

Technical drawing of a reinforced concrete slab cross-section (SEÇÃO A-A) showing reinforcement details, dimensions, and material specifications.

**Reinforcement Details:**

- Top Reinforcement:**
  - 2 N6  $\phi$ 10.0 C=1198 (1180)
  - 1 N4  $\phi$ 10.0 C=200 (2c) (100)
  - 2 N7  $\phi$ 10.0 C=335 (313) (75)
  - 1 N5  $\phi$ 10.0 C=180 (2c) (80)
- Bottom Reinforcement:**
  - 2 N2  $\phi$ 8.0 C=791
  - 24 N1  $\phi$ 15 (358.2)
  - 27 N1  $\phi$ 15 (397.7)
  - 29 N1  $\phi$ 15 (426.1)
  - 12 N1  $\phi$ 15 (170.4)
  - 92 N1  $\phi$ 5.0 C=76

**Dimensions and Spacing:**

- Overall width: 24
- Overall depth: 14
- Effective depth: 12
- Clearance from top: 3
- Clearance from bottom: 3
- Clearance from side: 3

**Material Specifications:**

- Concrete: C=35
- Reinforcement: N6, N7, N5, N4, N2, N1

Technical drawing of a reinforced concrete slab (Laje) showing dimensions, reinforcement details, and section A-A.

**Reinforcement Details:**

- Top reinforcement: 2 N12  $\phi$ 10.0 C=128
- Bottom reinforcement: 2 N10  $\phi$ 8.0 C=452
- Left edge reinforcement: 22 N8  $\phi$ 15
- Middle section reinforcement: 26 N8  $\phi$ 15
- Right edge reinforcement: 28 N8  $\phi$ 15
- Top edge reinforcement: 1 N11  $\phi$ 10.0 C=122
- Top edge reinforcement: 2 N13  $\phi$ 10.0 C=196
- Bottom edge reinforcement: 2 N9  $\phi$ 8.0 C=796

**Dimensions and Spacing:**

- Overall width: 4000 mm
- Overall length: 4051 mm
- Section A-A width: 1400 mm
- Section A-A height: 140 mm
- Section A-A reinforcement: 24 N8  $\phi$ 8.0 C=796
- Section A-A reinforcement: 76 N8  $\phi$ 5.0 C=796

**Section A-A:**

SEÇÃO A-A  
ESC 1:25

Technical drawing of a reinforced concrete slab (Linha 1) showing top and side views with reinforcement details.

**Top View:**

- Overall width: 2 N18 ø12.5 C=240 (197)
- Overall width: 2 N20 ø12.5 C=249 (207)
- Overall width: 1 N17 ø12.5 C=170 (2c) (127)
- Overall width: 1 N19 ø12.5 C=179 (2c) (137)
- Overall width: 2 N15 ø8.0 C=320
- Overall width: 45 N14 ø5.0 C=704
- Overall width: 45 N14 ø15 (660.6)
- Overall width: 45 N14 ø15 (660.6)

**Side View:**

- Section: SEÇÃO A-A
- Scale: ESC 1:25
- Slab thickness: 30
- Reinforcement bar diameter: 14
- Reinforcement bar diameter: 24
- Reinforcement bar diameter: 8
- Overall width: 45 N14 ø5.0 C=76

Technical drawing of a reinforced concrete beam cross-section and elevation.

**Cross-section (SEÇÃO A-A):**

- Width: 24 cm
- Height: 30 cm
- Effective depth: 26 cm
- Bottom reinforcement: 45 N23 ø12.5 C=716

**Elevation:**

- Top reinforcement: 2 N25 ø12.5 C=268 and 2 N27 ø16.0 C=250
- Bottom reinforcement: 1 N26 ø16.0 C=200 and 2 N22 ø8.0 C=293
- Beam length: 704 cm
- Supports: Wall on the left, Column on the right
- Section label: SEÇÃO A-A, ESC. 1:25

2 N31 ø8.0 C=1076  
1049

(2c) 2 N30 ø8.0 C=148  
119

29  
29

SEÇÃO A-A  
ESC 1:25

20  
14

24  
8

66 N28 ø5.0 C=76

0°

P11 P10 P9 P8

30 400 30 400 30 151.3 14

400 581.3 39 N28 ø15

27 N28 ø15

2 N29 ø8.0 C=1049

Technical drawing of a bridge structure, showing a plan view and a cross-section (SEÇÃO A-A) at a scale of 1:25.

**Plan View Details:**

- Top reinforcement: 2 N36 ø16.0 C=226 (span 174), 2 N37 ø16.0 C=261 (span 207).
- Bottom reinforcement: 2 N34 ø8.0 C=343.
- Central span length: 665.6.
- Side span lengths: 174 and 207.
- Bottom reinforcement details: 45 N32 c/15, 2 N35 ø12.5 C=716.
- Bottom reinforcement detail: 45 N32 ø5.0 C=76.
- Other dimensions: 704, 52, 33, 65.3, C=107, 7, 5, 14, 30, 14, 174, 207, 58.

**Cross-Section (SEÇÃO A-A) Details:**

- Width: 24.
- Height: 14.
- Reinforcement: 2 N36 ø16.0 C=226, 2 N37 ø16.0 C=261, 2 N34 ø8.0 C=343, 45 N32 c/15, 2 N35 ø12.5 C=716, 45 N32 ø5.0 C=76.

2 N41 ø8.0 C=1200

2 N42 ø8.0 C=186

38

0

P12

P13

P14

P11

30

400

30

400

30

433.5

30

400

27 N38 c/15

400

27 N38 c/15

433.5

29 N38 c/15

2 N39 ø8.0 C=902

2 N40 ø8.0 C=506

SEÇÃO A-A

ESC 1:25

90

14

24

8

83 N38 ø5.0 C=76

[illegible]

Technical drawing of a bridge section A-A, showing a plan view and a cross-section.

**Plan View:**

- Bridge length: 24m
- Span lengths: 7.8m, 8.0m, 8.2m
- Supports: P5, P6, P7, P8, P9
- Bridge deck width: 10.0m
- Reinforcement: 2 N10  $\phi$ 10.0 C=1200 (top), 1 N9  $\phi$ 10.0 C=190 (2c) (bottom)
- Dimensions: 373, 319.1, 389.7, 405.1, 179
- Reinforcement spacing: 22 N6  $\phi$ 15, 26 N6  $\phi$ 15, 28 N6  $\phi$ 15, 12 N6  $\phi$ 15

**Cross-Section (SEÇÃO A-A, ESC 1:25):**

- Bridge deck width: 10.0m
- Bridge height: 1.25m
- Reinforcement: 2 N10  $\phi$ 10.0 C=325 (top), 1 N9  $\phi$ 10.0 C=190 (2c) (bottom)
- Dimensions: 78, 303, 85
- Reinforcement spacing: 88 N6  $\phi$ 5.0 C=70

Technical drawing of a reinforced concrete slab (Laje) showing top and side views.

**Top View:**

- Overall dimensions: 204m (width) x 237m (length).
- Reinforcement details:
  - 2 N17 ø8.0 C=221
  - 2 N18 ø8.0 C=255
  - 2 N19 ø8.0 C=283
  - 2 N16 ø8.0 C=704
- Section line A-A is indicated.

**Side View:**

- Slab thickness: 14cm.
- Overall height: 20cm.
- Reinforcement bars: P8 and P4.
- Section cut A-A is shown.

**Bottom View:**

- Width: 14m.
- Length: 665.6m.
- Reinforcement: 45 N15 ø15.
- Section line A-A is indicated.

**Detail View:**

- Reinforcement bar: 24/8.
- Dimensions: 45 N15 ø5.0 C=76.

The drawing illustrates the cross-section of a bridge deck with various reinforcement layers. Key components include:

- Top Reinforcement:** 2 N28 ø12.5 C=304 (top left), 2 N29 ø16.0 C=1077 (top right).
- Main Deck Reinforcement:** 2x5 N21 ø6.3 C=1200 (left side), 2x5 N22 ø6.3 C=962 (PELE) (right side).
- Bottom Reinforcement:** 1 N24 ø12.5 C=705 (2c) (bottom left), 2 N25 ø12.5 C=1200 (bottom center-left), 2 N26 ø12.5 C=309 (bottom center-right), 2 N27 ø12.5 C=707 (bottom right).
- Dimensions and Spacing:** Various dimensions are provided for clearances and spacing, such as 267, 373, 48, 30, 1380.4, 50 N20 c/28, 325, 89, 660.6, 700, 997, 99, 14, 84, 8, 75, 10.
- Labels and Notes:** Labels like P12, A, P5, and P1 indicate specific points or sections. A note "SEÇÃO A-A ESC 1:25" indicates the section type and scale. Another note "75 N20 ø5.0 C=15" is partially visible at the bottom right.

SEÇÃO A-A  
ESC 1:25

1186

73

373

30

400

30

400

30

436

30

400

30

400

30

151.3

1067

27 N30 c/15

27 N30 c/15

30 N30 c/15

27 N30 c/15

27 N30 c/15

11 N30 c/15

2 N34 ø12.5 C=1197

2 N35 ø12.5 C=1143

2 N36 ø12.5 C=204

2 N33 ø10.0 C=480

2 N31 ø8.0 C=956

2 N33 ø10.0 C=76

24

8

28 2 N14 ø10.0 C=748 704 21

373 A

P6 30 P2

665.6

665.6

45 N12 c/15

704

2 N13 ø8.0 C=712

SEÇÃO A-A  
ESC 1:25

14

24

45 N12 ø5.0 C=76

ELEMENTO	AÇO	N	DIAM	Q	UNIT (cm)	C.TOTAL (cm)
V101	A60	1	5,0	92	76	6992
	A60	2	8,0	2	834	1668
	A50	3	8,0	2	653	1306
	A50	4	8,0	2	1198	2396
V102	A50	5	8,0	2	297	594
	A60	6	5,0	88	76	6688
	A50	7	8,0	2	798	1596
	A60	8	8,0	2	631	1262
	A50	9	10,0	1	190	190
	A50	10	10,0	2	1200	2400
V103	A50	11	32,0	2	322	644
	A50	12	5,0	45	76	3420
	A50	13	8,0	2	712	1424
V104	A50	14	10,0	2	748	1496
	A50	15	5,0	45	76	3420
	A50	16	8,0	2	704	1408
	A50	17	8,0	2	221	442
	A50	18	8,0	2	255	510
V105	A50	19	8,0	2	483	966
	A50	20	5,0	75	198	1470
	A50	21	8,0	10	1200	12000
	A50	22	6,3	10	962	9620
	A50	23	8,0	2	870	1740
	A50	24	12,5	1	705	705
	A50	25	12,5	2	1280	2400
	A50	26	12,5	2	300	618
	A50	27	12,5	2	707	1414
	A50	28	12,5	2	304	608
V106	A50	29	16,0	2	1077	2154
	A50	30	5,0	76	142	11324
	A50	31	8,0	2	956	1912
	A50	32	8,0	2	1075	2150
	A50	33	10,0	2	480	960
	A50	34	12,5	2	1197	2394
	A50	35	12,5	2	1143	2286
	A50	36	12,5	2	204	408

AÇO	DIAM	C.TOTAL (m)	PESO + 10 % (kg)
CA50	6.3	216.2	58.2
	8.0	189.7	82.3
	10.0	57	38.6
	12.5	108.4	114.8
	16.0	21.6	37.4
CA60	5.0	465.5	78.9
PESO TOTAL			
CA50	331.4		
CA60	78.9		

Relação do aço						
ELEMENTO	AÇO	N	DIAM	Q	UNIT (cm)	C.TOTAL (cm)
VB-1	CA60	1	5,0	92	76	6992
	CA50	2	8,0	2	791	1582
	CA50	3	8,0	2	617	1234
	CA50	4	10,0	1	200	200
	CA50	5	10,0	1	180	180
VB-2	CA50	6	10,0	2	1198	2396
	CA50	7	10,0	2	335	670
	CA60	8	5,0	76	76	5776
	CA50	9	8,0	2	798	1596
	CA50	10	8,0	2	452	904
VB-3	CA50	11	10,0	1	122	122
	CA50	12	10,0	2	1128	2256
	CA50	13	10,0	2	196	392
	CA50	14	5,0	45	76	3420
	CA50	15	8,0	2	320	640
VB-4	CA50	16	12,5	2	704	1408
	CA50	17	12,5	1	170	170
	CA50	18	12,5	1	240	480
	CA50	19	12,5	1	179	179
	CA50	20	12,5	2	249	498
VB-5	CA60	21	5,0	45	76	3420
	CA50	22	8,0	2	293	586
	CA50	23	12,5	2	716	1432
	CA50	24	12,5	1	168	168
	CA50	25	12,5	2	268	536
VB-6	CA50	26	16,0	1	200	200
	CA50	27	16,0	2	500	1000
	CA50	28	5,0	66	76	5016
	CA50	29	8,0	2	1049	2098
	CA50	30	8,0	2	146	292
VB-7	CA50	31	8,0	2	1076	2152
	CA60	32	5,0	45	76	3420
	CA50	33	6,3	1	107	107
	CA50	34	8,0	2	343	686
	CA50	35	12,5	2	716	1432
VB-8	CA60	36	16,0	2	226	452
	CA50	37	16,0	2	261	522
	CA60	38	5,0	83	76	6308
	CA50	39	8,0	2	902	1804
	CA50	40	8,0	2	1206	2400
VB-9	CA50	41	8,0	2	902	1804
	CA50	42	8,0	2	186	372

AÇO	DIAM	C.TOTAL (m)	PESO (kg)
CA50	6.3	1.1	0.3
	8.0	173.6	68.6
	10.0	62.2	38.4
	12.5	63.1	60.8
	16.0	16.8	26.5
CA60	5.0	343.6	52.9
PESO TOTAL			
CA50	194.6		
CA60	52.9		

Vol. de concreto total (C-25) = 3.03 m<sup>3</sup>  
Área de forma total = 53.4 m<sup>2</sup>



**ENGEHARIA**  
Construtoras Sonthos

**ENG. CIVIL DOMINGOS DA COSTA**

CRB 2006-0/16

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PROJETO  
NÚMERO: 001/2023

OBRA: INSTITUCIONAL - SESC LER

RT. PROJETO:	PROPRIETÁRIO:
DOMINGOS J. DA COSTA ENG. CIVIL CREA-TO nº 211808/D	SESC LER - Unidade Porto Nacional - TO CNPJ: 004.507.611-18

RT. EXECUÇÃO:	DECLARO QUE A APROVAÇÃO DESSE PROJETO NÃO IMPLICA NO RECONHECIMENTO POR PARTE DA PREFEITURA DO DIREITO DE PROPRIEDADE DO TERRENO
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DESENHO: ENG. MURYLO RODRIGUES CÂNDIDO DE OLIVEIRA  
CONTEÚDO: DETALHE DAS VIGAS BALDRAMES E VIGAS V101 ATÉ V106

ENDEREÇO: RUA NOVE, S/N, SETOR: NOVO PLANALTO  
CIDADE: PORTO NACIONAL ESTADO: TO DATA: OUT./2023

ESCALA: INDICADA	REVISÃO:	ÁREAS: VER ARQ.	PRANCHA: 6/8
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