

2 N12  $\phi$ 12.5 C=698 (1c)

610

47

1 N9  $\phi$ 12.5 C=257 (1c)

213

47

1 N8  $\phi$ 12.5 C=197 (1c)

153

47

1 N7  $\phi$ 12.5 C=193 (2c)

149

330

47

(1c) 2 N11  $\phi$ 12.5 C=212

168

(2c) 1 N10  $\phi$ 12.5 C=208

164

47

A

P22

20

573.5

20 x 40

346.5

110

117

11N1c/10

18 N1 c/20

13N1c/9

610

2 N5  $\phi$ 12.5 c/35 C=329 (1 $\phi$ 1c+1 $\phi$ 2c)

125

3 N6  $\phi$ 12.5 C=634 (1c)

15

3 N30  $\phi$ 16.0 C=704 (1c)

610

(1c) 1 N29  $\phi$ 16.0 C=218

173

49

49

330

P24

A

20

573.5

20 x 55

343.5

120

10N2c/12

18 N2 c/20

110

11N2c/10

20

48

N4  $\phi$ 8.0 C=108

3 N4  $\phi$ 8.0 C=108

602

1 N13  $\phi$ 12.5 C=626 (2c)

610

4 N6  $\phi$ 12.5 C=634 (1c)

Technical drawing of a reinforced concrete slab cross-section. The drawing shows a horizontal slab with a total width of 1158 mm. The top reinforcement consists of 2 N19 bars with a spacing of 12.5 mm, totaling 1158 mm. The bottom reinforcement consists of 2 N15 bars with a spacing of 12.5 mm, totaling 962 mm. The slab is supported by two columns, P17 on the left and P11 on the right. The distance between the centerlines of the columns is 4400 mm. The slab thickness is 200 mm. The top reinforcement is placed 20 mm from the top surface, and the bottom reinforcement is placed 20 mm from the bottom surface. The drawing also shows the distribution of reinforcement bars, with 1 N17 bar on the left and 1 N18 bar on the right. The total length of the slab is 1158 mm. The drawing is a technical drawing of a reinforced concrete slab cross-section.

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

**Cross-section (Top):**

- Width: 610
- Height: 400
- Top reinforcement: 2 N22  $\phi$ 12.5 C=673 (1c)
- Bottom reinforcement: 2 N21  $\phi$ 12.5 C=210 (1c)
- Top reinforcement distance from top edge: 173
- Bottom reinforcement distance from bottom edge: 330
- Section label: A

**Elevation (Bottom):**

- Length: 602
- Top reinforcement: 1 N13  $\phi$ 12.5 C=626 (2c)
- Bottom reinforcement: 4 N6  $\phi$ 12.5 C=634 (1c)
- Top reinforcement distance from top edge: 610
- Bottom reinforcement distance from bottom edge: 610
- Section label: A
- Supports: 20 x 50 (left), 120 (right)
- Reinforcement details: 23 N3 c/20, 10N3c/12
- Other details: 48, 17, 2 N4  $\phi$ 8.0 C=108, P25

Technical drawing of a reinforced concrete beam cross-section. The beam has a total width of 1186 mm and a height of 330 mm. It features a top reinforcement of 2 N27 bars (12.5 C=1) and a bottom reinforcement of 2 N23 bars (12.5 C=950 (1c)). The beam is supported by two columns, P18 and P12, which are 40 mm wide. The distance between the columns is 420 mm. The beam is 20 x 50 mm thick. The reinforcement is 21 N3 bars (c/20). The beam is labeled 'A'.

Technical drawing of a reinforced concrete beam cross-section. The beam has a total width of 413.5 mm and a height of 413.5 mm. It features 2 N26 ø12.5 C=220 (1c) top bars, 2 N24 ø12.5 C=464 (1c) bottom bars, and 1 N26 ø12.5 C=220 (1c) side bars. The drawing includes dimensions for bar spacing (84 mm), bar diameter (ø12.5), and bar length (413.5 mm).

| RELAÇÃO DO AÇO |            |              |       |                |                 |
|----------------|------------|--------------|-------|----------------|-----------------|
| V11<br>V14     | V12<br>V15 | V13          |       |                |                 |
| AÇO            | N          | DIAM<br>(mm) | QUANT | C.UNIT<br>(cm) | C.TOTAL<br>(cm) |
| CA60           | 1          | 5.0          | 42    | 115            | 4830            |
|                | 2          | 5.0          | 39    | 145            | 5655            |
| CA50           | 3          | 5.0          | 163   | 135            | 22005           |
|                | 4          | 8.0          | 8     | 108            | 864             |
|                | 5          | 12.5         | 2     | 329            | 658             |
|                | 6          | 12.5         | 11    | 634            | 6974            |
|                | 7          | 12.5         | 1     | 193            | 193             |
|                | 8          | 12.5         | 1     | 197            | 197             |
|                | 9          | 12.5         | 1     | 257            | 257             |
|                | 10         | 12.5         | 1     | 208            | 208             |
|                | 11         | 12.5         | 2     | 212            | 424             |
|                | 12         | 12.5         | 2     | 698            | 1396            |
|                | 13         | 12.5         | 2     | 626            | 1252            |
|                | 14         | 12.5         | 1     | 280            | 280             |
|                | 15         | 12.5         | 2     | 962            | 1924            |
|                | 16         | 12.5         | 2     | 464            | 928             |
|                | 17         | 12.5         | 1     | 217            | 217             |
|                | 18         | 12.5         | 1     | 1107           | 1107            |
|                | 19         | 12.5         | 2     | 1197           | 2394            |
|                | 20         | 12.5         | 2     | 381            | 762             |
| 21             | 12.5       | 2            | 210   | 420            |                 |
| 22             | 12.5       | 2            | 673   | 1346           |                 |
| 23             | 12.5       | 2            | 950   | 1900           |                 |
| 24             | 12.5       | 2            | 464   | 928            |                 |
| 25             | 12.5       | 1            | 260   | 260            |                 |
| 26             | 12.5       | 1            | 220   | 220            |                 |
| 27             | 12.5       | 2            | 1197  | 2394           |                 |
| 28             | 12.5       | 2            | 328   | 656            |                 |
| 29             | 16.0       | 1            | 218   | 218            |                 |
| 30             | 16.0       | 3            | 704   | 2112           |                 |

| RESUMO DO AÇO |              |                |                    |
|---------------|--------------|----------------|--------------------|
| AÇO           | DIAM<br>(mm) | C.TOTAL<br>(m) | PESO + 10%<br>(kg) |
| CA50          | 8.0          | 8.6            | 3.8                |
|               | 12.5         | 272.9          | 289.2              |
|               | 16.0         | 23.3           | 40.5               |
| CA60          | 5.0          | 324.9          | 55.1               |

Volume de concreto (C-25) = 4.25 m<sup>3</sup>  
Área de forma = 55.88 m<sup>2</sup>



Você sonha,  
nós concretizamos!

☎ 55 99684 4832 | 55 99713 6336

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Avenida Jacob Ermindo Hartmann, nº 223 São Martinho/RS

TÍTULO: ESTRUTURAL - VIGAS COBERTURA

PROPRIETÁRIOS:  
Prefeitura Municipal de São Martinho-RS

CPF: 87.613.097/0001-96

ENDEREÇO: Ampliação Escola Municipal de Ensino Fundamental Pe. Antônio Michels, São Martinho - R. Av. Pedro Dutra, 59, Centro, São Martinho/RS

|                   |                      |
|-------------------|----------------------|
| ÁREA:             | 295,14m <sup>2</sup> |
| AUTOR DO PROJETO: |                      |

DATA: Dezembro/2022

|                      |                 |
|----------------------|-----------------|
| DE MEDIDA:<br>metros | ESCALA:<br>1:50 |
|----------------------|-----------------|

Gabriela Blatt

PRANCHA

Prefeitura Municipal de São Martinho-RS  
Proprietário

Gabriela Blatt  
Responsável Técnico  
Eng. Civil - CREA RS221572