



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

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

segunda-feira, 7 de outubro de 2019



ASSOCIAÇÃO BRASILEIRA
DOS FABRICANTES DE
TUBOS DE CONCRETO

DADOS DO FABRICANTE



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

DADOS DO CLIENTE



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

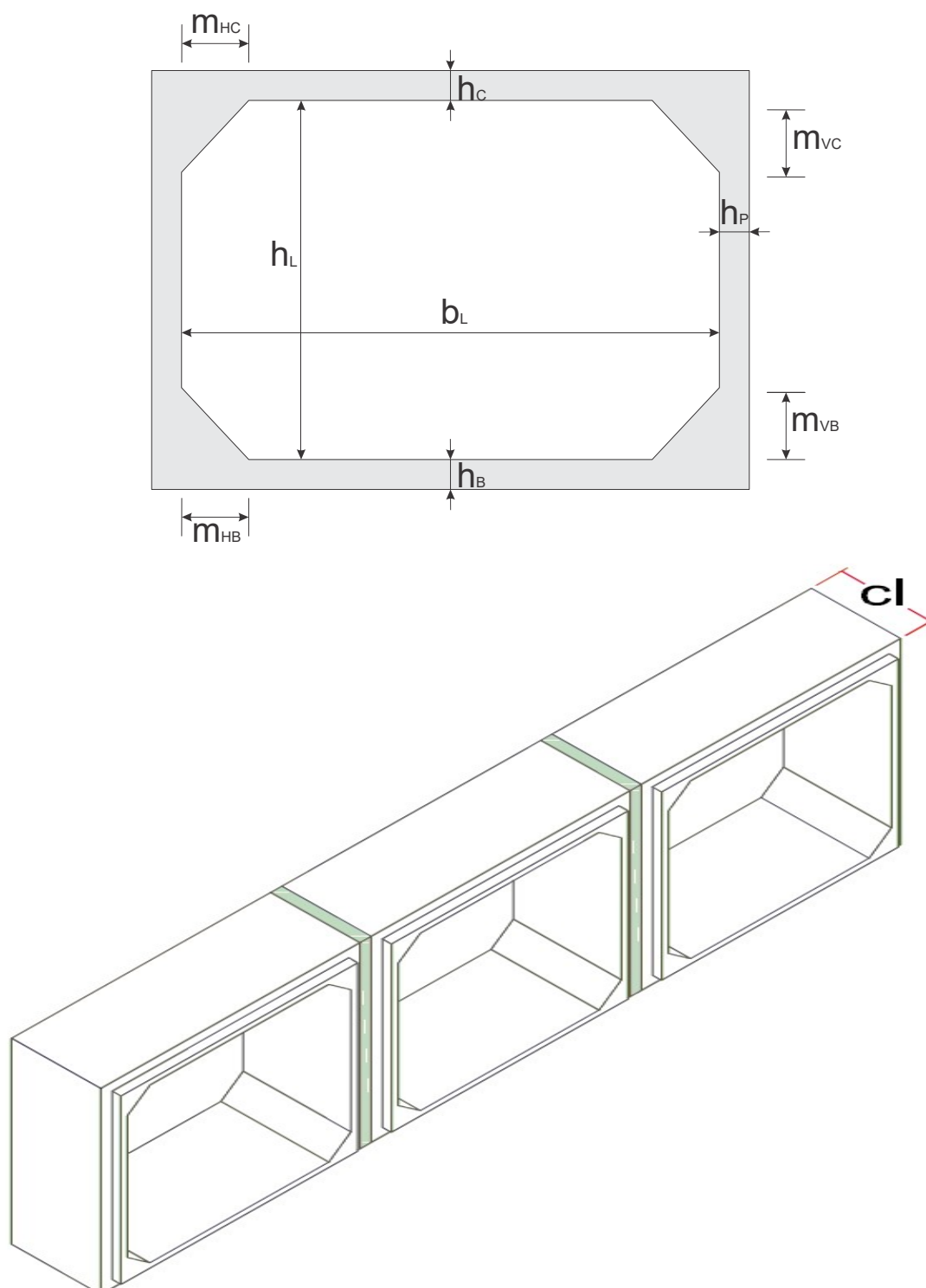
DADOS DA OBRA



NOME: ADUELA 3,00 X 3,00 M PARA ATERRO DE 5,00 M - LINHA TRIPLA
ENDEREÇO: ,
BAIRRO:
CIDADE:
ESTADO: Não Informado
CEP:
TEL.:
CEL.:
E-MAIL:
SITE:

GEOMETRIA

SEÇÃO CONSTANTE.....	: SIM
FINALIDADE.....	: ÁGUAS PLUVIAIS
COMPRIMENTO (c_l).....	: 1.00 m
LARGURA LIVRE (b_l).....	: 3.00 m
ALTURA LIVRE (h_l).....	: 3.00 m
ALTURA DA LAJE DA COBERTURA (h_c).....	: 0.20 m
ESPESSURA DAS PAREDES LATERAIS (h_p).....	: 0.20 m
ALTURA DA LAJE DA BASE (h_b).....	: 0.20 m
MÍSULA HOR. DA COBERTURA.....	: 0.20 m
MÍSULA VERT. DA COBERTURA.....	: 0.20 m
MÍSULA VERT. DA BASE.....	: 0.20 m
MÍSULA HOR. DA BASE.....	: 0.20 m



INSTALAÇÃO E MANUSEIO

ESPECIFICAÇÃO DO SOLO

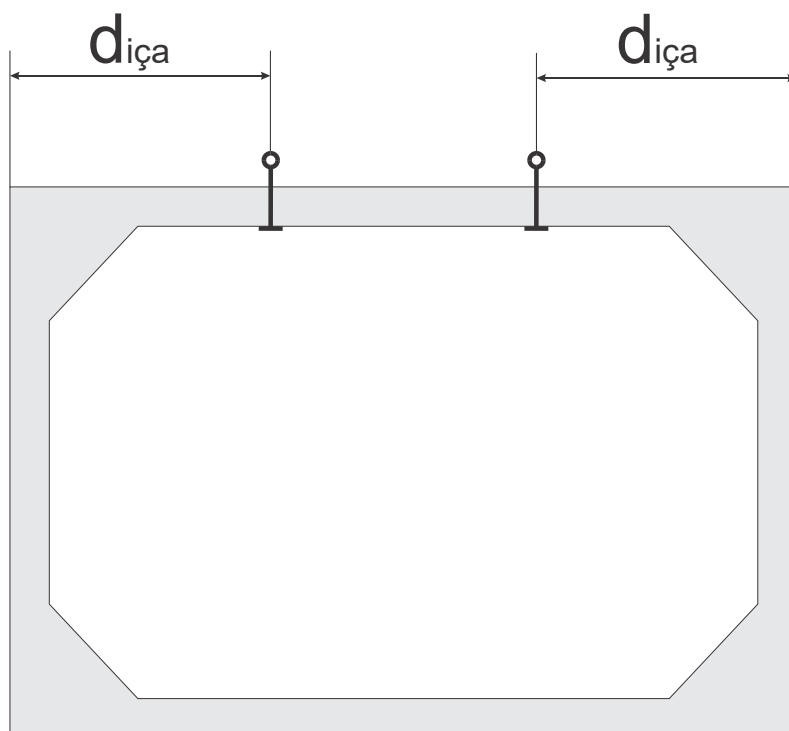
PESO ESPECÍFICO.....	: 18.00 kN/m ³
ÂNGULO DE ATRITO.....	: 30.00 graus
COEFICIENTE DE ATRITO ATIVO.....	: 0.33
COEFICIENTE DE ATRITO ESTÁTICO.....	: 0.50
COEFICIENTE DE ATRITO.....	: 0.58

DADOS DE INSTALAÇÃO

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

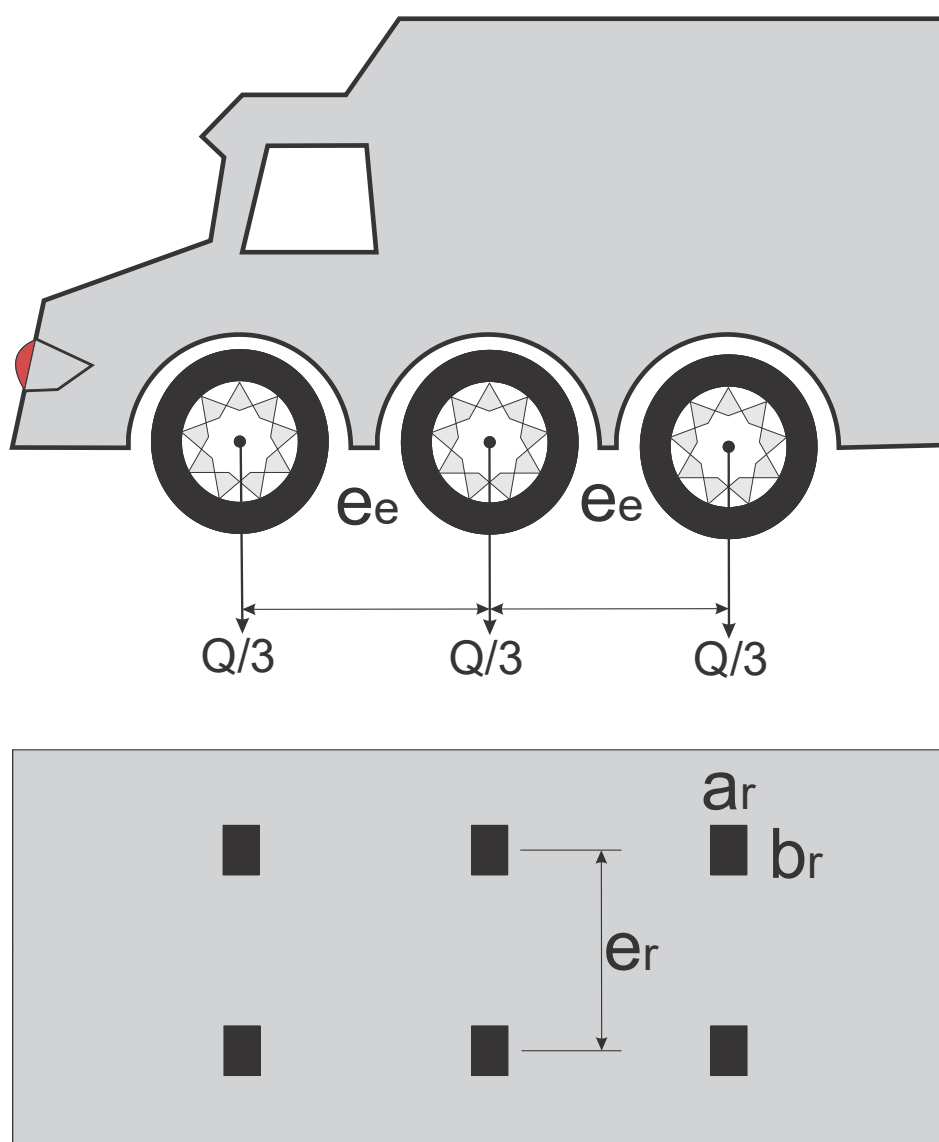
INFORMAÇÕES DE MANUSEIO

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



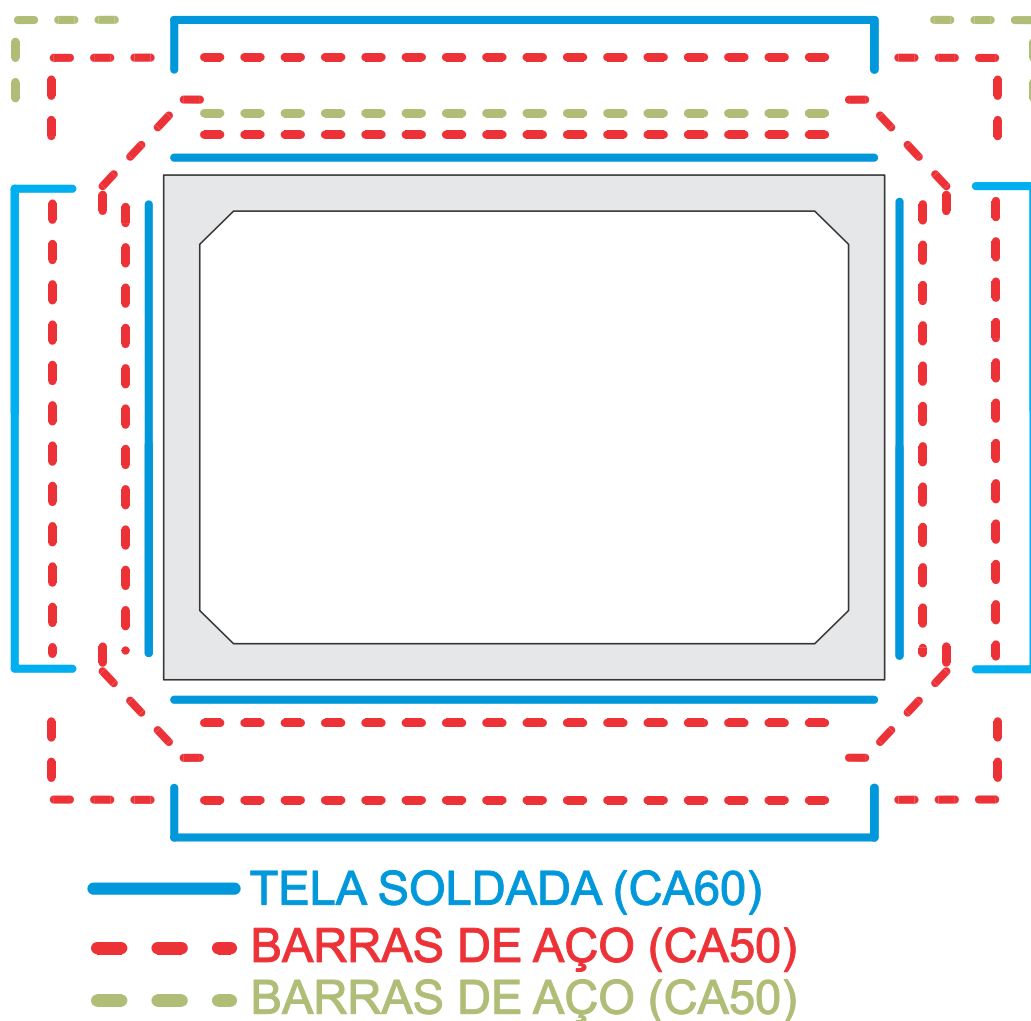
SOBRECARGA

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.....: 1.00



PARÂMETROS DA ARMADURA

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



CRITÉRIOS E CONSTANTES

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

ELS:

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

ELU:

- VmaxHmin:

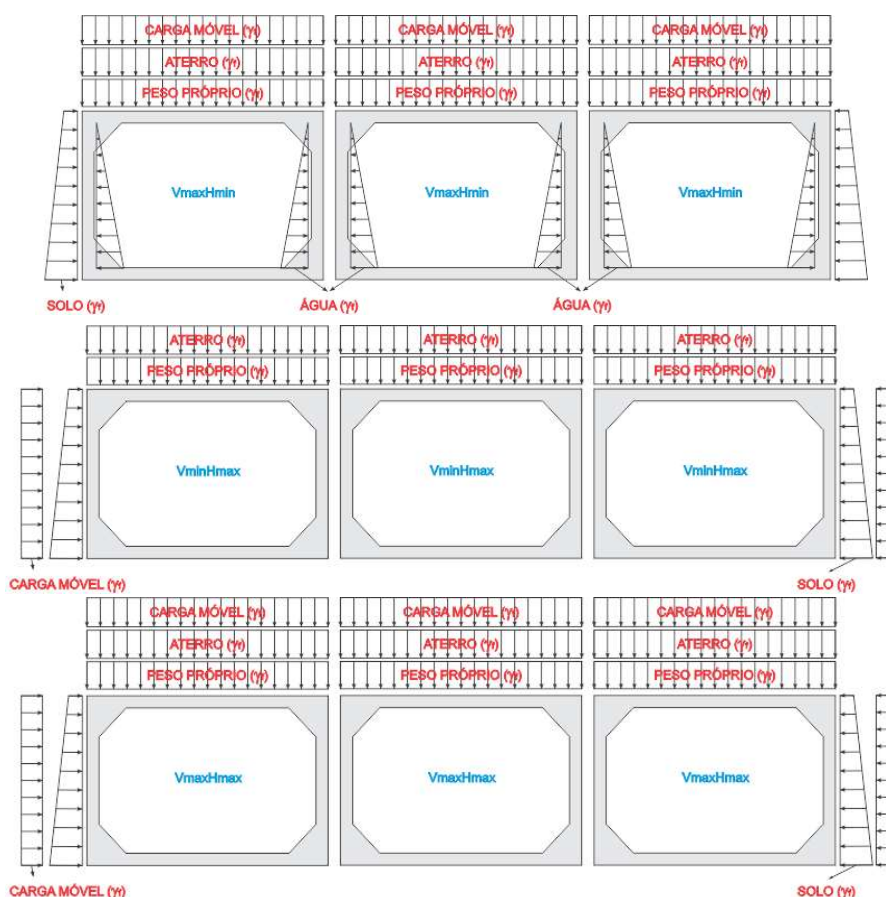
COEFICIENTE DE PONDERAÇÃO CARGA MÓVEL V.:	1.50
COEFICIENTE DE PONDERAÇÃO ATERRO.....	1.35
COEFICIENTE DE PONDERAÇÃO PESO PRÓPRIO...	1.30
COEFICIENTE DE PONDERAÇÃO SOLO.....	1.00
COEFICIENTE DE PONDERAÇÃO ÁGUA.....	1.20

- VminHmax:

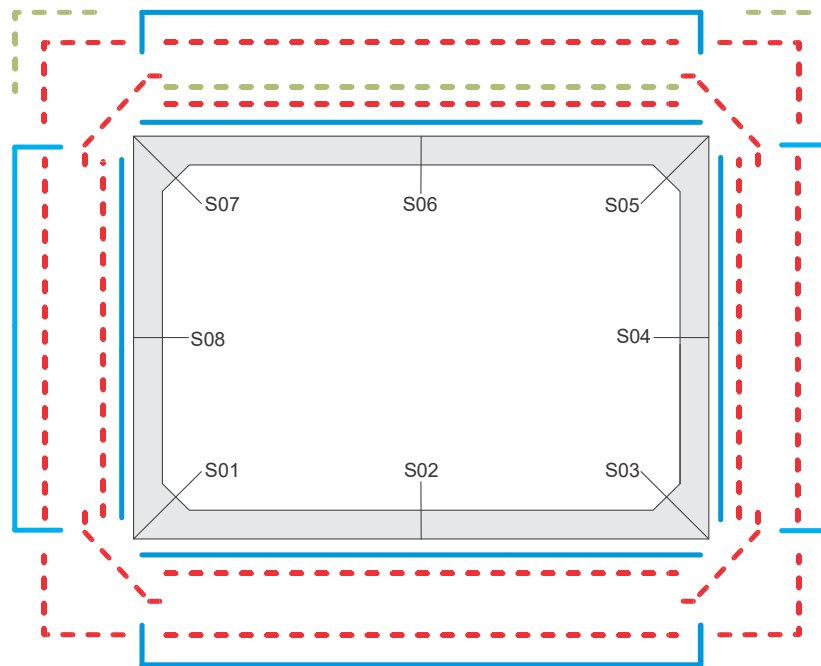
COEFICIENTE DE PONDERAÇÃO ATERRO.....	1.00
COEFICIENTE DE PONDERAÇÃO PESO PRÓPRIO...	1.00
COEFICIENTE DE PONDERAÇÃO SOLO.....	1.35
COEFICIENTE DE PONDERAÇÃO CARGA MÓVEL H.:	1.50

- VmaxHmax:

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



ESQUEMA P/ DETALHAMENTO



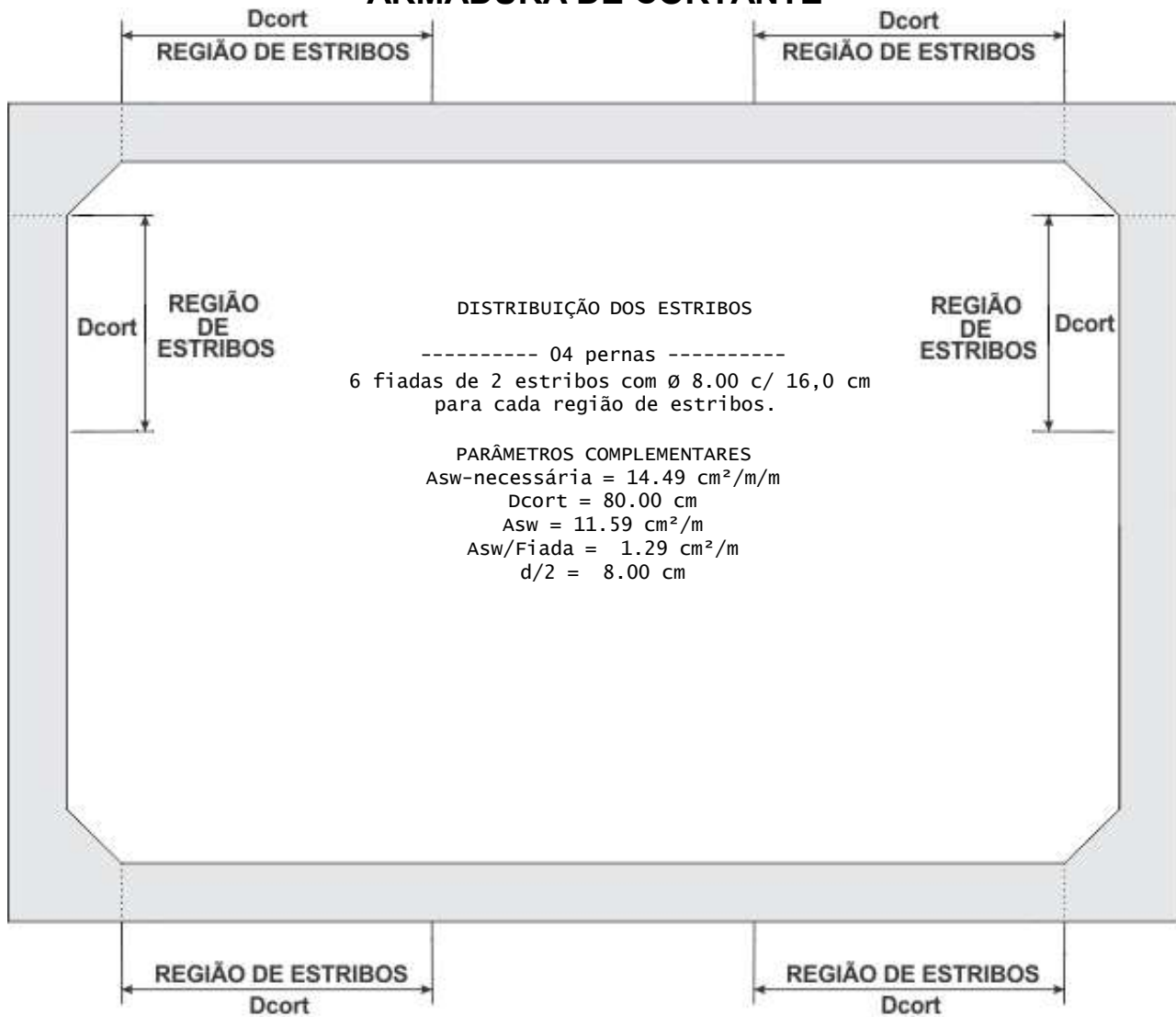
- TELA SOLDADA (CA60) ARMADURA BÁSICA
 - - - BARRAS DE AÇO (CA50) ARMADURA COMPLEMENTAR
 - - - BARRAS DE AÇO (CA50) ARMADURA DE FADIGA

OBS.: VALORES POR METRO DE ADUELA.

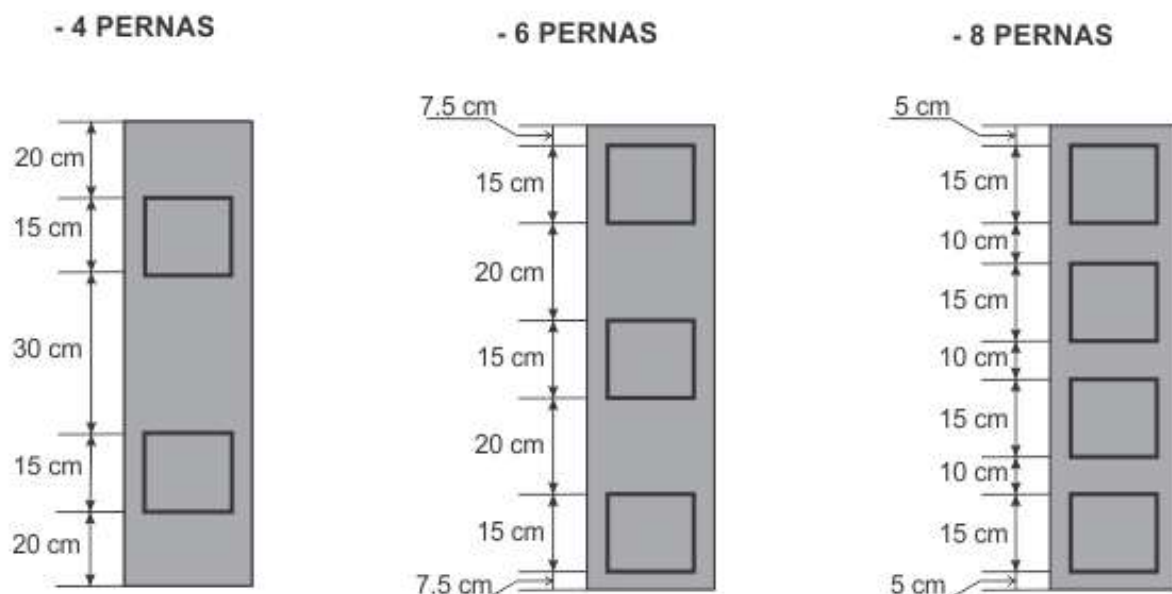
	TELA	ARMADURA COMPLEMENTAR	ARMADURA DE FADIGA
LADO EXTERNO	T-S02: L283	B-S01: 4 Ø10.00 c/ 31 cm (-8.30%)	B-S05: 0.00 cm ² de área acima
	T-S04: L283	B-S02: 4 Ø6.30 c/ 31 cm (74.65%)	B-S07: 0.00 cm ² de área acima
	T-S06: L283	B-S03: 4 Ø10.00 c/ 31 cm (-8.30%)	
	T-S08: L283	B-S04: 4 Ø6.30 c/ 31 cm (74.28%) B-S05: 9 Ø10.00 c/ 12 cm (1.36%) B-S06: 4 Ø6.30 c/ 31 cm (74.65%) B-S07: 9 Ø10.00 c/ 12 cm (1.36%) B-S08: 4 Ø6.30 c/ 31 cm (74.28%)	
LADO INTERNO	T-S02: L283	B-S01: 4 Ø6.30 c/ 31 cm (0.00%)	B-S06: 0.00 cm ² de área acima
	T-S04: L283	B-S02: 8 Ø12.50 c/ 13 cm (3.73%)	
	T-S06: L283	B-S03: 4 Ø6.30 c/ 31 cm (0.00%)	
	T-S08: L283	B-S04: 4 Ø6.30 c/ 31 cm (74.65%) B-S05: 4 Ø6.30 c/ 31 cm (0.00%) B-S06: 7 Ø12.50 c/ 15 cm (4.58%) B-S07: 4 Ø6.30 c/ 31 cm (0.00%) B-S08: 4 Ø6.30 c/ 31 cm (74.65%)	

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

ARMADURA DE CORTANTE



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

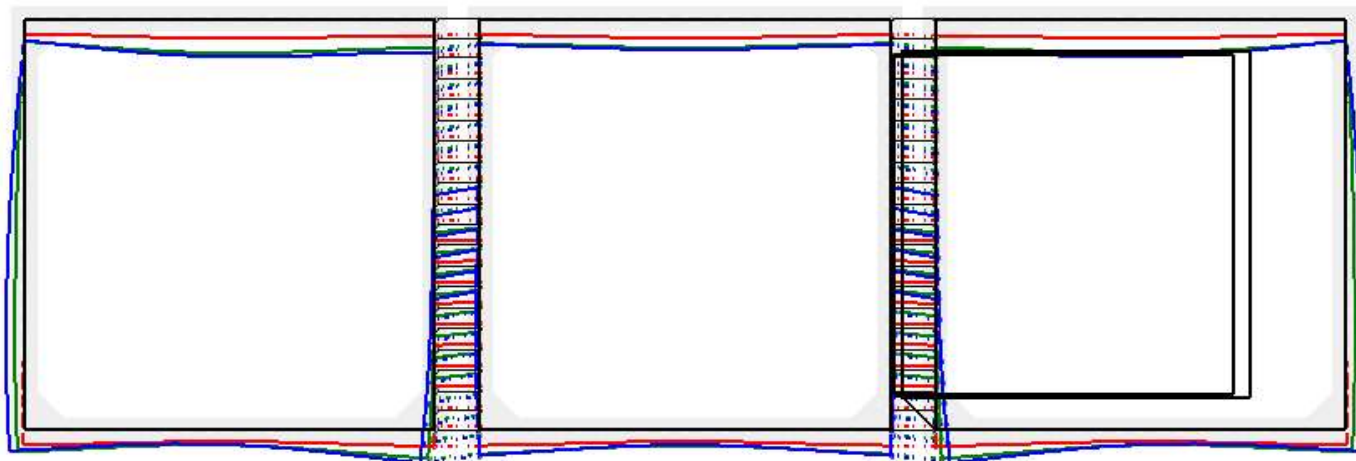
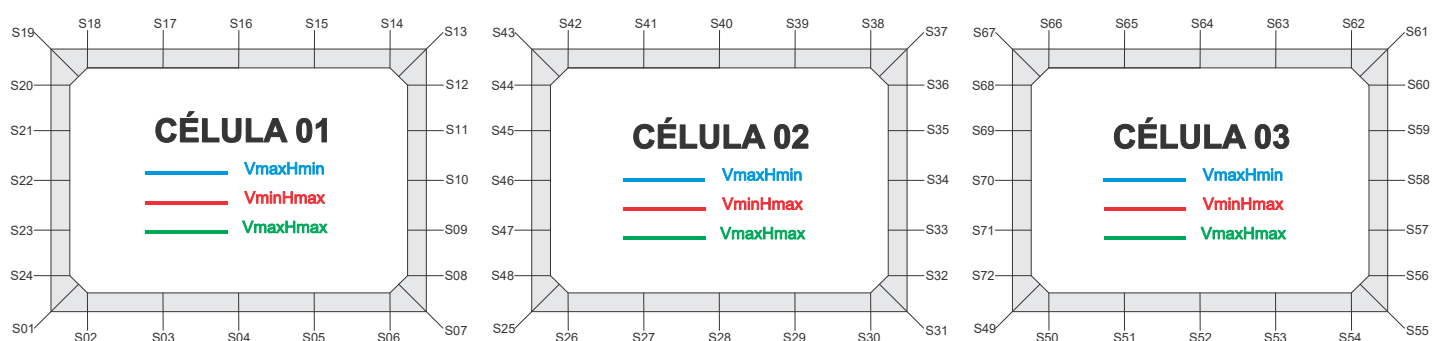


OBSERVAÇÃO:

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

DESLOCAMENTOS

NOMENCLATURA DAS SEÇÕES PARA VERSÃO COMPLETA DO RELATÓRIO



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

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-5.24E-003	-7.41E-003
2	-5.24E-003	-6.69E-003
3	-5.25E-003	-5.20E-003
4	-5.25E-003	-5.01E-003
5	-5.26E-003	-6.85E-003
6	-5.27E-003	-1.01E-002
7	-5.27E-003	-1.16E-002
8	-3.81E-003	-1.17E-002
9	-1.73E-003	-1.17E-002
10	-8.23E-004	-1.17E-002
11	-3.60E-004	-1.18E-002
12	-6.25E-005	-1.18E-002
13	-5.40E-005	-1.18E-002
14	-5.29E-005	-1.19E-002
15	-4.85E-005	-1.28E-002
16	-4.42E-005	-1.33E-002
17	-3.98E-005	-1.20E-002
18	-3.55E-005	-9.03E-003
19	-3.43E-005	-7.53E-003
20	-1.49E-003	-7.52E-003
21	-4.07E-003	-7.50E-003
22	-5.73E-003	-7.47E-003
23	-6.43E-003	-7.44E-003
24	-5.90E-003	-7.41E-003
25	1.53E-005	-8.99E-003
26	1.35E-005	-8.14E-003
27	6.75E-006	-6.16E-003
28	2.04E-010	-5.28E-003
29	-6.75E-006	-6.16E-003
30	-1.35E-005	-8.14E-003
31	-1.53E-005	-8.99E-003
32	7.55E-004	-8.99E-003
33	1.36E-003	-9.03E-003
34	9.36E-004	-9.06E-003
35	3.67E-004	-9.09E-003
36	9.68E-005	-9.12E-003
37	-6.95E-006	-9.13E-003
38	-6.13E-006	-9.31E-003
39	-3.06E-006	-1.03E-002
40	3.10E-010	-1.09E-002
41	3.06E-006	-1.03E-002
42	6.13E-006	-9.31E-003
43	6.95E-006	-9.13E-003
44	-9.68E-005	-9.12E-003
45	-3.67E-004	-9.09E-003
46	-9.36E-004	-9.06E-003
47	-1.36E-003	-9.03E-003
48	-7.55E-004	-8.99E-003
49	5.27E-003	-1.16E-002

50	5.27E-003	-1.01E-002
51	5.26E-003	-6.85E-003
52	5.25E-003	-5.01E-003
53	5.25E-003	-5.20E-003
54	5.24E-003	-6.69E-003
55	5.24E-003	-7.41E-003
56	5.90E-003	-7.41E-003
57	6.43E-003	-7.44E-003
58	5.73E-003	-7.47E-003
59	4.07E-003	-7.50E-003
60	1.49E-003	-7.52E-003
61	3.43E-005	-7.53E-003
62	3.55E-005	-9.03E-003
63	3.98E-005	-1.20E-002
64	4.42E-005	-1.33E-002
65	4.85E-005	-1.28E-002
66	5.29E-005	-1.19E-002
67	5.40E-005	-1.18E-002
68	6.25E-005	-1.18E-002
69	3.60E-004	-1.18E-002
70	8.23E-004	-1.17E-002
71	1.73E-003	-1.17E-002
72	3.81E-003	-1.17E-002

 DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	2.29E-003
2	2.46E-003
3	1.64E-003
4	-1.24E-003
5	-4.27E-003
6	-5.20E-003
7	-4.99E-003
8	-4.65E-003
9	-2.02E-003
10	-9.57E-004
11	-5.72E-004
12	-1.84E-004
13	1.32E-004
14	5.69E-004
15	1.61E-003
16	-5.46E-004
17	-3.54E-003
18	-5.02E-003
19	-4.94E-003
20	-4.76E-003
21	-3.23E-003
22	-1.86E-003
23	-2.32E-004
24	2.02E-003
25	2.71E-003
26	2.96E-003
27	2.56E-003
28	-3.09E-011
29	-2.56E-003

30	-2.96E-003
31	-2.71E-003
32	-2.36E-003
33	1.80E-004
34	9.06E-004
35	7.01E-004
36	2.48E-004
37	4.66E-004
38	8.21E-004
39	1.59E-003
40	-3.87E-011
41	-1.59E-003
42	-8.21E-004
43	-4.66E-004
44	-2.48E-004
45	-7.01E-004
46	-9.06E-004
47	-1.80E-004
48	2.36E-003
49	4.99E-003
50	5.20E-003
51	4.27E-003
52	1.24E-003
53	-1.64E-003
54	-2.46E-003
55	-2.29E-003
56	-2.02E-003
57	2.32E-004
58	1.86E-003
59	3.23E-003
60	4.76E-003
61	4.94E-003
62	5.02E-003
63	3.54E-003
64	5.46E-004
65	-1.61E-003
66	-5.69E-004
67	-1.32E-004
68	1.84E-004
69	5.72E-004
70	9.57E-004
71	2.02E-003
72	4.65E-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	-2.77E-004	-5.21E-003
2	-2.83E-004	-5.08E-003
3	-3.03E-004	-4.42E-003
4	-3.23E-004	-4.07E-003
5	-3.43E-004	-4.58E-003
6	-3.62E-004	-5.46E-003
7	-3.68E-004	-5.72E-003
8	-1.78E-004	-5.72E-003
9	-8.56E-005	-5.74E-003
10	-4.89E-005	-5.77E-003
11	-1.19E-005	-5.79E-003
12	2.65E-005	-5.81E-003
13	1.12E-005	-5.81E-003
14	1.57E-005	-5.89E-003
15	3.23E-005	-6.47E-003
16	4.89E-005	-6.80E-003
17	6.55E-005	-6.32E-003
18	8.21E-005	-5.52E-003
19	8.66E-005	-5.31E-003
20	-5.85E-005	-5.30E-003
21	1.09E-004	-5.28E-003
22	2.93E-004	-5.26E-003
23	-4.83E-006	-5.24E-003
24	-3.41E-004	-5.22E-003
25	4.53E-005	-5.50E-003
26	3.99E-005	-5.29E-003
27	2.00E-005	-4.49E-003
28	3.28E-011	-4.05E-003
29	-2.00E-005	-4.49E-003
30	-3.99E-005	-5.29E-003
31	-4.53E-005	-5.50E-003
32	1.02E-004	-5.51E-003
33	1.01E-004	-5.53E-003
34	4.93E-005	-5.55E-003
35	1.09E-005	-5.57E-003
36	-4.48E-006	-5.59E-003
37	-3.76E-005	-5.60E-003
38	-3.31E-005	-5.69E-003
39	-1.65E-005	-6.30E-003
40	9.36E-011	-6.68E-003
41	1.65E-005	-6.30E-003
42	3.31E-005	-5.69E-003
43	3.76E-005	-5.60E-003
44	4.48E-006	-5.59E-003
45	-1.09E-005	-5.57E-003
46	-4.93E-005	-5.55E-003
47	-1.01E-004	-5.53E-003
48	-1.02E-004	-5.51E-003
49	3.68E-004	-5.72E-003

50	3.62E-004	-5.46E-003
51	3.43E-004	-4.58E-003
52	3.23E-004	-4.07E-003
53	3.03E-004	-4.42E-003
54	2.83E-004	-5.08E-003
55	2.77E-004	-5.21E-003
56	3.41E-004	-5.22E-003
57	4.83E-006	-5.24E-003
58	-2.93E-004	-5.26E-003
59	-1.09E-004	-5.28E-003
60	5.85E-005	-5.30E-003
61	-8.66E-005	-5.31E-003
62	-8.21E-005	-5.52E-003
63	-6.55E-005	-6.32E-003
64	-4.89E-005	-6.80E-003
65	-3.23E-005	-6.47E-003
66	-1.57E-005	-5.89E-003
67	-1.12E-005	-5.81E-003
68	-2.65E-005	-5.81E-003
69	1.19E-005	-5.79E-003
70	4.89E-005	-5.77E-003
71	8.56E-005	-5.74E-003
72	1.78E-004	-5.72E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	3.26E-004
2	5.75E-004
3	1.05E-003
4	-1.15E-004
5	-1.33E-003
6	-9.79E-004
7	-7.42E-004
8	-5.01E-004
9	-6.14E-005
10	-5.70E-005
11	-5.08E-005
12	-2.36E-005
13	1.37E-004
14	3.90E-004
15	9.76E-004
16	-1.08E-004
17	-1.24E-003
18	-8.22E-004
19	-5.92E-004
20	-3.45E-004
21	5.12E-004
22	-7.62E-005
23	-7.28E-004
24	6.75E-005
25	6.00E-004
26	8.39E-004
27	1.22E-003
28	-1.90E-011
29	-1.22E-003

30	-8.39E-004
31	-6.00E-004
32	-3.58E-004
33	8.05E-005
34	7.12E-005
35	5.07E-005
36	3.83E-005
37	1.94E-004
38	4.44E-004
39	1.03E-003
40	-2.34E-011
41	-1.03E-003
42	-4.44E-004
43	-1.94E-004
44	-3.83E-005
45	-5.07E-005
46	-7.12E-005
47	-8.05E-005
48	3.58E-004
49	7.42E-004
50	9.79E-004
51	1.33E-003
52	1.15E-004
53	-1.05E-003
54	-5.75E-004
55	-3.26E-004
56	-6.75E-005
57	7.28E-004
58	7.62E-005
59	-5.12E-004
60	3.45E-004
61	5.92E-004
62	8.22E-004
63	1.24E-003
64	1.08E-004
65	-9.76E-004
66	-3.90E-004
67	-1.37E-004
68	2.36E-005
69	5.08E-005
70	5.70E-005
71	6.14E-005
72	5.01E-004

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

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-2.35E-003	-7.74E-003
2	-2.35E-003	-7.13E-003
3	-2.37E-003	-5.69E-003
4	-2.38E-003	-5.31E-003
5	-2.40E-003	-6.68E-003
6	-2.41E-003	-9.07E-003
7	-2.41E-003	-1.01E-002
8	-1.49E-003	-1.01E-002
9	-4.32E-004	-1.01E-002
10	-2.30E-004	-1.02E-002
11	-6.38E-005	-1.02E-002
12	2.61E-005	-1.02E-002
13	-3.12E-005	-1.02E-002
14	-2.83E-005	-1.04E-002
15	-1.77E-005	-1.14E-002
16	-7.00E-006	-1.20E-002
17	3.67E-006	-1.10E-002
18	1.43E-005	-8.87E-003
19	1.72E-005	-7.87E-003
20	-9.23E-004	-7.86E-003
21	-2.29E-003	-7.83E-003
22	-3.00E-003	-7.81E-003
23	-3.31E-003	-7.78E-003
24	-2.89E-003	-7.75E-003
25	3.24E-005	-8.54E-003
26	2.86E-005	-7.92E-003
27	1.43E-005	-6.28E-003
28	1.10E-010	-5.50E-003
29	-1.43E-005	-6.28E-003
30	-2.86E-005	-7.92E-003
31	-3.24E-005	-8.54E-003
32	5.06E-004	-8.55E-003
33	7.72E-004	-8.58E-003
34	3.23E-004	-8.61E-003
35	5.55E-005	-8.64E-003
36	7.65E-006	-8.67E-003
37	-2.28E-005	-8.68E-003
38	-2.01E-005	-8.80E-003
39	-1.01E-005	-9.66E-003
40	2.08E-010	-1.02E-002
41	1.01E-005	-9.66E-003
42	2.01E-005	-8.80E-003
43	2.28E-005	-8.68E-003
44	-7.65E-006	-8.67E-003
45	-5.55E-005	-8.64E-003
46	-3.23E-004	-8.61E-003
47	-7.72E-004	-8.58E-003
48	-5.06E-004	-8.55E-003
49	2.41E-003	-1.01E-002

50	2.41E-003	-9.07E-003
51	2.40E-003	-6.68E-003
52	2.38E-003	-5.31E-003
53	2.37E-003	-5.69E-003
54	2.35E-003	-7.13E-003
55	2.35E-003	-7.74E-003
56	2.89E-003	-7.75E-003
57	3.31E-003	-7.78E-003
58	3.00E-003	-7.81E-003
59	2.29E-003	-7.83E-003
60	9.23E-004	-7.86E-003
61	-1.72E-005	-7.87E-003
62	-1.43E-005	-8.87E-003
63	-3.66E-006	-1.10E-002
64	7.01E-006	-1.20E-002
65	1.77E-005	-1.14E-002
66	2.83E-005	-1.04E-002
67	3.12E-005	-1.02E-002
68	-2.61E-005	-1.02E-002
69	6.38E-005	-1.02E-002
70	2.30E-004	-1.02E-002
71	4.32E-004	-1.01E-002
72	1.49E-003	-1.01E-002

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.94E-003
2	2.16E-003
3	1.74E-003
4	-7.57E-004
5	-3.26E-003
6	-3.52E-003
7	-3.24E-003
8	-2.87E-003
9	-7.20E-004
10	-1.36E-004
11	-2.60E-004
12	5.37E-005
13	3.38E-004
14	7.51E-004
15	1.72E-003
16	-2.15E-004
17	-2.71E-003
18	-3.42E-003
19	-3.24E-003
20	-2.99E-003
21	-1.45E-003
22	-7.90E-004
23	-9.58E-005
24	1.64E-003
25	1.95E-003
26	2.23E-003
27	2.23E-003
28	-2.97E-011
29	-2.23E-003

30	-2.23E-003
31	-1.95E-003
32	-1.59E-003
33	4.09E-004
34	7.18E-004
35	1.99E-004
36	-1.53E-006
37	2.25E-004
38	5.91E-004
39	1.47E-003
40	-3.68E-011
41	-1.47E-003
42	-5.91E-004
43	-2.25E-004
44	1.53E-006
45	-1.99E-004
46	-7.18E-004
47	-4.09E-004
48	1.59E-003
49	3.24E-003
50	3.52E-003
51	3.26E-003
52	7.57E-004
53	-1.74E-003
54	-2.16E-003
55	-1.94E-003
56	-1.64E-003
57	9.58E-005
58	7.90E-004
59	1.45E-003
60	2.99E-003
61	3.24E-003
62	3.42E-003
63	2.71E-003
64	2.15E-004
65	-1.72E-003
66	-7.51E-004
67	-3.38E-004
68	-5.37E-005
69	2.60E-004
70	1.36E-004
71	7.20E-004
72	2.87E-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	-5.39E-003	-7.65E-003
2	-5.39E-003	-6.83E-003
3	-5.39E-003	-5.13E-003
4	-5.40E-003	-4.84E-003
5	-5.40E-003	-6.73E-003
6	-5.41E-003	-1.03E-002
7	-5.41E-003	-1.21E-002
8	-3.74E-003	-1.21E-002
9	-1.81E-003	-1.22E-002
10	-1.45E-003	-1.22E-002
11	-1.15E-003	-1.23E-002
12	-8.94E-004	-1.24E-002
13	-8.97E-004	-1.24E-002
14	-8.96E-004	-1.25E-002
15	-8.91E-004	-1.35E-002
16	-8.87E-004	-1.38E-002
17	-8.82E-004	-1.23E-002
18	-8.78E-004	-9.30E-003
19	-8.76E-004	-7.78E-003
20	-2.36E-003	-7.77E-003
21	-4.90E-003	-7.74E-003
22	-6.42E-003	-7.72E-003
23	-6.92E-003	-7.69E-003
24	-6.15E-003	-7.66E-003
25	1.48E-005	-9.14E-003
26	1.31E-005	-8.20E-003
27	6.53E-006	-6.08E-003
28	-1.45E-009	-5.13E-003
29	-6.53E-006	-6.09E-003
30	-1.31E-005	-8.37E-003
31	-1.48E-005	-9.43E-003
32	9.44E-004	-9.45E-003
33	1.27E-003	-9.51E-003
34	1.79E-004	-9.57E-003
35	-5.71E-004	-9.64E-003
36	-8.02E-004	-9.70E-003
37	-8.45E-004	-9.71E-003
38	-8.44E-004	-9.87E-003
39	-8.41E-004	-1.07E-002
40	-8.37E-004	-1.12E-002
41	-8.34E-004	-1.05E-002
42	-8.31E-004	-9.47E-003
43	-8.30E-004	-9.28E-003
44	-9.33E-004	-9.27E-003
45	-1.15E-003	-9.24E-003
46	-1.45E-003	-9.21E-003
47	-1.66E-003	-9.18E-003
48	-8.44E-004	-9.15E-003
49	5.32E-003	-1.20E-002

50	5.32E-003	-1.04E-002
51	5.31E-003	-6.84E-003
52	5.31E-003	-4.84E-003
53	5.30E-003	-5.02E-003
54	5.29E-003	-6.78E-003
55	5.29E-003	-7.70E-003
56	6.15E-003	-7.71E-003
57	6.75E-003	-7.77E-003
58	5.77E-003	-7.82E-003
59	3.79E-003	-7.87E-003
60	8.64E-004	-7.92E-003
61	-7.99E-004	-7.93E-003
62	-7.98E-004	-9.63E-003
63	-7.94E-004	-1.28E-002
64	-7.89E-004	-1.41E-002
65	-7.85E-004	-1.35E-002
66	-7.80E-004	-1.24E-002
67	-7.79E-004	-1.22E-002
68	-8.40E-004	-1.22E-002
69	-5.70E-004	-1.22E-002
70	1.82E-004	-1.21E-002
71	1.37E-003	-1.21E-002
72	3.73E-003	-1.20E-002

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	2.66E-003
2	2.82E-003
3	1.88E-003
4	-1.19E-003
5	-4.53E-003
6	-5.95E-003
7	-5.80E-003
8	-5.23E-003
9	-1.20E-003
10	-4.36E-004
11	-4.34E-004
12	-2.30E-004
13	2.90E-004
14	6.97E-004
15	1.50E-003
16	-7.66E-004
17	-3.76E-003
18	-5.11E-003
19	-5.01E-003
20	-4.81E-003
21	-3.09E-003
22	-1.59E-003
23	1.14E-004
24	2.38E-003
25	3.01E-003
26	3.24E-003
27	2.73E-003
28	3.90E-006
29	-2.82E-003

30	-3.64E-003
31	-3.45E-003
32	-2.84E-003
33	1.24E-003
34	1.53E-003
35	7.97E-004
36	-1.96E-005
37	3.62E-004
38	7.06E-004
39	1.40E-003
40	-1.97E-004
41	-1.73E-003
42	-8.35E-004
43	-4.64E-004
44	-2.50E-004
45	-4.41E-004
46	-4.70E-004
47	1.43E-004
48	2.65E-003
49	5.44E-003
50	5.64E-003
51	4.61E-003
52	1.39E-003
53	-1.80E-003
54	-3.12E-003
55	-3.02E-003
56	-2.60E-003
57	4.94E-004
58	2.36E-003
59	3.72E-003
60	5.41E-003
61	5.64E-003
62	5.66E-003
63	3.68E-003
64	3.67E-004
65	-1.92E-003
66	-8.22E-004
67	-3.66E-004
68	-4.00E-005
69	8.01E-004
70	1.47E-003
71	2.44E-003
72	5.09E-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	-3.82E-004	-5.23E-003
2	-3.87E-004	-5.08E-003
3	-4.07E-004	-4.38E-003
4	-4.27E-004	-4.02E-003
5	-4.47E-004	-4.56E-003
6	-4.67E-004	-5.55E-003
7	-4.72E-004	-5.88E-003
8	-2.30E-004	-5.90E-003
9	-2.29E-004	-5.94E-003
10	-2.39E-004	-5.98E-003
11	-1.98E-004	-6.03E-003
12	-1.02E-004	-6.07E-003
13	-9.43E-005	-6.08E-003
14	-8.99E-005	-6.15E-003
15	-7.32E-005	-6.70E-003
16	-5.66E-005	-6.97E-003
17	-3.99E-005	-6.42E-003
18	-2.32E-005	-5.56E-003
19	-1.88E-005	-5.33E-003
20	-1.86E-004	-5.32E-003
21	-5.08E-005	-5.30E-003
22	1.27E-004	-5.28E-003
23	-1.56E-004	-5.26E-003
24	-4.62E-004	-5.24E-003
25	4.53E-005	-5.58E-003
26	3.99E-005	-5.32E-003
27	2.00E-005	-4.45E-003
28	-4.42E-010	-3.99E-003
29	-2.00E-005	-4.46E-003
30	-3.99E-005	-5.37E-003
31	-4.53E-005	-5.66E-003
32	1.52E-004	-5.67E-003
33	4.57E-005	-5.71E-003
34	-7.46E-005	-5.76E-003
35	-1.34E-004	-5.80E-003
36	-1.19E-004	-5.84E-003
37	-1.40E-004	-5.85E-003
38	-1.35E-004	-5.95E-003
39	-1.19E-004	-6.56E-003
40	-1.02E-004	-6.90E-003
41	-8.57E-005	-6.47E-003
42	-6.91E-005	-5.79E-003
43	-6.47E-005	-5.67E-003
44	-1.27E-004	-5.67E-003
45	-1.97E-004	-5.65E-003
46	-2.39E-004	-5.63E-003
47	-2.37E-004	-5.60E-003
48	-1.43E-004	-5.58E-003
49	4.75E-004	-5.85E-003

50	4.70E-004	-5.55E-003
51	4.50E-004	-4.59E-003
52	4.30E-004	-4.04E-003
53	4.10E-004	-4.37E-003
54	3.90E-004	-5.05E-003
55	3.85E-004	-5.19E-003
56	4.28E-004	-5.20E-003
57	-3.76E-004	-5.25E-003
58	-1.01E-003	-5.29E-003
59	-5.61E-004	-5.33E-003
60	-2.33E-005	-5.37E-003
61	-1.85E-004	-5.38E-003
62	-1.81E-004	-5.64E-003
63	-1.64E-004	-6.50E-003
64	-1.48E-004	-7.00E-003
65	-1.31E-004	-6.65E-003
66	-1.15E-004	-6.04E-003
67	-1.10E-004	-5.95E-003
68	-1.43E-004	-5.94E-003
69	-1.34E-004	-5.92E-003
70	-7.46E-005	-5.90E-003
71	3.81E-005	-5.88E-003
72	2.39E-004	-5.86E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	3.83E-004
2	6.32E-004
3	1.10E-003
4	-1.16E-004
5	-1.43E-003
6	-1.23E-003
7	-1.01E-003
8	-5.66E-004
9	6.23E-005
10	-2.87E-005
11	-9.29E-005
12	-1.53E-004
13	1.32E-004
14	3.78E-004
15	9.04E-004
16	-2.10E-004
17	-1.35E-003
18	-9.03E-004
19	-6.68E-004
20	-4.17E-004
21	4.84E-004
22	-6.83E-005
23	-6.92E-004
24	1.23E-004
25	7.36E-004
26	9.70E-004
27	1.29E-003
28	1.81E-006
29	-1.32E-003

30	-1.08E-003
31	-8.61E-004
32	-4.13E-004
33	2.33E-004
34	1.37E-004
35	4.93E-005
36	-5.25E-005
37	2.26E-004
38	4.69E-004
39	9.95E-004
40	-7.38E-005
41	-1.12E-003
42	-5.39E-004
43	-2.88E-004
44	-1.40E-004
45	-9.66E-005
46	-3.20E-005
47	4.22E-005
48	4.99E-004
49	8.94E-004
50	1.12E-003
51	1.42E-003
52	1.56E-004
53	-1.05E-003
54	-6.13E-004
55	-3.69E-004
56	1.36E-004
57	1.59E-003
58	1.23E-004
59	-1.24E-003
60	2.76E-004
61	7.47E-004
62	9.67E-004
63	1.30E-003
64	1.03E-004
65	-1.02E-003
66	-4.46E-004
67	-1.93E-004
68	-3.97E-005
69	4.57E-005
70	1.33E-004
71	2.13E-004
72	6.58E-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	-2.76E-003	-7.82E-003
2	-2.77E-003	-7.15E-003
3	-2.78E-003	-5.60E-003
4	-2.79E-003	-5.17E-003
5	-2.81E-003	-6.62E-003
6	-2.82E-003	-9.33E-003
7	-2.82E-003	-1.06E-002
8	-1.70E-003	-1.06E-002
9	-7.43E-004	-1.07E-002
10	-8.45E-004	-1.07E-002
11	-7.13E-004	-1.08E-002
12	-5.69E-004	-1.09E-002
13	-6.00E-004	-1.09E-002
14	-5.97E-004	-1.10E-002
15	-5.87E-004	-1.20E-002
16	-5.76E-004	-1.25E-002
17	-5.65E-004	-1.13E-002
18	-5.54E-004	-9.00E-003
19	-5.51E-004	-7.95E-003
20	-1.54E-003	-7.95E-003
21	-2.97E-003	-7.92E-003
22	-3.65E-003	-7.89E-003
23	-3.89E-003	-7.86E-003
24	-3.36E-003	-7.83E-003
25	3.25E-005	-8.67E-003
26	2.86E-005	-7.97E-003
27	1.43E-005	-6.20E-003
28	-1.06E-009	-5.37E-003
29	-1.43E-005	-6.22E-003
30	-2.86E-005	-8.13E-003
31	-3.25E-005	-8.95E-003
32	6.66E-004	-8.96E-003
33	7.06E-004	-9.03E-003
34	-1.77E-004	-9.09E-003
35	-5.73E-004	-9.15E-003
36	-5.93E-004	-9.21E-003
37	-5.86E-004	-9.23E-003
38	-5.83E-004	-9.33E-003
39	-5.73E-004	-1.01E-002
40	-5.63E-004	-1.06E-002
41	-5.53E-004	-9.93E-003
42	-5.43E-004	-8.97E-003
43	-5.40E-004	-8.82E-003
44	-6.06E-004	-8.81E-003
45	-7.07E-004	-8.78E-003
46	-8.56E-004	-8.75E-003
47	-1.07E-003	-8.71E-003
48	-5.89E-004	-8.68E-003
49	2.86E-003	-1.05E-002

50	2.85E-003	-9.37E-003
51	2.84E-003	-6.71E-003
52	2.82E-003	-5.19E-003
53	2.81E-003	-5.52E-003
54	2.80E-003	-7.08E-003
55	2.79E-003	-7.80E-003
56	3.42E-003	-7.81E-003
57	3.58E-003	-7.87E-003
58	2.88E-003	-7.92E-003
59	2.05E-003	-7.98E-003
60	5.52E-004	-8.03E-003
61	-5.75E-004	-8.05E-003
62	-5.72E-004	-9.24E-003
63	-5.62E-004	-1.17E-002
64	-5.51E-004	-1.27E-002
65	-5.41E-004	-1.20E-002
66	-5.30E-004	-1.09E-002
67	-5.27E-004	-1.07E-002
68	-6.30E-004	-1.07E-002
69	-5.66E-004	-1.06E-002
70	-1.89E-004	-1.06E-002
71	3.82E-004	-1.06E-002
72	1.79E-003	-1.05E-002

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	2.13E-003
2	2.35E-003
3	1.88E-003
4	-7.57E-004
5	-3.54E-003
6	-4.24E-003
7	-4.02E-003
8	-3.39E-003
9	-1.98E-004
10	8.08E-005
11	-2.64E-004
12	-1.15E-004
13	3.68E-004
14	7.59E-004
15	1.56E-003
16	-4.64E-004
17	-2.97E-003
18	-3.60E-003
19	-3.41E-003
20	-3.14E-003
21	-1.47E-003
22	-7.15E-004
23	5.16E-005
24	1.83E-003
25	2.22E-003
26	2.50E-003
27	2.38E-003
28	-7.04E-006
29	-2.47E-003

30	-2.84E-003
31	-2.60E-003
32	-1.96E-003
33	1.14E-003
34	1.12E-003
35	2.96E-004
36	-1.98E-004
37	2.03E-004
38	5.57E-004
39	1.35E-003
40	-1.71E-004
41	-1.64E-003
42	-7.15E-004
43	-3.41E-004
44	-1.23E-004
45	-1.92E-004
46	-3.53E-004
47	-4.89E-005
48	1.87E-003
49	3.72E-003
50	3.99E-003
51	3.59E-003
52	9.19E-004
53	-1.78E-003
54	-2.49E-003
55	-2.31E-003
56	-1.80E-003
57	7.69E-004
58	1.20E-003
59	1.51E-003
60	3.53E-003
61	3.93E-003
62	4.05E-003
63	2.94E-003
64	1.64E-004
65	-1.90E-003
66	-9.16E-004
67	-4.93E-004
68	-2.06E-004
69	3.69E-004
70	6.79E-004
71	1.29E-003
72	3.36E-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	-1.76E-003	-5.67E-003
2	-1.77E-003	-5.21E-003
3	-1.78E-003	-4.15E-003
4	-1.79E-003	-3.88E-003
5	-1.80E-003	-4.89E-003
6	-1.81E-003	-6.66E-003
7	-1.81E-003	-7.42E-003
8	-1.12E-003	-7.42E-003
9	-3.23E-004	-7.45E-003
10	-1.72E-004	-7.47E-003
11	-4.82E-005	-7.50E-003
12	1.84E-005	-7.52E-003
13	-2.40E-005	-7.53E-003
14	-2.21E-005	-7.64E-003
15	-1.47E-005	-8.39E-003
16	-7.36E-006	-8.82E-003
17	-1.98E-009	-8.10E-003
18	7.35E-006	-6.50E-003
19	9.33E-006	-5.76E-003
20	-6.94E-004	-5.76E-003
21	-1.73E-003	-5.74E-003
22	-2.27E-003	-5.72E-003
23	-2.50E-003	-5.69E-003
24	-2.17E-003	-5.67E-003
25	2.29E-005	-6.26E-003
26	2.02E-005	-5.80E-003
27	1.01E-005	-4.59E-003
28	8.22E-011	-4.02E-003
29	-1.01E-005	-4.59E-003
30	-2.02E-005	-5.80E-003
31	-2.29E-005	-6.26E-003
32	3.78E-004	-6.27E-003
33	5.79E-004	-6.29E-003
34	2.42E-004	-6.31E-003
35	4.20E-005	-6.33E-003
36	6.17E-006	-6.36E-003
37	-1.56E-005	-6.36E-003
38	-1.38E-005	-6.45E-003
39	-6.89E-006	-7.07E-003
40	1.54E-010	-7.47E-003
41	6.89E-006	-7.07E-003
42	1.38E-005	-6.45E-003
43	1.56E-005	-6.36E-003
44	-6.17E-006	-6.36E-003
45	-4.20E-005	-6.33E-003
46	-2.42E-004	-6.31E-003
47	-5.79E-004	-6.29E-003
48	-3.78E-004	-6.27E-003
49	1.81E-003	-7.42E-003

50	1.81E-003	-6.66E-003
51	1.80E-003	-4.89E-003
52	1.79E-003	-3.88E-003
53	1.78E-003	-4.15E-003
54	1.77E-003	-5.21E-003
55	1.76E-003	-5.67E-003
56	2.17E-003	-5.67E-003
57	2.50E-003	-5.69E-003
58	2.27E-003	-5.72E-003
59	1.73E-003	-5.74E-003
60	6.94E-004	-5.76E-003
61	-9.33E-006	-5.76E-003
62	-7.35E-006	-6.50E-003
63	2.29E-009	-8.10E-003
64	7.36E-006	-8.82E-003
65	1.47E-005	-8.39E-003
66	2.21E-005	-7.64E-003
67	2.40E-005	-7.53E-003
68	-1.84E-005	-7.52E-003
69	4.82E-005	-7.50E-003
70	1.72E-004	-7.47E-003
71	3.23E-004	-7.45E-003
72	1.12E-003	-7.42E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.45E-003
2	1.61E-003
3	1.28E-003
4	-5.66E-004
5	-2.41E-003
6	-2.62E-003
7	-2.42E-003
8	-2.15E-003
9	-5.41E-004
10	-1.00E-004
11	-1.95E-004
12	4.08E-005
13	2.49E-004
14	5.50E-004
15	1.26E-003
16	-1.59E-004
17	-2.00E-003
18	-2.54E-003
19	-2.42E-003
20	-2.24E-003
21	-1.11E-003
22	-5.93E-004
23	-4.63E-005
24	1.24E-003
25	1.45E-003
26	1.66E-003
27	1.64E-003
28	-2.18E-011
29	-1.64E-003

30	-1.66E-003
31	-1.45E-003
32	-1.18E-003
33	3.05E-004
34	5.39E-004
35	1.49E-004
36	-2.10E-006
37	1.62E-004
38	4.28E-004
39	1.07E-003
40	-2.70E-011
41	-1.07E-003
42	-4.28E-004
43	-1.62E-004
44	2.10E-006
45	-1.49E-004
46	-5.39E-004
47	-3.05E-004
48	1.18E-003
49	2.42E-003
50	2.62E-003
51	2.41E-003
52	5.66E-004
53	-1.28E-003
54	-1.61E-003
55	-1.45E-003
56	-1.24E-003
57	4.63E-005
58	5.93E-004
59	1.11E-003
60	2.24E-003
61	2.42E-003
62	2.54E-003
63	2.00E-003
64	1.59E-004
65	-1.26E-003
66	-5.50E-004
67	-2.49E-004
68	-4.08E-005
69	1.95E-004
70	1.00E-004
71	5.41E-004
72	2.15E-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	-8.70E-004	-5.32E-003
2	-8.74E-004	-5.04E-003
3	-8.89E-004	-4.20E-003
4	-9.04E-004	-3.89E-003
5	-9.18E-004	-4.61E-003
6	-9.33E-004	-5.85E-003
7	-9.37E-004	-6.31E-003
8	-5.41E-004	-6.31E-003
9	-1.75E-004	-6.34E-003
10	-9.38E-005	-6.36E-003
11	-1.34E-005	-6.38E-003
12	2.68E-005	-6.40E-003
13	-5.22E-006	-6.41E-003
14	-2.00E-006	-6.51E-003
15	9.94E-006	-7.16E-003
16	2.19E-005	-7.54E-003
17	3.38E-005	-6.98E-003
18	4.58E-005	-5.85E-003
19	4.90E-005	-5.42E-003
20	-3.39E-004	-5.41E-003
21	-7.09E-004	-5.39E-003
22	-8.43E-004	-5.37E-003
23	-1.08E-003	-5.35E-003
24	-1.10E-003	-5.33E-003
25	3.38E-005	-5.69E-003
26	2.98E-005	-5.38E-003
27	1.49E-005	-4.44E-003
28	5.18E-011	-3.95E-003
29	-1.49E-005	-4.44E-003
30	-2.98E-005	-5.38E-003
31	-3.38E-005	-5.69E-003
32	2.11E-004	-5.70E-003
33	2.70E-004	-5.72E-003
34	9.84E-005	-5.74E-003
35	1.04E-005	-5.76E-003
36	-4.11E-006	-5.78E-003
37	-2.66E-005	-5.79E-003
38	-2.34E-005	-5.87E-003
39	-1.17E-005	-6.46E-003
40	1.16E-010	-6.84E-003
41	1.17E-005	-6.46E-003
42	2.34E-005	-5.87E-003
43	2.66E-005	-5.79E-003
44	4.11E-006	-5.78E-003
45	-1.04E-005	-5.76E-003
46	-9.84E-005	-5.74E-003
47	-2.70E-004	-5.72E-003
48	-2.11E-004	-5.70E-003
49	9.37E-004	-6.31E-003

50	9.33E-004	-5.85E-003
51	9.18E-004	-4.61E-003
52	9.04E-004	-3.89E-003
53	8.89E-004	-4.20E-003
54	8.74E-004	-5.04E-003
55	8.70E-004	-5.32E-003
56	1.10E-003	-5.33E-003
57	1.08E-003	-5.35E-003
58	8.43E-004	-5.37E-003
59	7.09E-004	-5.39E-003
60	3.39E-004	-5.41E-003
61	-4.90E-005	-5.42E-003
62	-4.58E-005	-5.85E-003
63	-3.38E-005	-6.98E-003
64	-2.19E-005	-7.54E-003
65	-9.94E-006	-7.16E-003
66	2.00E-006	-6.51E-003
67	5.22E-006	-6.41E-003
68	-2.68E-005	-6.40E-003
69	1.34E-005	-6.38E-003
70	9.38E-005	-6.36E-003
71	1.75E-004	-6.34E-003
72	5.41E-004	-6.31E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	8.50E-004
2	1.05E-003
3	1.14E-003
4	-3.08E-004
5	-1.77E-003
6	-1.65E-003
7	-1.43E-003
8	-1.17E-003
9	-2.34E-004
10	-1.03E-004
11	-9.98E-005
12	2.19E-005
13	2.00E-004
14	4.69E-004
15	1.10E-003
16	-1.04E-004
17	-1.53E-003
18	-1.56E-003
19	-1.38E-003
20	-1.17E-003
21	-2.16E-004
22	-2.85E-004
23	-3.74E-004
24	6.19E-004
25	9.25E-004
26	1.15E-003
27	1.36E-003
28	-1.98E-011
29	-1.36E-003

30	-1.15E-003
31	-9.25E-004
32	-6.75E-004
33	2.05E-004
34	2.28E-004
35	7.94E-005
36	3.40E-006
37	1.59E-004
38	4.10E-004
39	1.01E-003
40	-2.45E-011
41	-1.01E-003
42	-4.10E-004
43	-1.59E-004
44	-3.40E-006
45	-7.94E-005
46	-2.28E-004
47	-2.05E-004
48	6.75E-004
49	1.43E-003
50	1.65E-003
51	1.77E-003
52	3.08E-004
53	-1.14E-003
54	-1.05E-003
55	-8.50E-004
56	-6.19E-004
57	3.74E-004
58	2.85E-004
59	2.16E-004
60	1.17E-003
61	1.38E-003
62	1.56E-003
63	1.53E-003
64	1.04E-004
65	-1.10E-003
66	-4.69E-004
67	-2.00E-004
68	-2.19E-005
69	9.98E-005
70	1.03E-004
71	2.34E-004
72	1.17E-003

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

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-1.65E-003	-5.68E-003
2	-1.65E-003	-5.23E-003
3	-1.66E-003	-4.17E-003
4	-1.67E-003	-3.90E-003
5	-1.68E-003	-4.88E-003
6	-1.69E-003	-6.60E-003
7	-1.69E-003	-7.32E-003
8	-1.03E-003	-7.33E-003
9	-3.11E-004	-7.36E-003
10	-1.77E-004	-7.38E-003
11	-3.46E-005	-7.40E-003
12	2.26E-005	-7.43E-003
13	-2.27E-005	-7.44E-003
14	-2.06E-005	-7.55E-003
15	-1.28E-005	-8.31E-003
16	-5.08E-006	-8.74E-003
17	2.68E-006	-8.04E-003
18	1.04E-005	-6.49E-003
19	1.25E-005	-5.77E-003
20	-6.63E-004	-5.77E-003
21	-1.64E-003	-5.75E-003
22	-2.14E-003	-5.73E-003
23	-2.36E-003	-5.71E-003
24	-2.05E-003	-5.69E-003
25	2.36E-005	-6.22E-003
26	2.08E-005	-5.78E-003
27	1.04E-005	-4.60E-003
28	7.75E-011	-4.04E-003
29	-1.04E-005	-4.60E-003
30	-2.08E-005	-5.78E-003
31	-2.36E-005	-6.22E-003
32	3.56E-004	-6.23E-003
33	5.13E-004	-6.25E-003
34	1.87E-004	-6.27E-003
35	2.91E-005	-6.29E-003
36	1.90E-006	-6.32E-003
37	-1.66E-005	-6.32E-003
38	-1.46E-005	-6.40E-003
39	-7.32E-006	-7.02E-003
40	1.49E-010	-7.42E-003
41	7.32E-006	-7.02E-003
42	1.46E-005	-6.40E-003
43	1.66E-005	-6.32E-003
44	-1.90E-006	-6.32E-003
45	-2.91E-005	-6.29E-003
46	-1.87E-004	-6.27E-003
47	-5.13E-004	-6.25E-003
48	-3.56E-004	-6.23E-003
49	1.69E-003	-7.32E-003

50	1.69E-003	-6.60E-003
51	1.68E-003	-4.88E-003
52	1.67E-003	-3.90E-003
53	1.66E-003	-4.17E-003
54	1.65E-003	-5.23E-003
55	1.65E-003	-5.68E-003
56	2.05E-003	-5.69E-003
57	2.36E-003	-5.71E-003
58	2.14E-003	-5.73E-003
59	1.64E-003	-5.75E-003
60	6.63E-004	-5.77E-003
61	-1.25E-005	-5.77E-003
62	-1.04E-005	-6.49E-003
63	-2.68E-006	-8.04E-003
64	5.08E-006	-8.74E-003
65	1.28E-005	-8.31E-003
66	2.06E-005	-7.55E-003
67	2.27E-005	-7.44E-003
68	-2.26E-005	-7.43E-003
69	3.46E-005	-7.40E-003
70	1.77E-004	-7.38E-003
71	3.11E-004	-7.36E-003
72	1.03E-003	-7.33E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.42E-003
2	1.59E-003
3	1.28E-003
4	-5.41E-004
5	-2.35E-003
6	-2.51E-003
7	-2.31E-003
8	-2.03E-003
9	-4.52E-004
10	-1.61E-004
11	-1.79E-004
12	5.11E-005
13	2.58E-004
14	5.58E-004
15	1.27E-003
16	-1.37E-004
17	-1.95E-003
18	-2.46E-003
19	-2.33E-003
20	-2.15E-003
21	-1.03E-003
22	-5.54E-004
23	-5.33E-005
24	1.21E-003
25	1.38E-003
26	1.59E-003
27	1.61E-003
28	-2.17E-011
29	-1.61E-003

30	-1.59E-003
31	-1.38E-003
32	-1.11E-003
33	3.51E-004
34	4.38E-004
35	1.31E-004
36	-1.33E-005
37	1.51E-004
38	4.18E-004
39	1.06E-003
40	-2.68E-011
41	-1.06E-003
42	-4.18E-004
43	-1.51E-004
44	1.33E-005
45	-1.31E-004
46	-4.38E-004
47	-3.51E-004
48	1.11E-003
49	2.31E-003
50	2.51E-003
51	2.35E-003
52	5.41E-004
53	-1.28E-003
54	-1.59E-003
55	-1.42E-003
56	-1.21E-003
57	5.33E-005
58	5.54E-004
59	1.03E-003
60	2.15E-003
61	2.33E-003
62	2.46E-003
63	1.95E-003
64	1.37E-004
65	-1.27E-003
66	-5.58E-004
67	-2.58E-004
68	-5.11E-005
69	1.79E-004
70	1.61E-004
71	4.52E-004
72	2.03E-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	-1.54E-003	-5.40E-003
2	-1.55E-003	-4.98E-003
3	-1.56E-003	-3.98E-003
4	-1.57E-003	-3.71E-003
5	-1.58E-003	-4.64E-003
6	-1.59E-003	-6.27E-003
7	-1.59E-003	-6.95E-003
8	-9.70E-004	-6.95E-003
9	-2.92E-004	-6.98E-003
10	-1.66E-004	-7.00E-003
11	-3.24E-005	-7.02E-003
12	2.14E-005	-7.05E-003
13	-2.12E-005	-7.05E-003
14	-1.92E-005	-7.16E-003
15	-1.19E-005	-7.87E-003
16	-4.47E-006	-8.29E-003
17	2.91E-006	-7.62E-003
18	1.03E-005	-6.17E-003
19	1.23E-005	-5.49E-003
20	-6.22E-004	-5.49E-003
21	-1.54E-003	-5.47E-003
22	-2.00E-003	-5.45E-003
23	-2.21E-003	-5.43E-003
24	-1.92E-003	-5.41E-003
25	2.27E-005	-5.91E-003
26	2.00E-005	-5.49E-003
27	1.00E-005	-4.38E-003
28	7.33E-011	-3.85E-003
29	-1.00E-005	-4.38E-003
30	-2.00E-005	-5.49E-003
31	-2.27E-005	-5.91E-003
32	3.35E-004	-5.91E-003
33	4.82E-004	-5.94E-003
34	1.76E-004	-5.96E-003
35	2.73E-005	-5.98E-003
36	1.75E-006	-6.00E-003
37	-1.58E-005	-6.01E-003
38	-1.39E-005	-6.08E-003
39	-6.97E-006	-6.67E-003
40	1.41E-010	-7.04E-003
41	6.97E-006	-6.67E-003
42	1.39E-005	-6.08E-003
43	1.58E-005	-6.01E-003
44	-1.75E-006	-6.00E-003
45	-2.73E-005	-5.98E-003
46	-1.76E-004	-5.96E-003
47	-4.82E-004	-5.94E-003
48	-3.35E-004	-5.91E-003
49	1.59E-003	-6.95E-003

50	1.59E-003	-6.27E-003
51	1.58E-003	-4.64E-003
52	1.57E-003	-3.71E-003
53	1.56E-003	-3.98E-003
54	1.55E-003	-4.98E-003
55	1.54E-003	-5.40E-003
56	1.92E-003	-5.41E-003
57	2.21E-003	-5.43E-003
58	2.00E-003	-5.45E-003
59	1.54E-003	-5.47E-003
60	6.22E-004	-5.49E-003
61	-1.23E-005	-5.49E-003
62	-1.03E-005	-6.17E-003
63	-2.91E-006	-7.62E-003
64	4.47E-006	-8.29E-003
65	1.19E-005	-7.87E-003
66	1.92E-005	-7.16E-003
67	2.12E-005	-7.05E-003
68	-2.14E-005	-7.05E-003
69	3.24E-005	-7.02E-003
70	1.66E-004	-7.00E-003
71	2.92E-004	-6.98E-003
72	9.70E-004	-6.95E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.34E-003
2	1.50E-003
3	1.21E-003
4	-5.08E-004
5	-2.22E-003
6	-2.37E-003
7	-2.17E-003
8	-1.91E-003
9	-4.24E-004
10	-1.52E-004
11	-1.68E-004
12	4.78E-005
13	2.43E-004
14	5.26E-004
15	1.20E-003
16	-1.29E-004
17	-1.84E-003
18	-2.31E-003
19	-2.19E-003
20	-2.01E-003
21	-9.60E-004
22	-5.21E-004
23	-5.73E-005
24	1.14E-003
25	1.30E-003
26	1.50E-003
27	1.52E-003
28	-2.06E-011
29	-1.52E-003

30	-1.50E-003
31	-1.30E-003
32	-1.04E-003
33	3.30E-004
34	4.11E-004
35	1.23E-004
36	-1.23E-005
37	1.43E-004
38	3.95E-004
39	1.00E-003
40	-2.55E-011
41	-1.00E-003
42	-3.95E-004
43	-1.43E-004
44	1.23E-005
45	-1.23E-004
46	-4.11E-004
47	-3.30E-004
48	1.04E-003
49	2.17E-003
50	2.37E-003
51	2.22E-003
52	5.08E-004
53	-1.21E-003
54	-1.50E-003
55	-1.34E-003
56	-1.14E-003
57	5.73E-005
58	5.21E-004
59	9.60E-004
60	2.01E-003
61	2.19E-003
62	2.31E-003
63	1.84E-003
64	1.29E-004
65	-1.20E-003
66	-5.26E-004
67	-2.43E-004
68	-4.78E-005
69	1.68E-004
70	1.52E-004
71	4.24E-004
72	1.91E-003

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

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-1.71E-003	-5.56E-003
2	-1.71E-003	-5.12E-003
3	-1.72E-003	-4.08E-003
4	-1.73E-003	-3.81E-003
5	-1.74E-003	-4.79E-003
6	-1.75E-003	-6.52E-003
7	-1.75E-003	-7.25E-003
8	-1.08E-003	-7.26E-003
9	-3.13E-004	-7.29E-003
10	-1.67E-004	-7.31E-003
11	-4.67E-005	-7.33E-003
12	1.82E-005	-7.36E-003
13	-2.30E-005	-7.36E-003
14	-2.10E-005	-7.48E-003
15	-1.37E-005	-8.21E-003
16	-6.29E-006	-8.63E-003
17	1.07E-006	-7.92E-003
18	8.43E-006	-6.37E-003
19	1.04E-005	-5.65E-003
20	-6.70E-004	-5.65E-003
21	-1.67E-003	-5.63E-003
22	-2.18E-003	-5.61E-003
23	-2.41E-003	-5.59E-003
24	-2.10E-003	-5.57E-003
25	2.29E-005	-6.14E-003
26	2.02E-005	-5.69E-003
27	1.01E-005	-4.51E-003
28	7.98E-011	-3.95E-003
29	-1.01E-005	-4.51E-003
30	-2.02E-005	-5.69E-003
31	-2.29E-005	-6.14E-003
32	3.67E-004	-6.14E-003
33	5.60E-004	-6.17E-003
34	2.34E-004	-6.19E-003
35	4.06E-005	-6.21E-003
36	5.86E-006	-6.23E-003
37	-1.57E-005	-6.24E-003
38	-1.38E-005	-6.32E-003
39	-6.92E-006	-6.93E-003
40	1.50E-010	-7.32E-003
41	6.92E-006	-6.93E-003
42	1.38E-005	-6.32E-003
43	1.57E-005	-6.24E-003
44	-5.86E-006	-6.23E-003
45	-4.06E-005	-6.21E-003
46	-2.34E-004	-6.19E-003
47	-5.60E-004	-6.17E-003
48	-3.67E-004	-6.14E-003
49	1.75E-003	-7.25E-003

50	1.75E-003	-6.52E-003
51	1.74E-003	-4.79E-003
52	1.73E-003	-3.81E-003
53	1.72E-003	-4.08E-003
54	1.71E-003	-5.12E-003
55	1.71E-003	-5.56E-003
56	2.10E-003	-5.57E-003
57	2.41E-003	-5.59E-003
58	2.18E-003	-5.61E-003
59	1.67E-003	-5.63E-003
60	6.70E-004	-5.65E-003
61	-1.04E-005	-5.65E-003
62	-8.43E-006	-6.37E-003
63	-1.07E-006	-7.92E-003
64	6.29E-006	-8.63E-003
65	1.37E-005	-8.21E-003
66	2.10E-005	-7.48E-003
67	2.30E-005	-7.36E-003
68	-1.82E-005	-7.36E-003
69	4.67E-005	-7.33E-003
70	1.67E-004	-7.31E-003
71	3.13E-004	-7.29E-003
72	1.08E-003	-7.26E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.41E-003
2	1.56E-003
3	1.25E-003
4	-5.47E-004
5	-2.35E-003
6	-2.54E-003
7	-2.34E-003
8	-2.08E-003
9	-5.22E-004
10	-9.76E-005
11	-1.89E-004
12	3.90E-005
13	2.42E-004
14	5.36E-004
15	1.23E-003
16	-1.54E-004
17	-1.94E-003
18	-2.46E-003
19	-2.34E-003
20	-2.16E-003
21	-1.06E-003
22	-5.74E-004
23	-5.70E-005
24	1.19E-003
25	1.41E-003
26	1.61E-003
27	1.60E-003
28	-2.13E-011
29	-1.60E-003

30	-1.61E-003
31	-1.41E-003
32	-1.15E-003
33	2.96E-004
34	5.21E-004
35	1.44E-004
36	-1.43E-006
37	1.60E-004
38	4.20E-004
39	1.05E-003
40	-2.65E-011
41	-1.05E-003
42	-4.20E-004
43	-1.60E-004
44	1.43E-006
45	-1.44E-004
46	-5.21E-004
47	-2.96E-004
48	1.15E-003
49	2.34E-003
50	2.54E-003
51	2.35E-003
52	5.47E-004
53	-1.25E-003
54	-1.56E-003
55	-1.41E-003
56	-1.19E-003
57	5.70E-005
58	5.74E-004
59	1.06E-003
60	2.16E-003
61	2.34E-003
62	2.46E-003
63	1.94E-003
64	1.54E-004
65	-1.23E-003
66	-5.36E-004
67	-2.42E-004
68	-3.90E-005
69	1.89E-004
70	9.76E-005
71	5.22E-004
72	2.08E-003

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

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-8.97E-004	-5.33E-003
2	-9.01E-004	-5.04E-003
3	-9.16E-004	-4.19E-003
4	-9.30E-004	-3.88E-003
5	-9.45E-004	-4.61E-003
6	-9.59E-004	-5.87E-003
7	-9.63E-004	-6.33E-003
8	-5.59E-004	-6.34E-003
9	-1.80E-004	-6.36E-003
10	-9.62E-005	-6.39E-003
11	-1.38E-005	-6.41E-003
12	2.66E-005	-6.43E-003
13	-5.98E-006	-6.44E-003
14	-2.82E-006	-6.53E-003
15	8.90E-006	-7.19E-003
16	2.06E-005	-7.57E-003
17	3.24E-005	-7.00E-003
18	4.41E-005	-5.87E-003
19	4.72E-005	-5.42E-003
20	-3.51E-004	-5.41E-003
21	-7.45E-004	-5.39E-003
22	-8.92E-004	-5.37E-003
23	-1.13E-003	-5.35E-003
24	-1.13E-003	-5.33E-003
25	3.34E-005	-5.70E-003
26	2.94E-005	-5.39E-003
27	1.47E-005	-4.43E-003
28	5.21E-011	-3.95E-003
29	-1.47E-005	-4.43E-003
30	-2.94E-005	-5.39E-003
31	-3.34E-005	-5.70E-003
32	2.16E-004	-5.71E-003
33	2.78E-004	-5.73E-003
34	1.01E-004	-5.75E-003
35	1.08E-005	-5.77E-003
36	-3.94E-006	-5.79E-003
37	-2.61E-005	-5.80E-003
38	-2.30E-005	-5.88E-003
39	-1.15E-005	-6.47E-003
40	1.16E-010	-6.84E-003
41	1.15E-005	-6.47E-003
42	2.30E-005	-5.88E-003
43	2.61E-005	-5.80E-003
44	3.94E-006	-5.79E-003
45	-1.08E-005	-5.77E-003
46	-1.01E-004	-5.75E-003
47	-2.78E-004	-5.73E-003
48	-2.16E-004	-5.71E-003
49	9.63E-004	-6.33E-003

50	9.59E-004	-5.87E-003
51	9.45E-004	-4.61E-003
52	9.30E-004	-3.88E-003
53	9.16E-004	-4.19E-003
54	9.01E-004	-5.04E-003
55	8.97E-004	-5.33E-003
56	1.13E-003	-5.33E-003
57	1.13E-003	-5.35E-003
58	8.92E-004	-5.37E-003
59	7.45E-004	-5.39E-003
60	3.51E-004	-5.41E-003
61	-4.72E-005	-5.42E-003
62	-4.41E-005	-5.87E-003
63	-3.24E-005	-7.00E-003
64	-2.06E-005	-7.57E-003
65	-8.90E-006	-7.19E-003
66	2.83E-006	-6.53E-003
67	5.98E-006	-6.44E-003
68	-2.66E-005	-6.43E-003
69	1.38E-005	-6.41E-003
70	9.62E-005	-6.39E-003
71	1.80E-004	-6.36E-003
72	5.59E-004	-6.34E-003

DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	8.71E-004
2	1.07E-003
3	1.14E-003
4	-3.16E-004
5	-1.79E-003
6	-1.68E-003
7	-1.46E-003
8	-1.20E-003
9	-2.42E-004
10	-1.05E-004
11	-1.02E-004
12	2.35E-005
13	2.03E-004
14	4.72E-004
15	1.10E-003
16	-1.05E-004
17	-1.54E-003
18	-1.59E-003
19	-1.42E-003
20	-1.21E-003
21	-2.47E-004
22	-2.93E-004
23	-3.59E-004
24	6.41E-004
25	9.39E-004
26	1.16E-003
27	1.37E-003
28	-1.98E-011
29	-1.37E-003

30	-1.16E-003
31	-9.39E-004
32	-6.89E-004
33	2.10E-004
34	2.35E-004
35	8.08E-005
36	2.26E-006
37	1.58E-004
38	4.09E-004
39	1.01E-003
40	-2.46E-011
41	-1.01E-003
42	-4.09E-004
43	-1.58E-004
44	-2.26E-006
45	-8.08E-005
46	-2.35E-004
47	-2.10E-004
48	6.89E-004
49	1.46E-003
50	1.68E-003
51	1.79E-003
52	3.16E-004
53	-1.14E-003
54	-1.07E-003
55	-8.71E-004
56	-6.41E-004
57	3.59E-004
58	2.93E-004
59	2.47E-004
60	1.21E-003
61	1.42E-003
62	1.59E-003
63	1.54E-003
64	1.05E-004
65	-1.10E-003
66	-4.72E-004
67	-2.03E-004
68	-2.35E-005
69	1.02E-004
70	1.05E-004
71	2.42E-004
72	1.20E-003

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

SEÇÃO	DIREÇÃO X (m)	DIREÇÃO Y (m)
1	-1.61E-003	-5.58E-003
2	-1.61E-003	-5.14E-003
3	-1.62E-003	-4.10E-003
4	-1.63E-003	-3.83E-003
5	-1.64E-003	-4.79E-003
6	-1.65E-003	-6.48E-003
7	-1.65E-003	-7.18E-003
8	-1.01E-003	-7.19E-003
9	-3.04E-004	-7.21E-003
10	-1.73E-004	-7.24E-003
11	-3.38E-005	-7.26E-003
12	2.22E-005	-7.29E-003
13	-2.21E-005	-7.29E-003
14	-2.01E-005	-7.41E-003
15	-1.25E-005	-8.14E-003
16	-4.85E-006	-8.57E-003
17	2.76E-006	-7.88E-003
18	1.04E-005	-6.37E-003
19	1.24E-005	-5.67E-003
20	-6.48E-004	-5.66E-003
21	-1.60E-003	-5.64E-003
22	-2.09E-003	-5.62E-003
23	-2.30E-003	-5.60E-003
24	-2.00E-003	-5.58E-003
25	2.33E-005	-6.10E-003
26	2.05E-005	-5.67E-003
27	1.03E-005	-4.52E-003
28	7.60E-011	-3.96E-003
29	-1.03E-005	-4.52E-003
30	-2.05E-005	-5.67E-003
31	-2.33E-005	-6.10E-003
32	3.48E-004	-6.11E-003
33	5.01E-004	-6.13E-003
34	1.83E-004	-6.15E-003
35	2.84E-005	-6.18E-003
36	1.85E-006	-6.20E-003
37	-1.63E-005	-6.20E-003
38	-1.44E-005	-6.28E-003
39	-7.19E-006	-6.89E-003
40	1.46E-010	-7.27E-003
41	7.19E-006	-6.89E-003
42	1.44E-005	-6.28E-003
43	1.63E-005	-6.20E-003
44	-1.84E-006	-6.20E-003
45	-2.84E-005	-6.18E-003
46	-1.83E-004	-6.15E-003
47	-5.01E-004	-6.13E-003
48	-3.48E-004	-6.11E-003
49	1.65E-003	-7.18E-003

50	1.65E-003	-6.48E-003
51	1.64E-003	-4.79E-003
52	1.63E-003	-3.83E-003
53	1.62E-003	-4.10E-003
54	1.61E-003	-5.14E-003
55	1.61E-003	-5.58E-003
56	2.00E-003	-5.58E-003
57	2.30E-003	-5.60E-003
58	2.09E-003	-5.62E-003
59	1.60E-003	-5.64E-003
60	6.48E-004	-5.66E-003
61	-1.24E-005	-5.67E-003
62	-1.04E-005	-6.37E-003
63	-2.76E-006	-7.88E-003
64	4.85E-006	-8.57E-003
65	1.25E-005	-8.14E-003
66	2.01E-005	-7.41E-003
67	2.21E-005	-7.29E-003
68	-2.22E-005	-7.29E-003
69	3.38E-005	-7.26E-003
70	1.73E-004	-7.24E-003
71	3.04E-004	-7.21E-003
72	1.01E-003	-7.19E-003

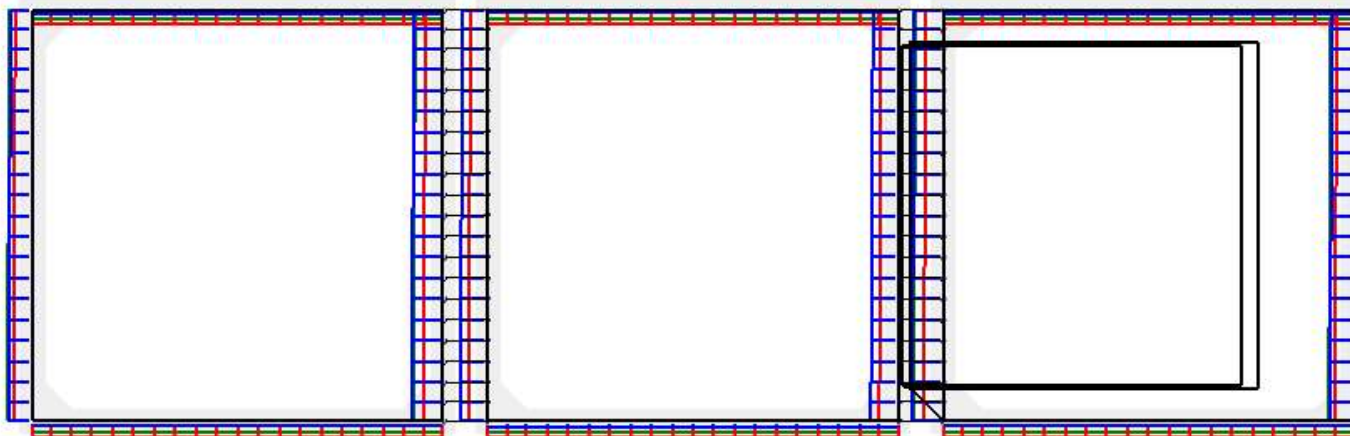
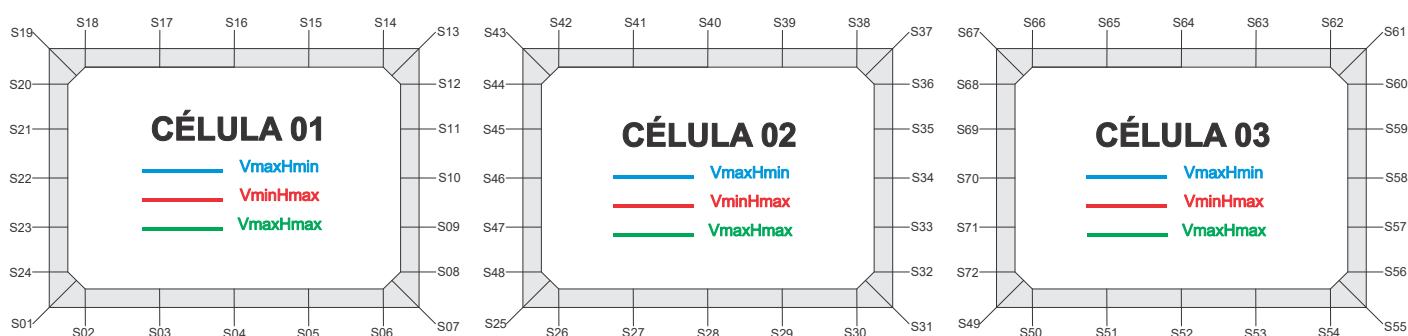
DESLOCAMENTOS NAS SEÇÕES DE INTERESSE (ROTAÇÃO)

SEÇÃO	ROTAÇÃO (rad)
1	1.39E-003
2	1.55E-003
3	1.25E-003
4	-5.29E-004
5	-2.31E-003
6	-2.46E-003
7	-2.26E-003
8	-1.99E-003
9	-4.41E-004
10	-1.58E-004
11	-1.75E-004
12	4.99E-005
13	2.52E-004
14	5.46E-004
15	1.24E-003
16	-1.34E-004
17	-1.91E-003
18	-2.40E-003
19	-2.28E-003
20	-2.10E-003
21	-1.00E-003
22	-5.42E-004
23	-5.48E-005
24	1.18E-003
25	1.35E-003
26	1.56E-003
27	1.57E-003
28	-2.12E-011
29	-1.57E-003

30	-1.56E-003
31	-1.35E-003
32	-1.09E-003
33	3.43E-004
34	4.28E-004
35	1.28E-004
36	-1.29E-005
37	1.48E-004
38	4.09E-004
39	1.04E-003
40	-2.63E-011
41	-1.04E-003
42	-4.09E-004
43	-1.48E-004
44	1.29E-005
45	-1.28E-004
46	-4.28E-004
47	-3.43E-004
48	1.09E-003
49	2.26E-003
50	2.46E-003
51	2.31E-003
52	5.29E-004
53	-1.25E-003
54	-1.55E-003
55	-1.39E-003
56	-1.18E-003
57	5.48E-005
58	5.42E-004
59	1.00E-003
60	2.10E-003
61	2.28E-003
62	2.40E-003
63	1.91E-003
64	1.34E-004
65	-1.24E-003
66	-5.46E-004
67	-2.52E-004
68	-4.99E-005
69	1.75E-004
70	1.58E-004
71	4.41E-004
72	1.99E-003

ESFORÇO NORMAL

NOMENCLATURA DAS SEÇÕES PARA VERSÃO COMPLETA DO RELATÓRIO



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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-225.58	-43.82
2	-43.82	-43.82
3	-43.82	-43.82
4	-43.82	-43.82
5	-43.82	-43.82
6	-43.82	-43.82
7	-43.82	-294.74
8	-292.47	-292.47
9	-288.24	-288.24
10	-284.02	-284.02
11	-279.79	-279.79
12	-275.57	-275.57
13	-273.29	-34.90
14	-34.90	-34.90
15	-34.90	-34.90
16	-34.90	-34.90
17	-34.90	-34.90
18	-34.90	-34.90
19	-34.90	-204.13
20	-206.40	-206.40
21	-210.63	-210.63
22	-214.85	-214.85
23	-219.08	-219.08
24	-223.30	-223.30
25	-225.58	-54.14
26	-54.14	-54.14
27	-54.14	-54.14
28	-54.14	-54.14
29	-54.14	-54.14
30	-54.14	-54.14
31	-54.14	-260.16
32	-257.89	-257.89
33	-253.66	-253.66
34	-249.44	-249.44
35	-245.21	-245.21
36	-240.99	-240.99
37	-238.71	-24.58
38	-24.58	-24.58
39	-24.58	-24.58
40	-24.58	-24.58
41	-24.58	-24.58
42	-24.58	-24.58
43	-24.58	-238.71
44	-240.99	-240.99
45	-245.21	-245.21
46	-249.44	-249.44
47	-253.66	-253.66
48	-257.89	-257.89
49	-260.16	-43.82

	50	-43.82	-43.82
	51	-43.82	-43.82
	52	-43.82	-43.82
	53	-43.82	-43.82
	54	-43.82	-43.82
	55	-43.82	-225.58
	56	-223.30	-223.30
	57	-219.08	-219.08
	58	-214.85	-214.85
	59	-210.63	-210.63
	60	-206.40	-206.40
	61	-204.13	-34.90
	62	-34.90	-34.90
	63	-34.90	-34.90
	64	-34.90	-34.90
	65	-34.90	-34.90
	66	-34.90	-34.90
	67	-34.90	-273.29
	68	-275.57	-275.57
	69	-279.79	-279.79
	70	-284.02	-284.02
	71	-288.24	-288.24
	72	-292.47	-292.47

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-178.04	-159.59
2	-159.59	-159.59
3	-159.59	-159.59
4	-159.59	-159.59
5	-159.59	-159.59
6	-159.59	-159.59
7	-159.59	-182.50
8	-180.75	-180.75
9	-177.50	-177.50
10	-174.25	-174.25
11	-171.00	-171.00
12	-167.75	-167.75
13	-166.00	-133.30
14	-133.30	-133.30
15	-133.30	-133.30
16	-133.30	-133.30
17	-133.30	-133.30
18	-133.30	-133.30
19	-133.30	-161.54
20	-163.29	-163.29
21	-166.54	-166.54
22	-169.79	-169.79
23	-173.04	-173.04
24	-176.29	-176.29
25	-178.04	-160.13
26	-160.13	-160.13
27	-160.13	-160.13
28	-160.13	-160.13
29	-160.13	-160.13
30	-160.13	-160.13
31	-160.13	-180.27
32	-178.52	-178.52
33	-175.27	-175.27
34	-172.02	-172.02
35	-168.77	-168.77
36	-165.52	-165.52
37	-163.77	-132.76
38	-132.76	-132.76
39	-132.76	-132.76
40	-132.76	-132.76
41	-132.76	-132.76
42	-132.76	-132.76
43	-132.76	-163.77
44	-165.52	-165.52
45	-168.77	-168.77
46	-172.02	-172.02
47	-175.27	-175.27
48	-178.52	-178.52
49	-180.27	-159.59

	50	-159.59	-159.59
	51	-159.59	-159.59
	52	-159.59	-159.59
	53	-159.59	-159.59
	54	-159.59	-159.59
	55	-159.59	-178.04
	56	-176.29	-176.29
	57	-173.04	-173.04
	58	-169.79	-169.79
	59	-166.54	-166.54
	60	-163.29	-163.29
	61	-161.54	-133.30
	62	-133.30	-133.30
	63	-133.30	-133.30
	64	-133.30	-133.30
	65	-133.30	-133.30
	66	-133.30	-133.30
	67	-133.30	-166.00
	68	-167.75	-167.75
	69	-171.00	-171.00
	70	-174.25	-174.25
	71	-177.50	-177.50
	72	-180.75	-180.75

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-237.17	-109.66
2	-109.66	-109.66
3	-109.66	-109.66
4	-109.66	-109.66
5	-109.66	-109.66
6	-109.66	-109.66
7	-109.66	-283.15
8	-280.88	-280.88
9	-276.65	-276.65
10	-272.43	-272.43
11	-268.20	-268.20
12	-263.98	-263.98
13	-261.70	-85.60
14	-85.60	-85.60
15	-85.60	-85.60
16	-85.60	-85.60
17	-85.60	-85.60
18	-85.60	-85.60
19	-85.60	-215.72
20	-218.00	-218.00
21	-222.22	-222.22
22	-226.45	-226.45
23	-230.67	-230.67
24	-234.90	-234.90
25	-237.17	-114.59
26	-114.59	-114.59
27	-114.59	-114.59
28	-114.59	-114.59
29	-114.59	-114.59
30	-114.59	-114.59
31	-114.59	-260.16
32	-257.89	-257.89
33	-253.66	-253.66
34	-249.44	-249.44
35	-245.21	-245.21
36	-240.99	-240.99
37	-238.71	-80.67
38	-80.67	-80.67
39	-80.67	-80.67
40	-80.67	-80.67
41	-80.67	-80.67
42	-80.67	-80.67
43	-80.67	-238.71
44	-240.99	-240.99
45	-245.21	-245.21
46	-249.44	-249.44
47	-253.66	-253.66
48	-257.89	-257.89
49	-260.16	-109.66

50	-109.66	-109.66
51	-109.66	-109.66
52	-109.66	-109.66
53	-109.66	-109.66
54	-109.66	-109.66
55	-109.66	-237.17
56	-234.90	-234.90
57	-230.67	-230.67
58	-226.45	-226.45
59	-222.22	-222.22
60	-218.00	-218.00
61	-215.72	-85.60
62	-85.60	-85.60
63	-85.60	-85.60
64	-85.60	-85.60
65	-85.60	-85.60
66	-85.60	-85.60
67	-85.60	-261.70
68	-263.98	-263.98
69	-268.20	-268.20
70	-272.43	-272.43
71	-276.65	-276.65
72	-280.88	-280.88

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-230.48	-41.57
2	-41.57	-41.57
3	-41.57	-41.57
4	-41.57	-41.57
5	-41.57	-41.57
6	-41.57	-41.57
7	-41.57	-289.84
8	-287.57	-287.57
9	-283.34	-283.34
10	-279.12	-279.12
11	-274.89	-274.89
12	-270.67	-270.67
13	-268.39	-37.15
14	-37.15	-37.15
15	-37.15	-37.15
16	-37.15	-37.15
17	-37.15	-37.15
18	-37.15	-37.15
19	-37.15	-209.03
20	-211.30	-211.30
21	-215.53	-215.53
22	-219.75	-219.75
23	-223.98	-223.98
24	-228.20	-228.20
25	-230.48	-52.38
26	-52.38	-52.38
27	-52.38	-52.38
28	-52.38	-52.38
29	-52.38	-52.38
30	-52.38	-52.38
31	-52.38	-257.44
32	-255.17	-255.17
33	-250.94	-250.94
34	-246.72	-246.72
35	-242.49	-242.49
36	-238.27	-238.27
37	-235.99	-26.34
38	-26.34	-26.34
39	-26.34	-26.34
40	-26.34	-26.34
41	-26.34	-26.34
42	-26.34	-26.34
43	-26.34	-241.43
44	-243.71	-243.71
45	-247.93	-247.93
46	-252.16	-252.16
47	-256.38	-256.38
48	-260.61	-260.61
49	-262.88	-43.61

	50	-43.61	-43.61
	51	-43.61	-43.61
	52	-43.61	-43.61
	53	-43.61	-43.61
	54	-43.61	-43.61
	55	-43.61	-217.93
	56	-215.65	-215.65
	57	-211.43	-211.43
	58	-207.20	-207.20
	59	-202.98	-202.98
	60	-198.75	-198.75
	61	-196.48	-35.11
	62	-35.11	-35.11
	63	-35.11	-35.11
	64	-35.11	-35.11
	65	-35.11	-35.11
	66	-35.11	-35.11
	67	-35.11	-280.94
	68	-283.22	-283.22
	69	-287.44	-287.44
	70	-291.67	-291.67
	71	-295.89	-295.89
	72	-300.12	-300.12

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-179.19	-159.26
2	-159.26	-159.26
3	-159.26	-159.26
4	-159.26	-159.26
5	-159.26	-159.26
6	-159.26	-159.26
7	-159.26	-181.35
8	-179.60	-179.60
9	-176.35	-176.35
10	-173.10	-173.10
11	-169.85	-169.85
12	-166.60	-166.60
13	-164.85	-133.63
14	-133.63	-133.63
15	-133.63	-133.63
16	-133.63	-133.63
17	-133.63	-133.63
18	-133.63	-133.63
19	-133.63	-162.69
20	-164.44	-164.44
21	-167.69	-167.69
22	-170.94	-170.94
23	-174.19	-174.19
24	-177.44	-177.44
25	-179.19	-160.22
26	-160.22	-160.22
27	-160.22	-160.22
28	-160.22	-160.22
29	-160.22	-160.22
30	-160.22	-160.22
31	-160.22	-179.48
32	-177.73	-177.73
33	-174.48	-174.48
34	-171.23	-171.23
35	-167.98	-167.98
36	-164.73	-164.73
37	-162.98	-132.67
38	-132.67	-132.67
39	-132.67	-132.67
40	-132.67	-132.67
41	-132.67	-132.67
42	-132.67	-132.67
43	-132.67	-164.56
44	-166.31	-166.31
45	-169.56	-169.56
46	-172.81	-172.81
47	-176.06	-176.06
48	-179.31	-179.31
49	-181.06	-160.03

	50	-160.03	-160.03
	51	-160.03	-160.03
	52	-160.03	-160.03
	53	-160.03	-160.03
	54	-160.03	-160.03
	55	-160.03	-177.02
	56	-175.27	-175.27
	57	-172.02	-172.02
	58	-168.77	-168.77
	59	-165.52	-165.52
	60	-162.27	-162.27
	61	-160.52	-132.86
	62	-132.86	-132.86
	63	-132.86	-132.86
	64	-132.86	-132.86
	65	-132.86	-132.86
	66	-132.86	-132.86
	67	-132.86	-167.02
	68	-168.77	-168.77
	69	-172.02	-172.02
	70	-175.27	-175.27
	71	-178.52	-178.52
	72	-181.77	-181.77

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-240.53	-108.53
2	-108.53	-108.53
3	-108.53	-108.53
4	-108.53	-108.53
5	-108.53	-108.53
6	-108.53	-108.53
7	-108.53	-279.79
8	-277.52	-277.52
9	-273.29	-273.29
10	-269.07	-269.07
11	-264.84	-264.84
12	-260.62	-260.62
13	-258.34	-86.73
14	-86.73	-86.73
15	-86.73	-86.73
16	-86.73	-86.73
17	-86.73	-86.73
18	-86.73	-86.73
19	-86.73	-219.08
20	-221.36	-221.36
21	-225.58	-225.58
22	-229.81	-229.81
23	-234.03	-234.03
24	-238.26	-238.26
25	-240.53	-114.85
26	-114.85	-114.85
27	-114.85	-114.85
28	-114.85	-114.85
29	-114.85	-114.85
30	-114.85	-114.85
31	-114.85	-258.26
32	-255.99	-255.99
33	-251.76	-251.76
34	-247.54	-247.54
35	-243.31	-243.31
36	-239.09	-239.09
37	-236.81	-80.41
38	-80.41	-80.41
39	-80.41	-80.41
40	-80.41	-80.41
41	-80.41	-80.41
42	-80.41	-80.41
43	-80.41	-240.61
44	-242.88	-242.88
45	-247.11	-247.11
46	-251.33	-251.33
47	-255.56	-255.56
48	-259.78	-259.78
49	-262.06	-110.72

	50	-110.72	-110.72
	51	-110.72	-110.72
	52	-110.72	-110.72
	53	-110.72	-110.72
	54	-110.72	-110.72
	55	-110.72	-231.26
	56	-228.99	-228.99
	57	-224.76	-224.76
	58	-220.54	-220.54
	59	-216.31	-216.31
	60	-212.09	-212.09
	61	-209.81	-84.54
	62	-84.54	-84.54
	63	-84.54	-84.54
	64	-84.54	-84.54
	65	-84.54	-84.54
	66	-84.54	-84.54
	67	-84.54	-267.61
	68	-269.88	-269.88
	69	-274.11	-274.11
	70	-278.33	-278.33
	71	-282.56	-282.56
	72	-286.78	-286.78

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-172.65	-77.31
2	-77.31	-77.31
3	-77.31	-77.31
4	-77.31	-77.31
5	-77.31	-77.31
6	-77.31	-77.31
7	-77.31	-207.13
8	-205.38	-205.38
9	-202.13	-202.13
10	-198.88	-198.88
11	-195.63	-195.63
12	-192.38	-192.38
13	-190.63	-59.01
14	-59.01	-59.01
15	-59.01	-59.01
16	-59.01	-59.01
17	-59.01	-59.01
18	-59.01	-59.01
19	-59.01	-156.15
20	-157.90	-157.90
21	-161.15	-161.15
22	-164.40	-164.40
23	-167.65	-167.65
24	-170.90	-170.90
25	-172.65	-81.01
26	-81.01	-81.01
27	-81.01	-81.01
28	-81.01	-81.01
29	-81.01	-81.01
30	-81.01	-81.01
31	-81.01	-189.89
32	-188.14	-188.14
33	-184.89	-184.89
34	-181.64	-181.64
35	-178.39	-178.39
36	-175.14	-175.14
37	-173.39	-55.31
38	-55.31	-55.31
39	-55.31	-55.31
40	-55.31	-55.31
41	-55.31	-55.31
42	-55.31	-55.31
43	-55.31	-173.39
44	-175.14	-175.14
45	-178.39	-178.39
46	-181.64	-181.64
47	-184.89	-184.89
48	-188.14	-188.14
49	-189.89	-77.31

	50	-77.31	-77.31
	51	-77.31	-77.31
	52	-77.31	-77.31
	53	-77.31	-77.31
	54	-77.31	-77.31
	55	-77.31	-172.65
	56	-170.90	-170.90
	57	-167.65	-167.65
	58	-164.40	-164.40
	59	-161.15	-161.15
	60	-157.90	-157.90
	61	-156.15	-59.01
	62	-59.01	-59.01
	63	-59.01	-59.01
	64	-59.01	-59.01
	65	-59.01	-59.01
	66	-59.01	-59.01
	67	-59.01	-190.63
	68	-192.38	-192.38
	69	-195.63	-195.63
	70	-198.88	-198.88
	71	-202.13	-202.13
	72	-205.38	-205.38

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-171.20	-117.64
2	-117.64	-117.64
3	-117.64	-117.64
4	-117.64	-117.64
5	-117.64	-117.64
6	-117.64	-117.64
7	-117.64	-189.34
8	-187.59	-187.59
9	-184.34	-184.34
10	-181.09	-181.09
11	-177.84	-177.84
12	-174.59	-174.59
13	-172.84	-95.82
14	-95.82	-95.82
15	-95.82	-95.82
16	-95.82	-95.82
17	-95.82	-95.82
18	-95.82	-95.82
19	-95.82	-154.70
20	-156.45	-156.45
21	-159.70	-159.70
22	-162.95	-162.95
23	-166.20	-166.20
24	-169.45	-169.45
25	-171.20	-119.51
26	-119.51	-119.51
27	-119.51	-119.51
28	-119.51	-119.51
29	-119.51	-119.51
30	-119.51	-119.51
31	-119.51	-180.27
32	-178.52	-178.52
33	-175.27	-175.27
34	-172.02	-172.02
35	-168.77	-168.77
36	-165.52	-165.52
37	-163.77	-93.95
38	-93.95	-93.95
39	-93.95	-93.95
40	-93.95	-93.95
41	-93.95	-93.95
42	-93.95	-93.95
43	-93.95	-163.77
44	-165.52	-165.52
45	-168.77	-168.77
46	-172.02	-172.02
47	-175.27	-175.27
48	-178.52	-178.52
49	-180.27	-117.64

	50	-117.64	-117.64
	51	-117.64	-117.64
	52	-117.64	-117.64
	53	-117.64	-117.64
	54	-117.64	-117.64
	55	-117.64	-171.20
	56	-169.45	-169.45
	57	-166.20	-166.20
	58	-162.95	-162.95
	59	-159.70	-159.70
	60	-156.45	-156.45
	61	-154.70	-95.82
	62	-95.82	-95.82
	63	-95.82	-95.82
	64	-95.82	-95.82
	65	-95.82	-95.82
	66	-95.82	-95.82
	67	-95.82	-172.84
	68	-174.59	-174.59
	69	-177.84	-177.84
	70	-181.09	-181.09
	71	-184.34	-184.34
	72	-187.59	-187.59

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-173.16	-80.09
2	-80.09	-80.09
3	-80.09	-80.09
4	-80.09	-80.09
5	-80.09	-80.09
6	-80.09	-80.09
7	-80.09	-206.62
8	-204.87	-204.87
9	-201.62	-201.62
10	-198.37	-198.37
11	-195.12	-195.12
12	-191.87	-191.87
13	-190.12	-62.22
14	-62.22	-62.22
15	-62.22	-62.22
16	-62.22	-62.22
17	-62.22	-62.22
18	-62.22	-62.22
19	-62.22	-156.66
20	-158.41	-158.41
21	-161.66	-161.66
22	-164.91	-164.91
23	-168.16	-168.16
24	-171.41	-171.41
25	-173.16	-83.59
26	-83.59	-83.59
27	-83.59	-83.59
28	-83.59	-83.59
29	-83.59	-83.59
30	-83.59	-83.59
31	-83.59	-189.89
32	-188.14	-188.14
33	-184.89	-184.89
34	-181.64	-181.64
35	-178.39	-178.39
36	-175.14	-175.14
37	-173.39	-58.72
38	-58.72	-58.72
39	-58.72	-58.72
40	-58.72	-58.72
41	-58.72	-58.72
42	-58.72	-58.72
43	-58.72	-173.39
44	-175.14	-175.14
45	-178.39	-178.39
46	-181.64	-181.64
47	-184.89	-184.89
48	-188.14	-188.14
49	-189.89	-80.09

	50	-80.09	-80.09
	51	-80.09	-80.09
	52	-80.09	-80.09
	53	-80.09	-80.09
	54	-80.09	-80.09
	55	-80.09	-173.16
	56	-171.41	-171.41
	57	-168.16	-168.16
	58	-164.91	-164.91
	59	-161.66	-161.66
	60	-158.41	-158.41
	61	-156.66	-62.22
	62	-62.22	-62.22
	63	-62.22	-62.22
	64	-62.22	-62.22
	65	-62.22	-62.22
	66	-62.22	-62.22
	67	-62.22	-190.12
	68	-191.87	-191.87
	69	-195.12	-195.12
	70	-198.37	-198.37
	71	-201.62	-201.62
	72	-204.87	-204.87

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-164.57	-77.11
2	-77.11	-77.11
3	-77.11	-77.11
4	-77.11	-77.11
5	-77.11	-77.11
6	-77.11	-77.11
7	-77.11	-195.97
8	-194.22	-194.22
9	-190.97	-190.97
10	-187.72	-187.72
11	-184.47	-184.47
12	-181.22	-181.22
13	-179.47	-59.21
14	-59.21	-59.21
15	-59.21	-59.21
16	-59.21	-59.21
17	-59.21	-59.21
18	-59.21	-59.21
19	-59.21	-148.07
20	-149.82	-149.82
21	-153.07	-153.07
22	-156.32	-156.32
23	-159.57	-159.57
24	-162.82	-162.82
25	-164.57	-80.39
26	-80.39	-80.39
27	-80.39	-80.39
28	-80.39	-80.39
29	-80.39	-80.39
30	-80.39	-80.39
31	-80.39	-180.27
32	-178.52	-178.52
33	-175.27	-175.27
34	-172.02	-172.02
35	-168.77	-168.77
36	-165.52	-165.52
37	-163.77	-55.93
38	-55.93	-55.93
39	-55.93	-55.93
40	-55.93	-55.93
41	-55.93	-55.93
42	-55.93	-55.93
43	-55.93	-163.77
44	-165.52	-165.52
45	-168.77	-168.77
46	-172.02	-172.02
47	-175.27	-175.27
48	-178.52	-178.52
49	-180.27	-77.11

	50	-77.11	-77.11
	51	-77.11	-77.11
	52	-77.11	-77.11
	53	-77.11	-77.11
	54	-77.11	-77.11
	55	-77.11	-164.57
	56	-162.82	-162.82
	57	-159.57	-159.57
	58	-156.32	-156.32
	59	-153.07	-153.07
	60	-149.82	-149.82
	61	-148.07	-59.21
	62	-59.21	-59.21
	63	-59.21	-59.21
	64	-59.21	-59.21
	65	-59.21	-59.21
	66	-59.21	-59.21
	67	-59.21	-179.47
	68	-181.22	-181.22
	69	-184.47	-184.47
	70	-187.72	-187.72
	71	-190.97	-190.97
	72	-194.22	-194.22

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

ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-169.63	-77.27
2	-77.27	-77.27
3	-77.27	-77.27
4	-77.27	-77.27
5	-77.27	-77.27
6	-77.27	-77.27
7	-77.27	-202.94
8	-201.19	-201.19
9	-197.94	-197.94
10	-194.69	-194.69
11	-191.44	-191.44
12	-188.19	-188.19
13	-186.44	-59.05
14	-59.05	-59.05
15	-59.05	-59.05
16	-59.05	-59.05
17	-59.05	-59.05
18	-59.05	-59.05
19	-59.05	-153.13
20	-154.88	-154.88
21	-158.13	-158.13
22	-161.38	-161.38
23	-164.63	-164.63
24	-167.88	-167.88
25	-169.63	-80.84
26	-80.84	-80.84
27	-80.84	-80.84
28	-80.84	-80.84
29	-80.84	-80.84
30	-80.84	-80.84
31	-80.84	-186.28
32	-184.53	-184.53
33	-181.28	-181.28
34	-178.03	-178.03
35	-174.78	-174.78
36	-171.53	-171.53
37	-169.78	-55.48
38	-55.48	-55.48
39	-55.48	-55.48
40	-55.48	-55.48
41	-55.48	-55.48
42	-55.48	-55.48
43	-55.48	-169.78
44	-171.53	-171.53
45	-174.78	-174.78
46	-178.03	-178.03
47	-181.28	-181.28
48	-184.53	-184.53
49	-186.28	-77.27

	50	-77.27	-77.27
	51	-77.27	-77.27
	52	-77.27	-77.27
	53	-77.27	-77.27
	54	-77.27	-77.27
	55	-77.27	-169.63
	56	-167.88	-167.88
	57	-164.63	-164.63
	58	-161.38	-161.38
	59	-158.13	-158.13
	60	-154.88	-154.88
	61	-153.13	-59.05
	62	-59.05	-59.05
	63	-59.05	-59.05
	64	-59.05	-59.05
	65	-59.05	-59.05
	66	-59.05	-59.05
	67	-59.05	-186.44
	68	-188.19	-188.19
	69	-191.44	-191.44
	70	-194.69	-194.69
	71	-197.94	-197.94
	72	-201.19	-201.19

```
#####
#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VminHmax                                  #
#####
-----
                ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE
-----
| SEÇÃO |          ESQUERDA (kN) |          DIREITA (kN) |
-----
|  1 |          -170.91 |          -116.03 |
|  2 |          -116.03 |          -116.03 |
|  3 |          -116.03 |          -116.03 |
|  4 |          -116.03 |          -116.03 |
|  5 |          -116.03 |          -116.03 |
|  6 |          -116.03 |          -116.03 |
|  7 |          -116.03 |          -189.63 |
|  8 |          -187.88 |          -187.88 |
|  9 |          -184.63 |          -184.63 |
| 10 |          -181.38 |          -181.38 |
| 11 |          -178.13 |          -178.13 |
| 12 |          -174.88 |          -174.88 |
| 13 |          -173.13 |           -94.06 |
| 14 |           -94.06 |           -94.06 |
| 15 |           -94.06 |           -94.06 |
| 16 |           -94.06 |           -94.06 |
| 17 |           -94.06 |           -94.06 |
| 18 |           -94.06 |           -94.06 |
| 19 |           -94.06 |          -154.41 |
| 20 |          -156.16 |          -156.16 |
| 21 |          -159.41 |          -159.41 |
| 22 |          -162.66 |          -162.66 |
| 23 |          -165.91 |          -165.91 |
| 24 |          -169.16 |          -169.16 |
| 25 |          -170.91 |          -117.96 |
| 26 |          -117.96 |          -117.96 |
| 27 |          -117.96 |          -117.96 |
| 28 |          -117.96 |          -117.96 |
| 29 |          -117.96 |          -117.96 |
| 30 |          -117.96 |          -117.96 |
| 31 |          -117.96 |          -180.27 |
| 32 |          -178.52 |          -178.52 |
| 33 |          -175.27 |          -175.27 |
| 34 |          -172.02 |          -172.02 |
| 35 |          -168.77 |          -168.77 |
| 36 |          -165.52 |          -165.52 |
| 37 |          -163.77 |           -92.14 |
| 38 |           -92.14 |           -92.14 |
| 39 |           -92.14 |           -92.14 |
| 40 |           -92.14 |           -92.14 |
| 41 |           -92.14 |           -92.14 |
| 42 |           -92.14 |           -92.14 |
| 43 |           -92.14 |          -163.77 |
| 44 |          -165.52 |          -165.52 |
| 45 |          -168.77 |          -168.77 |
| 46 |          -172.02 |          -172.02 |
| 47 |          -175.27 |          -175.27 |
| 48 |          -178.52 |          -178.52 |
| 49 |          -180.27 |          -116.03 |
```

50	-116.03	-116.03
51	-116.03	-116.03
52	-116.03	-116.03
53	-116.03	-116.03
54	-116.03	-116.03
55	-116.03	-170.91
56	-169.16	-169.16
57	-165.91	-165.91
58	-162.66	-162.66
59	-159.41	-159.41
60	-156.16	-156.16
61	-154.41	-94.06
62	-94.06	-94.06
63	-94.06	-94.06
64	-94.06	-94.06
65	-94.06	-94.06
66	-94.06	-94.06
67	-94.06	-173.13
68	-174.88	-174.88
69	-178.13	-178.13
70	-181.38	-181.38
71	-184.63	-184.63
72	-187.88	-187.88

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

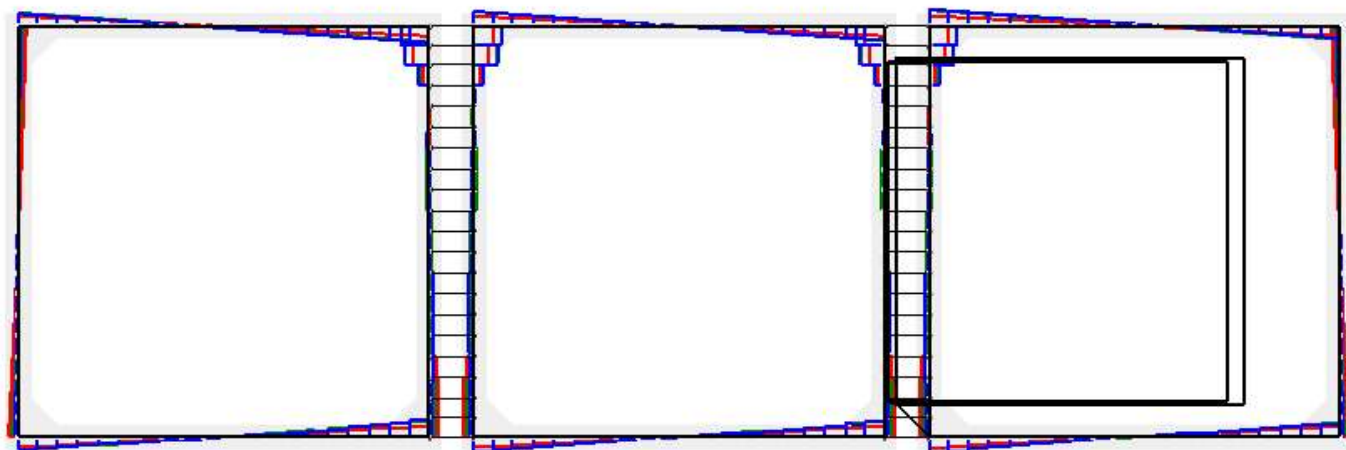
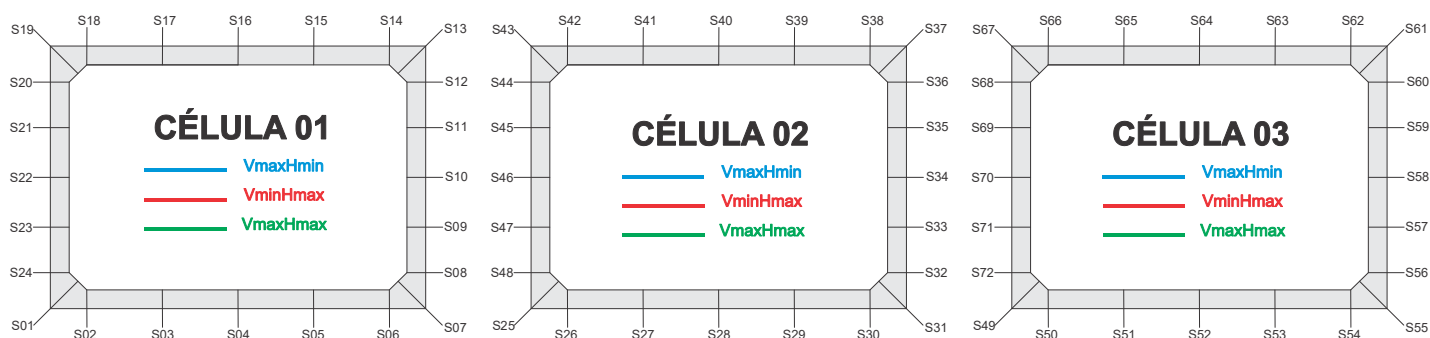
ESFORÇO NORMAL NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	-169.94	-78.97
2	-78.97	-78.97
3	-78.97	-78.97
4	-78.97	-78.97
5	-78.97	-78.97
6	-78.97	-78.97
7	-78.97	-202.63
8	-200.88	-200.88
9	-197.63	-197.63
10	-194.38	-194.38
11	-191.13	-191.13
12	-187.88	-187.88
13	-186.13	-61.09
14	-61.09	-61.09
15	-61.09	-61.09
16	-61.09	-61.09
17	-61.09	-61.09
18	-61.09	-61.09
19	-61.09	-153.44
20	-155.19	-155.19
21	-158.44	-158.44
22	-161.69	-161.69
23	-164.94	-164.94
24	-168.19	-168.19
25	-169.94	-82.39
26	-82.39	-82.39
27	-82.39	-82.39
28	-82.39	-82.39
29	-82.39	-82.39
30	-82.39	-82.39
31	-82.39	-186.28
32	-184.53	-184.53
33	-181.28	-181.28
34	-178.03	-178.03
35	-174.78	-174.78
36	-171.53	-171.53
37	-169.78	-57.67
38	-57.67	-57.67
39	-57.67	-57.67
40	-57.67	-57.67
41	-57.67	-57.67
42	-57.67	-57.67
43	-57.67	-169.78
44	-171.53	-171.53
45	-174.78	-174.78
46	-178.03	-178.03
47	-181.28	-181.28
48	-184.53	-184.53
49	-186.28	-78.97

	50	-78.97	-78.97
	51	-78.97	-78.97
	52	-78.97	-78.97
	53	-78.97	-78.97
	54	-78.97	-78.97
	55	-78.97	-169.94
	56	-168.19	-168.19
	57	-164.94	-164.94
	58	-161.69	-161.69
	59	-158.44	-158.44
	60	-155.19	-155.19
	61	-153.44	-61.09
	62	-61.09	-61.09
	63	-61.09	-61.09
	64	-61.09	-61.09
	65	-61.09	-61.09
	66	-61.09	-61.09
	67	-61.09	-186.13
	68	-187.88	-187.88
	69	-191.13	-191.13
	70	-194.38	-194.38
	71	-197.63	-197.63
	72	-200.88	-200.88

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	43.82	-211.69
2	-187.50	-161.35
3	-93.83	-72.72
4	-17.15	3.20
5	68.70	96.52
6	194.84	234.36
7	272.91	-43.82
8	-54.12	-54.12
9	-72.95	-72.95
10	-19.97	-19.97
11	-29.29	25.56
12	167.66	405.58
13	458.09	-273.29
14	-228.27	-228.27
15	-131.43	-131.43
16	-34.58	-34.58
17	62.26	62.26
18	159.10	159.10
19	204.13	-34.90
20	-25.40	-25.40
21	-6.32	-6.32
22	10.70	10.70
23	25.66	25.66
24	38.56	38.56
25	43.82	-243.31
26	-213.45	-181.66
27	-99.11	-74.08
28	-10.72	10.72
29	74.08	99.11
30	181.66	213.45
31	243.31	-54.14
32	-64.43	-64.44
33	-83.27	-83.27
34	-30.29	-30.29
35	-39.61	15.24
36	157.34	395.27
37	447.78	-238.71
38	-193.69	-193.69
39	-96.84	-96.84
40	0.00	0.00
41	96.84	96.84
42	193.69	193.69
43	238.71	-447.78
44	-395.27	-157.34
45	-15.24	39.61
46	30.29	30.29
47	83.27	83.27
48	64.44	64.43
49	54.14	-272.91

	50	-234.36	-194.84
	51	-96.52	-68.70
	52	-3.20	17.15
	53	72.72	93.83
	54	161.35	187.50
	55	211.69	-43.82
	56	-38.56	-38.56
	57	-25.66	-25.66
	58	-10.70	-10.70
	59	6.32	6.32
	60	25.40	25.40
	61	34.90	-204.13
	62	-159.10	-159.10
	63	-62.26	-62.26
	64	34.58	34.58
	65	131.43	131.43
	66	228.27	228.27
	67	273.29	-458.09
	68	-405.58	-167.66
	69	-25.56	29.29
	70	19.97	19.97
	71	72.95	72.95
	72	54.12	54.12

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	159.59	-168.27
2	-150.69	-130.84
3	-75.86	-57.92
4	-10.47	6.05
5	54.43	73.02
6	131.20	152.54
7	171.78	-159.59
8	-159.59	-159.59
9	-1.31	-1.31
10	-1.31	1.46
11	1.46	-5.94
12	91.76	244.85
13	316.14	-166.00
14	-135.09	-135.09
15	-68.66	-68.66
16	-2.23	-2.23
17	64.20	64.20
18	130.63	130.63
19	161.54	-133.30
20	-111.35	-111.35
21	-59.89	-59.89
22	-3.08	-3.08
23	59.09	59.09
24	126.62	126.62
25	159.59	-169.95
26	-151.43	-130.77
27	-74.16	-55.94
28	-8.22	8.22
29	55.94	74.16
30	130.77	151.43
31	169.95	-160.13
32	-160.13	-160.13
33	-1.85	-1.85
34	-1.85	0.93
35	0.93	-6.47
36	91.22	244.32
37	315.60	-163.77
38	-132.86	-132.86
39	-66.43	-66.43
40	0.00	0.00
41	66.43	66.43
42	132.86	132.86
43	163.77	-315.60
44	-244.32	-91.22
45	6.47	-0.93
46	-0.93	1.85
47	1.85	1.85
48	160.13	160.13
49	160.13	-171.78

	50	-152.54	-131.20
	51	-73.02	-54.43
	52	-6.05	10.47
	53	57.92	75.86
	54	130.84	150.69
	55	168.27	-159.59
	56	-126.62	-126.62
	57	-59.09	-59.09
	58	3.08	3.08
	59	59.89	59.89
	60	111.35	111.35
	61	133.30	-161.54
	62	-130.63	-130.63
	63	-64.20	-64.20
	64	2.23	2.23
	65	68.66	68.66
	66	135.09	135.09
	67	166.00	-316.14
	68	-244.85	-91.76
	69	5.94	-1.46
	70	-1.46	1.31
	71	1.31	1.31
	72	159.59	159.59

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	109.66	-222.66
2	-197.02	-169.17
3	-95.67	-72.56
4	-11.83	9.76
5	76.50	103.62
6	195.11	230.56
7	264.24	-109.66
8	-109.67	-109.67
9	-57.95	-57.95
10	-57.94	-57.94
11	44.42	-13.58
12	156.85	391.33
13	460.55	-261.70
14	-216.68	-216.68
15	-119.83	-119.83
16	-22.99	-22.99
17	73.85	73.85
18	170.70	170.70
19	215.72	-85.60
20	-70.97	-70.97
21	-36.66	-36.66
22	1.22	1.22
23	42.66	42.66
24	87.68	87.68
25	109.66	-244.15
26	-215.52	-184.60
27	-102.36	-76.85
28	-11.17	11.17
29	76.85	102.36
30	184.60	215.52
31	244.15	-114.59
32	-114.59	-114.59
33	-62.87	-62.87
34	-62.87	-62.87
35	39.50	-18.51
36	151.93	386.40
37	455.63	-238.71
38	-193.69	-193.69
39	-96.84	-96.84
40	0.00	0.00
41	96.84	96.84
42	193.69	193.69
43	238.71	-455.63
44	-386.40	-151.93
45	18.51	-39.50
46	62.87	62.87
47	62.87	62.87
48	114.59	114.59
49	114.59	-264.24

	50	-230.56	-195.11
	51	-103.62	-76.50
	52	-9.76	11.83
	53	72.56	95.67
	54	169.17	197.02
	55	222.66	-109.66
	56	-87.68	-87.68
	57	-42.66	-42.66
	58	-1.22	-1.22
	59	36.66	36.66
	60	70.97	70.97
	61	85.60	-215.72
	62	-170.70	-170.70
	63	-73.85	-73.85
	64	22.99	22.99
	65	119.83	119.83
	66	216.68	216.68
	67	261.70	-460.55
	68	-391.33	-156.85
	69	13.58	-44.42
	70	57.94	57.94
	71	57.95	57.95
	72	109.67	109.67

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

 ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	41.57	-216.13
2	-191.22	-164.54
3	-96.67	-75.83
4	-21.85	-2.19
5	61.33	88.69
6	187.14	227.44
7	267.19	-41.57
8	-51.87	-51.87
9	-70.70	-70.70
10	10.83	10.83
11	2.99	-0.77
12	133.71	404.77
13	505.80	-268.39
14	-223.37	-223.37
15	-126.53	-126.53
16	-29.68	-29.68
17	67.16	67.16
18	164.01	164.01
19	209.03	-37.15
20	-27.65	-27.65
21	-8.57	-8.57
22	8.45	8.45
23	23.41	23.41
24	36.31	36.31
25	41.57	-245.75
26	-215.48	-183.44
27	-101.13	-76.44
28	-14.66	6.18
29	67.98	92.74
30	175.93	208.63
31	239.76	-52.38
32	-62.67	-62.68
33	-81.51	-81.51
34	7.52	7.52
35	-1.81	-9.35
36	122.89	384.22
37	480.62	-235.99
38	-190.97	-190.97
39	-94.13	-94.13
40	2.72	2.72
41	99.56	99.56
42	196.41	196.41
43	241.43	-494.99
44	-393.96	-122.90
45	11.58	7.82
46	-0.02	-0.02
47	81.51	81.51
48	62.68	62.67
49	52.38	-279.84

	50	-240.08	-199.58
	51	-99.82	-72.02
	52	-7.73	11.94
	53	65.17	85.58
	54	152.13	178.61
	55	203.49	-43.61
	56	-38.35	-38.35
	57	-25.45	-25.45
	58	-10.49	-10.49
	59	6.53	6.53
	60	25.61	25.61
	61	35.11	-196.48
	62	-151.46	-151.46
	63	-54.61	-54.61
	64	42.23	42.23
	65	139.08	139.08
	66	235.92	235.92
	67	280.94	-489.38
	68	-392.99	-131.65
	69	0.59	-6.96
	70	-16.28	-16.28
	71	72.74	72.74
	72	53.91	53.91

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	159.26	-169.38
2	-151.75	-131.89
3	-77.09	-59.28
4	-12.34	3.99
5	51.90	70.42
6	128.91	150.59
7	170.32	-159.26
8	-159.26	-159.26
9	0.35	0.35
10	0.35	0.76
11	0.76	-2.59
12	71.55	240.38
13	339.44	-164.85
14	-133.94	-133.94
15	-67.51	-67.51
16	-1.08	-1.08
17	65.35	65.35
18	131.78	131.78
19	162.69	-133.63
20	-111.68	-111.68
21	-60.22	-60.22
22	-3.41	-3.41
23	58.76	58.76
24	126.29	126.29
25	159.26	-170.61
26	-151.89	-131.09
27	-74.51	-56.42
28	-9.31	6.90
29	54.01	72.12
30	128.93	149.90
31	168.87	-160.22
32	-160.22	-160.22
33	-0.04	-0.04
34	-0.04	0.38
35	0.38	-2.96
36	70.89	239.06
37	337.71	-162.98
38	-132.07	-132.07
39	-65.64	-65.64
40	0.79	0.79
41	67.22	67.22
42	133.65	133.65
43	164.56	-338.48
44	-239.43	-70.59
45	3.54	0.20
46	0.20	0.60
47	0.60	0.60
48	160.22	160.22
49	160.22	-172.55

	50	-152.90	-131.22
	51	-72.47	-53.83
	52	-5.57	10.83
	53	57.82	75.59
	54	130.08	149.80
	55	167.28	-160.03
	56	-127.05	-127.05
	57	-59.53	-59.53
	58	2.64	2.64
	59	59.46	59.46
	60	110.92	110.92
	61	132.86	-160.52
	62	-129.61	-129.61
	63	-63.18	-63.18
	64	3.25	3.25
	65	69.68	69.68
	66	136.11	136.11
	67	167.02	-337.90
	68	-239.25	-71.08
	69	2.77	-0.57
	70	-0.57	-0.15
	71	-0.15	-0.15
	72	160.03	160.03

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	108.53	-225.86
2	-200.02	-172.09
3	-99.03	-76.28
4	-17.06	3.95
5	69.25	96.13
6	188.46	224.90
7	259.97	-108.53
8	-108.53	-108.53
9	-53.02	-53.02
10	-53.02	27.35
11	27.35	-16.69
12	124.70	387.41
13	502.20	-258.34
14	-213.32	-213.32
15	-116.47	-116.47
16	-19.63	-19.63
17	77.21	77.21
18	174.06	174.06
19	219.08	-86.73
20	-72.10	-72.10
21	-37.80	-37.80
22	0.08	0.08
23	41.53	41.53
24	86.54	86.54
25	108.53	-245.80
26	-216.83	-185.70
27	-103.75	-78.58
28	-14.35	7.44
29	71.77	97.05
30	179.95	211.71
31	241.49	-114.85
32	-114.85	-114.85
33	-56.97	-56.97
34	-56.97	24.08
35	24.08	-20.21
36	118.80	376.08
37	488.15	-236.81
38	-191.79	-191.79
39	-94.95	-94.95
40	1.90	1.90
41	98.74	98.74
42	195.59	195.59
43	240.61	-495.88
44	-381.08	-118.37
45	23.02	-21.03
46	-21.03	59.34
47	59.35	59.35
48	114.85	114.85
49	114.85	-269.32

	50	-234.25	-197.64
	51	-104.22	-76.95
	52	-10.88	10.21
	53	69.01	91.44
	54	163.37	191.01
	55	216.65	-110.72
	56	-88.74	-88.74
	57	-43.72	-43.72
	58	-2.27	-2.27
	59	35.60	35.60
	60	69.91	69.91
	61	84.54	-209.81
	62	-164.79	-164.79
	63	-67.95	-67.95
	64	28.90	28.90
	65	125.74	125.74
	66	222.59	222.59
	67	267.61	-492.28
	68	-380.21	-122.93
	69	16.08	-28.21
	70	-28.21	52.84
	71	52.84	52.84
	72	110.72	110.72

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	77.31	-162.02
2	-143.36	-123.00
3	-69.53	-52.69
4	-8.58	7.16
5	55.76	75.60
6	142.52	168.55
7	193.22	-77.32
8	-77.32	-77.32
9	-43.74	-43.74
10	-43.73	-43.73
11	33.49	-10.02
12	114.57	285.17
13	334.44	-190.63
14	-157.91	-157.91
15	-87.57	-87.57
16	-17.24	-17.24
17	53.10	53.10
18	123.44	123.44
19	156.15	-59.01
20	-49.00	-49.00
21	-25.35	-25.35
22	0.99	0.99
23	30.03	30.03
24	61.76	61.76
25	77.31	-178.15
26	-157.26	-134.62
27	-74.62	-55.98
28	-8.16	8.16
29	55.98	74.62
30	134.62	157.26
31	178.15	-81.01
32	-81.01	-81.01
33	-47.43	-47.43
34	-47.43	-47.43
35	29.79	-13.71
36	110.88	281.48
37	330.74	-173.39
38	-140.67	-140.67
39	-70.34	-70.34
40	0.00	0.00
41	70.34	70.34
42	140.67	140.67
43	173.39	-330.74
44	-281.48	-110.88
45	13.71	-29.79
46	47.43	47.43
47	47.43	47.43
48	81.01	81.01
49	81.01	-193.22

	50	-168.55	-142.52
	51	-75.60	-55.76
	52	-7.16	8.58
	53	52.69	69.53
	54	123.00	143.36
	55	162.02	-77.31
	56	-61.76	-61.76
	57	-30.03	-30.03
	58	-0.99	-0.99
	59	25.35	25.35
	60	49.00	49.00
	61	59.01	-156.15
	62	-123.44	-123.44
	63	-53.10	-53.10
	64	17.24	17.24
	65	87.57	87.57
	66	157.91	157.91
	67	190.63	-334.44
	68	-285.17	-114.57
	69	10.02	-33.49
	70	43.73	43.73
	71	43.74	43.74
	72	77.32	77.32

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	117.64	-161.22
2	-143.51	-123.82
3	-70.70	-53.63
4	-8.78	7.03
5	54.33	73.05
6	133.58	156.43
7	177.51	-117.65
8	-117.65	-117.65
9	-21.32	-21.32
10	-21.32	10.91
11	10.91	-9.27
12	99.95	257.10
13	316.45	-172.84
14	-141.93	-141.93
15	-75.50	-75.50
16	-9.07	-9.07
17	57.36	57.36
18	123.79	123.79
19	154.70	-95.82
20	-79.91	-79.91
21	-42.53	-42.53
22	-1.17	-1.17
23	44.19	44.19
24	93.53	93.53
25	117.64	-169.60
26	-150.55	-129.52
27	-72.78	-54.76
28	-8.03	8.03
29	54.76	72.78
30	129.52	150.55
31	169.60	-119.51
32	-119.51	-119.51
33	-23.18	-23.18
34	-23.18	9.05
35	9.05	-11.14
36	98.09	255.23
37	314.59	-163.77
38	-132.86	-132.86
39	-66.43	-66.43
40	0.00	0.00
41	66.43	66.43
42	132.86	132.86
43	163.77	-314.59
44	-255.23	-98.09
45	11.14	-9.05
46	-9.05	23.18
47	23.18	23.18
48	119.51	119.51
49	119.51	-177.51

	50	-156.43	-133.58
	51	-73.05	-54.33
	52	-7.03	8.78
	53	53.63	70.70
	54	123.82	143.51
	55	161.22	-117.64
	56	-93.53	-93.53
	57	-44.19	-44.19
	58	1.17	1.17
	59	42.53	42.53
	60	79.91	79.91
	61	95.82	-154.70
	62	-123.79	-123.79
	63	-57.36	-57.36
	64	9.07	9.07
	65	75.50	75.50
	66	141.93	141.93
	67	172.84	-316.45
	68	-257.10	-99.95
	69	9.27	-10.91
	70	-10.91	21.32
	71	21.32	21.32
	72	117.65	117.65

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	80.09	-162.51
2	-143.77	-123.34
3	-69.55	-52.59
4	-8.19	7.64
5	56.34	76.16
6	142.71	168.50
7	192.89	-80.09
8	-80.09	-80.09
9	-49.24	-49.24
10	-49.24	23.85
11	23.85	-14.17
12	114.27	284.59
13	334.86	-190.12
14	-157.41	-157.41
15	-87.07	-87.07
16	-16.73	-16.73
17	53.61	53.61
18	123.94	123.94
19	156.66	-62.22
20	-51.62	-51.62
21	-26.70	-26.70
22	0.88	0.88
23	31.11	31.11
24	64.01	64.01
25	80.09	-178.23
26	-157.46	-134.89
27	-74.92	-56.23
28	-8.20	8.20
29	56.23	74.92
30	134.89	157.46
31	178.23	-83.59
32	-83.59	-83.59
33	-52.74	-52.74
34	-52.74	20.35
35	20.35	-17.67
36	110.77	281.09
37	331.36	-173.39
38	-140.67	-140.67
39	-70.34	-70.34
40	0.00	0.00
41	70.34	70.34
42	140.67	140.67
43	173.39	-331.36
44	-281.09	-110.77
45	17.67	-20.35
46	-20.35	52.74
47	52.74	52.74
48	83.59	83.59
49	83.59	-192.89

	50	-168.50	-142.71
	51	-76.16	-56.34
	52	-7.64	8.19
	53	52.59	69.55
	54	123.34	143.77
	55	162.51	-80.09
	56	-64.01	-64.01
	57	-31.11	-31.11
	58	-0.88	-0.88
	59	26.70	26.70
	60	51.62	51.62
	61	62.22	-156.66
	62	-123.94	-123.94
	63	-53.61	-53.61
	64	16.73	16.73
	65	87.07	87.07
	66	157.41	157.41
	67	190.12	-334.86
	68	-284.59	-114.27
	69	14.17	-23.85
	70	-23.85	49.24
	71	49.24	49.24
	72	80.09	80.09

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	77.11	-154.44
2	-136.70	-117.25
3	-66.16	-50.00
4	-7.80	7.28
5	53.50	72.35
6	135.42	159.90
7	182.95	-77.11
8	-77.11	-77.11
9	-46.08	-46.08
10	-46.08	22.34
11	22.34	-13.32
12	107.82	268.63
13	316.25	-179.47
14	-148.56	-148.56
15	-82.13	-82.13
16	-15.70	-15.70
17	50.73	50.73
18	117.16	117.16
19	148.07	-59.21
20	-49.21	-49.21
21	-25.56	-25.56
22	0.79	0.79
23	29.82	29.82
24	61.55	61.55
25	77.11	-169.19
26	-149.54	-128.09
27	-71.19	-53.40
28	-7.81	7.81
29	53.40	71.19
30	128.09	149.54
31	169.19	-80.39
32	-80.40	-80.40
33	-49.37	-49.37
34	-49.37	19.06
35	19.06	-16.60
36	104.53	265.34
37	312.96	-163.77
38	-132.86	-132.86
39	-66.43	-66.43
40	0.00	0.00
41	66.43	66.43
42	132.86	132.86
43	163.77	-312.96
44	-265.34	-104.53
45	16.60	-19.06
46	-19.06	49.37
47	49.37	49.37
48	80.40	80.40
49	80.39	-182.95

	50	-159.90	-135.42
	51	-72.35	-53.50
	52	-7.28	7.80
	53	50.00	66.16
	54	117.25	136.70
	55	154.44	-77.11
	56	-61.55	-61.55
	57	-29.82	-29.82
	58	-0.79	-0.79
	59	25.56	25.56
	60	49.21	49.21
	61	59.21	-148.07
	62	-117.16	-117.16
	63	-50.73	-50.73
	64	15.70	15.70
	65	82.13	82.13
	66	148.56	148.56
	67	179.47	-316.25
	68	-268.63	-107.82
	69	13.32	-22.34
	70	-22.34	46.08
	71	46.08	46.08
	72	77.11	77.11

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	77.27	-159.20
2	-140.90	-120.91
3	-68.38	-51.81
4	-8.46	7.03
5	54.73	74.20
6	139.74	165.22
7	189.33	-77.27
8	-77.27	-77.27
9	-42.15	-42.15
10	-42.15	-42.15
11	32.29	-9.75
12	111.92	278.85
13	327.49	-186.44
14	-154.40	-154.40
15	-85.53	-85.53
16	-16.66	-16.66
17	52.22	52.22
18	121.09	121.09
19	153.13	-59.05
20	-49.05	-49.05
21	-25.40	-25.40
22	0.95	0.95
23	29.98	29.98
24	61.71	61.71
25	77.27	-174.77
26	-154.33	-132.11
27	-73.27	-54.96
28	-8.02	8.02
29	54.96	73.27
30	132.11	154.33
31	174.77	-80.84
32	-80.84	-80.84
33	-45.72	-45.72
34	-45.72	-45.72
35	28.72	-13.32
36	108.35	275.27
37	323.92	-169.78
38	-137.74	-137.74
39	-68.87	-68.87
40	0.00	0.00
41	68.87	68.87
42	137.74	137.74
43	169.78	-323.92
44	-275.27	-108.35
45	13.32	-28.72
46	45.72	45.72
47	45.72	45.72
48	80.84	80.84
49	80.84	-189.33

	50	-165.22	-139.74
	51	-74.20	-54.73
	52	-7.03	8.46
	53	51.81	68.38
	54	120.91	140.90
	55	159.20	-77.27
	56	-61.71	-61.71
	57	-29.98	-29.98
	58	-0.95	-0.95
	59	25.40	25.40
	60	49.05	49.05
	61	59.05	-153.13
	62	-121.09	-121.09
	63	-52.22	-52.22
	64	16.66	16.66
	65	85.53	85.53
	66	154.40	154.40
	67	186.44	-327.49
	68	-278.85	-111.92
	69	9.75	-32.29
	70	42.15	42.15
	71	42.15	42.15
	72	77.27	77.27

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

ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	116.03	-160.92
2	-143.21	-123.53
3	-70.50	-53.47
4	-8.72	7.06
5	54.31	73.03
6	133.68	156.60
7	177.76	-116.03
8	-116.03	-116.03
9	-22.31	-22.31
10	-22.31	11.37
11	11.37	-9.44
12	100.31	257.62
13	316.42	-173.13
14	-142.22	-142.22
15	-75.79	-75.79
16	-9.36	-9.36
17	57.07	57.07
18	123.50	123.50
19	154.41	-94.06
20	-78.49	-78.49
21	-41.83	-41.83
22	-1.15	-1.15
23	43.52	43.52
24	92.21	92.21
25	116.03	-169.58
26	-150.51	-129.47
27	-72.72	-54.71
28	-8.02	8.02
29	54.71	72.72
30	129.47	150.51
31	169.58	-117.96
32	-117.96	-117.96
33	-24.23	-24.23
34	-24.23	9.45
35	9.45	-11.36
36	98.39	255.70
37	314.50	-163.77
38	-132.86	-132.86
39	-66.43	-66.43
40	0.00	0.00
41	66.43	66.43
42	132.86	132.86
43	163.77	-314.50
44	-255.70	-98.39
45	11.36	-9.45
46	-9.45	24.23
47	24.23	24.23
48	117.96	117.96
49	117.96	-177.76

	50	-156.60	-133.68
	51	-73.03	-54.31
	52	-7.06	8.72
	53	53.47	70.50
	54	123.53	143.21
	55	160.92	-116.03
	56	-92.21	-92.21
	57	-43.52	-43.52
	58	1.15	1.15
	59	41.83	41.83
	60	78.49	78.49
	61	94.06	-154.41
	62	-123.50	-123.50
	63	-57.07	-57.07
	64	9.36	9.36
	65	75.79	75.79
	66	142.22	142.22
	67	173.13	-316.42
	68	-257.62	-100.31
	69	9.44	-11.37
	70	-11.37	22.31
	71	22.31	22.31
	72	116.03	116.03

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

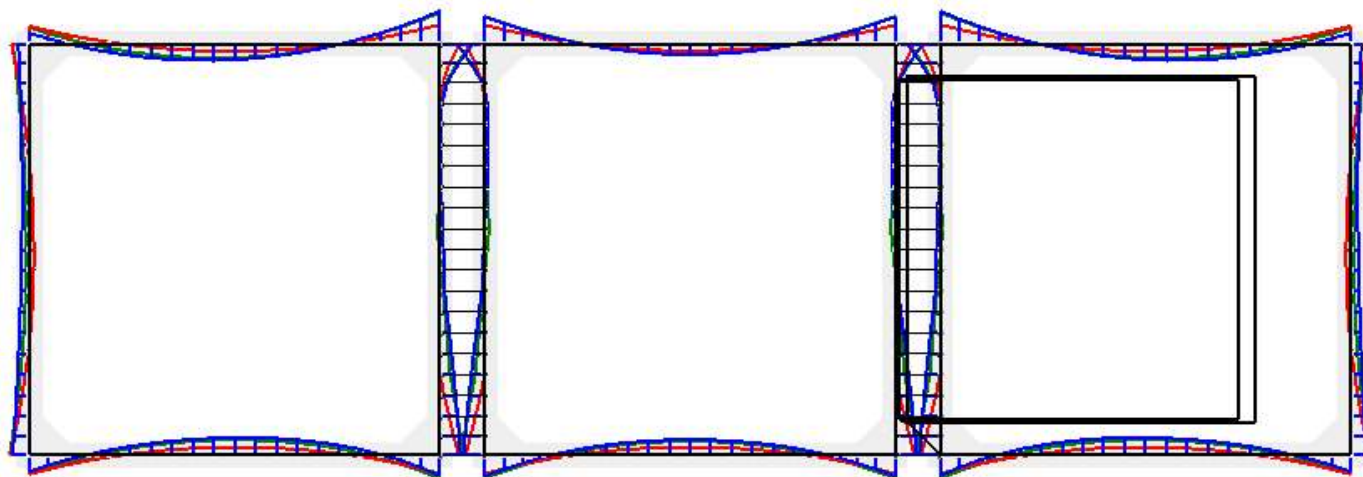
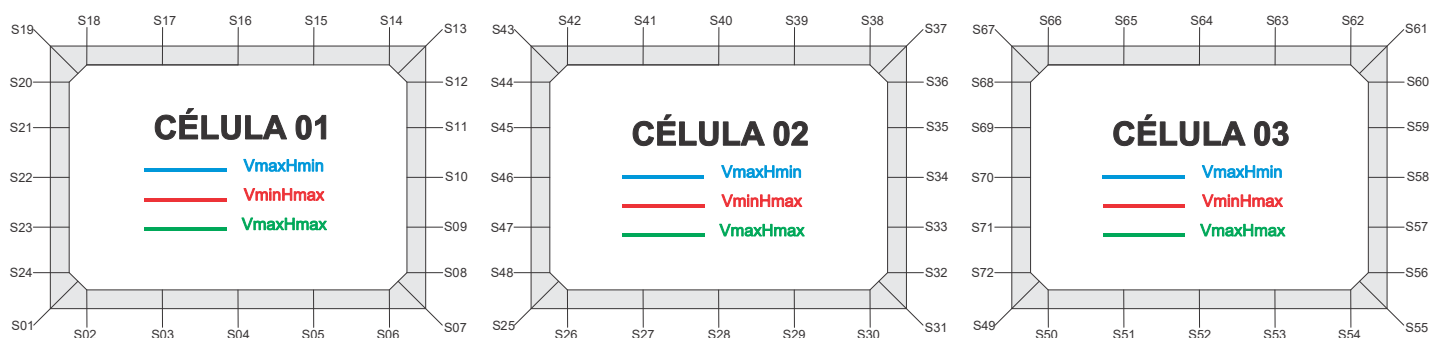
ESFORÇOS CORTANTE NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN)	DIREITA (kN)
1	78.97	-159.48
2	-141.12	-121.05
3	-68.28	-51.62
4	-8.04	7.51
5	55.28	74.73
6	139.97	165.27
7	189.16	-78.97
8	-78.97	-78.97
9	-48.05	-48.05
10	-48.05	23.29
11	23.29	-13.85
12	111.85	278.61
13	327.88	-186.13
14	-154.09	-154.09
15	-85.22	-85.22
16	-16.35	-16.35
17	52.53	52.53
18	121.40	121.40
19	153.44	-61.09
20	-50.71	-50.71
21	-26.27	-26.27
22	0.84	0.84
23	30.63	30.63
24	63.09	63.09
25	78.97	-174.84
26	-154.49	-132.34
27	-73.52	-55.17
28	-8.05	8.05
29	55.17	73.52
30	132.34	154.49
31	174.84	-82.39
32	-82.39	-82.39
33	-51.47	-51.47
34	-51.47	19.87
35	19.87	-17.27
36	108.43	275.19
37	324.46	-169.78
38	-137.74	-137.74
39	-68.87	-68.87
40	0.00	0.00
41	68.87	68.87
42	137.74	137.74
43	169.78	-324.46
44	-275.19	-108.43
45	17.27	-19.87
46	-19.87	51.47
47	51.47	51.47
48	82.39	82.39
49	82.39	-189.16

	50	-165.27	-139.97
	51	-74.73	-55.28
	52	-7.51	8.04
	53	51.62	68.28
	54	121.05	141.12
	55	159.48	-78.97
	56	-63.09	-63.09
	57	-30.63	-30.63
	58	-0.84	-0.84
	59	26.27	26.27
	60	50.71	50.71
	61	61.09	-153.44
	62	-121.40	-121.40
	63	-52.53	-52.53
	64	16.35	16.35
	65	85.22	85.22
	66	154.09	154.09
	67	186.13	-327.88
	68	-278.61	-111.85
	69	13.85	-23.29
	70	-23.29	48.05
	71	48.05	48.05
	72	78.97	78.97

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	-83.65	83.65
2	23.77	23.77
3	-58.65	-58.65
4	-87.79	-87.79
5	-65.03	-65.03
6	28.56	28.56
7	104.65	104.65
8	89.93	89.93
9	48.38	48.38
10	17.92	17.92
11	1.65	1.65
12	37.21	37.21
13	166.73	-166.73
14	-91.50	-91.50
15	25.40	25.40
16	79.36	79.36
17	70.36	70.36
18	-1.58	-1.58
19	-56.06	-56.06
20	-47.03	-47.03
21	-36.83	-36.83
22	-38.37	-38.37
23	-50.30	-50.30
24	-71.28	-71.28
25	-83.65	108.75
26	40.23	40.23
27	-50.35	-50.35
28	-77.61	-77.61
29	-50.35	-50.35
30	40.23	40.23
31	108.75	108.75
32	90.93	90.93
33	42.67	42.67
34	5.51	5.51
35	-17.46	-17.46
36	11.39	11.39
37	137.82	-137.82
38	-72.96	-72.96
39	21.47	21.47
40	52.94	52.94
41	21.47	21.47
42	-72.96	-72.96
43	-137.82	-137.82
44	-11.39	-11.39
45	17.46	17.46
46	-5.51	-5.51
47	-42.67	-42.67
48	-90.93	-90.93
49	-108.75	104.65

	50	28.56	28.56
	51	-65.03	-65.03
	52	-87.79	-87.79
	53	-58.65	-58.65
	54	23.77	23.77
	55	83.65	83.65
	56	71.28	71.28
	57	50.30	50.30
	58	38.37	38.37
	59	36.83	36.83
	60	47.03	47.03
	61	56.06	-56.06
	62	-1.58	-1.58
	63	70.36	70.36
	64	79.36	79.36
	65	25.40	25.40
	66	-91.50	-91.50
	67	-166.73	-166.73
	68	-37.21	-37.21
	69	-1.65	-1.65
	70	-17.92	-17.92
	71	-48.38	-48.38
	72	-89.93	-89.93

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-97.87	97.87
2	50.02	50.02
3	-16.92	-16.92
4	-39.03	-39.03
5	-19.55	-19.55
6	46.52	46.52
7	95.16	95.16
8	47.28	47.28
9	0.54	0.54
10	-0.31	-0.31
11	0.64	0.64
12	13.38	13.38
13	97.53	-97.53
14	-52.36	-52.36
15	13.85	13.85
16	36.89	36.89
17	16.74	16.74
18	-46.58	-46.58
19	-90.40	-90.40
20	-53.68	-53.68
21	2.27	2.27
22	23.02	23.02
23	5.11	5.11
24	-54.96	-54.96
25	-97.87	95.48
26	47.27	47.27
27	-19.05	-19.05
28	-39.75	-39.75
29	-19.05	-19.05
30	47.27	47.27
31	95.48	95.48
32	47.44	47.44
33	0.35	0.35
34	-0.85	-0.85
35	-0.25	-0.25
36	12.15	12.15
37	96.13	-96.13
38	-51.64	-51.64
39	13.13	13.13
40	34.72	34.72
41	13.13	13.13
42	-51.64	-51.64
43	-96.13	-96.13
44	-12.15	-12.15
45	0.25	0.25
46	0.85	0.85
47	-0.35	-0.35
48	-47.44	-47.44
49	-95.48	95.16

	50	46.52	46.52
	51	-19.55	-19.55
	52	-39.03	-39.03
	53	-16.92	-16.92
	54	50.02	50.02
	55	97.87	97.87
	56	54.96	54.96
	57	-5.11	-5.11
	58	-23.02	-23.02
	59	-2.27	-2.27
	60	53.68	53.68
	61	90.40	-90.40
	62	-46.58	-46.58
	63	16.74	16.74
	64	36.89	36.89
	65	13.85	13.85
	66	-52.36	-52.36
	67	-97.53	-97.53
	68	-13.38	-13.38
	69	-0.64	-0.64
	70	0.31	0.31
	71	-0.54	-0.54
	72	-47.28	-47.28

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-99.58	99.58
2	36.63	36.63
3	-48.94	-48.94
4	-76.24	-76.24
5	-48.66	-48.66
6	47.61	47.61
7	121.83	121.83
8	88.93	88.93
9	34.45	34.45
10	-3.21	-3.21
11	9.03	9.03
12	29.94	29.94
13	157.72	-157.72
14	-85.96	-85.96
15	23.40	23.40
16	69.82	69.82
17	53.29	53.29
18	-26.19	-26.19
19	-84.15	-84.15
20	-60.65	-60.65
21	-25.48	-25.48
22	-13.77	-13.77
23	-27.83	-27.83
24	-70.00	-70.00
25	-99.58	120.76
26	51.81	51.81
27	-40.89	-40.89
28	-69.23	-69.23
29	-40.89	-40.89
30	51.81	51.81
31	120.76	120.76
32	86.38	86.38
33	28.70	28.70
34	-12.16	-12.16
35	-3.13	-3.13
36	14.58	14.58
37	140.89	-140.89
38	-76.03	-76.03
39	18.40	18.40
40	49.87	49.87
41	18.40	18.40
42	-76.03	-76.03
43	-140.89	-140.89
44	-14.58	-14.58
45	3.13	3.13
46	12.16	12.16
47	-28.70	-28.70
48	-86.38	-86.38
49	-120.76	121.83

	50	47.61	47.61
	51	-48.66	-48.66
	52	-76.24	-76.24
	53	-48.94	-48.94
	54	36.63	36.63
	55	99.58	99.58
	56	70.00	70.00
	57	27.83	27.83
	58	13.77	13.77
	59	25.48	25.48
	60	60.65	60.65
	61	84.15	-84.15
	62	-26.19	-26.19
	63	53.29	53.29
	64	69.82	69.82
	65	23.40	23.40
	66	-85.96	-85.96
	67	-157.72	-157.72
	68	-29.94	-29.94
	69	-9.03	-9.03
	70	3.21	3.21
	71	-34.45	-34.45
	72	-88.93	-88.93

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-82.83	82.83
2	21.72	21.72
3	-62.59	-62.59
4	-94.23	-94.23
5	-75.64	-75.64
6	12.80	12.80
7	87.00	87.00
8	72.95	72.95
9	32.86	32.86
10	-2.39	-2.39
11	1.61	1.61
12	20.87	20.87
13	157.43	-157.43
14	-83.67	-83.67
15	30.05	30.05
16	80.81	80.81
17	68.63	68.63
18	-6.50	-6.50
19	-62.45	-62.45
20	-52.74	-52.74
21	-41.08	-41.08
22	-41.15	-41.15
23	-51.62	-51.62
24	-71.13	-71.13
25	-82.83	106.99
26	37.81	37.81
27	-53.95	-53.95
28	-83.24	-83.24
29	-59.46	-59.46
30	27.08	27.08
31	94.34	94.34
32	77.06	77.06
33	29.94	29.94
34	-11.12	-11.12
35	-9.52	-9.52
36	4.44	4.44
37	134.14	-134.14
38	-70.09	-70.09
39	22.56	22.56
40	52.27	52.27
41	19.03	19.03
42	-77.16	-77.16
43	-142.84	-142.84
44	-9.52	-9.52
45	2.72	2.72
46	-0.32	-0.32
47	-42.59	-42.59
48	-89.71	-89.71
49	-106.99	105.17

	50	27.18	27.18
	51	-68.93	-68.93
	52	-94.18	-94.18
	53	-69.19	-69.19
	54	7.47	7.47
	55	64.78	64.78
	56	52.48	52.48
	57	31.63	31.63
	58	19.84	19.84
	59	18.44	18.44
	60	28.77	28.77
	61	37.87	-37.87
	62	14.32	14.32
	63	81.29	81.29
	64	85.31	85.31
	65	26.39	26.39
	66	-95.49	-95.49
	67	-173.02	-173.02
	68	-40.69	-40.69
	69	-21.03	-21.03
	70	-13.74	-13.74
	71	-49.10	-49.10
	72	-90.52	-90.52

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-98.19	98.19
2	50.02	50.02
3	-17.65	-17.65
4	-40.80	-40.80
5	-22.82	-22.82
6	41.61	41.61
7	89.75	89.75
8	41.97	41.97
9	-1.33	-1.33
10	-1.10	-1.10
11	-0.61	-0.61
12	8.26	8.26
13	95.24	-95.24
14	-50.42	-50.42
15	15.05	15.05
16	37.34	37.34
17	16.46	16.46
18	-47.61	-47.61
19	-91.78	-91.78
20	-54.96	-54.96
21	1.20	1.20
22	22.17	22.17
23	4.47	4.47
24	-55.38	-55.38
25	-98.19	94.17
26	45.79	45.79
27	-20.72	-20.72
28	-41.93	-41.93
29	-22.29	-22.29
30	42.73	42.73
31	90.55	90.55
32	42.48	42.48
33	-1.27	-1.27
34	-1.30	-1.30
35	-1.05	-1.05
36	7.55	7.55
37	94.06	-94.06
38	-49.81	-49.81
39	14.45	14.45
40	35.52	35.52
41	13.41	13.41
42	-51.87	-51.87
43	-96.61	-96.61
44	-9.92	-9.92
45	-1.66	-1.66
46	-1.79	-1.79
47	-2.18	-2.18
48	-46.10	-46.10
49	-94.17	93.71

	50	44.89	44.89
	51	-20.98	-20.98
	52	-40.09	-40.09
	53	-17.90	-17.90
	54	48.70	48.70
	55	96.27	96.27
	56	53.23	53.23
	57	-7.12	-7.12
	58	-25.31	-25.31
	59	-4.84	-4.84
	60	50.82	50.82
	61	87.42	-87.42
	62	-43.90	-43.90
	63	18.76	18.76
	64	38.23	38.23
	65	14.53	14.53
	66	-52.35	-52.35
	67	-97.82	-97.82
	68	-11.25	-11.25
	69	-2.53	-2.53
	70	-2.16	-2.16
	71	-2.07	-2.07
	72	-45.70	-45.70

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-100.07	100.07
2	36.18	36.18
3	-51.39	-51.39
4	-81.58	-81.58
5	-58.27	-58.27
6	33.30	33.30
7	106.03	106.03
8	73.47	73.47
9	20.97	20.97
10	-13.50	-13.50
11	4.28	4.28
12	17.65	17.65
13	151.09	-151.09
14	-80.34	-80.34
15	26.84	26.84
16	71.07	71.07
17	52.36	52.36
18	-29.31	-29.31
19	-88.28	-88.28
20	-64.43	-64.43
21	-28.52	-28.52
22	-16.07	-16.07
23	-29.40	-29.40
24	-70.82	-70.82
25	-100.07	118.50
26	49.10	49.10
27	-44.36	-44.36
28	-74.28	-74.28
29	-48.83	-48.83
30	40.54	40.54
31	108.52	108.52
32	74.07	74.07
33	18.23	18.23
34	-18.81	-18.81
35	-3.15	-3.15
36	7.62	7.62
37	137.25	-137.25
38	-72.96	-72.96
39	20.23	20.23
40	50.47	50.47
41	17.76	17.76
42	-77.90	-77.90
43	-143.32	-143.32
44	-11.78	-11.78
45	-2.52	-2.52
46	11.15	11.15
47	-27.43	-27.43
48	-84.04	-84.04
49	-118.50	119.86

	50	44.33	44.33
	51	-52.88	-52.88
	52	-80.91	-80.91
	53	-55.28	-55.28
	54	27.00	27.00
	55	88.15	88.15
	56	58.25	58.25
	57	15.39	15.39
	58	0.63	0.63
	59	11.66	11.66
	60	46.14	46.14
	61	69.33	-69.33
	62	-13.14	-13.14
	63	62.50	62.50
	64	75.19	75.19
	65	24.93	24.93
	66	-88.27	-88.27
	67	-161.80	-161.80
	68	-30.93	-30.93
	69	-17.47	-17.47
	70	0.86	0.86
	71	-33.48	-33.48
	72	-86.64	-86.64

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-71.70	71.70
2	25.89	25.89
3	-36.31	-36.31
4	-56.13	-56.13
5	-36.02	-36.02
6	34.27	34.27
7	88.53	88.53
8	65.34	65.34
9	26.00	26.00
10	-2.43	-2.43
11	6.79	6.79
12	22.04	22.04
13	114.98	-114.98
14	-62.70	-62.70
15	17.09	17.09
16	51.15	51.15
17	39.50	39.50
18	-17.88	-17.88
19	-59.82	-59.82
20	-43.60	-43.60
21	-19.29	-19.29
22	-11.23	-11.23
23	-21.17	-21.17
24	-50.85	-50.85
25	-71.70	87.72
26	37.41	37.41
27	-30.18	-30.18
28	-50.83	-50.83
29	-30.18	-30.18
30	37.41	37.41
31	87.72	87.72
32	63.42	63.42
33	21.68	21.68
34	-9.15	-9.15
35	-2.34	-2.34
36	10.51	10.51
37	102.34	-102.34
38	-55.23	-55.23
39	13.35	13.35
40	36.21	36.21
41	13.35	13.35
42	-55.23	-55.23
43	-102.34	-102.34
44	-10.51	-10.51
45	2.34	2.34
46	9.15	9.15
47	-21.68	-21.68
48	-63.42	-63.42
49	-87.72	88.53

	50	34.27	34.27
	51	-36.02	-36.02
	52	-56.13	-56.13
	53	-36.31	-36.31
	54	25.89	25.89
	55	71.70	71.70
	56	50.85	50.85
	57	21.17	21.17
	58	11.23	11.23
	59	19.29	19.29
	60	43.60	43.60
	61	59.82	-59.82
	62	-17.88	-17.88
	63	39.50	39.50
	64	51.15	51.15
	65	17.09	17.09
	66	-62.70	-62.70
	67	-114.98	-114.98
	68	-22.04	-22.04
	69	-6.79	-6.79
	70	2.43	2.43
	71	-26.00	-26.00
	72	-65.34	-65.34

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-83.16	83.16
2	37.45	37.45
3	-25.48	-25.48
4	-45.66	-45.66
5	-25.95	-25.95
6	40.77	40.77
7	90.87	90.87
8	55.57	55.57
9	10.41	10.41
10	-3.45	-3.45
11	3.65	3.65
12	17.00	17.00
13	103.03	-103.03
14	-55.81	-55.81
15	14.85	14.85
16	42.34	42.34
17	26.64	26.64
18	-32.23	-32.23
19	-74.01	-74.01
20	-47.63	-47.63
21	-7.62	-7.62
22	6.80	6.80
23	-6.96	-6.96
24	-51.50	-51.50
25	-83.16	90.38
26	42.36	42.36
27	-23.06	-23.06
28	-43.31	-43.31
29	-23.06	-23.06
30	42.36	42.36
31	90.38	90.38
32	54.53	54.53
33	8.15	8.15
34	-6.91	-6.91
35	-1.03	-1.03
36	11.11	11.11
37	96.58	-96.58
38	-52.08	-52.08
39	12.68	12.68
40	34.27	34.27
41	12.68	12.68
42	-52.08	-52.08
43	-96.58	-96.58
44	-11.11	-11.11
45	1.03	1.03
46	6.91	6.91
47	-8.15	-8.15
48	-54.53	-54.53
49	-90.38	90.87

	50	40.77	40.77
	51	-25.95	-25.95
	52	-45.66	-45.66
	53	-25.48	-25.48
	54	37.45	37.45
	55	83.16	83.16
	56	51.50	51.50
	57	6.96	6.96
	58	-6.80	-6.80
	59	7.62	7.62
	60	47.63	47.63
	61	74.01	-74.01
	62	-32.23	-32.23
	63	26.64	26.64
	64	42.34	42.34
	65	14.85	14.85
	66	-55.81	-55.81
	67	-103.03	-103.03
	68	-17.00	-17.00
	69	-3.65	-3.65
	70	3.45	3.45
	71	-10.41	-10.41
	72	-55.57	-55.57

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-72.54	72.54
2	26.60	26.60
3	-35.73	-35.73
4	-55.39	-55.39
5	-34.92	-34.92
6	35.62	35.62
7	89.83	89.83
8	65.80	65.80
9	23.77	23.77
10	-8.23	-8.23
11	7.28	7.28
12	21.76	21.76
13	114.68	-114.68
14	-62.55	-62.55
15	16.91	16.91
16	50.64	50.64
17	38.66	38.66
18	-19.05	-19.05
19	-61.14	-61.14
20	-44.05	-44.05
21	-18.45	-18.45
22	-9.91	-9.91
23	-20.17	-20.17
24	-50.94	-50.94
25	-72.54	88.83
26	38.48	38.48
27	-29.30	-29.30
28	-50.05	-50.05
29	-29.30	-29.30
30	38.48	38.48
31	88.83	88.83
32	63.76	63.76
33	19.45	19.45
34	-14.83	-14.83
35	-1.60	-1.60
36	10.61	10.61
37	102.48	-102.48
38	-55.37	-55.37
39	13.21	13.21
40	36.07	36.07
41	13.21	13.21
42	-55.37	-55.37
43	-102.48	-102.48
44	-10.61	-10.61
45	1.60	1.60
46	14.83	14.83
47	-19.45	-19.45
48	-63.76	-63.76
49	-88.83	89.83

	50	35.62	35.62
	51	-34.92	-34.92
	52	-55.39	-55.39
	53	-35.73	-35.73
	54	26.60	26.60
	55	72.54	72.54
	56	50.94	50.94
	57	20.17	20.17
	58	9.91	9.91
	59	18.45	18.45
	60	44.05	44.05
	61	61.14	-61.14
	62	-19.05	-19.05
	63	38.66	38.66
	64	50.64	50.64
	65	16.91	16.91
	66	-62.55	-62.55
	67	-114.68	-114.68
	68	-21.76	-21.76
	69	-7.28	-7.28
	70	8.23	8.23
	71	-23.77	-23.77
	72	-65.80	-65.80

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-69.21	69.21
2	25.54	25.54
3	-33.72	-33.72
4	-52.42	-52.42
5	-32.97	-32.97
6	34.00	34.00
7	85.43	85.43
8	62.29	62.29
9	22.25	22.25
10	-7.70	-7.70
11	6.82	6.82
12	20.50	20.50
13	108.23	-108.23
14	-59.03	-59.03
15	15.95	15.95
16	47.75	47.75
17	36.36	36.36
18	-18.20	-18.20
19	-57.98	-57.98
20	-41.71	-41.71
21	-17.26	-17.26
22	-9.07	-9.07
23	-18.87	-18.87
24	-48.42	-48.42
25	-69.21	84.49
26	36.68	36.68
27	-27.70	-27.70
28	-47.41	-47.41
29	-27.70	-27.70
30	36.68	36.68
31	84.49	84.49
32	60.38	60.38
33	18.20	18.20
34	-13.89	-13.89
35	-1.50	-1.50
36	10.04	10.04
37	96.78	-96.78
38	-52.29	-52.29
39	12.48	12.48
40	34.07	34.07
41	12.48	12.48
42	-52.29	-52.29
43	-96.78	-96.78
44	-10.04	-10.04
45	1.50	1.50
46	13.89	13.89
47	-18.20	-18.20
48	-60.38	-60.38
49	-84.49	85.43

	50	34.00	34.00
	51	-32.97	-32.97
	52	-52.42	-52.42
	53	-33.72	-33.72
	54	25.54	25.54
	55	69.21	69.21
	56	48.42	48.42
	57	18.87	18.87
	58	9.07	9.07
	59	17.26	17.26
	60	41.71	41.71
	61	57.98	-57.98
	62	-18.20	-18.20
	63	36.36	36.36
	64	47.75	47.75
	65	15.95	15.95
	66	-59.03	-59.03
	67	-108.23	-108.23
	68	-20.50	-20.50
	69	-6.82	-6.82
	70	7.70	7.70
	71	-22.25	-22.25
	72	-62.29	-62.29

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-70.85	70.85
2	25.83	25.83
3	-35.33	-35.33
4	-54.82	-54.82
5	-35.08	-35.08
6	33.87	33.87
7	87.05	87.05
8	63.87	63.87
9	25.06	25.06
10	-2.34	-2.34
11	6.55	6.55
12	21.46	21.46
13	112.41	-112.41
14	-61.28	-61.28
15	16.69	16.69
16	49.90	49.90
17	38.35	38.35
18	-17.98	-17.98
19	-59.11	-59.11
20	-42.88	-42.88
21	-18.54	-18.54
22	-10.45	-10.45
23	-20.36	-20.36
24	-50.02	-50.02
25	-70.85	86.27
26	36.91	36.91
27	-29.43	-29.43
28	-49.71	-49.71
29	-29.43	-29.43
30	36.91	36.91
31	86.27	86.27
32	62.02	62.02
33	20.89	20.89
34	-8.83	-8.83
35	-2.26	-2.26
36	10.32	10.32
37	100.20	-100.20
38	-54.07	-54.07
39	13.08	13.08
40	35.46	35.46
41	13.08	13.08
42	-54.07	-54.07
43	-100.20	-100.20
44	-10.32	-10.32
45	2.26	2.26
46	8.83	8.83
47	-20.89	-20.89
48	-62.02	-62.02
49	-86.27	87.05

	50	33.87	33.87
	51	-35.08	-35.08
	52	-54.82	-54.82
	53	-35.33	-35.33
	54	25.83	25.83
	55	70.85	70.85
	56	50.02	50.02
	57	20.36	20.36
	58	10.45	10.45
	59	18.54	18.54
	60	42.88	42.88
	61	59.11	-59.11
	62	-17.98	-17.98
	63	38.35	38.35
	64	49.90	49.90
	65	16.69	16.69
	66	-61.28	-61.28
	67	-112.41	-112.41
	68	-21.46	-21.46
	69	-6.55	-6.55
	70	2.34	2.34
	71	-25.06	-25.06
	72	-63.87	-63.87

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

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-82.55	82.55
2	36.93	36.93
3	-25.83	-25.83
4	-45.94	-45.94
5	-26.24	-26.24
6	40.51	40.51
7	90.66	90.66
8	55.85	55.85
9	10.89	10.89
10	-3.61	-3.61
11	3.78	3.78
12	17.15	17.15
13	103.26	-103.26
14	-55.95	-55.95
15	14.90	14.90
16	42.58	42.58
17	27.07	27.07
18	-31.61	-31.61
19	-73.30	-73.30
20	-47.39	-47.39
21	-8.07	-8.07
22	6.11	6.11
23	-7.44	-7.44
24	-51.34	-51.34
25	-82.55	90.15
26	42.13	42.13
27	-23.25	-23.25
28	-43.47	-43.47
29	-23.25	-23.25
30	42.13	42.13
31	90.15	90.15
32	54.76	54.76
33	8.55	8.55
34	-7.20	-7.20
35	-1.06	-1.06
36	11.06	11.06
37	96.59	-96.59
38	-52.10	-52.10
39	12.67	12.67
40	34.26	34.26
41	12.67	12.67
42	-52.10	-52.10
43	-96.59	-96.59
44	-11.06	-11.06
45	1.06	1.06
46	7.20	7.20
47	-8.55	-8.55
48	-54.76	-54.76
49	-90.15	90.66

	50	40.51	40.51
	51	-26.24	-26.24
	52	-45.94	-45.94
	53	-25.83	-25.83
	54	36.93	36.93
	55	82.55	82.55
	56	51.34	51.34
	57	7.44	7.44
	58	-6.11	-6.11
	59	8.07	8.07
	60	47.39	47.39
	61	73.30	-73.30
	62	-31.61	-31.61
	63	27.07	27.07
	64	42.58	42.58
	65	14.90	14.90
	66	-55.95	-55.95
	67	-103.26	-103.26
	68	-17.15	-17.15
	69	-3.78	-3.78
	70	3.61	3.61
	71	-10.89	-10.89
	72	-55.85	-55.85

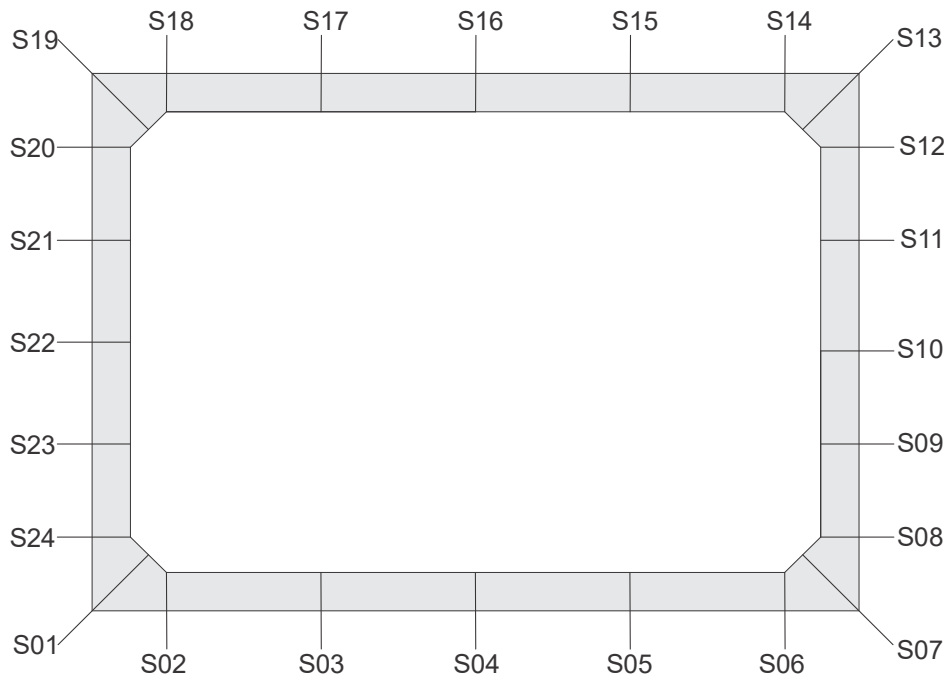
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#####
#          VERIFICAÇÃO DA FISSURAÇÃO (ELS)          #
#          VmaxHmax                                  #
#####
```

MOMENTO FLETOR NAS SEÇÕES DE INTERESSE

SEÇÃO	ESQUERDA (kN.m)	DIREITA (kN.m)
1	-71.29	71.29
2	26.20	26.20
3	-34.98	-34.98
4	-54.27	-54.27
5	-34.19	-34.19
6	35.01	35.01
7	88.18	88.18
8	64.49	64.49
9	23.20	23.20
10	-8.03	-8.03
11	7.11	7.11
12	21.28	21.28
13	112.26	-112.26
14	-61.23	-61.23
15	16.55	16.55
16	49.56	49.56
17	37.80	37.80
18	-18.73	-18.73
19	-59.95	-59.95
20	-43.17	-43.17
21	-18.01	-18.01
22	-9.60	-9.60
23	-19.68	-19.68
24	-49.99	-49.99
25	-71.29	87.21
26	37.81	37.81
27	-28.70	-28.70
28	-49.06	-49.06
29	-28.70	-28.70
30	37.81	37.81
31	87.21	87.21
32	62.49	62.49
33	18.98	18.98
34	-14.47	-14.47
35	-1.56	-1.56
36	10.40	10.40
37	100.34	-100.34
38	-54.21	-54.21
39	12.94	12.94
40	35.32	35.32
41	12.94	12.94
42	-54.21	-54.21
43	-100.34	-100.34
44	-10.40	-10.40
45	1.56	1.56
46	14.47	14.47
47	-18.98	-18.98
48	-62.49	-62.49
49	-87.21	88.18

	50	35.01	35.01
	51	-34.19	-34.19
	52	-54.27	-54.27
	53	-34.98	-34.98
	54	26.20	26.20
	55	71.29	71.29
	56	49.99	49.99
	57	19.68	19.68
	58	9.60	9.60
	59	18.01	18.01
	60	43.17	43.17
	61	59.95	-59.95
	62	-18.73	-18.73
	63	37.80	37.80
	64	49.56	49.56
	65	16.55	16.55
	66	-61.23	-61.23
	67	-112.26	-112.26
	68	-21.28	-21.28
	69	-7.11	-7.11
	70	8.03	8.03
	71	-23.20	-23.20
	72	-64.49	-64.49

ARMADURAS P/ SOLICITAÇÕES NORMAIS



Seção	As-CA60ext(cm ² /m)	As-CA50ext(cm ² /m)	As-CA60int(cm ² /m)	As-CA50int(cm ² /m)
1	6.57	7.88	1.26	1.26
2	5.54	6.65	3.10	3.72
3	3.10	3.72	6.71	8.05
4	3.10	3.72	10.85	13.02
5	3.10	3.72	7.58	9.10
6	5.22	6.26	3.10	3.72
7	6.57	7.88	1.26	1.26
8	8.55	10.26	3.10	3.72
9	3.10	3.72	3.10	3.72
10	3.10	3.72	3.10	3.72
11	3.10	3.72	3.10	3.72
12	3.10	3.72	3.10	3.72
13	8.79	10.55	1.26	1.26
14	11.58	13.89	3.10	3.72
15	3.10	3.72	3.10	3.72
16	3.10	3.72	9.79	11.75
17	3.10	3.72	8.50	10.20
18	5.25	6.30	3.10	3.72
19	6.57	7.88	1.26	1.26
20	4.69	5.63	3.10	3.72
21	3.10	3.72	3.10	3.72
22	3.10	3.72	3.10	3.72
23	3.10	3.72	3.10	3.72
24	5.92	7.10	3.10	3.72

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

VERIFICAÇÃO DA FADIGA

Seção	Nsdmax(kN)	Msdmax(kN.m)	Nsdmin(kN)	Msdmin(kN.m)	DSs(MPa)	Asad(cm ² /m)
12	-191.87	21.76	-181.22	20.50	3.60	0.00
13	-190.12	114.68	-59.21	108.23	-18.43	0.00
14	-62.22	62.55	-59.21	59.03	16.84	0.00
16	-59.01	51.15	-95.82	42.34	63.08	0.00
18	-62.22	19.05	-59.21	18.20	6.11	0.00
19	-156.66	61.14	-59.21	57.98	-30.73	0.00
20	-158.41	44.05	-149.82	41.71	16.79	0.00

VERIFICAÇÃO DA CORTANTE

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

Seção	As(cm ² /m)	ro	vsd(kN)	Vrd1(kN)	Vrd2(kN)	Asw(cm ² /m/m)
1	7.88	2.19E-003	202.61	202.61	0.00	0.00
2	6.65	4.16E-003	189.69	103.62	830.77	9.37
6	6.26	3.91E-003	211.55	102.75	830.77	14.49
7	7.88	2.19E-003	231.42	184.98	1869.23	0.00
13	10.55	2.93E-003	251.61	193.03	1869.23	0.00
14	13.89	8.68E-003	110.40	122.97	0.00	0.00
18	6.30	3.94E-003	156.05	105.92	830.77	1.48
19	7.88	2.19E-003	178.56	194.53	0.00	0.00

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

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

VERIFICAÇÃO DA FISSURAÇÃO

VmaxHmin

Seção	As (cm ² /m)	Nsd (kN)	Msd (kN.m)	Ø (mm)	w (mm)
1	7.88	-38.63	70.85	6.30	0.077
2	6.65	-77.27	25.83	6.30	0.058
3	8.05	-77.27	35.33	10.00	0.129
4	13.02	-77.27	54.82	10.00	0.129
5	9.10	-77.27	35.08	10.00	0.099
6	6.26	-77.27	33.87	6.30	0.122
7	7.88	-140.10	87.05	6.30	0.089
8	10.26	-201.19	63.87	6.30	0.146
9	3.72	-197.94	25.06	6.30	0.088
10	3.72	-194.69	2.34	6.30	0.000
11	3.72	-191.44	6.55	6.30	0.000
12	3.72	-188.19	21.46	10.00	0.088
13	10.55	-122.74	112.41	10.00	0.151
14	13.89	-59.05	61.28	10.00	0.149
15	3.72	-59.05	16.69	8.00	0.092
16	11.75	-59.05	49.90	8.00	0.108
17	10.20	-59.05	38.35	8.00	0.081
18	6.30	-59.05	17.98	10.00	0.048
19	7.88	-106.09	59.11	10.00	0.062
20	7.21*	-154.88	42.88	10.00	0.200
21	3.72	-158.13	18.54	6.30	0.043
22	3.72	-161.38	10.45	6.30	0.002
23	3.72	-164.63	20.36	6.30	0.056
24	7.10	-167.88	50.02	6.30	0.182

VminHmax

Seção	As (cm ² /m)	Nsd (kN)	Msd (kN.m)	Ø (mm)	w (mm)
1	7.88	-58.02	82.55	6.30	0.101
2	6.65	-116.03	36.93	6.30	0.116
3	8.05	-116.03	25.83	10.00	0.052
4	13.02	-116.03	45.94	10.00	0.080
5	9.10	-116.03	26.24	10.00	0.042
6	6.26	-116.03	40.51	6.30	0.163
7	7.88	-152.83	90.66	6.30	0.095
8	10.26	-187.88	55.85	6.30	0.109
9	3.72	-184.63	10.89	6.30	0.001
10	3.72	-181.38	3.61	6.30	0.000
11	3.72	-178.13	3.78	6.30	0.000
12	3.72	-174.88	17.15	10.00	0.043
13	10.55	-133.60	103.26	10.00	0.121
14	13.89	-94.06	55.95	10.00	0.115
15	3.72	-94.06	14.90	8.00	0.051
16	11.75	-94.06	42.58	8.00	0.070
17	10.20	-94.06	27.07	8.00	0.032
18	6.30	-94.06	31.61	10.00	0.154
19	7.88	-124.23	73.30	10.00	0.098
20	8.13*	-156.16	47.39	10.00	0.200
21	3.72	-159.41	8.07	6.30	0.000
22	3.72	-162.66	6.11	6.30	0.000
23	3.72	-165.91	7.44	6.30	0.000
24	7.10	-169.16	51.34	6.30	0.194

VERIFICAÇÃO DA FISSURAÇÃO (CONT.)

VmaxHmax

Seção	As(cm ² /m)	Nsd(kN)	Msd(kN.m)	Ø(mm)	w(mm)
1	7.88	-39.48	71.29	6.30	0.078
2	6.65	-78.97	26.20	6.30	0.060
3	8.05	-78.97	34.98	10.00	0.125
4	13.02	-78.97	54.27	10.00	0.126
5	9.10	-78.97	34.19	10.00	0.093
6	6.26	-78.97	35.01	6.30	0.131
7	7.88	-140.80	88.18	6.30	0.092
8	10.26	-200.88	64.49	6.30	0.150
9	3.72	-197.63	23.20	6.30	0.068
10	3.72	-194.38	8.03	6.30	0.000
11	3.72	-191.13	7.11	6.30	0.000
12	3.72	-187.88	21.28	10.00	0.086
13	10.55	-123.61	112.26	10.00	0.150
14	13.89	-61.09	61.23	10.00	0.148
15	3.72	-61.09	16.55	8.00	0.089
16	11.75	-61.09	49.56	8.00	0.106
17	10.20	-61.09	37.80	8.00	0.078
18	6.30	-61.09	18.73	10.00	0.052
19	7.88	-107.26	59.95	10.00	0.064
20	8.13*	-155.19	43.17	10.00	0.160
21	3.72	-158.44	18.01	6.30	0.039
22	3.72	-161.69	9.60	6.30	0.001
23	3.72	-164.94	19.68	6.30	0.050
24	7.10	-168.19	49.99	6.30	0.182

NOTA:

* Seção com aumento na armadura devido à fissuração.