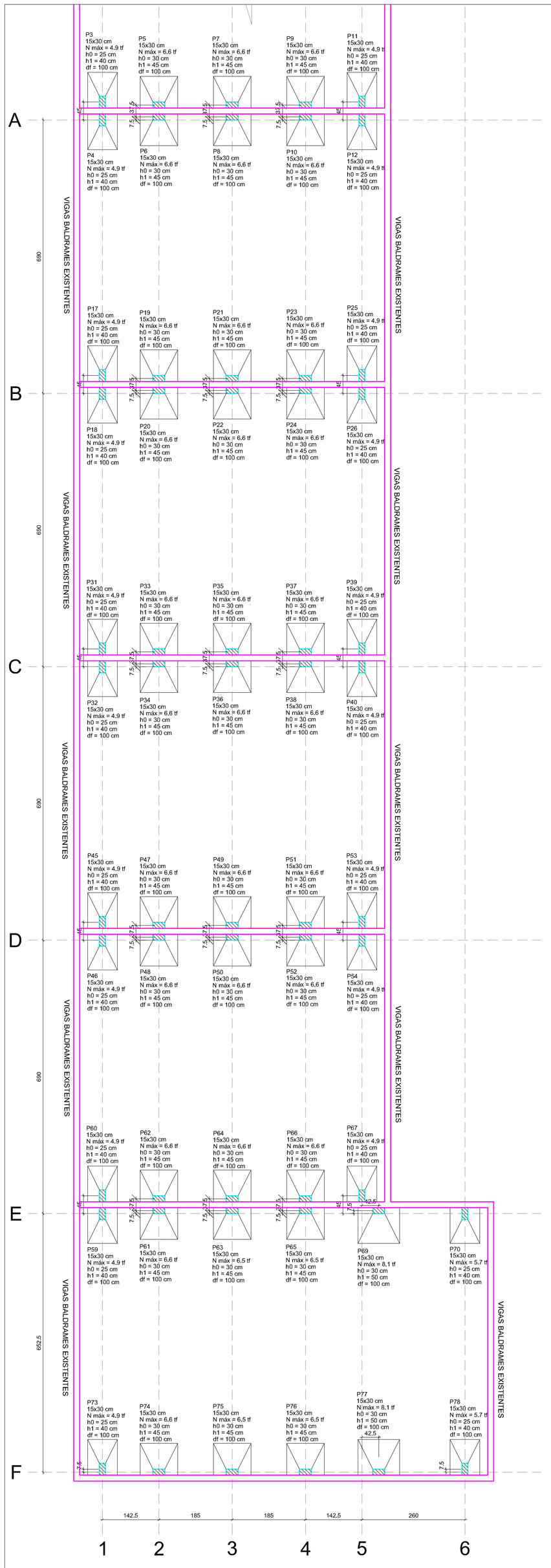
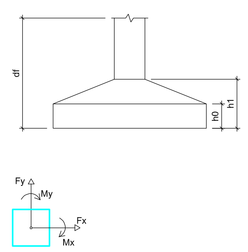


PLANTA DE LOCAÇÃO

ESCALA 1:50

Pilar											Fundação			
Nome	Seção (cm)	X (cm)	Y (cm)	Carga Máx. (tf)	Carga Mín. (tf)	Mx (kgf.m)	My (kgf.m)	Fx (tf)	Fy (tf)	Lado B (cm)	Lado H (cm)	h0 / ha (cm)	h1 / hb (cm)	df (cm)
P3	15x30	1187.50	3704.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P4	15x30	1187.50	3659.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P5	15x30	1330.00	3696.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P6	15x30	1330.00	3666.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P7	15x30	1515.00	3696.65	6.6	6.4	300	400	0.5	0.1	80	95	30	45	100
P8	15x30	1515.00	3666.65	6.6	6.4	300	400	0.5	0.1	80	95	30	45	100
P9	15x30	1700.00	3696.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P10	15x30	1700.00	3666.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P11	15x30	1842.50	3704.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P12	15x30	1842.50	3659.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P17	15x30	1187.50	3014.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P18	15x30	1187.50	2969.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P19	15x30	1330.00	3006.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P20	15x30	1330.00	2976.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P21	15x30	1515.00	3006.65	6.6	6.4	300	400	0.5	0.1	80	95	30	45	100
P22	15x30	1515.00	2976.65	6.6	6.4	300	400	0.5	0.1	80	95	30	45	100
P23	15x30	1700.00	3006.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P24	15x30	1700.00	2976.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P25	15x30	1842.50	3014.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P26	15x30	1842.50	2969.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P31	15x30	1187.50	2324.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P32	15x30	1187.50	2279.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P33	15x30	1330.00	2316.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P34	15x30	1330.00	2286.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P35	15x30	1515.00	2316.65	6.6	6.4	300	400	0.5	0.1	80	95	30	45	100
P36	15x30	1515.00	2286.65	6.6	6.4	300	400	0.5	0.1	80	95	30	45	100
P37	15x30	1700.00	2316.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P38	15x30	1700.00	2286.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P39	15x30	1842.50	2324.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P40	15x30	1842.50	2279.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P45	15x30	1187.50	1634.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P46	15x30	1187.50	1589.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P47	15x30	1330.00	1626.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P48	15x30	1330.00	1596.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P49	15x30	1515.00	1626.65	6.6	6.4	300	400	0.5	0.1	80	95	30	45	100
P50	15x30	1515.00	1596.65	6.6	6.4	300	400	0.5	0.1	80	95	30	45	100
P51	15x30	1700.00	1626.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P52	15x30	1700.00	1596.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P53	15x30	1842.50	1634.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P54	15x30	1842.50	1589.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P59	15x30	1187.50	899.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P60	15x30	1187.50	944.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P61	15x30	1330.00	906.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P62	15x30	1330.00	936.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P63	15x30	1515.00	906.65	6.5	6.4	300	400	0.5	0.1	80	95	30	45	100
P64	15x30	1515.00	936.65	6.6	6.4	300	400	0.5	0.1	80	95	30	45	100
P65	15x30	1700.00	906.65	6.5	6.3	300	500	0.5	0.1	80	95	30	45	100
P66	15x30	1700.00	936.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P67	15x30	1842.50	944.15	4.9	2.7	600	200	0.5	0.2	90	75	25	40	100
P69	15x30	1885.00	906.65	8.1	7.2	300	600	0.8	0.1	90	105	30	50	100
P70	15x30	2102.50	899.15	5.7	4.4	700	300	0.7	0.1	90	75	25	40	100
P73	15x30	1187.50	254.15	4.9	2.7	600	300	0.5	0.2	90	75	25	40	100
P74	15x30	1330.00	246.65	6.6	6.1	300	500	0.8	0.1	80	95	30	45	100
P75	15x30	1515.00	246.65	6.5	6.4	300	500	0.5	0.1	80	95	30	45	100
P76	15x30	1700.00	246.65	6.5	6.3	300	500	0.5	0.1	80	95	30	45	100
P77	15x30	1885.00	246.65	8.1	7.2	300	600	0.8	0.1	90	105	30	50	100
P78	15x30	2102.50	254.15	5.7	4.4	700	300	0.7	0.1	90	75	25	40	100

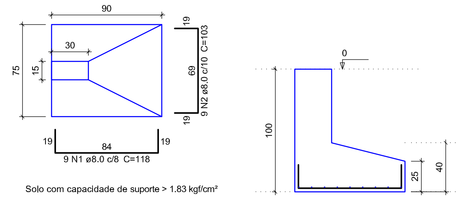


DETALHAMENTO SAPATAS

S3=S4=S11=S12=S17=S18=S25=S26=S31=S32
=S39=S40=S45=S46=S53=S54=S59=S60=S67
=S70=S73=S78

PLANTA
ESC 1:25

CORTE
ESC 1:25

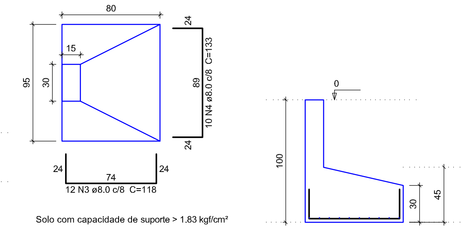


Solo com capacidade de suporte > 1.83 kgf/cm²

S5=S6=S7=S8=S9=S10=S19=S20=S21=S22=S23
=S24=S33=S34=S35=S36=S37=S38=S47=S48
=S49=S50=S51=S52=S61=S62=S63=S64=S65
=S66=S74=S75=S76

PLANTA
ESC 1:25

CORTE
ESC 1:25

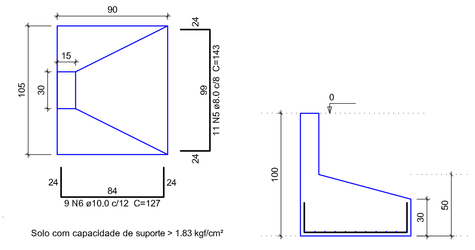


Solo com capacidade de suporte > 1.83 kgf/cm²

S69=S77

PLANTA
ESC 1:25

CORTE
ESC 1:25



Solo com capacidade de suporte > 1.83 kgf/cm²

Relação do aço

33xS10 2xS69 22xS70

AÇO	N	DIAM	Q	UNIT (cm)	C.TOTAL (cm)
CA50	1	8.0	198	118	23364
	2	8.0	198	103	20394
	3	8.0	396	118	46728
	4	8.0	330	133	43890
	5	8.0	22	143	3146
	6	10.0	18	127	2286

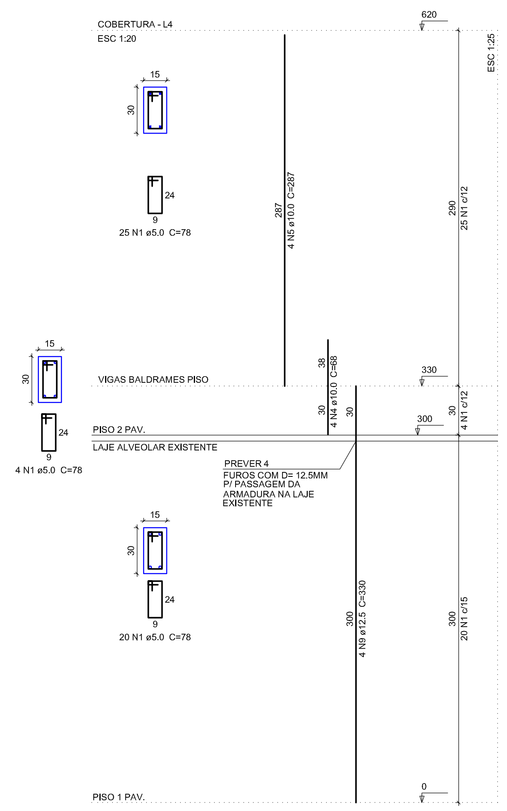
Resumo do aço

AÇO	DIAM	C.TOTAL (m)	PESO + 10 % (kg)
CA50	8.0	1375.3	596.9
	10.0	22.9	15.5
PESO TOTAL			
CA50	612.4		

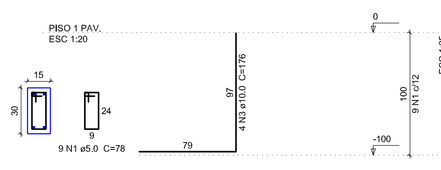
Vol. de concreto total (C-25) = 14,58 m³
Área de forma total = 62,74 m²

DETALHAMENTO PILARES

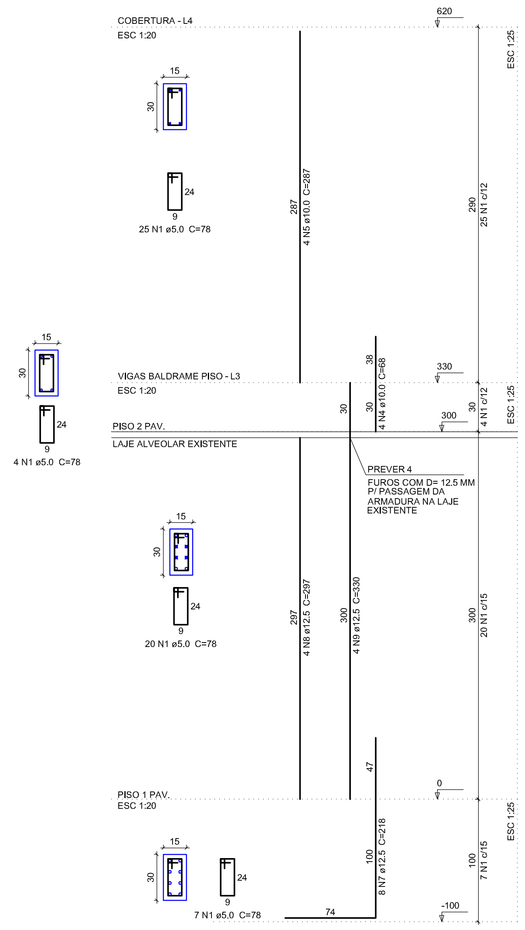
P1=P2=P13=P14=P15=P16=P27=P28=P29=P30=P41=P42=P43
P44=P55=P56=P57=P58=P68=P72



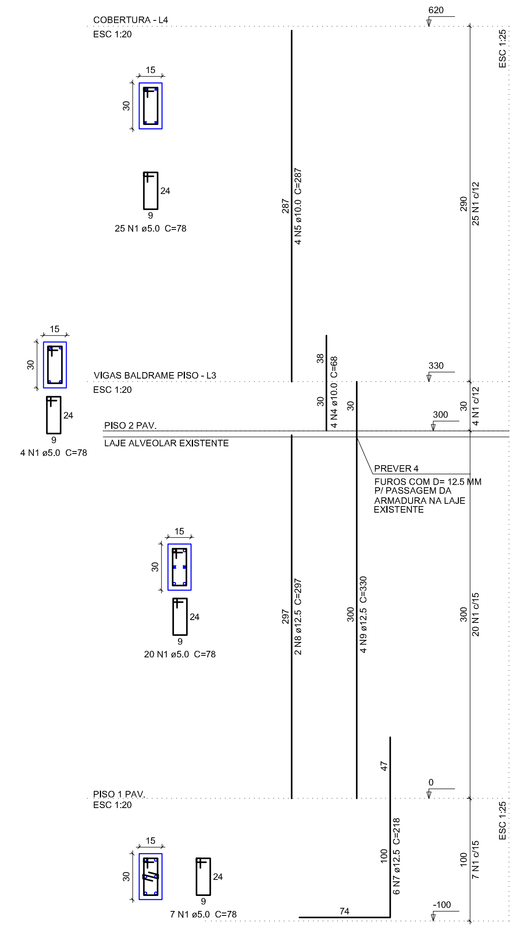
P3=P4=P1=P12=P17=P18=P25=P27=P31=P32=P39=P40=P45
P46=P53=P54=P59=P60=P67=P70=P73=P78



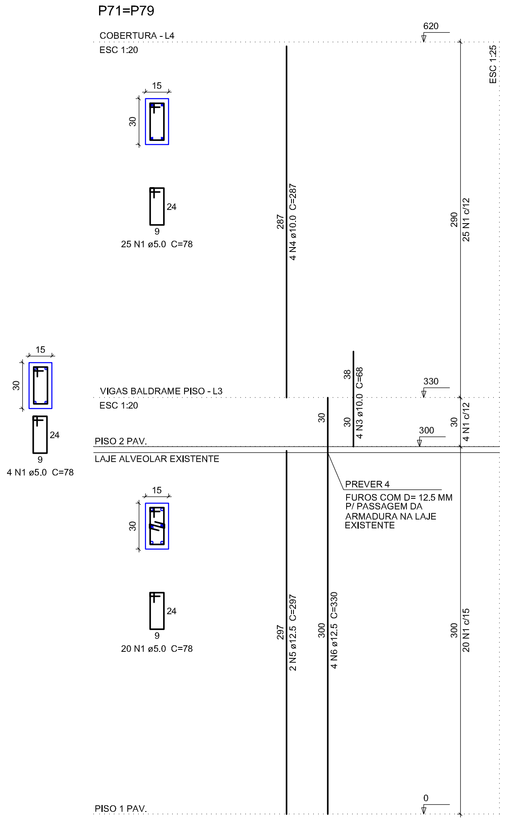
P5=P6=P9=P10=P19=P20=P23=P24=P33=P34=P37=P38=P47=P48
P51=P52=P61=P62=P66=P69=P74=P77



P7=P8=P21=P22=P35=P36=P49=P50=P63=P64=P65=P75=P76



P71=P79



ENGEON ENGENHARIA
(042) engeonengenharia@gmail.com
9906-0601

CENTRO MUNICIPAL DE EDUCAÇÃO INFANTIL
E ENSINO FUNDAMENTAL PRESIDENTE COSTA E SILVA

PROJETO REC. ESTRUTURAL

PROJETO: ENGENHEIRO CIVIL MARCO ANTÔNIO HANSEN CREA: 160.630/D
EXECUÇÃO:
PROPRIETÁRIO: PREFEITURA MUNICIPAL DE PARANAGUÁ CNPJ: 76.017.458/0001-15
ESCALA: INDICADA
DATA: JUNHO/2018
DESENHO: MAH
CONTEÚDO: PLANTA DE LOCAÇÃO REFORÇO ESTRUTURAL, DETALHES SAPATAS, DETALHES PILARES
LOCAL: RUA PROFESSOR CLETO – RIOCO – PARANAGUÁ – PR
CATEGORIA: INSTITUCIONAL
PRANCHA: 02/04