



MEMORIAL DE CÁLCULO

OBRA:

PROJETO DE UMA PONTE DE CONCRETO COM
CONTENÇÕES, LONGARINAS, PRÉ-LAJE E LAJE DE 2º
ESTÁGIO

CONTRATANTE:

ITUPORANGA/SC

LOCAL:

RUA JOSÉ PETRY, ITUPORANGA/SC.

DATA: 09/06/2025.

Dados iniciais

Geometria:

Largura = 1000 cm

Comprimento = 800 cm

Balanço = 15 cm

Espessura da laje = 20 cm

Nº de vigas = 6

Viga: seção retangular

Ações consideradas

Carga permanente:

Peso próprio viga pré-moldada: $g_{1,k} = A_c \cdot c = 0,27 \cdot 25 = 6,75 \text{ kN/m}$

Peso próprio da laje do tabuleiro: $g_{2,k} = h_{\text{Laje}} \cdot c = 0,2 \cdot 25 = 5 \text{ kN/m}^2$

Revestimento: $g_{3,k} = h_{\text{rev}} \cdot c + g_{\text{sc}} = 0,05 \cdot 24 + 2 = 3,2 \text{ kN/m}^2$

Guarda-Rodas: $g_{4,k} = A_c \cdot c = 0,19 \cdot 25 = 4,75 \text{ kN/m}$

Carga móvel:

Como carregamento móvel foi considerado o veículo tipo PB-45, de acordo com a NBR 7188:2012 (Carga rodoviária e de pedestres em pontes, passarelas e outras estruturas):

$$Q = P.CIV.CNF.CIA$$

$$q = p.CIV.CNF.CIA$$

Sendo:

$P = 75 \text{ kN}$, é a carga concentrada por roda;

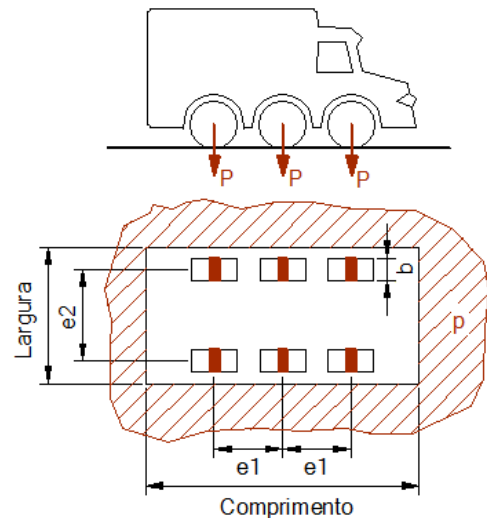
$p = 5 \text{ kN/m}^2$, é a carga de multidão, uniformemente distribuída;

$p' = 3 \text{ kN/m}^2$, é a carga de pedestres, uniformemente distribuída;

CIV o coeficiente de impacto vertical;

CNF o coeficiente de número de faixas;

CIA o coeficiente de impacto adicional, aplicável somente para o dimensionamento de elementos de juntas estruturais e extremidade da obra.



- Coeficientes CIV e CNF:

O coeficiente de impacto vertical é dado por:

$$CIV = 1,35, \text{ para estruturas com vão menor que } 10 \text{ m};$$

$$CIV = 1 + 1,06[20/(L_{iv}+50)], \text{ para estruturas com vão entre } 10 \text{ e } 200 \text{ m}.$$

Sendo L_{iv} o comprimento da longarina.

O coeficiente de número de faixas é dado por:

$$CNF = 1 - 0,005 (n-2)$$

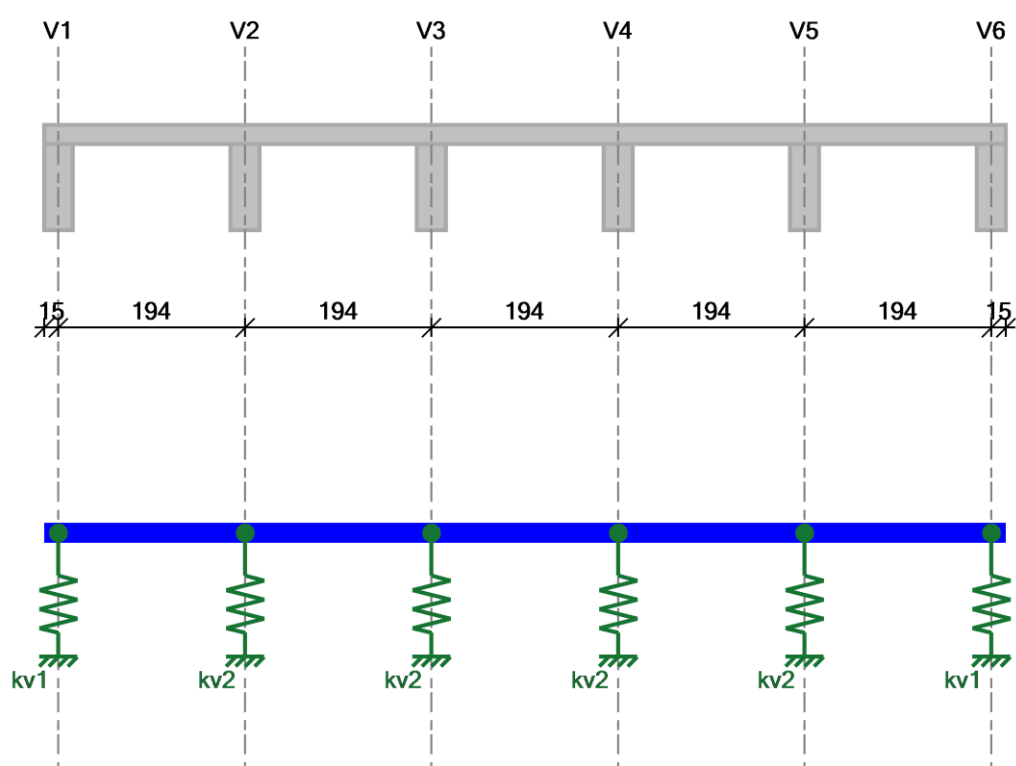
Sendo:

n é a parte inteira da razão $B/3,5$;

B é a largura do tabuleiro rodoviário transversalmente contínuo em metros, a ser carregado para uma determinada hipótese de carga.

Modelo estrutural

Modelo para distribuição transversal de cargas: Processo Courbon / Engesser



Apoio elástico:

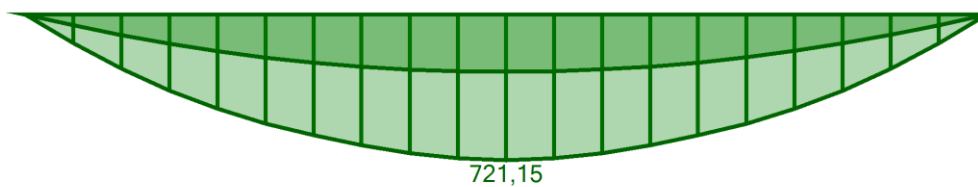
$K_{v1} = 39173 \text{ kN/m}$

$K_{v2} = 47737 \text{ kN/m}$

Esforços solicitantes nas longarinas

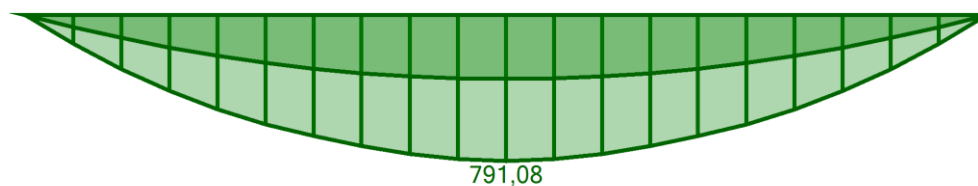
Envoltória de momento fletor combinação de cálculo: V1

Unidade: kN.m



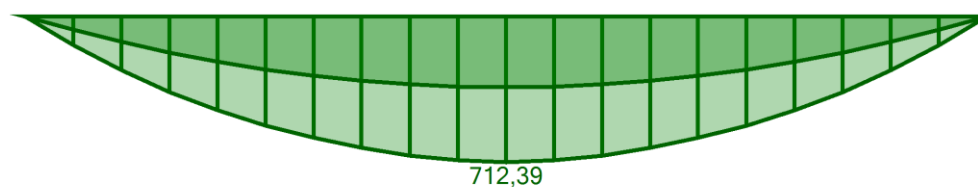
Envoltória de momento fletor combinação de cálculo: V2

Unidade: kN.m



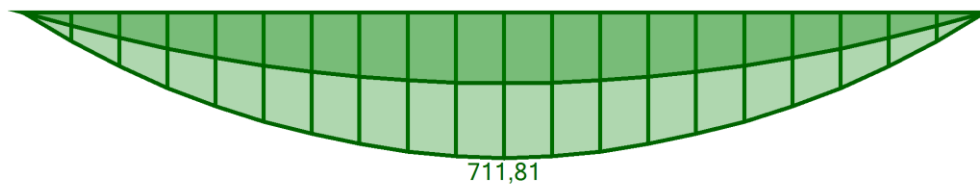
Envoltória de momento fletor combinação de cálculo: V3

Unidade: kN.m



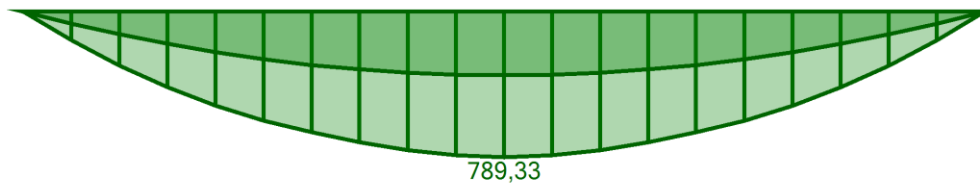
Envoltória de momento fletor combinação de cálculo: V4

Unidade: kN.m



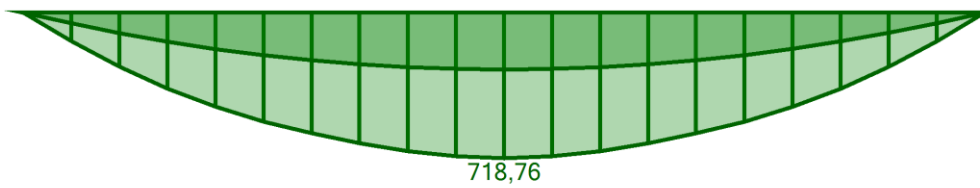
Envoltória de momento fletor combinação de cálculo: V5

Unidade: kN.m



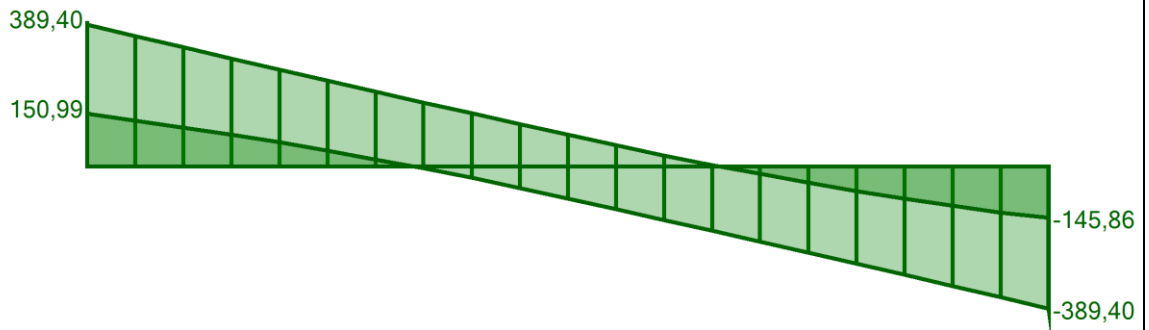
Envoltória de momento fletor combinação de cálculo: V6

Unidade: kN.m



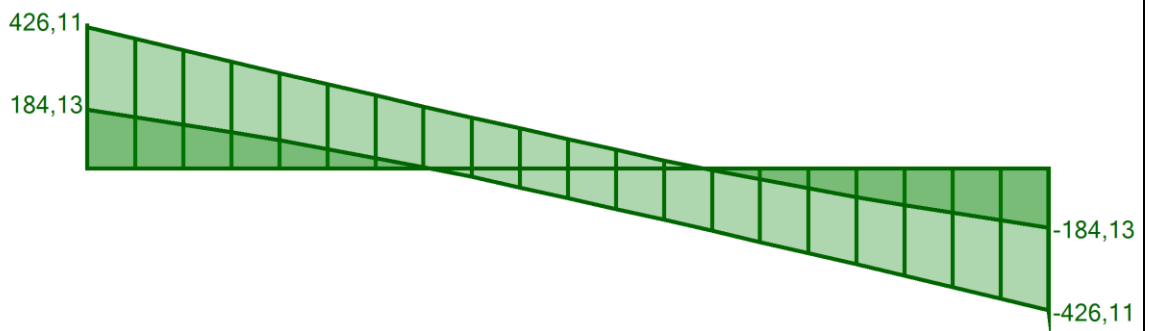
Envoltória de esforço cortante combinação de cálculo: V1

Unidade: kN



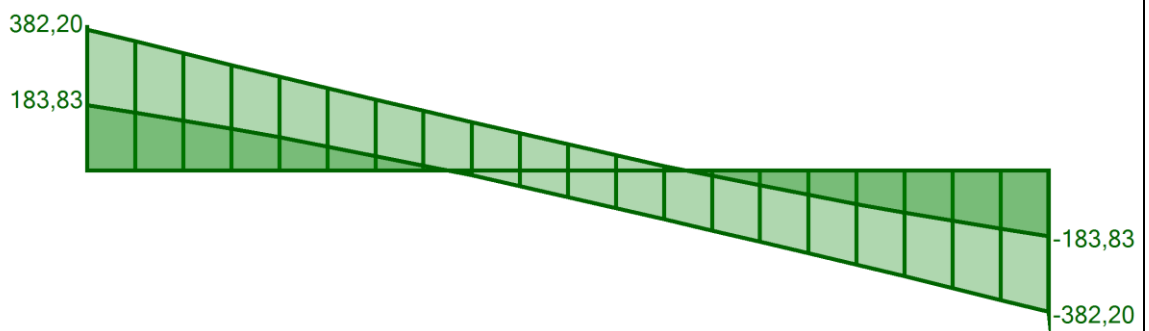
Envoltória de esforço cortante combinação de cálculo: V2

Unidade: kN



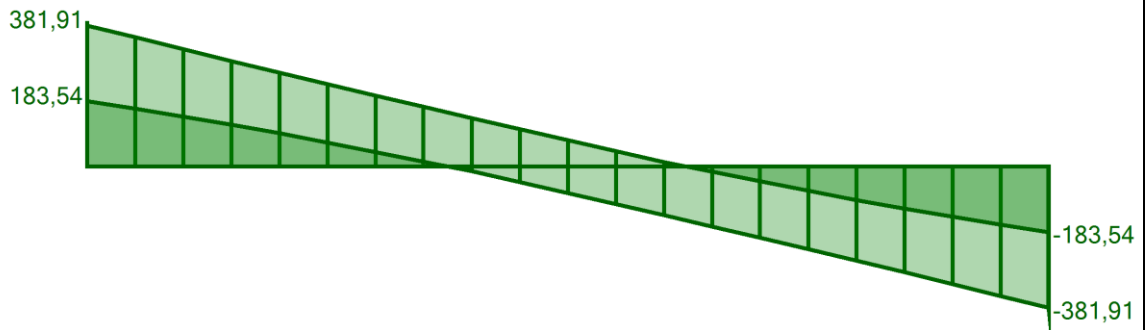
Envoltória de esforço cortante combinação de cálculo: V3

Unidade: kN



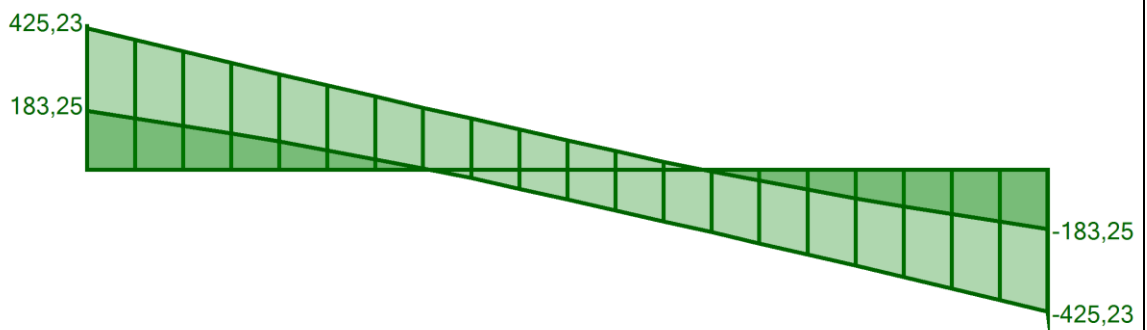
Envoltória de esforço cortante combinação de cálculo: V4

Unidade: kN



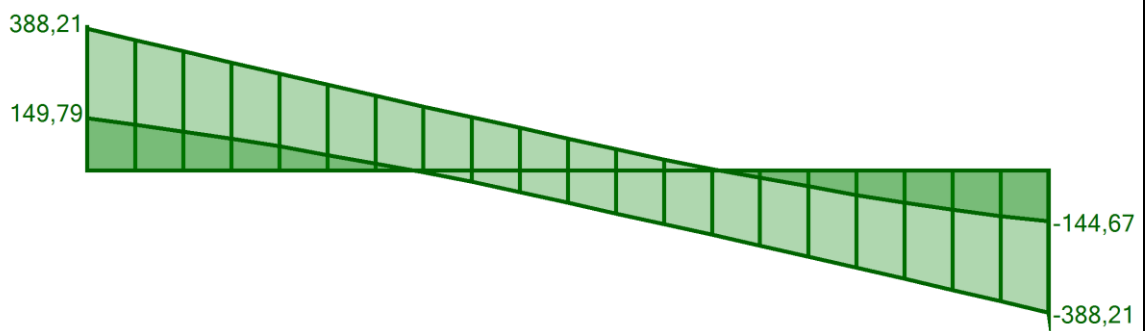
Envoltória de esforço cortante combinação de cálculo: V5

Unidade: kN



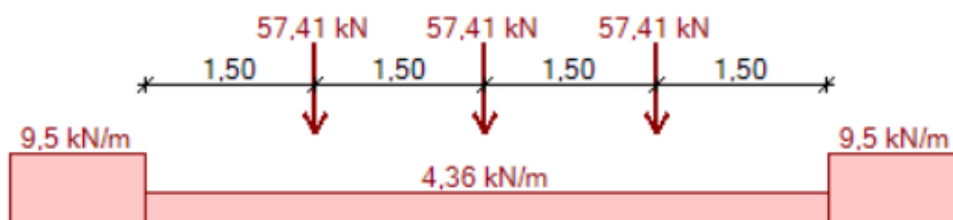
Envoltória de esforço cortante combinação de cálculo: V6

Unidade: kN

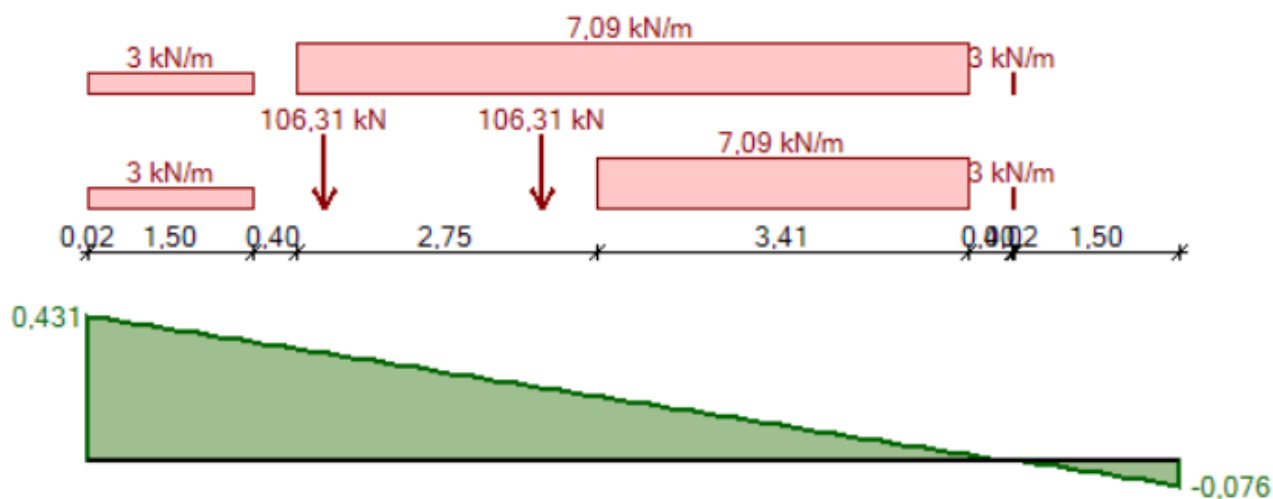


Reação máxima na V2 da Carga Móvel

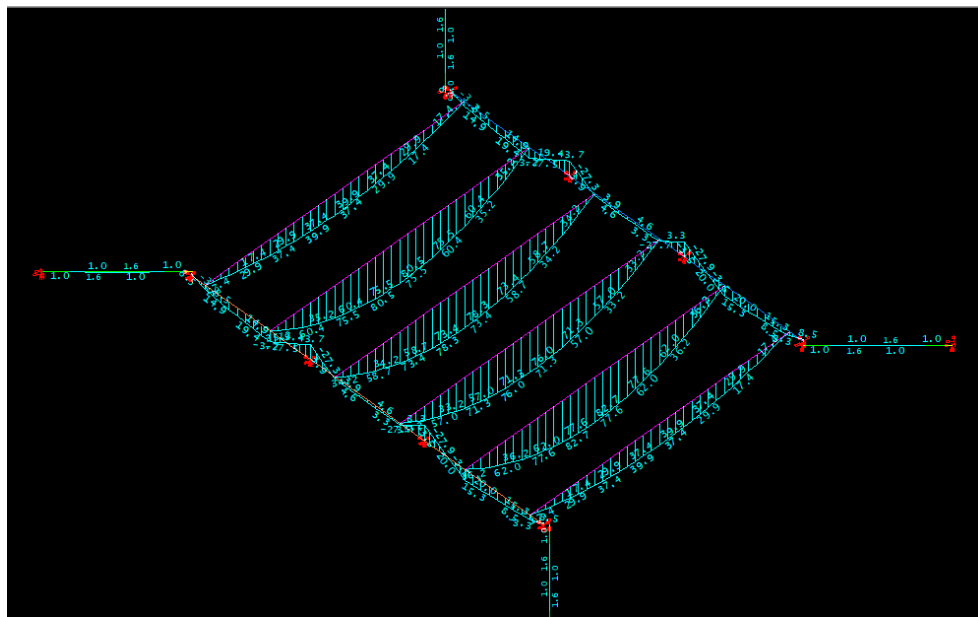
Trem-Tipo flexão máxima: V2



Linha de influência reação vertical: V2



Esforços solicitantes nas longarinas



Área de aço - Longitudinal

Dimensionado realizado em razão do momento de cálculo.

Norma utilizada: NBR-6118:2014

Geometria

$b_w = 30.0 \text{ cm}$

$h = 90.0 \text{ cm}$

$d = 86.0 \text{ cm}$

$d' = 4.0 \text{ cm}$

Materiais

$f_{ck} = 40.00 \text{ MPa}$

$f_{yk} = 500.00 \text{ MPa}$

$$\gamma_c = 1.40$$

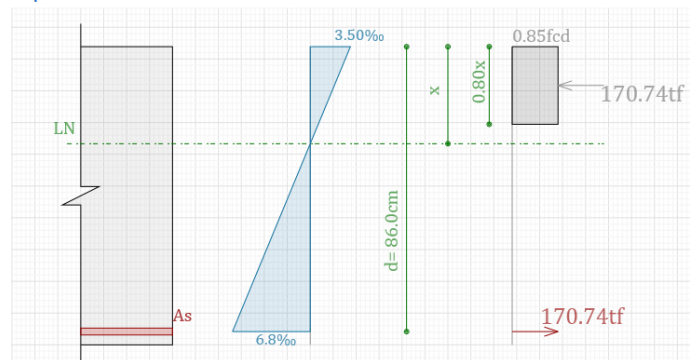
$$\gamma_s = 1.15$$

$$f_{ctk,sup} = 4.56 \text{ Mpa}$$

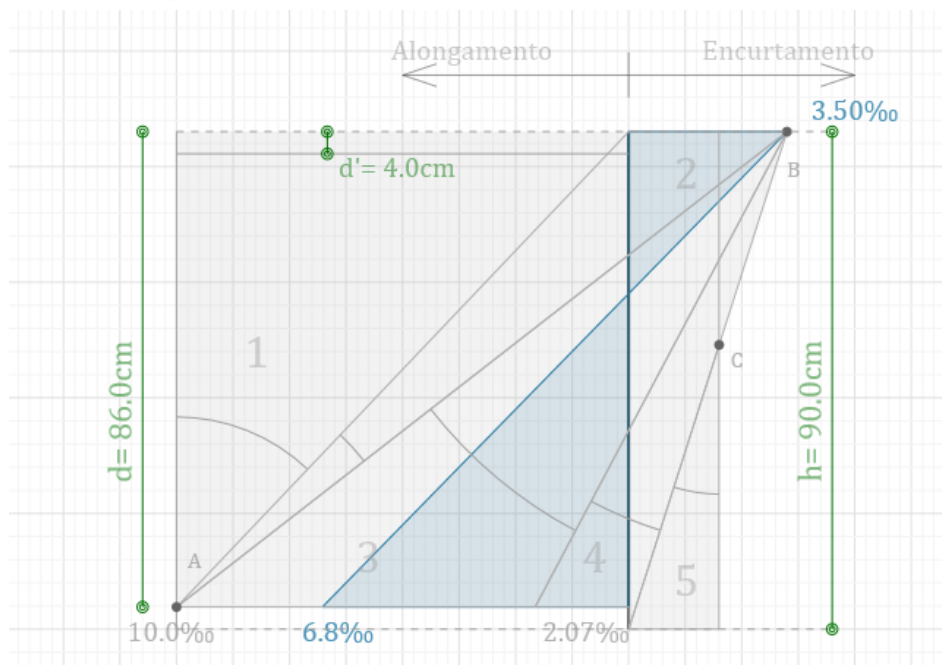
Armadura de flexão

$$A_s = 39.27 \text{ cm}^2$$

Equilíbrio



Deformação/Domínios



Cortante

Resultados

Cortante

$$A_{sw,nec} = 4.59 \text{ cm}^2/\text{m} - 2R$$

$$A_{sw,min} = 4.21 \text{ cm}^2/\text{m} - 2R$$

$$A_{sw,real} = 4.59 \text{ cm}^2/\text{m} - 2R$$

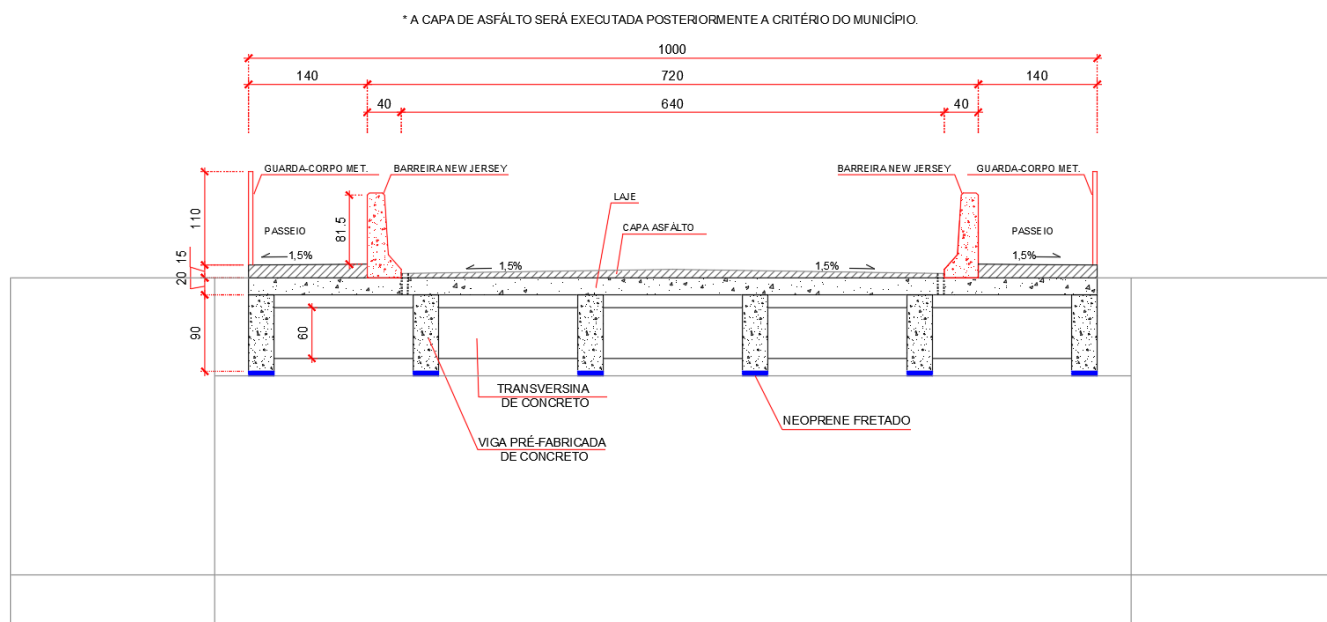
$$V_{Rd2} = 167.18 \text{ tf}$$

$$V_{Rd3} = 42.60 \text{ tf}$$

$$V_c = 27.16 \text{ tf}$$

$$V_{sw} = 15.44 \text{ tf}$$

Lajes do tabuleiro - Método de Rüsch



CORTE BB
ESC.: 1/50



Peso próprio:

Laje: $0,20\text{m} \times 25\text{kN/m}^3 = 5,00 \text{ kN/m}^2$

Pavimentação = $0,08\text{m} \times 25\text{kN/m}^3 = 2,00 \text{ kN/m}^2$

Recapeamento = $2,0 \text{ kN/m}^2$

Barreira + Guarda-Corpo = $0,25\text{m}^2 \times 25 \text{ kN/m}^3 / 10 = 0,625 \text{ kN/m}^2$

Total = $8,625 \text{ kN/m}^2$

Carga móvel:

Vão da laje $l_x = 1,97\text{m}$;

a = distancia transversal entre rodas = $2,0\text{m}$;

$l_x/a = 1,91\text{m} / 2,0\text{m} = 0,955$

Tamanho do contato roda \times pavimento = $0,2\text{m} \times 0,5\text{m}$

Tamanho do espraçamento da roda até o meio da laje de 25cm : $t = \sqrt{0,2 \times 0,5} + 2 * (0,08\text{m}) + (0,25\text{m}) = t \cong 0,73$

Coeficiente de impacto $\phi = \text{CIV} = 1 + 1,06[20/(1689+50)] = 1,32 * 1,25 = 1,66$

Momentos fletores segundo as Tabelas de RÜSCH

Relações para entrada na tabela:

$l_x/a = 1,91\text{m} / 2,0\text{m} = 0,955$

$t/a = 0,73\text{m} / 2,0\text{m} = 0,365$

Parâmetros de entrada

$$I_y/I_x=4,47$$

Condições de apoio:

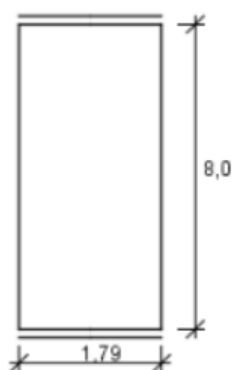
Direção do tráfego:



Tabela:88

$$I_x/a=0,90$$

$$t/a=0,310$$



Esforços devido às cargas móveis

M_{xm} (Tabela 88.1)

I_x/a	t/a				Para todos os valores de t/a	
	0,125	0,250	0,5	1,0		
	L	L	L	L	p	p'
0,50	0,2	0,17	0,112	0,065	0,0	0,0
1,0	0,351	0,3	0,237	0,176	0,0	0,15
1,5	0,431	0,4	0,351	0,305	0,1	0,23
2,0	0,52	0,491	0,461	0,421	0,25	0,4
2,5	0,62	0,59	0,56	0,53	0,58	0,96
3,0	0,72	0,69	0,67	0,63	1,0	1,35
4,0	0,87	0,85	0,82	0,8	2,2	2,85
5,0	0,99	0,98	0,95	0,93	3,46	5,65
6,0	1,08	1,07	1,04	1,02	4,7	8,0
7,0	1,15	1,14	1,11	1,1	5,75	11,8
8,0	1,2	1,19	1,17	1,15	6,9	16,4
9,0	1,24	1,23	1,21	1,2	8,0	22,1
10,0	1,27	1,26	1,24	1,23	9,12	28,7

$$M_L = 0,258$$

$$M_p = 0,0$$

$$M_{p'} = 0,118$$

$$M_{xm} = \varphi \times (P \times M_L + p \times M_p + p' \times M_{p'})$$

$$M_{xm} = 1,66 \times (75,0 \times 0,258 + 5,0 \times 0,0 + 5,0 \times 0,118)$$

$$M_{xm} = 33,084 \text{ kN.m/m}$$

M_{ym} (Tabela 88.2)

lx/a	t/a				Para todos os valores de t/a	
	0,125	0,250	0,5	1,0		
	L	L	L	L	p	p'
0,50	0,155	0,095	0,069	0,028	0,0	0,0
1,0	0,223	0,158	0,11	0,063	0,0	0,03
1,5	0,267	0,22	0,16	0,118	0,02	0,07
2,0	0,322	0,263	0,228	0,179	0,04	0,12
2,5	0,382	0,338	0,29	0,253	0,1	0,24
3,0	0,457	0,408	0,361	0,323	0,17	0,4
4,0	0,58	0,53	0,472	0,433	0,37	1,03
5,0	0,69	0,64	0,58	0,53	0,58	2,03
6,0	0,77	0,73	0,66	0,62	0,78	3,06
7,0	0,84	0,8	0,73	0,7	0,92	4,54
8,0	0,9	0,86	0,8	0,76	1,29	6,28
9,0	0,96	0,91	0,85	0,82	1,3	8,25
10,0	1,02	0,95	0,9	0,87	1,46	10,67

$$M_L = 0,134$$

$$M_p = 0,0$$

$$M_{p'} = 0,024$$

$$M_{ym} = \varphi \times (P \times M_L + p \times M_p + p' \times M_{p'})$$

$$M_{ym} = 1,66 \times (75,0 \times 0,134 + 5,0 \times 0,0 + 5,0 \times 0,024)$$

$$M_{ym} = 16,924 \text{ kN.m/m}$$

M_{ye} (Tabela 88.3)

lx/a	t/a				Para todos os valores de t/a	
	0,125	0,250	0,5	1,0		
	L	L	L	L	p	p'
0,50	0,32	0,255	0,16	0,16	0,0	0,0
1,0	0,405	0,365	0,28	0,19	0,0	0,1
1,5	0,55	0,53	0,47	0,37	0,05	0,2
2,0	0,72	0,7	0,66	0,57	0,2	0,65
2,5	0,85	0,85	0,82	0,74	0,39	0,95
3,0	0,99	0,99	0,96	0,89	0,75	1,55
4,0	1,2	1,2	1,19	1,13	1,4	3,4
5,0	1,36	1,36	1,36	1,3	2,1	5,79
6,0	1,48	1,48	1,48	1,42	3,0	9,5
7,0	1,56	1,56	1,56	1,51	4,3	15,0
8,0	1,62	1,62	1,62	1,58	5,5	20,6
9,0	1,66	1,66	1,66	1,63	6,8	26,9
10,0	1,67	1,67	1,67	1,67	8,33	34,3

$$M_L = 0,321$$

$$M_p = 0,0$$

$$M_{p'} = 0,079$$

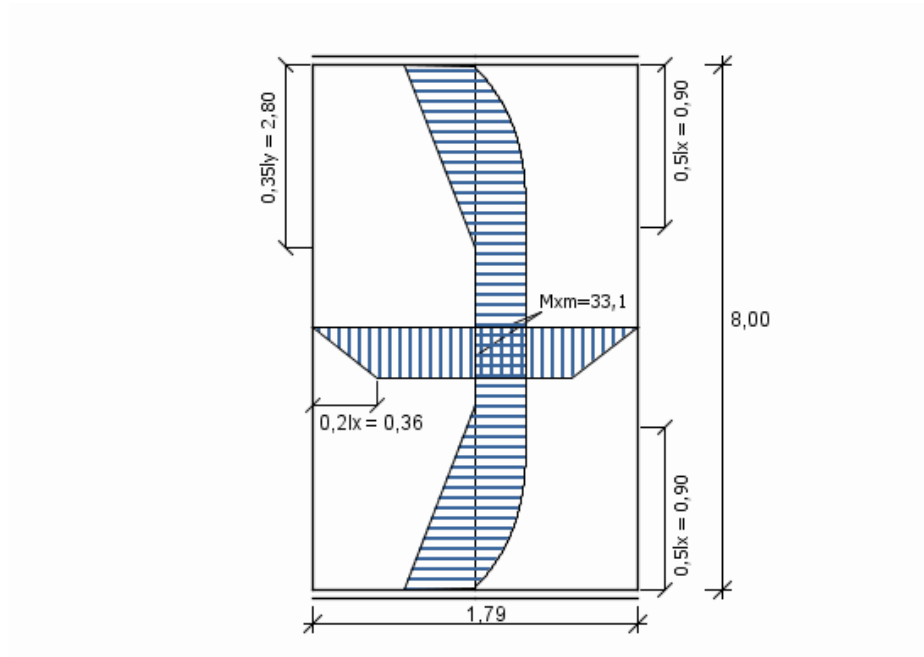
$$M_{ye} = \varphi \times (P \times M_L + p \times M_p + p' \times M_{p'})$$

$$M_{ye} = 1,66 \times (75,0 \times 0,321 + 5,0 \times 0,0 + 5,0 \times 0,079)$$

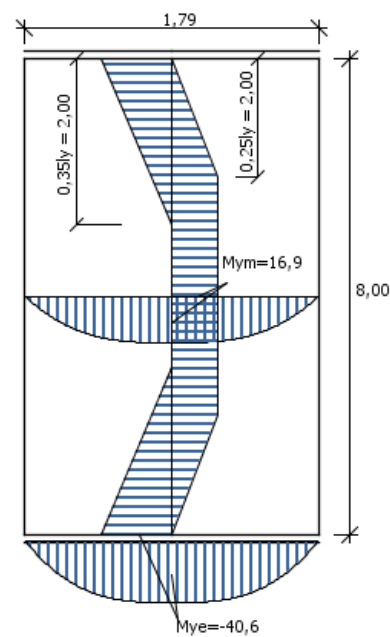
$$M_{ye} = -40,620 \text{ kN.m/m}$$

Diagramas Envoltórios

M_x devido à p



M_y devido à p



Esforços devido às cargas permanentes

M_{xm}

$$k=0,084$$

$$M_{xm}=k \times g \times l_x^2$$

$$M_{xm}=0,084 \times g \times 3,20$$

$$M_{xm}=0,269g \text{ kN.m/m}$$

M_{ym}

$$k=0,037$$

$$M_{ym}=k \times g \times l_x^2$$

$$M_{ym}=0,037 \times g \times 3,20$$

$$M_{ym}=0,119g \text{ kN.m/m}$$

M_{ye}

$$k=-0,119$$

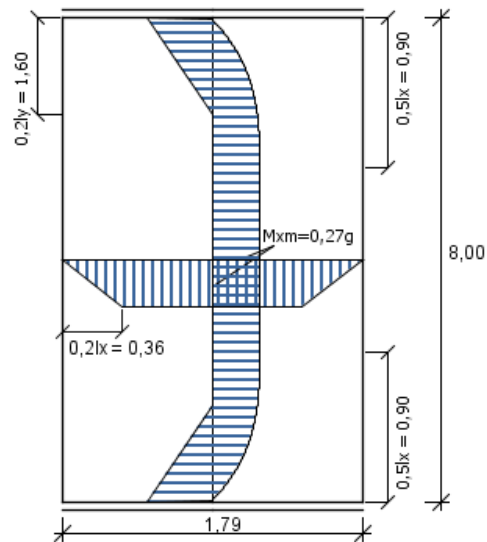
$$M_{ye}=k \times g \times l_x^2$$

$$M_{ye}=-0,119 \times g \times 3,20$$

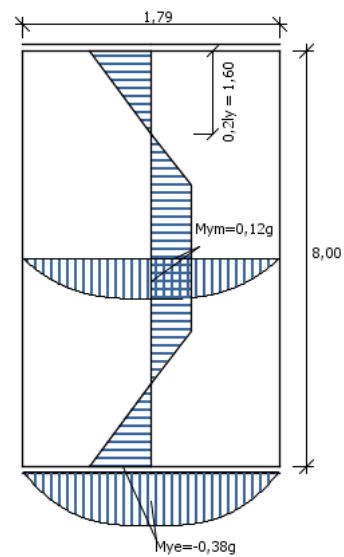
$$M_{ye}=-0,381g \text{ kN.m/m}$$

Diagramas Envoltórios

M_x devido à g



M_y devido à g



MEMÓRIA DE CÁLCULO DAS PAREDES DE CONTENÇÃO

Pavimento 1	fck = 3.00 kN/cm ²	E = 2684 kN/cm ²	Peso Espec = 2500.00 kgf/m ³
Lance 2		cobr = 3.00 cm	

Seção (cm)				Cargas Verticais (kN/m ²)				Cargas Horizontais (kN/m ²)		Temperatura Caso T1 Caso T2 (°C)	Retração Deform. X Deform. Y (‰)
Elemento	H	Elevação	Nível	Peso Próprio	Acidental Revestimento	Paredes Outras	Total	Base	Topo		
PAR1-A (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	10.13 kN/m	59.5 4	42.6 6		
PAR1-B (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	220.1 3 kN/m	59.5 4	42.6 6		
PAR1-C (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	220.1 3 kN/m	59.5 4	42.6 6		
PAR1-D (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	10.13 kN/m	59.5 4	42.6 6		
PAR1-E (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	220.1 3 kN/m	59.5 4	42.6 6		
PAR1-F (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	10.13 kN/m	59.5 4	42.6 6		
PAR1-G (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	21.82 kN/m	59.5 4	42.6 6		
PAR1-H (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	231.8 2 kN/m	59.5 4	42.6 6		
PAR1-I (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	21.82 kN/m	59.5 4	42.6 6		
PAR2-A (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	10.13 kN/m	59.5 4	42.6 6		
PAR2-B (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	10.13 kN/m	59.5 4	42.6 6		
PAR2-C (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	10.13 kN/m	59.5 4	42.6 6		
PAR2-D (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	10.13 kN/m	59.5 4	42.6 6		

PAR2-E (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	10.13 kN/m	59.5 4	42.6 6		
PAR2-F (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	10.13 kN/m	59.5 4	42.6 6		
PAR2-G (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	10.13 kN/m	59.5 4	42.6 6		
PAR2-H (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	10.13 kN/m	59.5 4	42.6 6		
PAR2-I (Contenções)	25.0 0	0.00	280.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	10.13 kN/m	59.5 4	42.6 6		
PAR3 (Contenções)	25.0 0	110.00	390.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	225.9 7 kN/m	59.5 4	42.6 6		
PAR4 (Contenções)	25.0 0	110.00	390.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	15.97 kN/m	59.5 4	42.6 6		
PAR5 (Contenções)	25.0 0	110.00	390.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	15.97 kN/m	59.5 4	42.6 6		
PAR6 (Contenções)	25.0 0	110.00	390.0 0	17.50 kN/m	0.00 0.00	0.00 0.00	225.9 7 kN/m	59.5 4	42.6 6		

MEMÓRIA DE CÁLCULO DAS PAREDES DE CONTENÇÃO

Pavimento 1	fck = 3.00 kN/cm ²	E = 2684 kN/cm ²	Peso Espec = 2500.00 kgf/m ³
Lance 2		cobr = 3.00 cm	

Reservatório Contensões

ARMADURAS NA LAJE								
Esforços					Resultados			
Trecho	Ndx Rdx (tf)	Ndy Rdy (tf)	Mdx (kN.m/m)	Mdy (kN.m/m)	Armadura inferior		Armadura superior	
					Asx	Asy	Asx	Asy
PAR1-A	18.53 -2.06	61.40 0.00	46.39	29.31	As = 5.42 cm ² /m ø10.0 c/14 (5.61 cm ² /m)	As = 3.41 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 3.35 cm ² /m ø10.0 c/20 (3.93 cm ² /m)
PAR1-B	16.56 -0.89	78.12 -1.68	15.42	35.20	As = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	As = 4.39 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 2.52 cm ² /m ø10.0 c/20 (3.93 cm ² /m)
PAR1-C	3.83 -9.55	92.01 -0.07	20.09	35.20	As = 3.69 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	As = 4.12 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 2.64 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)
PAR1-D	2.29 -8.34	80.67 0.00	14.94	24.79	As = 2.94 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	As = 2.87 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)
PAR1-E	5.68 -2.50	68.99 -2.25	14.58	24.79	As = 1.88 cm ² /m ø10.0 c/25 (3.14 cm ² /m)	As = 3.75 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 1.97 cm ² /m ø10.0 c/25 (3.14 cm ² /m)	A's = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)
PAR1-F	0.94 -5.10	69.50 0.00	14.85	20.95	As = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	As = 2.51 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)
PAR1-G	7.17 -6.09	64.44 -0.40	20.16	38.05	As = 3.15 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	As = 4.52 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)
PAR1-H	16.71 0.00	69.90 -3.12	15.34	38.05	As = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	As = 4.96 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 2.76 cm ² /m ø10.0 c/20 (3.93 cm ² /m)
PAR1-I	18.01 0.00	59.61 0.00	46.51	28.25	As = 5.12 cm ² /m	As = 3.28 cm ² /m	A's = 2.51 cm ² /m	A's = 3.23 cm ² /m

					ø10.0 c/15 (5.24 cm ² /m)	ø16.0 c/20 (10.05 cm ² /m)	ø10.0 c/20 (3.93 cm ² /m)	ø10.0 c/20 (3.93 cm ² /m)
PAR2-A	18.18 0.00	30.91 0.00	46.27	29.24	As = 5.09 cm ² /m ø10.0 c/15 (5.24 cm ² /m)	As = 3.40 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 3.35 cm ² /m ø10.0 c/20 (3.93 cm ² /m)
PAR2-B	16.47 0.00	36.37 -1.37	15.20	35.29	As = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	As = 4.35 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)
PAR2-C	3.77 -5.64	54.11 -0.07	19.69	35.29	As = 3.02 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	As = 4.13 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)
PAR2-D	0.00 -5.66	50.94 0.00	14.56	24.77	As = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	As = 2.87 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)
PAR2-E	3.57 -2.87	40.09 -1.94	14.39	24.77	As = 1.88 cm ² /m ø10.0 c/25 (3.14 cm ² /m)	As = 3.75 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 2.01 cm ² /m ø10.0 c/25 (3.14 cm ² /m)	A's = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)
PAR2-F	0.00 -5.16	57.81 0.00	14.70	20.97	As = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	As = 2.51 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)
PAR2-G	3.97 -5.52	50.99 -0.05	19.60	38.12	As = 2.99 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	As = 4.47 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)
PAR2-H	16.74 0.00	39.25 -1.54	15.13	38.12	As = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	As = 4.71 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)
PAR2-I	18.03 0.00	31.19 0.00	46.48	28.38	As = 5.12 cm ² /m ø10.0 c/15 (5.24 cm ² /m)	As = 3.30 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 3.25 cm ² /m ø10.0 c/20 (3.93 cm ² /m)
PAR3	20.27 -3.63	50.85 -8.72	33.02	45.21	As = 4.17 cm ² /m ø10.0 c/18 (4.36 cm ² /m)	As = 6.75 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 3.22 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 6.64 cm ² /m ø10.0 c/11 (7.14 cm ² /m)
PAR4	20.57 -3.91	25.36 -8.74	32.84	45.15	As = 4.19 cm ² /m ø10.0 c/18 (4.36 cm ² /m)	As = 6.74 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 3.26 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 6.64 cm ² /m ø10.0 c/11 (7.14 cm ² /m)
PAR5	20.52 -3.87	25.56 -8.75	32.92	45.23	As = 4.20 cm ² /m ø10.0 c/18 (4.36 cm ² /m)	As = 6.75 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 3.26 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 6.65 cm ² /m ø10.0 c/11 (7.14 cm ² /m)
PAR6	20.35 -3.60	50.85 -8.78	32.96	45.18	As = 4.16 cm ² /m ø10.0 c/18 (4.36 cm ² /m)	As = 6.76 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 3.22 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 6.65 cm ² /m ø10.0 c/11 (7.14 cm ² /m)

ARMADURAS NA CONTINUIDADE					
Viga Trecho	Laje 1 Laje 2	Momentos fletores (kN.m/m)		Armaduras	
		Md negativo	Md positivo	As (superior)	A's (inferior)

Barra	PAR1-A PAR6			As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR6 PAR1-A	-59.32		As = 6.90 cm ² /m ø10.0 c/11 (7.14 cm ² /m)	
Barra	PAR1-B PAR1-A			As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR1-A PAR1-B	-20.05		As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR1-C PAR1-B	-9.56		As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR1-B PAR1-C			As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR1-D PAR1-C			As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR1-C PAR1-D	-33.48		As = 5.15 cm ² /m ø10.0 c/15 (5.24 cm ² /m)	
Barra	PAR1-E PAR1-D	-2.17		As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR1-D PAR1-E	-2.66		As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR1-F PAR1-E	-2.25		As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR1-E PAR1-F	-1.66		As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR1-G PAR1-F			As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR1-F PAR1-G	-33.41		As = 4.60 cm ² /m ø10.0 c/17 (4.62 cm ² /m)	
Barra	PAR1-H PAR1-G	-9.20		As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR1-G PAR1-H			As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR1-I PAR1-H			As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR1-H PAR1-I	-19.20		As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR3 PAR1-I			As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR1-I PAR3	-59.48		As = 6.60 cm ² /m ø10.0 c/11	

				(7.14 cm ² /m)	
Barra	PAR4 PAR2-A	-59.25		As = 6.58 cm ² /m ø10.0 c/11 (7.14 cm ² /m)	
Barra	PAR2-A PAR4			As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR2-A PAR2-B	-20.00		As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR2-B PAR2-A			As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR2-B PAR2-C			As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR2-C PAR2-B	-9.44		As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR2-C PAR2-D	-32.72		As = 4.46 cm ² /m ø10.0 c/17 (4.62 cm ² /m)	
Barra	PAR2-D PAR2-C			As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR2-D PAR2-E	-2.67		As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR2-E PAR2-D	-2.16		As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR2-E PAR2-F	-1.65		As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR2-F PAR2-E	-2.20		As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR2-F PAR2-G	-33.01		As = 4.47 cm ² /m ø10.0 c/17 (4.62 cm ² /m)	
Barra	PAR2-G PAR2-F			As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR2-G PAR2-H			As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR2-H PAR2-G	-9.11		As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR2-H PAR2-I	-19.18		As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR2-I PAR2-H			As = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	
Barra	PAR2-I PAR5	-59.45		As = 6.60 cm ² /m ø10.0 c/11 (7.14 cm ² /m)	
Barra	PAR5			As = 3.75 cm ² /m	

	PAR2-I			$\phi 10.0 \text{ c}/20$ (3.93 cm ² /m)	
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MEMÓRIA DE CÁLCULO DAS PAREDES DE CONTENÇÃO

Pavimento 1	$f_{ck} = 3.00 \text{ kN/cm}^2$	$E = 2684 \text{ kN/cm}^2$	Peso Espec = 2500.00 kgf/m^3
Lance 2		cobr = 3.00 cm	

Reservatório Contensões

ARMADURAS POSITIVAS (LAJE)										
Trecho	Direção	Momento positivo			Momento negativo			Armadura inferior	Armadura superior	Cisalhamento
		Flexão	Verificação axial (compressão)	Verificação axial (tração)	Flexão	Verificação axial (compressão)	Verificação axial (tração)			
PAR1-A	X	Md = 46.39 kN.m/m As = 5.11 cm ² /m A's = 0.00 cm ² /m	Fd = 18.53 tf Situação: GE As = 2.76 cm ² /m A's = 0.00 cm ² /m	Fd = 2.48 tf Situação: GE As = 5.42 cm ² /m A's = 0.00 cm ² /m	Md = 21.02 kN.m/m As = 2.28 cm ² /m A's = 0.00 cm ² /m		Fd = 2.48 tf Situação: PE As = 0.28 cm ² /m A's = 0.28 cm ² /m	As = 5.42 cm ² /m ø10.0 c/14 (5.61 cm ² /m) M = 28.15 kN.m/m F = 0.00 tf fiss = 0.11 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 0.00 kN.m/m F = 0.00 tf fiss = 0.00 mm	vsd = 12.09 tf/m vrd1 = 13.73 tf/m Modelo I vrd2 = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
	Y	Md = 29.31 kN.m/m As = 3.41 cm ² /m A's = 0.00 cm ² /m			Md = 29.31 kN.m/m As = 3.35 cm ² /m A's = 0.00 cm ² /m			As = 3.41 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 8.91 kN.m/m F = 0.00 tf fiss = 0.01 mm	A's = 3.35 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 6.53 kN.m/m F = 0.00 tf fiss = 0.01 mm	vsd = 2.72 tf/m vrd1 = 13.22 tf/m vrd2 = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
PAR1-B	X	Md = 21.02 kN.m/m		Fd = 1.07 tf Situação: GE As = 1.36 cm ² /m	Md = 21.02 kN.m/m		Fd = 1.07 tf Situação: GE As = 1.81 cm ² /m	As = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	vsd = 7.85 tf/m vrd1 = 13.73 tf/m Modelo I vrd2 = 106.92 tf/m

		As = 2.28 cm ² /m A's = 0.00 cm ² /m		A's = 0.00 cm ² /m	As = 2.28 cm ² /m A's = 0.00 cm ² /m		A's = 0.00 cm ² /m	M = 4.10 kN.m/m F = 0.00 tf fiss = 0.00 mm	M = 10.92 kN.m/m F = 0.00 tf fiss = 0.03 mm	vsw = 0.00 tf/m asw = 0.00 cm ² /m
	Y	Md = 35.20 kN.m/m As = 4.11 cm ² /m A's = 0.00 cm ² /m		Fd = 2.02 tf Situação: GE As = 4.39 cm ² /m A's = 0.00 cm ² /m	Md = 21.02 kN.m/m As = 2.39 cm ² /m A's = 0.00 cm ² /m		Fd = 2.02 tf Situação: GE As = 2.52 cm ² /m A's = 0.00 cm ² /m	As = 4.39 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 25.12 kN.m/m F = 1.05 tf fiss = 0.05 mm	A's = 2.52 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 14.06 kN.m/m F = 1.05 tf fiss = 0.07 mm	vsd = 7.34 tf/m vrd1 = 13.22 tf/m vrd2 = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
PAR1 -C	X	Md = 21.02 kN.m/m As = 2.28 cm ² /m A's = 0.00 cm ² /m	Fd = 3.83 tf Situação: GE As = 1.67 cm ² /m A's = 0.00 cm ² /m	Fd = 11.46 tf Situação: GE As = 3.69 cm ² /m A's = 0.00 cm ² /m	Md = 21.02 kN.m/m As = 2.28 cm ² /m A's = 0.00 cm ² /m	Fd = 3.83 tf Situação: GE As = 0.45 cm ² /m A's = 0.00 cm ² /m	Fd = 11.46 tf Situação: GE As = 2.64 cm ² /m A's = 0.00 cm ² /m	As = 3.69 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 14.15 kN.m/m F = 5.51 tf fiss = 0.11 mm	A's = 2.64 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 6.30 kN.m/m F = 5.51 tf fiss = 0.04 mm	vsd = 8.92 tf/m vrd1 = 13.73 tf/m Modelo I vrd2 = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
	Y	Md = 35.20 kN.m/m As = 4.11 cm ² /m A's = 0.00 cm ² /m		Fd = 0.08 tf Situação: GE As = 4.12 cm ² /m A's = 0.00 cm ² /m	Md = 21.02 kN.m/m As = 2.39 cm ² /m A's = 0.00 cm ² /m		Fd = 0.08 tf Situação: GE As = 2.20 cm ² /m A's = 0.00 cm ² /m	As = 4.12 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 25.12 kN.m/m F = 0.04 tf fiss = 0.05 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 13.72 kN.m/m F = 0.04 tf fiss = 0.06 mm	vsd = 3.56 tf/m vrd1 = 13.22 tf/m vrd2 = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
PAR1 -D	X	Md = 21.02 kN.m/m As = 2.28 cm ² /m	Fd = 2.29 tf Situação: GE As = 1.31 cm ² /m A's = 0.00 cm ² /m	Fd = 10.00 tf Situação: GE As = 2.94 cm ² /m A's = 0.00 cm ² /m	Md = 21.02 kN.m/m As = 2.28 cm ² /m		Fd = 10.00 tf Situação: PE As = 1.15 cm ² /m A's = 1.15 cm ² /m	As = 2.94 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 10.52 kN.m/m	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 0.00 kN.m/m	vsd = 8.11 tf/m vrd1 = 13.73 tf/m Modelo I vrd2 = 106.92 tf/m vsw = 0.00 tf/m

		A's = 0.00 cm ² /m			A's = 0.00 cm ² /m			F = 4.95 tf fiss = 0.07 mm	F = 4.95 tf fiss = 0.01 mm	asw = 0.00 cm ² /m
	Y	Md = 24.79 kN.m/ m As = 2.87 cm ² /m A's = 0.00 cm ² /m			Md = 21.02 kN.m/ m As = 2.39 cm ² /m A's = 0.00 cm ² /m			As = 2.87 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 17.69 kN.m/m F = 0.00 tf fiss = 0.03 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 13.06 kN.m/m F = 0.00 tf fiss = 0.05 mm	vsd = 1.97 tf/m vrd1 = 13.22 tf/m vrd2 = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
PAR1 -E	X	Md = 15.69 kN.m/ m As = 1.69 cm ² /m A's = 0.00 cm ² /m		Fd = 3.00 tf Situação: PE As = 0.34 cm ² /m A's = 0.34 cm ² /m	Md = 15.69 kN.m/ m As = 1.69 cm ² /m A's = 0.00 cm ² /m	Fd = 5.68 tf Situação: GE As = 0.82 cm ² /m A's = 0.00 cm ² /m	Fd = 3.00 tf Situação: GE As = 1.97 cm ² /m A's = 0.00 cm ² /m	As = 1.88 cm ² /m ø10.0 c/25 (3.14 cm ² /m) M = 0.00 kN.m/m F = 1.76 tf fiss = 0.00 mm	A's = 1.97 cm ² /m ø10.0 c/25 (3.14 cm ² /m) M = 10.34 kN.m/m F = 1.76 tf fiss = 0.06 mm	vsd = 4.27 tf/m vrd1 = 13.57 tf/m Modelo I vrd2 = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
	Y	Md = 31.38 kN.m/ m As = 3.65 cm ² /m A's = 0.00 cm ² /m		Fd = 2.70 tf Situação: GE As = 3.25 cm ² /m A's = 0.00 cm ² /m	Md = 31.38 kN.m/ m As = 3.60 cm ² /m A's = 0.00 cm ² /m		Fd = 2.70 tf Situação: GE As = 2.88 cm ² /m A's = 0.00 cm ² /m	As = 3.75 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 17.69 kN.m/m F = 1.52 tf fiss = 0.03 mm	A's = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 15.68 kN.m/m F = 1.52 tf fiss = 0.09 mm	vsd = 7.78 tf/m vrd1 = 13.22 tf/m vrd2 = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
PAR1 -F	X	Md = 21.02 kN.m/ m As = 2.28 cm ² /m A's = 0.00 cm ² /m	Fd = 0.94 tf Situação: GE As = 1.48 cm ² /m A's = 0.00 cm ² /m	Fd = 6.12 tf Situação: GE As = 2.41 cm ² /m A's = 0.00 cm ² /m	Md = 21.02 kN.m/ m As = 2.28 cm ² /m A's = 0.00 cm ² /m		Fd = 6.12 tf Situação: PE As = 0.70 cm ² /m A's = 0.70 cm ² /m	As = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 10.54 kN.m/m F = 3.45 tf	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 0.00 kN.m/m F = 3.45 tf fiss = 0.00 mm	vsd = 8.14 tf/m vrd1 = 13.73 tf/m Modelo I vrd2 = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m

								fiss = 0.05 mm		
	Y	Md = 21.02 kN.m/ m As = 2.43 cm ² /m A's = 0.00 cm ² /m			Md = 21.02 kN.m/ m As = 2.39 cm ² /m A's = 0.00 cm ² /m			As = 2.51 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 14.94 kN.m/m F = 0.00 tf fiss = 0.02 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 13.06 kN.m/m F = 0.00 tf fiss = 0.05 mm	vsd = 1.72 tf/m vrd1 = 13.22 tf/m vrd2 = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
PAR1 -G	X	Md = 21.02 kN.m/ m As = 2.28 cm ² /m A's = 0.00 cm ² /m	Fd = 7.17 tf Situação: GE As = 1.24 cm ² /m A's = 0.00 cm ² /m	Fd = 7.31 tf Situação: GE As = 3.15 cm ² /m A's = 0.00 cm ² /m	Md = 21.02 kN.m/ m As = 2.28 cm ² /m A's = 0.00 cm ² /m		Fd = 7.31 tf Situação: GE As = 1.89 cm ² /m A's = 0.00 cm ² /m	As = 3.15 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 14.16 kN.m/m F = 3.99 tf fiss = 0.09 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 6.09 kN.m/m F = 3.99 tf fiss = 0.03 mm	vsd = 9.21 tf/m vrd1 = 13.73 tf/m Modelo I vrd2 = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
	Y	Md = 38.05 kN.m/ m As = 4.45 cm ² /m A's = 0.00 cm ² /m		Fd = 0.48 tf Situação: GE As = 4.52 cm ² /m A's = 0.00 cm ² /m	Md = 21.02 kN.m/ m As = 2.39 cm ² /m A's = 0.00 cm ² /m		Fd = 0.48 tf Situação: GE As = 2.25 cm ² /m A's = 0.00 cm ² /m	As = 4.52 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 27.16 kN.m/m F = 0.27 tf fiss = 0.06 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 13.67 kN.m/m F = 0.27 tf fiss = 0.06 mm	vsd = 3.49 tf/m vrd1 = 13.22 tf/m vrd2 = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
PAR1 -H	X	Md = 21.02 kN.m/ m As = 2.28 cm ² /m A's = 0.00 cm ² /m			Md = 21.02 kN.m/ m As = 2.28 cm ² /m A's = 0.00 cm ² /m			As = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 3.84 kN.m/m F = 0.00 tf fiss = 0.00 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 10.87 kN.m/m F = 0.00 tf fiss = 0.03 mm	vsd = 7.74 tf/m vrd1 = 13.73 tf/m Modelo I vrd2 = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m

	Y	<p>Md = 38.05 kN.m/m</p> <p>As = 4.45 cm²/m</p> <p>A's = 0.00 cm²/m</p>		<p>Fd = 3.74 tf</p> <p>Situação: GE</p> <p>As = 4.96 cm²/m</p> <p>A's = 0.00 cm²/m</p>	<p>Md = 21.02 kN.m/m</p> <p>As = 2.39 cm²/m</p> <p>A's = 0.00 cm²/m</p>		<p>Fd = 3.74 tf</p> <p>Situação: GE</p> <p>As = 2.76 cm²/m</p> <p>A's = 0.00 cm²/m</p>	<p>As = 4.96 cm²/m</p> <p>ø16.0 c/20 (10.05 cm²/m)</p> <p>M = 27.16 kN.m/m</p> <p>F = 1.90 tf</p> <p>físs = 0.07 mm</p>	<p>A's = 2.76 cm²/m</p> <p>ø10.0 c/20 (3.93 cm²/m)</p> <p>M = 14.02 kN.m/m</p> <p>F = 1.90 tf</p> <p>físs = 0.08 mm</p>	<p>vsd = 7.28 tf/m</p> <p>vrđ1 = 13.22 tf/m</p> <p>vrđ2 = 100.30 tf/m</p> <p>vsw = 0.00 tf/m</p> <p>asw = 0.00 cm²/m</p>
PAR1-I	X	<p>Md = 46.51 kN.m/m</p> <p>As = 5.12 cm²/m</p> <p>A's = 0.00 cm²/m</p>	<p>Fd = 18.01 tf</p> <p>Situação: GE</p> <p>As = 2.84 cm²/m</p> <p>A's = 0.00 cm²/m</p>		<p>Md = 21.02 kN.m/m</p> <p>As = 2.28 cm²/m</p> <p>A's = 0.00 cm²/m</p>			<p>As = 5.12 cm²/m</p> <p>ø10.0 c/15 (5.24 cm²/m)</p> <p>M = 28.35 kN.m/m</p> <p>F = 0.00 tf</p> <p>físs = 0.13 mm</p>	<p>A's = 2.51 cm²/m</p> <p>ø10.0 c/20 (3.93 cm²/m)</p> <p>M = 0.00 kN.m/m</p> <p>F = 0.00 tf</p> <p>físs = 0.00 mm</p>	<p>vsd = 12.02 tf/m</p> <p>vrđ1 = 13.73 tf/m</p> <p>Modelo I</p> <p>vrđ2 = 106.92 tf/m</p> <p>vsw = 0.00 tf/m</p> <p>asw = 0.00 cm²/m</p>
	Y	<p>Md = 28.25 kN.m/m</p> <p>As = 3.28 cm²/m</p> <p>A's = 0.00 cm²/m</p>			<p>Md = 28.25 kN.m/m</p> <p>As = 3.23 cm²/m</p> <p>A's = 0.00 cm²/m</p>			<p>As = 3.28 cm²/m</p> <p>ø16.0 c/20 (10.05 cm²/m)</p> <p>M = 6.89 kN.m/m</p> <p>F = 0.00 tf</p> <p>físs = 0.00 mm</p>	<p>A's = 3.23 cm²/m</p> <p>ø10.0 c/20 (3.93 cm²/m)</p> <p>M = 6.72 kN.m/m</p> <p>F = 0.00 tf</p> <p>físs = 0.01 mm</p>	<p>vsd = 2.75 tf/m</p> <p>vrđ1 = 13.22 tf/m</p> <p>vrđ2 = 100.30 tf/m</p> <p>vsw = 0.00 tf/m</p> <p>asw = 0.00 cm²/m</p>
PAR2-A	X	<p>Md = 46.27 kN.m/m</p> <p>As = 5.09 cm²/m</p> <p>A's = 0.00 cm²/m</p>	<p>Fd = 18.18 tf</p> <p>Situação: GE</p> <p>As = 2.79 cm²/m</p> <p>A's = 0.00 cm²/m</p>		<p>Md = 21.02 kN.m/m</p> <p>As = 2.28 cm²/m</p> <p>A's = 0.00 cm²/m</p>			<p>As = 5.09 cm²/m</p> <p>ø10.0 c/15 (5.24 cm²/m)</p> <p>M = 28.13 kN.m/m</p> <p>F = 0.00 tf</p> <p>físs = 0.12 mm</p>	<p>A's = 2.51 cm²/m</p> <p>ø10.0 c/20 (3.93 cm²/m)</p> <p>M = 0.00 kN.m/m</p> <p>F = 0.00 tf</p> <p>físs = 0.00 mm</p>	<p>vsd = 12.09 tf/m</p> <p>vrđ1 = 13.73 tf/m</p> <p>Modelo I</p> <p>vrđ2 = 106.92 tf/m</p> <p>vsw = 0.00 tf/m</p> <p>asw = 0.00 cm²/m</p>
	Y	<p>Md = 29.24 kN.m/m</p>			<p>Md = 29.24 kN.m/m</p>			<p>As = 3.40 cm²/m</p>	<p>A's = 3.35 cm²/m</p>	<p>vsd = 2.72 tf/m</p> <p>vrđ1 = 13.22 tf/m</p>

		As = 3.40 cm ² /m A's = 0.00 cm ² /m			As = 3.35 cm ² /m A's = 0.00 cm ² /m			ø16.0 c/20 (10.05 cm ² /m) M = 8.85 kN.m/m F = 0.00 tf fiss = 0.01 mm	ø10.0 c/20 (3.93 cm ² /m) M = 6.51 kN.m/m F = 0.00 tf fiss = 0.01 mm	vr2 = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
PAR2 -B	X	Md = 21.02 kN.m/ m As = 2.28 cm ² /m A's = 0.00 cm ² /m			Md = 21.02 kN.m/ m As = 2.28 cm ² /m A's = 0.00 cm ² /m			As = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 4.08 kN.m/m F = 0.00 tf fiss = 0.00 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 10.83 kN.m/m F = 0.00 tf fiss = 0.03 mm	vsd = 7.85 tf/m vr1 = 13.73 tf/m Modelo I vr2 = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
	Y	Md = 35.29 kN.m/ m As = 4.12 cm ² /m A's = 0.00 cm ² /m		Fd = 1.65 tf Situação: GE As = 4.35 cm ² /m A's = 0.00 cm ² /m	Md = 21.02 kN.m/ m As = 2.39 cm ² /m A's = 0.00 cm ² /m		Fd = 1.65 tf Situação: GE As = 2.47 cm ² /m A's = 0.00 cm ² /m	As = 4.35 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 25.17 kN.m/m F = 0.98 tf fiss = 0.05 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 14.06 kN.m/m F = 0.98 tf fiss = 0.07 mm	vsd = 7.30 tf/m vr1 = 13.22 tf/m vr2 = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
PAR2 -C	X	Md = 21.02 kN.m/ m As = 2.28 cm ² /m A's = 0.00 cm ² /m	Fd = 3.77 tf Situação: GE As = 1.64 cm ² /m A's = 0.00 cm ² /m	Fd = 6.77 tf Situação: GE As = 3.02 cm ² /m A's = 0.00 cm ² /m	Md = 21.02 kN.m/ m As = 2.28 cm ² /m A's = 0.00 cm ² /m	Fd = 3.77 tf Situação: GE As = 0.44 cm ² /m A's = 0.00 cm ² /m	Fd = 6.77 tf Situação: GE As = 1.84 cm ² /m A's = 0.00 cm ² /m	As = 3.02 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 14.01 kN.m/m F = 3.87 tf fiss = 0.09 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 6.25 kN.m/m F = 3.87 tf fiss = 0.03 mm	vsd = 8.95 tf/m vr1 = 13.73 tf/m Modelo I vr2 = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
	Y	Md = 35.29 kN.m/ m		Fd = 0.09 tf Situação: GE As = 4.13 cm ² /m	Md = 21.02 kN.m/ m		Fd = 0.09 tf Situação: GE As = 2.20 cm ² /m	As = 4.13 cm ² /m ø16.0 c/20 (10.05 cm ² /m)	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m)	vsd = 3.55 tf/m vr1 = 13.22 tf/m vr2 = 100.30 tf/m

		As = 4.12 cm ² /m A's = 0.00 cm ² /m		A's = 0.00 cm ² /m	As = 2.39 cm ² /m A's = 0.00 cm ² /m		A's = 0.00 cm ² /m	M = 25.17 kN.m/m F = 0.04 tf fiss = 0.05 mm	M = 13.72 kN.m/m F = 0.04 tf fiss = 0.06 mm	vsw = 0.00 tf/m asw = 0.00 cm ² /m
PAR2-D	X	Md = 21.02 kN.m/m As = 2.28 cm ² /m A's = 0.00 cm ² /m		Fd = 6.80 tf Situação: GE As = 2.47 cm ² /m A's = 0.00 cm ² /m	Md = 21.02 kN.m/m As = 2.28 cm ² /m A's = 0.00 cm ² /m		Fd = 6.80 tf Situação: PE As = 0.78 cm ² /m A's = 0.78 cm ² /m	As = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 10.37 kN.m/m F = 3.83 tf fiss = 0.06 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 0.00 kN.m/m F = 3.83 tf fiss = 0.00 mm	vsd = 7.98 tf/m vrd1 = 13.73 tf/m Modelo I vrd2 = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
	Y	Md = 24.77 kN.m/m As = 2.87 cm ² /m A's = 0.00 cm ² /m			Md = 21.02 kN.m/m As = 2.39 cm ² /m A's = 0.00 cm ² /m			As = 2.87 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 17.68 kN.m/m F = 0.00 tf fiss = 0.03 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 13.06 kN.m/m F = 0.00 tf fiss = 0.05 mm	vsd = 1.97 tf/m vrd1 = 13.22 tf/m vrd2 = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
PAR2-E	X	Md = 15.69 kN.m/m As = 1.69 cm ² /m A's = 0.00 cm ² /m		Fd = 3.44 tf Situação: PE As = 0.40 cm ² /m A's = 0.40 cm ² /m	Md = 15.69 kN.m/m As = 1.69 cm ² /m A's = 0.00 cm ² /m	Fd = 3.57 tf Situação: GE As = 1.08 cm ² /m A's = 0.00 cm ² /m	Fd = 3.44 tf Situação: GE As = 2.01 cm ² /m A's = 0.00 cm ² /m	As = 1.88 cm ² /m ø10.0 c/25 (3.14 cm ² /m) M = 0.00 kN.m/m F = 1.98 tf fiss = 0.00 mm	A's = 2.01 cm ² /m ø10.0 c/25 (3.14 cm ² /m) M = 10.26 kN.m/m F = 1.98 tf fiss = 0.06 mm	vsd = 4.18 tf/m vrd1 = 13.57 tf/m Modelo I vrd2 = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
	Y	Md = 31.38 kN.m/m As = 3.65 cm ² /m		Fd = 2.33 tf Situação: GE As = 3.19 cm ² /m A's = 0.00 cm ² /m	Md = 31.38 kN.m/m As = 3.60 cm ² /m		Fd = 2.33 tf Situação: GE As = 2.83 cm ² /m A's = 0.00 cm ² /m	As = 3.75 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 17.68 kN.m/m	A's = 3.75 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 15.69 kN.m/m	vsd = 7.78 tf/m vrd1 = 13.22 tf/m vrd2 = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m

		A's = 0.00 cm ² /m			A's = 0.00 cm ² /m			F = 1.38 tf fiss = 0.03 mm	F = 1.38 tf fiss = 0.09 mm	
PAR2 -F	X	Md = 21.02 kN.m/ m As = 2.28 cm ² /m A's = 0.00 cm ² /m		Fd = 6.19 tf Situação: GE As = 2.41 cm ² /m A's = 0.00 cm ² /m	Md = 21.02 kN.m/ m As = 2.28 cm ² /m A's = 0.00 cm ² /m		Fd = 6.19 tf Situação: PE As = 0.71 cm ² /m A's = 0.71 cm ² /m	As = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 10.47 kN.m/m F = 3.48 tf fiss = 0.05 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 0.00 kN.m/m F = 3.48 tf fiss = 0.00 mm	vsd = 8.04 tf/m vrd1 = 13.73 tf/m Modelo I vrd2 = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
	Y	Md = 21.02 kN.m/ m As = 2.43 cm ² /m A's = 0.00 cm ² /m			Md = 21.02 kN.m/ m As = 2.39 cm ² /m A's = 0.00 cm ² /m			As = 2.51 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 14.97 kN.m/m F = 0.00 tf fiss = 0.02 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 13.07 kN.m/m F = 0.00 tf fiss = 0.05 mm	vsd = 1.72 tf/m vrd1 = 13.22 tf/m vrd2 = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
PAR2 -G	X	Md = 21.02 kN.m/ m As = 2.28 cm ² /m A's = 0.00 cm ² /m	Fd = 3.97 tf Situação: GE As = 1.60 cm ² /m A's = 0.00 cm ² /m	Fd = 6.62 tf Situação: GE As = 2.99 cm ² /m A's = 0.00 cm ² /m	Md = 21.02 kN.m/ m As = 2.28 cm ² /m A's = 0.00 cm ² /m	Fd = 3.97 tf Situação: GE As = 0.39 cm ² /m A's = 0.00 cm ² /m	Fd = 6.62 tf Situação: GE As = 1.80 cm ² /m A's = 0.00 cm ² /m	As = 2.99 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 13.94 kN.m/m F = 3.76 tf fiss = 0.09 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 6.07 kN.m/m F = 3.76 tf fiss = 0.03 mm	vsd = 9.18 tf/m vrd1 = 13.73 tf/m Modelo I vrd2 = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
	Y	Md = 38.12 kN.m/ m As = 4.46 cm ² /m A's = 0.00 cm ² /m		Fd = 0.06 tf Situação: GE As = 4.47 cm ² /m A's = 0.00 cm ² /m	Md = 21.02 kN.m/ m As = 2.39 cm ² /m A's = 0.00 cm ² /m		Fd = 0.06 tf Situação: GE As = 2.19 cm ² /m A's = 0.00 cm ² /m	As = 4.47 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 27.20 kN.m/m F = 0.03 tf	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 13.68 kN.m/m F = 0.03 tf	vsd = 3.49 tf/m vrd1 = 13.22 tf/m vrd2 = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m

								fiss = 0.06 mm	fiss = 0.06 mm	
PAR2 -H	X	Md = 21.02 kN.m/ m As = 2.28 cm ² /m A's = 0.00 cm ² /m			Md = 21.02 kN.m/ m As = 2.28 cm ² /m A's = 0.00 cm ² /m			As = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 3.84 kN.m/m F = 0.00 tf fiss = 0.00 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 10.78 kN.m/m F = 0.00 tf fiss = 0.03 mm	vsd = 7.74 tf/m vrd1 = 13.73 tf/m Modelo I vrd2 = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
	Y	Md = 38.12 kN.m/ m As = 4.46 cm ² /m A's = 0.00 cm ² /m		Fd = 1.85 tf Situação: GE As = 4.71 cm ² /m A's = 0.00 cm ² /m	Md = 21.02 kN.m/ m As = 2.39 cm ² /m A's = 0.00 cm ² /m		Fd = 1.85 tf Situação: GE As = 2.49 cm ² /m A's = 0.00 cm ² /m	As = 4.71 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 27.20 kN.m/m F = 1.09 tf fiss = 0.06 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 14.03 kN.m/m F = 1.09 tf fiss = 0.07 mm	vsd = 7.26 tf/m vrd1 = 13.22 tf/m vrd2 = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
PAR2 -I	X	Md = 46.48 kN.m/ m As = 5.12 cm ² /m A's = 0.00 cm ² /m	Fd = 18.03 tf Situação: GE As = 2.83 cm ² /m A's = 0.00 cm ² /m		Md = 21.02 kN.m/ m As = 2.28 cm ² /m A's = 0.00 cm ² /m			As = 5.12 cm ² /m ø10.0 c/15 (5.24 cm ² /m) M = 28.35 kN.m/m F = 0.00 tf fiss = 0.13 mm	A's = 2.51 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 0.00 kN.m/m F = 0.00 tf fiss = 0.00 mm	vsd = 12.02 tf/m vrd1 = 13.73 tf/m Modelo I vrd2 = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
	Y	Md = 28.38 kN.m/ m As = 3.30 cm ² /m A's = 0.00 cm ² /m			Md = 28.38 kN.m/ m As = 3.25 cm ² /m A's = 0.00 cm ² /m			As = 3.30 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 6.94 kN.m/m F = 0.00 tf fiss = 0.00 mm	A's = 3.25 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 6.68 kN.m/m F = 0.00 tf fiss = 0.01 mm	vsd = 2.76 tf/m vrd1 = 13.22 tf/m vrd2 = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m

PAR3	X	Md = 33.02 kN.m/m As = 3.60 cm ² /m A's = 0.00 cm ² /m	Fd = 20.27 tf Situação: GE As = 1.00 cm ² /m A's = 0.00 cm ² /m	Fd = 4.35 tf Situação: GE As = 4.17 cm ² /m A's = 0.00 cm ² /m	Md = 24.41 kN.m/m As = 2.65 cm ² /m A's = 0.00 cm ² /m	Fd = 20.27 tf Situação: GE As = 0.02 cm ² /m A's = 0.00 cm ² /m	Fd = 4.35 tf Situação: GE As = 3.22 cm ² /m A's = 0.00 cm ² /m	As = 4.17 cm ² /m ø10.0 c/18 (4.36 cm ² /m) M = 20.32 kN.m/m F = 2.51 tf fiss = 0.12 mm	A's = 3.22 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 15.23 kN.m/m F = 2.51 tf fiss = 0.09 mm	vsd = 10.65 tf/m vrd1 = 13.73 tf/m Modelo I vrd2 = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
	Y	Md = 45.21 kN.m/m As = 5.31 cm ² /m A's = 0.00 cm ² /m		Fd = 10.46 tf Situação: GE As = 6.75 cm ² /m A's = 0.00 cm ² /m	Md = 45.21 kN.m/m As = 5.23 cm ² /m A's = 0.00 cm ² /m		Fd = 10.46 tf Situação: GE As = 6.64 cm ² /m A's = 0.00 cm ² /m	As = 6.75 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 5.68 kN.m/m F = 6.16 tf fiss = 0.01 mm	A's = 6.64 cm ² /m ø10.0 c/11 (7.14 cm ² /m) M = 7.89 kN.m/m F = 6.16 tf fiss = 0.02 mm	vsd = 6.48 tf/m vrd1 = 13.87 tf/m vrd2 = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
PAR4	X	Md = 32.84 kN.m/m As = 3.58 cm ² /m A's = 0.00 cm ² /m	Fd = 20.57 tf Situação: GE As = 0.94 cm ² /m A's = 0.00 cm ² /m	Fd = 4.69 tf Situação: GE As = 4.19 cm ² /m A's = 0.00 cm ² /m	Md = 24.39 kN.m/m As = 2.65 cm ² /m A's = 0.00 cm ² /m		Fd = 4.69 tf Situação: GE As = 3.26 cm ² /m A's = 0.00 cm ² /m	As = 4.19 cm ² /m ø10.0 c/18 (4.36 cm ² /m) M = 20.41 kN.m/m F = 2.64 tf fiss = 0.12 mm	A's = 3.26 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 15.24 kN.m/m F = 2.64 tf fiss = 0.09 mm	vsd = 10.62 tf/m vrd1 = 13.73 tf/m Modelo I vrd2 = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
	Y	Md = 45.15 kN.m/m As = 5.31 cm ² /m A's = 0.00 cm ² /m	Fd = 25.36 tf Situação: GE As = 1.88 cm ² /m A's = 0.00 cm ² /m	Fd = 10.49 tf Situação: GE As = 6.74 cm ² /m A's = 0.00 cm ² /m	Md = 45.15 kN.m/m As = 5.22 cm ² /m A's = 0.00 cm ² /m	Fd = 25.36 tf Situação: GE As = 1.85 cm ² /m A's = 0.00 cm ² /m	Fd = 10.49 tf Situação: GE As = 6.64 cm ² /m A's = 0.00 cm ² /m	As = 6.74 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 5.52 kN.m/m F = 6.16 tf fiss = 0.01 mm	A's = 6.64 cm ² /m ø10.0 c/11 (7.14 cm ² /m) M = 7.87 kN.m/m F = 6.16 tf fiss = 0.02 mm	vsd = 6.48 tf/m vrd1 = 13.87 tf/m vrd2 = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
PAR5	X	Md = 32.92 kN.m/m	Fd = 20.52 tf Situação: GE	Fd = 4.64 tf Situação: GE	Md = 24.45 kN.m/m		Fd = 4.64 tf Situação: GE	As = 4.20 cm ² /m ø10.0 c/18	A's = 3.26 cm ² /m ø10.0 c/20	vsd = 10.63 tf/m vrd1 = 13.73 tf/m Modelo I

		As = 3.59 cm ² /m A's = 0.00 cm ² /m	As = 0.96 cm ² /m A's = 0.00 cm ² /m	As = 4.20 cm ² /m A's = 0.00 cm ² /m	As = 2.65 cm ² /m A's = 0.00 cm ² /m		As = 3.26 cm ² /m A's = 0.00 cm ² /m	(4.36 cm ² /m) M = 20.39 kN.m/m F = 2.63 tf fiss = 0.12 mm	(3.93 cm ² /m) M = 15.26 kN.m/m F = 2.63 tf fiss = 0.09 mm	vr _{d2} = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
	Y	Md = 45.23 kN.m/m As = 5.32 cm ² /m A's = 0.00 cm ² /m	Fd = 25.56 tf Situação: GE As = 1.87 cm ² /m A's = 0.00 cm ² /m	Fd = 10.50 tf Situação: GE As = 6.75 cm ² /m A's = 0.00 cm ² /m	Md = 45.23 kN.m/m As = 5.23 cm ² /m A's = 0.00 cm ² /m	Fd = 25.56 tf Situação: GE As = 1.84 cm ² /m A's = 0.00 cm ² /m	Fd = 10.50 tf Situação: GE As = 6.65 cm ² /m A's = 0.00 cm ² /m	As = 6.75 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 5.67 kN.m/m F = 6.17 tf fiss = 0.01 mm	A's = 6.65 cm ² /m ø10.0 c/11 (7.14 cm ² /m) M = 7.88 kN.m/m F = 6.17 tf fiss = 0.02 mm	v _s d = 6.49 tf/m vr _{d1} = 13.87 tf/m vr _{d2} = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
PAR6	X	Md = 32.96 kN.m/m As = 3.60 cm ² /m A's = 0.00 cm ² /m	Fd = 20.35 tf Situação: GE As = 0.98 cm ² /m A's = 0.00 cm ² /m	Fd = 4.32 tf Situação: GE As = 4.16 cm ² /m A's = 0.00 cm ² /m	Md = 24.44 kN.m/m As = 2.65 cm ² /m A's = 0.00 cm ² /m	Fd = 20.35 tf Situação: GE As = 0.02 cm ² /m A's = 0.00 cm ² /m	Fd = 4.32 tf Situação: GE As = 3.22 cm ² /m A's = 0.00 cm ² /m	As = 4.16 cm ² /m ø10.0 c/18 (4.36 cm ² /m) M = 20.34 kN.m/m F = 2.49 tf fiss = 0.12 mm	A's = 3.22 cm ² /m ø10.0 c/20 (3.93 cm ² /m) M = 15.27 kN.m/m F = 2.49 tf fiss = 0.09 mm	v _s d = 10.64 tf/m vr _{d1} = 13.73 tf/m Modelo I vr _{d2} = 106.92 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m
	Y	Md = 45.18 kN.m/m As = 5.31 cm ² /m A's = 0.00 cm ² /m		Fd = 10.54 tf Situação: GE As = 6.76 cm ² /m A's = 0.00 cm ² /m	Md = 45.18 kN.m/m As = 5.23 cm ² /m A's = 0.00 cm ² /m		Fd = 10.54 tf Situação: GE As = 6.65 cm ² /m A's = 0.00 cm ² /m	As = 6.76 cm ² /m ø16.0 c/20 (10.05 cm ² /m) M = 5.54 kN.m/m F = 6.21 tf fiss = 0.01 mm	A's = 6.65 cm ² /m ø10.0 c/11 (7.14 cm ² /m) M = 7.87 kN.m/m F = 6.21 tf fiss = 0.02 mm	v _s d = 6.49 tf/m vr _{d1} = 13.87 tf/m vr _{d2} = 100.30 tf/m vsw = 0.00 tf/m asw = 0.00 cm ² /m

ARMADURAS NEGATIVAS (NA CONTINUIDADE)								
Viga	Laje 1	Momento negativo			Momento positivo			Armaduras finais
	Laje 2	Flexão	Flexo compressão	Flexo tração	Flexão	Flexo compressão	Flexo tração	
Barra	PAR1-A PAR6	Md = 31.38 kN.m/m		Fd = 2.48 tf Situação: PE As = 0.28 cm ² /m				As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm

		As = 3.42 cm ² /m A's = 0.00 cm ² /m		A's = 0.28 cm ² /m				
Barra	PAR6 PAR1-A	Md = 59.32 kN.m/m As = 6.59 cm ² /m A's = 0.00 cm ² /m	Fd = 20.35 tf Situação: GE As = 4.05 cm ² /m A's = 0.00 cm ² /m	Fd = 2.48 tf Situação: GE As = 6.90 cm ² /m A's = 0.00 cm ² /m				As = 6.90 cm ² /m (ø10.0 c/11 - 7.14 cm ² /m) fiss = 0.16 mm
Barra	PAR1-B PAR1-A	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m		Fd = 1.69 tf Situação: PE As = 0.19 cm ² /m A's = 0.19 cm ² /m				As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm
Barra	PAR1-A PAR1-B	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m		Fd = 1.69 tf Situação: GE As = 2.39 cm ² /m A's = 0.00 cm ² /m				As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.06 mm
Barra	PAR1-C PAR1-B	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m	Fd = 5.06 tf Situação: GE As = 0.36 cm ² /m A's = 0.00 cm ² /m	Fd = 1.60 tf Situação: GE As = 1.24 cm ² /m A's = 0.00 cm ² /m				As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.02 mm
Barra	PAR1-B PAR1-C	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m		Fd = 1.60 tf Situação: PE As = 0.18 cm ² /m A's = 0.18 cm ² /m				As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm
Barra	PAR1-D PAR1-C	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m		Fd = 11.46 tf Situação: PE As = 1.32 cm ² /m A's = 1.32 cm ² /m				As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.01 mm
Barra	PAR1-C PAR1-D	Md = 33.48 kN.m/m As = 3.66 cm ² /m A's = 0.00 cm ² /m	Fd = 2.24 tf Situação: GE As = 3.36 cm ² /m A's = 0.00 cm ² /m	Fd = 11.46 tf Situação: GE As = 5.15 cm ² /m A's = 0.00 cm ² /m				As = 5.15 cm ² /m (ø10.0 c/15 - 5.24 cm ² /m) fiss = 0.15 mm
Barra	PAR1-E PAR1-D	Md = 31.38 kN.m/m As = 3.42 cm ² /m		Fd = 5.28 tf Situação: PE As = 0.89 cm ² /m A's = 0.33 cm ² /m				As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.01 mm

		A's = 0.00 cm ² /m						
Barra	PAR1-D PAR1-E	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m	Fd = 1.71 tf Situação: GE As = 0.06 cm ² /m A's = 0.00 cm ² /m	Fd = 5.28 tf Situação: PE As = 0.95 cm ² /m A's = 0.27 cm ² /m				As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.01 mm
Barra	PAR1-F PAR1-E	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m	Fd = 1.01 tf Situação: GE As = 0.11 cm ² /m A's = 0.00 cm ² /m	Fd = 3.85 tf Situação: PE As = 0.73 cm ² /m A's = 0.15 cm ² /m				As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm
Barra	PAR1-E PAR1-F	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m	Fd = 1.01 tf Situação: GE As = 0.04 cm ² /m A's = 0.00 cm ² /m	Fd = 3.85 tf Situação: PE As = 0.65 cm ² /m A's = 0.23 cm ² /m				As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm
Barra	PAR1-G PAR1-F	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m		Fd = 7.31 tf Situação: PE As = 0.84 cm ² /m A's = 0.84 cm ² /m				As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.01 mm
Barra	PAR1-F PAR1-G	Md = 33.41 kN.m/m As = 3.65 cm ² /m A's = 0.00 cm ² /m	Fd = 5.85 tf Situação: GE As = 2.89 cm ² /m A's = 0.00 cm ² /m	Fd = 7.31 tf Situação: GE As = 4.60 cm ² /m A's = 0.00 cm ² /m				As = 4.60 cm ² /m (ø10.0 c/17 - 4.62 cm ² /m) fiss = 0.16 mm
Barra	PAR1-H PAR1-G	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m	Fd = 7.17 tf Situação: GE As = 0.04 cm ² /m A's = 0.00 cm ² /m					As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.01 mm
Barra	PAR1-G PAR1-H	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m						As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm
Barra	PAR1-I PAR1-H	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m						As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm

Barra	PAR1-H PAR1-I	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m						As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.05 mm
Barra	PAR3 PAR1-I	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m						As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm
Barra	PAR1-I PAR3	Md = 59.48 kN.m/m As = 6.60 cm ² /m A's = 0.00 cm ² /m	Fd = 20.27 tf Situação: GE As = 4.08 cm ² /m A's = 0.00 cm ² /m					As = 6.60 cm ² /m (ø10.0 c/11 - 7.14 cm ² /m) fiss = 0.15 mm
Barra	PAR4 PAR2-A	Md = 59.25 kN.m/m As = 6.58 cm ² /m A's = 0.00 cm ² /m	Fd = 20.57 tf Situação: GE As = 4.01 cm ² /m A's = 0.00 cm ² /m					As = 6.58 cm ² /m (ø10.0 c/11 - 7.14 cm ² /m) fiss = 0.15 mm
Barra	PAR2-A PAR4	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m						As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm
Barra	PAR2-A PAR2-B	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m						As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.06 mm
Barra	PAR2-B PAR2-A	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m						As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm
Barra	PAR2-B PAR2-C	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m						As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm
Barra	PAR2-C PAR2-B	Md = 31.38 kN.m/m	Fd = 5.01 tf Situação: GE					As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m)

		As = 3.42 cm ² /m A's = 0.00 cm ² /m	As = 0.35 cm ² /m A's = 0.00 cm ² /m				fiss = 0.01 mm
Barra	PAR2-C PAR2-D	Md = 32.72 kN.m/m As = 3.57 cm ² /m A's = 0.00 cm ² /m	Fd = 0.86 tf Situação: GE As = 3.46 cm ² /m A's = 0.00 cm ² /m	Fd = 6.80 tf Situação: GE As = 4.46 cm ² /m A's = 0.00 cm ² /m			As = 4.46 cm ² /m (ø10.0 c/17 - 4.62 cm ² /m) fiss = 0.15 mm
Barra	PAR2-D PAR2-C	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m		Fd = 6.80 tf Situação: PE As = 0.78 cm ² /m A's = 0.78 cm ² /m			As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm
Barra	PAR2-D PAR2-E	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m	Fd = 0.36 tf Situação: GE As = 0.24 cm ² /m A's = 0.00 cm ² /m	Fd = 4.12 tf Situação: PE As = 0.82 cm ² /m A's = 0.13 cm ² /m			As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.01 mm
Barra	PAR2-E PAR2-D	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m	Fd = 0.36 tf Situação: GE As = 0.18 cm ² /m A's = 0.00 cm ² /m	Fd = 4.12 tf Situação: PE As = 0.75 cm ² /m A's = 0.20 cm ² /m			As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm
Barra	PAR2-E PAR2-F	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m		Fd = 4.27 tf Situação: PE As = 0.70 cm ² /m A's = 0.28 cm ² /m			As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm
Barra	PAR2-F PAR2-E	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m		Fd = 4.27 tf Situação: PE As = 0.77 cm ² /m A's = 0.21 cm ² /m			As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm
Barra	PAR2-F PAR2-G	Md = 33.01 kN.m/m As = 3.60 cm ² /m A's = 0.00 cm ² /m	Fd = 1.19 tf Situação: GE As = 3.45 cm ² /m A's = 0.00 cm ² /m	Fd = 6.62 tf Situação: GE As = 4.47 cm ² /m A's = 0.00 cm ² /m			As = 4.47 cm ² /m (ø10.0 c/17 - 4.62 cm ² /m) fiss = 0.15 mm
Barra	PAR2-G PAR2-F	Md = 31.38 kN.m/m As = 3.42 cm ² /m		Fd = 6.62 tf Situação: PE As = 0.76 cm ² /m A's = 0.76 cm ² /m			As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm

		A's = 0.00 cm ² /m						
Barra	PAR2-G PAR2-H	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m						As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm
Barra	PAR2-H PAR2-G	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m	Fd = 5.57 tf Situação: GE As = 0.24 cm ² /m A's = 0.00 cm ² /m					As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.01 mm
Barra	PAR2-H PAR2-I	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m						As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.05 mm
Barra	PAR2-I PAR2-H	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m						As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm
Barra	PAR2-I PAR5	Md = 59.45 kN.m/m As = 6.60 cm ² /m A's = 0.00 cm ² /m	Fd = 20.52 tf Situação: GE As = 4.04 cm ² /m A's = 0.00 cm ² /m					As = 6.60 cm ² /m (ø10.0 c/11 - 7.14 cm ² /m) fiss = 0.15 mm
Barra	PAR5 PAR2-I	Md = 31.38 kN.m/m As = 3.42 cm ² /m A's = 0.00 cm ² /m						As = 3.75 cm ² /m (ø10.0 c/20 - 3.93 cm ² /m) fiss = 0.00 mm

ARMADURAS DAS ABAS							
Localização	Direção	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Armadura inferior	Armadura superior	Cisalhamento
PAR1-Asup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 0.49 tf Situação: PE As = 0.06 cm ² /m A's = 0.06 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.20 mm	A's = 6.68 cm ² 4 ø16.0 (8.04 cm ²)	vsd = 10.48 tf/m vrd1 = 10.19 tf/m asw = 6.53 cm ² /m

	Neg	Md = 112.16 kN.m/m As = 6.62 cm ² /m A's = 0.00 cm ² /m	Fd = 26.72 tf Situação: GE As = 3.55 cm ² /m A's = 0.00 cm ² /m	Fd = 0.49 tf Situação: GE As = 6.68 cm ² /m A's = 0.00 cm ² /m			
PAR1-Ainf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 8.04 tf Situação: PE As = 0.92 cm ² /m A's = 0.92 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.15 mm	A's = 7.93 cm ² 4 ø16.0 (8.04 cm ²)	vsd = 10.12 tf/m vrd1 = 10.19 tf/m asw = 6.31 cm ² /m
	Neg	Md = 84.80 kN.m/m As = 4.95 cm ² /m A's = 0.00 cm ² /m	Fd = 17.65 tf Situação: GE As = 2.86 cm ² /m A's = 0.00 cm ² /m	Fd = 8.04 tf Situação: GE As = 5.92 cm ² /m A's = 0.00 cm ² /m			
PAR1-Bsup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m	Fd = 1.67 tf Situação: GE As = 0.08 cm ² /m A's = 0.00 cm ² /m	Fd = 6.38 tf Situação: PE As = 1.05 cm ² /m A's = 0.41 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.02 mm	A's = 3.17 cm ² 3 ø12.5 (3.68 cm ²)	vsd = 2.91 tf/m vrd1 = 10.16 tf/m asw = 1.82 cm ² /m
	Neg	Md = 46.62 kN.m/m As = 2.67 cm ² /m A's = 0.00 cm ² /m	Fd = 1.67 tf Situação: GE As = 0.19 cm ² /m A's = 0.00 cm ² /m	Fd = 6.38 tf Situação: PE As = 1.18 cm ² /m A's = 0.38 cm ² /m			
PAR1-Binf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m	Fd = 7.27 tf Situação: GE As = 1.11 cm ² /m A's = 0.00 cm ² /m	Fd = 28.37 tf Situação: PE As = 5.48 cm ² /m A's = 1.69 cm ² /m	As = 5.48 cm ² 3 ø16.0 (6.03 cm ²) fiss = 0.18 mm	A's = 5.49 cm ² 3 ø16.0 (6.03 cm ²)	vsd = 8.76 tf/m vrd1 = 10.54 tf/m asw = 5.46 cm ² /m
	Neg	Md = 46.62 kN.m/m As = 2.68 cm ² /m A's = 0.00 cm ² /m	Fd = 7.27 tf Situação: GE As = 1.12 cm ² /m A's = 0.00 cm ² /m	Fd = 28.37 tf Situação: PE As = 5.49 cm ² /m A's = 1.69 cm ² /m			
PAR1-Csup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m	Fd = 1.34 tf Situação: GE As = 0.01 cm ² /m A's = 0.00 cm ² /m	Fd = 0.35 tf Situação: GE As = 0.23 cm ² /m A's = 0.00 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.00 mm	A's = 3.04 cm ² 2 ø16.0 (4.02 cm ²)	vsd = 4.16 tf/m vrd1 = 10.19 tf/m asw = 2.59 cm ² /m
	Neg	Md = 45.75 kN.m/m	Fd = 1.34 tf Situação: GE	Fd = 0.35 tf Situação: GE			

		As = 2.63 cm ² /m A's = 0.00 cm ² /m	As = 0.08 cm ² /m A's = 0.00 cm ² /m	As = 0.29 cm ² /m A's = 0.00 cm ² /m			
PAR1-Cinf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 19.69 tf Situação: PE As = 4.15 cm ² /m A's = 1.17 cm ² /m	As = 6.16 cm ² 3 ø16.0 (6.03 cm ²) fiss = 0.14 mm	A's = 8.09 cm ² 4 ø16.0 (8.04 cm ²)	vsd = 10.79 tf/m vrd1 = 10.54 tf/m asw = 6.77 cm ² /m
	Neg	Md = 62.94 kN.m/m As = 3.64 cm ² /m A's = 0.00 cm ² /m	Fd = 16.33 tf Situação: GE As = 1.67 cm ² /m A's = 0.00 cm ² /m	Fd = 19.69 tf Situação: GE As = 6.08 cm ² /m A's = 0.00 cm ² /m			
PAR1-Dsup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 0.90 tf Situação: PE As = 0.18 cm ² /m A's = 0.03 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.00 mm	A's = 3.04 cm ² 2 ø16.0 (4.02 cm ²)	vsd = 3.36 tf/m vrd1 = 10.19 tf/m asw = 2.09 cm ² /m
	Neg	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 0.90 tf Situação: GE As = 0.25 cm ² /m A's = 0.00 cm ² /m			
PAR1-Dinf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 5.34 tf Situação: PE As = 0.77 cm ² /m A's = 0.46 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.15 mm	A's = 4.43 cm ² 3 ø16.0 (6.03 cm ²)	vsd = 10.82 tf/m vrd1 = 10.19 tf/m asw = 6.75 cm ² /m
	Neg	Md = 65.20 kN.m/m As = 3.78 cm ² /m A's = 0.00 cm ² /m	Fd = 17.51 tf Situação: GE As = 1.67 cm ² /m A's = 0.00 cm ² /m	Fd = 5.34 tf Situação: GE As = 4.43 cm ² /m A's = 0.00 cm ² /m			
PAR1-Esup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m	Fd = 0.71 tf Situação: GE As = 0.12 cm ² /m A's = 0.00 cm ² /m	Fd = 7.72 tf Situação: PE As = 1.13 cm ² /m A's = 0.65 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.02 mm	A's = 3.17 cm ² 2 ø16.0 (4.02 cm ²)	vsd = 0.77 tf/m vrd1 = 10.19 tf/m asw = 0.48 cm ² /m
	Neg	Md = 46.62 kN.m/m As = 2.68 cm ² /m	Fd = 0.71 tf Situação: GE As = 0.08 cm ² /m	Fd = 7.72 tf Situação: PE As = 1.07 cm ² /m			

		A's = 0.00 cm ² /m	A's = 0.00 cm ² /m	A's = 0.70 cm ² /m			
PAR1-Einf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m	Fd = 7.39 tf Situação: GE As = 0.99 cm ² /m A's = 0.00 cm ² /m	Fd = 17.85 tf Situação: GE As = 4.15 cm ² /m A's = 0.00 cm ² /m	As = 6.16 cm ² 3 ø16.0 (6.03 cm ²) fiss = 0.10 mm	A's = 3.17 cm ² 4 ø10.0 (3.14 cm ²)	vsd = 6.18 tf/m vrd1 = 10.08 tf/m asw = 3.88 cm ² /m
	Neg	Md = 46.62 kN.m/m As = 2.66 cm ² /m A's = 0.00 cm ² /m		Fd = 17.85 tf Situação: PE As = 2.16 cm ² /m A's = 1.95 cm ² /m			
PAR1-Fsup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 0.86 tf Situação: PE As = 0.17 cm ² /m A's = 0.02 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.00 mm	A's = 3.04 cm ² 2 ø16.0 (4.02 cm ²)	vsd = 3.19 tf/m vrd1 = 10.19 tf/m asw = 1.99 cm ² /m
	Neg	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 0.86 tf Situação: GE As = 0.26 cm ² /m A's = 0.00 cm ² /m			
PAR1-Finf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 4.32 tf Situação: PE As = 0.65 cm ² /m A's = 0.34 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.15 mm	A's = 4.22 cm ² 8 ø8.0 (4.02 cm ²)	vsd = 10.57 tf/m vrd1 = 10.19 tf/m asw = 6.59 cm ² /m
	Neg	Md = 64.54 kN.m/m As = 3.70 cm ² /m A's = 0.00 cm ² /m	Fd = 20.09 tf Situação: GE As = 1.31 cm ² /m A's = 0.00 cm ² /m	Fd = 4.32 tf Situação: GE As = 4.22 cm ² /m A's = 0.00 cm ² /m			
PAR1-Gsup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 0.22 tf Situação: GE As = 0.21 cm ² /m A's = 0.00 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.00 mm	A's = 3.04 cm ² 4 ø10.0 (3.14 cm ²)	vsd = 4.30 tf/m vrd1 = 10.08 tf/m asw = 2.68 cm ² /m
	Neg	Md = 45.75 kN.m/m As = 2.61 cm ² /m A's = 0.00 cm ² /m		Fd = 0.22 tf Situação: GE As = 0.29 cm ² /m A's = 0.00 cm ² /m			

PAR1-Ginf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 11.08 tf Situação: GE As = 3.09 cm ² /m A's = 0.00 cm ² /m	As = 3.09 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.14 mm	A's = 6.23 cm ² 5 ø12.5 (6.14 cm ²)	vsd = 10.74 tf/m vrd1 = 10.19 tf/m asw = 6.69 cm ² /m
	Neg	Md = 63.26 kN.m/m As = 3.65 cm ² /m A's = 0.00 cm ² /m	Fd = 19.44 tf Situação: GE As = 1.32 cm ² /m A's = 0.00 cm ² /m	Fd = 11.08 tf Situação: GE As = 5.00 cm ² /m A's = 0.00 cm ² /m			
PAR1-Hsup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m	Fd = 1.69 tf Situação: GE As = 0.07 cm ² /m A's = 0.00 cm ² /m	Fd = 5.16 tf Situação: PE As = 0.91 cm ² /m A's = 0.28 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.01 mm	A's = 3.17 cm ² 4 ø10.0 (3.14 cm ²)	vsd = 3.00 tf/m vrd1 = 10.08 tf/m asw = 1.87 cm ² /m
	Neg	Md = 46.62 kN.m/m As = 2.66 cm ² /m A's = 0.00 cm ² /m	Fd = 1.69 tf Situação: GE As = 0.20 cm ² /m A's = 0.00 cm ² /m	Fd = 5.16 tf Situação: PE As = 1.05 cm ² /m A's = 0.14 cm ² /m			
PAR1-Hinf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m	Fd = 6.20 tf Situação: GE As = 1.23 cm ² /m A's = 0.00 cm ² /m	Fd = 21.10 tf Situação: GE As = 4.85 cm ² /m A's = 0.00 cm ² /m	As = 4.85 cm ² 3 ø16.0 (6.03 cm ²) fiss = 0.15 mm	A's = 4.85 cm ² 4 ø12.5 (4.91 cm ²)	vsd = 8.88 tf/m vrd1 = 10.37 tf/m asw = 5.55 cm ² /m
	Neg	Md = 46.62 kN.m/m As = 2.67 cm ² /m A's = 0.00 cm ² /m	Fd = 6.20 tf Situação: GE As = 1.27 cm ² /m A's = 0.00 cm ² /m	Fd = 21.10 tf Situação: GE As = 4.85 cm ² /m A's = 0.00 cm ² /m			
PAR1-Isup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m			As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.13 mm	A's = 6.60 cm ² 13 ø8.0 (6.53 cm ²)	vsd = 10.24 tf/m vrd1 = 10.19 tf/m asw = 6.39 cm ² /m
	Neg	Md = 112.90 kN.m/m As = 6.60 cm ² /m A's = 0.00 cm ² /m	Fd = 26.79 tf Situação: GE As = 3.55 cm ² /m A's = 0.00 cm ² /m				
PAR1-Iinf	Pos	Md = 45.75 kN.m/m		Fd = 6.51 tf Situação: PE	As = 3.04 cm ² 2 ø16.0	A's = 5.68 cm ²	vsd = 10.04 tf/m

		As = 2.63 cm ² /m A's = 0.00 cm ² /m		As = 0.75 cm ² /m A's = 0.75 cm ² /m	(4.02 cm ²) fiss = 0.18 mm	7 ø10.0 (5.50 cm ²)	vrđ1 = 10.19 tf/m asw = 6.26 cm ² /m
	Neg	Md = 84.51 kN.m/m As = 4.90 cm ² /m A's = 0.00 cm ² /m	Fd = 13.81 tf Situação: GE As = 3.27 cm ² /m A's = 0.00 cm ² /m	Fd = 6.51 tf Situação: GE As = 5.68 cm ² /m A's = 0.00 cm ² /m			
PAR2-Asup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m			As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.20 mm	A's = 6.57 cm ² 8 ø10.0 (6.28 cm ²)	vřd = 10.51 tf/m vrđ1 = 10.19 tf/m asw = 6.55 cm ² /m
	Neg	Md = 112.10 kN.m/m As = 6.57 cm ² /m A's = 0.00 cm ² /m	Fd = 27.91 tf Situação: GE As = 3.39 cm ² /m A's = 0.00 cm ² /m				
PAR2-Ainf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 2.98 tf Situação: PE As = 0.34 cm ² /m A's = 0.34 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.16 mm	A's = 5.29 cm ² 7 ø10.0 (5.50 cm ²)	vřd = 9.80 tf/m vrđ1 = 10.19 tf/m asw = 6.11 cm ² /m
	Neg	Md = 85.20 kN.m/m As = 4.94 cm ² /m A's = 0.00 cm ² /m	Fd = 1.46 tf Situação: GE As = 4.76 cm ² /m A's = 0.00 cm ² /m	Fd = 2.98 tf Situação: GE As = 5.29 cm ² /m A's = 0.00 cm ² /m			
PAR2-Bsup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m	Fd = 1.67 tf Situação: GE As = 0.08 cm ² /m A's = 0.00 cm ² /m	Fd = 1.64 tf Situação: GE As = 0.49 cm ² /m A's = 0.00 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.01 mm	A's = 3.17 cm ² 4 ø10.0 (3.14 cm ²)	vřd = 2.91 tf/m vrđ1 = 10.08 tf/m asw = 1.81 cm ² /m
	Neg	Md = 46.62 kN.m/m As = 2.66 cm ² /m A's = 0.00 cm ² /m	Fd = 1.67 tf Situação: GE As = 0.19 cm ² /m A's = 0.00 cm ² /m	Fd = 1.64 tf Situação: GE As = 0.61 cm ² /m A's = 0.00 cm ² /m			
PAR2-Binf	Pos	Md = 45.75 kN.m/m	Fd = 3.17 tf Situação: GE As = 1.59 cm ² /m	Fd = 15.26 tf Situação: GE As = 3.90 cm ² /m	As = 5.91 cm ² 3 ø16.0 (6.03 cm ²)	A's = 5.95 cm ² 3 ø16.0 (6.03 cm ²)	vřd = 8.62 tf/m vrđ1 = 10.54 tf/m

		As = 2.63 cm ² /m A's = 0.00 cm ² /m	A's = 0.00 cm ² /m	A's = 0.00 cm ² /m	fiss = 0.10 mm		asw = 5.41 cm ² /m
	Neg	Md = 46.62 kN.m/m As = 2.68 cm ² /m A's = 0.00 cm ² /m	Fd = 3.17 tf Situação: GE As = 1.62 cm ² /m A's = 0.00 cm ² /m	Fd = 15.26 tf Situação: GE As = 3.93 cm ² /m A's = 0.00 cm ² /m			
PAR2-Csup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m	Fd = 1.29 tf Situação: GE As = 0.02 cm ² /m A's = 0.00 cm ² /m	Fd = 0.42 tf Situação: GE As = 0.24 cm ² /m A's = 0.00 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.00 mm	A's = 3.04 cm ² 4 ø10.0 (3.14 cm ²)	vsd = 4.18 tf/m vrd1 = 10.08 tf/m asw = 2.60 cm ² /m
	Neg	Md = 45.75 kN.m/m As = 2.61 cm ² /m A's = 0.00 cm ² /m	Fd = 1.29 tf Situação: GE As = 0.09 cm ² /m A's = 0.00 cm ² /m	Fd = 0.42 tf Situação: GE As = 0.30 cm ² /m A's = 0.00 cm ² /m			
PAR2-Cinf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m	Fd = 7.39 tf Situação: GE As = 0.75 cm ² /m A's = 0.00 cm ² /m	Fd = 11.82 tf Situação: GE As = 3.16 cm ² /m A's = 0.00 cm ² /m	As = 3.16 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.14 mm	A's = 6.26 cm ² 5 ø12.5 (6.14 cm ²)	vsd = 10.47 tf/m vrd1 = 10.19 tf/m asw = 6.53 cm ² /m
	Neg	Md = 62.28 kN.m/m As = 3.59 cm ² /m A's = 0.00 cm ² /m	Fd = 7.39 tf Situação: GE As = 2.69 cm ² /m A's = 0.00 cm ² /m	Fd = 11.82 tf Situação: GE As = 5.04 cm ² /m A's = 0.00 cm ² /m			
PAR2-Dsup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 0.87 tf Situação: PE As = 0.18 cm ² /m A's = 0.02 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.00 mm	A's = 3.04 cm ² 4 ø10.0 (3.14 cm ²)	vsd = 3.35 tf/m vrd1 = 10.08 tf/m asw = 2.09 cm ² /m
	Neg	Md = 45.75 kN.m/m As = 2.61 cm ² /m A's = 0.00 cm ² /m		Fd = 0.87 tf Situação: GE As = 0.25 cm ² /m A's = 0.00 cm ² /m			
PAR2-Dinf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m		Fd = 3.65 tf Situação: PE As = 0.57 cm ² /m A's = 0.27 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.14 mm	A's = 6.21 cm ² 3 ø16.0 (6.03 cm ²)	vsd = 10.49 tf/m vrd1 = 10.19 tf/m asw = 6.54 cm ² /m

		A's = 0.00 cm ² /m					
	Neg	Md = 64.74 kN.m/m As = 3.75 cm ² /m A's = 0.00 cm ² /m	Fd = 9.06 tf Situação: GE As = 2.65 cm ² /m A's = 0.00 cm ² /m	Fd = 3.65 tf Situação: GE As = 4.20 cm ² /m A's = 0.00 cm ² /m			
PAR2-Esup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m	Fd = 0.70 tf Situação: GE As = 0.12 cm ² /m A's = 0.00 cm ² /m	Fd = 2.57 tf Situação: PE As = 0.53 cm ² /m A's = 0.06 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.00 mm	A's = 3.17 cm ² 2 ø16.0 (4.02 cm ²)	vsd = 0.77 tf/m vrd1 = 10.19 tf/m asw = 0.48 cm ² /m
	Neg	Md = 46.62 kN.m/m As = 2.68 cm ² /m A's = 0.00 cm ² /m	Fd = 0.70 tf Situação: GE As = 0.08 cm ² /m A's = 0.00 cm ² /m	Fd = 2.57 tf Situação: PE As = 0.48 cm ² /m A's = 0.11 cm ² /m			
PAR2-Einf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m	Fd = 3.54 tf Situação: GE As = 1.46 cm ² /m A's = 0.00 cm ² /m	Fd = 13.16 tf Situação: GE As = 3.56 cm ² /m A's = 0.00 cm ² /m	As = 3.56 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.18 mm	A's = 3.17 cm ² 2 ø16.0 (4.02 cm ²)	vsd = 6.06 tf/m vrd1 = 10.19 tf/m asw = 3.79 cm ² /m
	Neg	Md = 46.62 kN.m/m As = 2.68 cm ² /m A's = 0.00 cm ² /m		Fd = 13.16 tf Situação: PE As = 1.61 cm ² /m A's = 1.42 cm ² /m			
PAR2-Fsup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 0.98 tf Situação: PE As = 0.19 cm ² /m A's = 0.04 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.00 mm	A's = 3.04 cm ² 2 ø16.0 (4.02 cm ²)	vsd = 3.20 tf/m vrd1 = 10.19 tf/m asw = 1.99 cm ² /m
	Neg	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 0.98 tf Situação: GE As = 0.27 cm ² /m A's = 0.00 cm ² /m			
PAR2-Finf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 3.51 tf Situação: PE As = 0.55 cm ² /m A's = 0.26 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.13 mm	A's = 6.16 cm ² 3 ø16.0 (6.03 cm ²)	vsd = 10.39 tf/m vrd1 = 10.19 tf/m asw = 6.48 cm ² /m

	Neg	Md = 64.24 kN.m/m As = 3.72 cm ² /m A's = 0.00 cm ² /m	Fd = 8.40 tf Situação: GE As = 2.70 cm ² /m A's = 0.00 cm ² /m	Fd = 3.51 tf Situação: GE As = 4.15 cm ² /m A's = 0.00 cm ² /m			
PAR2-Gsup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 0.27 tf Situação: GE As = 0.22 cm ² /m A's = 0.00 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.00 mm	A's = 3.04 cm ² 2 ø16.0 (4.02 cm ²)	vsd = 4.28 tf/m vrd1 = 10.19 tf/m asw = 2.67 cm ² /m
	Neg	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m	Fd = 1.45 tf Situação: GE As = 0.08 cm ² /m A's = 0.00 cm ² /m	Fd = 0.27 tf Situação: GE As = 0.30 cm ² /m A's = 0.00 cm ² /m			
PAR2-Ginf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m	Fd = 7.19 tf Situação: GE As = 0.79 cm ² /m A's = 0.00 cm ² /m	Fd = 11.78 tf Situação: GE As = 3.16 cm ² /m A's = 0.00 cm ² /m	As = 3.16 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.18 mm	A's = 5.07 cm ² 3 ø16.0 (6.03 cm ²)	vsd = 10.53 tf/m vrd1 = 10.19 tf/m asw = 6.56 cm ² /m
	Neg	Md = 62.56 kN.m/m As = 3.62 cm ² /m A's = 0.00 cm ² /m	Fd = 7.19 tf Situação: GE As = 2.75 cm ² /m A's = 0.00 cm ² /m	Fd = 11.78 tf Situação: GE As = 5.07 cm ² /m A's = 0.00 cm ² /m			
PAR2-Hsup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m	Fd = 1.73 tf Situação: GE As = 0.06 cm ² /m A's = 0.00 cm ² /m	Fd = 1.36 tf Situação: GE As = 0.46 cm ² /m A's = 0.00 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.01 mm	A's = 3.17 cm ² 2 ø16.0 (4.02 cm ²)	vsd = 3.00 tf/m vrd1 = 10.19 tf/m asw = 1.87 cm ² /m
	Neg	Md = 46.62 kN.m/m As = 2.68 cm ² /m A's = 0.00 cm ² /m	Fd = 1.73 tf Situação: GE As = 0.20 cm ² /m A's = 0.00 cm ² /m	Fd = 1.36 tf Situação: GE As = 0.59 cm ² /m A's = 0.00 cm ² /m			
PAR2-Hinf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m	Fd = 3.13 tf Situação: GE As = 1.60 cm ² /m A's = 0.00 cm ² /m	Fd = 15.67 tf Situação: GE As = 3.95 cm ² /m A's = 0.00 cm ² /m	As = 5.96 cm ² 3 ø16.0 (6.03 cm ²) fiss = 0.10 mm	A's = 6.02 cm ² 3 ø16.0 (6.03 cm ²)	vsd = 8.79 tf/m vrd1 = 10.54 tf/m asw = 5.52 cm ² /m
	Neg	Md = 46.62 kN.m/m	Fd = 3.13 tf Situação: GE	Fd = 15.67 tf Situação: GE			

		As = 2.68 cm ² /m A's = 0.00 cm ² /m	As = 1.65 cm ² /m A's = 0.00 cm ² /m	As = 4.01 cm ² /m A's = 0.00 cm ² /m			
PAR2-Isup	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m			As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.13 mm	A's = 8.74 cm ² 5 ø16.0 (10.05 cm ²)	vsd = 10.48 tf/m vrd1 = 10.19 tf/m asw = 6.53 cm ² /m
	Neg	Md = 113.93 kN.m/m As = 6.73 cm ² /m A's = 0.00 cm ² /m	Fd = 28.35 tf Situação: GE As = 3.49 cm ² /m A's = 0.00 cm ² /m				
PAR2-Inf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 3.63 tf Situação: PE As = 0.42 cm ² /m A's = 0.42 cm ² /m	As = 3.04 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.13 mm	A's = 7.40 cm ² 4 ø16.0 (8.04 cm ²)	vsd = 9.78 tf/m vrd1 = 10.19 tf/m asw = 6.10 cm ² /m
	Neg	Md = 84.84 kN.m/m As = 4.95 cm ² /m A's = 0.00 cm ² /m	Fd = 1.29 tf Situação: GE As = 4.80 cm ² /m A's = 0.00 cm ² /m	Fd = 3.63 tf Situação: GE As = 5.39 cm ² /m A's = 0.00 cm ² /m			
PAR6sup	Pos	Md = 51.96 kN.m/m As = 2.99 cm ² /m A's = 0.00 cm ² /m	Fd = 20.85 tf Situação: GE As = 0.47 cm ² /m A's = 0.00 cm ² /m	Fd = 5.65 tf Situação: GE As = 3.69 cm ² /m A's = 0.00 cm ² /m	As = 5.70 cm ² 3 ø16.0 (6.03 cm ²) fiss = 0.13 mm	A's = 8.89 cm ² 5 ø16.0 (10.05 cm ²)	vsd = 12.08 tf/m vrd1 = 10.54 tf/m asw = 7.55 cm ² /m
	Neg	Md = 105.83 kN.m/m As = 6.20 cm ² /m A's = 0.00 cm ² /m	Fd = 20.85 tf Situação: GE As = 3.74 cm ² /m A's = 0.00 cm ² /m	Fd = 5.65 tf Situação: GE As = 6.88 cm ² /m A's = 0.00 cm ² /m			
PAR6inf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 19.91 tf Situação: GE As = 4.64 cm ² /m A's = 0.00 cm ² /m	As = 4.64 cm ² 3 ø16.0 (6.03 cm ²) fiss = 0.17 mm	A's = 5.25 cm ² 3 ø16.0 (6.03 cm ²)	vsd = 9.78 tf/m vrd1 = 10.54 tf/m asw = 6.10 cm ² /m
	Neg	Md = 48.12 kN.m/m		Fd = 19.91 tf Situação: GE As = 5.25 cm ² /m			

		As = 2.76 cm ² /m A's = 0.00 cm ² /m		A's = 0.00 cm ² /m			
PAR5sup	Pos	Md = 51.89 kN.m/m As = 2.99 cm ² /m A's = 0.00 cm ² /m	Fd = 12.73 tf Situação: GE As = 1.44 cm ² /m A's = 0.00 cm ² /m	Fd = 1.84 tf Situação: GE As = 3.22 cm ² /m A's = 0.00 cm ² /m	As = 3.22 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.19 mm	A's = 6.48 cm ² 4 ø16.0 (8.04 cm ²)	vsd = 12.10 tf/m vrd1 = 10.19 tf/m asw = 7.54 cm ² /m
	Neg	Md = 106.85 kN.m/m As = 6.26 cm ² /m A's = 0.00 cm ² /m	Fd = 12.73 tf Situação: GE As = 4.75 cm ² /m A's = 0.00 cm ² /m	Fd = 1.84 tf Situação: GE As = 6.48 cm ² /m A's = 0.00 cm ² /m			
PAR5inf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 23.99 tf Situação: GE As = 5.52 cm ² /m A's = 0.00 cm ² /m	As = 5.52 cm ² 3 ø16.0 (6.03 cm ²) fiss = 0.19 mm	A's = 5.68 cm ² 3 ø16.0 (6.03 cm ²)	vsd = 9.79 tf/m vrd1 = 10.54 tf/m asw = 6.09 cm ² /m
	Neg	Md = 47.38 kN.m/m As = 2.72 cm ² /m A's = 0.00 cm ² /m		Fd = 23.99 tf Situação: GE As = 5.68 cm ² /m A's = 0.00 cm ² /m			
PAR4sup	Pos	Md = 51.85 kN.m/m As = 2.99 cm ² /m A's = 0.00 cm ² /m	Fd = 12.92 tf Situação: GE As = 1.41 cm ² /m A's = 0.00 cm ² /m	Fd = 1.82 tf Situação: GE As = 3.21 cm ² /m A's = 0.00 cm ² /m	As = 3.21 cm ² 2 ø16.0 (4.02 cm ²) fiss = 0.19 mm	A's = 6.48 cm ² 4 ø16.0 (8.04 cm ²)	vsd = 12.09 tf/m vrd1 = 10.19 tf/m asw = 7.54 cm ² /m
	Neg	Md = 106.82 kN.m/m As = 6.26 cm ² /m A's = 0.00 cm ² /m	Fd = 12.92 tf Situação: GE As = 4.73 cm ² /m A's = 0.00 cm ² /m	Fd = 1.82 tf Situação: GE As = 6.48 cm ² /m A's = 0.00 cm ² /m			
PAR4inf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 24.05 tf Situação: GE As = 5.53 cm ² /m A's = 0.00 cm ² /m	As = 5.53 cm ² 3 ø16.0 (6.03 cm ²) fiss = 0.19 mm	A's = 5.68 cm ² 3 ø16.0 (6.03 cm ²)	vsd = 9.79 tf/m vrd1 = 10.54 tf/m asw = 6.09 cm ² /m
	Neg	Md = 47.38 kN.m/m		Fd = 24.05 tf Situação: GE As = 5.68 cm ² /m			

		As = 2.72 cm ² /m A's = 0.00 cm ² /m		A's = 0.00 cm ² /m			
PAR3sup	Pos	Md = 51.95 kN.m/m As = 2.99 cm ² /m A's = 0.00 cm ² /m	Fd = 20.68 tf Situação: GE As = 0.49 cm ² /m A's = 0.00 cm ² /m	Fd = 6.18 tf Situação: GE As = 3.76 cm ² /m A's = 0.00 cm ² /m	As = 5.77 cm ² 3 ø16.0 (6.03 cm ²) fiss = 0.14 mm	A's = 8.96 cm ² 5 ø16.0 (10.05 cm ²)	vsd = 12.09 tf/m vrd1 = 10.54 tf/m asw = 7.56 cm ² /m
	Neg	Md = 105.95 kN.m/m As = 6.21 cm ² /m A's = 0.00 cm ² /m	Fd = 20.68 tf Situação: GE As = 3.77 cm ² /m A's = 0.00 cm ² /m	Fd = 6.18 tf Situação: GE As = 6.95 cm ² /m A's = 0.00 cm ² /m			
PAR3inf	Pos	Md = 45.75 kN.m/m As = 2.63 cm ² /m A's = 0.00 cm ² /m		Fd = 19.85 tf Situação: GE As = 4.63 cm ² /m A's = 0.00 cm ² /m	As = 4.63 cm ² 3 ø16.0 (6.03 cm ²) fiss = 0.17 mm	A's = 5.27 cm ² 3 ø16.0 (6.03 cm ²)	vsd = 9.77 tf/m vrd1 = 10.54 tf/m asw = 6.09 cm ² /m
	Neg	Md = 48.47 kN.m/m As = 2.78 cm ² /m A's = 0.00 cm ² /m		Fd = 19.85 tf Situação: GE As = 5.27 cm ² /m A's = 0.00 cm ² /m			