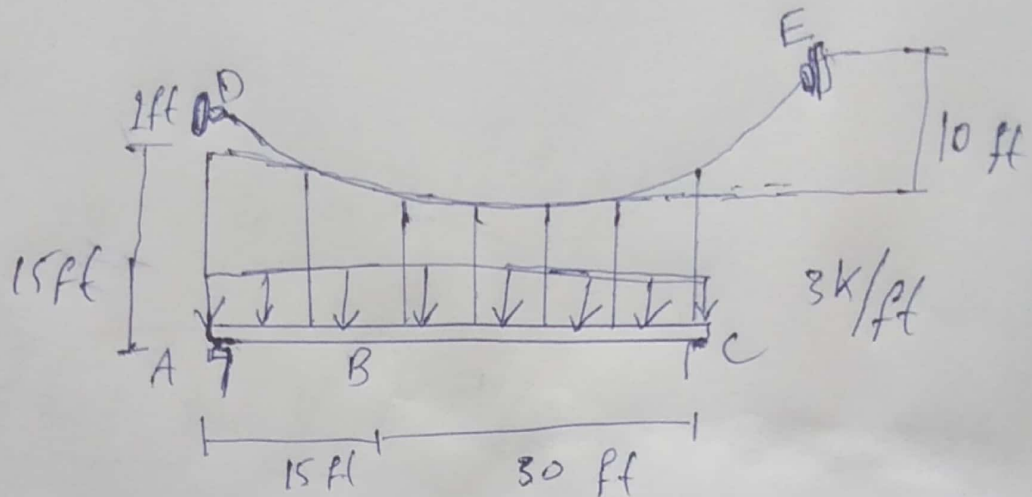


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Section	B
Subject	Structure I
Assignment No	04

(1)

Question No # 01

Given



Sols:

Member BC:

$$\rightarrow \sum F_x = 0; \quad B_x = 0$$

Member AB:

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

(2)

Moment at A

$$+\left(\sum \epsilon M_A = 0 \quad f_H(1) - B_V(15) - 45(7.5) = 0 \rightarrow \textcircled{10}\right.$$

FBD

$$\left(\sum M_C = 0 \quad -f_H(10) - B_V(30) + 45(30) = 0 \rightarrow \textcircled{11}\right.$$

$$\boxed{f_H = 153.4} \quad B_V = 0$$

$$W_0 = \frac{2 f_H h}{L^2} \Rightarrow \frac{2 (153.4) (10)}{30^2}$$

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

$$F_{\text{max}} = W_0 L \sqrt{1 + \left(\frac{L}{2h}\right)^2}$$

(3)

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

$$F_{\max} = 183.6 \text{ K}$$

Each hanger carries 5 ft of

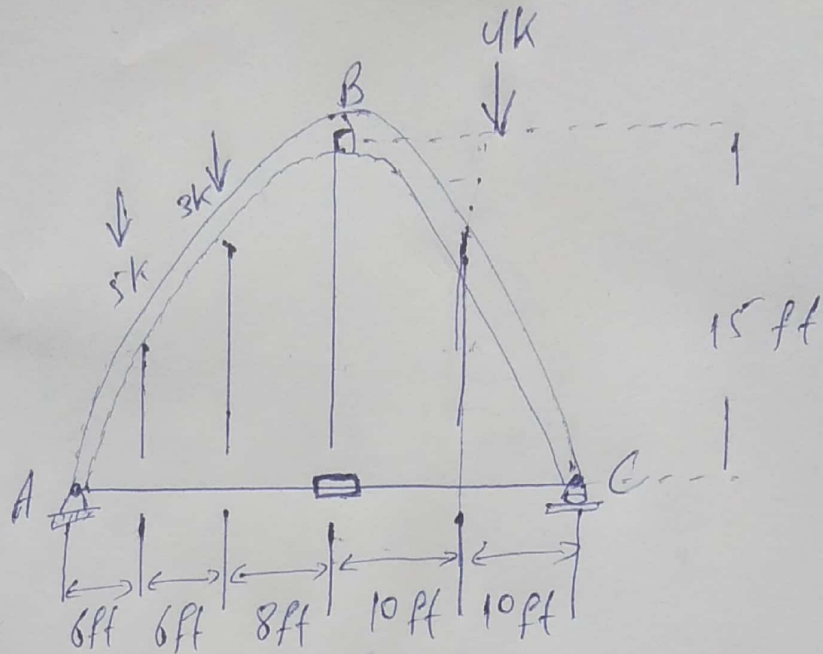
W_o

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

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

①

Question No # 02



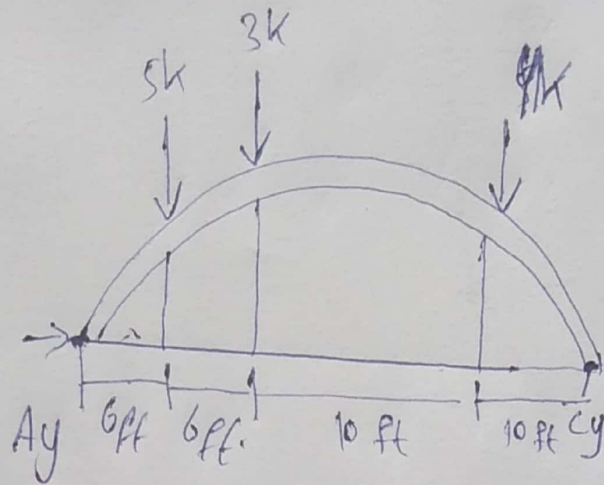
Entire arch

$$\left(\sum M_A = 0 \right)$$

$$-5(6) - 3(12) - 4(30) + C_y(40) = 0$$

$$C_y = 4.65 \text{ k}$$

(2)

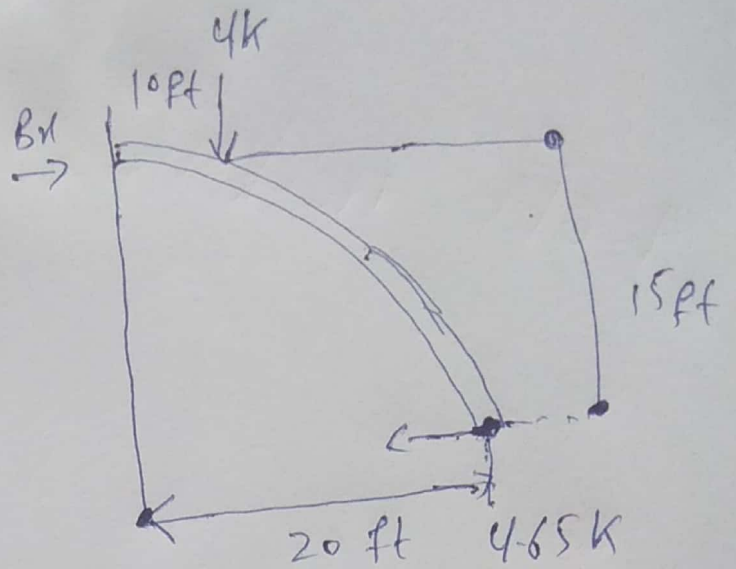


$$\uparrow \sum F_y = 0;$$

$$A_y + 4.65 - 5 - 3 - 4 = 0$$

$$A_y = 7.35 k$$

(3)



$$\rightarrow \sum P_x = 0; \quad A_k = 0$$

Section BC

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

$$-4(10) - T(15) + 4.65(20) = 0$$

$$T = 3.53 \text{ K}$$