

Technical drawing of a reinforced concrete slab (P62/P59) showing dimensions and reinforcement details.

**Dimensions:**

- Overall width: 744
- Overall length: 26
- Section cut A-A is shown at two locations.
- Distance between section cuts: 103
- Distance from left edge to first section cut: 235
- Distance from right edge to second section cut: 505

**Reinforcement Details:**

- Top reinforcement: 2 N1  $\phi$  16 C=800
- Bottom reinforcement (left): 2  $\phi$  16
- Bottom reinforcement (right): 2  $\phi$  16
- Bottom reinforcement (middle): 3  $\phi$  12.5
- Bottom reinforcement (left edge): 1 N3  $\phi$  10 C=105
- Bottom reinforcement (right edge): 2 N4  $\phi$  12.5 C=525
- Bottom reinforcement (middle edge): 1 N5  $\phi$  12.5 C=240
- Bottom reinforcement (bottom edge): 2 N2  $\phi$  10 C=250

**Other Labels:**

- 20/50 (top right)
- 20/50 (bottom left)
- P62 (left section cut)
- P59 (right section cut)

Technical drawing of a roof plan showing structural layout, dimensions, and reinforcement details. The drawing includes a grid system with horizontal lines 1, 2, 3 and vertical lines A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z. Key dimensions and reinforcement details are as follows:

- Top Section:**
  - Horizontal dimension: 130
  - Reinforcement: 3 N2  $\phi$  10 C=160
  - Horizontal dimension: 89
  - Reinforcement: 2 N1  $\phi$  5 C=250
  - Horizontal dimension: 271
  - Reinforcement: 2 N3  $\phi$  16 C=565
  - Horizontal dimension: 351
  - Reinforcement: 1 N4  $\phi$  16 C=240
  - Horizontal dimension: 223
  - Reinforcement: 3 N5  $\phi$  10 C=265
  - Vertical dimension: 42
- Central Section:**
  - Horizontal dimension: 34
  - Reinforcement: N10 C/15
  - Reinforcement: 3  $\phi$  10
  - Reinforcement: 2  $\phi$  5
  - Reinforcement: 3  $\phi$  16
  - Reinforcement: 3  $\phi$  16
  - Reinforcement: 2  $\phi$  16
  - Reinforcement: 3  $\phi$  10
  - Horizontal dimension: 28
  - Reinforcement: N10 C/15
  - Horizontal dimension: 5
  - Horizontal dimension: 4
  - Reinforcement: 4  $\phi$  10
  - Horizontal dimension: 4
  - Reinforcement: 4  $\phi$  10
  - Horizontal dimension: 55
  - Reinforcement: 2 N7  $\phi$  10 C=325
  - Horizontal dimension: 330
  - Reinforcement: 2 N9  $\phi$  10 C=345
  - Horizontal dimension: 540
  - Reinforcement: 2 N6  $\phi$  10 C=555
  - Horizontal dimension: 455
  - Reinforcement: 2 N8  $\phi$  10 C=470
  - Horizontal dimension: 5
  - Horizontal dimension: 5
- Labels and Notes:**
  - 20/50 (appears twice)
  - P39
  - P29
  - P20

Technical drawing of a rectangular plate. The top view shows a rectangle with a width of 16 and a height of 10. There are four holes, each with a diameter of 3, arranged in two rows of two. The bottom view shows a rectangle with a width of 15 and a height of 4.5. A small triangle is drawn in the top-left corner of the bottom view.

Structural drawing of a reinforced concrete slab (Table 1) showing top and bottom reinforcement details. The drawing includes dimensions, bar counts, and bar diameters for various sections of the slab.

**Top Reinforcement Details:**

- Section 1: 2 N2  $\phi$  16 C=440
- Section 2: 2 N1  $\phi$  5 C=200
- Section 3: 2 N3  $\phi$  16 C=740
- Section 4: 2 N4  $\phi$  12.5 C=620
- Section 5: 2 N5  $\phi$  12.5 C=205
- Section 6: 3 N6  $\phi$  10 C=265

**Bottom Reinforcement Details:**

- Section 1: N16 C/15 14  $\phi$  5
- Section 2: N16 C/15 29  $\phi$  5
- Section 3: N16 C/15 17  $\phi$  5
- Section 4: N16 C/15 31  $\phi$  5
- Section 5: N16 C/15 25  $\phi$  5

**Other Details:**

- Dimensions: 410, 117, 257, 256, 223, 48, 110, 235, 84, 59, 16, 42, 44.
- Bar counts and diameters: 2  $\phi$  16, 2  $\phi$  5, 2  $\phi$  12.5, 2  $\phi$  10, 3  $\phi$  10, 4  $\phi$  12.5, 4  $\phi$  10, 1 N8  $\phi$  10 C=125, 2 N7  $\phi$  10 C=250, 2 N9  $\phi$  12.5 C=470, 1 N11  $\phi$  10 C=125, 2 N10  $\phi$  10 C=275, 2 N12  $\phi$  10 C=495, 1 N13  $\phi$  10 C=295, 2 N14  $\phi$  10 C=430, 1 N15  $\phi$  10 C=230.
- Labels: 20/50, P63, P60, P47, P40, P30, P21, A, B.

The drawing shows a rectangular plate with a width of 15 and a height of 45. A detail view of the corner shows a rectangular feature with a width of 3 and a height of 10, with a small square indicating a 90-degree angle.

The drawing consists of two main parts: a plan view (top) and a section view (bottom).

**Plan View:**

- Dimensions:** 260, 268, 290, 264, 145, 185, 50, 49, 20/80, 41, 44.
- Room Numbers:** P64, P51, P48, P41.
- Structural Details:** Beams (N1, N2, N3, N4, N5, N6, N7, N8, N9), columns (C=310, C=585, C=340, C=235, C=403, C=263, C=523, C=420, C=540, C=545), and walls (2x6, 2x8, 2x10, 2x12, 2x16).
- Material Specifications:** 1 N1  $\phi$  10 C=310, 2 N2  $\phi$  12.5 C=680, 1 N3  $\phi$  12.5 C=520, 2 N4  $\phi$  16 C=585, 2 N5  $\phi$  10 C=340, 2 N6  $\phi$  10 C=235, 4  $\phi$  10, 4  $\phi$  10 + 2  $\phi$  12.5, 3  $\phi$  12.5, 3  $\phi$  12.5, 3  $\phi$  12.5, 2  $\phi$  12.5 + 2  $\phi$  16, 2  $\phi$  16, 4  $\phi$  10, 2x6  $\phi$  6.3, 2x8  $\phi$  6.3, 2x10  $\phi$  6.3, 2x12  $\phi$  6.3, 2x6 N11  $\phi$  6.3 C=403, 2x6 N12  $\phi$  6.3 C=263, 2x6 N13  $\phi$  6.3 C=523, 4 N7  $\phi$  10 C=420, 4 N8  $\phi$  10 C=540, 4 N9  $\phi$  10 C=545.

**Section View:**

- Dimensions:** 19, 16.
- Structural Details:** Walls (2x6, 2x8, 2x10, 2x12, 2x16), columns (C=403, C=263, C=523, C=420, C=540, C=545), and beams (N1, N2, N3, N4, N5, N6, N7, N8, N9).
- Material Specifications:** 2x6  $\phi$  6.3, 2x8  $\phi$  6.3, 2x10  $\phi$  6.3, 2x12  $\phi$  6.3, 2x6 N11  $\phi$  6.3 C=403, 2x6 N12  $\phi$  6.3 C=263, 2x6 N13  $\phi$  6.3 C=523, 4 N7  $\phi$  10 C=420, 4 N8  $\phi$  10 C=540, 4 N9  $\phi$  10 C=545.

Technical drawing of a rectangular plate. The overall dimensions are 75 (height) and 15 (width). The plate features a series of holes along its length. The hole specifications are as follows:

- Top edge: 3 holes with diameter  $\phi 12.5$
- Right edge: 6 holes with diameter  $\phi 6.3$
- Bottom edge: 4 holes with diameter  $\phi 10$

1. DIMENSÕES EM CENTÍMETROS, ELEVAÇÕES EM METROS
2. CONCRETO ESTRUTURAL:  
Fck>= 30 MPa  
CONSUMO DE CIMENTO >=320,0kg/m3.
3. FATOR ÁGUA/CEMENTO MÁXIMO: 0,60
4. CLASSE DE AGRESSIVIDADE II - URBANA
5. MÓDULO DE ELASTICIDADE INICIAL A 28 DIAS IGUAL A 30670 MPa
6. REALIZAR OS PROCEDIMENTOS DE CURA, RETIRADA DE FORMAS E DO ESCORAMENTO CONFORME NBR 1933:2004:  
PROCEDER COM A CURA ÚNIDA POR NO MÍNIMO 07 (SETE) DIAS OU UTILIZAR A CURA QUÍMICA DOS ELEMENTOS DE CONCRETO.
7. A EXECUÇÃO DA ESTRUTURA DEVERÁ CONTAR COM O ACOMPANHAMENTO DE UM TECNOLÓGISTA DE CONCRETO
8. O ENGENHEIRO RESPONSÁVEL PELA OBRA DEVERÁ OBEDECER AS RECOMENDAÇÕES DAS NORMAS TÉCNICAS APLICÁVEIS, DEDICANDO ESPECIAL ATENÇÃO ÀS SEGUINTES ATIVIDADES:
  - 8.1. CONCRETO: PREPARO, CONTROLE, RECEBIMENTO, TRANSPORTE, LANÇAMENTO, ADENSAMENTO E CURA
  - 8.2. FÓRMA: CONFERÊNCIA DAS MEDIDAS E POSIÇÕES, LIMPEZA, ESTANQUEIDADE, SATURAÇÃO DAS FORMAS ABSORVENTES (RETIRAR EXCESSO DE ÁGUA), CUIDADO COM O USO DOS DESMOLDANTES E RETIRADA DAS FORMAS
  - 8.3. ARMAÇÃO: LIMPEZA, MONTAGEM, COBRIMENTO (USO DE ESPAÇADORES PLÁSTICOS ADEQUADOS), E GARANTIA DA POSIÇÃO DAS ARMADURAS ANTES E DURANTE A CONCRETAGEM
9. COBRIMENTO MÍNIMO DA ARMADURA:  
LAJES=2,0cm; VIGAS E PILARES=2,5cm; BLOCOS=5,0CM; ESTACAS=4,0cm.
10. RECOMENDA-SE QUE OS MATERIAIS (AÇO E CONCRETO) UTILIZADOS NESTE PROJETO SEJAM SUBMETIDOS A ENSAIOS TECNOLÓGICOS
11. PREVER DRENAGEM E/OU IMPERMEABILIZAÇÃO PARA AS CORTINAS (CONTENCÕES).
12. CONFERIR MEDIDAS NO LOCAL.

RESUMO DE AÇO			
AÇO	BIT	COMPR	PESO
	mm	m	kgf
60A	5	302	46
50A	6,3	277	68
50A	10	184	114
50A	12,5	58	55
50A	16	65	103
Peso Total		60A =	46 kgf
Peso Total		50A =	340 kgf

**Eficácia**   
Projetos e Consultoria