

VIGAS			
NOME	SEÇÃO (cm)	Elevação (cm)	NÍVEL (cm)
V1	15x60	0	0
V2	15x60	0	0
V3	15x60	0	0
V4	15x60	0	0
V5	15x60	0	0
V6	15x60	0	0
V7	15x60	0	0
V8	15x60	0	0
V9	15x60	0	0
V10	15x60	0	0
V11	15x60	0	0
V12	15x60	0	0
V13	15x60	0	0
V14	15x60	0	0
V15	15x60	0	0
V16	15x60	0	0
V17	15x60	0	0
V18	15x60	0	0
V19	15x60	0	0
V20	15x60	0	0
V21	15x60	0	0
V22	15x60	0	0
V23	15x60	0	0
V24	15x60	0	0
V25	15x60	0	0
V26	15x60	0	0
V27	15x60	0	0
V28	15x60	0	0
V29	15x60	0	0
V30	15x60	0	0
V31	15x60	0	0
V32	15x60	0	0
V33	15x60	0	0
V34	15x60	0	0
V35	15x60	0	0
V36	15x60	0	0
V37	15x60	0	0
V38	15x60	0	0
V39	15x60	0	0
V40	15x60	0	0


CARACTERÍSTICAS DOS MATERIAIS	
FCk	fctd (MPa)
20	2,00

PILARES			
NOME	SEÇÃO (cm)	Elevação (cm)	NÍVEL (cm)
P1	20x40	0	0
P2	20x40	0	0
P3	20x40	0	0
P4	20x40	0	0
P5	20x40	0	0
P6	20x40	0	0
P7	20x40	0	0
P8	20x40	0	0
P9	20x40	0	0
P10	20x40	0	0
P11	20x40	0	0
P12	20x40	0	0
P13	20x40	0	0
P14	20x40	0	0
P15	20x40	0	0
P16	20x40	0	0
P17	20x30	0	0
P18	20x30	0	0
P19	20x30	0	0
P20	20x30	0	0
P21	20x40	0	0
P22	20x40	0	0
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P30	20x40	0	0
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P36	20x40	0	0
P37	20x40	0	0
P38	20x40	0	0
P39	20x40	0	0
P40	20x40	0	0
P41	20x40	0	0
P42	20x40	0	0
P43	20x40	0	0
P44	20x40	0	0
P45	20x40	0	0
P46	20x40	0	0
P47	20x40	0	0
P48	20x40	0	0

LEGENDA DOS PILARES		LEGENDA DAS VIGAS E PAREDES	
	PILAR QUE PASSA		VIGA

FORMA DO PAVIMENTO BALDRAME (NÍVEL 0)  
ESCALA 1:50

PROPRIETÁRIO	CONSTRUTORA
FUNDAÇÃO UNIVERSIDADE FEDERAL	GLOBAL SERVIÇOS LTDA
PROJETO	RESP. TÉCNICO


**GLOBAL SERVIÇOS LTDA.**  
 cliente

**BLOCO B - UNIFAP - CAMPUS OIAPOQUE/AP**  
 endereço

PROJETO ESTRUTURAL RODOVIA BR-156, 3051 - BARRIO UNIVERSIDADE - OIAPOQUE/AP  
 endereço

**FORMAS - BALDRAME**  
 descrição do projeto

ENG. CIVIL GERVÂNIO MACHADO  
 autor do projeto

ENG. CIVIL GERVÂNIO MACHADO  
 responsável do projeto

ESTRUTURAL\_UNIFAP\_BLOCO\_B\_PROJ.DWG  
 nome do arquivo

ENG. CIVIL GERVÂNIO MACHADO  
 desenho do projeto

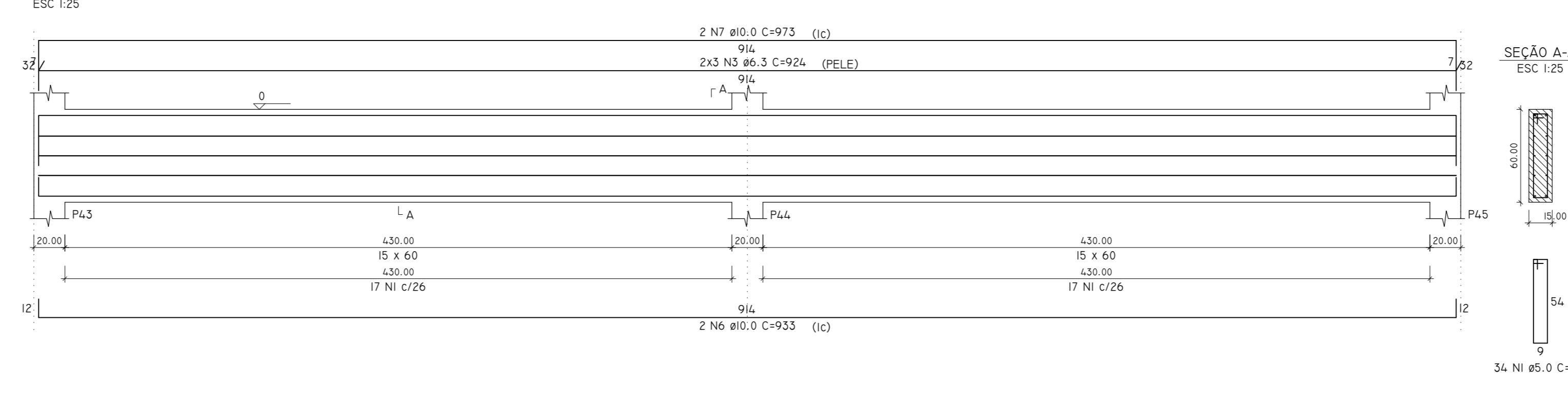
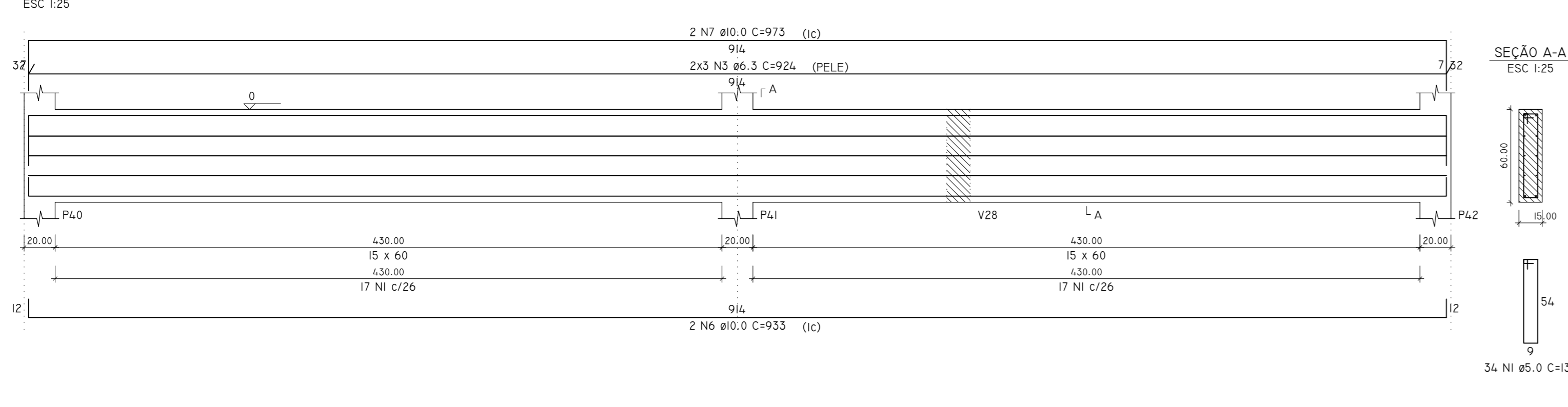
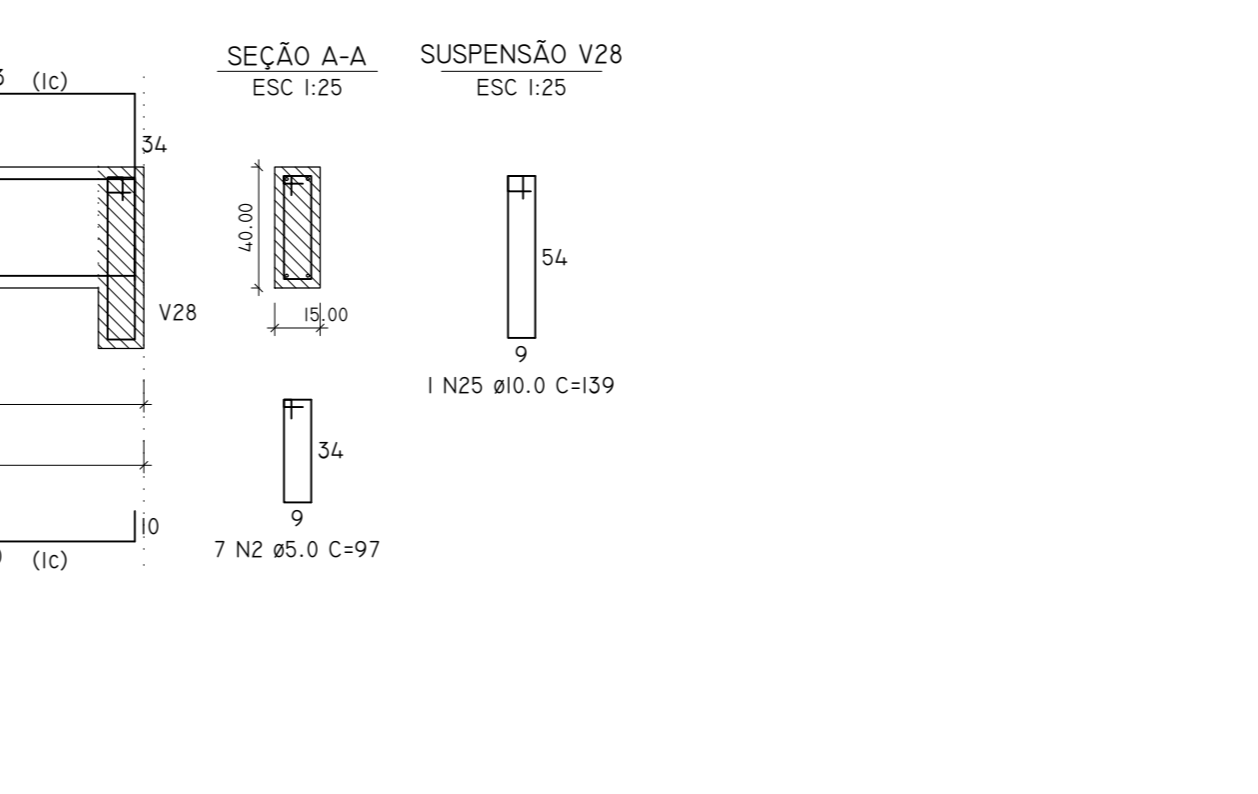
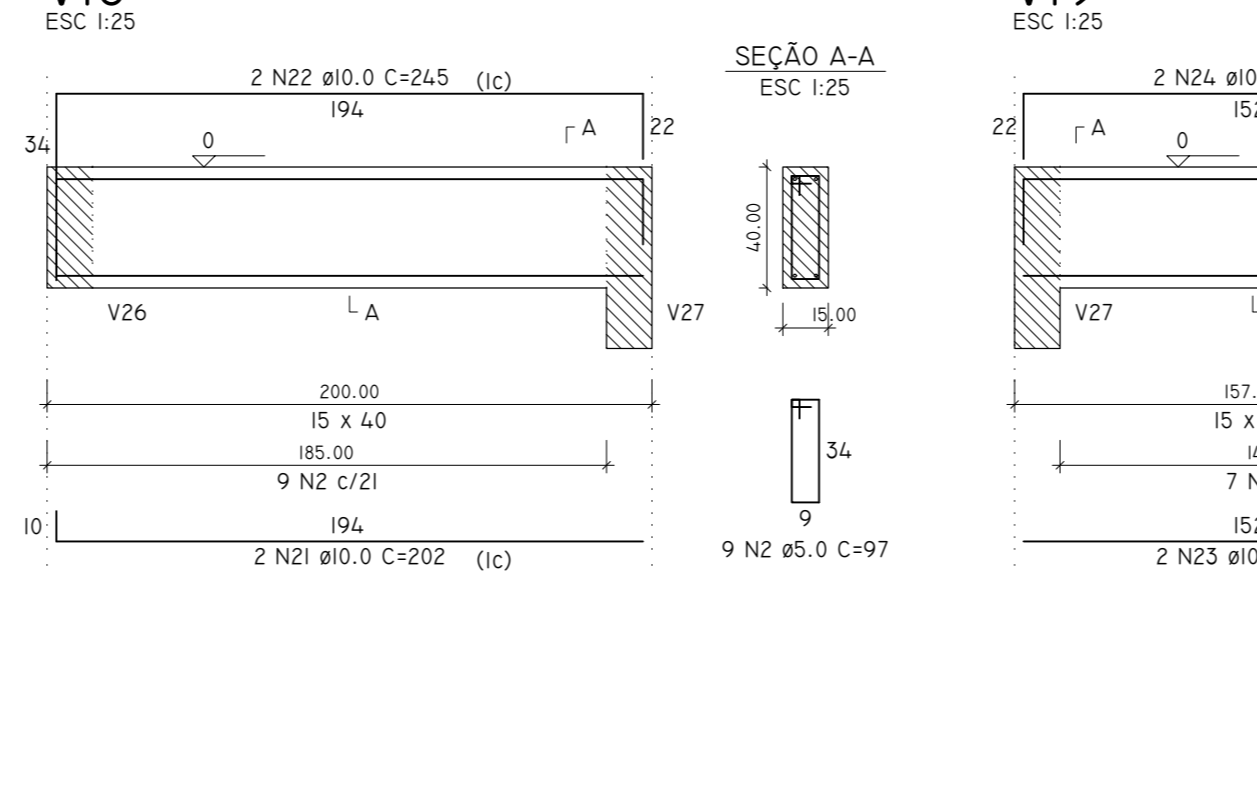
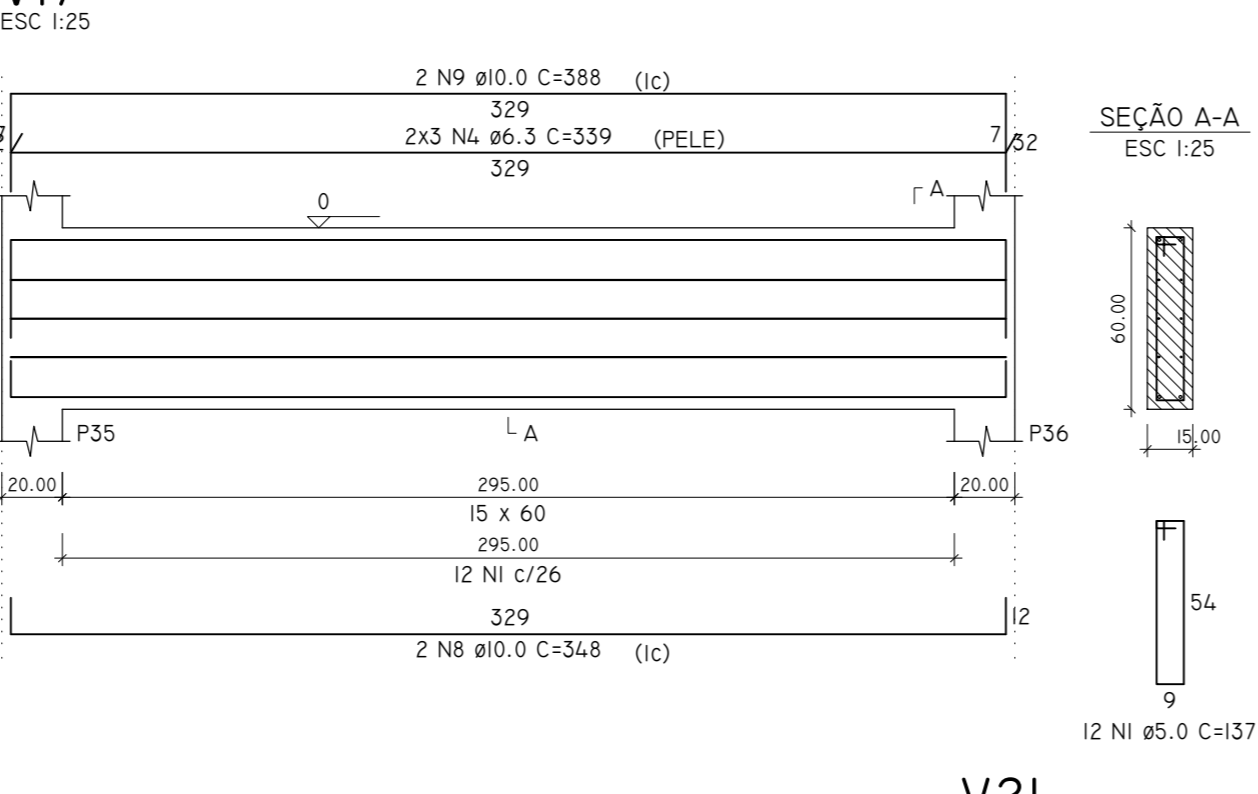
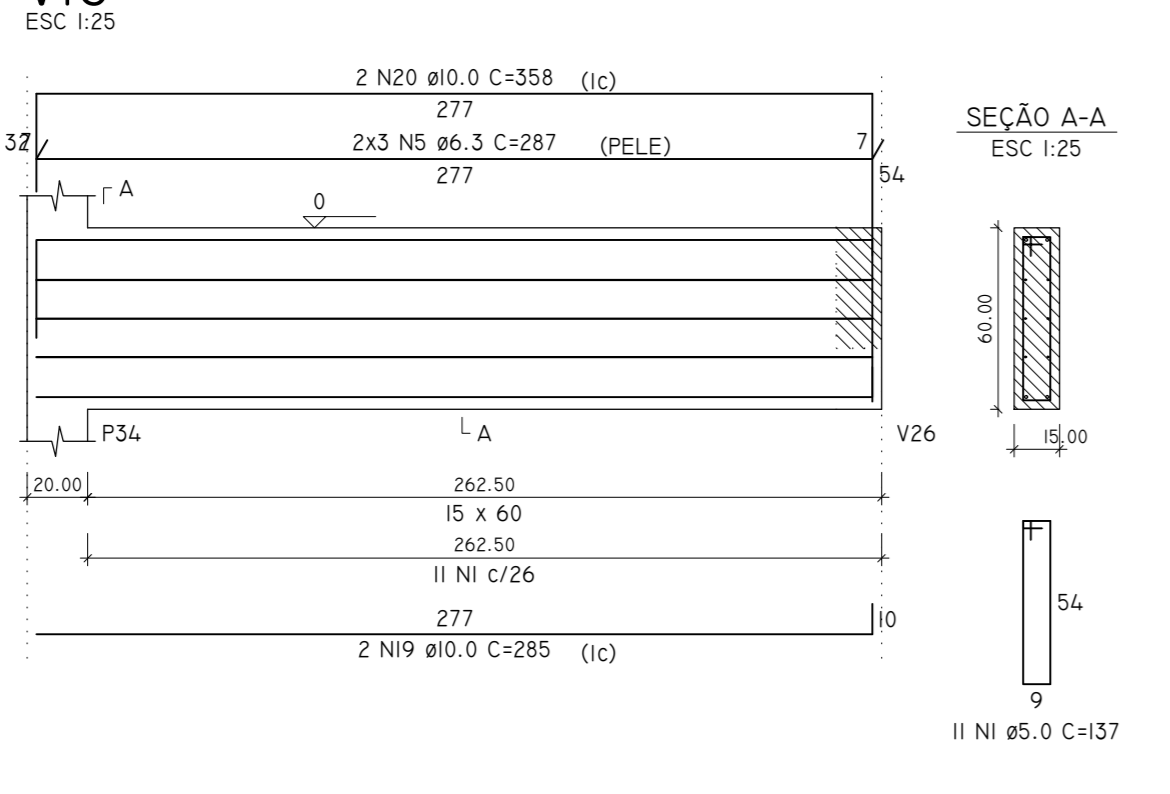
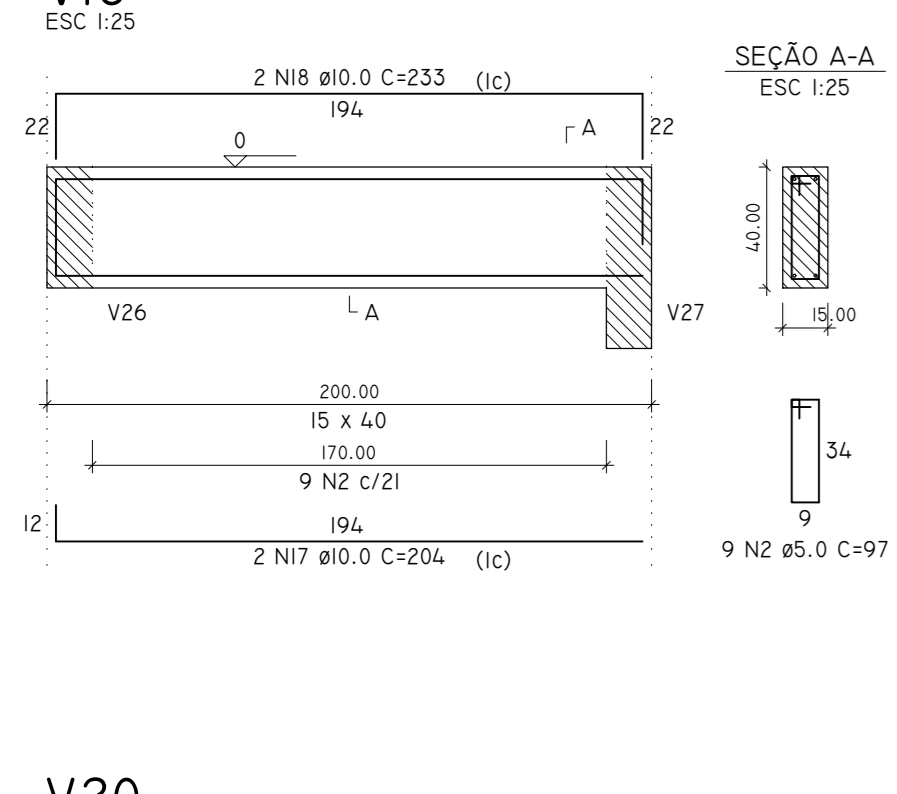
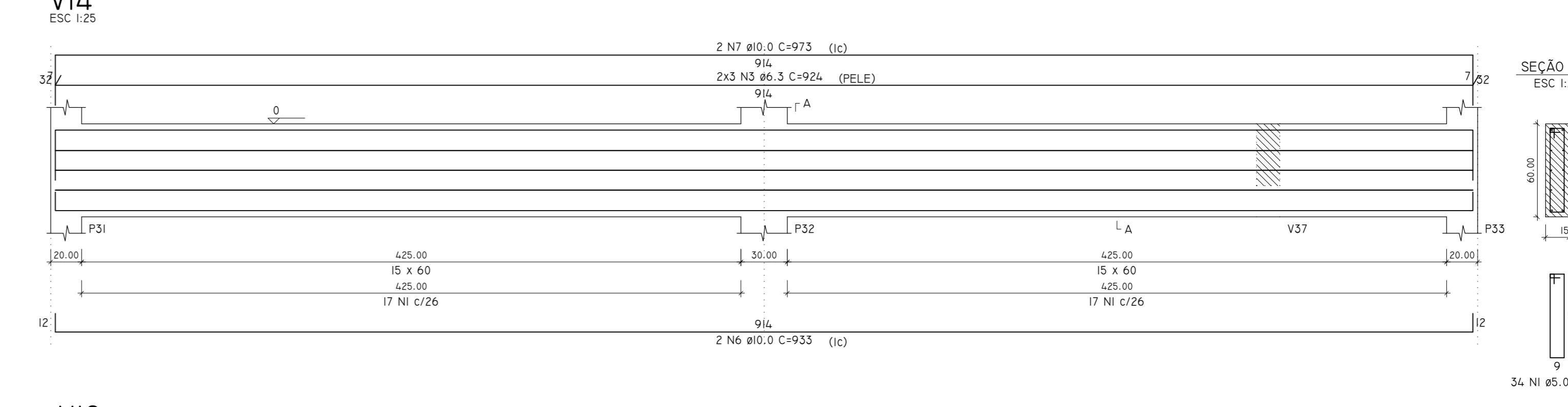
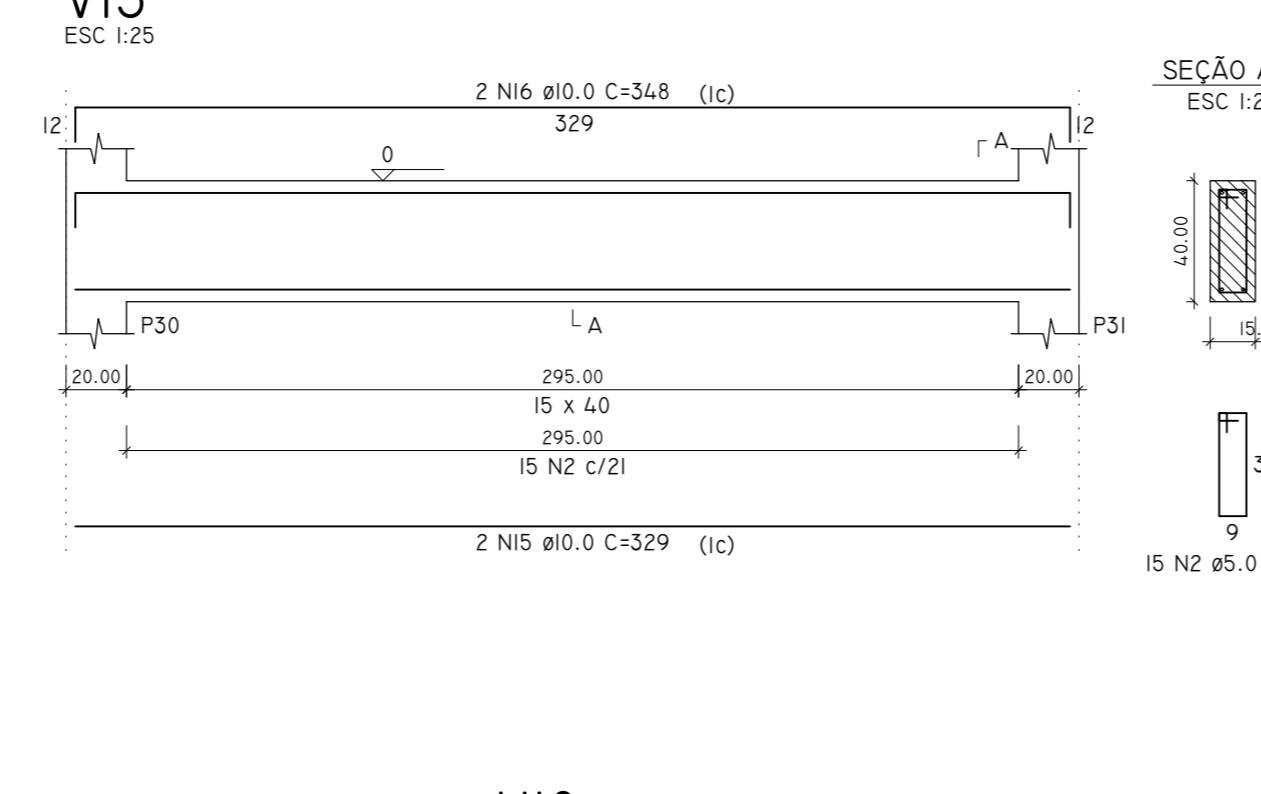
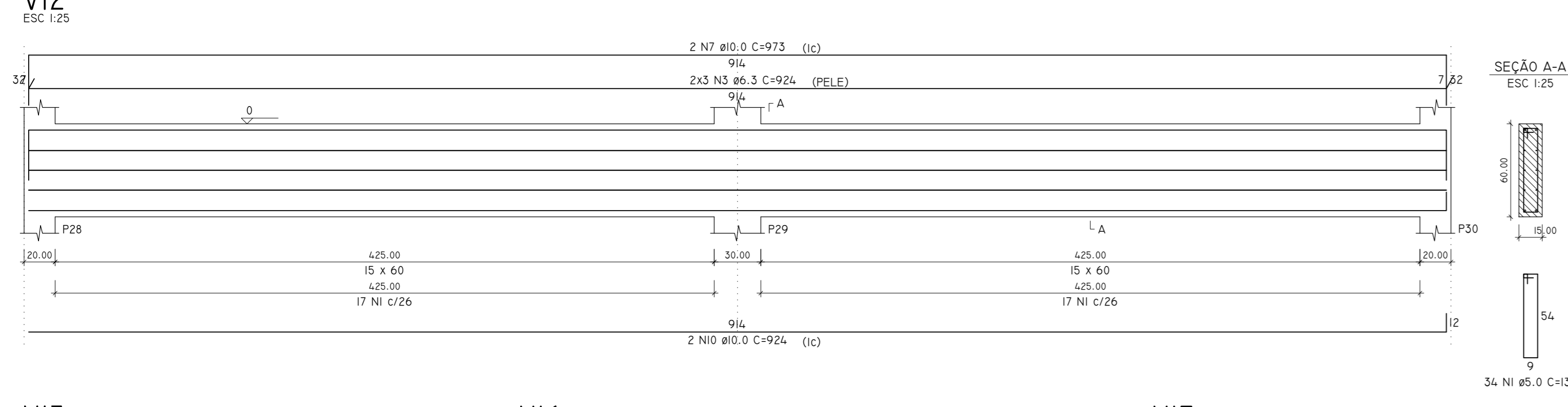
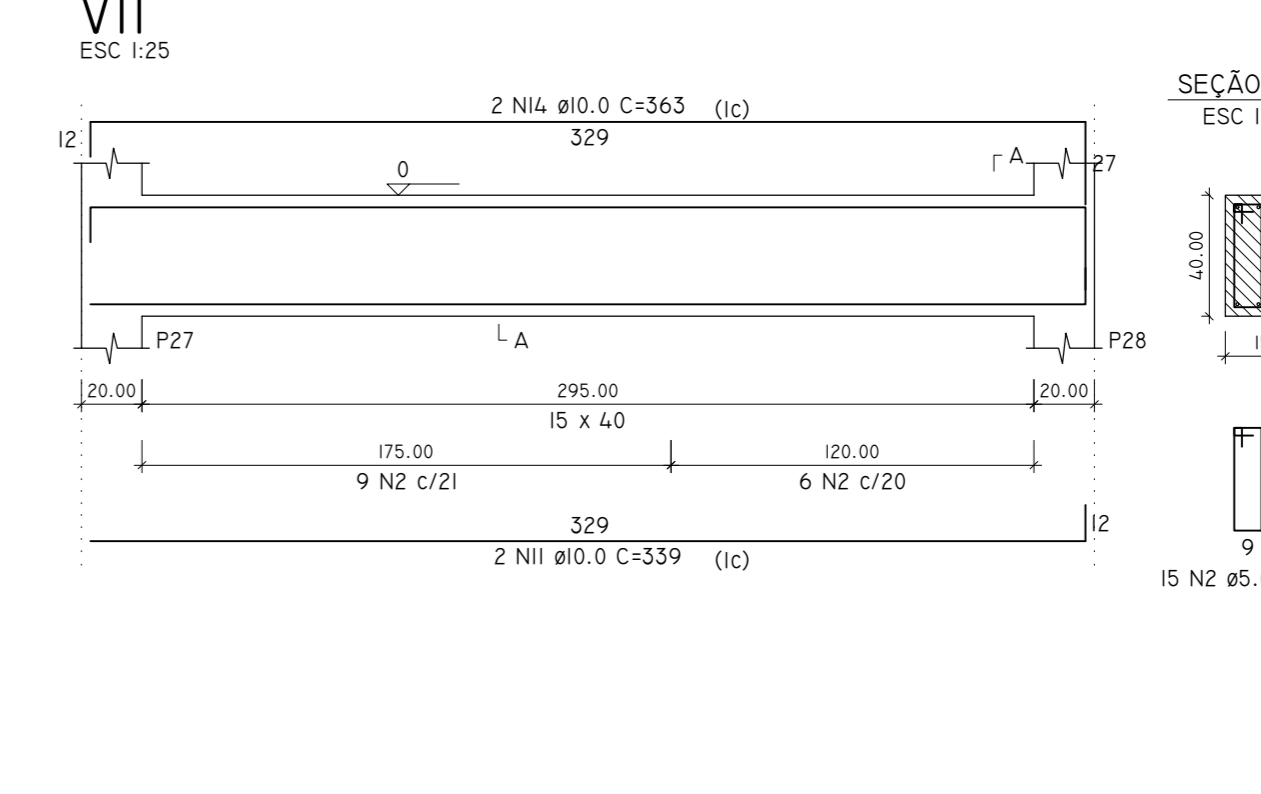
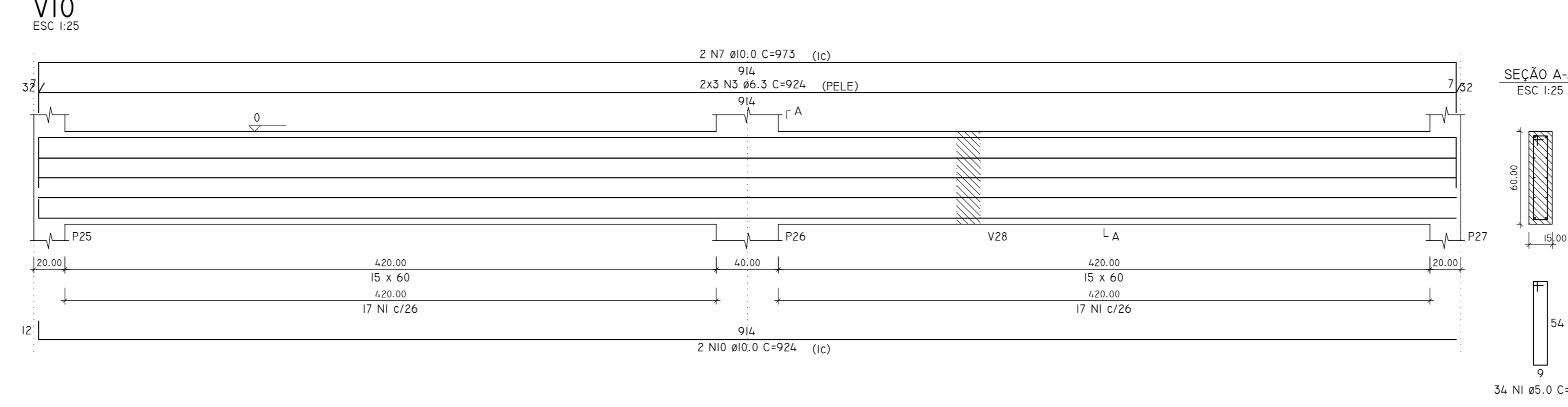
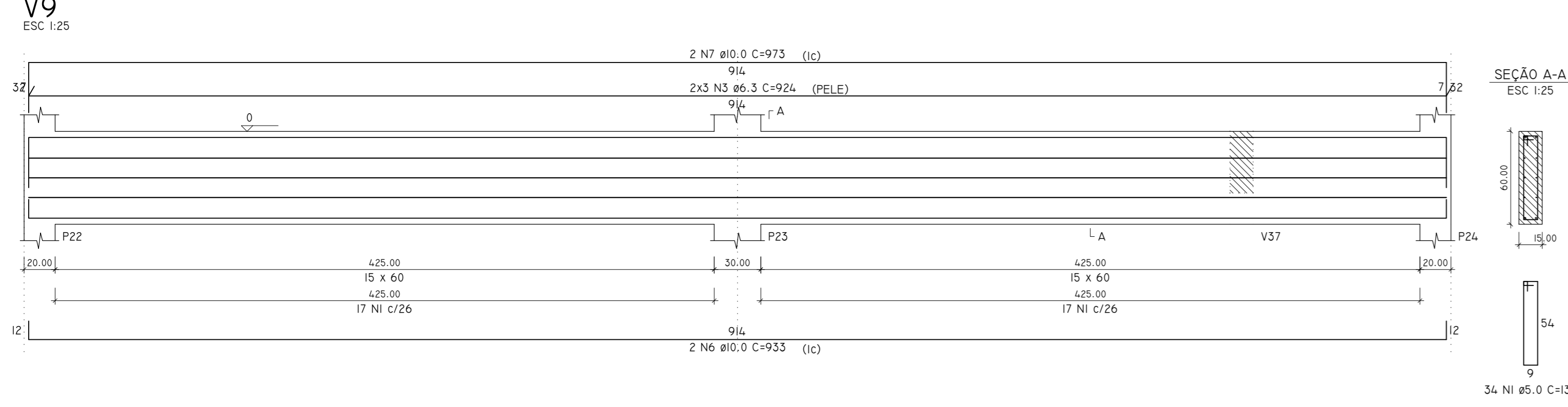
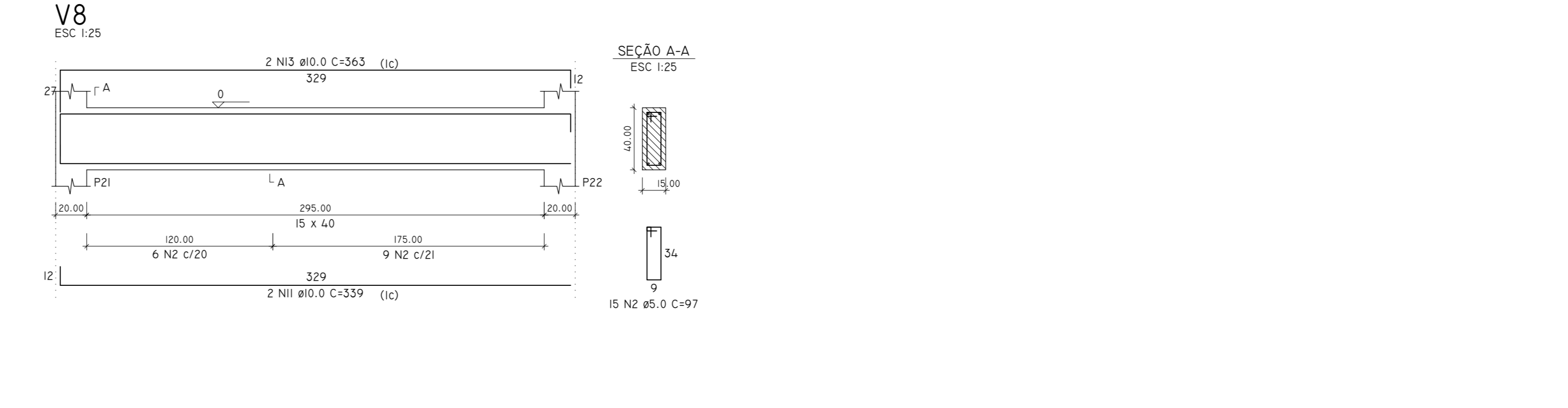
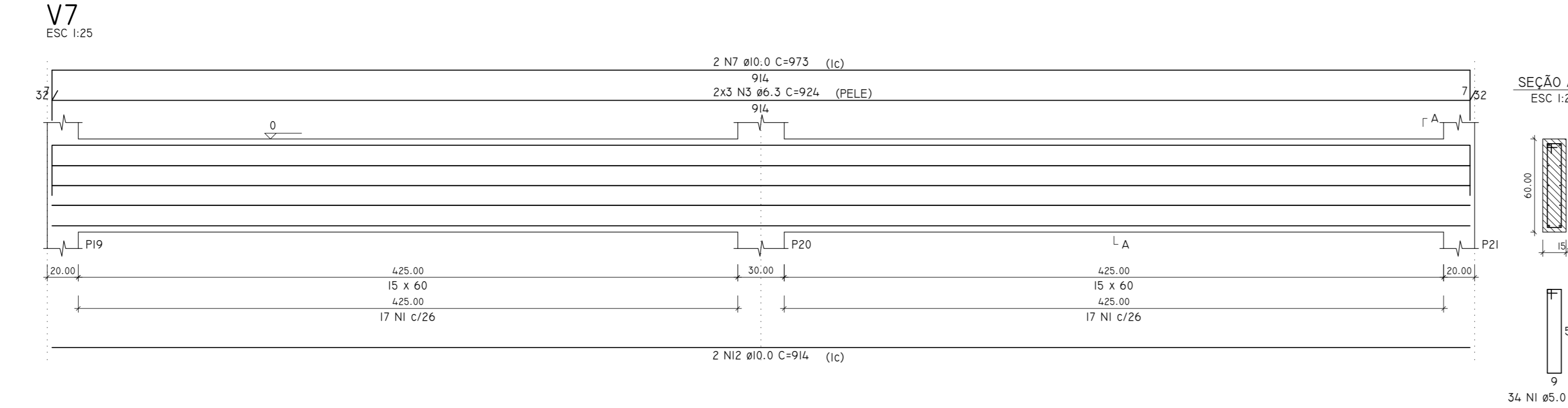
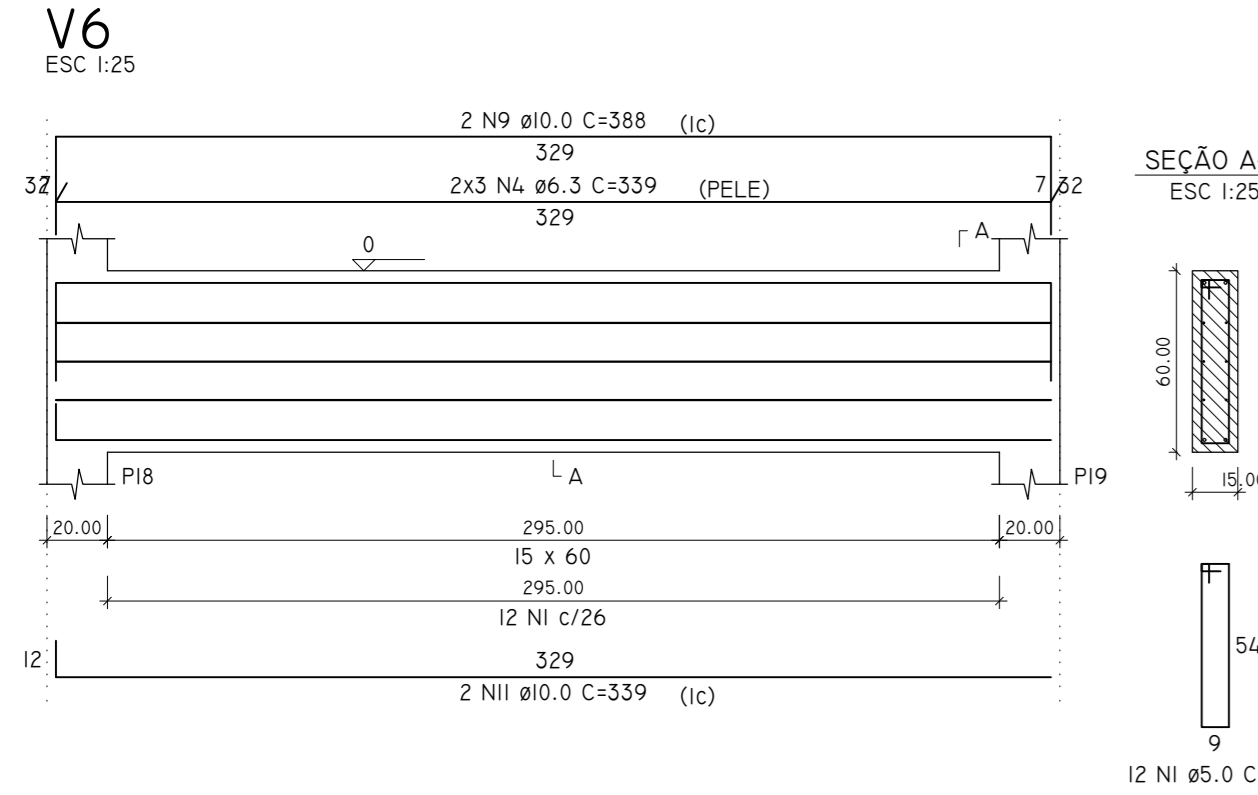
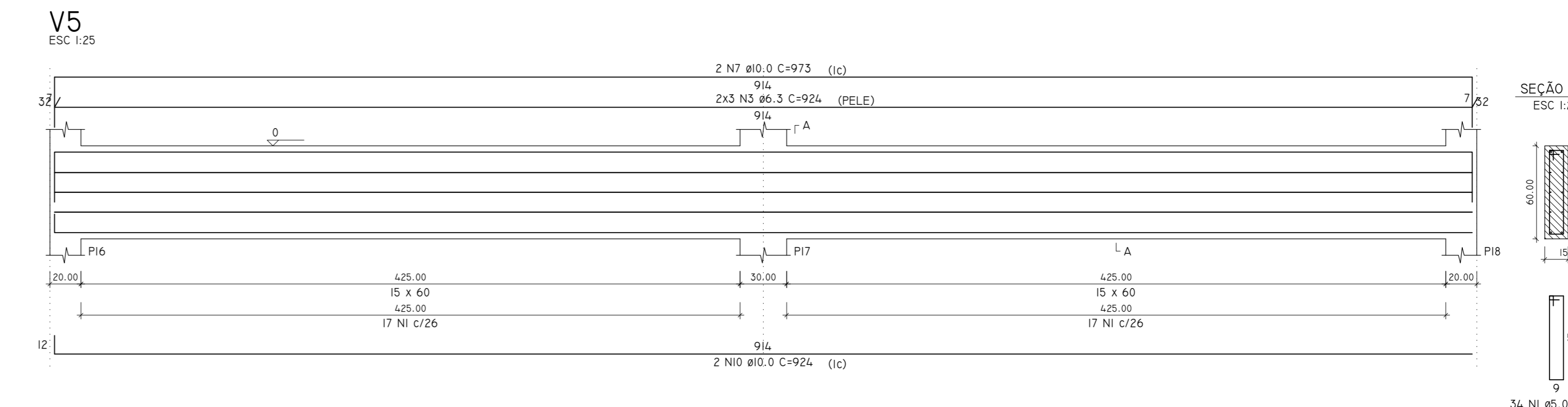
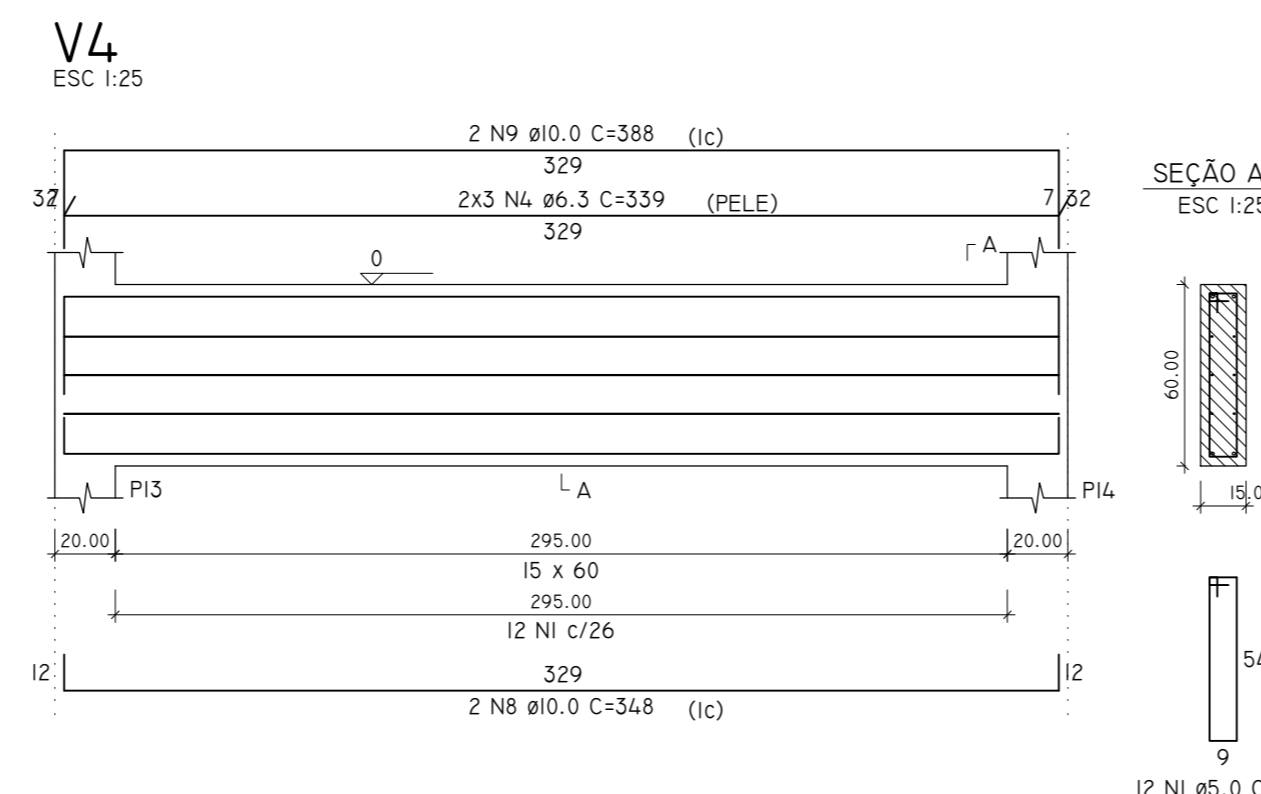
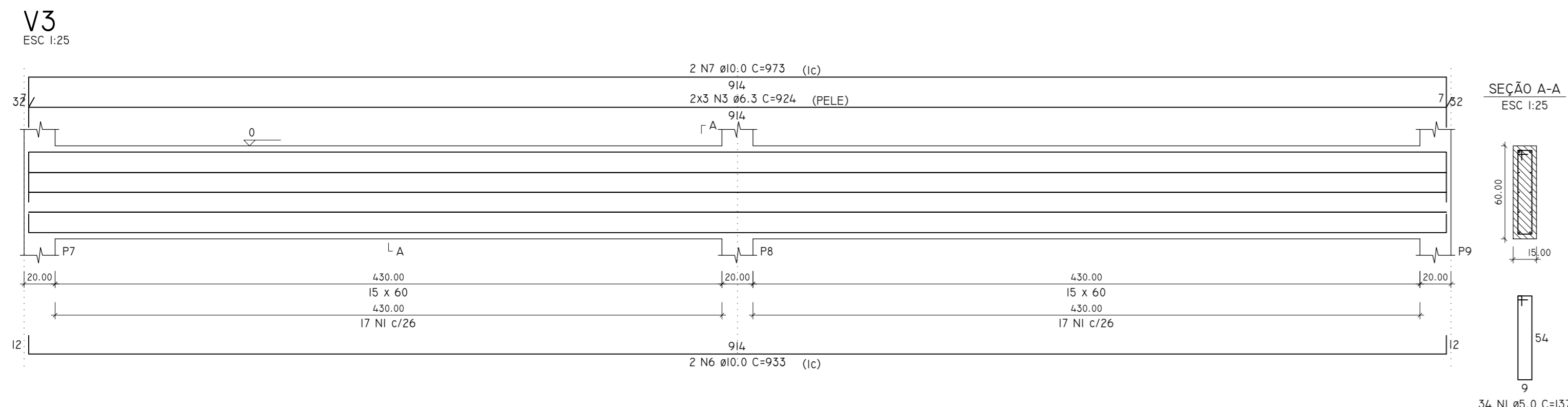
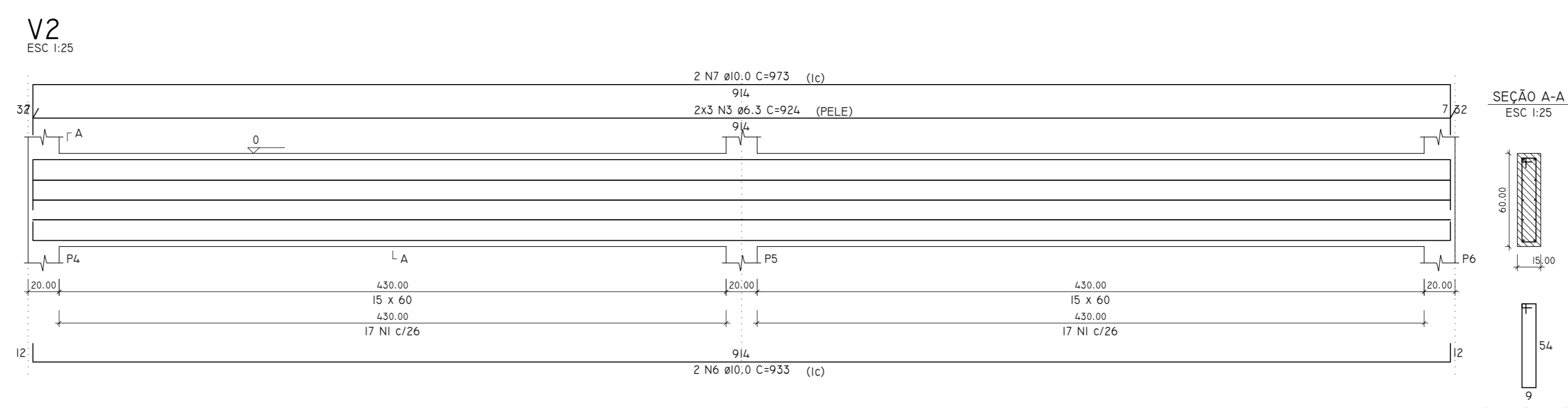
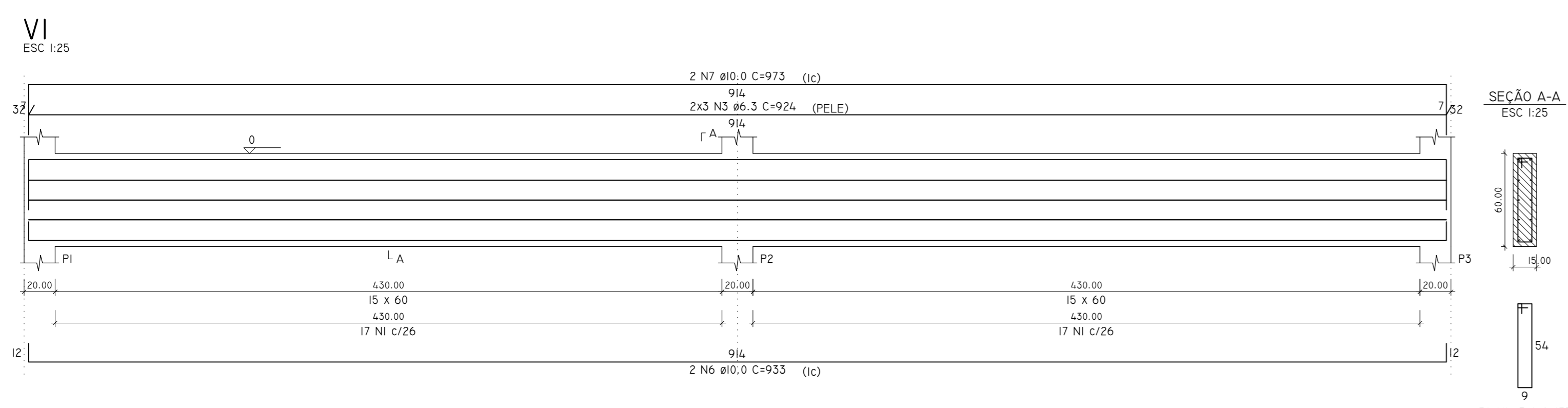
PROJETO INICIAL  
 status do projeto

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 data

INDICADA  
 data

MAR/2018  
 data

EST 01-25



RELAÇÃO DO AÇO

ACAO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CASO	1	5.0	421	157	66177
	2	5.0	70	97	6790
	3	6.3	66	924	60964
	4	6.3	18	339	6032
	5	6.3	6	287	1722
	6	10.0	14	933	13062
	7	10.0	22	288	2446
	8	10.0	4	348	1392
	9	10.0	6	359	2154
	10	10.0	6	924	5544
	11	10.0	6	259	2054
	12	10.0	6	911	5466
	13	10.0	6	259	2054
	14	10.0	6	348	1392
	15	10.0	6	259	2054
	16	10.0	6	348	1392
	17	10.0	6	259	2054
	18	10.0	6	259	2054
	19	10.0	6	259	2054
	20	10.0	6	358	2148
	21	10.0	6	259	2054
	22	10.0	6	265	2118
	23	10.0	6	160	1260
	24	10.0	7	203	1421
	25	10.0	1	159	159

RESUMO DO AÇO

ACAO	DIAM (mm)	C.TOTAL (cm)	QUANT (BARRAS)	UNID	PESO (kg)
CASO	6.3	688.1	64	12 M	185.2
	10.0	543.2	50	12 M	168.4
CASO	5.0	244.7	60	12 M	109.3
PESO TOTAL					
CASO		553.6			
CASO		109.3			

VOLUME DE CONCRETO (C-10) = 11.20 m³  
ÁREA DE FORMA = 168.84 m²

PRODUCED BY AN AUTODESK STUDENT VERSION

PRODUCED BY AN AUTODESK STUDENT VERSION

PROPRIETARIO: FUNDAÇÃO UNIVERSIDADE FEDERAL

CONSTRUTORA: GLOBAL SERVIÇOS LTDA

PROJETO: RESP. TÉCNICO

ING. CIVIL GERVÂNIO MACHADO  
CREA: 068088088-0/RS-10664P

**GLOBAL SERVIÇOS LTDA.**  
cliente

**BLOCO B - UNIFAP - CAMPUS OIAPOQUE/AP**

PROJETO ESTRUTURAL: RODOVIA BR-156, 3081 - BARRIO UNIVERSIDADE - OIAPOQUE/AP

VIGAS - BALDRAME - 01/02

ING. CIVIL GERVÂNIO MACHADO  
autor do projeto

ING. CIVIL GERVÂNIO MACHADO  
coordenador do projeto

ESTRUTURAL UNIFAP BLOCO B ROD.DWG  
nome do projeto

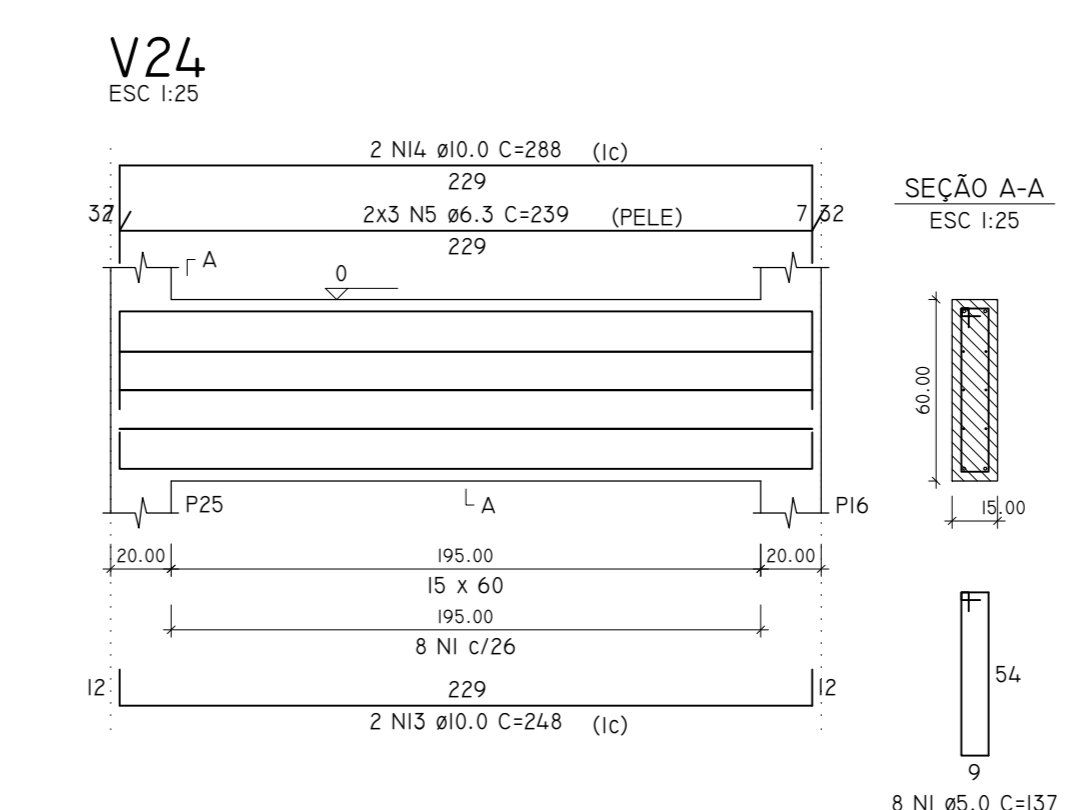
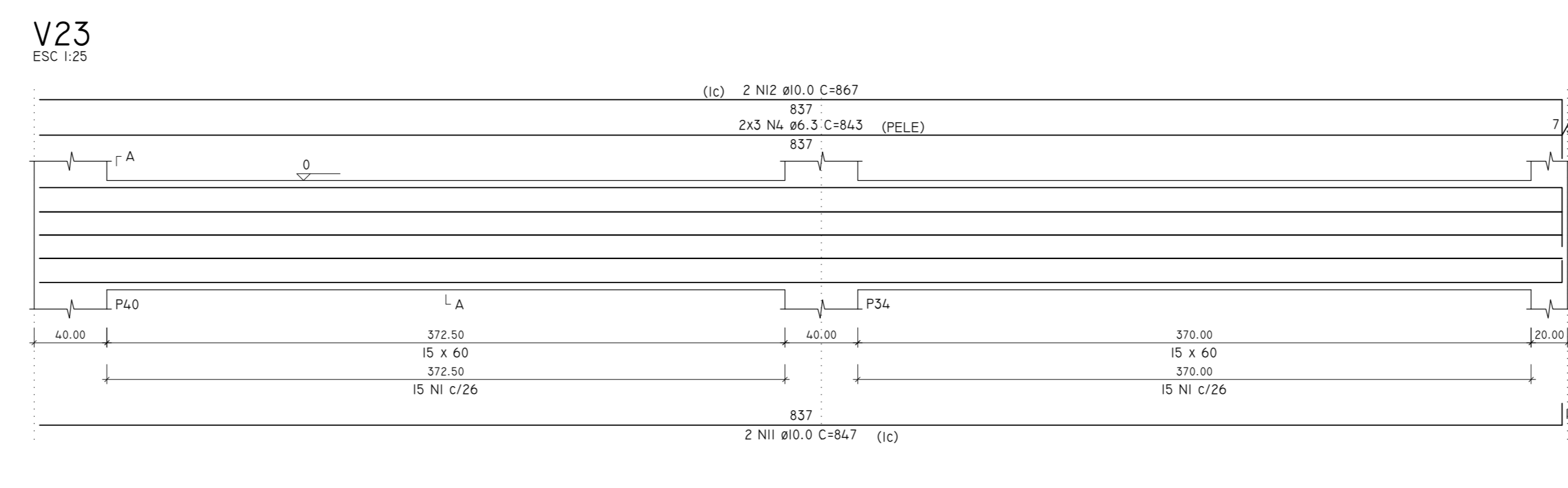
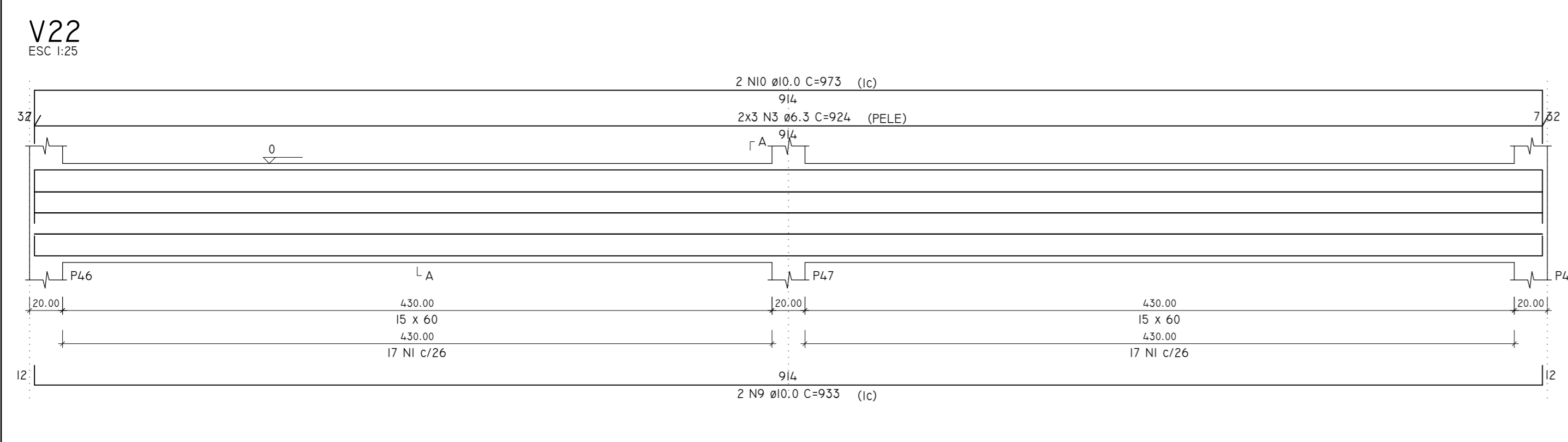
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no. revisões

INDICADA  
data

MAR/2018

**EST 04-25**



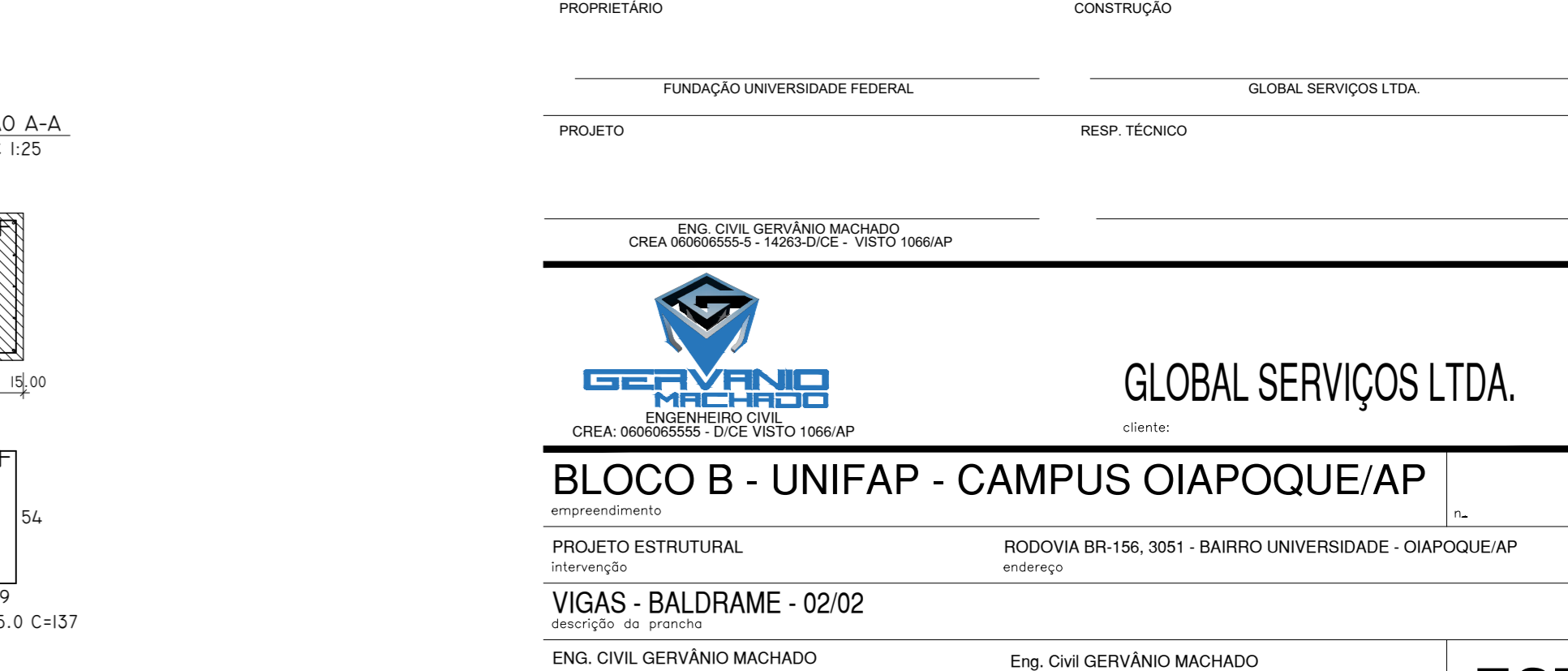
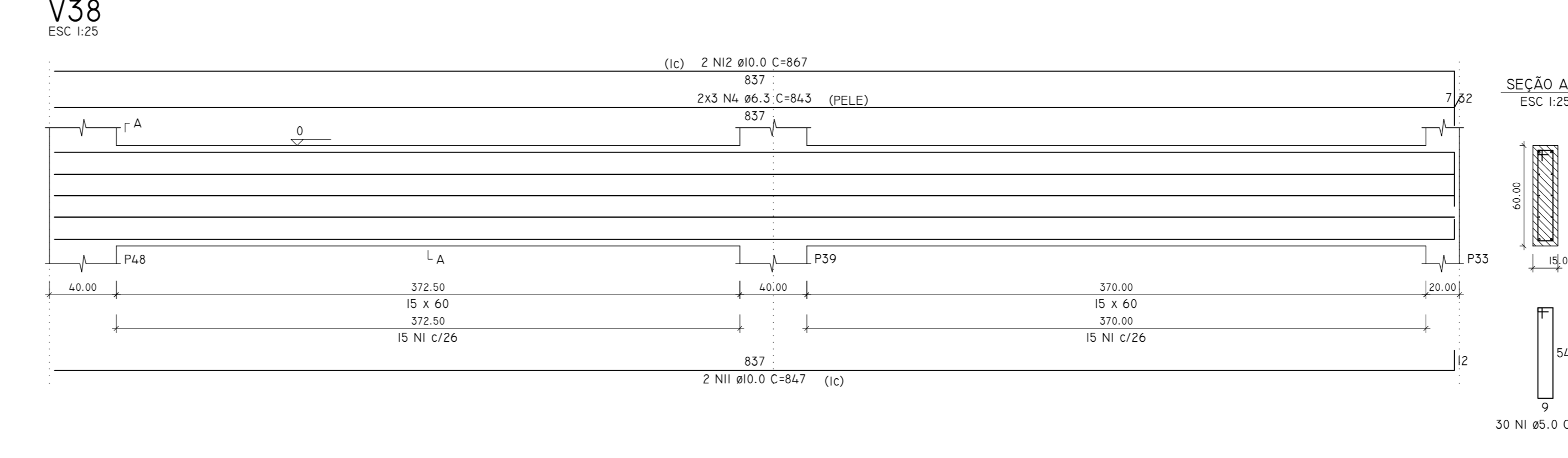
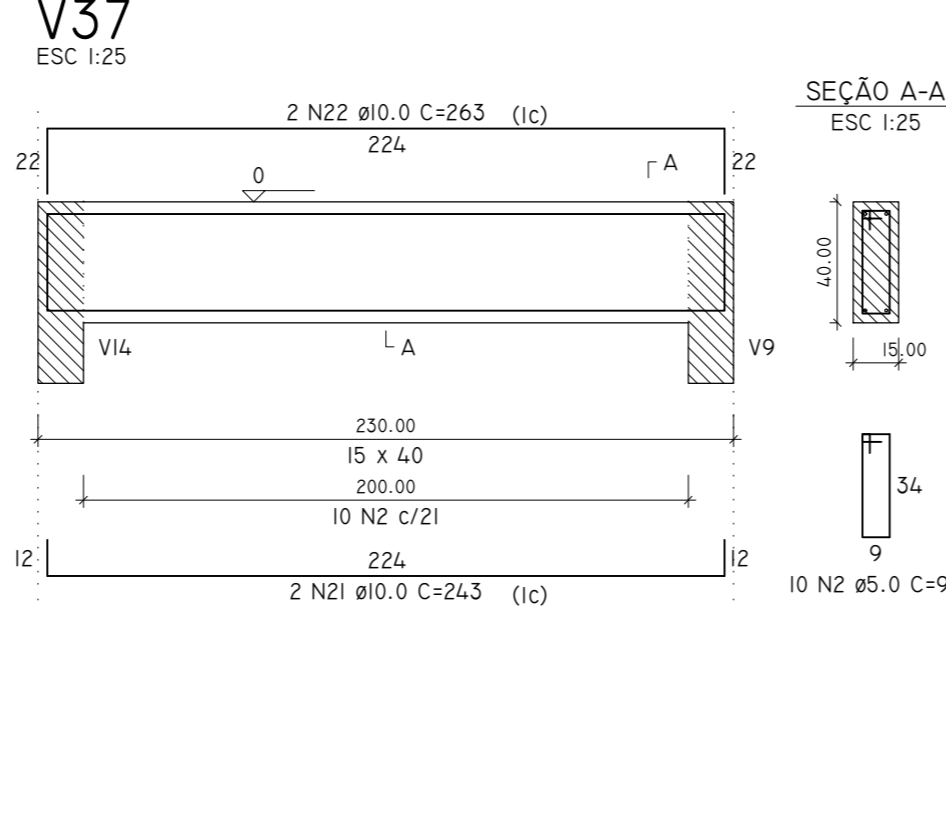
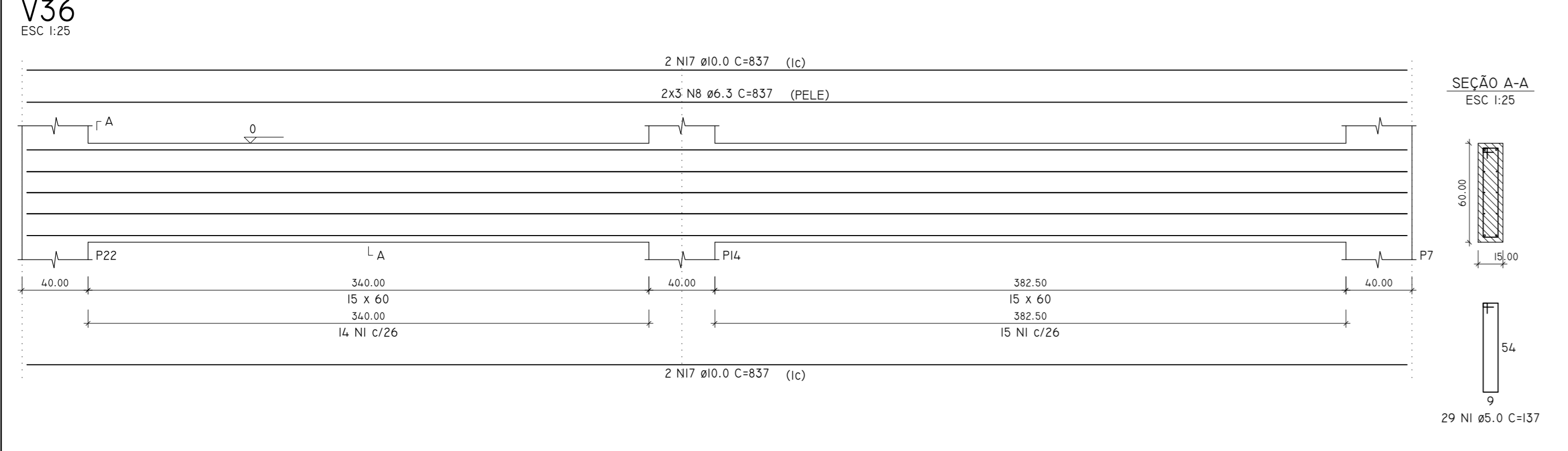
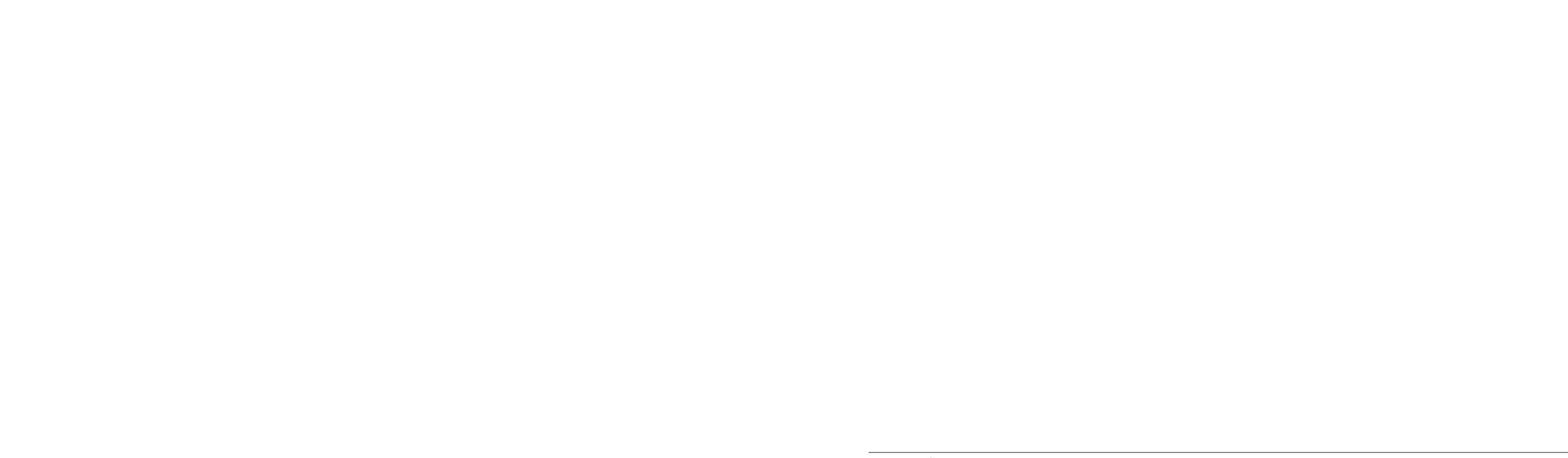
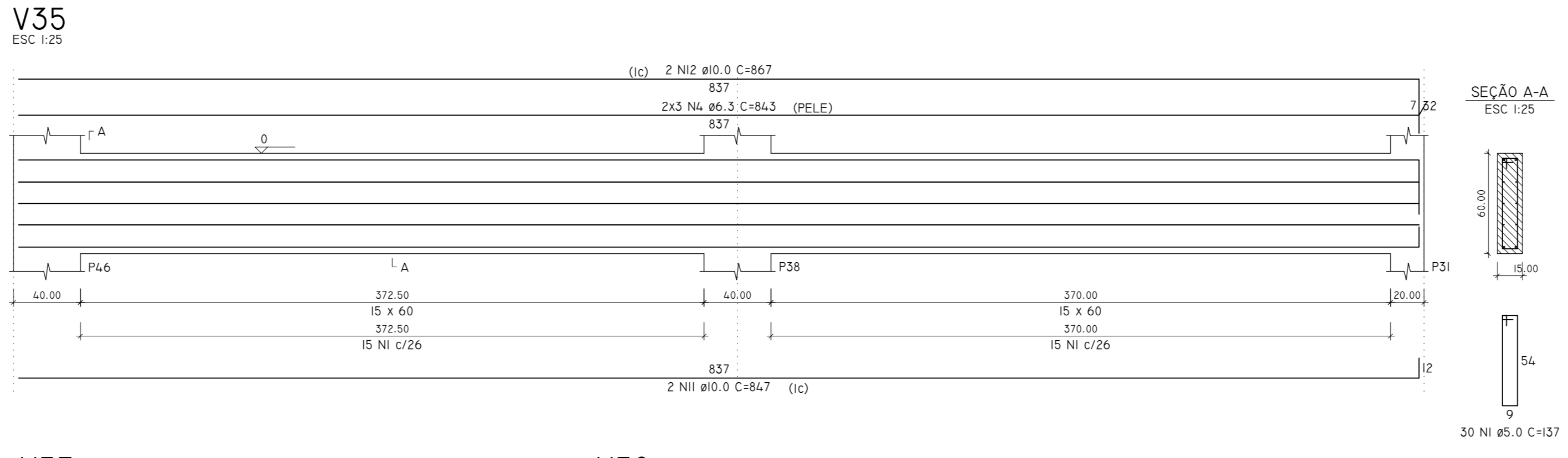
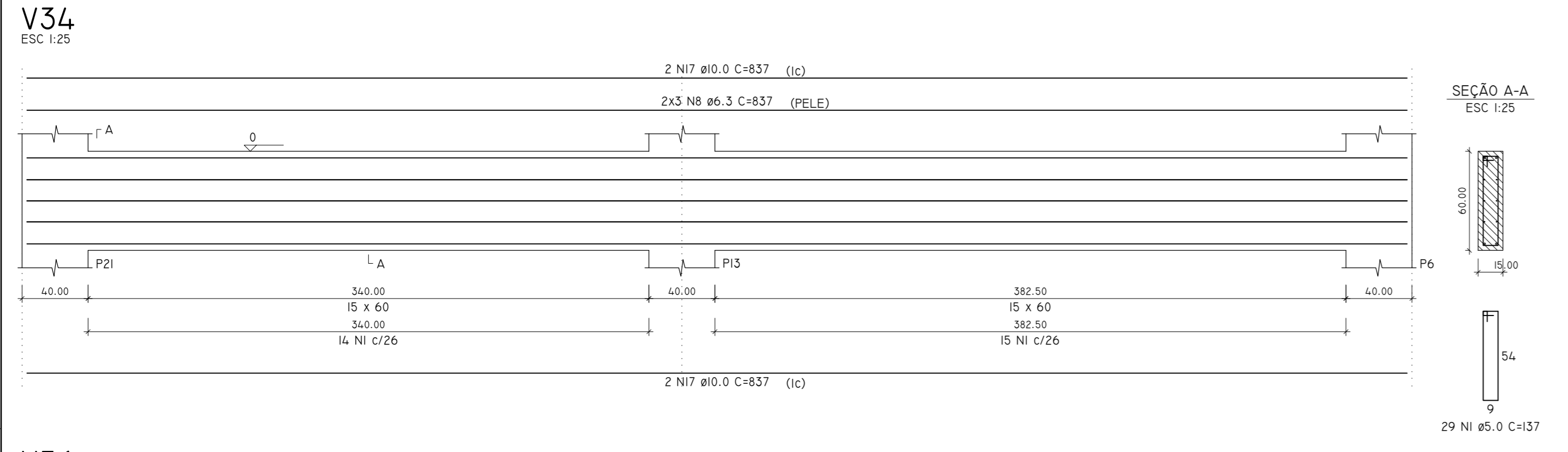
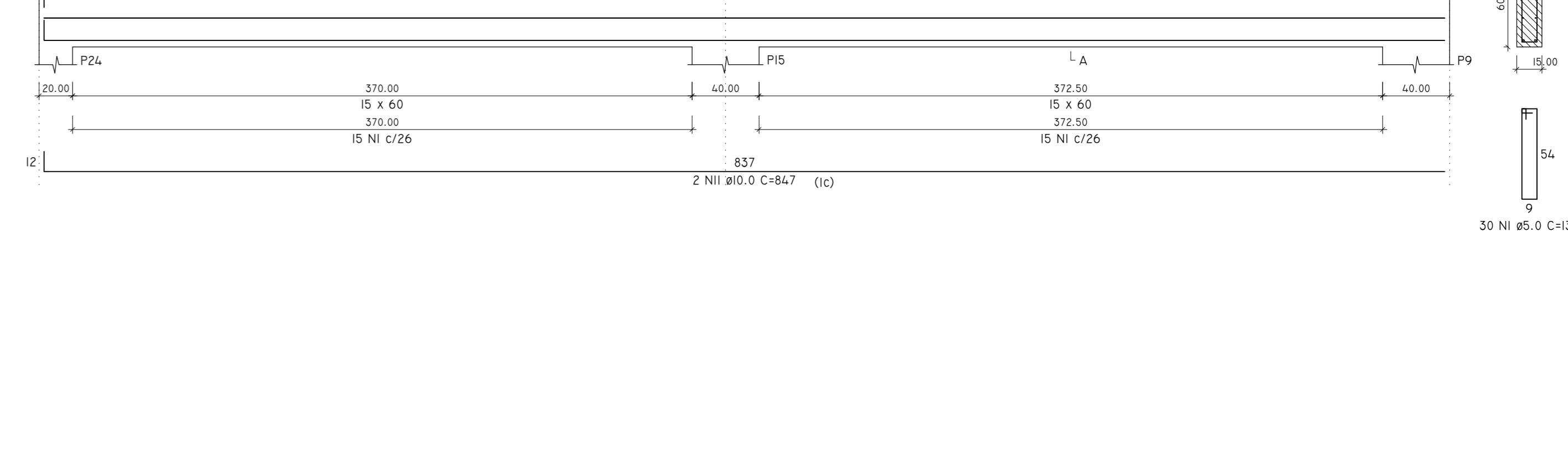
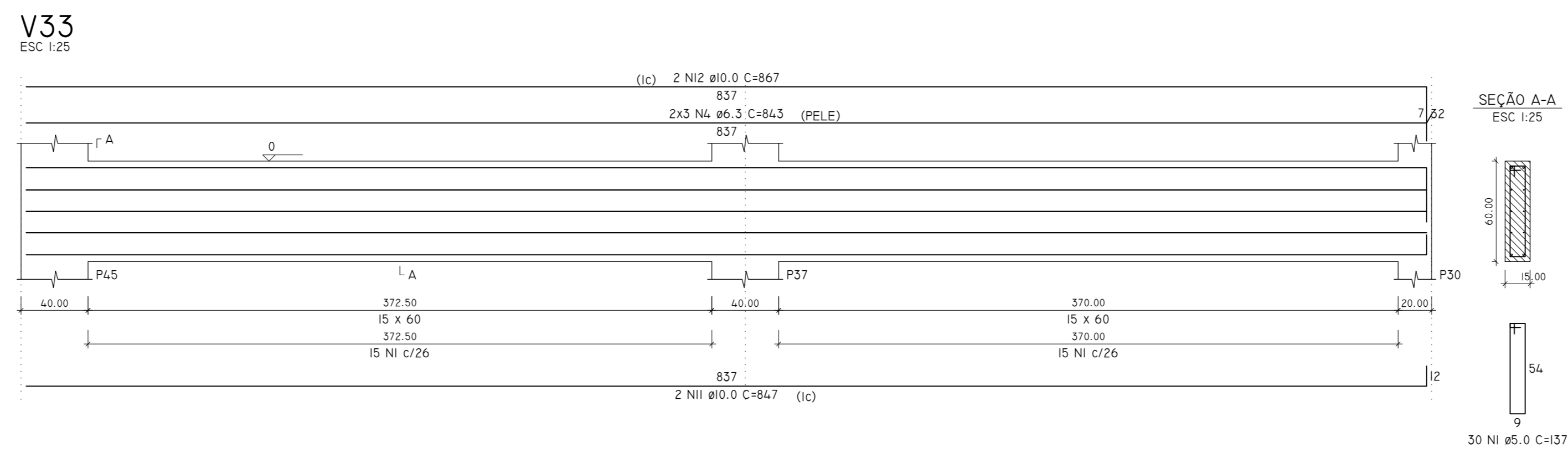
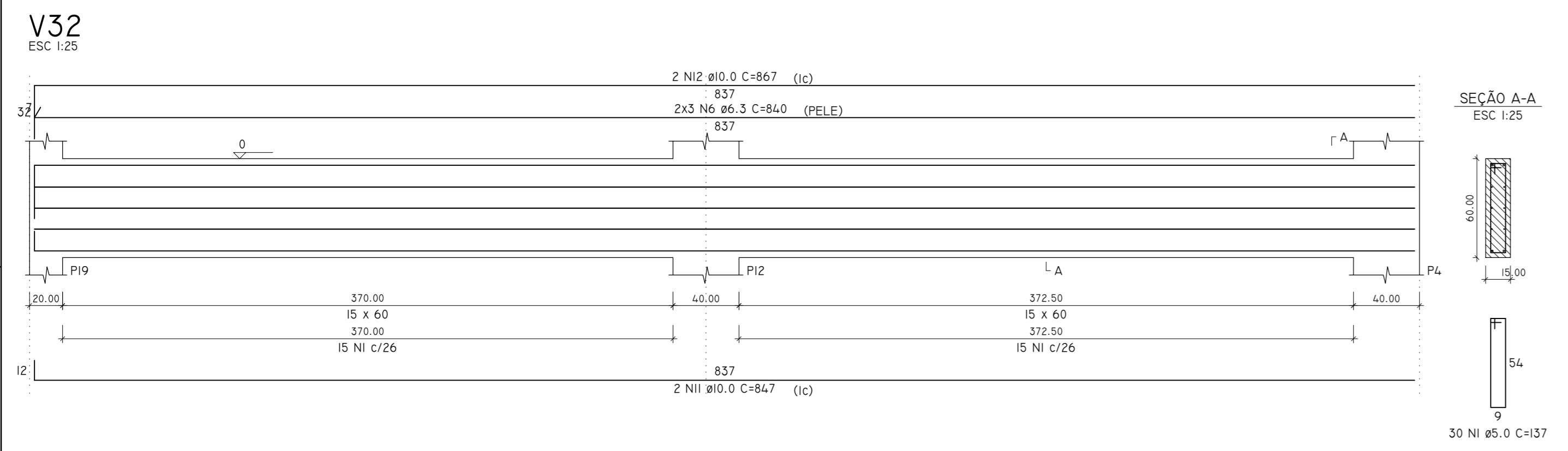
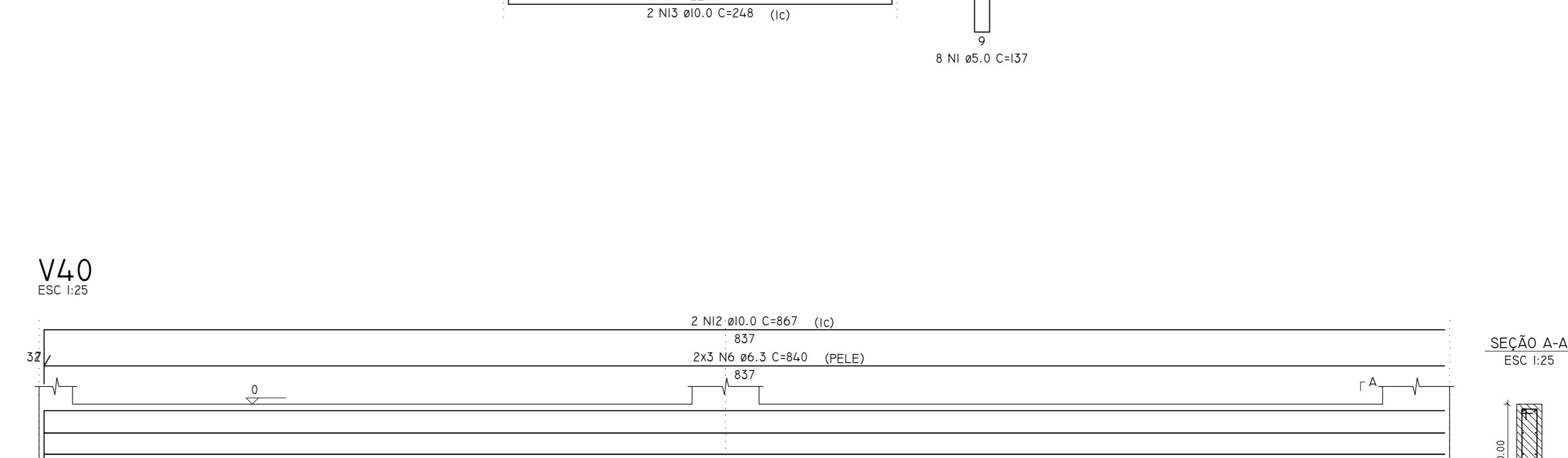
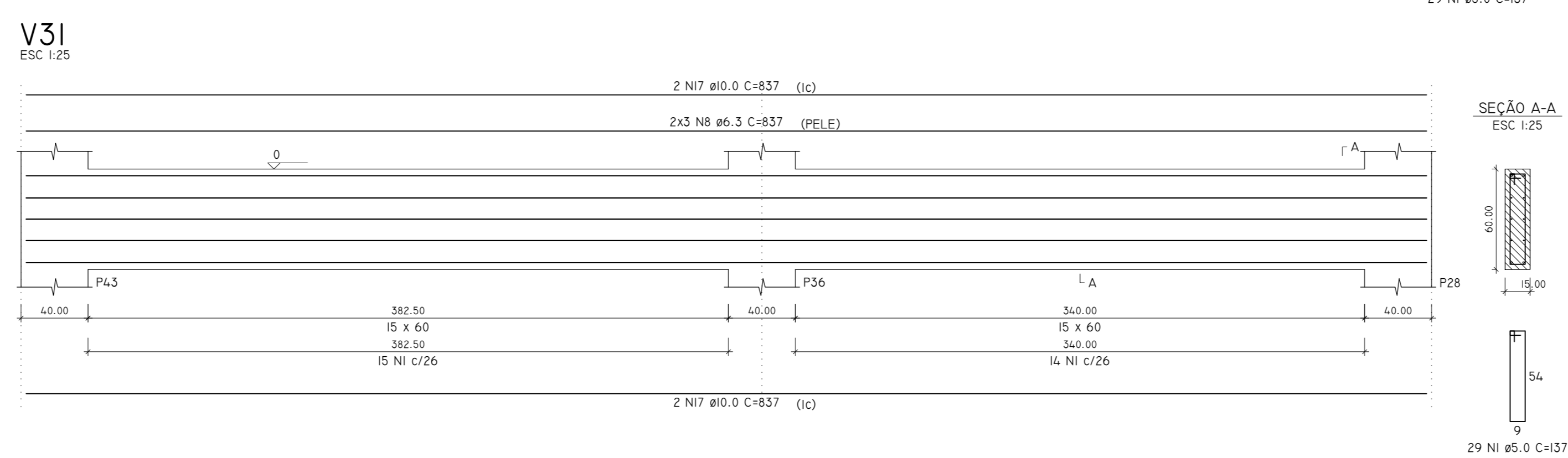
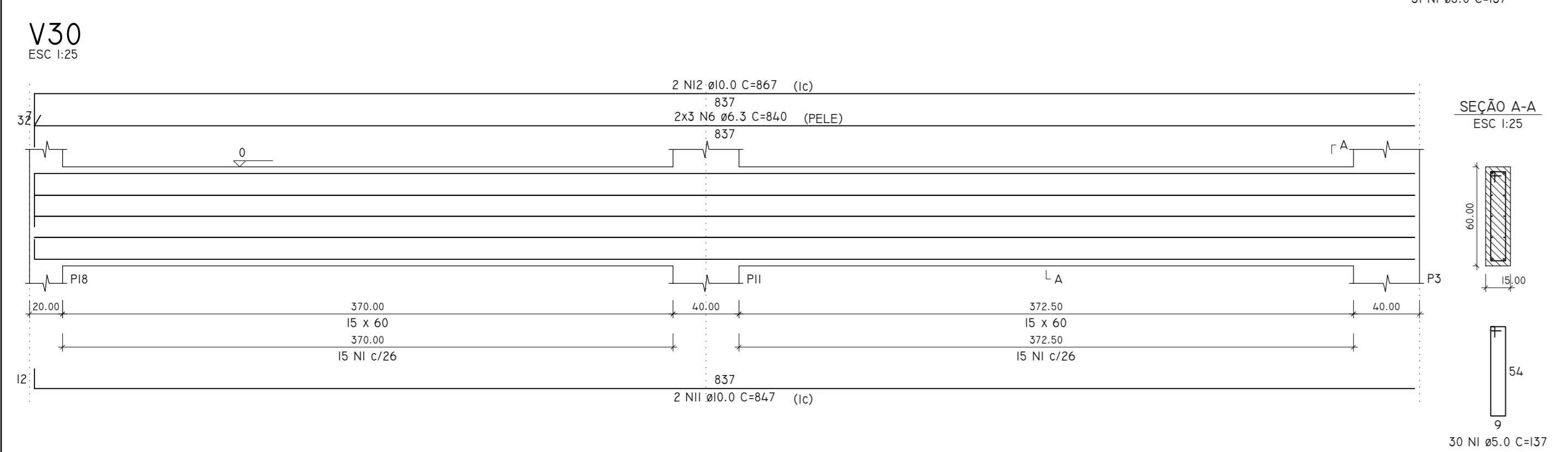
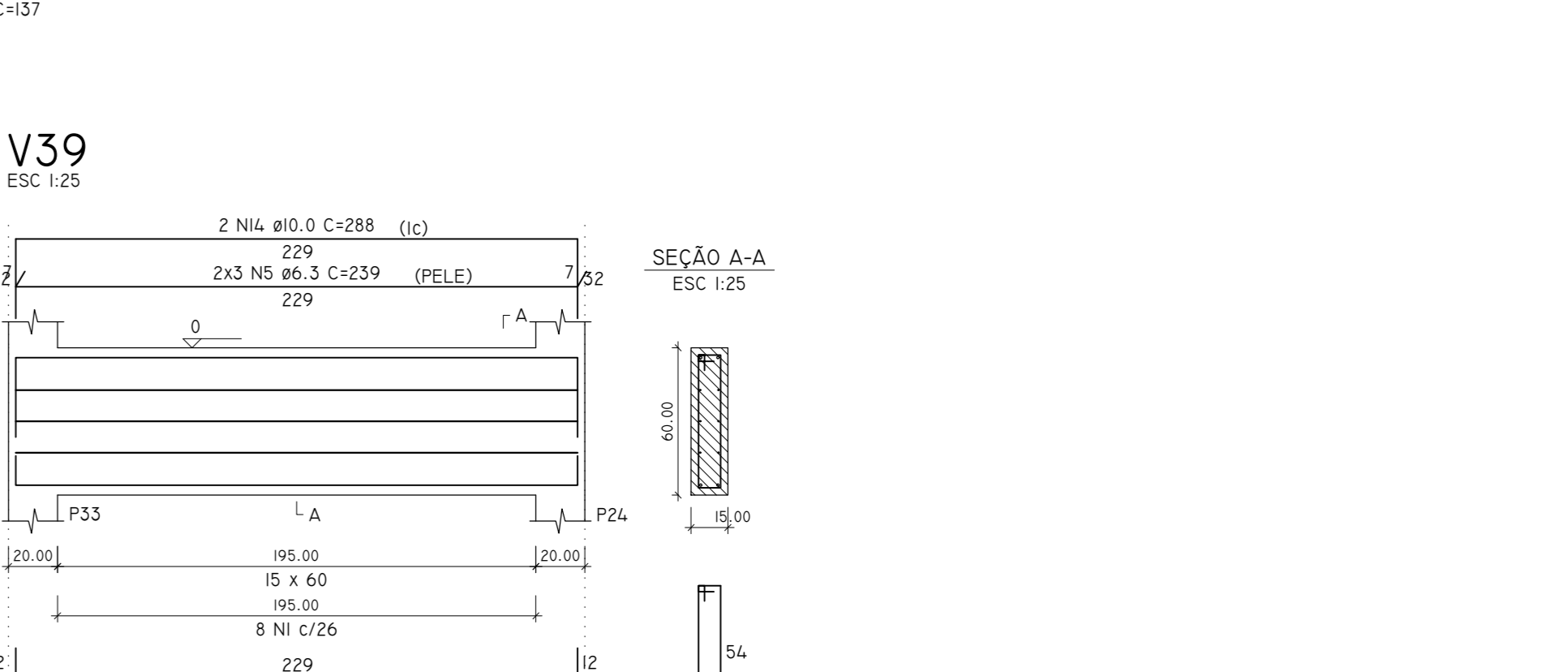
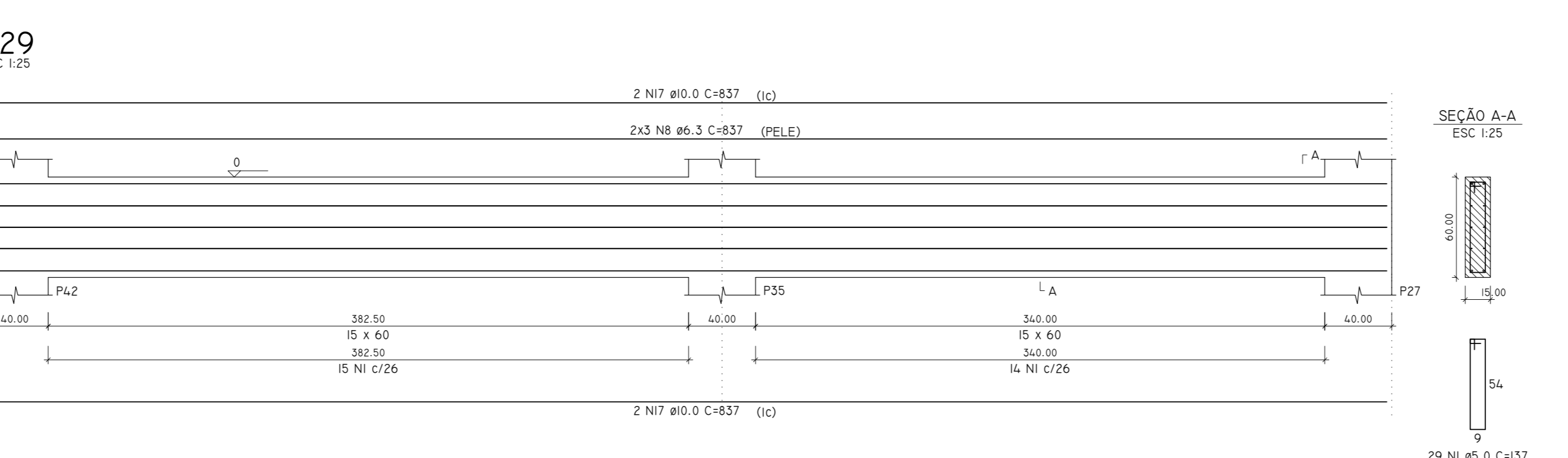
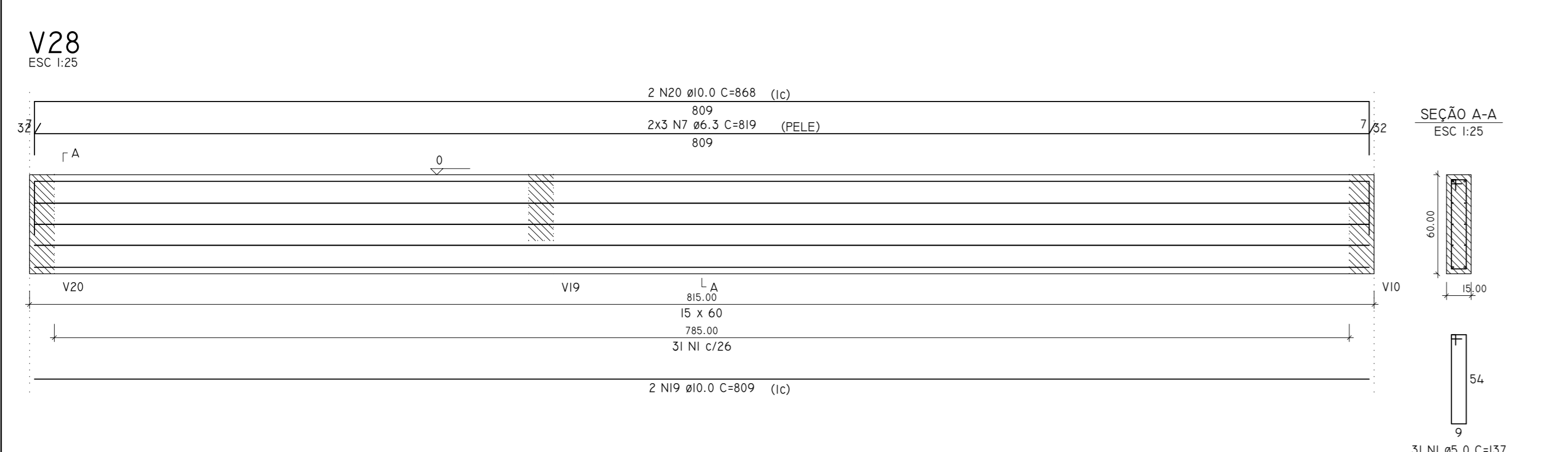
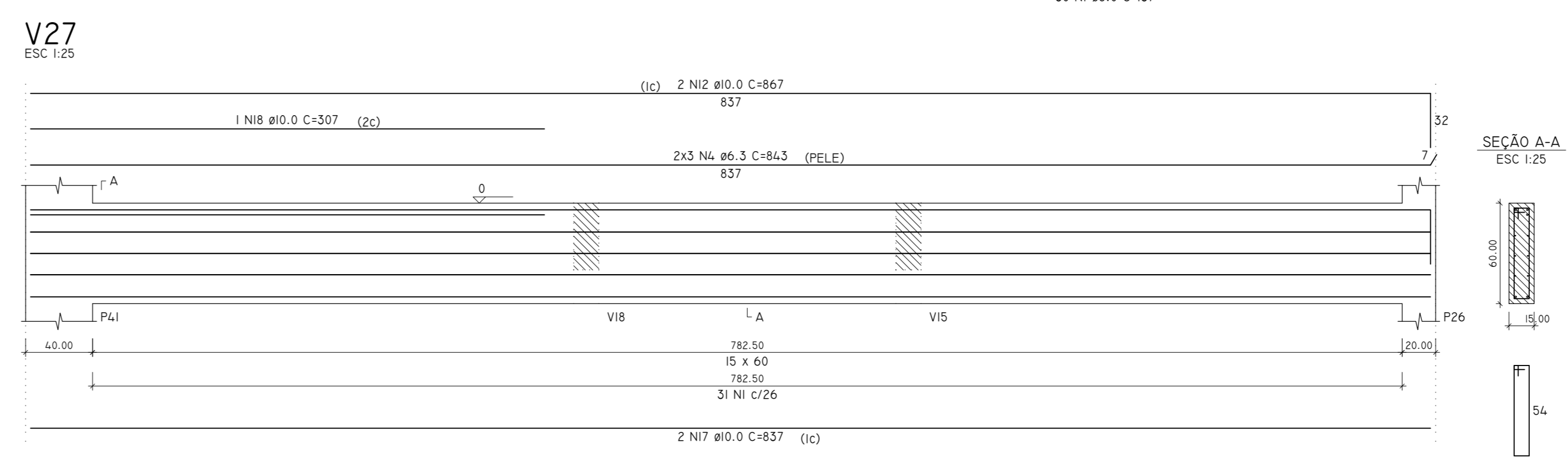
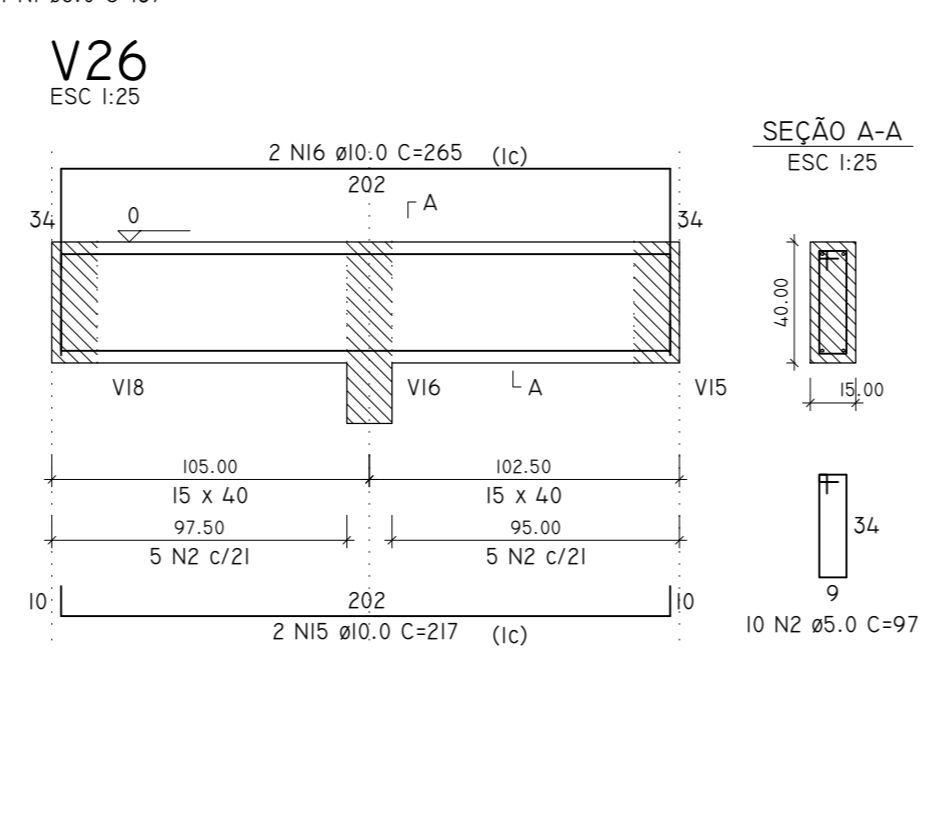
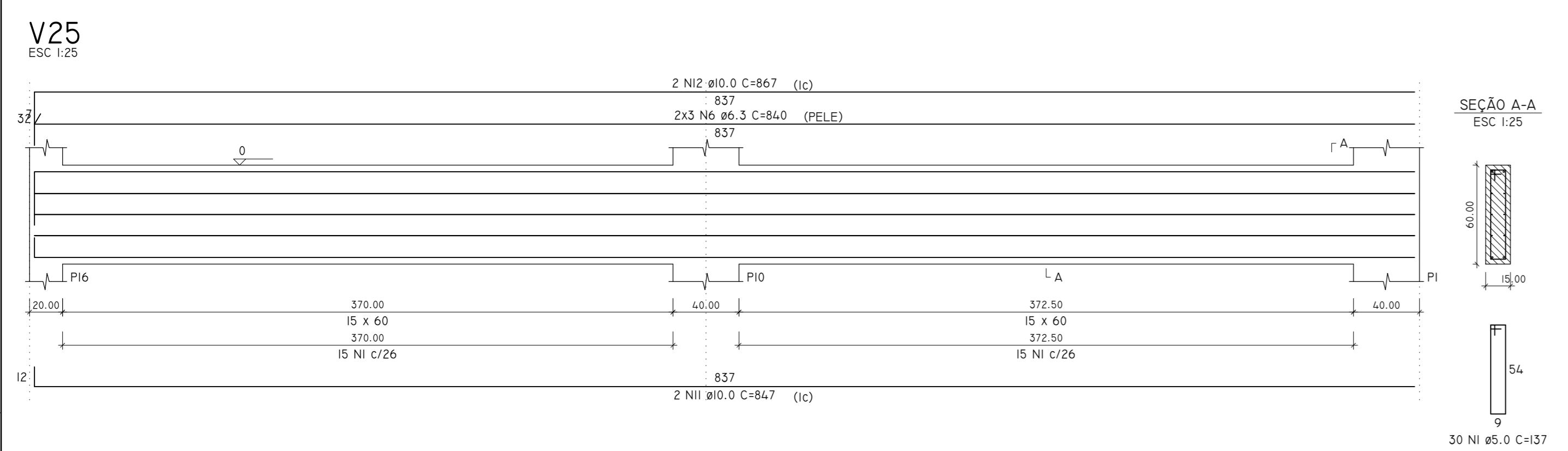
RELAÇÃO DO AÇO

CAÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
V22	1	5.0	488	137	64116
V22	2	5.0	30	97	940
V22	3	6.3	16	924	5544
V22	4	6.3	30	843	25290
V22	5	6.3	12	239	2868
V22	6	6.3	24	840	20160
V22	7	6.3	6	819	4914
V22	8	6.3	24	847	20328
V22	9	10.0	2	935	1870
V22	10	10.0	2	915	1830
V22	11	10.0	16	847	13552
V22	12	10.0	16	867	13872
V22	13	10.0	4	248	992
V22	14	10.0	4	248	992
V22	15	10.0	2	217	434
V22	16	10.0	1	257	514
V22	17	10.0	18	837	15066
V22	18	10.0	1	257	514
V22	19	10.0	2	899	1798
V22	20	10.0	2	868	1736
V22	21	10.0	2	243	486
V22	22	10.0	2	263	526

RESUMO DO AÇO

CAÇO	DIAM (mm)	C. TOTAL (cm)	QUANT + 10% (Barra)	UNIT	PESO + 10% (kg)
CA50	6.3	788.0	73	12 H	212.3
CA60	10.0	558.2	52	12 H	378.5
CA60	5.0	666.6	61	12 H	112
PESO TOTAL (kg)					
CA50	590.8				
CA60	112				

VOLUME DE CONCRETO (C=30) + 12.10 m³  
Área de Forma = 181.78 m²



PROPRIETARIO: FUNDAÇÃO UNIVERSIDADE FEDERAL

CONSTRUÇÃO: GLOBAL SERVIÇOS LTDA

PROJETO: PROJETO ESTRUTURAL

RESP. TÉCNICO: Eng. CIVIL GERVÂNIO MACHADO

CREA: 040000000-0/000000000-0

**GERVÂNIO**  
ENGENHEIRO CIVIL  
CREA: 040000000-0/000000000-0

GLOBAL SERVIÇOS LTDA.  
CIENTE

**BLOCO B - UNIFAP - CAMPUS OIAPOQUE/AP**

PROJETO ESTRUTURAL: RODOVIA BR-156, 3081 - BARRIO UNIVERSIDADE - OIAPOQUE/AP

VIGAS - BALDRAME - 02/02

Eng. CIVIL GERVÂNIO MACHADO  
autor do projeto

Eng. CIVIL GERVÂNIO MACHADO  
coordenador do projeto

ESTRUTURAL\_UNIFAP\_BLOCO\_B\_PROJ.DWG  
nome do arquivo pt

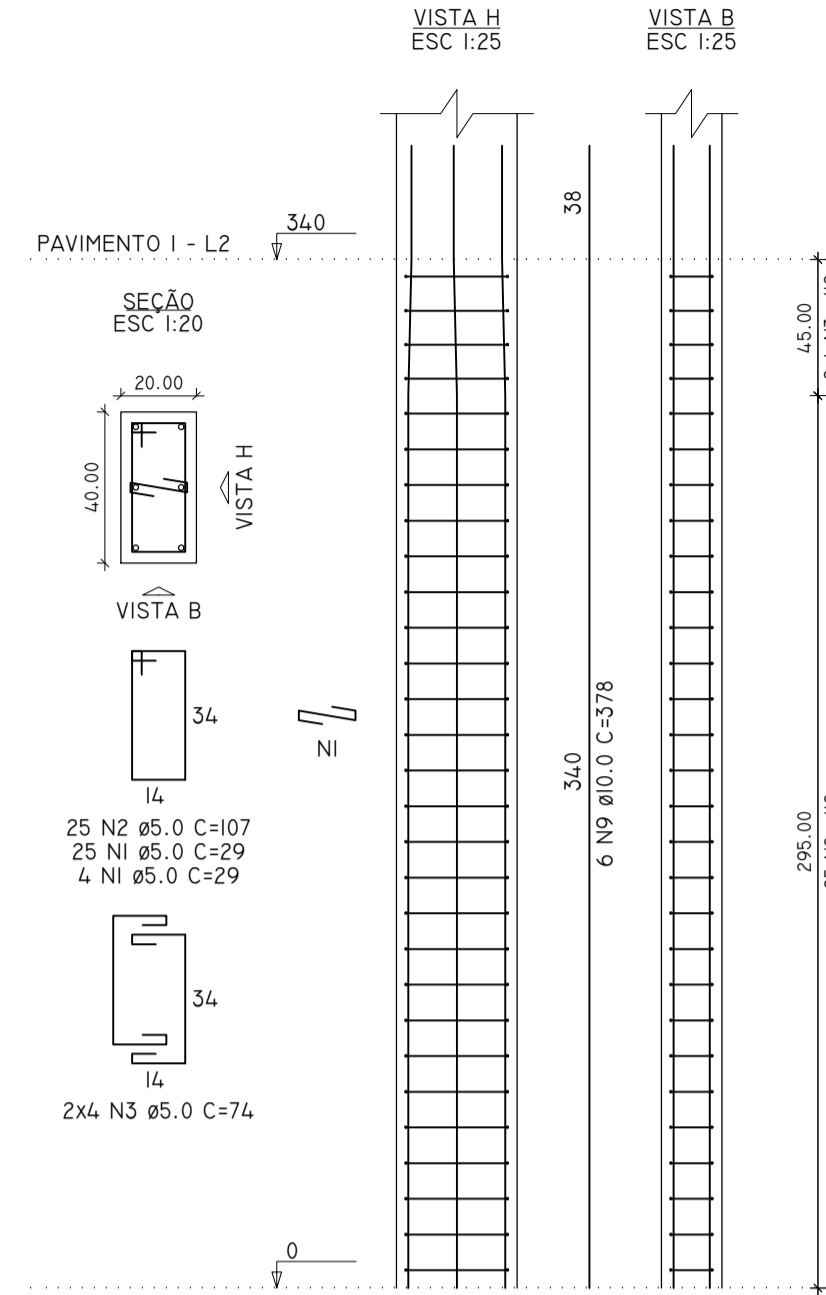
Eng. CIVIL GERVÂNIO MACHADO  
desenho do projeto

PROJETO INICIAL  
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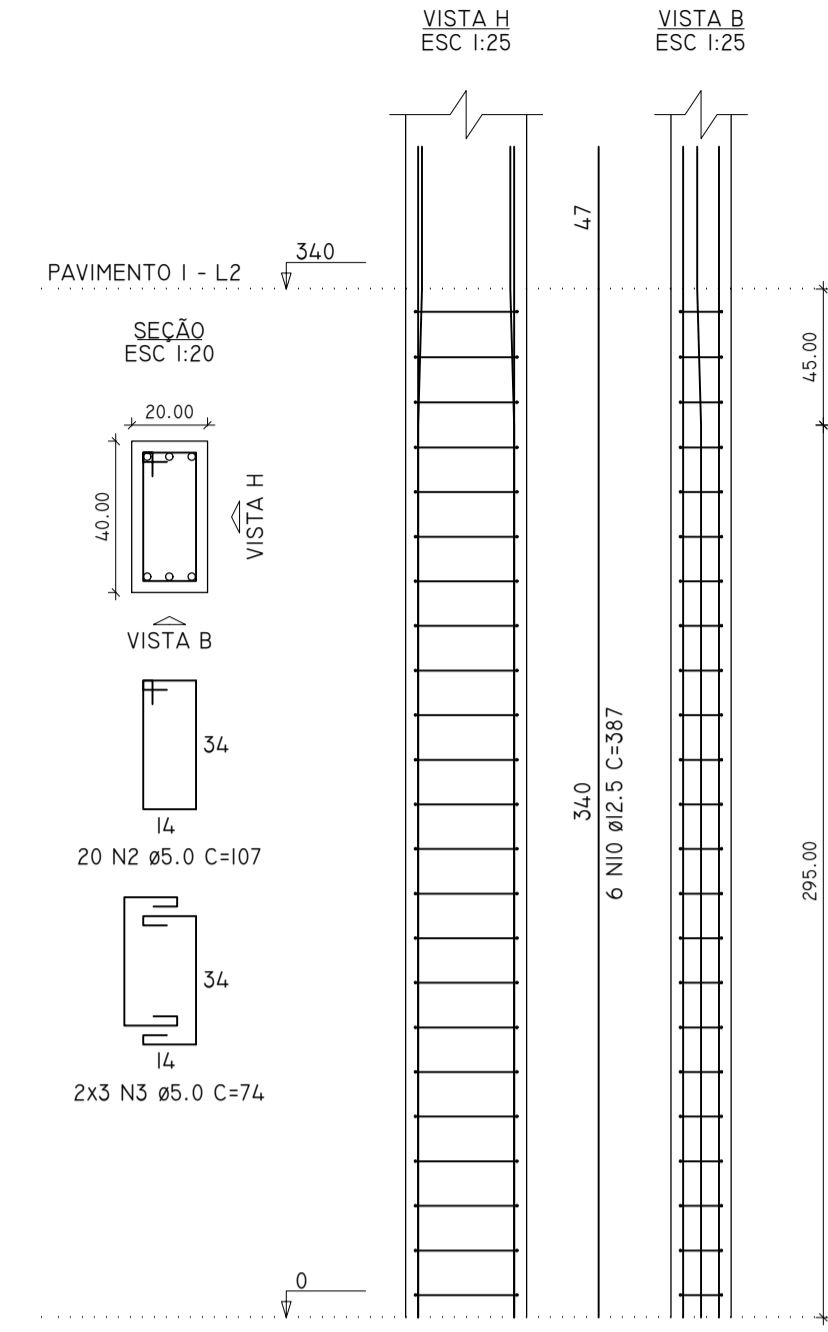
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**EST 05-25**

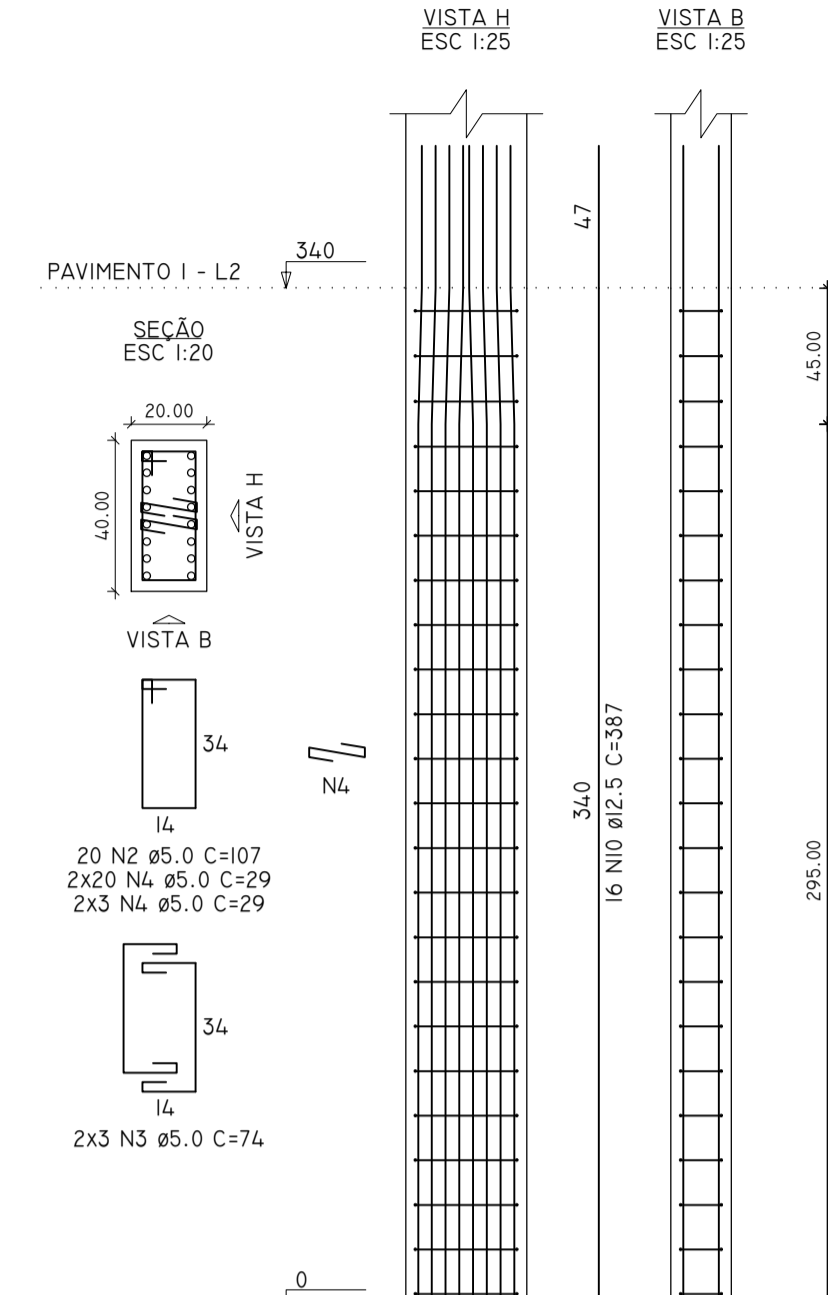
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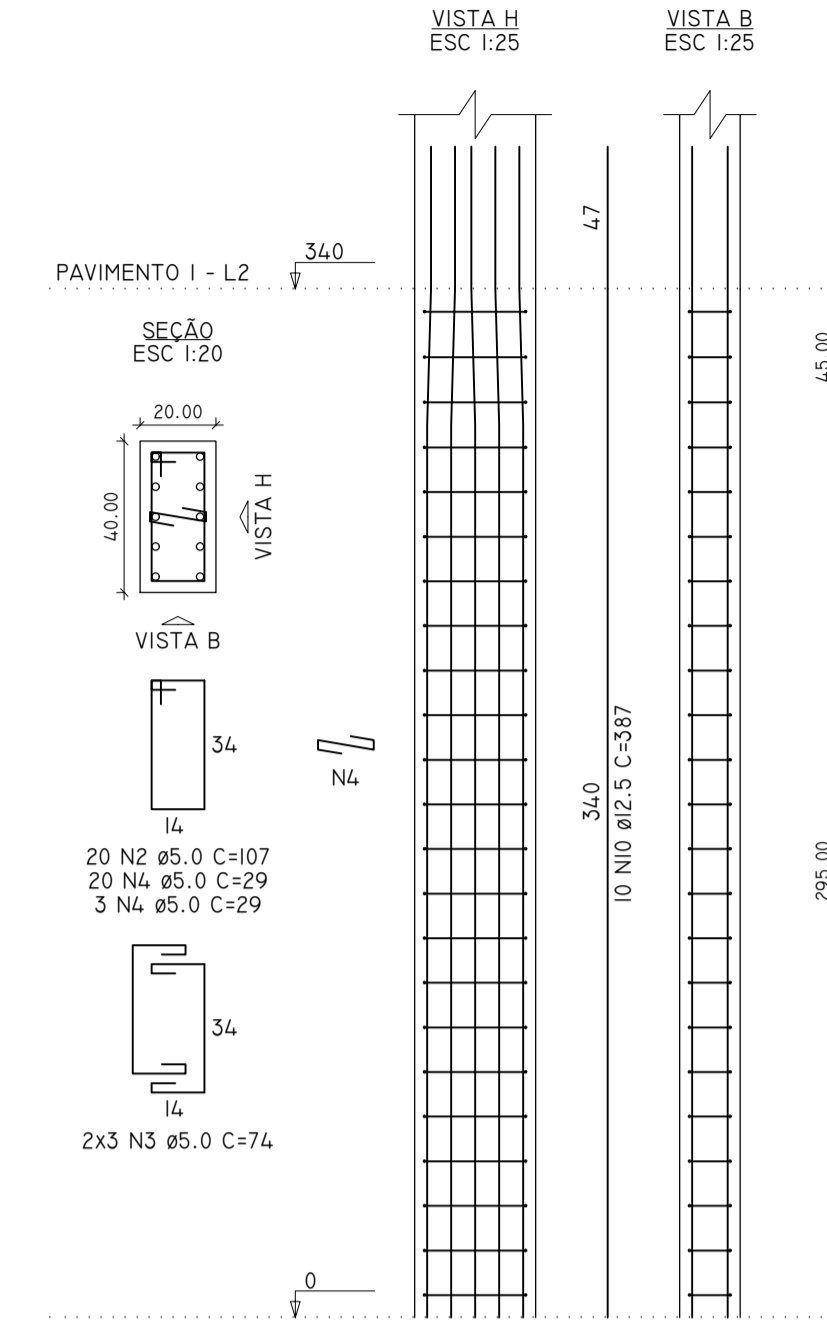
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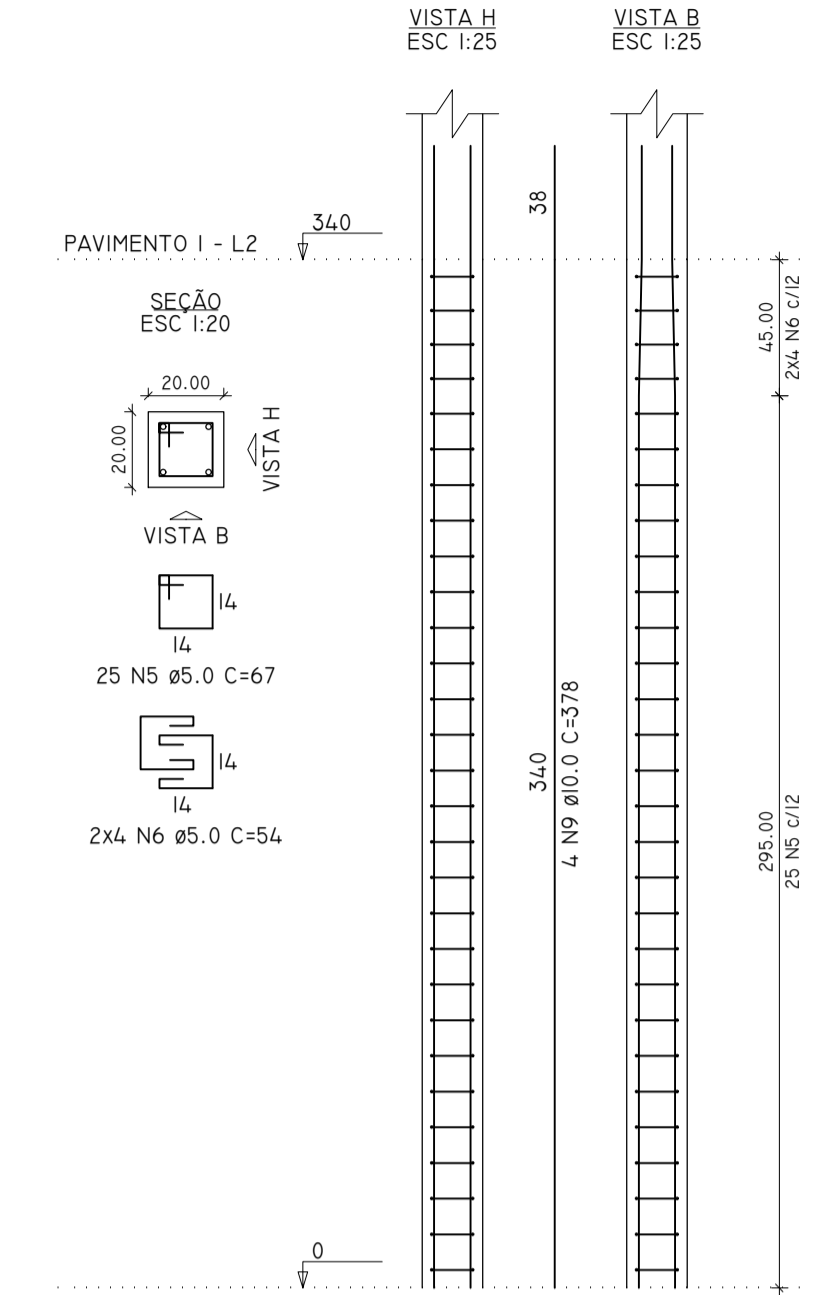
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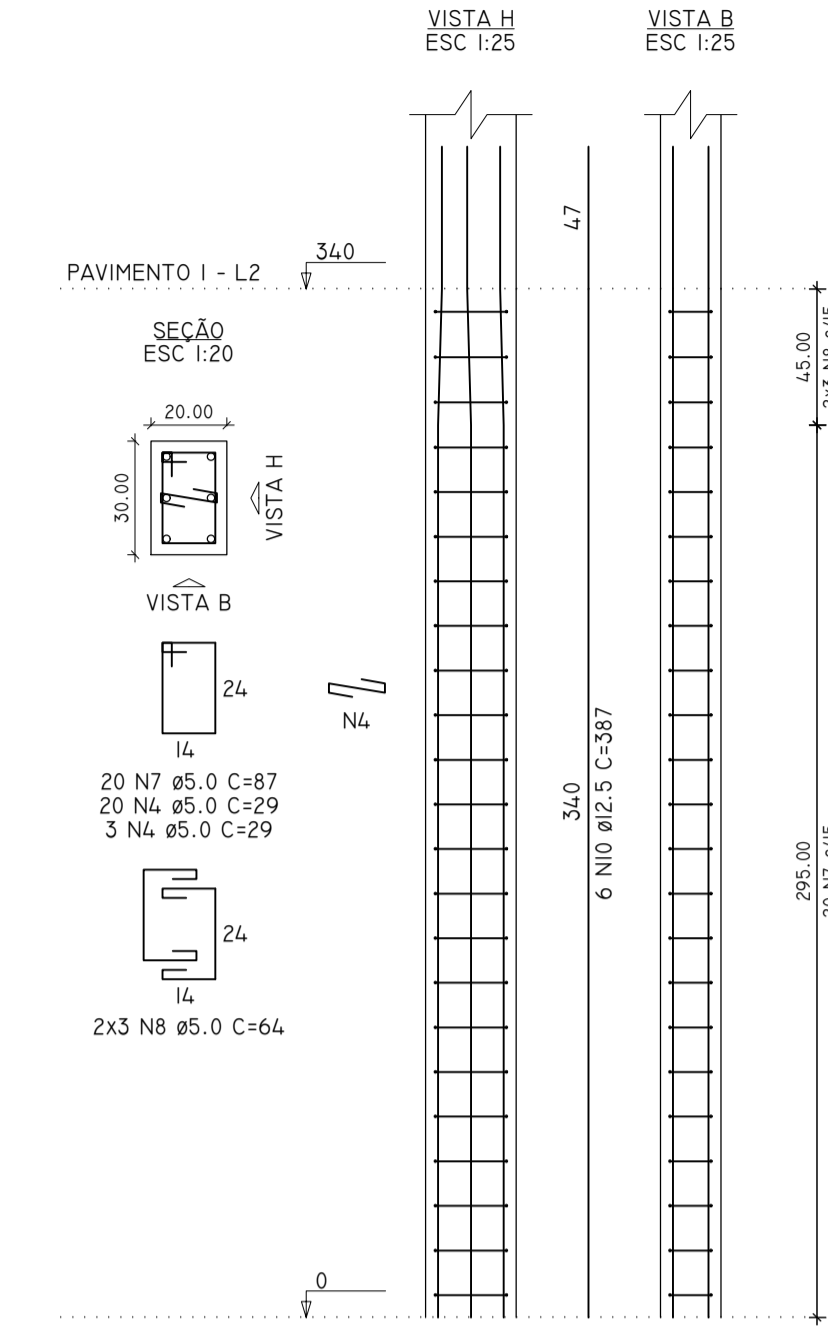
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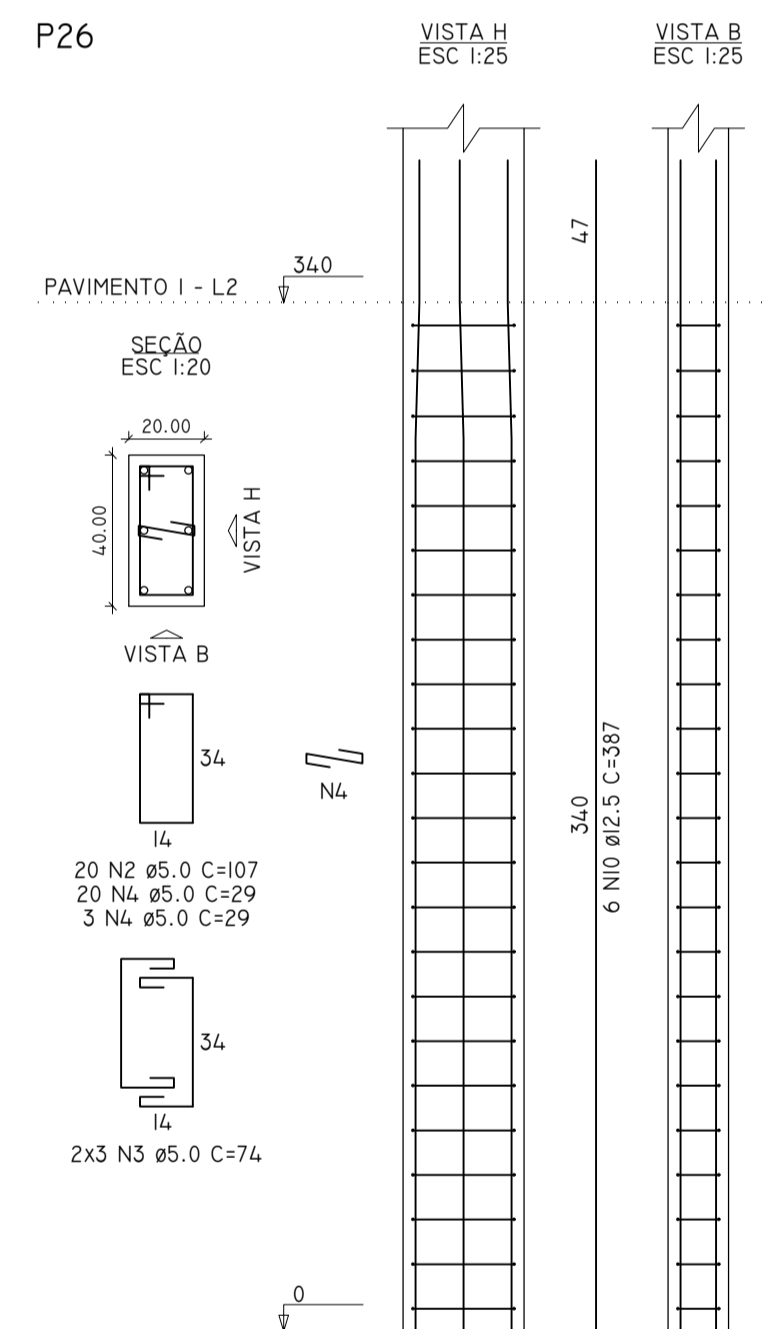
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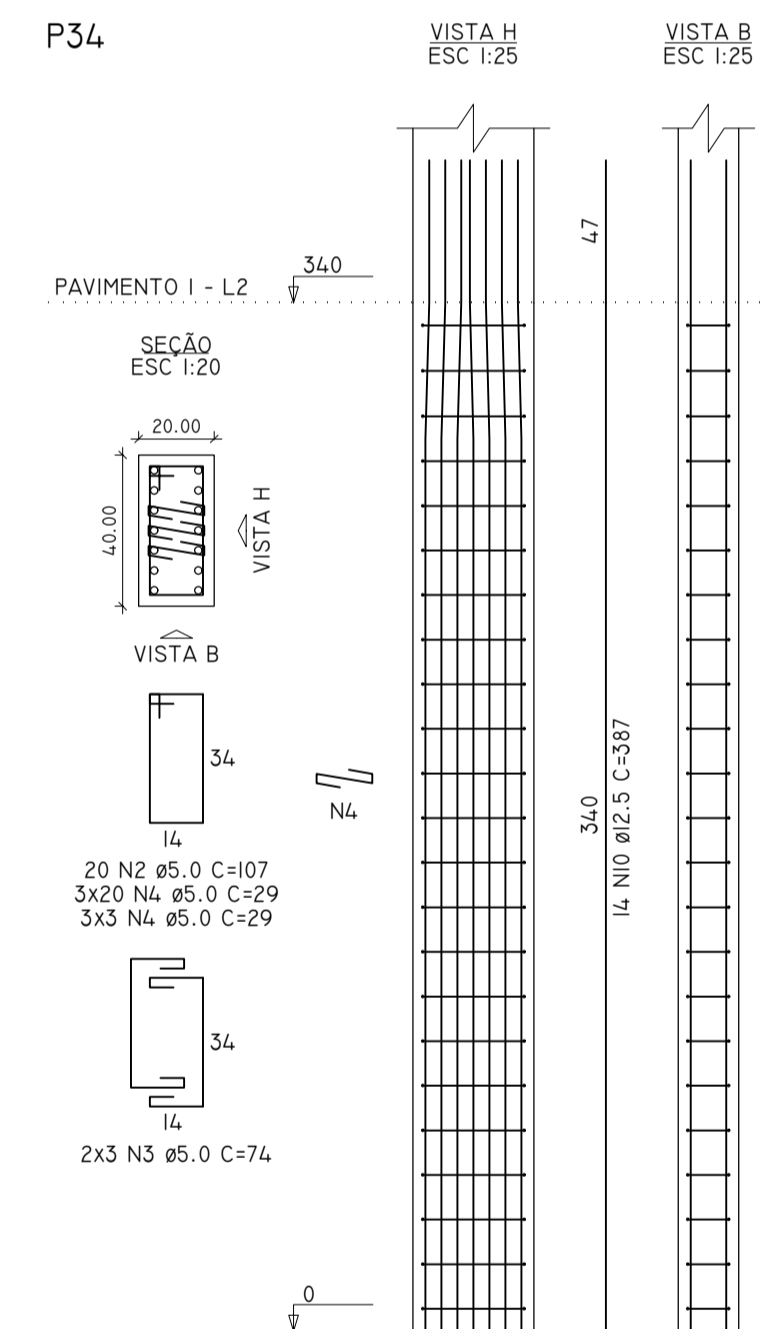
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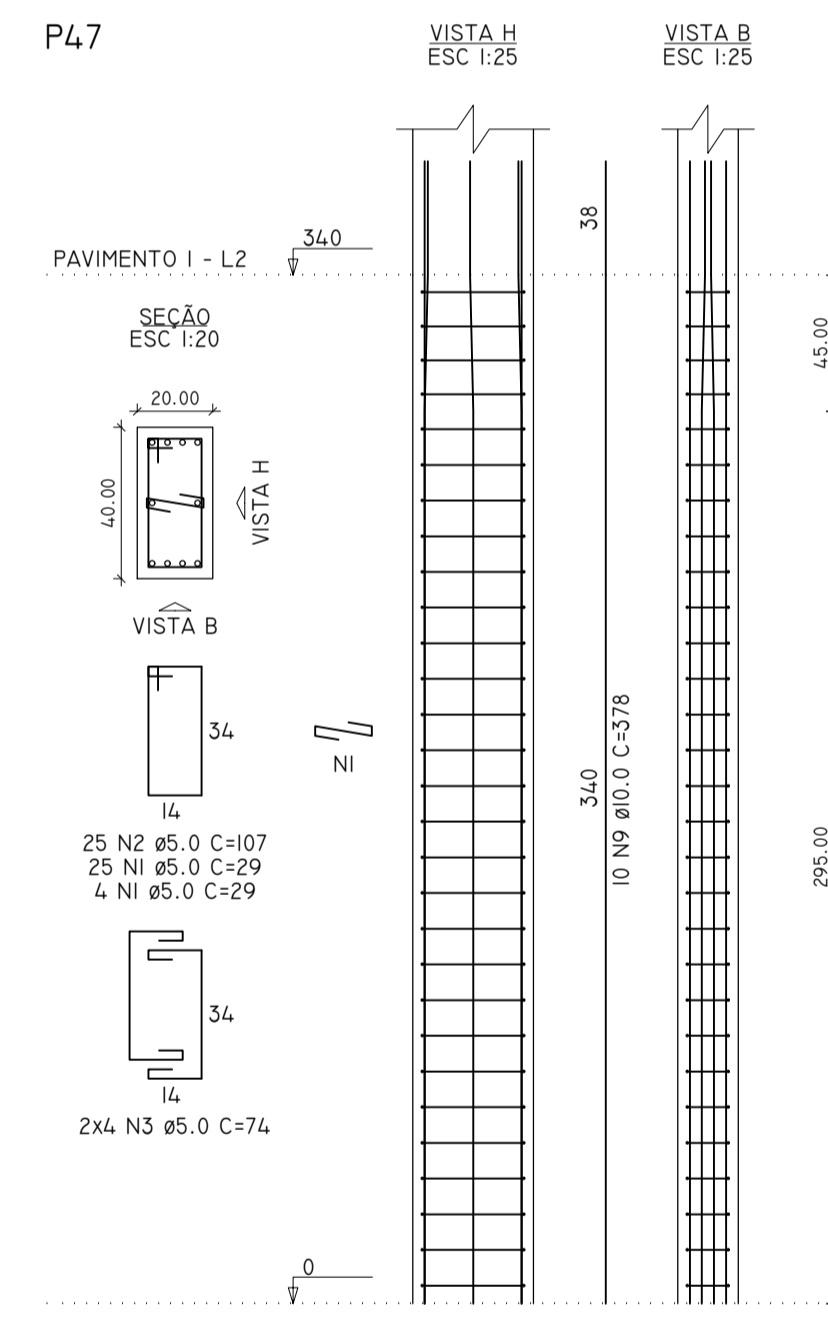
P26



P34



P47




RELAÇÃO DO AÇO

ACO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	493	29	14297
	2	5.0	785	107	83995
	3	5.0	244	74	18056
	4	5.0	621	29	18009
	5	5.0	200	67	13400
	6	5.0	64	54	3456
	7	5.0	100	87	8700
	8	5.0	30	64	1920
	9	10.0	138	378	52164
	10	12.5	232	387	89784

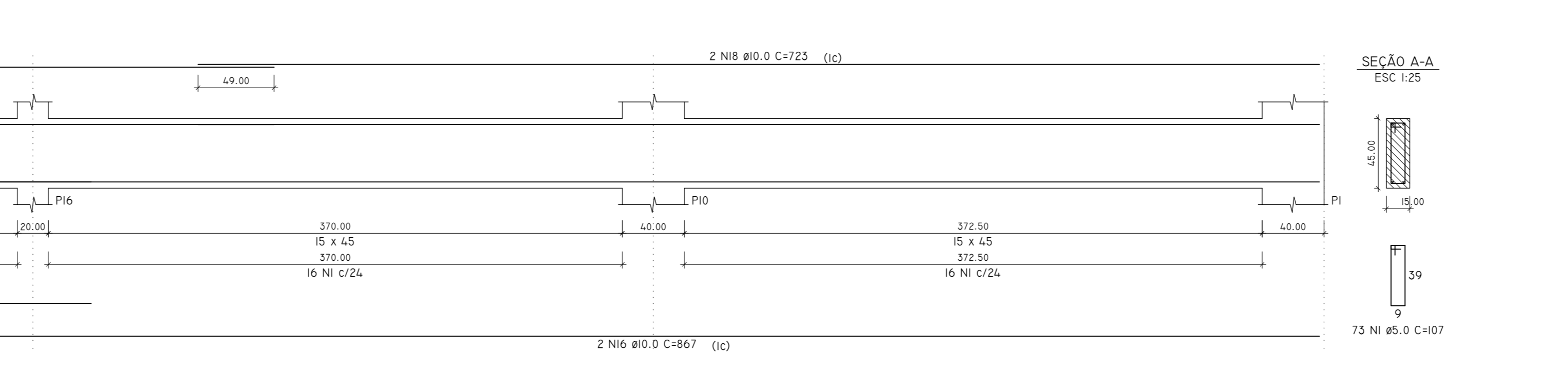
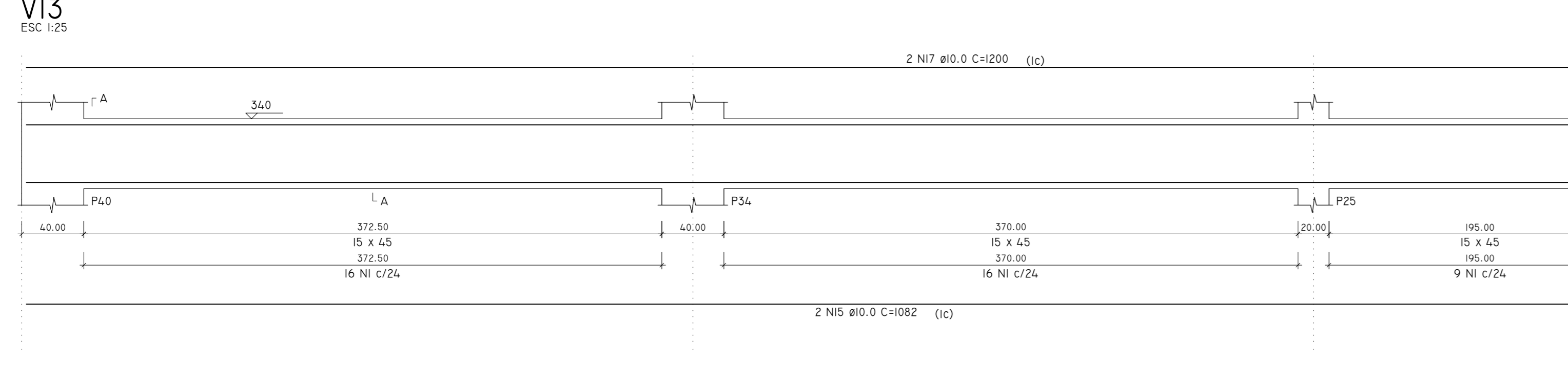
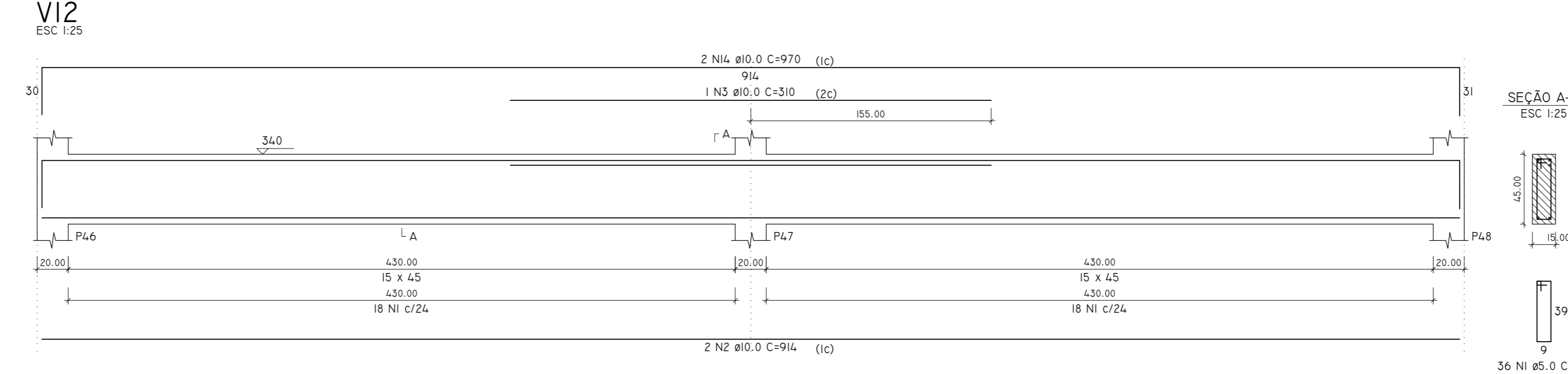
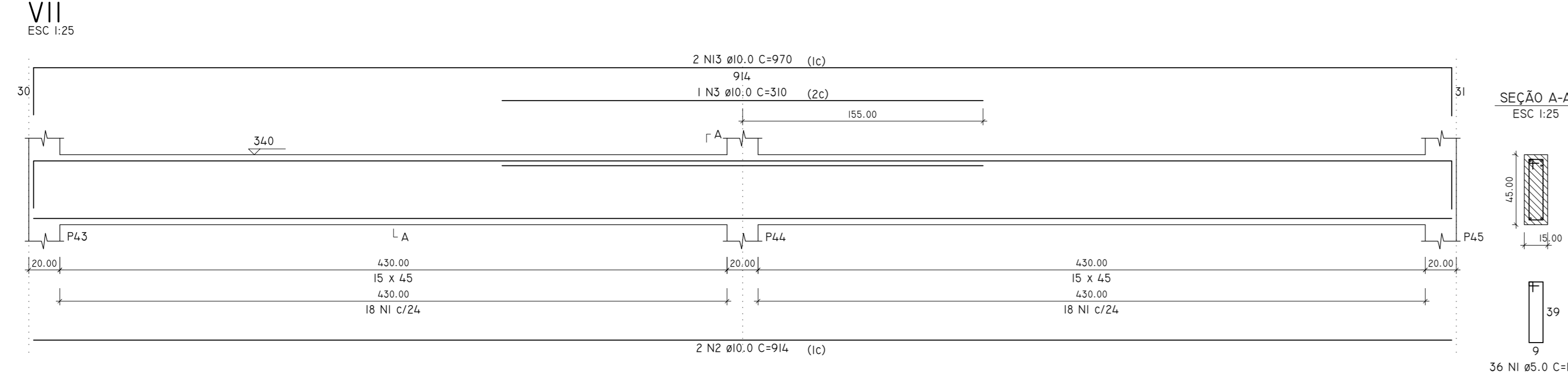
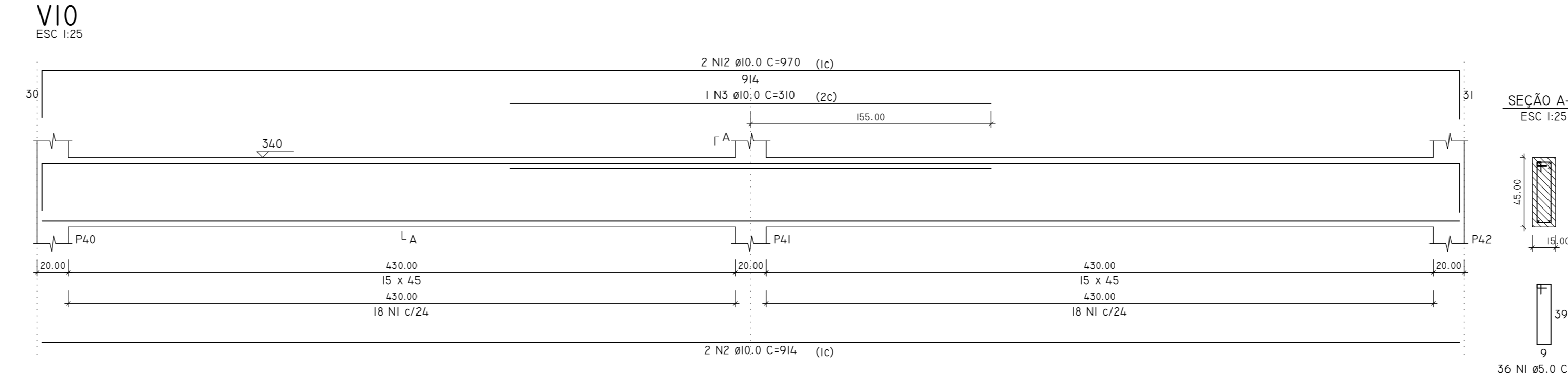
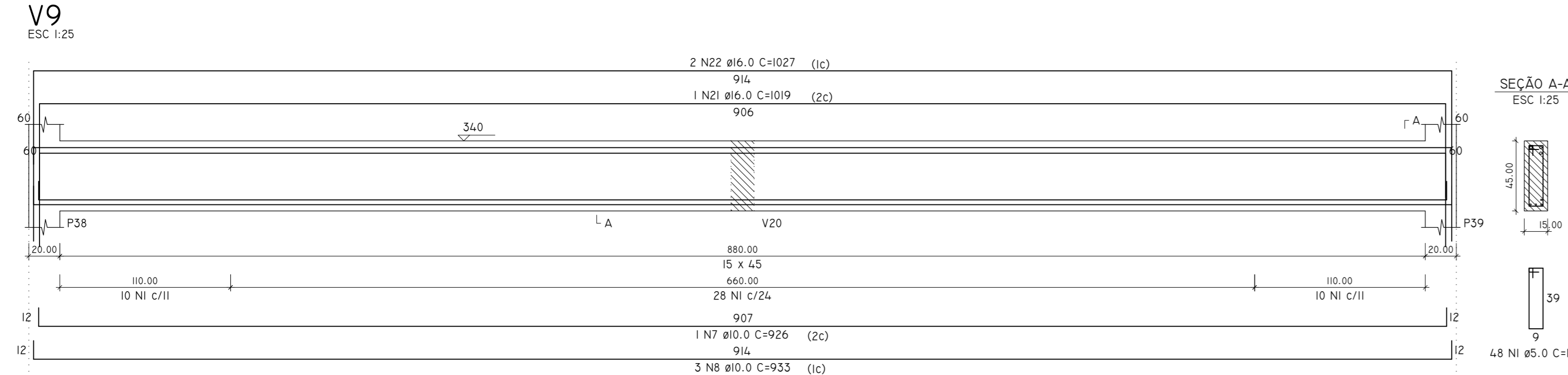
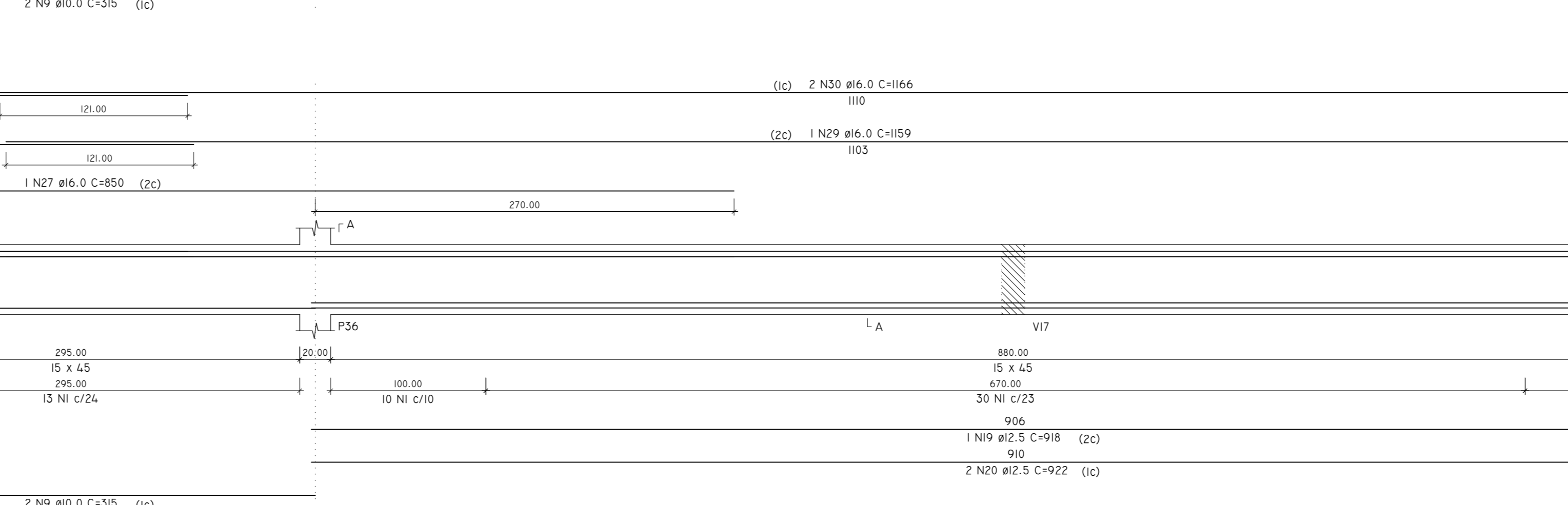
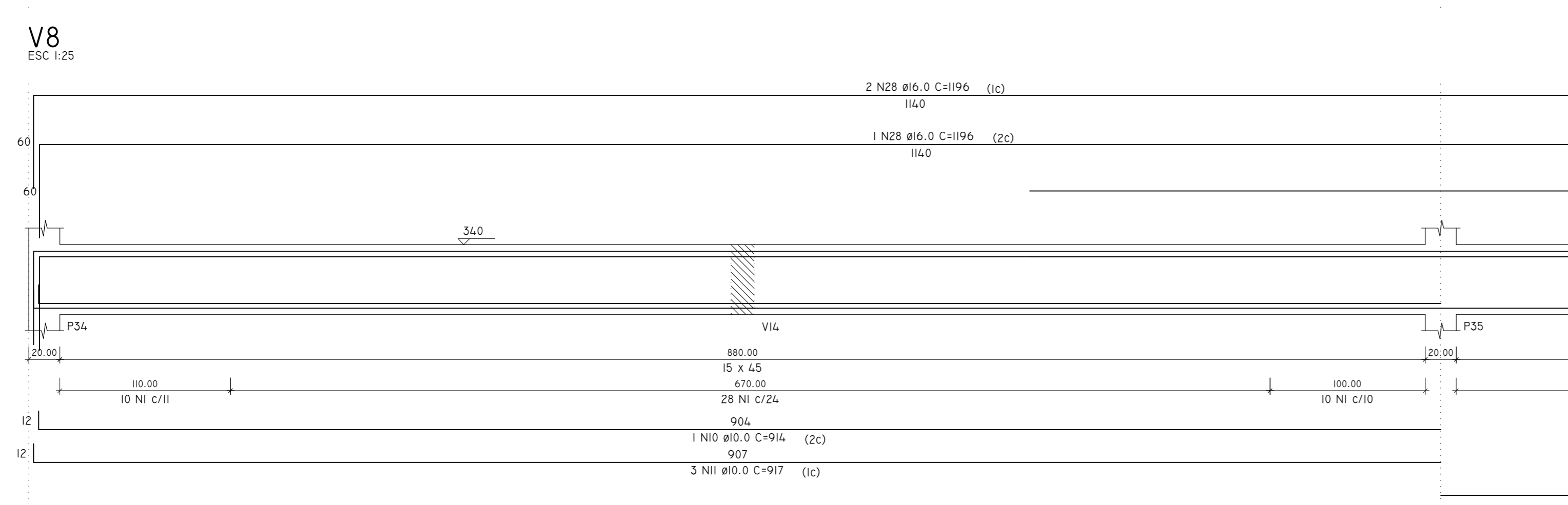
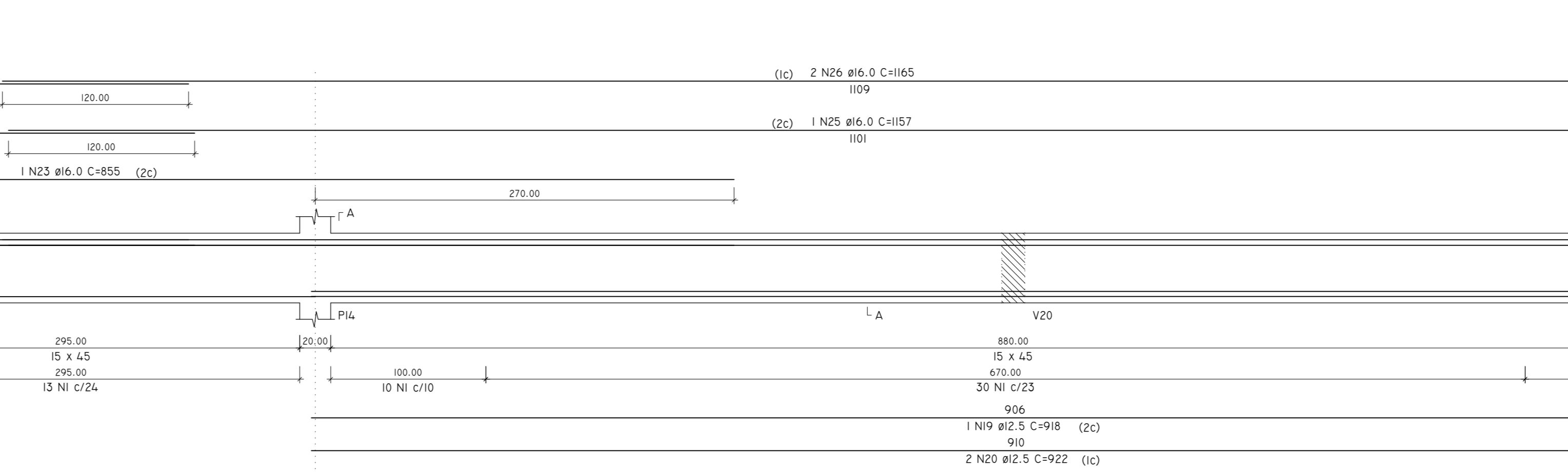
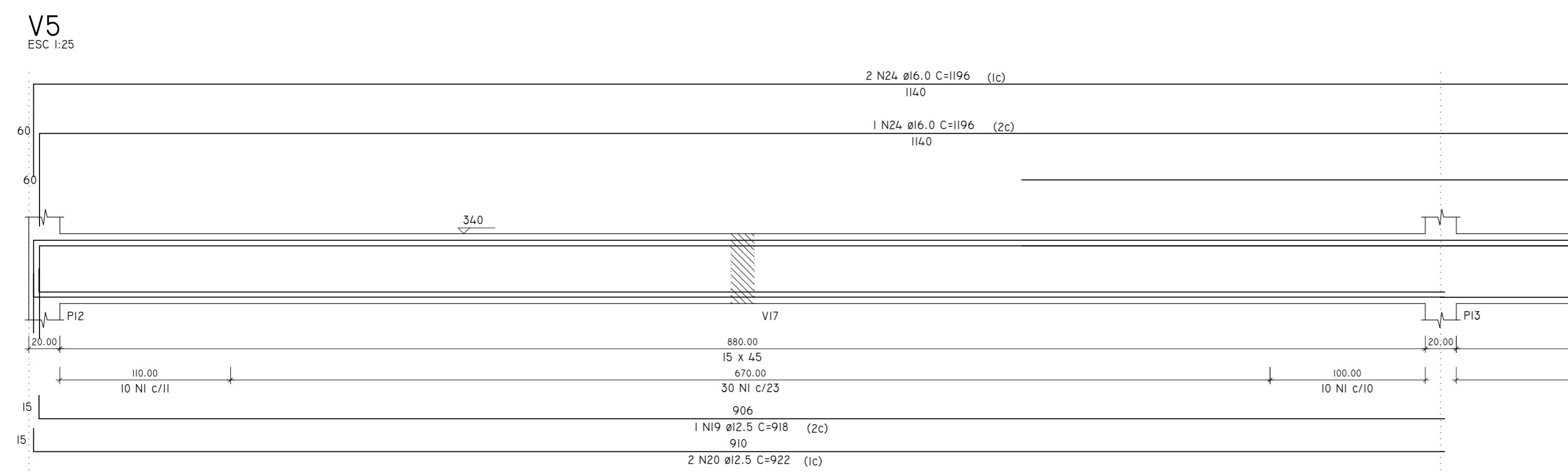
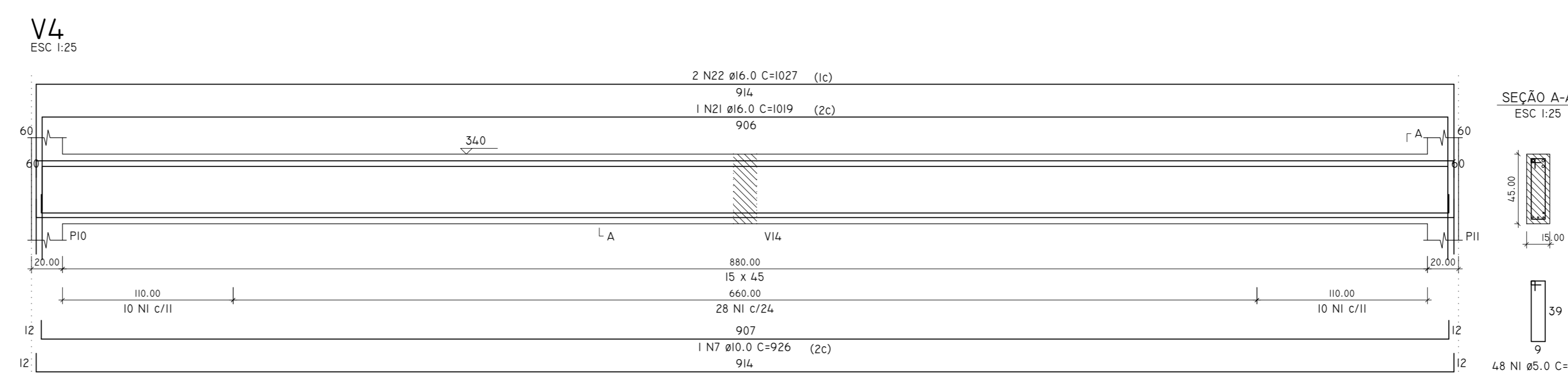
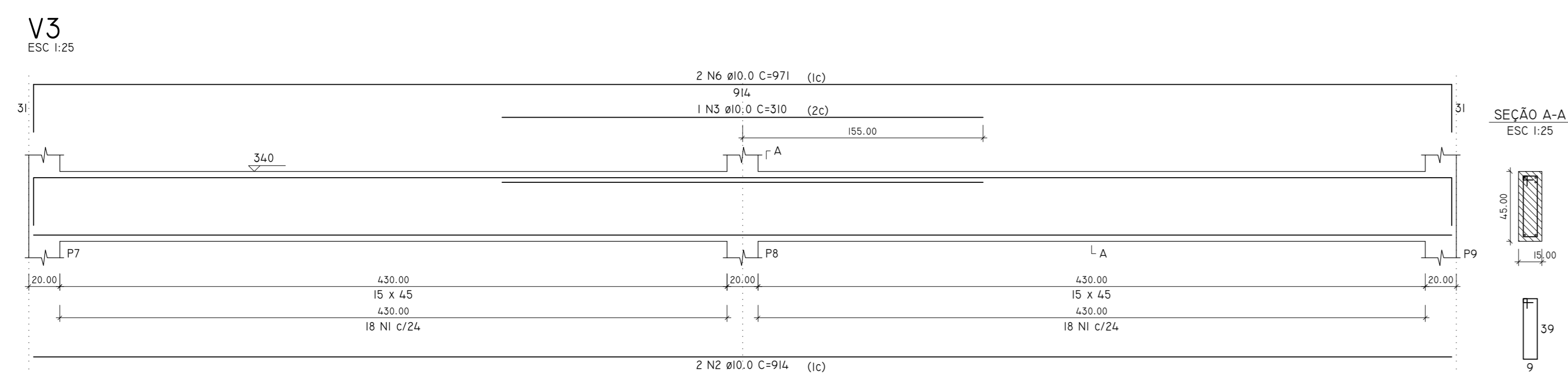
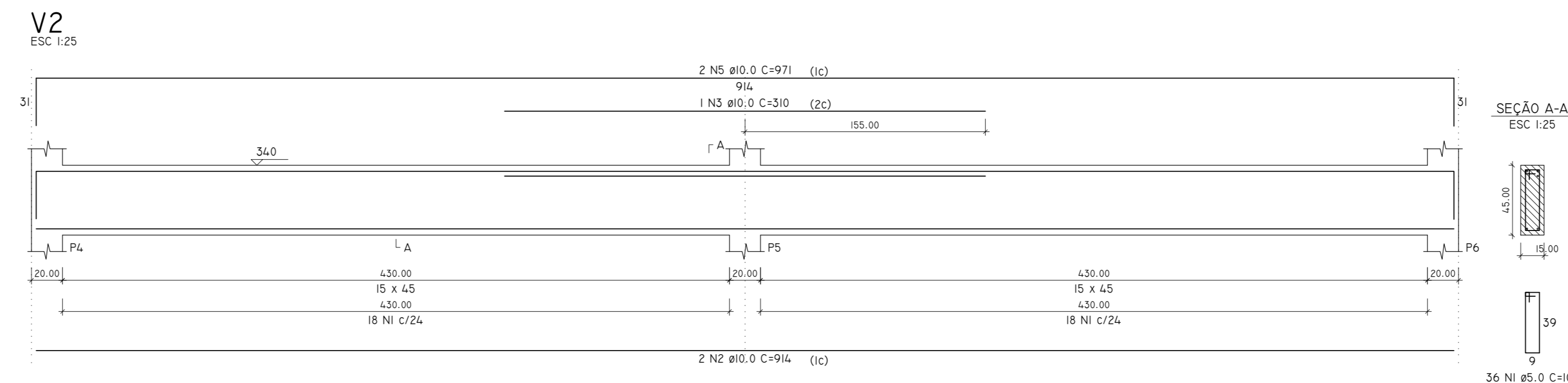
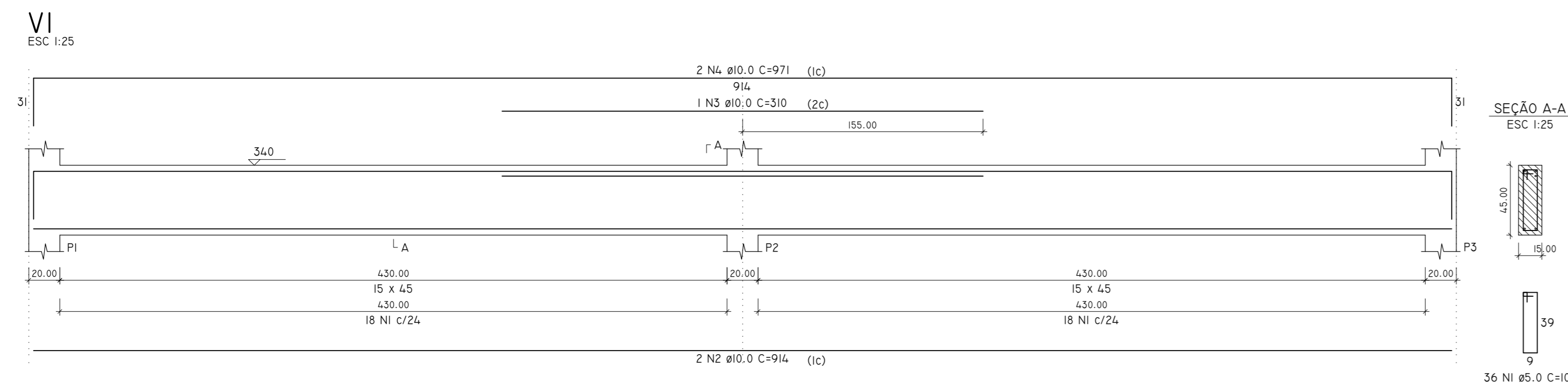
RESUMO DO AÇO

ACO	DIAM (mm)	C.TOTAL (m)	QUANT + 10% (BARRAS)	UNIT	PESO + 10% (kg)
CA50	10.0	521.6	48	12 M	353.8
CA60	12.5	897.8	83	12 M	951.4
	5.0	1618.3	149	12 M	274.4
PESO TOTAL (kg)					
CA50		1505.2			
CA60		274.4			

VOLUME DE CONCRETO (C-30) = 11.63 m³  
ÁREA DE FORMA = 181.56 m²

PROPRIETÁRIO	CONSTRUÇÃO
FUNDAÇÃO UNIVERSIDADE FEDERAL	GLOBAL SERVIÇOS LTDA.
PROJETO	RESP. TÉCNICO
ENG. CIVIL GERVÂNIO MACHADO CREA: 060605555-5 - DCE VISTO 1066/AP	
	
GLOBAL SERVIÇOS LTDA.	
BLOCO B - UNIFAP - CAMPUS OIAPOQUE/AP	
PROJETO ESTRUTURAL	RODOVIA BR-156, 3051 - BAIRRO UNIVERSIDADE - OIAPOQUE/AP
PILARES - PAVIMENTO 01	
ENG. CIVIL GERVÂNIO MACHADO autoria do projeto	Eng. Civil GERVÂNIO MACHADO coordenação do projeto
ESTRUTURAL_UNIFAP_BLOCO_B_R00.DWG nome do arquivo .pl	ENG. CIVIL GERVÂNIO MACHADO desenho do prancha
PROJETO INICIAL etapa projeto	00 nº. revisão
INDICADA escala	MAR/2018 data

EST 06-25



RELAÇÃO DO AÇO

ACAO	N	DIAM (mm)	QUANT	CLAVT (cm)	C TOTAL (cm)
CASO	1	5.0	609	107	65963
CASO	2	10.0	2	914	1828
CASO	3	10.0	2	310	620
CASO	4	10.0	2	911	1822
CASO	5	10.0	2	911	1822
CASO	6	10.0	2	911	1822
CASO	7	10.0	2	911	1822
CASO	8	10.0	2	911	1822
CASO	9	10.0	2	911	1822
CASO	10	10.0	2	911	1822
CASO	11	10.0	2	911	1822
CASO	12	10.0	2	911	1822
CASO	13	10.0	2	911	1822
CASO	14	10.0	2	911	1822
CASO	15	10.0	2	911	1822
CASO	16	10.0	2	911	1822
CASO	17	10.0	2	911	1822
CASO	18	10.0	2	911	1822
CASO	19	10.0	2	911	1822
CASO	20	10.0	2	911	1822
CASO	21	10.0	2	911	1822
CASO	22	10.0	2	911	1822
CASO	23	10.0	2	911	1822
CASO	24	10.0	2	911	1822
CASO	25	10.0	2	911	1822
CASO	26	10.0	2	911	1822
CASO	27	10.0	2	911	1822
CASO	28	10.0	2	911	1822
CASO	29	10.0	2	911	1822
CASO	30	10.0	2	911	1822

RESUMO DO AÇO

ACAO	DIAM (mm)	C TOTAL (M)	QUANT + 10% (BARRAS)	CLAVT	PESO + 10% (KG)
CASO	10.0	445.9	41	12 H	302.4
CASO	12.5	82.9	8	12 H	81.8
CASO	15.0	220.0	21	12 H	358.2
CASO	5.0	620.0	60	12 H	110.5
PESO TOTAL (KG)					772.3
CASO					772.3
CASO					110.5

VOLUME DE CONCRETO (C-30) = 9.12 m³  
ÁREA DE FORMA = 161.86 m²

PROPRIETARIO: FUNDAÇÃO UNIVERSIDADE FEDERAL  
CONSTRUTORA: GLOBAL SERVIÇOS LTDA

PROJETO: REPAR. TÉCNICO

ING. CIVIL GERVÂNIO MACHADO  
CREA 0080888-1/RS-1986-AP

GLOBAL SERVIÇOS LTDA  
CLIENTE

BLOCO B - UNIFAP - CAMPUS OIAPOQUE/AP

PROJETO ESTRUTURAL: RODOVIA BR-156, 3081 - BARRIO UNIVERSIDADE - OIAPOQUE/AP

VIGAS - PAVIMENTO 01 - 01.03

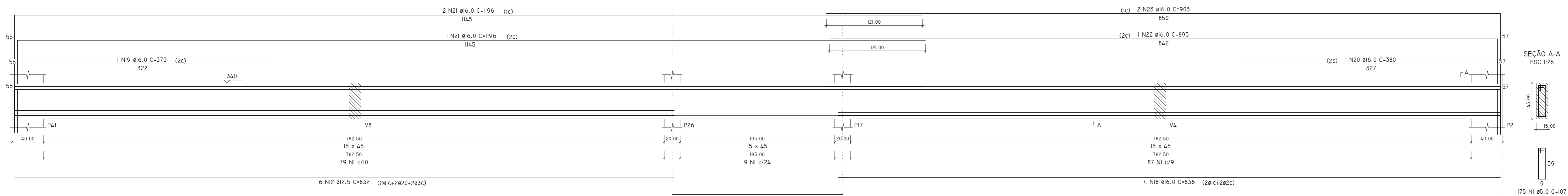
PROJETO INICIAL  
00 INDICADA MAR/2018

EST 08-25

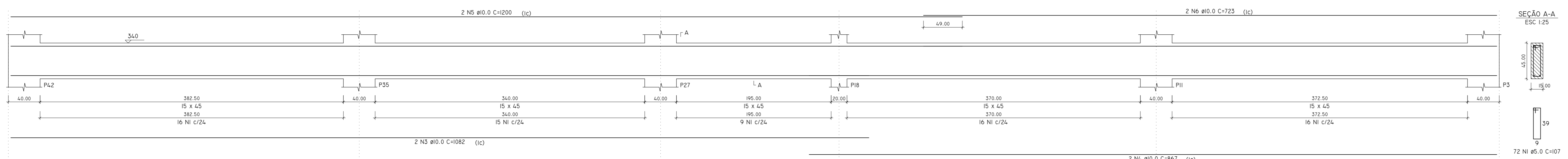
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PRODUCED BY AN AUTODESK STUDENT VERSION

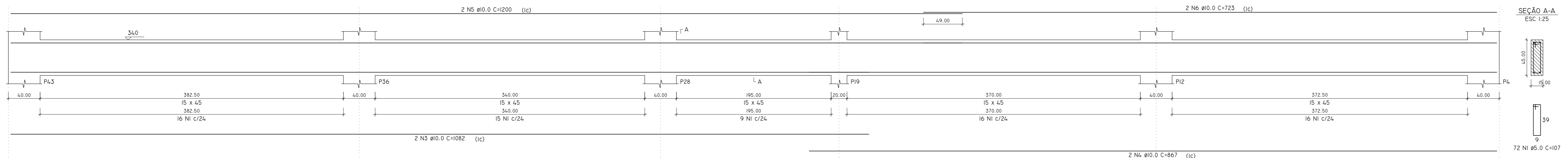
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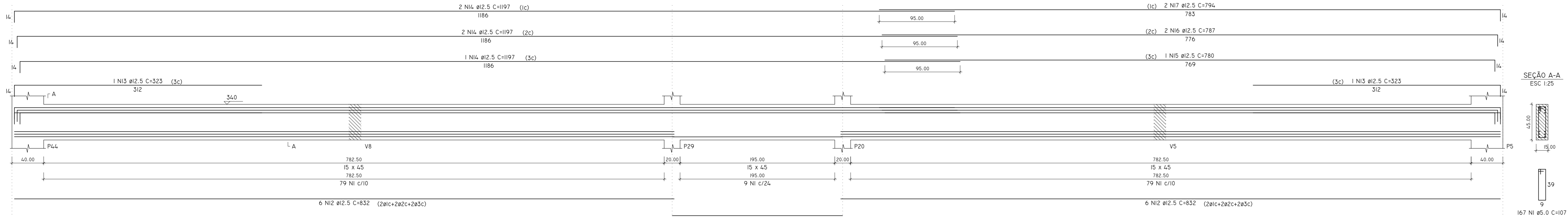
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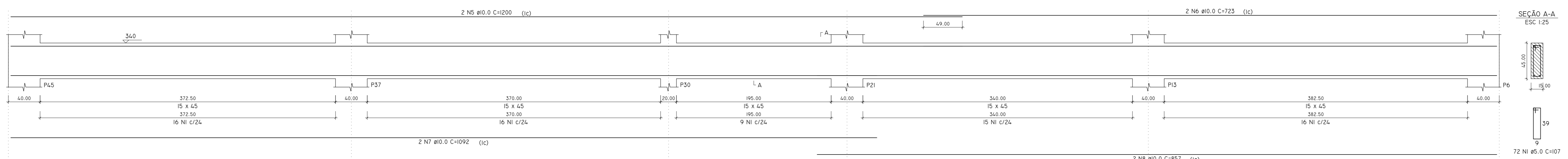
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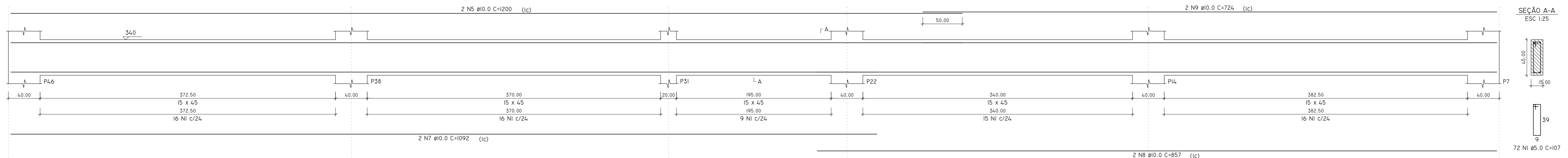
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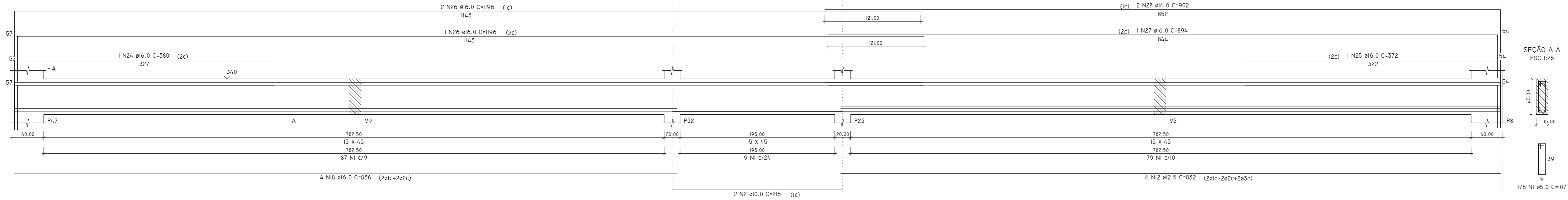
V18



V19



V20



RELAÇÃO DO AÇO

ACAO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	814	107	87098
CA60	2	10.0	4	225	900
CA60	3	10.0	4	1082	4328
CA60	4	10.0	4	867	3468
CA60	5	10.0	8	1200	9600
CA60	6	10.0	6	723	4338
CA60	7	10.0	4	1092	4368
CA60	8	10.0	4	857	3428
CA60	9	10.0	2	724	2896
CA60	10	10.0	2	225	900
CA60	11	10.0	2	267	1068
CA60	12	12.5	24	832	19968
CA60	13	12.5	2	323	1292
CA60	14	12.5	3	107	426
CA60	15	12.5	2	267	1068
CA60	16	12.5	8	787	6296
CA60	17	12.5	2	754	3016
CA60	18	16.0	1	850	3400
CA60	19	16.0	1	373	1492
CA60	20	16.0	1	580	2320
CA60	21	16.0	5	1196	5980
CA60	22	16.0	1	895	3580
CA60	23	16.0	2	903	3612
CA60	24	16.0	1	580	2320
CA60	25	16.0	1	372	1488
CA60	26	16.0	1	1196	4784
CA60	27	16.0	1	854	3416
CA60	28	16.0	2	902	3608

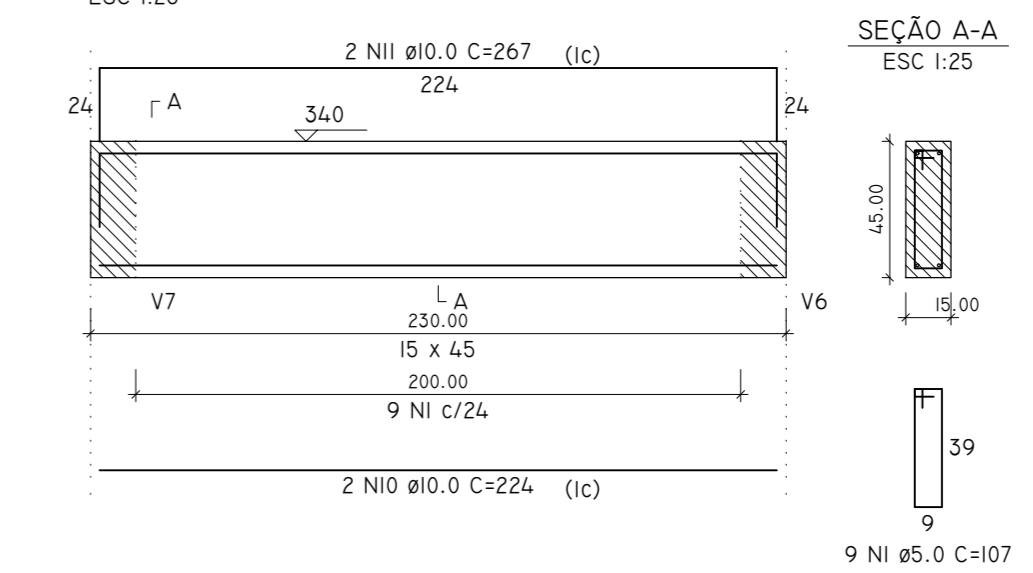
RESUMO DO AÇO

ACAO	DIAM (mm)	C.TOTAL (cm)	QUANT + 10% (REBARBA)	UNIT (kg)	PESO + 10% (kg)
CA60	10.0	332.5	31	12.4	275.5
CA60	12.5	306.4	28	12.4	322.6
CA60	16.0	207.7	20	12.4	248.0
CA60	5.0	871	80	12.4	971.2

PESO TOTAL (kg): 909.7  
CA60: 47.7

VOLUME DE CONCRETO (C-30) = 9.04 m³  
ÁREA DE FORMA = 140.59 m²

V21



RELAÇÃO DO AÇO

ACAO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	814	107	87098
CA60	2	10.0	4	225	900
CA60	3	10.0	4	1082	4328
CA60	4	10.0	4	867	3468
CA60	5	10.0	8	1200	9600
CA60	6	10.0	6	723	4338
CA60	7	10.0	4	1092	4368
CA60	8	10.0	4	857	3428
CA60	9	10.0	2	724	2896
CA60	10	10.0	2	225	900
CA60	11	10.0	2	267	1068
CA60	12	12.5	24	832	19968
CA60	13	12.5	2	323	1292
CA60	14	12.5	3	107	426
CA60	15	12.5	2	267	1068
CA60	16	12.5	8	787	6296
CA60	17	12.5	2	754	3016
CA60	18	16.0	1	850	3400
CA60	19	16.0	1	373	1492
CA60	20	16.0	1	580	2320
CA60	21	16.0	5	1196	5980
CA60	22	16.0	1	895	3580
CA60	23	16.0	2	903	3612
CA60	24	16.0	1	580	2320
CA60	25	16.0	1	372	1488
CA60	26	16.0	1	1196	4784
CA60	27	16.0	1	854	3416
CA60	28	16.0	2	902	3608

PROPRIETÁRIO: FUNDAÇÃO UNIVERSIDADE FEDERAL DO RIO DE JANEIRO

CONSTRUTORA: GLOBAL SERVIÇOS LTDA

PROJETO: VIGAS - PAVIMENTO 01 - 02/03

RESP. TÉCNICO: Eng. CIVIL GERVÂNIO MACHADO

CREA: 0685888-1/PR - RFO/2016

CLIENTE: GLOBAL SERVIÇOS LTDA

PROJETO INICIAL

INDICADA: MAR/2018

EST 09-25

