MEMÓRIA DE CÁLCULO
ADASA
CEPI PARANOÁ PARQUE

Autor do Projeto: Eng. Civil Dalmo Blanco Cinnanti

CREA: 7962/D-DF

R00	30/10/2022	VERSÃO INICIAL	DALMO B.CINNANTI
REVISÃO	DATA	DESCRIÇÃO	RESPONSÁVEL
Nome do projeto		MEMÓRIA DE CÁLCULO – ADASA– CEPI PARANOÁ PARQUE	
Número do projeto		**314-SEEDF-CEPI PARANOÁ PARQUE-MEM-EST-ADASA-R00**	
Local		***QUADRA 01 CONJUNTO 01 AE 02 – PARANOÁ PARQUE / PARANOÁ-DF***	

SUMÁRIO

Resumo de resultados

Cargas verticais:

Peso próprio = 151.49 tf

Adicional = 14.60 tf

Solo = 192.54 tf

Acidental = 16.04 tf

Água = 204.45 tf

Subpressão = -204.45 tf

Total = 579.13 tf

Área aproximada = 106.98 m²

Relação = 5413.19 kgf/m²

Deslocamento horizontal:

X+ = 0.00 cm (limite 0.26)

X- = 0.00 cm (limite 0.26)

Y+ = 0.01 cm (limite 0.26)

Y- = 0.01 cm (limite 0.26)

Aceleração horizontal:

X+ = 0.089 m/s² (limite 0.147)

X- = 0.089 m/s² (limite 0.147)

Y+ = 0.009 m/s² (limite 0.147)

Y- = 0.009 m/s² (limite 0.147)

Verificação de estabilidade (Gama-Z):

X+ = 1.01 (limite 1.10)

X- = 1.01 (limite 1.10)

Y+ = 1.04 (limite 1.10)

Y- = 1.04 (limite 1.10)

Análise de 2ª ordem:

Processo P-Delta

Deslocamentos no topo da edificação:

Vento X+: 0.02 »» 0.02 (+0.39%)

Vento X-: 0.02 »» 0.02 (+0.39%)

Vento Y+: 0.03 »» 0.03 (+2.32%)

Vento Y-: 0.03 »» 0.03 (+2.32%)

Análise dinâmica:

Frequência natural: 0.96 Hz

Verificação da Estabilidade Global da Estrutura

Maior coeficiente Gama-Z

Combinação: 1.3G1+1.4G2+1.4S+1.2R+1.4Q+1.2A+1.1AS+0.72T1+0.84V4+0.84D4							
Pavimento	**Altura relativa (cm)**	**Carga vertical (tf)**	**Carga horizontal (tf)**	**Deslocamento horizontal (cm)**	**Momento 2a. ordem (kgf.m)**	**Momento tombamento (kgf.m)**	**Gama-Z**
TOPO	440.00	261.61	0.58	0.02	56.79	2566.73	1.04 (lim=1.10)
FUNDO	60.00	172.81	0.14	0.02	37.13	82.42	
TOTAL					**93.92**	**2649.16**	

Limitações

Em estruturas com Gama-Z maior que 1.10 é necessário fazer a verificação dos efeitos de 2ª ordem com a análise P-Delta.

O Gama-Z é um parâmetro de estabilidade para avaliação de estruturas simétricas (tanto geometria quanto carregamento) e edificações com mais de 4 pavimentos. Nos demais casos, recomenda-se a verificação dos efeitos de 2ª ordem com a análise P-Delta.

Coeficiente Gama-Z por combinação

Combinação	Momento 2a. ordem (kgf.m)	Momento tombamento (kgf.m)	Gama-Z
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T1+0.84V1+0.84D1	57.69	7451.02	1.01
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T1+0.84V1+1.4D1	57.69	7451.02	1.01
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T1+0.84V2+0.84D2	58.14	7451.02	1.01
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T1+0.84V2+1.4D2	58.14	7451.02	1.01
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T1+0.84V3+0.84D3	92.57	2649.16	1.04
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T1+0.84V3+1.4D3	92.57	2649.16	1.04
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T1+0.84V4+0.84D4	92.71	2649.16	1.04
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T1+0.84V4+1.4D4	92.71	2649.16	1.04
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T1+1.4V1+0.84D1	96.30	12418.37	1.01
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T1+1.4V2+0.84D2	96.75	12418.37	1.01
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T1+1.4V3+0.84D3	154.33	4415.26	1.04
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T1+1.4V4+0.84D4	154.47	4415.26	1.04
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T2+0.84V1+0.84D1	57.69	7451.02	1.01
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T2+0.84V1+1.4D1	57.69	7451.02	1.01
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T2+0.84V2+0.84D2	58.14	7451.02	1.01

1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T2+0.84V2+1.4D2	58.14	7451.02	1.01
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T2+0.84V3+0.84D3	92.57	2649.16	1.04
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T2+0.84V3+1.4D3	92.57	2649.16	1.04
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T2+0.84V4+0.84D4	92.71	2649.16	1.04
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T2+0.84V4+1.4D4	92.71	2649.16	1.04
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T2+1.4V1+0.84D1	96.30	12418.37	1.01
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T2+1.4V2+0.84D2	96.75	12418.37	1.01
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T2+1.4V3+0.84D3	154.33	4415.26	1.04
1.3G1+1.4G2+1.4S+0.98Q+1.2A+1.1AS+0.72T2+1.4V4+0.84D4	154.47	4415.26	1.04
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+0.84V1+0.84D1	57.69	7451.02	1.01
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+0.84V1+1.4D1	57.69	7451.02	1.01
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+0.84V2+0.84D2	58.14	7451.02	1.01
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+0.84V2+1.4D2	58.14	7451.02	1.01
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+0.84V3+0.84D3	92.57	2649.16	1.04
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+0.84V3+1.4D3	92.57	2649.16	1.04
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+0.84V4+0.84D4	92.71	2649.16	1.04
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+0.84V4+1.4D4	92.71	2649.16	1.04
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+1.4V1+0.84D1	96.30	12418.37	1.01
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+1.4V2+0.84D2	96.75	12418.37	1.01
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+1.4V3+0.84D3	154.33	4415.26	1.04
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+1.4V4+0.84D4	154.47	4415.26	1.04
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+0.84V1+0.84D1	57.69	7451.02	1.01
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+0.84V1+1.4D1	57.69	7451.02	1.01
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+0.84V2+0.84D2	58.14	7451.02	1.01
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+0.84V2+1.4D2	58.14	7451.02	1.01
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+0.84V3+0.84D3	92.57	2649.16	1.04
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+0.84V3+1.4D3	92.57	2649.16	1.04
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+0.84V4+0.84D4	92.71	2649.16	1.04
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+0.84V4+1.4D4	92.71	2649.16	1.04
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+1.4V1+0.84D1	96.30	12418.37	1.01
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+1.4V2+0.84D2	96.75	12418.37	1.01
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+1.4V3+0.84D3	154.33	4415.26	1.04
1.3G1+1.4G2+1.4S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+1.4V4+0.84D4	154.47	4415.26	1.04
1.3G1+1.4G2+1.4S+1.2R+1.4Q+1.2A+1.1AS+0.72T1+0.84V1+0.84D1	58.44	7451.02	1.01
1.3G1+1.4G2+1.4S+1.2R+1.4Q+1.2A+1.1AS+0.72T1+0.84V2+0.84D2	58.90	7451.02	1.01
1.3G1+1.4G2+1.4S+1.2R+1.4Q+1.2A+1.1AS+0.72T1+0.84V3+0.84D3	93.77	2649.16	1.04
1.3G1+1.4G2+1.4S+1.2R+1.4Q+1.2A+1.1AS+0.72T1+0.84V4+0.84D4	**93.92**	**2649.16**	**1.04**
1.3G1+1.4G2+1.4S+1.2R+1.4Q+1.2A+1.1AS+0.72T2+0.84V1+0.84D1	58.44	7451.02	1.01
1.3G1+1.4G2+1.4S+1.2R+1.4Q+1.2A+1.1AS+0.72T2+0.84V2+0.84D2	58.90	7451.02	1.01
1.3G1+1.4G2+1.4S+1.2R+1.4Q+1.2A+1.1AS+0.72T2+0.84V3+0.84D3	93.77	2649.16	1.04
1.3G1+1.4G2+1.4S+1.2R+1.4Q+1.2A+1.1AS+0.72T2+0.84V4+0.84D4	93.92	2649.16	1.04
1.3G1+1.4G2+1.4S+1.4Q+1.2A+1.1AS+0.72T1+0.84V1+0.84D1	58.44	7451.02	1.01
1.3G1+1.4G2+1.4S+1.4Q+1.2A+1.1AS+0.72T1+0.84V2+0.84D2	58.90	7451.02	1.01
1.3G1+1.4G2+1.4S+1.4Q+1.2A+1.1AS+0.72T1+0.84V3+0.84D3	93.77	2649.16	1.04
1.3G1+1.4G2+1.4S+1.4Q+1.2A+1.1AS+0.72T1+0.84V4+0.84D4	93.92	2649.16	1.04
1.3G1+1.4G2+1.4S+1.4Q+1.2A+1.1AS+0.72T2+0.84V1+0.84D1	58.44	7451.02	1.01
1.3G1+1.4G2+1.4S+1.4Q+1.2A+1.1AS+0.72T2+0.84V2+0.84D2	58.90	7451.02	1.01
1.3G1+1.4G2+1.4S+1.4Q+1.2A+1.1AS+0.72T2+0.84V3+0.84D3	93.77	2649.16	1.04
1.3G1+1.4G2+1.4S+1.4Q+1.2A+1.1AS+0.72T2+0.84V4+0.84D4	93.92	2649.16	1.04
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+0.84V1+0.84D1	44.38	7451.02	1.01
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+0.84V1+1.4D1	44.38	7451.02	1.01
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+0.84V2+0.84D2	44.58	7451.02	1.01
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+0.84V2+1.4D2	44.58	7451.02	1.01
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+0.84V3+0.84D3	71.08	2649.16	1.03
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+0.84V3+1.4D3	71.08	2649.16	1.03
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+0.84V4+0.84D4	71.17	2649.16	1.03
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+0.84V4+1.4D4	71.17	2649.16	1.03
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+1.4V1+0.84D1	74.04	12418.37	1.01

G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+1.4V2+0.84D2	74.23	12418.37	1.01
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+1.4V3+0.84D3	118.50	4415.26	1.03
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T1+1.4V4+0.84D4	118.58	4415.26	1.03
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+0.84V1+0.84D1	44.38	7451.02	1.01
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+0.84V1+1.4D1	44.38	7451.02	1.01
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+0.84V2+0.84D2	44.58	7451.02	1.01
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+0.84V2+1.4D2	44.58	7451.02	1.01
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+0.84V3+0.84D3	71.08	2649.16	1.03
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+0.84V3+1.4D3	71.08	2649.16	1.03
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+0.84V4+0.84D4	71.17	2649.16	1.03
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+0.84V4+1.4D4	71.17	2649.16	1.03
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+1.4V1+0.84D1	74.04	12418.37	1.01
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+1.4V2+0.84D2	74.23	12418.37	1.01
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+1.4V3+0.84D3	118.50	4415.26	1.03
G1+G2+S+1.2R+0.98Q+1.2A+1.1AS+0.72T2+1.4V4+0.84D4	118.58	4415.26	1.03
G1+G2+S+1.2R+1.4Q+1.2A+1.1AS+0.72T1+0.84V1+0.84D1	45.13	7451.02	1.01
G1+G2+S+1.2R+1.4Q+1.2A+1.1AS+0.72T1+0.84V2+0.84D2	45.34	7451.02	1.01
G1+G2+S+1.2R+1.4Q+1.2A+1.1AS+0.72T1+0.84V3+0.84D3	72.28	2649.16	1.03
G1+G2+S+1.2R+1.4Q+1.2A+1.1AS+0.72T1+0.84V4+0.84D4	72.37	2649.16	1.03
G1+G2+S+1.2R+1.4Q+1.2A+1.1AS+0.72T2+0.84V1+0.84D1	45.13	7451.02	1.01
G1+G2+S+1.2R+1.4Q+1.2A+1.1AS+0.72T2+0.84V2+0.84D2	45.34	7451.02	1.01
G1+G2+S+1.2R+1.4Q+1.2A+1.1AS+0.72T2+0.84V3+0.84D3	72.28	2649.16	1.03
G1+G2+S+1.2R+1.4Q+1.2A+1.1AS+0.72T2+0.84V4+0.84D4	72.37	2649.16	1.03

Pavimento FUNDO

Cálculo dos Pilares

FUNDO	fck = 300.00 kgf/cm²	E = 268384 kgf/cm²	Peso Espec = 2500.00 kgf/m³
Lance 1		cobr = 3.00 cm	

Pilar	Seção (cm)	vínc esb B vínc esb H	Nd máx Nd mín (tf)	Msd(x) Msd(y) (kgf.m)	Mrd(x) Mrd(y) (kgf.m)	Mrd/Msd	As b As h (cm²)
P1	25.00 X 60.00	RR 11.07 RR 4.61	72.15 18.31	1651 525	8126 2584	4.92	1.57 (2 ø 10.0) 3.14 (4 ø 10.0)
P2	25.00 X 60.00	RR 11.07 RR 4.61	71.67 18.07	1640 533	8085 2626	4.93	1.57 (2 ø 10.0) 3.14 (4 ø 10.0)
P3	25.00 X 70.00	RR 11.07 RR 3.95	93.64 18.96	2758 2105	7032 5366	(*) 2.55	2.45 (2 ø 12.5) 3.68 (3 ø 12.5)
P4	20.00 X 50.00	RR 13.84 RR 5.54	110.66 16.86	1588 2878	2969 5380	1.87	1.57 (2 ø 10.0) 2.36 (3 ø 10.0)
P5	25.00 X 70.00	RR 11.07 RR 3.95	93.42 18.81	2760 2098	7027 5341	(*) 2.55	2.45 (2 ø 12.5) 3.68 (3 ø 12.5)
P6	25.00 X 60.00	RR 11.07 RR 4.61	72.76 18.81	1665 525	8159 2572	4.90	1.57 (2 ø 10.0) 3.14 (4 ø 10.0)
P7	25.00 X 60.00	RR 11.07 RR 4.61	72.68 18.67	1663 527	8154 2584	4.90	1.57 (2 ø 10.0) 3.14 (4 ø 10.0)

(*) Quantidade de barras alterada pelo usuário (para mais)

Vigas do pavimento FUNDO

Viga	Vãos			Nós			Avisos
	Md (kgf.m)	As	Als	Md (kgf.m)	As	Als	
VB1	5112.06 5112.75	4 ø 10.0 4 ø 10.0		-782.50 -13284.08 -782.00	4 ø 10.0 4 ø 16.0 4 ø 10.0		Aviso 38

Pavimento TOPO

Cálculo dos Pilares

TOPO	fck = 300.00 kgf/cm²	E = 268384 kgf/cm²	Peso Espec = 2500.00 kgf/m³
Lance 2		cobr = 3.00 cm	

Pilar	Seção (cm)	vínc esb B vínc esb H	Nd máx Nd mín (tf)	Msd(x) Msd(y) (kgf.m)	Mrd(x) Mrd(y) (kgf.m)	Mrd/Msd	As b As h (cm²)
P1	25.00 X 60.00	RR 52.59 RR 21.91	46.01 -0.14	2071 1195	6244 3603	3.01	1.57 (2 ø 10.0) 3.14 (4 ø 10.0)
P2	25.00 X 60.00	RR 52.59 RR 21.91	45.71 -0.09	2057 1186	6225 3590	3.03	1.57 (2 ø 10.0) 3.14 (4 ø 10.0)
P3	25.00 X 70.00	RR 52.59 RR 18.78	56.02 2.29	4367 64	5262 78	(*) 1.20	2.45 (2 ø 12.5) 3.68 (3 ø 12.5)
P4	20.00 X 50.00	RR 65.74 RR 26.30	38.41 20.24	1749 105	4148 249	2.37	1.57 (2 ø 10.0) 2.36 (3 ø 10.0)
P5	25.00 X 70.00	RR 52.59 RR 18.78	55.88 2.29	4363 64	5251 77	(*) 1.20	2.45 (2 ø 12.5) 3.68 (3 ø 12.5)
P6	25.00 X 60.00	RR 52.59 RR 21.91	46.39 -0.14	2087 1206	6266 3620	3.00	1.57 (2 ø 10.0) 3.14 (4 ø 10.0)
P7	25.00 X 60.00	RR 52.59 RR 21.91	46.34 -0.14	2085 1205	6261 3618	3.00	1.57 (2 ø 10.0) 3.14 (4 ø 10.0)

(*) Quantidade de barras alterada pelo usuário (para mais)

Vigas do pavimento TOPO

Viga	Vãos			Nós			Avisos
	Md (kgf.m)	As	Als	Md (kgf.m)	As	Als	
V101	3735.33 3733.77	2 ø 16.0 2 ø 16.0		-3943.11 -5495.37 -3942.49	2 ø 16.0 2 ø 16.0 2 ø 16.0		Aviso 38

Cálculos do Reservatório

TOPO	fck = 300.00 kgf/cm²	E = 268384 kgf/cm²	Peso Espec = 2500.00 kgf/m³
Lance 2		cobr = 3.00 cm	

Reservatório RES1

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)**			
L1	X	Md = 1849 kgf.m/m As = 2.63 cm²/m A's = 0.00 cm²/m	Fd = 6.19 tf Situação: GE As = 1.79 cm²/m A's = 0.00 cm²/m	Fd = 0.61 tf Situação: GE As = 2.71 cm²/m A's = 0.00 cm²/m	Md = 5807 kgf.m/m As = 8.82 cm²/m A's = 0.00 cm²/m	Fd = 6.19 tf Situação: GE As = 8.02 cm²/m A's = 0.00 cm²/m	Fd = 0.61 tf Situação: GE As = 8.90 cm²/m A's = 0.00 cm²/m	As = 2.71 cm²/m ø10.0 c/20 (3.93 cm²/m) M = 1331.42 kgf.m/m F = 0.05 tf fiss = 0.08 mm		vsd = 12.42 tf/m vrd1 = 11.10 tf/m Modelo I vrd2 = 81.46 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m
	Y	Md = 1785 kgf.m/m As = 2.70 cm²/m A's = 0.00 cm²/m	Fd = 6.12 tf Situação: GE As = 1.82 cm²/m A's = 0.00 cm²/m	Fd = 0.56 tf Situação: GE As = 2.79 cm²/m A's = 0.00 cm²/m	Md = 4710 kgf.m/m As = 7.58 cm²/m A's = 0.00 cm²/m	Fd = 6.12 tf Situação: GE As = 6.72 cm²/m A's = 0.00 cm²/m	Fd = 0.56 tf Situação: GE As = 7.66 cm²/m A's = 0.00 cm²/m	As = 2.79 cm²/m ø10.0 c/20 (3.93 cm²/m) M = 1267.18 kgf.m/m F = 0.33 tf fiss = 0.09 mm		vsd = 11.12 tf/m vrd1 = 10.55 tf/m vrd2 = 76.37 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m
L1	X	Md = 2931 kgf.m/m	Fd = 15.80 tf Situação: GE	Fd = 8.31 tf Situação: GE	Md = 10448 kgf.m/m	Fd = 15.80 tf Situação: GE	Fd = 8.31 tf Situação: GE	As = 4.34 cm²/m ø16.0 c/20		vsd = 25.10 tf/m vrd1 = 14.81 tf/m Modelo I

		As = 3.24 cm²/m A's = 0.00 cm²/m	As = 1.17 cm²/m A's = 0.00 cm²/m	As = 4.34 cm²/m A's = 0.00 cm²/m	As = 12.17 cm²/m A's = 0.00 cm²/m	As = 10.28 cm²/m A's = 0.00 cm²/m	As = 13.18 cm²/m A's = 0.00 cm²/m	(10.05 cm²/m) M = 2441.83 kgf.m/m F = 5.65 tf fiss = 0.07 mm		vrd2 = 105.39 tf/m vsw = 7.11 tf/m asw = 11.15 cm²/m
	Y	Md = 3777 kgf.m/m As = 4.56 cm²/m A's = 0.00 cm²/m	Fd = 9.83 tf Situação: GE As = 3.17 cm²/m A's = 0.00 cm²/m	Fd = 7.76 tf Situação: GE As = 5.66 cm²/m A's = 0.00 cm²/m	Md = 2860 kgf.m/m As = 3.40 cm²/m A's = 0.00 cm²/m	Fd = 9.83 tf Situação: GE As = 2.01 cm²/m A's = 0.00 cm²/m	Fd = 7.76 tf Situação: GE As = 4.50 cm²/m A's = 0.00 cm²/m	As = 5.66 cm²/m ø16.0 c/20 (10.05 cm²/m) M = 2773.54 kgf.m/m F = 5.24 tf fiss = 0.09 mm	A's = 4.07 cm²/m ø10.0 c/19 (4.13 cm²/m) M = 2183.68 kgf.m/m F = 5.24 tf fiss = 0.09 mm	vsd = 10.36 tf/m vrd1 = 14.00 tf/m vrd2 = 97.25 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m
L2	X	Md = 1865 kgf.m/m As = 2.65 cm²/m A's = 0.00 cm²/m	Fd = 6.00 tf Situação: GE As = 1.84 cm²/m A's = 0.00 cm²/m	Fd = 0.60 tf Situação: GE As = 2.73 cm²/m A's = 0.00 cm²/m	Md = 5834 kgf.m/m As = 8.86 cm²/m A's = 0.00 cm²/m	Fd = 6.00 tf Situação: GE As = 8.09 cm²/m A's = 0.00 cm²/m	Fd = 0.60 tf Situação: GE As = 8.94 cm²/m A's = 0.00 cm²/m	As = 2.73 cm²/m ø10.0 c/20 (3.93 cm²/m) M = 1342.54 kgf.m/m F = 0.04 tf fiss = 0.09 mm		vsd = 12.50 tf/m vrd1 = 11.10 tf/m Modelo I vrd2 = 81.46 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m
	Y	Md = 1801 kgf.m/m As = 2.73 cm²/m A's = 0.00 cm²/m	Fd = 6.09 tf Situação: GE As = 1.85 cm²/m A's = 0.00 cm²/m	Fd = 0.49 tf Situação: GE As = 2.80 cm²/m A's = 0.00 cm²/m	Md = 4744 kgf.m/m As = 7.64 cm²/m A's = 0.00 cm²/m	Fd = 6.09 tf Situação: GE As = 6.78 cm²/m A's = 0.00 cm²/m	Fd = 0.49 tf Situação: GE As = 7.71 cm²/m A's = 0.00 cm²/m	As = 2.80 cm²/m ø10.0 c/20 (3.93 cm²/m) M = 1278.30 kgf.m/m F = 0.29 tf fiss = 0.09 mm		vsd = 11.15 tf/m vrd1 = 10.55 tf/m vrd2 = 76.37 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m
L2	X	Md = 2918 kgf.m/m	Fd = 15.80 tf Situação: GE As = 1.15 cm²/m	Fd = 8.33 tf Situação: GE	Md = 10449 kgf.m/m	Fd = 15.80 tf Situação: GE	Fd = 8.33 tf Situação: GE	As = 4.33 cm²/m ø16.0 c/20		vsd = 25.10 tf/m vrd1 = 14.81 tf/m Modelo I

		As = 3.22 cm²/m A's = 0.00 cm²/m	A's = 0.00 cm²/m	As = 4.33 cm²/m A's = 0.00 cm²/m	As = 12.17 cm²/m A's = 0.00 cm²/m	As = 10.28 cm²/m A's = 0.00 cm²/m	As = 13.18 cm²/m A's = 0.00 cm²/m	(10.05 cm²/m) M = 2432.68 kgf.m/m F = 5.66 tf fiss = 0.06 mm		vrd2 = 105.39 tf/m vsw = 7.12 tf/m asw = 11.15 cm²/m
	Y	Md = 3775 kgf.m/m As = 4.56 cm²/m A's = 0.00 cm²/m	Fd = 9.82 tf Situação: GE As = 3.17 cm²/m A's = 0.00 cm²/m	Fd = 7.84 tf Situação: GE As = 5.67 cm²/m A's = 0.00 cm²/m	Md = 2861 kgf.m/m As = 3.40 cm²/m A's = 0.00 cm²/m	Fd = 9.82 tf Situação: GE As = 2.01 cm²/m A's = 0.00 cm²/m	Fd = 7.84 tf Situação: GE As = 4.51 cm²/m A's = 0.00 cm²/m	As = 5.67 cm²/m ø16.0 c/20 (10.05 cm²/m) M = 2770.22 kgf.m/m F = 5.31 tf fiss = 0.09 mm	A's = 4.07 cm²/m ø10.0 c/19 (4.13 cm²/m) M = 2185.16 kgf.m/m F = 5.31 tf fiss = 0.09 mm	vsd = 10.36 tf/m vrd1 = 14.00 tf/m vrd2 = 97.25 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m
PAR 1	X	Md = 2102 kgf.m/m As = 2.27 cm²/m A's = 0.00 cm²/m		Fd = 4.14 tf Situação: GE As = 1.00 cm²/m A's = 0.00 cm²/m	Md = 2102 kgf.m/m As = 2.27 cm²/m A's = 0.00 cm²/m		Fd = 4.14 tf Situação: GE As = 1.90 cm²/m A's = 0.00 cm²/m	As = 2.51 cm²/m ø8.0 c/20 (2.51 cm²/m) M = 297.23 kgf.m/m F = 2.80 tf fiss = 0.02 mm	A's = 2.51 cm²/m ø8.0 c/20 (2.51 cm²/m) M = 903.02 kgf.m/m F = 2.80 tf fiss = 0.07 mm	vsd = 9.82 tf/m vrd1 = 13.49 tf/m Modelo I vrd2 = 107.43 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m
	Y	Md = 2102 kgf.m/m As = 2.37 cm²/m A's = 0.00 cm²/m		Fd = 10.82 tf Situação: GE As = 3.11 cm²/m A's = 0.00 cm²/m	Md = 2814 kgf.m/m As = 3.21 cm²/m A's = 0.00 cm²/m	Fd = 22.49 tf Situação: GE As = 0.17 cm²/m A's = 0.00 cm²/m	Fd = 10.82 tf Situação: GE As = 4.69 cm²/m A's = 0.00 cm²/m	As = 3.11 cm²/m ø10.0 c/20 (3.93 cm²/m) M = 1063.78 kgf.m/m F = 7.21 tf fiss = 0.09 mm	A's = 7.14 cm²/m ø12.5 c/19 (6.46 cm²/m) M = 2015.42 kgf.m/m F = 7.21 tf fiss = 0.08 mm	vsd = 9.53 tf/m vrd1 = 13.77 tf/m vrd2 = 102.85 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m
PAR 2	X	Md = 2102 kgf.m/m		Fd = 4.20 tf Situação: GE	Md = 2102 kgf.m/m		Fd = 4.20 tf Situação: GE	As = 2.51 cm²/m ø8.0 c/20	A's = 2.51 cm²/m ø8.0 c/20	vsd = 9.81 tf/m vrd1 = 13.49 tf/m Modelo I

		As = 2.27 cm²/m A's = 0.00 cm²/m		As = 1.00 cm²/m A's = 0.00 cm²/m	As = 2.27 cm²/m A's = 0.00 cm²/m		As = 1.90 cm²/m A's = 0.00 cm²/m	(2.51 cm²/m) M = 291.39 kgf.m/m F = 2.84 tf fiss = 0.02 mm	(2.51 cm²/m) M = 894.39 kgf.m/m F = 2.84 tf fiss = 0.07 mm	vrd2 = 107.43 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m
	Y	Md = 2102 kgf.m/m As = 2.37 cm²/m A's = 0.00 cm²/m		Fd = 10.82 tf Situação : GE As = 3.17 cm²/m A's = 0.00 cm²/m	Md = 2815 kgf.m/m As = 3.21 cm²/m A's = 0.00 cm²/m	Fd = 22.68 tf Situação: GE As = 0.15 cm²/m A's = 0.00 cm²/m	Fd = 10.82 tf Situação : GE As = 4.69 cm²/m A's = 0.00 cm²/m	As = 3.17 cm²/m ø10.0 c/20 (3.93 cm²/m) M = 1101.84 kgf.m/m F = 7.20 tf fiss = 0.10 mm	A's = 7.14 cm²/m ø12.5 c/19 (6.46 cm²/m) M = 2016.01 kgf.m/m F = 7.20 tf fiss = 0.08 mm	vsd = 9.50 tf/m vrd1 = 13.77 tf/m vrd2 = 102.85 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m
PAR 3-A	X	Md = 2102 kgf.m/m As = 2.27 cm²/m A's = 0.00 cm²/m		Fd = 7.11 tf Situação : GE As = 1.93 cm²/m A's = 0.00 cm²/m	Md = 2102 kgf.m/m As = 2.27 cm²/m A's = 0.00 cm²/m		Fd = 7.11 tf Situação : GE As = 1.96 cm²/m A's = 0.00 cm²/m	As = 2.51 cm²/m ø8.0 c/20 (2.51 cm²/m) M = 266.60 kgf.m/m F = 4.76 tf fiss = 0.03 mm	A's = 2.51 cm²/m ø8.0 c/20 (2.51 cm²/m) M = 678.35 kgf.m/m F = 4.76 tf fiss = 0.07 mm	vsd = 9.71 tf/m vrd1 = 13.49 tf/m Modelo I vrd2 = 107.43 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m
	Y	Md = 2102 kgf.m/m As = 2.37 cm²/m A's = 0.00 cm²/m		Fd = 10.57 tf Situação : GE As = 3.05 cm²/m A's = 0.00 cm²/m	Md = 3176 kgf.m/m As = 3.66 cm²/m A's = 0.00 cm²/m	Fd = 22.99 tf Situação: GE As = 0.54 cm²/m A's = 0.00 cm²/m	Fd = 10.57 tf Situação : GE As = 5.11 cm²/m A's = 0.00 cm²/m	As = 3.05 cm²/m ø10.0 c/20 (3.93 cm²/m) M = 1054.56 kgf.m/m F = 7.05 tf fiss = 0.09 mm	A's = 5.11 cm²/m ø16.0 c/20 (10.05 cm²/m) M = 2268.22 kgf.m/m F = 7.05 tf fiss = 0.07 mm	vsd = 9.79 tf/m vrd1 = 14.41 tf/m vrd2 = 102.85 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m
PAR 3-B	X	Md = 2102 kgf.m/m		Fd = 7.11 tf Situação : GE	Md = 2102 kgf.m/m		Fd = 7.11 tf Situação : GE	As = 2.51 cm²/m ø8.0 c/20	A's = 2.51 cm²/m ø8.0 c/20	vsd = 9.70 tf/m vrd1 = 13.49 tf/m Modelo I

		As = 2.27 cm²/m A's = 0.00 cm²/m		As = 1.93 cm²/m A's = 0.00 cm²/m	As = 2.27 cm²/m A's = 0.00 cm²/m		As = 1.96 cm²/m A's = 0.00 cm²/m	(2.51 cm²/m) M = 263.56 kgf.m/m F = 4.77 tf fiss = 0.03 mm	(2.51 cm²/m) M = 676.46 kgf.m/m F = 4.77 tf fiss = 0.07 mm	vrd2 = 107.43 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m
	Y	Md = 2102 kgf.m/m As = 2.37 cm²/m A's = 0.00 cm²/m		Fd = 10.57 tf Situação : GE As = 3.07 cm²/m A's = 0.00 cm²/m	Md = 3174 kgf.m/m As = 3.66 cm²/m A's = 0.00 cm²/m	Fd = 22.99 tf Situação: GE As = 0.54 cm²/m A's = 0.00 cm²/m	Fd = 10.57 tf Situação : GE As = 5.11 cm²/m A's = 0.00 cm²/m	As = 3.07 cm²/m ø10.0 c/20 (3.93 cm²/m) M = 1066.42 kgf.m/m F = 7.05 tf fiss = 0.09 mm	A's = 5.11 cm²/m ø16.0 c/20 (10.05 cm²/m) M = 2266.89 kgf.m/m F = 7.05 tf fiss = 0.07 mm	vsd = 9.79 tf/m vrd1 = 14.41 tf/m vrd2 = 102.85 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m
PAR 4-A	X	Md = 2102 kgf.m/m As = 2.27 cm²/m A's = 0.00 cm²/m		Fd = 7.11 tf Situação : GE As = 1.93 cm²/m A's = 0.00 cm²/m	Md = 2102 kgf.m/m As = 2.27 cm²/m A's = 0.00 cm²/m		Fd = 7.11 tf Situação : GE As = 1.96 cm²/m A's = 0.00 cm²/m	As = 2.51 cm²/m ø8.0 c/20 (2.51 cm²/m) M = 263.57 kgf.m/m F = 4.76 tf fiss = 0.03 mm	A's = 2.51 cm²/m ø8.0 c/20 (2.51 cm²/m) M = 676.47 kgf.m/m F = 4.76 tf fiss = 0.07 mm	vsd = 9.70 tf/m vrd1 = 13.49 tf/m Modelo I vrd2 = 107.43 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m
	Y	Md = 2102 kgf.m/m As = 2.37 cm²/m A's = 0.00 cm²/m		Fd = 10.57 tf Situação : GE As = 3.07 cm²/m A's = 0.00 cm²/m	Md = 3174 kgf.m/m As = 3.66 cm²/m A's = 0.00 cm²/m	Fd = 22.93 tf Situação: GE As = 0.54 cm²/m A's = 0.00 cm²/m	Fd = 10.57 tf Situação : GE As = 5.11 cm²/m A's = 0.00 cm²/m	As = 3.07 cm²/m ø10.0 c/20 (3.93 cm²/m) M = 1066.38 kgf.m/m F = 7.05 tf fiss = 0.09 mm	A's = 5.11 cm²/m ø16.0 c/20 (10.05 cm²/m) M = 2266.85 kgf.m/m F = 7.05 tf fiss = 0.07 mm	vsd = 9.79 tf/m vrd1 = 14.41 tf/m vrd2 = 102.85 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m
PAR 4-B	X	Md = 2102 kgf.m/m		Fd = 7.09 tf Situação : GE	Md = 2102 kgf.m/m		Fd = 7.09 tf Situação : GE	As = 2.51 cm²/m ø8.0 c/20	A's = 2.51 cm²/m ø8.0 c/20	vsd = 9.71 tf/m vrd1 = 13.49 tf/m Modelo I

		As = 2.27 cm²/m A's = 0.00 cm²/m		As = 1.92 cm²/m A's = 0.00 cm²/m	As = 2.27 cm²/m A's = 0.00 cm²/m		As = 1.96 cm²/m A's = 0.00 cm²/m	(2.51 cm²/m) M = 270.92 kgf.m/m F = 4.75 tf fiss = 0.03 mm	(2.51 cm²/m) M = 682.05 kgf.m/m F = 4.75 tf fiss = 0.07 mm	vrd2 = 107.43 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m
	Y	Md = 2102 kgf.m/m As = 2.37 cm²/m A's = 0.00 cm²/m		Fd = 10.58 tf Situação: GE As = 3.04 cm²/m A's = 0.00 cm²/m	Md = 3177 kgf.m/m As = 3.66 cm²/m A's = 0.00 cm²/m	Fd = 22.93 tf Situação: GE As = 0.55 cm²/m A's = 0.00 cm²/m	Fd = 10.58 tf Situação: GE As = 5.11 cm²/m A's = 0.00 cm²/m	As = 3.04 cm²/m ø10.0 c/20 (3.93 cm²/m) M = 1047.91 kgf.m/m F = 7.06 tf fiss = 0.09 mm	A's = 5.11 cm²/m ø16.0 c/20 (10.05 cm²/m) M = 2268.91 kgf.m/m F = 7.06 tf fiss = 0.07 mm	vsd = 9.80 tf/m vrd1 = 14.41 tf/m vrd2 = 102.85 tf/m vsw = 0.00 tf/m asw = 0.00 cm²/m

ARMADURAS NEGATIVAS (NA CONTINUIDADE)								
Viga	**Laje 1**	**Momento negativo**			**Momento positivo**			**Armaduras finais**
Trecho	**Laje 2**	**Flexão**	**Flexo compressão**	**Flexo tração**	**Flexão**	**Flexo compressão**	**Flexo tração**	
Barra	L1 PAR4-B	Md = 3138 kgf.m/m As = 3.47 cm²/m A's = 0.00 cm²/m	Fd = 20.48 tf Situação: GE As = 0.48 cm²/m A's = 0.00 cm²/m	Fd = 10.47 tf Situação: GE As = 4.55 cm²/m A's = 0.00 cm²/m				As = 4.55 cm²/m (ø16.0 c/20 - 10.05 cm²/m) fiss = 0.05 mm
Barra	PAR4-B L1	Md = 3777 kgf.m/m As = 4.20 cm²/m A's = 0.00 cm²/m	Fd = 20.48 tf Situação: GE As = 1.54 cm²/m A's = 0.00 cm²/m	Fd = 10.47 tf Situação: GE As = 5.57 cm²/m A's = 0.00 cm²/m				As = 5.57 cm²/m (ø16.0 c/20 - 10.05 cm²/m) fiss = 0.08 mm
Barra	L1 PAR1	Md = 3138 kgf.m/m As = 3.47 cm²/m A's = 0.00 cm²/m	Fd = 17.94 tf Situação: GE As = 0.95 cm²/m A's = 0.00 cm²/m	Fd = 10.71 tf Situação: GE As = 4.72 cm²/m A's = 0.00 cm²/m				As = 4.72 cm²/m (ø16.0 c/20 - 10.05 cm²/m) fiss = 0.06 mm
Barra	PAR1 L1	Md = 3138 kgf.m/m As = 3.47 cm²/m	Fd = 17.94 tf Situação: GE As = 1.02 cm²/m A's = 0.00 cm²/m	Fd = 10.71 tf Situação: GE As = 4.78 cm²/m				As = 4.78 cm²/m (ø16.0 c/20 - 10.05 cm²/m) fiss = 0.06 mm

		A's = 0.00 cm²/m		A's = 0.00 cm²/m				
Barra	L1 PAR3-A	Md = 3138 kgf.m/m As = 3.47 cm²/m A's = 0.00 cm²/m	Fd = 20.54 tf Situação: GE As = 0.47 cm²/m A's = 0.00 cm²/m	Fd = 10.47 tf Situação: GE As = 4.55 cm²/m A's = 0.00 cm²/m				As = 4.55 cm²/m (ø16.0 c/20 - 10.05 cm²/m) fiss = 0.05 mm
Barra	PAR3-A L1	Md = 3774 kgf.m/m As = 4.19 cm²/m A's = 0.00 cm²/m	Fd = 20.54 tf Situação: GE As = 1.53 cm²/m A's = 0.00 cm²/m	Fd = 10.47 tf Situação: GE As = 5.57 cm²/m A's = 0.00 cm²/m				As = 5.57 cm²/m (ø16.0 c/20 - 10.05 cm²/m) fiss = 0.08 mm
VB1 1	L1 L2	Md = 10449 kgf.m/m As = 12.17 cm²/m A's = 0.00 cm²/m	Fd = 15.80 tf Situação: GE As = 10.28 cm²/m A's = 0.00 cm²/m	Fd = 3.66 tf Situação: GE As = 12.61 cm²/m A's = 0.00 cm²/m				As = 20.66 cm²/m (ø16.0 c/9 - 22.34 cm²/m) fiss = 0.09 mm
VB1 2	L1 L2	Md = 10449 kgf.m/m As = 12.17 cm²/m A's = 0.00 cm²/m	Fd = 15.80 tf Situação: GE As = 10.28 cm²/m A's = 0.00 cm²/m	Fd = 3.66 tf Situação: GE As = 12.61 cm²/m A's = 0.00 cm²/m				As = 20.66 cm²/m (ø16.0 c/9 - 22.34 cm²/m) fiss = 0.09 mm
Barra	L2 PAR4-A	Md = 3138 kgf.m/m As = 3.47 cm²/m A's = 0.00 cm²/m	Fd = 20.50 tf Situação: GE As = 0.48 cm²/m A's = 0.00 cm²/m	Fd = 10.46 tf Situação: GE As = 4.55 cm²/m A's = 0.00 cm²/m				As = 4.55 cm²/m (ø16.0 c/20 - 10.05 cm²/m) fiss = 0.05 mm
Barra	PAR4-A L2	Md = 3775 kgf.m/m As = 4.19 cm²/m A's = 0.00 cm²/m	Fd = 20.50 tf Situação: GE As = 1.54 cm²/m A's = 0.00 cm²/m	Fd = 10.46 tf Situação: GE As = 5.57 cm²/m A's = 0.00 cm²/m				As = 5.57 cm²/m (ø16.0 c/20 - 10.05 cm²/m) fiss = 0.08 mm
Barra	L2 PAR3-B	Md = 3138 kgf.m/m As = 3.47 cm²/m A's = 0.00 cm²/m	Fd = 20.55 tf Situação: GE As = 0.47 cm²/m A's = 0.00 cm²/m	Fd = 10.46 tf Situação: GE As = 4.55 cm²/m A's = 0.00 cm²/m				As = 4.55 cm²/m (ø16.0 c/20 - 10.05 cm²/m) fiss = 0.05 mm
Barra	PAR3-B	Md = 3773 kgf.m/m	Fd = 20.55 tf Situação: GE	Fd = 10.46 tf				As = 5.57 cm²/m

	L2	As = 4.19 cm²/m A's = 0.00 cm²/m	As = 1.53 cm²/m A's = 0.00 cm²/m	Situação: GE As = 5.57 cm²/m A's = 0.00 cm²/m				(ø16.0 c/20 - 10.05 cm²/m) fiss = 0.08 mm
Barra	L2 PAR2	Md = 3138 kgf.m/m As = 3.47 cm²/m A's = 0.00 cm²/m	Fd = 18.10 tf Situação: GE As = 0.94 cm²/m A's = 0.00 cm²/m	Fd = 10.70 tf Situação: GE As = 4.73 cm²/m A's = 0.00 cm²/m				As = 4.73 cm²/m (ø16.0 c/20 - 10.05 cm²/m) fiss = 0.06 mm
Barra	PAR2 L2	Md = 3138 kgf.m/m As = 3.47 cm²/m A's = 0.00 cm²/m	Fd = 18.10 tf Situação: GE As = 0.98 cm²/m A's = 0.00 cm²/m	Fd = 10.70 tf Situação: GE As = 4.77 cm²/m A's = 0.00 cm²/m				As = 4.77 cm²/m (ø16.0 c/20 - 10.05 cm²/m) fiss = 0.06 mm
Barra	L1 PAR3-A	Md = 4710 kgf.m/m As = 7.05 cm²/m A's = 0.00 cm²/m	Fd = 27.84 tf Situação: GE As = 3.45 cm²/m A's = 0.00 cm²/m	Fd = 14.72 tf Situação: GE As = 9.01 cm²/m A's = 0.00 cm²/m				As = 15.04 cm²/m (ø16.0 c/13 - 15.47 cm²/m) fiss = 0.09 mm
Barra	PAR3-A L1	Md = 2008 kgf.m/m As = 2.86 cm²/m A's = 0.00 cm²/m		Fd = 14.72 tf Situação: PE As = 1.86 cm²/m A's = 1.52 cm²/m				As = 3.00 cm²/m (ø10.0 c/20 - 3.93 cm²/m) fiss = 0.03 mm
Barra	PAR1 PAR3-A	Md = 4913 kgf.m/m As = 5.50 cm²/m A's = 0.00 cm²/m	Fd = 10.82 tf Situação: GE As = 4.11 cm²/m A's = 0.00 cm²/m	Fd = 4.14 tf Situação: GE As = 6.04 cm²/m A's = 0.00 cm²/m				As = 10.06 cm²/m (ø16.0 c/19 - 10.58 cm²/m) fiss = 0.09 mm
Barra	PAR3-A PAR1	Md = 3138 kgf.m/m As = 3.42 cm²/m A's = 0.00 cm²/m		Fd = 4.14 tf Situação: GE As = 1.20 cm²/m A's = 0.00 cm²/m				As = 3.75 cm²/m (ø10.0 c/20 - 3.93 cm²/m) fiss = 0.01 mm
Barra	PAR3-A PAR3-B	Md = 3138 kgf.m/m As = 3.42 cm²/m		Fd = 7.11 tf Situação: GE As = 2.34 cm²/m A's = 0.00 cm²/m				As = 3.75 cm²/m (ø10.0 c/20 - 3.93 cm²/m) fiss = 0.05 mm

		A's = 0.00 cm²/m						
Barra	PAR3-B PAR3-A	Md = 3138 kgf.m/m As = 3.42 cm²/m A's = 0.00 cm²/m		Fd = 7.11 tf Situação: PE As = 1.04 cm²/m A's = 0.59 cm²/m				As = 3.75 cm²/m (ø10.0 c/20 - 3.93 cm²/m) fiss = 0.01 mm
Barra	L2 PAR3-B	Md = 4744 kgf.m/m As = 7.11 cm²/m A's = 0.00 cm²/m	Fd = 27.87 tf Situação: GE As = 3.50 cm²/m A's = 0.00 cm²/m	Fd = 14.86 tf Situação: GE As = 9.08 cm²/m A's = 0.00 cm²/m				As = 15.11 cm²/m (ø16.0 c/13 - 15.47 cm²/m) fiss = 0.09 mm
Barra	PAR3-B L2	Md = 2008 kgf.m/m As = 2.86 cm²/m A's = 0.00 cm²/m		Fd = 14.86 tf Situação: PE As = 1.88 cm²/m A's = 1.53 cm²/m				As = 3.00 cm²/m (ø10.0 c/20 - 3.93 cm²/m) fiss = 0.03 mm
Barra	PAR2 PAR3-B	Md = 3138 kgf.m/m As = 3.42 cm²/m A's = 0.00 cm²/m		Fd = 4.20 tf Situação: GE As = 1.23 cm²/m A's = 0.00 cm²/m				As = 3.75 cm²/m (ø10.0 c/20 - 3.93 cm²/m) fiss = 0.01 mm
Barra	PAR3-B PAR2	Md = 4904 kgf.m/m As = 5.49 cm²/m A's = 0.00 cm²/m	Fd = 10.91 tf Situação: GE As = 4.09 cm²/m A's = 0.00 cm²/m	Fd = 4.20 tf Situação: GE As = 6.03 cm²/m A's = 0.00 cm²/m				As = 12.07 cm²/m (ø16.0 c/16 - 12.57 cm²/m) fiss = 0.07 mm
Barra	L2 PAR4-A	Md = 4744 kgf.m/m As = 7.11 cm²/m A's = 0.00 cm²/m	Fd = 27.80 tf Situação: GE As = 3.51 cm²/m A's = 0.00 cm²/m	Fd = 14.84 tf Situação: GE As = 9.08 cm²/m A's = 0.00 cm²/m				As = 15.11 cm²/m (ø16.0 c/13 - 15.47 cm²/m) fiss = 0.09 mm
Barra	PAR4-A L2	Md = 2008 kgf.m/m As = 2.86 cm²/m A's = 0.00 cm²/m		Fd = 14.84 tf Situação: PE As = 1.88 cm²/m A's = 1.53 cm²/m				As = 3.00 cm²/m (ø10.0 c/20 - 3.93 cm²/m) fiss = 0.03 mm
Barra	PAR4-A	Md = 3138 kgf.m/m		Fd = 4.20 tf Situação: GE				As = 3.75 cm²/m

	PAR2	As = 3.42 cm²/m A's = 0.00 cm²/m		As = 1.23 cm²/m A's = 0.00 cm²/m				(ø10.0 c/20 - 3.93 cm²/m) fiss = 0.01 mm
Barra	PAR2 PAR4-A	Md = 4904 kgf.m/m As = 5.49 cm²/m A's = 0.00 cm²/m	Fd = 10.90 tf Situação: GE As = 4.09 cm²/m A's = 0.00 cm²/m	Fd = 4.20 tf Situação: GE As = 6.03 cm²/m A's = 0.00 cm²/m				As = 12.07 cm²/m (ø16.0 c/16 - 12.57 cm²/m) fiss = 0.07 mm
Barra	PAR4-B PAR4-A	Md = 3138 kgf.m/m As = 3.42 cm²/m A's = 0.00 cm²/m		Fd = 7.11 tf Situação: PE As = 1.04 cm²/m A's = 0.59 cm²/m				As = 3.75 cm²/m (ø10.0 c/20 - 3.93 cm²/m) fiss = 0.01 mm
Barra	PAR4-A PAR4-B	Md = 3138 kgf.m/m As = 3.42 cm²/m A's = 0.00 cm²/m		Fd = 7.11 tf Situação: GE As = 2.34 cm²/m A's = 0.00 cm²/m				As = 3.75 cm²/m (ø10.0 c/20 - 3.93 cm²/m) fiss = 0.05 mm
Barra	L1 PAR4-B	Md = 4708 kgf.m/m As = 7.05 cm²/m A's = 0.00 cm²/m	Fd = 27.75 tf Situação: GE As = 3.46 cm²/m A's = 0.00 cm²/m	Fd = 14.61 tf Situação: GE As = 8.99 cm²/m A's = 0.00 cm²/m				As = 15.02 cm²/m (ø16.0 c/13 - 15.47 cm²/m) fiss = 0.09 mm
Barra	PAR4-B L1	Md = 2008 kgf.m/m As = 2.86 cm²/m A's = 0.00 cm²/m		Fd = 14.61 tf Situação: PE As = 1.83 cm²/m A's = 1.53 cm²/m				As = 3.00 cm²/m (ø10.0 c/20 - 3.93 cm²/m) fiss = 0.03 mm
Barra	PAR1 PAR4-B	Md = 3138 kgf.m/m As = 3.42 cm²/m A's = 0.00 cm²/m		Fd = 4.10 tf Situação: GE As = 1.12 cm²/m A's = 0.00 cm²/m				As = 3.75 cm²/m (ø10.0 c/20 - 3.93 cm²/m) fiss = 0.01 mm
Barra	PAR4-B PAR1	Md = 4925 kgf.m/m As = 5.51 cm²/m A's = 0.00 cm²/m	Fd = 10.77 tf Situação: GE As = 4.13 cm²/m A's = 0.00 cm²/m	Fd = 4.10 tf Situação: GE As = 6.05 cm²/m A's = 0.00 cm²/m				As = 10.07 cm²/m (ø16.0 c/19 - 10.58 cm²/m) fiss = 0.09 mm

Barra	L2 PAR2	Md = 4527 kgf.m/m As = 6.76 cm²/m A's = 0.00 cm²/m	Fd = 25.20 tf Situação: GE As = 3.48 cm²/m A's = 0.00 cm²/m	Fd = 0.90 tf Situação: GE As = 6.88 cm²/m A's = 0.00 cm²/m				As = 12.92 cm²/m (ø16.0 c/15 - 13.40 cm²/m) fiss = 0.08 mm
Barra	PAR2 L2	Md = 2008 kgf.m/m As = 2.86 cm²/m A's = 0.00 cm²/m		Fd = 0.90 tf Situação: GE As = 0.33 cm²/m A's = 0.00 cm²/m				As = 3.00 cm²/m (ø10.0 c/20 - 3.93 cm²/m) fiss = 0.00 mm
Barra	L1 PAR1	Md = 4508 kgf.m/m As = 6.73 cm²/m A's = 0.00 cm²/m	Fd = 24.96 tf Situação: GE As = 3.48 cm²/m A's = 0.00 cm²/m	Fd = 0.89 tf Situação: GE As = 6.85 cm²/m A's = 0.00 cm²/m				As = 12.88 cm²/m (ø16.0 c/15 - 13.40 cm²/m) fiss = 0.08 mm
Barra	PAR1 L1	Md = 2008 kgf.m/m As = 2.86 cm²/m A's = 0.00 cm²/m		Fd = 0.89 tf Situação: GE As = 0.33 cm²/m A's = 0.00 cm²/m				As = 3.00 cm²/m (ø10.0 c/20 - 3.93 cm²/m) fiss = 0.00 mm
V101 1	L1 L2	Md = 5834 kgf.m/m As = 8.86 cm²/m A's = 0.00 cm²/m	Fd = 4.54 tf Situação: GE As = 8.28 cm²/m A's = 0.00 cm²/m	Fd = 1.40 tf Situação: GE As = 9.04 cm²/m A's = 0.00 cm²/m				As = 17.08 cm²/m (ø16.0 c/11 - 18.28 cm²/m) fiss = 0.07 mm
V101 2	L1 L2	Md = 5834 kgf.m/m As = 8.86 cm²/m A's = 0.00 cm²/m	Fd = 4.54 tf Situação: GE As = 8.28 cm²/m A's = 0.00 cm²/m	Fd = 1.40 tf Situação: GE As = 9.04 cm²/m A's = 0.00 cm²/m				As = 17.08 cm²/m (ø16.0 c/11 - 18.28 cm²/m) fiss = 0.07 mm