TRANSPETRO	MEMORIAL DESCRITIVO	Nº: MC-4300.01-6903-122-PTD-001	
	CLIENTE: TP/DDT/DTSSPCO/UO-SPL/TSSE/OP		FOLHA: 1 de 58
	PROGRAMA: RELOCAÇÃO/CONSTRUÇÃO DE PÁTIO DE RESÍDUOS E ESTACIONAMENTO - TERMINAL DE BARUERI		INTEGRA-3390
	ÁREA: TERMINAL DE BARUERI / SP		
	TÍTULO: ESTRUTURA EM CONCRETO ARMADO		TP/DDT/ENGDT/ PPL/DPL/DP2
			INTERNA

FIRMA PROJETISTA:		
CONTRATO:	RESPONSÁVEL TÉCNICO: LEONARDO R. PAULIQUEVIS	CREA: 1214042520

ÍNDICE DE REVISÕES

REV.	DESCRIÇÃO E/OU FOLHAS ATINGIDAS
0	EMISSÃO ORIGINAL. (REV.0)
#1	1° VERSÃO PRELIMINAR EFETUADA ANTES DA EMISSÃO ORIGINAL. (REV.0)

	REV. #1	REV. 0	REV. B	REV. C	REV. D	REV. E
DATA	26/05/2025	29/08/2025				
EXECUÇÃO	EWF8	EWF8				
VERIFICAÇÃO	TDOL	TDOL				
APROVAÇÃO	T2H5	T2H5				

DE ACORDO COM A DI-1PBR-00337, AS INFORMAÇÕES DESTE DOCUMENTO SÃO PROPRIEDADE DA TRANSPETRO, SENDO PROIBIDA
A UTILIZAÇÃO FORA DA SUA FINALIDADE. FORMULÁRIO PADRONIZADO PELA NORMA PETROBRAS N-381-REV.M.

PÚBLICA

ÍNDICE

1 OBJETIVO 3

2 NORMAS, PADRÕES, MANUAIS E PROCEDIMENTOS APLICÁVEIS 3

2.1 NORMAS ABNT 3

2.2 NORMAS REGULAMENTADORAS 4

3 LOCALIZAÇÃO 5

4 ANÁLISE DA ESTRUTURA 6

1 OBJETIVO

Este memorial apresenta o dimensionamento e verificação da estrutura de concreto armado do galpão destinado ao abrigo de resíduos, localizado no Terminal Transpetro em Barueri, SP. O projeto considera segurança estrutural, durabilidade e conformidade com as normas técnicas brasileiras.

2 NORMAS, PADRÕES, MANUAIS E PROCEDIMENTOS APLICÁVEIS

Deverão ser observadas as informações constantes neste MD, bem como a adição ou revisão atualizada das normas, Instituições Normativas, Acordos e Convenções Coletivas do Trabalho, Resoluções e toda legislação vigente e/ou porventura vierem a surgir acerca do assunto que envolve e/ou afeta a prestação de serviços, dentre as quais as destacadas abaixo.

2.1 NORMAS ABNT

NBR 5626: Instalação predial de água fria

NBR 12212: Projeto de cisternas de concreto armado para captação de água de chuva

NBR 10844: Instalação predial de águas pluviais

NBR 5410: Instalações elétricas de baixa tensão (se houver sistemas de bombeamento elétrico)

NBR 15527: Água de chuva - Aproveitamento de coberturas em áreas urbanas para fins não potáveis - Requisitos

NBR 16085: Poços de visita e inspeção em sistemas enterrados

2.2 NORMAS REGULAMENTADORAS

NR-10 - SEGURANÇA EM INSTALAÇÕES E SERVIÇOS EM ELETRICIDADE;

NR-11 - TRANSPORTE, MOVIMENTAÇÃO, ARMAZENAGEM E MANUSEIO DE MATERIAIS;

NR-12 - SEGURANÇA NO TRABALHO EM MÁQUINAS E EQUIPAMENTOS;

NR-17 - ERGONOMIA;

NR 18 - CONDIÇÕES E MEIO AMBIENTE DE TRABALHO NA INDÚSTRIA DA CONSTRUÇÃO;

NR-35 - TRABALHO EM ALTURA;

3 LOCALIZAÇÃO

Terminal de Barueri-SP

Rodovia Presidente Castelo Branco, KM19,5

CEP: 06463-400, Bairro Jardim Mutinga, Barueri (SP)



Figura 1: Terminal de Barueri -SP

4 ANÁLISE DA ESTRUTURA

Resumo de resultados

Cargas verticais:

Peso próprio = 928.17 tf

Adicional = 56.85 tf

Acidental = 693.34 tf

Total = 1678.36 tf

Área aproximada = 462.22 m²

Relação = 3631.06 kgf/m²

Deslocamento horizontal:

X+ = 0.02 cm (limite 0.47)

X- = 0.02 cm (limite 0.47)

Y+ = 0.00 cm (limite 0.47)

Y- = 0.00 cm (limite 0.47)

Aceleração horizontal:

X+ = 0.000 m/s² (limite 0.147)

X- = 0.000 m/s² (limite 0.147)

Y+ = 0.000 m/s² (limite 0.147)

Y- = 0.000 m/s² (limite 0.147)

Verificação de estabilidade (Gama-Z):

X+ = 1.46 (limite 1.10)

X- = 1.46 (limite 1.10)

Y+ = 3.27 (limite 1.10)

Y- = 3.46 (limite 1.10)

Análise de 2ª ordem:

Processo P-Delta

Deslocamentos no topo da edificação:

Vento X+: 0.08 »» 0.08 (+3.54%)

Vento X-: 0.08 »» 0.08 (+3.54%)

Vento Y+: 0.01 »» 0.01 (+1.83%)

Vento Y-: 0.01 »» 0.01 (+1.83%)

Desaprumo X+: 0.03 »» 0.03 (+3.47%)

Desaprumo X-: 0.03 »» 0.03 (+3.47%)

Desaprumo Y+: 0.01 »» 0.01 (+1.72%)

Desaprumo Y-: 0.01 »» 0.01 (+1.72%)

Pavimento BALDRAME

Resultado dos Blocos

BALDRAME	fck = 350.00 kgf/cm²	E = 294029 kgf/cm²	Peso Espec = 2500.00 kgf/m³
Lance 1		cobr = 4.50 cm	

Blocos	ne Estaca	LB LH (cm)	hb (cm)	Principal (cm²)		Estribo (cm²)		Superior (cm²)		As dist. (cm²)
				X	Y	Hor.	Vert.	X	Y	
B1	9 C30	240.00 240.00	105.00	11.04 (9 ø 12.5)	11.04 (9 ø 12.5)	1.87 (6 ø 6.3)	-	6.03 (12 ø 8.0)	6.03 (12 ø 8.0)	2.22 (ø 8.0 c/20)
B2	2 C30	150.00 60.00	55.00	14.07 (7 ø 16.0)	-	1.56 (5 ø 6.3)	4.36 2x(7 ø 6.3)	2.51 (5 ø 8.0)	-	1.01 (ø 8.0 c/10)
B3	2 C30	150.00 60.00	65.00	11.04 (9 ø 12.5)	-	1.56 (5 ø 6.3)	4.36 2x(7 ø 6.3)	2.51 (5 ø 8.0)	-	1.01 (ø 8.0 c/10)
B4	9 C30	240.00 240.00	105.00	11.04 (9 ø 12.5)	11.04 (9 ø 12.5)	1.87 (6 ø 6.3)	-	6.03 (12 ø 8.0)	6.03 (12 ø 8.0)	2.23 (ø 8.0 c/20)
B5	2 C30	150.00 60.00	55.00	16.08 (8 ø 16.0)	-	2.18 (7 ø 6.3)	4.36 2x(7 ø 6.3)	3.14 (4 ø 10.0)	-	1.01 (ø 8.0 c/10)
B6	3 C30	159.28 137.94	65.00	11.04 (9 ø 12.5)	-	1.56 (5 ø 6.3)	-	3.52 (7 ø 8.0)	4.02 (8 ø 8.0)	2.20 (ø 8.0 c/20)
B7	3 C30	159.28 137.94	60.00	12.06 (6 ø 16.0)	-	1.56 (5 ø 6.3)	-	3.52 (7 ø 8.0)	4.02 (8 ø 8.0)	2.46 (ø 8.0 c/20)

B8	2 C30	150.00 60.00	55.00	16.08 (8 ø 16.0)	-	2.18 (7 ø 6.3)	4.36 2x(7 ø 6.3)	3.14 (4 ø 10.0)	-	1.01 (ø 8.0 c/10)
B9	2 C30	150.00 60.00	60.00	16.08 (8 ø 16.0)	-	1.87 (6 ø 6.3)	4.36 2x(7 ø 6.3)	3.14 (4 ø 10.0)	-	1.01 (ø 8.0 c/10)
B10	3 C30	159.28 137.94	60.00	12.27 (10 ø 12.5)	-	1.56 (5 ø 6.3)	-	3.52 (7 ø 8.0)	4.02 (8 ø 8.0)	2.51 (ø 8.0 c/20)
B11	3 C30	159.28 137.94	60.00	12.27 (10 ø 12.5)	-	1.56 (5 ø 6.3)	-	3.52 (7 ø 8.0)	4.02 (8 ø 8.0)	2.56 (ø 8.0 c/20)
B12	2 C30	150.00 60.00	80.00	14.73 (12 ø 12.5)	-	1.87 (6 ø 6.3)	4.36 2x(7 ø 6.3)	3.14 (4 ø 10.0)	-	1.01 (ø 8.0 c/10)
B13	2 C30	150.00 60.00	55.00	16.08 (8 ø 16.0)	-	1.87 (6 ø 6.3)	4.36 2x(7 ø 6.3)	3.14 (4 ø 10.0)	-	1.01 (ø 8.0 c/10)
B14	3 C30	159.28 137.94	60.00	12.27 (10 ø 12.5)	-	1.56 (5 ø 6.3)	-	3.52 (7 ø 8.0)	4.02 (8 ø 8.0)	2.48 (ø 8.0 c/20)
B15	3 C30	159.28 137.94	60.00	12.27 (10 ø 12.5)	-	1.56 (5 ø 6.3)	-	3.52 (7 ø 8.0)	4.02 (8 ø 8.0)	2.52 (ø 8.0 c/20)
B16	2 C30	150.00 60.00	55.00	16.08 (8 ø 16.0)	-	1.87 (6 ø 6.3)	4.36 2x(7 ø 6.3)	3.14 (4 ø 10.0)	-	1.01 (ø 8.0 c/10)
B17	2 C30	150.00 60.00	80.00	11.04 (9 ø 12.5)	-	1.56 (5 ø 6.3)	4.36 2x(7 ø 6.3)	2.51 (5 ø 8.0)	-	1.01 (ø 8.0 c/10)
B18	3 C30	159.28 137.94	60.00	12.06 (6 ø 16.0)	-	1.56 (5 ø 6.3)	-	3.52 (7 ø 8.0)	4.02 (8 ø 8.0)	2.46 (ø 8.0 c/20)
B19	3	159.28	60.00	12.27	-	1.56	-	3.52	4.02	2.53

	C30	137.94		(10 ø 12.5)		(5 ø 6.3)		(7 ø 8.0)	(8 ø 8.0)	(ø 8.0 c/20)
B20	2 C30	150.00 60.00	80.00	11.04 (9 ø 12.5)	-	1.56 (5 ø 6.3)	4.36 2x(7 ø 6.3)	2.51 (5 ø 8.0)	-	1.01 (ø 8.0 c/10)
B21	9 C30	240.00 240.00	105.00	14.07 (7 ø 16.0)	14.07 (7 ø 16.0)	1.87 (6 ø 6.3)	-	6.03 (12 ø 8.0)	6.03 (12 ø 8.0)	2.88 (ø 8.0 c/20)
B22	1 C30	60.00 60.00		-	-	2.18 (7 ø 6.3)	3.74 2x(6 ø 6.3)	-	-	-
B23	1 C30	60.00 60.00		-	-	1.56 (5 ø 6.3)	3.74 2x(6 ø 6.3)	-	-	-
B24	9 C30	240.00 240.00	105.00	14.07 (7 ø 16.0)	14.07 (7 ø 16.0)	1.87 (6 ø 6.3)	-	6.03 (12 ø 8.0)	6.03 (12 ø 8.0)	2.88 (ø 8.0 c/20)

Resultados dos Pilares

BALDRAME	fck = 350.00 kgf/cm²	E = 294029 kgf/cm²	Peso Espec = 2500.00 kgf/m³
Lance 1		cobr = 3.00 cm	

Dados				**Resultados**					
Pilar	**Seção (cm)**	**Nível Altura (cm)**	**lib vínc lih vínc (cm)**	**Nd máx Nd mín (tf)**	**MBd topo MBd base (kgf.m)**	**MHd topo MHd base (kgf.m)**	**As b Armaduras As h % armad total**	**Estribo Topo Base cota**	**Esb b Esb h**
P1 1:20	70.00 X 70.00	0.00 290.00	221.00 RR 221.00 RR	50.09 13.04	105057 0	10157 0	22.12 11 ø 16.0 22.12 11 ø 16.0 1.6 40 ø 16.0	ø 8.0 c/11	10.92 10.92
P2 1:20	50.00 X 50.00	0.00 240.00	215.00 RR 215.00 RR	79.37 38.11	4828 0	26151 0	11.04 9 ø 12.5 11.04 9 ø 12.5 1.6 32 ø 12.5	ø 6.3 c/9 ø 6.3 c/9 30	14.88 14.88
P3 1:20	50.00 X 50.00	0.00 250.00	215.00 RR 215.00 RR	79.36 38.40	4384 0	25409 0	6.03 3 ø 16.0 6.03 3 ø 16.0 0.6 8 ø 16.0	ø 6.3 c/9 ø 6.3 c/9 30	14.88 14.88
P4 1:20	70.00 X 70.00	0.00 290.00	221.00 RR 221.00 RR	49.91 13.00	105635 0	9892 0	22.12 11 ø 16.0 22.12 11 ø 16.0	ø 8.0 c/11	10.92 10.92

							1.6 40 ø 16.0		
P5 1:20	40.00 X 50.00	0.00 240.00	215.00 RR 215.00 RR	88.66 44.67	28023 0	1877 0	2.45 2 ø 12.5 14.73 12 ø 12.5 1.5 24 ø 12.5	ø 6.3 c/12 ø 6.3 c/12 30	18.60 14.88
P6 1:20	40.00 X 50.00	0.00 250.00	215.00 RR 215.00 RR	120.41 41.45	11607 0	1882 0	4.02 2 ø 16.0 6.03 3 ø 16.0 0.6 6 ø 16.0	ø 6.3 c/12 ø 6.3 c/12 30	18.60 14.88
P7 1:20	40.00 X 50.00	0.00 245.00	215.00 RR 215.00 RR	123.36 43.04	11439 0	1773 0	2.45 2 ø 12.5 7.36 6 ø 12.5 0.7 12 ø 12.5	ø 6.3 c/12 ø 6.3 c/12 30	18.60 14.88
P8 1:20	40.00 X 50.00	0.00 240.00	215.00 RR 215.00 RR	88.22 44.53	28092 0	1895 0	3.68 3 ø 12.5 14.73 12 ø 12.5 1.6 26 ø 12.5	ø 6.3 c/12 ø 6.3 c/12 30	18.60 14.88
P9 1:20	40.00 X 50.00	0.00 245.00	215.00 RR 215.00 RR	94.47 44.83	28676 0	2104 0	3.68 3 ø 12.5 14.73 12 ø 12.5 1.6 26 ø 12.5	ø 6.3 c/12 ø 6.3 c/12 30	18.60 14.88
P10 1:20	40.00 X 50.00	0.00 245.00	215.00 RR	127.48 45.68	10535 0	1995 0	1.57 2 ø 10.0	ø 6.3 c/12	18.60 14.88

			215.00 RR				4.71 6 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 30	
P11 1:20	40.00 X 50.00	0.00 245.00	215.00 RR 215.00 RR	130.74 48.08	10298 0	1857 0	1.57 2 ø 10.0 4.71 6 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 30	18.60 14.88
P12 1:20	40.00 X 50.00	0.00 265.00	215.00 RR 215.00 RR	93.92 44.67	28765 0	2087 0	6.28 2 ø 20.0 18.85 6 ø 20.0 1.9 12 ø 20.0	ø 6.3 c/12 ø 6.3 c/12 30	18.60 14.88
P13 1:20	40.00 X 50.00	0.00 240.00	215.00 RR 215.00 RR	83.67 37.11	28712 0	1944 0	4.91 4 ø 12.5 14.73 12 ø 12.5 1.7 28 ø 12.5	ø 6.3 c/12 ø 6.3 c/12 30	18.60 14.88
P14 1:20	40.00 X 50.00	0.00 245.00	215.00 RR 215.00 RR	126.92 45.30	9594 0	2062 0	1.57 2 ø 10.0 4.71 6 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 30	18.60 14.88
P15 1:20	40.00 X 50.00	0.00 245.00	215.00 RR 215.00 RR	129.72 47.38	9276 0	1930 0	1.57 2 ø 10.0 4.71 6 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 30	18.60 14.88

P16 1:20	40.00 X 50.00	0.00 240.00	215.00 RR 215.00 RR	83.13 36.93	28800 0	1929 0	4.91 4 ø 12.5 14.73 12 ø 12.5 1.7 28 ø 12.5	ø 6.3 c/12 ø 6.3 c/12 30	18.60 14.88
P17 1:20	40.00 X 50.00	0.00 265.00	215.00 RR 215.00 RR	60.86 23.78	28710 0	1368 0	6.28 2 ø 20.0 18.85 6 ø 20.0 1.9 12 ø 20.0	ø 6.3 c/12 ø 6.3 c/12 30	18.60 14.88
P18 1:20	40.00 X 50.00	0.00 245.00	215.00 RR 215.00 RR	126.46 45.44	8962 0	1958 0	1.57 2 ø 10.0 4.71 6 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 30	18.60 14.88
P19 1:20	40.00 X 50.00	0.00 245.00	215.00 RR 215.00 RR	130.71 48.18	8581 0	1850 0	1.57 2 ø 10.0 4.71 6 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 30	18.60 14.88
P20 1:20	40.00 X 50.00	0.00 265.00	215.00 RR 215.00 RR	60.37 23.53	28789 0	1351 0	6.28 2 ø 20.0 18.85 6 ø 20.0 1.9 12 ø 20.0	ø 6.3 c/12 ø 6.3 c/12 30	18.60 14.88
P21 1:20	70.00 X 70.00	0.00 290.00	221.00 RR 221.00 RR	110.89 62.92	119513 0	19274 0	24.13 12 ø 16.0 24.13 12 ø 16.0	ø 8.0 c/11 ø 8.0 c/11 30	10.92 10.92

							1.8 44 ø 16.0		
P22 1:20	40.00 X 50.00	0.00 240.00	215.00 RR 215.00 RR	62.47 23.71	848 0	12156 0	4.91 4 ø 12.5 4.91 4 ø 12.5 0.7 12 ø 12.5	ø 6.3 c/12 ø 6.3 c/12 30	18.60 14.88
P23 1:20	50.00 X 50.00	0.00 240.00	215.00 RR 215.00 RR	64.76 25.17	1583 0	14022 0	4.91 4 ø 12.5 4.91 4 ø 12.5 0.6 12 ø 12.5	ø 6.3 c/9 ø 6.3 c/9 30	14.88 14.88
P24 1:20	70.00 X 70.00	0.00 290.00	221.00 RR 221.00 RR	110.79 63.05	119852 0	18612 0	24.13 12 ø 16.0 24.13 12 ø 16.0 1.8 44 ø 16.0	ø 8.0 c/11 ø 8.0 c/11 30	10.92 10.92

Resultados da Viga V1

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P5	50.00			2 ø 8.0 0.90					0.00
1	500.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P6	50.00			2 ø 8.0 0.90					0.05
2	500.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P7	50.00			2 ø 8.0 0.90					0.05
3	497.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P8	50.00			2 ø 8.0 0.90					0.00

Resultados da Viga V2

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P9	50.00			2 ø 8.0 0.90					0.00
1	500.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P10	50.00			2 ø 8.0 0.90					0.06
2	500.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P11	50.00			2 ø 8.0 0.90					0.06
3	497.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P12	50.00			2 ø 8.0 0.90					0.00

Resultados da Viga V3

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P13	50.00			2 ø 8.0 0.90					0.00
1	500.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P14	50.00			2 ø 8.0 0.90					0.06
2	500.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P15	50.00			2 ø 8.0 0.90					0.06
3	497.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P16	50.00			2 ø 8.0 0.90					0.00

Resultados da Viga V4

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P17	50.00			2 ø 8.0 0.90					0.00
1	500.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P18	50.00			2 ø 8.0 0.90					0.06
2	500.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P19	50.00			2 ø 8.0 0.90					0.06
3	497.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P20	50.00			2 ø 8.0 0.90					0.00

Resultados da Viga V5

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P21	70.00			2 ø 8.0 0.90					0.02
1	480.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P22	40.00			2 ø 8.0 0.90					0.03
2	510.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P23	50.00			2 ø 8.0 0.90					0.03
3	477.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P24	70.00			2 ø 8.0 0.90					0.02

Resultados da Viga V6

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P22	50.00			4 ø 8.0 1.81					0.11
1	1046.55	20.00 x 30.00	2 ø 8.0 1.03			ø 6.3 c/ 15			0.12
P14	40.00			4 ø 8.0 1.77					0.10
2	520.75	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.09
P10	40.00			4 ø 8.0 1.83					0.11
3	520.75	20.00 x 30.00	2 ø 8.0 0.97			ø 6.3 c/ 15			0.11
P6	40.00			4 ø 8.0 2.01					0.13
4	488.95	20.00	3 ø 8.0			ø 6.3 c/ 15			0.09

		x 30.00	1.27						
	50.00								0.00

Resultados da Viga V7

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P23	50.00			4 ø 8.0 1.79					0.10
1	1046.56	20.00 x 30.00	2 ø 8.0 1.01			ø 6.3 c/ 15			0.11
P15	40.00			4 ø 8.0 1.73					0.10
2	520.74	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.09
P11	40.00			4 ø 8.0 1.80					0.11
3	520.76	20.00 x 30.00	2 ø 8.0 0.94			ø 6.3 c/ 15			0.10

P7	40.00			4 ø 8.0 1.97					0.13
4	488.94	20.00 x 30.00	3 ø 8.0 1.23			ø 6.3 c/ 15			0.08
	50.00								0.00

Pavimento INTERMEDIÁRIA

Resultados dos Pilares

INTERMEDIÁRIA	fck = 350.00 kgf/cm²	E = 294029 kgf/cm²	Peso Espec = 2500.00 kgf/m³
Lance 2		cobr = 3.00 cm	

Dados				**Resultados**					
Pilar	**Seção (cm)**	**Nível Altura (cm)**	**lib vínc lih vínc (cm)**	**Nd máx Nd mín (tf)**	**MBd topo MBd base (kgf.m)**	**MHd topo MHd base (kgf.m)**	**As b Armaduras As h % armad total**	**Estribo Topo Base cota**	**Esb b Esb h**
P1 1:20	70.00 X 70.00	250.00 250.00	250.00 RR 250.00 RR	34.03 -47.26	2726 82619	271 9170	22.12 11 ø 16.0 22.12 11 ø 16.0 1.6 40 ø 16.0	ø 10.0 c/8	12.36 12.36
P2 1:20	50.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	18.90 -59.73	140 3402	9790 16249	11.04 9 ø 12.5 11.04 9 ø 12.5	ø 6.3 c/9 ø 6.3 c/9 30	17.30 17.30

							1.6 32 ø 12.5		
P3 1:20	50.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	19.56 -58.06	609 3222	9361 15721	10.05 5 ø 16.0 10.05 5 ø 16.0 1.3 16 ø 16.0	ø 6.3 c/9 ø 6.3 c/9 30	17.30 17.30
P4 1:20	70.00 X 70.00	250.00 250.00	250.00 RR 250.00 RR	34.07 -47.51	2725 83095	232 9423	22.12 11 ø 16.0 22.12 11 ø 16.0 1.6 40 ø 16.0	ø 10.0 c/8	12.36 12.36
P5 1:20	40.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	54.29 -15.04	443 9530	1803 2879	2.45 2 ø 12.5 14.73 12 ø 12.5 1.5 24 ø 12.5	ø 8.0 c/10 ø 8.0 c/10 30	21.63 17.30
P6 1:20	40.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	116.77 38.46	8052 8214	2311 1186	4.02 2 ø 16.0 6.03 3 ø 16.0 0.6 6 ø 16.0	ø 6.3 c/12 ø 6.3 c/12 30	21.63 17.30
P7 1:20	40.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	119.72 40.06	7716 8126	2250 1397	2.45 2 ø 12.5 7.36 6 ø 12.5 0.7 12 ø 12.5	ø 6.3 c/12 ø 6.3 c/12 30	21.63 17.30
P8 1:20	40.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	54.04 -15.12	431 9585	1781 2857	3.68 3 ø 12.5 14.73 12 ø 12.5	ø 8.0 c/10 ø 8.0 c/10	21.63 17.30

							1.6 26 ø 12.5	30	
P9 1:20	40.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	58.10 -15.73	143 9673	1838 2941	3.68 3 ø 12.5 14.73 12 ø 12.5 1.6 26 ø 12.5	ø 8.0 c/10 ø 8.0 c/10 30	21.63 17.30
P10 1:20	40.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	123.90 42.73	6803 7373	2432 1244	1.57 2 ø 10.0 4.71 6 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 30	21.63 17.30
P11 1:20	40.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	127.16 45.14	6489 7206	2371 1406	1.57 2 ø 10.0 4.71 6 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 30	21.63 17.30
P12 1:20	40.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	57.76 -15.81	130 9668	1831 2959	6.28 2 ø 20.0 18.85 6 ø 20.0 1.9 12 ø 20.0	ø 8.0 c/9 ø 8.0 c/9 30	21.63 17.30
P13 1:20	40.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	51.20 -19.37	207 9669	1949 2881	4.91 4 ø 12.5 14.73 12 ø 12.5 1.7 28 ø 12.5	ø 8.0 c/10 ø 8.0 c/10 30	21.63 17.30
P14 1:20	40.00 X 50.00	250.00 250.00	250.00 RR	123.35 42.37	6537 6586	2546 1248	1.57 2 ø 10.0	ø 6.3 c/12	21.63 17.30

			250.00 RR				4.71 6 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 30	
P15 1:20	40.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	126.15 44.45	6238 6344	2489 1409	1.57 2 ø 10.0 4.71 6 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 30	21.63 17.30
P16 1:20	40.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	50.87 -19.47	198 9665	1936 2897	4.91 4 ø 12.5 14.73 12 ø 12.5 1.7 28 ø 12.5	ø 8.0 c/10 ø 8.0 c/10 30	21.63 17.30
P17 1:20	40.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	35.85 -23.54	78 9519	2016 2629	6.28 2 ø 20.0 18.85 6 ø 20.0 1.9 12 ø 20.0	ø 8.0 c/11 ø 8.0 c/11 30	21.63 17.30
P18 1:20	40.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	123.03 42.60	6697 5832	2664 1115	1.57 2 ø 10.0 4.71 6 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 30	21.63 17.30
P19 1:20	40.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	127.29 45.35	6424 5522	2609 1255	1.57 2 ø 10.0 4.71 6 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 30	21.63 17.30

P20 1:20	40.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	35.60 -23.64	67 9583	2005 2643	6.28 2 ø 20.0 18.85 6 ø 20.0 1.9 12 ø 20.0	ø 8.0 c/10 ø 8.0 c/10 30	21.63 17.30
P21 1:20	70.00 X 70.00	250.00 250.00	250.00 RR 250.00 RR	52.79 -18.64	272 95490	7961 7007	24.13 12 ø 16.0 24.13 12 ø 16.0 1.8 44 ø 16.0	ø 10.0 c/9 ø 10.0 c/9 30	12.36 12.36
P22 1:20	40.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	58.95 20.87	615 293	7791 10180	4.91 4 ø 12.5 4.91 4 ø 12.5 0.7 12 ø 12.5	ø 6.3 c/12 ø 6.3 c/12 30	21.63 17.30
P23 1:20	50.00 X 50.00	250.00 250.00	250.00 RR 250.00 RR	60.90 22.03	936 1242	9275 12078	4.91 4 ø 12.5 4.91 4 ø 12.5 0.6 12 ø 12.5	ø 6.3 c/9 ø 6.3 c/9 30	17.30 17.30
P24 1:20	70.00 X 70.00	250.00 250.00	250.00 RR 250.00 RR	53.14 -18.27	271 95808	7955 6399	24.13 12 ø 16.0 24.13 12 ø 16.0 1.8 44 ø 16.0	ø 10.0 c/9 ø 10.0 c/9 30	12.36 12.36

Resultados da Viga V1

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P5	50.00			2 ø 8.0 0.90					0.07
1	500.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P6	50.00			2 ø 8.0 0.90					0.03
2	500.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.00
P7	50.00			2 ø 8.0 0.90					0.03
3	497.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P8	50.00			2 ø 8.0 0.90					0.07

Resultados da Viga V2

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P9	50.00			2 ø 8.0 0.90					0.07
1	500.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P10	50.00			2 ø 8.0 0.90					0.03
2	500.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.00
P11	50.00			2 ø 8.0 0.90					0.03
3	497.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P12	50.00			2 ø 8.0 0.90					0.07

Resultados da Viga V3

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P13	50.00			2 ø 8.0 0.90					0.08
1	500.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P14	50.00			2 ø 8.0 0.90					0.03
2	500.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.00
P15	50.00			2 ø 8.0 0.90					0.03
3	497.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P16	50.00			2 ø 8.0 0.90					0.07

Resultados da Viga V4

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P17	50.00			2 ø 8.0 0.90					0.08
1	500.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P18	50.00			2 ø 8.0 0.90					0.03
2	500.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.00
P19	50.00			2 ø 8.0 0.90					0.03
3	497.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P20	50.00			2 ø 8.0 0.90					0.08

Resultados da Viga V5

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P21	70.00			2 ø 8.0 0.90					0.04
1	480.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.00
P22	40.00			2 ø 8.0 0.90					0.03
2	510.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P23	50.00			2 ø 8.0 0.90					0.03
3	477.00	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.00
P24	70.00			2 ø 8.0 0.90					0.04

Resultados da Viga V6

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P22	50.00		6 ø 8.0 2.88	6 ø 8.0 2.88					0.00
1	485.81	20.00 x 30.00	6 ø 8.0 2.88	6 ø 8.0 2.88		ø 6.3 c/ 15			0.00
P18	40.00		6 ø 8.0 2.88	6 ø 8.0 2.88					0.00
2	520.74	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P14	40.00			2 ø 8.0 0.90					0.04
3	520.75	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P10	40.00			2 ø 8.0 0.90					0.05
4	520.75	20.00	2 ø 8.0			ø 6.3 c/ 15			0.01

		x 30.00	0.90						
P6	40.00			2 ø 8.0 0.90					0.07
5	488.95	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P2	50.00			2 ø 8.0 0.90					0.10

Resultados da Viga V7

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P23	50.00		6 ø 8.0 2.88	6 ø 8.0 2.88					0.00
1	485.80	20.00 x 30.00	6 ø 8.0 2.88	6 ø 8.0 2.88		ø 6.3 c/ 15			0.00
P19	40.00		6 ø 8.0 2.88	6 ø 8.0 2.88					0.00
2	520.76	20.00 x	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01

		30.00							
P15	40.00			2 ø 8.0 0.90					0.04
3	520.74	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P11	40.00			2 ø 8.0 0.90					0.05
4	520.76	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P7	40.00			2 ø 8.0 0.90					0.07
5	488.94	20.00 x 30.00	2 ø 8.0 0.90			ø 6.3 c/ 15			0.01
P3	50.00			2 ø 8.0 0.90					0.10

Resultados do Reservatório

INTERMEDIÁRIA	fck = 400.00 kgf/cm²	E = 318758 kgf/cm²	Peso Espec = 2500.00 kgf/m³
Lance 2		cobr = 3.00 cm	

Reservatório Contenções

ARMADURAS NA LAJE								
Esforços					Resultados			
Trecho	Ndx Rdx (tf)	Ndy Rdy (tf)	Mdx (kgf.m/m)	Mdy (kgf.m/m)	Armadura inferior		Armadura superior	
					Asx	Asy	Asx	Asy
PAR1-A	28.81 -12.06	81.27 -2.19	10683	3225	As = 14.04 cm²/m ø16.0 c/14 (14.36 cm²/m)	As = 2.81 cm²/m ø8.0 c/17 (2.96 cm²/m)	A's = 7.70 cm²/m ø10.0 c/10 (7.85 cm²/m)	A's = 4.14 cm²/m ø8.0 c/12 (4.19 cm²/m)
PAR1-B	30.23 -7.55	54.54 -0.85	9716	3335	As = 14.21 cm²/m ø16.0 c/14 (14.36 cm²/m)	As = 2.84 cm²/m ø8.0 c/17 (2.96 cm²/m)	A's = 7.37 cm²/m ø12.5 c/16 (7.67 cm²/m)	A's = 4.07 cm²/m ø10.0 c/19 (4.13 cm²/m)
PAR1-C	26.04 -12.15	80.70 -2.22	10408	3351	As = 13.60 cm²/m ø12.5 c/9 (13.64 cm²/m)	As = 2.72 cm²/m ø6.3 c/11 (2.83 cm²/m)	A's = 7.55 cm²/m ø12.5 c/16 (7.67 cm²/m)	A's = 4.22 cm²/m ø8.0 c/11 (4.57 cm²/m)

PAR2-A	48.65 -22.97	71.67 -27.03	7231	3008	As = 11.70 cm²/m ø16.0 c/17 (11.83 cm²/m)	As = 4.39 cm²/m ø8.0 c/11 (4.57 cm²/m)	A's = 9.01 cm²/m ø12.5 c/13 (9.44 cm²/m)	A's = 8.29 cm²/m ø16.0 c/24 (8.38 cm²/m)
PAR2-B	2.25 -15.77	60.19 -22.66	7694	1853	As = 11.01 cm²/m ø12.5 c/11 (11.16 cm²/m)	As = 3.58 cm²/m ø8.0 c/14 (3.59 cm²/m)	A's = 8.18 cm²/m ø12.5 c/15 (8.18 cm²/m)	A's = 6.26 cm²/m ø12.5 c/19 (6.46 cm²/m)
PAR2-C	6.95 -12.00	58.12 -23.21	7669	1883	As = 12.50 cm²/m ø16.0 c/16 (12.57 cm²/m)	As = 3.68 cm²/m ø10.0 c/21 (3.74 cm²/m)	A's = 7.46 cm²/m ø12.5 c/16 (7.67 cm²/m)	A's = 6.41 cm²/m ø10.0 c/12 (6.54 cm²/m)
PAR2-D	11.28 -4.37	52.63 -25.29	7347	1892	As = 8.85 cm²/m ø12.5 c/13 (9.44 cm²/m)	As = 3.94 cm²/m ø10.0 c/19 (4.13 cm²/m)	A's = 6.38 cm²/m ø12.5 c/19 (6.46 cm²/m)	A's = 6.34 cm²/m ø12.5 c/19 (6.46 cm²/m)
PAR2-E	166.08 -44.64	82.74 -28.01	8838	1804	As = 16.80 cm²/m ø12.5 c/7 (17.53 cm²/m)	As = 4.27 cm²/m ø8.0 c/11 (4.57 cm²/m)	A's = 12.57 cm²/m ø10.0 c/6 (13.09 cm²/m)	A's = 6.54 cm²/m ø10.0 c/12 (6.54 cm²/m)
PAR3-A	166.58 -44.72	82.38 -28.39	8868	1804	As = 16.85 cm²/m ø12.5 c/7 (17.53 cm²/m)	As = 4.32 cm²/m ø8.0 c/11 (4.57 cm²/m)	A's = 12.58 cm²/m ø10.0 c/6 (13.09 cm²/m)	A's = 6.56 cm²/m ø8.0 c/7 (7.18 cm²/m)
PAR3-B	11.30 -4.32	52.79 -25.53	7329	1895	As = 8.83 cm²/m	As = 3.97 cm²/m	A's = 6.37 cm²/m	A's = 6.38 cm²/m

					ø12.5 c/13 (9.44 cm²/m)	ø10.0 c/19 (4.13 cm²/m)	ø12.5 c/19 (6.46 cm²/m)	ø12.5 c/19 (6.46 cm²/m)
PAR3-C	6.96 -12.02	58.10 -23.45	7691	1886	As = 12.53 cm²/m ø16.0 c/16 (12.57 cm²/m)	As = 3.72 cm²/m ø10.0 c/21 (3.74 cm²/m)	A's = 7.46 cm²/m ø12.5 c/16 (7.67 cm²/m)	A's = 6.47 cm²/m ø10.0 c/12 (6.54 cm²/m)
PAR3-D	2.27 -15.78	60.18 -22.97	7724	1856	As = 11.05 cm²/m ø12.5 c/11 (11.16 cm²/m)	As = 3.63 cm²/m ø10.0 c/21 (3.74 cm²/m)	A's = 8.18 cm²/m ø12.5 c/15 (8.18 cm²/m)	A's = 6.34 cm²/m ø12.5 c/19 (6.46 cm²/m)
PAR3-E	48.97 -22.90	72.02 -27.25	7282	3031	As = 11.75 cm²/m ø16.0 c/17 (11.83 cm²/m)	As = 4.41 cm²/m ø8.0 c/11 (4.57 cm²/m)	A's = 8.98 cm²/m ø12.5 c/13 (9.44 cm²/m)	A's = 8.36 cm²/m ø16.0 c/24 (8.38 cm²/m)

ARMADURAS NA CONTINUIDADE					
Viga	**Laje 1**	**Momentos fletores (kgf.m/m)**		**Armaduras**	
Trecho	**Laje 2**	**Md negativo**	**Md positivo**	**As (superior)**	**A's (inferior)**
Barra	PAR1-C PAR2-A	-11872		As = 15.27 cm²/m ø12.5 c/8 (15.34 cm²/m)	
Barra	PAR2-A PAR1-C			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR2-A PAR2-B	-9539		As = 14.23 cm²/m ø12.5 c/8 (15.34 cm²/m)	

Barra	PAR2-B PAR2-A			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR2-B PAR2-C	-10088		As = 13.77 cm²/m ø12.5 c/8 (15.34 cm²/m)	
Barra	PAR2-C PAR2-B			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR2-C PAR2-D	-10039		As = 13.06 cm²/m ø10.0 c/6 (13.09 cm²/m)	
Barra	PAR2-D PAR2-C			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR2-D PAR2-E	-10407		As = 14.46 cm²/m ø12.5 c/8 (15.34 cm²/m)	
Barra	PAR2-E PAR2-D			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR1-A PAR3-E			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR3-E PAR1-A	-12190		As = 15.53 cm²/m ø10.0 c/5 (15.71 cm²/m)	
Barra	PAR1-A PAR1-B	-12063		As = 14.99 cm²/m ø12.5 c/8 (15.34 cm²/m)	

Barra	PAR1-B PAR1-A			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR1-B PAR1-C	-11442		As = 14.14 cm²/m ø12.5 c/8 (15.34 cm²/m)	
Barra	PAR1-C PAR1-B			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR3-B PAR3-A			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR3-A PAR3-B	-10371		As = 14.44 cm²/m ø12.5 c/8 (15.34 cm²/m)	
Barra	PAR3-C PAR3-B			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR3-B PAR3-C	-10061		As = 13.09 cm²/m ø10.0 c/6 (13.09 cm²/m)	
Barra	PAR3-D PAR3-C			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR3-C PAR3-D	-10119		As = 13.81 cm²/m ø12.5 c/8 (15.34 cm²/m)	
Barra	PAR3-E PAR3-D			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	

Barra	PAR3-D PAR3-E	-9498		As = 14.17 cm²/m ø12.5 c/8 (15.34 cm²/m)	

Pavimento LAJE

Resultados dos Pilares

LAJE	fck = 350.00 kgf/cm²	E = 294029 kgf/cm²	Peso Espec = 2500.00 kgf/m³
Lance 3		cobr = 3.00 cm	

Dados				**Resultados**					
Pilar	**Seção (cm)**	**Nível Altura (cm)**	**lib vínc lih vínc (cm)**	**Nd máx Nd mín (tf)**	**MBd topo MBd base (kgf.m)**	**MHd topo MHd base (kgf.m)**	**As b Armaduras As h % armad total**	**Estribo Topo Base cota**	**Esb b Esb h**
P1 1:20	70.00 X 70.00	500.00 250.00	250.00 RR 250.00 RR	29.91 3.16	4947 2221	5601 1279	6.14 5 ø 12.5 6.14 5 ø 12.5 0.4 16 ø 12.5	ø 6.3 c/15	12.36 12.36
P2 1:20	50.00 X 50.00	500.00 250.00	250.00 RR 250.00 RR	87.21 -42.35	2571 1518	35112 11251	7.85 10 ø 10.0 7.85 10 ø 10.0 1.1 36 ø 10.0	ø 10.0 c/7 ø 10.0 c/7 60	17.30 17.30
P3 1:20	50.00 X	500.00 250.00	250.00 RR	91.33 -39.27	75 870	38308 10852	9.42 3 ø 20.0	ø 10.0 c/7	17.30 17.30

	50.00		250.00 RR				9.42 3 ø 20.0 1.0 8 ø 20.0	ø 10.0 c/7 80	
P4 1:20	70.00 X 70.00	500.00 250.00	250.00 RR 250.00 RR	30.00 3.19	4907 2270	5325 1177	6.14 5 ø 12.5 6.14 5 ø 12.5 0.4 16 ø 12.5	ø 6.3 c/15	12.36 12.36
P5 1:20	40.00 X 50.00	500.00 250.00	250.00 RR 250.00 RR	71.58 -6.27	668 413	25417 955	4.91 4 ø 12.5 4.91 4 ø 12.5 0.7 12 ø 12.5	ø 8.0 c/7 ø 8.0 c/7 60	21.63 17.30
P6 1:20	40.00 X 50.00	500.00 250.00	250.00 RR 250.00 RR	113.34 35.77	11795 8959	3822 2380	2.36 3 ø 10.0 3.93 5 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 60	21.63 17.30
P7 1:20	40.00 X 50.00	500.00 250.00	250.00 RR 250.00 RR	116.30 37.38	11824 8576	3977 2600	2.36 3 ø 10.0 3.93 5 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 80	21.63 17.30
P8 1:20	40.00 X 50.00	500.00 250.00	250.00 RR 250.00 RR	71.20 -6.37	673 447	25153 932	4.71 6 ø 10.0 3.93 5 ø 10.0 0.7 18 ø 10.0	ø 8.0 c/7 ø 8.0 c/7 60	21.63 17.30
P9 1:20	40.00 X	500.00 250.00	250.00 RR	73.77 -5.68	244 94	26620 921	5.50 7 ø 10.0	ø 8.0 c/8 ø 8.0 c/8	21.63 17.30

	50.00		250.00 RR				3.93 5 ø 10.0 0.8 20 ø 10.0	60	
P10 1:20	40.00 X 50.00	500.00 250.00	250.00 RR 250.00 RR	120.39 40.00	8228 7329	4084 2461	2.36 3 ø 10.0 3.93 5 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 60	21.63 17.30
P11 1:20	40.00 X 50.00	500.00 250.00	250.00 RR 250.00 RR	123.66 42.42	8132 6958	4230 2692	2.36 3 ø 10.0 3.93 5 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 80	21.63 17.30
P12 1:20	40.00 X 50.00	500.00 250.00	250.00 RR 250.00 RR	73.33 -5.77	241 114	26229 916	5.50 7 ø 10.0 3.93 5 ø 10.0 0.8 20 ø 10.0	ø 8.0 c/8 ø 8.0 c/8 60	21.63 17.30
P13 1:20	40.00 X 50.00	500.00 250.00	250.00 RR 250.00 RR	74.31 -7.24	362 176	26823 960	5.50 7 ø 10.0 3.93 5 ø 10.0 0.8 20 ø 10.0	ø 8.0 c/8 ø 8.0 c/8 60	21.63 17.30
P14 1:20	40.00 X 50.00	500.00 250.00	250.00 RR 250.00 RR	119.82 39.63	7210 6862	4227 2530	2.36 3 ø 10.0 3.93 5 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 60	21.63 17.30
P15 1:20	40.00 X	500.00 250.00	250.00 RR	122.63 41.72	7072 6501	4446 2773	2.36 3 ø 10.0	ø 6.3 c/12	21.63 17.30

	50.00		250.00 RR				3.93 5 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 80	
P16 1:20	40.00 X 50.00	500.00 250.00	250.00 RR 250.00 RR	73.81 -7.36	366 199	26409 953	5.50 7 ø 10.0 3.93 5 ø 10.0 0.8 20 ø 10.0	ø 8.0 c/8 ø 8.0 c/8 60	21.63 17.30
P17 1:20	40.00 X 50.00	500.00 250.00	250.00 RR 250.00 RR	73.76 -8.36	131 70	26509 928	5.50 7 ø 10.0 3.93 5 ø 10.0 0.8 20 ø 10.0	ø 8.0 c/7 ø 8.0 c/7 60	21.63 17.30
P18 1:20	40.00 X 50.00	500.00 250.00	250.00 RR 250.00 RR	119.59 39.90	6432 6715	4765 2619	2.36 3 ø 10.0 3.93 5 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 60	21.63 17.30
P19 1:20	40.00 X 50.00	500.00 250.00	250.00 RR 250.00 RR	123.86 42.66	6364 6371	4959 2836	2.36 3 ø 10.0 3.93 5 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 80	21.63 17.30
P20 1:20	40.00 X 50.00	500.00 250.00	250.00 RR 250.00 RR	73.31 -8.47	134 90	26178 923	5.50 7 ø 10.0 3.93 5 ø 10.0 0.8 20 ø 10.0	ø 8.0 c/7 ø 8.0 c/7 60	21.63 17.30
P21 1:20	70.00 X	500.00 250.00	250.00 RR	33.56 -8.45	3816 5134	26461 8815	8.64 11 ø 10.0	ø 10.0 c/9	12.36 12.36

	70.00		250.00 RR				8.64 11 ø 10.0 0.6 40 ø 10.0	ø 10.0 c/9 70	
P22 1:20	40.00 X 50.00	500.00 250.00	250.00 RR 250.00 RR	55.87 18.52	2480 519	5852 7446	2.36 3 ø 10.0 3.93 5 ø 10.0 0.5 12 ø 10.0	ø 6.3 c/12 ø 6.3 c/12 70	21.63 17.30
P23 1:20	50.00 X 50.00	500.00 250.00	250.00 RR 250.00 RR	57.38 19.35	4098 852	5402 8881	3.93 5 ø 10.0 3.93 5 ø 10.0 0.5 16 ø 10.0	ø 6.3 c/9 ø 6.3 c/9 80	17.30 17.30
P24 1:20	70.00 X 70.00	500.00 250.00	250.00 RR 250.00 RR	32.77 -8.33	4005 5156	25528 8766	8.64 11 ø 10.0 8.64 11 ø 10.0 0.6 40 ø 10.0	ø 10.0 c/9 ø 10.0 c/9 70	12.36 12.36

Resultados da Viga V1

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P5	50.00			9 ø 12.5 11.05					0.13
1	500.00	40.00 x 60.00	4 ø 16.0 3.60		ø 6.3 c/ 9 109.00	ø 6.3 c/ 25		2x5 ø 8.0	0.03
P6	50.00			6 ø 16.0 12.25					0.17
2	500.00	40.00 x 60.00	7 ø 8.0 3.60		ø 6.3 c/ 17 109.00	ø 6.3 c/ 25	ø 6.3 c/ 15 109.00	2x5 ø 8.0	0.08
P7	50.00			6 ø 16.0 11.79					0.16
3	497.00	40.00 x 60.00	4 ø 16.0 3.60		ø 6.3 c/ 19 109.00	ø 6.3 c/ 25	ø 6.3 c/ 9 109.00	2x5 ø 8.0	0.03
P8	50.00			9 ø 12.5 10.89					0.13

Resultados da Viga V2

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P9	50.00			15 ø 10.0 11.89					0.07
1	500.00	40.00 x 60.00	4 ø 16.0 3.62		ø 6.3 c/ 9 109.00	ø 6.3 c/ 25	ø 6.3 c/ 23 427.00	2x5 ø 8.0	0.03
P10	50.00			4 ø 20.0 12.89					0.22
2	500.00	40.00 x 60.00	7 ø 8.0 3.60		ø 6.3 c/ 14 427.00	ø 6.3 c/ 25	ø 6.3 c/ 14 109.00	2x5 ø 8.0	0.09
P11	50.00			6 ø 16.0 12.21					0.17
3	497.00	40.00 x 60.00	4 ø 16.0 3.60		ø 6.3 c/ 21 109.00	ø 6.3 c/ 25	ø 6.3 c/ 9 109.00	2x5 ø 8.0	0.03
P12	50.00			15 ø 10.0 11.68					0.07

Resultados da Viga V3

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P13	50.00			6 ø 16.0 11.76					0.18
1	500.00	40.00 x 60.00	4 ø 16.0 3.62		ø 6.3 c/ 9 109.00	ø 6.3 c/ 25	ø 6.3 c/ 24 427.00	2x5 ø 8.0	0.03
P14	50.00			4 ø 20.0 12.89					0.22
2	500.00	40.00 x 60.00	7 ø 8.0 3.60		ø 6.3 c/ 14 427.00	ø 6.3 c/ 25	ø 6.3 c/ 14 109.00	2x5 ø 8.0	0.09
P15	50.00			6 ø 16.0 12.23					0.17
3	497.00	40.00 x 60.00	4 ø 16.0 3.60		ø 6.3 c/ 21 109.00	ø 6.3 c/ 25	ø 6.3 c/ 9 109.00	2x5 ø 8.0	0.03
P16	50.00			15 ø 10.0 11.76					0.07

Resultados da Viga V4

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P17	50.00			15 ø 10.0 11.83					0.07
1	500.00	40.00 x 60.00	4 ø 16.0 3.60		ø 6.3 c/ 8 109.00	ø 6.3 c/ 25		2x5 ø 8.0	0.03
P18	50.00			4 ø 20.0 12.62					0.21
2	500.00	40.00 x 60.00	7 ø 8.0 3.60		ø 6.3 c/ 14 109.00	ø 6.3 c/ 25	ø 6.3 c/ 16 109.00	2x5 ø 8.0	0.08
P19	50.00			6 ø 16.0 11.94					0.16
3	497.00	40.00 x 60.00	4 ø 16.0 3.60		ø 6.3 c/ 21 109.00	ø 6.3 c/ 25	ø 6.3 c/ 8 109.00	2x5 ø 8.0	0.03
P20	50.00			9 ø 12.5 11.39					0.13

Resultados da Viga V5

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P21	70.00		11 ø 12.5 13.44	11 ø 12.5 13.44					0.05
1	480.00	40.00 x 70.00	11 ø 12.5 13.44	11 ø 12.5 13.44		ø 6.3 c/ 12		2x6 ø 8.0	0.03
P22	40.00			9 ø 10.0 7.03					0.11
2	510.00	40.00 x 70.00	2 ø 16.0 4.20			ø 6.3 c/ 12		2x6 ø 8.0	0.11
P23	50.00			6 ø 12.5 7.48					0.14
3	477.00	40.00 x 70.00	11 ø 12.5 13.44	11 ø 12.5 13.44		ø 6.3 c/ 12		2x6 ø 8.0	0.03
P24	70.00		11 ø 12.5 13.44	11 ø 12.5 13.44					0.05

Resultados da Viga V6

fck = 350.00 kgf/cm²	Ecs = 294029 kgf/cm²
Cobrimento = 3.00 cm	Peso específico = 2500.00 kgf/m³

Dados			Resultados						
Pilar Trecho	**Apoio 1 e 1o (cm)**	**Seção (cm)**	**As Inf (cm²)**	**As Sup (cm²)**	**As esq trecho (cm²)**	**Asw min (cm²)**	**As dir trecho (cm²)**	**Asw Pele (cm²)**	**Fissura (mm)**
P22	50.00		9 ø 12.5 11.52	9 ø 12.5 11.52					0.01
1	485.81	40.00 x 60.00	9 ø 12.5 11.52	9 ø 12.5 11.52		ø 6.3 c/ 25	ø 6.3 c/ 15 108.00	2x5 ø 8.0	0.02
P18	40.00			11 ø 12.5 13.16					0.07
2	520.74	40.00 x 60.00	7 ø 8.0 3.61		ø 6.3 c/ 23 447.00	ø 6.3 c/ 25	ø 6.3 c/ 15 109.00	2x5 ø 8.0	0.09
P14	40.00			11 ø 12.5 13.79					0.07
3	520.75	40.00 x 60.00	7 ø 8.0 3.60		ø 6.3 c/ 23 447.00	ø 6.3 c/ 25	ø 6.3 c/ 16 109.00	2x5 ø 8.0	0.09
P10	40.00			7 ø 16.0 13.90					0.15

4	520.75	40.00 x 60.00	7 ø 8.0 3.67		ø 6.3 c/ 19 557.00	ø 6.3 c/ 25		2x5 ø 8.0	0.09
P6	40.00			4 ø 20.0 12.53					0.22
5	488.95	40.00 x 60.00	4 ø 16.0 3.60			ø 6.3 c/ 25	ø 6.3 c/ 6 59.00	2x5 ø 8.0	0.02
P2	50.00			5 ø 20.0 15.15					0.23

Resultados da Laje

LAJE	fck = 350.00 kgf/cm²	E = 294029 kgf/cm²	Peso Espec = 2500.00 kgf/m³
Lance 3		cobr = 3.00 cm	

Nome	Espessura (cm)	Carga (kgf/m²)	Mdx (kgf.m/m)	Mdy (kgf.m/m)	Asx	Asy
L1	40	2623.00	6495	8182	As = 4.64 cm²/m (ø10.0 c/16 - 4.91 cm²/m)	As = 5.92 cm²/m (ø12.5 c/20 - 6.14 cm²/m)
L2	40	2623.00	6573	8926	As = 4.79 cm²/m (ø10.0 c/16 - 4.91 cm²/m)	As = 5.90 cm²/m (ø12.5 c/20 - 6.14 cm²/m)
L3	40	2623.00	6021	7078	As = 4.30 cm²/m (ø8.0 c/11 - 4.57 cm²/m)	As = 5.13 cm²/m (ø10.0 c/15 - 5.24 cm²/m)
L4	40	2623.00	7840	7896	As = 5.52 cm²/m	As = 5.19 cm²/m

					(ø10.0 c/14 - 5.61 cm²/m)	(ø10.0 c/15 - 5.24 cm²/m)
L5	40	2623.00	7729	7997	As = 4.92 cm²/m (ø8.0 c/10 - 5.03 cm²/m)	As = 5.23 cm²/m (ø10.0 c/15 - 5.24 cm²/m)
L6	40	2623.00	6227	7596	As = 4.02 cm²/m (ø10.0 c/19 - 4.13 cm²/m)	As = 5.51 cm²/m (ø10.0 c/14 - 5.61 cm²/m)
L7	40	2623.00	7865	7709	As = 5.58 cm²/m (ø10.0 c/14 - 5.61 cm²/m)	As = 5.04 cm²/m (ø6.3 c/6 - 5.20 cm²/m)
L8	40	2623.00	7766	7806	As = 4.95 cm²/m (ø8.0 c/10 - 5.03 cm²/m)	As = 5.10 cm²/m (ø10.0 c/15 - 5.24 cm²/m)
L9	40	2623.00	6421	7614	As = 4.09 cm²/m (ø10.0 c/19 - 4.13 cm²/m)	As = 5.56 cm²/m (ø10.0 c/14 - 5.61 cm²/m)
L10	40	2623.00	7864	7761	As = 5.58 cm²/m (ø10.0 c/14 - 5.61 cm²/m)	As = 5.24 cm²/m (ø10.0 c/14 - 5.61 cm²/m)
L11	40	2623.00	7771	7858	As = 4.95 cm²/m (ø8.0 c/10 - 5.03 cm²/m)	As = 5.20 cm²/m (ø10.0 c/15 - 5.24 cm²/m)
L12	40	2623.00	6487	7611	As = 4.16 cm²/m (ø8.0 c/12 - 4.19 cm²/m)	As = 5.53 cm²/m (ø10.0 c/14 - 5.61 cm²/m)
L13	40	2623.00	9470	7464	As = 10.01 cm²/m (ø16.0 c/20 - 10.05 cm²/m)	As = 5.61 cm²/m (ø10.0 c/14 - 5.61 cm²/m)
L14	40	2623.00	7900	7548	As = 5.38 cm²/m (ø10.0 c/14 - 5.61 cm²/m)	As = 4.95 cm²/m (ø8.0 c/10 - 5.03 cm²/m)
L15	40	2623.00	8734	7248	As = 9.47 cm²/m (ø12.5 c/12 - 10.23 cm²/m)	As = 5.40 cm²/m (ø10.0 c/14 - 5.61 cm²/m)

Resultados parede contenção

LAJE	fck = 400.00 kgf/cm²	E = 318758 kgf/cm²	Peso Espec = 2500.00 kgf/m³
Lance 3		cobr = 3.00 cm	

Paredes Contenções

ARMADURAS NA LAJE								
Esforços					**Resultados**			
Trecho	**Ndx Rdx (tf)**	**Ndy Rdy (tf)**	**Mdx (kgf.m/m)**	**Mdy (kgf.m/m)**	**Armadura inferior**		**Armadura superior**	
					Asx	**Asy**	**Asx**	**Asy**
PAR1-A	14.88 -4.49	27.45 -48.20	7465	5106	As = 9.01 cm²/m ø12.5 c/13 (9.44 cm²/m)	As = 14.23 cm²/m ø16.0 c/14 (14.36 cm²/m)	A's = 4.90 cm²/m ø8.0 c/10 (5.03 cm²/m)	A's = 10.99 cm²/m ø12.5 c/11 (11.16 cm²/m)
PAR1-B	18.94 -1.32	28.29 -49.63	6129	5441	As = 6.95 cm²/m ø10.0 c/11 (7.14 cm²/m)	As = 14.46 cm²/m ø10.0 c/5 (15.71 cm²/m)	A's = 5.59 cm²/m ø10.0 c/14 (5.61 cm²/m)	A's = 11.21 cm²/m ø10.0 c/7 (11.22 cm²/m)
PAR1-C	13.48 -4.94	27.06 -49.25	7355	4221	As = 8.95 cm²/m ø12.5 c/13 (9.44 cm²/m)	As = 13.59 cm²/m ø12.5 c/9 (13.64 cm²/m)	A's = 4.85 cm²/m ø10.0 c/16 (4.91 cm²/m)	A's = 11.02 cm²/m ø12.5 c/11 (11.16 cm²/m)

PAR2-A	20.19 -3.28	14.42 -38.62	6432	4074	As = 7.64 cm²/m ø12.5 c/16 (7.67 cm²/m)	As = 11.21 cm²/m ø10.0 c/7 (11.22 cm²/m)	A's = 4.79 cm²/m ø10.0 c/16 (4.91 cm²/m)	A's = 8.82 cm²/m ø12.5 c/14 (8.77 cm²/m)
PAR2-B	10.63 -2.23	16.01 -41.28	6292	4630	As = 7.32 cm²/m ø12.5 c/16 (7.67 cm²/m)	As = 12.48 cm²/m ø16.0 c/16 (12.57 cm²/m)	A's = 4.80 cm²/m ø10.0 c/16 (4.91 cm²/m)	A's = 9.71 cm²/m ø12.5 c/12 (10.23 cm²/m)
PAR2-C	7.61 -1.34	16.41 -42.15	6285	4598	As = 7.17 cm²/m ø12.5 c/17 (7.22 cm²/m)	As = 12.41 cm²/m ø10.0 c/6 (13.09 cm²/m)	A's = 4.59 cm²/m ø10.0 c/17 (4.62 cm²/m)	A's = 9.68 cm²/m ø12.5 c/12 (10.23 cm²/m)
PAR2-D	8.25 -0.39	15.52 -42.51	6296	4707	As = 7.00 cm²/m ø10.0 c/11 (7.14 cm²/m)	As = 12.44 cm²/m ø10.0 c/6 (13.09 cm²/m)	A's = 4.51 cm²/m ø10.0 c/17 (4.62 cm²/m)	A's = 9.75 cm²/m ø12.5 c/12 (10.23 cm²/m)
PAR2-E	26.32 -6.76	21.88 -39.99	5876	4234	As = 7.55 cm²/m ø12.5 c/16 (7.67 cm²/m)	As = 11.80 cm²/m ø16.0 c/17 (11.83 cm²/m)	A's = 5.94 cm²/m ø12.5 c/20 (6.14 cm²/m)	A's = 9.30 cm²/m ø12.5 c/13 (9.44 cm²/m)
PAR3-A	26.18 -6.70	21.89 -39.10	5856	4164	As = 7.52 cm²/m ø12.5 c/16 (7.67 cm²/m)	As = 11.56 cm²/m ø16.0 c/17 (11.83 cm²/m)	A's = 5.89 cm²/m ø12.5 c/20 (6.14 cm²/m)	A's = 9.18 cm²/m ø12.5 c/13 (9.44 cm²/m)
PAR3-B	8.23 -0.32	15.65 -41.34	6279	4625	As = 6.96 cm²/m ø10.0 c/11 (7.14 cm²/m)	As = 12.33 cm²/m ø16.0 c/16 (12.57 cm²/m)	A's = 4.50 cm²/m ø10.0 c/17 (4.62 cm²/m)	A's = 9.58 cm²/m ø12.5 c/12 (10.23 cm²/m)

PAR3-C	7.55 -1.41	16.52 -41.01	6292	4519	As = 7.19 cm²/m ø12.5 c/17 (7.22 cm²/m)	As = 12.31 cm²/m ø16.0 c/16 (12.57 cm²/m)	A's = 4.60 cm²/m ø10.0 c/16 (4.91 cm²/m)	A's = 9.50 cm²/m ø12.5 c/12 (10.23 cm²/m)
PAR3-D	10.65 -2.29	16.11 -40.20	6306	4550	As = 7.34 cm²/m ø12.5 c/16 (7.67 cm²/m)	As = 12.20 cm²/m ø16.0 c/16 (12.57 cm²/m)	A's = 4.81 cm²/m ø10.0 c/16 (4.91 cm²/m)	A's = 9.56 cm²/m ø12.5 c/12 (10.23 cm²/m)
PAR3-E	20.30 -3.28	14.53 -37.95	6471	4000	As = 7.64 cm²/m ø10.0 c/10 (7.85 cm²/m)	As = 10.94 cm²/m ø12.5 c/11 (11.16 cm²/m)	A's = 4.78 cm²/m ø10.0 c/16 (4.91 cm²/m)	A's = 8.60 cm²/m ø12.5 c/14 (8.77 cm²/m)

ARMADURAS NA CONTINUIDADE

Viga Trecho	Laje 1 Laje 2	Momentos fletores (kgf.m/m)		Armaduras	
		Md negativo	Md positivo	As (superior)	A's (inferior)
Barra	PAR1-C PAR2-A	-10262		As = 12.27 cm²/m ø10.0 c/6 (13.09 cm²/m)	
Barra	PAR2-A PAR1-C			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR2-A PAR2-B	-8617		As = 10.05 cm²/m ø8.0 c/5 (10.05 cm²/m)	
Barra	PAR2-B PAR2-A			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR2-B	-9009		As = 10.45 cm²/m	

	PAR2-C			ø12.5 c/11 (11.16 cm²/m)	
Barra	PAR2-C PAR2-B			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR2-C PAR2-D	-9017		As = 10.05 cm²/m ø8.0 c/5 (10.05 cm²/m)	
Barra	PAR2-D PAR2-C			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR2-D PAR2-E	-8691		As = 9.69 cm²/m ø10.0 c/8 (9.82 cm²/m)	
Barra	PAR2-E PAR2-D			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR1-A PAR3-E			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR3-E PAR1-A	-10371		As = 12.33 cm²/m ø10.0 c/6 (13.09 cm²/m)	
Barra	PAR1-A PAR1-B	-8481		As = 9.64 cm²/m ø10.0 c/8 (9.82 cm²/m)	
Barra	PAR1-B PAR1-A			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR1-B	-7873		As = 9.01 cm²/m	

	PAR1-C			ø12.5 c/13 (9.44 cm²/m)	
Barra	PAR1-C PAR1-B			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR3-B PAR3-A			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR3-A PAR3-B	-8700		As = 9.70 cm²/m ø10.0 c/8 (9.82 cm²/m)	
Barra	PAR3-C PAR3-B			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR3-B PAR3-C	-9009		As = 10.05 cm²/m ø8.0 c/5 (10.05 cm²/m)	
Barra	PAR3-D PAR3-C			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR3-C PAR3-D	-9019		As = 10.47 cm²/m ø12.5 c/11 (11.16 cm²/m)	
Barra	PAR3-E PAR3-D			As = 4.12 cm²/m ø8.0 c/12 (4.19 cm²/m)	
Barra	PAR3-D PAR3-E	-8580		As = 10.00 cm²/m ø8.0 c/5 (10.05 cm²/m)	