



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

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

sexta-feira, 4 de outubro de 2019



ASSOCIAÇÃO BRASILEIRA
DOS FABRICANTES DE
TUBOS DE CONCRETO

DADOS DO FABRICANTE



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

DADOS DO CLIENTE



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

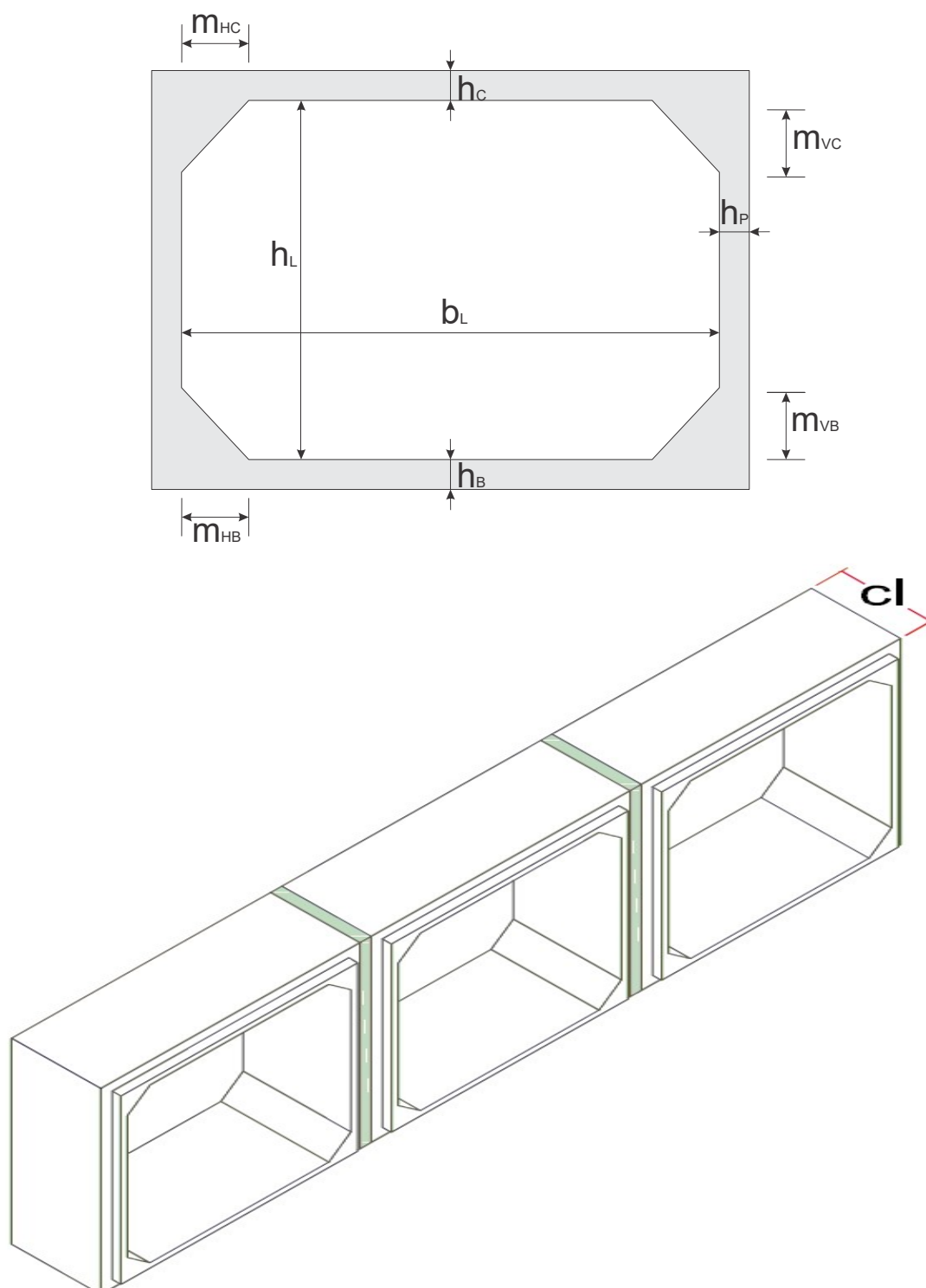
DADOS DA OBRA



NOME: ADUELA 2,00 X 2,00 M PARA ATERRO DE 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).....	: 2.00 m
ALTURA LIVRE (h_l).....	: 2.00 m
ALTURA DA LAJE DA COBERTURA (h_c).....	: 0.15 m
ESPESSURA DAS PAREDES LATERAIS (h_p).....	: 0.15 m
ALTURA DA LAJE DA BASE (h_b).....	: 0.15 m
MÍSULA HOR. DA COBERTURA.....	: 0.20 m
MÍSULA VERT. DA COBERTURA.....	: 0.20 m
MÍSULA VERT. DA BASE.....	: 0.20 m
MÍSULA HOR. DA BASE.....	: 0.20 m



INSTALAÇÃO E MANUSEIO

ESPECIFICAÇÃO DO SOLO

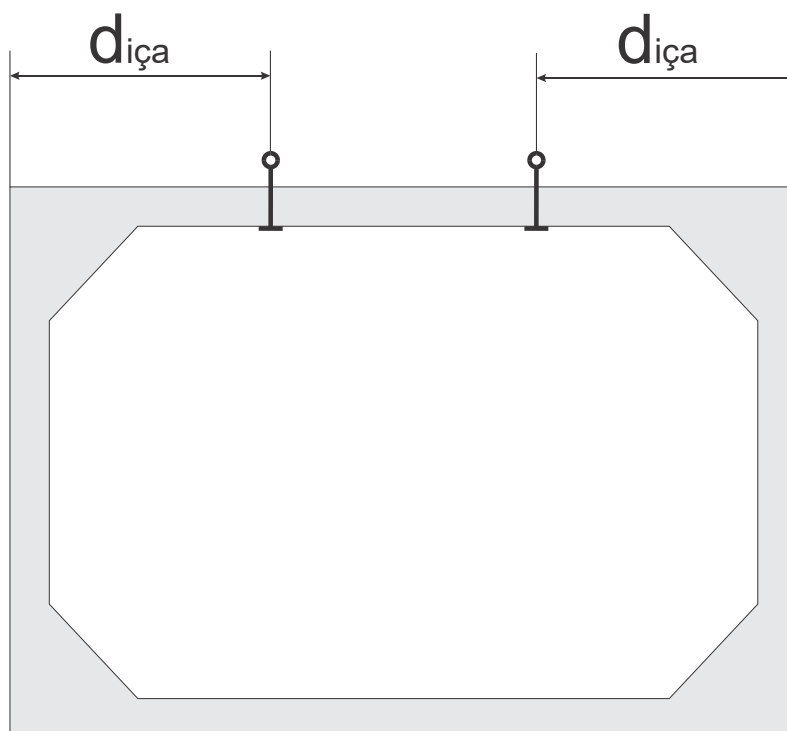
PESO ESPECÍFICO.....	: 18.00 kN/m ³
ÂNGULO DE ATRITO.....	: 30.00 graus
COEFICIENTE DE ATRITO ATIVO.....	: 0.33
COEFICIENTE DE ATRITO ESTÁTICO.....	: 0.50
COEFICIENTE DE ATRITO.....	: 0.58

DADOS DE INSTALAÇÃO

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

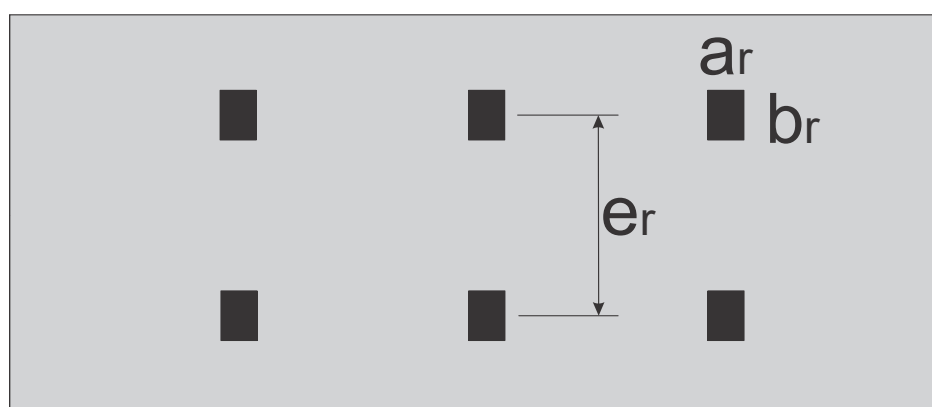
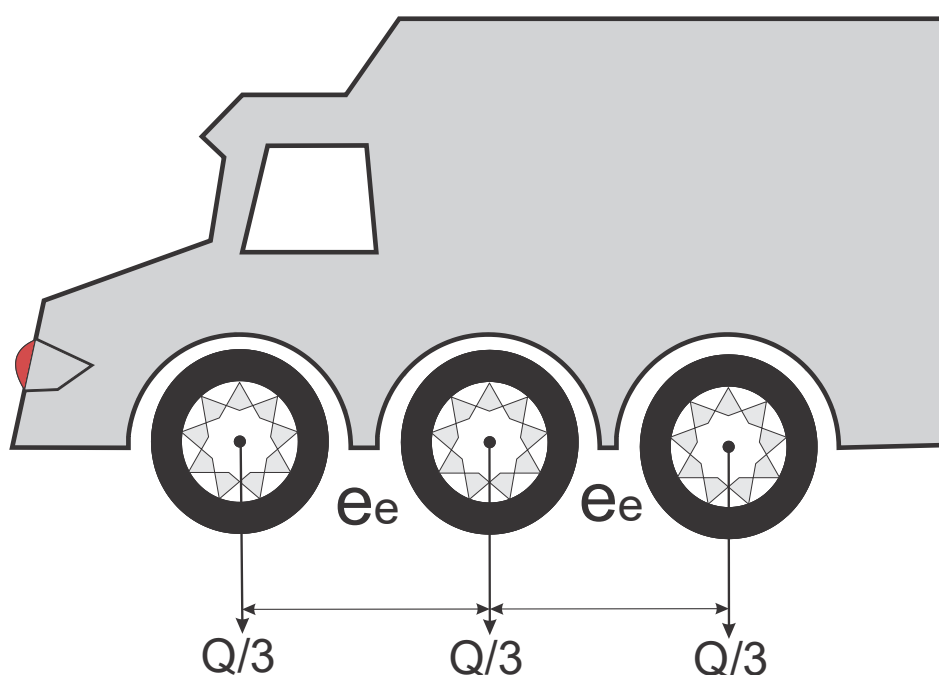
INFORMAÇÕES DE MANUSEIO

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



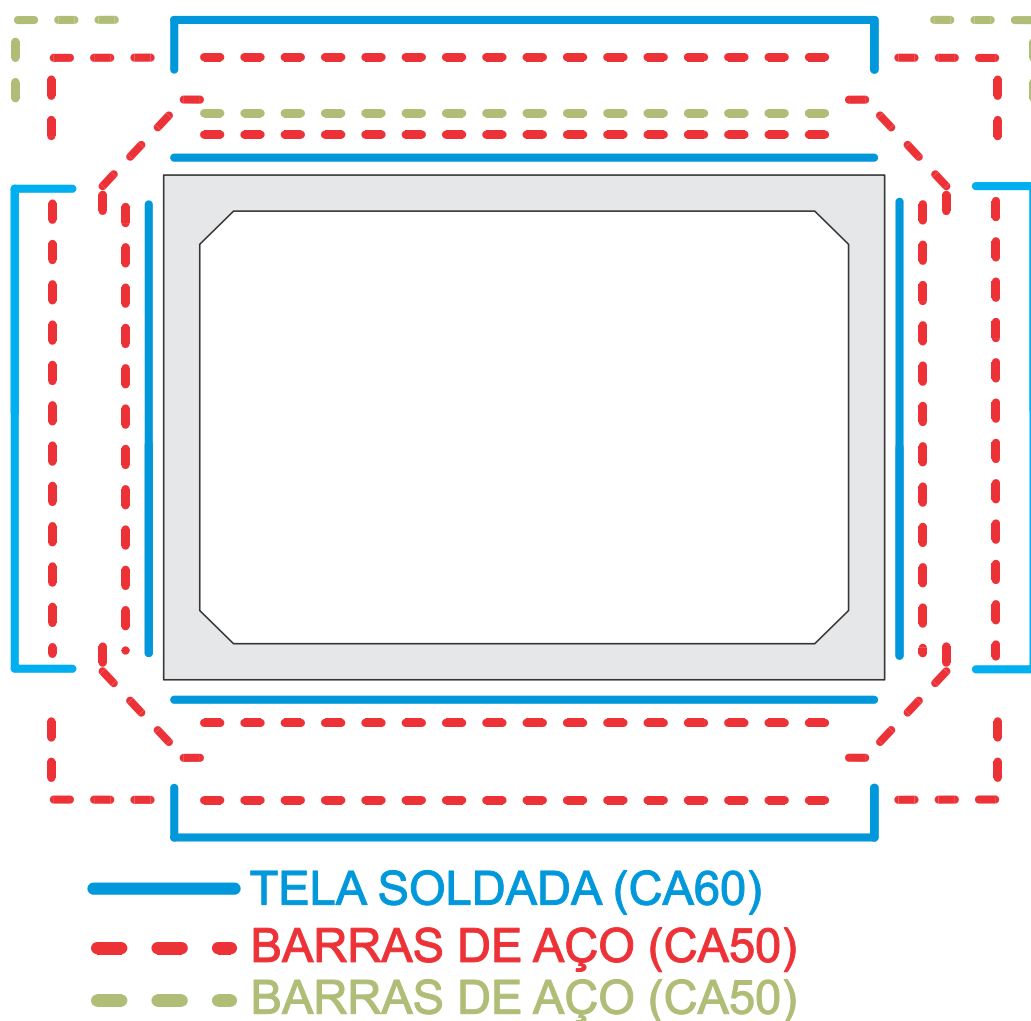
SOBRECARGA

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:

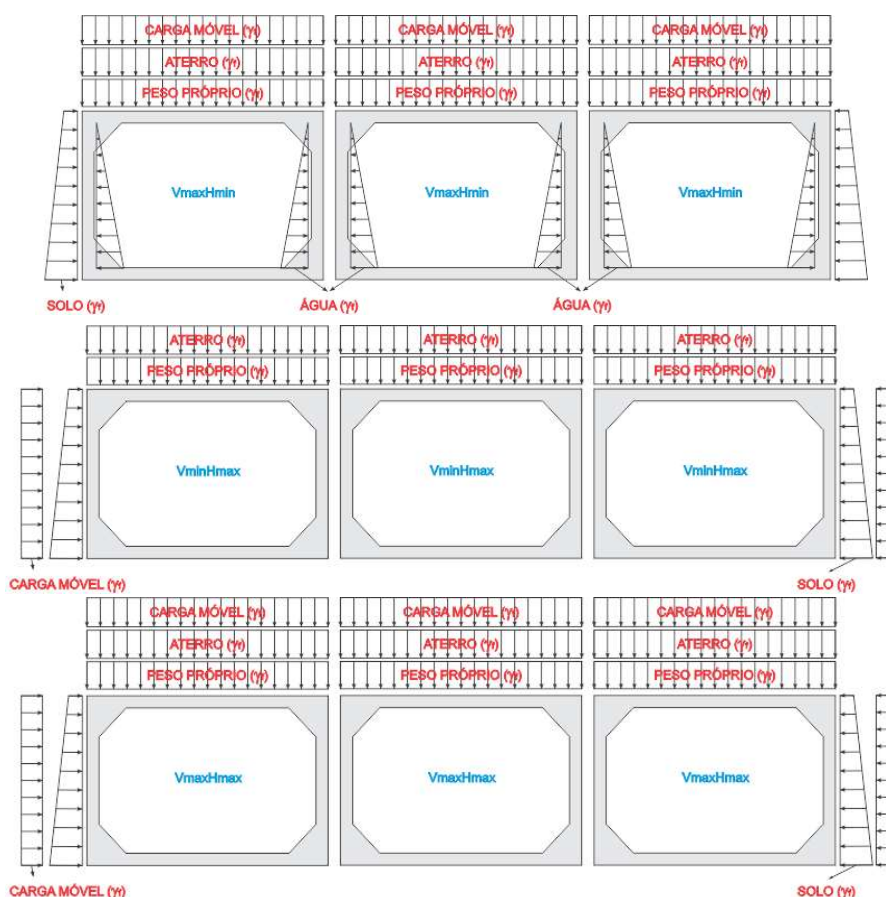
COEFICIENTE DE PONDERAÇÃO CARGA MÓVEL V.:	1.50
COEFICIENTE DE PONDERAÇÃO ATERRO.....	1.35
COEFICIENTE DE PONDERAÇÃO PESO PRÓPRIO...	1.30
COEFICIENTE DE PONDERAÇÃO SOLO.....	1.00
COEFICIENTE DE PONDERAÇÃO ÁGUA.....	1.20

- VminHmax:

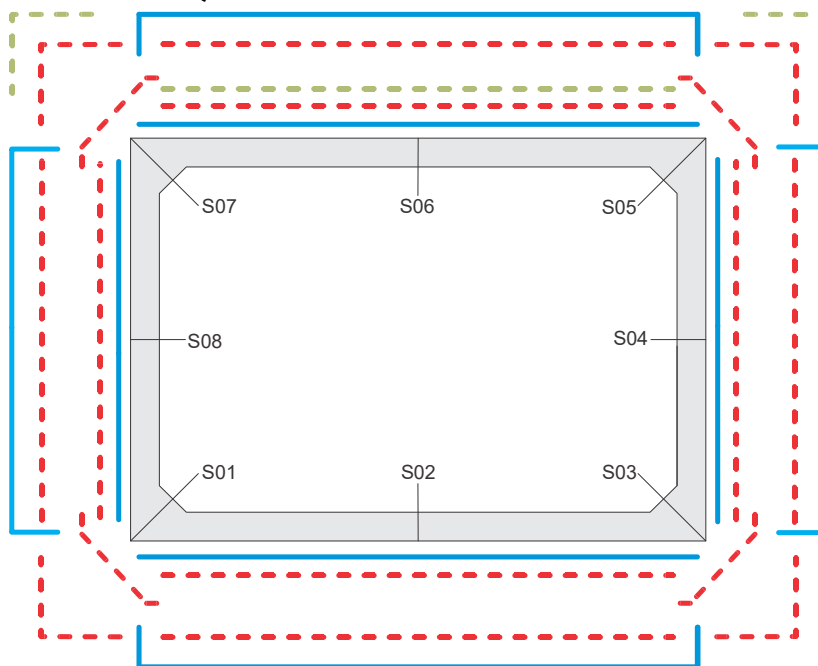
COEFICIENTE DE PONDERAÇÃO ATERRO.....	1.00
COEFICIENTE DE PONDERAÇÃO PESO PRÓPRIO...	1.00
COEFICIENTE DE PONDERAÇÃO SOLO.....	1.35
COEFICIENTE DE PONDERAÇÃO CARGA MÓVEL H.:	1.50

- 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



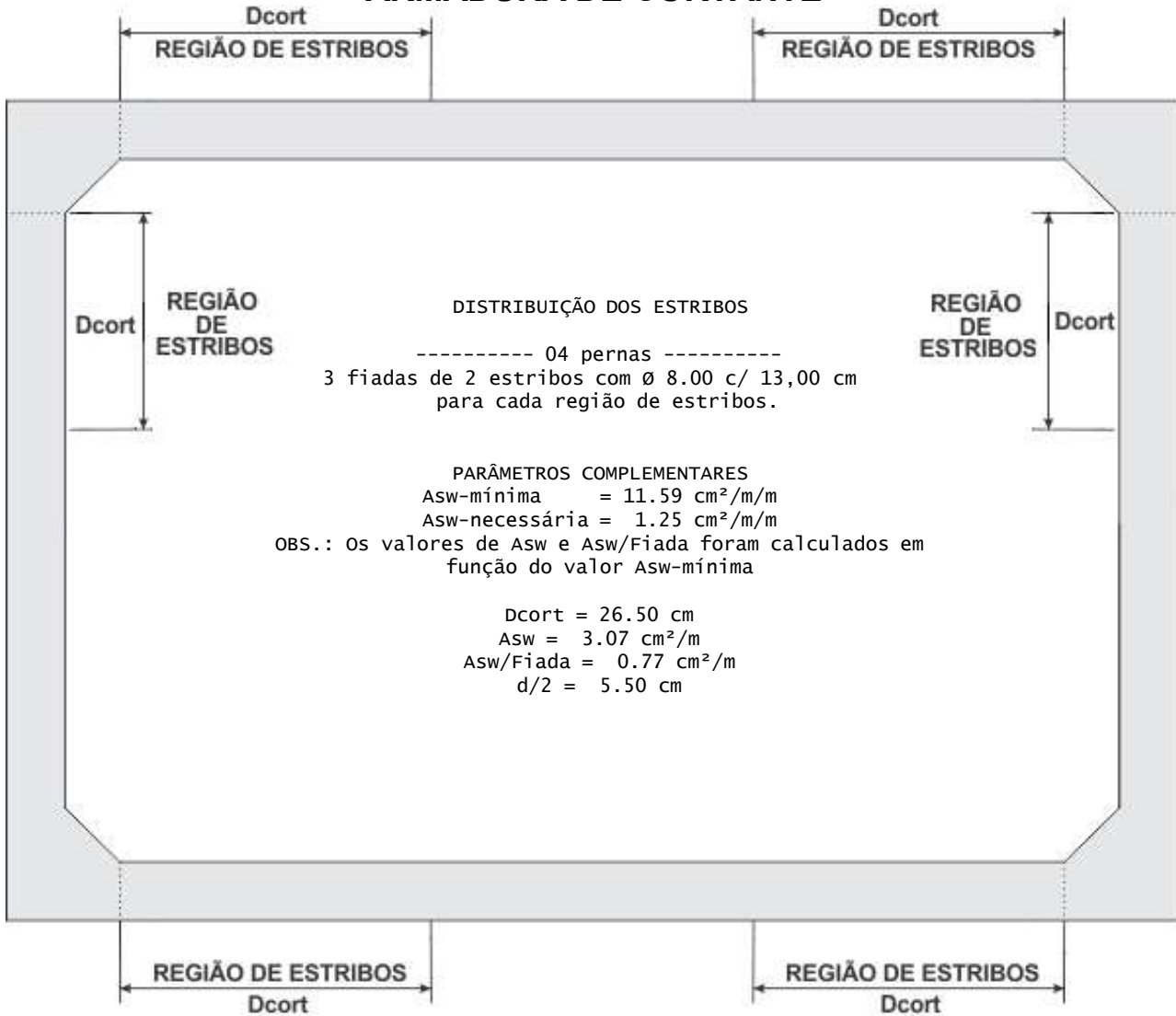
- TELA SOLDADA (CA60) ARMADURA BÁSICA
 - - - BARRAS DE AÇO (CA50) ARMADURA COMPLEMENTAR
 - - - BARRAS DE AÇO (CA50) ARMADURA DE FADIGA

OBS.: VALORES POR METRO DE ADUELA.

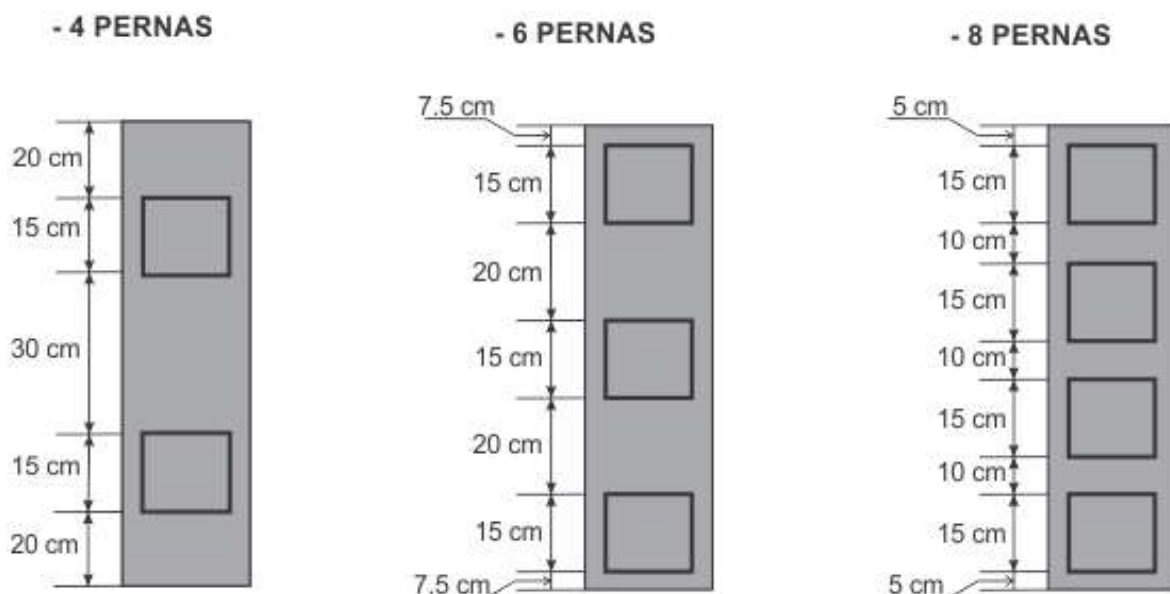
	TELA	ARMADURA COMPLEMENTAR	ARMADURA DE FADIGA
LADO EXTERNO	T-S02: L283	B-S01: 0.07 cm ² de área acima	B-S05: 7 Ø10.00 c/ 15 cm (2.87%)
	T-S04: L283	B-S02: 0.61 cm ² de área acima	B-S07: 7 Ø10.00 c/ 15 cm (2.87%)
	T-S06: L283	B-S03: 0.07 cm ² de área acima	
	T-S08: L283	B-S04: 5 Ø6.30 c/ 23 cm (2.72%) B-S05: 0.22 cm ² de área acima B-S06: 0.61 cm ² de área acima B-S07: 0.22 cm ² de área acima B-S08: 5 Ø6.30 c/ 23 cm (2.72%)	
LADO INTERNO	T-S02: L283	B-S01: 4 Ø6.30 c/ 31 cm (0.00%)	B-S06: 4 Ø6.30 c/ 31 cm (30.19%)
	T-S04: L283	B-S02: 5 Ø10.00 c/ 23 cm (-5.98%)	
	T-S06: L283	B-S03: 4 Ø6.30 c/ 31 cm (0.00%)	
	T-S08: L283	B-S04: 0.61 cm ² de área acima B-S05: 4 Ø6.30 c/ 31 cm (0.00%) B-S06: 6 Ø10.00 c/ 18 cm (7.51%) B-S07: 4 Ø6.30 c/ 31 cm (0.00%) B-S08: 0.61 cm ² de área acima	

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

ARMADURA DE CORTANTE



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

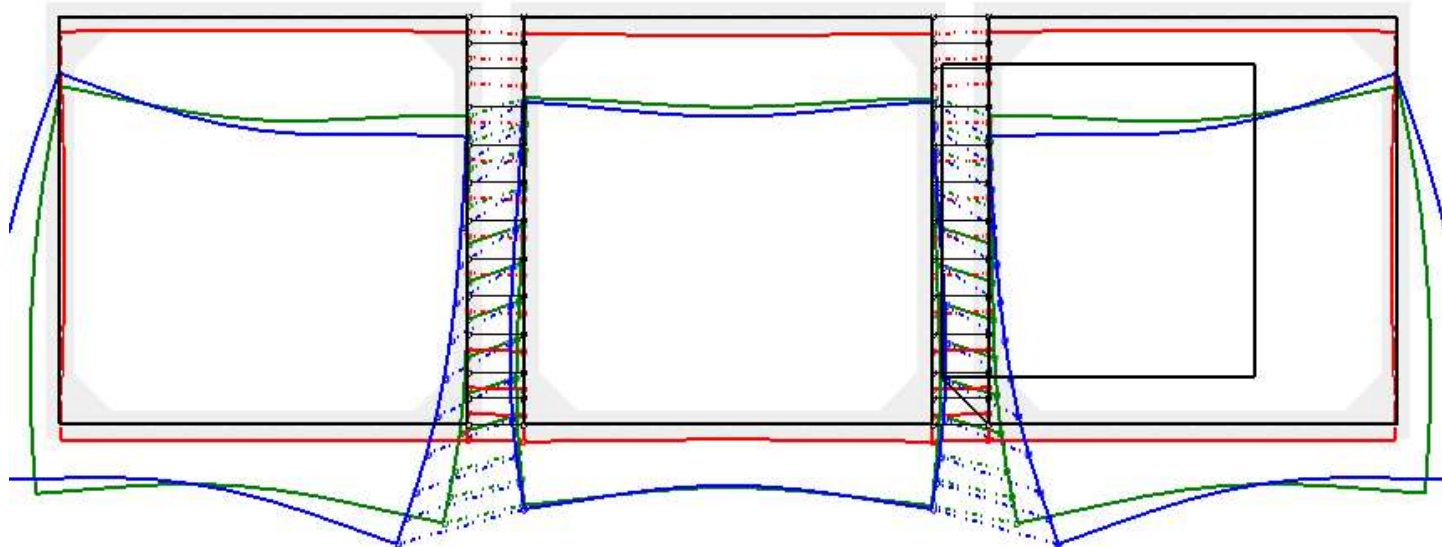
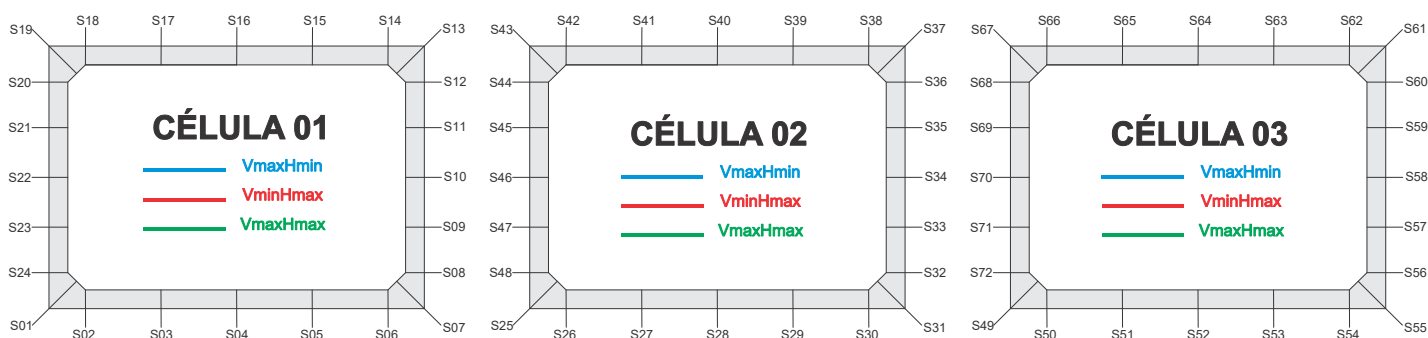


OBSERVAÇÃO:

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

DESLOCAMENTOS

NOMENCLATURA DAS SEÇÕES PARA VERSÃO COMPLETA DO RELATÓRIO



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

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-4.74E-003	-3.75E-003
2	-4.74E-003	-3.64E-003
3	-4.74E-003	-3.57E-003
4	-4.74E-003	-3.98E-003
5	-4.74E-003	-5.09E-003
6	-4.74E-003	-6.77E-003
7	-4.74E-003	-8.01E-003
8	-3.52E-003	-8.02E-003
9	-2.07E-003	-8.03E-003
10	-1.14E-003	-8.05E-003
11	-5.86E-004	-8.06E-003
12	-2.25E-004	-8.07E-003
13	-4.91E-005	-8.08E-003
14	-4.93E-005	-7.95E-003
15	-4.96E-005	-7.94E-003
16	-4.99E-005	-7.66E-003
17	-5.02E-005	-6.67E-003
18	-5.06E-005	-5.04E-003
19	-5.07E-005	-3.79E-003
20	-1.28E-003	-3.79E-003
21	-2.85E-003	-3.78E-003
22	-3.99E-003	-3.77E-003
23	-4.66E-003	-3.76E-003
24	-4.83E-003	-3.75E-003
25	1.74E-006	-5.67E-003
26	1.48E-006	-5.13E-003
27	7.39E-007	-4.40E-003
28	-2.00E-010	-4.09E-003
29	-7.39E-007	-4.39E-003
30	-1.48E-006	-5.13E-003
31	-1.74E-006	-5.67E-003
32	5.10E-004	-5.67E-003
33	9.22E-004	-5.68E-003
34	8.62E-004	-5.70E-003
35	5.39E-004	-5.71E-003
36	1.97E-004	-5.72E-003
37	-1.98E-005	-5.72E-003
38	-2.01E-005	-5.98E-003
39	-2.12E-005	-6.46E-003
40	-2.23E-005	-6.71E-003
41	-2.34E-005	-6.47E-003
42	-2.44E-005	-5.98E-003
43	-2.48E-005	-5.73E-003
44	-2.41E-004	-5.73E-003
45	-5.73E-004	-5.71E-003
46	-8.83E-004	-5.70E-003
47	-9.32E-004	-5.69E-003
48	-5.13E-004	-5.68E-003
49	4.68E-003	-8.01E-003

50	4.68E-003	-6.76E-003
51	4.68E-003	-5.09E-003
52	4.68E-003	-3.98E-003
53	4.68E-003	-3.57E-003
54	4.68E-003	-3.64E-003
55	4.68E-003	-3.75E-003
56	4.76E-003	-3.76E-003
57	4.60E-003	-3.77E-003
58	3.93E-003	-3.78E-003
59	2.80E-003	-3.79E-003
60	1.24E-003	-3.80E-003
61	6.06E-006	-3.80E-003
62	5.95E-006	-5.04E-003
63	5.62E-006	-6.67E-003
64	5.29E-006	-7.65E-003
65	4.97E-006	-7.94E-003
66	4.64E-006	-7.95E-003
67	4.53E-006	-8.07E-003
68	1.82E-004	-8.07E-003
69	5.39E-004	-8.06E-003
70	1.09E-003	-8.04E-003
71	2.01E-003	-8.03E-003
72	3.46E-003	-8.01E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	3.64E-004
2	4.14E-004
3	-2.69E-004
4	-1.87E-003
5	-3.61E-003
6	-4.55E-003
7	-4.51E-003
8	-4.35E-003
9	-2.92E-003
10	-1.79E-003
11	-1.08E-003
12	-7.17E-004
13	-5.59E-004
14	-3.35E-004
15	-8.62E-005
16	-1.51E-003
17	-3.40E-003
18	-4.53E-003
19	-4.52E-003
20	-4.42E-003
21	-3.40E-003
22	-2.28E-003
23	-1.06E-003
24	2.30E-004
25	1.94E-003
26	2.01E-003
27	1.45E-003
28	1.81E-006
29	-1.44E-003

30	-2.00E-003
31	-1.92E-003
32	-1.76E-003
33	-3.65E-004
34	5.75E-004
35	9.39E-004
36	7.51E-004
37	8.45E-004
38	1.02E-003
39	1.12E-003
40	4.70E-006
41	-1.11E-003
42	-1.01E-003
43	-8.40E-004
44	-7.46E-004
45	-9.00E-004
46	-5.45E-004
47	3.87E-004
48	1.77E-003
49	4.50E-003
50	4.55E-003
51	3.61E-003
52	1.87E-003
53	2.66E-004
54	-4.19E-004
55	-3.70E-004
56	-2.36E-004
57	1.05E-003
58	2.27E-003
59	3.39E-003
60	4.41E-003
61	4.51E-003
62	4.52E-003
63	3.39E-003
64	1.51E-003
65	8.64E-005
66	3.41E-004
67	5.65E-004
68	7.24E-004
69	1.05E-003
70	1.77E-003
71	2.91E-003
72	4.34E-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	3.46E-005	-1.02E-003
2	3.29E-005	-1.09E-003
3	2.81E-005	-1.11E-003
4	2.33E-005	-1.07E-003
5	1.85E-005	-1.05E-003
6	1.37E-005	-1.04E-003
7	1.20E-005	-1.02E-003
8	-1.43E-005	-1.02E-003
9	-4.53E-005	-1.02E-003
10	-5.66E-005	-1.02E-003
11	-4.75E-005	-1.03E-003
12	-1.77E-005	-1.03E-003
13	1.03E-005	-1.03E-003
14	1.17E-005	-1.00E-003
15	1.55E-005	-9.71E-004
16	1.93E-005	-9.34E-004
17	2.30E-005	-9.03E-004
18	2.68E-005	-9.44E-004
19	2.82E-005	-1.03E-003
20	1.26E-004	-1.03E-003
21	2.87E-004	-1.03E-003
22	3.63E-004	-1.02E-003
23	2.85E-004	-1.02E-003
24	1.25E-004	-1.02E-003
25	1.13E-005	-1.15E-003
26	9.57E-006	-1.11E-003
27	4.78E-006	-1.04E-003
28	2.92E-011	-1.01E-003
29	-4.78E-006	-1.04E-003
30	-9.57E-006	-1.11E-003
31	-1.13E-005	-1.15E-003
32	1.63E-005	-1.15E-003
33	4.41E-005	-1.15E-003
34	5.50E-005	-1.15E-003
35	4.70E-005	-1.15E-003
36	1.88E-005	-1.16E-003
37	-8.97E-006	-1.16E-003
38	-7.62E-006	-1.19E-003
39	-3.81E-006	-1.24E-003
40	5.15E-010	-1.27E-003
41	3.81E-006	-1.24E-003
42	7.62E-006	-1.19E-003
43	8.97E-006	-1.16E-003
44	-1.88E-005	-1.16E-003
45	-4.65E-005	-1.15E-003
46	-5.44E-005	-1.15E-003
47	-4.39E-005	-1.15E-003
48	-1.63E-005	-1.15E-003
49	-1.20E-005	-1.02E-003

50	-1.37E-005	-1.04E-003
51	-1.85E-005	-1.05E-003
52	-2.33E-005	-1.07E-003
53	-2.81E-005	-1.11E-003
54	-3.29E-005	-1.09E-003
55	-3.46E-005	-1.02E-003
56	-1.25E-004	-1.02E-003
57	-2.85E-004	-1.02E-003
58	-3.63E-004	-1.02E-003
59	-2.87E-004	-1.03E-003
60	-1.26E-004	-1.03E-003
61	-2.82E-005	-1.03E-003
62	-2.68E-005	-9.44E-004
63	-2.30E-005	-9.03E-004
64	-1.93E-005	-9.34E-004
65	-1.55E-005	-9.71E-004
66	-1.17E-005	-1.00E-003
67	-1.03E-005	-1.03E-003
68	1.77E-005	-1.03E-003
69	4.71E-005	-1.03E-003
70	5.60E-005	-1.02E-003
71	4.51E-005	-1.02E-003
72	1.43E-005	-1.02E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	-3.03E-004
2	-2.36E-004
3	7.33E-005
4	9.02E-005
5	2.05E-005
6	6.32E-005
7	8.88E-005
8	9.88E-005
9	5.33E-005
10	3.04E-006
11	-4.83E-005
12	-1.01E-004
13	-9.97E-005
14	-8.84E-005
15	-8.09E-005
16	-1.02E-004
17	-2.48E-005
18	2.78E-004
19	3.34E-004
20	3.77E-004
21	3.51E-004
22	-1.72E-006
23	-3.56E-004
24	-3.56E-004
25	1.11E-004
26	1.41E-004
27	1.66E-004
28	-2.01E-008
29	-1.66E-004

30	-1.41E-004
31	-1.11E-004
32	-9.18E-005
33	-4.90E-005
34	-4.60E-006
35	4.57E-005
36	9.50E-005
37	1.07E-004
38	1.26E-004
39	1.26E-004
40	7.30E-009
41	-1.26E-004
42	-1.26E-004
43	-1.08E-004
44	-9.51E-005
45	-4.39E-005
46	3.90E-006
47	4.79E-005
48	9.18E-005
49	-8.88E-005
50	-6.32E-005
51	-2.05E-005
52	-9.02E-005
53	-7.33E-005
54	2.36E-004
55	3.03E-004
56	3.56E-004
57	3.56E-004
58	1.72E-006
59	-3.51E-004
60	-3.77E-004
61	-3.34E-004
62	-2.78E-004
63	2.48E-005
64	1.02E-004
65	8.09E-005
66	8.84E-005
67	9.98E-005
68	1.01E-004
69	4.66E-005
70	-2.34E-006
71	-5.23E-005
72	-9.88E-005

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

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-1.58E-003	-4.63E-003
2	-1.58E-003	-4.36E-003
3	-1.58E-003	-4.03E-003
4	-1.58E-003	-4.12E-003
5	-1.59E-003	-4.80E-003
6	-1.59E-003	-5.86E-003
7	-1.59E-003	-6.59E-003
8	-8.93E-004	-6.60E-003
9	-2.28E-004	-6.61E-003
10	-3.83E-006	-6.63E-003
11	2.29E-005	-6.64E-003
12	7.59E-005	-6.65E-003
13	9.74E-005	-6.66E-003
14	9.84E-005	-6.68E-003
15	1.01E-004	-6.92E-003
16	1.04E-004	-6.96E-003
17	1.07E-004	-6.42E-003
18	1.09E-004	-5.41E-003
19	1.10E-004	-4.68E-003
20	-5.99E-004	-4.67E-003
21	-1.38E-003	-4.66E-003
22	-1.82E-003	-4.65E-003
23	-1.98E-003	-4.64E-003
24	-1.83E-003	-4.63E-003
25	7.56E-006	-5.41E-003
26	6.42E-006	-5.03E-003
27	3.21E-006	-4.47E-003
28	-2.12E-010	-4.22E-003
29	-3.21E-006	-4.48E-003
30	-6.43E-006	-5.05E-003
31	-7.56E-006	-5.44E-003
32	3.49E-004	-5.45E-003
33	5.63E-004	-5.46E-003
34	4.32E-004	-5.47E-003
35	2.32E-004	-5.48E-003
36	1.55E-004	-5.49E-003
37	1.07E-004	-5.50E-003
38	1.08E-004	-5.59E-003
39	1.10E-004	-5.90E-003
40	1.13E-004	-6.08E-003
41	1.15E-004	-5.88E-003
42	1.18E-004	-5.56E-003
43	1.19E-004	-5.47E-003
44	6.48E-005	-5.46E-003
45	-6.72E-005	-5.45E-003
46	-3.44E-004	-5.44E-003
47	-5.21E-004	-5.43E-003
48	-3.36E-004	-5.41E-003
49	1.93E-003	-6.61E-003

50	1.93E-003	-5.87E-003
51	1.93E-003	-4.81E-003
52	1.92E-003	-4.12E-003
53	1.92E-003	-4.02E-003
54	1.92E-003	-4.34E-003
55	1.92E-003	-4.61E-003
56	2.16E-003	-4.61E-003
57	2.29E-003	-4.62E-003
58	2.11E-003	-4.63E-003
59	1.65E-003	-4.64E-003
60	8.41E-004	-4.65E-003
61	1.16E-004	-4.66E-003
62	1.17E-004	-5.41E-003
63	1.20E-004	-6.43E-003
64	1.22E-004	-6.98E-003
65	1.25E-004	-6.95E-003
66	1.28E-004	-6.71E-003
67	1.29E-004	-6.67E-003
68	1.41E-004	-6.66E-003
69	2.25E-004	-6.65E-003
70	3.04E-004	-6.64E-003
71	5.53E-004	-6.62E-003
72	1.23E-003	-6.61E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	9.66E-004
2	1.02E-003
3	4.25E-004
4	-9.76E-004
5	-2.33E-003
6	-2.72E-003
7	-2.61E-003
8	-2.42E-003
9	-1.01E-003
10	-2.12E-004
11	-2.24E-005
12	-1.51E-004
13	-8.97E-008
14	2.27E-004
15	6.01E-004
16	-5.71E-004
17	-2.08E-003
18	-2.71E-003
19	-2.64E-003
20	-2.50E-003
21	-1.48E-003
22	-7.36E-004
23	-3.94E-005
24	8.45E-004
25	1.32E-003
26	1.43E-003
27	1.17E-003
28	-7.90E-006
29	-1.19E-003

30	-1.47E-003
31	-1.37E-003
32	-1.19E-003
33	1.06E-005
34	5.28E-004
35	3.60E-004
36	1.26E-004
37	2.39E-004
38	4.39E-004
39	8.14E-004
40	-1.92E-005
41	-8.49E-004
42	-4.63E-004
43	-2.61E-004
44	-1.46E-004
45	-5.97E-004
46	-6.78E-004
47	-9.94E-005
48	1.14E-003
49	2.63E-003
50	2.73E-003
51	2.34E-003
52	9.84E-004
53	-4.09E-004
54	-9.91E-004
55	-9.32E-004
56	-8.09E-004
57	8.99E-005
58	7.95E-004
59	1.54E-003
60	2.56E-003
61	2.69E-003
62	2.76E-003
63	2.12E-003
64	5.90E-004
65	-6.05E-004
66	-2.58E-004
67	-3.39E-005
68	1.15E-004
69	1.98E-004
70	3.03E-004
71	1.05E-003
72	2.44E-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	-5.64E-003	-6.09E-003
2	-5.64E-003	-5.48E-003
3	-5.64E-003	-4.72E-003
4	-5.64E-003	-4.60E-003
5	-5.64E-003	-5.37E-003
6	-5.64E-003	-6.88E-003
7	-5.64E-003	-8.07E-003
8	-4.48E-003	-8.08E-003
9	-3.34E-003	-8.11E-003
10	-3.00E-003	-8.14E-003
11	-3.13E-003	-8.17E-003
12	-3.35E-003	-8.20E-003
13	-3.54E-003	-8.21E-003
14	-3.54E-003	-8.46E-003
15	-3.54E-003	-8.97E-003
16	-3.54E-003	-9.13E-003
17	-3.54E-003	-8.53E-003
18	-3.54E-003	-7.21E-003
19	-3.54E-003	-6.15E-003
20	-4.58E-003	-6.15E-003
21	-5.83E-003	-6.13E-003
22	-6.55E-003	-6.12E-003
23	-6.70E-003	-6.11E-003
24	-6.22E-003	-6.09E-003
25	2.50E-006	-8.30E-003
26	2.12E-006	-7.19E-003
27	1.06E-006	-5.66E-003
28	1.77E-009	-4.73E-003
29	-1.06E-006	-4.58E-003
30	-2.12E-006	-4.99E-003
31	-2.50E-006	-5.35E-003
32	3.14E-004	-5.36E-003
33	1.89E-004	-5.39E-003
34	-7.00E-004	-5.41E-003
35	-1.88E-003	-5.44E-003
36	-2.89E-003	-5.46E-003
37	-3.50E-003	-5.47E-003
38	-3.50E-003	-6.13E-003
39	-3.51E-003	-7.19E-003
40	-3.51E-003	-7.97E-003
41	-3.51E-003	-8.25E-003
42	-3.51E-003	-8.28E-003
43	-3.51E-003	-8.38E-003
44	-3.37E-003	-8.37E-003
45	-3.15E-003	-8.36E-003
46	-2.87E-003	-8.34E-003
47	-2.26E-003	-8.33E-003
48	-1.08E-003	-8.31E-003
49	5.52E-003	-1.11E-002

50	5.52E-003	-9.17E-003
51	5.52E-003	-6.51E-003
52	5.52E-003	-4.60E-003
53	5.52E-003	-3.57E-003
54	5.52E-003	-3.18E-003
55	5.52E-003	-3.02E-003
56	5.33E-003	-3.02E-003
57	4.59E-003	-3.04E-003
58	3.12E-003	-3.06E-003
59	1.03E-003	-3.08E-003
60	-1.55E-003	-3.10E-003
61	-3.47E-003	-3.11E-003
62	-3.47E-003	-5.04E-003
63	-3.48E-003	-7.55E-003
64	-3.48E-003	-9.24E-003
65	-3.48E-003	-1.01E-002
66	-3.48E-003	-1.07E-002
67	-3.48E-003	-1.12E-002
68	-2.90E-003	-1.12E-002
69	-1.89E-003	-1.12E-002
70	-5.78E-004	-1.12E-002
71	1.19E-003	-1.12E-002
72	3.59E-003	-1.11E-002

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	2.18E-003
2	2.24E-003
3	1.29E-003
4	-7.83E-004
5	-3.00E-003
6	-4.33E-003
7	-4.31E-003
8	-4.05E-003
9	-1.74E-003
10	-1.15E-004
11	5.96E-004
12	5.64E-004
13	8.26E-004
14	1.04E-003
15	1.12E-003
16	-4.77E-004
17	-2.53E-003
18	-3.83E-003
19	-3.83E-003
20	-3.72E-003
21	-2.48E-003
22	-1.11E-003
23	3.93E-004
24	2.01E-003
25	4.01E-003
26	4.09E-003
27	3.24E-003
28	1.35E-003
29	-4.99E-004

30	-1.33E-003
31	-1.27E-003
32	-9.67E-004
33	1.44E-003
34	2.81E-003
35	2.88E-003
36	2.18E-003
37	2.34E-003
38	2.50E-003
39	2.50E-003
40	1.31E-003
41	1.71E-004
42	2.75E-004
43	4.60E-004
44	5.72E-004
45	5.12E-004
46	1.01E-003
47	2.15E-003
48	3.82E-003
49	7.09E-003
50	7.14E-003
51	5.88E-003
52	3.64E-003
53	1.60E-003
54	5.98E-004
55	6.23E-004
56	8.39E-004
57	2.81E-003
58	4.50E-003
59	5.89E-003
60	6.95E-003
61	7.03E-003
62	6.98E-003
63	5.35E-003
64	3.13E-003
65	1.52E-003
66	1.75E-003
67	1.99E-003
68	2.18E-003
69	2.86E-003
70	3.77E-003
71	5.15E-003
72	6.90E-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	3.44E-005	-1.02E-003
2	3.27E-005	-1.09E-003
3	2.79E-005	-1.11E-003
4	2.31E-005	-1.07E-003
5	1.83E-005	-1.05E-003
6	1.35E-005	-1.04E-003
7	1.18E-005	-1.02E-003
8	-1.99E-005	-1.02E-003
9	-5.80E-005	-1.02E-003
10	-7.24E-005	-1.02E-003
11	-6.25E-005	-1.03E-003
12	-2.73E-005	-1.03E-003
13	6.23E-006	-1.03E-003
14	7.57E-006	-1.00E-003
15	1.14E-005	-9.66E-004
16	1.52E-005	-9.27E-004
17	1.89E-005	-8.97E-004
18	2.27E-005	-9.40E-004
19	2.41E-005	-1.03E-003
20	1.23E-004	-1.03E-003
21	2.87E-004	-1.02E-003
22	3.63E-004	-1.02E-003
23	2.87E-004	-1.02E-003
24	1.25E-004	-1.02E-003
25	1.13E-005	-1.16E-003
26	9.56E-006	-1.12E-003
27	4.78E-006	-1.04E-003
28	1.18E-011	-1.00E-003
29	-4.78E-006	-1.04E-003
30	-9.56E-006	-1.11E-003
31	-1.13E-005	-1.15E-003
32	2.18E-005	-1.16E-003
33	5.45E-005	-1.16E-003
34	6.70E-005	-1.16E-003
35	5.64E-005	-1.17E-003
36	2.13E-005	-1.17E-003
37	-1.31E-005	-1.17E-003
38	-1.17E-005	-1.21E-003
39	-7.91E-006	-1.28E-003
40	-4.10E-006	-1.30E-003
41	-2.88E-007	-1.27E-003
42	3.53E-006	-1.21E-003
43	4.87E-006	-1.17E-003
44	-2.83E-005	-1.17E-003
45	-6.16E-005	-1.17E-003
46	-7.05E-005	-1.16E-003
47	-5.67E-005	-1.16E-003
48	-2.19E-005	-1.16E-003
49	-1.18E-005	-1.01E-003

50	-1.35E-005	-1.03E-003
51	-1.84E-005	-1.05E-003
52	-2.32E-005	-1.08E-003
53	-2.80E-005	-1.12E-003
54	-3.28E-005	-1.09E-003
55	-3.45E-005	-1.00E-003
56	-1.48E-004	-1.00E-003
57	-3.98E-004	-1.01E-003
58	-5.29E-004	-1.01E-003
59	-4.04E-004	-1.02E-003
60	-1.56E-004	-1.02E-003
61	-3.23E-005	-1.03E-003
62	-3.09E-005	-9.21E-004
63	-2.71E-005	-8.64E-004
64	-2.33E-005	-8.93E-004
65	-1.96E-005	-9.38E-004
66	-1.58E-005	-9.80E-004
67	-1.44E-005	-1.01E-003
68	2.03E-005	-1.01E-003
69	5.65E-005	-1.01E-003
70	6.79E-005	-1.01E-003
71	5.55E-005	-1.01E-003
72	1.98E-005	-1.01E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	-3.06E-004
2	-2.39E-004
3	6.98E-005
4	8.89E-005
5	2.41E-005
6	7.46E-005
7	1.01E-004
8	1.22E-004
9	6.61E-005
10	5.91E-006
11	-5.60E-005
12	-1.22E-004
13	-1.16E-004
14	-1.04E-004
15	-8.70E-005
16	-1.01E-004
17	-2.01E-005
18	2.84E-004
19	3.40E-004
20	3.83E-004
21	3.55E-004
22	4.08E-007
23	-3.57E-004
24	-3.59E-004
25	1.31E-004
26	1.61E-004
27	1.81E-004
28	6.66E-006
29	-1.72E-004

30	-1.66E-004
31	-1.38E-004
32	-1.07E-004
33	-5.76E-005
34	-3.69E-006
35	5.78E-005
36	1.16E-004
37	1.36E-004
38	1.52E-004
39	1.32E-004
40	-8.47E-006
41	-1.43E-004
42	-1.46E-004
43	-1.27E-004
44	-1.14E-004
45	-5.21E-005
46	6.89E-006
47	6.14E-005
48	1.12E-004
49	-1.09E-004
50	-8.48E-005
51	-4.43E-005
52	-1.04E-004
53	-6.31E-005
54	2.85E-004
55	3.58E-004
56	4.75E-004
57	5.95E-004
58	6.43E-006
59	-5.76E-004
60	-5.03E-004
61	-4.06E-004
62	-3.43E-004
63	4.85E-006
64	1.13E-004
65	1.07E-004
66	1.14E-004
67	1.25E-004
68	1.24E-004
69	5.84E-005
70	-1.42E-006
71	-6.04E-005
72	-1.17E-004

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

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-2.30E-003	-7.03E-003
2	-2.30E-003	-6.24E-003
3	-2.31E-003	-5.19E-003
4	-2.31E-003	-4.74E-003
5	-2.31E-003	-5.06E-003
6	-2.32E-003	-5.93E-003
7	-2.32E-003	-6.58E-003
8	-1.72E-003	-6.59E-003
9	-1.45E-003	-6.62E-003
10	-1.91E-003	-6.65E-003
11	-2.62E-003	-6.68E-003
12	-3.14E-003	-6.70E-003
13	-3.48E-003	-6.71E-003
14	-3.48E-003	-7.12E-003
15	-3.48E-003	-7.87E-003
16	-3.48E-003	-8.38E-003
17	-3.47E-003	-8.26E-003
18	-3.47E-003	-7.61E-003
19	-3.47E-003	-7.10E-003
20	-3.95E-003	-7.10E-003
21	-4.36E-003	-7.08E-003
22	-4.32E-003	-7.07E-003
23	-3.91E-003	-7.05E-003
24	-3.07E-003	-7.04E-003
25	8.22E-006	-8.04E-003
26	6.99E-006	-7.08E-003
27	3.49E-006	-5.74E-003
28	1.29E-009	-4.87E-003
29	-3.49E-006	-4.67E-003
30	-6.98E-006	-4.91E-003
31	-8.22E-006	-5.10E-003
32	1.22E-004	-5.11E-003
33	-2.81E-004	-5.13E-003
34	-1.30E-003	-5.16E-003
35	-2.35E-003	-5.18E-003
36	-3.04E-003	-5.21E-003
37	-3.47E-003	-5.21E-003
38	-3.47E-003	-5.70E-003
39	-3.46E-003	-6.59E-003
40	-3.46E-003	-7.32E-003
41	-3.46E-003	-7.66E-003
42	-3.46E-003	-7.86E-003
43	-3.46E-003	-8.11E-003
44	-3.16E-003	-8.11E-003
45	-2.74E-003	-8.09E-003
46	-2.40E-003	-8.08E-003
47	-1.88E-003	-8.06E-003
48	-9.08E-004	-8.04E-003
49	2.36E-003	-9.62E-003

50	2.36E-003	-8.21E-003
51	2.36E-003	-6.22E-003
52	2.35E-003	-4.77E-003
53	2.35E-003	-4.07E-003
54	2.35E-003	-3.91E-003
55	2.35E-003	-3.87E-003
56	2.28E-003	-3.88E-003
57	1.81E-003	-3.90E-003
58	8.80E-004	-3.92E-003
59	-3.92E-004	-3.94E-003
60	-2.08E-003	-3.96E-003
61	-3.45E-003	-3.97E-003
62	-3.45E-003	-5.37E-003
63	-3.45E-003	-7.24E-003
64	-3.45E-003	-8.49E-003
65	-3.45E-003	-9.06E-003
66	-3.44E-003	-9.37E-003
67	-3.44E-003	-9.70E-003
68	-3.05E-003	-9.70E-003
69	-2.36E-003	-9.68E-003
70	-1.59E-003	-9.66E-003
71	-5.67E-004	-9.64E-003
72	9.98E-004	-9.63E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	2.86E-003
2	2.93E-003
3	2.03E-003
4	1.54E-004
5	-1.67E-003
6	-2.40E-003
7	-2.32E-003
8	-1.98E-003
9	4.34E-004
10	1.65E-003
11	1.70E-003
12	1.11E-003
13	1.37E-003
14	1.59E-003
15	1.84E-003
16	5.34E-004
17	-1.11E-003
18	-1.88E-003
19	-1.81E-003
20	-1.66E-003
21	-4.28E-004
22	5.61E-004
23	1.53E-003
24	2.71E-003
25	3.41E-003
26	3.52E-003
27	2.94E-003
28	1.32E-003
29	-2.33E-004

30	-7.11E-004
31	-6.13E-004
32	-2.65E-004
33	2.03E-003
34	2.84E-003
35	2.15E-003
36	1.49E-003
37	1.69E-003
38	1.89E-003
39	2.22E-003
40	1.34E-003
41	4.71E-004
42	8.14E-004
43	1.02E-003
44	1.15E-003
45	8.58E-004
46	9.70E-004
47	1.75E-003
48	3.21E-003
49	5.05E-003
50	5.17E-003
51	4.48E-003
52	2.68E-003
53	9.19E-004
54	1.18E-004
55	1.65E-004
56	3.86E-004
57	1.83E-003
58	2.76E-003
59	3.63E-003
60	4.89E-003
61	5.08E-003
62	5.10E-003
63	4.03E-003
64	2.19E-003
65	8.13E-004
66	1.10E-003
67	1.33E-003
68	1.50E-003
69	1.84E-003
70	2.12E-003
71	3.12E-003
72	4.82E-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	-1.42E-003	-2.64E-003
2	-1.42E-003	-2.51E-003
3	-1.43E-003	-2.36E-003
4	-1.43E-003	-2.46E-003
5	-1.43E-003	-2.93E-003
6	-1.43E-003	-3.64E-003
7	-1.43E-003	-4.15E-003
8	-9.42E-004	-4.16E-003
9	-4.31E-004	-4.16E-003
10	-1.86E-004	-4.17E-003
11	-8.00E-005	-4.18E-003
12	3.59E-006	-4.19E-003
13	4.21E-005	-4.19E-003
14	4.24E-005	-4.18E-003
15	4.32E-005	-4.27E-003
16	4.41E-005	-4.24E-003
17	4.49E-005	-3.86E-003
18	4.57E-005	-3.18E-003
19	4.60E-005	-2.67E-003
20	-4.50E-004	-2.67E-003
21	-1.03E-003	-2.66E-003
22	-1.40E-003	-2.65E-003
23	-1.58E-003	-2.65E-003
24	-1.54E-003	-2.64E-003
25	4.00E-006	-3.28E-003
26	3.40E-006	-3.03E-003
27	1.70E-006	-2.67E-003
28	-1.29E-010	-2.52E-003
29	-1.70E-006	-2.68E-003
30	-3.40E-006	-3.04E-003
31	-4.00E-006	-3.29E-003
32	2.29E-004	-3.30E-003
33	3.86E-004	-3.30E-003
34	3.26E-004	-3.31E-003
35	1.95E-004	-3.32E-003
36	1.07E-004	-3.32E-003
37	5.21E-005	-3.33E-003
38	5.23E-005	-3.40E-003
39	5.29E-005	-3.61E-003
40	5.35E-005	-3.72E-003
41	5.41E-005	-3.60E-003
42	5.48E-005	-3.39E-003
43	5.50E-005	-3.31E-003
44	-3.52E-006	-3.31E-003
45	-1.13E-004	-3.30E-003
46	-2.77E-004	-3.29E-003
47	-3.62E-004	-3.29E-003
48	-2.21E-004	-3.28E-003
49	1.59E-003	-4.16E-003

50	1.59E-003	-3.65E-003
51	1.59E-003	-2.93E-003
52	1.59E-003	-2.46E-003
53	1.59E-003	-2.35E-003
54	1.58E-003	-2.50E-003
55	1.58E-003	-2.63E-003
56	1.70E-003	-2.63E-003
57	1.73E-003	-2.64E-003
58	1.54E-003	-2.65E-003
59	1.16E-003	-2.65E-003
60	5.65E-004	-2.66E-003
61	6.12E-005	-2.66E-003
62	6.15E-005	-3.17E-003
63	6.23E-005	-3.87E-003
64	6.31E-005	-4.25E-003
65	6.40E-005	-4.29E-003
66	6.48E-005	-4.19E-003
67	6.51E-005	-4.20E-003
68	9.90E-005	-4.20E-003
69	1.93E-004	-4.19E-003
70	3.20E-004	-4.18E-003
71	5.80E-004	-4.17E-003
72	1.10E-003	-4.17E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	4.63E-004
2	4.97E-004
3	1.41E-004
4	-7.12E-004
5	-1.57E-003
6	-1.88E-003
7	-1.82E-003
8	-1.71E-003
9	-8.92E-004
10	-3.86E-004
11	-1.96E-004
12	-1.82E-004
13	-9.50E-005
14	3.32E-005
15	2.24E-004
16	-4.83E-004
17	-1.41E-003
18	-1.86E-003
19	-1.83E-003
20	-1.76E-003
21	-1.17E-003
22	-6.78E-004
23	-1.91E-004
24	3.89E-004
25	8.59E-004
26	9.18E-004
27	7.26E-004
28	-4.34E-006
29	-7.39E-004

30	-9.45E-004
31	-8.87E-004
32	-7.85E-004
33	-6.15E-005
34	3.00E-004
35	2.98E-004
36	1.75E-004
37	2.35E-004
38	3.44E-004
39	5.06E-004
40	-1.13E-005
41	-5.27E-004
42	-3.57E-004
43	-2.48E-004
44	-1.86E-004
45	-3.91E-004
46	-3.72E-004
47	1.03E-005
48	7.55E-004
49	1.83E-003
50	1.89E-003
51	1.58E-003
52	7.17E-004
53	-1.34E-004
54	-4.83E-004
55	-4.48E-004
56	-3.73E-004
57	2.14E-004
58	7.05E-004
59	1.20E-003
60	1.79E-003
61	1.86E-003
62	1.89E-003
63	1.43E-003
64	4.94E-004
65	-2.25E-004
66	-4.77E-005
67	7.89E-005
68	1.65E-004
69	2.59E-004
70	4.31E-004
71	9.20E-004
72	1.73E-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	1.73E-005	-1.08E-003
2	1.62E-005	-1.10E-003
3	1.30E-005	-1.07E-003
4	9.75E-006	-1.04E-003
5	6.53E-006	-1.05E-003
6	3.30E-006	-1.08E-003
7	2.16E-006	-1.08E-003
8	-3.38E-006	-1.08E-003
9	-1.59E-005	-1.08E-003
10	-2.03E-005	-1.09E-003
11	-1.61E-005	-1.09E-003
12	-4.06E-006	-1.09E-003
13	5.07E-006	-1.09E-003
14	5.89E-006	-1.08E-003
15	8.22E-006	-1.09E-003
16	1.05E-005	-1.09E-003
17	1.29E-005	-1.07E-003
18	1.52E-005	-1.07E-003
19	1.60E-005	-1.09E-003
20	5.16E-005	-1.09E-003
21	1.25E-004	-1.09E-003
22	1.61E-004	-1.09E-003
23	1.18E-004	-1.09E-003
24	4.48E-005	-1.08E-003
25	7.58E-006	-1.13E-003
26	6.44E-006	-1.11E-003
27	3.22E-006	-1.05E-003
28	2.51E-011	-1.02E-003
29	-3.22E-006	-1.05E-003
30	-6.44E-006	-1.11E-003
31	-7.58E-006	-1.13E-003
32	5.99E-006	-1.13E-003
33	1.43E-005	-1.13E-003
34	1.78E-005	-1.13E-003
35	1.53E-005	-1.13E-003
36	5.54E-006	-1.14E-003
37	-5.50E-006	-1.14E-003
38	-4.67E-006	-1.15E-003
39	-2.34E-006	-1.19E-003
40	-3.56E-009	-1.21E-003
41	2.33E-006	-1.19E-003
42	4.66E-006	-1.15E-003
43	5.49E-006	-1.14E-003
44	-5.57E-006	-1.14E-003
45	-1.46E-005	-1.13E-003
46	-1.69E-005	-1.13E-003
47	-1.40E-005	-1.13E-003
48	-6.00E-006	-1.13E-003
49	-2.18E-006	-1.08E-003

50	-3.32E-006	-1.08E-003
51	-6.54E-006	-1.05E-003
52	-9.77E-006	-1.04E-003
53	-1.30E-005	-1.07E-003
54	-1.62E-005	-1.10E-003
55	-1.74E-005	-1.08E-003
56	-4.48E-005	-1.08E-003
57	-1.18E-004	-1.09E-003
58	-1.61E-004	-1.09E-003
59	-1.25E-004	-1.09E-003
60	-5.16E-005	-1.09E-003
61	-1.60E-005	-1.09E-003
62	-1.52E-005	-1.07E-003
63	-1.29E-005	-1.07E-003
64	-1.06E-005	-1.09E-003
65	-8.23E-006	-1.09E-003
66	-5.90E-006	-1.08E-003
67	-5.08E-006	-1.09E-003
68	4.09E-006	-1.09E-003
69	1.54E-005	-1.09E-003
70	1.94E-005	-1.09E-003
71	1.57E-005	-1.08E-003
72	3.39E-006	-1.08E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	-8.12E-005
2	-3.53E-005
3	1.13E-004
4	3.38E-005
5	-7.65E-005
6	-2.22E-005
7	8.82E-006
8	3.00E-005
9	2.23E-005
10	-8.00E-008
11	-2.09E-005
12	-3.68E-005
13	-2.76E-005
14	-8.78E-006
15	2.40E-005
16	-3.49E-005
17	-5.83E-005
18	8.06E-005
19	1.16E-004
20	1.46E-004
21	1.70E-004
22	-8.73E-006
23	-1.84E-004
24	-1.23E-004
25	6.19E-005
26	9.47E-005
27	1.43E-004
28	-2.85E-008
29	-1.44E-004

30	-9.46E-005
31	-6.19E-005
32	-3.75E-005
33	-1.44E-005
34	-2.24E-006
35	1.61E-005
36	3.42E-005
37	4.72E-005
38	6.84E-005
39	9.77E-005
40	2.19E-008
41	-9.77E-005
42	-6.85E-005
43	-4.73E-005
44	-3.43E-005
45	-1.34E-005
46	1.18E-006
47	1.28E-005
48	3.75E-005
49	-8.91E-006
50	2.21E-005
51	7.65E-005
52	-3.38E-005
53	-1.13E-004
54	3.54E-005
55	8.12E-005
56	1.23E-004
57	1.84E-004
58	8.73E-006
59	-1.70E-004
60	-1.46E-004
61	-1.16E-004
62	-8.07E-005
63	5.82E-005
64	3.48E-005
65	-2.39E-005
66	8.90E-006
67	2.77E-005
68	3.69E-005
69	1.82E-005
70	1.14E-006
71	-2.07E-005
72	-3.01E-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	-8.78E-004	-2.83E-003
2	-8.79E-004	-2.66E-003
3	-8.81E-004	-2.45E-003
4	-8.83E-004	-2.49E-003
5	-8.85E-004	-2.86E-003
6	-8.87E-004	-3.45E-003
7	-8.87E-004	-3.86E-003
8	-5.05E-004	-3.86E-003
9	-1.47E-004	-3.87E-003
10	-3.71E-005	-3.88E-003
11	-3.78E-005	-3.88E-003
12	-2.42E-005	-3.89E-003
13	-2.30E-005	-3.89E-003
14	-2.24E-005	-3.92E-003
15	-2.08E-005	-4.07E-003
16	-1.91E-005	-4.10E-003
17	-1.74E-005	-3.81E-003
18	-1.57E-005	-3.26E-003
19	-1.51E-005	-2.86E-003
20	-4.02E-004	-2.85E-003
21	-8.23E-004	-2.85E-003
22	-1.05E-003	-2.84E-003
23	-1.13E-003	-2.84E-003
24	-1.03E-003	-2.83E-003
25	4.99E-006	-3.25E-003
26	4.24E-006	-3.03E-003
27	2.12E-006	-2.70E-003
28	4.43E-011	-2.55E-003
29	-2.12E-006	-2.69E-003
30	-4.24E-006	-3.01E-003
31	-4.99E-006	-3.22E-003
32	1.84E-004	-3.22E-003
33	2.75E-004	-3.23E-003
34	1.70E-004	-3.24E-003
35	4.10E-005	-3.24E-003
36	4.48E-006	-3.25E-003
37	-1.85E-005	-3.25E-003
38	-1.80E-005	-3.30E-003
39	-1.64E-005	-3.48E-003
40	-1.48E-005	-3.58E-003
41	-1.32E-005	-3.49E-003
42	-1.16E-005	-3.32E-003
43	-1.11E-005	-3.28E-003
44	-3.05E-005	-3.28E-003
45	-8.77E-005	-3.27E-003
46	-2.25E-004	-3.26E-003
47	-3.10E-004	-3.26E-003
48	-1.95E-004	-3.25E-003
49	8.43E-004	-3.84E-003

50	8.43E-004	-3.44E-003
51	8.41E-004	-2.86E-003
52	8.39E-004	-2.50E-003
53	8.37E-004	-2.46E-003
54	8.35E-004	-2.67E-003
55	8.34E-004	-2.83E-003
56	9.87E-004	-2.83E-003
57	1.08E-003	-2.84E-003
58	1.01E-003	-2.85E-003
59	7.83E-004	-2.85E-003
60	3.68E-004	-2.86E-003
61	-1.41E-005	-2.86E-003
62	-1.35E-005	-3.26E-003
63	-1.18E-005	-3.80E-003
64	-1.02E-005	-4.08E-003
65	-8.47E-006	-4.05E-003
66	-6.79E-006	-3.90E-003
67	-6.19E-006	-3.87E-003
68	-3.77E-006	-3.87E-003
69	3.64E-005	-3.86E-003
70	4.86E-005	-3.85E-003
71	1.39E-004	-3.85E-003
72	4.73E-004	-3.84E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	5.89E-004
2	6.26E-004
3	2.93E-004
4	-5.18E-004
5	-1.30E-003
6	-1.50E-003
7	-1.44E-003
8	-1.32E-003
9	-5.27E-004
10	-8.00E-005
11	2.71E-005
12	-4.47E-005
13	3.97E-005
14	1.67E-004
15	3.69E-004
16	-2.93E-004
17	-1.14E-003
18	-1.48E-003
19	-1.44E-003
20	-1.36E-003
21	-7.86E-004
22	-3.78E-004
23	4.45E-006
24	5.16E-004
25	7.69E-004
26	8.33E-004
27	6.85E-004
28	4.72E-006
29	-6.69E-004

30	-7.96E-004
31	-7.29E-004
32	-6.22E-004
33	9.05E-005
34	3.65E-004
35	2.04E-004
36	5.44E-005
37	1.20E-004
38	2.36E-004
39	4.70E-004
40	1.62E-005
41	-4.42E-004
42	-2.21E-004
43	-1.07E-004
44	-4.20E-005
45	-2.91E-004
46	-3.38E-004
47	-2.31E-005
48	6.65E-004
49	1.39E-003
50	1.46E-003
51	1.28E-003
52	5.13E-004
53	-2.91E-004
54	-6.22E-004
55	-5.85E-004
56	-5.13E-004
57	-6.05E-006
58	3.71E-004
59	7.74E-004
60	1.34E-003
61	1.42E-003
62	1.46E-003
63	1.12E-003
64	2.76E-004
65	-3.78E-004
66	-1.64E-004
67	-3.53E-005
68	4.97E-005
69	7.10E-005
70	5.92E-005
71	4.61E-004
72	1.28E-003

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

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-1.24E-004	-1.11E-003
2	-1.24E-004	-1.07E-003
3	-1.26E-004	-1.00E-003
4	-1.27E-004	-9.90E-004
5	-1.29E-004	-1.06E-003
6	-1.30E-004	-1.18E-003
7	-1.31E-004	-1.24E-003
8	-7.04E-005	-1.25E-003
9	-2.28E-005	-1.25E-003
10	-7.43E-006	-1.25E-003
11	-5.46E-006	-1.25E-003
12	-2.00E-006	-1.25E-003
13	-2.09E-006	-1.25E-003
14	-1.83E-006	-1.26E-003
15	-1.09E-006	-1.29E-003
16	-3.49E-007	-1.30E-003
17	3.91E-007	-1.26E-003
18	1.13E-006	-1.17E-003
19	1.39E-006	-1.12E-003
20	-5.10E-005	-1.12E-003
21	-1.02E-004	-1.11E-003
22	-1.33E-004	-1.11E-003
23	-1.59E-004	-1.11E-003
24	-1.54E-004	-1.11E-003
25	3.73E-006	-1.16E-003
26	3.17E-006	-1.12E-003
27	1.59E-006	-1.04E-003
28	2.05E-011	-9.99E-004
29	-1.59E-006	-1.04E-003
30	-3.17E-006	-1.12E-003
31	-3.73E-006	-1.16E-003
32	2.94E-005	-1.16E-003
33	3.92E-005	-1.16E-003
34	2.35E-005	-1.16E-003
35	5.82E-006	-1.16E-003
36	5.69E-007	-1.17E-003
37	-3.36E-006	-1.17E-003
38	-3.10E-006	-1.17E-003
39	-2.38E-006	-1.21E-003
40	-1.66E-006	-1.23E-003
41	-9.36E-007	-1.21E-003
42	-2.14E-007	-1.18E-003
43	4.15E-008	-1.17E-003
44	-3.48E-006	-1.17E-003
45	-1.10E-005	-1.17E-003
46	-2.97E-005	-1.16E-003
47	-4.31E-005	-1.16E-003
48	-3.07E-005	-1.16E-003
49	1.26E-004	-1.24E-003

50	1.26E-004	-1.17E-003
51	1.24E-004	-1.06E-003
52	1.22E-004	-9.90E-004
53	1.21E-004	-1.01E-003
54	1.19E-004	-1.07E-003
55	1.19E-004	-1.11E-003
56	1.49E-004	-1.11E-003
57	1.54E-004	-1.11E-003
58	1.28E-004	-1.11E-003
59	9.72E-005	-1.11E-003
60	4.72E-005	-1.12E-003
61	-4.67E-006	-1.12E-003
62	-4.40E-006	-1.17E-003
63	-3.66E-006	-1.25E-003
64	-2.92E-006	-1.30E-003
65	-2.18E-006	-1.29E-003
66	-1.44E-006	-1.26E-003
67	-1.18E-006	-1.25E-003
68	-1.13E-006	-1.25E-003
69	5.30E-006	-1.25E-003
70	8.72E-006	-1.25E-003
71	2.19E-005	-1.25E-003
72	6.68E-005	-1.24E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.25E-004
2	1.49E-004
3	1.30E-004
4	-7.03E-005
5	-2.65E-004
6	-2.65E-004
7	-2.36E-004
8	-2.00E-004
9	-6.88E-005
10	-1.48E-005
11	-1.84E-006
12	-7.30E-006
13	8.93E-006
14	3.32E-005
15	7.40E-005
16	-3.78E-005
17	-1.75E-004
18	-2.11E-004
19	-1.99E-004
20	-1.80E-004
21	-9.07E-005
22	-7.26E-005
23	-4.52E-005
24	9.44E-005
25	1.40E-004
26	1.68E-004
27	1.79E-004
28	5.29E-007
29	-1.77E-004

30	-1.64E-004
31	-1.36E-004
32	-1.01E-004
33	1.93E-005
34	5.06E-005
35	2.87E-005
36	8.34E-006
37	2.18E-005
38	4.43E-005
39	8.68E-005
40	1.81E-006
41	-8.36E-005
42	-4.26E-005
43	-2.03E-005
44	-6.95E-006
45	-3.84E-005
46	-4.75E-005
47	-1.17E-005
48	1.06E-004
49	2.31E-004
50	2.60E-004
51	2.63E-004
52	6.97E-005
53	-1.29E-004
54	-1.49E-004
55	-1.25E-004
56	-9.40E-005
57	4.50E-005
58	7.18E-005
59	8.94E-005
60	1.78E-004
61	1.96E-004
62	2.09E-004
63	1.73E-004
64	3.60E-005
65	-7.50E-005
66	-3.29E-005
67	-8.43E-006
68	7.87E-006
69	1.28E-005
70	1.25E-005
71	6.14E-005
72	1.95E-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	-6.73E-004	-2.17E-003
2	-6.74E-004	-2.04E-003
3	-6.75E-004	-1.88E-003
4	-6.77E-004	-1.91E-003
5	-6.78E-004	-2.20E-003
6	-6.80E-004	-2.65E-003
7	-6.80E-004	-2.95E-003
8	-3.87E-004	-2.96E-003
9	-1.11E-004	-2.96E-003
10	-2.56E-005	-2.97E-003
11	-2.47E-005	-2.97E-003
12	-1.29E-005	-2.98E-003
13	-1.04E-005	-2.98E-003
14	-1.01E-005	-3.00E-003
15	-9.21E-006	-3.10E-003
16	-8.35E-006	-3.12E-003
17	-7.50E-006	-2.90E-003
18	-6.65E-006	-2.49E-003
19	-6.35E-006	-2.19E-003
20	-3.00E-004	-2.19E-003
21	-6.26E-004	-2.18E-003
22	-8.08E-004	-2.18E-003
23	-8.68E-004	-2.18E-003
24	-7.92E-004	-2.17E-003
25	3.63E-006	-2.49E-003
26	3.08E-006	-2.32E-003
27	1.54E-006	-2.07E-003
28	-7.02E-011	-1.96E-003
29	-1.54E-006	-2.06E-003
30	-3.08E-006	-2.31E-003
31	-3.63E-006	-2.47E-003
32	1.42E-004	-2.47E-003
33	2.16E-004	-2.48E-003
34	1.38E-004	-2.48E-003
35	4.14E-005	-2.49E-003
36	1.24E-005	-2.49E-003
37	-5.27E-006	-2.49E-003
38	-5.00E-006	-2.53E-003
39	-4.23E-006	-2.65E-003
40	-3.46E-006	-2.73E-003
41	-2.69E-006	-2.66E-003
42	-1.93E-006	-2.54E-003
43	-1.65E-006	-2.51E-003
44	-1.72E-005	-2.51E-003
45	-6.33E-005	-2.50E-003
46	-1.71E-004	-2.50E-003
47	-2.37E-004	-2.49E-003
48	-1.49E-004	-2.49E-003
49	6.70E-004	-2.94E-003

50	6.69E-004	-2.64E-003
51	6.68E-004	-2.20E-003
52	6.67E-004	-1.91E-003
53	6.65E-004	-1.89E-003
54	6.64E-004	-2.04E-003
55	6.63E-004	-2.17E-003
56	7.81E-004	-2.17E-003
57	8.55E-004	-2.18E-003
58	7.95E-004	-2.18E-003
59	6.14E-004	-2.19E-003
60	2.91E-004	-2.19E-003
61	-2.86E-007	-2.19E-003
62	1.43E-008	-2.49E-003
63	8.64E-007	-2.90E-003
64	1.71E-006	-3.11E-003
65	2.56E-006	-3.09E-003
66	3.41E-006	-2.98E-003
67	3.72E-006	-2.97E-003
68	6.59E-006	-2.97E-003
69	3.80E-005	-2.96E-003
70	5.06E-005	-2.95E-003
71	1.25E-004	-2.95E-003
72	3.85E-004	-2.94E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	4.53E-004
2	4.80E-004
3	2.23E-004
4	-3.95E-004
5	-9.91E-004
6	-1.15E-003
7	-1.10E-003
8	-1.02E-003
9	-4.08E-004
10	-6.52E-005
11	1.74E-005
12	-3.86E-005
13	2.20E-005
14	1.11E-004
15	2.51E-004
16	-2.23E-004
17	-8.36E-004
18	-1.11E-003
19	-1.09E-003
20	-1.03E-003
21	-6.19E-004
22	-3.00E-004
23	5.46E-006
24	3.99E-004
25	5.86E-004
26	6.34E-004
27	5.19E-004
28	2.71E-006
29	-5.10E-004

30	-6.12E-004
31	-5.62E-004
32	-4.82E-004
33	5.97E-005
34	2.73E-004
35	1.57E-004
36	4.38E-005
37	8.99E-005
38	1.71E-004
39	3.29E-004
40	9.74E-006
41	-3.12E-004
42	-1.62E-004
43	-8.21E-005
44	-3.67E-005
45	-2.28E-004
46	-2.63E-004
47	-1.96E-005
48	5.08E-004
49	1.07E-003
50	1.12E-003
51	9.78E-004
52	3.92E-004
53	-2.20E-004
54	-4.76E-004
55	-4.49E-004
56	-3.95E-004
57	-3.64E-006
58	2.99E-004
59	6.15E-004
60	1.03E-003
61	1.08E-003
62	1.10E-003
63	8.25E-004
64	2.14E-004
65	-2.57E-004
66	-1.11E-004
67	-2.09E-005
68	3.99E-005
69	5.85E-005
70	5.64E-005
71	3.66E-004
72	9.86E-004

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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	7.72E-006	-1.10E-003
2	6.71E-006	-1.10E-003
3	3.84E-006	-1.06E-003
4	9.76E-007	-1.03E-003
5	-1.89E-006	-1.05E-003
6	-4.76E-006	-1.09E-003
7	-5.77E-006	-1.10E-003
8	-3.42E-006	-1.10E-003
9	-1.05E-005	-1.11E-003
10	-1.28E-005	-1.11E-003
11	-9.30E-006	-1.11E-003
12	-1.21E-006	-1.11E-003
13	3.58E-006	-1.11E-003
14	4.25E-006	-1.11E-003
15	6.15E-006	-1.13E-003
16	8.05E-006	-1.13E-003
17	9.96E-006	-1.11E-003
18	1.19E-005	-1.10E-003
19	1.25E-005	-1.11E-003
20	3.03E-005	-1.11E-003
21	7.92E-005	-1.10E-003
22	1.05E-004	-1.10E-003
23	7.18E-005	-1.10E-003
24	2.01E-005	-1.10E-003
25	6.74E-006	-1.12E-003
26	5.73E-006	-1.10E-003
27	2.86E-006	-1.05E-003
28	2.36E-011	-1.02E-003
29	-2.86E-006	-1.05E-003
30	-5.73E-006	-1.10E-003
31	-6.74E-006	-1.12E-003
32	5.49E-006	-1.13E-003
33	9.00E-006	-1.13E-003
34	1.02E-005	-1.13E-003
35	8.44E-006	-1.13E-003
36	2.80E-006	-1.13E-003
37	-4.48E-006	-1.13E-003
38	-3.80E-006	-1.15E-003
39	-1.90E-006	-1.18E-003
40	7.87E-009	-1.20E-003
41	1.91E-006	-1.18E-003
42	3.82E-006	-1.15E-003
43	4.49E-006	-1.13E-003
44	-2.82E-006	-1.13E-003
45	-7.70E-006	-1.13E-003
46	-9.20E-006	-1.13E-003
47	-8.70E-006	-1.13E-003
48	-5.49E-006	-1.13E-003
49	5.79E-006	-1.10E-003

50	4.78E-006	-1.09E-003
51	1.91E-006	-1.05E-003
52	-9.58E-007	-1.03E-003
53	-3.83E-006	-1.06E-003
54	-6.69E-006	-1.10E-003
55	-7.71E-006	-1.10E-003
56	-2.01E-005	-1.10E-003
57	-7.18E-005	-1.10E-003
58	-1.05E-004	-1.10E-003
59	-7.92E-005	-1.10E-003
60	-3.03E-005	-1.11E-003
61	-1.25E-005	-1.11E-003
62	-1.18E-005	-1.10E-003
63	-9.95E-006	-1.11E-003
64	-8.04E-006	-1.13E-003
65	-6.14E-006	-1.13E-003
66	-4.24E-006	-1.11E-003
67	-3.57E-006	-1.11E-003
68	1.26E-006	-1.11E-003
69	8.60E-006	-1.11E-003
70	1.18E-005	-1.11E-003
71	1.02E-005	-1.11E-003
72	3.45E-006	-1.10E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	-2.77E-005
2	1.28E-005
3	1.21E-004
4	1.60E-005
5	-1.07E-004
6	-5.32E-005
7	-2.12E-005
8	4.12E-006
9	1.36E-005
10	-1.81E-006
11	-1.51E-005
12	-2.21E-005
13	-1.10E-005
14	9.55E-006
15	4.72E-005
16	-2.27E-005
17	-7.31E-005
18	2.30E-005
19	5.24E-005
20	7.99E-005
21	1.22E-004
22	-9.22E-006
23	-1.40E-004
24	-6.61E-005
25	5.79E-005
26	9.08E-005
27	1.42E-004
28	-3.44E-008
29	-1.42E-004

30	-9.08E-005
31	-5.79E-005
32	-3.07E-005
33	-4.53E-006
34	-3.24E-007
35	9.98E-006
36	2.05E-005
37	3.37E-005
38	5.56E-005
39	9.13E-005
40	3.25E-009
41	-9.13E-005
42	-5.56E-005
43	-3.38E-005
44	-2.06E-005
45	-7.17E-006
46	-8.06E-007
47	2.85E-006
48	3.07E-005
49	2.12E-005
50	5.32E-005
51	1.07E-004
52	-1.60E-005
53	-1.21E-004
54	-1.27E-005
55	2.77E-005
56	6.61E-005
57	1.40E-004
58	9.22E-006
59	-1.22E-004
60	-8.00E-005
61	-5.24E-005
62	-2.30E-005
63	7.31E-005
64	2.27E-005
65	-4.71E-005
66	-9.43E-006
67	1.11E-005
68	2.22E-005
69	1.24E-005
70	2.94E-006
71	-1.19E-005
72	-4.17E-006

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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	-5.95E-004	-2.18E-003
2	-5.96E-004	-2.06E-003
3	-5.98E-004	-1.91E-003
4	-5.99E-004	-1.93E-003
5	-6.01E-004	-2.19E-003
6	-6.03E-004	-2.60E-003
7	-6.04E-004	-2.88E-003
8	-3.42E-004	-2.88E-003
9	-1.00E-004	-2.89E-003
10	-2.60E-005	-2.89E-003
11	-2.57E-005	-2.90E-003
12	-1.59E-005	-2.90E-003
13	-1.52E-005	-2.90E-003
14	-1.47E-005	-2.92E-003
15	-1.34E-005	-3.03E-003
16	-1.21E-005	-3.05E-003
17	-1.07E-005	-2.85E-003
18	-9.39E-006	-2.48E-003
19	-8.92E-006	-2.20E-003
20	-2.70E-004	-2.20E-003
21	-5.53E-004	-2.20E-003
22	-7.08E-004	-2.19E-003
23	-7.65E-004	-2.19E-003
24	-7.03E-004	-2.18E-003
25	4.52E-006	-2.46E-003
26	3.84E-006	-2.31E-003
27	1.92E-006	-2.07E-003
28	3.54E-011	-1.97E-003
29	-1.92E-006	-2.07E-003
30	-3.84E-006	-2.30E-003
31	-4.52E-006	-2.45E-003
32	1.26E-004	-2.45E-003
33	1.87E-004	-2.45E-003
34	1.15E-004	-2.46E-003
35	2.78E-005	-2.46E-003
36	3.01E-006	-2.47E-003
37	-1.28E-005	-2.47E-003
38	-1.24E-005	-2.50E-003
39	-1.11E-005	-2.63E-003
40	-9.88E-006	-2.70E-003
41	-8.62E-006	-2.63E-003
42	-7.36E-006	-2.52E-003
43	-6.91E-006	-2.49E-003
44	-2.03E-005	-2.49E-003
45	-5.89E-005	-2.48E-003
46	-1.52E-004	-2.48E-003
47	-2.10E-004	-2.47E-003
48	-1.33E-004	-2.47E-003
49	5.74E-004	-2.86E-003

50	5.74E-004	-2.59E-003
51	5.72E-004	-2.19E-003
52	5.70E-004	-1.93E-003
53	5.68E-004	-1.91E-003
54	5.66E-004	-2.07E-003
55	5.66E-004	-2.18E-003
56	6.73E-004	-2.19E-003
57	7.35E-004	-2.19E-003
58	6.79E-004	-2.20E-003
59	5.26E-004	-2.20E-003
60	2.47E-004	-2.20E-003
61	-1.06E-005	-2.21E-003
62	-1.01E-005	-2.47E-003
63	-8.78E-006	-2.85E-003
64	-7.45E-006	-3.04E-003
65	-6.11E-006	-3.01E-003
66	-4.78E-006	-2.91E-003
67	-4.31E-006	-2.89E-003
68	-2.78E-006	-2.89E-003
69	2.47E-005	-2.88E-003
70	3.37E-005	-2.88E-003
71	9.50E-005	-2.87E-003
72	3.21E-004	-2.87E-003

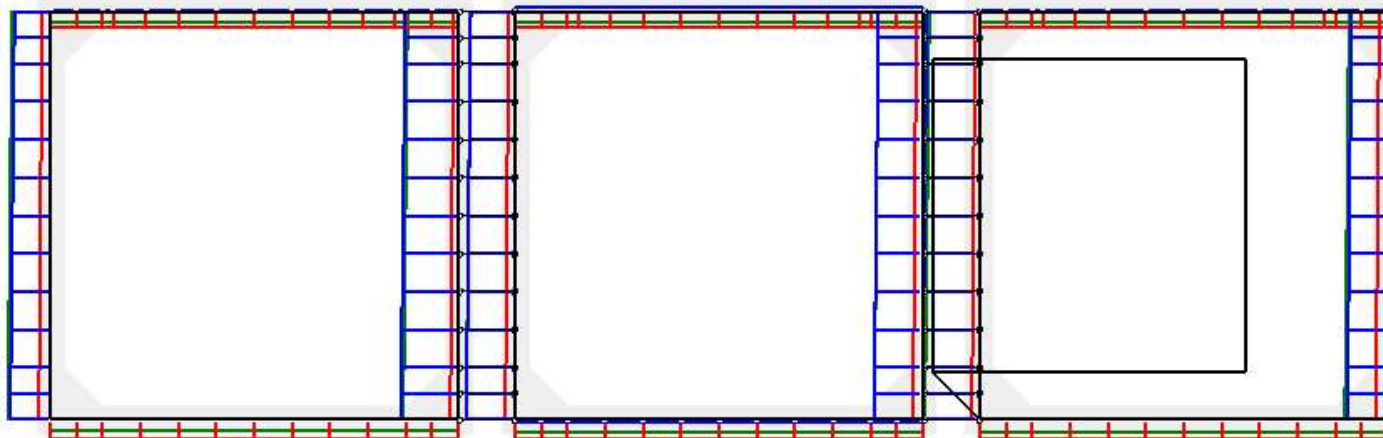
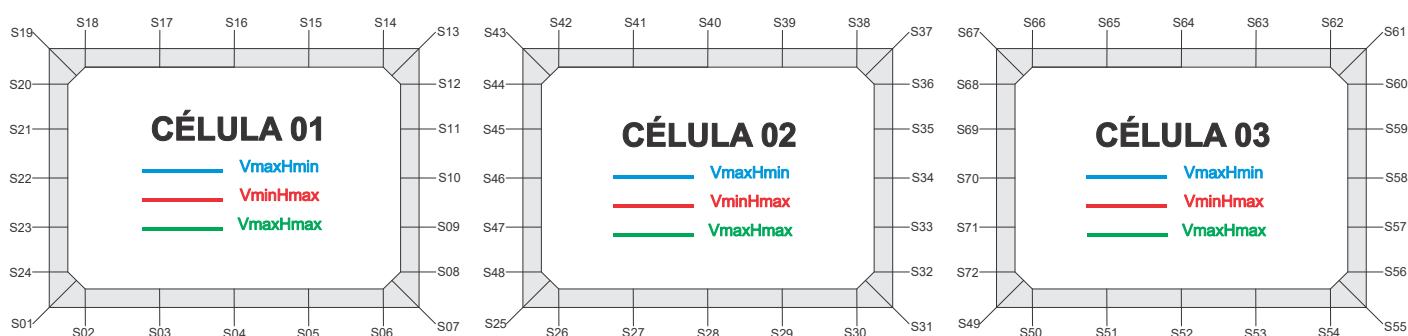
DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	4.15E-004
2	4.47E-004
3	2.32E-004
4	-3.50E-004
5	-9.12E-004
6	-1.04E-003
7	-9.87E-004
8	-9.03E-004
9	-3.55E-004
10	-5.56E-005
11	1.63E-005
12	-3.07E-005
13	2.82E-005
14	1.17E-004
15	2.59E-004
16	-1.97E-004
17	-7.76E-004
18	-1.00E-003
19	-9.73E-004
20	-9.17E-004
21	-5.25E-004
22	-2.63E-004
23	-1.42E-005
24	3.58E-004
25	5.33E-004
26	5.84E-004
27	4.95E-004
28	3.15E-006
29	-4.84E-004

30	-5.59E-004
31	-5.07E-004
32	-4.27E-004
33	6.38E-005
34	2.47E-004
35	1.39E-004
36	3.71E-005
37	8.34E-005
38	1.64E-004
39	3.26E-004
40	1.08E-005
41	-3.07E-004
42	-1.54E-004
43	-7.43E-005
44	-2.89E-005
45	-1.96E-004
46	-2.29E-004
47	-1.89E-005
48	4.55E-004
49	9.58E-004
50	1.01E-003
51	9.00E-004
52	3.47E-004
53	-2.30E-004
54	-4.45E-004
55	-4.13E-004
56	-3.56E-004
57	1.31E-005
58	2.59E-004
59	5.17E-004
60	9.05E-004
61	9.61E-004
62	9.92E-004
63	7.63E-004
64	1.86E-004
65	-2.64E-004
66	-1.15E-004
67	-2.52E-005
68	3.40E-005
69	4.92E-005
70	4.17E-005
71	3.11E-004
72	8.72E-004

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	-99.95	-0.02
2	-0.02	-0.02
3	-0.02	-0.02
4	-0.02	-0.02
5	-0.02	-0.02
6	-0.02	-0.02
7	-0.02	-142.26
8	-140.60	-140.60
9	-138.65	-138.65
10	-136.70	-136.70
11	-134.75	-134.75
12	-132.80	-132.80
13	-131.13	3.24
14	3.24	3.24
15	3.24	3.24
16	3.24	3.24
17	3.24	3.24
18	3.24	3.24
19	3.24	-88.81
20	-90.48	-90.48
21	-92.43	-92.43
22	-94.38	-94.38
23	-96.33	-96.33
24	-98.28	-98.28
25	-99.95	-7.22
26	-7.22	-7.22
27	-7.22	-7.22
28	-7.22	-7.22
29	-7.22	-7.22
30	-7.22	-7.22
31	-7.22	-121.15
32	-119.48	-119.48
33	-117.53	-117.53
34	-115.58	-115.58
35	-113.63	-113.63
36	-111.68	-111.68
37	-110.02	10.45
38	10.45	10.45
39	10.45	10.45
40	10.45	10.45
41	10.45	10.45
42	10.45	10.45
43	10.45	-109.93
44	-111.59	-111.59
45	-113.54	-113.54
46	-115.49	-115.49
47	-117.44	-117.44
48	-119.39	-119.39
49	-121.06	0.04

	50	0.04	0.04
	51	0.04	0.04
	52	0.04	0.04
	53	0.04	0.04
	54	0.04	0.04
	55	0.04	-99.90
	56	-98.24	-98.24
	57	-96.29	-96.29
	58	-94.34	-94.34
	59	-92.39	-92.39
	60	-90.44	-90.44
	61	-88.77	3.19
	62	3.19	3.19
	63	3.19	3.19
	64	3.19	3.19
	65	3.19	3.19
	66	3.19	3.19
	67	3.19	-131.18
	68	-132.84	-132.84
	69	-134.79	-134.79
	70	-136.74	-136.74
	71	-138.69	-138.69
	72	-140.64	-140.64

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-28.96	-47.00
2	-47.00	-47.00
3	-47.00	-47.00
4	-47.00	-47.00
5	-47.00	-47.00
6	-47.00	-47.00
7	-47.00	-19.95
8	-18.66	-18.66
9	-17.16	-17.16
10	-15.66	-15.66
11	-14.16	-14.16
12	-12.66	-12.66
13	-11.38	-37.02
14	-37.02	-37.02
15	-37.02	-37.02
16	-37.02	-37.02
17	-37.02	-37.02
18	-37.02	-37.02
19	-37.02	-20.40
20	-21.68	-21.68
21	-23.18	-23.18
22	-24.68	-24.68
23	-26.18	-26.18
24	-27.68	-27.68
25	-28.96	-46.78
26	-46.78	-46.78
27	-46.78	-46.78
28	-46.78	-46.78
29	-46.78	-46.78
30	-46.78	-46.78
31	-46.78	-24.45
32	-23.17	-23.17
33	-21.67	-21.67
34	-20.17	-20.17
35	-18.67	-18.67
36	-17.17	-17.17
37	-15.89	-37.25
38	-37.25	-37.25
39	-37.25	-37.25
40	-37.25	-37.25
41	-37.25	-37.25
42	-37.25	-37.25
43	-37.25	-15.89
44	-17.17	-17.17
45	-18.67	-18.67
46	-20.17	-20.17
47	-21.67	-21.67
48	-23.17	-23.17
49	-24.45	-47.00

	50	-47.00	-47.00
	51	-47.00	-47.00
	52	-47.00	-47.00
	53	-47.00	-47.00
	54	-47.00	-47.00
	55	-47.00	-28.96
	56	-27.68	-27.68
	57	-26.18	-26.18
	58	-24.68	-24.68
	59	-23.18	-23.18
	60	-21.68	-21.68
	61	-20.40	-37.02
	62	-37.02	-37.02
	63	-37.02	-37.02
	64	-37.02	-37.02
	65	-37.02	-37.02
	66	-37.02	-37.02
	67	-37.02	-11.38
	68	-12.66	-12.66
	69	-14.16	-14.16
	70	-15.66	-15.66
	71	-17.16	-17.16
	72	-18.66	-18.66

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-105.75	-29.07
2	-29.07	-29.07
3	-29.07	-29.07
4	-29.07	-29.07
5	-29.07	-29.07
6	-29.07	-29.07
7	-29.07	-136.46
8	-134.80	-134.80
9	-132.85	-132.85
10	-130.90	-130.90
11	-128.95	-128.95
12	-127.00	-127.00
13	-125.33	-26.95
14	-26.95	-26.95
15	-26.95	-26.95
16	-26.95	-26.95
17	-26.95	-26.95
18	-26.95	-26.95
19	-26.95	-94.62
20	-96.28	-96.28
21	-98.23	-98.23
22	-100.18	-100.18
23	-102.13	-102.13
24	-104.08	-104.08
25	-105.75	-31.41
26	-31.41	-31.41
27	-31.41	-31.41
28	-31.41	-31.41
29	-31.41	-31.41
30	-31.41	-31.41
31	-31.41	-120.94
32	-119.27	-119.27
33	-117.32	-117.32
34	-115.37	-115.37
35	-113.42	-113.42
36	-111.47	-111.47
37	-109.81	-24.61
38	-24.61	-24.61
39	-24.61	-24.61
40	-24.61	-24.61
41	-24.61	-24.61
42	-24.61	-24.61
43	-24.61	-110.14
44	-111.80	-111.80
45	-113.75	-113.75
46	-115.70	-115.70
47	-117.65	-117.65
48	-119.60	-119.60
49	-121.27	-29.36

	50	-29.36	-29.36
	51	-29.36	-29.36
	52	-29.36	-29.36
	53	-29.36	-29.36
	54	-29.36	-29.36
	55	-29.36	-105.91
	56	-104.25	-104.25
	57	-102.30	-102.30
	58	-100.35	-100.35
	59	-98.40	-98.40
	60	-96.45	-96.45
	61	-94.78	-26.66
	62	-26.66	-26.66
	63	-26.66	-26.66
	64	-26.66	-26.66
	65	-26.66	-26.66
	66	-26.66	-26.66
	67	-26.66	-125.16
	68	-126.83	-126.83
	69	-128.78	-128.78
	70	-130.73	-130.73
	71	-132.68	-132.68
	72	-134.63	-134.63

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-137.98	-1.86
2	-1.86	-1.86
3	-1.86	-1.86
4	-1.86	-1.86
5	-1.86	-1.86
6	-1.86	-1.86
7	-1.86	-149.00
8	-147.34	-147.34
9	-145.39	-145.39
10	-143.44	-143.44
11	-141.49	-141.49
12	-139.54	-139.54
13	-137.87	5.09
14	5.09	5.09
15	5.09	5.09
16	5.09	5.09
17	5.09	5.09
18	5.09	5.09
19	5.09	-126.85
20	-128.52	-128.52
21	-130.47	-130.47
22	-132.42	-132.42
23	-134.37	-134.37
24	-136.32	-136.32
25	-137.98	-10.38
26	-10.38	-10.38
27	-10.38	-10.38
28	-10.38	-10.38
29	-10.38	-10.38
30	-10.38	-10.38
31	-10.38	-126.19
32	-124.52	-124.52
33	-122.57	-122.57
34	-120.62	-120.62
35	-118.67	-118.67
36	-116.72	-116.72
37	-115.05	13.60
38	13.60	13.60
39	13.60	13.60
40	13.60	13.60
41	13.60	13.60
42	13.60	13.60
43	13.60	-149.67
44	-151.34	-151.34
45	-153.29	-153.29
46	-155.24	-155.24
47	-157.19	-157.19
48	-159.14	-159.14
49	-160.80	-2.90

	50	-2.90	-2.90
	51	-2.90	-2.90
	52	-2.90	-2.90
	53	-2.90	-2.90
	54	-2.90	-2.90
	55	-2.90	-99.54
	56	-97.87	-97.87
	57	-95.92	-95.92
	58	-93.97	-93.97
	59	-92.02	-92.02
	60	-90.07	-90.07
	61	-88.41	6.13
	62	6.13	6.13
	63	6.13	6.13
	64	6.13	6.13
	65	6.13	6.13
	66	6.13	6.13
	67	6.13	-176.32
	68	-177.98	-177.98
	69	-179.93	-179.93
	70	-181.88	-181.88
	71	-183.83	-183.83
	72	-185.78	-185.78

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-28.84	-46.99
2	-46.99	-46.99
3	-46.99	-46.99
4	-46.99	-46.99
5	-46.99	-46.99
6	-46.99	-46.99
7	-46.99	-20.06
8	-18.78	-18.78
9	-17.28	-17.28
10	-15.78	-15.78
11	-14.28	-14.28
12	-12.78	-12.78
13	-11.50	-37.04
14	-37.04	-37.04
15	-37.04	-37.04
16	-37.04	-37.04
17	-37.04	-37.04
18	-37.04	-37.04
19	-37.04	-20.28
20	-21.56	-21.56
21	-23.06	-23.06
22	-24.56	-24.56
23	-26.06	-26.06
24	-27.56	-27.56
25	-28.84	-46.74
26	-46.74	-46.74
27	-46.74	-46.74
28	-46.74	-46.74
29	-46.74	-46.74
30	-46.74	-46.74
31	-46.74	-24.19
32	-22.91	-22.91
33	-21.41	-21.41
34	-19.91	-19.91
35	-18.41	-18.41
36	-16.91	-16.91
37	-15.63	-37.28
38	-37.28	-37.28
39	-37.28	-37.28
40	-37.28	-37.28
41	-37.28	-37.28
42	-37.28	-37.28
43	-37.28	-16.15
44	-17.44	-17.44
45	-18.94	-18.94
46	-20.44	-20.44
47	-21.94	-21.94
48	-23.44	-23.44
49	-24.72	-46.96

	50	-46.96	-46.96
	51	-46.96	-46.96
	52	-46.96	-46.96
	53	-46.96	-46.96
	54	-46.96	-46.96
	55	-46.96	-29.65
	56	-28.37	-28.37
	57	-26.87	-26.87
	58	-25.37	-25.37
	59	-23.87	-23.87
	60	-22.37	-22.37
	61	-21.09	-37.07
	62	-37.07	-37.07
	63	-37.07	-37.07
	64	-37.07	-37.07
	65	-37.07	-37.07
	66	-37.07	-37.07
	67	-37.07	-10.69
	68	-11.97	-11.97
	69	-13.47	-13.47
	70	-14.97	-14.97
	71	-16.47	-16.47
	72	-17.97	-17.97

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-143.52	-30.38
2	-30.38	-30.38
3	-30.38	-30.38
4	-30.38	-30.38
5	-30.38	-30.38
6	-30.38	-30.38
7	-30.38	-143.47
8	-141.80	-141.80
9	-139.85	-139.85
10	-137.90	-137.90
11	-135.95	-135.95
12	-134.00	-134.00
13	-132.34	-25.64
14	-25.64	-25.64
15	-25.64	-25.64
16	-25.64	-25.64
17	-25.64	-25.64
18	-25.64	-25.64
19	-25.64	-132.39
20	-134.06	-134.06
21	-136.01	-136.01
22	-137.96	-137.96
23	-139.91	-139.91
24	-141.86	-141.86
25	-143.52	-34.15
26	-34.15	-34.15
27	-34.15	-34.15
28	-34.15	-34.15
29	-34.15	-34.15
30	-34.15	-34.15
31	-34.15	-127.68
32	-126.01	-126.01
33	-124.06	-124.06
34	-122.11	-122.11
35	-120.16	-120.16
36	-118.21	-118.21
37	-116.55	-21.87
38	-21.87	-21.87
39	-21.87	-21.87
40	-21.87	-21.87
41	-21.87	-21.87
42	-21.87	-21.87
43	-21.87	-148.18
44	-149.84	-149.84
45	-151.79	-151.79
46	-153.74	-153.74
47	-155.69	-155.69
48	-157.64	-157.64
49	-159.31	-32.48

50	-32.48	-32.48
51	-32.48	-32.48
52	-32.48	-32.48
53	-32.48	-32.48
54	-32.48	-32.48
55	-32.48	-107.14
56	-105.47	-105.47
57	-103.52	-103.52
58	-101.57	-101.57
59	-99.62	-99.62
60	-97.67	-97.67
61	-96.01	-23.54
62	-23.54	-23.54
63	-23.54	-23.54
64	-23.54	-23.54
65	-23.54	-23.54
66	-23.54	-23.54
67	-23.54	-168.72
68	-170.38	-170.38
69	-172.33	-172.33
70	-174.28	-174.28
71	-176.23	-176.23
72	-178.18	-178.18

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-61.89	-14.44
2	-14.44	-14.44
3	-14.44	-14.44
4	-14.44	-14.44
5	-14.44	-14.44
6	-14.44	-14.44
7	-14.44	-81.67
8	-80.39	-80.39
9	-78.89	-78.89
10	-77.39	-77.39
11	-75.89	-75.89
12	-74.39	-74.39
13	-73.11	-8.13
14	-8.13	-8.13
15	-8.13	-8.13
16	-8.13	-8.13
17	-8.13	-8.13
18	-8.13	-8.13
19	-8.13	-53.33
20	-54.61	-54.61
21	-56.11	-56.11
22	-57.61	-57.61
23	-59.11	-59.11
24	-60.61	-60.61
25	-61.89	-16.62
26	-16.62	-16.62
27	-16.62	-16.62
28	-16.62	-16.62
29	-16.62	-16.62
30	-16.62	-16.62
31	-16.62	-71.67
32	-70.39	-70.39
33	-68.89	-68.89
34	-67.39	-67.39
35	-65.89	-65.89
36	-64.39	-64.39
37	-63.11	-5.95
38	-5.95	-5.95
39	-5.95	-5.95
40	-5.95	-5.95
41	-5.95	-5.95
42	-5.95	-5.95
43	-5.95	-63.32
44	-64.60	-64.60
45	-66.10	-66.10
46	-67.60	-67.60
47	-69.10	-69.10
48	-70.60	-70.60
49	-71.89	-14.57

	50	-14.57	-14.57
	51	-14.57	-14.57
	52	-14.57	-14.57
	53	-14.57	-14.57
	54	-14.57	-14.57
	55	-14.57	-61.99
	56	-60.71	-60.71
	57	-59.21	-59.21
	58	-57.71	-57.71
	59	-56.21	-56.21
	60	-54.71	-54.71
	61	-53.43	-8.00
	62	-8.00	-8.00
	63	-8.00	-8.00
	64	-8.00	-8.00
	65	-8.00	-8.00
	66	-8.00	-8.00
	67	-8.00	-73.00
	68	-74.28	-74.28
	69	-75.78	-75.78
	70	-77.28	-77.28
	71	-78.78	-78.78
	72	-80.28	-80.28

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-26.08	-31.54
2	-31.54	-31.54
3	-31.54	-31.54
4	-31.54	-31.54
5	-31.54	-31.54
6	-31.54	-31.54
7	-31.54	-22.83
8	-21.55	-21.55
9	-20.05	-20.05
10	-18.55	-18.55
11	-17.05	-17.05
12	-15.55	-15.55
13	-14.27	-22.75
14	-22.75	-22.75
15	-22.75	-22.75
16	-22.75	-22.75
17	-22.75	-22.75
18	-22.75	-22.75
19	-22.75	-17.51
20	-18.79	-18.79
21	-20.29	-20.29
22	-21.79	-21.79
23	-23.29	-23.29
24	-24.79	-24.79
25	-26.08	-31.48
26	-31.48	-31.48
27	-31.48	-31.48
28	-31.48	-31.48
29	-31.48	-31.48
30	-31.48	-31.48
31	-31.48	-24.45
32	-23.17	-23.17
33	-21.67	-21.67
34	-20.17	-20.17
35	-18.67	-18.67
36	-17.17	-17.17
37	-15.89	-22.82
38	-22.82	-22.82
39	-22.82	-22.82
40	-22.82	-22.82
41	-22.82	-22.82
42	-22.82	-22.82
43	-22.82	-15.89
44	-17.17	-17.17
45	-18.67	-18.67
46	-20.17	-20.17
47	-21.67	-21.67
48	-23.17	-23.17
49	-24.45	-31.54

	50	-31.54	-31.54
	51	-31.54	-31.54
	52	-31.54	-31.54
	53	-31.54	-31.54
	54	-31.54	-31.54
	55	-31.54	-26.07
	56	-24.79	-24.79
	57	-23.29	-23.29
	58	-21.79	-21.79
	59	-20.29	-20.29
	60	-18.79	-18.79
	61	-17.51	-22.75
	62	-22.75	-22.75
	63	-22.75	-22.75
	64	-22.75	-22.75
	65	-22.75	-22.75
	66	-22.75	-22.75
	67	-22.75	-14.27
	68	-15.55	-15.55
	69	-17.05	-17.05
	70	-18.55	-18.55
	71	-20.05	-20.05
	72	-21.55	-21.55

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-63.42	-19.71
2	-19.71	-19.71
3	-19.71	-19.71
4	-19.71	-19.71
5	-19.71	-19.71
6	-19.71	-19.71
7	-19.71	-80.13
8	-78.85	-78.85
9	-77.35	-77.35
10	-75.85	-75.85
11	-74.35	-74.35
12	-72.85	-72.85
13	-71.57	-16.49
14	-16.49	-16.49
15	-16.49	-16.49
16	-16.49	-16.49
17	-16.49	-16.49
18	-16.49	-16.49
19	-16.49	-54.86
20	-56.14	-56.14
21	-57.64	-57.64
22	-59.14	-59.14
23	-60.64	-60.64
24	-62.14	-62.14
25	-63.42	-20.74
26	-20.74	-20.74
27	-20.74	-20.74
28	-20.74	-20.74
29	-20.74	-20.74
30	-20.74	-20.74
31	-20.74	-71.97
32	-70.69	-70.69
33	-69.19	-69.19
34	-67.69	-67.69
35	-66.19	-66.19
36	-64.69	-64.69
37	-63.41	-15.45
38	-15.45	-15.45
39	-15.45	-15.45
40	-15.45	-15.45
41	-15.45	-15.45
42	-15.45	-15.45
43	-15.45	-63.02
44	-64.30	-64.30
45	-65.80	-65.80
46	-67.30	-67.30
47	-68.80	-68.80
48	-70.30	-70.30
49	-71.59	-19.72

50	-19.72	-19.72
51	-19.72	-19.72
52	-19.72	-19.72
53	-19.72	-19.72
54	-19.72	-19.72
55	-19.72	-63.23
56	-61.95	-61.95
57	-60.45	-60.45
58	-58.95	-58.95
59	-57.45	-57.45
60	-55.95	-55.95
61	-54.67	-16.47
62	-16.47	-16.47
63	-16.47	-16.47
64	-16.47	-16.47
65	-16.47	-16.47
66	-16.47	-16.47
67	-16.47	-71.76
68	-73.05	-73.05
69	-74.55	-74.55
70	-76.05	-76.05
71	-77.55	-77.55
72	-79.05	-79.05

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-23.28	-15.34
2	-15.34	-15.34
3	-15.34	-15.34
4	-15.34	-15.34
5	-15.34	-15.34
6	-15.34	-15.34
7	-15.34	-25.63
8	-24.34	-24.34
9	-22.84	-22.84
10	-21.34	-21.34
11	-19.84	-19.84
12	-18.34	-18.34
13	-17.06	-7.24
14	-7.24	-7.24
15	-7.24	-7.24
16	-7.24	-7.24
17	-7.24	-7.24
18	-7.24	-7.24
19	-7.24	-14.72
20	-16.00	-16.00
21	-17.50	-17.50
22	-19.00	-19.00
23	-20.50	-20.50
24	-22.00	-22.00
25	-23.28	-15.51
26	-15.51	-15.51
27	-15.51	-15.51
28	-15.51	-15.51
29	-15.51	-15.51
30	-15.51	-15.51
31	-15.51	-24.48
32	-23.19	-23.19
33	-21.69	-21.69
34	-20.19	-20.19
35	-18.69	-18.69
36	-17.19	-17.19
37	-15.91	-7.06
38	-7.06	-7.06
39	-7.06	-7.06
40	-7.06	-7.06
41	-7.06	-7.06
42	-7.06	-7.06
43	-7.06	-15.87
44	-17.15	-17.15
45	-18.65	-18.65
46	-20.15	-20.15
47	-21.65	-21.65
48	-23.15	-23.15
49	-24.43	-15.34

	50	-15.34	-15.34
	51	-15.34	-15.34
	52	-15.34	-15.34
	53	-15.34	-15.34
	54	-15.34	-15.34
	55	-15.34	-23.26
	56	-21.98	-21.98
	57	-20.48	-20.48
	58	-18.98	-18.98
	59	-17.48	-17.48
	60	-15.98	-15.98
	61	-14.70	-7.24
	62	-7.24	-7.24
	63	-7.24	-7.24
	64	-7.24	-7.24
	65	-7.24	-7.24
	66	-7.24	-7.24
	67	-7.24	-17.08
	68	-18.37	-18.37
	69	-19.87	-19.87
	70	-21.37	-21.37
	71	-22.87	-22.87
	72	-24.37	-24.37

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-47.67	-14.24
2	-14.24	-14.24
3	-14.24	-14.24
4	-14.24	-14.24
5	-14.24	-14.24
6	-14.24	-14.24
7	-14.24	-60.39
8	-59.11	-59.11
9	-57.61	-57.61
10	-56.11	-56.11
11	-54.61	-54.61
12	-53.11	-53.11
13	-51.83	-8.34
14	-8.34	-8.34
15	-8.34	-8.34
16	-8.34	-8.34
17	-8.34	-8.34
18	-8.34	-8.34
19	-8.34	-39.11
20	-40.39	-40.39
21	-41.89	-41.89
22	-43.39	-43.39
23	-44.89	-44.89
24	-46.39	-46.39
25	-47.67	-15.07
26	-15.07	-15.07
27	-15.07	-15.07
28	-15.07	-15.07
29	-15.07	-15.07
30	-15.07	-15.07
31	-15.07	-54.15
32	-52.87	-52.87
33	-51.37	-51.37
34	-49.87	-49.87
35	-48.37	-48.37
36	-46.87	-46.87
37	-45.59	-7.50
38	-7.50	-7.50
39	-7.50	-7.50
40	-7.50	-7.50
41	-7.50	-7.50
42	-7.50	-7.50
43	-7.50	-45.35
44	-46.63	-46.63
45	-48.13	-48.13
46	-49.63	-49.63
47	-51.13	-51.13
48	-52.63	-52.63
49	-53.91	-14.26

	50	-14.26	-14.26
	51	-14.26	-14.26
	52	-14.26	-14.26
	53	-14.26	-14.26
	54	-14.26	-14.26
	55	-14.26	-47.55
	56	-46.27	-46.27
	57	-44.77	-44.77
	58	-43.27	-43.27
	59	-41.77	-41.77
	60	-40.27	-40.27
	61	-38.99	-8.31
	62	-8.31	-8.31
	63	-8.31	-8.31
	64	-8.31	-8.31
	65	-8.31	-8.31
	66	-8.31	-8.31
	67	-8.31	-51.95
	68	-53.23	-53.23
	69	-54.73	-54.73
	70	-56.23	-56.23
	71	-57.73	-57.73
	72	-59.23	-59.23

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-25.35	-28.03
2	-28.03	-28.03
3	-28.03	-28.03
4	-28.03	-28.03
5	-28.03	-28.03
6	-28.03	-28.03
7	-28.03	-23.56
8	-22.28	-22.28
9	-20.78	-20.78
10	-19.28	-19.28
11	-17.78	-17.78
12	-16.28	-16.28
13	-15.00	-18.60
14	-18.60	-18.60
15	-18.60	-18.60
16	-18.60	-18.60
17	-18.60	-18.60
18	-18.60	-18.60
19	-18.60	-16.78
20	-18.07	-18.07
21	-19.57	-19.57
22	-21.07	-21.07
23	-22.57	-22.57
24	-24.07	-24.07
25	-25.35	-28.00
26	-28.00	-28.00
27	-28.00	-28.00
28	-28.00	-28.00
29	-28.00	-28.00
30	-28.00	-28.00
31	-28.00	-24.45
32	-23.17	-23.17
33	-21.67	-21.67
34	-20.17	-20.17
35	-18.67	-18.67
36	-17.17	-17.17
37	-15.89	-18.63
38	-18.63	-18.63
39	-18.63	-18.63
40	-18.63	-18.63
41	-18.63	-18.63
42	-18.63	-18.63
43	-18.63	-15.89
44	-17.17	-17.17
45	-18.67	-18.67
46	-20.17	-20.17
47	-21.67	-21.67
48	-23.17	-23.17
49	-24.45	-28.03

	50	-28.03	-28.03
	51	-28.03	-28.03
	52	-28.03	-28.03
	53	-28.03	-28.03
	54	-28.03	-28.03
	55	-28.03	-25.35
	56	-24.06	-24.06
	57	-22.56	-22.56
	58	-21.06	-21.06
	59	-19.56	-19.56
	60	-18.06	-18.06
	61	-16.78	-18.60
	62	-18.60	-18.60
	63	-18.60	-18.60
	64	-18.60	-18.60
	65	-18.60	-18.60
	66	-18.60	-18.60
	67	-18.60	-15.00
	68	-16.28	-16.28
	69	-17.78	-17.78
	70	-19.28	-19.28
	71	-20.78	-20.78
	72	-22.28	-22.28

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

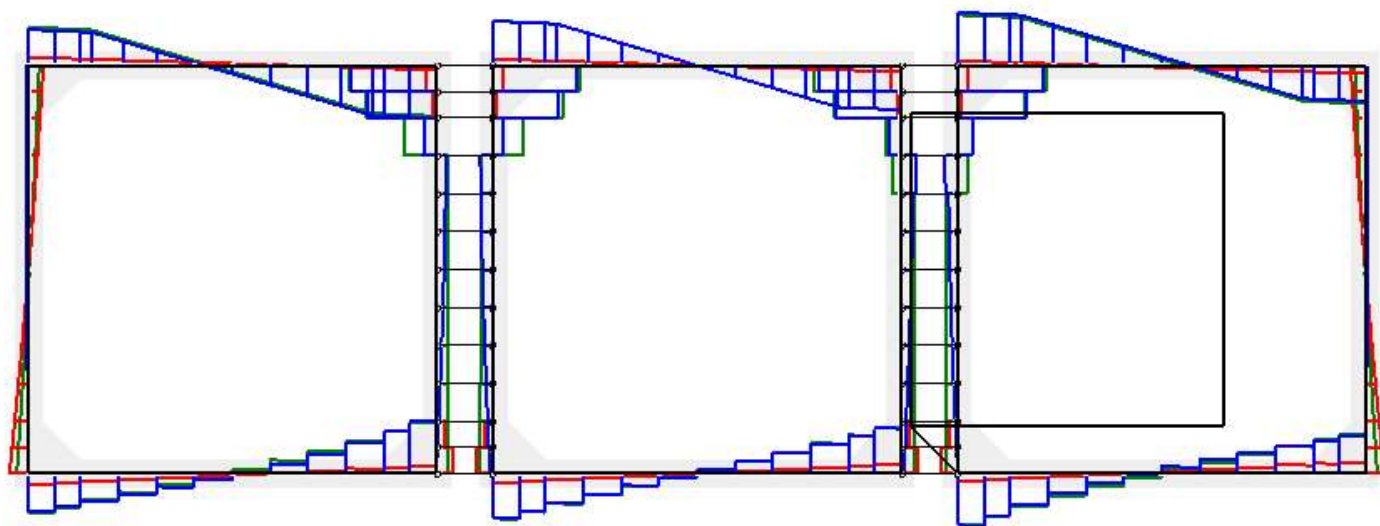
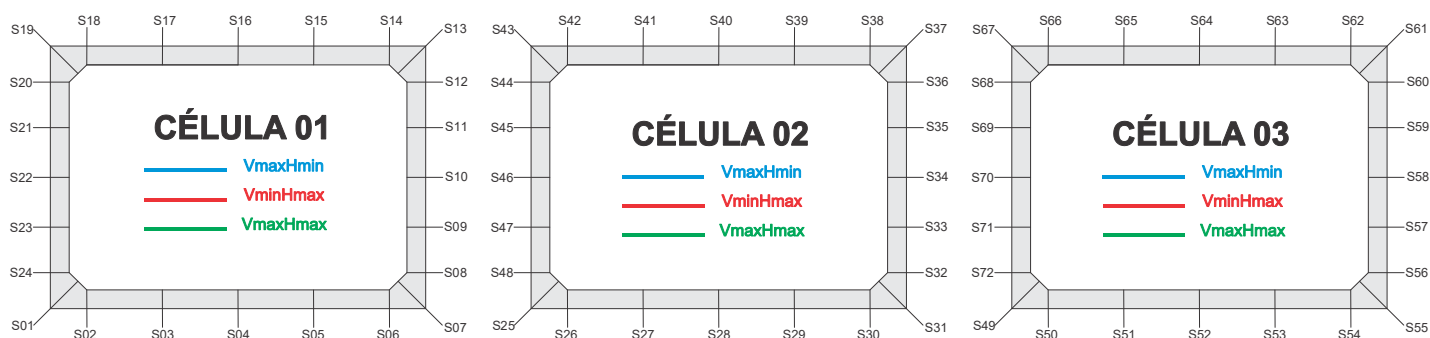
ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-48.37	-18.07
2	-18.07	-18.07
3	-18.07	-18.07
4	-18.07	-18.07
5	-18.07	-18.07
6	-18.07	-18.07
7	-18.07	-59.69
8	-58.41	-58.41
9	-56.91	-56.91
10	-55.41	-55.41
11	-53.91	-53.91
12	-52.41	-52.41
13	-51.13	-13.02
14	-13.02	-13.02
15	-13.02	-13.02
16	-13.02	-13.02
17	-13.02	-13.02
18	-13.02	-13.02
19	-13.02	-39.81
20	-41.09	-41.09
21	-42.59	-42.59
22	-44.09	-44.09
23	-45.59	-45.59
24	-47.09	-47.09
25	-48.37	-18.78
26	-18.78	-18.78
27	-18.78	-18.78
28	-18.78	-18.78
29	-18.78	-18.78
30	-18.78	-18.78
31	-18.78	-54.16
32	-52.88	-52.88
33	-51.38	-51.38
34	-49.88	-49.88
35	-48.38	-48.38
36	-46.88	-46.88
37	-45.60	-12.31
38	-12.31	-12.31
39	-12.31	-12.31
40	-12.31	-12.31
41	-12.31	-12.31
42	-12.31	-12.31
43	-12.31	-45.34
44	-46.62	-46.62
45	-48.12	-48.12
46	-49.62	-49.62
47	-51.12	-51.12
48	-52.62	-52.62
49	-53.90	-18.08

	50	-18.08	-18.08
	51	-18.08	-18.08
	52	-18.08	-18.08
	53	-18.08	-18.08
	54	-18.08	-18.08
	55	-18.08	-48.24
	56	-46.96	-46.96
	57	-45.46	-45.46
	58	-43.96	-43.96
	59	-42.46	-42.46
	60	-40.96	-40.96
	61	-39.68	-13.01
	62	-13.01	-13.01
	63	-13.01	-13.01
	64	-13.01	-13.01
	65	-13.01	-13.01
	66	-13.01	-13.01
	67	-13.01	-51.26
	68	-52.54	-52.54
	69	-54.04	-54.04
	70	-55.54	-55.54
	71	-57.04	-57.04
	72	-58.54	-58.54

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	0.02	-93.50
2	-82.46	-67.09
3	-51.19	-33.34
4	-16.83	3.07
5	23.34	48.78
6	76.21	104.75
7	128.49	-0.02
8	-6.20	-6.20
9	-13.68	-13.68
10	-19.38	-19.38
11	-23.28	-23.28
12	30.51	169.08
13	212.02	-131.13
14	-125.46	-125.46
15	-76.71	-76.71
16	-21.16	-21.16
17	34.39	34.39
18	83.14	83.14
19	88.81	3.24
20	4.05	4.05
21	4.59	4.59
22	4.37	4.37
23	3.39	3.39
24	1.65	1.65
25	0.02	-111.31
26	-94.39	-72.74
27	-51.02	-29.04
28	-10.14	10.31
29	29.21	51.18
30	72.89	94.51
31	111.41	-7.23
32	-13.41	-13.41
33	-20.89	-20.89
34	-26.58	-26.58
35	-30.49	-37.78
36	29.48	163.35
37	204.46	-110.02
38	-104.34	-104.34
39	-55.59	-55.59
40	-0.04	-0.04
41	55.50	55.50
42	104.25	104.25
43	109.93	-204.81
44	-161.87	-23.30
45	30.49	30.49
46	26.58	26.58
47	20.89	20.89
48	13.41	13.41
49	7.23	-128.54

	50	-104.82	-76.29
	51	-48.86	-23.43
	52	-3.16	16.74
	53	33.26	51.11
	54	67.02	82.39
	55	93.45	0.04
	56	-1.60	-1.60
	57	-3.34	-3.34
	58	-4.32	-4.32
	59	-4.54	-4.54
	60	-4.00	-4.00
	61	-3.19	-88.77
	62	-83.09	-83.09
	63	-34.34	-34.34
	64	21.20	21.20
	65	76.75	76.75
	66	125.50	125.50
	67	131.18	-211.73
	68	-170.61	-36.74
	69	30.52	23.23
	70	19.32	19.32
	71	13.63	13.63
	72	6.15	6.15

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	47.00	-27.21
2	-24.86	-20.25
3	-16.16	-10.60
4	-6.63	-1.27
5	2.53	7.79
6	11.53	15.92
7	18.19	-40.55
8	-19.36	-1.40
9	-0.05	-0.05
10	-0.05	-0.05
11	-0.05	-0.05
12	-0.22	9.55
13	24.83	-11.38
14	-7.13	-7.13
15	-1.31	-1.31
16	4.51	4.51
17	10.33	10.33
18	16.15	16.15
19	20.40	-37.02
20	-28.59	-28.59
21	-15.12	-15.12
22	-0.20	-0.20
23	16.15	16.15
24	33.94	33.94
25	47.00	-22.48
26	-19.88	-15.18
27	-11.29	-6.09
28	-2.51	2.51
29	6.09	11.30
30	15.19	19.88
31	22.48	-40.30
32	-19.17	-1.34
33	0.27	0.27
34	0.27	0.27
35	0.27	-0.61
36	0.43	9.88
37	25.02	-15.89
38	-11.64	-11.64
39	-5.82	-5.82
40	0.00	0.00
41	5.82	5.82
42	11.64	11.64
43	15.89	-25.05
44	-9.77	-0.01
45	-0.17	-0.17
46	-0.17	-0.17
47	-0.17	-0.17
48	1.18	19.14
49	40.32	-18.19

	50	-15.93	-11.53
	51	-7.79	-2.53
	52	1.26	6.63
	53	10.60	16.16
	54	20.25	24.86
	55	27.21	-47.00
	56	-33.94	-33.94
	57	-16.15	-16.15
	58	0.20	0.20
	59	15.12	15.12
	60	28.59	28.59
	61	37.02	-20.40
	62	-16.15	-16.15
	63	-10.33	-10.33
	64	-4.51	-4.51
	65	1.31	1.31
	66	7.13	7.13
	67	11.38	-24.80
	68	-9.65	-0.21
	69	0.84	-0.05
	70	-0.05	-0.05
	71	-0.05	-0.05
	72	1.56	19.39

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

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	29.07	-97.79
2	-84.00	-65.63
3	-46.78	-26.65
4	-8.58	12.03
5	32.04	56.05
6	80.65	105.38
7	125.13	-29.07
8	-29.07	-29.07
9	-27.86	-27.86
10	-27.86	-27.86
11	-27.86	-27.86
12	78.22	176.11
13	216.40	-125.33
14	-119.65	-119.65
15	-70.90	-70.90
16	-15.36	-15.36
17	40.19	40.19
18	88.94	88.94
19	94.62	-26.95
20	-21.33	-21.33
21	-12.34	-12.34
22	-2.40	-2.40
23	8.50	8.50
24	20.36	20.36
25	29.07	-111.97
26	-95.68	-74.44
27	-52.71	-30.37
28	-10.90	10.21
29	29.70	52.08
30	73.88	95.20
31	111.58	-31.41
32	-31.41	-31.41
33	-31.41	-31.41
34	-31.41	-31.41
35	-31.41	21.94
36	35.41	164.50
37	217.14	-109.81
38	-104.13	-104.13
39	-55.38	-55.38
40	0.17	0.17
41	55.71	55.71
42	104.46	104.46
43	110.14	-214.06
44	-173.77	-75.88
45	30.20	30.20
46	30.20	30.20
47	30.20	30.20
48	31.41	31.41
49	31.41	-124.94

	50	-105.15	-80.39
	51	-55.75	-31.73
	52	-11.69	8.93
	53	27.00	47.11
	54	65.93	84.26
	55	97.99	-29.36
	56	-20.65	-20.65
	57	-8.79	-8.79
	58	2.11	2.11
	59	12.05	12.05
	60	21.04	21.04
	61	26.66	-94.78
	62	-89.11	-89.11
	63	-40.36	-40.36
	64	15.19	15.19
	65	70.74	70.74
	66	119.49	119.49
	67	125.16	-219.18
	68	-166.55	-37.46
	69	-23.99	29.36
	70	29.36	29.36
	71	29.36	29.36
	72	29.36	29.36

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	1.86	-127.52
2	-109.30	-86.18
3	-62.88	-39.28
4	-18.47	4.52
5	26.91	53.74
6	82.07	111.09
7	135.13	-1.87
8	-8.05	-8.05
9	-15.53	-15.53
10	-21.23	-21.23
11	-25.13	-25.13
12	36.59	175.52
13	241.90	-137.87
14	-132.20	-132.20
15	-76.65	-76.65
16	-21.11	-21.11
17	34.44	34.44
18	88.34	88.34
19	126.85	5.09
20	5.90	5.90
21	6.44	6.44
22	6.22	6.22
23	5.24	5.24
24	3.50	3.50
25	1.86	-146.53
26	-121.56	-91.23
27	-61.27	-32.94
28	-9.38	14.27
29	35.13	58.02
30	79.79	100.86
31	116.99	-10.38
32	-16.56	-16.56
33	-24.04	-24.04
34	-29.74	-29.74
35	-33.64	-10.45
36	20.74	159.72
37	223.89	-115.05
38	-109.38	-109.38
39	-53.83	-53.83
40	1.71	1.71
41	57.26	57.26
42	111.16	111.16
43	149.67	-233.39
44	-167.01	-28.08
45	33.64	33.64
46	29.74	29.74
47	24.04	24.04
48	16.56	16.56
49	10.38	-168.32

	50	-135.08	-96.38
	51	-59.44	-26.87
	52	-1.61	21.39
	53	39.36	57.24
	54	71.93	85.36
	55	94.35	-2.90
	56	-4.54	-4.54
	57	-6.28	-6.28
	58	-7.26	-7.26
	59	-7.48	-7.48
	60	-6.94	-6.94
	61	-6.13	-88.41
	62	-82.73	-82.73
	63	-27.19	-27.19
	64	28.36	28.36
	65	83.91	83.91
	66	137.81	137.81
	67	176.32	-231.36
	68	-167.19	-28.22
	69	2.97	26.17
	70	22.26	22.26
	71	16.57	16.57
	72	9.09	9.09

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	46.99	-27.10
2	-24.75	-20.14
3	-16.05	-10.49
4	-6.51	-1.14
5	2.66	7.93
6	11.67	16.06
7	18.32	-41.91
8	-18.26	-0.45
9	-0.04	-0.04
10	-0.04	-0.04
11	-0.04	-0.04
12	-0.51	8.68
13	24.99	-11.50
14	-7.25	-7.25
15	-1.43	-1.43
16	4.39	4.39
17	10.21	10.21
18	16.03	16.03
19	20.28	-37.04
20	-28.61	-28.61
21	-15.13	-15.13
22	-0.22	-0.22
23	16.13	16.13
24	33.92	33.92
25	46.99	-22.73
26	-20.09	-15.37
27	-11.47	-6.26
28	-2.71	2.29
29	5.84	11.02
30	14.89	19.59
31	22.21	-41.46
32	-17.94	-0.39
33	0.18	0.18
34	0.18	0.18
35	0.18	-0.42
36	0.00	9.03
37	25.36	-15.63
38	-11.38	-11.38
39	-5.56	-5.56
40	0.26	0.26
41	6.08	6.08
42	11.90	11.90
43	16.15	-25.24
44	-8.92	0.26
45	-0.21	-0.21
46	-0.21	-0.21
47	-0.21	-0.21
48	0.20	18.01
49	41.66	-17.52

	50	-15.30	-10.94
	51	-7.22	-1.96
	52	1.86	7.26
	53	11.28	16.89
	54	21.01	25.61
	55	27.93	-46.96
	56	-33.89	-33.89
	57	-16.10	-16.10
	58	0.25	0.25
	59	15.16	15.16
	60	28.64	28.64
	61	37.07	-21.09
	62	-16.84	-16.84
	63	-11.02	-11.02
	64	-5.20	-5.20
	65	0.62	0.62
	66	6.44	6.44
	67	10.69	-25.15
	68	-8.82	0.22
	69	0.63	0.04
	70	0.04	0.04
	71	0.04	0.04
	72	0.61	18.16

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	30.38	-131.43
2	-110.28	-83.97
3	-57.57	-31.60
4	-9.19	14.52
5	36.62	61.94
6	87.28	112.31
7	132.16	-30.38
8	-30.38	-30.38
9	-26.88	-26.88
10	-26.88	-26.88
11	-26.88	-26.88
12	71.48	176.16
13	244.58	-132.34
14	-126.66	-126.66
15	-71.12	-71.12
16	-15.57	-15.57
17	39.98	39.98
18	93.88	93.88
19	132.39	-25.64
20	-20.02	-20.02
21	-11.03	-11.03
22	-1.09	-1.09
23	9.81	9.81
24	21.67	21.67
25	30.38	-145.49
26	-121.16	-91.27
27	-61.32	-32.64
28	-8.49	15.86
29	37.38	60.74
30	82.64	103.37
31	118.92	-34.15
32	-34.15	-34.15
33	-34.15	-34.15
34	-34.15	-34.15
35	-34.15	39.33
36	22.25	165.98
37	245.54	-116.55
38	-110.87	-110.87
39	-55.33	-55.33
40	0.22	0.22
41	55.76	55.76
42	109.67	109.67
43	148.18	-240.81
44	-172.39	-67.72
45	30.64	30.64
46	30.64	30.64
47	30.64	30.64
48	34.15	34.15
49	34.15	-163.32

	50	-134.32	-99.67
	51	-65.70	-34.59
	52	-9.49	14.38
	53	34.10	54.46
	54	72.27	88.76
	55	100.48	-32.48
	56	-23.77	-23.77
	57	-11.91	-11.91
	58	-1.01	-1.01
	59	8.94	8.94
	60	17.92	17.92
	61	23.54	-96.01
	62	-90.33	-90.33
	63	-34.79	-34.79
	64	20.76	20.76
	65	76.30	76.30
	66	130.20	130.20
	67	168.72	-247.21
	68	-167.65	-23.92
	69	-41.00	32.48
	70	32.48	32.48
	71	32.48	32.48
	72	32.48	32.48

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	14.44	-57.35
2	-49.78	-39.20
3	-28.63	-16.85
4	-6.52	5.79
5	17.55	32.18
6	47.03	62.40
7	74.53	-14.44
8	-14.44	-14.44
9	-14.44	-14.44
10	-14.44	-14.44
11	-14.44	-14.44
12	36.17	99.05
13	121.94	-73.11
14	-68.86	-68.86
15	-41.18	-41.18
16	-9.89	-9.89
17	21.40	21.40
18	49.07	49.07
19	53.33	-8.13
20	-6.90	-6.90
21	-4.24	-4.24
22	-0.55	-0.55
23	4.16	4.16
24	9.90	9.90
25	14.44	-66.26
26	-56.69	-43.90
27	-31.19	-17.82
28	-6.51	6.10
29	17.41	30.81
30	43.56	56.39
31	66.01	-16.62
32	-16.62	-16.62
33	-16.63	-16.63
34	-16.63	-16.63
35	-16.63	0.89
36	19.13	93.31
37	120.60	-63.11
38	-58.86	-58.86
39	-31.19	-31.19
40	0.11	0.11
41	31.40	31.40
42	59.07	59.07
43	63.32	-119.76
44	-96.87	-33.99
45	16.62	16.62
46	16.62	16.62
47	16.62	16.62
48	16.62	16.62
49	16.62	-74.41

	50	-62.26	-46.86
	51	-31.99	-17.35
	52	-5.59	6.72
	53	17.05	28.82
	54	39.37	49.93
	55	57.47	-14.57
	56	-10.03	-10.03
	57	-4.29	-4.29
	58	0.42	0.42
	59	4.11	4.11
	60	6.77	6.77
	61	8.00	-53.43
	62	-49.18	-49.18
	63	-21.51	-21.51
	64	9.78	9.78
	65	41.08	41.08
	66	68.75	68.75
	67	73.00	-122.65
	68	-95.36	-21.18
	69	-2.94	14.57
	70	14.57	14.57
	71	14.57	14.57
	72	14.57	14.57

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	31.54	-24.21
2	-21.74	-17.10
3	-13.13	-7.76
4	-4.00	1.20
5	4.90	10.15
6	13.99	18.54
7	20.97	-31.54
8	-29.04	-5.83
9	0.07	0.07
10	0.07	0.07
11	0.07	0.07
12	1.28	14.63
13	26.48	-14.27
14	-10.02	-10.02
15	-4.20	-4.20
16	1.62	1.62
17	7.44	7.44
18	13.26	13.26
19	17.51	-22.75
20	-17.74	-17.74
21	-9.43	-9.43
22	0.07	0.07
23	10.77	10.77
24	22.67	22.67
25	31.54	-22.52
26	-19.96	-15.30
27	-11.40	-6.16
28	-2.54	2.54
29	6.16	11.40
30	15.30	19.96
31	22.52	-31.48
32	-29.01	-6.01
33	0.28	0.28
34	0.28	0.28
35	0.28	-1.06
36	2.00	14.85
37	26.49	-15.89
38	-11.64	-11.64
39	-5.82	-5.82
40	0.00	0.00
41	5.82	5.82
42	11.64	11.64
43	15.89	-26.54
44	-14.69	-1.35
45	-0.14	-0.14
46	-0.14	-0.14
47	-0.14	-0.14
48	5.77	28.98
49	31.48	-20.98

	50	-18.54	-13.99
	51	-10.15	-4.90
	52	-1.20	4.00
	53	7.76	13.12
	54	17.09	21.74
	55	24.21	-31.54
	56	-22.67	-22.67
	57	-10.77	-10.77
	58	-0.07	-0.07
	59	9.43	9.43
	60	17.74	17.74
	61	22.75	-17.51
	62	-13.26	-13.26
	63	-7.44	-7.44
	64	-1.62	-1.62
	65	4.20	4.20
	66	10.02	10.02
	67	14.27	-26.43
	68	-14.79	-1.93
	69	1.13	-0.22
	70	-0.22	-0.22
	71	-0.22	-0.22
	72	6.07	29.07

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

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	19.71	-58.56
2	-50.40	-39.18
3	-27.98	-15.71
4	-5.06	7.39
5	19.08	33.40
6	47.64	62.21
7	73.50	-19.71
8	-19.71	-19.71
9	-15.57	-15.57
10	-15.57	-15.57
11	-15.57	-15.57
12	43.39	98.92
13	122.22	-71.57
14	-67.32	-67.32
15	-39.65	-39.65
16	-8.35	-8.35
17	22.94	22.94
18	50.61	50.61
19	54.86	-16.49
20	-13.14	-13.14
21	-7.61	-7.61
22	-1.27	-1.27
23	5.86	5.86
24	13.79	13.79
25	19.71	-66.01
26	-56.50	-43.73
27	-30.97	-17.49
28	-6.05	6.69
29	18.12	31.57
30	44.29	57.00
31	66.44	-20.74
32	-20.74	-20.74
33	-19.97	-19.97
34	-19.97	-19.97
35	-19.97	20.97
36	20.99	94.00
37	124.58	-63.41
38	-59.16	-59.16
39	-31.49	-31.49
40	-0.19	-0.19
41	31.10	31.10
42	58.77	58.77
43	63.02	-121.19
44	-97.88	-42.36
45	16.60	16.60
46	16.60	16.60
47	16.60	16.60
48	20.74	20.74
49	20.74	-73.73

	50	-62.50	-47.97
	51	-33.75	-19.43
	52	-7.73	4.75
	53	15.43	27.73
	54	38.95	50.19
	55	58.36	-19.72
	56	-13.81	-13.81
	57	-5.87	-5.87
	58	1.26	1.26
	59	7.59	7.59
	60	13.13	13.13
	61	16.47	-54.67
	62	-50.42	-50.42
	63	-22.75	-22.75
	64	8.55	8.55
	65	39.84	39.84
	66	67.51	67.51
	67	71.76	-125.60
	68	-95.02	-22.01
	69	-21.99	18.95
	70	18.95	18.95
	71	18.96	18.96
	72	19.72	19.72

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	15.34	-21.38
2	-18.92	-14.41
3	-10.73	-5.70
4	-2.27	2.68
5	6.25	11.55
6	15.64	20.60
7	23.49	-15.34
8	-15.34	-15.34
9	-1.88	-1.88
10	-1.88	-1.88
11	-1.88	-1.88
12	6.38	19.46
13	26.11	-17.06
14	-12.81	-12.81
15	-6.99	-6.99
16	-1.17	-1.17
17	4.65	4.65
18	10.47	10.47
19	14.72	-7.24
20	-6.01	-6.01
21	-3.35	-3.35
22	0.34	0.34
23	5.05	5.05
24	10.79	10.79
25	15.34	-22.44
26	-19.80	-15.09
27	-11.20	-6.01
28	-2.46	2.53
29	6.08	11.27
30	15.15	19.86
31	22.49	-15.51
32	-15.51	-15.51
33	-2.43	-2.43
34	-2.43	-2.43
35	-2.43	2.15
36	3.81	18.85
37	26.31	-15.91
38	-11.66	-11.66
39	-5.84	-5.84
40	-0.02	-0.02
41	5.80	5.80
42	11.62	11.62
43	15.87	-25.93
44	-19.29	-6.20
45	2.06	2.06
46	2.06	2.06
47	2.06	2.06
48	15.51	15.51
49	15.51	-23.51

	50	-20.64	-15.68
	51	-11.59	-6.29
	52	-2.72	2.24
	53	5.67	10.70
	54	14.38	18.89
	55	21.36	-15.34
	56	-10.80	-10.80
	57	-5.05	-5.05
	58	-0.34	-0.34
	59	3.35	3.35
	60	6.00	6.00
	61	7.24	-14.70
	62	-10.45	-10.45
	63	-4.63	-4.63
	64	1.19	1.19
	65	7.01	7.01
	66	12.83	12.83
	67	17.08	-26.49
	68	-19.03	-3.98
	69	-2.33	2.26
	70	2.26	2.26
	71	2.26	2.26
	72	15.34	15.34

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

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	14.24	-43.94
2	-37.98	-29.37
3	-21.13	-11.72
4	-3.89	5.66
5	14.27	25.25
6	35.81	46.97
7	55.32	-14.24
8	-14.24	-14.24
9	-11.91	-11.91
10	-11.91	-11.91
11	-11.91	-11.91
12	32.55	70.44
13	85.34	-51.83
14	-47.58	-47.58
15	-28.10	-28.10
16	-6.36	-6.36
17	15.38	15.38
18	34.86	34.86
19	39.11	-8.34
20	-7.10	-7.10
21	-4.45	-4.45
22	-0.76	-0.76
23	3.95	3.95
24	9.70	9.70
25	14.24	-49.64
26	-42.66	-32.88
27	-23.45	-13.12
28	-4.69	5.08
29	13.50	23.82
30	33.23	42.97
31	49.91	-15.07
32	-15.07	-15.07
33	-15.07	-15.07
34	-15.07	-15.07
35	-15.07	15.45
36	15.05	66.47
37	86.96	-45.59
38	-41.34	-41.34
39	-21.86	-21.86
40	-0.12	-0.12
41	21.62	21.62
42	41.10	41.10
43	45.35	-84.51
44	-69.61	-31.71
45	12.74	12.74
46	12.74	12.74
47	12.74	12.74
48	15.07	15.07
49	15.07	-55.46

	50	-47.15	-36.02
	51	-25.47	-14.49
	52	-5.86	3.71
	53	11.55	20.98
	54	29.24	37.85
	55	43.82	-14.26
	56	-9.72	-9.72
	57	-3.98	-3.98
	58	0.73	0.73
	59	4.42	4.42
	60	7.08	7.08
	61	8.31	-38.99
	62	-34.74	-34.74
	63	-15.26	-15.26
	64	6.48	6.48
	65	28.22	28.22
	66	47.70	47.70
	67	51.95	-87.77
	68	-67.28	-15.86
	69	-16.26	14.26
	70	14.26	14.26
	71	14.26	14.26
	72	14.26	14.26

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	28.03	-23.46
2	-20.97	-16.33
3	-12.40	-7.09
4	-3.39	1.76
5	5.44	10.69
6	14.56	19.17
7	21.67	-28.03
8	-28.03	-9.76
9	0.09	0.09
10	0.09	0.09
11	0.09	0.09
12	1.70	15.91
13	26.70	-15.00
14	-10.75	-10.75
15	-4.93	-4.93
16	0.89	0.89
17	6.71	6.71
18	12.53	12.53
19	16.78	-18.60
20	-14.77	-14.77
21	-8.08	-8.08
22	-0.07	-0.07
23	9.27	9.27
24	19.93	19.93
25	28.03	-22.52
26	-19.97	-15.31
27	-11.41	-6.17
28	-2.54	2.54
29	6.17	11.41
30	15.31	19.97
31	22.52	-28.00
32	-28.00	-10.00
33	0.28	0.28
34	0.28	0.28
35	0.28	-1.15
36	2.42	16.11
37	26.68	-15.89
38	-11.64	-11.64
39	-5.82	-5.82
40	0.00	0.00
41	5.82	5.82
42	11.64	11.64
43	15.89	-26.73
44	-15.94	-1.73
45	-0.12	-0.12
46	-0.12	-0.12
47	-0.12	-0.12
48	9.73	28.00
49	28.00	-21.67

	50	-19.17	-14.56
	51	-10.69	-5.44
	52	-1.76	3.39
	53	7.09	12.40
	54	16.33	20.96
	55	23.46	-28.03
	56	-19.93	-19.93
	57	-9.27	-9.27
	58	0.07	0.07
	59	8.08	8.08
	60	14.77	14.77
	61	18.60	-16.78
	62	-12.53	-12.53
	63	-6.71	-6.71
	64	-0.89	-0.89
	65	4.93	4.93
	66	10.75	10.75
	67	15.00	-26.65
	68	-16.08	-2.39
	69	1.18	-0.25
	70	-0.25	-0.25
	71	-0.25	-0.25
	72	10.03	28.03

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

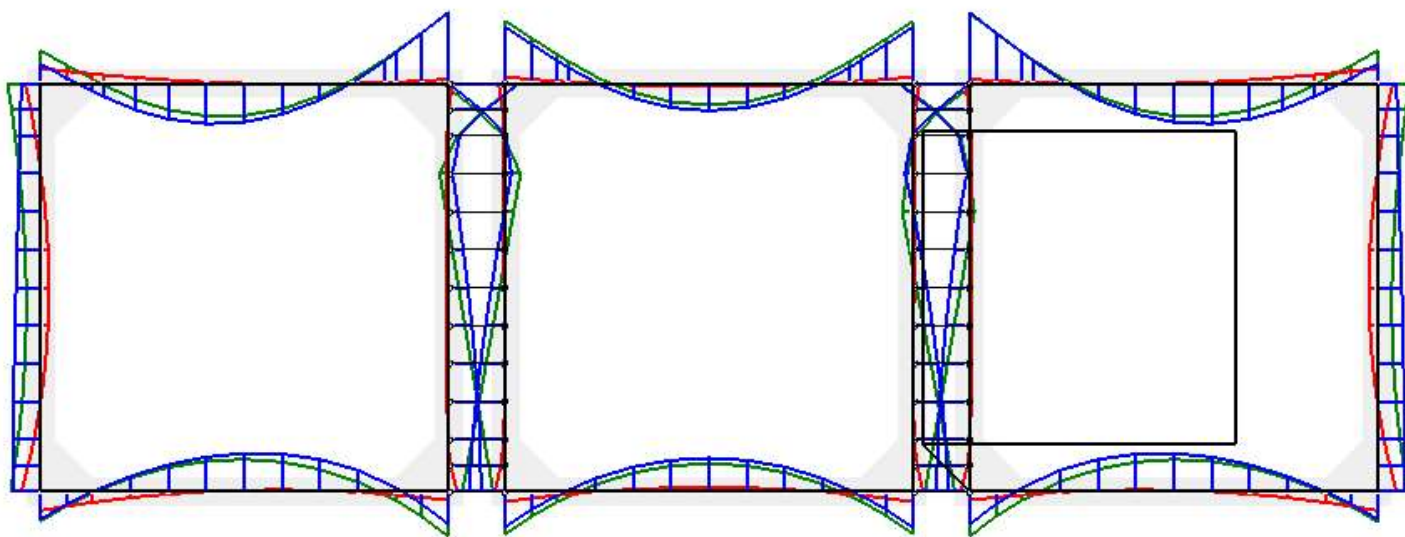
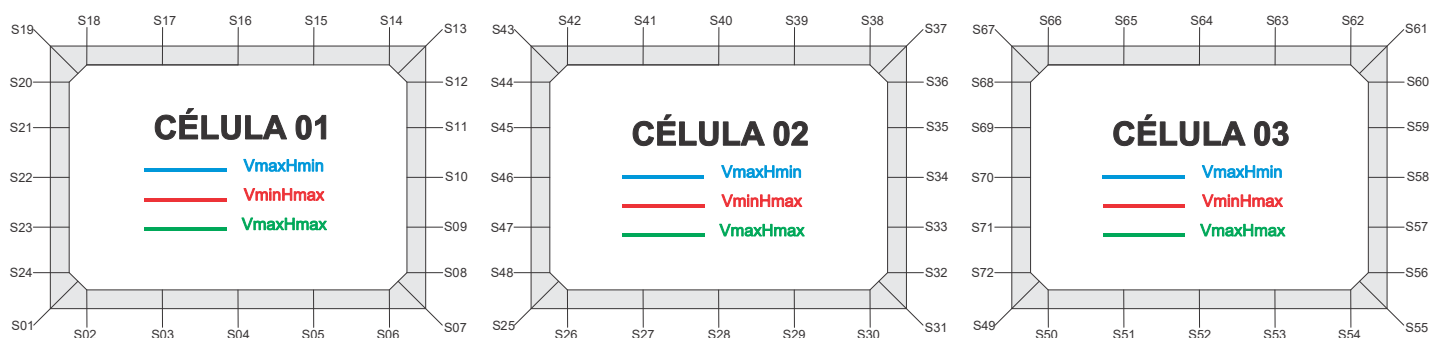
ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	18.07	-44.62
2	-38.60	-29.89
3	-21.51	-11.96
4	-4.01	5.63
5	14.27	25.21
6	35.64	46.61
7	54.75	-18.07
8	-18.07	-18.07
9	-10.43	-10.43
10	-10.43	-10.43
11	-10.43	-10.43
12	29.51	69.12
13	86.18	-51.13
14	-46.88	-46.88
15	-27.40	-27.40
16	-5.66	-5.66
17	16.08	16.08
18	35.56	35.56
19	39.81	-13.02
20	-10.47	-10.47
21	-6.01	-6.01
22	-0.67	-0.67
23	5.56	5.56
24	12.67	12.67
25	18.07	-49.67
26	-42.74	-32.99
27	-23.56	-13.19
28	-4.71	5.13
29	13.61	23.96
30	33.37	43.07
31	49.96	-18.78
32	-18.78	-18.78
33	-13.40	-13.40
34	-13.40	-13.40
35	-13.40	13.91
36	14.54	65.82
37	87.73	-45.60
38	-41.35	-41.35
39	-21.87	-21.87
40	-0.13	-0.13
41	21.61	21.61
42	41.09	41.09
43	45.34	-85.47
44	-68.41	-28.80
45	11.15	11.15
46	11.15	11.15
47	11.15	11.15
48	18.78	18.78
49	18.78	-54.90

	50	-46.80	-35.86
	51	-25.44	-14.50
	52	-5.85	3.81
	53	11.77	21.34
	54	29.74	38.46
	55	44.49	-18.08
	56	-12.68	-12.68
	57	-5.57	-5.57
	58	0.66	0.66
	59	6.00	6.00
	60	10.46	10.46
	61	13.01	-39.68
	62	-35.43	-35.43
	63	-15.95	-15.95
	64	5.79	5.79
	65	27.53	27.53
	66	47.01	47.01
	67	51.26	-88.43
	68	-66.52	-15.25
	69	-14.61	12.69
	70	12.69	12.69
	71	12.69	12.69
	72	18.08	18.08

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	-24.34	24.34
2	0.15	0.15
3	-23.51	-23.51
4	-33.55	-33.55
5	-28.26	-28.26
6	-3.26	-3.26
7	28.81	28.81
8	27.93	27.93
9	23.90	23.90
10	17.23	17.23
11	8.63	8.63
12	10.02	10.02
13	62.40	-62.40
14	-27.12	-27.12
15	14.48	14.48
16	34.05	34.05
17	31.41	31.41
18	6.73	6.73
19	-16.91	-16.91
20	-17.92	-17.92
21	-19.67	-19.67
22	-21.49	-21.49
23	-23.07	-23.07
24	-24.10	-24.10
25	-24.34	31.45
26	3.16	3.16
27	-21.59	-21.59
28	-29.42	-29.42
29	-21.52	-21.52
30	3.29	3.29
31	31.61	31.61
32	28.75	28.75
33	21.83	21.83
34	12.28	12.28
35	0.80	0.80
36	-0.92	-0.92
37	49.64	-49.64
38	-20.16	-20.16
39	12.99	12.99
40	24.11	24.11
41	13.02	13.02
42	-20.09	-20.09
43	-49.54	-49.54
44	0.86	0.86
45	-0.64	-0.64
46	-12.12	-12.12
47	-21.67	-21.67
48	-28.59	-28.59
49	-31.45	28.89

	50	-3.20	-3.20
	51	-28.23	-28.23
	52	-33.55	-33.55
	53	-23.55	-23.55
	54	0.08	0.08
	55	24.26	24.26
	56	24.03	24.03
	57	23.02	23.02
	58	21.47	21.47
	59	19.67	19.67
	60	17.94	17.94
	61	16.94	-16.94
	62	6.69	6.69
	63	31.34	31.34
	64	33.97	33.97
	65	14.38	14.38
	66	-27.24	-27.24
	67	-62.53	-62.53
	68	-9.98	-9.98
	69	-8.79	-8.79
	70	-17.36	-17.36
	71	-24.01	-24.01
	72	-28.03	-28.03

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-16.70	16.70
2	9.54	9.54
3	2.26	2.26
4	-1.19	-1.19
5	-0.94	-0.94
6	2.93	2.93
7	7.62	7.62
8	-0.62	-0.62
9	-0.91	-0.91
10	-0.93	-0.93
11	-0.95	-0.95
12	-1.01	-1.01
13	3.72	-3.72
14	-1.18	-1.18
15	0.51	0.51
16	-0.13	-0.13
17	-3.09	-3.09
18	-8.39	-8.39
19	-13.41	-13.41
20	-4.38	-4.38
21	4.41	4.41
22	7.53	7.53
23	4.38	4.38
24	-5.58	-5.58
25	-16.70	9.15
26	3.32	3.32
27	-1.97	-1.97
28	-3.69	-3.69
29	-1.97	-1.97
30	3.32	3.32
31	9.15	9.15
32	0.97	0.97
33	0.76	0.76
34	0.87	0.87
35	0.98	0.98
36	0.94	0.94
37	5.74	-5.74
38	-1.95	-1.95
39	1.54	1.54
40	2.70	2.70
41	1.54	1.54
42	-1.95	-1.95
43	-5.74	-5.74
44	-0.95	-0.95
45	-0.91	-0.91
46	-0.84	-0.84
47	-0.77	-0.77
48	-0.97	-0.97
49	-9.15	7.62

	50	2.93	2.93
	51	-0.94	-0.94
	52	-1.19	-1.19
	53	2.26	2.26
	54	9.54	9.54
	55	16.70	16.70
	56	5.58	5.58
	57	-4.38	-4.38
	58	-7.53	-7.53
	59	-4.41	-4.41
	60	4.38	4.38
	61	13.41	-13.41
	62	-8.39	-8.39
	63	-3.09	-3.09
	64	-0.13	-0.13
	65	0.51	0.51
	66	-1.18	-1.18
	67	-3.72	-3.72
	68	1.01	1.01
	69	0.89	0.89
	70	0.91	0.91
	71	0.92	0.92
	72	0.62	0.62

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-26.26	26.26
2	1.26	1.26
3	-21.22	-21.22
4	-28.27	-28.27
5	-19.45	-19.45
6	7.89	7.89
7	39.58	39.58
8	31.59	31.59
9	20.20	20.20
10	9.06	9.06
11	-2.09	-2.09
12	7.98	7.98
13	61.95	-61.95
14	-28.27	-28.27
15	11.01	11.01
16	28.26	28.26
17	23.29	23.29
18	-3.70	-3.70
19	-28.94	-28.94
20	-22.29	-22.29
21	-15.52	-15.52
22	-12.54	-12.54
23	-13.73	-13.73
24	-19.47	-19.47
25	-26.26	37.60
26	9.05	9.05
27	-16.38	-16.38
28	-24.64	-24.64
29	-16.65	-16.65
30	8.54	8.54
31	36.97	36.97
32	28.33	28.33
33	15.77	15.77
34	3.20	3.20
35	-9.36	-9.36
36	2.11	2.11
37	54.58	-54.58
38	-25.17	-25.17
39	7.90	7.90
40	18.94	18.94
41	7.77	7.77
42	-25.43	-25.43
43	-54.94	-54.94
44	-1.61	-1.61
45	7.52	7.52
46	-4.56	-4.56
47	-16.64	-16.64
48	-28.96	-28.96
49	-37.60	39.36

	50	7.73	7.73
	51	-19.50	-19.50
	52	-28.19	-28.19
	53	-21.00	-21.00
	54	1.61	1.61
	55	26.67	26.67
	56	19.80	19.80
	57	13.95	13.95
	58	12.64	12.64
	59	15.51	15.51
	60	22.15	22.15
	61	28.72	-28.72
	62	-3.44	-3.44
	63	23.62	23.62
	64	28.65	28.65
	65	11.47	11.47
	66	-27.74	-27.74
	67	-61.38	-61.38
	68	-8.34	-8.34
	69	3.95	3.95
	70	-7.80	-7.80
	71	-19.54	-19.54
	72	-31.29	-31.29

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-31.24	31.24
2	-1.32	-1.32
3	-31.13	-31.13
4	-42.69	-42.69
5	-36.40	-36.40
6	-9.24	-9.24
7	24.62	24.62
8	23.23	23.23
9	18.46	18.46
10	11.05	11.05
11	1.72	1.72
12	3.95	3.95
13	61.32	-61.32
14	-24.19	-24.19
15	17.58	17.58
16	37.13	37.13
17	34.46	34.46
18	9.75	9.75
19	-19.83	-19.83
20	-21.35	-21.35
21	-23.85	-23.85
22	-26.40	-26.40
23	-28.72	-28.72
24	-30.49	-30.49
25	-31.24	38.07
26	1.21	1.21
27	-29.29	-29.29
28	-37.76	-37.76
29	-27.88	-27.88
30	-0.32	-0.32
31	29.64	29.64
32	25.91	25.91
33	17.73	17.73
34	6.92	6.92
35	-5.82	-5.82
36	-3.82	-3.82
37	48.91	-48.91
38	-18.05	-18.05
39	14.59	14.59
40	25.02	25.02
41	13.22	13.22
42	-20.61	-20.61
43	-56.48	-56.48
44	-1.44	-1.44
45	-2.61	-2.61
46	-15.35	-15.35
47	-26.16	-26.16
48	-34.35	-34.35
49	-38.07	35.99

	50	-5.72	-5.72
	51	-36.89	-36.89
	52	-42.58	-42.58
	53	-30.43	-30.43
	54	-4.60	-4.60
	55	20.11	20.11
	56	19.08	19.08
	57	16.89	16.89
	58	14.15	14.15
	59	11.18	11.18
	60	8.27	8.27
	61	6.47	-6.47
	62	17.06	17.06
	63	39.05	39.05
	64	38.81	38.81
	65	16.36	16.36
	66	-28.14	-28.14
	67	-71.33	-71.33
	68	-16.55	-16.55
	69	-11.56	-11.56
	70	-21.30	-21.30
	71	-29.13	-29.13
	72	-34.32	-34.32

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-16.64	16.64
2	9.51	9.51
3	2.27	2.27
4	-1.13	-1.13
5	-0.82	-0.82
6	3.10	3.10
7	7.83	7.83
8	-0.45	-0.45
9	-0.54	-0.54
10	-0.56	-0.56
11	-0.57	-0.57
12	-0.68	-0.68
13	3.95	-3.95
14	-1.37	-1.37
15	0.37	0.37
16	-0.23	-0.23
17	-3.15	-3.15
18	-8.39	-8.39
19	-13.39	-13.39
20	-4.35	-4.35
21	4.45	4.45
22	7.57	7.57
23	4.43	4.43
24	-5.53	-5.53
25	-16.64	9.16
26	3.27	3.27
27	-2.09	-2.09
28	-3.89	-3.89
29	-2.26	-2.26
30	2.92	2.92
31	8.67	8.67
32	0.50	0.50
33	0.46	0.46
34	0.53	0.53
35	0.60	0.60
36	0.51	0.51
37	5.24	-5.24
38	-1.53	-1.53
39	1.86	1.86
40	2.91	2.91
41	1.65	1.65
42	-1.95	-1.95
43	-5.81	-5.81
44	-1.11	-1.11
45	-1.12	-1.12
46	-1.04	-1.04
47	-0.96	-0.96
48	-0.96	-0.96
49	-9.16	7.28

	50	2.77	2.77
	51	-0.86	-0.86
	52	-0.88	-0.88
	53	2.83	2.83
	54	10.40	10.40
	55	17.77	17.77
	56	6.67	6.67
	57	-3.29	-3.29
	58	-6.41	-6.41
	59	-3.28	-3.28
	60	5.53	5.53
	61	14.58	-14.58
	62	-9.36	-9.36
	63	-3.79	-3.79
	64	-0.55	-0.55
	65	0.37	0.37
	66	-1.04	-1.04
	67	-3.40	-3.40
	68	1.27	1.27
	69	1.10	1.10
	70	1.09	1.09
	71	1.07	1.07
	72	0.94	0.94

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-32.36	32.36
2	-0.88	-0.88
3	-29.19	-29.19
4	-37.35	-37.35
5	-27.12	-27.12
6	2.73	2.73
7	36.34	36.34
8	27.99	27.99
9	16.54	16.54
10	5.79	5.79
11	-4.97	-4.97
12	3.96	3.96
13	61.81	-61.81
14	-26.20	-26.20
15	13.36	13.36
16	30.70	30.70
17	25.81	25.81
18	-1.11	-1.11
19	-32.22	-32.22
20	-25.93	-25.93
21	-19.69	-19.69
22	-17.23	-17.23
23	-18.95	-18.95
24	-25.21	-25.21
25	-32.36	42.79
26	6.12	6.12
27	-24.40	-24.40
28	-32.62	-32.62
29	-21.97	-21.97
30	6.70	6.70
31	37.27	37.27
32	27.87	27.87
33	14.21	14.21
34	0.56	0.56
35	-13.10	-13.10
36	-0.79	-0.79
37	55.79	-55.79
38	-24.52	-24.52
39	8.71	8.71
40	19.74	19.74
41	8.54	8.54
42	-24.70	-24.70
43	-60.15	-60.15
44	-3.34	-3.34
45	4.08	4.08
46	-8.18	-8.18
47	-20.44	-20.44
48	-33.40	-33.40
49	-42.79	46.68

	50	5.76	5.76
	51	-27.32	-27.32
	52	-36.13	-36.13
	53	-26.44	-26.44
	54	-1.09	-1.09
	55	24.93	24.93
	56	17.21	17.21
	57	10.10	10.10
	58	7.55	7.55
	59	9.17	9.17
	60	14.57	14.57
	61	20.28	-20.28
	62	5.34	5.34
	63	30.36	30.36
	64	33.17	33.17
	65	13.76	13.76
	66	-27.70	-27.70
	67	-68.80	-68.80
	68	-11.76	-11.76
	69	1.22	1.22
	70	-11.77	-11.77
	71	-24.76	-24.76
	72	-37.75	-37.75

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-15.54	15.54
2	0.81	0.81
3	-12.76	-12.76
4	-17.43	-17.43
5	-12.76	-12.76
6	3.08	3.08
7	21.91	21.91
8	17.94	17.94
9	12.16	12.16
10	6.38	6.38
11	0.60	0.60
12	4.95	4.95
13	35.34	-35.34
14	-15.82	-15.82
15	6.81	6.81
16	17.03	17.03
17	14.73	14.73
18	0.01	0.01
19	-14.07	-14.07
20	-11.99	-11.99
21	-9.73	-9.73
22	-8.74	-8.74
23	-9.42	-9.42
24	-12.20	-12.20
25	-15.54	21.55
26	4.65	4.65
27	-10.37	-10.37
28	-15.24	-15.24
29	-10.53	-10.53
30	4.34	4.34
31	21.17	21.17
32	16.60	16.60
33	9.95	9.95
34	3.30	3.30
35	-3.35	-3.35
36	0.65	0.65
37	30.06	-30.06
38	-13.29	-13.29
39	5.34	5.34
40	11.56	11.56
41	5.25	5.25
42	-13.46	-13.46
43	-30.29	-30.29
44	-0.50	-0.50
45	2.97	2.97
46	-3.68	-3.68
47	-10.33	-10.33
48	-16.98	-16.98
49	-21.55	21.72

	50	2.93	2.93
	51	-12.84	-12.84
	52	-17.42	-17.42
	53	-12.67	-12.67
	54	0.97	0.97
	55	15.74	15.74
	56	12.36	12.36
	57	9.54	9.54
	58	8.80	8.80
	59	9.74	9.74
	60	11.95	11.95
	61	13.99	-13.99
	62	0.12	0.12
	63	14.88	14.88
	64	17.22	17.22
	65	7.05	7.05
	66	-15.54	-15.54
	67	-35.03	-35.03
	68	-5.05	-5.05
	69	-0.23	-0.23
	70	-6.06	-6.06
	71	-11.89	-11.89
	72	-17.72	-17.72

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-12.29	12.29
2	5.97	5.97
3	-0.07	-0.07
4	-2.42	-2.42
5	-1.20	-1.20
6	3.63	3.63
7	9.06	9.06
8	0.73	0.73
9	-0.42	-0.42
10	-0.40	-0.40
11	-0.37	-0.37
12	-0.10	-0.10
13	5.56	-5.56
14	-2.22	-2.22
15	0.63	0.63
16	1.14	1.14
17	-0.67	-0.67
18	-4.81	-4.81
19	-9.04	-9.04
20	-3.46	-3.46
21	2.01	2.01
22	3.92	3.92
23	1.80	1.80
24	-4.85	-4.85
25	-12.29	9.62
26	3.78	3.78
27	-1.55	-1.55
28	-3.30	-3.30
29	-1.55	-1.55
30	3.79	3.79
31	9.63	9.63
32	1.31	1.31
33	0.17	0.17
34	0.28	0.28
35	0.39	0.39
36	0.58	0.58
37	6.26	-6.26
38	-2.48	-2.48
39	1.01	1.01
40	2.18	2.18
41	1.02	1.02
42	-2.48	-2.48
43	-6.26	-6.26
44	-0.59	-0.59
45	-0.29	-0.29
46	-0.24	-0.24
47	-0.19	-0.19
48	-1.31	-1.31
49	-9.62	9.06

	50	3.63	3.63
	51	-1.20	-1.20
	52	-2.42	-2.42
	53	-0.07	-0.07
	54	5.97	5.97
	55	12.29	12.29
	56	4.85	4.85
	57	-1.80	-1.80
	58	-3.93	-3.93
	59	-2.01	-2.01
	60	3.46	3.46
	61	9.04	-9.04
	62	-4.81	-4.81
	63	-0.67	-0.67
	64	1.14	1.14
	65	0.63	0.63
	66	-2.22	-2.22
	67	-5.56	-5.56
	68	0.11	0.11
	69	0.27	0.27
	70	0.36	0.36
	71	0.44	0.44
	72	-0.73	-0.73

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-16.19	16.19
2	1.20	1.20
3	-12.23	-12.23
4	-16.38	-16.38
5	-11.09	-11.09
6	5.12	5.12
7	23.78	23.78
8	18.36	18.36
9	11.30	11.30
10	5.08	5.08
11	-1.15	-1.15
12	4.41	4.41
13	34.82	-34.82
14	-15.72	-15.72
15	6.29	6.29
16	15.89	15.89
17	12.98	12.98
18	-2.36	-2.36
19	-16.86	-16.86
20	-12.78	-12.78
21	-8.60	-8.60
22	-6.79	-6.79
23	-7.69	-7.69
24	-11.59	-11.59
25	-16.19	22.27
26	5.42	5.42
27	-9.52	-9.52
28	-14.23	-14.23
29	-9.26	-9.26
30	5.91	5.91
31	22.88	22.88
32	17.18	17.18
33	9.03	9.03
34	1.04	1.04
35	-6.95	-6.95
36	1.45	1.45
37	31.50	-31.50
38	-14.65	-14.65
39	4.10	4.10
40	10.44	10.44
41	4.26	4.26
42	-14.34	-14.34
43	-31.09	-31.09
44	-0.96	-0.96
45	4.19	4.19
46	-2.45	-2.45
47	-9.09	-9.09
48	-16.56	-16.56
49	-22.27	24.32

	50	5.58	5.58
	51	-10.76	-10.76
	52	-16.19	-16.19
	53	-12.15	-12.15
	54	1.18	1.18
	55	16.11	16.11
	56	11.51	11.51
	57	7.60	7.60
	58	6.70	6.70
	59	8.50	8.50
	60	12.67	12.67
	61	16.75	-16.75
	62	-2.30	-2.30
	63	12.95	12.95
	64	15.79	15.79
	65	6.12	6.12
	66	-15.98	-15.98
	67	-35.13	-35.13
	68	-4.79	-4.79
	69	4.01	4.01
	70	-3.57	-3.57
	71	-11.16	-11.16
	72	-18.89	-18.89

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-7.90	7.90
2	2.36	2.36
3	-2.67	-2.67
4	-4.26	-4.26
5	-2.48	-2.48
6	2.96	2.96
7	9.02	9.02
8	4.81	4.81
9	1.36	1.36
10	0.61	0.61
11	-0.14	-0.14
12	0.76	0.76
13	7.03	-7.03
14	-2.92	-2.92
15	1.04	1.04
16	2.67	2.67
17	1.98	1.98
18	-1.05	-1.05
19	-4.51	-4.51
20	-2.68	-2.68
21	-0.77	-0.77
22	-0.14	-0.14
23	-1.18	-1.18
24	-4.32	-4.32
25	-7.90	8.85
26	3.04	3.04
27	-2.22	-2.22
28	-3.91	-3.91
29	-2.19	-2.19
30	3.09	3.09
31	8.92	8.92
32	4.65	4.65
33	1.06	1.06
34	0.09	0.09
35	-0.89	-0.89
36	0.30	0.30
37	6.51	-6.51
38	-2.72	-2.72
39	0.78	0.78
40	1.95	1.95
41	0.79	0.79
42	-2.69	-2.69
43	-6.47	-6.47
44	-0.25	-0.25
45	0.58	0.58
46	-0.24	-0.24
47	-1.07	-1.07
48	-4.58	-4.58
49	-8.85	9.08

	50	3.01	3.01
	51	-2.44	-2.44
	52	-4.24	-4.24
	53	-2.66	-2.66
	54	2.35	2.35
	55	7.89	7.89
	56	4.31	4.31
	57	1.17	1.17
	58	0.13	0.13
	59	0.76	0.76
	60	2.67	2.67
	61	4.50	-4.50
	62	-1.04	-1.04
	63	1.97	1.97
	64	2.66	2.66
	65	1.02	1.02
	66	-2.95	-2.95
	67	-7.06	-7.06
	68	-0.80	-0.80
	69	0.46	0.46
	70	-0.45	-0.45
	71	-1.35	-1.35
	72	-4.87	-4.87

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-12.03	12.03
2	0.76	0.76
3	-9.34	-9.34
4	-12.46	-12.46
5	-8.47	-8.47
6	3.74	3.74
7	17.80	17.80
8	13.89	13.89
9	8.66	8.66
10	3.89	3.89
11	-0.87	-0.87
12	3.26	3.26
13	24.68	-24.68
14	-11.01	-11.01
15	4.51	4.51
16	11.41	11.41
17	9.60	9.60
18	-0.83	-0.83
19	-11.00	-11.00
20	-8.87	-8.87
21	-6.52	-6.52
22	-5.45	-5.45
23	-6.05	-6.05
24	-8.75	-8.75
25	-12.03	16.72
26	4.02	4.02
27	-7.24	-7.24
28	-10.80	-10.80
29	-7.09	-7.09
30	4.32	4.32
31	17.09	17.09
32	12.95	12.95
33	6.92	6.92
34	0.89	0.89
35	-5.14	-5.14
36	0.96	0.96
37	22.06	-22.06
38	-10.11	-10.11
39	2.92	2.92
40	7.32	7.32
41	3.02	3.02
42	-9.91	-9.91
43	-21.80	-21.80
44	-0.61	-0.61
45	3.18	3.18
46	-1.91	-1.91
47	-7.01	-7.01
48	-12.57	-12.57
49	-16.72	18.15

	50	4.04	4.04
	51	-8.26	-8.26
	52	-12.33	-12.33
	53	-9.28	-9.28
	54	0.77	0.77
	55	12.00	12.00
	56	8.71	8.71
	57	6.00	6.00
	58	5.39	5.39
	59	6.45	6.45
	60	8.79	8.79
	61	10.91	-10.91
	62	-0.78	-0.78
	63	9.61	9.61
	64	11.36	11.36
	65	4.42	4.42
	66	-11.15	-11.15
	67	-24.85	-24.85
	68	-3.53	-3.53
	69	2.89	2.89
	70	-2.81	-2.81
	71	-8.52	-8.52
	72	-14.23	-14.23

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-11.19	11.19
2	5.08	5.08
3	-0.67	-0.67
4	-2.76	-2.76
5	-1.32	-1.32
6	3.73	3.73
7	9.34	9.34
8	1.63	1.63
9	-0.30	-0.30
10	-0.26	-0.26
11	-0.23	-0.23
12	0.13	0.13
13	5.99	-5.99
14	-2.45	-2.45
15	0.68	0.68
16	1.49	1.49
17	-0.03	-0.03
18	-3.88	-3.88
19	-7.91	-7.91
20	-3.31	-3.31
21	1.31	1.31
22	2.98	2.98
23	1.19	1.19
24	-4.61	-4.61
25	-11.19	9.66
26	3.82	3.82
27	-1.52	-1.52
28	-3.26	-3.26
29	-1.52	-1.52
30	3.82	3.82
31	9.67	9.67
32	1.97	1.97
33	0.02	0.02
34	0.13	0.13
35	0.24	0.24
36	0.50	0.50
37	6.38	-6.38
38	-2.60	-2.60
39	0.90	0.90
40	2.06	2.06
41	0.90	0.90
42	-2.59	-2.59
43	-6.38	-6.38
44	-0.51	-0.51
45	-0.14	-0.14
46	-0.09	-0.09
47	-0.04	-0.04
48	-1.96	-1.96
49	-9.66	9.34

	50	3.73	3.73
	51	-1.32	-1.32
	52	-2.76	-2.76
	53	-0.67	-0.67
	54	5.08	5.08
	55	11.19	11.19
	56	4.61	4.61
	57	-1.19	-1.19
	58	-2.98	-2.98
	59	-1.31	-1.31
	60	3.31	3.31
	61	7.91	-7.91
	62	-3.88	-3.88
	63	-0.03	-0.03
	64	1.49	1.49
	65	0.68	0.68
	66	-2.45	-2.45
	67	-5.99	-5.99
	68	-0.12	-0.12
	69	0.12	0.12
	70	0.22	0.22
	71	0.32	0.32
	72	-1.63	-1.63

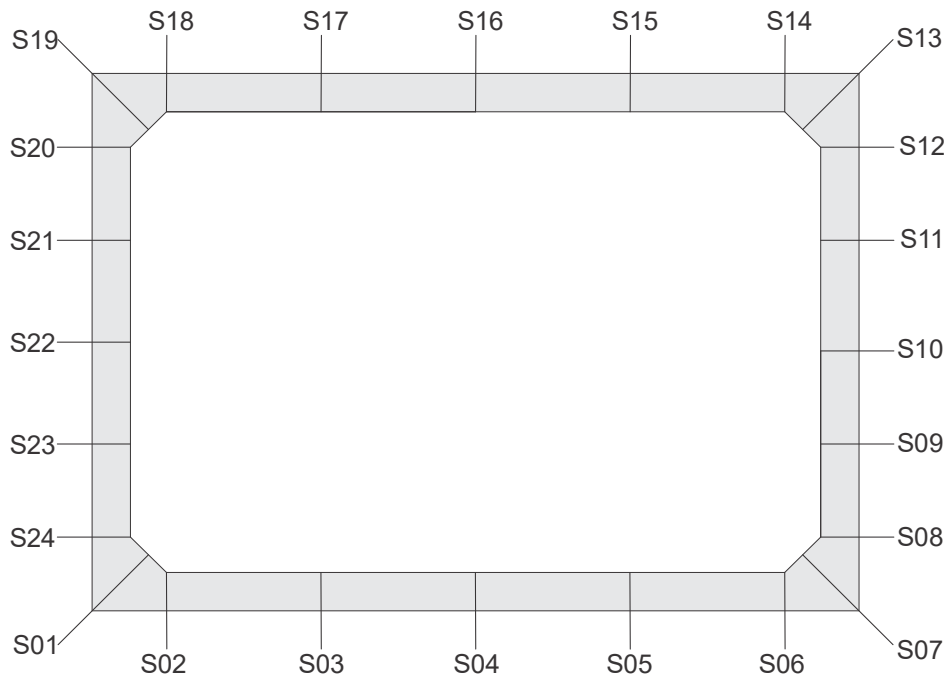
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#####
#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VmaxHmax                                  #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-13.08	13.08
2	1.64	1.64
3	-8.64	-8.64
4	-11.84	-11.84
5	-7.86	-7.86
6	4.31	4.31
7	18.25	18.25
8	13.28	13.28
9	7.58	7.58
10	3.40	3.40
11	-0.77	-0.77
12	3.05	3.05
13	24.40	-24.40
14	-10.92	-10.92
15	4.32	4.32
16	10.93	10.93
17	8.85	8.85
18	-1.87	-1.87
19	-12.23	-12.23
20	-8.99	-8.99
21	-5.66	-5.66
22	-4.30	-4.30
23	-5.25	-5.25
24	-8.86	-8.86
25	-13.08	17.23
26	4.53	4.53
27	-6.78	-6.78
28	-10.36	-10.36
29	-6.61	-6.61
30	4.85	4.85
31	17.64	17.64
32	12.48	12.48
33	6.04	6.04
34	0.69	0.69
35	-4.67	-4.67
36	1.02	1.02
37	22.13	-22.13
38	-10.18	-10.18
39	2.86	2.86
40	7.26	7.26
41	2.96	2.96
42	-9.97	-9.97
43	-21.85	-21.85
44	-0.70	-0.70
45	2.83	2.83
46	-1.62	-1.62
47	-6.08	-6.08
48	-12.07	-12.07
49	-17.23	18.60

	50	4.62	4.62
	51	-7.64	-7.64
	52	-11.71	-11.71
	53	-8.59	-8.59
	54	1.62	1.62
	55	13.03	13.03
	56	8.81	8.81
	57	5.19	5.19
	58	4.24	4.24
	59	5.60	5.60
	60	8.92	8.92
	61	12.16	-12.16
	62	-1.83	-1.83
	63	8.84	8.84
	64	10.87	10.87
	65	4.21	4.21
	66	-11.09	-11.09
	67	-24.60	-24.60
	68	-3.30	-3.30
	69	2.68	2.68
	70	-2.40	-2.40
	71	-7.48	-7.48
	72	-13.63	-13.63

ARMADURAS P/ SOLICITAÇÕES NORMAIS



Seção	As-CA60ext(cm ² /m)	As-CA50ext(cm ² /m)	As-CA60int(cm ² /m)	As-CA50int(cm ² /m)
1	5.47	6.57	1.26	1.26
2	2.32	2.79	2.32	2.79
3	2.32	2.79	4.36	5.23
4	2.32	2.79	6.36	7.64
5	2.32	2.79	5.30	6.36
6	2.32	2.79	2.32	2.79
7	5.47	6.57	1.26	1.26
8	5.60	6.73	2.32	2.79
9	4.11	4.93	2.32	2.79
10	2.85	3.42	2.32	2.79
11	2.32	2.79	2.32	2.79
12	2.32	2.79	2.32	2.79
13	5.47	6.57	1.26	1.26
14	5.36	6.43	2.32	2.79
15	2.32	2.79	2.70	3.24
16	2.32	2.79	6.53	7.84
17	2.32	2.79	5.99	7.19
18	2.32	2.79	2.32	2.79
19	5.47	6.57	1.26	1.26
20	3.71	4.45	2.32	2.79
21	3.18	3.81	2.32	2.79
22	3.50	4.20	2.32	2.79
23	3.77	4.53	2.32	2.79
24	3.95	4.73	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	-72.85	4.41	-18.34	0.76	27.12	0.00
13	-71.57	34.82	-7.24	7.03	131.53	1.66
14	-16.49	15.72	-7.24	2.92	191.96	5.44
16	-8.13	17.03	-22.75	1.14	211.33	0.88
18	-16.49	2.36	-7.24	1.05	15.20	0.00
19	-54.86	16.86	-7.24	4.51	48.29	0.00
20	-56.14	12.78	-16.00	2.68	133.90	1.81

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	115.04	190.56	0.00	0.00
2	2.79	2.53E-003	104.46	77.99	571.15	0.62
6	2.79	2.53E-003	106.03	77.99	571.15	1.25
7	6.57	2.12E-003	117.44	180.53	0.00	0.00
13	6.57	2.12E-003	157.48	182.01	0.00	0.00
14	6.43	5.85E-003	101.29	87.56	571.15	0.00
18	2.79	2.53E-003	83.29	79.09	571.15	0.00
19	6.57	2.12E-003	102.54	182.73	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	-22.38	12.03	6.30	0.004
2	2.79	-14.24	0.76	6.30	0.000
3	5.23	-14.24	9.34	6.30	0.032
4	7.64	-14.24	12.46	6.30	0.028
5	6.36	-14.24	8.47	6.30	0.018
6	2.79	-14.24	3.74	6.30	0.015
7	6.57	-37.32	17.80	6.30	0.008
8	6.73	-59.11	13.89	6.30	0.035
9	4.93	-57.61	8.66	6.30	0.021
10	3.42	-56.11	3.89	6.30	0.004
11	2.79	-54.61	0.87	6.30	0.000
12	2.79	-53.11	3.26	6.30	0.003
13	6.57	-30.08	24.68	6.30	0.019
14	6.43	-8.34	11.01	6.30	0.031
15	3.24	-8.34	4.51	6.30	0.019
16	7.84	-8.34	11.41	6.30	0.023
17	7.19	-8.34	9.60	6.30	0.019
18	2.79	-8.34	0.83	6.30	0.000
19	6.57	-23.72	11.00	6.30	0.003
20	4.45	-40.39	8.87	6.30	0.032
21	3.81	-41.89	6.52	6.30	0.020
22	4.20	-43.39	5.45	6.30	0.010
23	4.53	-44.89	6.05	6.30	0.011
24	4.73	-46.39	8.75	6.30	0.026

VminHmax

Seção	As (cm ² /m)	Nsd (kN)	Msd (kN.m)	Ø (mm)	w (mm)
1	6.57	-13.30	11.19	6.30	0.004
2	2.79	-28.03	5.08	6.30	0.025
3	5.23	-28.03	0.67	6.30	0.000
4	7.64	-28.03	2.76	6.30	0.001
5	6.36	-28.03	1.32	6.30	0.000
6	2.79	-28.03	3.73	6.30	0.011
7	6.57	-25.80	9.34	6.30	0.002
8	6.73	-22.28	1.63	6.30	0.000
9	4.93	-20.78	0.30	6.30	0.000
10	3.42	-19.28	0.26	6.30	0.000
11	2.79	-17.78	0.23	6.30	0.000
12	2.79	-16.28	0.13	6.30	0.000
13	6.57	-16.80	5.99	6.30	0.001
14	6.43	-18.60	2.45	6.30	0.001
15	3.24	-18.60	0.68	6.30	0.000
16	7.84	-18.60	1.49	6.30	0.000
17	7.19	-18.60	0.03	6.30	0.000
18	2.79	-18.60	3.88	6.30	0.015
19	6.57	-17.69	7.91	6.30	0.002
20	4.45	-18.07	3.31	6.30	0.004
21	3.81	-19.57	1.31	6.30	0.000
22	4.20	-21.07	2.98	6.30	0.003
23	4.53	-22.57	1.19	6.30	0.000
24	4.73	-24.07	4.61	6.30	0.007

VERIFICAÇÃO DA FISSURAÇÃO (CONT.)

VmaxHmax

Seção	As(cm ² /m)	Nsd(kN)	Msd(kN.m)	Ø(mm)	w(mm)
1	6.57	-22.69	13.08	6.30	0.005
2	2.79	-18.07	1.64	6.30	0.001
3	5.23	-18.07	8.64	6.30	0.026
4	7.64	-18.07	11.84	6.30	0.024
5	6.36	-18.07	7.86	6.30	0.015
6	2.79	-18.07	4.31	6.30	0.020
7	6.57	-38.88	18.25	6.30	0.009
8	6.73	-58.41	13.28	6.30	0.032
9	4.93	-56.91	7.58	6.30	0.015
10	3.42	-55.41	3.40	6.30	0.002
11	2.79	-53.91	0.77	6.30	0.000
12	2.79	-52.41	3.05	6.30	0.002
13	6.57	-32.07	24.40	6.30	0.018
14	6.43	-13.02	10.92	6.30	0.030
15	3.24	-13.02	4.32	6.30	0.016
16	7.84	-13.02	10.93	6.30	0.020
17	7.19	-13.02	8.85	6.30	0.015
18	2.79	-13.02	1.87	6.30	0.003
19	6.57	-26.41	12.23	6.30	0.004
20	4.45	-41.09	8.99	6.30	0.033
21	3.81	-42.59	5.66	6.30	0.014
22	4.20	-44.09	4.30	6.30	0.005
23	4.53	-45.59	5.25	6.30	0.007
24	4.73	-47.09	8.86	6.30	0.026

NOTA:

* Seção com aumento na armadura devido à fissuração.