75.41
	69	-27.13	26.15
	70	26.15	26.15
	71	26.15	26.15
	72	62.46	62.46

```
#####
#          VERIFICAÇÃO DA FADIGA (ELS)          #
#          VminHmax                             #
#####
```

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	95.21	-135.46
2	-118.92	-99.49
3	-62.02	-42.81
4	-7.94	10.81
5	46.96	67.43
6	108.62	130.27
7	149.10	-95.21
8	-95.21	-95.21
9	-6.20	-6.20
10	-6.20	-6.20
11	-6.20	-6.20
12	66.77	182.27
13	231.24	-145.67
14	-114.76	-114.76
15	-61.11	-61.11
16	-7.45	-7.45
17	46.20	46.20
18	99.86	99.86
19	130.77	-78.88
20	-62.97	-62.97
21	-33.06	-33.06
22	-0.53	-0.53
23	34.64	34.64
24	72.43	72.43
25	95.21	-142.42
26	-124.96	-104.57
27	-65.24	-45.29
28	-9.43	9.51
29	45.36	65.31
30	104.63	125.02
31	142.47	-96.05
32	-96.05	-96.05
33	-7.52	-7.52
34	-7.52	-7.52
35	-7.52	0.33
36	64.12	181.15
37	230.75	-138.24
38	-107.33	-107.33
39	-53.68	-53.68
40	-0.02	-0.02
41	53.63	53.63
42	107.29	107.29
43	138.20	-230.40
44	-181.43	-65.93
45	7.05	7.05
46	7.05	7.05
47	7.05	7.05
48	96.05	96.05
49	96.05	-149.13

	50	-130.30	-108.65
	51	-67.47	-47.00
	52	-10.85	7.90
	53	42.78	61.99
	54	99.46	118.90
	55	135.44	-95.21
	56	-72.43	-72.43
	57	-34.64	-34.64
	58	0.53	0.53
	59	33.06	33.06
	60	62.97	62.97
	61	78.88	-130.75
	62	-99.84	-99.84
	63	-46.18	-46.18
	64	7.47	7.47
	65	61.13	61.13
	66	114.78	114.78
	67	145.69	-231.59
	68	-181.99	-64.96
	69	-1.17	6.68
	70	6.68	6.68
	71	6.68	6.68
	72	95.21	95.21

```
#####
# VERIFICAÇÃO DA FADIGA (ELS) #
# VmaxHmax #
#####
```

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	64.89	-137.83
2	-120.85	-101.09
3	-63.27	-43.96
4	-8.70	10.47
5	48.22	70.01
6	115.18	139.42
7	161.06	-64.89
8	-64.90	-64.90
9	-21.85	-21.85
10	-21.85	-21.85
11	-21.85	-21.85
12	86.57	198.89
13	236.61	-159.25
14	-126.54	-126.54
15	-69.73	-69.73
16	-12.91	-12.91
17	43.90	43.90
18	100.71	100.71
19	133.42	-51.17
20	-40.56	-40.56
21	-20.62	-20.62
22	1.07	1.07
23	24.51	24.51
24	49.71	49.71
25	64.89	-149.55
26	-130.58	-108.80
27	-67.29	-46.55
28	-9.49	9.99
29	47.04	67.76
30	109.20	130.94
31	149.86	-66.84
32	-66.85	-66.85
33	-26.85	-26.85
34	-26.85	-26.85
35	-26.85	23.50
36	72.98	195.20
37	236.90	-146.47
38	-113.76	-113.76
39	-56.95	-56.95
40	-0.14	-0.14
41	56.68	56.68
42	113.49	113.49
43	146.20	-234.66
44	-196.94	-84.62
45	23.80	23.80
46	23.80	23.80
47	23.80	23.80
48	66.85	66.85
49	66.84	-161.23

	50	-139.63	-115.42
	51	-70.28	-48.49
	52	-10.73	8.45
	53	43.75	63.08
	54	100.92	120.70
	55	137.69	-64.90
	56	-49.71	-49.71
	57	-24.52	-24.52
	58	-1.08	-1.08
	59	20.62	20.62
	60	40.55	40.55
	61	51.16	-133.29
	62	-100.57	-100.57
	63	-43.76	-43.76
	64	13.05	13.05
	65	69.86	69.86
	66	126.67	126.67
	67	159.38	-238.85
	68	-197.14	-74.93
	69	-25.44	24.91
	70	24.91	24.91
	71	24.91	24.91
	72	64.90	64.90

```
#####
#          VERIFICAÇÃO DA FADIGA (ELS)          #
#          VminHmin                             #
#####
```

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	62.36	-130.94
2	-114.86	-96.03
3	-60.14	-41.73
4	-8.26	9.99
5	45.79	66.52
6	109.32	132.34
7	152.80	-62.36
8	-62.36	-62.36
9	-20.41	-20.41
10	-20.41	-20.41
11	-20.41	-20.41
12	81.56	187.80
13	223.58	-150.37
14	-119.46	-119.46
15	-65.80	-65.80
16	-12.15	-12.15
17	41.51	41.51
18	95.16	95.16
19	126.07	-48.61
20	-38.60	-38.60
21	-19.69	-19.69
22	1.00	1.00
23	23.47	23.47
24	47.71	47.71
25	62.36	-141.97
26	-124.02	-103.31
27	-63.94	-44.20
28	-9.04	9.51
29	44.65	64.37
30	103.68	124.36
31	142.26	-64.19
32	-64.19	-64.19
33	-25.09	-25.09
34	-25.09	-25.09
35	-25.09	21.86
36	68.88	184.35
37	223.84	-138.35
38	-107.44	-107.44
39	-53.78	-53.78
40	-0.13	-0.13
41	53.53	53.53
42	107.18	107.18
43	138.09	-221.75
44	-185.97	-79.73
45	22.24	22.24
46	22.24	22.24
47	22.24	22.24
48	64.19	64.19
49	64.19	-152.96

	50	-132.54	-109.55
	51	-66.77	-46.04
	52	-10.23	8.04
	53	41.54	59.95
	54	95.88	114.71
	55	130.81	-62.37
	56	-47.72	-47.72
	57	-23.47	-23.47
	58	-1.01	-1.01
	59	19.68	19.68
	60	38.59	38.59
	61	48.60	-125.95
	62	-95.04	-95.04
	63	-41.38	-41.38
	64	12.27	12.27
	65	65.93	65.93
	66	119.58	119.58
	67	150.49	-225.66
	68	-186.18	-70.71
	69	-23.69	23.26
	70	23.26	23.26
	71	23.26	23.26
	72	62.37	62.37

```
#####
#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VmaxHmin                                   #
#####
```

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	62.42	-135.01
2	-118.39	-99.01
3	-61.99	-43.06
4	-8.53	10.26
5	47.27	68.67
6	113.03	136.88
7	158.16	-62.42
8	-62.42	-62.42
9	-21.98	-21.98
10	-21.98	-21.98
11	-21.98	-21.98
12	85.42	195.04
13	231.33	-156.16
14	-124.12	-124.12
15	-68.50	-68.50
16	-12.87	-12.87
17	42.76	42.76
18	98.39	98.39
19	130.42	-48.55
20	-38.54	-38.54
21	-19.63	-19.63
22	1.06	1.06
23	23.53	23.53
24	47.77	47.77
25	62.42	-146.69
26	-128.08	-106.68
27	-65.97	-45.62
28	-9.30	9.81
29	46.11	66.44
30	107.09	128.44
31	147.00	-64.37
32	-64.37	-64.37
33	-27.01	-27.01
34	-27.01	-27.01
35	-27.01	23.89
36	71.70	191.32
37	231.65	-143.43
38	-111.39	-111.39
39	-55.76	-55.76
40	-0.14	-0.14
41	55.49	55.49
42	111.12	111.12
43	143.16	-229.38
44	-193.09	-83.47
45	23.93	23.93
46	23.93	23.93
47	23.93	23.93
48	64.37	64.37
49	64.37	-158.33

	50	-137.09	-113.28
	51	-68.95	-47.54
	52	-10.52	8.29
	53	42.84	61.79
	54	98.84	118.24
	55	134.87	-62.42
	56	-47.77	-47.77
	57	-23.53	-23.53
	58	-1.07	-1.07
	59	19.62	19.62
	60	38.54	38.54
	61	48.55	-130.29
	62	-98.25	-98.25
	63	-42.62	-42.62
	64	13.01	13.01
	65	68.63	68.63
	66	124.26	124.26
	67	156.30	-233.60
	68	-193.27	-73.65
	69	-25.84	25.07
	70	25.07	25.07
	71	25.07	25.07
	72	62.43	62.43

```
#####
#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VminHmax                                  #
#####
```

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	93.84	-135.25
2	-118.73	-99.32
3	-61.92	-42.75
4	-7.94	10.79
5	46.92	67.41
6	108.66	130.38
7	149.28	-93.84
8	-93.84	-93.84
9	-6.80	-6.80
10	-6.80	-6.80
11	-6.80	-6.80
12	67.42	182.54
13	230.89	-145.89
14	-114.98	-114.98
15	-61.32	-61.32
16	-7.67	-7.67
17	45.99	45.99
18	99.64	99.64
19	130.55	-77.39
20	-61.82	-61.82
21	-32.49	-32.49
22	-0.51	-0.51
23	34.10	34.10
24	71.36	71.36
25	93.84	-142.40
26	-124.92	-104.51
27	-65.19	-45.24
28	-9.42	9.51
29	45.33	65.28
30	104.59	124.99
31	142.46	-94.72
32	-94.72	-94.72
33	-8.26	-8.26
34	-8.26	-8.26
35	-8.26	1.23
36	64.35	181.33
37	230.43	-138.25
38	-107.34	-107.34
39	-53.68	-53.68
40	-0.03	-0.03
41	53.63	53.63
42	107.28	107.28
43	138.19	-230.01
44	-181.66	-66.54
45	7.69	7.69
46	7.69	7.69
47	7.69	7.69
48	94.72	94.72
49	94.72	-149.31

	50	-130.42	-108.71
	51	-67.46	-46.97
	52	-10.84	7.89
	53	42.71	61.88
	54	99.29	118.70
	55	135.23	-93.84
	56	-71.36	-71.36
	57	-34.10	-34.10
	58	0.51	0.51
	59	32.48	32.48
	60	61.82	61.82
	61	77.39	-130.53
	62	-99.62	-99.62
	63	-45.96	-45.96
	64	7.69	7.69
	65	61.35	61.35
	66	115.00	115.00
	67	145.91	-231.31
	68	-182.21	-65.23
	69	-2.11	7.38
	70	7.38	7.38
	71	7.38	7.38
	72	93.84	93.84

```
#####
#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VmaxHmax                                   #
#####
```

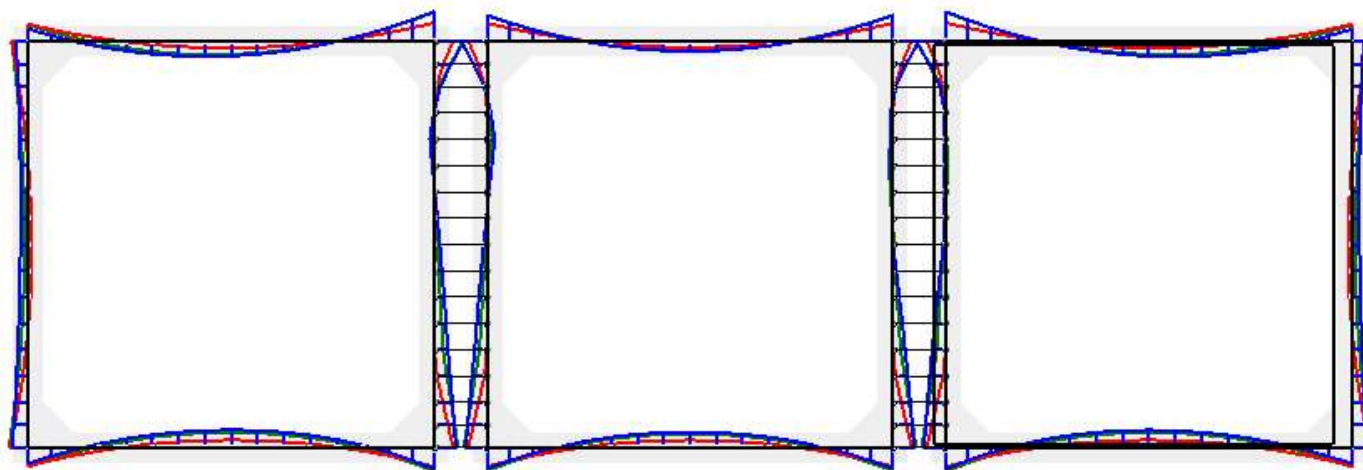
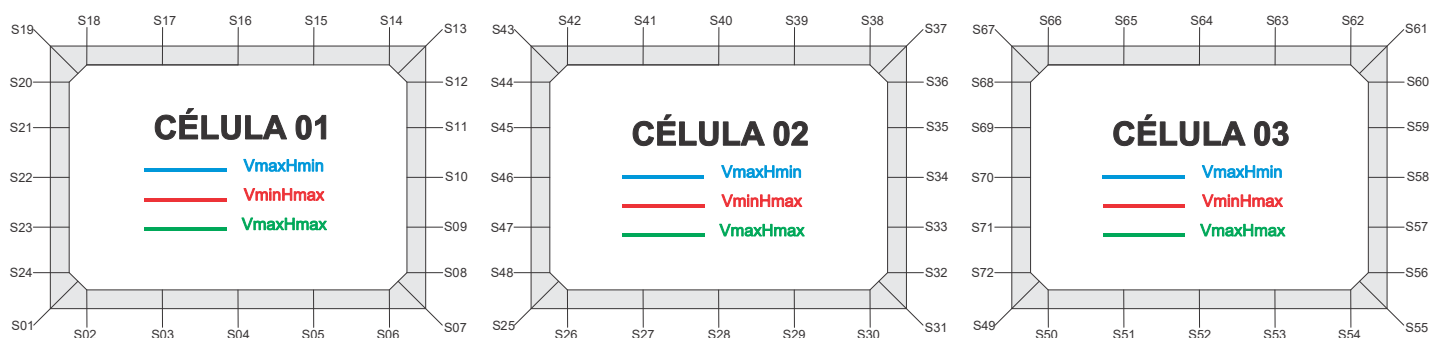
 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	63.94	-135.24
2	-118.60	-99.19
3	-62.10	-43.12
4	-8.53	10.29
5	47.31	68.70
6	112.98	136.77
7	157.97	-63.95
8	-63.95	-63.95
9	-21.31	-21.31
10	-21.31	-21.31
11	-21.31	-21.31
12	84.69	194.73
13	231.72	-155.92
14	-123.88	-123.88
15	-68.25	-68.25
16	-12.63	-12.63
17	43.00	43.00
18	98.63	98.63
19	130.67	-50.21
20	-39.82	-39.82
21	-20.27	-20.27
22	1.05	1.05
23	24.12	24.12
24	48.96	48.96
25	63.94	-146.71
26	-128.12	-106.74
27	-66.03	-45.67
28	-9.32	9.81
29	46.14	66.49
30	107.13	128.47
31	147.01	-65.85
32	-65.85	-65.85
33	-26.19	-26.19
34	-26.19	-26.19
35	-26.19	22.88
36	71.44	191.13
37	232.00	-143.42
38	-111.39	-111.39
39	-55.76	-55.76
40	-0.13	-0.13
41	55.50	55.50
42	111.12	111.12
43	143.16	-229.82
44	-192.83	-82.79
45	23.21	23.21
46	23.21	23.21
47	23.22	23.22
48	65.85	65.85
49	65.85	-158.13

	50	-136.97	-113.22
	51	-68.97	-47.57
	52	-10.54	8.30
	53	42.92	61.91
	54	99.03	118.45
	55	135.11	-63.95
	56	-48.97	-48.97
	57	-24.13	-24.13
	58	-1.05	-1.05
	59	20.26	20.26
	60	39.82	39.82
	61	50.20	-130.53
	62	-98.50	-98.50
	63	-42.87	-42.87
	64	12.76	12.76
	65	68.39	68.39
	66	124.01	124.01
	67	156.05	-233.90
	68	-193.03	-73.35
	69	-24.79	24.29
	70	24.29	24.29
	71	24.29	24.29
	72	63.95	63.95

MOMENTO FLETOR

NOMENCLATURA DAS SEÇÕES PARA VERSÃO COMPLETA DO RELATÓRIO



```
#####
# SOLICITAÇÕES NORMAIS (ELU) #
# VmaxHmin #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-59.84	59.84
2	8.59	8.59
3	-48.54	-48.54
4	-67.48	-67.48
5	-47.53	-47.53
6	18.64	18.64
7	81.70	81.70
8	69.17	69.17
9	44.79	44.79
10	20.93	20.93
11	-7.07	-7.07
12	23.46	23.46
13	113.42	-113.42
14	-52.27	-52.27
15	22.38	22.38
16	55.96	55.96
17	48.47	48.47
18	-0.07	-0.07
19	-46.30	-46.30
20	-37.82	-37.82
21	-29.62	-29.62
22	-29.29	-29.29
23	-36.15	-36.15
24	-49.53	-49.53
25	-59.84	80.15
26	22.74	22.74
27	-39.89	-39.89
28	-59.88	-59.88
29	-40.09	-40.09
30	22.39	22.39
31	79.79	79.79
32	65.70	65.70
33	35.45	35.45
34	-0.54	-0.54
35	-7.58	-7.58
36	9.05	9.05
37	97.86	-97.86
38	-44.17	-44.17
39	17.44	17.44
40	37.99	37.99
41	17.47	17.47
42	-44.12	-44.12
43	-97.80	-97.80
44	-9.41	-9.41
45	18.39	18.39
46	-12.35	-12.35
47	-38.94	-38.94
48	-66.06	-66.06
49	-80.15	82.24

	50	19.18	19.18
	51	-47.00	-47.00
	52	-66.88	-66.88
	53	-47.81	-47.81
	54	9.47	9.47
	55	60.75	60.75
	56	50.25	50.25
	57	36.53	36.53
	58	29.34	29.34
	59	29.33	29.33
	60	37.20	37.20
	61	45.49	-45.49
	62	0.73	0.73
	63	49.27	49.27
	64	56.74	56.74
	65	23.15	23.15
	66	-51.51	-51.51
	67	-112.66	-112.66
	68	-22.48	-22.48
	69	-3.45	-3.45
	70	-8.09	-8.09
	71	-41.68	-41.68
	72	-69.53	-69.53

```
#####
# SOLICITAÇÕES NORMAIS (ELU) #
# VminHmax #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-70.03	70.03
2	30.35	30.35
3	-14.19	-14.19
4	-28.76	-28.76
5	-14.30	-14.30
6	30.92	30.92
7	71.66	71.66
8	32.83	32.83
9	-0.01	-0.01
10	-0.13	-0.13
11	-0.24	-0.24
12	9.01	9.01
13	70.48	-70.48
14	-32.97	-32.97
15	10.48	10.48
16	25.76	25.76
17	12.87	12.87
18	-28.19	-28.19
19	-64.33	-64.33
20	-34.71	-34.71
21	0.67	0.67
22	13.49	13.49
23	1.91	1.91
24	-35.92	-35.92
25	-70.03	71.12
26	30.90	30.90
27	-14.00	-14.00
28	-28.54	-28.54
29	-14.01	-14.01
30	30.89	30.89
31	71.11	71.11
32	32.23	32.23
33	-0.85	-0.85
34	-0.66	-0.66
35	-0.46	-0.46
36	8.02	8.02
37	69.47	-69.47
38	-32.65	-32.65
39	9.61	9.61
40	23.69	23.69
41	9.61	9.61
42	-32.65	-32.65
43	-69.48	-69.48
44	-8.06	-8.06
45	1.10	1.10
46	0.90	0.90
47	0.69	0.69
48	-32.25	-32.25
49	-71.12	71.64

	50	30.90	30.90
	51	-14.31	-14.31
	52	-28.77	-28.77
	53	-14.19	-14.19
	54	30.35	30.35
	55	70.03	70.03
	56	35.92	35.92
	57	-1.91	-1.91
	58	-13.49	-13.49
	59	-0.66	-0.66
	60	34.71	34.71
	61	64.33	-64.33
	62	-28.19	-28.19
	63	12.87	12.87
	64	25.76	25.76
	65	10.48	10.48
	66	-32.97	-32.97
	67	-70.48	-70.48
	68	-8.97	-8.97
	69	-0.40	-0.40
	70	-0.11	-0.11
	71	0.18	0.18
	72	-32.82	-32.82

```
#####
# SOLICITAÇÕES NORMAIS (ELU) #
# VmaxHmax #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-72.52	72.52
2	19.38	19.38
3	-39.62	-39.62
4	-58.54	-58.54
5	-37.54	-37.54
6	28.89	28.89
7	90.66	90.66
8	64.01	64.01
9	27.68	27.68
10	11.93	11.93
11	-3.81	-3.81
12	19.84	19.84
13	109.78	-109.78
14	-50.77	-50.77
15	20.15	20.15
16	50.00	50.00
17	38.79	38.79
18	-13.49	-13.49
19	-61.85	-61.85
20	-42.87	-42.87
21	-20.62	-20.62
22	-13.41	-13.41
23	-22.46	-22.46
24	-49.01	-49.01
25	-72.52	87.77
26	30.20	30.20
27	-33.00	-33.00
28	-53.10	-53.10
29	-32.65	-32.65
30	30.87	30.87
31	88.58	88.58
32	61.13	61.13
33	22.66	22.66
34	3.32	3.32
35	-16.03	-16.03
36	10.94	10.94
37	100.18	-100.18
38	-46.44	-46.44
39	15.25	15.25
40	35.88	35.88
41	15.45	15.45
42	-46.05	-46.05
43	-99.68	-99.68
44	-10.54	-10.54
45	11.71	11.71
46	-5.44	-5.44
47	-22.59	-22.59
48	-60.33	-60.33
49	-87.77	91.36

	50	29.52	29.52
	51	-37.10	-37.10
	52	-58.30	-58.30
	53	-39.54	-39.54
	54	19.33	19.33
	55	72.41	72.41
	56	48.90	48.90
	57	22.35	22.35
	58	13.29	13.29
	59	20.50	20.50
	60	42.75	42.75
	61	61.73	-61.73
	62	-13.43	-13.43
	63	38.76	38.76
	64	49.87	49.87
	65	19.92	19.92
	66	-51.09	-51.09
	67	-110.16	-110.16
	68	-20.12	-20.12
	69	8.25	8.25
	70	-9.70	-9.70
	71	-27.64	-27.64
	72	-64.71	-64.71

```
#####
#          SOLICITAÇÕES TANGENCIAIS (ELU)          #
#          VmaxHmin                                #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-61.24	61.24
2	8.73	8.73
3	-50.83	-50.83
4	-72.74	-72.74
5	-56.38	-56.38
6	6.11	6.11
7	67.55	67.55
8	55.28	55.28
9	28.20	28.20
10	-4.62	-4.62
11	-1.12	-1.12
12	11.73	11.73
13	105.82	-105.82
14	-45.92	-45.92
15	26.54	26.54
16	57.94	57.94
17	48.27	48.27
18	-2.46	-2.46
19	-49.94	-49.94
20	-41.21	-41.21
21	-32.57	-32.57
22	-31.80	-31.80
23	-38.23	-38.23
24	-51.17	-51.17
25	-61.24	79.70
26	21.44	21.44
27	-42.59	-42.59
28	-64.29	-64.29
29	-46.75	-46.75
30	13.29	13.29
31	69.55	69.55
32	55.40	55.40
33	25.05	25.05
34	-11.05	-11.05
35	-6.58	-6.58
36	2.66	2.66
37	92.97	-92.97
38	-40.19	-40.19
39	19.82	19.82
40	38.77	38.77
41	16.65	16.65
42	-46.53	-46.53
43	-101.12	-101.12
44	-8.90	-8.90
45	0.67	0.67
46	0.90	0.90
47	-35.20	-35.20
48	-65.55	-65.55
49	-79.70	82.86

	50	17.94	17.94
	51	-50.38	-50.38
	52	-72.12	-72.12
	53	-55.52	-55.52
	54	-1.64	-1.64
	55	47.43	47.43
	56	36.78	36.78
	57	22.79	22.79
	58	15.33	15.33
	59	15.05	15.05
	60	22.65	22.65
	61	30.79	-30.79
	62	13.23	13.23
	63	57.92	57.92
	64	61.54	61.54
	65	24.09	24.09
	66	-54.42	-54.42
	67	-117.78	-117.78
	68	-26.18	-26.18
	69	-14.71	-14.71
	70	-8.01	-8.01
	71	-41.87	-41.87
	72	-69.99	-69.99

```
#####
#          SOLICITAÇÕES TANGENCIAIS (ELU)          #
#          VmínHmax                                #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-70.36	70.36
2	30.31	30.31
3	-14.89	-14.89
4	-30.28	-30.28
5	-16.80	-16.80
6	27.39	27.39
7	67.66	67.66
8	28.94	28.94
9	-1.30	-1.30
10	-1.09	-1.09
11	-0.88	-0.88
12	5.14	5.14
13	68.42	-68.42
14	-31.27	-31.27
15	11.54	11.54
16	26.19	26.19
17	12.66	12.66
18	-29.03	-29.03
19	-65.55	-65.55
20	-35.82	-35.82
21	-0.28	-0.28
22	12.72	12.72
23	1.32	1.32
24	-36.34	-36.34
25	-70.36	70.29
26	29.87	29.87
27	-15.34	-15.34
28	-30.31	-30.31
29	-16.42	-16.42
30	27.75	27.75
31	67.65	67.65
32	28.80	28.80
33	-1.74	-1.74
34	-1.24	-1.24
35	-0.75	-0.75
36	4.69	4.69
37	67.71	-67.71
38	-31.12	-31.12
39	10.70	10.70
40	24.37	24.37
41	9.86	9.86
42	-32.82	-32.82
43	-69.89	-69.89
44	-6.74	-6.74
45	-0.94	-0.94
46	-0.96	-0.96
47	-0.98	-0.98
48	-31.44	-31.44
49	-70.29	70.90

	50	29.97	29.97
	51	-15.33	-15.33
	52	-29.81	-29.81
	53	-15.37	-15.37
	54	28.82	28.82
	55	68.24	68.24
	56	34.05	34.05
	57	-3.89	-3.89
	58	-15.58	-15.58
	59	-2.88	-2.88
	60	32.38	32.38
	61	61.94	-61.94
	62	-26.08	-26.08
	63	14.49	14.49
	64	26.88	26.88
	65	11.10	11.10
	66	-32.84	-32.84
	67	-70.64	-70.64
	68	-7.65	-7.65
	69	-2.28	-2.28
	70	-1.85	-1.85
	71	-1.42	-1.42
	72	-32.02	-32.02

```
#####
#          SOLICITAÇÕES TANGENCIAIS (ELU)          #
#          VmaxHmax                                #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-73.21	73.21
2	18.97	18.97
3	-42.09	-42.09
4	-63.56	-63.56
5	-45.69	-45.69
6	17.48	17.48
7	77.80	77.80
8	51.50	51.50
9	16.96	16.96
10	5.40	5.40
11	-6.16	-6.16
12	10.97	10.97
13	103.51	-103.51
14	-45.61	-45.61
15	23.36	23.36
16	51.26	51.26
17	38.10	38.10
18	-16.12	-16.12
19	-65.59	-65.59
20	-46.27	-46.27
21	-23.43	-23.43
22	-15.62	-15.62
23	-24.08	-24.08
24	-50.04	-50.04
25	-73.21	85.98
26	27.94	27.94
27	-36.02	-36.02
28	-57.18	-57.18
29	-38.25	-38.25
30	23.54	23.54
31	80.49	80.49
32	53.04	53.04
33	14.15	14.15
34	-6.43	-6.43
35	-4.27	-4.27
36	4.64	4.64
37	96.86	-96.86
38	-43.68	-43.68
39	17.04	17.04
40	36.69	36.69
41	15.27	15.27
42	-47.21	-47.21
43	-101.40	-101.40
44	-10.01	-10.01
45	5.12	5.12
46	-8.43	-8.43
47	-21.99	-21.99
48	-58.54	-58.54
49	-85.98	91.93

	50	28.72	28.72
	51	-39.43	-39.43
	52	-61.90	-61.90
	53	-44.84	-44.84
	54	11.63	11.63
	55	63.11	63.11
	56	39.36	39.36
	57	12.39	12.39
	58	2.93	2.93
	59	9.73	9.73
	60	31.56	31.56
	61	50.31	-50.31
	62	-3.63	-3.63
	63	45.70	45.70
	64	53.96	53.96
	65	21.16	21.16
	66	-52.71	-52.71
	67	-113.41	-113.41
	68	-20.62	-20.62
	69	-10.72	-10.72
	70	-7.56	-7.56
	71	-27.15	-27.15
	72	-65.04	-65.04

```
#####
#          VERIFICAÇÃO DA FADIGA (ELS)          #
#          VmaxHmin                             #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-52.25	52.25
2	13.55	13.55
3	-29.41	-29.41
4	-43.20	-43.20
5	-27.90	-27.90
6	20.59	20.59
7	65.74	65.74
8	47.00	47.00
9	21.13	21.13
10	9.10	9.10
11	-2.93	-2.93
12	14.61	14.61
13	79.91	-79.91
14	-36.93	-36.93
15	14.79	14.79
16	36.69	36.69
17	28.76	28.76
18	-9.00	-9.00
19	-44.00	-44.00
20	-30.93	-30.93
21	-15.60	-15.60
22	-10.67	-10.67
23	-17.07	-17.07
24	-35.72	-35.72
25	-52.25	63.61
26	21.61	21.61
27	-24.48	-24.48
28	-39.13	-39.13
29	-24.21	-24.21
30	22.12	22.12
31	64.23	64.23
32	44.89	44.89
33	17.39	17.39
34	2.60	2.60
35	-12.18	-12.18
36	7.93	7.93
37	72.71	-72.71
38	-33.67	-33.67
39	11.14	11.14
40	26.13	26.13
41	11.29	11.29
42	-33.37	-33.37
43	-72.32	-72.32
44	-7.62	-7.62
45	8.85	8.85
46	-4.24	-4.24
47	-17.33	-17.33
48	-44.27	-44.27
49	-63.61	66.28

	50	21.07	21.07
	51	-27.56	-27.56
	52	-43.01	-43.01
	53	-29.35	-29.35
	54	13.52	13.52
	55	52.16	52.16
	56	35.64	35.64
	57	16.98	16.98
	58	10.58	10.58
	59	15.51	15.51
	60	30.84	30.84
	61	43.90	-43.90
	62	-8.94	-8.94
	63	28.74	28.74
	64	36.59	36.59
	65	14.62	14.62
	66	-37.18	-37.18
	67	-80.20	-80.20
	68	-14.82	-14.82
	69	6.35	6.35
	70	-7.37	-7.37
	71	-21.10	-21.10
	72	-47.54	-47.54

```
#####
#          VERIFICAÇÃO DA FADIGA (ELS)          #
#          VminHmax                             #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-59.67	59.67
2	21.51	21.51
3	-20.83	-20.83
4	-34.13	-34.13
5	-19.02	-19.02
6	27.10	27.10
7	69.01	69.01
8	40.45	40.45
9	6.04	6.04
10	2.78	2.78
11	-0.48	-0.48
12	11.36	11.36
13	73.39	-73.39
14	-34.32	-34.32
15	11.84	11.84
16	29.84	29.84
17	19.66	19.66
18	-18.68	-18.68
19	-53.27	-53.27
20	-31.97	-31.97
21	-6.65	-6.65
22	2.28	2.28
23	-6.56	-6.56
24	-34.55	-34.55
25	-59.67	67.31
26	27.20	27.20
27	-17.31	-17.31
28	-31.64	-31.64
29	-17.27	-17.27
30	27.28	27.28
31	67.40	67.40
32	38.59	38.59
33	3.66	3.66
34	-0.29	-0.29
35	-4.24	-4.24
36	7.69	7.69
37	69.48	-69.48
38	-32.64	-32.64
39	9.62	9.62
40	23.72	23.72
41	9.65	9.65
42	-32.60	-32.60
43	-69.42	-69.42
44	-7.65	-7.65
45	3.75	3.75
46	0.05	0.05
47	-3.65	-3.65
48	-38.50	-38.50
49	-67.31	69.09

	50	27.17	27.17
	51	-18.97	-18.97
	52	-34.11	-34.11
	53	-20.82	-20.82
	54	21.51	21.51
	55	59.66	59.66
	56	34.54	34.54
	57	6.54	6.54
	58	-2.30	-2.30
	59	6.64	6.64
	60	31.96	31.96
	61	53.26	-53.26
	62	-18.67	-18.67
	63	19.66	19.66
	64	29.82	29.82
	65	11.81	11.81
	66	-34.36	-34.36
	67	-73.43	-73.43
	68	-11.39	-11.39
	69	0.98	0.98
	70	-2.53	-2.53
	71	-6.03	-6.03
	72	-40.53	-40.53

```
#####
#          VERIFICAÇÃO DA FADIGA (ELS)          #
#          VmaxHmax                             #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-52.99	52.99
2	14.18	14.18
3	-28.90	-28.90
4	-42.72	-42.72
5	-27.39	-27.39
6	21.10	21.10
7	66.17	66.17
8	46.70	46.70
9	20.16	20.16
10	8.69	8.69
11	-2.78	-2.78
12	14.42	14.42
13	79.75	-79.75
14	-36.88	-36.88
15	14.64	14.64
16	36.33	36.33
17	28.20	28.20
18	-9.76	-9.76
19	-44.88	-44.88
20	-31.11	-31.11
21	-14.97	-14.97
22	-9.76	-9.76
23	-16.40	-16.40
24	-35.81	-35.81
25	-52.99	64.08
26	22.06	22.06
27	-24.08	-24.08
28	-38.75	-38.75
29	-23.82	-23.82
30	22.55	22.55
31	64.67	64.67
32	44.61	44.61
33	16.52	16.52
34	2.42	2.42
35	-11.68	-11.68
36	7.94	7.94
37	72.76	-72.76
38	-33.72	-33.72
39	11.09	11.09
40	26.07	26.07
41	11.23	11.23
42	-33.44	-33.44
43	-72.39	-72.39
44	-7.65	-7.65
45	8.52	8.52
46	-3.97	-3.97
47	-16.46	-16.46
48	-44.03	-44.03
49	-64.08	66.68

	50	21.55	21.55
	51	-27.07	-27.07
	52	-42.54	-42.54
	53	-28.84	-28.84
	54	14.15	14.15
	55	52.91	52.91
	56	35.73	35.73
	57	16.32	16.32
	58	9.68	9.68
	59	14.88	14.88
	60	31.02	31.02
	61	44.79	-44.79
	62	-9.71	-9.71
	63	28.18	28.18
	64	36.24	36.24
	65	14.47	14.47
	66	-37.11	-37.11
	67	-80.02	-80.02
	68	-14.62	-14.62
	69	6.01	6.01
	70	-7.06	-7.06
	71	-20.14	-20.14
	72	-47.21	-47.21

```
#####
#          VERIFICAÇÃO DA FADIGA (ELS)          #
#          VminHmin                             #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-50.51	50.51
2	13.64	13.64
3	-27.30	-27.30
4	-40.42	-40.42
5	-25.85	-25.85
6	20.18	20.18
7	62.96	62.96
8	44.25	44.25
9	18.85	18.85
10	8.13	8.13
11	-2.58	-2.58
12	13.60	13.60
13	75.31	-75.31
14	-34.83	-34.83
15	13.80	13.80
16	34.26	34.26
17	26.55	26.55
18	-9.32	-9.32
19	-42.51	-42.51
20	-29.41	-29.41
21	-14.04	-14.04
22	-9.05	-9.05
23	-15.40	-15.40
24	-34.01	-34.01
25	-50.51	60.98
26	21.08	21.08
27	-22.74	-22.74
28	-36.68	-36.68
29	-22.50	-22.50
30	21.54	21.54
31	61.53	61.53
32	42.27	42.27
33	15.41	15.41
34	2.24	2.24
35	-10.93	-10.93
36	7.50	7.50
37	68.73	-68.73
38	-31.86	-31.86
39	10.46	10.46
40	24.61	24.61
41	10.59	10.59
42	-31.60	-31.60
43	-68.39	-68.39
44	-7.23	-7.23
45	7.99	7.99
46	-3.69	-3.69
47	-15.36	-15.36
48	-41.72	-41.72
49	-60.98	63.43

	50	20.61	20.61
	51	-25.55	-25.55
	52	-40.25	-40.25
	53	-27.24	-27.24
	54	13.60	13.60
	55	50.43	50.43
	56	33.94	33.94
	57	15.33	15.33
	58	8.98	8.98
	59	13.96	13.96
	60	29.33	29.33
	61	42.43	-42.43
	62	-9.28	-9.28
	63	26.53	26.53
	64	34.17	34.17
	65	13.64	13.64
	66	-35.05	-35.05
	67	-75.56	-75.56
	68	-13.79	-13.79
	69	5.60	5.60
	70	-6.61	-6.61
	71	-18.82	-18.82
	72	-44.72	-44.72

```
#####
#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VmaxHmin                                   #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-51.59	51.59
2	13.58	13.58
3	-28.62	-28.62
4	-42.16	-42.16
5	-27.13	-27.13
6	20.44	20.44
7	64.69	64.69
8	45.97	45.97
9	20.28	20.28
10	8.74	8.74
11	-2.80	-2.80
12	14.23	14.23
13	78.19	-78.19
14	-36.14	-36.14
15	14.42	14.42
16	35.78	35.78
17	27.93	27.93
18	-9.12	-9.12
19	-43.44	-43.44
20	-30.36	-30.36
21	-15.02	-15.02
22	-10.06	-10.06
23	-16.44	-16.44
24	-35.08	-35.08
25	-51.59	62.62
26	21.41	21.41
27	-23.83	-23.83
28	-38.21	-38.21
29	-23.57	-23.57
30	21.90	21.90
31	63.22	63.22
32	43.91	43.91
33	16.65	16.65
34	2.47	2.47
35	-11.71	-11.71
36	7.77	7.77
37	71.22	-71.22
38	-32.99	-32.99
39	10.88	10.88
40	25.56	25.56
41	11.03	11.03
42	-32.71	-32.71
43	-70.85	-70.85
44	-7.48	-7.48
45	8.53	8.53
46	-4.03	-4.03
47	-16.60	-16.60
48	-43.31	-43.31
49	-62.62	65.21

	50	20.90	20.90
	51	-26.81	-26.81
	52	-41.98	-41.98
	53	-28.56	-28.56
	54	13.55	13.55
	55	51.51	51.51
	56	35.00	35.00
	57	16.36	16.36
	58	9.98	9.98
	59	14.93	14.93
	60	30.27	30.27
	61	43.35	-43.35
	62	-9.07	-9.07
	63	27.91	27.91
	64	35.68	35.68
	65	14.25	14.25
	66	-36.38	-36.38
	67	-78.46	-78.46
	68	-14.43	-14.43
	69	6.07	6.07
	70	-7.09	-7.09
	71	-20.25	-20.25
	72	-46.48	-46.48

```
#####
#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VminHmax                                   #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-59.26	59.26
2	21.16	21.16
3	-21.11	-21.11
4	-34.41	-34.41
5	-19.31	-19.31
6	26.82	26.82
7	68.77	68.77
8	40.62	40.62
9	6.58	6.58
10	3.01	3.01
11	-0.56	-0.56
12	11.47	11.47
13	73.48	-73.48
14	-34.35	-34.35
15	11.93	11.93
16	30.04	30.04
17	19.98	19.98
18	-18.25	-18.25
19	-52.78	-52.78
20	-31.87	-31.87
21	-7.00	-7.00
22	1.77	1.77
23	-6.93	-6.93
24	-34.50	-34.50
25	-59.26	67.05
26	26.95	26.95
27	-17.53	-17.53
28	-31.85	-31.85
29	-17.48	-17.48
30	27.04	27.04
31	67.16	67.16
32	38.74	38.74
33	4.15	4.15
34	-0.19	-0.19
35	-4.53	-4.53
36	7.69	7.69
37	69.45	-69.45
38	-32.61	-32.61
39	9.65	9.65
40	23.75	23.75
41	9.68	9.68
42	-32.56	-32.56
43	-69.38	-69.38
44	-7.63	-7.63
45	3.93	3.93
46	-0.10	-0.10
47	-4.14	-4.14
48	-38.63	-38.63
49	-67.05	68.86

	50	26.90	26.90
	51	-19.25	-19.25
	52	-34.37	-34.37
	53	-21.10	-21.10
	54	21.15	21.15
	55	59.24	59.24
	56	34.48	34.48
	57	6.91	6.91
	58	-1.79	-1.79
	59	6.99	6.99
	60	31.86	31.86
	61	52.76	-52.76
	62	-18.24	-18.24
	63	19.97	19.97
	64	30.02	30.02
	65	11.90	11.90
	66	-34.40	-34.40
	67	-73.53	-73.53
	68	-11.51	-11.51
	69	1.17	1.17
	70	-2.70	-2.70
	71	-6.58	-6.58
	72	-40.71	-40.71

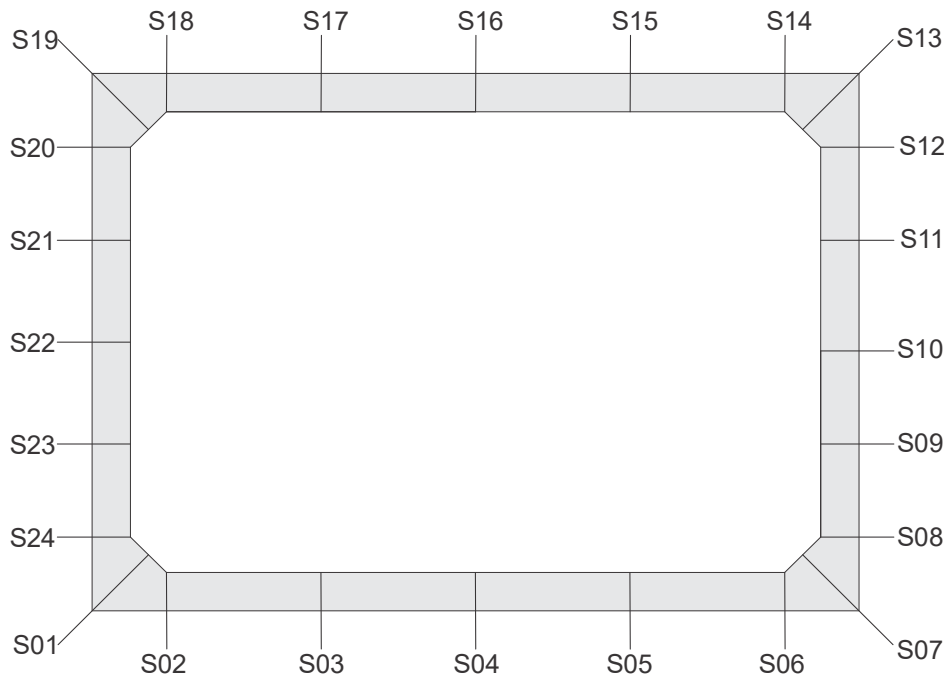
```
#####
#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VmaxHmax                                  #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-52.06	52.06
2	13.98	13.98
3	-28.30	-28.30
4	-41.85	-41.85
5	-26.81	-26.81
6	20.75	20.75
7	64.96	64.96
8	45.78	45.78
9	19.67	19.67
10	8.48	8.48
11	-2.71	-2.71
12	14.11	14.11
13	78.08	-78.08
14	-36.11	-36.11
15	14.32	14.32
16	35.55	35.55
17	27.58	27.58
18	-9.60	-9.60
19	-43.99	-43.99
20	-30.47	-30.47
21	-14.62	-14.62
22	-9.50	-9.50
23	-16.03	-16.03
24	-35.13	-35.13
25	-52.06	62.92
26	21.69	21.69
27	-23.58	-23.58
28	-37.98	-37.98
29	-23.33	-23.33
30	22.17	22.17
31	63.49	63.49
32	43.74	43.74
33	16.10	16.10
34	2.35	2.35
35	-11.40	-11.40
36	7.78	7.78
37	71.25	-71.25
38	-33.03	-33.03
39	10.85	10.85
40	25.52	25.52
41	10.99	10.99
42	-32.75	-32.75
43	-70.89	-70.89
44	-7.49	-7.49
45	8.32	8.32
46	-3.86	-3.86
47	-16.05	-16.05
48	-43.16	-43.16
49	-62.92	65.46

	50	21.20	21.20
	51	-26.50	-26.50
	52	-41.68	-41.68
	53	-28.24	-28.24
	54	13.95	13.95
	55	51.98	51.98
	56	35.06	35.06
	57	15.95	15.95
	58	9.42	9.42
	59	14.54	14.54
	60	30.39	30.39
	61	43.90	-43.90
	62	-9.55	-9.55
	63	27.56	27.56
	64	35.46	35.46
	65	14.16	14.16
	66	-36.34	-36.34
	67	-78.35	-78.35
	68	-14.31	-14.31
	69	5.86	5.86
	70	-6.89	-6.89
	71	-19.64	-19.64
	72	-46.28	-46.28

ARMADURAS P/ SOLICITAÇÕES NORMAIS



Seção	As-CA60ext(cm ² /m)	As-CA50ext(cm ² /m)	As-CA60int(cm ² /m)	As-CA50int(cm ² /m)
1	6.57	7.88	1.26	1.26
2	3.10	3.72	3.10	3.72
3	3.10	3.72	5.47	6.56
4	3.10	3.72	8.05	9.65
5	3.10	3.72	5.33	6.40
6	3.16	3.79	3.10	3.72
7	6.57	7.88	1.26	1.26
8	6.07	7.29	3.10	3.72
9	3.10	3.72	3.10	3.72
10	3.10	3.72	3.10	3.72
11	3.10	3.72	3.10	3.72
12	3.10	3.72	3.10	3.72
13	6.57	7.88	1.26	1.26
14	6.05	7.26	3.10	3.72
15	3.10	3.72	3.10	3.72
16	3.10	3.72	6.55	7.86
17	3.10	3.72	5.54	6.65
18	3.10	3.72	3.10	3.72
19	6.57	7.88	1.26	1.26
20	3.10	3.72	3.10	3.72
21	3.10	3.72	3.10	3.72
22	3.10	3.72	3.10	3.72
23	3.10	3.72	3.10	3.72
24	3.47	4.17	3.10	3.72

NOTA: A tabela acima mostra as áreas de aço calculadas para parte interna e externa das seções de interesse. Estas áreas são mostradas para o caso de se utilizar apenas aço do tipo CA60 (As-CA60ext e As-CA60int) e os correspondentes valores para o caso de se utilizar apenas aço do tipo CA50 (As-CA50ext e As-CA50int). Possibilitando os cálculos para o uso combinado dos tipos de aço: CA60 contido nas telas soldadas e o CA50 presentes nas barras.

VERIFICAÇÃO DA FADIGA

Seção	Nsdmax(kN)	Msdmax(kN.m)	Nsdmin(kN)	Msdmin(kN.m)	DSs(MPa)	Asad(cm ² /m)
12	-161.00	14.42	-152.12	13.60	3.30	0.00
13	-159.25	79.75	-48.61	75.31	-31.46	0.00
14	-51.17	36.88	-48.61	34.83	16.90	0.00
16	-48.52	36.69	-78.88	29.84	74.11	0.00
18	-51.17	9.76	-48.61	9.32	2.71	0.00
19	-133.42	44.88	-48.61	42.51	-28.23	0.00
20	-135.17	31.11	-127.82	29.41	11.65	0.00

VERIFICAÇÃO DA CORTANTE

Seção	fck(MPa)	fcd(MPa)	fctm(MPa)	fctk,inf(MPa)	fctd(MPa)	Trd(MPa)
1	30.00	23.08	2.90	2.03	1.56	0.39
2	30.00	23.08	2.90	2.03	1.56	0.39
6	30.00	23.08	2.90	2.03	1.56	0.39
7	30.00	23.08	2.90	2.03	1.56	0.39
13	30.00	23.08	2.90	2.03	1.56	0.39
14	30.00	23.08	2.90	2.03	1.56	0.39
18	30.00	23.08	2.90	2.03	1.56	0.39
19	30.00	23.08	2.90	2.03	1.56	0.39

Seção	As(cm ² /m)	ro	vsd(kN)	Vrd1(kN)	Vrd2(kN)	Asw(cm ² /m/m)
1	7.88	2.19E-003	171.47	206.68	0.00	0.00
2	3.72	2.32E-003	159.81	100.66	830.77	2.36
6	3.79	2.37E-003	174.84	100.82	830.77	5.89
7	7.88	2.19E-003	191.48	191.66	0.00	0.00
13	7.88	2.19E-003	194.73	194.12	1869.23	0.00
14	7.26	4.54E-003	106.75	110.91	0.00	0.00
18	3.72	2.32E-003	124.39	102.95	830.77	0.00
19	7.88	2.19E-003	146.90	198.81	0.00	0.00

OBSERVAÇÃO 1: A verificação da resistência à força cortante é feita a uma distância $d/2$ das seções das mísulas.

OBSERVAÇÃO 2: Recomenda-se a colocação de armadura transversal nas partes superiores das paredes, repedindo o arranjo da armadura transversal das lajes de cobertura, a partir das quinas, em função de possíveis concentrações de pressões mútuas entre as células.

VERIFICAÇÃO DA FISSURAÇÃO

VmaxHmin

Seção	As (cm ² /m)	Nsd (kN)	Msd (kN.m)	Ø (mm)	w (mm)
1	7.88	-31.21	51.59	6.30	0.040
2	3.72	-62.42	13.58	6.30	0.042
3	6.56	-62.42	28.62	12.50	0.159
4	9.65	-62.42	42.16	12.50	0.173
5	6.40	-62.42	27.13	12.50	0.149
6	3.79	-62.42	20.44	6.30	0.111
7	7.88	-116.29	64.69	6.30	0.047
8	7.29	-168.41	45.97	6.30	0.141
9	3.72	-165.79	20.28	6.30	0.055
10	3.72	-163.16	8.74	6.30	0.000
11	3.72	-160.54	2.80	6.30	0.000
12	3.72	-157.91	14.23	6.30	0.015
13	7.88	-102.36	78.19	6.30	0.078
14	7.26	-48.55	36.14	6.30	0.115
15	3.72	-48.55	14.42	8.00	0.070
16	7.86	-48.55	35.78	8.00	0.122
17	6.65	-48.55	27.93	8.00	0.099
18	3.72	-48.55	9.12	6.30	0.017
19	7.88	-89.49	43.44	6.30	0.020
20	3.87*	-132.17	30.36	6.30	0.200
21	3.72	-134.80	15.02	6.30	0.026
22	3.72	-137.42	10.06	6.30	0.004
23	3.72	-140.05	16.44	6.30	0.034
24	4.55*	-142.67	35.08	6.30	0.200

VminHmax

Seção	As (cm ² /m)	Nsd (kN)	Msd (kN.m)	Ø (mm)	w (mm)
1	7.88	-46.92	59.26	6.30	0.051
2	3.72	-93.84	21.16	6.30	0.104
3	6.56	-93.84	21.11	12.50	0.066
4	9.65	-93.84	34.41	12.50	0.100
5	6.40	-93.84	19.31	12.50	0.055
6	3.79	-93.84	26.82	6.30	0.181
7	7.88	-126.86	68.77	6.30	0.052
8	7.29	-158.14	40.62	6.30	0.107
9	3.72	-155.51	6.58	6.30	0.000
10	3.72	-152.89	3.01	6.30	0.000
11	3.72	-150.26	0.56	6.30	0.000
12	3.72	-147.64	11.47	6.30	0.006
13	7.88	-111.64	73.48	6.30	0.065
14	7.26	-77.39	34.35	6.30	0.094
15	3.72	-77.39	11.93	8.00	0.032
16	7.86	-77.39	30.04	8.00	0.075
17	6.65	-77.39	19.98	8.00	0.040
18	3.72	-77.39	18.25	6.30	0.079
19	7.88	-103.97	52.78	6.30	0.030
20	4.11*	-132.30	31.87	6.30	0.200
21	3.72	-134.93	7.00	6.30	0.000
22	3.72	-137.55	1.77	6.30	0.000
23	3.72	-140.18	6.93	6.30	0.000
24	4.55*	-142.80	34.50	6.30	0.192

VERIFICAÇÃO DA FISSURAÇÃO (CONT.)

VmaxHmax

Seção	As (cm ² /m)	Nsd (kN)	Msd (kN.m)	Ø (mm)	w (mm)
1	7.88	-31.97	52.06	6.30	0.041
2	3.72	-63.94	13.98	6.30	0.045
3	6.56	-63.94	28.30	12.50	0.155
4	9.65	-63.94	41.85	12.50	0.169
5	6.40	-63.94	26.81	12.50	0.144
6	3.79	-63.94	20.75	6.30	0.114
7	7.88	-116.93	64.96	6.30	0.047
8	7.29	-168.17	45.78	6.30	0.140
9	3.72	-165.54	19.67	6.30	0.050
10	3.72	-162.92	8.48	6.30	0.000
11	3.72	-160.29	2.71	6.30	0.000
12	3.72	-157.67	14.11	6.30	0.015
13	7.88	-103.06	78.08	6.30	0.078
14	7.26	-50.21	36.11	6.30	0.114
15	3.72	-50.21	14.32	8.00	0.068
16	7.86	-50.21	35.55	8.00	0.120
17	6.65	-50.21	27.58	8.00	0.096
18	3.72	-50.21	9.60	6.30	0.019
19	7.88	-90.44	43.99	6.30	0.020
20	4.11*	-132.42	30.47	6.30	0.178
21	3.72	-135.04	14.62	6.30	0.024
22	3.72	-137.67	9.50	6.30	0.003
23	3.72	-140.29	16.03	6.30	0.031
24	4.56*	-142.92	35.13	6.30	0.200

NOTA:

* Seção com aumento na armadura devido à fissuração.