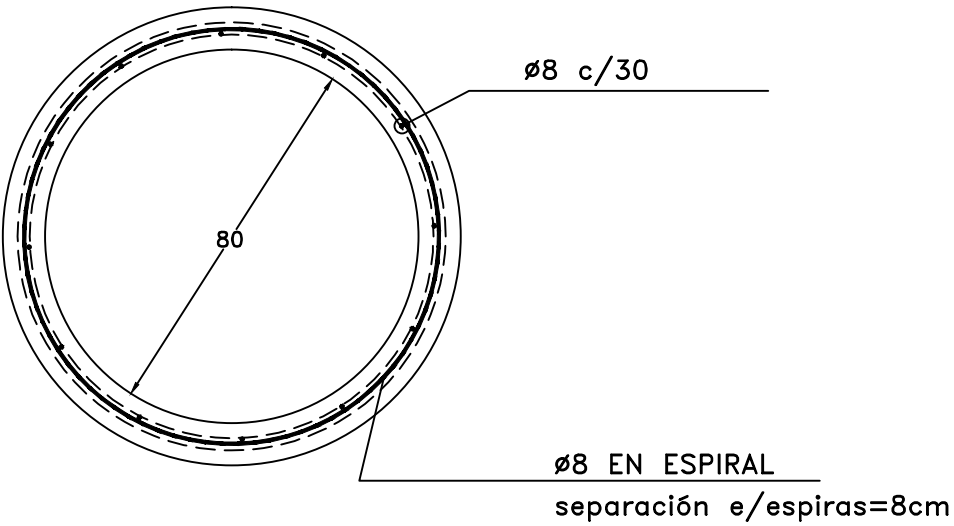
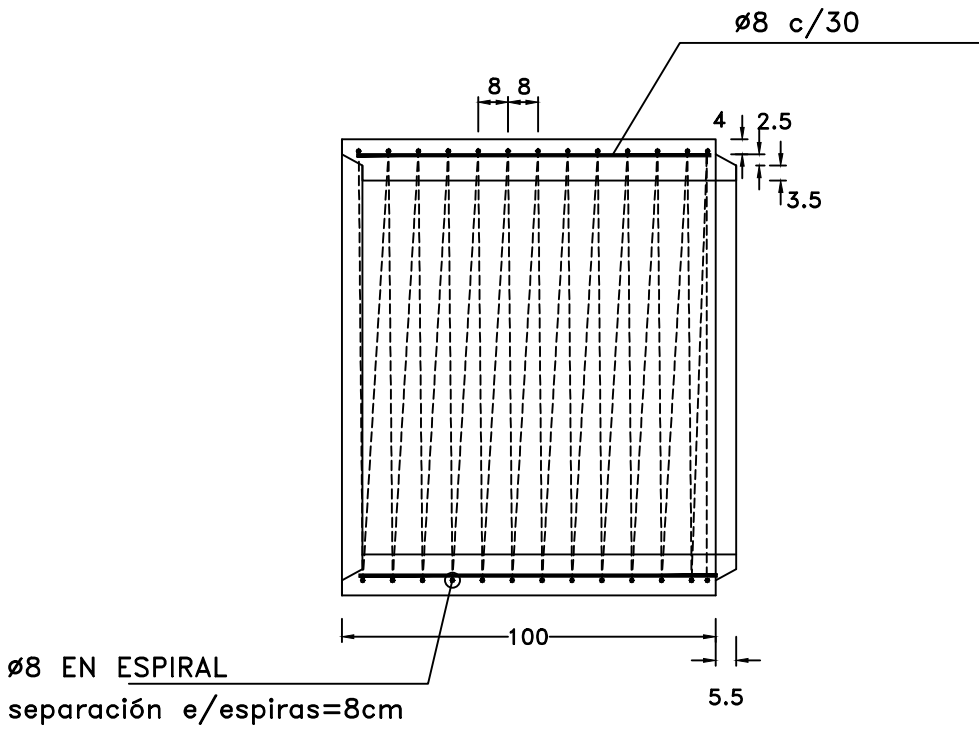
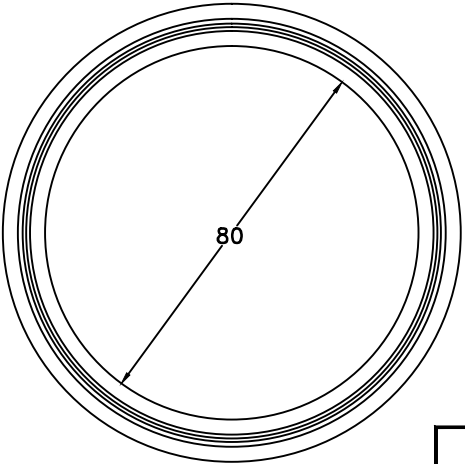
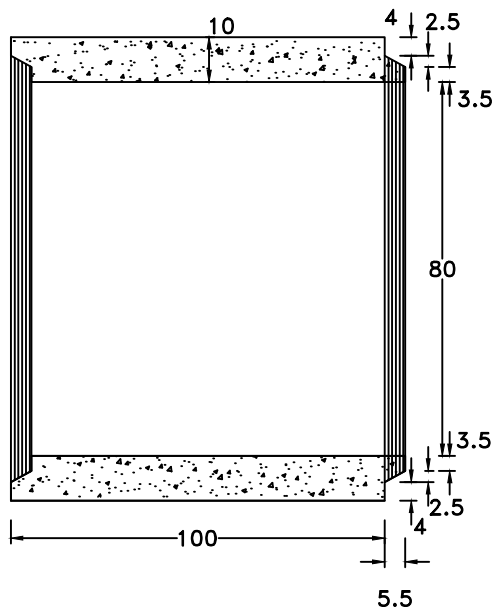


ARMADURAS



DISEÑO



ESPECIFICACIONES

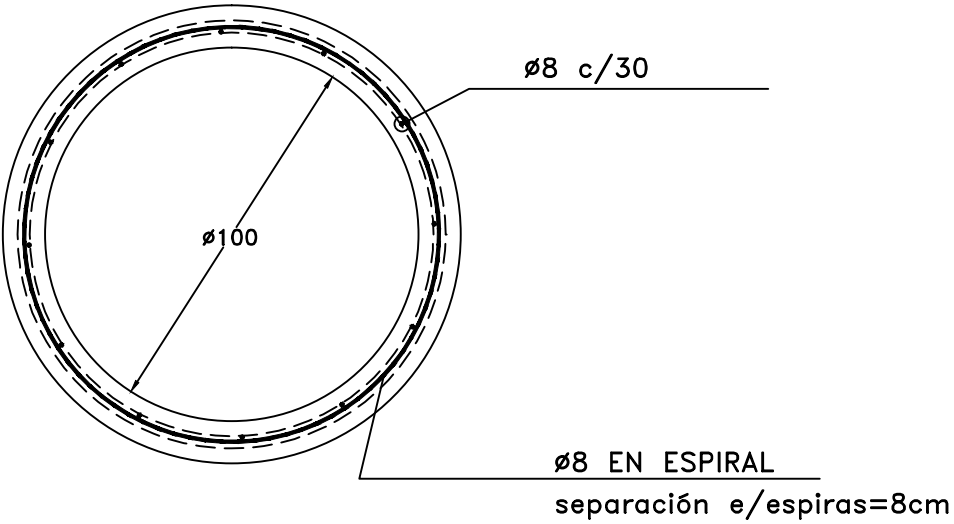
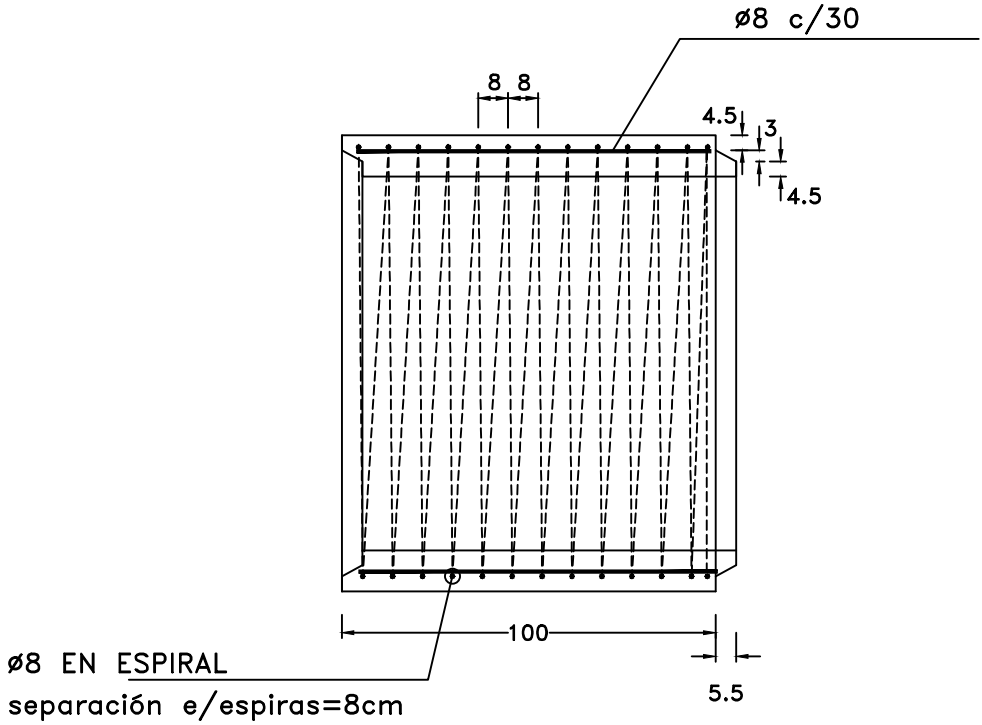
Hormigón:  $f_{ck}=210\text{kg/cm}^2$

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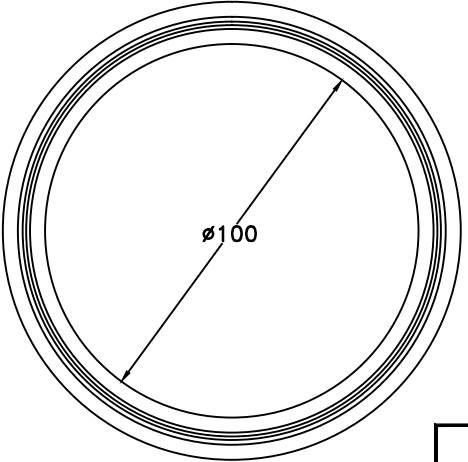
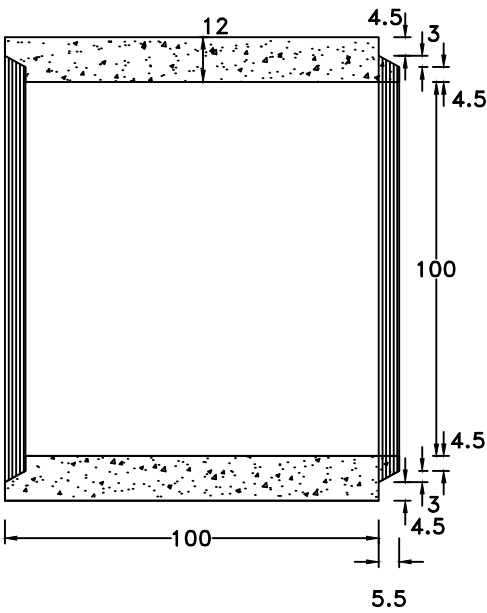
ALCANTARILLA TUBULAR PREFABRICADA  
Diam.= 0,80m

DISEÑO GENERAL

ARMADURAS



DISEÑO



ESPECIFICACIONES

Hormigón:  $f_{ck}=210\text{kg/cm}^2$

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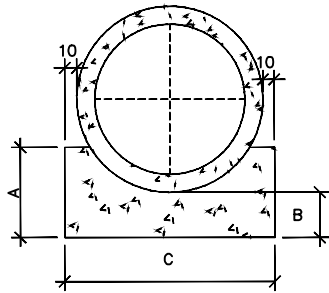
ALCANTARILLA TUBULAR PREFABRICADA  
Diam.= 1,00m

DISEÑO GENERAL

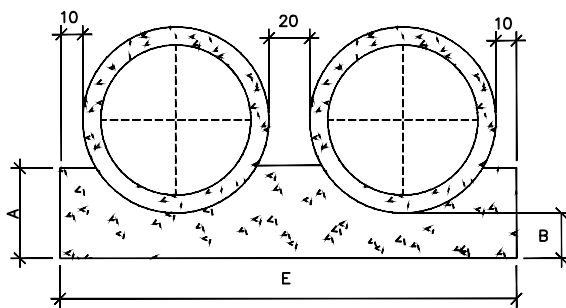
2/5

PLATEA DE HORMIGON PARA ASIENTO DE ALCANTARILLAS

ALCANTARILLA SIMPLE  
(ASTH°)



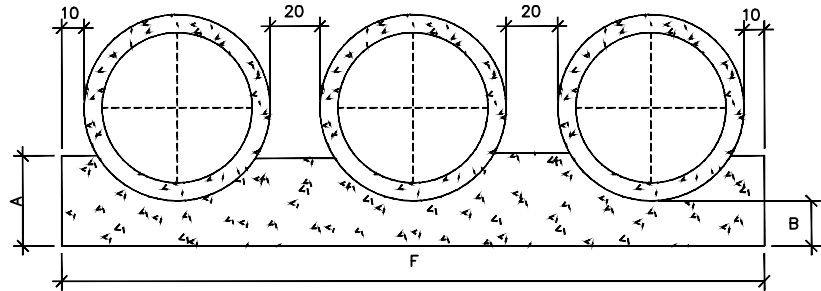
ALCANTARILLA DOBLE  
(ADTH°)



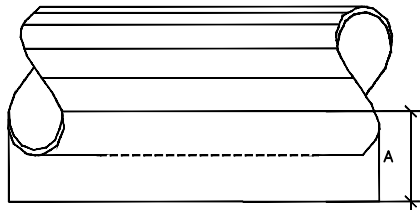
| CUADRO DE DIMENSIONES |    |    |     |     |     |
|-----------------------|----|----|-----|-----|-----|
| DIAMETRO              | A  | B  | C   | E   | F   |
| 80                    | 45 | 20 | 120 | —   | —   |
| 100                   | 56 | 25 | 144 | 288 | 432 |

| CUANTIDADES POR METRO LINEAL DE PLATEA |                               |                            |                               |                            |                               |                            |
|--|-------------------------------|----------------------------|-------------------------------|----------------------------|-------------------------------|----------------------------|
| DIAMETRO<br>(m)                        | SIMPLES                       |                            | DOBLE                         |                            | TRIPLE                        |                            |
|  | HORMIGON<br>(m <sup>3</sup> ) | FORMA<br>(m <sup>2</sup> ) | HORMIGON<br>(m <sup>3</sup> ) | FORMA<br>(m <sup>2</sup> ) | HORMIGON<br>(m <sup>3</sup> ) | FORMA<br>(m <sup>2</sup> ) |
| 80                                     | 0,386                         | 0,900                      | —                             | —                          | —                             | —                          |
| 100                                    | 0,570                         | 1,120                      | 1,141                         | 1,120                      | 1,711                         | 1,120                      |

ALCANTARILLA TRIPLE  
(ATTH°)



VISTA LATERAL



NOTAS:

- 1) UTILIZAR EN LAS PLATEAS DE HORMIGON SIMPLE  $f_{ck} \geq 9,0$  MPa.  
2) DIMENSIONES EN cm.

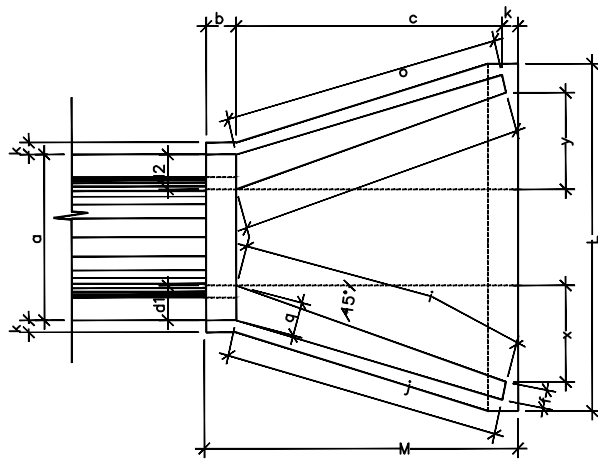
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ALCANTARILLA TUBULAR PREFABRICADA  
DETALLE DE CABECERAS

DISE3O GENERAL

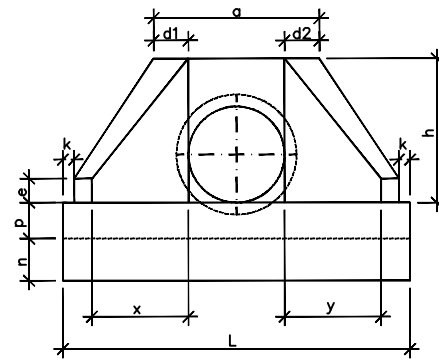
3/5

PLANTA

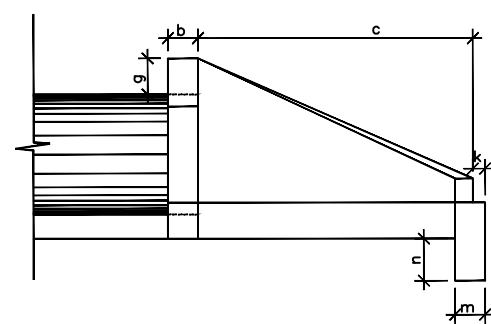


ALA PARA ALCANTARILLA SIMPLE TUBULAR DE HORMIGON

VISTA FRONTAL



VISTA LATERAL



| DIMENSIONES Y CONSUMO MÉDIO PARA ALCANTARILLA SIMPLE – escons.=0° |    |     |    |     |    |    |    |    |    |     |     |     |    |     |    |    |     |    |    |    |    |     |     |                |                  |
|---|----|-----|----|-----|----|----|----|----|----|-----|-----|-----|----|-----|----|----|-----|----|----|----|----|-----|-----|----------------|------------------|
| Ø   | B* | a   | b  | c   | d1 | d2 | e  | f  | g  | h   | i   | j   | k  | l   | m  | n  | o   | p  | q  | x  | y  | L   | M   | FORMAS<br>(m²) | HORMIGÓN<br>(m³) |
| 80  | 15 | 138 | 25 | 190 | 29 | 29 | 20 | 15 | 50 | 120 | 212 | 196 | 10 | 212 | 25 | 35 | 196 | 30 | 25 | 80 | 80 | 289 | 335 | 15,49          | 4,09             |
| 100   | 15 | 170 | 30 | 190 | 35 | 35 | 25 | 20 | 50 | 142 | 212 | 196 | 10 | 212 | 30 | 40 | 196 | 37 | 30 | 94 | 94 | 346 | 391 | 19,70          | 7,07             |

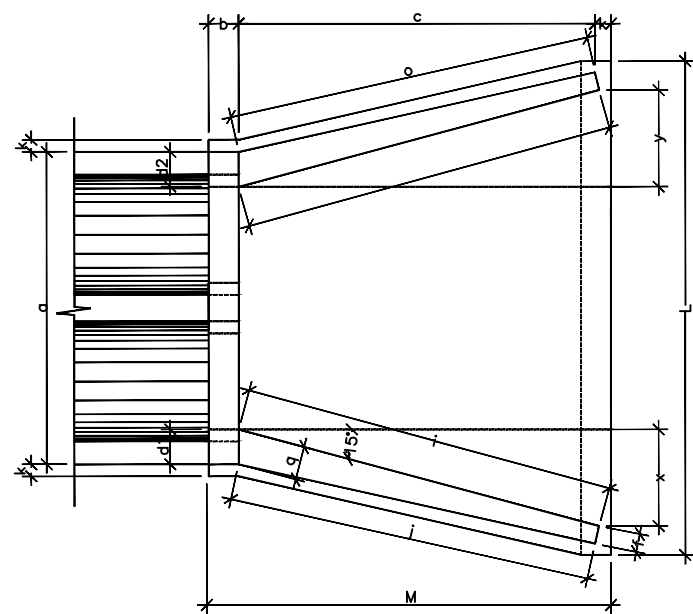
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ALCANTARILLA TUBULAR PREFABRICADA  
DETALLE DE CABECERAS

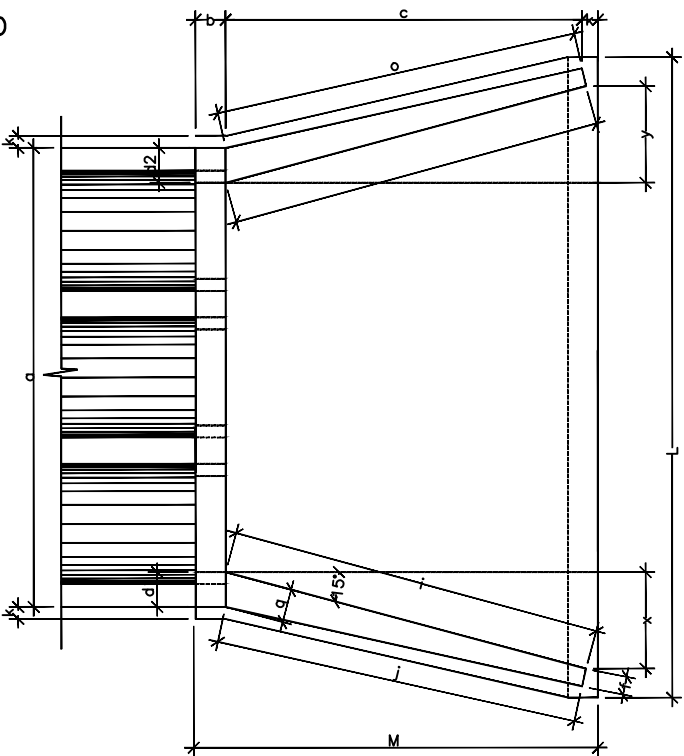
DISEÑO GENERAL

4/5

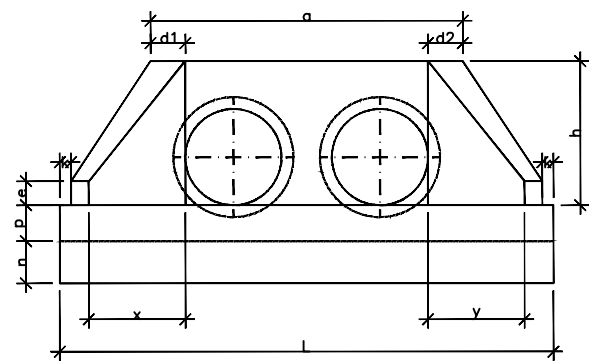
ALA DE ALCANTARILLA DOBLE Y TRIPLE TUBULAR DE HORMIGON ARMADO



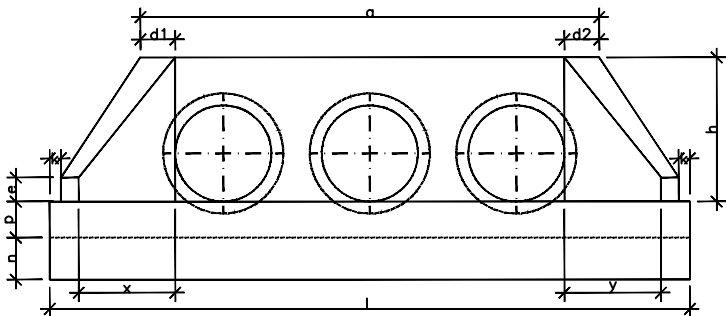
PLANTA



PLANTA



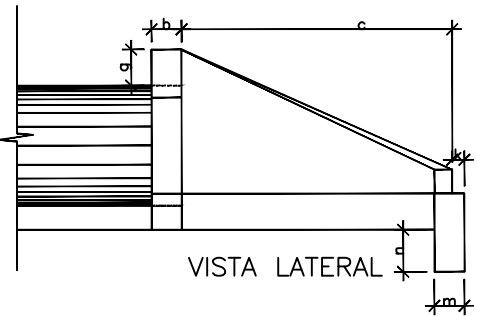
VISTA FRONTAL



VISTA FRONTAL

| DIMENSIONES Y CONSUMO MÉDIO PARA ALCANTARILLA DOBLES – escons.=0° |    |     |    |     |    |    |    |    |    |     |     |     |    |     |    |    |     |    |    |    |    |     |     |             |               |
|---|----|-----|----|-----|----|----|----|----|----|-----|-----|-----|----|-----|----|----|-----|----|----|----|----|-----|-----|-------------|---------------|
| Ø   | B* | a   | b  | c   | d1 | d2 | e  | f  | g  | h   | i   | j   | k  | l   | m  | n  | o   | p  | q  | x  | y  | L   | M   | FORMAS (m²) | HORMIGÓN (m³) |
| 100   | 15 | 314 | 30 | 190 | 35 | 35 | 25 | 20 | 30 | 142 | 212 | 196 | 10 | 212 | 30 | 40 | 196 | 37 | 30 | 94 | 94 | 489 | 391 | 25,55       | 9,78          |

| DIMENSIONES Y CONSUMO MÉDIO PARA ALCANTARILLA TRIPLES – escons.=0° |    |     |    |     |    |    |    |    |    |     |     |     |    |     |    |    |     |    |    |    |    |     |     |             |               |
|--|----|-----|----|-----|----|----|----|----|----|-----|-----|-----|----|-----|----|----|-----|----|----|----|----|-----|-----|-------------|---------------|
| Ø  | B* | a   | b  | c   | d1 | d2 | e  | f  | g  | h   | i   | j   | k  | l   | m  | n  | o   | p  | q  | x  | y  | L   | M   | FORMAS (m²) | HORMIGÓN (m³) |
| 100  | 15 | 456 | 30 | 190 | 35 | 35 | 25 | 20 | 30 | 142 | 212 | 196 | 10 | 212 | 30 | 40 | 196 | 37 | 30 | 94 | 94 | 633 | 391 | 30,10       | 12,15         |



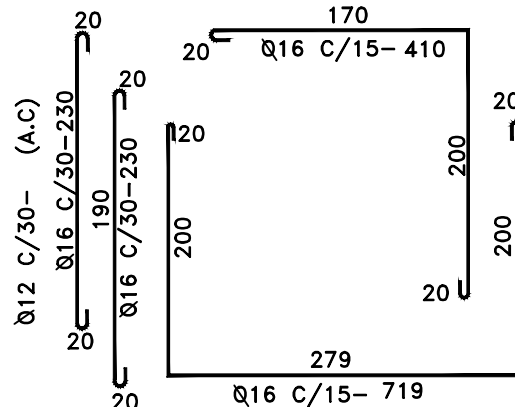
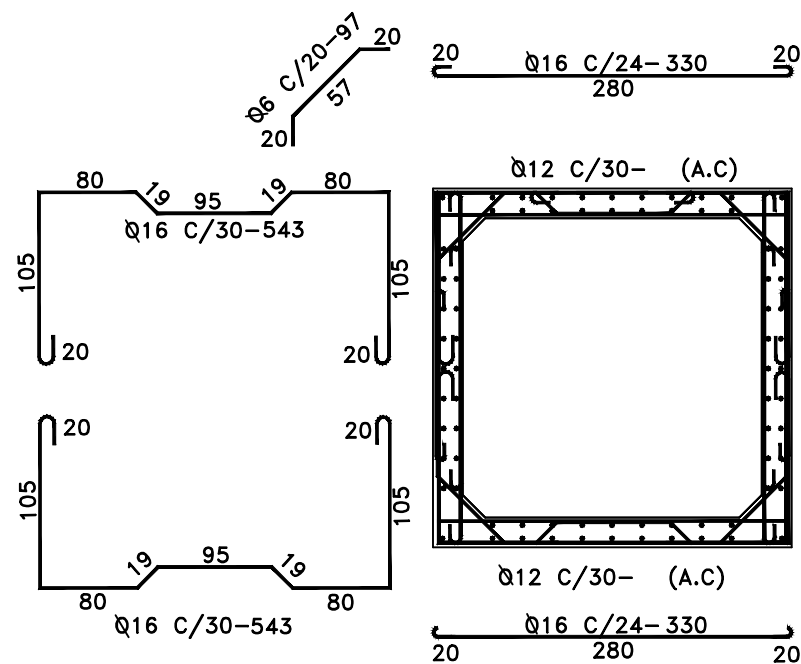
VISTA LATERAL

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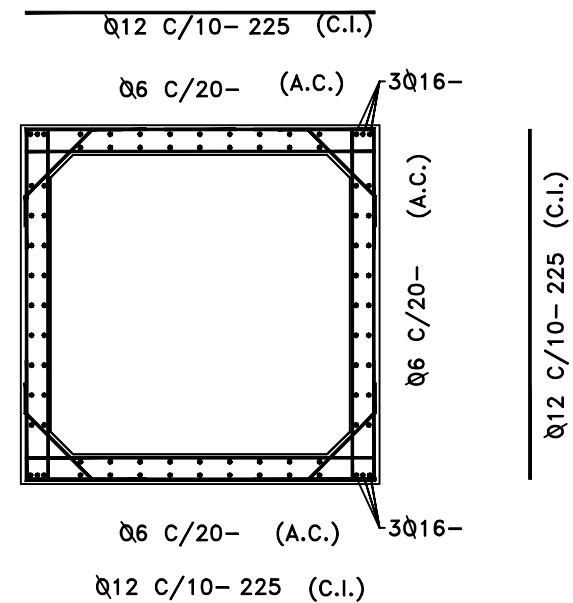
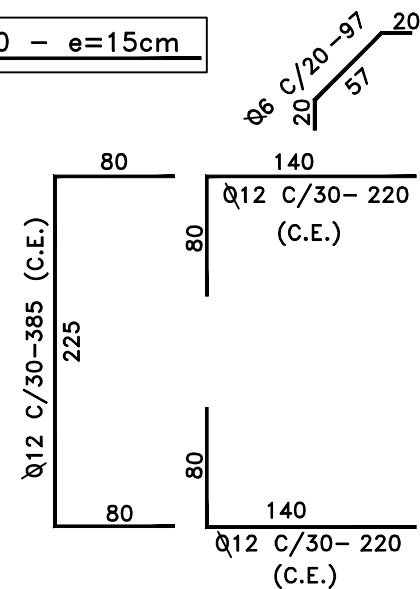
ALCANTARILLA TUBULAR PREFABRICADA  
DETALLE DE CABECERAS

DISEÑO GENERAL

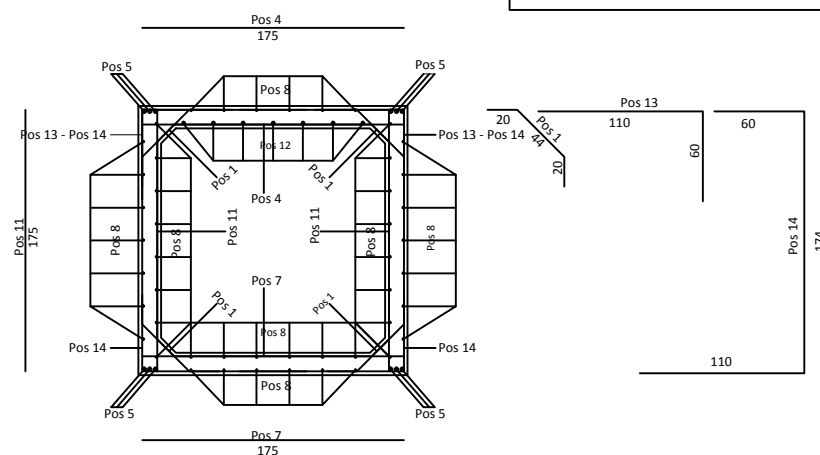
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200x200 - e=15cm

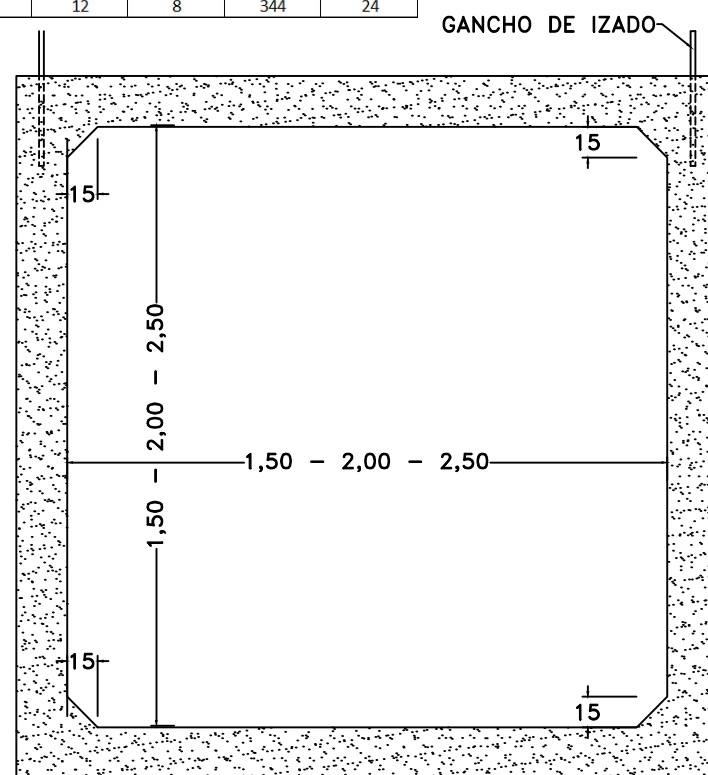
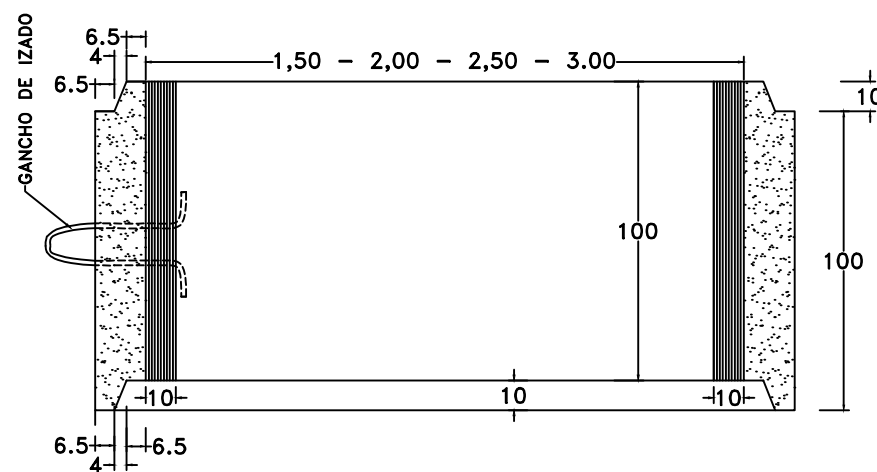


150x150 - e=15cm



| Pos. | Diam. (mm) | Cant. (un) | Long. (cm) | Sep. (cm) |
|------|------------|------------|------------|-----------|
| 1    | 6          | 20         | 84         | 20        |
| 4    | 12         | 6          | 175        | 16        |
| 5    | 12         | 12         | 85         | -----     |
| 7    | 12         | 6          | 175        | 16        |
| 8    | 6          | 48         | 85         | 22        |
| 11   | 6          | 10         | 175        | 20        |
| 12   | 10         | 7          | 85         | 20        |
| 13   | 12         | 8          | 170        | 24        |
| 14   | 12         | 8          | 344        | 24        |

### DETALLE DE ALCANTARILLAS



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PROYECTO ALCANTARILLAS CELULARES  
PREFABRICADAS

1,5x1,5-2,0x2,0-2,5x2,5

DISENO GENERAL Y ESTRUCTURAL:CELULAR

1/4

OBS.: Anteproyectos de diseños

ALCANTARILLAS CELULARES PREFABRICADAS 1,50-2,00, 2,50

AVFC27/2015

CABECERAS NORMALES PARA ALCANTARILLAS CELULARES

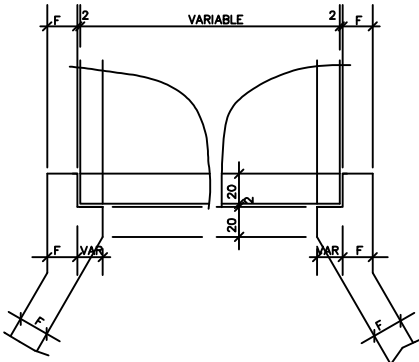
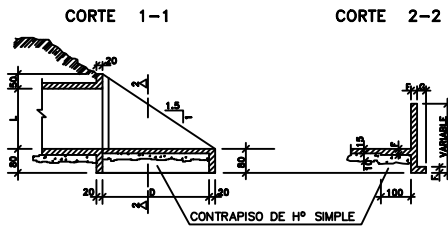
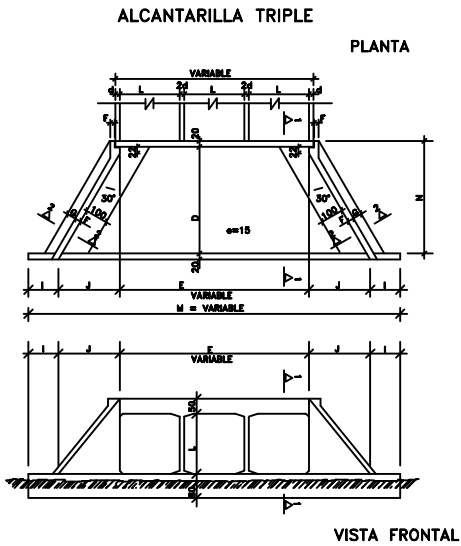
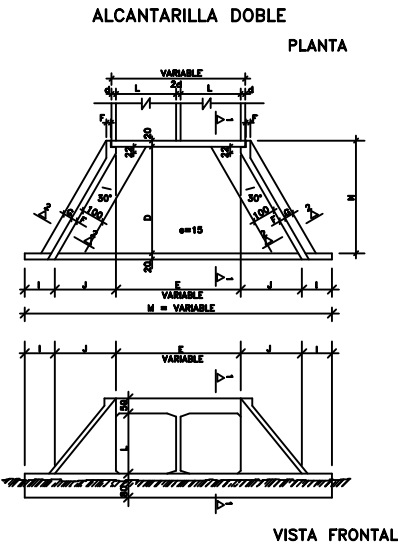
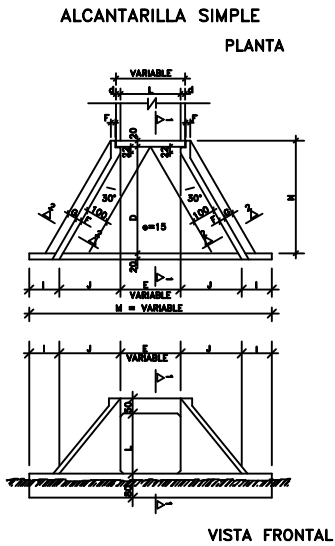


TABLA DE DIMENSIONES Y CANTIDAD DE MATERIALES PARA AMBAS CABEZERAS

| MEDIDAS<br>(cm) | ALCANTARILLA SIMPLE                      |  |  |
|-----------------|--|--|--|
|                 | 1.50x1.50m,<br>f <sub>s</sub> > 0.09 MPa | 2.00x2.00m,<br>f <sub>s</sub> > 0.09 MPa | 2.50x2.50m,<br>f <sub>s</sub> > 0.10 MPa |
| D               | 280.0                                    | 355.0                                    | 430.0                                    |
| E               | 150.0                                    | 200.0                                    | 250.0                                    |
| F               | 15.0                                     | 20.0                                     | 20.0                                     |
| G               | 30.0                                     | 30.0                                     | 50.0                                     |
| I               | 100.0                                    | 100.0                                    | 100.0                                    |
| J               | 160.5                                    | 204.0                                    | 247.0                                    |
| L               | 150.0                                    | 200.0                                    | 250.0                                    |
| M               | 671.0                                    | 808.0                                    | 944.0                                    |
| N               | 320.0                                    | 395.0                                    | 470.0                                    |

| DESCRIPCION | UNID | ALCANTARILLA SIMPLE |            |            |
|-------------|------|---------------------|------------|------------|
|             |      | 1.50x1.50m          | 2.00x2.00m | 2.50x2.50m |
| CONTRAPISO  | m³   | 2.46                | 4.35       | 6.30       |
| ENCOFRADO   | m²   | 85.50               | 115.00     | 144.00     |
| HORMIGON    | m³   | 10.85               | 17.86      | 24.35      |

| MEDIDAS<br>(cm) | ALCANTARILLA DOBLE                       |  |  |
|-----------------|--|--|--|
|                 | 1.50x1.50m,<br>f <sub>s</sub> > 0.10 MPa | 2.00x2.00m,<br>f <sub>s</sub> > 0.13 MPa | 2.50x2.50m,<br>f <sub>s</sub> > 0.21 MPa |
| D               | 280.0                                    | 355.0                                    | 430.0                                    |
| E               | 2L + 2d                                  |  |  |
| F               | 15.0                                     | 20.0                                     | 20.0                                     |
| G               | 30.0                                     | 30.0                                     | 50.0                                     |
| I               | 100.0                                    | 100.0                                    | 100.0                                    |
| J               | 160.5                                    | 204.0                                    | 247.0                                    |
| L               | 150.0                                    | 200.0                                    | 250.0                                    |
| M               | 200 + 2J + E                             |  |  |
| N               | 320.0                                    | 395.0                                    | 470.0                                    |

| DESCRIPCION | UNID | ALCANTARILLA DOBLE |            |            |
|-------------|------|--------------------|------------|------------|
|             |      | 1.50x1.50m         | 2.00x2.00m | 2.50x2.50m |
| CONTRAPISO  | m³   | 3.93               | 6.45       | 9.75       |
| ENCOFRADO   | m²   | 92.00              | 120.80     | 155.00     |
| HORMIGON    | m³   | 12.35              | 20.86      | 30.05      |

| MEDIDAS<br>(cm) | ALCANTARILLA TRIPLE                      |  |  |
|-----------------|--|--|--|
|                 | 1.50x1.50m,<br>f <sub>s</sub> > 0.10 MPa | 2.00x2.00m,<br>f <sub>s</sub> > 0.13 MPa | 2.50x2.50m,<br>f <sub>s</sub> > 0.21 MPa |
| D               | 280.0                                    | 355.0                                    | 430.0                                    |
| E               | 3L + 4d                                  |  |  |
| F               | 15.0                                     | 20.0                                     | 20.0                                     |
| G               | 30.0                                     | 30.0                                     | 50.0                                     |
| I               | 100.0                                    | 100.0                                    | 100.0                                    |
| J               | 160.5                                    | 204.0                                    | 247.0                                    |
| L               | 150.0                                    | 200.0                                    | 250.0                                    |
| M               | 200 + 2J + E                             |  |  |
| N               | 320.0                                    | 395.0                                    | 470.0                                    |

| DESCRIPCION | UNID | ALCANTARILLA TRIPLE |            |            |
|-------------|------|---------------------|------------|------------|
|             |      | 1.50x1.50m          | 2.00x2.00m | 2.50x2.50m |
| CONTRAPISO  | m³   | 5.40                | 8.85       | 13.20      |
| ENCOFRADO   | m²   | 104.00              | 156.00     | 174.00     |
| HORMIGON    | m³   | 16.40               | 26.26      | 35.75      |

NOTAS

- 1- EL PROYECTO DE LAS CABECERAS SE APLICA A TODOS LOS TIPOS DE CELULARES NORMALES, ESTANDO REPRESENTADA LA ALCANTARILLA DE PLANTA, VISTA FRONTAL Y CORTES EN ESCALA 1:100 ; DETALLE EN
- 2- LAS CANTIDADES INDICADAS EN LAS TABLAS SON PARA DOS CABECERA ESTANDO COMPUTADAS: LAS ALAS (4x); LOSA DE PISO ENTREALAS ( BORDE INFERIOR DEL CUERPO DE LA ALCANTARILLA (2x) ).
- 3- EL CONTRAPISO BAJO LA LOSA DE PISO ENTREALAS ES DE Hº SIMPLE DE UN ESPESOR DE 10 cm.
- 4- HORMIGON PARA CABECERAS f<sub>ck</sub> = 21 MPa.
- 5- NOMENCLATURA: f<sub>s</sub> = TENSION ADMISIBLE DEL SUELO BAJO LA GALERÍA

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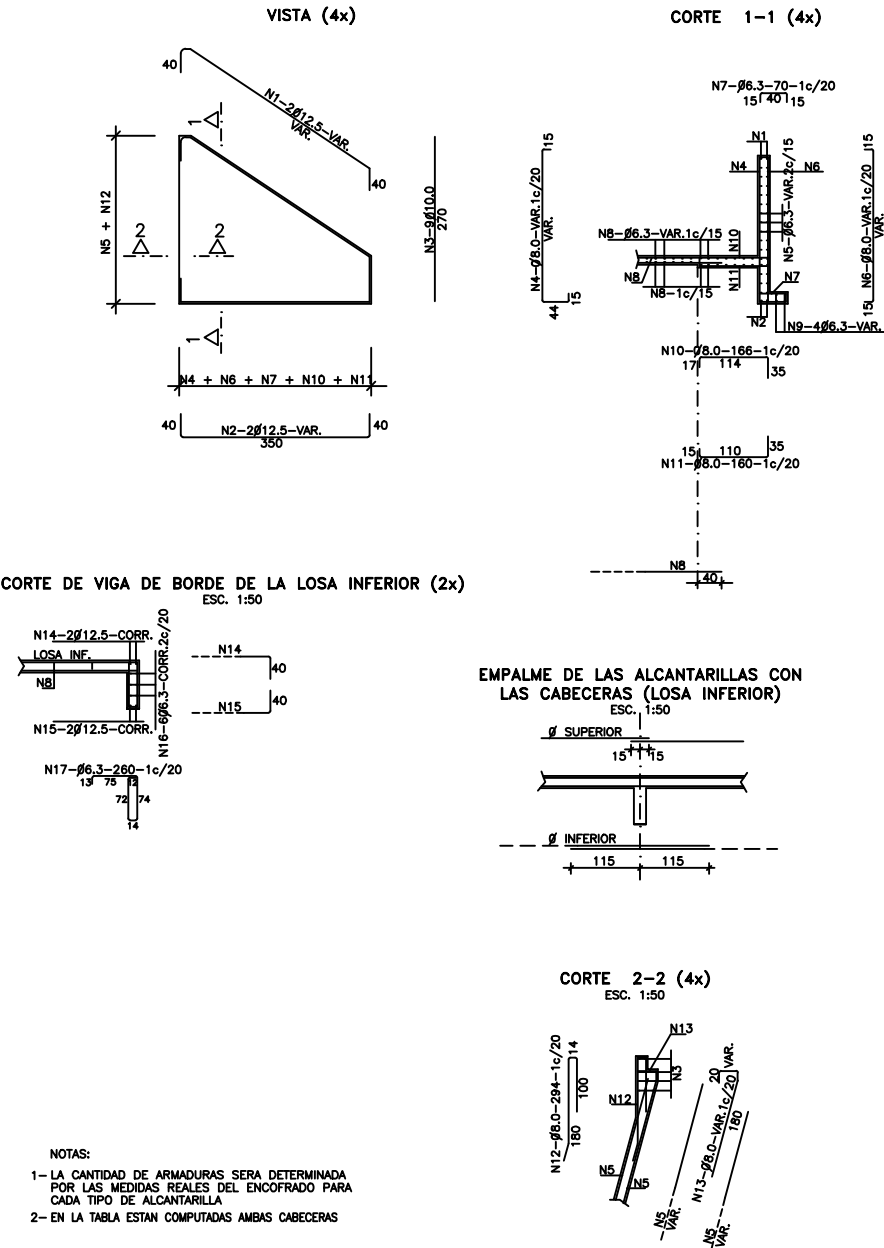
PROYECTO ALCANTARILLAS CELULARES  
PREFABRICADAS

1,5x1,5–2,0x2,0–2,5x2,5

DISEÑO GENERAL: CABECERAS

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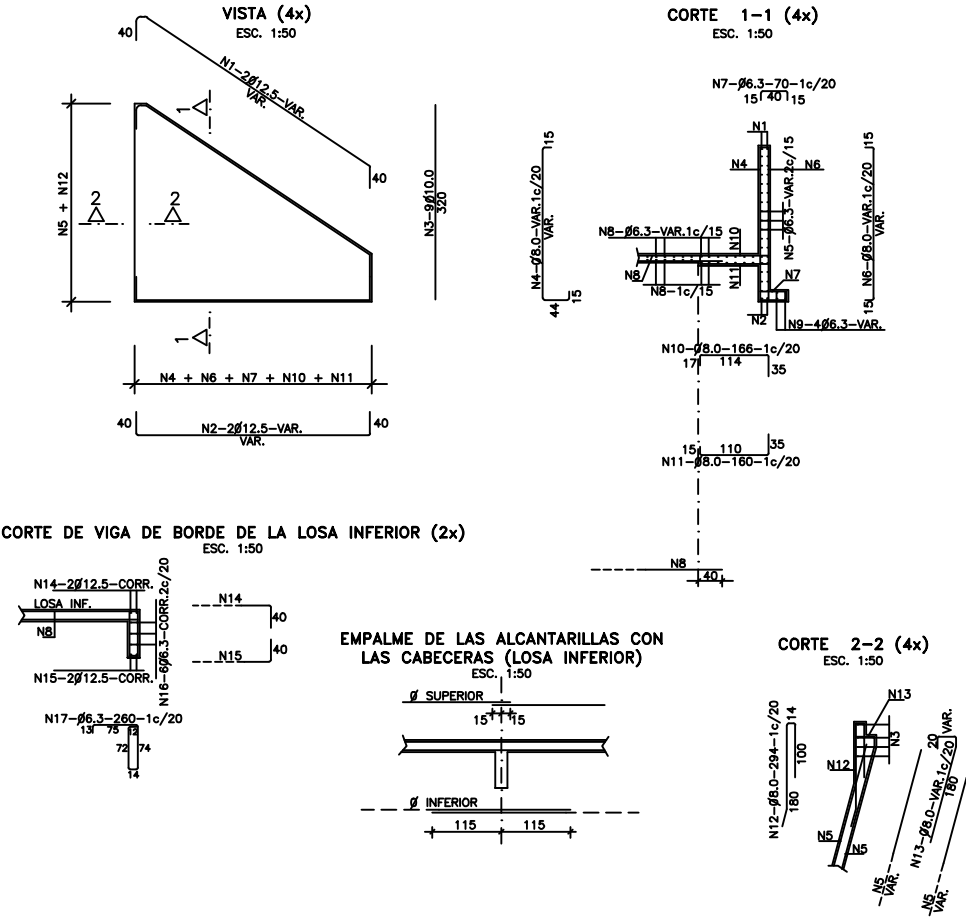
ALCANTARILLA CELULAR DE 1.50 x 1.50  
ARMADURAS DE CABECERAS -  $\alpha = 0^\circ - 15^\circ - 30^\circ - 45^\circ$



| TABLA DE ARMADURAS PARA CABECERAS DE ALCANTARILLA CELULAR - 1.50x1.50 |      |      |      |      |      |      |     |      |     |     |     |     |      |      |      |      |     |
|---|------|------|------|------|------|------|-----|------|-----|-----|-----|-----|------|------|------|------|-----|
| No.   | 1    | 2    | 3    | 4    | 5    | 6    | 7   | 8    | 9   | 10  | 11  | 12  | 13   | 14   | 15   | 16   | 17  |
| $\phi$  | 12.5 | 12.5 | 10.0 | 8.0  | 6.3  | 8.0  | 6.3 | 6.3  | 8.0 | 8.0 | 8.0 | 8.0 | 8.0  | 12.5 | 12.5 | 6.3  | 6.3 |
| C   | 8    | 8    | 36   | —    | —    | —    | —   | —    | —   | —   | —   | —   | —    | 4    | 4    | 12   | —   |
| LONG.   | 482  | 350  | 270  | VAR. | VAR. | VAR. | 70  | VAR. | 350 | 166 | 160 | 294 | VAR. | CORR | CORR | CORR | 260 |



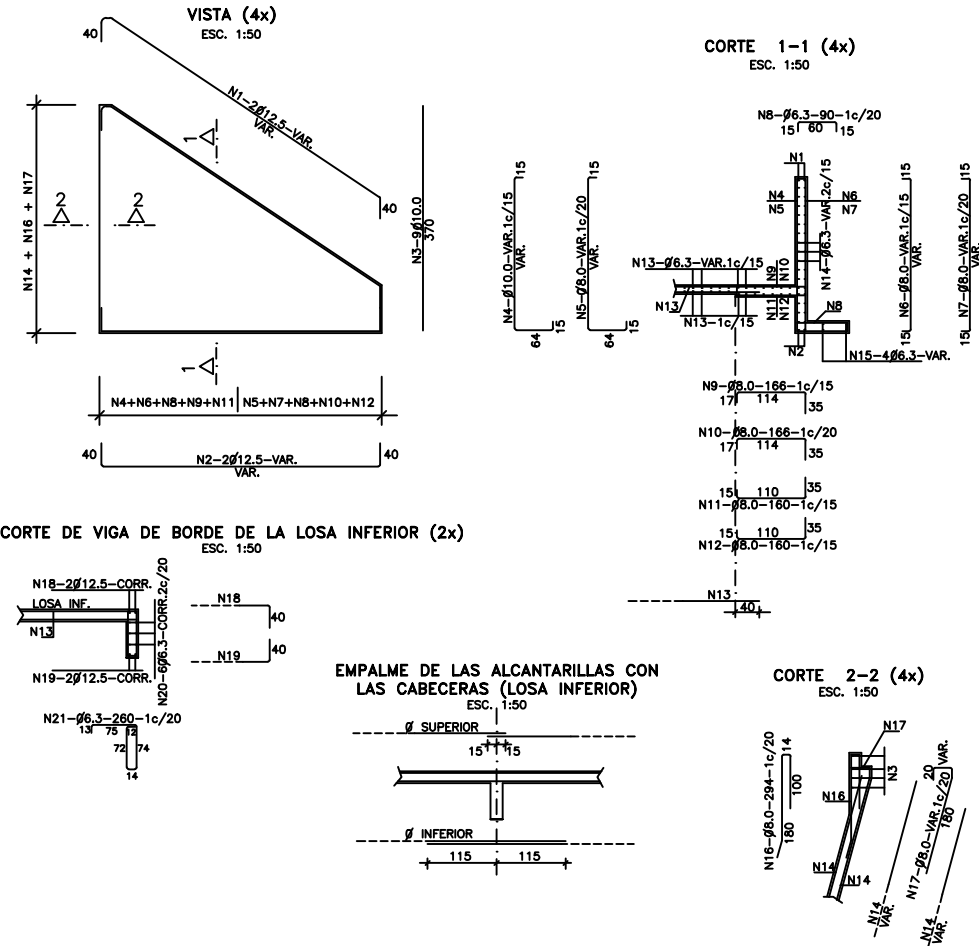
ARMADURAS DE CABECERAS  
ALCANTARILLA CELULAR DE 2.00 x 2.00 -  $\alpha=0^{\circ}-15^{\circ}-30^{\circ}-45^{\circ}$



| TABLA DE ARMADURAS PARA CABECERAS DE ALCANTARILLA CELULAR - 2.00x2.00 |      |      |      |      |      |      |     |      |      |     |     |     |      |      |      |     |
|---|------|------|------|------|------|------|-----|------|------|-----|-----|-----|------|------|------|-----|
| No.   | 1    | 2    | 3    | 4    | 5    | 6    | 7   | 8    | 9    | 10  | 11  | 12  | 13   | 14   | 15   | 17  |
| O   | 12.5 | 12.5 | 10.0 | 8.0  | 6.3  | 8.0  | 6.3 | 6.3  | 6.3  | 8.0 | 8.0 | 8.0 | 8.0  | 12.5 | 12.5 | 6.3 |
| C   | 8    | 8    | 36   | —    | —    | —    | —   | —    | 16   | —   | —   | —   | —    | 4    | 4    | 12  |
| LONG.   | VAR. | VAR. | 320  | VAR. | VAR. | VAR. | 70  | VAR. | VAR. | 166 | 160 | 294 | VAR. | CORR | CORR | 260 |

NOTAS  
1- LA CANTIDAD DE ARMADURAS SERA DETERMINADA POR LAS MEDIDAS REALES DEL ENCOFRADO PARA CADA TIPO DE ALCANTARILLA  
2- EN LA TABLA ESTAN COMPUTADAS AMBAS CABECERAS

ARMADURAS DE CABECERAS  
ALCANTARILLA CELULAR DE 2.50 x 2.50 -  $\alpha=0^{\circ}-15^{\circ}-30^{\circ}-45^{\circ}$



| TABLA DE ARMADURAS PARA CABECERAS DE ALCANTARILLA CELULAR - 2.50x2.50 |      |      |      |      |      |      |      |     |     |     |      |     |      |      |      |     |      |      |      |     |
|---|------|------|------|------|------|------|------|-----|-----|-----|------|-----|------|------|------|-----|------|------|------|-----|
| No.   | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8   | 9   | 10  | 11   | 12  | 13   | 14   | 15   | 16  | 17   | 18   | 19   | 20  |
| O   | 12.5 | 12.5 | 10.0 | 10.0 | 8.0  | 8.0  | 8.0  | 6.3 | 8.0 | 8.0 | 10.0 | 8.0 | 6.3  | 6.3  | 6.3  | 8.0 | 8.0  | 12.5 | 12.5 | 6.3 |
| C   | 8    | 8    | 36   | —    | —    | —    | —    | —   | —   | —   | —    | —   | —    | —    | 16   | —   | —    | 4    | 4    | 12  |
| LONG.   | VAR. | VAR. | 370  | VAR. | VAR. | VAR. | VAR. | 90  | 166 | 166 | 160  | 160 | VAR. | VAR. | VAR. | 294 | VAR. | CORR | CORR | 260 |

M O P C  
DEPARTAMENTO DE PUENTES Y O. A.  
DIVISION TÉCNICA

PROYECTO ALCANTARILLAS CELULARES  
PREFABRICADAS

1,5x1,5-2,0x2,0-2,5x2,5

DISEÑO ESTRUCTURAL: CABECERAS

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