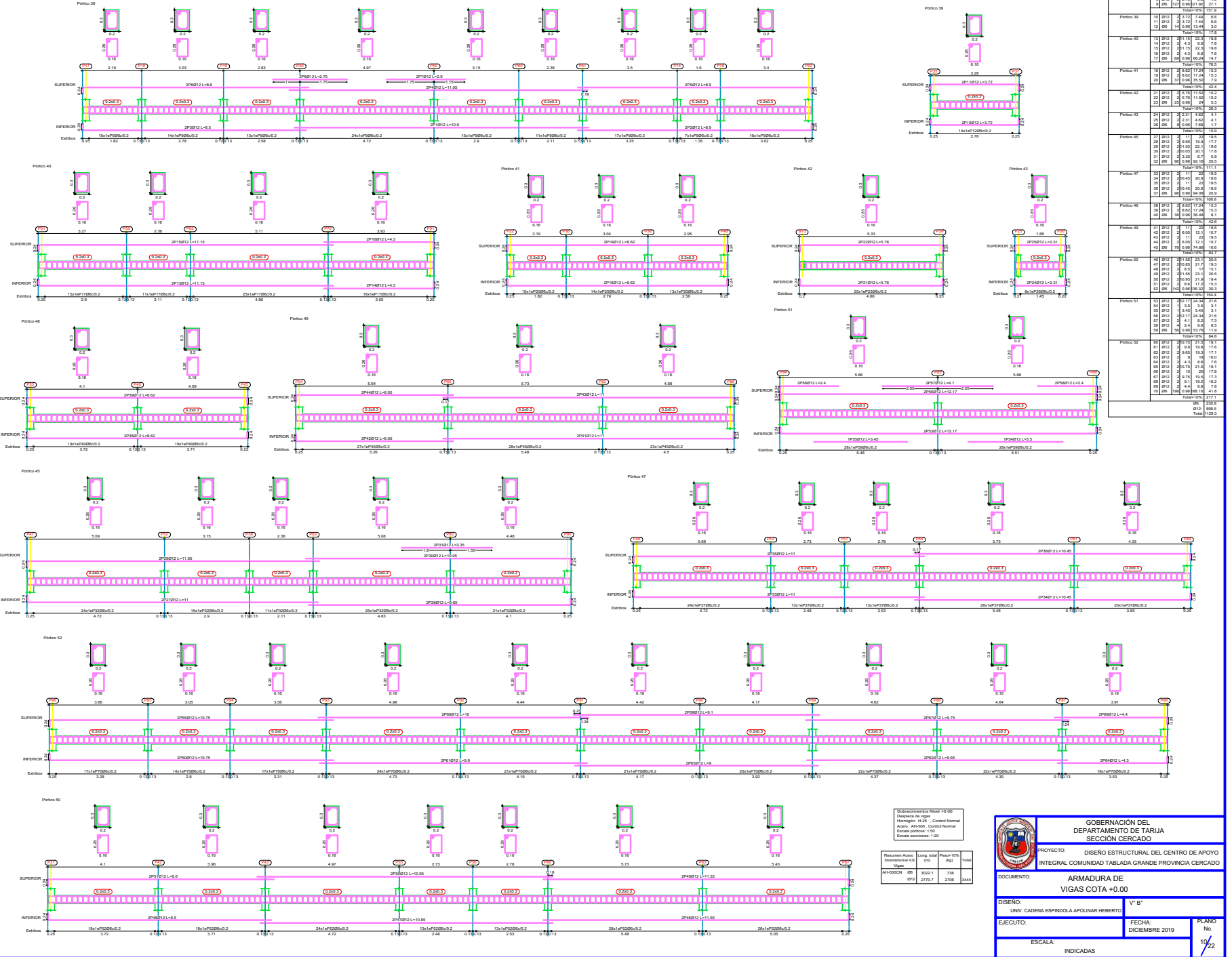


# REFUERZO VIGAS COTA +0.00

Esc. Viga 1:50  
Esc. Sección 1:20



| Elemento   | Ref. | Sección | Long. (m) | Volumen (m³) | Peso (kg) |
|------------|------|---------|-----------|--------------|-----------|
| Pórtico 38 | 1    | 2012    | 2.19      | 0.15         | 15.4      |
|            | 2    | 2012    | 2.19      | 0.15         | 15.4      |
|            | 3    | 2012    | 2.19      | 0.15         | 15.4      |
|            | 4    | 2012    | 2.19      | 0.15         | 15.4      |
|            | 5    | 2012    | 2.19      | 0.15         | 15.4      |
|            | 6    | 2012    | 2.19      | 0.15         | 15.4      |
|            | 7    | 2012    | 2.19      | 0.15         | 15.4      |
|            | 8    | 2012    | 2.19      | 0.15         | 15.4      |
|            | 9    | 2012    | 2.19      | 0.15         | 15.4      |
| Pórtico 39 | 10   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 11   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 12   | 2012    | 2.19      | 0.15         | 15.4      |
| Pórtico 40 | 13   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 14   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 15   | 2012    | 2.19      | 0.15         | 15.4      |
| Pórtico 41 | 16   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 17   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 18   | 2012    | 2.19      | 0.15         | 15.4      |
| Pórtico 42 | 19   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 20   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 21   | 2012    | 2.19      | 0.15         | 15.4      |
| Pórtico 43 | 22   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 23   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 24   | 2012    | 2.19      | 0.15         | 15.4      |
| Pórtico 44 | 25   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 26   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 27   | 2012    | 2.19      | 0.15         | 15.4      |
| Pórtico 45 | 28   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 29   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 30   | 2012    | 2.19      | 0.15         | 15.4      |
| Pórtico 46 | 31   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 32   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 33   | 2012    | 2.19      | 0.15         | 15.4      |
| Pórtico 47 | 34   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 35   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 36   | 2012    | 2.19      | 0.15         | 15.4      |
| Pórtico 48 | 37   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 38   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 39   | 2012    | 2.19      | 0.15         | 15.4      |
| Pórtico 49 | 40   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 41   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 42   | 2012    | 2.19      | 0.15         | 15.4      |
| Pórtico 50 | 43   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 44   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 45   | 2012    | 2.19      | 0.15         | 15.4      |
| Pórtico 51 | 46   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 47   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 48   | 2012    | 2.19      | 0.15         | 15.4      |
| Pórtico 52 | 49   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 50   | 2012    | 2.19      | 0.15         | 15.4      |
|            | 51   | 2012    | 2.19      | 0.15         | 15.4      |
| Total      |      |         |           |              | 1111.1    |

|                        |                        |                        |                        |
|------------------------|------------------------|------------------------|------------------------|
| Referencia Nivel 12.00 | Dimension de vigas     | Long. total            | Peso 175               |
| Referencia Nivel 12.00 | Referencia Nivel 12.00 | Referencia Nivel 12.00 | Referencia Nivel 12.00 |
| Referencia Nivel 12.00 | Referencia Nivel 12.00 | Referencia Nivel 12.00 | Referencia Nivel 12.00 |
| Referencia Nivel 12.00 | Referencia Nivel 12.00 | Referencia Nivel 12.00 | Referencia Nivel 12.00 |

GOBERNACIÓN DEL  
DEPARTAMENTO DE TARIJA  
SECCIÓN CERCADO

PROYECTO:  
DISEÑO ESTRUCTURAL DEL CENTRO DE APOYO  
INTEGRAL COMUNIDAD TABLADA GRANDE PROVINCIA CERCADO

DOCUMENTO:  
ARMADURA DE  
VIGAS COTA +0.00

DISEÑO:  
UNIV. CADENA ESPINOLA APOLINAR HERBERTO

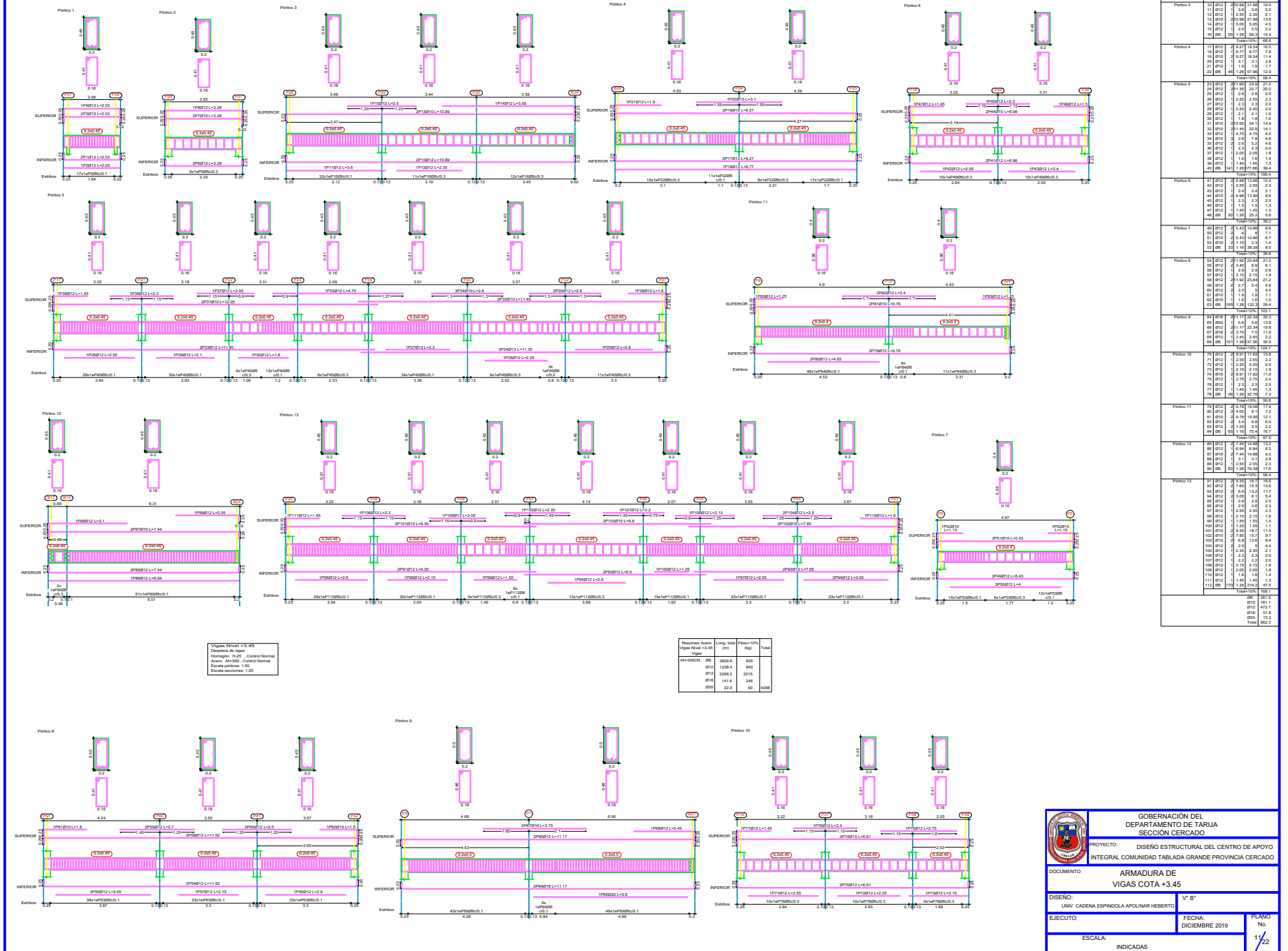
EJECUTO:  
FEBRA 2019

ESCALA:  
INDICADAS

PLANO  
No.  
10/22

# REFUERZO VIGAS COTA +3.45

Esc. Viga 1:50  
Esc. Sección 1:20



GOBIERNO DEL  
DEPARTAMENTO DE TARAPACÁ  
SECCIÓN CERCADO

PROYECTO: DISEÑO ESTRUCTURAL DEL CENTRO DE APOYO  
INTEGRAL COMUNIDAD TABLADA GRANDE PROVINCIA CERCADO

DOCUMENTO: ARMADURA DE  
VIGAS COTA +3.45

DISEÑO: UNIV. CADENA ESPINOLA APOLINAR HERRERO

EJECUTO:

FECHA: DICIEMBRE 2019

ESCALA: INDICADAS

PLANO No. 1/22

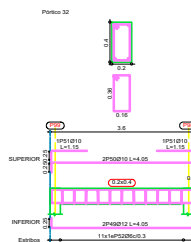
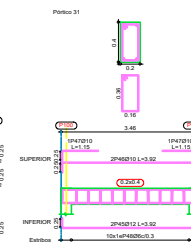
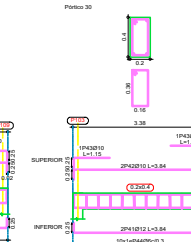
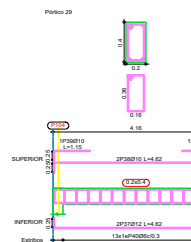
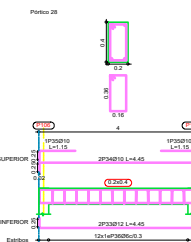
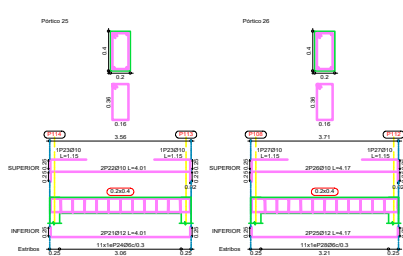
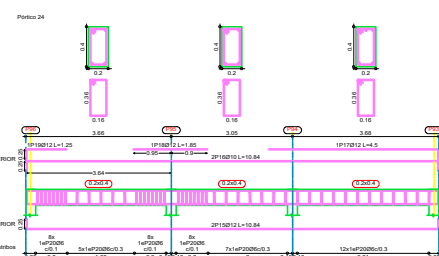
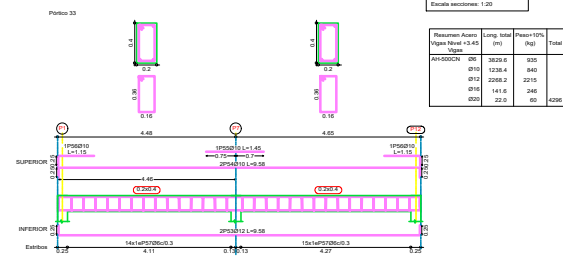
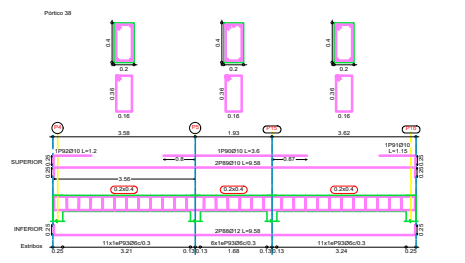
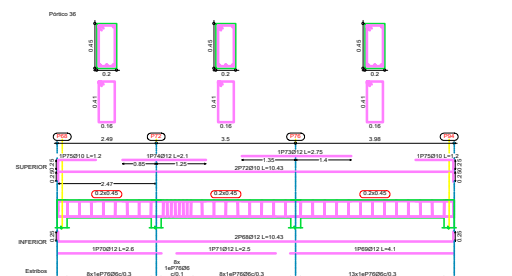
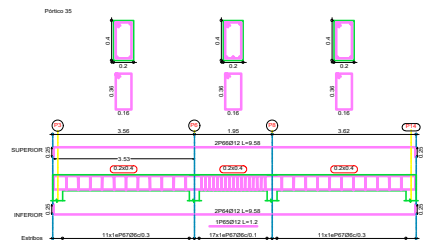


ARMADURA DE  
VIGAS COTA +3.45

|                                        |       |
|----------------------------------------|-------|
| DISEÑO:                                | V° B° |
| UNIV. CADENA FRONTERA ABOGADO HERBERTO |       |

PLANO  
No.  
~~12~~ 22

Esc Viga 1:50  
Esc Sección 1:20

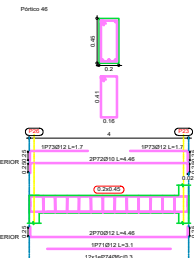
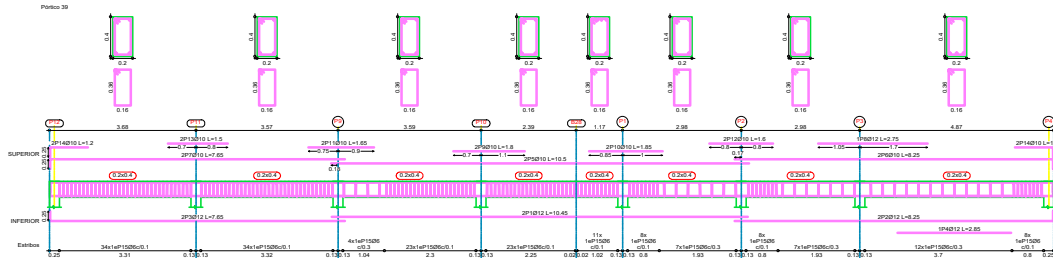


| Experiment | Time  | Size  | Time | Size | Time | Size |
|------------|-------|-------|------|------|------|------|
| Plasma 1D  | 1     | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 2     | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 4     | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 8     | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 16    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 32    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 64    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 128   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 256   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 512   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| Plasma 2D  | 15    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 30    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 60    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 120   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 240   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 480   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 960   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1920  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 3840  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 7680  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| Plasma 3D  | 21    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 42    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 84    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 168   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 336   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 672   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1344  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 2688  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 5376  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 10752 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| Plasma 4D  | 26    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 52    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 104   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 208   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 416   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 832   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1664  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 3328  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 6656  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 13312 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| Plasma 5D  | 31    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 62    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 124   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 248   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 496   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 992   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1984  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 3968  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 7936  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 15872 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| Plasma 6D  | 41    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 82    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 164   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 328   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 656   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1312  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 2624  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 5248  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 10496 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| 20992      | 0.012 | 0.01  | 0.01 | 0.01 | 0.01 |      |
| Plasma 7D  | 51    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 102   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 204   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 408   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 816   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1632  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 3264  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 6528  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 13056 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| 26112      | 0.012 | 0.01  | 0.01 | 0.01 | 0.01 |      |
| Plasma 8D  | 61    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 122   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 244   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 488   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 976   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1952  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 3904  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 7808  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 15616 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| 31232      | 0.012 | 0.01  | 0.01 | 0.01 | 0.01 |      |
| Plasma 9D  | 71    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 142   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 284   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 568   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1136  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 2272  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 4544  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 9088  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 18176 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| 36352      | 0.012 | 0.01  | 0.01 | 0.01 | 0.01 |      |
| Plasma 10D | 81    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 162   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 324   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 648   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1296  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 2592  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 5184  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 10368 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 20736 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| 41472      | 0.012 | 0.01  | 0.01 | 0.01 | 0.01 |      |
| Plasma 11D | 91    | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 182   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 364   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 728   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1456  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 2912  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 5824  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 11648 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 23296 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| 46592      | 0.012 | 0.01  | 0.01 | 0.01 | 0.01 |      |
| Plasma 12D | 101   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 202   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 404   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 808   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1616  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 3232  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 6464  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 12928 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 25856 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| 51712      | 0.012 | 0.01  | 0.01 | 0.01 | 0.01 |      |
| Plasma 13D | 111   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 222   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 444   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 888   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1776  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 3552  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 7104  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 14208 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 28416 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| 56832      | 0.012 | 0.01  | 0.01 | 0.01 | 0.01 |      |
| Plasma 14D | 121   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 242   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 484   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 968   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1936  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 3872  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 7744  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 15488 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 30976 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| 61952      | 0.012 | 0.01  | 0.01 | 0.01 | 0.01 |      |
| Plasma 15D | 131   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 262   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 524   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1048  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 2096  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 4192  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 8384  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 16768 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 33536 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| 67072      | 0.012 | 0.01  | 0.01 | 0.01 | 0.01 |      |
| Plasma 16D | 141   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 282   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 564   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1128  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 2256  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 4512  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 9024  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 18048 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 36096 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| 72192      | 0.012 | 0.01  | 0.01 | 0.01 | 0.01 |      |
| Plasma 17D | 151   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 302   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 604   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1208  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 2416  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 4832  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 9664  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 19328 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 38656 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| 77312      | 0.012 | 0.01  | 0.01 | 0.01 | 0.01 |      |
| Plasma 18D | 161   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 322   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 644   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1288  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 2576  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 5152  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 10304 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 20608 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 41216 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| 82432      | 0.012 | 0.01  | 0.01 | 0.01 | 0.01 |      |
| Plasma 19D | 171   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 342   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 684   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1368  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 2736  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 5472  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 10944 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 21888 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 43776 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| 87552      | 0.012 | 0.01  | 0.01 | 0.01 | 0.01 |      |
| Plasma 20D | 181   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 362   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 724   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1448  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 2896  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 5792  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 11584 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 23168 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 46336 | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
| 92672      | 0.012 | 0.01  | 0.01 | 0.01 | 0.01 |      |
| Plasma 21D | 191   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 382   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 764   | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 1528  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 3056  | 0.012 | 0.01 | 0.01 | 0.01 | 0.01 |
|            | 6112  | 0.012 | 0.01 |      |      |      |

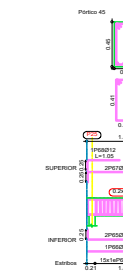
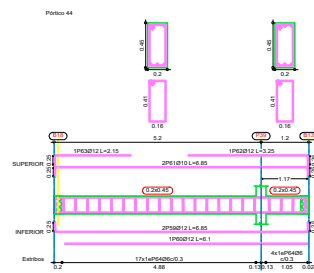
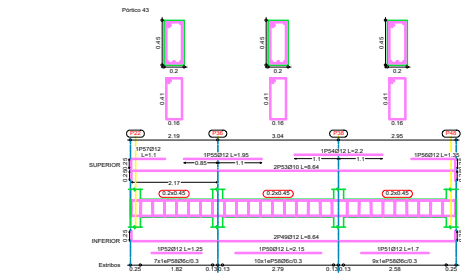
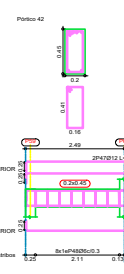
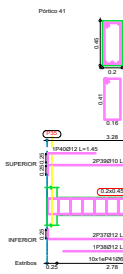
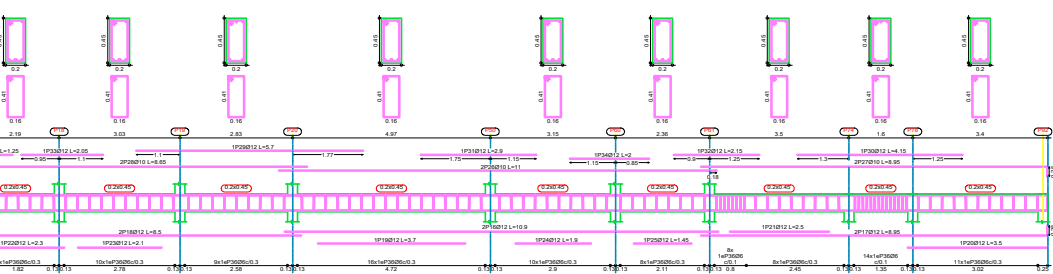
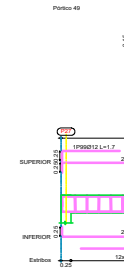
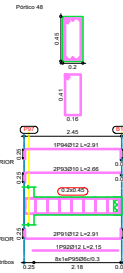
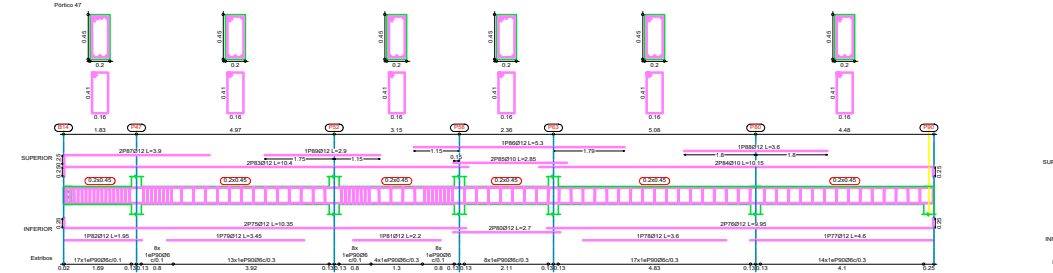
Vigas: Nivel +3.45  
Despiece de vigas:  
Hormigón: H-25, Control Normal  
Acero: A21-500, Control Normal  
Escala pátio: 1:50  
Escala secciones: 1:20

| Resumen Acero<br>Vigas Nivel +3.45<br>Vigas | Long. total<br>(m) | Peso+10%<br>(kg) | Total |
|---------------------------------------------|--------------------|------------------|-------|
| AP1-500CN                                   | Ø6                 | 3829.6           | 935   |
|                                             | Ø10                | 1238.4           | 840   |
|                                             | Ø12                | 2268.2           | 2215  |
|                                             | Ø16                | 141.6            | 246   |
|                                             | Ø20                | 22.0             | 60    |

REFUERZO VIGAS COTA +3.45  
Esc. Viga 1:50  
Esc. Sección 1:20



Vigas Refuerzo 1:50  
Sección de vigas: Control Normal  
Asesor: ARI-000, Control Normal  
Escala: Sección 1:20

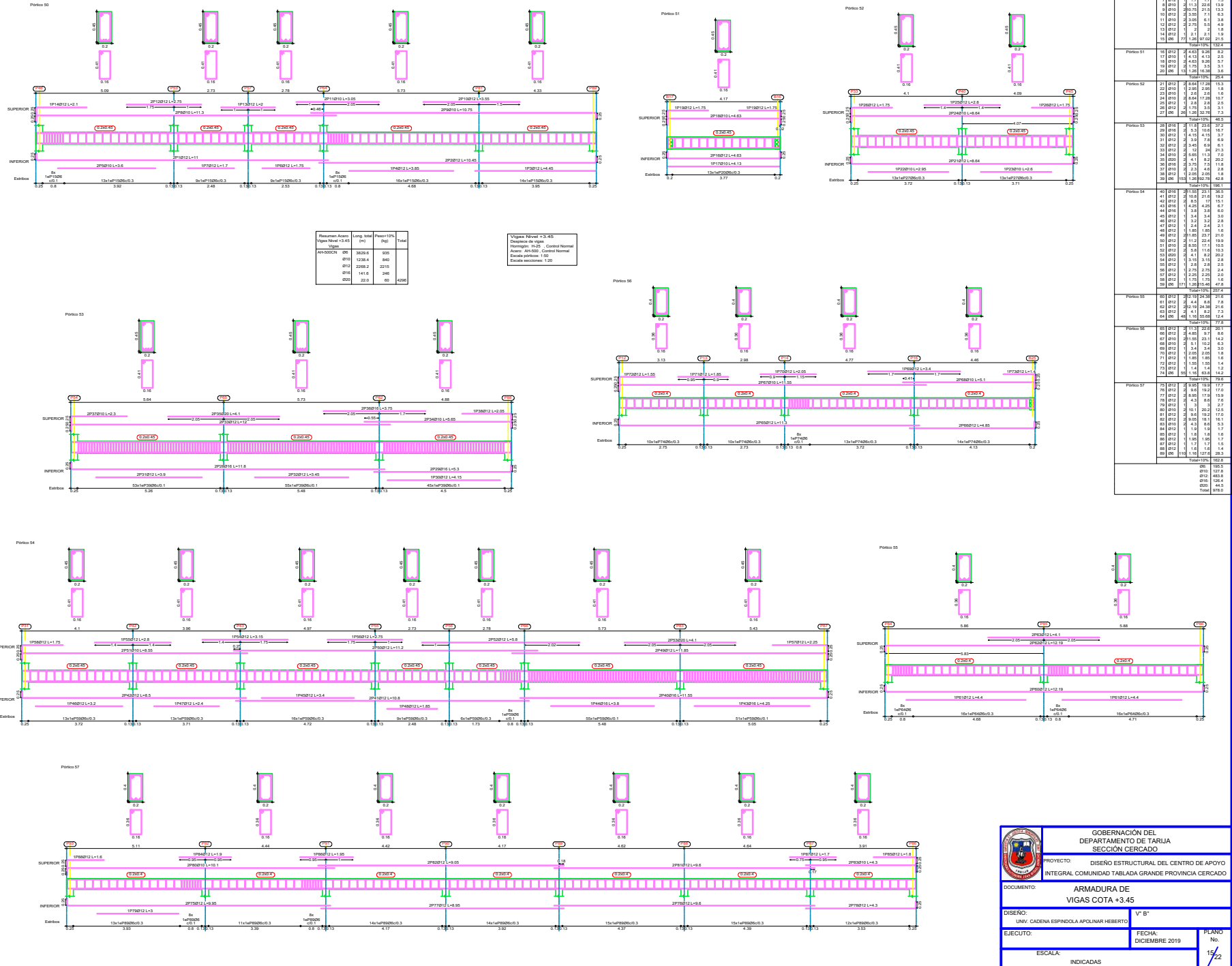


| Reinforcement   | Long. | Int. | Post-10% | Total |
|-----------------|-------|------|----------|-------|
| Asesor: ARI-000 | 200   | 200  | 200      | 600   |
| ARI-000         | 120   | 120  | 120      | 360   |
| ARI-000         | 140   | 140  | 140      | 420   |
| ARI-000         | 20    | 20   | 20       | 60    |

|            |                                         |                                                                                            |                |
|------------|-----------------------------------------|--------------------------------------------------------------------------------------------|----------------|
|            |                                         | GOBERNACIÓN DEL DEPARTAMENTO DE TOLIMA                                                     |                |
|            |                                         | SECCIÓN CERCADO                                                                            |                |
| PROYECTO:  |                                         | DISEÑO ESTRUCTURAL DEL CENTRO DE APOYO INTEGRAL COMUNIDAD TABLADA GRANDE PROVINCIA CERCADO |                |
| DOCUMENTO: |                                         | ARMADURA DE VIGAS COTA +3.45                                                               |                |
| DISEÑO:    | UNIV. CADENA ESPINOLA APOLINAR HERBERTO | V° B°                                                                                      |                |
| EJECUTO:   |                                         | FECHA:                                                                                     | DICIEMBRE 2019 |
| ESCALA:    | INDICADAS                               | PLANO:                                                                                     | No. 22         |

# REFUERZO VIGAS COTA +3.45

Esc. Viga 1:50  
Esc. Sección 1:20



GOBERNACIÓN DEL  
DEPARTAMENTO DE TARAPACÁ  
SECCIÓN CERCADO

PROYECTO:  
DISEÑO ESTRUCTURAL DEL CENTRO DE APOYO  
INTEGRAL COMUNIDAD TABLADA GRANDE PROVINCIA CERCADO

DOCUMENTO:  
ARMADURA DE  
VIGAS COTA +3.45

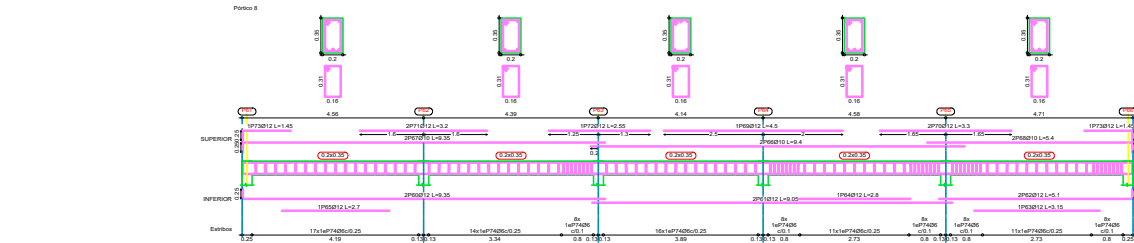
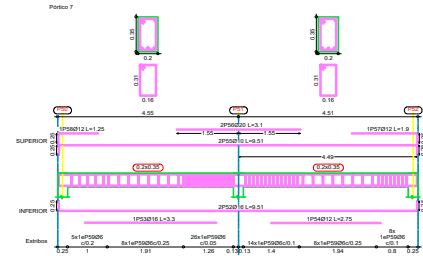
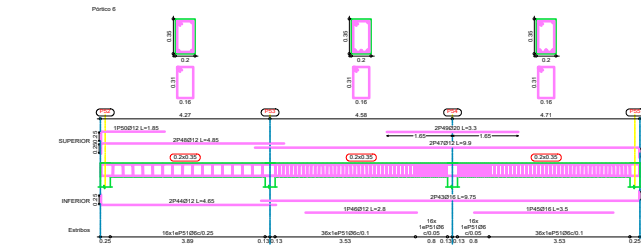
DISEÑO:  
UNIV. CADENA ESPINOLA APOLINAR HERBERTO

FECHA:  
DICIEMBRE 2019

PLANO  
No.  
15/22

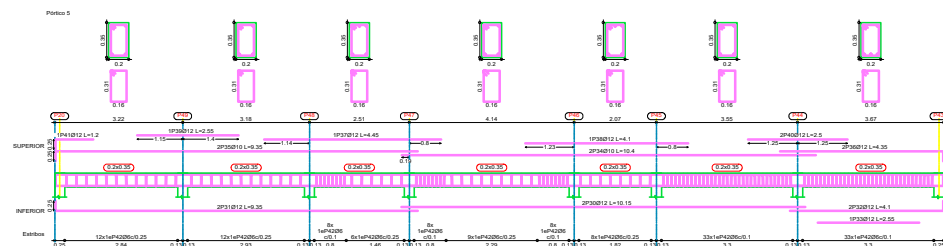
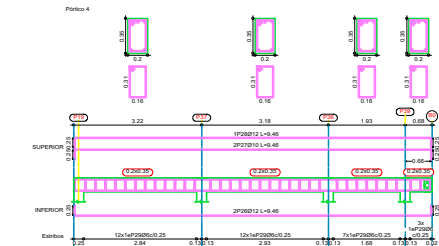
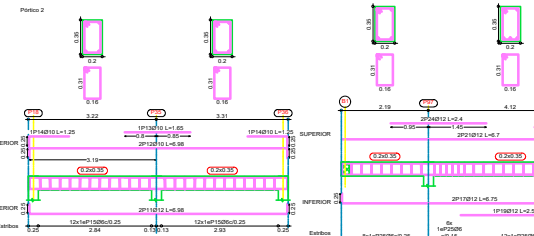
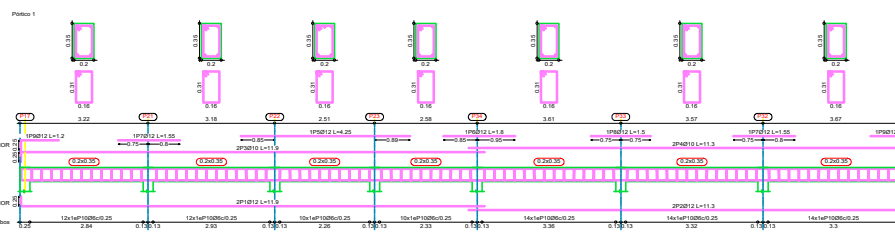
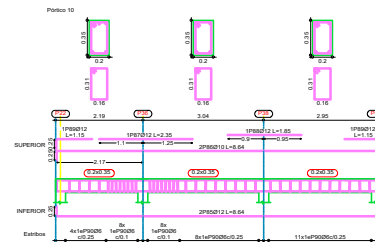
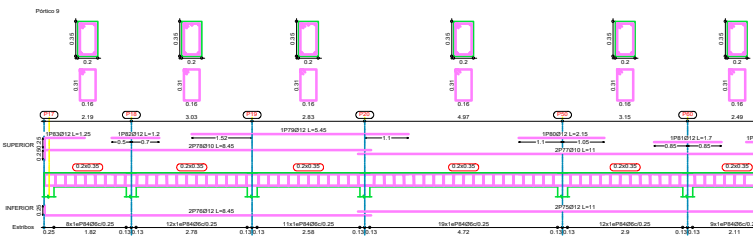
ESCALA:  
INDICADAS

REFUERZO VIGAS COTA +6.55  
Esc. Viga 1:50  
Esc. Sección 1:20



Vigas Nivel +6.55  
Cálculo de Vigas  
Método: P-25, Control Normal  
Acero: A400, Control Normal  
Escala: Secciónes 1:20

| Resumen Acero     | Long. total | Pesos 10% | Total       |
|-------------------|-------------|-----------|-------------|
| Vigas Nivel +6.55 | (m)         | (kg)      |             |
| A400-20           | 1546.3      | 254       |             |
| A400-16           | 364.6       | 247       |             |
| A400-12           | 618.2       | 604       |             |
| A400-10           | 463.3       | 79        |             |
| <b>Total</b>      | <b>12.8</b> | <b>35</b> | <b>1219</b> |



GOBERNACIÓN DEL  
DEPARTAMENTO DE TARAPACÁ  
SECCIÓN CERCADO

PROYECTO: DISEÑO ESTRUCTURAL DEL CENTRO DE APOYO  
INTEGRAL COMUNIDAD TABLADA GRANDE PROVINCIA CERCADO

DOCUMENTO: ARMADURA DE  
VIGAS COTA +6.55

DISEÑO: UNIV. CADENA ESPINOLA APOLINAR HERBERTO

EJECUTO:

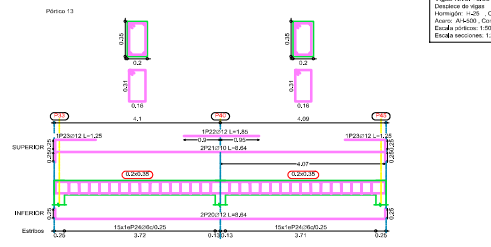
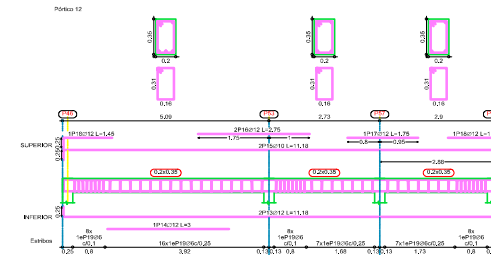
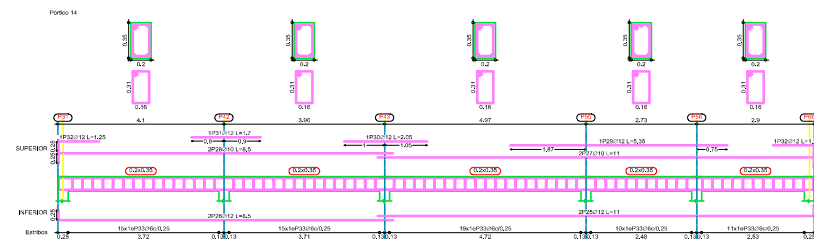
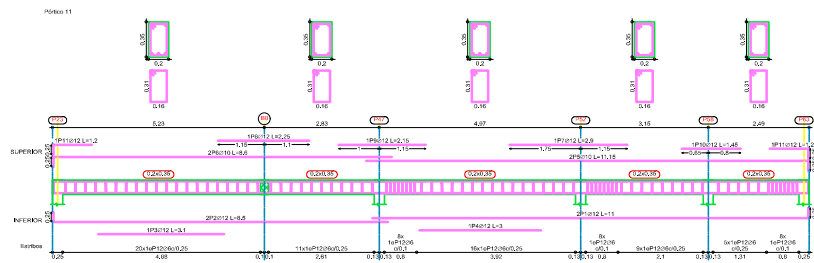
V" B"

FECHA: DICIEMBRE 2019

ESCALA: INDICADAS

PLANO No. 16/22

REFUERZO VIGAS COTA +6.55  
Esc. Viga 1:50  
Esc. Sección 1:20



Viga Nivel +6.55  
Cortante en el apoyo  
Hormigón: f<sub>cd</sub> = 28.1 MPa  
Acero: f<sub>yk</sub> = 485 MPa, f<sub>td</sub> = 460 MPa  
Escala: cortante: 1:50  
Escala: secciones: 1:20

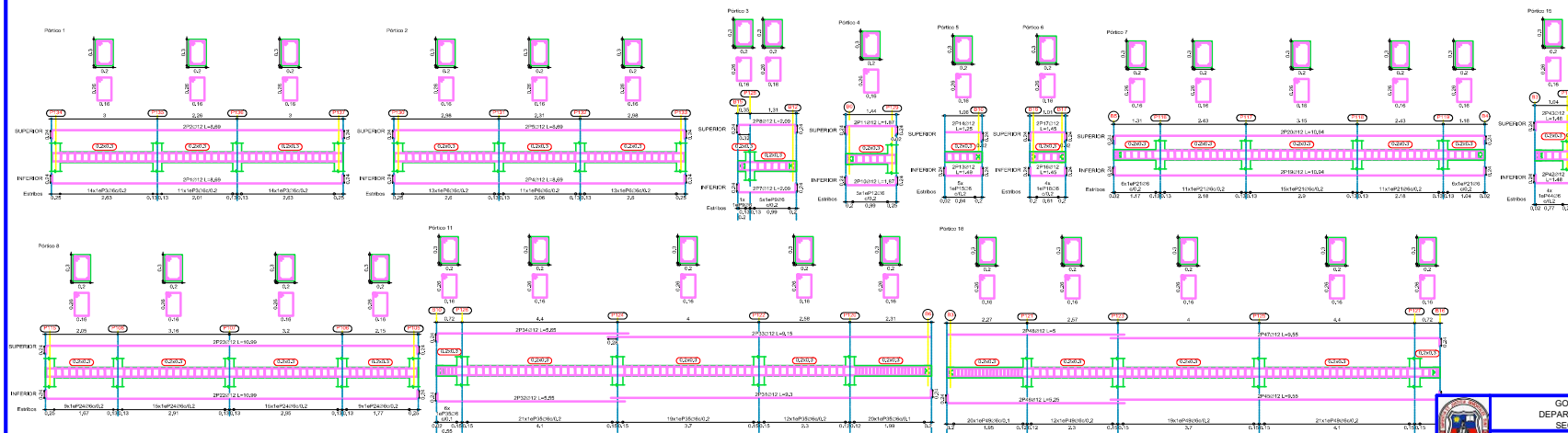
| Recurso          | Acero | Long. total | Recur. 100% |
|------------------|-------|-------------|-------------|
| Viga Nivel +6.55 | m     | 96          | Total       |
| ARMADURA         | 25    | 1062.0      | 254         |
| Ø10              | 304.6 | 237         |             |
| Ø12              | 619.2 | 604         |             |
| Ø16              | 45.3  | 79          |             |
| Ø20              | 12.8  | 95          | 1219        |

| Elemento | Posición | Long. total | Recur. 100% |
|----------|----------|-------------|-------------|
| Punto 11 | 1        | 11          | 16.5        |
|          | 2        | 11          | 16.5        |
|          | 3        | 11          | 16.5        |
|          | 4        | 11          | 16.5        |
|          | 5        | 11          | 16.5        |
|          | 6        | 11          | 16.5        |
|          | 7        | 11          | 16.5        |
|          | 8        | 11          | 16.5        |
|          | 9        | 11          | 16.5        |
|          | 10       | 11          | 16.5        |
|          | 11       | 11          | 16.5        |
|          | 12       | 11          | 16.5        |
|          | 13       | 11          | 16.5        |
|          | 14       | 11          | 16.5        |
|          | 15       | 11          | 16.5        |
|          | 16       | 11          | 16.5        |
|          | 17       | 11          | 16.5        |
|          | 18       | 11          | 16.5        |
|          | 19       | 11          | 16.5        |
|          | 20       | 11          | 16.5        |
|          | 21       | 11          | 16.5        |
|          | 22       | 11          | 16.5        |
|          | 23       | 11          | 16.5        |
|          | 24       | 11          | 16.5        |
|          | 25       | 11          | 16.5        |
|          | 26       | 11          | 16.5        |
|          | 27       | 11          | 16.5        |
|          | 28       | 11          | 16.5        |
|          | 29       | 11          | 16.5        |
|          | 30       | 11          | 16.5        |
|          | 31       | 11          | 16.5        |
|          | 32       | 11          | 16.5        |
|          | 33       | 11          | 16.5        |
|          | 34       | 11          | 16.5        |
|          | 35       | 11          | 16.5        |
|          | 36       | 11          | 16.5        |
|          | 37       | 11          | 16.5        |
|          | 38       | 11          | 16.5        |
|          | 39       | 11          | 16.5        |
|          | 40       | 11          | 16.5        |
|          | 41       | 11          | 16.5        |
|          | 42       | 11          | 16.5        |
|          | 43       | 11          | 16.5        |
|          | 44       | 11          | 16.5        |
|          | 45       | 11          | 16.5        |
|          | 46       | 11          | 16.5        |
|          | 47       | 11          | 16.5        |
|          | 48       | 11          | 16.5        |
|          | 49       | 11          | 16.5        |
|          | 50       | 11          | 16.5        |
|          | 51       | 11          | 16.5        |
|          | 52       | 11          | 16.5        |
|          | 53       | 11          | 16.5        |
|          | 54       | 11          | 16.5        |
|          | 55       | 11          | 16.5        |
|          | 56       | 11          | 16.5        |
|          | 57       | 11          | 16.5        |
|          | 58       | 11          | 16.5        |
|          | 59       | 11          | 16.5        |
|          | 60       | 11          | 16.5        |
|          | 61       | 11          | 16.5        |
|          | 62       | 11          | 16.5        |
|          | 63       | 11          | 16.5        |
|          | 64       | 11          | 16.5        |
|          | 65       | 11          | 16.5        |
|          | 66       | 11          | 16.5        |
|          | 67       | 11          | 16.5        |
|          | 68       | 11          | 16.5        |
|          | 69       | 11          | 16.5        |
|          | 70       | 11          | 16.5        |
|          | 71       | 11          | 16.5        |
|          | 72       | 11          | 16.5        |
|          | 73       | 11          | 16.5        |
|          | 74       | 11          | 16.5        |
|          | 75       | 11          | 16.5        |
|          | 76       | 11          | 16.5        |
|          | 77       | 11          | 16.5        |
|          | 78       | 11          | 16.5        |
|          | 79       | 11          | 16.5        |
|          | 80       | 11          | 16.5        |
|          | 81       | 11          | 16.5        |
|          | 82       | 11          | 16.5        |
|          | 83       | 11          | 16.5        |
|          | 84       | 11          | 16.5        |
|          | 85       | 11          | 16.5        |
|          | 86       | 11          | 16.5        |
|          | 87       | 11          | 16.5        |
|          | 88       | 11          | 16.5        |
|          | 89       | 11          | 16.5        |
|          | 90       | 11          | 16.5        |
|          | 91       | 11          | 16.5        |
|          | 92       | 11          | 16.5        |
|          | 93       | 11          | 16.5        |
|          | 94       | 11          | 16.5        |
|          | 95       | 11          | 16.5        |
|          | 96       | 11          | 16.5        |
|          | 97       | 11          | 16.5        |
|          | 98       | 11          | 16.5        |
|          | 99       | 11          | 16.5        |
|          | 100      | 11          | 16.5        |

|                                                                                                         |                                          |                 |
|---------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------|
|                                                                                                         | GOBERNACIÓN DEL<br>DEPARTAMENTO DE TARJA |                 |
|                                                                                                         | SECCIÓN CERCADO                          |                 |
| PROYECTO: DISEÑO ESTRUCTURAL DEL CENTRO DE APOYO<br>INTEGRAL COMUNIDAD TABLADA GRANDE PROVINCIA CERCADO |                                          |                 |
| DOCUMENTO: ARMADURA DE<br>VIGAS COTA +6.55                                                              |                                          |                 |
| DISEÑO:                                                                                                 | UNIV. CADENA ESPINDOLA APOLINAR HEBERTO  | V: B*           |
| EJECUTO:                                                                                                | FECHA: DICIEMBRE 2019                    | PLANO No. 17/22 |
| ESCALA: INDICADAS                                                                                       |                                          |                 |

# REFUERZO VIGAS AUDITORIO COTA +0.00

Esc. Viga 1:50  
Esc. Sección 1:20



| CONDICIONES DE USO               |
|----------------------------------|
| Obra de Arte                     |
| Requisito: 1405 - Control Normal |
| Proyecto: 1405 - Control Normal  |
| Estado: 1405 - Control Normal    |
| Fecha: 1405 - Control Normal     |

| Requisito | Acero | Long. total | Presión (kg) |
|-----------|-------|-------------|--------------|
| Requisito | Acero | 15          | 15           |
| Requisito | Acero | 15          | 15           |
| Requisito | Acero | 15          | 15           |

| Punto    | Requisito | Acero | Long. total | Presión (kg) |
|----------|-----------|-------|-------------|--------------|
| Punto 1  | Requisito | Acero | 15          | 15           |
| Punto 2  | Requisito | Acero | 15          | 15           |
| Punto 3  | Requisito | Acero | 15          | 15           |
| Punto 4  | Requisito | Acero | 15          | 15           |
| Punto 5  | Requisito | Acero | 15          | 15           |
| Punto 6  | Requisito | Acero | 15          | 15           |
| Punto 7  | Requisito | Acero | 15          | 15           |
| Punto 8  | Requisito | Acero | 15          | 15           |
| Punto 9  | Requisito | Acero | 15          | 15           |
| Punto 10 | Requisito | Acero | 15          | 15           |
| Punto 11 | Requisito | Acero | 15          | 15           |



GOBERNACIÓN DEL  
DEPARTAMENTO DE TARIJA  
SECCIÓN CERCADO

PROYECTO: DISEÑO ESTRUCTURAL DEL CENTRO DE APOYO  
INTEGRAL COMUNIDAD TABLADA GRANDE PROVINCIA CERCADO

DOCUMENTO: ARMADURA DE  
VIGAS AUDITORIO COTA +0.00

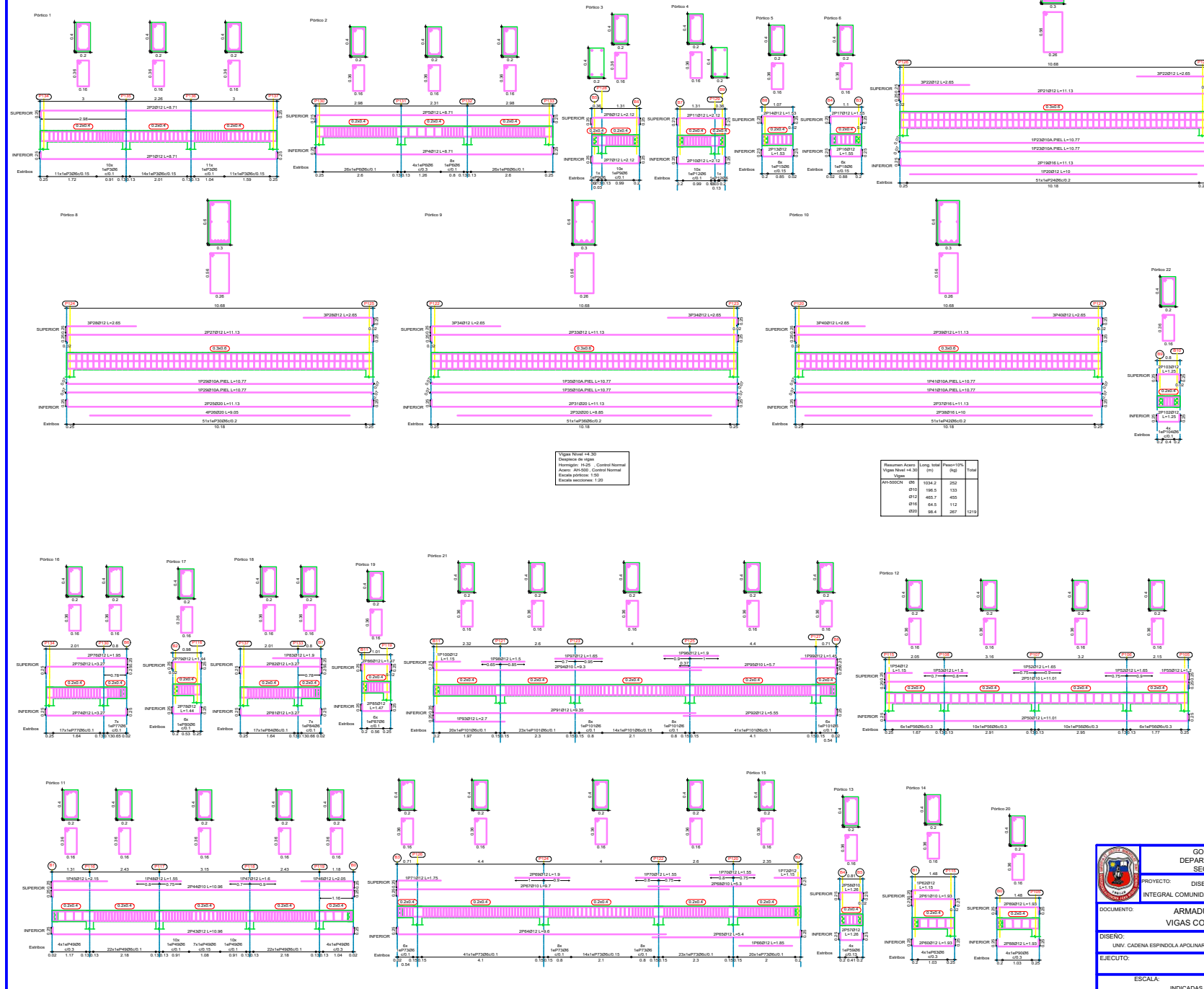
DISEÑO: UNIV. CADENA ESPINDOLA APOLINAR HEBERTO

EJECUTO: FECHA: DICIEMBRE 2019

ESCALA: INDICADAS

PLANO  
No.  
1/22

REFUERZO VIGAS COTA +4.30  
Eje Viga 1.50  
Eje Sección 1.20



Vigas N=4.30  
Reinforcement in Vign  
Horizontal: R=20 - Control Normal  
Vertical: R=20 - Control Normal  
Escala pñ: 1:50  
Escala seccion: 1:20

| Reinforcement | Acero | Long. m | Peso 100% | Vigas N=4.30 | Peso | Total |
|---------------|-------|---------|-----------|--------------|------|-------|
| 400/20        | 50    | 1000    | 200       | 50           | 200  | 200   |
| 400           | 100   | 100     | 100       | 100          | 100  | 100   |
| 400           | 100   | 100     | 100       | 100          | 100  | 100   |
| 400           | 100   | 100     | 100       | 100          | 100  | 100   |

| Elemento | Reinforcement | Long. m | Peso 100% | Vigas N=4.30 | Peso | Total |
|----------|---------------|---------|-----------|--------------|------|-------|
| Pier 1   | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 2   | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 3   | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 4   | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 5   | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 6   | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 7   | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 8   | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 9   | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 10  | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 11  | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 12  | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 13  | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 14  | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 15  | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 16  | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 17  | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 18  | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 19  | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 20  | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 21  | 400/20        | 1000    | 200       | 50           | 200  | 200   |
| Pier 22  | 400/20        | 1000    | 200       | 50           | 200  | 200   |

GOBERNACIÓN DEL DEPARTAMENTO DE TARIJA  
SECCIÓN CERCADO

PROYECTO: DISEÑO ESTRUCTURAL DEL CENTRO DE APOYO INTEGRAL COMUNIDAD TABLADA GRANDE PROVINCIA CERCADO

DOCUMENTO: ARMADURA DE VIGAS COTA +4.30

DISEÑO: UNIV. CADENA ESPINOLA APOLINAR HERBERTO

EJECUTO: V" B"

FECHA: DICIEMBRE 2019

ESCALA: INDICADAS

PLANO No. 19/22

## Esc 1:75

Vigas Nive| +3,45  
Replanteo  
Hormigón: H-25 , Control Norma  
AH-300 , Control Normal

[illegible]

| Resumen Acero<br>Vigas Rect (3x5)<br>Replanteo | Long. total<br>(m) | Peso-10%<br>(kg) | Total |
|------------------------------------------------|--------------------|------------------|-------|
| AH-600CN 010                                   | 2061,2             | 1398             |       |
| 012                                            | 68,4               | 57               |       |
| 016                                            | 18,7               | 32               |       |
| 020                                            | 4,3                | 12               | 1499  |

**Tabela de características do produto da vigantesa** (Olejo 7)

|                          |                                                                                          |
|--------------------------|------------------------------------------------------------------------------------------|
| Linha de montagem de:    | HOMEPOLIM                                                                                |
| Ano de base:             | 96 cm                                                                                    |
| Espesor capa compresión: | 5 cm                                                                                     |
| Interje:                 | 50 cm                                                                                    |
| Boveda:                  | De poliestireno                                                                          |
| Ancho del periodo:       | 30 cm                                                                                    |
| Volumen de hambrón:      | 0,285 m <sup>3</sup> /m <sup>2</sup>                                                     |
| Peso propio:             | 0,22 t/m <sup>2</sup>                                                                    |
| Nota:                    | Cada 1 m <sup>2</sup> de la losa requiere 4 unidades de las siguientes especificaciones. |

Vigas Nível +3,45  
LOSA ALIVIANADA  
Montagem: H-25, Control Normal  
AH-600, Control Normal  
ME: Momento flexor de cálculo por metro de ancho  
(x1000)  
Escala: 1:75

## Esc 1:75

|                                              |                    |                |
|----------------------------------------------|--------------------|----------------|
| Resumen Acero<br>Viga Nivel +6.25<br>Reglaje | Long. total<br>(m) | Peso=10%<br>kg |
| Ats-GSCN 010                                 | 838,6              | 839            |

Título de consideración de la lista de algunas (Grupo 3)

LOGA DE MICHIGAN DE HORMIGÓN

Alrededor de 15 cm

Espesor capa compresión 5 cm

Tramaje 50 cm

Revestido de poliestireno

Alrededor de 10 cm

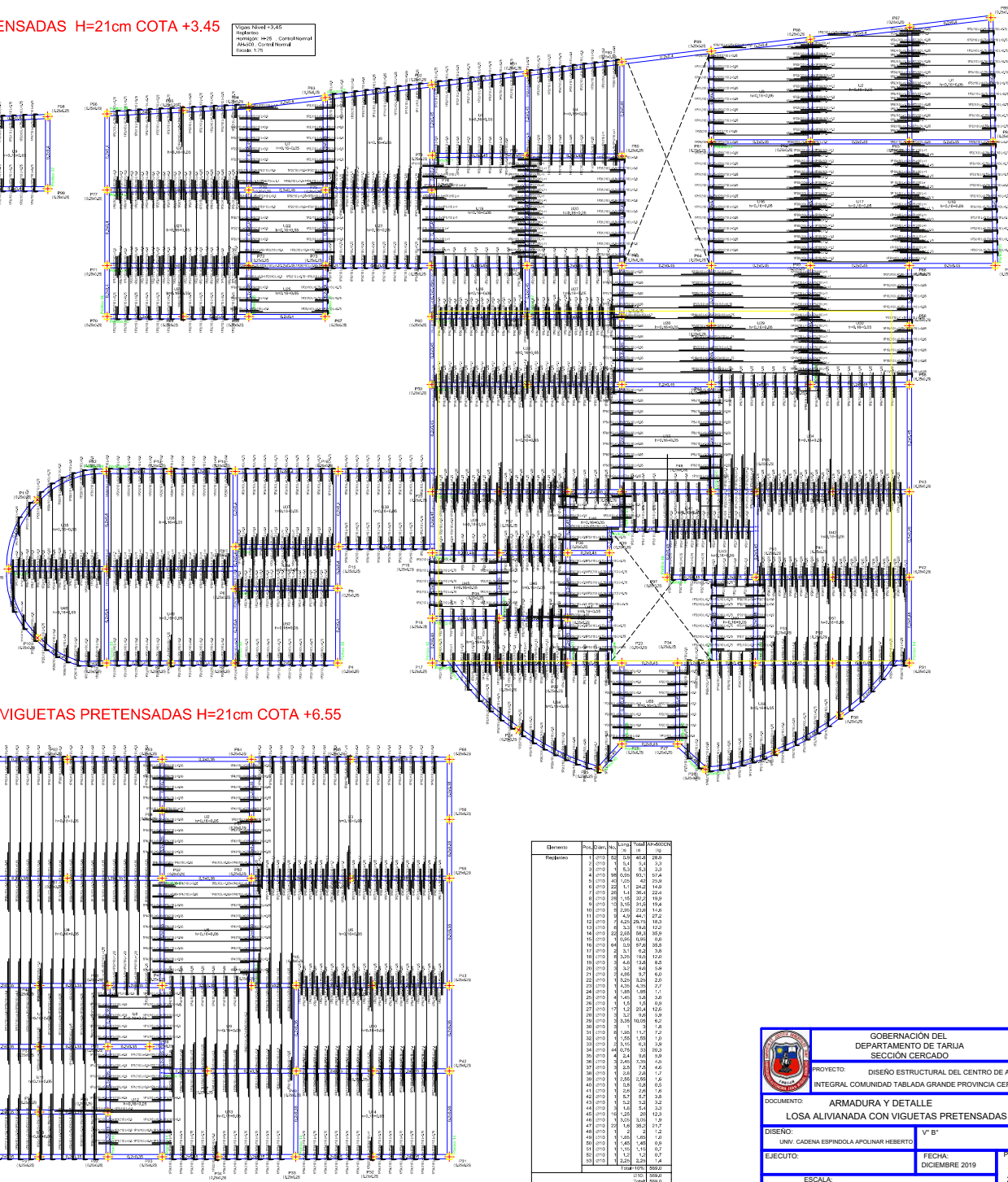
Volumen de hormigón 5,000 m<sup>3</sup>

Peso propio 2,252 kg

Nota: Cuando los datos referidos a procesos continúan de la actividad principal a los nuevos procesos.

Vigas Nivel +6,55  
LOSA ALIVIANADA  
Hormigón: H-25, Control Normal  
AH-500, Control Normal  
ME: Momento flector de cálculo por metro de ancho  
(m.c/p/m)  
Escala: 1:100

Diagrama de un puente de hormigón preesforzado de un solo vano de 30 metros. El diagrama muestra la sección transversal del puente con una viga superior de hormigón simple, una viga inferior de poliestireno de 10 cm, y una viga de distribución de 15 cm x 25 cm x 25 cm. Se indican las dimensiones de los vanos y la longitud total del puente.

[illegible]

GOBERNACIÓN DEL  
DEPARTAMENTO DE TARIJA  
SECCIÓN CERCADO

PROYECTO: DISEÑO ESTRUCTURAL DEL CENTRO DE APOYO  
INTEGRAL COMUNIDAD TABLADA GRANDE PROVINCIA CERCADO

DOCUMENTO:

LOSAS ALIVIANADAS CON VIGUETAS PRETENSADAS

|         |      |
|---------|------|
| DISEÑO: | V° F |
|---------|------|

UNIV. CADENA ESPINDOLA APOLINAR HEBERTO

**EJECUTO:**

FECHA:

\_\_\_\_\_

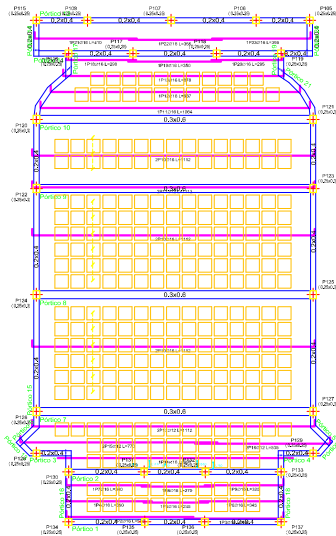
INDICADAS

PLANO  
No.  
20/22

REFUERZO LOSA CASETONADA H=30cm AUDITORIO TABLADA GRANDE

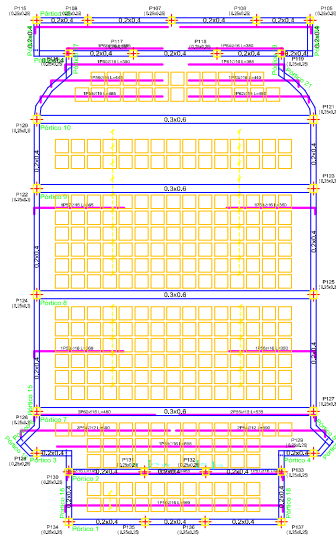
REFUERZO LOSA CASETONADA H=30cm COTA +4.30  
Armadura longitudinal inferior  
Esc 1/75

| Resumen Acepto<br>Vigas Alred $\Delta$ 30  | Long. total<br>m | Peso 100%<br>kg | Total |
|--------------------------------------------|------------------|-----------------|-------|
| Armadura longitudinal inferior<br>AH-500CN | 312              | 70,6            | 69    |
|                                            | 316              | 420,5           | 730   |
|                                            |                  |                 | 799   |



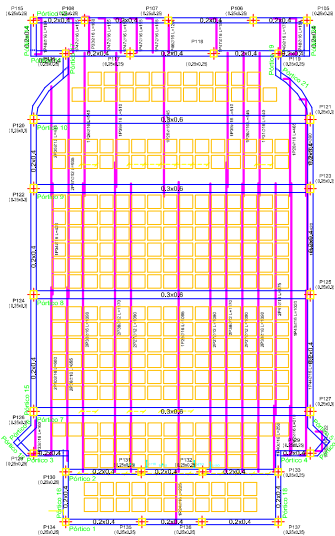
**REFUERZO LOSA CASETONADA H=30cm COTA +4.30**  
 Armadura longitudinal superior  
 Esc 1/75

|                                                                                                                                      |                    |                  |       |  |
|--------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------|-------|--|
| Virges Nivel +4,30<br>Armadura longitudinal superior<br>Homologías: H=25 - Control Normal<br>AH=600 - Control Normal<br>Escala: 1,75 |                    |                  |       |  |
| Recursos Acero<br>Virges Nivel +4,30<br>Armadura longitudinal superior<br>AH=600CN                                                   | Long. total<br>(m) | Peso 10%<br>(kg) | Total |  |
| 0712                                                                                                                                 | 34,3               | 33               |       |  |
| 0716                                                                                                                                 | 203,1              | 353              | 386   |  |



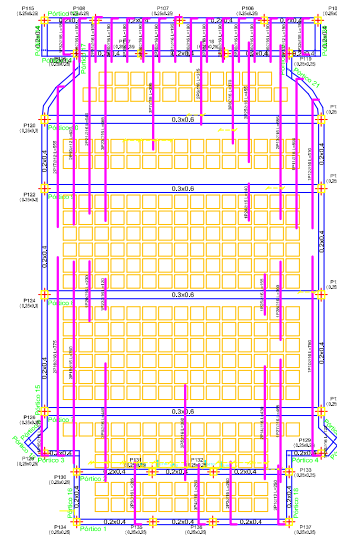
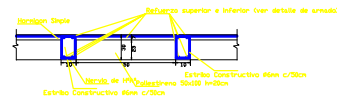
**REFUERZO LOSA CASETONADA H=30cm COTA +4.30**  
Armadura transversal inferior  
Esc 1/75

| Resumen Acero<br>Vigas Nivel +4,30 | Long. total<br>(m) | Peso+10%<br>(kg) | Total |
|------------------------------------|--------------------|------------------|-------|
| Armadura transversal inferior      | 212                | 161,0            | 557   |
| ARM-500, Control Normal            | 216                | 306,5            | 537   |
| Estaca: 1:75                       |                    |                  |       |

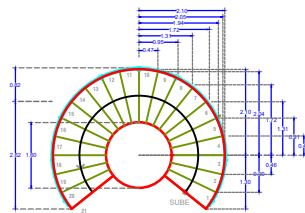


REFUERZO LOSA CASETONADA H=30cm COTA +4.30  
Armadura transversal superior  
Esc 1/75

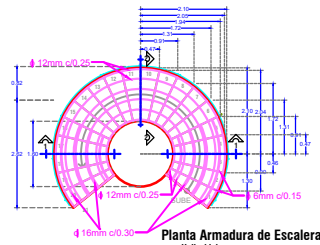
|                                                                                                              |                    |                  |           |      |
|--------------------------------------------------------------------------------------------------------------|--------------------|------------------|-----------|------|
| Armadura transversal superior<br>Homogénea: H=25 , Control Normal<br>A1=000 , Control Normal<br>Escala: 1:75 |                    |                  |           |      |
| Roseman-Acero<br>Viga Niv[ +4.20<br>Armadura Transversal superior                                            | Long. total<br>(m) | Peso+10%<br>(kg) | Total     |      |
| A1=000CN                                                                                                     | 0.12<br>0.16       | 37.3<br>459.4    | 36<br>798 | 83.3 |

[illegible][illegible]

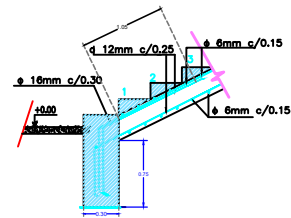
## Detalle De Escalera Helicoidal



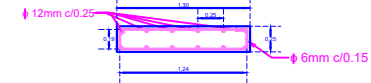
Planta de Escalera  
Helicoidal  
ESC. 1:50



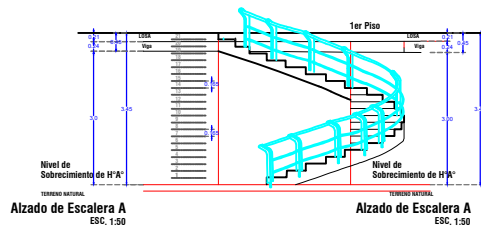
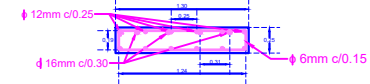
DETALLE DE ANCLAJE  
Escalera Helicoidal  
ESC. 1:20



DETALLE DE CORTE 2-2  
Escalera Helicoidal  
ESC. 1:20



DETALLE DE CORTE 1-1  
Escalera Helicoidal  
ESC. 1:20



|                                                                                      |                                                                                                         |                       |
|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----------------------|
|  | GOBERNACIÓN DEL<br>DEPARTAMENTO DE TARIJA<br>SECCIÓN CERCADO                                            |                       |
|                                                                                      | PROYECTO: DISEÑO ESTRUCTURAL DEL CENTRO DE APOYO<br>INTEGRAL COMUNIDAD TABLADA GRANDE PROVINCIA CERCADO |                       |
| DOCUMENTO:                                                                           | ARMADURA Y DETALLE DE<br>ESCALERA HELICOIDAL                                                            |                       |
| DISEÑO:                                                                              | UNIV. CADENA ESPINDOLA APOLINAR HEBERTO                                                                 | V° B°                 |
| EJECUTO:                                                                             | FECHA:<br>DICIEMBRE 2019                                                                                | PLANO<br>No.<br>22/22 |
| ESCALA:                                                                              | INDICADAS                                                                                               |                       |