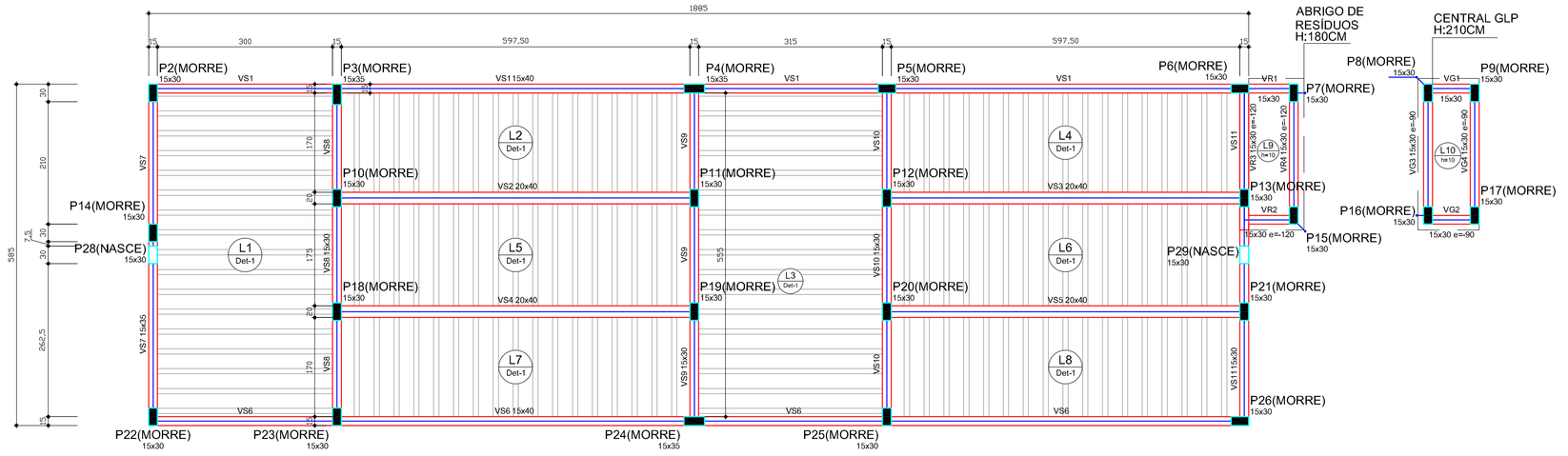
OBS. A LAJE DO ABRIGO E CENTRAL GLP DEVEM POSSUIR
UM CAIMENTO DE 2% PARA A DIREÇÃO FRONTAL
AS LAJES DEVEM SEREM IPERMEABILIZADAS COM MANTA LÍQUIDA



PLANTA FORMA - VIGAS SUPERIORES

ESC. 1:50

Vigas			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
VG1	15x30	-90	210
VG2	15x30	-90	210
VG3	15x30	-90	210
VG4	15x30	-90	210
VR1	15x30	-120	180
VR2	15x30	-120	180
VR3	15x30	-120	180
VR4	15x30	-120	180
VS1	15x40	0	300
VS2	20x40	0	300
VS3	20x40	0	300
VS4	20x40	0	300
VS5	20x40	0	300
VS6	15x40	0	300
VS7	15x35	0	300
VS8	15x30	0	300
VS9	15x30	0	300
VS10	15x30	0	300
VS11	15x30	0	300

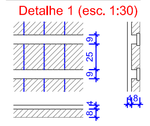
Blocos de enchimento						
Detalhe	Tipo	Nome	Dimensões(cm)			Quantidade
			fib	bx	by	
1	Lajota cerâmica	8/8/25/20	8	25	20	1344

Pilares			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
P1	15 x 30	-90	220
P2	15 x 30	0	300
P3	15 x 35	0	300
P4	15 x 35	0	300
P5	15 x 30	0	300
P6	15 x 30	0	300
P7	15 x 30	-120	180
P8	15 x 30	-90	210
P9	15 x 30	-90	210
P10	15 x 30	0	300
P11	15 x 30	0	300
P12	15 x 30	0	300
P13	15 x 30	0	300
P14	15 x 30	0	300
P15	15 x 30	-120	180
P16	15 x 30	-90	210
P17	15 x 30	-90	210
P18	15 x 30	0	300
P19	15 x 30	0	300
P20	15 x 30	0	300
P21	15 x 30	0	300
P22	15 x 30	0	300
P23	15 x 30	0	300
P24	15 x 35	0	300
P25	15 x 30	0	300
P26	15 x 30	0	300
P27	15 x 30	-90	220
P28	15 x 30	0	300
P29	15 x 30	0	300

Lajes								
Dados						Sobrecarga (kgf/m²)		
Nome	Tipo	Altura (cm)	Elevação (cm)	Nível (cm)	Peso próprio (kgf/m²)	Adicional	Acidental	Localizada
L1	Treliçada 1D	12	0	300	259	70	50	-
L2	Treliçada 1D	12	0	300	259	70	50	-
L3	Treliçada 1D	12	0	300	259	70	50	sim
L4	Treliçada 1D	12	0	300	259	70	50	-
L5	Treliçada 1D	12	0	300	259	70	50	-
L6	Treliçada 1D	12	0	300	259	70	50	-
L7	Treliçada 1D	12	0	300	259	70	50	-
L8	Treliçada 1D	12	0	300	259	70	50	-
L9	Maciça	10	-90	210	250	35	50	-
L10	Maciça	10	-90	210	250	35	50	-
L11	Maciça	10	-120	180	250	35	50	-
L12	Maciça	10	-120	180	250	35	50	-

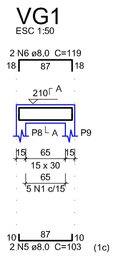
Características dos materiais	
fck (kgf/cm²)	Ecs (kgf/cm²)
300	260716

Detalhe 1 (esc. 1:30)

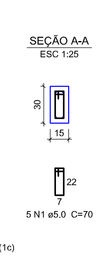


Legenda dos Pilares
Pilar que morre
Pilar que passa
Pilar que nasce
Pilar com mudança de seção

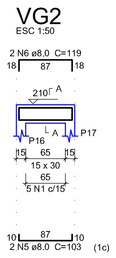
VG1
ESC 1:50



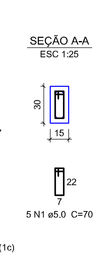
SEÇÃO A-A
ESC 1:25



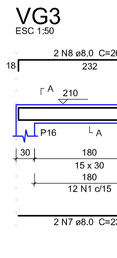
VG2
ESC 1:50



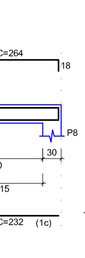
SEÇÃO A-A
ESC 1:25



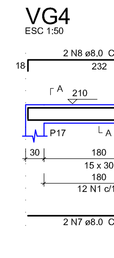
VG3
ESC 1:50



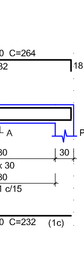
SEÇÃO A-A
ESC 1:25



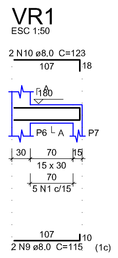
VG4
ESC 1:50



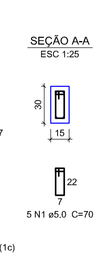
SEÇÃO A-A
ESC 1:25



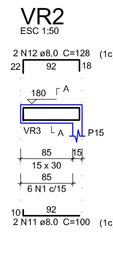
VR1
ESC 1:50



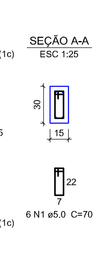
SEÇÃO A-A
ESC 1:25



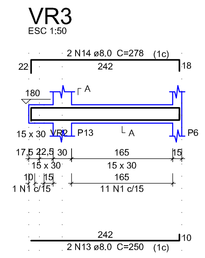
VR2
ESC 1:50



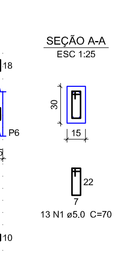
SEÇÃO A-A
ESC 1:25



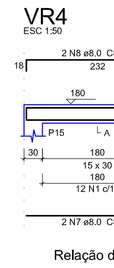
VR3
ESC 1:50



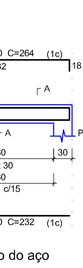
SEÇÃO A-A
ESC 1:25



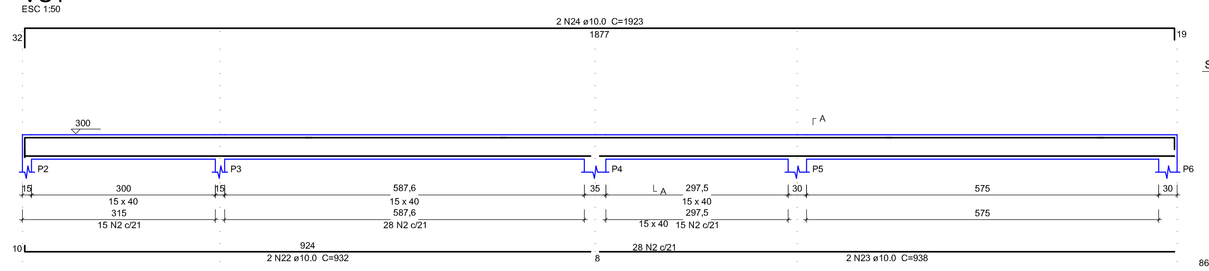
VR4
ESC 1:50



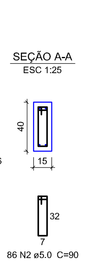
SEÇÃO A-A
ESC 1:25



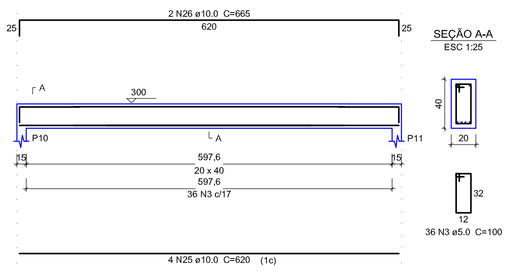
VS1
ESC 1:50



SEÇÃO A-A
ESC 1:25

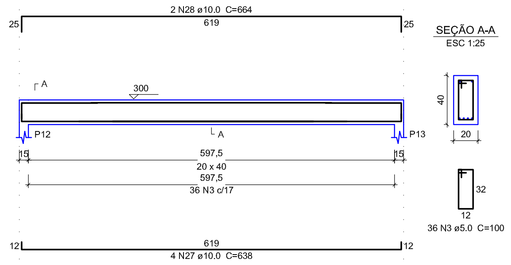


VS2
ESC 1:50

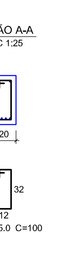


SEÇÃO A-A
ESC 1:25

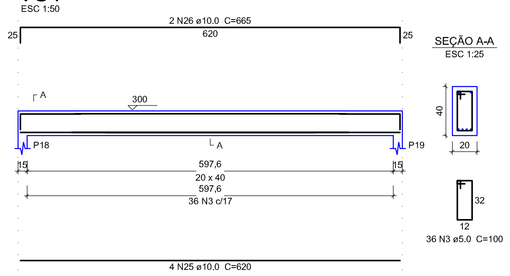
VS3
ESC 1:50



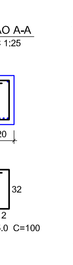
SEÇÃO A-A
ESC 1:25



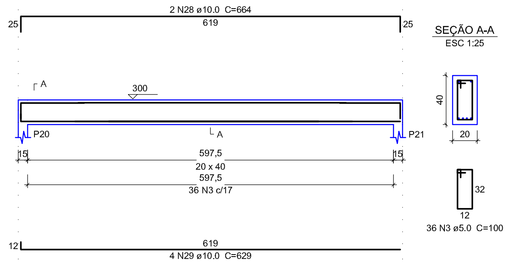
VS4
ESC 1:50



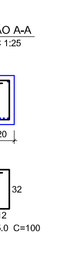
SEÇÃO A-A
ESC 1:25



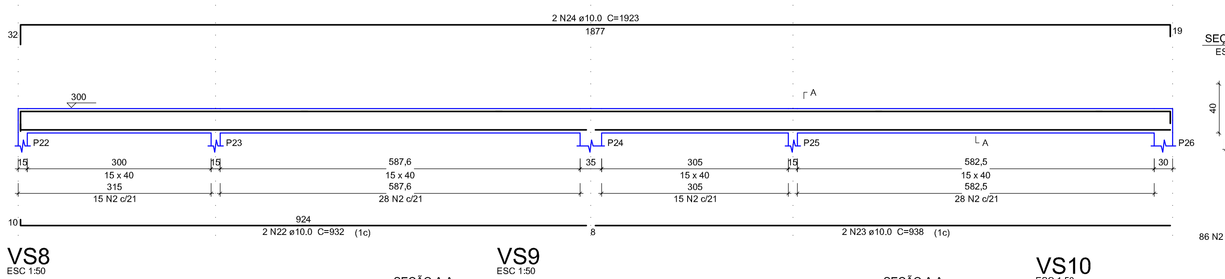
VS5
ESC 1:50



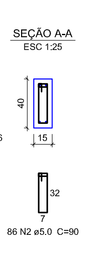
SEÇÃO A-A
ESC 1:25



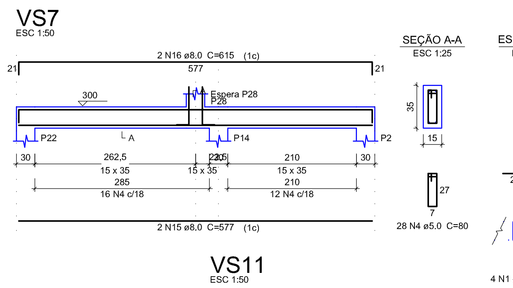
VS6
ESC 1:50



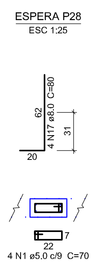
SEÇÃO A-A
ESC 1:25



VS7
ESC 1:50

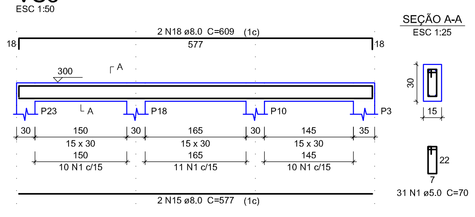


SEÇÃO A-A
ESC 1:25



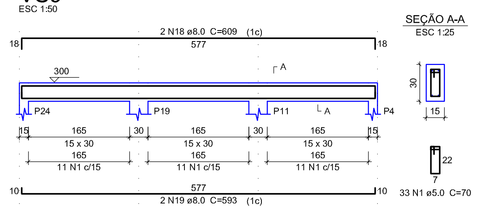
ESPERA P28
ESC 1:25

VS8
ESC 1:50



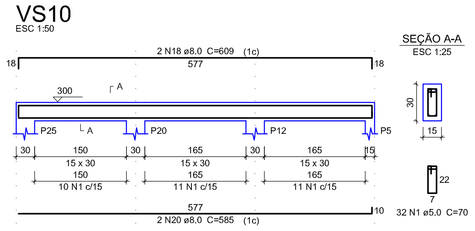
SEÇÃO A-A
ESC 1:25

VS9
ESC 1:50



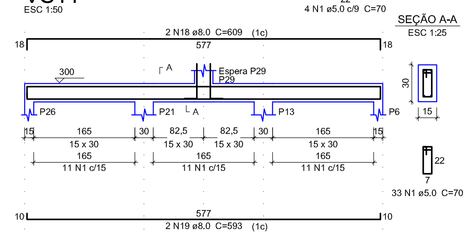
SEÇÃO A-A
ESC 1:25

VS10
ESC 1:50

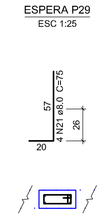


SEÇÃO A-A
ESC 1:25

VS11
ESC 1:50



SEÇÃO A-A
ESC 1:25



ESPERA P29
ESC 1:25

Relação do aço

VG1	VG2	VG3
VG4	VR1	VR2
VR3	VR4	VS1
VS2	VS3	VS4
VS5	VS6	VS7
VS8	VS9	VS10
VS11		

AÇO	N	DIAM	Q	UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	206	70	14420
	2	5.0	172	90	15480
	3	5.0	144	100	14400
	4	5.0	28	80	2240
CA50	5	8.0	4	103	412
	6	8.0	4	119	476
	7	8.0	6	232	1392
	8	8.0	6	264	1584
	9	8.0	2	115	230
	10	8.0	2	123	246
	11	8.0	2	100	200
	12	8.0	2	128	256
	13	8.0	2	250	500
	14	8.0	2	278	556
	15	8.0	4	577	2308
	16	8.0	2	615	1230
	17	8.0	4	80	320
	18	8.0	8	609	4872
	19	8.0	4	593	2372
	20	8.0	2	585	1170
	21	8.0	4	75	300
	22	10.0	4	932	3728
	23	10.0	4	938	3752
	24	10.0	4	1923	7692
	25	10.0	8	620	4960
	26	10.0	4	665	2660
	27	10.0	4	638	2552
	28	10.0	4	664	2656
	29	10.0	4	629	2516

Resumo do aço

AÇO	DIAM	C.TOTAL (m)	PESO + 10 % (kg)
CA50	8.0	184.3	80
	10.0	305.2	207
CA60	5.0	465.4	78.9
PESO TOTAL			
CA50	286.9		
CA60	78.9		

Vol. de concreto total (C-30) = 6.25 m³
Área de forma total = 93.75 m²

NOTAS

A. Confrontar medidas do projeto estrutural com projeto arquitetônico

B. Executar passagem de tubulação de água, esgoto e eletricidade

C. Molhar as formas antes da concretagem

D. Conservar úmida as peças concretadas durante o tempo de cura

E. Executar limpeza de formas ou partes da estrutura em contato com a concretagem

F. Usar apoio do tipo caranguejo para manter armaduras negativas em posição durante a concretagem

COBRIMENTO DAS ARMADURAS

ELEMENTOS ESTRUTURAIS	COBRIMENTO NOMINAL
Pilares	4,0 cm
Vigas	4,0 cm
Lajes	3,5 cm
Sapatas	4,0 cm
CLASSE DE AGRESSIVIDADE	III (FORTE) - CONTROLE RIGOROSO DAS DIMENSÕES

CARACTERÍSTICAS DO CONCRETO

Classe de Resistência	C-30
Módulo de Elasticidade	280 tf/cm²
Fator a/c	< 0,55

ENGEON ENGENHARIA
(45) 9906-6601
engeonengenharia@gmail.com

CMEI
AURORA XAVIER SANTOS

PROJETO ESTRUTURAL

PROJETO
ENGENHEIRO CIVIL
JEFFERSON MACIEL VALGANOVER CREA/PR 19.637/D

EXECUÇÃO

PROPRIETÁRIO
PREFEITURA MUNICIPAL DE PARANACUÃ
CNPJ: 76.017.458/0001-15

ESCALA: INDICADA
DATA: OUTUBRO/2018
DESENHO: MATHEUS J. SANTOS

CONTEÚDO: FORMA DAS VIGAS
VIGAS TERREO

LOCAL: RUA CARIMARISE, 439 – JARDIM GUARATUBA
PARANACUÃ – PR

CATEGORIA: ESTABELECIMENTO

PRANCHA: 04/07