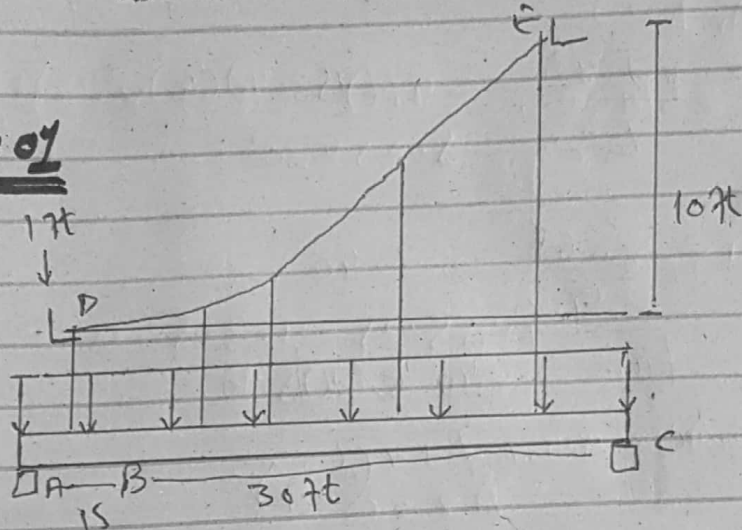


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# Assignment #04

## Answer #01



## Solution:

Member Bc

$$\sum \vec{F}_x = 0$$

$$B_x = 0$$

Member AB

$$\sum \vec{F}_x = 0$$

$$A_x = 0$$

Moment At A

$$\sum \vec{M}_A = 0 \quad F_x(17) - B_y(15) - 45(4.5) = 0 \quad \text{--- (1)}$$

FBD

$$\sum M_C = 0 \quad -F_y(10) - B_y(30) + (45)(50) = 0$$

$$F_H = 153.4$$

$$B_y = 0$$

(2)

$$w_0 = \frac{2FHh}{L^2} = \frac{2(153.4)(10)}{30^2}$$

$$= \frac{3068}{900} = 3.40$$

$$\boxed{w_0 = 3.40 \text{ k/ft}}$$

$$F_{\max} = w_0 L \sqrt{1 + \left(\frac{L}{24}\right)^2}$$

$$= 3.4(30) \sqrt{1 + \left(\frac{30}{2(10)}\right)^2}$$

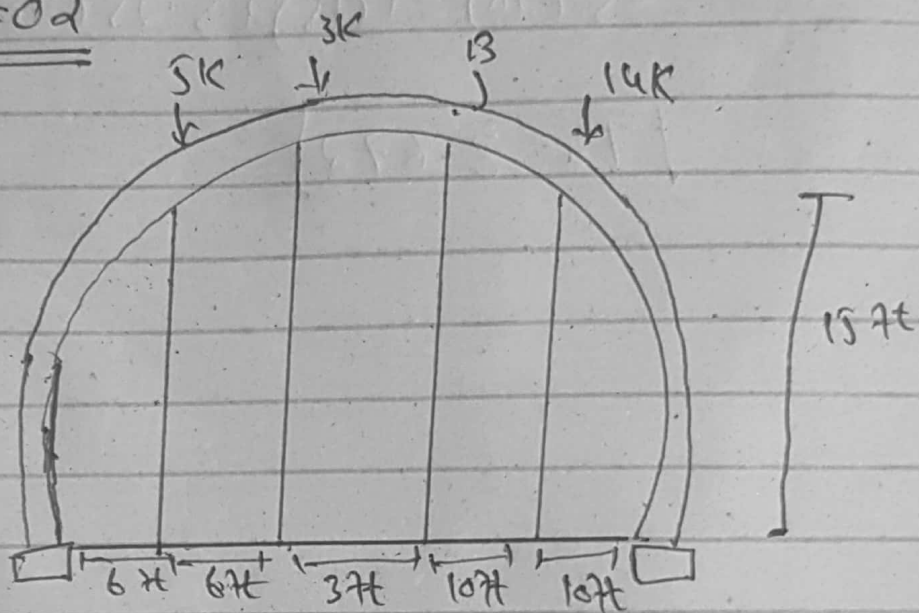
$$\boxed{F_{\max} = 183.6 \text{ k}}$$

Each hanger carries 5 ft of wv

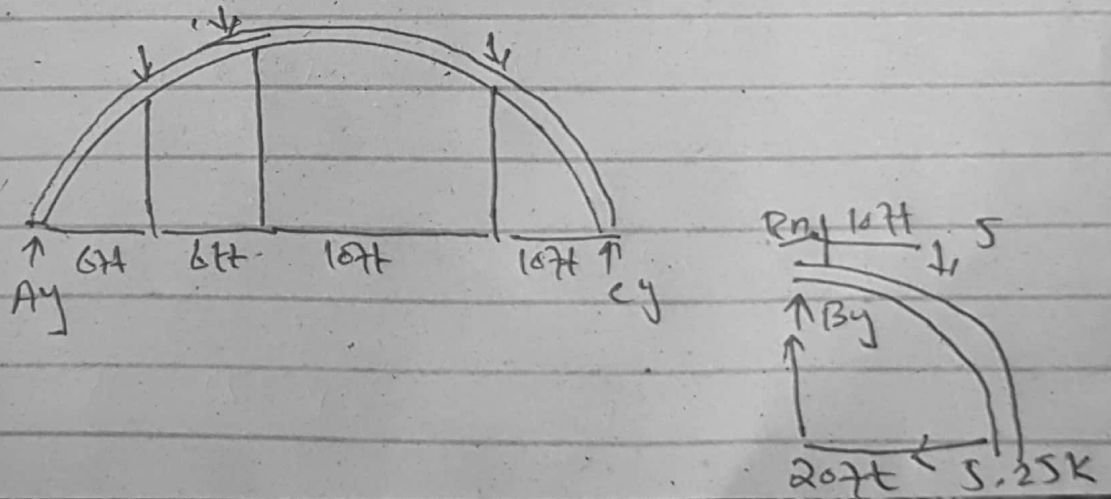
$$T_2 = (5)(3.4)$$

$$\boxed{T_2 = 17 \text{ k}}$$

Answer #02



Solution:



Entire Arch

$$\hookrightarrow \sum M_A = 0; \quad -4(6) - 3(2) - 5(30) + C_y(40) = 0$$
$$C_y = 5.25 \text{ k}$$

$$\uparrow \sum F_y = 0$$

$$A_y + 5.25 - 4 - 3 - 5 = 0$$

$$A_y = 6.75 \text{ k}$$

$$\rightarrow \sum F_x = 0$$

$$A_x = 0$$

Section Bc

$$\hookrightarrow \sum M_B = 0$$

$$-5(10) - T(15) + 5.25(20) = 0$$

$$\boxed{T = 3.672}$$