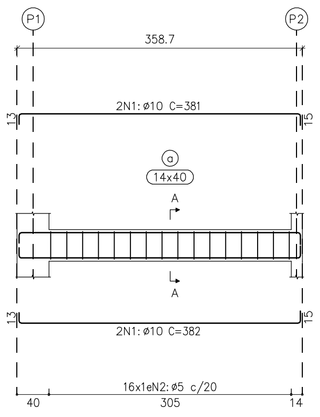
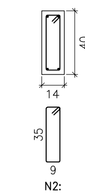
V 1
Escala vigas 1:50
Escala seções 1:25

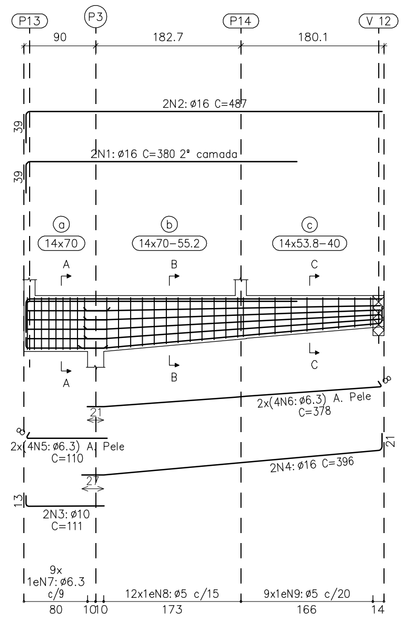


Seção A

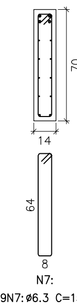


N2:
16N2: ø5 C=96

V 2
Escala vigas 1:50
Escala seções 1:25
Ver esperas no detalhamento de pilares ou vista de muros

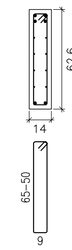


Seção A



N7:
9N7: ø6.3 C=157

Seção B

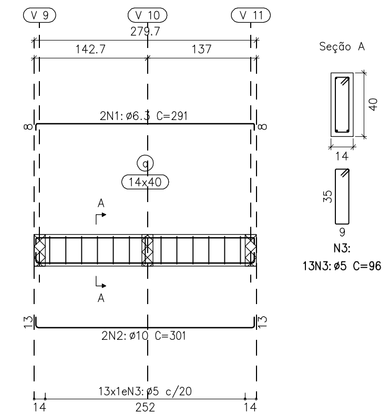


N8:
12N8: ø5 C=156-126

Seção C

N9:
9N9: ø5 C=124-96

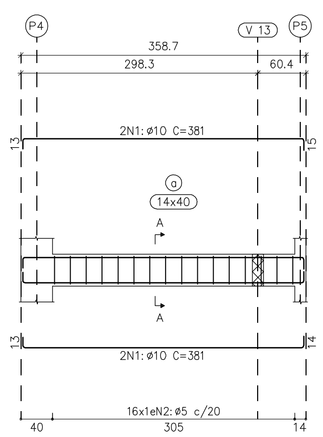
V 3
Escala vigas 1:50
Escala seções 1:25



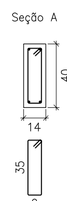
Seção A

N3:
13N3: ø5 C=96

V 5
Escala vigas 1:50
Escala seções 1:25

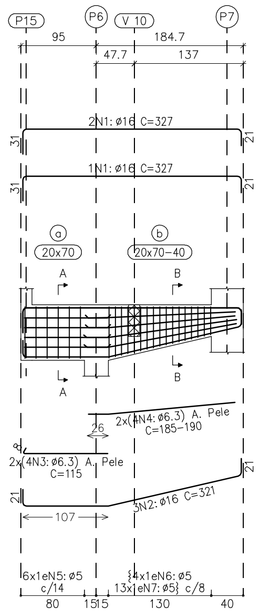


Seção A

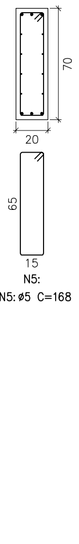


N2:
16N2: ø5 C=96

V 6
Escala vigas 1:50
Escala seções 1:25
Ver esperas no detalhamento de pilares ou vista de muros

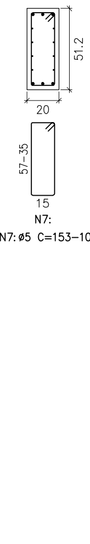


Seção A



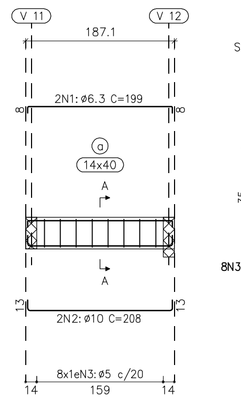
N5:
6N5: ø5 C=168

Seção B

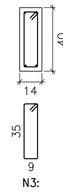


N7:
13N7: ø5 C=153-108

V 4
Escala vigas 1:50
Escala seções 1:25

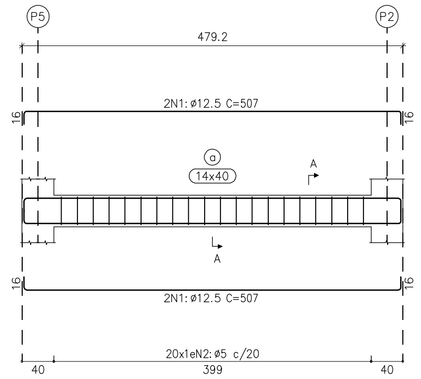


Seção A

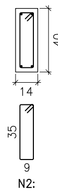


N3:
8N3: ø5 C=96

V 14
Escala vigas 1:50
Escala seções 1:25



Seção A



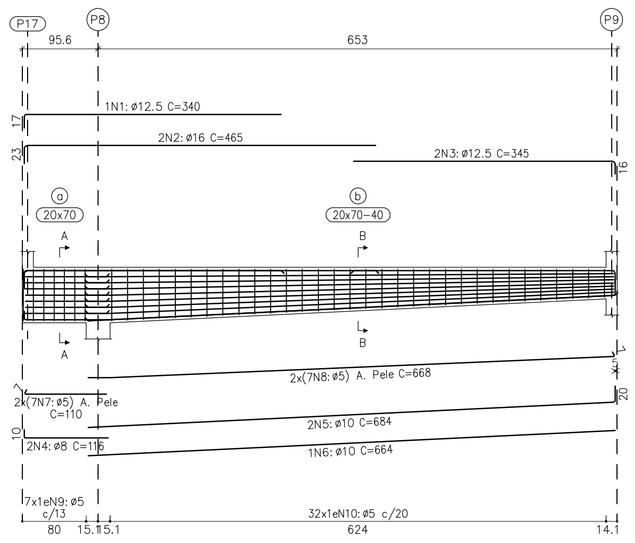
N2:
20N2: ø5 C=96

Resumo Aço Desenho de vigas		Comp. total (m)	Peso+10% (kg)	Total
CA-50	ø6.3	95.9	26	
	ø8	6.0	3	
	ø10	184.5	125	
	ø12.5	49.2	52	
	ø16	54.0	94	300
CA-60	ø5	485.3	84	84
Total				384

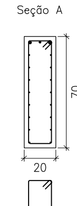
Térreo
Desenho de vigas
Concreto: C30, usina,rigor
Aço das barras: CA-50 e CA-60
Aço dos estribos: CA-50 e CA-60
Escala vigas 1:50
Escala seções 1:25
Escala aberturas 1:20

Elemento	Pos.	Diam.	Q.	Dob. (cm)	Reta (cm)	Dob. (cm)	Comp. (cm)	Total (cm)	CA-50 (kg)	CA-60 (kg)
V 1	1	ø10	4	13	353.7	14.6		1524	9.4	
	2	ø5	16	5	86	5	96	1536		2.4
							Total+10%		10.3	2.6
V 2	1	ø16	2	39.2	240.8		380	760	12.0	
	2	ø16	2	39.2	447.9		487	974	15.4	
	3	ø10	2	13	88.2		111	222	1.4	
	4	ø16	2		274.8	20.8	396	792	12.5	
	5	ø6.3	8	8.2	101.8		110	880	2.2	
	6	ø6.3	8		369.6	8.2	378	3024	7.4	
	7	ø6.3	9	6.3	145.5	6.3	158	1422	3.5	
	8	ø5	12	5	VAR.	5	VAR.	1692		2.7
	9	ø5	9	5	VAR.	5	VAR.	990		1.6
							Total+10%		59.8	4.7
V 3	1	ø6.3	2	8.2	274.7	8.2	291	582	3.4	
	2	ø10	2	13	274.7	13	301	602	3.7	
	3	ø5	13	5	86	5	96	1248		2.0
							Total+10%		5.6	2.2
V 4	1	ø6.3	2	8.2	182.5	8.2	199	398	1.0	
	2	ø10	2	13	182.5	13	208	416	2.6	
	3	ø5	8	5	86	5	96	768		1.2
							Total+10%		4.0	1.3
V 5	1	ø10	4	13	353.7	14.6	381	1524	9.4	
	2	ø5	16	5	86	5	96	1536		2.4
							Total+10%		10.3	2.6
V 6	1	ø16	3	31.3	274.7	20.8	327	981	15.5	
	2	ø16	2	30.3	278.1	20.8	331	961	15.2	
	3	ø6.3	8	8.2	104.8		113	903	2.3	
	4	ø6.3	8	5	VAR.	5	VAR.	1480	3.6	
	5	ø5	6	5	158	5	168	1008		1.6
	6	ø5	4	5	VAR.	5	VAR.	840		1.0
	7	ø5	13	5	VAR.	5	VAR.	1690		2.7
							Total+10%		40.3	5.8
V 7	1	ø12.5	2	16.9	323.5		340	680	3.3	
	2	ø16	2	22.9	442.1		465	930	14.7	
	3	ø12.5	2		328.8	16.3	345	690	6.6	
	4	ø8	2	10.4	105.7		116	232	0.9	
	5	ø10	2		663.9	20.3	684	1368	8.4	
	6	ø10	2		663.9		664	664	4.1	
	7	ø5	14	6.5	503.5		110	1540		2.4
	8	ø5	14		661.5	6.5	668	9352		14.7
	9	ø5	7	5	156	5	168	1176		1.8
	10	ø5	32	5	VAR.	5	VAR.	4416		6.9
							Total+10%		41.8	28.4
V 8	1	ø10	2	15	739.1	13	767	1534	9.5	
	2	ø10	2	13	739.1	13.6	766	1533	9.4	
	3	ø5	34	5	86	5	96	3264		5.1
							Total+10%		20.8	5.6
V 9	1	ø10	4	13	1037.7	13	1064	4256	26.2	
	2	ø5	52	5	86	5	96	4992		7.8
							Total+10%		28.8	8.6
V 10	1	ø10	2	13	127		140	280	1.7	
	2	ø6.3	2		170		170	340	0.8	
	3	ø10	2	13	226	13	287	574	3.5	
	4	ø5	12	5	86	5	96	1152		1.8
							Total+10%		6.6	2.0
V 11	1	ø10	2	13	157		170	340	2.1	
	2	ø6.3	2		270		270	540	1.3	
	3	ø12.5	2	16.3	393.1	16.3	426	852	8.2	
	4	ø5	19	5	86	5	96	1824		2.9
							Total+10%		12.8	3.2
V 12	1	ø10	2	15.4	474.2	19.7	509	1018	6.3	
	2	ø12.5	2	16.3	474.2	16.3	507	1014	9.8	
	3	ø5	4	6.5	474.2	6.5	487	1948		3.1
	4	ø5	20	5	106	5	116	2668		4.2
							Total+10%		17.7	8.0
V 13	1	ø10	2	13	552		565	1130	7.0	
	2	ø8	2		372.5	12.5	185	370	1.5	
	3	ø10	2	13	704.7	13	731	1462	9.0	
	4	ø5	33	5	86	5	96	3168		5.0
							Total+10%		19.3	5.5
V 14	1	ø12.5	4	16.3	474.2	16.3	507	2028	19.5	
	2	ø5	20	5	86	5	96	1920		3.0
							Total+10%		21.5	3.3
								ø5:	0.0	83.8
								ø6.3:	25.8	0.0
								ø8:	2.7	0.0
								ø10:	324.9	0.0
								ø12.5:	52.3	0.0
								ø16:	93.9	0.0
								Total:	299.6	83.8

V 7
Escala vigas 1:50
Escala seções 1:25
Ver esperas no detalhamento de pilares ou vista de muros



Seção A

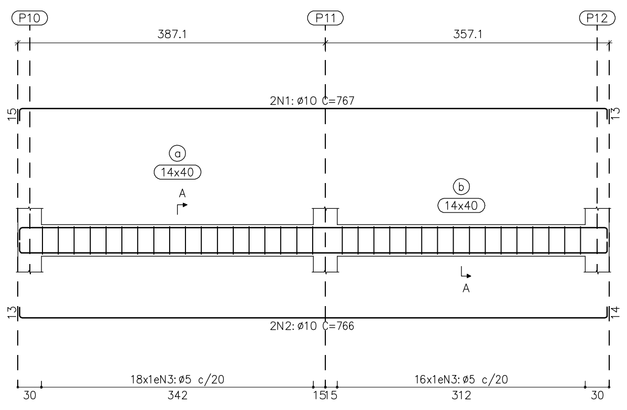


N9:
7N9: ø5 C=168

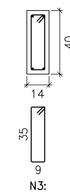
Seção B

N10:
32N10: ø5 C=168-108

V 8
Escala vigas 1:50
Escala seções 1:25

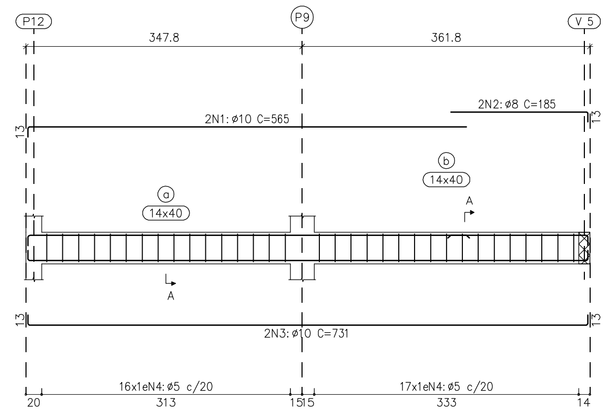


Seção A

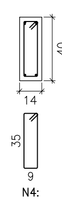


N3:
34N3: ø5 C=96

V 13
Escala vigas 1:50
Escala seções 1:25

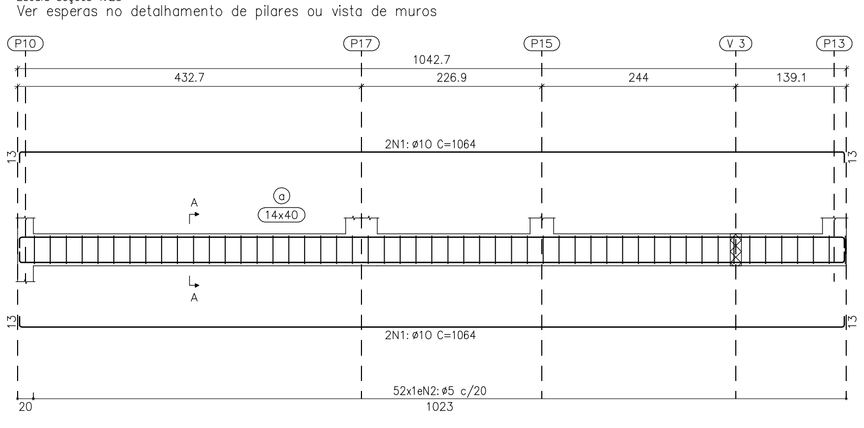


Seção A

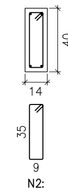


N4:
33N4: ø5 C=96

V 9
Escala vigas 1:50
Escala seções 1:25
Ver esperas no detalhamento de pilares ou vista de muros

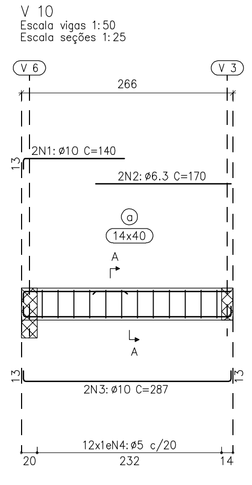


Seção A

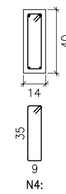


N2:
52N2: ø5 C=96

V 10
Escala vigas 1:50
Escala seções 1:25

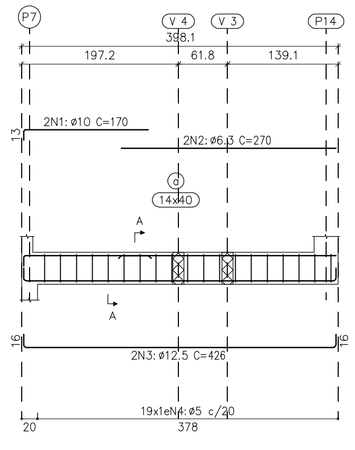


Seção A

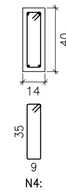


N4:
12N4: ø5 C=96

V 11
Escala vigas 1:50
Escala seções 1:25
Ver esperas no detalhamento de pilares ou vista de muros

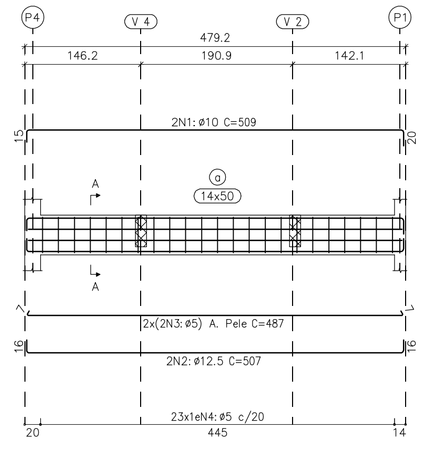


Seção A

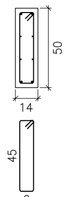


N4:
19N4: ø5 C=96

V 12
Escala vigas 1:50
Escala seções 1:25



Seção A



N4:
23N4: ø5 C=116

Concreto 30MPa

REVISÕES				
NÚMERO	DATA	DESCRIÇÃO	DESENHO	VERIF.

PROJETO ESTRUTURAL

ProEng
ENGENHARIA E ARQUITETURA
CREA/SC 120.020-5
CAU/SC 34701-9
Rua dos Ferroviários, 279 - Tubarão / SC
proengengenhoialia@live.com
(48)3626-1466

EQUIPE TÉCNICA:
Eng.º Civil Celso Zanoni Filho
CREA/SC 061.511-0
Eng.ª Civil Jéssica Tartari da Silva
CREA/SC 147.347-0
Eng.º Eletricista Eduardo Marcelo da Silva
CREA/SC 107.293-8
Eng.º Mecânico Fábio Domingos Guimarães
CREA/SC 075.436-1
Arquiteto e Urbanista David Tartari
CAU/SC A118224-2

RESPONSÁVEL PELO PROJETO
Eng.º Civil Celso Zanoni Filho

PROPRIETÁRIO LOCAL DA OBRA
Pref. Mun. Governador Celso Ramos
CNPJ: 82.892.373/0001-89

ESCOLA MUNICIPAL PROF. ALAÍDE DA SILVA MAFRA
Rua Joaquim Coelho
Bairro Areias do Meio - Governador Celso Ramos /SC

APROVAÇÃO

CONTEÚDO: - Vigas do térreo

ESCALA: INDIC.

CAD: C.Z.F | ÁREA: 168,17m² | DATA: Set/2019 | OBRA: 439 | PRANCHA: VI 01 / 06

BL - BLOCOS / CA - CARGAS / ES - ESCADAS / FO - FORMAS / LA - LAJES / LO - LOCAÇÃO / PI - PILARES/ SA -SAPATAS/ VI-VIGAS
HI - HIDROSSANITÁRIO / DR - DRENAGEM / PR - PREVENTIVO CONTRA INCÊNDIO
EL - ELÉTRICO / TE - TELEFÔNICO