



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

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

segunda-feira, 7 de outubro de 2019



ASSOCIAÇÃO BRASILEIRA
DOS FABRICANTES DE
TUBOS DE CONCRETO

DADOS DO FABRICANTE



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

DADOS DO CLIENTE



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

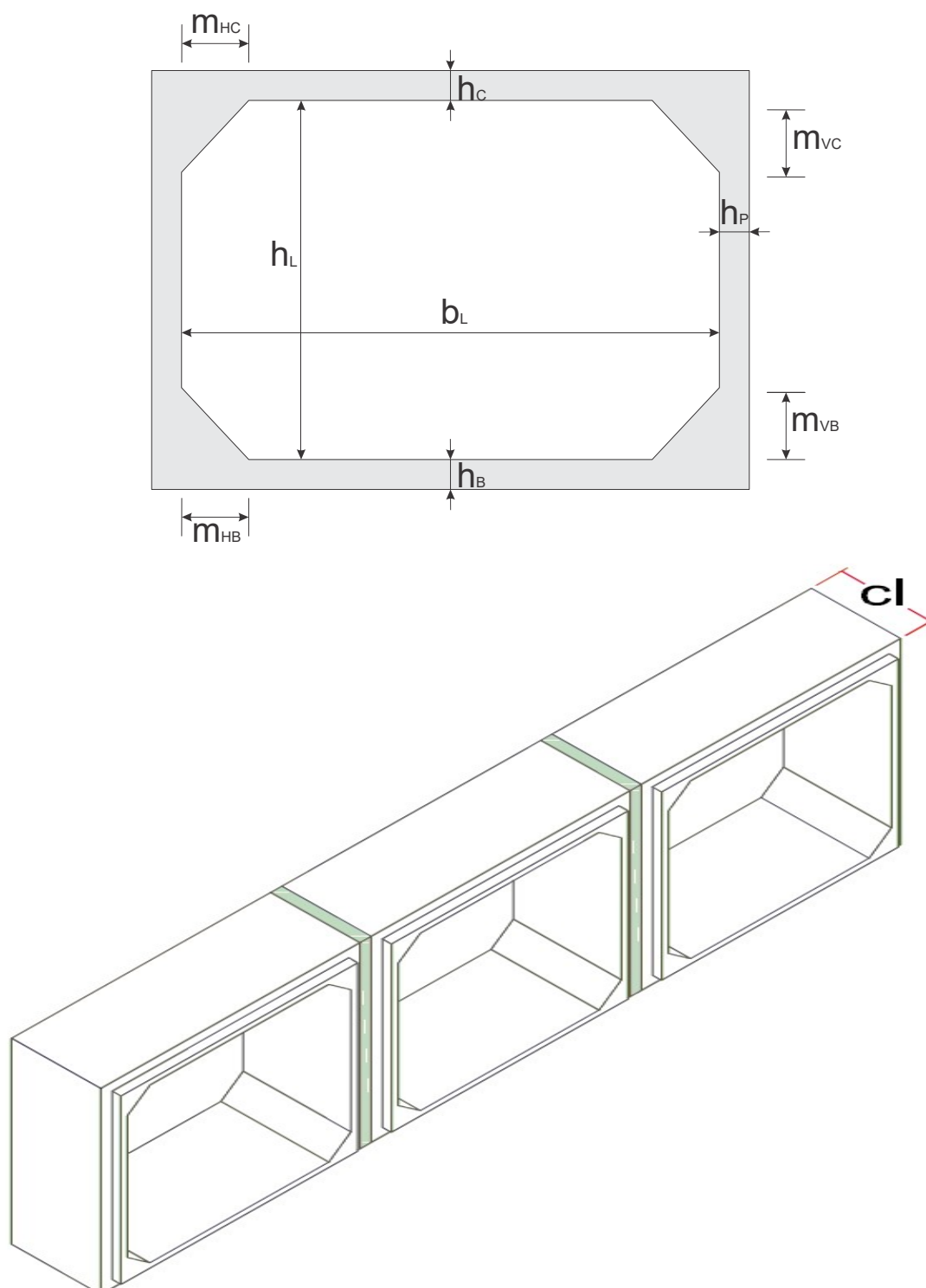
DADOS DA OBRA



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

GEOMETRIA

SEÇÃO CONSTANTE.....	: SIM
FINALIDADE.....	: ÁGUAS PLUVIAIS
COMPRIMENTO (c_l).....	: 1.00 m
LARGURA LIVRE (b_l).....	: 2.50 m
ALTURA LIVRE (h_l).....	: 2.50 m
ALTURA DA LAJE DA COBERTURA (h_c).....	: 0.15 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

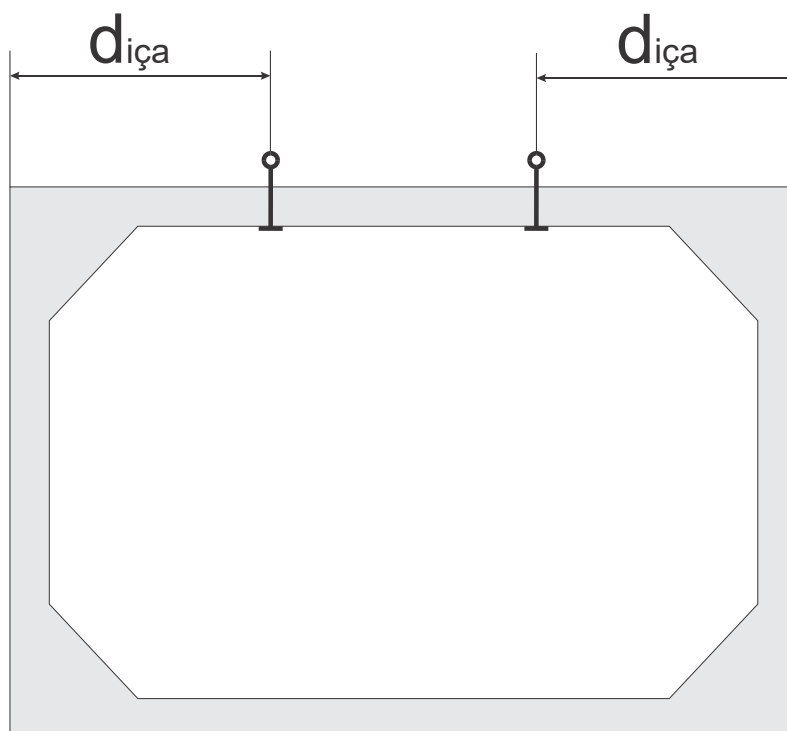
PESO ESPECÍFICO.....	: 18.00 kN/m ³
ÂNGULO DE ATRITO.....	: 30.00 graus
COEFICIENTE DE ATRITO ATIVO.....	: 0.33
COEFICIENTE DE ATRITO ESTÁTICO.....	: 0.50
COEFICIENTE DE ATRITO.....	: 0.58

DADOS DE INSTALAÇÃO

ALTURA DE TERRA.....	: 2.50 m
ESPESSURA DO PAVIMENTO.....	: 0.30 m
EFEITO DO ARQUEAMENTO.....	: NÃO CONSIDERADO
TIPO DE INSTALAÇÃO.....	: ---
LARGURA DA VALA.....	: ---
0.80 x K_a x COEFICIENTE DE ATRITO.....	: 0.15
RAZÃO DE RECALQUE.....	: ---

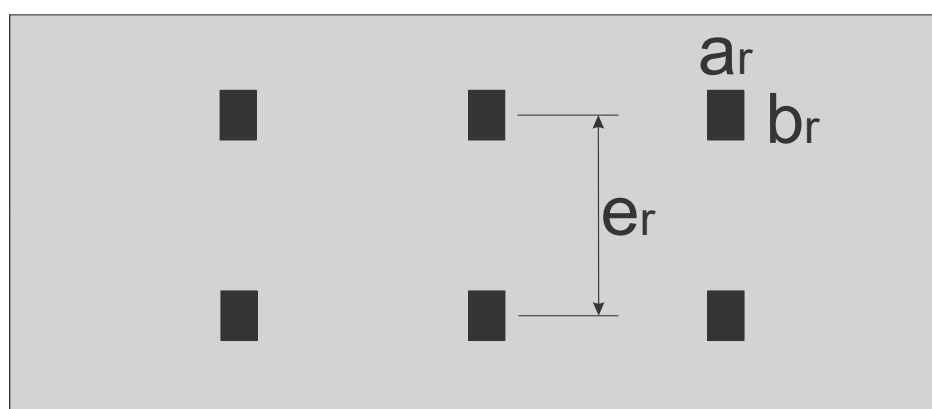
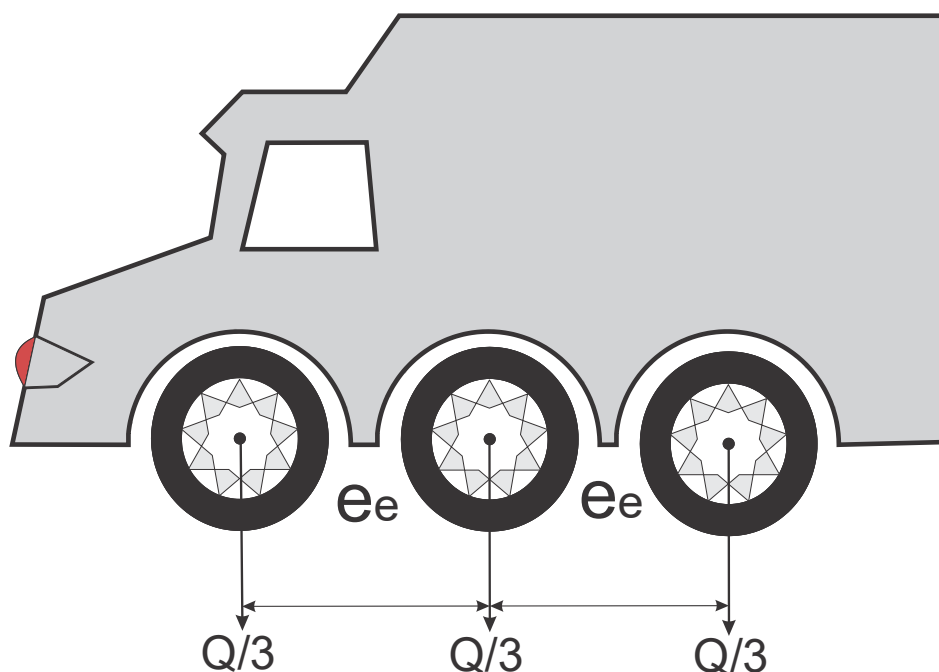
INFORMAÇÕES DE MANUSEIO

RESISTÊNCIA DO CONCRETO (f_{cj}).....	: 20.00 MPa
COEFICIENTE DE IMPACTO.....	: 1.20
DISTÂNCIA DE IÇAMENTO.....	: 50.00 cm



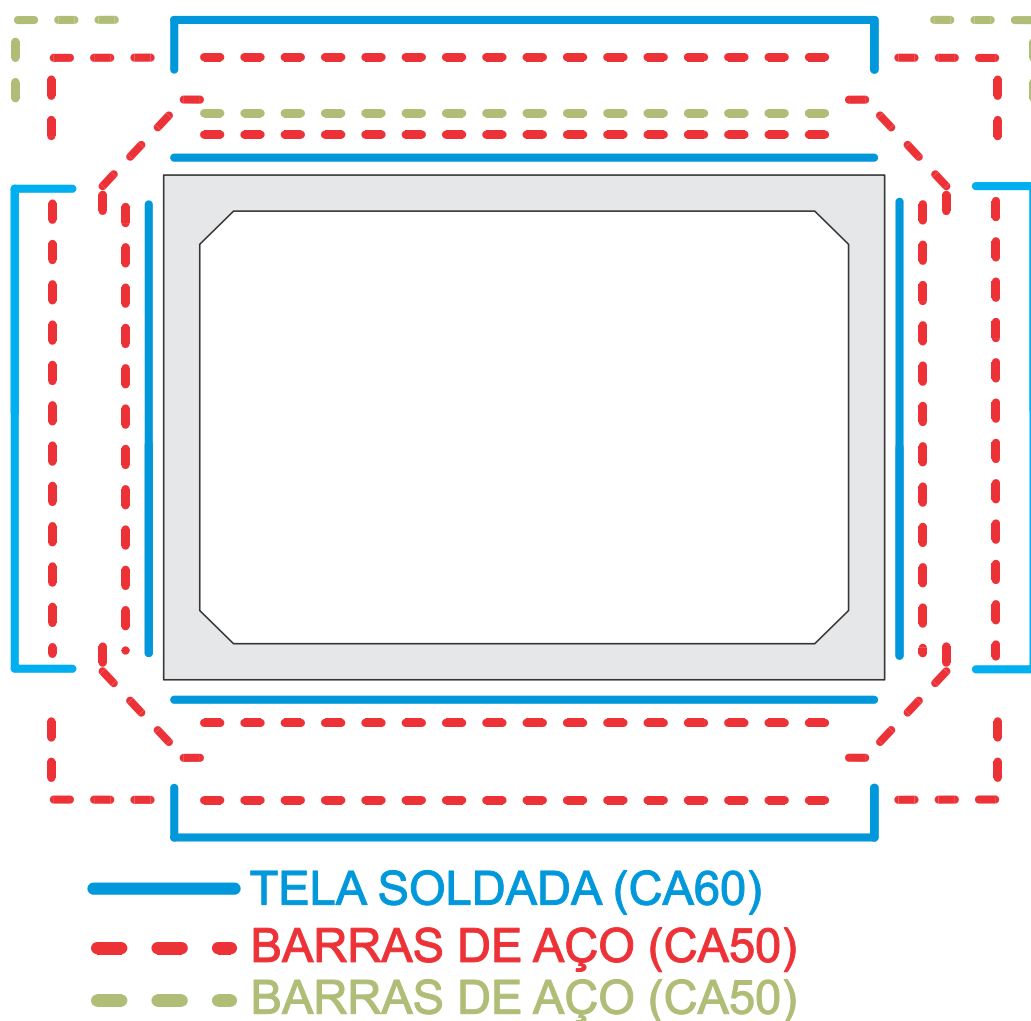
SOBRECARGA

TIPO DE SOBRECARGA.....: RODOVIÁRIO
TIPO DE TRÁFEGO.....: CLASSE 45
PESO DO VEÍCULO (Q).....: 450.00 kN
DISTÂNCIA ENTRE EIXOS (ee).....: 1.50 m
DISTÂNCIA ENTRE RODAS (er).....: 2.00 m
ÁREA DE CONTATO DA RODA (ar).....: 0.20 m
ÁREA DE CONTATO DA RODA (br).....: 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:

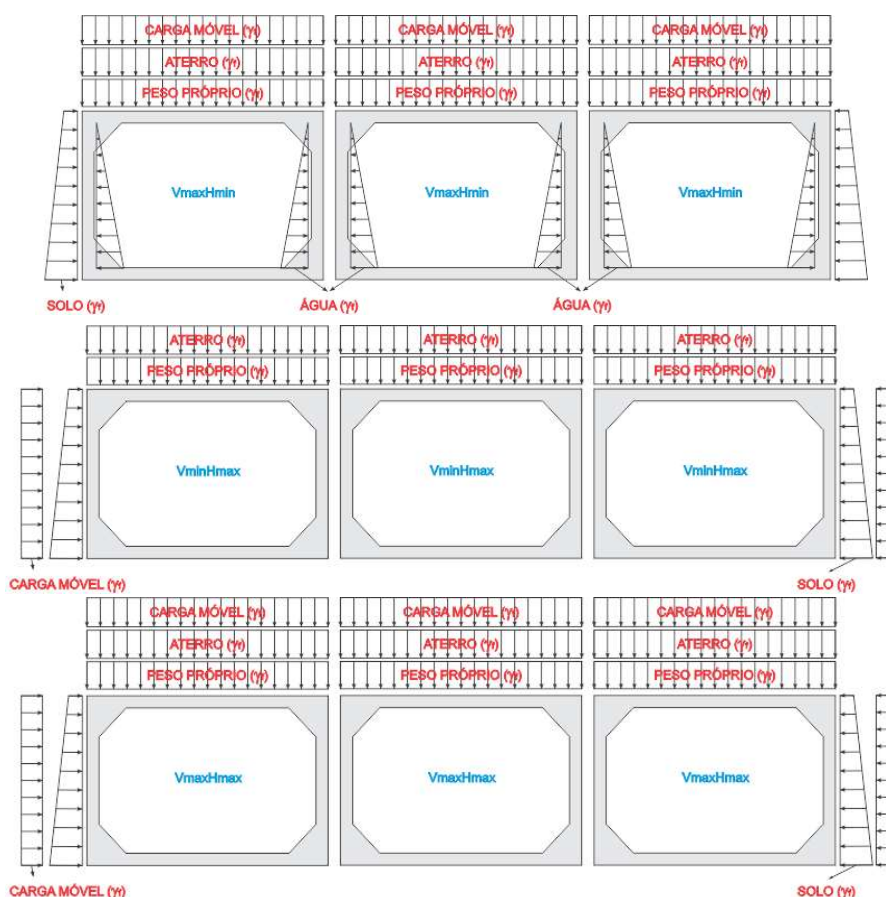
COEFICIENTE DE PONDERAÇÃO CARGA MÓVEL V.:	1.50
COEFICIENTE DE PONDERAÇÃO ATERRO.....	1.35
COEFICIENTE DE PONDERAÇÃO PESO PRÓPRIO...	1.30
COEFICIENTE DE PONDERAÇÃO SOLO.....	1.00
COEFICIENTE DE PONDERAÇÃO ÁGUA.....	1.20

- VminHmax:

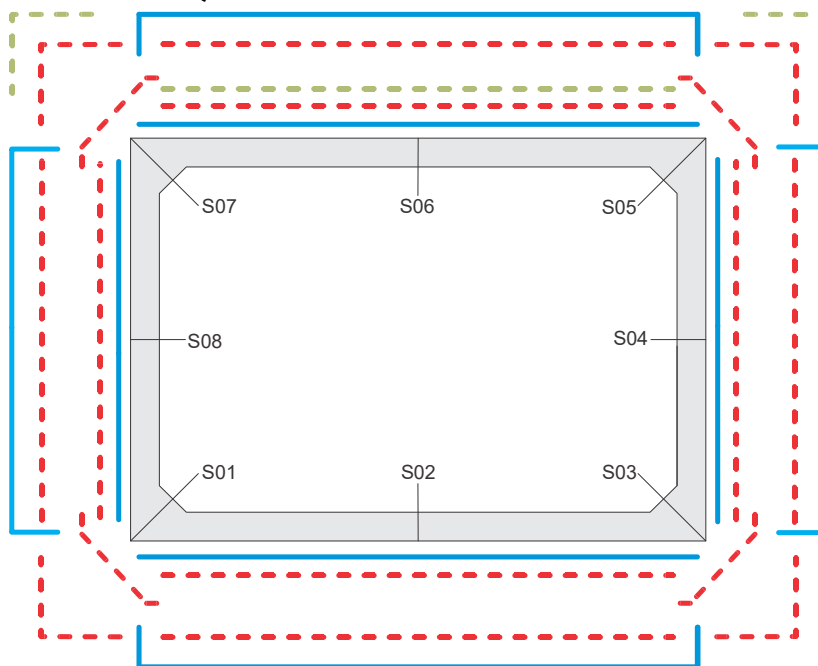
COEFICIENTE DE PONDERAÇÃO ATERRO.....	1.00
COEFICIENTE DE PONDERAÇÃO PESO PRÓPRIO...	1.00
COEFICIENTE DE PONDERAÇÃO SOLO.....	1.35
COEFICIENTE DE PONDERAÇÃO CARGA MÓVEL H.:	1.50

- 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

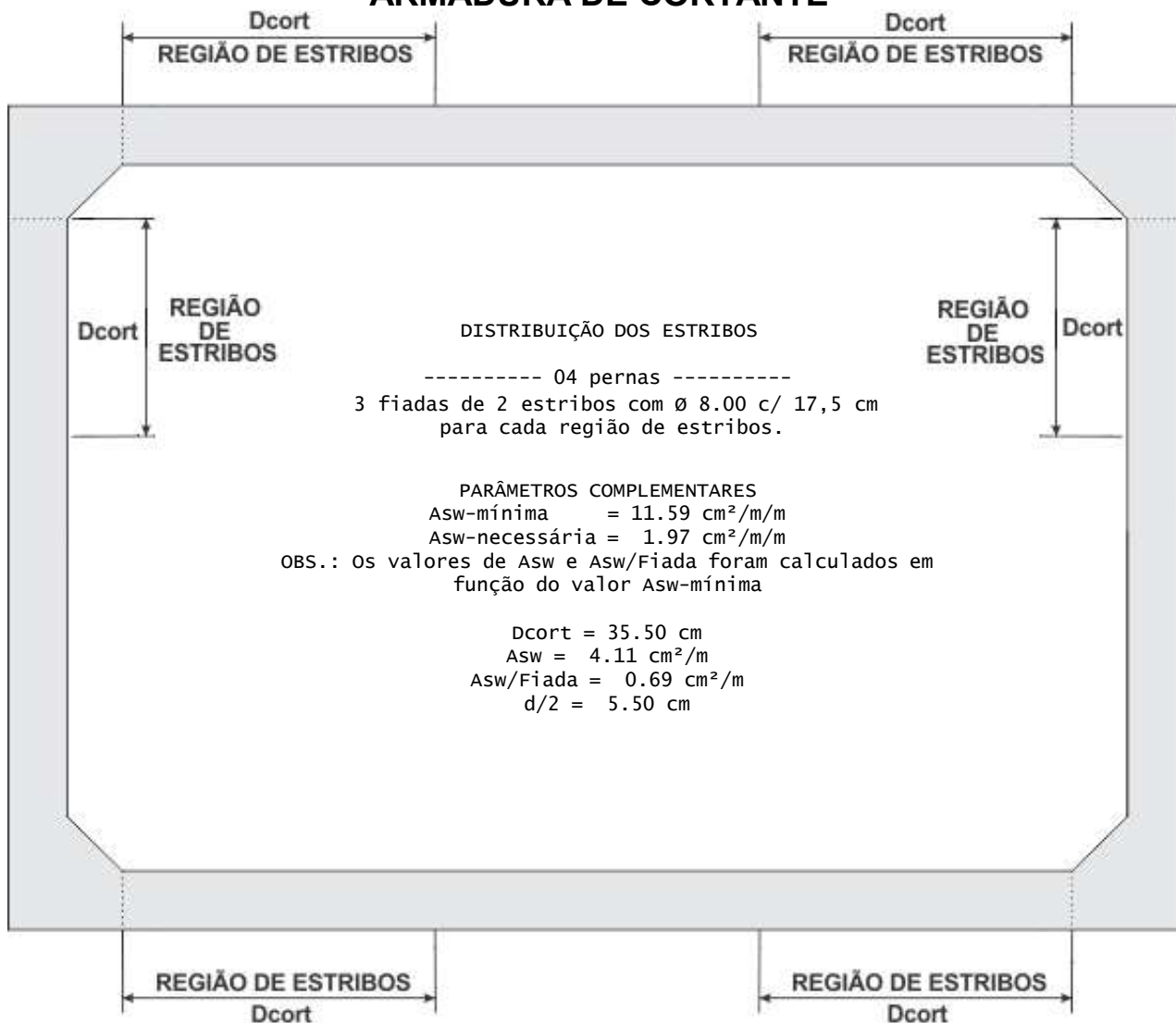
- - - BARRAS DE AÇO (CA50) ARMADURA DE FADIGA

OBS.: VALORES POR METRO DE ADUELA.

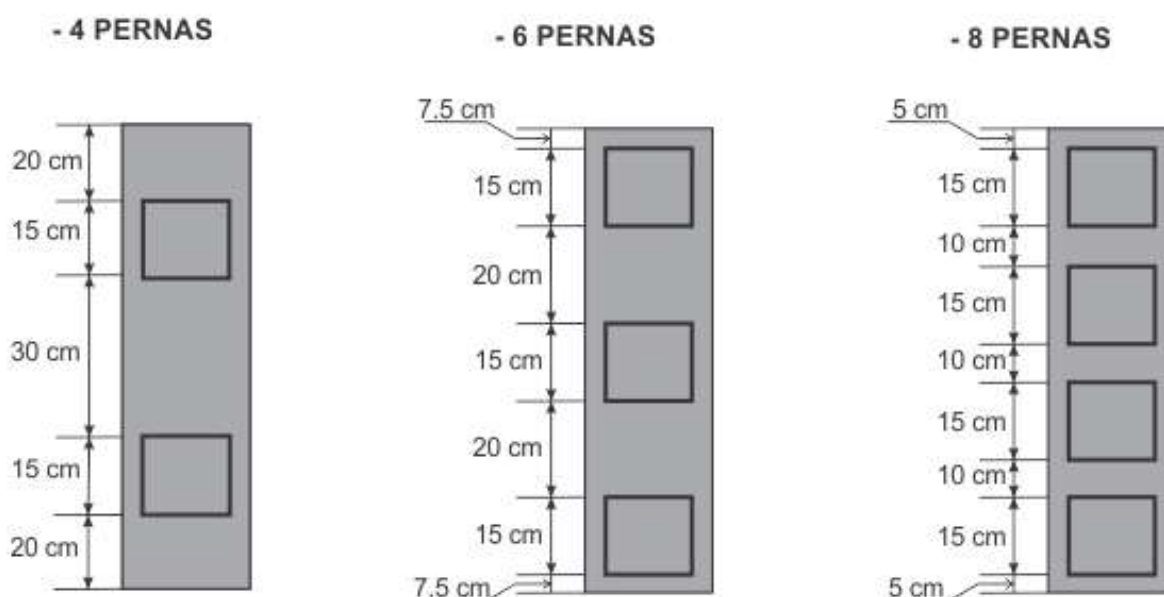
	TELA	ARMADURA COMPLEMENTAR	ARMADURA DE FADIGA
LADO EXTERNO	T-S02: L283	B-S01: 4 Ø6.30 c/ 31 cm (65.28%)	B-S05: 0.00 cm ² de área acima
	T-S04: L283	B-S02: 0.61 cm ² de área acima	B-S07: 0.00 cm ² de área acima
	T-S06: L283	B-S03: 4 Ø6.30 c/ 31 cm (65.28%)	
	T-S08: L283	B-S04: 0.09 cm ² de área acima B-S05: 6 Ø6.30 c/ 18 cm (2.71%) B-S06: 0.61 cm ² de área acima B-S07: 6 Ø6.30 c/ 18 cm (2.71%) B-S08: 0.09 cm ² de área acima	
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: 9 Ø8.00 c/ 12 cm (-2.19%)	
	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: 7 Ø8.00 c/ 15 cm (-4.60%) 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:

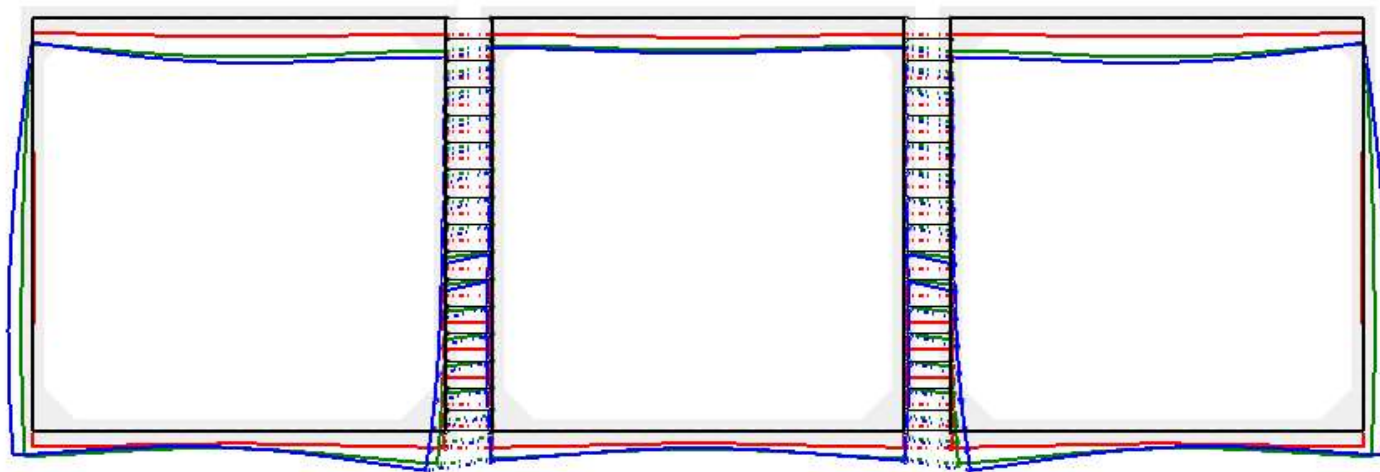
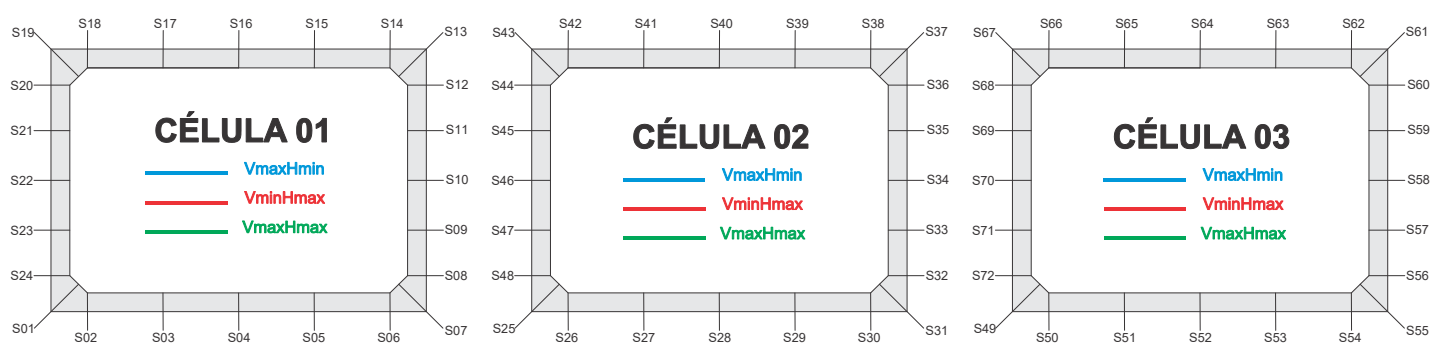


OBSERVAÇÃO:

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



```
#####
#          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	-3.65E-003	-4.65E-003
2	-3.65E-003	-4.11E-003
3	-3.65E-003	-3.15E-003
4	-3.66E-003	-3.05E-003
5	-3.66E-003	-4.26E-003
6	-3.66E-003	-6.41E-003
7	-3.66E-003	-7.57E-003
8	-2.54E-003	-7.57E-003
9	-1.13E-003	-7.60E-003
10	-5.64E-004	-7.62E-003
11	-2.18E-004	-7.63E-003
12	-2.94E-005	-7.65E-003
13	-2.24E-005	-7.66E-003
14	-2.20E-005	-7.71E-003
15	-2.04E-005	-8.28E-003
16	-1.88E-005	-8.59E-003
17	-1.72E-005	-7.75E-003
18	-1.56E-005	-5.85E-003
19	-1.51E-005	-4.71E-003
20	-1.13E-003	-4.71E-003
21	-2.92E-003	-4.70E-003
22	-4.08E-003	-4.68E-003
23	-4.56E-003	-4.67E-003
24	-4.16E-003	-4.65E-003
25	6.97E-006	-5.68E-003
26	6.14E-006	-5.06E-003
27	3.07E-006	-3.82E-003
28	-3.31E-010	-3.26E-003
29	-3.07E-006	-3.82E-003
30	-6.14E-006	-5.07E-003
31	-6.97E-006	-5.68E-003
32	5.66E-004	-5.69E-003
33	9.46E-004	-5.71E-003
34	5.78E-004	-5.72E-003
35	2.23E-004	-5.74E-003
36	5.55E-005	-5.76E-003
37	2.54E-006	-5.76E-003
38	2.75E-006	-5.86E-003
39	3.52E-006	-6.40E-003
40	4.29E-006	-6.74E-003
41	5.06E-006	-6.40E-003
42	5.83E-006	-5.86E-003
43	6.04E-006	-5.76E-003
44	-4.73E-005	-5.75E-003
45	-2.13E-004	-5.74E-003
46	-5.71E-004	-5.72E-003
47	-9.42E-004	-5.70E-003
48	-5.65E-004	-5.69E-003
49	3.67E-003	-7.57E-003

50	3.67E-003	-6.41E-003
51	3.67E-003	-4.26E-003
52	3.67E-003	-3.05E-003
53	3.67E-003	-3.14E-003
54	3.67E-003	-4.11E-003
55	3.66E-003	-4.65E-003
56	4.17E-003	-4.65E-003
57	4.57E-003	-4.67E-003
58	4.09E-003	-4.68E-003
59	2.93E-003	-4.70E-003
60	1.14E-003	-4.71E-003
61	2.37E-005	-4.71E-003
62	2.41E-005	-5.85E-003
63	2.57E-005	-7.75E-003
64	2.73E-005	-8.59E-003
65	2.89E-005	-8.29E-003
66	3.05E-005	-7.71E-003
67	3.10E-005	-7.66E-003
68	3.77E-005	-7.66E-003
69	2.24E-004	-7.64E-003
70	5.71E-004	-7.62E-003
71	1.14E-003	-7.60E-003
72	2.55E-003	-7.58E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.92E-003
2	2.02E-003
3	1.26E-003
4	-1.04E-003
5	-3.46E-003
6	-4.29E-003
7	-4.17E-003
8	-3.94E-003
9	-1.65E-003
10	-7.50E-004
11	-5.31E-004
12	-1.19E-004
13	7.07E-005
14	3.55E-004
15	1.26E-003
16	-3.84E-004
17	-2.78E-003
18	-4.14E-003
19	-4.11E-003
20	-4.01E-003
21	-2.81E-003
22	-1.60E-003
23	-1.48E-004
24	1.75E-003
25	2.17E-003
26	2.32E-003
27	1.99E-003
28	-2.27E-007
29	-1.99E-003

30	-2.33E-003
31	-2.18E-003
32	-1.94E-003
33	2.58E-004
34	8.39E-004
35	5.22E-004
36	1.43E-004
37	2.60E-004
38	4.85E-004
39	1.13E-003
40	-1.02E-006
41	-1.14E-003
42	-4.86E-004
43	-2.61E-004
44	-1.44E-004
45	-5.16E-004
46	-8.47E-004
47	-2.64E-004
48	1.94E-003
49	4.17E-003
50	4.29E-003
51	3.46E-003
52	1.04E-003
53	-1.26E-003
54	-2.02E-003
55	-1.92E-003
56	-1.74E-003
57	1.49E-004
58	1.61E-003
59	2.81E-003
60	4.01E-003
61	4.11E-003
62	4.14E-003
63	2.78E-003
64	3.85E-004
65	-1.25E-003
66	-3.56E-004
67	-7.15E-005
68	1.19E-004
69	5.23E-004
70	7.57E-004
71	1.66E-003
72	3.94E-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	-5.47E-005	-2.93E-003
2	-5.78E-005	-2.91E-003
3	-6.95E-005	-2.60E-003
4	-8.12E-005	-2.40E-003
5	-9.28E-005	-2.63E-003
6	-1.04E-004	-3.03E-003
7	-1.08E-004	-3.12E-003
8	-4.53E-005	-3.12E-003
9	-4.25E-005	-3.14E-003
10	-3.78E-005	-3.15E-003
11	-2.15E-005	-3.16E-003
12	7.63E-006	-3.17E-003
13	1.23E-005	-3.17E-003
14	1.48E-005	-3.19E-003
15	2.41E-005	-3.46E-003
16	3.35E-005	-3.61E-003
17	4.28E-005	-3.36E-003
18	5.21E-005	-3.02E-003
19	5.46E-005	-2.97E-003
20	3.90E-005	-2.97E-003
21	2.76E-004	-2.96E-003
22	4.59E-004	-2.95E-003
23	2.61E-004	-2.94E-003
24	-3.51E-005	-2.93E-003
25	2.65E-005	-3.10E-003
26	2.33E-005	-3.00E-003
27	1.17E-005	-2.60E-003
28	-2.54E-011	-2.36E-003
29	-1.17E-005	-2.60E-003
30	-2.33E-005	-3.00E-003
31	-2.65E-005	-3.10E-003
32	4.13E-005	-3.11E-003
33	4.62E-005	-3.12E-003
34	3.68E-005	-3.13E-003
35	2.12E-005	-3.14E-003
36	3.18E-006	-3.15E-003
37	-2.04E-005	-3.15E-003
38	-1.79E-005	-3.21E-003
39	-8.63E-006	-3.53E-003
40	6.85E-007	-3.73E-003
41	1.00E-005	-3.53E-003
42	1.93E-005	-3.20E-003
43	2.18E-005	-3.15E-003
44	-1.95E-006	-3.15E-003
45	-1.89E-005	-3.14E-003
46	-3.35E-005	-3.13E-003
47	-4.41E-005	-3.12E-003
48	-4.08E-005	-3.11E-003
49	1.10E-004	-3.12E-003

50	1.07E-004	-3.03E-003
51	9.48E-005	-2.63E-003
52	8.32E-005	-2.40E-003
53	7.15E-005	-2.60E-003
54	5.99E-005	-2.91E-003
55	5.67E-005	-2.93E-003
56	3.72E-005	-2.93E-003
57	-2.59E-004	-2.94E-003
58	-4.57E-004	-2.95E-003
59	-2.74E-004	-2.96E-003
60	-3.74E-005	-2.97E-003
61	-5.32E-005	-2.97E-003
62	-5.07E-005	-3.02E-003
63	-4.14E-005	-3.36E-003
64	-3.21E-005	-3.61E-003
65	-2.28E-005	-3.46E-003
66	-1.35E-005	-3.19E-003
67	-1.10E-005	-3.17E-003
68	-6.35E-006	-3.17E-003
69	2.15E-005	-3.16E-003
70	3.65E-005	-3.15E-003
71	4.24E-005	-3.14E-003
72	4.67E-005	-3.13E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	-1.78E-006
2	1.60E-004
3	6.82E-004
4	-1.66E-005
5	-7.76E-004
6	-4.30E-004
7	-2.87E-004
8	-1.54E-004
9	2.69E-006
10	-2.03E-005
11	-4.14E-005
12	-5.18E-005
13	2.54E-005
14	1.64E-004
15	5.76E-004
16	-9.47E-005
17	-7.44E-004
18	-2.67E-004
19	-1.21E-004
20	2.90E-005
21	5.95E-004
22	-2.92E-006
23	-6.64E-004
24	-1.62E-004
25	3.06E-004
26	4.50E-004
27	7.99E-004
28	-6.97E-008
29	-8.00E-004

30	-4.52E-004
31	-3.08E-004
32	-1.73E-004
33	1.37E-005
34	2.30E-005
35	3.74E-005
36	4.98E-005
37	1.29E-004
38	2.69E-004
39	6.86E-004
40	-6.61E-007
41	-6.87E-004
42	-2.70E-004
43	-1.30E-004
44	-5.03E-005
45	-3.20E-005
46	-2.39E-005
47	-1.69E-005
48	1.71E-004
49	2.89E-004
50	4.32E-004
51	7.77E-004
52	1.66E-005
53	-6.82E-004
54	-1.60E-004
55	1.56E-006
56	1.61E-004
57	6.64E-004
58	3.18E-006
59	-5.94E-004
60	-2.83E-005
61	1.22E-004
62	2.67E-004
63	7.44E-004
64	9.54E-005
65	-5.75E-004
66	-1.64E-004
67	-2.56E-005
68	5.16E-005
69	3.55E-005
70	2.09E-005
71	4.86E-007
72	1.56E-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	-1.38E-003	-4.88E-003
2	-1.39E-003	-4.44E-003
3	-1.40E-003	-3.55E-003
4	-1.40E-003	-3.31E-003
5	-1.41E-003	-4.15E-003
6	-1.42E-003	-5.60E-003
7	-1.42E-003	-6.29E-003
8	-7.83E-004	-6.29E-003
9	-1.79E-004	-6.31E-003
10	-1.13E-004	-6.33E-003
11	-8.56E-006	-6.35E-003
12	3.16E-005	-6.37E-003
13	-1.44E-005	-6.37E-003
14	-1.28E-005	-6.47E-003
15	-6.81E-006	-7.09E-003
16	-8.44E-007	-7.48E-003
17	5.12E-006	-6.91E-003
18	1.11E-005	-5.63E-003
19	1.27E-005	-4.95E-003
20	-6.38E-004	-4.94E-003
21	-1.47E-003	-4.93E-003
22	-1.88E-003	-4.91E-003
23	-2.06E-003	-4.90E-003
24	-1.78E-003	-4.88E-003
25	1.90E-005	-5.30E-003
26	1.67E-005	-4.89E-003
27	8.37E-006	-3.92E-003
28	-1.07E-010	-3.45E-003
29	-8.37E-006	-3.92E-003
30	-1.67E-005	-4.89E-003
31	-1.90E-005	-5.30E-003
32	3.39E-004	-5.30E-003
33	4.41E-004	-5.32E-003
34	1.16E-004	-5.34E-003
35	-1.10E-005	-5.36E-003
36	-1.93E-005	-5.37E-003
37	-1.55E-005	-5.38E-003
38	-1.40E-005	-5.42E-003
39	-8.36E-006	-5.89E-003
40	-2.74E-006	-6.20E-003
41	2.87E-006	-5.89E-003
42	8.49E-006	-5.42E-003
43	1.00E-005	-5.38E-003
44	1.40E-005	-5.38E-003
45	1.74E-005	-5.36E-003
46	-1.20E-004	-5.34E-003
47	-4.49E-004	-5.33E-003
48	-3.41E-004	-5.31E-003
49	1.41E-003	-6.28E-003

50	1.41E-003	-5.59E-003
51	1.40E-003	-4.15E-003
52	1.39E-003	-3.32E-003
53	1.39E-003	-3.55E-003
54	1.38E-003	-4.44E-003
55	1.38E-003	-4.88E-003
56	1.77E-003	-4.88E-003
57	2.05E-003	-4.90E-003
58	1.87E-003	-4.91E-003
59	1.46E-003	-4.93E-003
60	6.32E-004	-4.94E-003
61	-1.83E-005	-4.95E-003
62	-1.67E-005	-5.63E-003
63	-1.07E-005	-6.91E-003
64	-4.75E-006	-7.47E-003
65	1.21E-006	-7.09E-003
66	7.18E-006	-6.47E-003
67	8.78E-006	-6.37E-003
68	-3.64E-005	-6.36E-003
69	-6.56E-006	-6.34E-003
70	1.09E-004	-6.32E-003
71	1.79E-004	-6.31E-003
72	7.77E-004	-6.29E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.52E-003
2	1.66E-003
3	1.33E-003
4	-5.70E-004
5	-2.46E-003
6	-2.60E-003
7	-2.42E-003
8	-2.18E-003
9	-3.97E-004
10	-9.15E-005
11	-2.09E-004
12	8.83E-005
13	2.52E-004
14	5.15E-004
15	1.33E-003
16	-9.61E-005
17	-1.98E-003
18	-2.54E-003
19	-2.43E-003
20	-2.27E-003
21	-1.07E-003
22	-5.68E-004
23	-4.30E-005
24	1.33E-003
25	1.41E-003
26	1.59E-003
27	1.66E-003
28	-2.57E-009
29	-1.65E-003

30	-1.58E-003
31	-1.40E-003
32	-1.16E-003
33	4.76E-004
34	4.99E-004
35	1.09E-004
36	-6.95E-005
37	5.64E-005
38	2.89E-004
39	1.04E-003
40	2.76E-006
41	-1.03E-003
42	-2.87E-004
43	-5.55E-005
44	6.95E-005
45	-7.22E-005
46	-5.31E-004
47	-4.68E-004
48	1.17E-003
49	2.41E-003
50	2.59E-003
51	2.46E-003
52	5.70E-004
53	-1.33E-003
54	-1.65E-003
55	-1.51E-003
56	-1.32E-003
57	4.32E-005
58	5.67E-004
59	1.06E-003
60	2.27E-003
61	2.43E-003
62	2.54E-003
63	1.98E-003
64	9.34E-005
65	-1.33E-003
66	-5.12E-004
67	-2.50E-004
68	-8.49E-005
69	1.75E-004
70	1.24E-004
71	3.89E-004
72	2.17E-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	-4.18E-003	-4.71E-003
2	-4.18E-003	-4.11E-003
3	-4.18E-003	-3.06E-003
4	-4.19E-003	-2.92E-003
5	-4.19E-003	-4.20E-003
6	-4.19E-003	-6.63E-003
7	-4.19E-003	-8.01E-003
8	-2.85E-003	-8.02E-003
9	-1.39E-003	-8.06E-003
10	-1.02E-003	-8.10E-003
11	-8.16E-004	-8.14E-003
12	-6.30E-004	-8.18E-003
13	-6.17E-004	-8.19E-003
14	-6.16E-004	-8.25E-003
15	-6.14E-004	-8.79E-003
16	-6.13E-004	-8.98E-003
17	-6.11E-004	-8.00E-003
18	-6.09E-004	-5.97E-003
19	-6.09E-004	-4.78E-003
20	-1.78E-003	-4.77E-003
21	-3.63E-003	-4.76E-003
22	-4.79E-003	-4.74E-003
23	-5.22E-003	-4.73E-003
24	-4.74E-003	-4.71E-003
25	7.03E-006	-5.82E-003
26	6.20E-006	-5.12E-003
27	3.10E-006	-3.75E-003
28	-3.57E-010	-3.14E-003
29	-3.10E-006	-3.76E-003
30	-6.20E-006	-5.23E-003
31	-7.03E-006	-6.02E-003
32	7.30E-004	-6.03E-003
33	1.00E-003	-6.07E-003
34	2.60E-004	-6.10E-003
35	-3.52E-004	-6.13E-003
36	-5.61E-004	-6.17E-003
37	-5.89E-004	-6.17E-003
38	-5.88E-004	-6.26E-003
39	-5.88E-004	-6.76E-003
40	-5.87E-004	-7.01E-003
41	-5.86E-004	-6.60E-003
42	-5.85E-004	-6.01E-003
43	-5.85E-004	-5.90E-003
44	-6.50E-004	-5.89E-003
45	-8.07E-004	-5.87E-003
46	-1.06E-003	-5.86E-003
47	-1.22E-003	-5.84E-003
48	-6.49E-004	-5.82E-003
49	4.20E-003	-7.99E-003

50	4.20E-003	-6.67E-003
51	4.19E-003	-4.27E-003
52	4.19E-003	-2.92E-003
53	4.19E-003	-2.98E-003
54	4.19E-003	-4.08E-003
55	4.19E-003	-4.75E-003
56	4.82E-003	-4.76E-003
57	5.20E-003	-4.79E-003
58	4.43E-003	-4.81E-003
59	2.90E-003	-4.84E-003
60	7.47E-004	-4.87E-003
61	-5.66E-004	-4.87E-003
62	-5.65E-004	-6.20E-003
63	-5.64E-004	-8.32E-003
64	-5.62E-004	-9.19E-003
65	-5.61E-004	-8.83E-003
66	-5.59E-004	-8.17E-003
67	-5.59E-004	-8.09E-003
68	-5.79E-004	-8.08E-003
69	-3.50E-004	-8.06E-003
70	2.24E-004	-8.04E-003
71	1.16E-003	-8.02E-003
72	2.92E-003	-8.00E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	2.11E-003
2	2.21E-003
3	1.41E-003
4	-1.04E-003
5	-3.75E-003
6	-5.08E-003
7	-5.00E-003
8	-4.64E-003
9	-1.33E-003
10	-3.38E-004
11	-4.41E-004
12	-1.93E-004
13	1.16E-004
14	3.82E-004
15	1.10E-003
16	-6.42E-004
17	-3.05E-003
18	-4.35E-003
19	-4.31E-003
20	-4.19E-003
21	-2.87E-003
22	-1.56E-003
23	-1.88E-005
24	1.93E-003
25	2.48E-003
26	2.62E-003
27	2.16E-003
28	6.75E-006
29	-2.23E-003

30	-2.95E-003
31	-2.84E-003
32	-2.44E-003
33	9.38E-004
34	1.54E-003
35	7.84E-004
36	2.16E-005
37	2.23E-004
38	4.39E-004
39	1.01E-003
40	-1.58E-004
41	-1.27E-003
42	-5.35E-004
43	-3.01E-004
44	-1.87E-004
45	-4.06E-004
46	-5.36E-004
47	1.47E-004
48	2.25E-003
49	4.75E-003
50	4.86E-003
51	3.84E-003
52	1.21E-003
53	-1.34E-003
54	-2.47E-003
55	-2.41E-003
56	-2.14E-003
57	5.21E-004
58	2.28E-003
59	3.52E-003
60	4.70E-003
61	4.82E-003
62	4.80E-003
63	3.00E-003
64	3.24E-004
65	-1.43E-003
66	-4.73E-004
67	-1.75E-004
68	2.71E-005
69	8.01E-004
70	1.35E-003
71	2.36E-003
72	4.52E-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	-8.40E-005	-2.93E-003
2	-8.71E-005	-2.91E-003
3	-9.88E-005	-2.59E-003
4	-1.10E-004	-2.39E-003
5	-1.22E-004	-2.63E-003
6	-1.34E-004	-3.05E-003
7	-1.37E-004	-3.18E-003
8	-5.87E-005	-3.19E-003
9	-1.09E-004	-3.21E-003
10	-1.21E-004	-3.23E-003
11	-9.32E-005	-3.25E-003
12	-3.70E-005	-3.27E-003
13	-1.86E-005	-3.28E-003
14	-1.61E-005	-3.30E-003
15	-6.76E-006	-3.55E-003
16	2.57E-006	-3.67E-003
17	1.19E-005	-3.40E-003
18	2.12E-005	-3.04E-003
19	2.37E-005	-2.98E-003
20	-9.98E-007	-2.98E-003
21	2.25E-004	-2.97E-003
22	4.06E-004	-2.96E-003
23	2.14E-004	-2.95E-003
24	-7.15E-005	-2.94E-003
25	2.65E-005	-3.13E-003
26	2.33E-005	-3.02E-003
27	1.17E-005	-2.58E-003
28	-2.20E-011	-2.34E-003
29	-1.17E-005	-2.58E-003
30	-2.33E-005	-3.03E-003
31	-2.65E-005	-3.17E-003
32	6.01E-005	-3.17E-003
33	1.49E-005	-3.19E-003
34	-1.22E-005	-3.22E-003
35	-2.54E-005	-3.24E-003
36	-3.13E-005	-3.26E-003
37	-5.02E-005	-3.26E-003
38	-4.77E-005	-3.32E-003
39	-3.84E-005	-3.64E-003
40	-2.91E-005	-3.83E-003
41	-1.97E-005	-3.60E-003
42	-1.04E-005	-3.25E-003
43	-7.93E-006	-3.18E-003
44	-4.70E-005	-3.18E-003
45	-8.94E-005	-3.17E-003
46	-1.05E-004	-3.16E-003
47	-9.58E-005	-3.15E-003
48	-5.91E-005	-3.14E-003
49	1.37E-004	-3.16E-003

50	1.34E-004	-3.05E-003
51	1.22E-004	-2.64E-003
52	1.11E-004	-2.40E-003
53	9.90E-005	-2.59E-003
54	8.73E-005	-2.89E-003
55	8.42E-005	-2.90E-003
56	4.18E-005	-2.91E-003
57	-5.56E-004	-2.93E-003
58	-9.53E-004	-2.96E-003
59	-5.75E-004	-2.98E-003
60	-7.21E-005	-3.00E-003
61	-8.17E-005	-3.00E-003
62	-7.92E-005	-3.06E-003
63	-6.99E-005	-3.42E-003
64	-6.06E-005	-3.67E-003
65	-5.13E-005	-3.51E-003
66	-4.20E-005	-3.24E-003
67	-3.95E-005	-3.21E-003
68	-4.13E-005	-3.21E-003
69	-2.50E-005	-3.20E-003
70	-2.33E-006	-3.19E-003
71	2.58E-005	-3.18E-003
72	5.97E-005	-3.16E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	2.40E-005
2	1.85E-004
3	7.02E-004
4	-1.66E-005
5	-8.16E-004
6	-5.36E-004
7	-3.99E-004
8	-1.48E-004
9	7.26E-005
10	-2.10E-005
11	-7.82E-005
12	-1.26E-004
13	1.23E-005
14	1.48E-004
15	5.38E-004
16	-1.43E-004
17	-7.91E-004
18	-3.02E-004
19	-1.55E-004
20	-3.18E-006
21	5.83E-004
22	1.38E-006
23	-6.47E-004
24	-1.36E-004
25	3.71E-004
26	5.14E-004
27	8.35E-004
28	2.47E-006
29	-8.45E-004

30	-5.69E-004
31	-4.31E-004
32	-1.76E-004
33	8.05E-005
34	3.05E-005
35	2.76E-005
36	7.34E-006
37	1.49E-004
38	2.86E-004
39	6.70E-004
40	-4.01E-005
41	-7.39E-004
42	-3.24E-004
43	-1.84E-004
44	-1.09E-004
45	-5.68E-005
46	-4.00E-006
47	3.59E-005
48	2.38E-004
49	3.41E-004
50	4.82E-004
51	8.03E-004
52	2.97E-005
53	-6.72E-004
54	-1.46E-004
55	1.52E-005
56	3.35E-004
57	1.34E-003
58	-2.62E-006
59	-1.23E-003
60	-1.34E-004
61	1.62E-004
62	3.06E-004
63	7.61E-004
64	9.49E-005
65	-5.88E-004
66	-1.85E-004
67	-4.69E-005
68	2.48E-005
69	3.17E-005
70	5.16E-005
71	5.24E-005
72	2.11E-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	-1.73E-003	-4.91E-003
2	-1.73E-003	-4.44E-003
3	-1.74E-003	-3.48E-003
4	-1.75E-003	-3.21E-003
5	-1.75E-003	-4.11E-003
6	-1.76E-003	-5.78E-003
7	-1.76E-003	-6.65E-003
8	-9.58E-004	-6.66E-003
9	-3.72E-004	-6.70E-003
10	-5.20E-004	-6.74E-003
11	-4.63E-004	-6.78E-003
12	-3.85E-004	-6.81E-003
13	-4.09E-004	-6.82E-003
14	-4.07E-004	-6.92E-003
15	-4.01E-004	-7.49E-003
16	-3.95E-004	-7.77E-003
17	-3.89E-004	-7.09E-003
18	-3.83E-004	-5.71E-003
19	-3.81E-004	-4.98E-003
20	-1.07E-003	-4.98E-003
21	-1.95E-003	-4.96E-003
22	-2.37E-003	-4.95E-003
23	-2.51E-003	-4.93E-003
24	-2.16E-003	-4.92E-003
25	1.91E-005	-5.42E-003
26	1.68E-005	-4.94E-003
27	8.42E-006	-3.86E-003
28	-1.57E-010	-3.35E-003
29	-8.42E-006	-3.88E-003
30	-1.68E-005	-5.03E-003
31	-1.91E-005	-5.59E-003
32	4.70E-004	-5.60E-003
33	4.61E-004	-5.64E-003
34	-1.77E-004	-5.67E-003
35	-4.25E-004	-5.70E-003
36	-4.34E-004	-5.74E-003
37	-4.07E-004	-5.75E-003
38	-4.06E-004	-5.78E-003
39	-4.00E-004	-6.21E-003
40	-3.94E-004	-6.47E-003
41	-3.89E-004	-6.09E-003
42	-3.83E-004	-5.57E-003
43	-3.82E-004	-5.50E-003
44	-4.03E-004	-5.49E-003
45	-4.35E-004	-5.48E-003
46	-5.26E-004	-5.46E-003
47	-6.99E-004	-5.44E-003
48	-4.17E-004	-5.43E-003
49	1.78E-003	-6.62E-003

50	1.78E-003	-5.81E-003
51	1.77E-003	-4.17E-003
52	1.76E-003	-3.23E-003
53	1.75E-003	-3.43E-003
54	1.74E-003	-4.38E-003
55	1.74E-003	-4.88E-003
56	2.19E-003	-4.89E-003
57	2.29E-003	-4.92E-003
58	1.84E-003	-4.95E-003
59	1.32E-003	-4.98E-003
60	3.86E-004	-5.01E-003
61	-4.08E-004	-5.02E-003
62	-4.06E-004	-5.85E-003
63	-4.00E-004	-7.33E-003
64	-3.94E-004	-7.94E-003
65	-3.88E-004	-7.52E-003
66	-3.82E-004	-6.84E-003
67	-3.81E-004	-6.71E-003
68	-4.52E-004	-6.70E-003
69	-4.21E-004	-6.69E-003
70	-1.84E-004	-6.67E-003
71	1.40E-004	-6.65E-003
72	1.01E-003	-6.63E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.66E-003
2	1.80E-003
3	1.44E-003
4	-5.80E-004
5	-2.71E-003
6	-3.24E-003
7	-3.10E-003
8	-2.69E-003
9	-2.21E-005
10	1.97E-004
11	-2.46E-004
12	-3.76E-005
13	2.39E-004
14	4.88E-004
15	1.18E-003
16	-3.11E-004
17	-2.20E-003
18	-2.70E-003
19	-2.58E-003
20	-2.42E-003
21	-1.11E-003
22	-5.30E-004
23	5.64E-005
24	1.47E-003
25	1.68E-003
26	1.86E-003
27	1.80E-003
28	-6.35E-006
29	-1.87E-003

30	-2.11E-003
31	-1.95E-003
32	-1.54E-003
33	1.05E-003
34	9.50E-004
35	2.10E-004
36	-1.91E-004
37	3.13E-005
38	2.57E-004
39	9.45E-004
40	-1.22E-004
41	-1.16E-003
42	-3.82E-004
43	-1.46E-004
44	-2.69E-005
45	-8.01E-005
46	-3.28E-004
47	-1.16E-004
48	1.45E-003
49	2.87E-003
50	3.04E-003
51	2.75E-003
52	7.06E-004
53	-1.35E-003
54	-1.88E-003
55	-1.77E-003
56	-1.44E-003
57	6.20E-004
58	9.39E-004
59	1.16E-003
60	2.74E-003
61	2.99E-003
62	3.07E-003
63	2.19E-003
64	8.73E-005
65	-1.44E-003
66	-6.14E-004
67	-3.45E-004
68	-1.78E-004
69	2.87E-004
70	4.96E-004
71	9.37E-004
72	2.64E-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	-1.03E-003	-3.51E-003
2	-1.03E-003	-3.18E-003
3	-1.04E-003	-2.53E-003
4	-1.04E-003	-2.36E-003
5	-1.05E-003	-2.97E-003
6	-1.06E-003	-4.04E-003
7	-1.06E-003	-4.55E-003
8	-5.82E-004	-4.55E-003
9	-1.31E-004	-4.57E-003
10	-8.16E-005	-4.58E-003
11	-4.56E-006	-4.59E-003
12	2.32E-005	-4.60E-003
13	-1.17E-005	-4.61E-003
14	-1.07E-005	-4.68E-003
15	-6.89E-006	-5.13E-003
16	-3.10E-006	-5.41E-003
17	6.94E-007	-5.00E-003
18	4.48E-006	-4.06E-003
19	5.51E-006	-3.55E-003
20	-4.81E-004	-3.55E-003
21	-1.12E-003	-3.54E-003
22	-1.44E-003	-3.53E-003
23	-1.56E-003	-3.52E-003
24	-1.33E-003	-3.51E-003
25	1.28E-005	-3.81E-003
26	1.13E-005	-3.51E-003
27	5.65E-006	-2.81E-003
28	-7.85E-011	-2.47E-003
29	-5.65E-006	-2.81E-003
30	-1.13E-005	-3.51E-003
31	-1.28E-005	-3.81E-003
32	2.51E-004	-3.81E-003
33	3.26E-004	-3.83E-003
34	8.39E-005	-3.84E-003
35	-9.99E-006	-3.85E-003
36	-1.47E-005	-3.86E-003
37	-1.00E-005	-3.87E-003
38	-9.09E-006	-3.89E-003
39	-5.57E-006	-4.22E-003
40	-2.04E-006	-4.44E-003
41	1.49E-006	-4.22E-003
42	5.02E-006	-3.90E-003
43	5.97E-006	-3.87E-003
44	1.07E-005	-3.87E-003
45	1.48E-005	-3.85E-003
46	-8.65E-005	-3.84E-003
47	-3.32E-004	-3.83E-003
48	-2.52E-004	-3.82E-003
49	1.05E-003	-4.54E-003

50	1.05E-003	-4.04E-003
51	1.04E-003	-2.97E-003
52	1.04E-003	-2.36E-003
53	1.03E-003	-2.53E-003
54	1.03E-003	-3.18E-003
55	1.03E-003	-3.50E-003
56	1.32E-003	-3.51E-003
57	1.55E-003	-3.52E-003
58	1.43E-003	-3.53E-003
59	1.11E-003	-3.54E-003
60	4.76E-004	-3.55E-003
61	-9.66E-006	-3.55E-003
62	-8.64E-006	-4.06E-003
63	-4.85E-006	-5.00E-003
64	-1.06E-006	-5.40E-003
65	2.73E-006	-5.13E-003
66	6.52E-006	-4.68E-003
67	7.54E-006	-4.60E-003
68	-2.68E-005	-4.60E-003
69	-6.68E-006	-4.59E-003
70	7.83E-005	-4.58E-003
71	1.31E-004	-4.56E-003
72	5.78E-004	-4.55E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.14E-003
2	1.23E-003
3	9.63E-004
4	-4.26E-004
5	-1.80E-003
6	-1.92E-003
7	-1.80E-003
8	-1.62E-003
9	-2.97E-004
10	-6.73E-005
11	-1.53E-004
12	7.03E-005
13	1.88E-004
14	3.75E-004
15	9.59E-004
16	-6.49E-005
17	-1.43E-003
18	-1.89E-003
19	-1.82E-003
20	-1.71E-003
21	-8.36E-004
22	-4.23E-004
23	1.05E-005
24	1.01E-003
25	1.03E-003
26	1.17E-003
27	1.20E-003
28	-1.91E-009
29	-1.19E-003

30	-1.16E-003
31	-1.03E-003
32	-8.56E-004
33	3.56E-004
34	3.72E-004
35	7.85E-005
36	-5.61E-005
37	3.30E-005
38	1.98E-004
39	7.32E-004
40	2.05E-006
41	-7.28E-004
42	-1.97E-004
43	-3.23E-005
44	5.60E-005
45	-5.13E-005
46	-3.95E-004
47	-3.50E-004
48	8.63E-004
49	1.79E-003
50	1.92E-003
51	1.80E-003
52	4.26E-004
53	-9.62E-004
54	-1.23E-003
55	-1.14E-003
56	-1.00E-003
57	-1.04E-005
58	4.22E-004
59	8.34E-004
60	1.70E-003
61	1.81E-003
62	1.88E-003
63	1.43E-003
64	6.28E-005
65	-9.60E-004
66	-3.74E-004
67	-1.86E-004
68	-6.78E-005
69	1.28E-004
70	9.15E-005
71	2.91E-004
72	1.61E-003

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

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-5.42E-004	-3.01E-003
2	-5.44E-004	-2.87E-003
3	-5.53E-004	-2.44E-003
4	-5.61E-004	-2.26E-003
5	-5.70E-004	-2.64E-003
6	-5.78E-004	-3.32E-003
7	-5.81E-004	-3.61E-003
8	-3.25E-004	-3.61E-003
9	-7.02E-005	-3.63E-003
10	-1.38E-005	-3.64E-003
11	-2.98E-005	-3.65E-003
12	-1.70E-005	-3.66E-003
13	-2.69E-005	-3.66E-003
14	-2.51E-005	-3.70E-003
15	-1.86E-005	-4.02E-003
16	-1.20E-005	-4.20E-003
17	-5.50E-006	-3.88E-003
18	1.04E-006	-3.30E-003
19	2.80E-006	-3.05E-003
20	-2.13E-004	-3.05E-003
21	-3.64E-004	-3.04E-003
22	-4.12E-004	-3.03E-003
23	-5.81E-004	-3.02E-003
24	-6.53E-004	-3.01E-003
25	1.95E-005	-3.29E-003
26	1.72E-005	-3.09E-003
27	8.61E-006	-2.55E-003
28	-4.62E-011	-2.28E-003
29	-8.61E-006	-2.55E-003
30	-1.72E-005	-3.06E-003
31	-1.95E-005	-3.24E-003
32	1.26E-004	-3.24E-003
33	1.58E-004	-3.25E-003
34	4.83E-005	-3.26E-003
35	-6.23E-006	-3.27E-003
36	-2.77E-005	-3.28E-003
37	-4.42E-005	-3.29E-003
38	-4.24E-005	-3.33E-003
39	-3.60E-005	-3.65E-003
40	-2.96E-005	-3.87E-003
41	-2.32E-005	-3.68E-003
42	-1.67E-005	-3.38E-003
43	-1.50E-005	-3.34E-003
44	-2.65E-005	-3.34E-003
45	-5.39E-005	-3.33E-003
46	-1.67E-004	-3.32E-003
47	-2.46E-004	-3.31E-003
48	-1.50E-004	-3.29E-003
49	4.92E-004	-3.56E-003

50	4.90E-004	-3.30E-003
51	4.82E-004	-2.65E-003
52	4.73E-004	-2.27E-003
53	4.65E-004	-2.45E-003
54	4.56E-004	-2.87E-003
55	4.54E-004	-3.01E-003
56	5.61E-004	-3.01E-003
57	4.87E-004	-3.02E-003
58	3.22E-004	-3.03E-003
59	2.82E-004	-3.04E-003
60	1.46E-004	-3.05E-003
61	-6.16E-005	-3.06E-003
62	-5.98E-005	-3.29E-003
63	-5.33E-005	-3.85E-003
64	-4.67E-005	-4.15E-003
65	-4.02E-005	-3.96E-003
66	-3.36E-005	-3.65E-003
67	-3.19E-005	-3.61E-003
68	-3.78E-005	-3.61E-003
69	-4.71E-006	-3.60E-003
70	4.60E-005	-3.58E-003
71	7.54E-005	-3.57E-003
72	2.64E-004	-3.56E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	4.62E-004
2	5.89E-004
3	7.65E-004
4	-1.90E-004
5	-1.19E-003
6	-1.11E-003
7	-9.89E-004
8	-8.51E-004
9	-2.52E-004
10	-5.21E-007
11	2.36E-005
12	-6.19E-006
13	8.37E-005
14	2.32E-004
15	6.74E-004
16	-1.11E-004
17	-1.02E-003
18	-9.46E-004
19	-8.39E-004
20	-7.14E-004
21	-5.42E-005
22	-2.03E-004
23	-3.72E-004
24	3.20E-004
25	6.76E-004
26	8.02E-004
27	9.52E-004
28	2.31E-006
29	-9.28E-004

30	-7.23E-004
31	-5.91E-004
32	-4.47E-004
33	1.60E-004
34	1.77E-004
35	6.90E-005
36	2.44E-005
37	1.04E-004
38	2.47E-004
39	6.94E-004
40	2.88E-005
41	-6.46E-004
42	-2.25E-004
43	-8.49E-005
44	-6.26E-006
45	-1.59E-004
46	-2.27E-004
47	-3.39E-005
48	5.38E-004
49	8.93E-004
50	1.02E-003
51	1.16E-003
52	1.88E-004
53	-7.54E-004
54	-5.78E-004
55	-4.51E-004
56	-3.10E-004
57	3.71E-004
58	1.92E-004
59	3.26E-005
60	6.81E-004
61	8.06E-004
62	9.12E-004
63	9.83E-004
64	8.19E-005
65	-6.87E-004
66	-2.20E-004
67	-6.92E-005
68	2.05E-005
69	8.84E-005
70	6.07E-005
71	1.26E-004
72	7.50E-004

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

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-9.81E-004	-3.49E-003
2	-9.83E-004	-3.18E-003
3	-9.88E-004	-2.55E-003
4	-9.94E-004	-2.38E-003
5	-1.00E-003	-2.97E-003
6	-1.01E-003	-4.00E-003
7	-1.01E-003	-4.49E-003
8	-5.55E-004	-4.49E-003
9	-1.27E-004	-4.51E-003
10	-8.09E-005	-4.52E-003
11	-6.76E-006	-4.53E-003
12	2.21E-005	-4.55E-003
13	-1.01E-005	-4.55E-003
14	-8.97E-006	-4.62E-003
15	-4.73E-006	-5.06E-003
16	-4.93E-007	-5.33E-003
17	3.75E-006	-4.93E-003
18	7.99E-006	-4.02E-003
19	9.13E-006	-3.54E-003
20	-4.50E-004	-3.54E-003
21	-1.04E-003	-3.53E-003
22	-1.33E-003	-3.52E-003
23	-1.46E-003	-3.51E-003
24	-1.26E-003	-3.50E-003
25	1.37E-005	-3.80E-003
26	1.21E-005	-3.51E-003
27	6.04E-006	-2.81E-003
28	-7.63E-011	-2.48E-003
29	-6.04E-006	-2.81E-003
30	-1.21E-005	-3.50E-003
31	-1.37E-005	-3.79E-003
32	2.40E-004	-3.80E-003
33	3.13E-004	-3.81E-003
34	8.31E-005	-3.82E-003
35	-7.10E-006	-3.83E-003
36	-1.34E-005	-3.85E-003
37	-1.10E-005	-3.85E-003
38	-9.92E-006	-3.88E-003
39	-5.93E-006	-4.21E-003
40	-1.94E-006	-4.43E-003
41	2.05E-006	-4.21E-003
42	6.04E-006	-3.88E-003
43	7.12E-006	-3.85E-003
44	9.68E-006	-3.85E-003
45	1.17E-005	-3.84E-003
46	-8.55E-005	-3.82E-003
47	-3.18E-004	-3.81E-003
48	-2.42E-004	-3.80E-003
49	1.00E-003	-4.49E-003

50	1.00E-003	-4.00E-003
51	9.94E-004	-2.97E-003
52	9.88E-004	-2.38E-003
53	9.83E-004	-2.55E-003
54	9.77E-004	-3.18E-003
55	9.75E-004	-3.49E-003
56	1.26E-003	-3.50E-003
57	1.45E-003	-3.51E-003
58	1.32E-003	-3.52E-003
59	1.03E-003	-3.53E-003
60	4.46E-004	-3.54E-003
61	-1.31E-005	-3.54E-003
62	-1.19E-005	-4.02E-003
63	-7.71E-006	-4.93E-003
64	-3.47E-006	-5.33E-003
65	7.71E-007	-5.06E-003
66	5.01E-006	-4.62E-003
67	6.15E-006	-4.55E-003
68	-2.55E-005	-4.54E-003
69	-3.95E-006	-4.53E-003
70	7.78E-005	-4.52E-003
71	1.27E-004	-4.50E-003
72	5.51E-004	-4.49E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.07E-003
2	1.18E-003
3	9.53E-004
4	-4.02E-004
5	-1.75E-003
6	-1.85E-003
7	-1.72E-003
8	-1.54E-003
9	-2.81E-004
10	-6.49E-005
11	-1.49E-004
12	6.14E-005
13	1.77E-004
14	3.63E-004
15	9.40E-004
16	-6.86E-005
17	-1.40E-003
18	-1.79E-003
19	-1.72E-003
20	-1.60E-003
21	-7.52E-004
22	-4.05E-004
23	-3.70E-005
24	9.39E-004
25	1.00E-003
26	1.13E-003
27	1.18E-003
28	-1.82E-009
29	-1.18E-003

30	-1.13E-003
31	-9.94E-004
32	-8.23E-004
33	3.37E-004
34	3.54E-004
35	7.77E-005
36	-4.82E-005
37	4.10E-005
38	2.05E-004
39	7.36E-004
40	1.95E-006
41	-7.32E-004
42	-2.04E-004
43	-4.03E-005
44	4.81E-005
45	-5.17E-005
46	-3.76E-004
47	-3.31E-004
48	8.29E-004
49	1.71E-003
50	1.84E-003
51	1.75E-003
52	4.02E-004
53	-9.52E-004
54	-1.17E-003
55	-1.07E-003
56	-9.38E-004
57	3.71E-005
58	4.04E-004
59	7.50E-004
60	1.60E-003
61	1.71E-003
62	1.79E-003
63	1.40E-003
64	6.67E-005
65	-9.41E-004
66	-3.61E-004
67	-1.76E-004
68	-5.90E-005
69	1.24E-004
70	8.80E-005
71	2.75E-004
72	1.54E-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	-8.43E-004	-3.12E-003
2	-8.44E-004	-2.85E-003
3	-8.49E-004	-2.29E-003
4	-8.55E-004	-2.14E-003
5	-8.60E-004	-2.65E-003
6	-8.66E-004	-3.55E-003
7	-8.67E-004	-3.97E-003
8	-4.77E-004	-3.98E-003
9	-1.11E-004	-3.99E-003
10	-7.07E-005	-4.00E-003
11	-6.71E-006	-4.01E-003
12	1.89E-005	-4.02E-003
13	-8.48E-006	-4.03E-003
14	-7.45E-006	-4.09E-003
15	-3.65E-006	-4.47E-003
16	1.58E-007	-4.70E-003
17	3.96E-006	-4.36E-003
18	7.77E-006	-3.57E-003
19	8.79E-006	-3.16E-003
20	-3.84E-004	-3.16E-003
21	-8.80E-004	-3.15E-003
22	-1.13E-003	-3.14E-003
23	-1.24E-003	-3.13E-003
24	-1.08E-003	-3.12E-003
25	1.27E-005	-3.38E-003
26	1.12E-005	-3.13E-003
27	5.59E-006	-2.52E-003
28	-6.63E-011	-2.22E-003
29	-5.59E-006	-2.52E-003
30	-1.12E-005	-3.13E-003
31	-1.27E-005	-3.38E-003
32	2.07E-004	-3.38E-003
33	2.70E-004	-3.39E-003
34	7.26E-005	-3.40E-003
35	-5.20E-006	-3.41E-003
36	-1.13E-005	-3.42E-003
37	-9.82E-006	-3.43E-003
38	-8.85E-006	-3.45E-003
39	-5.26E-006	-3.74E-003
40	-1.67E-006	-3.94E-003
41	1.93E-006	-3.74E-003
42	5.52E-006	-3.46E-003
43	6.49E-006	-3.43E-003
44	8.04E-006	-3.43E-003
45	9.11E-006	-3.42E-003
46	-7.47E-005	-3.40E-003
47	-2.75E-004	-3.39E-003
48	-2.09E-004	-3.38E-003
49	8.62E-004	-3.97E-003

50	8.61E-004	-3.55E-003
51	8.55E-004	-2.66E-003
52	8.50E-004	-2.14E-003
53	8.44E-004	-2.29E-003
54	8.39E-004	-2.85E-003
55	8.38E-004	-3.12E-003
56	1.08E-003	-3.12E-003
57	1.24E-003	-3.13E-003
58	1.12E-003	-3.14E-003
59	8.75E-004	-3.15E-003
60	3.80E-004	-3.16E-003
61	-1.22E-005	-3.16E-003
62	-1.12E-005	-3.57E-003
63	-7.36E-006	-4.35E-003
64	-3.56E-006	-4.70E-003
65	2.45E-007	-4.47E-003
66	4.05E-006	-4.08E-003
67	5.07E-006	-4.02E-003
68	-2.18E-005	-4.02E-003
69	-2.49E-006	-4.01E-003
70	6.80E-005	-4.00E-003
71	1.11E-004	-3.99E-003
72	4.74E-004	-3.97E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	9.25E-004
2	1.02E-003
3	8.43E-004
4	-3.45E-004
5	-1.53E-003
6	-1.60E-003
7	-1.48E-003
8	-1.33E-003
9	-2.40E-004
10	-5.62E-005
11	-1.29E-004
12	5.10E-005
13	1.52E-004
14	3.14E-004
15	8.16E-004
16	-6.09E-005
17	-1.21E-003
18	-1.54E-003
19	-1.47E-003
20	-1.37E-003
21	-6.29E-004
22	-3.48E-004
23	-5.16E-005
24	8.03E-004
25	8.68E-004
26	9.86E-004
27	1.04E-003
28	-1.56E-009
29	-1.04E-003

30	-9.82E-004
31	-8.63E-004
32	-7.12E-004
33	2.89E-004
34	3.04E-004
35	6.77E-005
36	-3.97E-005
37	3.83E-005
38	1.82E-004
39	6.44E-004
40	1.68E-006
41	-6.41E-004
42	-1.81E-004
43	-3.77E-005
44	3.96E-005
45	-4.55E-005
46	-3.23E-004
47	-2.84E-004
48	7.17E-004
49	1.48E-003
50	1.59E-003
51	1.53E-003
52	3.45E-004
53	-8.42E-004
54	-1.02E-003
55	-9.25E-004
56	-8.03E-004
57	5.16E-005
58	3.48E-004
59	6.28E-004
60	1.37E-003
61	1.47E-003
62	1.54E-003
63	1.21E-003
64	5.92E-005
65	-8.17E-004
66	-3.12E-004
67	-1.50E-004
68	-4.89E-005
69	1.08E-004
70	7.60E-005
71	2.36E-004
72	1.32E-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	-9.61E-004	-3.36E-003
2	-9.62E-004	-3.06E-003
3	-9.68E-004	-2.44E-003
4	-9.73E-004	-2.28E-003
5	-9.79E-004	-2.85E-003
6	-9.84E-004	-3.86E-003
7	-9.85E-004	-4.33E-003
8	-5.43E-004	-4.34E-003
9	-1.23E-004	-4.35E-003
10	-7.75E-005	-4.36E-003
11	-5.37E-006	-4.37E-003
12	2.16E-005	-4.39E-003
13	-1.05E-005	-4.39E-003
14	-9.47E-006	-4.46E-003
15	-5.67E-006	-4.88E-003
16	-1.88E-006	-5.14E-003
17	1.92E-006	-4.76E-003
18	5.72E-006	-3.88E-003
19	6.74E-006	-3.41E-003
20	-4.45E-004	-3.40E-003
21	-1.03E-003	-3.39E-003
22	-1.32E-003	-3.38E-003
23	-1.44E-003	-3.37E-003
24	-1.24E-003	-3.36E-003
25	1.28E-005	-3.65E-003
26	1.13E-005	-3.37E-003
27	5.63E-006	-2.70E-003
28	-7.39E-011	-2.38E-003
29	-5.63E-006	-2.70E-003
30	-1.13E-005	-3.37E-003
31	-1.28E-005	-3.65E-003
32	2.34E-004	-3.65E-003
33	3.05E-004	-3.66E-003
34	7.97E-005	-3.67E-003
35	-8.19E-006	-3.69E-003
36	-1.34E-005	-3.70E-003
37	-9.96E-006	-3.70E-003
38	-9.00E-006	-3.73E-003
39	-5.45E-006	-4.04E-003
40	-1.90E-006	-4.25E-003
41	1.65E-006	-4.04E-003
42	5.21E-006	-3.73E-003
43	6.16E-006	-3.70E-003
44	9.73E-006	-3.70E-003
45	1.26E-005	-3.69E-003
46	-8.21E-005	-3.68E-003
47	-3.10E-004	-3.67E-003
48	-2.36E-004	-3.65E-003
49	9.80E-004	-4.33E-003

50	9.78E-004	-3.85E-003
51	9.73E-004	-2.85E-003
52	9.67E-004	-2.28E-003
53	9.62E-004	-2.44E-003
54	9.57E-004	-3.06E-003
55	9.55E-004	-3.36E-003
56	1.23E-003	-3.36E-003
57	1.43E-003	-3.37E-003
58	1.32E-003	-3.38E-003
59	1.02E-003	-3.39E-003
60	4.40E-004	-3.40E-003
61	-1.06E-005	-3.41E-003
62	-9.59E-006	-3.88E-003
63	-5.79E-006	-4.76E-003
64	-2.00E-006	-5.14E-003
65	1.80E-006	-4.88E-003
66	5.59E-006	-4.46E-003
67	6.62E-006	-4.39E-003
68	-2.49E-005	-4.38E-003
69	-5.11E-006	-4.37E-003
70	7.45E-005	-4.36E-003
71	1.23E-004	-4.35E-003
72	5.39E-004	-4.33E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.06E-003
2	1.15E-003
3	9.18E-004
4	-3.95E-004
5	-1.70E-003
6	-1.80E-003
7	-1.68E-003
8	-1.51E-003
9	-2.76E-004
10	-6.32E-005
11	-1.44E-004
12	6.31E-005
13	1.75E-004
14	3.52E-004
15	9.06E-004
16	-6.34E-005
17	-1.35E-003
18	-1.76E-003
19	-1.69E-003
20	-1.58E-003
21	-7.58E-004
22	-3.95E-004
23	-1.28E-005
24	9.30E-004
25	9.72E-004
26	1.10E-003
27	1.14E-003
28	-1.78E-009
29	-1.14E-003

30	-1.09E-003
31	-9.66E-004
32	-8.02E-004
33	3.31E-004
34	3.46E-004
35	7.45E-005
36	-4.99E-005
37	3.50E-005
38	1.92E-004
39	6.99E-004
40	1.91E-006
41	-6.96E-004
42	-1.91E-004
43	-3.43E-005
44	4.99E-005
45	-4.91E-005
46	-3.68E-004
47	-3.25E-004
48	8.08E-004
49	1.67E-003
50	1.80E-003
51	1.70E-003
52	3.95E-004
53	-9.17E-004
54	-1.15E-003
55	-1.06E-003
56	-9.29E-004
57	1.28E-005
58	3.94E-004
59	7.57E-004
60	1.58E-003
61	1.68E-003
62	1.75E-003
63	1.35E-003
64	6.15E-005
65	-9.06E-004
66	-3.51E-004
67	-1.73E-004
68	-6.07E-005
69	1.20E-004
70	8.57E-005
71	2.70E-004
72	1.50E-003

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

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-5.77E-004	-3.01E-003
2	-5.80E-004	-2.86E-003
3	-5.88E-004	-2.42E-003
4	-5.96E-004	-2.25E-003
5	-6.04E-004	-2.64E-003
6	-6.13E-004	-3.35E-003
7	-6.15E-004	-3.65E-003
8	-3.45E-004	-3.65E-003
9	-7.15E-005	-3.66E-003
10	-1.13E-005	-3.67E-003
11	-2.97E-005	-3.69E-003
12	-1.85E-005	-3.70E-003
13	-2.99E-005	-3.70E-003
14	-2.82E-005	-3.74E-003
15	-2.19E-005	-4.06E-003
16	-1.56E-005	-4.24E-003
17	-9.33E-006	-3.92E-003
18	-3.04E-006	-3.32E-003
19	-1.35E-006	-3.06E-003
20	-2.34E-004	-3.06E-003
21	-4.15E-004	-3.05E-003
22	-4.80E-004	-3.04E-003
23	-6.44E-004	-3.03E-003
24	-6.98E-004	-3.02E-003
25	1.91E-005	-3.30E-003
26	1.68E-005	-3.10E-003
27	8.40E-006	-2.55E-003
28	-4.75E-011	-2.28E-003
29	-8.40E-006	-2.55E-003
30	-1.68E-005	-3.06E-003
31	-1.91E-005	-3.25E-003
32	1.32E-004	-3.25E-003
33	1.65E-004	-3.26E-003
34	4.83E-005	-3.27E-003
35	-8.90E-006	-3.28E-003
36	-3.01E-005	-3.29E-003
37	-4.58E-005	-3.30E-003
38	-4.41E-005	-3.34E-003
39	-3.79E-005	-3.66E-003
40	-3.18E-005	-3.87E-003
41	-2.56E-005	-3.69E-003
42	-1.94E-005	-3.39E-003
43	-1.78E-005	-3.35E-003
44	-2.80E-005	-3.35E-003
45	-5.58E-005	-3.34E-003
46	-1.75E-004	-3.33E-003
47	-2.60E-004	-3.32E-003
48	-1.57E-004	-3.31E-003
49	5.20E-004	-3.59E-003

50	5.18E-004	-3.32E-003
51	5.10E-004	-2.65E-003
52	5.01E-004	-2.26E-003
53	4.93E-004	-2.43E-003
54	4.85E-004	-2.87E-003
55	4.83E-004	-3.01E-003
56	6.00E-004	-3.02E-003
57	5.44E-004	-3.03E-003
58	3.83E-004	-3.04E-003
59	3.27E-004	-3.05E-003
60	1.61E-004	-3.06E-003
61	-6.18E-005	-3.06E-003
62	-6.01E-005	-3.31E-003
63	-5.38E-005	-3.89E-003
64	-4.75E-005	-4.19E-003
65	-4.12E-005	-4.00E-003
66	-3.49E-005	-3.68E-003
67	-3.32E-005	-3.64E-003
68	-4.02E-005	-3.64E-003
69	-7.29E-006	-3.63E-003
70	4.58E-005	-3.62E-003
71	7.70E-005	-3.61E-003
72	2.79E-004	-3.60E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	4.97E-004
2	6.22E-004
3	7.71E-004
4	-2.04E-004
5	-1.23E-003
6	-1.16E-003
7	-1.04E-003
8	-9.02E-004
9	-2.71E-004
10	9.16E-007
11	2.89E-005
12	-1.59E-006
13	8.94E-005
14	2.39E-004
15	6.83E-004
16	-1.11E-004
17	-1.04E-003
18	-1.00E-003
19	-8.97E-004
20	-7.74E-004
21	-1.04E-004
22	-2.14E-004
23	-3.46E-004
24	3.57E-004
25	7.01E-004
26	8.27E-004
27	9.62E-004
28	2.48E-006
29	-9.37E-004

30	-7.42E-004
31	-6.10E-004
32	-4.65E-004
33	1.71E-004
34	1.88E-004
35	7.07E-005
36	2.13E-005
37	1.01E-004
38	2.44E-004
39	6.94E-004
40	3.10E-005
41	-6.42E-004
42	-2.20E-004
43	-8.05E-005
44	-1.88E-006
45	-1.68E-004
46	-2.41E-004
47	-3.57E-005
48	5.63E-004
49	9.38E-004
50	1.07E-003
51	1.19E-003
52	2.02E-004
53	-7.59E-004
54	-6.10E-004
55	-4.86E-004
56	-3.47E-004
57	3.46E-004
58	2.03E-004
59	8.05E-005
60	7.39E-004
61	8.61E-004
62	9.64E-004
63	1.00E-003
64	8.00E-005
65	-6.97E-004
66	-2.26E-004
67	-7.38E-005
68	1.70E-005
69	9.16E-005
70	6.36E-005
71	1.36E-004
72	7.94E-004

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

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-9.29E-004	-3.35E-003
2	-9.31E-004	-3.06E-003
3	-9.36E-004	-2.45E-003
4	-9.42E-004	-2.29E-003
5	-9.48E-004	-2.85E-003
6	-9.53E-004	-3.83E-003
7	-9.55E-004	-4.30E-003
8	-5.26E-004	-4.30E-003
9	-1.21E-004	-4.31E-003
10	-7.71E-005	-4.33E-003
11	-6.74E-006	-4.34E-003
12	2.09E-005	-4.35E-003
13	-9.50E-006	-4.35E-003
14	-8.40E-006	-4.42E-003
15	-4.33E-006	-4.84E-003
16	-2.48E-007	-5.10E-003
17	3.83E-006	-4.72E-003
18	7.90E-006	-3.86E-003
19	9.00E-006	-3.40E-003
20	-4.26E-004	-3.40E-003
21	-9.77E-004	-3.39E-003
22	-1.25E-003	-3.38E-003
23	-1.38E-003	-3.37E-003
24	-1.19E-003	-3.35E-003
25	1.33E-005	-3.64E-003
26	1.17E-005	-3.36E-003
27	5.87E-006	-2.70E-003
28	-7.26E-011	-2.38E-003
29	-5.87E-006	-2.70E-003
30	-1.17E-005	-3.36E-003
31	-1.33E-005	-3.64E-003
32	2.28E-004	-3.64E-003
33	2.97E-004	-3.65E-003
34	7.91E-005	-3.66E-003
35	-6.39E-006	-3.68E-003
36	-1.26E-005	-3.69E-003
37	-1.06E-005	-3.69E-003
38	-9.52E-006	-3.72E-003
39	-5.68E-006	-4.03E-003
40	-1.84E-006	-4.25E-003
41	2.00E-006	-4.04E-003
42	5.85E-006	-3.72E-003
43	6.88E-006	-3.69E-003
44	9.06E-006	-3.69E-003
45	1.07E-005	-3.68E-003
46	-8.14E-005	-3.67E-003
47	-3.02E-004	-3.66E-003
48	-2.30E-004	-3.64E-003
49	9.49E-004	-4.29E-003

50	9.48E-004	-3.83E-003
51	9.42E-004	-2.85E-003
52	9.36E-004	-2.29E-003
53	9.31E-004	-2.45E-003
54	9.25E-004	-3.06E-003
55	9.24E-004	-3.35E-003
56	1.19E-003	-3.35E-003
57	1.37E-003	-3.37E-003
58	1.25E-003	-3.38E-003
59	9.72E-004	-3.39E-003
60	4.21E-004	-3.40E-003
61	-1.28E-005	-3.40E-003
62	-1.17E-005	-3.85E-003
63	-7.58E-006	-4.71E-003
64	-3.50E-006	-5.09E-003
65	5.74E-007	-4.83E-003
66	4.65E-006	-4.42E-003
67	5.75E-006	-4.35E-003
68	-2.41E-005	-4.35E-003
69	-3.40E-006	-4.34E-003
70	7.41E-005	-4.32E-003
71	1.21E-004	-4.31E-003
72	5.22E-004	-4.30E-003

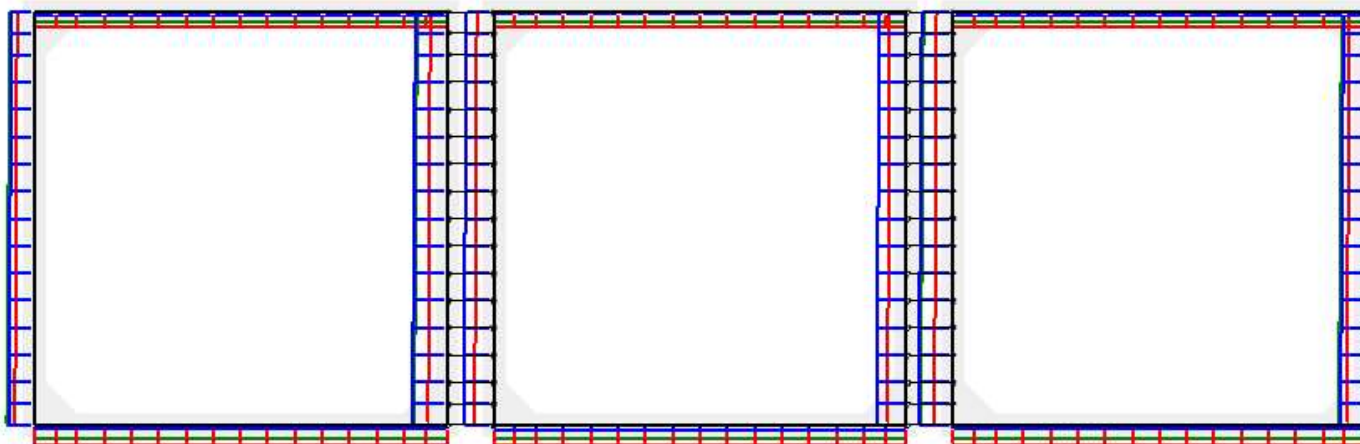
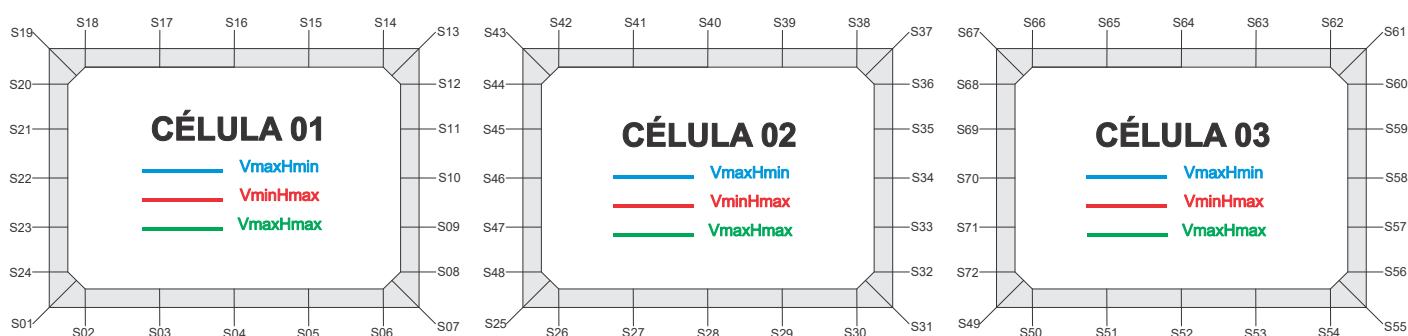
DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.02E-003
2	1.12E-003
3	9.12E-004
4	-3.81E-004
5	-1.67E-003
6	-1.75E-003
7	-1.63E-003
8	-1.46E-003
9	-2.66E-004
10	-6.17E-005
11	-1.41E-004
12	5.75E-005
13	1.68E-004
14	3.44E-004
15	8.94E-004
16	-6.57E-005
17	-1.33E-003
18	-1.70E-003
19	-1.62E-003
20	-1.52E-003
21	-7.06E-004
22	-3.84E-004
23	-4.25E-005
24	8.88E-004
25	9.50E-004
26	1.08E-003
27	1.13E-003
28	-1.72E-009
29	-1.13E-003

30	-1.07E-003
31	-9.45E-004
32	-7.81E-004
33	3.19E-004
34	3.35E-004
35	7.39E-005
36	-4.50E-005
37	4.00E-005
38	1.97E-004
39	7.01E-004
40	1.85E-006
41	-6.98E-004
42	-1.96E-004
43	-3.93E-005
44	4.49E-005
45	-4.94E-005
46	-3.56E-004
47	-3.14E-004
48	7.87E-004
49	1.62E-003
50	1.75E-003
51	1.66E-003
52	3.81E-004
53	-9.11E-004
54	-1.11E-003
55	-1.02E-003
56	-8.87E-004
57	4.26E-005
58	3.83E-004
59	7.05E-004
60	1.51E-003
61	1.62E-003
62	1.70E-003
63	1.33E-003
64	6.39E-005
65	-8.94E-004
66	-3.43E-004
67	-1.66E-004
68	-5.52E-005
69	1.18E-004
70	8.35E-005
71	2.60E-004
72	1.46E-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 |          -113.68 |          -16.69 |
|  2 |          -16.69 |          -16.69 |
|  3 |          -16.69 |          -16.69 |
|  4 |          -16.69 |          -16.69 |
|  5 |          -16.69 |          -16.69 |
|  6 |          -16.69 |          -16.69 |
|  7 |          -16.69 |          -153.79 |
|  8 |          -152.13 |          -152.13 |
|  9 |          -149.57 |          -149.57 |
| 10 |          -147.01 |          -147.01 |
| 11 |          -144.45 |          -144.45 |
| 12 |          -141.89 |          -141.89 |
| 13 |          -140.22 |          -11.93 |
| 14 |          -11.93 |          -11.93 |
| 15 |          -11.93 |          -11.93 |
| 16 |          -11.93 |          -11.93 |
| 17 |          -11.93 |          -11.93 |
| 18 |          -11.93 |          -11.93 |
| 19 |          -11.93 |          -100.11 |
| 20 |          -101.78 |          -101.78 |
| 21 |          -104.34 |          -104.34 |
| 22 |          -106.90 |          -106.90 |
| 23 |          -109.46 |          -109.46 |
| 24 |          -112.02 |          -112.02 |
| 25 |          -113.68 |          -22.88 |
| 26 |          -22.88 |          -22.88 |
| 27 |          -22.88 |          -22.88 |
| 28 |          -22.88 |          -22.88 |
| 29 |          -22.88 |          -22.88 |
| 30 |          -22.88 |          -22.88 |
| 31 |          -22.88 |          -133.73 |
| 32 |          -132.07 |          -132.07 |
| 33 |          -129.51 |          -129.51 |
| 34 |          -126.95 |          -126.95 |
| 35 |          -124.39 |          -124.39 |
| 36 |          -121.83 |          -121.83 |
| 37 |          -120.16 |           -5.74 |
| 38 |           -5.74 |           -5.74 |
| 39 |           -5.74 |           -5.74 |
| 40 |           -5.74 |           -5.74 |
| 41 |           -5.74 |           -5.74 |
| 42 |           -5.74 |           -5.74 |
| 43 |           -5.74 |          -120.17 |
| 44 |          -121.84 |          -121.84 |
| 45 |          -124.40 |          -124.40 |
| 46 |          -126.96 |          -126.96 |
| 47 |          -129.52 |          -129.52 |
| 48 |          -132.08 |          -132.08 |
| 49 |          -133.74 |          -16.70 |
```

	50	-16.70	-16.70
	51	-16.70	-16.70
	52	-16.70	-16.70
	53	-16.70	-16.70
	54	-16.70	-16.70
	55	-16.70	-113.69
	56	-112.02	-112.02
	57	-109.46	-109.46
	58	-106.90	-106.90
	59	-104.34	-104.34
	60	-101.78	-101.78
	61	-100.12	-11.92
	62	-11.92	-11.92
	63	-11.92	-11.92
	64	-11.92	-11.92
	65	-11.92	-11.92
	66	-11.92	-11.92
	67	-11.92	-140.22
	68	-141.88	-141.88
	69	-144.44	-144.44
	70	-147.00	-147.00
	71	-149.56	-149.56
	72	-152.12	-152.12

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-85.40	-86.87
2	-86.87	-86.87
3	-86.87	-86.87
4	-86.87	-86.87
5	-86.87	-86.87
6	-86.87	-86.87
7	-86.87	-84.25
8	-82.96	-82.96
9	-81.00	-81.00
10	-79.03	-79.03
11	-77.06	-77.06
12	-75.09	-75.09
13	-73.81	-69.37
14	-69.37	-69.37
15	-69.37	-69.37
16	-69.37	-69.37
17	-69.37	-69.37
18	-69.37	-69.37
19	-69.37	-74.96
20	-76.24	-76.24
21	-78.21	-78.21
22	-80.18	-80.18
23	-82.15	-82.15
24	-84.12	-84.12
25	-85.40	-86.89
26	-86.89	-86.89
27	-86.89	-86.89
28	-86.89	-86.89
29	-86.89	-86.89
30	-86.89	-86.89
31	-86.89	-84.82
32	-83.53	-83.53
33	-81.57	-81.57
34	-79.60	-79.60
35	-77.63	-77.63
36	-75.66	-75.66
37	-74.38	-69.36
38	-69.36	-69.36
39	-69.36	-69.36
40	-69.36	-69.36
41	-69.36	-69.36
42	-69.36	-69.36
43	-69.36	-74.39
44	-75.67	-75.67
45	-77.64	-77.64
46	-79.61	-79.61
47	-81.58	-81.58
48	-83.55	-83.55
49	-84.83	-86.87

	50	-86.87	-86.87
	51	-86.87	-86.87
	52	-86.87	-86.87
	53	-86.87	-86.87
	54	-86.87	-86.87
	55	-86.87	-85.40
	56	-84.12	-84.12
	57	-82.15	-82.15
	58	-80.18	-80.18
	59	-78.21	-78.21
	60	-76.25	-76.25
	61	-74.96	-69.37
	62	-69.37	-69.37
	63	-69.37	-69.37
	64	-69.37	-69.37
	65	-69.37	-69.37
	66	-69.37	-69.37
	67	-69.37	-73.80
	68	-75.08	-75.08
	69	-77.05	-77.05
	70	-79.02	-79.02
	71	-80.99	-80.99
	72	-82.96	-82.96

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-121.55	-59.74
2	-59.74	-59.74
3	-59.74	-59.74
4	-59.74	-59.74
5	-59.74	-59.74
6	-59.74	-59.74
7	-59.74	-145.92
8	-144.26	-144.26
9	-141.70	-141.70
10	-139.14	-139.14
11	-136.58	-136.58
12	-134.02	-134.02
13	-132.36	-44.43
14	-44.43	-44.43
15	-44.43	-44.43
16	-44.43	-44.43
17	-44.43	-44.43
18	-44.43	-44.43
19	-44.43	-107.98
20	-109.65	-109.65
21	-112.21	-112.21
22	-114.77	-114.77
23	-117.33	-117.33
24	-119.89	-119.89
25	-121.55	-62.35
26	-62.35	-62.35
27	-62.35	-62.35
28	-62.35	-62.35
29	-62.35	-62.35
30	-62.35	-62.35
31	-62.35	-133.77
32	-132.10	-132.10
33	-129.54	-129.54
34	-126.98	-126.98
35	-124.42	-124.42
36	-121.86	-121.86
37	-120.20	-41.82
38	-41.82	-41.82
39	-41.82	-41.82
40	-41.82	-41.82
41	-41.82	-41.82
42	-41.82	-41.82
43	-41.82	-120.14
44	-121.81	-121.81
45	-124.37	-124.37
46	-126.93	-126.93
47	-129.48	-129.48
48	-132.04	-132.04
49	-133.71	-59.74

	50	-59.74	-59.74
	51	-59.74	-59.74
	52	-59.74	-59.74
	53	-59.74	-59.74
	54	-59.74	-59.74
	55	-59.74	-121.52
	56	-119.86	-119.86
	57	-117.30	-117.30
	58	-114.74	-114.74
	59	-112.18	-112.18
	60	-109.62	-109.62
	61	-107.95	-44.42
	62	-44.42	-44.42
	63	-44.42	-44.42
	64	-44.42	-44.42
	65	-44.42	-44.42
	66	-44.42	-44.42
	67	-44.42	-132.38
	68	-134.05	-134.05
	69	-136.61	-136.61
	70	-139.17	-139.17
	71	-141.73	-141.73
	72	-144.29	-144.29

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-115.92	-16.06
2	-16.06	-16.06
3	-16.06	-16.06
4	-16.06	-16.06
5	-16.06	-16.06
6	-16.06	-16.06
7	-16.06	-151.56
8	-149.89	-149.89
9	-147.33	-147.33
10	-144.77	-144.77
11	-142.21	-142.21
12	-139.65	-139.65
13	-137.99	-12.56
14	-12.56	-12.56
15	-12.56	-12.56
16	-12.56	-12.56
17	-12.56	-12.56
18	-12.56	-12.56
19	-12.56	-102.35
20	-104.02	-104.02
21	-106.57	-106.57
22	-109.13	-109.13
23	-111.69	-111.69
24	-114.25	-114.25
25	-115.92	-23.08
26	-23.08	-23.08
27	-23.08	-23.08
28	-23.08	-23.08
29	-23.08	-23.08
30	-23.08	-23.08
31	-23.08	-132.27
32	-130.61	-130.61
33	-128.05	-128.05
34	-125.49	-125.49
35	-122.93	-122.93
36	-120.37	-120.37
37	-118.71	-5.54
38	-5.54	-5.54
39	-5.54	-5.54
40	-5.54	-5.54
41	-5.54	-5.54
42	-5.54	-5.54
43	-5.54	-121.63
44	-123.30	-123.30
45	-125.86	-125.86
46	-128.42	-128.42
47	-130.98	-130.98
48	-133.54	-133.54
49	-135.20	-17.06

	50	-17.06	-17.06
	51	-17.06	-17.06
	52	-17.06	-17.06
	53	-17.06	-17.06
	54	-17.06	-17.06
	55	-17.06	-109.24
	56	-107.58	-107.58
	57	-105.02	-105.02
	58	-102.46	-102.46
	59	-99.90	-99.90
	60	-97.34	-97.34
	61	-95.67	-11.56
	62	-11.56	-11.56
	63	-11.56	-11.56
	64	-11.56	-11.56
	65	-11.56	-11.56
	66	-11.56	-11.56
	67	-11.56	-144.66
	68	-146.33	-146.33
	69	-148.89	-148.89
	70	-151.45	-151.45
	71	-154.01	-154.01
	72	-156.57	-156.57

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-85.70	-86.77
2	-86.77	-86.77
3	-86.77	-86.77
4	-86.77	-86.77
5	-86.77	-86.77
6	-86.77	-86.77
7	-86.77	-83.94
8	-82.66	-82.66
9	-80.69	-80.69
10	-78.72	-78.72
11	-76.75	-76.75
12	-74.78	-74.78
13	-73.50	-69.47
14	-69.47	-69.47
15	-69.47	-69.47
16	-69.47	-69.47
17	-69.47	-69.47
18	-69.47	-69.47
19	-69.47	-75.27
20	-76.55	-76.55
21	-78.52	-78.52
22	-80.49	-80.49
23	-82.45	-82.45
24	-84.42	-84.42
25	-85.70	-86.91
26	-86.91	-86.91
27	-86.91	-86.91
28	-86.91	-86.91
29	-86.91	-86.91
30	-86.91	-86.91
31	-86.91	-84.54
32	-83.26	-83.26
33	-81.29	-81.29
34	-79.32	-79.32
35	-77.36	-77.36
36	-75.39	-75.39
37	-74.11	-69.33
38	-69.33	-69.33
39	-69.33	-69.33
40	-69.33	-69.33
41	-69.33	-69.33
42	-69.33	-69.33
43	-69.33	-74.66
44	-75.94	-75.94
45	-77.91	-77.91
46	-79.88	-79.88
47	-81.85	-81.85
48	-83.82	-83.82
49	-85.10	-87.03

	50	-87.03	-87.03
	51	-87.03	-87.03
	52	-87.03	-87.03
	53	-87.03	-87.03
	54	-87.03	-87.03
	55	-87.03	-85.28
	56	-84.00	-84.00
	57	-82.03	-82.03
	58	-80.06	-80.06
	59	-78.09	-78.09
	60	-76.13	-76.13
	61	-74.84	-69.21
	62	-69.21	-69.21
	63	-69.21	-69.21
	64	-69.21	-69.21
	65	-69.21	-69.21
	66	-69.21	-69.21
	67	-69.21	-73.92
	68	-75.20	-75.20
	69	-77.17	-77.17
	70	-79.14	-79.14
	71	-81.11	-81.11
	72	-83.08	-83.08

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-123.17	-59.22
2	-59.22	-59.22
3	-59.22	-59.22
4	-59.22	-59.22
5	-59.22	-59.22
6	-59.22	-59.22
7	-59.22	-144.31
8	-142.64	-142.64
9	-140.08	-140.08
10	-137.52	-137.52
11	-134.96	-134.96
12	-132.41	-132.41
13	-130.74	-44.94
14	-44.94	-44.94
15	-44.94	-44.94
16	-44.94	-44.94
17	-44.94	-44.94
18	-44.94	-44.94
19	-44.94	-109.60
20	-111.26	-111.26
21	-113.82	-113.82
22	-116.38	-116.38
23	-118.94	-118.94
24	-121.50	-121.50
25	-123.17	-62.68
26	-62.68	-62.68
27	-62.68	-62.68
28	-62.68	-62.68
29	-62.68	-62.68
30	-62.68	-62.68
31	-62.68	-132.94
32	-131.28	-131.28
33	-128.72	-128.72
34	-126.16	-126.16
35	-123.60	-123.60
36	-121.04	-121.04
37	-119.37	-41.48
38	-41.48	-41.48
39	-41.48	-41.48
40	-41.48	-41.48
41	-41.48	-41.48
42	-41.48	-41.48
43	-41.48	-120.96
44	-122.63	-122.63
45	-125.19	-125.19
46	-127.75	-127.75
47	-130.31	-130.31
48	-132.87	-132.87
49	-134.53	-60.39

	50	-60.39	-60.39
	51	-60.39	-60.39
	52	-60.39	-60.39
	53	-60.39	-60.39
	54	-60.39	-60.39
	55	-60.39	-118.57
	56	-116.91	-116.91
	57	-114.35	-114.35
	58	-111.79	-111.79
	59	-109.23	-109.23
	60	-106.67	-106.67
	61	-105.00	-43.77
	62	-43.77	-43.77
	63	-43.77	-43.77
	64	-43.77	-43.77
	65	-43.77	-43.77
	66	-43.77	-43.77
	67	-43.77	-135.33
	68	-137.00	-137.00
	69	-139.56	-139.56
	70	-142.12	-142.12
	71	-144.68	-144.68
	72	-147.24	-147.24

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-86.32	-40.14
2	-40.14	-40.14
3	-40.14	-40.14
4	-40.14	-40.14
5	-40.14	-40.14
6	-40.14	-40.14
7	-40.14	-104.67
8	-103.39	-103.39
9	-101.42	-101.42
10	-99.45	-99.45
11	-97.49	-97.49
12	-95.52	-95.52
13	-94.24	-28.23
14	-28.23	-28.23
15	-28.23	-28.23
16	-28.23	-28.23
17	-28.23	-28.23
18	-28.23	-28.23
19	-28.23	-75.88
20	-77.16	-77.16
21	-79.13	-79.13
22	-81.10	-81.10
23	-83.07	-83.07
24	-85.03	-85.03
25	-86.32	-42.09
26	-42.09	-42.09
27	-42.09	-42.09
28	-42.09	-42.09
29	-42.09	-42.09
30	-42.09	-42.09
31	-42.09	-95.51
32	-94.23	-94.23
33	-92.26	-92.26
34	-90.30	-90.30
35	-88.33	-88.33
36	-86.36	-86.36
37	-85.08	-26.28
38	-26.28	-26.28
39	-26.28	-26.28
40	-26.28	-26.28
41	-26.28	-26.28
42	-26.28	-26.28
43	-26.28	-85.04
44	-86.32	-86.32
45	-88.29	-88.29
46	-90.25	-90.25
47	-92.22	-92.22
48	-94.19	-94.19
49	-95.47	-40.14

	50	-40.14	-40.14
	51	-40.14	-40.14
	52	-40.14	-40.14
	53	-40.14	-40.14
	54	-40.14	-40.14
	55	-40.14	-86.29
	56	-85.01	-85.01
	57	-83.04	-83.04
	58	-81.08	-81.08
	59	-79.11	-79.11
	60	-77.14	-77.14
	61	-75.86	-28.23
	62	-28.23	-28.23
	63	-28.23	-28.23
	64	-28.23	-28.23
	65	-28.23	-28.23
	66	-28.23	-28.23
	67	-28.23	-94.26
	68	-95.54	-95.54
	69	-97.51	-97.51
	70	-99.48	-99.48
	71	-101.44	-101.44
	72	-103.41	-103.41

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-81.55	-63.31
2	-63.31	-63.31
3	-63.31	-63.31
4	-63.31	-63.31
5	-63.31	-63.31
6	-63.31	-63.31
7	-63.31	-88.09
8	-86.81	-86.81
9	-84.84	-84.84
10	-82.88	-82.88
11	-80.91	-80.91
12	-78.94	-78.94
13	-77.66	-48.74
14	-48.74	-48.74
15	-48.74	-48.74
16	-48.74	-48.74
17	-48.74	-48.74
18	-48.74	-48.74
19	-48.74	-71.11
20	-72.39	-72.39
21	-74.36	-74.36
22	-76.33	-76.33
23	-78.30	-78.30
24	-80.27	-80.27
25	-81.55	-64.16
26	-64.16	-64.16
27	-64.16	-64.16
28	-64.16	-64.16
29	-64.16	-64.16
30	-64.16	-64.16
31	-64.16	-85.06
32	-83.78	-83.78
33	-81.81	-81.81
34	-79.84	-79.84
35	-77.87	-77.87
36	-75.90	-75.90
37	-74.62	-47.88
38	-47.88	-47.88
39	-47.88	-47.88
40	-47.88	-47.88
41	-47.88	-47.88
42	-47.88	-47.88
43	-47.88	-74.15
44	-75.43	-75.43
45	-77.40	-77.40
46	-79.36	-79.36
47	-81.33	-81.33
48	-83.30	-83.30
49	-84.58	-63.31

	50	-63.31	-63.31
	51	-63.31	-63.31
	52	-63.31	-63.31
	53	-63.31	-63.31
	54	-63.31	-63.31
	55	-63.31	-81.31
	56	-80.03	-80.03
	57	-78.06	-78.06
	58	-76.09	-76.09
	59	-74.12	-74.12
	60	-72.15	-72.15
	61	-70.87	-48.73
	62	-48.73	-48.73
	63	-48.73	-48.73
	64	-48.73	-48.73
	65	-48.73	-48.73
	66	-48.73	-48.73
	67	-48.73	-77.89
	68	-79.18	-79.18
	69	-81.14	-81.14
	70	-83.11	-83.11
	71	-85.08	-85.08
	72	-87.05	-87.05

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-86.90	-43.12
2	-43.12	-43.12
3	-43.12	-43.12
4	-43.12	-43.12
5	-43.12	-43.12
6	-43.12	-43.12
7	-43.12	-104.09
8	-102.81	-102.81
9	-100.84	-100.84
10	-98.87	-98.87
11	-96.90	-96.90
12	-94.93	-94.93
13	-93.65	-31.58
14	-31.58	-31.58
15	-31.58	-31.58
16	-31.58	-31.58
17	-31.58	-31.58
18	-31.58	-31.58
19	-31.58	-76.46
20	-77.74	-77.74
21	-79.71	-79.71
22	-81.68	-81.68
23	-83.65	-83.65
24	-85.62	-85.62
25	-86.90	-44.96
26	-44.96	-44.96
27	-44.96	-44.96
28	-44.96	-44.96
29	-44.96	-44.96
30	-44.96	-44.96
31	-44.96	-95.51
32	-94.23	-94.23
33	-92.26	-92.26
34	-90.30	-90.30
35	-88.33	-88.33
36	-86.36	-86.36
37	-85.08	-29.73
38	-29.73	-29.73
39	-29.73	-29.73
40	-29.73	-29.73
41	-29.73	-29.73
42	-29.73	-29.73
43	-29.73	-85.04
44	-86.32	-86.32
45	-88.29	-88.29
46	-90.26	-90.26
47	-92.22	-92.22
48	-94.19	-94.19
49	-95.47	-43.12

	50	-43.12	-43.12
	51	-43.12	-43.12
	52	-43.12	-43.12
	53	-43.12	-43.12
	54	-43.12	-43.12
	55	-43.12	-86.88
	56	-85.60	-85.60
	57	-83.63	-83.63
	58	-81.66	-81.66
	59	-79.69	-79.69
	60	-77.72	-77.72
	61	-76.44	-31.58
	62	-31.58	-31.58
	63	-31.58	-31.58
	64	-31.58	-31.58
	65	-31.58	-31.58
	66	-31.58	-31.58
	67	-31.58	-93.67
	68	-94.95	-94.95
	69	-96.92	-96.92
	70	-98.89	-98.89
	71	-100.86	-100.86
	72	-102.83	-102.83

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-77.48	-40.03
2	-40.03	-40.03
3	-40.03	-40.03
4	-40.03	-40.03
5	-40.03	-40.03
6	-40.03	-40.03
7	-40.03	-92.16
8	-90.88	-90.88
9	-88.91	-88.91
10	-86.94	-86.94
11	-84.97	-84.97
12	-83.01	-83.01
13	-81.72	-28.34
14	-28.34	-28.34
15	-28.34	-28.34
16	-28.34	-28.34
17	-28.34	-28.34
18	-28.34	-28.34
19	-28.34	-67.04
20	-68.32	-68.32
21	-70.29	-70.29
22	-72.26	-72.26
23	-74.23	-74.23
24	-76.20	-76.20
25	-77.48	-41.61
26	-41.61	-41.61
27	-41.61	-41.61
28	-41.61	-41.61
29	-41.61	-41.61
30	-41.61	-41.61
31	-41.61	-84.84
32	-83.56	-83.56
33	-81.59	-81.59
34	-79.62	-79.62
35	-77.65	-77.65
36	-75.68	-75.68
37	-74.40	-26.76
38	-26.76	-26.76
39	-26.76	-26.76
40	-26.76	-26.76
41	-26.76	-26.76
42	-26.76	-26.76
43	-26.76	-74.37
44	-75.65	-75.65
45	-77.62	-77.62
46	-79.59	-79.59
47	-81.55	-81.55
48	-83.52	-83.52
49	-84.80	-40.03

	50	-40.03	-40.03
	51	-40.03	-40.03
	52	-40.03	-40.03
	53	-40.03	-40.03
	54	-40.03	-40.03
	55	-40.03	-77.46
	56	-76.18	-76.18
	57	-74.21	-74.21
	58	-72.24	-72.24
	59	-70.28	-70.28
	60	-68.31	-68.31
	61	-67.03	-28.34
	62	-28.34	-28.34
	63	-28.34	-28.34
	64	-28.34	-28.34
	65	-28.34	-28.34
	66	-28.34	-28.34
	67	-28.34	-81.74
	68	-83.02	-83.02
	69	-84.99	-84.99
	70	-86.96	-86.96
	71	-88.93	-88.93
	72	-90.90	-90.90

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-83.00	-40.10
2	-40.10	-40.10
3	-40.10	-40.10
4	-40.10	-40.10
5	-40.10	-40.10
6	-40.10	-40.10
7	-40.10	-99.98
8	-98.70	-98.70
9	-96.73	-96.73
10	-94.76	-94.76
11	-92.79	-92.79
12	-90.83	-90.83
13	-89.54	-28.27
14	-28.27	-28.27
15	-28.27	-28.27
16	-28.27	-28.27
17	-28.27	-28.27
18	-28.27	-28.27
19	-28.27	-72.56
20	-73.85	-73.85
21	-75.81	-75.81
22	-77.78	-77.78
23	-79.75	-79.75
24	-81.72	-81.72
25	-83.00	-41.91
26	-41.91	-41.91
27	-41.91	-41.91
28	-41.91	-41.91
29	-41.91	-41.91
30	-41.91	-41.91
31	-41.91	-91.51
32	-90.23	-90.23
33	-88.26	-88.26
34	-86.29	-86.29
35	-84.32	-84.32
36	-82.35	-82.35
37	-81.07	-26.46
38	-26.46	-26.46
39	-26.46	-26.46
40	-26.46	-26.46
41	-26.46	-26.46
42	-26.46	-26.46
43	-26.46	-81.03
44	-82.32	-82.32
45	-84.28	-84.28
46	-86.25	-86.25
47	-88.22	-88.22
48	-90.19	-90.19
49	-91.47	-40.10

	50	-40.10	-40.10
	51	-40.10	-40.10
	52	-40.10	-40.10
	53	-40.10	-40.10
	54	-40.10	-40.10
	55	-40.10	-82.98
	56	-81.70	-81.70
	57	-79.73	-79.73
	58	-77.76	-77.76
	59	-75.80	-75.80
	60	-73.83	-73.83
	61	-72.55	-28.27
	62	-28.27	-28.27
	63	-28.27	-28.27
	64	-28.27	-28.27
	65	-28.27	-28.27
	66	-28.27	-28.27
	67	-28.27	-89.56
	68	-90.84	-90.84
	69	-92.81	-92.81
	70	-94.78	-94.78
	71	-96.75	-96.75
	72	-98.72	-98.72

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-81.23	-61.63
2	-61.63	-61.63
3	-61.63	-61.63
4	-61.63	-61.63
5	-61.63	-61.63
6	-61.63	-61.63
7	-61.63	-88.41
8	-87.13	-87.13
9	-85.16	-85.16
10	-83.19	-83.19
11	-81.22	-81.22
12	-79.26	-79.26
13	-77.97	-46.85
14	-46.85	-46.85
15	-46.85	-46.85
16	-46.85	-46.85
17	-46.85	-46.85
18	-46.85	-46.85
19	-46.85	-70.79
20	-72.07	-72.07
21	-74.04	-74.04
22	-76.01	-76.01
23	-77.98	-77.98
24	-79.95	-79.95
25	-81.23	-62.55
26	-62.55	-62.55
27	-62.55	-62.55
28	-62.55	-62.55
29	-62.55	-62.55
30	-62.55	-62.55
31	-62.55	-85.08
32	-83.80	-83.80
33	-81.83	-81.83
34	-79.86	-79.86
35	-77.89	-77.89
36	-75.92	-75.92
37	-74.64	-45.93
38	-45.93	-45.93
39	-45.93	-45.93
40	-45.93	-45.93
41	-45.93	-45.93
42	-45.93	-45.93
43	-45.93	-74.13
44	-75.41	-75.41
45	-77.38	-77.38
46	-79.35	-79.35
47	-81.32	-81.32
48	-83.28	-83.28
49	-84.57	-61.64

	50	-61.64	-61.64
	51	-61.64	-61.64
	52	-61.64	-61.64
	53	-61.64	-61.64
	54	-61.64	-61.64
	55	-61.64	-80.97
	56	-79.69	-79.69
	57	-77.72	-77.72
	58	-75.76	-75.76
	59	-73.79	-73.79
	60	-71.82	-71.82
	61	-70.54	-46.85
	62	-46.85	-46.85
	63	-46.85	-46.85
	64	-46.85	-46.85
	65	-46.85	-46.85
	66	-46.85	-46.85
	67	-46.85	-78.23
	68	-79.51	-79.51
	69	-81.48	-81.48
	70	-83.45	-83.45
	71	-85.42	-85.42
	72	-87.39	-87.39

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

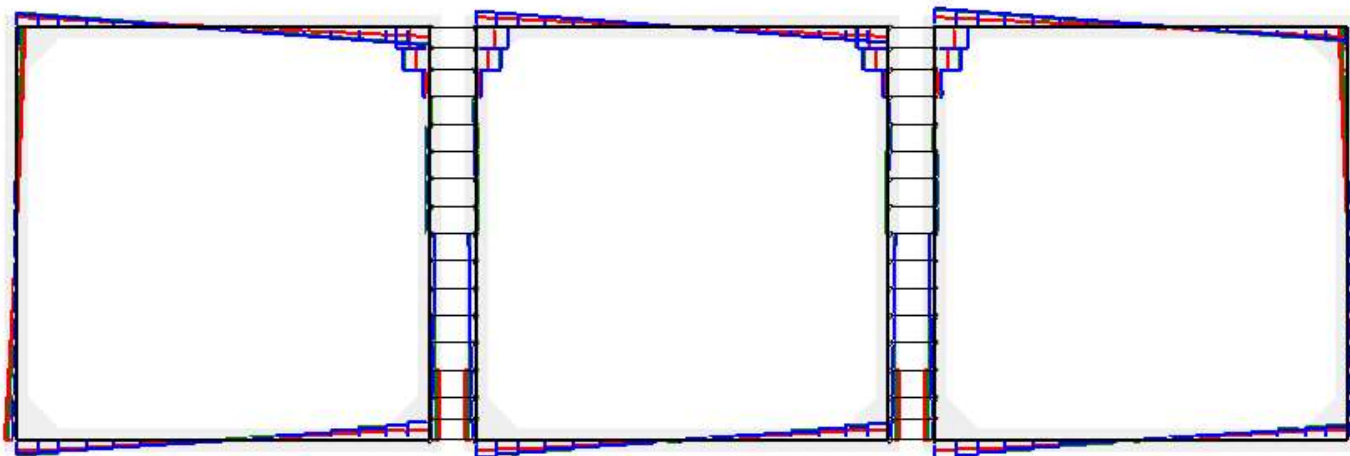
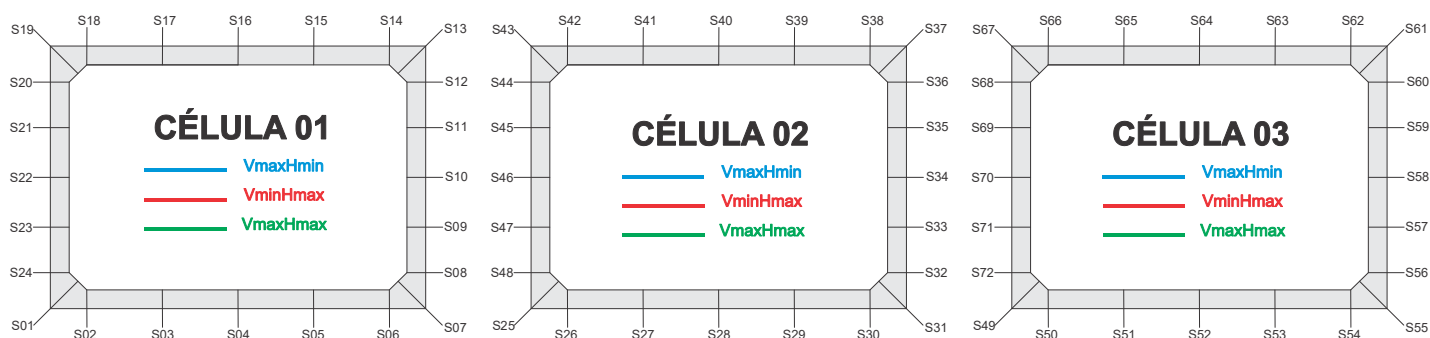
ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-83.37	-41.96
2	-41.96	-41.96
3	-41.96	-41.96
4	-41.96	-41.96
5	-41.96	-41.96
6	-41.96	-41.96
7	-41.96	-99.62
8	-98.34	-98.34
9	-96.37	-96.37
10	-94.40	-94.40
11	-92.43	-92.43
12	-90.46	-90.46
13	-89.18	-30.37
14	-30.37	-30.37
15	-30.37	-30.37
16	-30.37	-30.37
17	-30.37	-30.37
18	-30.37	-30.37
19	-30.37	-72.93
20	-74.21	-74.21
21	-76.18	-76.18
22	-78.15	-78.15
23	-80.12	-80.12
24	-82.09	-82.09
25	-83.37	-43.71
26	-43.71	-43.71
27	-43.71	-43.71
28	-43.71	-43.71
29	-43.71	-43.71
30	-43.71	-43.71
31	-43.71	-91.51
32	-90.23	-90.23
33	-88.26	-88.26
34	-86.29	-86.29
35	-84.32	-84.32
36	-82.35	-82.35
37	-81.07	-28.62
38	-28.62	-28.62
39	-28.62	-28.62
40	-28.62	-28.62
41	-28.62	-28.62
42	-28.62	-28.62
43	-28.62	-81.04
44	-82.32	-82.32
45	-84.29	-84.29
46	-86.25	-86.25
47	-88.22	-88.22
48	-90.19	-90.19
49	-91.47	-41.96

	50	-41.96	-41.96
	51	-41.96	-41.96
	52	-41.96	-41.96
	53	-41.96	-41.96
	54	-41.96	-41.96
	55	-41.96	-83.35
	56	-82.07	-82.07
	57	-80.10	-80.10
	58	-78.13	-78.13
	59	-76.16	-76.16
	60	-74.19	-74.19
	61	-72.91	-30.37
	62	-30.37	-30.37
	63	-30.37	-30.37
	64	-30.37	-30.37
	65	-30.37	-30.37
	66	-30.37	-30.37
	67	-30.37	-89.20
	68	-90.48	-90.48
	69	-92.45	-92.45
	70	-94.42	-94.42
	71	-96.39	-96.39
	72	-98.35	-98.35

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	16.69	-105.69
2	-92.29	-76.25
3	-47.47	-33.71
4	-10.36	2.98
5	31.13	49.75
6	93.39	118.41
7	140.78	-16.70
8	-24.52	-24.52
9	-37.08	-37.08
10	-46.51	9.71
11	3.39	3.39
12	50.77	197.77
13	246.24	-140.22
14	-115.03	-115.03
15	-67.54	-67.54
16	-20.06	-20.06
17	27.43	27.43
18	74.92	74.92
19	100.11	-11.93
20	-7.33	-7.33
21	0.40	0.40
22	6.76	6.76
23	11.74	11.74
24	15.35	15.35
25	16.69	-123.98
26	-107.16	-87.38
27	-51.27	-34.56
28	-7.16	7.12
29	34.52	51.24
30	87.35	107.14
31	123.97	-22.88
32	-30.71	-30.71
33	-43.27	-43.27
34	-52.70	4.43
35	-1.88	-7.80
36	45.27	191.52
37	239.80	-120.16
38	-94.97	-94.97
39	-47.48	-47.48
40	0.01	0.01
41	47.49	47.49
42	94.98	94.98
43	120.17	-240.06
44	-191.59	-44.58
45	2.79	2.79
46	-3.52	52.70
47	43.27	43.27
48	30.71	30.71
49	22.88	-140.78

	50	-118.40	-93.37
	51	-49.73	-31.11
	52	-2.96	10.38
	53	33.73	47.49
	54	76.26	92.30
	55	105.70	-16.70
	56	-15.36	-15.36
	57	-11.75	-11.75
	58	-6.76	-6.76
	59	-0.41	-0.41
	60	7.32	7.32
	61	11.92	-100.12
	62	-74.92	-74.92
	63	-27.44	-27.44
	64	20.05	20.05
	65	67.54	67.54
	66	115.02	115.02
	67	140.22	-245.98
	68	-197.70	-51.45
	69	1.62	-4.30
	70	-10.62	46.52
	71	37.08	37.08
	72	24.53	24.53

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	86.87	-80.37
2	-71.61	-60.26
3	-37.86	-26.46
4	-6.89	3.63
5	23.29	34.81
6	57.76	69.58
7	78.88	-86.87
8	-86.87	-86.87
9	0.05	0.05
10	0.05	0.05
11	0.05	0.05
12	21.52	100.45
13	147.56	-73.81
14	-58.17	-58.17
15	-28.80	-28.80
16	0.58	0.58
17	29.95	29.95
18	59.32	59.32
19	74.96	-69.37
20	-57.14	-57.14
21	-31.24	-31.24
22	-1.96	-1.96
23	30.67	30.67
24	66.67	66.67
25	86.87	-79.49
26	-70.26	-58.54
27	-35.85	-24.49
28	-5.18	5.16
29	24.46	35.83
30	58.52	70.25
31	79.48	-86.89
32	-86.89	-86.89
33	0.13	0.13
34	0.13	0.13
35	0.16	-2.23
36	21.88	100.36
37	147.38	-74.38
38	-58.74	-58.74
39	-29.37	-29.37
40	0.01	0.01
41	29.38	29.38
42	58.75	58.75
43	74.39	-147.55
44	-100.43	-21.50
45	-0.03	-0.03
46	-0.03	-0.03
47	-0.03	-0.03
48	86.89	86.89
49	86.89	-78.87

	50	-69.57	-57.75
	51	-34.80	-23.28
	52	-3.61	6.90
	53	26.47	37.87
	54	60.26	71.61
	55	80.38	-86.87
	56	-66.67	-66.67
	57	-30.67	-30.67
	58	1.96	1.96
	59	31.24	31.24
	60	57.14	57.14
	61	69.37	-74.96
	62	-59.33	-59.33
	63	-29.95	-29.95
	64	-0.58	-0.58
	65	28.79	28.79
	66	58.17	58.17
	67	73.80	-147.40
	68	-100.38	-21.89
	69	2.22	-0.18
	70	-0.14	-0.14
	71	-0.14	-0.14
	72	86.87	86.87

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	59.74	-113.17
2	-98.81	-81.46
3	-49.25	-33.72
4	-7.24	7.26
5	36.36	54.50
6	94.47	116.34
7	135.12	-59.74
8	-59.74	-59.74
9	-38.05	-38.05
10	-38.05	15.55
11	15.55	15.55
12	42.06	186.45
13	245.18	-132.36
14	-107.16	-107.16
15	-59.67	-59.67
16	-12.19	-12.19
17	35.30	35.30
18	82.78	82.78
19	107.98	-44.43
20	-36.27	-36.27
21	-19.00	-19.00
22	0.51	0.51
23	22.27	22.27
24	46.27	46.27
25	59.74	-124.59
26	-108.70	-89.58
27	-53.54	-36.37
28	-7.51	7.61
29	36.47	53.64
30	89.67	108.78
31	124.66	-62.35
32	-62.35	-62.35
33	-41.75	-41.75
34	-41.75	19.76
35	19.76	-16.87
36	43.55	183.92
37	241.65	-120.20
38	-95.00	-95.00
39	-47.51	-47.51
40	-0.03	-0.03
41	47.46	47.46
42	94.94	94.94
43	120.14	-242.57
44	-183.85	-39.45
45	-12.94	-12.94
46	-12.94	40.66
47	40.66	40.66
48	62.35	62.35
49	62.35	-135.16

	50	-116.39	-94.53
	51	-54.56	-36.42
	52	-7.31	7.19
	53	33.68	49.22
	54	81.43	98.78
	55	113.14	-59.74
	56	-46.27	-46.27
	57	-22.27	-22.27
	58	-0.51	-0.51
	59	19.00	19.00
	60	36.27	36.27
	61	44.42	-107.95
	62	-82.76	-82.76
	63	-35.27	-35.27
	64	12.21	12.21
	65	59.70	59.70
	66	107.18	107.18
	67	132.38	-244.25
	68	-186.53	-46.16
	69	14.26	-22.37
	70	-22.37	39.14
	71	39.14	39.15
	72	59.74	59.74

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	16.06	-107.83
2	-94.31	-78.24
3	-49.83	-36.43
4	-14.07	-1.29
5	25.92	44.29
6	88.40	114.28
7	137.78	-16.06
8	-23.89	-23.89
9	-36.44	-36.44
10	-21.24	-21.24
11	7.24	7.24
12	34.92	193.52
13	270.47	-137.99
14	-112.79	-112.79
15	-65.30	-65.30
16	-17.82	-17.82
17	29.67	29.67
18	77.15	77.15
19	102.35	-12.56
20	-7.96	-7.96
21	-0.23	-0.23
22	6.12	6.12
23	11.11	11.11
24	14.72	14.72
25	16.06	-125.20
26	-108.05	-88.06
27	-52.08	-35.68
28	-9.19	4.56
29	31.04	47.48
30	83.83	104.25
31	121.93	-23.08
32	-30.90	-30.90
33	-43.46	-43.46
34	-24.97	-24.97
35	5.96	-5.84
36	29.91	180.42
37	252.98	-118.71
38	-93.51	-93.51
39	-46.02	-46.02
40	1.46	1.46
41	48.95	48.95
42	96.43	96.43
43	121.63	-263.45
44	-186.51	-27.90
45	-0.22	-0.22
46	28.26	28.26
47	43.46	43.46
48	30.90	30.90
49	23.08	-144.49

	50	-120.94	-94.87
	51	-50.10	-31.41
	52	-3.88	8.89
	53	30.83	43.88
	54	71.63	87.56
	55	101.08	-17.06
	56	-15.72	-15.72
	57	-12.11	-12.11
	58	-7.12	-7.12
	59	-0.77	-0.77
	60	6.96	6.96
	61	11.56	-95.67
	62	-70.48	-70.48
	63	-22.99	-22.99
	64	24.49	24.49
	65	71.98	71.98
	66	119.47	119.47
	67	144.66	-259.00
	68	-186.43	-35.93
	69	-0.18	-11.97
	70	18.96	18.96
	71	37.45	37.45
	72	24.89	24.89

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

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	86.77	-80.66
2	-71.89	-60.53
3	-38.18	-26.83
4	-7.39	3.05
5	22.58	34.07
6	57.08	69.02
7	78.47	-86.77
8	-86.77	-83.36
9	0.49	0.49
10	0.49	0.49
11	0.49	0.49
12	14.23	96.62
13	157.31	-73.50
14	-57.86	-57.86
15	-28.49	-28.49
16	0.88	0.88
17	30.26	30.26
18	59.63	59.63
19	75.27	-69.47
20	-57.25	-57.25
21	-31.34	-31.34
22	-2.07	-2.07
23	30.57	30.57
24	66.57	66.57
25	86.77	-79.71
26	-70.41	-58.63
27	-35.95	-24.65
28	-5.51	4.72
29	23.85	35.15
30	57.87	69.71
31	79.10	-86.91
32	-86.91	-83.93
33	0.63	0.63
34	0.63	0.63
35	0.63	-2.06
36	14.49	96.50
37	157.07	-74.11
38	-58.47	-58.47
39	-29.10	-29.10
40	0.28	0.28
41	29.65	29.65
42	59.03	59.03
43	74.66	-157.16
44	-96.48	-14.09
45	-0.34	-0.34
46	-0.34	-0.34
47	-0.34	-0.34
48	83.51	86.91
49	86.91	-78.93

	50	-69.51	-57.60
	51	-34.52	-22.98
	52	-3.32	7.17
	53	26.67	38.02
	54	60.30	71.59
	55	80.29	-87.03
	56	-66.83	-66.83
	57	-30.83	-30.83
	58	1.81	1.81
	59	31.08	31.08
	60	56.99	56.99
	61	69.21	-74.84
	62	-59.21	-59.21
	63	-29.83	-29.83
	64	-0.46	-0.46
	65	28.91	28.91
	66	58.29	58.29
	67	73.92	-156.95
	68	-96.38	-14.38
	69	2.18	-0.51
	70	-0.51	-0.51
	71	-0.51	-0.51
	72	84.05	87.03

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	59.22	-114.73
2	-100.31	-82.97
3	-51.11	-35.90
4	-10.23	3.83
5	32.19	50.15
6	90.56	113.15
7	132.87	-59.22
8	-59.22	-59.22
9	-30.99	-30.99
10	-30.99	13.39
11	13.39	13.39
12	29.45	181.00
13	265.14	-130.74
14	-105.54	-105.54
15	-58.06	-58.06
16	-10.57	-10.57
17	36.91	36.91
18	84.40	84.40
19	109.60	-44.94
20	-36.79	-36.79
21	-19.52	-19.52
22	0.00	0.00
23	21.75	21.75
24	45.75	45.75
25	59.22	-125.22
26	-109.06	-89.78
27	-53.91	-37.02
28	-8.97	5.70
29	33.80	50.76
30	87.05	106.71
31	123.33	-62.69
32	-62.69	-62.69
33	-34.20	-34.20
34	-34.20	17.25
35	17.25	-14.33
36	29.36	175.09
37	256.91	-119.37
38	-94.18	-94.18
39	-46.69	-46.69
40	0.80	0.80
41	48.28	48.28
42	95.77	95.77
43	120.96	-261.68
44	-177.53	-25.99
45	-9.92	-9.92
46	-9.92	34.45
47	34.45	34.45
48	62.69	62.69
49	62.69	-137.52

	50	-117.80	-95.10
	51	-54.17	-35.93
	52	-7.18	6.94
	53	32.44	47.45
	54	78.78	95.90
	55	110.18	-60.39
	56	-46.92	-46.92
	57	-22.92	-22.92
	58	-1.17	-1.17
	59	18.35	18.35
	60	35.62	35.62
	61	43.77	-105.00
	62	-79.81	-79.81
	63	-32.32	-32.32
	64	15.16	15.16
	65	62.65	62.65
	66	110.13	110.13
	67	135.33	-259.21
	68	-177.38	-31.66
	69	12.04	-19.54
	70	-19.54	31.91
	71	31.91	31.91
	72	60.39	60.39

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

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	40.14	-80.29
2	-70.07	-57.65
3	-34.80	-23.74
4	-5.04	5.30
5	25.96	38.97
6	67.59	83.37
7	96.86	-40.14
8	-40.14	-40.14
9	-28.44	-28.44
10	-28.44	11.64
11	11.64	11.64
12	30.10	133.01
13	173.73	-94.24
14	-76.38	-76.38
15	-42.78	-42.78
16	-9.18	-9.18
17	24.42	24.42
18	58.03	58.03
19	75.88	-28.23
20	-23.21	-23.21
21	-12.29	-12.29
22	0.39	0.39
23	14.80	14.80
24	30.97	30.97
25	40.14	-88.92
26	-77.59	-63.87
27	-38.17	-25.88
28	-5.37	5.44
29	25.95	38.24
30	63.93	77.65
31	88.97	-42.09
32	-42.09	-42.09
33	-31.21	-31.21
34	-31.21	14.75
35	14.75	-12.47
36	31.20	131.12
37	171.09	-85.08
38	-67.23	-67.23
39	-33.62	-33.62
40	-0.02	-0.02
41	33.58	33.58
42	67.18	67.18
43	85.04	-171.78
44	-131.06	-28.15
45	-9.69	-9.69
46	-9.69	30.40
47	30.40	30.40
48	42.09	42.09
49	42.09	-96.88

	50	-83.40	-67.64
	51	-39.02	-26.01
	52	-5.34	5.00
	53	23.72	34.78
	54	57.63	70.05
	55	80.27	-40.14
	56	-30.97	-30.97
	57	-14.81	-14.81
	58	-0.39	-0.39
	59	12.28	12.28
	60	23.21	23.21
	61	28.23	-75.86
	62	-58.01	-58.01
	63	-24.40	-24.40
	64	9.20	9.20
	65	42.80	42.80
	66	76.40	76.40
	67	94.26	-173.04
	68	-133.07	-33.15
	69	10.52	-16.70
	70	-16.70	29.26
	71	29.26	29.26
	72	40.14	40.14

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

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	63.31	-76.38
2	-67.55	-56.36
3	-35.06	-24.40
4	-6.33	3.55
5	22.51	34.07
6	58.25	71.23
7	81.89	-63.31
8	-63.31	-63.31
9	-6.05	-6.05
10	-6.05	-6.05
11	-6.05	-6.05
12	27.57	106.00
13	146.70	-77.66
14	-62.02	-62.02
15	-32.65	-32.65
16	-3.27	-3.27
17	26.10	26.10
18	55.47	55.47
19	71.11	-48.74
20	-40.11	-40.11
21	-21.70	-21.70
22	-0.77	-0.77
23	22.69	22.69
24	48.68	48.68
25	63.31	-78.93
26	-69.22	-57.15
27	-34.36	-23.18
28	-4.49	5.50
29	24.18	35.33
30	57.99	69.94
31	79.49	-64.16
32	-64.16	-64.16
33	-12.84	-12.84
34	-12.84	6.17
35	6.17	-6.37
36	24.50	107.54
37	149.11	-74.62
38	-58.99	-58.99
39	-29.61	-29.61
40	-0.24	-0.24
41	29.14	29.14
42	58.51	58.51
43	74.15	-145.85
44	-105.14	-26.72
45	6.91	6.91
46	6.91	6.91
47	6.91	6.91
48	64.16	64.16
49	64.16	-82.22

	50	-71.70	-58.82
	51	-34.72	-23.13
	52	-4.08	5.86
	53	24.04	34.73
	54	56.09	67.30
	55	76.14	-63.31
	56	-48.69	-48.69
	57	-22.70	-22.70
	58	0.76	0.76
	59	21.70	21.70
	60	40.10	40.10
	61	48.73	-70.87
	62	-55.24	-55.24
	63	-25.86	-25.86
	64	3.51	3.51
	65	32.88	32.88
	66	62.26	62.26
	67	77.89	-149.96
	68	-108.39	-25.35
	69	5.52	-7.02
	70	-7.02	11.98
	71	11.98	11.98
	72	63.31	63.31

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	43.12	-80.89
2	-70.69	-58.25
3	-35.26	-24.11
4	-5.21	5.20
5	25.95	38.94
6	67.41	83.04
7	96.37	-43.12
8	-43.12	-43.12
9	-26.94	-26.94
10	-26.94	11.01
11	11.01	11.01
12	29.74	131.90
13	173.49	-93.65
14	-75.80	-75.80
15	-42.20	-42.20
16	-8.60	-8.60
17	25.01	25.01
18	58.61	58.61
19	76.46	-31.58
20	-25.83	-25.83
21	-13.56	-13.56
22	0.40	0.40
23	16.04	16.04
24	33.37	33.37
25	43.12	-88.95
26	-77.66	-63.97
27	-38.28	-25.97
28	-5.39	5.46
29	26.03	38.35
30	64.03	77.72
31	88.99	-44.96
32	-44.96	-44.96
33	-29.56	-29.56
34	-29.56	13.99
35	13.99	-11.94
36	30.80	130.10
37	170.99	-85.08
38	-67.23	-67.23
39	-33.62	-33.62
40	-0.02	-0.02
41	33.58	33.58
42	67.19	67.19
43	85.04	-171.65
44	-130.05	-27.90
45	-9.16	-9.16
46	-9.16	28.78
47	28.78	28.78
48	44.96	44.96
49	44.96	-96.40

	50	-83.08	-67.45
	51	-38.99	-25.99
	52	-5.24	5.18
	53	24.08	35.24
	54	58.23	70.67
	55	80.88	-43.12
	56	-33.37	-33.37
	57	-16.04	-16.04
	58	-0.40	-0.40
	59	13.56	13.56
	60	25.83	25.83
	61	31.58	-76.44
	62	-58.59	-58.59
	63	-24.99	-24.99
	64	8.62	8.62
	65	42.22	42.22
	66	75.82	75.82
	67	93.67	-172.84
	68	-131.95	-32.65
	69	10.10	-15.84
	70	-15.84	27.71
	71	27.71	27.71
	72	43.12	43.12

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	40.03	-72.12
2	-63.14	-52.01
3	-31.58	-21.54
4	-4.73	4.64
5	23.04	34.65
6	59.79	73.66
7	85.33	-40.03
8	-40.03	-40.03
9	-23.08	-23.08
10	-23.08	9.43
11	9.43	9.43
12	25.92	115.01
13	151.55	-81.72
14	-66.09	-66.09
15	-36.71	-36.71
16	-7.34	-7.34
17	22.03	22.03
18	51.41	51.41
19	67.04	-28.34
20	-23.32	-23.32
21	-12.39	-12.39
22	0.28	0.28
23	14.70	14.70
24	30.86	30.86
25	40.03	-78.99
26	-69.08	-56.86
27	-34.11	-23.09
28	-4.84	4.90
29	23.14	34.17
30	56.92	69.12
31	79.03	-41.61
32	-41.61	-41.61
33	-25.32	-25.32
34	-25.32	11.99
35	11.99	-10.28
36	26.83	113.47
37	149.41	-74.40
38	-58.76	-58.76
39	-29.39	-29.39
40	-0.02	-0.02
41	29.36	29.36
42	58.73	58.73
43	74.37	-149.97
44	-113.43	-24.33
45	-7.85	-7.85
46	-7.85	24.66
47	24.66	24.66
48	41.61	41.61
49	41.61	-85.35

	50	-73.69	-59.83
	51	-34.69	-23.08
	52	-4.67	4.70
	53	21.52	31.56
	54	51.99	63.12
	55	72.11	-40.03
	56	-30.86	-30.86
	57	-14.70	-14.70
	58	-0.28	-0.28
	59	12.39	12.39
	60	23.32	23.32
	61	28.34	-67.03
	62	-51.39	-51.39
	63	-22.02	-22.02
	64	7.36	7.36
	65	36.73	36.73
	66	66.11	66.11
	67	81.74	-150.99
	68	-115.05	-28.41
	69	8.70	-13.58
	70	-13.58	23.74
	71	23.74	23.74
	72	40.03	40.03

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	40.10	-77.23
2	-67.47	-55.53
3	-33.59	-22.92
4	-4.92	5.05
5	24.87	37.35
6	64.67	79.73
7	92.53	-40.10
8	-40.10	-40.10
9	-26.43	-26.43
10	-26.43	10.81
11	10.81	10.81
12	28.53	126.26
13	165.41	-89.54
14	-72.52	-72.52
15	-40.51	-40.51
16	-8.49	-8.49
17	23.53	23.53
18	55.54	55.54
19	72.56	-28.27
20	-23.25	-23.25
21	-12.33	-12.33
22	0.35	0.35
23	14.76	14.76
24	30.93	30.93
25	40.10	-85.20
26	-74.40	-61.24
27	-36.65	-24.83
28	-5.17	5.24
29	24.90	36.72
30	61.30	74.45
31	85.24	-41.91
32	-41.91	-41.91
33	-29.00	-29.00
34	-29.00	13.72
35	13.72	-11.65
36	29.56	124.50
37	162.96	-81.07
38	-64.05	-64.05
39	-32.04	-32.04
40	-0.02	-0.02
41	32.00	32.00
42	64.01	64.01
43	81.03	-163.60
44	-124.45	-26.72
45	-9.00	-9.00
46	-9.00	28.24
47	28.24	28.24
48	41.91	41.91
49	41.91	-92.56

	50	-79.76	-64.71
	51	-37.39	-24.91
	52	-5.09	4.89
	53	22.89	33.57
	54	55.51	67.45
	55	77.21	-40.10
	56	-30.93	-30.93
	57	-14.76	-14.76
	58	-0.35	-0.35
	59	12.33	12.33
	60	23.25	23.25
	61	28.27	-72.55
	62	-55.52	-55.52
	63	-23.51	-23.51
	64	8.51	8.51
	65	40.53	40.53
	66	72.54	72.54
	67	89.56	-164.77
	68	-126.31	-31.37
	69	9.84	-15.53
	70	-15.53	27.19
	71	27.19	27.19
	72	40.10	40.10

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	61.63	-76.05
2	-67.22	-56.04
3	-34.83	-24.23
4	-6.27	3.56
5	22.47	34.04
6	58.31	71.38
7	82.14	-61.63
8	-61.63	-61.63
9	-6.49	-6.49
10	-6.49	-6.49
11	-6.49	-6.49
12	28.06	106.50
13	146.62	-77.97
14	-62.34	-62.34
15	-32.96	-32.96
16	-3.59	-3.59
17	25.78	25.78
18	55.16	55.16
19	70.79	-46.85
20	-38.63	-38.63
21	-20.98	-20.98
22	-0.77	-0.77
23	22.00	22.00
24	47.34	47.34
25	61.63	-78.89
26	-69.15	-57.06
27	-34.26	-23.09
28	-4.44	5.52
29	24.16	35.30
30	57.95	69.92
31	79.50	-62.55
32	-62.55	-62.55
33	-13.77	-13.77
34	-13.77	6.60
35	6.60	-6.67
36	24.73	108.15
37	149.22	-74.64
38	-59.00	-59.00
39	-29.63	-29.63
40	-0.26	-0.26
41	29.12	29.12
42	58.49	58.49
43	74.13	-145.70
44	-105.58	-27.14
45	7.41	7.41
46	7.41	7.41
47	7.41	7.41
48	62.55	62.55
49	62.55	-82.49

	50	-71.88	-58.92
	51	-34.73	-23.14
	52	-4.14	5.76
	53	23.83	34.48
	54	55.76	66.95
	55	75.79	-61.64
	56	-47.34	-47.34
	57	-22.01	-22.01
	58	0.77	0.77
	59	20.98	20.98
	60	38.63	38.63
	61	46.85	-70.54
	62	-54.90	-54.90
	63	-25.53	-25.53
	64	3.85	3.85
	65	33.22	33.22
	66	62.59	62.59
	67	78.23	-150.13
	68	-109.06	-25.65
	69	5.76	-7.51
	70	-7.51	12.86
	71	12.86	12.86
	72	61.64	61.64

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

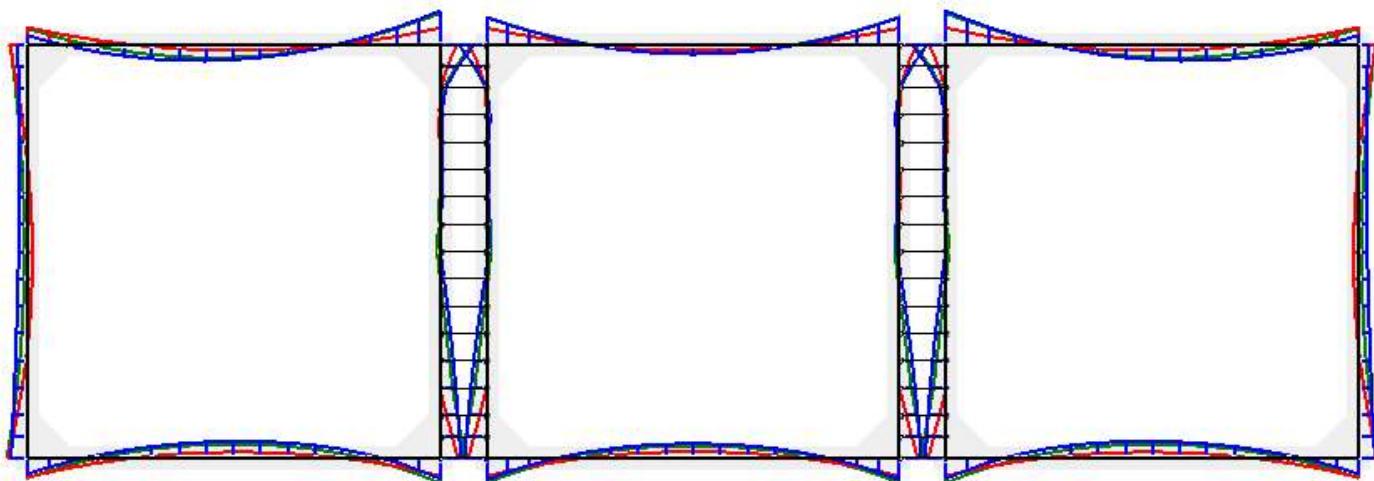
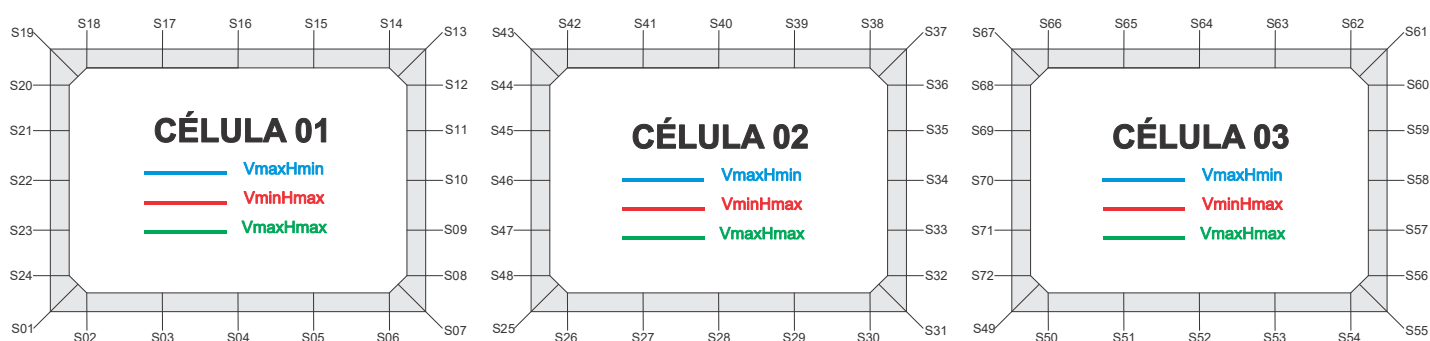
ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	41.96	-77.61
2	-67.86	-55.91
3	-33.88	-23.15
4	-5.03	4.99
5	24.86	37.33
6	64.55	79.53
7	92.23	-41.96
8	-41.96	-41.96
9	-25.49	-25.49
10	-25.49	10.42
11	10.42	10.42
12	28.31	125.57
13	165.26	-89.18
14	-72.16	-72.16
15	-40.14	-40.14
16	-8.13	-8.13
17	23.89	23.89
18	55.91	55.91
19	72.93	-30.37
20	-24.89	-24.89
21	-13.12	-13.12
22	0.35	0.35
23	15.54	15.54
24	32.43	32.43
25	41.96	-85.22
26	-74.44	-61.31
27	-36.72	-24.89
28	-5.18	5.25
29	24.95	36.78
30	61.36	74.50
31	85.26	-43.71
32	-43.71	-43.71
33	-27.97	-27.97
34	-27.97	13.24
35	13.24	-11.32
36	29.31	123.87
37	162.90	-81.07
38	-64.05	-64.05
39	-32.04	-32.04
40	-0.02	-0.02
41	32.00	32.00
42	64.01	64.01
43	81.04	-163.52
44	-123.82	-26.56
45	-8.67	-8.67
46	-8.67	27.24
47	27.24	27.24
48	43.71	43.71
49	43.71	-92.26

	50	-79.56	-64.59
	51	-37.38	-24.90
	52	-5.03	5.00
	53	23.12	33.86
	54	55.89	67.84
	55	77.59	-41.96
	56	-32.43	-32.43
	57	-15.54	-15.54
	58	-0.35	-0.35
	59	13.12	13.12
	60	24.89	24.89
	61	30.37	-72.91
	62	-55.89	-55.89
	63	-23.87	-23.87
	64	8.14	8.14
	65	40.16	40.16
	66	72.18	72.18
	67	89.20	-164.65
	68	-125.61	-31.06
	69	9.57	-14.99
	70	-14.99	26.22
	71	26.22	26.22
	72	41.96	41.96

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	-34.60	34.60
2	7.38	7.38
3	-24.97	-24.97
4	-36.52	-36.52
5	-27.72	-27.72
6	9.57	9.57
7	45.21	45.21
8	39.52	39.52
9	23.21	23.21
10	1.13	1.13
11	4.44	4.44
12	12.67	12.67
13	73.70	-73.70
14	-38.61	-38.61
15	9.32	9.32
16	32.31	32.31
17	30.38	30.38
18	3.51	3.51
19	-20.56	-20.56
20	-17.92	-17.92
21	-16.16	-16.16
22	-18.10	-18.10
23	-23.01	-23.01
24	-30.19	-30.19
25	-34.60	47.34
26	15.56	15.56
27	-20.67	-20.67
28	-31.55	-31.55
29	-20.69	-20.69
30	15.52	15.52
31	47.30	47.30
32	39.91	39.91
33	20.36	20.36
34	-4.97	-4.97
35	-4.44	-4.44
36	0.14	0.14
37	59.43	-59.43
38	-29.85	-29.85
39	7.55	7.55
40	20.01	20.01
41	7.54	7.54
42	-29.86	-29.86
43	-59.44	-59.44
44	-0.11	-0.11
45	4.88	4.88
46	4.93	4.93
47	-20.40	-20.40
48	-39.95	-39.95
49	-47.34	45.18

	50	9.54	9.54
	51	-27.74	-27.74
	52	-36.53	-36.53
	53	-24.97	-24.97
	54	7.39	7.39
	55	34.61	34.61
	56	30.20	30.20
	57	23.02	23.02
	58	18.10	18.10
	59	16.16	16.16
	60	17.92	17.92
	61	20.55	-20.55
	62	3.51	3.51
	63	30.38	30.38
	64	32.32	32.32
	65	9.33	9.33
	66	-38.59	-38.59
	67	-73.69	-73.69
	68	-12.70	-12.70
	69	-4.88	-4.88
	70	-1.10	-1.10
	71	-23.18	-23.18
	72	-39.49	-39.49

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-42.39	42.39
2	21.49	21.49
3	-4.22	-4.22
4	-12.95	-12.95
5	-5.92	-5.92
6	18.33	18.33
7	38.74	38.74
8	14.85	14.85
9	-0.33	-0.33
10	-0.31	-0.31
11	-0.28	-0.28
12	2.50	2.50
13	36.60	-36.60
14	-18.45	-18.45
15	4.38	4.38
16	11.78	11.78
17	3.77	3.77
18	-19.66	-19.66
19	-38.13	-38.13
20	-20.71	-20.71
21	2.64	2.64
22	11.50	11.50
23	4.11	4.11
24	-21.29	-21.29
25	-42.39	39.18
26	18.59	18.59
27	-6.13	-6.13
28	-13.89	-13.89
29	-6.14	-6.14
30	18.57	18.57
31	39.15	39.15
32	15.26	15.26
33	0.10	0.10
34	0.16	0.16
35	0.24	0.24
36	2.91	2.91
37	36.98	-36.98
38	-18.67	-18.67
39	4.45	4.45
40	12.16	12.16
41	4.45	4.45
42	-18.69	-18.69
43	-36.99	-36.99
44	-2.90	-2.90
45	-0.12	-0.12
46	-0.11	-0.11
47	-0.09	-0.09
48	-15.28	-15.28
49	-39.18	38.72

	50	18.31	18.31
	51	-5.93	-5.93
	52	-12.96	-12.96
	53	-4.22	-4.22
	54	21.49	21.49
	55	42.39	42.39
	56	21.30	21.30
	57	-4.11	-4.11
	58	-11.50	-11.50
	59	-2.63	-2.63
	60	20.71	20.71
	61	38.13	-38.13
	62	-19.67	-19.67
	63	3.77	3.77
	64	11.79	11.79
	65	4.38	4.38
	66	-18.44	-18.44
	67	-36.59	-36.59
	68	-2.52	-2.52
	69	0.16	0.16
	70	0.25	0.25
	71	0.32	0.32
	72	-14.83	-14.83

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-43.68	43.68
2	14.53	14.53
3	-19.66	-19.66
4	-30.38	-30.38
5	-19.03	-19.03
6	19.88	19.88
7	54.45	54.45
8	38.03	38.03
9	14.25	14.25
10	-5.72	-5.72
11	2.44	2.44
12	8.96	8.96
13	68.31	-68.31
14	-35.37	-35.37
15	8.42	8.42
16	27.28	27.28
17	21.22	21.22
18	-9.78	-9.78
19	-36.01	-36.01
20	-24.90	-24.90
21	-10.29	-10.29
22	-5.34	-5.34
23	-11.22	-11.22
24	-29.12	-29.12
25	-43.68	53.83
26	21.76	21.76
27	-15.69	-15.69
28	-27.14	-27.14
29	-15.63	-15.63
30	21.85	21.85
31	53.95	53.95
32	36.81	36.81
33	11.28	11.28
34	-10.64	-10.64
35	-0.26	-0.26
36	2.33	2.33
37	60.85	-60.85
38	-31.26	-31.26
39	6.15	6.15
40	18.63	18.63
41	6.18	6.18
42	-31.20	-31.20
43	-60.77	-60.77
44	-2.14	-2.14
45	3.01	3.01
46	9.80	9.80
47	-11.55	-11.55
48	-36.69	-36.69
49	-53.83	54.56

	50	19.97	19.97
	51	-18.98	-18.98
	52	-30.35	-30.35
	53	-19.65	-19.65
	54	14.53	14.53
	55	43.67	43.67
	56	29.10	29.10
	57	11.21	11.21
	58	5.33	5.33
	59	10.28	10.28
	60	24.88	24.88
	61	36.00	-36.00
	62	-9.77	-9.77
	63	21.21	21.21
	64	27.26	27.26
	65	8.38	8.38
	66	-35.42	-35.42
	67	-68.36	-68.36
	68	-9.13	-9.13
	69	-5.17	-5.17
	70	6.58	6.58
	71	-13.97	-13.97
	72	-38.13	-38.13

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-35.06	35.06
2	7.27	7.27
3	-26.21	-26.21
4	-39.45	-39.45
5	-33.15	-33.15
6	1.37	1.37
7	36.03	36.03
8	30.51	30.51
9	14.54	14.54
10	1.42	1.42
11	0.65	0.65
12	6.14	6.14
13	69.92	-69.92
14	-35.44	-35.44
15	11.31	11.31
16	33.13	33.13
17	30.02	30.02
18	1.98	1.98
19	-22.70	-22.70
20	-19.89	-19.89
21	-17.80	-17.80
22	-19.40	-19.40
23	-23.98	-23.98
24	-30.82	-30.82
25	-35.06	46.06
26	13.99	13.99
27	-22.62	-22.62
28	-34.32	-34.32
29	-25.05	-25.05
30	9.23	9.23
31	40.33	40.33
32	32.89	32.89
33	13.23	13.23
34	-2.43	-2.43
35	-4.30	-4.30
36	-2.09	-2.09
37	57.48	-57.48
38	-28.30	-28.30
39	8.32	8.32
40	20.02	20.02
41	6.79	6.79
42	-31.38	-31.38
43	-61.36	-61.36
44	0.49	0.49
45	2.29	2.29
46	-2.16	-2.16
47	-18.96	-18.96
48	-38.62	-38.62
49	-46.06	43.76

	50	7.26	7.26
	51	-30.48	-30.48
	52	-39.57	-39.57
	53	-29.16	-29.16
	54	1.02	1.02
	55	26.96	26.96
	56	22.44	22.44
	57	15.08	15.08
	58	9.97	9.97
	59	7.84	7.84
	60	9.41	9.41
	61	11.94	-11.94
	62	10.90	10.90
	63	35.44	35.44
	64	35.04	35.04
	65	9.72	9.72
	66	-40.54	-40.54
	67	-76.85	-76.85
	68	-15.63	-15.63
	69	-10.26	-10.26
	70	-8.97	-8.97
	71	-21.47	-21.47
	72	-37.97	-37.97

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-42.45	42.45
2	21.48	21.48
3	-4.39	-4.39
4	-13.35	-13.35
5	-6.65	-6.65
6	17.22	17.22
7	37.50	37.50
8	13.64	13.64
9	-0.78	-0.78
10	-0.53	-0.53
11	-0.27	-0.27
12	1.21	1.21
13	36.12	-36.12
14	-18.06	-18.06
15	4.61	4.61
16	11.85	11.85
17	3.68	3.68
18	-19.92	-19.92
19	-38.46	-38.46
20	-21.02	-21.02
21	2.38	2.38
22	11.30	11.30
23	3.96	3.96
24	-21.39	-21.39
25	-42.45	38.86
26	18.22	18.22
27	-6.54	-6.54
28	-14.43	-14.43
29	-6.96	-6.96
30	17.39	17.39
31	37.86	37.86
32	13.96	13.96
33	-0.51	-0.51
34	-0.18	-0.18
35	0.14	0.14
36	1.50	1.50
37	36.37	-36.37
38	-18.14	-18.14
39	4.85	4.85
40	12.41	12.41
41	4.55	4.55
42	-18.73	-18.73
43	-37.11	-37.11
44	-2.23	-2.23
45	-0.83	-0.83
46	-0.65	-0.65
47	-0.47	-0.47
48	-14.96	-14.96
49	-38.86	38.34

	50	17.93	17.93
	51	-6.19	-6.19
	52	-13.07	-13.07
	53	-4.21	-4.21
	54	21.56	21.56
	55	42.44	42.44
	56	21.31	21.31
	57	-4.18	-4.18
	58	-11.65	-11.65
	59	-2.87	-2.87
	60	20.39	20.39
	61	37.76	-37.76
	62	-19.33	-19.33
	63	4.04	4.04
	64	11.99	11.99
	65	4.53	4.53
	66	-18.36	-18.36
	67	-36.54	-36.54
	68	-1.71	-1.71
	69	-0.41	-0.41
	70	-0.15	-0.15
	71	0.12	0.12
	72	-14.41	-14.41

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-43.99	43.99
2	14.42	14.42
3	-20.65	-20.65
4	-32.72	-32.72
5	-23.38	-23.38
6	13.33	13.33
7	47.16	47.16
8	30.87	30.87
9	9.66	9.66
10	-6.61	-6.61
11	0.42	0.42
12	4.36	4.36
13	65.70	-65.70
14	-33.21	-33.21
15	9.73	9.73
16	27.75	27.75
17	20.83	20.83
18	-11.01	-11.01
19	-37.69	-37.69
20	-26.44	-26.44
21	-11.56	-11.56
22	-6.33	-6.33
23	-11.95	-11.95
24	-29.57	-29.57
25	-43.99	52.28
26	20.07	20.07
27	-17.50	-17.50
28	-29.51	-29.51
29	-19.21	-19.21
30	16.81	16.81
31	48.44	48.44
32	31.20	31.20
33	8.26	8.26
34	-9.69	-9.69
35	-0.64	-0.64
36	0.14	0.14
37	59.54	-59.54
38	-30.17	-30.17
39	6.80	6.80
40	18.85	18.85
41	5.97	5.97
42	-31.84	-31.84
43	-61.64	-61.64
44	-1.25	-1.25
45	0.86	0.86
46	6.07	6.07
47	-12.01	-12.01
48	-35.04	-35.04
49	-52.28	52.89

	50	17.78	17.78
	51	-21.19	-21.19
	52	-32.38	-32.38
	53	-22.07	-22.07
	54	10.94	10.94
	55	39.27	39.27
	56	24.53	24.53
	57	6.29	6.29
	58	0.07	0.07
	59	4.68	4.68
	60	18.94	18.94
	61	29.87	-29.87
	62	-4.46	-4.46
	63	24.97	24.97
	64	29.48	29.48
	65	9.05	9.05
	66	-36.31	-36.31
	67	-70.06	-70.06
	68	-10.03	-10.03
	69	-8.05	-8.05
	70	2.21	2.21
	71	-14.54	-14.54
	72	-36.28	-36.28

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-30.34	30.34
2	9.67	9.67
3	-14.51	-14.51
4	-22.05	-22.05
5	-13.92	-13.92
6	13.91	13.91
7	38.69	38.69
8	27.66	27.66
9	10.68	10.68
10	-4.26	-4.26
11	1.85	1.85
12	6.55	6.55
13	48.73	-48.73
14	-25.27	-25.27
15	6.01	6.01
16	19.65	19.65
17	15.65	15.65
18	-5.99	-5.99
19	-24.40	-24.40
20	-17.32	-17.32
21	-7.92	-7.92
22	-4.72	-4.72
23	-8.64	-8.64
24	-20.58	-20.58
25	-30.34	38.19
26	15.30	15.30
27	-11.39	-11.39
28	-19.55	-19.55
29	-11.36	-11.36
30	15.37	15.37
31	38.28	38.28
32	26.71	26.71
33	8.42	8.42
34	-7.97	-7.97
35	-0.22	-0.22
36	1.56	1.56
37	43.11	-43.11
38	-22.17	-22.17
39	4.31	4.31
40	13.14	13.14
41	4.33	4.33
42	-22.12	-22.12
43	-43.05	-43.05
44	-1.41	-1.41
45	2.26	2.26
46	7.34	7.34
47	-8.61	-8.61
48	-26.62	-26.62
49	-38.19	38.77

	50	13.98	13.98
	51	-13.87	-13.87
	52	-22.02	-22.02
	53	-14.51	-14.51
	54	9.66	9.66
	55	30.33	30.33
	56	20.56	20.56
	57	8.62	8.62
	58	4.71	4.71
	59	7.91	7.91
	60	17.31	17.31
	61	24.39	-24.39
	62	-5.98	-5.98
	63	15.65	15.65
	64	19.64	19.64
	65	5.99	5.99
	66	-25.30	-25.30
	67	-48.77	-48.77
	68	-6.68	-6.68
	69	-3.88	-3.88
	70	4.89	4.89
	71	-10.47	-10.47
	72	-27.73	-27.73

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-35.49	35.49
2	15.70	15.70
3	-8.24	-8.24
4	-16.28	-16.28
5	-9.49	-9.49
6	14.65	14.65
7	35.71	35.71
8	18.30	18.30
9	5.10	5.10
10	1.92	1.92
11	-1.25	-1.25
12	4.34	4.34
13	39.09	-39.09
14	-19.88	-19.88
15	4.97	4.97
16	14.39	14.39
17	8.40	8.40
18	-13.01	-13.01
19	-30.42	-30.42
20	-18.18	-18.18
21	-1.85	-1.85
22	4.16	4.16
23	-1.48	-1.48
24	-20.11	-20.11
25	-35.49	35.79
26	15.42	15.42
27	-8.53	-8.53
28	-15.75	-15.75
29	-8.00	-8.00
30	16.43	16.43
31	36.97	36.97
32	19.33	19.33
33	3.61	3.61
34	-3.13	-3.13
35	0.11	0.11
36	2.25	2.25
37	37.54	-37.54
38	-19.17	-19.17
39	4.09	4.09
40	11.93	11.93
41	4.34	4.34
42	-18.67	-18.67
43	-36.91	-36.91
44	-2.39	-2.39
45	2.75	2.75
46	-0.88	-0.88
47	-4.50	-4.50
48	-18.15	-18.15
49	-35.79	36.75

	50	15.58	15.58
	51	-8.88	-8.88
	52	-15.98	-15.98
	53	-8.15	-8.15
	54	15.63	15.63
	55	35.35	35.35
	56	19.97	19.97
	57	1.34	1.34
	58	-4.31	-4.31
	59	1.70	1.70
	60	18.03	18.03
	61	30.26	-30.26
	62	-12.92	-12.92
	63	8.37	8.37
	64	14.23	14.23
	65	4.68	4.68
	66	-20.30	-20.30
	67	-39.57	-39.57
	68	-4.04	-4.04
	69	-1.46	-1.46
	70	2.23	2.23
	71	-4.06	-4.06
	72	-19.34	-19.34

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-31.34	31.34
2	10.50	10.50
3	-13.96	-13.96
4	-21.64	-21.64
5	-13.54	-13.54
6	14.25	14.25
7	38.91	38.91
8	27.06	27.06
9	10.08	10.08
10	-4.06	-4.06
11	1.72	1.72
12	6.33	6.33
13	48.32	-48.32
14	-25.02	-25.02
15	5.95	5.95
16	19.29	19.29
17	14.98	14.98
18	-6.97	-6.97
19	-25.54	-25.54
20	-17.64	-17.64
21	-7.23	-7.23
22	-3.70	-3.70
23	-7.94	-7.94
24	-20.84	-20.84
25	-31.34	38.49
26	15.58	15.58
27	-11.17	-11.17
28	-19.36	-19.36
29	-11.13	-11.13
30	15.65	15.65
31	38.57	38.57
32	26.21	26.21
33	7.99	7.99
34	-7.53	-7.53
35	-0.18	-0.18
36	1.65	1.65
37	43.05	-43.05
38	-22.11	-22.11
39	4.36	4.36
40	13.19	13.19
41	4.38	4.38
42	-22.07	-22.07
43	-43.00	-43.00
44	-1.52	-1.52
45	2.12	2.12
46	6.93	6.93
47	-8.18	-8.18
48	-26.12	-26.12
49	-38.49	38.99

	50	14.31	14.31
	51	-13.49	-13.49
	52	-21.62	-21.62
	53	-13.96	-13.96
	54	10.49	10.49
	55	31.33	31.33
	56	20.82	20.82
	57	7.93	7.93
	58	3.69	3.69
	59	7.21	7.21
	60	17.63	17.63
	61	25.53	-25.53
	62	-6.96	-6.96
	63	14.98	14.98
	64	19.27	19.27
	65	5.93	5.93
	66	-25.06	-25.06
	67	-48.36	-48.36
	68	-6.45	-6.45
	69	-3.65	-3.65
	70	4.66	4.66
	71	-9.89	-9.89
	72	-27.13	-27.13

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-28.32	28.32
2	9.73	9.73
3	-12.14	-12.14
4	-19.01	-19.01
5	-11.82	-11.82
6	12.86	12.86
7	34.72	34.72
8	23.71	23.71
9	8.63	8.63
10	-3.48	-3.48
11	1.47	1.47
12	5.47	5.47
13	42.12	-42.12
14	-21.80	-21.80
15	5.19	5.19
16	16.75	16.75
17	12.89	12.89
18	-6.38	-6.38
19	-22.67	-22.67
20	-15.56	-15.56
21	-6.11	-6.11
22	-2.85	-2.85
23	-6.71	-6.71
24	-18.59	-18.59
25	-28.32	34.37
26	14.01	14.01
27	-9.79	-9.79
28	-17.08	-17.08
29	-9.76	-9.76
30	14.07	14.07
31	34.44	34.44
32	23.00	23.00
33	6.85	6.85
34	-6.44	-6.44
35	-0.15	-0.15
36	1.48	1.48
37	37.62	-37.62
38	-19.31	-19.31
39	3.83	3.83
40	11.55	11.55
41	3.85	3.85
42	-19.28	-19.28
43	-37.58	-37.58
44	-1.36	-1.36
45	1.81	1.81
46	5.93	5.93
47	-7.01	-7.01
48	-22.93	-22.93
49	-34.37	34.78

	50	12.91	12.91
	51	-11.78	-11.78
	52	-19.00	-19.00
	53	-12.13	-12.13
	54	9.72	9.72
	55	28.32	28.32
	56	18.58	18.58
	57	6.70	6.70
	58	2.84	2.84
	59	6.10	6.10
	60	15.55	15.55
	61	22.66	-22.66
	62	-6.38	-6.38
	63	12.89	12.89
	64	16.74	16.74
	65	5.16	5.16
	66	-21.83	-21.83
	67	-42.16	-42.16
	68	-5.58	-5.58
	69	-3.12	-3.12
	70	4.00	4.00
	71	-8.46	-8.46
	72	-23.77	-23.77

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-29.59	29.59
2	9.69	9.69
3	-13.62	-13.62
4	-20.91	-20.91
5	-13.13	-13.13
6	13.52	13.52
7	37.20	37.20
8	26.18	26.18
9	9.91	9.91
10	-3.97	-3.97
11	1.71	1.71
12	6.15	6.15
13	46.25	-46.25
14	-23.97	-23.97
15	5.70	5.70
16	18.56	18.56
17	14.62	14.62
18	-6.14	-6.14
19	-23.75	-23.75
20	-16.66	-16.66
21	-7.24	-7.24
22	-4.02	-4.02
23	-7.91	-7.91
24	-19.83	-19.83
25	-29.59	36.76
26	14.81	14.81
27	-10.79	-10.79
28	-18.63	-18.63
29	-10.76	-10.76
30	14.88	14.88
31	36.84	36.84
32	25.32	25.32
33	7.83	7.83
34	-7.40	-7.40
35	-0.19	-0.19
36	1.53	1.53
37	41.05	-41.05
38	-21.10	-21.10
39	4.13	4.13
40	12.54	12.54
41	4.15	4.15
42	-21.06	-21.06
43	-41.00	-41.00
44	-1.39	-1.39
45	2.09	2.09
46	6.82	6.82
47	-8.01	-8.01
48	-25.23	-25.23
49	-36.76	37.28

	50	13.58	13.58
	51	-13.09	-13.09
	52	-20.89	-20.89
	53	-13.62	-13.62
	54	9.68	9.68
	55	29.58	29.58
	56	19.82	19.82
	57	7.90	7.90
	58	4.01	4.01
	59	7.23	7.23
	60	16.65	16.65
	61	23.74	-23.74
	62	-6.13	-6.13
	63	14.61	14.61
	64	18.55	18.55
	65	5.68	5.68
	66	-24.00	-24.00
	67	-46.29	-46.29
	68	-6.27	-6.27
	69	-3.60	-3.60
	70	4.56	4.56
	71	-9.72	-9.72
	72	-26.25	-26.25

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-34.94	34.94
2	15.24	15.24
3	-8.55	-8.55
4	-16.53	-16.53
5	-9.75	-9.75
6	14.40	14.40
7	35.51	35.51
8	18.56	18.56
9	5.50	5.50
10	2.09	2.09
11	-1.31	-1.31
12	4.49	4.49
13	39.30	-39.30
14	-20.00	-20.00
15	5.01	5.01
16	14.61	14.61
17	8.78	8.78
18	-12.46	-12.46
19	-29.78	-29.78
20	-18.01	-18.01
21	-2.25	-2.25
22	3.57	3.57
23	-1.89	-1.89
24	-19.98	-19.98
25	-34.94	35.56
26	15.20	15.20
27	-8.69	-8.69
28	-15.88	-15.88
29	-8.13	-8.13
30	16.28	16.28
31	36.82	36.82
32	19.62	19.62
33	3.85	3.85
34	-3.38	-3.38
35	0.09	0.09
36	2.20	2.20
37	37.59	-37.59
38	-19.21	-19.21
39	4.06	4.06
40	11.90	11.90
41	4.33	4.33
42	-18.67	-18.67
43	-36.91	-36.91
44	-2.36	-2.36
45	2.97	2.97
46	-0.92	-0.92
47	-4.81	-4.81
48	-18.36	-18.36
49	-35.56	36.63

	50	15.40	15.40
	51	-9.10	-9.10
	52	-16.21	-16.21
	53	-8.46	-8.46
	54	15.17	15.17
	55	34.79	34.79
	56	19.82	19.82
	57	1.73	1.73
	58	-3.73	-3.73
	59	2.09	2.09
	60	17.85	17.85
	61	29.61	-29.61
	62	-12.37	-12.37
	63	8.75	8.75
	64	14.44	14.44
	65	4.71	4.71
	66	-20.45	-20.45
	67	-39.81	-39.81
	68	-4.17	-4.17
	69	-1.58	-1.58
	70	2.36	2.36
	71	-4.39	-4.39
	72	-19.67	-19.67

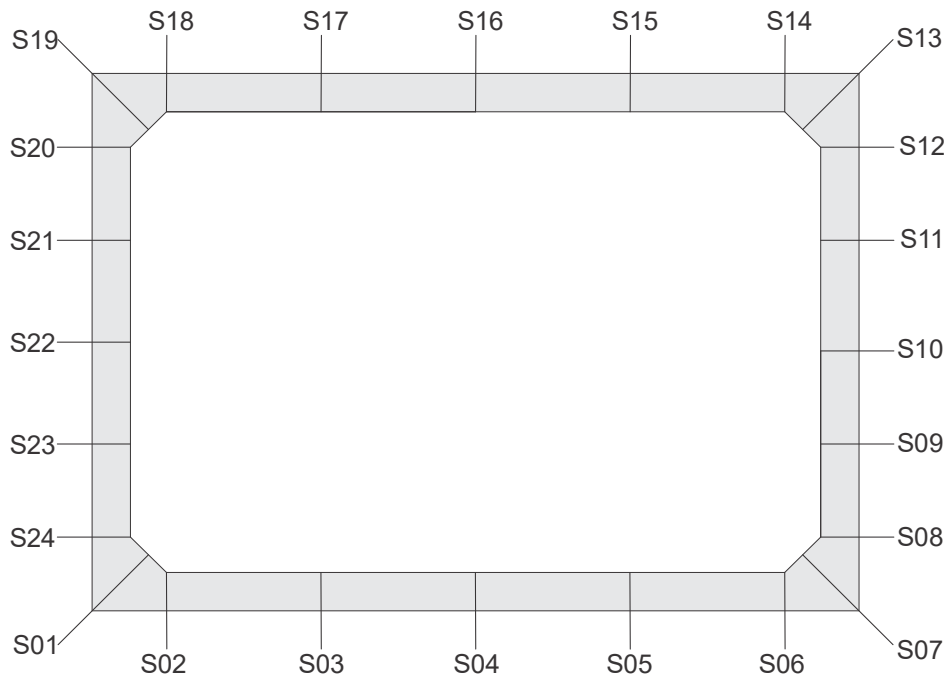
```
#####
#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VmaxHmax                                   #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-30.21	30.21
2	10.21	10.21
3	-13.28	-13.28
4	-20.65	-20.65
5	-12.89	-12.89
6	13.72	13.72
7	37.34	37.34
8	25.80	25.80
9	9.54	9.54
10	-3.84	-3.84
11	1.63	1.63
12	6.01	6.01
13	46.00	-46.00
14	-23.81	-23.81
15	5.67	5.67
16	18.34	18.34
17	14.20	14.20
18	-6.75	-6.75
19	-24.47	-24.47
20	-16.86	-16.86
21	-6.81	-6.81
22	-3.38	-3.38
23	-7.48	-7.48
24	-19.99	-19.99
25	-30.21	36.94
26	14.99	14.99
27	-10.65	-10.65
28	-18.50	-18.50
29	-10.62	-10.62
30	15.06	15.06
31	37.02	37.02
32	25.00	25.00
33	7.57	7.57
34	-7.12	-7.12
35	-0.17	-0.17
36	1.59	1.59
37	41.02	-41.02
38	-21.06	-21.06
39	4.16	4.16
40	12.58	12.58
41	4.18	4.18
42	-21.02	-21.02
43	-40.97	-40.97
44	-1.46	-1.46
45	2.01	2.01
46	6.56	6.56
47	-7.74	-7.74
48	-24.92	-24.92
49	-36.94	37.41

	50	13.79	13.79
	51	-12.85	-12.85
	52	-20.63	-20.63
	53	-13.27	-13.27
	54	10.20	10.20
	55	30.20	30.20
	56	19.98	19.98
	57	7.47	7.47
	58	3.37	3.37
	59	6.79	6.79
	60	16.85	16.85
	61	24.45	-24.45
	62	-6.74	-6.74
	63	14.19	14.19
	64	18.32	18.32
	65	5.64	5.64
	66	-23.85	-23.85
	67	-46.04	-46.04
	68	-6.13	-6.13
	69	-3.45	-3.45
	70	4.42	4.42
	71	-9.35	-9.35
	72	-25.87	-25.87

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	3.65	4.38	2.32	2.79
3	2.32	2.79	4.32	5.19
4	2.32	2.79	6.66	7.99
5	2.32	2.79	4.87	5.84
6	3.34	4.01	2.32	2.79
7	5.47	6.57	1.26	1.26
8	6.02	7.23	2.32	2.79
9	2.75	3.30	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	7.19	8.63	2.32	2.79
15	2.32	2.79	2.32	2.79
16	2.32	2.79	5.88	7.06
17	2.32	2.79	5.49	6.59
18	3.39	4.07	2.32	2.79
19	5.47	6.57	1.26	1.26
20	3.17	3.80	2.32	2.79
21	2.32	2.79	2.32	2.79
22	2.32	2.79	2.32	2.79
23	2.69	3.23	2.32	2.79
24	4.07	4.88	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	-94.93	6.33	-83.01	5.47	5.20	0.00
13	-93.65	48.32	-28.34	42.12	1.65	0.00
14	-31.58	25.02	-28.34	21.80	36.38	0.00
16	-28.23	19.65	-48.74	14.39	85.45	0.00
18	-31.58	6.97	-28.34	6.38	7.26	0.00
19	-76.46	25.54	-28.34	22.67	-8.52	0.00
20	-77.74	17.64	-68.32	15.56	26.96	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	103.55	188.80	0.00	0.00
2	4.38	3.98E-003	96.34	77.32	571.15	0.00
6	4.01	3.64E-003	107.81	76.45	571.15	1.97
7	6.57	2.12E-003	119.57	180.19	0.00	0.00
13	6.57	2.12E-003	148.27	181.99	0.00	0.00
14	8.63	7.85E-003	69.43	89.10	0.00	0.00
18	4.07	3.70E-003	77.47	78.50	0.00	0.00
19	6.57	2.12E-003	90.07	185.76	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	-20.05	29.59	6.30	0.030
2	4.38	-40.10	9.69	6.30	0.040
3	5.19	-40.10	13.62	8.00	0.080
4	7.99	-40.10	20.91	8.00	0.085
5	5.84	-40.10	13.13	8.00	0.058
6	4.01	-40.10	13.52	6.30	0.103
7	6.57	-70.04	37.20	6.30	0.038
8	7.23	-98.70	26.18	6.30	0.112
9	3.30	-96.73	9.91	6.30	0.044
10	2.79	-94.76	3.97	6.30	0.001
11	2.79	-92.79	1.71	6.30	0.000
12	2.79	-90.83	6.15	6.30	0.013
13	6.57	-58.91	46.25	6.30	0.066
14	8.63	-28.27	23.97	6.30	0.080
15	2.79	-28.27	5.70	6.30	0.032
16	7.06	-28.27	18.56	6.30	0.070
17	6.59	-28.27	14.62	6.30	0.048
18	4.07	-28.27	6.14	6.30	0.018
19	6.57	-50.42	23.75	6.30	0.015
20	3.80	-73.85	16.66	6.30	0.155
21	2.79	-75.81	7.24	6.30	0.031
22	2.79	-77.78	4.02	6.30	0.003
23	3.23	-79.75	7.91	6.30	0.029
24	4.88	-81.72	19.83	6.30	0.137

VminHmax

Seção	As (cm ² /m)	Nsd (kN)	Msd (kN.m)	Ø (mm)	w (mm)
1	6.57	-30.82	34.94	6.30	0.041
2	4.38	-61.63	15.24	6.30	0.101
3	5.19	-61.63	8.55	8.00	0.022
4	7.99	-61.63	16.53	8.00	0.046
5	5.84	-61.63	9.75	8.00	0.024
6	4.01	-61.63	14.40	6.30	0.106
7	6.57	-75.02	35.51	6.30	0.033
8	7.23	-87.13	18.56	6.30	0.052
9	3.30	-85.16	5.50	6.30	0.007
10	2.79	-83.19	2.09	6.30	0.000
11	2.79	-81.22	1.31	6.30	0.000
12	2.79	-79.26	4.49	6.30	0.004
13	6.57	-62.41	39.30	6.30	0.045
14	8.63	-46.85	20.00	6.30	0.051
15	2.79	-46.85	5.01	6.30	0.017
16	7.06	-46.85	14.61	6.30	0.038
17	6.59	-46.85	8.78	6.30	0.013
18	4.07	-46.85	12.46	6.30	0.080
19	6.57	-58.82	29.78	6.30	0.024
20	3.80	-72.07	18.01	6.30	0.187
21	2.79	-74.04	2.25	6.30	0.000
22	2.79	-76.01	3.57	6.30	0.001
23	3.23	-77.98	1.89	6.30	0.000
24	4.88	-79.95	19.98	6.30	0.140

VERIFICAÇÃO DA FISSURAÇÃO (CONT.)

VmaxHmax

Seção	As (cm ² /m)	Nsd (kN)	Msd (kN.m)	Ø (mm)	w (mm)
1	6.57	-20.98	30.21	6.30	0.032
2	4.38	-41.96	10.21	6.30	0.045
3	5.19	-41.96	13.28	8.00	0.074
4	7.99	-41.96	20.65	8.00	0.083
5	5.84	-41.96	12.89	8.00	0.055
6	4.01	-41.96	13.72	6.30	0.106
7	6.57	-70.79	37.34	6.30	0.038
8	7.23	-98.34	25.80	6.30	0.108
9	3.30	-96.37	9.54	6.30	0.040
10	2.79	-94.40	3.84	6.30	0.000
11	2.79	-92.43	1.63	6.30	0.000
12	2.79	-90.46	6.01	6.30	0.012
13	6.57	-59.77	46.00	6.30	0.065
14	8.63	-30.37	23.81	6.30	0.078
15	2.79	-30.37	5.67	6.30	0.031
16	7.06	-30.37	18.34	6.30	0.068
17	6.59	-30.37	14.20	6.30	0.045
18	4.07	-30.37	6.75	6.30	0.022
19	6.57	-51.65	24.47	6.30	0.015
20	3.80	-74.21	16.86	6.30	0.159
21	2.79	-76.18	6.81	6.30	0.025
22	2.79	-78.15	3.38	6.30	0.001
23	3.23	-80.12	7.48	6.30	0.024
24	4.88	-82.09	19.99	6.30	0.139

NOTA:

* Seção com aumento na armadura devido à fissuração.