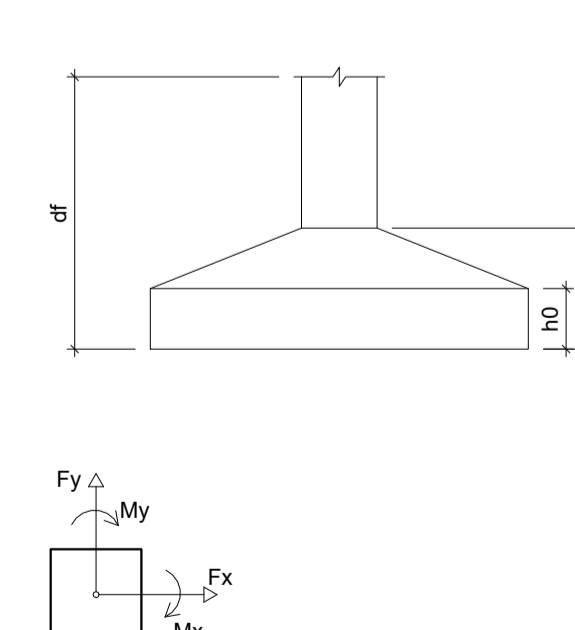


Nome	Seção (cm)	X (cm)	Y (cm)	Carga Máx. (tf)	Carga Mín. (tf)	Pilar				Fundação				Lado B (cm)	Lado H (cm)	h0 / ha (cm)	h1 / hb (cm)	df (cm)				
						Mx Máximo (kgf.m)		My Máximo (kgf.m)		Fx Máximo (tf)		Fy Máximo (tf)							Lado B (cm)	Lado H (cm)	h0 / ha (cm)	h1 / hb (cm)
						Positivo	Negativo	Positivo	Negativo	Positivo	Negativo	Positivo	Negativo									
P1	15x30	580.05	2507.93	7.2	0	0	-300	0	-500	0.0	-0.9	0.6	0.0	80	95	35	50	150				
P2	15x30	972.66	2500.43	5.1	4.1	100	-400	300	0	0.6	0.0	0.6	0.0	75	85	35	50	150				
P3	15x30	320.55	2200.38	2.9	2.0	400	-200	100	-200	0.1	-0.2	0.2	-0.4	60	75	40	40	150				
P4	15x30	485.58	2200.38	11.9	9.0	300	-300	0	-500	0.0	-0.8	0.4	-0.2	90	100	30	50	150				
P5	15x30	965.16	2207.88	10.1	7.9	200	-1300	0	2.6	0.0	0.1	-0.2	95	110	30	50	150					
P6	15x30	-1053.93	2079.87	3.9	2.8	0	-500	0	-400	0.0	-0.6	0.6	0.0	65	80	25	40	150				
P7	15x30	-1185.12	1934.68	6.1	5.0	200	-300	0	-300	0.0	-0.5	0.5	0.0	70	80	35	50	150				
P8	15x30	90.85	1932.83	5.2	4.1	100	-100	0	-400	0.0	-0.5	0.3	0.0	60	75	30	40	150				
P9	15x30	320.55	1925.33	16.5	14.3	200	-500	100	0	0.2	0.0	0.8	0.0	100	115	20	40	150				
P10	15x30	493.08	1932.83	14.2	11.2	200	-100	0	-900	0.0	-1.7	0.2	-0.1	100	115	20	40	150				
P11	15x30	965.16	1932.83	9.4	7.4	200	-100	1100	0	2.2	0.0	0.2	-0.1	90	105	30	50	150				
P12	15x30	-804.57	1871.36	5.9	4.9	200	-300	200	0	0.3	0.0	0.3	-0.3	65	80	25	40	150				
P13	15x30	-1342.30	1746.70	5.2	4.3	300	-200	100	-200	0.0	-0.4	0.3	-0.2	65	80	25	40	150				
P14	15x30	-913.67	1717.48	10.1	8.0	200	-300	0	-200	0.0	-0.5	0.2	-0.2	80	95	25	40	150				
P15	15x30	-601.07	1691.41	6.9	5.6	0	-600	500	0	0.9	0.0	1.2	0.0	80	95	25	40	150				
P16	15x50	-16.01	1737.80	10.9	8.8	300	-100	0	-1300	0.0	-1.8	0.1	-0.3	85	120	20	40	150				
P17	15x30	-1479.30	1571.77	4.3	3.6	0	-500	0	-600	0.0	-0.8	0.6	0.0	65	80	25	40	150				
P18	15x30	-1184.07	1604.61	5.4	3.9	400	0	100	-200	0.1	-0.2	0.0	-0.7	70	85	25	40	150				
P19	15x30	-982.36	1611.95	8.6	7.3	0	-400	0	-300	0.0	-0.4	0.7	0.0	80	95	25	40	150				
P20	15x30	493.08	1662.79	11.7	9.7	200	0	0	-500	0.0	-1.0	0.0	-0.4	90	100	20	40	150				
P21	15x30	972.66	1670.29	5.1	4.0	500	-100	500	0	0.9	0.0	0.0	-0.5	75	85	35	50	150				
P22	15x30	-186.51	1602.78	2.9	2.2	100	-100	0	-200	0.0	-0.4	0.2	0.0	55	70	30	40	150				
P23	15x30	-41.00	1602.78	4.6	3.4	200	-100	100	-200	0.0	-0.2	0.2	-0.1	55	70	30	40	150				
P24	15x30	-399.55	1532.68	4.8	3.3	200	-200	200	-200	0.2	0.0	0.3	-0.3	60	75	30	40	150				
P25	15x30	-285.70	1447.15	4.9	3.3	200	0	0	-300	0.0	-0.6	0.0	-0.3	60	75	30	40	150				
P26	15x30	-33.51	1455.25	7.5	5.9	400	-300	0	-200	0.0	-0.1	0.4	-0.4	70	85	25	40	150				
P27	15x30	320.55	1470.26	8.1	6.5	600	0	200	0	0.3	0.0	0.0	-0.7	80	95	25	40	150				
P28	15x30	-1207.86	1353.97	5.3	4.3	600	0	0	-200	0.0	-0.4	0.0	-0.9	75	90	25	40	150				
P29	15x30	-520.06	1388.56	7.5	5.7	600	0	500	0	1.0	0.0	0.0	-1.0	80	95	25	40	150				
P30	15x30	-840.48	1252.72	7.1	6.0	400	0	0	-300	0.0	-0.5	0.0	-0.7	80	95	35	50	150				
P31	15x41	-20.50	1252.72	4.8	3.7	200	-200	800	0	1.6	0.0	0.1	-0.2	75	95	25	40	150				

Os esforços indicados nesta tabela são os valores máximos obtidos pela envoltória de todas as combinações definidas para as fundações. Para análises complementares, deve-se consultar o relatório de esforços na fundação, que apresenta os valores calculados para cada combinação.

Localização no eixo X	
Coordenadas (cm)	Nome
-1479.30	P17
-1342.30	P13
-1207.86	P28
-1185.12	P7
-1184.07	P18
-1053.93	P6
-982.36	P19
-913.67	P14
-804.57	P12
-601.07	P15
-540.48	P30
-520.06	P29
-399.55	P24
-285.70	P25
-186.51	P22
-41.00	P23
-33.51	P26
-20.50	P31
-16.01	P16
90.85	P8
320.55	P3, P9, P27
485.58	P4
493.08	P10, P20
580.05	P1
965.16	P5, P11
972.66	P2, P21

Localização no eixo Y	
Coordenadas (cm)	Nome
2507.93	P1
2500.43	P2
2207.88	P5
2200.38	P3, P4
2079.87	P6
1934.68	P7
1932.83	P8, P10, P11
1925.33	P9
1871.36	P12
1746.70	P13
1737.80	P16
1717.48	P14
1691.41	P15
1670.29	P21
1662.79	P20
1611.95	P19
1604.61	P18
1602.78	P22, P23
1571.77	P17
1532.68	P24
1470.26	P27
1455.25	P26
1447.15	P25
1388.56	P29
1353.97	P28
1252.72	P30, P31



Planta de localização

escala 1:50

VIDEIRA
PREFEITURA
SECRETARIA DE PLANEJAMENTO
AV. MANOEL ROQUE, 189 - ALVORADA
FONE: (49) 3566-9051/3566-9050/3566-9088

NATUREZA DA OBRA: REFORMA E AMPLIAÇÃO DO ESF RIO DAS PEDRAS

LOCAL: RUA VALTER PEREIRA DIAS RIO DAS PEDRAS

PROJETO: ESTRUTURAL

RESPONSÁVEL TÉCNICO: HOBERDAN HAUPT DE CASTILHOS CREA/SC 133265-2

REFERÊNCIA: PLANTA DE LOCAÇÃO

PRANCHA: EST. 01

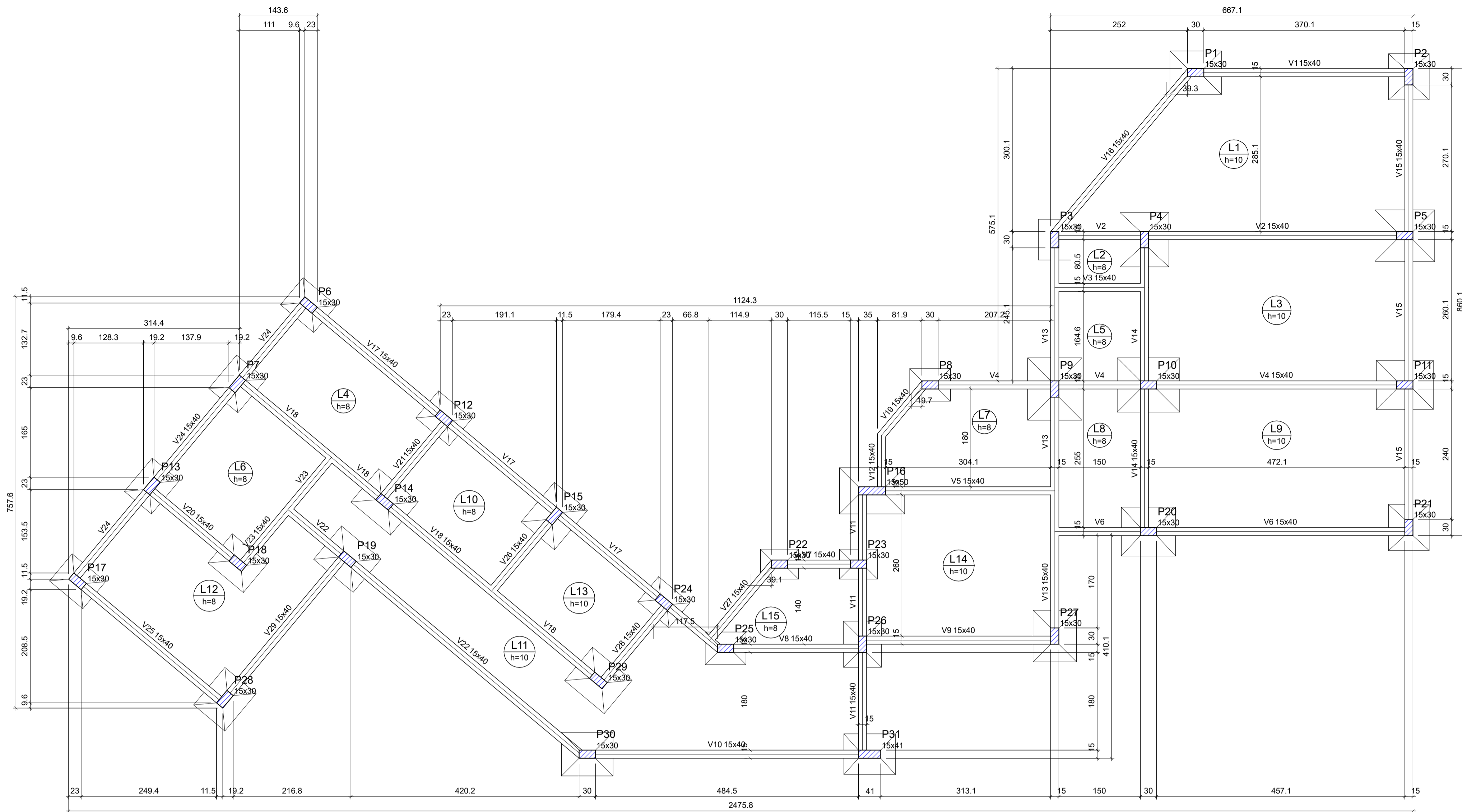
DATA: 31/03/2026

ESCALA: INDICADA

GRADIFICAÇÃO: HOBERDAN

ÁREA: 272,14 m²

01-09



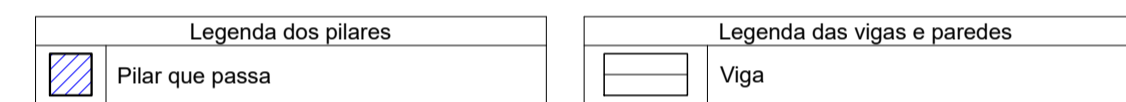
Vigas			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
V1	15x40	0	0
V2	15x40	0	0
V3	15x40	0	0
V4	15x40	0	0
V5	15x40	0	0
V6	15x40	0	0
V7	15x40	0	0
V8	15x40	0	0
V9	15x40	0	0
V10	15x40	0	0
V11	15x40	0	0
V12	15x40	0	0
V13	15x40	0	0
V14	15x40	0	0
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V18	15x40	0	0
V19	15x40	0	0
V20	15x40	0	0
V21	15x40	0	0
V22	15x40	0	0
V23	15x40	0	0
V24	15x40	0	0
V25	15x40	0	0
V26	15x40	0	0
V27	15x40	0	0
V28	15x40	0	0
V29	15x40	0	0

Pilares			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
P1	15x30	0	0
P2	15x30	0	0
P3	15x30	0	0
P4	15x30	0	0
P5	15x30	0	0
P6	15x30	0	0
P7	15x30	0	0
P8	15x30	0	0
P9	15x30	0	0
P10	15x30	0	0
P11	15x30	0	0
P12	15x30	0	0
P13	15x30	0	0
P14	15x30	0	0
P15	15x30	0	0
P16	15x50	0	0
P17	15x30	0	0
P18	15x30	0	0
P19	15x30	0	0
P20	15x30	0	0
P21	15x30	0	0
P22	15x30	0	0
P23	15x30	0	0
P24	15x30	0	0
P25	15x30	0	0
P26	15x30	0	0
P27	15x30	0	0
P28	15x30	0	0
P29	15x30	0	0
P30	15x30	0	0
P31	15x41	0	0

Características dos materiais		
	fck	Ecs
	(kgf/cm ²)	(kgf/cm ²)
	250	241500

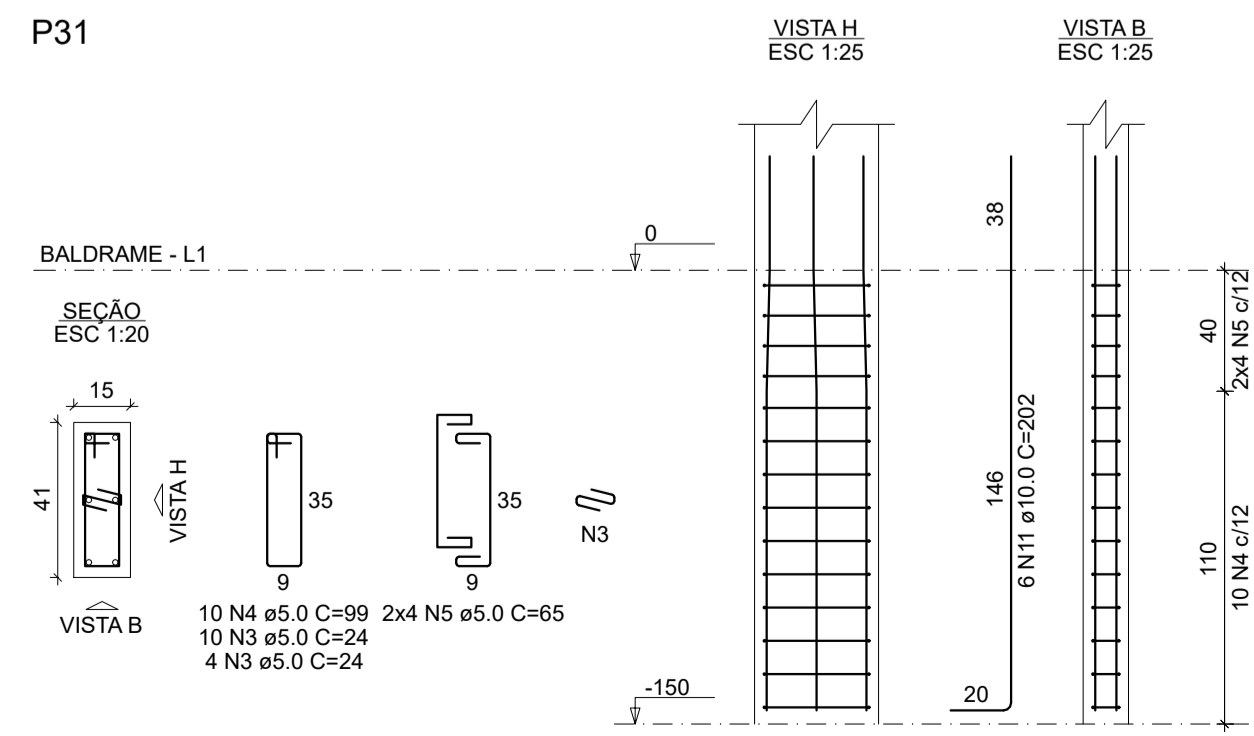
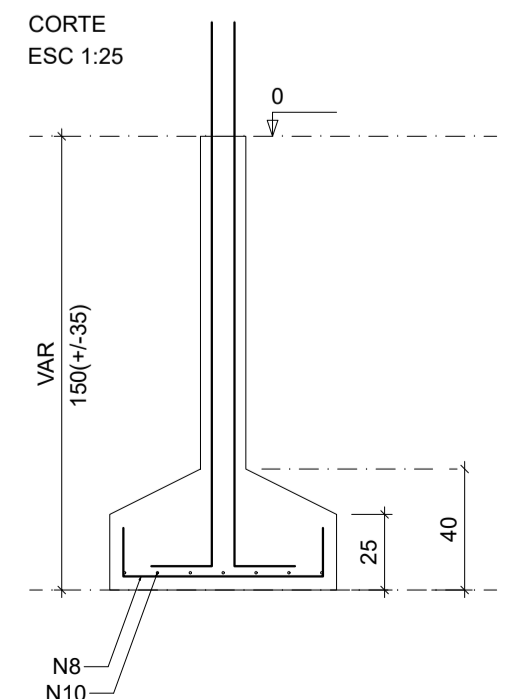
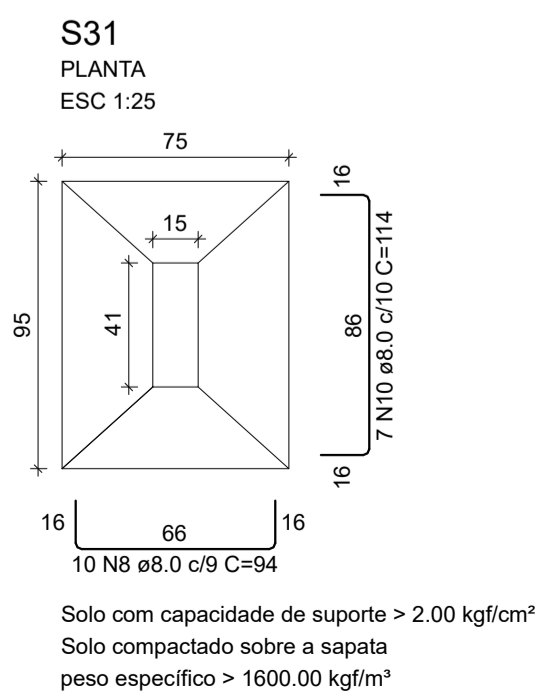
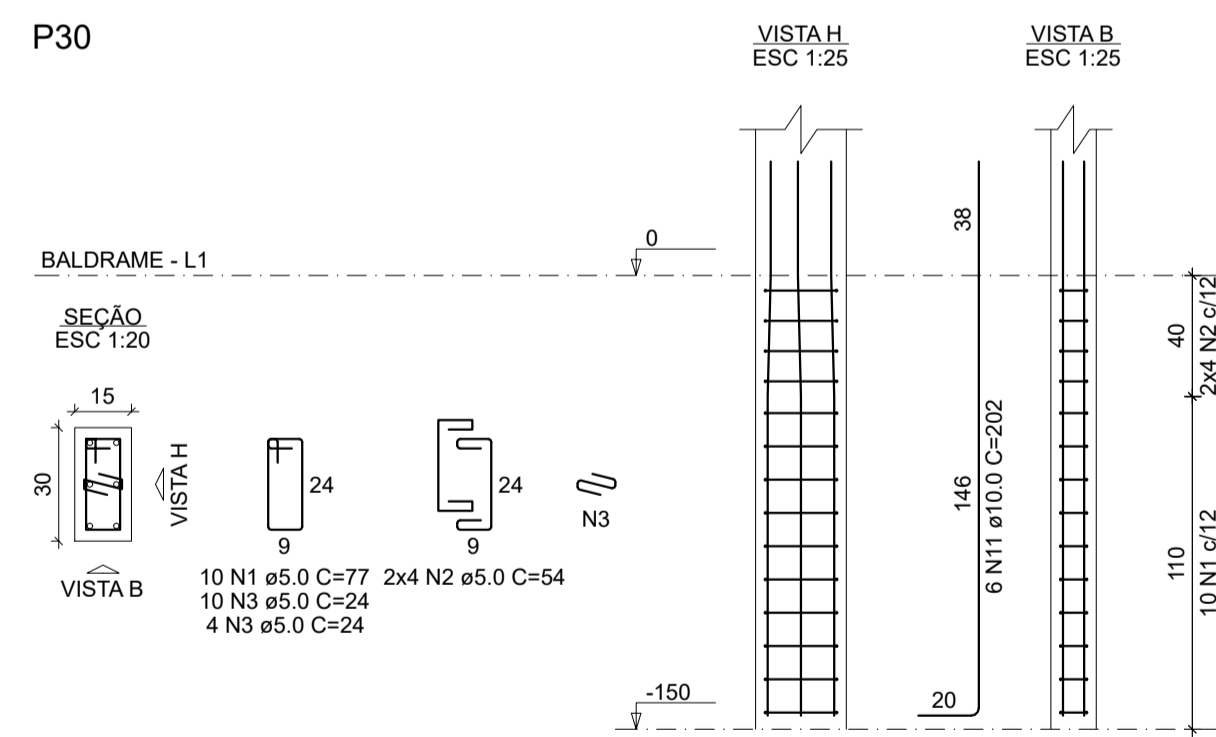
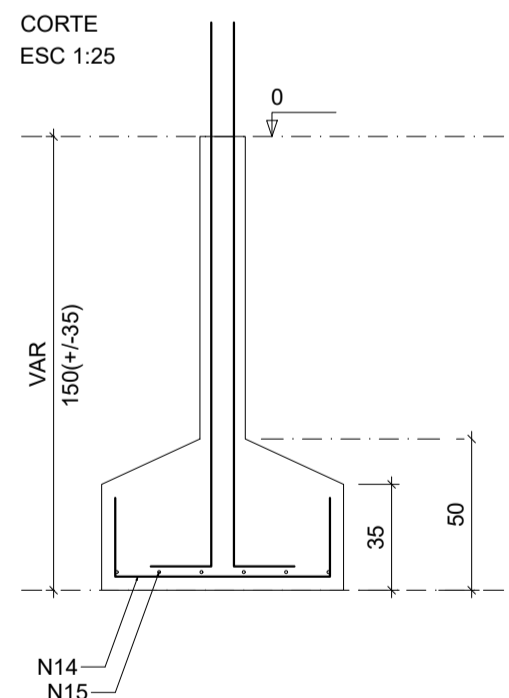
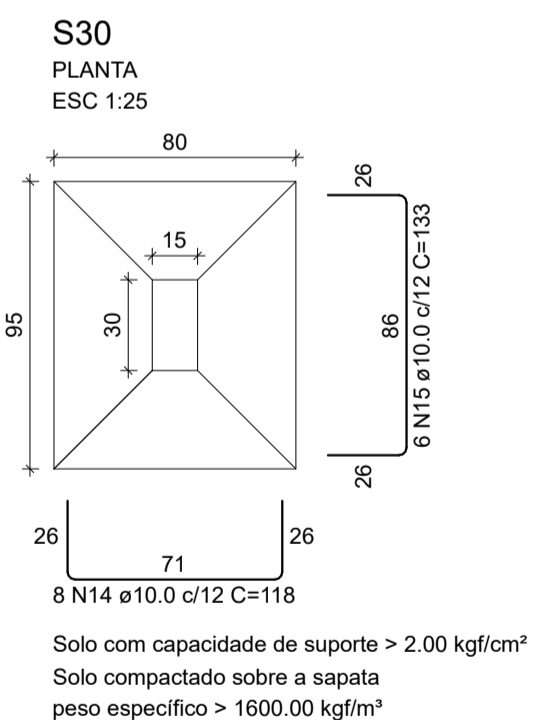
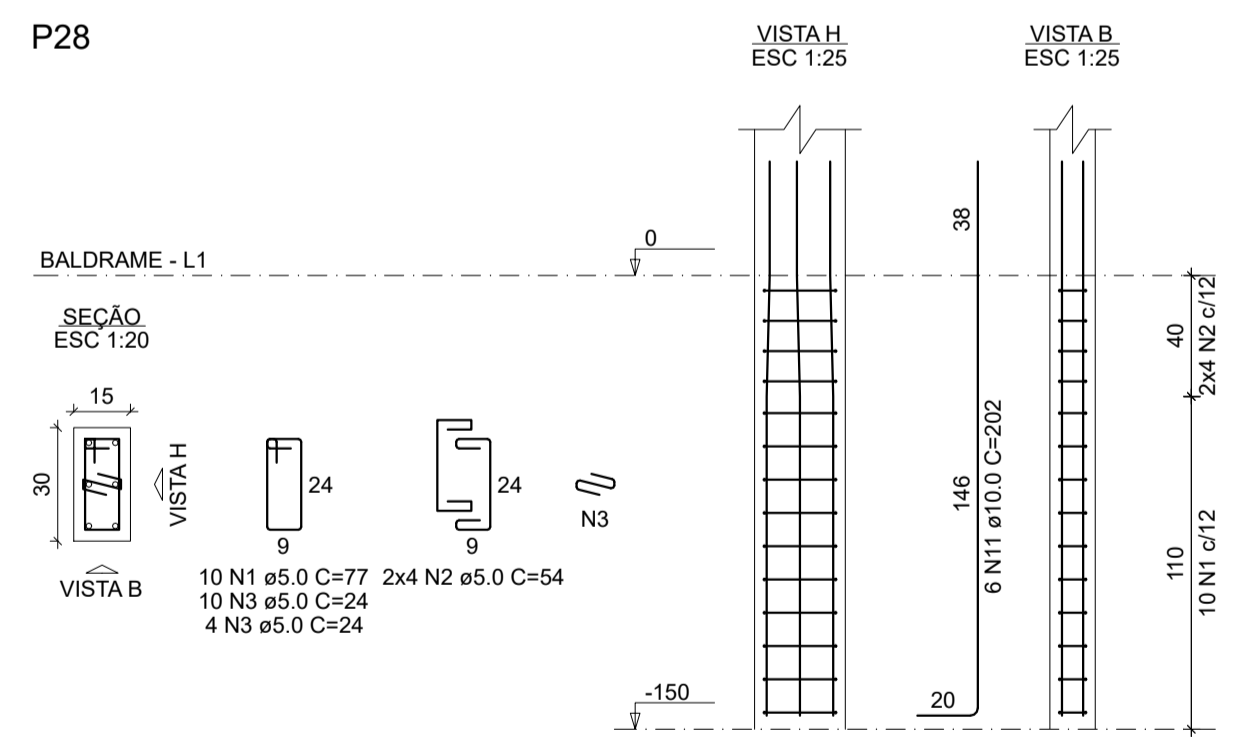
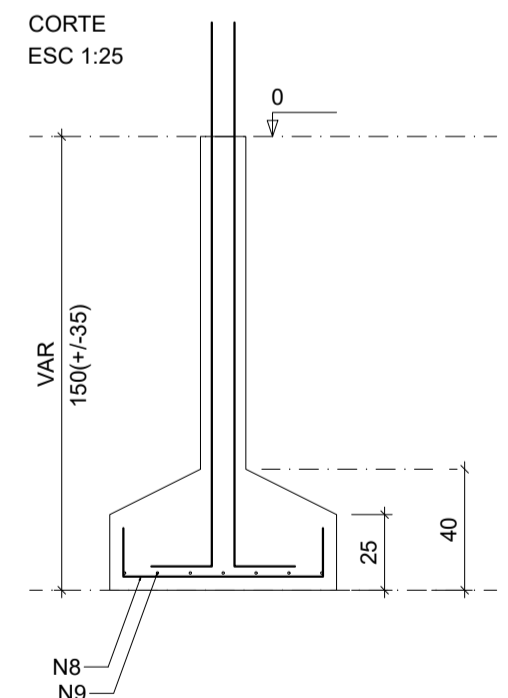
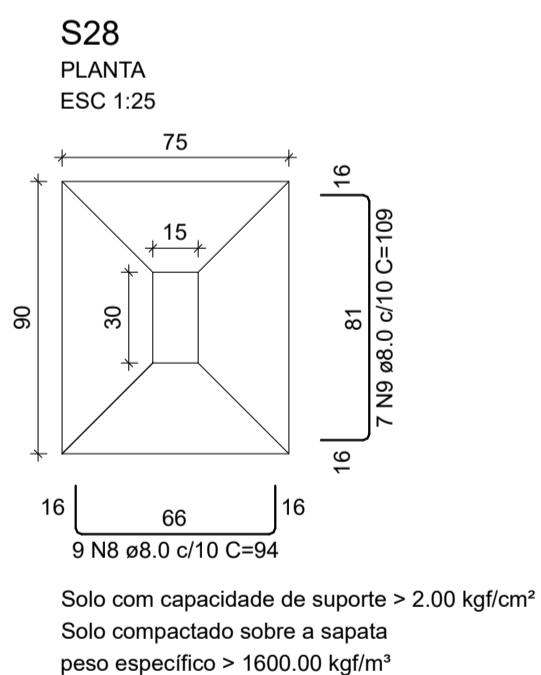
Dimensão máxima do agregado = 19 mm

Lajes								
Nome	Tipo	Dados			Sobrecarga (kgf/m ²)			
		Altura (cm)	Elevação (cm)	Nível (cm)	Peso próprio (kgf/m ²)	Adicional	Acidental	Localizada
L1	Maciça	10	0	0	250	154	250	-
L2	Maciça	8	0	0	200	154	250	-
L3	Maciça	10	0	0	250	154	250	-
L4	Maciça	8	0	0	200	154	250	-
L5	Maciça	8	0	0	200	154	250	-
L6	Maciça	8	0	0	200	154	250	-
L7	Maciça	8	0	0	200	154	250	-
L8	Maciça	8	0	0	200	154	250	-
L9	Maciça	10	0	0	250	154	250	-
L10	Maciça	8	0	0	200	154	250	-
L11	Maciça	10	0	0	250	154	250	-
L12	Maciça	8	0	0	200	154	250	-
L13	Maciça	10	0	0	250	154	250	-
L14	Maciça	10	0	0	250	154	250	-
L15	Maciça	8	0	0	200	154	250	-



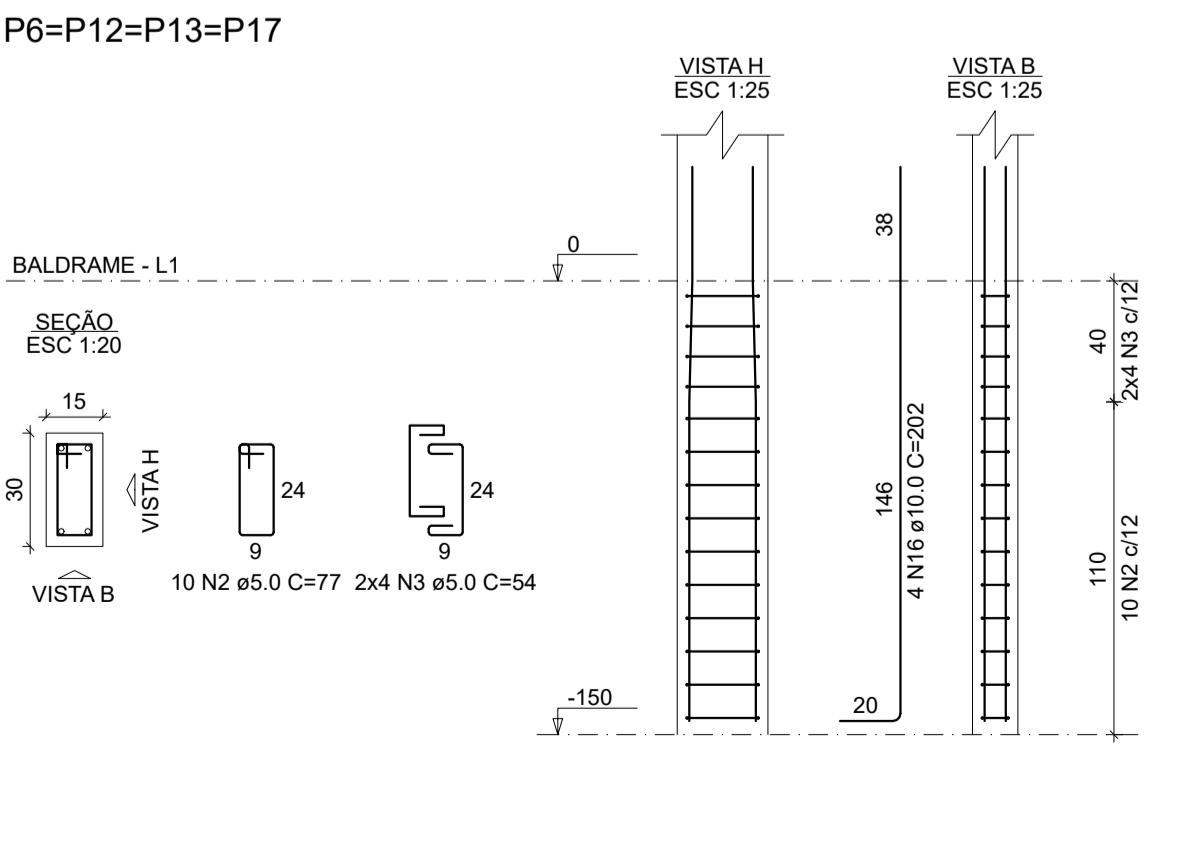
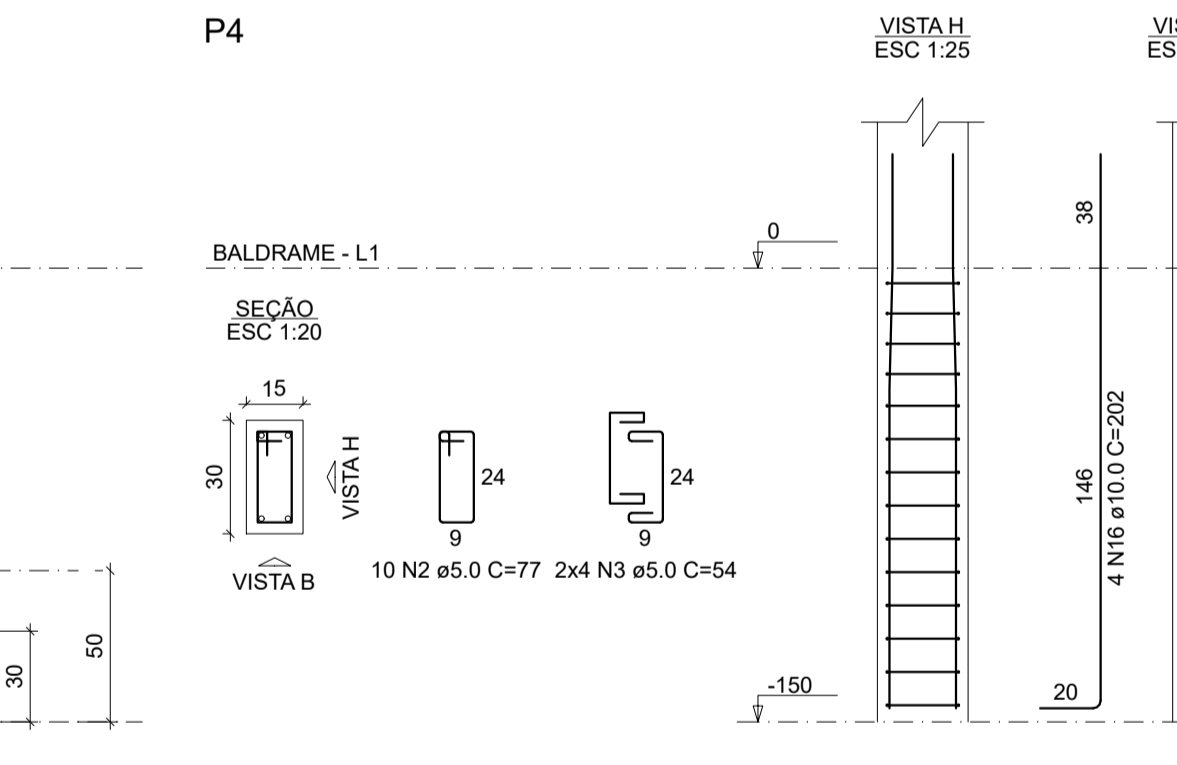
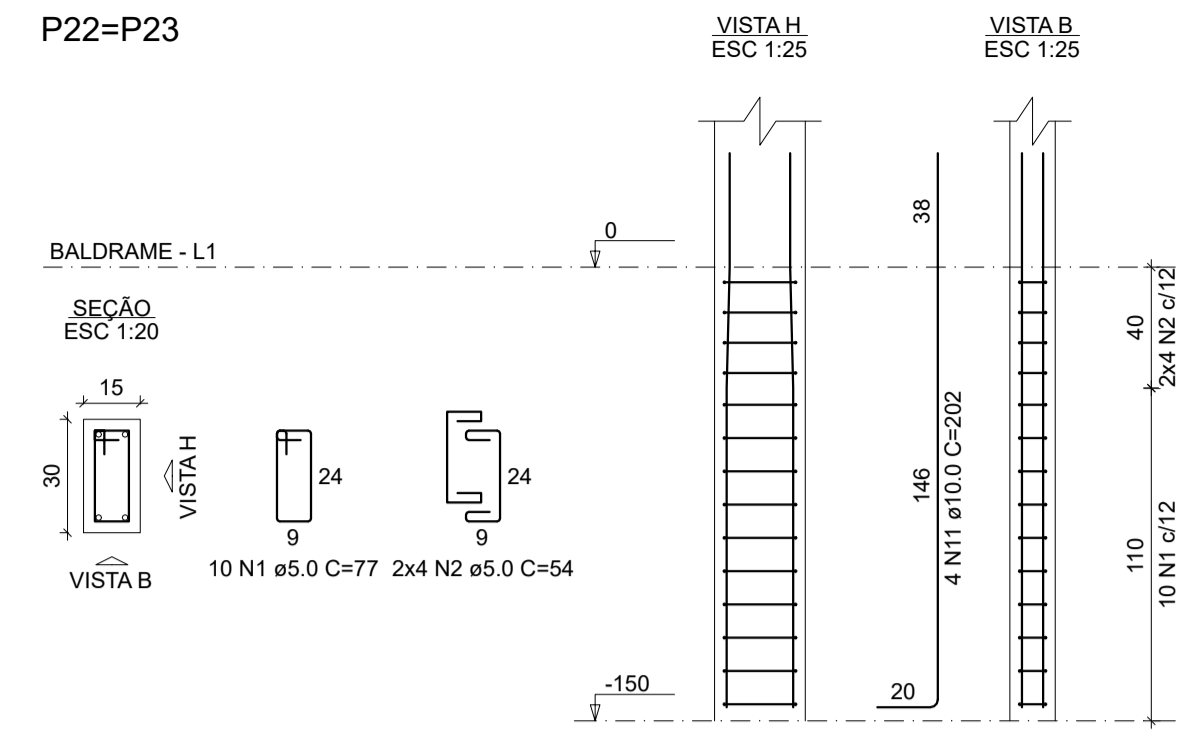
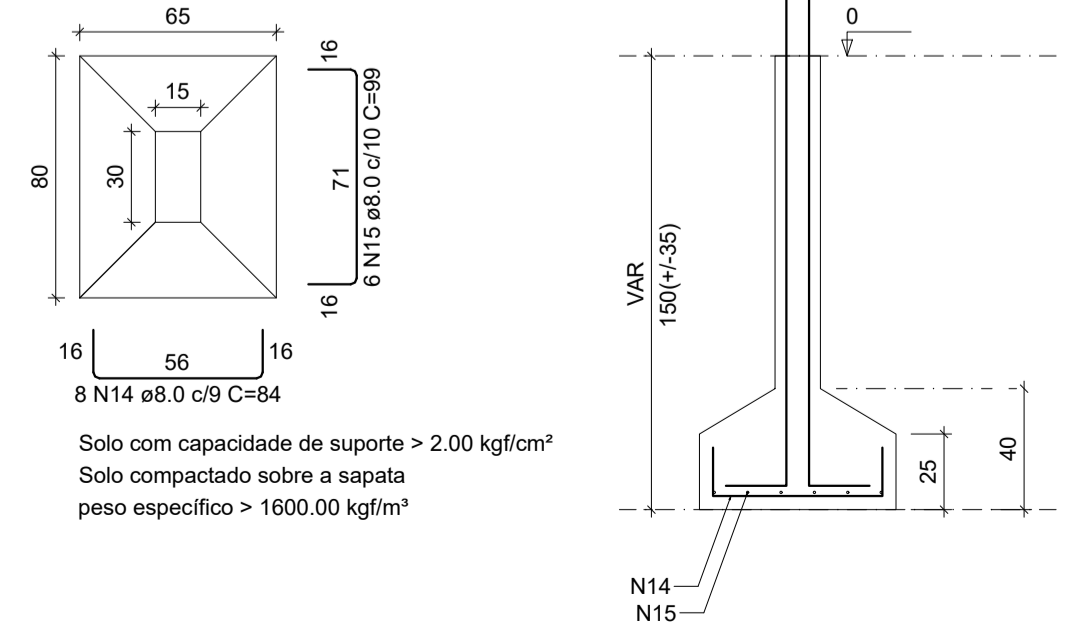
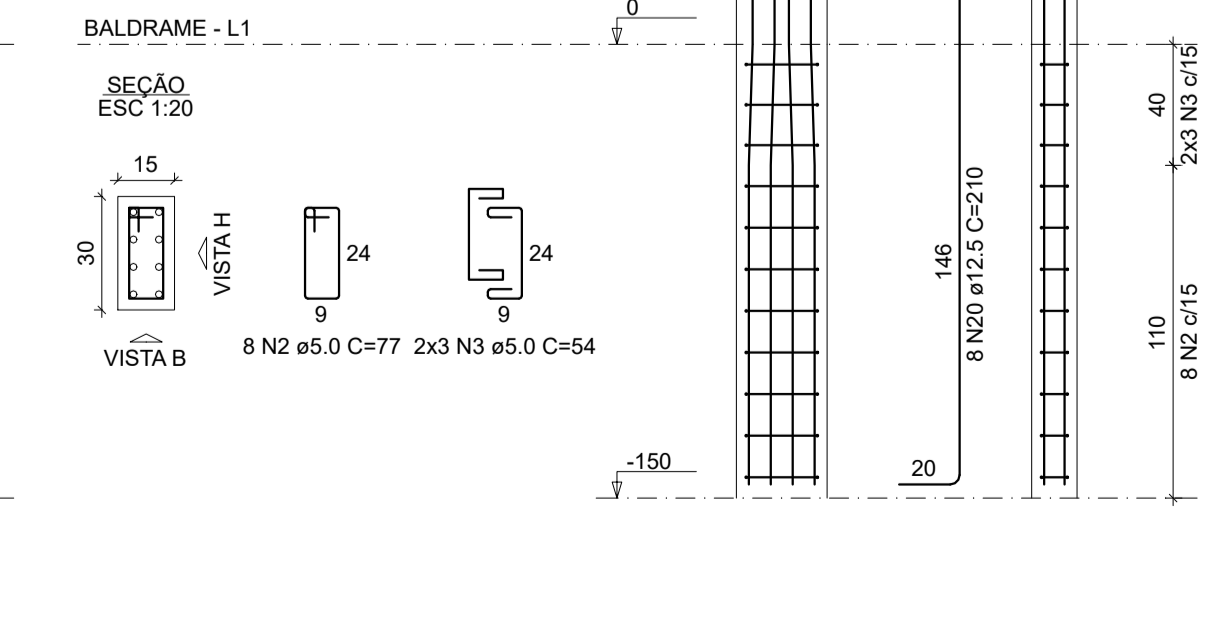
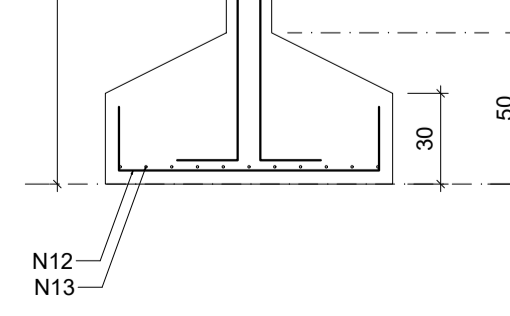
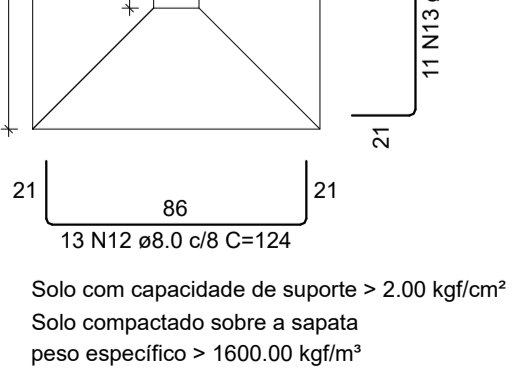
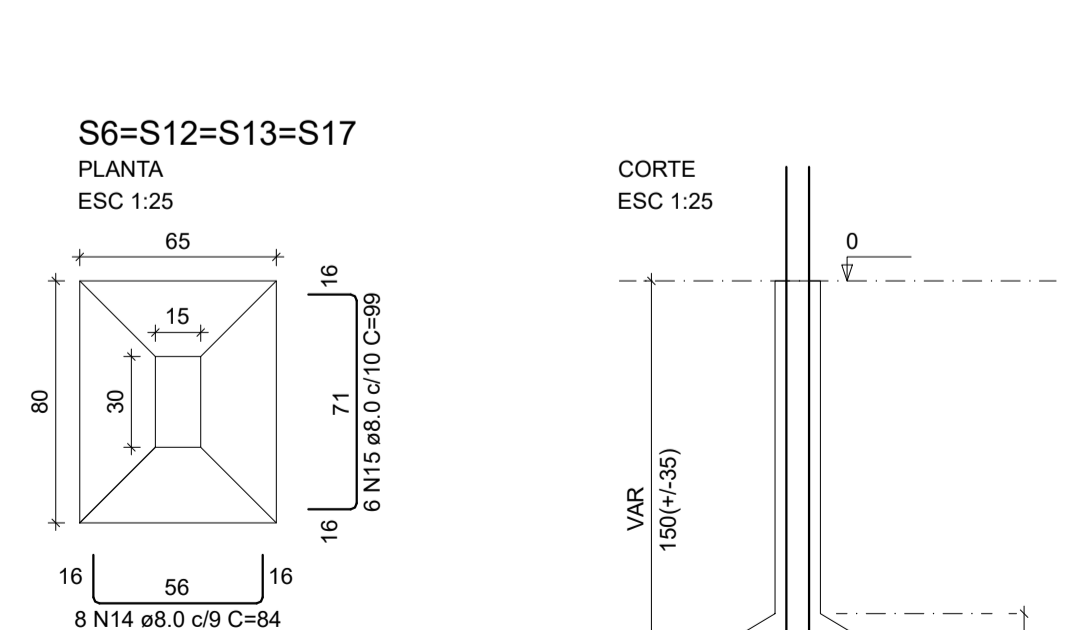
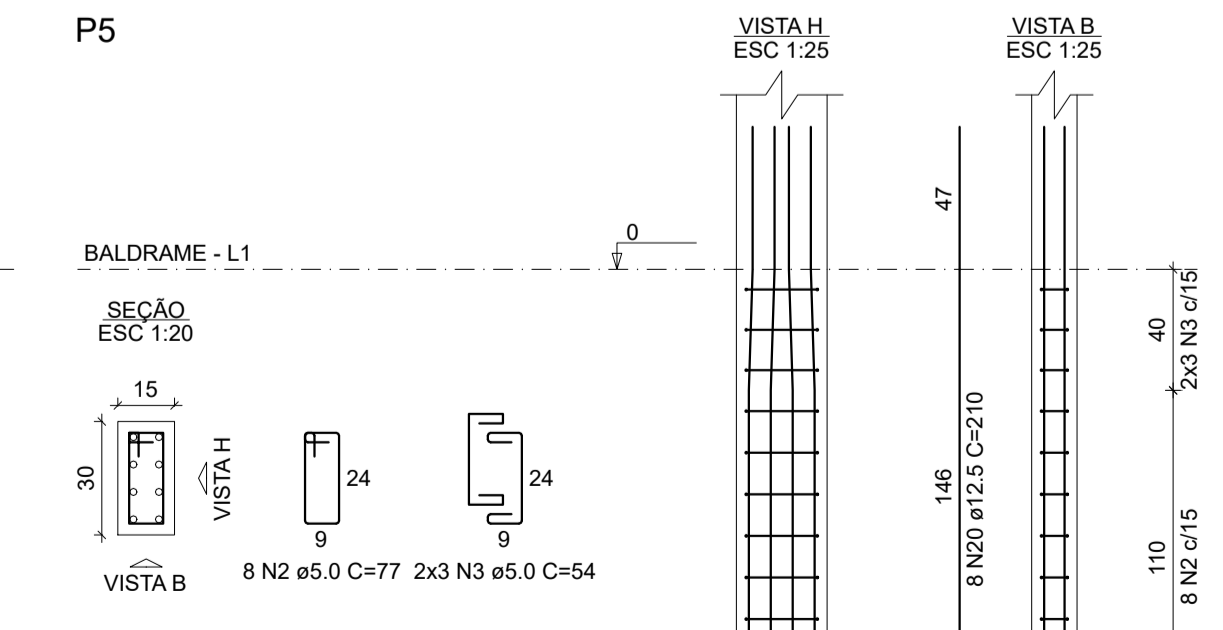
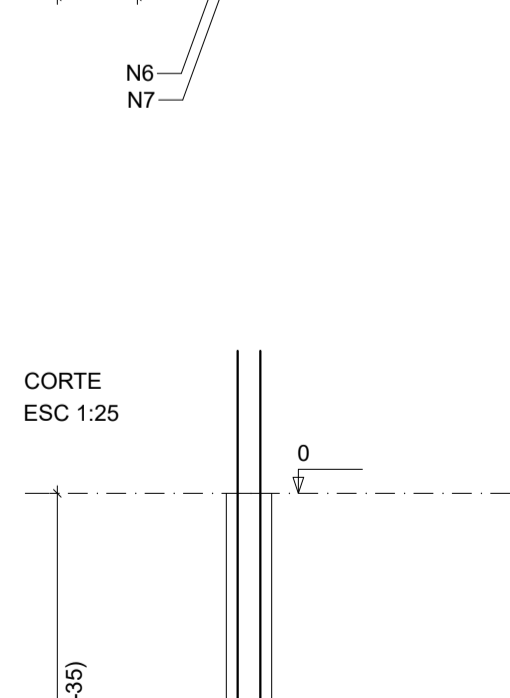
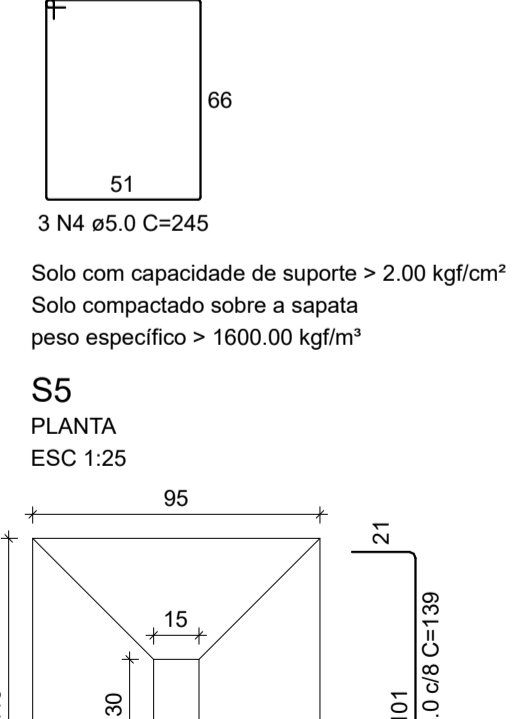
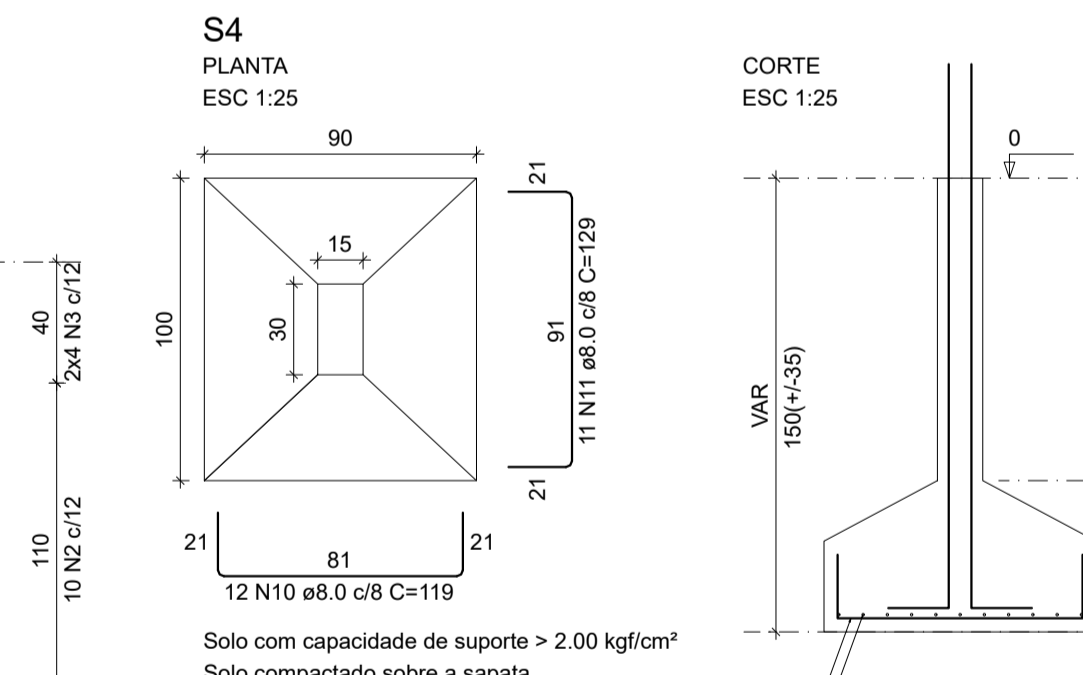
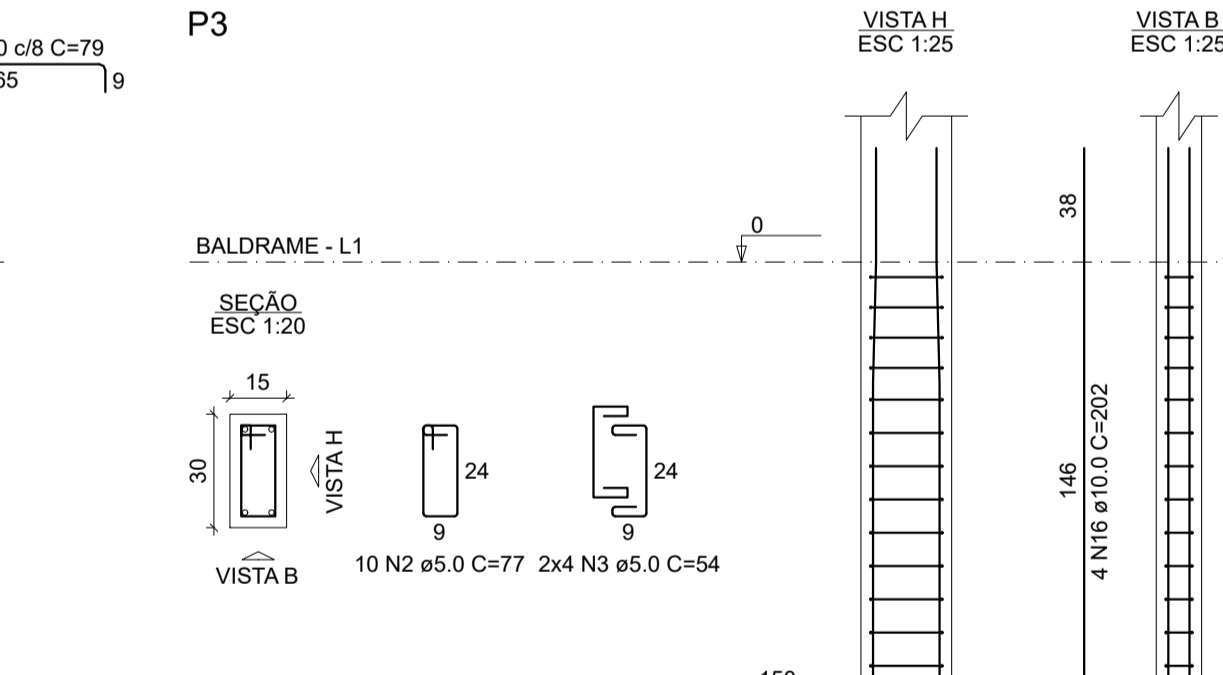
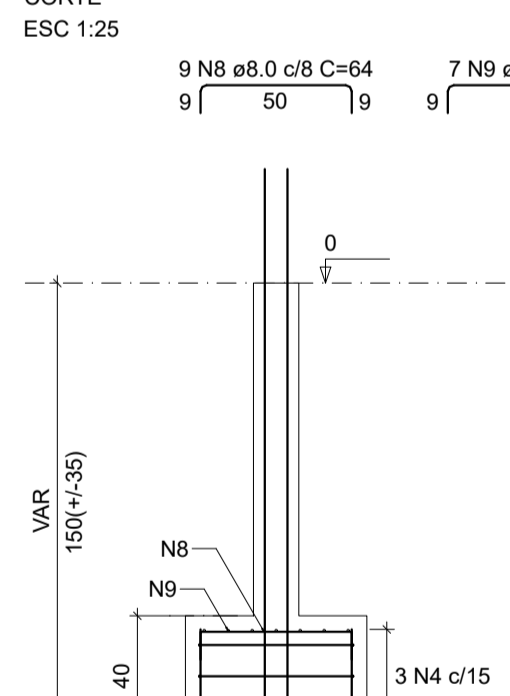
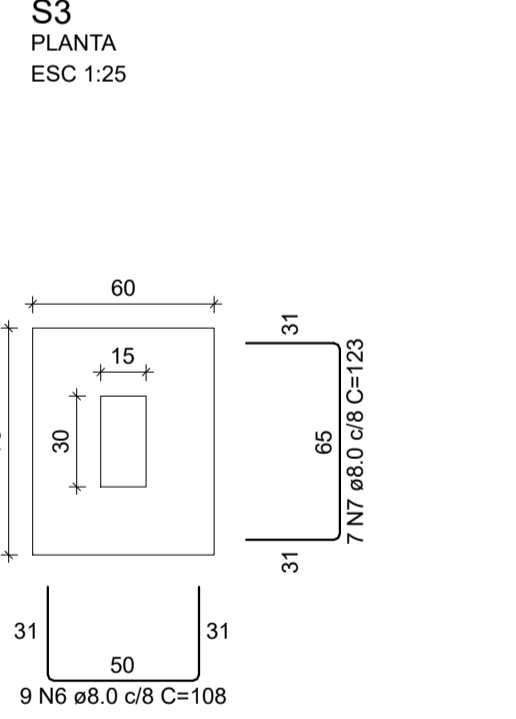
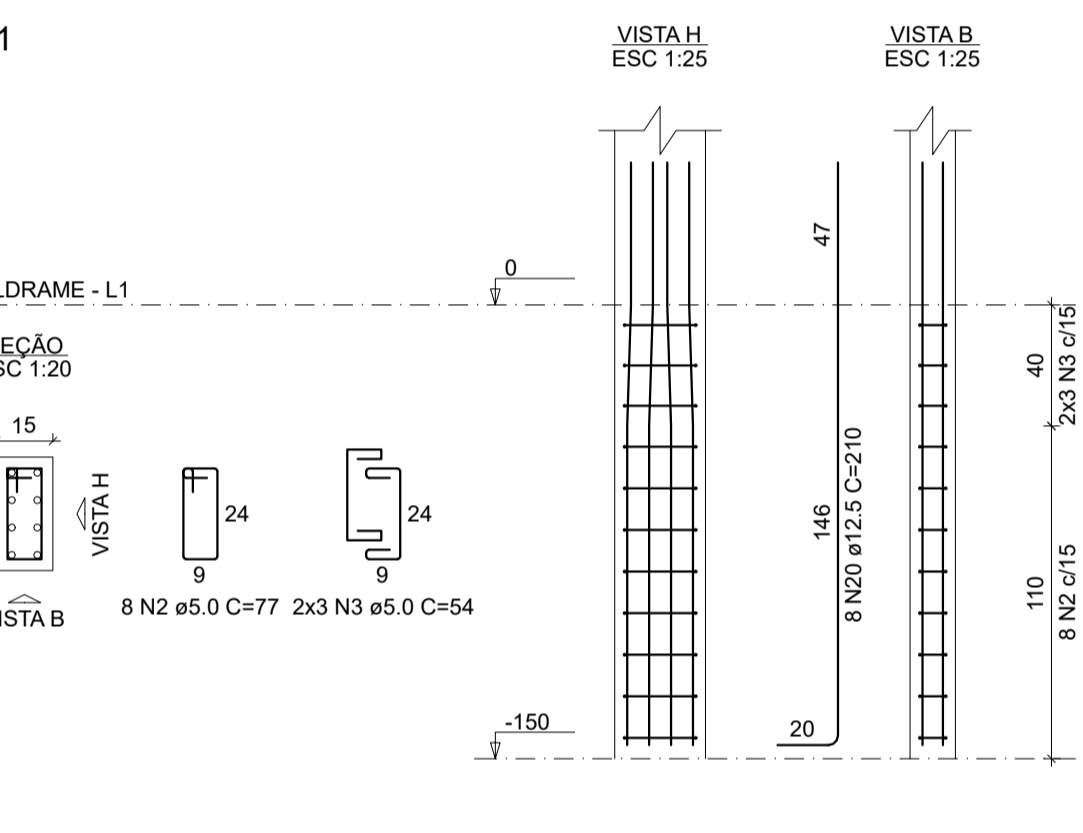
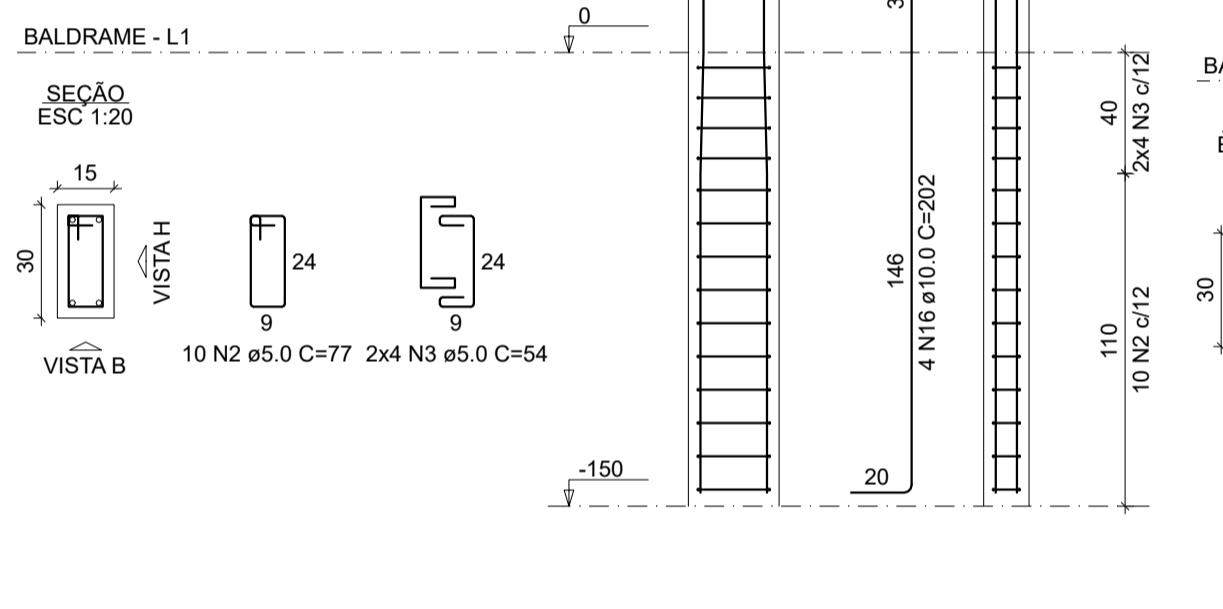
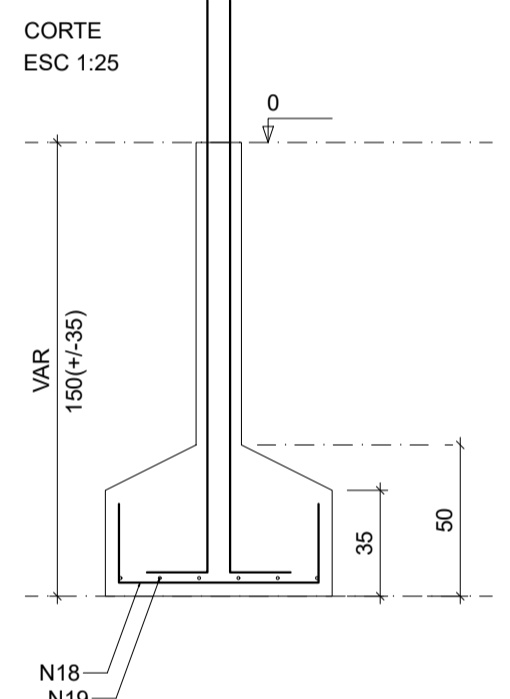
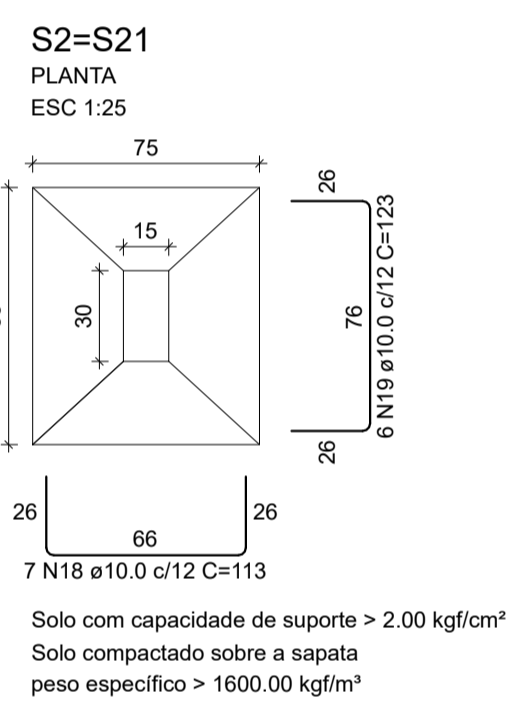
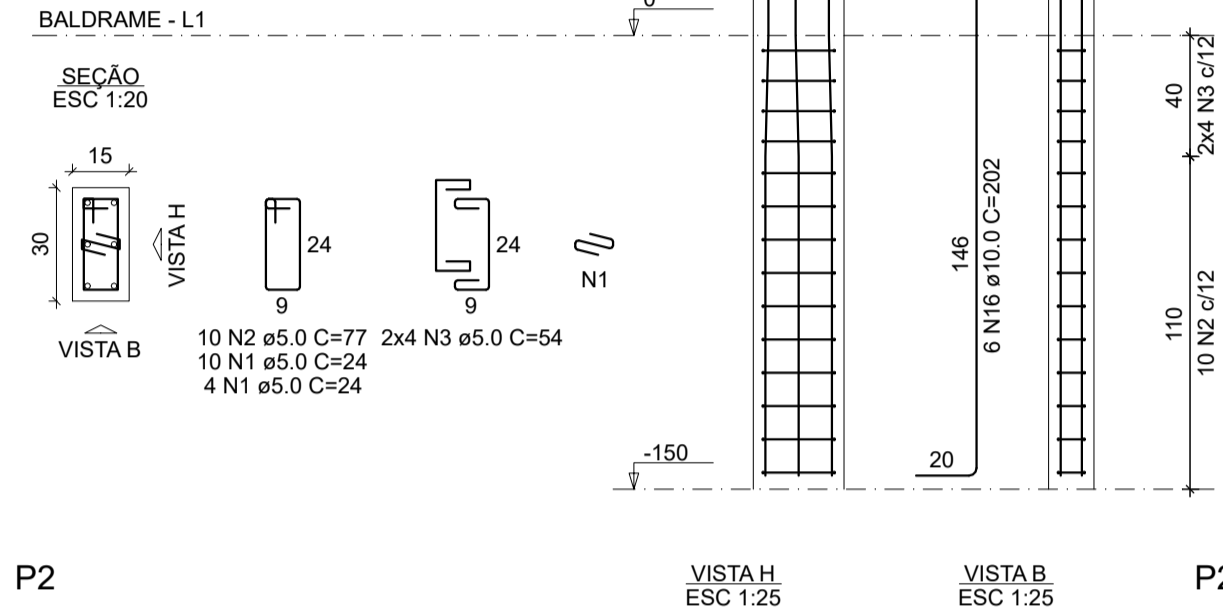
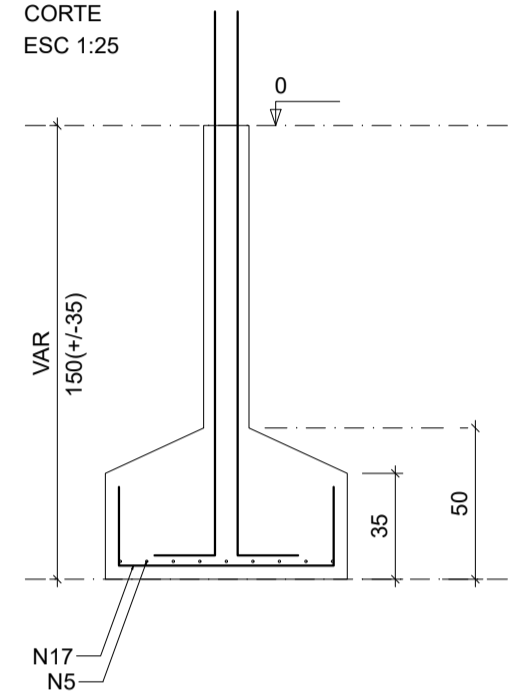
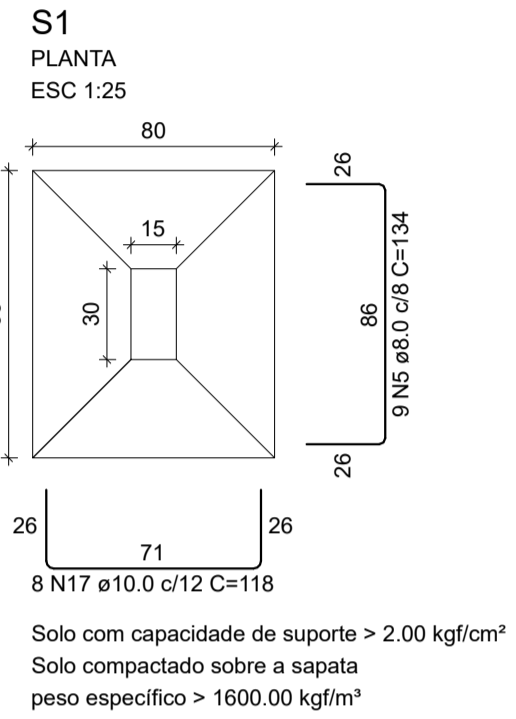
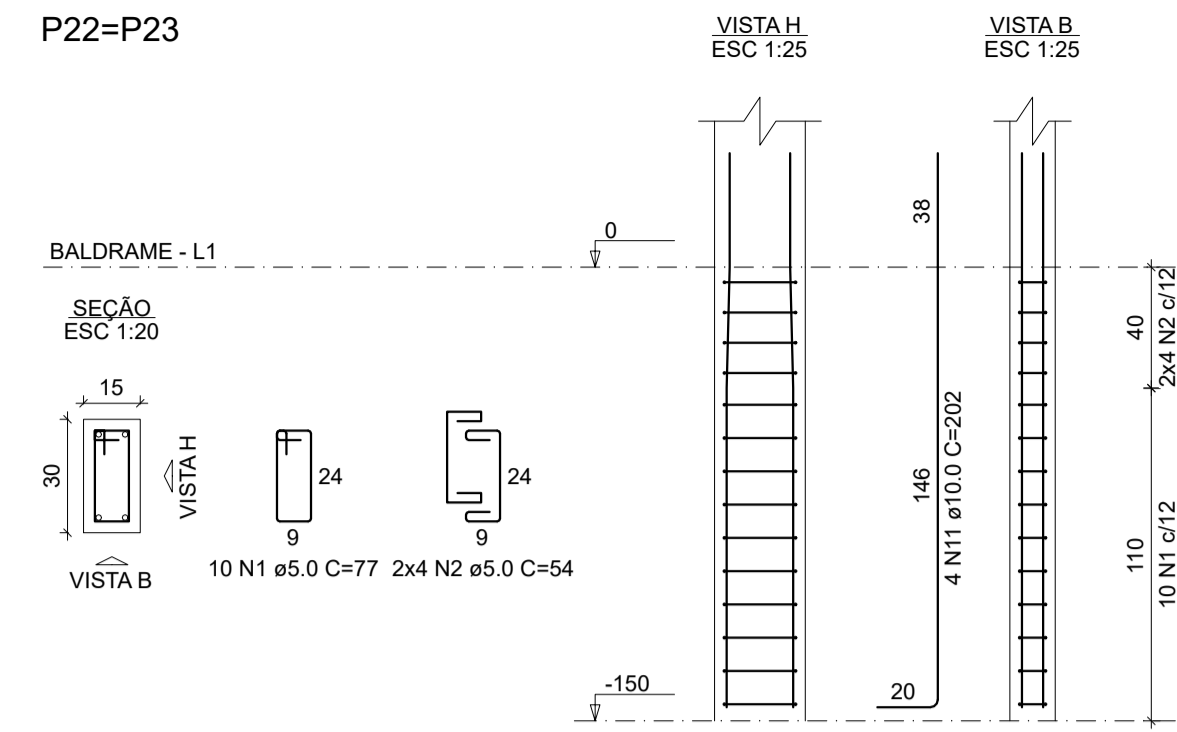
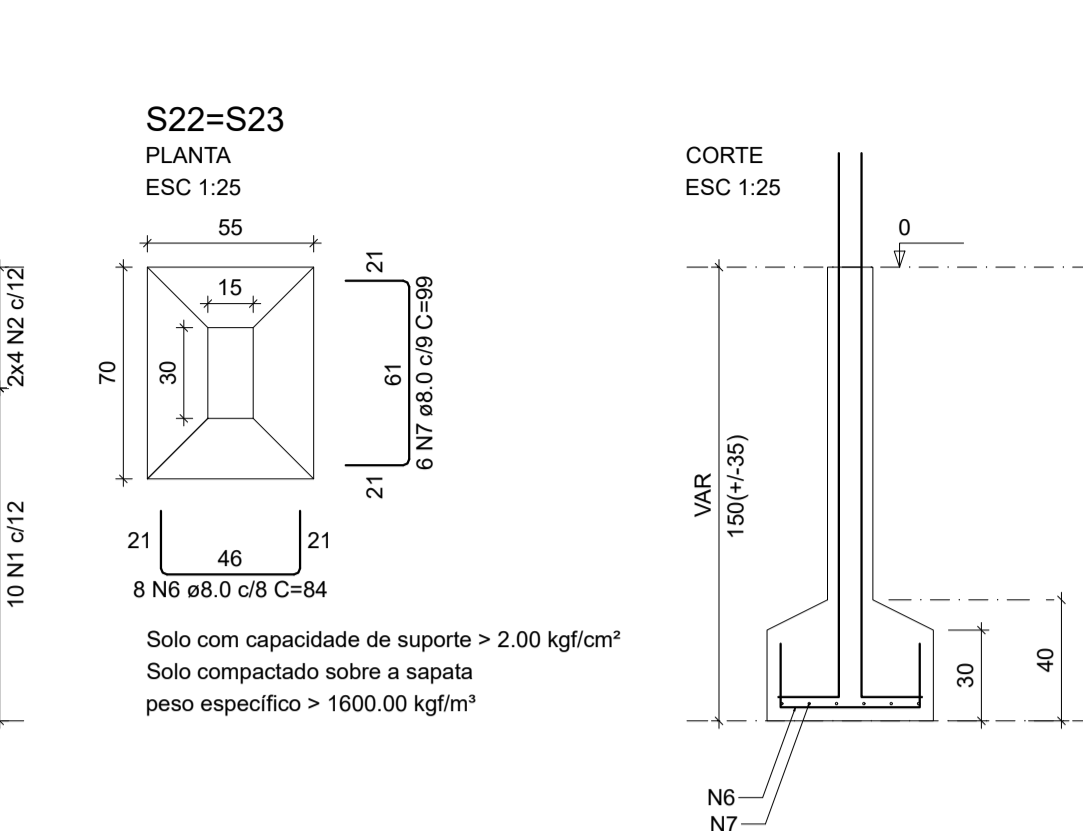
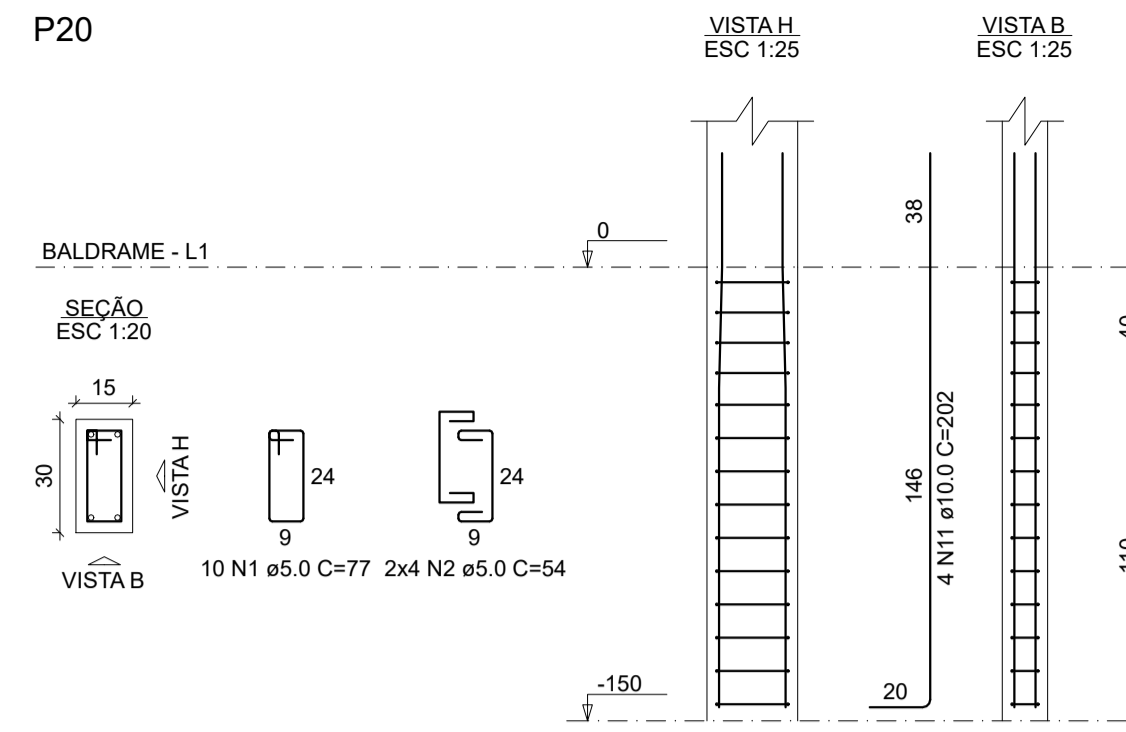
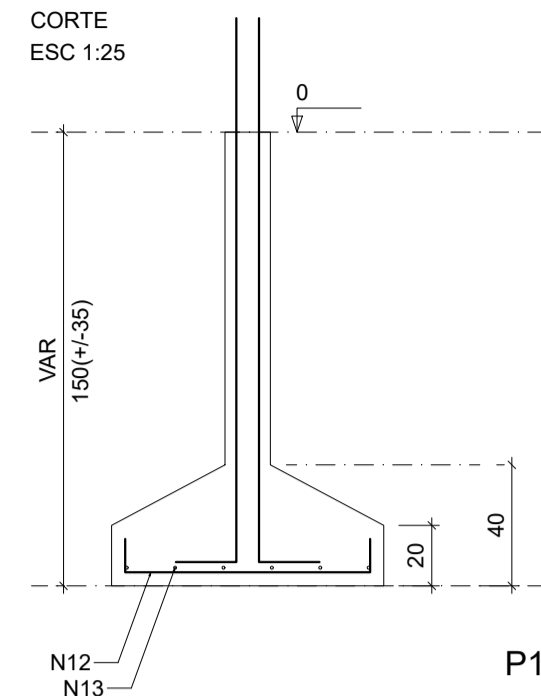
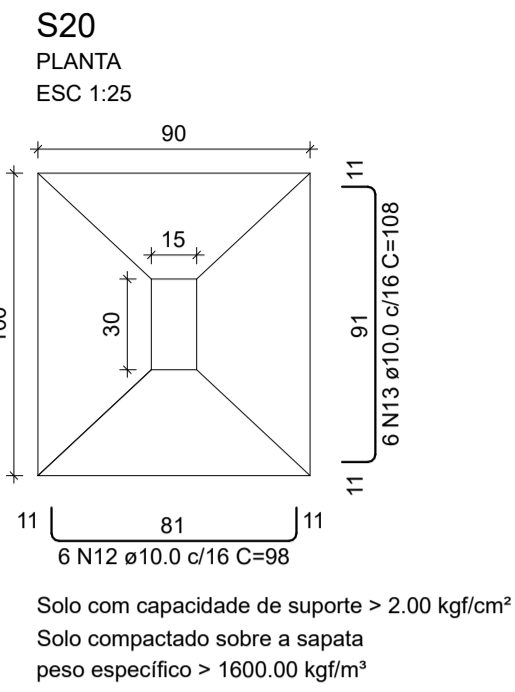
Forma do pavimento BALDRAME

escala 1:50



VIDEIRA
PREFEITURA
SECRETARIA DE PLANEJAMENTO
AV. MANOEL ROQUE, 188 - ALVORADA
FONE: (49) 3566-9051/3566-9050/3566-9058

NATUREZA DA OBRA REFORMA E AMPLIAÇÃO DO ESF RIO DAS PEDRAS	
LOCAL RUA VALTER PEREIRA DIAS RIO DAS PEDRAS	PROJETO ESTRUTURAL
RESPONSÁVEL TÉCNICO HOBERDAN HAUPT DE CASTILHOS CREASC 133265-2	REFERÊNCIA PLANTA DE FORMAS BALDRAME DETALHE FUNDAÇÕES
DATA 31/03/2026	PRANCHA - EST. 02 02-09
ESCALA INDICADA	ÁREA 272,14 m²
GRIFICAÇÃO HOBERDAN	ÁREA 272,14 m²



RELAÇÃO DO AÇO

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	50	77	3850
	2	5.0	40	54	2160
	3	5.0	42	24	1008
CA50	4	5.0	10	98	980
	5	5.0	8	65	520
	6	8.0	16	84	1344
	7	8.0	12	99	1188
	8	8.0	19	94	1786
	9	8.0	7	109	763
	10	8.0	7	114	798
	11	10.0	30	202	6060
	12	10.0	6	98	588
	13	10.0	6	108	648
14	10.0	8	118	944	
15	10.0	6	133	798	

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	8.0	58.8	25.5
CA60	10.0	90.4	61.3
CA60	5.0	85.3	14.5
PESO TOTAL (kg)			
CA50		86.8	
CA60		14.5	

Volume de concreto (C-25) = 1.59 m³
Área de forma = 11.25 m²

RELAÇÃO DO AÇO

P1	P2	P3
P4	P5	4xP6
P21	S1	S3
S4	S5	4xS12
2xS21		

RELAÇÃO DO AÇO

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	14	24	336
	2	5.0	96	77	7392
	3	5.0	76	54	4104
CA50	4	5.0	3	245	735
	5	8.0	9	134	1206
	6	8.0	9	108	972
	7	8.0	7	123	861
	8	8.0	9	64	576
	9	8.0	7	79	553
	10	8.0	12	119	1428
	11	8.0	11	129	1419
	12	8.0	13	124	1612
	13	8.0	11	139	1529
14	8.0	32	84	2688	
15	8.0	24	99	2376	
16	10.0	34	202	6868	
17	10.0	8	118	944	
18	10.0	14	113	1582	
19	10.0	12	123	1476	
20	12.5	16	210	3360	

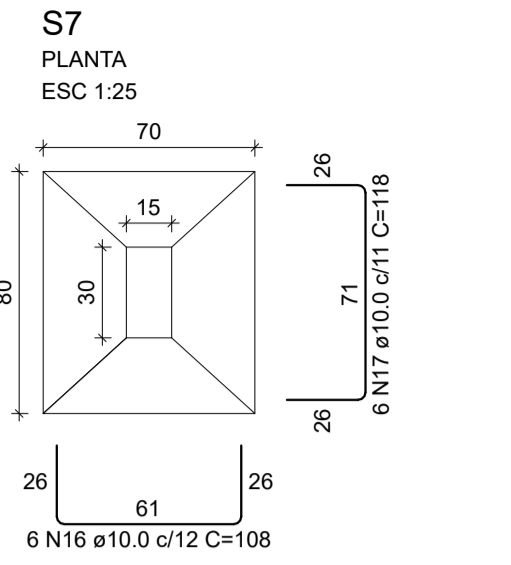
RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	8.0	152.2	86.1
CA50	10.0	108.7	73.7
CA60	12.5	33.6	35.6
CA60	5.0	125.7	21.3
PESO TOTAL (kg)			
CA50		175.4	
CA60		21.3	

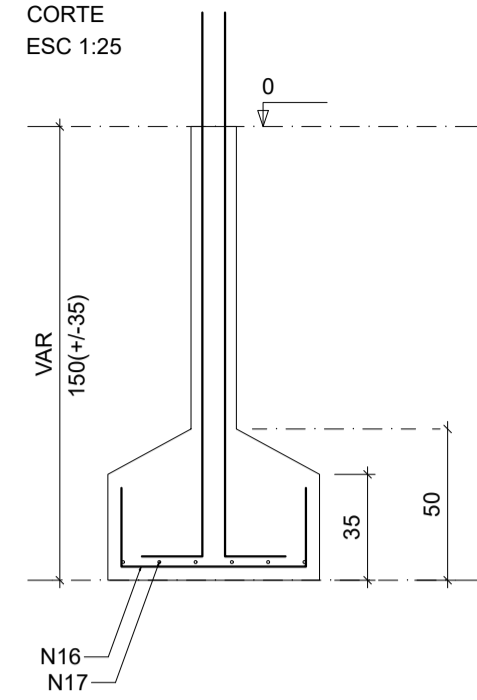
Volume de concreto (C-25) = 2.91 m³
Área de forma = 19.27 m²

VIDEIRA
PREFEITURA
SECRETARIA DE PLANEJAMENTO
AV. MANOEL ROQUE, 188 - ALVORADA
FONE: (49) 3566-9051/3566-9050/3566-9088

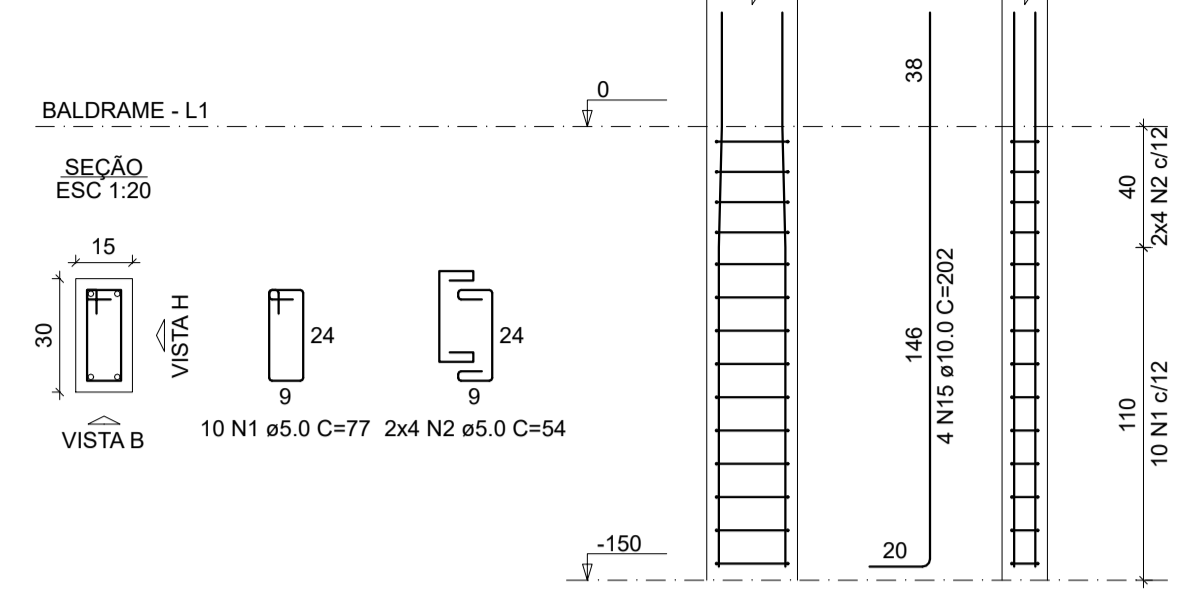
NATUREZA DA OBRA REFORMA E AMPLIAÇÃO DO ESF RIO DAS PEDRAS	
LOCAL RUA VALTER PEREIRA DIAS RIO DAS PEDRAS	PROJETO ESTRUTURAL
RESPONSÁVEL TÉCNICO HOBERDAN HAUPT DE CASTILHOS CREA/SC 133265-2	REFERÊNCIA DETALHE FUNDAÇÕES part. 2
PRONCHIA: EST. 03	PRONCHIA: EST. 03-09
DATA 31/03/2026	ESCALA INDICADA
GRATIFICAÇÃO HOBERDAN	ÁREA 272,14 m²



Solo com capacidade de suporte > 2.00 kgf/cm²
Solo compactado sobre a sapata
peso específico > 1600.00 kgf/m³

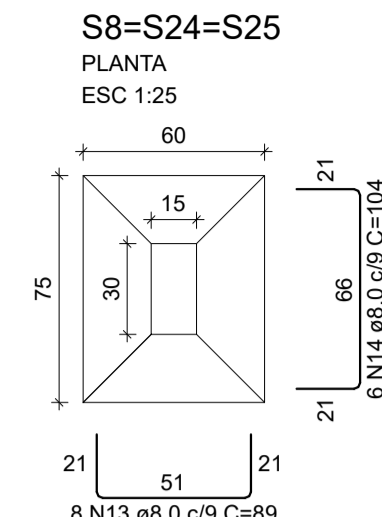


P7

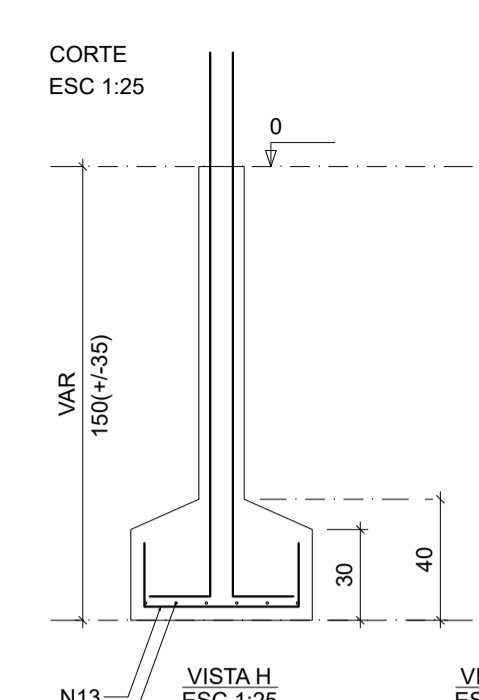


VISTA H
ESC 1:25

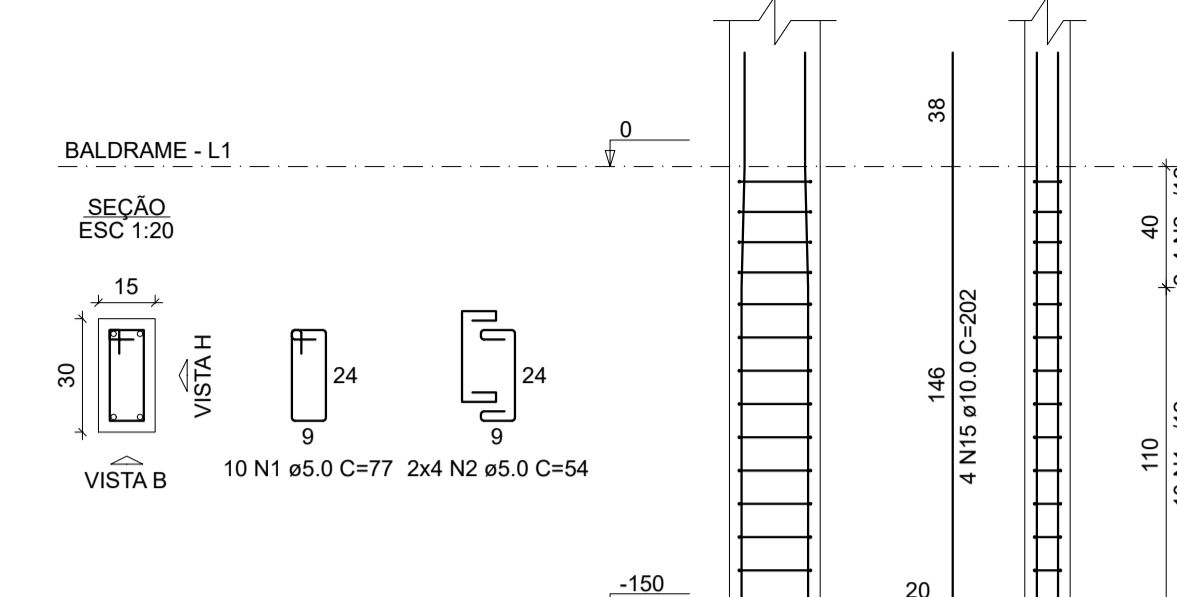
VISTA B
ESC 1:25



Solo com capacidade de suporte > 2.00 kgf/cm²
Solo compactado sobre a sapata
peso específico > 1600.00 kgf/m³



P8=P24=P25



VISTA H
ESC 1:25

VISTA B
ESC 1:25

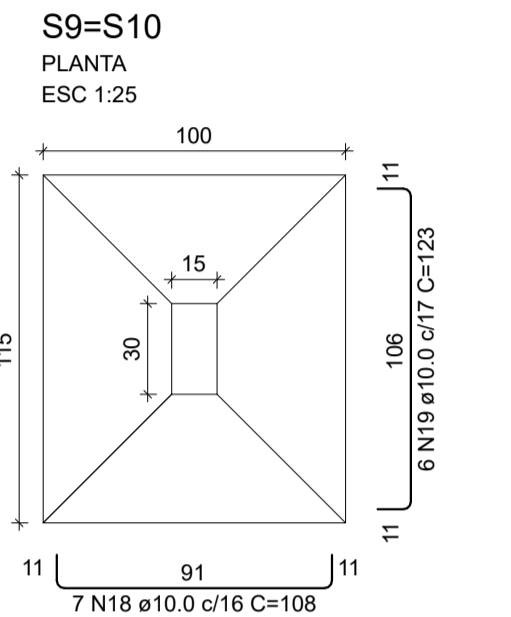
RELAÇÃO DO AÇO

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	134	77	10318
	2	5.0	106	54	5724
	3	5.0	11	24	264
	4	5.0	14	24	336
	5	5.0	10	117	1170
	6	5.0	8	74	592
CA50	7	8.0	45	99	4455
	8	8.0	40	114	4560
	9	8.0	12	94	1128
	10	8.0	7	129	903
	11	8.0	16	89	1424
	12	8.0	14	104	1456
	13	8.0	24	89	2136
	14	8.0	18	104	1872
	15	10.0	50	202	10100
	16	10.0	6	108	648
	17	10.0	6	118	708
	18	10.0	14	108	1512
	19	10.0	12	123	1476
	20	10.0	8	118	944
	21	10.0	7	133	931
	22	12.5	18	210	3780

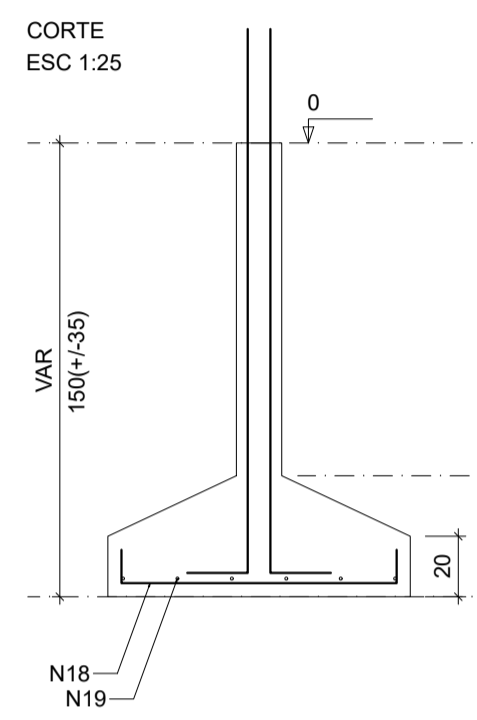
RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	8.0	179.3	77.8
	10.0	163.2	110.7
CA60	12.5	37.8	40.1
	5.0	184	31.2
PESO TOTAL (kg)			
CA50		228.6	
CA60		31.2	

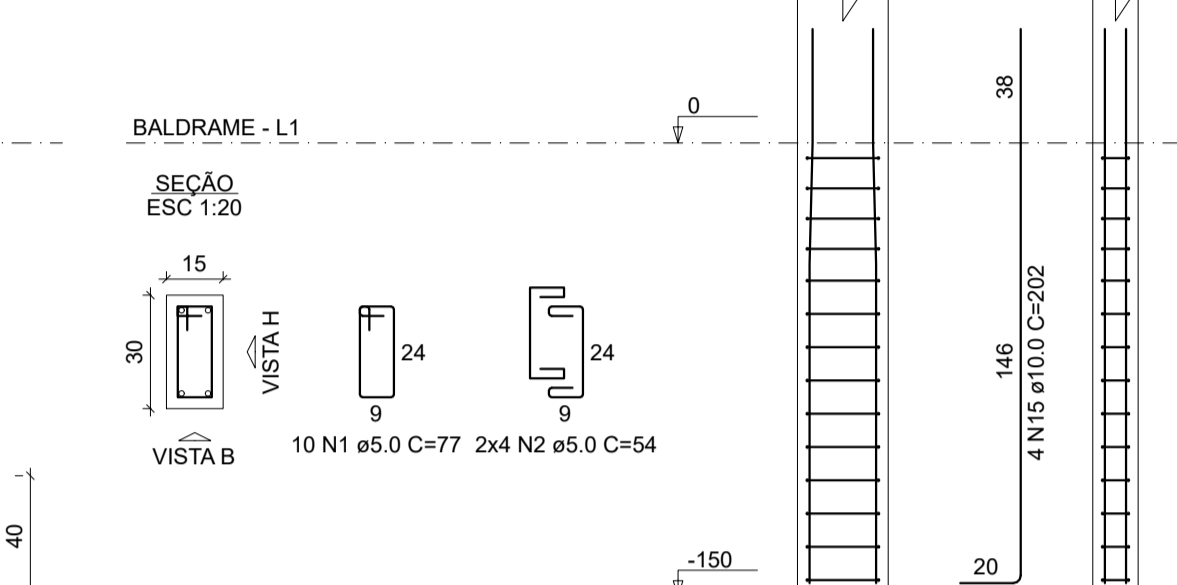
Volume de concreto (C-25) = 4.35 m³
Área de forma = 28.23 m²



Solo com capacidade de suporte > 2.00 kgf/cm²
Solo compactado sobre a sapata
peso específico > 1600.00 kgf/m³

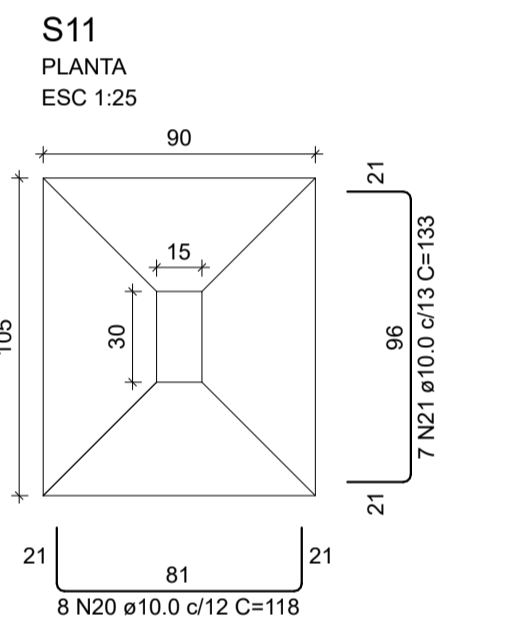
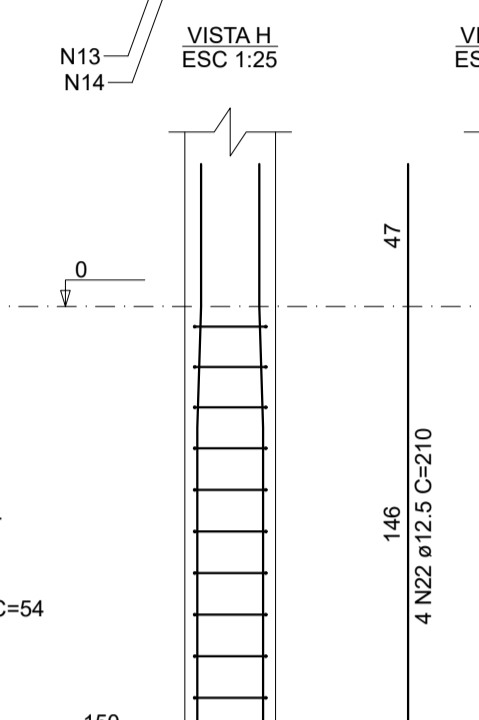
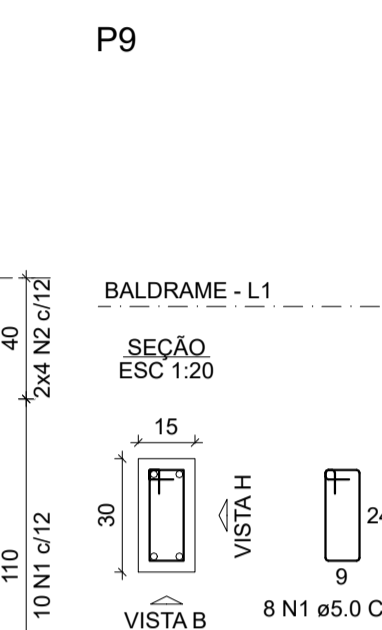


P10

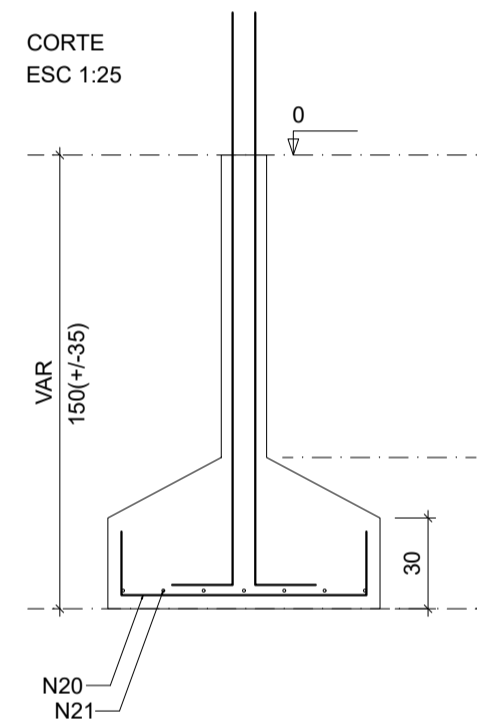


VISTA H
ESC 1:25

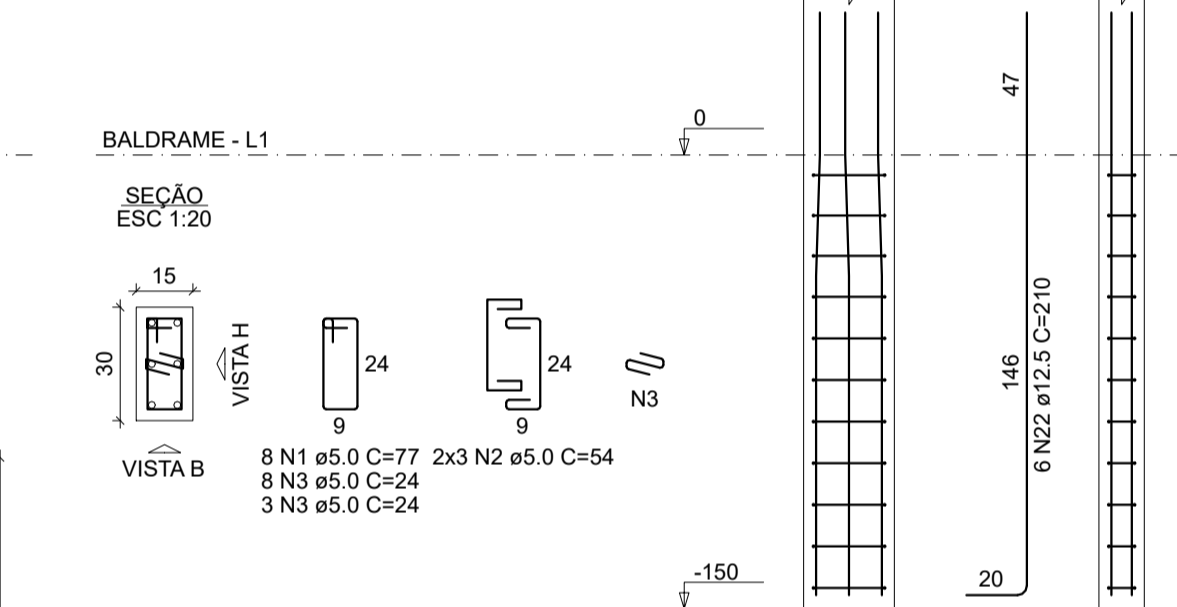
VISTA B
ESC 1:25



Solo com capacidade de suporte > 2.00 kgf/cm²
Solo compactado sobre a sapata
peso específico > 1600.00 kgf/m³

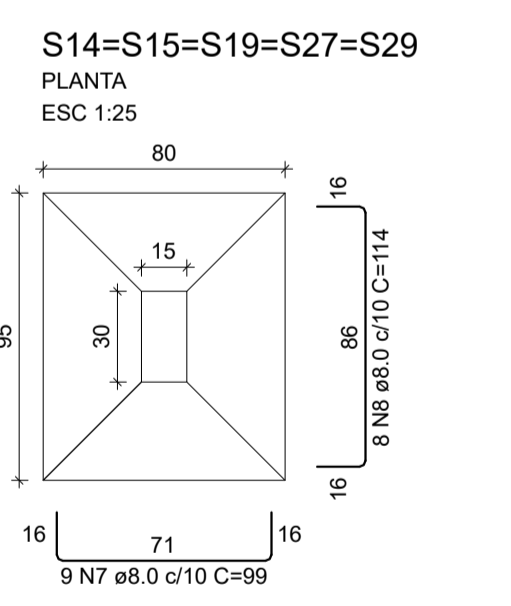
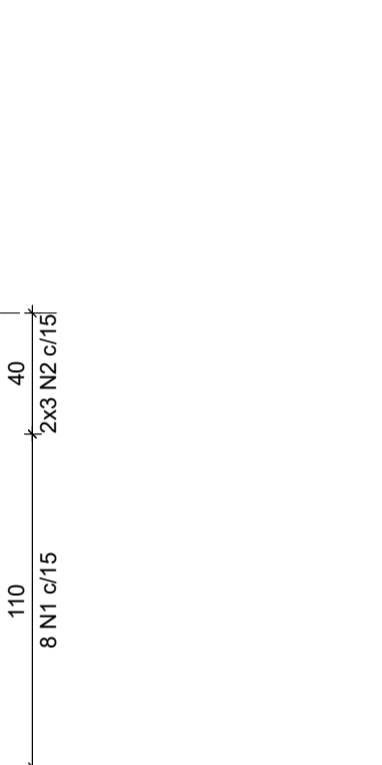


P11

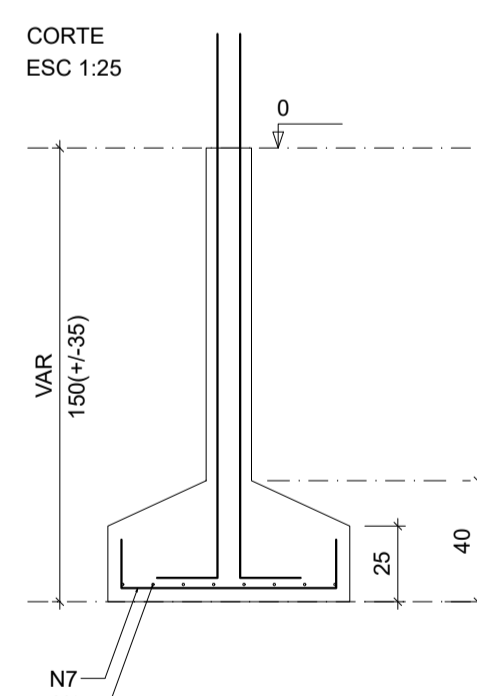


VISTA H
ESC 1:25

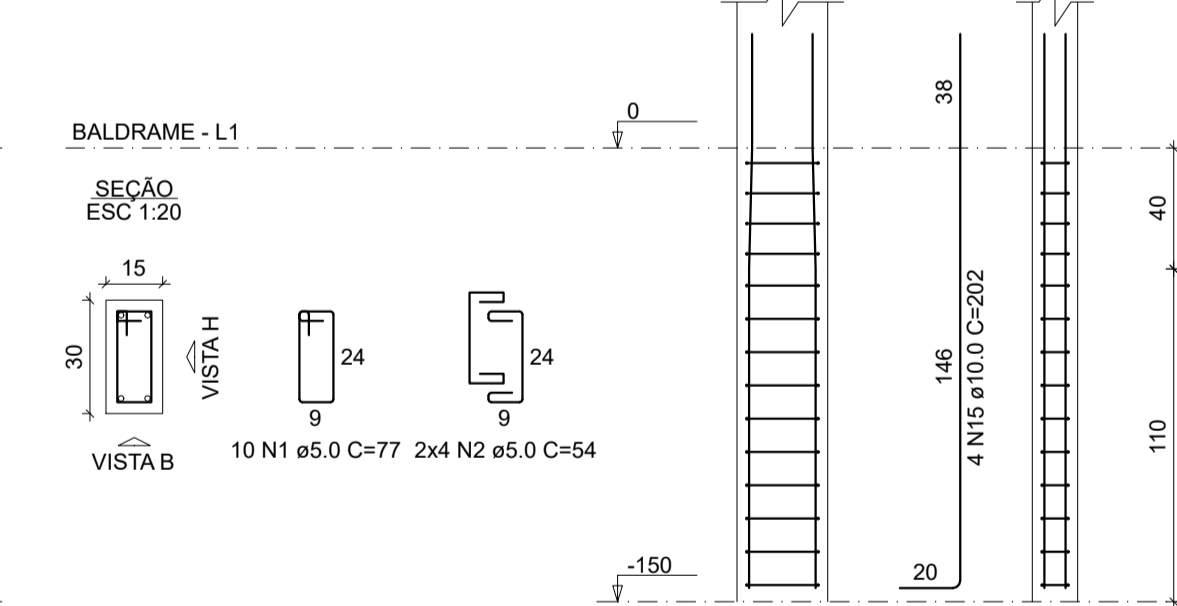
VISTA B
ESC 1:25



Solo com capacidade de suporte > 2.00 kgf/cm²
Solo compactado sobre a sapata
peso específico > 1600.00 kgf/m³

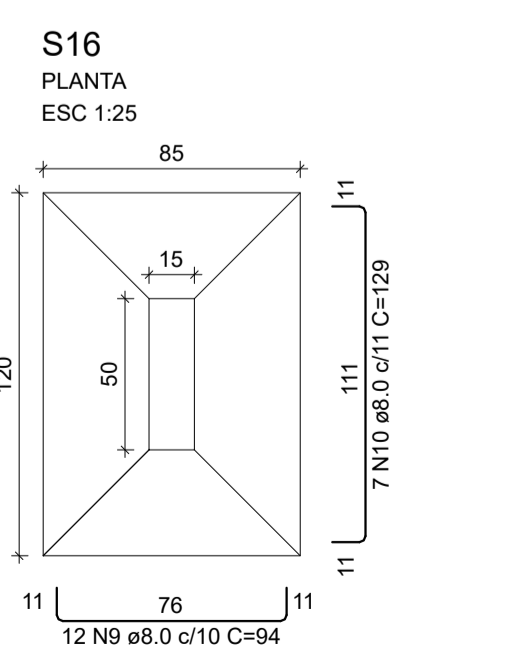
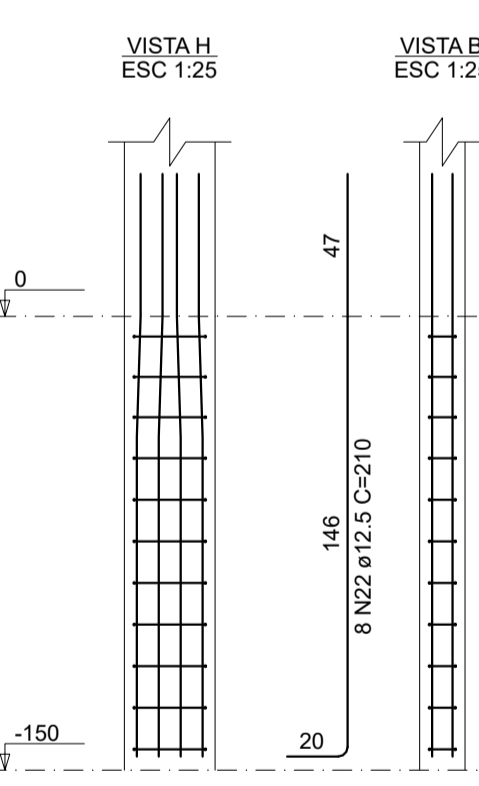
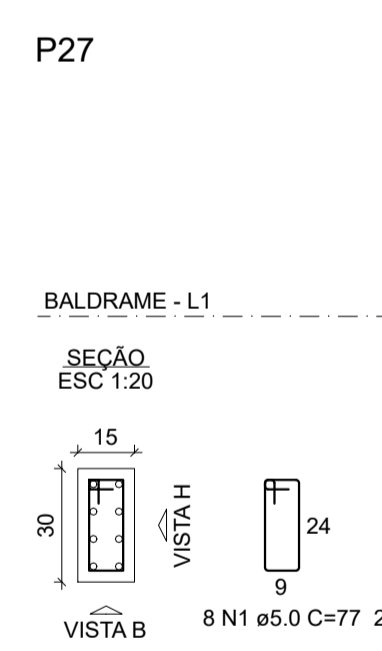


P14=P15=P19=P29

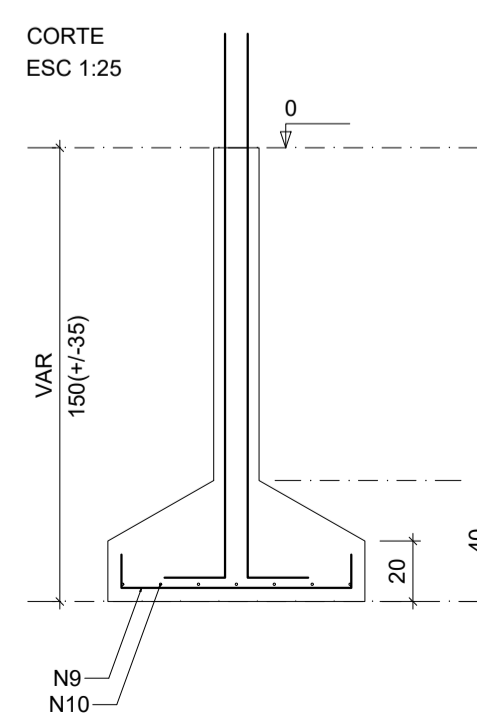


VISTA H
ESC 1:25

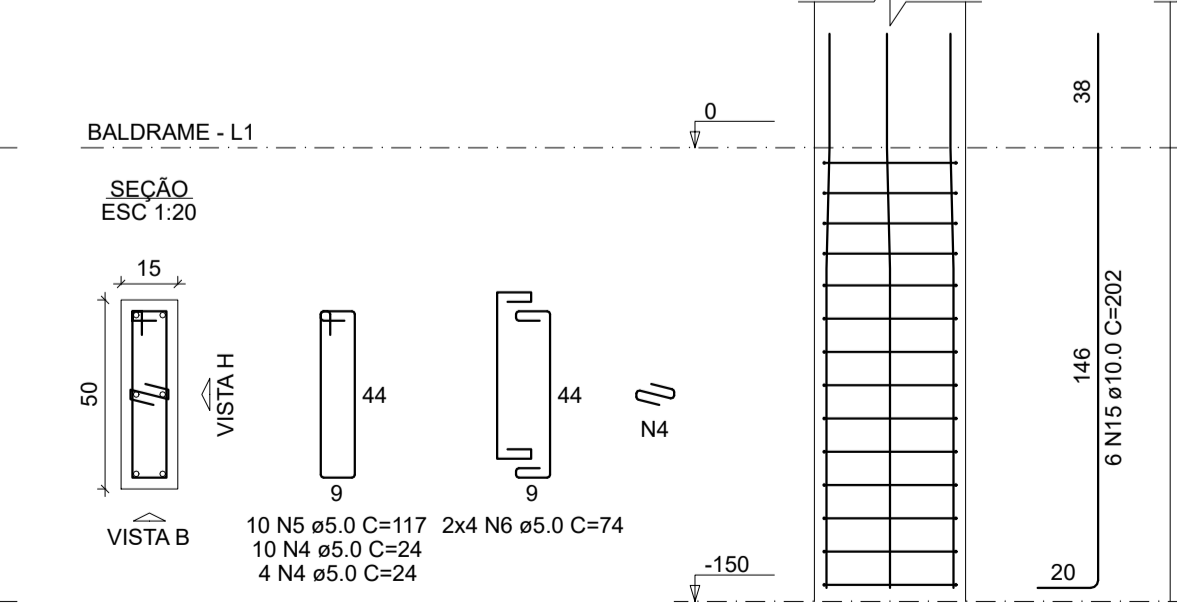
VISTA B
ESC 1:25



Solo com capacidade de suporte > 2.00 kgf/cm²
Solo compactado sobre a sapata
peso específico > 1600.00 kgf/m³

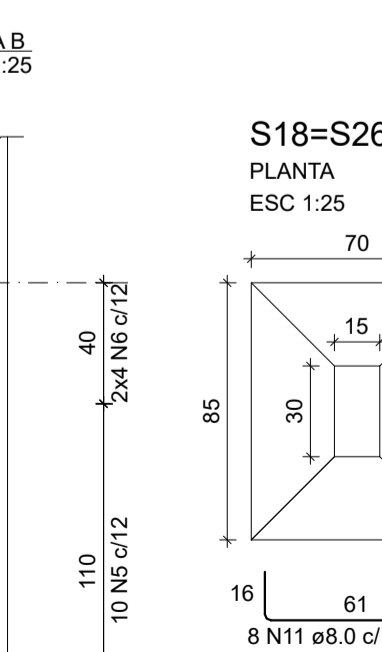


P16

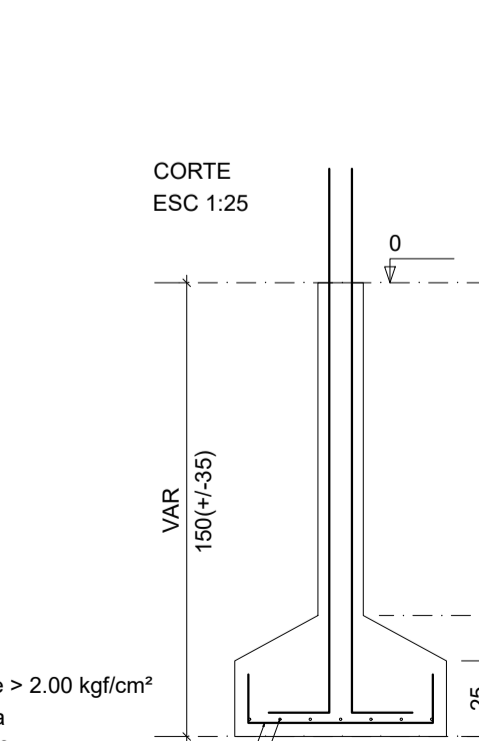


VISTA H
ESC 1:25

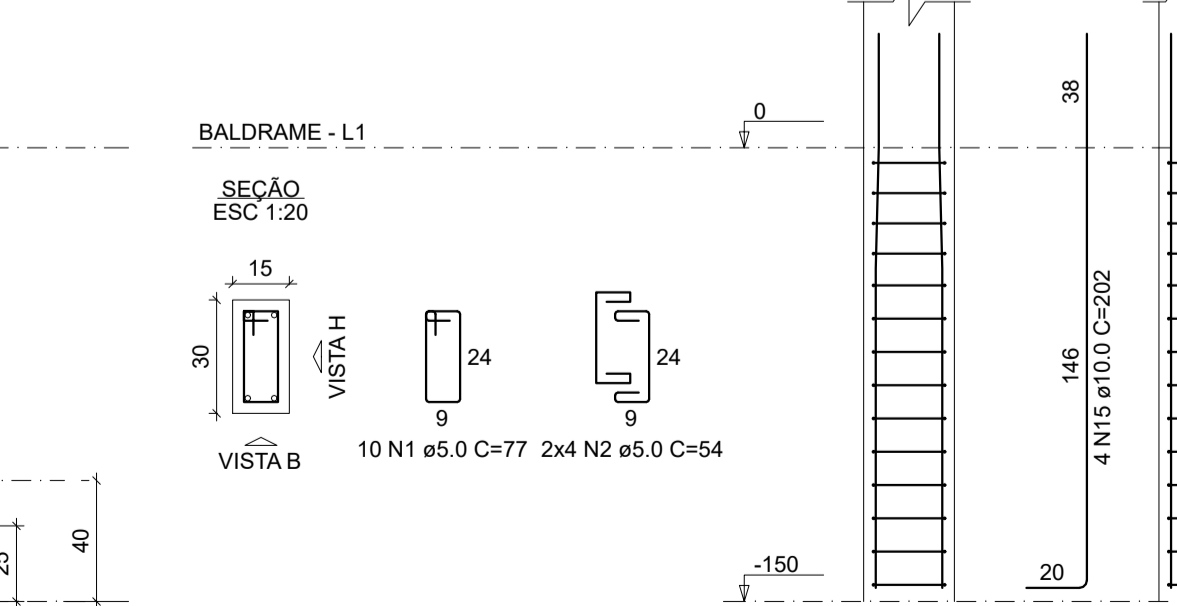
VISTA B
ESC 1:25



Solo com capacidade de suporte > 2.00 kgf/cm²
Solo compactado sobre a sapata
peso específico > 1600.00 kgf/m³



P18=P26

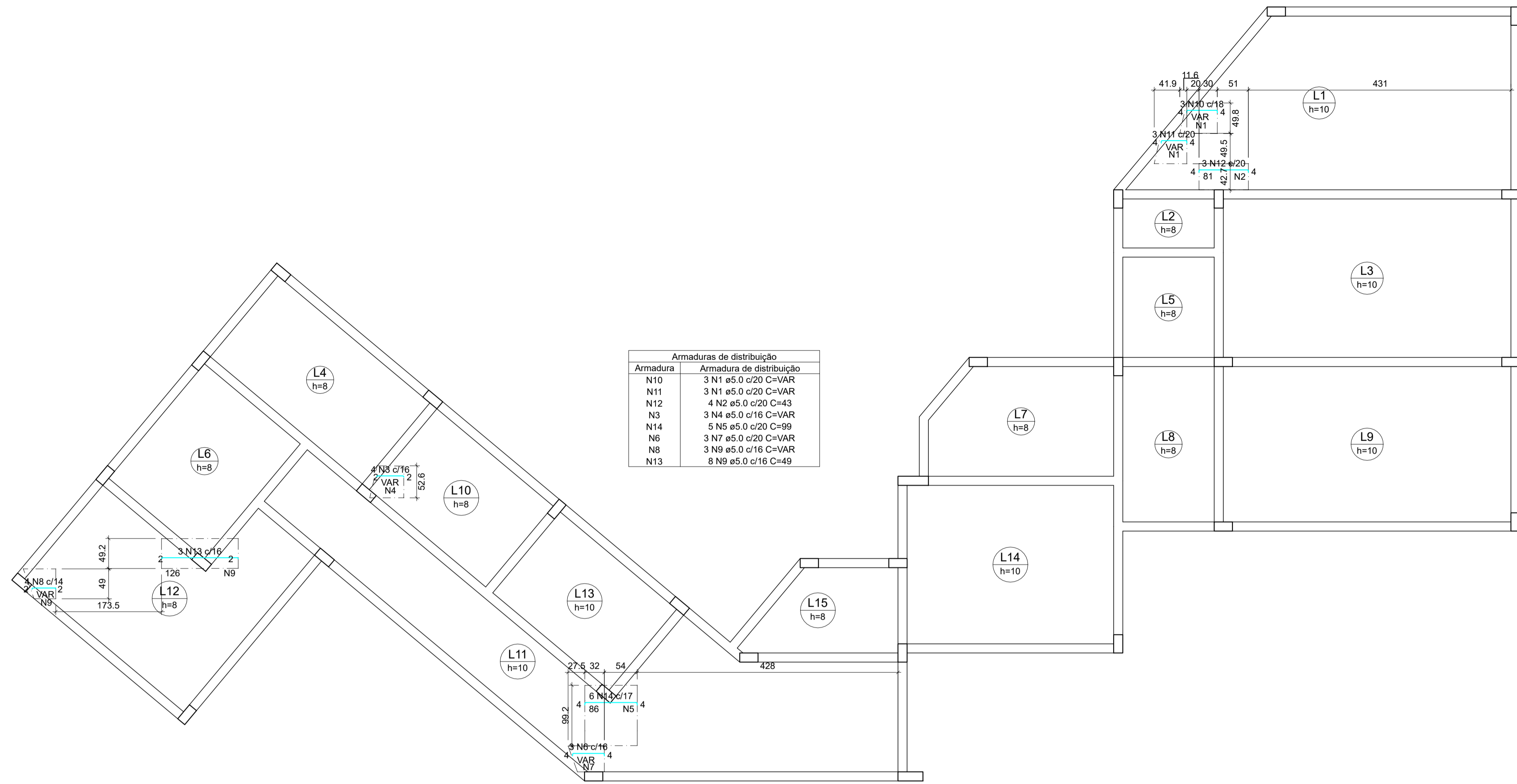


VISTA H
ESC 1:25

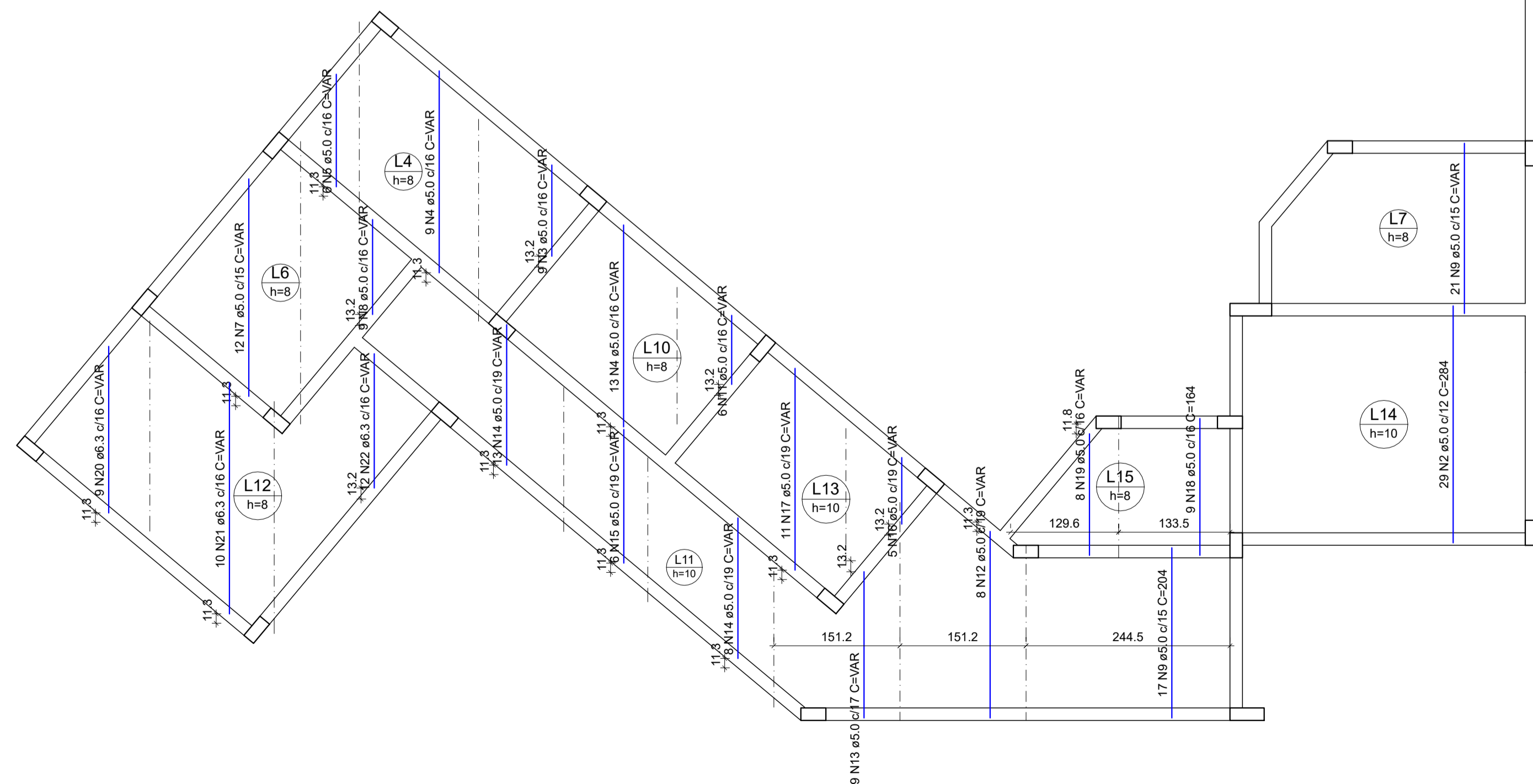
VISTA B
ESC 1:25

VIDEIRA
PREFEITURA
SECRETARIA DE PLANEJAMENTO
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NATUREZA DA OBRA REFORMA E AMPLIAÇÃO DO ESF RIO DAS PEDRAS	
LOCAL RUA VALTER PEREIRA DIAS RIO DAS PEDRAS	PROJETO ESTRUTURAL
RESPONSÁVEL TÉCNICO HOBERDAN HAUPT DE CASTILHOS CREA/SC 133265-2	REFERÊNCIA DETALHE FUNDAÇÕES part. 3
PRONCHA - EST. 04	
DATA 31/03/2026	ESCALA INDICADA
GRIFICAÇÃO HOBERDAN	ÁREA 272,14 m²
	04-09

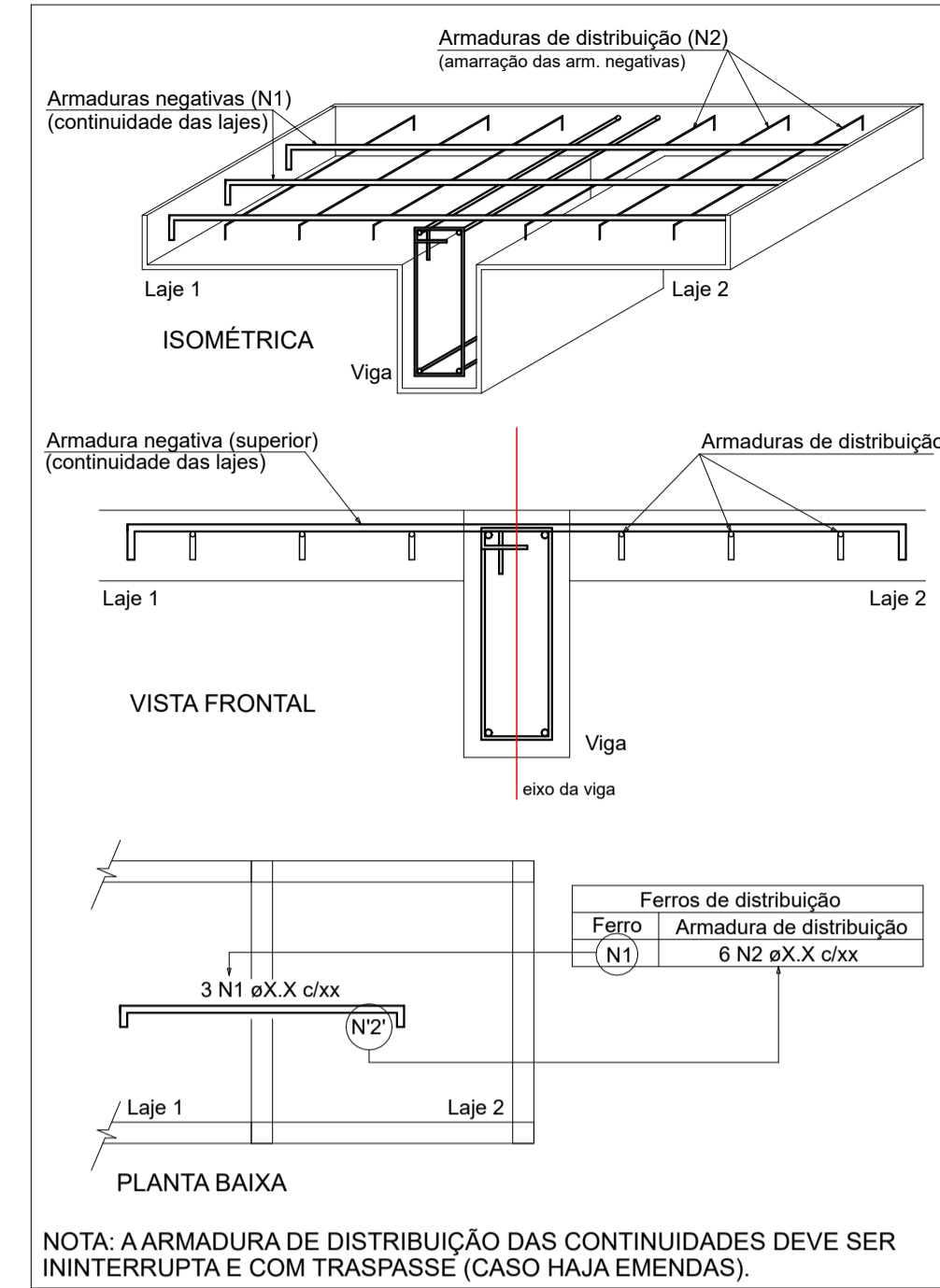


Armação negativa das lajes do pavimento BALDRAME (Eixo X)
escala: 1:50



Armação positiva das lajes do pavimento BALDRAME (Eixo Y)
escala: 1:50

DETALHE DA ARMADURA SUPERIOR DE CONTINUIDADE DA LAJE E MONTAGEM DA ARMADURA DE DISTRIBUIÇÃO



RELAÇÃO DO AÇO

Negativos X

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	6	VAR	VAR
	2	5.0	4	43	172
	3	5.0	4	VAR	VAR
	4	5.0	3	VAR	VAR
	5	5.0	5	99	495
	6	5.0	3	VAR	VAR
	7	5.0	3	VAR	VAR
	8	5.0	4	VAR	VAR
	9	5.0	11	VAR	VAR
	10	6.3	3	VAR	VAR
	11	6.3	3	VAR	VAR
	12	6.3	3	86	258
	13	6.3	3	127	381
	14	8.0	6	90	540

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	9.5	2.5
CA60	8.0	5.4	2.3
CA60	5.0	23	3.9
PESO TOTAL (kg)			
CA50	4.9		
CA60	3.9		

Volume de concreto (C-25) = 0.00 m³
Área de forma = 0.00 m²

RELAÇÃO DO AÇO

Positivos Y

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	10	104	1040
	2	5.0	77	294	21868
	3	5.0	9	VAR	VAR
	4	5.0	22	VAR	VAR
	5	5.0	6	VAR	VAR
	6	5.0	10	189	1890
	7	5.0	12	VAR	VAR
	8	5.0	9	VAR	VAR
	9	5.0	38	VAR	VAR
	10	5.0	10	279	2790
	11	5.0	6	VAR	VAR
	12	5.0	8	VAR	VAR
	13	5.0	9	VAR	VAR
	14	5.0	21	VAR	VAR
	15	5.0	6	VAR	VAR
	16	5.0	5	VAR	VAR
	17	5.0	11	VAR	VAR
	18	5.0	9	164	1476
	19	5.0	8	VAR	VAR
	20	6.3	9	VAR	VAR
	21	6.3	10	VAR	VAR
	22	6.3	12	VAR	VAR
	23	8.0	24	309	7416
	24	8.0	12	VAR	VAR
	25	8.0	24	279	6696

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	65	17.5
CA60	8.0	170.9	74.2
CA60	5.0	606.7	102.9
PESO TOTAL (kg)			
CA50	91.7		
CA60	102.9		

Volume de concreto (C-25) = 0.00 m³
Área de forma = 0.00 m²



NATUREZA DA OBRA: REFORMA E AMPLIAÇÃO DO ESF RIO DAS PEDRAS

LOCAL: RUA VALTER PEREIRA DIAS RIO DAS PEDRAS

PROJETO: ESTRUTURAL

RESPONSÁVEL TÉCNICO: HOBERDAN HAUPT DE CASTILHOS CREA/SC 133265-2

REFERÊNCIA: ARMAÇÃO POSITIVA DO PISO Y ARMAÇÃO NEGATIVA DO PISO X

PRANCHA: EST. 05

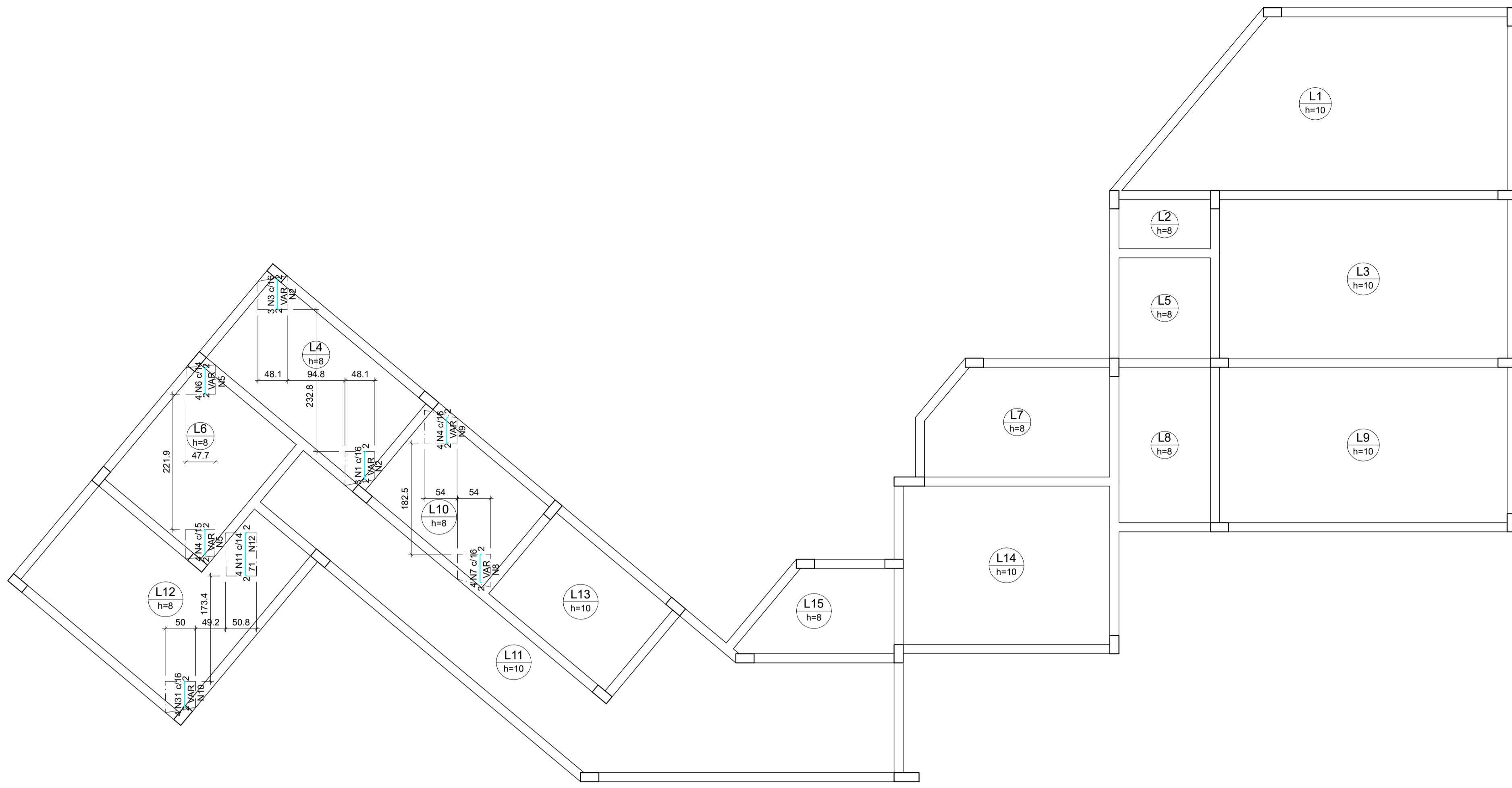
DATA: 31/03/2026

ESCALA: INDICADA

GRIFICAÇÃO: HOBERDAN

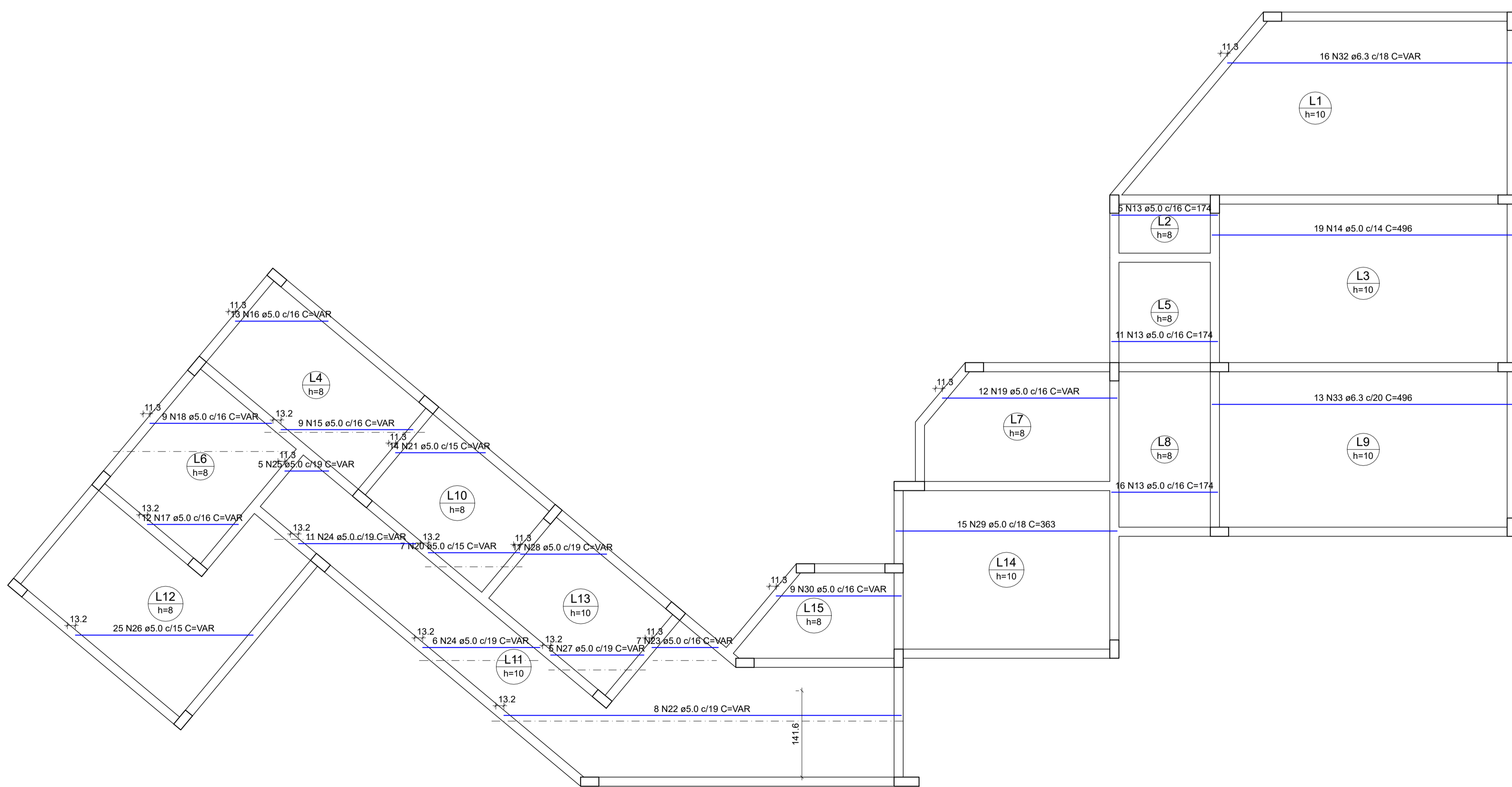
ÁREA: 272,14 m²

05-09



Armação negativa das lajes do pavimento BALDRAME (Eixo Y)

escala 1:50

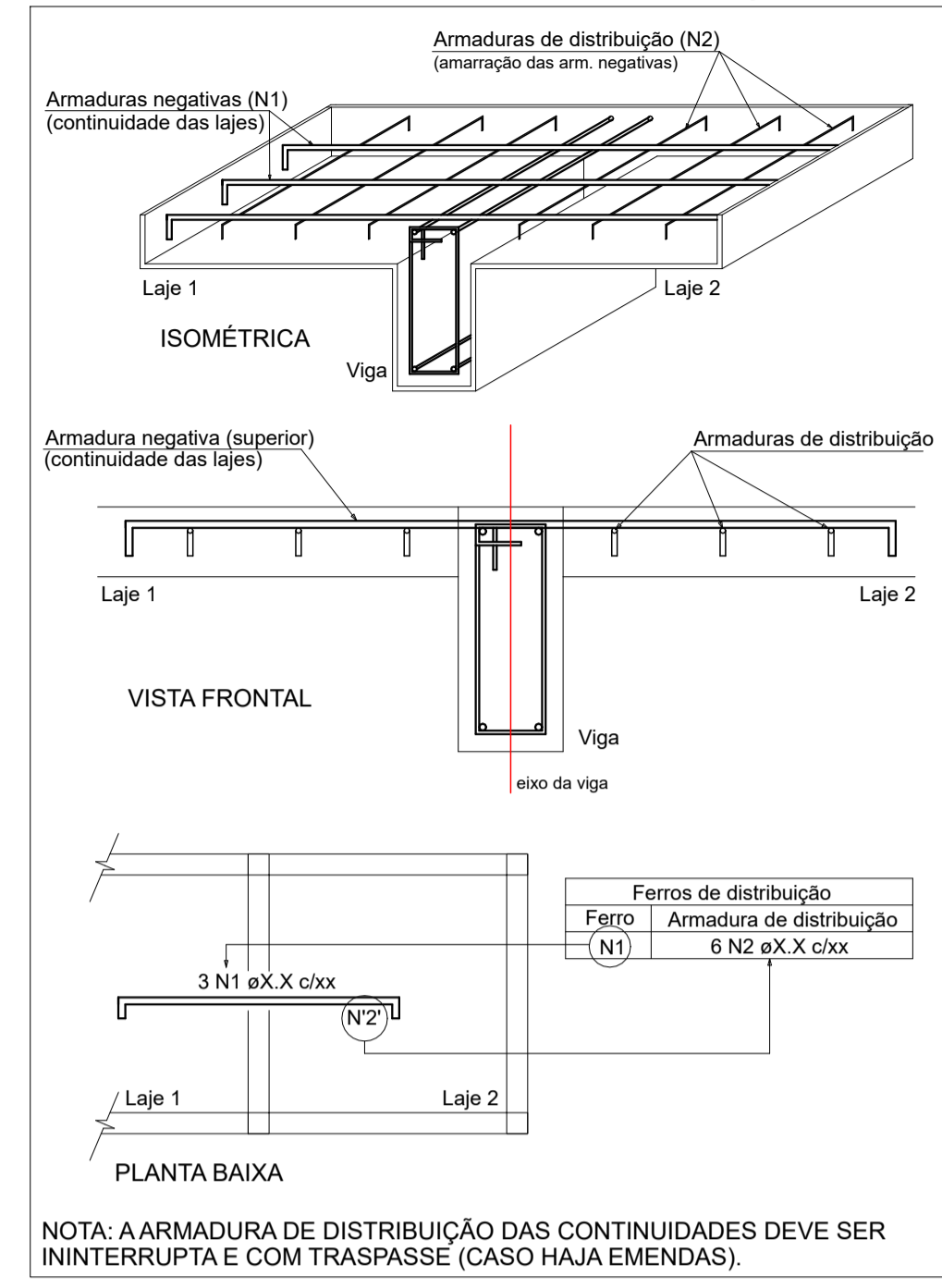


Armação positiva das lajes do pavimento BALDRAME (Eixo X)

escala 1:50

Armadura	Armadura de distribuição
N1	3 N2 ø5.0 c/16 C=VAR
N3	4 N2 ø5.0 c/16 C=VAR
N4	3 N5 ø5.0 c/16 C=VAR
N6	3 N5 ø5.0 c/16 C=VAR
N7	3 N8 ø5.0 c/16 C=VAR
N4	3 N9 ø5.0 c/16 C=VAR
N31	3 N10 ø5.0 c/16 C=VAR
N11	5 N12 ø5.0 c/16 C=50

DETALHE DA ARMADURA SUPERIOR DE CONTINUIDADE DA LAJE E MONTAGEM DA ARMADURA DE DISTRIBUIÇÃO



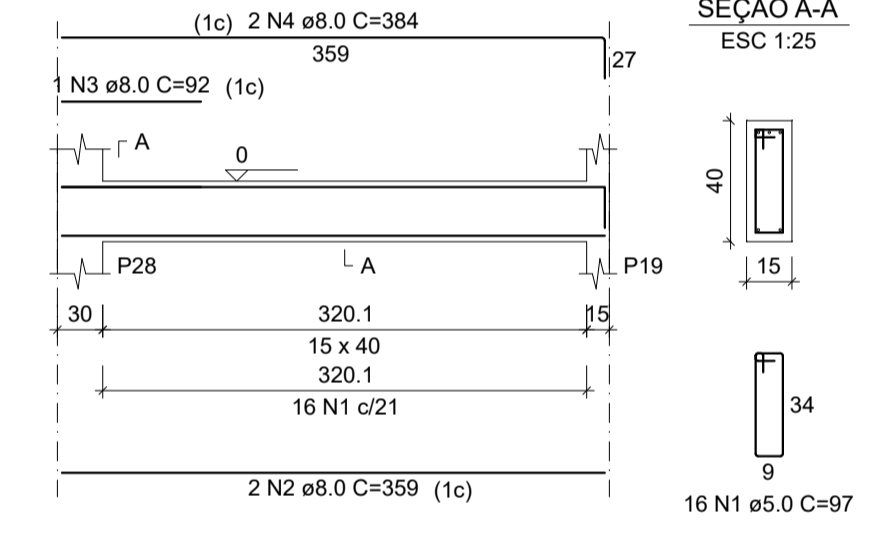
NOTA: A ARMADURA DE DISTRIBUIÇÃO DAS CONTINUIDADES DEVE SER ININTERRUPTA E COM TRASPASSE (CASO HAJA EMENDAS).

RELAÇÃO DO AÇO					
Negativos Y			Positivos X		
AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	3	VAR	VAR
	2	5.0	7	VAR	VAR
	3	5.0	3	VAR	VAR
	4	5.0	8	VAR	VAR
	5	5.0	6	VAR	VAR
	6	5.0	4	VAR	VAR
	7	5.0	4	VAR	VAR
	8	5.0	3	VAR	VAR
	9	5.0	3	VAR	VAR
	10	5.0	3	VAR	VAR
	11	5.0	4	72	288
	12	5.0	5	50	250
	13	5.0	32	174	5568
	14	5.0	19	496	9424
	15	5.0	9	VAR	VAR
	16	5.0	13	VAR	VAR
	17	5.0	12	VAR	VAR
	18	5.0	9	VAR	VAR
	19	5.0	12	VAR	VAR
	20	5.0	7	VAR	VAR
	21	5.0	14	VAR	VAR
	22	5.0	8	VAR	VAR
	23	5.0	7	VAR	VAR
	24	5.0	17	VAR	VAR
	25	5.0	5	VAR	VAR
	26	5.0	25	VAR	VAR
	27	5.0	5	VAR	VAR
	28	5.0	11	VAR	VAR
	29	5.0	15	363	5445
	30	5.0	9	VAR	VAR
	31	6.3	4	VAR	VAR
	32	6.3	16	VAR	VAR
	33	6.3	13	496	6448

RESUMO DO AÇO				
AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)	
CA50	6.3	141.6	38.1	
CA60	5.0	582.3	98.7	
PESO TOTAL (kg)				
CA50			38.1	
CA60			98.7	

Volume de concreto (C-25) = 10.01 m³
Área de forma = 107.95 m²

V29 ESC 1:50



RELAÇÃO DO AÇO					
AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	16	97	1552
CA50	2	8.0	2	359	718
	3	8.0	1	92	92
	4	8.0	2	384	768

RESUMO DO AÇO			
AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	8.0	15.8	6.8
CA60	5.0	15.5	2.6
PESO TOTAL (kg)			
CA50			6.8
CA60			2.6

Volume de concreto (C-25) = 0.19 m³
Área de forma = 2.78 m²

VIDEIRA
PREFEITURA
SECRETARIA DE PLANEJAMENTO
AV. MANOEL ROQUE, 188 - ALVORADA
FONE: (49) 3566-9051/3566-9050/3566-9058

NATUREZA DA OBRA: REFORMA E AMPLIAÇÃO DO ESF RIO DAS PEDRAS

LOCAL: RUA VALTER PEREIRA DIAS RIO DAS PEDRAS

PROJETO: ESTRUTURAL

RESPONSÁVEL TÉCNICO: HOBERDAN HAUPT DE CASTILHOS CREA/SC 133265-2

REFERÊNCIA: ARMAÇÃO POSITIVA DO PISO X ARMAÇÃO NEGATIVA DO PISO Y

PRONCHIA-EST: 06

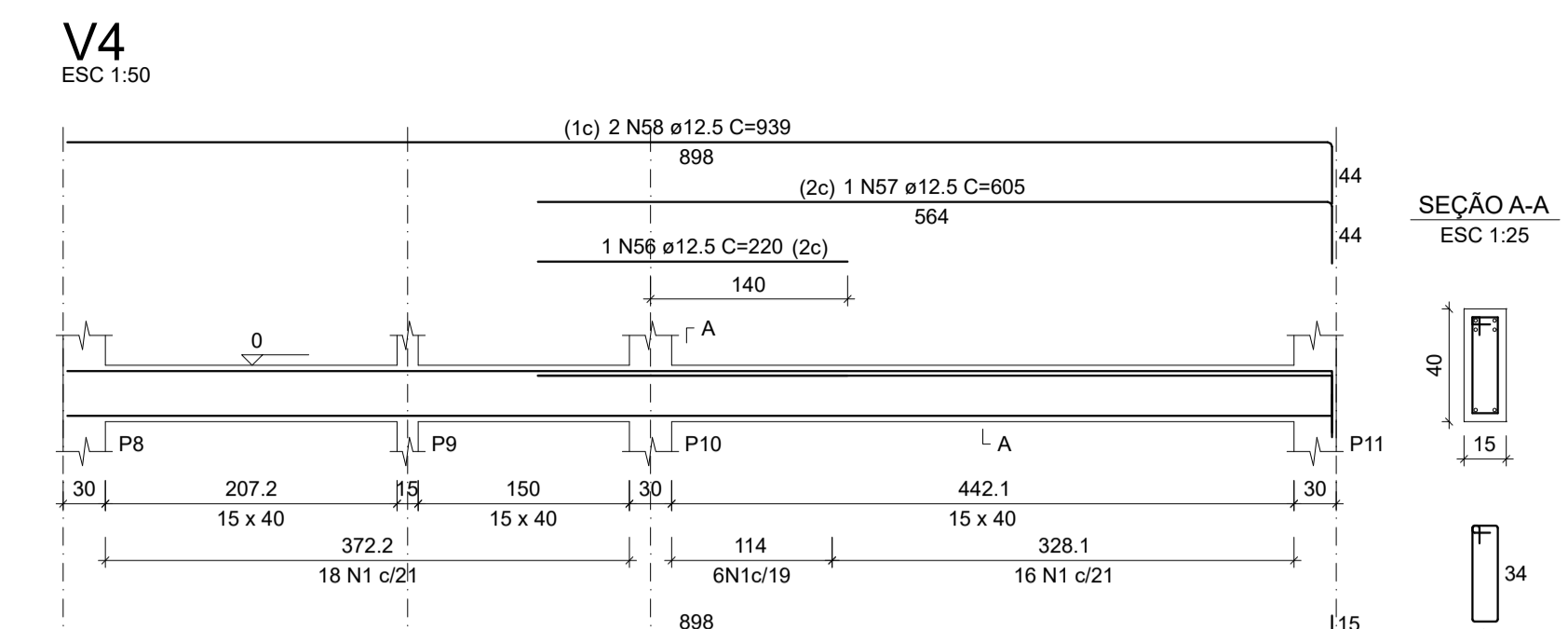
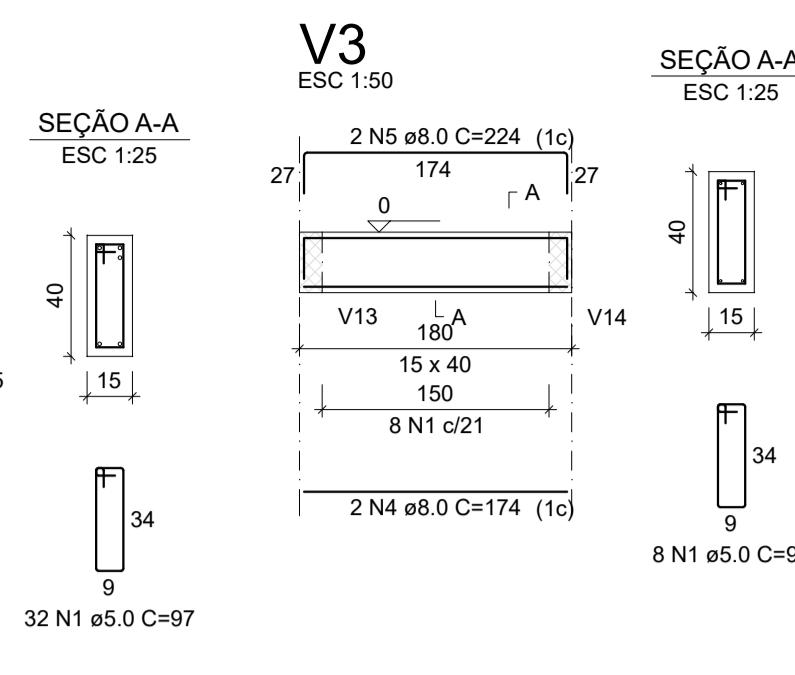
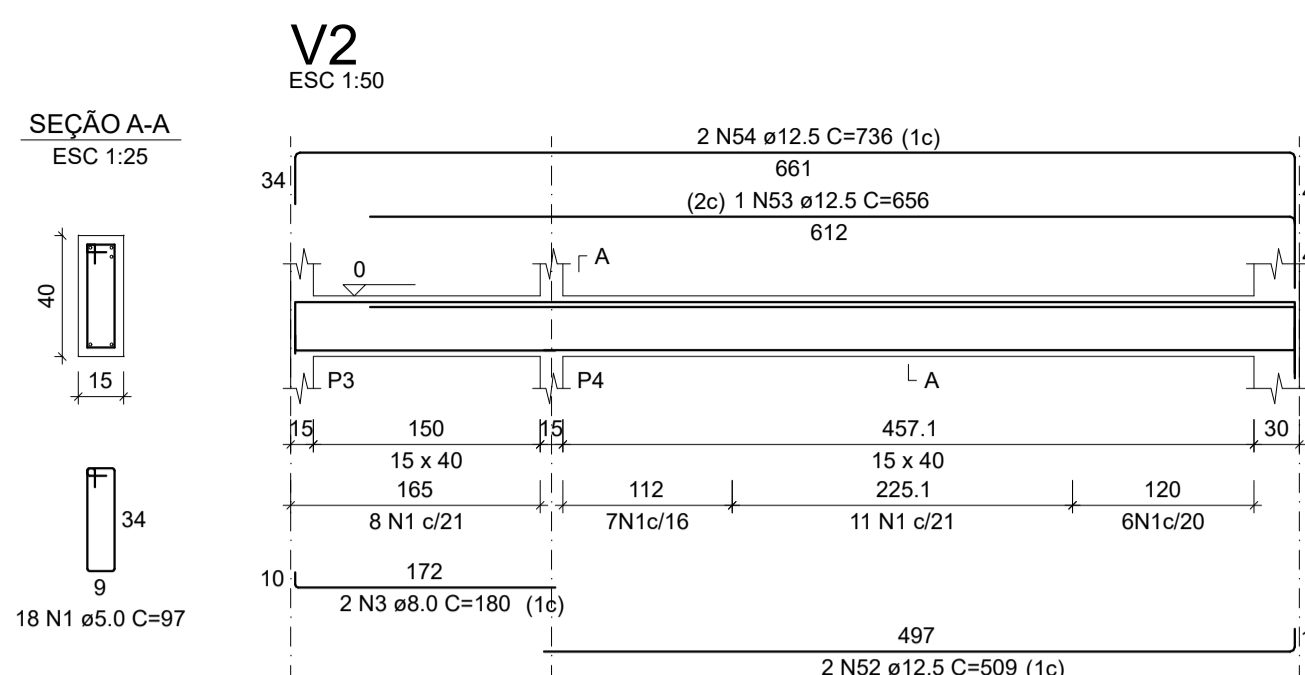
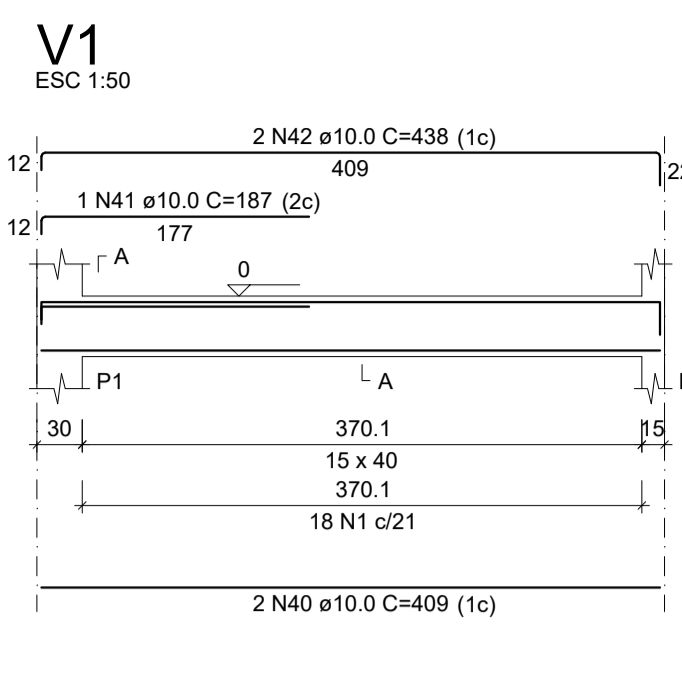
DATA: 31/03/2026

ESCALA: INDICADA

GRADUAÇÃO: HOBERDAN

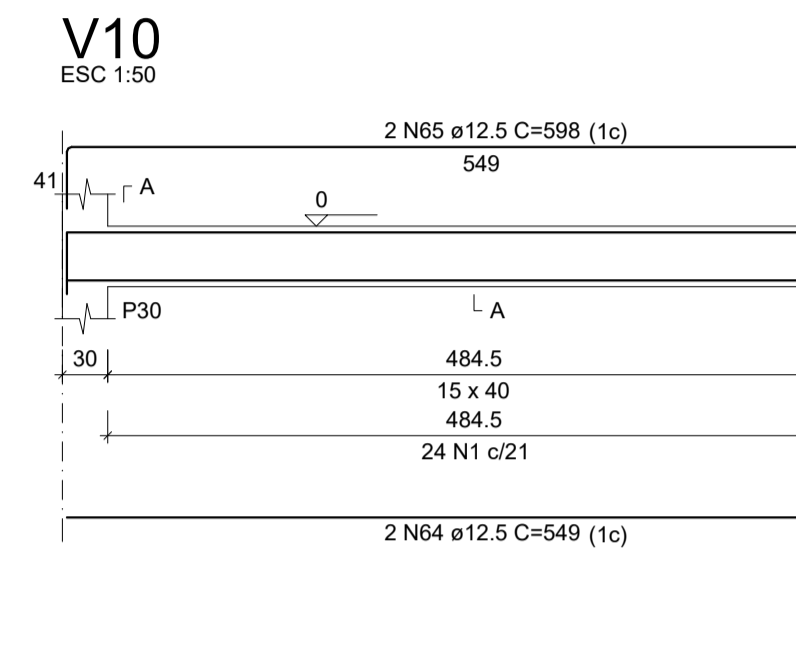
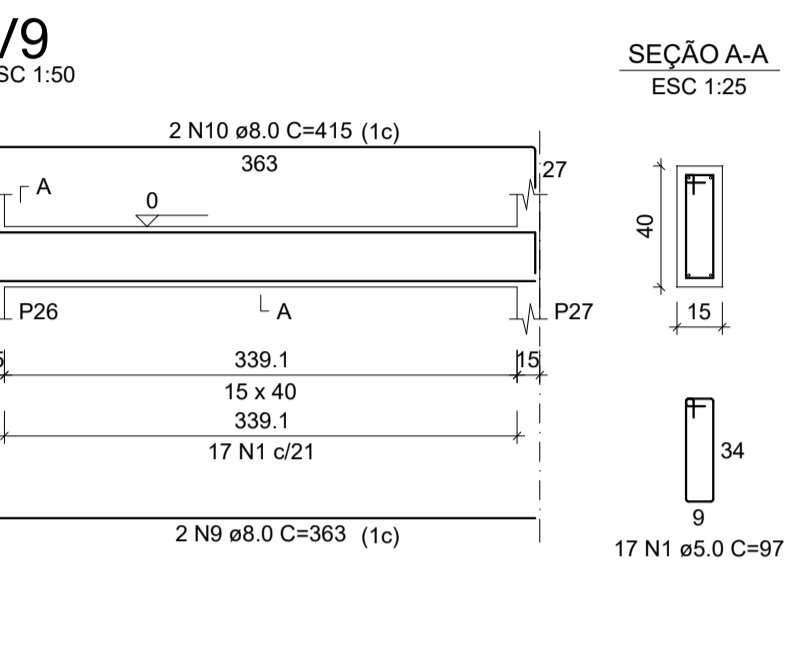
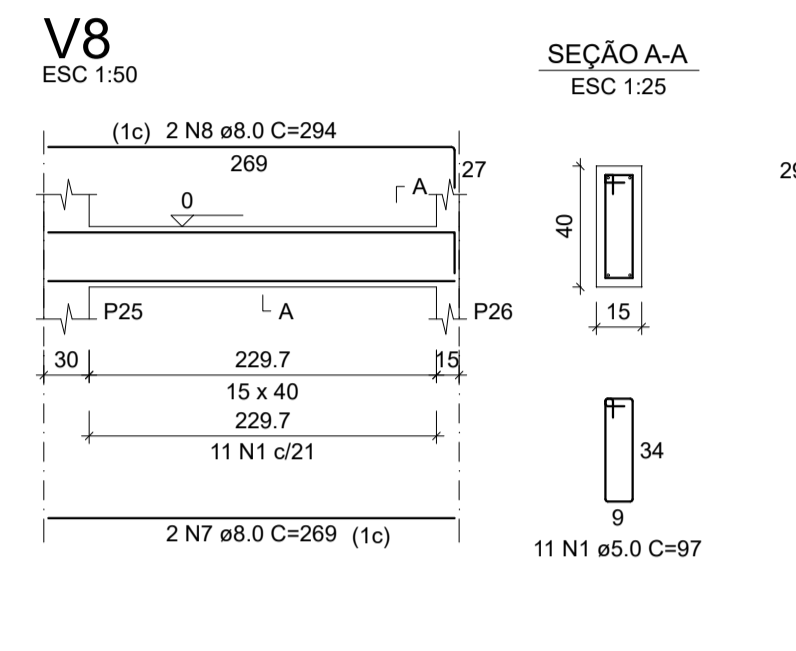
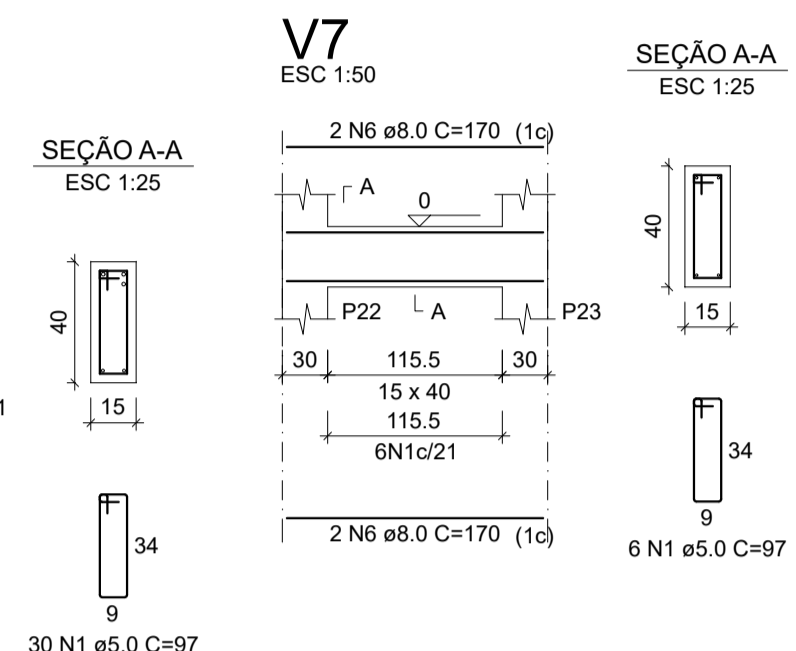
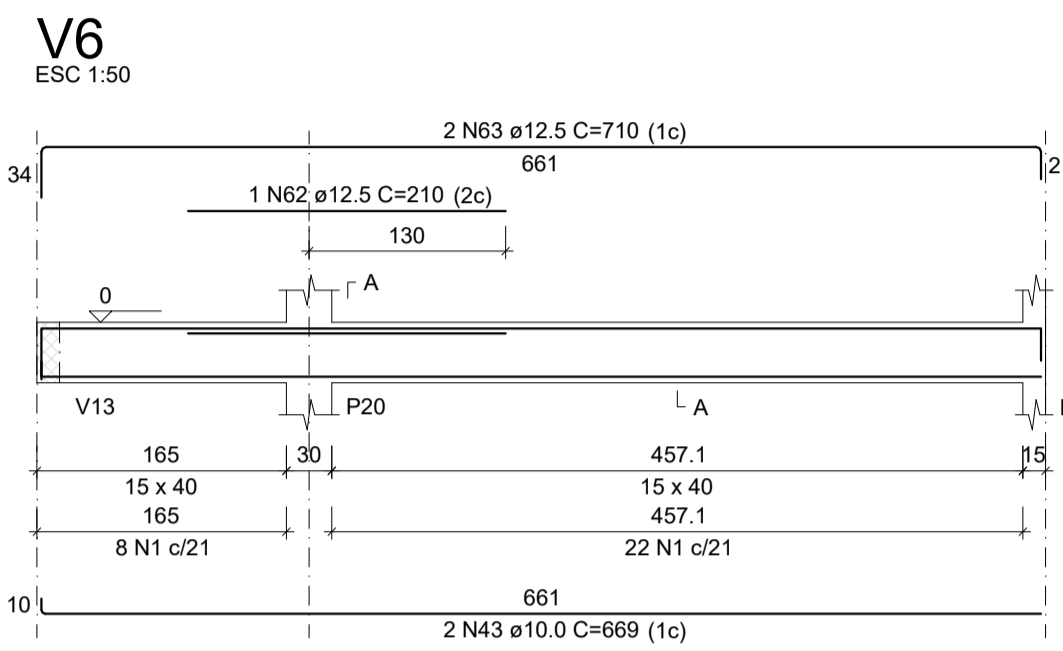
ÁREA: 272,14 m²

06-09



RELAÇÃO DO AÇO

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	572	97	55484
V8	2	5.0	2	229	458
V10	3	8.0	2	180	360
V11	4	8.0	2	174	348
V13	5	8.0	2	224	448
V16	6	8.0	4	170	680
V20	7	8.0	2	269	538
V22	8	8.0	2	294	588
V25	9	8.0	2	363	726
V28	10	8.0	2	415	830
	11	8.0	2	124	248
	12	8.0	2	173	346
	13	8.0	4	483	1932
	14	8.0	4	292	1168
	15	8.0	2	554	1108
	16	8.0	1	380	380
	17	8.0	2	579	1158
	18	8.0	4	854	3416
	19	8.0	2	89	178
	20	8.0	2	1014	2028
	21	8.0	2	1031	2062
	22	8.0	2	144	288
	23	8.0	1	193	386
	24	8.0	2	229	458
	25	8.0	2	254	508
	26	8.0	2	205	410
	27	8.0	2	247	494
	28	8.0	2	277	554
	29	8.0	2	319	638
	30	8.0	3	89	267
	31	8.0	2	688	1376
	32	8.0	2	722	1444
	33	8.0	2	364	728
	34	8.0	1	102	102
	35	8.0	2	389	778
	36	8.0	2	210	420
	37	8.0	2	244	488
	38	8.0	2	213	426
	39	8.0	2	247	494
	40	10.0	2	409	818
	41	10.0	1	187	187
	42	10.0	2	438	876
	43	10.0	2	669	1338
	44	10.0	2	504	1008
	45	10.0	2	533	1066
	46	10.0	2	411	822
	47	10.0	2	459	918
	48	10.0	2	733	1466
	49	10.0	2	207	414
	50	10.0	1	228	228
	51	10.0	2	238	476
	52	12.5	2	509	1018
	53	12.5	1	656	656
	54	12.5	2	736	1472
	55	12.5	2	910	1820
	56	12.5	1	220	220
	57	12.5	1	605	605
	58	12.5	2	939	1878
	59	12.5	2	375	750
	60	12.5	1	387	387
	61	12.5	2	394	788
	62	12.5	1	210	210
	63	12.5	2	710	1420
	64	12.5	2	549	1098
	65	12.5	2	598	1196
	66	12.5	2	754	1508
	67	12.5	1	205	205
	68	12.5	2	790	1580
	69	12.5	2	869	1738
	70	12.5	1	245	245
	71	12.5	2	928	1856
	72	12.5	1	200	200
	73	12.5	2	368	736
	74	12.5	2	201	402

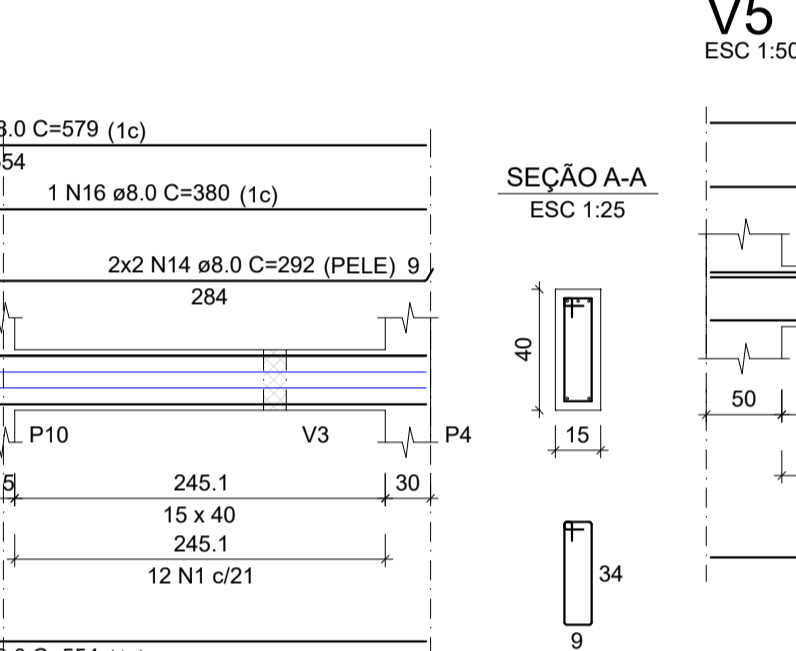
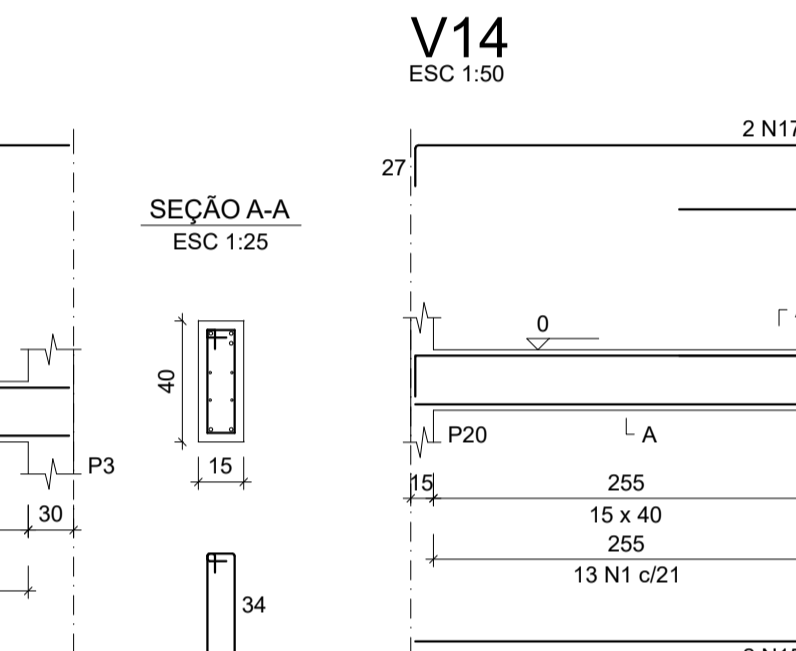
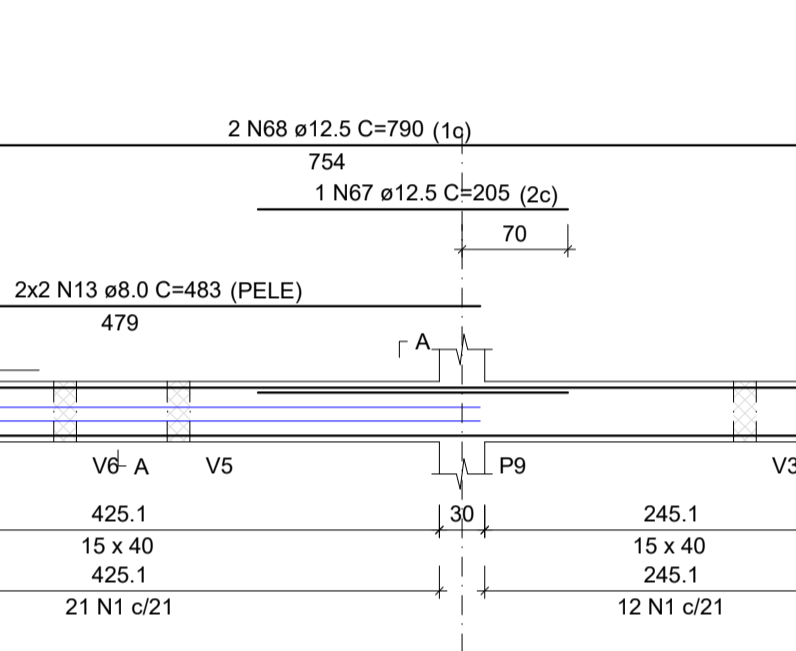
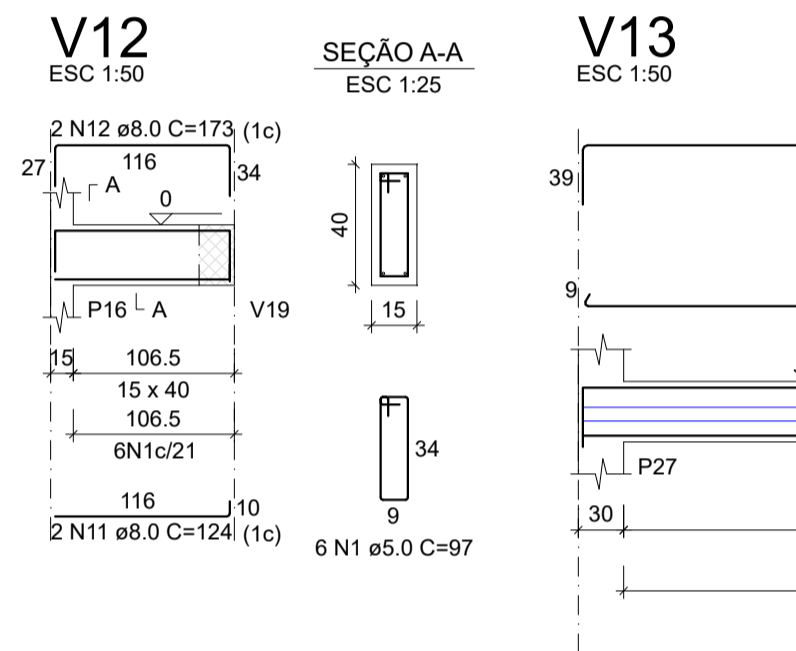
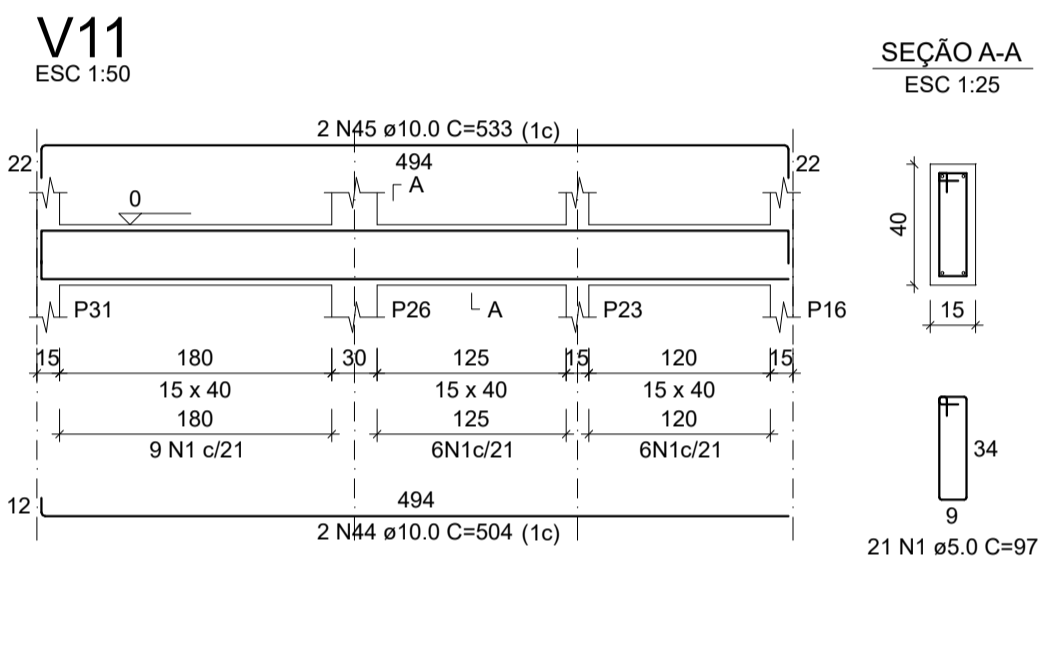


RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO x 10% (kg)
CA50	8.0	288	125
CA50	10.0	96.2	65.2
CA60	12.5	220.3	233.4
CA60	5.0	559.4	94.8

PESO TOTAL (kg)
CA50 423.7
CA60 94.8

Volume de concreto (C-25) = 6.86 m³
Área de forma = 94.05 m²

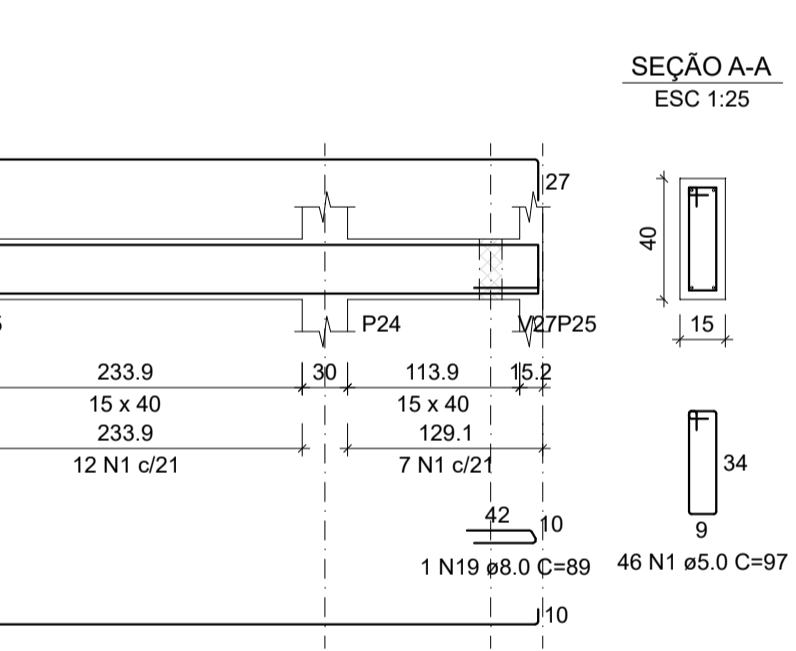
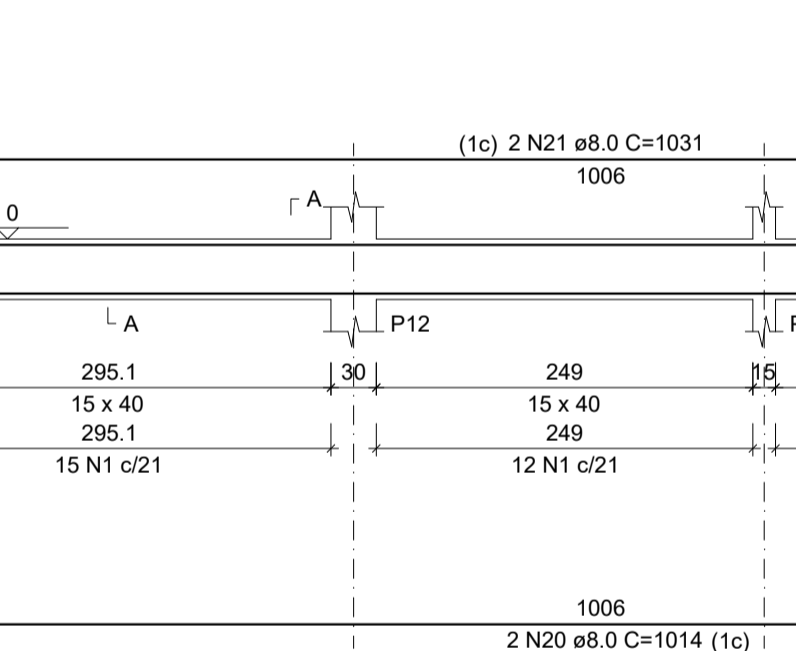
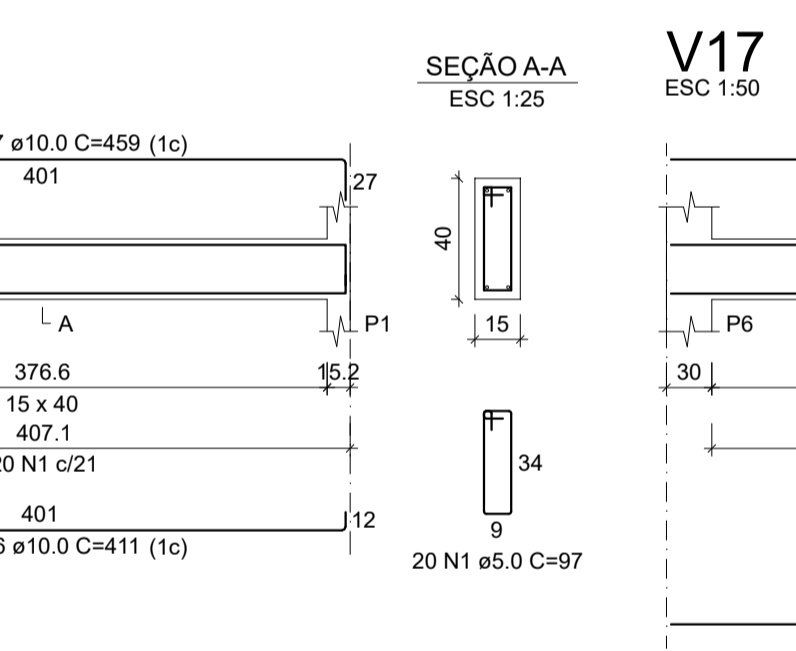
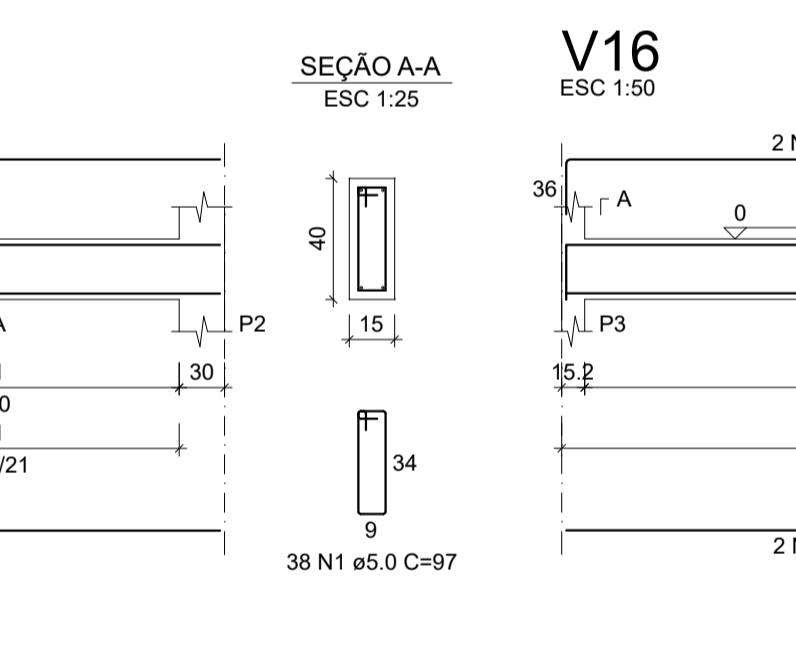
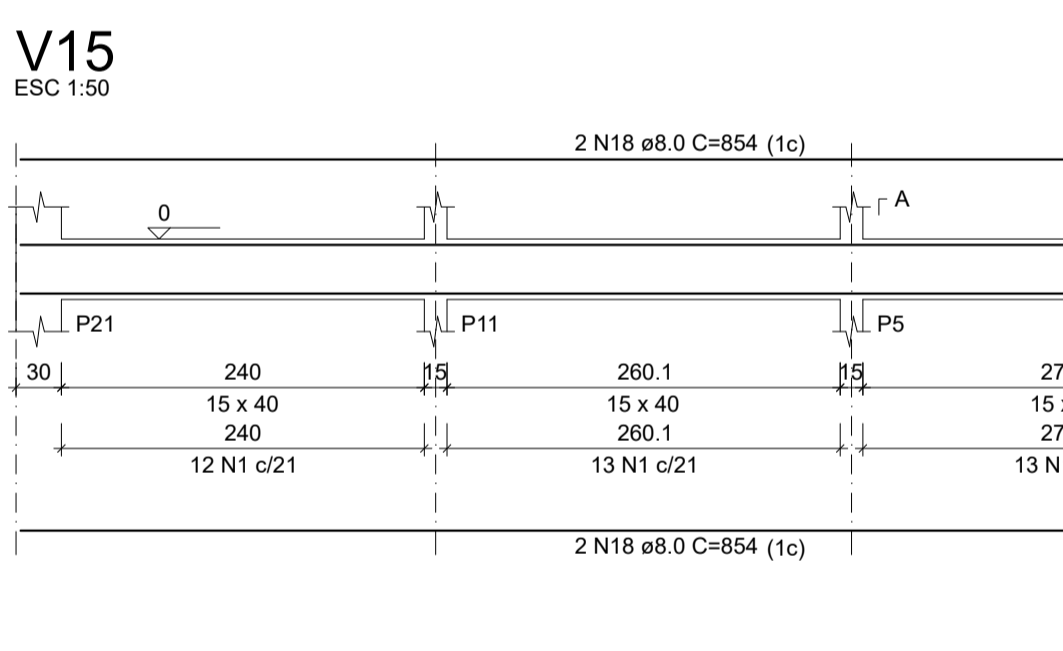


RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO x 10% (kg)
CA50	8.0	288	125
CA50	10.0	96.2	65.2
CA60	12.5	220.3	233.4
CA60	5.0	559.4	94.8

PESO TOTAL (kg)
CA50 423.7
CA60 94.8

Volume de concreto (C-25) = 6.86 m³
Área de forma = 94.05 m²

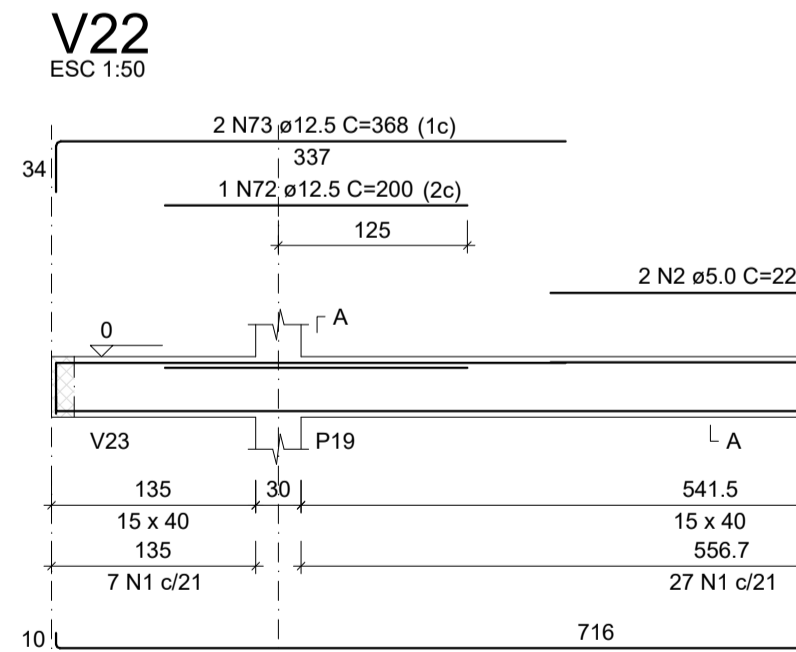
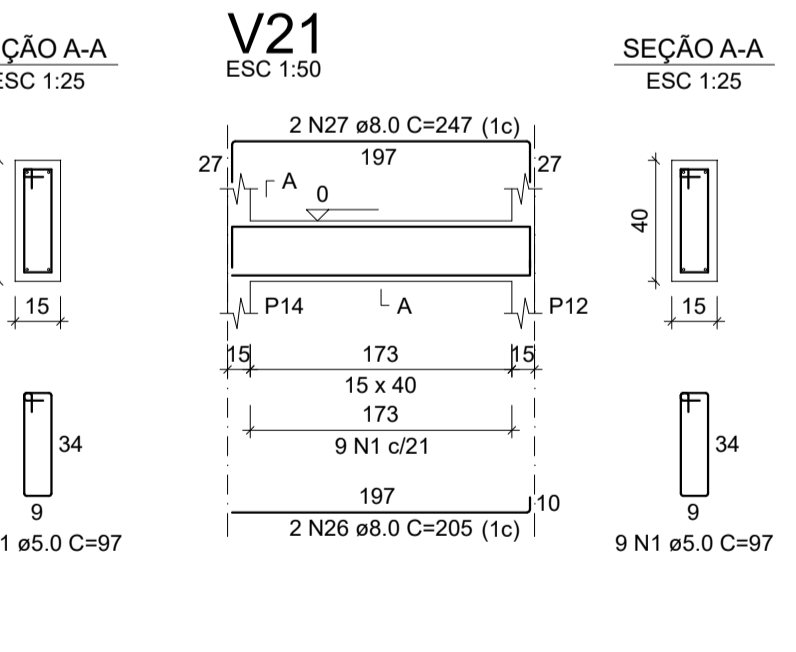
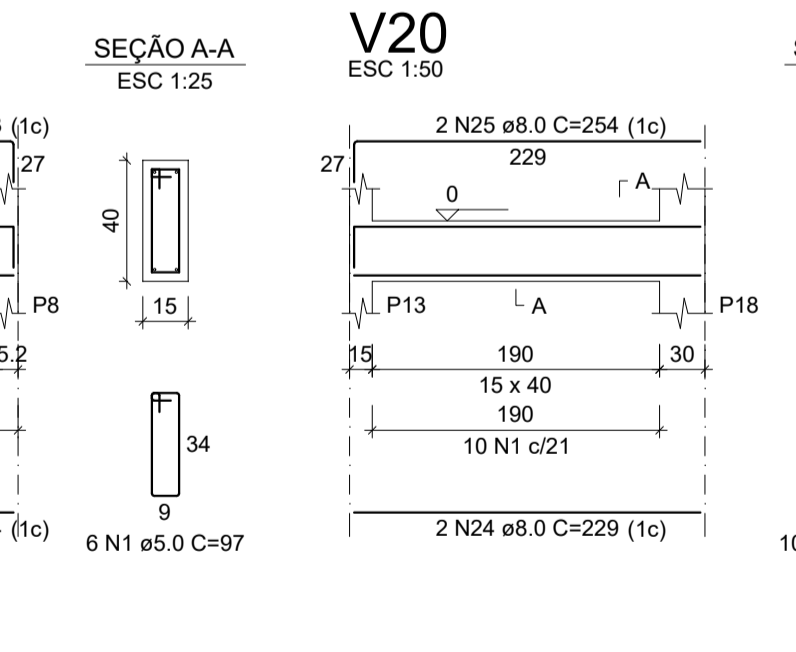
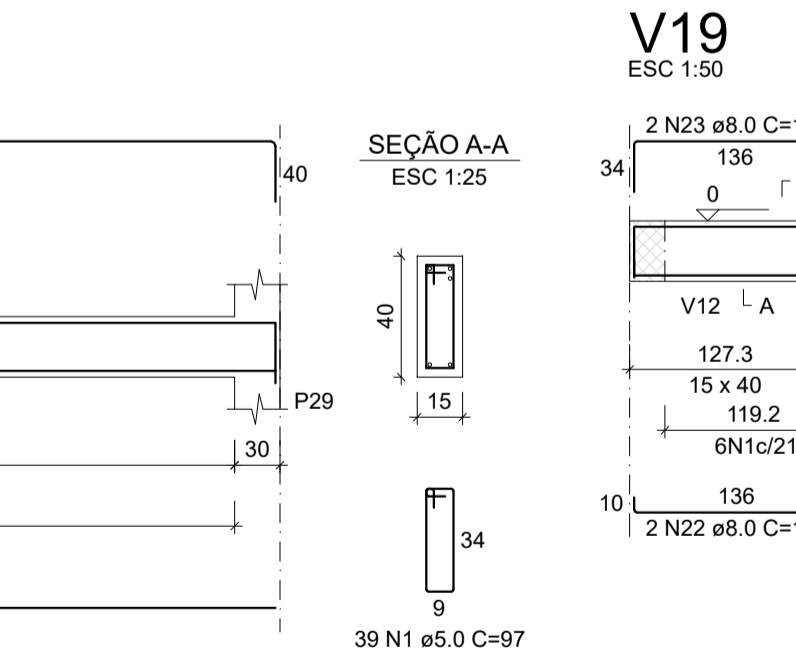
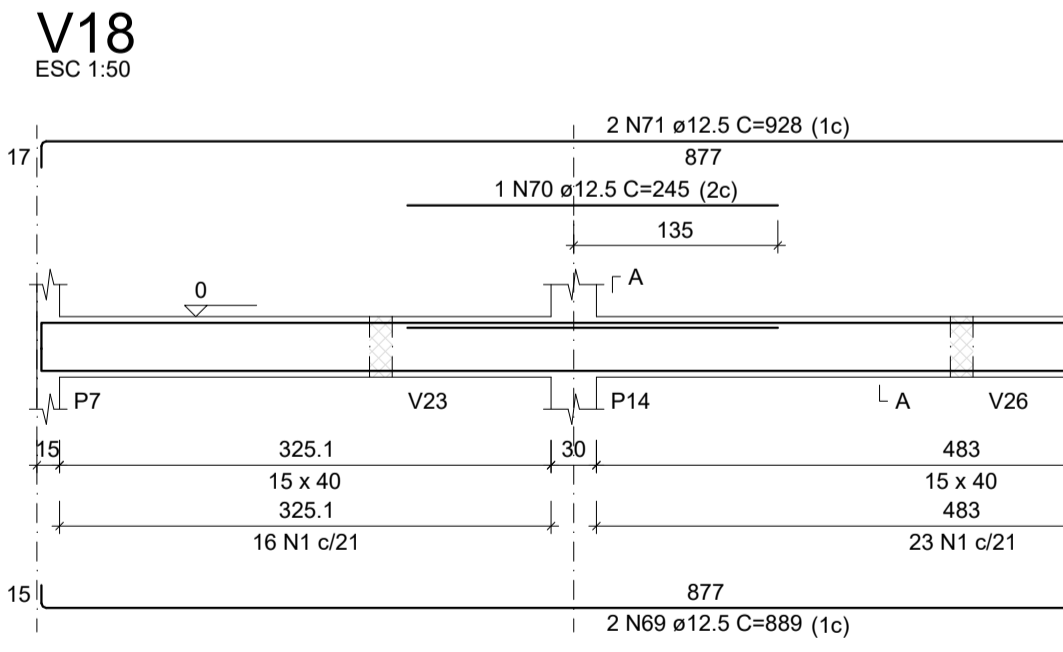


RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO x 10% (kg)
CA50	8.0	288	125
CA50	10.0	96.2	65.2
CA60	12.5	220.3	233.4
CA60	5.0	559.4	94.8

PESO TOTAL (kg)
CA50 423.7
CA60 94.8

Volume de concreto (C-25) = 6.86 m³
Área de forma = 94.05 m²

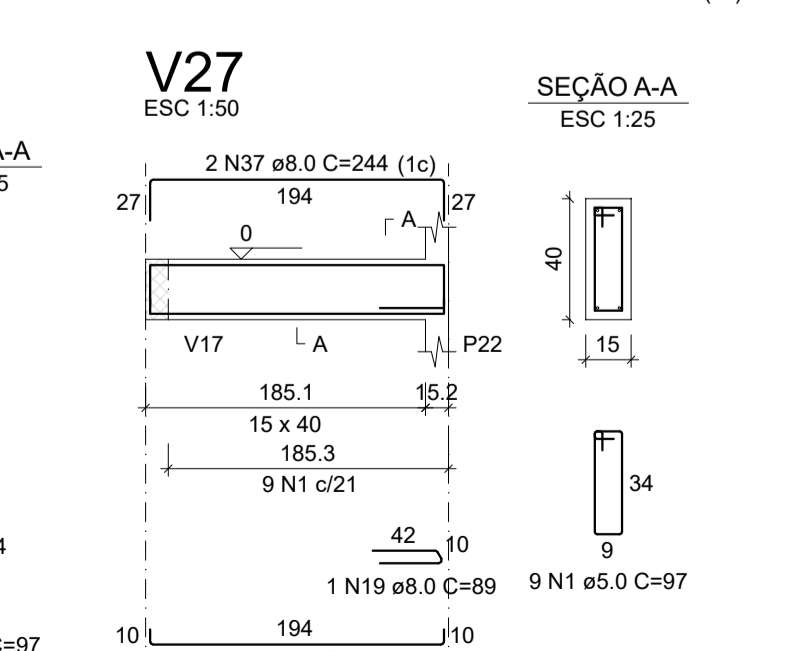
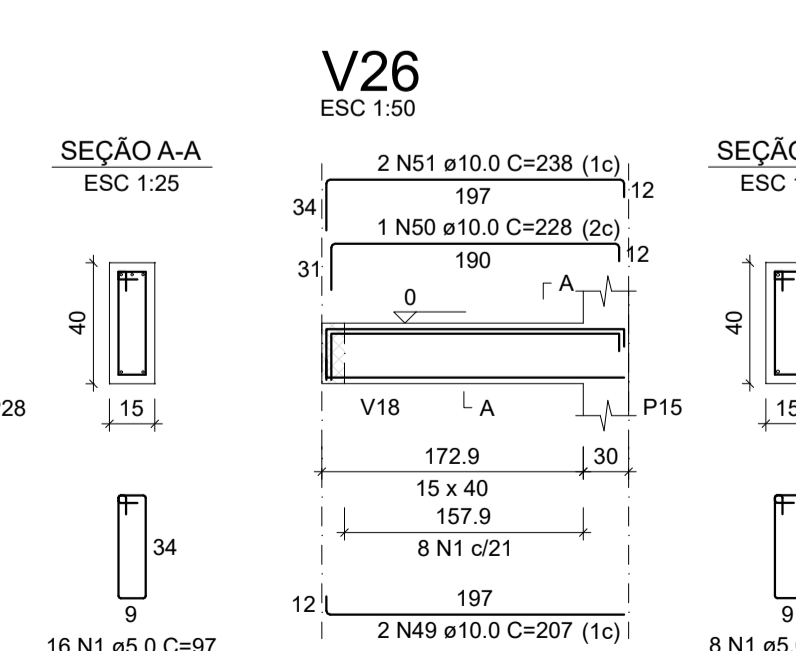
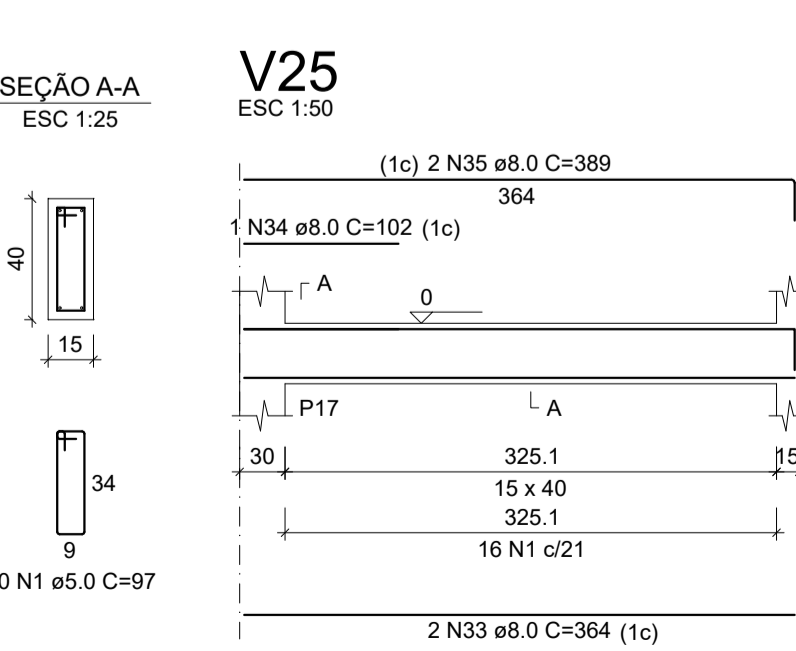
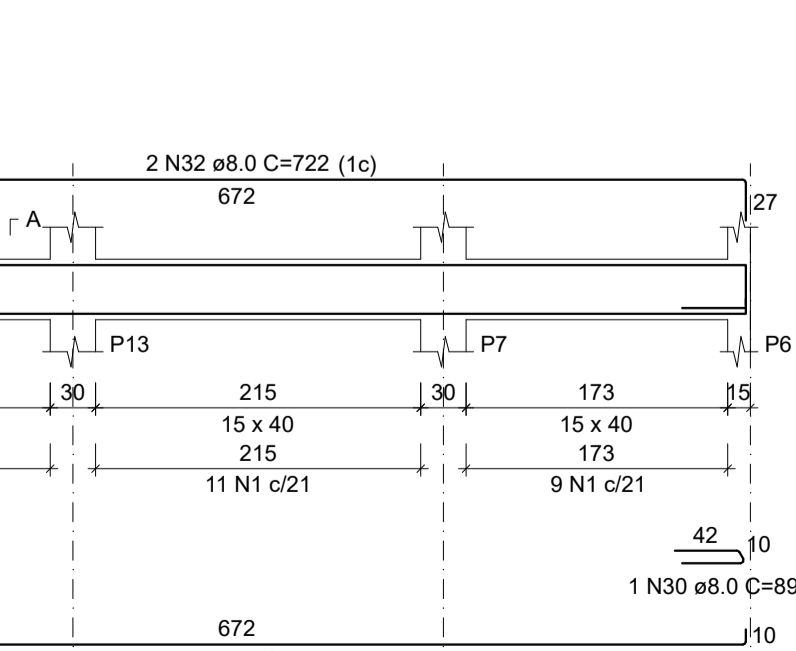
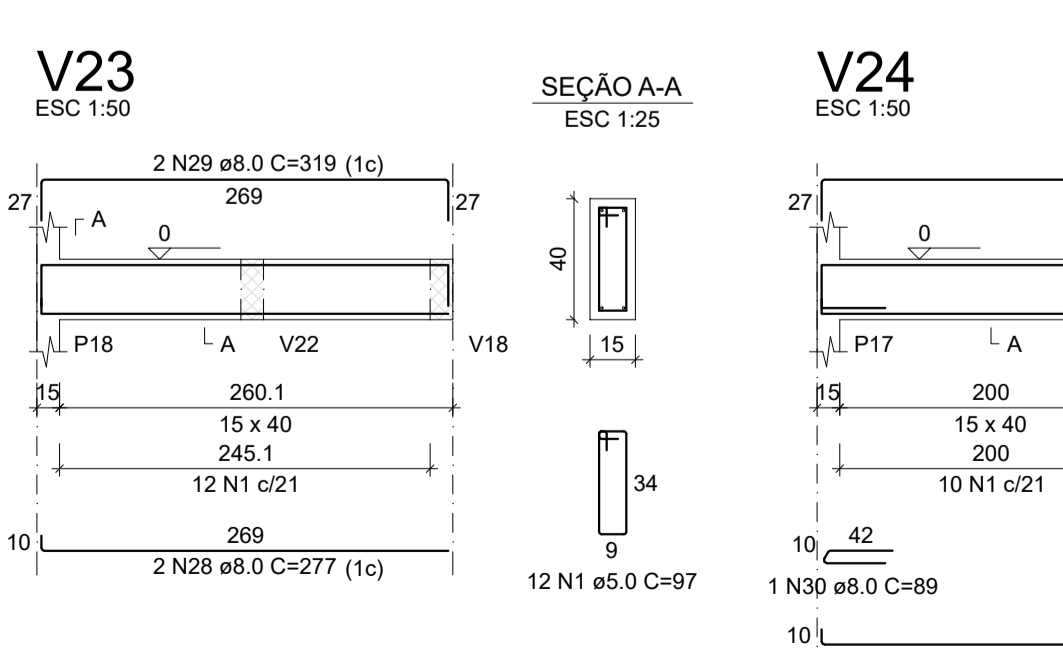


RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO x 10% (kg)
CA50	8.0	288	125
CA50	10.0	96.2	65.2
CA60	12.5	220.3	233.4
CA60	5.0	559.4	94.8

PESO TOTAL (kg)
CA50 423.7
CA60 94.8

Volume de concreto (C-25) = 6.86 m³
Área de forma = 94.05 m²



RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO x 10% (kg)
CA50	8.0	288	125
CA50	10.0	96.2	65.2
CA60	12.5	220.3	233.4
CA60	5.0	559.4	94.8

PESO TOTAL (kg)
CA50 423.7
CA60 94.8

Volume de concreto (C-25) = 6.86 m³
Área de forma = 94.05 m²



RESUMO DO AÇO

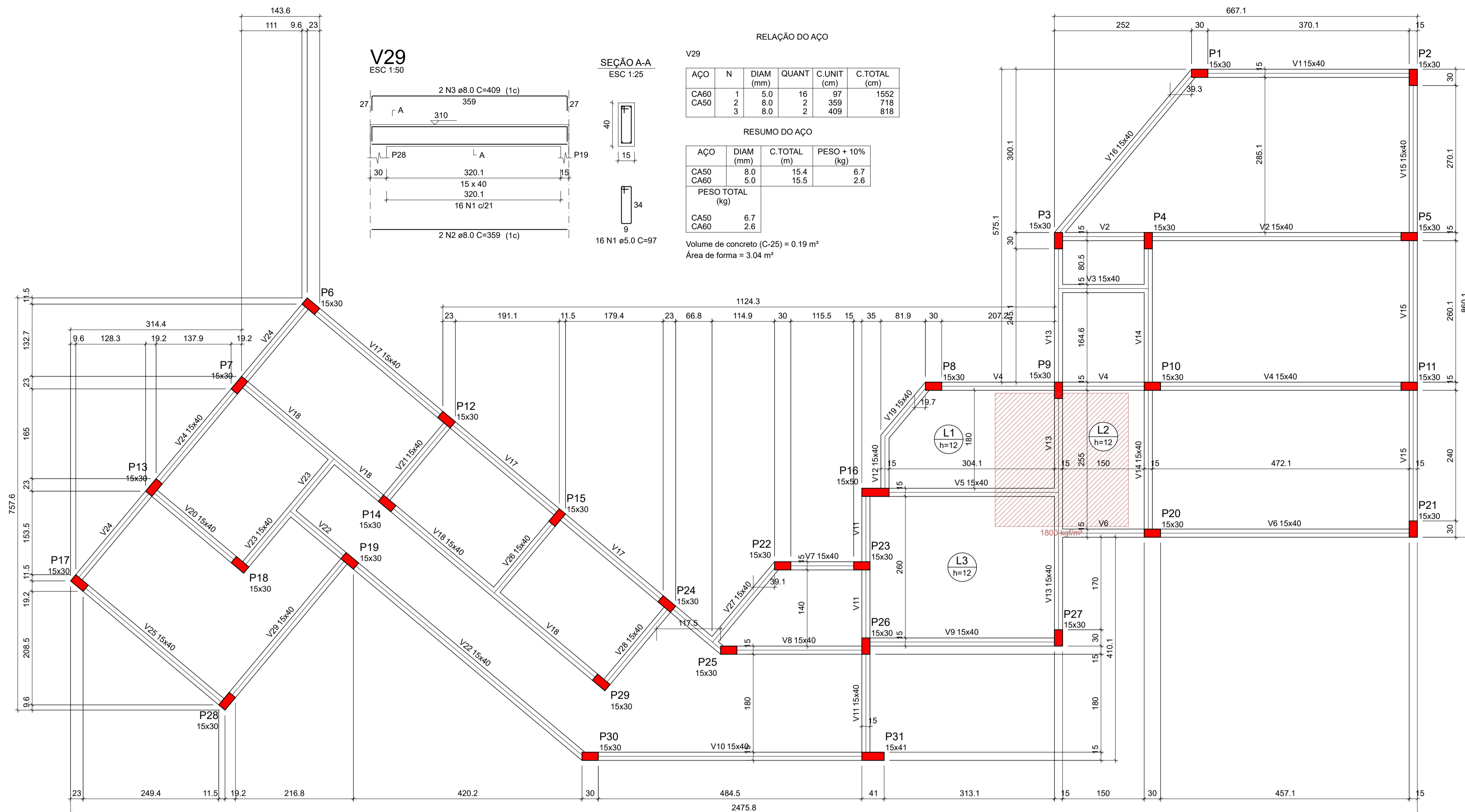
AÇO	DIAM (mm)	C.TOTAL (m)	PESO x 10% (kg)
CA50	8.0	288	125
CA50	10.0	96.2	65.2
CA60	12.5	220.3	233.4
CA60	5.0	559.4	94.8

PESO TOTAL (kg)
CA50 423.7
CA60 94.8

Volume de concreto (C-25) = 6.86 m³
Área de forma = 94.05 m²

VIDEIRA
PREFEITURA
SECRETARIA DE PLANEJAMENTO
AV. MANOEL ROQUE, 189 - ALVORADA
FONE: (49) 3566-9051/3566-9050/3566-9058

NATUREZA DA OBRA REFORMA E AMPLIAÇÃO DO ESF RIO DAS PEDRAS	
LOCAL RUA VALTER PEREIRA DIAS RIO DAS PEDRAS	PROJETO ESTRUTURAL
RESPONSÁVEL TÉCNICO HOBERDAN HAUPT DE CASTILHOS CREA/SC 133265-2	REFERÊNCIA VIGAS BALDRAME
DATA 31/03/2026	PRONCHIA - EST. 07 07-09
ESCALA INDICADA	GRADIFICAÇÃO HOBERDAN
	ÁREA 272,14 m²



RELAÇÃO DO AÇO

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	16	97	1552
CA50	2	8.0	2	359	718
	3	8.0	2	409	818

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	8.0	15.4	6.7
CA60	5.0	15.5	2.6

PESO TOTAL (kg): CA50 6.7, CA60 2.6

Volume de concreto (C-25) = 0.19 m³
Área de forma = 3.04 m²

Vigas				Pilares			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)	Nome	Seção (cm)	Elevação (cm)	Nível (cm)
V1	15x40	0	310	P1	15x30	0	310
V2	15x40	0	310	P2	15x30	0	310
V3	15x40	0	310	P3	15x30	0	310
V4	15x40	0	310	P4	15x30	0	310
V5	15x40	0	310	P5	15x30	0	310
V6	15x40	0	310	P6	15x30	0	310
V7	15x40	0	310	P7	15x30	0	310
V8	15x40	0	310	P8	15x30	0	310
V9	15x40	0	310	P9	15x30	0	310
V10	15x40	0	310	P10	15x30	0	310
V11	15x40	0	310	P11	15x30	0	310
V12	15x40	0	310	P12	15x30	0	310
V13	15x40	0	310	P13	15x30	0	310
V14	15x40	0	310	P14	15x30	0	310
V15	15x40	0	310	P15	15x30	0	310
V16	15x40	0	310	P16	15x30	0	310
V17	15x40	0	310	P17	15x30	0	310
V18	15x40	0	310	P18	15x30	0	310
V19	15x40	0	310	P19	15x30	0	310
V20	15x40	0	310	P20	15x30	0	310
V21	15x40	0	310	P21	15x30	0	310
V22	15x40	0	310	P22	15x30	0	310
V23	15x40	0	310	P23	15x30	0	310
V24	15x40	0	310	P24	15x30	0	310
V25	15x40	0	310	P25	15x30	0	310
V26	15x40	0	310	P26	15x30	0	310
V27	15x40	0	310	P27	15x30	0	310
V28	15x40	0	310	P28	15x30	0	310
V29	15x40	0	310	P29	15x30	0	310
				P30	15x30	0	310
				P31	15x41	0	310

Lajes

Nome	Tipo	Altura (cm)	Elevação (cm)	Nível (cm)	Sobrecarga (kgf/m ²)			
					Peso próprio (kgf/m ²)	Adicional	Acidental	Localizada
L1	Maciça	12	0	310	300	137	150	sim
L2	Maciça	12	0	310	300	137	150	sim
L3	Maciça	12	0	310	300	137	150	sim

Características dos materiais

f _{ck} (kgf/cm ²)	Ecs (kgf/cm ³)
25	241500

Dimensão máxima do agregado = 19 mm

Legenda dos pilares

■ Pilar que morre

Legenda das vigas e paredes

▬ Viga

RELAÇÃO DO AÇO

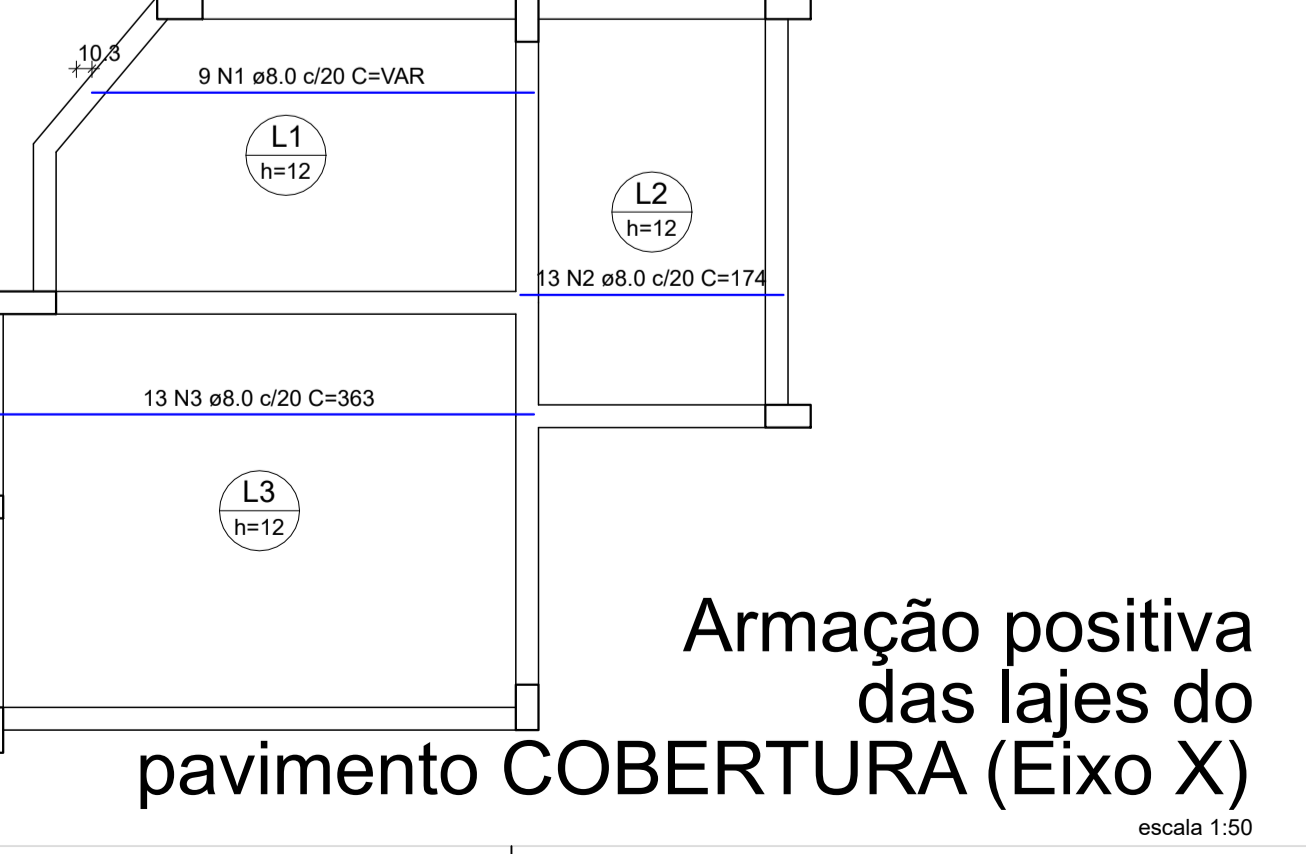
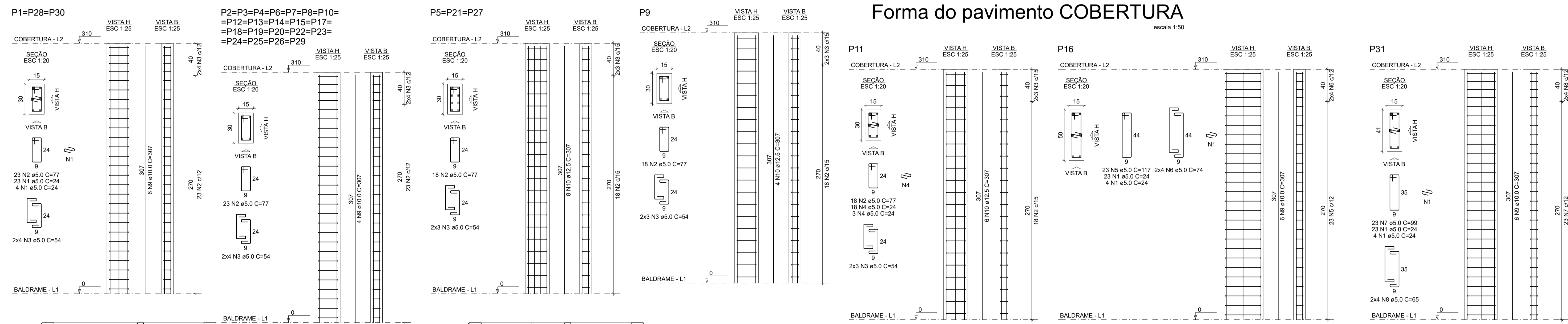
AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	135	24	3240
	2	5.0	642	77	49434
	3	5.0	222	54	11988
	4	5.0	21	24	504
	5	5.0	23	117	2691
	6	5.0	8	74	592
	7	5.0	23	99	2277
	8	5.0	8	65	520
CA50	9	10.0	114	307	34998
	10	12.5	34	307	10438

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	10.0	350	237.4
CA60	5.0	104.4	110.6
		712.5	120.8

PESO TOTAL (kg): CA50 348, CA60 120.8

Volume de concreto (C-25) = 4.47 m³
Área de forma = 88.41 m²



RELAÇÃO DO AÇO

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA50	1	8.0	9	VAR	VAR
	2	8.0	13	174	2262
	3	8.0	13	365	4719
	4	8.0	16	VAR	VAR
	5	8.0	8	279	2232
	6	8.0	17	284	4828

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	8.0	199.3	86.5

PESO TOTAL (kg): CA50 86.5

Volume de concreto (C-25) = 2.14 m³
Área de forma = 17.86 m²

VIDEIRA PREFEITURA
SECRETARIA DE PLANEJAMENTO
AV. MANOEL ROQUE, 189 - ALVORADA
FONE: (49) 3566-9051/3566-9050/3566-9058

REFORMA E AMPLIAÇÃO DO ESF RIO DAS PEDRAS

LOCAL: RUA VALTER PEREIRA DIAS RIO DAS PEDRAS

PROJETO: ESTRUTURAL

RESPONSÁVEL TÉCNICO: HOBERDAN HAUPT DE CASTILHOS CREA/SC 133265-2

REFERÊNCIA: FORMAS DA COBERTURA DETALHE DOS PILARES E VIGAS LAJES DA COBERTURA

PRONCHA - EST: 08

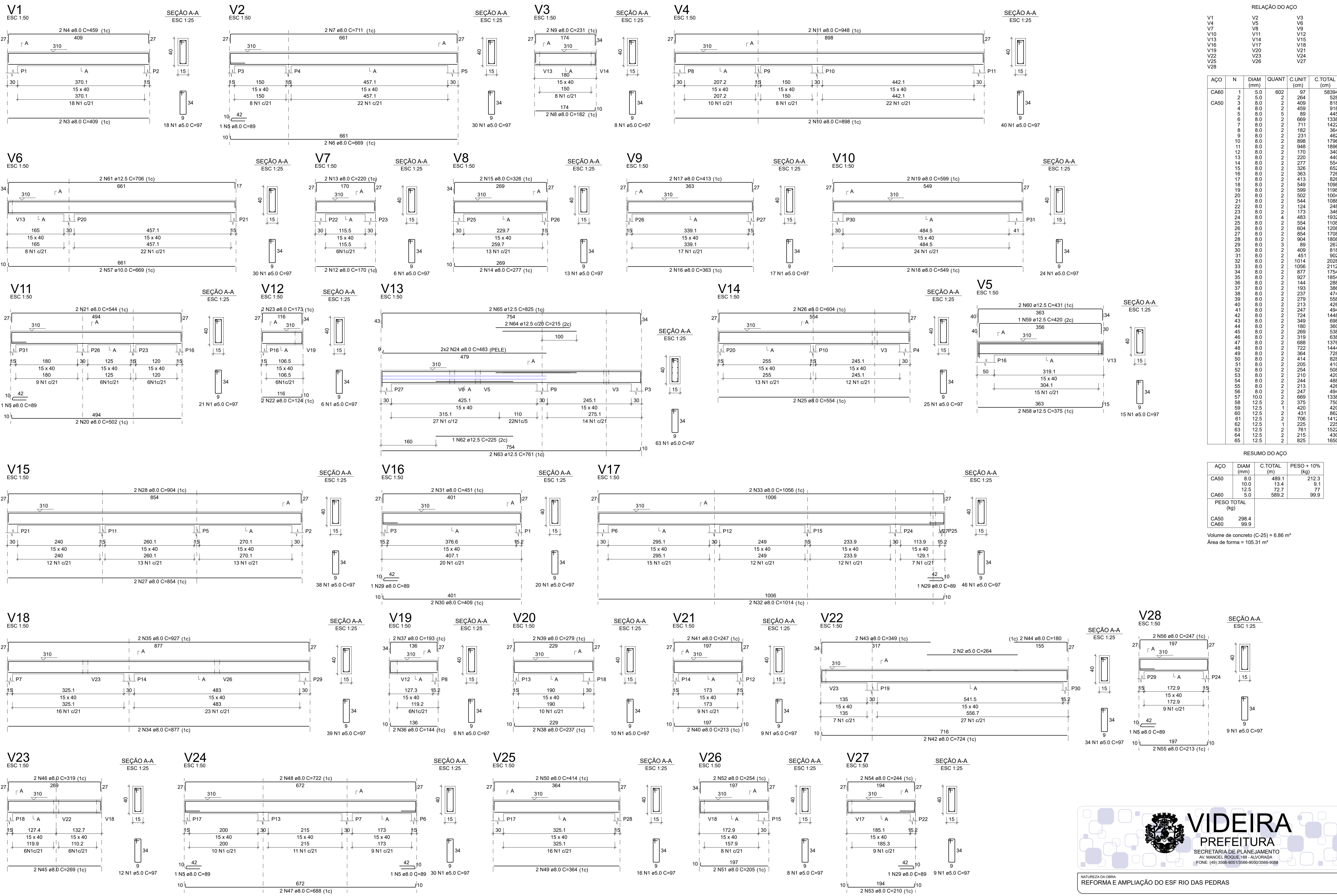
DATA: 31/03/2026

ESCALA: INDICADA

GRIFICAÇÃO: HOBERDAN

ÁREA: 272,14 m²

08-09



RELAÇÃO DO AÇO

AÇO	N	DIAM (mm)	QUANT	C.LIMIT (cm)	C.TOTAL (cm)
CA60	1	5.0	602	97	58394
CA50	2	5.0	2	264	528
	3	8.0	2	409	818
	4	8.0	2	459	918
	5	8.0	5	89	445
	6	8.0	6	669	1338
	7	8.0	2	711	1422
	8	8.0	2	182	364
	9	8.0	2	231	462
	10	8.0	2	898	1796
	11	8.0	2	948	1896
	12	8.0	2	170	340
	13	8.0	2	220	440
	14	8.0	2	277	554
	15	8.0	2	326	652
	16	8.0	2	363	726
	17	8.0	2	413	826
	18	8.0	2	549	1098
	19	8.0	2	599	1198
	20	8.0	2	502	1004
	21	8.0	2	544	1088
	22	8.0	2	124	248
	23	8.0	2	173	346
	24	8.0	4	483	1932
	25	8.0	2	554	1108
	26	8.0	2	604	1208
	27	8.0	2	854	1708
	28	8.0	2	904	1808
	29	8.0	3	89	267
	30	8.0	2	409	818
	31	8.0	2	451	902
	32	8.0	2	1014	2028
	33	8.0	2	1056	2112
	34	8.0	2	877	1754
	35	8.0	2	927	1854
	36	8.0	2	144	288
	37	8.0	2	193	386
	38	8.0	2	237	474
	39	8.0	2	279	558
	40	8.0	2	213	426
	41	8.0	2	247	494
	42	8.0	2	724	1448
	43	8.0	2	349	698
	44	8.0	2	180	360
	45	8.0	2	269	538
	46	8.0	2	319	638
	47	8.0	2	688	1376
	48	8.0	2	722	1444
	49	8.0	2	364	728
	50	8.0	2	414	828
	51	8.0	2	205	410
	52	8.0	2	254	508
	53	8.0	2	210	420
	54	8.0	2	244	488
	55	8.0	2	213	426
	56	8.0	2	247	494
	57	10.0	2	669	1338
	58	12.5	2	375	750
	59	12.5	1	420	420
	60	12.5	2	431	862
	61	12.5	2	706	1412
	62	12.5	1	225	225
	63	12.5	2	761	1522
	64	12.5	2	215	430
	65	12.5	2	825	1650

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	8.0	489.1	212.3
	10.0	13.4	9.1
	12.5	72.7	77
CA60	5.0	589.2	99.9
PESO TOTAL (kg)			
CA50		298.4	
CA60		99.9	

Volume de concreto (C-25) = 6.86 m³
 Área de forma = 105.31 m²

VIDEIRA
 PREFEITURA
 SECRETARIA DE PLANEJAMENTO
 AV. MANOEL ROQUE, 188 - ALVORADA
 FONE: (49) 3566-9051/3566-9050/3566-9058

NATUREZA DA OBRA: REFORMA E AMPLIAÇÃO DO ESF RIO DAS PEDRAS

LOCAL: RUA VALTER PEREIRA DIAS RIO DAS PEDRAS

PROJETO: ESTRUTURAL

RESPONSÁVEL TÉCNICO: HOBERDAN HAUPT DE CASTILHOS CREA/SC 133265-2

REFERÊNCIA: VIGAS COBERTURA

PRONCHA - EST: 09

DATA: 31/03/2026

ESCALA: INDICADA

GRADIFICAÇÃO: HOBERDAN

ÁREA: 272,14 m²

09-09