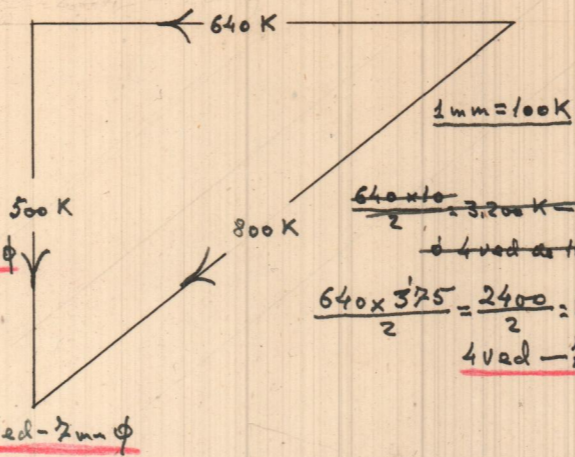
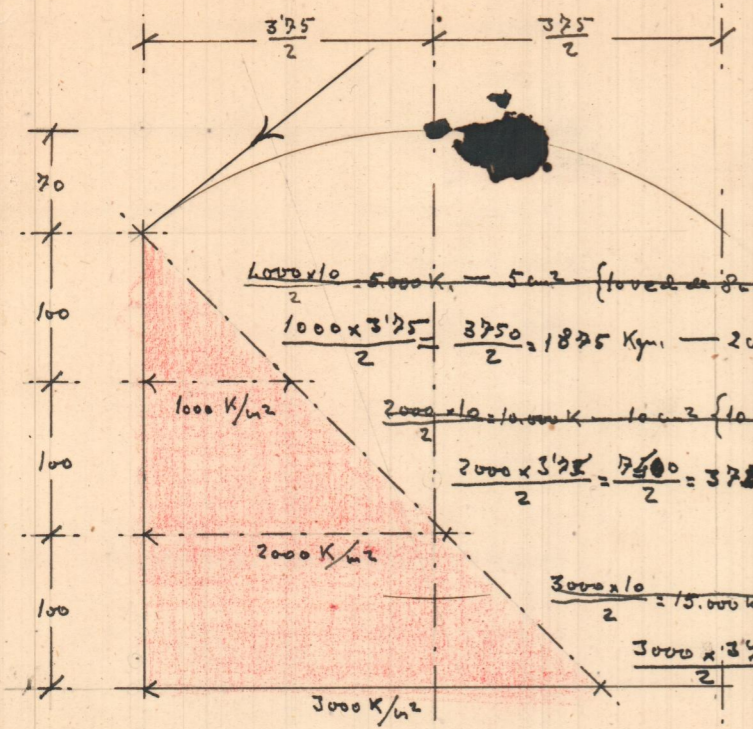
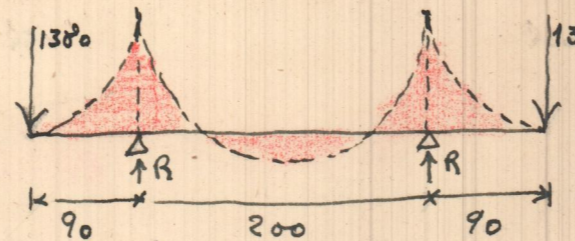


$$F = \frac{P \cdot U}{2}$$

Empuje de los 2 bovedas - Sojo de 1 m  
 $\frac{1}{2} \times 1 \times \frac{3'25}{2} = 0'93 \text{ m}^2$  a 500 K/m, < 500 K/m. lim



$\frac{1000 \times 10}{2} = 5000 \text{ K} = 5 \text{ m}^2$  {10 ved. de 8 mm  $\phi$   
 $\frac{1000 \times 3'25}{2} = 1625 \text{ K} = 2 \text{ m}^2$  {10 ved. de 5 mm  $\phi$   
 $\frac{2000 \times 10}{2} = 10000 \text{ K} = 10 \text{ m}^2$  {10 ved. de 12 mm  $\phi$   
 $\frac{2000 \times 3'25}{2} = 3250 \text{ K} = 4 \text{ m}^2$  {10 ved. de 7 mm  $\phi$   
 $\frac{3000 \times 10}{2} = 15000 \text{ K} = 15 \text{ m}^2$  {10 ved. de 14 mm  $\phi$   
 $\frac{3000 \times 3'25}{2} = 4875 \text{ K} = 6 \text{ m}^2$  {10 ved. de 9 mm  $\phi$



$$R = \left\{ \begin{array}{l} 1'9 \times 3000 = 5700 \\ 1380 \\ \hline 7080 \\ 1'9 \times 480 = 912 \\ \hline 7992 \end{array} \right.$$

**PLACA**

Karga en el borde - 720 + 640 = 1380 K/m ancho  
 " uniforme - 3000 K/m ancho.  
 " " - 0'2 x 2400 = 480 K/m ancho

Momento apoyo =  $1380 \times 0'9 + 3000 \times 0'9 \times 0'45 = 1242 + 1215 = 2457 \text{ K.m}$

Momento vano =  $1380 \times 1'9 + 3000 \times 1'9 \times 0'95 - 7080 \times 1 = 2622 + 5415 - 7080 = 975 \text{ K.m}$

Ha =  $2457 + 480 \times 0'9 \times 0'45 = 2457 + 195 = 2652 \text{ K.m}$

Hv =  $975 + 480 \times 1'9 \times 0'95 - 912 = 930 \text{ K.m}$

**PESO CUBIERTA**

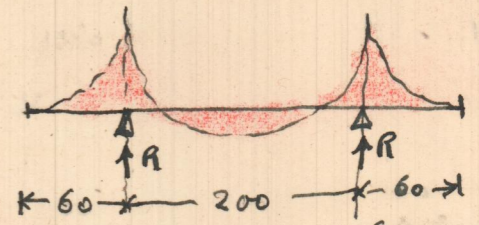
$$\frac{\pi d^2}{4} \times 500 = \frac{3'14 \times 3'25^2}{4} \times 500 = 11'05 \times 500 = 5525 \text{ Kg/m}$$

**PESO MURO**

$$\pi d \times 0'1 \times 3 \times 2400 = 11'78 \times 0'1 \times 3 \times 2400 = 8482 \text{ Kg/m}$$

**PESO AGUA**

$$\frac{\pi d^2}{4} \times 3 \times 1000 = \frac{3'14 \times 3'25^2}{4} \times 1000 \times 3 = 11'05 \times 3000 = 33150 \text{ Kg/m}$$



**JACENAS**

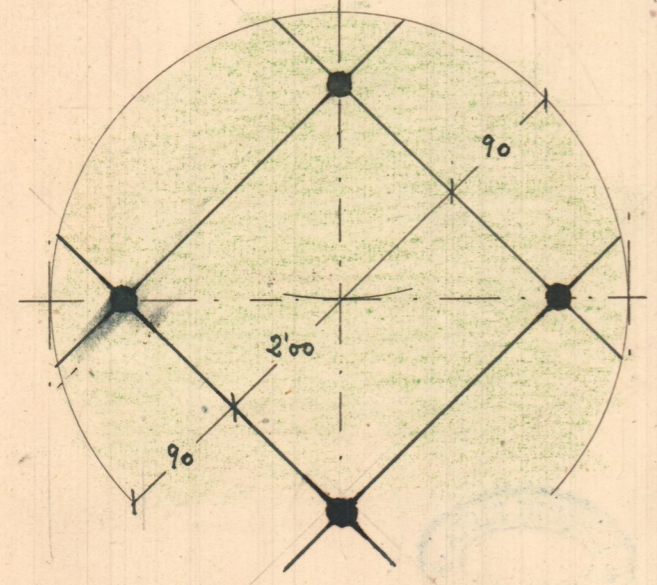
$$R = 9936 \times 1'60 = 15898$$

Karga uniforme  $\left\{ \begin{array}{l} 1'90 \times 3000 = 5700 \\ 1'90 \times 0'2 \times 2400 = 2280 \\ 0'6 \times 0'4 \times 2400 = 576 \\ \hline 1380 \\ \hline 9936 \text{ K.m.l.} \end{array} \right.$

Momento apoyo -  $9936 \times 0'3 \times 0'6 = 1789 \text{ K.m}$

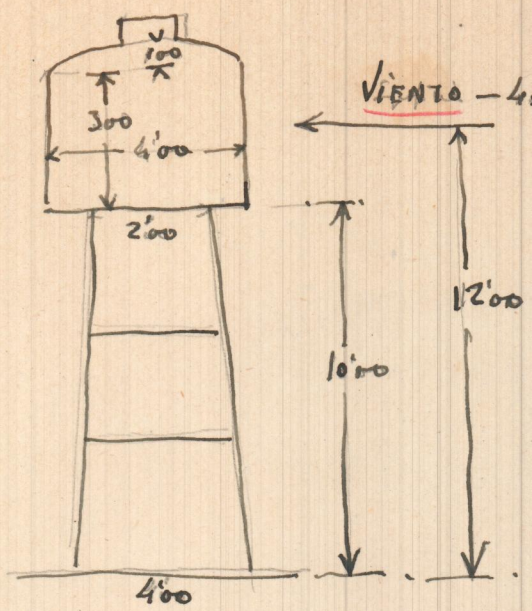
**Momento vano**

$$9936 \times 1'60 \times 0'8 - 15898 \times 1 = 12719 - 15898 = 3179 \text{ K.m}$$



HOYACAN — 200 K/m<sup>2</sup>

3200  
12  
64  
32  
38400

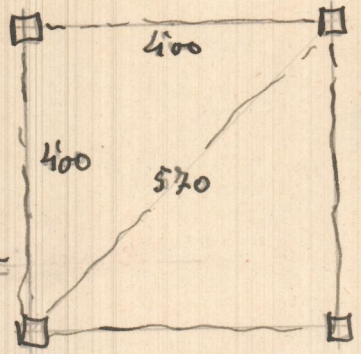


VIENTO —  $4 \times 4 \times 200 = 3200 \text{ Kg/m}$

Momento Gole —  $3200 \times 12 = 38400 \text{ K.m}$

$38400 = 400 \times p \Rightarrow p = \frac{38400}{4} = 9600 \text{ K}$

$\frac{9600}{2} \text{ por pie} = 4800 \text{ Kg Dinamija} - 9600$



Viento en virechitz

$38400 = 570 \times p$

$p = \frac{38400}{570} = 6738 \text{ Kg}$

Dinamija —  $2 \times 6738 = 13476 \text{ K}$

**PESO PROPIO**

fundado	5.600	Kg
Muro	8.500	"
Tubique — 11'28 x 0'05 x 1600	1.000	"
Aguá	33.200	"
Placa — 11'05 x 0'2 x 2400	13.300	"
Jarens — 4 x 3'20 x 0'4 x 0'6 x 2400	2.400	"
Pies — 0'4 x 0'4 x 10'5 x 2400	4.100	"
fishes — 8 x 3'0 x 0'4 x 0'3 x 2400	7.000	"
" — 2 x 4'5 x 0'5 x 0'3 x 2400	3.300	"
83.400 Kg		

casos mas desfavorables

Pie a compresion { 20.850 } 34.326 Kg

Pie a extension { 13.476 } 3.926 Kg

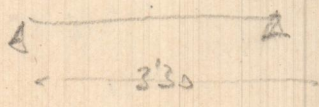
Para 35T { 26x26 — 30x30  
6'5 m<sup>2</sup> — 4 ped — 15 m φ

Minimo paredes  $\frac{3'50}{15} = 23'33 \text{ m}$

Karga por pie lleno —  $\frac{83400}{4} = 20850 \text{ Kg}$

Deposito vacio —  $\frac{83400 - 33200}{4} = 50200 / 4$

Karga por pie vacio — 12550 Kg

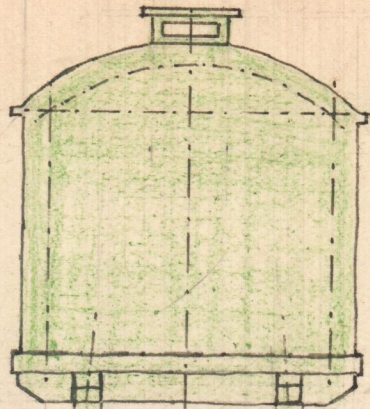


$\frac{P1^2}{8} = \frac{400 \times 3'3^2 \times 4}{8} = 220000$

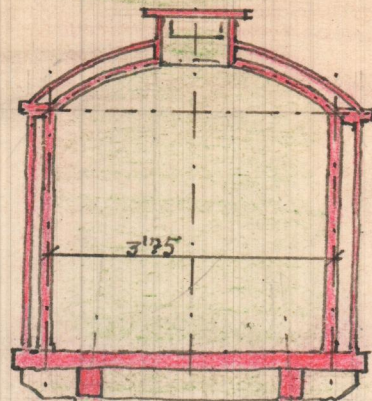
3'3	1600
3'3	21
3'3	1600
3'3	1600
3'3	1600
3'3	1760
3'3	16
3'3	2200
3'3	00

42221

TORRE DE AGUA



3'00



3'25

$\text{Diametro } 3'25 = \begin{cases} \text{área} = 11'04 \text{ m}^2 \\ \text{circunferencia} = 11'78 \text{ m} \end{cases}$   
 $\frac{3'25^2}{4} = 1'875$   
 $\text{Volumen } 3 \times 11'04 = 33'12 \text{ m}^3$

ALZADO

1'000

SECCION

$5 \times 5 \times 5 = 125 \text{ m}^3 \text{ a } 1000 \text{ kg} = 125 \text{ T}$

$\frac{125}{4} = 31'25 \text{ T} \neq 40 \text{ T por pie}$

$\frac{40.000}{2} = 20.000 \text{ cm}^2 \text{ de cemento a } 3 \text{ kg/cm}^2$

$150 \times 150 = 22.500 \text{ cm}^2$

TORRE DE AGUA

Mediciones

$\text{Cimientos } \begin{cases} 4 \times 220 \times 220 \times 0'80 = 15'488 \\ 4 \times 110 \times 110 \times 0'70 = 3'388 \end{cases} = 18'876 \text{ m}^3$

$\text{Pies } \{ 4 \times 10 \times 0'50 \times 0'40 = 8'000 \text{ m}^3 \}$

$\text{Puentes } \begin{cases} 4 \times 4'60 \times 0'30 \times 0'20 = 1'104 \text{ m}^3 \\ 4 \times 3'00 \times 0'30 \times 0'20 = 0'720 \text{ "} \end{cases}$

$\text{Jalenas } \{ 4 \times 4'50 \times 0'40 \times 0'30 = 2'160 \text{ m}^3 \}$

$\text{Placa } \{ \frac{3'14 \times 4'60^2}{4} \times 0'20 = 3'323 \text{ m}^3 \}$

$\text{Deposito } \begin{cases} 3'14 \times 3'25 \times 3 \times 0'10 = 3'534 \text{ m}^3 \\ 3'14 \times 3'25 \times 2 \times 0'05 = 0'589 \text{ "} \\ 3'14 \times 3'25 \times 0'20 \times 0'30 = 0'706 \text{ "} \end{cases}$

$\text{Eluido } \begin{cases} \frac{3'14 \times 3'25^2}{4} = 11'04 \\ 3'14 \times 3'25 \times 3 \times 2 = 70'68 \end{cases} = 81'72 \text{ m}^2$

$\text{Tabique } \begin{cases} 3'14 \times 4'50 \times 3 = 40'52 \\ 3'14 \times \frac{1}{2} \times 4'50 \times 2'50 = 16'88 \end{cases} = 57'40 \text{ m}^2$

$\text{Eluido } \begin{cases} 3'14 \times 4'30 \times 3'00 = 40'52 \\ 3'14 \times \frac{1}{2} \times 4'30 \times 2'50 = 16'88 \end{cases} = 57'40 \text{ m}^2$

Usos/nario

$\text{Eluido } - 139'12 \text{ m}^2$

PLANTA

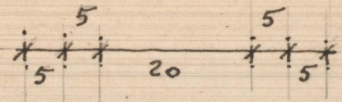
E.-1:100



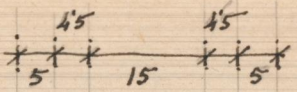
Tuberías para aguas pluviales

E. - 1:10

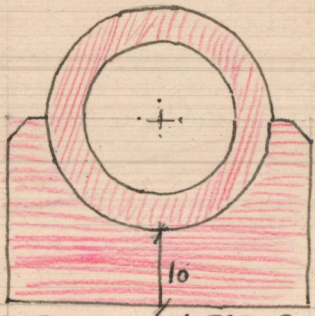
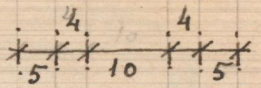
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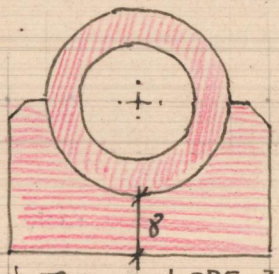
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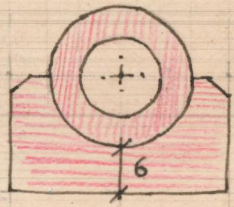
3



Sección Tubo — 0'0393 m<sup>2</sup>  
Sección final — 0'0648 m<sup>2</sup>



Sección Tubo — 0'0275 m<sup>2</sup>  
Sección final — 0'0455 m<sup>2</sup>



Sección Tubo — 0'0175 m<sup>2</sup>  
Sección final — 0'0294 m<sup>2</sup>