Elemento	Pos.	Diam.	Q	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
V 1	1	Ø8	2	10	565	10	585	1170	4.6	
	2	Ø8	2	10	565	10	585	1170	4.6	
	3	Ø8	56				74	4144	16.3	
								Total+10%	28.1	
V 2	4	Ø8	2	10	565	10	585	1170	4.6	
	5	Ø8	2	10	565	10	585	1170	4.6	
	6	Ø8	56				74	4144	16.3	
								Total+10%	28.1	
V 3	7	Ø8	2	10	837	10	857	1714	6.7	
	8	Ø8	2	10	837	10	857	1714	6.7	
	9	Ø8	86				74	6364	25.0	
								Total+10%	42.2	
								Ø8:	98.4	0.0
								Total:	98.4	0.0

Elemento	Pos.	Diam.	Q	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
V 4	1	Ø8	2	10	491	10	513	1026	4.0	
	2	Ø8	2	10	491	10	513	1026	4.0	
	3	Ø8	51				74	3774	14.8	
								Total+10%	23.1	
V 5	4	Ø8	2	10	498	10	518	1036	4.1	
	5	Ø8	2	10	498	10	518	1036	4.1	
	6	Ø8	51				74	3774	14.8	
								Total+10%	23.3	
V 6	7	Ø8	2	10	919	10	939	1878	7.4	
	8	Ø8	2	10	919	10	939	1878	7.4	
	9	Ø8	84				74	6956	27.3	
								Total+10%	46.3	
								Ø8:	96.7	0.0
								Total:	96.7	0.0

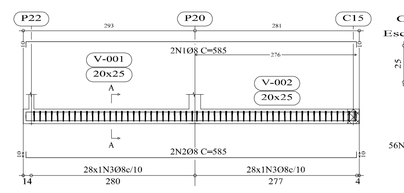
Elemento	Pos.	Diam.	Q	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
V 7	1	Ø8	2	10	209	10	229	458	1.8	
	2	Ø8	2	10	209	10	229	458	1.8	
	3	Ø8	21				74	1554	6.1	
								Total+10%	10.7	
V 8	4	Ø8	2	10	211	10	231	462	1.8	
	5	Ø8	2	10	211	10	231	462	1.8	
	6	Ø8	22				74	1628	6.4	
								Total+10%	11.0	
V 9	7	Ø8	2	10	232	10	252	504	2.0	
	8	Ø8	2	10	232	10	252	504	2.0	
	9	Ø8	24				74	1776	7.0	
								Total+10%	12.1	
								Ø8:	33.8	0.0
								Total:	33.8	0.0

Térreo
Desenho de vigas
Aço: CA-50-A e CA-60-B
Escala vigas: 1:50
Escala seções: 1:20

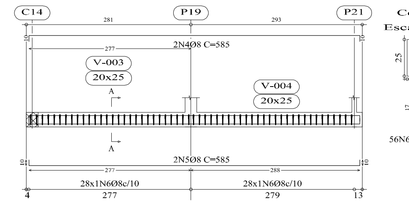
Resumo Aço Térreo Vigas	Comp. total (m)	Peso+10% (kg)	
CA-50-A Ø8	636.7	275	

Elemento	Pos.	Diam.	Q	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
V 10	1	Ø8	2	10	922	10	942	1884	7.4	
	2	Ø8	2	10	922	10	942	1884	7.4	
	3	Ø8	94				74	6956	27.3	
								Total+10%	46.3	
								Ø8:	46.3	0.0
								Total:	46.3	0.0

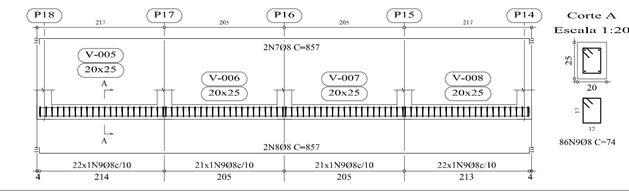
V 1
Escala 1:50



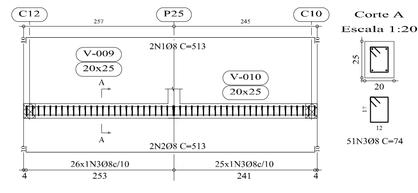
V 2
Escala 1:50



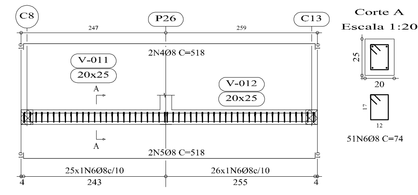
V 3
Escala 1:50



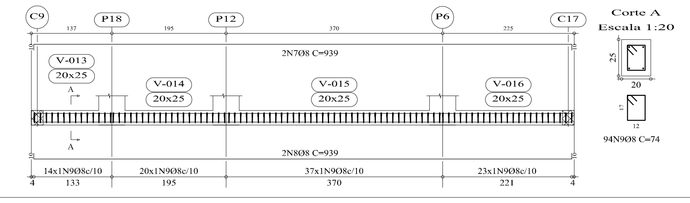
V 4
Escala 1:50



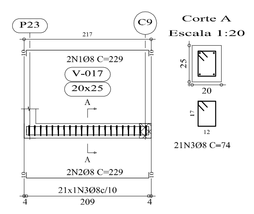
V 5
Escala 1:50



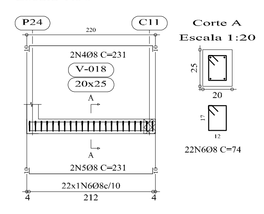
V 6
Escala 1:50



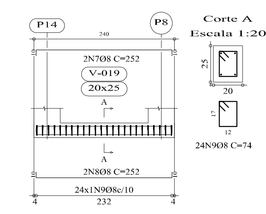
V 7
Escala 1:50



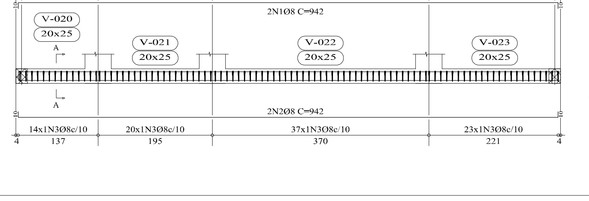
V 8
Escala 1:50



V 9
Escala 1:50

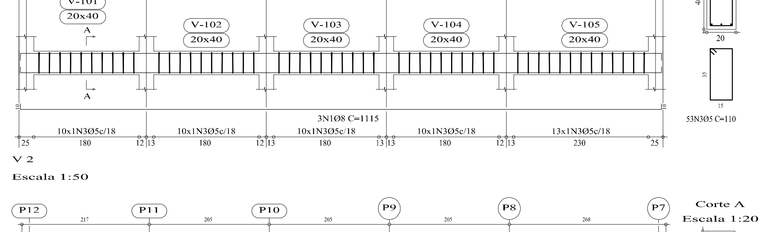


V 10
Escala 1:50

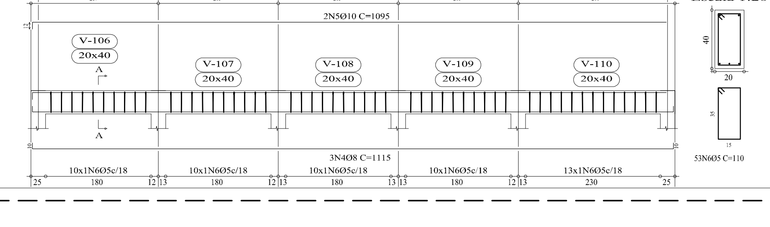


Elemento	Pos.	Diam.	Q	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
V 1	1	Ø8	3	10	1095	10	1115	3345	13.1	
	2	Ø10	3	12	1095	12	1119	3357	21.1	
	3	Ø5	53				110	5830		9.2
								Total+10%	37.6	10.1
V 2	4	Ø8	3	10	1095	10	1115	3345	13.1	
	5	Ø10	3	12	1095	12	1119	3357	21.1	
	6	Ø5	53				110	5830		9.2
								Total+10%	29.6	10.1
								Ø5:	0.0	20.2
								Ø8:	28.8	0.0
								Ø10:	38.4	0.0
								Total:	67.2	20.2

V 1
Escala 1:50



V 2
Escala 1:50



Elemento	Pos.	Diam.	Q	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
V 3	1	Ø8	2	10	275	10	295	590	2.2	
	2	Ø10	2	12	275	12	299	598	3.8	
	3	Ø5	18				90	1620		2.5
								Total+10%	6.7	2.8
V 4	4	Ø8	3	10	605	10	625	1875	7.4	
	5	Ø8	3	10	605	10	625	1875	7.4	
	6	Ø5	29				110	3000		4.8
								Total+10%	16.3	5.3
								Ø5:	0.0	8.1
								Ø8:	18.8	0.0
								Ø10:	4.2	0.0
								Total:	23.0	8.1

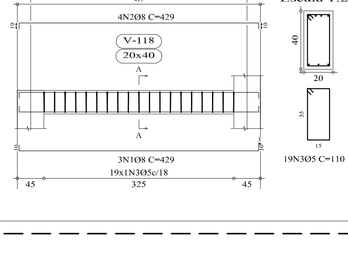
Elemento	Pos.	Diam.	Q	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
V 5	1	Ø8	2	10	605	10	625	1875	7.4	
	2	Ø10	3	12	605	12	617	1851	11.6	
	3	Ø5	29				110	3080		4.8
								Total+10%	20.9	5.3
V 6	4	Ø10	3	12	605	12	629	1887	11.9	
	5	Ø10	3	12	605	12	629	1887	11.9	
	6	Ø5	29				110	3080		4.8
								Total+10%	25.9	5.3
								Ø5:	0.0	10.6
								Ø8:	8.1	0.0
								Ø10:	38.7	0.0
								Total:	46.8	10.6

Piso 1
Desenho de vigas
Concreto: C25, usina rígor
Aço: CA-50-A e CA-60-B
Escala vigas: 1:50
Escala seções: 1:20

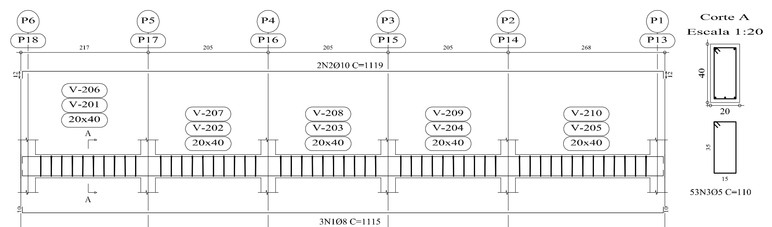
Resumo Aço Piso 1 Vigas		Comp. total (m)	Peso+10% (kg)	Total
CA-50-A	Ø8	159.1	69	
	Ø10	117.3	81	150
CA-60-B	Ø5	246.1	43	43
Total				193

Elemento	Pos.	Diam.	Q	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
V 7	1	Ø8	2	10	409	10	429	1287	5.1	
	2	Ø8	14	10	409	10	429	1716	6.7	
	3	Ø5	39				110	2090		3.3
								Total+10%	13.0	3.6
								Ø5:	0.0	3.6
								Ø8:	13.0	0.0
								Total:	13.0	3.6

V 7
Escala 1:50



V 1
V 2
Escala 1:50

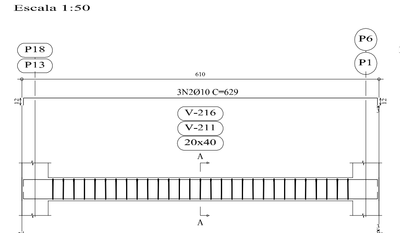


Elemento	Pos.	Diam.	Q	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
V 1=V 2	1	Ø8	3	10	1095	10	1115	3345	13.1	
	2	Ø10	3	12	1095	12	1119	2238	14.1	
	3	Ø5	29				110	5830		9.2
								Total+10%	29.9	10.1
								Ø5:	0.0	20.2
								Ø8:	28.8	0.0
								Ø10:	31.0	0.0
								Total:	59.8	20.2

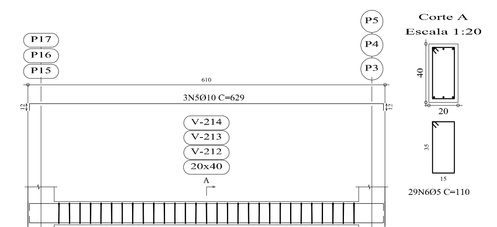
Piso 2
Desenho de vigas
Concreto: C25, usina rígor
Aço: CA-50-A e CA-60-B
Escala vigas: 1:50
Escala seções: 1:20

Elemento	Pos.	Diam.	Q	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
V 3=V 8	1	Ø10	3	12	605	12	629	1887	11.9	
	2	Ø10	3	12	605	12	629	1887	11.9	
	3						110	3190		5.0
								Total+10%	26.2	5.5
V 4=V 5=V 6	4	Ø10	3	12	605	12	629	1887	11.9	
	5	Ø10	3	12	605	12	629	1887	11.9	
	6	Ø5	29				110	3190		5.0
								Total+10%	26.2	5.3
								(x2):	78.6	16.5
								Ø5:	0.0	27.5
								Ø10:	131.0	0.0
								Total:	131.0	27.5

V 3
V 8
Escala 1:50



V 4
V 5
V 6
Escala 1:50

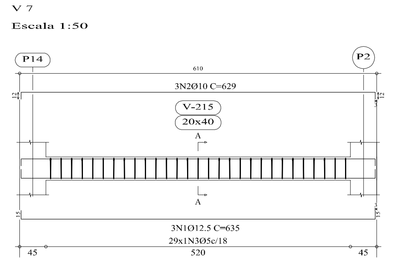


Piso 2
Desenho de vigas
Concreto: C25, usina rígor
Aço: CA-50-A e CA-60-B
Escala vigas: 1:50
Escala seções: 1:20

Resumo Aço Piso 2 Vigas		Comp. total (m)	Peso+10% (kg)	Total
CA-50-A	Ø8	66.9	29	
	Ø10	252.3	174	
	Ø12.5	19.1	21	224
CA-60-B	Ø5	308.0	53	53
Total				277

Elemento	Pos.	Diam.	Q	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
V 7	1	Ø12.5	3	15	605	15	635	1905	18.7	
	2	Ø10	3	12	605	12	629	1887	11.9	
	3	Ø5	29				110	3190		5.0
								Total+10%	33.7	5.5
								Ø5:	0.0	5.5
								Ø10:	13.1	0.0
								Ø12.5:	20.6	0.0
								Total:	33.7	5.5

V 7
Escala 1:50



PREFEITURA MUNICIPAL DO RIO GRANDE
UNIDADE GESTORA DE PROJETOS - UGP
RIO GRANDE 2010 UMA VISÃO DE FUTURO

OBRA/LOCAL:
PROJETO DE ESTRUTURAL DA CASA DE BOMBAS PADRÃO

CASA DE BOMBAS

RESP. PROJETO: Engº Mauro Lippert - CREA 57975
Engº Gilberto Arabidian Junior - CREA/RS 159164
Engº Ataualpa da Silva Agostinho - CREA/RS 160757

DESENHO: GILBERTO A. JR. | ESCALA: 1/50 | DATA: AGOSTO/2010 | PRANCHA: 08/10

ESPECIFICAÇÃO: ARMAÇÃO DAS VIGAS - DETALHAMENTO