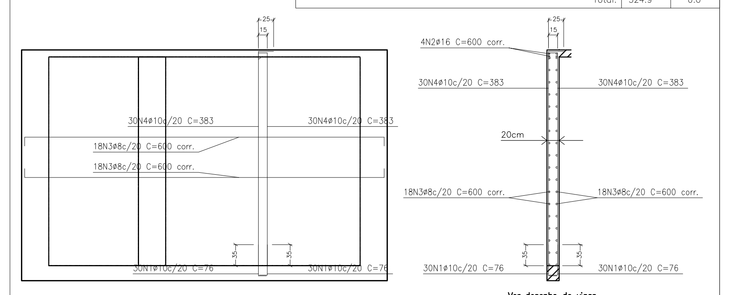
Elemento	Pos.	Diam.	Q.	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
C4	1	ø10	60	20	56		76	4560	28.4	
	2	ø16	4		VAR.		VAR.	2400	37.7	
	3	ø8	36		VAR.		VAR.	21600	84.8	
	4	ø10	60	25	358		383	22980	144.3	
							Total+10%:		324.9	
							ø8:		93.2	0.0
							ø10:		190.2	0.0
							ø16:		41.5	0.0
							Total:		324.9	0.0

Escala: 1:50
Casa de Bombas 3 0,5
Não se detalham os reforços locais das aberturas.

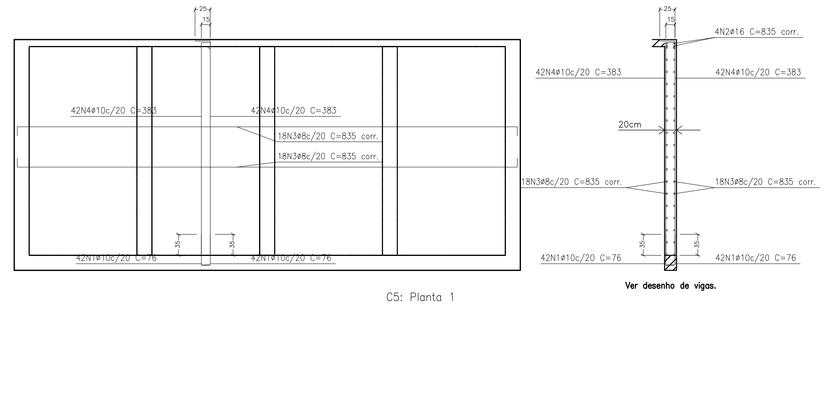


C4: Planta 1

Ver desenho de vigas.

Elemento	Pos.	Diam.	Q.	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
C5	1	ø10	88	20	56		76	6384	40.1	
	2	ø16	4		VAR.		VAR.	3340	52.4	
	3	ø8	36		VAR.		VAR.	30060	118.0	
	4	ø10	84	25	358		383	32172	202.0	
							Total+10%:		413.8	
							ø8:		129.8	0.0
							ø10:		266.3	0.0
							ø16:		57.7	0.0
							Total:		453.8	0.0

Escala: 1:50
Casa de Bombas 3 0,5
Não se detalham os reforços locais das aberturas.

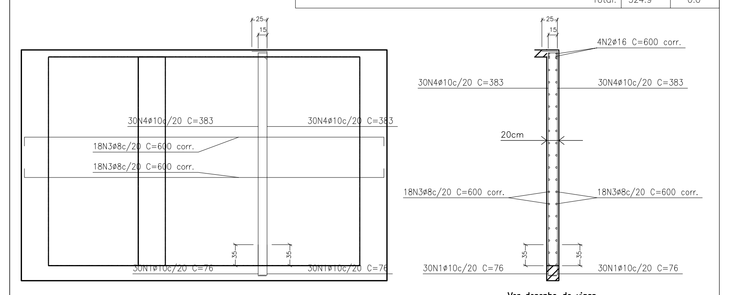


C5: Planta 1

Ver desenho de vigas.

Elemento	Pos.	Diam.	Q.	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
C6	1	ø10	68	20	56		76	4560	28.4	
	2	ø16	4		VAR.		VAR.	2400	37.7	
	3	ø8	36		VAR.		VAR.	21600	84.8	
	4	ø10	60	25	358		383	22980	144.3	
							Total+10%:		324.9	
							ø8:		93.2	0.0
							ø10:		190.2	0.0
							ø16:		41.5	0.0
							Total:		324.9	0.0

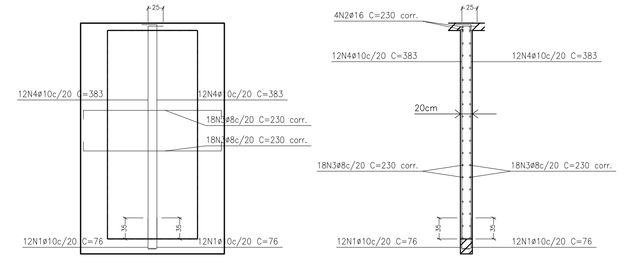
Escala: 1:50
Casa de Bombas 3 0,5
Não se detalham os reforços locais das aberturas.



C6: Planta 1

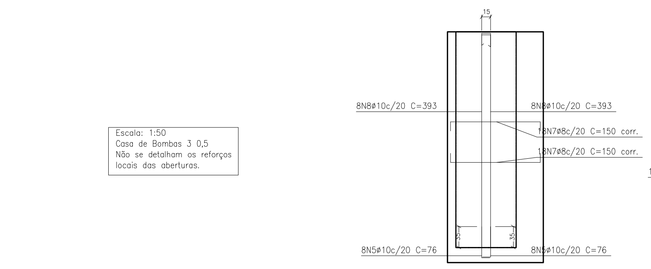
Ver desenho de vigas.

Elemento	Pos.	Diam.	Q.	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
C7	1	ø10	24	20	56		76	1824	11.5	
	2	ø16	4		VAR.		VAR.	920	14.4	
	3	ø8	36		VAR.		VAR.	8280	32.5	
	4	ø10	24	25	358		383	9192	57.7	
							Total+10%:		127.7	
C8	5	ø10	16	20	56		76	1216	7.6	
	6	ø16	4		VAR.		VAR.	600	9.4	
	7	ø8	36		VAR.		VAR.	5400	21.2	
	8	ø10	16	35	358		393	6288	39.5	
							Total+10%:		85.5	
							ø8:		59.0	0.0
							ø10:		127.9	0.0
							ø16:		26.3	0.0
							Total:		213.2	0.0



C7: Planta 1

Ver desenho de vigas.

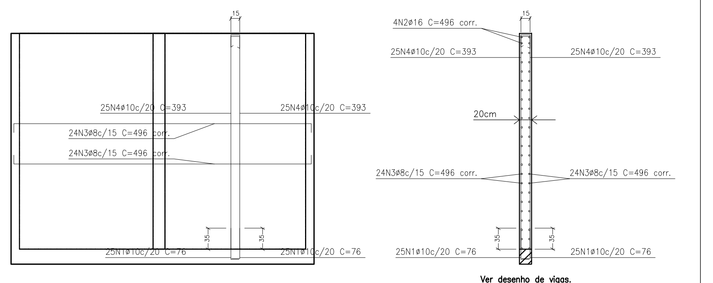


C8: Planta 1

Ver desenho de vigas.

Escala: 1:50
Casa de Bombas 3 0,5
Não se detalham os reforços locais das aberturas.

Elemento	Pos.	Diam.	Q.	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
C9	1	ø10	50	20	56		76	3800	23.9	
	2	ø16	4		VAR.		VAR.	1984	31.1	
	3	ø8	48		VAR.		VAR.	23808	93.4	
	4	ø10	50	35	358		393	19650	123.4	
							Total+10%:		299.0	
							ø8:		102.8	0.0
							ø10:		162.0	0.0
							ø16:		34.2	0.0
							Total:		299.0	0.0

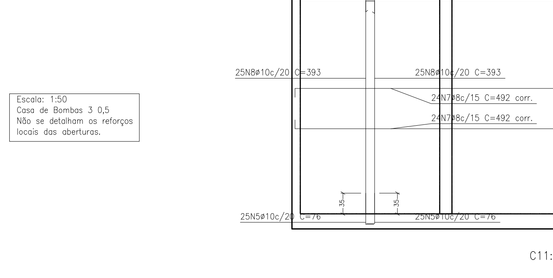


C9: Planta 1

Ver desenho de vigas.

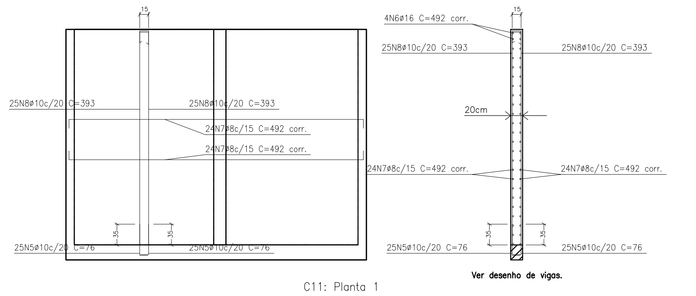
Escala: 1:50
Casa de Bombas 3 0,5
Não se detalham os reforços locais das aberturas.

Elemento	Pos.	Diam.	Q.	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
C10	1	ø10	16	20	56		76	1216	7.6	
	2	ø16	4		VAR.		VAR.	612	9.6	
	3	ø8	36		VAR.		VAR.	5508	21.6	
	4	ø10	16	35	358		393	6288	39.5	
							Total+10%:		86.1	
C11	5	ø10	50	20	56		76	3800	23.9	
	6	ø16	4		VAR.		VAR.	1968	30.9	
	7	ø8	48		VAR.		VAR.	23616	92.7	
	8	ø10	50	35	358		393	19650	123.4	
							Total+10%:		298.0	
							ø8:		120.7	0.0
							ø10:		213.8	0.0
							ø16:		44.6	0.0
							Total:		384.1	0.0



C10: Planta 1

Ver desenho de vigas.



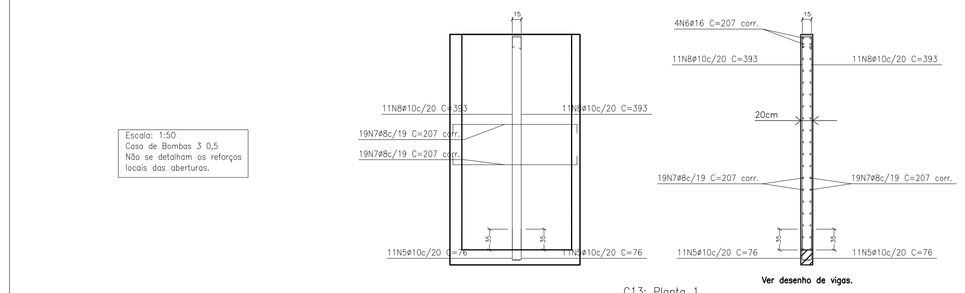
C11: Planta 1

Ver desenho de vigas.

Elemento	Pos.	Diam.	Q.	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
C12	1	ø10	22	20	56		76	1672	10.5	
	2	ø16	4		VAR.		VAR.	840	13.2	
	3	ø8	40		VAR.		VAR.	8400	33.0	
	4	ø10	22	35	358		393	8646	54.3	
							Total+10%:		122.1	
C13	5	ø10	22	20	56		76	1672	10.5	
	6	ø16	4		VAR.		VAR.	828	13.0	
	7	ø8	38		VAR.		VAR.	7866	30.9	
	8	ø10	22	35	358		393	8646	54.3	
							Total+10%:		119.6	
							ø8:		70.3	0.0
							ø10:		142.6	0.0
							ø16:		28.8	0.0
							Total:		241.7	0.0

C12: Planta 1

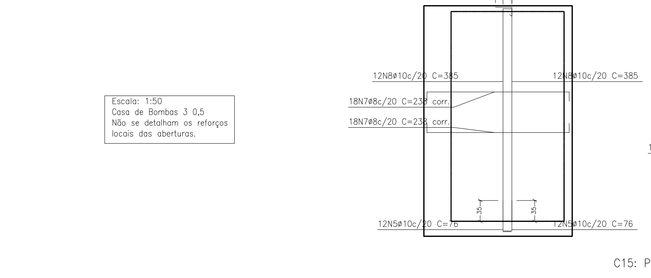
Ver desenho de vigas.



C13: Planta 1

Ver desenho de vigas.

Elemento	Pos.	Diam.	Q.	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
C14	1	ø10	24	20	56		76	1824	11.5	
	2	ø16	4		VAR.		VAR.	948	14.9	
	3	ø8	36		VAR.		VAR.	8532	33.5	
	4	ø10	24	27	358		385	9240	58.0	
							Total+10%:		129.7	
C15	5	ø10	24	20	56		76	1824	11.5	
	6	ø16	4		VAR.		VAR.	952	14.9	
	7	ø8	36		VAR.		VAR.	8568	33.6	
	8	ø10	24	27	358		385	9240	58.0	
							Total+10%:		129.8	
							ø8:		73.9	0.0
							ø10:		153.0	0.0
							ø16:		32.6	0.0
							Total:		259.5	0.0



C14: Planta 1

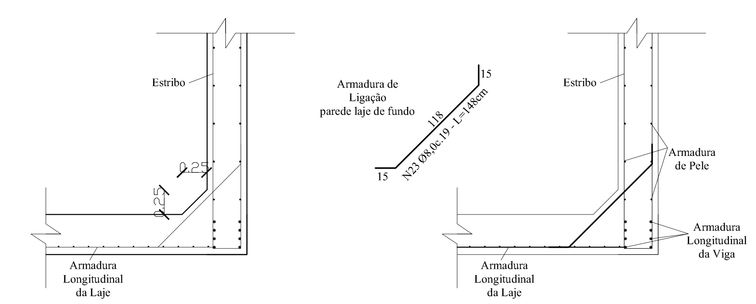
Ver desenho de vigas.

C15: Planta 1

Ver desenho de vigas.

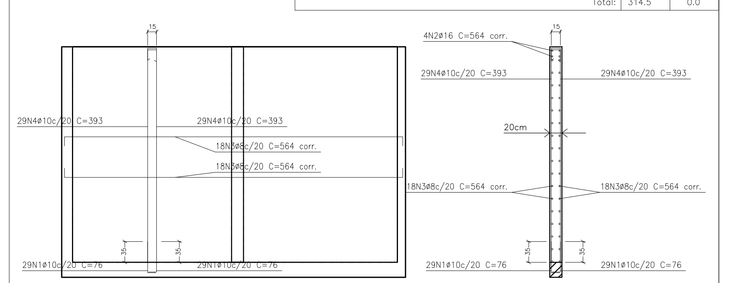
OBS:-Todas as ligações das vigas parede com as Lajes de fundo serão como esta no detalhe A, com misulas por todo o perímetro das ligações ;
-Todas os cobrimentos das vigas paredes são de 3cm;

Detalhe ligação Viga-Parede com Laje de fundo
(Misulas)



Elemento	Pos.	Diam.	Q.	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
C16	1	ø10	58	20	56		76	4408	27.7	
	2	ø16	4		VAR.		VAR.	2256	35.4	
	3	ø8	36		VAR.		VAR.	20304	79.7	
	4	ø10	58	35	358		393	22794	143.1	
							Total+10%:		314.5	
							ø8:		87.7	0.0
							ø10:		187.9	0.0
							ø16:		38.9	0.0
							Total:		314.5	0.0

Escala: 1:50
Casa de Bombas 3 0,5
Não se detalham os reforços locais das aberturas.

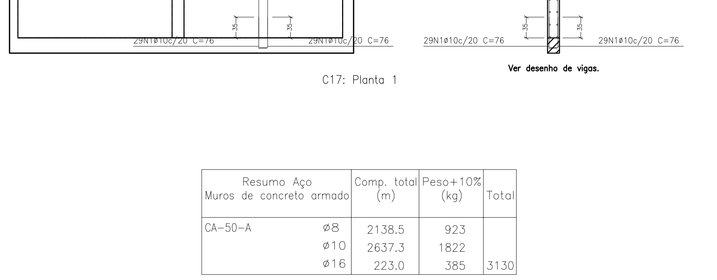


C16: Planta 1

Ver desenho de vigas.

Elemento	Pos.	Diam.	Q.	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50-A (kg)	CA-60-B (kg)
C17	1	ø10	58	20	56		76	4408	27.7	
	2	ø16	4		VAR.		VAR.	2256	35.4	
	3	ø8	36		VAR.		VAR.	20304	79.7	
	4	ø10	58	35	358		393	22794	143.1	
							Total+10%:		314.5	
							ø8:		87.7	0.0
							ø10:		187.9	0.0
							ø16:		38.9	0.0
							Total:		314.5	0.0

Escala: 1:50
Casa de Bombas 3 0,5
Não se detalham os reforços locais das aberturas.



C17: Planta 1

Ver desenho de vigas.

Resumo Aço Muros de concreto armado		Comp. total (m)	Peso+10% (kg)	Total
CA-50-A	ø8	2138.5	923	
	ø10	2637.3	1822	
	ø16	223.0	385	3130

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 57973
Engº Gilberto Arabidian Junior - CREA/RS 159866
Engº Ataualpa da Silva Agostinho - CREA/RS 160757

DESENHO: GILBERTO A. JR. | ESCALA: 1/50 | DATA: AGOSTO/2010 | PRANCHA: 07/10

ESPECIFICAÇÃO: ARMAÇÃO DAS CORTINAS E DETALHAMENTO