



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

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

sexta-feira, 4 de outubro de 2019



ASSOCIAÇÃO BRASILEIRA
DOS FABRICANTES DE
TUBOS DE CONCRETO

DADOS DO FABRICANTE



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

DADOS DO CLIENTE



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

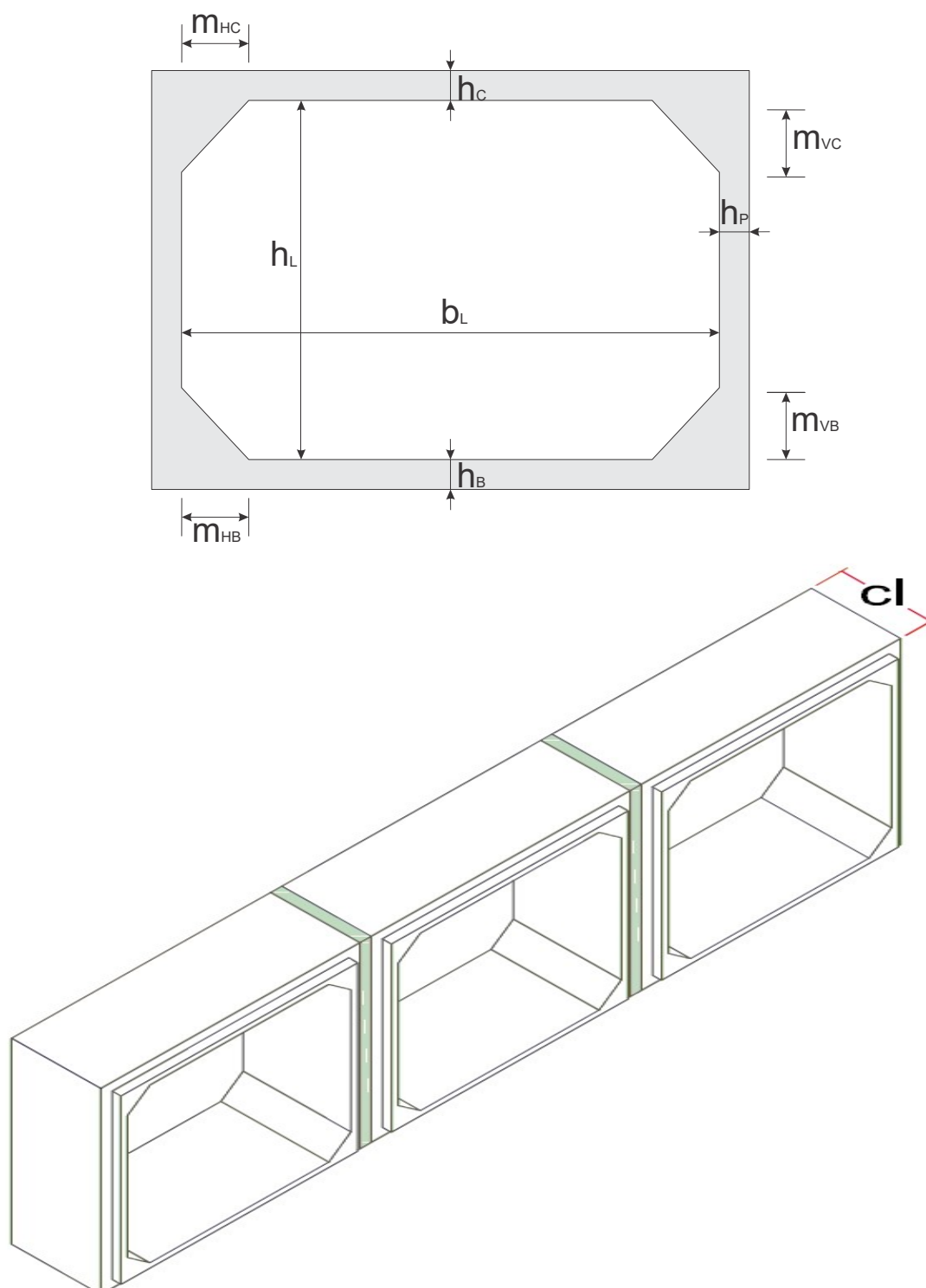
DADOS DA OBRA



NOME: ADUELA 2,50 X 2,50 M PARA ATERRO DE 0,50 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

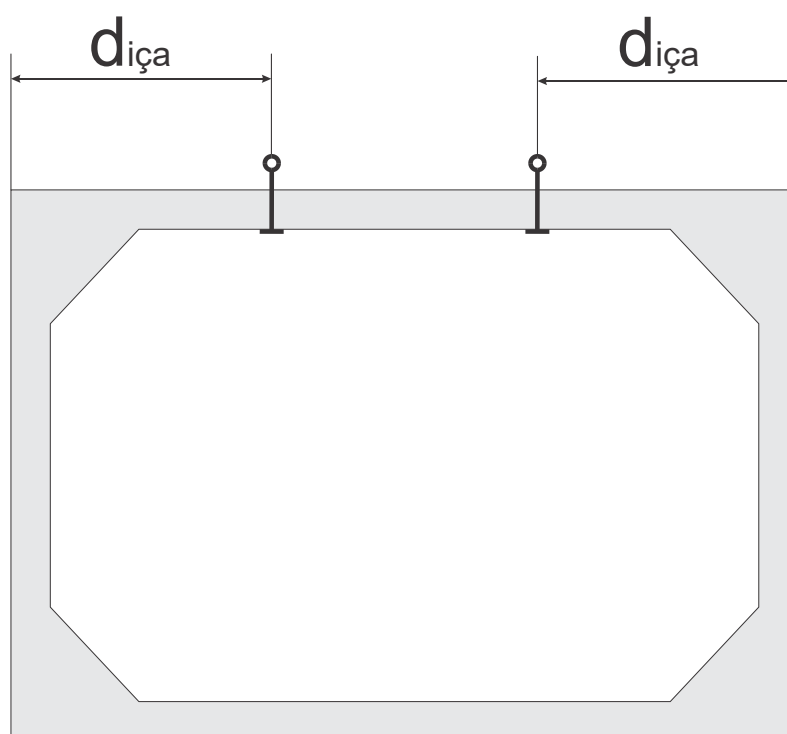
PESO ESPECÍFICO.....	: 18.00 kN/m ³
ÂNGULO DE ATRITO.....	: 30.00 graus
COEFICIENTE DE ATRITO ATIVO.....	: 0.33
COEFICIENTE DE ATRITO ESTÁTICO.....	: 0.50
COEFICIENTE DE ATRITO.....	: 0.58

DADOS DE INSTALAÇÃO

ALTURA DE TERRA.....	: 0.20 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.....	: ---

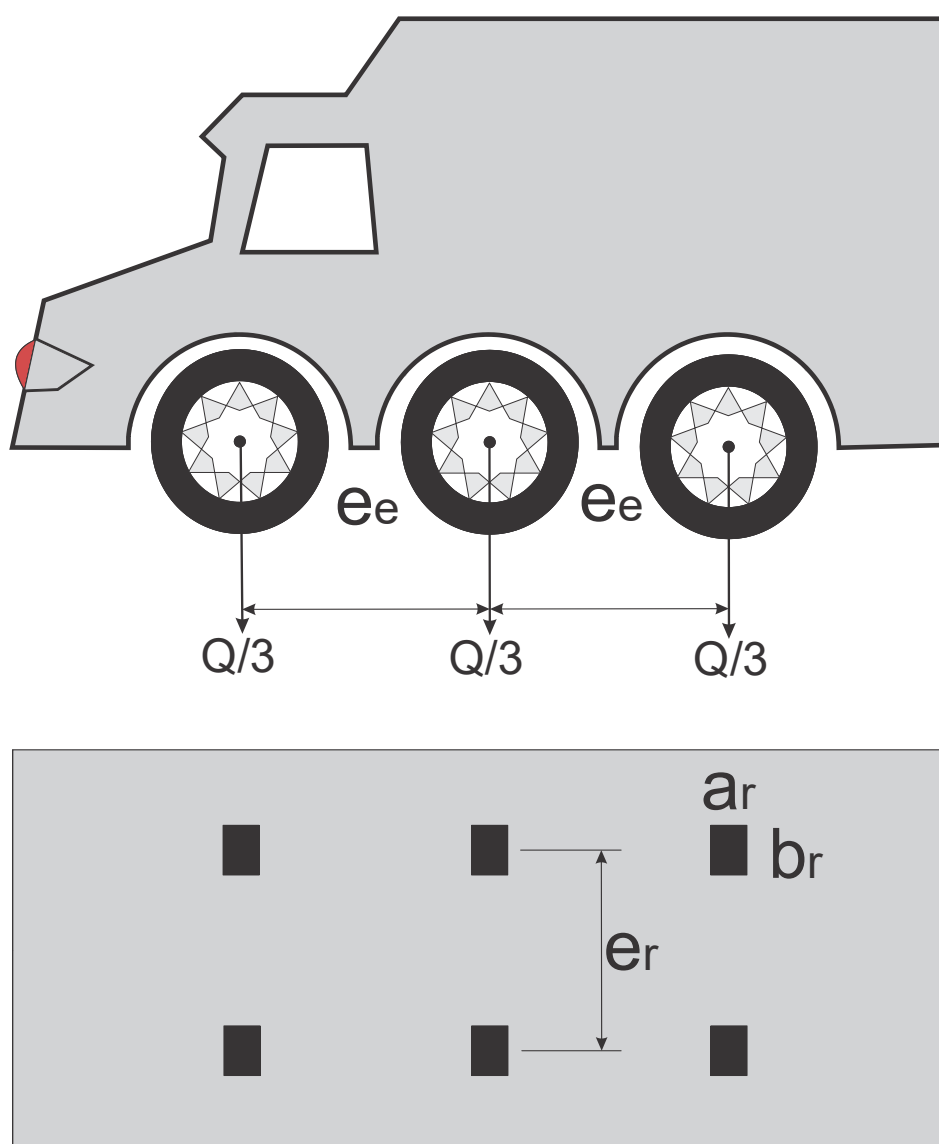
INFORMAÇÕES DE MANUSEIO

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



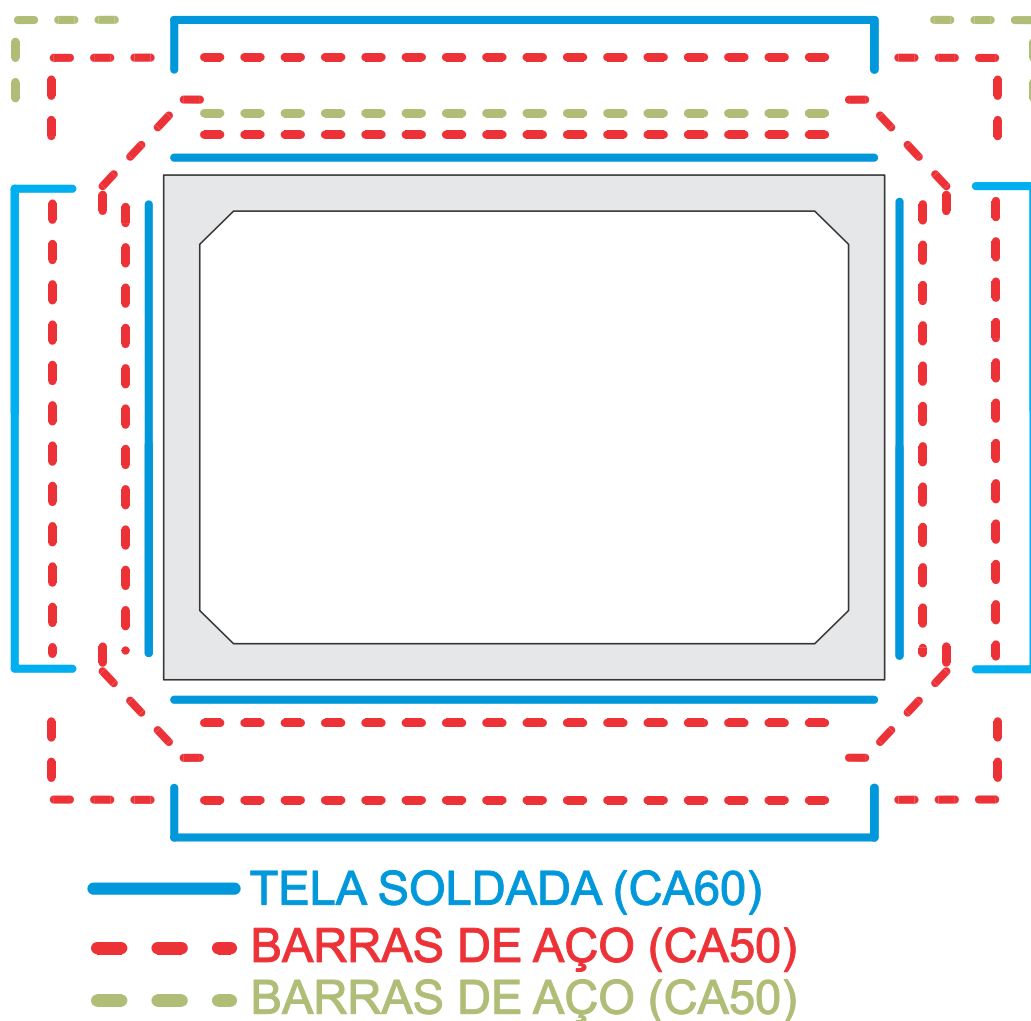
SOBRECARGA

TIPO DE SOBRECARGA.....: RODOVIÁRIO
TIPO DE TRÁFEGO.....: CLASSE 45
PESO DO VEÍCULO (Q).....: 450.00 kN
DISTÂNCIA ENTRE EIXOS (e_e).....: 1.50 m
DISTÂNCIA ENTRE RODAS (e_r).....: 2.00 m
ÁREA DE CONTATO DA RODA (a_r).....: 0.20 m
ÁREA DE CONTATO DA RODA (b_r).....: 0.50 m
COEF. DE IMPACTO ADICIONAL.....: 1.25
COEF. DE IMPACTO EMPREGADO.....: 1.58



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:

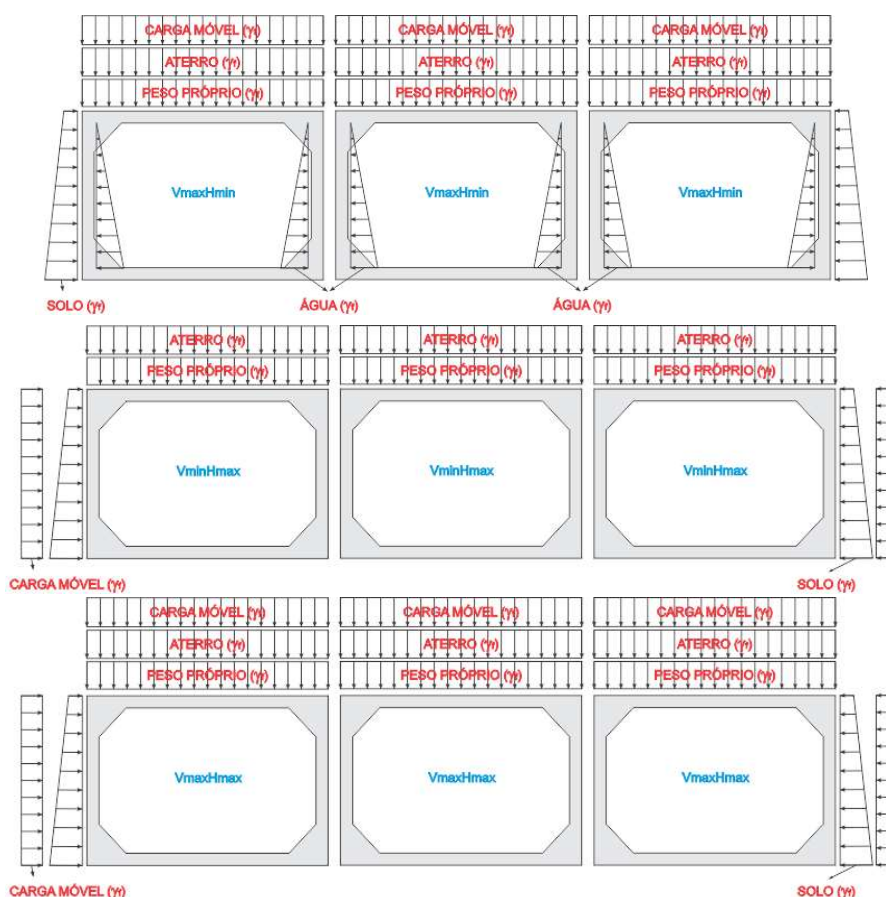
COEFICIENTE DE PONDERAÇÃO CARGA MÓVEL V.:	1.50
COEFICIENTE DE PONDERAÇÃO ATERRO.....	1.35
COEFICIENTE DE PONDERAÇÃO PESO PRÓPRIO...	1.30
COEFICIENTE DE PONDERAÇÃO SOLO.....	1.00
COEFICIENTE DE PONDERAÇÃO ÁGUA.....	1.20

- VminHmax:

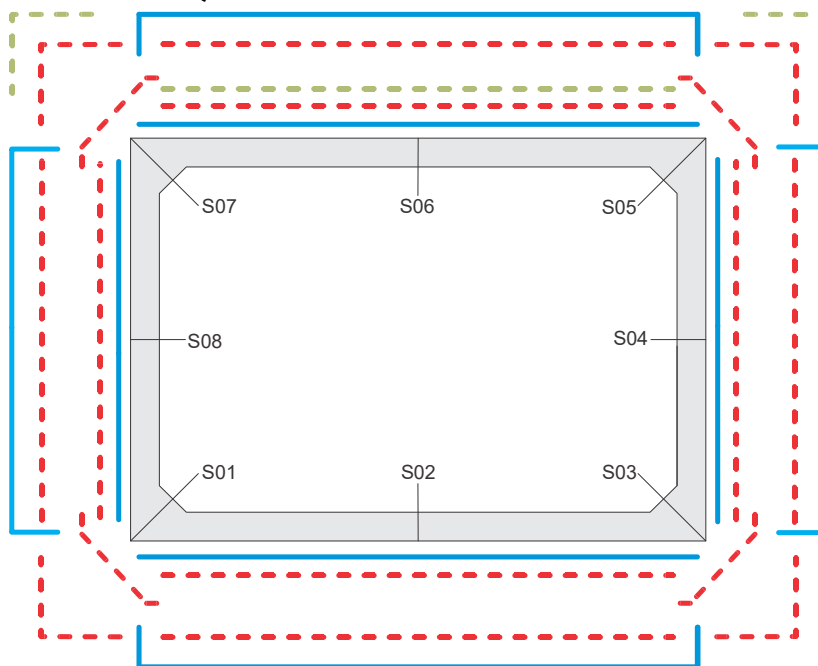
COEFICIENTE DE PONDERAÇÃO ATERRO.....	1.00
COEFICIENTE DE PONDERAÇÃO PESO PRÓPRIO...	1.00
COEFICIENTE DE PONDERAÇÃO SOLO.....	1.35
COEFICIENTE DE PONDERAÇÃO CARGA MÓVEL H.:	1.50

- 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



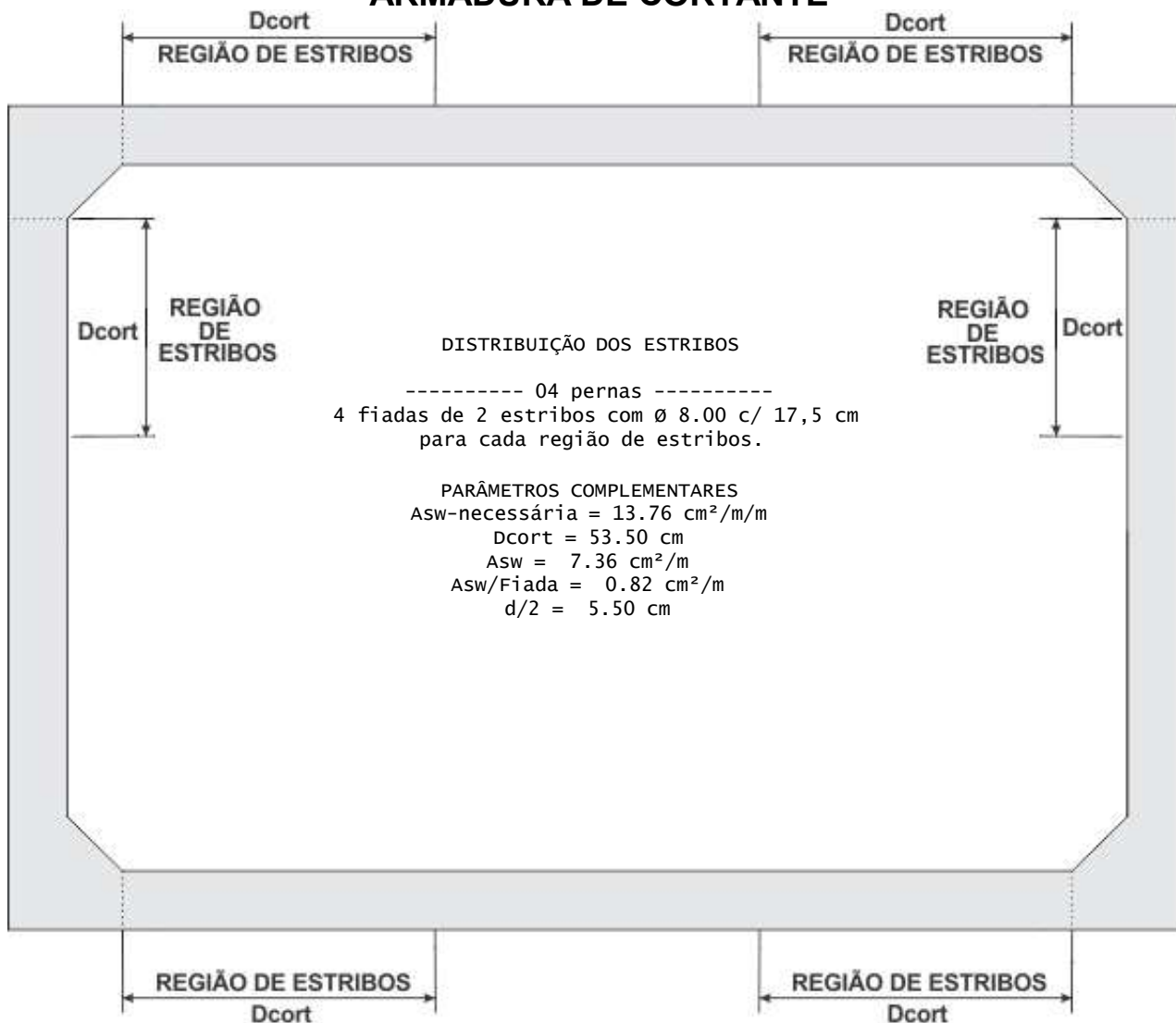
- TELA SOLDADA (CA60) ARMADURA BÁSICA
 - - - BARRAS DE AÇO (CA50) ARMADURA COMPLEMENTAR
 - - - BARRAS DE AÇO (CA50) ARMADURA DE FADIGA

OBS.: VALORES POR METRO DE ADUELA.

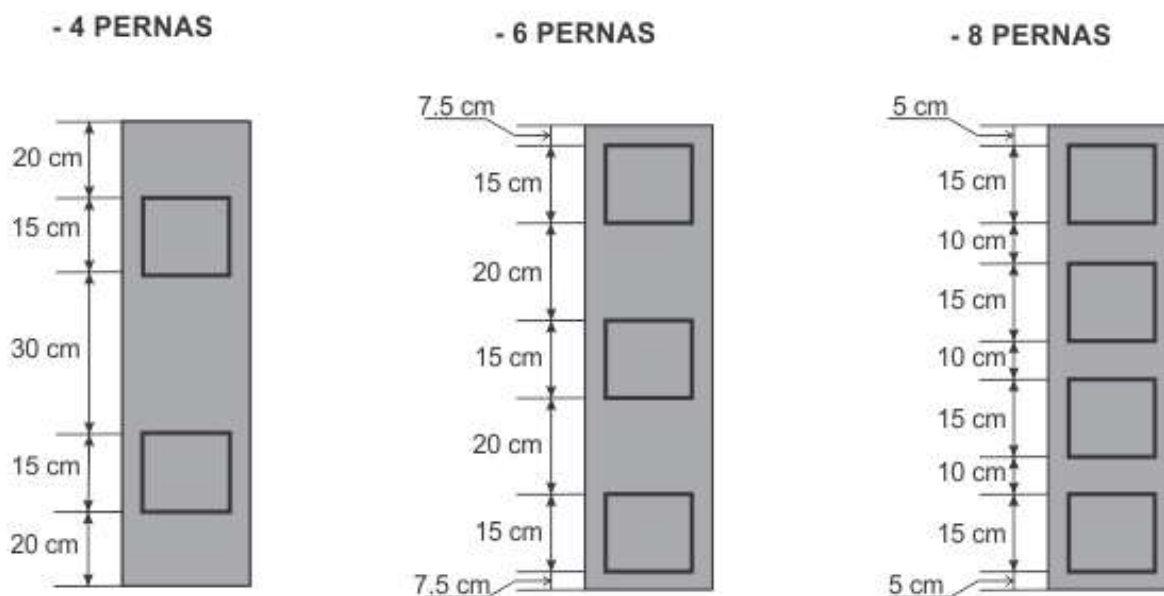
	TELA	ARMADURA COMPLEMENTAR	ARMADURA DE FADIGA
LADO EXTERNO	T-S02: L283	B-S01: 5 Ø6.30 c/ 23 cm (-4.78%)	B-S05: 7 Ø12.50 c/ 15 cm (3.17%)
	T-S04: L283	B-S02: 0.61 cm ² de área acima	B-S07: 7 Ø12.50 c/ 15 cm (3.17%)
	T-S06: L283	B-S03: 5 Ø6.30 c/ 23 cm (-4.78%)	
	T-S08: L283	B-S04: 8 Ø6.30 c/ 13 cm (3.76%) B-S05: 5 Ø12.50 c/ 23 cm (1.47%) B-S06: 0.61 cm ² de área acima B-S07: 5 Ø12.50 c/ 23 cm (1.47%) B-S08: 8 Ø6.30 c/ 13 cm (3.76%)	
LADO INTERNO	T-S02: L283	B-S01: 4 Ø6.30 c/ 31 cm (0.00%)	B-S06: 4 Ø6.30 c/ 31 cm (24.06%)
	T-S04: L283	B-S02: 5 Ø12.50 c/ 23 cm (6.58%)	
	T-S06: L283	B-S03: 4 Ø6.30 c/ 31 cm (0.00%)	
	T-S08: L283	B-S04: 0.25 cm ² de área acima B-S05: 4 Ø6.30 c/ 31 cm (0.00%) B-S06: 6 Ø12.50 c/ 18 cm (-2.82%) B-S07: 4 Ø6.30 c/ 31 cm (0.00%) B-S08: 6 Ø6.30 c/ 18 cm (5.04%)	

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

ARMADURA DE CORTANTE



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

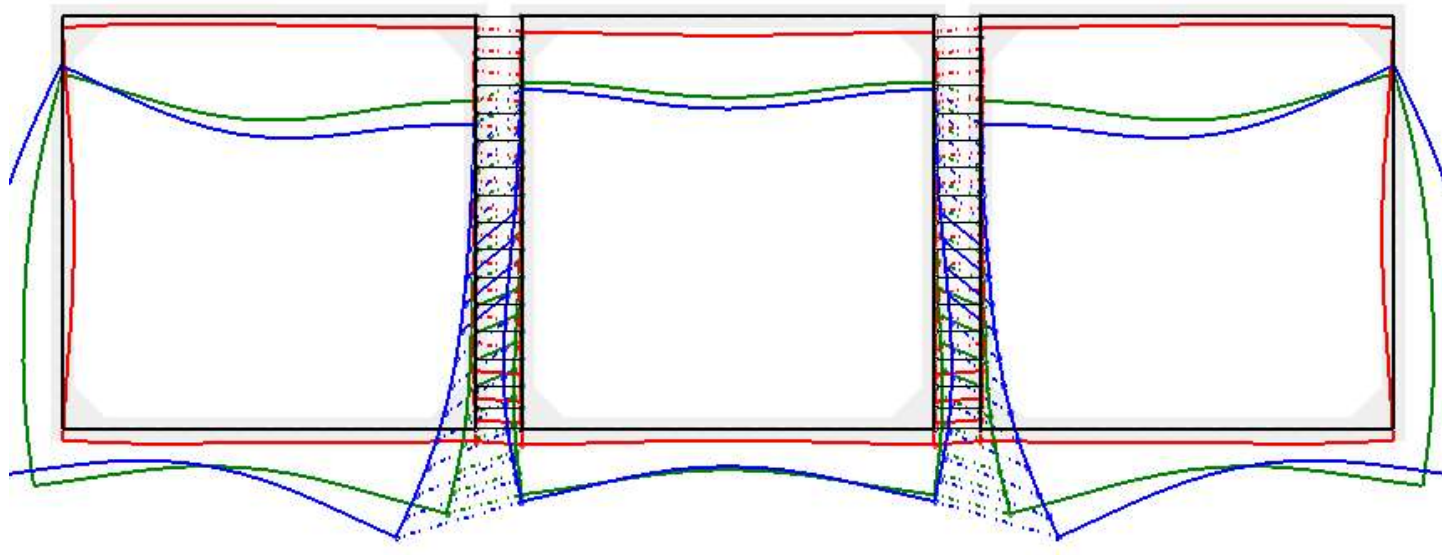
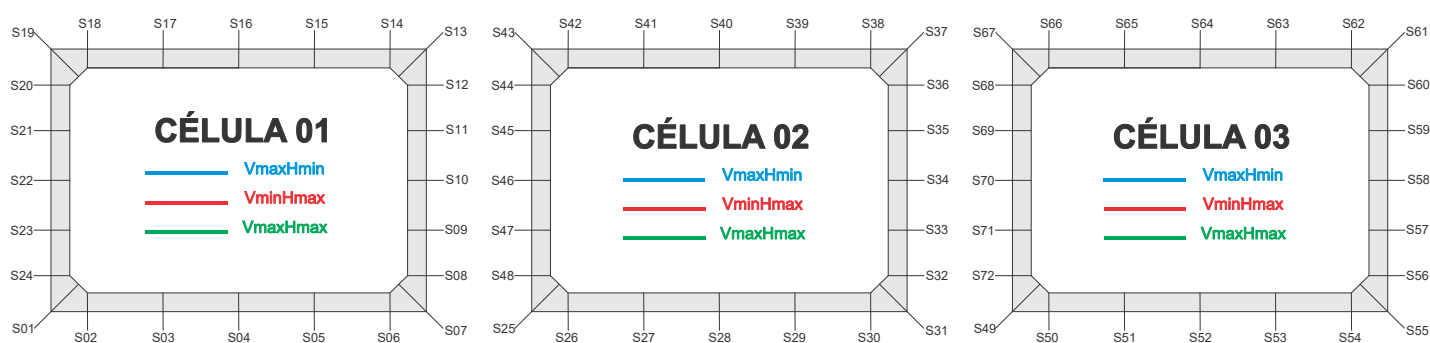


OBSERVAÇÃO:

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

DESLOCAMENTOS

NOMENCLATURA DAS SEÇÕES PARA VERSÃO COMPLETA DO RELATÓRIO



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

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-6.30E-003	-3.88E-003
2	-6.30E-003	-3.40E-003
3	-6.30E-003	-2.61E-003
4	-6.30E-003	-2.74E-003
5	-6.30E-003	-4.30E-003
6	-6.30E-003	-7.07E-003
7	-6.30E-003	-8.66E-003
8	-4.74E-003	-8.66E-003
9	-2.43E-003	-8.68E-003
10	-1.16E-003	-8.70E-003
11	-5.24E-004	-8.72E-003
12	-1.55E-004	-8.74E-003
13	-7.66E-005	-8.75E-003
14	-7.67E-005	-8.75E-003
15	-7.74E-005	-9.42E-003
16	-7.81E-005	-9.71E-003
17	-7.87E-005	-8.38E-003
18	-7.94E-005	-5.58E-003
19	-7.96E-005	-3.93E-003
20	-1.71E-003	-3.93E-003
21	-4.39E-003	-3.92E-003
22	-6.19E-003	-3.90E-003
23	-7.01E-003	-3.89E-003
24	-6.75E-003	-3.88E-003
25	2.14E-006	-5.78E-003
26	1.88E-006	-5.02E-003
27	9.42E-007	-3.59E-003
28	-1.81E-010	-2.99E-003
29	-9.42E-007	-3.59E-003
30	-1.88E-006	-5.01E-003
31	-2.14E-006	-5.76E-003
32	7.19E-004	-5.77E-003
33	1.39E-003	-5.79E-003
34	1.10E-003	-5.80E-003
35	4.82E-004	-5.82E-003
36	1.08E-004	-5.83E-003
37	-3.10E-005	-5.84E-003
38	-3.16E-005	-6.03E-003
39	-3.36E-005	-6.89E-003
40	-3.56E-005	-7.42E-003
41	-3.76E-005	-6.90E-003
42	-3.96E-005	-6.05E-003
43	-4.01E-005	-5.86E-003
44	-1.76E-004	-5.85E-003
45	-5.62E-004	-5.84E-003
46	-1.16E-003	-5.82E-003
47	-1.42E-003	-5.80E-003
48	-7.27E-004	-5.79E-003
49	6.20E-003	-8.64E-003

50	6.20E-003	-7.06E-003
51	6.20E-003	-4.30E-003
52	6.20E-003	-2.74E-003
53	6.20E-003	-2.61E-003
54	6.20E-003	-3.40E-003
55	6.20E-003	-3.88E-003
56	6.65E-003	-3.88E-003
57	6.91E-003	-3.90E-003
58	6.10E-003	-3.91E-003
59	4.30E-003	-3.92E-003
60	1.63E-003	-3.93E-003
61	8.61E-006	-3.94E-003
62	8.43E-006	-5.58E-003
63	7.78E-006	-8.37E-003
64	7.12E-006	-9.70E-003
65	6.47E-006	-9.40E-003
66	5.82E-006	-8.73E-003
67	5.64E-006	-8.73E-003
68	8.64E-005	-8.73E-003
69	4.76E-004	-8.71E-003
70	1.10E-003	-8.69E-003
71	2.35E-003	-8.67E-003
72	4.64E-003	-8.65E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.69E-003
2	1.77E-003
3	8.88E-004
4	-1.55E-003
5	-4.33E-003
6	-5.81E-003
7	-5.75E-003
8	-5.56E-003
9	-3.30E-003
10	-1.69E-003
11	-8.65E-004
12	-4.09E-004
13	-1.65E-004
14	2.10E-004
15	1.54E-003
16	-8.18E-004
17	-4.22E-003
18	-5.99E-003
19	-5.97E-003
20	-5.86E-003
21	-4.31E-003
22	-2.53E-003
23	-5.54E-004
24	1.53E-003
25	2.73E-003
26	2.85E-003
27	2.18E-003
28	1.88E-006
29	-2.17E-003

30	-2.82E-003
31	-2.71E-003
32	-2.49E-003
33	-1.94E-004
34	1.08E-003
35	1.05E-003
36	4.49E-004
37	5.86E-004
38	8.71E-004
39	1.77E-003
40	8.47E-006
41	-1.76E-003
42	-8.61E-004
43	-5.76E-004
44	-4.38E-004
45	-1.10E-003
46	-1.01E-003
47	2.45E-004
48	2.52E-003
49	5.73E-003
50	5.79E-003
51	4.32E-003
52	1.55E-003
53	-8.90E-004
54	-1.77E-003
55	-1.70E-003
56	-1.54E-003
57	5.42E-004
58	2.51E-003
59	4.29E-003
60	5.84E-003
61	5.95E-003
62	5.97E-003
63	4.20E-003
64	8.10E-004
65	-1.55E-003
66	-2.04E-004
67	1.72E-004
68	4.15E-004
69	9.28E-004
70	1.63E-003
71	3.26E-003
72	5.54E-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	5.75E-005	-9.02E-004
2	5.52E-005	-1.08E-003
3	4.68E-005	-1.16E-003
4	3.85E-005	-1.07E-003
5	3.01E-005	-1.03E-003
6	2.17E-005	-1.01E-003
7	1.95E-005	-9.67E-004
8	-3.05E-005	-9.67E-004
9	-1.09E-004	-9.70E-004
10	-1.40E-004	-9.73E-004
11	-1.19E-004	-9.75E-004
12	-4.12E-005	-9.77E-004
13	1.66E-005	-9.78E-004
14	1.83E-005	-9.23E-004
15	2.47E-005	-8.32E-004
16	3.12E-005	-7.15E-004
17	3.76E-005	-6.17E-004
18	4.41E-005	-7.34E-004
19	4.58E-005	-9.21E-004
20	2.52E-004	-9.20E-004
21	7.22E-004	-9.16E-004
22	9.55E-004	-9.12E-004
23	7.30E-004	-9.08E-004
24	2.58E-004	-9.03E-004
25	1.88E-005	-1.25E-003
26	1.66E-005	-1.18E-003
27	8.29E-006	-1.01E-003
28	-5.49E-011	-9.12E-004
29	-8.29E-006	-1.01E-003
30	-1.66E-005	-1.18E-003
31	-1.88E-005	-1.25E-003
32	3.35E-005	-1.25E-003
33	1.06E-004	-1.25E-003
34	1.37E-004	-1.25E-003
35	1.19E-004	-1.26E-003
36	4.28E-005	-1.26E-003
37	-1.48E-005	-1.26E-003
38	-1.31E-005	-1.33E-003
39	-6.53E-006	-1.48E-003
40	9.69E-010	-1.56E-003
41	6.53E-006	-1.48E-003
42	1.31E-005	-1.33E-003
43	1.48E-005	-1.26E-003
44	-4.28E-005	-1.26E-003
45	-1.18E-004	-1.26E-003
46	-1.37E-004	-1.25E-003
47	-1.06E-004	-1.25E-003
48	-3.35E-005	-1.25E-003
49	-1.95E-005	-9.66E-004

50	-2.17E-005	-1.01E-003
51	-3.01E-005	-1.03E-003
52	-3.85E-005	-1.07E-003
53	-4.68E-005	-1.16E-003
54	-5.52E-005	-1.08E-003
55	-5.75E-005	-9.02E-004
56	-2.58E-004	-9.03E-004
57	-7.30E-004	-9.08E-004
58	-9.55E-004	-9.12E-004
59	-7.22E-004	-9.16E-004
60	-2.52E-004	-9.20E-004
61	-4.58E-005	-9.21E-004
62	-4.41E-005	-7.34E-004
63	-3.76E-005	-6.17E-004
64	-3.12E-005	-7.15E-004
65	-2.47E-005	-8.32E-004
66	-1.83E-005	-9.23E-004
67	-1.66E-005	-9.78E-004
68	4.12E-005	-9.77E-004
69	1.19E-004	-9.75E-004
70	1.39E-004	-9.73E-004
71	1.09E-004	-9.70E-004
72	3.05E-005	-9.67E-004

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	-6.89E-004
2	-5.78E-004
3	1.19E-004
4	1.58E-004
5	1.43E-005
6	1.30E-004
7	1.71E-004
8	1.87E-004
9	1.06E-004
10	1.05E-005
11	-9.20E-005
12	-2.08E-004
13	-2.07E-004
14	-1.91E-004
15	-1.88E-004
16	-2.43E-004
17	-6.80E-005
18	6.24E-004
19	7.18E-004
20	7.92E-004
21	8.03E-004
22	1.32E-005
23	-8.04E-004
24	-7.78E-004
25	2.05E-004
26	2.52E-004
27	3.25E-004
28	-5.28E-009
29	-3.25E-004

30	-2.52E-004
31	-2.05E-004
32	-1.78E-004
33	-1.01E-004
34	-1.48E-005
35	8.94E-005
36	2.00E-004
37	2.19E-004
38	2.49E-004
39	2.68E-004
40	5.68E-009
41	-2.68E-004
42	-2.49E-004
43	-2.19E-004
44	-2.00E-004
45	-8.79E-005
46	1.44E-005
47	1.01E-004
48	1.78E-004
49	-1.71E-004
50	-1.30E-004
51	-1.43E-005
52	-1.58E-004
53	-1.19E-004
54	5.78E-004
55	6.89E-004
56	7.78E-004
57	8.04E-004
58	-1.32E-005
59	-8.03E-004
60	-7.92E-004
61	-7.18E-004
62	-6.24E-004
63	6.80E-005
64	2.43E-004
65	1.89E-004
66	1.91E-004
67	2.07E-004
68	2.08E-004
69	9.05E-005
70	-1.01E-005
71	-1.05E-004
72	-1.87E-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	-2.25E-003	-4.54E-003
2	-2.25E-003	-4.06E-003
3	-2.26E-003	-3.18E-003
4	-2.26E-003	-3.06E-003
5	-2.27E-003	-4.08E-003
6	-2.27E-003	-5.84E-003
7	-2.27E-003	-6.73E-003
8	-1.43E-003	-6.74E-003
9	-4.82E-004	-6.76E-003
10	-2.19E-004	-6.78E-003
11	-2.80E-005	-6.79E-003
12	4.64E-005	-6.81E-003
13	-3.82E-006	-6.82E-003
14	-2.58E-006	-6.94E-003
15	2.00E-006	-7.80E-003
16	6.59E-006	-8.34E-003
17	1.12E-005	-7.48E-003
18	1.58E-005	-5.60E-003
19	1.70E-005	-4.60E-003
20	-9.50E-004	-4.60E-003
21	-2.28E-003	-4.58E-003
22	-2.93E-003	-4.57E-003
23	-3.10E-003	-4.56E-003
24	-2.70E-003	-4.54E-003
25	1.33E-005	-5.24E-003
26	1.17E-005	-4.77E-003
27	5.85E-006	-3.74E-003
28	-2.63E-011	-3.25E-003
29	-5.85E-006	-3.74E-003
30	-1.17E-005	-4.78E-003
31	-1.33E-005	-5.25E-003
32	4.15E-004	-5.25E-003
33	6.05E-004	-5.27E-003
34	2.58E-004	-5.29E-003
35	5.08E-005	-5.30E-003
36	1.18E-005	-5.32E-003
37	9.95E-006	-5.32E-003
38	1.10E-005	-5.38E-003
39	1.51E-005	-6.05E-003
40	1.91E-005	-6.51E-003
41	2.31E-005	-6.05E-003
42	2.72E-005	-5.38E-003
43	2.82E-005	-5.31E-003
44	2.49E-005	-5.31E-003
45	-7.93E-006	-5.29E-003
46	-2.25E-004	-5.28E-003
47	-5.90E-004	-5.26E-003
48	-4.11E-004	-5.24E-003
49	2.33E-003	-6.74E-003

50	2.33E-003	-5.84E-003
51	2.33E-003	-4.08E-003
52	2.32E-003	-3.05E-003
53	2.31E-003	-3.17E-003
54	2.31E-003	-4.06E-003
55	2.31E-003	-4.53E-003
56	2.76E-003	-4.54E-003
57	3.16E-003	-4.55E-003
58	2.98E-003	-4.57E-003
59	2.32E-003	-4.58E-003
60	9.91E-004	-4.59E-003
61	2.11E-005	-4.60E-003
62	2.23E-005	-5.60E-003
63	2.69E-005	-7.49E-003
64	3.15E-005	-8.34E-003
65	3.61E-005	-7.81E-003
66	4.06E-005	-6.95E-003
67	4.19E-005	-6.82E-003
68	-9.29E-006	-6.82E-003
69	5.40E-005	-6.80E-003
70	2.51E-004	-6.78E-003
71	5.28E-004	-6.76E-003
72	1.48E-003	-6.74E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.70E-003
2	1.80E-003
3	1.19E-003
4	-8.58E-004
5	-2.92E-003
6	-3.33E-003
7	-3.18E-003
8	-2.94E-003
9	-9.03E-004
10	-3.46E-004
11	-3.08E-004
12	8.04E-005
13	2.91E-004
14	6.40E-004
15	1.89E-003
16	-1.87E-004
17	-2.94E-003
18	-3.71E-003
19	-3.59E-003
20	-3.41E-003
21	-1.78E-003
22	-7.72E-004
23	1.41E-004
24	1.53E-003
25	1.64E-003
26	1.80E-003
27	1.71E-003
28	-1.01E-006
29	-1.72E-003

30	-1.81E-003
31	-1.65E-003
32	-1.42E-003
33	4.23E-004
34	6.27E-004
35	2.34E-004
36	-6.00E-005
37	9.23E-005
38	3.95E-004
39	1.53E-003
40	-4.55E-006
41	-1.53E-003
42	-4.01E-004
43	-9.77E-005
44	5.41E-005
45	-2.09E-004
46	-6.67E-004
47	-4.50E-004
48	1.40E-003
49	3.19E-003
50	3.34E-003
51	2.93E-003
52	8.59E-004
53	-1.19E-003
54	-1.79E-003
55	-1.69E-003
56	-1.53E-003
57	-1.34E-004
58	7.80E-004
59	1.79E-003
60	3.42E-003
61	3.60E-003
62	3.72E-003
63	2.95E-003
64	1.91E-004
65	-1.89E-003
66	-6.43E-004
67	-2.94E-004
68	-8.36E-005
69	2.74E-004
70	3.77E-004
71	9.24E-004
72	2.95E-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	-9.37E-003	-6.94E-003
2	-9.37E-003	-5.89E-003
3	-9.37E-003	-4.07E-003
4	-9.37E-003	-3.65E-003
5	-9.37E-003	-5.34E-003
6	-9.37E-003	-8.89E-003
7	-9.37E-003	-1.10E-002
8	-7.29E-003	-1.10E-002
9	-4.61E-003	-1.11E-002
10	-3.77E-003	-1.11E-002
11	-3.72E-003	-1.12E-002
12	-3.79E-003	-1.12E-002
13	-3.96E-003	-1.13E-002
14	-3.96E-003	-1.15E-002
15	-3.96E-003	-1.27E-002
16	-3.96E-003	-1.34E-002
17	-3.97E-003	-1.21E-002
18	-3.97E-003	-8.97E-003
19	-3.97E-003	-7.04E-003
20	-5.88E-003	-7.03E-003
21	-8.97E-003	-7.01E-003
22	-1.09E-002	-6.99E-003
23	-1.14E-002	-6.97E-003
24	-1.04E-002	-6.95E-003
25	4.72E-006	-9.58E-003
26	4.16E-006	-8.08E-003
27	2.08E-006	-5.36E-003
28	-1.64E-009	-3.97E-003
29	-2.08E-006	-4.41E-003
30	-4.16E-006	-6.12E-003
31	-4.72E-006	-7.10E-003
32	9.07E-004	-7.11E-003
33	1.14E-003	-7.16E-003
34	-4.70E-004	-7.20E-003
35	-2.34E-003	-7.24E-003
36	-3.47E-003	-7.28E-003
37	-3.90E-003	-7.29E-003
38	-3.90E-003	-7.80E-003
39	-3.90E-003	-9.24E-003
40	-3.90E-003	-1.02E-002
41	-3.91E-003	-1.01E-002
42	-3.91E-003	-9.67E-003
43	-3.91E-003	-9.69E-003
44	-3.82E-003	-9.68E-003
45	-3.72E-003	-9.66E-003
46	-3.73E-003	-9.63E-003
47	-3.24E-003	-9.61E-003
48	-1.44E-003	-9.58E-003
49	8.85E-003	-1.37E-002

50	8.85E-003	-1.10E-002
51	8.85E-003	-6.39E-003
52	8.85E-003	-3.63E-003
53	8.85E-003	-3.00E-003
54	8.85E-003	-3.79E-003
55	8.85E-003	-4.34E-003
56	9.36E-003	-4.35E-003
57	9.18E-003	-4.38E-003
58	7.09E-003	-4.41E-003
59	3.49E-003	-4.44E-003
60	-1.18E-003	-4.47E-003
61	-3.84E-003	-4.48E-003
62	-3.84E-003	-7.15E-003
63	-3.85E-003	-1.15E-002
64	-3.85E-003	-1.37E-002
65	-3.85E-003	-1.39E-002
66	-3.85E-003	-1.36E-002
67	-3.85E-003	-1.38E-002
68	-3.50E-003	-1.38E-002
69	-2.34E-003	-1.38E-002
70	-5.40E-004	-1.38E-002
71	2.14E-003	-1.37E-002
72	6.23E-003	-1.37E-002

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	3.77E-003
2	3.88E-003
3	2.51E-003
4	-1.14E-003
5	-5.26E-003
6	-7.74E-003
7	-7.71E-003
8	-7.33E-003
9	-3.09E-003
10	-4.67E-004
11	1.52E-005
12	3.98E-004
13	8.76E-004
14	1.29E-003
15	2.42E-003
16	-4.08E-004
17	-4.45E-003
18	-7.02E-003
19	-7.02E-003
20	-6.88E-003
21	-4.83E-003
22	-2.38E-003
23	4.31E-004
24	3.52E-003
25	5.37E-003
26	5.52E-003
27	4.26E-003
28	8.92E-004
29	-2.39E-003

30	-3.62E-003
31	-3.50E-003
32	-3.03E-003
33	1.76E-003
34	3.86E-003
35	2.89E-003
36	1.45E-003
37	1.72E-003
38	2.04E-003
39	2.77E-003
40	8.45E-004
41	-1.02E-003
42	-1.03E-004
43	2.35E-004
44	4.00E-004
45	1.71E-006
46	1.81E-004
47	1.96E-003
48	5.07E-003
49	9.65E-003
50	9.73E-003
51	7.33E-003
52	3.13E-003
53	-5.03E-004
54	-2.04E-003
55	-1.98E-003
56	-1.65E-003
57	2.27E-003
58	5.55E-003
59	8.03E-003
60	9.63E-003
61	9.71E-003
62	9.64E-003
63	6.41E-003
64	2.02E-003
65	-8.02E-004
66	6.54E-004
67	1.12E-003
68	1.45E-003
69	2.89E-003
70	4.07E-003
71	6.30E-003
72	9.39E-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	5.72E-005	-8.96E-004
2	5.49E-005	-1.07E-003
3	4.66E-005	-1.16E-003
4	3.82E-005	-1.07E-003
5	2.98E-005	-1.03E-003
6	2.14E-005	-1.01E-003
7	1.92E-005	-9.58E-004
8	-3.97E-005	-9.60E-004
9	-1.35E-004	-9.66E-004
10	-1.74E-004	-9.71E-004
11	-1.51E-004	-9.76E-004
12	-6.03E-005	-9.80E-004
13	7.99E-006	-9.81E-004
14	9.72E-006	-9.17E-004
15	1.62E-005	-8.15E-004
16	2.26E-005	-6.96E-004
17	2.91E-005	-6.01E-004
18	3.55E-005	-7.25E-004
19	3.72E-005	-9.15E-004
20	2.47E-004	-9.14E-004
21	7.22E-004	-9.10E-004
22	9.58E-004	-9.06E-004
23	7.34E-004	-9.02E-004
24	2.59E-004	-8.98E-004
25	1.88E-005	-1.27E-003
26	1.66E-005	-1.20E-003
27	8.29E-006	-1.00E-003
28	1.96E-011	-9.02E-004
29	-8.29E-006	-9.96E-004
30	-1.66E-005	-1.19E-003
31	-1.88E-005	-1.26E-003
32	4.43E-005	-1.27E-003
33	1.31E-004	-1.27E-003
34	1.69E-004	-1.28E-003
35	1.44E-004	-1.29E-003
36	4.90E-005	-1.29E-003
37	-2.34E-005	-1.29E-003
38	-2.16E-005	-1.37E-003
39	-1.51E-005	-1.55E-003
40	-8.58E-006	-1.62E-003
41	-2.05E-006	-1.53E-003
42	4.48E-006	-1.36E-003
43	6.24E-006	-1.28E-003
44	-6.18E-005	-1.28E-003
45	-1.51E-004	-1.28E-003
46	-1.71E-004	-1.28E-003
47	-1.31E-004	-1.27E-003
48	-4.28E-005	-1.27E-003
49	-1.93E-005	-9.34E-004

50	-2.15E-005	-9.87E-004
51	-2.99E-005	-1.03E-003
52	-3.83E-005	-1.09E-003
53	-4.66E-005	-1.18E-003
54	-5.50E-005	-1.06E-003
55	-5.72E-005	-8.51E-004
56	-3.07E-004	-8.54E-004
57	-1.04E-003	-8.63E-004
58	-1.42E-003	-8.72E-004
59	-1.03E-003	-8.80E-004
60	-3.11E-004	-8.88E-004
61	-5.43E-005	-8.90E-004
62	-5.26E-005	-6.65E-004
63	-4.62E-005	-5.06E-004
64	-3.97E-005	-6.06E-004
65	-3.33E-005	-7.50E-004
66	-2.68E-005	-8.74E-004
67	-2.51E-005	-9.45E-004
68	4.74E-005	-9.44E-004
69	1.44E-004	-9.42E-004
70	1.71E-004	-9.40E-004
71	1.34E-004	-9.38E-004
72	4.12E-005	-9.35E-004

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	-6.96E-004
2	-5.86E-004
3	1.11E-004
4	1.54E-004
5	1.88E-005
6	1.49E-004
7	1.92E-004
8	2.26E-004
9	1.30E-004
10	1.71E-005
11	-1.05E-004
12	-2.48E-004
13	-2.41E-004
14	-2.23E-004
15	-2.00E-004
16	-2.41E-004
17	-5.75E-005
18	6.37E-004
19	7.30E-004
20	8.04E-004
21	8.11E-004
22	1.65E-005
23	-8.05E-004
24	-7.84E-004
25	2.38E-004
26	2.85E-004
27	3.49E-004
28	9.77E-006
29	-3.37E-004

30	-2.99E-004
31	-2.55E-004
32	-2.10E-004
33	-1.22E-004
34	-1.66E-005
35	1.13E-004
36	2.49E-004
37	2.80E-004
38	3.06E-004
39	2.83E-004
40	-1.54E-005
41	-3.01E-004
42	-2.88E-004
43	-2.58E-004
44	-2.37E-004
45	-1.01E-004
46	2.14E-005
47	1.25E-004
48	2.12E-004
49	-2.11E-004
50	-1.71E-004
51	-5.87E-005
52	-1.81E-004
53	-9.06E-005
54	6.99E-004
55	8.19E-004
56	1.02E-003
57	1.34E-003
58	-1.91E-005
59	-1.33E-003
60	-1.03E-003
61	-8.60E-004
62	-7.57E-004
63	3.60E-005
64	2.76E-004
65	2.52E-004
66	2.49E-004
67	2.62E-004
68	2.60E-004
69	1.14E-004
70	-1.18E-005
71	-1.25E-004
72	-2.24E-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	-3.72E-003	-7.88E-003
2	-3.72E-003	-6.72E-003
3	-3.73E-003	-4.67E-003
4	-3.73E-003	-3.93E-003
5	-3.74E-003	-5.05E-003
6	-3.74E-003	-7.54E-003
7	-3.75E-003	-8.93E-003
8	-2.42E-003	-8.95E-003
9	-1.27E-003	-9.00E-003
10	-1.77E-003	-9.05E-003
11	-2.75E-003	-9.09E-003
12	-3.26E-003	-9.14E-003
13	-3.56E-003	-9.15E-003
14	-3.56E-003	-9.56E-003
15	-3.55E-003	-1.10E-002
16	-3.55E-003	-1.19E-002
17	-3.55E-003	-1.12E-002
18	-3.54E-003	-9.16E-003
19	-3.54E-003	-7.98E-003
20	-4.68E-003	-7.98E-003
21	-6.17E-003	-7.95E-003
22	-6.64E-003	-7.93E-003
23	-6.25E-003	-7.91E-003
24	-4.83E-003	-7.89E-003
25	1.51E-005	-9.08E-003
26	1.33E-005	-7.84E-003
27	6.67E-006	-5.48E-003
28	-3.49E-010	-4.23E-003
29	-6.67E-006	-4.57E-003
30	-1.33E-005	-5.90E-003
31	-1.51E-005	-6.57E-003
32	5.75E-004	-6.58E-003
33	2.20E-004	-6.62E-003
34	-1.45E-003	-6.67E-003
35	-2.66E-003	-6.71E-003
36	-3.29E-003	-6.75E-003
37	-3.53E-003	-6.76E-003
38	-3.53E-003	-7.10E-003
39	-3.53E-003	-8.32E-003
40	-3.52E-003	-9.29E-003
41	-3.52E-003	-9.29E-003
42	-3.52E-003	-9.03E-003
43	-3.52E-003	-9.19E-003
44	-3.29E-003	-9.19E-003
45	-2.93E-003	-9.16E-003
46	-2.89E-003	-9.14E-003
47	-2.55E-003	-9.11E-003
48	-1.16E-003	-9.08E-003
49	4.06E-003	-1.15E-002

50	4.05E-003	-9.60E-003
51	4.05E-003	-6.14E-003
52	4.04E-003	-4.00E-003
53	4.04E-003	-3.67E-003
54	4.03E-003	-4.53E-003
55	4.03E-003	-5.06E-003
56	4.50E-003	-5.07E-003
57	4.44E-003	-5.11E-003
58	3.23E-003	-5.14E-003
59	1.27E-003	-5.18E-003
60	-1.61E-003	-5.21E-003
61	-3.51E-003	-5.22E-003
62	-3.50E-003	-7.15E-003
63	-3.50E-003	-1.04E-002
64	-3.50E-003	-1.21E-002
65	-3.49E-003	-1.20E-002
66	-3.49E-003	-1.15E-002
67	-3.49E-003	-1.16E-002
68	-3.31E-003	-1.16E-002
69	-2.66E-003	-1.16E-002
70	-1.62E-003	-1.15E-002
71	-2.48E-004	-1.15E-002
72	2.25E-003	-1.15E-002

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	4.14E-003
2	4.27E-003
3	3.00E-003
4	-3.51E-004
5	-3.77E-003
6	-5.14E-003
7	-5.01E-003
8	-4.53E-003
9	-2.55E-004
10	1.77E-003
11	1.60E-003
12	8.83E-004
13	1.32E-003
14	1.72E-003
15	2.82E-003
16	3.63E-004
17	-2.92E-003
18	-4.34E-003
19	-4.23E-003
20	-4.01E-003
21	-1.78E-003
22	-7.55E-005
23	1.63E-003
24	3.91E-003
25	4.41E-003
26	4.59E-003
27	3.80E-003
28	8.47E-004
29	-1.96E-003

30	-2.54E-003
31	-2.37E-003
32	-1.83E-003
33	2.56E-003
34	3.20E-003
35	1.61E-003
36	7.58E-004
37	1.08E-003
38	1.43E-003
39	2.55E-003
40	9.23E-004
41	-6.98E-004
42	3.83E-004
43	7.31E-004
44	9.12E-004
45	2.39E-004
46	1.33E-004
47	1.41E-003
48	4.11E-003
49	6.70E-003
50	6.88E-003
51	5.69E-003
52	2.31E-003
53	-8.40E-004
54	-1.98E-003
55	-1.87E-003
56	-1.52E-003
57	1.44E-003
58	3.05E-003
59	4.47E-003
60	6.74E-003
61	7.00E-003
62	7.04E-003
63	5.00E-003
64	1.34E-003
65	-1.21E-003
66	6.86E-005
67	4.92E-004
68	7.70E-004
69	1.71E-003
70	2.10E-003
71	3.40E-003
72	6.38E-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	-1.84E-003	-2.69E-003
2	-1.84E-003	-2.40E-003
3	-1.84E-003	-1.88E-003
4	-1.84E-003	-1.84E-003
5	-1.85E-003	-2.51E-003
6	-1.85E-003	-3.69E-003
7	-1.85E-003	-4.30E-003
8	-1.26E-003	-4.30E-003
9	-5.33E-004	-4.32E-003
10	-2.48E-004	-4.33E-003
11	-7.95E-005	-4.34E-003
12	8.03E-007	-4.35E-003
13	-1.25E-005	-4.35E-003
14	-1.21E-005	-4.41E-003
15	-1.05E-005	-4.87E-003
16	-9.01E-006	-5.15E-003
17	-7.48E-006	-4.60E-003
18	-5.96E-006	-3.39E-003
19	-5.55E-006	-2.72E-003
20	-6.59E-004	-2.72E-003
21	-1.62E-003	-2.71E-003
22	-2.15E-003	-2.70E-003
23	-2.33E-003	-2.70E-003
24	-2.10E-003	-2.69E-003
25	7.20E-006	-3.25E-003
26	6.34E-006	-2.93E-003
27	3.17E-006	-2.27E-003
28	-3.51E-011	-1.96E-003
29	-3.17E-006	-2.27E-003
30	-6.34E-006	-2.93E-003
31	-7.20E-006	-3.25E-003
32	2.82E-004	-3.25E-003
33	4.53E-004	-3.26E-003
34	2.59E-004	-3.27E-003
35	8.46E-005	-3.28E-003
36	1.97E-005	-3.29E-003
37	1.78E-006	-3.29E-003
38	2.07E-006	-3.34E-003
39	3.17E-006	-3.75E-003
40	4.27E-006	-4.01E-003
41	5.37E-006	-3.75E-003
42	6.46E-006	-3.34E-003
43	6.76E-006	-3.29E-003
44	-1.15E-005	-3.29E-003
45	-7.51E-005	-3.28E-003
46	-2.51E-004	-3.27E-003
47	-4.50E-004	-3.26E-003
48	-2.81E-004	-3.25E-003
49	1.86E-003	-4.30E-003

50	1.86E-003	-3.69E-003
51	1.86E-003	-2.52E-003
52	1.86E-003	-1.84E-003
53	1.85E-003	-1.88E-003
54	1.85E-003	-2.40E-003
55	1.85E-003	-2.68E-003
56	2.12E-003	-2.69E-003
57	2.34E-003	-2.70E-003
58	2.16E-003	-2.70E-003
59	1.63E-003	-2.71E-003
60	6.68E-004	-2.72E-003
61	1.41E-005	-2.72E-003
62	1.45E-005	-3.39E-003
63	1.60E-005	-4.60E-003
64	1.75E-005	-5.15E-003
65	1.90E-005	-4.88E-003
66	2.06E-005	-4.41E-003
67	2.10E-005	-4.35E-003
68	7.49E-006	-4.35E-003
69	8.54E-005	-4.34E-003
70	2.56E-004	-4.33E-003
71	5.43E-004	-4.32E-003
72	1.27E-003	-4.31E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.01E-003
2	1.07E-003
3	6.82E-004
4	-5.93E-004
5	-1.91E-003
6	-2.28E-003
7	-2.20E-003
8	-2.06E-003
9	-8.36E-004
10	-3.76E-004
11	-2.51E-004
12	-1.33E-005
13	1.12E-004
14	3.15E-004
15	1.04E-003
16	-1.88E-004
17	-1.86E-003
18	-2.46E-003
19	-2.41E-003
20	-2.32E-003
21	-1.38E-003
22	-6.71E-004
23	9.68E-007
24	9.09E-004
25	1.10E-003
26	1.20E-003
27	1.08E-003
28	-2.26E-007
29	-1.08E-003

30	-1.20E-003
31	-1.11E-003
32	-9.71E-004
33	1.71E-004
34	4.24E-004
35	2.41E-004
36	2.81E-005
37	1.13E-004
38	2.83E-004
39	8.92E-004
40	-1.02E-006
41	-8.94E-004
42	-2.85E-004
43	-1.14E-004
44	-2.94E-005
45	-2.35E-004
46	-4.33E-004
47	-1.77E-004
48	9.68E-004
49	2.20E-003
50	2.28E-003
51	1.91E-003
52	5.93E-004
53	-6.81E-004
54	-1.07E-003
55	-1.01E-003
56	-9.09E-004
57	4.22E-007
58	6.73E-004
59	1.38E-003
60	2.32E-003
61	2.41E-003
62	2.47E-003
63	1.86E-003
64	1.89E-004
65	-1.04E-003
66	-3.16E-004
67	-1.13E-004
68	1.26E-005
69	2.43E-004
70	3.83E-004
71	8.41E-004
72	2.07E-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	2.90E-005	-1.07E-003
2	2.75E-005	-1.12E-003
3	2.18E-005	-1.08E-003
4	1.62E-005	-9.97E-004
5	1.05E-005	-1.02E-003
6	4.81E-006	-1.09E-003
7	3.28E-006	-1.09E-003
8	-1.08E-005	-1.09E-003
9	-4.51E-005	-1.09E-003
10	-5.74E-005	-1.10E-003
11	-4.71E-005	-1.10E-003
12	-1.38E-005	-1.10E-003
13	8.38E-006	-1.10E-003
14	9.47E-006	-1.09E-003
15	1.35E-005	-1.10E-003
16	1.75E-005	-1.08E-003
17	2.15E-005	-1.01E-003
18	2.55E-005	-1.01E-003
19	2.66E-005	-1.08E-003
20	1.11E-004	-1.08E-003
21	3.43E-004	-1.08E-003
22	4.65E-004	-1.08E-003
23	3.38E-004	-1.07E-003
24	1.04E-004	-1.07E-003
25	1.28E-005	-1.20E-003
26	1.13E-005	-1.17E-003
27	5.64E-006	-1.02E-003
28	-2.28E-011	-9.34E-004
29	-5.64E-006	-1.02E-003
30	-1.13E-005	-1.17E-003
31	-1.28E-005	-1.20E-003
32	1.45E-005	-1.20E-003
33	4.12E-005	-1.21E-003
34	5.37E-005	-1.21E-003
35	4.64E-005	-1.22E-003
36	1.60E-005	-1.22E-003
37	-9.18E-006	-1.22E-003
38	-8.09E-006	-1.25E-003
39	-4.04E-006	-1.36E-003
40	1.28E-008	-1.42E-003
41	4.07E-006	-1.36E-003
42	8.12E-006	-1.25E-003
43	9.21E-006	-1.22E-003
44	-1.59E-005	-1.22E-003
45	-4.59E-005	-1.21E-003
46	-5.27E-005	-1.21E-003
47	-4.09E-005	-1.21E-003
48	-1.45E-005	-1.20E-003
49	-3.25E-006	-1.09E-003

50	-4.78E-006	-1.09E-003
51	-1.05E-005	-1.02E-003
52	-1.61E-005	-9.97E-004
53	-2.18E-005	-1.08E-003
54	-2.75E-005	-1.12E-003
55	-2.90E-005	-1.07E-003
56	-1.04E-004	-1.07E-003
57	-3.38E-004	-1.07E-003
58	-4.65E-004	-1.08E-003
59	-3.43E-004	-1.08E-003
60	-1.11E-004	-1.08E-003
61	-2.66E-005	-1.08E-003
62	-2.55E-005	-1.01E-003
63	-2.15E-005	-1.01E-003
64	-1.75E-005	-1.08E-003
65	-1.35E-005	-1.10E-003
66	-9.45E-006	-1.09E-003
67	-8.36E-006	-1.10E-003
68	1.38E-005	-1.10E-003
69	4.66E-005	-1.10E-003
70	5.65E-005	-1.10E-003
71	4.48E-005	-1.09E-003
72	1.08E-005	-1.09E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	-2.41E-004
2	-1.65E-004
3	2.06E-004
4	6.51E-005
5	-1.50E-004
6	-1.44E-005
7	3.42E-005
8	6.66E-005
9	4.55E-005
10	1.61E-006
11	-4.07E-005
12	-8.55E-005
13	-7.27E-005
14	-4.43E-005
15	2.56E-005
16	-9.79E-005
17	-1.28E-004
18	2.24E-004
19	2.84E-004
20	3.37E-004
21	4.23E-004
22	-1.60E-006
23	-4.38E-004
24	-3.10E-004
25	1.18E-004
26	1.69E-004
27	2.88E-004
28	-9.55E-009
29	-2.88E-004

30	-1.69E-004
31	-1.18E-004
32	-8.10E-005
33	-3.81E-005
34	-7.14E-006
35	3.68E-005
36	8.18E-005
37	1.02E-004
38	1.36E-004
39	2.12E-004
40	-5.65E-009
41	-2.12E-004
42	-1.36E-004
43	-1.02E-004
44	-8.19E-005
45	-3.43E-005
46	6.56E-006
47	3.68E-005
48	8.09E-005
49	-3.42E-005
50	1.45E-005
51	1.50E-004
52	-6.51E-005
53	-2.06E-004
54	1.65E-004
55	2.41E-004
56	3.10E-004
57	4.38E-004
58	1.60E-006
59	-4.23E-004
60	-3.37E-004
61	-2.84E-004
62	-2.24E-004
63	1.28E-004
64	9.79E-005
65	-2.55E-005
66	4.44E-005
67	7.28E-005
68	8.55E-005
69	3.83E-005
70	-1.03E-006
71	-4.43E-005
72	-6.66E-005

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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	-9.50E-004	-2.86E-003
2	-9.51E-004	-2.56E-003
3	-9.54E-004	-2.00E-003
4	-9.58E-004	-1.90E-003
5	-9.61E-004	-2.46E-003
6	-9.65E-004	-3.42E-003
7	-9.66E-004	-3.89E-003
8	-5.25E-004	-3.89E-003
9	-9.35E-005	-3.90E-003
10	-4.23E-005	-3.92E-003
11	2.60E-005	-3.93E-003
12	3.99E-005	-3.94E-003
13	-3.07E-006	-3.94E-003
14	-2.29E-006	-4.02E-003
15	5.91E-007	-4.54E-003
16	3.48E-006	-4.87E-003
17	6.36E-006	-4.43E-003
18	9.25E-006	-3.42E-003
19	1.00E-005	-2.89E-003
20	-4.98E-004	-2.89E-003
21	-1.16E-003	-2.88E-003
22	-1.46E-003	-2.87E-003
23	-1.50E-003	-2.87E-003
24	-1.23E-003	-2.86E-003
25	8.69E-006	-3.14E-003
26	7.66E-006	-2.88E-003
27	3.83E-006	-2.30E-003
28	5.73E-013	-2.02E-003
29	-3.83E-006	-2.30E-003
30	-7.66E-006	-2.89E-003
31	-8.69E-006	-3.15E-003
32	2.21E-004	-3.15E-003
33	2.85E-004	-3.16E-003
34	6.27E-005	-3.17E-003
35	-1.99E-005	-3.18E-003
36	-1.00E-005	-3.19E-003
37	3.12E-006	-3.19E-003
38	3.83E-006	-3.21E-003
39	6.47E-006	-3.57E-003
40	9.10E-006	-3.82E-003
41	1.17E-005	-3.57E-003
42	1.44E-005	-3.21E-003
43	1.51E-005	-3.19E-003
44	2.75E-005	-3.18E-003
45	4.41E-005	-3.17E-003
46	-4.69E-005	-3.16E-003
47	-2.80E-004	-3.15E-003
48	-2.20E-004	-3.14E-003
49	9.93E-004	-3.89E-003

50	9.92E-004	-3.42E-003
51	9.89E-004	-2.46E-003
52	9.85E-004	-1.90E-003
53	9.81E-004	-2.00E-003
54	9.78E-004	-2.56E-003
55	9.77E-004	-2.85E-003
56	1.26E-003	-2.86E-003
57	1.52E-003	-2.86E-003
58	1.48E-003	-2.87E-003
59	1.18E-003	-2.88E-003
60	5.17E-004	-2.89E-003
61	8.08E-006	-2.89E-003
62	8.85E-006	-3.42E-003
63	1.17E-005	-4.43E-003
64	1.46E-005	-4.87E-003
65	1.75E-005	-4.54E-003
66	2.04E-005	-4.03E-003
67	2.12E-005	-3.94E-003
68	-2.21E-005	-3.94E-003
69	-1.69E-005	-3.93E-003
70	5.76E-005	-3.92E-003
71	1.17E-004	-3.91E-003
72	5.51E-004	-3.90E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.05E-003
2	1.12E-003
3	7.68E-004
4	-4.40E-004
5	-1.62E-003
6	-1.76E-003
7	-1.66E-003
8	-1.51E-003
9	-2.95E-004
10	-6.50E-005
11	-1.28E-004
12	9.92E-005
13	2.17E-004
14	4.15E-004
15	1.12E-003
16	-4.28E-005
17	-1.57E-003
18	-1.96E-003
19	-1.89E-003
20	-1.78E-003
21	-8.46E-004
22	-3.09E-004
23	1.64E-004
24	9.56E-004
25	8.89E-004
26	9.93E-004
27	9.91E-004
28	-5.24E-007
29	-9.93E-004

30	-9.97E-004
31	-8.94E-004
32	-7.52E-004
33	3.30E-004
34	3.39E-004
35	5.68E-005
36	-8.67E-005
37	1.61E-006
38	1.76E-004
39	8.38E-004
40	-1.55E-006
41	-8.41E-004
42	-1.78E-004
43	-4.12E-006
44	8.37E-005
45	-3.31E-005
46	-3.69E-004
47	-3.42E-004
48	7.47E-004
49	1.67E-003
50	1.77E-003
51	1.62E-003
52	4.40E-004
53	-7.67E-004
54	-1.11E-003
55	-1.05E-003
56	-9.54E-004
57	-1.61E-004
58	3.12E-004
59	8.51E-004
60	1.79E-003
61	1.89E-003
62	1.97E-003
63	1.57E-003
64	4.43E-005
65	-1.12E-003
66	-4.16E-004
67	-2.19E-004
68	-9.98E-005
69	1.00E-004
70	9.08E-005
71	3.03E-004
72	1.52E-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	-2.10E-004	-1.19E-003
2	-2.11E-004	-1.12E-003
3	-2.14E-004	-9.58E-004
4	-2.17E-004	-8.92E-004
5	-2.20E-004	-1.03E-003
6	-2.23E-004	-1.28E-003
7	-2.24E-004	-1.39E-003
8	-1.27E-004	-1.39E-003
9	-2.78E-005	-1.39E-003
10	-6.40E-006	-1.40E-003
11	-1.33E-005	-1.40E-003
12	-9.33E-006	-1.40E-003
13	-1.20E-005	-1.40E-003
14	-1.16E-005	-1.42E-003
15	-1.02E-005	-1.50E-003
16	-8.83E-006	-1.55E-003
17	-7.45E-006	-1.46E-003
18	-6.06E-006	-1.28E-003
19	-5.69E-006	-1.20E-003
20	-8.03E-005	-1.20E-003
21	-1.54E-004	-1.20E-003
22	-1.94E-004	-1.19E-003
23	-2.53E-004	-1.19E-003
24	-2.60E-004	-1.19E-003
25	6.65E-006	-1.27E-003
26	5.86E-006	-1.20E-003
27	2.93E-006	-1.00E-003
28	-3.16E-012	-9.04E-004
29	-2.93E-006	-1.00E-003
30	-5.86E-006	-1.19E-003
31	-6.65E-006	-1.25E-003
32	4.85E-005	-1.25E-003
33	6.21E-005	-1.26E-003
34	2.00E-005	-1.26E-003
35	-7.49E-007	-1.26E-003
36	-9.57E-006	-1.27E-003
37	-1.47E-005	-1.27E-003
38	-1.43E-005	-1.28E-003
39	-1.30E-005	-1.37E-003
40	-1.17E-005	-1.42E-003
41	-1.03E-005	-1.38E-003
42	-8.99E-006	-1.30E-003
43	-8.63E-006	-1.29E-003
44	-1.18E-005	-1.29E-003
45	-2.31E-005	-1.29E-003
46	-6.68E-005	-1.28E-003
47	-9.69E-005	-1.28E-003
48	-5.80E-005	-1.27E-003
49	1.89E-004	-1.37E-003

50	1.88E-004	-1.27E-003
51	1.85E-004	-1.03E-003
52	1.82E-004	-8.97E-004
53	1.79E-004	-9.62E-004
54	1.76E-004	-1.13E-003
55	1.76E-004	-1.19E-003
56	2.24E-004	-1.19E-003
57	2.16E-004	-1.19E-003
58	1.58E-004	-1.19E-003
59	1.22E-004	-1.20E-003
60	5.35E-005	-1.20E-003
61	-1.75E-005	-1.20E-003
62	-1.71E-005	-1.28E-003
63	-1.57E-005	-1.45E-003
64	-1.43E-005	-1.53E-003
65	-1.30E-005	-1.48E-003
66	-1.16E-005	-1.39E-003
67	-1.12E-005	-1.38E-003
68	-1.23E-005	-1.38E-003
69	-1.91E-007	-1.38E-003
70	1.91E-005	-1.38E-003
71	2.99E-005	-1.37E-003
72	1.02E-004	-1.37E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	2.03E-004
2	2.46E-004
3	2.88E-004
4	-6.62E-005
5	-4.34E-004
6	-4.16E-004
7	-3.74E-004
8	-3.25E-004
9	-9.74E-005
10	9.87E-007
11	1.06E-005
12	-2.18E-006
13	2.25E-005
14	6.21E-005
15	1.80E-004
16	-3.42E-005
17	-2.93E-004
18	-3.08E-004
19	-2.84E-004
20	-2.53E-004
21	-7.51E-005
22	-9.49E-005
23	-1.09E-004
24	1.53E-004
25	2.56E-004
26	3.00E-004
27	3.45E-004
28	9.13E-007
29	-3.35E-004

30	-2.69E-004
31	-2.23E-004
32	-1.71E-004
33	6.06E-005
34	6.81E-005
35	2.62E-005
36	9.46E-006
37	3.01E-005
38	6.74E-005
39	1.85E-004
40	1.14E-005
41	-1.66E-004
42	-5.88E-005
43	-2.27E-005
44	-2.30E-006
45	-6.22E-005
46	-8.72E-005
47	-1.07E-005
48	2.07E-004
49	3.36E-004
50	3.81E-004
51	4.21E-004
52	6.53E-005
53	-2.83E-004
54	-2.41E-004
55	-1.98E-004
56	-1.49E-004
57	1.08E-004
58	9.06E-005
59	6.66E-005
60	2.40E-004
61	2.71E-004
62	2.95E-004
63	2.79E-004
64	2.28E-005
65	-1.85E-004
66	-5.73E-005
67	-1.68E-005
68	7.82E-006
69	3.40E-005
70	2.25E-005
71	4.78E-005
72	2.85E-004

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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	-7.59E-004	-2.24E-003
2	-7.60E-004	-2.01E-003
3	-7.62E-004	-1.58E-003
4	-7.65E-004	-1.50E-003
5	-7.68E-004	-1.93E-003
6	-7.70E-004	-2.68E-003
7	-7.71E-004	-3.04E-003
8	-4.26E-004	-3.05E-003
9	-8.40E-005	-3.06E-003
10	-3.72E-005	-3.06E-003
11	1.97E-005	-3.07E-003
12	3.34E-005	-3.08E-003
13	2.54E-006	-3.08E-003
14	2.96E-006	-3.14E-003
15	4.52E-006	-3.51E-003
16	6.07E-006	-3.74E-003
17	7.63E-006	-3.42E-003
18	9.19E-006	-2.68E-003
19	9.61E-006	-2.27E-003
20	-3.81E-004	-2.27E-003
21	-9.11E-004	-2.26E-003
22	-1.16E-003	-2.26E-003
23	-1.19E-003	-2.25E-003
24	-9.78E-004	-2.24E-003
25	6.61E-006	-2.46E-003
26	5.83E-006	-2.26E-003
27	2.91E-006	-1.80E-003
28	-1.75E-012	-1.59E-003
29	-2.91E-006	-1.80E-003
30	-5.83E-006	-2.26E-003
31	-6.61E-006	-2.47E-003
32	1.74E-004	-2.47E-003
33	2.31E-004	-2.48E-003
34	6.25E-005	-2.48E-003
35	-4.34E-006	-2.49E-003
36	1.56E-007	-2.50E-003
37	9.78E-006	-2.50E-003
38	1.01E-005	-2.51E-003
39	1.15E-005	-2.76E-003
40	1.29E-005	-2.94E-003
41	1.42E-005	-2.76E-003
42	1.56E-005	-2.51E-003
43	1.59E-005	-2.49E-003
44	2.45E-005	-2.49E-003
45	3.32E-005	-2.48E-003
46	-4.07E-005	-2.48E-003
47	-2.21E-004	-2.47E-003
48	-1.72E-004	-2.46E-003
49	8.10E-004	-3.05E-003

50	8.09E-004	-2.68E-003
51	8.06E-004	-1.93E-003
52	8.03E-004	-1.50E-003
53	8.01E-004	-1.58E-003
54	7.98E-004	-2.01E-003
55	7.97E-004	-2.24E-003
56	1.02E-003	-2.24E-003
57	1.23E-003	-2.25E-003
58	1.19E-003	-2.26E-003
59	9.42E-004	-2.26E-003
60	4.08E-004	-2.27E-003
61	1.60E-005	-2.27E-003
62	1.64E-005	-2.68E-003
63	1.80E-005	-3.42E-003
64	1.95E-005	-3.75E-003
65	2.11E-005	-3.51E-003
66	2.27E-005	-3.15E-003
67	2.31E-005	-3.09E-003
68	-8.48E-006	-3.08E-003
69	-2.19E-006	-3.08E-003
70	5.87E-005	-3.07E-003
71	1.15E-004	-3.06E-003
72	4.63E-004	-3.05E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	8.27E-004
2	8.75E-004
3	5.98E-004
4	-3.40E-004
5	-1.26E-003
6	-1.38E-003
7	-1.30E-003
8	-1.19E-003
9	-2.44E-004
10	-6.10E-005
11	-1.05E-004
12	7.06E-005
13	1.57E-004
14	2.98E-004
15	7.97E-004
16	-3.33E-005
17	-1.15E-003
18	-1.50E-003
19	-1.45E-003
20	-1.38E-003
21	-6.96E-004
22	-2.61E-004
23	1.32E-004
24	7.53E-004
25	6.93E-004
26	7.73E-004
27	7.68E-004
28	-6.79E-007
29	-7.71E-004

30	-7.81E-004
31	-7.02E-004
32	-5.94E-004
33	2.43E-004
34	2.63E-004
35	5.07E-005
36	-6.25E-005
37	1.61E-007
38	1.23E-004
39	5.83E-004
40	-3.06E-006
41	-5.89E-004
42	-1.27E-004
43	-3.79E-006
44	5.85E-005
45	-3.39E-005
46	-2.89E-004
47	-2.61E-004
48	5.84E-004
49	1.31E-003
50	1.38E-003
51	1.26E-003
52	3.41E-004
53	-5.97E-004
54	-8.73E-004
55	-8.25E-004
56	-7.51E-004
57	-1.28E-004
58	2.67E-004
59	7.03E-004
60	1.38E-003
61	1.46E-003
62	1.50E-003
63	1.15E-003
64	3.64E-005
65	-7.96E-004
66	-3.00E-004
67	-1.59E-004
68	-7.28E-005
69	8.21E-005
70	8.20E-005
71	2.58E-004
72	1.19E-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	1.27E-005	-1.10E-003
2	1.13E-005	-1.13E-003
3	6.22E-006	-1.06E-003
4	1.11E-006	-9.78E-004
5	-4.01E-006	-1.03E-003
6	-9.13E-006	-1.12E-003
7	-1.05E-005	-1.13E-003
8	-1.14E-005	-1.13E-003
9	-3.31E-005	-1.14E-003
10	-4.03E-005	-1.14E-003
11	-3.19E-005	-1.14E-003
12	-8.15E-006	-1.14E-003
13	6.14E-006	-1.14E-003
14	7.04E-006	-1.14E-003
15	1.04E-005	-1.17E-003
16	1.37E-005	-1.17E-003
17	1.71E-005	-1.11E-003
18	2.04E-005	-1.07E-003
19	2.13E-005	-1.11E-003
20	7.29E-005	-1.11E-003
21	2.43E-004	-1.11E-003
22	3.40E-004	-1.11E-003
23	2.39E-004	-1.10E-003
24	5.91E-005	-1.10E-003
25	1.16E-005	-1.20E-003
26	1.02E-005	-1.16E-003
27	5.10E-006	-1.02E-003
28	-1.59E-011	-9.35E-004
29	-5.10E-006	-1.02E-003
30	-1.02E-005	-1.16E-003
31	-1.16E-005	-1.20E-003
32	1.38E-005	-1.20E-003
33	3.04E-005	-1.21E-003
34	3.72E-005	-1.21E-003
35	3.13E-005	-1.21E-003
36	1.05E-005	-1.22E-003
37	-7.62E-006	-1.22E-003
38	-6.71E-006	-1.24E-003
39	-3.35E-006	-1.34E-003
40	1.21E-008	-1.40E-003
41	3.37E-006	-1.34E-003
42	6.74E-006	-1.24E-003
43	7.64E-006	-1.22E-003
44	-1.04E-005	-1.22E-003
45	-3.08E-005	-1.21E-003
46	-3.63E-005	-1.21E-003
47	-3.01E-005	-1.21E-003
48	-1.38E-005	-1.20E-003
49	1.05E-005	-1.13E-003

50	9.16E-006	-1.12E-003
51	4.04E-006	-1.03E-003
52	-1.08E-006	-9.78E-004
53	-6.19E-006	-1.06E-003
54	-1.13E-005	-1.13E-003
55	-1.27E-005	-1.10E-003
56	-5.91E-005	-1.10E-003
57	-2.39E-004	-1.10E-003
58	-3.40E-004	-1.11E-003
59	-2.43E-004	-1.11E-003
60	-7.29E-005	-1.11E-003
61	-2.13E-005	-1.11E-003
62	-2.04E-005	-1.07E-003
63	-1.70E-005	-1.11E-003
64	-1.37E-005	-1.17E-003
65	-1.04E-005	-1.17E-003
66	-7.02E-006	-1.14E-003
67	-6.12E-006	-1.14E-003
68	8.19E-006	-1.14E-003
69	3.14E-005	-1.14E-003
70	3.94E-005	-1.14E-003
71	3.28E-005	-1.14E-003
72	1.15E-005	-1.13E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	-1.41E-004
2	-7.20E-005
3	2.24E-004
4	3.94E-005
5	-1.97E-004
6	-6.48E-005
7	-1.52E-005
8	2.27E-005
9	2.93E-005
10	-1.48E-006
11	-3.00E-005
12	-5.84E-005
13	-4.29E-005
14	-1.16E-005
15	7.23E-005
16	-7.00E-005
17	-1.52E-004
18	1.15E-004
19	1.67E-004
20	2.15E-004
21	3.29E-004
22	-1.13E-006
23	-3.50E-004
24	-2.04E-004
25	1.12E-004
26	1.63E-004
27	2.85E-004
28	-9.01E-009
29	-2.85E-004

30	-1.63E-004
31	-1.12E-004
32	-7.10E-005
33	-2.17E-005
34	-2.56E-006
35	2.66E-005
36	5.62E-005
37	7.67E-005
38	1.12E-004
39	1.99E-004
40	-5.33E-009
41	-1.99E-004
42	-1.12E-004
43	-7.68E-005
44	-5.63E-005
45	-2.43E-005
46	2.01E-006
47	2.06E-005
48	7.09E-005
49	1.52E-005
50	6.48E-005
51	1.97E-004
52	-3.94E-005
53	-2.24E-004
54	7.20E-005
55	1.41E-004
56	2.04E-004
57	3.50E-004
58	1.13E-006
59	-3.29E-004
60	-2.15E-004
61	-1.67E-004
62	-1.15E-004
63	1.52E-004
64	7.00E-005
65	-7.23E-005
66	1.17E-005
67	4.29E-005
68	5.85E-005
69	2.77E-005
70	2.02E-006
71	-2.81E-005
72	-2.27E-005

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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	-6.59E-004	-2.23E-003
2	-6.60E-004	-2.02E-003
3	-6.63E-004	-1.61E-003
4	-6.67E-004	-1.52E-003
5	-6.70E-004	-1.92E-003
6	-6.73E-004	-2.61E-003
7	-6.74E-004	-2.94E-003
8	-3.67E-004	-2.94E-003
9	-7.14E-005	-2.95E-003
10	-3.78E-005	-2.96E-003
11	9.00E-006	-2.97E-003
12	1.97E-005	-2.98E-003
13	-9.07E-006	-2.98E-003
14	-8.44E-006	-3.04E-003
15	-6.12E-006	-3.39E-003
16	-3.79E-006	-3.62E-003
17	-1.47E-006	-3.31E-003
18	8.57E-007	-2.62E-003
19	1.48E-006	-2.26E-003
20	-3.42E-004	-2.26E-003
21	-7.82E-004	-2.25E-003
22	-9.76E-004	-2.25E-003
23	-1.02E-003	-2.24E-003
24	-8.53E-004	-2.24E-003
25	7.91E-006	-2.44E-003
26	6.97E-006	-2.25E-003
27	3.49E-006	-1.81E-003
28	-3.26E-013	-1.60E-003
29	-3.49E-006	-1.81E-003
30	-6.97E-006	-2.25E-003
31	-7.91E-006	-2.43E-003
32	1.55E-004	-2.44E-003
33	1.96E-004	-2.44E-003
34	3.92E-005	-2.45E-003
35	-1.84E-005	-2.46E-003
36	-1.35E-005	-2.46E-003
37	-6.21E-006	-2.47E-003
38	-5.63E-006	-2.48E-003
39	-3.47E-006	-2.74E-003
40	-1.32E-006	-2.92E-003
41	8.36E-007	-2.74E-003
42	2.99E-006	-2.48E-003
43	3.57E-006	-2.47E-003
44	1.10E-005	-2.47E-003
45	2.15E-005	-2.46E-003
46	-4.09E-005	-2.45E-003
47	-2.00E-004	-2.45E-003
48	-1.56E-004	-2.44E-003
49	6.70E-004	-2.94E-003

50	6.69E-004	-2.61E-003
51	6.66E-004	-1.92E-003
52	6.63E-004	-1.52E-003
53	6.59E-004	-1.61E-003
54	6.56E-004	-2.02E-003
55	6.55E-004	-2.23E-003
56	8.49E-004	-2.24E-003
57	1.02E-003	-2.24E-003
58	9.72E-004	-2.25E-003
59	7.78E-004	-2.25E-003
60	3.38E-004	-2.26E-003
61	-4.17E-006	-2.26E-003
62	-3.55E-006	-2.62E-003
63	-1.22E-006	-3.31E-003
64	1.10E-006	-3.61E-003
65	3.43E-006	-3.39E-003
66	5.75E-006	-3.03E-003
67	6.38E-006	-2.98E-003
68	-2.21E-005	-2.97E-003
69	-1.63E-005	-2.97E-003
70	3.56E-005	-2.96E-003
71	7.15E-005	-2.95E-003
72	3.64E-004	-2.94E-003

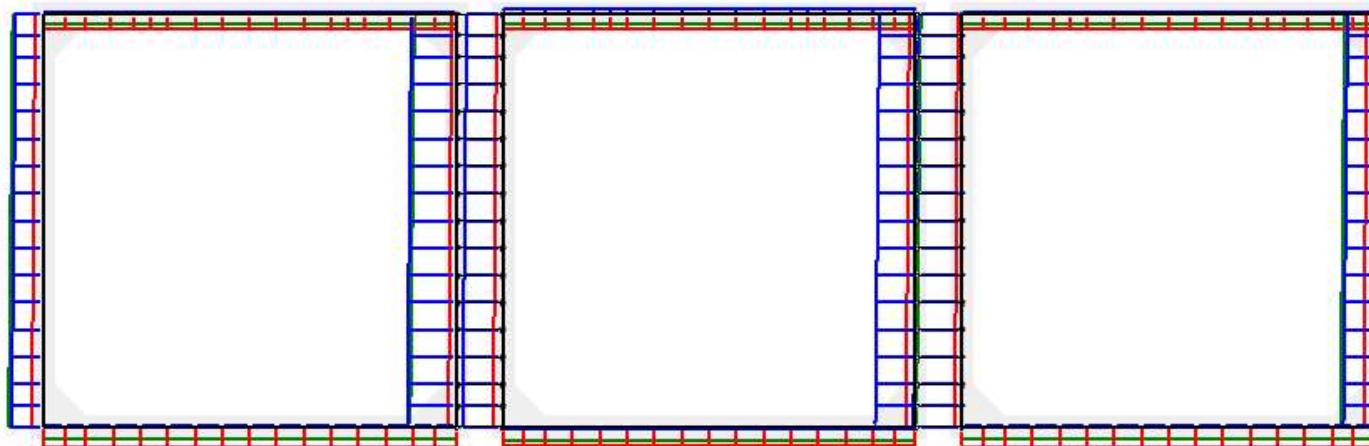
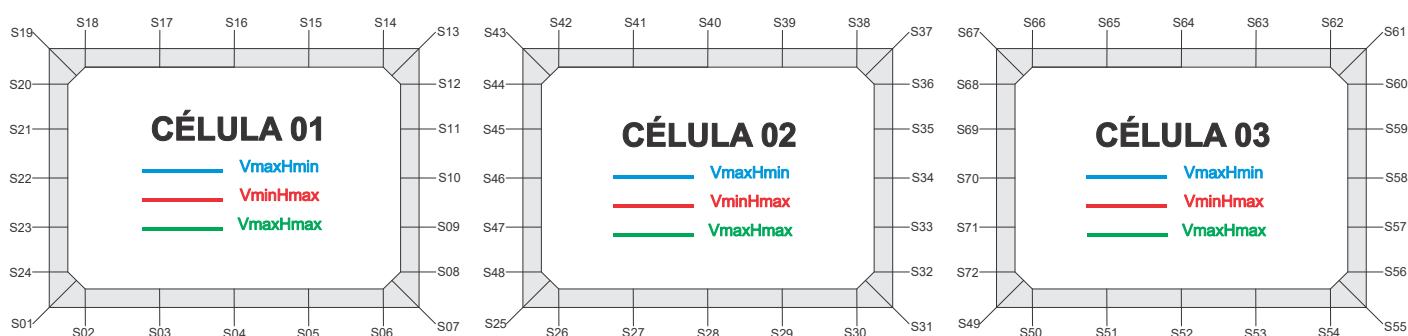
DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	7.37E-004
2	7.93E-004
3	5.89E-004
4	-2.97E-004
5	-1.17E-003
6	-1.24E-003
7	-1.16E-003
8	-1.05E-003
9	-1.99E-004
10	-4.29E-005
11	-8.88E-005
12	6.49E-005
13	1.48E-004
14	2.86E-004
15	7.72E-004
16	-3.37E-005
17	-1.08E-003
18	-1.33E-003
19	-1.28E-003
20	-1.20E-003
21	-5.50E-004
22	-2.22E-004
23	6.70E-005
24	6.58E-004
25	6.40E-004
26	7.22E-004
27	7.44E-004
28	-1.23E-009
29	-7.43E-004

30	-7.19E-004
31	-6.37E-004
32	-5.29E-004
33	2.36E-004
34	2.38E-004
35	4.10E-005
36	-5.44E-005
37	8.52E-006
38	1.31E-004
39	5.90E-004
40	1.33E-006
41	-5.88E-004
42	-1.31E-004
43	-8.06E-006
44	5.44E-005
45	-2.33E-005
46	-2.53E-004
47	-2.32E-004
48	5.33E-004
49	1.16E-003
50	1.24E-003
51	1.16E-003
52	2.97E-004
53	-5.88E-004
54	-7.92E-004
55	-7.36E-004
56	-6.58E-004
57	-6.69E-005
58	2.21E-004
59	5.49E-004
60	1.20E-003
61	1.28E-003
62	1.33E-003
63	1.08E-003
64	3.24E-005
65	-7.72E-004
66	-2.85E-004
67	-1.47E-004
68	-6.32E-005
69	7.23E-005
70	5.85E-005
71	1.95E-004
72	1.05E-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 |          -100.85 |          3.03 |
|  2 |           3.03 |          3.03 |
|  3 |           3.03 |          3.03 |
|  4 |           3.03 |          3.03 |
|  5 |           3.03 |          3.03 |
|  6 |           3.03 |          3.03 |
|  7 |           3.03 |         -155.96 |
|  8 |          -154.29 |         -154.29 |
|  9 |          -151.73 |         -151.73 |
| 10 |          -149.17 |         -149.17 |
| 11 |          -146.61 |         -146.61 |
| 12 |          -144.05 |         -144.05 |
| 13 |          -142.39 |           4.92 |
| 14 |           4.92 |           4.92 |
| 15 |           4.92 |           4.92 |
| 16 |           4.92 |           4.92 |
| 17 |           4.92 |           4.92 |
| 18 |           4.92 |           4.92 |
| 19 |           4.92 |          -87.29 |
| 20 |          -88.95 |          -88.95 |
| 21 |          -91.51 |          -91.51 |
| 22 |          -94.07 |          -94.07 |
| 23 |          -96.63 |          -96.63 |
| 24 |          -99.19 |          -99.19 |
| 25 |         -100.85 |           -7.02 |
| 26 |           -7.02 |           -7.02 |
| 27 |           -7.02 |           -7.02 |
| 28 |           -7.02 |           -7.02 |
| 29 |           -7.02 |           -7.02 |
| 30 |           -7.02 |           -7.02 |
| 31 |           -7.02 |         -128.45 |
| 32 |         -126.78 |         -126.78 |
| 33 |         -124.22 |         -124.22 |
| 34 |         -121.66 |         -121.66 |
| 35 |         -119.10 |         -119.10 |
| 36 |         -116.55 |         -116.55 |
| 37 |         -114.88 |          14.97 |
| 38 |          14.97 |          14.97 |
| 39 |          14.97 |          14.97 |
| 40 |          14.97 |          14.97 |
| 41 |          14.97 |          14.97 |
| 42 |          14.97 |          14.97 |
| 43 |          14.97 |         -114.79 |
| 44 |         -116.46 |         -116.46 |
| 45 |         -119.02 |         -119.02 |
| 46 |         -121.58 |         -121.58 |
| 47 |         -124.14 |         -124.14 |
| 48 |         -126.70 |         -126.70 |
| 49 |         -128.36 |           3.08 |
```

	50	3.08	3.08
	51	3.08	3.08
	52	3.08	3.08
	53	3.08	3.08
	54	3.08	3.08
	55	3.08	-100.81
	56	-99.15	-99.15
	57	-96.59	-96.59
	58	-94.03	-94.03
	59	-91.47	-91.47
	60	-88.91	-88.91
	61	-87.24	4.87
	62	4.87	4.87
	63	4.87	4.87
	64	4.87	4.87
	65	4.87	4.87
	66	4.87	4.87
	67	4.87	-142.43
	68	-144.10	-144.10
	69	-146.66	-146.66
	70	-149.22	-149.22
	71	-151.77	-151.77
	72	-154.33	-154.33

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-36.08	-62.36
2	-62.36	-62.36
3	-62.36	-62.36
4	-62.36	-62.36
5	-62.36	-62.36
6	-62.36	-62.36
7	-62.36	-23.85
8	-22.57	-22.57
9	-20.60	-20.60
10	-18.64	-18.64
11	-16.67	-16.67
12	-14.70	-14.70
13	-13.42	-48.01
14	-48.01	-48.01
15	-48.01	-48.01
16	-48.01	-48.01
17	-48.01	-48.01
18	-48.01	-48.01
19	-48.01	-25.64
20	-26.92	-26.92
21	-28.89	-28.89
22	-30.86	-30.86
23	-32.83	-32.83
24	-34.80	-34.80
25	-36.08	-61.75
26	-61.75	-61.75
27	-61.75	-61.75
28	-61.75	-61.75
29	-61.75	-61.75
30	-61.75	-61.75
31	-61.75	-29.97
32	-28.69	-28.69
33	-26.72	-26.72
34	-24.75	-24.75
35	-22.78	-22.78
36	-20.81	-20.81
37	-19.53	-48.63
38	-48.63	-48.63
39	-48.63	-48.63
40	-48.63	-48.63
41	-48.63	-48.63
42	-48.63	-48.63
43	-48.63	-19.53
44	-20.81	-20.81
45	-22.78	-22.78
46	-24.75	-24.75
47	-26.72	-26.72
48	-28.68	-28.68
49	-29.97	-62.36

	50	-62.36	-62.36
	51	-62.36	-62.36
	52	-62.36	-62.36
	53	-62.36	-62.36
	54	-62.36	-62.36
	55	-62.36	-36.08
	56	-34.80	-34.80
	57	-32.83	-32.83
	58	-30.86	-30.86
	59	-28.89	-28.89
	60	-26.92	-26.92
	61	-25.64	-48.01
	62	-48.01	-48.01
	63	-48.01	-48.01
	64	-48.01	-48.01
	65	-48.01	-48.01
	66	-48.01	-48.01
	67	-48.01	-13.42
	68	-14.70	-14.70
	69	-16.67	-16.67
	70	-18.64	-18.64
	71	-20.61	-20.61
	72	-22.57	-22.57

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-110.48	-39.42
2	-39.42	-39.42
3	-39.42	-39.42
4	-39.42	-39.42
5	-39.42	-39.42
6	-39.42	-39.42
7	-39.42	-146.33
8	-144.67	-144.67
9	-142.11	-142.11
10	-139.55	-139.55
11	-136.99	-136.99
12	-134.43	-134.43
13	-132.76	-34.16
14	-34.16	-34.16
15	-34.16	-34.16
16	-34.16	-34.16
17	-34.16	-34.16
18	-34.16	-34.16
19	-34.16	-96.91
20	-98.58	-98.58
21	-101.14	-101.14
22	-103.69	-103.69
23	-106.25	-106.25
24	-108.81	-108.81
25	-110.48	-43.56
26	-43.56	-43.56
27	-43.56	-43.56
28	-43.56	-43.56
29	-43.56	-43.56
30	-43.56	-43.56
31	-43.56	-128.38
32	-126.72	-126.72
33	-124.16	-124.16
34	-121.60	-121.60
35	-119.04	-119.04
36	-116.48	-116.48
37	-114.81	-30.03
38	-30.03	-30.03
39	-30.03	-30.03
40	-30.03	-30.03
41	-30.03	-30.03
42	-30.03	-30.03
43	-30.03	-114.86
44	-116.53	-116.53
45	-119.08	-119.08
46	-121.64	-121.64
47	-124.20	-124.20
48	-126.76	-126.76
49	-128.43	-39.45

	50	-39.45	-39.45
	51	-39.45	-39.45
	52	-39.45	-39.45
	53	-39.45	-39.45
	54	-39.45	-39.45
	55	-39.45	-110.50
	56	-108.84	-108.84
	57	-106.28	-106.28
	58	-103.72	-103.72
	59	-101.16	-101.16
	60	-98.60	-98.60
	61	-96.93	-34.14
	62	-34.14	-34.14
	63	-34.14	-34.14
	64	-34.14	-34.14
	65	-34.14	-34.14
	66	-34.14	-34.14
	67	-34.14	-132.74
	68	-134.41	-134.41
	69	-136.97	-136.97
	70	-139.53	-139.53
	71	-142.09	-142.09
	72	-144.64	-144.64

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-163.86	-1.45
2	-1.45	-1.45
3	-1.45	-1.45
4	-1.45	-1.45
5	-1.45	-1.45
6	-1.45	-1.45
7	-1.45	-197.44
8	-195.77	-195.77
9	-193.21	-193.21
10	-190.65	-190.65
11	-188.09	-188.09
12	-185.53	-185.53
13	-183.87	9.40
14	9.40	9.40
15	9.40	9.40
16	9.40	9.40
17	9.40	9.40
18	9.40	9.40
19	9.40	-150.29
20	-151.95	-151.95
21	-154.51	-154.51
22	-157.07	-157.07
23	-159.63	-159.63
24	-162.19	-162.19
25	-163.86	-15.50
26	-15.50	-15.50
27	-15.50	-15.50
28	-15.50	-15.50
29	-15.50	-15.50
30	-15.50	-15.50
31	-15.50	-163.16
32	-161.49	-161.49
33	-158.93	-158.93
34	-156.37	-156.37
35	-153.81	-153.81
36	-151.26	-151.26
37	-149.59	23.45
38	23.45	23.45
39	23.45	23.45
40	23.45	23.45
41	23.45	23.45
42	23.45	23.45
43	23.45	-184.57
44	-186.23	-186.23
45	-188.79	-188.79
46	-191.35	-191.35
47	-193.91	-193.91
48	-196.47	-196.47
49	-198.14	-2.48

	50	-2.48	-2.48
	51	-2.48	-2.48
	52	-2.48	-2.48
	53	-2.48	-2.48
	54	-2.48	-2.48
	55	-2.48	-123.17
	56	-121.50	-121.50
	57	-118.94	-118.94
	58	-116.38	-116.38
	59	-113.83	-113.83
	60	-111.27	-111.27
	61	-109.60	10.43
	62	10.43	10.43
	63	10.43	10.43
	64	10.43	10.43
	65	10.43	10.43
	66	10.43	10.43
	67	10.43	-224.56
	68	-226.22	-226.22
	69	-228.78	-228.78
	70	-231.34	-231.34
	71	-233.90	-233.90
	72	-236.46	-236.46

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-35.92	-62.35
2	-62.35	-62.35
3	-62.35	-62.35
4	-62.35	-62.35
5	-62.35	-62.35
6	-62.35	-62.35
7	-62.35	-24.02
8	-22.73	-22.73
9	-20.77	-20.77
10	-18.80	-18.80
11	-16.83	-16.83
12	-14.86	-14.86
13	-13.58	-48.02
14	-48.02	-48.02
15	-48.02	-48.02
16	-48.02	-48.02
17	-48.02	-48.02
18	-48.02	-48.02
19	-48.02	-25.48
20	-26.76	-26.76
21	-28.73	-28.73
22	-30.70	-30.70
23	-32.67	-32.67
24	-34.64	-34.64
25	-35.92	-61.72
26	-61.72	-61.72
27	-61.72	-61.72
28	-61.72	-61.72
29	-61.72	-61.72
30	-61.72	-61.72
31	-61.72	-29.64
32	-28.36	-28.36
33	-26.39	-26.39
34	-24.42	-24.42
35	-22.45	-22.45
36	-20.49	-20.49
37	-19.20	-48.66
38	-48.66	-48.66
39	-48.66	-48.66
40	-48.66	-48.66
41	-48.66	-48.66
42	-48.66	-48.66
43	-48.66	-19.85
44	-21.13	-21.13
45	-23.10	-23.10
46	-25.07	-25.07
47	-27.04	-27.04
48	-29.01	-29.01
49	-30.29	-62.35

	50	-62.35	-62.35
	51	-62.35	-62.35
	52	-62.35	-62.35
	53	-62.35	-62.35
	54	-62.35	-62.35
	55	-62.35	-37.02
	56	-35.74	-35.74
	57	-33.77	-33.77
	58	-31.80	-31.80
	59	-29.83	-29.83
	60	-27.87	-27.87
	61	-26.58	-48.02
	62	-48.02	-48.02
	63	-48.02	-48.02
	64	-48.02	-48.02
	65	-48.02	-48.02
	66	-48.02	-48.02
	67	-48.02	-12.47
	68	-13.75	-13.75
	69	-15.72	-15.72
	70	-17.69	-17.69
	71	-19.66	-19.66
	72	-21.63	-21.63

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-174.25	-41.95
2	-41.95	-41.95
3	-41.95	-41.95
4	-41.95	-41.95
5	-41.95	-41.95
6	-41.95	-41.95
7	-41.95	-187.04
8	-185.38	-185.38
9	-182.82	-182.82
10	-180.26	-180.26
11	-177.70	-177.70
12	-175.14	-175.14
13	-173.47	-31.63
14	-31.63	-31.63
15	-31.63	-31.63
16	-31.63	-31.63
17	-31.63	-31.63
18	-31.63	-31.63
19	-31.63	-160.68
20	-162.35	-162.35
21	-164.91	-164.91
22	-167.47	-167.47
23	-170.03	-170.03
24	-172.59	-172.59
25	-174.25	-49.67
26	-49.67	-49.67
27	-49.67	-49.67
28	-49.67	-49.67
29	-49.67	-49.67
30	-49.67	-49.67
31	-49.67	-165.00
32	-163.33	-163.33
33	-160.78	-160.78
34	-158.22	-158.22
35	-155.66	-155.66
36	-153.10	-153.10
37	-151.43	-23.92
38	-23.92	-23.92
39	-23.92	-23.92
40	-23.92	-23.92
41	-23.92	-23.92
42	-23.92	-23.92
43	-23.92	-182.73
44	-184.39	-184.39
45	-186.95	-186.95
46	-189.51	-189.51
47	-192.07	-192.07
48	-194.63	-194.63
49	-196.29	-44.52

	50	-44.52	-44.52
	51	-44.52	-44.52
	52	-44.52	-44.52
	53	-44.52	-44.52
	54	-44.52	-44.52
	55	-44.52	-135.25
	56	-133.59	-133.59
	57	-131.03	-131.03
	58	-128.47	-128.47
	59	-125.91	-125.91
	60	-123.35	-123.35
	61	-121.68	-29.06
	62	-29.06	-29.06
	63	-29.06	-29.06
	64	-29.06	-29.06
	65	-29.06	-29.06
	66	-29.06	-29.06
	67	-29.06	-212.47
	68	-214.14	-214.14
	69	-216.70	-216.70
	70	-219.26	-219.26
	71	-221.82	-221.82
	72	-224.38	-224.38

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-65.50	-20.43
2	-20.43	-20.43
3	-20.43	-20.43
4	-20.43	-20.43
5	-20.43	-20.43
6	-20.43	-20.43
7	-20.43	-89.09
8	-87.80	-87.80
9	-85.84	-85.84
10	-83.87	-83.87
11	-81.90	-81.90
12	-79.93	-79.93
13	-78.65	-11.37
14	-11.37	-11.37
15	-11.37	-11.37
16	-11.37	-11.37
17	-11.37	-11.37
18	-11.37	-11.37
19	-11.37	-55.06
20	-56.34	-56.34
21	-58.31	-58.31
22	-60.28	-60.28
23	-62.25	-62.25
24	-64.22	-64.22
25	-65.50	-23.62
26	-23.62	-23.62
27	-23.62	-23.62
28	-23.62	-23.62
29	-23.62	-23.62
30	-23.62	-23.62
31	-23.62	-77.29
32	-76.00	-76.00
33	-74.04	-74.04
34	-72.07	-72.07
35	-70.10	-70.10
36	-68.13	-68.13
37	-66.85	-8.18
38	-8.18	-8.18
39	-8.18	-8.18
40	-8.18	-8.18
41	-8.18	-8.18
42	-8.18	-8.18
43	-8.18	-66.86
44	-68.14	-68.14
45	-70.11	-70.11
46	-72.08	-72.08
47	-74.05	-74.05
48	-76.02	-76.02
49	-77.30	-20.44

	50	-20.44	-20.44
	51	-20.44	-20.44
	52	-20.44	-20.44
	53	-20.44	-20.44
	54	-20.44	-20.44
	55	-20.44	-65.50
	56	-64.22	-64.22
	57	-62.25	-62.25
	58	-60.28	-60.28
	59	-58.31	-58.31
	60	-56.35	-56.35
	61	-55.06	-11.36
	62	-11.36	-11.36
	63	-11.36	-11.36
	64	-11.36	-11.36
	65	-11.36	-11.36
	66	-11.36	-11.36
	67	-11.36	-78.64
	68	-79.92	-79.92
	69	-81.89	-81.89
	70	-83.86	-83.86
	71	-85.83	-85.83
	72	-87.80	-87.80

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-32.46	-42.27
2	-42.27	-42.27
3	-42.27	-42.27
4	-42.27	-42.27
5	-42.27	-42.27
6	-42.27	-42.27
7	-42.27	-27.47
8	-26.19	-26.19
9	-24.22	-24.22
10	-22.25	-22.25
11	-20.28	-20.28
12	-18.32	-18.32
13	-17.03	-29.95
14	-29.95	-29.95
15	-29.95	-29.95
16	-29.95	-29.95
17	-29.95	-29.95
18	-29.95	-29.95
19	-29.95	-22.02
20	-23.30	-23.30
21	-25.27	-25.27
22	-27.24	-27.24
23	-29.21	-29.21
24	-31.18	-31.18
25	-32.46	-42.03
26	-42.03	-42.03
27	-42.03	-42.03
28	-42.03	-42.03
29	-42.03	-42.03
30	-42.03	-42.03
31	-42.03	-29.97
32	-28.69	-28.69
33	-26.72	-26.72
34	-24.75	-24.75
35	-22.78	-22.78
36	-20.81	-20.81
37	-19.53	-30.19
38	-30.19	-30.19
39	-30.19	-30.19
40	-30.19	-30.19
41	-30.19	-30.19
42	-30.19	-30.19
43	-30.19	-19.53
44	-20.81	-20.81
45	-22.78	-22.78
46	-24.75	-24.75
47	-26.72	-26.72
48	-28.68	-28.68
49	-29.97	-42.27

	50	-42.27	-42.27
	51	-42.27	-42.27
	52	-42.27	-42.27
	53	-42.27	-42.27
	54	-42.27	-42.27
	55	-42.27	-32.46
	56	-31.18	-31.18
	57	-29.21	-29.21
	58	-27.24	-27.24
	59	-25.27	-25.27
	60	-23.30	-23.30
	61	-22.02	-29.95
	62	-29.95	-29.95
	63	-29.95	-29.95
	64	-29.95	-29.95
	65	-29.95	-29.95
	66	-29.95	-29.95
	67	-29.95	-17.03
	68	-18.32	-18.32
	69	-20.28	-20.28
	70	-22.25	-22.25
	71	-24.22	-24.22
	72	-26.19	-26.19

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-67.57	-26.66
2	-26.66	-26.66
3	-26.66	-26.66
4	-26.66	-26.66
5	-26.66	-26.66
6	-26.66	-26.66
7	-26.66	-87.01
8	-85.73	-85.73
9	-83.76	-83.76
10	-81.79	-81.79
11	-79.82	-79.82
12	-77.85	-77.85
13	-76.57	-21.49
14	-21.49	-21.49
15	-21.49	-21.49
16	-21.49	-21.49
17	-21.49	-21.49
18	-21.49	-21.49
19	-21.49	-57.13
20	-58.42	-58.42
21	-60.38	-60.38
22	-62.35	-62.35
23	-64.32	-64.32
24	-66.29	-66.29
25	-67.57	-28.54
26	-28.54	-28.54
27	-28.54	-28.54
28	-28.54	-28.54
29	-28.54	-28.54
30	-28.54	-28.54
31	-28.54	-77.29
32	-76.01	-76.01
33	-74.04	-74.04
34	-72.07	-72.07
35	-70.10	-70.10
36	-68.13	-68.13
37	-66.85	-19.61
38	-19.61	-19.61
39	-19.61	-19.61
40	-19.61	-19.61
41	-19.61	-19.61
42	-19.61	-19.61
43	-19.61	-66.86
44	-68.14	-68.14
45	-70.11	-70.11
46	-72.08	-72.08
47	-74.04	-74.04
48	-76.01	-76.01
49	-77.29	-26.67

	50	-26.67	-26.67
	51	-26.67	-26.67
	52	-26.67	-26.67
	53	-26.67	-26.67
	54	-26.67	-26.67
	55	-26.67	-67.58
	56	-66.29	-66.29
	57	-64.33	-64.33
	58	-62.36	-62.36
	59	-60.39	-60.39
	60	-58.42	-58.42
	61	-57.14	-21.48
	62	-21.48	-21.48
	63	-21.48	-21.48
	64	-21.48	-21.48
	65	-21.48	-21.48
	66	-21.48	-21.48
	67	-21.48	-76.57
	68	-77.85	-77.85
	69	-79.82	-79.82
	70	-81.79	-81.79
	71	-83.76	-83.76
	72	-85.73	-85.73

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-28.78	-21.48
2	-21.48	-21.48
3	-21.48	-21.48
4	-21.48	-21.48
5	-21.48	-21.48
6	-21.48	-21.48
7	-21.48	-31.15
8	-29.87	-29.87
9	-27.90	-27.90
10	-25.93	-25.93
11	-23.96	-23.96
12	-21.99	-21.99
13	-20.71	-10.32
14	-10.32	-10.32
15	-10.32	-10.32
16	-10.32	-10.32
17	-10.32	-10.32
18	-10.32	-10.32
19	-10.32	-18.34
20	-19.63	-19.63
21	-21.59	-21.59
22	-23.56	-23.56
23	-25.53	-25.53
24	-27.50	-27.50
25	-28.78	-21.82
26	-21.82	-21.82
27	-21.82	-21.82
28	-21.82	-21.82
29	-21.82	-21.82
30	-21.82	-21.82
31	-21.82	-30.06
32	-28.78	-28.78
33	-26.81	-26.81
34	-24.84	-24.84
35	-22.87	-22.87
36	-20.90	-20.90
37	-19.62	-9.98
38	-9.98	-9.98
39	-9.98	-9.98
40	-9.98	-9.98
41	-9.98	-9.98
42	-9.98	-9.98
43	-9.98	-19.43
44	-20.72	-20.72
45	-22.68	-22.68
46	-24.65	-24.65
47	-26.62	-26.62
48	-28.59	-28.59
49	-29.87	-21.48

	50	-21.48	-21.48
	51	-21.48	-21.48
	52	-21.48	-21.48
	53	-21.48	-21.48
	54	-21.48	-21.48
	55	-21.48	-28.69
	56	-27.41	-27.41
	57	-25.44	-25.44
	58	-23.47	-23.47
	59	-21.50	-21.50
	60	-19.53	-19.53
	61	-18.25	-10.32
	62	-10.32	-10.32
	63	-10.32	-10.32
	64	-10.32	-10.32
	65	-10.32	-10.32
	66	-10.32	-10.32
	67	-10.32	-20.81
	68	-22.09	-22.09
	69	-24.06	-24.06
	70	-26.03	-26.03
	71	-27.99	-27.99
	72	-29.96	-29.96

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-52.03	-20.20
2	-20.20	-20.20
3	-20.20	-20.20
4	-20.20	-20.20
5	-20.20	-20.20
6	-20.20	-20.20
7	-20.20	-67.06
8	-65.78	-65.78
9	-63.81	-63.81
10	-61.84	-61.84
11	-59.88	-59.88
12	-57.91	-57.91
13	-56.63	-11.60
14	-11.60	-11.60
15	-11.60	-11.60
16	-11.60	-11.60
17	-11.60	-11.60
18	-11.60	-11.60
19	-11.60	-41.59
20	-42.87	-42.87
21	-44.84	-44.84
22	-46.81	-46.81
23	-48.78	-48.78
24	-50.74	-50.74
25	-52.03	-21.71
26	-21.71	-21.71
27	-21.71	-21.71
28	-21.71	-21.71
29	-21.71	-21.71
30	-21.71	-21.71
31	-21.71	-59.53
32	-58.25	-58.25
33	-56.28	-56.28
34	-54.31	-54.31
35	-52.34	-52.34
36	-50.37	-50.37
37	-49.09	-10.09
38	-10.09	-10.09
39	-10.09	-10.09
40	-10.09	-10.09
41	-10.09	-10.09
42	-10.09	-10.09
43	-10.09	-49.12
44	-50.40	-50.40
45	-52.37	-52.37
46	-54.34	-54.34
47	-56.31	-56.31
48	-58.28	-58.28
49	-59.56	-20.22

	50	-20.22	-20.22
	51	-20.22	-20.22
	52	-20.22	-20.22
	53	-20.22	-20.22
	54	-20.22	-20.22
	55	-20.22	-52.04
	56	-50.76	-50.76
	57	-48.79	-48.79
	58	-46.82	-46.82
	59	-44.85	-44.85
	60	-42.88	-42.88
	61	-41.60	-11.58
	62	-11.58	-11.58
	63	-11.58	-11.58
	64	-11.58	-11.58
	65	-11.58	-11.58
	66	-11.58	-11.58
	67	-11.58	-56.61
	68	-57.89	-57.89
	69	-59.86	-59.86
	70	-61.83	-61.83
	71	-63.80	-63.80
	72	-65.77	-65.77

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-31.58	-38.13
2	-38.13	-38.13
3	-38.13	-38.13
4	-38.13	-38.13
5	-38.13	-38.13
6	-38.13	-38.13
7	-38.13	-28.35
8	-27.07	-27.07
9	-25.10	-25.10
10	-23.13	-23.13
11	-21.16	-21.16
12	-19.19	-19.19
13	-17.91	-24.90
14	-24.90	-24.90
15	-24.90	-24.90
16	-24.90	-24.90
17	-24.90	-24.90
18	-24.90	-24.90
19	-24.90	-21.15
20	-22.43	-22.43
21	-24.40	-24.40
22	-26.37	-26.37
23	-28.33	-28.33
24	-30.30	-30.30
25	-31.58	-37.98
26	-37.98	-37.98
27	-37.98	-37.98
28	-37.98	-37.98
29	-37.98	-37.98
30	-37.98	-37.98
31	-37.98	-29.97
32	-28.69	-28.69
33	-26.72	-26.72
34	-24.75	-24.75
35	-22.78	-22.78
36	-20.81	-20.81
37	-19.53	-25.04
38	-25.04	-25.04
39	-25.04	-25.04
40	-25.04	-25.04
41	-25.04	-25.04
42	-25.04	-25.04
43	-25.04	-19.53
44	-20.81	-20.81
45	-22.78	-22.78
46	-24.75	-24.75
47	-26.72	-26.72
48	-28.68	-28.68
49	-29.97	-38.13

	50	-38.13	-38.13
	51	-38.13	-38.13
	52	-38.13	-38.13
	53	-38.13	-38.13
	54	-38.13	-38.13
	55	-38.13	-31.58
	56	-30.30	-30.30
	57	-28.33	-28.33
	58	-26.37	-26.37
	59	-24.40	-24.40
	60	-22.43	-22.43
	61	-21.15	-24.90
	62	-24.90	-24.90
	63	-24.90	-24.90
	64	-24.90	-24.90
	65	-24.90	-24.90
	66	-24.90	-24.90
	67	-24.90	-17.91
	68	-19.19	-19.19
	69	-21.16	-21.16
	70	-23.13	-23.13
	71	-25.10	-25.10
	72	-27.07	-27.07

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

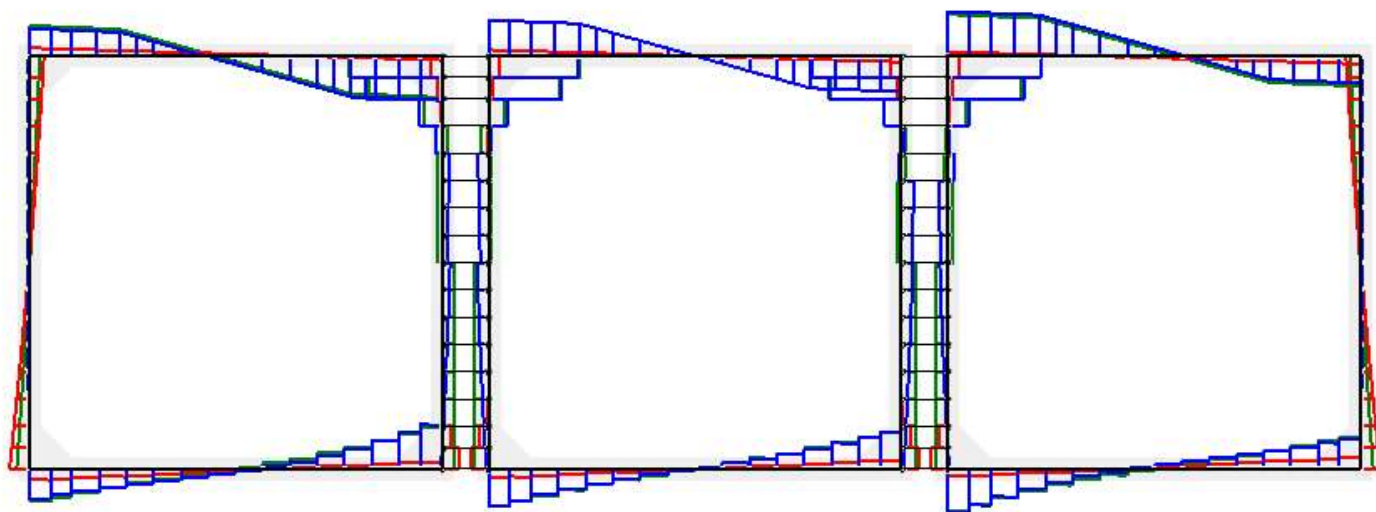
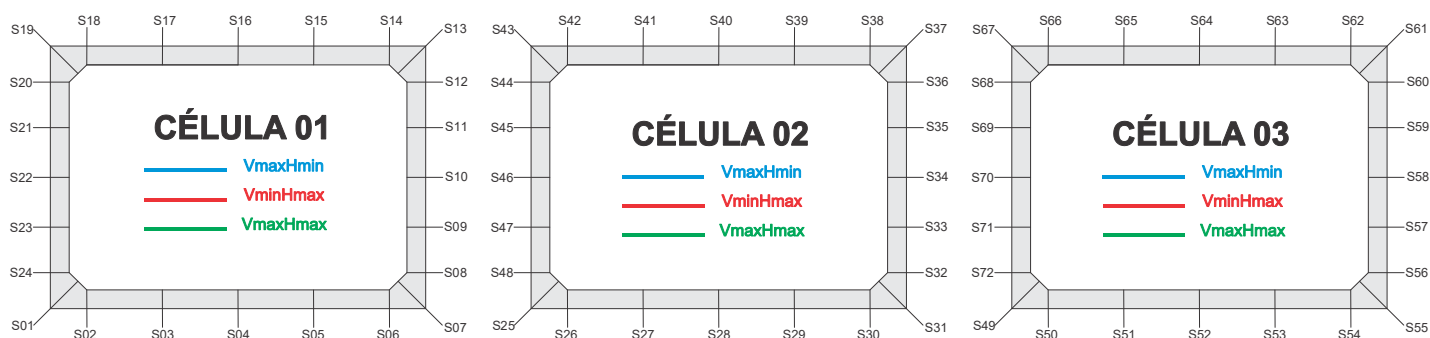
ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-53.02	-24.70
2	-24.70	-24.70
3	-24.70	-24.70
4	-24.70	-24.70
5	-24.70	-24.70
6	-24.70	-24.70
7	-24.70	-66.07
8	-64.79	-64.79
9	-62.82	-62.82
10	-60.85	-60.85
11	-58.88	-58.88
12	-56.91	-56.91
13	-55.63	-17.32
14	-17.32	-17.32
15	-17.32	-17.32
16	-17.32	-17.32
17	-17.32	-17.32
18	-17.32	-17.32
19	-17.32	-42.58
20	-43.87	-43.87
21	-45.83	-45.83
22	-47.80	-47.80
23	-49.77	-49.77
24	-51.74	-51.74
25	-53.02	-25.98
26	-25.98	-25.98
27	-25.98	-25.98
28	-25.98	-25.98
29	-25.98	-25.98
30	-25.98	-25.98
31	-25.98	-59.56
32	-58.28	-58.28
33	-56.31	-56.31
34	-54.34	-54.34
35	-52.37	-52.37
36	-50.40	-50.40
37	-49.12	-16.04
38	-16.04	-16.04
39	-16.04	-16.04
40	-16.04	-16.04
41	-16.04	-16.04
42	-16.04	-16.04
43	-16.04	-49.09
44	-50.37	-50.37
45	-52.34	-52.34
46	-54.31	-54.31
47	-56.28	-56.28
48	-58.25	-58.25
49	-59.53	-24.70

	50	-24.70	-24.70
	51	-24.70	-24.70
	52	-24.70	-24.70
	53	-24.70	-24.70
	54	-24.70	-24.70
	55	-24.70	-53.01
	56	-51.73	-51.73
	57	-49.76	-49.76
	58	-47.79	-47.79
	59	-45.82	-45.82
	60	-43.85	-43.85
	61	-42.57	-17.32
	62	-17.32	-17.32
	63	-17.32	-17.32
	64	-17.32	-17.32
	65	-17.32	-17.32
	66	-17.32	-17.32
	67	-17.32	-55.64
	68	-56.92	-56.92
	69	-58.89	-58.89
	70	-60.86	-60.86
	71	-62.83	-62.83
	72	-64.80	-64.80

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	-3.03	-94.19
2	-83.35	-70.07
3	-46.81	-35.41
4	-15.84	-3.85
5	22.94	41.74
6	88.11	115.71
7	141.08	3.03
8	-4.79	-4.80
9	-17.35	-17.35
10	-26.79	-15.95
11	-22.27	-22.27
12	70.87	243.72
13	294.95	-142.39
14	-136.71	-136.71
15	-100.45	-100.45
16	-27.55	-27.55
17	45.35	45.35
18	81.61	81.61
19	87.29	4.92
20	5.72	5.72
21	6.20	6.20
22	5.31	5.31
23	3.05	3.05
24	-0.58	-0.58
25	-3.03	-118.42
26	-101.51	-81.92
27	-47.18	-31.47
28	-6.39	6.68
29	31.75	47.45
30	82.13	101.68
31	118.54	-7.02
32	-14.85	-14.85
33	-27.41	-27.41
34	-36.84	-33.57
35	-39.89	9.21
36	55.10	234.21
37	287.01	-114.88
38	-109.20	-109.20
39	-72.95	-72.95
40	-0.04	-0.04
41	72.86	72.86
42	109.12	109.12
43	114.79	-284.90
44	-233.66	-60.82
45	32.32	32.32
46	26.01	36.84
47	27.41	27.41
48	14.85	14.85
49	7.02	-141.14

	50	-115.81	-88.24
	51	-41.90	-23.10
	52	3.70	15.69
	53	35.29	46.70
	54	69.98	83.28
	55	94.14	3.08
	56	0.63	0.63
	57	-3.01	-3.01
	58	-5.27	-5.27
	59	-6.16	-6.16
	60	-5.67	-5.67
	61	-4.87	-87.24
	62	-81.57	-81.57
	63	-45.31	-45.31
	64	27.59	27.59
	65	100.50	100.50
	66	136.76	136.76
	67	142.43	-297.11
	68	-244.31	-65.19
	69	-19.30	29.79
	70	23.47	26.74
	71	17.31	17.31
	72	4.75	4.75

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	62.36	-34.53
2	-32.39	-28.18
3	-20.00	-14.93
4	-7.13	-2.45
5	4.66	9.15
6	16.14	20.08
7	22.19	-56.89
8	-28.78	-3.53
9	-0.19	-0.19
10	-0.19	-0.19
11	-0.19	-0.19
12	0.77	13.90
13	33.63	-13.42
14	-9.17	-9.17
15	-1.53	-1.53
16	6.11	6.11
17	13.75	13.75
18	21.39	21.39
19	25.64	-48.01
20	-39.57	-39.57
21	-21.52	-21.52
22	-0.93	-0.93
23	22.21	22.21
24	47.89	47.89
25	62.36	-27.82
26	-24.92	-20.29
27	-12.65	-8.25
28	-2.00	2.00
29	8.25	12.65
30	20.30	24.92
31	27.82	-56.27
32	-28.19	-3.00
33	0.47	0.47
34	0.47	0.47
35	0.47	-0.20
36	1.49	14.51
37	34.21	-19.53
38	-15.28	-15.28
39	-7.64	-7.64
40	0.00	0.00
41	7.64	7.64
42	15.28	15.28
43	19.53	-34.25
44	-14.51	-1.39
45	-0.43	-0.43
46	-0.43	-0.43
47	-0.43	-0.43
48	2.91	28.16
49	56.28	-22.19

	50	-20.08	-16.14
	51	-9.15	-4.66
	52	2.45	7.13
	53	14.93	20.00
	54	28.18	32.39
	55	34.53	-62.36
	56	-47.89	-47.89
	57	-22.21	-22.21
	58	0.93	0.93
	59	21.52	21.52
	60	39.57	39.57
	61	48.01	-25.64
	62	-21.39	-21.39
	63	-13.75	-13.75
	64	-6.11	-6.11
	65	1.53	1.53
	66	9.17	9.17
	67	13.42	-33.60
	68	-13.89	-0.88
	69	0.81	0.15
	70	0.15	0.15
	71	0.15	0.15
	72	3.62	28.80

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

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	39.42	-102.68
2	-89.56	-73.71
3	-44.94	-31.05
4	-7.41	5.96
5	33.55	51.40
6	92.00	114.80
7	134.76	-39.42
8	-39.42	-39.42
9	-39.42	-39.42
10	-39.42	11.81
11	11.81	11.81
12	55.72	232.70
13	298.17	-132.76
14	-127.09	-127.09
15	-90.83	-90.83
16	-17.93	-17.93
17	54.98	54.98
18	91.24	91.24
19	96.91	-34.16
20	-28.54	-28.54
21	-16.50	-16.50
22	-2.77	-2.77
23	12.65	12.65
24	29.78	29.78
25	39.42	-119.42
26	-103.87	-85.24
27	-50.65	-34.31
28	-7.19	7.04
29	34.16	50.51
30	85.12	103.78
31	119.36	-43.56
32	-43.56	-43.56
33	-43.56	-43.56
34	-43.56	11.73
35	11.73	-14.61
36	54.66	228.27
37	292.90	-114.81
38	-109.14	-109.14
39	-72.88	-72.88
40	0.02	0.02
41	72.93	72.93
42	109.18	109.18
43	114.86	-294.03
44	-228.57	-51.58
45	-7.67	-7.67
46	-7.67	43.56
47	43.56	43.56
48	43.56	43.56
49	43.56	-134.73

	50	-114.75	-91.93
	51	-51.31	-33.46
	52	-5.88	7.48
	53	31.12	45.00
	54	73.75	89.60
	55	102.71	-39.45
	56	-29.80	-29.80
	57	-12.68	-12.68
	58	2.75	2.75
	59	16.48	16.48
	60	28.51	28.51
	61	34.14	-96.93
	62	-91.26	-91.26
	63	-55.00	-55.00
	64	17.90	17.90
	65	90.81	90.81
	66	127.07	127.07
	67	132.74	-297.01
	68	-232.39	-58.77
	69	10.50	-15.84
	70	-15.84	39.45
	71	39.45	39.45
	72	39.45	39.45

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	1.45	-151.93
2	-131.53	-108.53
3	-68.26	-50.48
4	-21.18	-5.23
5	29.42	52.80
6	111.22	145.95
7	178.50	-1.45
8	-9.28	-9.28
9	-21.84	-21.84
10	-31.28	-31.28
11	8.69	8.69
12	56.04	294.72
13	401.63	-183.87
14	-178.19	-178.19
15	-105.29	-105.29
16	-32.39	-32.39
17	38.87	38.87
18	111.78	111.78
19	150.29	9.40
20	10.20	10.20
21	10.68	10.68
22	9.79	9.79
23	7.53	7.53
24	3.90	3.90
25	1.45	-181.68
26	-152.98	-121.43
27	-65.87	-42.42
28	-5.91	11.45
29	43.83	63.11
30	105.96	129.88
31	150.95	-15.51
32	-23.33	-23.34
33	-35.89	-35.89
34	-45.33	-45.33
35	21.45	-3.12
36	44.33	268.47
37	366.99	-149.59
38	-143.91	-143.91
39	-71.01	-71.01
40	1.89	1.89
41	73.15	73.15
42	146.05	146.05
43	184.57	-387.57
44	-280.66	-41.99
45	5.36	5.36
46	45.33	45.33
47	35.90	35.90
48	23.34	23.33
49	15.51	-214.59

	50	-173.77	-130.71
	51	-58.34	-30.38
	52	8.73	24.60
	53	49.15	62.27
	54	88.60	103.39
	55	115.71	-2.48
	56	-4.93	-4.93
	57	-8.56	-8.56
	58	-10.82	-10.82
	59	-11.71	-11.71
	60	-11.23	-11.23
	61	-10.43	-109.60
	62	-103.93	-103.93
	63	-31.02	-31.02
	64	41.88	41.88
	65	113.14	113.14
	66	186.04	186.04
	67	224.56	-380.02
	68	-281.50	-57.36
	69	-9.90	-34.48
	70	32.31	32.31
	71	22.87	22.87
	72	10.31	10.31

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	62.35	-34.38
2	-32.26	-28.06
3	-19.90	-14.82
4	-7.01	-2.32
5	4.84	9.34
6	16.34	20.27
7	22.37	-59.21
8	-27.38	-1.70
9	-0.12	-0.12
10	-0.12	-0.12
11	-0.12	-0.12
12	0.09	12.48
13	33.66	-13.58
14	-9.33	-9.33
15	-1.69	-1.69
16	5.95	5.95
17	13.59	13.59
18	21.23	21.23
19	25.48	-48.02
20	-39.58	-39.58
21	-21.53	-21.53
22	-0.94	-0.94
23	22.20	22.20
24	47.89	47.89
25	62.35	-28.11
26	-25.14	-20.46
27	-12.77	-8.37
28	-2.18	1.77
29	7.92	12.28
30	19.88	24.53
31	27.47	-57.98
32	-26.45	-1.26
33	0.32	0.32
34	0.32	0.32
35	0.32	-0.07
36	0.63	13.40
37	34.85	-19.20
38	-14.95	-14.95
39	-7.31	-7.31
40	0.32	0.32
41	7.96	7.96
42	15.60	15.60
43	19.85	-34.29
44	-13.11	-0.72
45	-0.51	-0.51
46	-0.51	-0.51
47	-0.51	-0.51
48	1.06	26.75
49	58.57	-21.31

	50	-19.28	-15.42
	51	-8.53	-4.03
	52	3.20	7.97
	53	15.97	21.14
	54	29.38	33.54
	55	35.56	-62.35
	56	-47.89	-47.89
	57	-22.20	-22.20
	58	0.93	0.93
	59	21.53	21.53
	60	39.58	39.58
	61	48.02	-26.58
	62	-22.33	-22.33
	63	-14.69	-14.69
	64	-7.06	-7.06
	65	0.58	0.58
	66	8.22	8.22
	67	12.47	-34.21
	68	-12.77	0.01
	69	0.71	0.32
	70	0.32	0.32
	71	0.32	0.32
	72	1.90	27.09

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	41.95	-160.71
2	-137.25	-110.99
3	-64.35	-43.90
4	-10.54	6.67
5	41.66	63.77
6	115.58	145.02
7	171.69	-41.95
8	-41.95	-41.95
9	-29.17	-29.17
10	-29.17	-29.17
11	-29.17	-29.17
12	58.63	273.38
13	388.74	-173.47
14	-167.80	-167.80
15	-94.89	-94.89
16	-21.99	-21.99
17	49.27	49.27
18	122.17	122.17
19	160.68	-31.63
20	-26.01	-26.01
21	-13.97	-13.97
22	-0.24	-0.24
23	15.18	15.18
24	32.30	32.30
25	41.95	-180.69
26	-153.26	-122.63
27	-67.33	-43.34
28	-4.94	13.55
29	48.02	68.00
30	110.90	133.93
31	153.71	-49.67
32	-49.67	-49.67
33	-49.67	-49.67
34	-49.67	-49.67
35	39.97	-17.48
36	45.98	269.39
37	382.29	-151.43
38	-145.76	-145.76
39	-72.85	-72.85
40	0.05	0.05
41	71.31	71.31
42	144.21	144.21
43	182.73	-381.02
44	-265.66	-50.91
45	36.89	36.89
46	36.89	36.89
47	36.89	36.89
48	49.67	49.67
49	49.67	-206.33

	50	-171.75	-134.24
	51	-68.58	-41.72
	52	-1.65	15.86
	53	45.23	61.28
	54	94.00	111.71
	55	126.55	-44.52
	56	-34.88	-34.88
	57	-17.75	-17.75
	58	-2.33	-2.33
	59	11.40	11.40
	60	23.44	23.44
	61	29.06	-121.68
	62	-116.01	-116.01
	63	-43.11	-43.11
	64	29.80	29.80
	65	101.06	101.06
	66	173.96	173.96
	67	212.47	-387.44
	68	-274.54	-51.12
	69	12.34	-45.12
	70	44.53	44.53
	71	44.53	44.53
	72	44.53	44.52

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	20.43	-60.88
2	-53.41	-44.04
3	-27.47	-19.23
4	-5.57	2.48
5	18.88	29.88
6	54.84	69.24
7	81.69	-20.43
8	-20.43	-20.43
9	-20.44	-20.44
10	-20.44	2.65
11	2.65	2.65
12	34.12	135.05
13	169.76	-78.65
14	-74.40	-74.40
15	-52.87	-52.87
16	-11.79	-11.79
17	29.28	29.28
18	50.81	50.81
19	55.06	-11.37
20	-10.14	-10.14
21	-6.46	-6.46
22	-1.03	-1.03
23	6.14	6.14
24	15.06	15.06
25	20.43	-71.71
26	-62.36	-50.91
27	-30.20	-20.28
28	-4.31	4.28
29	20.25	30.17
30	50.88	62.34
31	71.70	-23.62
32	-23.62	-23.62
33	-23.62	-23.62
34	-23.62	0.37
35	0.37	-5.52
36	31.62	131.80
37	166.32	-66.85
38	-62.60	-62.60
39	-41.07	-41.07
40	0.01	0.01
41	41.08	41.08
42	62.61	62.61
43	66.86	-166.57
44	-131.87	-30.94
45	0.54	0.54
46	0.54	23.62
47	23.62	23.62
48	23.62	23.62
49	23.62	-81.68

	50	-69.22	-54.82
	51	-29.86	-18.86
	52	-2.46	5.58
	53	19.24	27.48
	54	44.05	53.42
	55	60.89	-20.44
	56	-15.07	-15.07
	57	-6.15	-6.15
	58	1.03	1.03
	59	6.45	6.45
	60	10.13	10.13
	61	11.36	-55.06
	62	-50.81	-50.81
	63	-29.28	-29.28
	64	11.79	11.79
	65	52.86	52.86
	66	74.39	74.39
	67	78.64	-169.50
	68	-134.98	-34.80
	69	2.34	-3.55
	70	-3.55	20.44
	71	20.44	20.44
	72	20.44	20.44

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	42.27	-30.63
2	-28.13	-23.74
3	-15.88	-11.16
4	-4.11	0.25
5	7.01	11.49
6	18.85	23.12
7	25.60	-42.27
8	-42.27	-11.66
9	0.04	0.04
10	0.04	0.04
11	0.04	0.04
12	3.68	21.48
13	36.76	-17.03
14	-12.78	-12.78
15	-5.14	-5.14
16	2.49	2.49
17	10.13	10.13
18	17.77	17.77
19	22.02	-29.95
20	-24.93	-24.93
21	-13.76	-13.76
22	-0.50	-0.50
23	14.86	14.86
24	32.30	32.30
25	42.27	-27.90
26	-25.10	-20.55
27	-12.91	-8.46
28	-2.04	2.04
29	8.46	12.91
30	20.55	25.10
31	27.90	-42.03
32	-42.03	-11.58
33	0.35	0.35
34	0.35	0.35
35	0.35	-0.73
36	4.09	21.71
37	36.95	-19.53
38	-15.28	-15.28
39	-7.64	-7.64
40	0.00	0.00
41	7.64	7.64
42	15.28	15.28
43	19.53	-37.00
44	-21.72	-3.92
45	-0.28	-0.28
46	-0.28	-0.28
47	-0.28	-0.28
48	11.42	42.03
49	42.03	-25.60

	50	-23.12	-18.85
	51	-11.49	-7.01
	52	-0.25	4.11
	53	11.16	15.88
	54	23.74	28.13
	55	30.63	-42.27
	56	-32.30	-32.30
	57	-14.86	-14.86
	58	0.50	0.50
	59	13.76	13.76
	60	24.93	24.93
	61	29.95	-22.02
	62	-17.77	-17.77
	63	-10.13	-10.13
	64	-2.49	-2.49
	65	5.14	5.14
	66	12.78	12.78
	67	17.03	-36.71
	68	-21.47	-3.85
	69	0.97	-0.10
	70	-0.10	-0.10
	71	-0.10	-0.10
	72	11.82	42.27

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	26.66	-62.66
2	-54.64	-44.65
3	-26.85	-18.08
4	-3.59	4.72
5	21.23	31.99
6	55.67	69.03
7	80.32	-26.66
8	-26.66	-26.66
9	-26.34	-26.34
10	-26.34	10.77
11	10.77	10.77
12	30.49	132.60
13	170.91	-76.57
14	-72.32	-72.32
15	-50.79	-50.79
16	-9.72	-9.72
17	31.35	31.35
18	52.88	52.88
19	57.13	-21.49
20	-18.15	-18.15
21	-10.70	-10.70
22	-1.86	-1.86
23	8.38	8.38
24	20.01	20.01
25	26.66	-71.90
26	-62.81	-51.54
27	-30.86	-20.81
28	-4.43	4.38
29	20.77	30.81
30	51.51	62.78
31	71.88	-28.54
32	-28.54	-28.54
33	-28.54	-28.54
34	-28.54	13.01
35	13.01	-11.46
36	31.41	130.59
37	168.17	-66.85
38	-62.60	-62.60
39	-41.07	-41.07
40	0.00	0.00
41	41.08	41.08
42	62.61	62.61
43	66.86	-169.03
44	-130.72	-28.61
45	-8.89	-8.89
46	-8.89	28.22
47	28.22	28.22
48	28.54	28.54
49	28.54	-80.32

	50	-69.01	-55.65
	51	-31.97	-21.20
	52	-4.70	3.62
	53	18.10	26.87
	54	44.66	54.65
	55	62.67	-26.67
	56	-20.02	-20.02
	57	-8.39	-8.39
	58	1.84	1.84
	59	10.68	10.68
	60	18.13	18.13
	61	21.48	-57.14
	62	-52.89	-52.89
	63	-31.36	-31.36
	64	9.72	9.72
	65	50.79	50.79
	66	72.32	72.32
	67	76.57	-170.04
	68	-132.46	-33.28
	69	9.59	-14.88
	70	-14.88	26.67
	71	26.67	26.67
	72	26.67	26.67

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	21.48	-26.74
2	-24.05	-19.65
3	-12.49	-8.30
4	-2.36	1.54
5	7.79	12.30
6	20.45	25.45
7	28.76	-21.48
8	-21.48	-21.48
9	-2.36	-2.36
10	-2.36	-2.36
11	-2.36	-2.36
12	7.90	28.11
13	37.93	-20.71
14	-16.46	-16.46
15	-8.82	-8.82
16	-1.18	-1.18
17	6.45	6.45
18	14.09	14.09
19	18.34	-10.32
20	-9.09	-9.09
21	-5.41	-5.41
22	0.02	0.02
23	7.19	7.19
24	16.11	16.11
25	21.48	-27.68
26	-24.71	-20.03
27	-12.35	-7.97
28	-1.78	2.18
29	8.36	12.74
30	20.36	24.99
31	27.91	-21.82
32	-21.82	-21.82
33	-5.03	-5.03
34	-5.03	2.40
35	2.40	-2.20
36	6.65	28.72
37	38.89	-19.62
38	-15.37	-15.37
39	-7.73	-7.73
40	-0.09	-0.09
41	7.54	7.54
42	15.18	15.18
43	19.43	-37.59
44	-27.77	-7.56
45	2.70	2.70
46	2.70	2.70
47	2.70	2.70
48	21.82	21.82
49	21.82	-28.89

	50	-25.64	-20.67
	51	-12.56	-8.04
	52	-1.75	2.17
	53	8.15	12.36
	54	19.55	23.95
	55	26.65	-21.48
	56	-16.11	-16.11
	57	-7.19	-7.19
	58	-0.02	-0.02
	59	5.41	5.41
	60	9.09	9.09
	61	10.32	-18.25
	62	-14.00	-14.00
	63	-6.36	-6.36
	64	1.28	1.28
	65	8.92	8.92
	66	16.56	16.56
	67	20.81	-39.22
	68	-29.05	-6.98
	69	1.87	-2.74
	70	-2.74	4.70
	71	4.70	4.70
	72	21.48	21.48

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

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	20.20	-48.17
2	-42.14	-34.29
3	-20.73	-13.83
4	-2.84	3.71
5	16.25	24.70
6	42.81	53.27
7	61.83	-20.20
8	-20.21	-20.21
9	-20.21	-20.21
10	-20.21	8.14
11	8.14	8.14
12	22.16	95.56
13	121.82	-56.63
14	-52.37	-52.37
15	-36.05	-36.05
16	-7.52	-7.52
17	21.02	21.02
18	37.34	37.34
19	41.59	-11.60
20	-10.37	-10.37
21	-6.69	-6.69
22	-1.26	-1.26
23	5.91	5.91
24	14.83	14.83
25	20.20	-55.33
26	-48.49	-39.67
27	-23.87	-15.98
28	-3.52	3.42
29	15.88	23.78
30	39.59	48.43
31	55.29	-21.71
32	-21.71	-21.71
33	-21.71	-21.71
34	-21.71	9.37
35	9.37	-8.36
36	22.72	93.85
37	119.55	-49.09
38	-44.84	-44.84
39	-28.52	-28.52
40	0.02	0.02
41	28.55	28.55
42	44.87	44.87
43	49.12	-120.31
44	-94.05	-20.65
45	-6.63	-6.63
46	-6.63	21.71
47	21.71	21.71
48	21.71	21.71
49	21.71	-61.81

	50	-53.23	-42.77
	51	-24.64	-16.20
	52	-3.65	2.89
	53	13.87	20.77
	54	34.33	42.17
	55	48.19	-20.22
	56	-14.85	-14.85
	57	-5.93	-5.93
	58	1.24	1.24
	59	6.67	6.67
	60	10.35	10.35
	61	11.58	-41.60
	62	-37.35	-37.35
	63	-21.03	-21.03
	64	7.50	7.50
	65	36.04	36.04
	66	52.36	52.36
	67	56.61	-121.04
	68	-95.35	-24.21
	69	6.87	-10.86
	70	-10.86	20.22
	71	20.22	20.22
	72	20.22	20.22

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	38.13	-29.70
2	-27.14	-22.73
3	-14.98	-10.35
4	-3.50	0.78
5	7.46	11.95
6	19.43	23.81
7	26.40	-38.13
8	-38.13	-18.89
9	0.06	0.06
10	0.06	0.06
11	0.06	0.06
12	4.44	23.31
13	37.28	-17.91
14	-13.66	-13.66
15	-6.02	-6.02
16	1.62	1.62
17	9.26	9.26
18	16.90	16.90
19	21.15	-24.90
20	-21.07	-21.07
21	-12.02	-12.02
22	-0.68	-0.68
23	12.95	12.95
24	28.88	28.88
25	38.13	-27.90
26	-25.11	-20.57
27	-12.93	-8.47
28	-2.05	2.05
29	8.47	12.93
30	20.57	25.11
31	27.90	-37.98
32	-37.98	-18.90
33	0.27	0.27
34	0.27	0.27
35	0.27	-0.75
36	4.74	23.45
37	37.38	-19.53
38	-15.28	-15.28
39	-7.64	-7.64
40	0.00	0.00
41	7.64	7.64
42	15.28	15.28
43	19.53	-37.43
44	-23.46	-4.58
45	-0.21	-0.21
46	-0.21	-0.21
47	-0.21	-0.21
48	18.74	37.98
49	37.98	-26.40

	50	-23.81	-19.43
	51	-11.95	-7.46
	52	-0.78	3.50
	53	10.35	14.98
	54	22.73	27.14
	55	29.70	-38.13
	56	-28.88	-28.88
	57	-12.95	-12.95
	58	0.68	0.68
	59	12.02	12.02
	60	21.07	21.07
	61	24.90	-21.15
	62	-16.90	-16.90
	63	-9.26	-9.26
	64	-1.62	-1.62
	65	6.02	6.02
	66	13.66	13.66
	67	17.91	-37.23
	68	-23.30	-4.60
	69	0.90	-0.12
	70	-0.12	-0.12
	71	-0.12	-0.12
	72	19.05	38.13

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

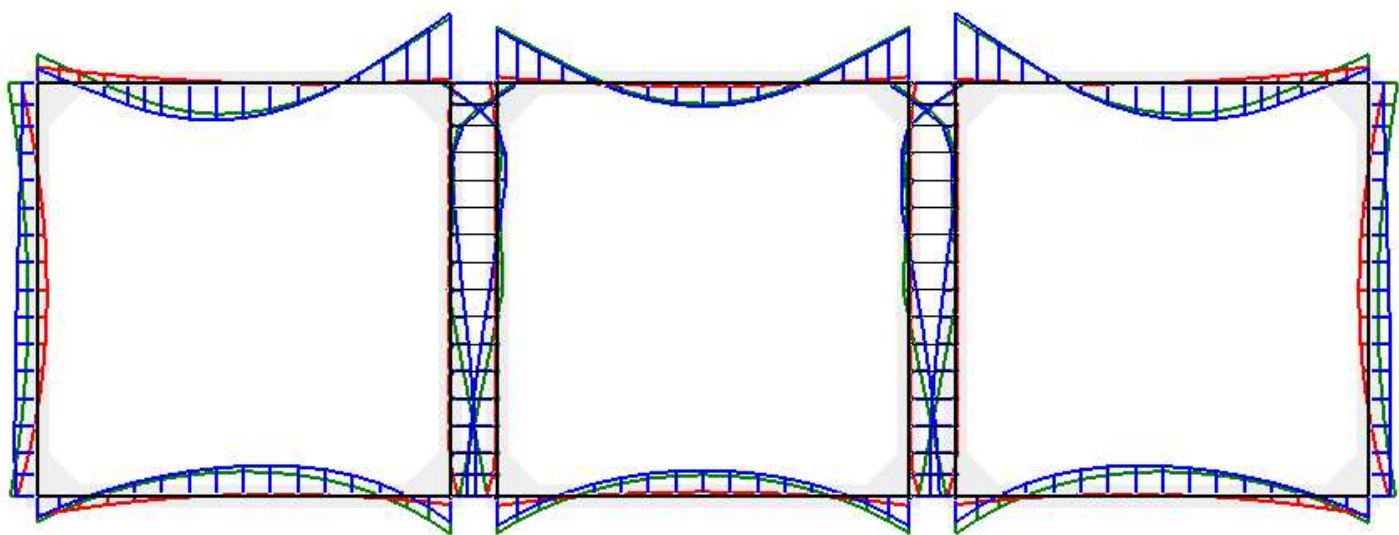
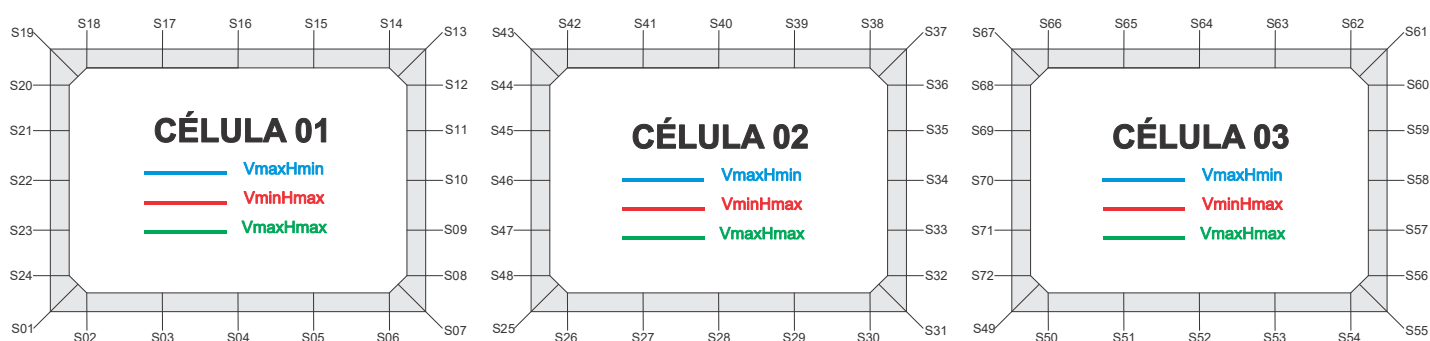
ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	24.70	-49.18
2	-43.14	-35.24
3	-21.40	-14.34
4	-3.04	3.63
5	16.30	24.71
6	42.54	52.74
7	61.01	-24.70
8	-24.70	-24.70
9	-18.16	-18.16
10	-18.16	7.42
11	7.42	7.42
12	21.43	93.62
13	121.41	-55.63
14	-51.38	-51.38
15	-35.06	-35.06
16	-6.52	-6.52
17	22.01	22.01
18	38.33	38.33
19	42.58	-17.32
20	-14.77	-14.77
21	-8.73	-8.73
22	-1.17	-1.17
23	7.92	7.92
24	18.53	18.53
25	24.70	-55.35
26	-48.57	-39.78
27	-23.98	-16.05
28	-3.48	3.52
29	16.10	24.03
30	39.82	48.60
31	55.38	-25.98
32	-25.98	-25.98
33	-19.97	-19.97
34	-19.97	9.42
35	9.42	-8.19
36	22.13	92.38
37	119.69	-49.12
38	-44.87	-44.87
39	-28.55	-28.55
40	-0.01	-0.01
41	28.52	28.52
42	44.84	44.84
43	49.09	-120.13
44	-92.34	-20.16
45	-6.14	-6.14
46	-6.14	19.44
47	19.44	19.44
48	25.98	25.98
49	25.98	-61.03

	50	-52.76	-42.57
	51	-24.74	-16.32
	52	-3.66	3.01
	53	14.32	21.39
	54	35.22	43.13
	55	49.17	-24.70
	56	-18.53	-18.53
	57	-7.92	-7.92
	58	1.17	1.17
	59	8.73	8.73
	60	14.77	14.77
	61	17.32	-42.57
	62	-38.32	-38.32
	63	-22.00	-22.00
	64	6.54	6.54
	65	35.07	35.07
	66	51.39	51.39
	67	55.64	-120.96
	68	-93.65	-23.41
	69	6.92	-10.70
	70	-10.70	18.69
	71	18.69	18.69
	72	24.70	24.70

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	-28.83	28.83
2	4.41	4.41
3	-26.16	-26.16
4	-39.63	-39.63
5	-34.82	-34.82
6	-1.09	-1.09
7	34.22	34.22
8	33.96	33.96
9	28.01	28.01
10	16.28	16.28
11	6.11	6.11
12	17.57	17.57
13	91.62	-91.62
14	-53.24	-53.24
15	13.01	13.01
16	46.61	46.61
17	41.94	41.94
18	4.61	4.61
19	-18.61	-18.61
20	-20.08	-20.08
21	-23.27	-23.27
22	-26.35	-26.35
23	-28.61	-28.61
24	-29.32	-29.32
25	-28.83	39.89
26	9.65	9.65
27	-24.05	-24.05
28	-33.91	-33.91
29	-23.90	-23.90
30	9.93	9.93
31	40.21	40.21
32	37.18	37.18
33	25.95	25.95
34	8.95	8.95
35	-10.47	-10.47
36	-0.88	-0.88
37	70.77	-70.77
38	-39.95	-39.95
39	11.86	11.86
40	31.02	31.02
41	11.90	11.90
42	-39.87	-39.87
43	-70.65	-70.65
44	0.63	0.63
45	6.81	6.81
46	-8.64	-8.64
47	-25.64	-25.64
48	-36.87	-36.87
49	-39.89	34.44

	50	-0.89	-0.89
	51	-34.69	-34.69
	52	-39.58	-39.58
	53	-26.19	-26.19
	54	4.33	4.33
	55	28.73	28.73
	56	29.23	29.23
	57	28.55	28.55
	58	26.31	26.31
	59	23.26	23.26
	60	20.09	20.09
	61	18.63	-18.63
	62	4.58	4.58
	63	41.88	41.88
	64	46.53	46.53
	65	12.91	12.91
	66	-53.37	-53.37
	67	-91.76	-91.76
	68	-17.33	-17.33
	69	-2.44	-2.44
	70	-16.56	-16.56
	71	-28.26	-28.26
	72	-34.19	-34.19

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-25.77	25.77
2	16.57	16.57
3	3.92	3.92
4	-1.86	-1.86
5	-1.27	-1.27
6	5.37	5.37
7	11.18	11.18
8	-0.60	-0.60
9	-1.28	-1.28
10	-1.38	-1.38
11	-1.48	-1.48
12	-1.65	-1.65
13	4.88	-4.88
14	-1.78	-1.78
15	1.03	1.03
16	-0.17	-0.17
17	-5.39	-5.39
18	-14.61	-14.61
19	-21.08	-21.08
20	-9.02	-9.02
21	7.13	7.13
22	13.14	13.14
23	7.66	7.66
24	-10.63	-10.63
25	-25.77	13.06
26	5.81	5.81
27	-2.81	-2.81
28	-5.49	-5.49
29	-2.81	-2.81
30	5.81	5.81
31	13.06	13.06
32	1.45	1.45
33	1.09	1.09
34	1.33	1.33
35	1.58	1.58
36	1.70	1.70
37	8.39	-8.39
38	-3.61	-3.61
39	2.41	2.41
40	4.41	4.41
41	2.41	2.41
42	-3.61	-3.61
43	-8.39	-8.39
44	-1.69	-1.69
45	-1.54	-1.54
46	-1.32	-1.32
47	-1.09	-1.09
48	-1.45	-1.45
49	-13.06	11.18

	50	5.37	5.37
	51	-1.27	-1.27
	52	-1.86	-1.86
	53	3.92	3.92
	54	16.57	16.57
	55	25.77	25.77
	56	10.63	10.63
	57	-7.66	-7.66
	58	-13.14	-13.14
	59	-7.13	-7.13
	60	9.02	9.02
	61	21.08	-21.08
	62	-14.61	-14.61
	63	-5.39	-5.39
	64	-0.17	-0.17
	65	1.03	1.03
	66	-1.78	-1.78
	67	-4.88	-4.88
	68	1.65	1.65
	69	1.44	1.44
	70	1.37	1.37
	71	1.29	1.29
	72	0.60	0.60

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-35.25	35.25
2	8.81	8.81
3	-22.21	-22.21
4	-32.29	-32.29
5	-22.05	-22.05
6	15.35	15.35
7	49.67	49.67
8	38.83	38.83
9	18.13	18.13
10	-2.57	-2.57
11	3.63	3.63
12	12.33	12.33
13	85.33	-85.33
14	-49.60	-49.60
15	11.60	11.60
16	40.15	40.15
17	30.43	30.43
18	-11.95	-11.95
19	-37.82	-37.82
20	-29.19	-29.19
21	-17.29	-17.29
22	-12.16	-12.16
23	-14.68	-14.68
24	-25.74	-25.74
25	-35.25	49.31
26	18.61	18.61
27	-16.92	-16.92
28	-27.75	-27.75
29	-17.00	-17.00
30	18.46	18.46
31	49.14	49.14
32	37.16	37.16
33	14.29	14.29
34	-8.57	-8.57
35	-2.42	-2.42
36	2.29	2.29
37	73.95	-73.95
38	-43.15	-43.15
39	8.62	8.62
40	27.75	27.75
41	8.60	8.60
42	-43.20	-43.20
43	-74.01	-74.01
44	-2.15	-2.15
45	4.38	4.38
46	8.41	8.41
47	-14.46	-14.46
48	-37.33	-37.33
49	-49.31	49.55

	50	15.25	15.25
	51	-22.12	-22.12
	52	-32.31	-32.31
	53	-22.20	-22.20
	54	8.86	8.86
	55	35.30	35.30
	56	25.79	25.79
	57	14.71	14.71
	58	12.18	12.18
	59	17.30	17.30
	60	29.18	29.18
	61	37.81	-37.81
	62	-11.93	-11.93
	63	30.46	30.46
	64	40.19	40.19
	65	11.66	11.66
	66	-49.53	-49.53
	67	-85.25	-85.25
	68	-12.46	-12.46
	69	-5.60	-5.60
	70	2.72	2.72
	71	-17.99	-17.99
	72	-38.70	-38.70

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-45.29	45.29
2	6.31	6.31
3	-39.85	-39.85
4	-58.61	-58.61
5	-52.47	-52.47
6	-9.88	-9.88
7	34.73	34.73
8	33.24	33.24
9	24.93	24.93
10	10.85	10.85
11	0.73	0.73
12	10.23	10.23
13	105.95	-105.95
14	-56.17	-56.17
15	18.24	18.24
16	54.39	54.39
17	52.39	52.39
18	12.84	12.84
19	-23.19	-23.19
20	-25.90	-25.90
21	-31.44	-31.44
22	-36.87	-36.87
23	-41.48	-41.48
24	-44.54	-44.54
25	-45.29	56.18
26	10.16	10.16
27	-38.64	-38.64
28	-51.15	-51.15
29	-36.70	-36.70
30	7.45	7.45
31	46.07	46.07
32	40.71	40.71
33	25.02	25.02
34	3.56	3.56
35	-9.24	-9.24
36	-5.28	-5.28
37	82.08	-82.08
38	-41.72	-41.72
39	14.70	14.70
40	32.84	32.84
41	12.84	12.84
42	-44.70	-44.70
43	-90.16	-90.16
44	1.70	1.70
45	3.82	3.82
46	-13.68	-13.68
47	-35.14	-35.14
48	-50.82	-50.82
49	-56.18	48.72

	50	-4.68	-4.68
	51	-53.70	-53.70
	52	-59.03	-59.03
	53	-39.60	-39.60
	54	-0.10	-0.10
	55	30.02	30.02
	56	29.00	29.00
	57	25.40	25.40
	58	20.25	20.25
	59	14.27	14.27
	60	8.19	8.19
	61	5.20	-5.20
	62	24.16	24.16
	63	59.58	59.58
	64	56.73	56.73
	65	15.74	15.74
	66	-62.79	-62.79
	67	-119.25	-119.25
	68	-28.31	-28.31
	69	-17.52	-17.52
	70	-23.48	-23.48
	71	-38.10	-38.10
	72	-46.95	-46.95

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-25.70	25.70
2	16.54	16.54
3	3.94	3.94
4	-1.78	-1.78
5	-1.11	-1.11
6	5.63	5.63
7	11.49	11.49
8	-0.41	-0.41
9	-0.75	-0.75
10	-0.82	-0.82
11	-0.88	-0.88
12	-1.09	-1.09
13	5.25	-5.25
14	-2.10	-2.10
15	0.79	0.79
16	-0.33	-0.33
17	-5.46	-5.46
18	-14.60	-14.60
19	-21.02	-21.02
20	-8.96	-8.96
21	7.19	7.19
22	13.20	13.20
23	7.73	7.73
24	-10.56	-10.56
25	-25.70	13.05
26	5.72	5.72
27	-2.97	-2.97
28	-5.73	-5.73
29	-3.20	-3.20
30	5.22	5.22
31	12.37	12.37
32	0.76	0.76
33	0.65	0.65
34	0.82	0.82
35	0.99	0.99
36	1.00	1.00
37	7.63	-7.63
38	-2.93	-2.93
39	2.91	2.91
40	4.75	4.75
41	2.57	2.57
42	-3.62	-3.62
43	-8.49	-8.49
44	-1.97	-1.97
45	-1.85	-1.85
46	-1.58	-1.58
47	-1.31	-1.31
48	-1.32	-1.32
49	-13.05	10.72

	50	5.14	5.14
	51	-1.15	-1.15
	52	-1.37	-1.37
	53	4.90	4.90
	54	18.17	18.17
	55	27.67	27.67
	56	12.53	12.53
	57	-5.76	-5.76
	58	-11.23	-11.23
	59	-5.22	-5.22
	60	10.93	10.93
	61	22.99	-22.99
	62	-16.27	-16.27
	63	-6.55	-6.55
	64	-0.84	-0.84
	65	0.86	0.86
	66	-1.45	-1.45
	67	-4.30	-4.30
	68	2.16	2.16
	69	1.84	1.84
	70	1.67	1.67
	71	1.50	1.50
	72	1.06	1.06

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-48.96	48.96
2	7.99	7.99
3	-37.76	-37.76
4	-51.96	-51.96
5	-39.41	-39.41
6	7.34	7.34
7	50.89	50.89
8	39.35	39.35
9	21.80	21.80
10	6.49	6.49
11	-8.83	-8.83
12	9.01	9.01
13	100.05	-100.05
14	-53.13	-53.13
15	15.83	15.83
16	46.51	46.51
17	39.06	39.06
18	-5.95	-5.95
19	-44.84	-44.84
20	-36.90	-36.90
21	-26.33	-26.33
22	-22.53	-22.53
23	-26.37	-26.37
24	-38.77	-38.77
25	-48.96	62.83
26	16.91	16.91
27	-32.65	-32.65
28	-45.16	-45.16
29	-29.05	-29.05
30	17.74	17.74
31	57.29	57.29
32	43.63	43.63
33	17.55	17.55
34	-8.53	-8.53
35	-3.23	-3.23
36	-1.27	-1.27
37	88.33	-88.33
38	-47.47	-47.47
39	9.91	9.91
40	29.02	29.02
41	10.00	10.00
42	-46.58	-46.58
43	-91.53	-91.53
44	-2.62	-2.62
45	11.17	11.17
46	-8.20	-8.20
47	-27.56	-27.56
48	-49.17	-49.17
49	-62.83	65.56

	50	13.58	13.58
	51	-39.21	-39.21
	52	-50.32	-50.32
	53	-34.25	-34.25
	54	6.40	6.40
	55	39.16	39.16
	56	28.25	28.25
	57	14.51	14.51
	58	9.31	9.31
	59	11.77	11.77
	60	20.99	20.99
	61	28.22	-28.22
	62	4.47	4.47
	63	46.23	46.23
	64	49.73	49.73
	65	15.08	15.08
	66	-57.11	-57.11
	67	-110.25	-110.25
	68	-19.22	-19.22
	69	-14.56	-14.56
	70	-6.57	-6.57
	71	-29.94	-29.94
	72	-53.32	-53.32

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-20.69	20.69
2	4.98	4.98
3	-13.72	-13.72
4	-20.23	-20.23
5	-14.71	-14.71
6	7.38	7.38
7	28.13	28.13
8	22.51	22.51
9	11.79	11.79
10	1.06	1.06
11	2.45	2.45
12	7.86	7.86
13	49.77	-49.77
14	-28.72	-28.72
15	6.81	6.81
16	23.79	23.79
17	19.20	19.20
18	-3.96	-3.96
19	-18.51	-18.51
20	-15.55	-15.55
21	-11.11	-11.11
22	-9.07	-9.07
23	-10.33	-10.33
24	-15.82	-15.82
25	-20.69	28.68
26	10.24	10.24
27	-10.96	-10.96
28	-17.38	-17.38
29	-10.98	-10.98
30	10.21	10.21
31	28.64	28.64
32	22.14	22.14
33	9.74	9.74
34	-2.66	-2.66
35	-2.47	-2.47
36	0.86	0.86
37	41.86	-41.86
38	-24.06	-24.06
39	5.29	5.29
40	16.07	16.07
41	5.28	5.28
42	-24.07	-24.07
43	-41.87	-41.87
44	-0.83	-0.83
45	2.90	2.90
46	2.62	2.62
47	-9.78	-9.78
48	-22.18	-22.18
49	-28.68	28.11

	50	7.36	7.36
	51	-14.72	-14.72
	52	-20.23	-20.23
	53	-13.72	-13.72
	54	4.99	4.99
	55	20.71	20.71
	56	15.83	15.83
	57	10.34	10.34
	58	9.07	9.07
	59	11.11	11.11
	60	15.54	15.54
	61	18.51	-18.51
	62	-3.95	-3.95
	63	19.20	19.20
	64	23.80	23.80
	65	6.83	6.83
	66	-28.71	-28.71
	67	-49.75	-49.75
	68	-7.89	-7.89
	69	-2.89	-2.89
	70	-1.02	-1.02
	71	-11.76	-11.76
	72	-22.49	-22.49

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-18.94	18.94
2	10.86	10.86
3	0.47	0.47
4	-3.53	-3.53
5	-1.63	-1.63
6	6.33	6.33
7	13.03	13.03
8	1.40	1.40
9	-0.62	-0.62
10	-0.60	-0.60
11	-0.58	-0.58
12	-0.24	-0.24
13	7.76	-7.76
14	-3.66	-3.66
15	1.04	1.04
16	1.74	1.74
17	-1.58	-1.58
18	-8.90	-8.90
19	-14.37	-14.37
20	-6.81	-6.81
21	3.43	3.43
22	7.27	7.27
23	3.59	3.59
24	-8.70	-8.70
25	-18.94	13.81
26	6.52	6.52
27	-2.24	-2.24
28	-4.99	-4.99
29	-2.24	-2.24
30	6.52	6.52
31	13.81	13.81
32	2.25	2.25
33	0.34	0.34
34	0.52	0.52
35	0.70	0.70
36	1.12	1.12
37	9.18	-9.18
38	-4.40	-4.40
39	1.62	1.62
40	3.62	3.62
41	1.62	1.62
42	-4.40	-4.40
43	-9.18	-9.18
44	-1.11	-1.11
45	-0.65	-0.65
46	-0.50	-0.50
47	-0.35	-0.35
48	-2.25	-2.25
49	-13.81	13.03

	50	6.33	6.33
	51	-1.63	-1.63
	52	-3.53	-3.53
	53	0.47	0.47
	54	10.86	10.86
	55	18.94	18.94
	56	8.70	8.70
	57	-3.59	-3.59
	58	-7.27	-7.27
	59	-3.43	-3.43
	60	6.81	6.81
	61	14.37	-14.37
	62	-8.90	-8.90
	63	-1.58	-1.58
	64	1.74	1.74
	65	1.04	1.04
	66	-3.66	-3.66
	67	-7.76	-7.76
	68	0.23	0.23
	69	0.52	0.52
	70	0.58	0.58
	71	0.63	0.63
	72	-1.40	-1.40

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-21.67	21.67
2	5.54	5.54
3	-13.15	-13.15
4	-18.82	-18.82
5	-12.09	-12.09
6	10.80	10.80
7	31.33	31.33
8	24.00	24.00
9	10.12	10.12
10	-3.71	-3.71
11	1.95	1.95
12	6.69	6.69
13	48.43	-48.43
14	-27.95	-27.95
15	6.50	6.50
16	22.38	22.38
17	16.70	16.70
18	-7.54	-7.54
19	-22.67	-22.67
20	-17.21	-17.21
21	-9.58	-9.58
22	-6.22	-6.22
23	-7.87	-7.87
24	-15.27	-15.27
25	-21.67	30.51
26	11.99	11.99
27	-9.57	-9.57
28	-16.16	-16.16
29	-9.59	-9.59
30	11.94	11.94
31	30.45	30.45
32	22.61	22.61
33	7.62	7.62
34	-7.36	-7.36
35	-0.53	-0.53
36	1.52	1.52
37	42.60	-42.60
38	-24.80	-24.80
39	4.54	4.54
40	15.32	15.32
41	4.54	4.54
42	-24.81	-24.81
43	-42.61	-42.61
44	-1.40	-1.40
45	2.36	2.36
46	7.03	7.03
47	-7.79	-7.79
48	-22.66	-22.66
49	-30.51	31.30

	50	10.77	10.77
	51	-12.10	-12.10
	52	-18.83	-18.83
	53	-13.14	-13.14
	54	5.56	5.56
	55	21.70	21.70
	56	15.28	15.28
	57	7.89	7.89
	58	6.23	6.23
	59	9.58	9.58
	60	17.20	17.20
	61	22.66	-22.66
	62	-7.53	-7.53
	63	16.72	16.72
	64	22.40	22.40
	65	6.51	6.51
	66	-27.93	-27.93
	67	-48.40	-48.40
	68	-6.81	-6.81
	69	-3.78	-3.78
	70	4.04	4.04
	71	-9.97	-9.97
	72	-23.97	-23.97

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-12.23	12.23
2	5.24	5.24
3	-3.17	-3.17
4	-5.96	-5.96
5	-3.53	-3.53
6	5.03	5.03
7	12.49	12.49
8	6.58	6.58
9	2.00	2.00
10	0.75	0.75
11	-0.49	-0.49
12	1.33	1.33
13	10.41	-10.41
14	-5.30	-5.30
15	1.34	1.34
16	3.97	3.97
17	2.58	2.58
18	-2.81	-2.81
19	-7.27	-7.27
20	-4.59	-4.59
21	-0.71	-0.71
22	0.79	0.79
23	-1.03	-1.03
24	-7.07	-7.07
25	-12.23	12.54
26	5.34	5.34
27	-3.14	-3.14
28	-5.68	-5.68
29	-2.93	-2.93
30	5.73	5.73
31	13.00	13.00
32	7.01	7.01
33	1.43	1.43
34	-1.22	-1.22
35	0.04	0.04
36	0.52	0.52
37	9.82	-9.82
38	-5.00	-5.00
39	1.06	1.06
40	3.11	3.11
41	1.16	1.16
42	-4.81	-4.81
43	-9.57	-9.57
44	-0.58	-0.58
45	1.06	1.06
46	-0.36	-0.36
47	-1.78	-1.78
48	-6.54	-6.54
49	-12.54	12.90

	50	5.40	5.40
	51	-3.29	-3.29
	52	-5.84	-5.84
	53	-3.14	-3.14
	54	5.21	5.21
	55	12.17	12.17
	56	7.01	7.01
	57	0.97	0.97
	58	-0.84	-0.84
	59	0.65	0.65
	60	4.53	4.53
	61	7.21	-7.21
	62	-2.77	-2.77
	63	2.57	2.57
	64	3.90	3.90
	65	1.23	1.23
	66	-5.46	-5.46
	67	-10.60	-10.60
	68	-1.21	-1.21
	69	-0.56	-0.56
	70	0.88	0.88
	71	-1.59	-1.59
	72	-6.99	-6.99

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-16.56	16.56
2	4.14	4.14
3	-10.25	-10.25
4	-14.61	-14.61
5	-9.43	-9.43
6	8.20	8.20
7	24.02	24.02
8	18.47	18.47
9	7.86	7.86
10	-2.75	-2.75
11	1.52	1.52
12	5.01	5.01
13	34.90	-34.90
14	-19.92	-19.92
15	4.63	4.63
16	16.07	16.07
17	12.52	12.52
18	-4.13	-4.13
19	-14.98	-14.98
20	-11.95	-11.95
21	-7.40	-7.40
22	-5.23	-5.23
23	-6.38	-6.38
24	-11.75	-11.75
25	-16.56	23.46
26	9.19	9.19
27	-7.43	-7.43
28	-12.52	-12.52
29	-7.48	-7.48
30	9.09	9.09
31	23.35	23.35
32	17.38	17.38
33	5.98	5.98
34	-5.42	-5.42
35	-0.50	-0.50
36	0.97	0.97
37	30.31	-30.31
38	-17.39	-17.39
39	3.20	3.20
40	10.68	10.68
41	3.18	3.18
42	-17.43	-17.43
43	-30.35	-30.35
44	-0.87	-0.87
45	1.82	1.82
46	5.31	5.31
47	-6.09	-6.09
48	-17.49	-17.49
49	-23.46	23.94

	50	8.12	8.12
	51	-9.47	-9.47
	52	-14.63	-14.63
	53	-10.24	-10.24
	54	4.17	4.17
	55	16.59	16.59
	56	11.78	11.78
	57	6.40	6.40
	58	5.25	5.25
	59	7.40	7.40
	60	11.95	11.95
	61	14.97	-14.97
	62	-4.12	-4.12
	63	12.54	12.54
	64	16.09	16.09
	65	4.66	4.66
	66	-19.87	-19.87
	67	-34.85	-34.85
	68	-5.10	-5.10
	69	-2.85	-2.85
	70	2.85	2.85
	71	-7.77	-7.77
	72	-18.38	-18.38

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-17.37	17.37
2	9.55	9.55
3	-0.33	-0.33
4	-3.96	-3.96
5	-1.80	-1.80
6	6.42	6.42
7	13.33	13.33
8	2.84	2.84
9	-0.45	-0.45
10	-0.41	-0.41
11	-0.38	-0.38
12	0.10	0.10
13	8.43	-8.43
14	-4.09	-4.09
15	1.08	1.08
16	2.23	2.23
17	-0.62	-0.62
18	-7.49	-7.49
19	-12.72	-12.72
20	-6.38	-6.38
21	2.40	2.40
22	5.83	5.83
23	2.71	2.71
24	-8.17	-8.17
25	-17.37	13.86
26	6.57	6.57
27	-2.21	-2.21
28	-4.96	-4.96
29	-2.21	-2.21
30	6.57	6.57
31	13.86	13.86
32	3.41	3.41
33	0.20	0.20
34	0.34	0.34
35	0.48	0.48
36	0.99	0.99
37	9.35	-9.35
38	-4.57	-4.57
39	1.45	1.45
40	3.45	3.45
41	1.45	1.45
42	-4.57	-4.57
43	-9.35	-9.35
44	-0.98	-0.98
45	-0.42	-0.42
46	-0.31	-0.31
47	-0.20	-0.20
48	-3.41	-3.41
49	-13.86	13.33

	50	6.42	6.42
	51	-1.80	-1.80
	52	-3.96	-3.96
	53	-0.33	-0.33
	54	9.55	9.55
	55	17.37	17.37
	56	8.17	8.17
	57	-2.71	-2.71
	58	-5.83	-5.83
	59	-2.40	-2.40
	60	6.38	6.38
	61	12.72	-12.72
	62	-7.49	-7.49
	63	-0.62	-0.62
	64	2.23	2.23
	65	1.08	1.08
	66	-4.09	-4.09
	67	-8.43	-8.43
	68	-0.11	-0.11
	69	0.33	0.33
	70	0.39	0.39
	71	0.45	0.45
	72	-2.84	-2.84

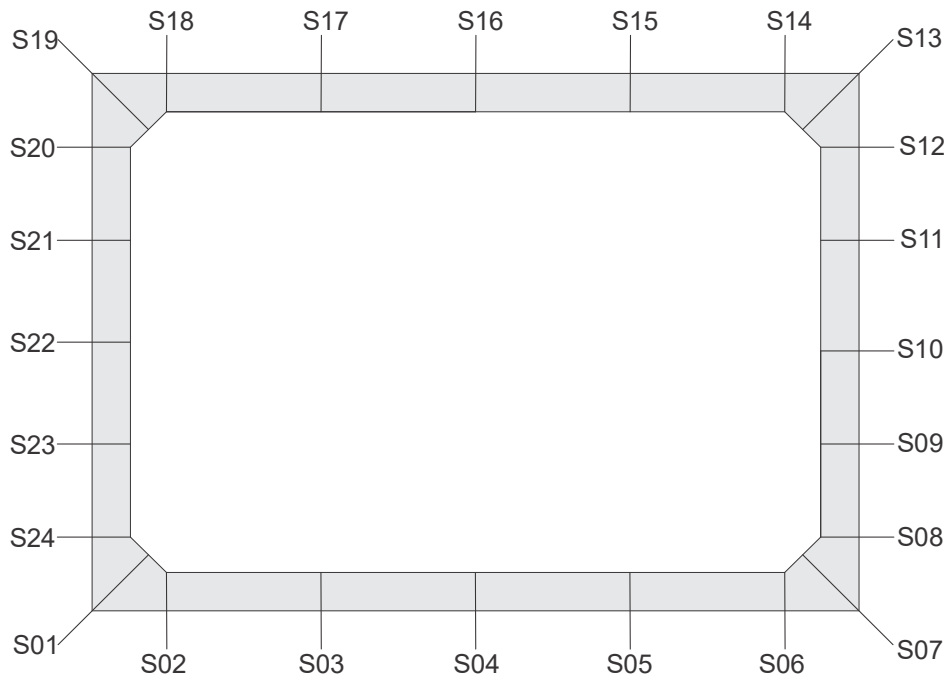
```
#####
#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VmaxHmax                                  #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-18.09	18.09
2	5.40	5.40
3	-9.41	-9.41
4	-13.96	-13.96
5	-8.78	-8.78
6	8.78	8.78
7	24.42	24.42
8	17.63	17.63
9	6.95	6.95
10	-2.59	-2.59
11	1.31	1.31
12	4.62	4.62
13	34.19	-34.19
14	-19.47	-19.47
15	4.55	4.55
16	15.46	15.46
17	11.40	11.40
18	-5.78	-5.78
19	-16.90	-16.90
20	-12.48	-12.48
21	-6.25	-6.25
22	-3.58	-3.58
23	-5.28	-5.28
24	-12.16	-12.16
25	-18.09	23.88
26	9.60	9.60
27	-7.08	-7.08
28	-12.18	-12.18
29	-7.06	-7.06
30	9.64	9.64
31	23.94	23.94
32	16.80	16.80
33	5.26	5.26
34	-5.22	-5.22
35	-0.27	-0.27
36	1.15	1.15
37	30.31	-30.31
38	-17.38	-17.38
39	3.22	3.22
40	10.72	10.72
41	3.24	3.24
42	-17.35	-17.35
43	-30.27	-30.27
44	-1.05	-1.05
45	1.59	1.59
46	4.82	4.82
47	-5.39	-5.39
48	-16.74	-16.74
49	-23.88	24.47

	50	8.82	8.82
	51	-8.76	-8.76
	52	-13.95	-13.95
	53	-9.41	-9.41
	54	5.39	5.39
	55	18.09	18.09
	56	12.15	12.15
	57	5.28	5.28
	58	3.57	3.57
	59	6.24	6.24
	60	12.47	12.47
	61	16.89	-16.89
	62	-5.77	-5.77
	63	11.39	11.39
	64	15.45	15.45
	65	4.53	4.53
	66	-19.50	-19.50
	67	-34.22	-34.22
	68	-4.71	-4.71
	69	-2.62	-2.62
	70	3.00	3.00
	71	-6.81	-6.81
	72	-17.68	-17.68

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	3.09	3.71	2.32	2.79
3	2.32	2.79	4.94	5.93
4	2.32	2.79	7.70	9.23
5	2.32	2.79	6.68	8.02
6	2.86	3.43	2.32	2.79
7	5.47	6.57	1.26	1.26
8	7.04	8.44	2.32	2.79
9	4.85	5.82	2.32	2.79
10	2.62	3.14	2.32	2.79
11	2.32	2.79	2.32	2.79
12	2.94	3.53	2.32	2.79
13	6.56	7.87	1.26	1.26
14	10.79	12.95	2.32	2.79
15	2.32	2.79	2.46	2.95
16	2.32	2.79	9.26	11.11
17	2.32	2.79	8.23	9.87
18	2.76	3.31	2.32	2.79
19	5.47	6.57	1.26	1.26
20	4.97	5.96	2.32	2.79
21	3.76	4.51	2.32	2.79
22	4.33	5.19	2.32	2.79
23	4.74	5.68	2.32	2.79
24	4.84	5.81	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	-77.85	6.69	-21.99	1.33	26.74	0.00
13	-76.57	48.43	-10.32	10.41	97.13	0.00
14	-21.49	27.95	-10.32	5.30	173.70	8.47
16	-11.37	23.79	-29.95	1.74	206.37	0.96
18	-21.49	7.54	-10.32	2.81	66.82	0.00
19	-57.13	22.67	-10.32	7.27	66.93	0.00
20	-58.42	17.21	-19.63	4.59	173.42	4.28

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	142.53	192.04	0.00	0.00
2	3.71	3.37E-003	130.81	78.44	571.15	11.26
6	3.43	3.12E-003	136.99	77.80	571.15	13.76
7	6.57	2.12E-003	153.27	174.09	0.00	0.00
13	7.87	2.54E-003	228.47	178.52	1609.62	0.00
14	12.95	1.18E-002	116.75	101.50	571.15	5.58
18	3.31	3.01E-003	111.58	79.09	571.15	3.49
19	6.57	2.12E-003	130.84	178.98	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	-10.10	16.56	6.30	0.010
2	3.71	-20.20	4.14	6.30	0.010
3	5.93	-20.20	10.25	6.30	0.029
4	9.23	-20.20	14.61	6.30	0.026
5	8.02	-20.20	9.43	6.30	0.013
6	3.43	-20.20	8.20	6.30	0.054
7	6.57	-43.63	24.02	6.30	0.016
8	8.44	-65.78	18.47	6.30	0.041
9	5.82	-63.81	7.86	8.00	0.013
10	3.14	-61.84	2.75	6.30	0.000
11	2.79	-59.88	1.52	8.00	0.000
12	3.53	-57.91	5.01	12.50	0.016
13	7.87	-34.11	34.90	12.50	0.055
14	12.95	-11.60	19.92	12.50	0.051
15	2.95	-11.60	4.63	8.00	0.029
16	11.11	-11.60	16.07	8.00	0.028
17	9.87	-11.60	12.52	8.00	0.022
18	3.31	-11.60	4.13	12.50	0.028
19	6.57	-26.59	14.98	12.50	0.012
20	5.96	-42.87	11.95	12.50	0.069
21	4.51	-44.84	7.40	8.00	0.024
22	5.19	-46.81	5.23	6.30	0.005
23	5.68	-48.78	6.38	8.00	0.010
24	5.81	-50.74	11.75	6.30	0.033

VminHmax

Seção	As (cm ² /m)	Nsd (kN)	Msd (kN.m)	Ø (mm)	w (mm)
1	6.57	-19.06	17.37	6.30	0.010
2	3.71	-38.13	9.55	6.30	0.056
3	5.93	-38.13	0.33	6.30	0.000
4	9.23	-38.13	3.96	6.30	0.001
5	8.02	-38.13	1.80	6.30	0.000
6	3.43	-38.13	6.42	6.30	0.025
7	6.57	-33.24	13.33	6.30	0.004
8	8.44	-27.07	2.84	6.30	0.001
9	5.82	-25.10	0.45	8.00	0.000
10	3.14	-23.13	0.41	6.30	0.000
11	2.79	-21.16	0.38	8.00	0.000
12	3.53	-19.19	0.10	12.50	0.000
13	7.87	-21.40	8.43	12.50	0.002
14	12.95	-24.90	4.09	12.50	0.001
15	2.95	-24.90	1.08	8.00	0.000
16	11.11	-24.90	2.23	8.00	0.000
17	9.87	-24.90	0.62	8.00	0.000
18	3.31	-24.90	7.49	12.50	0.090
19	6.57	-23.02	12.72	12.50	0.009
20	5.96	-22.43	6.38	12.50	0.020
21	4.51	-24.40	2.40	8.00	0.002
22	5.19	-26.37	5.83	6.30	0.010
23	5.68	-28.33	2.71	8.00	0.001
24	5.81	-30.30	8.17	6.30	0.017

VERIFICAÇÃO DA FISSURAÇÃO (CONT.)

VmaxHmax

Seção	As(cm ² /m)	Nsd(kN)	Msd(kN.m)	Ø(mm)	w(mm)
1	6.57	-12.35	18.09	6.30	0.011
2	3.71	-24.70	5.40	6.30	0.017
3	5.93	-24.70	9.41	6.30	0.024
4	9.23	-24.70	13.96	6.30	0.023
5	8.02	-24.70	8.78	6.30	0.011
6	3.43	-24.70	8.78	6.30	0.060
7	6.57	-45.38	24.42	6.30	0.016
8	8.44	-64.79	17.63	6.30	0.037
9	5.82	-62.82	6.95	8.00	0.010
10	3.14	-60.85	2.59	6.30	0.000
11	2.79	-58.88	1.31	8.00	0.000
12	3.53	-56.91	4.62	12.50	0.013
13	7.87	-36.47	34.19	12.50	0.052
14	12.95	-17.32	19.47	12.50	0.048
15	2.95	-17.32	4.55	8.00	0.026
16	11.11	-17.32	15.46	8.00	0.026
17	9.87	-17.32	11.40	8.00	0.017
18	3.31	-17.32	5.78	12.50	0.055
19	6.57	-29.95	16.90	12.50	0.016
20	5.96	-43.87	12.48	12.50	0.076
21	4.51	-45.83	6.25	8.00	0.015
22	5.19	-47.80	3.58	6.30	0.002
23	5.68	-49.77	5.28	8.00	0.006
24	5.81	-51.74	12.16	6.30	0.036

NOTA:

* Seção com aumento na armadura devido à fissuração.