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19 N12  $\phi$  6.3 C=194    18 N12  $\phi$  6.3 C=194    8 N12  $\phi$  6.3 C=194

Technical drawing of a cable tray layout, showing two parallel trays with various cable specifications and dimensions.

**Top Tray:**

- Left side: 360, 2 N1  $\phi$  12.5 C=380
- Below left: 210, 1 N2  $\phi$  12.5 C=230
- Right side: 636, 2 N3  $\phi$  16 C=670
- Below right: 120, 1 N4  $\phi$  16 C=270

**Bottom Tray:**

- Left side: 3  $\phi$  12.5, 2  $\phi$  16, 3  $\phi$  16
- Right side: 2  $\phi$  16
- Center: 2x6  $\phi$  6.3
- Below center: 3  $\phi$  12.5
- Left side (P71): 19
- Right side (P72): 4  $\phi$  10
- Bottom center: 62, 1 N6  $\phi$  12.5 C=440
- Bottom right: 165, 4 N7  $\phi$  10 C=180

**Dimensions and Notes:**

- 20/80 (twice)
- (coste la)
- 2x6 N9  $\phi$  6.3 C=648
- 2x6 N10  $\phi$  6.3 C=180

Technical drawing of a rectangular plate. The overall dimensions are 15 (width) and 75 (height). The plate features a series of holes along its top edge, with a center-to-center distance of 6 x 2 and a hole diameter of 6.3. The distance from the top edge to the first hole is 3, and the distance from the last hole to the top edge is 12.5. The hole diameter is 16.

Technical drawing of a mechanical part showing two views: a top view and a front view.

**Top View:**

- Overall width: 243
- Overall depth: 90
- Central hole:  $\varnothing 20$
- Smaller hole:  $\varnothing 6.3$
- Distance from center of  $\varnothing 20$  hole to right edge: 80
- Distance from center of  $\varnothing 6.3$  hole to right edge: 275

**Front View:**

- Overall width: 243
- Overall height: 10
- Central hole:  $\varnothing 20$
- Smaller hole:  $\varnothing 6.3$
- Distance from center of  $\varnothing 20$  hole to right edge: 80
- Distance from center of  $\varnothing 6.3$  hole to right edge: 275

Technical drawing of a rectangular plate. The top view shows a rectangle with a width of 15 and a height of 75. The side view shows a rectangle with a width of 15 and a height of 75. The top view also shows a series of holes along the top edge, with dimensions: 2  $\phi$  6.3, 6x2  $\phi$  6.3, and 4  $\phi$  10.

9 N3  $\phi$  6.3 C=194

Technical drawing of a mechanical assembly, showing a shaft with a diameter of 70. The shaft is supported by bearings (A and B) and has a gear (C) mounted on it. The drawing includes dimensions for diameters, lengths, and positions. Key features include a shaft with a diameter of 70, a gear with 20 teeth and a module of 2, and a bearing with a diameter of 70. The drawing is labeled with 'A' and 'B' at the ends and 'C' in the middle. The drawing is oriented horizontally with the shaft running from left to right.

Technical drawing of a rectangular plate. The main view shows a rectangle with a height of 45 and a width of 15. A detail view of the corner shows a square with side lengths of 2 units each, indicated by dimension lines and the number 2.

Technical drawing of a rectangular plate. The plate has a width of 15 and a height of 45. There are two horizontal slots, each with a width of 3 and a depth of 10. The slots are located at the top and bottom of the plate, with a distance of 2 between the inner edges of the slots.

Technical drawing of a rectangular plate with dimensions 45 and 15. The plate has two holes with diameter 20 and distance 20.

3 N4 Ø 5 C=133

15 N4  $\phi$  5 C=133

22 N4  $\phi$  5 C=133

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Technical drawing of a rectangular component. The top view shows a rectangle with a width of 35 and a length of 15. The side view shows a rectangle with a height of 35 and a width of 15. The material is specified as 3 N3  $\phi$  6.3 C=114.

13 N3  $\phi$  6.3 C=114

Technical drawing of a shaft assembly. The shaft has a diameter of 363 mm and a length of 300 mm. The pulley has a diameter of 1700 mm and a width of 100 mm. The shaft is supported by bearings V762 and V764. The drawing includes dimensions for the shaft, pulley, and bearings, as well as a key with a width of 63 mm and a height of 20 mm.

Technical drawing of a rectangular plate. The top view shows a rectangle with a width of 15 and a height of 10. There are four holes, each with a diameter of 6, located at the corners. The distance from the center of each hole to the nearest edge is 2. The side view shows a rectangle with a width of 3 and a height of 1. There are four holes, each with a diameter of 1, located at the corners. The distance from the center of each hole to the nearest edge is 2.

17 N3  $\phi$  6.3 C=114

Technical drawing of a reinforced concrete slab (P64) showing reinforcement details. The drawing includes a plan view and a cross-section view.

**Plan View:**

- Top edge: 250
- Left edge: 164
- Right edge: 233
- Bottom edge: 164
- Reinforcement labels:
  - Top: 4 N2  $\phi$  20 C=290
  - Bottom: 2 N1  $\phi$  6.3 C=335
  - Right: 3 N3  $\phi$  16 C=275
  - Bottom: 2 N5  $\phi$  16 C=365
- Dimensions:
  - Top: 250
  - Left: 164
  - Right: 233
  - Bottom: 164

**Cross-section View:**

- Left edge: 250
- Right edge: 233
- Reinforcement labels:
  - Top: 4 N2  $\phi$  20 C=290
  - Bottom: 2 N1  $\phi$  6.3 C=335
  - Right: 3 N3  $\phi$  16 C=275
  - Bottom: 2 N5  $\phi$  16 C=365
- Dimensions:
  - Top: 250
  - Left: 164
  - Right: 233
  - Bottom: 164

Technical drawing of a rectangular part. The top edge is dimensioned as  $-3 \varnothing 16$  and the bottom edge as  $-4 \varnothing 16$ . A section symbol is shown below the part, consisting of a square with the number 15 and a diagonal line.

Technical drawing of a rectangular plate. The main view shows a rectangle with a width of 15 and a height of 30. The top edge has a dimension of 3 and the bottom edge has a dimension of 2. The plate is shown in a perspective view. A detail view of the top edge is shown below the main view, indicating a thickness of 15.

Technical drawing of a metal grate (V736) showing top and side views with dimensions.

**Top View:**

- Overall width: 15
- Overall height: 15
- Central opening width: 243
- Central opening height: 20
- Distance from top edge to central opening: 2 N1  $\phi$  6.3
- Distance from bottom edge to central opening: C=275
- Distance from side edge to central opening: 20/80

**Side View:**

- Overall width: 15
- Overall height: 15
- Central opening width: 243
- Central opening height: 20
- Distance from top edge to central opening: 2 N1  $\phi$  6.3
- Distance from bottom edge to central opening: C=275
- Distance from side edge to central opening: 20/80

**Bottom View:**

- Overall width: 15
- Overall height: 15
- Central opening width: 243
- Central opening height: 20
- Distance from top edge to central opening: 2 N1  $\phi$  6.3
- Distance from bottom edge to central opening: C=275
- Distance from side edge to central opening: 20/80

**Technical Drawing Details:**

- Material:  $\phi$  6.3
- Dimensions: 243, 20, 15, 15, 20/80, 2 N1, C=275
- Notes: (coste la)

Technical drawing of a rectangular plate. The top view shows a rectangle with dimensions 15 (width) and 75 (length). The side view shows a cross-section with a total height of 6.3. The cross-section features a central hole with a diameter of 6.3, indicated by the notation  $\phi 6.3$ . The hole is positioned 2 units from the top edge and 4 units from the bottom edge. The distance between the hole and the side edges is 6.3 units, indicated by the notation  $6 \times 2 \phi 6.3$ . The bottom edge has a diameter of 10, indicated by the notation  $\phi 10$ .

9 N3  $\phi$  6.3 C=194

13 N3  $\phi$  5 C=133

	ACO	POS	BIT (mm)	QUANT	COMPROMENTO		
					UNIT (cm)	TOTAL (cm)	
V728		50A	1	10	2	300	160
		50A	2	10	1	185	685
		50A	3	12,5	2	605	1210
		50A	4	12,5	1	240	240
		50A	5	12,5	3	350	1050
		50A	6	10	4	185	740
		50A	7	10	2	520	1040
		50A	8	8	1	430	430
		50A	9	12,5	2	510	1020
		50A	10	12,5	2	325	650
		50A	11	12,5	4	280	1120
		50A	12	6,3	45	194	8730
		50A	13	6,3	12	501	6012
		50A	14	6,3	12	489	5868
		50A	15	6,3	12	238	2856
V730		50A	1	10	2	278	556
		50A	2	10	2	260	520
		60A	3	5	13	333	1729
V731		50A	1	6,3	2	335	670
		50A	2	20	4	290	1160
		50A	3	16	3	275	825
		50A	4	16	2	815	1630
		50A	5	16	2	365	730
		50A	6	6,3	40	134	5360
V732		50A	1	6,3	2	395	790
		50A	2	10	3	390	1170
		50A	3	6,3	17	114	1938
V733		50A	1	10	2	278	556
		50A	2	10	2	260	520
		60A	3	5	13	333	1729
V734		50A	1	12,5	2	380	760
		50A	2	12,5	1	230	230
		50A	3	16	2	670	1340
		50A	4	16	1	270	270
		50A	5	12,5	2	680	1360
		50A	6	12,5	1	440	440
		50A	7	10	4	180	720
		50A	8	6,3	30	194	5820
		50A	9	6,3	12	648	7776
		50A	10	6,3	12	161	1932
V735		50A	1	10	2	760	1520
		50A	2	10	1	175	175
		50A	3	10	2	730	1460
		60A	4	5	40	133	5320
V736		50A	1	6,3	2	275	550
		50A	2	10	4	270	1080
		50A	3	6,3	9	194	1746
		50A	4	6,3	12	245	2940
V738		50A	1	16	3	385	1155
		50A	2	10	4	340	1360
		50A	3	6,3	13	114	1482

RESUMO AÇO CA 50-60			
AÇO	BIT (mm)	COMPR (m)	PESO (kg)
60A	5	88	14
50A	6,3	545	133
50A	10	126	78
50A	12,5	81	78
50A	16	60	94
50A	20	12	29
Peso Total	60A =		14 kg
Peso Total	50A =		412 kg

EXE	00	PROJETO EXECUTIVO - LICITAÇÃO OBRA	EFICÁCIA	31/07/20
REVCOMP	02	REVISÃO PROJETO EXECUTIVO - REF EXE 2	EFICÁCIA	24/07/20
REVCOMP	01	REVISÃO PROJETO EXECUTIVO - REF EXE	EFICÁCIA	03/07/20
REVCOMP	00	EMIÇÃO INICIAL EXECUTIVO	EFICÁCIA	25/04/20
ANT	01	REVISÃO ANTEPROJETO	EFICÁCIA	20/02/20
ANT	00	EMIÇÃO INICIAL ANTEPROJETO	EFICÁCIA	21/11/19
TIPO	REV	DESCRIÇÃO	DESENHO	DATA

REVISÕES		
MINISTÉRIO PÚBLICO DO ESTADO DE MINAS GERAIS SEDE DAS PROMOTORIAS DE JUSTIÇA DE JUIZ DE FORA		
ENDEREÇO: RUA JOSÉ CALIL AHOUAGI, LOTE F, BAIXADA DO PARAIBUNA	ÁREA TERRENO: 2.996,30m2 ÁREA CONSTRUÍDA: 7.266,36m2	
PROPRIETÁRIO:  PROCURADORIA GERAL DE JUSTIÇA DO ESTADO DE MINAS GERAIS	CNPJ: 20.971.057/0001-45	
PROJETO DE ESTRUTURA DE CONCRETO ARMADO		
EMPRESA:  ENGENHEIRO FABRÍCIO SILVA LIMA CREA: 80.082/D-MG EFICÁCIA PROJETOS E CONSULTORIA LTDA	CNPJ: 06.301.115/0001-00	
RESPONSÁVEL TÉCNICO:  NELSON URIAS PINTO GARIGLIO DA SILVA	CREA: 82.624/D-MG	
CONTEÚDO: ARMAÇÃO DE VIGAS - 7º PAVIMENTO - 05/09	DATA: 31/07/20 ESCALA: INDICADA	FOLHA: 87/126

# NOTAS

1. DIMENSÕES EM CENTÍMETROS, ELEVAÇÕES EM METROS
2. CONCRETO ESTRUTURAL:  
 $f_{ck} \geq 20 \text{ MPa}$  (ESTACAS TIPO RAIZ) – ARGAMASSA;  
CONSUMO DE CIMENTO  $\geq 600,0 \text{ kg/m}^3$ ; RELAÇÃO A/C ENTRE 0,5 E 0,6;  
AGREGADO – AREIA.  
 $f_{ck} \geq 30 \text{ MPa}$  (DEMAIS ELEMENTOS ESTRUTURAIS): CONSUMO DE CIMENTO  
CONSUMO DE CIMENTO  $\geq 320,0 \text{ kg/m}^3$ .
3. FATOR ÁGUA/CIMENTO 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 14931:2004 E MEMORIAL DESCRITIVO.  
PROCEDER COM A CURA ÚMIDA POR NO MÍNIMO 07 (SETE) DIAS OU  
UTILIZAR A CURA QUÍMICA DOS ELEMENTOS DE ACOMPANHAMENTO.
7. A EXECUÇÃO DA ESTRUTURA DEVERÁ CONTAR COM O ACOMPANHAMENTO DE UM  
TECNOLOGISTA DE CONCRETO
8. O ENGENHEIRO RESPONSÁVEL PELA OBRA DEVERÁ OBEDECER AS  
RECOMENDAÇÕES DAS NORMAS TÉCNICAS APLICÁVEIS, DEDICANDO ESPECIAL  
ATENÇÃO ÀS SEGUINTE ATIVIDADES:  
8.1. CONCRETO: PREPARO, CONTROLE, RECEBIMENTO, TRANSPORTE,  
LANÇAMENTO, ADENSAMENTO E CURA  
8.2. FORMA: 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 ESPACADORES  
PLÁSTICOS ADEQUADOS), E GARANTIA DA POSIÇÃO DAS ARMADURAS  
ANTES E DURANTE A CONCRETAGEM
9. CONCRETO MÍNIMO DA ARMADURA:  
LAJES=2,0cm; VIGAS E PILARES=2,5cm; BLOCOS=5,0cm; ESTACAS=4,0cm.  
OBRA COM RÍGIDO CONTROLE DE QUALIDADE.
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  
(CONTENÇÕES).
12. CONFERIR MEDIDAS NO LOCAL.

CONFIGURACAO DAS PENAS - FORMATO A1 (601 x 900mm)							
RED	YELLOW	GREEN	CYAN	BLUE	MAGENTA	WHITE	101
0.25	0.50	0.13	0.30	0.40	1.0	0.80	0.18