



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

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

sexta-feira, 4 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:

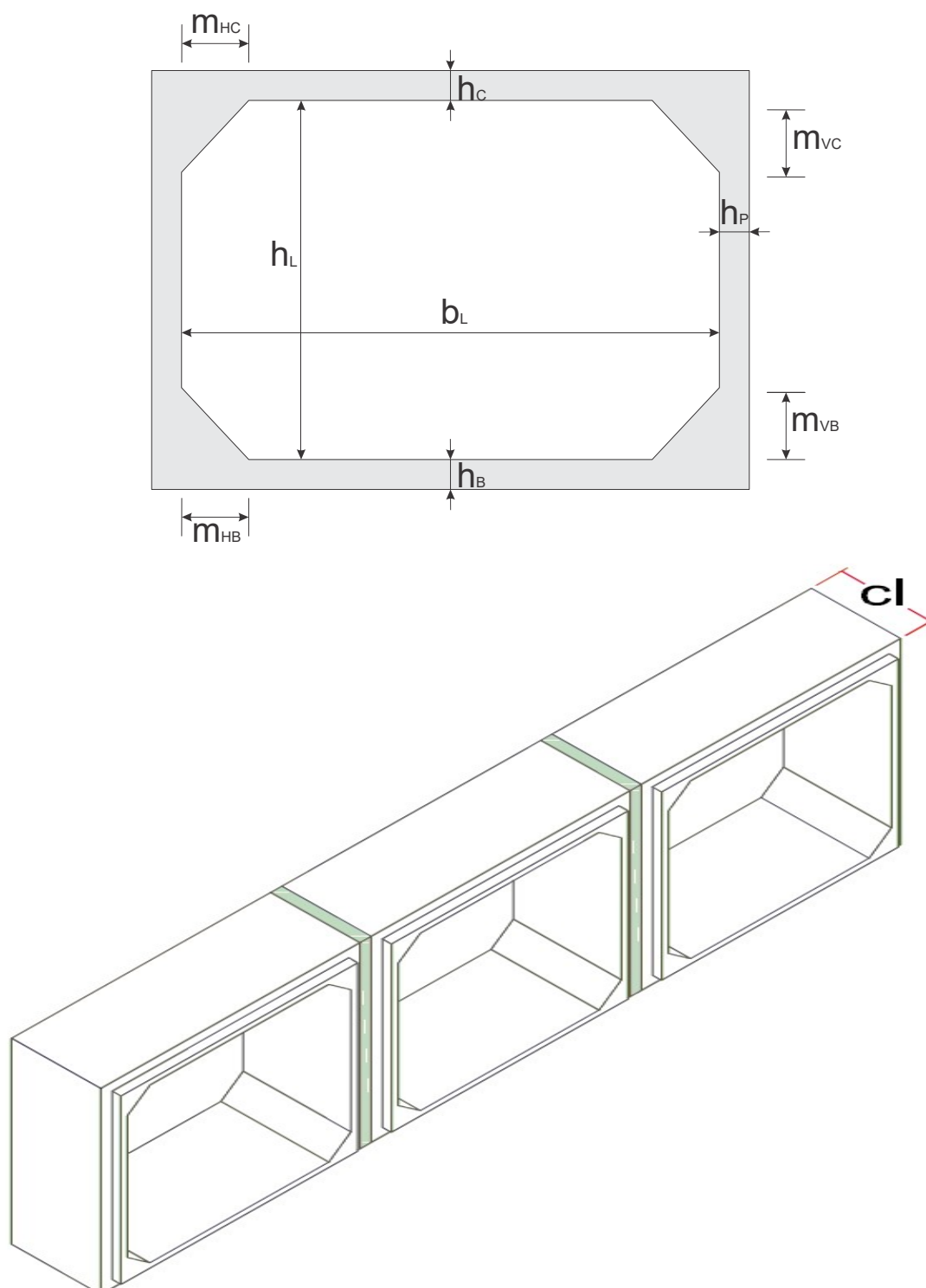
DADOS DA OBRA



NOME: ADUELA 2,00 X 2,00 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).....	: 2.00 m
ALTURA LIVRE (h_l).....	: 2.00 m
ALTURA DA LAJE DA COBERTURA (h_c).....	: 0.15 m
ESPESSURA DAS PAREDES LATERAIS (h_p).....	: 0.15 m
ALTURA DA LAJE DA BASE (h_b).....	: 0.15 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

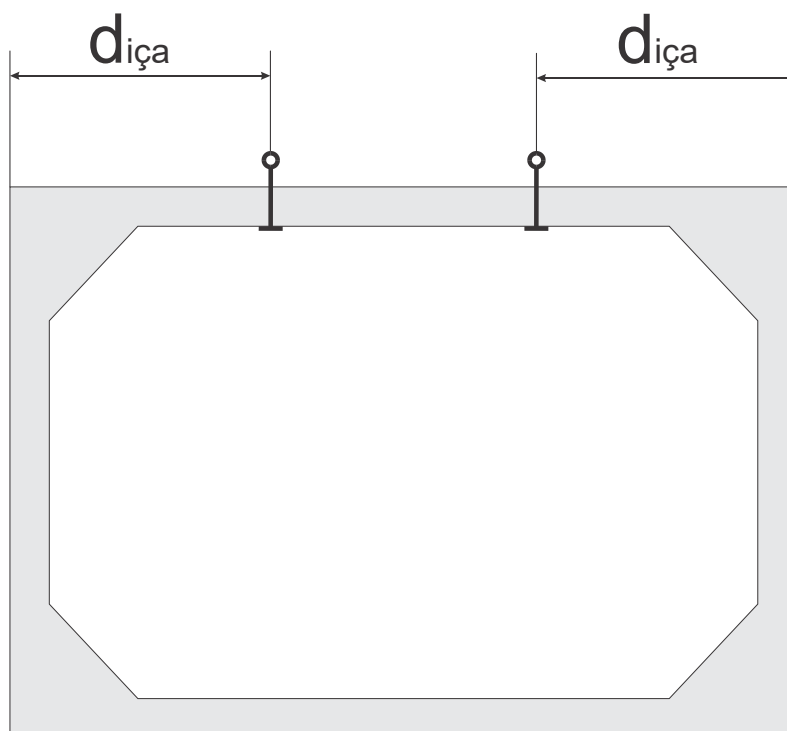
PESO ESPECÍFICO.....	: 18.00 kN/m ³
ÂNGULO DE ATRITO.....	: 30.00 graus
COEFICIENTE DE ATRITO ATIVO.....	: 0.33
COEFICIENTE DE ATRITO ESTÁTICO.....	: 0.50
COEFICIENTE DE ATRITO.....	: 0.58

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.....	: ---

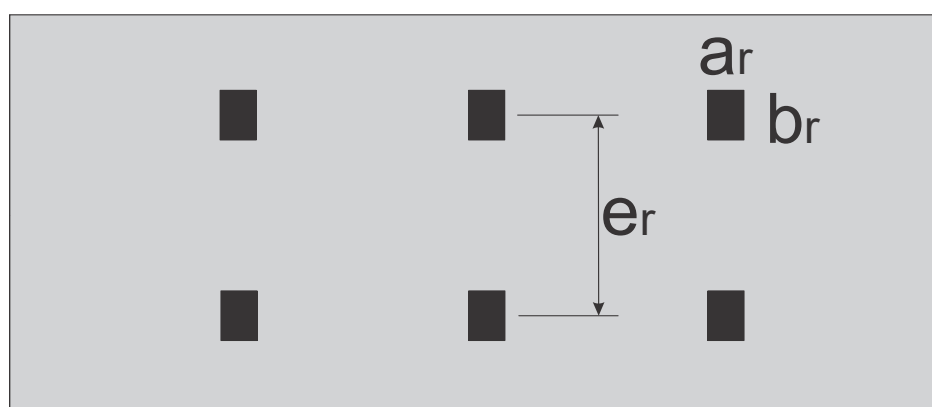
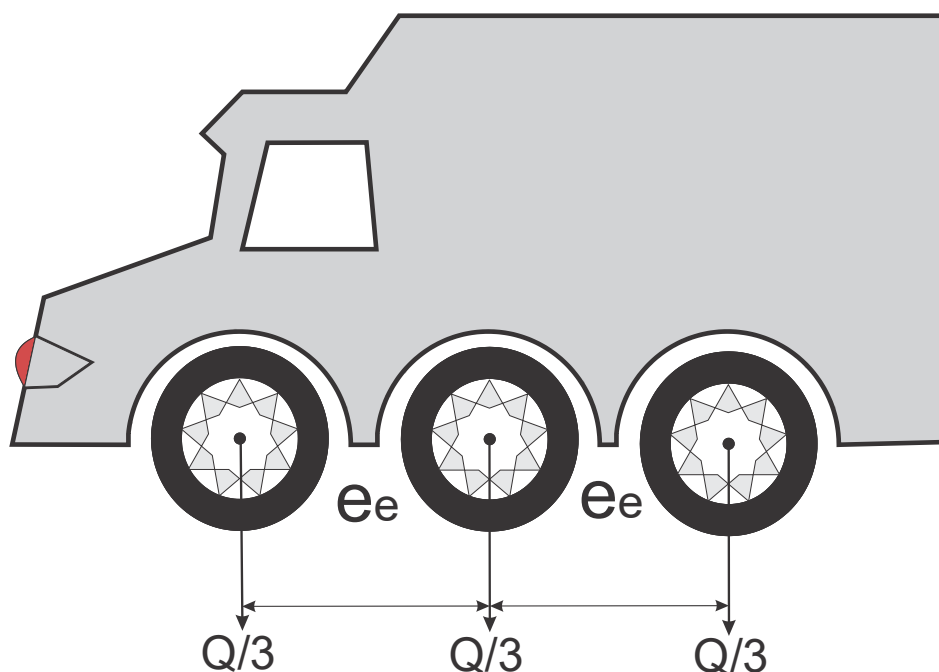
INFORMAÇÕES DE MANUSEIO

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



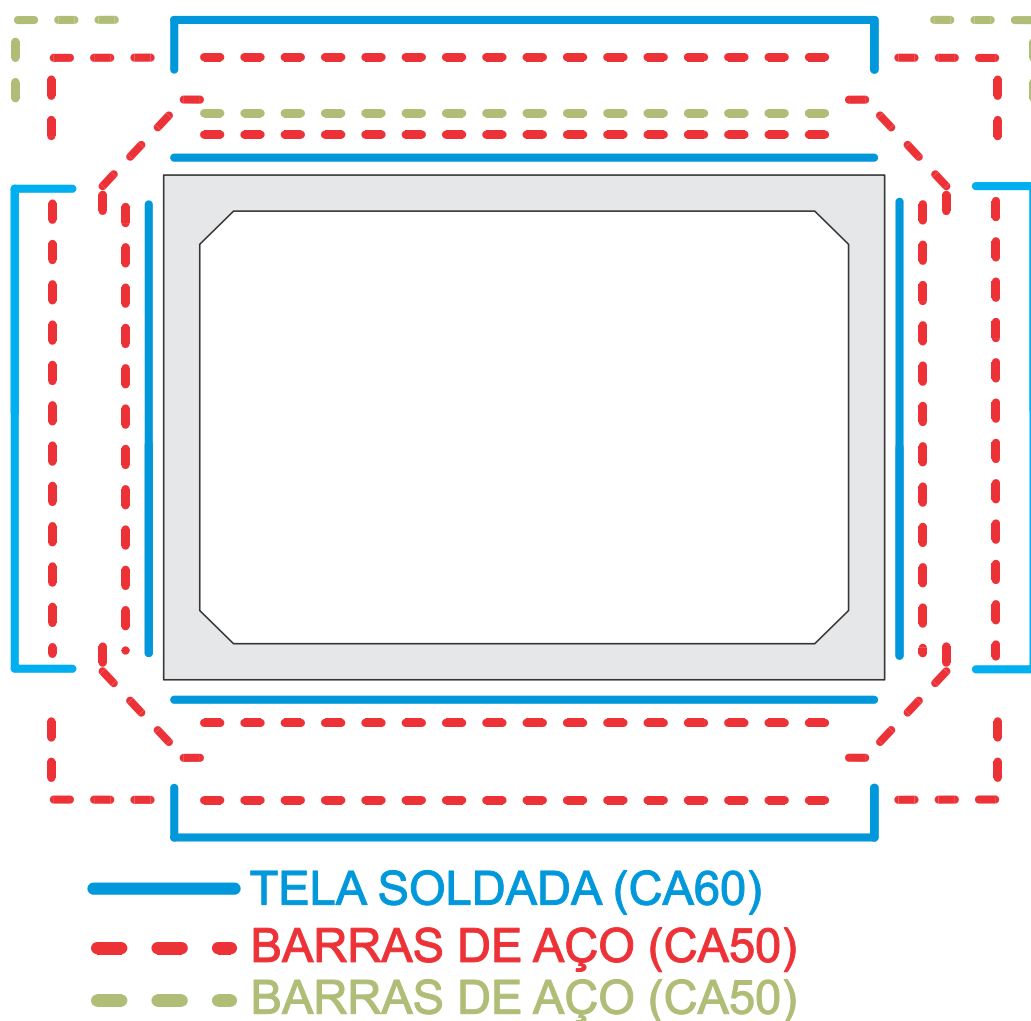
SOBRECARGA

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:

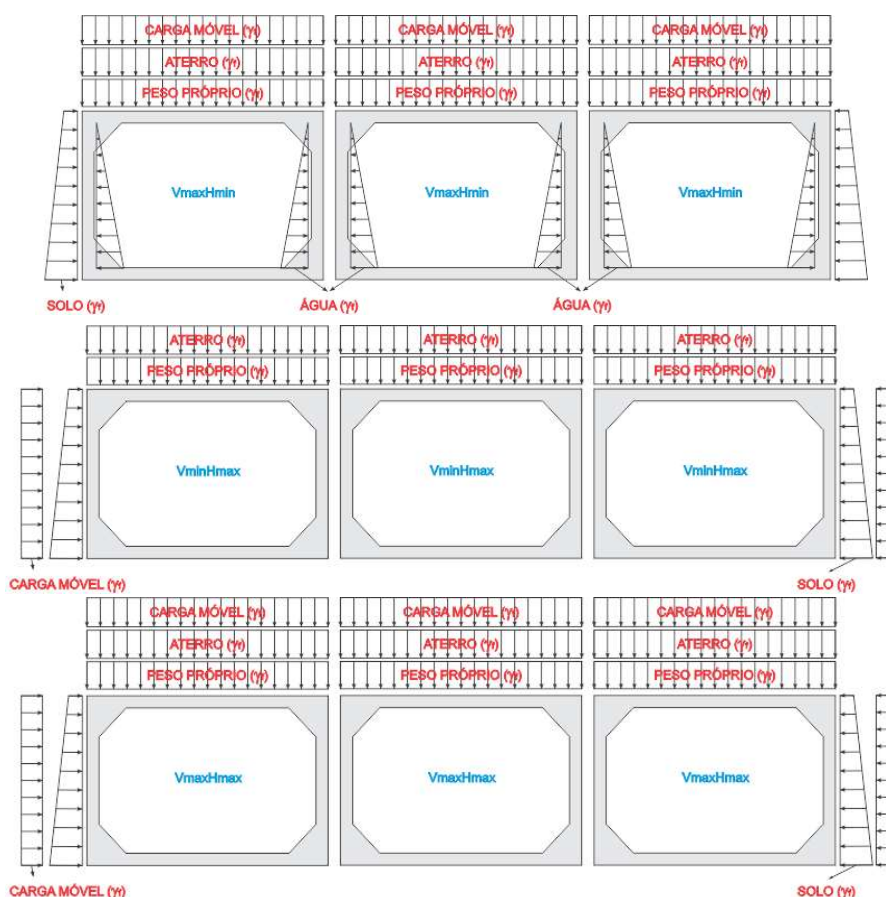
COEFICIENTE DE PONDERAÇÃO CARGA MÓVEL V.:	1.50
COEFICIENTE DE PONDERAÇÃO ATERRO.....	1.35
COEFICIENTE DE PONDERAÇÃO PESO PRÓPRIO...	1.30
COEFICIENTE DE PONDERAÇÃO SOLO.....	1.00
COEFICIENTE DE PONDERAÇÃO ÁGUA.....	1.20

- VminHmax:

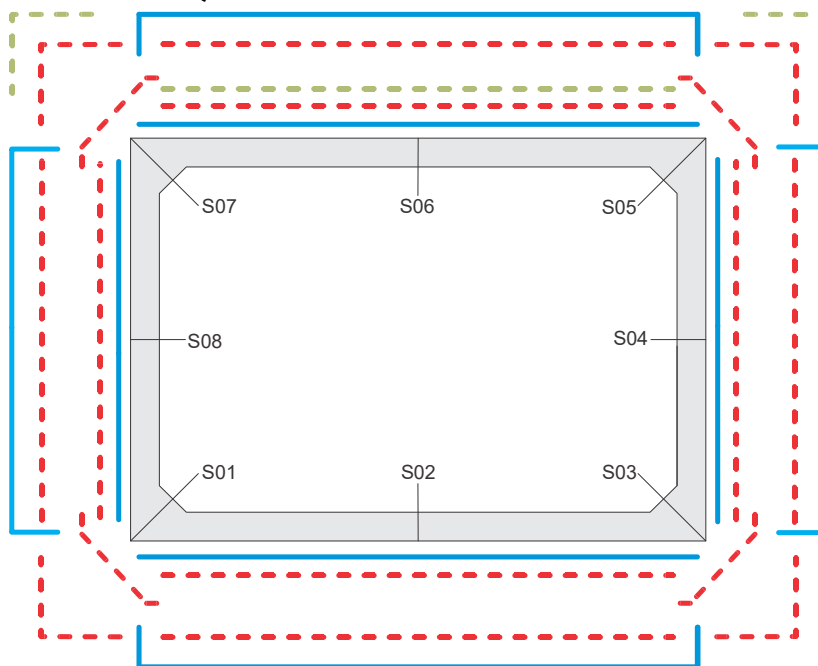
COEFICIENTE DE PONDERAÇÃO ATERRO.....	1.00
COEFICIENTE DE PONDERAÇÃO PESO PRÓPRIO...	1.00
COEFICIENTE DE PONDERAÇÃO SOLO.....	1.35
COEFICIENTE DE PONDERAÇÃO CARGA MÓVEL H.:	1.50

- 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

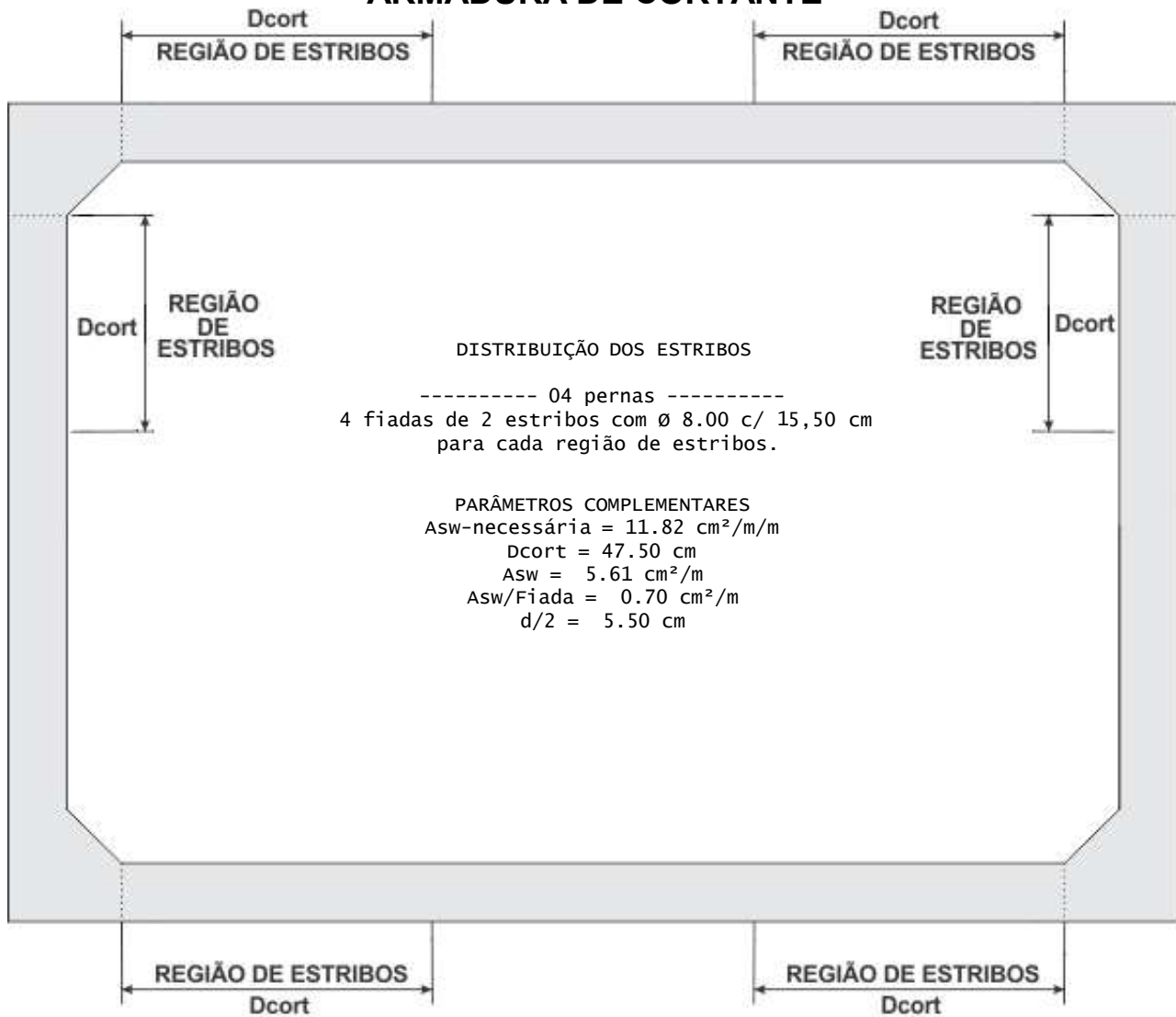
- - - BARRAS DE AÇO (CA50) ARMADURA DE FADIGA

OBS.: VALORES POR METRO DE ADUELA.

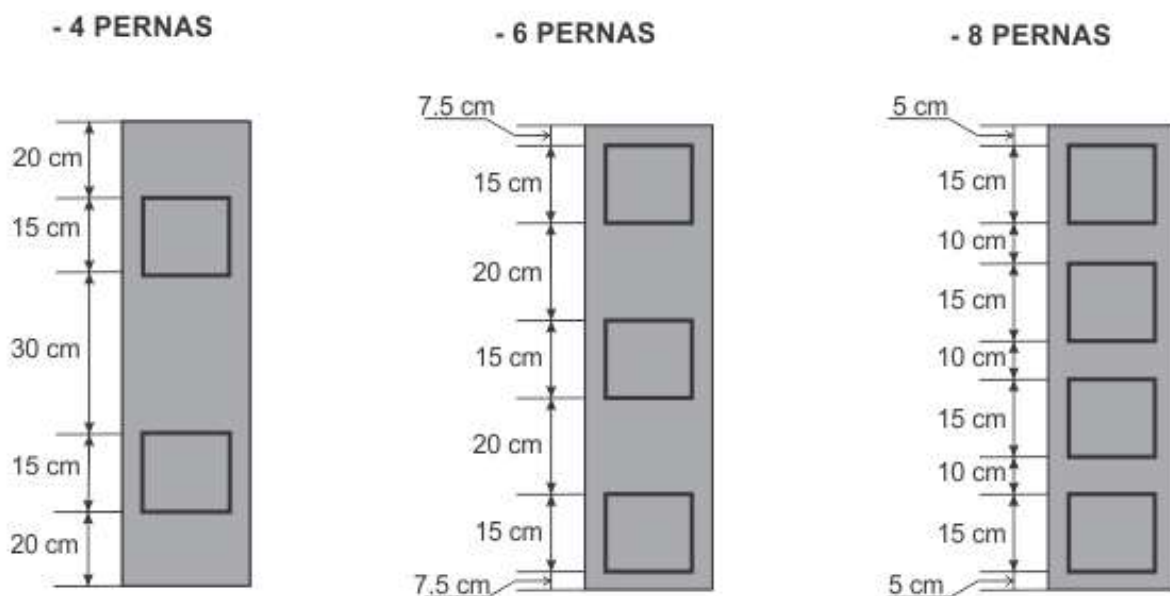
	TELA	ARMADURA COMPLEMENTAR	ARMADURA DE FADIGA
LADO EXTERNO	T-S02: L283	B-S01: 4 Ø6.30 c/ 31 cm (33.26%)	B-S05: 0.00 cm ² de área acima
	T-S04: L283	B-S02: 0.61 cm ² de área acima	B-S07: 0.00 cm ² de área acima
	T-S06: L283	B-S03: 4 Ø6.30 c/ 31 cm (33.26%)	
	T-S08: L283	B-S04: 4 Ø6.30 c/ 31 cm (52.22%) B-S05: 0.22 cm ² de área acima B-S06: 0.61 cm ² de área acima B-S07: 0.22 cm ² de área acima B-S08: 4 Ø6.30 c/ 31 cm (52.22%)	
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: 7 Ø10.00 c/ 15 cm (6.19%)	
	T-S06: L283	B-S03: 4 Ø6.30 c/ 31 cm (0.00%)	
	T-S08: L283	B-S04: 0.61 cm ² de área acima B-S05: 4 Ø6.30 c/ 31 cm (0.00%) B-S06: 4 Ø10.00 c/ 31 cm (-7.82%) B-S07: 4 Ø6.30 c/ 31 cm (0.00%) B-S08: 0.61 cm ² de área acima	

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:

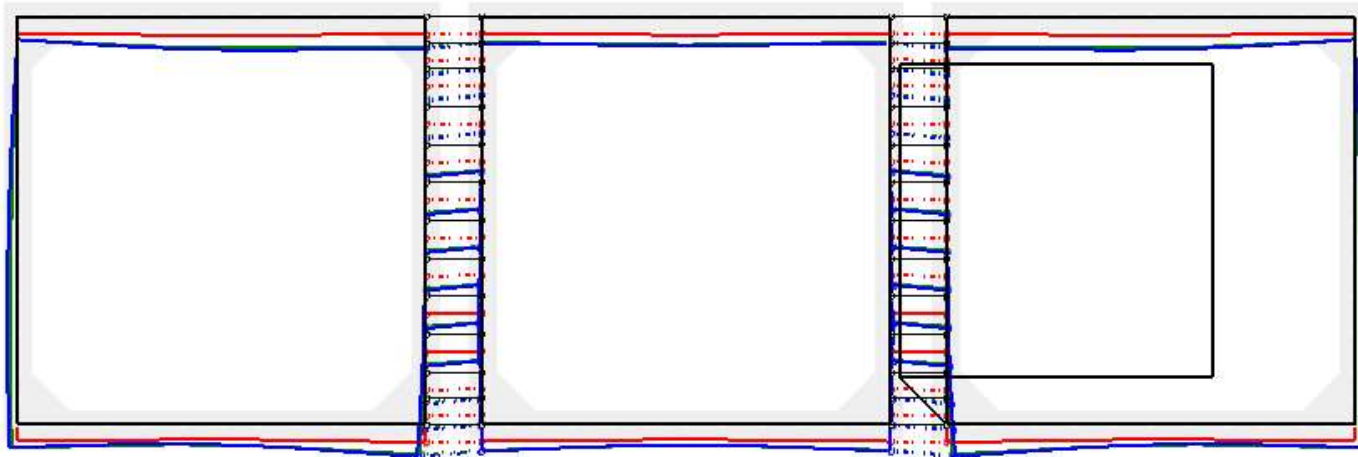
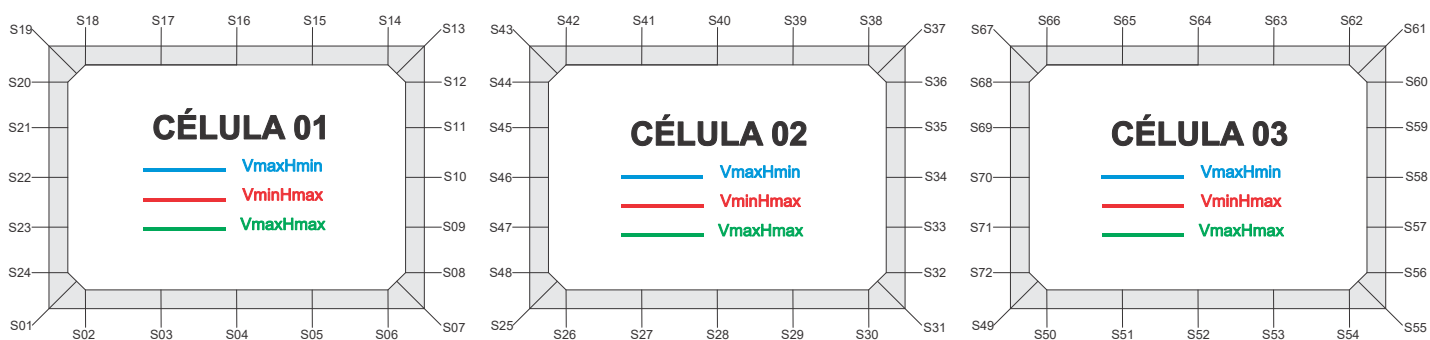


OBSERVAÇÃO:

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	-2.32E-003	-6.52E-003
2	-2.32E-003	-6.10E-003
3	-2.32E-003	-5.58E-003
4	-2.33E-003	-5.68E-003
5	-2.33E-003	-6.61E-003
6	-2.33E-003	-8.09E-003
7	-2.33E-003	-9.13E-003
8	-1.34E-003	-9.14E-003
9	-3.93E-004	-9.16E-003
10	-8.75E-005	-9.18E-003
11	-8.59E-005	-9.20E-003
12	-3.71E-005	-9.22E-003
13	-9.25E-006	-9.22E-003
14	-8.23E-006	-9.25E-003
15	-5.33E-006	-9.50E-003
16	-2.43E-006	-9.50E-003
17	4.62E-007	-8.82E-003
18	3.36E-006	-7.55E-003
19	4.38E-006	-6.59E-003
20	-9.33E-004	-6.58E-003
21	-2.02E-003	-6.57E-003
22	-2.68E-003	-6.55E-003
23	-2.94E-003	-6.54E-003
24	-2.71E-003	-6.52E-003
25	8.06E-006	-7.59E-003
26	6.85E-006	-7.02E-003
27	3.42E-006	-6.18E-003
28	8.57E-011	-5.82E-003
29	-3.42E-006	-6.17E-003
30	-6.85E-006	-6.99E-003
31	-8.06E-006	-7.55E-003
32	4.99E-004	-7.55E-003
33	7.79E-004	-7.57E-003
34	5.31E-004	-7.59E-003
35	1.91E-004	-7.60E-003
36	7.41E-005	-7.62E-003
37	3.81E-006	-7.62E-003
38	4.72E-006	-7.74E-003
39	7.30E-006	-8.11E-003
40	9.88E-006	-8.32E-003
41	1.25E-005	-8.13E-003
42	1.50E-005	-7.78E-003
43	1.60E-005	-7.67E-003
44	-4.83E-005	-7.66E-003
45	-2.34E-004	-7.65E-003
46	-6.24E-004	-7.63E-003
47	-8.41E-004	-7.61E-003
48	-5.19E-004	-7.60E-003
49	2.37E-003	-9.09E-003

50	2.36E-003	-8.07E-003
51	2.36E-003	-6.61E-003
52	2.36E-003	-5.69E-003
53	2.35E-003	-5.60E-003
54	2.35E-003	-6.10E-003
55	2.35E-003	-6.51E-003
56	2.73E-003	-6.52E-003
57	2.95E-003	-6.54E-003
58	2.69E-003	-6.55E-003
59	2.03E-003	-6.56E-003
60	9.49E-004	-6.58E-003
61	1.65E-005	-6.58E-003
62	1.75E-005	-7.54E-003
63	2.04E-005	-8.80E-003
64	2.32E-005	-9.47E-003
65	2.61E-005	-9.46E-003
66	2.90E-005	-9.21E-003
67	3.00E-005	-9.18E-003
68	5.70E-005	-9.17E-003
69	1.78E-004	-9.15E-003
70	2.29E-004	-9.13E-003
71	5.00E-004	-9.11E-003
72	1.40E-003	-9.09E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.48E-003
2	1.56E-003
3	7.10E-004
4	-1.29E-003
5	-3.24E-003
6	-3.85E-003
7	-3.71E-003
8	-3.44E-003
9	-1.44E-003
10	-2.33E-004
11	6.60E-005
12	-1.89E-004
13	-7.46E-006
14	2.45E-004
15	5.93E-004
16	-7.77E-004
17	-2.58E-003
18	-3.52E-003
19	-3.47E-003
20	-3.32E-003
21	-2.16E-003
22	-1.16E-003
23	-8.47E-005
24	1.30E-003
25	2.02E-003
26	2.16E-003
27	1.71E-003
28	7.67E-006
29	-1.68E-003

30	-2.09E-003
31	-1.94E-003
32	-1.69E-003
33	1.31E-004
34	9.27E-004
35	5.73E-004
36	1.96E-004
37	3.31E-004
38	5.54E-004
39	9.39E-004
40	2.93E-005
41	-8.89E-004
42	-5.29E-004
43	-3.09E-004
44	-1.76E-004
45	-8.60E-004
46	-9.22E-004
47	-1.21E-005
48	1.77E-003
49	3.62E-003
50	3.76E-003
51	3.20E-003
52	1.28E-003
53	-6.98E-004
54	-1.54E-003
55	-1.46E-003
56	-1.28E-003
57	1.01E-004
58	1.17E-003
59	2.15E-003
60	3.30E-003
61	3.45E-003
62	3.50E-003
63	2.55E-003
64	7.47E-004
65	-6.14E-004
66	-2.50E-004
67	4.53E-006
68	1.87E-004
69	2.24E-004
70	2.21E-004
71	1.30E-003
72	3.35E-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	-1.20E-004	-4.71E-003
2	-1.23E-004	-4.61E-003
3	-1.33E-004	-4.36E-003
4	-1.43E-004	-4.25E-003
5	-1.53E-004	-4.46E-003
6	-1.63E-004	-4.81E-003
7	-1.67E-004	-4.96E-003
8	-5.41E-005	-4.97E-003
9	-1.78E-005	-4.98E-003
10	-2.42E-006	-4.99E-003
11	1.21E-005	-5.00E-003
12	2.50E-005	-5.02E-003
13	1.13E-005	-5.02E-003
14	1.43E-005	-5.07E-003
15	2.31E-005	-5.28E-003
16	3.18E-005	-5.40E-003
17	4.05E-005	-5.23E-003
18	4.92E-005	-4.91E-003
19	5.23E-005	-4.77E-003
20	-5.99E-005	-4.76E-003
21	-5.27E-005	-4.75E-003
22	-1.77E-005	-4.74E-003
23	-1.09E-004	-4.73E-003
24	-1.84E-004	-4.72E-003
25	2.35E-005	-4.80E-003
26	2.00E-005	-4.70E-003
27	9.99E-006	-4.42E-003
28	6.60E-011	-4.27E-003
29	-9.99E-006	-4.42E-003
30	-2.00E-005	-4.70E-003
31	-2.35E-005	-4.81E-003
32	4.37E-005	-4.81E-003
33	2.39E-005	-4.82E-003
34	-5.20E-007	-4.83E-003
35	-1.26E-005	-4.85E-003
36	-8.84E-006	-4.86E-003
37	-1.81E-005	-4.86E-003
38	-1.50E-005	-4.90E-003
39	-6.30E-006	-5.11E-003
40	2.39E-006	-5.24E-003
41	1.11E-005	-5.11E-003
42	1.98E-005	-4.90E-003
43	2.28E-005	-4.86E-003
44	1.30E-005	-4.85E-003
45	2.02E-005	-4.84E-003
46	9.55E-006	-4.83E-003
47	-1.83E-005	-4.82E-003
48	-4.19E-005	-4.81E-003
49	1.74E-004	-4.97E-003

50	1.70E-004	-4.81E-003
51	1.60E-004	-4.46E-003
52	1.50E-004	-4.25E-003
53	1.40E-004	-4.36E-003
54	1.31E-004	-4.61E-003
55	1.27E-004	-4.71E-003
56	1.91E-004	-4.72E-003
57	1.16E-004	-4.73E-003
58	2.48E-005	-4.74E-003
59	5.92E-005	-4.75E-003
60	6.54E-005	-4.76E-003
61	-4.75E-005	-4.77E-003
62	-4.45E-005	-4.91E-003
63	-3.58E-005	-5.23E-003
64	-2.70E-005	-5.40E-003
65	-1.83E-005	-5.28E-003
66	-9.63E-006	-5.07E-003
67	-6.55E-006	-5.02E-003
68	-2.05E-005	-5.02E-003
69	-1.19E-005	-5.01E-003
70	5.55E-007	-5.00E-003
71	1.91E-005	-4.98E-003
72	5.93E-005	-4.97E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	3.03E-004
2	4.48E-004
3	5.99E-004
4	-1.38E-004
5	-8.57E-004
6	-6.41E-004
7	-4.84E-004
8	-3.18E-004
9	-4.15E-005
10	-3.63E-005
11	-3.75E-005
12	5.54E-006
13	1.04E-004
14	2.65E-004
15	5.72E-004
16	-5.86E-005
17	-7.46E-004
18	-6.10E-004
19	-4.74E-004
20	-3.22E-004
21	1.76E-004
22	-6.65E-005
23	-3.31E-004
24	1.45E-004
25	3.10E-004
26	4.66E-004
27	6.90E-004
28	-7.62E-007
29	-6.93E-004

30	-4.72E-004
31	-3.17E-004
32	-1.55E-004
33	7.72E-005
34	4.53E-005
35	1.57E-005
36	-7.52E-006
37	8.52E-005
38	2.43E-004
39	5.61E-004
40	-2.61E-006
41	-5.65E-004
42	-2.46E-004
43	-8.74E-005
44	5.52E-006
45	-1.76E-006
46	-4.97E-005
47	-8.80E-005
48	1.48E-004
49	4.91E-004
50	6.47E-004
51	8.60E-004
52	1.38E-004
53	-6.00E-004
54	-4.49E-004
55	-3.04E-004
56	-1.46E-004
57	3.32E-004
58	6.75E-005
59	-1.75E-004
60	3.25E-004
61	4.77E-004
62	6.13E-004
63	7.49E-004
64	6.12E-005
65	-5.71E-004
66	-2.66E-004
67	-1.05E-004
68	-6.35E-006
69	2.16E-005
70	3.97E-005
71	5.21E-005
72	3.25E-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	-1.65E-003	-6.61E-003
2	-1.65E-003	-6.27E-003
3	-1.66E-003	-5.80E-003
4	-1.67E-003	-5.82E-003
5	-1.67E-003	-6.55E-003
6	-1.68E-003	-7.73E-003
7	-1.68E-003	-8.51E-003
8	-9.51E-004	-8.52E-003
9	-2.90E-004	-8.54E-003
10	-8.52E-005	-8.56E-003
11	-7.93E-005	-8.57E-003
12	-4.39E-005	-8.59E-003
13	-3.69E-005	-8.60E-003
14	-3.49E-005	-8.65E-003
15	-2.93E-005	-8.92E-003
16	-2.37E-005	-8.98E-003
17	-1.80E-005	-8.44E-003
18	-1.24E-005	-7.42E-003
19	-1.04E-005	-6.68E-003
20	-7.10E-004	-6.68E-003
21	-1.45E-003	-6.66E-003
22	-1.88E-003	-6.65E-003
23	-2.08E-003	-6.63E-003
24	-1.95E-003	-6.62E-003
25	1.65E-005	-7.39E-003
26	1.41E-005	-6.95E-003
27	7.03E-006	-6.24E-003
28	9.62E-011	-5.92E-003
29	-7.02E-006	-6.24E-003
30	-1.41E-005	-6.92E-003
31	-1.65E-005	-7.35E-003
32	3.58E-004	-7.35E-003
33	5.27E-004	-7.37E-003
34	3.28E-004	-7.39E-003
35	8.50E-005	-7.40E-003
36	1.04E-005	-7.42E-003
37	-3.95E-005	-7.42E-003
38	-3.76E-005	-7.52E-003
39	-3.22E-005	-7.87E-003
40	-2.68E-005	-8.07E-003
41	-2.13E-005	-7.89E-003
42	-1.59E-005	-7.56E-003
43	-1.40E-005	-7.47E-003
44	-5.74E-005	-7.46E-003
45	-1.69E-004	-7.45E-003
46	-4.29E-004	-7.43E-003
47	-5.90E-004	-7.41E-003
48	-3.78E-004	-7.40E-003
49	1.60E-003	-8.47E-003

50	1.60E-003	-7.71E-003
51	1.59E-003	-6.56E-003
52	1.59E-003	-5.83E-003
53	1.58E-003	-5.81E-003
54	1.57E-003	-6.28E-003
55	1.57E-003	-6.62E-003
56	1.87E-003	-6.62E-003
57	2.00E-003	-6.64E-003
58	1.80E-003	-6.65E-003
59	1.38E-003	-6.67E-003
60	6.48E-004	-6.68E-003
61	-4.24E-005	-6.69E-003
62	-4.04E-005	-7.41E-003
63	-3.48E-005	-8.42E-003
64	-2.92E-005	-8.95E-003
65	-2.35E-005	-8.88E-003
66	-1.79E-005	-8.60E-003
67	-1.59E-005	-8.56E-003
68	-6.61E-006	-8.55E-003
69	7.66E-005	-8.53E-003
70	1.06E-004	-8.52E-003
71	2.76E-004	-8.50E-003
72	8.93E-004	-8.48E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.17E-003
2	1.29E-003
3	7.64E-004
4	-9.45E-004
5	-2.61E-003
6	-2.93E-003
7	-2.76E-003
8	-2.51E-003
9	-9.70E-004
10	-1.60E-004
11	2.70E-005
12	-1.06E-004
13	6.35E-005
14	3.10E-004
15	6.84E-004
16	-5.53E-004
17	-2.11E-003
18	-2.71E-003
19	-2.61E-003
20	-2.44E-003
21	-1.39E-003
22	-7.91E-004
23	-1.73E-004
24	9.76E-004
25	1.54E-003
26	1.70E-003
27	1.49E-003
28	8.54E-006
29	-1.46E-003

30	-1.64E-003
31	-1.46E-003
32	-1.22E-003
33	1.78E-004
34	6.86E-004
35	3.94E-004
36	1.21E-004
37	2.58E-004
38	4.85E-004
39	9.04E-004
40	2.92E-005
41	-8.53E-004
42	-4.57E-004
43	-2.33E-004
44	-9.90E-005
45	-5.50E-004
46	-6.37E-004
47	-5.66E-005
48	1.29E-003
49	2.69E-003
50	2.86E-003
51	2.58E-003
52	9.36E-004
53	-7.60E-004
54	-1.28E-003
55	-1.16E-003
56	-9.70E-004
57	1.70E-004
58	7.79E-004
59	1.37E-003
60	2.41E-003
61	2.58E-003
62	2.68E-003
63	2.08E-003
64	5.24E-004
65	-7.00E-004
66	-3.05E-004
67	-5.54E-005
68	1.15E-004
69	1.50E-004
70	1.23E-004
71	8.51E-004
72	2.42E-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	-2.80E-003	-6.48E-003
2	-2.81E-003	-6.02E-003
3	-2.81E-003	-5.46E-003
4	-2.81E-003	-5.56E-003
5	-2.81E-003	-6.59E-003
6	-2.82E-003	-8.33E-003
7	-2.82E-003	-9.62E-003
8	-1.59E-003	-9.63E-003
9	-5.09E-004	-9.67E-003
10	-3.24E-004	-9.71E-003
11	-4.95E-004	-9.74E-003
12	-4.54E-004	-9.78E-003
13	-3.87E-004	-9.79E-003
14	-3.86E-004	-9.80E-003
15	-3.83E-004	-9.97E-003
16	-3.80E-004	-9.83E-003
17	-3.77E-004	-9.01E-003
18	-3.74E-004	-7.60E-003
19	-3.73E-004	-6.55E-003
20	-1.39E-003	-6.55E-003
21	-2.56E-003	-6.53E-003
22	-3.25E-003	-6.52E-003
23	-3.50E-003	-6.50E-003
24	-3.23E-003	-6.49E-003
25	8.22E-006	-7.68E-003
26	6.98E-006	-7.04E-003
27	3.49E-006	-6.12E-003
28	1.74E-010	-5.72E-003
29	-3.49E-006	-6.13E-003
30	-6.98E-006	-7.10E-003
31	-8.22E-006	-7.80E-003
32	6.33E-004	-7.81E-003
33	8.26E-004	-7.85E-003
34	2.77E-004	-7.88E-003
35	-1.66E-004	-7.91E-003
36	-3.08E-004	-7.95E-003
37	-3.72E-004	-7.96E-003
38	-3.71E-004	-8.08E-003
39	-3.68E-004	-8.43E-003
40	-3.66E-004	-8.60E-003
41	-3.63E-004	-8.33E-003
42	-3.61E-004	-7.92E-003
43	-3.60E-004	-7.76E-003
44	-4.66E-004	-7.76E-003
45	-6.66E-004	-7.74E-003
46	-9.68E-004	-7.72E-003
47	-1.05E-003	-7.71E-003
48	-5.95E-004	-7.69E-003
49	2.90E-003	-9.50E-003

50	2.89E-003	-8.33E-003
51	2.89E-003	-6.67E-003
52	2.89E-003	-5.61E-003
53	2.88E-003	-5.43E-003
54	2.88E-003	-5.95E-003
55	2.88E-003	-6.42E-003
56	3.31E-003	-6.43E-003
57	3.46E-003	-6.46E-003
58	3.00E-003	-6.49E-003
59	2.11E-003	-6.52E-003
60	7.79E-004	-6.55E-003
61	-3.56E-004	-6.56E-003
62	-3.55E-004	-7.72E-003
63	-3.53E-004	-9.18E-003
64	-3.50E-004	-9.92E-003
65	-3.47E-004	-9.91E-003
66	-3.44E-004	-9.63E-003
67	-3.43E-004	-9.59E-003
68	-3.27E-004	-9.58E-003
69	-1.59E-004	-9.56E-003
70	1.43E-004	-9.54E-003
71	6.56E-004	-9.52E-003
72	1.78E-003	-9.50E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.62E-003
2	1.70E-003
3	7.84E-004
4	-1.39E-003
5	-3.65E-003
6	-4.73E-003
7	-4.65E-003
8	-4.24E-003
9	-1.37E-003
10	2.24E-004
11	3.73E-004
12	-3.81E-004
13	-8.45E-005
14	1.44E-004
15	3.19E-004
16	-1.14E-003
17	-2.95E-003
18	-3.83E-003
19	-3.76E-003
20	-3.60E-003
21	-2.30E-003
22	-1.19E-003
23	-1.93E-005
24	1.44E-003
25	2.29E-003
26	2.42E-003
27	1.85E-003
28	-8.25E-006
29	-1.91E-003

30	-2.62E-003
31	-2.51E-003
32	-2.08E-003
33	7.92E-004
34	1.58E-003
35	6.17E-004
36	1.43E-004
37	3.62E-004
38	5.72E-004
39	8.48E-004
40	-1.27E-004
41	-1.07E-003
42	-6.88E-004
43	-4.62E-004
44	-3.27E-004
45	-7.50E-004
46	-6.16E-004
47	3.45E-004
48	2.05E-003
49	4.16E-003
50	4.30E-003
51	3.64E-003
52	1.57E-003
53	-6.06E-004
54	-1.72E-003
55	-1.68E-003
56	-1.40E-003
57	4.99E-004
58	1.72E-003
59	2.73E-003
60	4.02E-003
61	4.20E-003
62	4.21E-003
63	2.87E-003
64	8.19E-004
65	-6.68E-004
66	-3.02E-004
67	-3.71E-005
68	1.51E-004
69	6.54E-004
70	8.58E-004
71	1.88E-003
72	3.89E-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	-1.47E-004	-4.73E-003
2	-1.51E-004	-4.61E-003
3	-1.61E-004	-4.34E-003
4	-1.71E-004	-4.23E-003
5	-1.81E-004	-4.45E-003
6	-1.91E-004	-4.84E-003
7	-1.94E-004	-5.03E-003
8	-5.93E-005	-5.04E-003
9	-7.76E-005	-5.06E-003
10	-8.46E-005	-5.09E-003
11	-6.01E-005	-5.11E-003
12	-2.15E-005	-5.13E-003
13	-2.16E-005	-5.14E-003
14	-1.85E-005	-5.19E-003
15	-9.75E-006	-5.39E-003
16	-1.02E-006	-5.48E-003
17	7.72E-006	-5.28E-003
18	1.64E-005	-4.94E-003
19	1.95E-005	-4.78E-003
20	-1.06E-004	-4.78E-003
21	-1.12E-004	-4.76E-003
22	-7.87E-005	-4.75E-003
23	-1.63E-004	-4.74E-003
24	-2.23E-004	-4.73E-003
25	2.35E-005	-4.83E-003
26	2.00E-005	-4.70E-003
27	9.98E-006	-4.41E-003
28	-3.12E-011	-4.25E-003
29	-9.98E-006	-4.41E-003
30	-2.00E-005	-4.72E-003
31	-2.35E-005	-4.86E-003
32	5.90E-005	-4.87E-003
33	-2.26E-005	-4.89E-003
34	-6.94E-005	-4.92E-003
35	-7.60E-005	-4.94E-003
36	-5.35E-005	-4.96E-003
37	-4.96E-005	-4.97E-003
38	-4.65E-005	-5.01E-003
39	-3.78E-005	-5.21E-003
40	-2.91E-005	-5.32E-003
41	-2.04E-005	-5.17E-003
42	-1.17E-005	-4.94E-003
43	-8.62E-006	-4.88E-003
44	-3.40E-005	-4.88E-003
45	-4.61E-005	-4.86E-003
46	-5.35E-005	-4.85E-003
47	-6.22E-005	-4.84E-003
48	-5.95E-005	-4.83E-003
49	1.95E-004	-5.02E-003

50	1.91E-004	-4.84E-003
51	1.81E-004	-4.47E-003
52	1.71E-004	-4.24E-003
53	1.61E-004	-4.33E-003
54	1.51E-004	-4.60E-003
55	1.48E-004	-4.71E-003
56	2.09E-004	-4.72E-003
57	-8.65E-006	-4.74E-003
58	-2.01E-004	-4.77E-003
59	-8.13E-005	-4.79E-003
60	4.50E-005	-4.81E-003
61	-7.77E-005	-4.82E-003
62	-7.46E-005	-4.99E-003
63	-6.59E-005	-5.33E-003
64	-5.72E-005	-5.50E-003
65	-4.85E-005	-5.37E-003
66	-3.98E-005	-5.14E-003
67	-3.67E-005	-5.08E-003
68	-6.55E-005	-5.07E-003
69	-7.50E-005	-5.06E-003
70	-5.55E-005	-5.05E-003
71	-1.20E-005	-5.04E-003
72	5.90E-005	-5.02E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	3.47E-004
2	4.92E-004
3	6.30E-004
4	-1.39E-004
5	-9.12E-004
6	-7.76E-004
7	-6.30E-004
8	-3.20E-004
9	6.91E-005
10	-2.81E-005
11	-8.84E-005
12	-7.22E-005
13	9.86E-005
14	2.55E-004
15	5.24E-004
16	-1.27E-004
17	-8.17E-004
18	-6.64E-004
19	-5.26E-004
20	-3.70E-004
21	1.59E-004
22	-5.82E-005
23	-3.03E-004
24	1.88E-004
25	3.74E-004
26	5.27E-004
27	7.24E-004
28	-3.21E-006
29	-7.44E-004

30	-5.86E-004
31	-4.38E-004
32	-1.32E-004
33	1.93E-004
34	5.40E-005
35	-8.11E-006
36	-8.38E-005
37	8.16E-005
38	2.36E-004
39	5.28E-004
40	-5.22E-005
41	-6.22E-004
42	-3.02E-004
43	-1.42E-004
44	-5.47E-005
45	-2.08E-005
46	-1.82E-005
47	-2.73E-005
48	2.13E-004
49	5.67E-004
50	7.23E-004
51	9.19E-004
52	1.73E-004
53	-5.99E-004
54	-4.95E-004
55	-3.56E-004
56	-5.31E-005
57	7.60E-004
58	8.39E-005
59	-5.54E-004
60	2.84E-004
61	5.72E-004
62	7.00E-004
63	7.75E-004
64	4.24E-005
65	-6.16E-004
66	-3.19E-004
67	-1.57E-004
68	-6.34E-005
69	6.40E-006
70	8.48E-005
71	1.27E-004
72	4.02E-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	-2.00E-003	-6.59E-003
2	-2.00E-003	-6.22E-003
3	-2.00E-003	-5.71E-003
4	-2.01E-003	-5.73E-003
5	-2.02E-003	-6.53E-003
6	-2.02E-003	-7.90E-003
7	-2.03E-003	-8.87E-003
8	-1.12E-003	-8.89E-003
9	-4.08E-004	-8.92E-003
10	-3.05E-004	-8.96E-003
11	-4.09E-004	-9.00E-003
12	-3.63E-004	-9.03E-003
13	-3.21E-004	-9.04E-003
14	-3.19E-004	-9.07E-003
15	-3.13E-004	-9.29E-003
16	-3.07E-004	-9.24E-003
17	-3.02E-004	-8.59E-003
18	-2.96E-004	-7.46E-003
19	-2.94E-004	-6.67E-003
20	-1.05E-003	-6.66E-003
21	-1.86E-003	-6.65E-003
22	-2.30E-003	-6.63E-003
23	-2.50E-003	-6.61E-003
24	-2.33E-003	-6.60E-003
25	1.66E-005	-7.46E-003
26	1.41E-005	-6.96E-003
27	7.05E-006	-6.18E-003
28	7.75E-011	-5.84E-003
29	-7.05E-006	-6.20E-003
30	-1.41E-005	-7.02E-003
31	-1.66E-005	-7.59E-003
32	4.81E-004	-7.60E-003
33	6.07E-004	-7.63E-003
34	2.07E-004	-7.67E-003
35	-2.00E-004	-7.70E-003
36	-2.86E-004	-7.73E-003
37	-3.21E-004	-7.74E-003
38	-3.19E-004	-7.84E-003
39	-3.14E-004	-8.16E-003
40	-3.09E-004	-8.32E-003
41	-3.03E-004	-8.06E-003
42	-2.98E-004	-7.67E-003
43	-2.96E-004	-7.54E-003
44	-3.77E-004	-7.54E-003
45	-5.09E-004	-7.52E-003
46	-7.04E-004	-7.50E-003
47	-7.59E-004	-7.49E-003
48	-4.42E-004	-7.47E-003
49	1.96E-003	-8.81E-003

50	1.96E-003	-7.92E-003
51	1.95E-003	-6.60E-003
52	1.95E-003	-5.76E-003
53	1.94E-003	-5.68E-003
54	1.93E-003	-6.17E-003
55	1.93E-003	-6.55E-003
56	2.26E-003	-6.56E-003
57	2.29E-003	-6.59E-003
58	1.92E-003	-6.62E-003
59	1.38E-003	-6.65E-003
60	5.23E-004	-6.68E-003
61	-3.22E-004	-6.69E-003
62	-3.20E-004	-7.57E-003
63	-3.15E-004	-8.74E-003
64	-3.09E-004	-9.33E-003
65	-3.03E-004	-9.26E-003
66	-2.98E-004	-8.96E-003
67	-2.96E-004	-8.90E-003
68	-3.04E-004	-8.89E-003
69	-2.07E-004	-8.87E-003
70	-5.30E-005	-8.85E-003
71	3.08E-004	-8.84E-003
72	1.13E-003	-8.82E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.28E-003
2	1.40E-003
3	8.29E-004
4	-1.01E-003
5	-2.92E-003
6	-3.59E-003
7	-3.47E-003
8	-3.05E-003
9	-8.39E-004
10	1.62E-004
11	1.95E-004
12	-2.79E-004
13	2.16E-006
14	2.31E-004
15	4.73E-004
16	-8.33E-004
17	-2.40E-003
18	-2.94E-003
19	-2.83E-003
20	-2.65E-003
21	-1.49E-003
22	-8.00E-004
23	-1.12E-004
24	1.09E-003
25	1.76E-003
26	1.92E-003
27	1.61E-003
28	-1.13E-005
29	-1.68E-003

30	-2.12E-003
31	-1.99E-003
32	-1.56E-003
33	5.70E-004
34	1.22E-003
35	6.05E-004
36	3.34E-005
37	2.63E-004
38	4.77E-004
39	8.01E-004
40	-1.28E-004
41	-1.02E-003
42	-6.01E-004
43	-3.71E-004
44	-2.37E-004
45	-4.82E-004
46	-4.04E-004
47	2.26E-004
48	1.53E-003
49	3.15E-003
50	3.32E-003
51	2.93E-003
52	1.16E-003
53	-6.96E-004
54	-1.43E-003
55	-1.34E-003
56	-1.02E-003
57	6.15E-004
58	1.15E-003
59	1.59E-003
60	2.92E-003
61	3.18E-003
62	3.24E-003
63	2.35E-003
64	5.87E-004
65	-7.49E-004
66	-3.74E-004
67	-1.20E-004
68	5.38E-005
69	3.25E-004
70	5.44E-004
71	1.36E-003
72	2.89E-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	-1.24E-003	-4.82E-003
2	-1.24E-003	-4.57E-003
3	-1.25E-003	-4.23E-003
4	-1.25E-003	-4.24E-003
5	-1.26E-003	-4.79E-003
6	-1.26E-003	-5.66E-003
7	-1.26E-003	-6.25E-003
8	-7.16E-004	-6.25E-003
9	-2.18E-004	-6.27E-003
10	-6.41E-005	-6.28E-003
11	-6.02E-005	-6.29E-003
12	-3.42E-005	-6.31E-003
13	-2.84E-005	-6.31E-003
14	-2.70E-005	-6.34E-003
15	-2.32E-005	-6.54E-003
16	-1.93E-005	-6.58E-003
17	-1.54E-005	-6.18E-003
18	-1.15E-005	-5.42E-003
19	-1.02E-005	-4.87E-003
20	-5.34E-004	-4.87E-003
21	-1.10E-003	-4.86E-003
22	-1.42E-003	-4.85E-003
23	-1.57E-003	-4.84E-003
24	-1.46E-003	-4.83E-003
25	1.16E-005	-5.41E-003
26	9.86E-006	-5.08E-003
27	4.93E-006	-4.56E-003
28	7.03E-011	-4.32E-003
29	-4.93E-006	-4.55E-003
30	-9.86E-006	-5.06E-003
31	-1.16E-005	-5.37E-003
32	2.69E-004	-5.38E-003
33	3.97E-004	-5.39E-003
34	2.47E-004	-5.40E-003
35	6.46E-005	-5.41E-003
36	8.24E-006	-5.43E-003
37	-2.90E-005	-5.43E-003
38	-2.77E-005	-5.50E-003
39	-2.40E-005	-5.75E-003
40	-2.03E-005	-5.90E-003
41	-1.66E-005	-5.77E-003
42	-1.29E-005	-5.53E-003
43	-1.16E-005	-5.46E-003
44	-4.39E-005	-5.46E-003
45	-1.29E-004	-5.45E-003
46	-3.24E-004	-5.44E-003
47	-4.44E-004	-5.42E-003
48	-2.84E-004	-5.41E-003
49	1.20E-003	-6.22E-003

50	1.20E-003	-5.65E-003
51	1.20E-003	-4.79E-003
52	1.19E-003	-4.25E-003
53	1.19E-003	-4.23E-003
54	1.18E-003	-4.58E-003
55	1.18E-003	-4.83E-003
56	1.40E-003	-4.83E-003
57	1.51E-003	-4.84E-003
58	1.36E-003	-4.85E-003
59	1.04E-003	-4.86E-003
60	4.87E-004	-4.87E-003
61	-2.99E-005	-4.88E-003
62	-2.85E-005	-5.42E-003
63	-2.47E-005	-6.16E-003
64	-2.08E-005	-6.56E-003
65	-1.69E-005	-6.51E-003
66	-1.30E-005	-6.31E-003
67	-1.17E-005	-6.28E-003
68	-4.15E-006	-6.27E-003
69	5.82E-005	-6.26E-003
70	8.00E-005	-6.25E-003
71	2.07E-004	-6.23E-003
72	6.72E-004	-6.22E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	8.72E-004
2	9.57E-004
3	5.55E-004
4	-7.07E-004
5	-1.94E-003
6	-2.19E-003
7	-2.07E-003
8	-1.88E-003
9	-7.30E-004
10	-1.20E-004
11	2.20E-005
12	-8.01E-005
13	4.39E-005
14	2.23E-004
15	4.92E-004
16	-4.15E-004
17	-1.56E-003
18	-2.02E-003
19	-1.95E-003
20	-1.83E-003
21	-1.06E-003
22	-5.95E-004
23	-1.17E-004
24	7.32E-004
25	1.15E-003
26	1.27E-003
27	1.10E-003
28	6.47E-006
29	-1.08E-003

30	-1.22E-003
31	-1.09E-003
32	-9.12E-004
33	1.32E-004
34	5.16E-004
35	2.97E-004
36	9.17E-005
37	1.91E-004
38	3.55E-004
39	6.58E-004
40	2.21E-005
41	-6.20E-004
42	-3.34E-004
43	-1.72E-004
44	-7.47E-005
45	-4.15E-004
46	-4.79E-004
47	-3.94E-005
48	9.71E-004
49	2.01E-003
50	2.13E-003
51	1.91E-003
52	7.01E-004
53	-5.51E-004
54	-9.52E-004
55	-8.67E-004
56	-7.28E-004
57	1.15E-004
58	5.86E-004
59	1.04E-003
60	1.81E-003
61	1.93E-003
62	2.00E-003
63	1.54E-003
64	3.93E-004
65	-5.04E-004
66	-2.19E-004
67	-3.77E-005
68	8.70E-005
69	1.13E-004
70	9.11E-005
71	6.40E-004
72	1.82E-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	-6.31E-004	-4.65E-003
2	-6.34E-004	-4.48E-003
3	-6.41E-004	-4.19E-003
4	-6.48E-004	-4.14E-003
5	-6.56E-004	-4.50E-003
6	-6.63E-004	-5.08E-003
7	-6.66E-004	-5.43E-003
8	-3.56E-004	-5.44E-003
9	-1.10E-004	-5.45E-003
10	-3.09E-005	-5.46E-003
11	-2.16E-005	-5.47E-003
12	-2.88E-006	-5.48E-003
13	-7.21E-006	-5.49E-003
14	-4.99E-006	-5.53E-003
15	1.27E-006	-5.73E-003
16	7.53E-006	-5.81E-003
17	1.38E-005	-5.53E-003
18	2.00E-005	-5.03E-003
19	2.23E-005	-4.70E-003
20	-2.75E-004	-4.70E-003
21	-5.29E-004	-4.69E-003
22	-6.60E-004	-4.67E-003
23	-7.76E-004	-4.66E-003
24	-7.67E-004	-4.65E-003
25	1.74E-005	-4.96E-003
26	1.48E-005	-4.76E-003
27	7.41E-006	-4.37E-003
28	6.65E-011	-4.19E-003
29	-7.41E-006	-4.37E-003
30	-1.48E-005	-4.75E-003
31	-1.74E-005	-4.95E-003
32	1.46E-004	-4.95E-003
33	1.95E-004	-4.97E-003
34	1.13E-004	-4.98E-003
35	2.33E-005	-4.99E-003
36	-7.14E-007	-5.00E-003
37	-2.26E-005	-5.00E-003
38	-2.05E-005	-5.06E-003
39	-1.43E-005	-5.28E-003
40	-8.09E-006	-5.41E-003
41	-1.91E-006	-5.29E-003
42	4.27E-006	-5.07E-003
43	6.45E-006	-5.02E-003
44	-1.35E-005	-5.01E-003
45	-4.88E-005	-5.00E-003
46	-1.44E-004	-4.99E-003
47	-2.14E-004	-4.98E-003
48	-1.52E-004	-4.97E-003
49	6.42E-004	-5.42E-003

50	6.39E-004	-5.08E-003
51	6.32E-004	-4.50E-003
52	6.24E-004	-4.15E-003
53	6.17E-004	-4.19E-003
54	6.10E-004	-4.48E-003
55	6.07E-004	-4.65E-003
56	7.43E-004	-4.65E-003
57	7.51E-004	-4.67E-003
58	6.37E-004	-4.68E-003
59	5.07E-004	-4.69E-003
60	2.57E-004	-4.70E-003
61	-3.82E-005	-4.70E-003
62	-3.60E-005	-5.03E-003
63	-2.98E-005	-5.53E-003
64	-2.35E-005	-5.80E-003
65	-1.72E-005	-5.72E-003
66	-1.10E-005	-5.52E-003
67	-8.76E-006	-5.48E-003
68	-1.24E-005	-5.47E-003
69	2.08E-005	-5.46E-003
70	3.72E-005	-5.45E-003
71	1.05E-004	-5.44E-003
72	3.39E-004	-5.42E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	5.57E-004
2	6.70E-004
3	5.64E-004
4	-3.95E-004
5	-1.33E-003
6	-1.33E-003
7	-1.20E-003
8	-1.03E-003
9	-3.57E-004
10	-7.37E-005
11	-9.35E-006
12	-3.42E-005
13	7.31E-005
14	2.39E-004
15	5.20E-004
16	-2.20E-004
17	-1.10E-003
18	-1.24E-003
19	-1.14E-003
20	-1.00E-003
21	-3.94E-004
22	-3.08E-004
23	-2.25E-004
24	4.11E-004
25	6.87E-004
26	8.22E-004
27	8.61E-004
28	2.58E-006
29	-8.52E-004

30	-8.02E-004
31	-6.66E-004
32	-4.99E-004
33	1.00E-004
34	2.60E-004
35	1.45E-004
36	3.85E-005
37	1.31E-004
38	2.88E-004
39	5.90E-004
40	8.83E-006
41	-5.75E-004
42	-2.80E-004
43	-1.24E-004
44	-3.17E-005
45	-1.92E-004
46	-2.45E-004
47	-6.33E-005
48	5.23E-004
49	1.17E-003
50	1.31E-003
51	1.32E-003
52	3.93E-004
53	-5.63E-004
54	-6.68E-004
55	-5.55E-004
56	-4.09E-004
57	2.24E-004
58	3.05E-004
59	3.87E-004
60	9.95E-004
61	1.13E-003
62	1.23E-003
63	1.09E-003
64	2.12E-004
65	-5.24E-004
66	-2.37E-004
67	-7.07E-005
68	3.70E-005
69	6.30E-005
70	6.23E-005
71	3.21E-004
72	1.00E-003

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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	-1.20E-003	-4.83E-003
2	-1.20E-003	-4.58E-003
3	-1.21E-003	-4.24E-003
4	-1.21E-003	-4.25E-003
5	-1.22E-003	-4.78E-003
6	-1.22E-003	-5.64E-003
7	-1.22E-003	-6.21E-003
8	-6.92E-004	-6.21E-003
9	-2.12E-004	-6.23E-003
10	-6.22E-005	-6.24E-003
11	-5.79E-005	-6.26E-003
12	-3.21E-005	-6.27E-003
13	-2.69E-005	-6.27E-003
14	-2.54E-005	-6.31E-003
15	-2.13E-005	-6.51E-003
16	-1.73E-005	-6.55E-003
17	-1.32E-005	-6.15E-003
18	-9.08E-006	-5.41E-003
19	-7.64E-006	-4.88E-003
20	-5.16E-004	-4.88E-003
21	-1.06E-003	-4.87E-003
22	-1.37E-003	-4.85E-003
23	-1.52E-003	-4.84E-003
24	-1.42E-003	-4.83E-003
25	1.21E-005	-5.39E-003
26	1.03E-005	-5.07E-003
27	5.13E-006	-4.56E-003
28	7.04E-011	-4.33E-003
29	-5.13E-006	-4.55E-003
30	-1.03E-005	-5.05E-003
31	-1.21E-005	-5.36E-003
32	2.61E-004	-5.37E-003
33	3.84E-004	-5.38E-003
34	2.39E-004	-5.39E-003
35	6.20E-005	-5.40E-003
36	7.68E-006	-5.41E-003
37	-2.87E-005	-5.42E-003
38	-2.74E-005	-5.49E-003
39	-2.34E-005	-5.74E-003
40	-1.95E-005	-5.89E-003
41	-1.56E-005	-5.76E-003
42	-1.16E-005	-5.52E-003
43	-1.02E-005	-5.45E-003
44	-4.19E-005	-5.45E-003
45	-1.23E-004	-5.44E-003
46	-3.12E-004	-5.42E-003
47	-4.30E-004	-5.41E-003
48	-2.76E-004	-5.40E-003
49	1.17E-003	-6.18E-003

50	1.16E-003	-5.63E-003
51	1.16E-003	-4.78E-003
52	1.15E-003	-4.26E-003
53	1.15E-003	-4.25E-003
54	1.14E-003	-4.59E-003
55	1.14E-003	-4.83E-003
56	1.36E-003	-4.84E-003
57	1.46E-003	-4.85E-003
58	1.31E-003	-4.86E-003
59	1.00E-003	-4.87E-003
60	4.71E-004	-4.88E-003
61	-3.08E-005	-4.88E-003
62	-2.94E-005	-5.41E-003
63	-2.53E-005	-6.14E-003
64	-2.12E-005	-6.53E-003
65	-1.71E-005	-6.48E-003
66	-1.30E-005	-6.28E-003
67	-1.16E-005	-6.24E-003
68	-4.70E-006	-6.24E-003
69	5.59E-005	-6.23E-003
70	7.74E-005	-6.21E-003
71	2.01E-004	-6.20E-003
72	6.50E-004	-6.19E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	8.51E-004
2	9.39E-004
3	5.58E-004
4	-6.87E-004
5	-1.90E-003
6	-2.13E-003
7	-2.01E-003
8	-1.82E-003
9	-7.06E-004
10	-1.17E-004
11	1.95E-005
12	-7.76E-005
13	4.56E-005
14	2.25E-004
15	4.96E-004
16	-4.02E-004
17	-1.54E-003
18	-1.97E-003
19	-1.90E-003
20	-1.78E-003
21	-1.01E-003
22	-5.77E-004
23	-1.27E-004
24	7.11E-004
25	1.12E-003
26	1.24E-003
27	1.09E-003
28	6.21E-006
29	-1.07E-003

30	-1.19E-003
31	-1.07E-003
32	-8.86E-004
33	1.30E-004
34	4.99E-004
35	2.87E-004
36	8.87E-005
37	1.87E-004
38	3.52E-004
39	6.56E-004
40	2.13E-005
41	-6.19E-004
42	-3.32E-004
43	-1.70E-004
44	-7.23E-005
45	-4.01E-004
46	-4.63E-004
47	-4.11E-005
48	9.42E-004
49	1.95E-003
50	2.08E-003
51	1.88E-003
52	6.80E-004
53	-5.55E-004
54	-9.34E-004
55	-8.47E-004
56	-7.07E-004
57	1.25E-004
58	5.68E-004
59	9.95E-004
60	1.75E-003
61	1.88E-003
62	1.95E-003
63	1.51E-003
64	3.81E-004
65	-5.07E-004
66	-2.21E-004
67	-3.97E-005
68	8.42E-005
69	1.10E-004
70	8.94E-005
71	6.19E-004
72	1.76E-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	-1.13E-003	-4.59E-003
2	-1.13E-003	-4.35E-003
3	-1.13E-003	-4.03E-003
4	-1.14E-003	-4.04E-003
5	-1.14E-003	-4.54E-003
6	-1.15E-003	-5.35E-003
7	-1.15E-003	-5.88E-003
8	-6.50E-004	-5.89E-003
9	-1.99E-004	-5.90E-003
10	-5.85E-005	-5.91E-003
11	-5.42E-005	-5.93E-003
12	-3.00E-005	-5.94E-003
13	-2.52E-005	-5.94E-003
14	-2.38E-005	-5.98E-003
15	-1.99E-005	-6.16E-003
16	-1.61E-005	-6.21E-003
17	-1.22E-005	-5.83E-003
18	-8.31E-006	-5.14E-003
19	-6.94E-006	-4.64E-003
20	-4.85E-004	-4.63E-003
21	-9.92E-004	-4.62E-003
22	-1.29E-003	-4.61E-003
23	-1.42E-003	-4.60E-003
24	-1.33E-003	-4.59E-003
25	1.16E-005	-5.12E-003
26	9.82E-006	-4.81E-003
27	4.91E-006	-4.33E-003
28	6.69E-011	-4.11E-003
29	-4.91E-006	-4.32E-003
30	-9.82E-006	-4.80E-003
31	-1.16E-005	-5.09E-003
32	2.45E-004	-5.09E-003
33	3.61E-004	-5.10E-003
34	2.24E-004	-5.11E-003
35	5.82E-005	-5.13E-003
36	7.16E-006	-5.14E-003
37	-2.71E-005	-5.14E-003
38	-2.57E-005	-5.21E-003
39	-2.20E-005	-5.44E-003
40	-1.83E-005	-5.59E-003
41	-1.45E-005	-5.46E-003
42	-1.08E-005	-5.24E-003
43	-9.49E-006	-5.17E-003
44	-3.92E-005	-5.17E-003
45	-1.16E-004	-5.16E-003
46	-2.93E-004	-5.15E-003
47	-4.03E-004	-5.13E-003
48	-2.59E-004	-5.12E-003
49	1.10E-003	-5.86E-003

50	1.09E-003	-5.34E-003
51	1.09E-003	-4.54E-003
52	1.08E-003	-4.04E-003
53	1.08E-003	-4.04E-003
54	1.08E-003	-4.36E-003
55	1.07E-003	-4.59E-003
56	1.28E-003	-4.59E-003
57	1.37E-003	-4.60E-003
58	1.23E-003	-4.61E-003
59	9.43E-004	-4.63E-003
60	4.43E-004	-4.64E-003
61	-2.91E-005	-4.64E-003
62	-2.78E-005	-5.13E-003
63	-2.39E-005	-5.82E-003
64	-2.00E-005	-6.18E-003
65	-1.61E-005	-6.14E-003
66	-1.23E-005	-5.95E-003
67	-1.09E-005	-5.92E-003
68	-4.53E-006	-5.91E-003
69	5.24E-005	-5.90E-003
70	7.27E-005	-5.89E-003
71	1.89E-004	-5.87E-003
72	6.11E-004	-5.86E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	8.03E-004
2	8.87E-004
3	5.30E-004
4	-6.45E-004
5	-1.79E-003
6	-2.01E-003
7	-1.89E-003
8	-1.71E-003
9	-6.63E-004
10	-1.10E-004
11	1.80E-005
12	-7.27E-005
13	4.35E-005
14	2.13E-004
15	4.69E-004
16	-3.78E-004
17	-1.45E-003
18	-1.85E-003
19	-1.79E-003
20	-1.67E-003
21	-9.48E-004
22	-5.43E-004
23	-1.22E-004
24	6.70E-004
25	1.05E-003
26	1.17E-003
27	1.03E-003
28	5.83E-006
29	-1.01E-003

30	-1.12E-003
31	-1.00E-003
32	-8.33E-004
33	1.23E-004
34	4.69E-004
35	2.70E-004
36	8.31E-005
37	1.76E-004
38	3.32E-004
39	6.19E-004
40	1.99E-005
41	-5.84E-004
42	-3.13E-004
43	-1.60E-004
44	-6.78E-005
45	-3.76E-004
46	-4.35E-004
47	-3.93E-005
48	8.86E-004
49	1.84E-003
50	1.96E-003
51	1.77E-003
52	6.40E-004
53	-5.27E-004
54	-8.82E-004
55	-7.99E-004
56	-6.66E-004
57	1.20E-004
58	5.35E-004
59	9.33E-004
60	1.65E-003
61	1.76E-003
62	1.83E-003
63	1.42E-003
64	3.58E-004
65	-4.80E-004
66	-2.09E-004
67	-3.80E-005
68	7.89E-005
69	1.03E-004
70	8.43E-005
71	5.82E-004
72	1.66E-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	-1.20E-003	-4.73E-003
2	-1.20E-003	-4.49E-003
3	-1.20E-003	-4.15E-003
4	-1.21E-003	-4.17E-003
5	-1.21E-003	-4.70E-003
6	-1.22E-003	-5.55E-003
7	-1.22E-003	-6.11E-003
8	-6.91E-004	-6.12E-003
9	-2.11E-004	-6.13E-003
10	-6.20E-005	-6.14E-003
11	-5.80E-005	-6.16E-003
12	-3.26E-005	-6.17E-003
13	-2.72E-005	-6.17E-003
14	-2.58E-005	-6.21E-003
15	-2.19E-005	-6.40E-003
16	-1.81E-005	-6.44E-003
17	-1.42E-005	-6.05E-003
18	-1.03E-005	-5.31E-003
19	-8.96E-006	-4.78E-003
20	-5.15E-004	-4.78E-003
21	-1.06E-003	-4.77E-003
22	-1.37E-003	-4.76E-003
23	-1.51E-003	-4.75E-003
24	-1.42E-003	-4.74E-003
25	1.16E-005	-5.30E-003
26	9.84E-006	-4.98E-003
27	4.92E-006	-4.47E-003
28	6.90E-011	-4.24E-003
29	-4.92E-006	-4.46E-003
30	-9.84E-006	-4.96E-003
31	-1.16E-005	-5.27E-003
32	2.60E-004	-5.27E-003
33	3.83E-004	-5.28E-003
34	2.39E-004	-5.29E-003
35	6.22E-005	-5.31E-003
36	7.83E-006	-5.32E-003
37	-2.83E-005	-5.32E-003
38	-2.70E-005	-5.39E-003
39	-2.33E-005	-5.64E-003
40	-1.95E-005	-5.78E-003
41	-1.58E-005	-5.65E-003
42	-1.21E-005	-5.42E-003
43	-1.08E-005	-5.36E-003
44	-4.21E-005	-5.35E-003
45	-1.24E-004	-5.34E-003
46	-3.13E-004	-5.33E-003
47	-4.29E-004	-5.32E-003
48	-2.75E-004	-5.30E-003
49	1.16E-003	-6.08E-003

50	1.16E-003	-5.53E-003
51	1.16E-003	-4.70E-003
52	1.15E-003	-4.17E-003
53	1.15E-003	-4.16E-003
54	1.14E-003	-4.49E-003
55	1.14E-003	-4.74E-003
56	1.36E-003	-4.74E-003
57	1.46E-003	-4.75E-003
58	1.31E-003	-4.76E-003
59	1.00E-003	-4.77E-003
60	4.70E-004	-4.79E-003
61	-2.96E-005	-4.79E-003
62	-2.82E-005	-5.31E-003
63	-2.44E-005	-6.04E-003
64	-2.05E-005	-6.42E-003
65	-1.66E-005	-6.37E-003
66	-1.28E-005	-6.18E-003
67	-1.14E-005	-6.14E-003
68	-4.29E-006	-6.14E-003
69	5.61E-005	-6.13E-003
70	7.72E-005	-6.11E-003
71	2.00E-004	-6.10E-003
72	6.49E-004	-6.09E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	8.46E-004
2	9.30E-004
3	5.45E-004
4	-6.84E-004
5	-1.88E-003
6	-2.12E-003
7	-2.00E-003
8	-1.82E-003
9	-7.05E-004
10	-1.16E-004
11	2.05E-005
12	-7.74E-005
13	4.37E-005
14	2.19E-004
15	4.84E-004
16	-4.01E-004
17	-1.52E-003
18	-1.96E-003
19	-1.89E-003
20	-1.77E-003
21	-1.02E-003
22	-5.75E-004
23	-1.19E-004
24	7.09E-004
25	1.11E-003
26	1.23E-003
27	1.07E-003
28	6.23E-006
29	-1.05E-003

30	-1.18E-003
31	-1.06E-003
32	-8.82E-004
33	1.28E-004
34	4.98E-004
35	2.87E-004
36	8.85E-005
37	1.85E-004
38	3.47E-004
39	6.44E-004
40	2.13E-005
41	-6.07E-004
42	-3.26E-004
43	-1.67E-004
44	-7.21E-005
45	-4.01E-004
46	-4.62E-004
47	-3.94E-005
48	9.39E-004
49	1.94E-003
50	2.07E-003
51	1.86E-003
52	6.78E-004
53	-5.42E-004
54	-9.26E-004
55	-8.41E-004
56	-7.05E-004
57	1.17E-004
58	5.67E-004
59	1.00E-003
60	1.75E-003
61	1.87E-003
62	1.94E-003
63	1.49E-003
64	3.79E-004
65	-4.95E-004
66	-2.16E-004
67	-3.78E-005
68	8.40E-005
69	1.09E-004
70	8.86E-005
71	6.18E-004
72	1.76E-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	-6.53E-004	-4.65E-003
2	-6.56E-004	-4.47E-003
3	-6.63E-004	-4.18E-003
4	-6.70E-004	-4.14E-003
5	-6.78E-004	-4.51E-003
6	-6.85E-004	-5.10E-003
7	-6.87E-004	-5.45E-003
8	-3.70E-004	-5.46E-003
9	-1.13E-004	-5.47E-003
10	-3.20E-005	-5.48E-003
11	-2.29E-005	-5.49E-003
12	-4.06E-006	-5.51E-003
13	-8.06E-006	-5.51E-003
14	-5.89E-006	-5.55E-003
15	2.46E-007	-5.75E-003
16	6.38E-006	-5.83E-003
17	1.25E-005	-5.55E-003
18	1.87E-005	-5.03E-003
19	2.08E-005	-4.70E-003
20	-2.85E-004	-4.69E-003
21	-5.51E-004	-4.68E-003
22	-6.89E-004	-4.67E-003
23	-8.06E-004	-4.66E-003
24	-7.93E-004	-4.65E-003
25	1.72E-005	-4.97E-003
26	1.46E-005	-4.76E-003
27	7.30E-006	-4.37E-003
28	6.65E-011	-4.18E-003
29	-7.30E-006	-4.37E-003
30	-1.46E-005	-4.75E-003
31	-1.72E-005	-4.96E-003
32	1.50E-004	-4.96E-003
33	2.02E-004	-4.97E-003
34	1.18E-004	-4.98E-003
35	2.47E-005	-4.99E-003
36	-4.00E-007	-5.01E-003
37	-2.28E-005	-5.01E-003
38	-2.07E-005	-5.07E-003
39	-1.46E-005	-5.29E-003
40	-8.55E-006	-5.42E-003
41	-2.49E-006	-5.29E-003
42	3.56E-006	-5.08E-003
43	5.70E-006	-5.02E-003
44	-1.46E-005	-5.02E-003
45	-5.17E-005	-5.01E-003
46	-1.51E-004	-5.00E-003
47	-2.22E-004	-4.99E-003
48	-1.57E-004	-4.97E-003
49	6.62E-004	-5.44E-003

50	6.59E-004	-5.09E-003
51	6.52E-004	-4.51E-003
52	6.45E-004	-4.14E-003
53	6.38E-004	-4.19E-003
54	6.31E-004	-4.48E-003
55	6.28E-004	-4.65E-003
56	7.67E-004	-4.65E-003
57	7.80E-004	-4.66E-003
58	6.64E-004	-4.67E-003
59	5.28E-004	-4.68E-003
60	2.66E-004	-4.69E-003
61	-3.77E-005	-4.70E-003
62	-3.55E-005	-5.03E-003
63	-2.94E-005	-5.54E-003
64	-2.33E-005	-5.82E-003
65	-1.71E-005	-5.74E-003
66	-1.10E-005	-5.54E-003
67	-8.81E-006	-5.50E-003
68	-1.21E-005	-5.49E-003
69	2.21E-005	-5.48E-003
70	3.86E-005	-5.47E-003
71	1.09E-004	-5.46E-003
72	3.51E-004	-5.44E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	5.68E-004
2	6.81E-004
3	5.63E-004
4	-4.07E-004
5	-1.35E-003
6	-1.36E-003
7	-1.23E-003
8	-1.06E-003
9	-3.70E-004
10	-7.53E-005
11	-7.97E-006
12	-3.56E-005
13	7.22E-005
14	2.38E-004
15	5.18E-004
16	-2.27E-004
17	-1.12E-003
18	-1.27E-003
19	-1.17E-003
20	-1.04E-003
21	-4.19E-004
22	-3.18E-004
23	-2.20E-004
24	4.23E-004
25	7.03E-004
26	8.37E-004
27	8.68E-004
28	2.73E-006
29	-8.59E-004

30	-8.16E-004
31	-6.81E-004
32	-5.14E-004
33	1.01E-004
34	2.70E-004
35	1.50E-004
36	4.02E-005
37	1.33E-004
38	2.90E-004
39	5.91E-004
40	9.32E-006
41	-5.75E-004
42	-2.81E-004
43	-1.25E-004
44	-3.31E-005
45	-2.00E-004
46	-2.54E-004
47	-6.24E-005
48	5.39E-004
49	1.20E-003
50	1.34E-003
51	1.34E-003
52	4.04E-004
53	-5.61E-004
54	-6.78E-004
55	-5.66E-004
56	-4.21E-004
57	2.19E-004
58	3.14E-004
59	4.12E-004
60	1.03E-003
61	1.16E-003
62	1.26E-003
63	1.11E-003
64	2.18E-004
65	-5.23E-004
66	-2.36E-004
67	-6.96E-005
68	3.85E-005
69	6.46E-005
70	6.33E-005
71	3.32E-004
72	1.03E-003

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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	-1.17E-003	-4.74E-003
2	-1.18E-003	-4.50E-003
3	-1.18E-003	-4.16E-003
4	-1.18E-003	-4.17E-003
5	-1.19E-003	-4.69E-003
6	-1.19E-003	-5.53E-003
7	-1.20E-003	-6.09E-003
8	-6.76E-004	-6.09E-003
9	-2.07E-004	-6.11E-003
10	-6.08E-005	-6.12E-003
11	-5.65E-005	-6.13E-003
12	-3.13E-005	-6.15E-003
13	-2.62E-005	-6.15E-003
14	-2.48E-005	-6.18E-003
15	-2.08E-005	-6.38E-003
16	-1.68E-005	-6.42E-003
17	-1.28E-005	-6.03E-003
18	-8.79E-006	-5.31E-003
19	-7.38E-006	-4.79E-003
20	-5.04E-004	-4.78E-003
21	-1.03E-003	-4.77E-003
22	-1.34E-003	-4.76E-003
23	-1.48E-003	-4.75E-003
24	-1.39E-003	-4.74E-003
25	1.19E-005	-5.29E-003
26	1.01E-005	-4.97E-003
27	5.05E-006	-4.47E-003
28	6.90E-011	-4.24E-003
29	-5.04E-006	-4.47E-003
30	-1.01E-005	-4.96E-003
31	-1.19E-005	-5.26E-003
32	2.55E-004	-5.26E-003
33	3.75E-004	-5.28E-003
34	2.33E-004	-5.29E-003
35	6.06E-005	-5.30E-003
36	7.48E-006	-5.31E-003
37	-2.81E-005	-5.31E-003
38	-2.68E-005	-5.39E-003
39	-2.29E-005	-5.63E-003
40	-1.90E-005	-5.78E-003
41	-1.52E-005	-5.64E-003
42	-1.13E-005	-5.41E-003
43	-9.95E-006	-5.35E-003
44	-4.09E-005	-5.34E-003
45	-1.21E-004	-5.33E-003
46	-3.05E-004	-5.32E-003
47	-4.20E-004	-5.31E-003
48	-2.69E-004	-5.30E-003
49	1.14E-003	-6.06E-003

50	1.14E-003	-5.52E-003
51	1.13E-003	-4.69E-003
52	1.13E-003	-4.18E-003
53	1.12E-003	-4.17E-003
54	1.12E-003	-4.50E-003
55	1.12E-003	-4.74E-003
56	1.33E-003	-4.74E-003
57	1.42E-003	-4.76E-003
58	1.28E-003	-4.77E-003
59	9.81E-004	-4.78E-003
60	4.61E-004	-4.79E-003
61	-3.02E-005	-4.79E-003
62	-2.88E-005	-5.31E-003
63	-2.48E-005	-6.02E-003
64	-2.08E-005	-6.40E-003
65	-1.68E-005	-6.35E-003
66	-1.27E-005	-6.15E-003
67	-1.13E-005	-6.12E-003
68	-4.64E-006	-6.12E-003
69	5.46E-005	-6.10E-003
70	7.57E-005	-6.09E-003
71	1.96E-004	-6.08E-003
72	6.36E-004	-6.06E-003

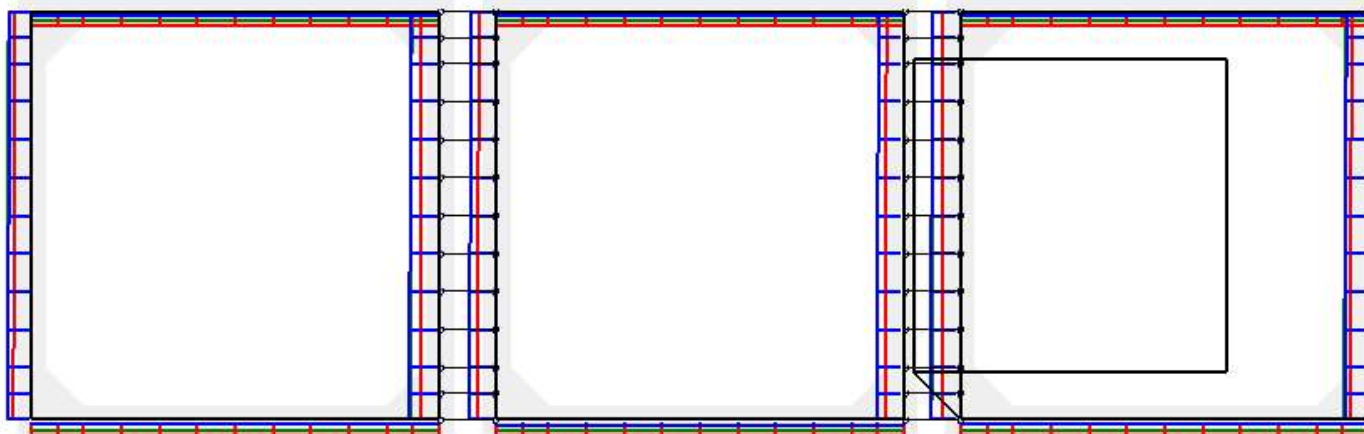
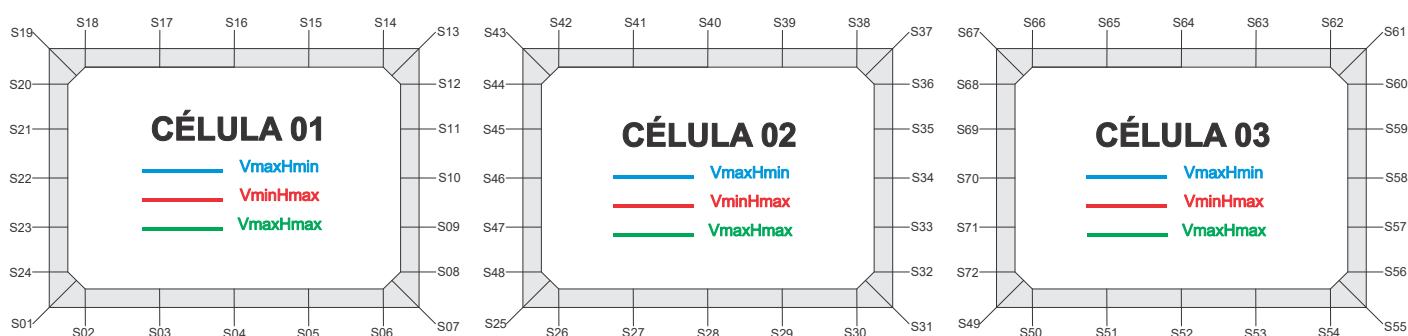
DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	8.33E-004
2	9.19E-004
3	5.47E-004
4	-6.71E-004
5	-1.86E-003
6	-2.09E-003
7	-1.97E-003
8	-1.78E-003
9	-6.90E-004
10	-1.14E-004
11	1.90E-005
12	-7.58E-005
13	4.48E-005
14	2.20E-004
15	4.86E-004
16	-3.93E-004
17	-1.50E-003
18	-1.93E-003
19	-1.86E-003
20	-1.74E-003
21	-9.87E-004
22	-5.64E-004
23	-1.25E-004
24	6.95E-004
25	1.09E-003
26	1.21E-003
27	1.06E-003
28	6.07E-006
29	-1.04E-003

30	-1.17E-003
31	-1.04E-003
32	-8.66E-004
33	1.27E-004
34	4.88E-004
35	2.81E-004
36	8.66E-005
37	1.83E-004
38	3.45E-004
39	6.42E-004
40	2.08E-005
41	-6.06E-004
42	-3.25E-004
43	-1.66E-004
44	-7.06E-005
45	-3.92E-004
46	-4.53E-004
47	-4.04E-005
48	9.21E-004
49	1.91E-003
50	2.03E-003
51	1.84E-003
52	6.65E-004
53	-5.44E-004
54	-9.14E-004
55	-8.29E-004
56	-6.91E-004
57	1.23E-004
58	5.56E-004
59	9.72E-004
60	1.71E-003
61	1.83E-003
62	1.90E-003
63	1.48E-003
64	3.72E-004
65	-4.97E-004
66	-2.16E-004
67	-3.91E-005
68	8.22E-005
69	1.07E-004
70	8.75E-005
71	6.05E-004
72	1.72E-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	-150.12	-30.38
2	-30.38	-30.38
3	-30.38	-30.38
4	-30.38	-30.38
5	-30.38	-30.38
6	-30.38	-30.38
7	-30.38	-189.63
8	-187.96	-187.96
9	-186.01	-186.01
10	-184.06	-184.06
11	-182.11	-182.11
12	-180.16	-180.16
13	-178.50	-28.31
14	-28.31	-28.31
15	-28.31	-28.31
16	-28.31	-28.31
17	-28.31	-28.31
18	-28.31	-28.31
19	-28.31	-138.99
20	-140.66	-140.66
21	-142.61	-142.61
22	-144.56	-144.56
23	-146.51	-146.51
24	-148.46	-148.46
25	-150.12	-33.47
26	-33.47	-33.47
27	-33.47	-33.47
28	-33.47	-33.47
29	-33.47	-33.47
30	-33.47	-33.47
31	-33.47	-170.25
32	-168.58	-168.58
33	-166.63	-166.63
34	-164.68	-164.68
35	-162.73	-162.73
36	-160.78	-160.78
37	-159.12	-25.22
38	-25.22	-25.22
39	-25.22	-25.22
40	-25.22	-25.22
41	-25.22	-25.22
42	-25.22	-25.22
43	-25.22	-158.37
44	-160.04	-160.04
45	-161.99	-161.99
46	-163.94	-163.94
47	-165.89	-165.89
48	-167.84	-167.84
49	-169.50	-30.53

	50	-30.53	-30.53
	51	-30.53	-30.53
	52	-30.53	-30.53
	53	-30.53	-30.53
	54	-30.53	-30.53
	55	-30.53	-149.75
	56	-148.08	-148.08
	57	-146.13	-146.13
	58	-144.18	-144.18
	59	-142.23	-142.23
	60	-140.28	-140.28
	61	-138.62	-28.17
	62	-28.17	-28.17
	63	-28.17	-28.17
	64	-28.17	-28.17
	65	-28.17	-28.17
	66	-28.17	-28.17
	67	-28.17	-178.87
	68	-180.54	-180.54
	69	-182.49	-182.49
	70	-184.44	-184.44
	71	-186.39	-186.39
	72	-188.34	-188.34

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-114.73	-97.49
2	-97.49	-97.49
3	-97.49	-97.49
4	-97.49	-97.49
5	-97.49	-97.49
6	-97.49	-97.49
7	-97.49	-119.94
8	-118.66	-118.66
9	-117.16	-117.16
10	-115.66	-115.66
11	-114.16	-114.16
12	-112.66	-112.66
13	-111.37	-85.13
14	-85.13	-85.13
15	-85.13	-85.13
16	-85.13	-85.13
17	-85.13	-85.13
18	-85.13	-85.13
19	-85.13	-106.17
20	-107.45	-107.45
21	-108.95	-108.95
22	-110.45	-110.45
23	-111.95	-111.95
24	-113.45	-113.45
25	-114.73	-97.64
26	-97.64	-97.64
27	-97.64	-97.64
28	-97.64	-97.64
29	-97.64	-97.64
30	-97.64	-97.64
31	-97.64	-117.30
32	-116.02	-116.02
33	-114.52	-114.52
34	-113.02	-113.02
35	-111.52	-111.52
36	-110.02	-110.02
37	-108.74	-84.97
38	-84.97	-84.97
39	-84.97	-84.97
40	-84.97	-84.97
41	-84.97	-84.97
42	-84.97	-84.97
43	-84.97	-108.80
44	-110.08	-110.08
45	-111.58	-111.58
46	-113.08	-113.08
47	-114.58	-114.58
48	-116.08	-116.08
49	-117.36	-97.48

50	-97.48	-97.48
51	-97.48	-97.48
52	-97.48	-97.48
53	-97.48	-97.48
54	-97.48	-97.48
55	-97.48	-114.76
56	-113.48	-113.48
57	-111.98	-111.98
58	-110.48	-110.48
59	-108.98	-108.98
60	-107.48	-107.48
61	-106.20	-85.13
62	-85.13	-85.13
63	-85.13	-85.13
64	-85.13	-85.13
65	-85.13	-85.13
66	-85.13	-85.13
67	-85.13	-111.34
68	-112.62	-112.62
69	-114.12	-114.12
70	-115.62	-115.62
71	-117.12	-117.12
72	-118.62	-118.62

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-155.02	-66.65
2	-66.65	-66.65
3	-66.65	-66.65
4	-66.65	-66.65
5	-66.65	-66.65
6	-66.65	-66.65
7	-66.65	-184.73
8	-183.06	-183.06
9	-181.11	-181.11
10	-179.16	-179.16
11	-177.21	-177.21
12	-175.26	-175.26
13	-173.60	-55.10
14	-55.10	-55.10
15	-55.10	-55.10
16	-55.10	-55.10
17	-55.10	-55.10
18	-55.10	-55.10
19	-55.10	-143.89
20	-145.56	-145.56
21	-147.51	-147.51
22	-149.46	-149.46
23	-151.41	-151.41
24	-153.36	-153.36
25	-155.02	-68.68
26	-68.68	-68.68
27	-68.68	-68.68
28	-68.68	-68.68
29	-68.68	-68.68
30	-68.68	-68.68
31	-68.68	-170.22
32	-168.56	-168.56
33	-166.61	-166.61
34	-164.66	-164.66
35	-162.71	-162.71
36	-160.76	-160.76
37	-159.09	-53.06
38	-53.06	-53.06
39	-53.06	-53.06
40	-53.06	-53.06
41	-53.06	-53.06
42	-53.06	-53.06
43	-53.06	-158.39
44	-160.06	-160.06
45	-162.01	-162.01
46	-163.96	-163.96
47	-165.91	-165.91
48	-167.86	-167.86
49	-169.53	-66.67

	50	-66.67	-66.67
	51	-66.67	-66.67
	52	-66.67	-66.67
	53	-66.67	-66.67
	54	-66.67	-66.67
	55	-66.67	-154.67
	56	-153.01	-153.01
	57	-151.06	-151.06
	58	-149.11	-149.11
	59	-147.16	-147.16
	60	-145.21	-145.21
	61	-143.54	-55.07
	62	-55.07	-55.07
	63	-55.07	-55.07
	64	-55.07	-55.07
	65	-55.07	-55.07
	66	-55.07	-55.07
	67	-55.07	-173.94
	68	-175.61	-175.61
	69	-177.56	-177.56
	70	-179.51	-179.51
	71	-181.46	-181.46
	72	-183.41	-183.41

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-153.82	-29.32
2	-29.32	-29.32
3	-29.32	-29.32
4	-29.32	-29.32
5	-29.32	-29.32
6	-29.32	-29.32
7	-29.32	-185.93
8	-184.26	-184.26
9	-182.31	-182.31
10	-180.36	-180.36
11	-178.41	-178.41
12	-176.46	-176.46
13	-174.80	-29.37
14	-29.37	-29.37
15	-29.37	-29.37
16	-29.37	-29.37
17	-29.37	-29.37
18	-29.37	-29.37
19	-29.37	-142.69
20	-144.35	-144.35
21	-146.30	-146.30
22	-148.25	-148.25
23	-150.20	-150.20
24	-152.15	-152.15
25	-153.82	-34.13
26	-34.13	-34.13
27	-34.13	-34.13
28	-34.13	-34.13
29	-34.13	-34.13
30	-34.13	-34.13
31	-34.13	-168.30
32	-166.63	-166.63
33	-164.68	-164.68
34	-162.73	-162.73
35	-160.78	-160.78
36	-158.83	-158.83
37	-157.17	-24.56
38	-24.56	-24.56
39	-24.56	-24.56
40	-24.56	-24.56
41	-24.56	-24.56
42	-24.56	-24.56
43	-24.56	-160.32
44	-161.98	-161.98
45	-163.93	-163.93
46	-165.88	-165.88
47	-167.83	-167.83
48	-169.78	-169.78
49	-171.45	-31.64

	50	-31.64	-31.64
	51	-31.64	-31.64
	52	-31.64	-31.64
	53	-31.64	-31.64
	54	-31.64	-31.64
	55	-31.64	-143.88
	56	-142.21	-142.21
	57	-140.26	-140.26
	58	-138.31	-138.31
	59	-136.36	-136.36
	60	-134.41	-134.41
	61	-132.75	-27.05
	62	-27.05	-27.05
	63	-27.05	-27.05
	64	-27.05	-27.05
	65	-27.05	-27.05
	66	-27.05	-27.05
	67	-27.05	-184.74
	68	-186.41	-186.41
	69	-188.36	-188.36
	70	-190.31	-190.31
	71	-192.26	-192.26
	72	-194.21	-194.21

```
#####
#          SOLICITAÇÕES TANGENCIAIS (ELU)          #
#          VminHmax                                #
#####
-----
                ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE
-----
| SEÇÃO |          ESQUERDA (kN) |          DIREITA (kN) |
-----
|  1 |          -115.56 |          -97.23 |
|  2 |          -97.23 |          -97.23 |
|  3 |          -97.23 |          -97.23 |
|  4 |          -97.23 |          -97.23 |
|  5 |          -97.23 |          -97.23 |
|  6 |          -97.23 |          -97.23 |
|  7 |          -97.23 |         -119.11 |
|  8 |         -117.82 |         -117.82 |
|  9 |         -116.32 |         -116.32 |
| 10 |         -114.82 |         -114.82 |
| 11 |         -113.32 |         -113.32 |
| 12 |         -111.82 |         -111.82 |
| 13 |         -110.54 |          -85.38 |
| 14 |          -85.38 |          -85.38 |
| 15 |          -85.38 |          -85.38 |
| 16 |          -85.38 |          -85.38 |
| 17 |          -85.38 |          -85.38 |
| 18 |          -85.38 |          -85.38 |
| 19 |          -85.38 |         -107.00 |
| 20 |         -108.28 |         -108.28 |
| 21 |         -109.78 |         -109.78 |
| 22 |         -111.28 |         -111.28 |
| 23 |         -112.78 |         -112.78 |
| 24 |         -114.28 |         -114.28 |
| 25 |         -115.56 |          -97.54 |
| 26 |          -97.54 |          -97.54 |
| 27 |          -97.54 |          -97.54 |
| 28 |          -97.54 |          -97.54 |
| 29 |          -97.54 |          -97.54 |
| 30 |          -97.54 |          -97.54 |
| 31 |          -97.54 |         -116.88 |
| 32 |         -115.60 |         -115.60 |
| 33 |         -114.10 |         -114.10 |
| 34 |         -112.60 |         -112.60 |
| 35 |         -111.10 |         -111.10 |
| 36 |         -109.60 |         -109.60 |
| 37 |         -108.32 |          -85.07 |
| 38 |          -85.07 |          -85.07 |
| 39 |          -85.07 |          -85.07 |
| 40 |          -85.07 |          -85.07 |
| 41 |          -85.07 |          -85.07 |
| 42 |          -85.07 |          -85.07 |
| 43 |          -85.07 |         -109.22 |
| 44 |         -110.50 |         -110.50 |
| 45 |         -112.00 |         -112.00 |
| 46 |         -113.50 |         -113.50 |
| 47 |         -115.00 |         -115.00 |
| 48 |         -116.50 |         -116.50 |
| 49 |         -117.78 |          -97.63 |
```

	50	-97.63	-97.63
	51	-97.63	-97.63
	52	-97.63	-97.63
	53	-97.63	-97.63
	54	-97.63	-97.63
	55	-97.63	-113.93
	56	-112.65	-112.65
	57	-111.15	-111.15
	58	-109.65	-109.65
	59	-108.15	-108.15
	60	-106.65	-106.65
	61	-105.37	-84.99
	62	-84.99	-84.99
	63	-84.99	-84.99
	64	-84.99	-84.99
	65	-84.99	-84.99
	66	-84.99	-84.99
	67	-84.99	-112.17
	68	-113.45	-113.45
	69	-114.95	-114.95
	70	-116.45	-116.45
	71	-117.95	-117.95
	72	-119.45	-119.45

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-157.89	-65.78
2	-65.78	-65.78
3	-65.78	-65.78
4	-65.78	-65.78
5	-65.78	-65.78
6	-65.78	-65.78
7	-65.78	-181.86
8	-180.20	-180.20
9	-178.25	-178.25
10	-176.30	-176.30
11	-174.35	-174.35
12	-172.40	-172.40
13	-170.73	-55.96
14	-55.96	-55.96
15	-55.96	-55.96
16	-55.96	-55.96
17	-55.96	-55.96
18	-55.96	-55.96
19	-55.96	-146.76
20	-148.42	-148.42
21	-150.37	-150.37
22	-152.32	-152.32
23	-154.27	-154.27
24	-156.22	-156.22
25	-157.89	-68.94
26	-68.94	-68.94
27	-68.94	-68.94
28	-68.94	-68.94
29	-68.94	-68.94
30	-68.94	-68.94
31	-68.94	-168.35
32	-166.68	-166.68
33	-164.73	-164.73
34	-162.78	-162.78
35	-160.83	-160.83
36	-158.88	-158.88
37	-157.22	-52.81
38	-52.81	-52.81
39	-52.81	-52.81
40	-52.81	-52.81
41	-52.81	-52.81
42	-52.81	-52.81
43	-52.81	-160.27
44	-161.94	-161.94
45	-163.89	-163.89
46	-165.84	-165.84
47	-167.79	-167.79
48	-169.74	-169.74
49	-171.40	-67.54

	50	-67.54	-67.54
	51	-67.54	-67.54
	52	-67.54	-67.54
	53	-67.54	-67.54
	54	-67.54	-67.54
	55	-67.54	-150.47
	56	-148.80	-148.80
	57	-146.85	-146.85
	58	-144.90	-144.90
	59	-142.95	-142.95
	60	-141.00	-141.00
	61	-139.34	-54.20
	62	-54.20	-54.20
	63	-54.20	-54.20
	64	-54.20	-54.20
	65	-54.20	-54.20
	66	-54.20	-54.20
	67	-54.20	-178.15
	68	-179.81	-179.81
	69	-181.76	-181.76
	70	-183.71	-183.71
	71	-185.66	-185.66
	72	-187.61	-187.61

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-112.68	-46.65
2	-46.65	-46.65
3	-46.65	-46.65
4	-46.65	-46.65
5	-46.65	-46.65
6	-46.65	-46.65
7	-46.65	-134.91
8	-133.63	-133.63
9	-132.13	-132.13
10	-130.63	-130.63
11	-129.13	-129.13
12	-127.63	-127.63
13	-126.35	-37.84
14	-37.84	-37.84
15	-37.84	-37.84
16	-37.84	-37.84
17	-37.84	-37.84
18	-37.84	-37.84
19	-37.84	-104.12
20	-105.40	-105.40
21	-106.90	-106.90
22	-108.40	-108.40
23	-109.90	-109.90
24	-111.40	-111.40
25	-112.68	-48.19
26	-48.19	-48.19
27	-48.19	-48.19
28	-48.19	-48.19
29	-48.19	-48.19
30	-48.19	-48.19
31	-48.19	-124.06
32	-122.78	-122.78
33	-121.28	-121.28
34	-119.78	-119.78
35	-118.28	-118.28
36	-116.78	-116.78
37	-115.50	-36.31
38	-36.31	-36.31
39	-36.31	-36.31
40	-36.31	-36.31
41	-36.31	-36.31
42	-36.31	-36.31
43	-36.31	-114.97
44	-116.25	-116.25
45	-117.75	-117.75
46	-119.25	-119.25
47	-120.75	-120.75
48	-122.25	-122.25
49	-123.53	-46.67

	50	-46.67	-46.67
	51	-46.67	-46.67
	52	-46.67	-46.67
	53	-46.67	-46.67
	54	-46.67	-46.67
	55	-46.67	-112.42
	56	-111.14	-111.14
	57	-109.64	-109.64
	58	-108.14	-108.14
	59	-106.64	-106.64
	60	-105.14	-105.14
	61	-103.85	-37.82
	62	-37.82	-37.82
	63	-37.82	-37.82
	64	-37.82	-37.82
	65	-37.82	-37.82
	66	-37.82	-37.82
	67	-37.82	-126.61
	68	-127.89	-127.89
	69	-129.39	-129.39
	70	-130.89	-130.89
	71	-132.39	-132.39
	72	-133.89	-133.89

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-110.90	-71.68
2	-71.68	-71.68
3	-71.68	-71.68
4	-71.68	-71.68
5	-71.68	-71.68
6	-71.68	-71.68
7	-71.68	-123.76
8	-122.48	-122.48
9	-120.98	-120.98
10	-119.48	-119.48
11	-117.98	-117.98
12	-116.48	-116.48
13	-115.20	-61.20
14	-61.20	-61.20
15	-61.20	-61.20
16	-61.20	-61.20
17	-61.20	-61.20
18	-61.20	-61.20
19	-61.20	-102.34
20	-103.62	-103.62
21	-105.12	-105.12
22	-106.62	-106.62
23	-108.12	-108.12
24	-109.62	-109.62
25	-110.90	-72.46
26	-72.46	-72.46
27	-72.46	-72.46
28	-72.46	-72.46
29	-72.46	-72.46
30	-72.46	-72.46
31	-72.46	-117.44
32	-116.16	-116.16
33	-114.66	-114.66
34	-113.16	-113.16
35	-111.66	-111.66
36	-110.16	-110.16
37	-108.88	-60.42
38	-60.42	-60.42
39	-60.42	-60.42
40	-60.42	-60.42
41	-60.42	-60.42
42	-60.42	-60.42
43	-60.42	-108.67
44	-109.95	-109.95
45	-111.45	-111.45
46	-112.95	-112.95
47	-114.45	-114.45
48	-115.95	-115.95
49	-117.23	-71.69

	50	-71.69	-71.69
	51	-71.69	-71.69
	52	-71.69	-71.69
	53	-71.69	-71.69
	54	-71.69	-71.69
	55	-71.69	-110.80
	56	-109.52	-109.52
	57	-108.02	-108.02
	58	-106.52	-106.52
	59	-105.02	-105.02
	60	-103.52	-103.52
	61	-102.24	-61.20
	62	-61.20	-61.20
	63	-61.20	-61.20
	64	-61.20	-61.20
	65	-61.20	-61.20
	66	-61.20	-61.20
	67	-61.20	-115.31
	68	-116.59	-116.59
	69	-118.09	-118.09
	70	-119.59	-119.59
	71	-121.09	-121.09
	72	-122.59	-122.59

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-113.00	-48.64
2	-48.64	-48.64
3	-48.64	-48.64
4	-48.64	-48.64
5	-48.64	-48.64
6	-48.64	-48.64
7	-48.64	-134.59
8	-133.31	-133.31
9	-131.81	-131.81
10	-130.31	-130.31
11	-128.81	-128.81
12	-127.31	-127.31
13	-126.03	-39.95
14	-39.95	-39.95
15	-39.95	-39.95
16	-39.95	-39.95
17	-39.95	-39.95
18	-39.95	-39.95
19	-39.95	-104.44
20	-105.72	-105.72
21	-107.22	-107.22
22	-108.72	-108.72
23	-110.22	-110.22
24	-111.72	-111.72
25	-113.00	-50.12
26	-50.12	-50.12
27	-50.12	-50.12
28	-50.12	-50.12
29	-50.12	-50.12
30	-50.12	-50.12
31	-50.12	-124.05
32	-122.77	-122.77
33	-121.27	-121.27
34	-119.77	-119.77
35	-118.27	-118.27
36	-116.77	-116.77
37	-115.49	-38.47
38	-38.47	-38.47
39	-38.47	-38.47
40	-38.47	-38.47
41	-38.47	-38.47
42	-38.47	-38.47
43	-38.47	-114.98
44	-116.26	-116.26
45	-117.76	-117.76
46	-119.26	-119.26
47	-120.76	-120.76
48	-122.26	-122.26
49	-123.54	-48.66

50	-48.66	-48.66
51	-48.66	-48.66
52	-48.66	-48.66
53	-48.66	-48.66
54	-48.66	-48.66
55	-48.66	-112.75
56	-111.47	-111.47
57	-109.97	-109.97
58	-108.47	-108.47
59	-106.97	-106.97
60	-105.47	-105.47
61	-104.19	-39.93
62	-39.93	-39.93
63	-39.93	-39.93
64	-39.93	-39.93
65	-39.93	-39.93
66	-39.93	-39.93
67	-39.93	-126.28
68	-127.56	-127.56
69	-129.06	-129.06
70	-130.56	-130.56
71	-132.06	-132.06
72	-133.56	-133.56

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-107.18	-46.60
2	-46.60	-46.60
3	-46.60	-46.60
4	-46.60	-46.60
5	-46.60	-46.60
6	-46.60	-46.60
7	-46.60	-127.49
8	-126.21	-126.21
9	-124.71	-124.71
10	-123.21	-123.21
11	-121.71	-121.71
12	-120.21	-120.21
13	-118.92	-37.89
14	-37.89	-37.89
15	-37.89	-37.89
16	-37.89	-37.89
17	-37.89	-37.89
18	-37.89	-37.89
19	-37.89	-98.62
20	-99.90	-99.90
21	-101.40	-101.40
22	-102.90	-102.90
23	-104.40	-104.40
24	-105.90	-105.90
25	-107.18	-48.00
26	-48.00	-48.00
27	-48.00	-48.00
28	-48.00	-48.00
29	-48.00	-48.00
30	-48.00	-48.00
31	-48.00	-117.57
32	-116.29	-116.29
33	-114.79	-114.79
34	-113.29	-113.29
35	-111.79	-111.79
36	-110.29	-110.29
37	-109.01	-36.50
38	-36.50	-36.50
39	-36.50	-36.50
40	-36.50	-36.50
41	-36.50	-36.50
42	-36.50	-36.50
43	-36.50	-108.53
44	-109.81	-109.81
45	-111.31	-111.31
46	-112.81	-112.81
47	-114.31	-114.31
48	-115.81	-115.81
49	-117.10	-46.62

	50	-46.62	-46.62
	51	-46.62	-46.62
	52	-46.62	-46.62
	53	-46.62	-46.62
	54	-46.62	-46.62
	55	-46.62	-106.94
	56	-105.66	-105.66
	57	-104.16	-104.16
	58	-102.66	-102.66
	59	-101.16	-101.16
	60	-99.66	-99.66
	61	-98.38	-37.87
	62	-37.87	-37.87
	63	-37.87	-37.87
	64	-37.87	-37.87
	65	-37.87	-37.87
	66	-37.87	-37.87
	67	-37.87	-119.16
	68	-120.44	-120.44
	69	-121.94	-121.94
	70	-123.44	-123.44
	71	-124.94	-124.94
	72	-126.44	-126.44

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-110.62	-46.64
2	-46.64	-46.64
3	-46.64	-46.64
4	-46.64	-46.64
5	-46.64	-46.64
6	-46.64	-46.64
7	-46.64	-132.13
8	-130.85	-130.85
9	-129.35	-129.35
10	-127.85	-127.85
11	-126.35	-126.35
12	-124.85	-124.85
13	-123.56	-37.86
14	-37.86	-37.86
15	-37.86	-37.86
16	-37.86	-37.86
17	-37.86	-37.86
18	-37.86	-37.86
19	-37.86	-102.06
20	-103.34	-103.34
21	-104.84	-104.84
22	-106.34	-106.34
23	-107.84	-107.84
24	-109.34	-109.34
25	-110.62	-48.12
26	-48.12	-48.12
27	-48.12	-48.12
28	-48.12	-48.12
29	-48.12	-48.12
30	-48.12	-48.12
31	-48.12	-121.63
32	-120.35	-120.35
33	-118.85	-118.85
34	-117.35	-117.35
35	-115.85	-115.85
36	-114.35	-114.35
37	-113.06	-36.38
38	-36.38	-36.38
39	-36.38	-36.38
40	-36.38	-36.38
41	-36.38	-36.38
42	-36.38	-36.38
43	-36.38	-112.56
44	-113.84	-113.84
45	-115.34	-115.34
46	-116.84	-116.84
47	-118.34	-118.34
48	-119.84	-119.84
49	-121.12	-46.65

50	-46.65	-46.65
51	-46.65	-46.65
52	-46.65	-46.65
53	-46.65	-46.65
54	-46.65	-46.65
55	-46.65	-110.36
56	-109.08	-109.08
57	-107.58	-107.58
58	-106.08	-106.08
59	-104.58	-104.58
60	-103.08	-103.08
61	-101.80	-37.84
62	-37.84	-37.84
63	-37.84	-37.84
64	-37.84	-37.84
65	-37.84	-37.84
66	-37.84	-37.84
67	-37.84	-123.82
68	-125.10	-125.10
69	-126.60	-126.60
70	-128.10	-128.10
71	-129.60	-129.60
72	-131.10	-131.10

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-110.72	-70.56
2	-70.56	-70.56
3	-70.56	-70.56
4	-70.56	-70.56
5	-70.56	-70.56
6	-70.56	-70.56
7	-70.56	-123.94
8	-122.66	-122.66
9	-121.16	-121.16
10	-119.66	-119.66
11	-118.16	-118.16
12	-116.66	-116.66
13	-115.38	-60.02
14	-60.02	-60.02
15	-60.02	-60.02
16	-60.02	-60.02
17	-60.02	-60.02
18	-60.02	-60.02
19	-60.02	-102.16
20	-103.44	-103.44
21	-104.94	-104.94
22	-106.44	-106.44
23	-107.94	-107.94
24	-109.44	-109.44
25	-110.72	-71.38
26	-71.38	-71.38
27	-71.38	-71.38
28	-71.38	-71.38
29	-71.38	-71.38
30	-71.38	-71.38
31	-71.38	-117.45
32	-116.16	-116.16
33	-114.66	-114.66
34	-113.16	-113.16
35	-111.66	-111.66
36	-110.16	-110.16
37	-108.88	-59.20
38	-59.20	-59.20
39	-59.20	-59.20
40	-59.20	-59.20
41	-59.20	-59.20
42	-59.20	-59.20
43	-59.20	-108.66
44	-109.94	-109.94
45	-111.44	-111.44
46	-112.94	-112.94
47	-114.44	-114.44
48	-115.94	-115.94
49	-117.22	-70.57

	50	-70.57	-70.57
	51	-70.57	-70.57
	52	-70.57	-70.57
	53	-70.57	-70.57
	54	-70.57	-70.57
	55	-70.57	-110.61
	56	-109.33	-109.33
	57	-107.83	-107.83
	58	-106.33	-106.33
	59	-104.83	-104.83
	60	-103.33	-103.33
	61	-102.05	-60.01
	62	-60.01	-60.01
	63	-60.01	-60.01
	64	-60.01	-60.01
	65	-60.01	-60.01
	66	-60.01	-60.01
	67	-60.01	-115.49
	68	-116.77	-116.77
	69	-118.27	-118.27
	70	-119.77	-119.77
	71	-121.27	-121.27
	72	-122.77	-122.77

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

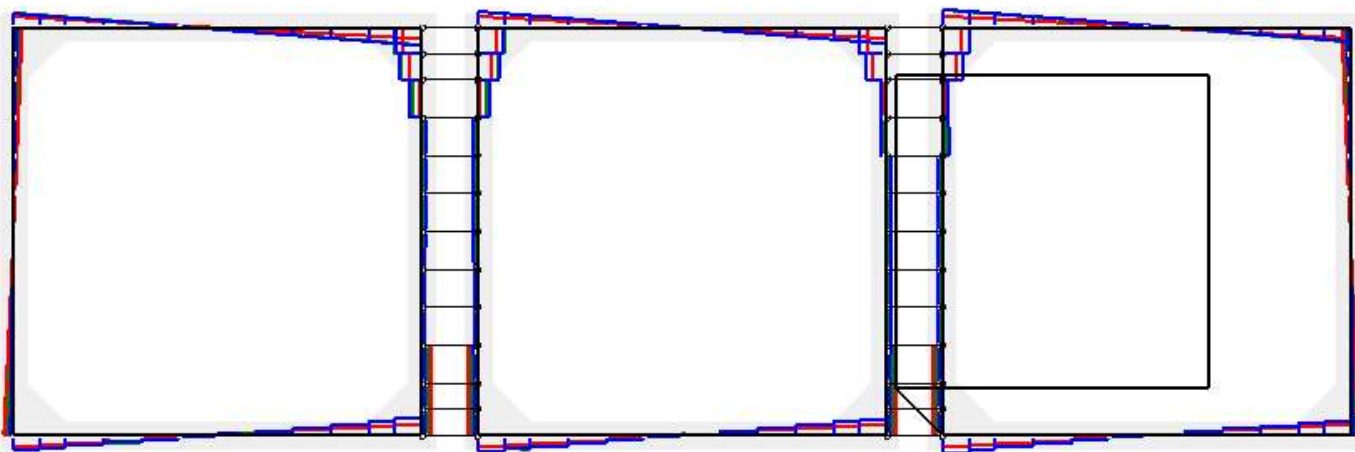
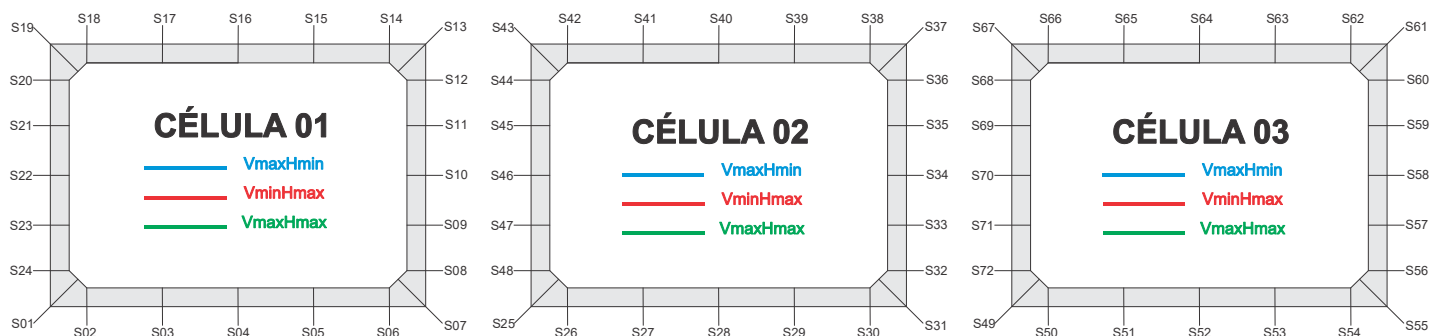
ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-110.82	-47.87
2	-47.87	-47.87
3	-47.87	-47.87
4	-47.87	-47.87
5	-47.87	-47.87
6	-47.87	-47.87
7	-47.87	-131.93
8	-130.64	-130.64
9	-129.14	-129.14
10	-127.64	-127.64
11	-126.14	-126.14
12	-124.64	-124.64
13	-123.36	-39.18
14	-39.18	-39.18
15	-39.18	-39.18
16	-39.18	-39.18
17	-39.18	-39.18
18	-39.18	-39.18
19	-39.18	-102.26
20	-103.54	-103.54
21	-105.04	-105.04
22	-106.54	-106.54
23	-108.04	-108.04
24	-109.54	-109.54
25	-110.82	-49.32
26	-49.32	-49.32
27	-49.32	-49.32
28	-49.32	-49.32
29	-49.32	-49.32
30	-49.32	-49.32
31	-49.32	-121.62
32	-120.34	-120.34
33	-118.84	-118.84
34	-117.34	-117.34
35	-115.84	-115.84
36	-114.34	-114.34
37	-113.06	-37.73
38	-37.73	-37.73
39	-37.73	-37.73
40	-37.73	-37.73
41	-37.73	-37.73
42	-37.73	-37.73
43	-37.73	-112.56
44	-113.84	-113.84
45	-115.34	-115.34
46	-116.84	-116.84
47	-118.34	-118.34
48	-119.84	-119.84
49	-121.12	-47.89

	50	-47.89	-47.89
	51	-47.89	-47.89
	52	-47.89	-47.89
	53	-47.89	-47.89
	54	-47.89	-47.89
	55	-47.89	-110.57
	56	-109.29	-109.29
	57	-107.79	-107.79
	58	-106.29	-106.29
	59	-104.79	-104.79
	60	-103.29	-103.29
	61	-102.01	-39.16
	62	-39.16	-39.16
	63	-39.16	-39.16
	64	-39.16	-39.16
	65	-39.16	-39.16
	66	-39.16	-39.16
	67	-39.16	-123.61
	68	-124.89	-124.89
	69	-126.39	-126.39
	70	-127.89	-127.89
	71	-129.39	-129.39
	72	-130.89	-130.89

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	30.38	-138.92
2	-118.90	-93.18
3	-66.15	-38.23
4	-12.53	15.87
5	44.15	77.19
6	111.83	145.97
7	173.93	-30.38
8	-36.56	-36.56
9	-35.93	-35.93
10	-41.62	-41.62
11	-45.53	-45.53
12	112.13	211.22
13	251.25	-178.50
14	-137.65	-137.65
15	-78.70	-78.70
16	-19.75	-19.75
17	39.19	39.19
18	98.14	98.14
19	138.99	-28.31
20	-19.58	-19.58
21	-7.52	-7.52
22	3.78	3.78
23	14.32	14.32
24	24.10	24.10
25	30.38	-156.46
26	-133.00	-103.39
27	-72.47	-41.56
28	-13.95	15.14
29	42.73	73.60
30	104.45	133.94
31	157.28	-33.47
32	-39.65	-39.65
33	-47.13	-47.13
34	-52.83	-52.83
35	-56.73	56.67
36	44.99	195.76
37	257.04	-159.12
38	-118.27	-118.27
39	-59.32	-59.32
40	-0.37	-0.37
41	58.57	58.57
42	117.52	117.52
43	158.37	-248.16
44	-208.13	-109.04
45	48.62	48.62
46	44.71	44.71
47	39.02	39.02
48	39.65	39.65
49	33.47	-174.38

	50	-146.54	-112.48
	51	-77.88	-44.82
	52	-16.50	11.97
	53	37.74	65.71
	54	92.78	118.52
	55	138.55	-30.53
	56	-24.24	-24.24
	57	-14.46	-14.46
	58	-3.92	-3.92
	59	7.38	7.38
	60	19.44	19.44
	61	28.17	-138.62
	62	-97.77	-97.77
	63	-38.82	-38.82
	64	20.13	20.13
	65	79.07	79.07
	66	138.02	138.02
	67	178.87	-259.99
	68	-198.71	-47.93
	69	-59.61	53.79
	70	49.88	49.88
	71	44.19	44.19
	72	36.71	36.71

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	97.49	-106.63
2	-91.87	-72.41
3	-51.46	-29.68
4	-9.85	11.40
5	31.51	53.83
6	75.57	95.87
7	111.40	-97.49
8	-97.49	-97.49
9	-0.29	-0.29
10	-0.29	-0.29
11	-0.29	-0.29
12	18.19	124.35
13	187.52	-111.37
14	-83.36	-83.36
15	-42.98	-42.98
16	-2.60	-2.60
17	37.78	37.78
18	78.16	78.16
19	106.17	-85.13
20	-65.05	-65.05
21	-34.14	-34.14
22	-1.18	-1.18
23	33.81	33.81
24	70.85	70.85
25	97.49	-109.11
26	-94.04	-74.22
27	-52.87	-30.77
28	-10.72	10.62
29	30.66	52.77
30	74.13	93.96
31	109.04	-97.64
32	-97.64	-97.64
33	0.10	0.10
34	0.10	0.10
35	0.10	-6.51
36	21.48	124.82
37	186.82	-108.74
38	-80.73	-80.73
39	-40.35	-40.35
40	0.03	0.03
41	40.41	40.41
42	80.79	80.79
43	108.80	-187.36
44	-124.19	-18.03
45	0.44	0.44
46	0.44	0.44
47	0.44	0.44
48	97.64	97.64
49	97.64	-111.37

	50	-95.82	-75.51
	51	-53.77	-31.45
	52	-11.35	9.90
	53	29.72	51.50
	54	72.45	91.90
	55	106.66	-97.48
	56	-70.84	-70.84
	57	-33.81	-33.81
	58	1.18	1.18
	59	34.14	34.14
	60	65.06	65.06
	61	85.13	-106.20
	62	-78.19	-78.19
	63	-37.81	-37.81
	64	2.57	2.57
	65	42.95	42.95
	66	83.33	83.33
	67	111.34	-186.97
	68	-124.98	-21.64
	69	6.35	-0.26
	70	-0.26	-0.26
	71	-0.26	-0.26
	72	97.48	97.48

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

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	66.65	-143.66
2	-123.16	-96.69
3	-68.59	-39.57
4	-12.90	16.20
5	44.76	77.53
6	111.21	143.82
7	170.10	-66.65
8	-66.65	-66.65
9	-28.51	-28.51
10	-28.51	-28.51
11	-28.51	-28.51
12	82.04	201.32
13	257.94	-173.60
14	-132.75	-132.75
15	-73.80	-73.80
16	-14.85	-14.85
17	44.09	44.09
18	103.04	103.04
19	143.89	-55.10
20	-41.71	-41.71
21	-21.10	-21.10
22	0.87	0.87
23	24.20	24.20
24	48.89	48.89
25	66.65	-156.82
26	-133.82	-104.51
27	-73.54	-42.32
28	-14.23	15.39
29	43.46	74.64
30	105.53	134.72
31	157.60	-68.68
32	-68.68	-68.69
33	-36.65	-36.65
34	-36.65	-36.65
35	-36.65	37.37
36	41.37	192.27
37	262.04	-159.09
38	-118.24	-118.24
39	-59.30	-59.30
40	-0.35	-0.35
41	58.60	58.60
42	117.54	117.54
43	158.39	-255.90
44	-199.29	-80.01
45	30.55	30.55
46	30.55	30.55
47	30.55	30.55
48	68.69	68.68
49	68.68	-170.51

	50	-144.34	-111.81
	51	-78.17	-45.40
	52	-16.80	12.34
	53	39.07	68.14
	54	96.28	122.78
	55	143.30	-66.67
	56	-48.91	-48.91
	57	-24.22	-24.22
	58	-0.90	-0.90
	59	21.08	21.08
	60	41.69	41.69
	61	55.07	-143.54
	62	-102.69	-102.69
	63	-43.75	-43.75
	64	15.20	15.20
	65	74.15	74.15
	66	133.09	133.09
	67	173.94	-264.05
	68	-194.28	-43.38
	69	-39.38	34.64
	70	34.64	34.64
	71	34.64	34.64
	72	66.68	66.67

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	29.32	-142.68
2	-122.85	-97.45
3	-70.93	-43.61
4	-18.55	9.25
5	37.10	70.03
6	105.08	140.21
7	169.40	-29.32
8	-35.50	-35.50
9	-27.54	-27.54
10	-33.23	-33.23
11	-37.14	-37.14
12	91.07	195.35
13	267.51	-174.80
14	-133.95	-133.95
15	-75.00	-75.00
16	-16.06	-16.06
17	42.89	42.89
18	101.84	101.84
19	142.69	-29.37
20	-20.64	-20.64
21	-8.58	-8.58
22	2.71	2.71
23	13.26	13.26
24	23.04	23.04
25	29.32	-158.24
26	-134.60	-104.92
27	-74.14	-43.57
28	-16.39	12.23
29	39.43	70.07
30	101.00	130.94
31	154.89	-34.14
32	-40.31	-40.32
33	-47.79	-47.79
34	-53.49	-53.49
35	48.55	-7.77
36	21.25	187.01
37	275.32	-157.17
38	-116.32	-116.32
39	-57.37	-57.37
40	1.57	1.57
41	60.52	60.52
42	119.47	119.47
43	160.32	-262.70
44	-190.54	-86.25
45	41.95	41.95
46	38.05	38.05
47	32.35	32.35
48	40.32	40.31
49	34.14	-179.55

	50	-150.56	-115.41
	51	-80.02	-46.66
	52	-18.43	9.62
	53	34.72	61.89
	54	88.11	113.23
	55	132.84	-31.64
	56	-25.36	-25.36
	57	-15.58	-15.58
	58	-5.04	-5.04
	59	6.26	6.26
	60	18.32	18.32
	61	27.05	-132.75
	62	-91.89	-91.89
	63	-32.95	-32.95
	64	26.00	26.00
	65	84.94	84.94
	66	143.89	143.89
	67	184.74	-277.81
	68	-189.50	-23.74
	69	5.28	-51.04
	70	51.00	51.00
	71	45.30	45.30
	72	37.82	37.82

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	97.23	-107.44
2	-92.65	-73.19
3	-52.28	-30.56
4	-10.83	10.31
5	30.32	52.59
6	74.35	94.76
7	110.46	-97.23
8	-97.23	-95.04
9	0.85	0.85
10	0.85	0.85
11	0.85	0.85
12	8.07	119.21
13	199.97	-110.54
14	-82.53	-82.53
15	-42.15	-42.15
16	-1.77	-1.77
17	38.61	38.61
18	78.99	78.99
19	107.00	-85.38
20	-65.31	-65.31
21	-34.39	-34.39
22	-1.44	-1.44
23	33.56	33.56
24	70.59	70.59
25	97.23	-109.49
26	-94.37	-74.53
27	-53.21	-31.18
28	-11.23	10.01
29	29.97	52.02
30	73.39	93.32
31	108.53	-97.54
32	-97.54	-97.18
33	1.76	1.76
34	1.76	1.76
35	1.76	-7.58
36	13.21	119.50
37	198.60	-108.32
38	-80.31	-80.31
39	-39.93	-39.93
40	0.45	0.45
41	40.83	40.83
42	81.21	81.21
43	109.22	-199.66
44	-118.90	-7.76
45	-0.53	-0.53
46	-0.53	-0.53
47	-0.53	-0.53
48	95.35	97.54
49	97.54	-112.11

	50	-96.41	-75.97
	51	-54.14	-31.80
	52	-11.73	9.45
	53	29.17	50.85
	54	71.70	91.09
	55	105.83	-97.63
	56	-70.99	-70.99
	57	-33.95	-33.95
	58	1.04	1.04
	59	34.00	34.00
	60	64.91	64.91
	61	84.99	-105.37
	62	-77.36	-77.36
	63	-36.98	-36.98
	64	3.40	3.40
	65	43.78	43.78
	66	84.16	84.16
	67	112.17	-198.51
	68	-119.42	-13.13
	69	7.66	-1.67
	70	-1.67	-1.67
	71	-1.67	-1.67
	72	97.26	97.63

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	65.78	-146.55
2	-126.18	-99.92
3	-72.18	-43.61
4	-17.42	11.23
5	39.45	72.13
6	106.09	139.43
7	166.61	-65.78
8	-65.78	-65.78
9	-22.19	-22.19
10	-22.19	-22.19
11	-22.19	-22.19
12	62.38	188.92
13	275.94	-170.73
14	-129.88	-129.88
15	-70.93	-70.93
16	-11.99	-11.99
17	46.96	46.96
18	105.91	105.91
19	146.76	-55.96
20	-42.58	-42.58
21	-21.97	-21.97
22	0.00	0.00
23	23.33	23.33
24	48.02	48.02
25	65.78	-158.57
26	-135.44	-106.09
27	-75.28	-44.37
28	-16.67	12.53
29	40.25	71.24
30	102.22	131.85
31	155.31	-68.94
32	-68.94	-68.94
33	-28.94	-28.94
34	-28.94	-28.94
35	-28.94	33.48
36	23.12	181.00
37	277.12	-157.22
38	-116.37	-116.37
39	-57.42	-57.42
40	1.53	1.53
41	60.47	60.47
42	119.42	119.42
43	160.27	-272.78
44	-185.76	-59.23
45	25.35	25.35
46	25.35	25.35
47	25.35	25.35
48	68.94	68.94
49	68.94	-174.14

	50	-147.03	-113.62
	51	-79.37	-46.37
	52	-17.87	10.92
	53	37.11	65.52
	54	93.01	119.02
	55	139.22	-67.54
	56	-49.78	-49.78
	57	-25.09	-25.09
	58	-1.76	-1.76
	59	20.21	20.21
	60	40.82	40.82
	61	54.20	-139.34
	62	-98.49	-98.49
	63	-39.54	-39.54
	64	19.40	19.40
	65	78.35	78.35
	66	137.30	137.30
	67	178.15	-278.51
	68	-182.40	-24.52
	69	-34.88	27.54
	70	27.54	27.54
	71	27.54	27.55
	72	67.54	67.54

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	46.65	-104.39
2	-89.52	-70.23
3	-49.85	-28.72
4	-9.38	11.83
5	32.59	56.53
6	81.08	104.97
7	124.17	-46.66
8	-46.66	-46.66
9	-21.50	-21.50
10	-21.50	-21.50
11	-21.50	-21.50
12	61.16	146.73
13	186.76	-126.35
14	-96.68	-96.68
15	-53.90	-53.90
16	-11.11	-11.11
17	31.67	31.67
18	74.45	74.45
19	104.12	-37.84
20	-28.69	-28.69
21	-14.51	-14.51
22	0.70	0.70
23	16.93	16.93
24	34.19	34.19
25	46.65	-114.24
26	-97.49	-76.07
27	-53.54	-30.77
28	-10.36	11.24
29	31.63	54.37
30	76.84	98.17
31	114.83	-48.19
32	-48.19	-48.19
33	-27.66	-27.66
34	-27.66	-27.66
35	-27.66	28.47
36	30.33	139.88
37	189.88	-115.50
38	-85.83	-85.83
39	-43.05	-43.05
40	-0.26	-0.26
41	42.52	42.52
42	85.30	85.30
43	114.97	-185.23
44	-145.20	-59.63
45	23.03	23.03
46	23.03	23.03
47	23.03	23.03
48	48.19	48.19
49	48.19	-124.49

	50	-105.37	-81.54
	51	-57.01	-33.07
	52	-12.29	8.96
	53	28.34	49.50
	54	69.92	89.23
	55	104.12	-46.67
	56	-34.21	-34.21
	57	-16.95	-16.95
	58	-0.72	-0.72
	59	14.49	14.49
	60	28.67	28.67
	61	37.82	-103.85
	62	-74.19	-74.19
	63	-31.41	-31.41
	64	11.38	11.38
	65	54.16	54.16
	66	96.95	96.95
	67	126.61	-191.39
	68	-141.39	-31.84
	69	-29.98	26.14
	70	26.14	26.14
	71	26.14	26.14
	72	46.68	46.68

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	71.68	-102.92
2	-88.49	-69.59
3	-49.44	-28.49
4	-9.40	11.31
5	31.19	53.71
6	76.17	97.62
7	114.43	-71.68
8	-71.68	-71.68
9	-10.02	-10.02
10	-10.02	-10.02
11	-10.02	-10.02
12	37.41	131.21
13	182.06	-115.20
14	-87.19	-87.19
15	-46.81	-46.81
16	-6.43	-6.43
17	33.95	33.95
18	74.33	74.33
19	102.34	-61.20
20	-46.65	-46.65
21	-24.21	-24.21
22	-0.25	-0.25
23	25.24	25.24
24	52.24	52.24
25	71.68	-108.70
26	-93.26	-73.19
27	-51.85	-29.98
28	-10.29	10.64
29	30.32	52.19
30	73.50	93.53
31	108.93	-72.46
32	-72.46	-72.46
33	-12.64	-12.64
34	-12.64	-12.64
35	-12.64	9.73
36	24.94	128.30
37	183.13	-108.88
38	-80.87	-80.87
39	-40.49	-40.49
40	-0.11	-0.11
41	40.27	40.27
42	80.65	80.65
43	108.67	-181.28
44	-130.42	-36.62
45	10.80	10.80
46	10.80	10.80
47	10.80	10.80
48	72.46	72.46
49	72.46	-114.55

	50	-97.78	-76.36
	51	-53.90	-31.38
	52	-11.50	9.23
	53	28.34	49.30
	54	69.46	88.38
	55	102.81	-71.69
	56	-52.24	-52.24
	57	-25.24	-25.24
	58	0.24	0.24
	59	24.20	24.20
	60	46.65	46.65
	61	61.20	-102.24
	62	-74.23	-74.23
	63	-33.85	-33.85
	64	6.53	6.53
	65	46.91	46.91
	66	87.29	87.29
	67	115.31	-183.91
	68	-129.08	-25.72
	69	-10.50	11.87
	70	11.87	11.87
	71	11.87	11.87
	72	71.69	71.69

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	48.64	-104.71
2	-89.80	-70.48
3	-50.03	-28.84
4	-9.43	11.82
5	32.60	56.52
6	81.02	104.81
7	123.92	-48.64
8	-48.64	-48.64
9	-20.75	-20.75
10	-20.75	-20.75
11	-20.75	-20.75
12	59.65	146.15
13	187.21	-126.03
14	-96.36	-96.36
15	-53.58	-53.58
16	-10.79	-10.79
17	31.99	31.99
18	74.78	74.78
19	104.44	-39.95
20	-30.25	-30.25
21	-15.29	-15.29
22	0.69	0.69
23	17.67	17.67
24	35.67	35.67
25	48.64	-114.27
26	-97.55	-76.15
27	-53.62	-30.83
28	-10.39	11.23
29	31.66	54.42
30	76.89	98.20
31	114.83	-50.12
32	-50.12	-50.12
33	-26.67	-26.67
34	-26.67	-26.67
35	-26.67	27.21
36	30.04	139.56
37	190.19	-115.49
38	-85.82	-85.82
39	-43.04	-43.04
40	-0.25	-0.25
41	42.53	42.53
42	85.32	85.32
43	114.98	-185.72
44	-144.67	-58.16
45	22.23	22.23
46	22.23	22.23
47	22.23	22.23
48	50.12	50.12
49	50.12	-124.22

	50	-105.19	-81.46
	51	-56.98	-33.06
	52	-12.26	9.03
	53	28.47	49.70
	54	70.18	89.53
	55	104.44	-48.66
	56	-35.69	-35.69
	57	-17.69	-17.69
	58	-0.71	-0.71
	59	15.27	15.27
	60	30.23	30.23
	61	39.93	-104.19
	62	-74.52	-74.52
	63	-31.74	-31.74
	64	11.05	11.05
	65	53.83	53.83
	66	96.62	96.62
	67	126.28	-191.65
	68	-141.02	-31.50
	69	-28.68	25.20
	70	25.20	25.20
	71	25.20	25.20
	72	48.66	48.66

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

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	46.60	-99.30
2	-85.20	-66.84
3	-47.48	-27.33
4	-8.96	11.23
5	30.89	53.60
6	76.76	99.33
7	117.37	-46.60
8	-46.60	-46.60
9	-19.47	-19.47
10	-19.47	-19.47
11	-19.47	-19.47
12	56.09	137.89
13	176.75	-118.92
14	-90.91	-90.91
15	-50.53	-50.53
16	-10.15	-10.15
17	30.23	30.23
18	70.61	70.61
19	98.62	-37.89
20	-28.74	-28.74
21	-14.56	-14.56
22	0.65	0.65
23	16.88	16.88
24	34.14	34.14
25	46.60	-108.30
26	-92.49	-72.19
27	-50.87	-29.22
28	-9.88	10.67
29	29.99	51.61
30	72.88	93.11
31	108.83	-48.00
32	-48.00	-48.00
33	-25.03	-25.03
34	-25.03	-25.03
35	-25.03	25.50
36	28.32	131.70
37	179.54	-109.01
38	-81.00	-81.00
39	-40.62	-40.62
40	-0.24	-0.24
41	40.14	40.14
42	80.52	80.52
43	108.53	-175.35
44	-136.49	-54.69
45	20.87	20.87
46	20.87	20.87
47	20.87	20.87
48	48.00	48.00
49	48.00	-117.66

	50	-99.69	-77.18
	51	-54.03	-31.32
	52	-11.64	8.58
	53	26.99	47.17
	54	66.56	84.95
	55	99.05	-46.62
	56	-34.16	-34.16
	57	-16.90	-16.90
	58	-0.66	-0.66
	59	14.54	14.54
	60	28.72	28.72
	61	37.87	-98.38
	62	-70.37	-70.37
	63	-29.99	-29.99
	64	10.39	10.39
	65	50.77	50.77
	66	91.15	91.15
	67	119.16	-180.92
	68	-133.08	-29.70
	69	-26.88	23.65
	70	23.65	23.65
	71	23.65	23.65
	72	46.62	46.62

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

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	46.64	-102.48
2	-87.90	-68.96
3	-48.96	-28.20
4	-9.22	11.61
5	31.95	55.43
6	79.46	102.86
7	121.62	-46.64
8	-46.64	-46.64
9	-20.74	-20.74
10	-20.74	-20.74
11	-20.74	-20.74
12	59.26	143.42
13	183.01	-123.56
14	-94.52	-94.52
15	-52.64	-52.64
16	-10.75	-10.75
17	31.13	31.13
18	73.01	73.01
19	102.06	-37.86
20	-28.71	-28.71
21	-14.53	-14.53
22	0.68	0.68
23	16.91	16.91
24	34.17	34.17
25	46.64	-112.01
26	-95.61	-74.62
27	-52.54	-30.19
28	-10.18	11.02
29	31.02	53.34
30	75.36	96.27
31	112.58	-48.12
32	-48.12	-48.12
33	-26.67	-26.67
34	-26.67	-26.67
35	-26.67	27.35
36	29.58	136.81
37	186.00	-113.06
38	-84.02	-84.02
39	-42.14	-42.14
40	-0.25	-0.25
41	41.63	41.63
42	83.51	83.51
43	112.56	-181.53
44	-141.94	-57.78
45	22.22	22.22
46	22.22	22.22
47	22.22	22.22
48	48.12	48.12
49	48.12	-121.93

	50	-103.24	-79.90
	51	-55.89	-32.41
	52	-12.04	8.82
	53	27.84	48.63
	54	68.66	87.62
	55	102.22	-46.65
	56	-34.19	-34.19
	57	-16.93	-16.93
	58	-0.70	-0.70
	59	14.51	14.51
	60	28.69	28.69
	61	37.84	-101.80
	62	-72.76	-72.76
	63	-30.87	-30.87
	64	11.01	11.01
	65	52.89	52.89
	66	94.77	94.77
	67	123.82	-187.46
	68	-138.28	-31.04
	69	-28.82	25.21
	70	25.21	25.21
	71	25.21	25.21
	72	46.66	46.66

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	70.56	-102.74
2	-88.33	-69.45
3	-49.34	-28.43
4	-9.37	11.32
5	31.19	53.71
6	76.21	97.71
7	114.57	-70.56
8	-70.56	-70.56
9	-10.44	-10.44
10	-10.44	-10.44
11	-10.44	-10.44
12	38.26	131.54
13	181.81	-115.38
14	-87.37	-87.37
15	-46.99	-46.99
16	-6.61	-6.61
17	33.77	33.77
18	74.15	74.15
19	102.16	-60.02
20	-45.77	-45.77
21	-23.77	-23.77
22	-0.24	-0.24
23	24.82	24.82
24	51.40	51.40
25	70.56	-108.68
26	-93.22	-73.14
27	-51.81	-29.95
28	-10.28	10.64
29	30.31	52.16
30	73.47	93.51
31	108.93	-71.38
32	-71.38	-71.38
33	-13.20	-13.20
34	-13.20	-13.20
35	-13.20	10.43
36	25.11	128.48
37	182.96	-108.88
38	-80.87	-80.87
39	-40.49	-40.49
40	-0.11	-0.11
41	40.27	40.27
42	80.65	80.65
43	108.66	-181.00
44	-130.73	-37.44
45	11.25	11.25
46	11.25	11.25
47	11.25	11.25
48	71.38	71.38
49	71.38	-114.71

	50	-97.88	-76.40
	51	-53.92	-31.39
	52	-11.51	9.19
	53	28.27	49.20
	54	69.32	88.21
	55	102.62	-70.57
	56	-51.41	-51.41
	57	-24.83	-24.83
	58	0.23	0.23
	59	23.76	23.76
	60	45.77	45.77
	61	60.01	-102.05
	62	-74.04	-74.04
	63	-33.66	-33.66
	64	6.72	6.72
	65	47.10	47.10
	66	87.48	87.48
	67	115.49	-183.76
	68	-129.29	-25.91
	69	-11.24	12.40
	70	12.40	12.40
	71	12.40	12.40
	72	70.57	70.57

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

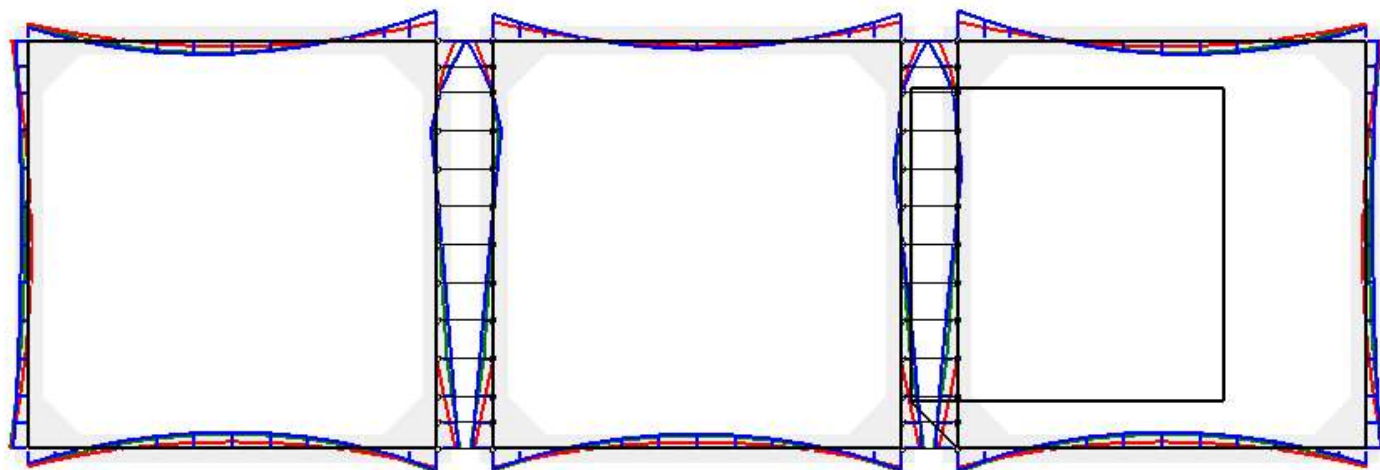
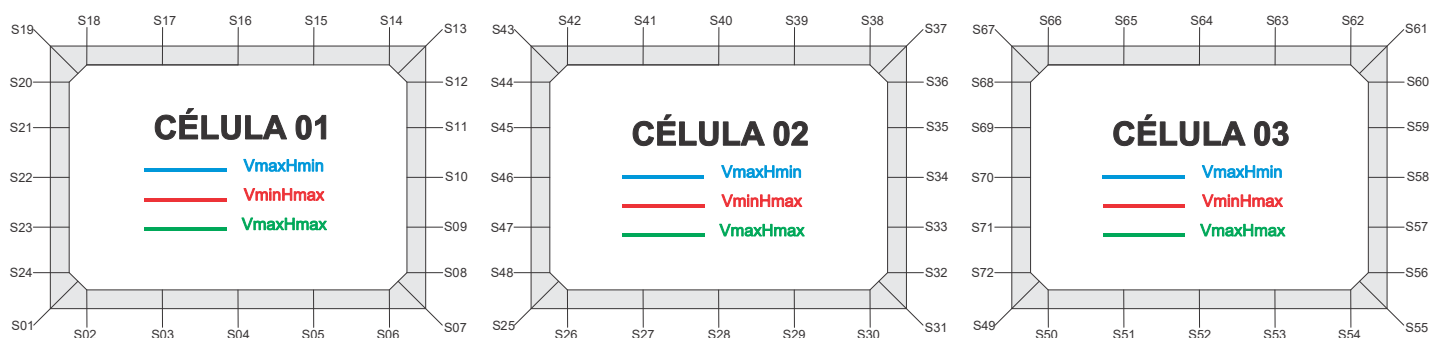
ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	47.87	-102.68
2	-88.08	-69.11
3	-49.07	-28.27
4	-9.25	11.60
5	31.96	55.42
6	79.42	102.76
7	121.46	-47.87
8	-47.88	-47.88
9	-20.27	-20.27
10	-20.27	-20.27
11	-20.27	-20.27
12	58.31	143.05
13	183.28	-123.36
14	-94.32	-94.32
15	-52.44	-52.44
16	-10.55	-10.55
17	31.33	31.33
18	73.21	73.21
19	102.26	-39.18
20	-29.68	-29.68
21	-15.02	-15.02
22	0.67	0.67
23	17.38	17.38
24	35.10	35.10
25	47.87	-112.03
26	-95.65	-74.67
27	-52.59	-30.22
28	-10.20	11.02
29	31.03	53.37
30	75.39	96.29
31	112.58	-49.33
32	-49.33	-49.33
33	-26.05	-26.05
34	-26.05	-26.05
35	-26.05	26.57
36	29.39	136.61
37	186.19	-113.06
38	-84.01	-84.01
39	-42.13	-42.13
40	-0.25	-0.25
41	41.63	41.63
42	83.52	83.52
43	112.56	-181.83
44	-141.60	-56.86
45	21.72	21.72
46	21.72	21.72
47	21.72	21.72
48	49.33	49.33
49	49.33	-121.76

	50	-103.13	-79.85
	51	-55.88	-32.41
	52	-12.03	8.86
	53	27.91	48.75
	54	68.82	87.81
	55	102.42	-47.89
	56	-35.12	-35.12
	57	-17.40	-17.40
	58	-0.69	-0.69
	59	15.00	15.00
	60	29.67	29.67
	61	39.16	-102.01
	62	-72.96	-72.96
	63	-31.08	-31.08
	64	10.80	10.80
	65	52.68	52.68
	66	94.57	94.57
	67	123.61	-187.63
	68	-138.04	-30.83
	69	-28.00	24.62
	70	24.62	24.62
	71	24.62	24.62
	72	47.89	47.89

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	-37.13	37.13
2	1.68	1.68
3	-30.19	-30.19
4	-40.34	-40.34
5	-28.34	-28.34
6	9.46	9.46
7	53.45	53.45
8	44.23	44.23
9	29.67	29.67
10	14.10	14.10
11	-3.39	-3.39
12	9.87	9.87
13	73.44	-73.44
14	-29.97	-29.97
15	13.30	13.30
16	32.99	32.99
17	29.10	29.10
18	1.63	1.63
19	-30.97	-30.97
20	-24.40	-24.40
21	-19.00	-19.00
22	-18.28	-18.28
23	-21.92	-21.92
24	-29.63	-29.63
25	-37.13	50.76
26	10.96	10.96
27	-24.21	-24.21
28	-35.31	-35.31
29	-23.74	-23.74
30	11.87	11.87
31	51.91	51.91
32	41.84	41.84
33	24.42	24.42
34	4.37	4.37
35	-17.60	-17.60
36	2.67	2.67
37	64.91	-64.91
38	-26.77	-26.77
39	8.74	8.74
40	20.68	20.68
41	9.04	9.04
42	-26.18	-26.18
43	-64.11	-64.11
44	-1.39	-1.39
45	10.64	10.64
46	-8.09	-8.09
47	-24.89	-24.89
48	-40.69	-40.69
49	-50.76	54.58

	50	10.46	10.46
	51	-27.62	-27.62
	52	-39.88	-39.88
	53	-29.94	-29.94
	54	1.76	1.76
	55	37.11	37.11
	56	29.57	29.57
	57	21.80	21.80
	58	18.10	18.10
	59	18.77	18.77
	60	24.11	24.11
	61	30.64	-30.64
	62	1.86	1.86
	63	29.18	29.18
	64	32.91	32.91
	65	13.07	13.07
	66	-30.34	-30.34
	67	-73.92	-73.92
	68	-10.87	-10.87
	69	10.58	10.58
	70	-10.21	-10.21
	71	-29.08	-29.08
	72	-45.32	-45.32

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-43.53	43.53
2	16.23	16.23
3	-8.54	-8.54
4	-16.45	-16.45
5	-7.86	-7.86
6	18.02	18.02
7	46.52	46.52
8	19.71	19.71
9	0.15	0.15
10	0.04	0.04
11	-0.08	-0.08
12	3.50	3.50
13	46.38	-46.38
14	-19.61	-19.61
15	5.66	5.66
16	14.78	14.78
17	7.74	7.74
18	-15.44	-15.44
19	-40.79	-40.79
20	-20.12	-20.12
21	-0.21	-0.21
22	6.92	6.92
23	0.46	0.46
24	-20.40	-20.40
25	-43.53	45.86
26	17.92	17.92
27	-7.50	-7.50
28	-15.79	-15.79
29	-7.54	-7.54
30	17.84	17.84
31	45.76	45.76
32	18.90	18.90
33	-0.60	-0.60
34	-0.56	-0.56
35	-0.52	-0.52
36	2.47	2.47
37	45.32	-45.32
38	-19.27	-19.27
39	4.95	4.95
40	13.01	13.01
41	4.92	4.92
42	-19.32	-19.32
43	-45.39	-45.39
44	-2.55	-2.55
45	0.97	0.97
46	0.79	0.79
47	0.61	0.61
48	-19.00	-19.00
49	-45.86	46.43

	50	17.94	17.94
	51	-7.92	-7.92
	52	-16.48	-16.48
	53	-8.55	-8.55
	54	16.24	16.24
	55	43.54	43.54
	56	20.42	20.42
	57	-0.45	-0.45
	58	-6.91	-6.91
	59	0.23	0.23
	60	20.13	20.13
	61	40.81	-40.81
	62	-15.45	-15.45
	63	7.75	7.75
	64	14.79	14.79
	65	5.69	5.69
	66	-19.57	-19.57
	67	-46.33	-46.33
	68	-3.44	-3.44
	69	-0.38	-0.38
	70	-0.28	-0.28
	71	-0.18	-0.18
	72	-19.62	-19.62

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-45.04	45.04
2	8.35	8.35
3	-24.71	-24.71
4	-35.20	-35.20
5	-23.01	-23.01
6	14.74	14.74
7	57.90	57.90
8	39.58	39.58
9	20.54	20.54
10	9.14	9.14
11	-2.27	-2.27
12	8.44	8.44
13	71.59	-71.59
14	-29.46	-29.46
15	11.84	11.84
16	29.58	29.58
17	23.73	23.73
18	-5.70	-5.70
19	-39.65	-39.65
20	-26.33	-26.33
21	-13.72	-13.72
22	-9.63	-9.63
23	-14.60	-14.60
24	-29.17	-29.17
25	-45.04	55.48
26	15.52	15.52
27	-20.09	-20.09
28	-31.40	-31.40
29	-19.63	-19.63
30	16.40	16.40
31	56.59	56.59
32	37.70	37.70
33	16.64	16.64
34	1.98	1.98
35	-12.68	-12.68
36	3.07	3.07
37	65.54	-65.54
38	-27.40	-27.40
39	8.10	8.10
40	20.03	20.03
41	8.38	8.38
42	-26.85	-26.85
43	-64.79	-64.79
44	-2.20	-2.20
45	7.69	7.69
46	-4.53	-4.53
47	-16.75	-16.75
48	-36.59	-36.59
49	-55.48	58.87

	50	15.58	15.58
	51	-22.42	-22.42
	52	-34.86	-34.86
	53	-24.57	-24.57
	54	8.31	8.31
	55	44.90	44.90
	56	29.02	29.02
	57	14.44	14.44
	58	9.46	9.46
	59	13.54	13.54
	60	26.14	26.14
	61	39.46	-39.46
	62	-5.60	-5.60
	63	23.69	23.69
	64	29.40	29.40
	65	11.53	11.53
	66	-29.92	-29.92
	67	-72.14	-72.14
	68	-9.12	-9.12
	69	7.43	7.43
	70	-6.42	-6.42
	71	-20.28	-20.28
	72	-40.54	-40.54

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-37.88	37.88
2	1.36	1.36
3	-32.31	-32.31
4	-44.74	-44.74
5	-35.47	-35.47
6	-0.45	-0.45
7	42.12	42.12
8	33.19	33.19
9	20.52	20.52
10	8.31	8.31
11	-5.83	-5.83
12	4.90	4.90
13	68.52	-68.52
14	-26.07	-26.07
15	15.72	15.72
16	33.93	33.93
17	28.57	28.57
18	-0.38	-0.38
19	-34.00	-34.00
20	-27.13	-27.13
21	-21.31	-21.31
22	-20.16	-20.16
23	-23.38	-23.38
24	-30.67	-30.67
25	-37.88	49.34
26	9.08	9.08
27	-26.73	-26.73
28	-38.72	-38.72
29	-28.39	-28.39
30	5.82	5.82
31	45.13	45.13
32	34.87	34.87
33	17.19	17.19
34	-3.13	-3.13
35	-4.17	-4.17
36	-1.54	-1.54
37	62.01	-62.01
38	-24.41	-24.41
39	10.33	10.33
40	21.49	21.49
41	9.07	9.07
42	-26.93	-26.93
43	-65.40	-65.40
44	-3.10	-3.10
45	5.70	5.70
46	-10.36	-10.36
47	-24.49	-24.49
48	-39.09	-39.09
49	-49.34	54.51

	50	9.12	9.12
	51	-29.97	-29.97
	52	-42.98	-42.98
	53	-34.12	-34.12
	54	-4.12	-4.12
	55	29.72	29.72
	56	21.87	21.87
	57	13.66	13.66
	58	9.51	9.51
	59	9.73	9.73
	60	14.62	14.62
	61	20.85	-20.85
	62	10.03	10.03
	63	35.00	35.00
	64	36.39	36.39
	65	14.20	14.20
	66	-31.56	-31.56
	67	-76.75	-76.75
	68	-12.52	-12.52
	69	-8.88	-8.88
	70	-8.93	-8.93
	71	-28.25	-28.25
	72	-44.94	-44.94

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-43.67	43.67
2	16.15	16.15
3	-8.94	-8.94
4	-17.22	-17.22
5	-9.09	-9.09
6	16.30	16.30
7	44.52	44.52
8	17.78	17.78
9	-1.06	-1.06
10	-0.72	-0.72
11	-0.38	-0.38
12	1.40	1.40
13	45.29	-45.29
14	-18.74	-18.74
15	6.20	6.20
16	14.98	14.98
17	7.61	7.61
18	-15.91	-15.91
19	-41.48	-41.48
20	-20.74	-20.74
21	-0.73	-0.73
22	6.51	6.51
23	0.15	0.15
24	-20.61	-20.61
25	-43.67	45.51
26	17.48	17.48
27	-8.07	-8.07
28	-16.55	-16.55
29	-8.55	-8.55
30	16.53	16.53
31	44.29	44.29
32	17.46	17.46
33	-1.62	-1.62
34	-0.92	-0.92
35	-0.22	-0.22
36	0.91	0.91
37	44.65	-44.65
38	-18.71	-18.71
39	5.34	5.34
40	13.23	13.23
41	4.98	4.98
42	-19.43	-19.43
43	-45.61	-45.61
44	-1.81	-1.81
45	-0.15	-0.15
46	0.06	0.06
47	0.27	0.27
48	-18.69	-18.69
49	-45.51	46.40

	50	17.73	17.73
	51	-8.30	-8.30
	52	-17.00	-17.00
	53	-9.28	-9.28
	54	15.23	15.23
	55	42.31	42.31
	56	19.15	19.15
	57	-1.77	-1.77
	58	-8.29	-8.29
	59	-1.21	-1.21
	60	18.64	18.64
	61	39.27	-39.27
	62	-14.15	-14.15
	63	8.72	8.72
	64	15.44	15.44
	65	6.00	6.00
	66	-19.59	-19.59
	67	-46.58	-46.58
	68	-2.87	-2.87
	69	-1.77	-1.77
	70	-1.10	-1.10
	71	-0.43	-0.43
	72	-19.55	-19.55

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-45.57	45.57
2	8.07	8.07
3	-26.35	-26.35
4	-38.56	-38.56
5	-28.42	-28.42
6	7.23	7.23
7	49.31	49.31
8	31.22	31.22
9	13.62	13.62
10	4.74	4.74
11	-4.14	-4.14
12	3.90	3.90
13	67.82	-67.82
14	-26.48	-26.48
15	13.68	13.68
16	30.26	30.26
17	23.27	23.27
18	-7.30	-7.30
19	-42.04	-42.04
20	-28.48	-28.48
21	-15.53	-15.53
22	-11.09	-11.09
23	-15.71	-15.71
24	-29.94	-29.94
25	-45.57	54.44
26	14.02	14.02
27	-22.26	-22.26
28	-34.46	-34.46
29	-23.91	-23.91
30	10.79	10.79
31	50.27	50.27
32	31.31	31.31
33	11.74	11.74
34	0.16	0.16
35	-11.42	-11.42
36	-0.10	-0.10
37	62.89	-62.89
38	-25.28	-25.28
39	9.48	9.48
40	20.66	20.66
41	8.26	8.26
42	-27.72	-27.72
43	-66.18	-66.18
44	-3.13	-3.13
45	3.65	3.65
46	-6.49	-6.49
47	-16.63	-16.63
48	-35.49	-35.49
49	-54.44	58.13

	50	13.97	13.97
	51	-24.62	-24.62
	52	-37.47	-37.47
	53	-27.87	-27.87
	54	3.84	3.84
	55	39.35	39.35
	56	23.23	23.23
	57	8.30	8.30
	58	2.98	2.98
	59	6.71	6.71
	60	18.96	18.96
	61	32.04	-32.04
	62	0.66	0.66
	63	28.26	28.26
	64	32.29	32.29
	65	12.74	12.74
	66	-30.39	-30.39
	67	-73.76	-73.76
	68	-10.39	-10.39
	69	1.49	1.49
	70	-9.53	-9.53
	71	-20.54	-20.54
	72	-39.56	-39.56

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-32.34	32.34
2	5.68	5.68
3	-18.33	-18.33
4	-25.96	-25.96
5	-17.07	-17.07
6	10.45	10.45
7	41.96	41.96
8	29.13	29.13
9	15.50	15.50
10	6.90	6.90
11	-1.70	-1.70
12	6.23	6.23
13	52.08	-52.08
14	-21.42	-21.42
15	8.70	8.70
16	21.70	21.70
17	17.59	17.59
18	-3.63	-3.63
19	-28.19	-28.19
20	-19.03	-19.03
21	-10.35	-10.35
22	-7.56	-7.56
23	-11.05	-11.05
24	-21.24	-21.24
25	-32.34	40.15
26	11.04	11.04
27	-14.88	-14.88
28	-23.11	-23.11
29	-14.53	-14.53
30	11.71	11.71
31	41.00	41.00
32	27.74	27.74
33	12.58	12.58
34	1.51	1.51
35	-9.55	-9.55
36	2.21	2.21
37	47.55	-47.55
38	-19.87	-19.87
39	5.91	5.91
40	14.57	14.57
41	6.12	6.12
42	-19.45	-19.45
43	-46.99	-46.99
44	-1.55	-1.55
45	5.77	5.77
46	-3.44	-3.44
47	-12.66	-12.66
48	-26.90	-26.90
49	-40.15	42.69

	50	11.09	11.09
	51	-16.62	-16.62
	52	-25.69	-25.69
	53	-18.23	-18.23
	54	5.65	5.65
	55	32.24	32.24
	56	21.13	21.13
	57	10.93	10.93
	58	7.43	7.43
	59	10.22	10.22
	60	18.88	18.88
	61	28.04	-28.04
	62	-3.55	-3.55
	63	17.56	17.56
	64	21.57	21.57
	65	8.46	8.46
	66	-21.76	-21.76
	67	-52.50	-52.50
	68	-6.74	-6.74
	69	5.62	5.62
	70	-4.84	-4.84
	71	-15.29	-15.29
	72	-29.86	-29.86

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-37.31	37.31
2	10.99	10.99
3	-12.82	-12.82
4	-20.39	-20.39
5	-11.89	-11.89
6	14.08	14.08
7	43.24	43.24
8	23.53	23.53
9	7.19	7.19
10	3.18	3.18
11	-0.82	-0.82
12	4.65	4.65
13	47.73	-47.73
14	-19.90	-19.90
15	6.90	6.90
16	17.55	17.55
17	12.04	12.04
18	-9.61	-9.61
19	-33.91	-33.91
20	-19.06	-19.06
21	-4.84	-4.84
22	0.11	0.11
23	-4.84	-4.84
24	-20.29	-20.29
25	-37.31	42.08
26	14.31	14.31
27	-10.70	-10.70
28	-18.75	-18.75
29	-10.56	-10.56
30	14.57	14.57
31	42.41	42.41
32	22.49	22.49
33	5.46	5.46
34	0.41	0.41
35	-4.65	-4.65
36	2.28	2.28
37	45.11	-45.11
38	-19.02	-19.02
39	5.25	5.25
40	13.37	13.37
41	5.34	5.34
42	-18.85	-18.85
43	-44.88	-44.88
44	-2.02	-2.02
45	3.14	3.14
46	-1.18	-1.18
47	-5.50	-5.50
48	-22.15	-22.15
49	-42.08	43.53

	50	14.34	14.34
	51	-11.72	-11.72
	52	-20.29	-20.29
	53	-12.78	-12.78
	54	10.98	10.98
	55	37.26	37.26
	56	20.24	20.24
	57	4.79	4.79
	58	-0.16	-0.16
	59	4.78	4.78
	60	19.00	19.00
	61	33.85	-33.85
	62	-9.58	-9.58
	63	12.03	12.03
	64	17.49	17.49
	65	6.80	6.80
	66	-20.04	-20.04
	67	-47.90	-47.90
	68	-4.86	-4.86
	69	2.39	2.39
	70	-2.36	-2.36
	71	-7.11	-7.11
	72	-23.82	-23.82

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-32.86	32.86
2	6.11	6.11
3	-17.99	-17.99
4	-25.64	-25.64
5	-16.76	-16.76
6	10.75	10.75
7	42.20	42.20
8	28.82	28.82
9	14.95	14.95
10	6.65	6.65
11	-1.65	-1.65
12	6.13	6.13
13	51.97	-51.97
14	-21.39	-21.39
15	8.60	8.60
16	21.48	21.48
17	17.24	17.24
18	-4.12	-4.12
19	-28.76	-28.76
20	-19.10	-19.10
21	-9.95	-9.95
22	-7.00	-7.00
23	-10.64	-10.64
24	-21.27	-21.27
25	-32.86	40.44
26	11.32	11.32
27	-14.64	-14.64
28	-22.88	-22.88
29	-14.30	-14.30
30	11.96	11.96
31	41.25	41.25
32	27.47	27.47
33	12.11	12.11
34	1.44	1.44
35	-9.22	-9.22
36	2.23	2.23
37	47.57	-47.57
38	-19.89	-19.89
39	5.89	5.89
40	14.54	14.54
41	6.09	6.09
42	-19.48	-19.48
43	-47.02	-47.02
44	-1.59	-1.59
45	5.59	5.59
46	-3.30	-3.30
47	-12.19	-12.19
48	-26.66	-26.66
49	-40.44	42.90

	50	11.36	11.36
	51	-16.33	-16.33
	52	-25.39	-25.39
	53	-17.89	-17.89
	54	6.08	6.08
	55	32.75	32.75
	56	21.17	21.17
	57	10.52	10.52
	58	6.88	6.88
	59	9.82	9.82
	60	18.96	18.96
	61	28.62	-28.62
	62	-4.04	-4.04
	63	17.21	17.21
	64	21.35	21.35
	65	8.37	8.37
	66	-21.72	-21.72
	67	-52.37	-52.37
	68	-6.62	-6.62
	69	5.41	5.41
	70	-4.67	-4.67
	71	-14.75	-14.75
	72	-29.52	-29.52

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-31.26	31.26
2	5.89	5.89
3	-16.97	-16.97
4	-24.23	-24.23
5	-15.81	-15.81
6	10.26	10.26
7	40.06	40.06
8	27.24	27.24
9	14.03	14.03
10	6.24	6.24
11	-1.55	-1.55
12	5.78	5.78
13	49.04	-49.04
14	-20.19	-20.19
15	8.10	8.10
16	20.24	20.24
17	16.23	16.23
18	-3.94	-3.94
19	-27.21	-27.21
20	-18.04	-18.04
21	-9.34	-9.34
22	-6.52	-6.52
23	-10.00	-10.00
24	-20.17	-20.17
25	-31.26	38.41
26	10.80	10.80
27	-13.81	-13.81
28	-21.63	-21.63
29	-13.50	-13.50
30	11.40	11.40
31	39.17	39.17
32	25.97	25.97
33	11.36	11.36
34	1.35	1.35
35	-8.66	-8.66
36	2.10	2.10
37	44.90	-44.90
38	-18.77	-18.77
39	5.55	5.55
40	13.72	13.72
41	5.74	5.74
42	-18.39	-18.39
43	-44.39	-44.39
44	-1.51	-1.51
45	5.26	5.26
46	-3.09	-3.09
47	-11.43	-11.43
48	-25.21	-25.21
49	-38.41	40.72

	50	10.84	10.84
	51	-15.41	-15.41
	52	-24.00	-24.00
	53	-16.88	-16.88
	54	5.86	5.86
	55	31.16	31.16
	56	20.06	20.06
	57	9.89	9.89
	58	6.41	6.41
	59	9.22	9.22
	60	17.91	17.91
	61	27.07	-27.07
	62	-3.87	-3.87
	63	16.20	16.20
	64	20.12	20.12
	65	7.89	7.89
	66	-20.50	-20.50
	67	-49.42	-49.42
	68	-6.24	-6.24
	69	5.07	5.07
	70	-4.39	-4.39
	71	-13.85	-13.85
	72	-27.90	-27.90

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-31.94	31.94
2	5.76	5.76
3	-17.82	-17.82
4	-25.31	-25.31
5	-16.60	-16.60
6	10.38	10.38
7	41.25	41.25
8	28.42	28.42
9	14.95	14.95
10	6.65	6.65
11	-1.65	-1.65
12	6.06	6.06
13	50.94	-50.94
14	-20.95	-20.95
15	8.48	8.48
16	21.16	21.16
17	17.08	17.08
18	-3.75	-3.75
19	-27.82	-27.82
20	-18.65	-18.65
21	-9.97	-9.97
22	-7.17	-7.17
23	-10.65	-10.65
24	-20.84	-20.84
25	-31.94	39.50
26	10.95	10.95
27	-14.48	-14.48
28	-22.55	-22.55
29	-14.15	-14.15
30	11.59	11.59
31	40.31	40.31
32	27.08	27.08
33	12.12	12.12
34	1.45	1.45
35	-9.22	-9.22
36	2.17	2.17
37	46.56	-46.56
38	-19.46	-19.46
39	5.77	5.77
40	14.25	14.25
41	5.98	5.98
42	-19.05	-19.05
43	-46.01	-46.01
44	-1.53	-1.53
45	5.58	5.58
46	-3.31	-3.31
47	-12.20	-12.20
48	-26.27	-26.27
49	-39.50	41.95

	50	10.99	10.99
	51	-16.17	-16.17
	52	-25.06	-25.06
	53	-17.73	-17.73
	54	5.73	5.73
	55	31.83	31.83
	56	20.73	20.73
	57	10.54	10.54
	58	7.05	7.05
	59	9.84	9.84
	60	18.52	18.52
	61	27.67	-27.67
	62	-3.67	-3.67
	63	17.05	17.05
	64	21.03	21.03
	65	8.25	8.25
	66	-21.29	-21.29
	67	-51.34	-51.34
	68	-6.55	-6.55
	69	5.42	5.42
	70	-4.67	-4.67
	71	-14.75	-14.75
	72	-29.12	-29.12

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-37.02	37.02
2	10.75	10.75
3	-13.01	-13.01
4	-20.57	-20.57
5	-12.07	-12.07
6	13.92	13.92
7	43.10	43.10
8	23.70	23.70
9	7.50	7.50
10	3.32	3.32
11	-0.85	-0.85
12	4.71	4.71
13	47.79	-47.79
14	-19.92	-19.92
15	6.96	6.96
16	17.68	17.68
17	12.24	12.24
18	-9.34	-9.34
19	-33.58	-33.58
20	-19.02	-19.02
21	-5.06	-5.06
22	-0.21	-0.21
23	-5.07	-5.07
24	-20.27	-20.27
25	-37.02	41.92
26	14.15	14.15
27	-10.84	-10.84
28	-18.88	-18.88
29	-10.69	-10.69
30	14.43	14.43
31	42.27	42.27
32	22.64	22.64
33	5.73	5.73
34	0.45	0.45
35	-4.83	-4.83
36	2.28	2.28
37	45.10	-45.10
38	-19.01	-19.01
39	5.26	5.26
40	13.39	13.39
41	5.35	5.35
42	-18.83	-18.83
43	-44.86	-44.86
44	-2.00	-2.00
45	3.24	3.24
46	-1.26	-1.26
47	-5.76	-5.76
48	-22.29	-22.29
49	-41.92	43.41

	50	14.18	14.18
	51	-11.88	-11.88
	52	-20.46	-20.46
	53	-12.97	-12.97
	54	10.73	10.73
	55	36.97	36.97
	56	20.22	20.22
	57	5.02	5.02
	58	0.15	0.15
	59	5.00	5.00
	60	18.96	18.96
	61	33.52	-33.52
	62	-9.31	-9.31
	63	12.23	12.23
	64	17.62	17.62
	65	6.85	6.85
	66	-20.06	-20.06
	67	-47.97	-47.97
	68	-4.93	-4.93
	69	2.50	2.50
	70	-2.45	-2.45
	71	-7.41	-7.41
	72	-24.01	-24.01

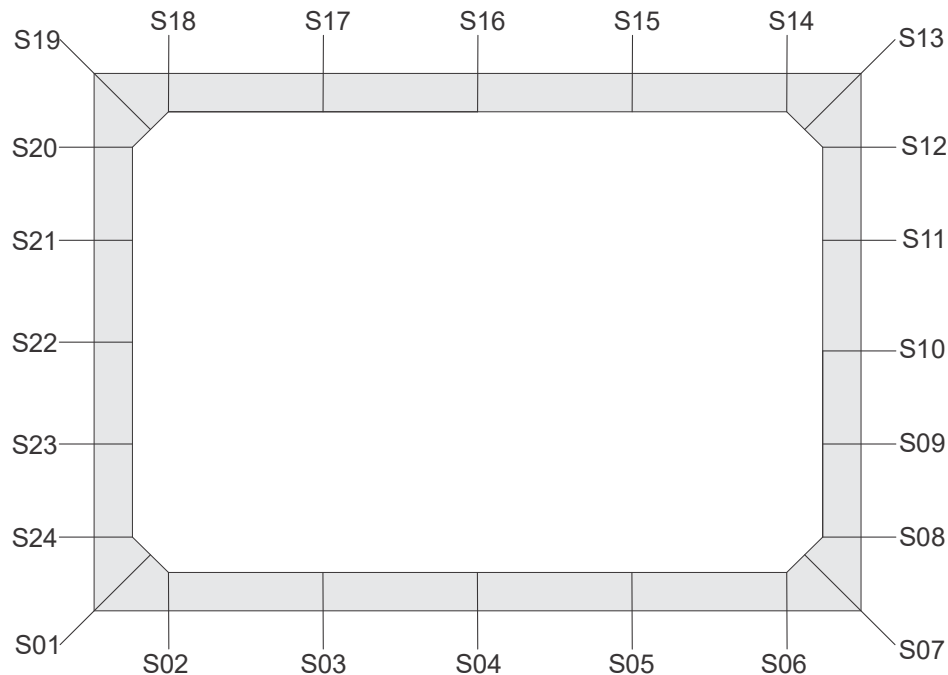
```
#####
#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VmaxHmax                                  #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-32.26	32.26
2	6.03	6.03
3	-17.61	-17.61
4	-25.11	-25.11
5	-16.40	-16.40
6	10.57	10.57
7	41.40	41.40
8	28.23	28.23
9	14.60	14.60
10	6.49	6.49
11	-1.61	-1.61
12	6.00	6.00
13	50.87	-50.87
14	-20.94	-20.94
15	8.41	8.41
16	21.01	21.01
17	16.86	16.86
18	-4.05	-4.05
19	-28.18	-28.18
20	-18.70	-18.70
21	-9.72	-9.72
22	-6.82	-6.82
23	-10.40	-10.40
24	-20.86	-20.86
25	-32.26	39.68
26	11.12	11.12
27	-14.33	-14.33
28	-22.41	-22.41
29	-14.00	-14.00
30	11.75	11.75
31	40.47	40.47
32	26.90	26.90
33	11.83	11.83
34	1.41	1.41
35	-9.01	-9.01
36	2.18	2.18
37	46.57	-46.57
38	-19.47	-19.47
39	5.76	5.76
40	14.24	14.24
41	5.96	5.96
42	-19.07	-19.07
43	-46.03	-46.03
44	-1.56	-1.56
45	5.47	5.47
46	-3.22	-3.22
47	-11.91	-11.91
48	-26.11	-26.11
49	-39.68	42.08

	50	11.16	11.16
	51	-15.98	-15.98
	52	-24.87	-24.87
	53	-17.51	-17.51
	54	6.00	6.00
	55	32.16	32.16
	56	20.75	20.75
	57	10.28	10.28
	58	6.70	6.70
	59	9.60	9.60
	60	18.56	18.56
	61	28.04	-28.04
	62	-3.98	-3.98
	63	16.83	16.83
	64	20.89	20.89
	65	8.19	8.19
	66	-21.26	-21.26
	67	-51.26	-51.26
	68	-6.48	-6.48
	69	5.28	5.28
	70	-4.56	-4.56
	71	-14.41	-14.41
	72	-28.91	-28.91

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	5.47	6.57	1.26	1.26
2	2.38	2.86	2.32	2.79
3	2.32	2.79	5.10	6.12
4	2.32	2.79	7.21	8.65
5	2.32	2.79	4.73	5.68
6	2.72	3.27	2.32	2.79
7	5.47	6.57	1.26	1.26
8	6.36	7.63	2.32	2.79
9	3.33	4.00	2.32	2.79
10	2.32	2.79	2.32	2.79
11	2.32	2.79	2.32	2.79
12	2.32	2.79	2.32	2.79
13	5.47	6.57	1.26	1.26
14	5.10	6.11	2.32	2.79
15	2.32	2.79	2.32	2.79
16	2.32	2.79	5.71	6.85
17	2.32	2.79	4.92	5.90
18	2.32	2.79	2.32	2.79
19	5.47	6.57	1.26	1.26
20	2.85	3.42	2.32	2.79
21	2.32	2.79	2.32	2.79
22	2.32	2.79	2.32	2.79
23	2.32	2.79	2.32	2.79
24	3.39	4.07	2.32	2.79

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	-127.31	6.13	-120.21	5.78	1.65	0.00
13	-126.03	51.97	-37.89	49.04	-29.50	0.00
14	-39.95	21.39	-37.89	20.19	17.38	0.00
16	-37.84	21.70	-61.20	17.55	73.28	0.00
18	-39.95	4.12	-37.89	3.94	1.63	0.00
19	-104.44	28.76	-37.89	27.21	-26.21	0.00
20	-105.72	19.10	-99.90	18.04	13.20	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	6.57	2.12E-003	130.76	187.41	0.00	0.00
2	2.86	2.60E-003	120.57	72.64	571.15	7.13
6	3.27	2.97E-003	132.19	73.58	571.15	11.82
7	6.57	2.12E-003	146.78	175.62	0.00	0.00
13	6.57	2.12E-003	165.90	177.10	0.00	0.00
14	6.11	5.56E-003	94.90	81.50	571.15	0.00
18	2.79	2.53E-003	94.67	73.77	571.15	0.00
19	6.57	2.12E-003	115.10	180.83	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	6.57	-50.33	31.94	6.30	0.030
2	2.86	-46.64	5.76	6.30	0.024
3	6.12	-46.64	17.82	6.30	0.079
4	8.65	-46.64	25.31	6.30	0.085
5	5.68	-46.64	16.60	6.30	0.079
6	3.27	-46.64	10.38	6.30	0.081
7	6.57	-89.38	41.25	6.30	0.044
8	7.63	-130.85	28.42	6.30	0.110
9	4.00	-129.35	14.95	6.30	0.077
10	2.79	-127.85	6.65	6.30	0.007
11	2.79	-126.35	1.65	6.30	0.000
12	2.79	-124.85	6.06	6.30	0.004
13	6.57	-80.71	50.94	6.30	0.075
14	6.11	-37.86	20.95	6.30	0.116
15	2.79	-37.86	8.48	6.30	0.075
16	6.85	-37.86	21.16	6.30	0.095
17	5.90	-37.86	17.08	6.30	0.080
18	2.79	-37.86	3.75	6.30	0.009
19	6.57	-69.96	27.82	6.30	0.018
20	3.58*	-103.34	18.65	6.30	0.200
21	2.79	-104.84	9.97	6.30	0.058
22	2.79	-106.34	7.17	6.30	0.018
23	2.79	-107.84	10.65	6.30	0.069
24	4.07	-109.34	20.84	6.30	0.197

VminHmax

Seção	As (cm ² /m)	Nsd (kN)	Msd (kN.m)	Ø (mm)	w (mm)
1	6.57	-47.10	37.02	6.30	0.042
2	2.86	-70.56	10.75	6.30	0.095
3	6.12	-70.56	13.01	6.30	0.034
4	8.65	-70.56	20.57	6.30	0.050
5	5.68	-70.56	12.07	6.30	0.032
6	3.27	-70.56	13.92	6.30	0.139
7	6.57	-97.25	43.10	6.30	0.047
8	7.63	-122.66	23.70	6.30	0.073
9	4.00	-121.16	7.50	6.30	0.008
10	2.79	-119.66	3.32	6.30	0.000
11	2.79	-118.16	0.85	6.30	0.000
12	2.79	-116.66	4.71	6.30	0.001
13	6.57	-87.70	47.79	6.30	0.063
14	6.11	-60.02	19.92	6.30	0.096
15	2.79	-60.02	6.96	6.30	0.035
16	6.85	-60.02	17.68	6.30	0.058
17	5.90	-60.02	12.24	6.30	0.033
18	2.79	-60.02	9.34	6.30	0.077
19	6.57	-81.09	33.58	6.30	0.027
20	3.66*	-103.44	19.02	6.30	0.200
21	2.79	-104.94	5.06	6.30	0.003
22	2.79	-106.44	0.21	6.30	0.000
23	2.79	-107.94	5.07	6.30	0.003
24	4.07	-109.44	20.27	6.30	0.184

VERIFICAÇÃO DA FISSURAÇÃO (CONT.)

VmaxHmax

Seção	As (cm ² /m)	Nsd (kN)	Msd (kN.m)	Ø (mm)	w (mm)
1	6.57	-50.25	32.26	6.30	0.030
2	2.86	-47.87	6.03	6.30	0.026
3	6.12	-47.87	17.61	6.30	0.077
4	8.65	-47.87	25.11	6.30	0.083
5	5.68	-47.87	16.40	6.30	0.076
6	3.27	-47.87	10.57	6.30	0.084
7	6.57	-89.90	41.40	6.30	0.044
8	7.63	-130.64	28.23	6.30	0.109
9	4.00	-129.14	14.60	6.30	0.072
10	2.79	-127.64	6.49	6.30	0.006
11	2.79	-126.14	1.61	6.30	0.000
12	2.79	-124.64	6.00	6.30	0.004
13	6.57	-81.27	50.87	6.30	0.075
14	6.11	-39.18	20.94	6.30	0.116
15	2.79	-39.18	8.41	6.30	0.072
16	6.85	-39.18	21.01	6.30	0.093
17	5.90	-39.18	16.86	6.30	0.078
18	2.79	-39.18	4.05	6.30	0.011
19	6.57	-70.72	28.18	6.30	0.019
20	3.66*	-103.54	18.70	6.30	0.192
21	2.79	-105.04	9.72	6.30	0.054
22	2.79	-106.54	6.82	6.30	0.014
23	2.79	-108.04	10.40	6.30	0.064
24	4.07	-109.54	20.86	6.30	0.198

NOTA:

* Seção com aumento na armadura devido à fissuração.