

Name

MUBATAK-CHA H

I.D

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7955

subject

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structure

Assignment

no

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03

section

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B

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Q No # 01

Solution:

Member BC

$$\sum_{H} F = 0 \quad B_x = 0$$

Member AB

$$\sum_{H} F_x = 0 - \quad A_x = 0$$

Moment At A

$$\sum_{H} M_A = F_H(1) - B_y(15) - (45)(75) = 0 \rightarrow \textcircled{10}$$

FBD =

$$\sum_{H} M_c = 0 - \underbrace{F_H(10)}_{LH} - B_y(30) + (45)(30) = 0 \rightarrow \textcircled{11}$$

$$\boxed{F_H = 153.4} \quad B_y = 0$$

$$W_0 = \frac{2fwh}{L^2} = \frac{2(153.4)(10)}{30^2} = \frac{3068}{900} = 3.40$$

$$W_0 = 3.40 \text{ k/ft}$$

$$F_{max} = W_0 L \sqrt{1 + \left(\frac{L}{24}\right)^2} = 3.4(30) \sqrt{1 + \left(\frac{30}{24}\right)^2}$$

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

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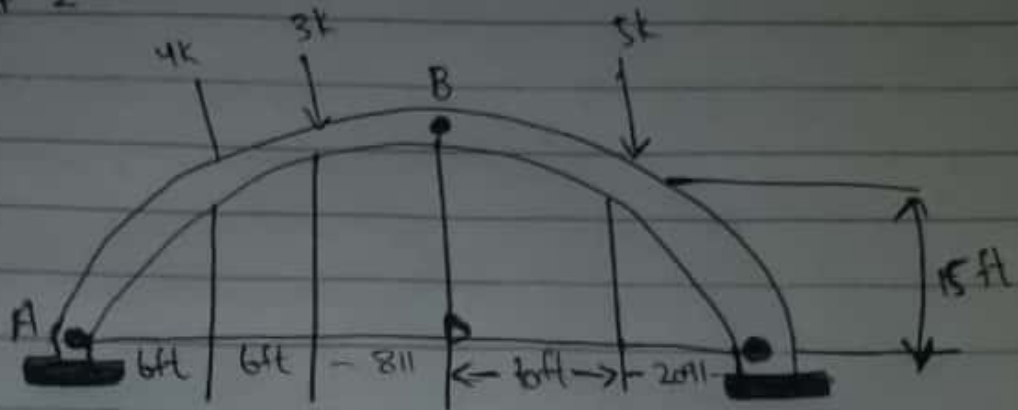
Each hanger carries  
5ft of  $W_o$

$$T = (5\text{ft})(3.4\text{k})\text{ft}$$

$$T = 17\text{k}$$

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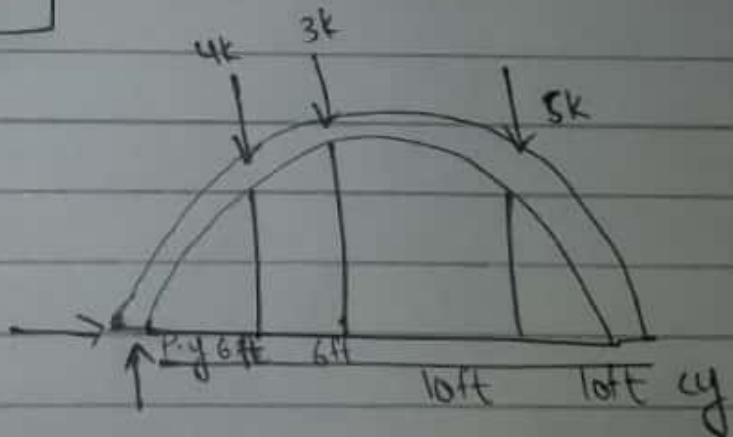
Q# 2 :-



Entire Arch.

$$\begin{aligned} \sum M_A = 0; \\ -4(6) - 3(12) - 5(30) + c_y(40) = 0 \\ \boxed{c_y = 5.5 \text{ k}} \end{aligned}$$

$$\sum f_y = 0;$$



$$A_y + 5 \cdot 25 - 4 - 3 - 5 = 0$$

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

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$$\rightarrow \sum f_x = 0; \quad A_x = 0$$

Section BC :

$$\hookrightarrow + \sum M_B = 0;$$

$$-S(10) - T(15) + 5 \cdot 25(20) = 0$$

$$T = 3.67K$$

