Código:	Nº de páginas:	Emissão:
CRO-163MT-121+600-PAS-ASB-RT-V1-001-R01	354	11/03/2022

Rodovia:	Trecho:
BR-364/MT	Km 202+700

Objetivo:

RELATÓRIO DE PROJETO DA PASSARELA DE PEDESTRES KM 202+700 DA BR-364/MT

Documentos de Referência:

Documentos Resultantes:

Observações:

01	Revisão de Itens	CRO	11/03/2022
00	Emissão Inicial	CRO	16/07/2021
Rev.	**Natureza da Revisão**	**Resp. Técnico**	**Data**

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1 APRESENTAÇÃO

Este relatório tem como objetivo apresentar o projeto As-built da **Passarela 6**, que foi implantada na travessia urbana de Rondonópolis/MT, no km 202+700 da BR-364/MT, de forma a atender ao fluxo de pedestres na região. O projeto desenvolvido visa atender aos parâmetros técnicos das Obras de Melhoria conforme item 3.2.5.3 do PER e do **OFÍCIO SEI Nº 23901/2021/COINFRS/URRS-ANTT.**

2 DISCIPLINAS CORRIGIDAS

Conforme os apontamentos contidos no ofício **OFÍCIO SEI Nº 23901/2021/COINFRS/URRS-ANTT**, foram executadas as adequações no que tange as disciplinas:

- Sinalização e Segurança
- Drenagem
- Obras complementares

As demais disciplinas não houveram revisões e mantiveram-se fieis ao apresentado no projeto executivo, sendo elas:

- Desapropriação
- Estrutural
- Iluminação
- Interferências
- Locação
- SPDA

2.1 SINALIZAÇÃO E SEGURANÇA

Como foi demonstrado pelo **OFÍCIO SEI Nº 23901/2021/COINFRS/URRS-ANTT**, havia uma deficiência na sinalização vertical e horizontal para indicação da utilização da passarela, e que foi sanada implantando placas de advertência, de regulamentação e placas educativas próximas as entradas da passarela. Também foi adequada a baia de parada de ônibus no sentido sul, além de realocação de placas conforme a necessidade.

Placa de Regulamentação e Educativa executadas no sentido Norte.

Placa de regulamentação, educativa e de advertência executadas no sentido sul.

Placa de advertência e educativa executadas no sentido sul.

Baia do ponto de ônibus no sentido sul.

2.2 DRENAGEM

Em relação a Drenagem, conforme foi executada a passarela e o passeio, o escoamento superficial do estacionamento lindeiro começou a causar erosões e empoçamentos, e para solução do problema, foi executada uma solução visando realocar esse escoamento até a rodovia.

Dispositivo de drenagem executado no trecho sul.

2.3 OBRAS COMPLEMENTARES

Seguindo as pendências do Ofício, o abrigo do ponto de ônibus não atendia o item 3.2.5.3 do PER, em relação as dimensões do mesmo. Para sanar esta pendência foi projetado e executado um abrigo novo em estrutura metálica que também atende a NBR 9050 e a NBR 16537 no que tange a acessibilidade. Na mesma linha, os rebaixamentos de calçadas de ambos os sentidos foram readequados para também atender os parâmetros de acessibilidade.

Novo abrigo do ponto de ônibus em estrutura metálica no sentido sul.

Novo abrigo do ponto de ônibus em estrutura metálica no sentido norte.

Adequação da acessibilidade no trecho sul.

Adequação da acessibilidade no trecho norte.

3 ANEXO I – RELATÓRIOS DE PROJETO APRESENTADOS NO PROJETO EXECUTIVO

AGÊNCIA NACIONAL DE TRANSPORTES TERRESTRES

Rota do Oeste

RELÁTORIO TÉCNICO DESAPROPRIAÇÃO - AS BULT

Título da obra	Passarela de Rondonópolis- ID 06	**N° DE IMOVEIS DESAPROPRIADO**	2

Identificação do Expropriado (01)	☑ **Pessoa Fisica**	**NOME**	RODEMAR JOSE PEREIRA		
		CPF	240.885.951/0000-49	**RG**	2735750 SSP MT
	☐ **Pessoa Jurídica**	**Nome Fantasia**			
		Razão Social			
		CNPJ			

Dados do Imóvel (01)	**Endereço**	Rodovia BR-364 Endereço = Av. Ítrio Correia da Costa; Lote 5; Quadra 6 Bairro = Vila Salmen;			CEP	78700000
	Município/UF	Rondonópolis		**Marco Quilométrico**	202+700	
	Coordenadas UTM/SIRGAS 2000	**Fuso:**	21S	**E** 750433470	**N**	8177140417
	Área total do imóvel (m²)	5.850,00		**Área desapropriada (m²)**	82.80	
	Cartório	**Rondonópolis**		**Nº da Matrícula**	67.202	
	Uso Predominante	☐ **Rural**	☑ **Comercial**	☐ **Residencial**	☐ **Industrial**	
		☐ **Outros (citar)**				

Valor do laudo (01)	**Valor Terra nua (R$)**	R$ 11.826,20	**Valor Benfeitorias (R$)**	**R$** -
	Total Terras + Benfeitorias (R$)	R$ 11.826,20	**Data da Indenização**	29/06/2020 e 04/02/2021
	Forma de Pagamento	☑ **Depósito em conta**	☐ **Cheque**	☐ **Outros (Citar)**
Processo Judicial?	☐ SIM	**N° do processo judicial:**		☑ NÃO

Dados do Imóvel (02)	**Endereço**				CEP	78700000
	Município/UF	Rondonópolis		**Marco Quilométrico**		
	Coordenadas UTM/SIRGAS 2000	**Fuso:**	21S	**E** 750.429.668	**N**	8.177.149.177
	Área total do imóvel (m²)	9.940,00		**Área desapropriada (m²)**	301.02	
	Cartório	Rondonópolis		**Nº da Matrícula**	82.085	
	Uso Predominante	☐ **Rural**	☑ **Comercial**	☐ **Residencial**	☐ **Industrial**	
		☐ **Outros (citar)**				

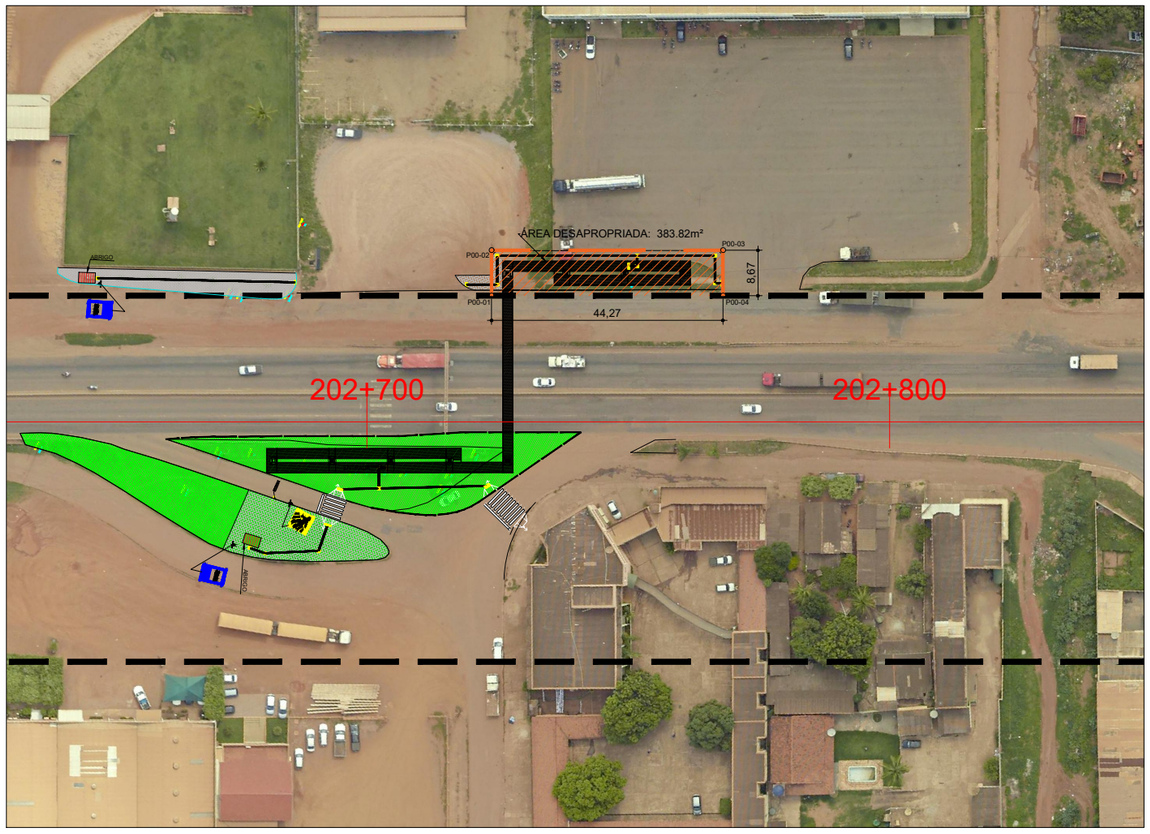
Valor do laudo (02)	**Valor Terra nua (R$)**	R$ 131.273,80	**Valor Benfeitorias (R$)**	**R$** -
	Total Terras + Benfeitorias (R$)	R$ 131.273,80	**Data da Indenização**	29/06/2020 e 04/02/2021
	Forma de Pagamento	☑ **Depósito em conta**	☐ **Cheque**	☐ **Outros (Citar)**
Processo Judicial?	☐ SIM	**N° do processo judicial:**		☑ NÃO

DESAPROPRIAÇÃO DA PASSARELA

COORDINATES		
POINTS	EASTING	NORTHING
P00-01	750433.47	8177140.417
P00-02	750425.52	8177136.968
P00-03	750407.902	8177177.576
P00-04	750415.852	8177181.025

LEGENDA

- ÁREA DE DESAPROPRIAÇÃO
- LIMITE FAIXA DE DOMÍNIO
- LIMITE DE DESAPROPRIAÇÃO



ÁREA DESAPROPRIADA: 383.82m²

Nº	DESCRIÇÃO	PRJ.	VER.	APR.	DATA
0	EMISSÃO INICIAL	MC	SA	DS	18/03/2019

REVISÃO

LEGENDAS

NOTAS

PROJETO

RESP. TÉCNICO

CREA

PROJETISTA
PAULO ADRIANO

DESENHISTA
VANESSA CRISTINA

CÓDIGO PROJETISTA

ANTT

Rota do Oeste

RODOVIA BR-163/MT - CONCESSIONÁRIA ROTA DO OESTE
DESAPROPRIAÇÃO
KM 202+700
DESAPROPRIAÇÃO DA PASSARELA

CÓDIGO
CRO-BR0163-000-E-PAS-202-DE-DS01-0001

DATA 04/11/2019

ESC. S/E

FOLHA 01/01

REV. 0

Código:	Nº de páginas:	Emissão:
CRO-BR0163-364-S-PAS-202-MC-EC01-0001	149	08/01/202

Rodovia:	Trecho:
BR-364/MT	km 202+700

Objetivo:

MEMORIAL DE CÁLCULO DA ESTRUTURA
DE CONCRETO - CONFORME CONSTRUÍDO

Documentos de Referência:

Documentos Resultantes:

Observações:

00	Emissão Inicial	Itamar Félix da Silva	07/07/2021
Rev.	**Natureza da Revisão**	**Responsável**	**Data**

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1 INTRODUÇÃO

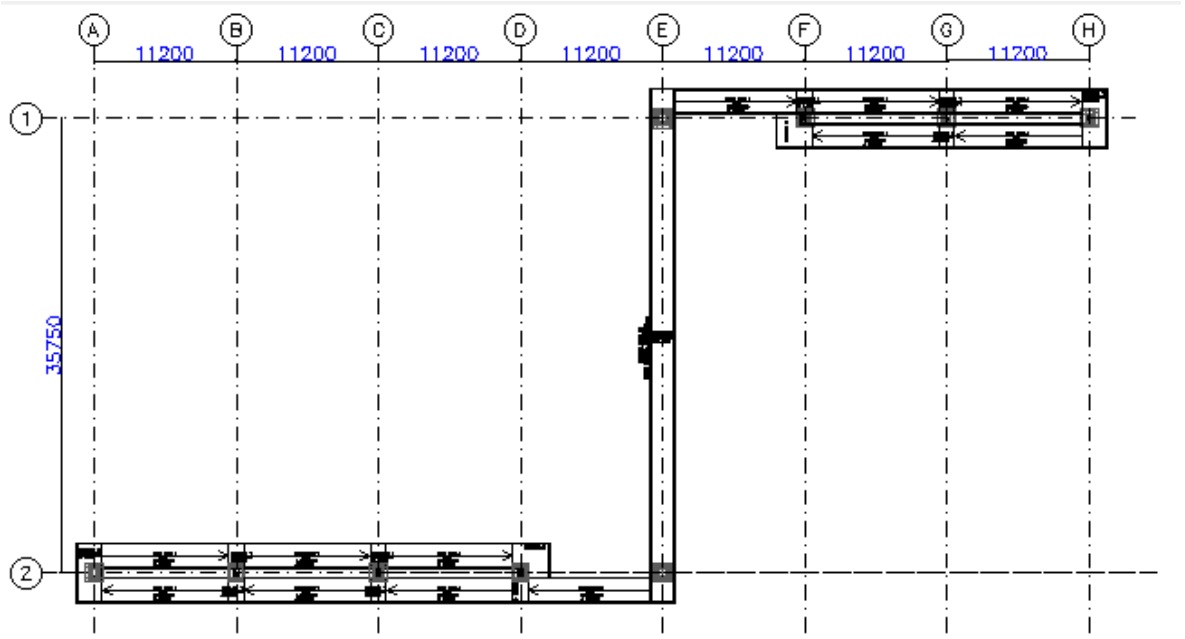
Memorial de Cálculo para passarela mista em concreto pré-moldado e estrutura metálica, -**Passarela 6 – KM 202 + 700**

2 SISTEMA ESTRUTURAL ADOTADO

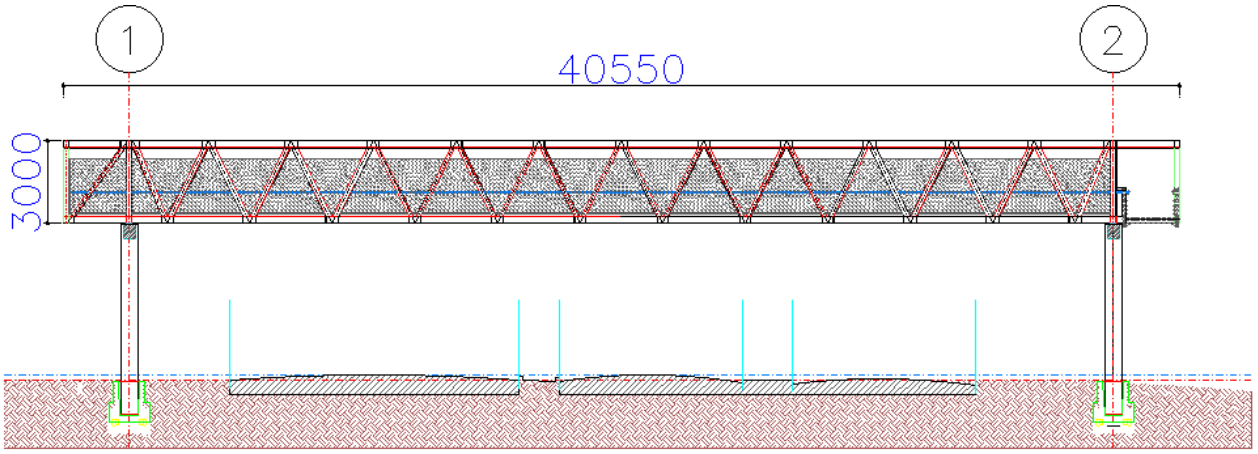
As passarelas serão mistas em concreto pré-moldado e Estrutura metálica, sendo Fundação em bloco em concreto pré-moldado sobre estacas raiz, Pilares em concreto pré-moldado, pisos em laje pré-moldada. As estruturas de rampas e passarelas serão em estrutura metálica treliçada.

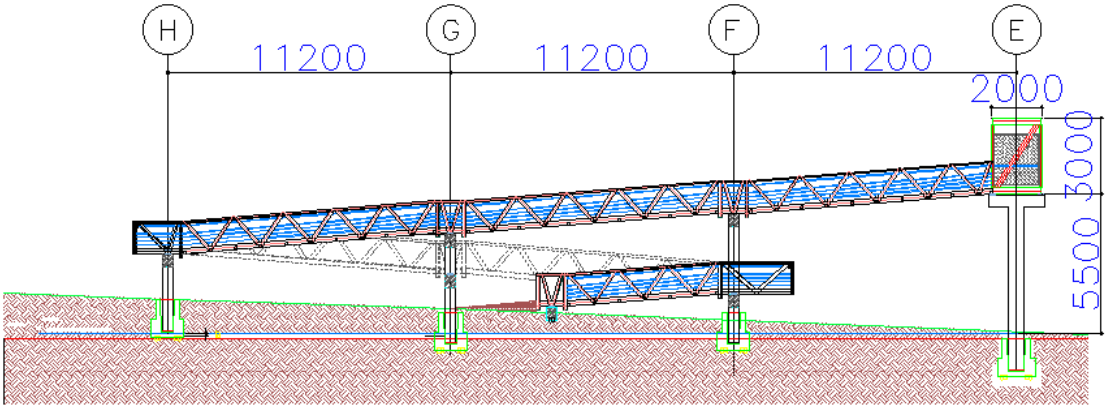
3 PROJETO GEOMÉTRICO DAS PASSAREALAS.

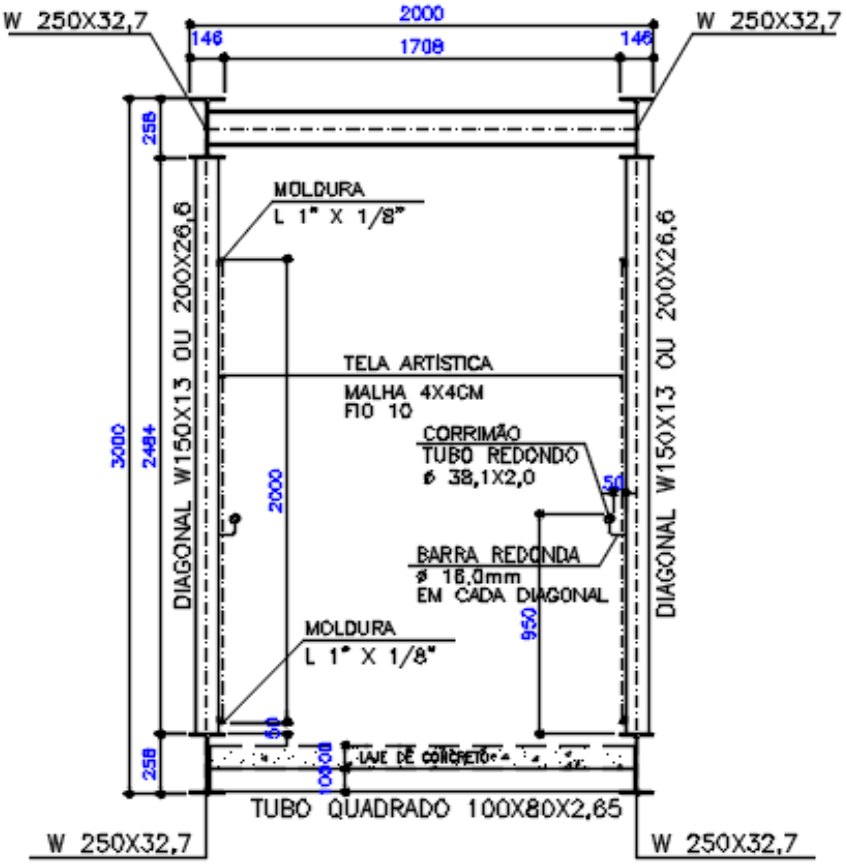
AS RAMPAS terão largura de 2,00 metros com inclinação de 8,0% com patamares de 1,20 metros de comprimento a cada 10 metros de rampa percorrido, Guarda corpo nas laterais com 1,15 metros de altura e corrimão com altura de 0,92 metros. AS PASSARELAS terão forma de caixão com largura de 2,00 metros e altura de 3,00 metros , sendo utilizado seu interior como passarela, receberá proteção lateral com tela artística até 2,00 metros de altura e corrimão na altura de 0,92 metros.



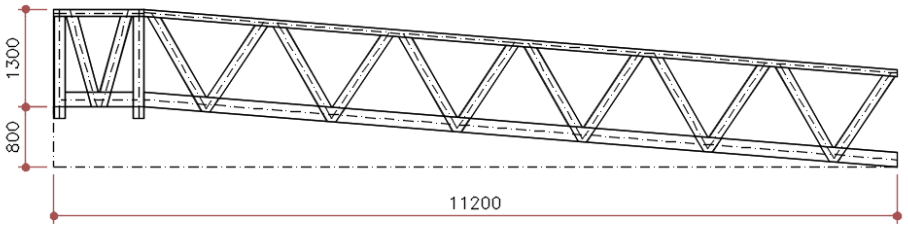
Planta baixa



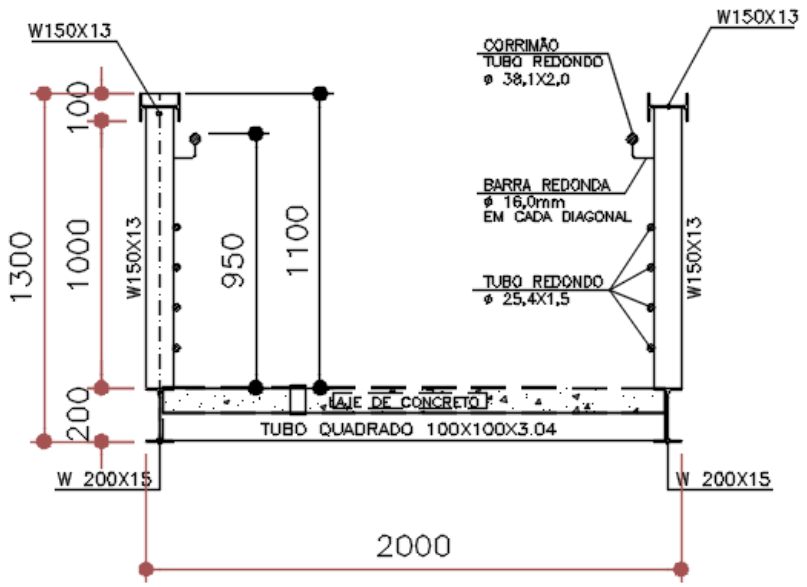




CORTE TRANSVERSAL DA PASSARELA



ELEVAÇÃO LATERAL DA RAMPA



CORTE TRANSVERSAL/RAMPAS

4 NORMAS UTILIZADAS

- NBR 8800/2008 projeto de estruturas de aço e estruturas mistas de aço e concreto de edifícios;
- NBR 6123/88 forças devidas aos ventos nas edificações;
- NBR 6118/14 projeto de estruturas de concreto procedimentos;
- NBR 6122/10 projeto e execução de fundações;
- NBR 9062/2016 projeto e execução de estruturas de concreto pré-moldado;
- NBR 7188/2013 carga móvel rodoviária e de pedestres em pontes, viadutos, passarelas e outras estruturas ;
- NBR 9050/2004 acessibilidade a edificações, mobiliário, espaço e equipamentos urbanos .

5 CARGAS ATUANTES NA ESTRUTURA

5.1 PESO PRÓPRIO DA ESTRUTURA

-ESTRUTURA METÁLICA	- PASSARELA	**125,00 KGF/M2**
-ESTRUTURA METÁLICA	- RAMPAS	**65,00 KGF/M2**
-LAJE DE CONCRETO		**250,00 KGF/M2**

5.2 Carga variável

-SOBRECARGA DE UTILIZAÇÃO **500,00 KGF/M2**

5.3 Carga excepcional

CARGA CONCENTRADA NO SENTIDO DO TRÁFEGO, NA POSIÇÃO MAIS DESFAVORÁVEL .

-NO PRIMEIRO VÃO DA PASSARELA **10.000,00 KGF**

-NO SEGUNDO VÃO DA PASSARELA **-10.000,00 KGF**

Obs. - essa carga não atua simultaneamente

5.4 Cargas devida ao vento

a) VELOCIDADE BÁSICA DO VENTO **35,00 m/s**

b) FATOR TOPOGRÁFICO-TERRENO PLANO OU FRACAMENTE ACIDENTADO **S1=1,00**

c) FATOR DE RUGOSIDADE – CATEGORIA III
- CLASSE C
- ALTURA ENTRE 5,0 E 10,0m

S2=0,88

d)- FATOR ESTATÍSTICO - GRUPO 2 **S3=1,00**

e) VELOCIDADE CARACTERÍSTICA DO VENTO = Vk=V0*S1*S2*S3 = **Vk= 30,80 m/S**

f) PRESSÃO DINÂMICA DO VENTO = q=0,613*Vk2 = 580,00 N/m2, **q = 58,00kgf/m2**

6 PROGRAMA DE CÁULCULO UTILIZADO

-Eberick ;Para estrutura de concreto;

-Mcalc ; Para estrutura metálica.

-Planilhas de cálculo.

CÁLCULO DOS BLOCOS

Os Blocos de fundação foram cálculdos através de planilhas de cálculos com os esforços

obtidos pelo modelo estrutural montado no Mcalc 3D, onde foi calculado a estrutura metálica sobre os pilares de concreto, abaixo as reações de apoios:

REAÇÕES NODAIS - Eixos Globais(não ponderadas)						
	Unidades:	kgf	cm	rad*1000		
Combinação 1: Peso proprio+Permanente+Sobrecarga						
Nó	Fx	Fy	Fz	Mx	My	Mz
P5	-22,54	-1.286,41	19.027,71	540.260,69	162.165,34	6.431,77
P8	-3.018,44	5.691,68	36.376,84	-610.445,25	259.325,09	-
E4	382,10	-3.011,61	3.379,38	-	-	-
E3	358,27	-1.005,55	3.730,13	-	-	-
P1	-589,51	-820,00	38.599,38	285.875,41	-432.097,75	-0,02
E2	1.053,03	643,35	38.514,52	-147.010,42	771.849,69	-0,06
P6	457,76	408,48	35.495,77	-141.404,19	387.538,03	-
P7	255,82	-1.146,10	32.487,92	163.437,83	308.952,75	-0,09
E1	-338,67	2.507,13	3.392,06	-	-	-
P9	-339,46	600,58	3.616,10	-	-	-
P4	-96,73	2.563,53	18.955,54	-769.283,19	-215.635,97	12.817,21
P2	2.465,06	-4.470,77	38.987,94	360.752,94	-459.171,63	-0,08
P3	-566,69	-674,29	36.724,41	262.103,84	-429.611,63	-0,02

Combinação 2: Peso proprio+Permanente+Vento0						
Nó	Fx	Fy	Fz	Mx	My	Mz
P5	-986,65	-374,10	6.599,46	157.110,11	-427.841,81	1.870,34
P8	-2.015,93	1.898,78	12.732,54	-257.080,50	-439.218,22	0,02
E4	-295,50	371,05	1.064,30	-	-	-
E3	-223,31	-1.648,50	1.439,69	-	-	-
P1	-696,56	-216,90	15.389,17	50.374,51	-510.571,19	-
E2	-53,11	259,00	15.128,90	-117.122,28	-38.933,47	0,00
P6	-1.219,45	111,52	12.219,59	-49.332,87	-570.475,25	-0,02
P7	-1.388,11	-580,57	11.091,12	57.292,06	-610.819,31	-0,03
E1	-445,82	1.871,54	1.217,13	-	-	-
P9	-405,95	-727,73	1.144,33	-	-	-
P4	-860,03	1.021,24	6.461,39	-306.462,25	-394.226,91	5.106,08
P2	-667,72	-1.767,43	13.207,98	133.812,34	-795.686,25	-0,02
P3	-1.665,16	-217,89	12.808,36	70.461,34	-718.090,81	0,02

Combinação 3: Peso proprio+Permanente+Vento180						
Nó	Fx	Fy	Fz	Mx	My	Mz
P5	960,52	-494,74	6.466,11	207.777,70	534.206,19	2.473,62
P8	-23,40	1.985,29	12.506,81	-165.075,19	652.866,75	-0,02
E4	575,03	-2.503,66	1.257,53	-	-	-
E3	486,63	1.032,44	1.134,87	-	-	-
P1	208,48	-304,86	15.178,06	139.828,09	152.823,31	-
E2	863,23	150,80	15.344,96	18.610,46	632.738,13	-0,04
P6	1.537,36	162,41	12.236,69	-46.618,03	838.799,13	0,02
P7	1.557,27	-190,87	11.373,86	49.319,34	832.783,94	-0,03
E1	197,79	-32,24	1.112,73	-	-	-
P9	158,16	1.084,98	1.353,85	-	-	-
P4	813,61	717,60	6.554,20	-215.342,06	253.097,78	3.587,82
P2	2.333,23	-1.380,14	13.466,37	131.277,19	405.575,09	-0,02
P3	1.255,37	-227,02	12.517,91	108.040,36	406.577,69	-0,02

Combinação 4: Peso proprio+Permanente+Vento90						
Nó	Fx	Fy	Fz	Mx	My	Mz
P5	-154,52	-814,68	6.658,70	342.153,50	4.718,26	4.073,32
P8	-1.156,24	1.643,27	12.641,86	-57.936,17	119.054,70	-0,03
E4	189,49	-1.362,16	1.182,82	-	-	-
E3	181,34	-367,04	1.289,95	-	-	-
P1	-352,02	-349,02	15.480,52	377.213,50	-258.024,44	0,09
E2	297,79	-19,44	15.041,29	307.393,28	218.272,03	-0,10
P6	256,20	-91,11	12.243,18	89.811,58	171.886,70	0,01
P7	264,57	-740,91	11.232,92	209.931,09	179.388,75	-0,03
E1	-84,42	661,75	1.145,96	-	-	-
P9	-84,33	143,83	1.247,14	-	-	-
P4	-170,61	235,20	6.367,19	-70.573,58	-102.937,33	1.175,84
P2	781,38	-2.007,30	13.301,56	321.731,50	-156.523,61	0,00
P3	31,38	-700,73	12.670,86	270.980,66	-96.629,66	-

Combinação 5: Peso proprio+Permanente+Vento270						
Nó	Fx	Fy	Fz	Mx	My	Mz
P5	130,22	-38,08	6.404,36	15.982,38	102.924,48	190,27
P8	-878,35	2.258,38	12.600,77	-368.665,13	95.106,89	0,03
E4	88,87	-765,48	1.138,60	-	-	-
E3	80,80	-246,71	1.284,34	-	-	-
P1	-136,03	-176,95	15.086,82	-184.238,56	-99.703,76	-0,09
E2	512,49	435,65	15.432,71	-410.277,84	375.650,19	0,06
P6	60,14	378,42	12.212,65	-191.227,56	95.943,13	-0,01
P7	-97,64	-11,89	11.232,27	-108.850,88	41.998,66	-0,03
E1	-162,53	1.173,63	1.183,54	-	-	-
P9	-162,36	212,73	1.250,85	-	-	-
P4	122,71	1.476,28	6.645,57	-443.021,81	-39.165,04	7.381,30
P2	880,07	-1.164,33	13.376,47	-51.557,23	-233.755,38	-0,05
P3	-438,39	232,27	12.654,99	-86.115,18	-214.360,53	-

Combinação 6: Peso proprio+Permanente+Sobrecarga+Vento90+EXC1						
Nó	Fx	Fy	Fz	Mx	My	Mz
P5	-350,17	-1.806,36	14.305,11	758.644,25	5.241,49	9.031,62
P8	-2.444,59	3.713,88	26.763,49	-104.564,36	332.912,50	-0,06
E4	444,27	-3.231,99	2.565,56	-	-	-
E3	426,68	-643,87	2.738,31	-	-	-
P1	-1.338,08	-2.829,68	29.596,22	1.857.591,38	-980.793,06	0,55
E2	-87,91	-1.865,69	28.909,95	1.622.076,38	-64.445,44	-0,59
P6	699,70	-247,50	26.191,41	200.680,86	445.987,81	0,04
P7	858,43	-1.584,69	24.070,83	453.202,53	544.880,13	-0,07
E1	-128,53	991,94	2.437,16	-	-	-
P9	-129,48	488,67	2.678,80	-	-	-
P4	-373,20	427,73	13.689,84	-128.340,00	-216.223,05	2.138,27
P2	1.902,63	-4.131,63	28.805,37	723.094,25	-125.943,34	-0,00
P3	520,25	-1.541,81	27.022,16	593.718,63	-38.295,92	-0,03

Combinação 7: Peso proprio+Permanente+Sobrecarga+Vento270+EXC2						
Nó	Fx	Fy	Fz	Mx	My	Mz
P5	313,58	-75,33	13.752,92	31.614,47	232.591,36	376,35
P8	-1.989,62	4.680,67	26.985,61	-799.634,44	64.567,66	0,06
E4	125,51	-1.233,39	2.418,28	-	-	-
E3	108,02	-806,90	2.767,45	-	-	-
P1	434,21	1.634,49	28.950,36	-1.436.805,13	318.281,75	-0,58
E2	1.677,21	2.805,43	29.497,47	-1.840.514,38	1.229.378,88	0,50
P6	-24,17	855,26	26.185,71	-412.004,63	126.080,91	-0,04
P7	-485,01	-88,12	23.901,22	-217.754,50	-85.570,48	-0,07
E1	-376,55	2.750,90	2.565,11	-	-	-
P9	-376,42	373,89	2.659,64	-	-	-
P4	238,00	3.327,90	14.261,37	-998.680,00	-99.478,73	16.639,28
P2	1.717,69	-2.507,14	28.651,27	-180.919,92	-581.788,38	-0,11
P3	-1.362,46	540,69	27.177,81	-204.014,22	-601.581,31	0,00

De posse dos dados foi utilizado planilha de cálculos para obter o dimensionamento dos blocos.

1- DIMENSIONAMENTO DO CÁLICE P1 E P9 - COMBINAÇÃO1									
Bloco liso - 1		1	Mk (tf.m)	2,86	4,00	Md/(Nd.H)	0,09	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	39	54,60	Lenb (cm)	120,00	160	
Bloco com chave - 3			Vk (tf)	0,82	1,148	(x) interp.	-		
			H (cm)	80,00	B (cm)	40,00	Largura / bloco (cm)		200
2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	16,00	26,67	58,67			26,67	Hsfd (tf)	- 4,11	Fx(cons.)
Coef.(emb)	20,00	0	- 60,00			-	Nbd (tf)	54,60	- 1,47
Coef (μ)	0,6	0	0,30	0,00	0,30	0,00			
3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1,5	As,vp (cm2)	7,80
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	- 2,26	Hd (tf)	- 1,81	As,vsc(cm2)	4,88
Compr.(cm)	95		a (cm)	68,33	Pressão de contato			As,vs(cm2)	6,44
Largura (cm)	25		α	0,5	- 16,06	Ft/m2		As,hp(cm2)	-0,47
Altura (cm)	135		As,vss	6,28	857,14286	Limite	OK	As,hs(cm2)	5,06
4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	27,30	C1/C2	2,00	H laje (m)	0,25	0,5	cm2/cada	0,2	
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		2,50	
μ (m)	2,40	WP	0,64	Tsd (tf/m2	56,88	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,91	k	0,7	Wp	2,61				
				Tsd (tf/m2	27,78	Trd2 (tf/m2	37,50	Ok	
5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	14,98	Adotar	A (m)	0,58	α	57,05
Bloco de 4 estacas - (4)			Pi (tf) (-)	12,32	15,00	Z (m)	0,90	Nest (tf)	17,88
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	7,89		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	6,88	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	1,58	
σc,e (tf/m2)	433,96		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P1 E P9 - COMBINAÇÃO2									
Bloco liso - 1		1	Mk (tf.m)	0,5	0,70	Md/(Nd.H)	0,04	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	16	22,40	Lenb (cm)	120,00	160	
Bloco com chave - 3			Vk (tf)	0,2	0,28	(x) interp.	-		
			H (cm)	80,00	B (cm)	40,00	Largura / bloco (cm)		200

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	16,00	26,67	58,67			26,67	Hsfd (tf)	- 2,64	Fx(cons.)
Coef.(emb)	20,00	0	- 60,00			-	Nbd (tf)	22,40	- 0,94
Coef (µ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1,5	As,vp (cm2)	7,80
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	- 1,45	Hd (tf)	- 1,16	As,vsc(cm2)	4,88
Compr.(cm)	95		a (cm)	68,33	Pressão de contato			As,vs(cm2)	5,52
Largura (cm)	25		α	0,5	- 10,31	Ft/m2		As,hp(cm2)	-0,30
Altura (cm)	135		As,vss	2,58	857,14286	Limite	OK	As,hs(cm2)	5,06

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO								
- Verificação no Perímetro C								
FSD (tf)	11,20	C1/C2	2,00	H laje (m)	0,25	0,5	cm2/cad	0,2
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		2,50
µ (m)	2,40	WP	0,64	Tsd (tf/m2	23,33	Trd2 (tf/m2	509,143	Ok
- Verificação no Perímetro C'								
µ (m)	4,91	k	0,7	Wp	2,61			
				Tsd (tf/m2	11,40	Trd2 (tf/m2	37,50	Ok

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	5,83	Adotar	A (m)	0,58	α	57,05
Bloco de 4 estacas - (4)			Pi (tf) (-)	5,37	6,00	Z (m)	0,90	Nest (tf)	7,15
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	3,16		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	2,75	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,63	
σc,e (tf/m2)	173,58		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P1 E P9 - COMBINAÇÃO3									
Bloco liso - 1		1	Mk (tf.m)	1,4	1,96	Md/(Nd.H)	0,11	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	16	22,40	Lenb (cm)	120,00	160	
Bloco com chave - 3			Vk (tf)	0,3	0,42	(x) interp.	-		
			H (cm)	80,00	B (cm)	40,00	Largura / bloco (cm)		200

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	16,00	26,67	58,67			26,67	Hsfd (tf)	- 1,50	Fx(cons.)
Coef.(emb)	20,00	0	- 60,00			-	Nbd (tf)	22,40	- 0,53
Coef (μ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1,5	As,vp (cm2)	7,80
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	- 0,82	Hd (tf)	- 0,66	As,vsc(cm2)	4,88
Compr.(cm)	95		a (cm)	68,33	Pressão de contato			As,vs(cm2)	5,52
Largura (cm)	25		α	0,5	- 5,84	Ft/m2		As,hp(cm2)	-0,17
Altura (cm)	135		As,vss	2,58	857,14286	Limite	OK	As,hs(cm2)	5,06

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	11,20	C1/C2	2,00	H laje (m)	0,25	0,5	cm2/cad	0,2	
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		2,50	
μ (m)	2,40	WP	0,64	Tsd (tf/m2	23,33	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,91	k	0,7	Wp	2,61				
				Tsd (tf/m2	11,40	Trd2 (tf/m2	37,50	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	6,25	Adotar	A (m)	0,58	α	57,05
Bloco de 4 estacas - (4)			Pi (tf) (-)	4,95	7,00	Z (m)	0,90	Nest (tf)	8,34
Verificação da Biela Junto ao Pilar							Armadura Principal do Bloco		
σc,p (tf/m2)	3,68		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	3,21	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,74	
σc,e (tf/m2)	202,52		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P1 E P9 - COMBINAÇÃO4									
Bloco liso - 1		1	Mk (tf.m)	3,8	5,32	Md/(Nd.H)	0,30	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	16	22,40	Lenb (cm)	123,18	160	
Bloco com chave - 3			Vk (tf)	0,35	0,49	(x) interp.	1,54		
			H (cm)	80,00	B (cm)	40,00	Largura / bloco (cm)		200

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	16,00	26,67	25,82			25,82	Hsfd (tf)	1,14	Fx(cons.)
Coef.(emb)	20,00	0	1,59			1,59	Nbd (tf)	22,38	0,41
Coef (μ)	0,6	0	0,30	0,02	0,32	0,02			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1,5	As,vp (cm2)	7,80
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	0,62	Hd (tf)	0,50	As,vsc(cm2)	4,88
Compr.(cm)	95		a (cm)	69,18	Pressão de contato			As,vs(cm2)	5,52
Largura (cm)	25		α	0,5	4,44	Ft/m2		As,hp(cm2)	0,13
Altura (cm)	135		As,vss	2,57	857,14286	Limite	OK	As,hs(cm2)	5,06

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	11,19	C1/C2	2,00	H laje (m)	0,25	0,5	cm2/cad	0,2	
MSD (tf.m)	0,18	K	0,7	d (m)	0,2	Taxa(cm2/m)		2,50	
μ (m)	2,40	WP	0,64	Tsd (tf/m2	24,28	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,91	k	0,7	Wp	2,61				
				Tsd (tf/m2	11,62	Trd2 (tf/m2	37,50	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	7,37	Adotar	A (m)	0,58	α	57,05
Bloco de 4 estacas - (4)			Pi (tf) (-)	3,83	8,00	Z (m)	0,90	Nest (tf)	9,53
Verificação da Biela Junto ao Pilar							Armadura Principal do Bloco		
σc,p (tf/m2)	4,21		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	3,67	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,84	
σc,e (tf/m2)	231,45		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P1 E P9 - COMBINAÇÃO5									
Bloco liso - 1		1	Mk (tf.m)	1,84	2,58	Md/(Nd.H)	0,14	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	16	22,40	Lenb (cm)	120,00	160	
Bloco com chave - 3			Vk (tf)	0,2	0,28	(x) interp.	-		
			H (cm)	80,00	B (cm)	40,00	Largura / bloco (cm)		200

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	16,00	26,67	58,67			26,67	Hsfd (tf)	- 1,17	Fx(cons.)
Coef.(emb)	20,00	0	- 60,00			-	Nbd (tf)	22,40	- 0,42
Coef (µ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1,5	As,vp (cm2)	7,80
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	- 0,64	Hd (tf)	- 0,52	As,vsc(cm2)	4,88
Compr.(cm)	95		a (cm)	68,33	Pressão de contato			As,vs(cm2)	5,52
Largura (cm)	25		α	0,5	- 4,58	Ft/m2		As,hp(cm2)	-0,13
Altura (cm)	135		As,vss	2,58	857,14286	Limite	OK	As,hs(cm2)	5,06

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	11,20	C1/C2	2,00	H laje (m)	0,25	0,5	cm2/cada	0,2	
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		2,50	
µ (m)	2,40	WP	0,64	Tsd (tf/m2	23,33	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
µ (m)	4,91	k	0,7	Wp	2,61				
				Tsd (tf/m2	11,40	Trd2 (tf/m2	37,50	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	6,46	Adotar	A (m)	0,58	α	57,05
Bloco de 4 estacas - (4)			Pi (tf) (-)	4,74	7,00	Z (m)	0,90	Nest (tf)	8,34
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	3,68		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	3,21	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,74	
σc,e (tf/m2)	202,52		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P1 E P9 - COMBINAÇÃO6									
Bloco liso - 1		1	Mk (tf.m)	18,6	26,04	Md/(Nd.H)	0,78	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	30	42,00	Lenb (cm)	133,51	160	
Bloco com chave - 3			Vk (tf)	2,9	4,06	(x) interp.	1,67		
			H (cm)	80,00	B (cm)	40,00	Largura / bloco (cm)		200

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	16,00	26,67	23,06			23,06	Hsfd (tf)	17,13	Fx(cons.)
Coef.(emb)	20,00	0	6,76			6,76	Nbd (tf)	41,17	6,12
Coef (µ)	0,6	0	0,30	0,10	0,40	0,10			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1,5	As,vp (cm2)	7,80
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	9,42	Hd (tf)	7,54	As,vsc(cm2)	4,88
Compr.(cm)	95		a (cm)	71,94	Pressão de contato			As,vs(cm2)	6,06
Largura (cm)	25		α	0,5	66,93	Ft/m2		As,hp(cm2)	1,97
Altura (cm)	135		As,vss	4,73	857,14286	Limite	OK	As,hs(cm2)	5,06

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO								
- Verificação no Perímetro C								
FSD (tf)	20,58	C1/C2	2,00	H laje (m)	0,25	0,5	cm2/cad	0,2
MSD (tf.m)	1,39	K	0,7	d (m)	0,2	Taxa(cm2/m)		2,50
µ (m)	2,40	WP	0,64	Tsd (tf/m2	50,49	Trd2 (tf/m2	509,143	Ok
- Verificação no Perímetro C'								
µ (m)	4,91	k	0,7	Wp	2,61			
				Tsd (tf/m2	22,81	Trd2 (tf/m2	37,50	Ok

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	19,18	Adotar	A (m)	0,58	α	57,05
Bloco de 4 estacas - (4)			Pi (tf) (-)	1,82	20,00	Z (m)	0,90	Nest (tf)	23,83
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
Ƣc,p (tf/m2)	10,52		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	9,17	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	2,11	
Ƣc,e (tf/m2)	578,62		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P1 E P9 - COMBINAÇÃO7									
Bloco liso - 1		1	Mk (tf.m)	14,5	20,30	Md/(Nd.H)	0,63	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	29	40,60	Lenb (cm)	130,27	160	
Bloco com chave - 3			Vk (tf)	1,6	2,24	(x) interp.	1,63		
			H (cm)	80,00	B (cm)	40,00	Largura / bloco (cm)		200

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	16,00	26,67	23,93			23,93	Hsfd (tf)	11,30	Fx(cons.)
Coef.(emb)	20,00	0	5,14			5,14	Nbd (tf)	40,19	4,03
Coef (µ)	0,6	0	0,30	0,08	0,38	0,08			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1,5	As,vp (cm2)	7,80
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	6,21	Hd (tf)	4,97	As,vsc(cm2)	4,88
Compr.(cm)	95		a (cm)	71,07	Pressão de contato			As,vs(cm2)	6,03
Largura (cm)	25		α	0,5	44,13	Ft/m2		As,hp(cm2)	1,30
Altura (cm)	135		As,vss	4,62	857,14286	Limite	OK	As,hs(cm2)	5,06

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	20,09	C1/C2	2,00	H laje (m)	0,25	0,5	cm2/cada	0,2	
MSD (tf.m)	1,03	K	0,7	d (m)	0,2	Taxa(cm2/m)		2,50	
µ (m)	2,40	WP	0,64	Tsd (tf/m2	47,51	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
µ (m)	4,91	k	0,7	Wp	2,61				
				Tsd (tf/m2	21,84	Trd2 (tf/m2	37,50	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	16,92	Adotar	A (m)	0,58	α	57,05
Bloco de 4 estacas - (4)			Pi (tf) (-)	3,38	17,00	Z (m)	0,90	Nest (tf)	20,26
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	8,94		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	7,79	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	1,79	
σc,e (tf/m2)	491,82		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P2 -COMBINAÇÃO 1									
Bloco liso - 1		1	Mk (tf.m)	3,6	5,04	Md/(Nd.H)	0,15	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	39	54,60	Lenb (cm)	90,06	120	
Bloco com chave - 3			Vk (tf)	4,47	6,258	(x) interp.	1,50		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	19,98			19,98	Hsfd (tf)	3,76	Fx(cons.)
Coef.(emb)	15,00	0	0,03			0,03	Nbd (tf)	54,60	1,34
Coef (µ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	2,07	Hd (tf)	1,65	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,02	Pressão de contato			As,vs(cm2)	5,17
Largura (cm)	20		α	0,5	26,08	Ft/m2		As,hp(cm2)	0,43
Altura (cm)	125		As,vss	6,28	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	27,30	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2	
MSD (tf.m)	0,01	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
µ (m)	2,00	WP	0,42	Tsd (tf/m2	68,32	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
µ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	30,26	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	16,17	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	11,13	17,00	Z (m)	0,60	Nest (tf)	18,59
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	9,56		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	5,31	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	1,22	
σc,e (tf/m2)	413,96		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P2 -COMBINAÇÃO 2									
Bloco liso - 1		1	Mk (tf.m)	1,34	1,88	Md/(Nd.H)	0,17	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	13,2	18,48	Lenb (cm)	90,31	120	
Bloco com chave - 3			Vk (tf)	1,76	2,464	(x) interp.	1,51		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	19,92			19,92	Hsfd (tf)	1,83	Fx(cons.)
Coef.(emb)	15,00	0	0,16			0,16	Nbd (tf)	18,47	0,65
Coef (μ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	1,01	Hd (tf)	0,81	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,08	Pressão de contato			As,vs(cm2)	4,13
Largura (cm)	20		α	0,5	12,72	Ft/m2		As,hp(cm2)	0,21
Altura (cm)	125		As,vss	2,12	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	9,24	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cada	0,2	
MSD (tf.m)	0,01	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	23,21	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	10,26	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	5,56	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	3,68	6,00	Z (m)	0,60	Nest (tf)	6,56
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	3,38		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,88	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,43	
σc,e (tf/m2)	146,10		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P2 -COMBINAÇÃO3									
Bloco liso - 1		1	Mk (tf.m)	1,31	1,83	Md/(Nd.H)	0,16	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	13,5	18,90	Lenb (cm)	90,19	120	
Bloco com chave - 3			Vk (tf)	1,38	1,932	(x) interp.	1,50		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	19,95			19,95	Hsfd (tf)	1,13	Fx(cons.)
Coef.(emb)	15,00	0	0,10			0,10	Nbd (tf)	18,90	0,40
Coef (μ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	0,62	Hd (tf)	0,50	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,05	Pressão de contato			As,vs(cm2)	4,14
Largura (cm)	20		α	0,5	7,82	Ft/m2		As,hp(cm2)	0,13
Altura (cm)	125		As,vss	2,17	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	9,45	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2	
MSD (tf.m)	0,01	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	23,70	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	10,48	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	5,64	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	3,81	6,00	Z (m)	0,60	Nest (tf)	6,56
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	3,38		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,88	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,43	
σc,e (tf/m2)	146,10		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P2 -COMBINAÇÃO4									
Bloco liso - 1		1	Mk (tf.m)	3,2	4,48	Md/(Nd.H)	0,40	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	13,3	18,62	Lenb (cm)	94,07	120	
Bloco com chave - 3			Vk (tf)	2	2,8	(x) interp.	1,57		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	18,91			18,91	Hsfd (tf)	4,76	Fx(cons.)
Coef.(emb)	15,00	0	2,04			2,04	Nbd (tf)	18,48	1,70
Coef (µ)	0,6	0	0,30	0,04	0,34	0,04			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	2,62	Hd (tf)	2,09	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	66,09	Pressão de contato			As,vs(cm2)	4,13
Largura (cm)	20		α	0,5	33,06	Ft/m2		As,hp(cm2)	0,55
Altura (cm)	125		As,vss	2,12	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	9,24	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cada	0,2	
MSD (tf.m)	0,19	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
µ (m)	2,00	WP	0,42	Tsd (tf/m2	24,66	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
µ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	10,54	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	6,90	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	2,42	7,00	Z (m)	0,60	Nest (tf)	7,65
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
Ϭc,p (tf/m2)	3,94		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	2,19	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,50	
Ϭc,e (tf/m2)	170,45		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P2 -COMBINAÇÃO5									
Bloco liso - 1		1	Mk (tf.m)	0,5	0,70	Md/(Nd.H)	0,06	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	13,4	18,76	Lenb (cm)	90,00	120	
Bloco com chave - 3			Vk (tf)	1,16	1,624	(x) interp.	-		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	44,00			20,00	Hsfd (tf)	- 0,38	Fx(cons.)
Coef.(emb)	15,00	0	- 45,00			-	Nbd (tf)	18,76	- 0,13
Coef (µ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	- 0,21	Hd (tf)	- 0,17	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,00	Pressão de contato			As,vs(cm2)	4,14
Largura (cm)	20		α	0,5	- 2,60	Ft/m2		As,hp(cm2)	-0,04
Altura (cm)	125		As,vss	2,16	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	9,38	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cada	0,2	
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
µ (m)	2,00	WP	0,42	Tsd (tf/m2	23,45	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
µ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	10,39	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	5,04	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	4,34	5,00	Z (m)	0,60	Nest (tf)	5,47
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	2,81		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,56	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,36	
σc,e (tf/m2)	121,75		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P2 -COMBINAÇÃO6									
Bloco liso - 1		1	Mk (tf.m)	7,23	10,12	Md/(Nd.H)	0,42	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	28,8	40,32	Lenb (cm)	94,35	120	
Bloco com chave - 3			Vk (tf)	4,13	5,782	(x) interp.	1,57		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	18,84			18,84	Hsfd (tf)	10,40	Fx(cons.)
Coef.(emb)	15,00	0	2,18			2,18	Nbd (tf)	39,99	3,71
Coef (μ)	0,6	0	0,30	0,04	0,34	0,04			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	5,72	Hd (tf)	4,58	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	66,16	Pressão de contato			As,vs(cm2)	4,75
Largura (cm)	20		α	0,5	72,23	Ft/m2		As,hp(cm2)	1,20
Altura (cm)	125		As,vss	4,60	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	20,00	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2	
MSD (tf.m)	0,44	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	53,62	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	22,87	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	15,14	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	5,02	16,00	Z (m)	0,60	Nest (tf)	17,49
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	9,00		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	5,00	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	1,15	
σc,e (tf/m2)	389,61		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P2 -COMBINAÇÃO7									
Bloco liso - 1		1	Mk (tf.m)	1,81	2,53	Md/(Nd.H)	0,10	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	29	40,60	Lenb (cm)	90,00	120	
Bloco com chave - 3			Vk (tf)	2,5	3,5	(x) interp.	-		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	44,00			20,00	Hsfd (tf)	0,23	Fx(cons.)
Coef.(emb)	15,00	0	- 45,00			-	Nbd (tf)	40,60	0,08
Coef (μ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	0,13	Hd (tf)	0,10	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,00	Pressão de contato			As,vs(cm2)	4,77
Largura (cm)	20		α	0,5	1,62	Ft/m2		As,hp(cm2)	0,03
Altura (cm)	125		As,vss	4,67	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	20,30	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cada	0,2	
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	50,75	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	22,49	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	11,42	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	8,88	12,00	Z (m)	0,60	Nest (tf)	13,12
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	6,75		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	3,75	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,86	
σc,e (tf/m2)	292,21		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P3 -COMBINAÇÃO 1								
Bloco liso - 1	1	Mk (tf.m)	2,6	3,64	Md/(Nd.H)	0,12	Adotar Lemb (cm)	
Bloco Rugoso - 2		Nk (tf)	37	51,80	Lenb (cm)	90,00	120	
Bloco com chave - 3		Vk (tf)	0,67	0,938	(x) interp.	-		
		H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	44,00			20,00	Hsfd (tf)	- 3,25	Fx(cons.)
Coef.(emb)	15,00	0	- 45,00			-	Nbd (tf)	51,80	- 1,16
Coef (µ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	- 1,79	Hd (tf)	- 1,43	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,00	Pressão de contato			As,vs(cm2)	5,09
Largura (cm)	20		α	0,5	- 22,55	Ft/m2		As,hp(cm2)	-0,37
Altura (cm)	125		As,vss	5,96	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	25,90	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cada	0,2	
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
µ (m)	2,00	WP	0,42	Tsd (tf/m2	64,75	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
µ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	28,69	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO								
Bloco de 2 estacas - (2)	4	Pi (tf) (+)	14,77	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)		Pi (tf) (-)	11,13	15,00	Z (m)	0,60	Nest (tf)	16,40
Verificação da Biela Junto ao Pilar						**Armadura Principal do Bloco**		
σc,p (tf/m2)	8,44	Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	4,69	
Verificação da Biela Junto a estaca		Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	1,08	
σc,e (tf/m2)	365,26	Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P3 -COMBINAÇÃO 2								
Bloco liso - 1		1	Mk (tf.m)	1,33	1,86	Md/(Nd.H)	0,17	Adotar Lemb (cm)
Bloco Rugoso - 2			Nk (tf)	13,2	18,48	Lenb (cm)	90,29	120
Bloco com chave - 3			Vk (tf)	1,77	2,478	(x) interp.	1,50	
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)	170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	19,92			19,92	Hsfd (tf)	1,83	Fx(cons.)
Coef.(emb)	15,00	0	0,15			0,15	Nbd (tf)	18,47	0,65
Coef (µ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	1,01	Hd (tf)	0,81	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,08	Pressão de contato			As,vs(cm2)	4,13
Largura (cm)	20		α	0,5	12,73	Ft/m2		As,hp(cm2)	0,21
Altura (cm)	125		As,vss	2,12	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO								
- Verificação no Perímetro C								
FSD (tf)	9,24	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cada	0,2
MSD (tf.m)	0,01	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00
µ (m)	2,00	WP	0,42	Tsd (tf/m2	23,20	Trd2 (tf/m2	509,143	Ok
- Verificação no Perímetro C'								
µ (m)	4,51	k	0,7	Wp	2,13			
				Tsd (tf/m2	10,25	Trd2 (tf/m2	43,86	Ok

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO								
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	5,55	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	3,69	6,00	Z (m)	0,60	Nest (tf)	6,56
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	3,38		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,88	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,43	
σc,e (tf/m2)	146,10		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P3 -COMBINAÇÃO3									
Bloco liso - 1		1	Mk (tf.m)	1,08	1,51	Md/(Nd.H)	0,14	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	12,6	17,64	Lenb (cm)	90,00	120	
Bloco com chave - 3			Vk (tf)	0,22	0,308	(x) interp.	-		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	44,00			20,00	Hsfd (tf)	- 0,83	Fx(cons.)
Coef.(emb)	15,00	0	- 45,00			-	Nbd (tf)	17,64	- 0,30
Coef (µ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	- 0,46	Hd (tf)	- 0,37	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,00	Pressão de contato			As,vs(cm2)	4,11
Largura (cm)	20		α	0,5	- 5,80	Ft/m2		As,hp(cm2)	-0,10
Altura (cm)	125		As,vss	2,03	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	8,82	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2	
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
µ (m)	2,00	WP	0,42	Tsd (tf/m2	22,05	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
µ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	9,77	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	5,17	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	3,65	6,00	Z (m)	0,60	Nest (tf)	6,56
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	3,38		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,88	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,43	
σc,e (tf/m2)	146,10		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P3 -COMBINAÇÃO4									
Bloco liso - 1		1	Mk (tf.m)	2,71	3,79	Md/(Nd.H)	0,36	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	12,67	17,74	Lenb (cm)	93,35	120	
Bloco com chave - 3			Vk (tf)	0,7	0,98	(x) interp.	1,56		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	19,11			19,11	Hsfd (tf)	2,19	Fx(cons.)
Coef.(emb)	15,00	0	1,67			1,67	Nbd (tf)	17,69	0,78
Coef (µ)	0,6	0	0,30	0,03	0,33	0,03			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	1,20	Hd (tf)	0,96	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,89	Pressão de contato			As,vs(cm2)	4,11
Largura (cm)	20		α	0,5	15,19	Ft/m2		As,hp(cm2)	0,25
Altura (cm)	125		As,vss	2,03	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	8,84	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cada	0,2	
MSD (tf.m)	0,15	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
µ (m)	2,00	WP	0,42	Tsd (tf/m2	23,34	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
µ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	10,04	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	6,33	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	2,54	7,00	Z (m)	0,60	Nest (tf)	7,65
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	3,94		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	2,19	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,50	
σc,e (tf/m2)	170,45		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P3 -COMBINAÇÃO5									
Bloco liso - 1		1	Mk (tf.m)	0,86	1,20	Md/(Nd.H)	0,11	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	12,65	17,71	Lenb (cm)	90,00	120	
Bloco com chave - 3			Vk (tf)	0,23	0,322	(x) interp.	-		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	44,00			20,00	Hsfd (tf)	- 1,15	Fx(cons.)
Coef.(emb)	15,00	0	- 45,00			-	Nbd (tf)	17,71	- 0,41
Coef (µ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	- 0,63	Hd (tf)	- 0,51	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,00	Pressão de contato			As,vs(cm2)	4,11
Largura (cm)	20		α	0,5	- 7,99	Ft/m2		As,hp(cm2)	-0,13
Altura (cm)	125		As,vss	2,04	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	8,86	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2	
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
µ (m)	2,00	WP	0,42	Tsd (tf/m2	22,14	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
µ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	9,81	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	5,03	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	3,83	6,00	Z (m)	0,60	Nest (tf)	6,56
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	3,38		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,88	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,43	
σc,e (tf/m2)	146,10		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P3 -COMBINAÇÃO 6									
Bloco liso - 1		1	Mk (tf.m)	5,93	8,30	Md/(Nd.H)	0,37	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	27	37,80	Lenb (cm)	93,50	120	
Bloco com chave - 3			Vk (tf)	1,54	2,156	(x) interp.	1,56		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	19,07			19,07	Hsfd (tf)	4,95	Fx(cons.)
Coef.(emb)	15,00	0	1,75			1,75	Nbd (tf)	37,68	1,77
Coef (µ)	0,6	0	0,30	0,04	0,34	0,04			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	2,72	Hd (tf)	2,18	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,93	Pressão de contato			As,vs(cm2)	4,68
Largura (cm)	20		α	0,5	34,38	Ft/m2		As,hp(cm2)	0,57
Altura (cm)	125		As,vss	4,33	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	18,84	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cada	0,2	
MSD (tf.m)	0,33	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
µ (m)	2,00	WP	0,42	Tsd (tf/m2	49,85	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
µ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	21,41	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	13,60	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	5,30	14,00	Z (m)	0,60	Nest (tf)	15,31
Verificação da Biela Junto ao Pilar							Armadura Principal do Bloco		
σc,p (tf/m2)	7,88		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	4,38	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	1,01	
σc,e (tf/m2)	340,91		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P3 -COMBINAÇÃO 6									
Bloco liso - 1		1	Mk (tf.m)	2,04	2,86	Md/(Nd.H)	0,13	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	27,17	38,04	Lenb (cm)	90,00	120	
Bloco com chave - 3			Vk (tf)	0,54	0,756	(x) interp.	-		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	44,00			20,00	Hsfd (tf)	- 2,12	Fx(cons.)
Coef.(emb)	15,00	0	- 45,00			-	Nbd (tf)	38,04	- 0,76
Coef (μ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	- 1,16	Hd (tf)	- 0,93	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,00	Pressão de contato			As,vs(cm2)	4,69
Largura (cm)	20		α	0,5	- 14,71	Ft/m2		As,hp(cm2)	-0,24
Altura (cm)	125		As,vss	4,37	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	19,02	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2	
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	47,55	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	21,07	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	10,94	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	8,08	11,00	Z (m)	0,60	Nest (tf)	12,03
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	6,19		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	3,44	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,79	
σc,e (tf/m2)	267,86		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE - P4 - COMBINAÇÃO 1									
Bloco liso - 1		1	Mk (tf.m)	7,69	10,77	Md/(Nd.H)	0,67	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	19	26,60	Lenb (cm)	98,51	120	
Bloco com chave - 3			Vk (tf)	2,56	3,584	(x) interp.	1,64		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		150

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	17,73			17,73	Hsfd (tf)	10,49	Fx(cons.)
Coef.(emb)	15,00	0	4,25			4,25	Nbd (tf)	26,11	3,75
Coef (μ)	0,6	0	0,30	0,09	0,39	0,09			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	Muito curto	Fd (tf)	5,77	Hd (tf)	4,61	As,vsc(cm2)	3,60
Compr.(cm)	55		a (cm)	37,27	Pressão de contato			As,vs(cm2)	4,35
Largura (cm)	20		α	0,5	72,82	Ft/m2		As,hp(cm2)	1,21
Altura (cm)	125		As,vss	3,00	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	13,05	C1/C2	1,50	H laje (m)	0,25	0,32	cm2/cad	0,2	
MSD (tf.m)	0,56	K	0,7	d (m)	0,2	Taxa(cm2/m)		1,60	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	37,26	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	15,37	Trd2 (tf/m2	32,32	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	12,03	Adotar	A (m)	0,27	α	73,58
Bloco de 4 estacas - (4)			Pi (tf) (-)	1,27	12,00	Z (m)	0,90	Nest (tf)	12,51
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	6,96		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	2,50	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,58	
σc,e (tf/m2)	265,68		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE - P4 - COMBINAÇÃO 2									
Bloco liso - 1		1	Mk (tf.m)	7,69	10,77	Md/(Nd.H)	4,19	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	3,06	4,28	Lenb (cm)	120,00	120	
Bloco com chave - 3			Vk (tf)	6,46	9,044	(x) interp.	-		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		150

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	44,00			12,00	Hsfd (tf)	18,52	Fx(cons.)
Coef.(emb)	15,00	0	- 45,00			15,00	Nbd (tf)	1,44	6,62
Coef (μ)	0,6	0	0,30	0,30	0,60	0,30			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	Muito curto	Fd (tf)	10,19	Hd (tf)	8,15	As,vsc(cm2)	3,60
Compr.(cm)	55		a (cm)	43,00	Pressão de contato			As,vs(cm2)	3,64
Largura (cm)	20		α	0,5	128,64	Ft/m2		As,hp(cm2)	2,13
Altura (cm)	125		As,vss	0,17	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	0,72	C1/C2	1,50	H laje (m)	0,25	0,32	cm2/cada	0,2	
MSD (tf.m)	0,11	K	0,7	d (m)	0,2	Taxa(cm2/m)		1,60	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	2,70	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	0,98	Trd2 (tf/m2	32,32	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	6,45	Adotar	A (m)	0,27	α	73,58
Bloco de 4 estacas - (4)			Pi (tf) (-)	- 4,31	7,00	Z (m)	0,90	Nest (tf)	7,30
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	4,06		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,46	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,34	
σc,e (tf/m2)	154,98		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE - P4 - COMBINAÇÃO 3								
Bloco liso - 1		1	Mk (tf.m)	2,15	3,01	Md/(Nd.H)	0,55	Adotar Lemb (cm)
Bloco Rugoso - 2			Nk (tf)	6,55	9,17	Lenb (cm)	96,44	120
Bloco com chave - 3			Vk (tf)	0,72	1,008	(x) interp.	1,61	
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)	150

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	18,28			18,28	Hsfd (tf)	2,70	Fx(cons.)
Coef.(emb)	15,00	0	3,22			3,22	Nbd (tf)	9,07	0,97
Coef (μ)	0,6	0	0,30	0,06	0,36	0,06			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	Muito curto	Fd (tf)	1,49	Hd (tf)	1,19	As,vsc(cm2)	3,60
Compr.(cm)	55		a (cm)	36,72	Pressão de contato			As,vs(cm2)	3,86
Largura (cm)	20		α	0,5	18,77	Ft/m2		As,hp(cm2)	0,31
Altura (cm)	125		As,vss	1,04	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	4,53	C1/C2	1,50	H laje (m)	0,25	0,32	cm2/cad	0,2	
MSD (tf.m)	0,15	K	0,7	d (m)	0,2	Taxa(cm2/m)		1,60	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	12,55	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	5,26	Trd2 (tf/m2	32,32	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	3,80	Adotar	A (m)	0,27	α	73,58
Bloco de 4 estacas - (4)			Pi (tf) (-)	0,79	4,00	Z (m)	0,90	Nest (tf)	4,17
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	2,32		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	0,83	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,19	
σc,e (tf/m2)	88,56		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE - P4 - COMBINAÇÃO 4									
Bloco liso - 1		1	Mk (tf.m)	0,7	0,98	Md/(Nd.H)	0,18	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	6,37	8,92	Lenb (cm)	90,54	120	
Bloco com chave - 3			Vk (tf)	0,23	0,322	(x) interp.	1,51		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		150

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	19,86			19,86	Hsfd (tf)	- 0,02	Fx(cons.)
Coef.(emb)	15,00	0	0,27			0,27	Nbd (tf)	8,92	- 0,01
Coef (µ)	0,6	0	0,30	0,01	0,31	0,01			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	Muito curto	Fd (tf)	- 0,01	Hd (tf)	- 0,01	As,vsc(cm2)	3,60
Compr.(cm)	55		a (cm)	35,14	Pressão de contato			As,vs(cm2)	3,86
Largura (cm)	20		α	0,5	- 0,11	Ft/m2		As,hp(cm2)	0,00
Altura (cm)	125		As,vss	1,03	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	4,46	C1/C2	1,50	H laje (m)	0,25	0,32	cm2/cada	0,2	
MSD (tf.m)	0,01	K	0,7	d (m)	0,2	Taxa(cm2/m)		1,60	
µ (m)	2,00	WP	0,42	Tsd (tf/m2	11,24	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
µ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	4,96	Trd2 (tf/m2	32,32	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	2,72	Adotar	A (m)	0,27	α	73,58
Bloco de 4 estacas - (4)			Pi (tf) (-)	1,74	3,00	Z (m)	0,90	Nest (tf)	3,13
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	1,74		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	0,63	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,14	
σc,e (tf/m2)	66,42		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE - P4 - COMBINAÇÃO 5									
Bloco liso - 1		1	Mk (tf.m)	4,43	6,20	Md/(Nd.H)	1,11	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	6,64	9,30	Lenb (cm)	105,60	120	
Bloco com chave - 3			Vk (tf)	1,47	2,058	(x) interp.	1,76		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		150

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	15,84			15,84	Hsfd (tf)	6,75	Fx(cons.)
Coef.(emb)	15,00	0	7,80			7,80	Nbd (tf)	8,76	2,41
Coef (μ)	0,6	0	0,30	0,16	0,46	0,16			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	Muito curto	Fd (tf)	3,71	Hd (tf)	2,97	As,vsc(cm2)	3,60
Compr.(cm)	55		a (cm)	39,16	Pressão de contato			As,vs(cm2)	3,85
Largura (cm)	20		α	0,5	46,84	Ft/m2		As,hp(cm2)	0,78
Altura (cm)	125		As,vss	1,01	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	4,38	C1/C2	1,50	H laje (m)	0,25	0,32	cm2/cad	0,2	
MSD (tf.m)	0,34	K	0,7	d (m)	0,2	Taxa(cm2/m)		1,60	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	13,80	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	5,41	Trd2 (tf/m2	32,32	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	5,43	Adotar	A (m)	0,27	α	73,58
Bloco de 4 estacas - (4)			Pi (tf) (-)	- 0,78	6,00	Z (m)	0,90	Nest (tf)	6,25
Verificação da Biela Junto ao Pilar							Armadura Principal do Bloco		
σc,p (tf/m2)	3,48		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,25	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,29	
σc,e (tf/m2)	132,84		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE - P4 - COMBINAÇÃO 6								
Bloco liso - 1		1	Mk (tf.m)	1,28	1,79	Md/(Nd.H)	0,16	Adotar Lemb (cm)
Bloco Rugoso - 2			Nk (tf)	13,69	19,17	Lenb (cm)	90,09	120
Bloco com chave - 3			Vk (tf)	0,43	0,602	(x) interp.	1,50	
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)	150

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	19,97			19,97	Hsfd (tf)	- 0,45	Fx(cons.)
Coef.(emb)	15,00	0	0,05			0,05	Nbd (tf)	19,17	- 0,16
Coef (μ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	Muito curto	Fd (tf)	- 0,25	Hd (tf)	- 0,20	As,vsc(cm2)	3,60
Compr.(cm)	55		a (cm)	35,03	Pressão de contato			As,vs(cm2)	4,15
Largura (cm)	20		α	0,5	- 3,14	Ft/m2		As,hp(cm2)	-0,05
Altura (cm)	125		As,vss	2,20	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO								
- Verificação no Perímetro C								
FSD (tf)	9,58	C1/C2	1,50	H laje (m)	0,25	0,32	cm2/cada	0,2
MSD (tf.m)	0,00	K	0,7	d (m)	0,2	Taxa(cm2/m)		1,60
μ (m)	2,00	WP	0,42	Tsd (tf/m2	23,99	Trd2 (tf/m2	509,143	Ok
- Verificação no Perímetro C'								
μ (m)	4,51	k	0,7	Wp	2,13			
				Tsd (tf/m2	10,62	Trd2 (tf/m2	32,32	Ok

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO								
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	5,69	Adotar	A (m)	0,27	α	73,58
Bloco de 4 estacas - (4)			Pi (tf) (-)	3,90	6,00	Z (m)	0,90	Nest (tf)	6,25
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**	
σc,p (tf/m2)	3,48		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,25
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,29
σc,e (tf/m2)	132,84		Fcd3 (Tf/m2)	1.357,71	VER Fcd2			

1- DIMENSIONAMENTO DO CÁLICE - P4 - COMBINAÇÃO 7									
Bloco liso - 1		1	Mk (tf.m)	9,98	13,97	Md/(Nd.H)	1,17	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	14,26	19,96	Lenb (cm)	106,48	120	
Bloco com chave - 3			Vk (tf)	3,32	4,648	(x) interp.	1,77		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		150

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	15,60			15,60	Hsfd (tf)	15,30	Fx(cons.)
Coef.(emb)	15,00	0	8,24			8,24	Nbd (tf)	18,69	5,46
Coef (µ)	0,6	0	0,30	0,16	0,46	0,16			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	Muito curto	Fd (tf)	8,41	Hd (tf)	6,73	As,vsc(cm2)	3,60
Compr.(cm)	55		a (cm)	39,40	Pressão de contato			As,vs(cm2)	4,14
Largura (cm)	20		α	0,5	106,25	Ft/m2		As,hp(cm2)	1,76
Altura (cm)	125		As,vss	2,15	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	9,35	C1/C2	1,50	H laje (m)	0,25	0,32	cm2/cada	0,2	
MSD (tf.m)	0,77	K	0,7	d (m)	0,2	Taxa(cm2/m)		1,60	
µ (m)	2,00	WP	0,42	Tsd (tf/m2	29,78	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
µ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	11,62	Trd2 (tf/m2	32,32	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	11,98	Adotar	A (m)	0,27	α	73,58
Bloco de 4 estacas - (4)			Pi (tf) (-)	- 2,00	12,00	Z (m)	0,90	Nest (tf)	12,51
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	6,96		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	2,50	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,58	
σc,e (tf/m2)	265,68		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE - P5 - COMBINAÇÃO 1									
Bloco liso - 1		1	Mk (tf.m)	5,4	7,56	Md/(Nd.H)	0,47	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	19	26,60	Lenb (cm)	95,25	120	
Bloco com chave - 3			Vk (tf)	1,28	1,792	(x) interp.	1,59		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		150

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	18,60			18,60	Hsfd (tf)	5,46	Fx(cons.)
Coef.(emb)	15,00	0	2,62			2,62	Nbd (tf)	26,43	1,95
Coef (µ)	0,6	0	0,30	0,05	0,35	0,05			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	Muito curto	Fd (tf)	3,00	Hd (tf)	2,40	As,vsc(cm2)	3,60
Compr.(cm)	55		a (cm)	36,40	Pressão de contato			As,vs(cm2)	4,36
Largura (cm)	20		α	0,5	37,92	Ft/m2		As,hp(cm2)	0,63
Altura (cm)	125		As,vss	3,04	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	13,22	C1/C2	1,50	H laje (m)	0,25	0,32	cm2/cada	0,2	
MSD (tf.m)	0,35	K	0,7	d (m)	0,2	Taxa(cm2/m)		1,60	
µ (m)	2,00	WP	0,42	Tsd (tf/m2	35,93	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
µ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	15,21	Trd2 (tf/m2	32,32	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	10,43	Adotar	A (m)	0,27	α	73,58
Bloco de 4 estacas - (4)			Pi (tf) (-)	2,87	11,00	Z (m)	0,90	Nest (tf)	11,47
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	6,38		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	2,29	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,53	
σc,e (tf/m2)	243,54		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE - P5 - COMBINAÇÃO 2								
Bloco liso - 1	1	Mk (tf.m)	1,57	2,20	Md/(Nd.H)	0,40	Adotar Lemb (cm)	
Bloco Rugoso - 2		Nk (tf)	6,6	9,24	Lenb (cm)	94,00	120	
Bloco com chave - 3		Vk (tf)	0,37	0,518	(x) interp.	1,57		
		H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		150

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	18,93			18,93	Hsfd (tf)	1,37	Fx(cons.)
Coef.(emb)	15,00	0	2,00			2,00	Nbd (tf)	9,20	0,49
Coef (μ)	0,6	0	0,30	0,04	0,34	0,04			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	Muito curto	Fd (tf)	0,75	Hd (tf)	0,60	As,vsc(cm2)	3,60
Compr.(cm)	55		a (cm)	36,07	Pressão de contato			As,vs(cm2)	3,86
Largura (cm)	20		α	0,5	9,48	Ft/m2		As,hp(cm2)	0,16
Altura (cm)	125		As,vss	1,06	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	4,60	C1/C2	1,50	H laje (m)	0,25	0,32	cm2/cada	0,2	
MSD (tf.m)	0,09	K	0,7	d (m)	0,2	Taxa(cm2/m)		1,60	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	12,27	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	5,25	Trd2 (tf/m2	32,32	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)	4	Pi (tf) (+)	3,41	Adotar	A (m)	0,27	α	73,58	
Bloco de 4 estacas - (4)		Pi (tf) (-)	1,21	4,00	Z (m)	0,90	Nest (tf)	4,17	
Verificação da Biela Junto ao Pilar						**Armadura Principal do Bloco**			
σc,p (tf/m2)	2,32	Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	0,83		
Verificação da Biela Junto a estaca		Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,19		
σc,e (tf/m2)	88,56	Fcd3 (Tf/m2)	1.357,71	VER Fcd2					

1- DIMENSIONAMENTO DO CÁLICE - P5 - COMBINAÇÃO 3									
Bloco liso - 1		1	Mk (tf.m)	2,07	2,90	Md/(Nd.H)	0,53	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	6,47	9,06	Lenb (cm)	96,21	120	
Bloco com chave - 3			Vk (tf)	0,49	0,686	(x) interp.	1,60		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		150

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	18,34			18,34	Hsfd (tf)	2,25	Fx(cons.)
Coef.(emb)	15,00	0	3,11			3,11	Nbd (tf)	8,98	0,81
Coef (μ)	0,6	0	0,30	0,06	0,36	0,06			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	Muito curto	Fd (tf)	1,24	Hd (tf)	0,99	As,vsc(cm2)	3,60
Compr.(cm)	55		a (cm)	36,66	Pressão de contato			As,vs(cm2)	3,86
Largura (cm)	20		α	0,5	15,65	Ft/m2		As,hp(cm2)	0,26
Altura (cm)	125		As,vss	1,03	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	4,49	C1/C2	1,50	H laje (m)	0,25	0,32	cm2/cada	0,2	
MSD (tf.m)	0,14	K	0,7	d (m)	0,2	Taxa(cm2/m)		1,60	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	12,39	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	5,20	Trd2 (tf/m2	32,32	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	3,71	Adotar	A (m)	0,27	α	73,58
Bloco de 4 estacas - (4)			Pi (tf) (-)	0,82	4,00	Z (m)	0,90	Nest (tf)	4,17
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	2,32		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	0,83	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,19	
σc,e (tf/m2)	88,56		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE - P5 - COMBINAÇÃO 4									
Bloco liso - 1		1	Mk (tf.m)	3,42	4,79	Md/(Nd.H)	0,86	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	6,65	9,31	Lenb (cm)	101,47	120	
Bloco com chave - 3			Vk (tf)	0,81	1,134	(x) interp.	1,69		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		150

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	16,94			16,94	Hsfd (tf)	4,47	Fx(cons.)
Coef.(emb)	15,00	0	5,73			5,73	Nbd (tf)	9,06	1,60
Coef (μ)	0,6	0	0,30	0,11	0,41	0,11			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	Muito curto	Fd (tf)	2,46	Hd (tf)	1,97	As,vsc(cm2)	3,60
Compr.(cm)	55		a (cm)	38,06	Pressão de contato			As,vs(cm2)	3,86
Largura (cm)	20		α	0,5	31,07	Ft/m2		As,hp(cm2)	0,51
Altura (cm)	125		As,vss	1,04	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	4,53	C1/C2	1,50	H laje (m)	0,25	0,32	cm2/cad	0,2	
MSD (tf.m)	0,26	K	0,7	d (m)	0,2	Taxa(cm2/m)		1,60	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	13,49	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	5,45	Trd2 (tf/m2	32,32	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	4,72	Adotar	A (m)	0,27	α	73,58
Bloco de 4 estacas - (4)			Pi (tf) (-)	- 0,07	5,00	Z (m)	0,90	Nest (tf)	5,21
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	2,90		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,04	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,24	
σc,e (tf/m2)	110,70		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE - P5 - COMBINAÇÃO 5									
Bloco liso - 1		1	Mk (tf.m)	0,16	0,22	Md/(Nd.H)	0,04	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	6,4	8,96	Lenb (cm)	90,00	120	
Bloco com chave - 3			Vk (tf)	0,038	0,0532	(x) interp.	-		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		150

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	44,00			20,00	Hsfd (tf)	- 1,11	Fx(cons.)
Coef.(emb)	15,00	0	- 45,00			-	Nbd (tf)	8,96	- 0,40
Coef (μ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	Muito curto	Fd (tf)	- 0,61	Hd (tf)	- 0,49	As,vsc(cm2)	3,60
Compr.(cm)	55		a (cm)	35,00	Pressão de contato			As,vs(cm2)	3,86
Largura (cm)	20		α	0,5	- 7,69	Ft/m2		As,hp(cm2)	-0,13
Altura (cm)	125		As,vss	1,03	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO								
- Verificação no Perímetro C								
FSD (tf)	4,48	C1/C2	1,50	H laje (m)	0,25	0,32	cm2/cada	0,2
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		1,60
μ (m)	2,00	WP	0,42	Tsd (tf/m2	11,20	Trd2 (tf/m2	509,143	Ok
- Verificação no Perímetro C'								
μ (m)	4,51	k	0,7	Wp	2,13			
				Tsd (tf/m2	4,96	Trd2 (tf/m2	32,32	Ok

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	2,35	Adotar	A (m)	0,27	α	73,58
Bloco de 4 estacas - (4)			Pi (tf) (-)	2,13	3,00	Z (m)	0,90	Nest (tf)	3,13
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	1,74		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	0,63	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,14	
σc,e (tf/m2)	66,42		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE - P5 - COMBINAÇÃO 6								
Bloco liso - 1	1	Mk (tf.m)	7,59	10,63	Md/(Nd.H)	0,88	Adotar Lemb (cm)	
Bloco Rugoso - 2		Nk (tf)	14,3	20,02	Lenb (cm)	101,91	120	
Bloco com chave - 3		Vk (tf)	1,8	2,52	(x) interp.	1,70		
		H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		150

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	16,82			16,82	Hsfd (tf)	10,01	Fx(cons.)
Coef.(emb)	15,00	0	5,96			5,96	Nbd (tf)	19,44	3,58
Coef (μ)	0,6	0	0,30	0,12	0,42	0,12			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	Muito curto	Fd (tf)	5,51	Hd (tf)	4,40	As,vsc(cm2)	3,60
Compr.(cm)	55		a (cm)	38,18	Pressão de contato			As,vs(cm2)	4,16
Largura (cm)	20		α	0,5	69,52	Ft/m2		As,hp(cm2)	1,15
Altura (cm)	125		As,vss	2,24	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	9,72	C1/C2	1,50	H laje (m)	0,25	0,32	cm2/cada	0,2	
MSD (tf.m)	0,58	K	0,7	d (m)	0,2	Taxa(cm2/m)		1,60	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	29,13	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	11,72	Trd2 (tf/m2	32,32	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)	4	Pi (tf) (+)	10,32	Adotar	A (m)	0,27	α	73,58	
Bloco de 4 estacas - (4)		Pi (tf) (-)	- 0,31	11,00	Z (m)	0,90	Nest (tf)	11,47	
Verificação da Biela Junto ao Pilar						**Armadura Principal do Bloco**			
σc,p (tf/m2)	6,38	Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	2,29		
Verificação da Biela Junto a estaca		Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,53		
σc,e (tf/m2)	243,54	Fcd3 (Tf/m2)	1.357,71	VER Fcd2					

1- DIMENSIONAMENTO DO CÁLICE - P5 - COMBINAÇÃO 7								
Bloco liso - 1	1	Mk (tf.m)	0,3	0,42	Md/(Nd.H)	0,04	Adotar Lemb (cm)	
Bloco Rugoso - 2		Nk (tf)	13,75	19,25	Lenb (cm)	90,00	120	
Bloco com chave - 3		Vk (tf)	0,07	0,098	(x) interp.	-		
		H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		150

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	44,00			20,00	Hsfd (tf)	- 2,46	Fx(cons.)
Coef.(emb)	15,00	0	- 45,00			-	Nbd (tf)	19,25	- 0,88
Coef (μ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	Muito curto	Fd (tf)	- 1,35	Hd (tf)	- 1,08	As,vsc(cm2)	3,60
Compr.(cm)	55		a (cm)	35,00	Pressão de contato			As,vs(cm2)	4,15
Largura (cm)	20		α	0,5	- 17,08	Ft/m2		As,hp(cm2)	-0,28
Altura (cm)	125		As,vss	2,21	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	9,63	C1/C2	1,50	H laje (m)	0,25	0,32	cm2/cad	0,2	
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		1,60	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	24,06	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	10,66	Trd2 (tf/m2	32,32	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)	4	Pi (tf) (+)	5,02	Adotar	A (m)	0,27	α	73,58	
Bloco de 4 estacas - (4)		Pi (tf) (-)	4,60	5,00	Z (m)	0,90	Nest (tf)	5,21	
Verificação da Biela Junto ao Pilar						**Armadura Principal do Bloco**			
σc,p (tf/m2)	2,90	Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,04		
Verificação da Biela Junto a estaca		Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,24		
σc,e (tf/m2)	110,70	Fcd3 (Tf/m2)	1.357,71	VER Fcd2					

1- DIMENSIONAMENTO DO CÁLICE P6 -COMBINAÇÃO 1									
Bloco liso - 1		1	Mk (tf.m)	1,41	1,97	Md/(Nd.H)	0,07	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	35,5	49,70	Lenb (cm)	90,00	120	
Bloco com chave - 3			Vk (tf)	0,67	0,938	(x) interp.	-		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	44,00			20,00	Hsfd (tf)	- 4,65	Fx(cons.)
Coef.(emb)	15,00	0	- 45,00			-	Nbd (tf)	49,70	- 1,66
Coef (μ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	- 2,56	Hd (tf)	- 2,05	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,00	Pressão de contato			As,vs(cm2)	5,03
Largura (cm)	20		α	0,5	- 32,32	Ft/m2		As,hp(cm2)	-0,54
Altura (cm)	125		As,vss	5,72	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	24,85	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2	
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	62,13	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	27,53	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	13,41	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	11,44	14,00	Z (m)	0,60	Nest (tf)	15,31
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	7,88		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	4,38	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	1,01	
σc,e (tf/m2)	340,91		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P6 -COMBINAÇÃO 2								
Bloco liso - 1	1	Mk (tf.m)	0,49	0,69	Md/(Nd.H)	0,07	Adotar Lemb (cm)	
Bloco Rugoso - 2		Nk (tf)	12,2	17,08	Lenb (cm)	90,00	120	
Bloco com chave - 3		Vk (tf)	0,11	0,154	(x) interp.	-		
		H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	44,00			20,00	Hsfd (tf)	- 1,78	Fx(cons.)
Coef.(emb)	15,00	0	- 45,00			-	Nbd (tf)	17,08	- 0,64
Coef (μ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	- 0,98	Hd (tf)	- 0,78	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,00	Pressão de contato			As,vs(cm2)	4,09
Largura (cm)	20		α	0,5	- 12,37	Ft/m2		As,hp(cm2)	-0,20
Altura (cm)	125		As,vss	1,96	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO								
- Verificação no Perímetro C								
FSD (tf)	8,54	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cada	0,2
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00
μ (m)	2,00	WP	0,42	Tsd (tf/m2	21,35	Trd2 (tf/m2	509,143	Ok
- Verificação no Perímetro C'								
μ (m)	4,51	k	0,7	Wp	2,13			
				Tsd (tf/m2	9,46	Trd2 (tf/m2	43,86	Ok

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO								
Bloco de 2 estacas - (2)	4	Pi (tf) (+)	4,61	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)		Pi (tf) (-)	3,93	5,00	Z (m)	0,60	Nest (tf)	5,47
Verificação da Biela Junto ao Pilar						**Armadura Principal do Bloco**		
σc,p (tf/m2)	2,81	Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,56	
Verificação da Biela Junto a estaca		Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,36	
σc,e (tf/m2)	121,75	Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P6 -COMBINAÇÃO 3									
Bloco liso - 1		1	Mk (tf.m)	4,66	6,52	Md/(Nd.H)	0,64	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	12,23	17,12	Lenb (cm)	97,87	120	
Bloco com chave - 3			Vk (tf)	0,16	0,224	(x) interp.	1,63		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	17,90			17,90	Hsfd (tf)	4,06	Fx(cons.)
Coef.(emb)	15,00	0	3,93			3,93	Nbd (tf)	17,00	1,45
Coef (μ)	0,6	0	0,30	0,08	0,38	0,08			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	2,23	Hd (tf)	1,79	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	67,10	Pressão de contato			As,vs(cm2)	4,09
Largura (cm)	20		α	0,5	28,22	Ft/m2		As,hp(cm2)	0,47
Altura (cm)	125		As,vss	1,95	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	8,50	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2	
MSD (tf.m)	0,33	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	24,03	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	9,96	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	7,54	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	1,02	8,00	Z (m)	0,60	Nest (tf)	8,75
Verificação da Biela Junto ao Pilar							Armadura Principal do Bloco		
σc,p (tf/m2)	4,50		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	2,50	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,58	
σc,e (tf/m2)	194,81		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P6 -COMBINAÇÃO 4								
Bloco liso - 1		1	Mk (tf.m)	0,89	1,25	Md/(Nd.H)	0,12	Adotar Lemb (cm)
Bloco Rugoso - 2			Nk (tf)	12,24	17,14	Lenb (cm)	90,00	120
Bloco com chave - 3			Vk (tf)	0,091	0,1274	(x) interp.	-	
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)	170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	44,00			20,00	Hsfd (tf)	- 1,24	Fx(cons.)
Coef.(emb)	15,00	0	- 45,00			-	Nbd (tf)	17,14	- 0,44
Coef (µ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	- 0,68	Hd (tf)	- 0,54	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,00	Pressão de contato			As,vs(cm2)	4,09
Largura (cm)	20		α	0,5	- 8,59	Ft/m2		As,hp(cm2)	-0,14
Altura (cm)	125		As,vss	1,97	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	8,57	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2	
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
µ (m)	2,00	WP	0,42	Tsd (tf/m2	21,42	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
µ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	9,49	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	4,91	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	3,66	5,00	Z (m)	0,60	Nest (tf)	5,47
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	2,81		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,56	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,36	
σc,e (tf/m2)	121,75		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P6 -COMBINAÇÃO 5								
Bloco liso - 1	1	Mk (tf.m)	1,91	2,67	Md/(Nd.H)	0,26	Adotar Lemb (cm)	
Bloco Rugoso - 2		Nk (tf)	12,2	17,08	Lenb (cm)	91,80	120	
Bloco com chave - 3		Vk (tf)	0,37	0,518	(x) interp.	1,53		
		H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	19,52			19,52	Hsfd (tf)	0,66	Fx(cons.)
Coef.(emb)	15,00	0	0,90			0,90	Nbd (tf)	17,07	0,24
Coef (μ)	0,6	0	0,30	0,02	0,32	0,02			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	0,36	Hd (tf)	0,29	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,48	Pressão de contato			As,vs(cm2)	4,09
Largura (cm)	20		α	0,5	4,59	Ft/m2		As,hp(cm2)	0,08
Altura (cm)	125		As,vss	1,96	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	8,53	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2	
MSD (tf.m)	0,08	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	21,97	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	9,58	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)	4	Pi (tf) (+)	5,61	Adotar	A (m)	0,27	α	66,16	
Bloco de 4 estacas - (4)		Pi (tf) (-)	2,93	6,00	Z (m)	0,60	Nest (tf)	6,56	
Verificação da Biela Junto ao Pilar						Armadura Principal do Bloco			
σc,p (tf/m2)	3,38	Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,88		
Verificação da Biela Junto a estaca		Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,43		
σc,e (tf/m2)	146,10	Fcd3 (Tf/m2)	1.357,71	VER Fcd2					

1- DIMENSIONAMENTO DO CÁLICE P6 -COMBINAÇÃO 6								
Bloco liso - 1	1	Mk (tf.m)	2	2,80	Md/(Nd.H)	0,13	Adotar Lemb (cm)	
Bloco Rugoso - 2		Nk (tf)	26,2	36,68	Lenb (cm)	90,00	120	
Bloco com chave - 3		Vk (tf)	0,24	0,336	(x) interp.	-		
		H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	44,00			20,00	Hsfd (tf)	- 2,44	Fx(cons.)
Coef.(emb)	15,00	0	- 45,00			-	Nbd (tf)	36,68	- 0,87
Coef (μ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	- 1,34	Hd (tf)	- 1,07	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,00	Pressão de contato			As,vs(cm2)	4,65
Largura (cm)	20		α	0,5	- 16,92	Ft/m2		As,hp(cm2)	-0,28
Altura (cm)	125		As,vss	4,22	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO								
- Verificação no Perímetro C								
FSD (tf)	18,34	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00
μ (m)	2,00	WP	0,42	Tsd (tf/m2	45,85	Trd2 (tf/m2	509,143	Ok
- Verificação no Perímetro C'								
μ (m)	4,51	k	0,7	Wp	2,13			
				Tsd (tf/m2	20,32	Trd2 (tf/m2	43,86	Ok

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO								
Bloco de 2 estacas - (2)	4	Pi (tf) (+)	10,57	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)		Pi (tf) (-)	7,77	11,00	Z (m)	0,60	Nest (tf)	12,03
Verificação da Biela Junto ao Pilar						**Armadura Principal do Bloco**		
σc,p (tf/m2)	6,19	Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	3,44	
Verificação da Biela Junto a estaca		Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,79	
σc,e (tf/m2)	267,86	Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P6 -COMBINAÇÃO 7								
Bloco liso - 1	1	Mk (tf.m)	4,12	5,77	Md/(Nd.H)	0,26	Adotar Lemb (cm)	
Bloco Rugoso - 2		Nk (tf)	26,2	36,68	Lenb (cm)	91,82	120	
Bloco com chave - 3		Vk (tf)	0,85	1,19	(x) interp.	1,53		
		H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	19,52			19,52	Hsfd (tf)	1,53	Fx(cons.)
Coef.(emb)	15,00	0	0,91			0,91	Nbd (tf)	36,65	0,55
Coef (μ)	0,6	0	0,30	0,02	0,32	0,02			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	0,84	Hd (tf)	0,67	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,48	Pressão de contato			As,vs(cm2)	4,65
Largura (cm)	20		α	0,5	10,63	Ft/m2		As,hp(cm2)	0,18
Altura (cm)	125		As,vss	4,21	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	18,32	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2	
MSD (tf.m)	0,17	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	47,20	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	20,57	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)	4	Pi (tf) (+)	12,05	Adotar	A (m)	0,27	α	66,16	
Bloco de 4 estacas - (4)		Pi (tf) (-)	6,29	12,00	Z (m)	0,60	Nest (tf)	13,12	
Verificação da Biela Junto ao Pilar						**Armadura Principal do Bloco**			
σc,p (tf/m2)	6,75	Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	3,75		
Verificação da Biela Junto a estaca		Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,86		
σc,e (tf/m2)	292,21	Fcd3 (Tf/m2)	1.357,71	VER Fcd2					

1- DIMENSIONAMENTO DO CÁLICE P7 -COMBINAÇÃO 1									
Bloco liso - 1		1	Mk (tf.m)	1,63	2,28	Md/(Nd.H)	0,08	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	32,48	45,47	Lenb (cm)	90,00	120	
Bloco com chave - 3			Vk (tf)	1,46	2,044	(x) interp.	-		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	44,00			20,00	Hsfd (tf)	- 2,43	Fx(cons.)
Coef.(emb)	15,00	0	- 45,00			-	Nbd (tf)	45,47	- 0,87
Coef (μ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	- 1,34	Hd (tf)	- 1,07	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,00	Pressão de contato			As,vs(cm2)	4,91
Largura (cm)	20		α	0,5	- 16,86	Ft/m2		As,hp(cm2)	-0,28
Altura (cm)	125		As,vss	5,23	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	22,74	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cada	0,2	
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	56,84	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	25,19	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	12,51	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	10,23	13,00	Z (m)	0,60	Nest (tf)	14,21
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	7,31		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	4,06	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,93	
σc,e (tf/m2)	316,56		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P7 -COMBINAÇÃO 2								
Bloco liso - 1	1	Mk (tf.m)	0,57	0,80	Md/(Nd.H)	0,09	Adotar Lemb (cm)	
Bloco Rugoso - 2		Nk (tf)	11	15,40	Lenb (cm)	90,00	120	
Bloco com chave - 3		Vk (tf)	0,58	0,812	(x) interp.	-		
		H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	44,00			20,00	Hsfd (tf)	- 0,66	Fx(cons.)
Coef.(emb)	15,00	0	- 45,00			-	Nbd (tf)	15,40	- 0,24
Coef (μ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	- 0,36	Hd (tf)	- 0,29	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,00	Pressão de contato			As,vs(cm2)	4,04
Largura (cm)	20		α	0,5	- 4,59	Ft/m2		As,hp(cm2)	-0,08
Altura (cm)	125		As,vss	1,77	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	7,70	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2	
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	19,25	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	8,53	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)	4	Pi (tf) (+)	4,25	Adotar	A (m)	0,27	α	66,16	
Bloco de 4 estacas - (4)		Pi (tf) (-)	3,45	5,00	Z (m)	0,60	Nest (tf)	5,47	
Verificação da Biela Junto ao Pilar						**Armadura Principal do Bloco**			
σc,p (tf/m2)	2,81	Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,56		
Verificação da Biela Junto a estaca		Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,36		
σc,e (tf/m2)	121,75	Fcd3 (Tf/m2)	1.357,71	VER Fcd2					

1- DIMENSIONAMENTO DO CÁLICE P7 -COMBINAÇÃO 3									
Bloco liso - 1		1	Mk (tf.m)	4,93	6,90	Md/(Nd.H)	0,72	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	11,4	15,96	Lenb (cm)	99,26	120	
Bloco com chave - 3			Vk (tf)	0,19	0,266	(x) interp.	1,65		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	17,53			17,53	Hsfd (tf)	4,62	Fx(cons.)
Coef.(emb)	15,00	0	4,63			4,63	Nbd (tf)	15,80	1,65
Coef (µ)	0,6	0	0,30	0,09	0,39	0,09			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	2,54	Hd (tf)	2,03	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	67,47	Pressão de contato			As,vs(cm2)	4,05
Largura (cm)	20		α	0,5	32,08	Ft/m2		As,hp(cm2)	0,53
Altura (cm)	125		As,vss	1,82	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	7,90	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cada	0,2	
MSD (tf.m)	0,37	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
µ (m)	2,00	WP	0,42	Tsd (tf/m2	22,80	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
µ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	9,35	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	7,44	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	0,54	8,00	Z (m)	0,60	Nest (tf)	8,75
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	4,50		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	2,50	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,58	
σc,e (tf/m2)	194,81		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	0,92	Hd (tf)	0,74	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,68	Pressão de contato			As,vs(cm2)	4,05
Largura (cm)	20		α	0,5	11,65	Ft/m2		As,hp(cm2)	0,19
Altura (cm)	125		As,vss	1,82	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO								
- Verificação no Perímetro C								
FSD (tf)	7,91	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cada	0,2
MSD (tf.m)	0,10	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00
µ (m)	2,00	WP	0,42	Tsd (tf/m2	20,61	Trd2 (tf/m2	509,143	Ok
- Verificação no Perímetro C'								
µ (m)	4,51	k	0,7	Wp	2,13			
				Tsd (tf/m2	8,92	Trd2 (tf/m2	43,86	Ok

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO								
Bloco de 2 estacas - (2)	4	Pi (tf) (+)	5,43	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)		Pi (tf) (-)	2,50	**6,00**	Z (m)	0,60	Nest (tf)	**6,56**
Verificação da Biela Junto ao Pilar						**Armadura Principal do Bloco**		
σc,p (tf/m2)	3,38	Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	**1,88**	
Verificação da Biela Junto a estaca		Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	**0,43**	
σc,e (tf/m2)	146,10	Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P7 -COMBINAÇÃO 5									
Bloco liso - 1		1	Mk (tf.m)	1,08	1,51	Md/(Nd.H)	0,16	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	11,23	15,72	Lenb (cm)	90,17	120	
Bloco com chave - 3			Vk (tf)	0,11	0,154	(x) interp.	1,50		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	19,96			19,96	Hsfd (tf)	- 0,71	Fx(cons.)
Coef.(emb)	15,00	0	0,08			0,08	Nbd (tf)	15,72	- 0,25
Coef (μ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	- 0,39	Hd (tf)	- 0,31	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,04	Pressão de contato			As,vs(cm2)	4,05
Largura (cm)	20		α	0,5	- 4,94	Ft/m2		As,hp(cm2)	-0,08
Altura (cm)	125		As,vss	1,81	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	7,86	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cada	0,2	
MSD (tf.m)	0,01	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	19,71	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	8,72	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	4,69	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	3,17	5,00	Z (m)	0,60	Nest (tf)	5,47
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	2,81		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,56	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,36	
σc,e (tf/m2)	121,75		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P7 -COMBINAÇÃO 6									
Bloco liso - 1		1	Mk (tf.m)	4,53	6,34	Md/(Nd.H)	0,31	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	24	33,60	Lenb (cm)	92,67	120	
Bloco com chave - 3			Vk (tf)	0,11	0,154	(x) interp.	1,54		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	19,29			19,29	Hsfd (tf)	1,41	Fx(cons.)
Coef.(emb)	15,00	0	1,33			1,33	Nbd (tf)	33,57	0,50
Coef (μ)	0,6	0	0,30	0,03	0,33	0,03			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	0,77	Hd (tf)	0,62	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,71	Pressão de contato			As,vs(cm2)	4,57
Largura (cm)	20		α	0,5	9,77	Ft/m2		As,hp(cm2)	0,16
Altura (cm)	125		As,vss	3,86	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	16,79	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cada	0,2	
MSD (tf.m)	0,22	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	43,83	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	18,96	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	11,57	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	5,23	12,00	Z (m)	0,60	Nest (tf)	13,12
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	6,75		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	3,75	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,86	
σc,e (tf/m2)	292,21		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P7 -COMBINAÇÃO 7									
Bloco liso - 1		1	Mk (tf.m)	2,17	3,04	Md/(Nd.H)	0,15	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	24	33,60	Lenb (cm)	90,01	120	
Bloco com chave - 3			Vk (tf)	0,088	0,1232	(x) interp.	1,50		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	20,00			20,00	Hsfd (tf)	- 1,95	Fx(cons.)
Coef.(emb)	15,00	0	0,01			0,01	Nbd (tf)	33,60	- 0,70
Coef (μ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	- 1,07	Hd (tf)	- 0,86	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,00	Pressão de contato			As,vs(cm2)	4,57
Largura (cm)	20		α	0,5	- 13,52	Ft/m2		As,hp(cm2)	-0,22
Altura (cm)	125		As,vss	3,86	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	16,80	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2	
MSD (tf.m)	0,00	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	42,01	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	18,61	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	9,92	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	6,88	10,00	Z (m)	0,60	Nest (tf)	10,93
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	5,63		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	3,13	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,72	
σc,e (tf/m2)	243,51		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P8 -COMBINAÇÃO 1									
Bloco liso - 1		1	Mk (tf.m)	6,1	8,54	Md/(Nd.H)	0,28	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	36,37	50,92	Lenb (cm)	92,10	120	
Bloco com chave - 3			Vk (tf)	5,69	7,966	(x) interp.	1,54		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	19,44			19,44	Hsfd (tf)	9,73	Fx(cons.)
Coef.(emb)	15,00	0	1,05			1,05	Nbd (tf)	50,73	3,47
Coef (μ)	0,6	0	0,30	0,02	0,32	0,02			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	5,35	Hd (tf)	4,28	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,56	Pressão de contato			As,vs(cm2)	5,06
Largura (cm)	20		α	0,5	67,57	Ft/m2		As,hp(cm2)	1,12
Altura (cm)	125		As,vss	5,83	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	25,36	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cada	0,2	
MSD (tf.m)	0,27	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	65,63	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	28,54	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	17,00	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	8,46	17,00	Z (m)	0,60	Nest (tf)	18,59
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	9,56		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	5,31	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	1,22	
σc,e (tf/m2)	413,96		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P8 -COMBINAÇÃO 2								
Bloco liso - 1	1	Mk (tf.m)	2,57	3,60	Md/(Nd.H)	0,34	Adotar Lemb (cm)	
Bloco Rugoso - 2		Nk (tf)	12,73	17,82	Lenb (cm)	93,02	120	
Bloco com chave - 3		Vk (tf)	1,89	2,646	(x) interp.	1,55		
		H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	19,19			19,19	Hsfd (tf)	3,85	Fx(cons.)
Coef.(emb)	15,00	0	1,51			1,51	Nbd (tf)	17,73	1,37
Coef (μ)	0,6	0	0,30	0,03	0,33	0,03			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	2,11	Hd (tf)	1,69	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,81	Pressão de contato			As,vs(cm2)	4,11
Largura (cm)	20		α	0,5	26,70	Ft/m2		As,hp(cm2)	0,44
Altura (cm)	125		As,vss	2,04	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	8,86	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cada	0,2	
MSD (tf.m)	0,13	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	23,27	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	10,04	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO								
Bloco de 2 estacas - (2)	4	Pi (tf) (+)	6,25	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)		Pi (tf) (-)	2,66	7,00	Z (m)	0,60	Nest (tf)	7,65
Verificação da Biela Junto ao Pilar						**Armadura Principal do Bloco**		
σc,p (tf/m2)	3,94	Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	2,19	
Verificação da Biela Junto a estaca		Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,50	
σc,e (tf/m2)	170,45	Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P8 -COMBINAÇÃO 3								
Bloco liso - 1	1	Mk (tf.m)	1,65	2,31	Md/(Nd.H)	0,22	Adotar Lemb (cm)	
Bloco Rugoso - 2		Nk (tf)	12,5	17,50	Lenb (cm)	91,14	120	
Bloco com chave - 3		Vk (tf)	1,98	2,772	(x) interp.	1,52		
		H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	19,70			19,70	Hsfd (tf)	2,76	Fx(cons.)
Coef.(emb)	15,00	0	0,57			0,57	Nbd (tf)	17,47	0,99
Coef (μ)	0,6	0	0,30	0,01	0,31	0,01			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	1,52	Hd (tf)	1,22	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,30	Pressão de contato			As,vs(cm2)	4,10
Largura (cm)	20		α	0,5	19,18	Ft/m2		As,hp(cm2)	0,32
Altura (cm)	125		As,vss	2,01	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	8,73	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2	
MSD (tf.m)	0,05	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	22,25	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	9,76	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)	4	Pi (tf) (+)	5,53	Adotar	A (m)	0,27	α	66,16	
Bloco de 4 estacas - (4)		Pi (tf) (-)	3,22	6,00	Z (m)	0,60	Nest (tf)	6,56	
Verificação da Biela Junto ao Pilar						Armadura Principal do Bloco			
σc,p (tf/m2)	3,38	Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,88		
Verificação da Biela Junto a estaca		Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,43		
σc,e (tf/m2)	146,10	Fcd3 (Tf/m2)	1.357,71	VER Fcd2					

1- DIMENSIONAMENTO DO CÁLICE P8 -COMBINAÇÃO 4									
Bloco liso - 1		1	Mk (tf.m)	0,57	0,80	Md/(Nd.H)	0,08	Adotar Lemb (cm)	
Bloco Rugoso - 2			Nk (tf)	12,64	17,70	Lenb (cm)	90,00	120	
Bloco com chave - 3			Vk (tf)	1,64	2,296	(x) interp.	-		
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	44,00			20,00	Hsfd (tf)	0,65	Fx(cons.)
Coef.(emb)	15,00	0	- 45,00			-	Nbd (tf)	17,70	0,23
Coef (µ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	0,36	Hd (tf)	0,29	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,00	Pressão de contato			As,vs(cm2)	4,11
Largura (cm)	20		α	0,5	4,51	Ft/m2		As,hp(cm2)	0,07
Altura (cm)	125		As,vss	2,04	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	8,85	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2	
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
µ (m)	2,00	WP	0,42	Tsd (tf/m2	22,12	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
µ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	9,80	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	4,82	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	4,03	5,00	Z (m)	0,60	Nest (tf)	5,47
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	2,81		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	1,56	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,36	
σc,e (tf/m2)	121,75		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P8 -COMBINAÇÃO 5								
Bloco liso - 1		1	Mk (tf.m)	3,68	5,15	Md/(Nd.H)	0,49	Adotar Lemb (cm)
Bloco Rugoso - 2			Nk (tf)	12,6	17,64	Lenb (cm)	95,46	120
Bloco com chave - 3			Vk (tf)	2,25	3,15	(x) interp.	1,59	
			H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)	170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	18,54			18,54	Hsfd (tf)	5,94	Fx(cons.)
Coef.(emb)	15,00	0	2,73			2,73	Nbd (tf)	17,42	2,12
Coef (μ)	0,6	0	0,30	0,05	0,35	0,05			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	3,27	Hd (tf)	2,61	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	66,46	Pressão de contato			As,vs(cm2)	4,10
Largura (cm)	20		α	0,5	41,23	Ft/m2		As,hp(cm2)	0,68
Altura (cm)	125		As,vss	2,00	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO								
- Verificação no Perímetro C								
FSD (tf)	8,71	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cada	0,2
MSD (tf.m)	0,24	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00
μ (m)	2,00	WP	0,42	Tsd (tf/m2	23,75	Trd2 (tf/m2	509,143	Ok
- Verificação no Perímetro C'								
μ (m)	4,51	k	0,7	Wp	2,13			
				Tsd (tf/m2	10,04	Trd2 (tf/m2	43,86	Ok

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)		4	Pi (tf) (+)	6,99	Adotar	A (m)	0,27	α	66,16
Bloco de 4 estacas - (4)			Pi (tf) (-)	1,83	7,00	Z (m)	0,60	Nest (tf)	7,65
Verificação da Biela Junto ao Pilar							**Armadura Principal do Bloco**		
σc,p (tf/m2)	3,94		Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	2,19	
Verificação da Biela Junto a estaca			Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,50	
σc,e (tf/m2)	170,45		Fcd3 (Tf/m2)	1.357,71	VER Fcd2				

1- DIMENSIONAMENTO DO CÁLICE P8 -COMBINAÇÃO 6								
Bloco liso - 1	1	Mk (tf.m)	1,04	1,46	Md/(Nd.H)	0,06	Adotar Lemb (cm)	
Bloco Rugoso - 2		Nk (tf)	26,7	37,38	Lenb (cm)	90,00	120	
Bloco com chave - 3		Vk (tf)	3,71	5,194	(x) interp.	-		
		H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	44,00			20,00	Hsfd (tf)	1,52	Fx(cons.)
Coef.(emb)	15,00	0	- 45,00			-	Nbd (tf)	37,38	0,54
Coef (μ)	0,6	0	0,30	0,00	0,30	0,00			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	0,84	Hd (tf)	0,67	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	65,00	Pressão de contato			As,vs(cm2)	4,67
Largura (cm)	20		α	0,5	10,55	Ft/m2		As,hp(cm2)	0,17
Altura (cm)	125		As,vss	4,30	857,14286	Limite	OK	As,hs(cm2)	3,75

4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	18,69	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2	
MSD (tf.m)	-	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	46,73	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	20,71	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)	4	Pi (tf) (+)	10,07	Adotar	A (m)	0,27	α	66,16	
Bloco de 4 estacas - (4)		Pi (tf) (-)	8,62	11,00	Z (m)	0,60	Nest (tf)	12,03	
Verificação da Biela Junto ao Pilar						**Armadura Principal do Bloco**			
σc,p (tf/m2)	6,19	Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	3,44		
Verificação da Biela Junto a estaca		Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	0,79		
σc,e (tf/m2)	267,86	Fcd3 (Tf/m2)	1.357,71	VER Fcd2					

1- DIMENSIONAMENTO DO CÁLICE P8 -COMBINAÇÃO7								
Bloco liso - 1	1	Mk (tf.m)	7,99	11,19	Md/(Nd.H)	0,49	Adotar Lemb (cm)	
Bloco Rugoso - 2		Nk (tf)	27	37,80	Lenb (cm)	95,57	120	
Bloco com chave - 3		Vk (tf)	4,68	6,552	(x) interp.	1,59		
		H (cm)	60,00	B (cm)	40,00	Largura / bloco (cm)		170

2-DEFINIÇÃO DAS RESULTANTES									
	Gran. Exc.	Peq.Exc.	Inter.	Inter.	Inter.				
Coef. (a)	12,00	20,00	18,52			18,52	Hsfd (tf)	12,64	Fx(cons.)
Coef.(emb)	15,00	0	2,78			2,78	Nbd (tf)	37,32	4,52
Coef (μ)	0,6	0	0,30	0,06	0,36	0,06			

3-CÁLCULO DAS ARMADURAS									
FCK	30	AÇO	50	ϕ Estaca	25	Distanica	1	As,vp (cm2)	5,76
3.1-Cálculo do colarinho		Consolo	curto	Fd (tf)	6,95	Hd (tf)	5,56	As,vsc(cm2)	3,60
Compr.(cm)	85		a (cm)	66,48	Pressão de contato			As,vs(cm2)	4,67
Largura (cm)	20		α	0,5	87,80	Ft/m2		As,hp(cm2)	1,45
Altura (cm)	125		As,vss	4,29	857,14286	Limite	OK	As,hs(cm2)	3,75

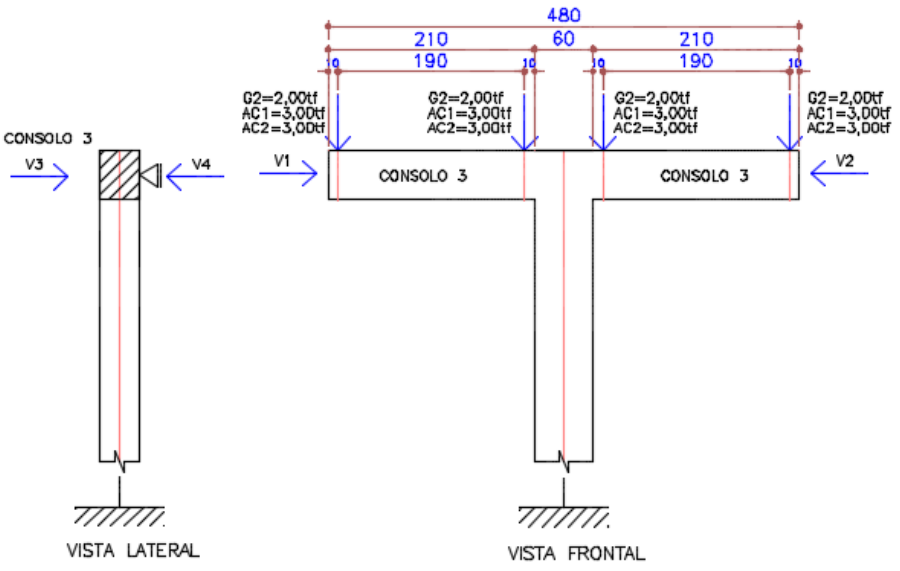
4-VERIFICAÇÃO DA PUNÇÃO DE FUNDO									
- Verificação no Perímetro C									
FSD (tf)	18,66	C1/C2	1,50	H laje (m)	0,25	0,8	cm2/cad	0,2	
MSD (tf.m)	0,52	K	0,7	d (m)	0,2	Taxa(cm2/m)		4,00	
μ (m)	2,00	WP	0,42	Tsd (tf/m2	50,98	Trd2 (tf/m2	509,143	Ok	
- Verificação no Perímetro C'									
μ (m)	4,51	k	0,7	Wp	2,13				
				Tsd (tf/m2	21,52	Trd2 (tf/m2	43,86	Ok	

5-DIMENSIONAMENTO E VERIFICAÇÃO DO BLOCO									
Bloco de 2 estacas - (2)	4	Pi (tf) (+)	15,04	Adotar	A (m)	0,27	α	66,16	
Bloco de 4 estacas - (4)		Pi (tf) (-)	3,86	15,00	Z (m)	0,60	Nest (tf)	16,40	
Verificação da Biela Junto ao Pilar						Armadura Principal do Bloco			
σc,p (tf/m2)	8,44	Fcd1 (Tf/m2)	1.602,86	Ok		Fsx	4,69		
Verificação da Biela Junto a estaca		Fcd2 (Tf/m2)	1.131,43	Ok		As (cm2)	1,08		
σc,e (tf/m2)	365,26	Fcd3 (Tf/m2)	1.357,71	VER Fcd2					

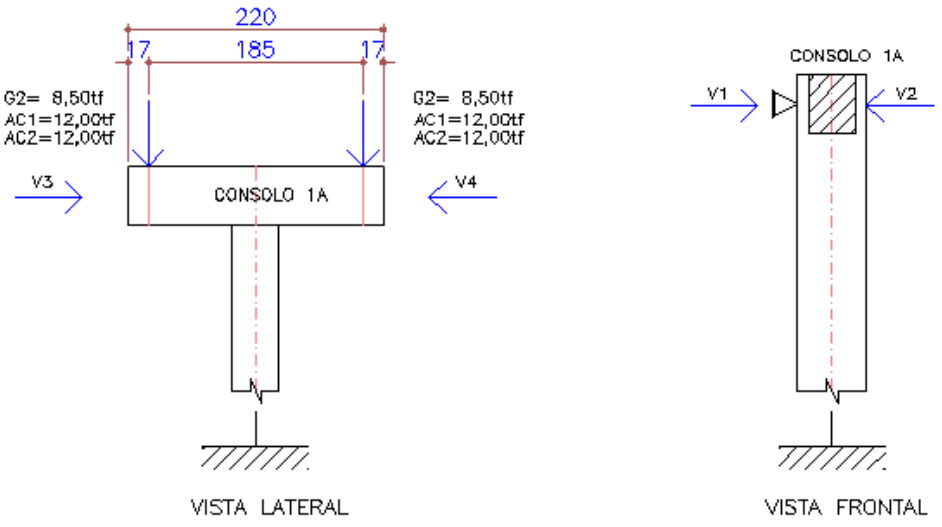
7 LANÇAMENTO DAS CARGAS NA ESTRUTURA

As cargas foram lançadas nos consolos dos pilares através das reações de apoio da Combinação de cargas mais desfavorável fornecida pelo cálculo da estrutura metálica. As cargas foram levantadas por Consolo de concreto (C1, C2, C3) aplicando para cada um os piores casos com seus valores arredondados para cima. Abaixo apresenta-se o lançamento das cargas:

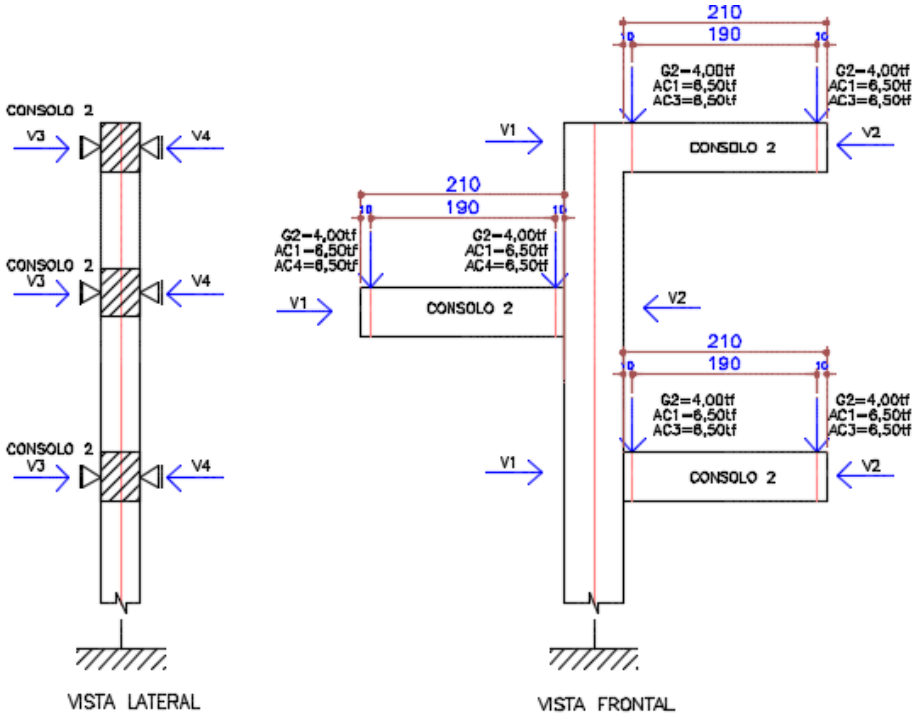
P4, P5



P1 e P9



P2, P3, P6, P7 E P8



Onde:

- G1 - Peso próprio do concreto pré-moldado
- G2 - Carga permanente
- AC1, AC2, AC3, AC4 - Carga Acidental
- EXC1, EXC2 – Carga excepcional – Impacto no sentido do tráfego (10000kgf posição desfav.)
- V1, V2, V3, V4; Ventos

As cargas AC1, AC2, AC3 E AC4 não acontecem simultâneamente, assim como os ventos V1, V2, V3 E V4, e de posse dessas cargas o Programa Eberikc faz as combinações e análise de cada combinação gerando os resultados de cálculos apresentados a seguir:

8 DADOS DE SAÍDA - (Eberick)

8.1 Dados da obra

A obra refere-se a uma estrutura projetada em concreto armado. O projeto é composto por pavimentos conforme descrito na tabela a seguir.

Pavimentos da estrutura:

Pavimento
nivel3
nivel2
nivel1
fundaçao

8.2 Objetivo do memorial

O objetivo desta memória de cálculo é apresentar as especificações de materiais, critérios de cálculo, o modelo estrutural e os principais resultados de análise e dimensionamento dos elementos da estrutura em concreto armado.

8.3 Normas relacionadas ao projeto

Os principais critérios adotados neste projeto, referente aos materiais utilizados e dimensionamento das peças de concreto seguem prescrições normativas.

Normas:

- ABNT NBR 6118:2014 - Projeto de estruturas de concreto - Procedimento

8.4 Critérios para durabilidade

Visando garantir a durabilidade da estrutura com adequada segurança, estabilidade e aptidão em serviço durante o período correspondente a vida útil da estrutura, foram adotados critérios em relação à classe de agressividade ambiental e valores de cobrimentos das armaduras, conforme apresentado nas tabelas a seguir.

Classe de agressividade ambiental adotada:

Pavimento	Classe de agressividade ambiental	Agressividade	Risco de deterioração da estrutura
Todos	II	moderada	pequeno

Cobrimentos das armaduras:

Elemento	Cobrimento (cm)	
	Peças externas	**Peças internas**
Vigas	3.00	2.50
Pilares	3.00	2.50
Pilares pré-moldados	3.00	-
Sapatas	3.00	-

8.5 Propriedades do concreto

O concreto considerado neste projeto e que será empregado na construção deve atender as características da tabela a seguir.

Características do concreto:

fck (kgf/cm²)	Ecs (kgf/cm²)	fct (kgf/cm²)	Abatimento (cm)
300	260716	29	5.00

Etapa de desforma e armazenamento

Elemento	Idade (dias)	fckj (kgf/cm²)	Ecj (kgf/cm²)	fctj (kgf/cm²)
Pilares pré-moldados	3	137.40	207574.60	17.21

Etapa de transporte:

Elemento	Idade (dias)	fckj (kgf/cm²)	Ecj (kgf/cm²)	fctj (kgf/cm²)
Pilares pré-moldados	7	205.16	253648.74	22.48

Etapa de montagem:

Elemento	Idade (dias)	fckj (kgf/cm²)	Ecj (kgf/cm²)	fctj (kgf/cm²)
Pilares pré-moldados	10	232.27	269891.38	24.42

Etapa de construção preliminar:

Elemento	Idade (dias)	fckj (kgf/cm²)	Ecj (kgf/cm²)	fctj (kgf/cm²)
Pilares pré-moldados	21	282.87	297840.25	27.85

8.6 Propriedades do aço

O aço considerado neste projeto para dimensionamento das peças em concreto armado e que será empregado na construção deve atender as características da tabela a seguir:

Características do aço:

Categoria	Massa específica (kgf/m³)	Módulo de elasticidade (kgf/cm²)	fyk (kgf/cm²)
CA50	7850	2100000	5000
CA60	7850	2100000	6000

8.7 Ações de carregamento

Coeficientes de ponderação das ações:

Ação	Coeficientes de ponderação				Fatores de combinação		
	Desfavorável	Favorável	Fundações	Construção	Psi0	Psi1	Psi2
Peso próprio (G1)	1.30	1.00	1.00	1.30	-	-	-
Adicional (G2)	1.40	1.00	1.00	1.30	-	-	-
Vento X+ (V1)	1.40	-	1.00	0.00	0.60	0.30	0.00
Vento X- (V2)	1.40	-	1.00	0.00	0.60	0.30	0.00
Vento Y+ (V3)	1.40	-	1.00	0.00	0.60	0.30	0.00
Vento Y- (V4)	1.40	-	1.00	0.00	0.60	0.30	0.00
Acidental1 (AC1)	1.40	-	1.00	1.20	0.70	0.60	0.40
Acidental2 (AC2)	1.40	-	1.00	1.20	0.70	0.60	0.40
Acidental3 (AC3)	1.40	-	1.00	1.20	0.70	0.60	0.40
Acidental4 (AC4)	1.40		- 1.00				

Combinações de ações

Tipo	Combinações
Últimas	1.3G1+1.4G2
	1.3G1+1.4G2+0.84V1+1.4AC1
	1.3G1+1.4G2+0.84V1+1.4AC2
	1.3G1+1.4G2+0.84V1+1.4AC3
	1.3G1+1.4G2+0.84V1+1.4AC4
	1.3G1+1.4G2+0.84V2+1.4AC1

1.3G1+1.4G2+0.84V2+1.4AC2
1.3G1+1.4G2+0.84V2+1.4AC3
1.3G1+1.4G2+0.84V2+1.4AC4
1.3G1+1.4G2+0.84V3+1.4AC1
1.3G1+1.4G2+0.84V3+1.4AC2
1.3G1+1.4G2+0.84V3+1.4AC3
1.3G1+1.4G2+0.84V3+1.4AC4
1.3G1+1.4G2+0.84V4+1.4AC1
1.3G1+1.4G2+0.84V4+1.4AC2
1.3G1+1.4G2+0.84V4+1.4AC3
1.3G1+1.4G2+0.84V4+1.4AC4
1.3G1+1.4G2+1.4AC1
1.3G1+1.4G2+1.4AC2
1.3G1+1.4G2+1.4AC3
1.3G1+1.4G2+1.4AC4
1.3G1+1.4G2+1.4V1
1.3G1+1.4G2+1.4V1+0.98AC1
1.3G1+1.4G2+1.4V1+0.98AC2
1.3G1+1.4G2+1.4V1+0.98AC3
1.3G1+1.4G2+1.4V1+0.98AC4
1.3G1+1.4G2+1.4V2
1.3G1+1.4G2+1.4V2+0.98AC1
1.3G1+1.4G2+1.4V2+0.98AC2
1.3G1+1.4G2+1.4V2+0.98AC3
1.3G1+1.4G2+1.4V2+0.98AC4
1.3G1+1.4G2+1.4V3
1.3G1+1.4G2+1.4V3+0.98AC1
1.3G1+1.4G2+1.4V3+0.98AC2
1.3G1+1.4G2+1.4V3+0.98AC3
1.3G1+1.4G2+1.4V3+0.98AC4
1.3G1+1.4G2+1.4V4
1.3G1+1.4G2+1.4V4+0.98AC1
1.3G1+1.4G2+1.4V4+0.98AC2
1.3G1+1.4G2+1.4V4+0.98AC3
1.3G1+1.4G2+1.4V4+0.98AC4
G1+G2+0.84V1+1.4AC1
G1+G2+1.4AC1
G1+G2+1.4AC2
G1+G2+1.4AC3
G1+G2+1.4AC4
G1+G2+1.4V1
G1+G2+1.4V1+0.98AC1
G1+G2+1.4V1+0.98AC2
G1+G2+1.4V1+0.98AC3

	G1+G2+1.4V1+0.98AC4
	G1+G2+1.4V2
	G1+G2+1.4V2+0.98AC1
	G1+G2+1.4V2+0.98AC2
	G1+G2+1.4V2+0.98AC3
	G1+G2+1.4V2+0.98AC4
	G1+G2+1.4V3
	G1+G2+1.4V3+0.98AC1
	G1+G2+1.4V3+0.98AC2
	G1+G2+1.4V3+0.98AC3
	G1+G2+1.4V3+0.98AC4
	G1+G2+1.4V4
	G1+G2+1.4V4+0.98AC1
	G1+G2+1.4V4+0.98AC2
	G1+G2+1.4V4+0.98AC3
	G1+G2+1.4V4+0.98AC4
Serviço	G1+G2
	G1+G2+0.3V1
	G1+G2+0.3V1+0.4AC1
	G1+G2+0.3V1+0.4AC2
	G1+G2+0.3V1+0.4AC3
	G1+G2+0.3V1+0.4AC4
	G1+G2+0.3V2
	G1+G2+0.3V2+0.4AC1
	G1+G2+0.3V2+0.4AC2
	G1+G2+0.3V2+0.4AC3
	G1+G2+0.3V2+0.4AC4
	G1+G2+0.3V3
	G1+G2+0.3V3+0.4AC1
	G1+G2+0.3V3+0.4AC2
	G1+G2+0.3V3+0.4AC3
	G1+G2+0.3V3+0.4AC4
	G1+G2+0.3V4
	G1+G2+0.3V4+0.4AC1
	G1+G2+0.3V4+0.4AC2
	G1+G2+0.3V4+0.4AC3
	G1+G2+0.3V4+0.4AC4
	G1+G2+0.6AC1
	G1+G2+0.6AC2
	G1+G2+0.6AC3
	G1+G2+0.6AC4
Fundações	G1+G2
	G1+G2+0.6V1+AC1
	G1+G2+0.6V1+AC2

	G1+G2+0.6V1+AC3
	G1+G2+0.6V1+AC4
	G1+G2+0.6V2+AC1
	G1+G2+0.6V2+AC2
	G1+G2+0.6V2+AC3
	G1+G2+0.6V2+AC4
	G1+G2+0.6V3+AC1
	G1+G2+0.6V3+AC2
	G1+G2+0.6V3+AC3
	G1+G2+0.6V3+AC4
	G1+G2+0.6V4+AC1
	G1+G2+0.6V4+AC2
	G1+G2+0.6V4+AC3
	G1+G2+0.6V4+AC4
	G1+G2+AC1
	G1+G2+AC2
	G1+G2+AC3
	G1+G2+AC4
	G1+G2+V1
	G1+G2+V1+0.7AC1
	G1+G2+V1+0.7AC2
	G1+G2+V1+0.7AC3
	G1+G2+V1+0.7AC4
	G1+G2+V2
	G1+G2+V2+0.7AC1
	G1+G2+V2+0.7AC2
	G1+G2+V2+0.7AC3
	G1+G2+V2+0.7AC4
	G1+G2+V3
	G1+G2+V3+0.7AC1
	G1+G2+V3+0.7AC2
	G1+G2+V3+0.7AC3
	G1+G2+V3+0.7AC4
	G1+G2+V4
	G1+G2+V4+0.7AC1
	G1+G2+V4+0.7AC2
	G1+G2+V4+0.7AC3
	G1+G2+V4+0.7AC4
Construção	1.3G1+1.3G2
	1.3G1+1.3G2+0.84AC1
	1.3G1+1.3G2+0.84AC2
	1.3G1+1.3G2+0.84AC3
	1.3G1+1.3G2+0.84AC4

8.8 Ação do vento

O efeito do vento sobre a edificação é avaliado a partir de diversos parâmetros que permitem definir as forças aplicadas sobre a estrutura.

Parâmetros adotados para consideração do vento:

Parâmetros	Valor adotado	Observações
Velocidade	35.00m/s	-
Nível do solo (S2)	0.00cm	-
Maior dimensão horizontal ou vertical (S2)	Acima e 50 m	-
Rugosidade do terreno (S2)	Categoria III	Terrenos planos ou ondulados com obstáculos, tais como sebes e muros, poucos quebra-ventos de árvores, edificio

9 CÁLCULO DOS PILARES E CONSOLOS

9.1 Cálculo do Pilar Pré-Moldado P1 E P9

Pavimento fundaçao

Cálculo dos Pilares Pré-Moldados

fundaçao fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 1 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	Armazenamento					
	fckj (kgf/cm²)	Beta-a	M pos M neg (kgf.m)	As b As h (cm²)	V máx (tf)	Asw cm²/m
L1	137.40	1.30	1565.66 1252.53	2.38 2 ø 20.0 2.53 2 ø 20.0	2.42	0.00

Lance	Transporte					
	fckj (kgf/cm²)	Beta-a	M pos M neg (kgf.m)	As b As h (cm²)	V máx (tf)	Asw cm²/m

L1	205.16	1.30	1565.66 1252.53	3.09 2 ø 20.0 3.30 2 ø 20.0	2.42	0.00

Lance	**Montagem** **fckj** **(kgf/cm²)**	**Beta-a**	**M pos** **M neg** **(kgf.m)**	**As b** **As h** **(cm²)**	**V máx** **(tf)**	**Asw** **cm²/m**
L1	232.27	1.30	4403.41 1252.53	3.36 2 ø 20.0 3.79 2 ø 20.0	3.43	3.91

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					**Momentos**	**Armadura**	**Cortantes**	**Armadura**
				atuantes	**longitudinal**	**atuantes**	**transversal**	
Lance	**KB** **KH**	**CB** **CH**	**S2**	**Força B** **Força H** **(kgf/m)**	**MB** **MH** **(kgf.m)**	**As b** **As h** **(cm²)**	**VB** **VH** **(tf)**	**Asw** **cm²/m**
L1	0.803 0.866	2.100 0.750	0.40	30.45 5.87	4086.13 787.47	3.36 2 ø 20.0 3.58 2 ø 20.0	0.90 0.17	3.91

Verificação do pilar na etapa final

Dados						**Resultados**		
Pilar	**Seção** **(cm)**	**lib** **esb B** **lih** **esb H** **(cm)**	**vínc** **vínc**	**Nd máx** **Nd mín** **(tf)** **ni** **Zr**	**MBd topo** **MBd base** **MHd topo** **MHd base** **(kgf.m)**	**MBsdtopo** **MBsdcentro** **MBsdbase** **MHsdtopo** **MHsdcentro** **MHsdbase** **(kgf.m)**	**Madtopo** **Madcentro** **Madbase** **MB2d** **MBcd** **MH2d** **MHcd** **(kgf.m)**	**Processo de Cálculo As b(cm²)** **As h** **% armad**
P1	40.00	1552.00 134.25	EL	60.98 20.62	567 741	0 0	549 274	15.71 Msd(x) = 18399 kgf.m 5 ø 20.0

X					0	549	Msd(y) = 69256 kgf.m 15.71
80.00	776.00	RR	0.09	58739		18089	5 ø 20.0
	33.56		0.00	76268	58739	35	Mrd(x) = 19244 kgf.m
			0.00		69256	2521	Mrd(y) = 72436 kgf.m
Mrd/Msd=1.05	1.6						
					76268	502	

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

Pavimento nivel1

Cálculo dos Pilares Pré-Moldados

nivel1 fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 2 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	**Armazenamento**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L2	137.40	1.30	1565.66	2.38	2.42	0.00
			1252.53	2 ø 20.0		
				2.53		
				2 ø 20.0		

Lance	**Transporte**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L2	205.16	1.30	1565.66	3.09	2.42	0.00
			1252.53	2 ø 20.0		
				3.30		
				2 ø 20.0		

Lance	**Montagem**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L2	232.27	1.30	4403.41	3.36	3.43	3.91

				1252.53	2 ø 20.0			
					3.79			
					2 ø 20.0			

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					**Momentos**	**Armadura**	**Cortantes**	**Armadura**
				atuantes	**longitudinal**	**atuantes**	**transversal**	
Lance	**KB**	**CB**	**S2**	**Força B**	**MB**	**As b**	**VB**	**Asw**
	KH	**CH**		**Força H**	**MH**	**As h**	**VH**	**cm²/m**
				(kgf/m)	**(kgf.m)**	**(cm²)**	**(tf)**	
L2	0.803	2.100	0.85	141.70	4036.81	3.36	0.84	3.91
	0.866	0.750		27.31	777.97	2 ø 20.0	0.16	
						3.58		
						2 ø 20.0		

Verificação do pilar na etapa final

Dados						**Resultados**		
Pilar	**Seção**	**lib**	**vínc**	**Nd máx**	**MBd topo**	**MBsdtopo**	**Madtopo**	**Processo de Cálculo As b(cm²)**
	(cm)	**esb B**		**Nd mín**	**MBd base**	**MBsdcentro**	**Madcentro**	
				(tf)		**MBsdbase**	**Madbase**	**As h**
		lih	**vínc**	**ni**	**MHd topo**			
		esb H			**MHd base**	**MHsdtopo**	**MB2d**	
				Zr		**MHsdcentro**	**MBcd**	**% armad**
		(cm)			**(kgf.m)**	**MHsdbase**		
						(kgf.m)	**MH2d**	
							MHcd	
							(kgf.m)	
P5		1552.00	EL	59.10	0	0	1255	(*2) 9.42
	40.00	134.25		15.85	567	0	628	Msd(x) = 0 kgf.m 3 ø 20.0
	X					0	1255	Msd(y) = 59994 kgf.m 15.71
	80.00	776.00	RR	0.09	0		15354	5 ø 20.0
		33.56		0.00	58739	0	64	Mrd(x) = 0 kgf.m
				0.00		35243	1982	Mrd(y) = 68526 kgf.m
Mrd/Msd=1.14		1.2						
						58739	211	

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

Cálculo Do consolo C1

Pavimento nivel1 - Lance 2

fck = 300.00 kgf/cm² Ecs = 260716 kgf/cm²
Cobrimento = 3.00 cm Peso específico = 2500.00 kgf/m³

DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1	retangular	Md = 5021 kgf.m				As = 3.00 cm²
		As = 2.55 cm²				(4ø10.0 - 3.14 cm²)
1-2	bw = 40.00 cm	A's = 0.00 cm²				d = 46.00 cm
	h = 50.00 cm	yLN = 1.52 cm				% armad. = 0.16
						M = 0 kgf.m
						fiss = 0.00 mm

DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 0 kgf.m			
	As = 0.00 cm²			
	A's = 0.00 cm²			
	yLN = 0.00 cm			
2	Md = 5021 kgf.m			As = 3.00 cm²
	As = 2.55 cm²			(4ø10.0 - 3.14 cm²)
	A's = 0.00 cm²			d = 46.00 cm
	yLN = 1.52 cm			% armad. = 0.16
				fiss = 0.00 mm
3	Md = 17769 kgf.m			As = 9.54 cm²
	As = 9.54 cm²			(5ø16.0 - 10.05 cm²)

A's = 0.00 cm² d = 45.70 cm

yLN = 5.69 cm % armad. = 0.50

fiss = 0.15 mm

DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

Modelo de cálculo **I**

Inclinação bielas **45**

Verificação de esforços limites

Vão trechos	**Cisalhamento**	**Torção**	**Cisalhamento + Torção**
1	Vd = 26.45 tf	Td = 0 kgf.m	Vd/VRd2 + Td/TRd2 = 0.28
1-2	VRd2 = 93.68 tf	TRd2 = 11770 kgf.m	

Vão	**ARMADURA DE CISALHAMENTO**				**ARMADURA DE TORÇÃO**	
trechos	**Dados cisalham**	**Armad. à esquerda**	**Armad. mínima**	**Armad. à direita**	**Dados torção**	**Armad. de torção**
1	d = 46.00 cm		Vmin = 8.75 tf	Vc = 15.99 tf		
	Vc0 = 15.99 tf		Aswmin = 4.63 cm²	Vsw = 10.46 tf		
1-2	k = 1.00		(4 ramos)	Asw = 5.81 cm²		
			ø 5.0 c/ 17	(4 ramos)		
				ø 5.0 c/ 14		

9.2 Cálculo do Pilar Pré-Moldado P2

Pavimento Fundação

Cálculo dos Pilares Pré-Moldados

Fundação fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 1 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	Armazenamento					
	fckj	Beta-a	M pos	As b	V máx	Asw
	(kgf/cm²)		M neg	As h	(tf)	cm²/m
			(kgf.m)	(cm²)		
L1	137.40	1.30	568.62	1.82	1.26	0.00
			454.90	2 ø 20.0		
				1.90		
				2 ø 20.0		

Lance	Transporte					
	fckj	Beta-a	M pos	As b	V máx	Asw
	(kgf/cm²)		M neg	As h	(tf)	cm²/m
			(kgf.m)	(cm²)		
L1	205.16	1.30	568.62	2.37	1.26	0.00
			454.90	2 ø 20.0		
				2.47		
				2 ø 20.0		

Lance	Montagem					
	fckj	Beta-a	M pos	As b	V máx	Asw
	(kgf/cm²)		M neg	As h	(tf)	cm²/m
			(kgf.m)	(cm²)		
L1	232.27	1.30	1599.24	2.57	1.79	0.00
			454.90	2 ø 20.0		
				2.69		
				2 ø 20.0		

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					Momentos	Armadura	Cortantes	Armadura
				atuantes	longitudinal	atuantes	transversal	
Lance	KB	CB	S2	Força B	MB	As b	VB	Asw
	KH	CH		Força H	MH	As h	VH	cm²/m
				(kgf/m)	(kgf.m)	(cm²)	(tf)	
L1	0.786	2.050	0.39	11.19	716.83	2.57	0.22	0.00
	0.831	1.375		5.29	338.89	2 ø 20.0	0.10	
						2.69		
						2 ø 20.0		

Verificação do pilar na etapa final

Dados						Resultados		
Pilar	**Seção**	**lib**	**vínc**	**Nd máx**	**MBd topo**	**MBsdtopo**	**Madtopo**	**Processo de Cálculo As b(cm²)**
	(cm)	**esb B**		**Nd mín**	**MBd base**	**MBsdcentro**	**Madcentro**	
				(tf)		**MBsdbase**	**Madbase**	**As h**
		lih	**vínc**	**ni**	**MHd topo**			
		esb H			**MHd base**	**MHsdtopo**	**MB2d**	
				Zr		**MHsdcentro**	**MBcd**	**% armad**
		(cm)			**(kgf.m)**	**MHsdbase**		
						(kgf.m)	**MH2d**	
							MHcd	
							(kgf.m)	
P2		1080.00	EL	67.40	268	0	369	12.57
	40.00	93.42		21.71	445	0	184	Msd(x) = 5341 kgf.m 4 ø 20.0
	X					0	369	Msd(y) = 42276 kgf.m 9.42
	60.00	220.00	RR	0.13	41756		5146	3 ø 20.0
		12.69		0.00	42622	41756	11	Mrd(x) = 5476 kgf.m
				0.00		42276	217	Mrd(y) = 43343 kgf.m
Mrd/Msd=1.03		1.3						
						42622	44	

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

Pavimento Nivel1

Cálculo dos Pilares Pré-Moldados

Nivel1 fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 2 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	**Armazenamento**					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L2	137.40	1.30	568.62	1.82	1.26	0.00
			454.90	2 ø 20.0		
				1.90		
				2 ø 20.0		

Lance	Transporte					
	fckj	Beta-a	M pos	As b	V máx	Asw
	(kgf/cm²)		M neg	As h	(tf)	cm²/m
			(kgf.m)	(cm²)		
L2	205.16	1.30	568.62	2.37	1.26	0.00
			454.90	2 ø 20.0		
				2.47		
				2 ø 20.0		

Lance	Montagem					
	fckj	Beta-a	M pos	As b	V máx	Asw
	(kgf/cm²)		M neg	As h	(tf)	cm²/m
			(kgf.m)	(cm²)		
L2	232.27	1.30	1599.24	2.57	1.79	0.00
			454.90	2 ø 20.0		
				2.69		
				2 ø 20.0		

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					Momentos	Armadura	Cortantes	Armadura
				atuantes	longitudinal	atuantes	transversal	
Lance	KB	CB	S2	Força B	MB	As b	VB	Asw
	KH	CH		Força H	MH	As h	VH	cm²/m
				(kgf/m)	(kgf.m)	(cm²)	(tf)	
L2	0.786	2.050	0.79	46.52	704.25	2.57	0.20	0.00
	0.831	1.375		21.99	332.94	2 ø 20.0	0.10	
						2.69		
						2 ø 20.0		

Verificação do pilar na etapa final

Dados						Resultados		
Pilar	Seção	lib	vínc	Nd máx	MBd topo	MBsdtopo	Madtopo	Processo de Cálculo As b(cm²)
	(cm)	esb B		Nd mín	MBd base	MBsdcentro	Madcentro	
				(tf)		MBsdbase	Madbase	As h
		lih	vínc	ni	MHd topo			
		esb H			MHd base	MHsdtopo	MB2d	
				Zr		MHsdcentro	MBcd	% armad
		(cm)			(kgf.m)	MHsdbase		

					(kgf.m)	**MH2d MHcd (kgf.m)**	
P2		1080.00 EL	66.23	188	0	168	12.57
	40.00	93.42	21.29	268	0	84	Msd(x) = 5043 kgf.m 4 ø 20.0
	X				0	168	Msd(y) = 41584 kgf.m 9.42
	60.00	220.00 RR	0.13	41327		4954	3 ø 20.0
		12.69	0.00	41756	41327	5	Mrd(x) = 5245 kgf.m
			0.00		41584	212	Mrd(y) = 43247 kgf.m
Mrd/Msd=1.04		1.3					
					41756	41	

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

Cálculo do consolo C2

Pavimento Nivel1 - Lance 2

fck = 300.00 kgf/cm² Ecs = 260716 kgf/cm²

Cobrimento = 3.00 cm Peso específico = 2500.00 kgf/m³

DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	**Seção**	**Flexão**	**Torção**	**Verificação axial (compressão)**	**Verificação axial (tração)**	**Final**
1	retangular	Md = 5021 kgf.m				As = 3.00 cm²
		As = 2.55 cm²				(4ø10.0 - 3.14 cm²)
1-3	bw = 40.00 cm	A's = 0.00 cm²				d = 46.00 cm
	h = 50.00 cm	yLN = 1.52 cm				% armad. = 0.16
						M = 0 kgf.m
						fiss = 0.00 mm

DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	**Flexão**	**Verificação axial (compressão)**	**Verificação axial (tração)**	**Final**
1	Md = 0 kgf.m			

	As = 0.00 cm²	
	A's = 0.00 cm²	
	yLN = 0.00 cm	
2	Md = 5021 kgf.m	As = 3.00 cm²
	As = 2.55 cm²	(4ø10.0 - 3.14 cm²)
	A's = 0.00 cm²	d = 46.00 cm
	yLN = 1.52 cm	% armad. = 0.16
		fiss = 0.00 mm
3	Md = 15331 kgf.m	As = 8.15 cm²
	As = 8.15 cm²	(4ø16.0 - 8.04 cm²)
	A's = 0.00 cm²	d = 45.70 cm
	yLN = 4.86 cm	% armad. = 0.40
		fiss = 0.18 mm
4	Md = 18550 kgf.m	As = 9.99 cm²
	As = 9.99 cm²	(5ø16.0 - 10.05 cm²)
	A's = 0.00 cm²	d = 45.70 cm
	yLN = 5.96 cm	% armad. = 0.50
		fiss = 0.17 mm

DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

Modelo de cálculo **I**

Inclinação bielas **45**

Verificação de esforços limites

Vão trechos	**Cisalhamento**	**Torção**	**Cisalhamento + Torção**
1	Vd = 16.16 tf	Td = 0 kgf.m	Vd/VRd2 + Td/TRd2 = 0.17
1-3	VRd2 = 93.68 tf	TRd2 = 11770 kgf.m	

Vão	**ARMADURA DE CISALHAMENTO**				**ARMADURA DE TORÇÃO**	
trechos	**Dados cisalham**	**Armad. à esquerda**	**Armad. mínima**	**Armad. à direita**	**Dados torção**	**Armad. de torção**
1	d = 46.00 cm		Vmin = 9.30 tf			
	Vc0 = 15.99 tf		Aswmin = 4.63 cm²			
1-3	k = 1.00		(2 ramos)			

ø 5.0 c/ 8

9.3 Cálculo do Pilar Pré-Moldado P3

Pavimento Fundação
Cálculo dos Pilares Pré-Moldados

Fundação fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³
Lance 1 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	**Armazenamento**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L1	137.40	1.30	412.62	1.82	1.08	0.00
			330.10	2 ø 20.0		
				1.90		
				2 ø 20.0		

Lance	**Transporte**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L1	205.16	1.30	412.62	2.37	1.08	0.00
			330.10	2 ø 20.0		
				2.47		
				2 ø 20.0		

Lance	**Montagem**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L1	232.27	1.30	1160.49	2.57	1.52	0.00
			330.10	2 ø 20.0		
				2.69		

2 ø 20.0

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					Momentos	Armadura	Cortantes	Armadura
				atuantes	longitudinal	atuantes	transversal	
Lance	**KB**	**CB**	**S2**	**Força B**	**MB**	**As b**	**VB**	**Asw**
	KH	**CH**		**Força H**	**MH**	**As h**	**VH**	**cm²/m**
				(kgf/m)	**(kgf.m)**	**(cm²)**	**(tf)**	
L1	0.754	2.050	0.39	10.73	480.62	2.57	0.17	0.00
	0.819	1.375		5.21	233.44	2 ø 20.0	0.08	
						2.69		
						2 ø 20.0		

Verificação do pilar na etapa final

Dados						Resultados		
Pilar	**Seção**	**lib**	**vínc**	**Nd máx**	**MBd topo**	**MBsdtopo**	**Madtopo**	**Processo de Cálculo As b(cm²)**
	(cm)	**esb B**		**Nd mín**	**MBd base**	**MBsdcentro**	**Madcentro**	
				(tf)		**MBsdbase**	**Madbase**	**As h**
		lih	**vínc**	**ni**	**MHd topo**			
		esb H			**MHd base**	**MHsdtopo**	**MB2d**	
				Zr		**MHsdcentro**	**MBcd**	**% armad**
		(cm)			**(kgf.m)**	**MHsdbase**		
						(kgf.m)	**MH2d**	
							MHcd	
							(kgf.m)	
P3		920.00	EL	50.61	230	0	311	(*2) 12.57
	40.00	79.58		16.11	374	0	156	Msd(x) = 2523 kgf.m 4 ø 20.0
	X					0	311	Msd(y) = 32275 kgf.m 9.42
	60.00	300.00	RR	0.10	31919		2361	3 ø 20.0
		17.30		0.00	32512	31919	6	Mrd(x) = 3368 kgf.m
				0.00		32275	337	Mrd(y) = 43085 kgf.m
Mrd/Msd=1.33		1.3						
						32512	53	

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

Pavimento Nivel1

Cálculo dos Pilares Pré-Moldados

Nivel1 fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³
Lance 2 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	**Armazenamento**					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L2	137.40	1.30	412.62	1.82	1.08	0.00
			330.10	2 ø 20.0		
				1.90		
				2 ø 20.0		

Lance	**Transporte**					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L2	205.16	1.30	412.62	2.37	1.08	0.00
			330.10	2 ø 20.0		
				2.47		
				2 ø 20.0		

Lance	**Montagem**					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L2	232.27	1.30	1160.49	2.57	1.52	0.00
			330.10	2 ø 20.0		
				2.69		
				2 ø 20.0		

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					**Momentos**	**Armadura**	**Cortantes**	**Armadura**
				atuantes	**longitudinal**	**atuantes**	**transversal**	
Lance	**KB**	**CB**	**S2**	**Força B**	**MB**	**As b**	**VB**	**Asw**
	KH	**CH**		**Força H**	**MH**	**As h**	**VH**	**cm²/m**

				(kgf/m)	(kgf.m)	(cm²)	(tf)	
L2	0.754	2.050	0.81	46.07	468.54	2.57	0.15	0.00
	0.819	1.375		22.37	227.57	2 ø 20.0	0.07	
						2.69		
						2 ø 20.0		

Verificação do pilar na etapa final

Dados						Resultados		
Pilar	**Seção**	**lib**	**vínc**	**Nd máx**	**MBd topo**	**MBsdtopo**	**Madtopo**	**Processo de Cálculo As b(cm²)**
	(cm)	**esb B**		**Nd mín**	**MBd base**	**MBsdcentro**	**Madcentro**	
				(tf)		**MBsdbase**	**Madbase**	**As h**
		lih	**vínc**	**ni**	**MHd topo**			
		esb H			**MHd base**	**MHsdtopo**	**MB2d**	
				Zr		**MHsdcentro**	**MBcd**	**% armad**
		(cm)			**(kgf.m)**	**MHsdbase**		
						(kgf.m)	**MH2d**	
							MHcd	
							(kgf.m)	
P3		920.00	EL	49.44	92	0	303	(*2)12.57
	40.00	79.58		15.21	230	0	151	Msd(x) = 2451 kgf.m 4 ø 20.0
	X					0	303	Msd(y) = 31670 kgf.m 9.42
	60.00	300.00	RR	0.10	31296		2295	3 ø 20.0
		17.30		0.00	31919	31296	5	Mrd(x) = 3318 kgf.m
				0.00		31670	328	Mrd(y) = 42863 kgf.m
Mrd/Msd=1.35		1.3						
						31919	49	

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

Cálculo Do consolo C2

Pavimento Nivel1 - Lance 2

fck = 300.00 kgf/cm² Ecs = 260716 kgf/cm²

Cobrimento = 3.00 cm Peso específico = 2500.00 kgf/m³

DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão	**Seção**	**Flexão**	**Torção**	**Verificação axial (compressão)**	**Verificação axial (tração)**	**Final**
trechos						

1	retangular	Md = 5021 kgf.m	As = 3.00 cm²
		As = 2.55 cm²	(4ø10.0 - 3.14 cm²)
1-3	bw = 40.00 cm	A's = 0.00 cm²	d = 46.00 cm
	h = 50.00 cm	yLN = 1.52 cm	% armad. = 0.16
			M = 0 kgf.m
			fiss = 0.00 mm

DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 0 kgf.m			
	As = 0.00 cm²			
	A's = 0.00 cm²			
	yLN = 0.00 cm			
2	Md = 5021 kgf.m			As = 3.00 cm²
	As = 2.55 cm²			(4ø10.0 - 3.14 cm²)
	A's = 0.00 cm²			d = 46.00 cm
	yLN = 1.52 cm			% armad. = 0.16
				fiss = 0.00 mm
3	Md = 15331 kgf.m			As = 8.15 cm²
	As = 8.15 cm²			(4ø16.0 - 8.04 cm²)
	A's = 0.00 cm²			d = 45.70 cm
	yLN = 4.86 cm			% armad. = 0.40
				fiss = 0.18 mm
4	Md = 18550 kgf.m			As = 9.99 cm²
	As = 9.99 cm²			(5ø16.0 - 10.05 cm²)
	A's = 0.00 cm²			d = 45.70 cm
	yLN = 5.96 cm			% armad. = 0.50
				fiss = 0.17 mm

DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

Modelo de cálculo **I**
Inclinação bielas **45**

Verificação de esforços limites

Vão trechos	**Cisalhamento**	**Torção**	**Cisalhamento + Torção**
1	Vd = 16.16 tf	Td = 0 kgf.m	Vd/VRd2 + Td/TRd2 = 0.17
1-3	VRd2 = 93.68 tf	TRd2 = 11770 kgf.m	

Vão	**ARMADURA DE CISALHAMENTO**				**ARMADURA DE TORÇÃO**	
trechos	**Dados cisalham**	**Armad. à esquerda**	**Armad. mínima**	**Armad. à direita**	**Dados torção**	**Armad. de torção**
1	d = 46.00 cm		Vmin = 9.30 tf			
	Vc0 = 15.99 tf		Aswmin = 4.63 cm²			
1-3	k = 1.00		(2 ramos)			
			ø 5.0 c/ 8			

Pavimento Nivel 2

Cálculo dos Pilares Pré-Moldados

Nivel 2 fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³
Lance 3 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	**Armazenamento**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L3	137.40	1.30	412.62	1.82	1.08	0.00
			330.10	2 ø 20.0		
				1.90		
				2 ø 20.0		

Lance	**Transporte**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg**	**As b As h**	**V máx (tf)**	**Asw cm²/m**

			(kgf.m)	**(cm²)**		
L3	205.16	1.30	412.62	2.37	1.08	0.00
			330.10	2 ø 20.0		
				2.47		
				2 ø 20.0		

Lance	**Montagem**					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L3	232.27	1.30	1160.49	2.57	1.52	0.00
			330.10	2 ø 20.0		
				2.69		
				2 ø 20.0		

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					**Momentos**	**Armadura**	**Cortantes**	**Armadura**
				atuantes	**longitudinal**	**atuantes**	**transversal**	
Lance	**KB**	**CB**	**S2**	**Força B**	**MB**	**As b**	**VB**	**Asw**
	KH	**CH**		**Força H**	**MH**	**As h**	**VH**	**cm²/m**
				(kgf/m)	**(kgf.m)**	**(cm²)**	**(tf)**	
L3	0.754	2.050	0.85	51.49	313.07	2.57	0.08	0.00
	0.819	1.375		25.01	152.06	2 ø 20.0	0.04	
						2.69		
						2 ø 20.0		

Verificação do pilar na etapa final

Dados						**Resultados**		
Pilar	**Seção**	**lib**	**vínc**	**Nd máx**	**MBd topo**	**MBsdtopo**	**Madtopo**	**Processo de Cálculo As b(cm²)**
	(cm)	**esb B**		**Nd mín**	**MBd base**	**MBsdcentro**	**Madcentro**	
				(tf)		**MBsdbase**	**Madbase**	**As h**
		lih	**vínc**	**ni**	**MHd topo**			
		esb H			**MHd base**	**MHsdtopo**	**MB2d**	
				Zr		**MHsdcentro**	**MBcd**	**% armad**
		(cm)			**(kgf.m)**	**MHsdbase**		
						(kgf.m)	**MH2d**	
							MHcd	
							(kgf.m)	
P3		920.00	EL	32.11	0	0	257	12.57

40.00	79.58		9.12	92	0	128	Msd(x) = 1967 kgf.m 4 ø 20.0
X					0	257	Msd(y) = 40298 kgf.m 9.42
60.00	160.00	RR	0.06	40085		1836	3 ø 20.0
	9.23		0.00	40441	40085	3	Mrd(x) = 2038 kgf.m
			0.00		40298	78	Mrd(y) = 41749 kgf.m
Mrd/Msd=1.04	1.3						
					40441	14	

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

9.4 Cálculo do Pilar Pré-Moldado P4

Pavimento fundacao

Cálculo dos Pilares Pré-Moldados

fundacao fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 1 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	**Armazenamento**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L1	137.40	1.30	175.50	1.81	0.70	0.00
			140.40	2 ø 12.5		
				1.88		
				2 ø 12.5		

Lance	**Transporte**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L1	205.16	1.30	175.50	2.35	0.70	0.00
			140.40	2 ø 12.5		
				2.45		
				2 ø 12.5		

Lance	Montagem fckj (kgf/cm²)	Beta-a	M pos M neg (kgf.m)	As b As h (cm²)	V máx (tf)	Asw cm²/m
L1	232.27	1.30	493.59 140.40	2.55 2 ø 12.5 2.66 3 ø 12.5	0.99	0.00

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					Momentos	Armadura	Cortantes	Armadura
				atuantes	longitudinal	atuantes	transversal	
Lance	KB KH	CB CH	S2	Força B Força H (kgf/m)	MB MH (kgf.m)	As b As h (cm²)	VB VH (tf)	Asw cm²/m
L1	0.690 0.750	2.050 1.375	0.38	9.39 4.57	162.74 79.10	2.55 2 ø 12.5 2.66 3 ø 12.5	0.09 0.04	0.00

Verificação do pilar na etapa final

Dados						Resultados		
Pilar	Seção (cm)	lib esb B lih esb H (cm)	vínc vínc	Nd máx Nd mín (tf) ni Zr	MBd topo MBd base MHd topo MHd base (kgf.m)	MBsdtopo MBsdcentro MBsdbase MHsdtopo MHsdcentro MHsdbase (kgf.m)	Madtopo Madcentro Madbase MB2d MBcd MH2d MHcd (kgf.m)	Processo de Cálculo As b(cm²) As h % armad
P4		600.00	EL	33.26	123	0	123	(*2)4.91
	40.00	51.90		11.33	210	0	61	Msd(x) = 0 kgf.m 4 ø 12.5
	X					0	123	Msd(y) = 11425 kgf.m 4.91
	60.00	300.00	RR	0.06	11125		107	4 ø 12.5
		17.30		0.00	11244	11125	0	Mrd(x) = 0 kgf.m
				0.00		11196	157	Mrd(y) = 21890 kgf.m
Mrd/Msd=1.92		0.6						

11244	10	

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

Pavimento nivel1

Cálculo dos Pilares Pré-Moldados

nivel1 fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³
Lance 2 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	**Armazenamento**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L2	137.40	1.30	175.50	1.81	0.70	0.00
			140.40	2 ø 12.5		
				1.88		
				2 ø 12.5		

Lance	**Transporte**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L2	205.16	1.30	175.50	2.35	0.70	0.00
			140.40	2 ø 12.5		
				2.45		
				2 ø 12.5		

Lance	**Montagem**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L2	232.27	1.30	493.59	2.55	0.99	0.00
			140.40	2 ø 12.5		
				2.66		
				3 ø 12.5		

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					Momentos	Armadura	Cortantes	Armadura
				atuantes	longitudinal	atuantes	transversal	
Lance	**KB**	**CB**	**S2**	**Força B**	**MB**	**As b**	**VB**	**Asw**
	KH	**CH**		**Força H**	**MH**	**As h**	**VH**	**cm²/m**
				(kgf/m)	**(kgf.m)**	**(cm²)**	**(tf)**	
L2	0.690	2.050	0.80	41.26	155.98	2.55	0.07	0.00
	0.750	1.375		20.06	75.81	2 ø 12.5	0.04	
						2.66		
						3 ø 12.5		

Verificação do pilar na etapa final

Dados						Resultados		
Pilar	**Seção**	**lib**	**vínc**	**Nd máx**	**MBd topo**	**MBsdtopo**	**Madtopo**	**Processo de Cálculo As b(cm²)**
	(cm)	**esb B**		**Nd mín**	**MBd base**	**MBsdcentro**	**Madcentro**	
				(tf)		**MBsdbase**	**Madbase**	**As h**
		lih	**vínc**	**ni**	**MHd topo**			
		esb H			**MHd base**	**MHsdtopo**	**MB2d**	
				Zr		**MHsdcentro**	**MBcd**	**% armad**
		(cm)			**(kgf.m)**	**MHsdbase**		
						(kgf.m)	**MH2d**	
							MHcd	
							(kgf.m)	
P4		600.00	EL	32.33	0	0	178	(*2) 4.91
	40.00	51.90		10.25	123	0	89	Msd(x) = 0 kgf.m 4 ø 12.5
	X					0	178	Msd(y) = 11303 kgf.m 4.91
	60.00	300.00	RR	0.06	10920		140	4 ø 12.5
		17.30		0.00	11125	10920	1	Mrd(x) = 0 kgf.m
				0.00		11043	153	Mrd(y) = 21724 kgf.m
Mrd/Msd=1.92		0.6						
						11125	9	

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

Cálculo do consolo C3

Pavimento nivel1 - Lance 2

fck = 300.00 kgf/cm² Ecs = 260716 kgf/cm²
Cobrimento = 3.00 cm Peso específico = 2500.00 kgf/m³

DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1	retangular	Md = 5021 kgf.m				As = 3.00 cm²
		As = 2.55 cm²				(4ø10.0 - 3.14 cm²)
1-3	bw = 40.00 cm	A's = 0.00 cm²				d = 46.00 cm
	h = 50.00 cm	yLN = 1.52 cm				% armad. = 0.16
						M = 0 kgf.m
						fiss = 0.00 mm

DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 0 kgf.m			
	As = 0.00 cm²			
	A's = 0.00 cm²			
	yLN = 0.00 cm			
2	Md = 5021 kgf.m			As = 3.00 cm²
	As = 2.55 cm²			(4ø10.0 - 3.14 cm²)
	A's = 0.00 cm²			d = 46.00 cm
	yLN = 1.52 cm			% armad. = 0.16
				fiss = 0.00 mm
3	Md = 14666 kgf.m			As = 7.78 cm²
	As = 7.78 cm²			(4ø16.0 - 8.04 cm²)
	A's = 0.00 cm²			d = 45.70 cm

	yLN = 4.64 cm	% armad. = 0.40
		fiss = 0.17 mm
4	Md = 17745 kgf.m	As = 9.52 cm²
	As = 9.52 cm²	(5ø16.0 - 10.05 cm²)
	A's = 0.00 cm²	d = 45.70 cm
	yLN = 5.68 cm	% armad. = 0.50
		fiss = 0.16 mm

DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

Modelo de cálculo **I**

Inclinação bielas **45**

Verificação de esforços limites

Vão trechos	**Cisalhamento**	**Torção**	**Cisalhamento + Torção**
1	Vd = 15.46 tf	Td = 0 kgf.m	Vd/VRd2 + Td/TRd2 = 0.17
1-3	VRd2 = 93.68 tf	TRd2 = 11770 kgf.m	

Vão	**ARMADURA DE CISALHAMENTO**				**ARMADURA DE TORÇÃO**	
trechos	**Dados cisalham**	**Armad. à esquerda**	**Armad. mínima**	**Armad. à direita**	**Dados torção**	**Armad. de torção**
1	d = 46.00 cm		Vmin = 9.30 tf			
	Vc0 = 15.99 tf		Aswmin = 4.63 cm²			
1-3	k = 1.00		(2 ramos)			
			ø 5.0 c/ 8			

9.5 Cálculo do Pilar Pré-Moldado P5

Pavimento fundacao

Cálculo dos Pilares Pré-Moldados

fundacao fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 1 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	Armazenamento					
	fckj (kgf/cm²)	Beta-a	M pos M neg (kgf.m)	As b As h (cm²)	V máx (tf)	Asw cm²/m
L1	137.40	1.30	360.55	1.81	1.01	0.00
			288.44	2 ø 12.5		
				1.88		
				2 ø 12.5		

Lance	Transporte					
	fckj (kgf/cm²)	Beta-a	M pos M neg (kgf.m)	As b As h (cm²)	V máx (tf)	Asw cm²/m
L1	205.16	1.30	360.55	2.35	1.01	0.00
			288.44	2 ø 12.5		
				2.45		
				2 ø 12.5		

Lance	Montagem					
	fckj (kgf/cm²)	Beta-a	M pos M neg (kgf.m)	As b As h (cm²)	V máx (tf)	Asw cm²/m
L1	232.27	1.30	1014.06	2.55	1.43	0.00
			288.44	2 ø 12.5		
				2.66		
				3 ø 12.5		

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					Momentos	Armadura	Cortantes	Armadura
				atuantes	longitudinal	atuantes	transversal	
Lance	KB KH	CB CH	S2	Força B Força H (kgf/m)	MB MH (kgf.m)	As b As h (cm²)	VB VH (tf)	Asw cm²/m
L1	0.742	2.050	0.38	10.10	400.20	2.55	0.16	0.00
	0.815	1.375		4.96	196.43	2 ø 12.5	0.08	
						2.66		
						3 ø 12.5		

Verificação do pilar na etapa final

Dados						Resultados		
Pilar	**Seção**	**lib**	**vínc**	**Nd máx**	**MBd topo**	**MBsdtopo**	**Madtopo**	**Processo de Cálculo As b(cm²)**
	(cm)	**esb B**		**Nd mín**	**MBd base**	**MBsdcentro**	**Madcentro**	
				(tf)		**MBsdbase**	**Madbase**	**As h**
		lih	**vínc**	**ni**	**MHd topo**			
		esb H			**MHd base**	**MHsdtopo**	**MB2d**	
				Zr		**MHsdcentro**	**MBcd**	**% armad**
		(cm)			**(kgf.m)**	**MHsdbase**		
						(kgf.m)	**MH2d**	
							MHcd	
							(kgf.m)	
P5		860.00	EL	34.28	221	0	127	2.45
	40.00	74.39		12.11	310	0	64	Msd(x) = 0 kgf.m 2 ø 12.5
	X					0	127	Msd(y) = 12135 kgf.m 4.91
	60.00	430.00	RR	0.07	11576		866	4 ø 12.5
		24.80		0.00	11803	11576	1	Mrd(x) = 0 kgf.m
				0.00		11712	337	Mrd(y) = 16642 kgf.m
Mrd/Msd=1.37		0.4						
						11803	22	

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

Pavimento nivel1

Cálculo dos Pilares Pré-Moldados

nivel1 fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 2 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	**Armazenamento**					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L2	137.40	1.30	360.55	1.81	1.01	0.00
			288.44	2 ø 12.5		

				1.88		
				2 ø 12.5		

Lance	Transporte					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L2	205.16	1.30	360.55	2.35	1.01	0.00
			288.44	2 ø 12.5		
				2.45		
				2 ø 12.5		

Lance	Montagem					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L2	232.27	1.30	1014.06	2.55	1.43	0.00
			288.44	2 ø 12.5		
				2.66		
				3 ø 12.5		

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					**Momentos**	**Armadura**	**Cortantes**	**Armadura**
				atuantes	**longitudinal**	**atuantes**	**transversal**	
Lance	**KB**	**CB**	**S2**	**Força B**	**MB**	**As b**	**VB**	**Asw**
	KH	**CH**		**Força H**	**MH**	**As h**	**VH**	**cm²/m**
				(kgf/m)	**(kgf.m)**	**(cm²)**	**(tf)**	
L2	0.742	2.050	0.81	46.09	392.92	2.55	0.14	0.00
	0.815	1.375		22.62	192.86	2 ø 12.5	0.07	
						2.66		
						3 ø 12.5		

Verificação do pilar na etapa final

Dados						**Resultados**		
Pilar	**Seção**	**lib**	**vínc**	**Nd máx**	**MBd topo**	**MBsdtopo**	**Madtopo**	**Processo de Cálculo As b(cm²)**
	(cm)	**esb B**		**Nd mín**	**MBd base**	**MBsdcentro**	**Madcentro**	
				(tf)		**MBsdbase**	**Madbase**	**As h**
		lih	**vínc**	**ni**	**MHd topo**			
		esb H			**MHd base**	**MHsdtopo**	**MB2d**	

			Zr		**MHsdcentro**	**MBcd**	**% armad**	
		(cm)		**(kgf.m)**	**MHsdbase**			
					(kgf.m)	**MH2d**		
						MHcd		
						(kgf.m)		
P5		860.00 EL	33.34	0	0	318	2.45	
	40.00	74.39	10.25	221	0	159	Msd(x) = 0 kgf.m 2 ø 12.5	
	X				0	318	Msd(y) = 11894 kgf.m 4.91	
	60.00	430.00 RR	0.06	10920		957	4 ø 12.5	
		24.80	0.00	11576	10920	3	Mrd(x) = 0 kgf.m	
			0.00		11314	326	Mrd(y) = 16466 kgf.m	
Mrd/Msd=1.38		0.4						
					11576	20		

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

Cálculo Do Consolo C3

Pavimento nivel1 - Lance 2

fck = 300.00 kgf/cm² Ecs = 260716 kgf/cm²

Cobrimento = 3.00 cm Peso específico = 2500.00 kgf/m³

DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão	**Seção**	**Flexão**	**Torção**	**Verificação axial (compressão)**	**Verificação axial (tração)**	**Final**
trechos						
1	retangular	Md = 5021 kgf.m				As = 3.00 cm²
		As = 2.55 cm²				(4ø10.0 - 3.14 cm²)
1-3	bw = 40.00 cm	A's = 0.00 cm²				d = 46.00 cm
	h = 50.00 cm	yLN = 1.52 cm				% armad. = 0.16
						M = 0 kgf.m
						fiss = 0.00 mm

DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 0 kgf.m As = 0.00 cm² A's = 0.00 cm² yLN = 0.00 cm			
2	Md = 5021 kgf.m As = 2.55 cm² A's = 0.00 cm² yLN = 1.52 cm			As = 3.00 cm² (4ø10.0 - 3.14 cm²) d = 46.00 cm % armad. = 0.16 fiss = 0.00 mm
3	Md = 14666 kgf.m As = 7.78 cm² A's = 0.00 cm² yLN = 4.64 cm			As = 7.78 cm² (4ø16.0 - 8.04 cm²) d = 45.70 cm % armad. = 0.40 fiss = 0.17 mm
4	Md = 17745 kgf.m As = 9.52 cm² A's = 0.00 cm² yLN = 5.68 cm			As = 9.52 cm² (5ø16.0 - 10.05 cm²) d = 45.70 cm % armad. = 0.50 fiss = 0.16 mm

DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

Modelo de cálculo **I**

Inclinação bielas **45**

Verificação de esforços limites

Vão trechos	Cisalhamento	Torção	Cisalhamento + Torção
1	Vd = 15.46 tf	Td = 0 kgf.m	Vd/VRd2 + Td/TRd2 = 0.17
1-3	VRd2 = 93.68 tf	TRd2 = 11770 kgf.m	

Vão	ARMADURA DE CISALHAMENTO				ARMADURA DE TORÇÃO	
trechos	Dados cisalham	Armad. à esquerda	Armad. mínima	Armad. à direita	Dados torção	Armad. de torção
1	d = 46.00 cm		Vmin = 9.30 tf			
	Vc0 = 15.99 tf		Aswmin = 4.63 cm²			
1-3	k = 1.00		(2 ramos)			
			ø 5.0 c/ 8			

9.6 Cálculo do Pilar Pré-Moldado P6

Pavimento Fundação

Cálculo dos Pilares Pré-Moldados

Fundação fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 1 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	Armazenamento					
	fckj (kgf/cm²)	Beta-a	M pos M neg (kgf.m)	As b As h (cm²)	V máx (tf)	Asw cm²/m
L1	137.40	1.30	568.62	1.82	1.26	0.00
			454.90	2 ø 20.0		
				1.90		
				2 ø 20.0		

Lance	Transporte					
	fckj (kgf/cm²)	Beta-a	M pos M neg (kgf.m)	As b As h (cm²)	V máx (tf)	Asw cm²/m
L1	205.16	1.30	568.62	2.37	1.26	0.00
			454.90	2 ø 20.0		
				2.47		
				2 ø 20.0		

Lance	Montagem					
	fckj (kgf/cm²)	Beta-a	M pos M neg	As b As h	V máx (tf)	Asw cm²/m

			(kgf.m)	**(cm²)**		
L1	232.27	1.30	1599.24	2.57	1.79	0.00
			454.90	2 ø 20.0		
				2.69		
				2 ø 20.0		

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					**Momentos**	**Armadura**	**Cortantes**	**Armadura**
				atuantes	**longitudinal**	**atuantes**	**transversal**	
Lance	**KB**	**CB**	**S2**	**Força B**	**MB**	**As b**	**VB**	**Asw**
	KH	**CH**		**Força H**	**MH**	**As h**	**VH**	**cm²/m**
				(kgf/m)	**(kgf.m)**	**(cm²)**	**(tf)**	
L1	0.786	2.050	0.39	11.19	723.56	2.57	0.22	0.00
	0.831	1.375		5.29	342.07	2 ø 20.0	0.10	
						2.69		
						2 ø 20.0		

Verificação do pilar na etapa final

Dados						**Resultados**		
Pilar	**Seção**	**lib**	**vínc**	**Nd máx**	**MBd topo**	**MBsdtopo**	**Madtopo**	**Processo de Cálculo As b(cm²)**
	(cm)	**esb B**		**Nd mín**	**MBd base**	**MBsdcentro**	**Madcentro**	
				(tf)		**MBsdbase**	**Madbase**	**As h**
		lih	**vínc**	**ni**	**MHd topo**			
		esb H			**MHd base**	**MHsdtopo**	**MB2d**	
				Zr		**MHsdcentro**	**MBcd**	**% armad**
		(cm)			**(kgf.m)**	**MHsdbase**		
						(kgf.m)	**MH2d**	
							MHcd	
							(kgf.m)	
P6		1080.00	EL	51.24	289	0	316	(*2) 12.57
	40.00	93.42		16.59	425	0	158	Msd(x) = 4573 kgf.m 4 ø 20.0
	X					0	316	Msd(y) = 32965 kgf.m 9.42
	60.00	380.00	RR	0.10	32519		4407	3 ø 20.0
		21.91		0.00	33262	32519	8	Mrd(x) = 5824 kgf.m
				0.00		32965	550	Mrd(y) = 41980 kgf.m
Mrd/Msd=1.27		1.3						
						33262	89	

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

Pavimento Nivel1

Cálculo dos Pilares Pré-Moldados

Nivel1 fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 2 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	**Armazenamento**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L2	137.40	1.30	568.62	1.82	1.26	0.00
			454.90	2 ø 20.0		
				1.90		
				2 ø 20.0		

Lance	**Transporte**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L2	205.16	1.30	568.62	2.37	1.26	0.00
			454.90	2 ø 20.0		
				2.47		
				2 ø 20.0		

Lance	**Montagem**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L2	232.27	1.30	1599.24	2.57	1.79	0.00
			454.90	2 ø 20.0		
				2.69		
				2 ø 20.0		

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					Momentos	Armadura	Cortantes	Armadura
				atuantes	longitudinal	atuantes	transversal	
Lance	**KB**	**CB**	**S2**	**Força B**	**MB**	**As b**	**VB**	**Asw**
	KH	**CH**		**Força H**	**MH**	**As h**	**VH**	**cm²/m**
				(kgf/m)	**(kgf.m)**	**(cm²)**	**(tf)**	
L2	0.786	2.050	0.82	49.22	710.97	2.57	0.20	0.00
	0.831	1.375		23.27	336.12	2 ø 20.0	0.10	
						2.69		
						2 ø 20.0		

Verificação do pilar na etapa final

Dados						Resultados		
Pilar	**Seção**	**lib**	**vínc**	**Nd máx**	**MBd topo**	**MBsdtopo**	**Madtopo**	**Processo de Cálculo As b(cm²)**
	(cm)	**esb B**		**Nd mín**	**MBd base**	**MBsdcentro**	**Madcentro**	
				(tf)		**MBsdbase**	**Madbase**	**As h**
		lih	**vínc**	**ni**	**MHd topo**			
		esb H			**MHd base**	**MHsdtopo**	**MB2d**	
				Zr		**MHsdcentro**	**MBcd**	**% armad**
		(cm)			**(kgf.m)**	**MHsdbase**		
						(kgf.m)	**MH2d**	
							MHcd	
							(kgf.m)	
P6		1080.00	EL	50.07	86	0	471	(*2) 12.57
	40.00	93.42		15.21	289	0	236	Msd(x) = 4587 kgf.m 4 ø 20.0
	X					0	471	Msd(y) = 32046 kgf.m 9.42
	60.00	380.00	RR	0.10	31338		4340	3 ø 20.0
		21.91		0.00	32519	31338	11	Mrd(x) = 5967 kgf.m
				0.00		32046	535	Mrd(y) = 41686 kgf.m
Mrd/Msd=1.30		1.3						
						32519	82	

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

Cálculo do consolo C2

Pavimento Nivel1 - Lance 2

fck = 300.00 kgf/cm² Ecs = 260716 kgf/cm²

Cobrimento = 3.00 cm Peso específico = 2500.00 kgf/m³

DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1	retangular	Md = 5021 kgf.m				As = 3.00 cm²
		As = 2.55 cm²				(4ø10.0 - 3.14 cm²)
1-3	bw = 40.00 cm	A's = 0.00 cm²				d = 46.00 cm
	h = 50.00 cm	yLN = 1.52 cm				% armad. = 0.16
						M = 0 kgf.m
						fiss = 0.00 mm

DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 0 kgf.m			
	As = 0.00 cm²			
	A's = 0.00 cm²			
	yLN = 0.00 cm			
2	Md = 5021 kgf.m			As = 3.00 cm²
	As = 2.55 cm²			(4ø10.0 - 3.14 cm²)
	A's = 0.00 cm²			d = 46.00 cm
	yLN = 1.52 cm			% armad. = 0.16
				fiss = 0.00 mm
3	Md = 15331 kgf.m			As = 8.15 cm²
	As = 8.15 cm²			(4ø16.0 - 8.04 cm²)
	A's = 0.00 cm²			d = 45.70 cm
	yLN = 4.86 cm			% armad. = 0.40
				fiss = 0.18 mm
4	Md = 18550 kgf.m			As = 9.99 cm²
	As = 9.99 cm²			(5ø16.0 - 10.05 cm²)

A's = 0.00 cm² d = 45.70 cm

yLN = 5.96 cm % armad. = 0.50

fiss = 0.17 mm

DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

Modelo de cálculo **I**

Inclinação bielas **45**

Verificação de esforços limites

Vão trechos	**Cisalhamento**	**Torção**	**Cisalhamento + Torção**
1	Vd = 16.16 tf	Td = 0 kgf.m	Vd/VRd2 + Td/TRd2 = 0.17
1-3	VRd2 = 93.68 tf	TRd2 = 11770 kgf.m	

Vão	**ARMADURA DE CISALHAMENTO**				**ARMADURA DE TORÇÃO**	
trechos	**Dados cisalham**	**Armad. à esquerda**	**Armad. mínima**	**Armad. à direita**	**Dados torção**	**Armad. de torção**
1	d = 46.00 cm		Vmin = 9.30 tf			
	Vc0 = 15.99 tf		Aswmin = 4.63 cm²			
1-3	k = 1.00		(2 ramos)			
			ø 5.0 c/ 8			

Pavimento Nivel 2

Cálculo dos Pilares Pré-Moldados

Nivel 2 fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 3 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	**Armazenamento**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L3	137.40	1.30	568.62	1.82	1.26	0.00
			454.90	2 ø 20.0		

				1.90		
				2 ø 20.0		

Lance	Transporte					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L3	205.16	1.30	568.62	2.37	1.26	0.00
			454.90	2 ø 20.0		
				2.47		
				2 ø 20.0		

Lance	Montagem					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L3	232.27	1.30	1599.24	2.57	1.79	0.00
			454.90	2 ø 20.0		
				2.69		
				2 ø 20.0		

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					**Momentos**	**Armadura**	**Cortantes**	**Armadura**
				atuantes	**longitudinal**	**atuantes**	**transversal**	
Lance	**KB**	**CB**	**S2**	**Força B**	**MB**	**As b**	**VB**	**Asw**
	KH	**CH**		**Força H**	**MH**	**As h**	**VH**	**cm²/m**
				(kgf/m)	**(kgf.m)**	**(cm²)**	**(tf)**	
L3	0.786	2.050	0.87	55.84	410.99	2.57	0.09	0.00
	0.831	1.375		26.40	194.30	2 ø 20.0	0.04	
						2.69		
						2 ø 20.0		

Verificação do pilar na etapa final

Dados						**Resultados**		
Pilar	**Seção**	**lib**	**vínc**	**Nd máx**	**MBd topo**	**MBsdtopo**	**Madtopo**	**Processo de Cálculo As b(cm²)**
	(cm)	**esb B**		**Nd mín**	**MBd base**	**MBsdcentro**	**Madcentro**	
				(tf)		**MBsdbase**	**Madbase**	**As h**
		lih	**vínc**	**ni**	**MHd topo**			
		esb H			**MHd base**	**MHsdtopo**	**MB2d**	

			Zr		**MHsdcentro**	**MBcd**	**% armad**	
		(cm)		**(kgf.m)**	**MHsdbase**			
					(kgf.m)	**MH2d**		
						MHcd		
						(kgf.m)		
P6		1080.00 EL	32.11	0	0	257	12.57	
	40.00	93.42	9.12	86	0	128	Msd(x) = 3497 kgf.m 4 ø 20.0	
	X				0	257	Msd(y) = 40324 kgf.m 9.42	
	60.00	160.00 RR	0.06	40085		3364	3 ø 20.0	
		9.23	0.00	40483	40085	5	Mrd(x) = 3563 kgf.m	
			0.00		40324	78	Mrd(y) = 41083 kgf.m	
Mrd/Msd=1.02		1.3						
					40483	14		

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

9.7 Cálculo do Pilar Pré-Moldado P7

Pavimento Fundação
Cálculo dos Pilares Pré-Moldados

Fundação fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³
Lance 1 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	**Armazenamento**					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L1	137.40	1.30	749.58	1.82	1.45	0.00
			599.66	2 ø 20.0		
				1.90		
				2 ø 20.0		

Lance	**Transporte**					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**

	(kgf/cm²)		M neg (kgf.m)	As h (cm²)	(tf)	cm²/m
L1	205.16	1.30	749.58	2.37	1.45	0.00
			599.66	2 ø 20.0		
				2.47		
				2 ø 20.0		

Lance	Montagem					
	fckj (kgf/cm²)	Beta-a	M pos M neg (kgf.m)	As b As h (cm²)	V máx (tf)	Asw cm²/m
L1	232.27	1.30	2108.19	2.57	2.06	3.91
			599.66	2 ø 20.0		
				2.69		
				2 ø 20.0		

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					Momentos	Armadura	Cortantes	Armadura
				atuantes	longitudinal	atuantes	transversal	
Lance	KB KH	CB CH	S2	Força B Força H (kgf/m)	MB MH (kgf.m)	As b As h (cm²)	VB VH (tf)	Asw cm²/m
L1	0.812	2.050	0.39	11.56	1022.15	2.57	0.27	0.00
	0.843	1.375		5.37	474.51	2 ø 20.0	0.13	
						2.69		
						2 ø 20.0		

Verificação do pilar na etapa final

Dados						Resultados		
Pilar	Seção (cm)	lib esb B	vínc	Nd máx Nd mín (tf)	MBd topo MBd base	MBsdtopo MBsdcentro MBsdbase	Madtopo Madcentro Madbase	Processo de Cálculo As b(cm²) As h
		lih esb H	vínc	ni	MHd topo MHd base	MHsdtopo MHsdcentro MHsdbase	MB2d MBcd	% armad
		(cm)		Zr	(kgf.m)	(kgf.m)	MH2d MHcd (kgf.m)	

P7		1240.00 EL	51.86	304	0	321	(*2) 15.71
	40.00	107.26	17.07	435	0	160	Msd(x) = 7077 kgf.m 5 ø 20.0
	X				0	321	Msd(y) = 33981 kgf.m 9.42
	60.00	300.00 RR	0.10	33365		6906	3 ø 20.0
		17.30	0.00	34392	33365	11	Mrd(x) = 9694 kgf.m
			0.00		33981	348	Mrd(y) = 46546 kgf.m
Mrd/Msd=1.37		1.6					
					34392	59	

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

Pavimento Nivel1

Cálculo dos Pilares Pré-Moldados

Nivel1 fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 2 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	**Armazenamento**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L2	137.40	1.30	749.58	1.82	1.45	0.00
			599.66	2 ø 20.0		
				1.90		
				2 ø 20.0		

Lance	**Transporte**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L2	205.16	1.30	749.58	2.37	1.45	0.00
			599.66	2 ø 20.0		
				2.47		
				2 ø 20.0		

Lance	**Montagem**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg**	**As b As h**	**V máx (tf)**	**Asw cm²/m**

			(kgf.m)	**(cm²)**		
L2	232.27	1.30	2108.19	2.57	2.06	3.91
			599.66	2 ø 20.0		
				2.69		
				2 ø 20.0		

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					**Momentos**	**Armadura**	**Cortantes**	**Armadura**
				atuantes	**longitudinal**	**atuantes**	**transversal**	
Lance	**KB**	**CB**	**S2**	**Força B**	**MB**	**As b**	**VB**	**Asw**
	KH	**CH**		**Força H**	**MH**	**As h**	**VH**	**cm²/m**
				(kgf/m)	**(kgf.m)**	**(cm²)**	**(tf)**	
L2	0.812	2.050	0.81	49.61	1009.15	2.57	0.26	0.00
	0.843	1.375		23.03	468.47	2 ø 20.0	0.12	
						2.69		
						2 ø 20.0		

Verificação do pilar na etapa final

Dados						**Resultados**		
Pilar	**Seção**	**lib**	**vínc**	**Nd máx**	**MBd topo**	**MBsdtopo**	**Madtopo**	**Processo de Cálculo As b(cm²)**
	(cm)	**esb B**		**Nd mín**	**MBd base**	**MBsdcentro**	**Madcentro**	
				(tf)		**MBsdbase**	**Madbase**	**As h**
		lih	**vínc**	**ni**	**MHd topo**			
		esb H			**MHd base**	**MHsdtopo**	**MB2d**	
				Zr		**MHsdcentro**	**MBcd**	**% armad**
		(cm)			**(kgf.m)**	**MHsdbase**		
						(kgf.m)	**MH2d**	
							MHcd	
							(kgf.m)	
P7		1240.00	EL	50.69	177	0	312	(*2) 15.71
	40.00	107.26		16.17	304	0	156	Msd(x) = 6883 kgf.m 5 ø 20.0
	X					0	312	Msd(y) = 32939 kgf.m 9.42
	60.00	300.00	RR	0.10	32299		6717	3 ø 20.0
		17.30		0.00	33365	32299	10	Mrd(x) = 9687 kgf.m
				0.00		32939	338	Mrd(y) = 46354 kgf.m
Mrd/Msd=1.41		1.6						
						33365	54	

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

Cálculo do consolo C2

Pavimento Nivel1 - Lance 2

fck = 300.00 kgf/cm² Ecs = 260716 kgf/cm²
Cobrimento = 3.00 cm Peso específico = 2500.00 kgf/m³

DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1	retangular	Md = 5021 kgf.m				As = 3.00 cm²
		As = 2.55 cm²				(4ø10.0 - 3.14 cm²)
1-3	bw = 40.00 cm	A's = 0.00 cm²				d = 46.00 cm
	h = 50.00 cm	yLN = 1.52 cm				% armad. = 0.16
						M = 0 kgf.m
						fiss = 0.00 mm

DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 0 kgf.m			
	As = 0.00 cm²			
	A's = 0.00 cm²			
	yLN = 0.00 cm			
2	Md = 5021 kgf.m			As = 3.00 cm²
	As = 2.55 cm²			(4ø10.0 - 3.14 cm²)
	A's = 0.00 cm²			d = 46.00 cm
	yLN = 1.52 cm			% armad. = 0.16
				fiss = 0.00 mm
3	Md = 15331 kgf.m			As = 8.15 cm²

	As = 8.15 cm²	(4ø16.0 - 8.04 cm²)
	A's = 0.00 cm²	d = 45.70 cm
	yLN = 4.86 cm	% armad. = 0.40
		fiss = 0.18 mm
4	Md = 18550 kgf.m	As = 9.99 cm²
	As = 9.99 cm²	(5ø16.0 - 10.05 cm²)
	A's = 0.00 cm²	d = 45.70 cm
	yLN = 5.96 cm	% armad. = 0.50
		fiss = 0.17 mm

DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

Modelo de cálculo **I**
Inclinação bielas **45**

Verificação de esforços limites

Vão trechos	**Cisalhamento**	**Torção**	**Cisalhamento + Torção**
1	Vd = 16.16 tf	Td = 0 kgf.m	Vd/VRd2 + Td/TRd2 = 0.17
1-3	VRd2 = 93.68 tf	TRd2 = 11770 kgf.m	

Vão	**ARMADURA DE CISALHAMENTO**				**ARMADURA DE TORÇÃO**	
trechos	**Dados cisalham**	**Armad. à esquerda**	**Armad. mínima**	**Armad. à direita**	**Dados torção**	**Armad. de torção**
1	d = 46.00 cm		Vmin = 9.30 tf			
	Vc0 = 15.99 tf		Aswmin = 4.63 cm²			
1-3	k = 1.00		(2 ramos)			
			ø 5.0 c/ 8			

Pavimento Nivel 2

Cálculo dos Pilares Pré-Moldados

Nivel 2 fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³
Lance 3 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	Armazenamento					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L3	137.40	1.30	749.58	1.82	1.45	0.00
			599.66	2 ø 20.0		
				1.90		
				2 ø 20.0		

Lance	Transporte					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L3	205.16	1.30	749.58	2.37	1.45	0.00
			599.66	2 ø 20.0		
				2.47		
				2 ø 20.0		

Lance	Montagem					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L3	232.27	1.30	2108.19	2.57	2.06	3.91
			599.66	2 ø 20.0		
				2.69		
				2 ø 20.0		

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					Momentos	Armadura	Cortantes	Armadura
				atuantes	**longitudinal**	**atuantes**	**transversal**	
Lance	**KB**	**CB**	**S2**	**Força B**	**MB**	**As b**	**VB**	**Asw**
	KH	**CH**		**Força H**	**MH**	**As h**	**VH**	**cm²/m**
				(kgf/m)	**(kgf.m)**	**(cm²)**	**(tf)**	
L3	0.812	2.050	0.86	57.18	841.71	2.57	0.18	0.00
	0.843	1.375		26.55	390.74	2 ø 20.0	0.08	
						2.69		
						2 ø 20.0		

Verificação do pilar na etapa final

Dados						Resultados		
Pilar	**Seção**	**lib**	**vínc**	**Nd máx**	**MBd topo**	**MBsdtopo**	**Madtopo**	**Processo de Cálculo As b(cm²)**
	(cm)	**esb B**		**Nd mín**	**MBd base**	**MBsdcentro**	**Madcentro**	
				(tf)		**MBsdbase**	**Madbase**	**As h**
		lih	**vínc**	**ni**	**MHd topo**			
		esb H			**MHd base**	**MHsdtopo**	**MB2d**	
				Zr		**MHsdcentro**	**MBcd**	**% armad**
		(cm)			**(kgf.m)**	**MHsdbase**		
						(kgf.m)	**MH2d**	
							MHcd	
							(kgf.m)	
P7		1240.00	EL	33.36	0	0	534	15.71
	40.00	107.26		9.12	177	0	267	Msd(x) = 5732 kgf.m 5 ø 20.0
	X					0	534	Msd(y) = 40900 kgf.m 9.42
	60.00	320.00	RR	0.06	40085		5451	3 ø 20.0
		18.45		0.00	41444	40085	14	Mrd(x) = 6568 kgf.m
				0.00		40900	324	Mrd(y) = 46865 kgf.m
Mrd/Msd=1.15		1.6						
						41444	60	

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

9.8 Cálculo do Pilar Pré-Moldado P8

Pavimento Fundação
Cálculo dos Pilares Pré-Moldados

Fundação fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³
Lance 1 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	**Armazenamento**					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		

L1	137.40	1.30	955.50 764.40	1.82 2 ø 20.0 1.90 2 ø 20.0	1.64	0.00

Lance	**Transporte**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L1	205.16	1.30	955.50 764.40	2.37 2 ø 20.0 2.47 2 ø 20.0	1.64	0.00

Lance	**Montagem**					
	fckj (kgf/cm²)	**Beta-a**	**M pos M neg (kgf.m)**	**As b As h (cm²)**	**V máx (tf)**	**Asw cm²/m**
L1	232.27	1.30	2687.34 764.40	2.57 2 ø 20.0 2.69 2 ø 20.0	2.32	3.91

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					**Momentos**	**Armadura**	**Cortantes**	**Armadura**
				atuantes	**longitudinal**	**atuantes**	**transversal**	
Lance	**KB KH**	**CB CH**	**S2**	**Força B Força H (kgf/m)**	**MB MH (kgf.m)**	**As b As h (cm²)**	**VB VH (tf)**	**Asw cm²/m**
L1	0.820 0.855	2.050 1.375	0.39	11.67 5.44	1329.68 619.95	2.57 2 ø 20.0 2.69 2 ø 20.0	0.32 0.15	0.00

Verificação do pilar na etapa final

Dados						**Resultados**		
Pilar	**Seção (cm)**	**lib esb B**	**vínc**	**Nd máx Nd mín (tf)**	**MBd topo MBd base**	**MBsdtopo MBsdcentro MBsdbase**	**Madtopo Madcentro Madbase**	**Processo de Cálculo As b(cm²) As h**

		lih	**vínc**	**ni**	**MHd topo**			
		esb H			**MHd base**	**MHsdtopo**	**MB2d**	
				Zr		**MHsdcentro**	**MBcd**	**% armad**
		(cm)			**(kgf.m)**	**MHsdbase**		
						(kgf.m)	**MH2d**	
							MHcd	
							(kgf.m)	
P8		1400.00	EL	68.65	349	0	515	15.71
	40.00	121.10		22.67	511	0	257	Msd(x) = 15868 kgf.m 5 ø 20.0
	X					0	515	Msd(y) = 44434 kgf.m 12.57
	60.00	220.00	RR	0.13	43646		15571	4 ø 20.0
		12.69		0.00	44959	43646	39	Mrd(x) = 16526 kgf.m
				0.00		44434	292	Mrd(y) = 46276 kgf.m
Mrd/Msd=1.04		1.8						
						44959	66	

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

Pavimento Nivel1

Cálculo dos Pilares Pré-Moldados

Nivel1 fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 2 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	**Armazenamento**					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L2	137.40	1.30	955.50	1.82	1.64	0.00
			764.40	2 ø 20.0		
				1.90		
				2 ø 20.0		

Lance	**Transporte**					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L2	205.16	1.30	955.50	2.37	1.64	0.00

			764.40	2 ø 20.0		
				2.47		
				2 ø 20.0		

Lance	Montagem fckj (kgf/cm²)	Beta-a	M pos M neg (kgf.m)	As b As h (cm²)	V máx (tf)	Asw cm²/m
L2	232.27	1.30	2687.34	2.57	2.32	3.91
			764.40	2 ø 20.0		
				2.69		
				2 ø 20.0		

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					Momentos	Armadura	Cortantes	Armadura
				atuantes	longitudinal	atuantes	transversal	
Lance	KB KH	CB CH	S2	Força B Força H (kgf/m)	MB MH (kgf.m)	As b As h (cm²)	VB VH (tf)	Asw cm²/m
L2	0.820	2.050	0.79	48.53	1316.55	2.57	0.31	0.00
	0.855	1.375		22.63	613.83	2 ø 20.0	0.14	
						2.69		
						2 ø 20.0		

Verificação do pilar na etapa final

Dados						Resultados		
Pilar	Seção (cm)	lib esb B	vínc	Nd máx Nd mín (tf)	MBd topo MBd base	MBsdtopo MBsdcentro MBsdbase	Madtopo Madcentro Madbase	Processo de Cálculo As b(cm²) As h
		lih esb H	vínc	ni	MHd topo MHd base	MHsdtopo MHsdcentro MHsdbase	MB2d MBcd	% armad
		(cm)		Zr	(kgf.m)	(kgf.m)	MH2d MHcd (kgf.m)	
P8		1400.00	EL	67.48	275	0	236	15.71
	40.00	121.10		22.25	349	0	118	Msd(x) = 15395 kgf.m 5 ø 20.0
	X					0	236	Msd(y) = 43389 kgf.m 12.57

	60.00	220.00	RR	0.13	43004		15259	4 ø 20.0		
		12.69		0.00	43646	43004	17	Mrd(x) = 16420 kgf.m		
				0.00		43389	286	Mrd(y)	=	46279 kgf.m
Mrd/Msd=1.07		1.8								
						43646	62			

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

Cálculo do consolo C2

Pavimento Nivel1 - Lance 2

fck = 300.00 kgf/cm² Ecs = 260716 kgf/cm²

Cobrimento = 3.00 cm Peso específico = 2500.00 kgf/m³

DIMENSIONAMENTO DA ARMADURA POSITIVA

Vão trechos	Seção	Flexão	Torção	Verificação axial (compressão)	Verificação axial (tração)	Final
1	retangular	Md = 5021 kgf.m				As = 3.00 cm²
		As = 2.55 cm²				(4ø10.0 - 3.14 cm²)
1-3	bw = 40.00 cm	A's = 0.00 cm²				d = 46.00 cm
	h = 50.00 cm	yLN = 1.52 cm				% armad. = 0.16
						M = 0 kgf.m
						fiss = 0.00 mm

DIMENSIONAMENTO DA ARMADURA NEGATIVA

Nó	Flexão	Verificação axial (compressão)	Verificação axial (tração)	Final
1	Md = 0 kgf.m			
	As = 0.00 cm²			
	A's = 0.00 cm²			
	yLN = 0.00 cm			
2	Md = 5021 kgf.m			As = 3.00 cm²

	As = 2.55 cm²	(4ø10.0 - 3.14 cm²)
	A's = 0.00 cm²	d = 46.00 cm
	yLN = 1.52 cm	% armad. = 0.16
		fiss = 0.00 mm
3	Md = 15331 kgf.m	As = 8.15 cm²
	As = 8.15 cm²	(4ø16.0 - 8.04 cm²)
	A's = 0.00 cm²	d = 45.70 cm
	yLN = 4.86 cm	% armad. = 0.40
		fiss = 0.18 mm
4	Md = 18550 kgf.m	As = 9.99 cm²
	As = 9.99 cm²	(5ø16.0 - 10.05 cm²)
	A's = 0.00 cm²	d = 45.70 cm
	yLN = 5.96 cm	% armad. = 0.50
		fiss = 0.17 mm

DIMENSIONAMENTO DA ARMADURA TRANSVERSAL

Modelo de cálculo **I**

Inclinação bielas **45**

Verificação de esforços limites

Vão trechos	**Cisalhamento**	**Torção**	**Cisalhamento + Torção**
1	Vd = 16.16 tf	Td = 0 kgf.m	Vd/VRd2 + Td/TRd2 = 0.17
1-3	VRd2 = 93.68 tf	TRd2 = 11770 kgf.m	

Vão	**ARMADURA DE CISALHAMENTO**				**ARMADURA DE TORÇÃO**	
trechos	**Dados cisalham**	**Armad. à esquerda**	**Armad. mínima**	**Armad. à direita**	**Dados torção**	**Armad. de torção**
1	d = 46.00 cm		Vmin = 9.30 tf			
	Vc0 = 15.99 tf		Aswmin = 4.63 cm²			
1-3	k = 1.00		(2 ramos)			
			ø 5.0 c/ 8			

Pavimento Nivel 2

Cálculo dos Pilares Pré-Moldados

Nivel 2 fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³
Lance 3 cobr = 3.00 cm

Verificação do pilar isolado nas etapas de armazenamento, transporte e montagem

Lance	**Armazenamento**					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L3	137.40	1.30	955.50	1.82	1.64	0.00
			764.40	2 ø 20.0		
				1.90		
				2 ø 20.0		

Lance	**Transporte**					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L3	205.16	1.30	955.50	2.37	1.64	0.00
			764.40	2 ø 20.0		
				2.47		
				2 ø 20.0		

Lance	**Montagem**					
	fckj	**Beta-a**	**M pos**	**As b**	**V máx**	**Asw**
	(kgf/cm²)		**M neg**	**As h**	**(tf)**	**cm²/m**
			(kgf.m)	**(cm²)**		
L3	232.27	1.30	2687.34	2.57	2.32	3.91
			764.40	2 ø 20.0		
				2.69		
				2 ø 20.0		

Verificação do pilar isolado na etapa de montagem devido aos esforços de vento

Forças devido ao vento					**Momentos**	**Armadura**	**Cortantes**	**Armadura**
				atuantes	**longitudinal**	**atuantes**	**transversal**	
Lance	**KB**	**CB**	**S2**	**Força B**	**MB**	**As b**	**VB**	**Asw**
	KH	**CH**		**Força H**	**MH**	**As h**	**VH**	**cm²/m**

				(kgf/m)	**(kgf.m)**	**(cm²)**	**(tf)**	
L3	0.820	2.050	0.86	56.78	1253.71	2.57	0.27	0.00
	0.855	1.375		26.47	584.53	2 ø 20.0	0.13	
						2.69		
						2 ø 20.0		

Verificação do pilar na etapa final

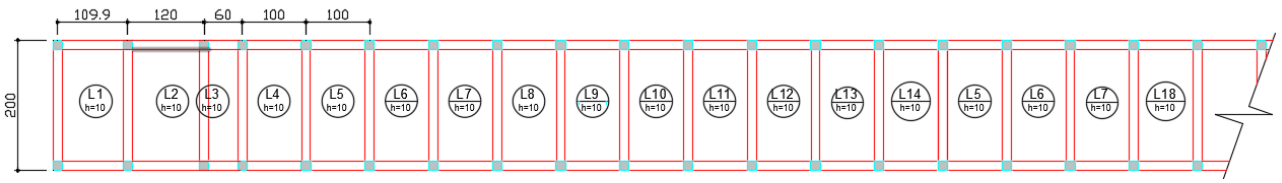
Dados						**Resultados**		
Pilar	**Seção**	**lib**	**vínc**	**Nd máx**	**MBd topo**	**MBsdtopo**	**Madtopo**	**Processo de Cálculo As b(cm²)**
	(cm)	**esb B**		**Nd mín**	**MBd base**	**MBsdcentro**	**Madcentro**	
				(tf)		**MBsdbase**	**Madbase**	**As h**
		lih	**vínc**	**ni**	**MHd topo**			
		esb H			**MHd base**	**MHsdtopo**	**MB2d**	
				Zr		**MHsdcentro**	**MBcd**	**% armad**
		(cm)			**(kgf.m)**	**MHsdbase**		
						(kgf.m)	**MH2d**	
							MHcd	
							(kgf.m)	
P8		1400.00	EL	34.61	0	0	758	(*2) 15.71
	40.00	121.10		9.12	275	0	379	Msd(x) = 8338 kgf.m 5 ø 20.0
	X					0	758	Msd(y) = 41836 kgf.m 12.57
	60.00	480.00	RR	0.07	40085		7931	4 ø 20.0
		27.68		0.00	43004	40085	28	Mrd(x) = 10008 kgf.m
				0.00		41836	756	Mrd(y) = 50216 kgf.m
Mrd/Msd=1.20		1.8						
						43004	151	

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

10 LAJES

As lajes serão em concreto pré-moldado, sendo montadas inicialmente as pré-lajes, lançadas as armaduras de distribuição e finalmente receberá a concretagem da capa in loco, o concreto será Fck 30 Mpa no mínimo e as armaduras CA-50-A.

10.1 Laje da passarela



Planta da laje (parcial)

laje fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 1 cobr = 2.50 cm

Seção (cm)							**Cargas (kgf/m²)**		
Laje	**Tipo**	**H**	**ee**	**enx**	**eex**	**Peso**	**Acidental**	**Paredes**	**Total**
			ec	**eny**	**eey**	**Próprio**	**Revestimento**	**Outras**	
L1	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L2	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L3	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L4	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L5	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L6	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L7	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L8	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L9	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L10	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L11	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L12	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L13	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L14	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L15	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L16	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00

			4.00				175.00	0.00	
L17	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L18	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L19	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L20	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L21	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L22	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L23	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L24	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L25	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L26	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L27	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L28	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L29	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	

Resultados da Laje

laje fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 1 cobr = 2.50 cm

Nome	**Espessura (cm)**	**Carga (kgf/m²)**	**Mdx (kgf.m/m)**	**Mdy (kgf.m/m)**	**Asx**	**Asy**	**Flecha (cm)**
L1	10	925.00	157		As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)		-0.08
L2	10	925.00	94		As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)		-0.09
L3	10	925.00			As = 0.38 cm²/N		-0.07

				(TR 08644 - 0.28 cm²/N)	
				(1ø6.3 c/N - 0.31 cm²/N)	
L4	10	925.00	51	As = 0.38 cm²/N	-0.07
				(TR 08644 - 0.28 cm²/N)	
				(1ø6.3 c/N - 0.31 cm²/N)	
L5	10	925.00	50	As = 0.38 cm²/N	-0.08
				(TR 08644 - 0.28 cm²/N)	
				(1ø6.3 c/N - 0.31 cm²/N)	
L6	10	925.00	44	As = 0.38 cm²/N	-0.08
				(TR 08644 - 0.28 cm²/N)	
				(1ø6.3 c/N - 0.31 cm²/N)	
L7	10	925.00	43	As = 0.38 cm²/N	-0.08
				(TR 08644 - 0.28 cm²/N)	
				(1ø6.3 c/N - 0.31 cm²/N)	
L8	10	925.00	43	As = 0.38 cm²/N	-0.08
				(TR 08644 - 0.28 cm²/N)	
				(1ø6.3 c/N - 0.31 cm²/N)	
L9	10	925.00	43	As = 0.38 cm²/N	-0.08
				(TR 08644 - 0.28 cm²/N)	
				(1ø6.3 c/N - 0.31 cm²/N)	
L10	10	925.00	43	As = 0.38 cm²/N	-0.08
				(TR 08644 - 0.28 cm²/N)	
				(1ø6.3 c/N - 0.31 cm²/N)	
L11	10	925.00	43	As = 0.38 cm²/N	-0.08
				(TR 08644 - 0.28 cm²/N)	
				(1ø6.3 c/N - 0.31 cm²/N)	
L12	10	925.00	43	As = 0.38 cm²/N	-0.08
				(TR 08644 - 0.28 cm²/N)	
				(1ø6.3 c/N - 0.31 cm²/N)	
L13	10	925.00	43	As = 0.38 cm²/N	-0.08
				(TR 08644 - 0.28 cm²/N)	
				(1ø6.3 c/N - 0.31 cm²/N)	
L14	10	925.00	43	As = 0.38 cm²/N	-0.08
				(TR 08644 - 0.28 cm²/N)	
				(1ø6.3 c/N - 0.31 cm²/N)	
L15	10	925.00	43	As = 0.38 cm²/N	-0.08
				(TR 08644 - 0.28 cm²/N)	
				(1ø6.3 c/N - 0.31 cm²/N)	
L16	10	925.00	43	As = 0.38 cm²/N	-0.08
				(TR 08644 - 0.28 cm²/N)	
				(1ø6.3 c/N - 0.31 cm²/N)	
L17	10	925.00	43	As = 0.38 cm²/N	-0.08
				(TR 08644 - 0.28 cm²/N)	
				(1ø6.3 c/N - 0.31 cm²/N)	

L18	10	925.00	43	As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)	-0.08
L19	10	925.00	43	As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)	-0.08
L20	10	925.00	43	As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)	-0.08
L21	10	925.00	43	As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)	-0.08
L22	10	925.00	43	As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)	-0.08
L23	10	925.00	43	As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)	-0.08
L24	10	925.00	43	As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)	-0.08
L25	10	925.00	43	As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)	-0.08
L26	10	925.00	43	As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)	-0.08
L27	10	925.00	44	As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)	-0.08
L28	10	925.00	57	As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)	-0.08
L29	10	925.00	124	As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)	-0.07

ARMADURA NEGATIVA

Dados				**Resultados**			
Viga	**Trecho**	**Laje 1**	**Laje 2**	**Reação 1 (kgf.m/m)**	**Reação 2 (kgf.m/m)**	**Md (kgf.m/m)**	**As (cm²)**
V4	1	L1	L2	490	444	-166	As = 1.65 cm²/m (ø6.3 c/18 - 1.73 cm²/m)
V5	1	L2	L3	438	228	-133	As = 1.65 cm²/m

							(ø6.3 c/18 - 1.73 cm²/m)
V6	1	L3	L4	213	371	-114	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V7	1	L4	L5	364	365	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V8	1	L5	L6	370	367	-105	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V9	1	L6	L7	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V10	1	L7	L8	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V11	1	L8	L9	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V12	1	L9	L10	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V13	1	L10	L11	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V14	1	L11	L12	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V15	1	L12	L13	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V16	1	L13	L14	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V17	1	L14	L15	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V18	1	L15	L16	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V19	1	L16	L17	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V20	1	L17	L18	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V21	1	L18	L19	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V22	1	L19	L20	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V23	1	L20	L21	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V24	1	L21	L22	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V25	1	L22	L23	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V26	1	L23	L24	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V27	1	L24	L25	368	368	-106	As = 1.65 cm²/m

							(ø6.3 c/18 - 1.73 cm²/m)
V28	1	L25	L26	368	367	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V29	1	L26	L27	368	368	-106	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V30	1	L27	L28	367	373	-107	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)
V31	1	L28	L29	362	421	-117	As = 1.65 cm²/m
							(ø6.3 c/18 - 1.73 cm²/m)

Cálculos das Lajes

laje fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 1 cobr = 2.50 cm

ARMADURAS POSITIVAS (LAJE)

Laje negativo	**Direção**	**Momento positivo**				**Momento**
	Cisalhamento			**Armadura**	**Armadura**	
Verificação	**Verificação**	**Seção inferior**	**Flexão superior**	**Verificação axial (compressão)**	**Verificação axial (tração)**	**Seção Flexão axial axial**
L1	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N			bw = 25.0 cm h = 10.0 cm
L2	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N			bw = 25.0 cm h = 10.0 cm
L3	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N			bw = 25.0 cm h = 10.0 cm
L4	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N			bw = 25.0 cm h = 10.0 cm

L5	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L6	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L7	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L8	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L9	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L10	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L11	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L12	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L13	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N	bw = 25.0 cm h = 10.0 cm

			A's = 0.00 cm²/N	
L14	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L15	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L16	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L17	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L18	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L19	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L20	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L21	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L22	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N	bw = 25.0 cm h = 10.0 cm

			As = 0.37 cm²/N A's = 0.00 cm²/N	
L23	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L24	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L25	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L26	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L27	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L28	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L29	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm

ARMADURAS NEGATIVAS (NA CONTINUIDADE)

Viga	**Laje 1**	**Momento negativo**		
Momento positivo				**Armaduras**
		Seção	**Flexão**	**Flexo**
	Flexo	**Seção**	**Flexão**	**Flexo**

Trecho	Flexo Laje 2 tração tração	finais		compressão compressão
V4	L1	bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L2		As = 1.65 cm²/m A's = 0.00 cm²/m	
V5	L2	bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L3		As = 1.65 cm²/m A's = 0.00 cm²/m	
V6	L3	bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L4		As = 1.65 cm²/m A's = 0.00 cm²/m	
V7	L4	bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L5		As = 1.65 cm²/m A's = 0.00 cm²/m	
V8	L5	bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L6		As = 1.65 cm²/m A's = 0.00 cm²/m	
V9	L6	bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L7		As = 1.65 cm²/m A's = 0.00 cm²/m	
V10	L7	bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L8		As = 1.65 cm²/m A's = 0.00 cm²/m	
V11	L8	bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L9		As = 1.65 cm²/m A's = 0.00 cm²/m	

V12	L9	bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L10		As = 1.65 cm²/m A's = 0.00 cm²/m	
V13	L10	bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L11		As = 1.65 cm²/m A's = 0.00 cm²/m	
V14	L11	bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L12		As = 1.65 cm²/m A's = 0.00 cm²/m	
V15	L12	bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L13		As = 1.65 cm²/m A's = 0.00 cm²/m	
V16	L13	bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L14		As = 1.65 cm²/m A's = 0.00 cm²/m	
V17	L14	bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L15		As = 1.65 cm²/m A's = 0.00 cm²/m	
V18	L15	bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L16		As = 1.65 cm²/m A's = 0.00 cm²/m	
V19	L16	bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L17		As = 1.65 cm²/m A's = 0.00 cm²/m	
V20	L17	bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L18		As = 1.65 cm²/m A's = 0.00 cm²/m	

V21	L18	bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
		h = 10.0 cm		h = 10.0 cm
1	L19		As = 1.65 cm²/m	
			A's = 0.00 cm²/m	
V22	L19	bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
		h = 10.0 cm		h = 10.0 cm
1	L20		As = 1.65 cm²/m	
			A's = 0.00 cm²/m	
V23	L20	bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
		h = 10.0 cm		h = 10.0 cm
1	L21		As = 1.65 cm²/m	
			A's = 0.00 cm²/m	
V24	L21	bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
		h = 10.0 cm		h = 10.0 cm
1	L22		As = 1.65 cm²/m	
			A's = 0.00 cm²/m	
V25	L22	bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
		h = 10.0 cm		h = 10.0 cm
1	L23		As = 1.65 cm²/m	
			A's = 0.00 cm²/m	
V26	L23	bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
		h = 10.0 cm		h = 10.0 cm
1	L24		As = 1.65 cm²/m	
			A's = 0.00 cm²/m	
V27	L24	bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
		h = 10.0 cm		h = 10.0 cm
1	L25		As = 1.65 cm²/m	
			A's = 0.00 cm²/m	
V28	L25	bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
		h = 10.0 cm		h = 10.0 cm
1	L26		As = 1.65 cm²/m	
			A's = 0.00 cm²/m	
V29	L26	bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
		h = 10.0 cm		h = 10.0 cm
1	L27		As = 1.65 cm²/m	

				A's = 0.00 cm²/m	
V30	L27		bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
			h = 10.0 cm		h = 10.0 cm
1	L28			As = 1.65 cm²/m	
				A's = 0.00 cm²/m	
V31	L28		bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
			h = 10.0 cm		h = 10.0 cm
1	L29			As = 1.65 cm²/m	
				A's = 0.00 cm²/m	

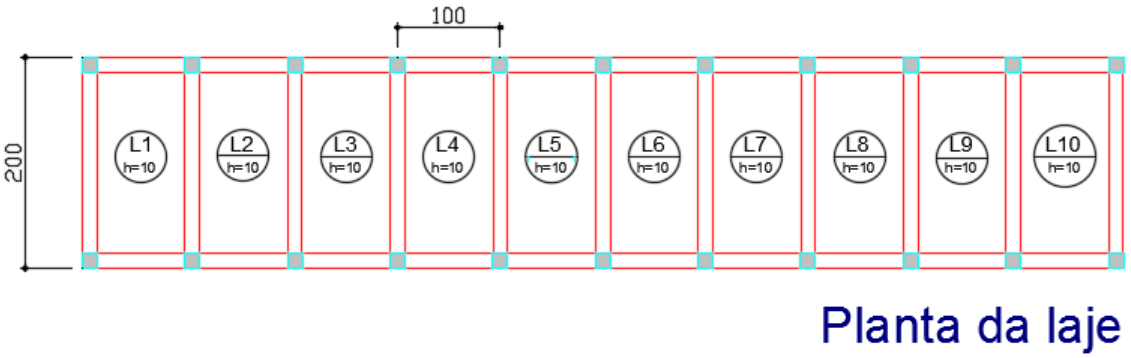
Vigotas pré-moldadas - Lajes do pavimento laje

Laje	Vigota	Quant	Compr. (cm)	Compr. Adic. (cm)	Treliça Tipo	Compr. (cm)	Armadura adicional Armadura	Compr. (cm)	Gancho (cm)	Total (cm)
L1	VT1a	8	115	3	TR 08644	121	1ø6.3 c/N	121	7	132
L2	VT2a	8	120	3	TR 08644	126	1ø6.3 c/N	126	7	137
L3	VT3a	8	60	3	TR 08644	66	1ø6.3 c/N	66	7	77
L4	VT4a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L5	VT5a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L6	VT6a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L7	VT7a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L8	VT8a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L9	VT9a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L10	VT10a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L11	VT11a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L12	VT12a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L13	VT13a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L14	VT14a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L15	VT15a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L16	VT16a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L17	VT17a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L18	VT18a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L19	VT19a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L20	VT20a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L21	VT21a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L22	VT22a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L23	VT23a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117

L24	VT24a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L25	VT25a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L26	VT26a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L27	VT27a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L28	VT28a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L29	VT29a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117

Laje	**bv**	**hv**	**Treliça**	**Altura**	**Base**	**Armaduras treliça (mm)**			**S**
	(cm)	**(cm)**		**(cm)**	**(cm)**	**øsup**	**ødiag**	**øinf**	**(cm)**
L1	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L2	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L3	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L4	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L5	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L6	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L7	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L8	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L9	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L10	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L11	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L12	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L13	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L14	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L15	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L16	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L17	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L18	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L19	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L20	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L21	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L22	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L23	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L24	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L25	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L26	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L27	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L28	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L29	25	4	TR 08644	8	8	6.0	4.2	4.2	20

10.2 Lajes da rampa 1, 2 e 3



laje fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 1 cobr = 2.50 cm

Seção (cm)							**Cargas (kgf/m²)**		
Laje	**Tipo**	**H**	**ee**	**enx**	**eex**	**Peso**	**Acidental**	**Paredes**	**Total**
			ec	**eny**	**eey**	**Próprio**	**Revestimento**	**Outras**	
L1	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L2	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L3	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L4	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L5	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L6	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L7	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L8	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L9	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L10	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	

Resultados da Laje

laje fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 1 cobr = 2.50 cm

Nome	Espessura (cm)	Carga (kgf/m²)	Mdx (kgf.m/m)	Mdy (kgf.m/m)	Asx	Asy	Flecha (cm)
L1	10	925.00	124		As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)		-0.07
L2	10	925.00	57		As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)		-0.08
L3	10	925.00	44		As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)		-0.08
L4	10	925.00	43		As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)		-0.08
L5	10	925.00	43		As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)		-0.08
L6	10	925.00	43		As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)		-0.08
L7	10	925.00	43		As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)		-0.08
L8	10	925.00	44		As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)		-0.08
L9	10	925.00	57		As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)		-0.08
L10	10	925.00	124		As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)		-0.07

ARMADURA NEGATIVA

Dados				Resultados			
Viga	**Trecho**	**Laje 1**	**Laje 2**	**Reação 1 (kgf.m/m)**	**Reação 2 (kgf.m/m)**	**Md (kgf.m/m)**	**As (cm²)**
V4	1	L1	L2	421	362	-117	As = 1.65 cm²/m (ø6.3 c/18 - 1.73 cm²/m)
V5	1	L2	L3	373	367	-107	As = 1.65 cm²/m (ø6.3 c/18 - 1.73 cm²/m)
V6	1	L3	L4	368	368	-106	As = 1.65 cm²/m (ø6.3 c/18 - 1.73 cm²/m)
V7	1	L4	L5	367	368	-106	As = 1.65 cm²/m (ø6.3 c/18 - 1.73 cm²/m)
V8	1	L5	L6	368	368	-106	As = 1.65 cm²/m (ø6.3 c/18 - 1.73 cm²/m)
V9	1	L6	L7	368	367	-106	As = 1.65 cm²/m (ø6.3 c/18 - 1.73 cm²/m)
V10	1	L7	L8	368	368	-106	As = 1.65 cm²/m (ø6.3 c/18 - 1.73 cm²/m)
V11	1	L8	L9	367	373	-107	As = 1.65 cm²/m (ø6.3 c/18 - 1.73 cm²/m)
V12	1	L9	L10	362	421	-117	As = 1.65 cm²/m (ø6.3 c/18 - 1.73 cm²/m)

Cálculos das Lajes

laje fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 1 cobr = 2.50 cm

ARMADURAS POSITIVAS (LAJE)

Laje	Direção	Momento positivo				Momento negativo
	Cisalhamento			Armadura	Armadura	
Verificação	**Verificação**	**Seção inferior**	**Flexão superior**	**Verificação axial (compressão)**	**Verificação axial (tração)**	**Seção Flexão**
L1	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N			bw = 25.0 cm h = 10.0 cm
L2	X	bw = 25.0 cm	Md = 126 kgf.m/N			bw = 25.0 cm

		h = 10.0 cm		h = 10.0 cm
			As = 0.37 cm²/N	
			A's = 0.00 cm²/N	
L3	X	bw = 25.0 cm	Md = 126 kgf.m/N	bw = 25.0 cm
		h = 10.0 cm		h = 10.0 cm
			As = 0.37 cm²/N	
			A's = 0.00 cm²/N	
L4	X	bw = 25.0 cm	Md = 126 kgf.m/N	bw = 25.0 cm
		h = 10.0 cm		h = 10.0 cm
			As = 0.37 cm²/N	
			A's = 0.00 cm²/N	
L5	X	bw = 25.0 cm	Md = 126 kgf.m/N	bw = 25.0 cm
		h = 10.0 cm		h = 10.0 cm
			As = 0.37 cm²/N	
			A's = 0.00 cm²/N	
L6	X	bw = 25.0 cm	Md = 126 kgf.m/N	bw = 25.0 cm
		h = 10.0 cm		h = 10.0 cm
			As = 0.37 cm²/N	
			A's = 0.00 cm²/N	
L7	X	bw = 25.0 cm	Md = 126 kgf.m/N	bw = 25.0 cm
		h = 10.0 cm		h = 10.0 cm
			As = 0.37 cm²/N	
			A's = 0.00 cm²/N	
L8	X	bw = 25.0 cm	Md = 126 kgf.m/N	bw = 25.0 cm
		h = 10.0 cm		h = 10.0 cm
			As = 0.37 cm²/N	
			A's = 0.00 cm²/N	
L9	X	bw = 25.0 cm	Md = 126 kgf.m/N	bw = 25.0 cm
		h = 10.0 cm		h = 10.0 cm
			As = 0.37 cm²/N	
			A's = 0.00 cm²/N	
L10	X	bw = 25.0 cm	Md = 126 kgf.m/N	bw = 25.0 cm
		h = 10.0 cm		h = 10.0 cm
			As = 0.37 cm²/N	
			A's = 0.00 cm²/N	

ARMADURAS NEGATIVAS (NA CONTINUIDADE)

Viga	**Laje 1**	**Momento negativo**		
	Momento positivo			
	Armaduras			
		Seção	**Flexão**	**Flexo**
	Flexo	**Seção**	**Flexão**	**Flexo**
	Flexo	**finais**		
Trecho	**Laje 2**			**compressão**
	tração			**compressão**
	tração			
V4	L1	bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
		h = 10.0 cm		h = 10.0 cm
1	L2		As = 1.65 cm²/m	
			A's = 0.00 cm²/m	
V5	L2	bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
		h = 10.0 cm		h = 10.0 cm
1	L3		As = 1.65 cm²/m	
			A's = 0.00 cm²/m	
V6	L3	bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
		h = 10.0 cm		h = 10.0 cm
1	L4		As = 1.65 cm²/m	
			A's = 0.00 cm²/m	
V7	L4	bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
		h = 10.0 cm		h = 10.0 cm
1	L5		As = 1.65 cm²/m	
			A's = 0.00 cm²/m	
V8	L5	bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
		h = 10.0 cm		h = 10.0 cm
1	L6		As = 1.65 cm²/m	
			A's = 0.00 cm²/m	
V9	L6	bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
		h = 10.0 cm		h = 10.0 cm
1	L7		As = 1.65 cm²/m	
			A's = 0.00 cm²/m	
V10	L7	bw = 100.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm
		h = 10.0 cm		h = 10.0 cm
1	L8		As = 1.65 cm²/m	

				A's = 0.00 cm²/m	
V11	L8		bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L9			As = 1.65 cm²/m A's = 0.00 cm²/m	
V12	L9		bw = 100.0 cm h = 10.0 cm	Md = 502 kgf.m/m	bw = 100.0 cm h = 10.0 cm
1	L10			As = 1.65 cm²/m A's = 0.00 cm²/m	

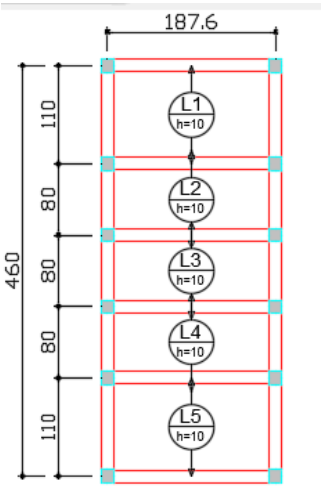
Vigotas pré-moldadas - Lajes do pavimento laje

Laje	Vigota	Quant	Compr. (cm)	Compr. Adic. (cm)	Treliça Tipo	Compr. (cm)	Armadura adicional Armadura	Compr. (cm)	Gancho (cm)	Total (cm)
L1	VT1a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L2	VT2a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L3	VT3a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L4	VT4a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L5	VT5a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L6	VT6a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L7	VT7a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L8	VT8a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L9	VT9a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117
L10	VT10a	8	100	3	TR 08644	106	1ø6.3 c/N	106	7	117

Laje	bv (cm)	hv (cm)	Treliça	Altura (cm)	Base (cm)	Armaduras treliça (mm) øsup	ødiag	øinf	S (cm)
L1	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L2	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L3	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L4	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L5	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L6	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L7	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L8	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L9	25	4	TR 08644	8	8	6.0	4.2	4.2	20

L10	25	4	TR 08644	8	8	6.0	4.2	4.2	20

10.3 Laje dos patamares 2 e 3



Planta da laje

laje fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³

Lance 1 cobr = 2.50 cm

Seção (cm)							**Cargas (kgf/m²)**		
Laje	**Tipo**	**H**	**ee**	**enx**	**eex**	**Peso**	**Acidental**	**Paredes**	**Total**
			ec	**eny**	**eey**	**Próprio**	**Revestimento**	**Outras**	
L1	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L2	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L3	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L4	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	
L5	Painel maciço 1D	10	6.00	25.00	0.00	250.00	500.00	0.00	925.00
			4.00				175.00	0.00	

Resultados da Laje

laje fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³
Lance 1 cobr = 2.50 cm

Nome	Espessura (cm)	Carga (kgf/m²)	Mdx (kgf.m/m)	Mdy (kgf.m/m)	Asx	Asy	Flecha (cm)
L1	10	925.00	180		As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)		-0.07
L2	10	925.00	95		As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)		-0.07
L3	10	925.00	95		As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)		-0.06
L4	10	925.00	95		As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)		-0.07
L5	10	925.00	180		As = 0.38 cm²/N (TR 08644 - 0.28 cm²/N) (1ø6.3 c/N - 0.31 cm²/N)		-0.07

Cálculos das Lajes

laje fck = 300.00 kgf/cm² E = 260716 kgf/cm² Peso Espec = 2500.00 kgf/m³
Lance 1 cobr = 2.50 cm

ARMADURAS POSITIVAS (LAJE)

Laje	Direção	Momento positivo				Momento negativo
	Cisalhamento			Armadura	Armadura	
Verificação	Verificação	Seção inferior	Flexão superior	Verificação axial (compressão)	Verificação axial (tração)	Seção Flexão
L1	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N			bw = 25.0 cm h = 10.0 cm

L2	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L3	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L4	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm
L5	X	bw = 25.0 cm h = 10.0 cm	Md = 126 kgf.m/N As = 0.37 cm²/N A's = 0.00 cm²/N	bw = 25.0 cm h = 10.0 cm

Vigotas pré-moldadas - Lajes do pavimento laje

Laje	Vigota	Quant	Compr. (cm)	Compr. Adic. (cm)	Treliça Tipo	Compr. (cm)	Armadura adicional Armadura	Compr. (cm)	Gancho (cm)	Total (cm)
L1	VT1a	8	110	3	TR 08644	116	1ø6.3 c/N	116	7	127
L2	VT2a	8	80	3	TR 08644	86	1ø6.3 c/N	86	7	97
L3	VT3a	8	80	3	TR 08644	86	1ø6.3 c/N	86	7	97
L4	VT4a	8	80	3	TR 08644	86	1ø6.3 c/N	86	7	97
L5	VT5a	8	110	3	TR 08644	116	1ø6.3 c/N	116	7	127

Laje	bv (cm)	hv (cm)	Treliça	Altura (cm)	Base (cm)	Armaduras treliça (mm) øsup	ødiag	øinf	S (cm)
L1	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L2	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L3	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L4	25	4	TR 08644	8	8	6.0	4.2	4.2	20
L5	25	4	TR 08644	8	8	6.0	4.2	4.2	20

ITAMAR FÉLIX DA SILVA

Eng. Civil CREA 71.683-D/PR

Maringá 08 de janeiro de 2020

Código:	Nº de páginas:	Emissão:
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Objetivo:

MEMORIAL DESCRITIVO PARA ESTRUTURA DE CONCRETO - CONFORME CONSTRUÍDO

Documentos de Referência:

Documentos Resultantes:

Observações:

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1 INTRODUÇÃO

Memorial descritivo para passarela mista em concreto pré-moldado e estrutura metálica, em Rondonópolis Mt.

-**Passarela 6**, - KM 202 + 700 ;

2 SISTEMA ESTRUTURAL ADOTADO

As passarelas serão mistas em concreto pré-moldado e Estrutura metálica, sendo Fundação em bloco em concreto pré-moldado sobre estacas hélice contínua, Pilares em concreto pré-moldado, pisos em laje Steel Deck. As estruturas de rampas e passarelas serão em estrutura metálica treliçada.

3 PROJETO GEOMÉTRICO DAS PASSAREALAS.

AS RAMPAS terão largura de 2,00 metros com inclinação de 8,0% com patamares de 1,20 metros de comprimento a cada 10 metros de rampa percorrido, Guarda corpo nas laterais com 1,15 metros de altura e corrimão com altura de 0,92 metros.

AS PASSARELAS terão forma de caixão com largura de 2,00 metros e altura de 3,00 metros , sendo utilizado seu interior como passarela, receberá proteção lateral com tela artística até 2,00 metros de altura e corrimão na altura de 0,92 metros.

4 ESTRUTURA DE CONCRETO

4.1 Estacas

- Estacas do tipo Hélice Contínua;
- Concreto fck 20 Mpa;
- Armaduras longitudinais e estribos helicoidal CA-50-A;
- Cobrimento mínimo da armadura 4,0 cm;
- Consumo mínimo de cimento 400,00 kgf/m3
- Fator água cimento A/C=0,60
- Abatimanto Slump test 22 ± 3cm.

4.2 Blocos Pré-moldados

Os Blocos serão em concreto pré-moldados tipo Cálice, com nicho do tipo Liso e profundidade de acordo com projeto, utilizar concreto de Fck 30,0Mpa no mínimo, armaduras longitudinais em aço CA-50-A, e estribos em aço CA-60-B.

Para assentamento dos blocos deverá ser escavado o solo até a cota de arrasamento apresentada em projeto, lançar lastro de concreto não estrutural com altura mínima de 5cm.

4.3 Pilares e consolos

Os pilares serão em concreto pré-moldados, Montados nos nichos dos blocos e fixados através de concretagem garantindo a perfeita ligação entre pilar e bloco, o concreto do pilar será de fck 30,0 Mpa no mínimo, armaduras longitudinais em aço CA-50-A, e estribos em aço CA-60-B.
Antes da fabricação dos pilares deve-se conferir os níveis reais dos blocos montados em campo, pois o pilar depois de montado deve assegurar uma altura livre mínima de 5,60 metros entre a parte inferior da passarela e o ponto mais alta do pavimento (pista).

4.4 Lajes

As lajes serão em Steel deck, com forma Ploideck 59S em aço galvanizado Z275 estrutural ZAR 280 na espessura de 0,80mm.
Camada de concreto sobre a laje de 5,0 cm com armadura superior antifissuração em malha Ø 3.8xØ3,8mm 150x150 (Q75). Concreto fck 30 Mpa.
Incluir armaduras positivas longitudinais na laje, essa armadura tem como objetivo aumentar a segurança contra incêndio e de garantir a estabilidade da laje em caso de corrosão das chapas de forma.

ITAMAR FÉLIX DA SILVA
Eng. Civil CREA 71.683-D/PR

Maringá 01 de julho de 2020

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Objetivo:

MEMORIAL DE CÁLCULO PARA ESTRUTURA METÁLICA - CONFORME CONSTRUÍDO

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1. INTRODUÇÃO

Memorial de Cálculo para passarelas mista em concreto pré-moldado e estrutura metálica, na Cidade de Rondonópolis MT. **-Passarela 6 - KM 202+700.**

2. SISTEMA ESTRUTURAL ADOTADO

As passarelas serão mistas em concreto pré-moldado e Estrutura metálica, sendo Fundação em Bloco pré-moldado sobre estacas raiz e Pilares em concreto pré-moldado, pisos em laje pré-moldada. As estruturas de rampas e passarelas serão em estrutura metálica treliçada.

3. PROJETO GEOMÉTRICO DAS PASSAREALAS.

AS RAMPAS terão largura de 2,00 metros com inclinação de 8,0% com patamares de 1,20 metros de comprimento a cada 10 metros de rampa percorrido, Guarda corpo nas laterais com 1,15 metros de altura e corrimão com altura de 0,92 metros.

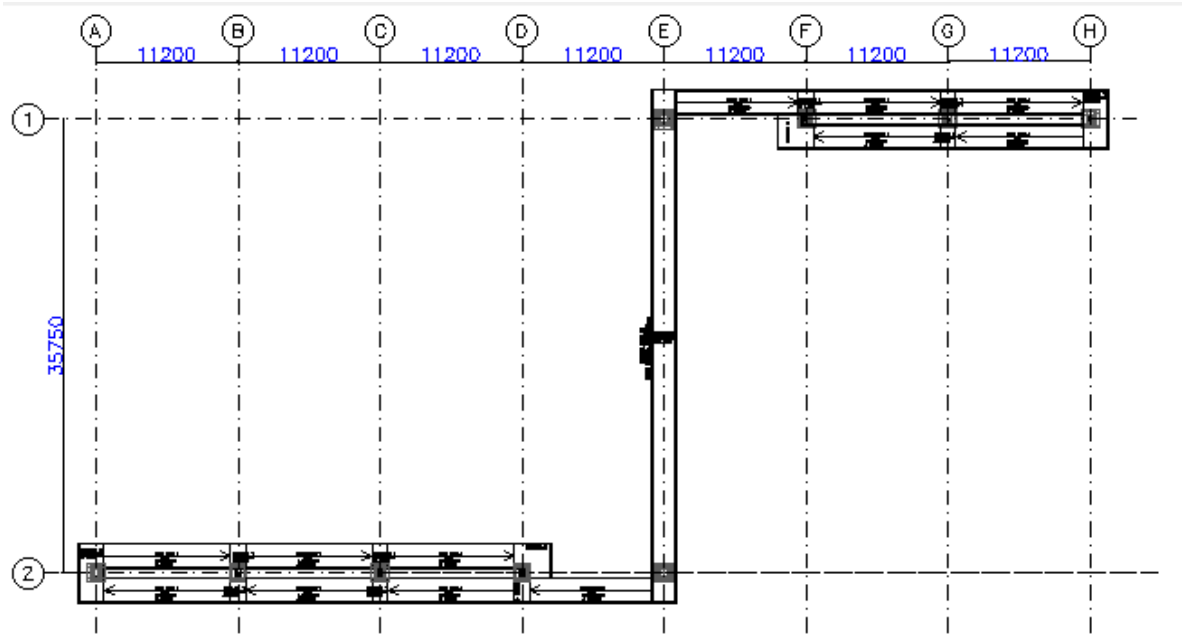
AS PASSARELAS terão forma de caixão com largura de 2,00 metros e altura de 3,00 metros ,sendo utilizado seu interior como passarela, receberá proteção lateral com tela artística até 2,00 metros de altura e corrimão na altura de 0,92 metros.

4. ESTRUTURA METÁLICA.

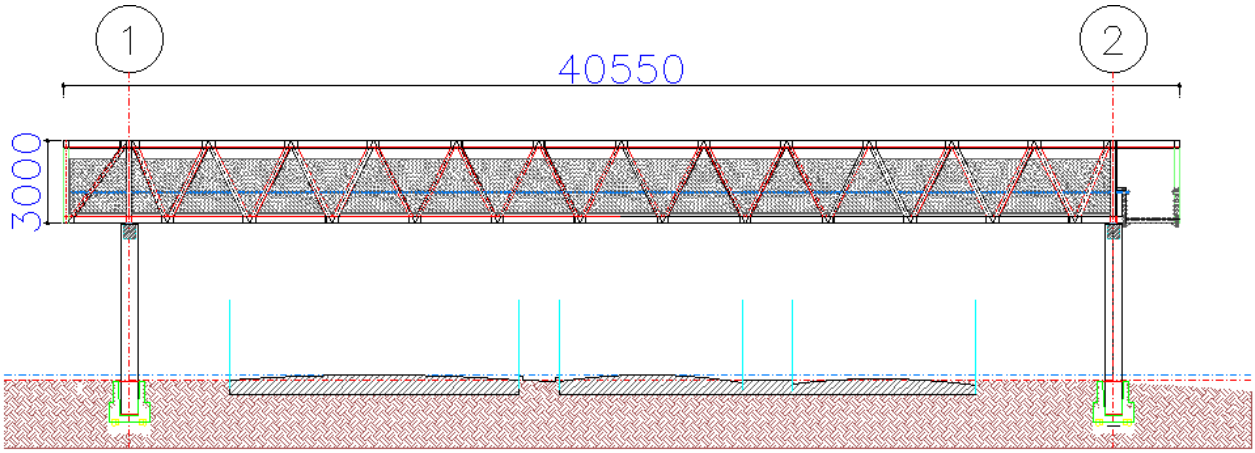
4.1 Passarela

A passarela será em forma de caixão treliçado, As treliças serão em perfil W laminado, treliça inferior com montantes espaçados de forma a receber as lajes pré-moldadas. O corrimão será em perfil dobrado tubular redondo, tela artística de proteção lateral em malha 4cm no fio 10 galvanizado montado em quadro metálico com cantoneiras.

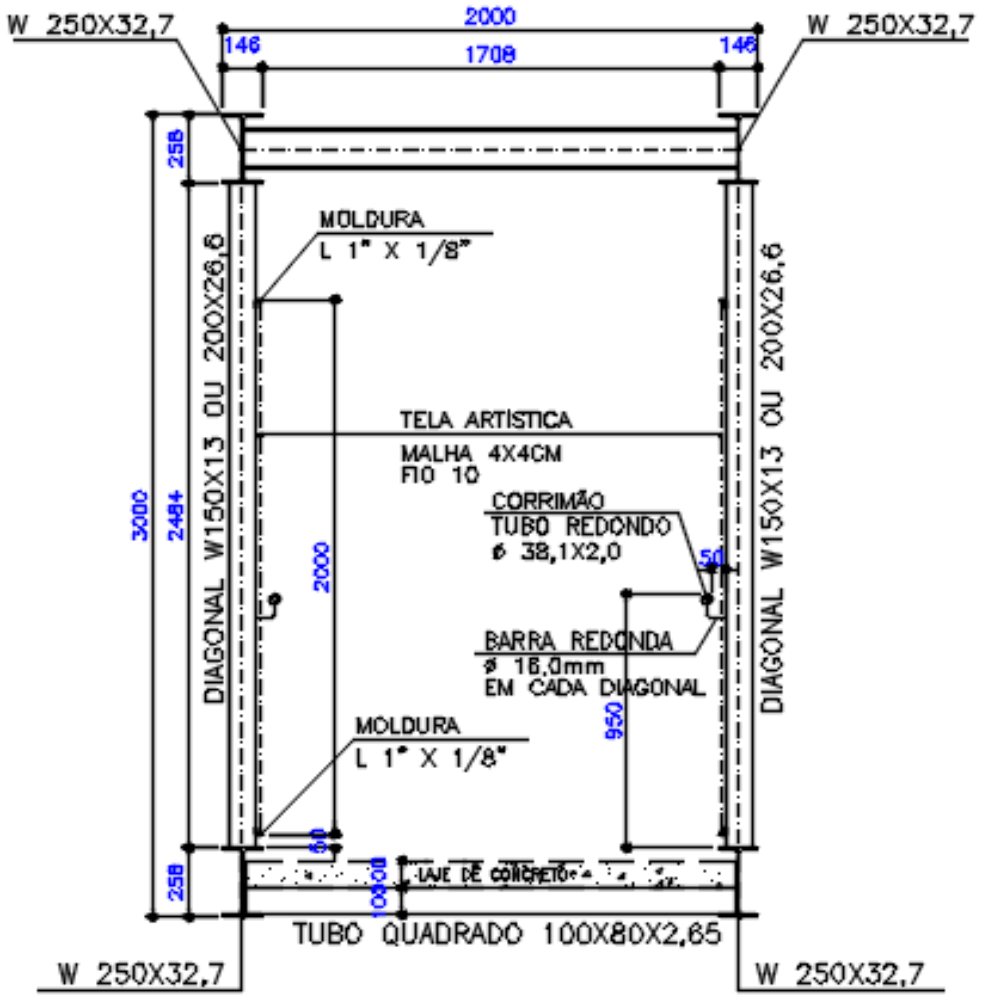
Abaixo figuras representando o projeto geométrico da passarela 5



Planta Baixa



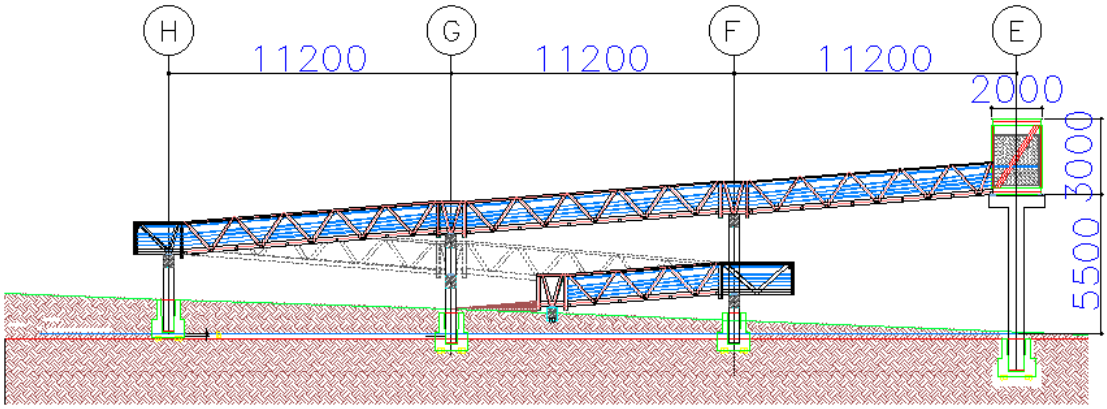
Corte no eixo da passarela



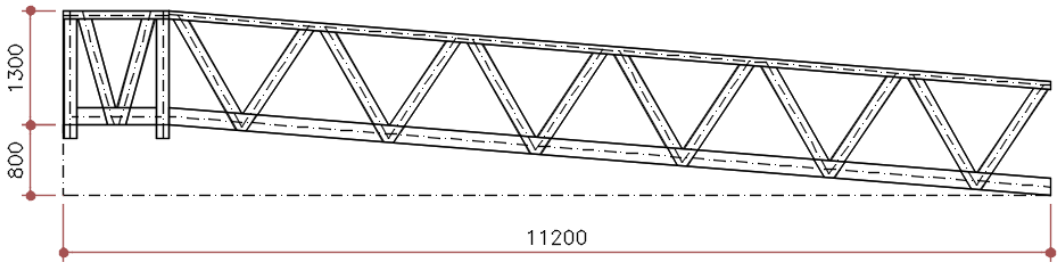
CORTE TRANSVERSAL DA PASSARELA

4.2 Rampa

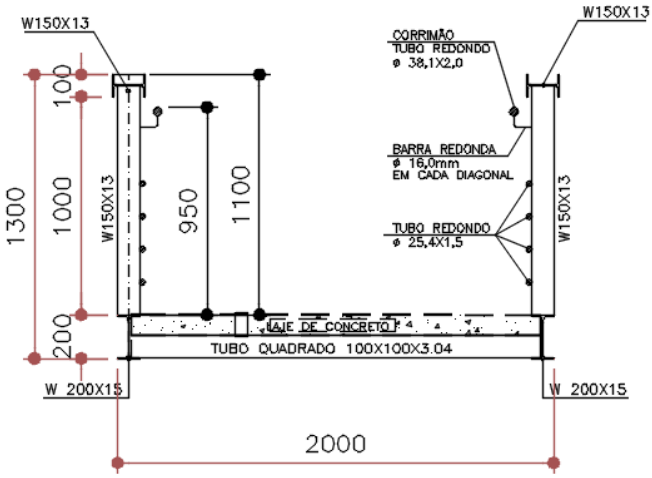
As rampas serão em trelicadas nas laterais em perfil W laminado, treliça inferior com montantes espaçados de forma a receber as lajes pré-moldadas. O corrimão será em perfil dobrado tubular redondo, proteção lateral logo abaixo do corrimão em perfil tubular redondo com espaçamentos entre si respeitando as normas de segurança.



Corte no eixo das rampas



ELEVAÇÃO LATERAL DA RAMPA



CORTE TRANSVERSAL/RAMPAS

5. CONSIDERAÇÕES DE CÁLCULO

5.1 Normas utilizadas

- NBR 8800/2008 - PROJETO DE ESTRUTURAS DE AÇO E ESTRUTURAS MISTAS DE AÇO E CONCRETO DE EDIFÍCIOS.
- NBR 14762/2010 - DIMENSIONAMENTO DE ESTRUTURA DE AÇO DE PERFIS DE AÇO CONSTITUIDO A FRIO.
- NBR 6123/88 - FORÇAS DEVIDAS AOS VENTOS NAS EDIFICAÇÕES
- NBR 7188/2013 - CARGA MÓVEL RODOVIÁRIA E DE PEDESTRES EM PONTES, VIADUTOS, PASSARELAS E OUTRAS ESTRUTURAS
- NBR 9050/2004 - ACESSIBILIDADE A EDIFICAÇÕES, MOBILIÁRIO, ESPAÇO E EQUIPAMENTOS URBANOS

5.2 Materiais utilizados

- PERFIS W LAMINADO ASTM A572 GR50;Fy 345 Mpa;
- PERFIS DOBRADOS TUBULARES ASTM A36, Fy 250Mpa;
- PERFIL L LAMINADO ASTM A36;Fy 250 Mpa;
- AÇO PARA CHAPAS SAE 1020;
- PERFIS REDONDOS, CHAPAS SECUNDARIAS (NÃO ESTRUTURAL) SAE 1020;
- SOLDA E70XX FW 485 MPA

5.3 Características dos materiais

Para efeito de cálculo foram adotados, para os aços aqui relacionados, os seguintes valores de propriedades mecânicas:

- Módulo de elasticidade, E = 200 000 Mpa;
- Coeficiente de Poisson, v = 0,3;
- Módulo de elasticidade Transversal G = 77 000 Mpa;
- Coeficiente de dilatação térmica, βα = 1,2 x 10-5 ºC-1;
- Massa específica ρ=7.850,00 kgf/m3.

5.4 Cargas atuantes na estrutura

5.4.1 Peso próprio da estrutura

-ESTRUTURA METÁLICA	- PASSARELA	**125,00 KGF/M2**
-ESTRUTURA METÁLICA	- RAMPAS	**65,00 KGF/M2**
-LAJE DE CONCRETO		**250,00 KGF/M2**

5.4.2 Carga variável

-SOBRECARGA DE UTILIZAÇÃO **500,00 KGF/M2**

5.4.3 Carga excepcional

CARGA CONCENTRADA NO SENTIDO DO TRÁFEGO, NA POSIÇÃO MAIS DESFAVORÁVEL.

-NO PRIMEIRO VÃO DA PASSARELA **10.000,00 KGF**

-NO SEGUNDO VÃO DA PASSARELA **-10.000,00 KGF**

Obs. - essa carga não atua simultaneamente

5.4.4 Cargas devida ao vento

a) VELOCIDADE BÁSICA DO VENTO **35,00 m/s**

b) FATOR TOPOGRÁFICO-TERRENO PLANO OU FRACAMENTE ACIDENTADO **S1=1,00**

c) FATOR DE RUGOSIDADE

– CATEGORIA III

- CLASSE C

- ALTURA ENTRE 5,0 E 10,0m **S2=0,88**

d)- FATOR ESTATÍSTICO - GRUPO 2 **S3=1,00**

e) VELOCIDADE CARACTERÍSTICA DO VENTO = Vk=V0*S1*S2*S3 = **Vk= 30,80 m/S**

f) PRESSÃO DINÂMICA DO VENTO = q=0,613*Vk2 = 580,00 N/m2, **q=58,00kgf/m2**

5.5 Programa de cálculo utilizado

- Mcalc 3D - Versão 5.0;
- McalcLig - Versão 5.0;
- Cálculos manuais.

6. COMBINAÇÕES DE CÁLCULO.

Para as distintas situações de projeto, as combinações de ações serão definidas de acordo com os seguintes critérios:

$$\sum_{j \geq 1} \gamma_{Gj} G_{kj} + \gamma_{Q1} \Psi_{p1} Q_{k1} + \sum_{i > 1} \gamma_{Qi} \Psi_{ai} Q_{ki}$$

Onde:

- Gk Ação permanente
- Qk Ação variável - sobrecarga
- YG Coeficiente parcial de segurança das ações permanentes
- YQ,1 Coeficiente parcial de segurança da ação variável principal
- YQ,i Coeficiente parcial de segurança das ações variáveis de acompanhamento
- ψp,1 Coeficiente de combinação da ação variável principal
- ψa,i Coeficiente de combinação das ações variáveis de acompanhamento

6.1 Características principais

Os pisos da Passarela e das Rampas serão em laje de concreto armado, trabalhando como **diafragma rígido**.

Estado		
Peso proprio		
Permanente		
Sobrecarga		
Vento0		
Vento180		
Vento90		
Vento270		
EXC1		
EXC2		

6.2. Combinação 1

Estado	Gama	PSI0	PSI1,2
Peso-Próprio	1.25	1	1
permanente	1.40	1	1
Sobrecarga	1.5	1	1

6.3. Combinação 2

Estado	Gama	PSI0	PSI1,2
Peso-Próprio	1	1	1
permanente	1	1	1
Vento 0	1.4	1	1

6.4. Combinação 3

Estado	Gama	PSI0	PSI1,2
Peso-Próprio	1	1	1
permanente	1	1	1
Vento - 0	1.4	1	1

6.5. Combinação 4

Estado	Gama	PSI0	PSI1,2
Peso-Próprio	1	1	1
permanente	1	1	1
Vento 90	1.4	1	1

6.6. Combinação 5

Estado	Gama	PSI0	PSI1,2
Peso-Próprio	1	1	1
permanente	1	1	1
Vento - 90	1.4	1	1

6.7. Combinação 6

Estado	Gama	PSI0	PSI1,2
Peso-Próprio	1.1	1	1
permanente	1.2	1	1
Sobrecarga	1	0.6	1
Vento 90	1	0.6	1
Exc1	1	1	1

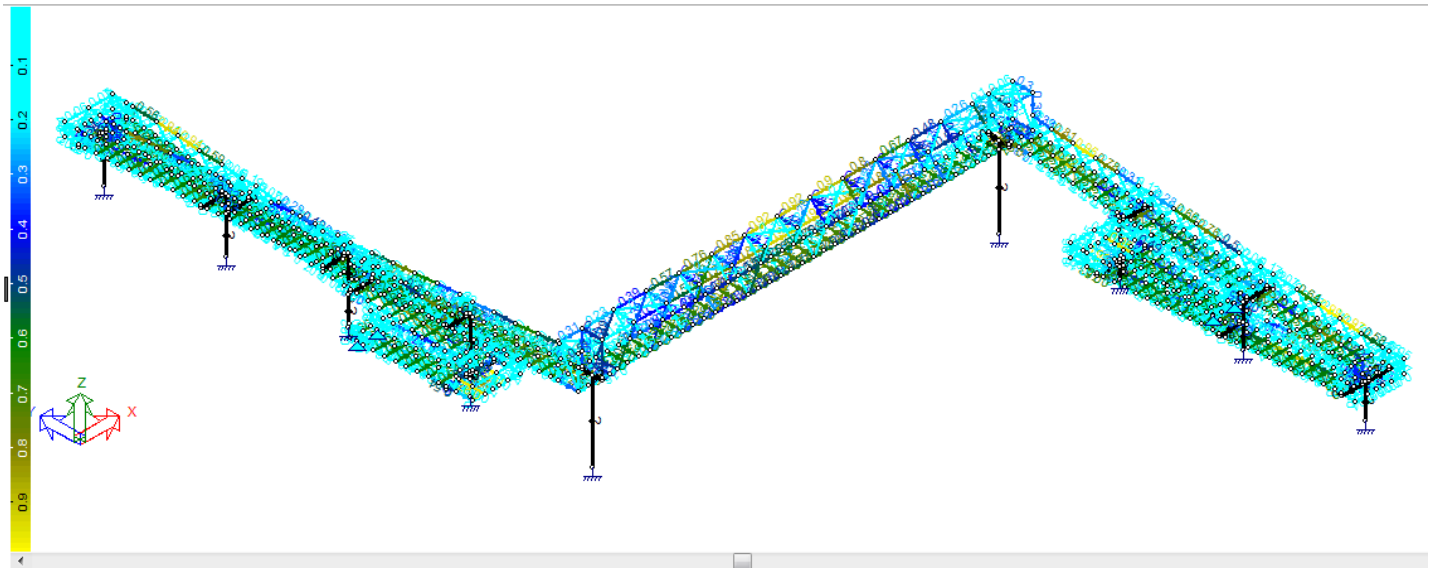
6.8. Combinação 7

Estado	Gama	PSI0	PSI1,2
Peso-Próprio	1.1	1	1
permanente	1.2	1	1
Sobrecarga	1	0.6	1
Vento - 90	1	0.6	1
Exc2	1	1	1

7. CÁLCULO.

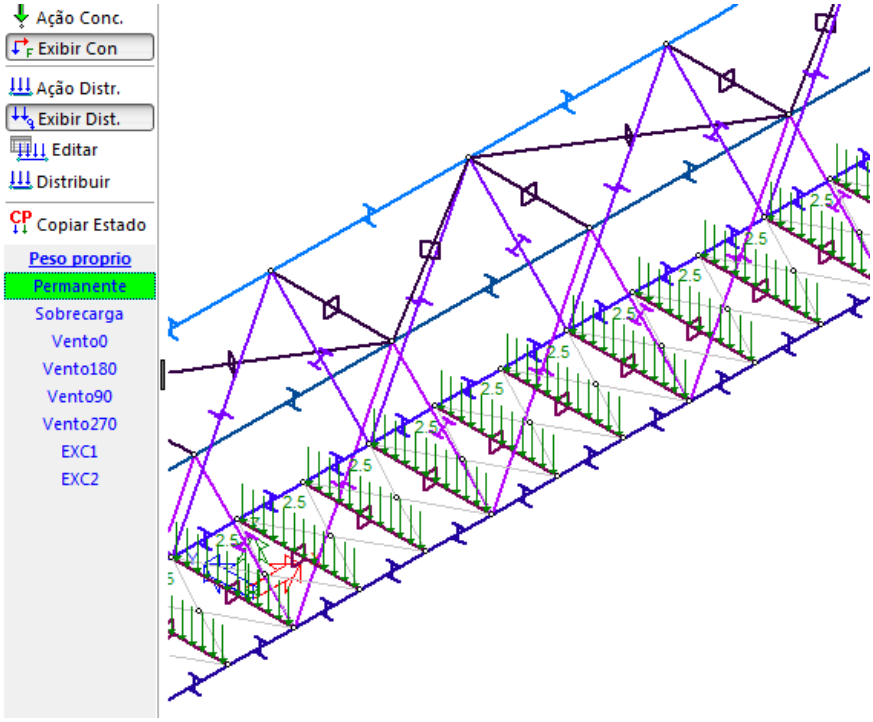
As cargas foram lançados na estrutura de acordo com as 5 combinações da seguinte forma

- Peso próprio - gerada pelo software Mcalc 3D;
- Carga Permanente - Distribuída sobre as vigas de piso da passarela e rampas;
- Vento, lançado sobre as superfícies das barras na direção do vento segundo sua combinação.

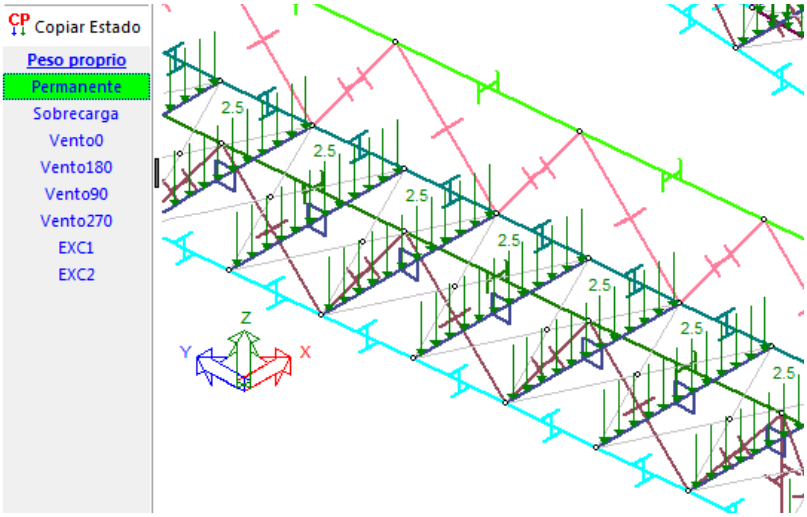


Visão 3D da estrutura - % de resistência Sd/Rd – Todas as barras atendem

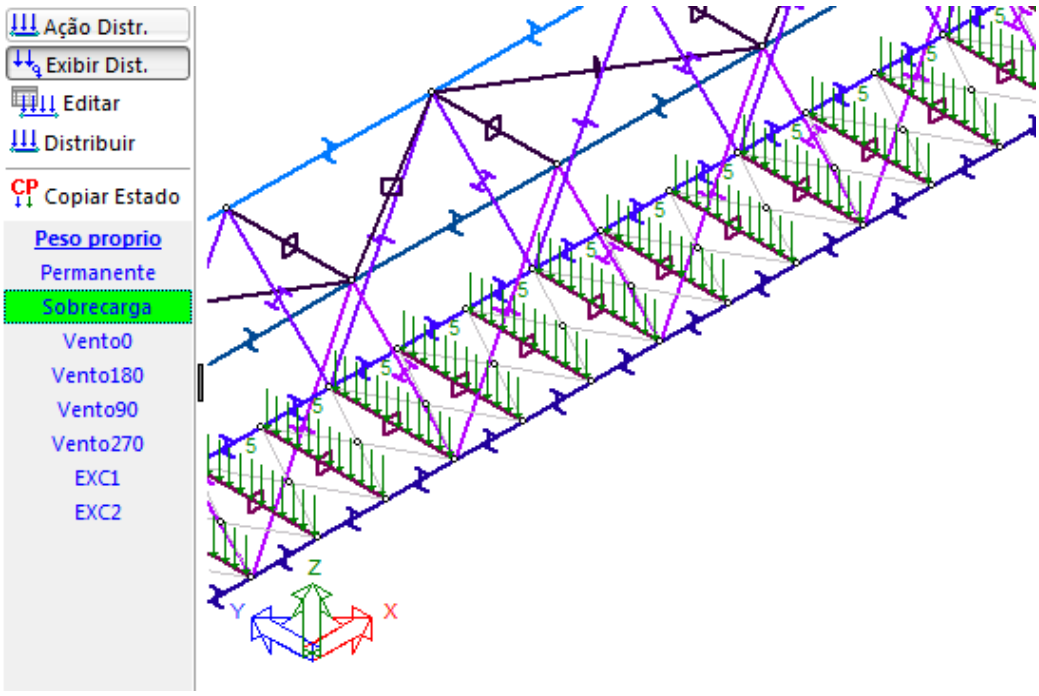
7.1 Dados de entrada



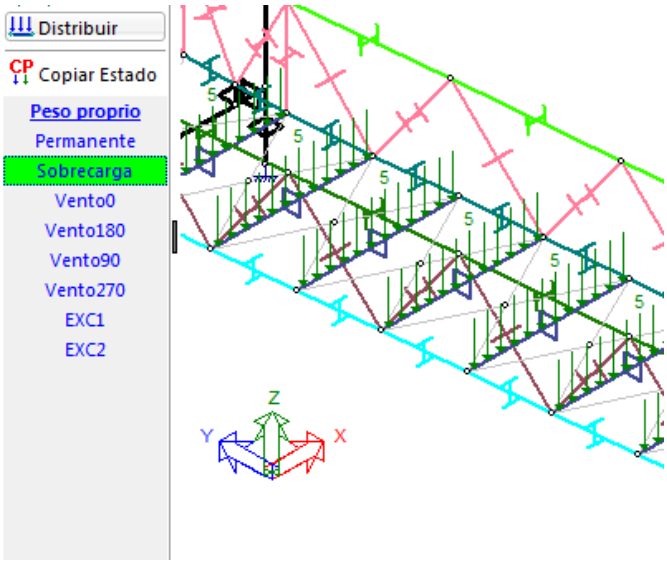
Passarela Carga permanente



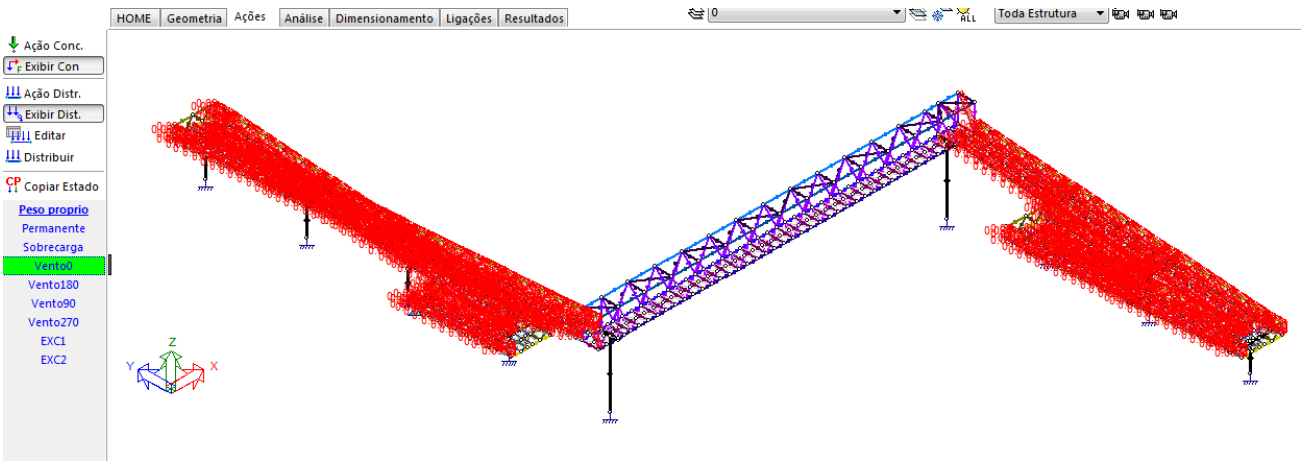
Rampa Carga permanente



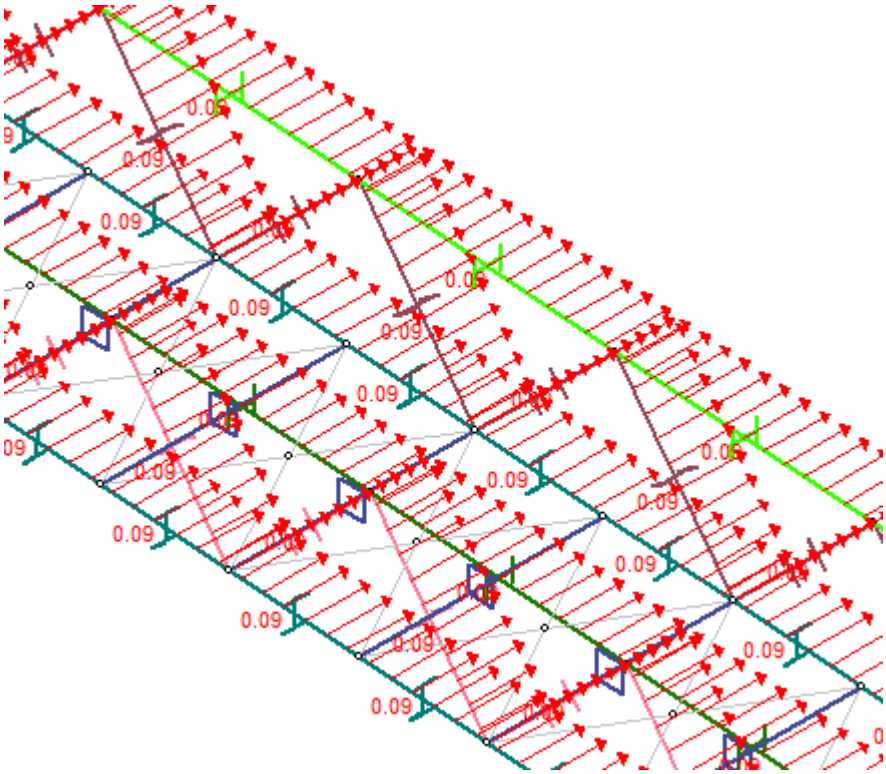
Passarela Carga Variável - sobrecarga



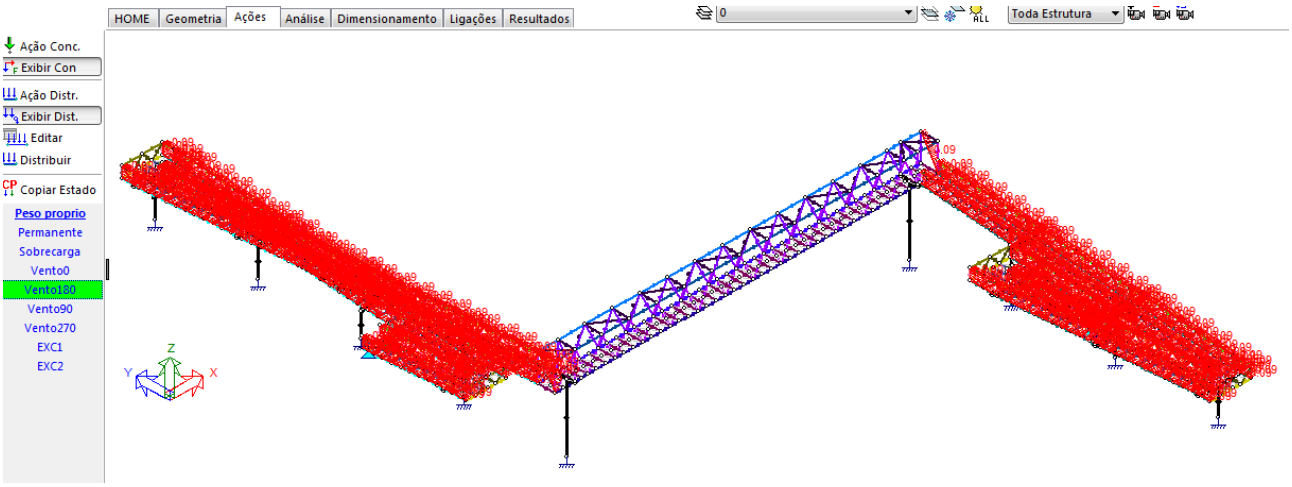
Rampa Carga Variável - sobrecarga



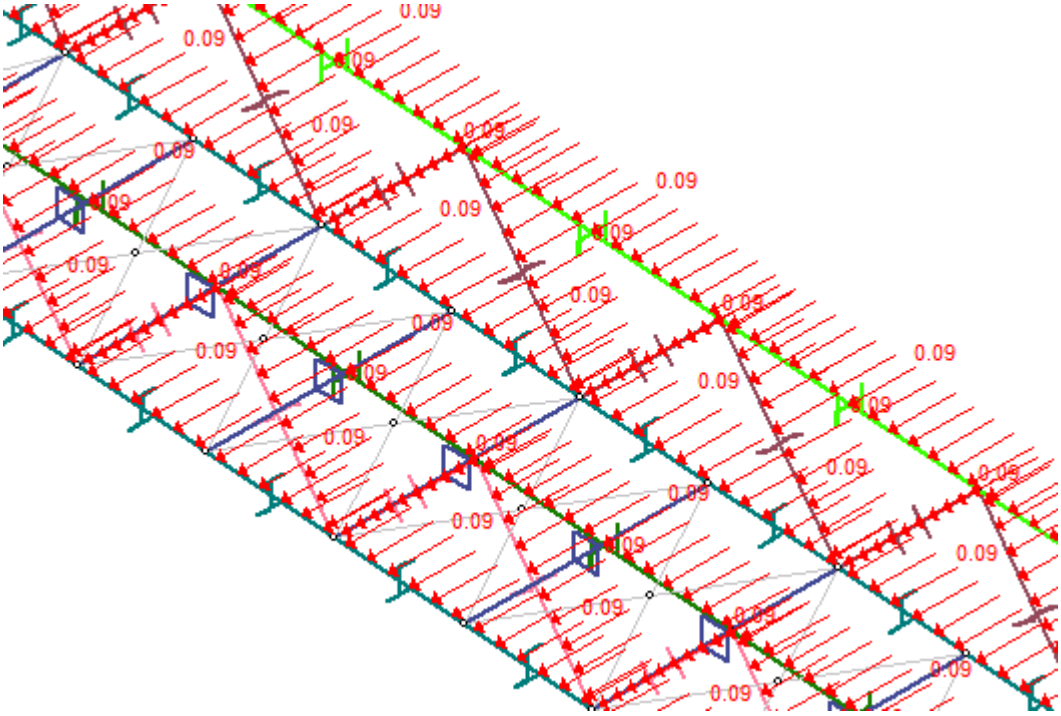
Vento 0 - visão geral



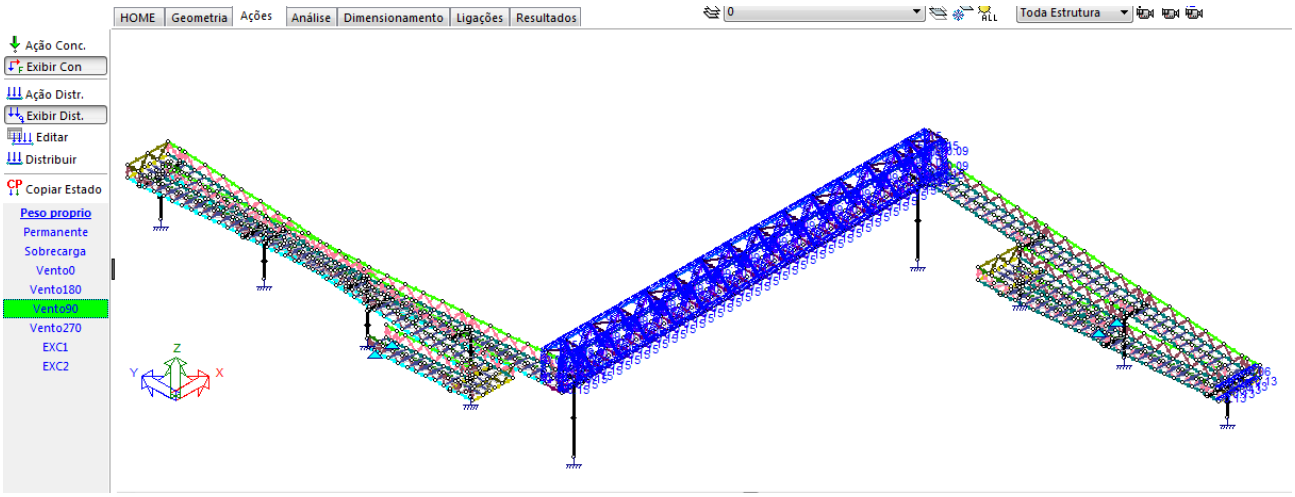
Vento 0 - Detalhe



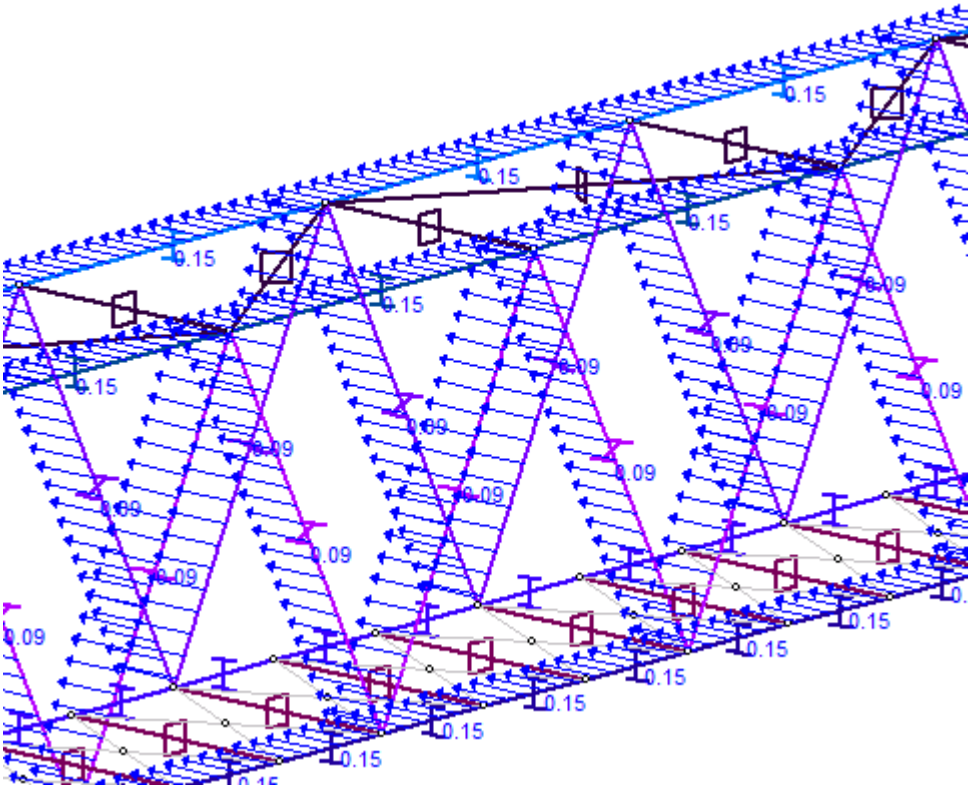
Vento 180 - visão geral



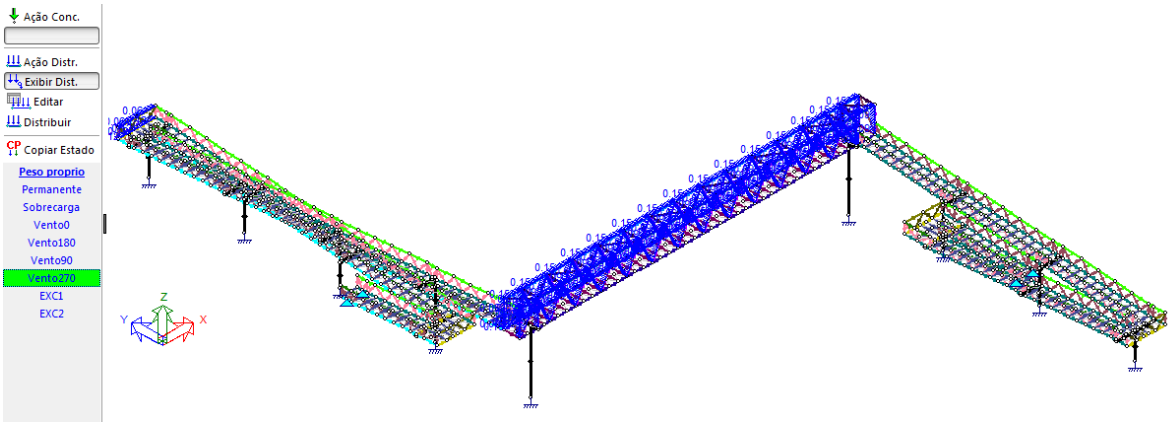
Vento 180 - Detalhe



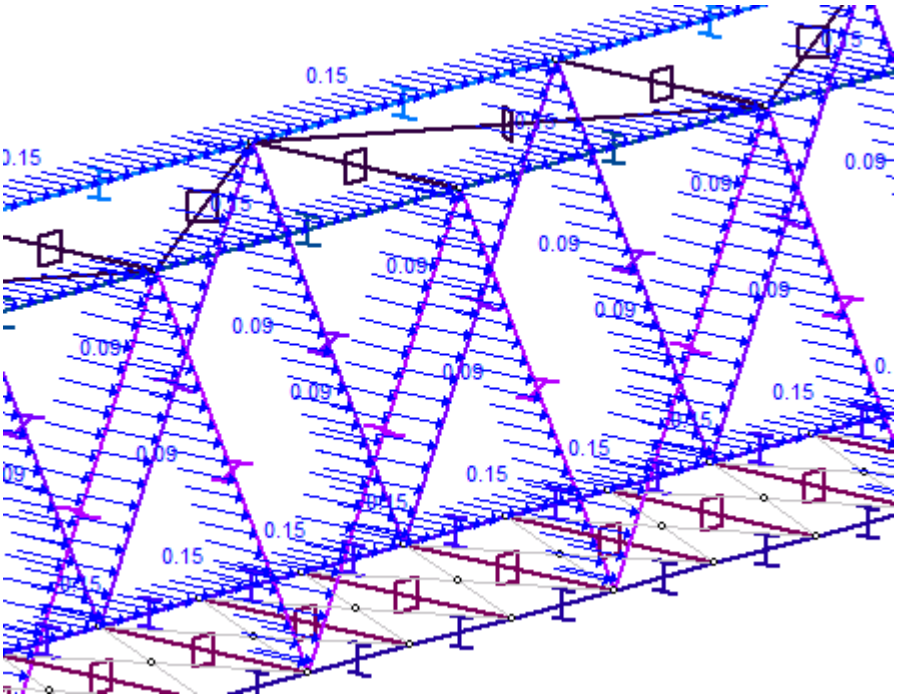
Vento 90 - visão geral



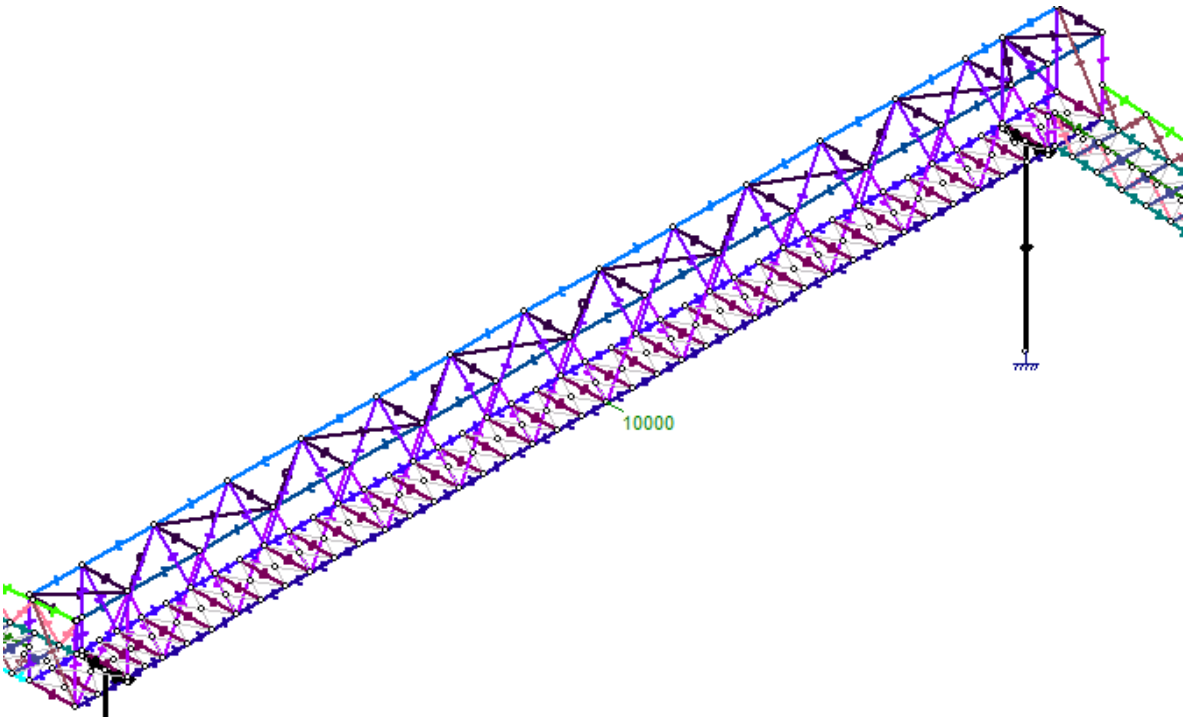
Vento 90 - Detalhe



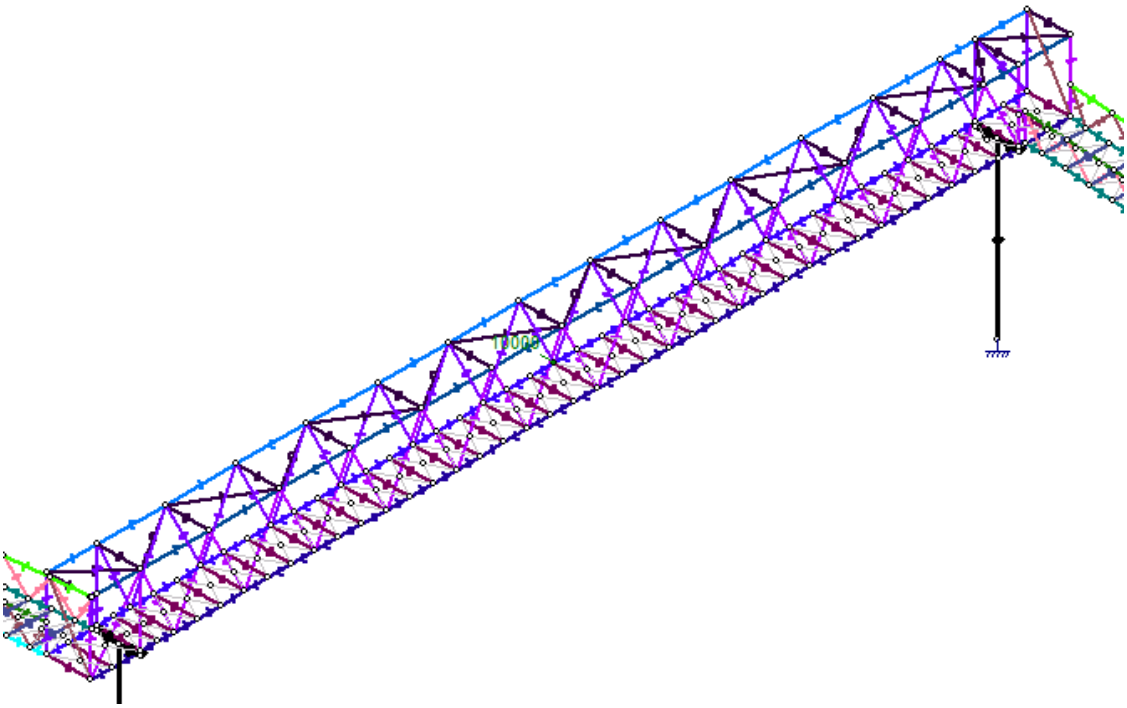
Vento 270 - visão geral



Vento 270 - Detalhe



Carga excepcional 1



Carga excepcional 2

7.2 Dados de saída

7.2.1 Saída gráfica

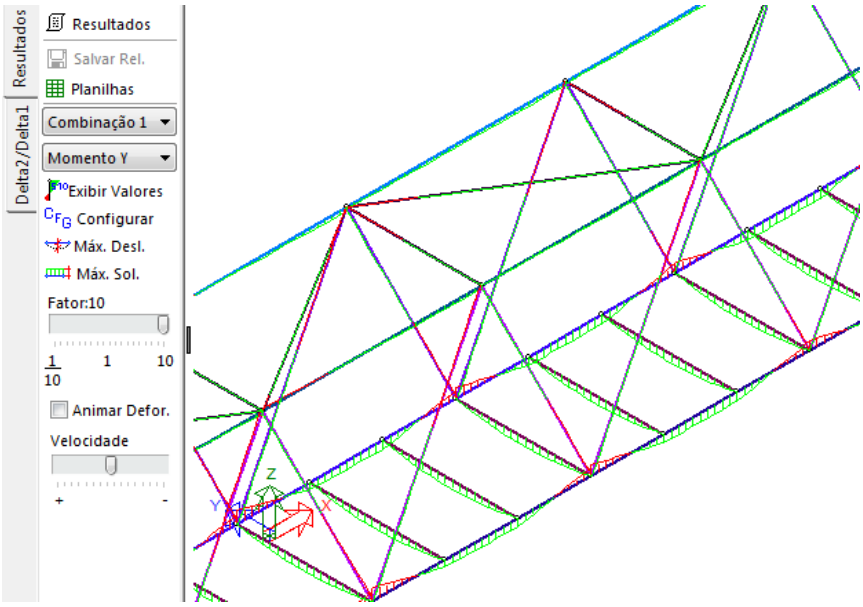


Diagrama de momentos Máximos(kgf.cm) na passarela (Combinação mais desfavorável)

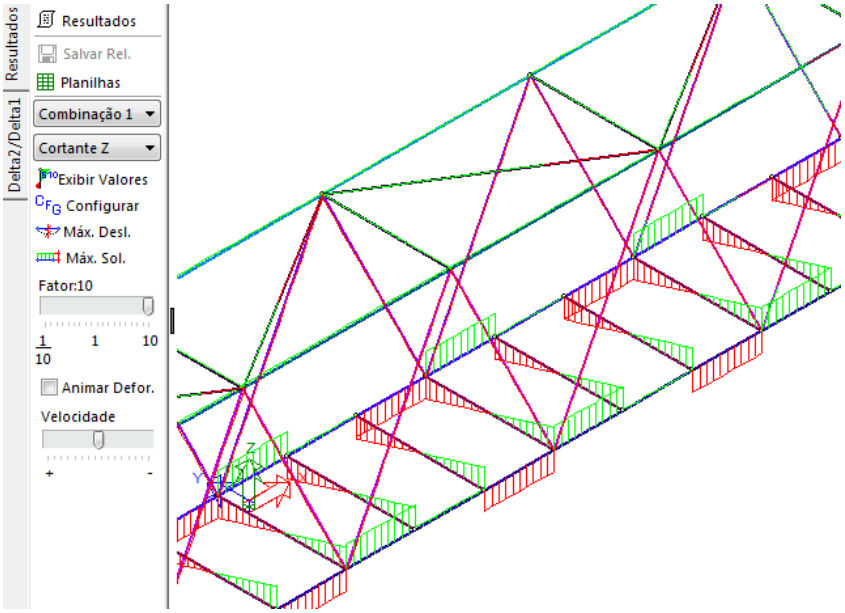


Diagrama de Cortantes Máximos(kgf) na passarela (Combinação mais desfavorável)

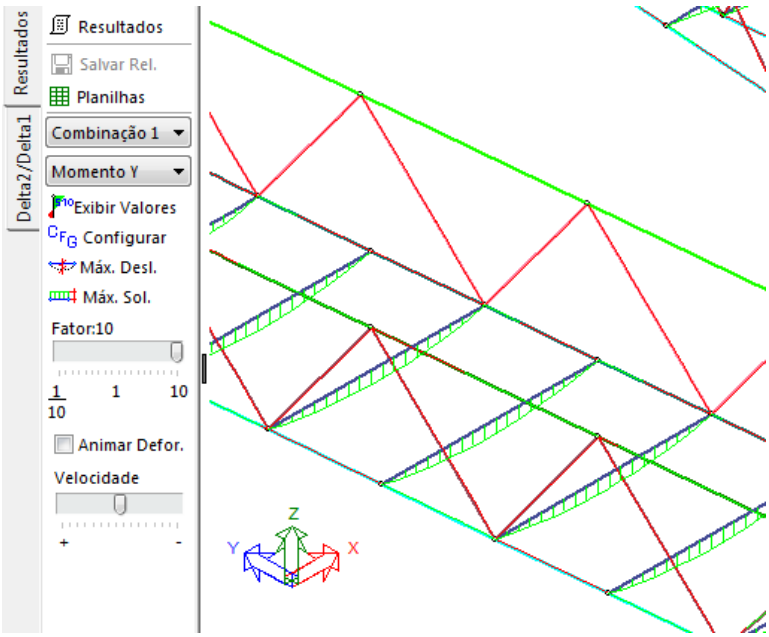


Diagrama de momentos Máximos(kgf.cm) nas Rampas (Combinação mais desfavorável)

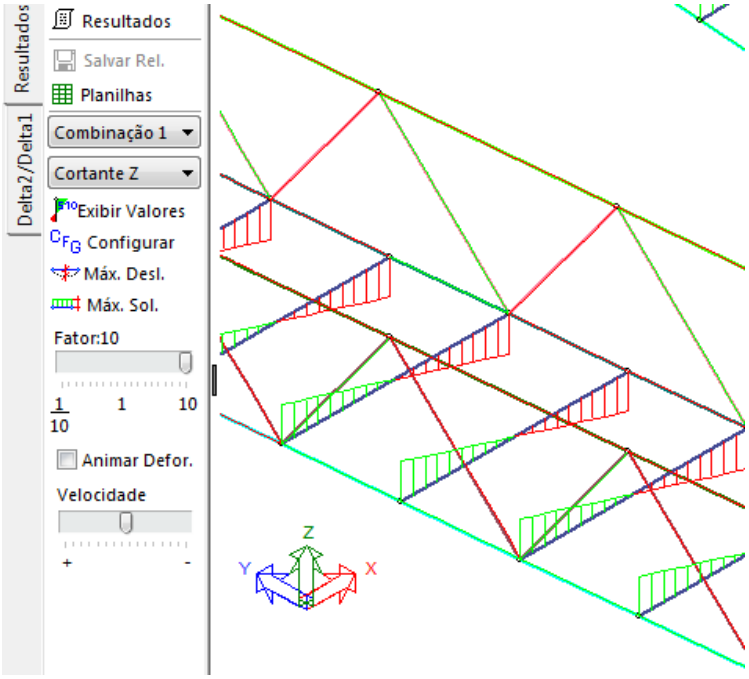


Diagrama de Cortantes Máximos(kgf) na passarela (Combinação mais desfavorável)

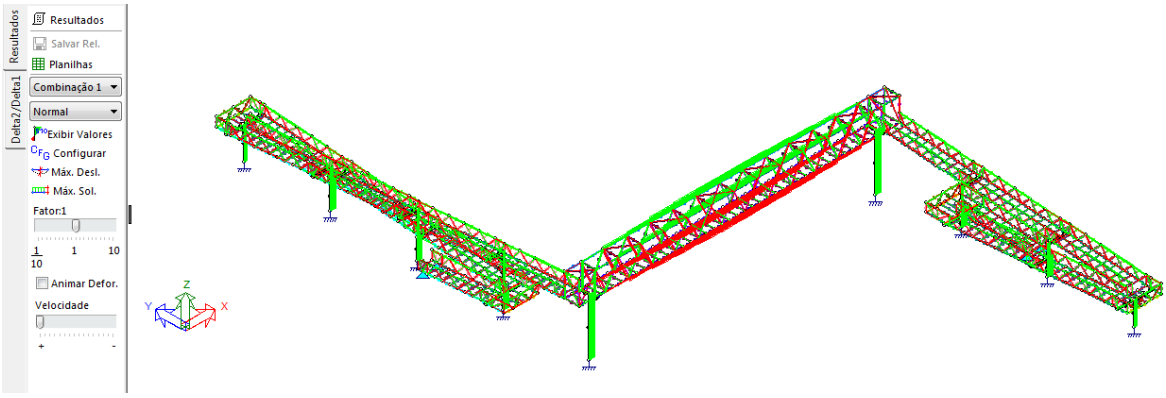


Diagrama de Esforço normal (kgf) Visão Geral (Combinação mais desfavorável)

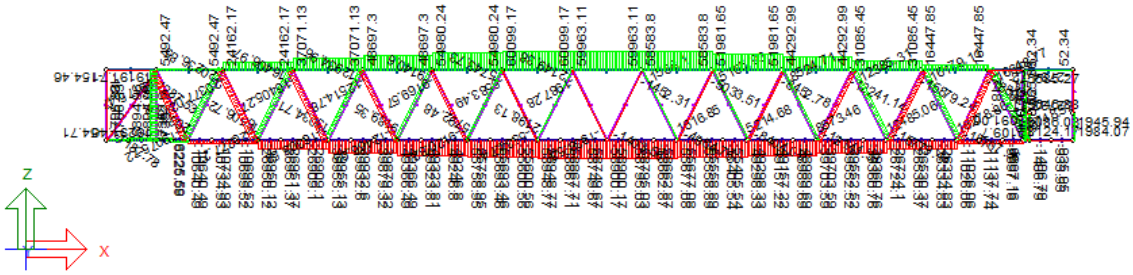


Diagrama de Esforço normal (kgf) da passarela (Combinação mais desfavorável)

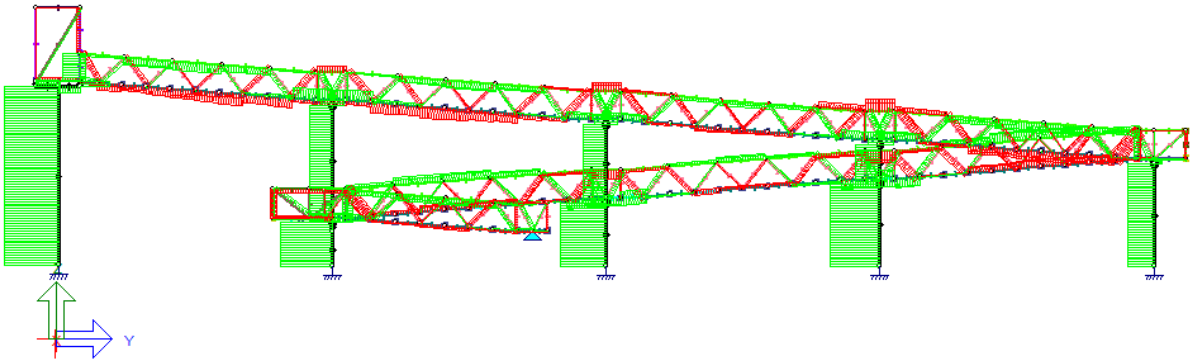
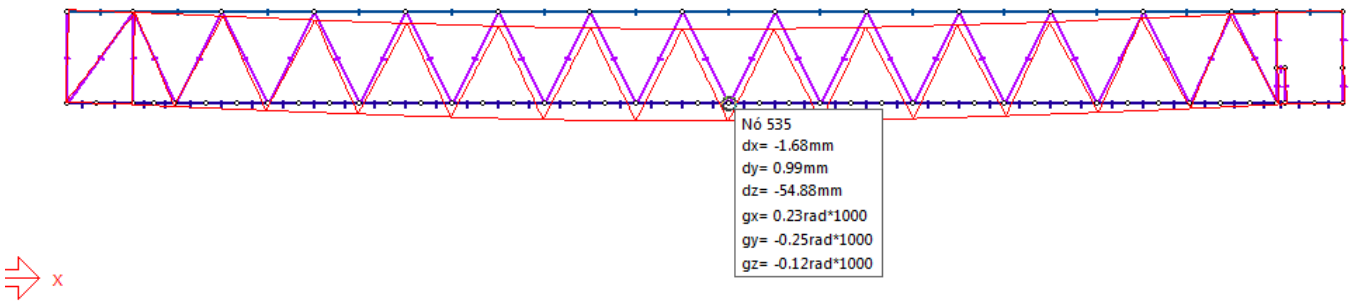


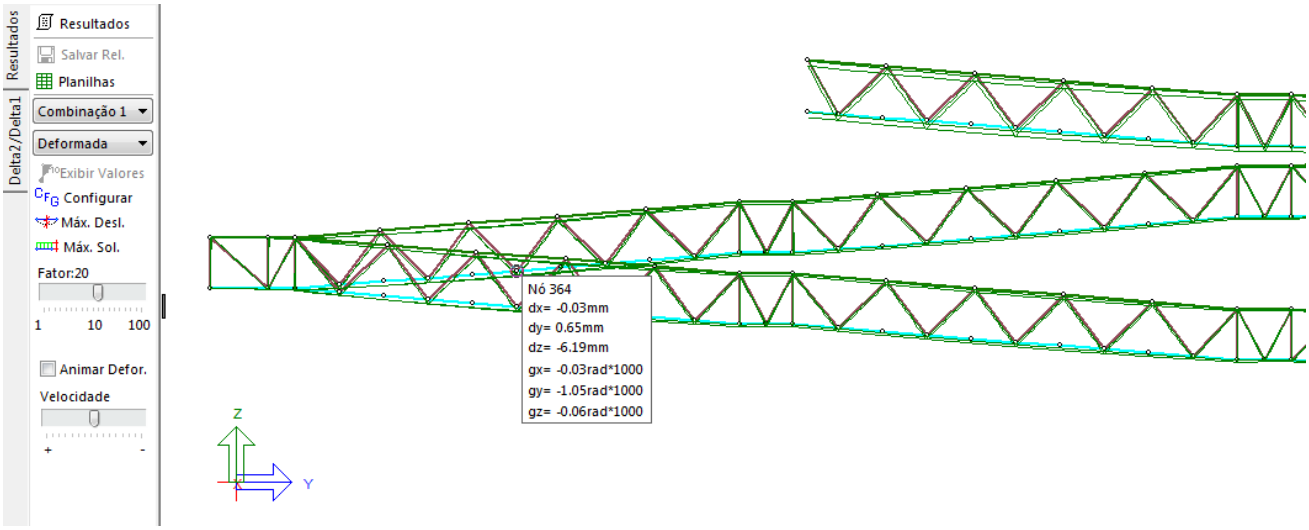
Diagrama de Esforço normal (kgf) da rampa (Combinação mais desfavorável)



Deformação máxima L/350 = 35750mm/350 = 102 mm

54,88 mm < 102 mm ok!

Diagrama da deformada da passarela



Deformação máxima L/350 = 11200mm/350 = 32,00mm

6,19mm <32,00mm ok!

Diagrama da deformada das rampas

8. DIMENSIONAMENTO

Unidades: kgf-cm

Barra		Normal	Cortante Y	Cortante Z	Momento X	Momento Y	Momento Z	Eq. Int. Max.	Comp.	Dimensionamento
1	Sol.	-259.26	-42.02	2833.49	-32.63	-369177.06	-7764.27	0.31	215	W 250 32.7
	Res.	132040.91	50003.67	29616.05	---	1312198.75	311185.41			
	Sd/Rd	0.00	0	0.1	---	-0.28	-0.02			
2	Sol.	-187.71	27.85	291.45	0	-38056.76	-3506.08	0.04	215	W 250 32.7
	Res.	132040.91	50003.67	29616.05	---	1312198.75	311185.41			
	Sd/Rd	0.00	0	0.01	---	-0.03	-0.01			
3	Sol.	2070.93	-61.4	1001.4	0	104920.84	4476.25	0.46	95	W 150 13
	Res.	45550.14	18441.82	11975.89	---	277447.97	76882.74			
	Sd/Rd	0.05	0.00	0.08	---	0.38	0.06			
4	Sol.	1706.33	-208.52	686.89	-40.91	65792.37	-10638.89	0.09	95	W 250 32.7
	Res.	121496.4	50003.67	29616.05	---	1312198.75	311185.41			
	Sd/Rd	0.01	0.00	0.02	---	0.05	-0.03			
5	Sol.	-1287.53	-1.72	81.82	0	-18657.2	2038.23	0.04	369.09	W 200 26.6
	Res.	107263.63	42047.34	22593.11	---	860402.31	238029.25			
	Sd/Rd	0.01	0	0.00	---	-0.02	0.01			
6	Sol.	7352.6	-265.28	3308.75	63.68	-269408.56	11527.58	0.27	68.75	W 250 32.7
	Res.	124855.23	50003.67	29616.05	---	1312198.75	311185.41			
	Sd/Rd	0.06	-0.01	0.11	---	-0.21	0.04			
7	Sol.	-10640.49	-63.48	965.62	0	75455.55	-3562.13	0.11	100	W 250 32.7
	Res.	132040.91	50003.67	29616.05	---	1312198.75	311185.41			
	Sd/Rd	0.08	0.00	0.03	---	0.06	-0.01			
8	Sol.	-10734.93	33.46	79.12	0	75683.21	2566.75	0.11	100	W 250 32.7
	Res.	132040.91	50003.67	29616.05	---	1312198.75	311185.41			
	Sd/Rd	0.08	0	0.00	---	0.06	0.01			

9	Sol. Res. Sd/Rd	-10752 132040.91 0.08	2333.25 50003.67 0.05	2074.09 29616.05 0.07	0 --- ---	-176669.84 1312198.75 -0.13	-133315.56 311185.41 -0.43	0.6	68.75	W 250 32.7
10	Sol. Res. Sd/Rd	-19386.77 132040.91 0.15	41.67 50003.67 0	899.02 29616.05 0.03	0 --- ---	86175.76 1312198.75 0.07	3048.08 311185.41 0.01	0.15	100	W 250 32.7
11	Sol. Res. Sd/Rd	-19689.51 132040.91 0.15	-24.76 50003.67 0	145.72 29616.05 0.00	0 --- ---	85948.09 1312198.75 0.07	1369.37 311185.41 0.00	0.15	100	W 250 32.7
12	Sol. Res. Sd/Rd	827.95 20895.77 0.04	-12.55 7200 0.00	462.79 7200 0.06	-251.42 --- ---	21404.25 79199.27 0.27	-1260.78 79199.27 -0.02	0.33	185	BOX 100 x 100 x 3
13	Sol. Res. Sd/Rd	-4174.67 25636.36 0.16	-48.77 7200 -0.01	909.4 7200 0.13	430.03 --- ---	42059.57 79199.27 0.53	6965.34 79199.27 0.09	0.78	185	BOX 100 x 100 x 3
14	Sol. Res. Sd/Rd	1144.24 20895.77 0.05	11.28 7200 0.00	665.25 7200 0.09	0 --- ---	30767.99 79199.27 0.39	1176.17 79199.27 0.01	0.46	185	BOX 100 x 100 x 3
15	Sol. Res. Sd/Rd	-10430.45 107263.63 0.1	55.48 42047.34 0.00	148.44 22593.11 0.01	0 --- ---	-35819.32 839079.75 -0.04	13933.83 238029.25 0.06	0.15	330.01	W 200 26.6
16	Sol. Res. Sd/Rd	5492.47 76153.48 0.07	-13.18 50003.67 0	669.8 29616.05 0.02	0 --- ---	-103321.41 1312198.75 -0.08	3064.98 311185.41 0.01	0.12	287.5	W 250 32.7
17	Sol. Res. Sd/Rd	5828.64 76153.48 0.08	-14.33 50003.67 0	1320.99 29616.05 0.04	0 --- ---	-240970.89 1312198.75 -0.18	3381.63 311185.41 0.01	0.23	287.5	W 250 32.7
18	Sol. Res. Sd/Rd	-19175.47 107263.63 0.18	-3.38 42047.34 0	339.73 22593.11 0.02	0 --- ---	-71969.48 860402.31 -0.08	-1238.36 238029.25 -0.01	0.18	330.01	W 200 26.6
19	Sol. Res. Sd/Rd	20336.6 45713 0.44	-13.29 42047.34 0	458.02 22593.11 0.02	0 --- ---	83623.66 860402.31 0.1	4378.31 238029.25 0.02	0.55	335.41	W 200 26.6
20	Sol. Res.	-9517.09 132040.91	373.18 50003.67	-1696.96 29616.05	0 ---	-81238.24 1312198.75	24063.17 311185.41	0.18	68.75	W 250 32.7

	Sd/Rd	0.07	0.01	-0.06	---	-0.06	0.08			
21	Sol. Res. Sd/Rd	6225.59 124855.23 0.05	-206.76 50003.67 0.00	-2615.42 29616.05 -0.09	0 --- ---	-136141.03 1312198.75 -0.1	10351.41 311185.41 0.03	0.16	68.75	W 250 32.7
22	Sol. Res. Sd/Rd	-19.03 17454.54 0.00	-20.65 5018.18 0.00	64.16 5018.18 0.01	457.5 --- ---	7801.64 50950.93 0.15	-2016.78 50950.93 -0.04	0.19	185	BOX 100 x 100 x 2
23	Sol. Res. Sd/Rd	355.28 12907.22 0.03	25.66 5018.18 0.01	200.49 5018.18 0.04	0 --- ---	-20171.87 50950.93 -0.4	2636.3 50950.93 0.05	0.48	185	BOX 100 x 100 x 2
24	Sol. Res. Sd/Rd	42.99 12907.22 0.00	8.57 5018.18 0.00	109.53 5018.18 0.02	0 --- ---	9702.14 50950.93 0.19	-825.11 50950.93 -0.02	0.21	185	BOX 100 x 100 x 2
25	Sol. Res. Sd/Rd	2721.92 10579.32 0.26	-2.6 5018.18 0	14.96 5018.18 0.00	0 --- ---	-908.75 50950.93 -0.02	560.16 50950.93 0.01	0.29	341.88	BOX 100 x 100 x 2
26	Sol. Res. Sd/Rd	660.57 20895.77 0.03	40.45 7200 0.01	1034.44 7200 0.14	1212.53 --- ---	47843.06 79199.27 0.6	-4878.83 79199.27 -0.06	0.7	185	BOX 100 x 100 x 3
27	Sol. Res. Sd/Rd	5894.96 117423.18 0.05	127.5 50003.67 0.00	1770.38 29616.05 0.06	0 --- ---	-212042.13 1312198.75 -0.16	-8734.4 311185.41 -0.03	0.21	120	W 250 32.7
28	Sol. Res. Sd/Rd	4986.85 45550.14 0.11	425.71 18441.82 0.02	1560.95 11975.89 0.13	0 --- ---	-132924.81 277447.97 -0.48	-27608.74 76882.74 -0.36	0.89	95	W 150 13
29	Sol. Res. Sd/Rd	754.07 11563.4 0.07	4.76 5018.18 0	-34.61 5018.18 -0.01	0 --- ---	5763.3 50950.93 0.11	-1022.14 50950.93 -0.02	0.2	283.64	BOX 100 x 100 x 2
30	Sol. Res. Sd/Rd	-3867.72 107263.63 0.04	130.88 42047.34 0.00	1151.95 22593.11 0.05	0 --- ---	204104.02 860402.31 0.24	18303.54 238029.25 0.08	0.33	185.24	W 200 26.6
31	Sol. Res. Sd/Rd	-154.46 107263.63 0.00	-10.2 42047.34 0	152.52 22593.11 0.01	0 --- ---	28921.72 860402.31 0.03	-2269.87 238029.25 -0.01	0.04	300	W 200 26.6

32	Sol. Res. Sd/Rd	19291.46 54215.34 0.36	-135.4 42047.34 0.00	-233.92 22593.11 -0.01	0 --- ---	42133.46 860402.31 0.05	-26699 238029.25 -0.11	0.5	300	W 200 26.6
33	Sol. Res. Sd/Rd	10960.08 82693.65 0.13	-404.11 42047.34 -0.01	491.37 22593.11 0.02	0 --- ---	-84093.37 860402.31 -0.1	-45663.18 238029.25 -0.19	0.36	185.24	W 200 26.6
34	Sol. Res. Sd/Rd	-18191.92 107263.63 0.17	17.71 42047.34 0	226.28 22593.11 0.01	0 --- ---	42937.64 860402.31 0.05	-3100.6 238029.25 -0.01	0.17	335.41	W 200 26.6
35	Sol. Res. Sd/Rd	48.5 20895.77 0.00	-2.01 7200 0	814.12 7200 0.11	0 --- ---	37653.11 79199.27 0.48	-339.88 79199.27 0.00	0.48	185	BOX 100 x 100 x 3
36	Sol. Res. Sd/Rd	1055.64 20895.77 0.05	1.12 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	219.49 79199.27 0.00	0.62	185	BOX 100 x 100 x 3
37	Sol. Res. Sd/Rd	688.33 20895.77 0.03	1.52 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	-177 79199.27 0.00	0.6	185	BOX 100 x 100 x 3
38	Sol. Res. Sd/Rd	-10699.52 132040.91 0.08	-28.14 50003.67 0	1082.98 29616.05 0.04	0 --- ---	69962.59 1312198.75 0.05	1929.76 311185.41 0.01	0.1	100	W 250 32.7
39	Sol. Res. Sd/Rd	-19857.77 132040.91 0.15	-3.77 50003.67 0	1149.58 29616.05 0.04	0 --- ---	73272.31 1312198.75 0.06	1569.01 311185.41 0.01	0.15	100	W 250 32.7
40	Sol. Res. Sd/Rd	1269.65 20895.77 0.06	-3.59 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	466.45 79199.27 0.01	0.63	185	BOX 100 x 100 x 3
41	Sol. Res. Sd/Rd	-26950.12 132040.91 0.2	-20.64 50003.67 0	1299.39 29616.05 0.04	0 --- ---	-88600.3 1312198.75 -0.07	1399.67 311185.41 0.00	0.27	100	W 250 32.7
42	Sol. Res. Sd/Rd	-26951.37 132040.91 0.2	13.06 50003.67 0	295.53 29616.05 0.01	0 --- ---	66916.3 1312198.75 0.05	1241.05 311185.41 0.00	0.25	100	W 250 32.7
43	Sol. Res.	-34253.49 132040.91	-9.11 50003.67	1289.87 29616.05	0 ---	-85051.13 1312198.75	-753.36 311185.41	0.32	100	W 250 32.7

	Sd/Rd	0.26	0	0.04	---	-0.06	0.00			
44	Sol. Res. Sd/Rd	-34445.29 132040.91 0.26	-11.44 50003.67 0	286 29616.05 0.01	0 --- ---	68335.75 1312198.75 0.05	1147.76 311185.41 0.00	0.31	100	W 250 32.7
45	Sol. Res. Sd/Rd	24162.17 72686.84 0.33	57.49 50003.67 0.00	335.63 29616.05 0.01	0 --- ---	60107.09 1312198.75 0.05	-10006.46 311185.41 -0.03	0.4	300	W 250 32.7
46	Sol. Res. Sd/Rd	24181.06 72686.84 0.33	55.15 50003.67 0.00	201.05 29616.05 0.01	0 --- ---	50329.63 1312198.75 0.04	-9704.23 311185.41 -0.03	0.39	300	W 250 32.7
47	Sol. Res. Sd/Rd	16506.72 45713 0.36	11.59 42047.34 0	182.72 22593.11 0.01	0 --- ---	29140.05 860402.31 0.03	3114.4 238029.25 0.01	0.4	335.41	W 200 26.6
48	Sol. Res. Sd/Rd	-168.36 17454.54 0.01	26.54 5018.18 0.01	133.56 5018.18 0.03	0 --- ---	11930.55 50950.93 0.23	2459.41 50950.93 0.05	0.29	185	BOX 100 x 100 x 2
49	Sol. Res. Sd/Rd	-2402.57 17454.54 0.14	4.55 5018.18 0	24.39 5018.18 0.00	0 --- ---	-3048.87 50950.93 -0.06	-1136.14 50950.93 -0.02	0.22	352.46	BOX 100 x 100 x 2
50	Sol. Res. Sd/Rd	-14020.09 107263.63 0.13	-5.83 42047.34 0	170.91 22593.11 0.01	0 --- ---	28688.85 860402.31 0.03	1448.05 238029.25 0.01	0.13	335.41	W 200 26.6
51	Sol. Res. Sd/Rd	1837 20895.77 0.09	1.69 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	158.62 79199.27 0.00	0.65	185	BOX 100 x 100 x 3
52	Sol. Res. Sd/Rd	1580.64 20895.77 0.08	0.04 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	4.58 79199.27 0	0.64	185	BOX 100 x 100 x 3
53	Sol. Res. Sd/Rd	-26909.1 132040.91 0.2	-1.85 50003.67 0	749.21 29616.05 0.03	0 --- ---	67006.95 1312198.75 0.05	115.74 311185.41 0	0.25	100	W 250 32.7
54	Sol. Res. Sd/Rd	-34612.48 132040.91 0.26	13.16 50003.67 0	758.74 29616.05 0.03	0 --- ---	68245.1 1312198.75 0.05	1142.84 311185.41 0.00	0.31	100	W 250 32.7

55	Sol. Res. Sd/Rd	2038.24 20895.77 0.1	2.81 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	352 79199.27 0.00	0.66	185	BOX 100 x 100 x 3
56	Sol. Res. Sd/Rd	-39955.13 132040.91 0.3	0.54 50003.67 0	1219.71 29616.05 0.04	0 --- ---	-72610.76 1312198.75 -0.06	796.02 311185.41 0.00	0.35	100	W 250 32.7
57	Sol. Res. Sd/Rd	-39932.6 132040.91 0.3	8.15 50003.67 0	215.85 29616.05 0.01	0 --- ---	66841.58 1312198.75 0.05	721.7 311185.41 0.00	0.35	100	W 250 32.7
58	Sol. Res. Sd/Rd	-45690.82 132040.91 0.35	12.07 50003.67 0	1186.6 29616.05 0.04	0 --- ---	-62450.67 1312198.75 -0.05	944.65 311185.41 0.00	0.39	100	W 250 32.7
59	Sol. Res. Sd/Rd	-45868.92 132040.91 0.35	-10.7 50003.67 0	182.74 29616.05 0.01	0 --- ---	70411.64 1312198.75 0.05	800.4 311185.41 0.00	0.4	100	W 250 32.7
60	Sol. Res. Sd/Rd	37071.13 72686.84 0.51	-75.33 50003.67 0.00	157.43 29616.05 0.01	0 --- ---	34367.25 1312198.75 0.03	12527.36 311185.41 0.04	0.57	300	W 250 32.7
61	Sol. Res. Sd/Rd	36979.31 72686.84 0.51	-75.61 50003.67 0.00	160.87 29616.05 0.01	0 --- ---	37542.5 1312198.75 0.03	12514.26 311185.41 0.04	0.57	300	W 250 32.7
62	Sol. Res. Sd/Rd	13034.71 45713 0.29	-7.57 42047.34 0	256.03 22593.11 0.01	0 --- ---	42845.13 860402.31 0.05	1365.51 238029.25 0.01	0.33	335.41	W 200 26.6
63	Sol. Res. Sd/Rd	-219.05 17454.54 0.01	-15.49 5018.18 0.00	192.05 5018.18 0.04	0 --- ---	17686.12 50950.93 0.35	1457.42 50950.93 0.03	0.39	185	BOX 100 x 100 x 2
64	Sol. Res. Sd/Rd	2395.14 10388.53 0.23	-7.88 5018.18 0.00	30.4 5018.18 0.01	0 --- ---	3500.25 50950.93 0.07	-1630.66 50950.93 -0.03	0.33	352.46	BOX 100 x 100 x 2
65	Sol. Res. Sd/Rd	-6390.19 52063.64 0.12	23.04 18441.82 0.00	33.7 11975.89 0.00	0 --- ---	4116.69 277447.97 0.01	5573.2 76882.74 0.07	0.15	335.41	W 150 13
66	Sol. Res.	2480.15 20895.77	0.14 7200	962.99 7200	0 ---	44538.22 79199.27	19.94 79199.27	0.68	185	BOX 100 x 100 x 3

	Sd/Rd	0.12	0	0.13	---	0.56	0			
67	Sol. Res. Sd/Rd	2288.85 20895.77 0.11	1.06 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	-100.84 79199.27 0.00	0.67	185	BOX 100 x 100 x 3
68	Sol. Res. Sd/Rd	-39879.32 132040.91 0.3	-10.37 50003.67 0	828.89 29616.05 0.03	0 --- ---	66765.13 1312198.75 0.05	849.47 311185.41 0.00	0.35	100	W 250 32.7
69	Sol. Res. Sd/Rd	-46005.73 132040.91 0.35	0.14 50003.67 0	862 29616.05 0.03	0 --- ---	70488.09 1312198.75 0.05	699.56 311185.41 0.00	0.4	100	W 250 32.7
70	Sol. Res. Sd/Rd	2614.73 20895.77 0.13	-0.75 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	137.94 79199.27 0.00	0.69	185	BOX 100 x 100 x 3
71	Sol. Res. Sd/Rd	-49366.49 132040.91 0.37	-8.77 50003.67 0	1136.87 29616.05 0.04	0 --- ---	73676.74 1312198.75 0.06	715.35 311185.41 0.00	0.43	100	W 250 32.7
72	Sol. Res. Sd/Rd	-49323.81 132040.91 0.37	5.38 50003.67 0	133.01 29616.05 0.00	0 --- ---	84783.64 1312198.75 0.06	613.05 311185.41 0.00	0.43	100	W 250 32.7
73	Sol. Res. Sd/Rd	-53546.38 132040.91 0.41	-1.83 50003.67 0	1109.21 29616.05 0.04	0 --- ---	76595.3 1312198.75 0.06	-140.65 311185.41 0	0.46	100	W 250 32.7
74	Sol. Res. Sd/Rd	-53700.32 132040.91 0.41	-7.28 50003.67 0	105.35 29616.05 0.00	0 --- ---	85236.23 1312198.75 0.06	675.92 311185.41 0.00	0.47	100	W 250 32.7
75	Sol. Res. Sd/Rd	48697.3 72686.84 0.67	109.11 50003.67 0.00	324.62 29616.05 0.01	0 --- ---	68136.42 1312198.75 0.05	-17244.45 311185.41 -0.06	0.77	300	W 250 32.7
76	Sol. Res. Sd/Rd	48381.24 72686.84 0.67	108.77 50003.67 0.00	267.02 29616.05 0.01	0 --- ---	64212.7 1312198.75 0.05	-17133.42 311185.41 -0.06	0.76	300	W 250 32.7
77	Sol. Res. Sd/Rd	6829.6 11470.91 0.6	6.33 18441.82 0	70.88 11975.89 0.01	0 --- ---	11583.49 277447.97 0.04	1085.36 76882.74 0.01	0.65	335.41	W 150 13

78	Sol. Res. Sd/Rd	9189.35 11470.91 0.8	7.52 18441.82 0	90.63 11975.89 0.01	0 --- ---	14702.67 277447.97 0.05	-1384.63 76882.74 -0.02	0.86	335.41	W 150 13
79	Sol. Res. Sd/Rd	-218.12 17454.54 0.01	11.43 5018.18 0.00	165.18 5018.18 0.03	0 --- ---	15479.65 50950.93 0.3	-1060.49 50950.93 -0.02	0.34	185	BOX 100 x 100 x 2
80	Sol. Res. Sd/Rd	-1488.57 17454.54 0.09	12.63 5018.18 0.00	34.36 5018.18 0.01	0 --- ---	-5419.96 50950.93 -0.11	-2499.59 50950.93 -0.05	0.24	352.46	BOX 100 x 100 x 2
81	Sol. Res. Sd/Rd	2925.16 20895.77 0.14	1.06 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	102.3 79199.27 0.00	0.7	185	BOX 100 x 100 x 3
82	Sol. Res. Sd/Rd	2793.97 20895.77 0.13	0.26 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	-26.66 79199.27 0	0.7	185	BOX 100 x 100 x 3
83	Sol. Res. Sd/Rd	-49246.8 132040.91 0.37	1.17 50003.67 0	911.73 29616.05 0.03	0 --- ---	84612.59 1312198.75 0.06	-63.65 311185.41 0	0.43	100	W 250 32.7
84	Sol. Res. Sd/Rd	-53829.2 132040.91 0.41	8.32 50003.67 0	939.39 29616.05 0.03	0 --- ---	85407.28 1312198.75 0.07	649.25 311185.41 0.00	0.47	100	W 250 32.7
85	Sol. Res. Sd/Rd	3008.73 20895.77 0.14	2.38 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	265.51 79199.27 0.00	0.71	185	BOX 100 x 100 x 3
86	Sol. Res. Sd/Rd	-55758.95 132040.91 0.42	2.73 50003.67 0	1085.1 29616.05 0.04	0 --- ---	82981.28 1312198.75 0.06	566.55 311185.41 0.00	0.48	100	W 250 32.7
87	Sol. Res. Sd/Rd	-55693.46 132040.91 0.42	2.74 50003.67 0	81.24 29616.05 0.00	0 --- ---	88862.93 1312198.75 0.07	264.63 311185.41 0	0.48	100	W 250 32.7
88	Sol. Res. Sd/Rd	-58439.76 132040.91 0.44	6.59 50003.67 0	1060.46 29616.05 0.04	0 --- ---	84705.7 1312198.75 0.06	552.75 311185.41 0.00	0.5	100	W 250 32.7
89	Sol. Res.	-58583.49 132040.91	-4.41 50003.67	56.6 29616.05	0 ---	88520.34 1312198.75	314.02 311185.41	0.5	100	W 250 32.7

	Sd/Rd	0.44	0	0.00	---	0.07	0.00			
90	Sol. Res. Sd/Rd	54980.24 72686.84 0.76	-115.81 50003.67 0.00	105.03 29616.05 0.00	0 --- ---	56973.99 1091811.75 0.05	18006.29 311185.41 0.06	0.85	300	W 250 32.7
91	Sol. Res. Sd/Rd	54567.76 72686.84 0.75	-116.34 50003.67 0.00	91.76 29616.05 0.00	0 --- ---	56291.72 1072754.38 0.05	18041.36 311185.41 0.06	0.85	300	W 250 32.7
92	Sol. Res. Sd/Rd	-251.41 17454.54 0.01	-15.96 5018.18 0.00	195.87 5018.18 0.04	0 --- ---	18475.3 50950.93 0.36	1482.85 50950.93 0.03	0.41	185	BOX 100 x 100 x 2
93	Sol. Res. Sd/Rd	1716.44 10388.53 0.17	-13.76 5018.18 0.00	31.81 5018.18 0.01	0 --- ---	4038.59 50950.93 0.08	-2702.05 50950.93 -0.05	0.3	352.46	BOX 100 x 100 x 2
94	Sol. Res. Sd/Rd	-2044.85 52063.64 0.04	45.54 18441.82 0.00	13.95 11975.89 0.00	0 --- ---	1836.74 275102.66 0.01	11933.46 76882.74 0.16	0.18	335.41	W 150 13
95	Sol. Res. Sd/Rd	-2858.94 52063.64 0.05	39.19 18441.82 0.00	40.41 11975.89 0.00	0 --- ---	6423.53 260284.7 0.02	10429.19 76882.74 0.14	0.19	335.41	W 150 13
96	Sol. Res. Sd/Rd	3208.68 20895.77 0.15	0.27 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	28.72 79199.27 0	0.72	185	BOX 100 x 100 x 3
97	Sol. Res. Sd/Rd	3134.76 20895.77 0.15	1.11 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	-105.44 79199.27 0.00	0.71	185	BOX 100 x 100 x 3
98	Sol. Res. Sd/Rd	-57724.21 132040.91 0.44	25.7 50003.67 0	516.84 29616.05 0.02	0 --- ---	53618.32 1312198.75 0.04	-4576.31 311185.41 -0.01	0.49	100	W 250 32.7
99	Sol. Res. Sd/Rd	-58690.13 132040.91 0.44	-3.78 50003.67 0	988.14 29616.05 0.03	0 --- ---	88728.93 1312198.75 0.07	586.61 311185.41 0.00	0.51	100	W 250 32.7
100	Sol. Res. Sd/Rd	3230.81 20895.77 0.15	-0.89 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	101.55 79199.27 0.00	0.72	185	BOX 100 x 100 x 3

101	Sol. Res. Sd/Rd	-61935.4 132040.91 0.47	1.5 50003.67 0	578.44 29616.05 0.02	0 --- ---	55080.16 1312198.75 0.04	-2924.34 311185.41 -0.01	0.51	100	W 250 32.7
102	Sol. Res. Sd/Rd	-64257.28 132040.91 0.49	64.71 50003.67 0.00	33.96 29616.05 0.00	0 --- ---	56317.73 1312198.75 0.04	-7735.68 311185.41 -0.02	0.55	100	W 250 32.7
103	Sol. Res. Sd/Rd	-62661.27 132040.91 0.47	-4.95 50003.67 0	564.81 29616.05 0.02	0 --- ---	55490.73 1312198.75 0.04	3097.17 311185.41 0.01	0.52	100	W 250 32.7
104	Sol. Res. Sd/Rd	-65104.84 132040.91 0.49	-65.87 50003.67 0.00	20.33 29616.05 0	0 --- ---	55942.73 1312198.75 0.04	7911.43 311185.41 0.03	0.55	100	W 250 32.7
105	Sol. Res. Sd/Rd	60099.17 72686.84 0.83	133.44 50003.67 0.00	109.94 29616.05 0.00	0 --- ---	57862.05 1097357.13 0.05	-20248.7 311185.41 -0.07	0.93	300	W 250 32.7
106	Sol. Res. Sd/Rd	59539.31 72686.84 0.82	133.23 50003.67 0.00	82.91 29616.05 0.00	0 --- ---	56363.22 1063998.88 0.05	-20188.26 311185.41 -0.06	0.92	300	W 250 32.7
107	Sol. Res. Sd/Rd	1567.5 11470.91 0.14	-54.57 18441.82 0.00	42.94 11975.89 0.00	0 --- ---	6259.79 271682.41 0.02	-13441.41 76882.74 -0.17	0.27	335.41	W 150 13
108	Sol. Res. Sd/Rd	-266.09 17454.54 0.02	-4.55 5018.18 0	225.27 5018.18 0.04	0 --- ---	21308.19 50950.93 0.42	-428.26 50950.93 -0.01	0.44	185	BOX 100 x 100 x 2
109	Sol. Res. Sd/Rd	-685.15 17454.54 0.04	13.99 5018.18 0.00	36.97 5018.18 0.01	0 --- ---	-5036.38 50950.93 -0.1	-2847.32 50950.93 -0.06	0.19	352.46	BOX 100 x 100 x 2
110	Sol. Res. Sd/Rd	202.17 11470.91 0.02	-46.34 18441.82 0.00	23.07 11975.89 0.00	0 --- ---	3684.57 267910.19 0.01	-12057.16 76882.74 -0.16	0.18	335.41	W 150 13
111	Sol. Res. Sd/Rd	3311.63 20895.77 0.16	1.13 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	108.4 79199.27 0.00	0.72	185	BOX 100 x 100 x 3
112	Sol. Res.	3296.84 20895.77	0.23 7200	962.99 7200	0 ---	44538.22 79199.27	-24.61 79199.27	0.72	185	BOX 100 x 100 x 3

	Sd/Rd	0.16	0	0.13	---	0.56	0			
113	Sol. Res. Sd/Rd	-67478.19 132040.91 0.51	-22.35 50003.67 0	546.49 29616.05 0.02	0 --- ---	56090.73 1312198.75 0.04	-6094.63 311185.41 -0.02	0.57	100	W 250 32.7
114	Sol. Res. Sd/Rd	-68453.66 132040.91 0.52	24.99 50003.67 0	560.12 29616.05 0.02	0 --- ---	55625.82 1312198.75 0.04	6232.13 311185.41 0.02	0.57	100	W 250 32.7
115	Sol. Res. Sd/Rd	3275.26 20895.77 0.16	2.64 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	-250.02 79199.27 0.00	0.72	185	BOX 100 x 100 x 3
116	Sol. Res. Sd/Rd	-67458.22 132040.91 0.51	22.84 50003.67 0	545 29616.05 0.02	0 --- ---	55551.83 1312198.75 0.04	-6109.75 311185.41 -0.02	0.57	100	W 250 32.7
117	Sol. Res. Sd/Rd	-63869.13 132040.91 0.48	-68.15 50003.67 0.00	35.45 29616.05 0.00	0 --- ---	55638.53 1312198.75 0.04	-7941.37 311185.41 -0.03	0.54	100	W 250 32.7
118	Sol. Res. Sd/Rd	-67405.35 132040.91 0.51	-20.2 50003.67 0	537.07 29616.05 0.02	0 --- ---	56099.94 1312198.75 0.04	6057.25 311185.41 0.02	0.57	100	W 250 32.7
119	Sol. Res. Sd/Rd	-63945.09 132040.91 0.48	66.91 50003.67 0.00	43.38 29616.05 0.00	0 --- ---	56427.16 1312198.75 0.04	7849.6 311185.41 0.03	0.54	100	W 250 32.7
120	Sol. Res. Sd/Rd	59963.11 72686.84 0.82	-126.74 50003.67 0.00	62.74 29616.05 0.00	0 --- ---	56357.91 1055649.38 0.05	-19035.23 311185.41 -0.06	0.93	300	W 250 32.7
121	Sol. Res. Sd/Rd	59309.72 72686.84 0.82	-126.72 50003.67 0.00	87.31 29616.05 0.00	0 --- ---	56716.59 1068229.75 0.05	-19067.84 311185.41 -0.06	0.92	300	W 250 32.7
122	Sol. Res. Sd/Rd	-2112.14 52063.64 0.04	52.19 18441.82 0.00	16.52 11975.89 0.00	0 --- ---	1922.91 277447.97 0.01	13499.86 76882.74 0.18	0.2	335.41	W 150 13
123	Sol. Res. Sd/Rd	-263.07 17454.54 0.02	-1.62 5018.18 0	219.99 5018.18 0.04	0 --- ---	20790.05 50950.93 0.41	-154.02 50950.93 0.00	0.43	185	BOX 100 x 100 x 2

124	Sol. Res. Sd/Rd	1739.5 10388.53 0.17	-25.45 5018.18 -0.01	13.32 5018.18 0.00	0 --- ---	1485.24 50950.93 0.03	-4494.76 50950.93 -0.09	0.28	352.46	BOX 100 x 100 x 2
125	Sol. Res. Sd/Rd	1264.02 11470.91 0.11	-40.59 18441.82 0.00	40.2 11975.89 0.00	0 --- ---	5792.91 265712.59 0.02	-10656.13 76882.74 -0.14	0.22	335.41	W 150 13
126	Sol. Res. Sd/Rd	3238.52 20895.77 0.15	0.24 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	25.2 79199.27 0	0.72	185	BOX 100 x 100 x 3
127	Sol. Res. Sd/Rd	3282.7 20895.77 0.16	1.13 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	-108.09 79199.27 0.00	0.72	185	BOX 100 x 100 x 3
128	Sol. Res. Sd/Rd	-61184.95 132040.91 0.46	-6.91 50003.67 0	579.93 29616.05 0.02	0 --- ---	54119.69 1312198.75 0.04	-3050.14 311185.41 -0.01	0.51	100	W 250 32.7
129	Sol. Res. Sd/Rd	-61383.74 132040.91 0.46	3.76 50003.67 0	587.86 29616.05 0.02	0 --- ---	54360.01 1312198.75 0.04	2969.89 311185.41 0.01	0.51	100	W 250 32.7
130	Sol. Res. Sd/Rd	3142.36 20895.77 0.15	-0.84 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	-109.02 79199.27 0.00	0.71	185	BOX 100 x 100 x 3
131	Sol. Res. Sd/Rd	-55677.08 132040.91 0.42	-2.87 50003.67 0	992.29 29616.05 0.03	0 --- ---	88602.24 1312198.75 0.07	-492.68 311185.41 0.00	0.48	100	W 250 32.7
132	Sol. Res. Sd/Rd	-55558.89 132040.91 0.42	-5.76 50003.67 0	52.44 29616.05 0.00	0 --- ---	88372.63 1312198.75 0.07	-310.03 311185.41 0	0.48	100	W 250 32.7
133	Sol. Res. Sd/Rd	-56084.45 132040.91 0.42	28.13 50003.67 0	495.78 29616.05 0.02	0 --- ---	52510.43 1312198.75 0.04	4689.4 311185.41 0.02	0.47	100	W 250 32.7
134	Sol. Res. Sd/Rd	-53907.16 132040.91 0.41	4.2 50003.67 0	116.45 29616.05 0.00	0 --- ---	87234.77 1312198.75 0.07	-266.11 311185.41 0	0.47	100	W 250 32.7
135	Sol. Res.	58583.8 72686.84	129.66 50003.67	90.69 29616.05	0 ---	56339.23 1071635.5	19897.63 311185.41	0.91	300	W 250 32.7

	Sd/Rd	0.81	0.00	0.00	---	0.05	0.06			
136	Sol. Res. Sd/Rd	57834.8 72686.84 0.8	130.2 50003.67 0.00	94.85 29616.05 0.00	0 --- ---	57866 1076054.38 0.05	19993.11 311185.41 0.06	0.9	300	W 250 32.7
137	Sol. Res. Sd/Rd	-232.7 17454.54 0.01	-21.18 5018.18 0.00	190.46 5018.18 0.04	0 --- ---	18026.76 50950.93 0.35	-2005.81 50950.93 -0.04	0.41	185	BOX 100 x 100 x 2
138	Sol. Res. Sd/Rd	-881.38 17454.54 0.05	13.56 5018.18 0.00	36.55 5018.18 0.01	0 --- ---	-5043.21 50950.93 -0.1	2806.77 50950.93 0.06	0.2	352.46	BOX 100 x 100 x 2
139	Sol. Res. Sd/Rd	7372.83 11470.91 0.64	-4.81 18441.82 0	76.02 11975.89 0.01	0 --- ---	12515.62 277447.97 0.05	851.45 76882.74 0.01	0.69	335.41	W 150 13
140	Sol. Res. Sd/Rd	5214.68 11470.91 0.45	-6.05 18441.82 0	61.15 11975.89 0.01	0 --- ---	10590.01 251757.19 0.04	-1076.69 76882.74 -0.01	0.5	335.41	W 150 13
141	Sol. Res. Sd/Rd	2987.07 20895.77 0.14	1.1 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	104.8 79199.27 0.00	0.71	185	BOX 100 x 100 x 3
142	Sol. Res. Sd/Rd	3089.12 20895.77 0.15	0.31 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	-33.11 79199.27 0	0.71	185	BOX 100 x 100 x 3
143	Sol. Res. Sd/Rd	-55405.54 132040.91 0.42	7.01 50003.67 0	1056.31 29616.05 0.04	0 --- ---	84992.4 1312198.75 0.06	-459.37 311185.41 0.00	0.48	100	W 250 32.7
144	Sol. Res. Sd/Rd	-53966.3 132040.91 0.41	1.34 50003.67 0	1120.32 29616.05 0.04	0 --- ---	77812.69 1312198.75 0.06	-433.63 311185.41 0.00	0.46	100	W 250 32.7
145	Sol. Res. Sd/Rd	2835.3 20895.77 0.14	2.25 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	-263.93 79199.27 0.00	0.7	185	BOX 100 x 100 x 3
146	Sol. Res. Sd/Rd	-49298.33 132040.91 0.37	8.61 50003.67 0	819.61 29616.05 0.03	0 --- ---	79468.66 1312198.75 0.06	-620.04 311185.41 0.00	0.43	100	W 250 32.7

147	Sol. Res. Sd/Rd	-49157.22 132040.91 0.37	-8.33 50003.67 0	225.13 29616.05 0.01	0 --- ---	79523.55 1312198.75 0.06	-645.3 311185.41 0.00	0.43	100	W 250 32.7
148	Sol. Res. Sd/Rd	-46095.65 132040.91 0.35	-1.12 50003.67 0	853.67 29616.05 0.03	0 --- ---	71214.74 1312198.75 0.05	172.36 311185.41 0	0.4	100	W 250 32.7
149	Sol. Res. Sd/Rd	-46168.45 132040.91 0.35	10.1 50003.67 0	191.07 29616.05 0.01	0 --- ---	71159.86 1312198.75 0.05	-852.55 311185.41 0.00	0.4	100	W 250 32.7
150	Sol. Res. Sd/Rd	51981.65 72686.84 0.72	-109.29 50003.67 0.00	157.67 29616.05 0.01	0 --- ---	58313.05 1221948.13 0.05	-17064.33 311185.41 -0.05	0.81	300	W 250 32.7
151	Sol. Res. Sd/Rd	51178.41 72686.84 0.7	-110.03 50003.67 0.00	277.95 29616.05 0.01	0 --- ---	66650.42 1312198.75 0.05	-17122.65 311185.41 -0.06	0.8	300	W 250 32.7
152	Sol. Res. Sd/Rd	-4261.51 52063.64 0.08	32.06 18441.82 0.00	48.5 11975.89 0.00	0 --- ---	7238.43 277447.97 0.03	8555.17 76882.74 0.11	0.18	335.41	W 150 13
153	Sol. Res. Sd/Rd	-223.82 17454.54 0.01	2.63 5018.18 0	198.3 5018.18 0.04	0 --- ---	-19740.43 50950.93 -0.39	-535.9 50950.93 -0.01	0.41	185	BOX 100 x 100 x 2
154	Sol. Res. Sd/Rd	1852.31 10388.53 0.18	-10.66 5018.18 0.00	37.49 5018.18 0.01	0 --- ---	5495.08 50950.93 0.11	1977.77 50950.93 0.04	0.32	352.46	BOX 100 x 100 x 2
155	Sol. Res. Sd/Rd	11251.07 45713 0.25	20.96 42047.34 0	223.99 22593.11 0.01	0 --- ---	38570.06 860402.31 0.04	-3894.69 238029.25 -0.02	0.3	335.41	W 200 26.6
156	Sol. Res. Sd/Rd	2568.69 20895.77 0.12	0.21 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	25.27 79199.27 0	0.69	185	BOX 100 x 100 x 3
157	Sol. Res. Sd/Rd	2725.25 20895.77 0.13	1.59 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	-165.42 79199.27 0.00	0.69	185	BOX 100 x 100 x 3
158	Sol. Res.	-48989.69 132040.91	-3.4 50003.67	1228.99 29616.05	0 ---	-61669.51 1312198.75	398.13 311185.41	0.41	100	W 250 32.7

	Sd/Rd	0.37	0	0.04	---	-0.05	0.00			
159	Sol. Res. Sd/Rd	-46198.93 132040.91 0.35	-23.61 50003.67 0	1194.93 29616.05 0.04	0 --- ---	-63484.27 1312198.75 -0.05	1343.15 311185.41 0.00	0.4	100	W 250 32.7
160	Sol. Res. Sd/Rd	2347.91 20895.77 0.11	-3.12 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	-320.07 79199.27 0.00	0.68	185	BOX 100 x 100 x 3
161	Sol. Res. Sd/Rd	-39703.59 132040.91 0.3	-1.62 50003.67 0	925.09 29616.05 0.03	0 --- ---	63964.61 1312198.75 0.05	-799.75 311185.41 0.00	0.35	100	W 250 32.7
162	Sol. Res. Sd/Rd	-39552.52 132040.91 0.3	-11.46 50003.67 0	119.65 29616.05 0.00	0 --- ---	63972.75 1312198.75 0.05	-773.24 311185.41 0.00	0.35	100	W 250 32.7
163	Sol. Res. Sd/Rd	-34710.66 132040.91 0.26	-25.27 50003.67 0	819.02 29616.05 0.03	0 --- ---	72893.97 1312198.75 0.06	-1878.81 311185.41 -0.01	0.32	100	W 250 32.7
164	Sol. Res. Sd/Rd	-34753.93 132040.91 0.26	13.24 50003.67 0	225.72 29616.05 0.01	0 --- ---	72885.82 1312198.75 0.06	-831.6 311185.41 0.00	0.31	100	W 250 32.7
165	Sol. Res. Sd/Rd	44292.99 72686.84 0.61	97.94 50003.67 0.00	208.69 29616.05 0.01	0 --- ---	47722.57 1312198.75 0.04	15727.24 311185.41 0.05	0.69	300	W 250 32.7
166	Sol. Res. Sd/Rd	43208.1 72686.84 0.59	96.66 50003.67 0.00	148.89 29616.05 0.01	0 --- ---	38650.59 1292469.13 0.03	15512.07 311185.41 0.05	0.67	300	W 250 32.7
167	Sol. Res. Sd/Rd	-7688.14 107263.63 0.07	-48.64 42047.34 0.00	113.93 22593.11 0.01	0 --- ---	17370.52 860402.31 0.02	-15237.8 238029.25 -0.06	0.12	335.41	W 200 26.6
168	Sol. Res. Sd/Rd	-215.7 17454.54 0.01	-36.91 5018.18 -0.01	222.3 5018.18 0.04	0 --- ---	20304.46 50950.93 0.4	-3466.01 50950.93 -0.07	0.48	185	BOX 100 x 100 x 2
169	Sol. Res. Sd/Rd	-1774.73 17454.54 0.1	11.81 5018.18 0.00	43.65 5018.18 0.01	0 --- ---	-6769.79 50950.93 -0.13	2659.62 50950.93 0.05	0.29	352.46	BOX 100 x 100 x 2

170	Sol. Res. Sd/Rd	14717.69 45713 0.32	-9.75 42047.34 0	185.77 22593.11 0.01	0 --- ---	32601.47 860402.31 0.04	-2588.75 238029.25 -0.01	0.37	335.41	W 200 26.6
171	Sol. Res. Sd/Rd	1958.12 20895.77 0.09	1.58 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	-156.46 79199.27 0.00	0.66	185	BOX 100 x 100 x 3
172	Sol. Res. Sd/Rd	2174.25 20895.77 0.1	0.2 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	-23.2 79199.27 0	0.67	185	BOX 100 x 100 x 3
173	Sol. Res. Sd/Rd	-39360.76 132040.91 0.3	11.15 50003.67 0	1123.51 29616.05 0.04	0 --- ---	-56288.96 1312198.75 -0.04	-756.13 311185.41 0.00	0.34	100	W 250 32.7
174	Sol. Res. Sd/Rd	-34772.38 132040.91 0.26	-3.58 50003.67 0	1229.58 29616.05 0.04	0 --- ---	-68522.84 1312198.75 -0.05	-854.8 311185.41 0.00	0.31	100	W 250 32.7
175	Sol. Res. Sd/Rd	1678.94 20895.77 0.08	2.25 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	-307.48 79199.27 0.00	0.65	185	BOX 100 x 100 x 3
176	Sol. Res. Sd/Rd	-26724.1 132040.91 0.2	11.07 50003.67 0	836.81 29616.05 0.03	0 --- ---	71233.75 1312198.75 0.05	-1025.59 311185.41 0.00	0.25	100	W 250 32.7
177	Sol. Res. Sd/Rd	-26530.37 132040.91 0.2	-10.01 50003.67 0	207.93 29616.05 0.01	0 --- ---	71302.7 1312198.75 0.05	-1050.34 311185.41 0.00	0.25	100	W 250 32.7
178	Sol. Res. Sd/Rd	-20273.64 132040.91 0.15	-3.85 50003.67 0	801.66 29616.05 0.03	0 --- ---	67523.4 1312198.75 0.05	-213.37 311185.41 0	0.15	100	W 250 32.7
179	Sol. Res. Sd/Rd	-20316.7 132040.91 0.15	9.76 50003.67 0	243.08 29616.05 0.01	0 --- ---	67454.45 1312198.75 0.05	-849.22 311185.41 0.00	0.15	100	W 250 32.7
180	Sol. Res. Sd/Rd	31085.45 72686.84 0.43	-62.26 50003.67 0.00	281.43 29616.05 0.01	0 --- ---	56157.14 1312198.75 0.04	-10463.79 311185.41 -0.03	0.5	300	W 250 32.7
181	Sol. Res.	29865.24 72686.84	-61.77 50003.67	321.16 29616.05	0 ---	62854.45 1312198.75	-10447.65 311185.41	0.48	300	W 250 32.7

	Sd/Rd	0.41	0.00	0.01	---	0.05	-0.03			
182	Sol. Res. Sd/Rd	-105.37 17454.54 0.01	17.26 5018.18 0.00	108.74 5018.18 0.02	0 --- ---	-9836.81 50950.93 -0.19	-1598.19 50950.93 -0.03	0.23	185	BOX 100 x 100 x 2
183	Sol. Res. Sd/Rd	2659.34 10388.53 0.26	-8.3 5018.18 0.00	30.59 5018.18 0.01	0 --- ---	-3339.93 50950.93 -0.07	1521.08 50950.93 0.03	0.35	352.46	BOX 100 x 100 x 2
184	Sol. Res. Sd/Rd	18461.81 45713 0.4	-0.28 42047.34 0	262.7 22593.11 0.01	0 --- ---	43724 860402.31 0.05	-1704.66 238029.25 -0.01	0.46	335.41	W 200 26.6
185	Sol. Res. Sd/Rd	16278.86 45713 0.36	2.4 42047.34 0	229.64 22593.11 0.01	0 --- ---	40359.17 860402.31 0.05	-2478.56 238029.25 -0.01	0.41	335.41	W 200 26.6
186	Sol. Res. Sd/Rd	1165 20895.77 0.06	0.37 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	-44.21 79199.27 0	0.62	185	BOX 100 x 100 x 3
187	Sol. Res. Sd/Rd	1436.23 20895.77 0.07	1.38 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	155.78 79199.27 0.00	0.63	185	BOX 100 x 100 x 3
188	Sol. Res. Sd/Rd	-26334.83 132040.91 0.2	-14.62 50003.67 0	1211.79 29616.05 0.04	0 --- ---	-66448.3 1312198.75 -0.05	1256.62 311185.41 0.00	0.2	100	W 250 32.7
189	Sol. Res. Sd/Rd	-20346.29 132040.91 0.15	-3.46 50003.67 0	1246.94 29616.05 0.04	0 --- ---	-77593.28 1312198.75 -0.06	-949.19 311185.41 0.00	0.15	100	W 250 32.7
190	Sol. Res. Sd/Rd	897.66 20895.77 0.04	-1.69 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	-388.1 79199.27 0.00	0.61	185	BOX 100 x 100 x 3
191	Sol. Res. Sd/Rd	-11026.06 132040.91 0.08	24.2 50003.67 0	207.52 29616.05 0.01	0 --- ---	42661.76 1312198.75 0.03	-2926.68 311185.41 -0.01	0.08	100	W 250 32.7
192	Sol. Res. Sd/Rd	-13202.19 132040.91 0.1	-286.66 50003.67 -0.01	497.31 29616.05 0.02	0 --- ---	28490.76 1312198.75 0.02	-24234.88 311185.41 -0.08	0.15	100	W 250 32.7

193	Sol. Res. Sd/Rd	-6030.04 132040.91 0.05	64.47 50003.67 0.00	209.21 29616.05 0.01	0 --- ---	31081.09 1312198.75 0.02	3724.83 311185.41 0.01	0.06	100	W 250 32.7
194	Sol. Res. Sd/Rd	-8656.71 132040.91 0.07	72.08 50003.67 0.00	371.24 29616.05 0.01	0 --- ---	30320.8 1312198.75 0.02	-5159.79 311185.41 -0.02	0.07	100	W 250 32.7
195	Sol. Res. Sd/Rd	16447.85 76153.48 0.22	48.07 50003.67 0	215.95 29616.05 0.01	0 --- ---	46423.55 1312198.75 0.04	7919.4 311185.41 0.03	0.27	287.5	W 250 32.7
196	Sol. Res. Sd/Rd	15238.79 76153.48 0.2	52 50003.67 0.00	338.28 29616.05 0.01	0 --- ---	53548.35 1312198.75 0.04	8352.44 311185.41 0.03	0.26	287.5	W 250 32.7
197	Sol. Res. Sd/Rd	-5.49 17454.54 0	17.09 5018.18 0.00	124.95 5018.18 0.02	0 --- ---	11666.85 50950.93 0.23	1622.48 50950.93 0.03	0.26	185	BOX 100 x 100 x 2
198	Sol. Res. Sd/Rd	-2569.44 17454.54 0.15	4.09 5018.18 0	22.87 5018.18 0.00	0 --- ---	-2841.81 50950.93 -0.06	928.41 50950.93 0.02	0.22	341.88	BOX 100 x 100 x 2
199	Sol. Res. Sd/Rd	20635.92 45713 0.45	-93.89 42047.34 0.00	183.25 22593.11 0.01	0 --- ---	-34770.81 860402.31 -0.04	19422.37 238029.25 0.08	0.56	335.41	W 200 26.6
200	Sol. Res. Sd/Rd	16748.52 45713 0.37	-71.02 42047.34 0.00	88.9 22593.11 0.00	0 --- ---	-26984.63 860402.31 -0.03	-11948.87 238029.25 -0.05	0.44	335.41	W 200 26.6
201	Sol. Res. Sd/Rd	-24.45 25636.36 0	0.64 7200 0	962.99 7200 0.13	0 --- ---	44538.22 79199.27 0.56	252.59 79199.27 0.00	0.57	185	BOX 100 x 100 x 3
202	Sol. Res. Sd/Rd	1674.48 20895.77 0.08	4.61 7200 0	903.44 7200 0.13	0 --- ---	41784.16 79199.27 0.53	-648.56 79199.27 -0.01	0.62	185	BOX 100 x 100 x 3
203	Sol. Res. Sd/Rd	-15155.89 132040.91 0.11	-1747.5 50003.67 -0.03	1006.08 29616.05 0.03	0 --- ---	-106521.29 1312198.75 -0.08	124293.38 311185.41 0.4	0.54	87.5	W 250 32.7
204	Sol. Res.	-10948.07 132040.91	243.61 50003.67	880 29616.05	0 ---	-81201.32 1312198.75	15729.61 311185.41	0.15	87.5	W 250 32.7

	Sd/Rd	0.08	0.00	0.03	---	-0.06	0.05			
205	Sol. Res. Sd/Rd	-4106.69 25636.36 0.16	-16.27 7200 0.00	998.72 7200 0.14	0 --- ---	46190.64 79199.27 0.58	-3173.79 79199.27 -0.04	0.78	185	BOX 100 x 100 x 3
206	Sol. Res. Sd/Rd	354.42 12907.22 0.03	7.3 5018.18 0.00	229.9 5018.18 0.05	0 --- ---	-24257.77 50950.93 -0.48	-702.69 50950.93 -0.01	0.52	185	BOX 100 x 100 x 2
207	Sol. Res. Sd/Rd	3516.2 54215.34 0.06	-142.69 42047.34 0.00	166.97 22593.11 0.01	0 --- ---	-25245.99 860402.31 -0.03	27646.63 238029.25 0.12	0.18	300	W 200 26.6
208	Sol. Res. Sd/Rd	4856.33 82693.65 0.06	405.87 42047.34 0.01	-685.65 22593.11 -0.03	0 --- ---	94773.98 860402.31 0.11	49816.29 238029.25 0.21	0.35	185.24	W 200 26.6
209	Sol. Res. Sd/Rd	52.34 95954.98 0	13.25 50003.67 0	2859.29 29616.05 0.1	0 --- ---	-394335.53 1312198.75 -0.3	1531.04 311185.41 0.00	0.31	215	W 250 32.7
210	Sol. Res. Sd/Rd	-125.41 132040.91 0	33.65 50003.67 0	428.7 29616.05 0.01	0 --- ---	-63734 1312198.75 -0.05	-3960.37 311185.41 -0.01	0.06	215	W 250 32.7
211	Sol. Res. Sd/Rd	5829.44 45550.14 0.13	561.65 18441.82 0.03	1505.97 11975.89 0.13	0 --- ---	-125911.21 277447.97 -0.45	36297.07 76882.74 0.47	0.99	95	W 150 13
212	Sol. Res. Sd/Rd	5432.5 117423.18 0.05	129.74 50003.67 0.00	1013.7 29616.05 0.03	0 --- ---	-103300.01 1312198.75 -0.08	10306.02 311185.41 0.03	0.13	120	W 250 32.7
213	Sol. Res. Sd/Rd	3430.18 20895.77 0.16	11.96 7200 0.00	246.27 7200 0.03	0 --- ---	11390.09 79199.27 0.14	-1485.48 79199.27 -0.02	0.33	185	BOX 100 x 100 x 3
214	Sol. Res. Sd/Rd	607.76 20895.77 0.03	22.98 7200 0.00	1034.44 7200 0.14	4387.96 --- ---	47843.06 79199.27 0.6	3117.22 79199.27 0.04	0.67	185	BOX 100 x 100 x 3
215	Sol. Res. Sd/Rd	3281.34 121496.4 0.03	-90.99 50003.67 0.00	65.16 29616.05 0.00	0 --- ---	14233.81 1312198.75 0.01	-6543.89 311185.41 -0.02	0.05	95	W 250 32.7

216	Sol. Res. Sd/Rd	2601.17 45550.14 0.06	-85.43 18441.82 0.00	946.41 11975.89 0.08	0 --- ---	101386.24 277447.97 0.37	-6103.63 76882.74 -0.08	0.47	95	W 150 13
217	Sol. Res. Sd/Rd	1790.42 54215.34 0.03	-11.8 42047.34 0	-86.33 22593.11 0.00	0 --- ---	-13692.26 860402.31 -0.02	2150.94 238029.25 0.01	0.04	300	W 200 26.6
218	Sol. Res. Sd/Rd	-2794.72 107263.63 0.03	111.88 42047.34 0.00	-1110.65 22593.11 -0.05	0 --- ---	206681.8 860402.31 0.24	-16070.97 238029.25 -0.07	0.32	185.24	W 200 26.6
219	Sol. Res. Sd/Rd	-2400.95 107263.63 0.02	-5.54 42047.34 0	87.16 22593.11 0.00	0 --- ---	-17095.42 860402.31 -0.02	-2859.73 238029.25 -0.01	0.04	369.09	W 200 26.6
220	Sol. Res. Sd/Rd	1117.15 12907.22 0.09	-17.69 5018.18 0.00	78.55 5018.18 0.02	0 --- ---	9283.22 50950.93 0.18	-1721.84 50950.93 -0.03	0.3	185	BOX 100 x 100 x 2
221	Sol. Res. Sd/Rd	-328.27 52063.64 0.01	-47.6 18441.82 0.00	25.8 11975.89 0.00	0 --- ---	4050.32 275600.16 0.01	-11790.85 76882.74 -0.15	0.17	335.41	W 150 13
222	Sol. Res. Sd/Rd	2523.38 11470.91 0.22	50.2 18441.82 0.00	44.88 11975.89 0.00	0 --- ---	6707.02 266728.41 0.03	11723.23 76882.74 0.15	0.38	335.41	W 150 13
223	Sol. Res. Sd/Rd	10664.31 45713 0.23	-11.6 42047.34 0	211.95 22593.11 0.01	0 --- ---	36511.77 860402.31 0.04	2435.56 238029.25 0.01	0.28	335.41	W 200 26.6
224	Sol. Res. Sd/Rd	14214.05 45713 0.31	9.94 42047.34 0	127.99 22593.11 0.01	0 --- ---	20665.6 860402.31 0.02	3114.14 238029.25 0.01	0.34	335.41	W 200 26.6
225	Sol. Res. Sd/Rd	-3388.79 52063.64 0.07	-32.55 18441.82 0.00	44.36 11975.89 0.00	0 --- ---	6953.85 277447.97 0.03	-8741.9 76882.74 -0.11	0.17	335.41	W 150 13
226	Sol. Res. Sd/Rd	-3819.29 52063.64 0.07	-37.37 18441.82 0.00	49.44 11975.89 0.00	0 --- ---	7995.23 268733.88 0.03	-10009.27 76882.74 -0.13	0.2	335.41	W 150 13
227	Sol. Res.	-10711.13 52063.64	-5.08 18441.82	63.47 11975.89	0 ---	9710.43 277447.97	858.5 76882.74	0.25	335.41	W 150 13

	Sd/Rd	0.21	0	0.01	---	0.03	0.01			
228	Sol. Res. Sd/Rd	-14675.11 107263.63 0.14	16.09 42047.34 0	166.05 22593.11 0.01	0 --- ---	29208.68 860402.31 0.03	3878.69 238029.25 0.02	0.14	335.41	W 200 26.6
229	Sol. Res. Sd/Rd	-18198.15 107263.63 0.17	0.72 42047.34 0	202.01 22593.11 0.01	0 --- ---	34022.43 860402.31 0.04	-910.65 238029.25 0.00	0.17	335.41	W 200 26.6
230	Sol. Res. Sd/Rd	-21153.13 107263.63 0.2	3.94 42047.34 0	300.31 22593.11 0.01	0 --- ---	46648.98 860402.31 0.05	1664.76 238029.25 0.01	0.2	330.01	W 200 26.6
231	Sol. Res. Sd/Rd	2646.54 11470.91 0.23	54.11 18441.82 0.00	49.57 11975.89 0.00	0 --- ---	7388.8 264024.81 0.03	13114.85 76882.74 0.17	0.41	335.41	W 150 13
232	Sol. Res. Sd/Rd	-1057.24 52063.64 0.02	-53.62 18441.82 0.00	24.04 11975.89 0.00	0 --- ---	3049.08 277447.97 0.01	-13800.64 76882.74 -0.18	0.2	335.41	W 150 13
233	Sol. Res. Sd/Rd	-5653.24 52063.64 0.11	-38.08 18441.82 0.00	39.88 11975.89 0.00	0 --- ---	5911.16 277447.97 0.02	-10043 76882.74 -0.13	0.21	335.41	W 150 13
234	Sol. Res. Sd/Rd	-12514.78 52063.64 0.24	3.7 18441.82 0	70.75 11975.89 0.01	0 --- ---	10559.24 277447.97 0.04	-1120.69 76882.74 -0.01	0.29	335.41	W 150 13
235	Sol. Res. Sd/Rd	-16405.27 107263.63 0.15	-6.41 42047.34 0	191.81 22593.11 0.01	0 --- ---	31994.77 860402.31 0.04	1165.79 238029.25 0.00	0.15	335.41	W 200 26.6
236	Sol. Res. Sd/Rd	-20377.02 107263.63 0.19	13.79 42047.34 0	193.49 22593.11 0.01	0 --- ---	33218.41 860402.31 0.04	-3104.19 238029.25 -0.01	0.19	335.41	W 200 26.6
237	Sol. Res. Sd/Rd	12485.06 45713 0.27	-14.65 42047.34 0	160.56 22593.11 0.01	0 --- ---	27532.42 860402.31 0.03	-3844.01 238029.25 -0.02	0.32	335.41	W 200 26.6
238	Sol. Res. Sd/Rd	8573.46 11470.91 0.75	8.46 18441.82 0	62.64 11975.89 0.01	0 --- ---	9605.95 276576.16 0.03	-1686.19 76882.74 -0.02	0.8	335.41	W 150 13

239	Sol. Res. Sd/Rd	-783.57 52063.64 0.02	45.03 18441.82 0.00	29.54 11975.89 0.00	0 --- ---	4750.45 274601.84 0.02	11785.66 76882.74 0.15	0.18	335.41	W 150 13
240	Sol. Res. Sd/Rd	-3125.53 52063.64 0.06	-43.96 18441.82 0.00	15.49 11975.89 0.00	0 --- ---	1958.62 274699.47 0.01	-11587.45 76882.74 -0.15	0.19	335.41	W 150 13
241	Sol. Res. Sd/Rd	-15879.24 107263.63 0.15	0.32 42047.34 0	162.83 22593.11 0.01	0 --- ---	27945.42 860402.31 0.03	-1174.98 238029.25 0.00	0.15	335.41	W 200 26.6
242	Sol. Res. Sd/Rd	-18807.11 107263.63 0.18	20.56 42047.34 0	345.72 22593.11 0.02	0 --- ---	56747.68 860402.31 0.07	-4303.82 238029.25 -0.02	0.18	330.01	W 200 26.6
243	Sol. Res. Sd/Rd	5792.48 11470.91 0.5	-4.85 18441.82 0	61.35 11975.89 0.01	0 --- ---	10606.54 247013.16 0.04	-1004.09 76882.74 -0.01	0.55	335.41	W 150 13
244	Sol. Res. Sd/Rd	17446.51 45713 0.38	-10.09 42047.34 0	493.59 22593.11 0.02	0 --- ---	88674.43 860402.31 0.1	4869.91 238029.25 0.02	0.49	335.41	W 200 26.6
245	Sol. Res. Sd/Rd	928.18 42839.72 0.02	-34.17 18441.82 0.00	-106.6 11975.89 -0.01	0 --- ---	-12857.81 277447.97 -0.05	-2599.97 76882.74 -0.03	0.09	114.75	W 150 13
246	Sol. Res. Sd/Rd	-354.68 52063.64 0.01	-35.29 18441.82 0.00	-89.1 11975.89 -0.01	0 --- ---	-10714.5 277447.97 -0.04	-2865.75 76882.74 -0.04	0.08	114.75	W 150 13
247	Sol. Res. Sd/Rd	-414.55 25636.36 0.02	989.02 7200 0.14	103.57 7200 0.01	0 --- ---	10596.07 79199.27 0.13	46978.22 79199.27 0.59	0.74	190	BOX 100 x 100 x 3
248	Sol. Res. Sd/Rd	-5515.53 52063.64 0.11	29.15 18441.82 0.00	-123.44 11975.89 -0.01	0 --- ---	27342.87 277447.97 0.1	3244.07 76882.74 0.04	0.19	138.57	W 150 13
249	Sol. Res. Sd/Rd	3932.39 36982.74 0.11	-34.23 18441.82 0.00	68.41 11975.89 0.01	0 --- ---	21989.46 277447.97 0.08	2192.02 76882.74 0.03	0.16	151.97	W 150 13
250	Sol. Res.	-3883.17 52063.64	8.26 18441.82	-73.61 11975.89	0 ---	21983.24 277447.97	-586.87 76882.74	0.12	151.92	W 150 13

	Sd/Rd	0.07	0	-0.01	---	0.08	-0.01			
251	Sol. Res. Sd/Rd	1098.71 36981.52 0.03	-12.48 18441.82 0	77.3 11975.89 0.01	0 --- ---	22998.53 277447.97 0.08	639.61 76882.74 0.01	0.11	151.98	W 150 13
252	Sol. Res. Sd/Rd	-1015.68 52063.64 0.02	10.31 18441.82 0	-78.91 11975.89 -0.01	0 --- ---	22998.24 277447.97 0.08	-703.07 76882.74 -0.01	0.1	151.91	W 150 13
253	Sol. Res. Sd/Rd	-1623.73 52063.64 0.03	-9.36 18441.82 0	75.92 11975.89 0.01	0 --- ---	23077.19 277447.97 0.08	662.9 76882.74 0.01	0.11	151.97	W 150 13
254	Sol. Res. Sd/Rd	1697.73 36994 0.05	11.59 18441.82 0	-76.33 11975.89 -0.01	0 --- ---	23067.08 277447.97 0.08	-787.55 76882.74 -0.01	0.12	151.9	W 150 13
255	Sol. Res. Sd/Rd	-4416.49 52063.64 0.08	-16.6 18441.82 0	69.27 11975.89 0.01	0 --- ---	22654.86 277447.97 0.08	794.28 76882.74 0.01	0.13	151.98	W 150 13
256	Sol. Res. Sd/Rd	4475.33 36994 0.12	18.87 18441.82 0.00	-52.14 11975.89 0.00	0 --- ---	22647.87 277447.97 0.08	-1260.65 76882.74 -0.02	0.16	151.9	W 150 13
257	Sol. Res. Sd/Rd	-6659.24 52063.64 0.13	-19.05 18441.82 0.00	23.03 11975.89 0.00	0 --- ---	18385.32 277447.97 0.07	-1409.08 76882.74 -0.02	0.15	147.08	W 150 13
258	Sol. Res. Sd/Rd	2510.24 32536.42 0.08	49.54 18441.82 0.00	149.97 11975.89 0.01	0 --- ---	-13804.92 277447.97 -0.05	4293.39 76882.74 0.06	0.14	178.17	W 150 13
259	Sol. Res. Sd/Rd	7666.03 15914.6 0.48	18.88 18441.82 0.00	155.16 11975.89 0.01	0 --- ---	-16020.85 277447.97 -0.06	-1021.4 76882.74 -0.01	0.54	200.02	W 150 13
260	Sol. Res. Sd/Rd	9050.87 15914.6 0.57	16.53 18441.82 0	156.78 11975.89 0.01	0 --- ---	16088.82 277447.97 0.06	-1117.88 76882.74 -0.01	0.63	200	W 150 13
261	Sol. Res. Sd/Rd	6878.67 15914.6 0.43	19.94 18441.82 0.00	157.18 11975.89 0.01	0 --- ---	17176.04 277447.97 0.06	-1090.11 76882.74 -0.01	0.5	200.01	W 150 13

262	Sol. Res. Sd/Rd	-3865.7 60845.45 0.06	-158.58 19570.91 -0.01	288.89 16183.64 0.02	0 --- ---	-16036.21 434083.75 -0.04	8124.64 83354.24 0.1	0.17	101.61	W 200 15
263	Sol. Res. Sd/Rd	-9784.83 60845.45 0.16	-40.84 19570.91 0.00	492.34 16183.64 0.03	0 --- ---	-35516.26 434083.75 -0.08	3452.26 83354.24 0.04	0.2	100	W 200 15
264	Sol. Res. Sd/Rd	-8700.63 60845.45 0.14	-47.94 19570.91 0.00	520.28 16183.64 0.03	0 --- ---	-37956.88 434083.75 -0.09	-4464.73 83354.24 -0.05	0.21	100.01	W 200 15
265	Sol. Res. Sd/Rd	-11550.73 60845.45 0.19	-46.21 19570.91 0.00	496.36 16183.64 0.03	0 --- ---	-37113.16 434083.75 -0.09	3898.26 83354.24 0.05	0.23	100.01	W 200 15
266	Sol. Res. Sd/Rd	-10166.04 60845.45 0.17	-47.51 19570.91 0.00	513.34 16183.64 0.03	0 --- ---	-39993.79 434083.75 -0.09	-4268.74 83354.24 -0.05	0.23	99.97	W 200 15
267	Sol. Res. Sd/Rd	-9482.87 60845.45 0.16	-48.52 19570.91 0.00	444.44 16183.64 0.03	0 --- ---	-35881.17 434083.75 -0.08	4156.4 83354.24 0.05	0.21	100.03	W 200 15
268	Sol. Res. Sd/Rd	-8281.08 60845.45 0.14	-49.83 19570.91 0.00	576.15 16183.64 0.04	0 --- ---	-38945.89 434083.75 -0.09	-4256.64 83354.24 -0.05	0.21	99.98	W 200 15
269	Sol. Res. Sd/Rd	-4161.28 60845.45 0.07	-56.15 19570.91 0.00	505.36 16183.64 0.03	0 --- ---	-35314.87 434083.75 -0.08	4523 83354.24 0.05	0.17	100	W 200 15
270	Sol. Res. Sd/Rd	-8527.52 60845.45 0.14	-30.93 19570.91 0.00	297.91 16183.64 0.02	0 --- ---	-24138 434083.75 -0.06	-2933.36 83354.24 -0.04	0.16	100	W 200 15
271	Sol. Res. Sd/Rd	9373.2 52994.78 0.18	-57.82 19570.91 0.00	156.43 16183.64 0.01	0 --- ---	7792.38 434083.75 0.02	5328.25 83354.24 0.06	0.18	68.99	W 200 15
272	Sol. Res. Sd/Rd	2651.75 15914.6 0.17	20.23 18441.82 0.00	70.68 11975.89 0.01	0 --- ---	-7326.07 277447.97 -0.03	926.86 76882.74 0.01	0.17	192.4	W 150 13
273	Sol. Res.	-5352.42 52063.64	26.99 18441.82	-85.77 11975.89	0 ---	18605.21 277447.97	2390.69 76882.74	0.15	138.57	W 150 13

	Sd/Rd	0.1	0.00	-0.01	---	0.07	0.03			
274	Sol. Res. Sd/Rd	4041.19 36982.74 0.11	-32.46 18441.82 0.00	82.01 11975.89 0.01	0 --- ---	20276.25 277447.97 0.07	2394.4 76882.74 0.03	0.16	151.97	W 150 13
275	Sol. Res. Sd/Rd	-3968.79 52063.64 0.08	7.59 18441.82 0	-71.06 11975.89 -0.01	0 --- ---	20268.44 277447.97 0.07	-525.64 76882.74 -0.01	0.12	151.92	W 150 13
276	Sol. Res. Sd/Rd	1148.85 36981.52 0.03	-14.39 18441.82 0	69.29 11975.89 0.01	0 --- ---	20425.31 277447.97 0.07	710.52 76882.74 0.01	0.1	151.98	W 150 13
277	Sol. Res. Sd/Rd	-1065.88 52063.64 0.02	11.1 18441.82 0	-68.85 11975.89 -0.01	0 --- ---	20425.79 277447.97 0.07	-633.59 76882.74 -0.01	0.09	151.91	W 150 13
278	Sol. Res. Sd/Rd	-1548.14 52063.64 0.03	-15.14 18441.82 0	67.63 11975.89 0.01	0 --- ---	20703.31 277447.97 0.07	757.35 76882.74 0.01	0.1	151.97	W 150 13
279	Sol. Res. Sd/Rd	1633.33 36994 0.04	17.25 18441.82 0	-68.14 11975.89 -0.01	0 --- ---	20694.54 277447.97 0.07	-929.04 76882.74 -0.01	0.11	151.9	W 150 13
280	Sol. Res. Sd/Rd	-4372.42 52063.64 0.08	-13.43 18441.82 0	60.17 11975.89 0.01	0 --- ---	20051.03 277447.97 0.07	441.65 76882.74 0.01	0.12	151.98	W 150 13
281	Sol. Res. Sd/Rd	4451.4 36994 0.12	32.79 18441.82 0.00	-46.74 11975.89 0.00	0 --- ---	20044.97 277447.97 0.07	-2072.73 76882.74 -0.03	0.16	151.9	W 150 13
282	Sol. Res. Sd/Rd	-6493.83 52063.64 0.12	-14.11 18441.82 0	25.05 11975.89 0.00	0 --- ---	16869.13 277447.97 0.06	-1535.94 76882.74 -0.02	0.14	147.08	W 150 13
283	Sol. Res. Sd/Rd	-104.55 52063.64 0.00	22.96 18441.82 0.00	185.98 11975.89 0.02	0 --- ---	-32148.47 277447.97 -0.12	1001.88 76882.74 0.01	0.13	178.17	W 150 13
284	Sol. Res. Sd/Rd	7795.26 15914.6 0.49	19.38 18441.82 0.00	139.81 11975.89 0.01	0 --- ---	-14340.67 277447.97 -0.05	-982.35 76882.74 -0.01	0.55	200.02	W 150 13

285	Sol. Res. Sd/Rd	9247.01 15914.6 0.58	17.29 18441.82 0	139.36 11975.89 0.01	0 --- ---	14602.55 277447.97 0.05	-987.28 76882.74 -0.01	0.64	200	W 150 13
286	Sol. Res. Sd/Rd	7167.8 15914.6 0.45	21.16 18441.82 0.00	139.88 11975.89 0.01	0 --- ---	15351.28 277447.97 0.06	-804.54 76882.74 -0.01	0.51	200.01	W 150 13
287	Sol. Res. Sd/Rd	11036.28 48674.54 0.23	-130.26 19570.91 -0.01	187.69 16183.64 0.01	0 --- ---	14878.16 434083.75 0.03	-6867.02 83354.24 -0.08	0.33	101.61	W 200 15
288	Sol. Res. Sd/Rd	2638.17 48917.69 0.05	-37.56 19570.91 0.00	539.17 16183.64 0.03	0 --- ---	-33127.33 434083.75 -0.08	3039.76 83354.24 0.04	0.14	100	W 200 15
289	Sol. Res. Sd/Rd	1393.77 48915.61 0.03	-42.66 19570.91 0.00	487.55 16183.64 0.03	0 --- ---	-30686.71 434083.75 -0.07	-3911.29 83354.24 -0.05	0.13	100.01	W 200 15
290	Sol. Res. Sd/Rd	-3889.04 60845.45 0.06	-44.86 19570.91 0.00	577.72 16183.64 0.04	0 --- ---	-36456.51 434083.75 -0.08	3633.25 83354.24 0.04	0.16	100.01	W 200 15
291	Sol. Res. Sd/Rd	-4848.18 60845.45 0.08	-44.2 19570.91 0.00	442.38 16183.64 0.03	0 --- ---	-33575.88 434083.75 -0.08	-3916.81 83354.24 -0.05	0.16	99.97	W 200 15
292	Sol. Res. Sd/Rd	-6582.87 60845.45 0.11	-44.88 19570.91 0.00	512.22 16183.64 0.03	0 --- ---	-37812.34 434083.75 -0.09	3690.09 83354.24 0.04	0.19	100.03	W 200 15
293	Sol. Res. Sd/Rd	-7730.8 60845.45 0.13	-42.92 19570.91 0.00	511.02 16183.64 0.03	0 --- ---	-34747.61 434083.75 -0.08	-3701.43 83354.24 -0.04	0.19	99.98	W 200 15
294	Sol. Res. Sd/Rd	-6018.59 60845.45 0.1	-40.74 19570.91 0.00	608.67 16183.64 0.04	0 --- ---	-41859.74 434083.75 -0.1	3630.02 83354.24 0.04	0.19	100	W 200 15
295	Sol. Res. Sd/Rd	-12669.22 60845.45 0.21	-40.33 19570.91 0.00	248.43 16183.64 0.02	0 --- ---	-24207.5 434083.75 -0.06	-2922.65 83354.24 -0.04	0.29	100	W 200 15
296	Sol. Res.	-10815.65 60845.45	1022 19570.91	44 16183.64	0 ---	1403.89 434083.75	51421.45 83354.24	0.71	68.99	W 200 15

	Sd/Rd	0.18	0.05	0.00	---	0.00	0.62			
297	Sol. Res. Sd/Rd	4191.08 15914.6 0.26	21.95 18441.82 0.00	60.68 11975.89 0.01	0 --- ---	7385.68 277447.97 0.03	1422.89 76882.74 0.02	0.3	192.4	W 150 13
298	Sol. Res. Sd/Rd	-35.02 25636.36 0.00	989.02 7200 0.14	48.01 7200 0.01	0 --- ---	-4889.37 79199.27 -0.06	46978.22 79199.27 0.59	0.66	190	BOX 100 x 100 x 3
299	Sol. Res. Sd/Rd	17.31 20761.74 0	989.02 7200 0.14	-15.44 7200 0.00	0 --- ---	1473.1 79199.27 0.02	46978.22 79199.27 0.59	0.61	190	BOX 100 x 100 x 3
300	Sol. Res. Sd/Rd	599.97 20761.74 0.03	989.02 7200 0.14	58.84 7200 0.01	0 --- ---	5749.23 79199.27 0.07	46978.22 79199.27 0.59	0.69	190	BOX 100 x 100 x 3
301	Sol. Res. Sd/Rd	996.06 20761.74 0.05	989.02 7200 0.14	-14.87 7200 0.00	0 --- ---	-1429.14 79199.27 -0.02	46978.22 79199.27 0.59	0.66	190	BOX 100 x 100 x 3
302	Sol. Res. Sd/Rd	952.1 20761.74 0.05	989.02 7200 0.14	64.49 7200 0.01	0 --- ---	6427.11 79199.27 0.08	46978.22 79199.27 0.59	0.72	190	BOX 100 x 100 x 3
303	Sol. Res. Sd/Rd	555.96 20761.74 0.03	989.02 7200 0.14	-13.48 7200 0.00	0 --- ---	1356.74 79199.27 0.02	46978.22 79199.27 0.59	0.64	190	BOX 100 x 100 x 3
304	Sol. Res. Sd/Rd	2.43 20761.74 0	989.02 7200 0.14	71.77 7200 0.01	0 --- ---	7182.29 79199.27 0.09	46978.22 79199.27 0.59	0.68	190	BOX 100 x 100 x 3
305	Sol. Res. Sd/Rd	-1 25636.36 0	989.02 7200 0.14	-10.74 7200 0.00	0 --- ---	1074.98 79199.27 0.01	46978.22 79199.27 0.59	0.61	190	BOX 100 x 100 x 3
306	Sol. Res. Sd/Rd	8.81 20761.74 0	989.02 7200 0.14	76.95 7200 0.01	0 --- ---	7699.15 79199.27 0.1	46978.22 79199.27 0.59	0.69	190	BOX 100 x 100 x 3
307	Sol. Res. Sd/Rd	-8439.72 132040.91 0.06	10097.81 50003.67 0.2	4484.04 29616.05 0.15	0 --- ---	-150942.5 1312198.75 -0.12	-158636.73 311185.41 -0.51	0.66	25	W 250 32.7

308	Sol. Res. Sd/Rd	4839.95 42838.27 0.11	39.46 18441.82 0.00	343.8 11975.89 0.03	0 --- ---	-28590.9 277447.97 -0.1	3131.27 76882.74 0.04	0.2	114.76	W 150 13
309	Sol. Res. Sd/Rd	-165.52 52063.64 0.00	1380.92 18441.82 0.07	617.87 11975.89 0.05	0 --- ---	17786.22 277447.97 0.06	34476.61 76882.74 0.45	0.51	25	W 150 13
310	Sol. Res. Sd/Rd	10100.59 97071.11 0.1	1007.34 42047.34 0.02	-161.57 22593.11 -0.01	0 --- ---	9822.51 860402.31 0.01	-66750.41 238029.25 -0.28	0.34	114.76	W 200 26.6
311	Sol. Res. Sd/Rd	885.54 97071.11 0.01	75.09 42047.34 0.00	1125.42 22593.11 0.05	0 --- ---	115767.58 860402.31 0.13	10766.09 238029.25 0.05	0.18	114.76	W 200 26.6
312	Sol. Res. Sd/Rd	-959.46 52063.64 0.02	-23.49 18441.82 0.00	2.22 11975.89 0	0 --- ---	265.02 277447.97 0	-1958.3 76882.74 -0.03	0.04	114.74	W 150 13
313	Sol. Res. Sd/Rd	-178.12 52063.64 0.00	-34.23 18441.82 0.00	16.2 11975.89 0.00	0 --- ---	1950.84 277447.97 0.01	-2688.64 76882.74 -0.03	0.04	114.74	W 150 13
314	Sol. Res. Sd/Rd	-1271.21 25636.36 0.05	1346.26 7200 0.19	22.55 7200 0.00	0 --- ---	1869.21 79199.27 0.02	-48193.02 79199.27 -0.61	0.68	115	BOX 100 x 100 x 3
315	Sol. Res. Sd/Rd	-6330.35 52063.64 0.12	15.85 18441.82 0	-40.62 11975.89 0.00	0 --- ---	-3848.1 267847.09 -0.01	1123.76 76882.74 0.01	0.12	159.23	W 150 13
316	Sol. Res. Sd/Rd	3628.54 36987.5 0.1	-16.98 18441.82 0	22.71 11975.89 0.00	0 --- ---	-3753.4 269338.47 -0.01	990.96 76882.74 0.01	0.1	151.94	W 150 13
317	Sol. Res. Sd/Rd	-3567.36 52063.64 0.07	14.26 18441.82 0	-3.37 11975.89 0	0 --- ---	-812.34 277447.97 0.00	-775.04 76882.74 -0.01	0.07	151.94	W 150 13
318	Sol. Res. Sd/Rd	836.18 36987.47 0.02	-9.74 18441.82 0	3.6 11975.89 0	0 --- ---	-965.22 277447.97 0.00	651.26 76882.74 0.01	0.02	151.94	W 150 13
319	Sol. Res.	-766.49 52063.64	9.58 18441.82	-1.2 11975.89	0 ---	-596.74 277447.97	-655.3 76882.74	0.02	151.94	W 150 13

	Sd/Rd	0.01	0	0	---	0.00	-0.01			
320	Sol. Res. Sd/Rd	-1882.29 52063.64 0.04	-11.7 18441.82 0	0.81 11975.89 0	0 --- ---	-755.76 277447.97 0.00	627.33 76882.74 0.01	0.04	151.95	W 150 13
321	Sol. Res. Sd/Rd	1953.05 36994 0.05	9.9 18441.82 0	-0.61 11975.89 0	0 --- ---	-722.31 277447.97 0.00	-571.73 76882.74 -0.01	0.05	151.9	W 150 13
322	Sol. Res. Sd/Rd	-4666.78 52063.64 0.09	-15.52 18441.82 0	1.72 11975.89 0	0 --- ---	-858.21 277447.97 0.00	569.4 76882.74 0.01	0.09	151.98	W 150 13
323	Sol. Res. Sd/Rd	4729.88 36999.95 0.13	21.47 18441.82 0.00	-0.32 11975.89 0	0 --- ---	-645.77 277447.97 0.00	-1202.24 76882.74 -0.02	0.13	151.87	W 150 13
324	Sol. Res. Sd/Rd	-6834.62 52063.64 0.13	-10.72 18441.82 0	-2.72 11975.89 0	0 --- ---	-1116.17 276525.03 0.00	-1173.06 76882.74 -0.02	0.13	147.14	W 150 13
325	Sol. Res. Sd/Rd	2257.21 9929.78 0.23	21.17 18441.82 0.00	11.16 11975.89 0	0 --- ---	-1608.99 277447.97 -0.01	988.77 76882.74 0.01	0.24	210.73	W 150 13
326	Sol. Res. Sd/Rd	5455.29 9929.78 0.55	19.32 18441.82 0.00	-3.49 11975.89 0	0 --- ---	2158.48 277447.97 0.01	-1037.34 76882.74 -0.01	0.57	200.01	W 150 13
327	Sol. Res. Sd/Rd	6503.74 9929.78 0.65	17.6 18441.82 0	-5.89 11975.89 0	0 --- ---	2008.92 240481.48 0.01	-1046.41 76882.74 -0.01	0.67	200.02	W 150 13
328	Sol. Res. Sd/Rd	3992.94 9929.78 0.4	21.18 18441.82 0.00	-6.09 11975.89 0	0 --- ---	1662.37 277447.97 0.01	-887.72 76882.74 -0.01	0.42	200.01	W 150 13
329	Sol. Res. Sd/Rd	4400.94 48661.11 0.09	1.99 19570.91 0	210.06 16183.64 0.01	0 --- ---	17543.25 434083.75 0.04	-122.47 83354.24 0.00	0.09	101.7	W 200 15
330	Sol. Res. Sd/Rd	-3700.02 60845.45 0.06	-1.77 19570.91 0	536.43 16183.64 0.03	0 --- ---	-32183.69 434083.75 -0.07	-183.25 83354.24 0.00	0.11	99.9	W 200 15

331	Sol. Res. Sd/Rd	-4363.44 60845.45 0.07	-2.14 19570.91 0	483.13 16183.64 0.03	0 --- ---	-31626.78 434083.75 -0.07	-226.94 83354.24 0.00	0.11	100.05	W 200 15
332	Sol. Res. Sd/Rd	-9390.12 60845.45 0.15	0.19 19570.91 0	541.51 16183.64 0.03	0 --- ---	-36070.12 434083.75 -0.08	-199.02 83354.24 0.00	0.16	99.95	W 200 15
333	Sol. Res. Sd/Rd	-9778.05 60845.45 0.16	-3.38 19570.91 0	471.21 16183.64 0.03	0 --- ---	-35724.25 434083.75 -0.08	-303.47 83354.24 0.00	0.17	100	W 200 15
334	Sol. Res. Sd/Rd	-11465.65 60845.45 0.19	-5.37 19570.91 0	496.05 16183.64 0.03	0 --- ---	-37916.94 434083.75 -0.09	-498.54 83354.24 -0.01	0.19	100.01	W 200 15
335	Sol. Res. Sd/Rd	-12130.23 60845.45 0.2	-0.45 19570.91 0	526.85 16183.64 0.03	0 --- ---	-37934.51 434083.75 -0.09	-259.61 83354.24 0.00	0.2	100	W 200 15
336	Sol. Res. Sd/Rd	-9916.46 60845.45 0.16	-1.6 19570.91 0	512.96 16183.64 0.03	0 --- ---	-37384.89 434083.75 -0.09	-406.27 83354.24 0.00	0.17	100.02	W 200 15
337	Sol. Res. Sd/Rd	-10580.79 60845.45 0.17	0.45 19570.91 0	520 16183.64 0.03	0 --- ---	-37989.76 434083.75 -0.09	-275.58 83354.24 0.00	0.18	99.98	W 200 15
338	Sol. Res. Sd/Rd	-4521.07 60845.45 0.07	129.03 19570.91 0.01	294.77 16183.64 0.02	0 --- ---	-18694.39 434083.75 -0.04	8391.8 83354.24 0.1	0.18	101.6	W 200 15
339	Sol. Res. Sd/Rd	-4956.63 60845.45 0.08	857.45 19570.91 0.04	1482.45 16183.64 0.09	0 --- ---	-65630.58 434083.75 -0.15	-30766.45 83354.24 -0.37	0.56	60	W 200 15
340	Sol. Res. Sd/Rd	369.26 42839.72 0.01	39.57 18441.82 0.00	-105.43 11975.89 -0.01	0 --- ---	-11394.7 277447.97 -0.04	2927.78 76882.74 0.04	0.08	114.75	W 150 13
341	Sol. Res. Sd/Rd	-2191.11 52063.64 0.04	34.79 18441.82 0.00	-7.48 11975.89 0	0 --- ---	1230.14 277447.97 0.00	2701.22 76882.74 0.04	0.06	192.43	W 150 13
342	Sol. Res.	5106.59 40615.62	-19.71 18441.82	182.7 11975.89	0 ---	-14974.67 277447.97	-1103.47 76882.74	0.13	129.49	W 150 13

	Sd/Rd	0.13	0.00	0.02	---	-0.05	-0.01			
343	Sol. Res. Sd/Rd	4574.57 40615.62 0.11	23.83 18441.82 0.00	171.12 11975.89 0.01	0 --- ---	-24006.38 277447.97 -0.09	1405.67 76882.74 0.02	0.16	129.49	W 150 13
344	Sol. Res. Sd/Rd	-5698.03 52063.64 0.11	-52.5 18441.82 0.00	14.77 11975.89 0.00	0 --- ---	-1414.49 277447.97 -0.01	7024.99 76882.74 0.09	0.15	120	W 150 13
345	Sol. Res. Sd/Rd	-4937.63 60845.45 0.08	-705.95 19570.91 -0.04	1296.18 16183.64 0.08	0 --- ---	-60705.79 434083.75 -0.14	-23672.13 83354.24 -0.28	0.46	60	W 200 15
346	Sol. Res. Sd/Rd	-6306.48 52063.64 0.12	10.57 18441.82 0	-32.33 11975.89 0.00	0 --- ---	-2986.2 265953.88 -0.01	1431.01 76882.74 0.02	0.12	159.23	W 150 13
347	Sol. Res. Sd/Rd	4123.84 36987.5 0.11	-38.21 18441.82 0.00	17.33 11975.89 0.00	0 --- ---	-3002.29 271719.59 -0.01	2493.41 76882.74 0.03	0.11	151.94	W 150 13
348	Sol. Res. Sd/Rd	-4035.92 52063.64 0.08	14.42 18441.82 0	-3.51 11975.89 0	0 --- ---	-899.37 277447.97 0.00	544.93 76882.74 0.01	0.08	151.94	W 150 13
349	Sol. Res. Sd/Rd	1226.22 36987.47 0.03	-17.73 18441.82 0	3.23 11975.89 0	0 --- ---	-1133.76 277447.97 0.00	696.46 76882.74 0.01	0.03	151.94	W 150 13
350	Sol. Res. Sd/Rd	-1139.99 52063.64 0.02	14.14 18441.82 0	-2.53 11975.89 0	0 --- ---	-1023.57 277447.97 0.00	-655.76 76882.74 -0.01	0.02	151.94	W 150 13
351	Sol. Res. Sd/Rd	-1489.85 52063.64 0.03	-15.14 18441.82 0	4.17 11975.89 0	0 --- ---	-1268.34 277447.97 0.00	615.91 76882.74 0.01	0.03	151.95	W 150 13
352	Sol. Res. Sd/Rd	1575.24 36994 0.04	17.54 18441.82 0	-2.09 11975.89 0	0 --- ---	-950.14 277447.97 0.00	-908.37 76882.74 -0.01	0.04	151.9	W 150 13
353	Sol. Res. Sd/Rd	-4302.49 52063.64 0.08	-9.35 18441.82 0	1.39 11975.89 0	0 --- ---	-1184.9 277447.97 0.00	290.24 76882.74 0.00	0.08	151.98	W 150 13

354	Sol. Res. Sd/Rd	4377.86 36999.95 0.12	27.59 18441.82 0.00	-3.53 11975.89 0	0 --- ---	-1508.45 277447.97 -0.01	-1669.97 76882.74 -0.02	0.12	151.87	W 150 13
355	Sol. Res. Sd/Rd	-6502.12 52063.64 0.12	-9.32 18441.82 0	4.93 11975.89 0	0 --- ---	-1636.58 272956.78 -0.01	-1050.94 76882.74 -0.01	0.12	147.14	W 150 13
356	Sol. Res. Sd/Rd	3290.93 9929.78 0.33	23.89 18441.82 0.00	3.28 11975.89 0	0 --- ---	1347.64 277447.97 0.00	1638.84 76882.74 0.02	0.35	210.73	W 150 13
357	Sol. Res. Sd/Rd	5863.61 9929.78 0.59	20.88 18441.82 0.00	-5.03 11975.89 0	0 --- ---	2356.13 277447.97 0.01	687.34 76882.74 0.01	0.61	200.01	W 150 13
358	Sol. Res. Sd/Rd	7415.31 9929.78 0.75	16.29 18441.82 0	-5.73 11975.89 0	0 --- ---	2193.85 240619.25 0.01	-771.31 76882.74 -0.01	0.76	200.02	W 150 13
359	Sol. Res. Sd/Rd	5412.45 9929.78 0.55	20.01 18441.82 0.00	-7.81 11975.89 0	0 --- ---	1881.84 277447.97 0.01	-692.1 76882.74 -0.01	0.56	200.01	W 150 13
360	Sol. Res. Sd/Rd	6520.68 48661.11 0.13	17.3 19570.91 0	249.25 16183.64 0.02	0 --- ---	17043.42 434083.75 0.04	-1263.95 83354.24 -0.02	0.13	101.7	W 200 15
361	Sol. Res. Sd/Rd	65.82 48932.34 0.00	-2.47 19570.91 0	508.78 16183.64 0.03	0 --- ---	-30698.01 434083.75 -0.07	-306.76 83354.24 0.00	0.08	99.9	W 200 15
362	Sol. Res. Sd/Rd	568.98 48909.89 0.01	-3.49 19570.91 0	514.75 16183.64 0.03	0 --- ---	-31254.92 434083.75 -0.07	-210.21 83354.24 0.00	0.08	100.05	W 200 15
363	Sol. Res. Sd/Rd	-2783.85 60845.45 0.05	-6.04 19570.91 0	532.9 16183.64 0.03	0 --- ---	-32624.4 434083.75 -0.08	-512.93 83354.24 -0.01	0.1	99.95	W 200 15
364	Sol. Res. Sd/Rd	-2005.11 60845.45 0.03	-4.38 19570.91 0	487.69 16183.64 0.03	0 --- ---	-32970.27 434083.75 -0.08	-392.34 83354.24 0.00	0.1	100	W 200 15
365	Sol. Res.	-1998.96 60845.45	-2.44 19570.91	475.14 16183.64	0 ---	-31889.37 434083.75	-398.94 83354.24	0.09	100.01	W 200 15

	Sd/Rd	0.03	0	0.03	---	-0.07	0.00			
366	Sol. Res. Sd/Rd	-1495.59 60845.45 0.02	-5.97 19570.91 0	548.43 16183.64 0.03	0 --- ---	-31871.8 434083.75 -0.07	-479.93 83354.24 -0.01	0.09	100	W 200 15
367	Sol. Res. Sd/Rd	2472.68 48914.24 0.05	-4.23 19570.91 0	563.55 16183.64 0.03	0 --- ---	-33232.05 434083.75 -0.08	-543.83 83354.24 -0.01	0.11	100.02	W 200 15
368	Sol. Res. Sd/Rd	2976.75 48920.79 0.06	-2.7 19570.91 0	457.53 16183.64 0.03	0 --- ---	-32627.19 434083.75 -0.08	-389.96 83354.24 0.00	0.11	99.98	W 200 15
369	Sol. Res. Sd/Rd	10644.38 48677.3 0.22	83.9 19570.91 0.00	42.5 16183.64 0.00	0 --- ---	12697.88 434083.75 0.03	5256.76 83354.24 0.06	0.3	101.6	W 200 15
370	Sol. Res. Sd/Rd	10704.24 53942.45 0.2	672.51 19570.91 0.03	618.23 16183.64 0.04	0 --- ---	-48394.19 434083.75 -0.11	-24080.4 83354.24 -0.29	0.5	60	W 200 15
371	Sol. Res. Sd/Rd	451.86 42839.72 0.01	27.84 18441.82 0.00	-73.79 11975.89 -0.01	0 --- ---	-8022.71 277447.97 -0.03	2417.08 76882.74 0.03	0.07	114.75	W 150 13
372	Sol. Res. Sd/Rd	1034.4 9929.78 0.1	23.19 18441.82 0.00	-4.45 11975.89 0	0 --- ---	1305.49 277447.97 0.00	1540.09 76882.74 0.02	0.1	192.43	W 150 13
373	Sol. Res. Sd/Rd	5037.18 40615.62 0.12	-15.77 18441.82 0	148.89 11975.89 0.01	0 --- ---	-10916.53 277447.97 -0.04	-956.97 76882.74 -0.01	0.12	129.49	W 150 13
374	Sol. Res. Sd/Rd	5906.53 40615.62 0.15	16.49 18441.82 0	138.95 11975.89 0.01	0 --- ---	-20923.95 277447.97 -0.08	1128.56 76882.74 0.01	0.16	129.49	W 150 13
375	Sol. Res. Sd/Rd	-5865.19 52063.64 0.11	-51.56 18441.82 0.00	13.27 11975.89 0.00	0 --- ---	-3893.33 277447.97 -0.01	6446.08 76882.74 0.08	0.15	120	W 150 13
376	Sol. Res. Sd/Rd	11787.75 53942.45 0.22	-561.48 19570.91 -0.03	1438.02 16183.64 0.09	0 --- ---	-77936.43 434083.75 -0.18	-18266.06 83354.24 -0.22	0.57	60	W 200 15

377	Sol. Res. Sd/Rd	-450.26 25636.36 0.02	989.02 7200 0.14	-122.8 7200 -0.02	0 --- ---	-12306.69 79199.27 -0.16	46978.22 79199.27 0.59	0.77	190	BOX 100 x 100 x 3
378	Sol. Res. Sd/Rd	19.53 20761.74 0	989.02 7200 0.14	-9.78 7200 0.00	0 --- ---	1185.77 79199.27 0.01	46978.22 79199.27 0.59	0.61	190	BOX 100 x 100 x 3
379	Sol. Res. Sd/Rd	0.27 20761.74 0	989.02 7200 0.14	-2.93 7200 0	0 --- ---	425.5 79199.27 0.01	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
380	Sol. Res. Sd/Rd	-1.19 25636.36 0	989.02 7200 0.14	-15.22 7200 0.00	0 --- ---	1703.58 79199.27 0.02	46978.22 79199.27 0.59	0.61	190	BOX 100 x 100 x 3
381	Sol. Res. Sd/Rd	4.23 20761.74 0	989.02 7200 0.14	-4.22 7200 0	0 --- ---	518 79199.27 0.01	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
382	Sol. Res. Sd/Rd	520.93 20761.74 0.03	989.02 7200 0.14	-15.72 7200 0.00	0 --- ---	1751.25 79199.27 0.02	46978.22 79199.27 0.59	0.64	190	BOX 100 x 100 x 3
383	Sol. Res. Sd/Rd	521.29 20761.74 0.03	989.02 7200 0.14	-4.08 7200 0	0 --- ---	559.77 79199.27 0.01	46978.22 79199.27 0.59	0.63	190	BOX 100 x 100 x 3
384	Sol. Res. Sd/Rd	3.35 20761.74 0	989.02 7200 0.14	-14.64 7200 0.00	0 --- ---	1711.27 79199.27 0.02	46978.22 79199.27 0.59	0.61	190	BOX 100 x 100 x 3
385	Sol. Res. Sd/Rd	0.32 20761.74 0	989.02 7200 0.14	-3.25 7200 0	0 --- ---	447.09 79199.27 0.01	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
386	Sol. Res. Sd/Rd	5.78 20761.74 0	989.02 7200 0.14	-11.9 7200 0.00	0 --- ---	1471.09 79199.27 0.02	46978.22 79199.27 0.59	0.61	190	BOX 100 x 100 x 3
387	Sol. Res. Sd/Rd	-2271.93 25636.36 0.09	1625.3 7200 0.23	-9.59 7200 0.00	6595.98 --- ---	-660.68 79199.27 -0.01	-54217.07 79199.27 -0.68	0.78	75	BOX 100 x 100 x 3
388	Sol. Res.	-712.44 52063.64	-43.31 18441.82	595.68 11975.89	0 ---	-48194.56 277447.97	-2747.04 76882.74	0.22	114.75	W 150 13

	Sd/Rd	0.01	0.00	0.05	---	-0.17	-0.04			
389	Sol. Res. Sd/Rd	-2354.42 25636.36 0.09	1624.6 7200 0.23	35.58 7200 0.00	0 --- ---	-2024.59 79199.27 -0.03	-52689.05 79199.27 -0.67	0.78	75	BOX 100 x 100 x 3
390	Sol. Res. Sd/Rd	-2260.14 25636.36 0.09	387.51 7200 0.05	-46.2 7200 -0.01	0 --- ---	-2257.86 79199.27 -0.03	-16540.1 79199.27 -0.21	0.33	60	BOX 100 x 100 x 3
391	Sol. Res. Sd/Rd	-1207.45 25636.36 0.05	1343.76 7200 0.19	-29.2 7200 0.00	0 --- ---	2158.97 79199.27 0.03	-48247.26 79199.27 -0.61	0.68	115	BOX 100 x 100 x 3
392	Sol. Res. Sd/Rd	-465.28 52063.64 0.01	-282.1 18441.82 -0.02	65.2 11975.89 0.01	0 --- ---	11211.79 277447.97 0.04	-10016.91 76882.74 -0.13	0.18	60	W 150 13
393	Sol. Res. Sd/Rd	-7797.9 52063.64 0.15	-9.08 18441.82 0	2.62 11975.89 0	0 --- ---	-1297.06 256881.41 -0.01	-1394.87 76882.74 -0.02	0.15	159.29	W 150 13
394	Sol. Res. Sd/Rd	5406.09 36987.44 0.15	35.42 18441.82 0.00	-5.38 11975.89 0	0 --- ---	-1623.52 269217.63 -0.01	-2247.63 76882.74 -0.03	0.15	151.94	W 150 13
395	Sol. Res. Sd/Rd	-5321.13 52063.64 0.1	-8.4 18441.82 0	6.75 11975.89 0	0 --- ---	-1623.85 277447.97 -0.01	257.75 76882.74 0.00	0.1	151.92	W 150 13
396	Sol. Res. Sd/Rd	2539.81 36985.15 0.07	17.52 18441.82 0	-6.78 11975.89 0	0 --- ---	-1612.45 277447.97 -0.01	-758.53 76882.74 -0.01	0.07	151.96	W 150 13
397	Sol. Res. Sd/Rd	-2466.08 52063.64 0.05	-9.72 18441.82 0	6.66 11975.89 0	0 --- ---	-1612.74 267311.34 -0.01	461.73 76882.74 0.01	0.05	151.91	W 150 13
398	Sol. Res. Sd/Rd	-194.96 52063.64 0.00	17.74 18441.82 0	-5.83 11975.89 0	0 --- ---	-1507.47 277447.97 -0.01	-921.62 76882.74 -0.01	0.02	151.96	W 150 13
399	Sol. Res. Sd/Rd	284.69 36995.68 0.01	-16.97 18441.82 0	5.7 11975.89 0	0 --- ---	-1507.22 277447.97 -0.01	1044.85 76882.74 0.01	0.02	151.89	W 150 13

400	Sol. Res. Sd/Rd	-2877.63 52063.64 0.06	10.55 18441.82 0	-4.6 11975.89 0	0 --- ---	-1393.91 277447.97 -0.01	-481.93 76882.74 -0.01	0.06	151.96	W 150 13
401	Sol. Res. Sd/Rd	2939.92 36993.01 0.08	-16.75 18441.82 0	8.04 11975.89 0	0 --- ---	-1393.64 277447.97 -0.01	-792.88 76882.74 -0.01	0.08	151.91	W 150 13
402	Sol. Res. Sd/Rd	-7063.7 52063.64 0.14	31.62 18441.82 0.00	-5.58 11975.89 0	0 --- ---	-1052.39 277447.97 0.00	2167.23 76882.74 0.03	0.14	147.09	W 150 13
403	Sol. Res. Sd/Rd	-2049.13 52063.64 0.04	-35.99 18441.82 0.00	-8.49 11975.89 0	0 --- ---	-1560.95 277447.97 -0.01	-3107.13 76882.74 -0.04	0.07	210.86	W 150 13
404	Sol. Res. Sd/Rd	5023.22 9929.8 0.51	-22.51 18441.82 0.00	-9.86 11975.89 0	0 --- ---	-1396.92 277447.97 -0.01	-804.63 76882.74 -0.01	0.52	199.94	W 150 13
405	Sol. Res. Sd/Rd	8313.99 9929.8 0.84	-17.72 18441.82 0	-9.74 11975.89 0	0 --- ---	-1224.15 244067.92 -0.01	890.9 76882.74 0.01	0.85	200.01	W 150 13
406	Sol. Res. Sd/Rd	8014.47 9929.8 0.81	-17.23 18441.82 0	-9.61 11975.89 0	0 --- ---	-1162.54 277447.97 0.00	922.36 76882.74 0.01	0.82	200	W 150 13
407	Sol. Res. Sd/Rd	3812.74 48677.54 0.08	-18.1 19570.91 0	-1712.41 16183.64 -0.11	0 --- ---	145055.47 434083.75 0.33	1368.74 83354.24 0.02	0.39	101.59	W 200 15
408	Sol. Res. Sd/Rd	-2675.95 60845.45 0.04	0.91 19570.91 0	-582.48 16183.64 -0.04	0 --- ---	30458.51 434083.75 0.07	-162.22 83354.24 0.00	0.09	99.98	W 200 15
409	Sol. Res. Sd/Rd	-2818.26 60845.45 0.05	1.81 19570.91 0	-440.65 16183.64 -0.03	0 --- ---	30706.08 434083.75 0.07	240.28 83354.24 0.00	0.1	100.02	W 200 15
410	Sol. Res. Sd/Rd	-5041.3 60845.45 0.08	2.04 19570.91 0	-506.45 16183.64 -0.03	0 --- ---	36528.24 434083.75 0.08	-214.55 83354.24 0.00	0.13	100	W 200 15
411	Sol. Res.	-5184.44 60845.45	3.01 19570.91	-516.71 16183.64	0 ---	36869.37 434083.75	325.33 83354.24	0.13	100.01	W 200 15

	Sd/Rd	0.09	0	-0.03	---	0.08	0.00			
412	Sol. Res. Sd/Rd	-3973.7 60845.45 0.07	4.43 19570.91 0	-553.4 16183.64 -0.03	0 --- ---	33048.39 434083.75 0.08	422.01 83354.24 0.01	0.11	99.95	W 200 15
413	Sol. Res. Sd/Rd	1050.45 48909.65 0.02	5.99 19570.91 0	-534.81 16183.64 -0.03	0 --- ---	32188.98 434083.75 0.07	-387.65 83354.24 0.00	0.09	100.05	W 200 15
414	Sol. Res. Sd/Rd	907.15 48932.34 0.02	3.3 19570.91 0	-487.59 16183.64 -0.03	0 --- ---	32440.45 434083.75 0.07	385.5 83354.24 0.00	0.09	99.9	W 200 15
415	Sol. Res. Sd/Rd	9460.02 48660.99 0.19	24.35 19570.91 0.00	-37.27 16183.64 0.00	0 --- ---	-11474.03 434083.75 -0.03	1511.7 83354.24 0.02	0.19	101.7	W 200 15
416	Sol. Res. Sd/Rd	6429.46 42835.36 0.15	168.62 18441.82 0.01	-10.73 11975.89 0	0 --- ---	-1382.15 277447.97 0.00	13258.72 76882.74 0.17	0.25	114.78	W 150 13
417	Sol. Res. Sd/Rd	4193.06 9929.8 0.42	-32.93 18441.82 0.00	-13.06 11975.89 0.00	0 --- ---	-1839.17 277447.97 -0.01	-2271.26 76882.74 -0.03	0.45	192.39	W 150 13
418	Sol. Res. Sd/Rd	-7212.66 52063.64 0.14	-10.49 18441.82 0	-2.41 11975.89 0	0 --- ---	2024.57 260060.75 0.01	-1317.95 76882.74 -0.02	0.14	159.29	W 150 13
419	Sol. Res. Sd/Rd	4784.2 36987.44 0.13	31.19 18441.82 0.00	6.49 11975.89 0	0 --- ---	2598.77 277447.97 0.01	-1943.32 76882.74 -0.03	0.13	151.94	W 150 13
420	Sol. Res. Sd/Rd	-4702.67 52063.64 0.09	-7.51 18441.82 0	-9.69 11975.89 0	0 --- ---	2597.58 277447.97 0.01	300.21 76882.74 0.00	0.09	151.92	W 150 13
421	Sol. Res. Sd/Rd	1933.83 36985.15 0.05	14.84 18441.82 0	9.85 11975.89 0	0 --- ---	2652.18 277447.97 0.01	-613.3 76882.74 -0.01	0.05	151.96	W 150 13
422	Sol. Res. Sd/Rd	-1862.8 52063.64 0.04	-8.68 18441.82 0	-10.68 11975.89 0	0 --- ---	2651.85 277447.97 0.01	472.48 76882.74 0.01	0.04	151.91	W 150 13

423	Sol. Res. Sd/Rd	-795.61 52063.64 0.02	13.76 18441.82 0	10.68 11975.89 0	0 --- ---	2674.66 277447.97 0.01	-666.07 76882.74 -0.01	0.03	151.96	W 150 13
424	Sol. Res. Sd/Rd	878.31 36995.68 0.02	-14.55 18441.82 0	-10.98 11975.89 0	0 --- ---	2673.16 277447.97 0.01	814.08 76882.74 0.01	0.03	151.89	W 150 13
425	Sol. Res. Sd/Rd	-3528.83 52063.64 0.07	11.7 18441.82 0	11.04 11975.89 0	0 --- ---	2698.2 277447.97 0.01	-439.49 76882.74 -0.01	0.07	151.96	W 150 13
426	Sol. Res. Sd/Rd	3595.48 36993.01 0.1	-18.04 18441.82 0	-11.09 11975.89 0	0 --- ---	2695.86 277447.97 0.01	841.52 76882.74 0.01	0.1	151.91	W 150 13
427	Sol. Res. Sd/Rd	-6936.52 52063.64 0.13	13.79 18441.82 0	10.3 11975.89 0	0 --- ---	2517.06 277447.97 0.01	912.85 76882.74 0.01	0.13	147.09	W 150 13
428	Sol. Res. Sd/Rd	-1456.17 52063.64 0.03	-33.99 18441.82 0.00	13.82 11975.89 0.00	0 --- ---	1507.02 277447.97 0.01	-2740.14 76882.74 -0.04	0.06	210.86	W 150 13
429	Sol. Res. Sd/Rd	4797.79 9929.8 0.48	-21.62 18441.82 0.00	17.02 11975.89 0.00	0 --- ---	-1911.05 277447.97 -0.01	779.65 76882.74 0.01	0.5	199.94	W 150 13
430	Sol. Res. Sd/Rd	7291.71 9929.8 0.73	-16.97 18441.82 0	17.85 11975.89 0.00	0 --- ---	-1996.48 277447.97 -0.01	893.87 76882.74 0.01	0.75	200.01	W 150 13
431	Sol. Res. Sd/Rd	6204.82 9929.8 0.62	-18.86 18441.82 0.00	18.15 11975.89 0.00	0 --- ---	-1945.03 237649.89 -0.01	858.68 76882.74 0.01	0.64	200	W 150 13
432	Sol. Res. Sd/Rd	3587.95 48677.54 0.07	-3.05 19570.91 0	-1130.69 16183.64 -0.07	0 --- ---	91154.73 434083.75 0.21	-430.91 83354.24 -0.01	0.25	101.59	W 200 15
433	Sol. Res. Sd/Rd	-3152.75 60845.45 0.05	-6.29 19570.91 0	-561.04 16183.64 -0.03	0 --- ---	31244.37 434083.75 0.07	566.81 83354.24 0.01	0.1	99.98	W 200 15
434	Sol. Res.	-3171.65 60845.45	-5.83 19570.91	-462.31 16183.64	0 ---	30996.79 434083.75	-514.8 83354.24	0.1	100.02	W 200 15

	Sd/Rd	0.05	0	-0.03	---	0.07	-0.01			
435	Sol. Res. Sd/Rd	-6089.5 60845.45 0.1	-6 19570.91 0	-525.44 16183.64 -0.03	0 --- ---	36068.05 434083.75 0.08	553.58 83354.24 0.01	0.14	100	W 200 15
436	Sol. Res. Sd/Rd	-6107.58 60845.45 0.1	-5.82 19570.91 0	-497.86 16183.64 -0.03	0 --- ---	35726.93 434083.75 0.08	-494.63 83354.24 -0.01	0.14	100.01	W 200 15
437	Sol. Res. Sd/Rd	-5425.1 60845.45 0.09	-5.77 19570.91 0	-478.16 16183.64 -0.03	0 --- ---	33671.84 434083.75 0.08	551.91 83354.24 0.01	0.13	100	W 200 15
438	Sol. Res. Sd/Rd	-5442.2 60845.45 0.09	-5.91 19570.91 0	-540.09 16183.64 -0.03	0 --- ---	33337.66 434083.75 0.08	-489.31 83354.24 -0.01	0.13	99.95	W 200 15
439	Sol. Res. Sd/Rd	-1104.49 60845.45 0.02	-6.97 19570.91 0	-536.71 16183.64 -0.03	0 --- ---	33276.06 434083.75 0.08	609.55 83354.24 0.01	0.09	100.05	W 200 15
440	Sol. Res. Sd/Rd	-1121.53 60845.45 0.02	-4.5 19570.91 0	-487.52 16183.64 -0.03	0 --- ---	33024.59 434083.75 0.08	-424.01 83354.24 -0.01	0.09	99.9	W 200 15
441	Sol. Res. Sd/Rd	6734.3 48660.99 0.14	-26.68 19570.91 0.00	-85.89 16183.64 -0.01	0 --- ---	-11716.73 434083.75 -0.03	-1452.34 83354.24 -0.02	0.14	101.7	W 200 15
442	Sol. Res. Sd/Rd	1521.34 9929.8 0.15	-30.01 18441.82 0.00	18.2 11975.89 0.00	0 --- ---	-1863.53 277447.97 -0.01	-1947.07 76882.74 -0.03	0.15	192.39	W 150 13
443	Sol. Res. Sd/Rd	-534.74 25636.36 0.02	989.02 7200 0.14	-3.83 7200 0	0 --- ---	517.69 79199.27 0.01	46978.22 79199.27 0.59	0.62	190	BOX 100 x 100 x 3
444	Sol. Res. Sd/Rd	-2.58 25636.36 0	989.02 7200 0.14	-0.23 7200 0	0 --- ---	-156.12 79199.27 0.00	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
445	Sol. Res. Sd/Rd	1.21 20761.74 0	989.02 7200 0.14	-2.29 7200 0	0 --- ---	402.3 79199.27 0.01	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3

446	Sol. Res. Sd/Rd	0.6 20761.74 0	989.02 7200 0.14	0.25 7200 0	0 --- ---	-127.1 79199.27 0.00	46978.22 79199.27 0.59	0.59	190	BOX 100 x 100 x 3
447	Sol. Res. Sd/Rd	0.57 20761.74 0	989.02 7200 0.14	-0.65 7200 0	0 --- ---	324.18 79199.27 0.00	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
448	Sol. Res. Sd/Rd	0.39 20761.74 0	989.02 7200 0.14	0.89 7200 0	0 --- ---	-134.86 79199.27 0.00	46978.22 79199.27 0.59	0.59	190	BOX 100 x 100 x 3
449	Sol. Res. Sd/Rd	0.72 20761.74 0	989.02 7200 0.14	0.85 7200 0	0 --- ---	425.81 79199.27 0.01	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
450	Sol. Res. Sd/Rd	0.22 20761.74 0	989.02 7200 0.14	1.38 7200 0	0 --- ---	-131.38 79199.27 0.00	46978.22 79199.27 0.59	0.59	190	BOX 100 x 100 x 3
451	Sol. Res. Sd/Rd	12.76 20761.74 0	989.02 7200 0.14	1.41 7200 0	0 --- ---	566.53 79199.27 0.01	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
452	Sol. Res. Sd/Rd	-461.16 52063.64 0.01	6.31 18441.82 0	18.88 11975.89 0.00	0 --- ---	2157.55 277447.97 0.01	786.89 76882.74 0.01	0.02	114.76	W 150 13
453	Sol. Res. Sd/Rd	-389.04 52063.64 0.01	4.56 18441.82 0	17.93 11975.89 0.00	0 --- ---	2048.09 277447.97 0.01	703.91 76882.74 0.01	0.02	114.76	W 150 13
454	Sol. Res. Sd/Rd	-76.77 25636.36 0.00	989.02 7200 0.14	56.17 7200 0.01	0 --- ---	5361.82 79199.27 0.07	46978.22 79199.27 0.59	0.66	190	BOX 100 x 100 x 3
455	Sol. Res. Sd/Rd	-8222.81 132040.91 0.06	-10296.39 50003.67 -0.21	-2618.06 29616.05 -0.09	0 --- ---	90222.77 1312198.75 0.07	157572.83 311185.41 0.51	0.61	25	W 250 32.7
456	Sol. Res. Sd/Rd	2109.7 42838.27 0.05	-33.16 18441.82 0.00	-478.68 11975.89 -0.04	0 --- ---	31649.75 277447.97 0.11	-2515.93 76882.74 -0.03	0.17	114.76	W 150 13
457	Sol. Res.	-361.73 52063.64	1268.09 18441.82	-1481.57 11975.89	0 ---	36097.91 277447.97	31485.7 76882.74	0.54	25	W 150 13

	Sd/Rd	0.01	0.07	-0.12	---	0.13	0.41			
458	Sol. Res. Sd/Rd	2777.49 97071.11 0.03	-1041.91 42047.34 -0.02	86.53 22593.11 0.00	0 --- ---	5424.31 860402.31 0.01	69804.31 238029.25 0.29	0.31	114.76	W 200 26.6
459	Sol. Res. Sd/Rd	1984.07 97071.11 0.02	-58.69 42047.34 0.00	-1077.88 22593.11 -0.05	0 --- ---	-103541.73 860402.31 -0.12	-9284.75 238029.25 -0.04	0.17	114.76	W 200 26.6
480	Sol. Res. Sd/Rd	-3140.27 52063.64 0.06	-47.91 18441.82 0.00	8.08 11975.89 0	0 --- ---	2766.04 277447.97 0.01	-3487.71 76882.74 -0.05	0.09	114.76	W 150 13
481	Sol. Res. Sd/Rd	-3512 52063.64 0.07	-58.59 18441.82 0.00	9.19 11975.89 0	0 --- ---	2266.14 277447.97 0.01	-4151.87 76882.74 -0.05	0.1	114.76	W 150 13
482	Sol. Res. Sd/Rd	-54.91 25636.36 0.00	989.02 7200 0.14	-41.97 7200 -0.01	0 --- ---	4128.56 79199.27 0.05	46978.22 79199.27 0.59	0.65	190	BOX 100 x 100 x 3
483	Sol. Res. Sd/Rd	-6614.39 52063.64 0.13	12.96 18441.82 0	-5.08 11975.89 0	0 --- ---	-682.04 264295.53 0.00	1043.69 76882.74 0.01	0.13	159.23	W 150 13
484	Sol. Res. Sd/Rd	3031.01 36987.5 0.08	-23.01 18441.82 0.00	5.7 11975.89 0	0 --- ---	-749.38 273141.56 0.00	1162.93 76882.74 0.02	0.08	151.94	W 150 13
485	Sol. Res. Sd/Rd	-744 52063.64 0.01	6.06 18441.82 0	19.33 11975.89 0.00	0 --- ---	9211.91 265519.81 0.03	120.29 76882.74 0.00	0.04	151.95	W 150 13
486	Sol. Res. Sd/Rd	155.93 36987.47 0.00	-8.95 18441.82 0	-40.97 11975.89 0.00	0 --- ---	9332.1 277447.97 0.03	-256.85 76882.74 0.00	0.04	151.94	W 150 13
487	Sol. Res. Sd/Rd	-95.21 52063.64 0.00	7.04 18441.82 0	21.49 11975.89 0.00	0 --- ---	6379.19 274764.03 0.02	214.33 76882.74 0.00	0.03	151.95	W 150 13
488	Sol. Res. Sd/Rd	-2597.02 52063.64 0.05	-13.53 18441.82 0	-12.63 11975.89 0.00	0 --- ---	-2066.71 277447.97 -0.01	543.34 76882.74 0.01	0.05	151.93	W 150 13

489	Sol. Res. Sd/Rd	2645.31 36996.68 0.07	35.26 18441.82 0.00	27.11 11975.89 0.00	0 --- ---	-2063.69 277447.97 -0.01	-2391.75 76882.74 -0.03	0.07	151.89	W 150 13
490	Sol. Res. Sd/Rd	187.96 20313.11 0.01	16.95 18441.82 0	-90.19 11975.89 -0.01	0 --- ---	-8884.29 277447.97 -0.03	867.14 76882.74 0.01	0.05	210.73	W 150 13
491	Sol. Res. Sd/Rd	4674.8 20313.11 0.23	18.08 18441.82 0	-1.25 11975.89 0	0 --- ---	200.51 277447.97 0	-676.33 76882.74 -0.01	0.24	200.01	W 150 13
492	Sol. Res. Sd/Rd	5004.9 20313.11 0.25	16.95 18441.82 0	-2.42 11975.89 0	0 --- ---	429.48 277447.97 0.00	-670.2 76882.74 -0.01	0.26	200.02	W 150 13
493	Sol. Res. Sd/Rd	1705.61 48925.02 0.03	-132.48 19570.91 -0.01	105.26 16183.64 0.01	0 --- ---	-6978.28 434083.75 -0.02	-8324.46 83354.24 -0.1	0.13	99.95	W 200 15
494	Sol. Res. Sd/Rd	11.68 48917.33 0	-6.37 19570.91 0	565.99 16183.64 0.03	0 --- ---	-34303.96 434083.75 -0.08	522.93 83354.24 0.01	0.09	100	W 200 15
495	Sol. Res. Sd/Rd	-2205.74 60845.45 0.04	1.61 19570.91 0	535.3 16183.64 0.03	0 --- ---	-30924.32 434083.75 -0.07	-90.58 83354.24 0.00	0.09	100.01	W 200 15
496	Sol. Res. Sd/Rd	-2847.92 60845.45 0.05	-0.86 19570.91 0	487.77 16183.64 0.03	0 --- ---	-30266.79 434083.75 -0.07	53.45 83354.24 0	0.09	100	W 200 15
497	Sol. Res. Sd/Rd	-1365.36 60845.45 0.02	-0.63 19570.91 0	509.78 16183.64 0.03	0 --- ---	-32089.54 434083.75 -0.07	42.14 83354.24 0	0.09	100.02	W 200 15
498	Sol. Res. Sd/Rd	-2003.57 60845.45 0.03	-4.69 19570.91 0	514.58 16183.64 0.03	0 --- ---	-31292.54 434083.75 -0.07	-322.38 83354.24 0.00	0.09	99.98	W 200 15
499	Sol. Res. Sd/Rd	3940.99 48677.66 0.08	15.08 19570.91 0	960.4 16183.64 0.06	0 --- ---	-77631.58 434083.75 -0.18	1083.08 83354.24 0.01	0.23	101.59	W 200 15
500	Sol. Res.	-143.56 60845.45	-230.57 19570.91	557.76 16183.64	0 ---	-32802.41 434083.75	8470.97 83354.24	0.18	60	W 200 15

	Sd/Rd	0.00	-0.01	0.03	---	-0.08	0.1			
501	Sol. Res. Sd/Rd	559.13 40614.24 0.01	-22.97 18441.82 0.00	-25.17 11975.89 0.00	0 --- ---	2432.03 277447.97 0.01	-1372.24 76882.74 -0.02	0.03	129.5	W 150 13
502	Sol. Res. Sd/Rd	3752.89 40614.24 0.09	14.07 18441.82 0	-18.7 11975.89 0.00	0 --- ---	-3219.8 277447.97 -0.01	604.31 76882.74 0.01	0.09	129.5	W 150 13
503	Sol. Res. Sd/Rd	-60.51 52063.64 0.00	25.74 18441.82 0.00	11.23 11975.89 0	0 --- ---	282.81 277447.97 0.00	-1849.12 76882.74 -0.02	0.03	120	W 150 13
504	Sol. Res. Sd/Rd	2720.46 53942.45 0.05	278.31 19570.91 0.01	524 16183.64 0.03	0 --- ---	-34761.21 434083.75 -0.08	9226 83354.24 0.11	0.22	60	W 200 15
505	Sol. Res. Sd/Rd	2180.65 36987.5 0.06	-31.05 18441.82 0.00	1.26 11975.89 0	0 --- ---	690.25 275713.84 0.00	2064.74 76882.74 0.03	0.06	151.94	W 150 13
506	Sol. Res. Sd/Rd	-534.5 52063.64 0.01	8.25 18441.82 0	33.27 11975.89 0.00	0 --- ---	11037.52 277447.97 0.04	261.6 76882.74 0.00	0.05	151.95	W 150 13
507	Sol. Res. Sd/Rd	-212.72 52063.64 0.00	-8.37 18441.82 0	22.15 11975.89 0.00	0 --- ---	-8729.86 277447.97 -0.03	-198.97 76882.74 0.00	0.04	151.94	W 150 13
508	Sol. Res. Sd/Rd	274.74 36985.73 0.01	7.52 18441.82 0	-14.53 11975.89 0.00	0 --- ---	-6908.72 262153.03 -0.03	204.06 76882.74 0.00	0.03	151.95	W 150 13
509	Sol. Res. Sd/Rd	-3525.01 52063.64 0.07	-10.56 18441.82 0	-4.56 11975.89 0	0 --- ---	-1057.74 277447.97 0.00	547.11 76882.74 0.01	0.07	151.93	W 150 13
510	Sol. Res. Sd/Rd	3561.55 36996.68 0.1	37.75 18441.82 0.00	16.03 11975.89 0.00	0 --- ---	1379.26 277447.97 0.00	-2670.4 76882.74 -0.03	0.1	151.89	W 150 13
511	Sol. Res. Sd/Rd	4586.88 20313.11 0.23	26.07 18441.82 0.00	-3.34 11975.89 0	0 --- ---	1651 277447.97 0.01	1393.08 76882.74 0.02	0.25	210.73	W 150 13

512	Sol. Res. Sd/Rd	7395.8 20313.11 0.36	17.97 18441.82 0	1.64 11975.89 0	0 --- ---	367.17 277447.97 0.00	-764.45 76882.74 -0.01	0.37	200.01	W 150 13
513	Sol. Res. Sd/Rd	6484.33 20313.11 0.32	17.41 18441.82 0	0.45 11975.89 0	0 --- ---	147.94 277447.97 0	-819.57 76882.74 -0.01	0.33	200.02	W 150 13
514	Sol. Res. Sd/Rd	-1847.67 60845.45 0.03	19.84 19570.91 0.00	449.54 16183.64 0.03	0 --- ---	-36481.51 434083.75 -0.08	-1525.04 83354.24 -0.02	0.12	99.95	W 200 15
515	Sol. Res. Sd/Rd	-1347.43 60845.45 0.02	-8.54 19570.91 0	575.37 16183.64 0.04	0 --- ---	-36978.93 434083.75 -0.09	560.83 83354.24 0.01	0.1	100	W 200 15
516	Sol. Res. Sd/Rd	-3660.54 60845.45 0.06	-3.2 19570.91 0	516 16183.64 0.03	0 --- ---	-31524.31 434083.75 -0.07	183.67 83354.24 0.00	0.1	100.01	W 200 15
517	Sol. Res. Sd/Rd	-3179.57 60845.45 0.05	-6.02 19570.91 0	507.4 16183.64 0.03	0 --- ---	-32181.84 434083.75 -0.07	-330.36 83354.24 0.00	0.1	100	W 200 15
518	Sol. Res. Sd/Rd	-1767.61 60845.45 0.03	-6.31 19570.91 0	547.82 16183.64 0.03	0 --- ---	-36341.72 434083.75 -0.08	356.68 83354.24 0.00	0.1	100.02	W 200 15
519	Sol. Res. Sd/Rd	-1289.62 60845.45 0.02	-8.1 19570.91 0	477.58 16183.64 0.03	0 --- ---	-37138.72 434083.75 -0.09	-480.89 83354.24 -0.01	0.1	99.98	W 200 15
520	Sol. Res. Sd/Rd	3832.8 48677.66 0.08	-50.91 19570.91 0.00	192.11 16183.64 0.01	0 --- ---	-12805.63 434083.75 -0.03	-3167.61 83354.24 -0.04	0.11	101.59	W 200 15
521	Sol. Res. Sd/Rd	54.58 53942.45 0.00	-226.97 19570.91 -0.01	629.88 16183.64 0.04	0 --- ---	-36290.06 434083.75 -0.08	8306.89 83354.24 0.1	0.18	60	W 200 15
522	Sol. Res. Sd/Rd	481.93 40614.24 0.01	-25.68 18441.82 0.00	-21.24 11975.89 0.00	0 --- ---	2308.44 277447.97 0.01	-1570.42 76882.74 -0.02	0.03	129.5	W 150 13
523	Sol. Res.	4201.83 40614.24	16.09 18441.82	-16.91 11975.89	0 ---	-2603.39 277447.97	-743.43 76882.74	0.1	129.5	W 150 13

	Sd/Rd	0.1	0	0.00	---	-0.01	-0.01			
524	Sol. Res. Sd/Rd	-205.03 52063.64 0.00	3.31 18441.82 0	28.92 11975.89 0.00	0 --- ---	-1304.98 277447.97 0.00	-1066.54 76882.74 -0.01	0.02	120	W 150 13
525	Sol. Res. Sd/Rd	-223.69 60845.45 0.00	252.97 19570.91 0.01	630.11 16183.64 0.04	0 --- ---	-38603.92 434083.75 -0.09	8703.99 83354.24 0.1	0.2	60	W 200 15
526	Sol. Res. Sd/Rd	35.38 20761.74 0.00	989.02 7200 0.14	-13.11 7200 0.00	0 --- ---	1646.08 79199.27 0.02	46978.22 79199.27 0.59	0.62	190	BOX 100 x 100 x 3
527	Sol. Res. Sd/Rd	-1.13 25636.36 0	989.02 7200 0.14	-4.08 7200 0	0 --- ---	605.56 79199.27 0.01	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
528	Sol. Res. Sd/Rd	-0.22 25636.36 0	989.02 7200 0.14	-8.49 7200 0.00	0 --- ---	1144.03 79199.27 0.01	46978.22 79199.27 0.59	0.61	190	BOX 100 x 100 x 3
529	Sol. Res. Sd/Rd	0.17 20761.74 0	989.02 7200 0.14	-2.07 7200 0	0 --- ---	410.02 79199.27 0.01	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
530	Sol. Res. Sd/Rd	-0.41 25636.36 0	989.02 7200 0.14	-5.79 7200 0	0 --- ---	881.48 79199.27 0.01	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
531	Sol. Res. Sd/Rd	-5.41 25636.36 0	989.02 7200 0.14	1.32 7200 0	0 --- ---	353.41 79199.27 0.00	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
532	Sol. Res. Sd/Rd	-1056.69 60845.45 0.02	-78.31 19570.91 0.00	690.78 16183.64 0.04	0 --- ---	-22059.42 434083.75 -0.05	2912.29 83354.24 0.03	0.09	60	W 200 15
533	Sol. Res. Sd/Rd	1169.72 44022.44 0.03	-0.4 19570.91 0	227.79 16183.64 0.01	0 --- ---	-26138.14 434083.75 -0.06	-79.69 83354.24 0	0.07	130	W 200 15
534	Sol. Res. Sd/Rd	142.52 42839.72 0.00	-39.59 18441.82 0.00	208.94 11975.89 0.02	0 --- ---	-23952.73 277447.97 -0.09	-2461.22 76882.74 -0.03	0.12	114.75	W 150 13

535	Sol. Res. Sd/Rd	65.02 42839.72 0.00	32.41 18441.82 0.00	-57.09 11975.89 0.00	0 --- ---	4194.63 277447.97 0.02	-1896.28 76882.74 -0.02	0.04	114.75	W 150 13
536	Sol. Res. Sd/Rd	5285.65 40615.62 0.13	25.05 18441.82 0.00	380.74 11975.89 0.03	0 --- ---	26594.91 277447.97 0.1	-1370.35 76882.74 -0.02	0.18	129.49	W 150 13
537	Sol. Res. Sd/Rd	999.18 33354.43 0.03	-15.69 18441.82 0	106.57 11975.89 0.01	0 --- ---	-20425.92 277447.97 -0.07	-1333.54 76882.74 -0.02	0.11	173.4	W 150 13
538	Sol. Res. Sd/Rd	-597.37 52063.64 0.01	109.31 18441.82 0.01	-117.14 11975.89 -0.01	0 --- ---	8836.41 277447.97 0.03	-3179.79 76882.74 -0.04	0.08	60	W 150 13
539	Sol. Res. Sd/Rd	-636.96 52063.64 0.01	14.57 18441.82 0	91.8 11975.89 0.01	0 --- ---	8841.18 277447.97 0.03	-1099.81 76882.74 -0.01	0.05	130	W 150 13
540	Sol. Res. Sd/Rd	632.45 46565.13 0.01	-1.28 19570.91 0	138.4 16183.64 0.01	0 --- ---	10462.28 434083.75 0.02	110.17 83354.24 0.00	0.03	115	W 200 15
541	Sol. Res. Sd/Rd	384.87 49360.66 0.01	-5.5 18441.82 0	6022.74 11975.89 0.5	0 --- ---	183328.63 277447.97 0.66	-310.61 76882.74 0.00	0.67	60	W 150 13
542	Sol. Res. Sd/Rd	-939.95 52063.64 0.02	-0.71 18441.82 0	1701.99 11975.89 0.14	0 --- ---	-132680.69 277447.97 -0.48	111.25 76882.74 0.00	0.49	130	W 150 13
543	Sol. Res. Sd/Rd	1103.06 49360.66 0.02	62.91 18441.82 0.00	5964.29 11975.89 0.5	0 --- ---	180124.56 277447.97 0.65	2528.19 76882.74 0.03	0.69	60	W 150 13
544	Sol. Res. Sd/Rd	-391.69 52063.64 0.01	-14.78 18441.82 0	1673.46 11975.89 0.14	0 --- ---	-128980.13 277447.97 -0.46	-1246 76882.74 -0.02	0.48	130	W 150 13
545	Sol. Res. Sd/Rd	1757.71 53942.45 0.03	8.31 19570.91 0	17.51 16183.64 0.00	0 --- ---	-10792.44 434083.75 -0.02	-655.57 83354.24 -0.01	0.05	60	W 200 15
546	Sol. Res.	1163.39 52298.97	10.9 19570.91	319.6 16183.64	0 ---	13362.09 434083.75	-797.38 83354.24	0.05	75	W 200 15

	Sd/Rd	0.02	0	0.02	---	0.03	-0.01			
547	Sol. Res. Sd/Rd	121.8 53942.45 0.00	-183.31 19570.91 -0.01	152.61 16183.64 0.01	0 --- ---	-7070.17 434083.75 -0.02	5418.76 83354.24 0.07	0.08	60	W 200 15
548	Sol. Res. Sd/Rd	1078.33 44022.44 0.02	-21.53 19570.91 0.00	214.9 16183.64 0.01	0 --- ---	-24460.76 434083.75 -0.06	-1897.32 83354.24 -0.02	0.09	130	W 200 15
549	Sol. Res. Sd/Rd	129.09 42839.72 0.00	-37.39 18441.82 0.00	-186.2 11975.89 -0.02	0 --- ---	21346.11 277447.97 0.08	-2324.63 76882.74 -0.03	0.11	114.75	W 150 13
550	Sol. Res. Sd/Rd	59.21 42839.72 0.00	33.47 18441.82 0.00	52.88 11975.89 0.00	0 --- ---	-3892.75 277447.97 -0.01	-2023.83 76882.74 -0.03	0.04	114.75	W 150 13
551	Sol. Res. Sd/Rd	4924.66 40615.62 0.12	24.49 18441.82 0.00	-317.8 11975.89 -0.03	0 --- ---	-25986.15 277447.97 -0.09	-1319.57 76882.74 -0.02	0.17	129.49	W 150 13
552	Sol. Res. Sd/Rd	917.38 33354.43 0.03	-13.85 18441.82 0	-79.17 11975.89 -0.01	0 --- ---	15717.28 277447.97 0.06	-1178.09 76882.74 -0.02	0.09	173.4	W 150 13
553	Sol. Res. Sd/Rd	-462.76 52063.64 0.01	98.94 18441.82 0.01	203.29 11975.89 0.02	0 --- ---	-8379.4 277447.97 -0.03	-2880.48 76882.74 -0.04	0.07	60	W 150 13
554	Sol. Res. Sd/Rd	-500.15 52063.64 0.01	11.51 18441.82 0	17.09 11975.89 0.00	0 --- ---	-10601.04 277447.97 -0.04	-915.99 76882.74 -0.01	0.05	130	W 150 13
555	Sol. Res. Sd/Rd	1373.17 52298.97 0.03	-1.48 19570.91 0	324.35 16183.64 0.02	0 --- ---	13012.58 434083.75 0.03	-378.99 83354.24 0.00	0.05	75	W 200 15
556	Sol. Res. Sd/Rd	567.44 46565.13 0.01	15.59 19570.91 0	131.32 16183.64 0.01	0 --- ---	9959.41 434083.75 0.02	-907.89 83354.24 -0.01	0.04	115	W 200 15
557	Sol. Res. Sd/Rd	163.23 23211.46 0.01	992.83 7200 0.14	-14.2 7200 0.00	0 --- ---	-1368.54 79199.27 -0.02	23351.49 79199.27 0.29	0.32	60	BOX 100 x 100 x 3

558	Sol. Res. Sd/Rd	163.23 22175.83 0.01	985.2 7200 0.14	-14.2 7200 0.00	0 --- ---	1328.8 79199.27 0.02	29846 79199.27 0.38	0.4	130	BOX 100 x 100 x 3
559	Sol. Res. Sd/Rd	47.57 23211.46 0.00	991.03 7200 0.14	15.06 7200 0.00	0 --- ---	1257.49 79199.27 0.02	23230.29 79199.27 0.29	0.31	60	BOX 100 x 100 x 3
560	Sol. Res. Sd/Rd	47.57 22175.83 0.00	987 7200 0.14	15.06 7200 0.00	0 --- ---	-1603.82 79199.27 -0.02	29657.75 79199.27 0.37	0.4	130	BOX 100 x 100 x 3
561	Sol. Res. Sd/Rd	-805.36 52063.64 0.02	114.97 18441.82 0.01	-46.5 11975.89 0.00	0 --- ---	-3271.84 277447.97 -0.01	-13796.11 76882.74 -0.18	0.2	162.46	W 150 13
562	Sol. Res. Sd/Rd	-24.87 52063.64 0	-67.33 18441.82 0.00	-12.08 11975.89 0.00	0 --- ---	1087.3 277447.97 0.00	-9607.32 76882.74 -0.12	0.13	155.54	W 150 13
563	Sol. Res. Sd/Rd	98.48 36386.38 0.00	61.77 18441.82 0.00	-13.05 11975.89 0.00	0 --- ---	1243.41 277447.97 0.00	-10392.24 76882.74 -0.14	0.14	155.54	W 150 13
564	Sol. Res. Sd/Rd	-894.7 52063.64 0.02	-102.3 18441.82 -0.01	-48.15 11975.89 0.00	0 --- ---	-3396.15 277447.97 -0.01	-12468.84 76882.74 -0.16	0.18	162.46	W 150 13
565	Sol. Res. Sd/Rd	458.2 25424.21 0.02	18.57 18441.82 0.00	32.01 11975.89 0.00	0 --- ---	-11619.58 277447.97 -0.04	-746.06 76882.74 -0.01	0.06	220	W 150 13
566	Sol. Res. Sd/Rd	528.18 25424.21 0.02	18.45 18441.82 0.00	-97.09 11975.89 -0.01	0 --- ---	-12733.54 277447.97 -0.05	-724.43 76882.74 -0.01	0.07	220	W 150 13
567	Sol. Res. Sd/Rd	-7030.08 52063.64 0.14	-9.63 18441.82 0	-2.89 11975.89 0	0 --- ---	-926.88 255411.72 0.00	-1401.92 76882.74 -0.02	0.14	159.29	W 150 13
568	Sol. Res. Sd/Rd	4548.9 36994.59 0.12	28.02 18441.82 0.00	1.23 11975.89 0	0 --- ---	-843.64 275535.13 0.00	-1530.25 76882.74 -0.02	0.12	151.9	W 150 13
569	Sol. Res.	-4474.36 52063.64	-9.86 18441.82	3.08 11975.89	0 ---	-657.42 277447.97	-311.62 76882.74	0.09	151.92	W 150 13

	Sd/Rd	0.09	0	0	---	0.00	0.00			
570	Sol. Res. Sd/Rd	1706.13 36979.18 0.05	12.95 18441.82 0	-3.34 11975.89 0	0 --- ---	-636.08 277447.97 0.00	-375.84 76882.74 0.00	0.05	151.99	W 150 13
571	Sol. Res. Sd/Rd	-1634.98 52063.64 0.03	-7.66 18441.82 0	3.75 11975.89 0	0 --- ---	-635.99 277447.97 0.00	310.83 76882.74 0.00	0.03	151.91	W 150 13
572	Sol. Res. Sd/Rd	-1011.89 52063.64 0.02	11.08 18441.82 0	-3.77 11975.89 0	0 --- ---	-575.8 277447.97 0.00	-390.07 76882.74 -0.01	0.02	151.98	W 150 13
573	Sol. Res. Sd/Rd	1090.87 36992.66 0.03	-12.04 18441.82 0	3.67 11975.89 0	0 --- ---	-575.1 277447.97 0.00	426.88 76882.74 0.01	0.03	151.91	W 150 13
574	Sol. Res. Sd/Rd	-3811.77 52063.64 0.07	11.29 18441.82 0	-3.76 11975.89 0	0 --- ---	-526.01 277447.97 0.00	299.39 76882.74 0.00	0.07	151.98	W 150 13
575	Sol. Res. Sd/Rd	3878.58 36991.67 0.1	-23.28 18441.82 0.00	4.15 11975.89 0	0 --- ---	-525.52 277447.97 0.00	-1211.16 76882.74 -0.02	0.1	151.92	W 150 13
576	Sol. Res. Sd/Rd	-6058.51 52063.64 0.12	8.97 18441.82 0	-7.13 11975.89 0	0 --- ---	-894.62 274444.94 0.00	1121.25 76882.74 0.01	0.12	147.08	W 150 13
577	Sol. Res. Sd/Rd	-4713.86 52063.64 0.09	-34.42 18441.82 0.00	0.68 11975.89 0	0 --- ---	-598.49 277447.97 0.00	-3025.26 76882.74 -0.04	0.09	210.8	W 150 13
578	Sol. Res. Sd/Rd	1234.45 9929.78 0.12	-20.96 18441.82 0.00	-3.62 11975.89 0	0 --- ---	409.25 277447.97 0.00	-821.23 76882.74 -0.01	0.12	200	W 150 13
579	Sol. Res. Sd/Rd	3427.99 9929.78 0.35	-16.62 18441.82 0	-4.03 11975.89 0	0 --- ---	521.47 257454.17 0.00	630.7 76882.74 0.01	0.35	200.03	W 150 13
580	Sol. Res. Sd/Rd	2058.65 9929.78 0.21	-19.55 18441.82 0.00	-3.94 11975.89 0	0 --- ---	472.63 277447.97 0.00	-622.27 76882.74 -0.01	0.22	199.98	W 150 13

581	Sol. Res. Sd/Rd	634.46 48929.36 0.01	4.23 19570.91 0	-517.99 16183.64 -0.03	0 --- ---	28553.07 434083.75 0.07	-239.39 83354.24 0.00	0.08	99.92	W 200 15
582	Sol. Res. Sd/Rd	369.98 48907.02 0.01	1.67 19570.91 0	-505.23 16183.64 -0.03	0 --- ---	28537.4 434083.75 0.07	101.56 83354.24 0.00	0.07	100.07	W 200 15
583	Sol. Res. Sd/Rd	-3160.91 60845.45 0.05	3.15 19570.91 0	-488.12 16183.64 -0.03	0 --- ---	30730.41 434083.75 0.07	175.88 83354.24 0.00	0.1	100.01	W 200 15
584	Sol. Res. Sd/Rd	-2931 60845.45 0.05	3.05 19570.91 0	-479.04 16183.64 -0.03	0 --- ---	29868.84 434083.75 0.07	-215.84 83354.24 0.00	0.1	99.94	W 200 15
585	Sol. Res. Sd/Rd	-3108.37 60845.45 0.05	3.98 19570.91 0	-541.57 16183.64 -0.03	0 --- ---	29804.52 434083.75 0.07	223.88 83354.24 0.00	0.1	100.06	W 200 15
586	Sol. Res. Sd/Rd	772.56 48917.11 0.02	4.87 19570.91 0	-531.81 16183.64 -0.03	0 --- ---	29350.69 434083.75 0.07	-309.66 83354.24 0.00	0.08	100	W 200 15
587	Sol. Res. Sd/Rd	594.88 48932.34 0.01	2.44 19570.91 0	-490.96 16183.64 -0.03	0 --- ---	29264.41 434083.75 0.07	164.88 83354.24 0.00	0.08	99.9	W 200 15
588	Sol. Res. Sd/Rd	8005.23 48660.99 0.16	34.79 19570.91 0.00	-124.52 16183.64 -0.01	0 --- ---	-16077.31 434083.75 -0.04	2269.45 83354.24 0.03	0.16	101.7	W 200 15
589	Sol. Res. Sd/Rd	9316.96 53942.45 0.17	-65.72 19570.91 0.00	1483.61 16183.64 0.09	0 --- ---	-93930.38 434083.75 -0.22	2180.09 83354.24 0.03	0.33	60	W 200 15
590	Sol. Res. Sd/Rd	-442.68 52063.64 0.01	24.91 18441.82 0.00	-3.07 11975.89 0	0 --- ---	-379.51 277447.97 0.00	2163.46 76882.74 0.03	0.03	114.75	W 150 13
591	Sol. Res. Sd/Rd	1285.21 42839.72 0.03	-39.74 18441.82 0.00	-15.14 11975.89 0.00	0 --- ---	-1610.2 277447.97 -0.01	-3267.83 76882.74 -0.04	0.06	114.75	W 150 13
592	Sol. Res.	-3001.08 52063.64	-33 18441.82	-4.33 11975.89	0 ---	-454.89 277447.97	-2689.18 76882.74	0.07	192.39	W 150 13

	Sd/Rd	0.06	0.00	0	---	0.00	-0.03			
593	Sol. Res. Sd/Rd	5614.56 40615.62 0.14	36.17 18441.82 0.00	12.79 11975.89 0.00	0 --- ---	946.9 277447.97 0.00	2696.9 76882.74 0.04	0.14	129.49	W 150 13
594	Sol. Res. Sd/Rd	1298.13 40615.62 0.03	-5.97 18441.82 0	148.41 11975.89 0.01	0 --- ---	-17361.37 277447.97 -0.06	159.17 76882.74 0.00	0.08	129.49	W 150 13
595	Sol. Res. Sd/Rd	-9606.83 52063.64 0.18	-8.22 18441.82 0	18.54 11975.89 0.00	0 --- ---	-4431.94 277447.97 -0.02	-718.51 76882.74 -0.01	0.18	120	W 150 13
596	Sol. Res. Sd/Rd	-6770.17 52063.64 0.13	-8.83 18441.82 0	4.41 11975.89 0	0 --- ---	-806.87 255976.61 0.00	-1356.37 76882.74 -0.02	0.13	159.29	W 150 13
597	Sol. Res. Sd/Rd	4403.37 36994.59 0.12	32.33 18441.82 0.00	-1.97 11975.89 0	0 --- ---	-422.62 277447.97 0.00	-1913.56 76882.74 -0.02	0.12	151.9	W 150 13
598	Sol. Res. Sd/Rd	-4321.6 52063.64 0.08	-8.71 18441.82 0	1.82 11975.89 0	0 --- ---	-422.17 277447.97 0.00	-198.86 76882.74 0.00	0.08	151.92	W 150 13
599	Sol. Res. Sd/Rd	1541.31 36979.18 0.04	15.1 18441.82 0	-1.23 11975.89 0	0 --- ---	-360.24 277447.97 0.00	509.35 76882.74 0.01	0.04	151.99	W 150 13
600	Sol. Res. Sd/Rd	-1466.83 52063.64 0.03	-10.47 18441.82 0	0.98 11975.89 0	0 --- ---	-360.02 277447.97 0.00	380.41 76882.74 0.00	0.03	151.91	W 150 13
601	Sol. Res. Sd/Rd	-1169.19 52063.64 0.02	13.1 18441.82 0	-0.82 11975.89 0	0 --- ---	-365.82 277447.97 0.00	-454.82 76882.74 -0.01	0.02	151.98	W 150 13
602	Sol. Res. Sd/Rd	1252.74 36992.66 0.03	-14.46 18441.82 0	0.7 11975.89 0	0 --- ---	-365.08 277447.97 0.00	588.21 76882.74 0.01	0.03	151.91	W 150 13
603	Sol. Res. Sd/Rd	-3976.41 52063.64 0.08	9.51 18441.82 0	-0.17 11975.89 0	0 --- ---	-317.97 277447.97 0.00	-231.24 76882.74 0.00	0.08	151.98	W 150 13

604	Sol. Res. Sd/Rd	4045.84 36991.67 0.11	-25.93 18441.82 0.00	-1.05 11975.89 0	0 --- ---	-478.12 277447.97 0.00	1441.84 76882.74 0.02	0.11	151.92	W 150 13
605	Sol. Res. Sd/Rd	-6205.92 52063.64 0.12	9.98 18441.82 0	6.08 11975.89 0	0 --- ---	-497.37 264079.59 0.00	1221.28 76882.74 0.02	0.12	147.08	W 150 13
606	Sol. Res. Sd/Rd	-2967.89 52063.64 0.06	-34.46 18441.82 0.00	-2.96 11975.89 0	0 --- ---	611.07 277447.97 0.00	-3003.01 76882.74 -0.04	0.07	210.8	W 150 13
607	Sol. Res. Sd/Rd	2784.49 9929.78 0.28	-20.87 18441.82 0.00	-2.8 11975.89 0	0 --- ---	543.29 277447.97 0.00	-793.66 76882.74 -0.01	0.29	200	W 150 13
608	Sol. Res. Sd/Rd	4758.46 9929.78 0.48	-16.45 18441.82 0	-2.55 11975.89 0	0 --- ---	456.71 258006.19 0.00	652.44 76882.74 0.01	0.49	200.03	W 150 13
609	Sol. Res. Sd/Rd	3178.71 9929.78 0.32	-19.7 18441.82 0.00	-2.43 11975.89 0	0 --- ---	427.32 277447.97 0.00	-621.49 76882.74 -0.01	0.33	199.98	W 150 13
610	Sol. Res. Sd/Rd	7534.95 48677.79 0.15	12.7 19570.91 0	-263.3 16183.64 -0.02	0 --- ---	-19011.15 434083.75 -0.04	-909.42 83354.24 -0.01	0.15	101.59	W 200 15
611	Sol. Res. Sd/Rd	1295.01 48929.36 0.03	-1.84 19570.91 0	-514.03 16183.64 -0.03	0 --- ---	29000.81 434083.75 0.07	-152.36 83354.24 0.00	0.08	99.92	W 200 15
612	Sol. Res. Sd/Rd	1223.95 48907.02 0.03	1.5 19570.91 0	-508.94 16183.64 -0.03	0 --- ---	29016.47 434083.75 0.07	86.97 83354.24 0.00	0.08	100.07	W 200 15
613	Sol. Res. Sd/Rd	-2150.21 60845.45 0.04	-0.28 19570.91 0	-536.35 16183.64 -0.03	0 --- ---	30994.03 434083.75 0.07	-72.19 83354.24 0	0.09	100.01	W 200 15
614	Sol. Res. Sd/Rd	-2133.66 60845.45 0.04	0.24 19570.91 0	-486.81 16183.64 -0.03	0 --- ---	31029.36 434083.75 0.07	21.95 83354.24 0	0.09	100.01	W 200 15
615	Sol. Res.	-1923.88 60845.45	0.21 19570.91	-476.16 16183.64	0 ---	30042.64 434083.75	-70.75 83354.24	0.09	99.94	W 200 15

	Sd/Rd	0.03	0	-0.03	---	0.07	0			
616	Sol. Res. Sd/Rd	-1906.88 60845.45 0.03	-0.19 19570.91 0	-545.21 16183.64 -0.03	0 --- ---	30106.97 434083.75 0.07	12.82 83354.24 0	0.09	100.06	W 200 15
617	Sol. Res. Sd/Rd	1959.18 48917.11 0.04	-1.28 19570.91 0	-541.36 16183.64 -0.03	0 --- ---	30225.32 434083.75 0.07	-141.98 83354.24 0.00	0.09	100	W 200 15
618	Sol. Res. Sd/Rd	1976.51 48932.34 0.04	1.96 19570.91 0	-479.95 16183.64 -0.03	0 --- ---	30311.61 434083.75 0.07	-103.81 83354.24 0.00	0.09	99.9	W 200 15
619	Sol. Res. Sd/Rd	9323.27 48660.99 0.19	-7.95 19570.91 0	-60.56 16183.64 0.00	0 --- ---	-13378.59 434083.75 -0.03	-682.79 83354.24 -0.01	0.19	101.7	W 200 15
620	Sol. Res. Sd/Rd	6741.84 53942.45 0.12	84.94 19570.91 0.00	1079.28 16183.64 0.07	0 --- ---	-65532.71 434083.75 -0.15	-2928.55 83354.24 -0.04	0.25	60	W 200 15
621	Sol. Res. Sd/Rd	-35.74 52063.64 0	28.14 18441.82 0.00	8.89 11975.89 0	0 --- ---	1087.15 277447.97 0.00	2423.92 76882.74 0.03	0.04	114.75	W 150 13
622	Sol. Res. Sd/Rd	714.82 42839.72 0.02	-36.85 18441.82 0.00	14.36 11975.89 0.00	0 --- ---	1525.37 277447.97 0.01	-2963.12 76882.74 -0.04	0.05	114.75	W 150 13
623	Sol. Res. Sd/Rd	-2100.05 52063.64 0.04	-33.41 18441.82 0.00	-1.22 11975.89 0	0 --- ---	359.79 277447.97 0.00	-2724.04 76882.74 -0.04	0.06	192.39	W 150 13
624	Sol. Res. Sd/Rd	1365.75 40615.62 0.03	7.69 18441.82 0	165.99 11975.89 0.01	0 --- ---	-22813.83 277447.97 -0.08	395.97 76882.74 0.01	0.1	129.49	W 150 13
625	Sol. Res. Sd/Rd	1211.96 40615.62 0.03	-7.6 18441.82 0	-165.67 11975.89 -0.01	0 --- ---	18861.84 277447.97 0.07	-370.2 76882.74 0.00	0.09	129.49	W 150 13
626	Sol. Res. Sd/Rd	-8686.89 52063.64 0.17	5.98 18441.82 0	16.77 11975.89 0.00	0 --- ---	-3978.93 277447.97 -0.01	867.99 76882.74 0.01	0.17	120	W 150 13

627	Sol. Res. Sd/Rd	-1254.11 25636.36 0.05	989.02 7200 0.14	-2.45 7200 0	0 --- ---	721.46 79199.27 0.01	46978.22 79199.27 0.59	0.65	190	BOX 100 x 100 x 3
628	Sol. Res. Sd/Rd	-521.66 25636.36 0.02	989.02 7200 0.14	-0.25 7200 0	0 --- ---	-235.56 79199.27 0.00	46978.22 79199.27 0.59	0.62	190	BOX 100 x 100 x 3
629	Sol. Res. Sd/Rd	-2.84 25636.36 0	989.02 7200 0.14	-1.15 7200 0	0 --- ---	-257.59 79199.27 0.00	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
630	Sol. Res. Sd/Rd	0.56 20761.74 0	989.02 7200 0.14	-0.64 7200 0	0 --- ---	-325.08 79199.27 0.00	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
631	Sol. Res. Sd/Rd	0.67 20761.74 0	989.02 7200 0.14	-1.05 7200 0	0 --- ---	-263.43 79199.27 0.00	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
632	Sol. Res. Sd/Rd	-0.11 25636.36 0	989.02 7200 0.14	-0.74 7200 0	0 --- ---	-346.94 79199.27 0.00	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
633	Sol. Res. Sd/Rd	-0.38 25636.36 0	989.02 7200 0.14	-0.98 7200 0	0 --- ---	-255.81 79199.27 0.00	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
634	Sol. Res. Sd/Rd	-89.54 25636.36 0.00	989.02 7200 0.14	-0.58 7200 0	0 --- ---	-344.17 79199.27 0.00	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
635	Sol. Res. Sd/Rd	-19.35 25636.36 0	989.02 7200 0.14	-0.84 7200 0	0 --- ---	-249.89 79199.27 0.00	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
636	Sol. Res. Sd/Rd	-412.03 25636.36 0.02	989.02 7200 0.14	-0.55 7200 0	0 --- ---	-383.74 79199.27 0.00	46978.22 79199.27 0.59	0.61	190	BOX 100 x 100 x 3
637	Sol. Res. Sd/Rd	-1166.28 25636.36 0.05	989.02 7200 0.14	1.76 7200 0	0 --- ---	-970.74 79199.27 -0.01	46978.22 79199.27 0.59	0.65	190	BOX 100 x 100 x 3
638	Sol. Res.	7355.43 53942.45	-89.16 19570.91	1350.21 16183.64	0 ---	-71452.24 434083.75	-3470.93 83354.24	0.27	60	W 200 15

	Sd/Rd	0.14	0.00	0.08	---	-0.16	-0.04			
639	Sol. Res. Sd/Rd	-7250.78 52063.64 0.14	-37.38 18441.82 0.00	41.72 11975.89 0.00	0 --- ---	-6892.51 277447.97 -0.02	-2818.07 76882.74 -0.04	0.14	159.23	W 150 13
640	Sol. Res. Sd/Rd	2488.19 36981.5 0.07	15.54 18441.82 0	-2.09 11975.89 0	0 --- ---	-598.07 277447.97 0.00	-533.84 76882.74 -0.01	0.07	151.98	W 150 13
641	Sol. Res. Sd/Rd	-2433.2 52063.64 0.05	-11.63 18441.82 0	3.82 11975.89 0	0 --- ---	-601.7 277447.97 0.00	683.31 76882.74 0.01	0.05	151.91	W 150 13
642	Sol. Res. Sd/Rd	-68.58 52063.64 0.00	7.67 18441.82 0	-13.92 11975.89 0.00	0 --- ---	3168.09 277447.97 0.01	-224.67 76882.74 0.00	0.01	151.97	W 150 13
643	Sol. Res. Sd/Rd	264.86 36993.01 0.01	-13.7 18441.82 0	-1.15 11975.89 0	0 --- ---	300.85 277447.97 0.00	822.57 76882.74 0.01	0.02	151.91	W 150 13
644	Sol. Res. Sd/Rd	-2928.89 52063.64 0.06	9.15 18441.82 0	1.73 11975.89 0	0 --- ---	406.5 277447.97 0.00	-499.74 76882.74 -0.01	0.06	151.98	W 150 13
645	Sol. Res. Sd/Rd	3008.91 36994 0.08	-15.56 18441.82 0	-1.22 11975.89 0	0 --- ---	406.34 277447.97 0.00	842.16 76882.74 0.01	0.08	151.9	W 150 13
646	Sol. Res. Sd/Rd	-5718.6 52063.64 0.11	14.45 18441.82 0	0.88 11975.89 0	0 --- ---	400.64 277447.97 0.00	499.14 76882.74 0.01	0.11	151.97	W 150 13
647	Sol. Res. Sd/Rd	5782.82 36993.01 0.16	-26.63 18441.82 0.00	2.38 11975.89 0	0 --- ---	761.55 277447.97 0.00	1498.09 76882.74 0.02	0.16	151.91	W 150 13
648	Sol. Res. Sd/Rd	-7932.76 52063.64 0.15	8.55 18441.82 0	-7.09 11975.89 0	0 --- ---	795.52 267903.38 0.00	1266.18 76882.74 0.02	0.15	147.07	W 150 13
649	Sol. Res. Sd/Rd	5046.97 26960.93 0.19	-36.51 18441.82 0.00	5.59 11975.89 0	0 --- ---	-2528.76 277447.97 -0.01	-2693.5 76882.74 -0.04	0.19	210.8	W 150 13

650	Sol. Res. Sd/Rd	8286.49 15915.79 0.52	-16.24 18441.82 0	3.86 11975.89 0	0 --- ---	-560.26 277447.97 0.00	1080.73 76882.74 0.01	0.53	200	W 150 13
651	Sol. Res. Sd/Rd	8005.76 15915.8 0.5	-18.5 18441.82 0.00	2.82 11975.89 0	0 --- ---	380.68 244879.06 0.00	976.67 76882.74 0.01	0.52	200.03	W 150 13
652	Sol. Res. Sd/Rd	4107.25 15915.8 0.26	-22.5 18441.82 0.00	2.31 11975.89 0	0 --- ---	307.06 277447.97 0.00	813.12 76882.74 0.01	0.27	199.98	W 150 13
653	Sol. Res. Sd/Rd	8606.7 48677.66 0.18	-16.12 19570.91 0	-276.52 16183.64 -0.02	0 --- ---	-20739.47 434083.75 -0.05	1144.17 83354.24 0.01	0.18	101.59	W 200 15
654	Sol. Res. Sd/Rd	-218.63 60845.45 0.00	0.23 19570.91 0	-542.65 16183.64 -0.03	0 --- ---	29593.04 434083.75 0.07	72.26 83354.24 0	0.07	99.92	W 200 15
655	Sol. Res. Sd/Rd	-252.18 60845.45 0.00	0.9 19570.91 0	-480.52 16183.64 -0.03	0 --- ---	29294.92 434083.75 0.07	-128.56 83354.24 0.00	0.07	100.07	W 200 15
656	Sol. Res. Sd/Rd	-6027.84 60845.45 0.1	0.25 19570.91 0	-551.85 16183.64 -0.03	0 --- ---	34717.25 434083.75 0.08	47.88 83354.24 0	0.13	100.01	W 200 15
657	Sol. Res. Sd/Rd	-6059.24 60845.45 0.1	0.23 19570.91 0	-471.47 16183.64 -0.03	0 --- ---	34372.47 434083.75 0.08	-87.37 83354.24 0.00	0.13	100.01	W 200 15
658	Sol. Res. Sd/Rd	-8192.13 60845.45 0.13	-0.56 19570.91 0	-520.49 16183.64 -0.03	0 --- ---	38165.97 434083.75 0.09	46.65 83354.24 0	0.16	99.94	W 200 15
659	Sol. Res. Sd/Rd	-8222.76 60845.45 0.14	0.3 19570.91 0	-495.24 16183.64 -0.03	0 --- ---	37784.16 434083.75 0.09	-71.35 83354.24 0	0.16	100.05	W 200 15
660	Sol. Res. Sd/Rd	-6773.8 60845.45 0.11	-2.05 19570.91 0	-453.23 16183.64 -0.03	0 --- ---	34053.89 434083.75 0.08	-142.35 83354.24 0.00	0.14	100.01	W 200 15
661	Sol. Res.	-6803.29 60845.45	6.17 19570.91	-576.85 16183.64	0 ---	33758.21 434083.75	420.23 83354.24	0.14	100	W 200 15

	Sd/Rd	0.11	0	-0.04	---	0.08	0.01			
662	Sol. Res. Sd/Rd	-175.35 60845.45 0.00	-19.84 19570.91 0.00	-1778.44 16183.64 -0.11	0 --- ---	154744.16 434083.75 0.36	-1353.81 83354.24 -0.02	0.37	101.6	W 200 15
663	Sol. Res. Sd/Rd	7698.95 53942.45 0.14	-151.52 19570.91 -0.01	1167.23 16183.64 0.07	0 --- ---	-71449.16 434083.75 -0.16	5331.49 83354.24 0.06	0.3	60	W 200 15
664	Sol. Res. Sd/Rd	148.31 42839.72 0.00	37.29 18441.82 0.00	-12.25 11975.89 0.00	0 --- ---	-1488.66 277447.97 -0.01	3081.74 76882.74 0.04	0.05	114.75	W 150 13
665	Sol. Res. Sd/Rd	936.05 42839.72 0.02	-31.85 18441.82 0.00	-23.46 11975.89 0.00	0 --- ---	-2498.97 277447.97 -0.01	-2754.62 76882.74 -0.04	0.06	114.75	W 150 13
666	Sol. Res. Sd/Rd	-3466.68 52063.64 0.07	-37.98 18441.82 0.00	-0.96 11975.89 0	0 --- ---	-405.29 277447.97 0.00	-3275.11 76882.74 -0.04	0.08	192.39	W 150 13
667	Sol. Res. Sd/Rd	5573.76 40615.62 0.14	27.31 18441.82 0.00	21.87 11975.89 0.00	0 --- ---	-2358.82 277447.97 -0.01	1799.24 76882.74 0.02	0.14	129.49	W 150 13
668	Sol. Res. Sd/Rd	6103.18 40615.62 0.15	-24.55 18441.82 0.00	22.18 11975.89 0.00	0 --- ---	1917.1 277447.97 0.01	-1632.17 76882.74 -0.02	0.15	129.49	W 150 13
669	Sol. Res. Sd/Rd	-11756.05 52063.64 0.23	-3.8 18441.82 0	11.01 11975.89 0	0 --- ---	-4411.13 277447.97 -0.02	-655.18 76882.74 -0.01	0.25	120	W 150 13
670	Sol. Res. Sd/Rd	-5324.38 52063.64 0.1	-17.07 18441.82 0	-52.5 11975.89 0.00	0 --- ---	8086.41 277447.97 0.03	-1065.4 76882.74 -0.01	0.1	159.23	W 150 13
671	Sol. Res. Sd/Rd	2951.82 36981.5 0.08	27.72 18441.82 0.00	-5.29 11975.89 0	0 --- ---	-1130.99 277447.97 0.00	-1926.82 76882.74 -0.03	0.08	151.98	W 150 13
672	Sol. Res. Sd/Rd	-2857.97 52063.64 0.05	-13 18441.82 0	1.17 11975.89 0	0 --- ---	-1123.55 277447.97 0.00	699.34 76882.74 0.01	0.05	151.91	W 150 13

673	Sol. Res. Sd/Rd	99.62 36982.7 0.00	14.25 18441.82 0	-8.73 11975.89 0	0 --- ---	-2327.39 277447.97 -0.01	-705.95 76882.74 -0.01	0.02	151.97	W 150 13
674	Sol. Res. Sd/Rd	-27.29 52063.64 0	-13.78 18441.82 0	8.14 11975.89 0	0 --- ---	-2326.35 277447.97 -0.01	835.03 76882.74 0.01	0.02	151.91	W 150 13
675	Sol. Res. Sd/Rd	-2615.28 52063.64 0.05	11.73 18441.82 0	-9.35 11975.89 0	0 --- ---	-2565.53 277447.97 -0.01	-576.27 76882.74 -0.01	0.05	151.98	W 150 13
676	Sol. Res. Sd/Rd	2701.68 36994 0.07	-17.78 18441.82 0	9.62 11975.89 0	0 --- ---	-2562.7 277447.97 -0.01	1021.74 76882.74 0.01	0.07	151.9	W 150 13
677	Sol. Res. Sd/Rd	-5421.43 52063.64 0.1	11.04 18441.82 0	-9.43 11975.89 0	0 --- ---	-2583.79 277447.97 -0.01	-309.98 76882.74 0.00	0.1	151.97	W 150 13
678	Sol. Res. Sd/Rd	5491.04 36993.01 0.15	-29.19 18441.82 0.00	9.31 11975.89 0	0 --- ---	-2583.94 277447.97 -0.01	1753.21 76882.74 0.02	0.15	151.91	W 150 13
679	Sol. Res. Sd/Rd	-7598.28 52063.64 0.15	9.28 18441.82 0	-4.5 11975.89 0	0 --- ---	-1842.99 272183.94 -0.01	1245.04 76882.74 0.02	0.15	147.07	W 150 13
680	Sol. Res. Sd/Rd	5280.77 9929.78 0.53	-24.93 18441.82 0.00	-22.08 11975.89 0.00	0 --- ---	5713.66 277447.97 0.02	-1019.67 76882.74 -0.01	0.56	210.8	W 150 13
681	Sol. Res. Sd/Rd	9106.68 9929.78 0.92	-19.05 18441.82 0.00	-17.96 11975.89 0.00	0 --- ---	2540.5 277447.97 0.01	986.51 76882.74 0.01	0.94	200	W 150 13
682	Sol. Res. Sd/Rd	9181.78 9929.78 0.92	-18.51 18441.82 0.00	-17.36 11975.89 0.00	0 --- ---	2010.25 240075.39 0.01	1013.98 76882.74 0.01	0.94	200.03	W 150 13
683	Sol. Res. Sd/Rd	5692.69 9929.78 0.57	-22.15 18441.82 0.00	-17.64 11975.89 0.00	0 --- ---	1909.95 277447.97 0.01	827.03 76882.74 0.01	0.59	199.98	W 150 13
684	Sol. Res.	9020.03 48677.66	9.03 19570.91	-253.02 16183.64	0 ---	-18886.23 434083.75	485.73 83354.24	0.19	101.59	W 200 15

	Sd/Rd	0.19	0	-0.02	---	-0.04	0.01			
685	Sol. Res. Sd/Rd	494.35 48929.36 0.01	5.54 19570.91 0	-528.35 16183.64 -0.03	0 --- ---	30361.38 434083.75 0.07	-526.92 83354.24 -0.01	0.08	99.92	W 200 15
686	Sol. Res. Sd/Rd	362.58 48907.02 0.01	4.97 19570.91 0	-495.2 16183.64 -0.03	0 --- ---	30659.5 434083.75 0.07	460.06 83354.24 0.01	0.08	100.07	W 200 15
687	Sol. Res. Sd/Rd	-5108.79 60845.45 0.08	5.23 19570.91 0	-548.18 16183.64 -0.03	0 --- ---	35001.89 434083.75 0.08	-504.23 83354.24 -0.01	0.13	100.01	W 200 15
688	Sol. Res. Sd/Rd	-5238.6 60845.45 0.09	4.72 19570.91 0	-474.96 16183.64 -0.03	0 --- ---	35346.67 434083.75 0.08	427.73 83354.24 0.01	0.13	100.01	W 200 15
689	Sol. Res. Sd/Rd	-7075.28 60845.45 0.12	5.21 19570.91 0	-488.87 16183.64 -0.03	0 --- ---	36658.66 434083.75 0.08	-490.88 83354.24 -0.01	0.15	99.94	W 200 15
690	Sol. Res. Sd/Rd	-7204.96 60845.45 0.12	3.14 19570.91 0	-527.82 16183.64 -0.03	0 --- ---	37040.48 434083.75 0.09	303.4 83354.24 0.00	0.15	100.05	W 200 15
691	Sol. Res. Sd/Rd	-5399.81 60845.45 0.09	5.38 19570.91 0	-544.55 16183.64 -0.03	0 --- ---	38965.92 434083.75 0.09	-434.69 83354.24 -0.01	0.14	100.01	W 200 15
692	Sol. Res. Sd/Rd	-5530.49 60845.45 0.09	-3.3 19570.91 0	-484.13 16183.64 -0.03	0 --- ---	39261.59 434083.75 0.09	-204.24 83354.24 0.00	0.14	100	W 200 15
693	Sol. Res. Sd/Rd	-518.89 60845.45 0.01	51.03 19570.91 0.00	-38 16183.64 0.00	0 --- ---	2361.24 434083.75 0.01	-2475.7 83354.24 -0.03	0.04	101.6	W 200 15
694	Sol. Res. Sd/Rd	9174.7 53942.45 0.17	28.29 19570.91 0.00	1130.75 16183.64 0.07	0 --- ---	-72930.01 434083.75 -0.17	-1280.04 83354.24 -0.02	0.27	60	W 200 15
695	Sol. Res. Sd/Rd	-148.74 52063.64 0.00	38.31 18441.82 0.00	4.94 11975.89 0	0 --- ---	600.97 277447.97 0.00	3081.05 76882.74 0.04	0.04	114.75	W 150 13

696	Sol. Res. Sd/Rd	951.16 42839.72 0.02	-29.79 18441.82 0.00	6.4 11975.89 0	0 --- ---	677.85 277447.97 0.00	-2631.64 76882.74 -0.03	0.05	114.75	W 150 13
697	Sol. Res. Sd/Rd	-1493 52063.64 0.03	-36.54 18441.82 0.00	-17.52 11975.89 0.00	0 --- ---	1781.93 277447.97 0.01	-3031.97 76882.74 -0.04	0.06	192.39	W 150 13
698	Sol. Res. Sd/Rd	5184.72 40615.62 0.13	29.35 18441.82 0.00	-13.69 11975.89 0.00	0 --- ---	1411.17 277447.97 0.01	2010.43 76882.74 0.03	0.13	129.49	W 150 13
699	Sol. Res. Sd/Rd	6314.63 40615.62 0.16	-15.87 18441.82 0	-12.12 11975.89 0.00	0 --- ---	2543.87 277447.97 0.01	-960.17 76882.74 -0.01	0.16	129.49	W 150 13
700	Sol. Res. Sd/Rd	-9664.5 52063.64 0.19	-5.84 18441.82 0	20.62 11975.89 0.00	0 --- ---	-4731.07 277447.97 -0.02	559.57 76882.74 0.01	0.19	120	W 150 13
701	Sol. Res. Sd/Rd	-1476.32 25636.36 0.06	989.02 7200 0.14	9.27 7200 0.00	0 --- ---	1495.99 79199.27 0.02	46978.22 79199.27 0.59	0.67	190	BOX 100 x 100 x 3
702	Sol. Res. Sd/Rd	33.68 20761.74 0.00	989.02 7200 0.14	5.29 7200 0	0 --- ---	600.53 79199.27 0.01	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
703	Sol. Res. Sd/Rd	8.45 20761.74 0	989.02 7200 0.14	-0.18 7200 0	0 --- ---	-55.15 79199.27 0	46978.22 79199.27 0.59	0.59	190	BOX 100 x 100 x 3
704	Sol. Res. Sd/Rd	4.49 20761.74 0	989.02 7200 0.14	3.6 7200 0	0 --- ---	-543.92 79199.27 -0.01	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
705	Sol. Res. Sd/Rd	1.47 20761.74 0	989.02 7200 0.14	-0.54 7200 0	0 --- ---	-62.42 79199.27 0	46978.22 79199.27 0.59	0.59	190	BOX 100 x 100 x 3
706	Sol. Res. Sd/Rd	0.26 20761.74 0	989.02 7200 0.14	2.57 7200 0	0 --- ---	-553.4 79199.27 -0.01	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
707	Sol. Res.	0.25 20761.74	989.02 7200	-1.05 7200	0 ---	-135.69 79199.27	46978.22 79199.27	0.59	190	BOX 100 x 100 x 3

	Sd/Rd	0	0.14	0	---	0.00	0.59			
708	Sol. Res. Sd/Rd	-5.6 25636.36 0	989.02 7200 0.14	1.36 7200 0	0 --- ---	-518.37 79199.27 -0.01	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
709	Sol. Res. Sd/Rd	-4.26 25636.36 0	989.02 7200 0.14	-1.4 7200 0	0 --- ---	-201.03 79199.27 0.00	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
710	Sol. Res. Sd/Rd	5.15 20761.74 0	989.02 7200 0.14	0.21 7200 0	0 --- ---	-500.54 79199.27 -0.01	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
711	Sol. Res. Sd/Rd	-902.28 25636.36 0.04	989.02 7200 0.14	-12.83 7200 0.00	0 --- ---	-2050.7 79199.27 -0.03	46978.22 79199.27 0.59	0.65	190	BOX 100 x 100 x 3
712	Sol. Res. Sd/Rd	8563.65 53942.45 0.16	-5.16 19570.91 0	1358.7 16183.64 0.08	0 --- ---	-72472.69 434083.75 -0.17	-268.17 83354.24 0.00	0.25	60	W 200 15
713	Sol. Res. Sd/Rd	-3137.37 132040.91 0.02	5.98 50003.67 0	1139.81 29616.05 0.04	0 --- ---	-112062.54 1312198.75 -0.09	476.17 311185.41 0.00	0.1	150	W 250 32.7
714	Sol. Res. Sd/Rd	-718.1 132040.91 0.01	-9.75 50003.67 0	2593.22 29616.05 0.09	0 --- ---	-295988.41 1312198.75 -0.23	-1120.62 311185.41 0.00	0.23	150	W 250 32.7
715	Sol. Res. Sd/Rd	2088.54 12239.31 0.17	-8.93 5018.18 0.00	31.23 5018.18 0.01	0 --- ---	2920 50950.93 0.06	-1115.33 50950.93 -0.02	0.25	238.17	BOX 100 x 100 x 2
716	Sol. Res. Sd/Rd	603.4 11563.4 0.05	0.76 5018.18 0	33.04 5018.18 0.01	0 --- ---	-5790.64 50950.93 -0.11	-117.37 50950.93 0.00	0.17	283.64	BOX 100 x 100 x 2
717	Sol. Res. Sd/Rd	-2184.84 52063.64 0.04	-35.48 18441.82 0.00	-8.17 11975.89 0	0 --- ---	-2032.74 234041.39 -0.01	-5705.93 76882.74 -0.07	0.1	352.46	W 150 13
718	Sol. Res. Sd/Rd	1345.11 10388.23 0.13	-24.46 18441.82 0.00	133.64 11975.89 0.01	0 --- ---	26417.98 277447.97 0.1	-2062.9 76882.74 -0.03	0.19	352.46	W 150 13

725	Sol. Res. Sd/Rd	-605.41 25636.36 0.02	989.02 7200 0.14	-20.8 7200 0.00	0 --- ---	2712.78 79199.27 0.03	46978.22 79199.27 0.59	0.65	190	BOX 100 x 100 x 3
726	Sol. Res. Sd/Rd	-1296.21 52063.64 0.02	-21.34 18441.82 0.00	7.9 11975.89 0	0 --- ---	997.16 277447.97 0.00	-1886.79 76882.74 -0.02	0.04	114.74	W 150 13
727	Sol. Res. Sd/Rd	192.89 42841.18 0.00	-28.46 18441.82 0.00	20.7 11975.89 0.00	0 --- ---	2488.29 277447.97 0.01	-2571.3 76882.74 -0.03	0.04	114.74	W 150 13
728	Sol. Res. Sd/Rd	-6908.12 52063.64 0.13	10.61 18441.82 0	3.37 11975.89 0	0 --- ---	-2896.24 255714.69 -0.01	1247.4 76882.74 0.02	0.13	159.22	W 150 13
729	Sol. Res. Sd/Rd	4387.76 36982.66 0.12	-26.63 18441.82 0.00	-8.34 11975.89 0	0 --- ---	-3712.88 277447.97 -0.01	1511.71 76882.74 0.02	0.12	151.97	W 150 13
730	Sol. Res. Sd/Rd	-4312.96 52063.64 0.08	9.57 18441.82 0	9.58 11975.89 0	0 --- ---	-3711.75 277447.97 -0.01	-280.72 76882.74 0.00	0.08	151.89	W 150 13
731	Sol. Res. Sd/Rd	1564.45 36994.59 0.04	-13.87 18441.82 0	-8.8 11975.89 0	0 --- ---	-3782.62 277447.97 -0.01	514.76 76882.74 0.01	0.04	151.9	W 150 13
732	Sol. Res. Sd/Rd	-1488.5 52063.64 0.03	8.88 18441.82 0	10.35 11975.89 0	0 --- ---	-3786.73 277447.97 -0.01	-404.14 76882.74 -0.01	0.03	151.97	W 150 13
733	Sol. Res. Sd/Rd	-1155.37 52063.64 0.02	-12.34 18441.82 0	-10.09 11975.89 0	0 --- ---	-3948.89 277447.97 -0.01	487 76882.74 0.01	0.03	151.97	W 150 13
734	Sol. Res. Sd/Rd	1234.47 36991.67 0.03	13.69 18441.82 0	10.4 11975.89 0	0 --- ---	-3945.16 277447.97 -0.01	-569.78 76882.74 -0.01	0.04	151.92	W 150 13
735	Sol. Res. Sd/Rd	-3951.28 52063.64 0.08	-9.18 18441.82 0	-8.28 11975.89 0	0 --- ---	-3832.27 277447.97 -0.01	266.99 76882.74 0.00	0.08	151.91	W 150 13
736	Sol. Res.	4023.75 36994	26.01 18441.82	7.86 11975.89	0 ---	-3832.2 277447.97	-1458.14 76882.74	0.11	151.9	W 150 13

	Sd/Rd	0.11	0.00	0	---	-0.01	-0.02			
737	Sol. Res. Sd/Rd	-6115.73 52063.64 0.12	-11.41 18441.82 0	-9.34 11975.89 0	0 --- ---	-4112.6 277447.97 -0.01	-1311.88 76882.74 -0.02	0.12	147.14	W 150 13
738	Sol. Res. Sd/Rd	-2467.71 52063.64 0.05	32.85 18441.82 0.00	-23.28 11975.89 0.00	0 --- ---	2644.77 277447.97 0.01	2619.14 76882.74 0.03	0.07	210.79	W 150 13
739	Sol. Res. Sd/Rd	3268.63 15205.08 0.21	20.57 18441.82 0.00	-24.52 11975.89 0.00	0 --- ---	2624.18 277447.97 0.01	-675.63 76882.74 -0.01	0.23	199.89	W 150 13
740	Sol. Res. Sd/Rd	5273.99 15205.08 0.35	16.24 18441.82 0	-26.07 11975.89 0.00	0 --- ---	2707.74 269616.16 0.01	-743.14 76882.74 -0.01	0.36	200.12	W 150 13
741	Sol. Res. Sd/Rd	3715.8 15205.08 0.24	19.95 18441.82 0.00	-26.38 11975.89 0.00	0 --- ---	2684.71 277447.97 0.01	-634.06 76882.74 -0.01	0.26	199.91	W 150 13
742	Sol. Res. Sd/Rd	8149.39 48661.11 0.17	23.54 19570.91 0.00	203.85 16183.64 0.01	0 --- ---	18327.38 434083.75 0.04	1219.8 83354.24 0.01	0.17	101.7	W 200 15
743	Sol. Res. Sd/Rd	1118.22 48932.34 0.02	4.4 19570.91 0	525.84 16183.64 0.03	0 --- ---	-30008.96 434083.75 -0.07	-451.76 83354.24 -0.01	0.09	99.9	W 200 15
744	Sol. Res. Sd/Rd	620.21 48917.46 0.01	6.28 19570.91 0	498.3 16183.64 0.03	0 --- ---	-29188.67 434083.75 -0.07	585.52 83354.24 0.01	0.08	100	W 200 15
745	Sol. Res. Sd/Rd	-3309.64 60845.45 0.05	7.36 19570.91 0	544.68 16183.64 0.03	0 --- ---	-32433.84 434083.75 -0.07	-666.24 83354.24 -0.01	0.11	100.06	W 200 15
746	Sol. Res. Sd/Rd	-3655.2 60845.45 0.06	5.49 19570.91 0	478.12 16183.64 0.03	0 --- ---	-31769.36 434083.75 -0.07	569.87 83354.24 0.01	0.11	99.94	W 200 15
747	Sol. Res. Sd/Rd	-4112.67 60845.45 0.07	4.39 19570.91 0	487.85 16183.64 0.03	0 --- ---	-32311.56 434083.75 -0.07	-515 83354.24 -0.01	0.11	100.01	W 200 15

748	Sol. Res. Sd/Rd	-4612.93 60845.45 0.08	7.22 19570.91 0	531.15 16183.64 0.03	0 --- ---	-31761.16 434083.75 -0.07	613.76 83354.24 0.01	0.12	100.01	W 200 15
749	Sol. Res. Sd/Rd	-1237.39 60845.45 0.02	7.01 19570.91 0	529.92 16183.64 0.03	0 --- ---	-31833.12 434083.75 -0.07	-645.22 83354.24 -0.01	0.09	100.07	W 200 15
750	Sol. Res. Sd/Rd	-1776.18 60845.45 0.03	5.54 19570.91 0	494.35 16183.64 0.03	0 --- ---	-31362.5 434083.75 -0.07	546.47 83354.24 0.01	0.09	99.92	W 200 15
751	Sol. Res. Sd/Rd	5208.25 48677.43 0.11	13.78 19570.91 0	163.94 16183.64 0.01	0 --- ---	14862.3 434083.75 0.03	-864.46 83354.24 -0.01	0.11	101.6	W 200 15
752	Sol. Res. Sd/Rd	4596.24 53942.45 0.09	172.12 19570.91 0.01	28.2 16183.64 0.00	0 --- ---	-1986.97 434083.75 0.00	-7022.12 83354.24 -0.08	0.13	60	W 200 15
753	Sol. Res. Sd/Rd	-282.6 52063.64 0.01	32.48 18441.82 0.00	-3.04 11975.89 0	0 --- ---	-304.41 277447.97 0.00	2646.45 76882.74 0.03	0.04	114.74	W 150 13
754	Sol. Res. Sd/Rd	-1531.54 52063.64 0.03	33.59 18441.82 0.00	-25.96 11975.89 0.00	0 --- ---	-2544.03 277447.97 -0.01	2723.76 76882.74 0.04	0.06	192.49	W 150 13
755	Sol. Res. Sd/Rd	6617.85 40617 0.16	-24.23 18441.82 0.00	14.92 11975.89 0.00	0 --- ---	3876.51 277447.97 0.01	-1524.81 76882.74 -0.02	0.16	129.48	W 150 13
756	Sol. Res. Sd/Rd	6542.57 40617 0.16	27.46 18441.82 0.00	1.03 11975.89 0	0 --- ---	630.51 277447.97 0.00	1812.5 76882.74 0.02	0.16	129.48	W 150 13
757	Sol. Res. Sd/Rd	-9922.46 52063.64 0.19	8.02 18441.82 0	13.88 11975.89 0.00	0 --- ---	-3884.16 277447.97 -0.01	852.51 76882.74 0.01	0.19	120	W 150 13
758	Sol. Res. Sd/Rd	4746.44 53942.45 0.09	243.18 19570.91 0.01	-44.25 16183.64 0.00	0 --- ---	-4015.55 434083.75 -0.01	-8983.47 83354.24 -0.11	0.16	60	W 200 15
759	Sol. Res.	-5862.21 52063.64	8.6 18441.82	9.84 11975.89	0 ---	-3004.42 257532.47	1119.29 76882.74	0.11	159.22	W 150 13

	Sd/Rd	0.11	0	0	---	-0.01	0.01			
760	Sol. Res. Sd/Rd	3490.91 36982.66 0.09	-28.72 18441.82 0.00	-12.72 11975.89 0.00	0 --- ---	-3566.61 277447.97 -0.01	1685.23 76882.74 0.02	0.09	151.97	W 150 13
761	Sol. Res. Sd/Rd	-3411.34 52063.64 0.07	8.96 18441.82 0	9.03 11975.89 0	0 --- ---	-3565.09 277447.97 -0.01	-276.9 76882.74 0.00	0.07	151.89	W 150 13
762	Sol. Res. Sd/Rd	634.56 36994.59 0.02	-11.71 18441.82 0	-7.78 11975.89 0	0 --- ---	-3650.28 277447.97 -0.01	356.06 76882.74 0.00	0.03	151.9	W 150 13
763	Sol. Res. Sd/Rd	-559.59 52063.64 0.01	9.84 18441.82 0	7.71 11975.89 0	0 --- ---	-3653.98 277447.97 -0.01	-402.37 76882.74 -0.01	0.02	151.97	W 150 13
764	Sol. Res. Sd/Rd	-2092.3 52063.64 0.04	-9 18441.82 0	-6.52 11975.89 0	0 --- ---	-3765.13 277447.97 -0.01	342.65 76882.74 0.00	0.04	151.97	W 150 13
765	Sol. Res. Sd/Rd	2168.07 36991.67 0.06	13.33 18441.82 0	8.11 11975.89 0	0 --- ---	-3761.28 277447.97 -0.01	-516.36 76882.74 -0.01	0.06	151.92	W 150 13
766	Sol. Res. Sd/Rd	-4885.77 52063.64 0.09	-15.67 18441.82 0	-7.76 11975.89 0	0 --- ---	-4012.4 277447.97 -0.01	-698.09 76882.74 -0.01	0.09	151.91	W 150 13
767	Sol. Res. Sd/Rd	4948.43 36994 0.13	22.93 18441.82 0.00	5.13 11975.89 0	0 --- ---	-4012.02 277447.97 -0.01	1255.97 76882.74 0.02	0.13	151.9	W 150 13
768	Sol. Res. Sd/Rd	-7160.57 52063.64 0.14	-9.26 18441.82 0	-2.64 11975.89 0	0 --- ---	-3792.11 277447.97 -0.01	-1351.58 76882.74 -0.02	0.14	147.14	W 150 13
769	Sol. Res. Sd/Rd	-1589.33 52063.64 0.03	31.99 18441.82 0.00	-28.26 11975.89 0.00	0 --- ---	4062.56 277447.97 0.01	2542.69 76882.74 0.03	0.06	210.79	W 150 13
770	Sol. Res. Sd/Rd	2962.09 9929.78 0.3	19.67 18441.82 0.00	-24.58 11975.89 0.00	0 --- ---	2798.7 277447.97 0.01	597.66 76882.74 0.01	0.31	199.89	W 150 13

771	Sol. Res. Sd/Rd	3741.06 9929.78 0.38	17.38 18441.82 0	-24.5 11975.89 0.00	0 --- ---	2696.61 266954.66 0.01	-656.89 76882.74 -0.01	0.39	200.12	W 150 13
772	Sol. Res. Sd/Rd	1106.26 9929.78 0.11	16.72 18441.82 0	-16.85 11975.89 0.00	0 --- ---	1811.04 277447.97 0.01	606.76 76882.74 0.01	0.11	199.91	W 150 13
773	Sol. Res. Sd/Rd	7897.12 48661.11 0.16	27.28 19570.91 0.00	314.33 16183.64 0.02	0 --- ---	23546.42 434083.75 0.05	-1550 83354.24 -0.02	0.16	101.7	W 200 15
774	Sol. Res. Sd/Rd	507.28 48932.34 0.01	4.36 19570.91 0	523.38 16183.64 0.03	0 --- ---	-26466.89 434083.75 -0.06	-545.42 83354.24 -0.01	0.07	99.9	W 200 15
775	Sol. Res. Sd/Rd	845.04 48917.46 0.02	3.53 19570.91 0	500.39 16183.64 0.03	0 --- ---	-27287.18 434083.75 -0.06	502.49 83354.24 0.01	0.08	100	W 200 15
776	Sol. Res. Sd/Rd	-3435.8 60845.45 0.06	2.37 19570.91 0	535.19 16183.64 0.03	0 --- ---	-30297.14 434083.75 -0.07	-423.5 83354.24 -0.01	0.1	100.06	W 200 15
777	Sol. Res. Sd/Rd	-2942.95 60845.45 0.05	3.15 19570.91 0	487.88 16183.64 0.03	0 --- ---	-30961.61 434083.75 -0.07	419.1 83354.24 0.01	0.1	99.94	W 200 15
778	Sol. Res. Sd/Rd	-3749.39 60845.45 0.06	4.98 19570.91 0	479.24 16183.64 0.03	0 --- ---	-30489.15 434083.75 -0.07	-553.9 83354.24 -0.01	0.11	100.01	W 200 15
779	Sol. Res. Sd/Rd	-3409.4 60845.45 0.06	1.11 19570.91 0	540.39 16183.64 0.03	0 --- ---	-31039.55 434083.75 -0.07	315.15 83354.24 0.00	0.1	100.01	W 200 15
780	Sol. Res. Sd/Rd	-362.39 60845.45 0.01	1.61 19570.91 0	539.9 16183.64 0.03	0 --- ---	-31638.97 434083.75 -0.07	-391.29 83354.24 0.00	0.08	100.07	W 200 15
781	Sol. Res. Sd/Rd	-59.64 60845.45 0	4.93 19570.91 0	483.84 16183.64 0.03	0 --- ---	-32109.6 434083.75 -0.07	488.85 83354.24 0.01	0.08	99.92	W 200 15
782	Sol. Res.	6477.37 48677.43	-33.42 19570.91	95.11 16183.64	0 ---	11970.56 434083.75	-2682.79 83354.24	0.13	101.6	W 200 15

	Sd/Rd	0.13	0.00	0.01	---	0.03	-0.03			
783	Sol. Res. Sd/Rd	6854.22 53942.45 0.13	-201.11 19570.91 -0.01	1157.6 16183.64 0.07	0 --- ---	-69553.35 434083.75 -0.16	7281.21 83354.24 0.09	0.31	60	W 200 15
784	Sol. Res. Sd/Rd	788.23 42841.18 0.02	27.04 18441.82 0.00	29.15 11975.89 0.00	0 --- ---	3115.87 277447.97 0.01	2343.85 76882.74 0.03	0.05	114.74	W 150 13
785	Sol. Res. Sd/Rd	-5523.59 52063.64 0.11	36.96 18441.82 0.00	-23.47 11975.89 0.00	0 --- ---	2806.38 277447.97 0.01	3288.83 76882.74 0.04	0.11	192.49	W 150 13
786	Sol. Res. Sd/Rd	4458.1 40617 0.11	-28.19 18441.82 0.00	-18.9 11975.89 0.00	0 --- ---	5770.04 277447.97 0.02	-1928.98 76882.74 -0.03	0.11	129.48	W 150 13
787	Sol. Res. Sd/Rd	5547.16 40617 0.14	10.95 18441.82 0	-18.63 11975.89 0.00	0 --- ---	-1505.08 277447.97 -0.01	536.98 76882.74 0.01	0.14	129.48	W 150 13
788	Sol. Res. Sd/Rd	-7370.51 52063.64 0.14	8.18 18441.82 0	22.91 11975.89 0.00	0 --- ---	-3933.55 277447.97 -0.01	-538.96 76882.74 -0.01	0.14	120	W 150 13
789	Sol. Res. Sd/Rd	5611.3 53942.45 0.1	154.89 19570.91 0.01	1106.76 16183.64 0.07	0 --- ---	-56489.06 434083.75 -0.13	5319.91 83354.24 0.06	0.25	60	W 200 15
790	Sol. Res. Sd/Rd	-1006.87 25636.36 0.04	989.02 7200 0.14	15.42 7200 0.00	0 --- ---	-2104.23 79199.27 -0.03	46978.22 79199.27 0.59	0.66	190	BOX 100 x 100 x 3
791	Sol. Res. Sd/Rd	-339.06 25636.36 0.01	989.02 7200 0.14	-21.82 7200 0.00	0 --- ---	2302.2 79199.27 0.03	46978.22 79199.27 0.59	0.64	190	BOX 100 x 100 x 3
792	Sol. Res. Sd/Rd	69.54 20761.74 0.00	989.02 7200 0.14	-0.86 7200 0	0 --- ---	226.54 79199.27 0.00	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
793	Sol. Res. Sd/Rd	71.33 20761.74 0.00	989.02 7200 0.14	-22.14 7200 0.00	0 --- ---	2367.48 79199.27 0.03	46978.22 79199.27 0.59	0.63	190	BOX 100 x 100 x 3

794	Sol. Res. Sd/Rd	3.35 20761.74 0	989.02 7200 0.14	-1.2 7200 0	0 --- ---	260.38 79199.27 0.00	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
795	Sol. Res. Sd/Rd	291.45 20761.74 0.01	989.02 7200 0.14	-23.51 7200 0.00	0 --- ---	2497.26 79199.27 0.03	46978.22 79199.27 0.59	0.64	190	BOX 100 x 100 x 3
796	Sol. Res. Sd/Rd	292.05 20761.74 0.01	989.02 7200 0.14	-1.28 7200 0	0 --- ---	291.99 79199.27 0.00	46978.22 79199.27 0.59	0.61	190	BOX 100 x 100 x 3
797	Sol. Res. Sd/Rd	2 20761.74 0	989.02 7200 0.14	-24.28 7200 0.00	0 --- ---	2609.99 79199.27 0.03	46978.22 79199.27 0.59	0.63	190	BOX 100 x 100 x 3
798	Sol. Res. Sd/Rd	1.35 20761.74 0	989.02 7200 0.14	-1.2 7200 0	0 --- ---	259.37 79199.27 0.00	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
799	Sol. Res. Sd/Rd	-0.1 25636.36 0	989.02 7200 0.14	-22.62 7200 0.00	0 --- ---	2506.25 79199.27 0.03	46978.22 79199.27 0.59	0.62	190	BOX 100 x 100 x 3
809	Sol. Res. Sd/Rd	-746.98 25636.36 0.03	989.02 7200 0.14	-26.79 7200 0.00	0 --- ---	3104.17 79199.27 0.04	46978.22 79199.27 0.59	0.66	190	BOX 100 x 100 x 3
810	Sol. Res. Sd/Rd	-7849.05 52063.64 0.15	8.25 18441.82 0	14.65 11975.89 0.00	0 --- ---	-6715.31 277447.97 -0.02	1171.65 76882.74 0.02	0.15	159.22	W 150 13
811	Sol. Res. Sd/Rd	5357.78 36981.5 0.14	-34.01 18441.82 0.00	-26.04 11975.89 0.00	0 --- ---	-8446.66 277447.97 -0.03	2182.71 76882.74 0.03	0.14	151.98	W 150 13
812	Sol. Res. Sd/Rd	-5271.78 52063.64 0.1	7.84 18441.82 0	26.39 11975.89 0.00	0 --- ---	-8441.32 277447.97 -0.03	-321.03 76882.74 0.00	0.1	151.9	W 150 13
813	Sol. Res. Sd/Rd	2507.96 36993.43 0.07	-18.14 18441.82 0	-25.46 11975.89 0.00	0 --- ---	-8557.74 277447.97 -0.03	910.27 76882.74 0.01	0.08	151.91	W 150 13
814	Sol. Res.	-2436.18 52063.64	10.03 18441.82	28.65 11975.89	0 ---	-8569.08 277447.97	-571.29 76882.74	0.06	151.98	W 150 13

	Sd/Rd	0.05	0	0.00	---	-0.03	-0.01			
815	Sol. Res. Sd/Rd	-200.62 52063.64 0.00	-16.31 18441.82 0	-28.77 11975.89 0.00	0 --- ---	-8837.83 277447.97 -0.03	918.56 76882.74 0.01	0.05	151.96	W 150 13
816	Sol. Res. Sd/Rd	290.18 36994 0.01	14.67 18441.82 0	29.95 11975.89 0.00	0 --- ---	-8834.94 277447.97 -0.03	-866.8 76882.74 -0.01	0.05	151.9	W 150 13
817	Sol. Res. Sd/Rd	-3012.96 52063.64 0.06	-13.47 18441.82 0	-22.12 11975.89 0.00	0 --- ---	-7880.65 277447.97 -0.03	639.48 76882.74 0.01	0.07	151.98	W 150 13
818	Sol. Res. Sd/Rd	3094.89 36992.02 0.08	24.84 18441.82 0.00	27.64 11975.89 0.00	0 --- ---	-7881.66 277447.97 -0.03	-1758.89 76882.74 -0.02	0.09	151.91	W 150 13
819	Sol. Res. Sd/Rd	-5181.93 52063.64 0.1	-19.01 18441.82 0.00	21.28 11975.89 0.00	0 --- ---	-3715.59 260910.2 -0.01	-1103.56 76882.74 -0.01	0.1	147.08	W 150 13
820	Sol. Res. Sd/Rd	-441.97 52063.64 0.01	35.46 18441.82 0.00	-55.5 11975.89 0.00	0 --- ---	-5857.36 277447.97 -0.02	2899.74 76882.74 0.04	0.06	210.79	W 150 13
821	Sol. Res. Sd/Rd	6567.31 28811.39 0.23	22.5 18441.82 0.00	-55.85 11975.89 0.00	0 --- ---	-5906.28 277447.97 -0.02	-889.25 76882.74 -0.01	0.26	199.89	W 150 13
822	Sol. Res. Sd/Rd	9818.77 26604.49 0.37	18.14 18441.82 0	-59.04 11975.89 0.00	0 --- ---	-6453.05 277447.97 -0.02	-1047.94 76882.74 -0.01	0.4	200.12	W 150 13
823	Sol. Res. Sd/Rd	9512.63 26604.49 0.36	18.91 18441.82 0.00	-60.22 11975.89 -0.01	0 --- ---	-6869.8 277447.97 -0.02	-1001.56 76882.74 -0.01	0.39	199.99	W 150 13
824	Sol. Res. Sd/Rd	235.51 48676.2 0.00	17.71 19570.91 0	181.19 16183.64 0.01	0 --- ---	-10344.07 434083.75 -0.02	1714.28 83354.24 0.02	0.05	101.6	W 200 15
825	Sol. Res. Sd/Rd	-5054 60845.45 0.08	14.42 19570.91 0	510.13 16183.64 0.03	0 --- ---	-38284.09 434083.75 -0.09	-1218.76 83354.24 -0.01	0.14	100	W 200 15

826	Sol. Res. Sd/Rd	-5042.41 60845.45 0.08	17.35 19570.91 0	508.3 16183.64 0.03	0 --- ---	-36881.6 434083.75 -0.08	1570.31 83354.24 0.02	0.15	100.01	W 200 15
827	Sol. Res. Sd/Rd	-7233.91 60845.45 0.12	20.43 19570.91 0.00	542.25 16183.64 0.03	0 --- ---	-38570.66 434083.75 -0.09	-1632.19 83354.24 -0.02	0.17	100.05	W 200 15
828	Sol. Res. Sd/Rd	-6843.79 60845.45 0.11	16.56 19570.91 0	480.62 16183.64 0.03	0 --- ---	-37046.83 434083.75 -0.09	1614.23 83354.24 0.02	0.16	99.94	W 200 15
829	Sol. Res. Sd/Rd	-5790.72 60845.45 0.1	13.5 19570.91 0	481.26 16183.64 0.03	0 --- ---	-36078.57 434083.75 -0.08	-1278.5 83354.24 -0.02	0.15	100.01	W 200 15
830	Sol. Res. Sd/Rd	-5789.66 60845.45 0.1	19.7 19570.91 0.00	536.42 16183.64 0.03	0 --- ---	-34590.29 434083.75 -0.08	1680.52 83354.24 0.02	0.15	100.01	W 200 15
831	Sol. Res. Sd/Rd	-637.4 60845.45 0.01	18.04 19570.91 0	540.52 16183.64 0.03	0 --- ---	-34423.57 434083.75 -0.08	-1502.24 83354.24 -0.02	0.1	100.07	W 200 15
832	Sol. Res. Sd/Rd	-711.69 60845.45 0.01	15.87 19570.91 0	483.56 16183.64 0.03	0 --- ---	-33005.57 434083.75 -0.08	1532.23 83354.24 0.02	0.1	99.92	W 200 15
833	Sol. Res. Sd/Rd	8014 48677.43 0.16	16.61 19570.91 0	125.02 16183.64 0.01	0 --- ---	12341.99 434083.75 0.03	-1449.26 83354.24 -0.02	0.16	101.6	W 200 15
834	Sol. Res. Sd/Rd	7753.16 53942.45 0.14	150.26 19570.91 0.01	-279.09 16183.64 -0.02	0 --- ---	14655.58 434083.75 0.03	-7071.05 83354.24 -0.08	0.19	60	W 200 15
835	Sol. Res. Sd/Rd	-91.69 52063.64 0.00	43.21 18441.82 0.00	-2.77 11975.89 0	0 --- ---	-299.51 277447.97 0.00	3447.65 76882.74 0.04	0.05	114.74	W 150 13
836	Sol. Res. Sd/Rd	5499.89 26604.49 0.21	23.41 18441.82 0.00	-65.74 11975.89 -0.01	0 --- ---	-9148.15 277447.97 -0.03	848.93 76882.74 0.01	0.25	192.41	W 150 13
837	Sol. Res.	7041.4 40617	-25.87 18441.82	25.18 11975.89	0 ---	8250.85 277447.97	-1773.75 76882.74	0.17	129.48	W 150 13

	Sd/Rd	0.17	0.00	0.00	---	0.03	-0.02			
838	Sol. Res. Sd/Rd	6403.34 40617 0.16	20.51 18441.82 0.00	-6.07 11975.89 0	0 --- ---	3250.8 277447.97 0.01	1248.01 76882.74 0.02	0.16	129.48	W 150 13
839	Sol. Res. Sd/Rd	-8704.82 52063.64 0.17	18.45 18441.82 0.00	15.95 11975.89 0.00	0 --- ---	-4250.49 277447.97 -0.02	1445.77 76882.74 0.02	0.17	120	W 150 13
840	Sol. Res. Sd/Rd	8048.2 53942.45 0.15	204.88 19570.91 0.01	207.91 16183.64 0.01	0 --- ---	9319.58 434083.75 0.02	-7678.36 83354.24 -0.09	0.19	60	W 200 15
841	Sol. Res. Sd/Rd	-8471.81 52063.64 0.16	12.32 18441.82 0	17.97 11975.89 0.00	0 --- ---	-5778.6 276734.5 -0.02	1589.23 76882.74 0.02	0.16	159.22	W 150 13
842	Sol. Res. Sd/Rd	5882.71 36981.5 0.16	-27.81 18441.82 0.00	-23.61 11975.89 0.00	0 --- ---	-6711.78 277447.97 -0.02	1616.25 76882.74 0.02	0.16	151.98	W 150 13
843	Sol. Res. Sd/Rd	-5808.82 52063.64 0.11	13.63 18441.82 0	20.51 11975.89 0.00	0 --- ---	-6707.12 277447.97 -0.02	-480.41 76882.74 -0.01	0.11	151.9	W 150 13
844	Sol. Res. Sd/Rd	3048.23 36993.43 0.08	-12.92 18441.82 0	-19.63 11975.89 0.00	0 --- ---	-6881.18 277447.97 -0.02	587.6 76882.74 0.01	0.08	151.91	W 150 13
845	Sol. Res. Sd/Rd	-2986.58 52063.64 0.06	11.24 18441.82 0	19.45 11975.89 0.00	0 --- ---	-6890.32 277447.97 -0.02	-570.57 76882.74 -0.01	0.06	151.98	W 150 13
846	Sol. Res. Sd/Rd	309.84 36983.83 0.01	-13.42 18441.82 0	-16.6 11975.89 0.00	0 --- ---	-6749.5 277447.97 -0.02	763.25 76882.74 0.01	0.04	151.96	W 150 13
847	Sol. Res. Sd/Rd	-225.52 52063.64 0.00	11.45 18441.82 0	21.16 11975.89 0.00	0 --- ---	-6747.58 277447.97 -0.02	-802.12 76882.74 -0.01	0.04	151.9	W 150 13
848	Sol. Res. Sd/Rd	-2358.99 52063.64 0.05	-17.28 18441.82 0	-15.13 11975.89 0.00	0 --- ---	-6106.7 277447.97 -0.02	916.6 76882.74 0.01	0.06	151.98	W 150 13

849	Sol. Res. Sd/Rd	2396.11 36992.02 0.06	8.73 18441.82 0	29.64 11975.89 0.00	0 --- ---	-6108.64 277447.97 -0.02	-236.03 76882.74 0.00	0.06	151.91	W 150 13
850	Sol. Res. Sd/Rd	-6738.12 52063.64 0.13	-38.03 18441.82 0.00	6.22 11975.89 0	0 --- ---	-1732.08 264392.88 -0.01	-2562.89 76882.74 -0.03	0.13	147.08	W 150 13
851	Sol. Res. Sd/Rd	-4400.19 52063.64 0.08	36.51 18441.82 0.00	-49.19 11975.89 0.00	0 --- ---	5945.08 277447.97 0.02	3149.41 76882.74 0.04	0.1	210.79	W 150 13
852	Sol. Res. Sd/Rd	3308.43 9929.8 0.33	23.22 18441.82 0.00	-46.09 11975.89 0.00	0 --- ---	-4803.89 277447.97 -0.02	-868.95 76882.74 -0.01	0.36	199.89	W 150 13
853	Sol. Res. Sd/Rd	7278.74 9929.8 0.73	18.39 18441.82 0	-45.91 11975.89 0.00	0 --- ---	-4929.81 277447.97 -0.02	-1015.74 76882.74 -0.01	0.76	200.12	W 150 13
854	Sol. Res. Sd/Rd	7623.82 9929.8 0.77	16.6 18441.82 0	-50.48 11975.89 0.00	0 --- ---	-6145.27 277447.97 -0.02	-1122.82 76882.74 -0.01	0.8	199.99	W 150 13
855	Sol. Res. Sd/Rd	-2296.82 60845.45 0.04	-4.75 19570.91 0	1855.29 16183.64 0.11	0 --- ---	-158414.52 434083.75 -0.36	544.66 83354.24 0.01	0.39	101.6	W 200 15
856	Sol. Res. Sd/Rd	-8258.47 60845.45 0.14	5.03 19570.91 0	581.99 16183.64 0.04	0 --- ---	-31710.74 434083.75 -0.07	-492.14 83354.24 -0.01	0.15	100	W 200 15
857	Sol. Res. Sd/Rd	-8430.22 60845.45 0.14	14.6 19570.91 0	432.78 16183.64 0.03	0 --- ---	-33113.23 434083.75 -0.08	1291.52 83354.24 0.02	0.16	100.01	W 200 15
858	Sol. Res. Sd/Rd	-9982.07 60845.45 0.16	8.13 19570.91 0	483.58 16183.64 0.03	0 --- ---	-38484.4 434083.75 -0.09	-824.1 83354.24 -0.01	0.18	100.05	W 200 15
859	Sol. Res. Sd/Rd	-9756.84 60845.45 0.16	13.28 19570.91 0	538.6 16183.64 0.03	0 --- ---	-40008.23 434083.75 -0.09	1194.32 83354.24 0.01	0.19	99.94	W 200 15
860	Sol. Res.	-8110.64 60845.45	15.86 19570.91	452.52 16183.64	0 ---	-33739.82 434083.75	-1265.49 83354.24	0.16	100.01	W 200 15

	Sd/Rd	0.13	0	0.03	---	-0.08	-0.02			
861	Sol. Res. Sd/Rd	-8272.02 60845.45 0.14	7.85 19570.91 0	562.42 16183.64 0.03	0 --- ---	-35228.11 434083.75 -0.08	974.38 83354.24 0.01	0.16	100.01	W 200 15
862	Sol. Res. Sd/Rd	-2505.7 60845.45 0.04	9.04 19570.91 0	498.81 16183.64 0.03	0 --- ---	-31344.42 434083.75 -0.07	-931.01 83354.24 -0.01	0.1	100.07	W 200 15
863	Sol. Res. Sd/Rd	-2740.19 60845.45 0.05	12.8 19570.91 0	526.48 16183.64 0.03	0 --- ---	-32762.43 434083.75 -0.08	1184.89 83354.24 0.01	0.11	99.92	W 200 15
864	Sol. Res. Sd/Rd	6640.53 48677.43 0.14	-28.5 19570.91 0.00	125.12 16183.64 0.01	0 --- ---	14384.19 434083.75 0.03	-2625.8 83354.24 -0.03	0.14	101.6	W 200 15
865	Sol. Res. Sd/Rd	6451.35 53942.45 0.12	-258.71 19570.91 -0.01	1404.19 16183.64 0.09	0 --- ---	-81839.58 434083.75 -0.19	9558.15 83354.24 0.11	0.36	60	W 200 15
866	Sol. Res. Sd/Rd	1061.21 42841.18 0.02	43.66 18441.82 0.00	30.41 11975.89 0.00	0 --- ---	3263.66 277447.97 0.01	3489.32 76882.74 0.05	0.07	114.74	W 150 13
867	Sol. Res. Sd/Rd	4503.66 9929.8 0.45	35.86 18441.82 0.00	-64.98 11975.89 -0.01	0 --- ---	-10611.08 277447.97 -0.04	2475.26 76882.74 0.03	0.52	192.41	W 150 13
868	Sol. Res. Sd/Rd	6649.29 40617 0.16	-26.43 18441.82 0.00	-21.4 11975.89 0.00	0 --- ---	8183.74 277447.97 0.03	-1787.25 76882.74 -0.02	0.16	129.48	W 150 13
869	Sol. Res. Sd/Rd	5243.76 40617 0.13	29.6 18441.82 0.00	-19.32 11975.89 0.00	0 --- ---	2946.3 277447.97 0.01	1921.43 76882.74 0.02	0.13	129.48	W 150 13
870	Sol. Res. Sd/Rd	-12867.61 52063.64 0.25	22.21 18441.82 0.00	23.55 11975.89 0.00	0 --- ---	-5225.89 277447.97 -0.02	-1546.62 76882.74 -0.02	0.28	120	W 150 13
871	Sol. Res. Sd/Rd	7079.7 53942.45 0.13	172.16 19570.91 0.01	1510.09 16183.64 0.09	0 --- ---	-81183.83 434083.75 -0.19	5682.08 83354.24 0.07	0.32	60	W 200 15

872	Sol. Res. Sd/Rd	-1242.58 25636.36 0.05	989.02 7200 0.14	29.76 7200 0.00	0 --- ---	-3336.73 79199.27 -0.04	46978.22 79199.27 0.59	0.68	190	BOX 100 x 100 x 3
873	Sol. Res. Sd/Rd	-438.9 25636.36 0.02	989.02 7200 0.14	-32.64 7200 0.00	0 --- ---	3174.69 79199.27 0.04	46978.22 79199.27 0.59	0.65	190	BOX 100 x 100 x 3
874	Sol. Res. Sd/Rd	138 20761.74 0.01	989.02 7200 0.14	2.24 7200 0	0 --- ---	358.65 79199.27 0.00	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
875	Sol. Res. Sd/Rd	139.57 20761.74 0.01	989.02 7200 0.14	-30.81 7200 0.00	0 --- ---	3029.49 79199.27 0.04	46978.22 79199.27 0.59	0.64	190	BOX 100 x 100 x 3
876	Sol. Res. Sd/Rd	7.11 20761.74 0	989.02 7200 0.14	2.6 7200 0	0 --- ---	362.61 79199.27 0.00	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
877	Sol. Res. Sd/Rd	734.08 20761.74 0.04	989.02 7200 0.14	-30.28 7200 0.00	0 --- ---	2922.48 79199.27 0.04	46978.22 79199.27 0.59	0.67	190	BOX 100 x 100 x 3
878	Sol. Res. Sd/Rd	733.88 20761.74 0.04	989.02 7200 0.14	3.02 7200 0	0 --- ---	453.41 79199.27 0.01	46978.22 79199.27 0.59	0.63	190	BOX 100 x 100 x 3
879	Sol. Res. Sd/Rd	5.68 20761.74 0	989.02 7200 0.14	-27.99 7200 0.00	0 --- ---	2721.38 79199.27 0.03	46978.22 79199.27 0.59	0.63	190	BOX 100 x 100 x 3
880	Sol. Res. Sd/Rd	-3.32 25636.36 0	989.02 7200 0.14	3 7200 0	0 --- ---	389.42 79199.27 0.00	46978.22 79199.27 0.59	0.6	190	BOX 100 x 100 x 3
881	Sol. Res. Sd/Rd	-3.28E-3 25636.36 0	989.02 7200 0.14	-18.03 7200 0.00	0 --- ---	-1830.36 79199.27 -0.02	46978.22 79199.27 0.59	0.62	190	BOX 100 x 100 x 3
892	Sol. Res. Sd/Rd	5390.68 42839.72 0.13	154.41 18441.82 0.01	394.07 11975.89 0.03	0 --- ---	36158.81 277447.97 0.13	-12680.68 76882.74 -0.16	0.36	114.75	W 150 13
893	Sol. Res.	-536.86 52063.64	42.75 18441.82	-584.9 11975.89	0 ---	-48132.05 277447.97	-2691.09 76882.74	0.21	114.75	W 150 13

	Sd/Rd	0.01	0.00	-0.05	---	-0.17	-0.04			
894	Sol. Res. Sd/Rd	5216.6 42839.72 0.12	166.09 18441.82 0.01	-512.59 11975.89 -0.04	0 --- ---	-42060.2 277447.97 -0.15	-13531.48 76882.74 -0.18	0.39	114.75	W 150 13
895	Sol. Res. Sd/Rd	-3830.42 60845.45 0.06	3.36 19570.91 0	-466.28 16183.64 -0.03	0 --- ---	32714.22 434083.75 0.08	-278.27 83354.24 0.00	0.11	100	W 200 15
896	Sol. Res. Sd/Rd	6881.15 53942.45 0.13	55.69 19570.91 0.00	892.92 16183.64 0.06	0 --- ---	-44829.62 434083.75 -0.1	2328.55 83354.24 0.03	0.19	60	W 200 15
897	Sol. Res. Sd/Rd	-2983.15 60845.45 0.05	3.38 19570.91 0	-535.18 16183.64 -0.03	0 --- ---	30765.74 434083.75 0.07	222.17 83354.24 0.00	0.1	100.01	W 200 15
898	Sol. Res. Sd/Rd	6867.87 48677.79 0.14	-3.94 19570.91 0	-269.07 16183.64 -0.02	0 --- ---	-20062.65 434083.75 -0.05	-377.04 83354.24 0.00	0.14	101.59	W 200 15
899	Sol. Res. Sd/Rd	8099.35 53942.45 0.15	138.33 19570.91 0.01	1576.35 16183.64 0.1	0 --- ---	-84584.52 434083.75 -0.19	-5107.27 83354.24 -0.06	0.33	60	W 200 15
904	Sol. Res. Sd/Rd	4187.26 53942.45 0.08	53.84 19570.91 0.00	6047.96 16183.64 0.37	0 --- ---	-203501.75 434083.75 -0.47	2132.33 83354.24 0.03	0.53	60	W 200 15
905	Sol. Res. Sd/Rd	3770.79 53942.45 0.07	5.54 19570.91 0	4920.01 16183.64 0.3	0 --- ---	-194874.91 434083.75 -0.45	-309.06 83354.24 0.00	0.49	60	W 200 15
906	Sol. Res. Sd/Rd	65.59 20761.74 0.00	989.02 7200 0.14	-4.8 7200 0	0 --- ---	-765.19 79199.27 -0.01	46978.22 79199.27 0.59	0.61	190	BOX 100 x 100 x 3
907	Sol. Res. Sd/Rd	3347.39 50358.11 0.07	-5.1 19570.91 0	3158.05 16183.64 0.2	0 --- ---	-209746.08 434083.75 -0.48	1148.58 83354.24 0.01	0.53	90	W 200 15
908	Sol. Res. Sd/Rd	-298.55 52063.64 0.01	-8.6 18441.82 0	-23.42 11975.89 0.00	0 --- ---	2664.91 277447.97 0.01	1194.22 76882.74 0.02	0.03	114.78	W 150 13

909	Sol. Res. Sd/Rd	-117.36 60845.45 0.00	81.6 19570.91 0.00	10.06 16183.64 0	0 --- ---	-1551.83 434083.75 0.00	6601.89 83354.24 0.08	0.08	115	W 200 15
910	Sol. Res. Sd/Rd	2007.71 20199.5 0.1	1093.12 7200 0.15	14.34 7200 0.00	0 --- ---	-2079.64 79199.27 -0.03	57388.91 79199.27 0.72	0.85	210	BOX 100 x 100 x 3
911	Sol. Res. Sd/Rd	-1881.12 25636.36 0.07	1093.12 7200 0.15	-15.73 7200 0.00	0 --- ---	2373.96 79199.27 0.03	57388.91 79199.27 0.72	0.83	210	BOX 100 x 100 x 3
912	Sol. Res. Sd/Rd	-2628.4 60845.45 0.04	32.76 19570.91 0.00	48.11 16183.64 0.00	0 --- ---	45614.65 434083.75 0.11	-1243.32 83354.24 -0.01	0.14	60	W 200 15
913	Sol. Res. Sd/Rd	-1674.37 60845.45 0.03	-12.81 19570.91 0	1155.29 16183.64 0.07	0 --- ---	46993.55 434083.75 0.11	646.03 83354.24 0.01	0.13	75	W 200 15
914	Sol. Res. Sd/Rd	-341.37 52063.64 0.01	-7.3 18441.82 0	45.17 11975.89 0.00	0 --- ---	-3418.69 277447.97 -0.01	1213.6 76882.74 0.02	0.03	114.78	W 150 13
915	Sol. Res. Sd/Rd	-3583.96 60845.45 0.06	-37.01 19570.91 0.00	1070.33 16183.64 0.07	0 --- ---	42554.82 434083.75 0.1	1653.29 83354.24 0.02	0.15	75	W 200 15
916	Sol. Res. Sd/Rd	-31.35 60845.45 0	24.01 19570.91 0.00	81.75 16183.64 0.01	0 --- ---	-11589.16 434083.75 -0.03	1406.21 83354.24 0.02	0.04	115	W 200 15
917	Sol. Res. Sd/Rd	777.08 19285.01 0.04	1249.28 7200 0.17	-1.31 7200 0	0 --- ---	473.21 79199.27 0.01	74956.94 79199.27 0.95	0.99	240	BOX 100 x 100 x 3
918	Sol. Res. Sd/Rd	-3629.56 52063.64 0.07	7.43 18441.82 0	-62.16 11975.89 -0.01	0 --- ---	7642.33 277447.97 0.03	-676.55 76882.74 -0.01	0.07	162.48	W 150 13
919	Sol. Res. Sd/Rd	157.43 36382.67 0.00	0.43 18441.82 0	-158.43 11975.89 -0.01	0 --- ---	-16454.42 277447.97 -0.06	652.81 76882.74 0.01	0.07	155.56	W 150 13
920	Sol. Res.	199.58 36382.67	-2.46 18441.82	-157.47 11975.89	0 ---	-16273.31 277447.97	-582.86 76882.74	0.07	155.56	W 150 13

	Sd/Rd	0.01	0	-0.01	---	-0.06	-0.01			
921	Sol. Res. Sd/Rd	-3555.19 52063.64 0.07	-6.19 18441.82 0	-50.83 11975.89 0.00	0 --- ---	6980.86 277447.97 0.03	1209.49 76882.74 0.02	0.08	162.48	W 150 13
922	Sol. Res. Sd/Rd	2578.05 25424.21 0.1	24.7 18441.82 0.00	-19.81 11975.89 0.00	0 --- ---	-3332.13 277447.97 -0.01	-1278.45 76882.74 -0.02	0.1	220	W 150 13
923	Sol. Res. Sd/Rd	2605.79 25424.21 0.1	24.09 18441.82 0.00	-16.93 11975.89 0.00	0 --- ---	3961.69 277447.97 0.01	-1177.01 76882.74 -0.02	0.1	220	W 150 13
928	Sol. Res. Sd/Rd	-4457.15 60845.45 0.07	-409.81 19570.91 -0.02	49.56 16183.64 0.00	0 --- ---	-4702.01 434083.75 -0.01	-24209.91 83354.24 -0.29	0.34	115	W 200 15
929	Sol. Res. Sd/Rd	-3734.47 60845.45 0.06	-420.53 19570.91 -0.02	144.74 16183.64 0.01	0 --- ---	11923.93 434083.75 0.03	-25069.51 83354.24 -0.3	0.36	115	W 200 15
930	Sol. Res. Sd/Rd	4743.74 42835.36 0.11	-126.47 18441.82 -0.01	-8.76 11975.89 0	0 --- ---	966.71 277447.97 0.00	9558.1 76882.74 0.12	0.18	114.78	W 150 13
931	Sol. Res. Sd/Rd	-1119.72 52063.64 0.02	-39.5 18441.82 0.00	20.88 11975.89 0.00	0 --- ---	-2109.03 277447.97 -0.01	4962.88 76882.74 0.06	0.08	150	W 150 13
932	Sol. Res. Sd/Rd	200.63 42835.36 0.00	118.04 18441.82 0.01	-4.74 11975.89 0	0 --- ---	-544.51 277447.97 0.00	-8823.49 76882.74 -0.11	0.12	114.78	W 150 13
933	Sol. Res. Sd/Rd	689.91 30696.76 0.02	-55.02 18441.82 0.00	6.69 11975.89 0	0 --- ---	-2879.35 277447.97 -0.01	-6010.34 76882.74 -0.08	0.1	188.88	W 150 13
934	Sol. Res. Sd/Rd	4691.79 30696.76 0.15	48.52 18441.82 0.00	-24.1 11975.89 0.00	0 --- ---	-2539.08 277447.97 -0.01	-3943.5 76882.74 -0.05	0.15	188.88	W 150 13
935	Sol. Res. Sd/Rd	-454.28 60845.45 0.01	-343.06 19570.91 -0.02	456.47 16183.64 0.03	0 --- ---	20215.08 434083.75 0.05	12298.22 83354.24 0.15	0.2	60	W 200 15

936	Sol. Res. Sd/Rd	3504.22 56214.38 0.06	355.97 19570.91 0.02	3528.56 16183.64 0.22	0 --- ---	-98635.48 434083.75 -0.23	8681.66 83354.24 0.1	0.36	30	W 200 15
937	Sol. Res. Sd/Rd	-4179.47 25636.36 0.16	156.16 7200 0.02	1171.46 7200 0.16	9156.15 --- ---	-19527.85 79199.27 -0.25	1171.2 79199.27 0.01	0.42	30	BOX 100 x 100 x 3
938	Sol. Res. Sd/Rd	-1086.31 52063.64 0.02	-59.77 18441.82 0.00	43.79 11975.89 0.00	0 --- ---	-3479.75 277447.97 -0.01	-7074.39 76882.74 -0.09	0.11	150	W 150 13
939	Sol. Res. Sd/Rd	3.27 40412.29 0	-27.26 19570.91 0.00	382.9 16183.64 0.02	0 --- ---	54942.09 434083.75 0.13	-2734.31 83354.24 -0.03	0.16	150	W 200 15
940	Sol. Res. Sd/Rd	3365.77 50358.11 0.07	3.78 19570.91 0	2813.81 16183.64 0.17	0 --- ---	-185096.69 434083.75 -0.43	305.27 83354.24 0.00	0.46	90	W 200 15
941	Sol. Res. Sd/Rd	4928.04 42835.36 0.12	-120.58 18441.82 -0.01	-0.81 11975.89 0	0 --- ---	-65.84 277447.97 0	9183.53 76882.74 0.12	0.18	114.78	W 150 13
942	Sol. Res. Sd/Rd	-1085.26 52063.64 0.02	72.97 18441.82 0.00	23.24 11975.89 0.00	0 --- ---	-2227.07 277447.97 -0.01	-9874.76 76882.74 -0.13	0.15	150	W 150 13
943	Sol. Res. Sd/Rd	190.88 42835.36 0.00	111.4 18441.82 0.01	-4.05 11975.89 0	0 --- ---	-465.69 277447.97 0.00	-8259.28 76882.74 -0.11	0.11	114.78	W 150 13
944	Sol. Res. Sd/Rd	12.09 30696.76 0	-20.98 18441.82 0.00	-56.09 11975.89 0.00	0 --- ---	21395.64 277447.97 0.08	-1782.88 76882.74 -0.02	0.1	188.88	W 150 13
945	Sol. Res. Sd/Rd	4550.66 30696.76 0.15	45.12 18441.82 0.00	-12.71 11975.89 0.00	0 --- ---	-2460.48 277447.97 -0.01	-3560.58 76882.74 -0.05	0.15	188.88	W 150 13
946	Sol. Res. Sd/Rd	-1052.7 52063.64 0.02	108.59 18441.82 0.01	48.3 11975.89 0.00	0 --- ---	-3576.15 277447.97 -0.01	14484.54 76882.74 0.19	0.21	150	W 150 13
947	Sol. Res.	-198.32 60845.45	167.52 19570.91	106.18 16183.64	0 ---	14099.93 434083.75	17415.07 83354.24	0.24	150	W 200 15

	Sd/Rd	0.00	0.01	0.01	---	0.03	0.21			
948	Sol. Res. Sd/Rd	3776.46 53942.45 0.07	114.16 19570.91 0.01	4697.04 16183.64 0.29	0 --- ---	-194679.91 434083.75 -0.45	4414.79 83354.24 0.05	0.54	60	W 200 15
949	Sol. Res. Sd/Rd	4563.85 53942.45 0.08	-119.72 19570.91 -0.01	1795.48 16183.64 0.11	0 --- ---	-91068.55 434083.75 -0.21	-4314.03 83354.24 -0.05	0.3	60	W 200 15
950	Sol. Res. Sd/Rd	1294.95 42835.36 0.03	48.6 18441.82 0.00	33.89 11975.89 0.00	0 --- ---	3557.73 277447.97 0.01	3507.05 76882.74 0.05	0.07	114.78	W 150 13
951	Sol. Res. Sd/Rd	192.6 42835.36 0.00	-1.5 18441.82 0	123.97 11975.89 0.01	0 --- ---	-7815 277447.97 -0.03	205.4 76882.74 0.00	0.03	114.78	W 150 13
952	Sol. Res. Sd/Rd	39.57 49360.66 0	-160.87 18441.82 -0.01	172.84 11975.89 0.01	0 --- ---	-5592.84 277447.97 -0.02	-5817.72 76882.74 -0.08	0.1	60	W 150 13
953	Sol. Res. Sd/Rd	-40.9 52063.64 0	-41.11 18441.82 0.00	-2.21 11975.89 0	0 --- ---	450.01 277447.97 0.00	-3641.49 76882.74 -0.05	0.05	114.78	W 150 13
954	Sol. Res. Sd/Rd	-126.75 52063.64 0.00	37.15 18441.82 0.00	23.15 11975.89 0.00	0 --- ---	1571.17 277447.97 0.01	-4024.12 76882.74 -0.05	0.06	90	W 150 13
955	Sol. Res. Sd/Rd	450.2 37993.28 0.01	-6.42 18441.82 0	57.26 11975.89 0.00	0 --- ---	-11776.47 277447.97 -0.04	-207.47 76882.74 0.00	0.05	145.86	W 150 13
956	Sol. Res. Sd/Rd	165.02 46178.41 0.00	-106.97 18441.82 -0.01	14.12 11975.89 0.00	0 --- ---	385.04 277447.97 0.00	-5821.34 76882.74 -0.08	0.08	90	W 150 13
957	Sol. Res. Sd/Rd	2505.35 37993.28 0.07	-38.77 18441.82 0.00	-42.98 11975.89 0.00	0 --- ---	-4002.72 277447.97 -0.01	-3463.34 76882.74 -0.05	0.09	145.86	W 150 13
958	Sol. Res. Sd/Rd	-4605.29 52063.64 0.09	10.47 18441.82 0	-8.81 11975.89 0	0 --- ---	-2140.33 265420.06 -0.01	766.54 76882.74 0.01	0.09	159.23	W 150 13

959	Sol. Res. Sd/Rd	646.65 20761.74 0.03	989.02 7200 0.14	-8.64 7200 0.00	0 --- ---	-1353.21 79199.27 -0.02	46978.22 79199.27 0.59	0.64	190	BOX 100 x 100 x 3
960	Sol. Res. Sd/Rd	-461.79 25636.36 0.02	1249.28 7200 0.17	0.29 7200 0	0 --- ---	329.07 79199.27 0.00	74956.94 79199.27 0.95	0.97	240	BOX 100 x 100 x 3
961	Sol. Res. Sd/Rd	-3811.57 60845.45 0.06	864.38 19570.91 0.04	193.35 16183.64 0.01	0 --- ---	12183.56 434083.75 0.03	-37120.78 83354.24 -0.45	0.5	75	W 200 15
962	Sol. Res. Sd/Rd	-4226 60845.45 0.07	-875.1 19570.91 -0.04	153.81 16183.64 0.01	0 --- ---	-16711.05 434083.75 -0.04	37455.03 83354.24 0.45	0.52	75	W 200 15
964	Sol. Res. Sd/Rd	1815.43 20313.11 0.09	53.52 18441.82 0.00	-11.03 11975.89 0	0 --- ---	1537.11 277447.97 0.01	2288.21 76882.74 0.03	0.09	90.79	W 150 13
965	Sol. Res. Sd/Rd	1553.52 20313.11 0.08	44.09 18441.82 0.00	-16.9 11975.89 0.00	0 --- ---	2659.54 277447.97 0.01	1945.63 76882.74 0.03	0.08	90.79	W 150 13
966	Sol. Res. Sd/Rd	768.71 42839.72 0.02	34.3 18441.82 0.00	95.9 11975.89 0.01	0 --- ---	11569.14 277447.97 0.04	2594.85 76882.74 0.03	0.08	114.75	W 150 13
967	Sol. Res. Sd/Rd	-219.73 52063.64 0.00	36.17 18441.82 0.00	77.12 11975.89 0.01	0 --- ---	9274.68 277447.97 0.03	2879.67 76882.74 0.04	0.07	114.75	W 150 13
968	Sol. Res. Sd/Rd	-387.15 25636.36 0.02	-989.02 7200 -0.14	-89.63 7200 -0.01	0 --- ---	-9250.91 79199.27 -0.12	-46978.22 79199.27 -0.59	0.73	190	BOX 100 x 100 x 3
969	Sol. Res. Sd/Rd	-5555.89 52063.64 0.11	-23.01 18441.82 0.00	100.29 11975.89 0.01	0 --- ---	-23171.68 277447.97 -0.08	-2746.47 76882.74 -0.04	0.17	138.57	W 150 13
970	Sol. Res. Sd/Rd	4104.72 36982.74 0.11	34.16 18441.82 0.00	-61.6 11975.89 -0.01	0 --- ---	-19846.32 277447.97 -0.07	-2249.87 76882.74 -0.03	0.16	151.97	W 150 13
971	Sol. Res.	-4053.38 52063.64	-8.57 18441.82	67.39 11975.89	0 ---	-19840.8 277447.97	601.51 76882.74	0.12	151.92	W 150 13

	Sd/Rd	0.08	0	0.01	---	-0.07	0.01			
972	Sol. Res. Sd/Rd	1261.71 36981.52 0.03	12.73 18441.82 0	-70.62 11975.89 -0.01	0 --- ---	-20697.44 277447.97 -0.07	-671.06 76882.74 -0.01	0.1	151.98	W 150 13
973	Sol. Res. Sd/Rd	-1178.7 52063.64 0.02	-10.05 18441.82 0	72.13 11975.89 0.01	0 --- ---	-20697.59 277447.97 -0.07	707.51 76882.74 0.01	0.1	151.91	W 150 13
974	Sol. Res. Sd/Rd	-1455.78 52063.64 0.03	9.33 18441.82 0	-69.34 11975.89 -0.01	0 --- ---	-20708 277447.97 -0.07	-687.67 76882.74 -0.01	0.1	151.97	W 150 13
975	Sol. Res. Sd/Rd	1531.1 36994 0.04	-12.04 18441.82 0	69.56 11975.89 0.01	0 --- ---	-20699.04 277447.97 -0.07	808.95 76882.74 0.01	0.11	151.9	W 150 13
976	Sol. Res. Sd/Rd	-4253.07 52063.64 0.08	14.57 18441.82 0	-63.18 11975.89 -0.01	0 --- ---	-20279.25 277447.97 -0.07	-692.95 76882.74 -0.01	0.12	151.98	W 150 13
977	Sol. Res. Sd/Rd	4315.07 36994 0.12	-20.53 18441.82 0.00	47.91 11975.89 0.00	0 --- ---	-20273.08 277447.97 -0.07	1403.97 76882.74 0.02	0.15	151.9	W 150 13
978	Sol. Res. Sd/Rd	-6473.14 52063.64 0.12	17.65 18441.82 0	-20.18 11975.89 0.00	0 --- ---	-16176.44 277447.97 -0.06	1296.72 76882.74 0.02	0.14	147.08	W 150 13
979	Sol. Res. Sd/Rd	2571.31 10608.07 0.24	-47.93 18441.82 0.00	-133.06 11975.89 -0.01	0 --- ---	-12015.72 277447.97 -0.04	-4039.75 76882.74 -0.05	0.33	178.17	W 150 13
980	Sol. Res. Sd/Rd	7952.72 10608.07 0.75	-19.14 18441.82 0.00	-138.85 11975.89 -0.01	0 --- ---	14098.78 277447.97 0.05	1051.43 76882.74 0.01	0.81	200.02	W 150 13
981	Sol. Res. Sd/Rd	9552.58 10608.07 0.9	-16.57 18441.82 0	-140.36 11975.89 -0.01	0 --- ---	-14493.65 277447.97 -0.05	1146.56 76882.74 0.01	0.96	200	W 150 13
982	Sol. Res. Sd/Rd	7600.94 10608.07 0.72	-19.93 18441.82 0.00	-140.57 11975.89 -0.01	0 --- ---	-15374.26 277447.97 -0.06	1104.61 76882.74 0.01	0.78	200.01	W 150 13

983	Sol. Res. Sd/Rd	-2952.38 60845.45 0.05	142.53 19570.91 0.01	-268.85 16183.64 -0.02	0 --- ---	14995.61 434083.75 0.03	-7325.02 83354.24 -0.09	0.15	101.61	W 200 15
984	Sol. Res. Sd/Rd	-9016.89 60845.45 0.15	37.12 19570.91 0.00	-492.89 16183.64 -0.03	0 --- ---	36153.22 434083.75 0.08	-3136.53 83354.24 -0.04	0.2	100	W 200 15
985	Sol. Res. Sd/Rd	-8279.14 60845.45 0.14	44.07 19570.91 0.00	-520.56 16183.64 -0.03	0 --- ---	38221.26 434083.75 0.09	4060.04 83354.24 0.05	0.2	100.01	W 200 15
986	Sol. Res. Sd/Rd	-11270.04 60845.45 0.19	42.17 19570.91 0.00	-501.69 16183.64 -0.03	0 --- ---	37635.94 434083.75 0.09	-3538.58 83354.24 -0.04	0.22	100.01	W 200 15
987	Sol. Res. Sd/Rd	-10225.33 60845.45 0.17	43.76 19570.91 0.00	-508.38 16183.64 -0.03	0 --- ---	40129.57 434083.75 0.09	3901.58 83354.24 0.05	0.22	99.97	W 200 15
988	Sol. Res. Sd/Rd	-9688.49 60845.45 0.16	44.65 19570.91 0.00	-446.9 16183.64 -0.03	0 --- ---	36495.98 434083.75 0.08	-3784.48 83354.24 -0.05	0.21	100.03	W 200 15
989	Sol. Res. Sd/Rd	-8831.31 60845.45 0.15	46.11 19570.91 0.00	-573.7 16183.64 -0.04	0 --- ---	39211.64 434083.75 0.09	3924.85 83354.24 0.05	0.21	99.98	W 200 15
990	Sol. Res. Sd/Rd	-4852.31 60845.45 0.08	51.55 19570.91 0.00	-513.87 16183.64 -0.03	0 --- ---	36383.48 434083.75 0.08	-4107.44 83354.24 -0.05	0.17	100	W 200 15
991	Sol. Res. Sd/Rd	-9554.75 60845.45 0.16	32.47 19570.91 0.00	-300.56 16183.64 -0.02	0 --- ---	24512.17 434083.75 0.06	3062.1 83354.24 0.04	0.17	100	W 200 15
992	Sol. Res. Sd/Rd	9185.6 52994.78 0.17	53.08 19570.91 0.00	-50.54 16183.64 0.00	0 --- ---	-5929.99 434083.75 -0.01	-5186.56 83354.24 -0.06	0.17	68.99	W 200 15
993	Sol. Res. Sd/Rd	2973.55 10608.07 0.28	-20.09 18441.82 0.00	-62.96 11975.89 -0.01	0 --- ---	6790.88 277447.97 0.02	-908.07 76882.74 -0.01	0.31	192.4	W 150 13
994	Sol. Res.	-3333.39 52063.64	-10.95 18441.82	27.89 11975.89	0 ---	-22283.74 277447.97	-1101.84 76882.74	0.13	138.57	W 150 13

	Sd/Rd	0.06	0	0.00	---	-0.08	-0.01			
995	Sol. Res. Sd/Rd	3975.34 36982.74 0.11	29.99 18441.82 0.00	-52.87 11975.89 0.00	0 --- ---	-17142.15 277447.97 -0.06	-2091.28 76882.74 -0.03	0.14	151.97	W 150 13
996	Sol. Res. Sd/Rd	-3902.58 52063.64 0.07	-7.65 18441.82 0	59.28 11975.89 0.00	0 --- ---	-17135.78 277447.97 -0.06	493.97 76882.74 0.01	0.11	151.92	W 150 13
997	Sol. Res. Sd/Rd	1119.63 36981.52 0.03	15.25 18441.82 0	-58.44 11975.89 0.00	0 --- ---	-17358.05 277447.97 -0.06	-764.22 76882.74 -0.01	0.09	151.98	W 150 13
998	Sol. Res. Sd/Rd	-1035.36 52063.64 0.02	-11.67 18441.82 0	58.79 11975.89 0.00	0 --- ---	-17359.04 277447.97 -0.06	662.36 76882.74 0.01	0.08	151.91	W 150 13
999	Sol. Res. Sd/Rd	-1589.31 52063.64 0.03	14.51 18441.82 0	-57.69 11975.89 0.00	0 --- ---	-17563.78 277447.97 -0.06	-719.28 76882.74 -0.01	0.09	151.97	W 150 13
1000	Sol. Res. Sd/Rd	1673.5 36994 0.05	-16.86 18441.82 0	58.11 11975.89 0.00	0 --- ---	-17556.55 277447.97 -0.06	919.02 76882.74 0.01	0.1	151.9	W 150 13
1001	Sol. Res. Sd/Rd	-4408.81 52063.64 0.08	12.2 18441.82 0	-50.96 11975.89 0.00	0 --- ---	-16929.84 277447.97 -0.06	-413.05 76882.74 -0.01	0.11	151.98	W 150 13
1002	Sol. Res. Sd/Rd	4486.12 36994 0.12	-31.31 18441.82 0.00	39.47 11975.89 0.00	0 --- ---	-16924.86 277447.97 -0.06	1982.67 76882.74 0.03	0.15	151.9	W 150 13
1003	Sol. Res. Sd/Rd	-6545.96 52063.64 0.13	11.72 18441.82 0	-19.62 11975.89 0.00	0 --- ---	-14003.51 277447.97 -0.05	1299.14 76882.74 0.02	0.13	147.08	W 150 13
1004	Sol. Res. Sd/Rd	2971.03 10608.07 0.28	-20.07 18441.82 0.00	49.17 11975.89 0.00	0 --- ---	-20512.32 277447.97 -0.07	-1216.42 76882.74 -0.02	0.36	178.17	W 150 13
1005	Sol. Res. Sd/Rd	7815.28 10608.07 0.74	-19.53 18441.82 0.00	-117.31 11975.89 -0.01	0 --- ---	-11815.3 277447.97 -0.04	967.19 76882.74 0.01	0.79	200.02	W 150 13

1006	Sol. Res. Sd/Rd	9227.91 10608.07 0.87	-17.1 18441.82 0	-117.67 11975.89 -0.01	0 --- ---	-12501.61 277447.97 -0.05	987.2 76882.74 0.01	0.92	200	W 150 13
1007	Sol. Res. Sd/Rd	7095 10608.07 0.67	-21.05 18441.82 0.00	-118.08 11975.89 -0.01	0 --- ---	-13019.5 277447.97 -0.05	826.06 76882.74 0.01	0.72	200.01	W 150 13
1008	Sol. Res. Sd/Rd	9474.56 48674.54 0.19	111.97 19570.91 0.01	-199.16 16183.64 -0.01	0 --- ---	-14715.36 434083.75 -0.03	5867.73 83354.24 0.07	0.2	101.61	W 200 15
1009	Sol. Res. Sd/Rd	1387.78 48917.69 0.03	32.31 19570.91 0.00	-536.11 16183.64 -0.03	0 --- ---	33342.25 434083.75 0.08	-2588.37 83354.24 -0.03	0.12	100	W 200 15
1010	Sol. Res. Sd/Rd	5396.27 48915.61 0.11	22.14 19570.91 0.00	-291.51 16183.64 -0.02	0 --- ---	17193.06 434083.75 0.04	2063.8 83354.24 0.02	0.12	100.01	W 200 15
1011	Sol. Res. Sd/Rd	-4484.79 60845.45 0.07	38.98 19570.91 0.00	-570.19 16183.64 -0.04	0 --- ---	36427.02 434083.75 0.08	-3117.29 83354.24 -0.04	0.16	100.01	W 200 15
1012	Sol. Res. Sd/Rd	-5090.15 60845.45 0.08	38.4 19570.91 0.00	-449.2 16183.64 -0.03	0 --- ---	33933.39 434083.75 0.08	3382.72 83354.24 0.04	0.16	99.97	W 200 15
1013	Sol. Res. Sd/Rd	-6520.51 60845.45 0.11	38.67 19570.91 0.00	-512.55 16183.64 -0.03	0 --- ---	37793.69 434083.75 0.09	-3139.85 83354.24 -0.04	0.18	100.03	W 200 15
1014	Sol. Res. Sd/Rd	-7318.75 60845.45 0.12	37.73 19570.91 0.00	-510.65 16183.64 -0.03	0 --- ---	35078.02 434083.75 0.08	3247.68 83354.24 0.04	0.18	99.98	W 200 15
1015	Sol. Res. Sd/Rd	4126 10608.07 0.39	-21.71 18441.82 0.00	-49.67 11975.89 0.00	0 --- ---	-6412.65 277447.97 -0.02	-1376.81 76882.74 -0.02	0.43	192.4	W 150 13
1016	Sol. Res. Sd/Rd	-10.87 25636.36 0	-989.02 7200 -0.14	-42.64 7200 -0.01	0 --- ---	4350.74 79199.27 0.05	-46978.22 79199.27 -0.59	0.65	190	BOX 100 x 100 x 3
1017	Sol. Res.	16.04 20761.74	-989.02 7200	14.58 7200	0 ---	1426.15 79199.27	-46978.22 79199.27	0.61	190	BOX 100 x 100 x 3

	Sd/Rd	0	-0.14	0.00	---	0.02	-0.59			
1018	Sol. Res. Sd/Rd	605.27 20761.74 0.03	-989.02 7200 -0.14	-49.77 7200 -0.01	0 --- ---	-4859.09 79199.27 -0.06	-46978.22 79199.27 -0.59	0.68	190	BOX 100 x 100 x 3
1019	Sol. Res. Sd/Rd	1003.41 20761.74 0.05	-989.02 7200 -0.14	13.85 7200 0.00	0 --- ---	1373.38 79199.27 0.02	-46978.22 79199.27 -0.59	0.66	190	BOX 100 x 100 x 3
1020	Sol. Res. Sd/Rd	966.17 20761.74 0.05	-989.02 7200 -0.14	-53.94 7200 -0.01	0 --- ---	-5426.57 79199.27 -0.07	-46978.22 79199.27 -0.59	0.71	190	BOX 100 x 100 x 3
1021	Sol. Res. Sd/Rd	568.98 20761.74 0.03	-989.02 7200 -0.14	12.6 7200 0.00	0 --- ---	-1239.45 79199.27 -0.02	-46978.22 79199.27 -0.59	0.64	190	BOX 100 x 100 x 3
1022	Sol. Res. Sd/Rd	2.42 20761.74 0	-989.02 7200 -0.14	-60.26 7200 -0.01	0 --- ---	-6108.78 79199.27 -0.08	-46978.22 79199.27 -0.59	0.67	190	BOX 100 x 100 x 3
1023	Sol. Res. Sd/Rd	-1.22 25636.36 0	-989.02 7200 -0.14	10.07 7200 0.00	0 --- ---	-987.09 79199.27 -0.01	-46978.22 79199.27 -0.59	0.61	190	BOX 100 x 100 x 3
1024	Sol. Res. Sd/Rd	8.94 20761.74 0	-989.02 7200 -0.14	-64.84 7200 -0.01	0 --- ---	-6577.48 79199.27 -0.08	-46978.22 79199.27 -0.59	0.68	190	BOX 100 x 100 x 3
1025	Sol. Res. Sd/Rd	-1462.5 25636.36 0.06	-1347.09 7200 -0.19	-17.16 7200 0.00	0 --- ---	-1343.59 79199.27 -0.02	48016.71 79199.27 0.61	0.68	115	BOX 100 x 100 x 3
1026	Sol. Res. Sd/Rd	-6224.64 52063.64 0.12	-14.5 18441.82 0	34.67 11975.89 0.00	0 --- ---	4356.44 263039.09 0.02	-1063.68 76882.74 -0.01	0.12	159.23	W 150 13
1027	Sol. Res. Sd/Rd	3607.98 36987.5 0.1	20.76 18441.82 0.00	-16.55 11975.89 0.00	0 --- ---	4317.47 273669.69 0.02	-1293.75 76882.74 -0.02	0.1	151.94	W 150 13
1028	Sol. Res. Sd/Rd	-3541.19 52063.64 0.07	-11.1 18441.82 0	-0.65 11975.89 0	0 --- ---	1801.63 277447.97 0.01	582.76 76882.74 0.01	0.07	151.94	W 150 13

1029	Sol. Res. Sd/Rd	803.48 36987.47 0.02	10.67 18441.82 0	0.16 11975.89 0	0 --- ---	1965.3 277447.97 0.01	-628.16 76882.74 -0.01	0.03	151.94	W 150 13
1030	Sol. Res. Sd/Rd	-728.34 52063.64 0.01	-8.08 18441.82 0	-2.42 11975.89 0	0 --- ---	1961.37 276547.75 0.01	601.3 76882.74 0.01	0.02	151.94	W 150 13
1031	Sol. Res. Sd/Rd	-1909.39 52063.64 0.04	9.11 18441.82 0	2.4 11975.89 0	0 --- ---	2214.52 277447.97 0.01	-560.58 76882.74 -0.01	0.04	151.95	W 150 13
1032	Sol. Res. Sd/Rd	1985.54 36994 0.05	-12.96 18441.82 0	-2.82 11975.89 0	0 --- ---	2212.01 277447.97 0.01	655.01 76882.74 0.01	0.05	151.9	W 150 13
1033	Sol. Res. Sd/Rd	-4702.47 52063.64 0.09	11.92 18441.82 0	1.82 11975.89 0	0 --- ---	2306.57 277447.97 0.01	-382.44 76882.74 0.00	0.09	151.98	W 150 13
1034	Sol. Res. Sd/Rd	4770.93 36999.95 0.13	-25.99 18441.82 0.00	0.16 11975.89 0	0 --- ---	2329.3 277447.97 0.01	1519.47 76882.74 0.02	0.13	151.87	W 150 13
1035	Sol. Res. Sd/Rd	-6902.54 52063.64 0.13	10.22 18441.82 0	5.79 11975.89 0	0 --- ---	3305.17 276098.84 0.01	1254.25 76882.74 0.02	0.13	147.14	W 150 13
1036	Sol. Res. Sd/Rd	2576.82 9929.78 0.26	-21.1 18441.82 0.00	-8.05 11975.89 0	0 --- ---	1411.74 277447.97 0.01	-985.21 76882.74 -0.01	0.28	210.73	W 150 13
1037	Sol. Res. Sd/Rd	6307.58 9929.78 0.64	-19.23 18441.82 0.00	13.45 11975.89 0.00	0 --- ---	-2710.93 277447.97 -0.01	996.71 76882.74 0.01	0.66	200.01	W 150 13
1038	Sol. Res. Sd/Rd	7309.22 9929.78 0.74	-17.73 18441.82 0	15.72 11975.89 0.00	0 --- ---	-2605.66 259918.05 -0.01	1000.59 76882.74 0.01	0.76	200.02	W 150 13
1039	Sol. Res. Sd/Rd	4759.27 9929.78 0.48	-21.28 18441.82 0.00	16.13 11975.89 0.00	0 --- ---	-2374.07 277447.97 -0.01	828.77 76882.74 0.01	0.5	200.01	W 150 13
1040	Sol. Res.	7439.43 48661.11	-22.89 19570.91	-241.13 16183.64	0 ---	-17341.11 434083.75	1293.01 83354.24	0.15	101.7	W 200 15

	Sd/Rd	0.15	0.00	-0.01	---	-0.04	0.02			
1041	Sol. Res. Sd/Rd	-883.19 60845.45 0.01	-0.79 19570.91 0	-535.49 16183.64 -0.03	0 --- ---	31676.11 434083.75 0.07	224.07 83354.24 0.00	0.08	99.9	W 200 15
1042	Sol. Res. Sd/Rd	-1674.57 60845.45 0.03	-0.09 19570.91 0	-486.61 16183.64 -0.03	0 --- ---	30769.52 434083.75 0.07	-70.47 83354.24 0	0.09	100.05	W 200 15
1043	Sol. Res. Sd/Rd	-6884.09 60845.45 0.11	-2.11 19570.91 0	-548.31 16183.64 -0.03	0 --- ---	35315.38 434083.75 0.08	363.69 83354.24 0.00	0.14	99.95	W 200 15
1044	Sol. Res. Sd/Rd	-9268.19 60845.45 0.15	2.66 19570.91 0	-496.87 16183.64 -0.03	0 --- ---	37231.41 434083.75 0.09	418.12 83354.24 0.01	0.17	100.01	W 200 15
1045	Sol. Res. Sd/Rd	-10060.96 60845.45 0.17	-1.33 19570.91 0	-526.01 16183.64 -0.03	0 --- ---	37075.09 434083.75 0.09	120.31 83354.24 0.00	0.17	100	W 200 15
1046	Sol. Res. Sd/Rd	-8023.22 60845.45 0.13	-0.6 19570.91 0	-523.3 16183.64 -0.03	0 --- ---	37409.14 434083.75 0.09	396.18 83354.24 0.00	0.16	100.02	W 200 15
1047	Sol. Res. Sd/Rd	-8816.1 60845.45 0.14	-2.63 19570.91 0	-507.78 16183.64 -0.03	0 --- ---	37824.52 434083.75 0.09	201.82 83354.24 0.00	0.16	99.98	W 200 15
1048	Sol. Res. Sd/Rd	-2971.64 60845.45 0.05	-117.61 19570.91 -0.01	-249.07 16183.64 -0.02	0 --- ---	15216.33 434083.75 0.04	-7544.67 83354.24 -0.09	0.15	101.6	W 200 15
1049	Sol. Res. Sd/Rd	-3581.52 60845.45 0.06	753.67 19570.91 0.04	1374.07 16183.64 0.08	0 --- ---	-62922.21 434083.75 -0.14	-26936.89 83354.24 -0.32	0.5	60	W 200 15
1050	Sol. Res. Sd/Rd	334.4 42839.72 0.01	-38.43 18441.82 0.00	95.13 11975.89 0.01	0 --- ---	10283.93 277447.97 0.04	-2863.53 76882.74 -0.04	0.08	114.75	W 150 13
1051	Sol. Res. Sd/Rd	-1475.97 52063.64 0.03	-35.84 18441.82 0.00	14.16 11975.89 0.00	0 --- ---	-2182.83 277447.97 -0.01	-2913.26 76882.74 -0.04	0.06	192.43	W 150 13

1052	Sol. Res. Sd/Rd	4979.15 40615.62 0.12	18.94 18441.82 0.00	-168.82 11975.89 -0.01	0 --- ---	12556.32 277447.97 0.05	1067.67 76882.74 0.01	0.12	129.49	W 150 13
1053	Sol. Res. Sd/Rd	4685.76 40615.62 0.12	-20.8 18441.82 0.00	-158.25 11975.89 -0.01	0 --- ---	21849.21 277447.97 0.08	-1195.99 76882.74 -0.02	0.15	129.49	W 150 13
1054	Sol. Res. Sd/Rd	-4690.52 52063.64 0.09	-42.77 18441.82 0.00	11.85 11975.89 0	0 --- ---	-1250.11 277447.97 0.00	6101.64 76882.74 0.08	0.13	120	W 150 13
1055	Sol. Res. Sd/Rd	-3666.85 60845.45 0.06	-627.88 19570.91 -0.03	1245.07 16183.64 0.08	0 --- ---	-58335.31 434083.75 -0.13	-21128.76 83354.24 -0.25	0.42	60	W 200 15
1056	Sol. Res. Sd/Rd	-5689.82 52063.64 0.11	-9.73 18441.82 0	25.3 11975.89 0.00	0 --- ---	3598.89 259503.73 0.01	-1263.85 76882.74 -0.02	0.11	159.23	W 150 13
1057	Sol. Res. Sd/Rd	3450.83 36987.5 0.09	33.44 18441.82 0.00	-10.21 11975.89 0	0 --- ---	3670.45 271058.47 0.01	-2085.75 76882.74 -0.03	0.09	151.94	W 150 13
1058	Sol. Res. Sd/Rd	-3367.17 52063.64 0.06	-12.67 18441.82 0	-1.4 11975.89 0	0 --- ---	2118.32 277447.97 0.01	414.5 76882.74 0.01	0.06	151.94	W 150 13
1059	Sol. Res. Sd/Rd	566.6 36987.47 0.02	14.07 18441.82 0	1.11 11975.89 0	0 --- ---	2400.14 277447.97 0.01	-432.87 76882.74 -0.01	0.02	151.94	W 150 13
1060	Sol. Res. Sd/Rd	-486.45 52063.64 0.01	-12.42 18441.82 0	-2.06 11975.89 0	0 --- ---	2397 270618.78 0.01	515.67 76882.74 0.01	0.02	151.94	W 150 13
1061	Sol. Res. Sd/Rd	-2156.11 52063.64 0.04	10.98 18441.82 0	0.33 11975.89 0	0 --- ---	2484.56 277447.97 0.01	-371.83 76882.74 0.00	0.04	151.95	W 150 13
1062	Sol. Res. Sd/Rd	2236.4 36994 0.06	-15.47 18441.82 0	-2.31 11975.89 0	0 --- ---	2481.7 277447.97 0.01	688.24 76882.74 0.01	0.06	151.9	W 150 13
1063	Sol. Res.	-4957.68 52063.64	14.07 18441.82	2.29 11975.89	0 ---	2830.61 277447.97	559.88 76882.74	0.1	151.98	W 150 13

	Sd/Rd	0.1	0	0	---	0.01	0.01			
1064	Sol. Res. Sd/Rd	5023.35 36999.95 0.14	-24.47 18441.82 0.00	3.72 11975.89 0	0 --- ---	3395.01 277447.97 0.01	-1333.79 76882.74 -0.02	0.14	151.87	W 150 13
1065	Sol. Res. Sd/Rd	-7215.09 52063.64 0.14	8.62 18441.82 0	-6.04 11975.89 0	0 --- ---	3579.3 268499.41 0.01	1253.59 76882.74 0.02	0.14	147.14	W 150 13
1066	Sol. Res. Sd/Rd	2954.59 9929.78 0.3	-22.71 18441.82 0.00	7.8 11975.89 0	0 --- ---	-1781.73 277447.97 -0.01	-1459.16 76882.74 -0.02	0.32	210.73	W 150 13
1067	Sol. Res. Sd/Rd	4897.06 9929.78 0.49	-15.99 18441.82 0	12.92 11975.89 0.00	0 --- ---	-2436.36 277447.97 -0.01	-455.8 76882.74 -0.01	0.51	200.01	W 150 13
1068	Sol. Res. Sd/Rd	4967.4 9929.78 0.5	-17.34 18441.82 0	17.34 11975.89 0.00	0 --- ---	-2936.17 262884.97 -0.01	673.64 76882.74 0.01	0.52	200.02	W 150 13
1069	Sol. Res. Sd/Rd	2597.94 9929.78 0.26	-17.13 18441.82 0	14.35 11975.89 0.00	0 --- ---	-2174.34 277447.97 -0.01	-623.01 76882.74 -0.01	0.28	200.01	W 150 13
1070	Sol. Res. Sd/Rd	7780.47 48661.11 0.16	-44.98 19570.91 0.00	-303.18 16183.64 -0.02	0 --- ---	-22626.44 434083.75 -0.05	2937.2 83354.24 0.04	0.17	101.7	W 200 15
1071	Sol. Res. Sd/Rd	607.73 48932.34 0.01	-0.13 19570.91 0	-521.03 16183.64 -0.03	0 --- ---	27104.79 434083.75 0.06	291.64 83354.24 0.00	0.07	99.9	W 200 15
1072	Sol. Res. Sd/Rd	1238.85 48909.89 0.03	1.15 19570.91 0	-503.04 16183.64 -0.03	0 --- ---	28011.39 434083.75 0.06	-221.44 83354.24 0.00	0.08	100.05	W 200 15
1073	Sol. Res. Sd/Rd	-2844.46 60845.45 0.05	2.89 19570.91 0	-534.11 16183.64 -0.03	0 --- ---	30620.93 434083.75 0.07	449.19 83354.24 0.01	0.1	99.95	W 200 15
1074	Sol. Res. Sd/Rd	-1992.24 60845.45 0.03	2.21 19570.91 0	-486.45 16183.64 -0.03	0 --- ---	31206.23 434083.75 0.07	-145.45 83354.24 0.00	0.09	100	W 200 15

1075	Sol. Res. Sd/Rd	-2664.27 60845.45 0.04	0.35 19570.91 0	-481.7 16183.64 -0.03	0 --- ---	30862.45 434083.75 0.07	366.78 83354.24 0.00	0.1	100.01	W 200 15
1076	Sol. Res. Sd/Rd	-2032.71 60845.45 0.03	3.22 19570.91 0	-541.89 16183.64 -0.03	0 --- ---	31018.77 434083.75 0.07	-177.41 83354.24 0.00	0.09	100	W 200 15
1077	Sol. Res. Sd/Rd	1196.55 48914.24 0.02	1.6 19570.91 0	-559.16 16183.64 -0.03	0 --- ---	32595.52 434083.75 0.08	475.58 83354.24 0.01	0.09	100.02	W 200 15
1078	Sol. Res. Sd/Rd	1829.17 48920.79 0.04	-0.11 19570.91 0	-463.2 16183.64 -0.03	0 --- ---	32180.15 434083.75 0.07	50.97 83354.24 0	0.09	99.98	W 200 15
1079	Sol. Res. Sd/Rd	8752.39 48677.3 0.18	-72.78 19570.91 0.00	-30.99 16183.64 0.00	0 --- ---	-10661.78 434083.75 -0.02	-4401.59 83354.24 -0.05	0.18	101.6	W 200 15
1080	Sol. Res. Sd/Rd	9018.06 53942.45 0.17	566.15 19570.91 0.03	671.64 16183.64 0.04	0 --- ---	-47377.35 434083.75 -0.11	-20118.2 83354.24 -0.24	0.43	60	W 200 15
1081	Sol. Res. Sd/Rd	413.21 42839.72 0.01	-24.5 18441.82 0.00	63.19 11975.89 0.01	0 --- ---	6878.49 277447.97 0.02	-2166.88 76882.74 -0.03	0.06	114.75	W 150 13
1082	Sol. Res. Sd/Rd	-4480.13 52063.64 0.09	-36.23 18441.82 0.00	13.31 11975.89 0.00	0 --- ---	-2595.34 277447.97 -0.01	-3148.96 76882.74 -0.04	0.09	192.43	W 150 13
1083	Sol. Res. Sd/Rd	4606.16 40615.62 0.11	16.73 18441.82 0	-132.77 11975.89 -0.01	0 --- ---	-8966.58 277447.97 -0.03	994.8 76882.74 0.01	0.11	129.49	W 150 13
1084	Sol. Res. Sd/Rd	5780.94 40615.62 0.14	-16.5 18441.82 0	-124.6 11975.89 -0.01	0 --- ---	18160.31 277447.97 0.07	-1118.22 76882.74 -0.01	0.15	129.49	W 150 13
1085	Sol. Res. Sd/Rd	-5964.51 52063.64 0.11	-39.49 18441.82 0.00	15.63 11975.89 0.00	0 --- ---	-3740.53 277447.97 -0.01	5354.62 76882.74 0.07	0.14	120	W 150 13
1086	Sol. Res.	9906.59 53942.45	-485.41 19570.91	1420.84 16183.64	0 ---	-75913.8 434083.75	-15860.44 83354.24	0.46	60	W 200 15

	Sd/Rd	0.18	-0.02	0.09	---	-0.17	-0.19			
1087	Sol. Res. Sd/Rd	-423.37 25636.36 0.02	-989.02 7200 -0.14	106.41 7200 0.01	0 --- ---	10756.03 79199.27 0.14	-46978.22 79199.27 -0.59	0.75	190	BOX 100 x 100 x 3
1088	Sol. Res. Sd/Rd	19.64 20761.74 0	-989.02 7200 -0.14	17.87 7200 0.00	0 --- ---	-1976.51 79199.27 -0.02	-46978.22 79199.27 -0.59	0.62	190	BOX 100 x 100 x 3
1089	Sol. Res. Sd/Rd	0.16 20761.74 0	-989.02 7200 -0.14	2.95 7200 0	0 --- ---	-425.96 79199.27 -0.01	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1090	Sol. Res. Sd/Rd	-1.07 25636.36 0	-989.02 7200 -0.14	23.98 7200 0.00	0 --- ---	-2561.04 79199.27 -0.03	-46978.22 79199.27 -0.59	0.63	190	BOX 100 x 100 x 3
1091	Sol. Res. Sd/Rd	3.44 20761.74 0	-989.02 7200 -0.14	4.45 7200 0	0 --- ---	-545.94 79199.27 -0.01	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1092	Sol. Res. Sd/Rd	417.55 20761.74 0.02	-989.02 7200 -0.14	25.64 7200 0.00	0 --- ---	-2726.01 79199.27 -0.03	-46978.22 79199.27 -0.59	0.65	190	BOX 100 x 100 x 3
1093	Sol. Res. Sd/Rd	418 20761.74 0.02	-989.02 7200 -0.14	4.48 7200 0	0 --- ---	-596.52 79199.27 -0.01	-46978.22 79199.27 -0.59	0.62	190	BOX 100 x 100 x 3
1094	Sol. Res. Sd/Rd	2.37 20761.74 0	-989.02 7200 -0.14	25.58 7200 0.00	0 --- ---	-2777.64 79199.27 -0.04	-46978.22 79199.27 -0.59	0.63	190	BOX 100 x 100 x 3
1095	Sol. Res. Sd/Rd	0.29 20761.74 0	-989.02 7200 -0.14	3.73 7200 0	0 --- ---	-501.57 79199.27 -0.01	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1096	Sol. Res. Sd/Rd	7.24 20761.74 0	-989.02 7200 -0.14	23.1 7200 0.00	0 --- ---	-2565.04 79199.27 -0.03	-46978.22 79199.27 -0.59	0.63	190	BOX 100 x 100 x 3
1097	Sol. Res. Sd/Rd	-2106.47 25636.36 0.08	-1635.65 7200 -0.23	5.71 7200 0	0 --- ---	593.88 79199.27 0.01	55420.88 79199.27 0.7	0.79	75	BOX 100 x 100 x 3

1098	Sol. Res. Sd/Rd	-593.15 52063.64 0.01	43.6 18441.82 0.00	-595.51 11975.89 -0.05	0 --- ---	47758.1 277447.97 0.17	2772.29 76882.74 0.04	0.21	114.74	W 150 13
1099	Sol. Res. Sd/Rd	-2611.17 25636.36 0.1	-1623.8 7200 -0.23	-37.07 7200 -0.01	0 --- ---	2022.3 79199.27 0.03	52309.01 79199.27 0.66	0.79	75	BOX 100 x 100 x 3
1100	Sol. Res. Sd/Rd	-2673.05 25636.36 0.1	-379.86 7200 -0.05	76.33 7200 0.01	0 --- ---	3259.6 79199.27 0.04	16353.58 79199.27 0.21	0.35	60	BOX 100 x 100 x 3
1101	Sol. Res. Sd/Rd	-986.01 25636.36 0.04	-1335.1 7200 -0.19	37.95 7200 0.01	0 --- ---	-2850.99 79199.27 -0.04	47785.16 79199.27 0.6	0.68	115	BOX 100 x 100 x 3
1102	Sol. Res. Sd/Rd	-7072.09 52063.64 0.14	36.67 18441.82 0.00	-48.63 11975.89 0.00	0 --- ---	8380.77 277447.97 0.03	2775.97 76882.74 0.04	0.14	159.29	W 150 13
1103	Sol. Res. Sd/Rd	2391.45 36993.43 0.06	-16.47 18441.82 0	3.25 11975.89 0	0 --- ---	1154.02 277447.97 0.00	590.48 76882.74 0.01	0.06	151.91	W 150 13
1104	Sol. Res. Sd/Rd	-2335.28 52063.64 0.04	10.57 18441.82 0	-6.76 11975.89 0	0 --- ---	1158.58 277447.97 0.00	-617.36 76882.74 -0.01	0.04	151.91	W 150 13
1105	Sol. Res. Sd/Rd	-82.84 52063.64 0.00	-7.79 18441.82 0	14.9 11975.89 0.00	0 --- ---	-3021.39 277447.97 -0.01	219.85 76882.74 0.00	0.01	151.98	W 150 13
1106	Sol. Res. Sd/Rd	369.2 36993.01 0.01	14.56 18441.82 0	-0.4 11975.89 0	0 --- ---	34.57 277447.97 0	-848.58 76882.74 -0.01	0.02	151.91	W 150 13
1107	Sol. Res. Sd/Rd	-3030.24 52063.64 0.06	-9.25 18441.82 0	-0.27 11975.89 0	0 --- ---	-89.07 277447.97 0	456.65 76882.74 0.01	0.06	151.98	W 150 13
1108	Sol. Res. Sd/Rd	3111.54 36994 0.08	16.54 18441.82 0	-0.17 11975.89 0	0 --- ---	-114.44 277447.97 0	-871.65 76882.74 -0.01	0.08	151.9	W 150 13
1109	Sol. Res.	-5822.67 52063.64	-13.81 18441.82	0.13 11975.89	0 ---	-165.79 277447.97	-499.37 76882.74	0.11	151.97	W 150 13

	Sd/Rd	0.11	0	0	---	0	-0.01			
1110	Sol. Res. Sd/Rd	5887.66 36993.01 0.16	27.98 18441.82 0.00	-3.82 11975.89 0	0 --- ---	-726.03 277447.97 0.00	1589 76882.74 0.02	0.16	151.91	W 150 13
1111	Sol. Res. Sd/Rd	-8033.15 52063.64 0.15	-11.05 18441.82 0	7.61 11975.89 0	0 --- ---	-761.78 265971.69 0.00	-1557.31 76882.74 -0.02	0.15	147.07	W 150 13
1112	Sol. Res. Sd/Rd	4985.92 9929.8 0.5	36 18441.82 0.00	-5.04 11975.89 0	0 --- ---	3014.38 277447.97 0.01	2652.11 76882.74 0.03	0.54	210.8	W 150 13
1113	Sol. Res. Sd/Rd	8096.43 9929.8 0.82	16.28 18441.82 0	-1.53 11975.89 0	0 --- ---	429.7 277447.97 0.00	-1034.61 76882.74 -0.01	0.83	200	W 150 13
1114	Sol. Res. Sd/Rd	7678.91 9929.8 0.77	18.74 18441.82 0.00	-0.42 11975.89 0	0 --- ---	79.25 240837.83 0	-921.83 76882.74 -0.01	0.78	200.03	W 150 13
1115	Sol. Res. Sd/Rd	3645.91 9929.8 0.37	22.61 18441.82 0.00	0.02 11975.89 0	0 --- ---	115.93 277447.97 0	830.07 76882.74 0.01	0.38	199.98	W 150 13
1116	Sol. Res. Sd/Rd	10458.84 48677.66 0.21	17.65 19570.91 0	277.68 16183.64 0.02	0 --- ---	22218.06 434083.75 0.05	-1331.71 83354.24 -0.02	0.27	101.59	W 200 15
1117	Sol. Res. Sd/Rd	1435.56 48929.36 0.03	-0.48 19570.91 0	544.31 16183.64 0.03	0 --- ---	-28357.61 434083.75 -0.07	-101.21 83354.24 0.00	0.08	99.92	W 200 15
1118	Sol. Res. Sd/Rd	1287.83 48907.02 0.03	-1.88 19570.91 0	480.28 16183.64 0.03	0 --- ---	-28067.84 434083.75 -0.06	135.04 83354.24 0.00	0.08	100.07	W 200 15
1119	Sol. Res. Sd/Rd	-4651.24 60845.45 0.08	-1.48 19570.91 0	554.09 16183.64 0.03	0 --- ---	-33682.79 434083.75 -0.08	-108.73 83354.24 0.00	0.12	100.01	W 200 15
1120	Sol. Res. Sd/Rd	-4752.66 60845.45 0.08	-0.9 19570.91 0	469.26 16183.64 0.03	0 --- ---	-33282.25 434083.75 -0.08	76.37 83354.24 0	0.12	100.01	W 200 15

1121	Sol. Res. Sd/Rd	-7091.54 60845.45 0.12	-0.22 19570.91 0	522.52 16183.64 0.03	0 --- ---	-37400.72 434083.75 -0.09	-19.55 83354.24 0	0.14	99.94	W 200 15
1122	Sol. Res. Sd/Rd	-7192.12 60845.45 0.12	-1.23 19570.91 0	494.26 16183.64 0.03	0 --- ---	-36925.57 434083.75 -0.09	82.49 83354.24 0	0.15	100.06	W 200 15
1123	Sol. Res. Sd/Rd	-5947.05 60845.45 0.1	2.65 19570.91 0	459.24 16183.64 0.03	0 --- ---	-33738.48 434083.75 -0.08	220.16 83354.24 0.00	0.13	100	W 200 15
1124	Sol. Res. Sd/Rd	-6047.44 60845.45 0.1	-10.5 19570.91 0	569.54 16183.64 0.04	0 --- ---	-33336.05 434083.75 -0.08	-708.32 83354.24 -0.01	0.13	99.9	W 200 15
1125	Sol. Res. Sd/Rd	552.19 48660.87 0.01	19.4 19570.91 0	1725.81 16183.64 0.11	0 --- ---	-149972.56 434083.75 -0.35	1379.89 83354.24 0.02	0.37	101.7	W 200 15
1126	Sol. Res. Sd/Rd	10016.02 53942.45 0.19	-182.41 19570.91 -0.01	1285.76 16183.64 0.08	0 --- ---	-83232.17 434083.75 -0.19	6401.55 83354.24 0.08	0.36	60	W 200 15
1127	Sol. Res. Sd/Rd	-73.73 52063.64 0.00	-35.82 18441.82 0.00	14.19 11975.89 0.00	0 --- ---	1724.84 277447.97 0.01	-3055.76 76882.74 -0.04	0.05	114.75	W 150 13
1128	Sol. Res. Sd/Rd	1181.58 42839.72 0.03	38.94 18441.82 0.00	27 11975.89 0.00	0 --- ---	2888.15 277447.97 0.01	3295.24 76882.74 0.04	0.07	114.75	W 150 13
1129	Sol. Res. Sd/Rd	-4066.05 52063.64 0.08	39.1 18441.82 0.00	3.7 11975.89 0	0 --- ---	1019.11 277447.97 0.00	3508.79 76882.74 0.05	0.09	192.39	W 150 13
1130	Sol. Res. Sd/Rd	6373.76 40615.62 0.16	-30.66 18441.82 0.00	-19.3 11975.89 0.00	0 --- ---	3798.09 277447.97 0.01	-2137.05 76882.74 -0.03	0.16	129.49	W 150 13
1131	Sol. Res. Sd/Rd	6366.22 40615.62 0.16	23.05 18441.82 0.00	-19.54 11975.89 0.00	0 --- ---	-2331.71 277447.97 -0.01	1479.47 76882.74 0.02	0.16	129.49	W 150 13
1132	Sol. Res.	-12542.67 52063.64	-1.45 18441.82	9.83 11975.89	0 ---	-4886.05 277447.97	-307.84 76882.74	0.26	120	W 150 13

	Sd/Rd	0.24	0	0	---	-0.02	0.00			
1133	Sol. Res. Sd/Rd	-5283.89 52063.64 0.1	16.73 18441.82 0	48.54 11975.89 0.00	0 --- ---	-7449.06 277447.97 -0.03	1078.19 76882.74 0.01	0.1	159.29	W 150 13
1134	Sol. Res. Sd/Rd	2934.5 36993.43 0.08	-28.56 18441.82 0.00	6.5 11975.89 0	0 --- ---	1340.36 277447.97 0.00	1978.22 76882.74 0.03	0.08	151.91	W 150 13
1135	Sol. Res. Sd/Rd	-2840.77 52063.64 0.05	13.6 18441.82 0	-1.59 11975.89 0	0 --- ---	1333.47 277447.97 0.00	-717.05 76882.74 -0.01	0.05	151.91	W 150 13
1136	Sol. Res. Sd/Rd	79.1 36981.5 0.00	-14.46 18441.82 0	9.46 11975.89 0	0 --- ---	2588.49 277447.97 0.01	689.95 76882.74 0.01	0.02	151.98	W 150 13
1137	Sol. Res. Sd/Rd	-13.6 52063.64 0	14.09 18441.82 0	-9.18 11975.89 0	0 --- ---	2587.52 277447.97 0.01	-835.79 76882.74 -0.01	0.02	151.91	W 150 13
1138	Sol. Res. Sd/Rd	-2634.49 52063.64 0.05	-11.88 18441.82 0	10.36 11975.89 0	0 --- ---	2820.27 277447.97 0.01	559.25 76882.74 0.01	0.05	151.98	W 150 13
1139	Sol. Res. Sd/Rd	2721.1 36994 0.07	17.98 18441.82 0	-10.86 11975.89 0	0 --- ---	2817.57 277447.97 0.01	-1020.13 76882.74 -0.01	0.07	151.9	W 150 13
1140	Sol. Res. Sd/Rd	-5439.64 52063.64 0.1	-11.13 18441.82 0	10.68 11975.89 0	0 --- ---	2836.37 277447.97 0.01	295.5 76882.74 0.00	0.1	151.97	W 150 13
1141	Sol. Res. Sd/Rd	5508.97 36993.01 0.15	29.23 18441.82 0.00	-10.88 11975.89 0	0 --- ---	2835.79 277447.97 0.01	-1737.72 76882.74 -0.02	0.15	151.91	W 150 13
1142	Sol. Res. Sd/Rd	-7619.45 52063.64 0.15	-9.74 18441.82 0	3.56 11975.89 0	0 --- ---	1720.28 264335.38 0.01	-1305.8 76882.74 -0.02	0.15	147.07	W 150 13
1143	Sol. Res. Sd/Rd	5086.86 9929.8 0.51	25.06 18441.82 0.00	24.62 11975.89 0.00	0 --- ---	-6070.17 277447.97 -0.02	1072.53 76882.74 0.01	0.54	210.8	W 150 13

1144	Sol. Res. Sd/Rd	8889.23 9929.8 0.9	19.07 18441.82 0.00	19.71 11975.89 0.00	0 --- ---	-2637.12 277447.97 -0.01	-952.68 76882.74 -0.01	0.91	200	W 150 13
1145	Sol. Res. Sd/Rd	8936.9 9929.8 0.9	18.51 18441.82 0.00	19.43 11975.89 0.00	0 --- ---	-2100.61 236150.89 -0.01	-983.83 76882.74 -0.01	0.92	200.03	W 150 13
1146	Sol. Res. Sd/Rd	5422.35 9929.8 0.55	22.09 18441.82 0.00	19.93 11975.89 0.00	0 --- ---	2062.07 277447.97 0.01	-799.22 76882.74 -0.01	0.56	199.98	W 150 13
1147	Sol. Res. Sd/Rd	9303.29 48677.66 0.19	-5.95 19570.91 0	256.14 16183.64 0.02	0 --- ---	19305.06 434083.75 0.04	-432.26 83354.24 -0.01	0.19	101.59	W 200 15
1148	Sol. Res. Sd/Rd	821.13 48929.36 0.02	-6.65 19570.91 0	528.68 16183.64 0.03	0 --- ---	-29952.84 434083.75 -0.07	571.9 83354.24 0.01	0.08	99.92	W 200 15
1149	Sol. Res. Sd/Rd	714.61 48907.02 0.01	-5.5 19570.91 0	495.1 16183.64 0.03	0 --- ---	-30242.61 434083.75 -0.07	-538.76 83354.24 -0.01	0.08	100.07	W 200 15
1150	Sol. Res. Sd/Rd	-4667.17 60845.45 0.08	-5.5 19570.91 0	547.42 16183.64 0.03	0 --- ---	-34522.58 434083.75 -0.08	511.75 83354.24 0.01	0.12	100.01	W 200 15
1151	Sol. Res. Sd/Rd	-4726.97 60845.45 0.08	-5.66 19570.91 0	475.7 16183.64 0.03	0 --- ---	-34923.13 434083.75 -0.08	-509.07 83354.24 -0.01	0.13	100.01	W 200 15
1152	Sol. Res. Sd/Rd	-6519.81 60845.45 0.11	-5.88 19570.91 0	487.48 16183.64 0.03	0 --- ---	-36088 434083.75 -0.08	531.04 83354.24 0.01	0.14	99.94	W 200 15
1153	Sol. Res. Sd/Rd	-6579.54 60845.45 0.11	-3.76 19570.91 0	529.68 16183.64 0.03	0 --- ---	-36563.16 434083.75 -0.08	-362.92 83354.24 0.00	0.14	100.06	W 200 15
1154	Sol. Res. Sd/Rd	-4728.32 60845.45 0.08	-7.1 19570.91 0	545.67 16183.64 0.03	0 --- ---	-38482.67 434083.75 -0.09	516.74 83354.24 0.01	0.13	100	W 200 15
1155	Sol. Res.	-4788.18 60845.45	5.18 19570.91	481.92 16183.64	0 ---	-38885.1 434083.75	295.49 83354.24	0.13	99.9	W 200 15

	Sd/Rd	0.08	0	0.03	---	-0.09	0.00			
1156	Sol. Res. Sd/Rd	814.44 48660.87 0.02	47.82 19570.91 0.00	15.11 16183.64 0	0 --- ---	952.59 434083.75 0.00	-2234.64 83354.24 -0.03	0.04	101.7	W 200 15
1157	Sol. Res. Sd/Rd	9092.12 53942.45 0.17	-9.5 19570.91 0	1147.69 16183.64 0.07	0 --- ---	-73761.88 434083.75 -0.17	-487.81 83354.24 -0.01	0.26	60	W 200 15
1158	Sol. Res. Sd/Rd	-127.6 52063.64 0.00	-37.83 18441.82 0.00	-2.77 11975.89 0	0 --- ---	-333.35 277447.97 0.00	-3073.42 76882.74 -0.04	0.04	114.75	W 150 13
1159	Sol. Res. Sd/Rd	964.91 42839.72 0.02	31.87 18441.82 0.00	-2.36 11975.89 0	0 --- ---	-236.21 277447.97 0	2769.43 76882.74 0.04	0.05	114.75	W 150 13
1160	Sol. Res. Sd/Rd	-1787.22 52063.64 0.03	36.82 18441.82 0.00	20.13 11975.89 0.00	0 --- ---	2200.74 277447.97 0.01	3093.02 76882.74 0.04	0.07	192.39	W 150 13
1161	Sol. Res. Sd/Rd	5434.26 40615.62 0.13	-28.74 18441.82 0.00	18.55 11975.89 0.00	0 --- ---	3137.71 277447.97 0.01	-1964.37 76882.74 -0.03	0.13	129.49	W 150 13
1162	Sol. Res. Sd/Rd	6284.79 40615.62 0.15	17.54 18441.82 0	17.94 11975.89 0.00	0 --- ---	-3557.12 277447.97 -0.01	1084.37 76882.74 0.01	0.15	129.49	W 150 13
1163	Sol. Res. Sd/Rd	-9956.25 52063.64 0.19	-1.39 18441.82 0	17.52 11975.89 0.00	0 --- ---	-4620.8 277447.97 -0.02	600.92 76882.74 0.01	0.19	120	W 150 13
1164	Sol. Res. Sd/Rd	-1656.65 25636.36 0.06	-989.02 7200 -0.14	-15.79 7200 0.00	0 --- ---	-2084.87 79199.27 -0.03	-46978.22 79199.27 -0.59	0.68	190	BOX 100 x 100 x 3
1165	Sol. Res. Sd/Rd	463.47 20761.74 0.02	-989.02 7200 -0.14	-6.95 7200 0	0 --- ---	-762.09 79199.27 -0.01	-46978.22 79199.27 -0.59	0.63	190	BOX 100 x 100 x 3
1166	Sol. Res. Sd/Rd	12.72 20761.74 0	-989.02 7200 -0.14	0.48 7200 0	0 --- ---	121.11 79199.27 0.00	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3

1167	Sol. Res. Sd/Rd	4.06 20761.74 0	-989.02 7200 -0.14	-4.12 7200 0	0 --- ---	597.03 79199.27 0.01	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1168	Sol. Res. Sd/Rd	1.56 20761.74 0	-989.02 7200 -0.14	0.91 7200 0	0 --- ---	102.37 79199.27 0.00	-46978.22 79199.27 -0.59	0.59	190	BOX 100 x 100 x 3
1169	Sol. Res. Sd/Rd	0.47 20761.74 0	-989.02 7200 -0.14	-2.64 7200 0	0 --- ---	566.65 79199.27 0.01	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1170	Sol. Res. Sd/Rd	-0.36 25636.36 0	-989.02 7200 -0.14	1.48 7200 0	0 --- ---	185.3 79199.27 0.00	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1171	Sol. Res. Sd/Rd	-89.56 25636.36 0.00	-989.02 7200 -0.14	-1.26 7200 0	0 --- ---	517.3 79199.27 0.01	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1172	Sol. Res. Sd/Rd	-88.02 25636.36 0.00	-989.02 7200 -0.14	1.8 7200 0	0 --- ---	237.01 79199.27 0.00	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1173	Sol. Res. Sd/Rd	3.16 20761.74 0	-989.02 7200 -0.14	-0.43 7200 0	0 --- ---	527.2 79199.27 0.01	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1174	Sol. Res. Sd/Rd	-1009.72 25636.36 0.04	-989.02 7200 -0.14	16.89 7200 0.00	0 --- ---	2446.44 79199.27 0.03	-46978.22 79199.27 -0.59	0.66	190	BOX 100 x 100 x 3
1175	Sol. Res. Sd/Rd	8694.22 53942.45 0.16	14.49 19570.91 0	1396.73 16183.64 0.09	0 --- ---	-74767 434083.75 -0.17	-593.44 83354.24 -0.01	0.26	60	W 200 15
1176	Sol. Res. Sd/Rd	-8308.07 52063.64 0.16	8.87 18441.82 0	5.53 11975.89 0	0 --- ---	-842.32 255250.63 0.00	1514.63 76882.74 0.02	0.16	159.3	W 150 13
1177	Sol. Res. Sd/Rd	5855.95 36986.28 0.16	-34.02 18441.82 0.00	-5.87 11975.89 0	0 --- ---	-968.6 273866.25 0.00	2049.01 76882.74 0.03	0.16	151.95	W 150 13
1178	Sol. Res.	-5776.28 52063.64	9.15 18441.82	1.88 11975.89	0 ---	-967.54 277447.97	241.65 76882.74	0.11	151.9	W 150 13

	Sd/Rd	0.11	0	0	---	0.00	0.00			
1179	Sol. Res. Sd/Rd	2996.33 36987.47 0.08	-17.37 18441.82 0	-1.21 11975.89 0	0 --- ---	-991 277447.97 0.00	711.44 76882.74 0.01	0.08	151.94	W 150 13
1180	Sol. Res. Sd/Rd	-2922.59 52063.64 0.06	8.21 18441.82 0	1.08 11975.89 0	0 --- ---	-990.89 272265.66 0.00	-396.67 76882.74 -0.01	0.06	151.91	W 150 13
1181	Sol. Res. Sd/Rd	296.93 36982.65 0.01	-16.65 18441.82 0	-0.62 11975.89 0	0 --- ---	-1054.6 277447.97 0.00	827.33 76882.74 0.01	0.02	151.97	W 150 13
1182	Sol. Res. Sd/Rd	-210.05 52063.64 0.00	14 18441.82 0	1.02 11975.89 0	0 --- ---	-1054.02 277447.97 0.00	-730.55 76882.74 -0.01	0.02	151.91	W 150 13
1183	Sol. Res. Sd/Rd	-2492.65 52063.64 0.05	-11.98 18441.82 0	0.77 11975.89 0	0 --- ---	-1046.65 277447.97 0.00	508.76 76882.74 0.01	0.05	151.98	W 150 13
1184	Sol. Res. Sd/Rd	2566.16 36993.01 0.07	21.88 18441.82 0.00	-1.6 11975.89 0	0 --- ---	-1173.36 277447.97 0.00	-1299.17 76882.74 -0.02	0.07	151.91	W 150 13
1185	Sol. Res. Sd/Rd	-5455.98 52063.64 0.1	-11.06 18441.82 0	1.98 11975.89 0	0 --- ---	-1285.37 277447.97 0.00	-628.22 76882.74 -0.01	0.1	147.07	W 150 13
1186	Sol. Res. Sd/Rd	-4311.77 52063.64 0.08	37.49 18441.82 0.00	-11.78 11975.89 0	0 --- ---	2171.09 277447.97 0.01	3434.06 76882.74 0.04	0.09	210.86	W 150 13
1187	Sol. Res. Sd/Rd	3357.11 9929.78 0.34	22.99 18441.82 0.00	-7.79 11975.89 0	0 --- ---	961.16 277447.97 0.00	939.1 76882.74 0.01	0.35	199.94	W 150 13
1188	Sol. Res. Sd/Rd	7249.63 9929.78 0.73	18.66 18441.82 0.00	-7.65 11975.89 0	0 --- ---	-822.44 248445.92 0.00	-861.38 76882.74 -0.01	0.74	200.01	W 150 13
1189	Sol. Res. Sd/Rd	7576.63 9929.78 0.76	17.75 18441.82 0	-8.06 11975.89 0	0 --- ---	-1045.77 277447.97 0.00	-857.59 76882.74 -0.01	0.78	200	W 150 13

1190	Sol. Res. Sd/Rd	2602.68 48677.66 0.05	7.84 19570.91 0	788.05 16183.64 0.05	0 --- ---	-63611.45 434083.75 -0.15	427.52 83354.24 0.01	0.18	101.59	W 200 15
1191	Sol. Res. Sd/Rd	-2812.49 60845.45 0.05	-3.26 19570.91 0	522.15 16183.64 0.03	0 --- ---	-33878.45 434083.75 -0.08	190.19 83354.24 0.00	0.1	99.98	W 200 15
1192	Sol. Res. Sd/Rd	-3115.59 60845.45 0.05	-0.28 19570.91 0	498.39 16183.64 0.03	0 --- ---	-33763.58 434083.75 -0.08	119.48 83354.24 0.00	0.1	100.02	W 200 15
1193	Sol. Res. Sd/Rd	-4916.34 60845.45 0.08	-0.57 19570.91 0	517.58 16183.64 0.03	0 --- ---	-35355.05 434083.75 -0.08	-78.18 83354.24 0	0.12	100	W 200 15
1194	Sol. Res. Sd/Rd	-5219.07 60845.45 0.09	-0.51 19570.91 0	505.7 16183.64 0.03	0 --- ---	-35461.25 434083.75 -0.08	120.99 83354.24 0.00	0.13	100.01	W 200 15
1195	Sol. Res. Sd/Rd	-3704.76 60845.45 0.06	-1.09 19570.91 0	558.21 16183.64 0.03	0 --- ---	-32096.97 434083.75 -0.07	119.71 83354.24 0.00	0.11	99.95	W 200 15
1196	Sol. Res. Sd/Rd	1769.11 48910 0.04	-2.25 19570.91 0	526.33 16183.64 0.03	0 --- ---	-30116.73 434083.75 -0.07	-200.4 83354.24 0.00	0.09	100.05	W 200 15
1197	Sol. Res. Sd/Rd	1467.47 48932.34 0.03	1.04 19570.91 0	495.35 16183.64 0.03	0 --- ---	-30363.28 434083.75 -0.07	86.72 83354.24 0.00	0.09	99.9	W 200 15
1198	Sol. Res. Sd/Rd	10472.23 48660.87 0.22	-34.16 19570.91 0.00	54.5 16183.64 0.00	0 --- ---	14431.37 434083.75 0.03	-2462.52 83354.24 -0.03	0.27	101.7	W 200 15
1199	Sol. Res. Sd/Rd	3367.24 42839.72 0.08	-93.42 18441.82 -0.01	0.84 11975.89 0	0 --- ---	100.82 277447.97 0	-6986.12 76882.74 -0.09	0.13	114.75	W 150 13
1200	Sol. Res. Sd/Rd	4255.4 9929.78 0.43	26.52 18441.82 0.00	-7.22 11975.89 0	0 --- ---	-1210.26 277447.97 0.00	1416.22 76882.74 0.02	0.45	192.39	W 150 13
1201	Sol. Res.	-7080.42 52063.64	8.37 18441.82	0.81 11975.89	0 ---	-1334.44 258015.7	1326.88 76882.74	0.14	159.3	W 150 13

	Sd/Rd	0.14	0	0	---	-0.01	0.02			
1202	Sol. Res. Sd/Rd	4694.34 36986.28 0.13	-32.41 18441.82 0.00	-7.14 11975.89 0	0 --- ---	-2304.91 277447.97 -0.01	1944.14 76882.74 0.03	0.13	151.95	W 150 13
1203	Sol. Res. Sd/Rd	-4613.13 52063.64 0.09	7.82 18441.82 0	7.28 11975.89 0	0 --- ---	-2303.86 277447.97 -0.01	-210.62 76882.74 0.00	0.09	151.9	W 150 13
1204	Sol. Res. Sd/Rd	1837.93 36987.47 0.05	-14.76 18441.82 0	-7.41 11975.89 0	0 --- ---	-2385.49 272724.91 -0.01	502.49 76882.74 0.01	0.05	151.94	W 150 13
1205	Sol. Res. Sd/Rd	-1765.71 52063.64 0.03	8.96 18441.82 0	7.88 11975.89 0	0 --- ---	-2385.43 277447.97 -0.01	-377.07 76882.74 0.00	0.03	151.91	W 150 13
1206	Sol. Res. Sd/Rd	-895.36 52063.64 0.02	-13.73 18441.82 0	-7.5 11975.89 0	0 --- ---	-2401.03 277447.97 -0.01	560.28 76882.74 0.01	0.02	151.97	W 150 13
1207	Sol. Res. Sd/Rd	981.74 36993.01 0.03	14.86 18441.82 0	7.6 11975.89 0	0 --- ---	-2399.19 277447.97 -0.01	-756.7 76882.74 -0.01	0.03	151.91	W 150 13
1208	Sol. Res. Sd/Rd	-3611.2 52063.64 0.07	-13.57 18441.82 0	-7.74 11975.89 0	0 --- ---	-2517.86 277447.97 -0.01	407.29 76882.74 0.01	0.07	151.98	W 150 13
1209	Sol. Res. Sd/Rd	3668.72 36993.01 0.1	16.77 18441.82 0	10.44 11975.89 0	0 --- ---	-2517.17 277447.97 -0.01	847.26 76882.74 0.01	0.1	151.91	W 150 13
1210	Sol. Res. Sd/Rd	-7332.53 52063.64 0.14	-20.32 18441.82 0.00	-9.64 11975.89 0	0 --- ---	-2462.52 277447.97 -0.01	-1557.5 76882.74 -0.02	0.14	147.07	W 150 13
1211	Sol. Res. Sd/Rd	-2943.53 52063.64 0.06	35.07 18441.82 0.00	-15.61 11975.89 0.00	0 --- ---	1799.07 277447.97 0.01	3054.86 76882.74 0.04	0.07	210.86	W 150 13
1212	Sol. Res. Sd/Rd	3192.85 9929.78 0.32	21.48 18441.82 0.00	-15.76 11975.89 0.00	0 --- ---	-1612.08 277447.97 -0.01	795.88 76882.74 0.01	0.34	199.94	W 150 13

1213	Sol. Res. Sd/Rd	5559.49 9929.78 0.56	16.84 18441.82 0	-16.23 11975.89 0.00	0 --- ---	-1719.64 277447.97 -0.01	-739.47 76882.74 -0.01	0.57	200.01	W 150 13
1214	Sol. Res. Sd/Rd	4338.59 9929.78 0.44	18.53 18441.82 0.00	-16.33 11975.89 0.00	0 --- ---	-1827 277447.97 -0.01	-721.77 76882.74 -0.01	0.45	200	W 150 13
1215	Sol. Res. Sd/Rd	5432.46 48677.66 0.11	-24.13 19570.91 0.00	1375.95 16183.64 0.09	0 --- ---	-110556.25 434083.75 -0.25	1865.29 83354.24 0.02	0.33	101.59	W 200 15
1216	Sol. Res. Sd/Rd	-1442.54 60845.45 0.02	5.4 19570.91 0	569.35 16183.64 0.04	0 --- ---	28067.9 434083.75 0.06	-464.31 83354.24 -0.01	0.08	99.98	W 200 15
1217	Sol. Res. Sd/Rd	-1299.59 60845.45 0.02	3.22 19570.91 0	452.34 16183.64 0.03	0 --- ---	-28054.1 434083.75 -0.06	392.18 83354.24 0.00	0.08	100.02	W 200 15
1218	Sol. Res. Sd/Rd	-4189.58 60845.45 0.07	4.15 19570.91 0	520.55 16183.64 0.03	0 --- ---	-33706.4 434083.75 -0.08	-362.89 83354.24 0.00	0.12	100	W 200 15
1219	Sol. Res. Sd/Rd	-4048.06 60845.45 0.07	4.47 19570.91 0	502.63 16183.64 0.03	0 --- ---	-33600.21 434083.75 -0.08	428.81 83354.24 0.01	0.12	100.01	W 200 15
1220	Sol. Res. Sd/Rd	-3344.31 60845.45 0.05	4.63 19570.91 0	478 16183.64 0.03	0 --- ---	-31193.86 434083.75 -0.07	-404.77 83354.24 0.00	0.1	100	W 200 15
1221	Sol. Res. Sd/Rd	-3202.76 60845.45 0.05	4.94 19570.91 0	542.11 16183.64 0.03	0 --- ---	-30952.94 434083.75 -0.07	438.48 83354.24 0.01	0.1	99.95	W 200 15
1222	Sol. Res. Sd/Rd	1166.03 48910 0.02	6.21 19570.91 0	540.41 16183.64 0.03	0 --- ---	-31026.96 434083.75 -0.07	-482.73 83354.24 -0.01	0.09	100.05	W 200 15
1223	Sol. Res. Sd/Rd	1307.32 48932.34 0.03	3.35 19570.91 0	481.8 16183.64 0.03	0 --- ---	-30780.41 434083.75 -0.07	361.01 83354.24 0.00	0.09	99.9	W 200 15
1224	Sol. Res.	9140.16 48660.87	9.62 19570.91	63.59 16183.64	0 ---	13374.62 434083.75	-548.78 83354.24	0.19	101.7	W 200 15

	Sd/Rd	0.19	0	0.00	---	0.03	-0.01			
1225	Sol. Res. Sd/Rd	-448.98 52063.64 0.01	32.81 18441.82 0.00	-19.03 11975.89 0.00	0 --- ---	-2174.03 277447.97 -0.01	2470.89 76882.74 0.03	0.04	192.39	W 150 13
1226	Sol. Res. Sd/Rd	-598.21 25636.36 0.02	-989.02 7200 -0.14	8.86 7200 0.00	0 --- ---	951.19 79199.27 0.01	-46978.22 79199.27 -0.59	0.63	190	BOX 100 x 100 x 3
1227	Sol. Res. Sd/Rd	-3.08 25636.36 0	-989.02 7200 -0.14	0.36 7200 0	0 --- ---	183.46 79199.27 0.00	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1228	Sol. Res. Sd/Rd	0.82 20761.74 0	-989.02 7200 -0.14	8.91 7200 0.00	0 --- ---	996.72 79199.27 0.01	-46978.22 79199.27 -0.59	0.61	190	BOX 100 x 100 x 3
1229	Sol. Res. Sd/Rd	0.62 20761.74 0	-989.02 7200 -0.14	0.41 7200 0	0 --- ---	192.65 79199.27 0.00	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1230	Sol. Res. Sd/Rd	-0.13 25636.36 0	-989.02 7200 -0.14	9.65 7200 0.00	0 --- ---	1052.14 79199.27 0.01	-46978.22 79199.27 -0.59	0.61	190	BOX 100 x 100 x 3
1231	Sol. Res. Sd/Rd	0.12 20761.74 0	-989.02 7200 -0.14	0.68 7200 0	0 --- ---	199.82 79199.27 0.00	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1232	Sol. Res. Sd/Rd	-0.36 25636.36 0	-989.02 7200 -0.14	11.16 7200 0.00	0 --- ---	1170.96 79199.27 0.01	-46978.22 79199.27 -0.59	0.61	190	BOX 100 x 100 x 3
1233	Sol. Res. Sd/Rd	-2.58 25636.36 0	-989.02 7200 -0.14	1.32 7200 0	0 --- ---	256.3 79199.27 0.00	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1234	Sol. Res. Sd/Rd	20.52 20761.74 0	-989.02 7200 -0.14	14.42 7200 0.00	0 --- ---	-1393.77 79199.27 -0.02	-46978.22 79199.27 -0.59	0.61	190	BOX 100 x 100 x 3
1235	Sol. Res. Sd/Rd	-431.8 60845.45 0.01	-45.5 19570.91 0.00	778.22 16183.64 0.05	0 --- ---	-27535.52 434083.75 -0.06	1796.99 83354.24 0.02	0.09	60	W 200 15

1236	Sol. Res. Sd/Rd	1235.09 44022.44 0.03	-4.56 19570.91 0	207.17 16183.64 0.01	0 --- ---	-23540.95 434083.75 -0.05	-423.89 83354.24 -0.01	0.07	130	W 200 15
1237	Sol. Res. Sd/Rd	138.02 42841.18 0.00	35.7 18441.82 0.00	-206.01 11975.89 -0.02	0 --- ---	23617.47 277447.97 0.09	2167.89 76882.74 0.03	0.11	114.74	W 150 13
1238	Sol. Res. Sd/Rd	52.57 42841.18 0.00	-31.44 18441.82 0.00	53.48 11975.89 0.00	0 --- ---	-4071.3 277447.97 -0.01	1869.02 76882.74 0.02	0.04	114.74	W 150 13
1239	Sol. Res. Sd/Rd	5187.4 40617 0.13	-22.59 18441.82 0.00	-369.44 11975.89 -0.03	0 --- ---	-26122.21 277447.97 -0.09	-1155.97 76882.74 -0.02	0.17	129.48	W 150 13
1240	Sol. Res. Sd/Rd	1090.09 33355.56 0.03	14.14 18441.82 0	-95.15 11975.89 -0.01	0 --- ---	19105.94 277447.97 0.07	1158.53 76882.74 0.02	0.1	173.39	W 150 13
1241	Sol. Res. Sd/Rd	-666.02 52063.64 0.01	104.42 18441.82 0.01	-119.72 11975.89 -0.01	0 --- ---	8284.72 277447.97 0.03	-3058.74 76882.74 -0.04	0.08	60	W 150 13
1242	Sol. Res. Sd/Rd	-701.72 52063.64 0.01	14.96 18441.82 0	86.28 11975.89 0.01	0 --- ---	8289.08 277447.97 0.03	-1132.29 76882.74 -0.01	0.05	130	W 150 13
1243	Sol. Res. Sd/Rd	679 46565.13 0.01	-1.02 19570.91 0	-130.23 16183.64 -0.01	0 --- ---	-9645.74 434083.75 -0.02	-160.91 83354.24 0.00	0.03	115	W 200 15
1244	Sol. Res. Sd/Rd	752.53 49360.66 0.02	17.56 18441.82 0	6073.28 11975.89 0.51	0 --- ---	180301.38 277447.97 0.65	-544.19 76882.74 -0.01	0.66	60	W 150 13
1245	Sol. Res. Sd/Rd	-1132.46 52063.64 0.02	-7.91 18441.82 0	1662.43 11975.89 0.14	0 --- ---	-127538.35 277447.97 -0.46	-544.17 76882.74 -0.01	0.48	130	W 150 13
1246	Sol. Res. Sd/Rd	1475.37 49360.66 0.03	83.65 18441.82 0.00	5888.11 11975.89 0.49	0 --- ---	174564.67 277447.97 0.63	3295.12 76882.74 0.04	0.69	60	W 150 13
1247	Sol. Res.	-417.07 52063.64	-20.54 18441.82	1619.87 11975.89	0 ---	-122016.8 277447.97	-1723.11 76882.74	0.47	130	W 150 13

	Sd/Rd	0.01	0.00	0.14	---	-0.44	-0.02			
1248	Sol. Res. Sd/Rd	1884.48 53942.45 0.03	-16.09 19570.91 0	-21.6 16183.64 0.00	0 --- ---	9265.08 434083.75 0.02	938.7 83354.24 0.01	0.05	60	W 200 15
1249	Sol. Res. Sd/Rd	1222.79 52298.97 0.02	-8.79 19570.91 0	-270.09 16183.64 -0.02	0 --- ---	-11421.5 434083.75 -0.03	650.67 83354.24 0.01	0.05	75	W 200 15
1250	Sol. Res. Sd/Rd	-418.98 60845.45 0.01	101.79 19570.91 0.01	629.27 16183.64 0.04	0 --- ---	-24805.77 434083.75 -0.06	3273.54 83354.24 0.04	0.1	60	W 200 15
1251	Sol. Res. Sd/Rd	1094.12 44022.44 0.02	-25.02 19570.91 0.00	189.82 16183.64 0.01	0 --- ---	-21316.68 434083.75 -0.05	-2174.13 83354.24 -0.03	0.09	130	W 200 15
1252	Sol. Res. Sd/Rd	124.15 42841.18 0.00	32.39 18441.82 0.00	185.59 11975.89 0.02	0 --- ---	-21275.66 277447.97 -0.08	1955.77 76882.74 0.03	0.1	114.74	W 150 13
1253	Sol. Res. Sd/Rd	40.41 42841.18 0	-31.71 18441.82 0.00	-54.39 11975.89 0.00	0 --- ---	3925.48 277447.97 0.01	1937.33 76882.74 0.03	0.04	114.74	W 150 13
1254	Sol. Res. Sd/Rd	4776.01 40617 0.12	-21.47 18441.82 0.00	324.19 11975.89 0.03	0 --- ---	25817.8 277447.97 0.09	-1113.79 76882.74 -0.01	0.17	129.48	W 150 13
1255	Sol. Res. Sd/Rd	1034.93 33355.56 0.03	12.4 18441.82 0	88.95 11975.89 0.01	0 --- ---	-16835.56 277447.97 -0.06	989.81 76882.74 0.01	0.09	173.39	W 150 13
1256	Sol. Res. Sd/Rd	-560.68 52063.64 0.01	92.89 18441.82 0.01	198.16 11975.89 0.02	0 --- ---	-8580.82 277447.97 -0.03	-2736.78 76882.74 -0.04	0.07	60	W 150 13
1257	Sol. Res. Sd/Rd	-593.07 52063.64 0.01	12.62 18441.82 0	12.56 11975.89 0.00	0 --- ---	-10214.11 277447.97 -0.04	-977.79 76882.74 -0.01	0.06	130	W 150 13
1258	Sol. Res. Sd/Rd	1507.77 52298.97 0.03	-1.7 19570.91 0	-280.71 16183.64 -0.02	0 --- ---	-11266.67 434083.75 -0.03	457.8 83354.24 0.01	0.05	75	W 200 15

1259	Sol. Res. Sd/Rd	574.47 46565.13 0.01	-17.93 19570.91 0	-125.03 16183.64 -0.01	0 --- ---	-9203.51 434083.75 -0.02	1085.29 83354.24 0.01	0.04	115	W 200 15
1260	Sol. Res. Sd/Rd	153.96 23211.46 0.01	992.86 7200 0.14	-14.68 7200 0.00	0 --- ---	-1387.32 79199.27 -0.02	23310.2 79199.27 0.29	0.32	60	BOX 100 x 100 x 3
1261	Sol. Res. Sd/Rd	153.96 22175.83 0.01	985.17 7200 0.14	-14.68 7200 0.00	0 --- ---	1401.53 79199.27 0.02	29805.7 79199.27 0.38	0.4	130	BOX 100 x 100 x 3
1262	Sol. Res. Sd/Rd	-29.71 25636.36 0.00	992.72 7200 0.14	15.67 7200 0.00	0 --- ---	1347.56 79199.27 0.02	23240.44 79199.27 0.29	0.31	60	BOX 100 x 100 x 3
1263	Sol. Res. Sd/Rd	-29.71 25636.36 0.00	985.31 7200 0.14	15.67 7200 0.00	0 --- ---	-1629.35 79199.27 -0.02	29730.68 79199.27 0.38	0.4	130	BOX 100 x 100 x 3
1264	Sol. Res. Sd/Rd	-893.02 52063.64 0.02	-113 18441.82 -0.01	42.36 11975.89 0.00	0 --- ---	2838.02 277447.97 0.01	13621.84 76882.74 0.18	0.2	162.45	W 150 13
1265	Sol. Res. Sd/Rd	12.29 36387.61 0	65.75 18441.82 0.00	11.52 11975.89 0	0 --- ---	-907.75 277447.97 0.00	9468.17 76882.74 0.12	0.13	155.53	W 150 13
1266	Sol. Res. Sd/Rd	97.64 36387.61 0.00	-62.83 18441.82 0.00	10.61 11975.89 0	0 --- ---	-925.38 277447.97 0.00	10450.13 76882.74 0.14	0.14	155.53	W 150 13
1267	Sol. Res. Sd/Rd	-961.6 52063.64 0.02	102.7 18441.82 0.01	47.4 11975.89 0.00	0 --- ---	3156.79 277447.97 0.01	12464.81 76882.74 0.16	0.18	162.45	W 150 13
1268	Sol. Res. Sd/Rd	519.41 25424.21 0.02	-18.77 18441.82 0.00	-35.08 11975.89 0.00	0 --- ---	11685.98 277447.97 0.04	773.43 76882.74 0.01	0.06	220	W 150 13
1269	Sol. Res. Sd/Rd	580.38 25424.21 0.02	-18.46 18441.82 0.00	93.49 11975.89 0.01	0 --- ---	12656.19 277447.97 0.05	722.29 76882.74 0.01	0.07	220	W 150 13
1270	Sol. Res.	-472.17 52063.64	334.8 18441.82	-38.71 11975.89	0 ---	-10613.5 277447.97	11743.44 76882.74	0.2	60	W 150 13

	Sd/Rd	0.01	0.02	0.00	---	-0.04	0.15			
1271	Sol. Res. Sd/Rd	-3146.58 52063.64 0.06	49.16 18441.82 0.00	-6.94 11975.89 0	0 --- ---	-2357.87 277447.97 -0.01	3557.69 76882.74 0.05	0.08	114.78	W 150 13
1272	Sol. Res. Sd/Rd	-3375.65 52063.64 0.06	57.26 18441.82 0.00	-6.63 11975.89 0	0 --- ---	-2437.21 277447.97 -0.01	4052.31 76882.74 0.05	0.09	114.78	W 150 13
1273	Sol. Res. Sd/Rd	-39.61 25636.36 0.00	-989.02 7200 -0.14	35.55 7200 0.00	0 --- ---	3408.89 79199.27 0.04	-46978.22 79199.27 -0.59	0.64	190	BOX 100 x 100 x 3
1274	Sol. Res. Sd/Rd	-1662.67 52063.64 0.03	-7.98 18441.82 0	-53.46 11975.89 0.00	0 --- ---	-16037.54 277447.97 -0.06	-389.56 76882.74 -0.01	0.08	159.22	W 150 13
1275	Sol. Res. Sd/Rd	793.28 36989.82 0.02	9.78 18441.82 0	20.31 11975.89 0.00	0 --- ---	-11441.28 277325.72 -0.04	322.41 76882.74 0.00	0.06	151.93	W 150 13
1276	Sol. Res. Sd/Rd	-734.16 52063.64 0.01	-5.98 18441.82 0	-36.71 11975.89 0.00	0 --- ---	-11454.03 277447.97 -0.04	120.41 76882.74 0.00	0.05	151.96	W 150 13
1277	Sol. Res. Sd/Rd	145.87 36985.15 0.00	8.63 18441.82 0	22.73 11975.89 0.00	0 --- ---	-8527.04 277447.97 -0.03	231.35 76882.74 0.00	0.04	151.96	W 150 13
1278	Sol. Res. Sd/Rd	-85.62 52063.64 0.00	-6.73 18441.82 0	-14.05 11975.89 0.00	0 --- ---	-6639.4 262209.5 -0.03	-181.59 76882.74 0.00	0.03	151.94	W 150 13
1279	Sol. Res. Sd/Rd	-2697.28 52063.64 0.05	12.67 18441.82 0	11.2 11975.89 0	0 --- ---	1730.46 277447.97 0.01	-536.66 76882.74 -0.01	0.05	151.93	W 150 13
1280	Sol. Res. Sd/Rd	2741.79 36992.66 0.07	-35.07 18441.82 0.00	-22.88 11975.89 0.00	0 --- ---	-1747.67 277447.97 -0.01	2393.55 76882.74 0.03	0.07	151.91	W 150 13
1281	Sol. Res. Sd/Rd	346.33 20313.15 0.02	-16.64 18441.82 0	99.93 11975.89 0.01	0 --- ---	10839.96 277447.97 0.04	-803.99 76882.74 -0.01	0.06	210.73	W 150 13

1282	Sol. Res. Sd/Rd	4940.34 20313.15 0.24	-17.91 18441.82 0	1.29 11975.89 0	0 --- ---	-267.55 277447.97 0	714.87 76882.74 0.01	0.25	200.01	W 150 13
1283	Sol. Res. Sd/Rd	5142.85 20313.15 0.25	-16.99 18441.82 0	2.62 11975.89 0	0 --- ---	-403.44 277447.97 0.00	707.6 76882.74 0.01	0.26	200.02	W 150 13
1284	Sol. Res. Sd/Rd	-84.72 60845.45 0.00	-27.64 19570.91 0.00	-457.92 16183.64 -0.03	0 --- ---	35302.74 434083.75 0.08	2024.17 83354.24 0.02	0.11	99.95	W 200 15
1285	Sol. Res. Sd/Rd	-643.01 60845.45 0.01	5.31 19570.91 0	-565.52 16183.64 -0.03	0 --- ---	34827.37 434083.75 0.08	-451.94 83354.24 -0.01	0.09	100	W 200 15
1286	Sol. Res. Sd/Rd	-2997.44 60845.45 0.05	-0.62 19570.91 0	-534.09 16183.64 -0.03	0 --- ---	31377.23 434083.75 0.07	50.52 83354.24 0	0.1	100.01	W 200 15
1287	Sol. Res. Sd/Rd	-3593.57 60845.45 0.06	0.57 19570.91 0	-486.18 16183.64 -0.03	0 --- ---	30784.01 434083.75 0.07	-34.86 83354.24 0	0.1	100	W 200 15
1288	Sol. Res. Sd/Rd	-2190.74 60845.45 0.04	-0.66 19570.91 0	-509.58 16183.64 -0.03	0 --- ---	32772.71 434083.75 0.08	-43.69 83354.24 0	0.09	100.02	W 200 15
1289	Sol. Res. Sd/Rd	-2783.29 60845.45 0.05	7.07 19570.91 0	-516.31 16183.64 -0.03	0 --- ---	32089.99 434083.75 0.07	451.05 83354.24 0.01	0.1	99.98	W 200 15
1290	Sol. Res. Sd/Rd	2767.98 48677.54 0.06	-5.35 19570.91 0	-939.08 16183.64 -0.06	0 --- ---	76303.7 434083.75 0.18	-332.49 83354.24 0.00	0.21	101.59	W 200 15
1291	Sol. Res. Sd/Rd	-107.87 60845.45 0.00	-207.36 19570.91 -0.01	560.67 16183.64 0.03	0 --- ---	-32953.15 434083.75 -0.08	7610.54 83354.24 0.09	0.17	60	W 200 15
1292	Sol. Res. Sd/Rd	556.29 40611.48 0.01	23.09 18441.82 0.00	21.71 11975.89 0.00	0 --- ---	-2165.82 277447.97 -0.01	1380.71 76882.74 0.02	0.03	129.52	W 150 13
1293	Sol. Res.	3761.72 40611.48	-14.1 18441.82	16.34 11975.89	0 ---	2735.3 277447.97	-604 76882.74	0.09	129.52	W 150 13

	Sd/Rd	0.09	0	0.00	---	0.01	-0.01			
1294	Sol. Res. Sd/Rd	-243.41 52063.64 0.00	4.89 18441.82 0	24.41 11975.89 0.00	0 --- ---	-1048.13 277447.97 0.00	-1000.72 76882.74 -0.01	0.02	120	W 150 13
1295	Sol. Res. Sd/Rd	2009.09 53942.45 0.04	244.48 19570.91 0.01	534.28 16183.64 0.03	0 --- ---	-34925.39 434083.75 -0.08	8198.08 83354.24 0.1	0.2	60	W 200 15
1296	Sol. Res. Sd/Rd	600.61 36989.82 0.02	11.29 18441.82 0	24.5 11975.89 0.00	0 --- ---	-11568.47 277447.97 -0.04	410.84 76882.74 0.01	0.06	151.93	W 150 13
1297	Sol. Res. Sd/Rd	-538.52 52063.64 0.01	-7.4 18441.82 0	-38.69 11975.89 0.00	0 --- ---	-11577.65 277447.97 -0.04	-193.98 76882.74 0.00	0.05	151.96	W 150 13
1298	Sol. Res. Sd/Rd	-152.58 52063.64 0.00	8.22 18441.82 0	-12.38 11975.89 0.00	0 --- ---	8129.55 270373.22 0.03	188.82 76882.74 0.00	0.03	151.96	W 150 13
1299	Sol. Res. Sd/Rd	214.53 36987.07 0.01	-7.17 18441.82 0	23.1 11975.89 0.00	0 --- ---	7712.48 277196.25 0.03	-177.53 76882.74 0.00	0.03	151.94	W 150 13
1300	Sol. Res. Sd/Rd	-3375.24 52063.64 0.06	10.06 18441.82 0	12.15 11975.89 0.00	0 --- ---	1860.65 277447.97 0.01	-543.04 76882.74 -0.01	0.06	151.93	W 150 13
1301	Sol. Res. Sd/Rd	3409.91 36992.66 0.09	-36.53 18441.82 0.00	-24.59 11975.89 0.00	0 --- ---	-1877.39 277447.97 -0.01	2576.29 76882.74 0.03	0.09	151.91	W 150 13
1302	Sol. Res. Sd/Rd	3932.83 20313.15 0.19	-28.03 18441.82 0.00	5.07 11975.89 0	0 --- ---	-1460.11 277447.97 -0.01	-1690 76882.74 -0.02	0.19	210.73	W 150 13
1303	Sol. Res. Sd/Rd	6898.04 20313.15 0.34	-17.76 18441.82 0	2.92 11975.89 0	0 --- ---	-525.89 277447.97 0.00	772.67 76882.74 0.01	0.35	200.01	W 150 13
1304	Sol. Res. Sd/Rd	6198.56 20313.15 0.31	-17.13 18441.82 0	2.93 11975.89 0	0 --- ---	-504.14 277447.97 0.00	817.12 76882.74 0.01	0.32	200.02	W 150 13

1305	Sol. Res. Sd/Rd	-2314.59 60845.45 0.04	-28.76 19570.91 0.00	-448.27 16183.64 -0.03	0 --- ---	36444.87 434083.75 0.08	2116.97 83354.24 0.03	0.13	99.95	W 200 15
1306	Sol. Res. Sd/Rd	-1803.47 60845.45 0.03	4.19 19570.91 0	-574.51 16183.64 -0.04	0 --- ---	36920.25 434083.75 0.09	-389.06 83354.24 0.00	0.1	100	W 200 15
1307	Sol. Res. Sd/Rd	-4019.78 60845.45 0.07	-2.7 19570.91 0	-517.89 16183.64 -0.03	0 --- ---	31699.22 434083.75 0.07	160.98 83354.24 0.00	0.11	100.01	W 200 15
1308	Sol. Res. Sd/Rd	-3583.84 60845.45 0.06	0.44 19570.91 0	-501.32 16183.64 -0.03	0 --- ---	32292.44 434083.75 0.07	-32.06 83354.24 0	0.1	100	W 200 15
1309	Sol. Res. Sd/Rd	-2031.94 60845.45 0.03	1.65 19570.91 0	-523.8 16183.64 -0.03	0 --- ---	34839.61 434083.75 0.08	118.2 83354.24 0.00	0.1	100.02	W 200 15
1310	Sol. Res. Sd/Rd	-1599.58 60845.45 0.03	-0.56 19570.91 0	-501.14 16183.64 -0.03	0 --- ---	35522.34 434083.75 0.08	61.96 83354.24 0	0.1	99.98	W 200 15
1311	Sol. Res. Sd/Rd	3746.28 48677.54 0.08	20.81 19570.91 0.00	-587.52 16183.64 -0.04	0 --- ---	47881.91 434083.75 0.11	1242.26 83354.24 0.01	0.16	101.59	W 200 15
1312	Sol. Res. Sd/Rd	71.57 53942.45 0.00	-206.05 19570.91 -0.01	611.52 16183.64 0.04	0 --- ---	-35214.49 434083.75 -0.08	7554.11 83354.24 0.09	0.17	60	W 200 15
1313	Sol. Res. Sd/Rd	502.27 40611.48 0.01	24.82 18441.82 0.00	22.17 11975.89 0.00	0 --- ---	-2158.63 277447.97 -0.01	1506.89 76882.74 0.02	0.03	129.52	W 150 13
1314	Sol. Res. Sd/Rd	4039.21 40611.48 0.1	-15.31 18441.82 0	16.6 11975.89 0.00	0 --- ---	2834.81 277447.97 0.01	688.37 76882.74 0.01	0.1	129.52	W 150 13
1315	Sol. Res. Sd/Rd	-215.43 52063.64 0.00	5.41 18441.82 0	28.19 11975.89 0.00	0 --- ---	-1235.94 277447.97 0.00	-997.39 76882.74 -0.01	0.02	120	W 150 13
1316	Sol. Res.	-712.12 60845.45	246.33 19570.91	608.54 16183.64	0 ---	-37409.75 434083.75	8203.34 83354.24	0.19	60	W 200 15

	Sd/Rd	0.01	0.01	0.04	---	-0.09	0.1			
1317	Sol. Res. Sd/Rd	-519.24 25636.36 0.02	-989.02 7200 -0.14	5.46 7200 0	0 --- ---	587.83 79199.27 0.01	-46978.22 79199.27 -0.59	0.62	190	BOX 100 x 100 x 3
1318	Sol. Res. Sd/Rd	-4.97 25636.36 0	-989.02 7200 -0.14	1.42 7200 0	0 --- ---	212.98 79199.27 0.00	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1319	Sol. Res. Sd/Rd	0.73 20761.74 0	-989.02 7200 -0.14	2.17 7200 0	0 --- ---	290.49 79199.27 0.00	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1320	Sol. Res. Sd/Rd	0.98 20761.74 0	-989.02 7200 -0.14	-0.28 7200 0	0 --- ---	77.58 79199.27 0	-46978.22 79199.27 -0.59	0.59	190	BOX 100 x 100 x 3
1321	Sol. Res. Sd/Rd	108.12 20761.74 0.01	-989.02 7200 -0.14	-0.09 7200 0	0 --- ---	88.73 79199.27 0.00	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1322	Sol. Res. Sd/Rd	108.51 20761.74 0.01	-989.02 7200 -0.14	-3.48 7200 0	0 --- ---	372.04 79199.27 0.00	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1323	Sol. Res. Sd/Rd	-458.25 52063.64 0.01	-6.2 18441.82 0	-16.82 11975.89 0.00	0 --- ---	-1921.44 277447.97 -0.01	-781.16 76882.74 -0.01	0.02	114.78	W 150 13
1324	Sol. Res. Sd/Rd	-407.4 52063.64 0.01	-4.77 18441.82 0	-16.76 11975.89 0.00	0 --- ---	-1915.02 277447.97 -0.01	-707.45 76882.74 -0.01	0.02	114.78	W 150 13
1325	Sol. Res. Sd/Rd	-36.74 25636.36 0.00	-989.02 7200 -0.14	-50.72 7200 -0.01	0 --- ---	-4829.38 79199.27 -0.06	-46978.22 79199.27 -0.59	0.66	190	BOX 100 x 100 x 3
1341	Sol. Res. Sd/Rd	16 42841.18 0	31.67 18441.82 0.00	-19.6 11975.89 0.00	0 --- ---	-2342.76 277447.97 -0.01	2678.63 76882.74 0.03	0.04	114.74	W 150 13
1342	Sol. Res. Sd/Rd	-43.96 52063.64 0	30.41 18441.82 0.00	-34.85 11975.89 0.00	0 --- ---	-4213.24 277447.97 -0.02	2637.09 76882.74 0.03	0.05	114.74	W 150 13

1343	Sol. Res. Sd/Rd	-796.91 25636.36 0.03	-989.02 7200 -0.14	46.94 7200 0.01	0 --- ---	-5395.62 79199.27 -0.07	-46978.22 79199.27 -0.59	0.69	190	BOX 100 x 100 x 3
1344	Sol. Res. Sd/Rd	-7847.79 52063.64 0.15	-9.97 18441.82 0	-18.61 11975.89 0.00	0 --- ---	6834.58 277447.97 0.02	-1358.6 76882.74 -0.02	0.15	159.22	W 150 13
1345	Sol. Res. Sd/Rd	5440.73 36982.66 0.15	34.32 18441.82 0.00	28.26 11975.89 0.00	0 --- ---	8313.55 277447.97 0.03	-2227.38 76882.74 -0.03	0.15	151.97	W 150 13
1346	Sol. Res. Sd/Rd	-5359.07 52063.64 0.1	-7.4 18441.82 0	-25.88 11975.89 0.00	0 --- ---	8311.42 277447.97 0.03	310.61 76882.74 0.00	0.1	151.89	W 150 13
1347	Sol. Res. Sd/Rd	2584.33 36994.59 0.07	17.68 18441.82 0	24.81 11975.89 0.00	0 --- ---	8422.56 277447.97 0.03	-858.67 76882.74 -0.01	0.08	151.9	W 150 13
1348	Sol. Res. Sd/Rd	-2502.97 52063.64 0.05	-9.47 18441.82 0	-27.86 11975.89 0.00	0 --- ---	8433.22 277447.97 0.03	542.51 76882.74 0.01	0.06	151.97	W 150 13
1349	Sol. Res. Sd/Rd	-131.93 52063.64 0.00	16.38 18441.82 0	27.93 11975.89 0.00	0 --- ---	8706.67 277447.97 0.03	-911.91 76882.74 -0.01	0.04	151.97	W 150 13
1350	Sol. Res. Sd/Rd	214.55 36991.67 0.01	-14.52 18441.82 0	-29.22 11975.89 0.00	0 --- ---	8699.86 277447.97 0.03	834.86 76882.74 0.01	0.05	151.92	W 150 13
1351	Sol. Res. Sd/Rd	-2938.88 52063.64 0.06	13.88 18441.82 0	21.24 11975.89 0.00	0 --- ---	7729.65 277447.97 0.03	-641.68 76882.74 -0.01	0.06	151.91	W 150 13
1352	Sol. Res. Sd/Rd	3023.58 36994 0.08	-25.15 18441.82 0.00	-26.07 11975.89 0.00	0 --- ---	7734.09 277447.97 0.03	1765.38 76882.74 0.02	0.09	151.9	W 150 13
1353	Sol. Res. Sd/Rd	-5113.19 52063.64 0.1	18.44 18441.82 0.00	-24.61 11975.89 0.00	0 --- ---	3807.95 260665.3 0.01	1083.62 76882.74 0.01	0.1	147.14	W 150 13
1354	Sol. Res.	-1005.02 52063.64	-35.64 18441.82	57.9 11975.89	0 ---	-6661.66 277447.97	-2941.22 76882.74	0.07	210.79	W 150 13

	Sd/Rd	0.02	0.00	0.00	---	-0.02	-0.04			
1355	Sol. Res. Sd/Rd	6116.87 9929.78 0.62	-22.58 18441.82 0.00	55.52 11975.89 0.00	0 --- ---	5696.22 277447.97 0.02	872.49 76882.74 0.01	0.64	199.89	W 150 13
1356	Sol. Res. Sd/Rd	9464.27 9929.78 0.95	-18.12 18441.82 0	58.57 11975.89 0.00	0 --- ---	6320.67 277447.97 0.02	1026.89 76882.74 0.01	0.99	200.12	W 150 13
1357	Sol. Res. Sd/Rd	9253.28 9929.78 0.93	-18.88 18441.82 0.00	59.87 11975.89 0.00	0 --- ---	6836.76 277447.97 0.02	973.37 76882.74 0.01	0.97	199.91	W 150 13
1358	Sol. Res. Sd/Rd	920.64 48661.11 0.02	-22.67 19570.91 0.00	-181.81 16183.64 -0.01	0 --- ---	10072.83 434083.75 0.02	-1892.53 83354.24 -0.02	0.06	101.7	W 200 15
1359	Sol. Res. Sd/Rd	-4440.18 60845.45 0.07	-13.52 19570.91 0	-509.52 16183.64 -0.03	0 --- ---	37885.71 434083.75 0.09	1149.61 83354.24 0.01	0.14	99.9	W 200 15
1360	Sol. Res. Sd/Rd	-4589.91 60845.45 0.08	-16.78 19570.91 0	-509.82 16183.64 -0.03	0 --- ---	36510.61 434083.75 0.08	-1534.78 83354.24 -0.02	0.14	100	W 200 15
1361	Sol. Res. Sd/Rd	-6843.07 60845.45 0.11	-19.62 19570.91 0.00	-543 16183.64 -0.03	0 --- ---	38184.31 434083.75 0.09	1583.33 83354.24 0.02	0.16	100.06	W 200 15
1362	Sol. Res. Sd/Rd	-6632.85 60845.45 0.11	-15.86 19570.91 0	-479.86 16183.64 -0.03	0 --- ---	36665.88 434083.75 0.08	-1558.56 83354.24 -0.02	0.16	99.94	W 200 15
1363	Sol. Res. Sd/Rd	-5633.34 60845.45 0.09	-13.01 19570.91 0	-479.96 16183.64 -0.03	0 --- ---	35692.06 434083.75 0.08	1253.96 83354.24 0.02	0.14	100.01	W 200 15
1364	Sol. Res. Sd/Rd	-5794.38 60845.45 0.1	-18.47 19570.91 0	-537.81 16183.64 -0.03	0 --- ---	34192.33 434083.75 0.08	-1586.94 83354.24 -0.02	0.15	100.01	W 200 15
1365	Sol. Res. Sd/Rd	-711.85 60845.45 0.01	-17.04 19570.91 0	-547.55 16183.64 -0.03	0 --- ---	34563.88 434083.75 0.08	1459.04 83354.24 0.02	0.1	100.07	W 200 15

1366	Sol. Res. Sd/Rd	-931.66 60845.45 0.02	-14.69 19570.91 0	-476.51 16183.64 -0.03	0 --- ---	33124.08 434083.75 0.08	-1426.51 83354.24 -0.02	0.1	99.92	W 200 15
1367	Sol. Res. Sd/Rd	7687.73 48677.43 0.16	3.29 19570.91 0	-68.19 16183.64 0.00	0 --- ---	-11306.28 434083.75 -0.03	1096.03 83354.24 0.01	0.16	101.6	W 200 15
1368	Sol. Res. Sd/Rd	7287.83 53942.45 0.14	-222.51 19570.91 -0.01	1126.95 16183.64 0.07	0 --- ---	-70679.7 434083.75 -0.16	8029.32 83354.24 0.1	0.33	60	W 200 15
1369	Sol. Res. Sd/Rd	815.63 42841.18 0.02	-40.45 18441.82 0.00	-18.96 11975.89 0.00	0 --- ---	-2076.54 277447.97 -0.01	-3255.2 76882.74 -0.04	0.06	114.74	W 150 13
1370	Sol. Res. Sd/Rd	5337.33 9929.78 0.54	-23.4 18441.82 0.00	64.7 11975.89 0.01	0 --- ---	9120.21 277447.97 0.03	-878.39 76882.74 -0.01	0.58	192.49	W 150 13
1371	Sol. Res. Sd/Rd	6090.14 40617 0.15	22.75 18441.82 0.00	5.25 11975.89 0	0 --- ---	-7701.97 277447.97 -0.03	1510.8 76882.74 0.02	0.15	129.48	W 150 13
1372	Sol. Res. Sd/Rd	5591.32 40617 0.14	-21.63 18441.82 0.00	2.4 11975.89 0	0 --- ---	-414.51 277447.97 0.00	-1364.48 76882.74 -0.02	0.14	129.48	W 150 13
1373	Sol. Res. Sd/Rd	-8825.7 52063.64 0.17	25.58 18441.82 0.00	14.57 11975.89 0.00	0 --- ---	-4018.13 277447.97 -0.01	1788.88 76882.74 0.02	0.17	120	W 150 13
1374	Sol. Res. Sd/Rd	7707.87 53942.45 0.14	156.55 19570.91 0.01	1417.03 16183.64 0.09	0 --- ---	-74623.14 434083.75 -0.17	-4810.93 83354.24 -0.06	0.3	60	W 200 15
1375	Sol. Res. Sd/Rd	-8318.04 52063.64 0.16	-10.89 18441.82 0	-20.41 11975.89 0.00	0 --- ---	5505.75 257883.55 0.02	-1518.9 76882.74 -0.02	0.16	159.22	W 150 13
1376	Sol. Res. Sd/Rd	5785.32 36982.66 0.16	29.94 18441.82 0.00	25.96 11975.89 0.00	0 --- ---	6457.19 277447.97 0.02	-1791.31 76882.74 -0.02	0.16	151.97	W 150 13
1377	Sol. Res.	-5710.97 52063.64	-11.87 18441.82	-19.4 11975.89	0 ---	6455.06 277447.97	382.68 76882.74	0.11	151.89	W 150 13

	Sd/Rd	0.11	0	0.00	---	0.02	0.00			
1378	Sol. Res. Sd/Rd	2943.47 36994.59 0.08	13.64 18441.82 0	18.49 11975.89 0.00	0 --- ---	6639.41 277447.97 0.02	-599.37 76882.74 -0.01	0.08	151.9	W 150 13
1379	Sol. Res. Sd/Rd	-2872.62 52063.64 0.06	-10.11 18441.82 0	-18.35 11975.89 0.00	0 --- ---	6647.83 277447.97 0.02	529.52 76882.74 0.01	0.06	151.97	W 150 13
1380	Sol. Res. Sd/Rd	200.08 36982.66 0.01	13.96 18441.82 0	15.44 11975.89 0.00	0 --- ---	6510.65 277447.97 0.02	-778.13 76882.74 -0.01	0.04	151.97	W 150 13
1381	Sol. Res. Sd/Rd	-119.95 52063.64 0.00	-12.25 18441.82 0	-20.16 11975.89 0.00	0 --- ---	6505.94 277447.97 0.02	833.12 76882.74 0.01	0.04	151.92	W 150 13
1382	Sol. Res. Sd/Rd	-2467.51 52063.64 0.05	16.88 18441.82 0	13.23 11975.89 0.00	0 --- ---	5734.01 277447.97 0.02	-879.01 76882.74 -0.01	0.06	151.91	W 150 13
1383	Sol. Res. Sd/Rd	2507.45 36994 0.07	-9.58 18441.82 0	-28.92 11975.89 0.00	0 --- ---	5739.36 277447.97 0.02	262.58 76882.74 0.00	0.07	151.9	W 150 13
1384	Sol. Res. Sd/Rd	-6795.64 52063.64 0.13	37.18 18441.82 0.00	-16.13 11975.89 0.00	0 --- ---	1480.04 277447.97 0.01	2517.63 76882.74 0.03	0.13	147.14	W 150 13
1385	Sol. Res. Sd/Rd	-3855.31 52063.64 0.07	-36.83 18441.82 0.00	51.66 11975.89 0.00	0 --- ---	-6886.19 277447.97 -0.02	-3206.81 76882.74 -0.04	0.1	210.79	W 150 13
1386	Sol. Res. Sd/Rd	3725.09 9929.78 0.38	-23.15 18441.82 0.00	45.09 11975.89 0.00	0 --- ---	4515.96 277447.97 0.02	855.3 76882.74 0.01	0.4	199.89	W 150 13
1387	Sol. Res. Sd/Rd	7553.02 9929.78 0.76	-18.29 18441.82 0	44.95 11975.89 0.00	0 --- ---	4763.73 277447.97 0.02	1006.08 76882.74 0.01	0.79	200.12	W 150 13
1388	Sol. Res. Sd/Rd	7756.19 9929.78 0.78	-16.49 18441.82 0	49.66 11975.89 0.00	0 --- ---	6127.17 277447.97 0.02	1111 76882.74 0.01	0.81	199.91	W 150 13

1389	Sol. Res. Sd/Rd	-2104.56 60845.45 0.03	8.47 19570.91 0	-1816.58 16183.64 -0.11	0 --- ---	155102.28 434083.75 0.36	-730.06 83354.24 -0.01	0.38	101.7	W 200 15
1390	Sol. Res. Sd/Rd	-8019.9 60845.45 0.13	-3.77 19570.91 0	-580.42 16183.64 -0.04	0 --- ---	31738.89 434083.75 0.07	389.12 83354.24 0.00	0.14	99.9	W 200 15
1391	Sol. Res. Sd/Rd	-8030.41 60845.45 0.13	-13.71 19570.91 0	-435.24 16183.64 -0.03	0 --- ---	33113.98 434083.75 0.08	-1221.56 83354.24 -0.01	0.16	100	W 200 15
1392	Sol. Res. Sd/Rd	-9560.98 60845.45 0.16	-7.25 19570.91 0	-484.84 16183.64 -0.03	0 --- ---	38317.16 434083.75 0.09	759.1 83354.24 0.01	0.18	100.06	W 200 15
1393	Sol. Res. Sd/Rd	-9192.12 60845.45 0.15	-12.31 19570.91 0	-537.41 16183.64 -0.03	0 --- ---	39835.6 434083.75 0.09	-1118.89 83354.24 -0.01	0.18	99.94	W 200 15
1394	Sol. Res. Sd/Rd	-7512.58 60845.45 0.12	-14.66 19570.91 0	-451.41 16183.64 -0.03	0 --- ---	33529.48 434083.75 0.08	1196.35 83354.24 0.01	0.15	100.01	W 200 15
1395	Sol. Res. Sd/Rd	-7511.86 60845.45 0.12	-6.85 19570.91 0	-564.18 16183.64 -0.03	0 --- ---	35029.21 434083.75 0.08	-880.76 83354.24 -0.01	0.15	100.01	W 200 15
1396	Sol. Res. Sd/Rd	-1733.1 60845.45 0.03	-7.78 19570.91 0	-504.87 16183.64 -0.03	0 --- ---	31498.88 434083.75 0.07	862.3 83354.24 0.01	0.1	100.07	W 200 15
1397	Sol. Res. Sd/Rd	-1789.24 60845.45 0.03	-11.35 19570.91 0	-519.83 16183.64 -0.03	0 --- ---	32938.69 434083.75 0.08	-1059.41 83354.24 -0.01	0.1	99.92	W 200 15
1398	Sol. Res. Sd/Rd	7564.86 48677.43 0.16	53.92 19570.91 0.00	-95.34 16183.64 -0.01	0 --- ---	-13415.38 434083.75 -0.03	4339.67 83354.24 0.05	0.16	101.6	W 200 15
1399	Sol. Res. Sd/Rd	7609.75 53942.45 0.14	-405.05 19570.91 -0.02	1524.05 16183.64 0.09	0 --- ---	-91078.44 434083.75 -0.21	14516.8 83354.24 0.17	0.45	60	W 200 15
1400	Sol. Res.	1232.47 42841.18	-41.87 18441.82	-50.91 11975.89	0 ---	-5468.26 277447.97	-3417.46 76882.74	0.08	114.74	W 150 13

	Sd/Rd	0.03	0.00	0.00	---	-0.02	-0.04			
1401	Sol. Res. Sd/Rd	4491.84 9929.78 0.45	-35.83 18441.82 0.00	65.35 11975.89 0.01	0 --- ---	11159.52 277447.97 0.04	-2477.59 76882.74 -0.03	0.52	192.49	W 150 13
1402	Sol. Res. Sd/Rd	6284.78 40617 0.15	32.95 18441.82 0.00	37.54 11975.89 0.00	0 --- ---	-10349.91 277447.97 -0.04	2345.96 76882.74 0.03	0.15	129.48	W 150 13
1403	Sol. Res. Sd/Rd	5618.43 40617 0.14	-20.61 18441.82 0.00	36.32 11975.89 0.00	0 --- ---	2559.28 277447.97 0.01	-1191.1 76882.74 -0.02	0.14	129.48	W 150 13
1404	Sol. Res. Sd/Rd	-12049.06 52063.64 0.23	17.88 18441.82 0	11.34 11975.89 0	0 --- ---	-4396.51 277447.97 -0.02	-1438.8 76882.74 -0.02	0.26	120	W 150 13
1405	Sol. Res. Sd/Rd	6687.37 53942.45 0.12	321.7 19570.91 0.02	1281.41 16183.64 0.08	0 --- ---	-67824.6 434083.75 -0.16	10977.67 83354.24 0.13	0.35	60	W 200 15
1406	Sol. Res. Sd/Rd	-1301.75 25636.36 0.05	-989.02 7200 -0.14	-50.88 7200 -0.01	0 --- ---	5449.1 79199.27 0.07	-46978.22 79199.27 -0.59	0.71	190	BOX 100 x 100 x 3
1407	Sol. Res. Sd/Rd	-451.92 25636.36 0.02	-989.02 7200 -0.14	34 7200 0.00	0 --- ---	-3304.39 79199.27 -0.04	-46978.22 79199.27 -0.59	0.65	190	BOX 100 x 100 x 3
1408	Sol. Res. Sd/Rd	106.86 20761.74 0.01	-989.02 7200 -0.14	-1.48 7200 0	0 --- ---	-289.6 79199.27 0.00	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1409	Sol. Res. Sd/Rd	108.73 20761.74 0.01	-989.02 7200 -0.14	31.59 7200 0.00	0 --- ---	-3094.74 79199.27 -0.04	-46978.22 79199.27 -0.59	0.64	190	BOX 100 x 100 x 3
1410	Sol. Res. Sd/Rd	6.64 20761.74 0	-989.02 7200 -0.14	-2.02 7200 0	0 --- ---	-308.97 79199.27 0.00	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1411	Sol. Res. Sd/Rd	699.83 20761.74 0.03	-989.02 7200 -0.14	30.94 7200 0.00	0 --- ---	-2977.79 79199.27 -0.04	-46978.22 79199.27 -0.59	0.66	190	BOX 100 x 100 x 3

1412	Sol. Res. Sd/Rd	699.5 20761.74 0.03	-989.02 7200 -0.14	-2.55 7200 0	0 --- ---	-406.68 79199.27 -0.01	-46978.22 79199.27 -0.59	0.63	190	BOX 100 x 100 x 3
1413	Sol. Res. Sd/Rd	5.18 20761.74 0	-989.02 7200 -0.14	28.4 7200 0.00	0 --- ---	-2742.3 79199.27 -0.03	-46978.22 79199.27 -0.59	0.63	190	BOX 100 x 100 x 3
1414	Sol. Res. Sd/Rd	-3.34 25636.36 0	-989.02 7200 -0.14	-2.54 7200 0	0 --- ---	-345.44 79199.27 0.00	-46978.22 79199.27 -0.59	0.6	190	BOX 100 x 100 x 3
1415	Sol. Res. Sd/Rd	-7.88 25636.36 0	-989.02 7200 -0.14	17.91 7200 0.00	0 --- ---	1840.63 79199.27 0.02	-46978.22 79199.27 -0.59	0.62	190	BOX 100 x 100 x 3
1426	Sol. Res. Sd/Rd	5401.85 42841.18 0.13	-152.67 18441.82 -0.01	-390.69 11975.89 -0.03	0 --- ---	-35976.46 277447.97 -0.13	12525.42 76882.74 0.16	0.36	114.74	W 150 13
1427	Sol. Res. Sd/Rd	-510.45 52063.64 0.01	-43.04 18441.82 0.00	578.48 11975.89 0.05	0 --- ---	47980.57 277447.97 0.17	2718.04 76882.74 0.04	0.21	114.74	W 150 13
1428	Sol. Res. Sd/Rd	5106.95 42841.18 0.12	-162.95 18441.82 -0.01	525.85 11975.89 0.04	0 --- ---	42993.02 277447.97 0.15	13253.07 76882.74 0.17	0.39	114.74	W 150 13
1429	Sol. Res. Sd/Rd	-3402.82 60845.45 0.06	-0.15 19570.91 0	461.91 16183.64 0.03	0 --- ---	-31856.05 434083.75 -0.07	-72.34 83354.24 0	0.1	100	W 200 15
1430	Sol. Res. Sd/Rd	9958.96 53942.45 0.18	158.04 19570.91 0.01	1522.17 16183.64 0.09	0 --- ---	-82816.2 434083.75 -0.19	-5706.47 83354.24 -0.07	0.35	60	W 200 15
1435	Sol. Res. Sd/Rd	3287 49360.66 0.07	14.81 18441.82 0	4434.44 11975.89 0.37	0 --- ---	-176906.09 277447.97 -0.64	893.03 76882.74 0.01	0.68	60	W 150 13
1436	Sol. Res. Sd/Rd	5854.62 53942.45 0.11	-89.56 19570.91 0.00	6849.19 16183.64 0.42	0 --- ---	-270120.22 434083.75 -0.62	2777.4 83354.24 0.03	0.71	60	W 200 15
1437	Sol. Res.	1076.94 20761.74	-989.02 7200	-1.08 7200	0 ---	731.87 79199.27	-46978.22 79199.27	0.65	190	BOX 100 x 100 x 3

	Sd/Rd	0.05	-0.14	0	---	0.01	-0.59			
1438	Sol. Res. Sd/Rd	4832.97 50358.11 0.1	18 19570.91 0	4024.87 16183.64 0.25	0 --- ---	-246159.97 434083.75 -0.57	1539.97 83354.24 0.02	0.63	90	W 200 15
1439	Sol. Res. Sd/Rd	-96.01 52063.64 0.00	-12.59 18441.82 0	55.39 11975.89 0.00	0 --- ---	-4734.15 277447.97 -0.02	848.65 76882.74 0.01	0.03	114.75	W 150 13
1440	Sol. Res. Sd/Rd	-188.85 60845.45 0.00	-29.89 19570.91 0.00	-29.78 16183.64 0.00	0 --- ---	2407.5 434083.75 0.01	-2457.05 83354.24 -0.03	0.04	115	W 200 15
1441	Sol. Res. Sd/Rd	745.18 27095.88 0.03	5.96 18441.82 0	1395.32 11975.89 0.12	0 --- ---	-62310.82 277447.97 -0.22	-879.83 76882.74 -0.01	0.25	210	W 150 13
1442	Sol. Res. Sd/Rd	132.93 27095.88 0.00	-4.32 18441.82 0	1422.92 11975.89 0.12	0 --- ---	-68083.38 277447.97 -0.25	653.64 76882.74 0.01	0.26	210	W 150 13
1443	Sol. Res. Sd/Rd	-3691.33 60845.45 0.06	3.28 19570.91 0	-18.7 16183.64 0.00	0 --- ---	-34224.26 434083.75 -0.08	347.5 83354.24 0.00	0.11	60	W 200 15
1444	Sol. Res. Sd/Rd	-3224.13 60845.45 0.05	0.53 19570.91 0	-806.97 16183.64 -0.05	0 --- ---	-33441.32 434083.75 -0.08	-142.76 83354.24 0.00	0.11	75	W 200 15
1445	Sol. Res. Sd/Rd	-1118.34 52063.64 0.02	-34.74 18441.82 0.00	-28.03 11975.89 0.00	0 --- ---	2296.66 277447.97 0.01	-3009.66 76882.74 -0.04	0.06	114.75	W 150 13
1446	Sol. Res. Sd/Rd	-3510.28 60845.45 0.06	-2.44 19570.91 0	-808.42 16183.64 -0.05	0 --- ---	-34227.65 434083.75 -0.08	-206.89 83354.24 0.00	0.11	75	W 200 15
1447	Sol. Res. Sd/Rd	-393.51 60845.45 0.01	-0.63 19570.91 0	-60.95 16183.64 0.00	0 --- ---	8069.47 434083.75 0.02	-36.35 83354.24 0	0.02	115	W 200 15
1448	Sol. Res. Sd/Rd	167.67 19285.01 0.01	1249.28 7200 0.17	4.56 7200 0	0 --- ---	-588.86 79199.27 -0.01	74956.94 79199.27 0.95	0.96	240	BOX 100 x 100 x 3

1449	Sol. Res. Sd/Rd	-3118.48 52063.64 0.06	-6.31 18441.82 0	38.31 11975.89 0.00	0 --- ---	-4807.47 277447.97 -0.02	-718.15 76882.74 -0.01	0.06	162.46	W 150 13
1450	Sol. Res. Sd/Rd	147.29 36386.38 0.00	0.34 18441.82 0	111.7 11975.89 0.01	0 --- ---	11816.08 277447.97 0.04	-321.87 76882.74 0.00	0.05	155.54	W 150 13
1451	Sol. Res. Sd/Rd	129.15 36386.38 0.00	0.15 18441.82 0	114.07 11975.89 0.01	0 --- ---	12161.05 277447.97 0.04	317.58 76882.74 0.00	0.05	155.54	W 150 13
1452	Sol. Res. Sd/Rd	-3081.13 52063.64 0.06	0.57 18441.82 0	40.42 11975.89 0.00	0 --- ---	-5134.38 277447.97 -0.02	-376.86 76882.74 0.00	0.06	162.46	W 150 13
1453	Sol. Res. Sd/Rd	651.72 25424.21 0.03	-15.97 18441.82 0	64.09 11975.89 0.01	0 --- ---	15392.15 277447.97 0.06	560.47 76882.74 0.01	0.08	220	W 150 13
1454	Sol. Res. Sd/Rd	2224.29 25424.21 0.09	-23.66 18441.82 0.00	13.52 11975.89 0.00	0 --- ---	-3618.04 277447.97 -0.01	1135.54 76882.74 0.01	0.09	220	W 150 13
1459	Sol. Res. Sd/Rd	-5642.55 60845.45 0.09	19.58 19570.91 0.00	192.79 16183.64 0.01	0 --- ---	-18427.73 434083.75 -0.04	1235.56 83354.24 0.01	0.1	115	W 200 15
1460	Sol. Res. Sd/Rd	-3679.97 60845.45 0.06	-14.56 19570.91 0	274.03 16183.64 0.02	0 --- ---	-19312.83 434083.75 -0.04	957.14 83354.24 0.01	0.09	115	W 200 15
1461	Sol. Res. Sd/Rd	6159.54 42839.72 0.14	143.48 18441.82 0.01	-6.58 11975.89 0	0 --- ---	939.13 277447.97 0.00	-11127.26 76882.74 -0.14	0.22	114.75	W 150 13
1462	Sol. Res. Sd/Rd	-4526.93 52063.64 0.09	26.18 18441.82 0.00	27.44 11975.89 0.00	0 --- ---	3317.59 277447.97 0.01	-1457.58 76882.74 -0.02	0.09	150	W 150 13
1463	Sol. Res. Sd/Rd	71.35 42839.72 0.00	-136.74 18441.82 -0.01	-2.49 11975.89 0	0 --- ---	-287.09 277447.97 0.00	11044.36 76882.74 0.14	0.15	114.75	W 150 13
1464	Sol. Res.	-1349.58 52063.64	66.95 18441.82	24.63 11975.89	0 ---	4766.26 277447.97	7581.68 76882.74	0.13	188.86	W 150 13

	Sd/Rd	0.03	0.00	0.00	---	0.02	0.1			
1465	Sol. Res. Sd/Rd	5522.56 30699.89 0.18	-54.22 18441.82 0.00	0.63 11975.89 0	0 --- ---	-636.84 243281.91 0.00	5117.31 76882.74 0.07	0.18	188.86	W 150 13
1466	Sol. Res. Sd/Rd	-30.23 60845.45 0	-69.75 19570.91 0.00	-499.57 16183.64 -0.03	0 --- ---	16029.38 434083.75 0.04	-2766.61 83354.24 -0.03	0.07	60	W 200 15
1467	Sol. Res. Sd/Rd	1128.65 51374.32 0.02	-64.44 18441.82 0.00	2482.91 11975.89 0.21	0 --- ---	-105225.91 277447.97 -0.38	1928.4 76882.74 0.03	0.42	30	W 150 13
1468	Sol. Res. Sd/Rd	-473.68 52063.64 0.01	294.62 18441.82 0.02	2819.63 11975.89 0.24	0 --- ---	-118235.31 277447.97 -0.43	-5355.47 76882.74 -0.07	0.5	30	W 150 13
1469	Sol. Res. Sd/Rd	-4390.19 52063.64 0.08	54.52 18441.82 0.00	24.95 11975.89 0.00	0 --- ---	-4538.26 277447.97 -0.02	-3998.63 76882.74 -0.05	0.11	150	W 150 13
1470	Sol. Res. Sd/Rd	-806.8 60845.45 0.01	-4.77 19570.91 0	1139.08 16183.64 0.07	0 --- ---	58831.05 434083.75 0.14	-677.42 83354.24 -0.01	0.15	150	W 200 15
1471	Sol. Res. Sd/Rd	2419.91 50358.11 0.05	-8.63 19570.91 0	2581.32 16183.64 0.16	0 --- ---	-169383.66 434083.75 -0.39	-720.47 83354.24 -0.01	0.42	90	W 200 15
1472	Sol. Res. Sd/Rd	4745.28 42839.72 0.11	115.18 18441.82 0.01	-1.88 11975.89 0	0 --- ---	202.81 277447.97 0	-8817.93 76882.74 -0.11	0.17	114.75	W 150 13
1473	Sol. Res. Sd/Rd	-1048.99 52063.64 0.02	10.09 18441.82 0	156.8 11975.89 0.01	0 --- ---	-20513.84 277447.97 -0.07	-332.37 76882.74 0.00	0.09	150	W 150 13
1474	Sol. Res. Sd/Rd	73.79 42839.72 0.00	-86.48 18441.82 0.00	7.58 11975.89 0	0 --- ---	870.19 277447.97 0.00	7022.62 76882.74 0.09	0.1	114.75	W 150 13
1475	Sol. Res. Sd/Rd	-19.69 52063.64 0	20.32 18441.82 0.00	80.36 11975.89 0.01	0 --- ---	-21907.38 277447.97 -0.08	1691.95 76882.74 0.02	0.1	188.86	W 150 13

1476	Sol. Res. Sd/Rd	4164.08 30699.89 0.14	-36.37 18441.82 0.00	-0.08 11975.89 0	0 --- ---	366.96 277447.97 0.00	2886.32 76882.74 0.04	0.14	188.86	W 150 13
1477	Sol. Res. Sd/Rd	-1022.13 52063.64 0.02	24.55 18441.82 0.00	190.36 11975.89 0.02	0 --- ---	28706 277447.97 0.1	-1266.98 76882.74 -0.02	0.13	150	W 150 13
1478	Sol. Res. Sd/Rd	-705.04 60845.45 0.01	-7.12 19570.91 0	332.07 16183.64 0.02	0 --- ---	46976.01 434083.75 0.11	-538.35 83354.24 -0.01	0.12	150	W 200 15
1479	Sol. Res. Sd/Rd	2965.44 53942.45 0.05	49.59 19570.91 0.00	4602.23 16183.64 0.28	0 --- ---	-191079.47 434083.75 -0.44	1678.97 83354.24 0.02	0.49	60	W 200 15
1480	Sol. Res. Sd/Rd	4759.03 49360.66 0.1	-16.51 18441.82 0	3805.68 11975.89 0.32	0 --- ---	-154826.02 277447.97 -0.56	901.78 76882.74 0.01	0.62	60	W 150 13
1481	Sol. Res. Sd/Rd	3101.77 42839.72 0.07	-84.32 18441.82 0.00	-23.2 11975.89 0.00	0 --- ---	-2555.69 277447.97 -0.01	-6395.69 76882.74 -0.08	0.13	114.75	W 150 13
1482	Sol. Res. Sd/Rd	-64.35 52063.64 0.00	204.77 18441.82 0.01	-33.95 11975.89 0.00	0 --- ---	2240.24 277447.97 0.01	16266.98 76882.74 0.21	0.22	114.75	W 150 13
1483	Sol. Res. Sd/Rd	21.27 49360.66 0	172.51 18441.82 0.01	-193.49 11975.89 -0.02	0 --- ---	5850.74 277447.97 0.02	6013.92 76882.74 0.08	0.1	60	W 150 13
1484	Sol. Res. Sd/Rd	-169.22 52063.64 0.00	186.26 18441.82 0.01	-30.93 11975.89 0.00	0 --- ---	1952.15 277447.97 0.01	14743.42 76882.74 0.19	0.2	114.75	W 150 13
1485	Sol. Res. Sd/Rd	-319.35 52063.64 0.01	45.65 18441.82 0.00	137.85 11975.89 0.01	0 --- ---	7207.17 277447.97 0.03	-4058.57 76882.74 -0.05	0.08	90	W 150 13
1486	Sol. Res. Sd/Rd	1343.19 37997.16 0.04	142.4 18441.82 0.01	35.6 11975.89 0.00	0 --- ---	4269.14 277447.97 0.02	13468.97 76882.74 0.18	0.21	145.83	W 150 13
1487	Sol. Res.	143.49 46178.41	-110.78 18441.82	24.57 11975.89	0 ---	958.28 277447.97	-6017.22 76882.74	0.08	90	W 150 13

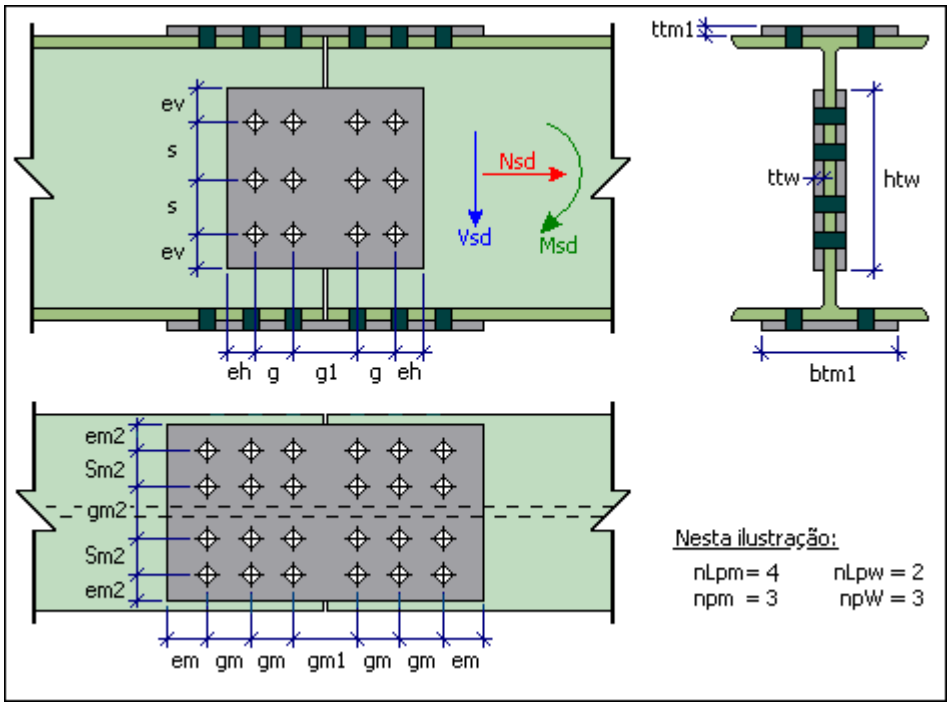
	Sd/Rd	0.00	-0.01	0.00	---	0.00	-0.08			
1488	Sol. Res. Sd/Rd	1039.44 37997.16 0.03	128.32 18441.82 0.01	31.81 11975.89 0.00	0 --- ---	2738.02 277447.97 0.01	12113.44 76882.74 0.16	0.18	145.83	W 150 13
1489	Sol. Res. Sd/Rd	-5310.54 52063.64 0.1	-11.95 18441.82 0	5.55 11975.89 0	0 --- ---	1232.55 271731.78 0.00	-889.84 76882.74 -0.01	0.1	159.22	W 150 13
1490	Sol. Res. Sd/Rd	324.18 20761.74 0.02	-989.02 7200 -0.14	6.84 7200 0	0 --- ---	964.3 79199.27 0.01	-46978.22 79199.27 -0.59	0.62	190	BOX 100 x 100 x 3
1491	Sol. Res. Sd/Rd	34.25 19285.01 0.00	1249.28 7200 0.17	-3.17 7200 0	0 --- ---	489.13 79199.27 0.01	74956.94 79199.27 0.95	0.95	240	BOX 100 x 100 x 3
1492	Sol. Res. Sd/Rd	-3138.57 60845.45 0.05	-42.97 19570.91 0.00	-1010.88 16183.64 -0.06	0 --- ---	62855.14 434083.75 0.14	2016.5 83354.24 0.02	0.19	75	W 200 15
1493	Sol. Res. Sd/Rd	-5001.18 60845.45 0.08	-67.75 19570.91 0.00	1092.11 16183.64 0.07	0 --- ---	-77016.87 434083.75 -0.18	3476.62 83354.24 0.04	0.26	75	W 200 15
1494	Sol. Res. Sd/Rd	1727.31 20313.15 0.09	-52.36 18441.82 0.00	15.37 11975.89 0.00	0 --- ---	-2362.07 277447.97 -0.01	-2207.57 76882.74 -0.03	0.09	90.79	W 150 13
1495	Sol. Res. Sd/Rd	1560.55 20313.15 0.08	-45.48 18441.82 0.00	14.29 11975.89 0.00	0 --- ---	-2152.73 277447.97 -0.01	-1978.62 76882.74 -0.03	0.08	90.79	W 150 13
1496	Sol. Res. Sd/Rd	-7454.76 60845.45 0.12	1.27 19570.91 0	-467.07 16183.64 -0.03	0 --- ---	34730.08 434083.75 0.08	-101.5 83354.24 0.00	0.14	100	W 200 15
1497	Sol. Res. Sd/Rd	-5314.4 60845.45 0.09	34.88 19570.91 0.00	-581.1 16183.64 -0.04	0 --- ---	39917.84 434083.75 0.09	-3098.35 83354.24 -0.04	0.17	100	W 200 15
1498	Sol. Res. Sd/Rd	-12993.34 60845.45 0.21	43.86 19570.91 0.00	-267.23 16183.64 -0.02	0 --- ---	23607.99 434083.75 0.05	3168.18 83354.24 0.04	0.3	100	W 200 15

1499	Sol. Res. Sd/Rd	-11046.54 60845.45 0.18	-1085.57 19570.91 -0.06	-16.18 16183.64 0.00	0 --- ---	-1619.61 434083.75 0.00	-54747.74 83354.24 -0.66	0.75	68.99	W 200 15

9. RESULTADO DAS EMENDAS PARAFUSADAS

9.1 Banzos da passarela

EMENDA EM PERFIL I COM TALAS INTERNAS



1.DADOS DE ENTRADA

Solicitações de cálculo	
Esforço normal de cálculo(Nsd)	35179 kgf
Esforço cortante de cálculo(Vsd)	893 kgf
Momento fletor de cálculo(Msd)	98402 kgf.cm

Parafusos	
Tipo	ASTM A325
Tensão de escoamento dos parafusos(fy)	635 MPa
Tensão de ruptura dos parafusos(fu)	825 MPa
Número de parafusos nas mesas(nm)	4
Número de linhas de parafusos nas mesas(nLpm)	2
Número de parafusos por linhas nas mesas(npm)	2
Número de parafusos na alma(nw)	6
Número de linhas de parafusos na alma(nLpw)	2
Número de parafusos por linha na alma(npw)	3
Diâmetro	16 mm

Rosca	Inclusa no plano de corte

Talas das mesas - Externa ao perfil	
Largura das talas das mesas externas ao perfil(btm1)	120.1 mm
Espessura das talas das mesas(ttm)	10 mm
Aço	ASTM A36
Tensão de escoamento(fy)	250 MPa
Tensão de ruptura(fu)	400 MPa

Talas da alma	
Espessura das talas da alma(ttw)	6.35 mm
Espaçamentos vertical entre furo e borda(ev)	25 mm
Espaçamento horizontal entre furo e borda(eh)	25 mm
Espaçamentos vertical entre furos(s)	75 mm
Espaçamento horizontal entre furos(g)	75 mm
Espaçamento entre furos das duas vigas(g1)	50 mm

Espaçamentos	
Espaçamentos vertical entre furo e borda(ev)	25 mm
Espaçamento entre furos das duas vigas(g1)	50 mm
Espaçamentos vertical entre furo e borda nas mesas(em2)	25 mm
Espaçamentos vertical entre furos(s)	75 mm
Espaçamentos entre furos e borda(em)	25 mm
Espaçamento entre furos na mesa da viga(gm2)	70.1 mm
Espaçamento horizontal entre furo e borda(eh)	25 mm
Espaçamentos entre furos(gm)	75 mm
Espaçamento horizontal entre furos(g)	75 mm
Espaçamentos entre os furos das duas partes da ligação(gm1)	50 mm

Viga	
Tipo	W 250 32.7
Aço	ASTM A572 GR 50
Tensão de escoamento(fy)	345 MPa
Tensão de ruptura(fu)	450 MPa

2.Verificação dos parafusos da alma

2.1.Verificação dos Parafusos ao Cisalhamento

Fdw = 3563.95 kgf Esforço máximo nos parafusos.
Ab = 2.01 cm2 Área da seção do parafuso

$$\frac{R_{Rknv}}{\gamma} = \frac{2 \cdot (0,4 \cdot A_b \cdot f_{ub})}{1,35} = 9829.7 \text{ kgf}$$

$$\frac{R_{Rknv}}{\gamma} \geq F_{dw}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistência}} = \frac{F_{dw}}{R_{Rknv}/\gamma} = 0.36 \leq 1.0$$ **OK!**

2.2.Verificação do rasgamento entre furos consecutivos

lc = 5.75 cm Distância livre, na direção da força, entre a borda do furo e a borda do furo adjacente.
tc = 0.61 cm Espessura do elemento considerado na conexão.

$$\frac{R_{Rkc}}{\gamma} = \frac{1,5 \cdot l_c \cdot t_c \cdot f_u}{1,35} \leq \frac{3 \cdot d_b \cdot t_c \cdot f_u}{1,35} = 9760 \text{ kgf}$$

$$\frac{R_{Rkc}}{\gamma} \geq F_{dw}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistência}} = \frac{F_{dw}}{R_{Rkc}/\gamma} = 0.37 \leq 1.0$$ **OK!**

2.3.Verificação do rasgamento entre furos e borda

lc = 1.63 cm Distância livre, na direção da força, entre a borda do furo e a borda da parte ligada.
tc = 0.61 cm Espessura do elemento considerado na conexão.

$$\frac{R_{Rkc}}{\gamma} = \frac{1,5 \cdot l_c \cdot t_c \cdot f_u}{1,35} \leq \frac{3 \cdot d_b \cdot t_c \cdot f_u}{1,35} = 4956.25 \text{ kgf}$$

$$\frac{R_{Rkc}}{\gamma} \geq F_{dw}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistência}} = \frac{F_{dw}}{R_{Rkc}/\gamma} = 0.72 \leq 1.0$$ **OK!**

3.Verificação dos parafusos das mesas

3.1.Verificação do Cisalhamento nos Parafusos das Mesas

Fdm = 3680.69 kgf Esforço máximo nos parafusos.
Ab = 2.01 cm2 Área da seção do parafuso

$$\frac{R_{Rknv}}{\gamma} = \frac{PC \cdot (0,4 \cdot A_b \cdot f_{ub})}{1,35} = 4914.85 \text{ kgf}$$

$$\frac{R_{Rknv}}{\gamma} \geq F_{dm}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistência}} = \frac{F_{dm}}{R_{Rknv}/\gamma} = 0.74 \leq 1.0$$ **OK!**

3.2.Verificação do rasgamento entre furos consecutivos

Fdm = 3680.69 kgf Esforço máximo nos parafusos.
lc = 5.75 cm Distância livre, na direção da força, entre a borda do furo e a borda do furo adjacente.
tc = 0.91 cm Espessura do elemento considerado na conexão.

$$\frac{R_{Rkc}}{\gamma} = \frac{1{,}5 \cdot l_c \cdot t_c \cdot f_u}{1{,}35} \leq \frac{3 \cdot d_b \cdot t_c \cdot f_u}{1{,}35} = 14560 \text{ kgf}$$

$$\frac{R_{Rkc}}{\gamma} \geq F_{dm}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistência}} = \frac{F_{dm}}{R_{Rkc}/\gamma} = 0.25 \leq 1.0$$ **OK!**

3.3.Verificação do rasgamento entre furo e borda

lc = 1.63 cm Distância livre, na direção da força, entre a borda do furo e a borda do furo adjacente.
tc = 0.91 cm Espessura do elemento considerado na conexão.

$$\frac{R_{Rkc}}{\gamma} = \frac{1{,}5 \cdot l_c \cdot t_c \cdot f_u}{1{,}35} \leq \frac{3 \cdot d_b \cdot t_c \cdot f_u}{1{,}35} = 7393.75 \text{ kgf}$$

$$\frac{R_{Rkc}}{\gamma} \geq F_{dm}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistência}} = \frac{F_{dm}}{R_{Rkc}/\gamma} = 0.5 \leq 1.0$$ **OK!**

4.Verificação das talas da alma

4.1.Verificação da Tensão Cisalhante na Seção Bruta

fvd = 35.16 kgf/cm2 Tensão cisalhante.

$$\frac{R_{Rknv}}{\gamma} = \frac{0{,}6 \cdot f_y}{1{,}10} = 1363.64 \text{ kgf/cm2}$$

$$\frac{R_{Rknv}}{\gamma} \geq f_{vd}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistência}} = \frac{f_{vd}}{R_{Rknv}/\gamma} = 0.03 \leq 1.0$$ **OK!**

4.2.Verificação da Tensão Normal na Seção Bruta

fnd = 928.84 kgf/cm2 Tensão cisalhante.

$$\frac{R_{Rkn}}{\gamma} = \frac{f_y}{1{,}10} = 2272.73 \text{ kgf/cm2}$$

$$\frac{R_{Rkn}}{\gamma} \geq f_{nd}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistênia}} = \frac{f_{nd}}{R_{Rkn}/\gamma} = 0.41 \leq 1.0$$ **OK!**

4.3.Verificação da Tensão Cisalhante na Seção Líquida

fvd = 47.67 kgf/cm2 Tensão cisalhante.

$$\frac{R_{Rknv}}{\gamma} = \frac{0,6 \cdot f_u}{1,35} = 1777.78 \text{ kgf/cm2}$$

$$\frac{R_{Rknv}}{\gamma} \geq f_{vd}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistênia}} = \frac{f_{vd}}{R_{Rknv}/\gamma} = 0.03 \leq 1.0$$ **OK!**

4.4.Verificação da Tensão Normal na Seção Líquida

fnd = 1800.78 kgf/cm2 Tensão normal.

$$\frac{R_{Rkn}}{\gamma} = \frac{f_u}{1,35} = 2962.96 \text{ kgf/cm2}$$

$$\frac{R_{Rkn}}{\gamma} \geq f_{nd}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistênia}} = \frac{f_{nd}}{R_{Rkn}/\gamma} = 0.61 \leq 1.0$$ **OK!**

5.Verificação da alma

5.1.Verificação da Tensão Cisalhante na Seção Bruta

fvd = 61.05 kgf/cm2 Tensão cisalhante.

$\lambda = 39.31$

$\lambda_p = 60.84$

$\lambda_r = 78.86$

$V_{pl} = 0,6 \cdot f_y = 2070$ kgf/cm2

$\lambda \leq \lambda_p$

$$\frac{R_{Rkn}}{\gamma} = \frac{V_{pl}}{1,10} = 1881.82 \text{ kgf/cm2}$$

$$\frac{R_{Rkn}}{\gamma} \geq f_{vd}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistênia}} = \frac{f_{vd}}{R_{Rkn}/\gamma} = 0.03 \leq 1.0$$ **OK!**

5.2.Verificação da Tensão Cisalhante na Seção Líquida

fvd = 47.67 kgf/cm2 Tensão cisalhante.

$$\frac{R_{Rknv}}{\gamma} = \frac{0,6 \cdot f_u}{1,35} = 2000 \text{ kgf/cm2}$$

$$\frac{R_{Rknv}}{\gamma} \geq f_{vd}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistênia}} = \frac{f_{vd}}{R_{Rknv}/\gamma} = 0.02 \leq 1.0$$ **OK!**

5.3.Verificação da Tensão Normal na Seção Bruta

fnd = 899.58 kgf/cm2 Tensão normal.

$$\frac{R_{Rkn}}{\gamma} = \frac{f_y}{1,10} = 3136.36 \text{ kgf/cm2}$$

$$\frac{R_{Rkn}}{\gamma} \geq f_{nd}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistênia}} = \frac{f_{nd}}{R_{Rkn}/\gamma} = 0.29 \leq 1.0$$ **OK!**

5.4.Verificação da Tensão Normal na Seção Líquida

fnd = 1161.07 kgf/cm2 Tensão normal.

$$\frac{R_{Rkn}}{\gamma} = \frac{f_u}{1,35} = 3333.33 \text{ kgf/cm2}$$

$$\frac{R_{Rkn}}{\gamma} \geq f_{nd}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistênia}} = \frac{f_{nd}}{R_{Rkn}/\gamma} = 0.35 \leq 1.0$$ **OK!**

6.Verificação das talas das mesas(cobrejuntas)

Ftm = 14722.74 kgf Força atuante nas mesas.
Atm1 = 12.01 cm2 Área das talas das mesas.
Antm1 = 8.51 cm2 Área líquida das talas das mesas

$$\frac{R_{Rkn1}}{\gamma} = \frac{A_{tm1} \cdot f_y}{1{,}10} = 27295.46 \text{ kgf}$$

$$\frac{R_{Rkn2}}{\gamma} = \frac{A_{ntm1} \cdot f_u}{1{,}35} = 25214.82 \text{ kgf}$$

$$\frac{R_{Rkn}}{\gamma} = 25214.82 \text{ kgf}$$

$$\frac{R_{Rkn}}{\gamma} \geq F_{tm}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Re sistênia}} = \frac{F_{tm}}{R_{Rkn}/\gamma} = 0.58 \leq 1.0$$ **OK!**

7.Verificação das Mesas

7.1.Verificação da Seção Bruta

σ = 1117.32 kgf/cm2 Tensão nas mesas

$$\frac{R_{Rkn}}{\gamma} = \frac{f_y}{1{,}10} = 3136.36 \text{ kgf/cm2}$$ Tensão nas mesas

$$\frac{R_{Rkn}}{\gamma} \geq \sigma$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Re sistênia}} = \frac{\sigma}{R_{Rkn}/\gamma} = 0.36 \leq 1.0$$ **OK!**

7.2.Verificação da Seção Líquida

$$\frac{R_{Rkn}}{\gamma} = \frac{f_u}{1{,}35} = 3333.33 \text{ kgf/cm2}$$ Tensão nas mesas

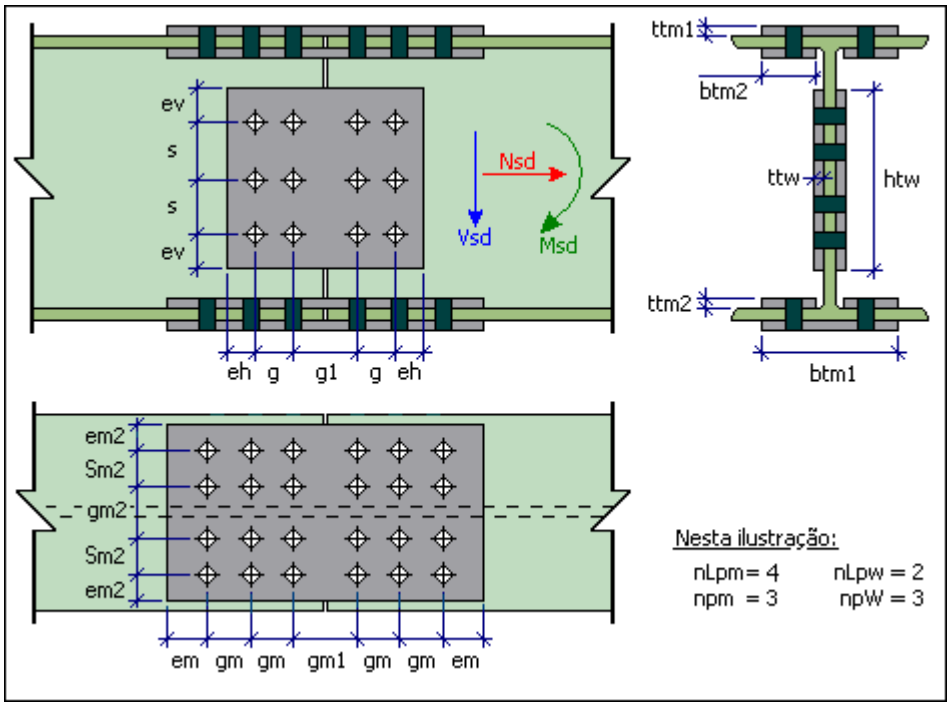
$$\frac{R_{Rkn}}{\gamma} \geq \sigma$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Re sistênia}} = \frac{\sigma}{R_{Rkn}/\gamma} = 0.43 \leq 1.0$$ **OK!**

Verificação finalizada

9.2 Diagonal da passarela

9.2.1 Emenda em perfil i com talas internas



1.DADOS DE ENTRADA

Solicitações de cálculo	
Esforço normal de cálculo(Nsd)	8000 kgf
Esforço cortante de cálculo(Vsd)	60 kgf
Momento fletor de cálculo(Msd)	7300 kgf.cm

Parafusos	
Tipo	ASTM A325
Tensão de escoamento dos parafusos(fy)	635 MPa
Tensão de ruptura dos parafusos(fu)	825 MPa
Número de parafusos nas mesas(nm)	4
Número de linhas de parafusos nas mesas(nLpm)	2
Número de parafusos por linhas nas mesas(npm)	2
Número de parafusos na alma(nw)	4
Número de linhas de parafusos na alma(nLpw)	2
Número de parafusos por linha na alma(npw)	2
Diâmetro	16 mm
Rosca	Inclusa no plano de corte

Talas das mesas - Externa ao perfil

Largura das talas das mesas externas ao perfil(btm1)	116.3 mm
Espessura das talas das mesas(ttm)	6.35 mm
Aço	COS-CIVIL 300
Tensão de escoamento(fy)	300 MPa
Tensão de ruptura(fu)	400 MPa

Talas das mesas - Interna ao perfil	
Largura das talas das mesas internas ao perfil(btm2)	48 mm
Aço	COS-CIVIL 300
Tensão de escoamento(fy)	300 MPa
Tensão de ruptura(fu)	400 MPa

Talas da alma	
Espessura das talas da alma(ttw)	6.35 mm
Espaçamentos vertical entre furo e borda(ev)	24 mm
Espaçamento horizontal entre furo e borda(eh)	24 mm
Espaçamentos vertical entre furos(s)	48 mm
Espaçamento horizontal entre furos(g)	48 mm
Espaçamento entre furos das duas vigas(g1)	60 mm

Espaçamentos	
Espaçamentos vertical entre furo e borda(ev)	24 mm
Espaçamento entre furos das duas vigas(g1)	60 mm
Espaçamentos vertical entre furo e borda nas mesas(em2)	24 mm
Espaçamentos vertical entre furos(s)	48 mm
Espaçamentos entre furos e borda(em)	24 mm
Espaçamento entre furos na mesa da viga(gm2)	68.3 mm
Espaçamento horizontal entre furo e borda(eh)	24 mm
Espaçamentos entre furos(gm)	48 mm
Espaçamento horizontal entre furos(g)	48 mm
Espaçamentos entre os furos das duas partes da ligação(gm1)	60 mm

Viga	
Tipo	W 150 13
Aço	ASTM A572 GR 50
Tensão de escoamento(fy)	345 MPa
Tensão de ruptura(fu)	450 MPa

2.Verificação dos parafusos da alma

2.1.Verificação dos Parafusos ao Cisalhamento

Fdw = 837.223 kgf Esforço máximo nos parafusos.
Ab = 2.011 cm2 Área da seção do parafuso

$$\frac{R_{Rknv}}{\gamma} = \frac{2 \cdot (0,4 \cdot A_b \cdot f_{ub})}{1,35}$$ = 9829.695 kgf

$$\frac{R_{Rknv}}{\gamma} \geq F_{dw}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistênia}} = \frac{F_{dw}}{R_{Rknv}/\gamma}$$ = 0.085 ≤ 1.0 **OK!**

2.2.Verificação do rasgamento entre furos consecutivos

lc = 3.05 cm Distância livre, na direção da força, entre a borda do furo e a borda do furo adjacente.
tc = 0.43 cm Espessura do elemento considerado na conexão.

$$\frac{R_{Rkc}}{\gamma} = \frac{1,5 \cdot l_c \cdot t_c \cdot f_u}{1,35} \leq \frac{3 \cdot d_b \cdot t_c \cdot f_u}{1,35}$$ = 6557.5 kgf

$$\frac{R_{Rkc}}{\gamma} \geq F_{dw}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistênia}} = \frac{F_{dw}}{R_{Rkc}/\gamma}$$ = 0.128 ≤ 1.0 **OK!**

2.3.Verificação do rasgamento entre furos e borda

lc = 1.525 cm Distância livre, na direção da força, entre a borda do furo e a borda da parte ligada.
tc = 0.43 cm Espessura do elemento considerado na conexão.

$$\frac{R_{Rkc}}{\gamma} = \frac{1,5 \cdot l_c \cdot t_c \cdot f_u}{1,35} \leq \frac{3 \cdot d_b \cdot t_c \cdot f_u}{1,35}$$ = 3278.75 kgf

$$\frac{R_{Rkc}}{\gamma} \geq F_{dw}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistênia}} = \frac{F_{dw}}{R_{Rkc}/\gamma}$$ = 0.255 ≤ 1.0 **OK!**

3.Verificação dos parafusos das mesas

3.1.Verificação do Cisalhamento nos Parafusos das Mesas

Fdm = 806.354 kgf Esforço máximo nos parafusos.
Ab = 2.011 cm2 Área da seção do parafuso

$$\frac{R_{Rknv}}{\gamma} = \frac{PC \cdot (0,4 \cdot A_b \cdot f_{ub})}{1,35}$$ = 9829.695 kgf

$$\frac{R_{Rknv}}{\gamma} \geq F_{dm}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistência}} = \frac{F_{dm}}{R_{Rknv}/\gamma} = 0.082 \leq 1.0$$ **OK!**

3.2.Verificação do rasgamento entre furos consecutivos

Fdm = 806.354 kgf Esforço máximo nos parafusos.
lc = 3.05 cm Distância livre, na direção da força, entre a borda do furo e a borda do furo adjacente.
tc = 0.49 cm Espessura do elemento considerado na conexão.

$$\frac{R_{Rkc}}{\gamma} = \frac{1,5 \cdot l_c \cdot t_c \cdot f_u}{1,35} \leq \frac{3 \cdot d_b \cdot t_c \cdot f_u}{1,35} = 7472.5 \text{ kgf}$$

$$\frac{R_{Rkc}}{\gamma} \geq F_{dm}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistência}} = \frac{F_{dm}}{R_{Rkc}/\gamma} = 0.108 \leq 1.0$$ **OK!**

3.3.Verificação do rasgamento entre furo e borda

lc = 1.525 cm Distância livre, na direção da força, entre a borda do furo e a borda do furo adjacente.
tc = 0.49 cm Espessura do elemento considerado na conexão.

$$\frac{R_{Rkc}}{\gamma} = \frac{1,5 \cdot l_c \cdot t_c \cdot f_u}{1,35} \leq \frac{3 \cdot d_b \cdot t_c \cdot f_u}{1,35} = 3736.25 \text{ kgf}$$

$$\frac{R_{Rkc}}{\gamma} \geq F_{dm}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistência}} = \frac{F_{dm}}{R_{Rkc}/\gamma} = 0.216 \leq 1.0$$ **OK!**

4.Verificação das talas da alma

4.1.Verificação da Tensão Cisalhante na Seção Bruta

fvd = 4.921 kgf/cm2 Tensão cisalhante.

$$\frac{R_{Rknv}}{\gamma} = \frac{0,6 \cdot f_y}{1,10} = 1636.364 \text{ kgf/cm2}$$

$$\frac{R_{Rknv}}{\gamma} \geq f_{vd}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistência}} = \frac{f_{vd}}{R_{Rknv}/\gamma} = 0.003 \leq 1.0$$ **OK!**

4.2.Verificação da Tensão Normal na Seção Bruta

fnd = 316.26 kgf/cm2 Tensão cisalhante.

$$\frac{R_{Rkn}}{\gamma} = \frac{f_y}{1,10}$$ = 2727.273 kgf/cm2

$$\frac{R_{Rkn}}{\gamma} \geq f_{nd}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistênia}} = \frac{f_{nd}}{R_{Rkn}/\gamma}$$ = 0.116 ≤ 1.0 **OK!**

4.3.Verificação da Tensão Cisalhante na Seção Líquida

fvd = 7.745 kgf/cm2 Tensão cisalhante.

$$\frac{R_{Rknv}}{\gamma} = \frac{0,6 \cdot f_u}{1,35}$$ = 1777.778 kgf/cm2

$$\frac{R_{Rknv}}{\gamma} \geq f_{vd}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistênia}} = \frac{f_{vd}}{R_{Rknv}/\gamma}$$ = 0.004 ≤ 1.0 **OK!**

4.4.Verificação da Tensão Normal na Seção Líquida

fnd = 485.785 kgf/cm2 Tensão normal.

$$\frac{R_{Rkn}}{\gamma} = \frac{f_u}{1,35}$$ = 2962.963 kgf/cm2

$$\frac{R_{Rkn}}{\gamma} \geq f_{nd}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistênia}} = \frac{f_{nd}}{R_{Rkn}/\gamma}$$ = 0.164 ≤ 1.0 **OK!**

5.Verificação da alma

5.1.Verificação da Tensão Cisalhante na Seção Bruta

fvd = 10.097 kgf/cm2 Tensão cisalhante.

λ = 32.14

λ_p = 60.836

λ_r = 78.862

$V_{pl} = 0,6 \cdot f_y$ = 2070 kgf/cm2

$\lambda \leq \lambda_p$

$$\frac{R_{Rkn}}{\gamma} = \frac{V_{pl}}{1,10}$$ = 1881.818 kgf/cm2

$$\frac{R_{Rkn}}{\gamma} \geq f_{vd}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistênia}} = \frac{f_{vd}}{R_{Rkn}/\gamma}$$ = 0.005 ≤ 1.0 **OK!**

5.2.Verificação da Tensão Cisalhante na Seção Líquida

fvd = 7.745 kgf/cm2 Tensão cisalhante.

$$\frac{R_{Rknv}}{\gamma} = \frac{0,6 \cdot f_u}{1,35}$$ = 2000 kgf/cm2

$$\frac{R_{Rknv}}{\gamma} \geq f_{vd}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistênia}} = \frac{f_{vd}}{R_{Rknv}/\gamma}$$ = 0.004 ≤ 1.0 **OK!**

5.3.Verificação da Tensão Normal na Seção Bruta

fnd = 523.67 kgf/cm2 Tensão normal.

$$\frac{R_{Rkn}}{\gamma} = \frac{f_y}{1,10}$$ = 3136.364 kgf/cm2

$$\frac{R_{Rkn}}{\gamma} \geq f_{nd}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistênia}} = \frac{f_{nd}}{R_{Rkn}/\gamma}$$ = 0.167 ≤ 1.0 **OK!**

5.4.Verificação da Tensão Normal na Seção Líquida

fnd = 755.954 kgf/cm2 Tensão normal.

$$\frac{R_{Rkn}}{\gamma} = \frac{f_u}{1,35}$$ = 3333.333 kgf/cm2

$$\frac{R_{Rkn}}{\gamma} \geq f_{nd}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistência}} = \frac{f_{nd}}{R_{Rkn}/\gamma} = 0.227 \leq 1.0$$ **OK!**

6.Verificação das talas das mesas(cobrejuntas)

Ftm = 3225.415 kgf Força atuante nas mesas.
Atm1 = 13.481 cm2 Área das talas das mesas.
Antm1 = 9.036 cm2 Área líquida das talas das mesas

$$\frac{R_{Rkn1}}{\gamma} = \frac{A_{tm1} \cdot f_y}{1,10} = 36766.5 \text{ kgf}$$

$$\frac{R_{Rkn2}}{\gamma} = \frac{A_{ntm1} \cdot f_u}{1,35} = 26773.484 \text{ kgf}$$

$$\frac{R_{Rkn}}{\gamma} = 26773.484 \text{ kgf}$$

$$\frac{R_{Rkn}}{\gamma} \geq F_{tm}$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistência}} = \frac{F_{tm}}{R_{Rkn}/\gamma} = 0.12 \leq 1.0$$ **OK!**

7.Verificação das Mesas

7.1.Verificação da Seção Bruta

σ = 598.74 kgf/cm2 Tensão nas mesas

$$\frac{R_{Rkn}}{\gamma} = \frac{f_y}{1,10} = 3136.364 \text{ kgf/cm2}$$ Tensão nas mesas

$$\frac{R_{Rkn}}{\gamma} \geq \sigma$$ **OK!**

$$\frac{\text{Solicitação}}{\text{Resistência}} = \frac{\sigma}{R_{Rkn}/\gamma} = 0.191 \leq 1.0$$ **OK!**

7.2.Verificação da Seção Líquida

σ = 868.589 kgf/cm2 Tensão nas mesas

$$\frac{R_{Rkn}}{\gamma} = \frac{f_u}{1,35} = 3333.333 \text{ kgf/cm2}$$ Tensão nas mesas

$$\frac{R_{Rkn}}{\gamma} \geq \sigma$$

OK!

$$\frac{\text{Solicitação}}{\text{Resistência}} = \frac{\sigma}{R_{Rkn}/\gamma} = 0.261 \leq 1.0$$

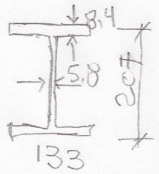
OK!

Verificação finalizada

9.3 - Ligações soldadas

1- VERIFICAÇÃO DA SOLDA DAS DIAGONAIS E MONTANTES DAS PASSARELAS.

- W 200 x 26,6 ⇒ MAIOR TRAÇÃO $N_{t,Sd} = 17200$ kgf.



$f_y = 345$ MPa
$f_u = 450$ MPa
$A_S = 34,20$ cm²

SOLDA E70 $f_w = 48,5$ MPa

→ RESISTÊNCIA MÍNIMA P/ CÁLCULO
- 45 KN
- $N_{t,Sd} = 172$ KN
- 50 % $N_{t,Rd}$ BARRA

→ 50% $N_{t,Rd}$ BARRA

$N_{t,Rd} = \frac{34,20 \cdot 34,5}{1,10} = 1072$ KN ; $N_{t,Rd} = \frac{34,20 \cdot 1 \cdot 45}{1,35} = 1.140$ KN

ct = 1 SOLDA EM TODO CONTORNO

50% = 1072/2 = 536 KN ⇒ COMANDA -

- ADOTADA SOLDA EM TODO CONTORNO ⇒
  → ESPESSURA 5mm ⇒ RESPEITANDO TABELA 10 NBR 8800:2008

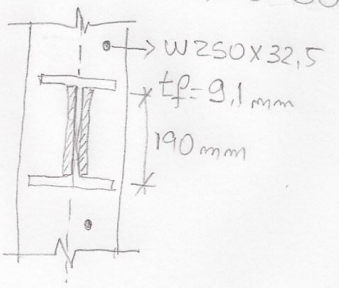
$d_e = 0,7 \times 5 = 3,5$ mm

$L = (4 \times 133) + (2 \times 207) - (2 \times 5,8) = 934$ mm $= 93,4$ cm

$A_w = d_e \cdot L = 0,35 \times 93,4 = 32,69$ cm²

$F_{w,Rd} = \frac{0,6 \times 32,69 \text{ cm}^2 \cdot 48,5}{1,35} = 704$ KN > 536 KN (OK).

* VERIFICAÇÃO DO METAL BASE



VERIFICAR RASGAMENTO APENAS PROVOCADO PELA ALMA DO PERFIL

$A_g = 2 \times 19 \times 0,91 = 34,58$ cm²

- ESCOAMENTO DA SEÇÃO BRUTA

$F_{Rd} = \frac{34,58 \times 34,5}{1,1} = 1084$ KN > 536 (OK)

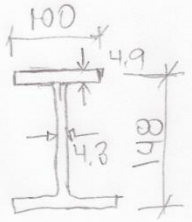
- RUPTURA DA SEÇÃO LÍQUIDA

$F_{Rd} = \frac{34,58 \times 1 \times 45}{1,35} = 1152$ KN > 536 (OK)

LIGAÇÃO VERIFICADA

(1)

- W 150X13 ⇒ MAIOR TRAÇÃO 9500 kgf.



$A_g = 16,60\ cm^2$ $f_w = 48,5\ mpa$

$f_y = 345\ mpa$

$f_u = 450\ mpa$

→ 50% $N_{t,Rd}$ da BARRA

$N_{t,Rd} = \frac{16,6 \cdot 34,5}{1,1} = 520\ KN$; $N_{t,Rd_2} = \frac{16,6 \times 1 \times 45}{1,35} = 553\ KN$

$50\%\ N_{t,Rd} = 520/2 = 260\ KN > \left\{ \begin{matrix} 45\ KN \\ 95\ KN \end{matrix} \right\}$ CALCULAR P 260 KN

- SOLDA EM TODO CONTORNO -

* ESPESSURA ADOTADA 3 mm ⇒ TABELA 10 NBR 8800:2008

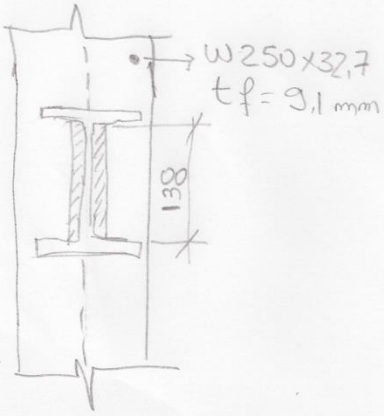
$de = 0,7 \times 3 = 2,10\ mm$

$L = (4 \times 100) + (2 \times 148) - (2 \times 4,3) = 687\ mm = 68,7\ cm$

$A_w = de \cdot L = 68,7 \times 0,21 = 14,43\ cm^2$

- $F_{w,Rd} = \frac{0,6 \cdot 14,43 \cdot 48,5}{1,35} = 311\ KN > 260\ KN$ ⇒ OK SOLDA

* VERIFICAÇÃO DO METAL BASE



→ VERIFICAR RASGAMENTO PROVOCADO APENAS PELA ALMA DO PERFIL

$A_g = 2 \times 13,8 \times 0,91 = 25,12\ cm^2$

- ESCOAMENTO DA SEÇÃO BRUTA

$F_{Rd} = \frac{25,12 \times 34,5}{1,1} = 788\ KN > 260$ OK

- RUPTURA DA SEÇÃO LÍQUIDA

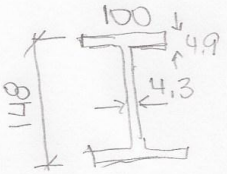
$F_{Rd} = \frac{25,12 \times 1 \times 45}{1,35} = 837 > 260$ OK

LIGAÇÃO VERIFICADA

2

(2) - VERIFICAÇÃO DAS SOLDAS DAS DIAGONAIS DA RAMPA.

W150X13



MAIOR TRAÇÃO = 7200 Kgf ⇒ modele.

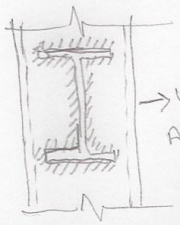
50% $N_{t,Rd}$ = 26000 Kgf. ⇒ COMANDA

1500 Kg

JÁ VERIFICADO NO ITEM 1

$F_{w,Rd}$ = 311 KN > 260 (OK) // #3,0mm

* VERIFICAÇÃO DO METAL BASE SUPERIOR



→ W150X13
ALMA 4,3mm

L = (4x100) + (2x148) − (2.4,3) = 68,7 cm

Ag = 68,7 x 0,43 = 29,54 cm2

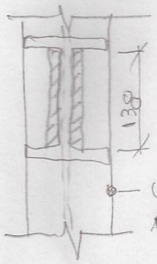
• ESCOAMENTO DA SEÇÃO BRUTA

$$F_{Rd} = \frac{29,54 \times 34,5}{1.1} = 926 \text{ KN} > 260 \text{ (OK)}$$

• RUPTURA DA SEÇÃO LÍQUIDA

$$F_{Rd} = \frac{29,54 \times 1 \times 45}{1,35} = 984 \text{ KN} > 260 \text{ (OK)}$$

* VERIFICAÇÃO DO METAL BASE INFERIOR



W 200 X 15
MESA = 5,2

L = 138x2 = 276mm = 27.6cm

Ag = 0,52 x 27,6 cm = 14,35 cm2

• ESCOAMENTO DA SEÇÃO BRUTA

$$F_{Rd} = \frac{14,35 \times 34,5}{1,1} = 450 \text{ KN} > 260 \text{ (OK)}$$

• RUPTURA DA SEÇÃO BRUTA

$$F_{Rd} = \frac{14,35 \cdot 1 \cdot 45}{1,35} = 478 \text{ KN} > 260 \text{ (OK)}$$

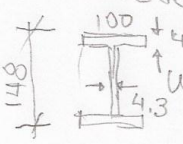
VERIFICA-

(3)

③ VERIFICAÇÃO DA SOLDA NA EMENDA DOS BANZOS DAS RAMPAS

3.1 → BANZO SUPERIOR MAIOR TRAÇÃO 12.235,0 kgf.

DIMENSIONAR P/ MAIOR
- 45 KN
- 122,35 KN
- 260,00 KN → COMANDA



→ SOLDA DE ENTALHE → PENETRAÇÃO TOTAL.

- VERIFICAR O METAL BASE

$A_G = 16,6\ cm^2$

$$F_{Rd} = \frac{16,6 \times 34,5}{1,1} = 520\ KN >> 260 \quad OK$$

- VERIFICAR METAL SOLDA

$A_e = 16,6\ cm^2$

$$F_{wd} = \frac{0,6 \times 16,6 \times 48,5}{1,35} = 357\ KN > 260 \quad OK$$

- LIGAÇÃO VERIFICADA -

3.2 - BANZO INFERIOR.

* NO BANZO INFERIOR SÓ APARECE FORÇA NORMAL DE COMPRESSÃO NÃO PRECISA SER VERIFICADO

- SERÁ ADOTADO PENETRAÇÃO TOTAL.

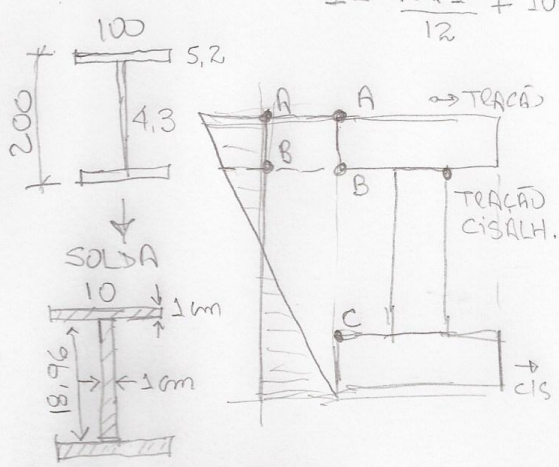
4 - VERIFICAÇÃO DA SOLDA DE LIGAÇÃO DA RAMPA COM A PASSARELA

$N_{t,Sd} \cong 0 \Rightarrow$ DESPREZÍVEL
$V_{Sd} = 20$ KN
$M_{Sd} = 523$ KN

} DADOS DO MCALC.

W 200x15

$$I = \frac{10 \times 1^3}{12} + \overset{1993,67}{10 \cdot 1 \cdot \left(\frac{18,96+0,5}{2}\right)^2 \times 2} + \overset{561,98}{\frac{1 \times 18,96^3}{12}} = 2562\ cm^4$$



$$\sigma_{mA} = \frac{M \cdot y}{I} \cdot y_A = \frac{523}{2562} \cdot \left(\frac{20}{2}\right) = 2,04\ \frac{KN}{cm^2}$$

$$\sigma_{mB} = \frac{M \cdot y_B}{I} = \frac{523}{2562} \cdot \left(\frac{18,96}{2}\right) = 1,94\ \frac{KN}{cm^2}$$

$$\sigma_{CB} = \frac{N}{A} = \frac{20}{1 \times 18,96} = 1,05\ \frac{KN}{cm^2}$$

$\sigma_A = 2,04$ KN/cm²

$\sigma_B = \sqrt{1,94^2 + 1,05^2} = 2,21$ KN/cm² $\Rightarrow$ CRÍTICA -

→ VERIFICAÇÃO DO METAL BASE

$$\sigma_R = \frac{0,6 \cdot f_w}{1,35} = \frac{0,6 \cdot 34,5}{1,10} = 18,82\ KN/cm^2$$

$$\frac{\sigma_S}{\sigma_R} = \frac{2,21}{18,82} = 0,12 \Rightarrow d_w = \frac{0,12}{2} = 0,06 = 0,6\ mm.$$

→ VERIFICAÇÃO DO METAL SOLDA

$$\sigma_{SR} = \frac{0,6\ f_w}{1,35} = \frac{0,6 \cdot 48,5}{1,35} = 21,55\ KN/cm^2$$

$$\frac{\sigma_S}{\sigma_R} = \frac{2,21}{21,55} = 0,10 = d_w = 0,1/0,7 = 0,14\ cm = 1,4\ mm$$

ADOTAR $d_w = 3$ mm $\Rightarrow$ MÍNIMO

} O BANZO SUPERIOR AS SOLICITAÇÕES SÃO DESPREZÍVEIS E NÃO SERÁ VERIFICADO (A

10. APARELHO DE APOIO

Será verificado o pior caso que ocorre no pilar central da Passarela P6 e P7, e adotado para todos os apoios.

Os dados de entrada foram obtidos pelas reações de apoio e giro da estrutura metálica através do programa MCalc 3D.

Para o Cálculo foi utilizado o programa Free SCAPE V1.0

SCAPE Software para Cálculo de Aparelhos de Apoio Elastoméricos

Aparelho de Apoio Retangular Fretado - Memorial de Cálculo - BS EN 1337-3

Tipo de verificação	Resultado	Limite	Situação
Máxima deformação total de cálculo	3.06	7 mm	OK
Verificação da espessura das chapas de aço	0.29	2.0mm	OK
Máxima rotação permitida	2.01	>=0	OK
Estabilidade a flambagem	4.73	<=87.8	OK
Estabilidade ao deslizamento	-	-	OK

Variáveis de entrada

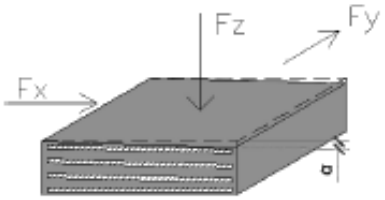
Fzk = 180 kN

Fzd = 252 kN Fzd,mín =180 kN

Fxd = 56 kN Fyd = 5 kN

vxd = 19.91 mm vyd = 1.78 mm

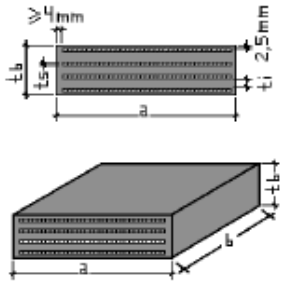
$\alpha_{a,d}$ = 0.001 rad $\alpha_{b,d}$ = 0.0 rad



Aparelho de apoio escolhido

Aparelho de apoio escolhido

a = 250.0 mm
b = 250.0 mm
n = 3.0 camadas
ts = 2.0 mm
ti = 5.0 mm
tb = 28.0 mm



Configurações

*Kf = 0.6
G = 0.9 MPa
Eb = 2000.0 MPa
fy = 210.0 MPa
ch = 4.0 mm
cv = 2.5 mm
**Kh = 1.0

*Para aparelhos de apoio em contato com o concreto Kf = 0,6 e, para quais quer outros materiais Kf = 0,2.
**Para aparelhos de apoio com presença de furos Kh = 2,0 , caso contrário, Kf = 1,0.

Data: 15/04/2019 Pág. 1 de 2

Verificação 1: Máxima deformação total de cálculo

$K_L(\varepsilon_{c,d} + \varepsilon_{q,d} + \varepsilon_{a,d}) \leq \varepsilon_{u,d}$ = 1.5*(0.65+1.00+0.39) ≤ 7 = 3.06 < 7 →OK

$\varepsilon_{q,d} = \frac{v_{xy,d}}{\tau_q} \leq 1{,}0$ = 1.00 < 1 → OK

Verificação 2: Verificação de espessura das chapas de aço

$t_s{}' = \frac{K_p.F_{z,d}.(t_1+t_2).K_h.\gamma_m}{A_r.f_y} \leq t_s$ = 0.29 ≤ 2.00 → OK

Verificação 3: Condição limite - rotação

$\sum v_{z,d} - \frac{(a'.\alpha_{a,d}+b'.\alpha_{b,d})}{K_{r,d}} \geq 0$ = 2.01 ≥ 0 → OK

Verificação 4: Condição limite - estabilidade à flambagem

$\frac{F_{z,d}}{A_r} < \frac{2.a'.G.S_1}{3.T_e}$ = 4.73 ≤ 87.85 → OK

Verificação 5: Condição limite - estabilidade ao deslizamento

Sob Cargas permanentes:

$\sigma_{cd,min} = \frac{F_{z,d\ min}}{A_r} \geq 3 = 3.38 \geq 3$ N/mm² → OK

Sob Cargas totais:

$F_{xy,d} - \mu_e \cdot F_{z,d\ min} \leq 0 = -9760.99 \leq 0$ → OK

ITAMAR FÉLIX DA SILVA

Eng. Civil CREA 71.683-D/PR

Maringá 08 de janeiro de 2020

Código:	Nº de páginas:	Emissão:
CRO-BR0163-364-S-PAS-202-MD-EM01-0001	4	07/07/2021

Rodovia:	Trecho:
BR-364/MT	km 202+700

Objetivo:

MEMORIAL DESCRITIVO PARA
ESTRUTURA METÁLICA - CONFORME CONSTRUÍDO

Documentos de Referência:

Documentos Resultantes:

Observações:

00	Emissão Inicial	Itamar Félix da Silva	07/07/2021
Rev.	**Natureza da Revisão**	**Responsável**	**Data**

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1. INTRODUÇÃO

Memorial Descritivo para passarelas mista em concreto pré-moldado e estrutura metálica, em Rondonópolis Mt **- Passarela 6, BR 167 – KM 202+700**

2. SISTEMA ESTRUTURAL ADOTADO

As passarelas serão mistas em concreto pré-moldado e Estrutura metálica, sendo Fundação em blocos pré-moldados sobre estacas raiz e Pilares em concreto pré-moldado, pisos em laje pré-moldada. As estruturas de rampas e passarelas serão em estrutura metálica treliçada.

3. PROJETO GEOMÉTRICO DAS PASSAREALAS.

AS RAMPAS terão largura de 2,00 metros com inclinação de 8,0% com patamares de 1,20 metros de comprimento a cada 10 metros de rampa percorrido, Guarda corpo nas laterais com 1,15 metros de altura e corrimão com altura de 0,92 metros.
AS PASSARELAS terão forma de caixão com largura de 2,00 metros e altura de 3,00 metros , sendo utilizado seu interior como passarela, receberá proteção lateral com tela artística até 2,00 metros de altura e corrimão na altura de 0,92 metros.

4. ESTRUTURA METÁLICA.

4.1 Passarela

A passarela será em forma de caixão treliçado, As treliças serão em perfil W laminado, treliça inferior com montantes espaçados de forma a receber as lajes pré-moldadas. O corrimão será em perfil dobrado tubular redondo, tela artística de proteção lateral em malha 4cm no fio 10 galvanizado montado em quadro metálico com cantoneiras.

4.2 Rampa

As rampas serão em trelicadas nas laterais em perfil W laminado, treliça inferior com montantes espaçados de forma a receber as lajes pré-moldadas. O corrimão

será em perfil dobrado tubular redondo, proteção lateral logo abaixo do corrimão em perfil tubular redondo com espaçamentos entre si respeitando as normas de segurança.

4.3 Pintura

Toda a Estrutura Metálica será submetida, antes da pintura, a um processo de desengraxe químico, após a limpeza e remoção de rebarbas e respingos de solda. Após, garantida o desengraxe dos elementos metálicos, será necessário uma aplicação de fosfatização química para posterior aplicação de pintura final:

- Tinta poliuretano dupla função, fundo e acabamento com 70 microns cada.

A aplicação da pintura líquida se fará, sempre a pistola de ar comprimido, seguindo a recomendação do fabricante de tintas, inclusive para retoques eventualmente necessários após a montagem de telhas de cobertura e fechamento.

4.4 Materiais

- Perfis W laminado ASTM A572 gr50;
- Perfis dobrados tubulares ASTM A36;
- Perfil L laminado ASTM A36;
- Aço para chapas de apoios SAE 1020;
- Perfis redondos e chapas secundarias de ligação (não estrutural) SAE 1020.
- Solda E70XX fw 485 Mpa
- Parafusos para emendas serão de Alta Resistência ASTM A325.

ITAMAR FÉLIX DA SILVA
Eng. Civil CREA 71.683-D/PR

Maringá 08 de janeiro de 2020

Código:	Nº de páginas:	Emissão:
CRO-BR0163-364-S-PAS-202-MC-EC10-0001	21	07/07/2021

Rodovia:	Trecho:
BR-364/MT	Km 202+700

Objetivo:

MEMORIAL DE CALCULO DE FUNDAÇÃO - CONFORME CONSTRUÍDO

Documentos de Referência:

Documentos Resultantes:

Observações:

00	Emissão Inicial	CRO	07/07/2021
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1. INTRODUÇÃO

Memorial de Cálculo para passarela mista em concreto pré-moldado e estrutura metálica.

Passarela 6 – KM 202 + 700

2. ESTACAS ADOTADAS

- Estacas Raiz.

3. NORMAS UTILIZADAS

- NBR 6118/14 .....Projeto de estruturas de concreto procedimento;
- NBR 6122/10 .....Projeto e execução de fundações.

4. PROGRAMA DE CÁLCULO UTILIZADO

- Planilhas de cálculos.

5. CAPACIDADE DE CARGA E ARMADURA DAS ESTACAS

CÁLCULO DA CAPACIDADE DE CARGA ESTRUTURAL E ARMADURAS DAS ESTACAS														
Tipo de estaca:			Estaca Raiz		Carga nominal = 400 kn (tabela)									
PASSARELA RONDONÓPOLIS													As(cm2) = maior)	
Pilar	ϕ (cm)	Pk(KN)	γf	Pd (KN)	Ac (cm2)	Fck (kn/cm2)	γc	0,85fcd	σs (kn/cm2)	Ac*0,85fcd	Pd-Ac*0,85fcd	σs-0,85fcd	As calc. (cm2)	Asmín (0,005Ac)
P1	25	200,00	1,4	280,00	490,87	2,00	1,60	1,06	42	521,55	- 241,55	40,94	- 5,90	2,45
P2	25	170,00	1,4	238,00	490,87	2,00	1,60	1,06	42	521,55	- 283,55	40,94	- 6,93	2,45
P3	25	150,00	1,4	210,00	490,87	2,00	1,60	1,06	42	521,55	- 311,55	40,94	- 7,61	2,45
P4	25	120,00	1,4	168,00	490,87	2,00	1,60	1,06	42	521,55	- 353,55	40,94	- 8,64	2,45
P5	25	110,00	1,4	154,00	490,87	2,00	1,60	1,06	42	521,55	- 367,55	40,94	- 8,98	2,45
P6	25	120,00	1,4	168,00	490,87	2,00	1,60	1,06	42	521,55	- 353,55	40,94	- 8,64	2,45
P7	25	130,00	1,4	182,00	490,87	2,00	1,60	1,06	42	521,55	- 339,55	40,94	- 8,29	2,45
P8	25	150,00	1,4	210,00	490,87	2,00	1,60	1,06	42	521,55	- 311,55	40,94	- 7,61	2,45
P9	25	200,00	1,4	280,00	490,87	2,00	1,60	1,06	42	521,55	- 241,55	40,94	- 5,90	2,45
Ebloc	25	60,00	1,4	84,00	490,87	2,00	1,60	1,06	42	521,55	- 437,55	40,94	- 10,69	2,45
ÁREA MÍNIMA DE AÇO PARA TODAS AS ESTACAS					As =	2,45 cm2		4ϕ 10mm		PARA FACILIDADE DE MONTAGEM ADOTAR 4ϕ 12,5mm 5,00cm2				

ESTACA MAIS CARREGADA 200Kn, CARGA NOMINAL DA ESTACA ϕ25 = 400Kn =>OK

6. CAPACIDADE DE CARGA GEOTÉCNICA DAS ESTACAS

MÉTODO DE CÁLCULO AOKY VELOSSO (1975) – SPT – SP-01

SONDAGEM		N. A.	FUSTE DA ESTACA
N_{SPT}	Composição da Camada	7	
10	Silte arenoso		1
7	Silte arenoso		2
6	Areia siltosa		3
7	Areia siltosa		4
6	Areia siltosa		5
5	Areia siltosa		6
9	Areia siltosa		7
23	Areia argilossiltosa		8
21	Areia argilossiltosa		9
19	Silte argiloarenoso		10
18	Silte argiloarenoso		11
24	Silte argiloarenoso		12
43	Silte argiloarenoso		13
46	Silte argiloarenoso		14
49	Silte		15
	-		16
	-		17
	-		18
	-		19
	-		20

DADOS DA ESTACA

Moldagem	Tipo	Diâmetro (cm)	Cota de apoio (m)
Moldada In-Loco	Raiz	25	15,0

TABELA DE AUXÍLIO P/ DIAMETROS

Método de Cálculo

		$A_{seção}$ (cm²)	Perímetro (cm)
		490,87	78,54

Métodos de Cálculo

Aoki-Velloso (1975)

Décourt-Quaresma (1978)

Teixeira (1996)

MÉTODO AOKI VELLOSO (1975)

Dados do Cálculo

Estaca	Tipo	Diâmetro (cm)	Comp. (m)	F.S (Global)
Moldada in-loco	Raiz	25	15	1

% Resistência de ponta	% Resistência lateral
0	125

AVANÇAR

VOLTAR

RESULTADOS

Profundidade (m)	K (kPa)	α	F1	F2	$R_{P\ na\ camada}$ (kN)	$R_{L\ por\ metro}$ (kN)	$R_{L\ acumlada}$ (kN)	$R_{Total\ do\ solo}$ (kN)	P_{Adm} (kN)
1	550	0,022	2	4	0,00	29,70	29,70	29,70	29,70
2	550	0,022	2	4	0,00	20,79	50,49	50,49	50,49
3	800	0,02	2	4	0,00	23,56	74,05	74,05	74,05
4	800	0,02	2	4	0,00	27,49	101,54	101,54	101,54
5	800	0,02	2	4	0,00	23,56	125,10	125,10	125,10
6	800	0,02	2	4	0,00	19,63	144,73	144,73	144,73
7	800	0,02	2	4	0,00	35,34	180,08	180,08	180,08
8	500	0,028	2	4	0,00	79,03	259,11	259,11	259,11
9	500	0,028	2	4	0,00	72,16	331,27	331,27	331,27
10	250	0,03	2	4	0,00	34,97	366,24	366,24	366,24
11	250	0,03	2	4	0,00	33,13	399,37	399,37	399,37
12	250	0,03	2	4	0,00	44,18	443,55	443,55	443,55
13	250	0,03	2	4	0,00	79,15	522,71	522,71	522,71
14	250	0,03	2	4	0,00	84,68	607,38	607,38	607,38
15	400	0,03	2	4	0,00	144,32	751,70	751,70	751,70

MÉTODO AOKI VELLOSO (1975)

Dados do Cálculo

Estaca	Tipo	Diâmetro (cm)	Comp. (m)	F.S (Global)
Moldada in-loco	Raiz	25	15	2

% Resistência de ponta	% Resistência lateral
100	100

AVANÇAR

VOLTAR

RESULTADOS

Profundidade (m)	K (kPa)	α	F1	F2	$R_{P\ na\ camada}$ (kN)	$R_{L\ por\ metro}$ (kN)	$R_{L\ acumlada}$ (kN)	$R_{Total\ do\ solo}$ (kN)	P_{Adm} (kN)
1	550	0,022	2	4	134,99	23,76	23,76	158,75	**79,37**
2	550	0,022	2	4	94,49	16,63	40,39	134,88	**67,44**
3	800	0,02	2	4	117,81	18,85	59,24	177,05	**88,52**
4	800	0,02	2	4	137,44	21,99	81,23	218,67	**109,34**
5	800	0,02	2	4	117,81	18,85	100,08	217,89	**108,94**
6	800	0,02	2	4	98,17	15,71	115,79	213,96	**106,98**
7	800	0,02	2	4	176,71	28,27	144,06	320,78	**160,39**
8	500	0,028	2	4	282,25	63,22	207,29	489,54	**244,77**
9	500	0,028	2	4	257,71	57,73	265,01	522,72	**261,36**
10	250	0,03	2	4	116,58	27,98	292,99	409,58	**204,79**
11	250	0,03	2	4	110,45	26,51	319,50	429,95	**214,97**
12	250	0,03	2	4	147,26	35,34	354,84	502,11	**251,05**
13	250	0,03	2	4	263,84	63,32	418,17	682,01	**341,01**
14	250	0,03	2	4	282,25	67,74	485,91	768,16	**384,08**
15	400	0,03	2	4	481,06	115,45	601,36	1082,42	**541,21**

MÉTODO DE CÁLCULO AOKY VELOSSO (1975) – SPT – SP-02

SONDAGEM		N. A.	FUSTE DA ESTACA
N_{SPT}	Composição da Camada	6	
9	Silte argiloso		1
9	Silte argiloso		2
10	Silte argiloso		3
8	Areia siltosa		4
6	Areia siltosa		5
6	Areia siltosa		6
6	Areia siltosa		7
6	Areia siltosa		8
7	Areia siltosa		9
7	Areia argilossiltosa		10
11	Areia argilossiltosa		11
20	Areia argilossiltosa		12
22	Areia argilossiltosa		13
32	Silte argiloso		14
46	Silte		15
	-		16
	-		17
	-		18
	-		19
	-		20

DADOS DA ESTACA

Moldagem	Tipo	Diâmetro (cm)	Cota de apoio (m)
Moldada In-Loco	Raiz	25	15,0

TABELA DE AUXÍLIO P/ DIAMETROS

Método de Cálculo

		$A_{seção}$ (cm²)	Perímetro (cm)
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Métodos de Cálculo

Aoki-Velloso (1975)

Décourt-Quaresma (1978)

Teixeira (1996)

MÉTODO AOKI VELLOSO (1975)

Dados do Cálculo

Estaca	Tipo	Diâmetro (cm)	Comp. (m)	F.S (Global)
Moldada in-loco	Raiz	25	15	1

% Resistência de ponta	% Resistência lateral
0	125

AVANÇAR

VOLTAR

RESULTADOS

Profundidade (m)	K (kPa)	α	F1	F2	$R_{P\ na\ camada}$ (kN)	$R_{L\ por\ metro}$ (kN)	$R_{L\ acumlada}$ (kN)	$R_{Total\ do\ solo}$ (kN)	P_{Adm} (kN)
4	800	0,02	2	4	0,00	31,42	85,16	85,16	85,16
5	800	0,02	2	4	0,00	23,56	108,72	108,72	108,72
6	800	0,02	2	4	0,00	23,56	132,28	132,28	132,28
7	800	0,02	2	4	0,00	23,56	155,84	155,84	155,84
8	800	0,02	2	4	0,00	23,56	179,40	179,40	179,40
9	800	0,02	2	4	0,00	27,49	206,89	206,89	206,89
10	500	0,028	2	4	0,00	24,05	230,95	230,95	230,95
11	500	0,028	2	4	0,00	37,80	268,74	268,74	268,74
12	500	0,028	2	4	0,00	68,72	337,47	337,47	337,47
13	500	0,028	2	4	0,00	75,59	413,06	413,06	413,06
14	230	0,034	2	4	0,00	61,42	474,48	474,48	474,48
15	400	0,03	2	4	0,00	135,48	609,96	609,96	609,96

MÉTODO AOKI VELLOSO (1975)

Dados do Cálculo

Estaca	Tipo	Diâmetro (cm)	Comp. (m)	F.S (Global)
Moldada in-loco	Raiz	25	15	2

% Resistência de ponta	% Resistência lateral
100	100

AVANÇAR

VOLTAR

RESULTADOS

Profundidade (m)	K (kPa)	α	F1	F2	$R_{P\ na\ camada}$ (kN)	$R_{L\ por\ metro}$ (kN)	$R_{L\ acumlada}$ (kN)	$R_{Total\ do\ solo}$ (kN)	P_{Adm} (kN)
4	800	0,02	2	4	157,08	25,13	68,13	225,21	112,60
5	800	0,02	2	4	117,81	18,85	86,97	204,78	102,39
6	800	0,02	2	4	117,81	18,85	105,82	223,63	111,82
7	800	0,02	2	4	117,81	18,85	124,67	242,48	121,24
8	800	0,02	2	4	117,81	18,85	143,52	261,33	130,67
9	800	0,02	2	4	137,44	21,99	165,51	302,96	151,48
10	500	0,028	2	4	85,90	19,24	184,76	270,66	135,33
11	500	0,028	2	4	134,99	30,24	214,99	349,99	174,99
12	500	0,028	2	4	245,44	54,98	269,97	515,41	257,70
13	500	0,028	2	4	269,98	60,48	330,45	600,43	300,21
14	230	0,034	2	4	180,64	49,13	379,58	560,22	280,11
15	400	0,03	2	4	451,60	108,38	487,97	939,57	469,79

Para a determinação da profundidade das estacas, serão os piores casos entre as duas análise do SP1 e do SP2

As profundidades estão na tabela abaixo:

TABELA DAS PROFUNDIDADES DAS ESTACAS CALCULADAS									
			CARGA UNIT.	PROFUNDIDADE (m)				PROFUNDIDADE FINAL (m)	
	ESTACA	QUANT	(KN)	SP1	SP1	SP2	SP2	CALCULADA	ADOTADA
P1	E1	4,0	200,0	8,0	8,0	9,0	12,0	12,0	12,0
P2	E1	4,0	170,0	7,0	8,0	8,0	11,0	11,0	12,0
P3	E1	4,0	150,0	7,0	7,0	7,0	9,0	9,0	12,0
P4	E2	4,0	120,0	5,0	7,0	6,0	7,0	7,0	8,0
P5	E2	4,0	110,0	5,0	7,0	6,0	6,0	7,0	8,0
P6	E2	4,0	120,0	5,0	7,0	6,0	7,0	7,0	8,0
P7	E2	4,0	130,0	6,0	7,0	6,0	8,0	8,0	8,0
P8	E1	4,0	160,0	7,0	7,0	8,0	11,0	11,0	12,0
P9	E1	4,0	200,0	8,0	8,0	9,0	12,0	12,0	12,0
BLOCO4	E3	2,0	60,0	3,0	2,0	4,0	4,0	4,0	5,0

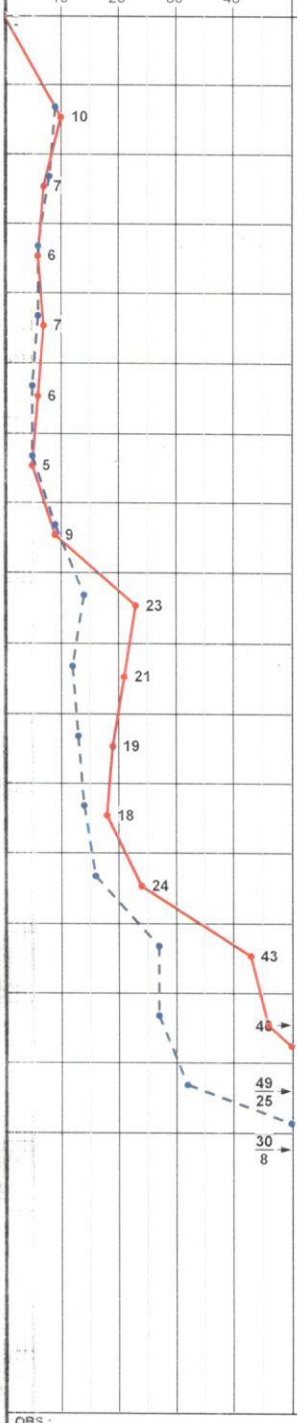
7. SONDAGENS

SONDAGEM DE SIMPLES RECONHECIMENTO DO SOLO COM SPT
NBR 6484/01

CLIENTE: CONCESSIONARIA ROTA DO OESTE
OBRA: PASSARELA KM 202
LOCAL: BR 364 - KM 202 - RONDONÓPOLIS-MT

SONDAGEM À PERCUSSÃO: SP-01

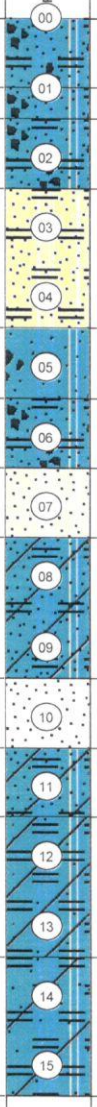
INÍCIO: 02/06/2019 TÉRMINO: 02/07/2019 COTA: 0,00
DATUM: SIRGAS 2000 COORD. N: 8177149,00 E: 750429,07



PROFUNDIDADE (m)	ENSAIO DE PENETRAÇÃO (GOLPES/PENET.)	RESISTÊNCIA À PENETRAÇÃO INI.	RESISTÊNCIA À PENETRAÇÃO FIN.	PROFUDIDADE DA CAMADA (m)	DESCRIÇÃO DO MATERIAL	NÍVEL D'ÁGUA	AVANÇO
	- - -	-	-		AMOSTRA TRADO-SILTE ARENOSO COM PEDREGULHOS, DE COR VARIEGADO.		TH 1,00
1,00	4/15 5/15 5/15	9	10	1,00			
				1,45	SILTE ARENOSO COM PEDREGULHOS DE COR VARIEGADO, CONSISTÊNCIA FOFO À POUCO COMPACTO.		
2,00	4/15 4/15 3/15	8	7	2,45	AREIA SILTOSA COM PEDREGULHOS, DE COR VARIEGADO, CONSISTÊNCIA FOFO.		
3,00	3/15 3/15 3/15	6	6		AREIA-SILTOSA, FINA,DE COR BEJE, CONSISTÊNCIA FOFO.		
4,00	3/15 3/15 4/15	6	7	4,45			
5,00	2/15 3/15 3/15	5	6	5,45	AREIA COM PEDREGULHOS, MÉDIA A GROSSA, DE COR VARIEGADA,CONSISTÊNCIA FOFO.		
6,00	3/15 2/15 3/15	5	5	6,45	AREIA SILTOSA COM PEDREGULHOS, FINA,DE COR VARIEGADA,CONSISTÊNCIA FOFO.		
7,00	4/15 5/15 4/15	9	9	7,45	AMOSTRA NÃO RECUPERADA	7,00	
8,00	5/15 9/15 14/15	14	23		AREIA-ARGILO-SILTOSA, MÉDIA A GROSSA, DE COR VARIEGADA, CONSISTÊNCIA FOFO.		TC
9,00	4/15 8/15 13/15	12	21	9,45			
10,00	5/15 8/15 11/15	13	19	10,45	AMOSTRA NÃO RECUPERADA.		
11,00	6/15 8/15 10/15	14	18	11,45	AREIA-ARGILO-SILTOSA, FINA,DE COR VARIEGADA, PLÁSTICO, POUCO COMPACTO À MEDIANAMENTE COMPACTO.		
12,00	7/15 9/15 15/15	16	24		SILTE-ARGILO-ARENOSO,DE COR VARIEGADA, RIJO À DURO.		
13,00	10/15 17/15 26/15	27	43	13,45			
14,00	11/15 16/15 30/15	27	46		SILTE (FILITO), DE COR VARIEGADO, CONSISTÊNCIA RIJO À DURO.		
15,00	13/15 19/15 30/10	32	49/25	15,44			15,44
16,00	18/15 30/8 -	48/23	30/8		IMPENETRÁVEL AO TRÉPANO DE LAVAGEM FURO PARALISADO CONFORME DESCRITO NO ITEM 6.4.3.3 DA NORMA NBR6484:2001 - SOLO - SONDAGEM DE SIMPLES RECONHECIMENTO COM SPT. ENSAIO DE LAVAGEM: 1° 10 min = 2,00 cm 2° 10 min = 2,00 cm 3° 10 min = 3,00 cm	N.A. INICIAL: 06/02/19 ; FURO SECO N.A. FINAL: 07/02/19 : 7,00m	
17,00							
18,00							
19,00							
20,00							

AMOSTRADOR BIPARTIDO:
Ø INTERNO = 34.9 mm PESO: 65 Kg
Ø EXTERNO = 50.8 mm ALTURA DE QUEDA: 75 cm

INTERPRETAÇÃO GEOLÓGICA / PERFIL GEOLÓGICO



OBS.:
- SONDAGEM EXECUTADA CONFORME AS NORMAS NBR6484/NBR6502/NBR7181/NBR9603 E NBR13441.
- FURO PARALISADO EM 15,44m.

LEGENDAS: 30 cm INICIAIS — 30 cm FINAIS — TRADO CAVADEIRA - TC • TRADO HELICOIDAL - TH • CIRCULAÇÃO DE ÁGUA - CA • REVESTIMENTO
ATERRO - **AT** • SOLO ALUVIONAR - **SA** • SOLO COLUVIONAR - **SC** • SOLO FLUVIAL - **SF** • SOLO MARINHO - **SM** • SOLO RESIDUAL - **SR**

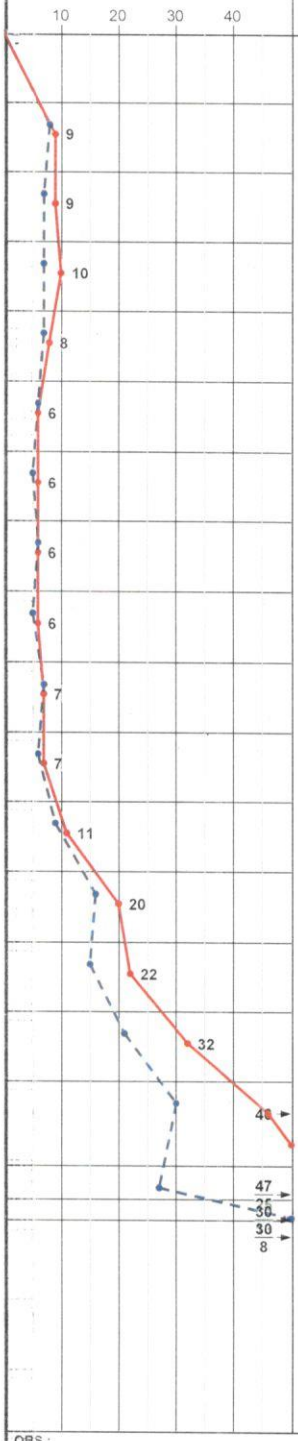
El Condor Consultoria, Controle Tecnológico LTDA

DATA:	TRABALHO Nº:	FOLHA:	RESP.:
12/02/19	RL-2018.200	01	ENGENHEIRO RESP.: ALBER VITORINO
ESCALA: 1/100	DESENHISTA: THIAGO SANTOS	SONDADOR: LUIS AUGUSTO DO NASCIMENTO	

Telefone: (65) 3661-3441 Endereço: Av das Seringueiras, 33, Jardim das Palmeiras, Cuiabá/Mato Gross

SONDAGEM DE SIMPLES RECONHECIMENTO DO SOLO COM SPT
NBR 6484/01

CLIENTE:	CONCESSIONARIA ROTA DO OESTE	SONDAGEM À PERCUSSÃO:	**SP-02**
OBRA:	PASSARELA KM 202	INÍCIO: 02/07/2019 TÉRMINO: 02/08/2019	COTA: 0,00
LOCAL:	BR 364 - KM 202 - RONDONÓPOLIS-MT	DATUM: SIRGAS 2000 COORD. N: 8177149,00	E: 750463,62



PROFUNDIDADE (m)	ENSAIO DE PENETRAÇÃO (GOLPES/PENET.)	RESISTÊNCIA À PENETRAÇÃO INI.	RESISTÊNCIA À PENETRAÇÃO FIN.	PROFUDIDADE DA CAMADA (m)	DESCRIÇÃO DO MATERIAL	NÍVEL D'ÁGUA	AVANÇO
	- - -	-	-		AMOSTRA TRADO - ATERRO, SILTE ARGILOSO COM PEDREGULHOS, DE COR VERMELHO.		TH
1,00	4/15 4/15 5/15	8	9	1,00			1,00
2,00	3/15 4/15 5/15	7	9		SILTE ARGILOSO COM PEDREGULHOS (ATERRO), DE COR VARIEGADO, CONSISTÊNCIA MOLE.		
3,00	3/15 4/15 6/15	7	10	3,45			
4,00	3/15 4/15 4/15	7	8				
5,00	3/15 3/15 3/15	6	6				
6,00	2/15 3/15 3/15	5	6		AREIA-SILTOSA, FINA,DE COR VARIEGADA, CONSISTÊNCIA FOFO.	6,00	
7,00	3/15 3/15 3/15	6	6				
8,00	2/15 3/15 3/15	5	6	8,45			
9,00	3/15 4/15 3/15	7	7				TC
10,00	3/15 3/15 4/15	6	7		AREIA-ARGILO-SILTOSA, FINA A MÉDIA, DE COR CINZA ESCURO, CONSISTÊNCIA FOFO À POUCO COMPACTO.		
11,00	4/15 5/15 6/15	9	11	11,45			
12,00	7/15 9/15 11/15	16	20		AREIA-ARGILO-SILTOSA, FINA A MÉDIA,DE COR VARIEGADA, CONSISTÊNCIA COMPACTO.		
13,00	6/15 9/15 13/15	15	22	13,45			
14,00	8/15 13/15 19/15	21	32	14,45	SILTE ARGILOSO COM PEDREGULHOS, DE COR VARIEGADO, CONSISTÊNCIA MÉDIO À RIJO.	N.A. INICIAL: 07/02/19 : FURO SECO N.A. FINAL: 08/02/19 : 6,00m	
15,00	11/15 19/15 27/15	30	46	15,45	SILTE ARGILOSO, DE COR VARIEGADO, CONSISTÊNCIA RIJO À DURO		
16,00	10/15 17/15 30/10	27	47/25		SILTE (FILITO), DE COR VARIEGADO, CONSISTÊNCIA DURO.		
17,00	18/15 30/13 -	48/28	30/13	16,98			16,98
18,00							
19,00							
20,00							

AMOSTRADOR BIPARTIDO:
Ø INTERNO = 34.9 mm PESO: 65 Kg
Ø EXTERNO = 50.8 mm ALTURA DE QUEDA: 75 cm

OBS.:
- SONDAGEM EXECUTADA CONFORME AS NORMAS NBR6484/NBR6502/NBR7181/NBR9603 E NBR13441.
- FURO PARALISADO EM 16.98m.

LEGENDAS: *30 cm INICIAIS* — *30 cm FINAIS* — *TRADO CAVADEIRA - TC • TRADO HELICOIDAL - TH • CIRCULAÇÃO DE ÁGUA - CA • REVESTIMENTO* | |
*ATERRO - **AT** • SOLO ALUVIONAR - **SA** • SOLO COLUVIONAR - **SC** • SOLO FLUVIAL - **SF** • SOLO MARINHO - **SM** • SOLO RESIDUAL - **SR***

El Condor Consultoria, Controle Tecnológico LTDA	DATA: 12/02/19	TRABALHO Nº: RL-2018.200	FOLHA: 02	RESP.:
	ESCALA: 1/100	DESENHISTA: THIAGO SANTOS	SONDADOR: LUIS AUGUSTO DO NASCIMENTO	ENGENHEIRO RESP. - ALBER VITORINO

Telefone: (65) 3661-3441 Endereço: Av das Seringueiras, 33, Jardim das Palmeiras, Cuiabá/Mato Gross

SONDAGEM DE SIMPLES RECONHECIMENTO DO SOLO COM SPT
NBR 6484/01

CLIENTE:	CONCESSIONARIA ROTA DO OESTE	SONDAGEM À PERCUSSÃO:	SP-02
OBRA:	PASSARELA KM 202	INÍCIO: 02/07/2019 TÉRMINO: 02/08/2019	COTA: 0,00
LOCAL:	BR 364 - KM 202 - RONDONÓPOLIS-MT	DATUM: SIRGAS 2000 COORD. N: 8177149,00	E: 750463,62

AMOSTRADOR BIPARTIDO:
Ø INTERNO = 34.9 mm PESO: 65 Kg
Ø EXTERNO = 50.8 mm ALTURA DE QUEDA: 75 cm

GRÁFICO SPT (10 20 30 40)	PROFUNDIDADE (m)	ENSAIO DE PENETRAÇÃO (GOLPES/PENET.)	RESISTÊNCIA À PENETRAÇÃO INI.	RESISTÊNCIA À PENETRAÇÃO FIN.	INTERPRETAÇÃO GEOLÓGICA	PERFIL GEOLÓGICO	PROFUDIDADE DA CAMADA (m)	DESCRIÇÃO DO MATERIAL	NÍVEL D'ÁGUA	AVANÇO
	21,00							IMPENETRAVEL AO TREPANO DE LAVAGEM FURO PARALISADO CONFORME DESCRITO NO ITEM 6.4.3.3 DA NORMA NBR6484:2001 - SOLO - SONDAGEM DE SIMPLES RECONHECIMENTO COM SPT. ENSAIO DE LAVAGEM: 1° 10 min = 2,00 cm 2° 10 min = 2,00 cm 3° 10 min = 3,00 cm	N.A. INICIAL: 07/02/19 : FURO SECO N.A. FINAL: 08/02/19 : 6,00m	
	22,00									
	23,00									
	24,00									
	25,00									
	26,00									
	27,00									
	28,00									
	29,00									
	30,00									
	31,00									
	32,00									
	33,00									
	34,00									
	35,00									
	36,00									
	37,00									
	38,00									
	39,00									
	40,00									

OBS.:
- SONDAGEM EXECUTADA CONFORME AS NORMAS NBR6484/NBR6502/NBR7181/NBR9603 E NBR13441.
- FURO PARALISADO EM 16.98m.

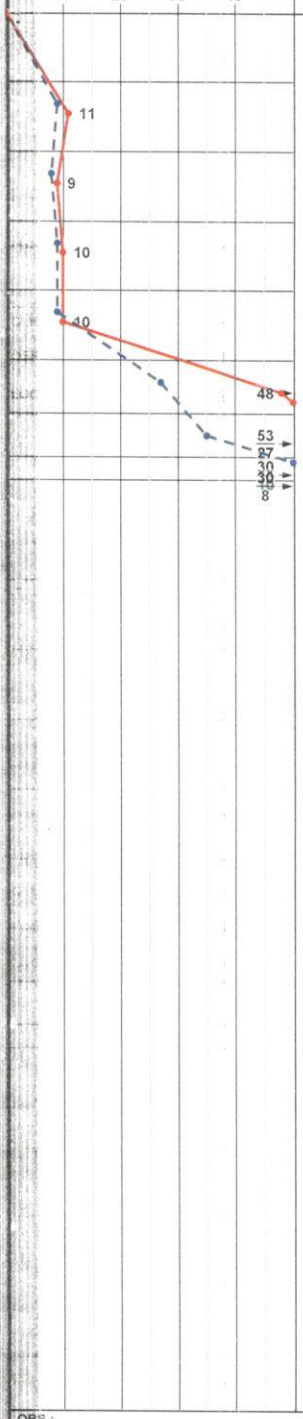
LEGENDAS: *30 cm INICIAIS* *30 cm FINAIS* *TRADO CAVADEIRA - TC • TRADO HELICOIDAL - TH • CIRCULAÇÃO DE ÁGUA - CA • REVESTIMENTO* | |
*ATERRO - **AT** • SOLO ALUVIONAR - **SA** • SOLO COLUVIONAR - **SC** • SOLO FLUVIAL - **SF** • SOLO MARINHO - **SM** • SOLO RESIDUAL - **SR***

El Condor Consultoria, Controle Tecnológico LTDA	DATA: 12/02/19	TRABALHO Nº: RL-2018.200	FOLHA: 03	RESP.:
	ESCALA: 1/100	DESENHISTA: THIAGO SANTOS	SONDADOR: LUIS AUGUSTO DO NASCIMENTO	ENGENHEIRO RESP. - ALBER VITORINO

Telefone: (65) 3661-3441 Endereço: Av das Seringueiras, 33, Jardim das Palmeiras, Cuiabá/Mato Gross

SONDAGEM DE SIMPLES RECONHECIMENTO DO SOLO COM SPT
NBR 6484/01

CLIENTE:	CONCESSIONARIA ROTA DO OESTE	SONDAGEM À PERCUSSÃO:	**SP-03**
OBRA:	PASSARELA KM 205	INÍCIO: 08/02/2019 TÉRMINO: 08/02/2019	COTA: 0,00
LOCAL:	BR 364 - KM 205 - RONDONÓPOLIS-MT	DATUM: SIRGAS 2000 COORD. N: 8179499,00	E: 749451,00



PROFUNDIDADE (m)	ENSAIO DE PENETRAÇÃO (GOLPES/PENET.)	RESISTÊNCIA À PENETRAÇÃO INI.	RESISTÊNCIA À PENETRAÇÃO FIN.	PROFUDIDADE DA CAMADA (m)	DESCRIÇÃO DO MATERIAL	NÍVEL D'ÁGUA	AVANÇO
	- - -	-	-		AMOSTRADOR BIPARTIDO: Ø INTERNO = 34.9 mm PESO: 65 Kg; Ø EXTERNO = 50.8 mm ALTURA DE QUEDA: 75 cm		
1,00	4/15 5/15 6/15	9	11	1,00	AMOSTRA TRADO - SILTE ARGILO ARENOSO COM PEDREGULHOS, DE COR VARIEGADO.		TH 1,00
				1,45	SILTE ARGILO ARENOSO, DE COR VARIEGADO, CONSISTÊNCIA MOLE À MÉDIO.		
2,00	4/15 4/15 5/15	8	9				
3,00	5/15 4/15 6/15	9	10		SILTE ARENOSO, DE COR VERMELHO, CONSISTÊNCIA		
4,00	4/15 5/15 5/15	9	10	4,45			TC
5,00	9/15 18/15 30/15	27	48		AREIA-SILTOSA, FINA, DE COR VARIEGADA, CONSISTÊNCIA MEDIAMENTE COMPACTO À COMPACTO.		
6,00	13/15 22/15 31/12	35	53			6,00	
	18/15 30/15 -	48	30	6,45			
7,00		25	27 / 10	6,80	AREIA-SILTOSA, FINA A MÉDIA,DE COR VARIEGADA,CONSISTÊNCIA COMPACTO.		6,85
8,00					IMPENETRÁVEL AO TRÉPANO DE LAVAGEM		
9,00					FURO PARALISADO CONFORME DESCRITO NO ITEM 6.4.3.3 DA NORMA NBR6484:2001 - SOLO - SONDAGEM DE SIMPLES RECONHECIMENTO COM SPT.		
10,00					ENSAIO DE LAVAGEM: 1° 10 min = 2,00 cm; 2° 10 min = 2,00 cm; 3° 10 min = 3,00 cm		
11,00							
12,00							
13,00						N.A. INICIAL: 07/02/19 : FURO SECO; N.A. FINAL: 08/02/19 : 6,00m	
14,00							
15,00							
16,00							
17,00							
18,00							
19,00							
20,00							

INTERPRETAÇÃO GEOLÓGICA / PERFIL GEOLÓGICO: 00, 01, 02, 03, 04, 05, 06, 07, 08

OBS.:
- SONDAGEM EXECUTADA CONFORME AS NORMAS NBR6484/NBR6502/NBR7181/NBR9603 E NBR13441.
- FURO PARALISADO EM 6,85m.

LEGENDAS: *30 cm INICIAIS* — *30 cm FINAIS* — *TRADO CAVADEIRA - TC • TRADO HELICOIDAL - TH • CIRCULAÇÃO DE ÁGUA - CA • REVESTIMENTO* | |
*ATERRO - **AT** • SOLO ALUVIONAR - **SA** • SOLO COLUVIONAR - **SC** • SOLO FLUVIAL - **SF** • SOLO MARINHO - **SM** • SOLO RESIDUAL - **SR***

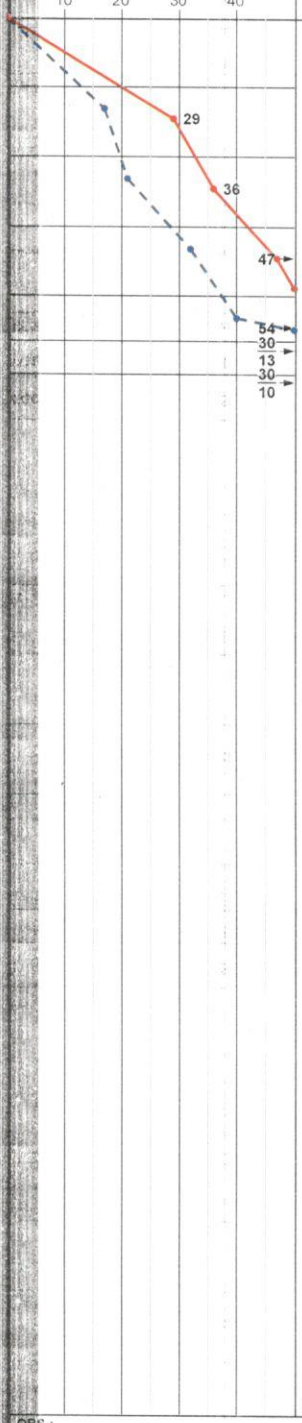
El Condor Consultoria, Controle Tecnológico LTDA	DATA: 12/02/19	TRABALHO N°: RL-2018.200	FOLHA: 03	RESP.:
	ESCALA: 1/100	DESENHISTA: THIAGO SANTOS	SONDADOR: LUIS AUGUSTO DO NASCIMENTO	ENGENHEIRO RESP. - ALBER VITORINO

Telefone: (65) 3661-3441 Endereço: Av das Seringueiras, 33, Jardim das Palmeiras, Cuiabá/Mato Gross

SONDAGEM DE SIMPLES RECONHECIMENTO DO SOLO COM SPT
NBR 6484/01

CLIENTE:	CONCESSIONARIA ROTA DO OESTE	SONDAGEM À PERCUSSÃO:	**SP-04**
OBRA:	PASSARELA KM 205	INÍCIO: 08/02/2019 TÉRMINO: 08/02/2019	COTA: 0,00
LOCAL:	BR 364 - KM 205- RONDONÓPOLIS-MT	DATUM: SIRGAS 2000 COORD. N: 8179499,00	E: 749451,00

GRÁFICO SPT



PROFUNDIDADE (m)	ENSAIO DE PENETRAÇÃO (GOLPES/PENET.)	RESISTÊNCIA À PENETRAÇÃO INI.	RESISTÊNCIA À PENETRAÇÃO FIN.	PROFUNDIDADE DA CAMADA (m)	DESCRIÇÃO DO MATERIAL	NÍVEL D'ÁGUA	AVANÇO
	- - -	-	-		AMOSTRA TRADO - SILTE ARGILO ARENOSO COM PEDREGULHOS, DE COR MARROM.		TH 1,00
1,00	6/15 11/15 18/15	17	29	1,00			
				1,45	SILTE ARENOSO COM PEDREGULHOS(ATERRO), MARROM, MEDIANAMENTE COMPACTO À COMPACTO.		
2,00	7/15 14/15 22/15	21	36		AREIA-SILTOSA, FINA, DE COR VARIEGADA, CONSISTÊNCIA MEDIAMENTE COMPACTO À COMPACTO.		
3,00	13/15 19/15 28/15	32	47				TC
				3,45			
4,00	16/15 24/15 30/15	40	54				
	30/13 - -	30	-		AREIA-SILTOSA, FINA A MÉDIA, DE COR VARIEGADA, CONSISTÊNCIA COMPACTO.		
5,00	30/10 - -	30	-	5,13		5,00	5,21
					IMPENETRÁVEL AO TRÉPANO DE LAVAGEM		
6,00					FURO PARALISADO CONFORME DESCRITO NO ITEM 6.4.3.3 DA NORMA NBR6484:2001 - SOLO - SONDAGEM DE SIMPLES RECONHECIMENTO COM SPT.		
7,00					ENSAIO DE LAVAGEM: 1° 10 min = 2,00 cm 2° 10 min = 2,00 cm 3° 10 min = 3,00 cm		
8,00							
9,00							
10,00							
11,00							
12,00							
13,00						N.A. INICIAL: 08/02/19 : FURO SECO N.A. FINAL: 08/02/19 : 5,00m	
14,00							
15,00							
16,00							
17,00							
18,00							
19,00							
20,00							

AMOSTRADOR BIPARTIDO:
Ø INTERNO = 34.9 mm PESO: 65 Kg
Ø EXTERNO = 50.8 mm ALTURA DE QUEDA: 75 cm

OBS.:
- SONDAGEM EXECUTADA CONFORME AS NORMAS NBR6484/NBR6502/NBR7181/NBR9603 E NBR13441.
- FURO PARALISADO EM 5,21m.

LEGENDAS: *30 cm INICIAIS* *30 cm FINAIS* *TRADO CAVADEIRA - TC • TRADO HELICOIDAL - TH • CIRCULAÇÃO DE ÁGUA - CA • REVESTIMENTO* *ATERRO - **AT** • SOLO ALUVIONAR - **SA** • SOLO COLUVIONAR - **SC** • SOLO FLUVIAL - **SF** • SOLO MARINHO - **SM** • SOLO RESIDUAL - **SR***

El Condor Consultoria, Controle Tecnológico LTDA	DATA: 12/02/19	TRABALHO Nº: RL-2018.200	FOLHA: 04	RESP.:
	ESCALA: 1/100	DESENHISTA: THIAGO SANTOS	SONDADOR: LUIS AUGUSTO DO NASCIMENTO	ENGENHEIRO RESP. - ALBER VITORINO

Telefone: (65) 3661-3441 Endereço: Av das Seringueiras, 33, Jardim das Palmeiras, Cuiabá/Mato Gross