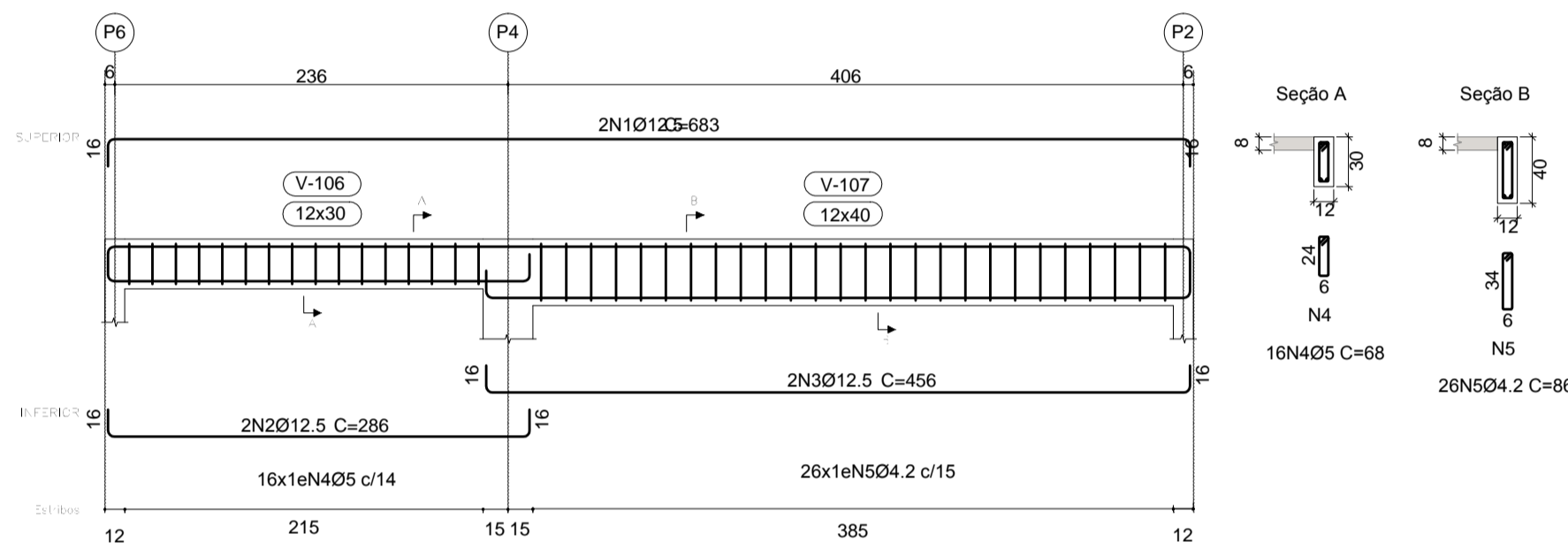
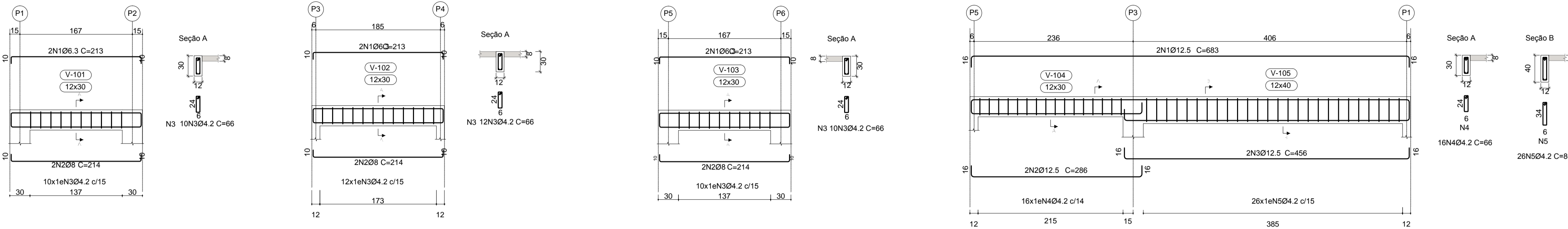


VIGAS DE RESPALDO



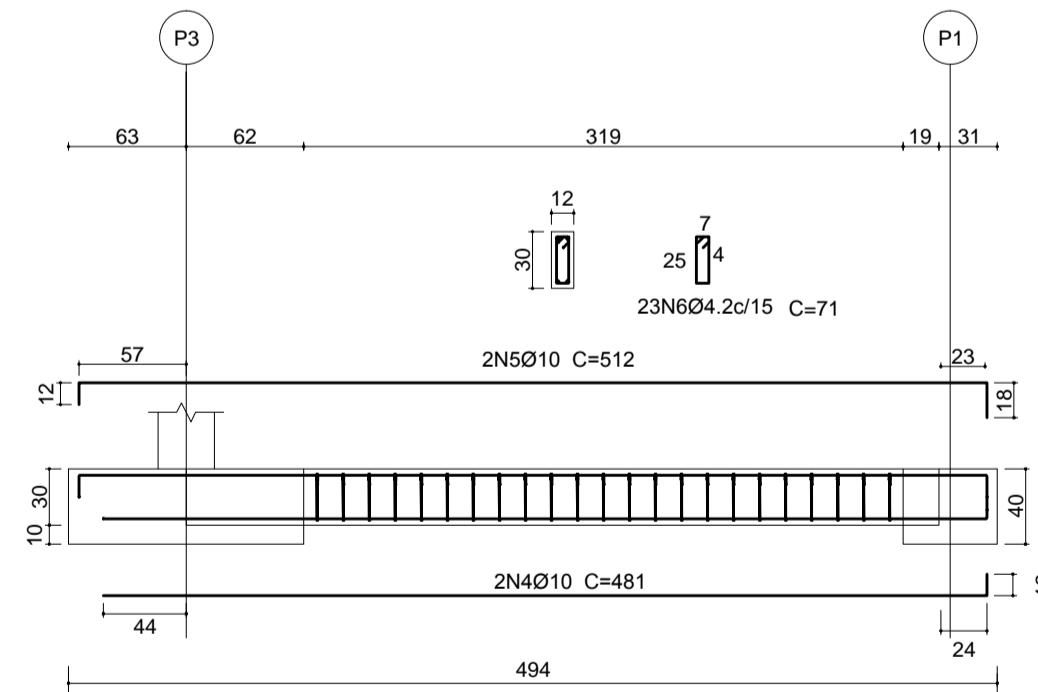
| Resumo Apo   | Comp. total (m) | Peso+10% (kg) | Total     |
|--------------|-----------------|---------------|-----------|
| CA-50 Ø6.3   | 12.8            | 3             |           |
| Ø8           | 12.8            | 6             |           |
| Ø12.5        | 57.0            | 60            | 69        |
| CA-60 Ø4.2   | 77.4            | 9             |           |
| Ø5           | 10.9            | 2             | 11        |
| <b>Total</b> |                 |               | <b>80</b> |

VIGAS DE RESPALDO  
 Desenho de vigas  
 Concreto: C25, em geral  
 Apo das barras: CA-50 e CA-60  
 Apo dos estribos: CA-50 e CA-60  
 Escala vigas 1:40  
 Escala seções 1:40

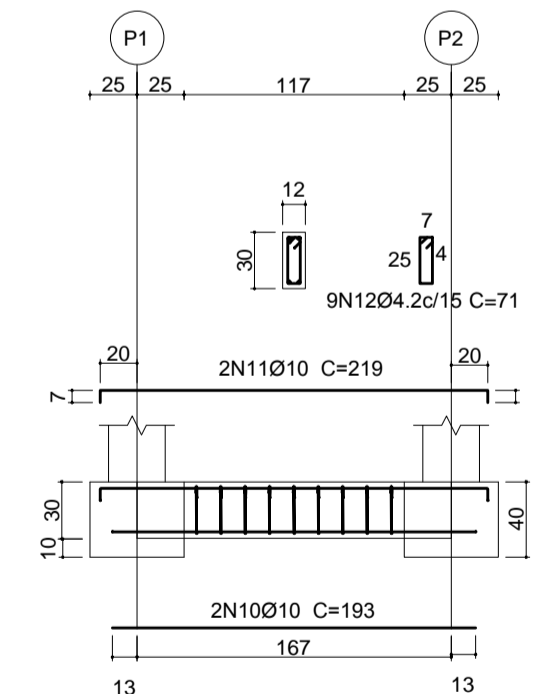
TABELA DE AÇO DAS VIGAS DE RESPALDO

| Elemento   | Pos. | Diam. | Q. | Esquema (cm) | Comp. (cm) | Total (cm) | CA-50 (kg)    | CA-60 (kg)  |             |
|------------|------|-------|----|--------------|------------|------------|---------------|-------------|-------------|
| V101       | 1    | Ø6.3  | 2  | 193          | 10         | 213        | 426           | 1.0         |             |
|            | 2    | Ø8    | 2  | 193          | 10         | 214        | 428           | 1.7         |             |
|            | 3    | Ø4.2  | 10 | 24/6         |            | 67         | 670           | 0.7         |             |
| Total+10%: |      |       |    |              |            |            | 3.0           | 0.8         |             |
| V102       | 1    | Ø6.3  | 2  | 193          | 10         | 213        | 426           | 1.0         |             |
|            | 2    | Ø8    | 2  | 193          | 10         | 214        | 428           | 1.7         |             |
|            | 3    | Ø4.2  | 12 | 24/6         |            | 67         | 804           | 0.9         |             |
| Total+10%: |      |       |    |              |            |            | 3.0           | 1.0         |             |
| V103       | 1    | Ø6.3  | 2  | 193          | 10         | 213        | 426           | 1.0         |             |
|            | 2    | Ø8    | 2  | 193          | 10         | 214        | 428           | 1.7         |             |
|            | 3    | Ø4.2  | 10 | 24/6         |            | 67         | 670           | 0.7         |             |
| Total+10%: |      |       |    |              |            |            | 3.0           | 0.8         |             |
| V104       | 1    | Ø12.5 | 2  | 650          | 16         | 683        | 1366          | 13.2        |             |
|            | 2    | Ø12.5 | 2  | 253          | 16         | 286        | 572           | 5.5         |             |
|            | 3    | Ø12.5 | 2  | 423          | 16         | 456        | 912           | 8.8         |             |
|            | 4    | Ø4.2  | 16 | 24/6         |            | 67         | 1072          | 1.2         |             |
|            | 5    | Ø4.2  | 26 | 34/6         |            | 87         | 2262          | 2.5         |             |
| Total+10%: |      |       |    |              |            |            | 30.3          | 4.1         |             |
| V105       | 1    | Ø12.5 | 2  | 650          | 16         | 683        | 1366          | 13.2        |             |
|            | 2    | Ø12.5 | 2  | 253          | 16         | 286        | 572           | 5.5         |             |
|            | 3    | Ø12.5 | 2  | 423          | 16         | 456        | 912           | 8.8         |             |
|            | 4    | Ø5    | 16 | 24/6         |            | 68         | 1088          | 1.7         |             |
|            | 5    | Ø4.2  | 26 | 34/6         |            | 87         | 2262          | 2.5         |             |
| Total+10%: |      |       |    |              |            |            | 30.3          | 4.6         |             |
|            |      |       |    |              |            |            | Ø4.2:         | 0.0         | 9.4         |
|            |      |       |    |              |            |            | Ø5:           | 0.0         | 1.9         |
|            |      |       |    |              |            |            | Ø6.3:         | 3.3         | 0.0         |
|            |      |       |    |              |            |            | Ø8:           | 5.7         | 0.0         |
|            |      |       |    |              |            |            | Ø12.5:        | 69.6        | 0.0         |
|            |      |       |    |              |            |            | <b>Total:</b> | <b>69.6</b> | <b>11.3</b> |

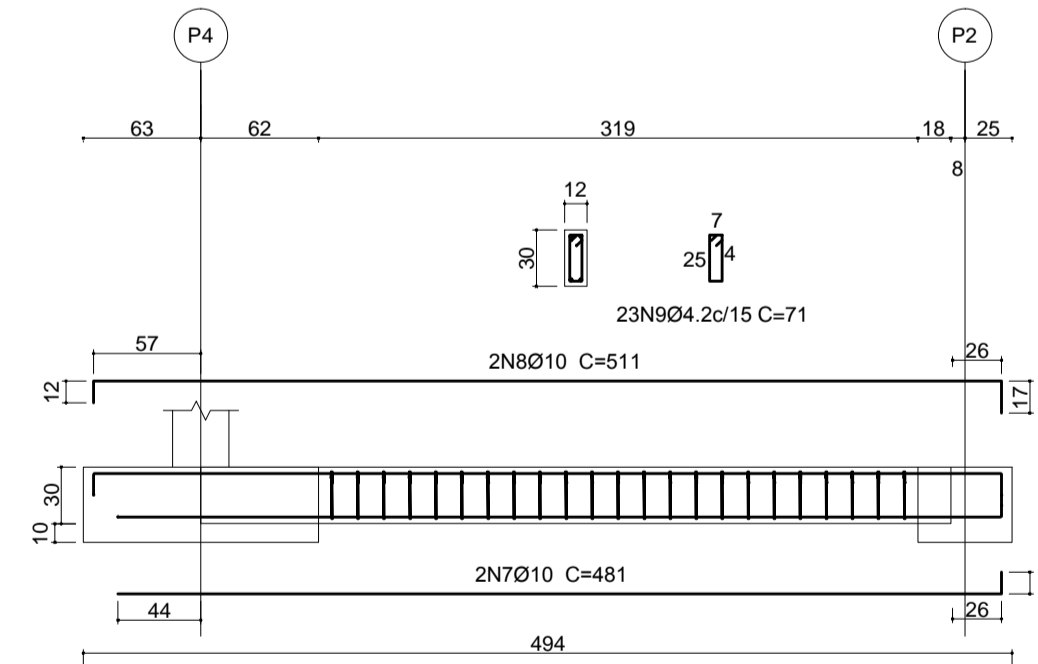
VB-001 12X30



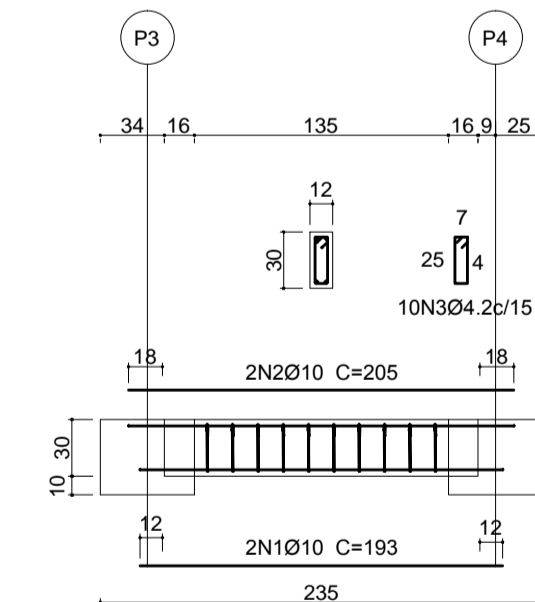
VB-002 12X30



VB-003 12X30



VB-004 12X30



| Resumo Apo   | Comp. total (m) | Peso+10% (kg) | Total      |
|--------------|-----------------|---------------|------------|
| CA-50 Ø6.3   | 118.9           | 32            |            |
| Ø10          | 90.8            | 62            | 94         |
| CA-60 Ø4.2   | 59.7            | 7             | 7          |
| <b>Total</b> |                 |               | <b>101</b> |

VIGAS BALDRAMES  
 Desenho de vigas  
 Concreto: C20, em geral  
 Apo das barras: CA-50 e CA-60  
 Apo dos estribos: CA-50 e CA-60  
 Escala vigas 1:40  
 Escala seções 1:40

TABELA DE AÇO DAS VIGAS BALDRAMES

| Elemento     | Pos. | Diam. | Q. | Dob. (cm) | Reta (cm) | Dob. (cm) | Comp. (cm) | Total (cm) | CA-50 (kg)    | CA-60 (kg)  |            |
|--------------|------|-------|----|-----------|-----------|-----------|------------|------------|---------------|-------------|------------|
| VB-004 12X30 | 1    | Ø10   | 2  | 193       | 193       | 193       | 386        | 2.4        |               |             |            |
|              | 2    | Ø10   | 2  | 205       | 205       | 205       | 410        | 2.5        |               |             |            |
|              | 3    | Ø4.2  | 10 | 71        | 71        | 71        | 710        | 0.8        |               |             |            |
| Total+10%:   |      |       |    |           |           |           |            |            | 5.4           | 0.9         |            |
| VB-001 12X30 | 4    | Ø10   | 2  | 469       | 469       | 469       | 938        | 5.9        |               |             |            |
|              | 5    | Ø10   | 2  | 482       | 482       | 482       | 964        | 6.3        |               |             |            |
|              | 6    | Ø4.2  | 23 | 71        | 71        | 71        | 1633       | 1.8        |               |             |            |
| Total+10%:   |      |       |    |           |           |           |            |            | 13.4          | 2.0         |            |
| VB-003 12X30 | 7    | Ø10   | 2  | 469       | 469       | 469       | 938        | 5.9        |               |             |            |
|              | 8    | Ø10   | 2  | 482       | 482       | 482       | 964        | 6.3        |               |             |            |
|              | 9    | Ø4.2  | 23 | 71        | 71        | 71        | 1633       | 1.8        |               |             |            |
| Total+10%:   |      |       |    |           |           |           |            |            | 13.4          | 2.0         |            |
| VB-002 12X30 | 10   | Ø10   | 2  | 193       | 193       | 193       | 386        | 2.4        |               |             |            |
|              | 11   | Ø10   | 2  | 205       | 205       | 205       | 410        | 2.5        |               |             |            |
|              | 12   | Ø4.2  | 9  | 71        | 71        | 71        | 639        | 0.7        |               |             |            |
| Total+10%:   |      |       |    |           |           |           |            |            | 5.6           | 0.8         |            |
|              |      |       |    |           |           |           |            |            | Ø4.2:         | 0.0         | 5.7        |
|              |      |       |    |           |           |           |            |            | Ø10:          | 37.8        | 0.0        |
|              |      |       |    |           |           |           |            |            | <b>Total:</b> | <b>37.8</b> | <b>5.7</b> |

DEPARTAMENTO ESTADUAL DE TRÂNSITO DE MATO GROSSO DO SUL  
 DIVISÃO DE ENGENHARIA, MANUTENÇÃO E INFRAESTRUTURA  
 DETRAN MS

OBRAS: ENTRADA DA SEDE DETRAN MS | ESTRUTURAL

LOCAL: CAMPO GRANDE MS | ÁREA

AUTOR DO PROJETO: Eng. Bruno Oliveira Gonçalves, CREA 16312 D/MS | PROPRIETÁRIO: DETRAN MS

TÍTULO: ARMAÇÃO - VIGAS BALDRAMES E RESPALDO | FOLHA: 05/14

ESCALA: 1/40 | DATA: 29/10/2017 | DESENHO: Eng. Bruno Oliveira | ALTERAÇÃO: 00