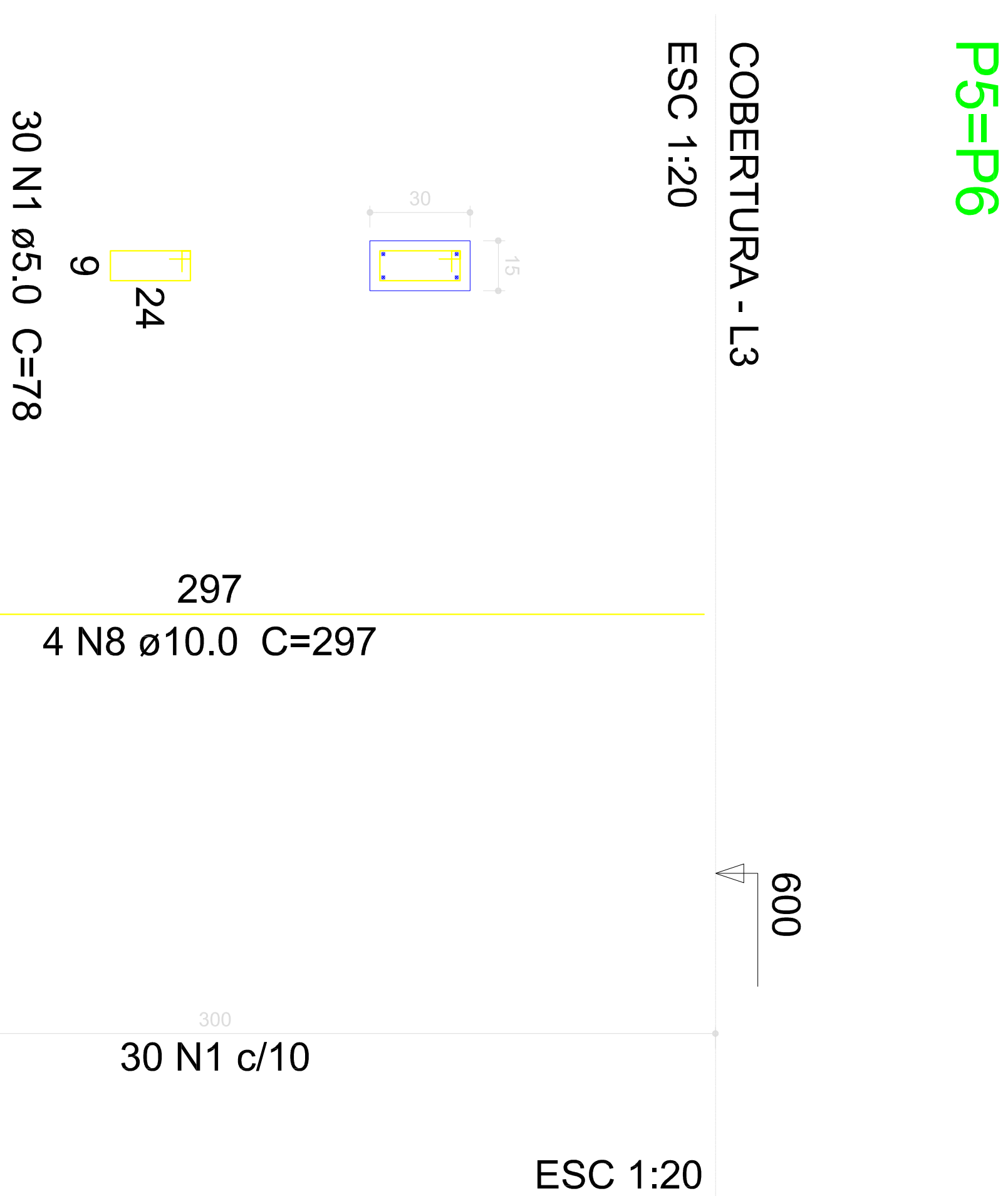
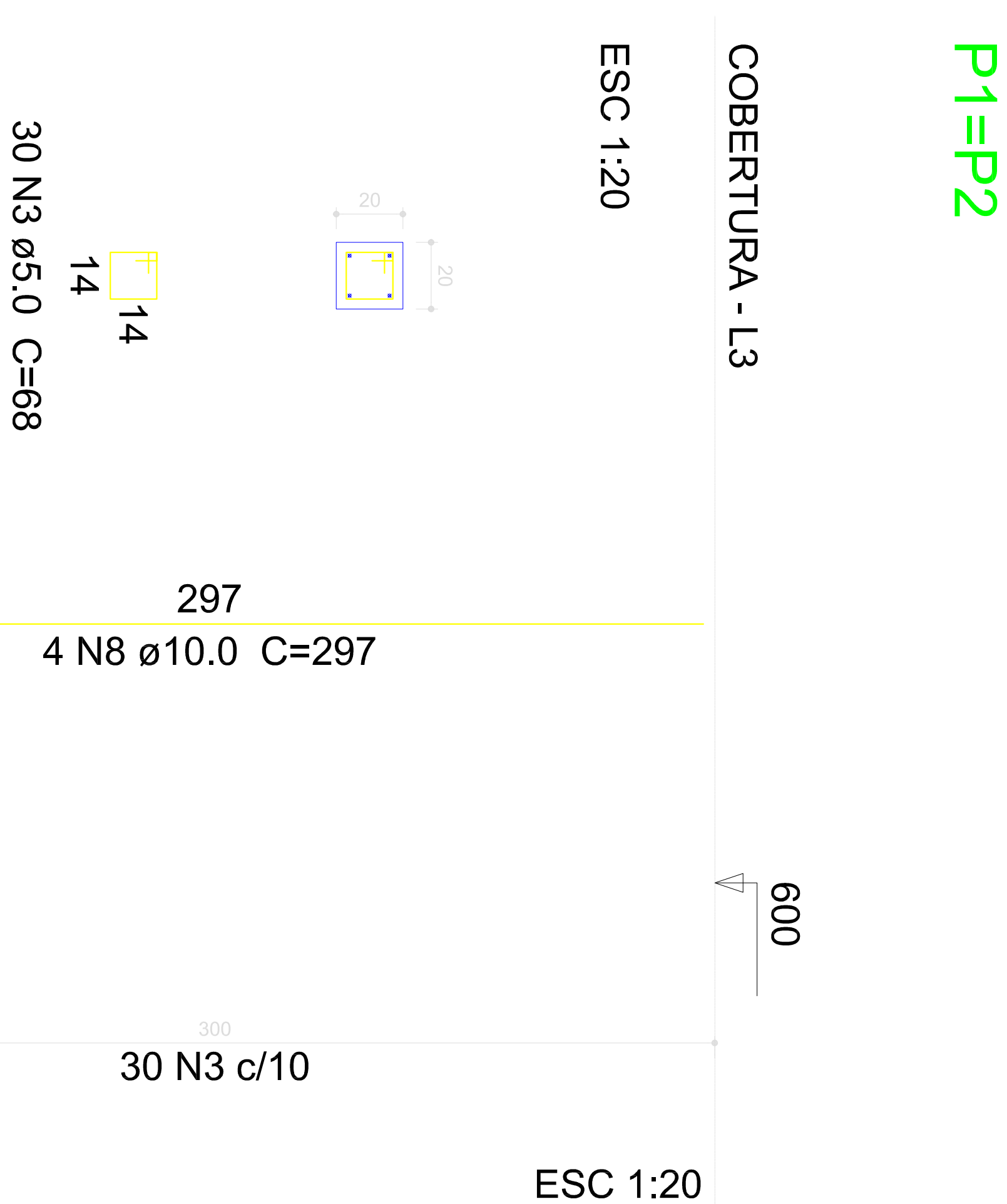
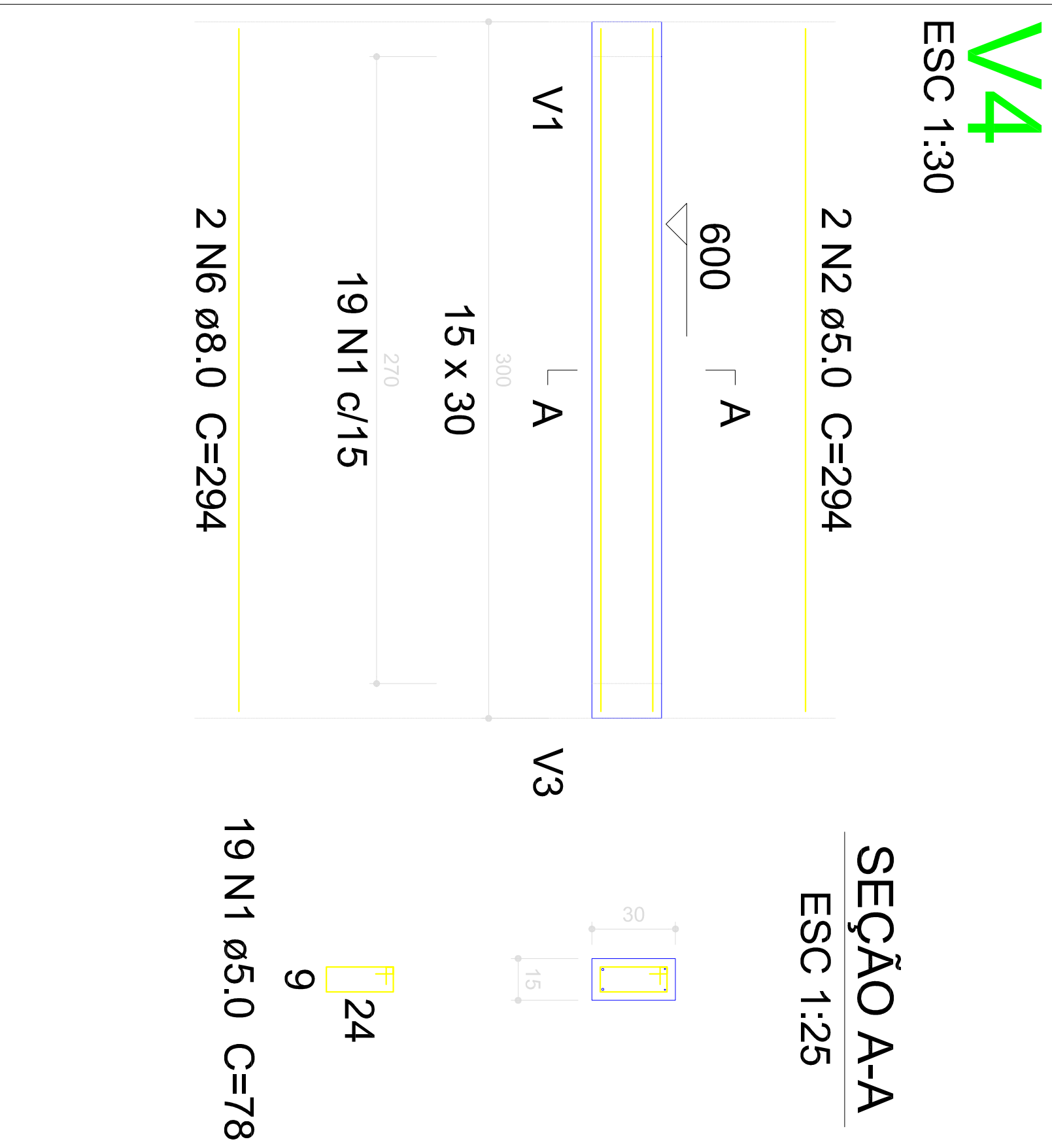
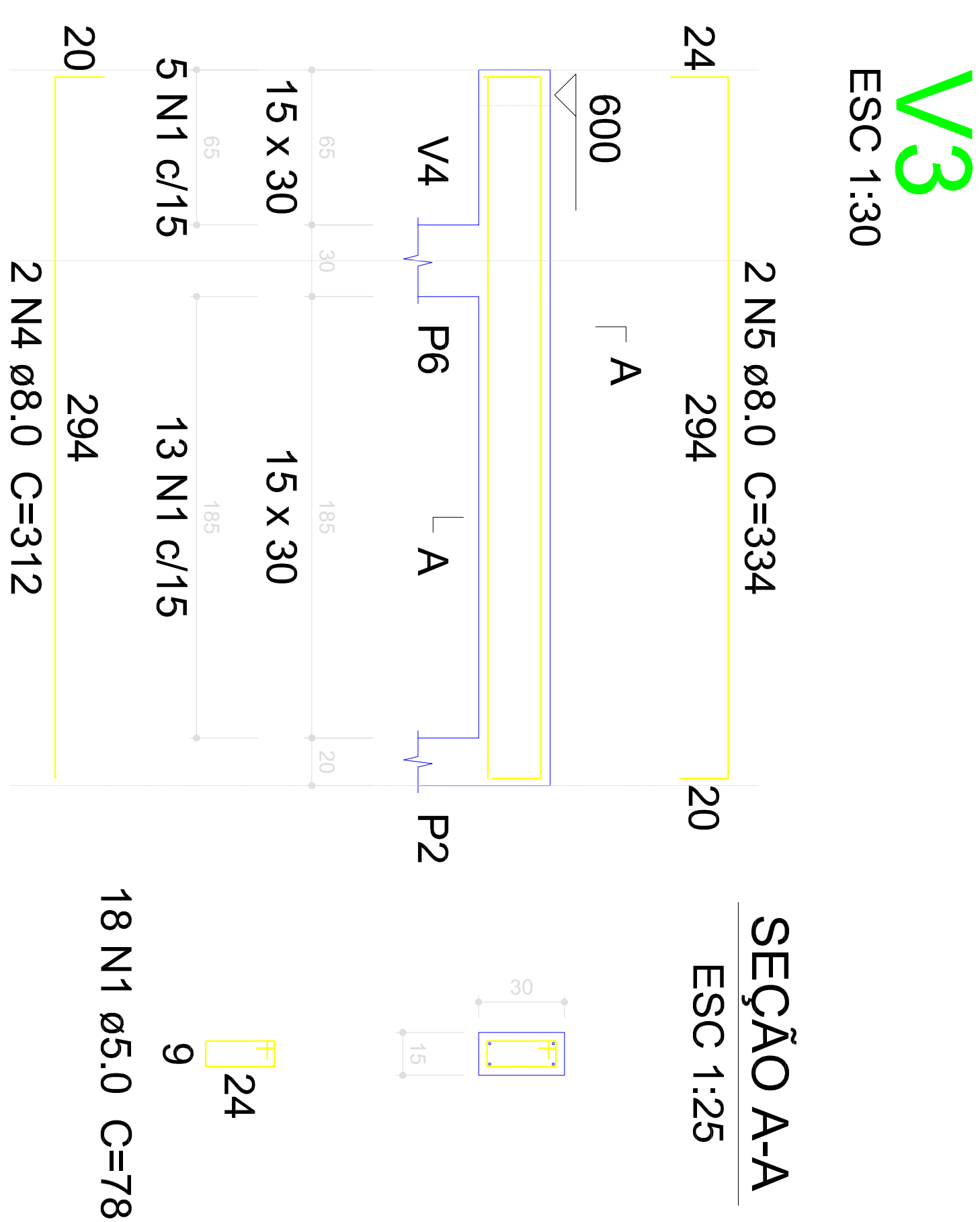
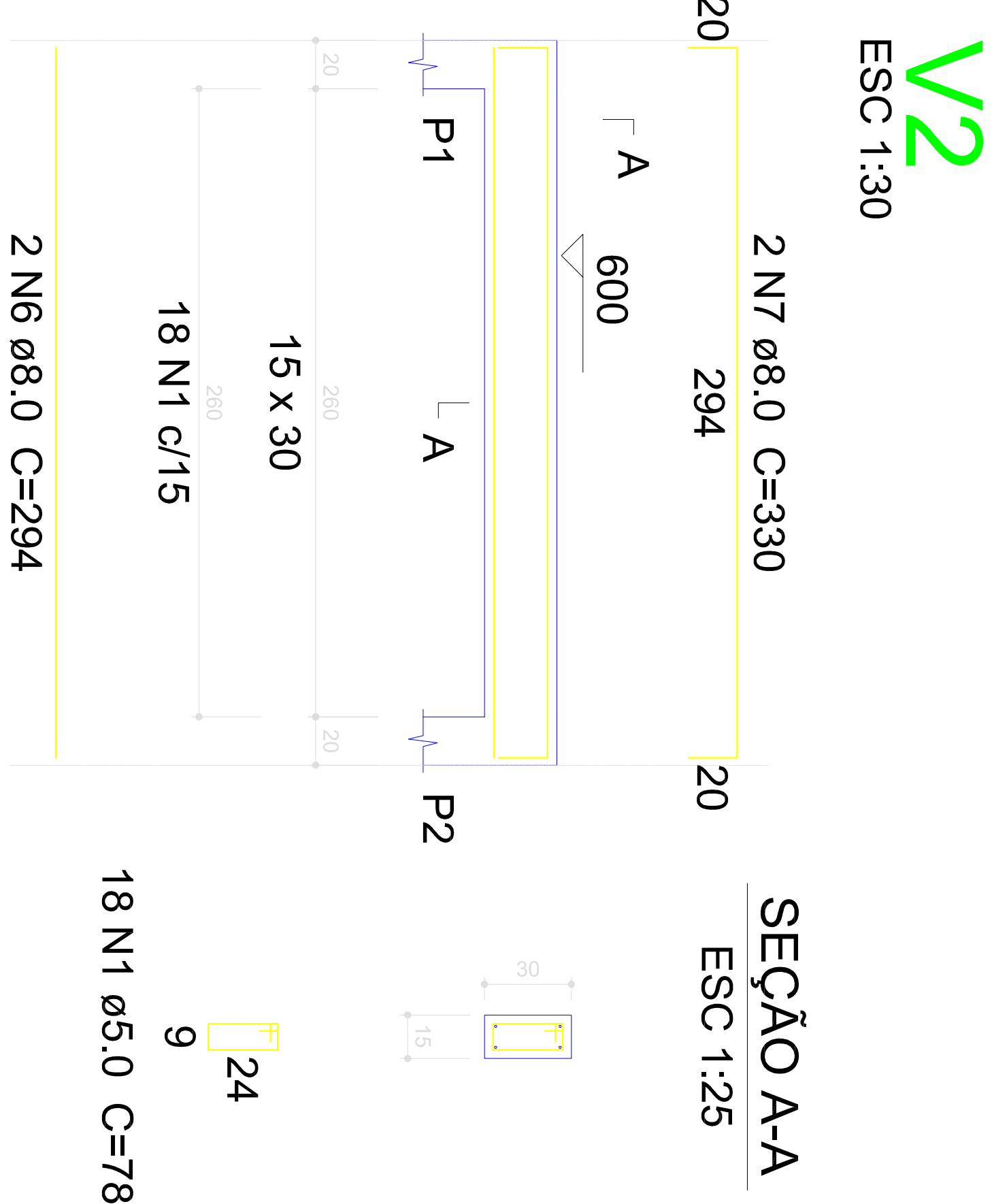
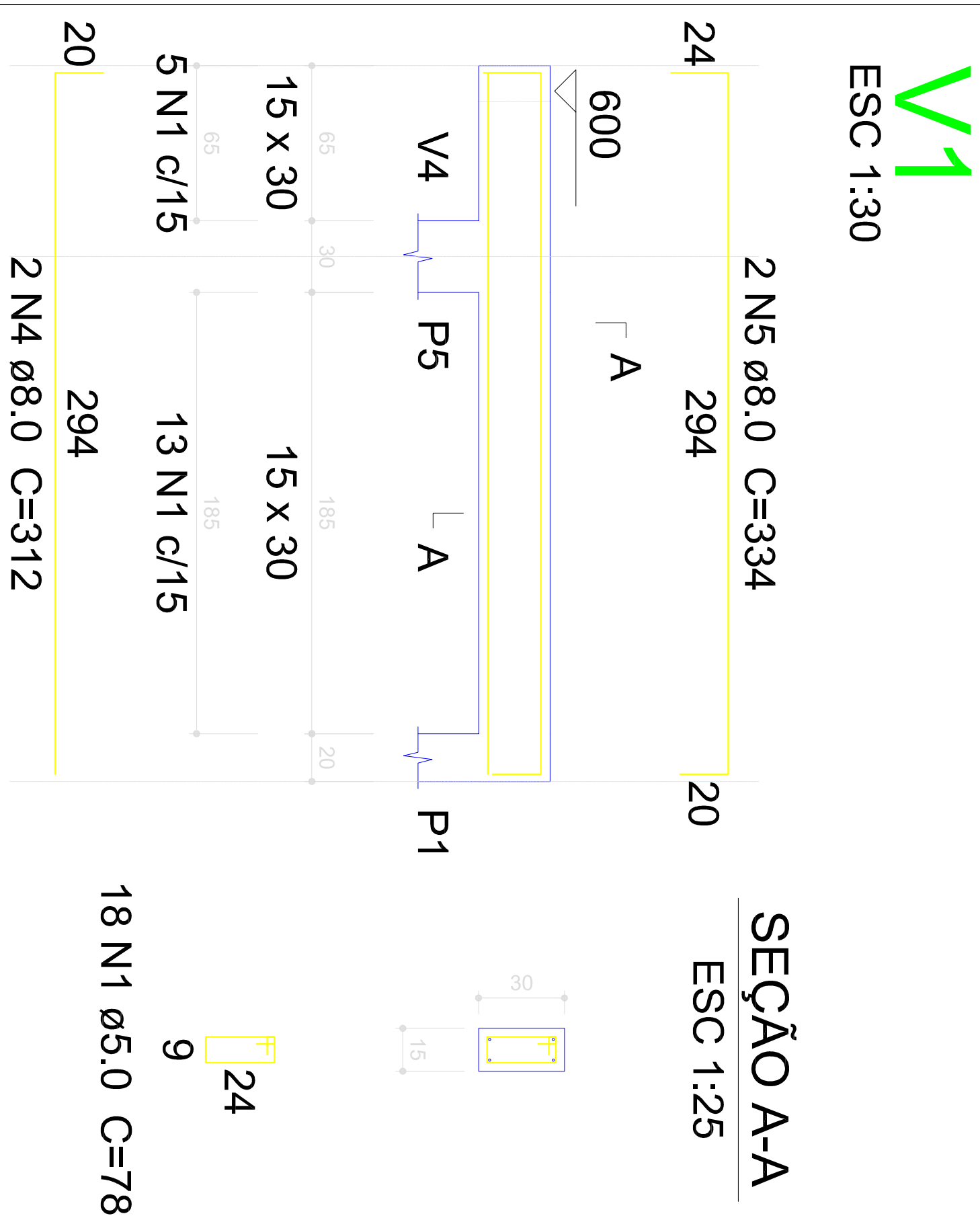




Relação do aço						
2xP1		2xP5		V1		
V2		V3		V4		
AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)	
CA60	1	5.0	133	78	10374	
	2	5.0	2	294	588	
	3	5.0	60	68	4080	
CA50	4	8.0	4	312	1248	
	5	8.0	4	334	1336	
	6	8.0	4	294	1176	
	7	8.0	2	330	660	
	8	10.0	16	297	4752	

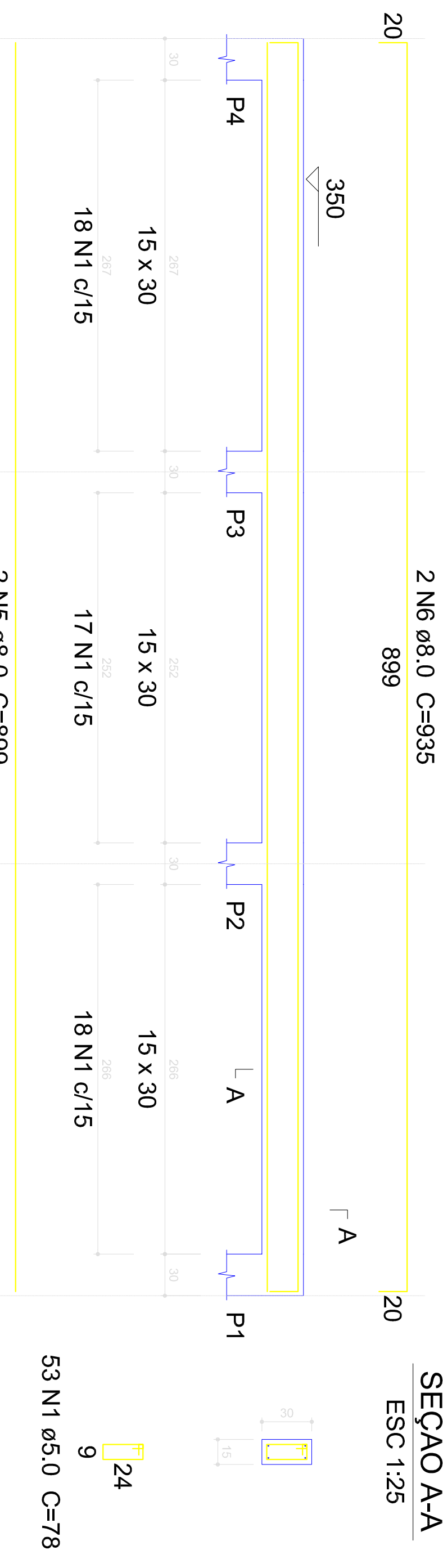
Resumo do aço

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10 % (kg)
CA50	8.0	44.2	19.2
	10.0	47.6	32.2
CA60	5.0	150.5	25.5
PESO TOTAL (kg)			
CA50	51.4		
CA60	25.5		

Volume de concreto (C-25) = 0.54 m³
 Volume de concreto (C-30) = 0.51 m³
 Área de forma = 19.2 m²

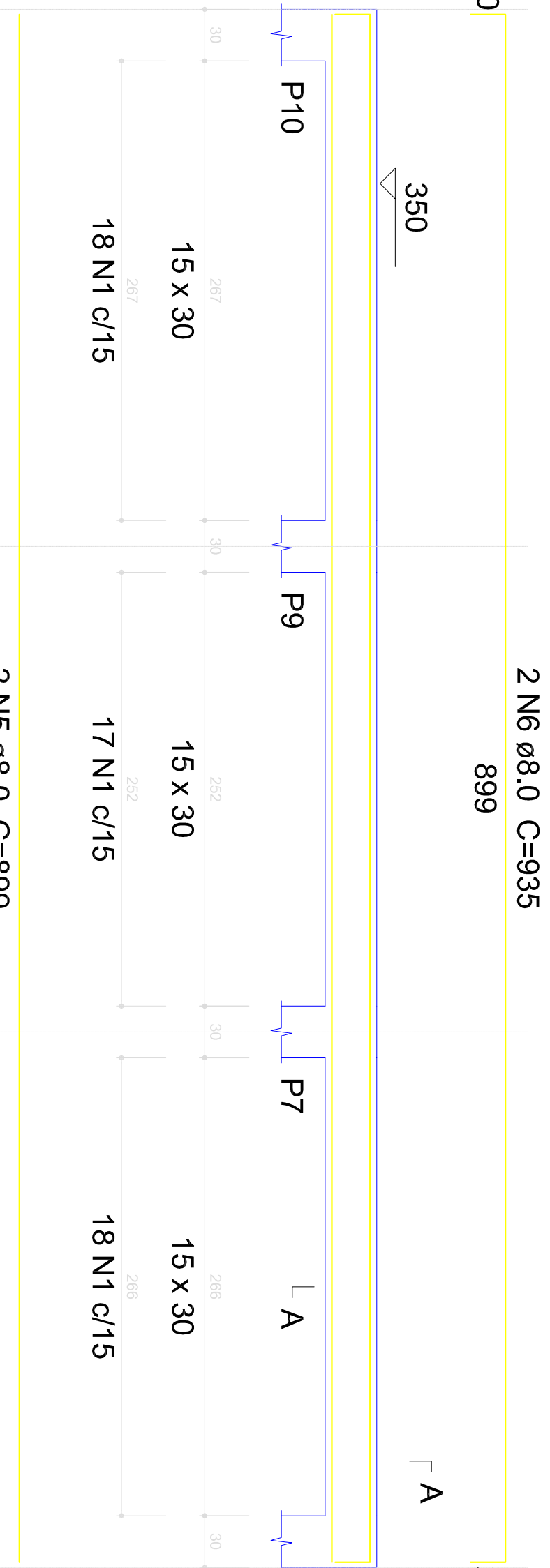
V1

ESC 1:30



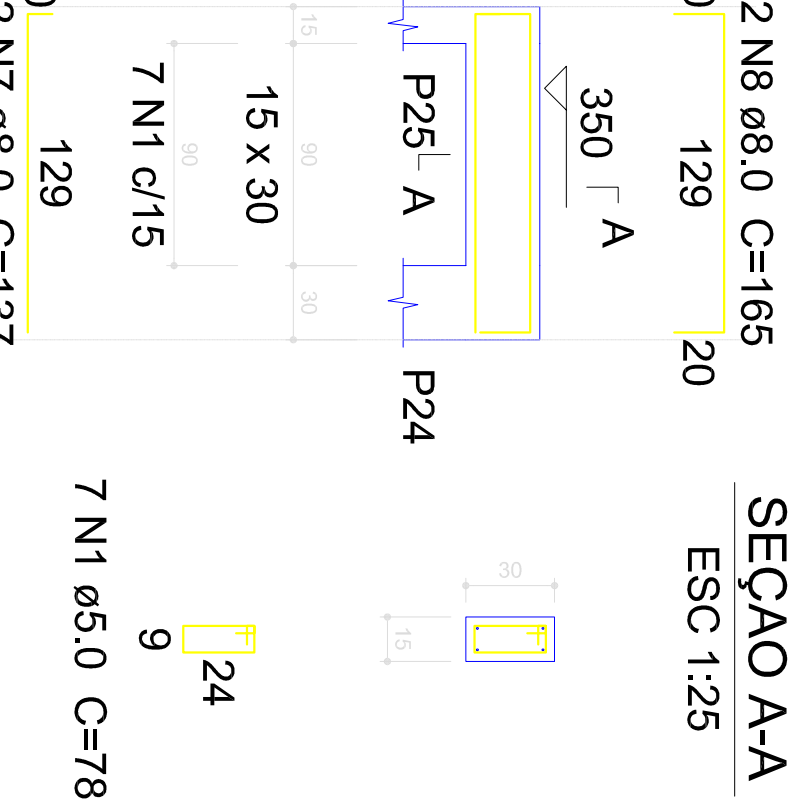
V2

ESC 1:30



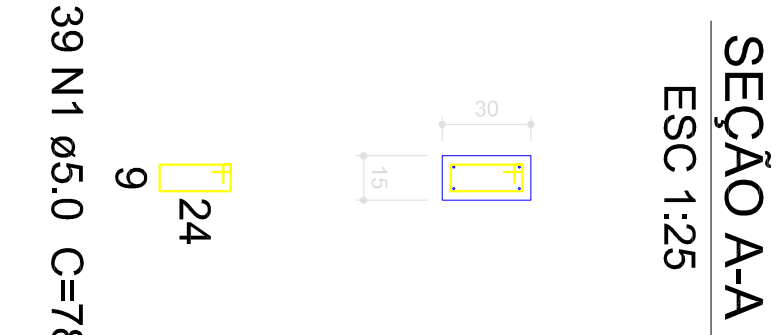
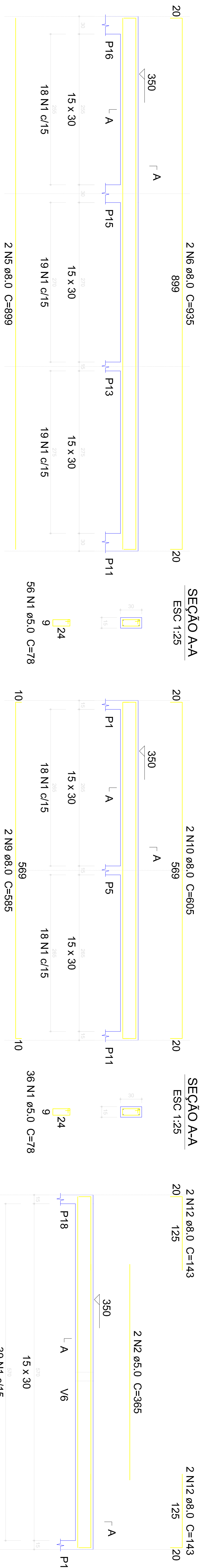
V15

ESC 1:30



Relação do aço

V1	V2	V3
V4	V5	V6
V8	V9	V10
V15		



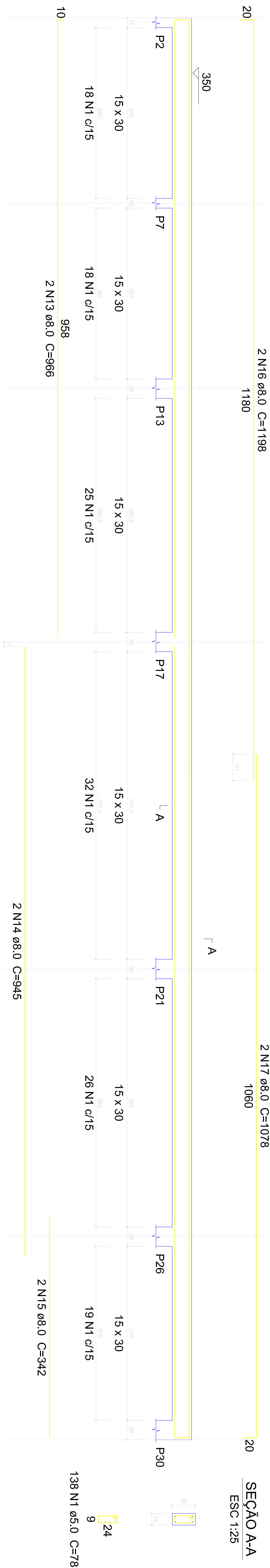
Resumo do aço

ACO	DIAM (mm)	C.TOTAL (m)	PESO + 10 % (kg)
CASO	8.0	393.7	170.8
CASO	5.0	526.4	89.2
PESO TOTAL (kg)			
CASO	170.8		
CASO	89.2		

Volume de concreto (C-25) = 4.63 m³
Área de forma = 77.14 m²

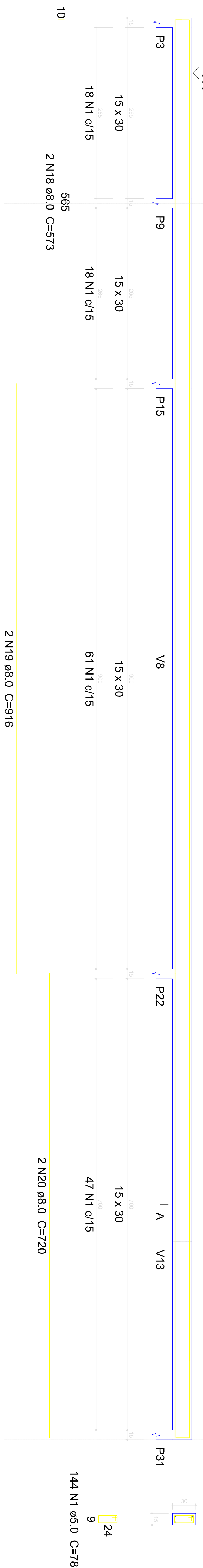
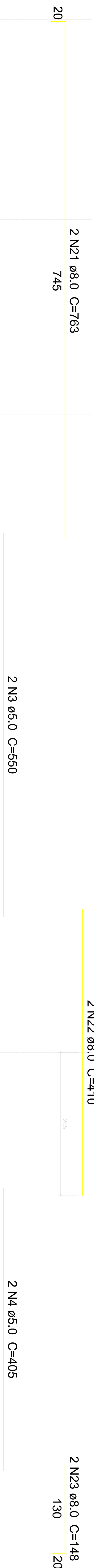
V5

ESC 1:30



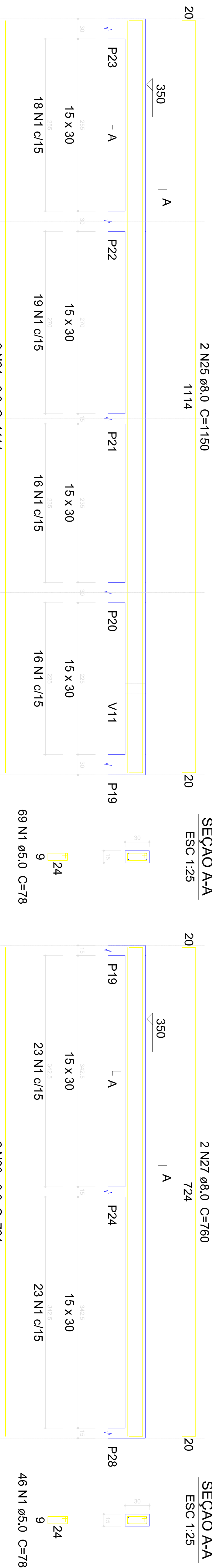
V6

ESC 1:30



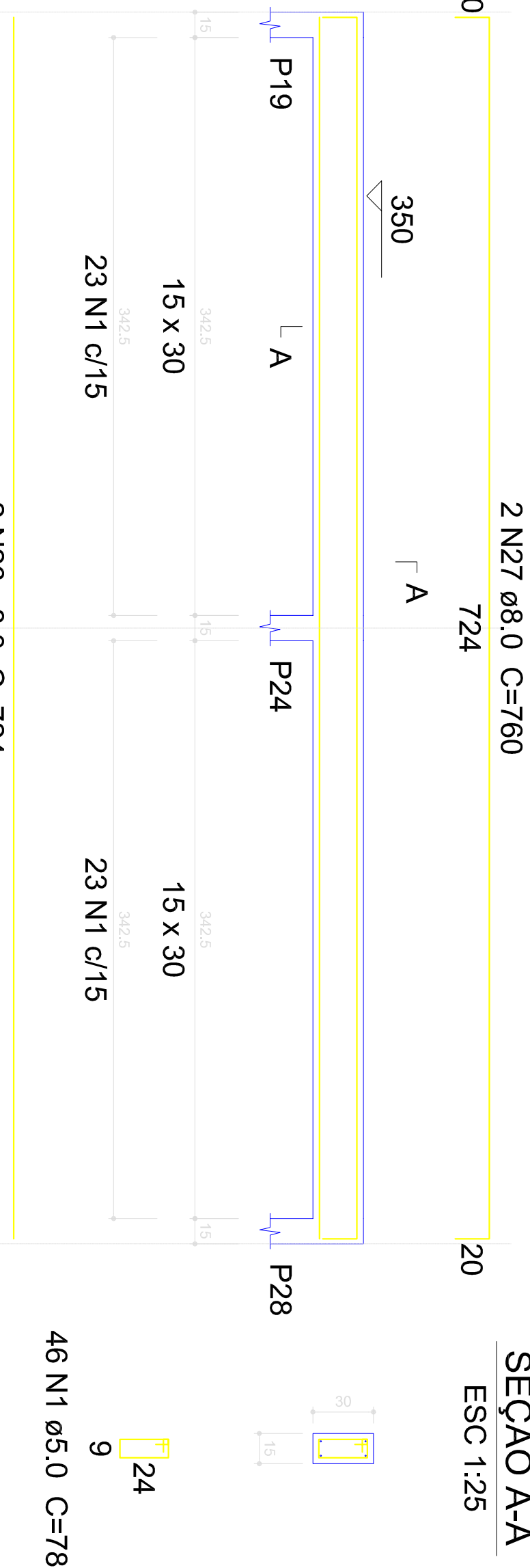
V9

ESC 1:30



V10

ESC 1:30



Conteúdo - Projeto Estrutural Pavimento - Cobertura

Proprietário - Município de Sãoandara
Endereço - Avenida João de Castilhos, RS 126, Seção Entradas

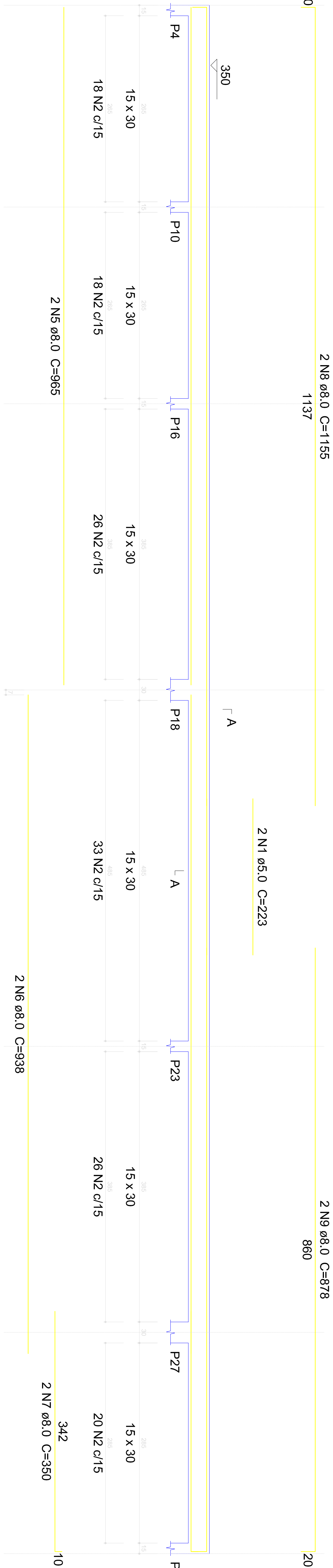
Projeto - Pavimento de Rodovias
LUCAS SAGIO RATO MACHADO
C.R. 0664617060
Instituto de Engenharia e Arquitetura
Rua da Liberdade, 1000
91050-000 - Porto Alegre, RS
Fone: (51) 3096-1000
E-mail: contato@lucasmachado.com.br

Assinatura
LUCAS SAGIO RATO MACHADO
Instituto de Engenharia e Arquitetura
Rua da Liberdade, 1000
91050-000 - Porto Alegre, RS
Fone: (51) 3096-1000
E-mail: contato@lucasmachado.com.br

DATA - 17/07/2023
FOLHA - 01
PRANCHIA

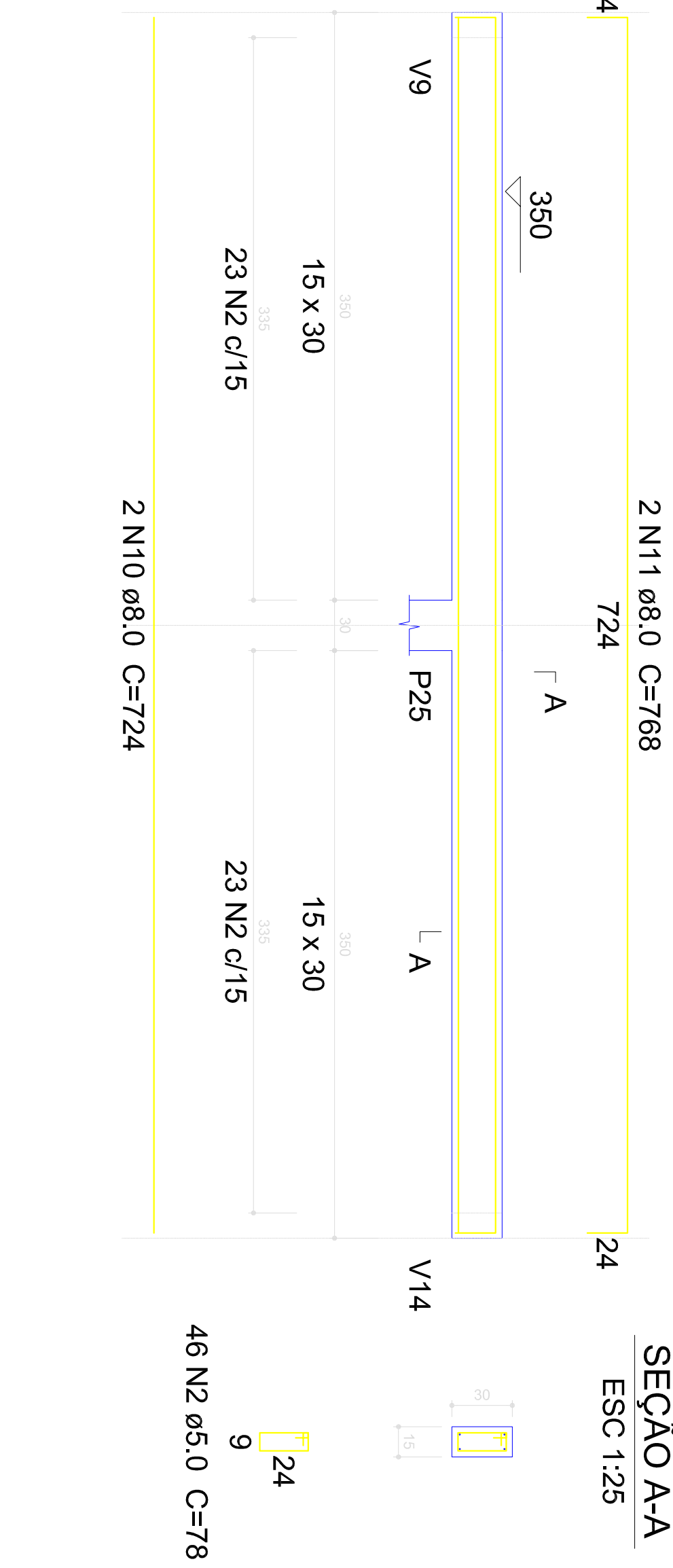
V7

ESC 1:30



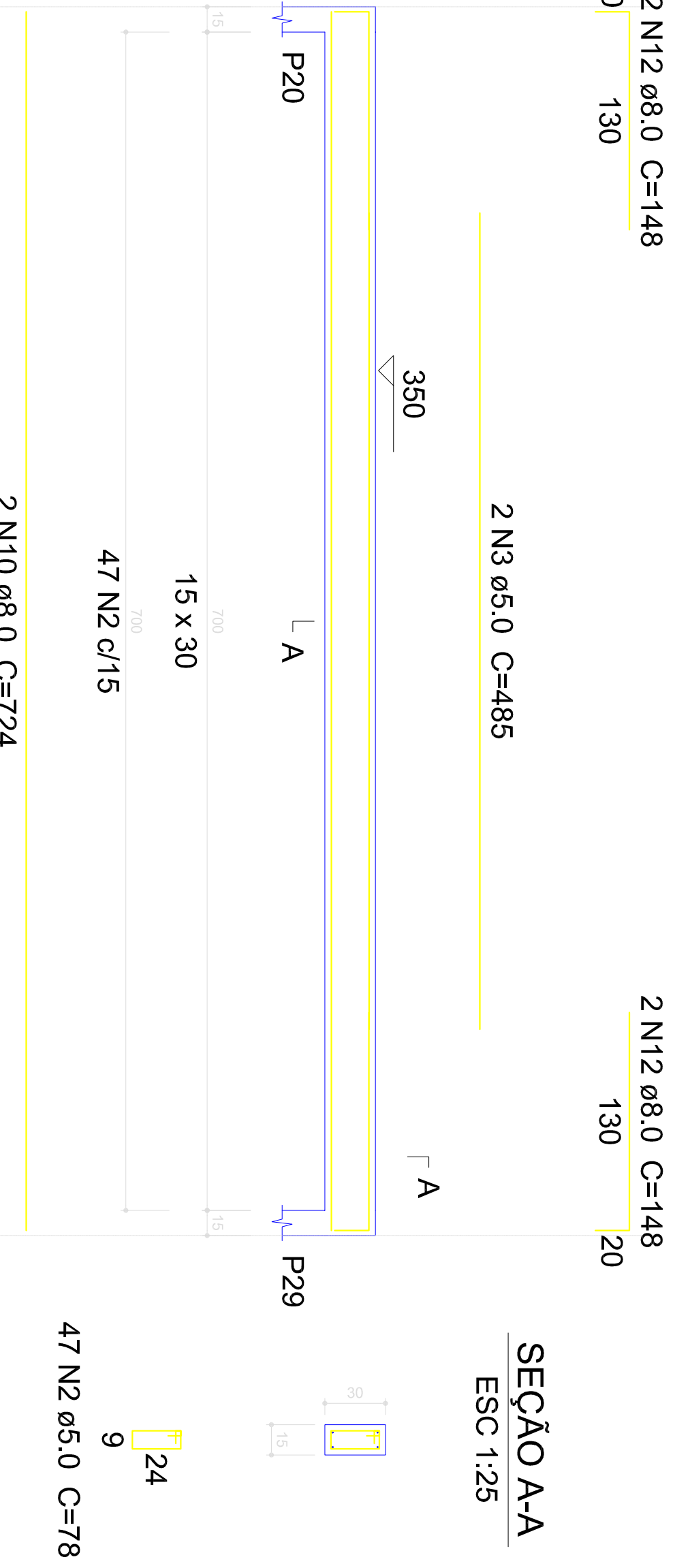
V11

ESC 1:30



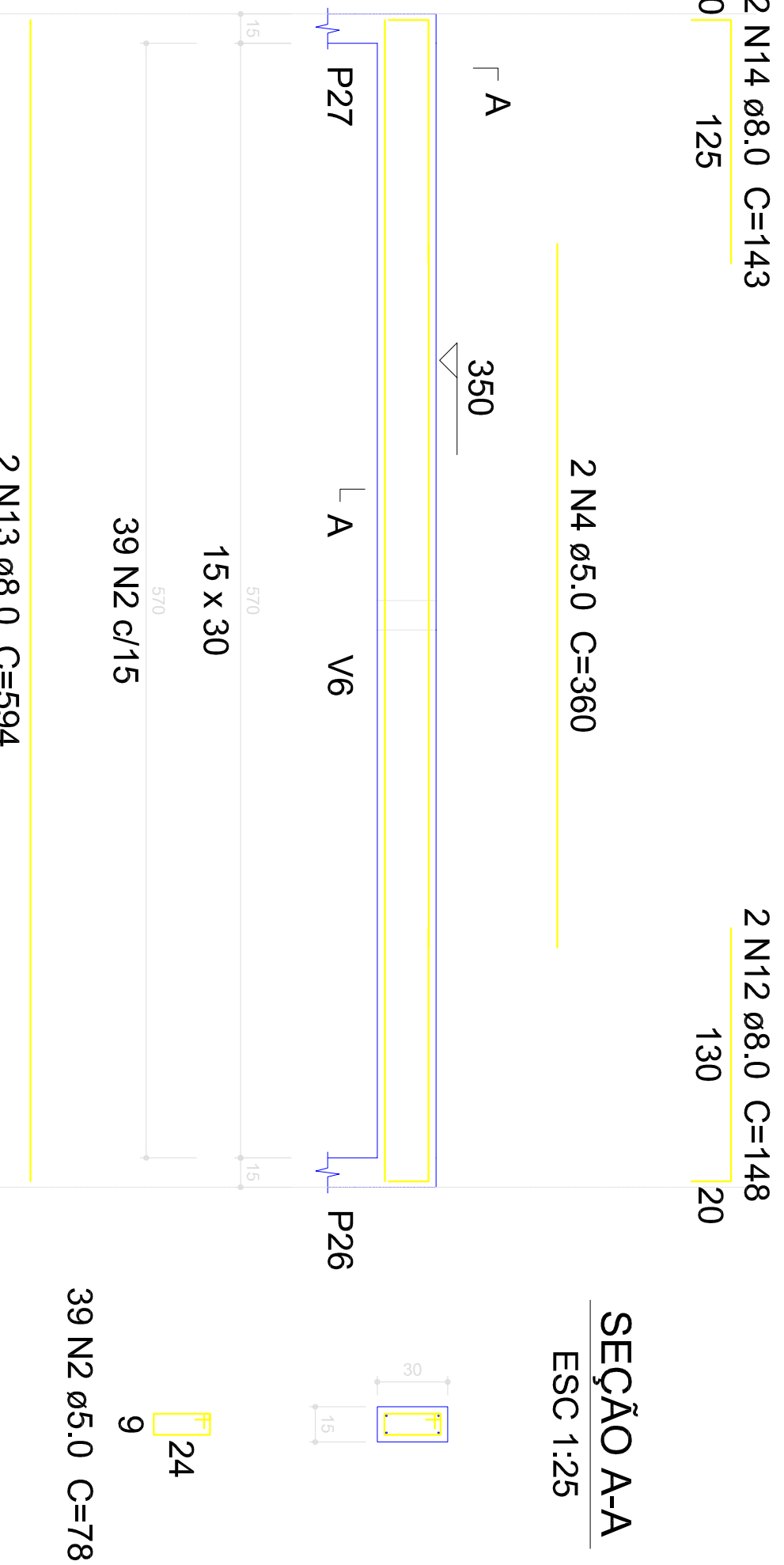
V12

ESC 1:30



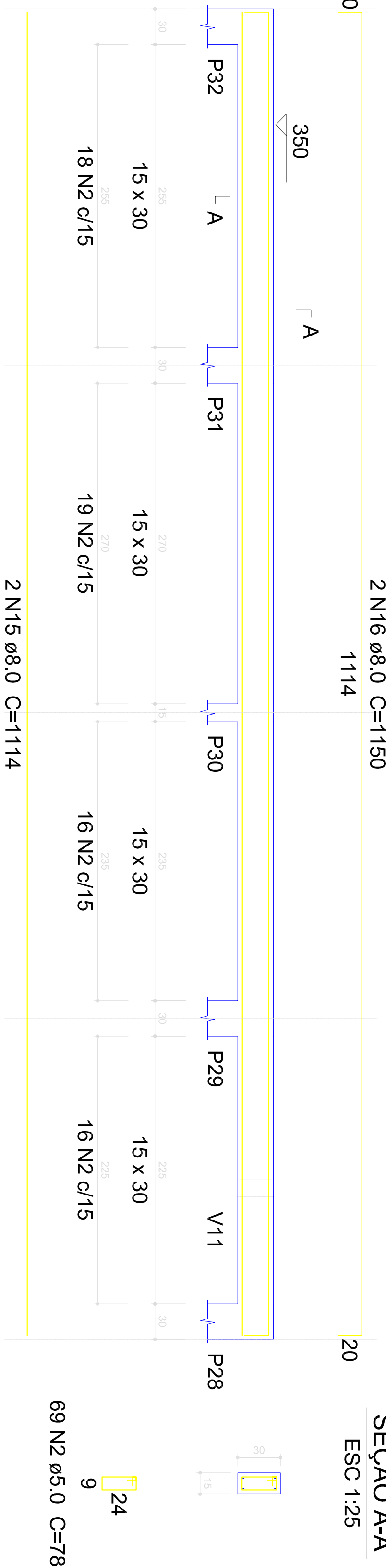
V13

ESC 1:30



V14

ESC 1:30



Relação do aço

28xP1		V7		V11	
V12		V13		V14	
AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	2	223	446
	2	5.0	1182	78	92196
	3	5.0	2	485	970
CA50	4	5.0	2	360	720
	5	8.0	2	965	1930
	6	8.0	2	938	1876
	7	8.0	2	350	700
	8	8.0	2	1155	2310
	9	8.0	2	878	1756
	10	8.0	4	724	2896
	11	8.0	2	765	1536
	12	8.0	6	148	888
	13	8.0	2	594	1188
CA60	14	8.0	2	143	286
	15	8.0	2	1114	2228
	16	8.0	2	1150	2300
	17	10.0	112	347	38664

Resumo do aço

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10 % (kg)
CA50	8.0	199	86.3
CA60	10.0	388.7	263.6
CA60	5.0	943.4	159.9
PESO TOTAL (kg)			
CA50	349.9		
CA60	159.9		

Volume de concreto (C-25) = 2.42 m³
Volume de concreto (C-30) = 4.41 m³
Área de forma = 128.59 m²



Conteúdo = Projeto Estrutural Pavimento - Cobertura

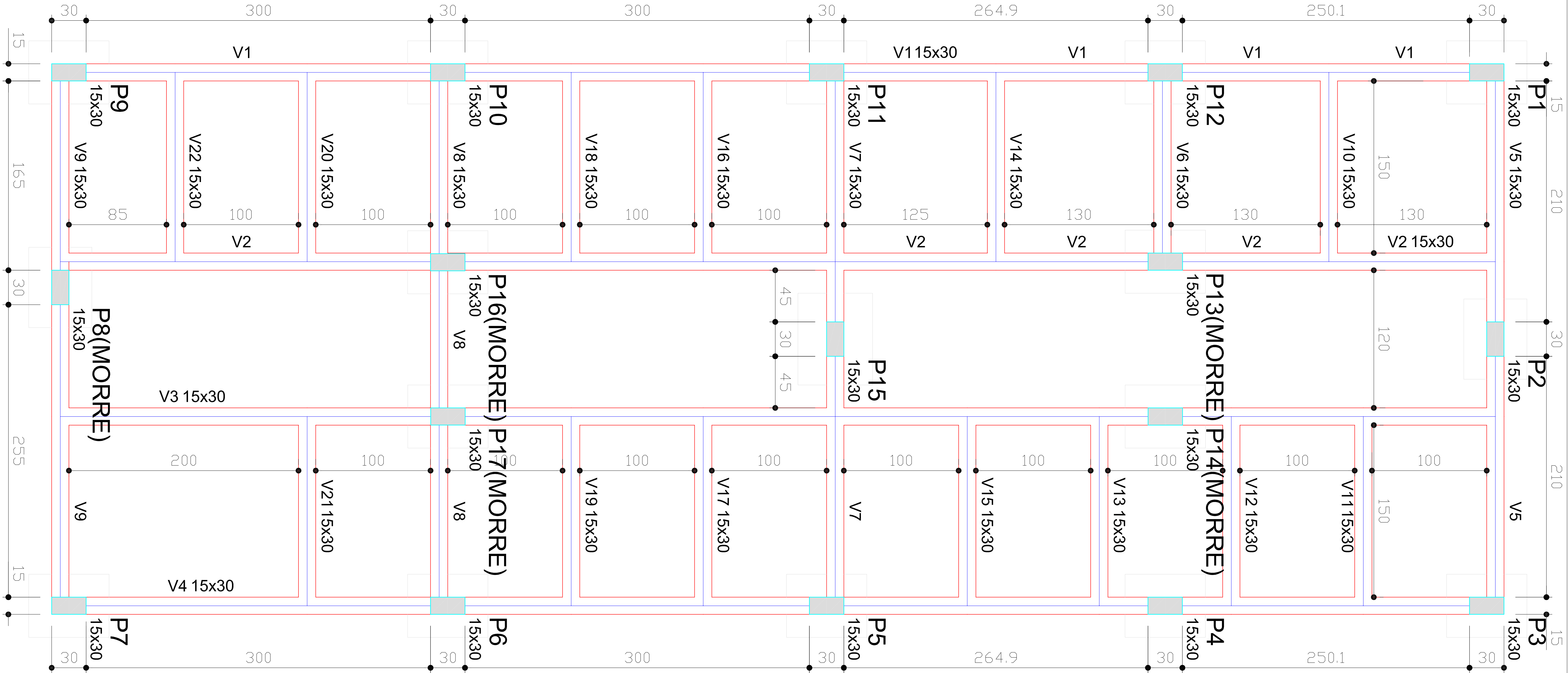
Propriedade = Município de São José do Rio Preto

Endereço = Avenida João de Castilhos, RS 126, Setor Entradas

Projeto = Projeto de Relevo

LUCAS SAGIO RATO MACHADO L. 3064617066
Assinado digitalmente por LUCAS SAGIO RATO MACHADO L. 3064617066
Data: 2023.07.26 15:40:00
Município de São José do Rio Preto
Município de São José do Rio Preto
Município de São José do Rio Preto

DATA = 17/07/2023
FOLHA = 02
PRANCHA

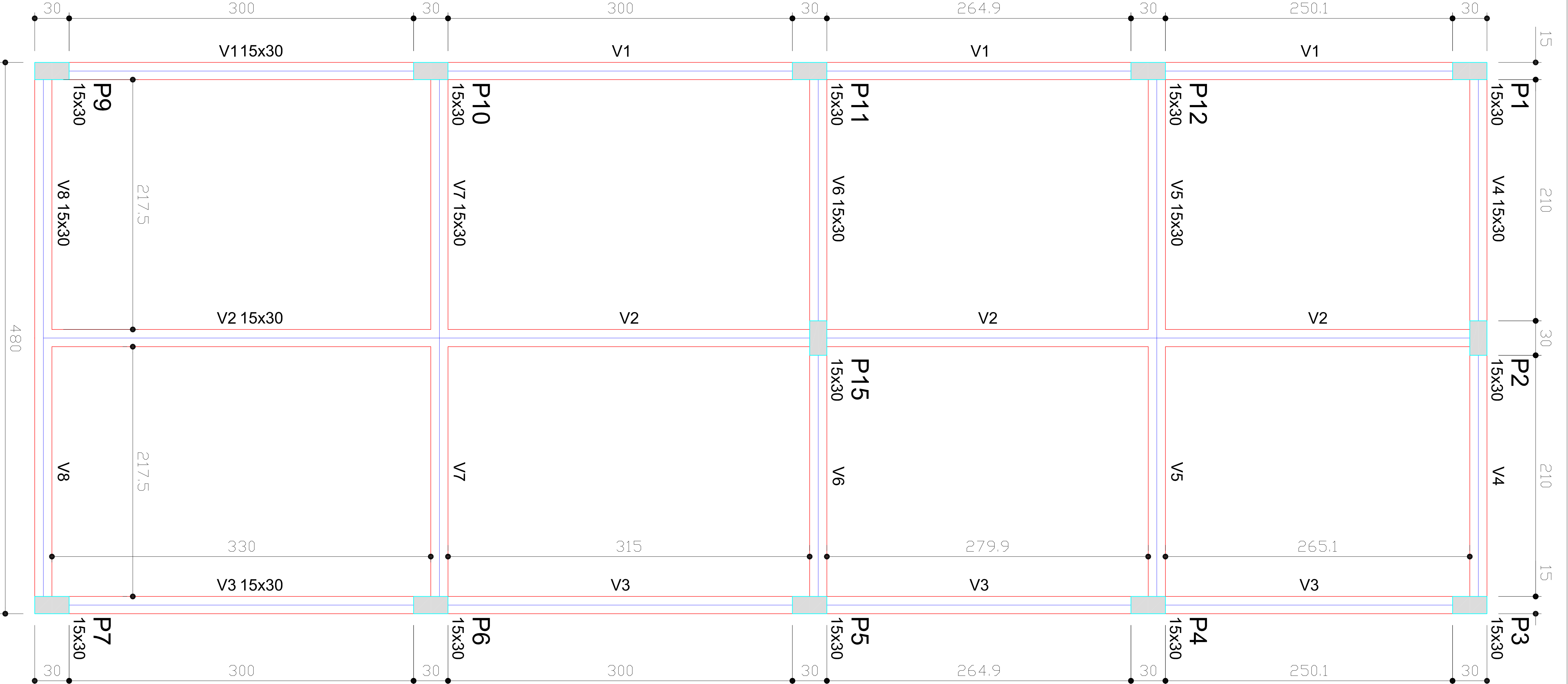


Vigas			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
V1	15x30	0	0
V2	15x30	0	0
V3	15x30	0	0
V4	15x30	0	0
V5	15x30	0	0
V6	15x30	0	0
V7	15x30	0	0
V8	15x30	0	0
V9	15x30	0	0
V10	15x30	0	0
V11	15x30	0	0
V12	15x30	0	0
V13	15x30	0	0
V14	15x30	0	0
V15	15x30	0	0
V16	15x30	0	0
V17	15x30	0	0
V18	15x30	0	0
V19	15x30	0	0
V20	15x30	0	0
V21	15x30	0	0
V22	15x30	0	0

Características dos materiais			
Elemento	fck (kgf/cm²)	Ecs (kgf/cm²)	
Vigas	250	285600	
Pilares	300	312859	
Sapatas	250	285600	

Pilares			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
P1	15 x 30	0	0
P2	15 x 30	0	0
P3	15 x 30	0	0
P4	15 x 30	0	0
P5	15 x 30	0	0
P6	15 x 30	0	0
P7	15 x 30	0	0
P8	15 x 30	0	0
P9	15 x 30	0	0
P10	15 x 30	0	0
P11	15 x 30	0	0
P12	15 x 30	0	0
P13	15 x 30	0	0
P14	15 x 30	0	0
P15	15 x 30	0	0
P16	15 x 30	0	0
P17	15 x 30	0	0

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



Vigas			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
V1	15x30	0	300
V2	15x30	0	300
V3	15x30	0	300
V4	15x30	0	300
V5	15x30	0	300
V6	15x30	0	300
V7	15x30	0	300
V8	15x30	0	300

Características dos materiais			
Elemento	fck (kgf/cm²)	Ecs (kgf/cm²)	
Vigas	250	285600	
Pilares	300	312859	

Pilares			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
P1	15 x 30	0	300
P2	15 x 30	0	300
P3	15 x 30	0	300
P4	15 x 30	0	300
P5	15 x 30	0	300
P6	15 x 30	0	300
P7	15 x 30	0	300
P8	15 x 30	0	300
P9	15 x 30	0	300
P10	15 x 30	0	300
P11	15 x 30	0	300
P12	15 x 30	0	300
P13	15 x 30	0	300
P14	15 x 30	0	300
P15	15 x 30	0	300

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

Forma do pavimento Térreo
escala 1:50

Forma do pavimento Cobertura
escala 1:50



Contratado - Projeto Estrutural Ponto de Fornas Banheiros

Proprietário - Município de Sãoandara

Endereço - Avenida João de Castilhos, RS 126, Seção Entradas

Projeto - Projeto de Resumos

LUCAS SAGIO RATO MACHADO 3064617060
Engenheiro Civil
C.R.C. 15.123/RS
RUBRICADO
17/07/2023

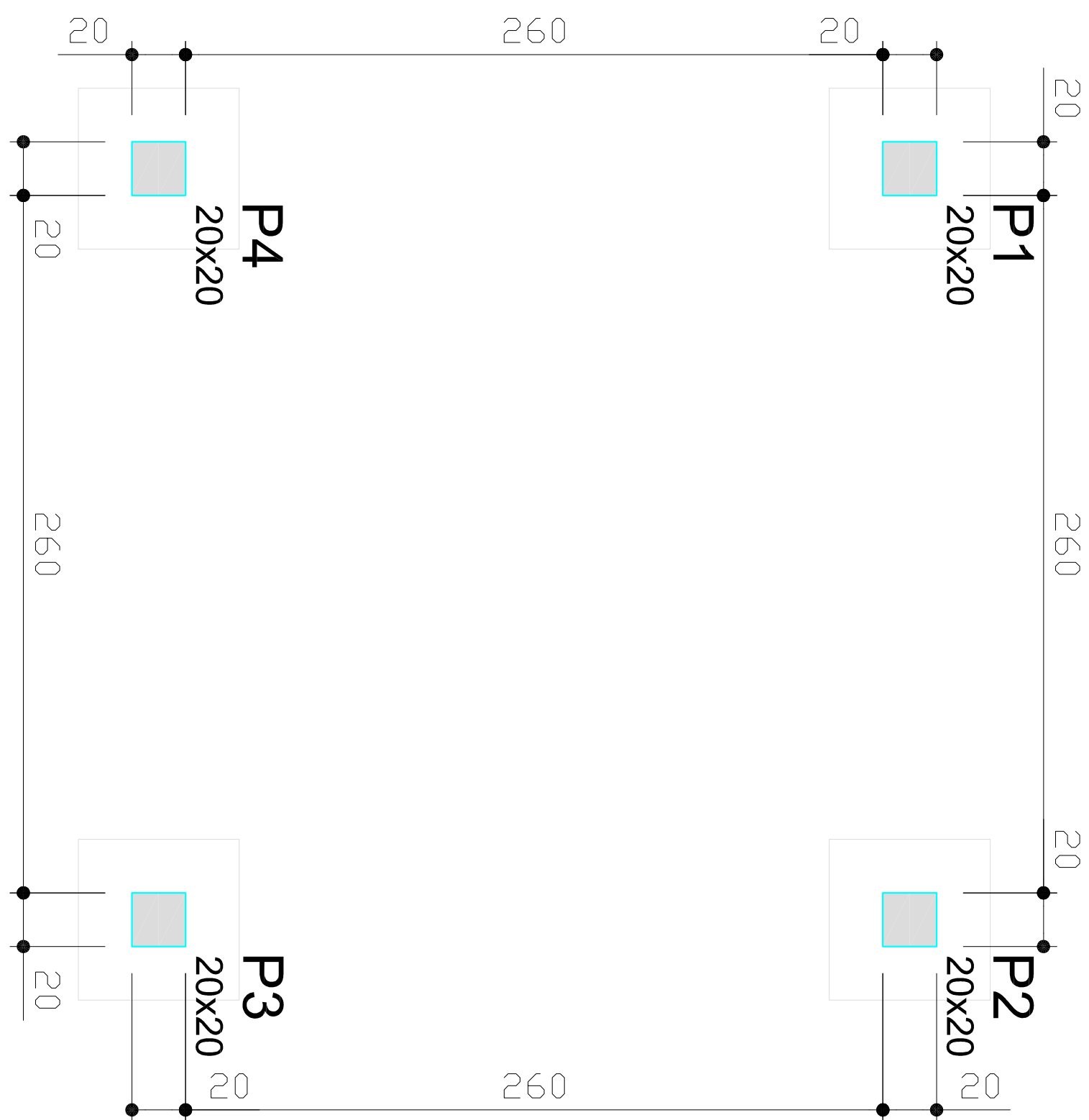
MANOEL DE OLIVEIRA
SANTANA 300112
Engenheiro Civil
C.R.C. 15.123/RS
RUBRICADO
17/07/2023

DATA - 17/07/2023

ESCALA - 1:50

Folha 01

FRANCHA



Vigas		
Nome	Seção (cm)	Nível (cm)

Elemento	fck (kgf/cm²)	Ecs (kgf/cm²)
Pilares	300	312859
Sapatas	250	285600

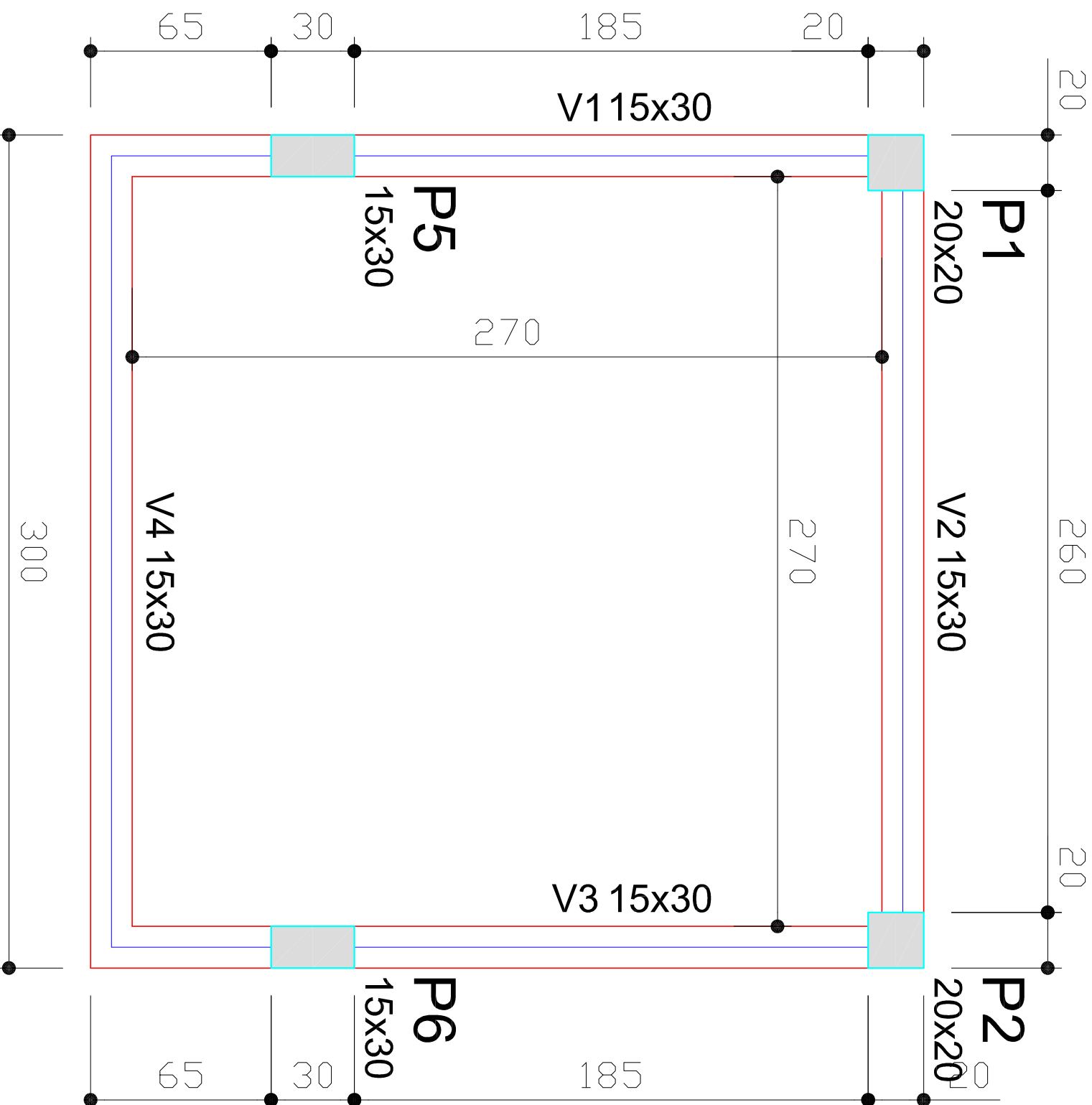
Características dos materiais

Pilares			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
P1	20 x 20	0	0
P2	20 x 20	0	0
P3	20 x 20	0	0
P4	20 x 20	0	0

Legenda dos Pilares

	Pilar que morre
	Pilar que passa
	Pilar que nasce
	Pilar com mudança de seção

Forma do pavimento Térreo escala 1:50



Vigas			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
V1	15x30	0	600
V2	15x30	0	600
V3	15x30	0	600
V4	15x30	0	600

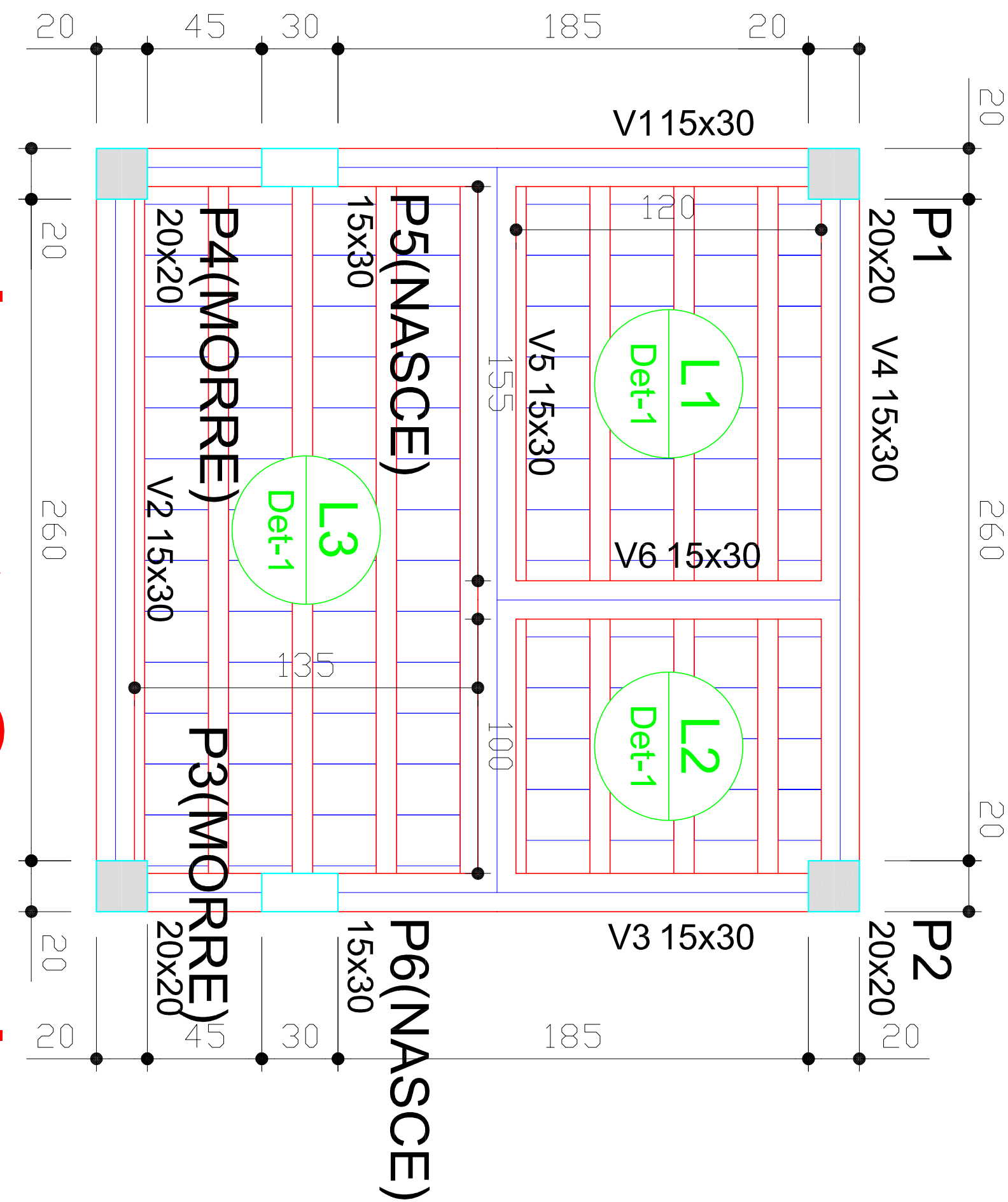
Características dos materiais

Elemento	fck (kgf/cm²)	Ecs (kgf/cm²)
Vigas	250	285600
Pilares	300	312859

Pilares			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
P1	20 x 20	0	600
P2	20 x 20	0	600
P5	15 x 30	0	600
P6	15 x 30	0	600

Forma do pavimento Cobertura escala 1:50

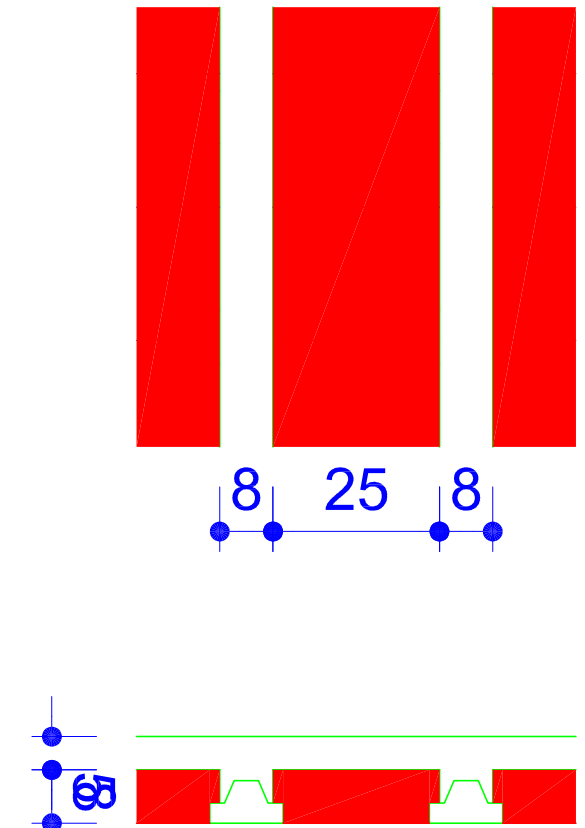
Legenda dos Pilares		
	Pilar que morre	
	Pilar que passa	
	Pilar que nasce	
	Pilar com mudança de seção	



P5(NASCE) P4(MORRE) P3(MORRE) P6(NASCE)

Detalhe 1 (esc. 1:30)

Vigas			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
V1	15x30	0	300
V2	15x30	0	300
V3	15x30	0	300
V4	15x30	0	300
V5	15x30	0	300
V6	15x30	0	300



Lajes

Dados					Sobrecarga (kgf/m²)	
Nome	Tipo	Altura (cm)	Elevação (cm)	Nível (cm)	Adicional	Acidental
L1	Pré-moldada	13	0	300	150	150
L2	Pré-moldada	13	0	300	150	150
L3	Pré-moldada	13	0	300	150	150

Área de lajes			
Tipo	Altura (cm)	Bloco de Enchimento	Área (m²)
Pré-moldada	13	B8/25/20	6.71

Blocos de enchimento

Detalhe	Tipo	Nome	Dimensões(cm)		Quantidade
			hb	bx by	
1	Lajota cerâmica	B8/25/20	8	25 20	96

Elemento	fck (kgf/cm²)	Ecs (kgf/cm²)
Vigas	250	285600
Pilares	300	312859
Lajes	250	285600

Características dos materiais

Pilares			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
P1	20 x 20	0	300
P2	20 x 20	0	300
P3	20 x 20	0	300
P4	20 x 20	0	300
P5	15 x 30	0	300
P6	15 x 30	0	300

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

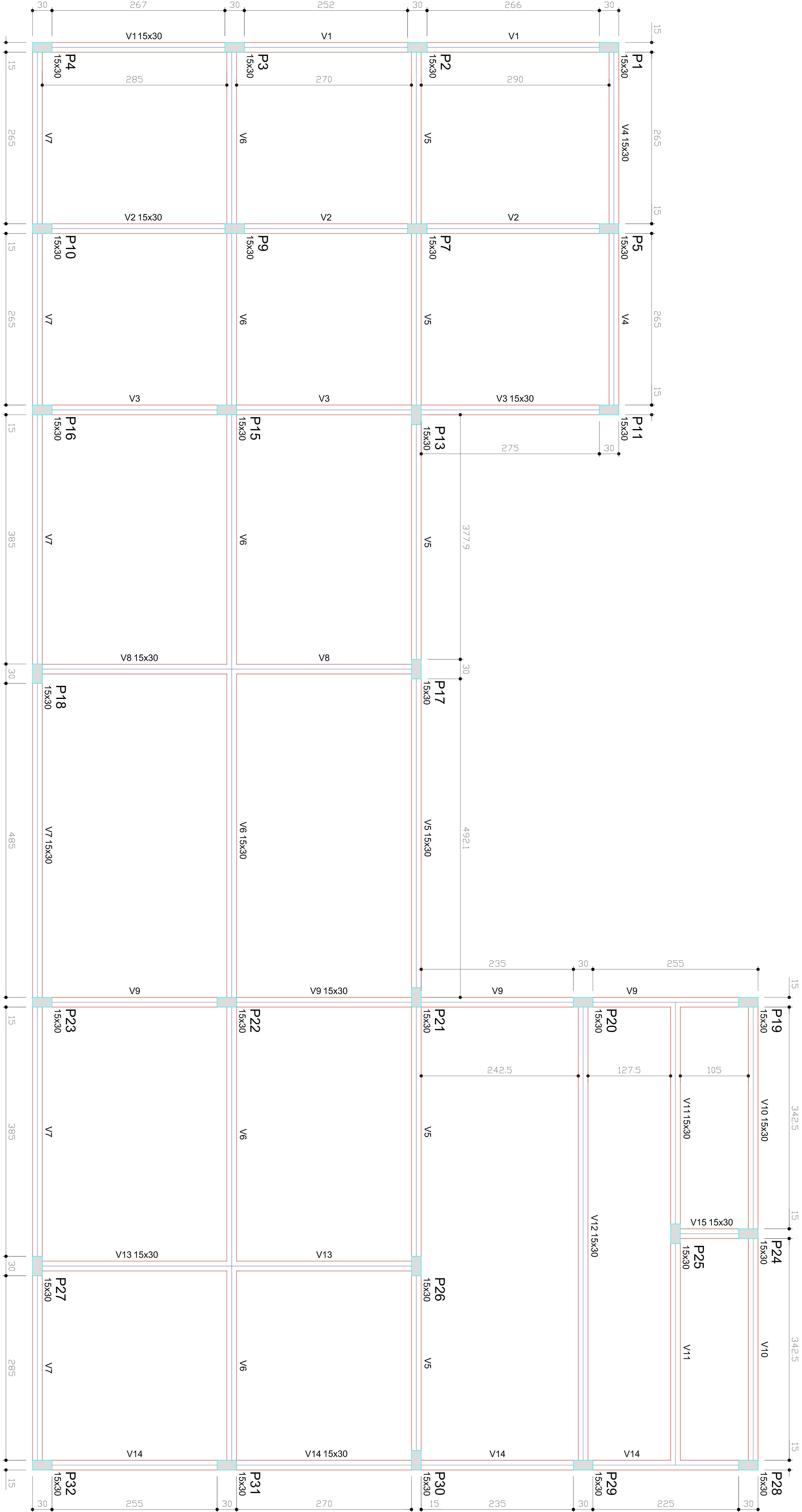


Vigas		
Nome	Seção	Elevação
	(cm)	(cm)
V1	15x30	0
V2	15x30	0
V3	15x30	0
V4	15x30	0
V5	15x30	0
V6	15x30	0
V7	15x30	0
V8	15x30	0
V9	15x30	0
V10	15x30	0
V11	15x30	0
V12	15x30	0
V13	15x30	0
V14	15x30	0
V15	15x30	0

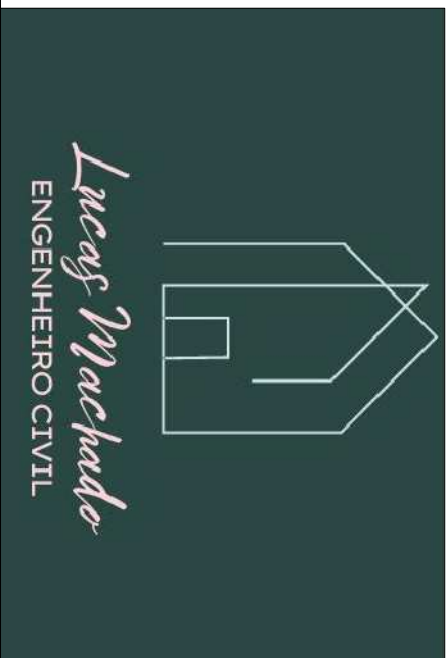
Características dos materiais		
Elemento	fck	Ecs
	(kgf/cm²)	(kgf/cm²)
Vigas	250	285600
Pilares	300	312859

Pilares		
Nome	Seção	Elevação
	(cm)	(cm)
P1	15 x 30	0
P2	15 x 30	0
P3	15 x 30	0
P4	15 x 30	0
P5	15 x 30	0
P7	15 x 30	0
P9	15 x 30	0
P10	15 x 30	0
P11	15 x 30	0
P13	15 x 30	0
P15	15 x 30	0
P16	15 x 30	0
P17	15 x 30	0
P18	15 x 30	0
P19	15 x 30	0
P20	15 x 30	0
P21	15 x 30	0
P22	15 x 30	0
P23	15 x 30	0
P24	15 x 30	0
P25	15 x 30	0
P26	15 x 30	0
P27	15 x 30	0
P28	15 x 30	0
P29	15 x 30	0
P30	15 x 30	0
P31	15 x 30	0
P32	15 x 30	0

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



Forma do pavimento Cobertura
escala 1:50



Conteúdo = Projeto Estrutural: Plano de Formas Pavimento - Cobertura

Proprietário = Município de São João do Rio

Engenheiro = Avenida João de Castilhos, 15, 156, São João do Rio

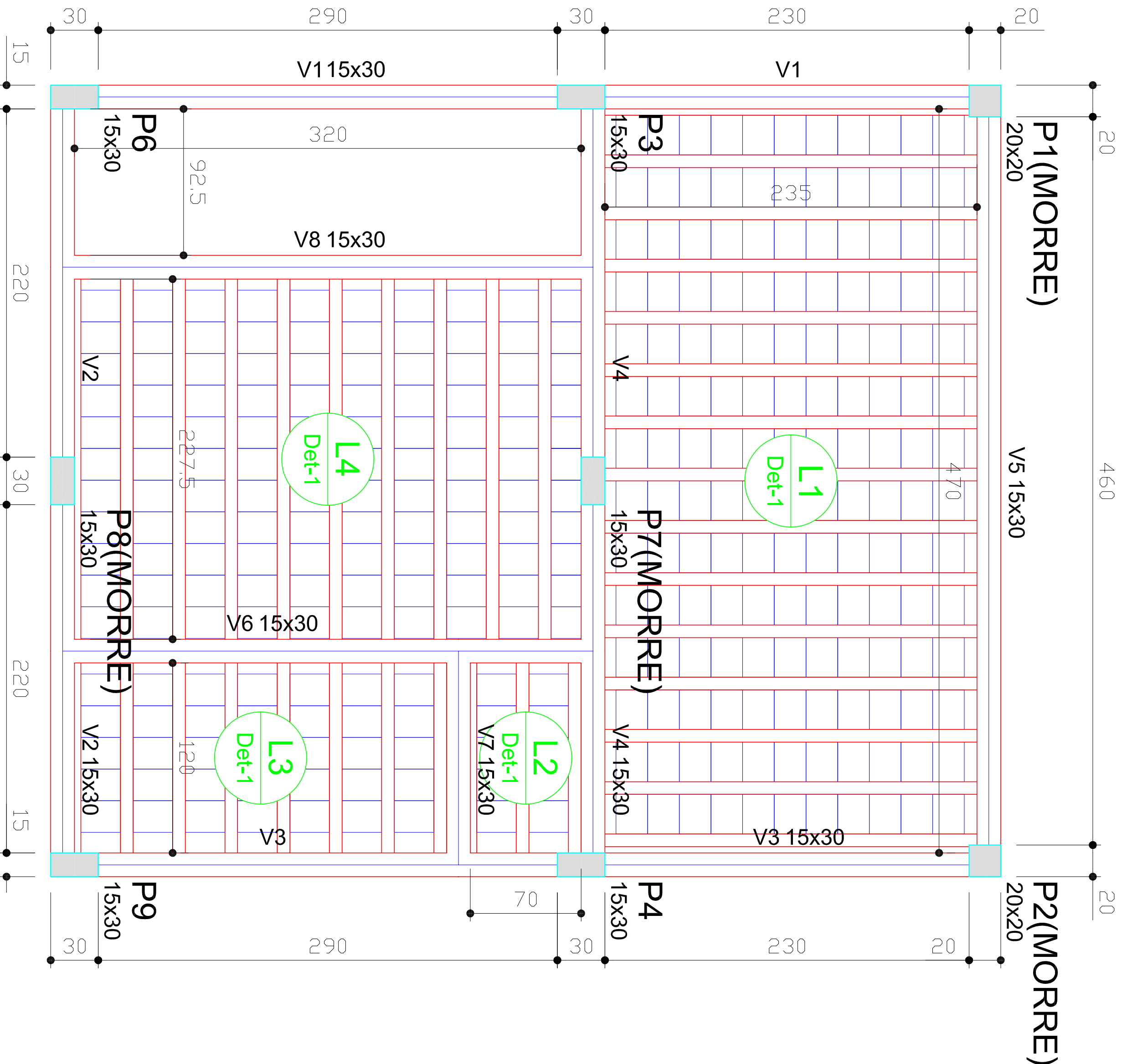
Projeto = Pavimento de Cobertura

LUCAS SAGIO
RATO MACHADO
036467060
Engenheiro Civil
CRM: 156467060
HOMOLOGADO
PROFESSOR

DATA = 17/07/2023

ESCALA = 1:50

FRANQUIA = 02



Forma do pavimento Superior
escala 1:50

Vigas		
Nome	Seção	Elevação
(cm)	(cm)	(cm)
V1	15x30	0
V2	15x30	0
V3	15x30	0
V4	15x30	0
V5	15x30	0
V6	15x30	0
V7	15x30	0
V8	15x30	0

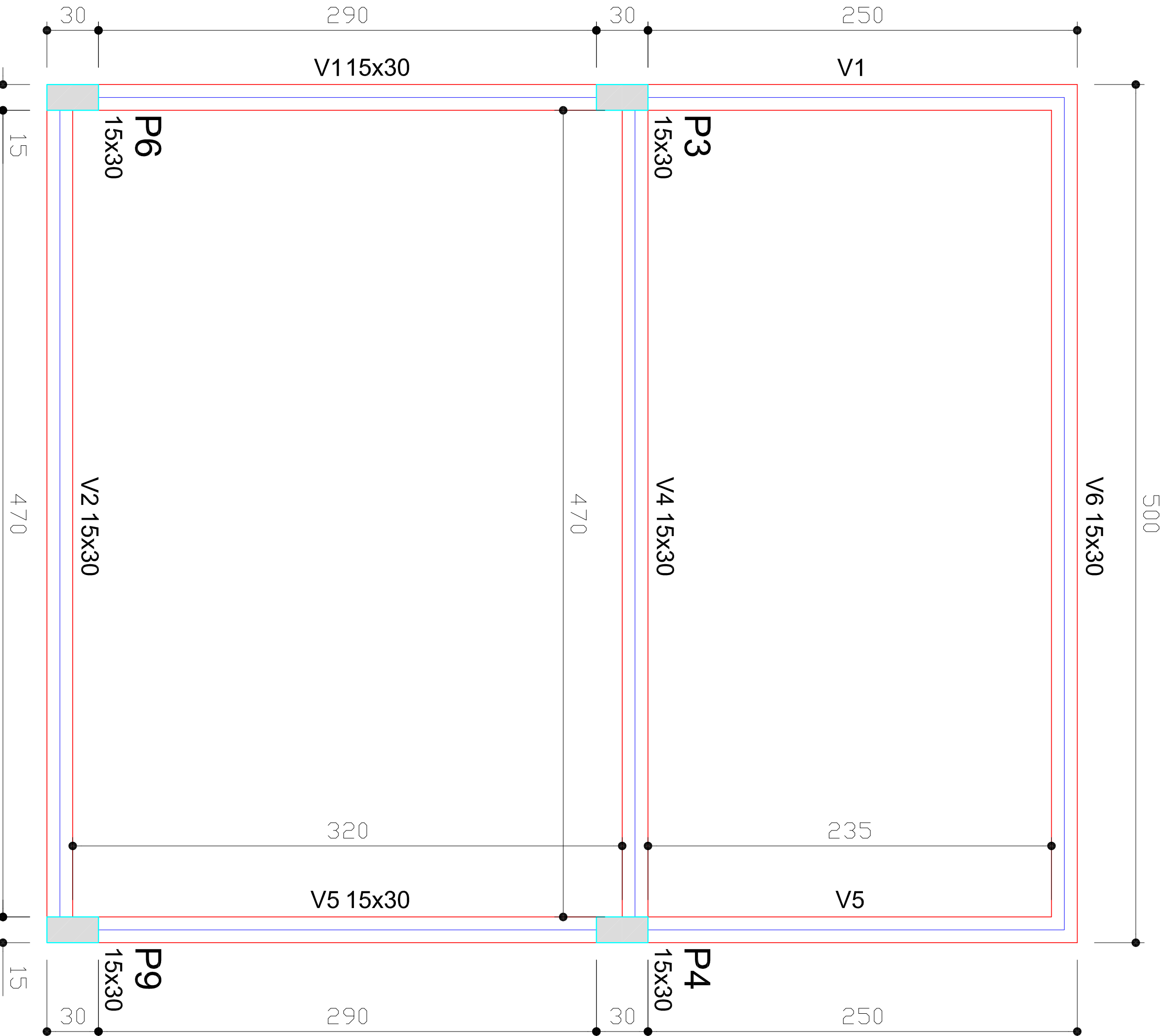
Pilares		
Nome	Seção	Elevação
(cm)	(cm)	(cm)
P1	20 x 20	0
P2	20 x 20	0
P3	15 x 30	0
P4	15 x 30	0
P6	15 x 30	0
P7	15 x 30	0
P8	15 x 30	0
P9	15 x 30	0

Lajes			
Dados		Sobrecarga (kgf/m²)	
Nome	Tipo	Altura (cm)	Nível
L1	Pré-moldada	13	0
L2	Pré-moldada	13	0
L3	Pré-moldada	13	0
L4	Pré-moldada	13	0

Área de lajes			
Tipo	Altura (cm)	Bloco de Enchimento	Área (m²)
Pré-moldada	13	B8/25/20	21.98

Características dos materiais		
Elemento	fck (kgf/cm²)	Ecs (kgf/cm²)
Vigas	250	285600
Pilares	300	312859
Lajes	250	285600

Blocos de enchimento					
1	Detalhe	Tipo	Nome	Dimensões(cm)	
				hb	bx
				8	25
			B8/25/20		20
			Lajota cerâmica		
					309



Forma do pavimento Cobertura
escala 1:50

Vigas		
Nome	Seção	Elevação
(cm)	(cm)	(cm)
V1	15x30	0
V2	15x30	0
V4	15x30	0
V5	15x30	0
V6	15x30	0

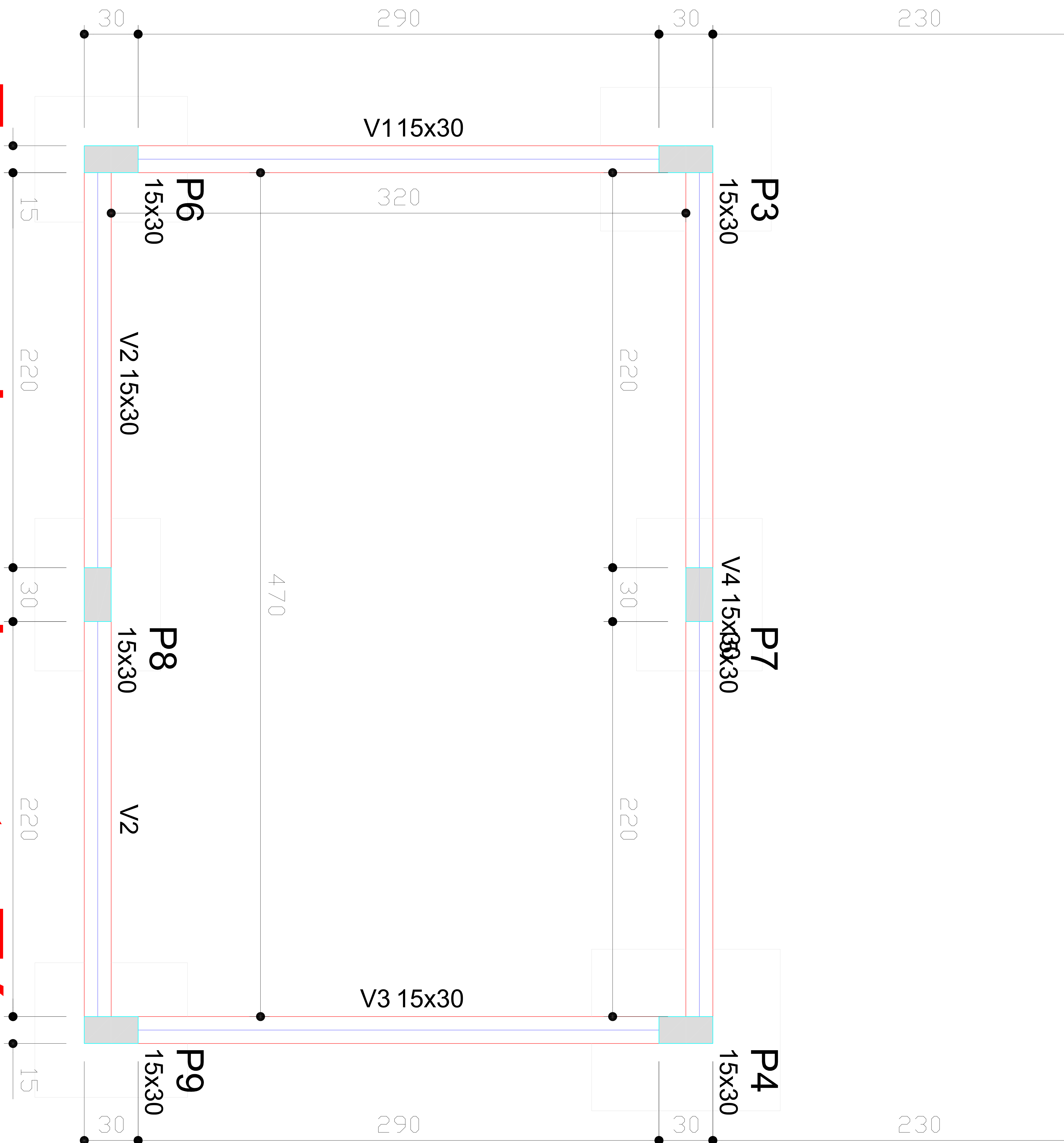
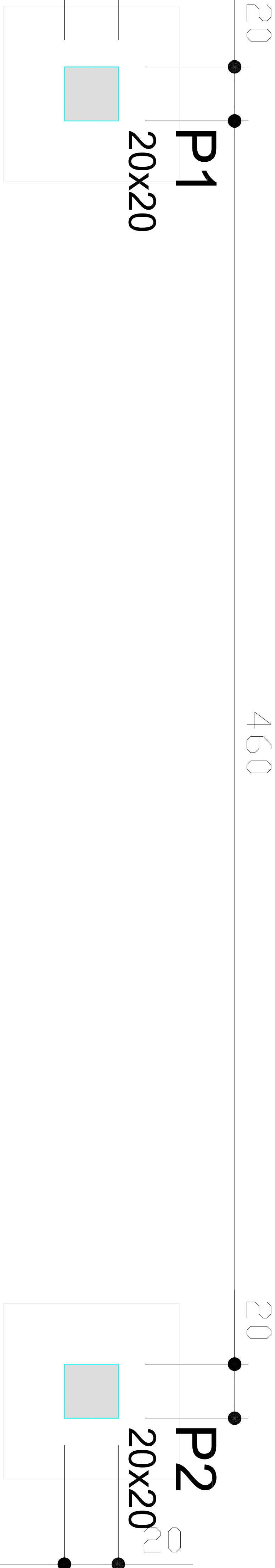
Características dos materiais		
Elemento	fck (kgf/cm²)	Ecs (kgf/cm²)
Vigas	250	285600
Pilares	300	312859

Pilares		
Nome	Seção	Elevação
(cm)	(cm)	(cm)
P3	15 x 30	0
P4	15 x 30	0
P6	15 x 30	0
P9	15 x 30	0

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



Conteúdo = Projeto Estrutural Plano de Formas Casimiro de Inocência Judamento =	
Solicitante e Edificação:	
Proprietário = Município de São José do Rio Preto	
Endereço = Avenida João de Castilhos, RS 126, Setor Entradas	
Projeto = Parque de Rodagem	
LUCAS SÁGIO RATO MACHADO 3064617060	
MUNICÍPIO DE SÃO JOSÉ DO RIO PRETO	
17/07/2023	
DATA -	ESCALA -
17/07/2023	1:50
PRANCHAS	
12	



Forma do pavimento Têrro

escala 1:50

Vigas			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
V1	15x30	0	0
V2	15x30	0	0
V3	15x30	0	0
V4	15x30	0	0

Características dos materiais			
Elemento	fck (kgf/cm²)	Ecs (kgf/cm²)	
Vigas	250	285600	
Pilares	300	312859	
Sapatas	250	285600	

Pilares			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
P1	20 x 20	0	0
P2	20 x 20	0	0
P3	15 x 30	0	0
P4	15 x 30	0	0
P6	15 x 30	0	0
P7	15 x 30	0	0
P8	15 x 30	0	0
P9	15 x 30	0	0

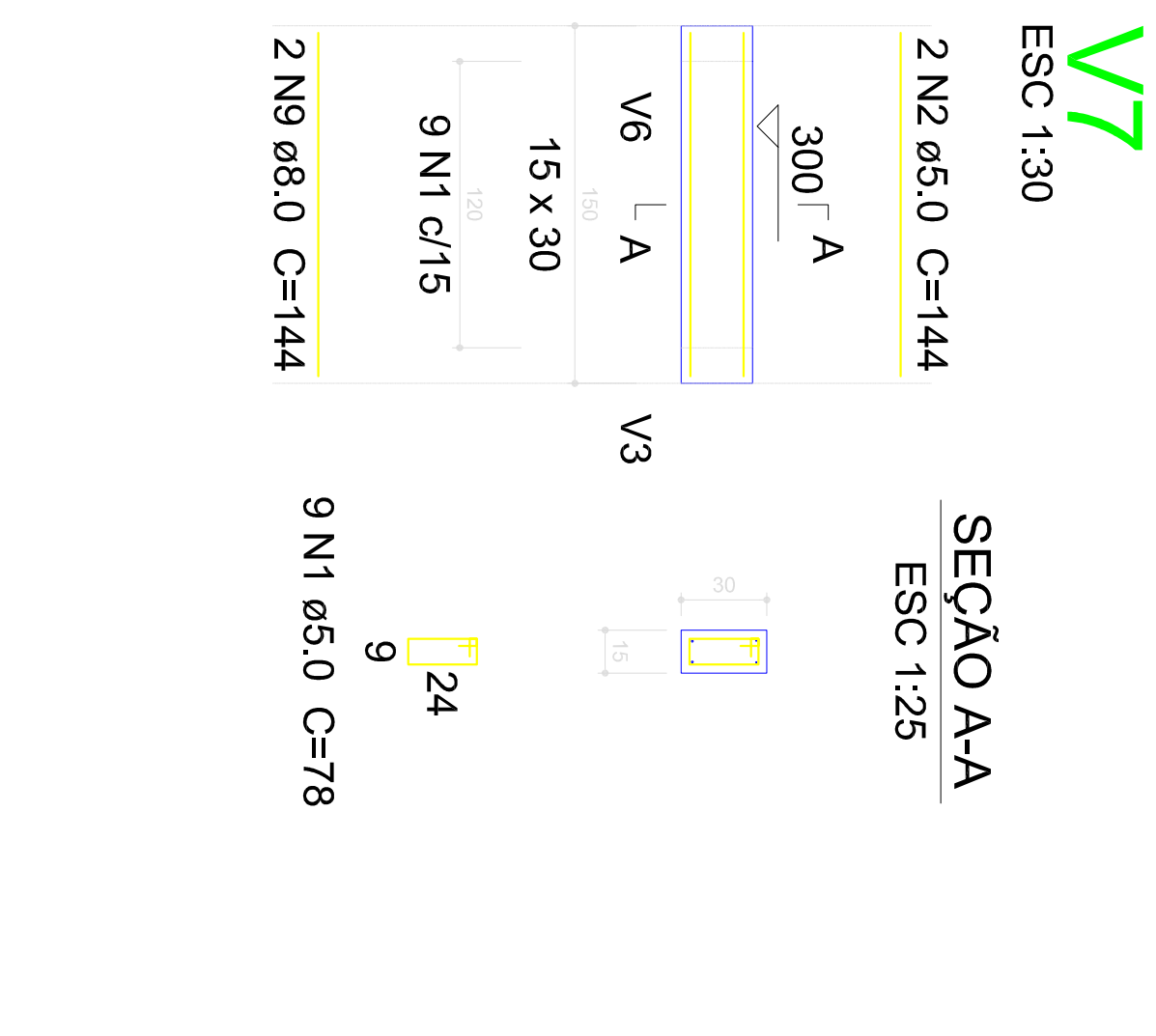
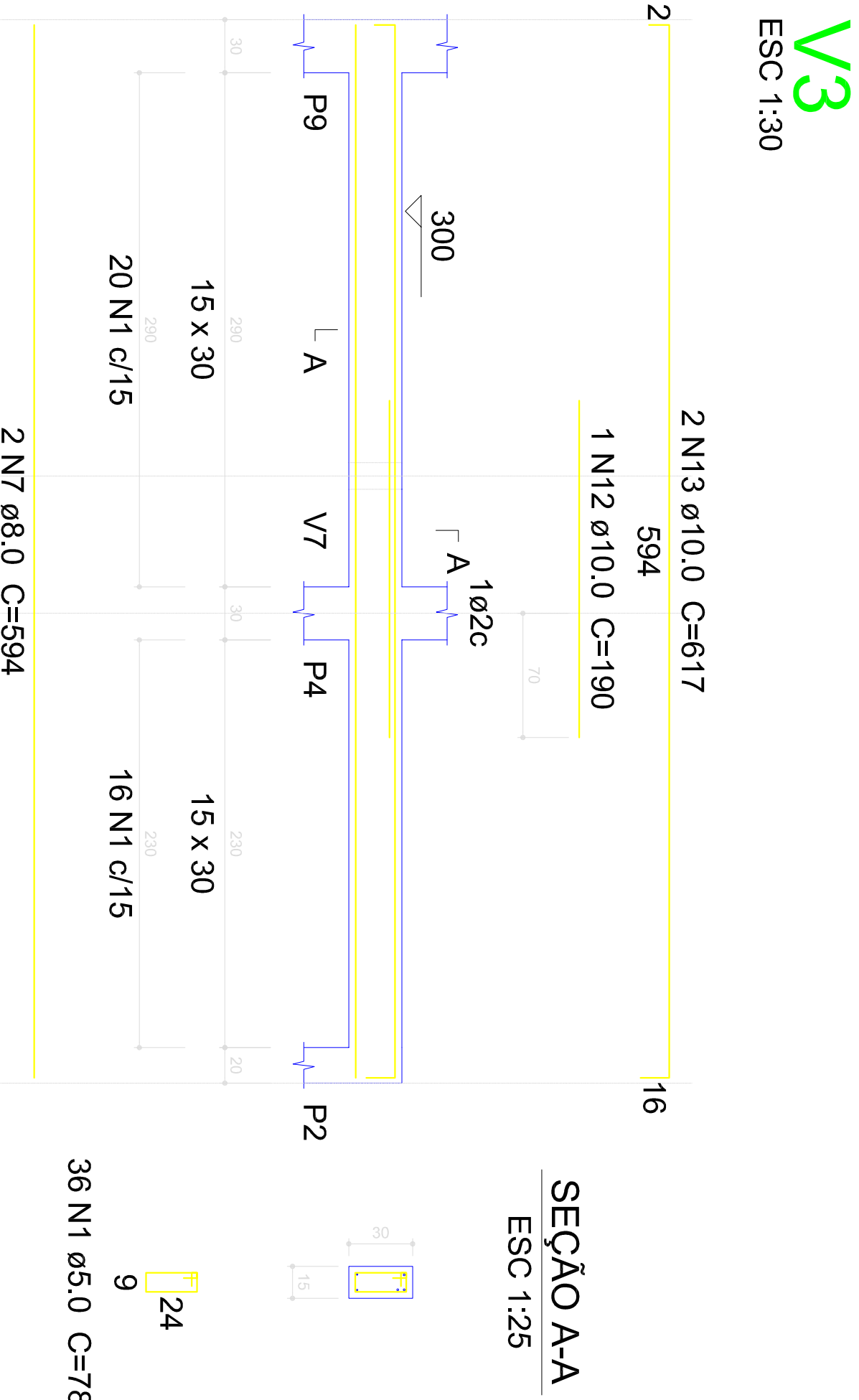
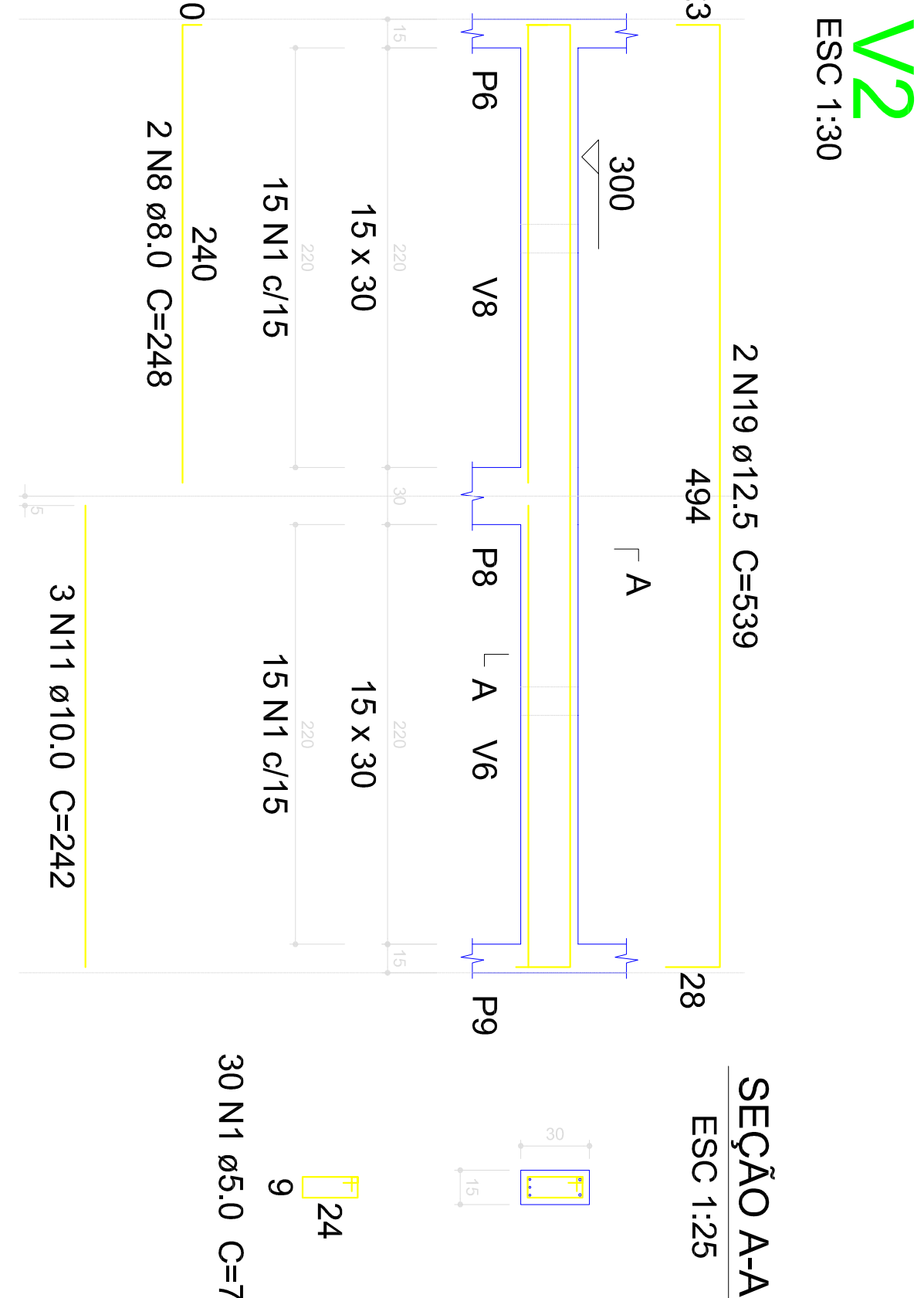
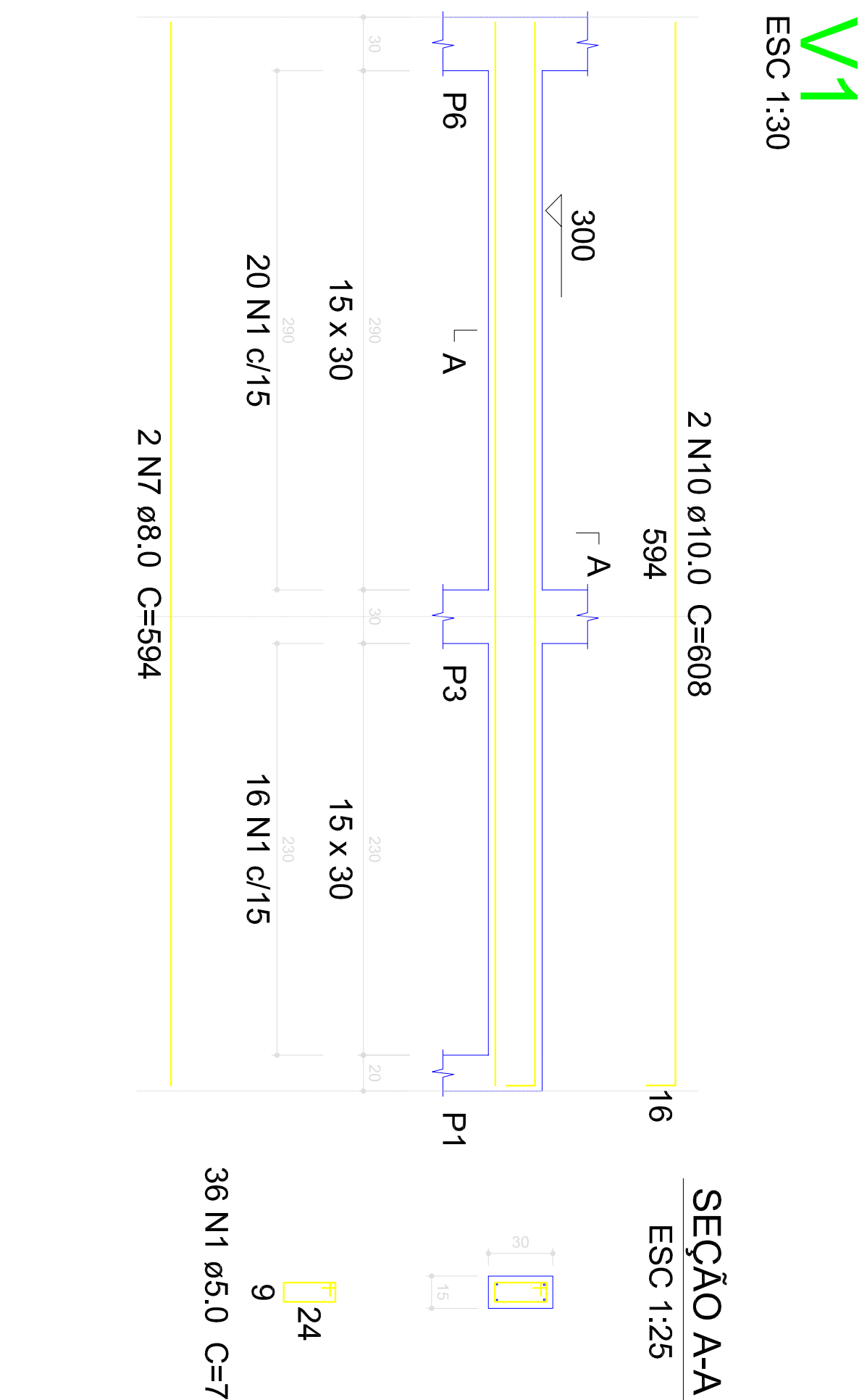
Pilar que morre

Pilar que passa

Pilar que nasce

Pilar com mudança de seção



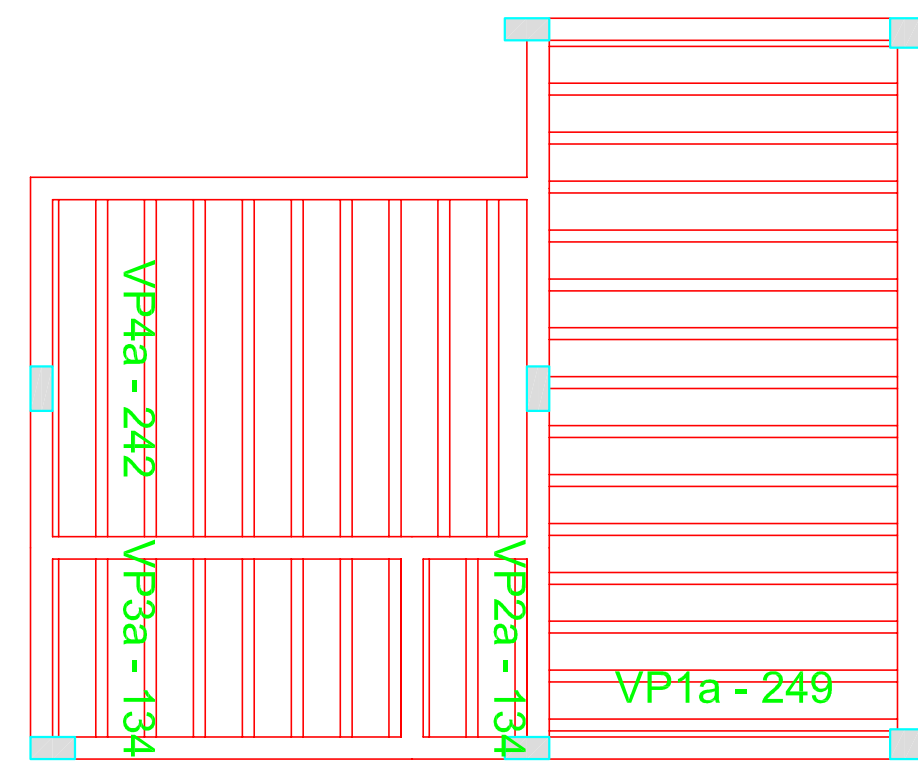
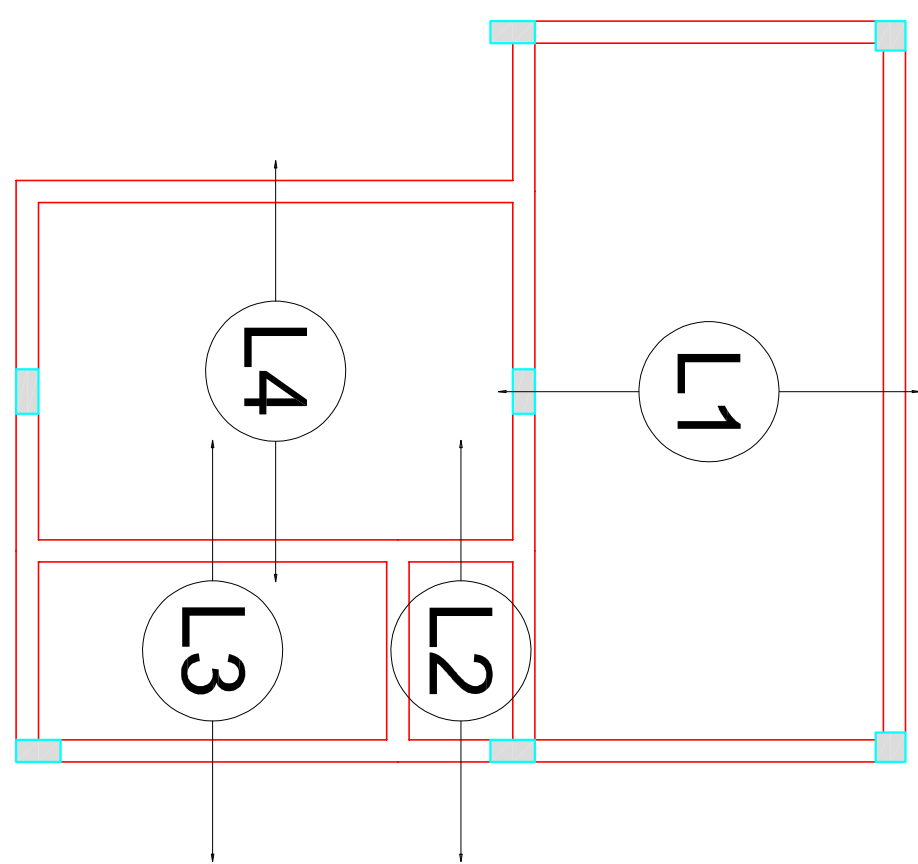
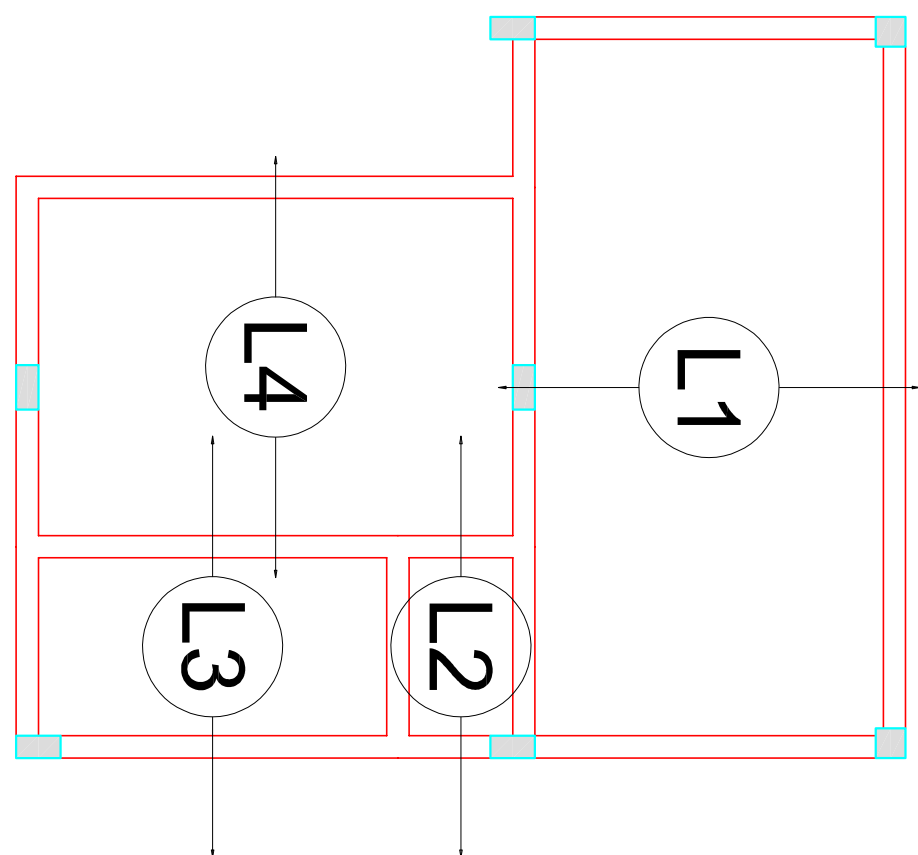
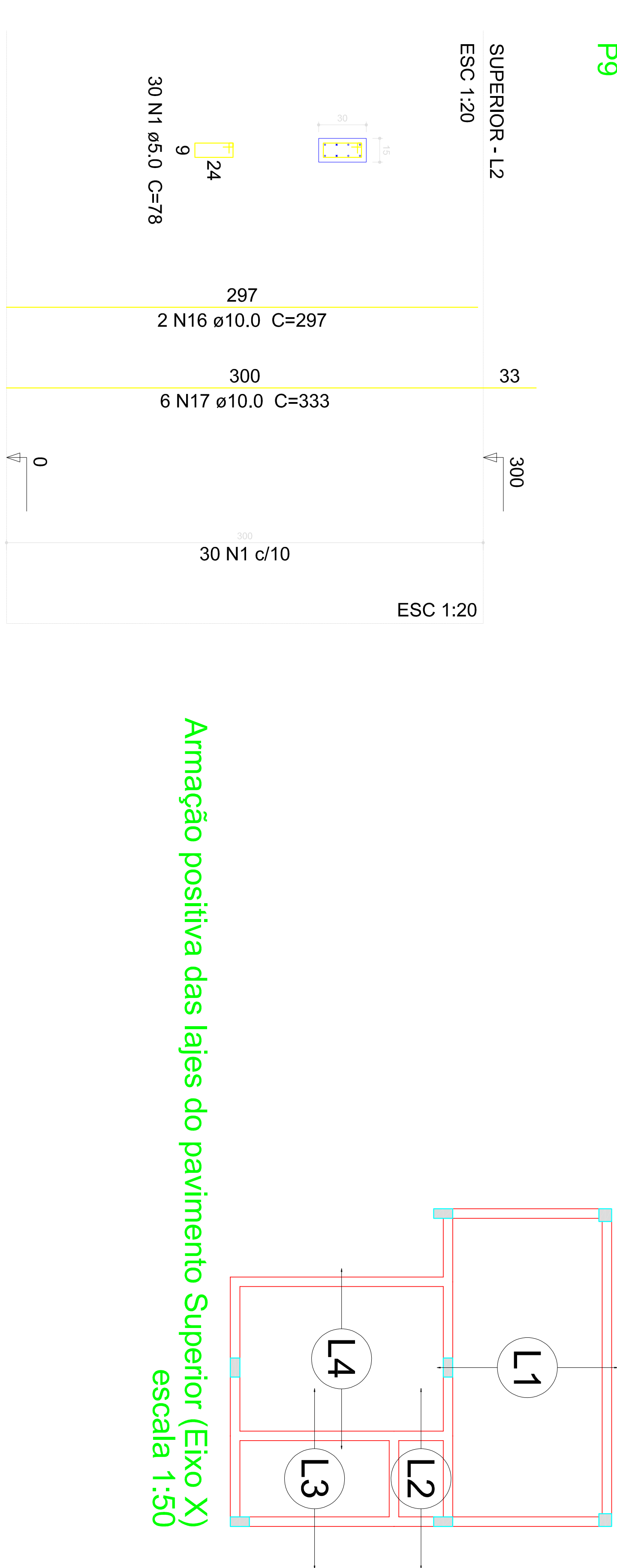
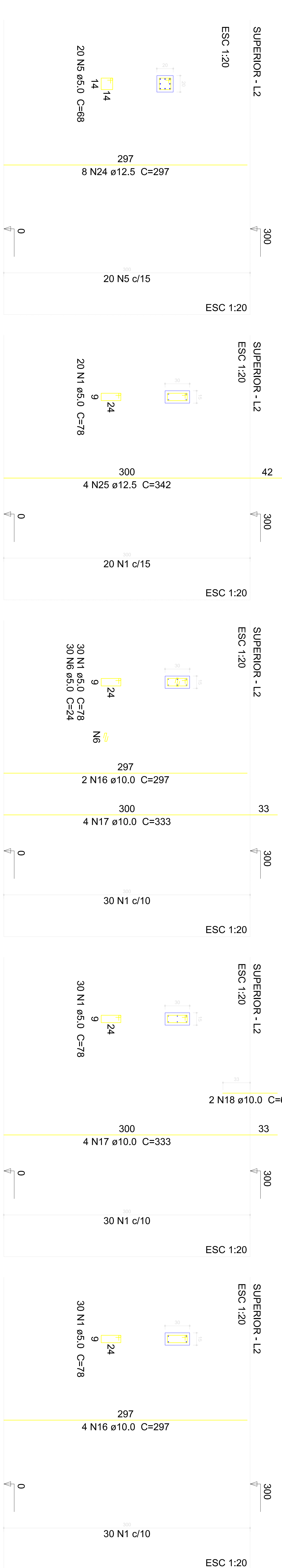


Relação do aço							
2xP1	P3	P4					
P6	2xP7	P9					
V1	V2	V3					
V4	V5	V6					
V7	V8						
ACO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C-TOTAL (cm)		
CA60	1	5,0	389	78	30342		
	2	5,0	2	144	288		
	3	5,0	2	240	480		
	4	5,0	4	344	1376		
CA50	5	5,0	40	68	2720		
	6	5,0	30	24	720		
	7	8,0	4	594	2376		
	8	8,0	4	246	992		
	9	8,0	2	144	288		
	10	10,0	2	608	1216		
	11	10,0	3	242	726		
	12	10,0	1	190	190		
	13	10,0	2	617	1234		
	14	10,0	2	252	504		
	15	10,0	2	344	688		
	16	10,0	12	297	3564		
	17	10,0	14	333	4662		
	18	10,0	2	67	134		
	19	12,5	2	539	1078		
	20	12,5	2	543	1086		
	21	12,5	3	518	1554		
	22	12,5	1	275	275		
	23	12,5	3	368	1104		
	24	12,5	16	297	4752		
	25	12,5	4	342	1368		
	26	16,0	4	172	688		

Resumo do aço

ACO	DIAM (mm)	C.TOTAL (m)	PESO + 10 % (kg)
CA50	8,0	36,6	15,9
	10,0	129,2	87,6
	12,5	112,2	118,9
	16,0	6,9	11,9
CA60	5,0	359,3	60,9
PESO TOTAL			

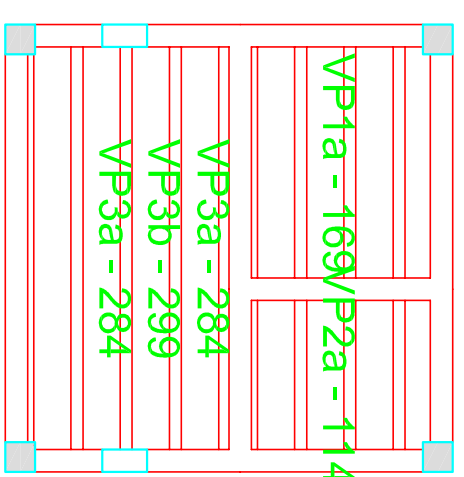
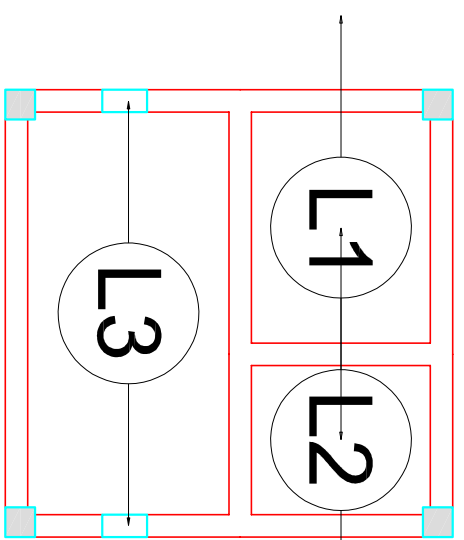
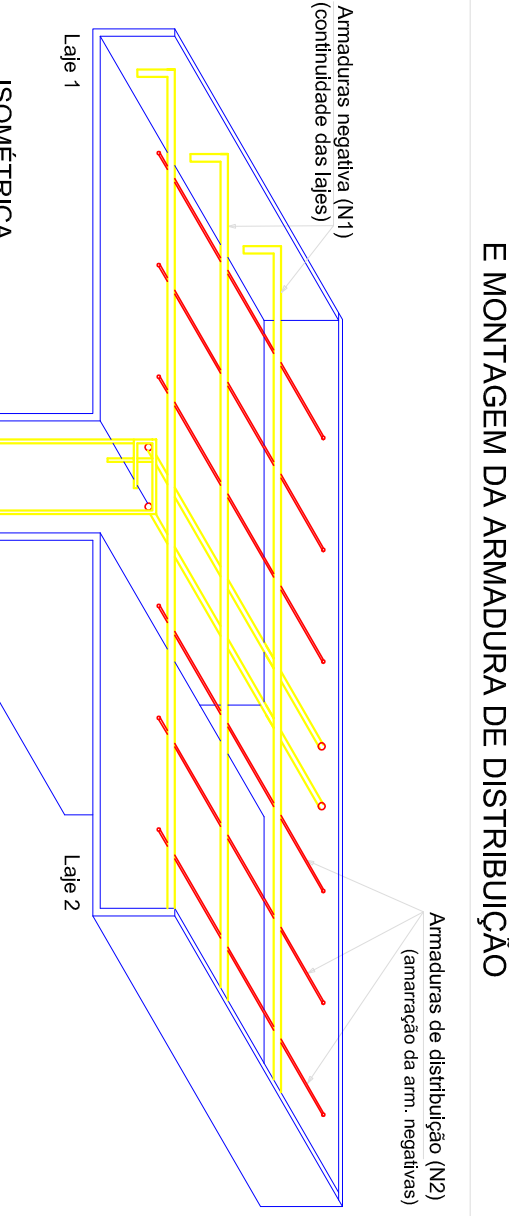
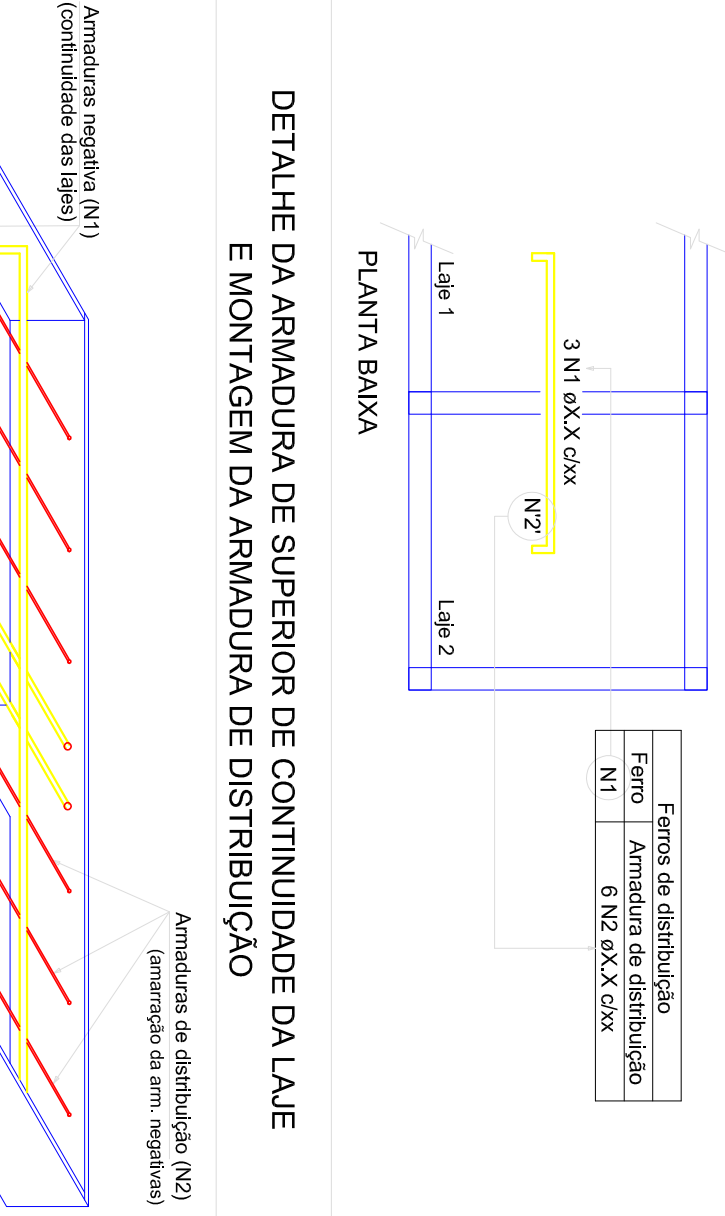
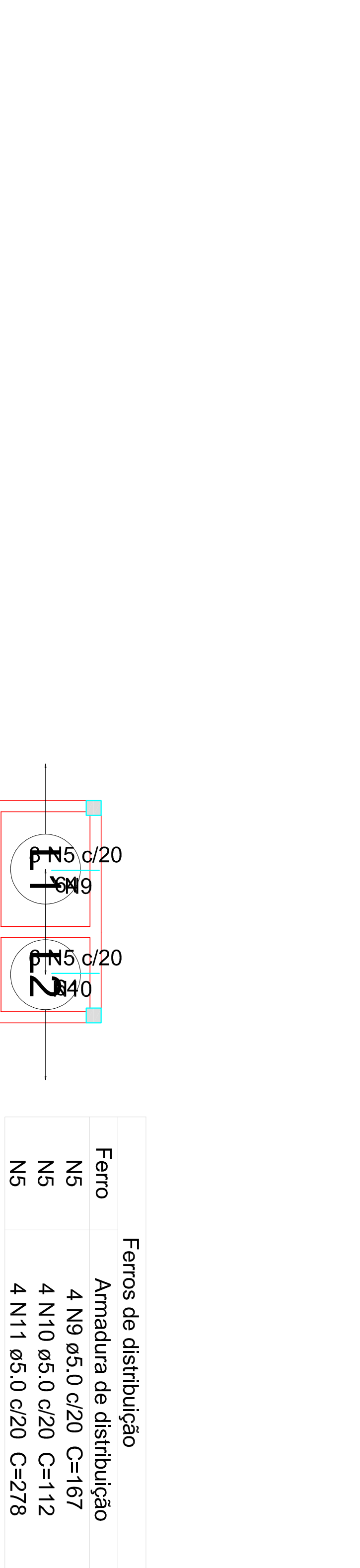
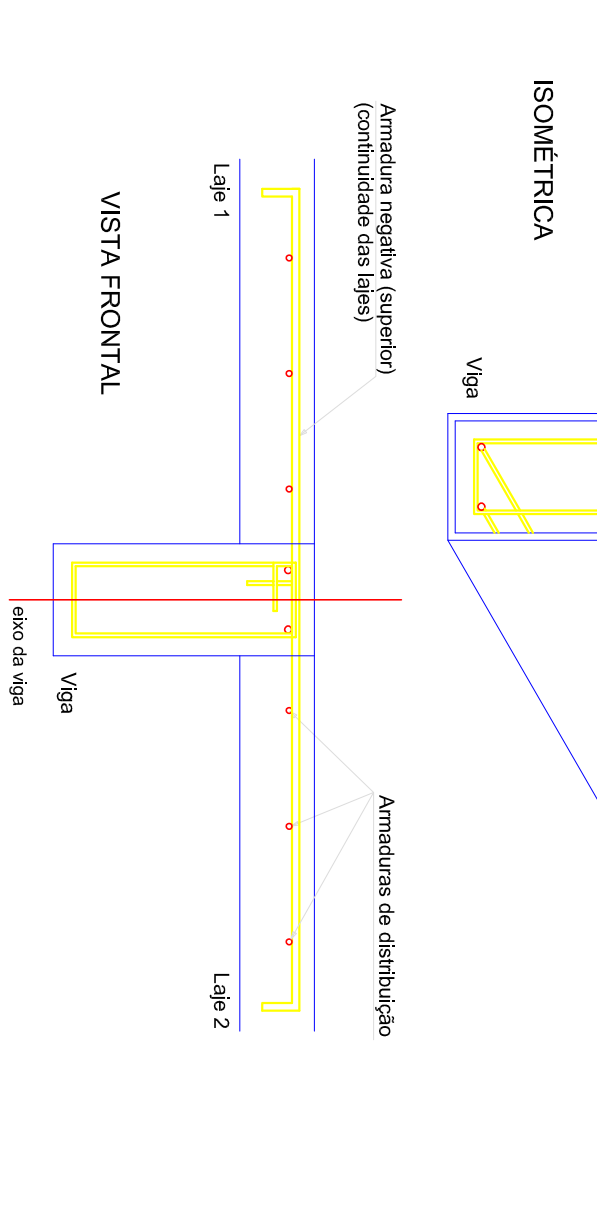
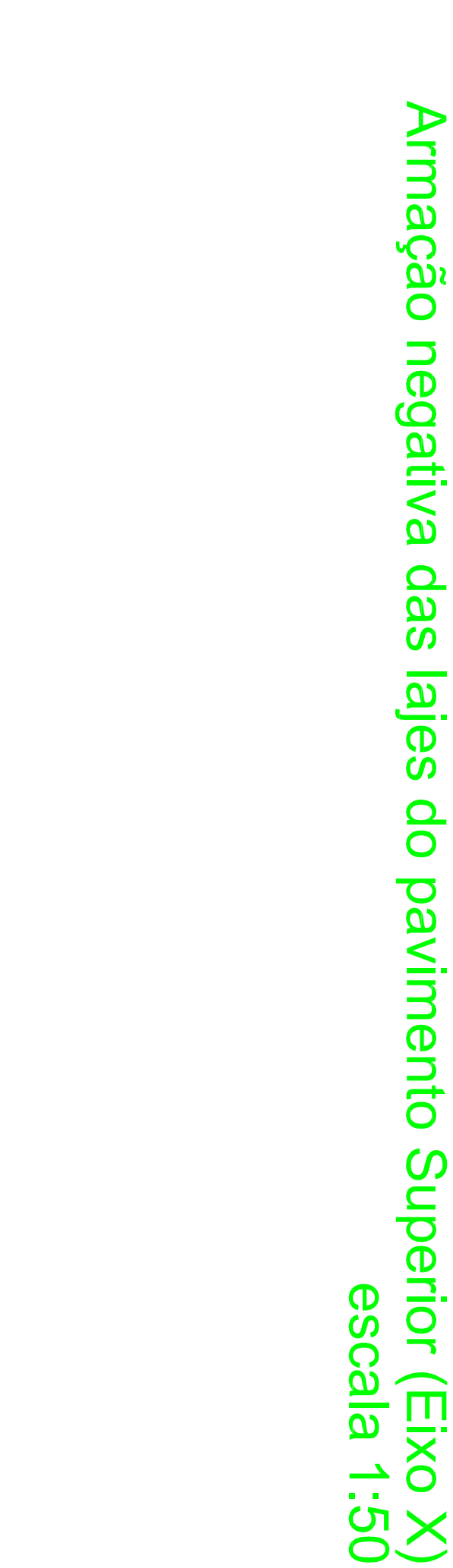
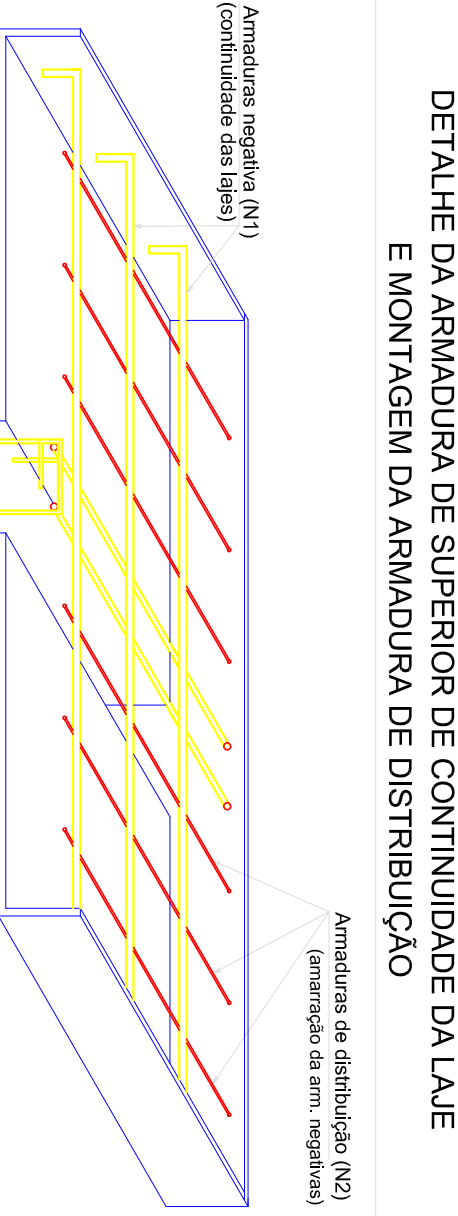
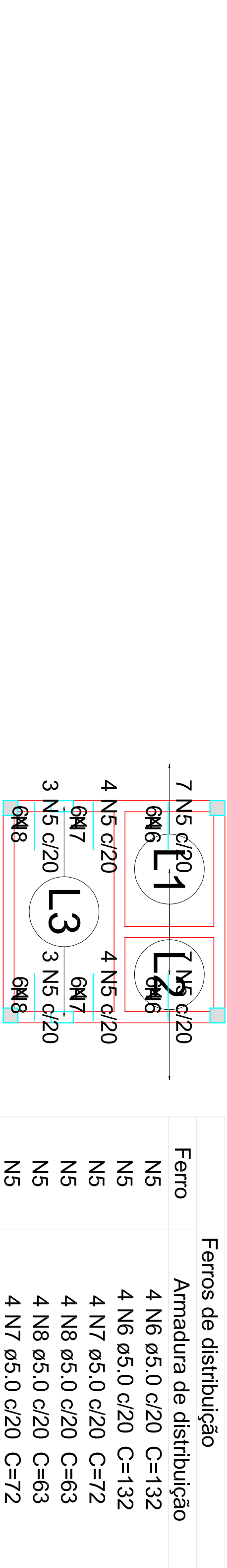
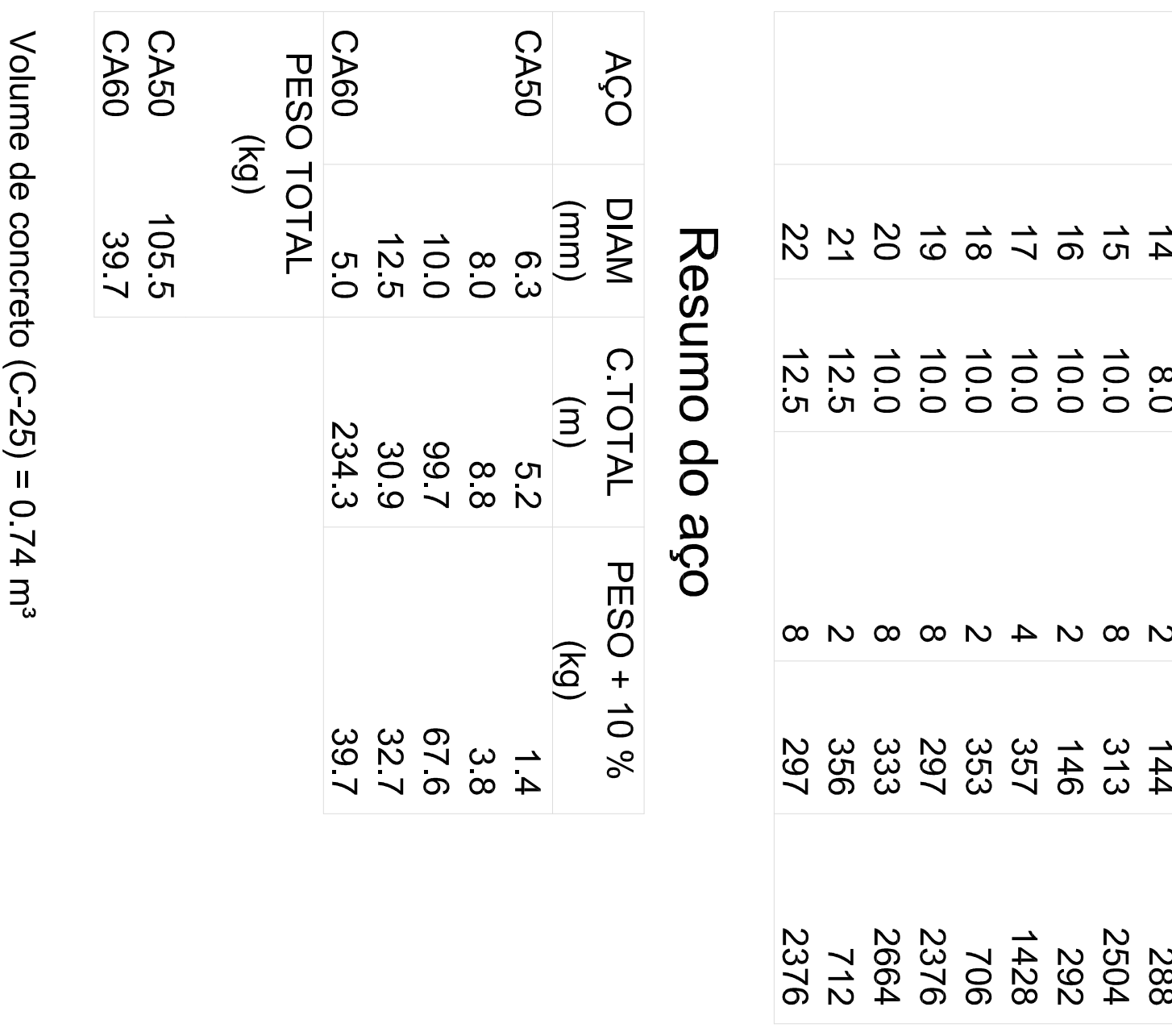
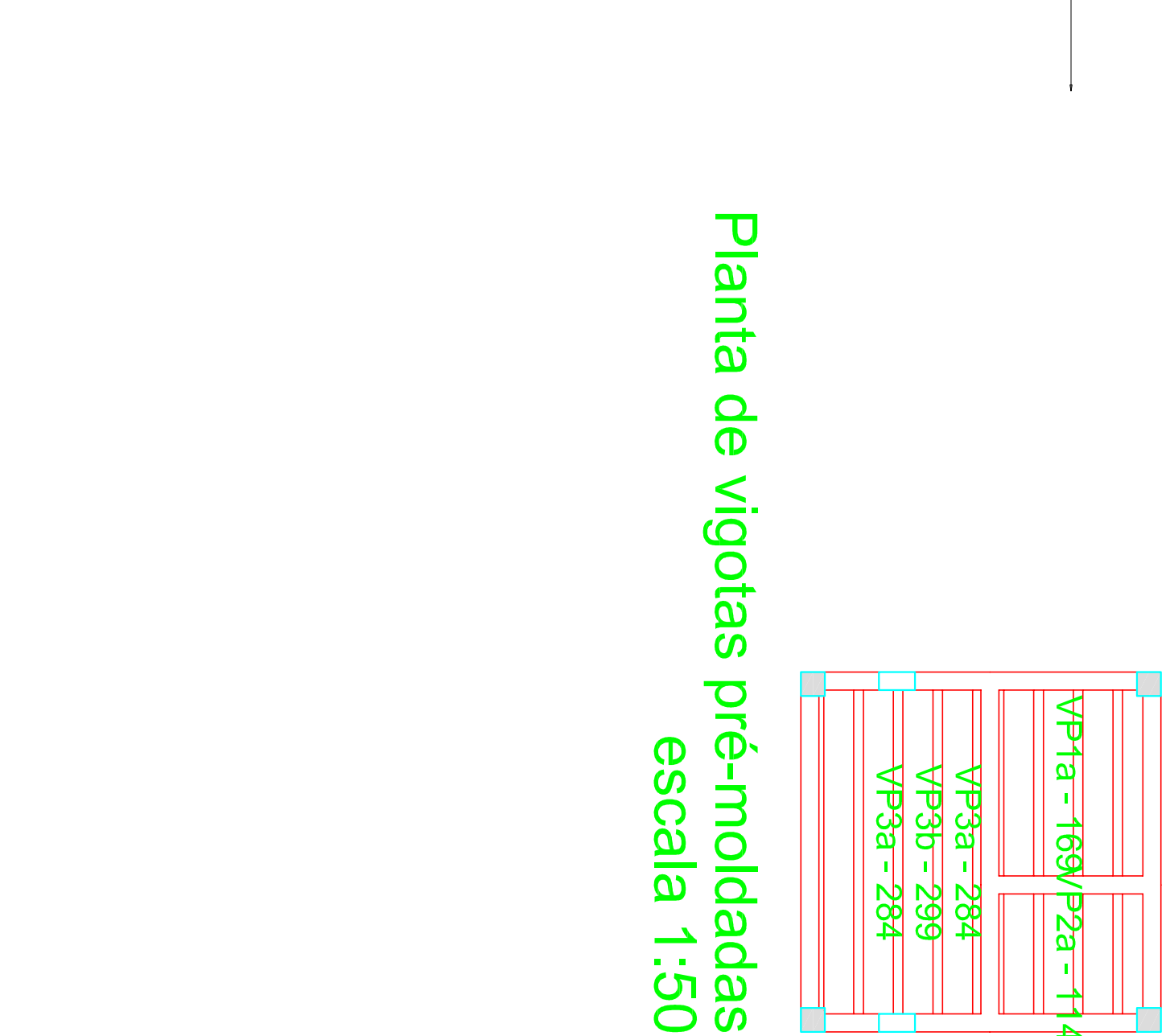
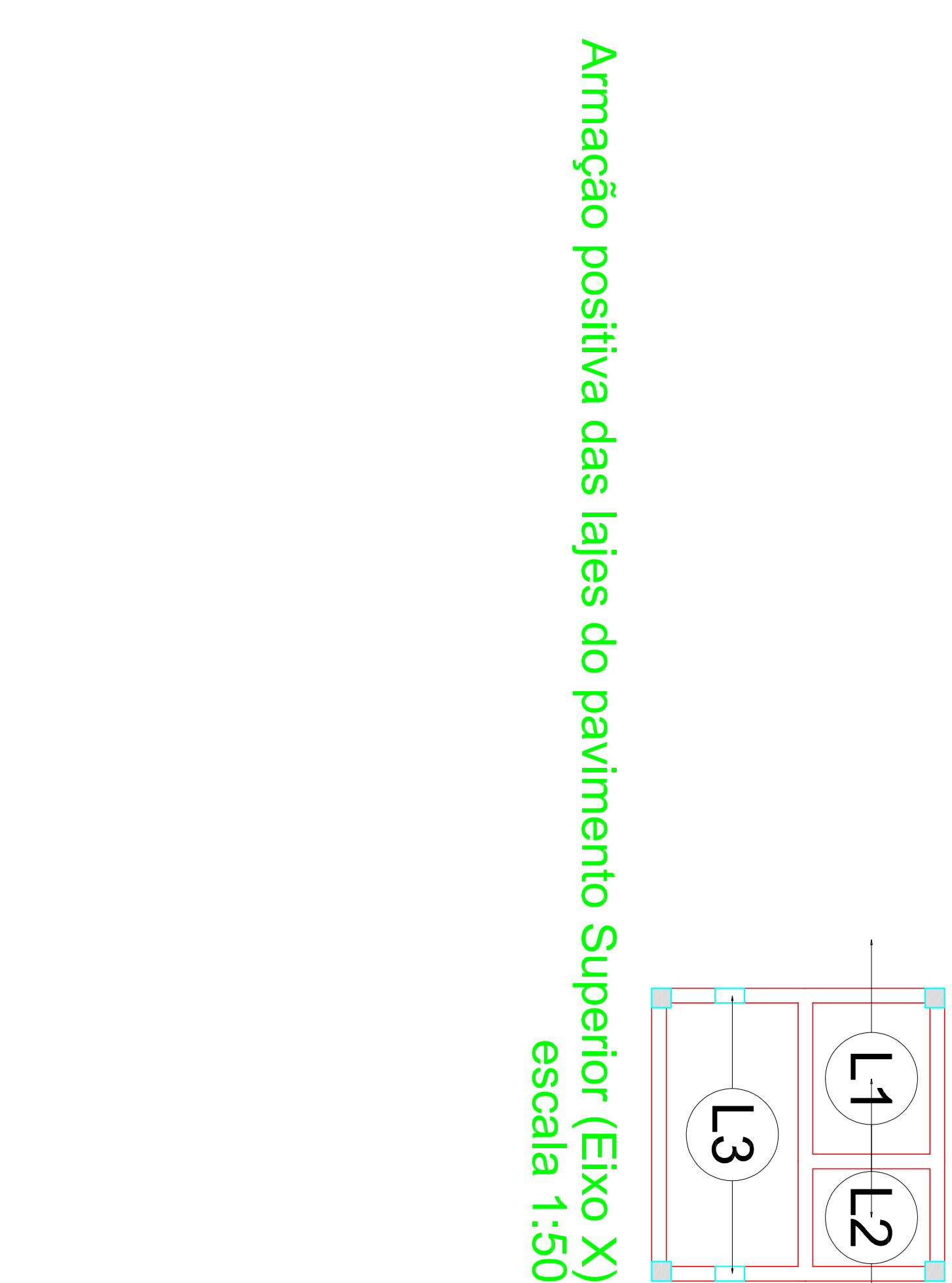
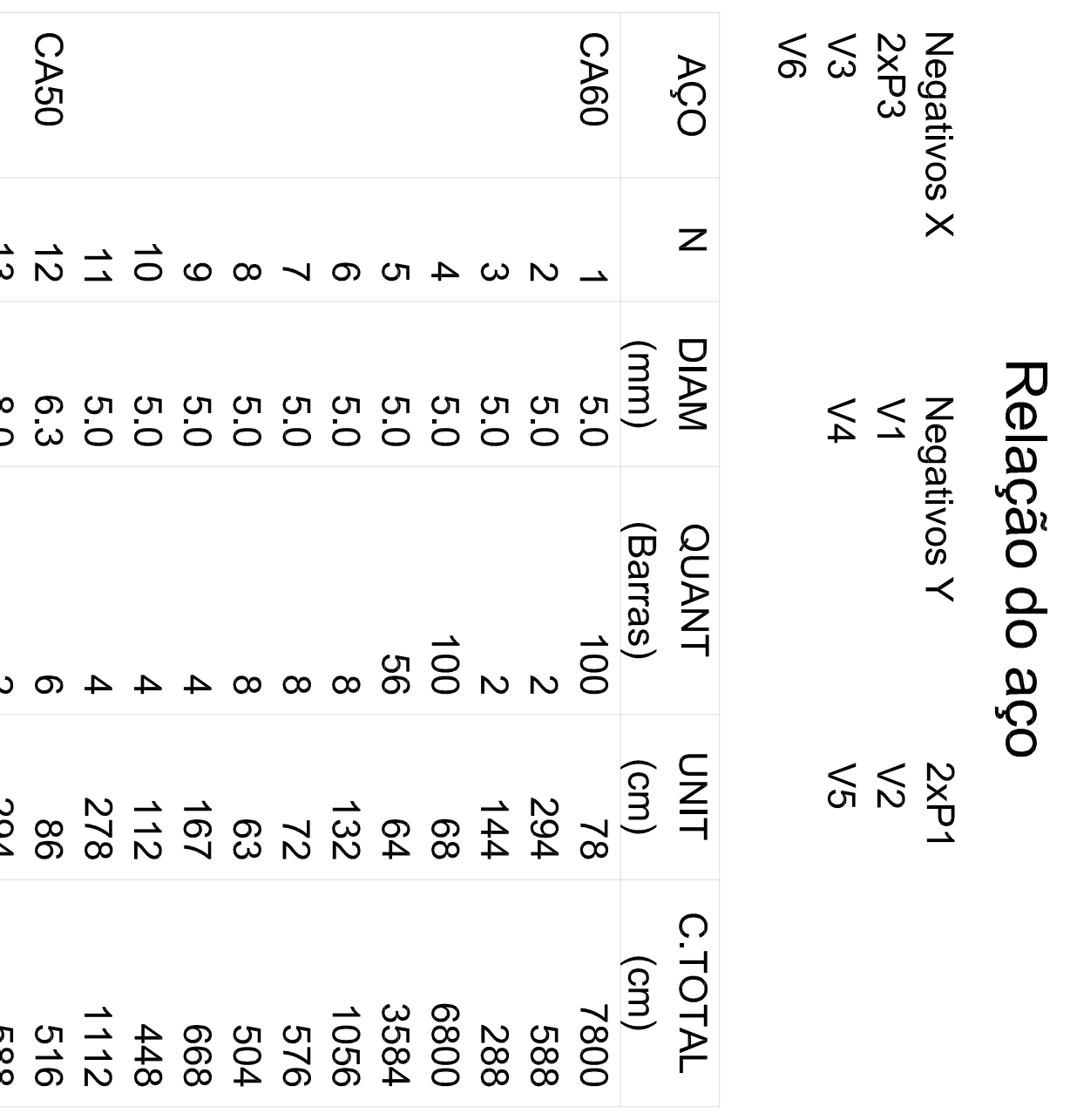
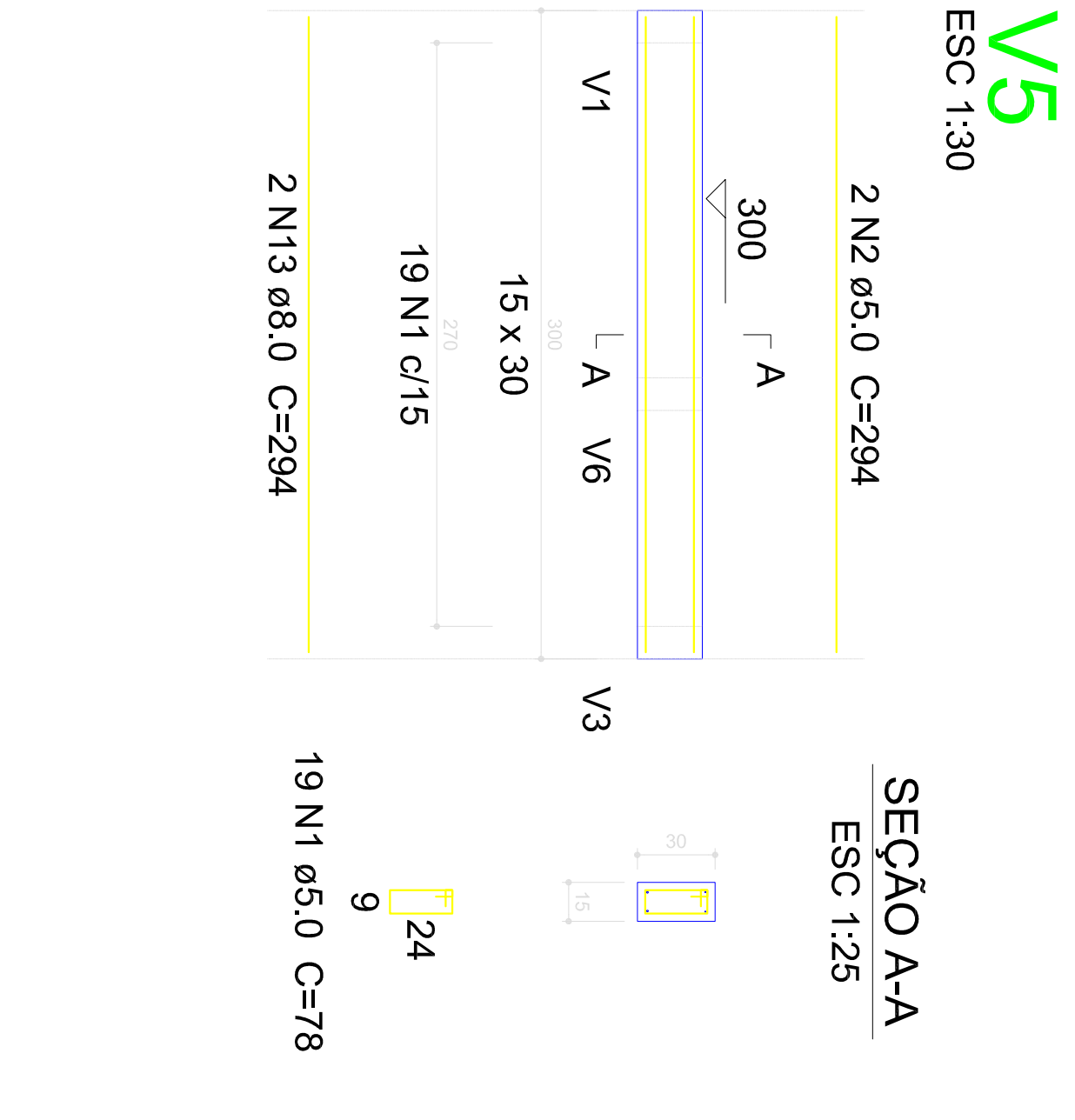
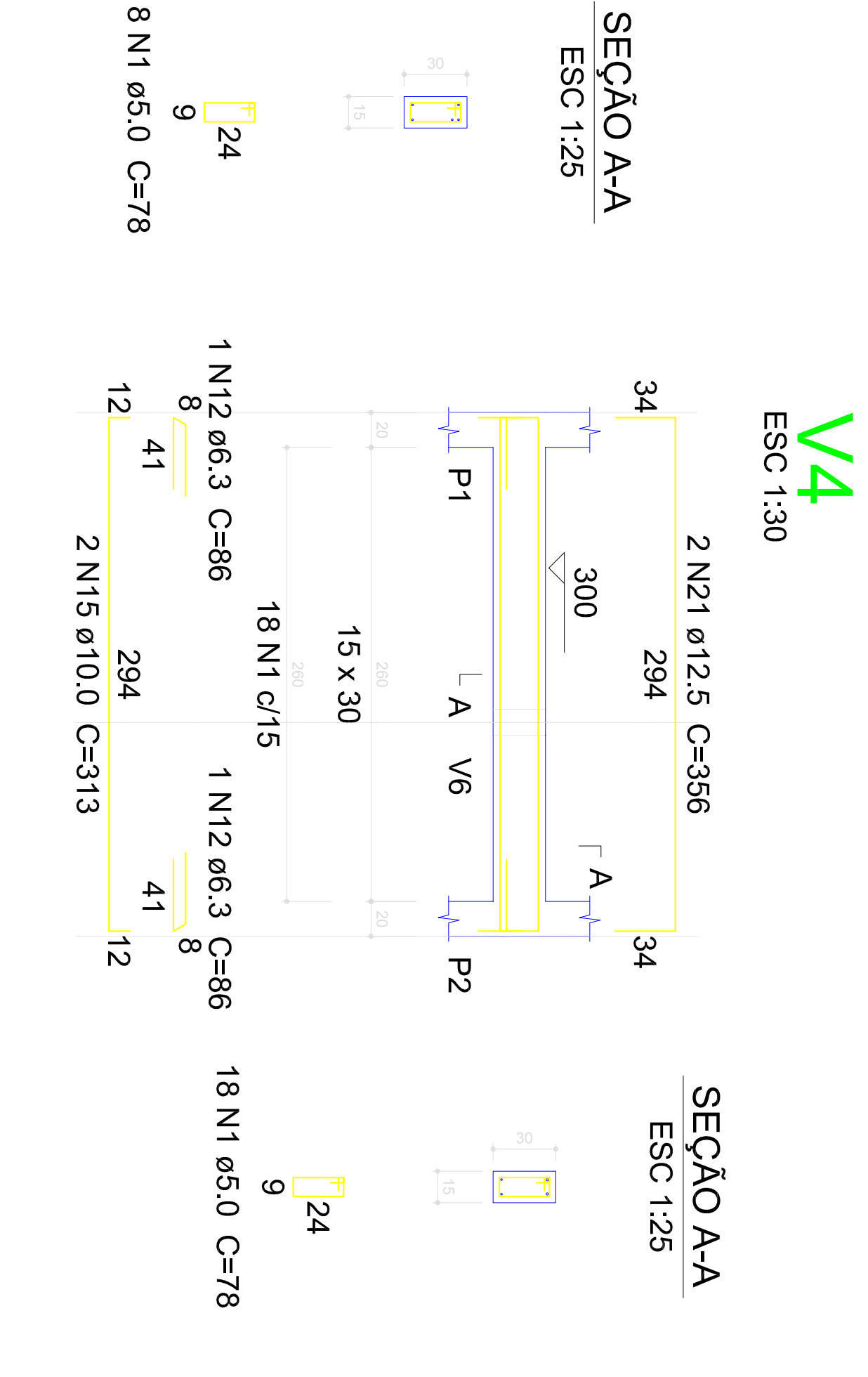
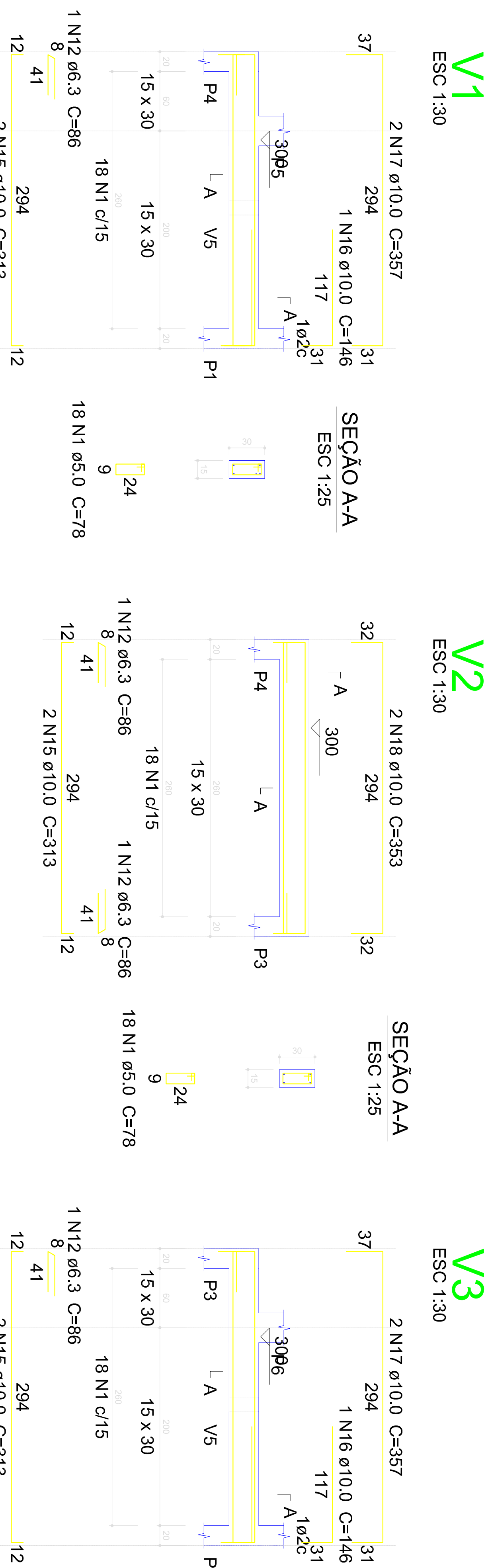
Volume de concreto (C-25) = 1.6 m³
 Volume de concreto (C-30) = 1.05 m³
 Área de forma = 47.63 m²



Armação positiva das lajes do pavimento Superior (Eixo X)
escala 1:50

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

Planta de vigotas pre-moldadas
escala 1:50



Armação positiva das lajes do pavimento Superior (Eixo X)
escala 1:50

Planta de vigotas pré-moldadas
escala 1:50

Resumo do aço

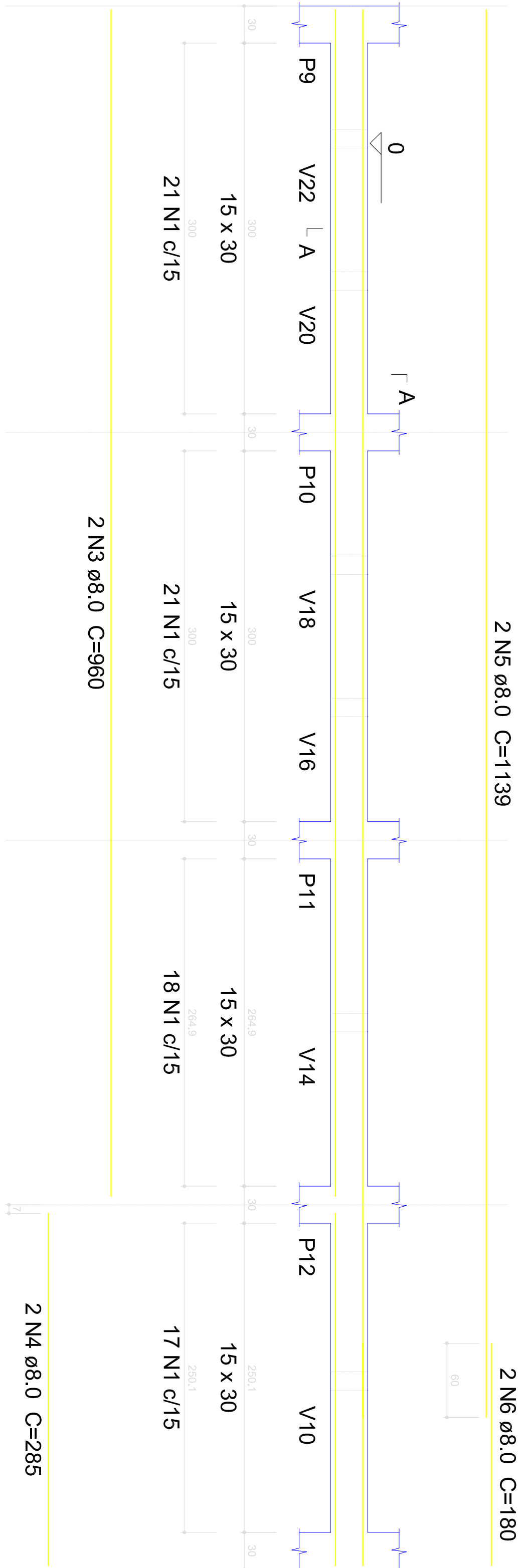
	DIAMI	C.TOTAL	PESO + 10 %
AQO	(mm)	(m)	(kg)
CASO	6.3	5.2	1.4
	8.0	8.8	3.8
	10.0	99.7	67.6
	12.5	30.9	32.7
CASO	5.0	234.3	39.7
PESO TOTAL			
(kg)			
CASO			105.5
CASO			39.7

Volume de concreto (C-25) = 0.74 m³
 Volume de concreto (C-30) = 0.48 m³
 Área de forma = 21.98 m²

Area de forma = 21.98 m²

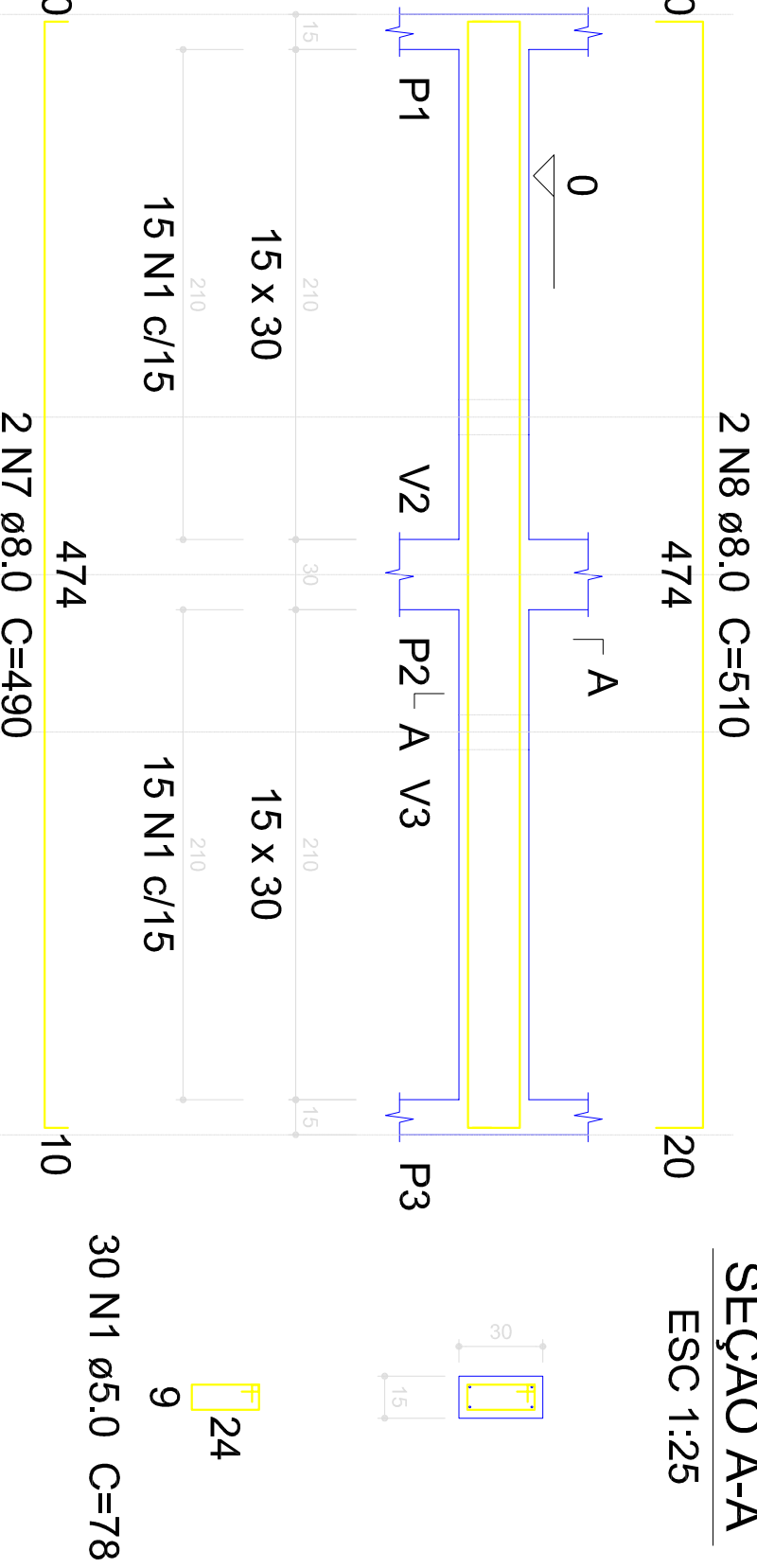
V1

ESC 1:30



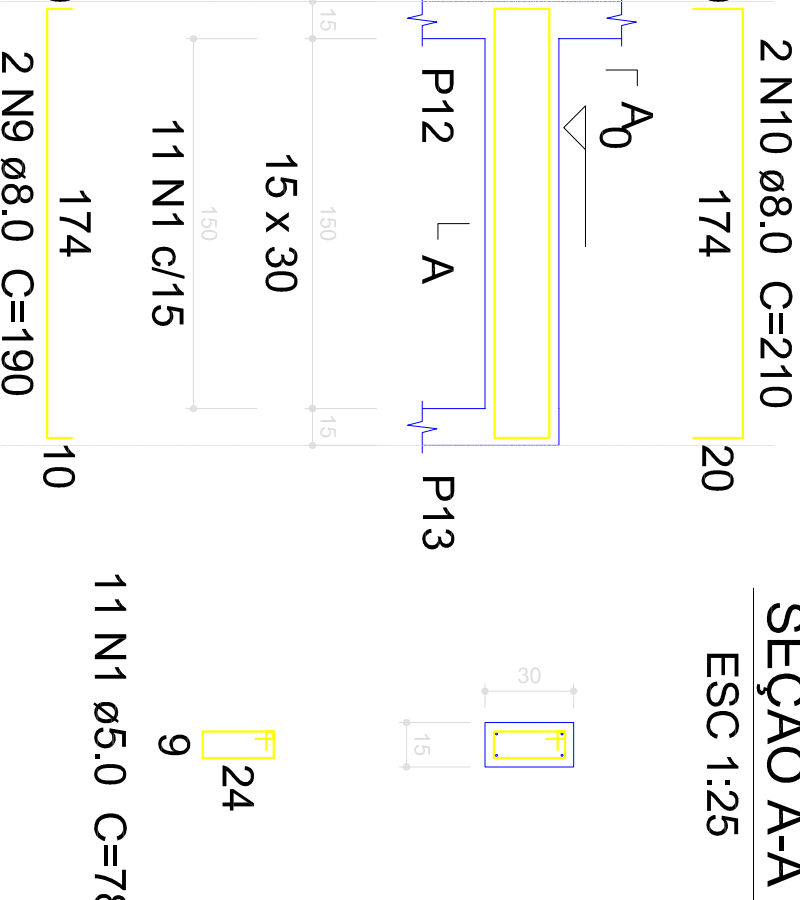
V5

ESC 1:30



V6

ESC 1:30



Relação do aço

	V1	V4	V7	V10	V13	V16	V19	V2	V5	V8	V11	V14	V17	V3	V6	V9	V12	V15	V18
ACO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)														
CA60	1	5.0	565	78	44070														
CA60	2	8.0	22	174	3828														
CA60	3	8.0	8	960	7680														
CA60	4	8.0	8	285	2280														
CA60	5	8.0	4	1139	4556														
CA60	6	8.0	2	180	360														
CA60	7	8.0	6	490	2940														
CA60	8	8.0	6	510	3060														
CA60	9	8.0	2	190	380														
CA60	10	8.0	2	210	420														
CA60	11	8.0	1	89	89														
CA60	12	8.0	2	482	964														
CA60	13	8.0	22	174	3828														
CA60	14	8.0	2	178	356														
CA60	15	10.0	4	1161	4644														
CA60	16	10.0	2	201	402														
CA60	17	10.0	2	493	986														
CA60	18	10.0	2	195	390														

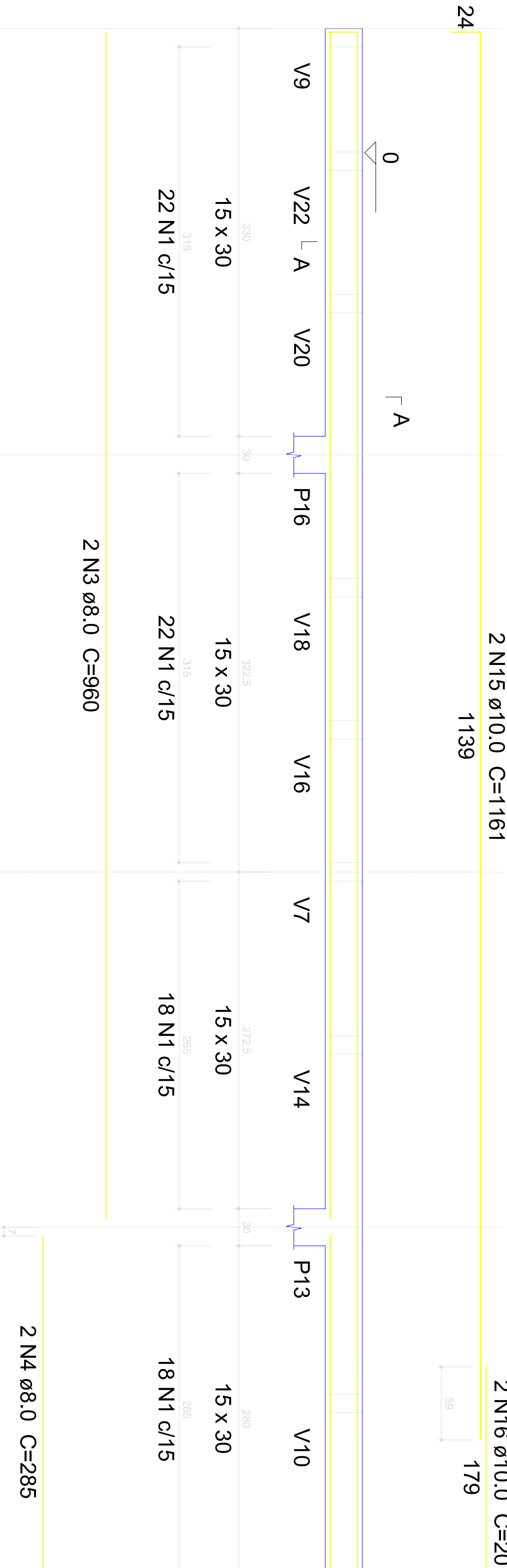
Resumo do aço

ACO	DIAM (mm)	C.TOTAL (m)	PESO + 10 % (kg)
CA50	8.0	269.2	116.8
CA50	10.0	64.3	43.6
CA60	5.0	479	81.2
PESO TOTAL (kg)			
CA50	160.4		
CA60	81.2		

Volume de concreto (C-25) = 4.11 m³
Área de forma = 65.55 m²

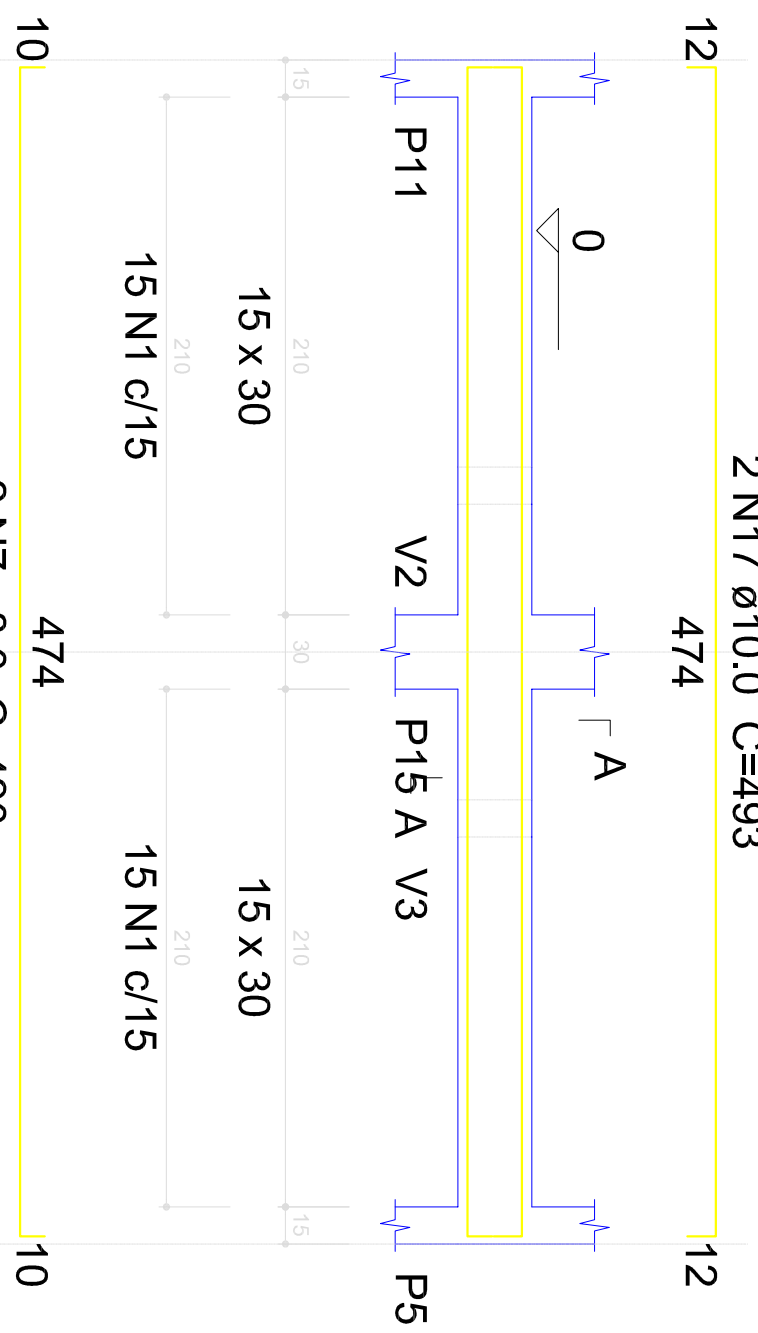
V3

ESC 1:30



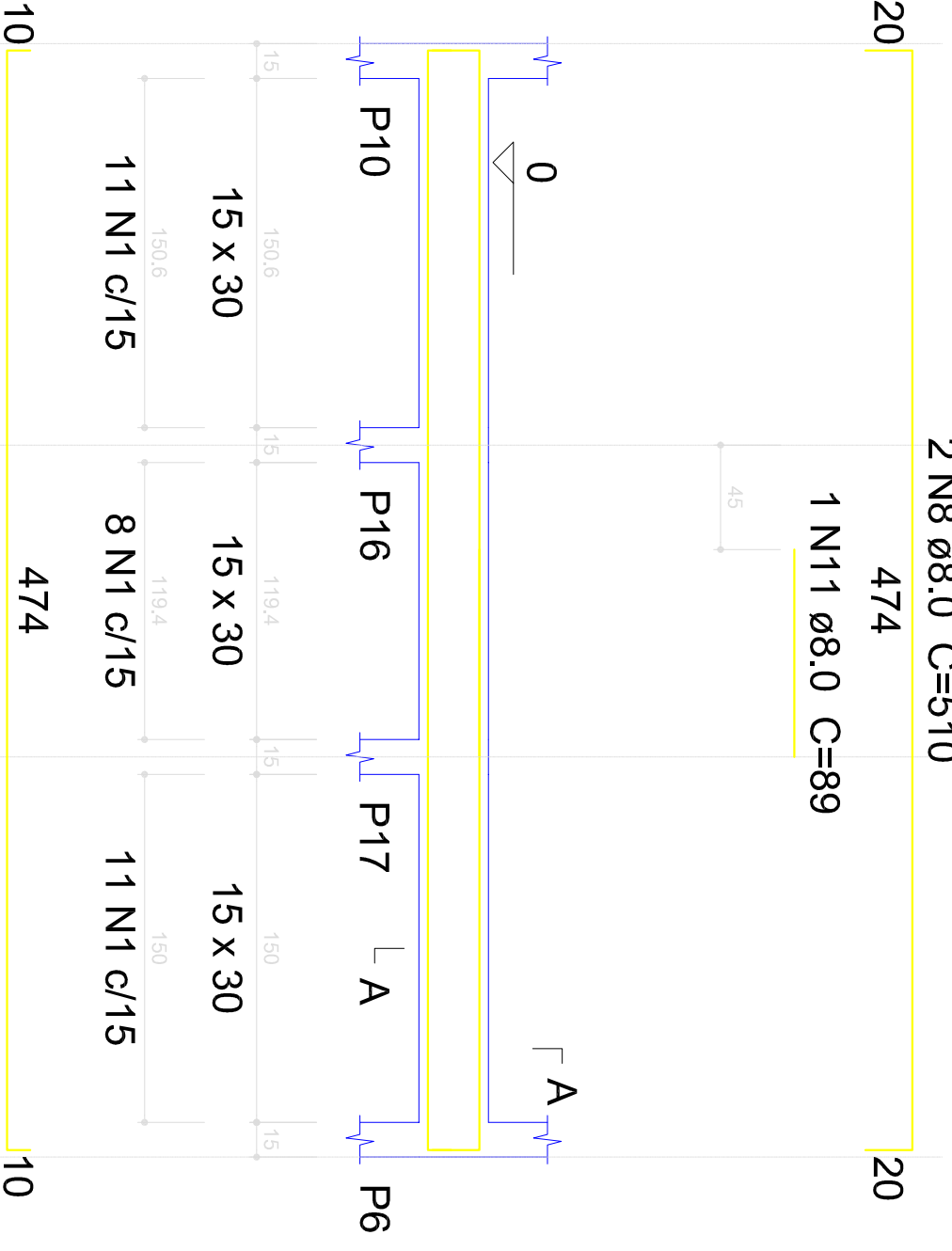
V9

ESC 1:30



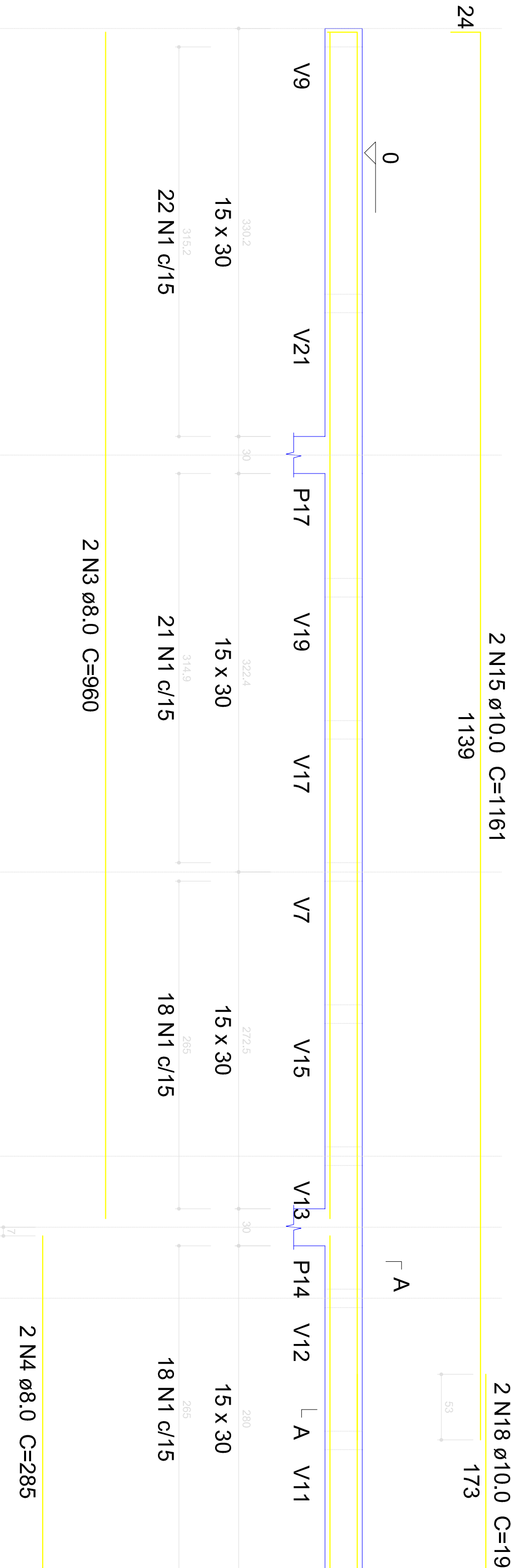
V10

ESC 1:30



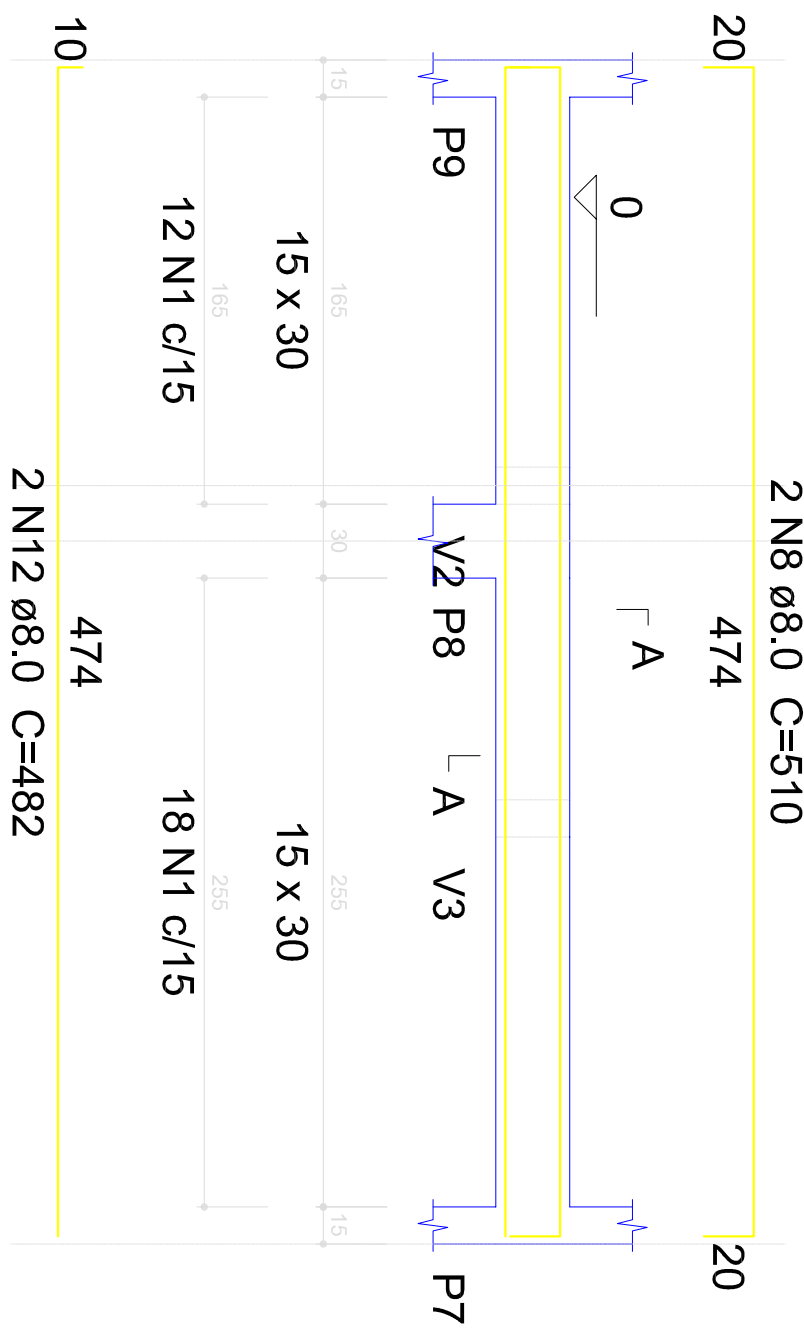
V3

ESC 1:30



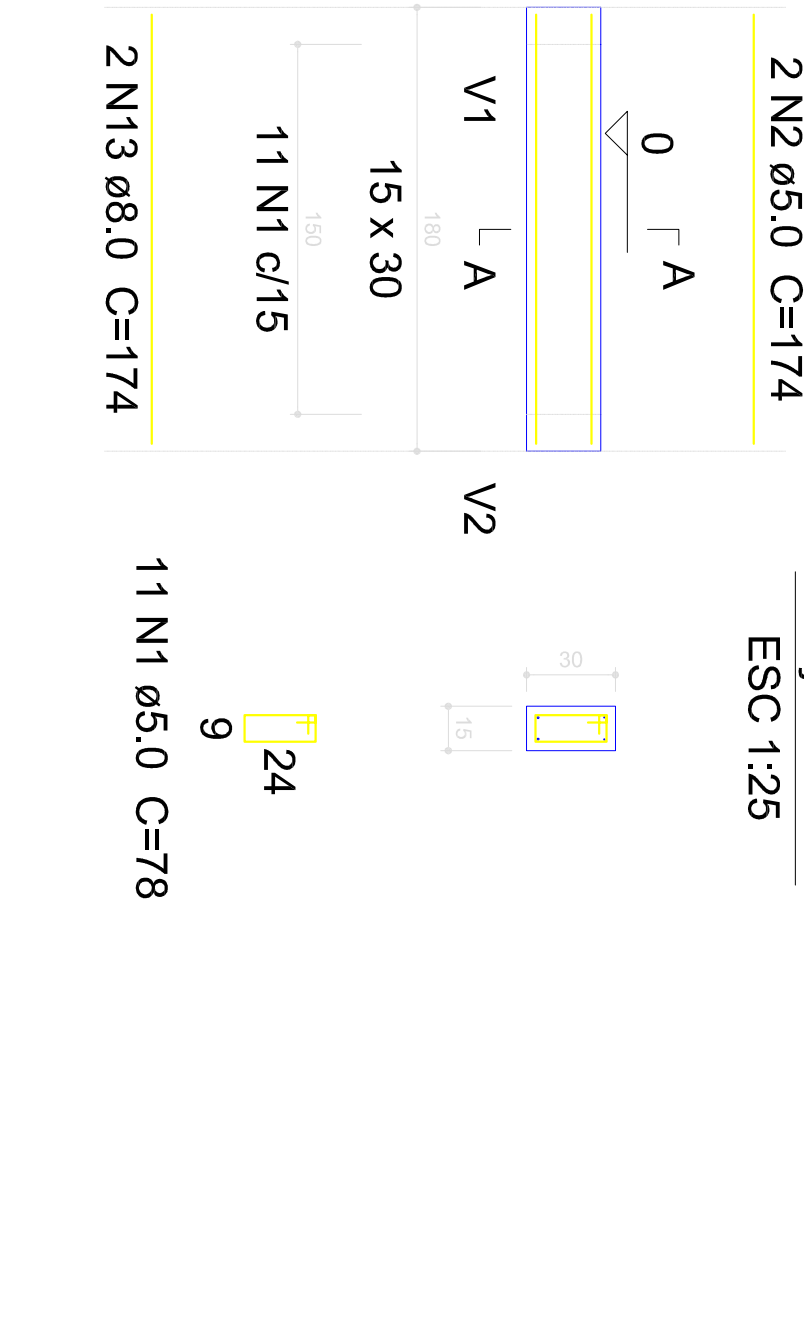
V9

ESC 1:30



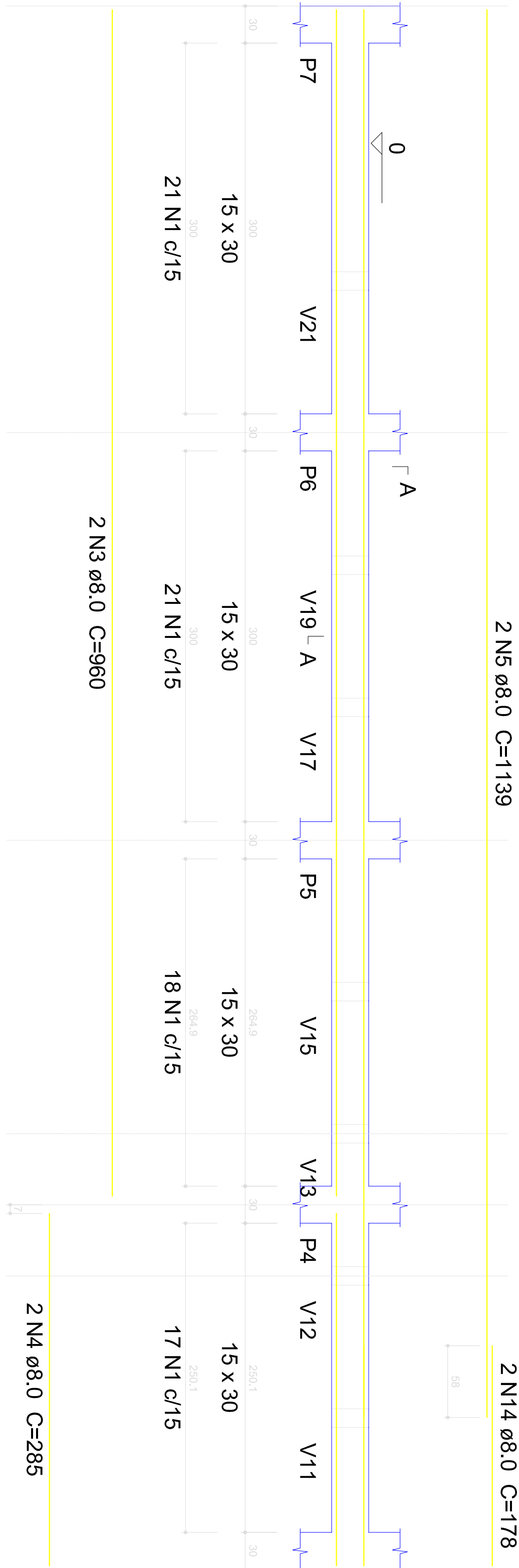
V10

ESC 1:30



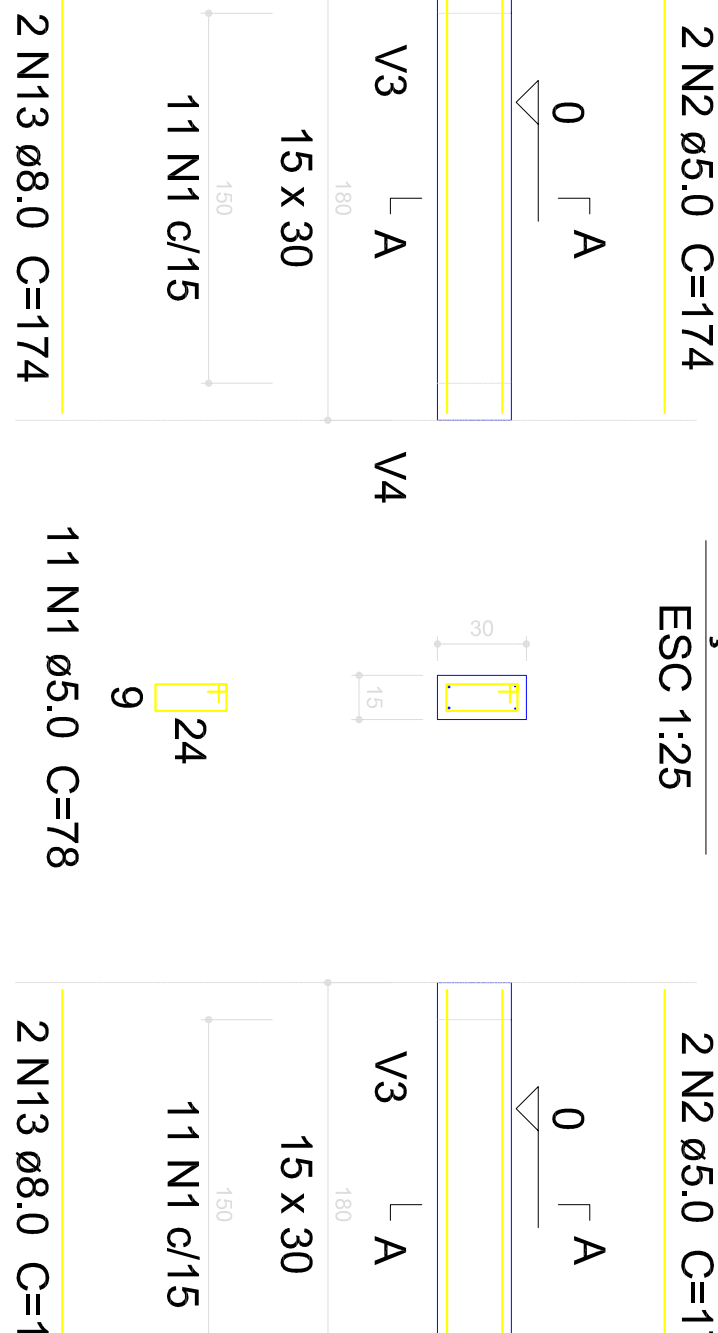
V4

ESC 1:30



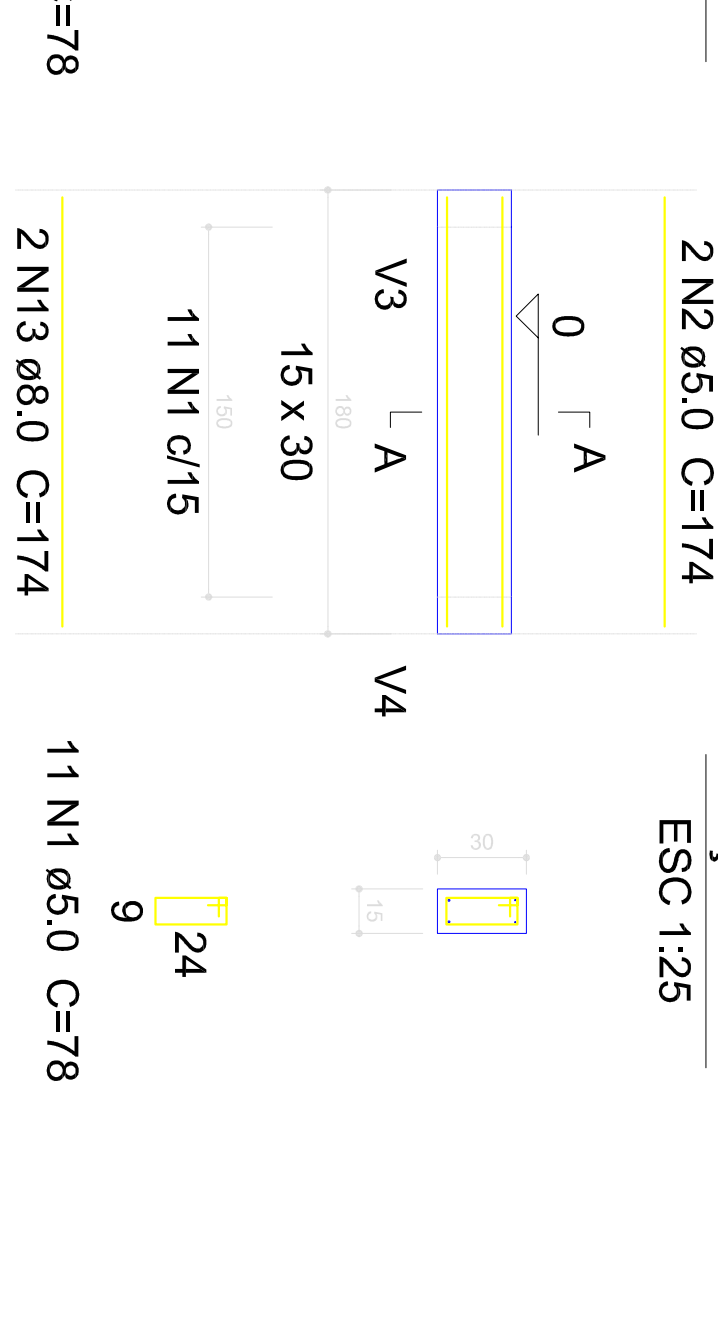
V11

ESC 1:30



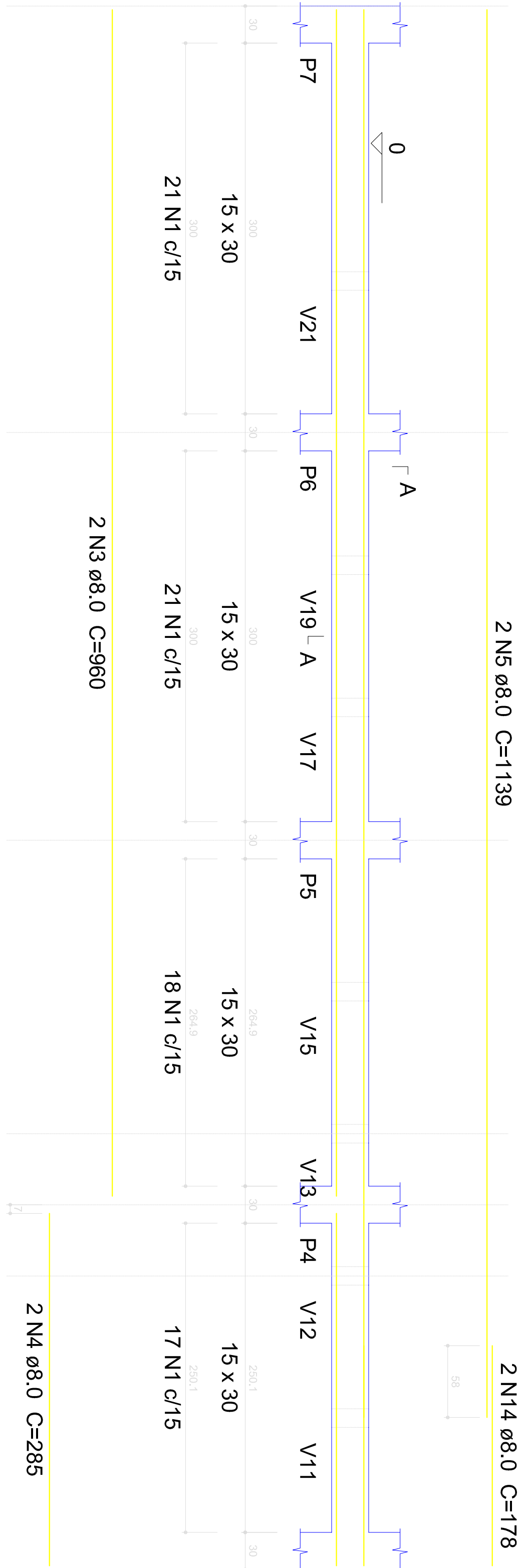
V13

ESC 1:30



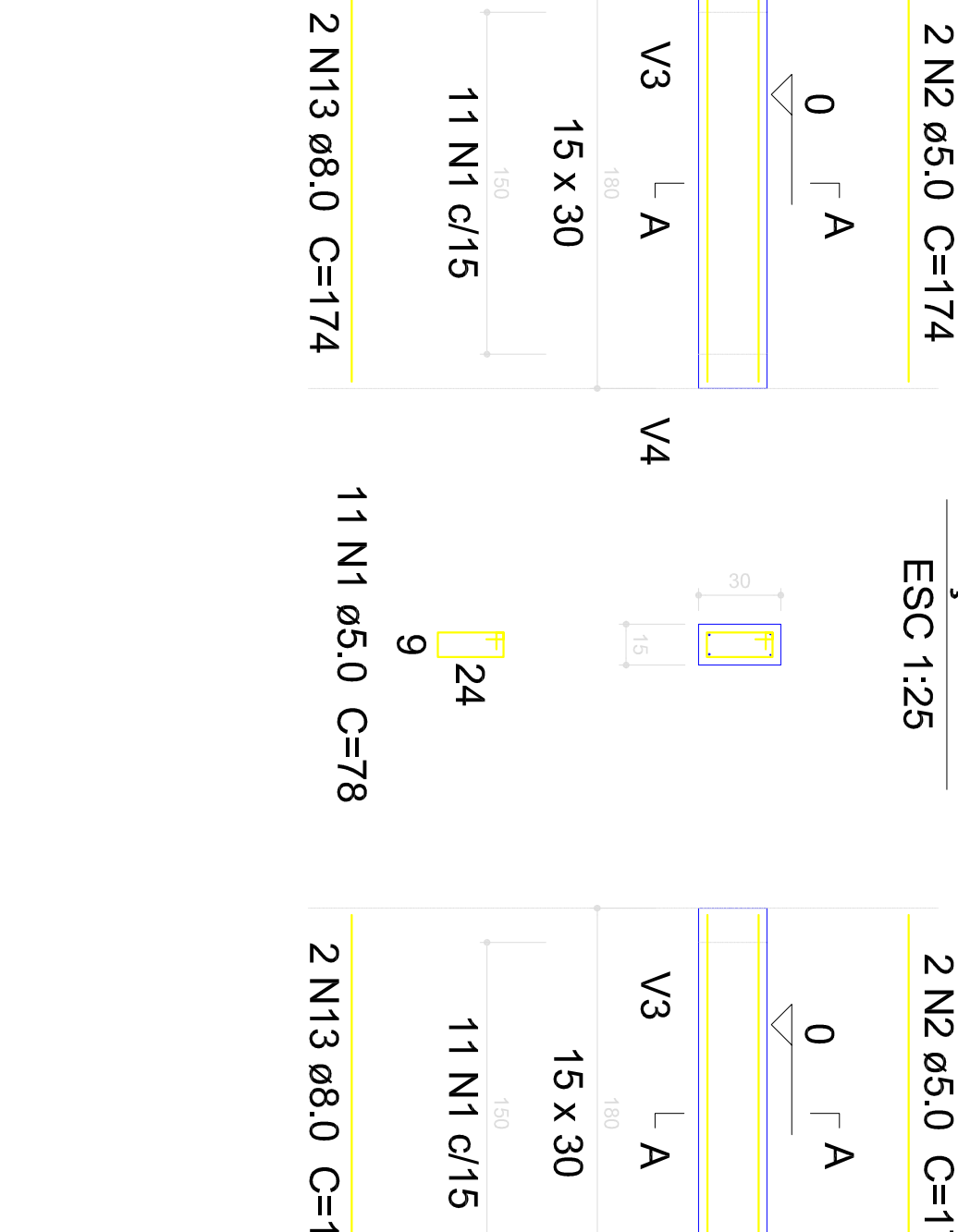
V14

ESC 1:30



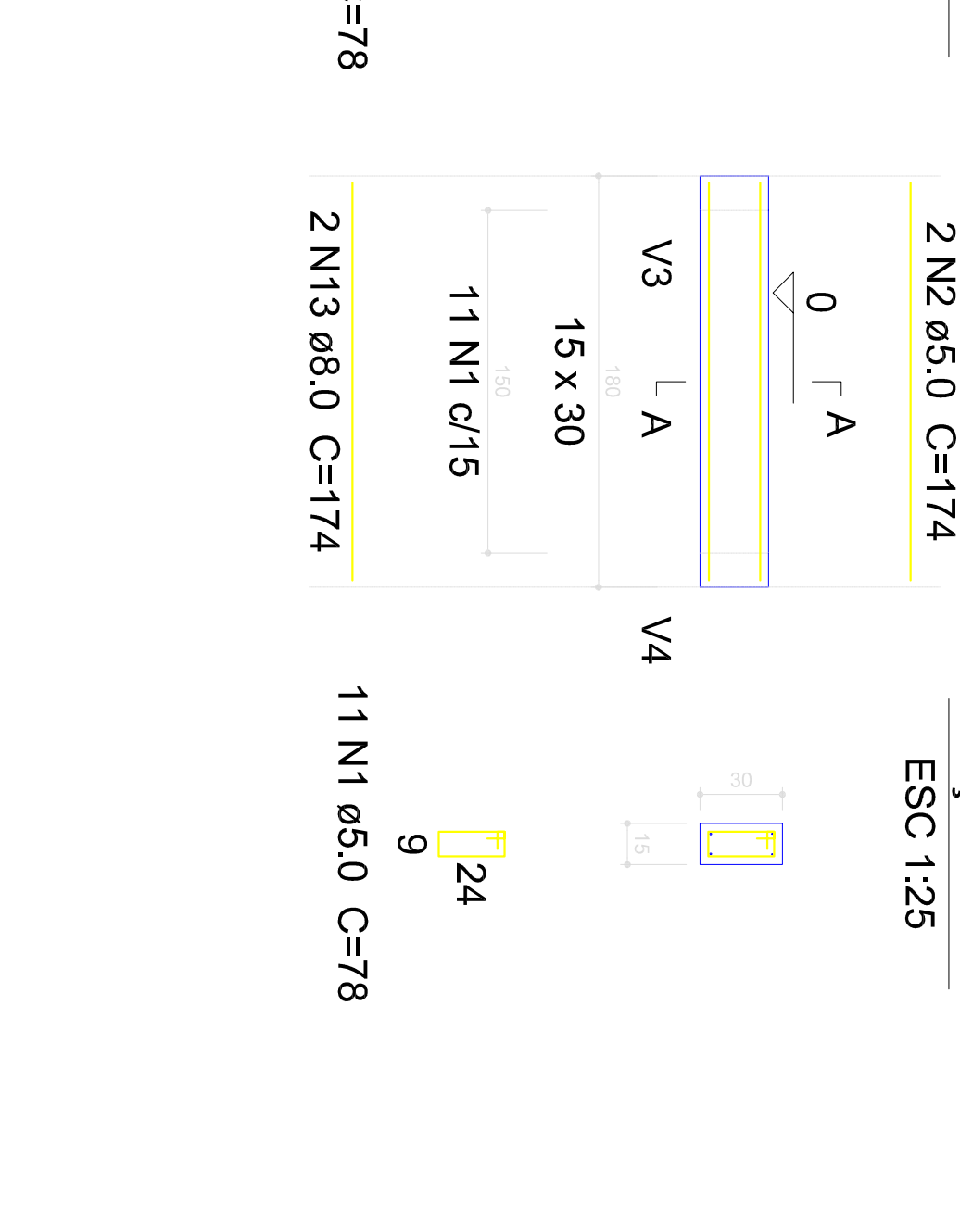
V16

ESC 1:30



V18

ESC 1:30



V20

ESC 1:30



Conteúdo - Projeto Estrutural Barragem - Terreno

Propriedade - Município de São João del-Rei

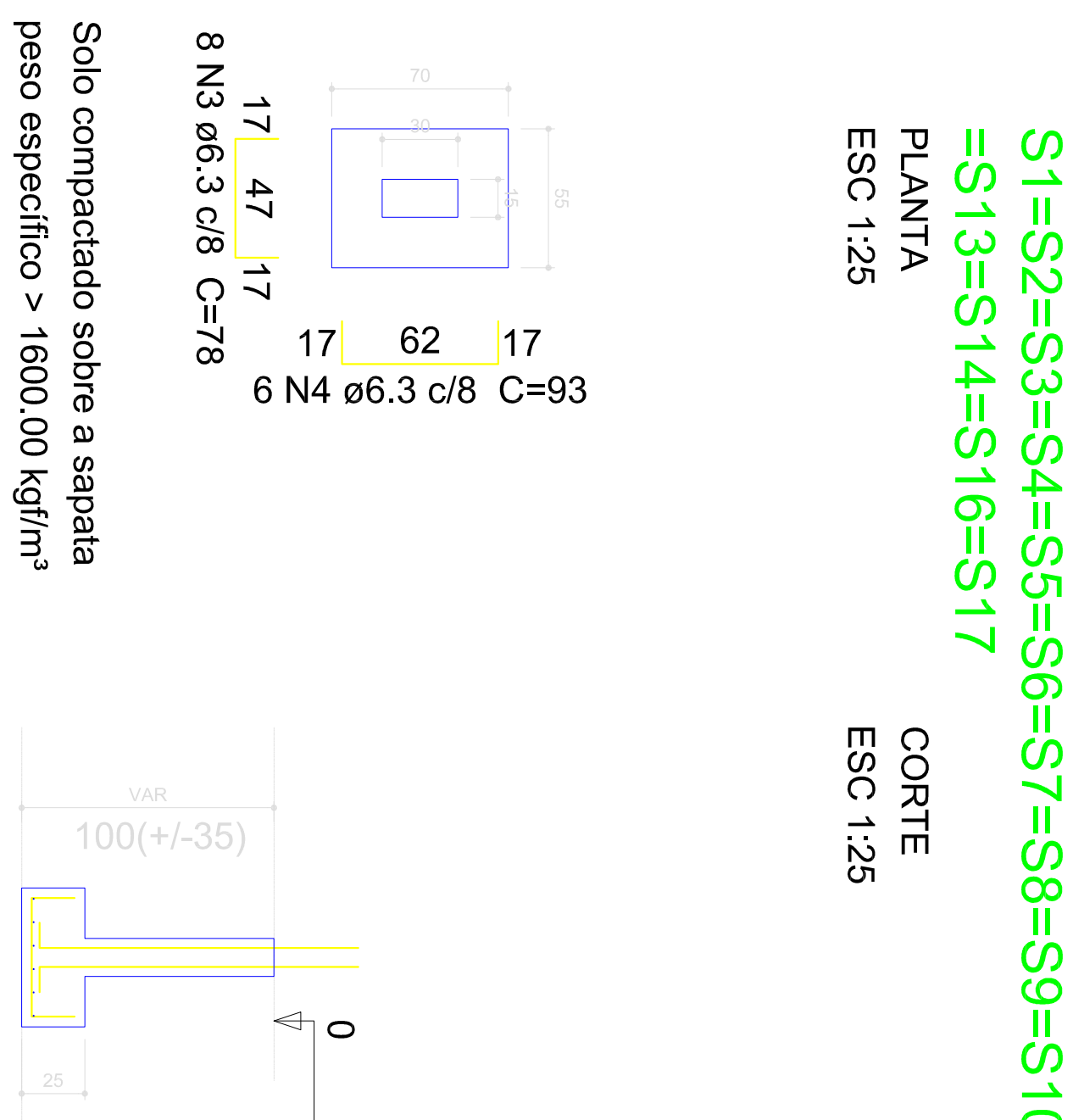
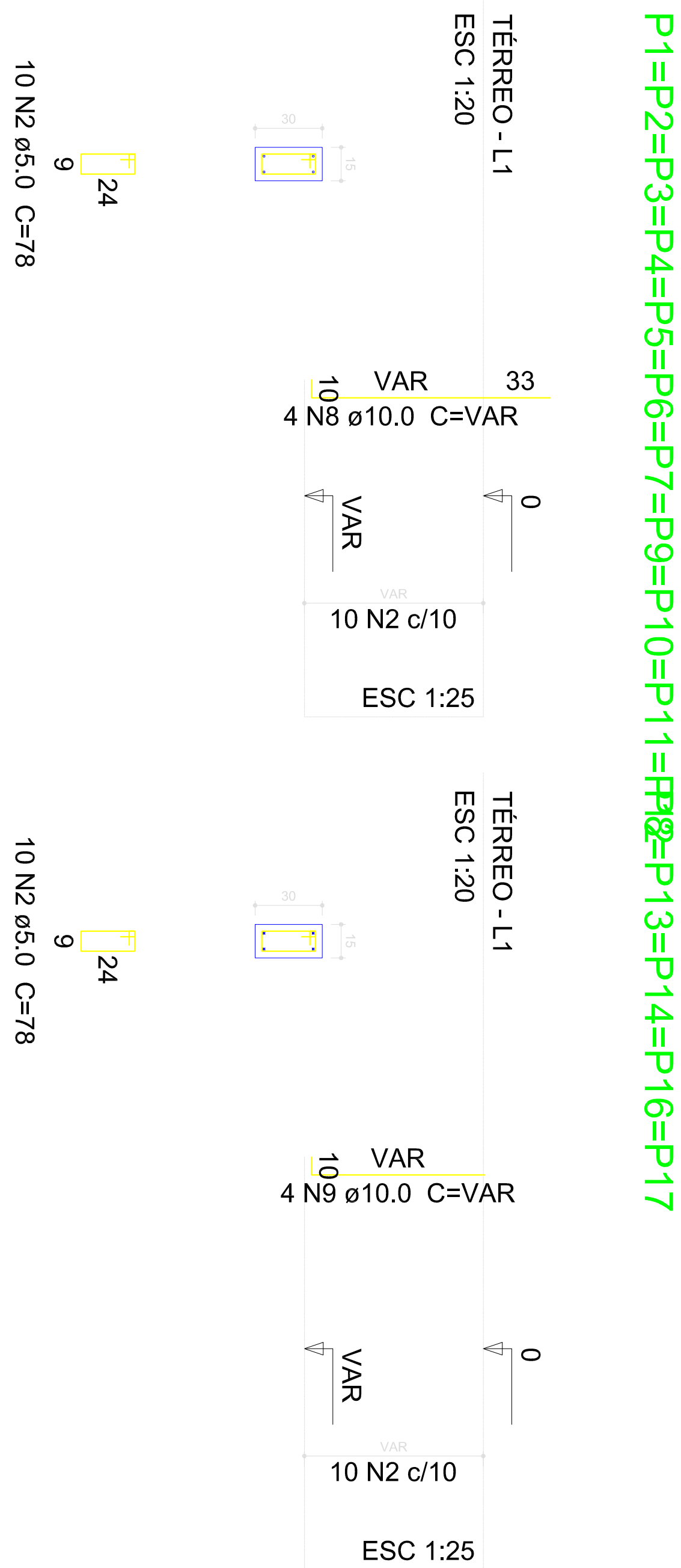
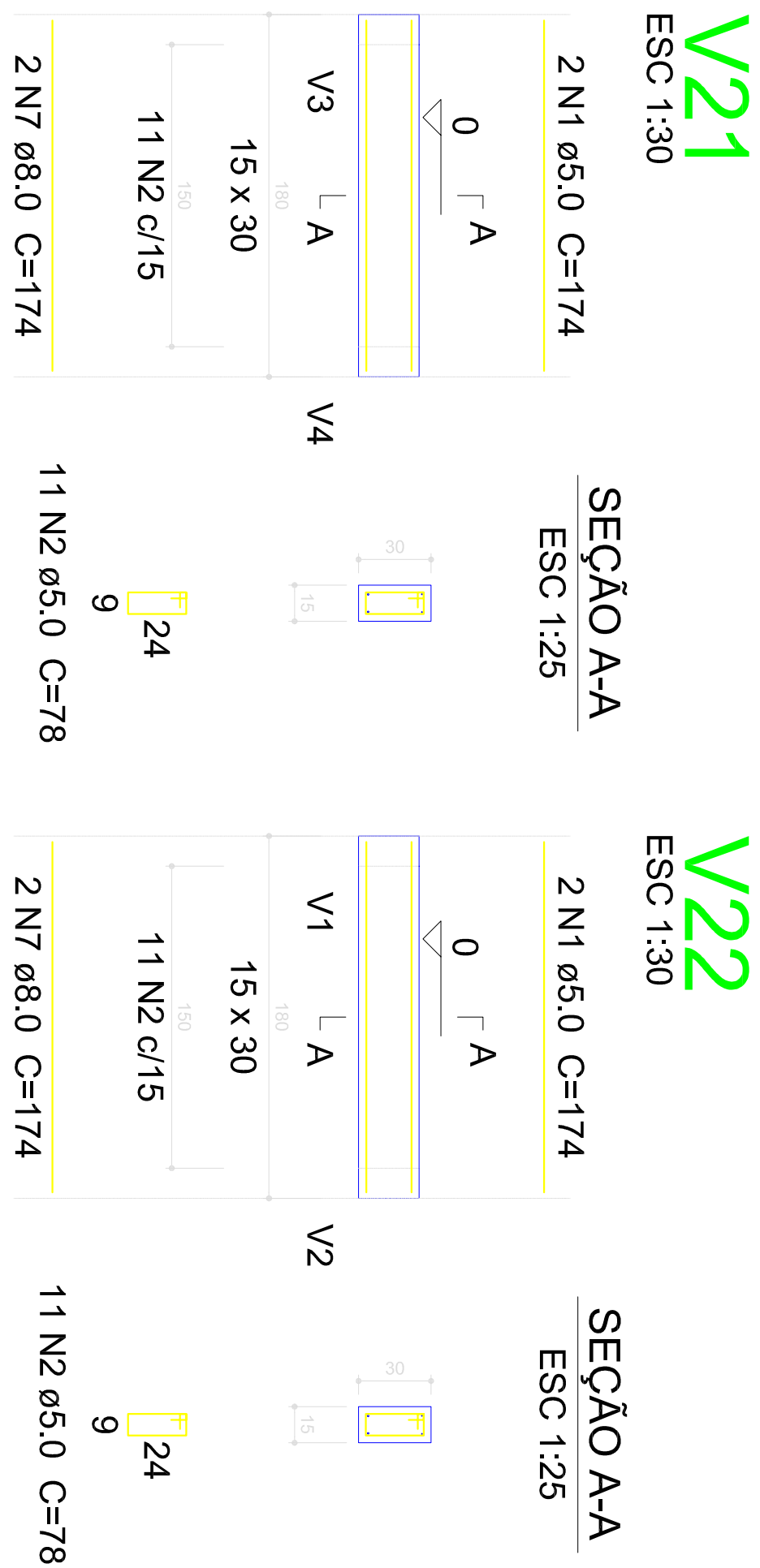
Endereço - Avenida João de Castilhos, RS 126, São João del-Rei

Projeto - Barragem de São João del-Rei

Autores - Lucas Machado, Engenheiro Civil

DATA - 17/07/2023

FRANCHA



Relação do aço						
11xP1	5xP8	P15				
16xS1	S15	V21				
V22						
AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C TOTAL (cm)	
CA60	1	5,0	4	174	696	
	2	5,0	192	78	14976	
CA50	3	6,3	128	78	9984	
	4	6,3	96	93	8928	
	5	6,3	9	88	792	
	6	6,3	8	103	824	
	7	8,0	4	174	696	
	8	10,0	48	VAR	VAR	
	9	10,0	20	VAR	VAR	

SEÇÃO A-A
ESC 1:25

2 N1 ø5.0 C=174

11 N2 c/15

15 x 30

0

V3 A

V4

11 N2 ø5.0 C=78

9

24

SEÇÃO A-A
ESC 1:25

2 N1 ø5.0 C=174

11 N2 c/15

15 x 30

0

V1 A

V2

11 N2 ø5.0 C=78

9

24

PLANTA
ESC 1:25

33

0

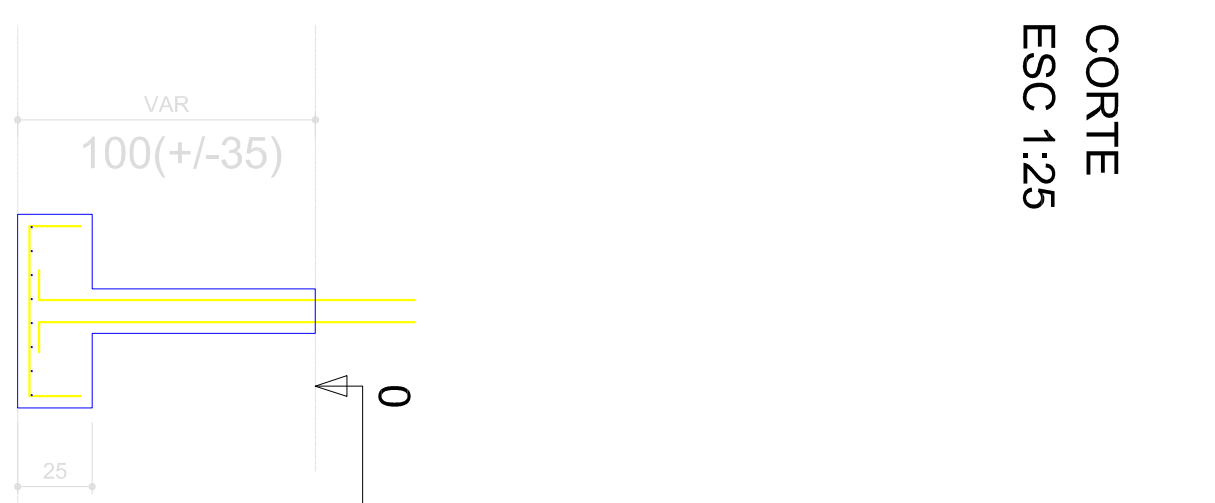
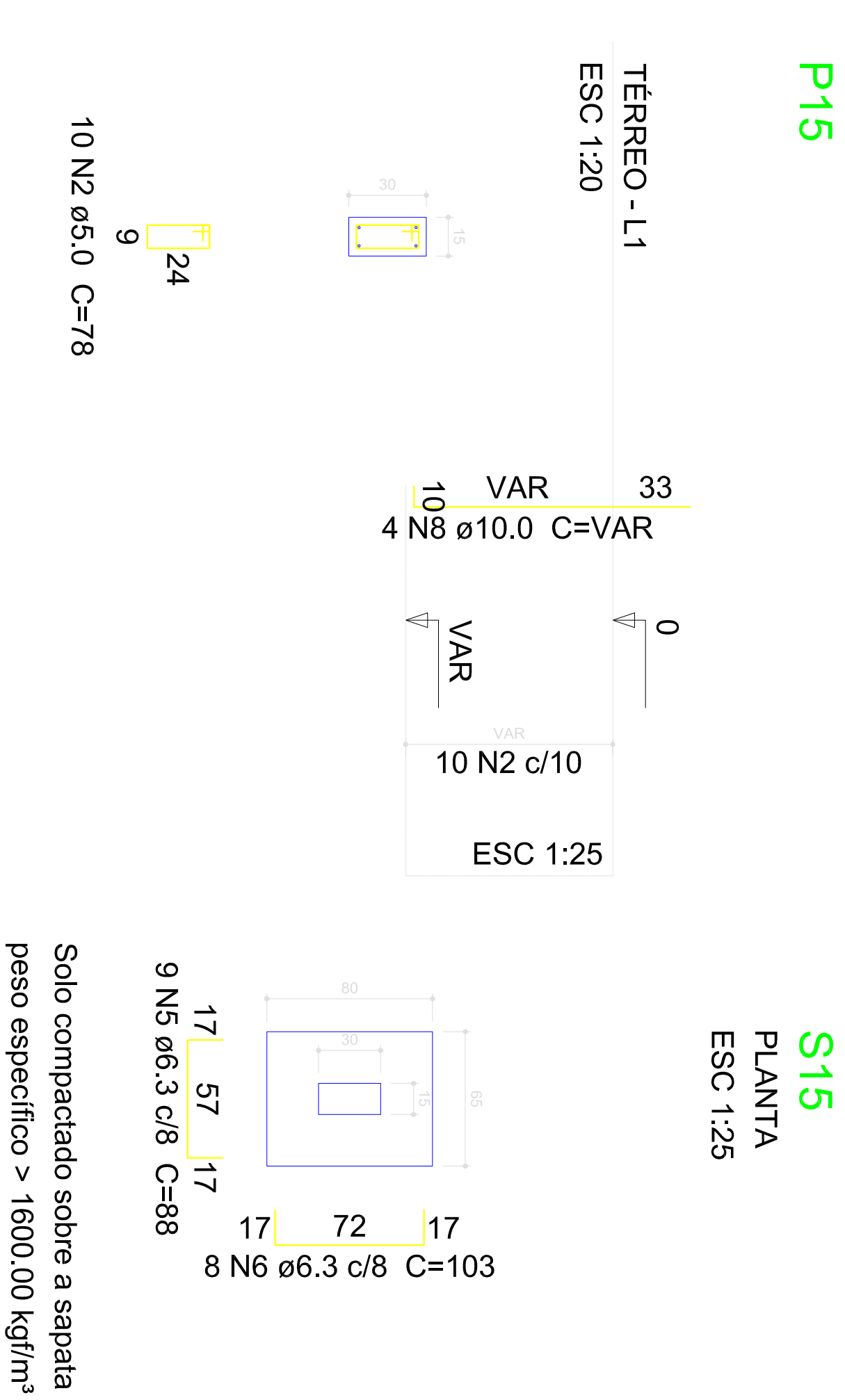
VAR

5

P15

S15

TÉRREO - L1
ESC 1:20



$S1=S2=S3=S4=S5=S6=S7=S8=S9=S10=S11=S12$
 $S13=S14=S16=S17$
 PLANTA
 ESC 1:25

8 N3 ø6.3 c/8 C=78
 17 47 17
 62 17
 6 N4 ø6.3 c/8 C=93

Solo compactado sobre a sapata
 peso específico > 1600,00 Kg/m³

VAR
 100(+/-35)
 25
 0

CORTE
 ESC 1:25

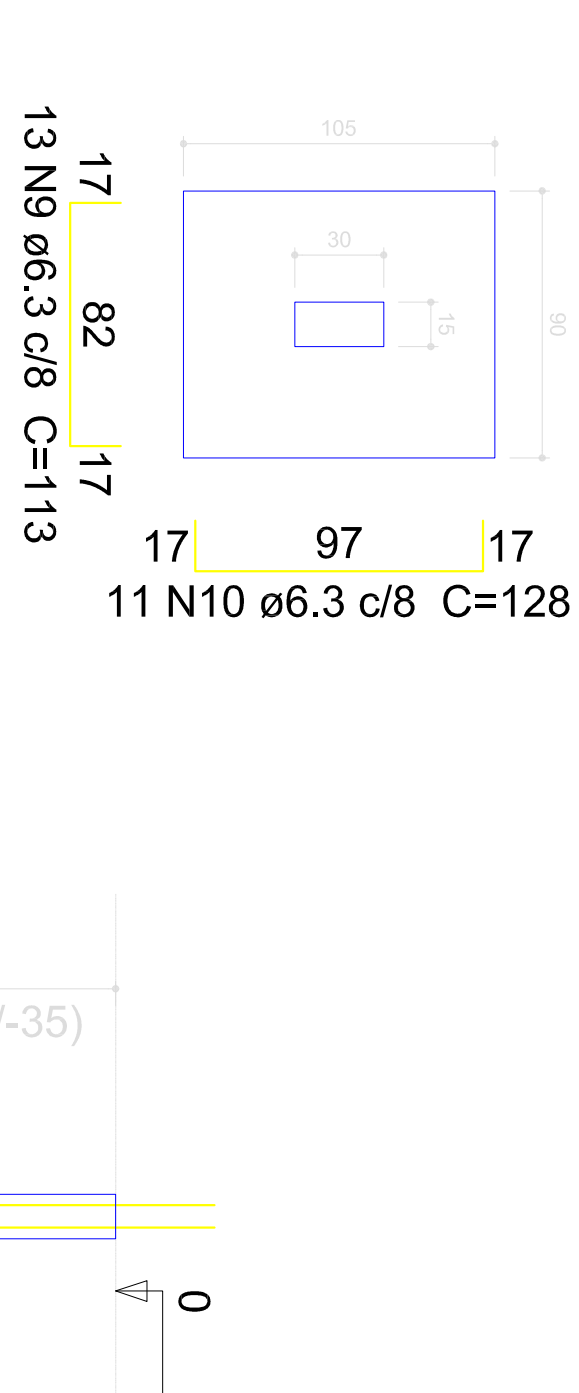
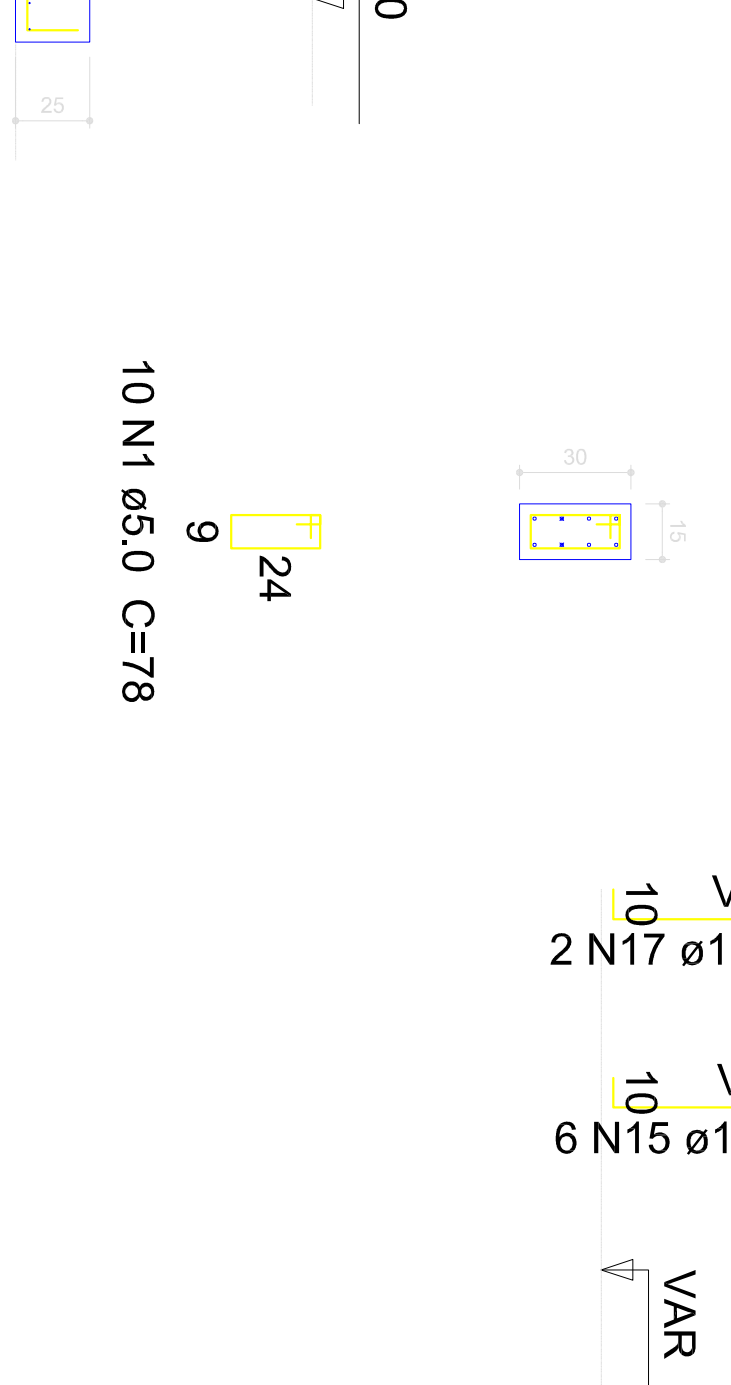
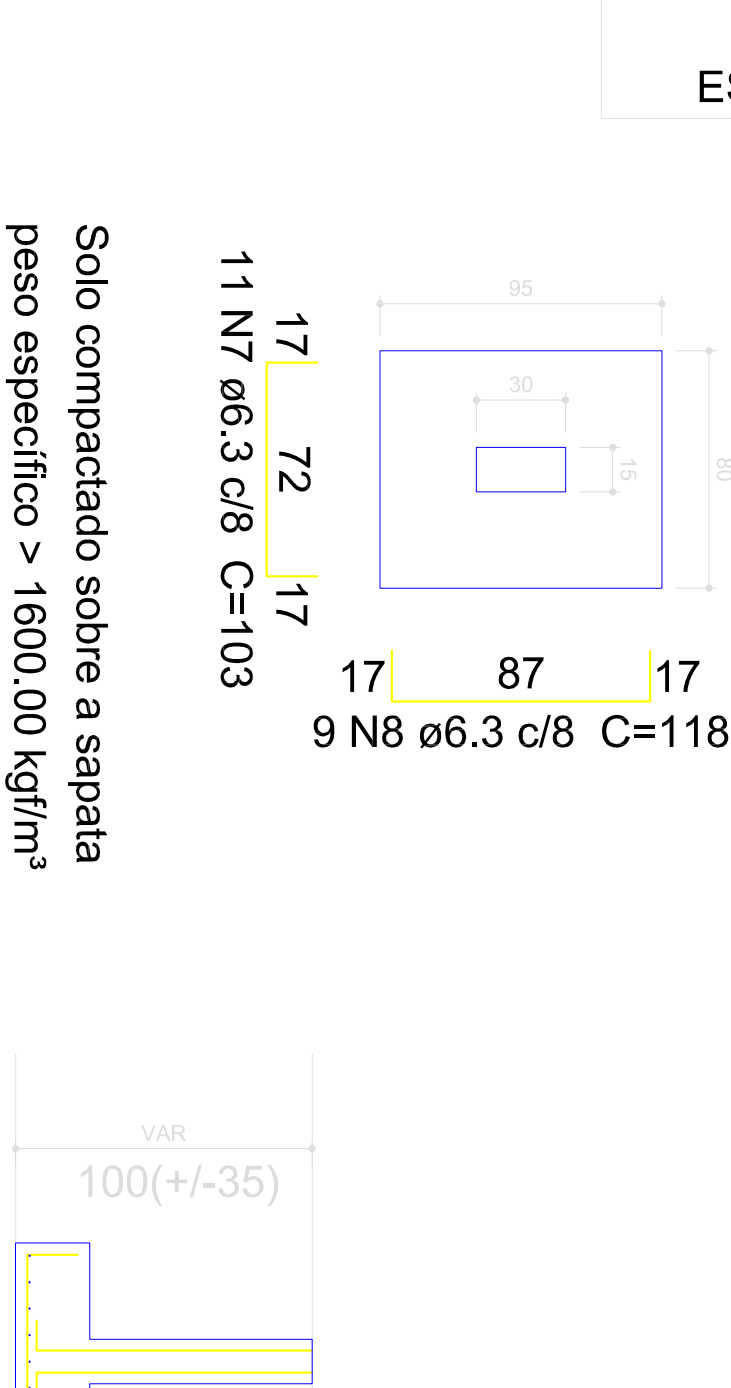
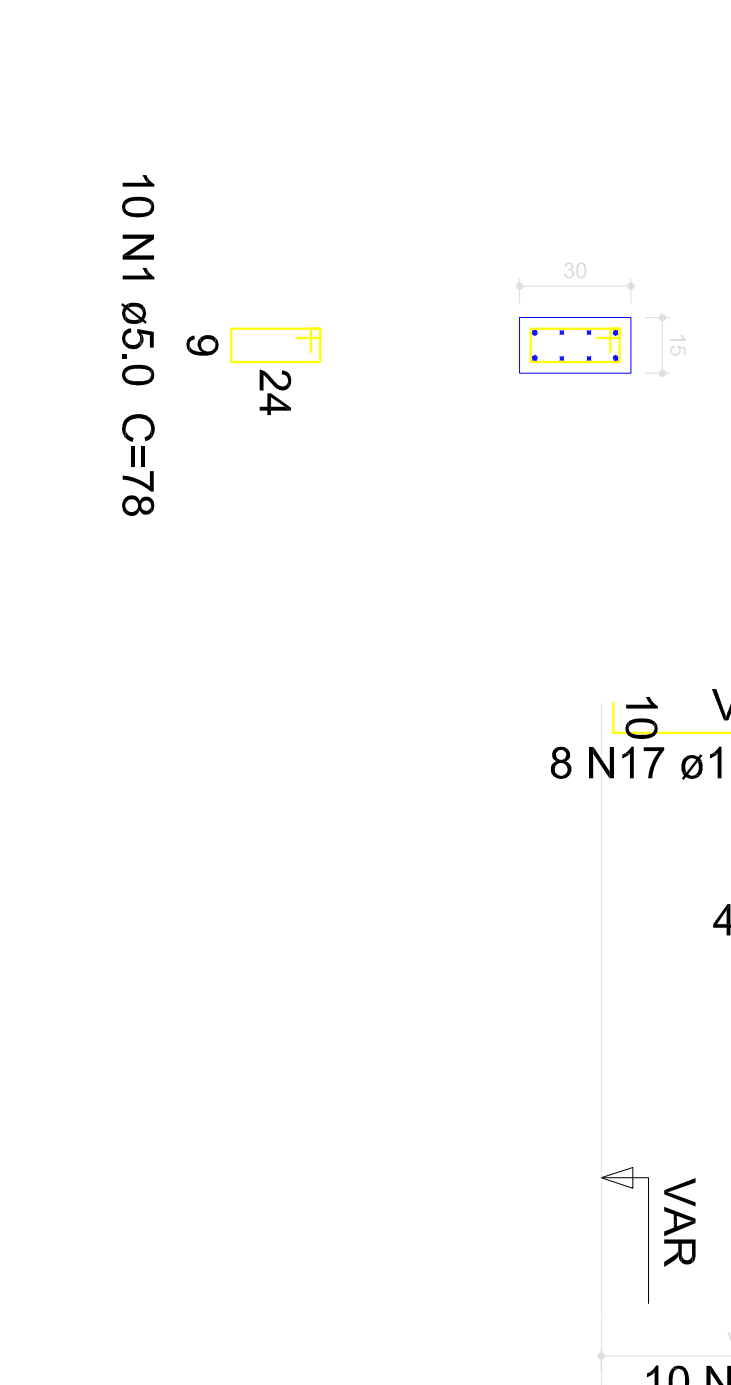
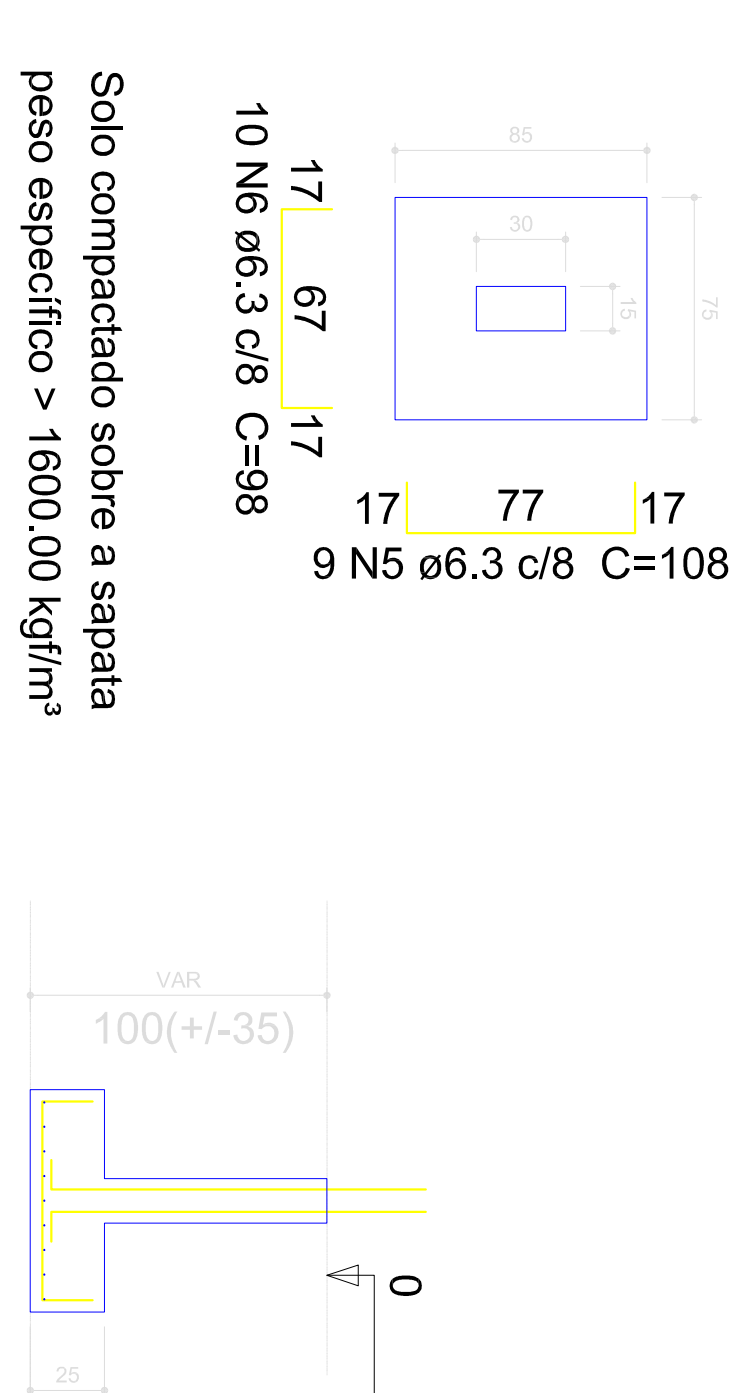
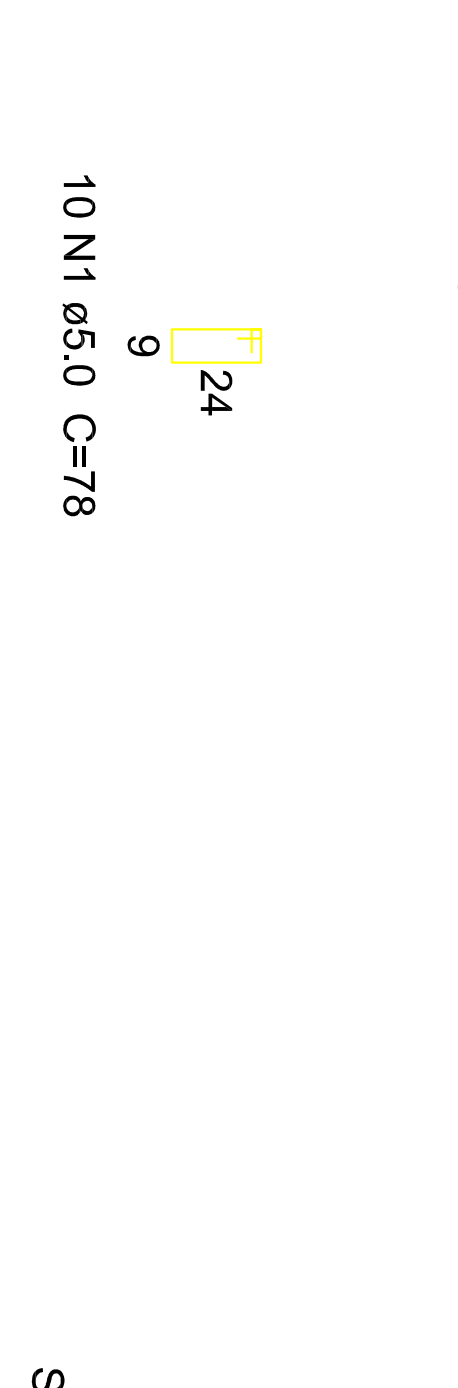
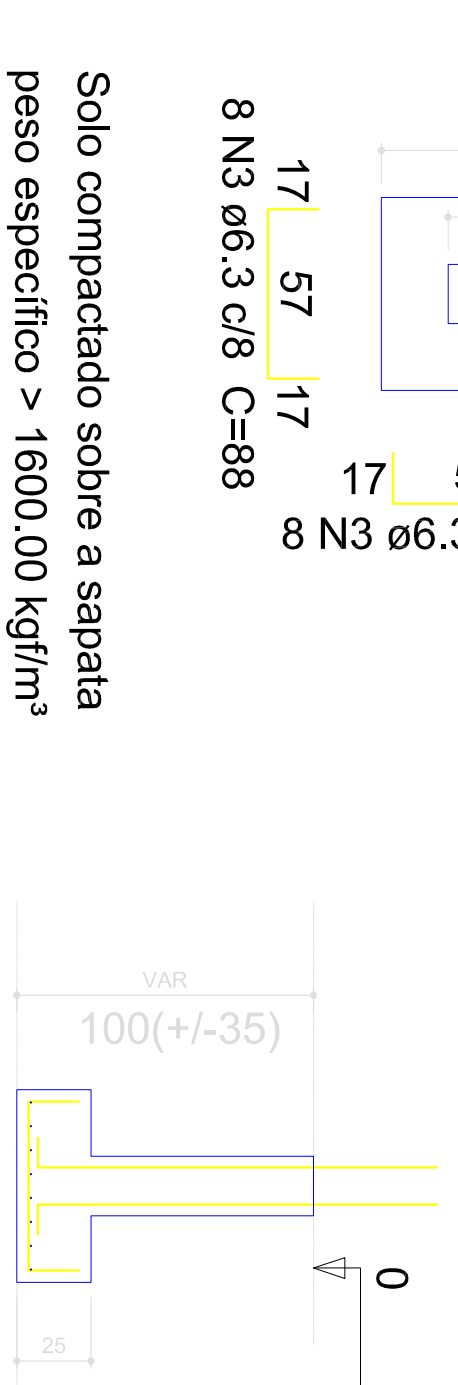
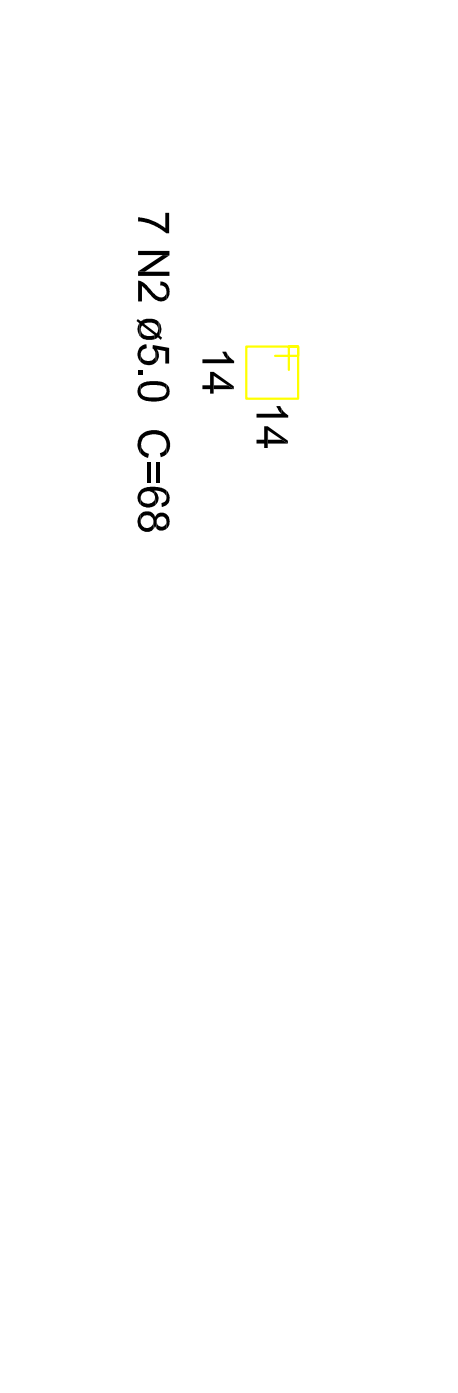
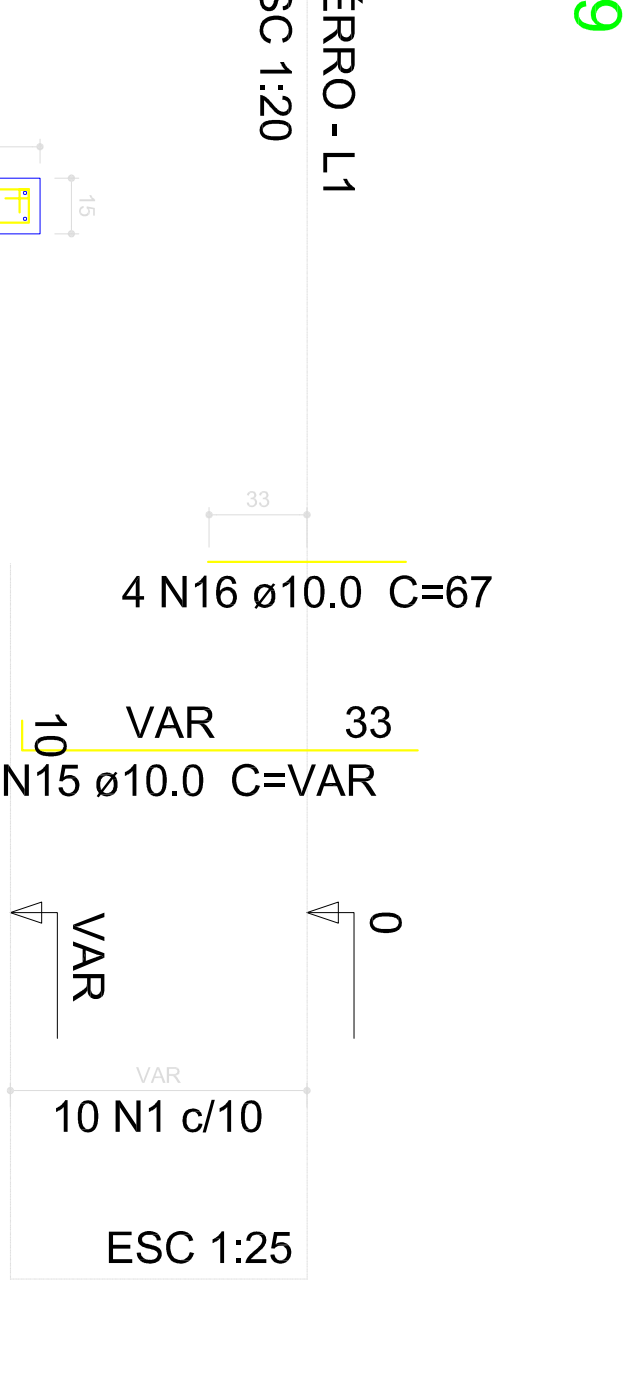
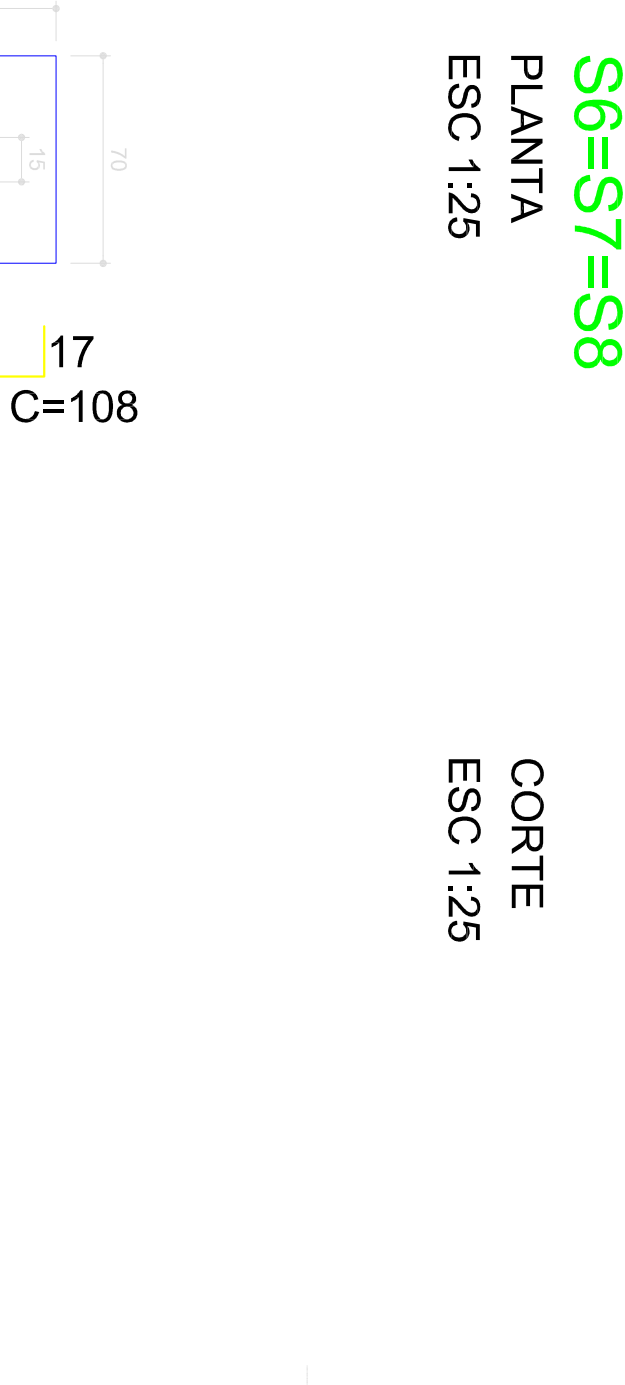
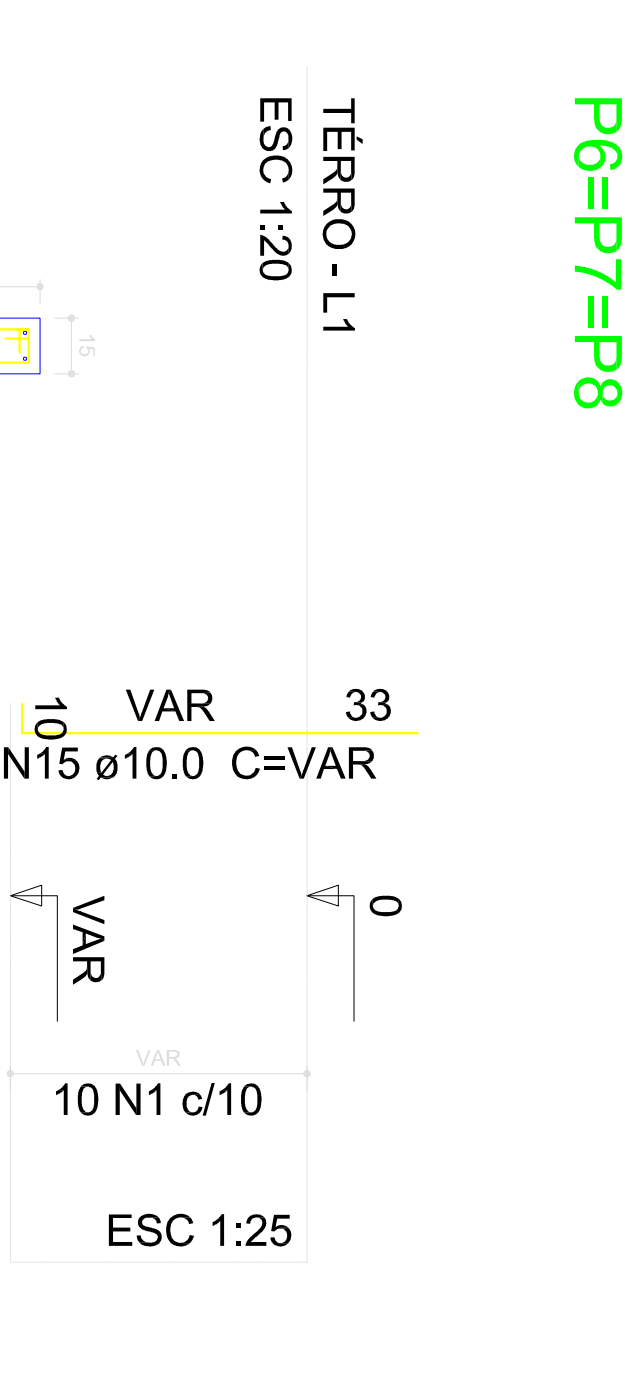
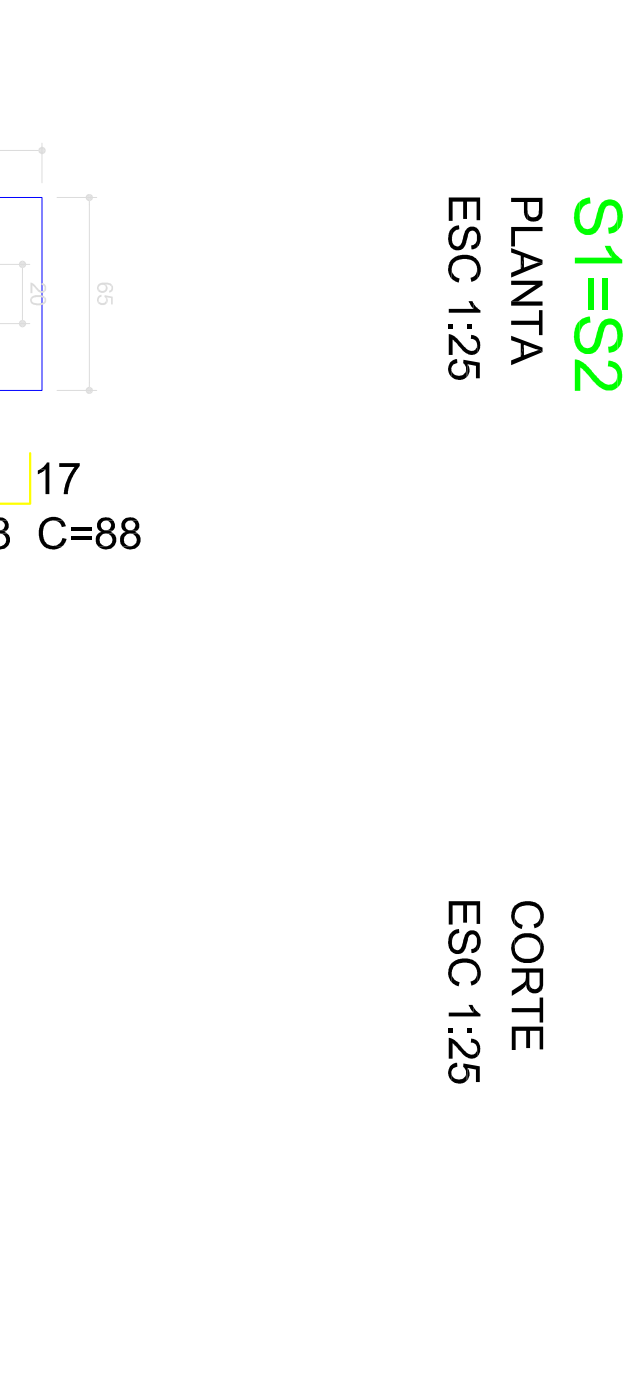
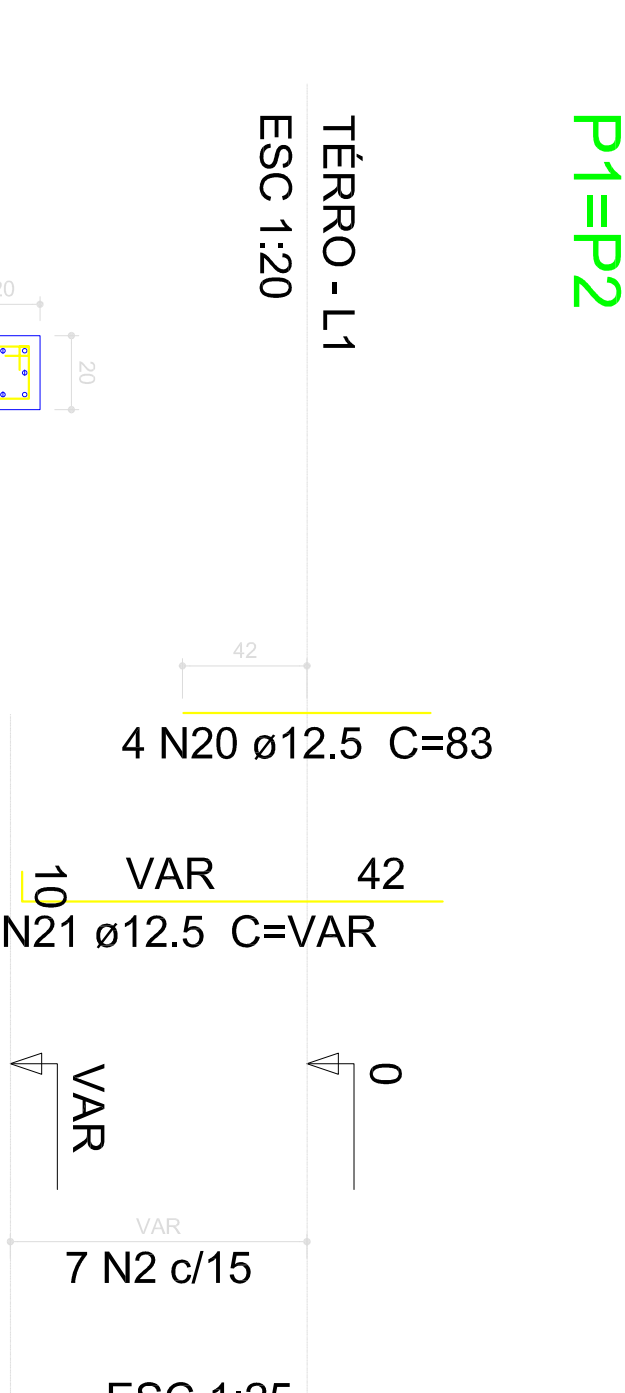
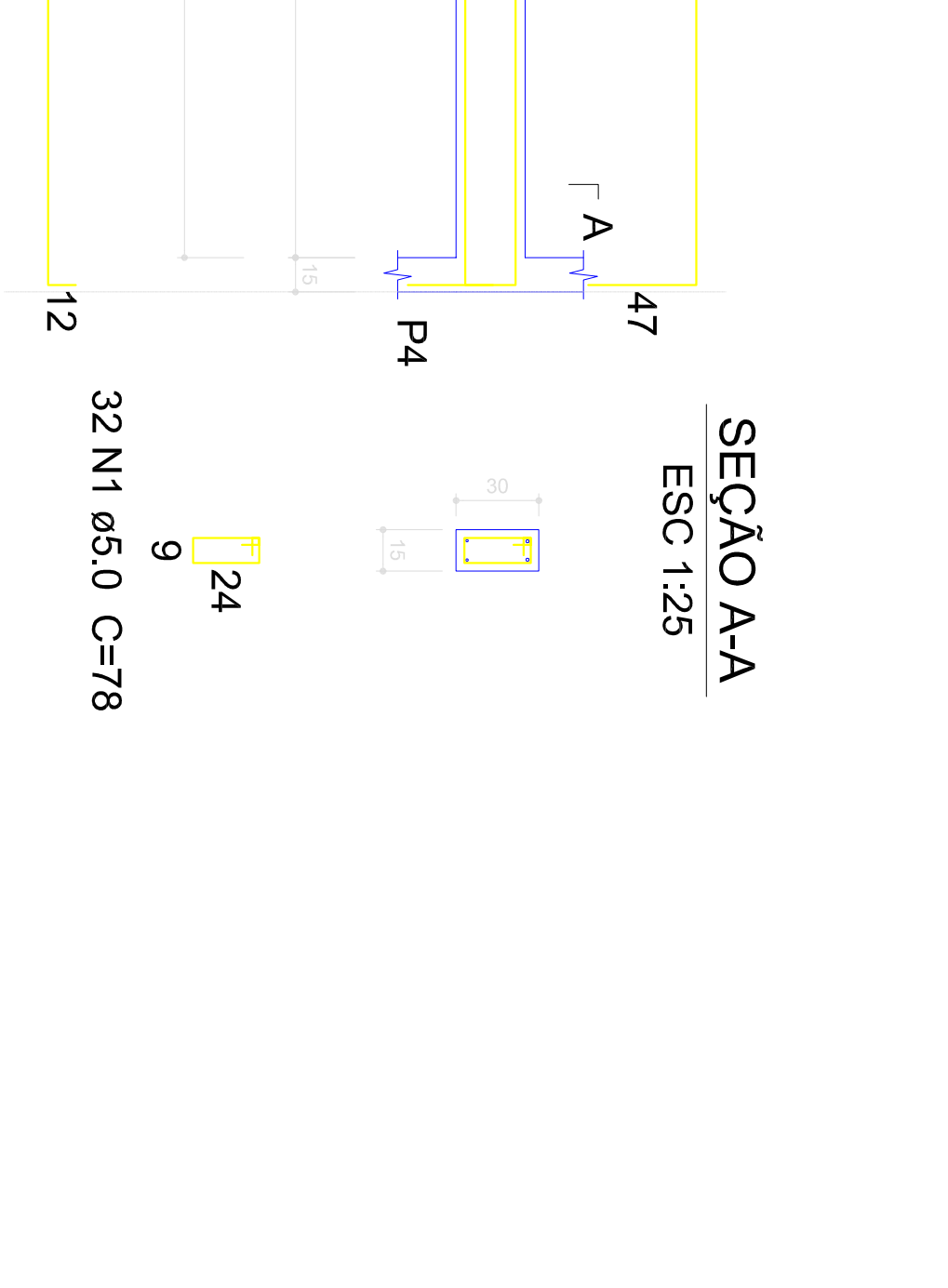
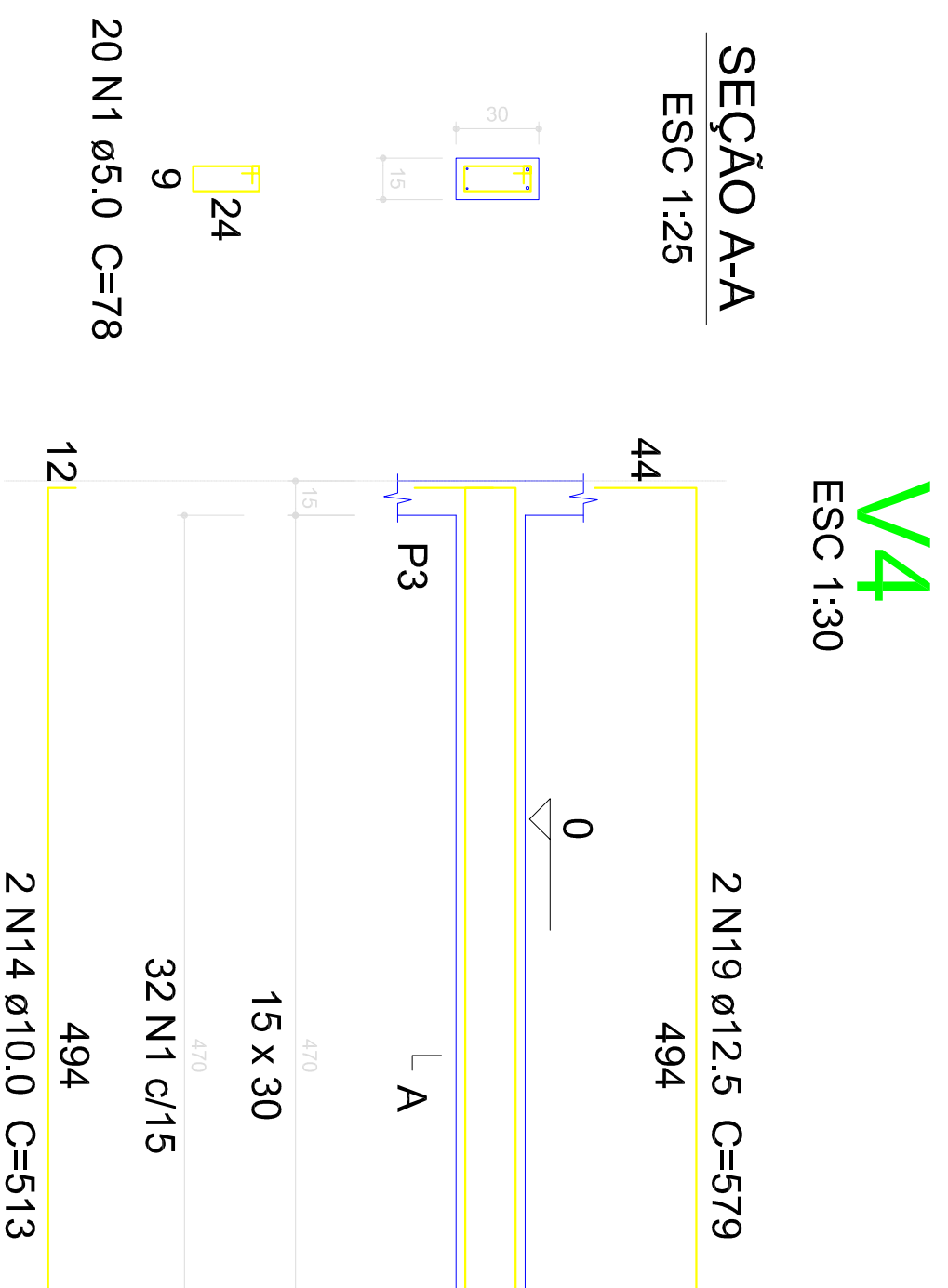
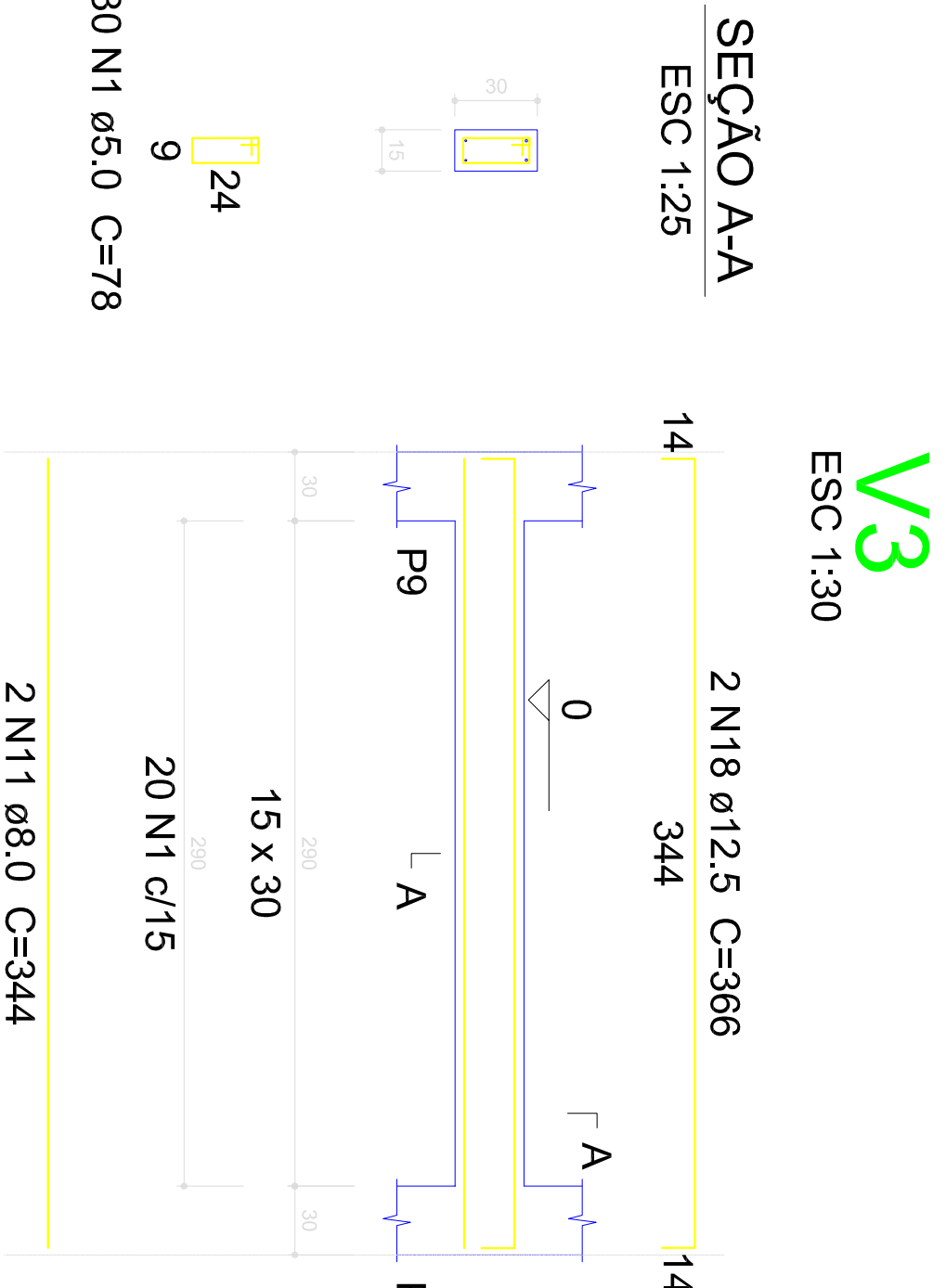
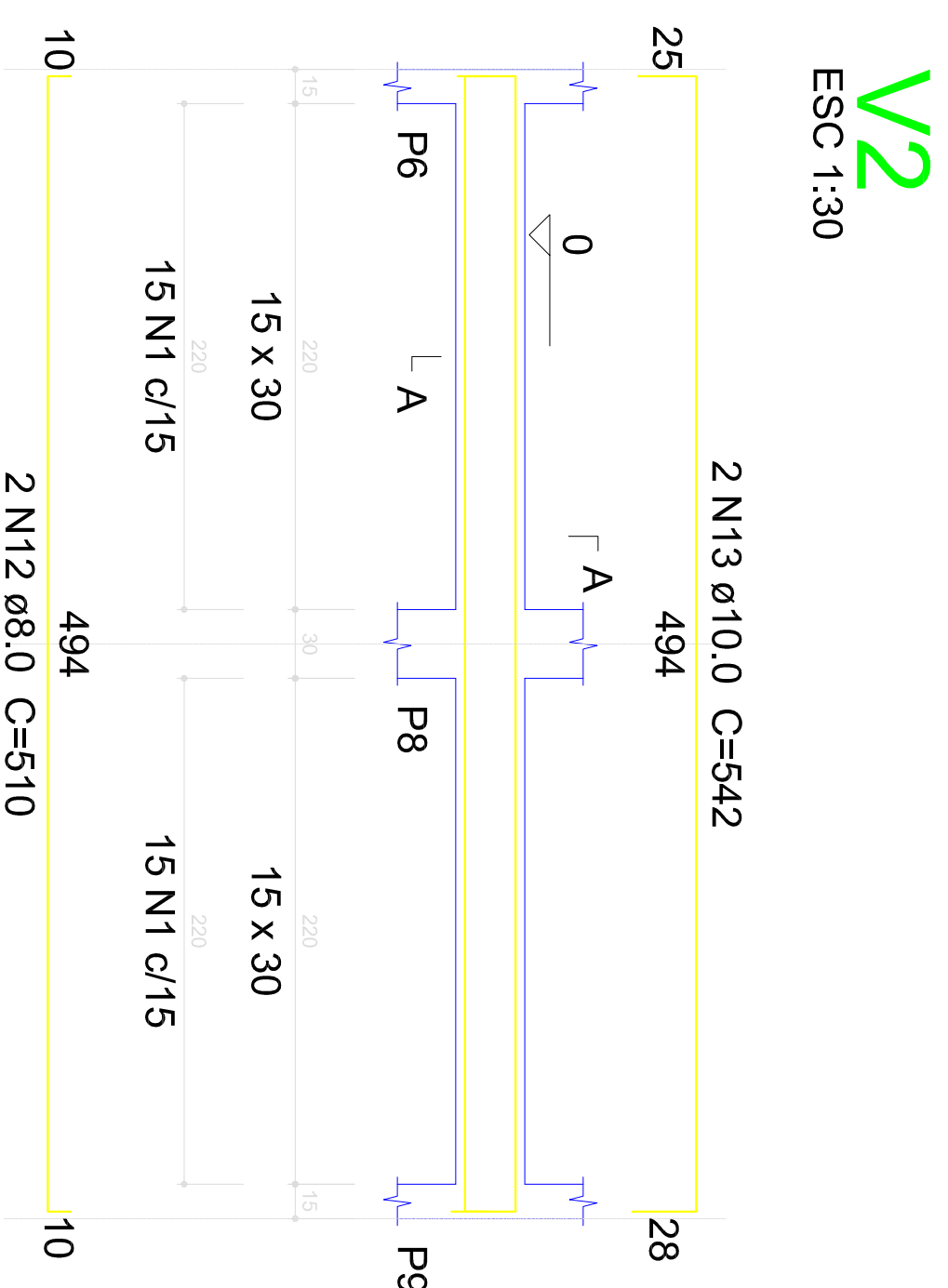
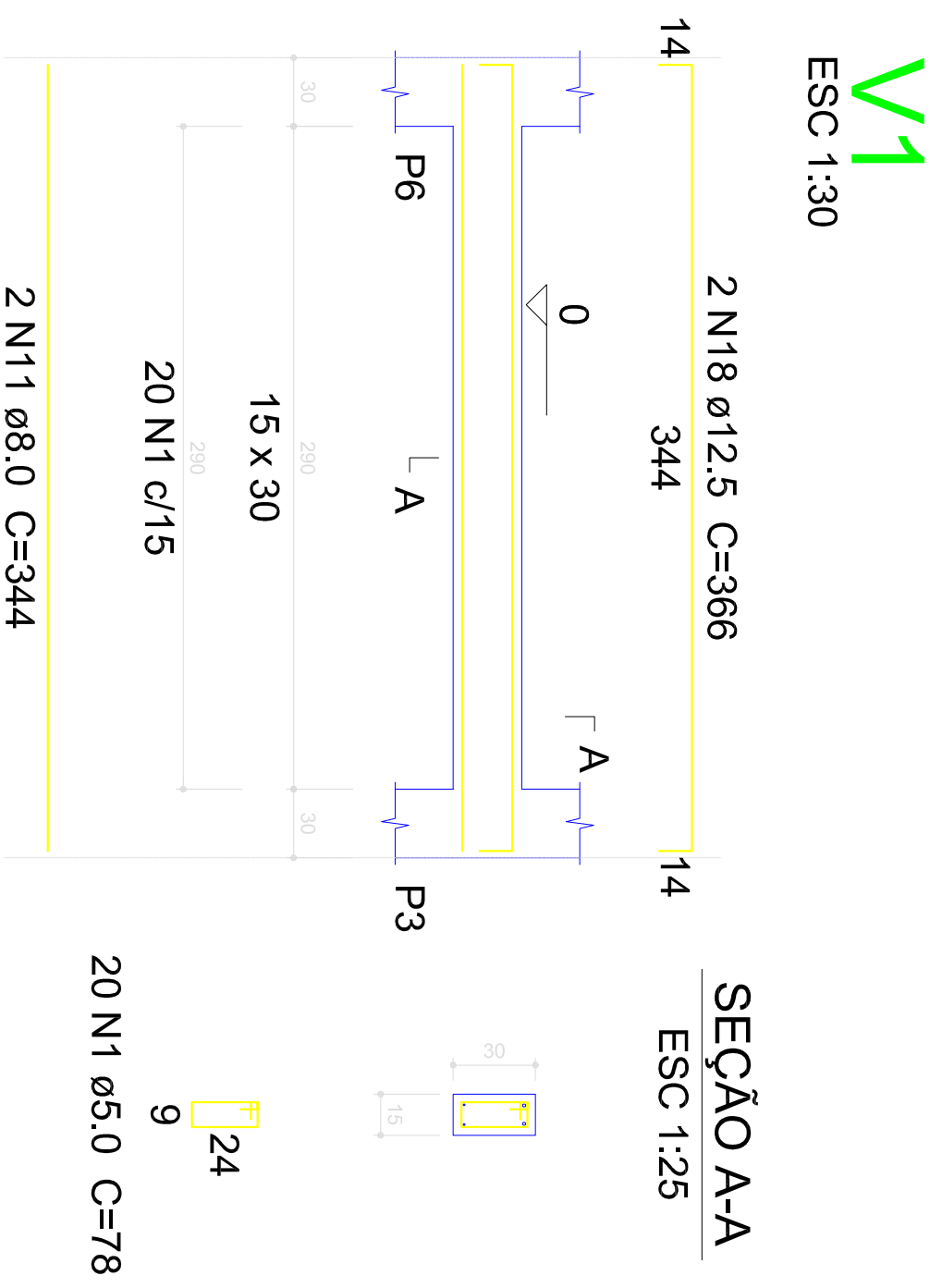
Relação do aço

11xP1	5xP8	P15
16xS1	S15	V21
V22		

AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)
CA60	1	5,0	4	174
	2	5,0	192	78
CA50	3	6,3	128	78
	4	6,3	96	93
	5	6,3	9	88
	6	6,3	8	103
	7	8,0	4	174
	8	10,0	48	VAR
	9	10,0	20	VAR

Resumo do aço

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10 % (kg)	%
CA60	6,3	205,3	55,3	3
	8,0	7	60,1	
CA60	10,0	88,7	26,6	
	5,0	156,8	26,6	
PESO TOTAL (kg)				
CA50	118,4			
CA60	26,6			

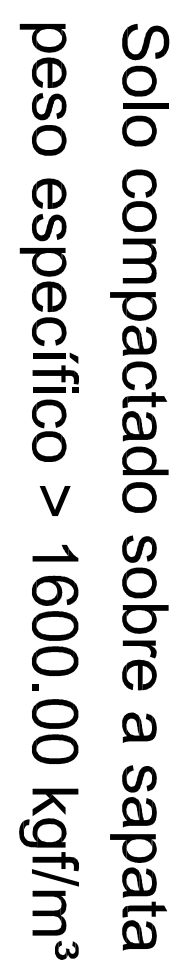
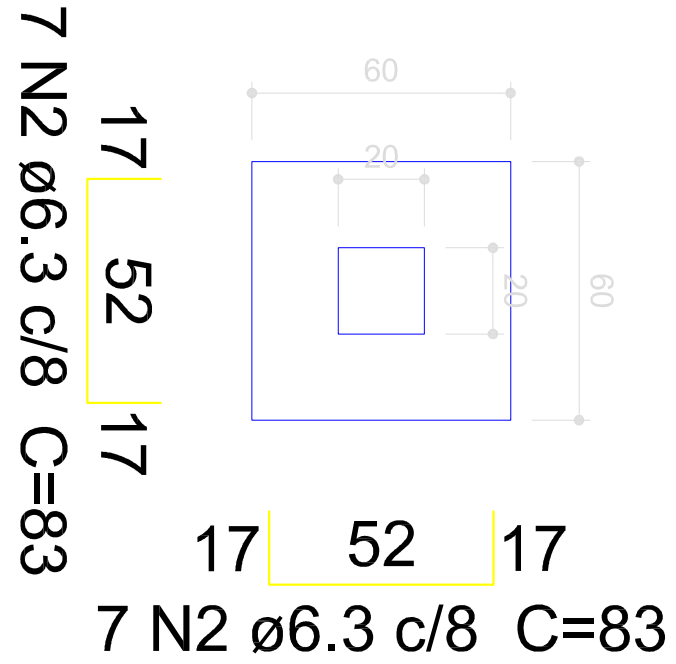
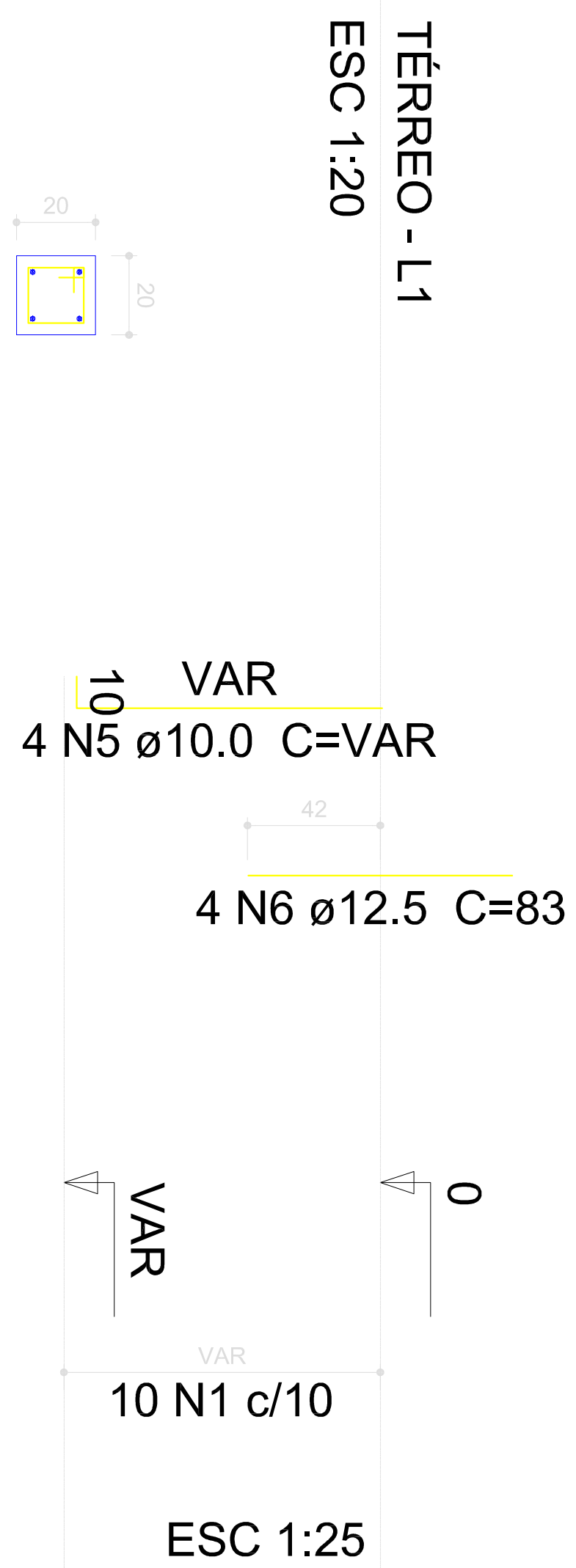
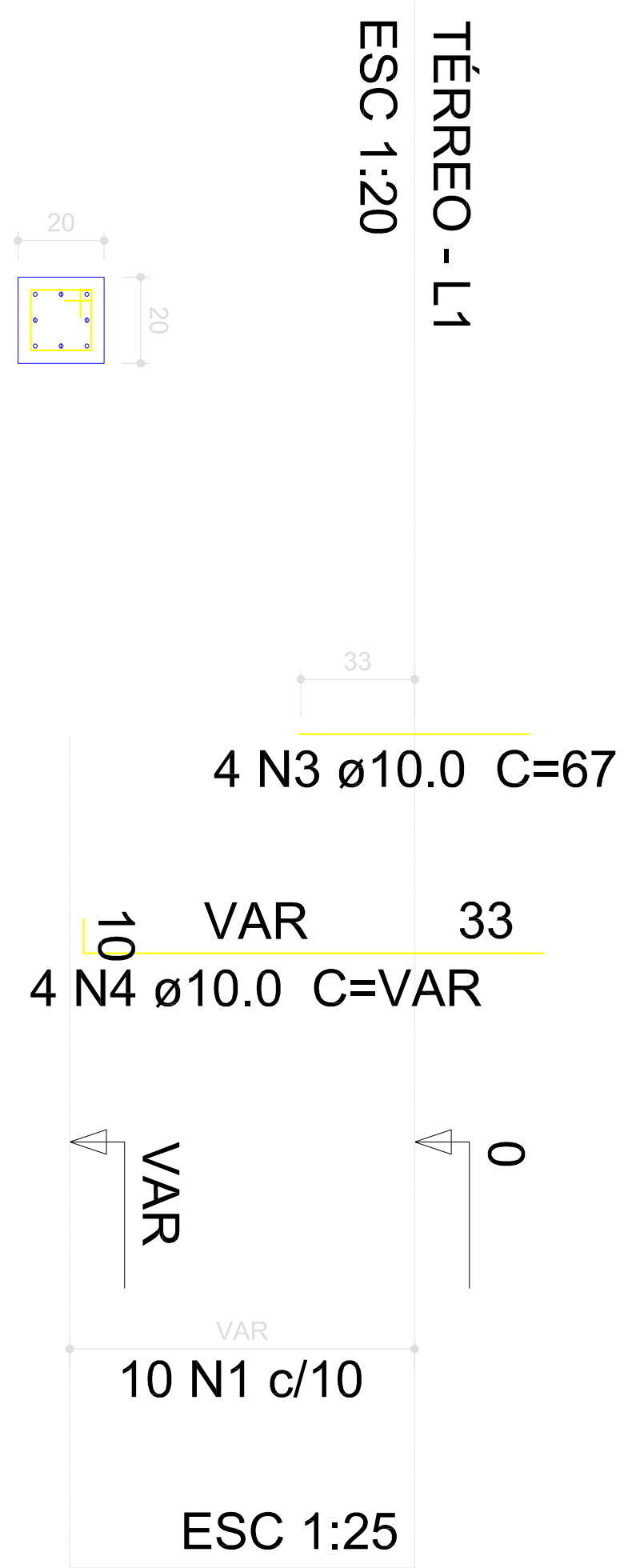


Relação do aço						
2xP1	P3	P4				
3xP6	P9	2xS1				
S3	S4	3xS6				
S9	V1	V2				
V3	V4					
AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)	
CA60	1	3,0	162	78	12636	
	2	5,0	14	68	952	
	3	6,3	32	88	2816	
	4	6,3	30	93	2790	
	5	6,3	33	108	3564	
	6	6,3	10	98	980	
	7	6,3	11	103	1133	
	8	6,3	9	118	1062	
	9	6,3	13	113	1469	
	10	8,0	11	128	1408	
CA50	11	8,0	4	344	1376	
	12	8,0	2	510	1080	
	13	10,0	2	542	1084	
	14	10,0	2	513	1026	
	15	10,0	22	VAR	VAR	
	16	10,0	4	67	268	
	17	12,5	10	VAR	VAR	
	18	12,5	4	366	1464	
	19	12,5	2	579	1158	
	20	12,5	12	83	996	
	21	12,5	8	VAR	VAR	

Resumo do aço			
AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10 % (kg)
CASO	6,3	152,3	41
	8,0	24	10,4
	10,0	65,3	44,3
	12,5	48,1	51
CASO	5,0	135,9	23
PESO TOTAL			
(kg)			

Volume de concreto (C-25) = 2.01 m³
 Volume de concreto (C-30) = 0.35 m³
 Área de forma = 26.03 m²

CA50	146.6
CA60	23

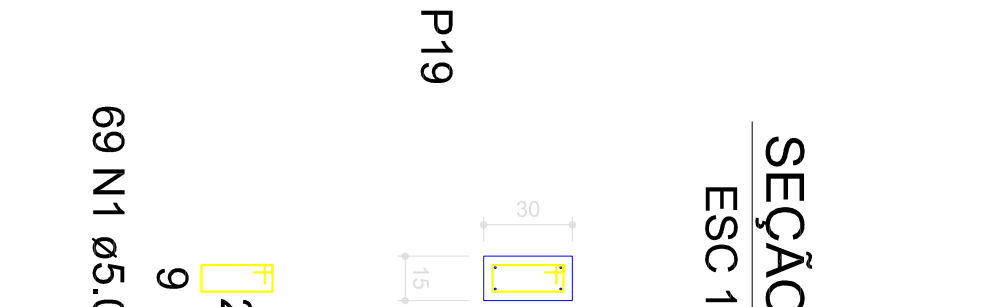
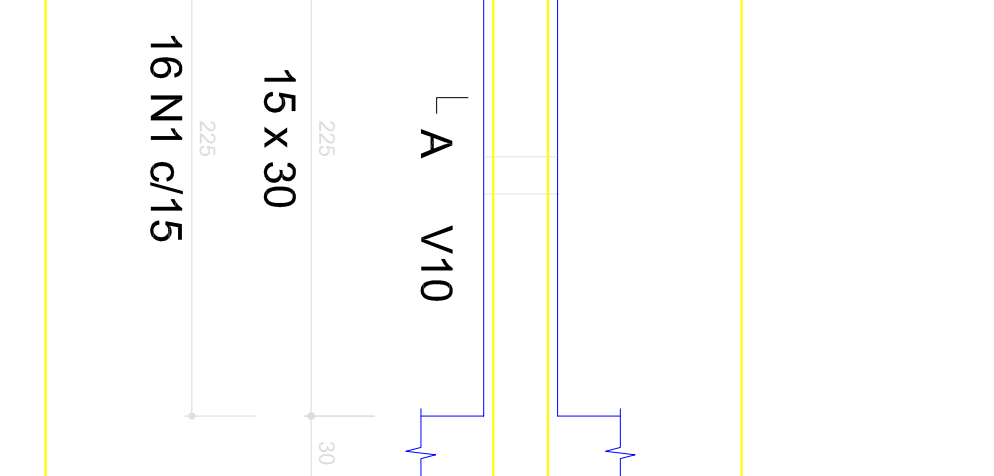
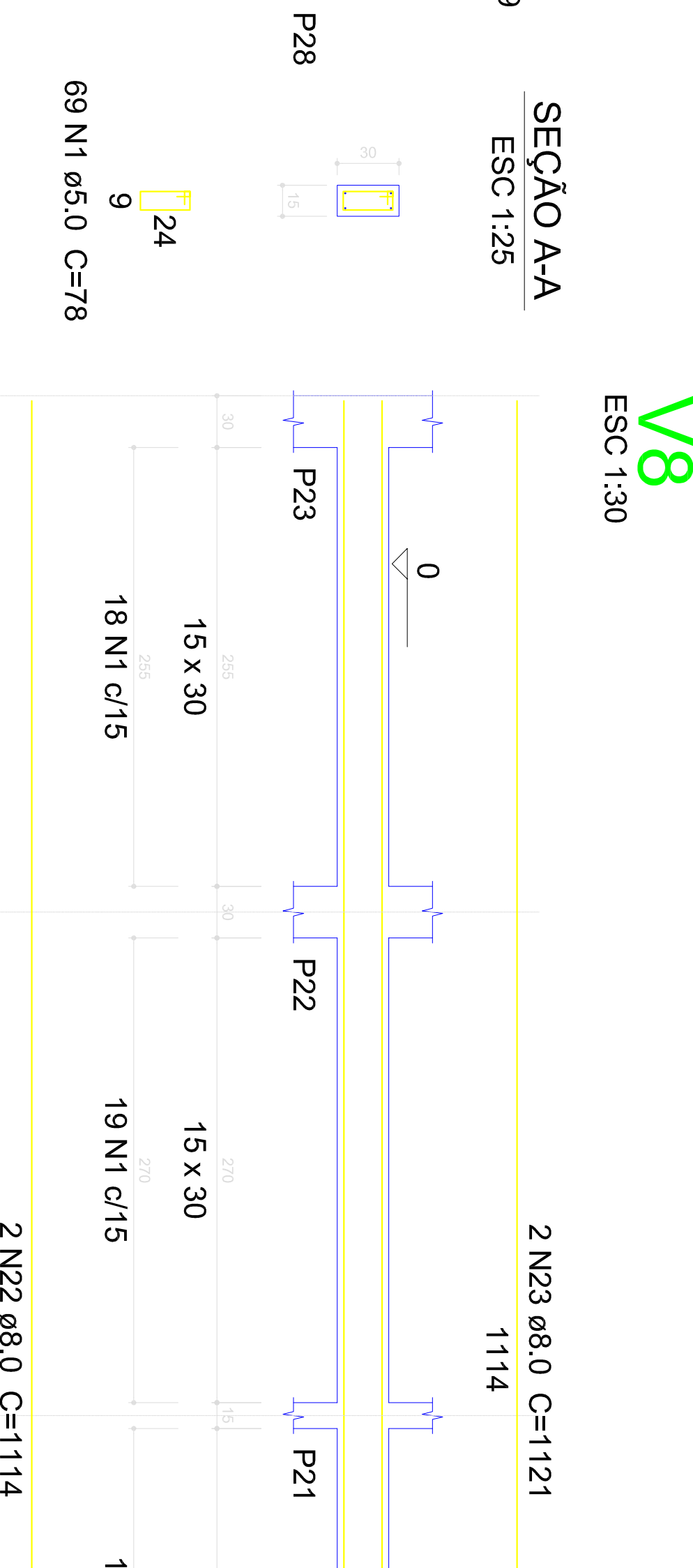
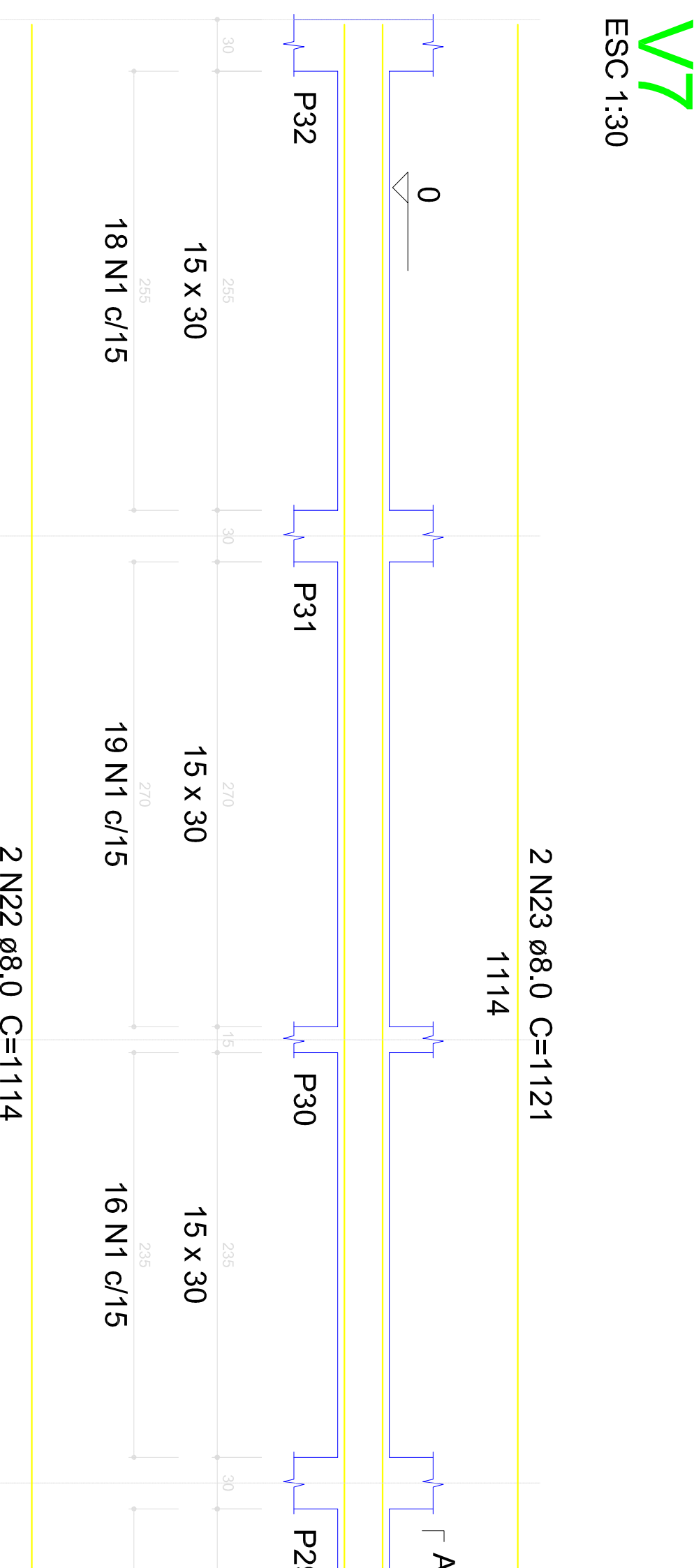
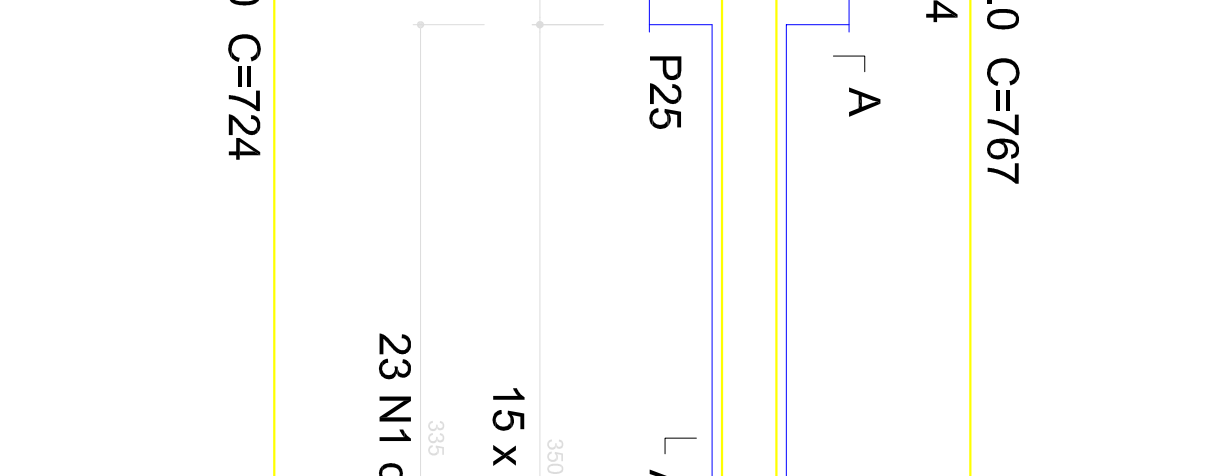
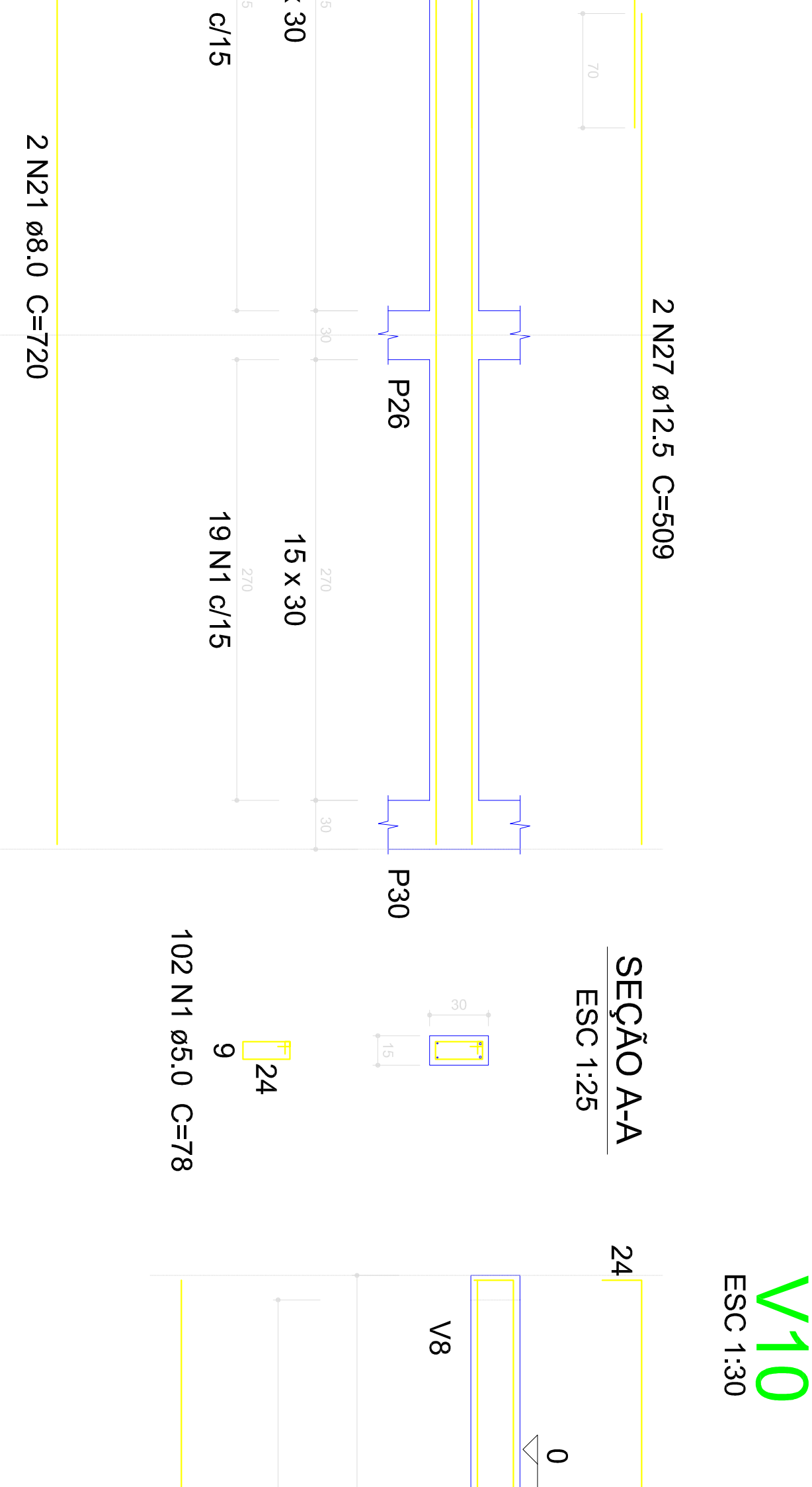
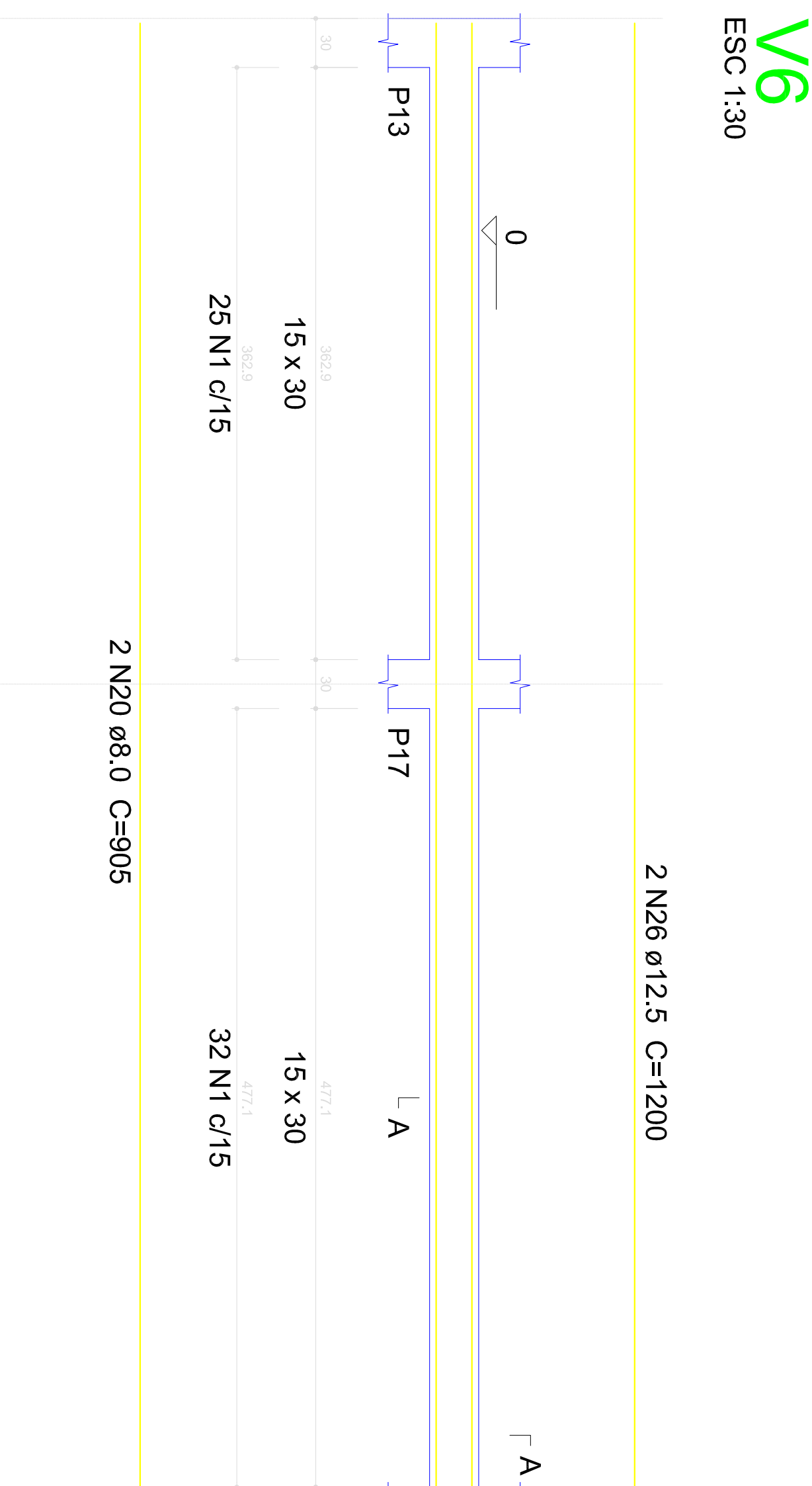
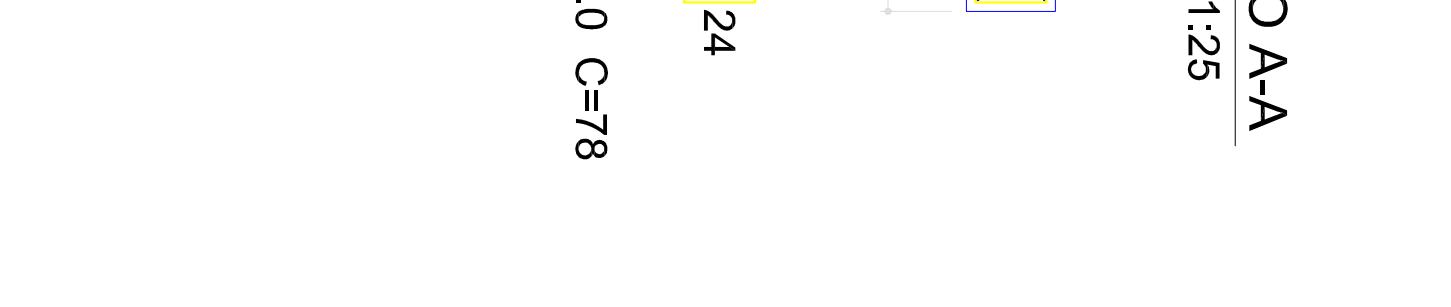
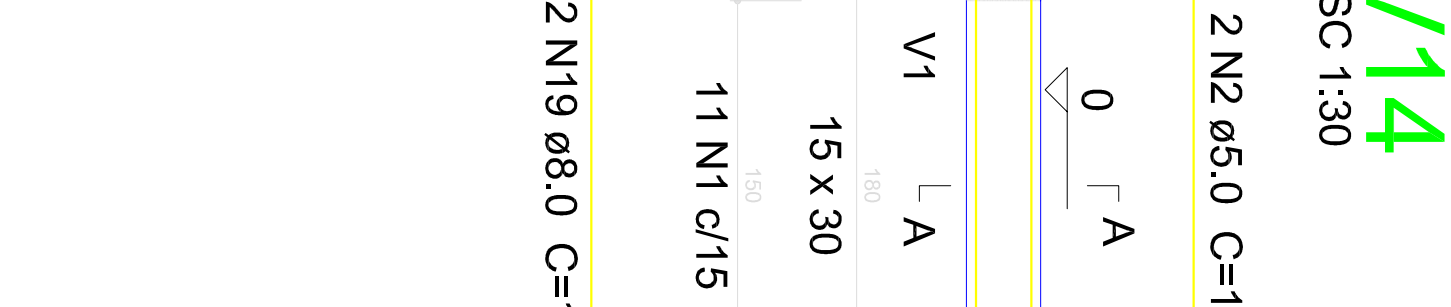
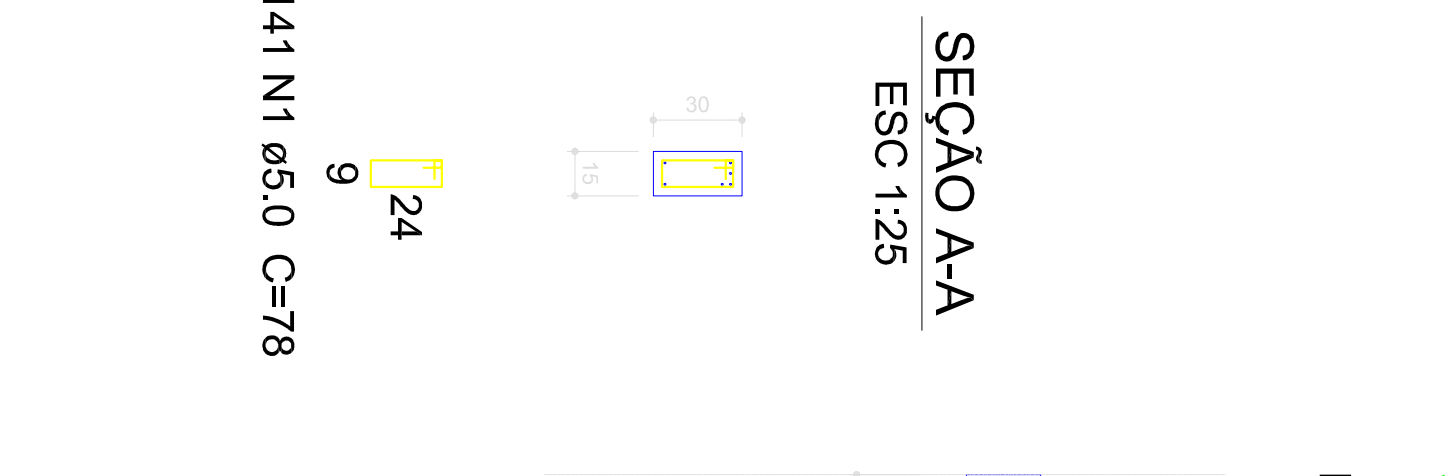
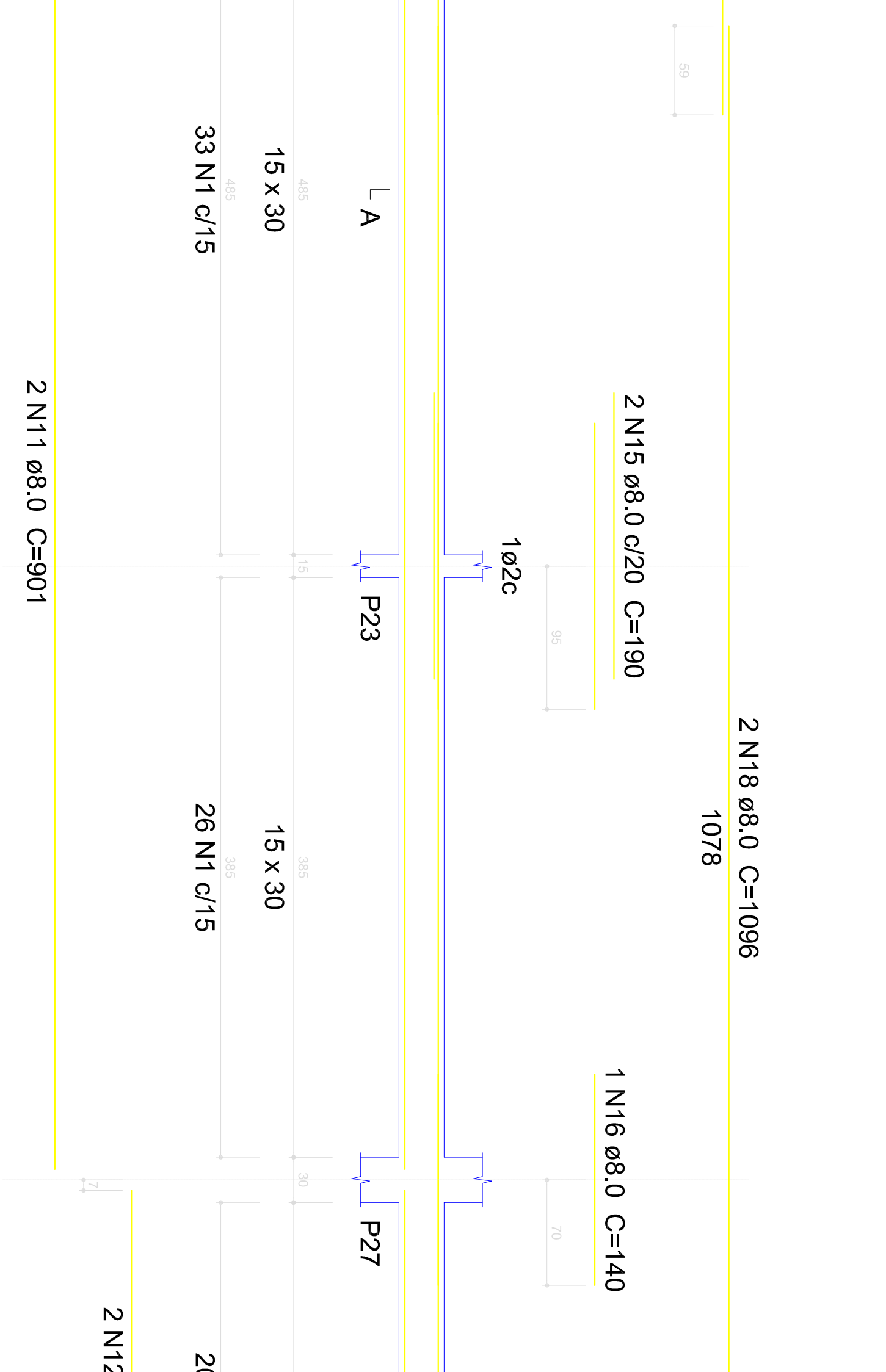
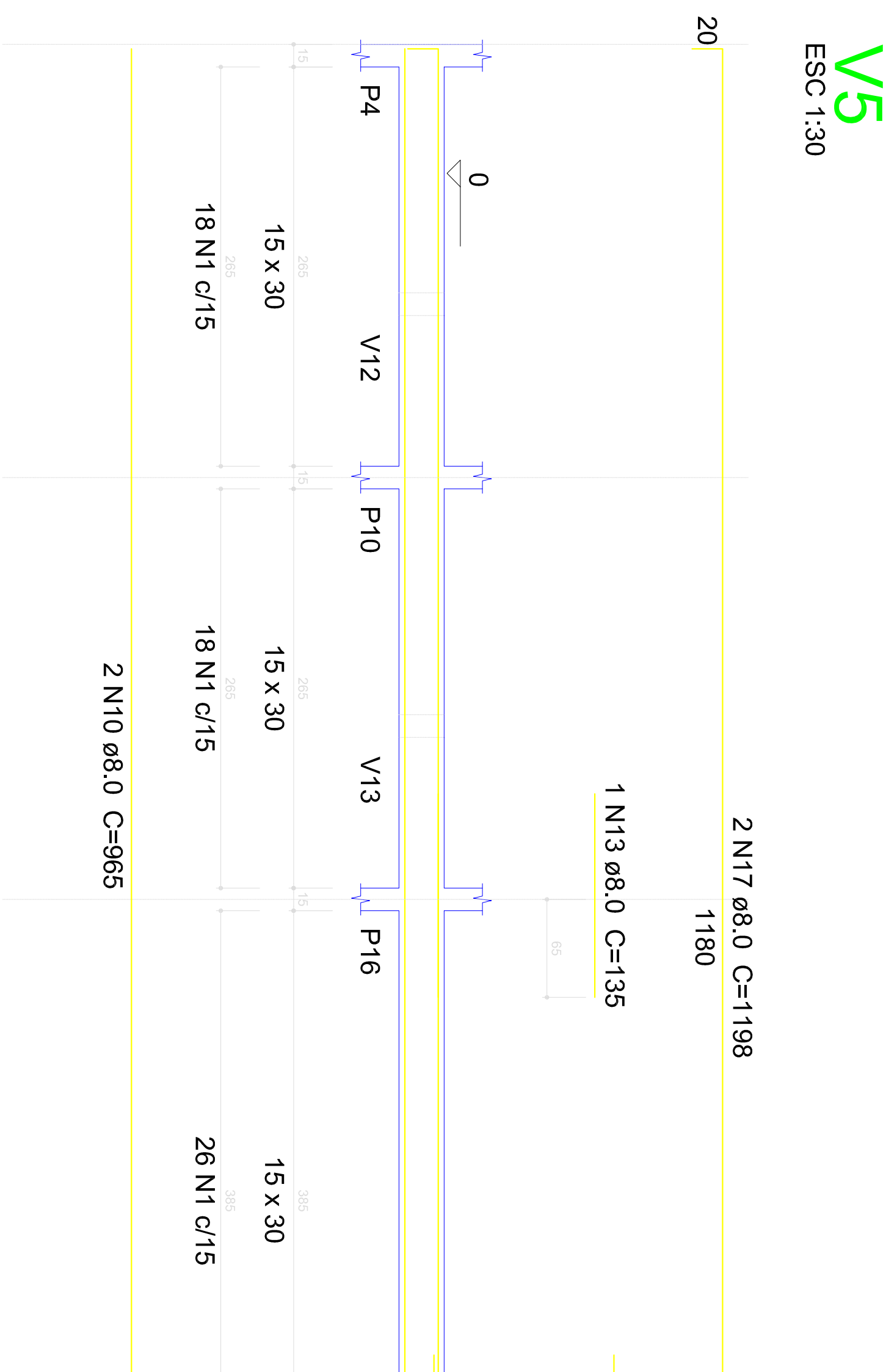
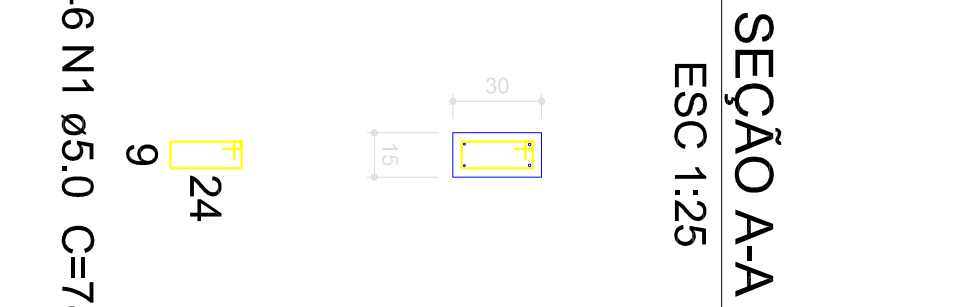
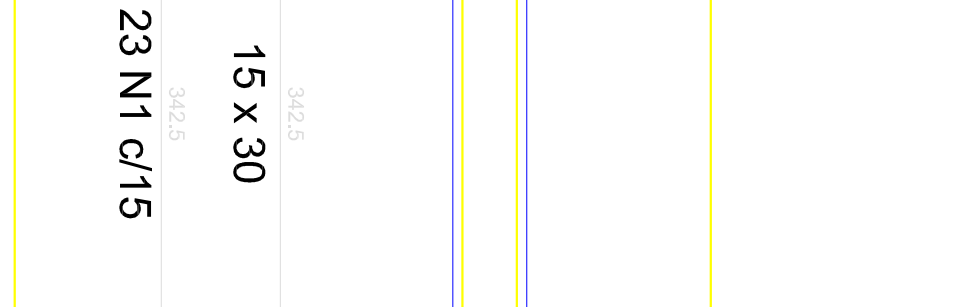
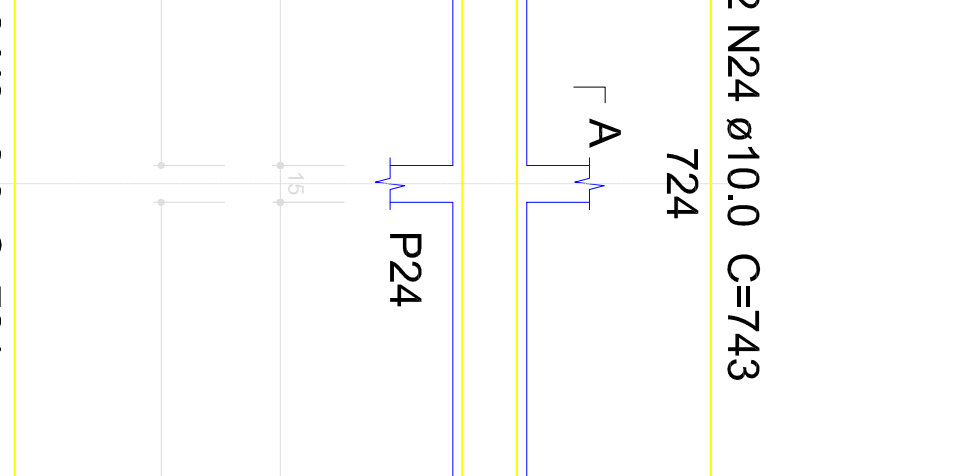
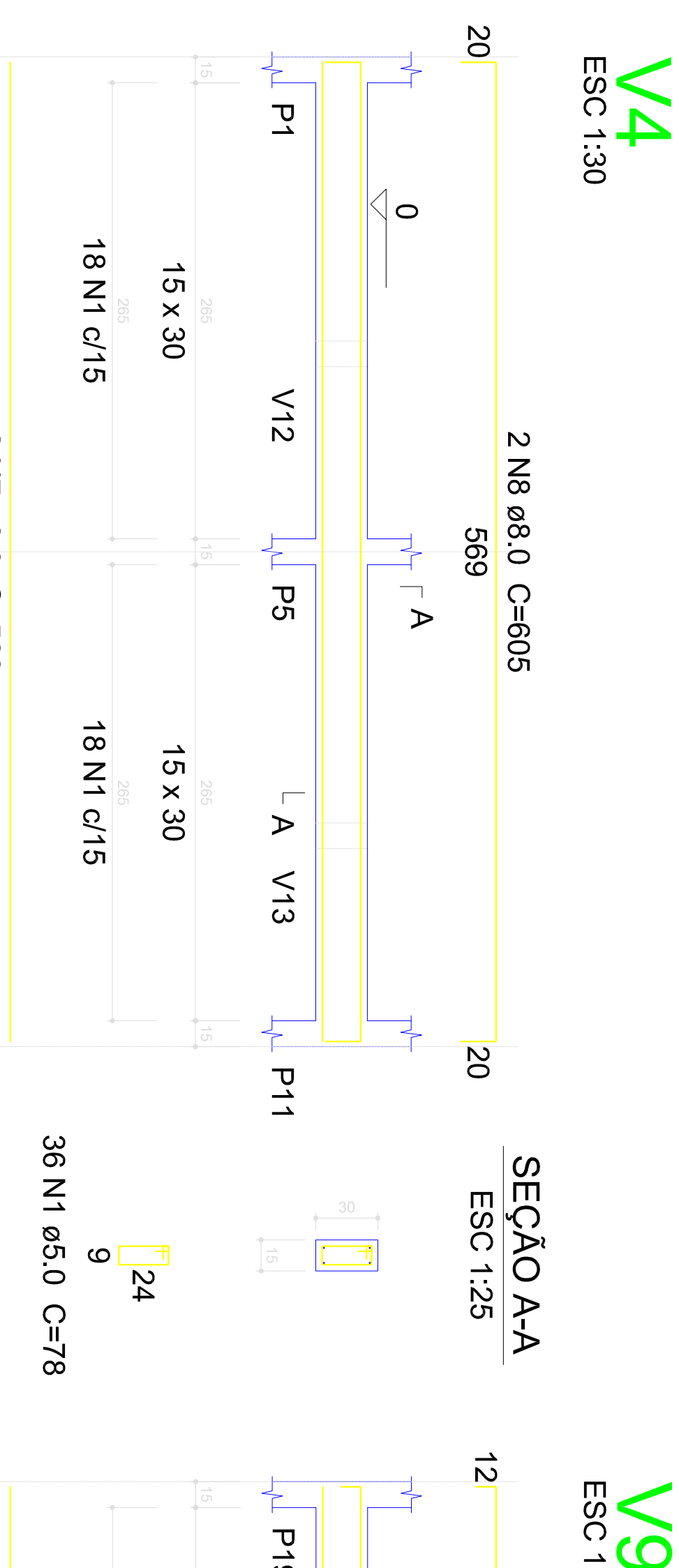
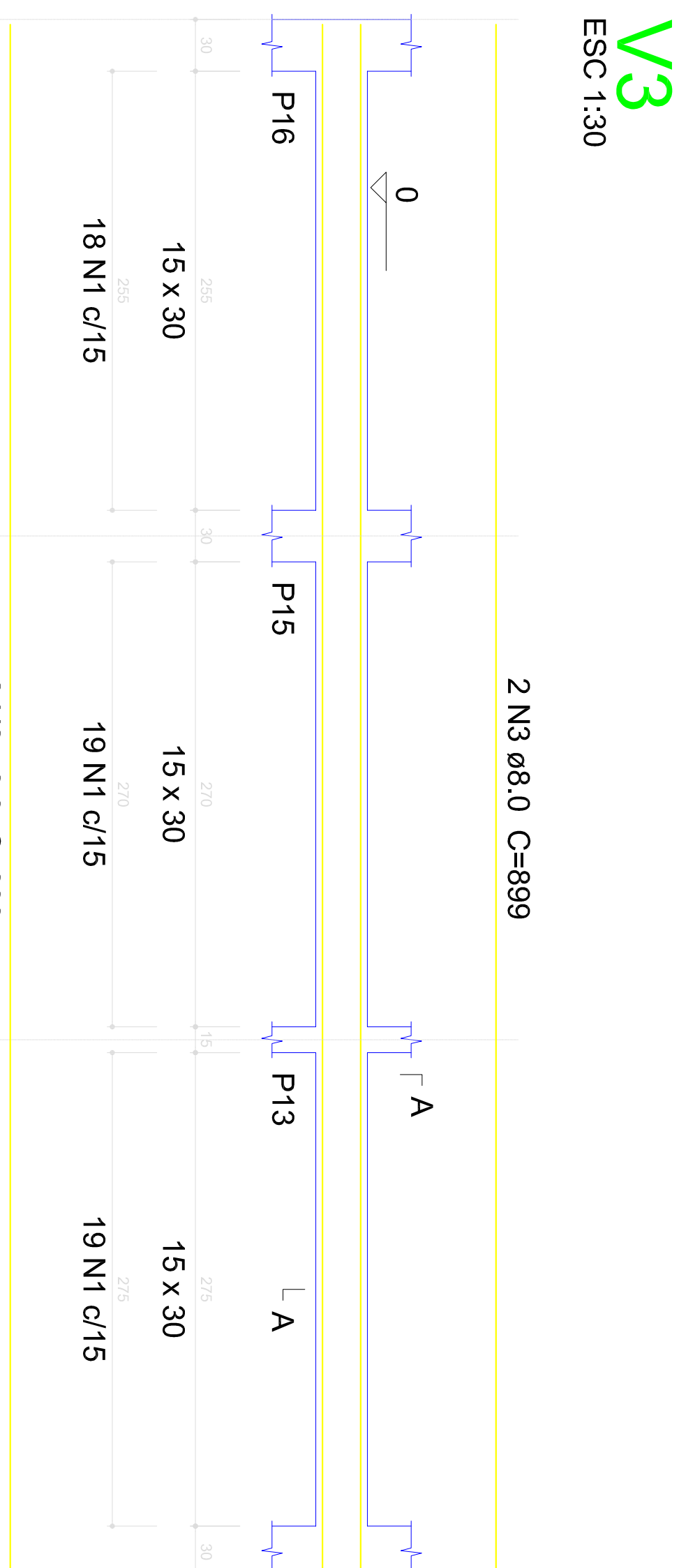
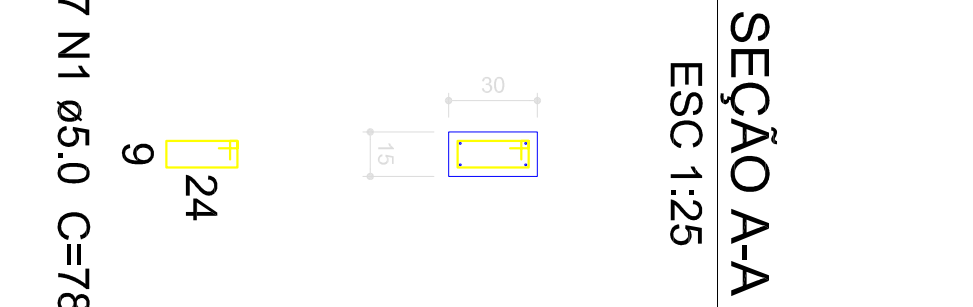
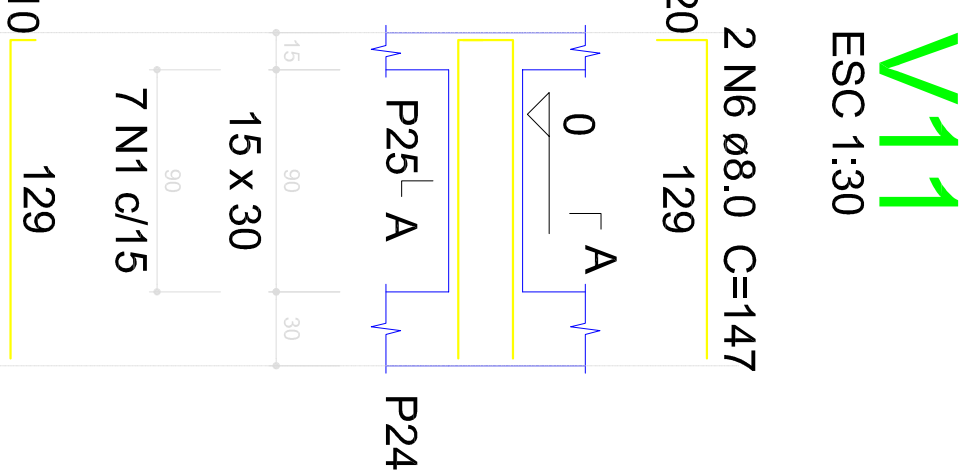
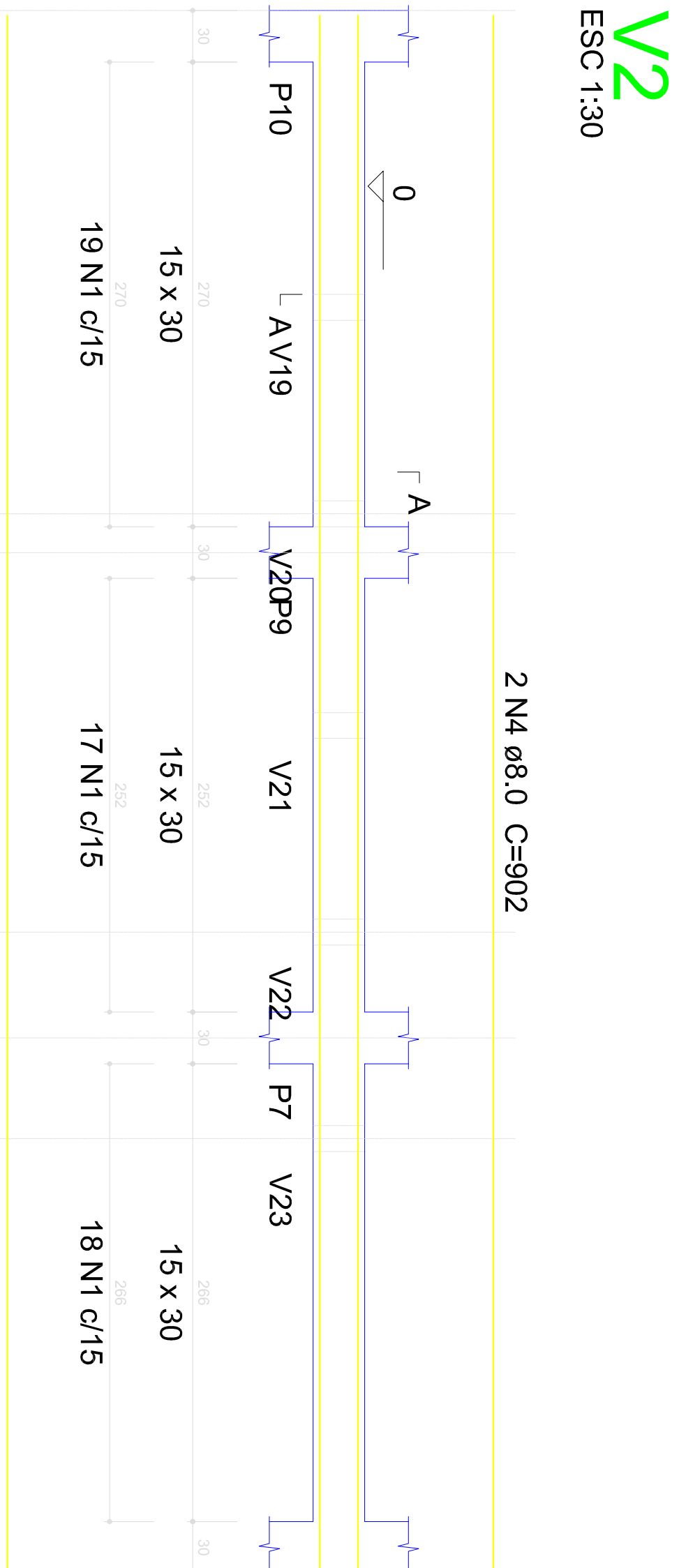
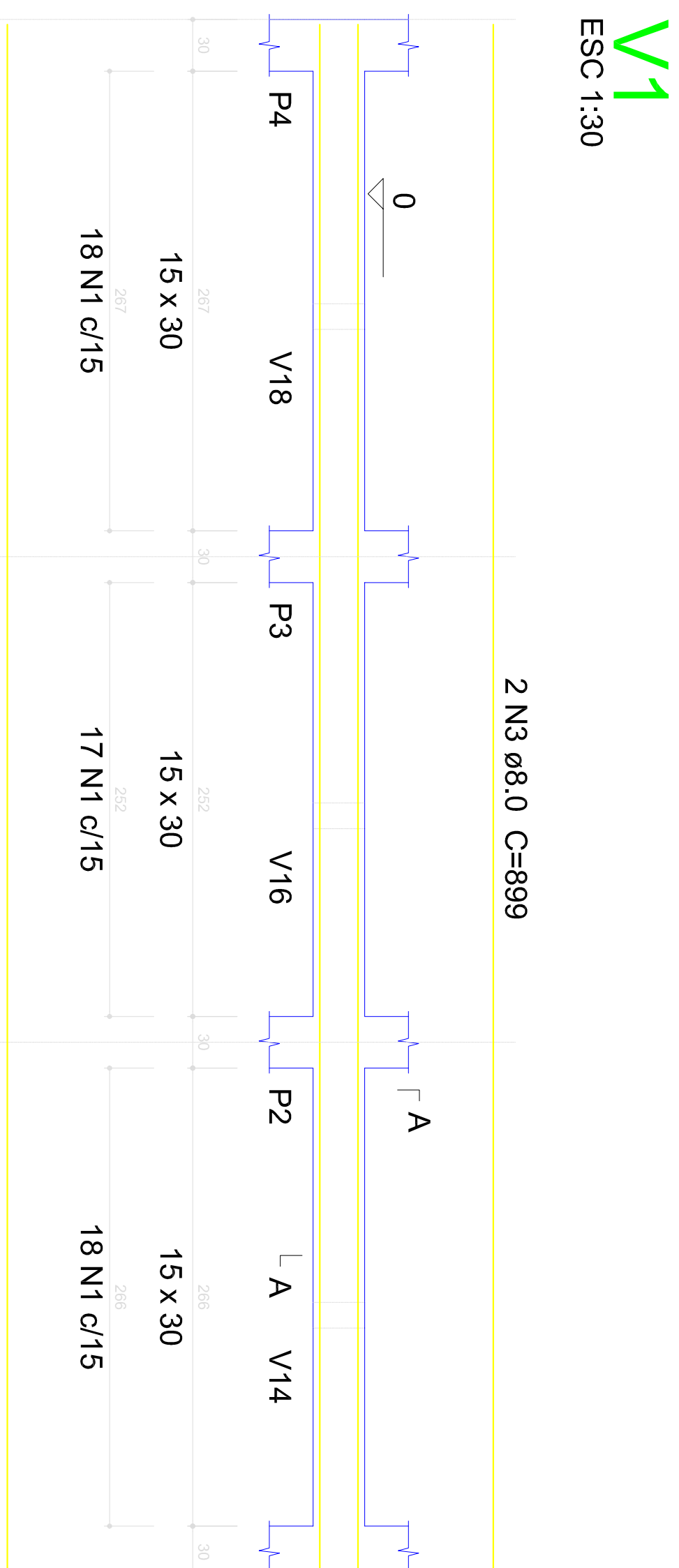


Relação do aço					
2xP1		2xP3		4xS1	
AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)
CA60 CA50	1	5.0	40	68	2720
	2	6.3	56	83	4648
	3	10.0	8	67	536
	4	10.0	8	VAR	VAR
	5	10.0	8	VAR	VAR
	6	12.5	8	83	664

Resumo do aço

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10 % (kg)
CA50	6.3	46.5	12.5
	10.0	25.1	17
	12.5	6.7	7
CA60	5.0	27.2	4.6
PESO TOTAL (kg)			
CA50	36.5		
CA60	4.6		

Volume de concreto (C-30) = 0.16 m³
 Volume de concreto (C-25) = 0.36 m³
 Área de forma = 5.6 m²



Relação do aço						
V1	V2	V3				
V4	V5	V6				
V7	V8	V9				
V10	V11	V14				
AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)	
CA60	1	5,0	690	78	53620	
	2	5,0	2	174	348	
CA50	3	8,0	8	899	7192	
	4	8,0	4	902	3608	
	5	8,0	2	137	274	
	6	8,0	2	147	294	
	7	8,0	2	569	1138	
	8	8,0	2	605	1210	
	9	8,0	4	724	2896	
	10	8,0	2	965	1930	
	11	8,0	2	901	1802	
	12	8,0	2	305	610	
	13	8,0	1	135	135	
	14	8,0	2	210	420	
	15	8,0	2	190	380	
	16	8,0	1	140	140	
	17	8,0	2	1198	2396	
	18	8,0	2	1096	2192	
	19	8,0	2	174	348	
	20	8,0	2	905	1810	
	21	8,0	2	720	1440	
	22	8,0	4	1114	4456	
	23	8,0	4	1121	4484	
	24	10,0	2	743	1486	
	25	10,0	2	767	1534	
	26	12,5	2	1200	2400	
	27	12,5	2	509	1018	

Resumo do aço				
AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10 % (kg)	
CA50	8,0	391,6	169,9	
	10,0	30,2	20,5	
	12,5	34,2	36,2	
CA60	5,0	541,7	91,8	
PESO TOTAL				
				(kg)
CA50			226,7	
CA60			91,8	

Volume de concreto (C-25) = 5.02 m³
Área de forma = 83.69 m²

