

# ENSAYO: COMPRESION SIMPLE

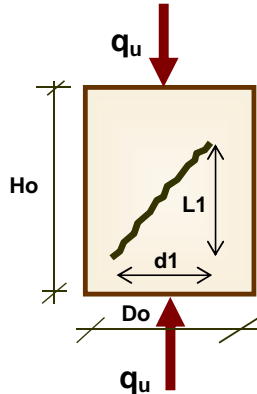
Obra....: ESTACION TRANSFORMADORA SAN AGUSTIN

Ubicac.: RUTA N 21 - (Km 2,7) LA MERCED - DPTO CERRILLOS- PROVINCIA de SALTA.

|           |           |
|-----------|-----------|
| Pozo N°:  | S1        |
| Muestra:  | M - 1     |
| Profund.: | 1,85 mts. |

|          |                         |
|----------|-------------------------|
| Alto Ho: | 72,00 mm                |
| Diam.Do: | 35,50 mm                |
| Area Ao: | 9,898 cm <sup>2</sup>   |
| Vol. Vo: | 71,266 cm <sup>3</sup>  |
| Peso Pm: | 139,80 grs.             |
| Den.Dsh: | 1,962 g/cm <sup>3</sup> |

|           |              |
|-----------|--------------|
| Fact.Aro: | 0,251 Kg/div |
|-----------|--------------|



$$L1 = 22,9 \text{ mm}$$

$$d1 = 19,5 \text{ mm}$$

$$\Theta = \arctan(L1/d1)$$

$$\Theta = 0,87 \text{ rad}$$

$$\Theta = 49,58^\circ$$

$$\Phi = 2 * (\Theta - 45^\circ)$$

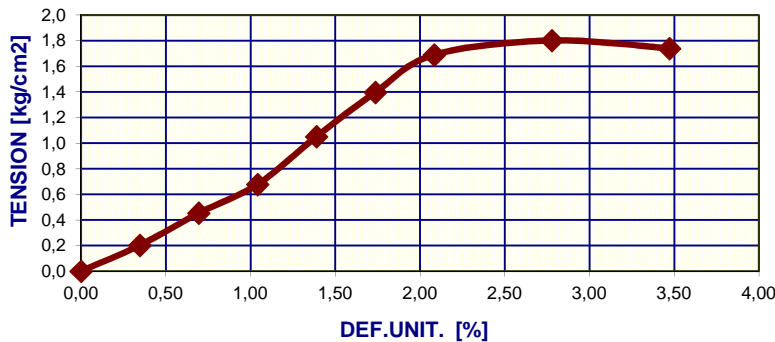
$$\Phi = 9,17^\circ$$

$$N\Phi = \text{Tang}2(45 + \Phi/2)$$

$$\sqrt{N\Phi} = 1,17 \text{ (RNF)}$$

| T I E M P O | Lect.Flex. | Def. Unit.        | Area Ac            | Lect.ARO | Fza. Vert. | Tens. Vertic.                  |
|-------------|------------|-------------------|--------------------|----------|------------|--------------------------------|
| [seg]       | [div]      | $\varepsilon$ [%] | [cm <sup>2</sup> ] | [div]    | [kg]       | $\sigma$ [kg/cm <sup>2</sup> ] |
| 0           | 0,0        | 0,00              | 9,90               | 0,0      | 0,00       | 0,00                           |
| 15          | 25,0       | 0,35              | 9,93               | 8,0      | 2,01       | 0,20                           |
| 30          | 50,0       | 0,69              | 9,97               | 18,0     | 4,52       | 0,45                           |
| 45          | 75,0       | 1,04              | 10,00              | 27,0     | 6,78       | 0,68                           |
| 60          | 100,0      | 1,39              | 10,04              | 42,0     | 10,54      | 1,05                           |
| 75          | 125,0      | 1,74              | 10,07              | 56,0     | 14,06      | 1,40                           |
| 90          | 150,0      | 2,08              | 10,11              | 68,0     | 17,07      | 1,69                           |
| 120         | 200,0      | 2,78              | 10,18              | 73,0     | 18,32      | 1,80                           |
| 150         | 250,0      | 3,47              | 10,25              | 71,0     | 17,82      | 1,74                           |
|             |            |                   |                    |          |            |                                |
|             |            |                   |                    |          |            |                                |
|             |            |                   |                    |          |            |                                |
|             |            |                   |                    |          |            |                                |

ESFZO. vs.- DEFORMACION



$$q_u = 1,80 \text{ kg/cm}^2$$

$$C = q_u / (2 \times \text{RNF})$$

$$C = 0,77 \text{ kg/cm}^2$$

$$\Phi = 9,17^\circ$$

$$C = 0,77 \text{ kg/cm}^2$$

Ing. Jorge Unzueta Perez

# ENSAYO: COMPRESION SIMPLE

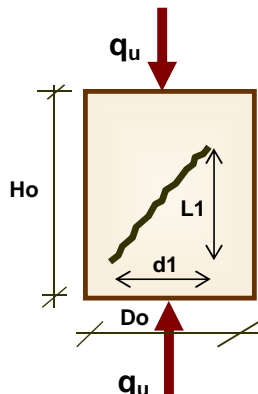
Obra.....: **ESTACION TRANSFORMADORA SAN AGUSTIN**

Ubicac.: RUTA N 21 - (Km 2,7)LA MERCED - DPTO CERRILLOS- PROVINCIA de **SALTA**.

|           |           |
|-----------|-----------|
| Pozo N°:  | S2        |
| Muestra:  | M - 2     |
| Profund.: | 2,15 mts. |

|          |                         |
|----------|-------------------------|
| Alto Ho: | 71,50 mm                |
| Diam.Do: | 35,50 mm                |
| Area Ao: | 9,898 cm <sup>2</sup>   |
| Vol. Vo: | 70,771 cm <sup>3</sup>  |
| Peso Pm: | 139,80 grs.             |
| Den.Dsh: | 1,975 g/cm <sup>3</sup> |

|           |              |
|-----------|--------------|
| Fact.Aro: | 0,251 Kg/div |
|-----------|--------------|



$$L1 = 22,0 \text{ mm}$$

$$d1 = 18,4 \text{ mm}$$

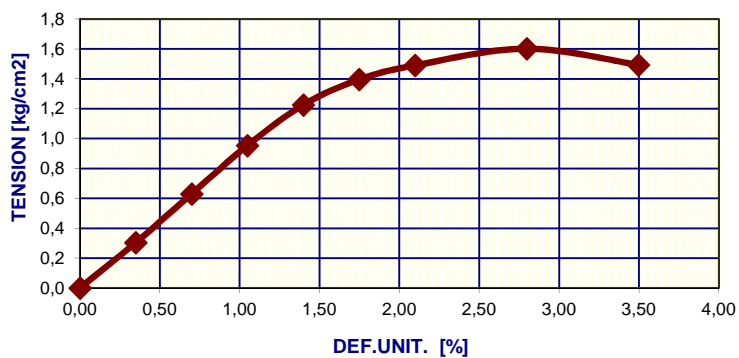
|                                |
|--------------------------------|
| $\Theta = \arctang (L1/d1)$    |
| $\Theta = 0,87 \text{ rad}$    |
| $\Theta = 50,09^\circ$         |
| $\Phi = 2*(\Theta - 45^\circ)$ |
| $\Phi = 10,18^\circ$           |

$$N\Phi = \text{Tang}2 (45+\Phi/2)$$

$$\sqrt{N\Phi} = 1,20 \text{ (RNF)}$$

| TIEMPO | Lect.Flex. | Def. Unit.     | Area Ac            | Lect.ARO | Fza. Vert. | Tens. Vertic.                  |
|--------|------------|----------------|--------------------|----------|------------|--------------------------------|
| [seg]  | [div]      | $\epsilon$ [%] | [cm <sup>2</sup> ] | [div]    | [kg]       | $\sigma$ [kg/cm <sup>2</sup> ] |
| 0      | 0,0        | 0,00           | 9,90               | 0,0      | 0,00       | 0,00                           |
| 15     | 25,0       | 0,35           | 9,93               | 12,0     | 3,01       | 0,30                           |
| 30     | 50,0       | 0,70           | 9,97               | 25,0     | 6,28       | 0,63                           |
| 45     | 75,0       | 1,05           | 10,00              | 38,0     | 9,54       | 0,95                           |
| 60     | 100,0      | 1,40           | 10,04              | 49,0     | 12,30      | 1,23                           |
| 75     | 125,0      | 1,75           | 10,07              | 56,0     | 14,06      | 1,40                           |
| 90     | 150,0      | 2,10           | 10,11              | 60,0     | 15,06      | 1,49                           |
| 120    | 200,0      | 2,80           | 10,18              | 65,0     | 16,32      | 1,60                           |
| 150    | 250,0      | 3,50           | 10,26              | 61,0     | 15,31      | 1,49                           |
|        |            |                |                    |          |            |                                |
|        |            |                |                    |          |            |                                |
|        |            |                |                    |          |            |                                |
|        |            |                |                    |          |            |                                |

ESFZO. vs.- DEFORMACION



$$q_u = 1,60 \text{ kg/cm}^2$$

$$C = q_u / (2 \times \text{RNF})$$

$$C = 0,67 \text{ kg/cm}^2$$

$$\Phi = 10,18^\circ$$

$$C = 0,67 \text{ kg/cm}^2$$

Ing. Jorge Unzueta Perez

# ENSAYO: COMPRESION SIMPLE

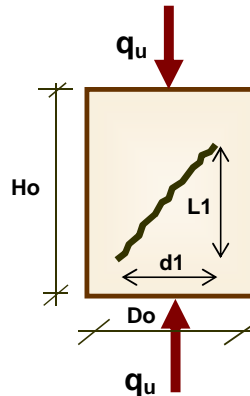
Obra....: **ESTACION TRANSFORMADORA SAN AGUSTIN**

Ubicac.: RUTA N 21 - (Km 2,7) LA MERCED - DPTO CERRILLOS- PROVINCIA de **SALTA**.

|           |           |
|-----------|-----------|
| Pozo N°:  | S3        |
| Muestra:  | M - 3     |
| Profund.: | 2,20 mts. |

|          |                         |
|----------|-------------------------|
| Alto Ho: | 71,75 mm                |
| Diam.Do: | 35,75 mm                |
| Area Ao: | 10,038 cm <sup>2</sup>  |
| Vol. Vo: | 72,022 cm <sup>3</sup>  |
| Peso Pm: | 139,80 grs.             |
| Den.Dsh: | 1,941 g/cm <sup>3</sup> |

|           |              |
|-----------|--------------|
| Fact.Aro: | 0,251 Kg/div |
|-----------|--------------|



$$L1 = 25,0 \text{ mm}$$

$$d1 = 20,4 \text{ mm}$$

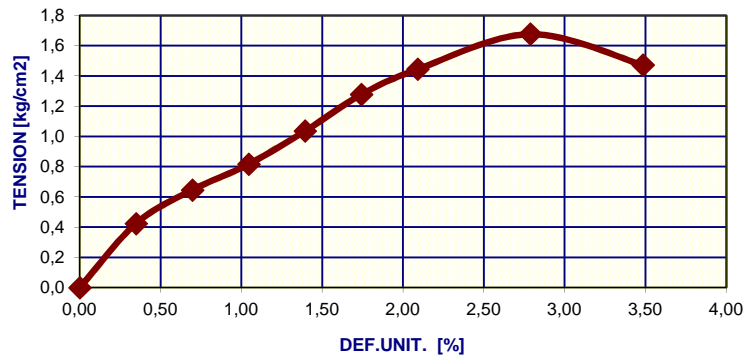
|                                  |
|----------------------------------|
| $\Theta = \arctang (L1/d1)$      |
| $\Theta = 0,89 \text{ rad}$      |
| $\Theta = 50,79^\circ$           |
| $\Phi = 2 * (\Theta - 45^\circ)$ |
| $\Phi = 11,57^\circ$             |

$$N\Phi = \text{Tang2} (45 + \Phi/2)$$

$$\sqrt{N\Phi} = 1,23 \text{ (RNF)}$$

| TIEMPO | Lect.Flex. | Def. Unit.     | Area Ac            | Lect.ARO | Fza. Vert. | Tens. Vertic.                  |
|--------|------------|----------------|--------------------|----------|------------|--------------------------------|
| [seg]  | [div]      | $\epsilon$ [%] | [cm <sup>2</sup> ] | [div]    | [kg]       | $\sigma$ [kg/cm <sup>2</sup> ] |
| 0      | 0,0        | 0,00           | 10,04              | 0,0      | 0,00       | 0,00                           |
| 15     | 25,0       | 0,35           | 10,07              | 17,0     | 4,27       | 0,42                           |
| 30     | 50,0       | 0,70           | 10,11              | 26,0     | 6,53       | 0,65                           |
| 45     | 75,0       | 1,05           | 10,14              | 33,0     | 8,28       | 0,82                           |
| 60     | 100,0      | 1,39           | 10,18              | 42,0     | 10,54      | 1,04                           |
| 75     | 125,0      | 1,74           | 10,22              | 52,0     | 13,05      | 1,28                           |
| 90     | 150,0      | 2,09           | 10,25              | 59,0     | 14,81      | 1,44                           |
| 120    | 200,0      | 2,79           | 10,33              | 69,0     | 17,32      | 1,68                           |
| 150    | 250,0      | 3,48           | 10,40              | 61,0     | 15,31      | 1,47                           |
|        |            |                |                    |          |            |                                |
|        |            |                |                    |          |            |                                |
|        |            |                |                    |          |            |                                |
|        |            |                |                    |          |            |                                |

ESFZO. vs.- DEFORMACION



$$q_u = 1,68 \text{ kg/cm}^2$$

$$C = q_u / (2 \times \text{RNF})$$

$$C = 0,69 \text{ kg/cm}^2$$

$$\Phi = 11,57^\circ$$

$$C = 0,69 \text{ kg/cm}^2$$

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