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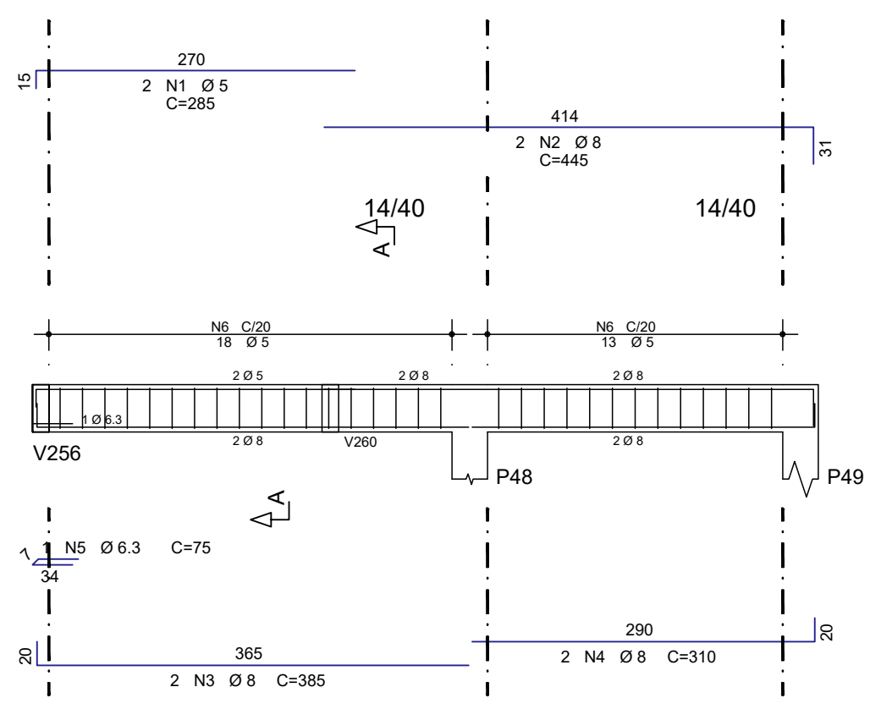

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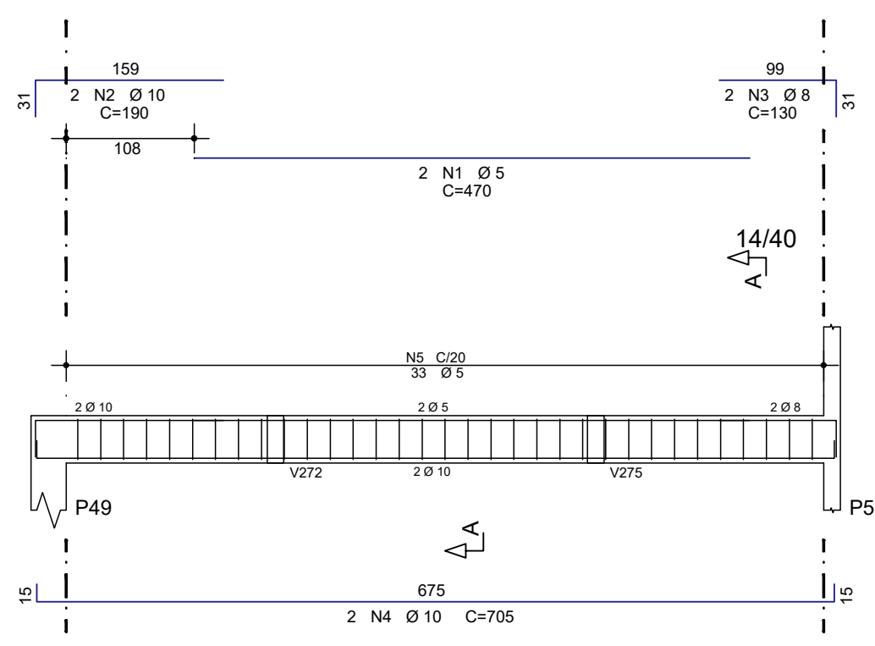

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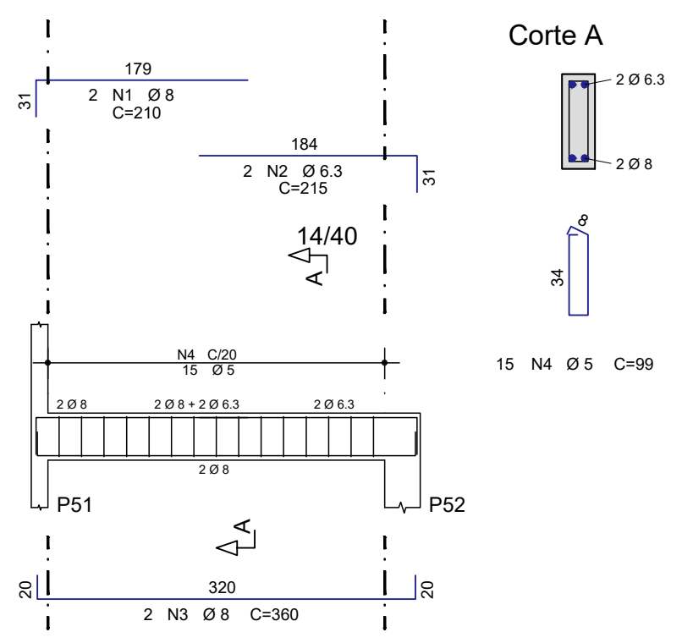

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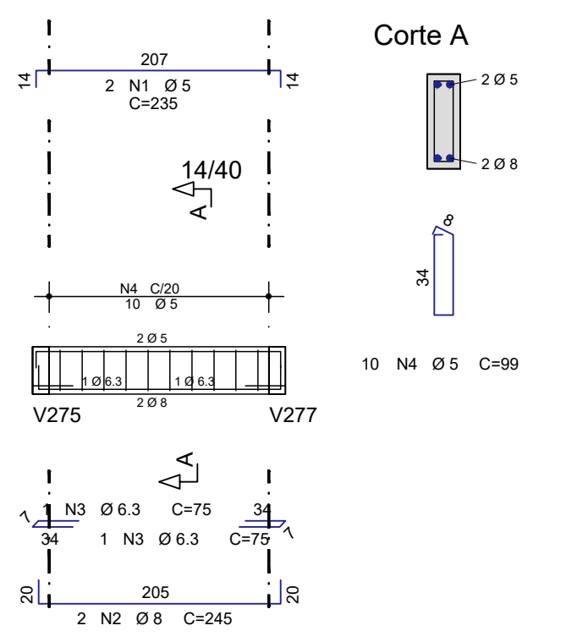

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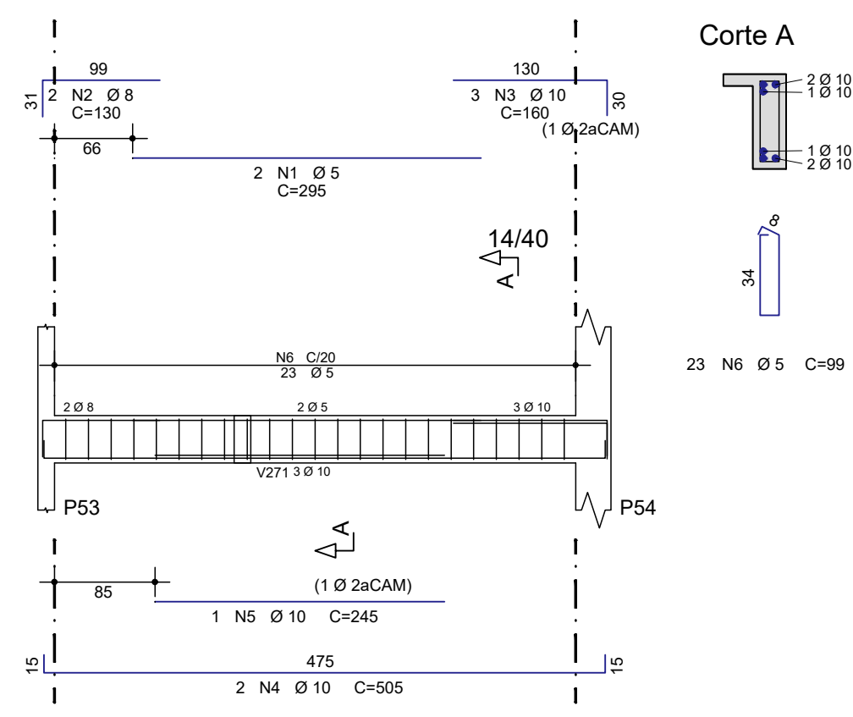

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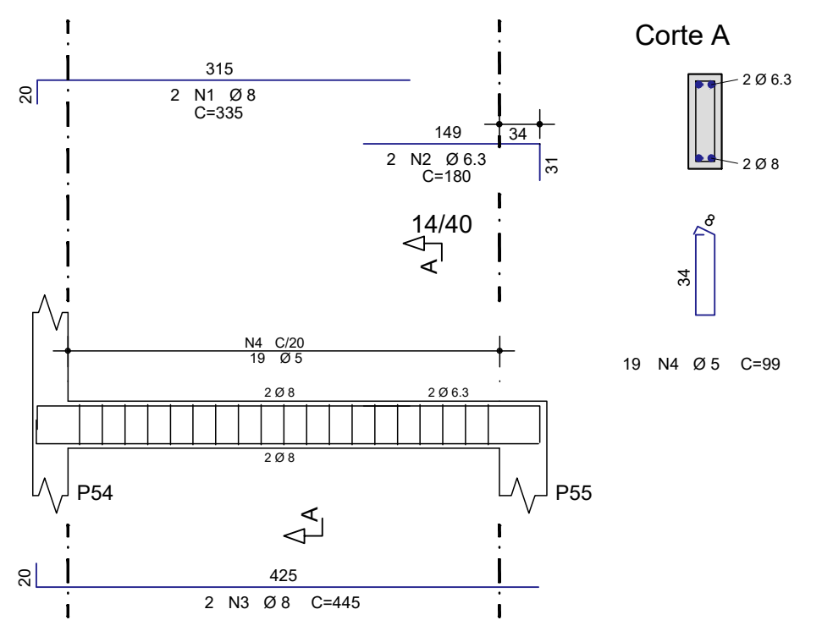

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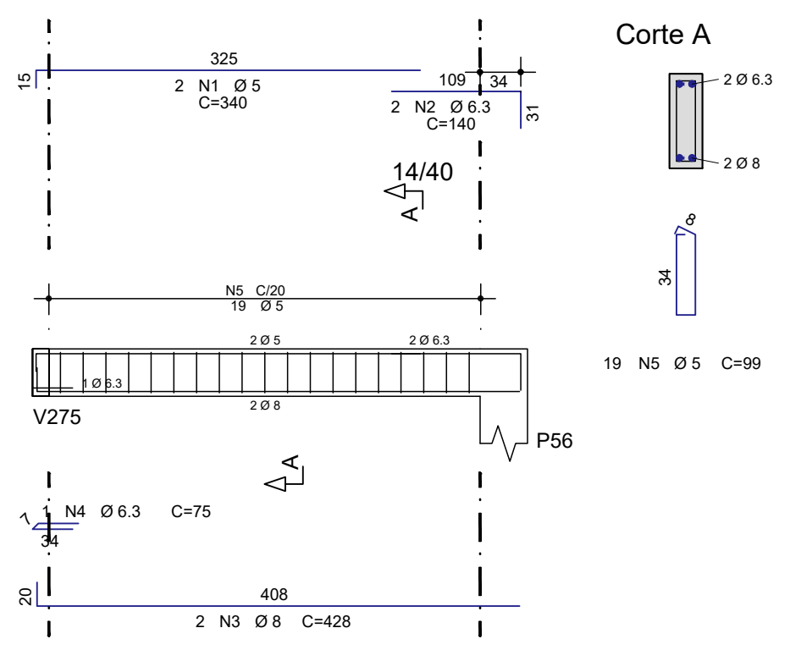

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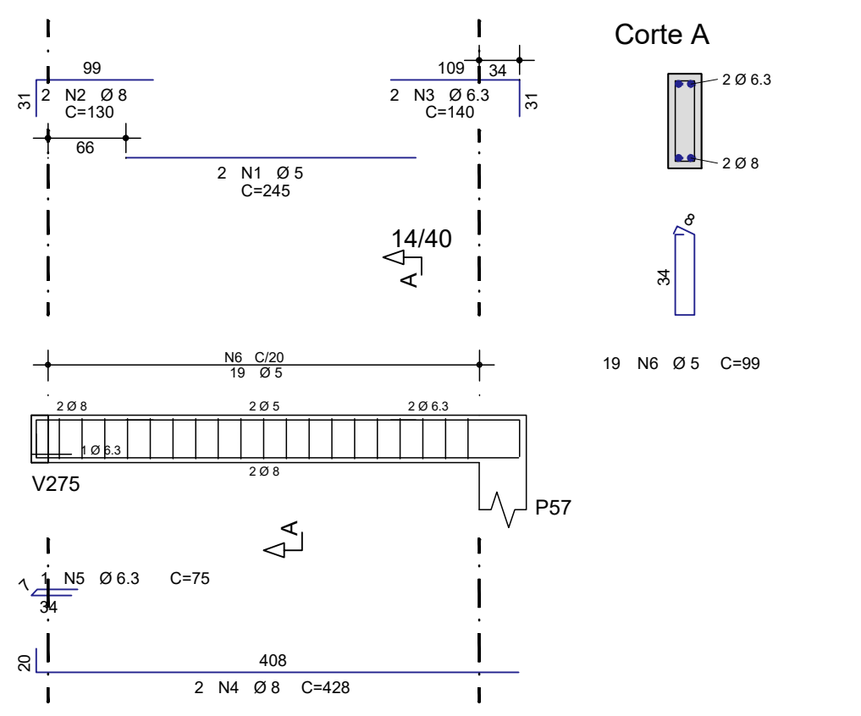

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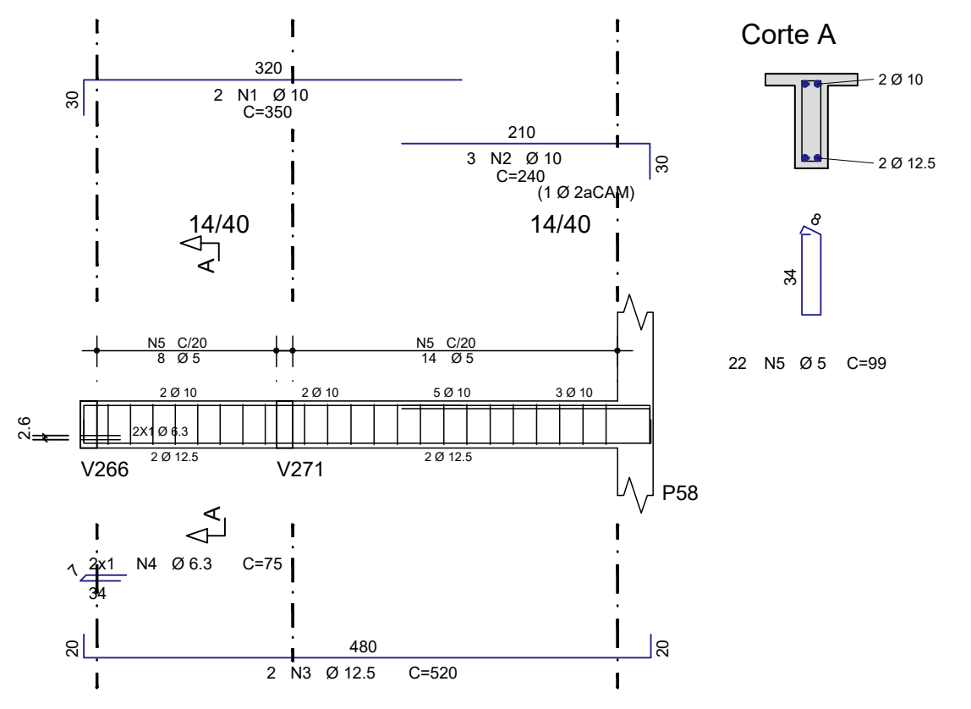

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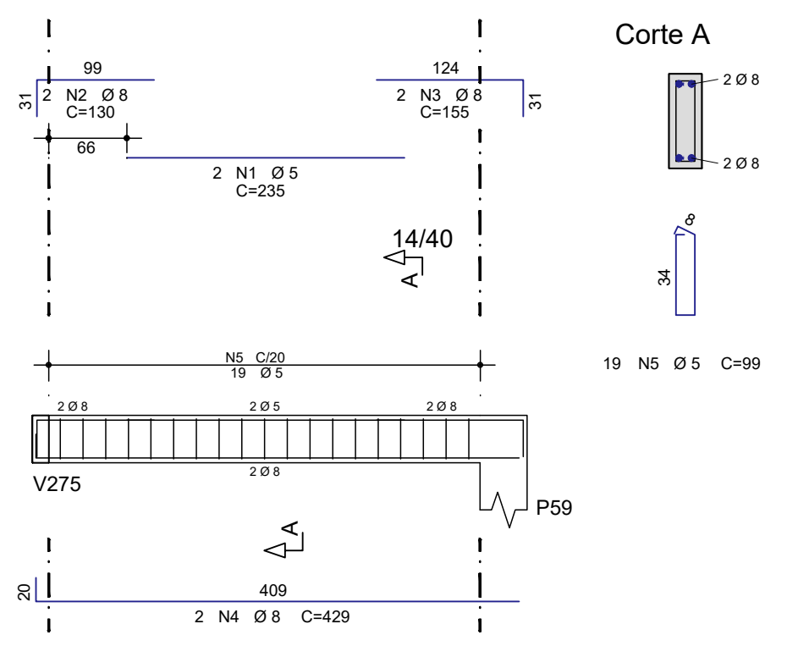

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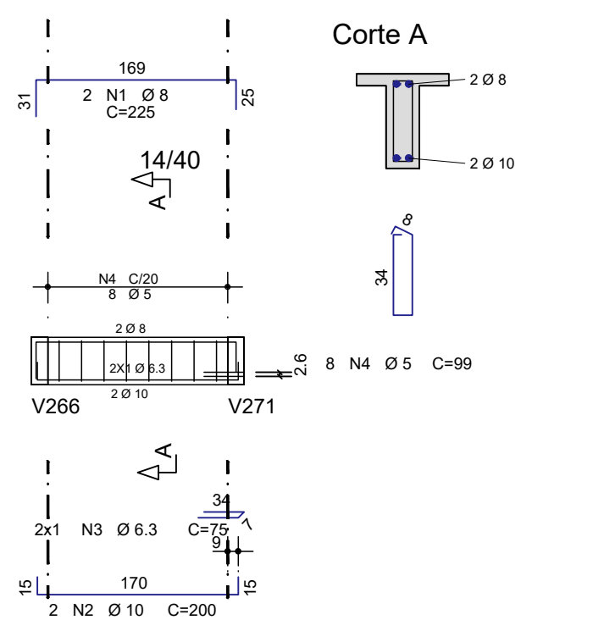

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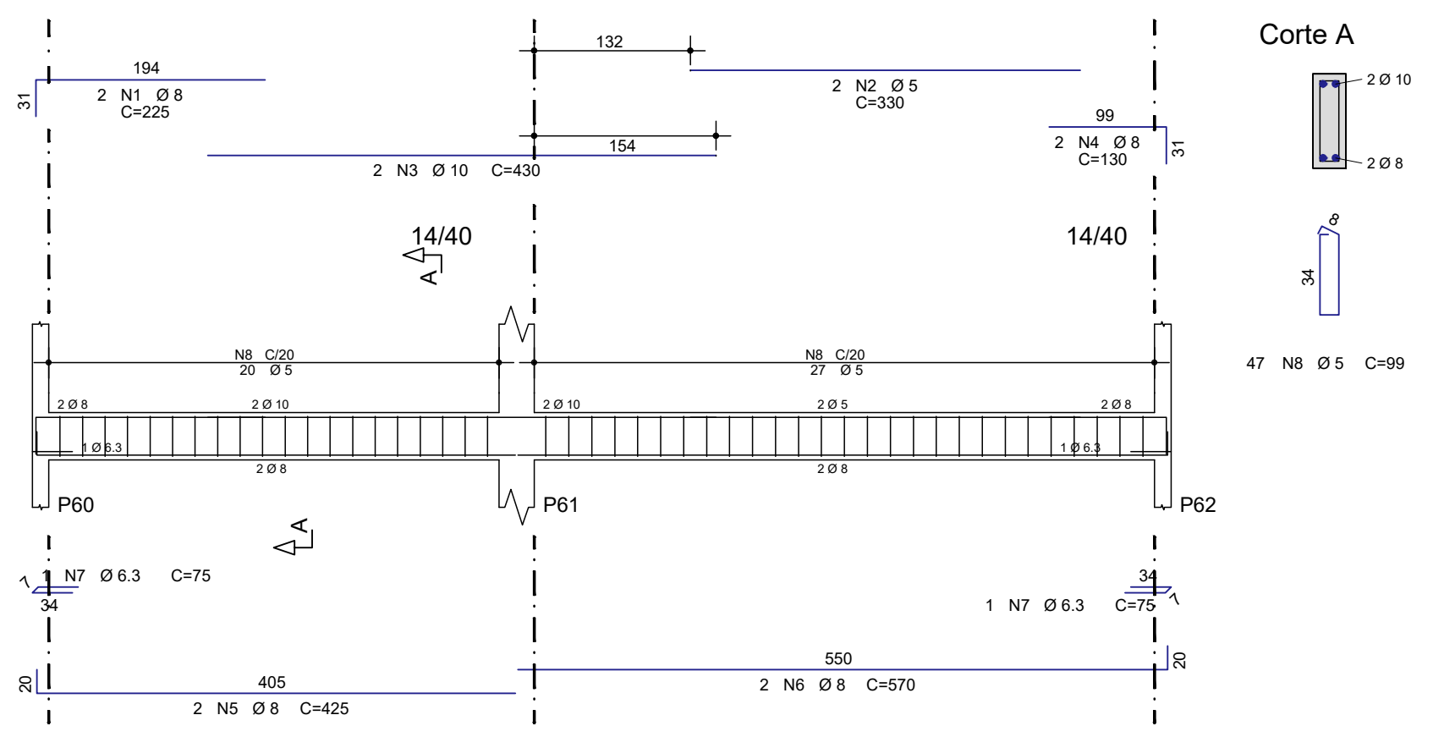

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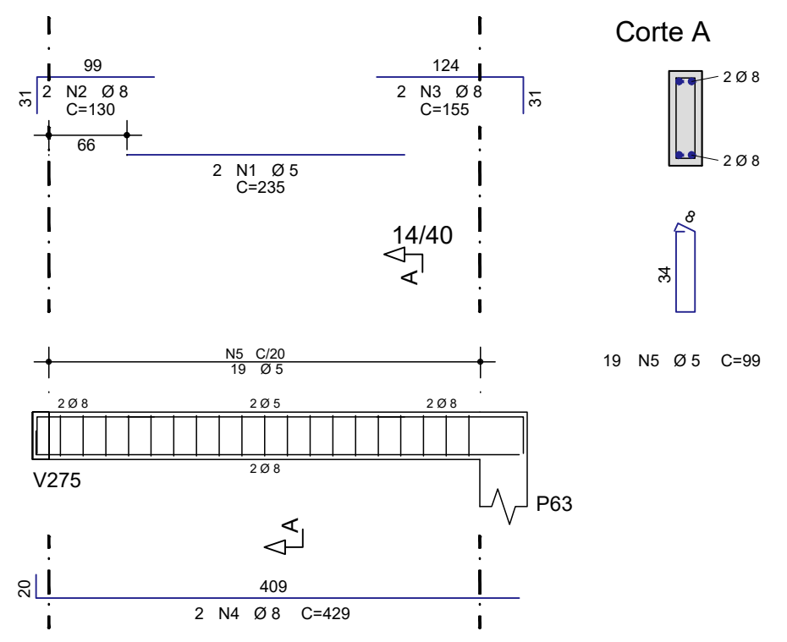

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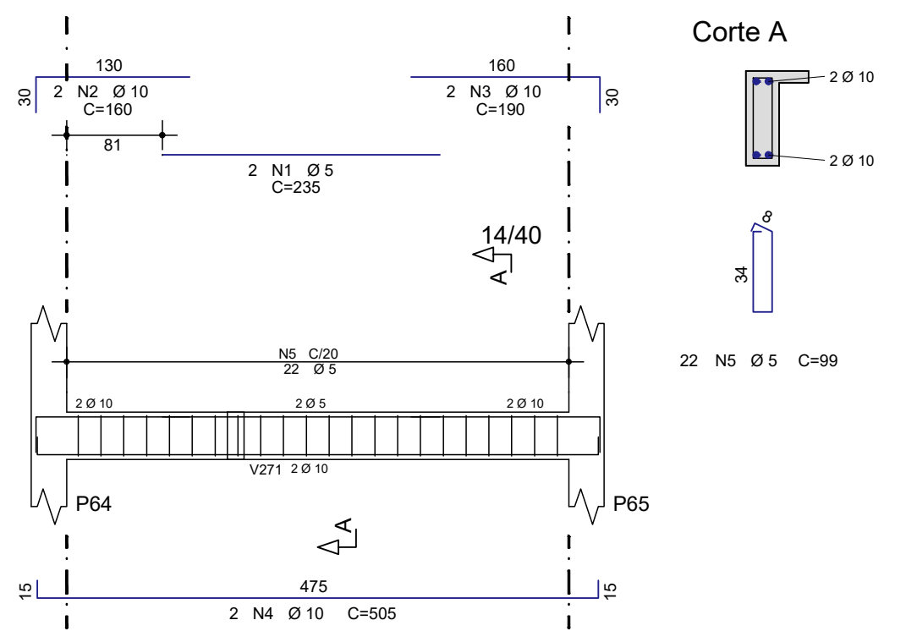

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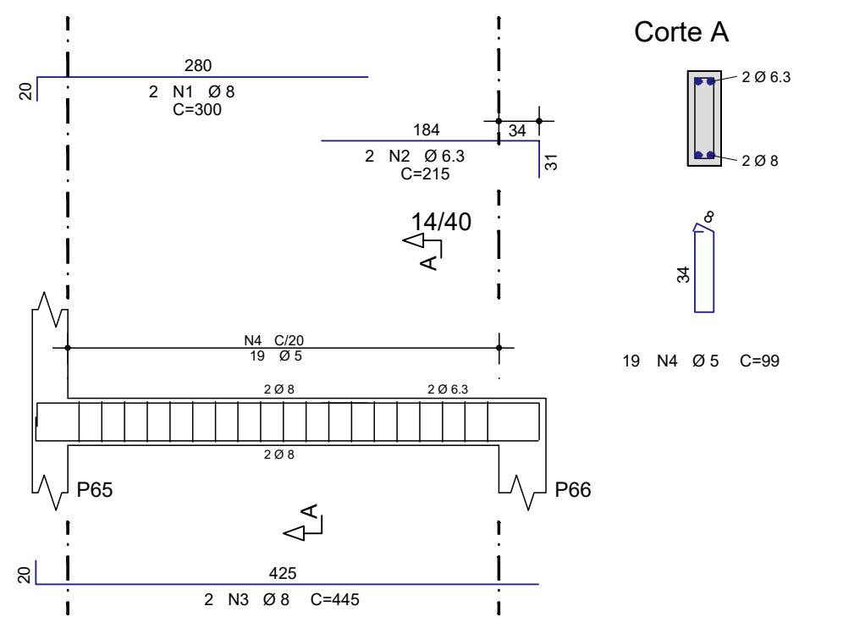

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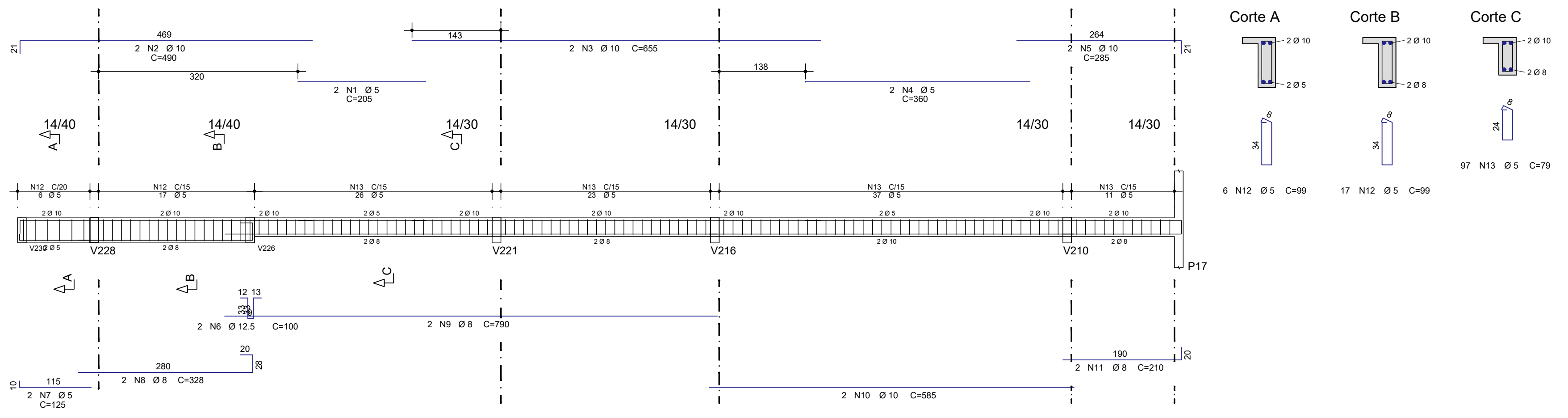

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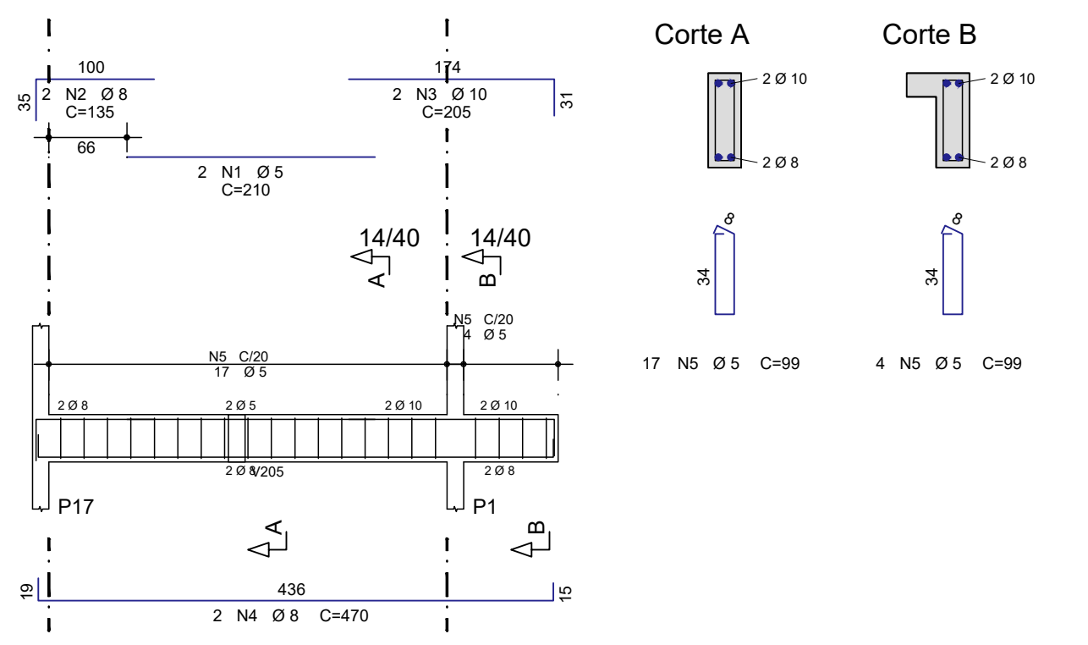

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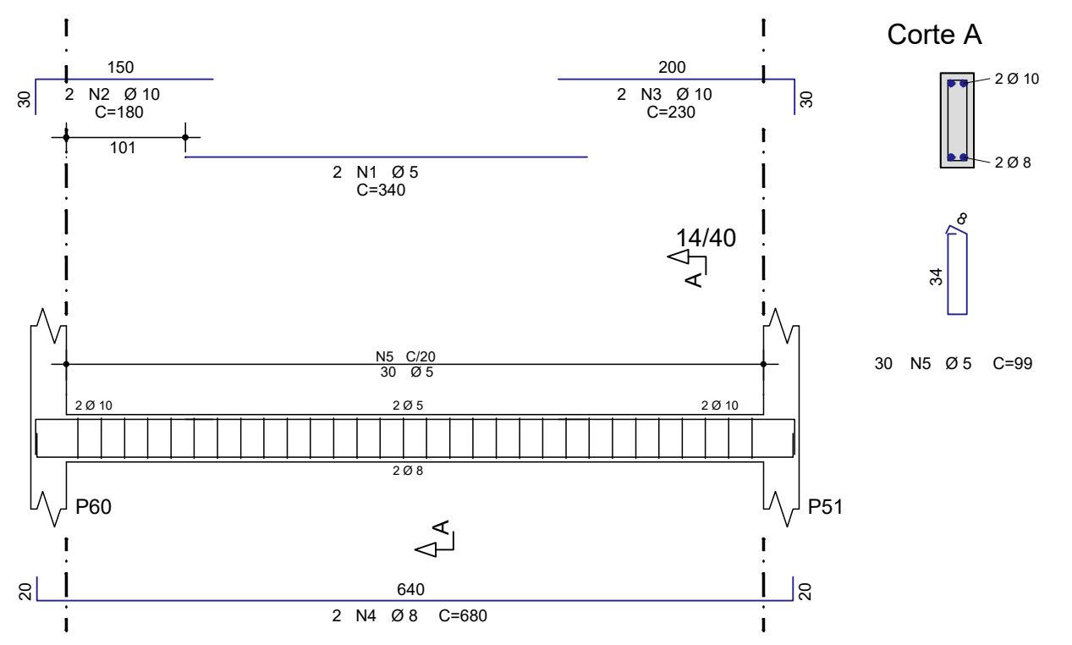

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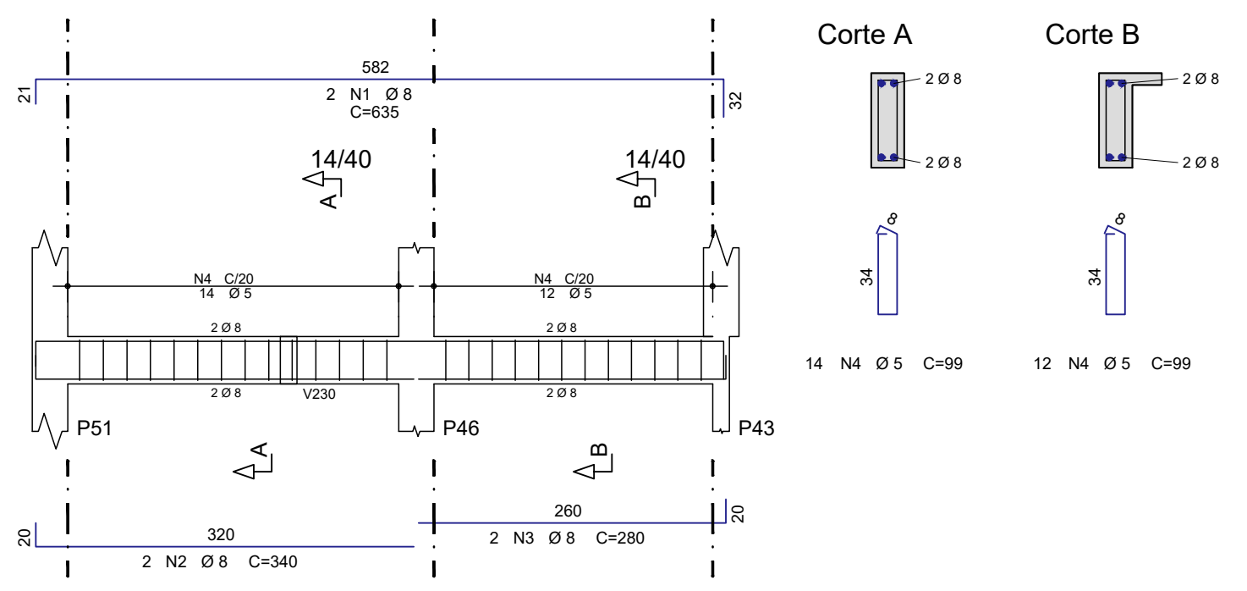

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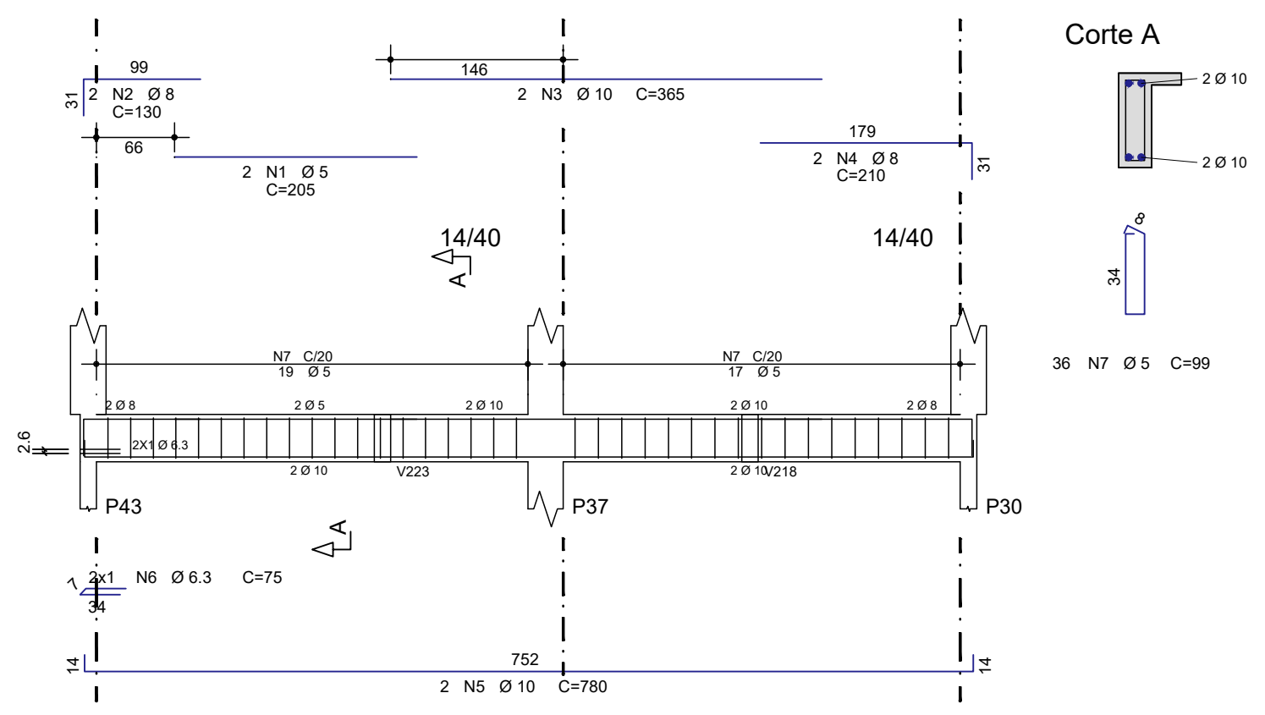

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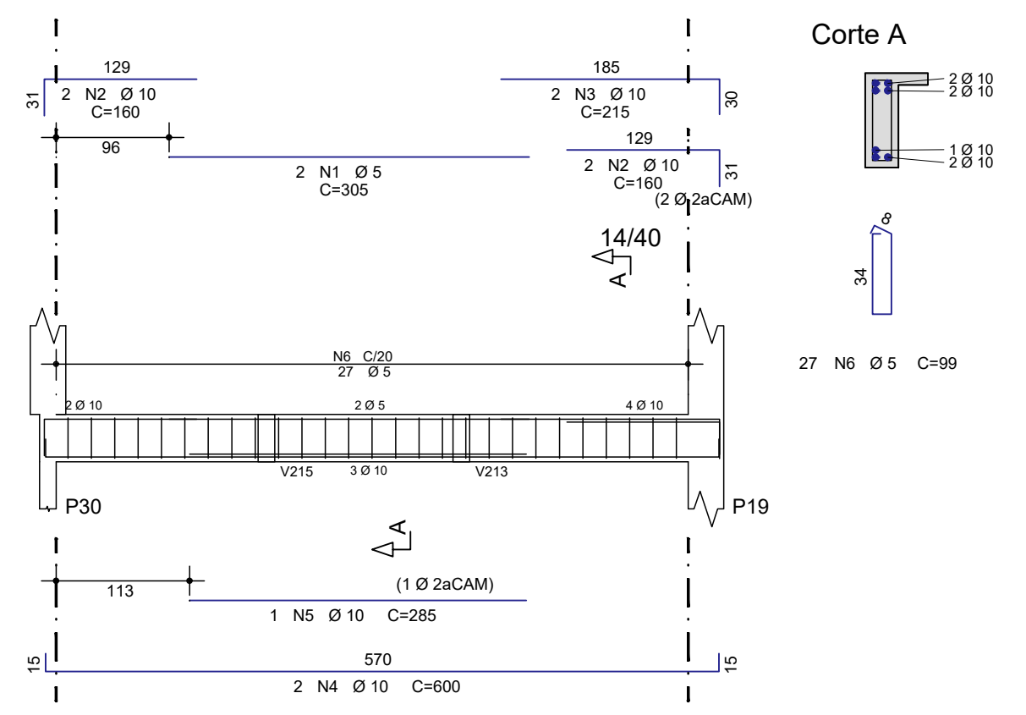

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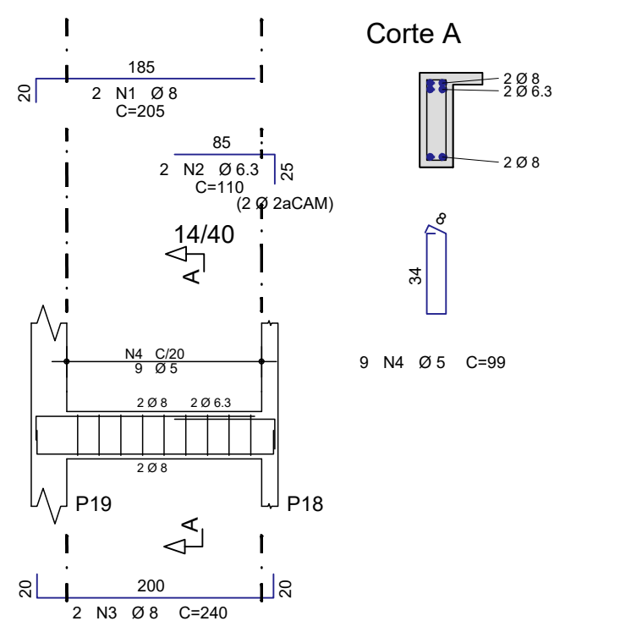

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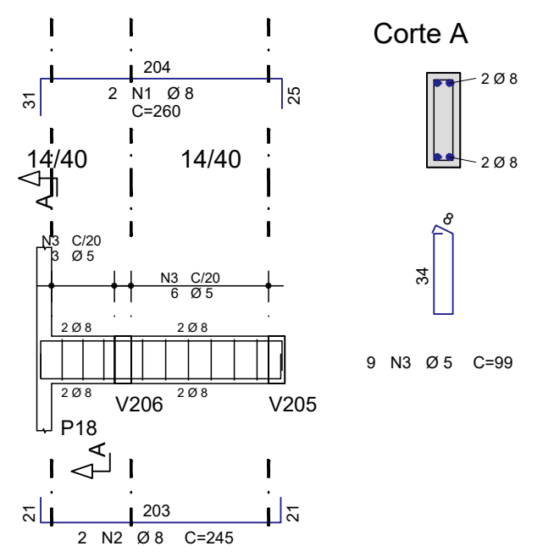

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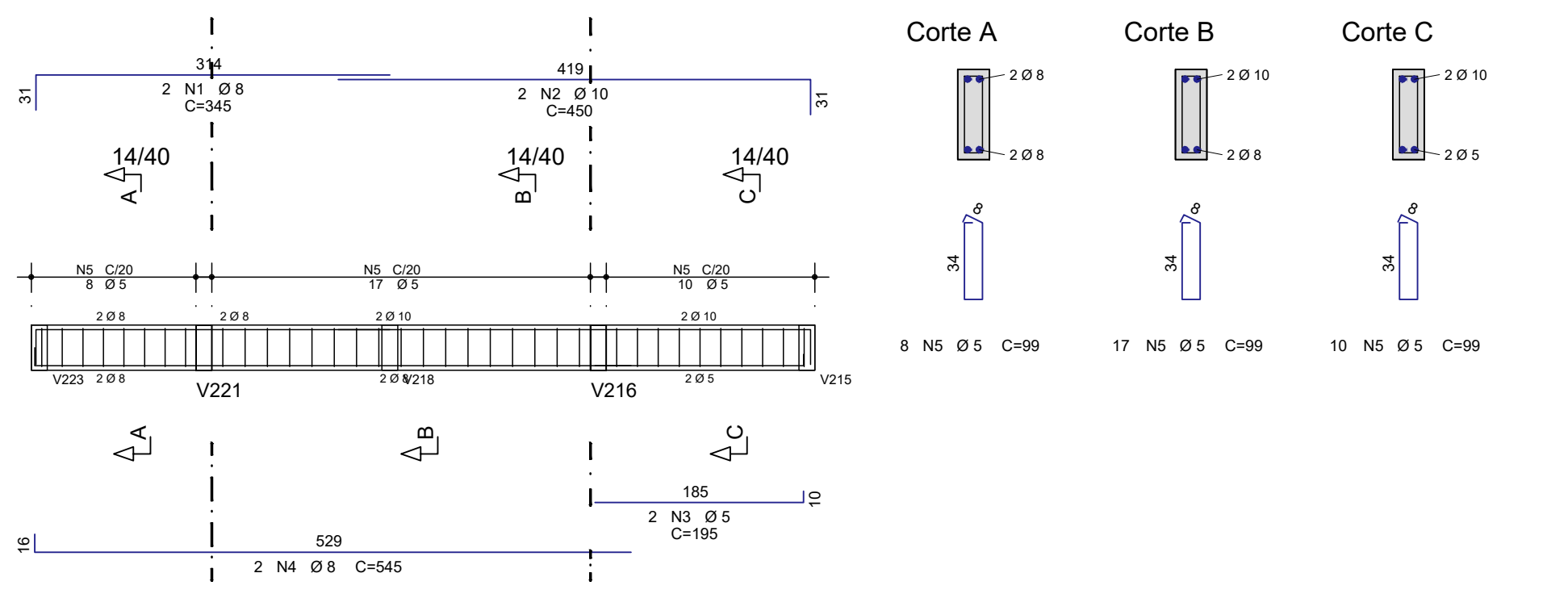

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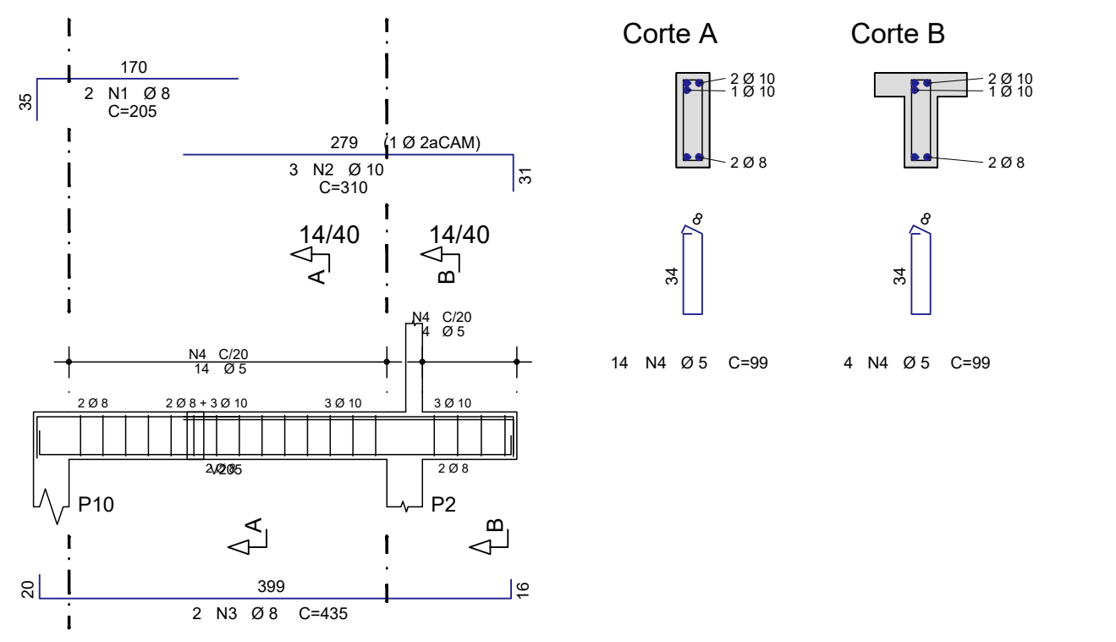

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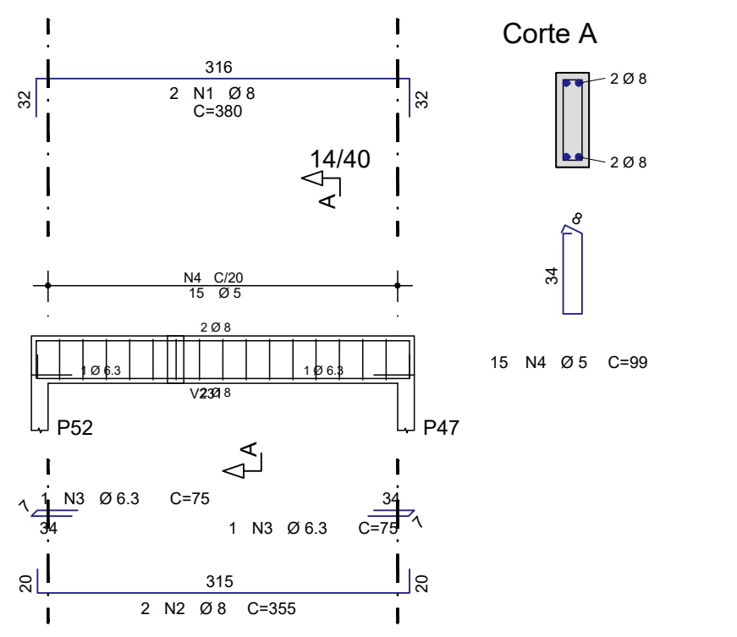

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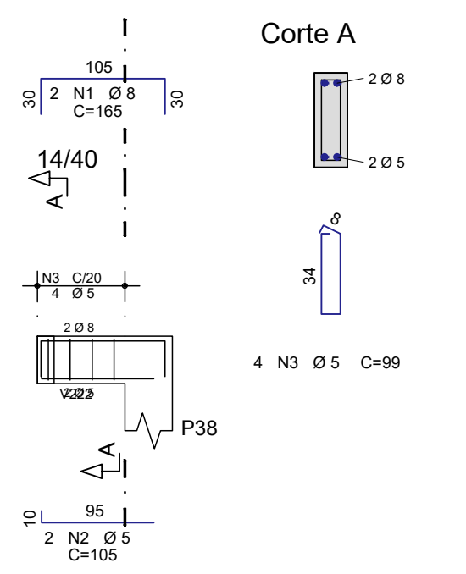

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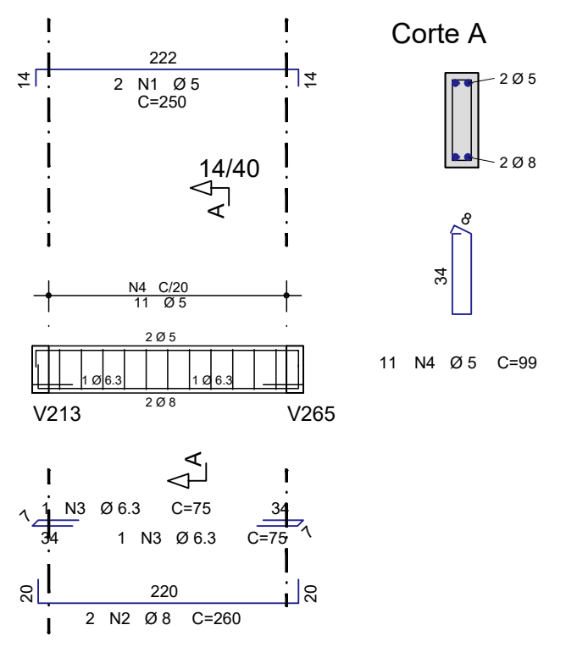

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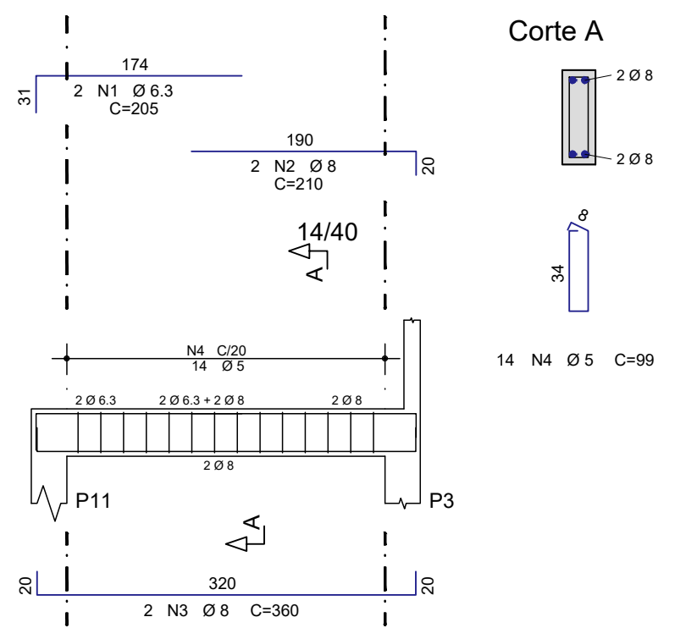

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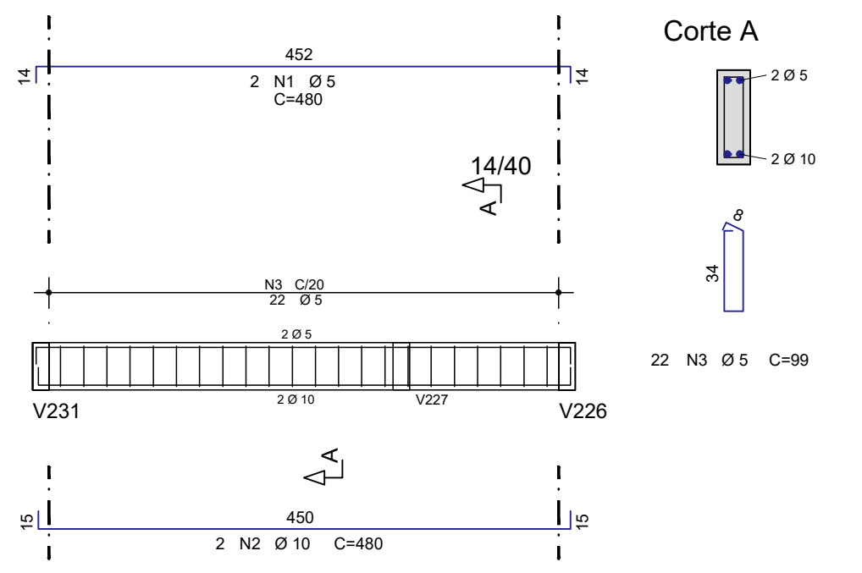

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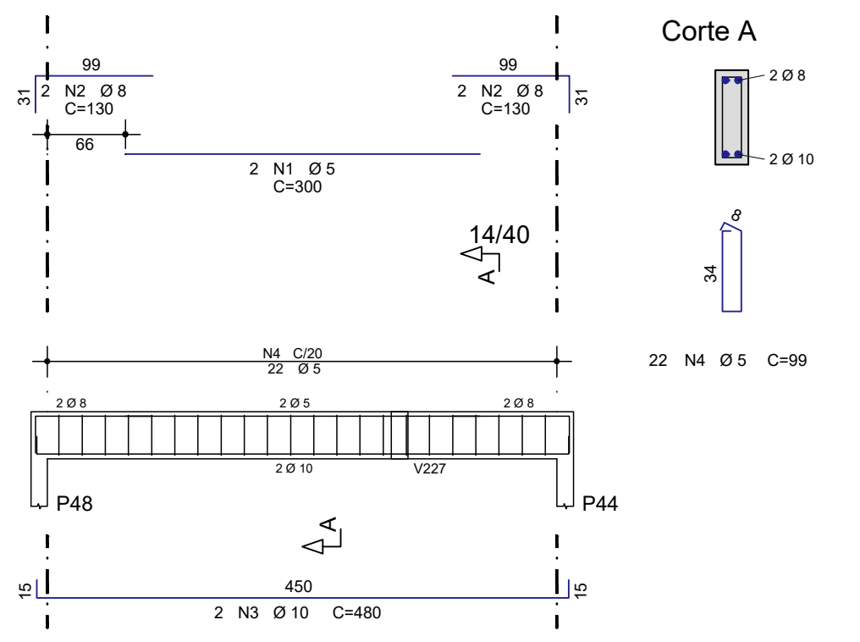

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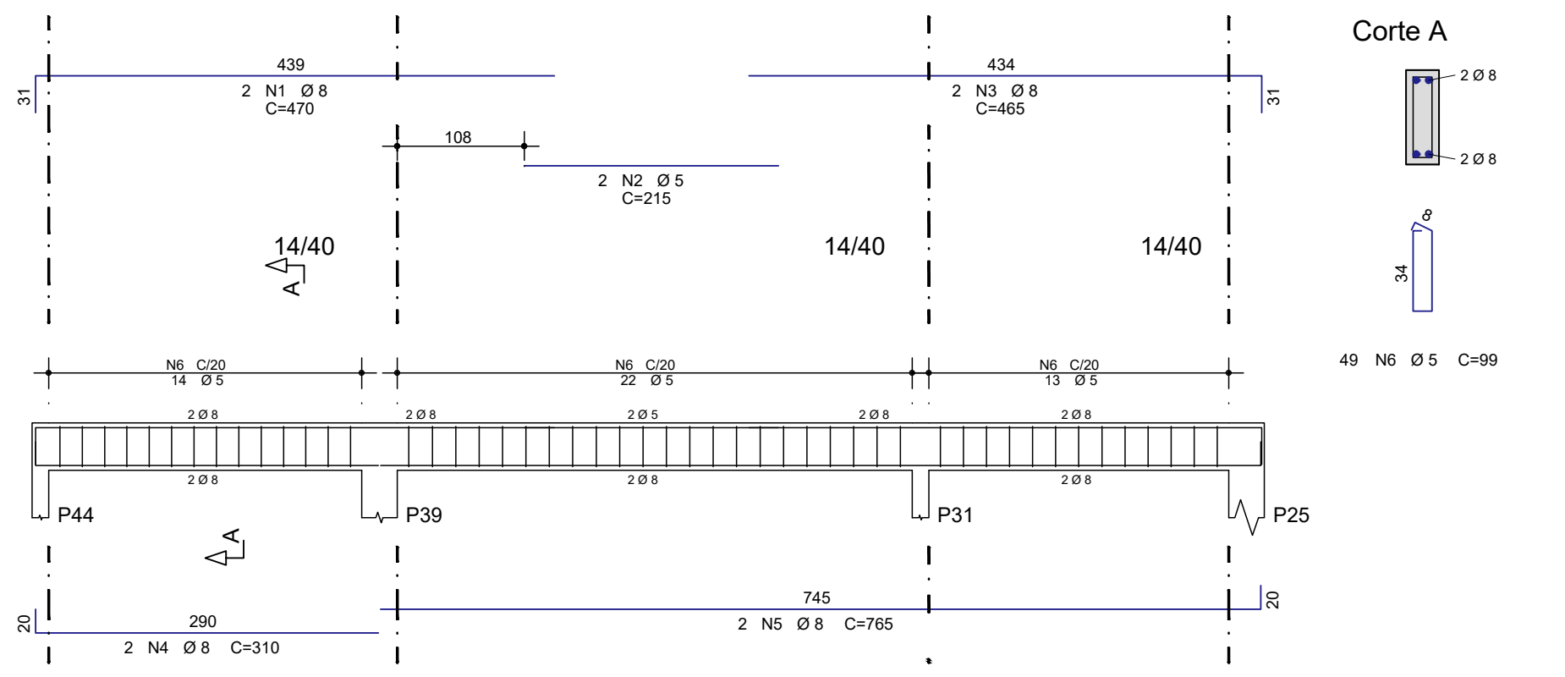
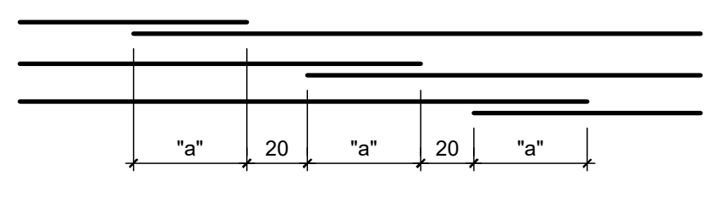


	AÇO	POS	BIT (mm)	QUANT	COMPRIMENTO UNIT (cm)	COMPRIMENTO TOTAL (cm)
V231						
	60B	1	5	2	285	570
	50A	2	8	2	445	890
	50A	3	8	2	385	770
	50A	4	8	2	310	620
	50A	5	6.3	1	75	75
	60B	6	5	31	99	3069
V232						
	60B	1	5	2	470	940
	50A	2	10	2	190	380
	50A	3	8	2	130	260
	50A	4	10	2	705	1410
	60B	5	5	33	99	3267
V233						
	50A	1	8	2	210	420
	50A	2	6.3	2	215	430
	50A	3	8	2	360	720
	60B	4	5	15	99	1485
V234						
	60B	1	5	2	235	470
	50A	2	8	2	245	490
	50A	3	6.3	2	75	150
	60B	4	5	10	99	990
V235						
	60B	1	5	2	295	590
	50A	2	8	2	130	260
	50A	3	10	3	160	480
	50A	4	10	2	505	1010
	50A	5	10	1	245	245
	60B	6	5	23	99	2277
V236						
	50A	1	8	2	335	670
	50A	2	6.3	2	180	360
	50A	3	8	2	445	890
	60B	4	5	19	99	1881
V237						
	60B	1	5	2	340	680
	50A	2	6.3	2	140	280
	50A	3	8	2	428	856
	50A	4	6.3	1	75	75
	60B	5	5	19	99	1881
V238						
	60B	1	5	2	245	490
	50A	2	8	2	130	260
	50A	3	6.3	2	140	280
	50A	4	8	2	428	856
	50A	5	6.3	1	75	75
	60B	6	5	19	99	1881
V239						
	50A	1	10	2	350	700
	50A	2	10	3	240	720
	50A	3	12.5	2	520	1040
	50A	4	6.3	2	75	150
	60B	5	5	22	99	2178
V240						
	60B	1	5	2	235	470
	50A	2	8	2	130	260
	50A	3	8	2	155	310
	50A	4	8	2	429	858
	60B	5	5	19	99	1881
V241						
	50A	1	8	2	225	450
	50A	2	10	2	200	400
	50A	3	6.3	2	75	150
	60B	4	5	8	99	792
V242						
	50A	1	8	2	225	450
	60B	2	5	2	330	660
	50A	3	10	2	430	860
	50A	4	8	2	130	260
	50A	5	8	2	425	850
	50A	6	8	2	570	1140
	50A	7	6.3	2	75	150
	60B	8	5	47	99	4653
V243						
	60B	1	5	2	235	470
	50A	2	8	2	130	260
	50A	3	8	2	155	310
	50A	4	8	2	429	858
	60B	5	5	19	99	1881
V244						
	60B	1	5	2	235	470
	50A	2	10	2	160	320
	50A	3	10	2	190	380
	50A	4	10	2	505	1010
	60B	5	5	22	99	2178
V245						
	50A	1	8	2	300	600
	50A	2	6.3	2	215	430
	50A	3	8	2	445	890
	60B	4	5	19	99	1881
V246						
	60B	1	5	2	205	410
	50A	2	10	2	490	980
	50A	3	10	2	655	1310
	60B	4	5	2	360	720
	50A	5	10	2	285	570
	50A	6	12.5	2	100	200
	60B	7	5	2	125	250
	50A	8	8	2	328	656
	50A	9	8	2	790	1580
	50A	10	10	2	585	1170
	50A	11	8	2	210	420
	60B	12	5	23	99	2277
	60B	13	5	97	79	7663
V247						
	60B	1	5	2	210	420
	50A	2	8	2	135	270
	50A	3	10	2	205	410
	50A	4	8	2	470	940
	60B	5	5	21	99	2079
V248						
	60B	1	5	2	340	680
	50A	2	10	2	180	360
	50A	3	10	2	230	460
	50A	4	8	2	680	1360
	60B	5	5	30	99	2970
V249						
	50A	1	8	2	635	1270
	50A	2	8	2	340	680
	50A	3	8	2	280	560
	60B	4	5	26	99	2574
V250						
	60B	1	5	2	205	410
	50A	2	8	2	130	260
	50A	3	10	2	365	730
	50A	4	8	2	210	420
	50A	5	10	2	780	1560
	50A	6	6.3	2	75	150
	60B	7	5	36	99	3564
V251						
	60B	1	5	2	305	610
	50A	2	10	4	160	640
	50A	3	10	2	215	430
	50A	4	10	2	600	1200
	50A	5	10	1	285	285
	60B	6	5	27	99	2673
V252						
	50A	1	8	2	205	410
	50A	2	6.3	2	110	220
	50A	3	8	2	240	480
	60B	4	5	9	99	891
V253						
	50A	1	8	2	260	520
	50A	2	8	2	245	490
	60B	3	5	9	99	891
V254						
	50A	1	8	2	345	690
	50A	2	10	2	450	900
	60B	3	5	2	195	390
	50A	4	8	2	545	1090
	60B	5	5	35	99	3465
V255						
	50A	1	8	2	205	410
	50A	2	10	3	310	930
	50A	3	8	2	435	870
	60B	4	5	18	99	1782
V256						
	50A	1	8	2	380	760
	50A	2	8	2	355	710
	50A	3	6.3	2	75	150
	60B	4	5	15	99	1485
V257						
	50A	1	8	2	165	330
	60B	2	5	2	105	210
	60B	3	5	4	99	396
V258						
	60B	1	5	2	250	500
	50A	2	8	2	260	520
	50A	3	6.3	2	75	150
	60B	4	5	11	99	1089
V259						
	50A	1	6.3	2	205	410
	50A	2	8	2	210	420
	50A	3	8	2	360	720
	60B	4	5	14	99	1386
V260						
	60B	1	5	2	480	960
	50A	2	10	2	480	960
	60B	3	5	22	99	2178
V261						
	60B	1	5	2	300	600
	50A	2	8	4	130	520
	50A	3	10	2	480	960
	60B	4	5	22	99	2178
V262						
	50A	1	8	2	470	940
	60B	2	5	2	215	430
	50A	3	8	2	465	930
	50A	4	8	2	310	620
	50A	5	8	2	765	1530
	60B	6	5	49	99	4851

RESUMO AÇO CA 50-60			
AÇO	BIT (mm)	COMPR (m)	PESO (kg)
60B	5	890	137
50A	6.3	37	9
50A	8	368	145
50A	10	218	134
50A	12.5	12	12
Peso Total 60B =			137 kg
Peso Total 50A =			301 kg

	Eixo	Faces
Volume de concreto de VIGAS (m3)	8.6	8.1
Taxa de armadura (kg/m3)	50.7	54.1

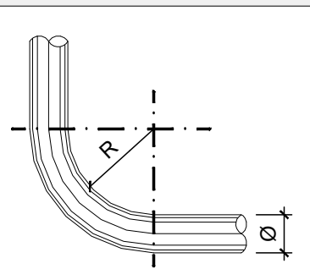
DETALHE GENÉRICO DAS EMENDAS ALTERNADAS



(USADA PARA BARRAS CORRIDAS COM EMENDAS NÃO INDICADAS)

CLASSE DE CONCRETO C-50 OU MENOR					
Ø	5.0	6.3	8.0	10.0	12.5
"a"(cm)	30	35	45	60	75

RAIO DE CURVATURA DAS BARRAS



(USADA PARA BARRAS COM RAIOS NÃO INDICADOS)

CLASSE DE CONCRETO C-50 OU MENOR					
Ø	8	10	12.5	16.0	20.0
"R"(cm)	7	8	10	12	15

MATERIAIS

CONCRETO

REISTÊNCIA A COMPRESSÃO	Fck> 25 MPa
MÓDULO DE ELASTICIDADE	Ec > 28.000,00 MPa
RELAÇÃO ÁGUA / CIMENTO	< 0,60
SLUMP	--

AÇO

CATEGORIA	CA - 50 / CA - 60

NOTAS

- PROJETO ELABORADO DE ACORDO COM A NORMA NBR - 6118:2014
- O CONCRETO DEVE ATENDER AS ESPECIFICAÇÕES DA NBR - 12.655:1996
- A EXECUÇÃO DA ESTRUTURA DEVE OBEDECER AS PRESCRIÇÕES DA NBR - 14.931:2003
- CLASSE DE AGRESSIVIDADE AMBIENTAL: II
- TOLERÂNCIA NA EXECUÇÃO DOS RECOBRIMENTOS: 10mm
- UTILIZAR DISTÂNCIADORES E ESPAÇADORES, PREFERÍVELMENTE PLÁSTICOS, QUE GARANTAM OS COBRIMENTOS E POSICIONAMENTOS DAS ARMADURAS.
- AS ARMADURAS DEVERÃO ESTAR LIMPAS E ISENTAS DE QUALQUER SUBSTÂNCIA QUE PREJUDIQUEM SUA ADERÊNCIA AO CONCRETO, INCLUSIVE ESCAMAS DE OXIDAÇÃO.
- LIMPAR AS FORMAS E VEDAR TODAS AS JUNTAS ANTES DO LANÇAMENTO DO CONCRETO.
- EM HIPÓTESE ALGUMA A CONCRETAGEM PODERÁ OCORRER SOBRE POEIRA, PEDAÇOS DE MADEIRA, SERRAGEM OU OUTRO CORPO ESTRANHO À ESTRUTURA.

REV	DATA	AUTOR	ASSUNTO
02	29/01/2018	RAFAEL L. DA LUZ	REVISÃO GERAL - DETALHAMENTO
01	06/12/2017	RAFAEL L. DA LUZ	REVISÃO - PVTO INFERIOR
00	13/11/2017	RAFAEL L. DA LUZ	EMISSÃO INICIAL

R.LUZ
ENGENHARIA CIVIL

Rafael Lima da Luz
Engenheiro Civil CREA PR 148.390/D

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rluzengenharia
contato@rluzengenharia.com.br
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Av. Coronel José Osório, nº 910
B. Centro - Caixa Postal 98
Palmas | Paraná | 85.555-000

Obra/Endereço:
CENTRO DE ESPECIALIDADES
RUA CORONEL SANTHIAGO DANTAS - S/N - CENTRO - CHOPINZINHO - PR

Cliente:
MUNICÍPIO DE CHOPINZINHO

Referência:
DET. VIGAS
VIGAS
231/232/233/234/235/236/237
238/239/240/241/242/243/244
245/246/247/248/249/250/251
252/253/254/255/256/257/258
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Arquivo:
P0105-18

Folha:
18
R 03

Escala:
INDICADA

Data:
29/01/2018