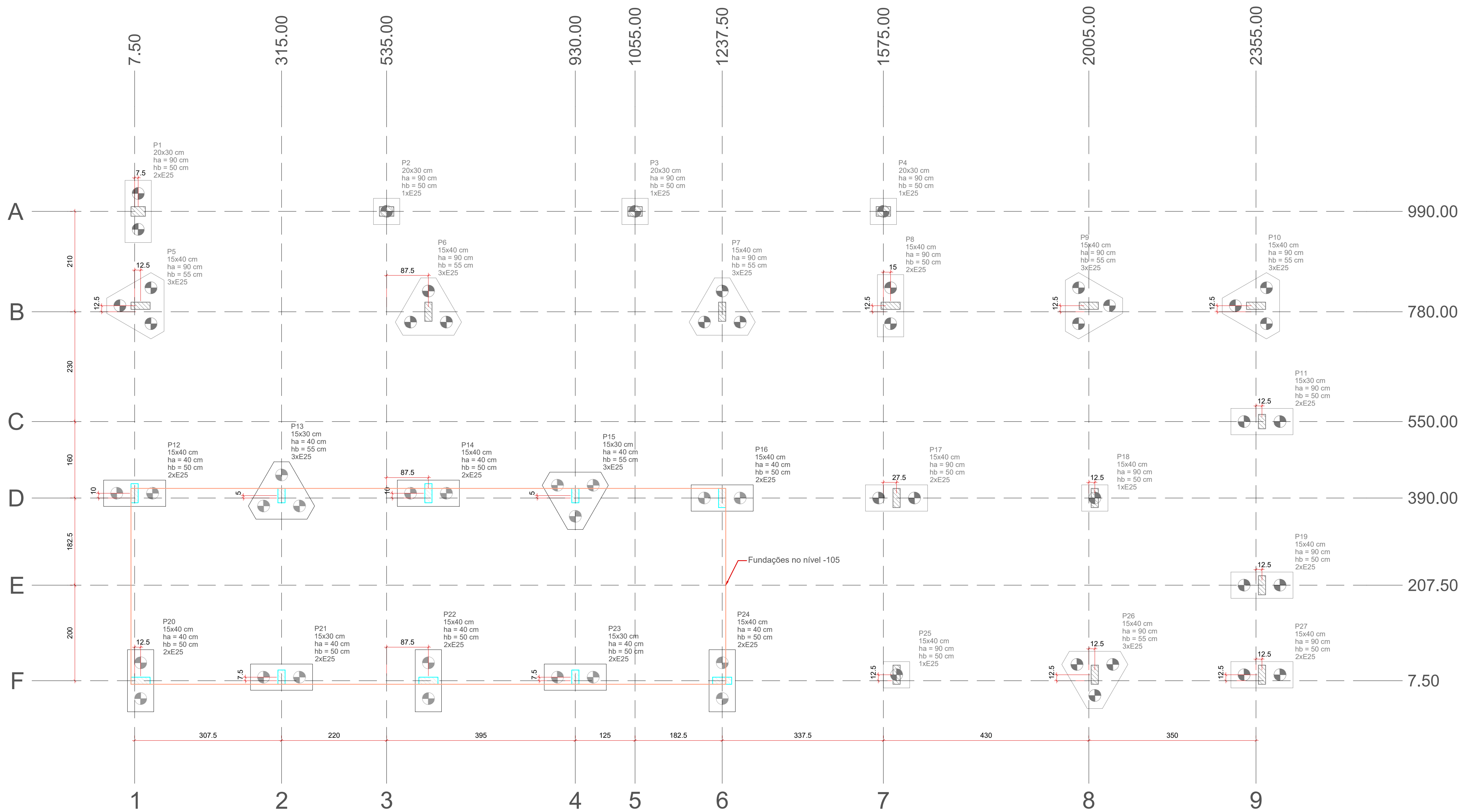
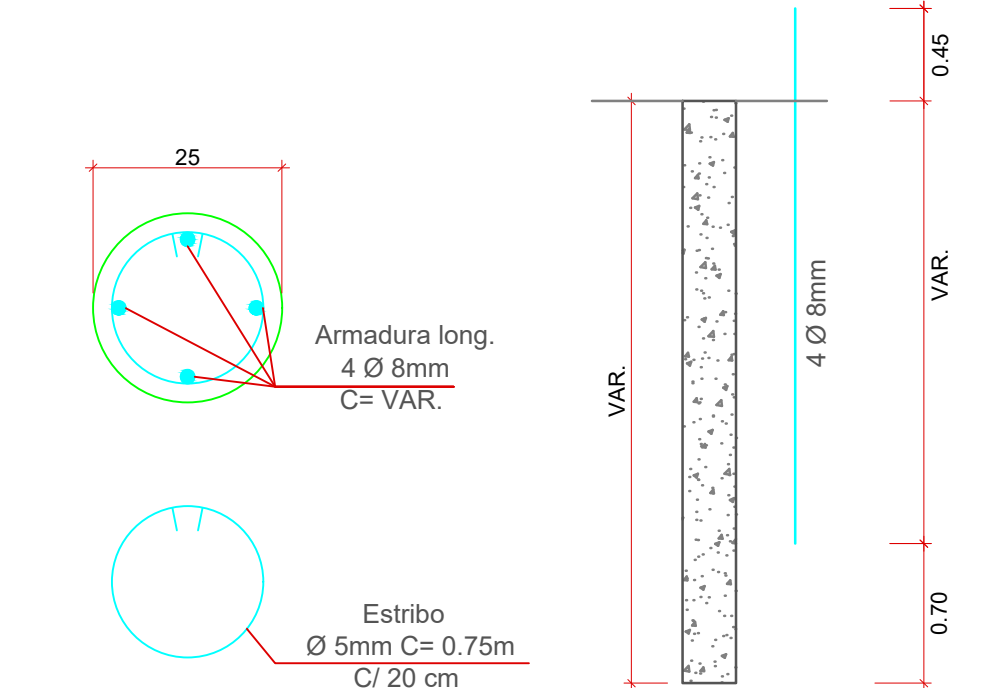
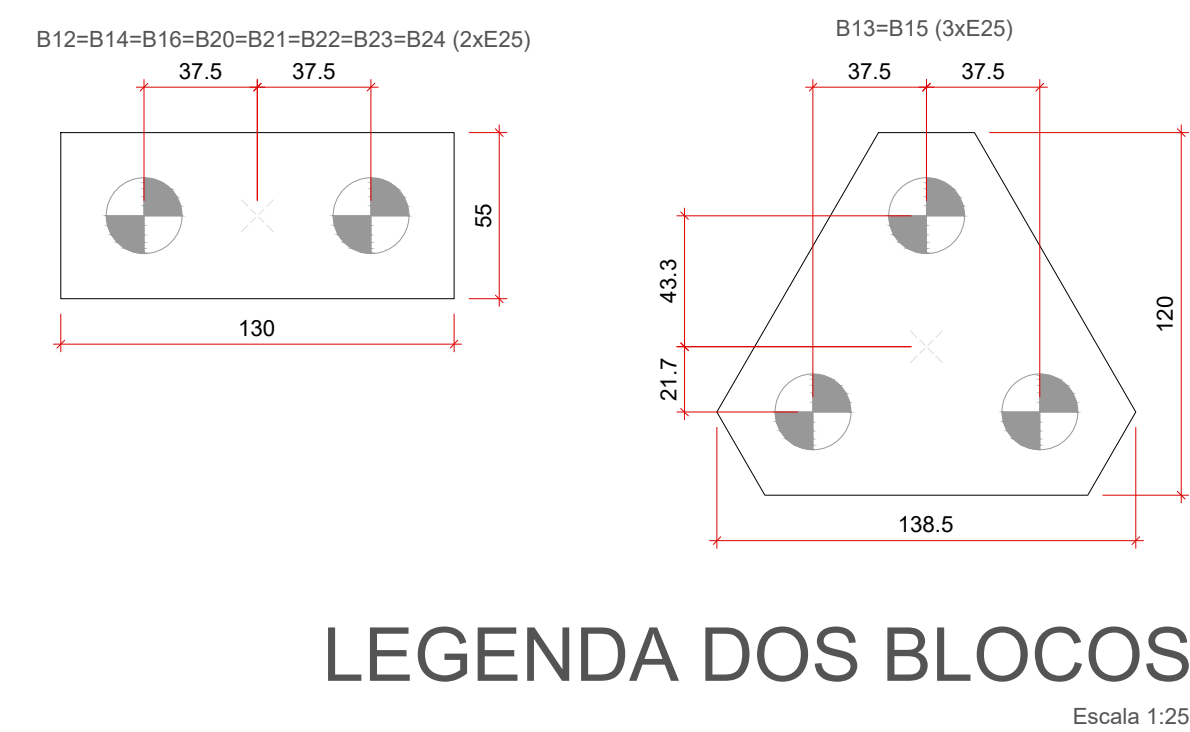




PLANTA DE LOCAÇÃO (NÍVEL -105)
Escala 1:50

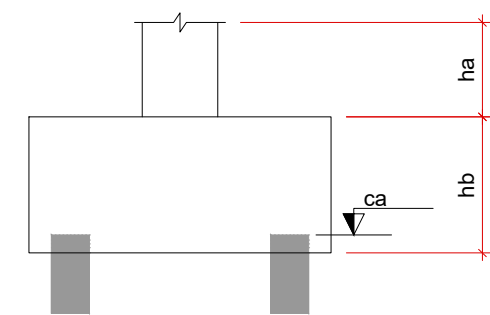


DETALHAMENTO ESTACAS
Sem Escala

Resumo de materiais - Estacas				
Resumo do Aço				
Aço	Diâmetro (mm)	Comprimento total (m)	Barras	Peso +10% (kg)
CA50	8.0	198	16.5	86.88
CA60	5.0	185.63	15.47	31.42
Volume de concreto (C-25) = 2.7m³				

Locação no eixo X		Locação no eixo Y	
Coordenadas (cm)	Nome	Coordenadas (cm)	Nome
7.50	P12	990.00	P1, P2, P3, P4
15.00	P1	792.50	P5, P8, P9, P10
20.00	P5, P20	780.00	P6, P7
315.00	P13, P21	550.00	P11
535.00	P2	400.00	P12, P14
622.50	P6, P14, P22	395.00	P13, P15
930.00	P15, P23	390.00	P16, P17, P18
1055.00	P3	207.50	P19
1237.50	P7, P16, P24	20.00	P25, P26, P27
1575.00	P4	15.00	P21, P23
2005.00	P9	7.50	P20, P22, P24
2355.00	P18, P26		
2367.50	P10		
	P11, P19, P27		

Estacas			
Simbologia	Nome	d (cm)	Quantidade
	E25	25.00	22





**AMPLIAÇÃO BLOCO ADMINISTRATIVO
ESCOLA ANTÔNIO BABY**

Projeto:

ESTRUTURAL

Cidade: Bituruna

Estado: Paraná

Desenho: Bruna

Escala: Indicada

Data: OUTUBRO/2025

Referência:

FUNDAÇÕES

Locação, Detalhamento de estacas

Folha:

01

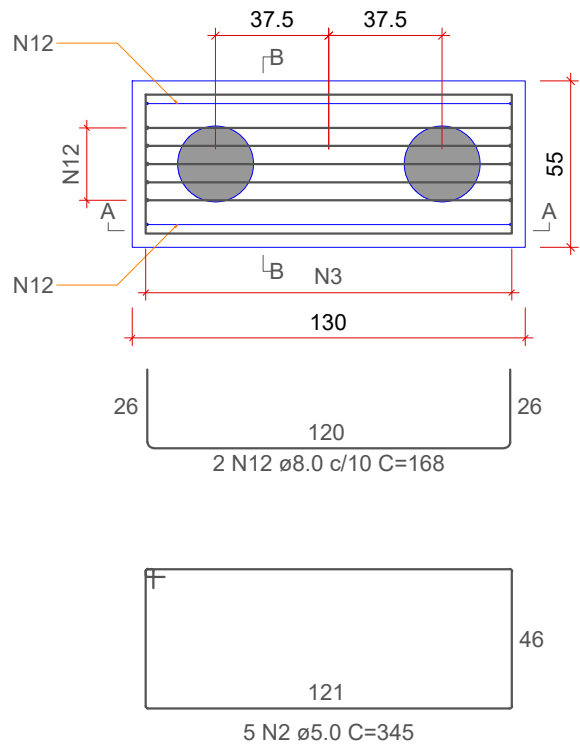
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Responsável Técnico:

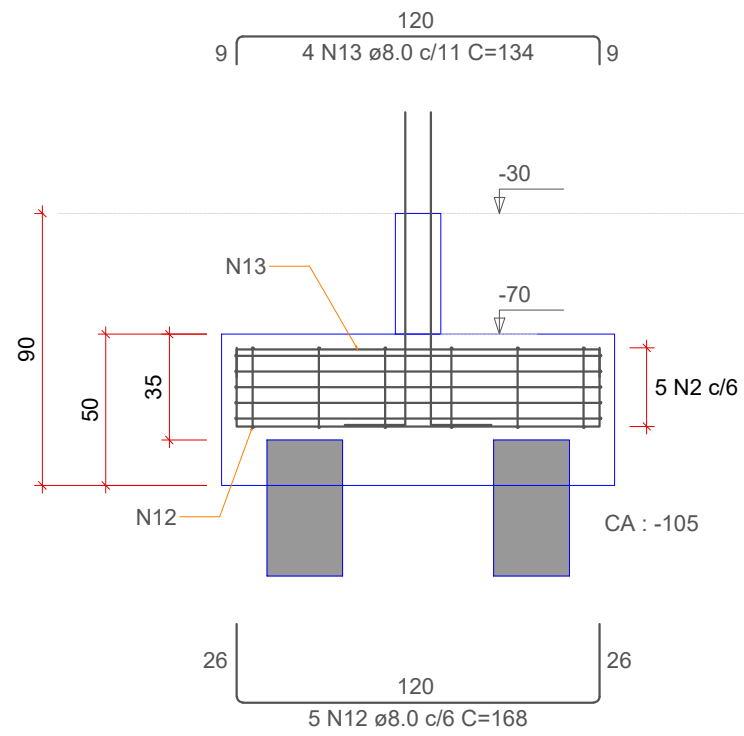
LUIZ RENATO FRIEDRICH DE RAMOS

Engº Civil CREA 168233/D - PR

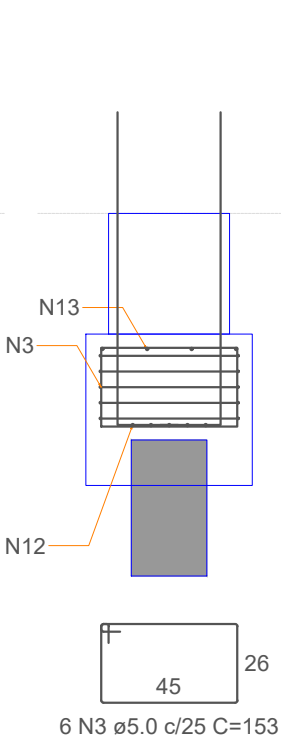
B12=B16=B24
2xE25
PLANTA
ESC 1:25



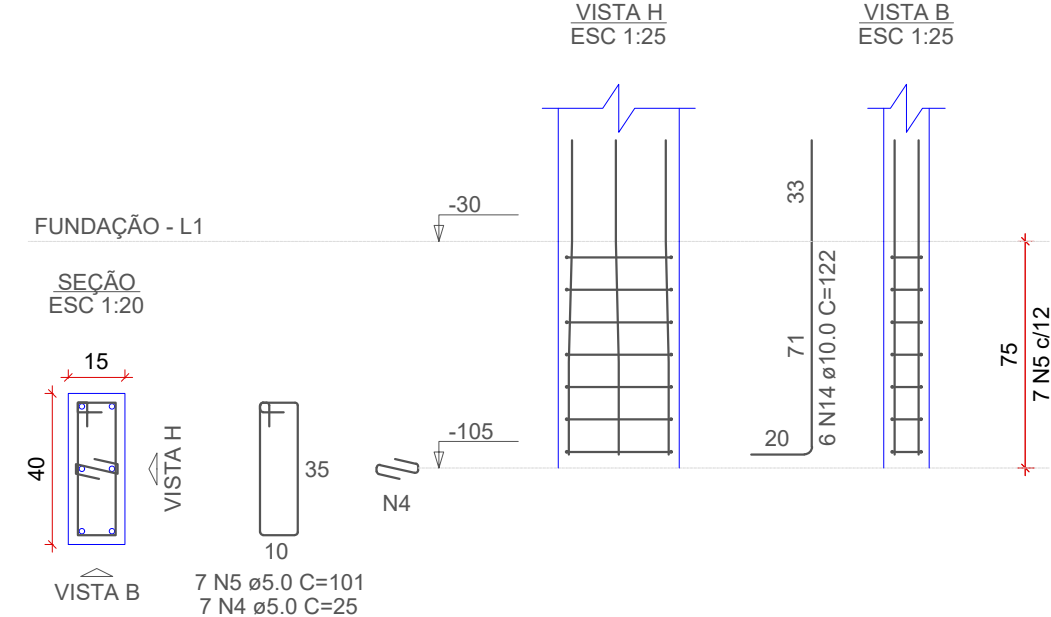
CORTE A-A
ESC 1:25



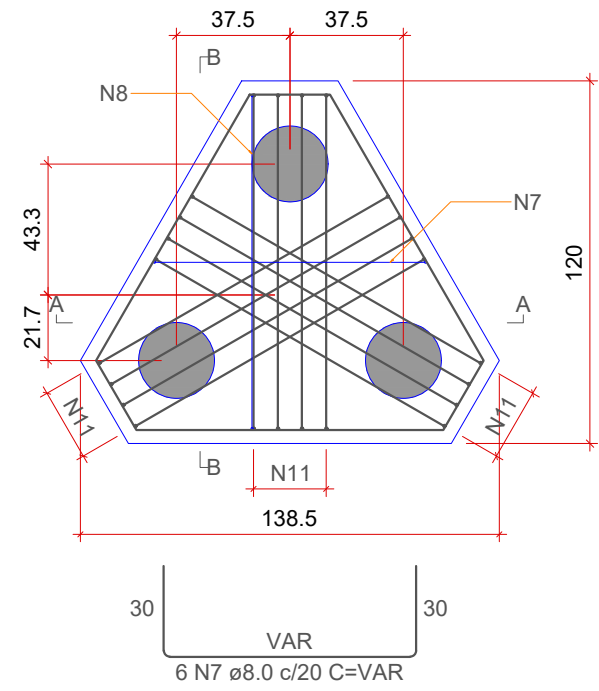
CORTE B-B
ESC 1:25



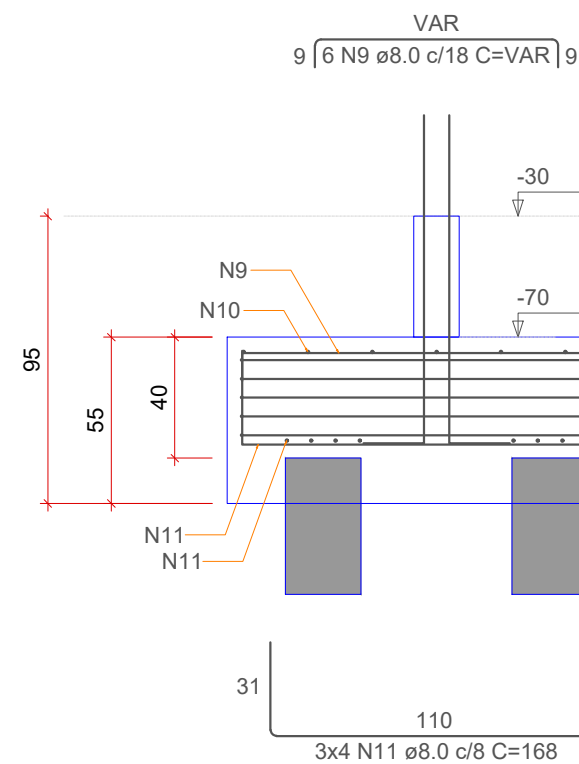
P12=P16=P24



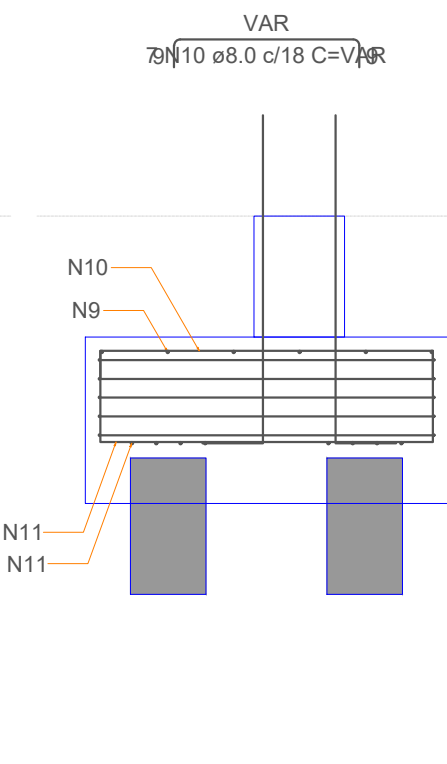
B13=B15
3xE25
PLANTA
ESC 1:25



CORTE A-A
ESC 1:25



CORTE B-B
ESC 1:25



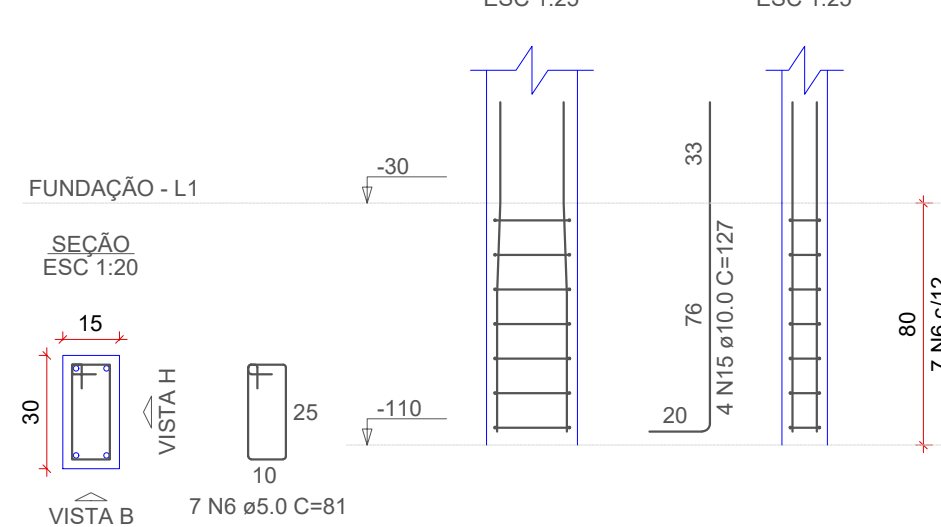
ARMADURA COM COMPRIMENTO VARIÁVEL				
N7	QUANT	C. VAR (cm)	C. UNIT (cm)	C. TOTAL (cm)
A	1	36	92	92
B	1	57	113	113
C	1	79	135	135
D	1	100	156	156
E	1	111	167	167
F	1	121	177	177

ARMADURA COM COMPRIMENTO VARIÁVEL				
N8	QUANT	C. VAR (cm)	C. UNIT (cm)	C. TOTAL (cm)
A	2	36	92	184
B	2	77	133	266
C	2	110	166	332

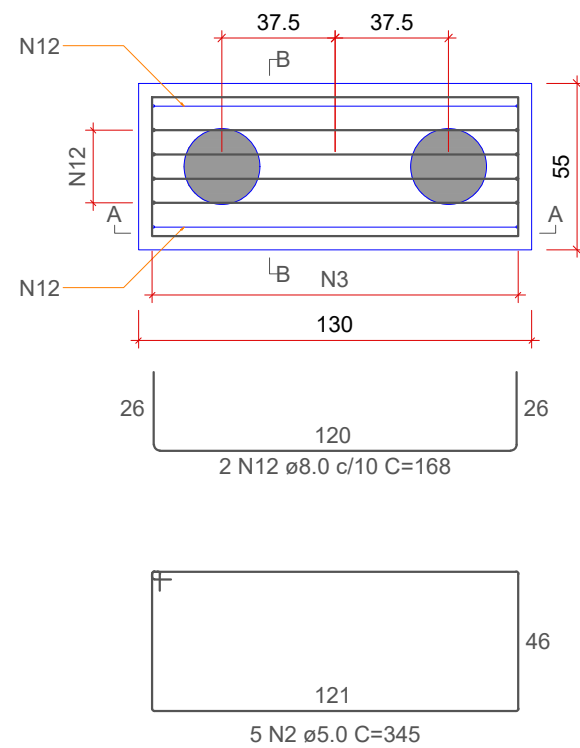
ARMADURA COM COMPRIMENTO VARIÁVEL				
N9	QUANT	C. VAR (cm)	C. UNIT (cm)	C. TOTAL (cm)
A	1	27	43	43
B	1	52	68	68
C	1	77	93	93
D	2	102	118	236
E	1	126	142	142

ARMADURA COM COMPRIMENTO VARIÁVEL				
N10	QUANT	C. VAR (cm)	C. UNIT (cm)	C. TOTAL (cm)
A	1	4	20	20
B	1	5	21	21
C	1	60	76	76
D	1	61	77	77
E	1	96	112	112
F	1	97	113	113
G	1	110	126	126

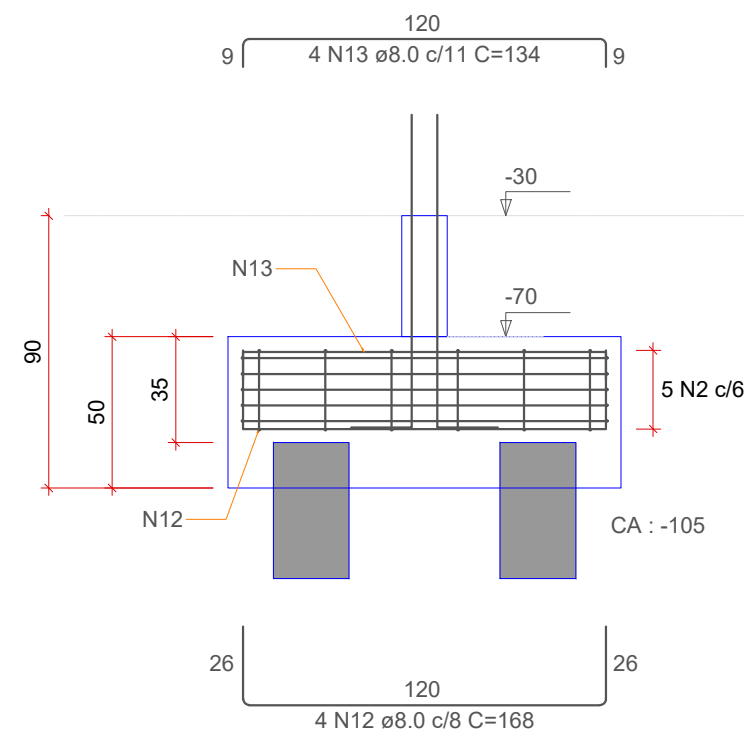
P13=P15



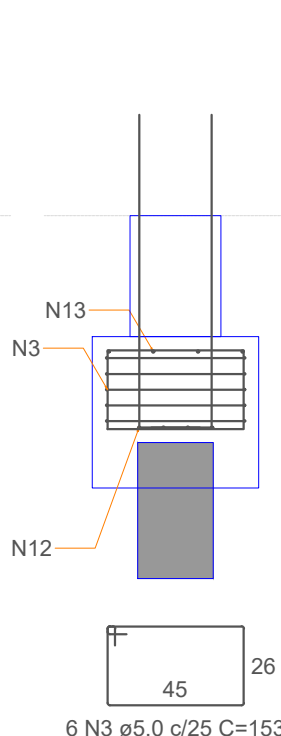
B20=B21=B23
2xE25
PLANTA
ESC 1:25



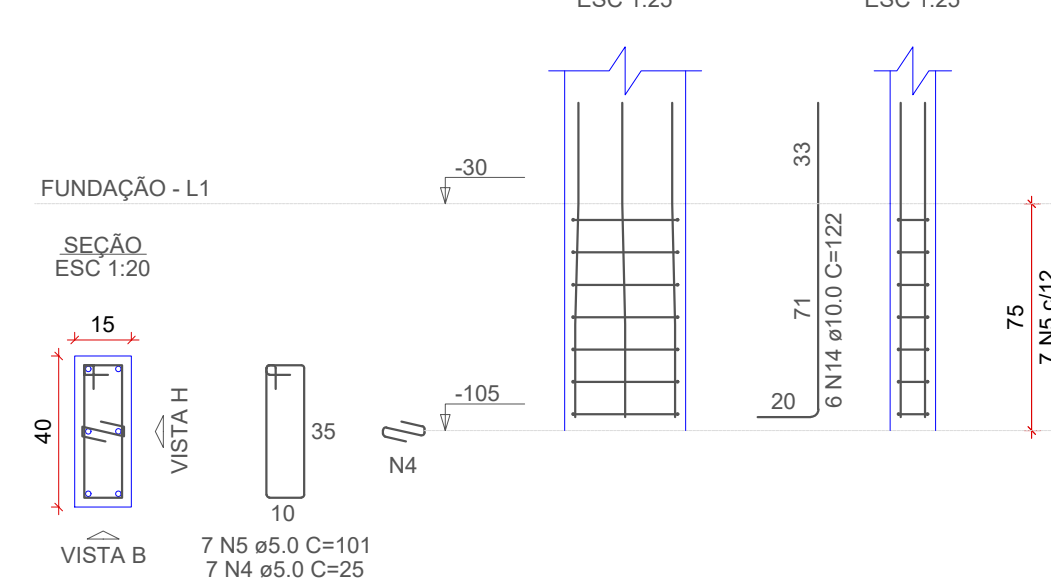
CORTE A-A
ESC 1:25



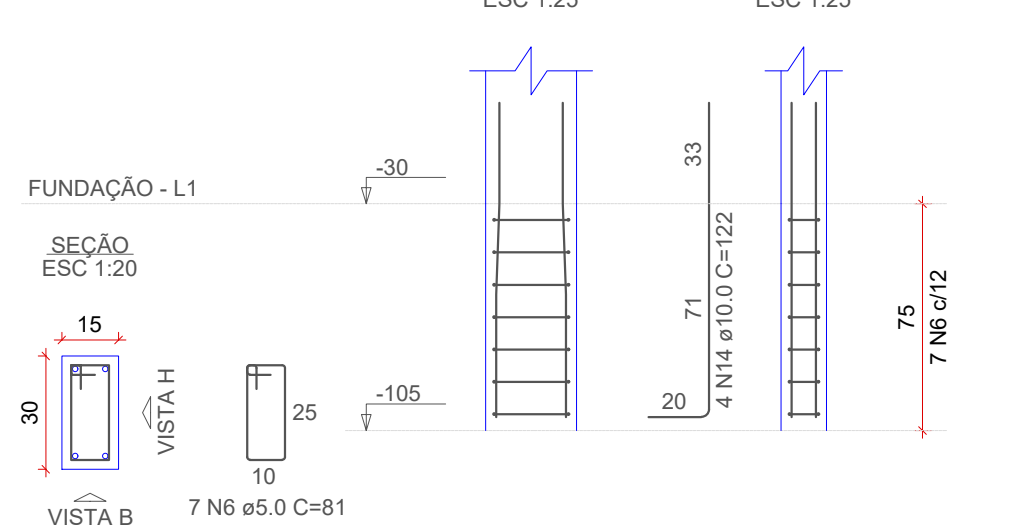
CORTE B-B
ESC 1:25



P20



P21=P23



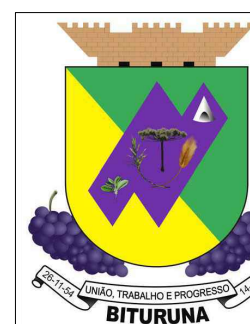
RELAÇÃO DO AÇO

2xB15 3xB24 2xP14		2xB22 3xP12 P20		3xB23 2xP13 2xP21	
AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	10	399	3990
	2	5.0	40	345	13800
	3	5.0	48	153	7344
	4	5.0	42	25	1050
	5	5.0	42	101	4242
	6	5.0	28	91	2268
	7	8.0	12	VAR	VAR
	8	8.0	14	VAR	VAR
	9	8.0	12	VAR	VAR
	10	8.0	14	VAR	VAR
	11	8.0	24	168	4032
	12	8.0	55	168	9240
	13	8.0	32	134	4288
	14	10.0	44	122	5368
	15	10.0	8	127	1016

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	8.0	232.4	100.9
CA60	10.0	63.9	43.3
CA60	5.0	326.9	55.4
PESO TOTAL (kg)			
CA50	144.2		
CA60	55.4		

Volume de concreto (C-30) = 4.15 m³
Área de forma = 23.45 m²



**AMPLIAÇÃO BLOCO ADMINISTRATIVO
ESCOLA ANTÔNIO BABY**

Projeto:

ESTRUTURAL

Cidade: Bituruna

Estado: Paraná

Desenho: Bruna

Escala: Indicada

Data: OUTUBRO/2025

Referencia:

FUNDAÇÕES

Detalhamento blocos de fundação

Folha:

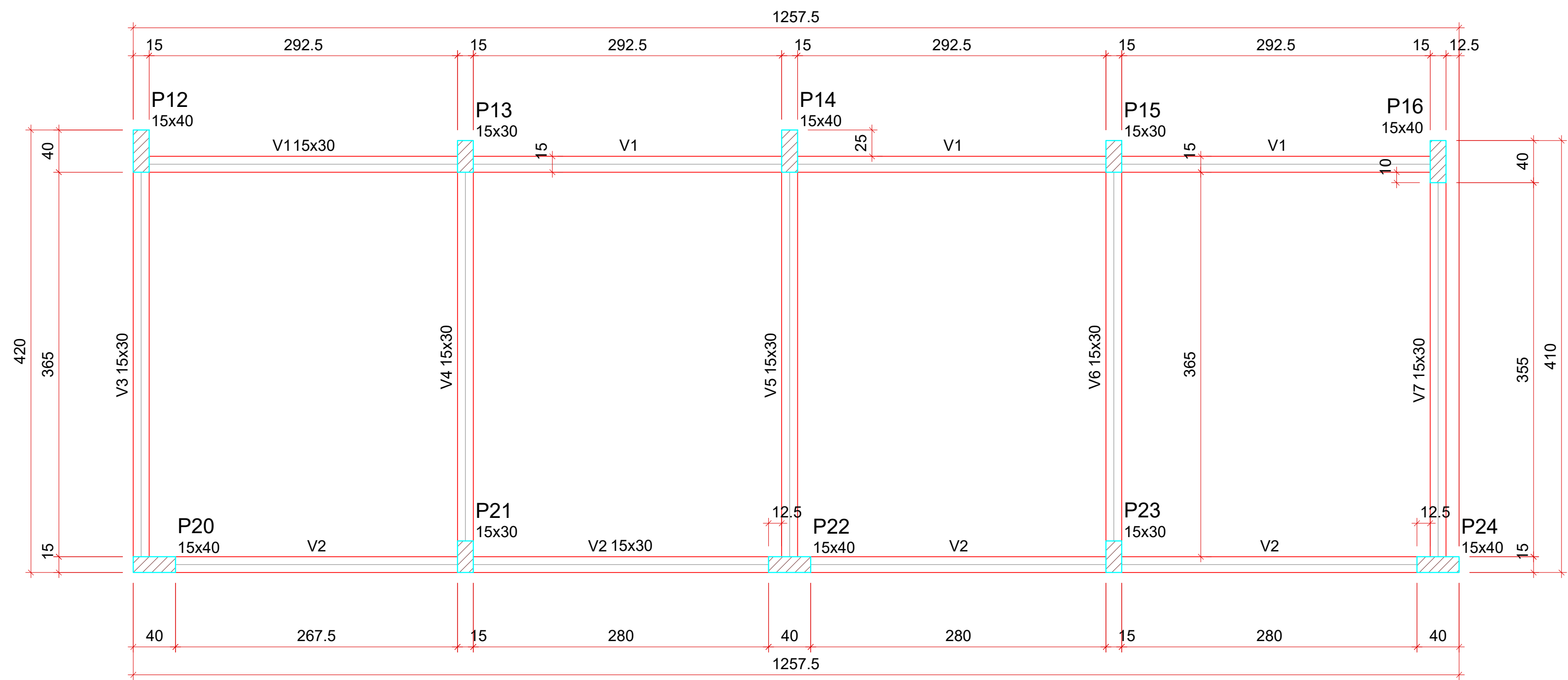
02

10

Responsável Técnico:

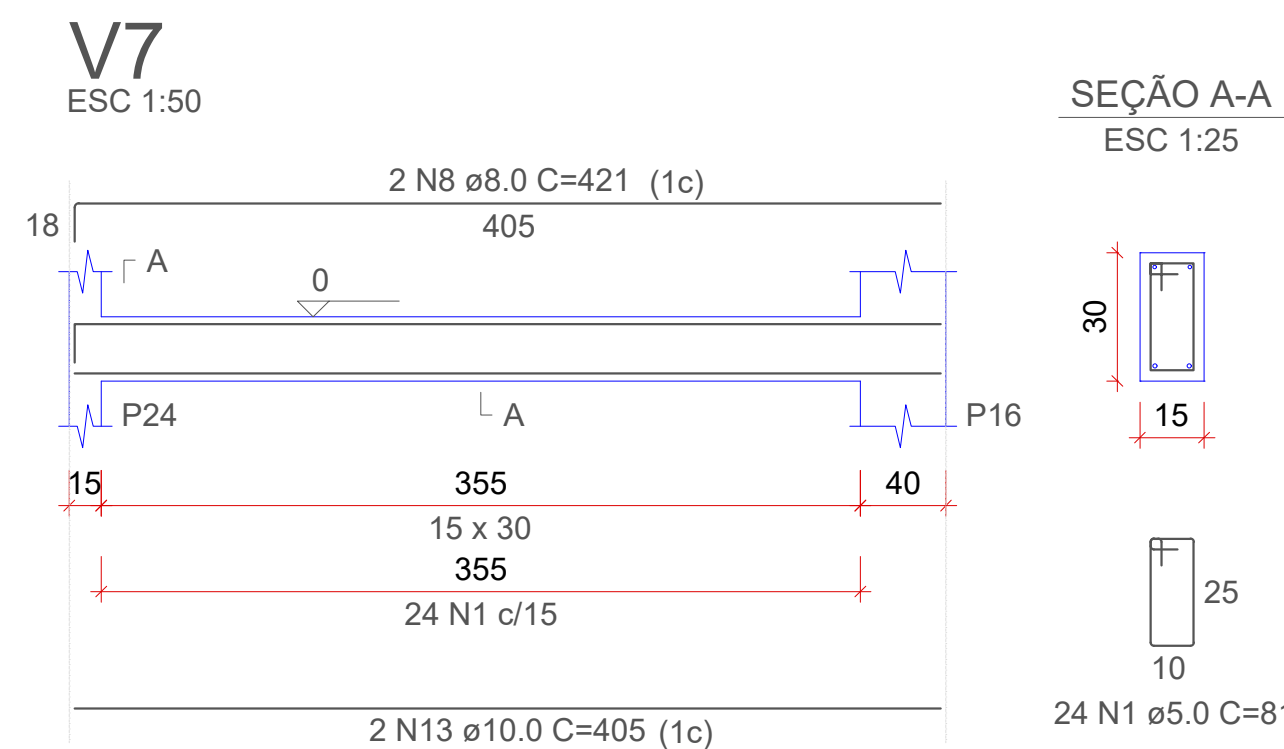
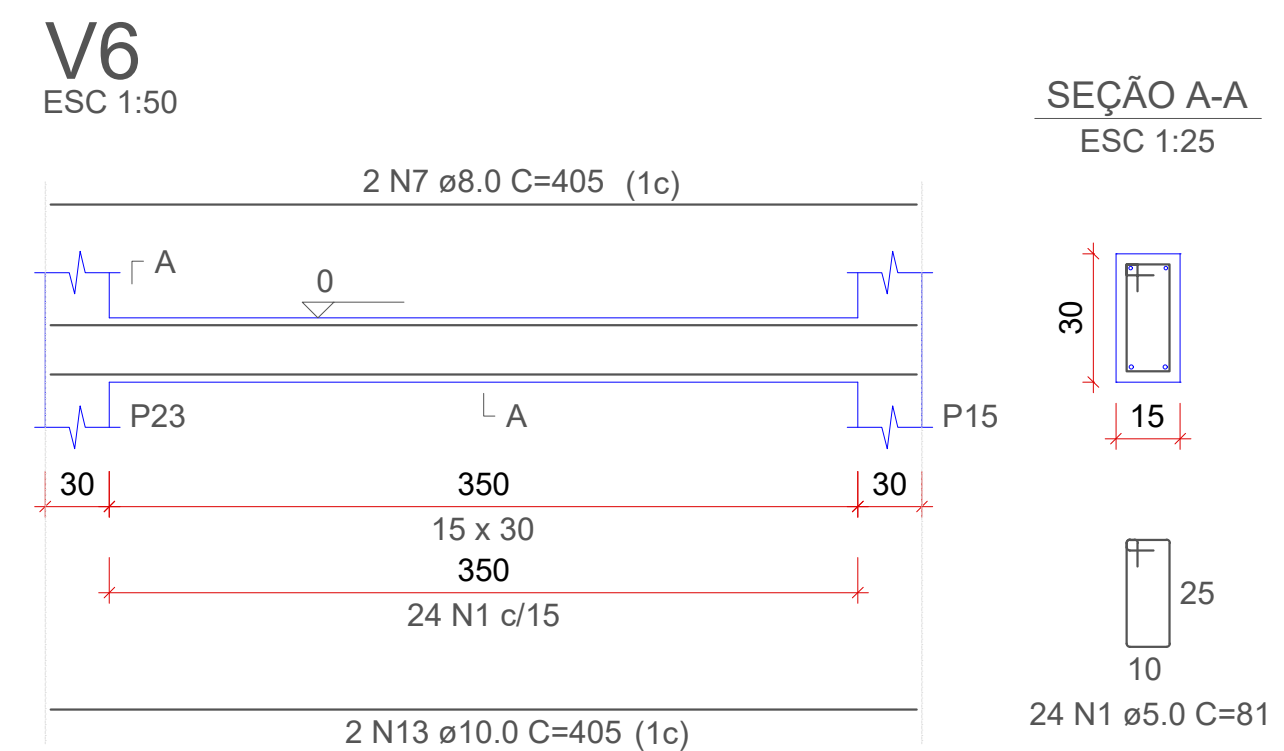
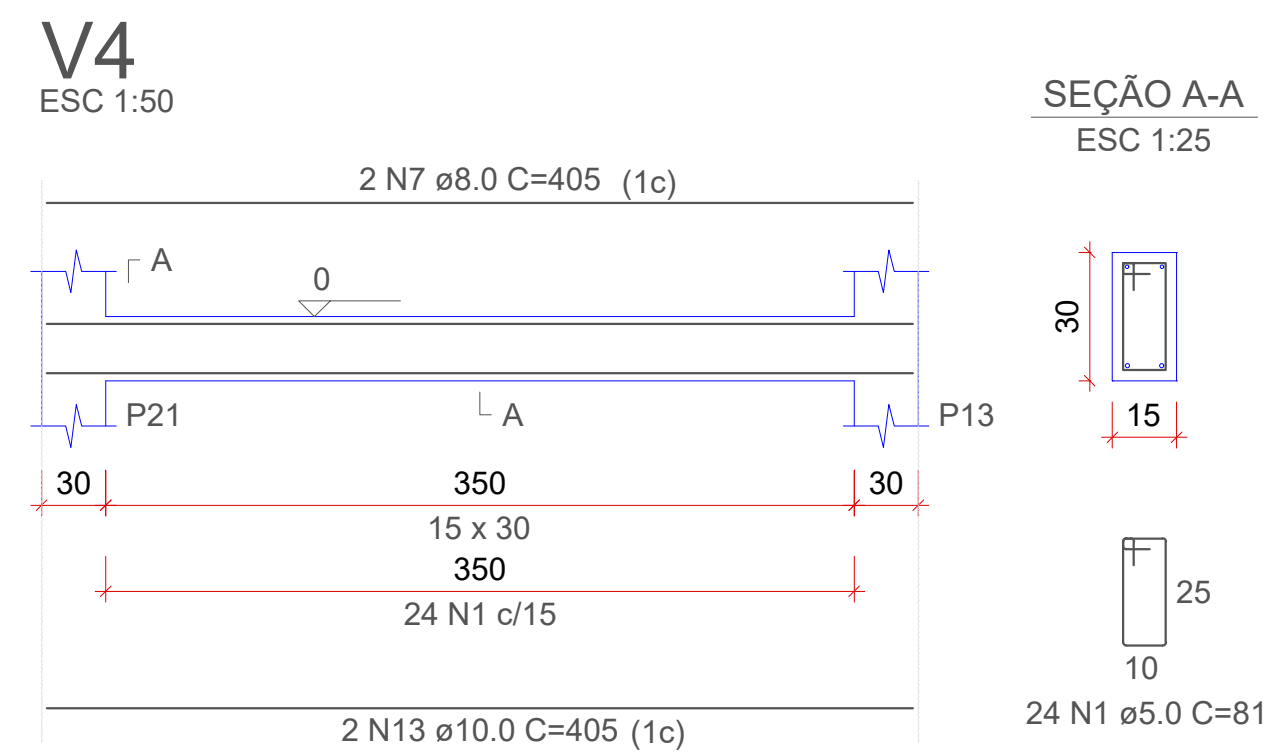
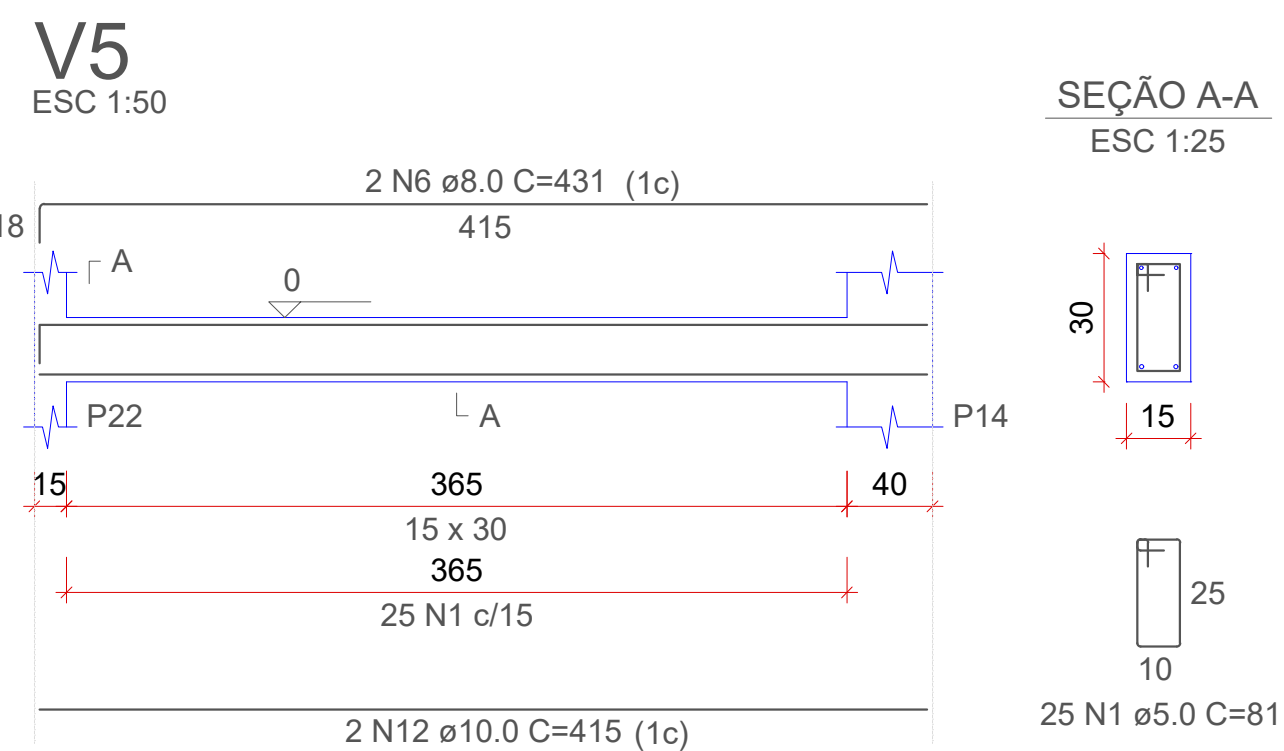
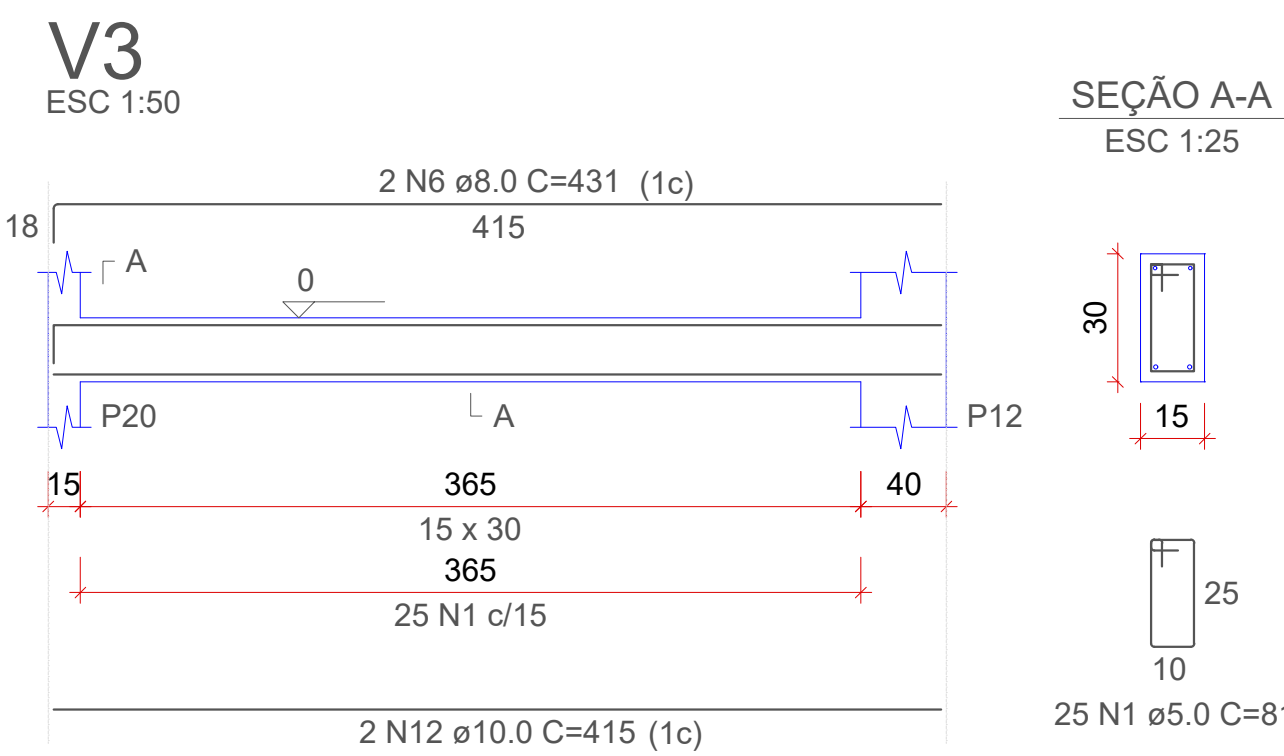
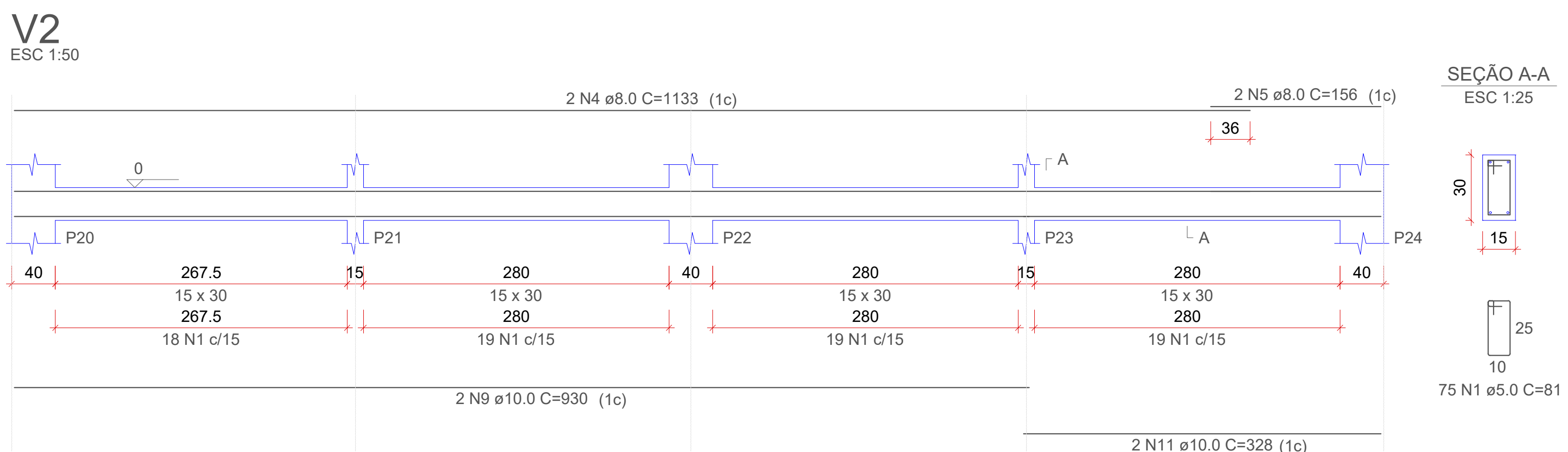
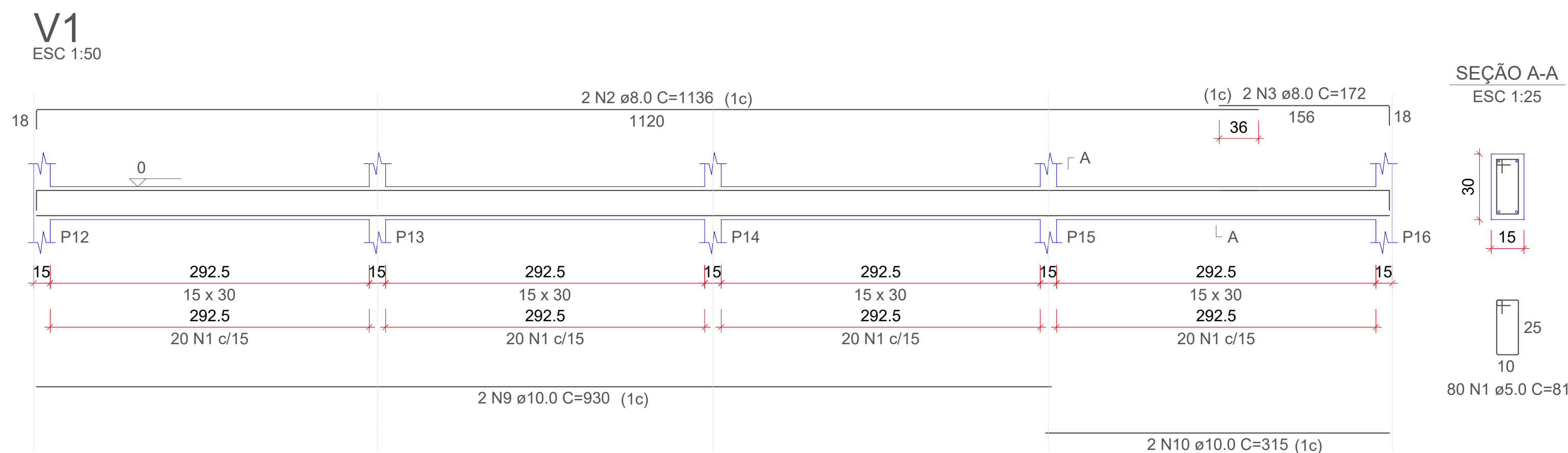
LUIZ RENATO FRIEDRICH DE RAMOS

Engº Civil CREA 168233/D - PR



FORMA DO PAVIMENTO SUBSOLO (NÍVEL 0)

Escala 1:50

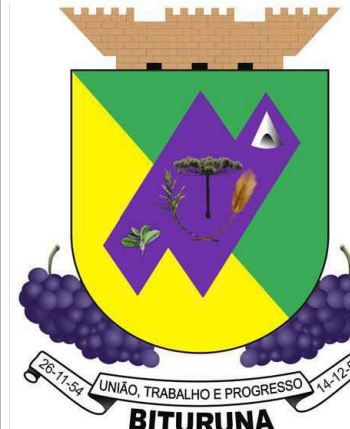


RELAÇÃO DO AÇO					
AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	277	81	22437
CA50	2	8.0	2	1136	2272
	3	8.0	2	172	344
	4	8.0	2	1133	2266
	5	8.0	2	156	312
	6	8.0	4	431	1724
	7	8.0	4	405	1620
	8	8.0	2	421	842
	9	10.0	4	930	3720
	10	10.0	2	315	630
	11	10.0	2	328	656
	12	10.0	4	415	1660
	13	10.0	6	405	2430

RESUMO DO AÇO			
AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	8.0	93.8	40.7
CA60	10.0	91	61.7
CA60	5.0	224.4	38
PESO TOTAL (kg)			
CA50	102.4		
CA60	38		

Volume de concreto (C-30) = 1.83 m³
Área de forma = 30.47 m²

Legenda dos pilares		Legenda das vigas e paredes	
	Pilar que passa		Viga



AMPLIAÇÃO BLOCO ADMINISTRATIVO
ESCOLA ANTÔNIO BABY

Projeto:

ESTRUTURAL

Cidade: **Bituruna**

Estado: **Paraná**

Desenho: **Bruna**

Escala: **Indicada**

Data: **OUTUBRO/2025**

Referencia:

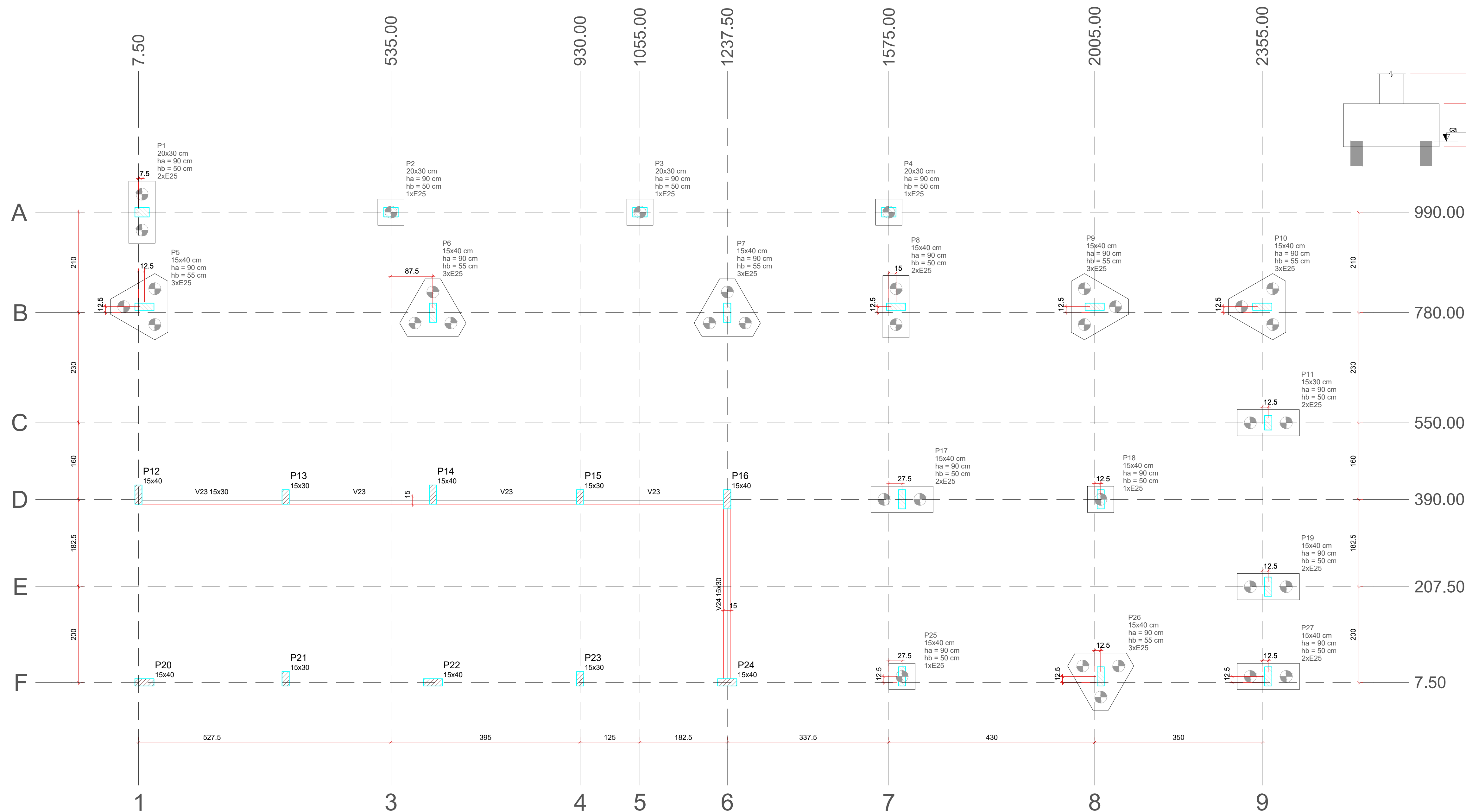
SUBSOLO
Planta de formas, Detalhamento de vigas

Folha:

03
10

Responsável Técnico:

LUIZ RENATO FRIEDRICH DE RAMOS
Engº Civil CREA 168233/D - PR

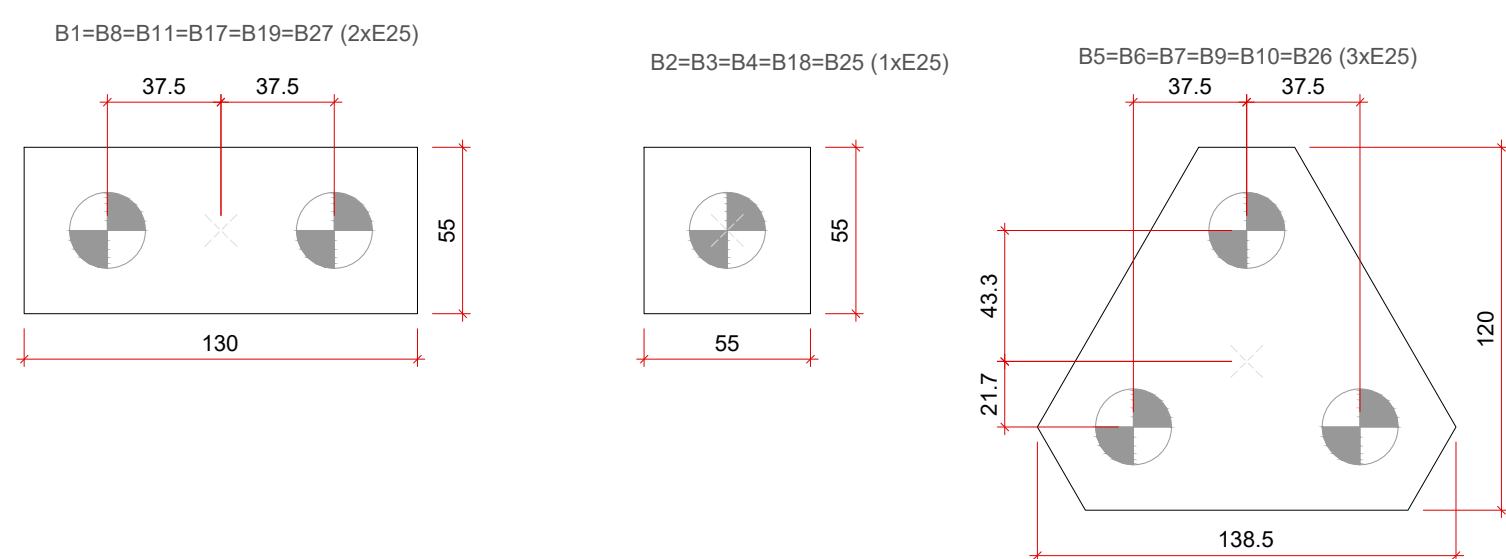


Localização no eixo X	
Coordenadas (cm)	Nome
7.50	P12
15.00	P1
20.00	P5, P20
315.00	P13, P21
535.00	P2
622.50	P6, P14, P22
930.00	P15, P23
1055.00	P3
1237.50	P7, P16, P24
1575.00	P4
1602.50	P8
1590.00	P17, P25
2005.00	P9
2017.50	P18, P26
2355.00	P10
2367.50	P11, P19, P27

Localização no eixo Y	
Coordenadas (cm)	Nome
990.00	P1, P2, P3, P4
792.50	P5, P8, P9, P10
780.00	P6, P7
550.00	P11
400.00	P12, P14
395.00	P13, P15
390.00	P16, P17, P18
207.50	P19
20.00	P25, P26, P27
15.00	P21, P23
7.50	P20, P22, P24

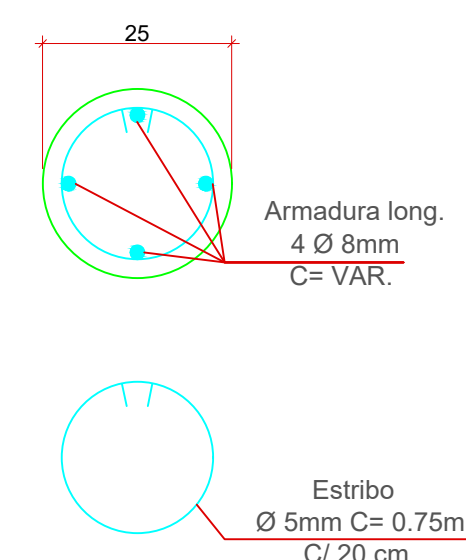
FORMA INTERMEDIÁRIA DO PAV. TÉRREO (NÍVEL 90)

Escala 1:50



LEGENDA DOS BLOCOS

Escala 1:25



DETALHAMENTO ESTACAS

Sem Escala

Estacas			
Simbologia	Nome	d (cm)	Quantidade
	E25	25.00	35

Resumo de materiais - Estacas				
Resumo do Aço				
Aço	Diâmetro (mm)	Comprimento total (m)	Barra	Peso +10% (kg)
CA50	8.0	315	26.25	138.21
CA60	5.0	295.4	24.62	50.01
Volume de concreto (C-25) = 4.3m³				



AMPLIAÇÃO BLOCO ADMINISTRATIVO
ESCOLA ANTÔNIO BABY

Projeto:

ESTRUTURAL

Cidade: **Bituruna**

Estado: **Paraná**

Desenho: **Bruna**

Escala: **Indicada**

Data: **OUTUBRO/2025**

Referência:

PAV. INTERMEDIÁRIO DO PAV. TÉRREO
Planta de formas, Localização fundações, Estacas

Folha:

04
10

Responsável Técnico:

LUIZ RENATO FRIEDRICH DE RAMOS
Engº Civil CREA 168233/D - PR

Technical drawing of a rectangular plate with two circular holes. The drawing includes overall dimensions and detailed views of the holes.

Overall Dimensions:

- Width: 130
- Height: 46
- Hole Diameter: 26
- Hole Spacing: 120
- Hole Offset from Side: 26

Hole Details:

- Hole Diameter: 26
- Hole Spacing: 120
- Hole Offset from Side: 26

Plate Thickness: 1.75

Material: N17

Surface Finish: Ra 0.8

Technical drawing of a cable support assembly. The main view shows a side profile of a cable hanger with a central support block and a base plate. Labels N17, N18, and N2 point to different components. A detail view shows a rectangular plate with dimensions 45 and 26, and a note "6 N2 ø5.0 c/25 C=153".

TERREO - L3

SEÇÃO
ESC 1:20

20
30

VISTA H

VISTA B

8 N5 @ 5.0 C=91 2x4 N6 @ 5.0 C=67

180

55

20

121

3

4 N19 @ 10.0 C=172

85

40

8 N5 @ 12 2x4 N6 @ 12

Figure 10 shows the reinforcement details of the column. The left section is labeled '20' at the bottom and '121' on the right. It shows a rectangular cross-section with a width of 400 mm and a height of 121 mm. The reinforcement consists of 4 N19 bars at the bottom and 4 N19 bars at the top. The right section is labeled '40' at the bottom and '85' on the right. It shows a rectangular cross-section with a width of 400 mm and a height of 85 mm. The reinforcement consists of 8 N5 bars at the bottom and 2x4 N6 bars at the top.

Diagram of a 10m long beam with 8 N5 reinforcement bars and 2x4 N6 cross-sections. The beam is divided into two sections: 8m (8 N5 c/12) and 4m (2x4 N6 c/12).

TERREO - L3

SEÇÃO
ESC 1:20

15
30
VISTA H
VISTA B

25
10
25
10
C=57

8 N10 ø5.0 C=812x3 N11 ø5.0 C=172

180
3
121
20
55

95
30
8 N10 ø12
2x N11 ø12

Diagram of a 4N19 tube pinout. The diagram shows a 19-pin connector with pins numbered 1 to 19. Pin 1 is at the top left, and pin 19 is at the bottom right. The diagram is divided into two sections by a vertical line. The left section contains pins 1 through 12, and the right section contains pins 13 through 19. The pins are arranged in a 19-pin D-sub connector format. The diagram is labeled "4N19" and "4N19 0.0C=172".

RELAÇÃO DO AÇO						
5x8/25 P11 3xP8 P19		6x8/26 3xP2 P11		6x8/27 6xP2 2xP18		
AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (kg)	
CA60	1	5,0	25	195	4875	
	2	5,0	48	153	7038	
	3	5,0	30	399	11970	
	4	5,0	30	345	10350	
	5	5,0	32	281	2912	
	6	5,0	26	67	1742	
	7	5,0	143	25	3575	
	8	5,0	96	101	9606	
	9	5,0	94	94	6298	
	10	5,0	8	81	648	
CA50	11	5,0	97	57	542	
	12	8,0	36	VAR	VAR	
	13	8,0	42	VAR	VAR	
	14	8,0	36	VAR	VAR	
	15	8,0	42	VAR	VAR	
	16	8,0	72	168	12096	
	17	8,0	36	168	6048	
	18	8,0	24	134	3216	
	19	10,0	56	172	9632	
	20	10,0	36	177	6372	

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	8.0	383.9	166.6
	10.0	160	108.5
CA60	5.0	594.5	100.8
PESO TOTAL (kg)			
CA50	275.2		
CA60	100.8		

Volume de concreto (C-30) = 7.26 m³
Área de forma = 46.60 m²

Technical drawing of a square plate with a central hole. The plate has a side length of 55 mm. A central hole has a diameter of 50 mm. A dimension line labeled 'N2' indicates the distance from the top edge of the plate to the top edge of the hole, which is 5 mm. Below the plate, there is a smaller square with a side length of 46 mm, labeled '5 N1 ø5.0 C=195'.

Technical drawing of a cable gland (N2) with dimensions in mm. The drawing shows a side view and a top view. The side view indicates a total height of 140 mm, a mounting flange thickness of 5 mm, and a central cable passage diameter of 180 mm. The top view shows a square base with a side length of 45 mm and a mounting flange width of 26 mm. The cable gland is labeled N2 and has a CA: 55 specification.

TÉRREO - L3

SEÇÃO
ESC 1:20

15
40
VISTA H
VISTA B

8 N8 e5.0 C=101 2x4 N9 e5.0 C=67
8 N7 e5.0 C=25
4 N7 e5.0 C=25

35
10
35
10
N7

55

[illegible]

TÉRREO - L3

SEÇÃO
ESC 1:20

40
2x N 9 c/12

85
8 N 8 c/12

20
30

VISTA B

VISTA H

TÉRREO - L3

SEÇÃO
ESC 1:20

20

30

VISTA B

VISTA H

25

15

25

15

8 N5 ø5.0 C=91 2x3 N6 ø5.0 C=67

[illegible]

95
8 N5 c/12

30
2x3 N6 c/12

37.5 37.5

N13

45.3

21.7

N12

120

N16

138.5

30

VAR

30

6 N12 ± 0.0 c/20 C=VAR

Technical drawing of a reinforced concrete slab cross-section. The drawing shows a slab with a total thickness of 145 mm. The top reinforcement consists of N14 bars with a spacing of 180 mm. The bottom reinforcement consists of N16 bars with a spacing of 90 mm. The slab is supported by two columns. The distance between the centerlines of the columns is 110 mm. The slab is 3x4 m in plan. The reinforcement is labeled as 3x4 N16 ø8.0 c/18 C=168.

Technical drawing of a mechanical part, likely a bracket or support, showing dimensions and labels. The part has a central vertical section and two side sections. Dimensions include a total width of 150, a central width of 80, and a height of 18. Labels N15, N14, N16, and N17 point to specific features.

ARMADURA COM COMPRIMENTO VARIÁVEL				
N12	QUANT	C. VAR (cm)	C. UNIT (cm)	C. TOTAL (cm)
A	1	36	92	92
B	1	57	113	113
C	1	79	135	135
D	1	100	156	156
E	1	111	167	167
F	1	121	177	177

ARMADURA COM COMPRIMENTO VARIÁVEL				
N13	QUANT	C. VAR (cm)	C. UNIT (cm)	C. TOTAL (cm)
A	2	36	92	184
B	2	77	133	266
C	2	110	166	332

ARMADURA COM COMPRIMENTO VARIÁVEL				
N14	QUANT	C. VAR (cm)	C. UNIT (cm)	C. TOTAL (cm)
A	1	27	43	43
B	1	52	68	68
C	1	77	93	93
D	2	102	118	236
E	1	126	142	142

N15	QUANT	C. VAR (cm)	C. UNIT (cm)	C. TOTAL (cm)
A	1	4	20	20
B	1	5	21	21
C	1	60	76	76
D	1	61	77	77
E	1	96	112	112
F	1	97	113	113
G	1	110	126	126

TERREIRO - L3

SEÇÃO
ESC 1:20

15

40

VISTA H

35

10

35

10

N7

50

180

33

126

6 N20 @ 10.0 C=177

20

80

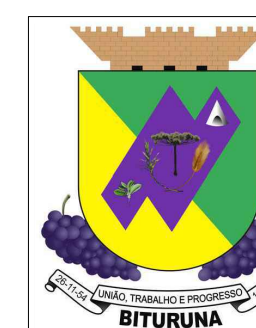
40

8 N8 ø5.0 C=101 2x4 N9 ø5.0 C=67

8 N7 ø5.0 C=25

8 N8 ø5.0 C=25

VISTA B



Projeto:

ESTRUTURAL

Cidade:

Estado:

Paraná

Bruna

Indica

Referencia:

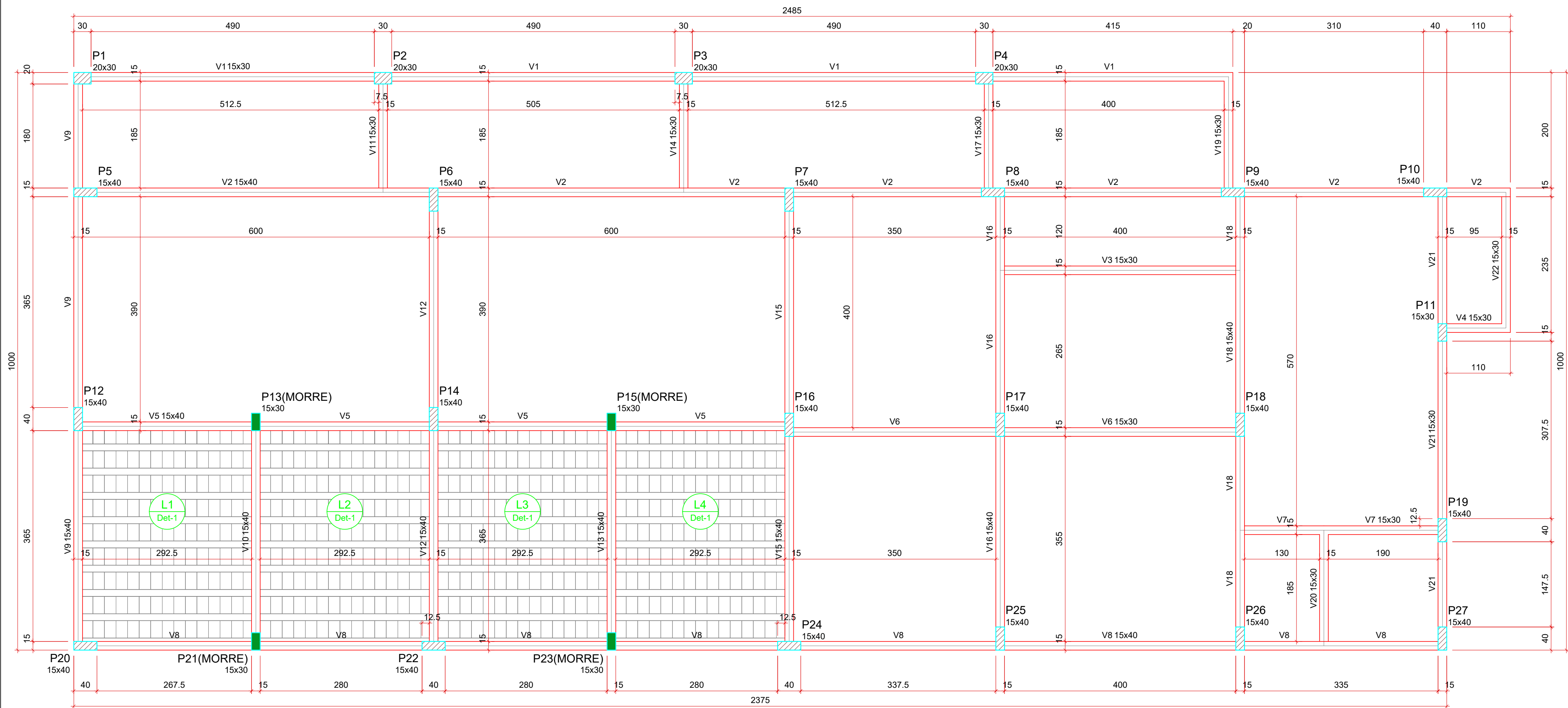
FUNDAÇÕES PAV. INTERMEDIÁRIO
Detalhamento blocos de fundação

Folha:

05	10
----	----

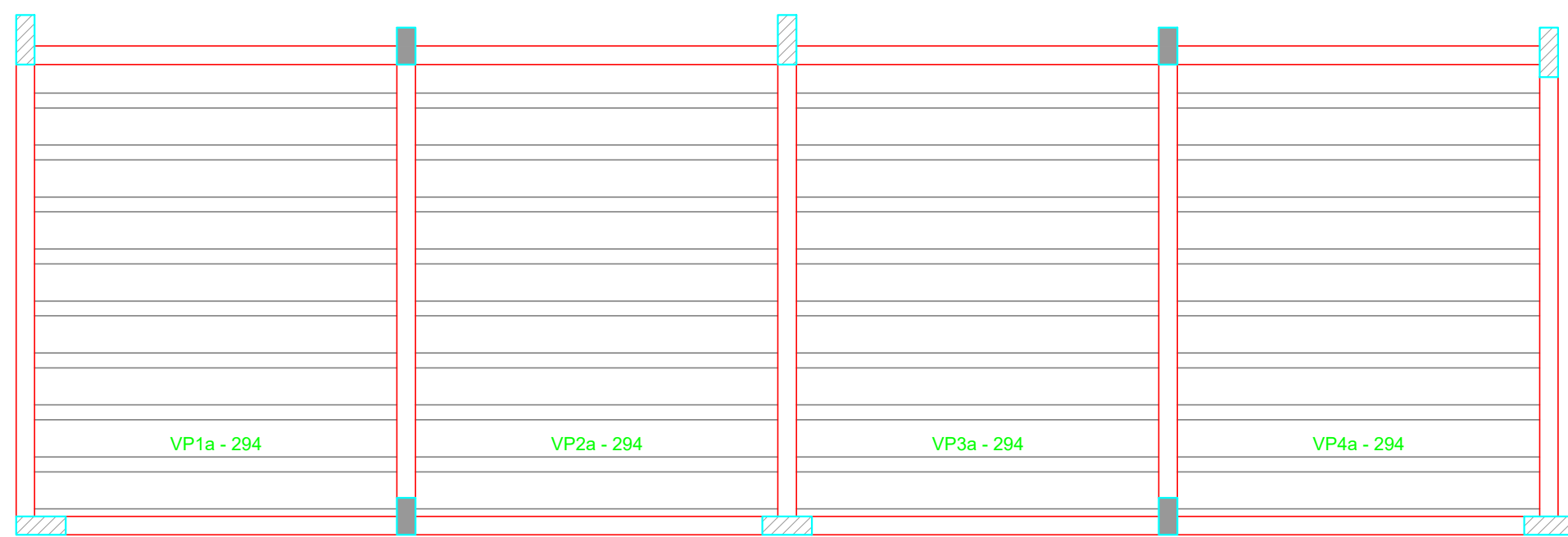
Responsável Técnico:

LUIZ RENATO FRIEDRICH DE RAMOS
Eng^o Civil CREA 168233/D - PR



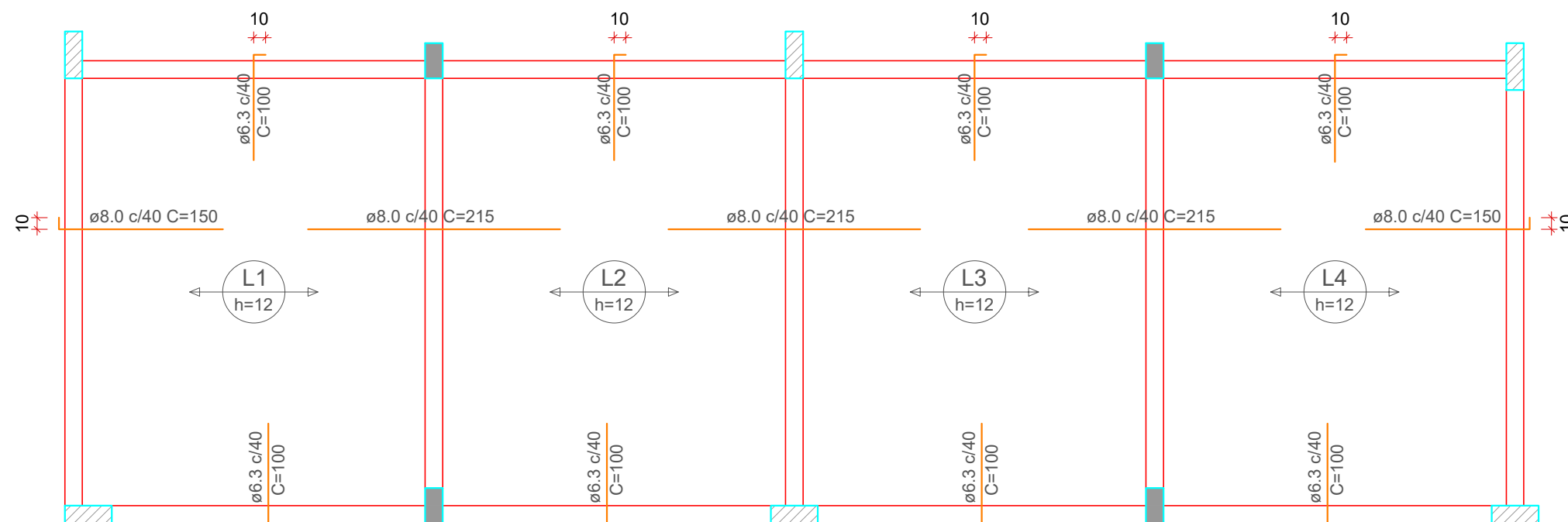
FORMA DO PAVIMENTO TÉRREO (NÍVEL 180)

Escala: 1:50



PLANTA DE VIGOTAS PRÉ-MOLDADAS

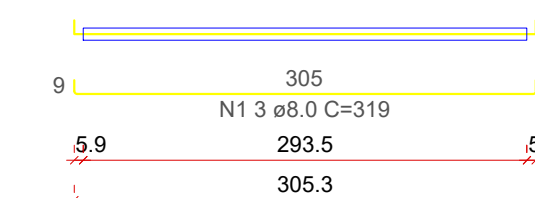
Escala: 1:50



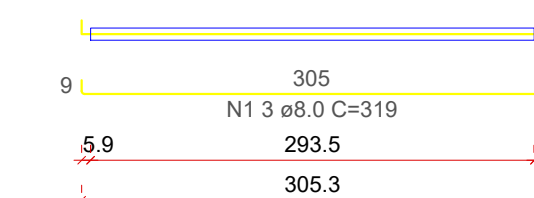
ARMAÇÃO NEGATIVA LAJES DO PAV. TÉRREO

Escala: 1:50

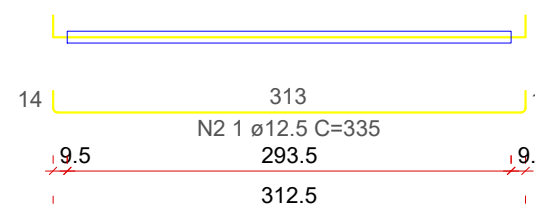
VP1a (8 unidades)
(L1)
ESC 1:50



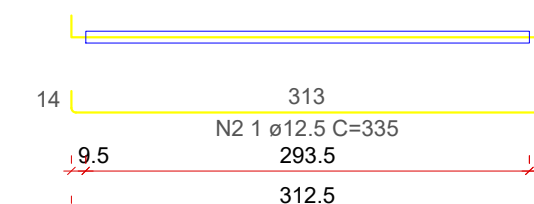
VP2a (8 unidades)
(L2)
ESC 1:50



VP3a (8 unidades)
(L3)
ESC 1:50



VP4a (8 unidades)
(L4)
ESC 1:50



RELAÇÃO DO AÇO - VIGOTAS

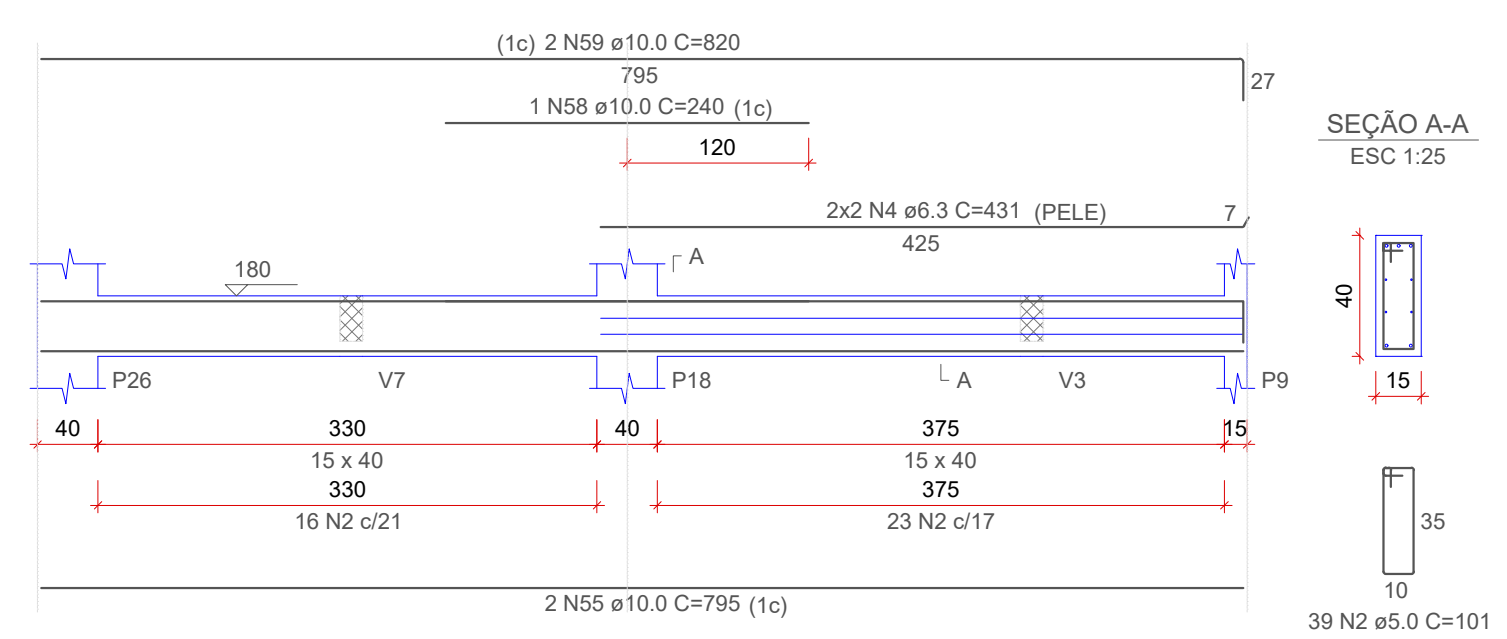
8xVP1a		8xVP2a		8xVP3a	
AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA50	1	8.0	48	319	15312
	2	12.5	16	335	5360

RESUMO DO AÇO NEGATIVOS

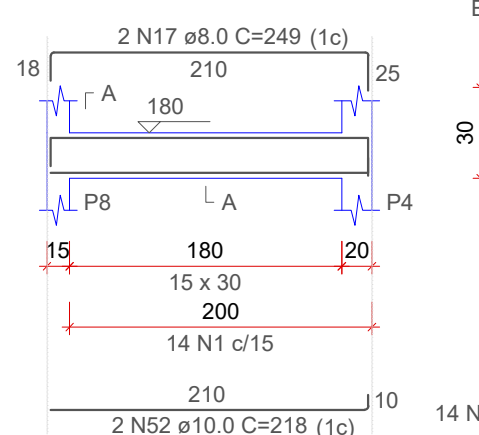
AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	62.25	16.78
	8.0	93.32	40.5

Volume de concreto capa da laje (C-30) = 1.97 m³

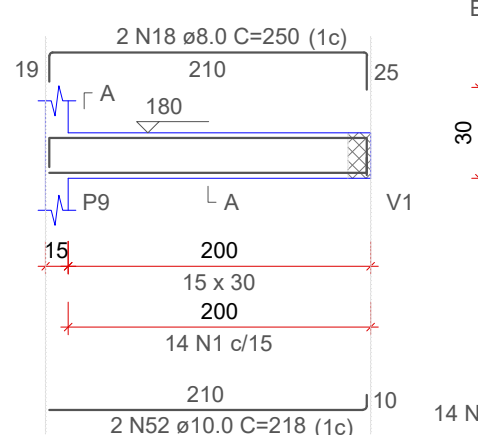
V18
ESC 1:50



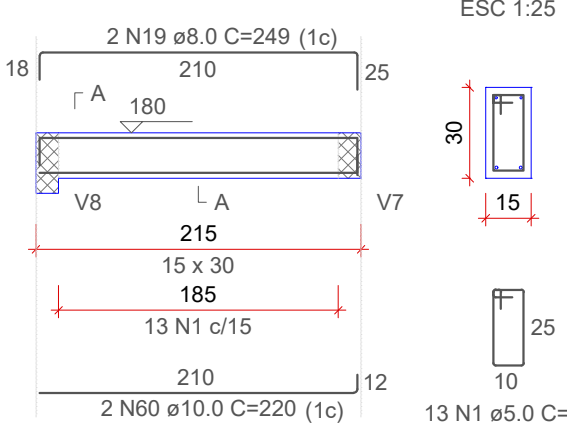
V17
ESC 1:50



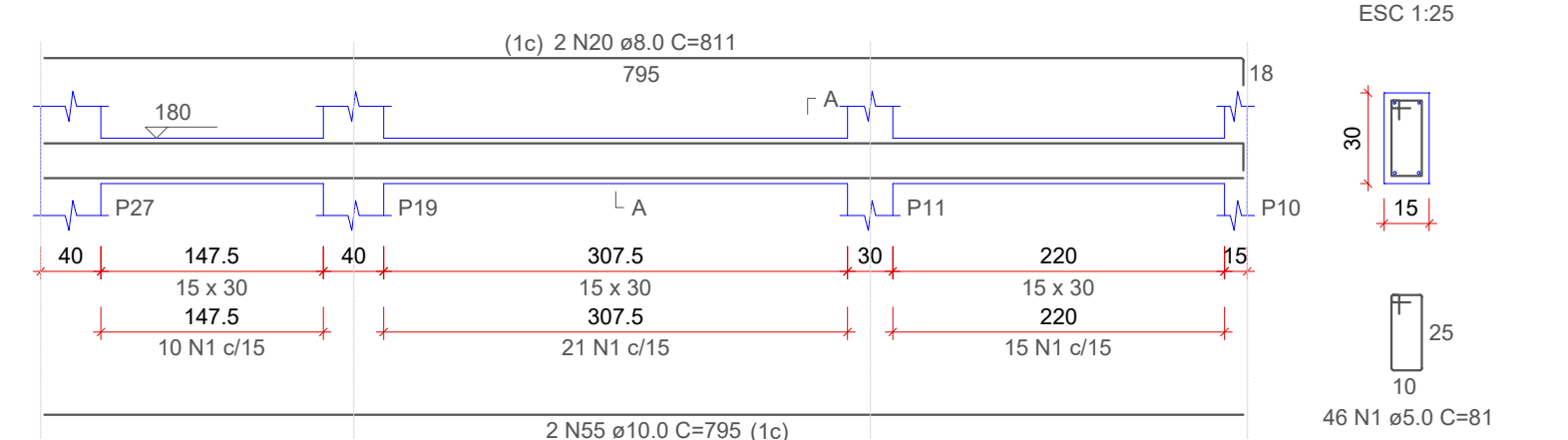
V19
ESC 1:50



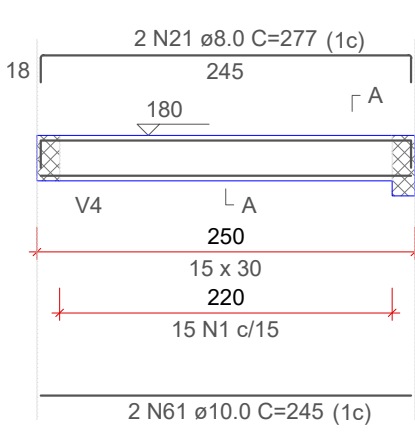
V20
ESC 1:50



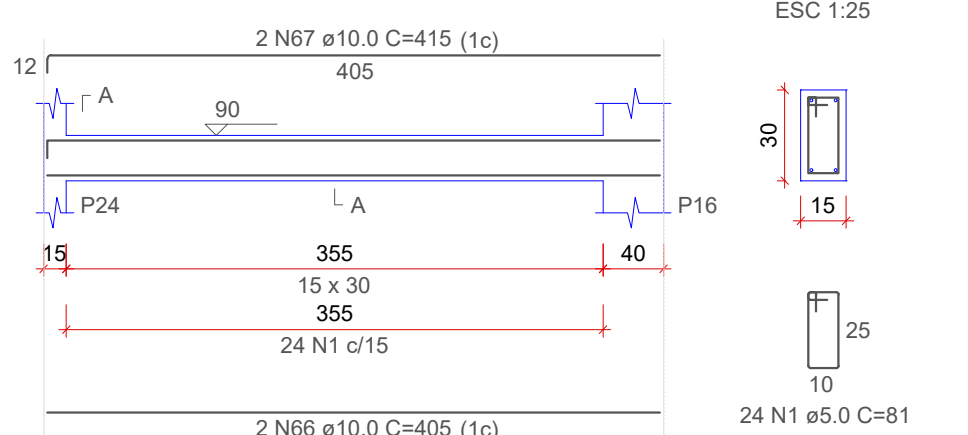
V21
ESC 1:50



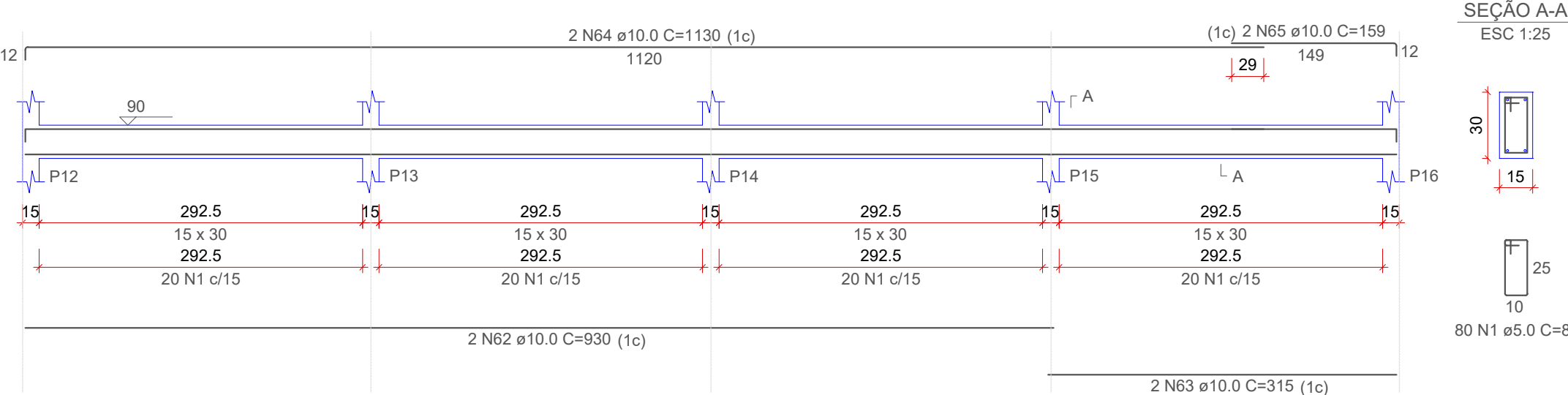
V22
ESC 1:50



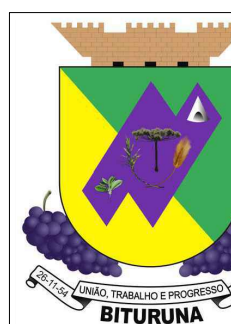
V24
ESC 1:50



V23
ESC 1:50



Observações:
¹Utilizar malha Q92 Gerdau como armadura positiva nas lajes; ²Contrapiso executado sobre aterro deve ser armado com malha Q92 Gerdau e ter espessura de no mínimo 7cm.



**AMPLIAÇÃO BLOCO ADMINISTRATIVO
ESCOLA ANTÔNIO BABY**

Projeto:

ESTRUTURAL

Cidade: **Bituruna**

Estado: **Paraná**

Desenho: **Bruna**

Escola: **Indicada**

Data: **OUTUBRO/2025**

Referência:

TÉRREO

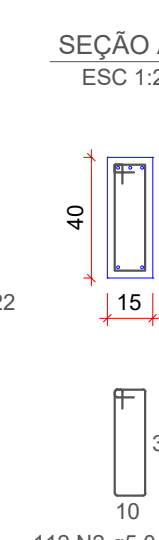
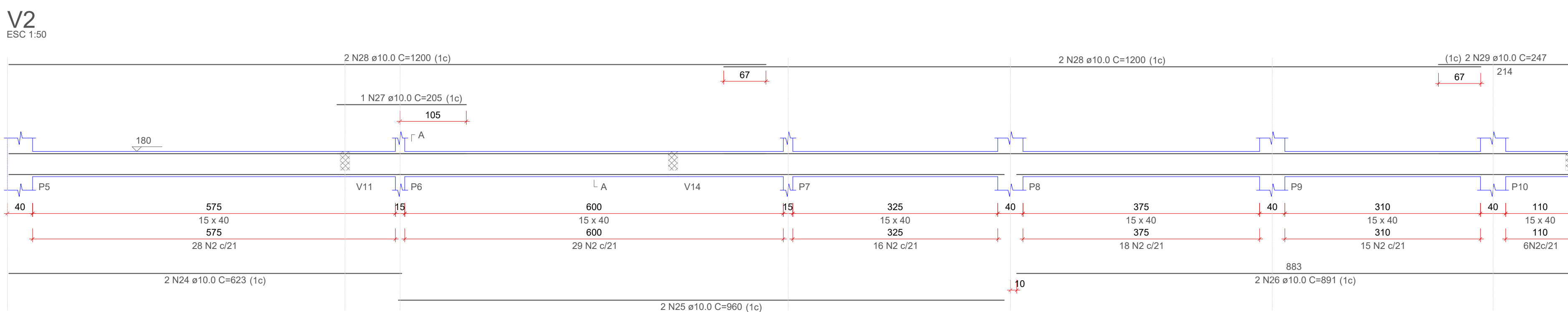
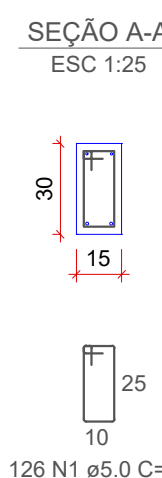
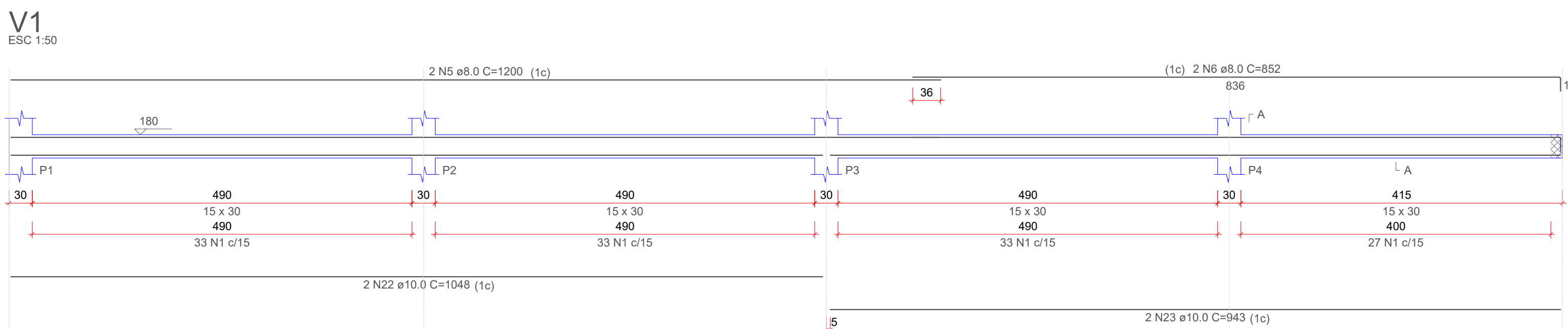
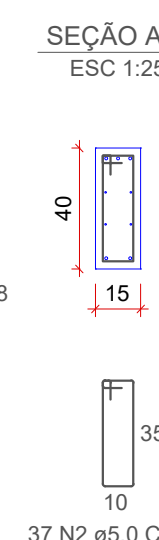
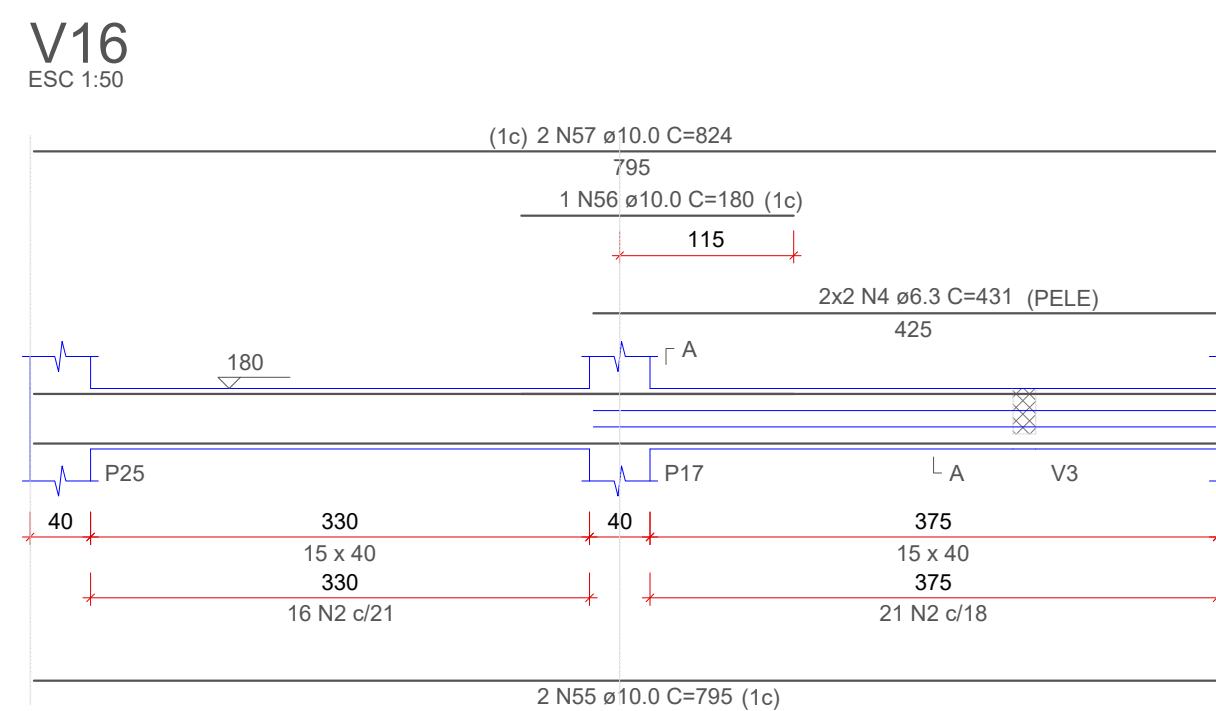
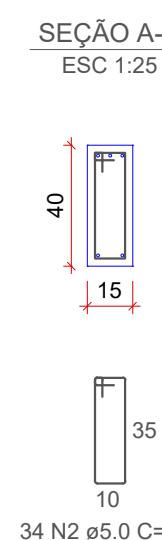
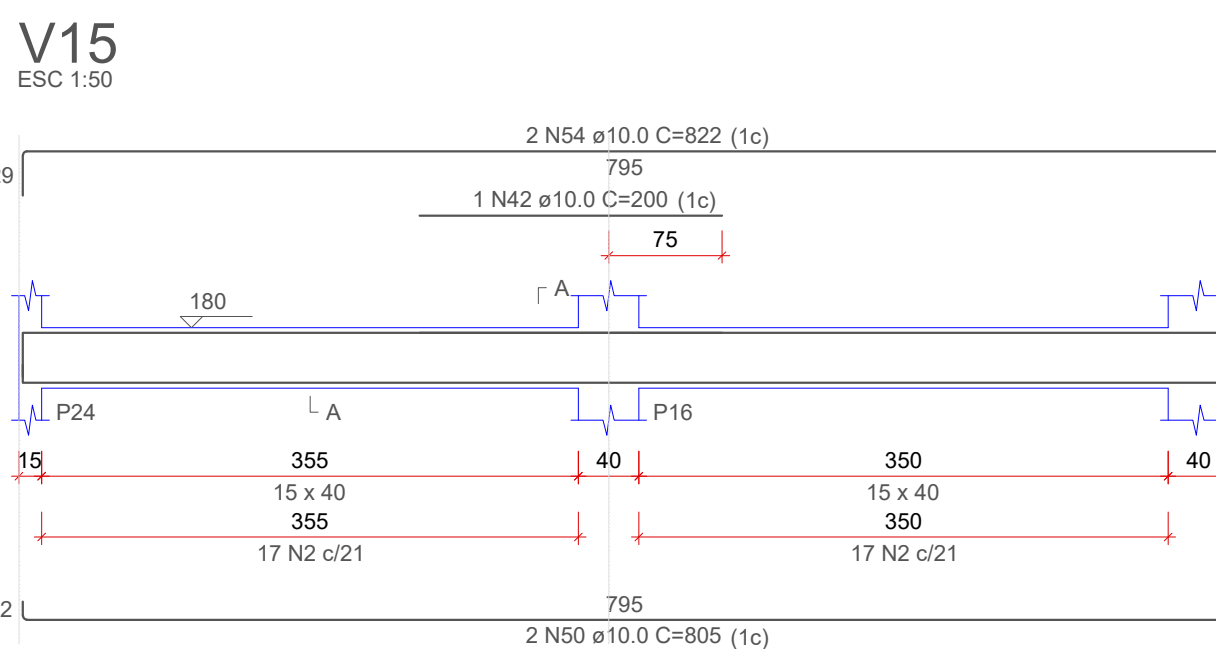
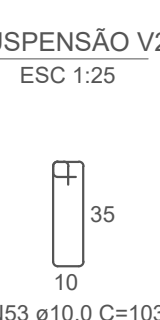
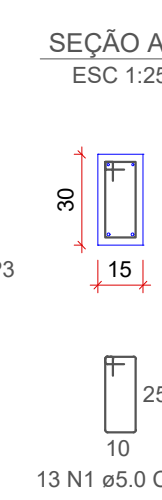
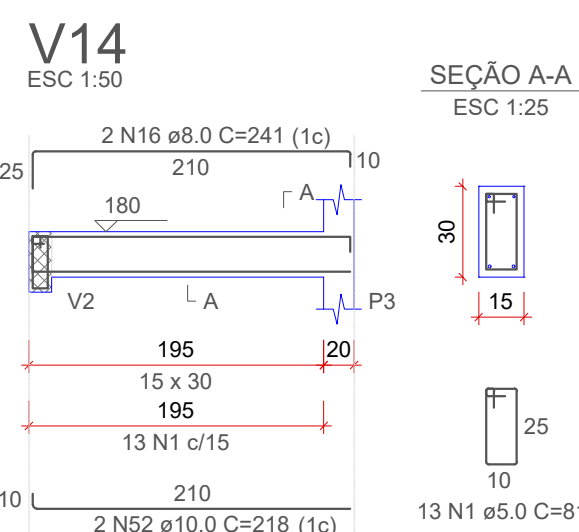
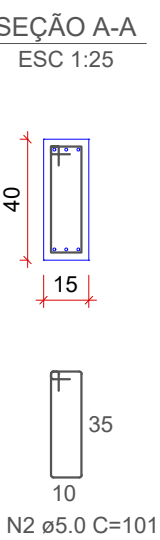
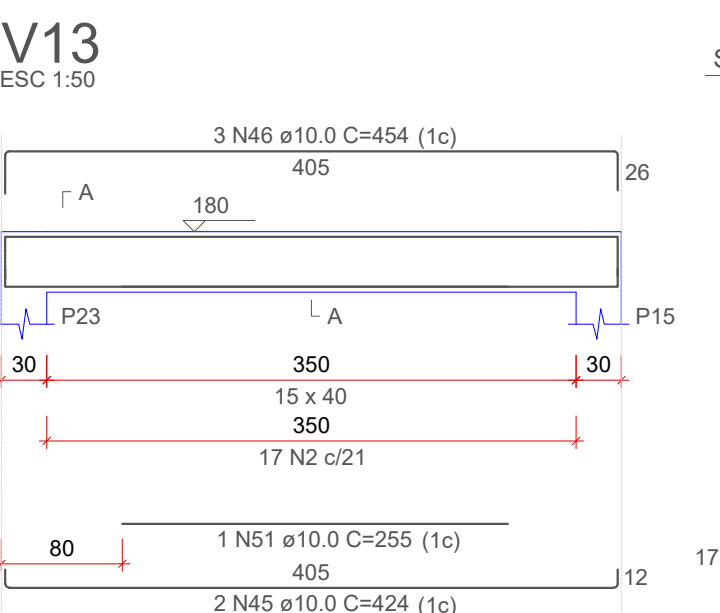
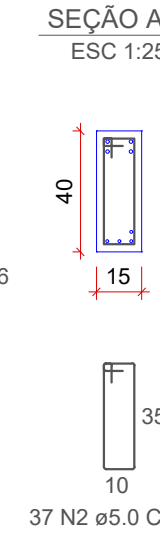
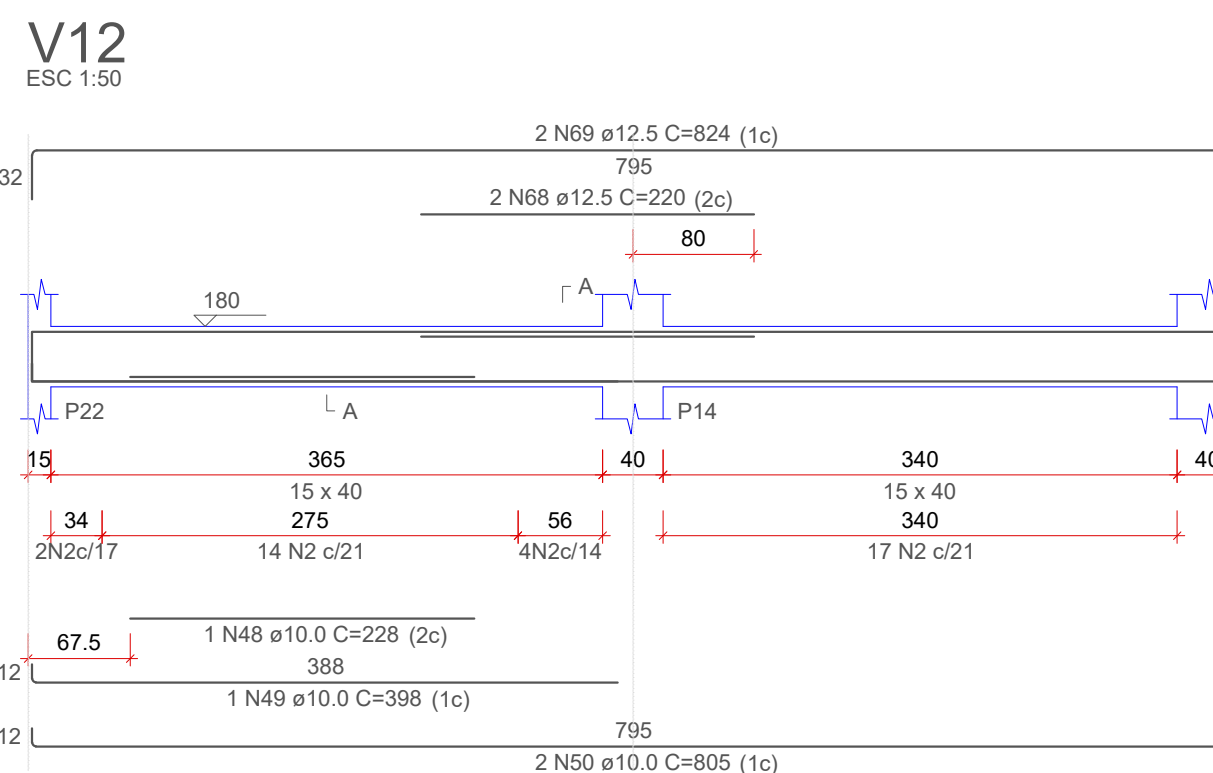
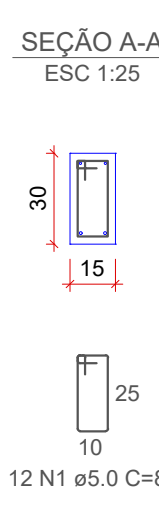
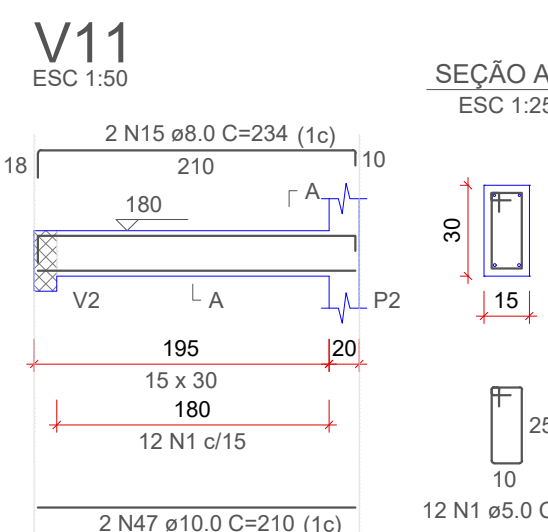
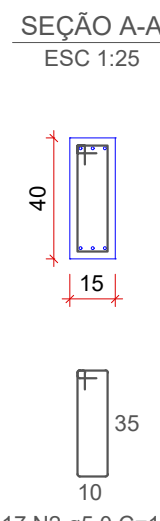
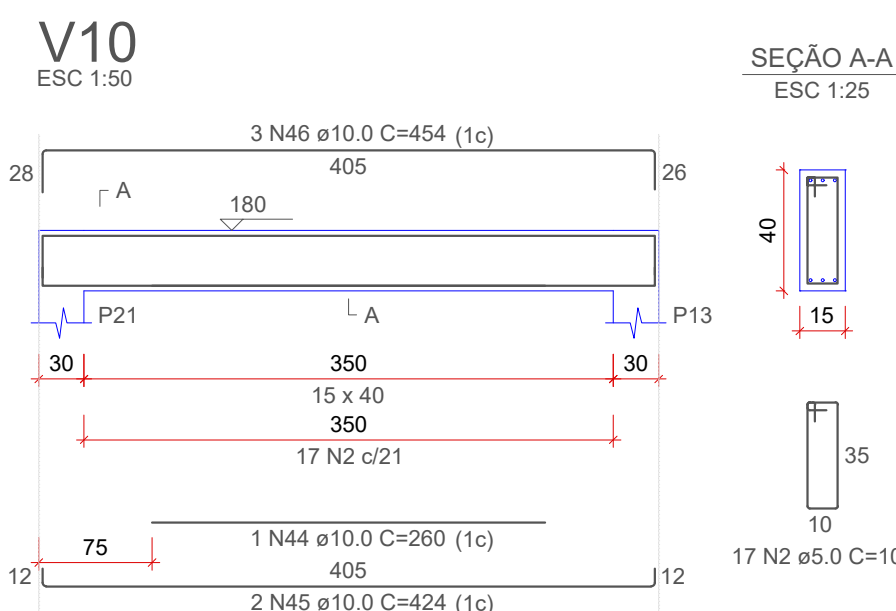
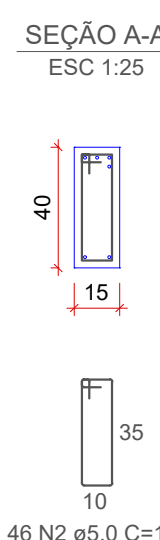
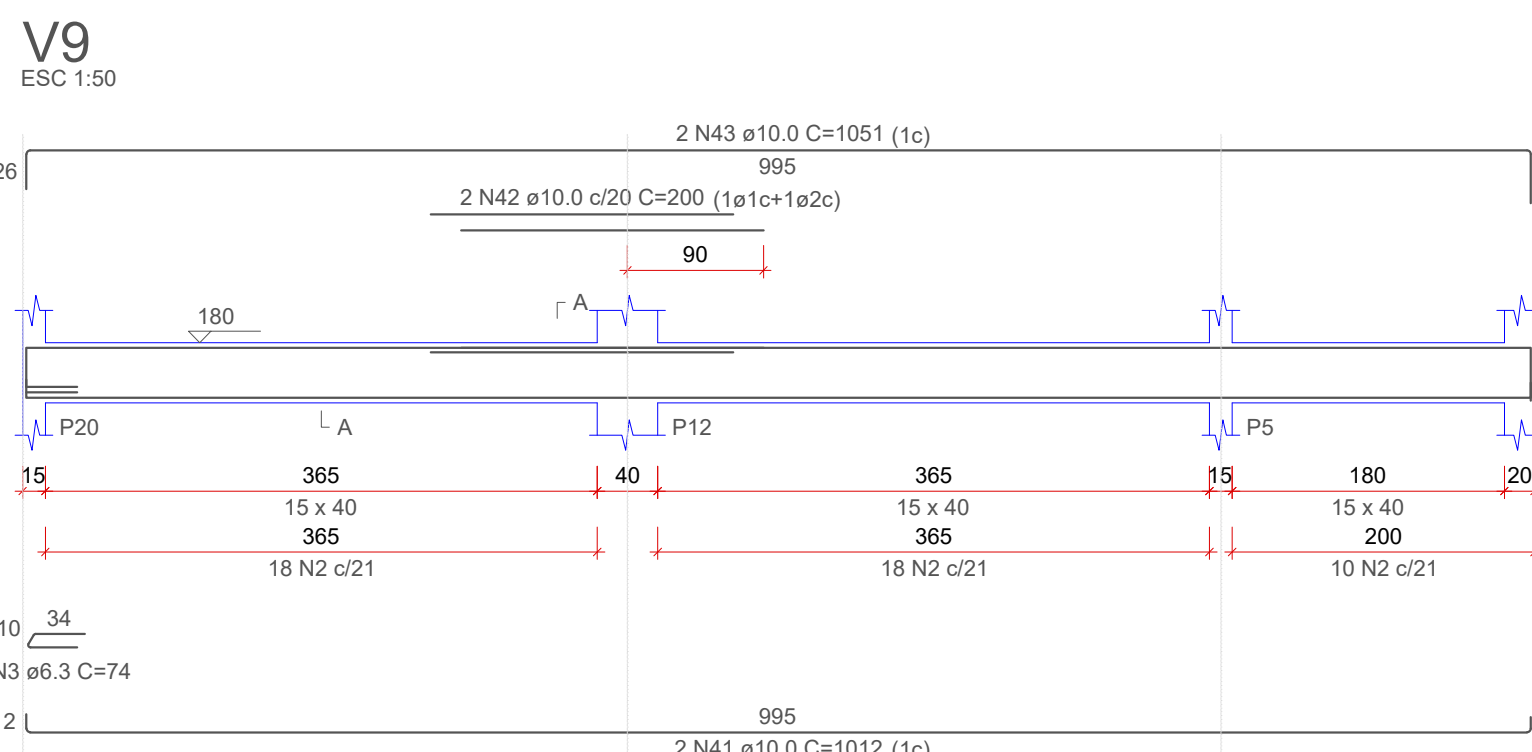
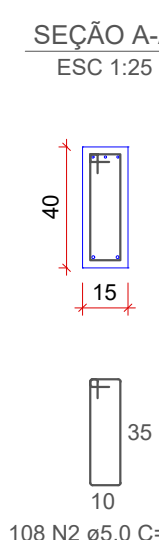
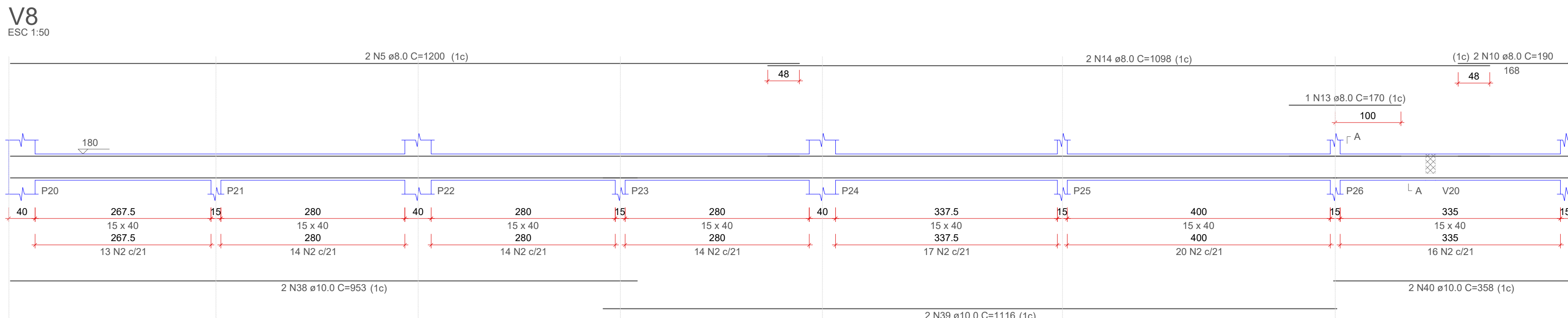
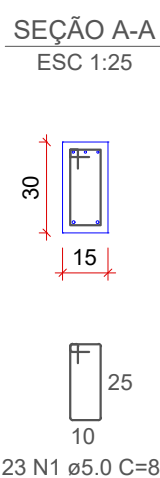
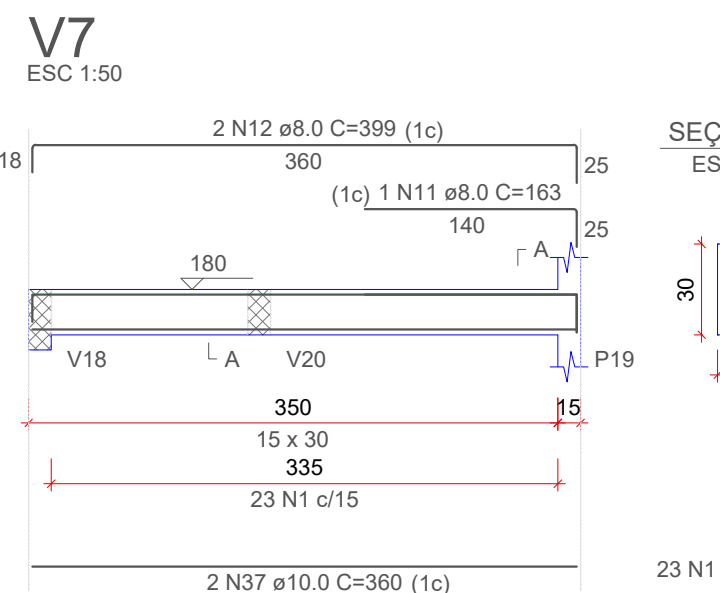
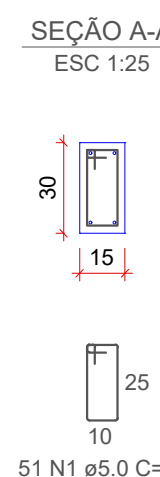
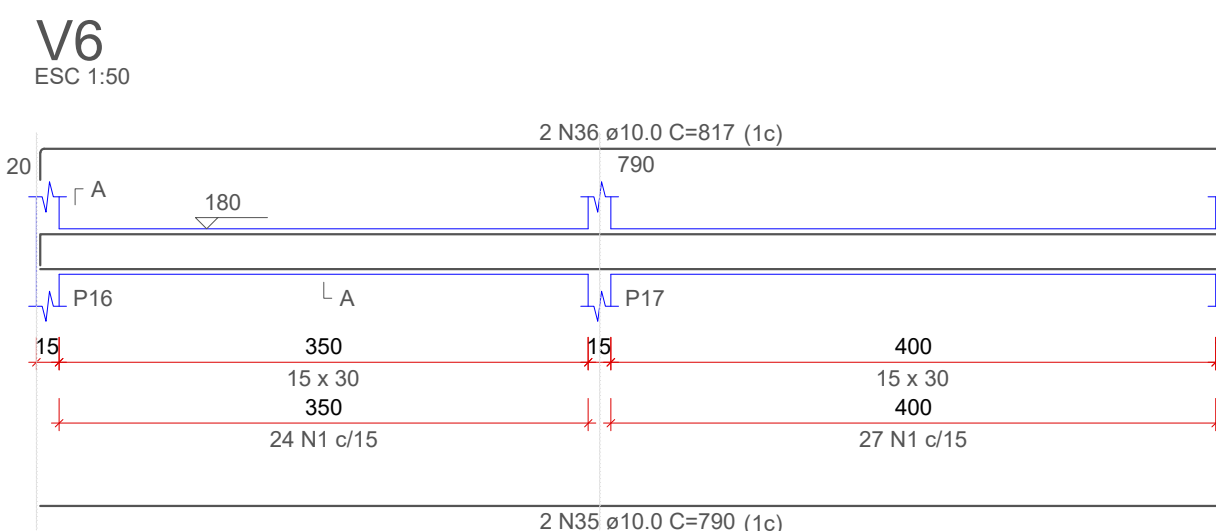
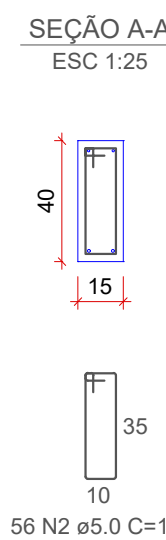
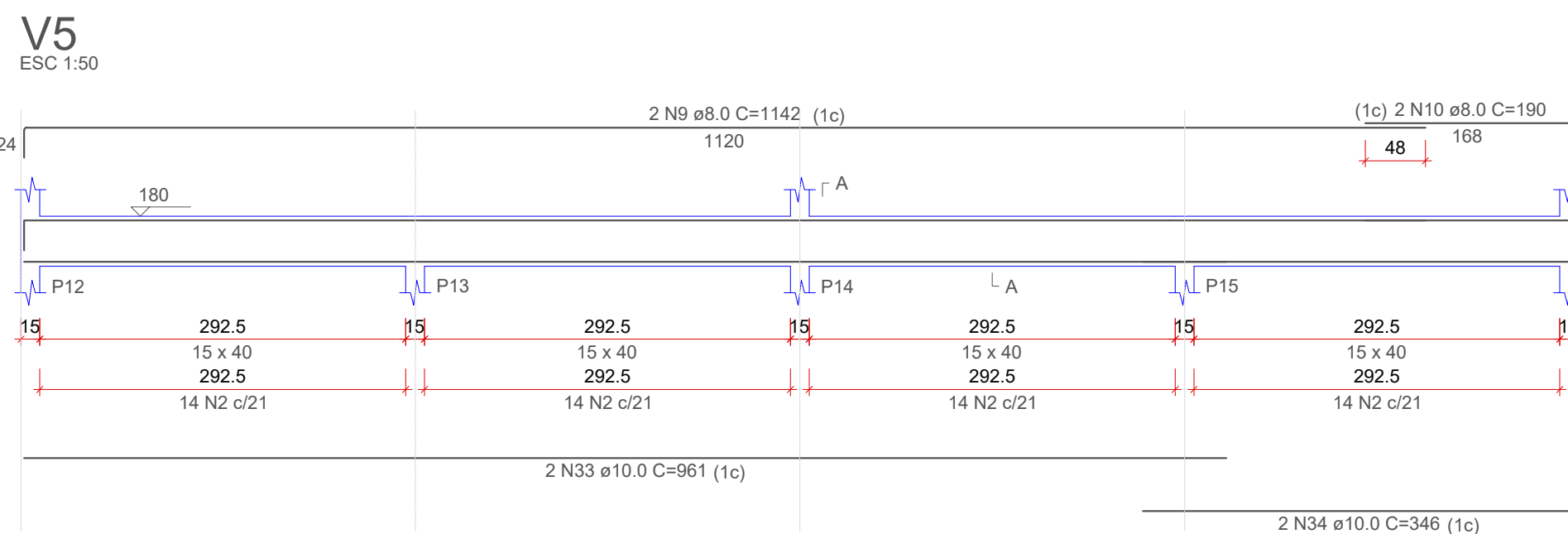
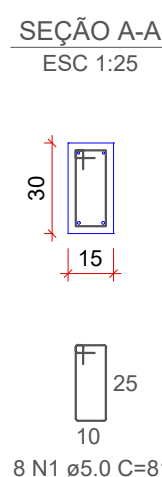
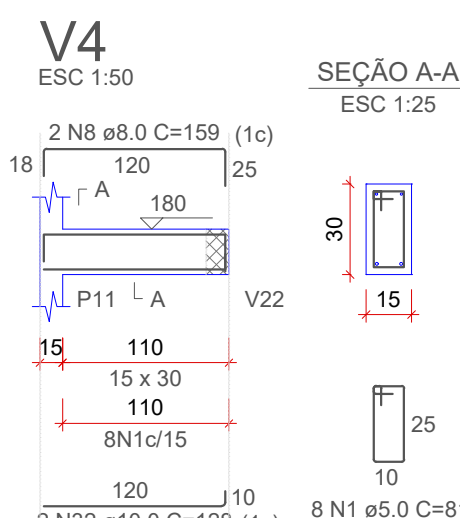
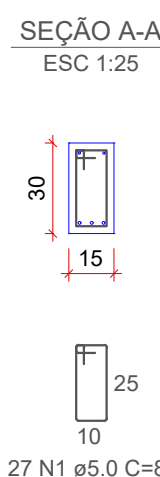
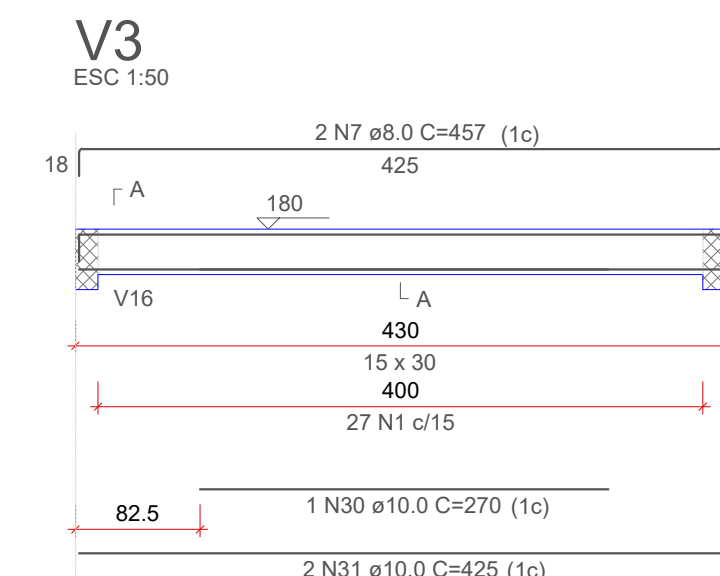
Planta de formas, Detalhamento de vigas, Lajes

Folha: **06**

10

Responsável Técnico:

LUIZ RENATO FRIEDRICH DE RAMOS
Engº Civil CREA 168233/D - PR



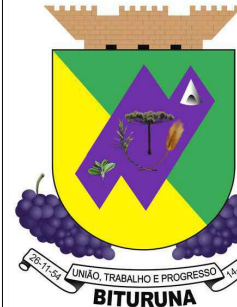
RELAÇÃO DO AÇO

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
V1	1	5.0	466	81	37746
V4	2	5.0	503	101	50803
V7	3	6.3	2	74	148
V10	4	6.3	2	431	3448
V13	5	8.0	4	1200	4800
V16	6	8.0	2	852	1704
V19	7	8.0	2	457	914
V22	8	8.0	2	159	318
	9	8.0	2	1142	2284
	10	8.0	4	190	760
	11	8.0	1	163	163
	12	8.0	2	389	778
	13	8.0	1	170	170
	14	8.0	2	1098	2196
	15	8.0	3	234	468
	16	8.0	2	241	482
	17	8.0	2	249	498
	18	8.0	2	250	500
	19	8.0	2	249	498
	20	8.0	2	811	1622
	21	8.0	2	277	554
	22	10.0	2	1048	2096
	23	10.0	2	943	1886
	24	10.0	2	623	1246
	25	10.0	2	960	1920
	26	10.0	2	891	1782
	27	10.0	1	205	205
	28	10.0	4	1200	4800
	29	10.0	2	247	494
	30	10.0	1	270	270
	31	10.0	2	425	850
	32	10.0	2	128	256
	33	10.0	2	961	1922
	34	10.0	2	346	692
	35	10.0	2	790	1580
	36	10.0	2	817	1634
	37	10.0	2	360	720
	38	10.0	2	953	1906
	39	10.0	2	1116	2232
	40	10.0	2	358	716
	41	10.0	2	1012	2024
	42	10.0	3	200	600
	43	10.0	2	1051	2102
	44	10.0	1	260	260
	45	10.0	4	424	1696
	46	10.0	6	454	2724
	47	10.0	2	210	420
	48	10.0	1	228	228
	49	10.0	1	388	388
	50	10.0	4	805	3220
	51	10.0	1	255	255
	52	10.0	6	218	1308
	53	10.0	1	103	103
	54	10.0	2	822	1644
	55	10.0	6	795	4770
	56	10.0	1	180	180
	57	10.0	2	824	1648
	58	10.0	1	240	240
	59	10.0	2	820	1640
	60	10.0	2	220	440
	61	10.0	2	245	490
	62	10.0	2	930	1860
	63	10.0	2	315	630
	64	10.0	2	1130	2260
	65	10.0	2	159	318
	66	10.0	2	405	810
	67	10.0	2	415	830
	68	12.5	2	220	440
	69	12.5	2	824	1648

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	36	9.7
	8.0	187.3	81.3
	10.0	603.1	409
	12.5	20.9	22.1
CA60	5.0	885.5	150.1
PESO TOTAL (kg)			
CA50		522.1	
CA60		150.1	

Volume de concreto (C-30) = 9.13 m³
Área de forma = 141.03 m²



Cidade: **Bituruna**
Estado: **Paraná**
Desenho: **Bruna**
Escala: **Indicada**
Data: **OUTUBRO/2025**

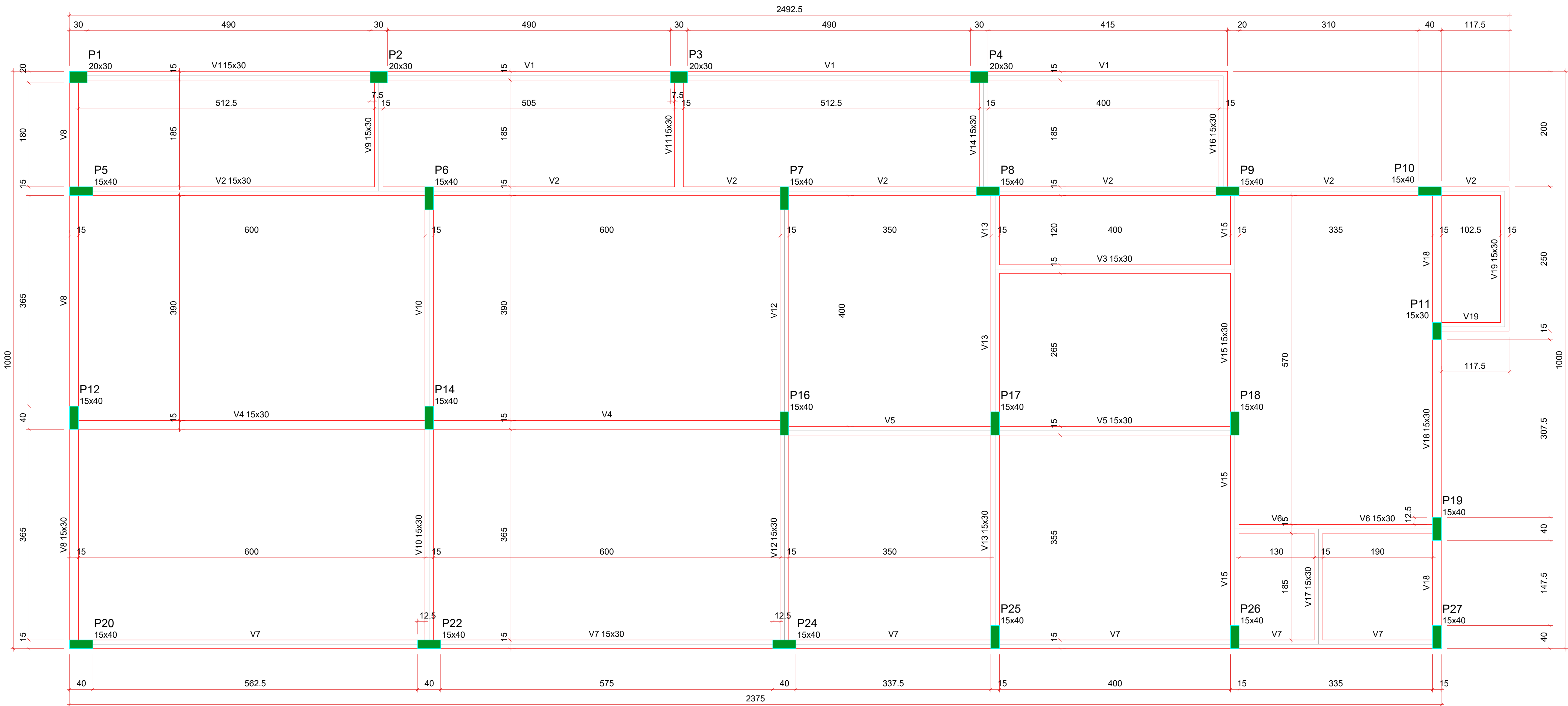
**AMPLIAÇÃO BLOCO ADMINISTRATIVO
ESCOLA ANTÔNIO BABY**

Projeto: **ESTRUTURAL**

Referencia: **TÉRREO
Detalhamento de vigas**

Folha: **07
10**

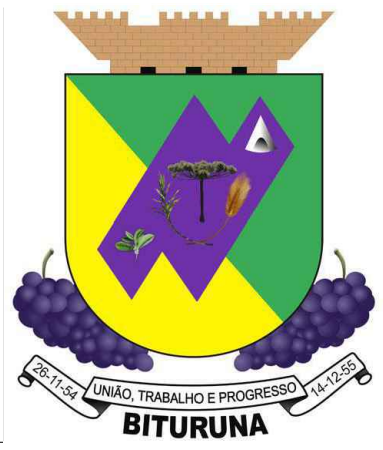
Responsável Técnico: **LUIZ RENATO FRIEDRICH DE RAMOS
Engº Civil CREA 168233/D - PR**



FORMA DO PAVIMENTO COBERTURA (NÍVEL 490)
Escala 1:50

Legenda dos pilares	
	Pilar que morre

Legenda das vigas e paredes	
	Viga



AMPLIAÇÃO BLOCO ADMINISTRATIVO
ESCOLA ANTÔNIO BABY

Projeto:

ESTRUTURAL

Referencia:

COBERTURA
Planta de formas

Folha:

08
10

Responsável Técnico:

LUIZ RENATO FRIEDRICH DE RAMOS
Engº Civil CREA 168233/D - PR

Cidade:

Bituruna

Estado:

Paraná

Desenho:

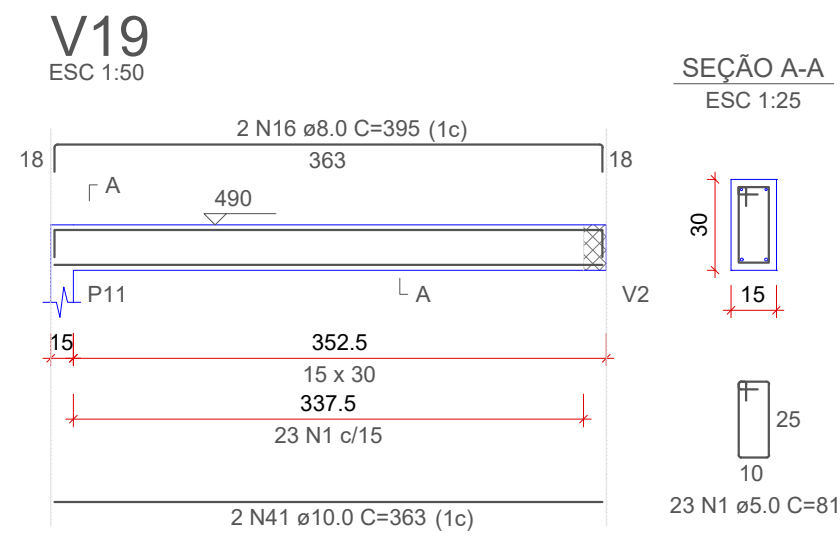
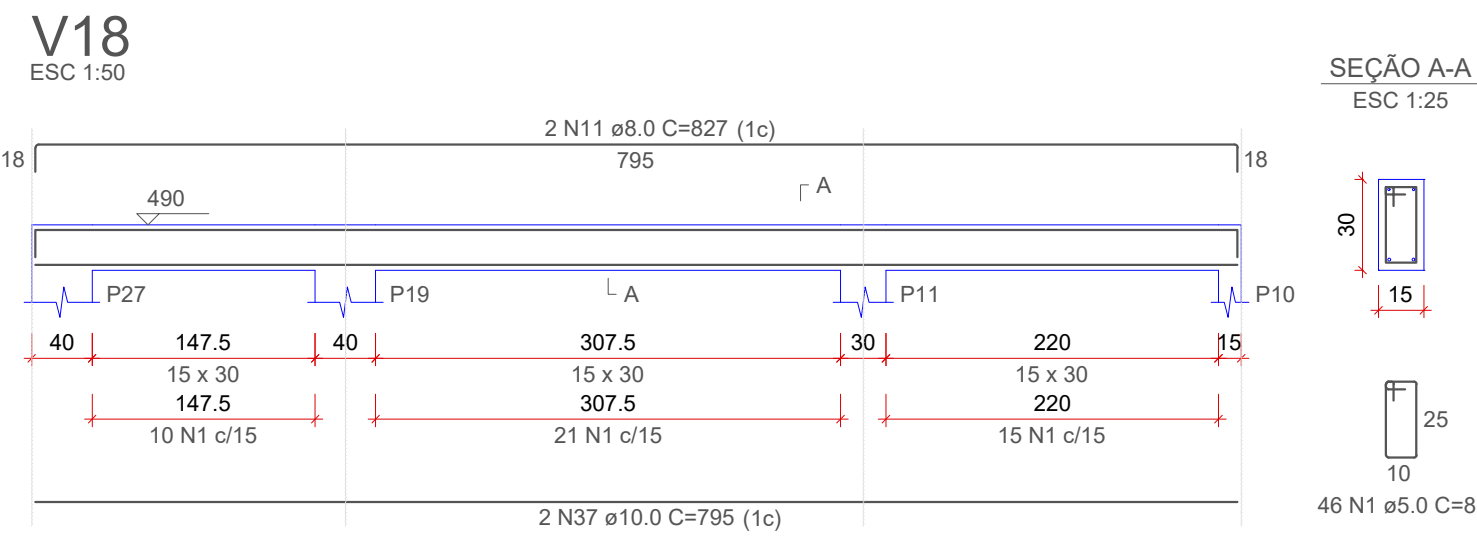
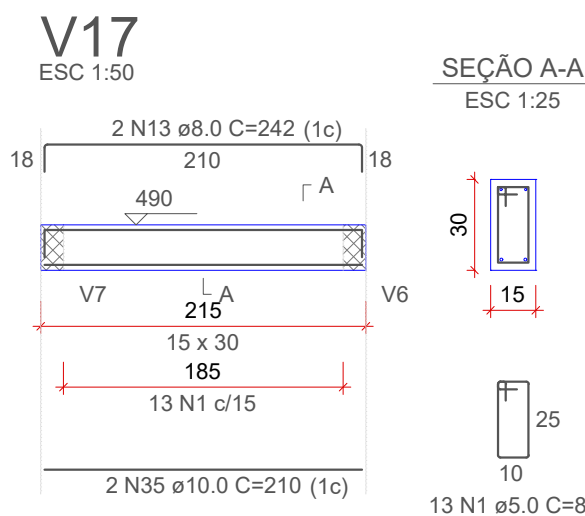
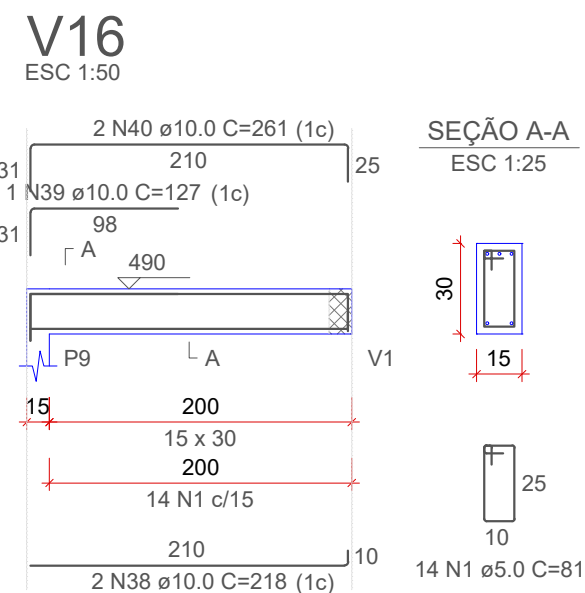
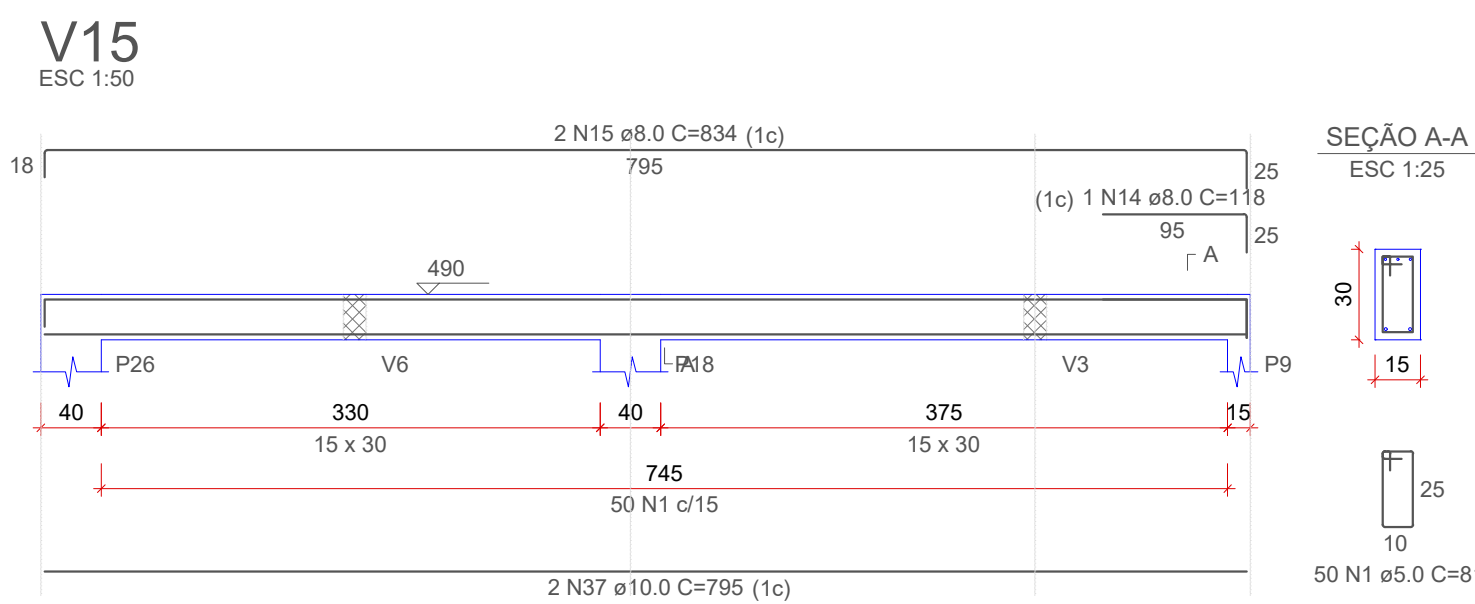
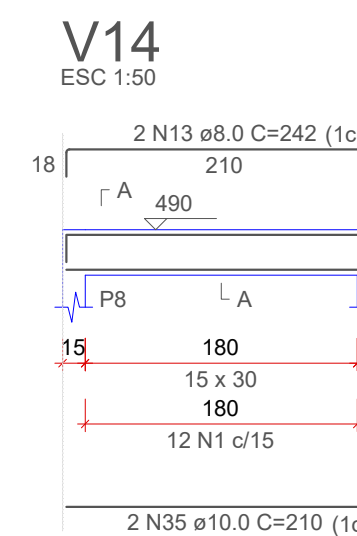
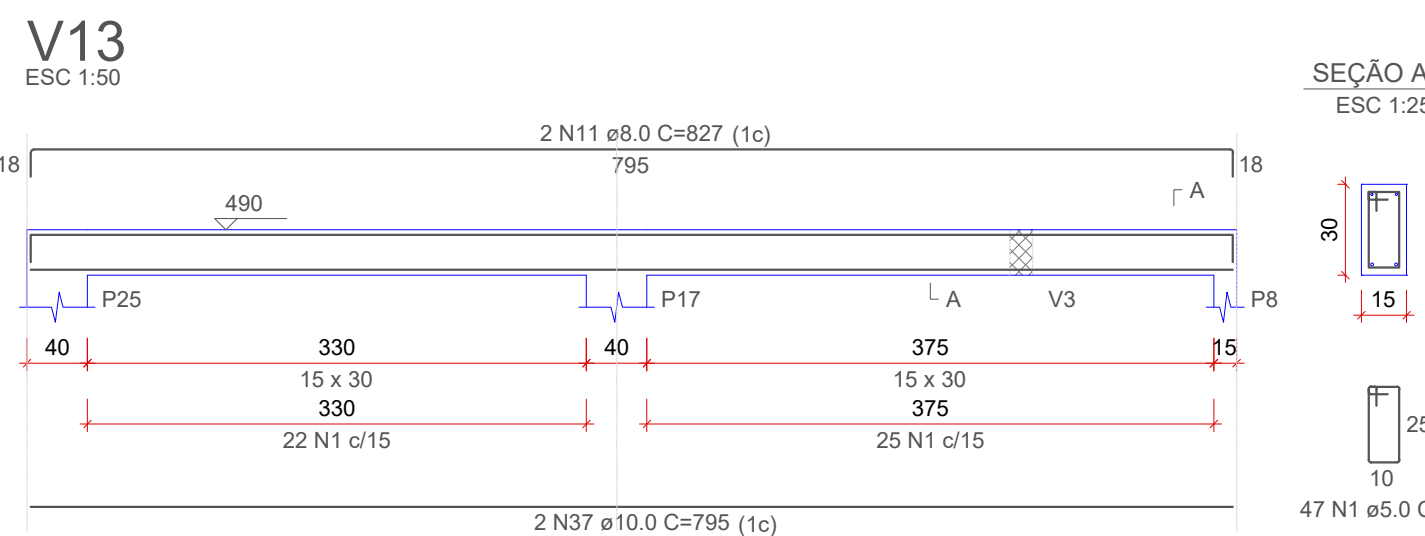
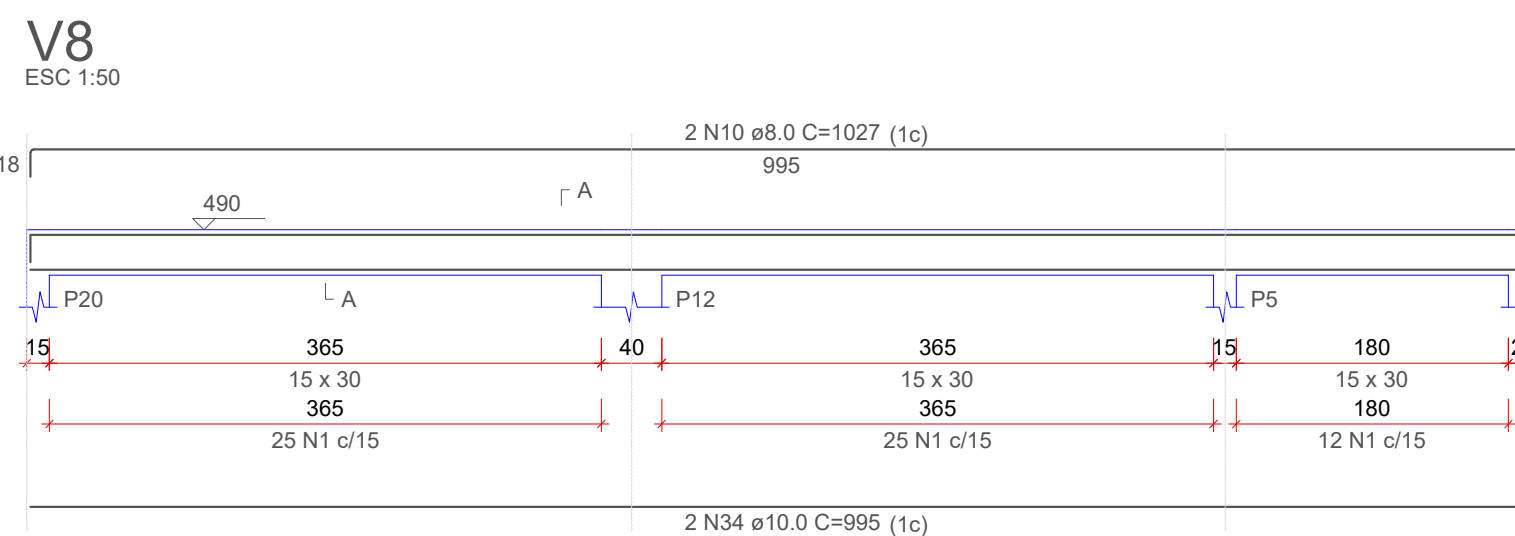
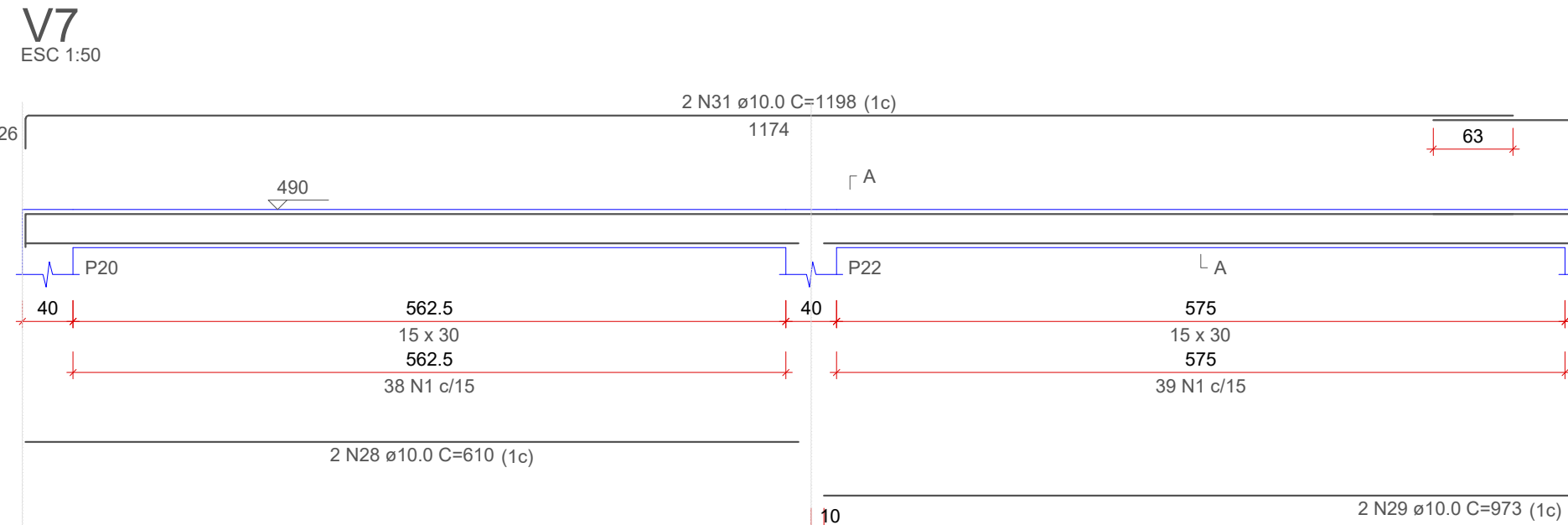
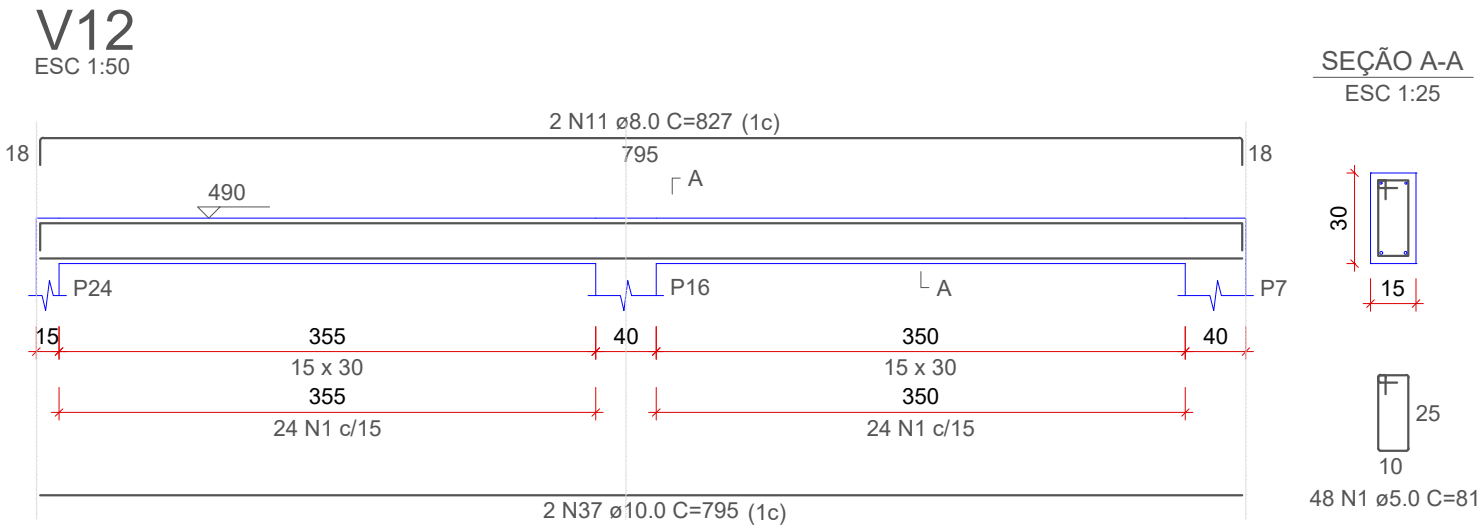
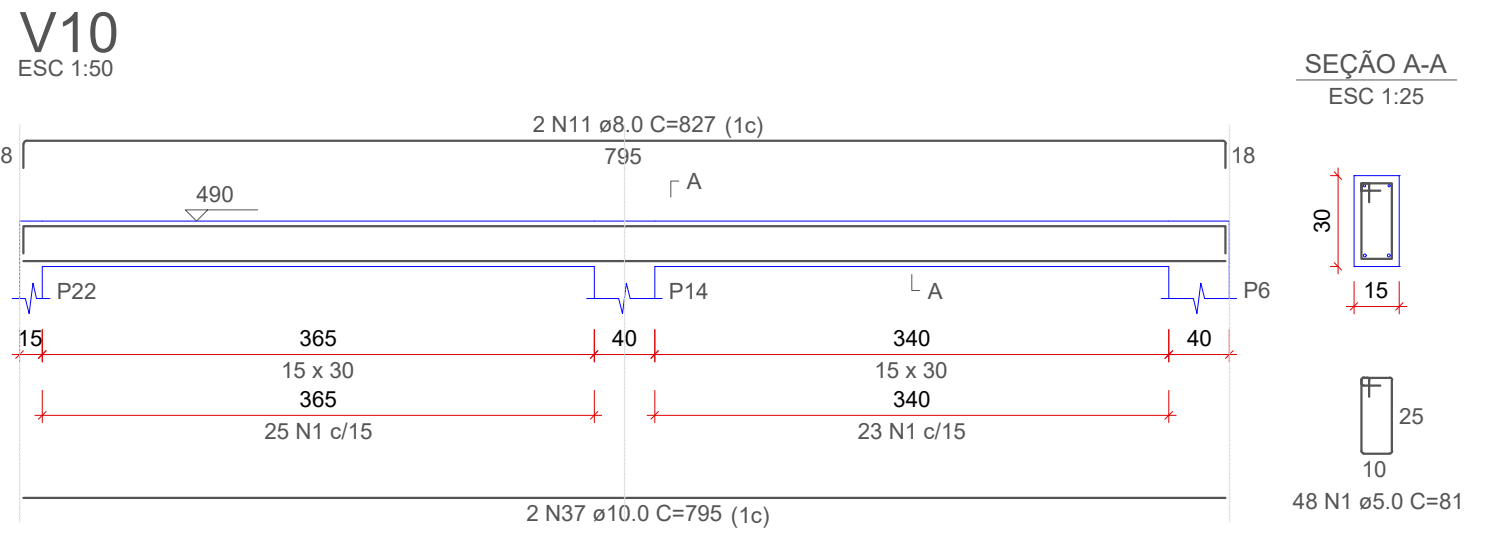
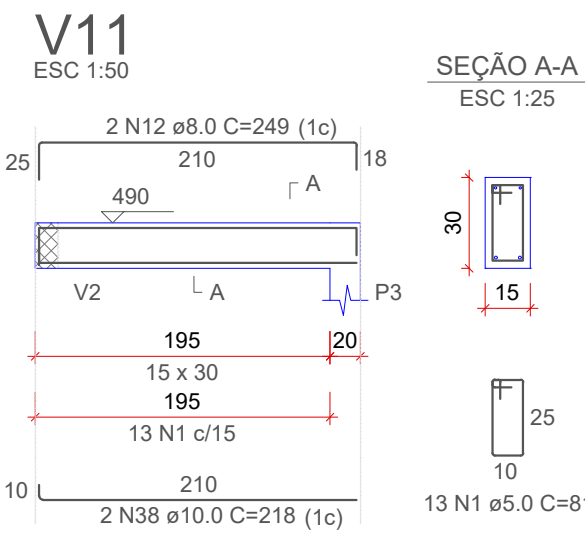
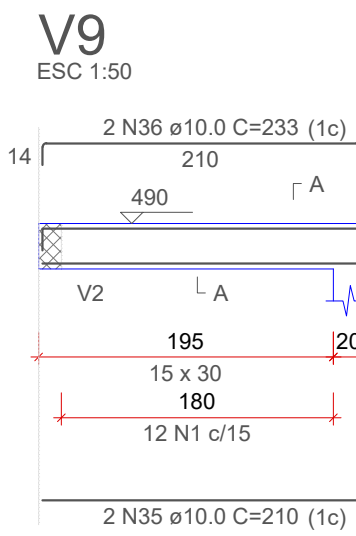
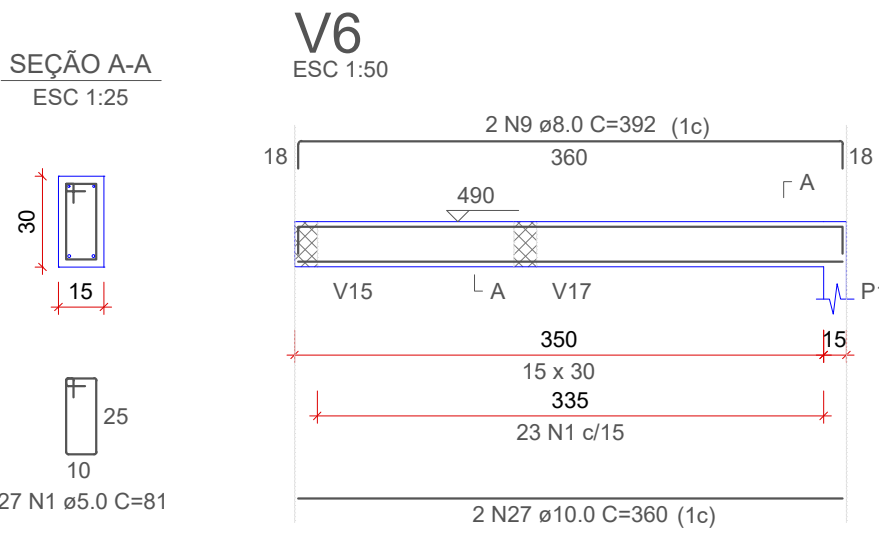
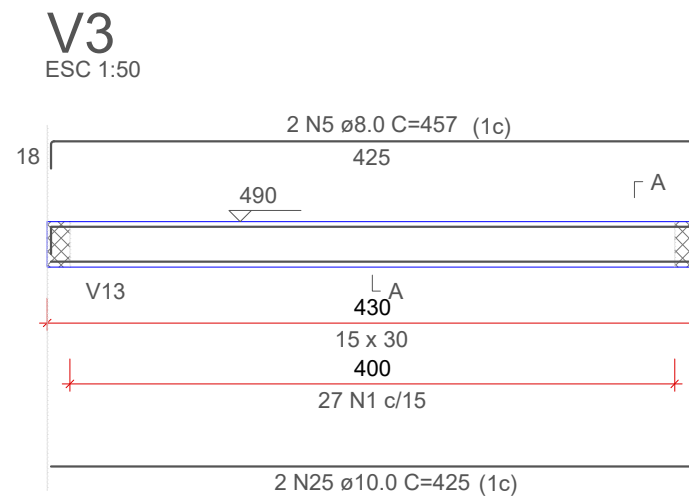
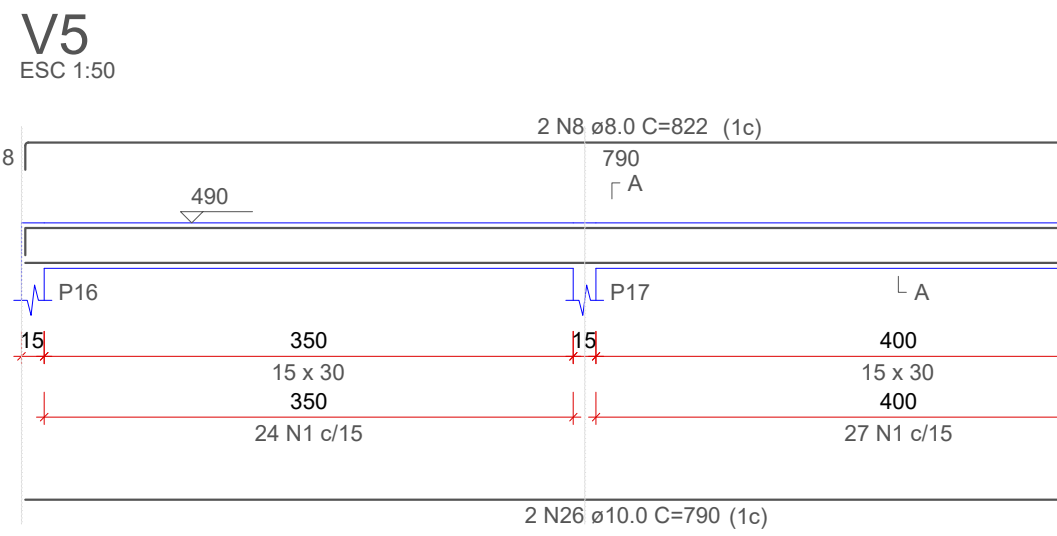
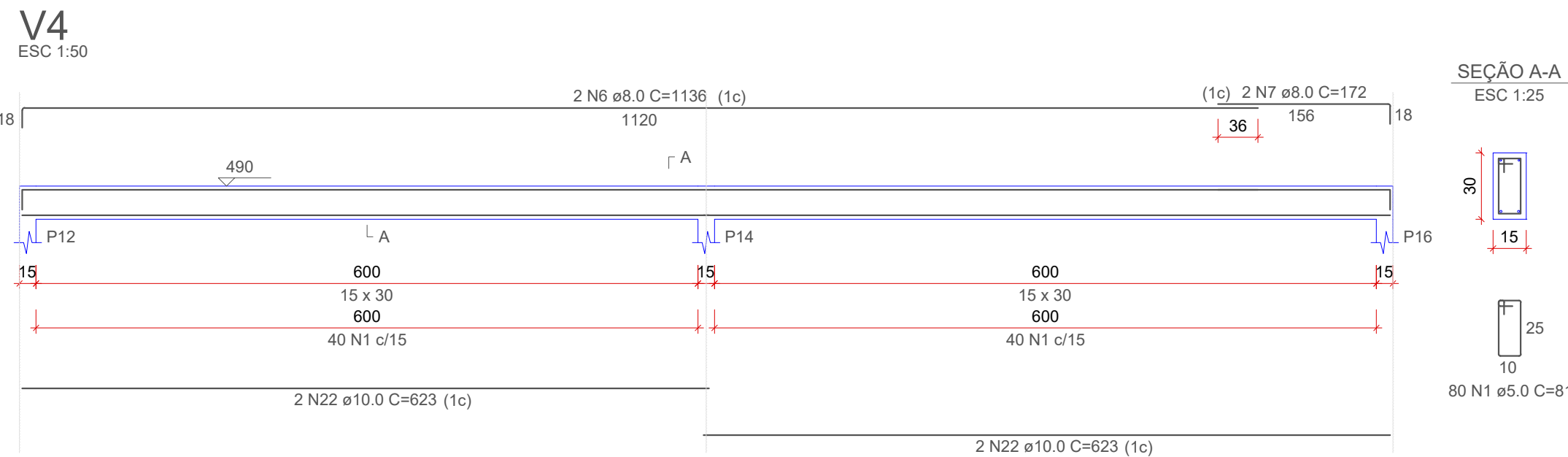
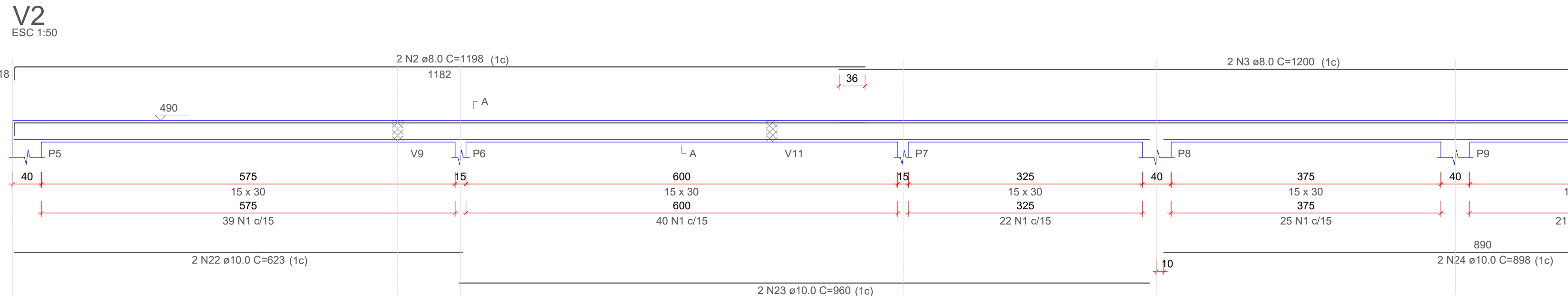
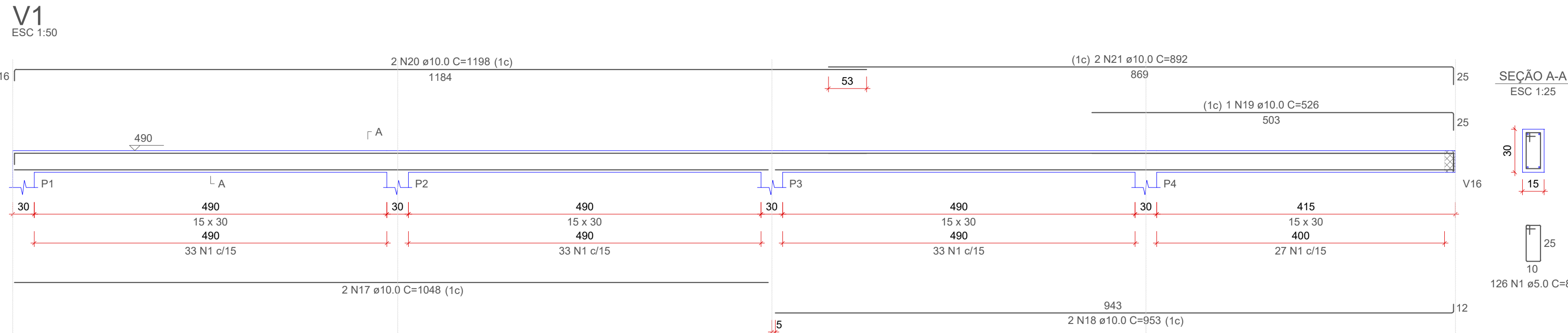
Bruna

Escala:

Indicada

Data:

OUTUBRO/2025



RELAÇÃO DO AÇO					
AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	1000	81	81000
CA50	2	8.0	2	1198	2396
	3	8.0	2	1200	2400
	4	8.0	2	200	400
	5	8.0	2	457	914
	6	8.0	2	1136	2272
	7	8.0	2	172	344
	8	8.0	2	822	1644
	9	8.0	2	392	784
	10	8.0	2	1027	2054
	11	8.0	2	827	1654
	12	8.0	2	249	498
	13	8.0	4	242	968
	14	8.0	1	118	118
	15	8.0	2	834	1668
	16	8.0	2	395	790
	17	10.0	2	1048	2096
	18	10.0	2	953	1906
	19	10.0	1	526	526
	20	10.0	2	1198	2396
	21	10.0	2	892	1784
	22	10.0	6	623	3738
	23	10.0	2	960	1920
	24	10.0	2	898	1796
	25	10.0	2	425	850
	26	10.0	2	790	1580
	27	10.0	2	360	720
	28	10.0	2	610	1220
	29	10.0	2	973	1946
	30	10.0	2	773	1546
	31	10.0	2	1198	2396
	32	10.0	2	1139	2278
	33	10.0	2	195	390
	34	10.0	2	995	1990
	35	10.0	6	210	1260
	36	10.0	2	233	466
	37	10.0	10	795	7950
	38	10.0	4	218	872
	39	10.0	1	127	127
	40	10.0	2	261	522
	41	10.0	2	363	726

RESUMO DO AÇO			
AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	8.0	238.7	103.6
CA60	10.0	430	291.6
CA60	5.0	810	137.3
PESO TOTAL (kg)			
CA50		395.2	
CA60		137.3	

Volume de concreto (C-30) = 6.64 m³
Área de forma = 110.91 m²



Bituruna

**AMPLIAÇÃO BLOCO ADMINISTRATIVO
ESCOLA ANTÔNIO BABY**

Projeto:

ESTRUTURAL

Referência:

**COBERTURA
Detalhamento de vigas**

Desenho:

Bruna

Escala:

Indicada

Data:

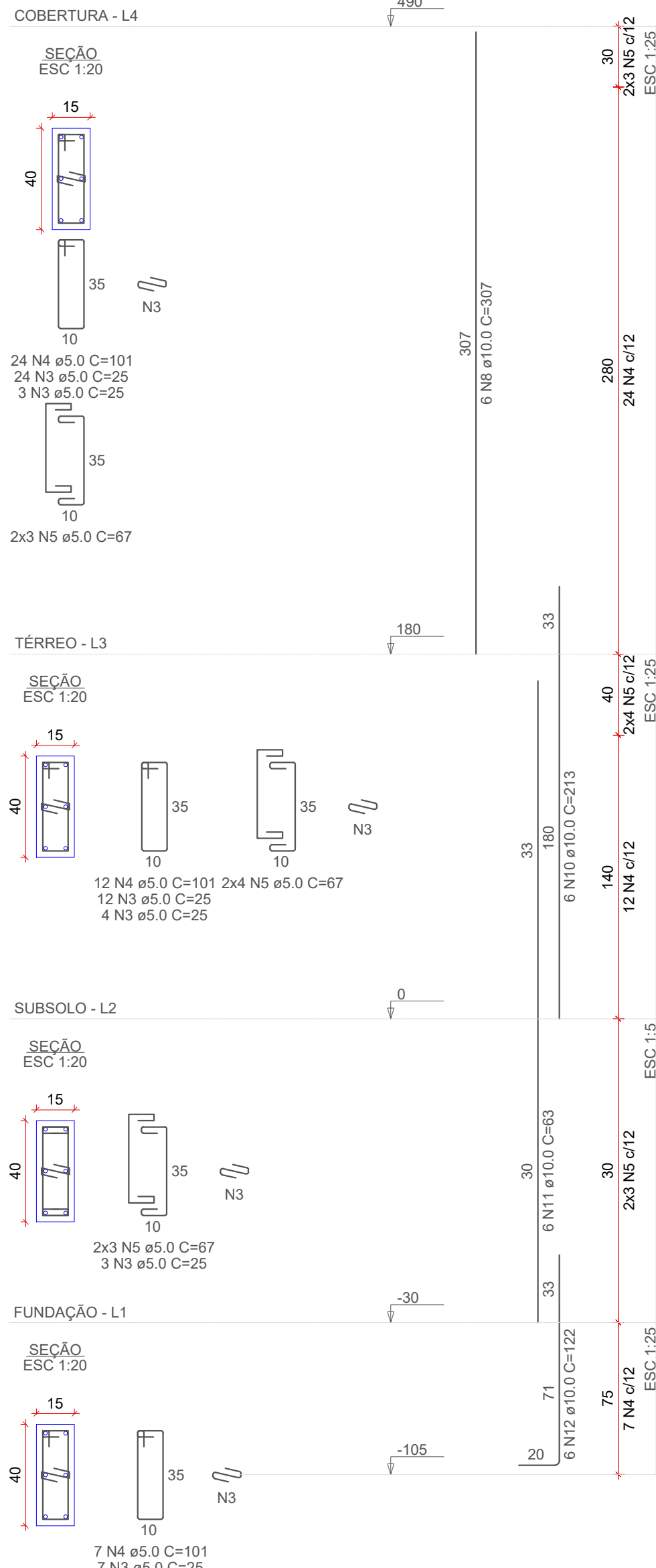
OUTUBRO/2025

Responsável Técnico:

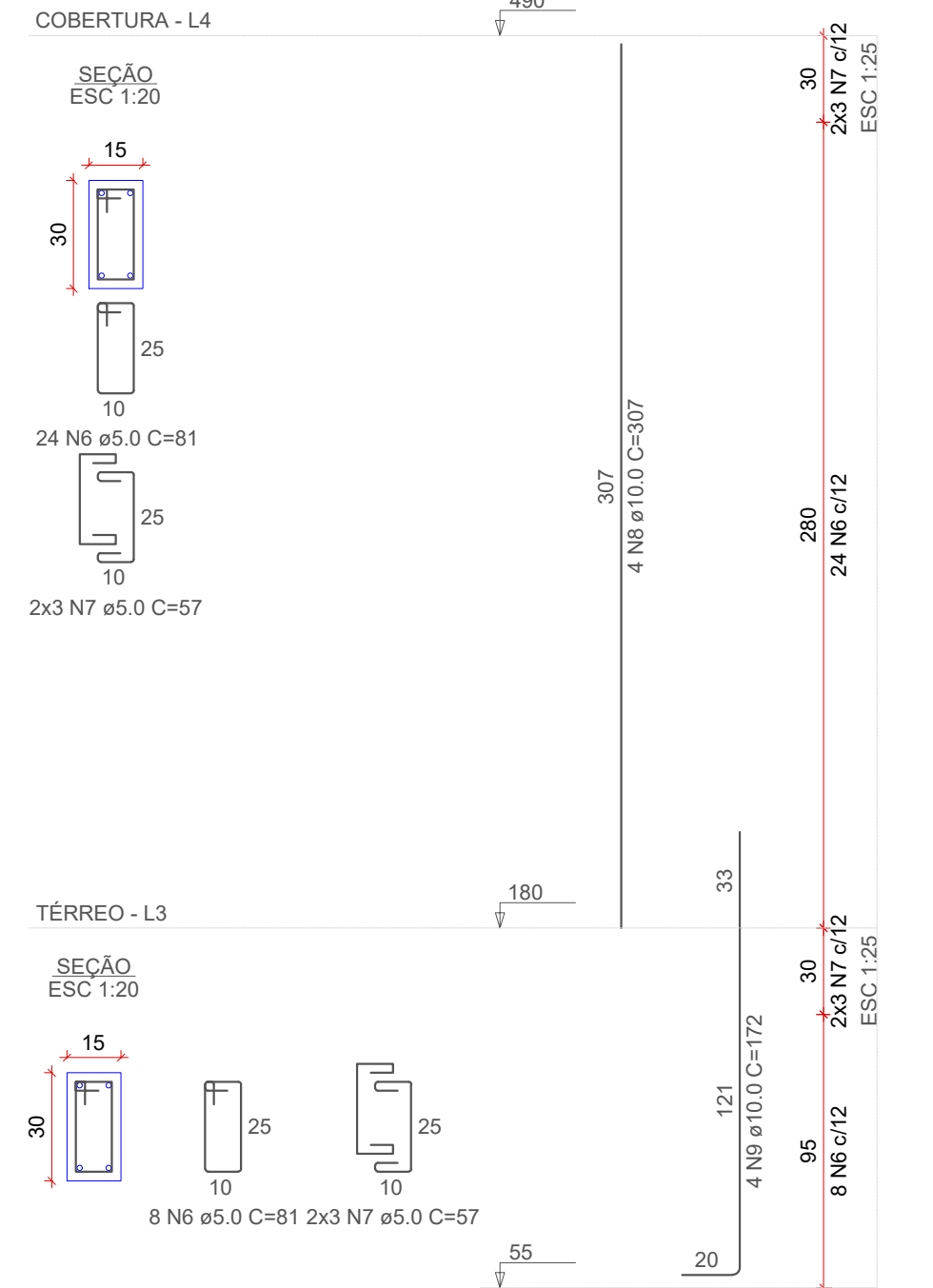
**09
10**

LUIZ RENATO FRIEDRICH DE RAMOS
Engº Civil CREA 168233/D - PR

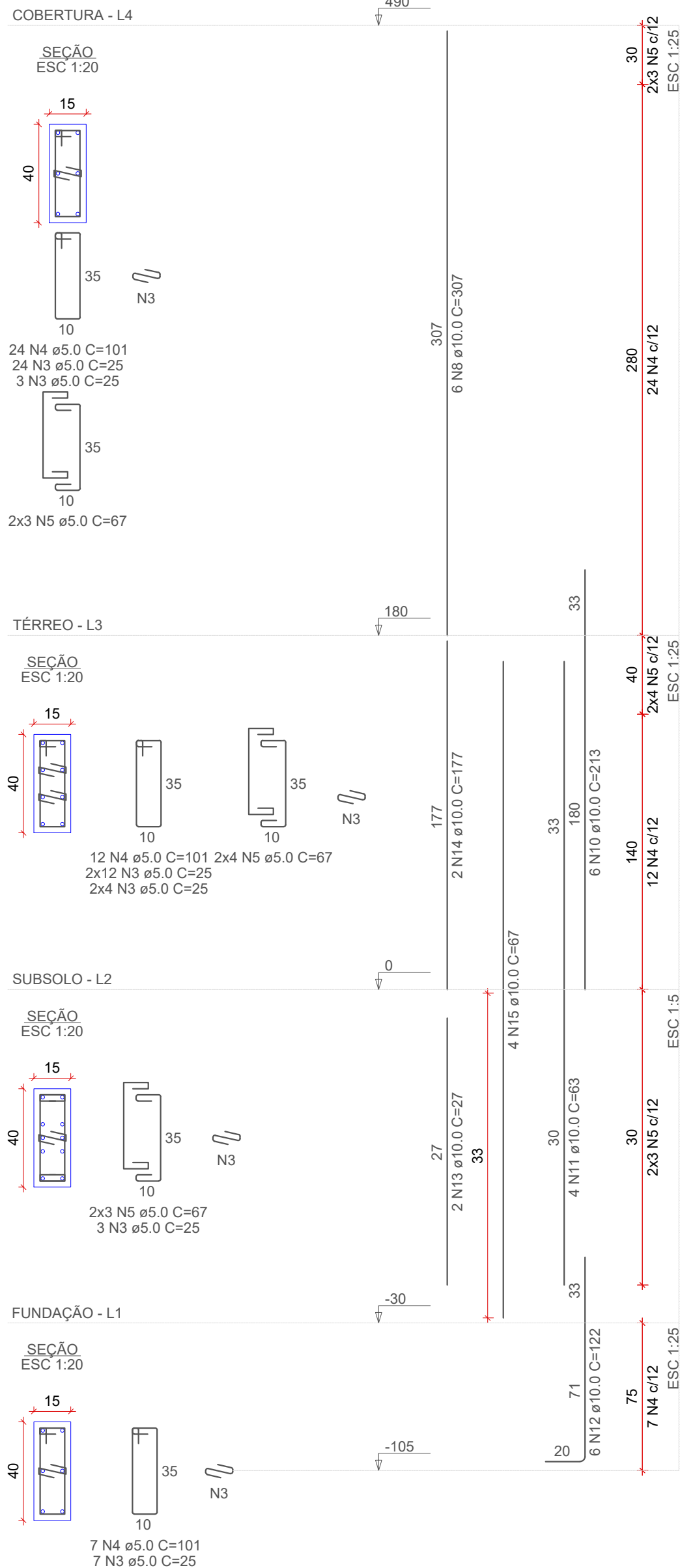
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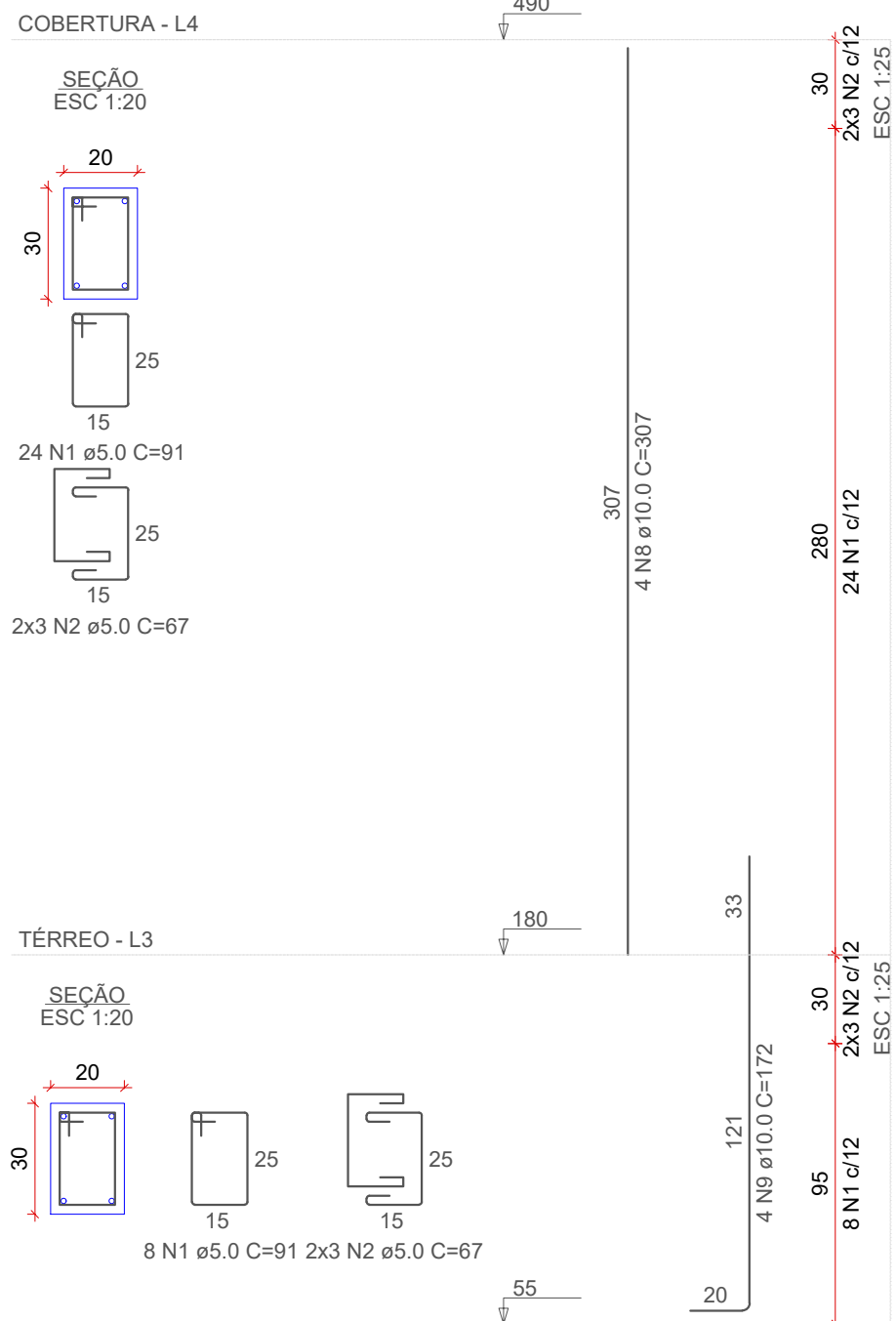
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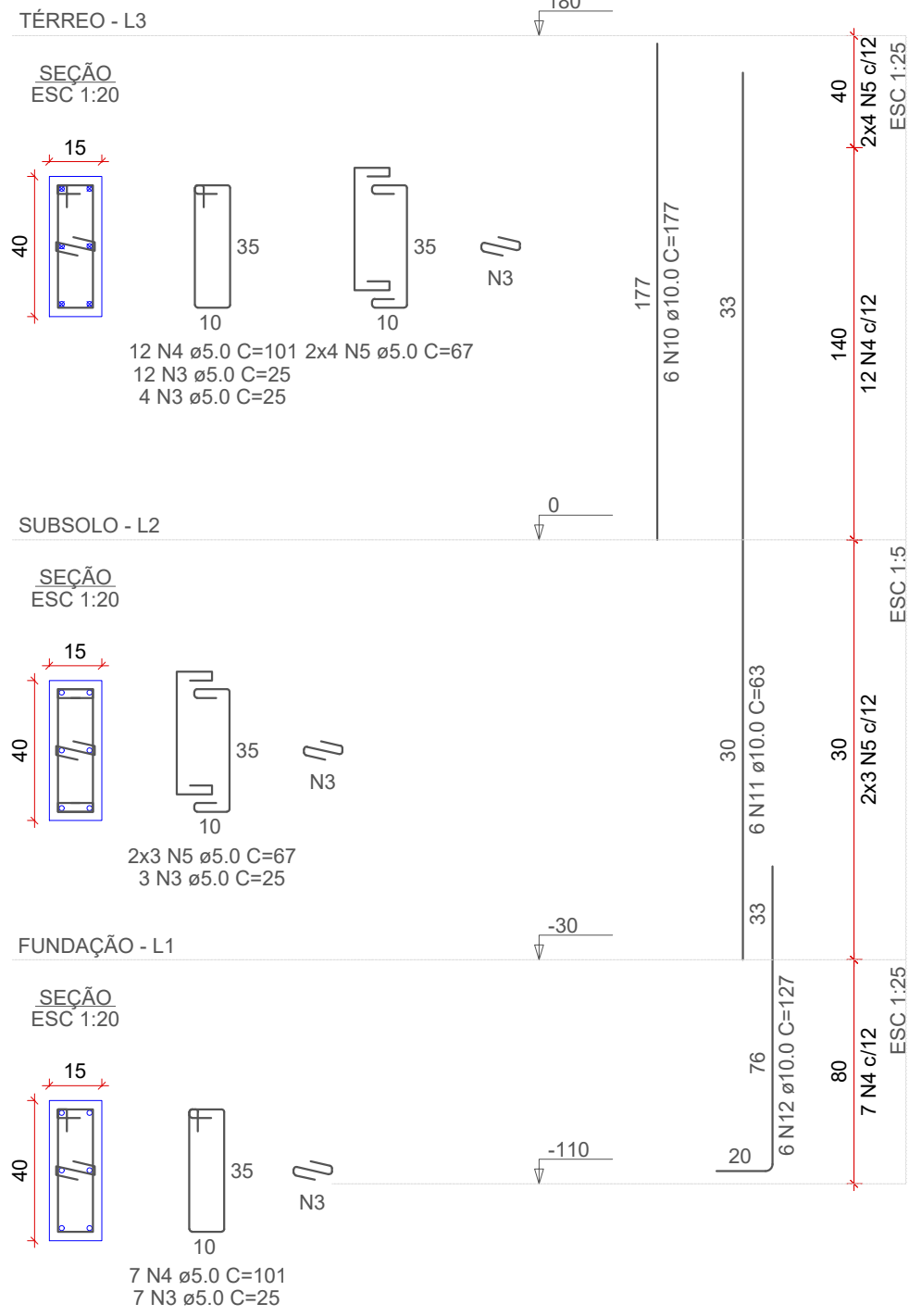
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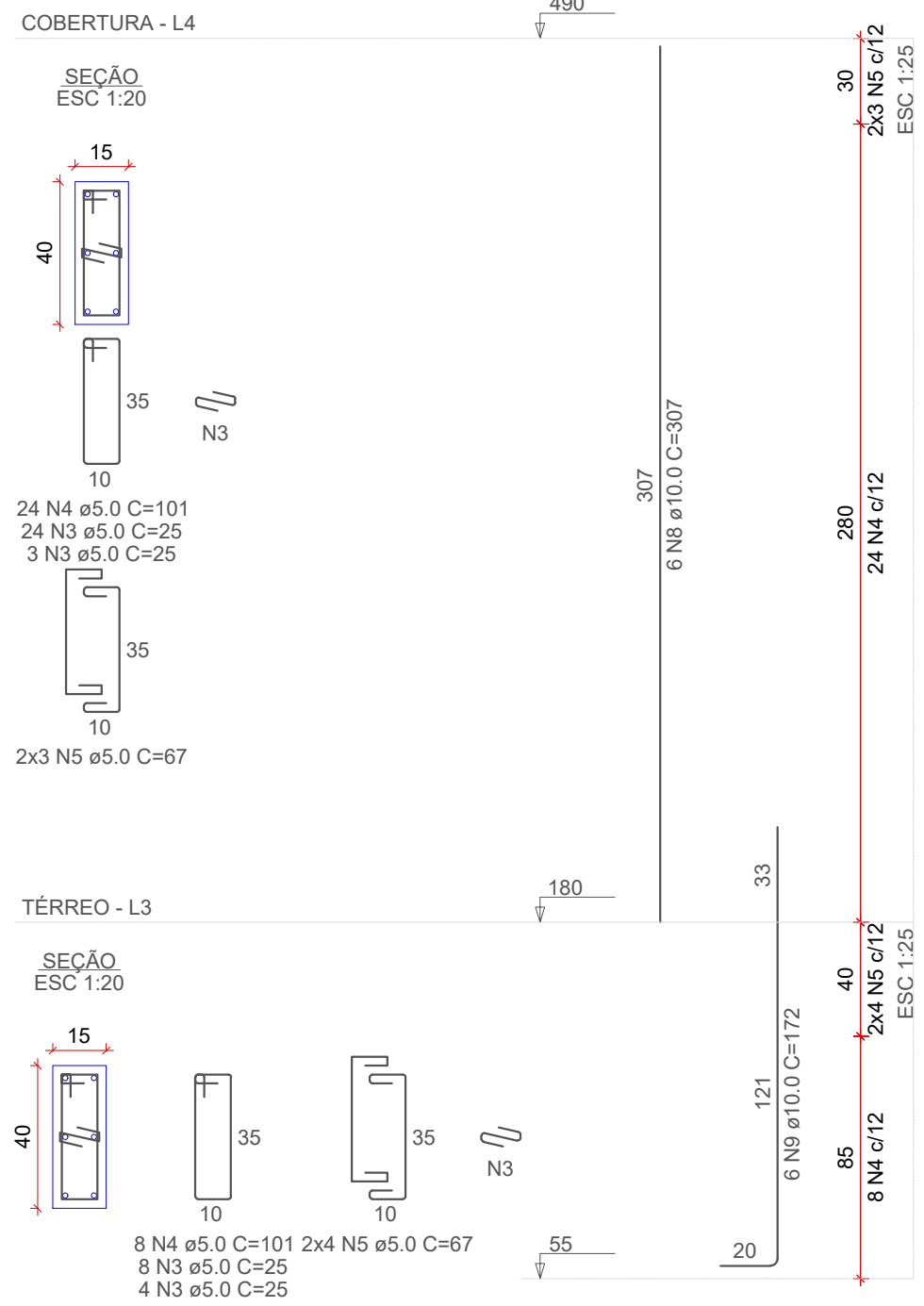
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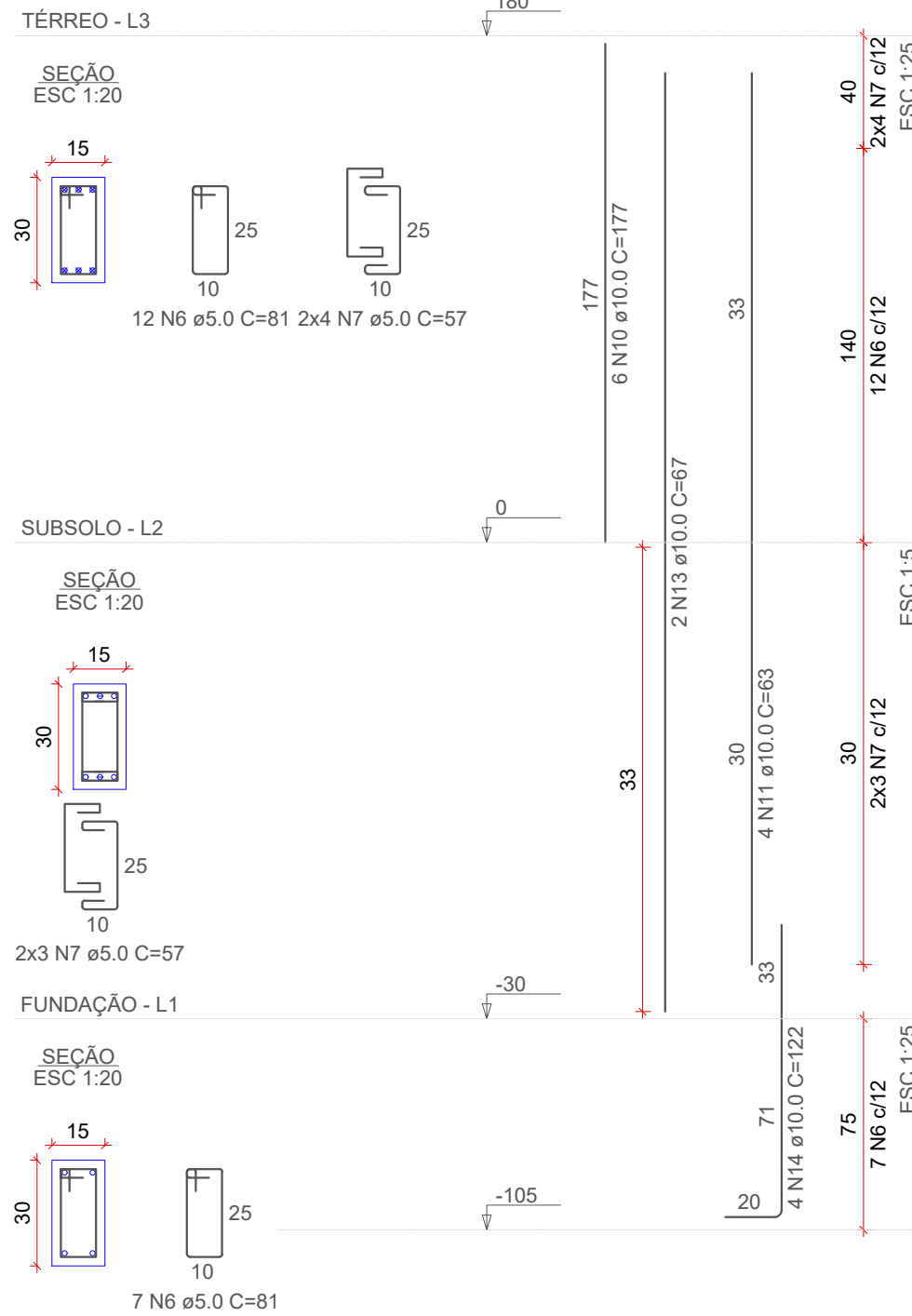
P13=P15



P5=P6=P7=P8=P9=P10
P17=P18=P19=P25=P26=P27



P21=P23



RELAÇÃO DO AÇO

P1-L4	P1-L3	P2-L4
P2-L3	P3-L4	P3-L3
P4-L3	P4-L3	P5-L4
P5-L3	P6-L3	P6-L3
P7-L4	P7-L3	P8-L4
P8-L3	P9-L4	P9-L3
P10-L4	P10-L3	P11-L4
P11-L3	P12-L4	P12-L3
P12-L2	P12-L1	P13-L3
P13-L2	P13-L1	P14-L4
P14-L3	P14-L2	P14-L1
P15-L3	P15-L2	P15-L1
P16-L4	P16-L3	P16-L2
P16-L1	P17-L4	P17-L3
P18-L4	P18-L3	P19-L4
P19-L3	P20-L4	P20-L3
P20-L2	P20-L1	P21-L3
P21-L2	P21-L1	P22-L4
P22-L3	P22-L2	P22-L1
P23-L3	P23-L2	P23-L1
P24-L4	P24-L3	P24-L2
P24-L1	P25-L4	P25-L3
P26-L4	P26-L3	P27-L4
P27-L3		

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	128	91	11648
	2	5.0	50	67	3350
	3	5.0	869	25	21725
	4	5.0	680	101	68680
	5	5.0	314	67	21038
	6	5.0	70	81	5670
	7	5.0	40	57	2280
	8	10.0	128	307	39296
	9	10.0	56	172	9632
	10	10.0	36	177	6372
	11	10.0	36	213	7668
	12	10.0	52	63	3276
	13	10.0	44	122	5368
	14	10.0	28	177	4956
	15	10.0	12	127	1524
	16	10.0	12	67	804
	17	10.0	4	27	108

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	10.0	790	535.8
CA60	5.0	1343.9	227.9

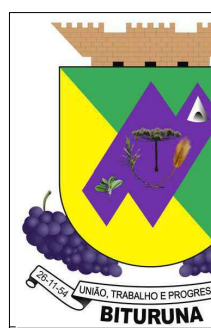
PESO TOTAL (kg)

CA50 535.8

CA60 227.9

Volume de concreto (C-30) = 6.56 m³

Área de forma = 119.36 m²



AMPLIAÇÃO BLOCO ADMINISTRATIVO
ESCOLA ANTÔNIO BABY

Projeto:

ESTRUTURAL

Cidade:

Bituruna

Estado:

Paraná

Desenho:

Bruna

Escala:

Indicada

Data:

OUTUBRO/2025

Referencia:

PILARES

Detalhamento pilares

Folha:

10
10

Responsável Técnico:

LUIZ RENATO FRIEDRICH DE RAMOS
Engº Civil CREA 168233/D - PR