

ELEMENTOS PATRIMONIALES

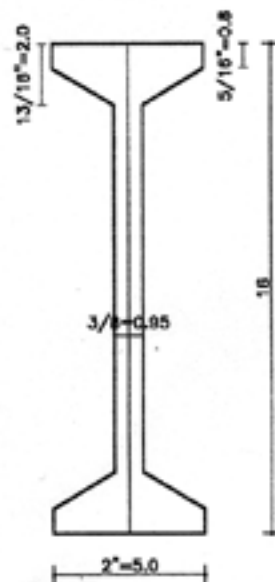
CUBIERTA PRINCIPAL

EVALUACION DE LA ESTRUCTURA FIVE-LILLE

CAPACIDAD PORTANTE DE LA PARRILLA

Verificación de la capacidad portante de la estructura de la parrilla

Perfiles I h=16 b=5 (fichas 21 y 22)
luz = 370 (distancia entre arcos)



$$I = 921 \text{ cm}^4$$

$$W = 115 \text{ cm}^3$$

$$\sigma_{adm} = 0.8 \text{ t/cm}^2 \quad M_{adm} = 92 \text{ t/cm} = 0.92 \text{ t/m}$$

$$Q_t \times \frac{3.70^2}{8} = 0.92 \quad Q_t = 0.538 \text{ t/m} \quad \text{Para esta carga: } R = 0.54 \times 3.7 = 1.0 \text{ t}$$

$$\text{PPR: perfil } (2 \times 7.57 + 14 \times 0.95) \times 100 \times 7.85 \times \frac{1}{1000} = 22.3 \text{ kg/m}$$

$$\text{correa madera } 5'' \times 3'' : 12.7 \times 7.6 = 9.6 \text{ kg/m}$$

$$\text{por metro correas } 3'' \times 3'' \text{ separads } 8 \text{ cm}$$

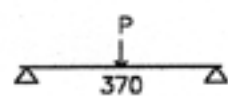
$$\frac{100}{15.6} = 6.4 \text{ correas por metro} \quad 7.6 \times 7.6 \times 1.40 \times 6.40 = \frac{520}{83.9} \text{ kg/m}$$

$$\text{Carga util } \frac{\text{t}}{\text{m}^2} = \frac{0.538 - 0.084}{1.40} = \frac{0.454}{1.40} = 0.324 \text{ t/m}^2$$

PARA CARGAS PUNTUALES

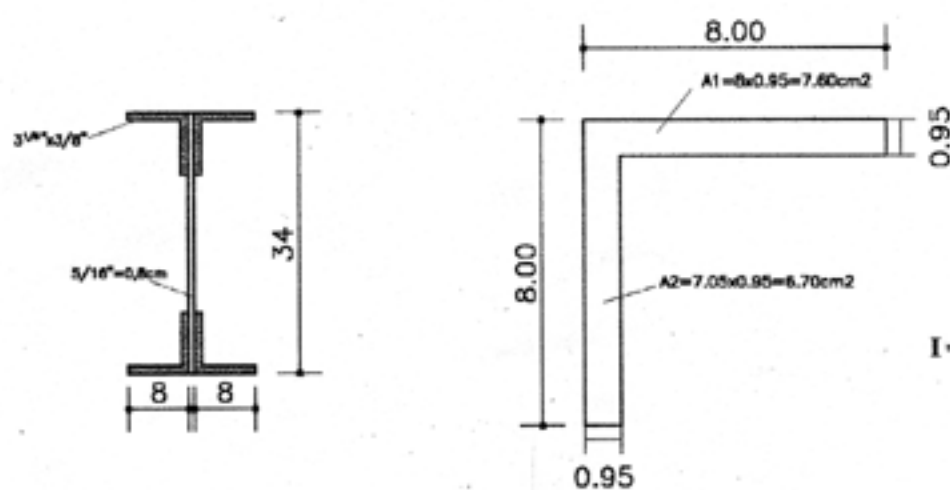
$$M_{adm} = 0.92 \text{ tm} \quad M_{PPV} = \frac{3.70^2}{8} \times 0.084 = 0.143 \text{ tm}$$

$$\text{Momento carga puntual: } P \text{ al centro del vano} = 0.92 - 0.143 = 0.777$$



$$P \times 3.70 = 0.777 \quad \underline{P_{adm} = 0.84 \text{ t}}$$

Viga metálica horizontal en plano del arco (cuelga de tres tensores) (ficha 22)



$$St = 14.30$$

$$y_G = \frac{7.60 \times 0.95/2 + 6.70 \times 4.48}{14.30} = 2.35$$

$$I = 2 \times 2 \times 14.30(17 \times 2.35)^2 + 0.8 \times 34^3/12 = 14897 \text{ cm}^4$$

$$W = \frac{14897}{17} = 876 \text{ cm}^3 \quad \sigma_{adm} = 0.8 \text{ t/cm}^2$$

$$M_{adm} = 876 \times 0.8 = 700 \text{ tcm} = 7.0 \text{ tm}$$

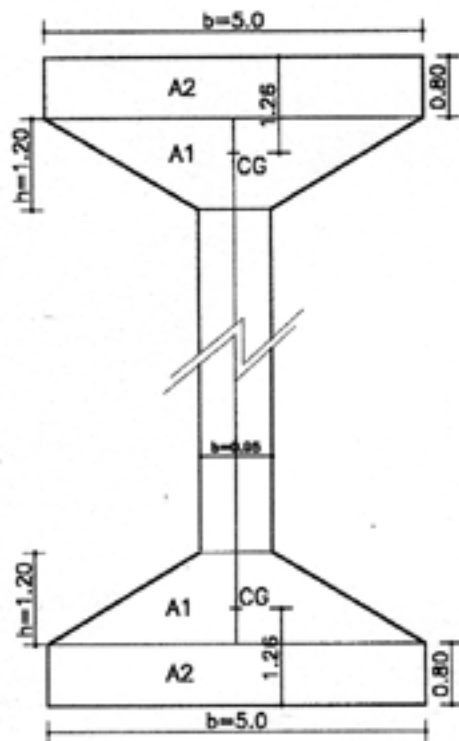
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PI 16 Parrilla



INERCIA

$$X_{G1} = \frac{1.2(5.0 + 2 \times 0.95)}{3(5.0 + 0.95)} = 0.46$$

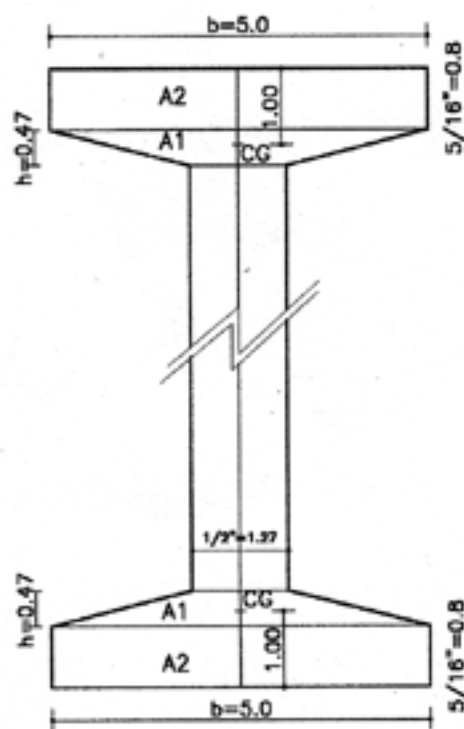
$$A_1 = 3.57 \text{ cm}^2$$

$$A_2 = 4.0 \text{ cm}^2$$

$$I = 2 \times 3.57(8.0 - 1.26)^2 + 2 \times 4.00(8.0 - 0.4)^2 + 0.95 \times 12^3 / 12 = 3.24 + 462 + 137 = 921 \text{ cm}^4$$

$$W = \frac{921}{8} = 115 \text{ cm}^3$$

PI 14 Cubierta



$$X_{G1} = \frac{0.47(5.0 + 2 \times 1.27)}{3(5.0 + 1.27)} = 0.20$$

$$A_1 = 1.47 \text{ cm}^2$$

$$A_2 = 4.0 \text{ cm}^2$$

$$I = 2 \times 1.47(7.0 - 1.0)^2 + 2 \times 4.00(7.0 - 0.4)^2 + 1.27 \times (14 - 2.94)^3 / 12 = 106 + 348 + 143 = 597 \text{ cm}^4$$

$$W = \frac{597}{7} = 85 \text{ cm}^3 \quad \sigma_{adm} = 0.8$$

$$M_{adm} = 68 \text{ tcm} = 0.68 \text{ tm}$$

$$L = 420 \text{ (sobre sala de pintura)}$$

Descontando momento del PPr de P14 y un elemento de apoyo de las de las chapas : PPr PI 14: $(2 \times 5.47 + 1.27 \times 11.5) \times 7.85 = 20.0 \text{ kg/m}$

elemento apoyo $\frac{100}{30.0} \text{ kg/m}$

$$M = \frac{4.20^2}{8} \times 0.03 = 0.066$$

$$M_{adm} \text{ (solo cubierta)}: 0.68 - 0.066 = 0.61$$

$$q \times 3.00 \times \frac{4.20^2}{8} = 0.61 \quad q_{cubierta} = 0.093 \text{ t/m}^2 = 93 \text{ kg/m}^2$$