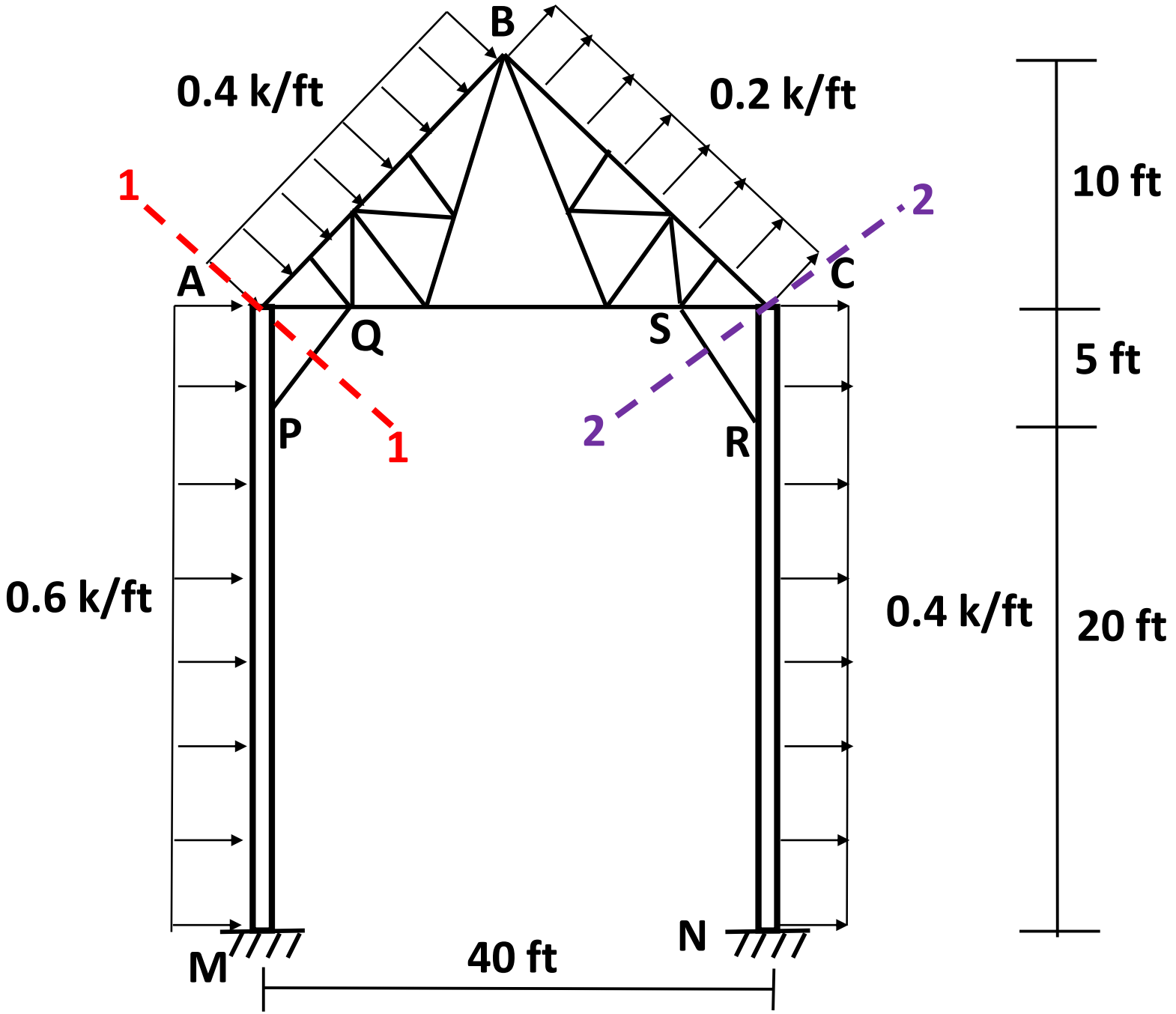
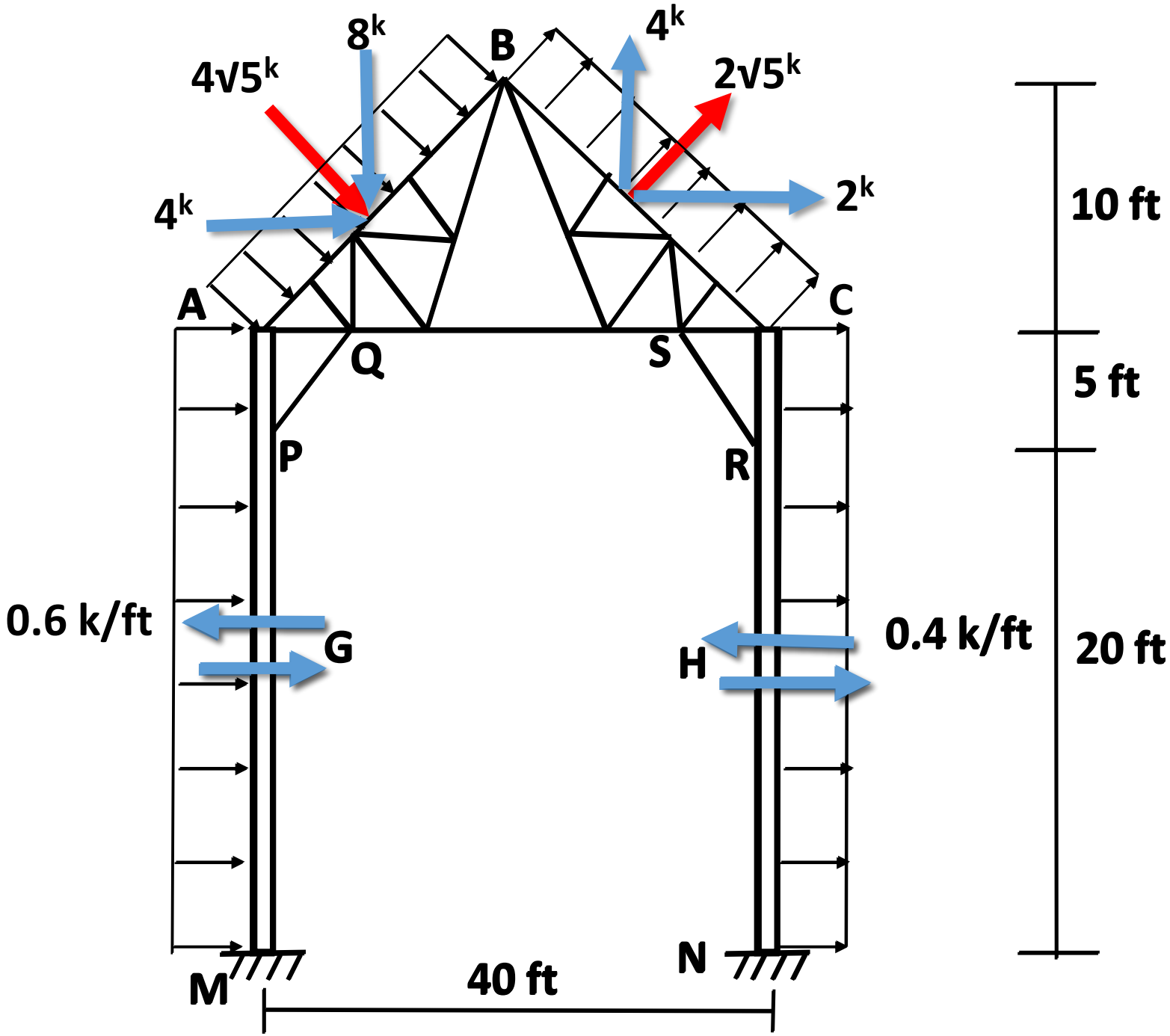


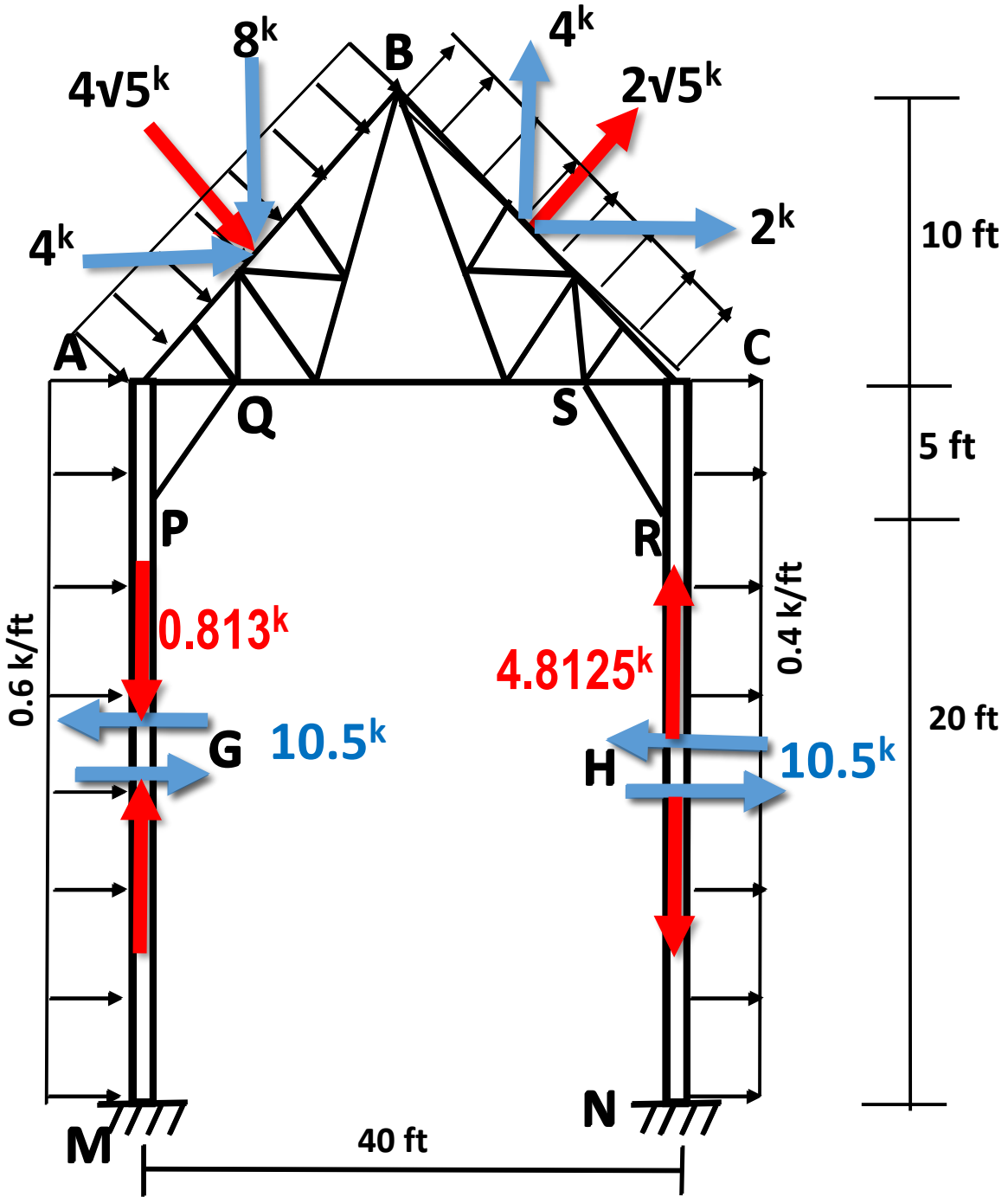
MILL BENT



Shear forces at hinges

$$= \frac{0.6\ x\ 15+4+2+0.4\ x\ 15}{2}$$

$$= 10.5^{k}$$



$$\sum M_G = 0$$

$$0.6 \times 15 \times 7.5 + 4 \times 20 + 8 \times 10 - 4 \times 30 + 2 \times 20 + 0.4 \times 15 \times 7.5 - R_H \times 40 = 0$$

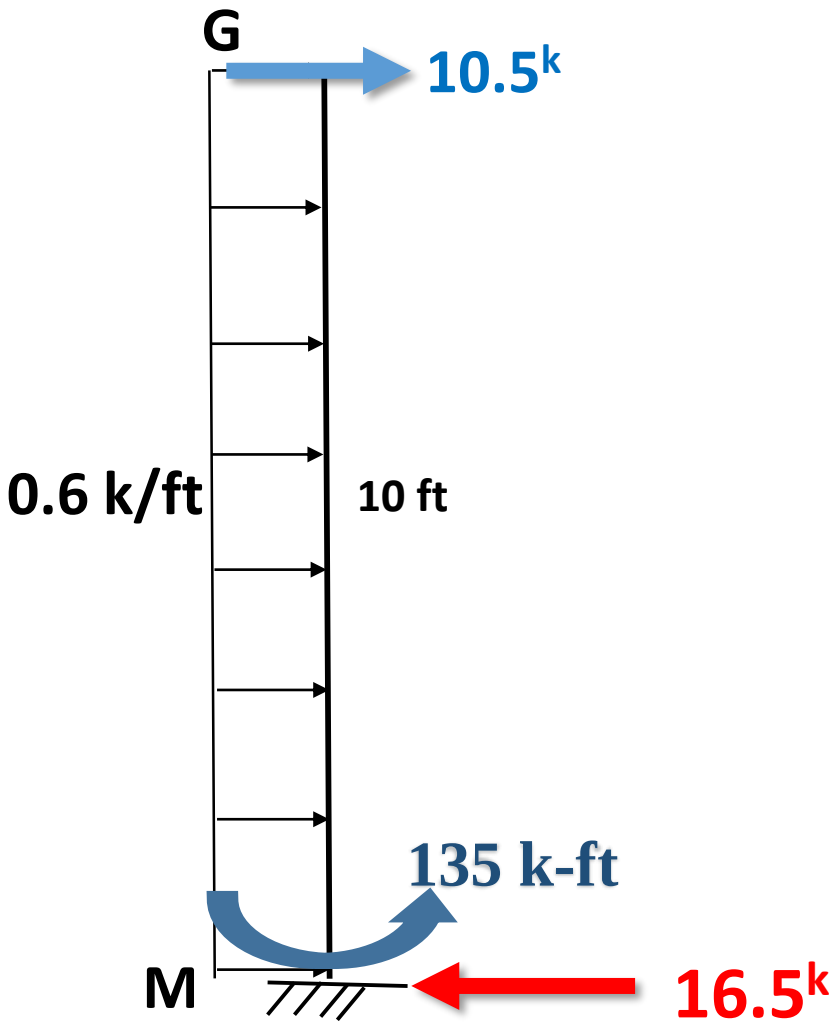
$$R_H = 4.8125^k \uparrow$$

$$\sum F_y = 0 \ (\uparrow +ve)$$

$$4.8125 + 4 - 8 + R_G = 0$$

$$R_G = -0.813^k \downarrow$$

Free Body GM :



$\sum M_M = 0$

$10.5 \times 10 + 0.6 \times 10 \times 5 - M_M = 0$

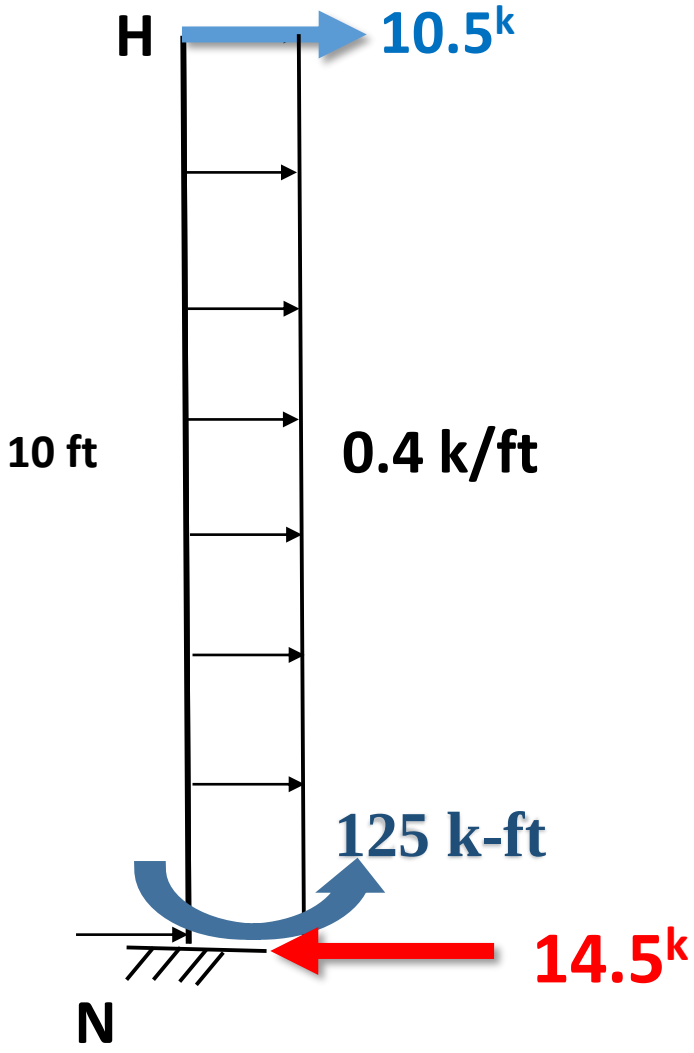
$M_M = 135$ k-ft

$\sum F_x = 0$ ($\rightarrow$ +ve)

$10.5 + 0.6 \times 10 + M_x = 0$

$M_x = -16.5^k$

Free Body HN :



$\sum M_N = 0$

$10.5 \times 10 + 0.4 \times 10 \times 5 - M_N = 0$

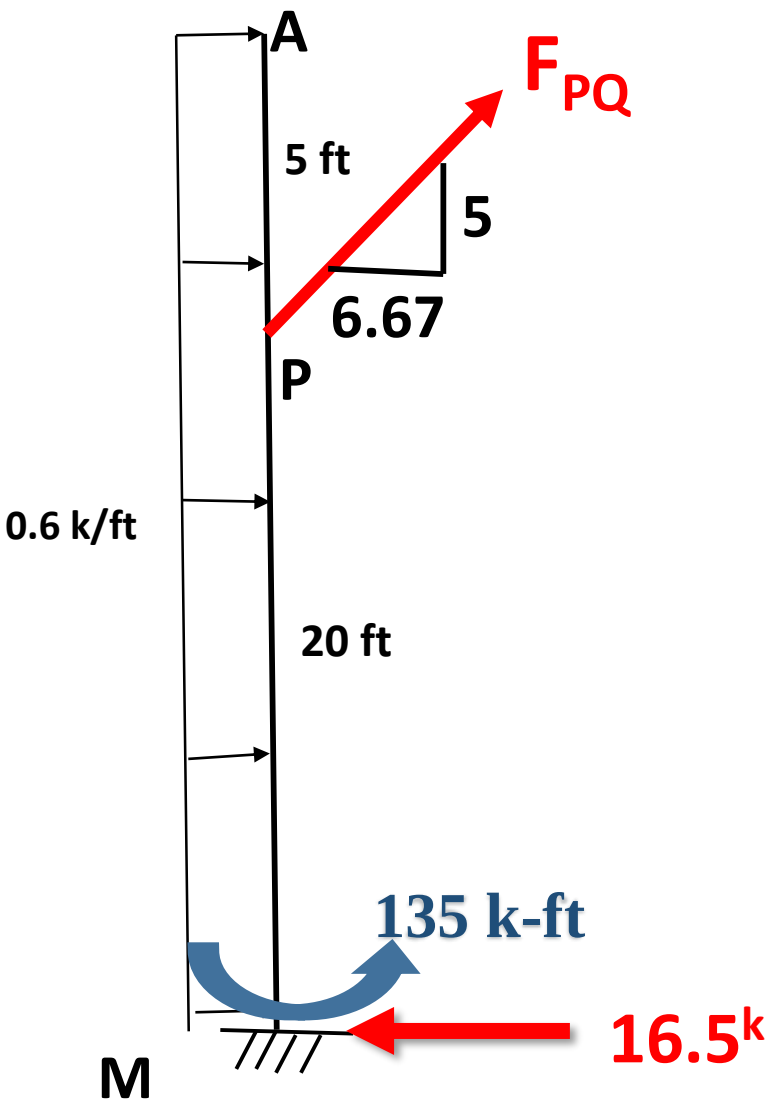
$M_N = 125$ k-ft

$\sum F_x = 0$ ($\rightarrow$ +ve)

$10.5 + 0.4 \times 10 + N_x = 0$

$N_x = -14.5^k$

Section 1-1:



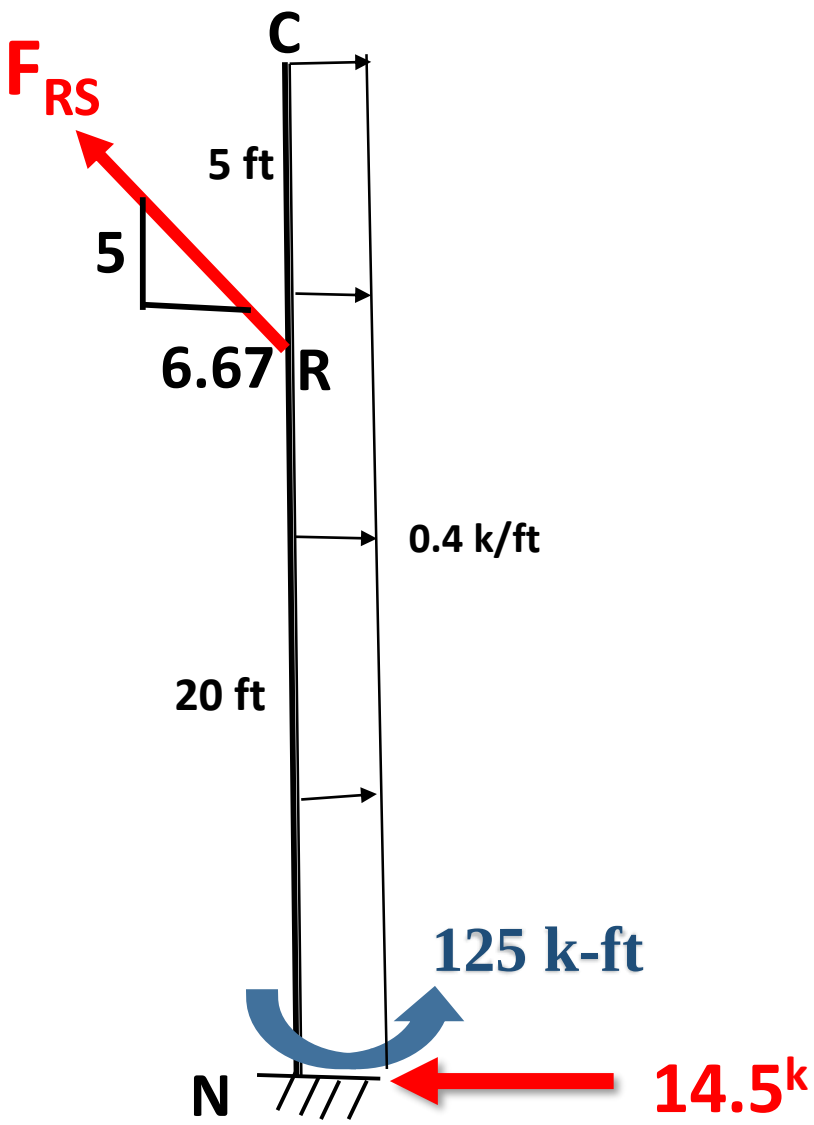
$\sum M_A = 0$

$-135 - 0.6 \times 25 \times (25/2) + 16.5 \times 25$

$+ F_{PQ} \times (6.67/8.34) \times 5 = 0$

$F_{PQ} = 22.5^k$ (T)

Section 2-2:

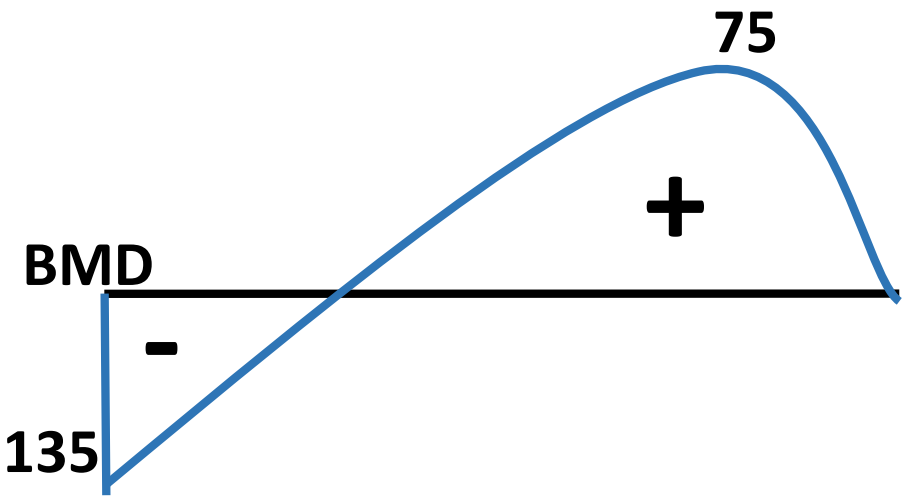


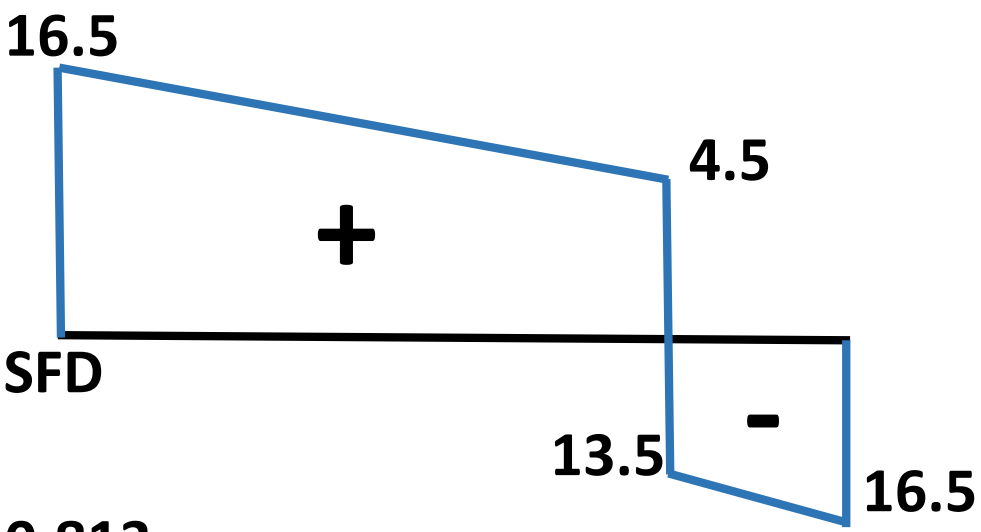
$\sum M_C = 0$

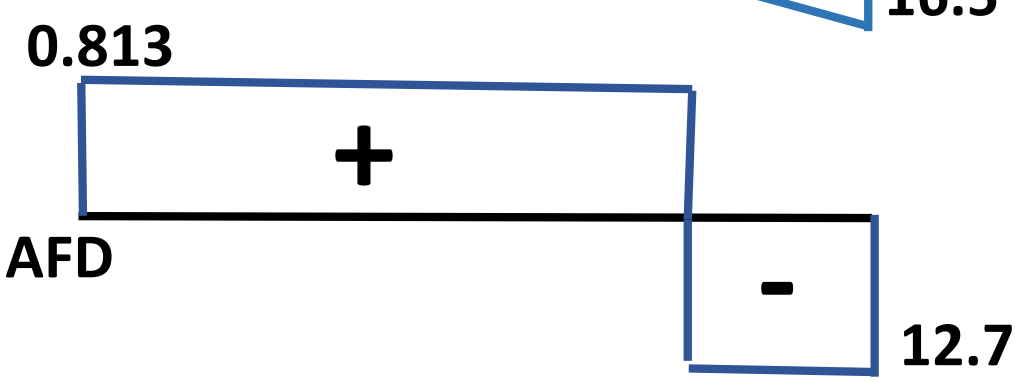
$-125 - 0.4 \times 25 \times (25/2) + 14.5 \times 25$

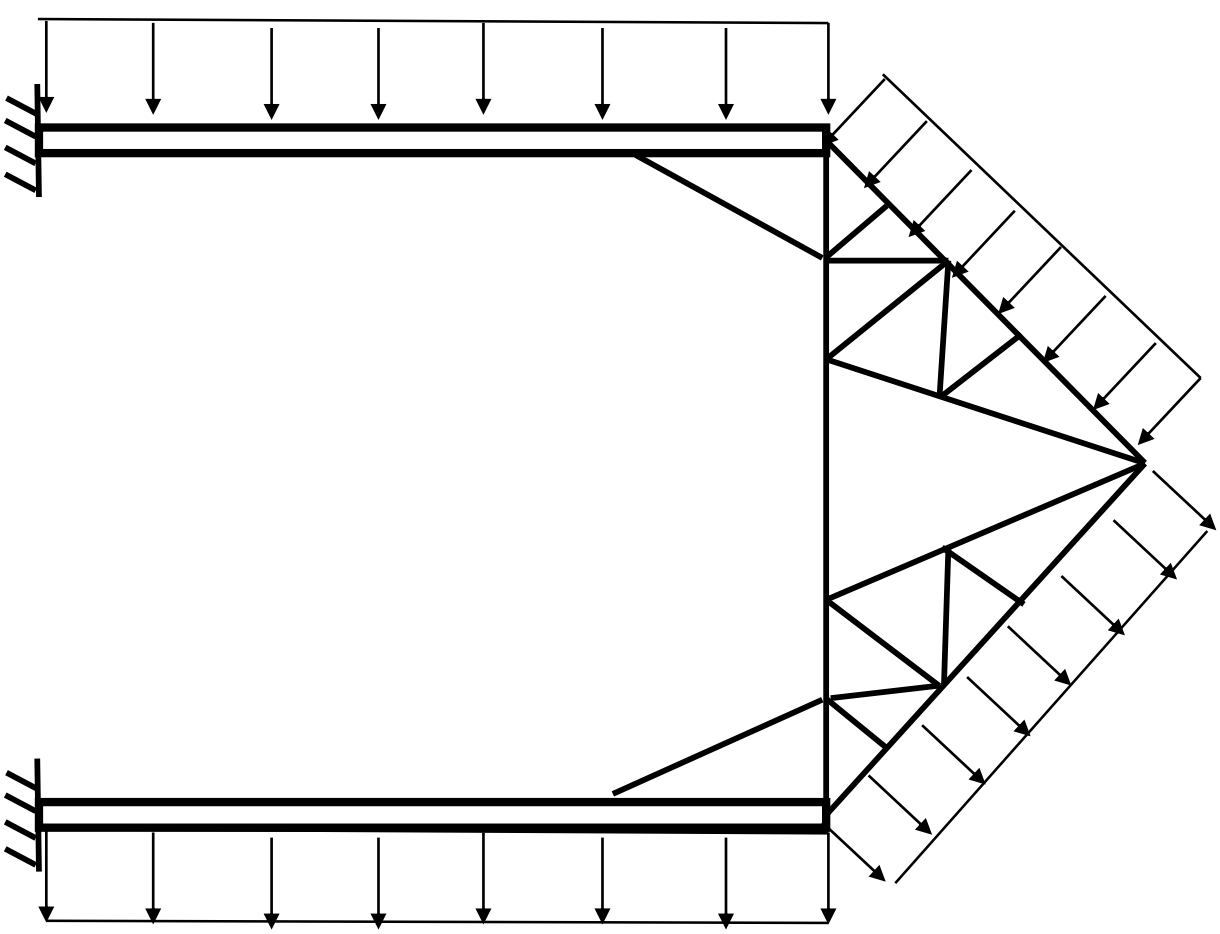
$- F_{RS} \times (6.67/8.34) \times 5 = 0$

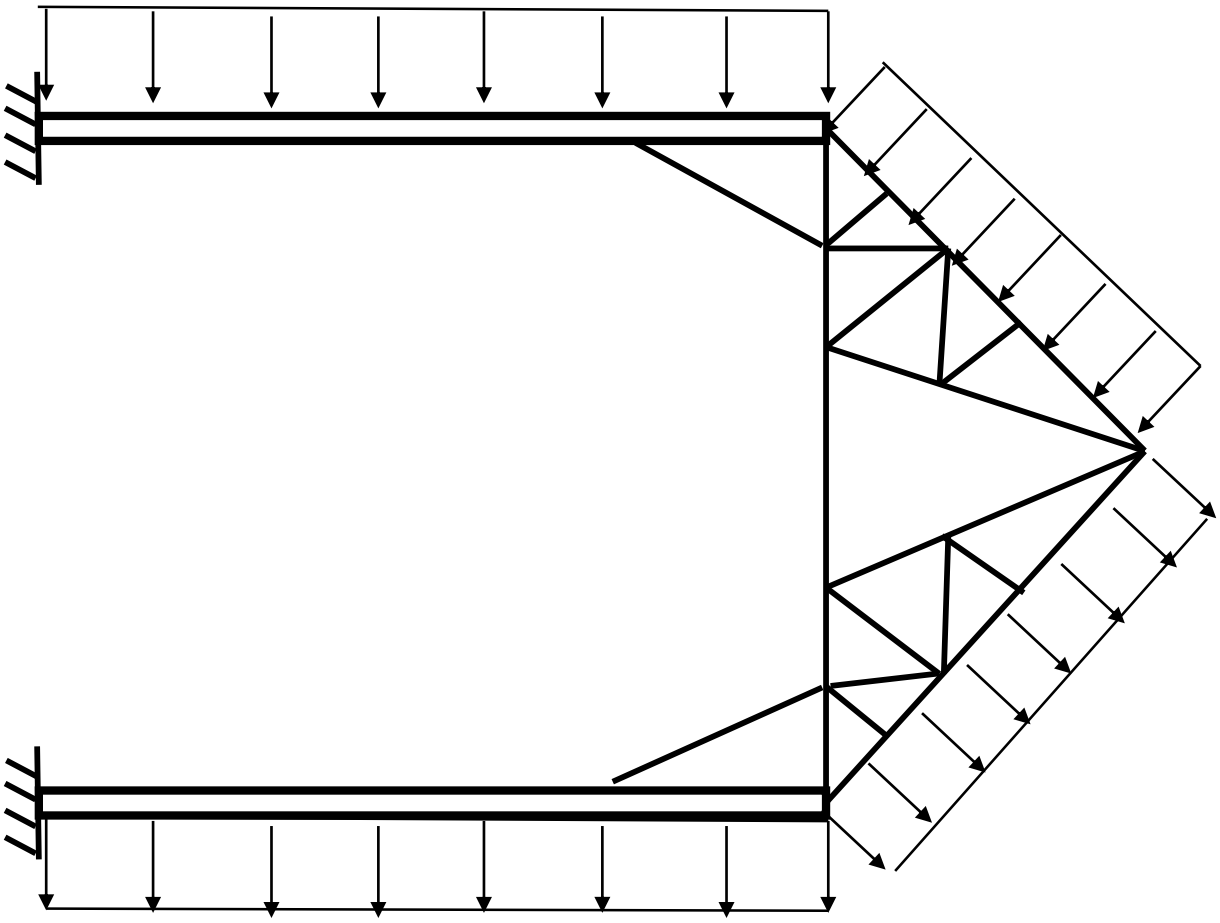
$F_{RS} = -28.13^{k}$ (C)

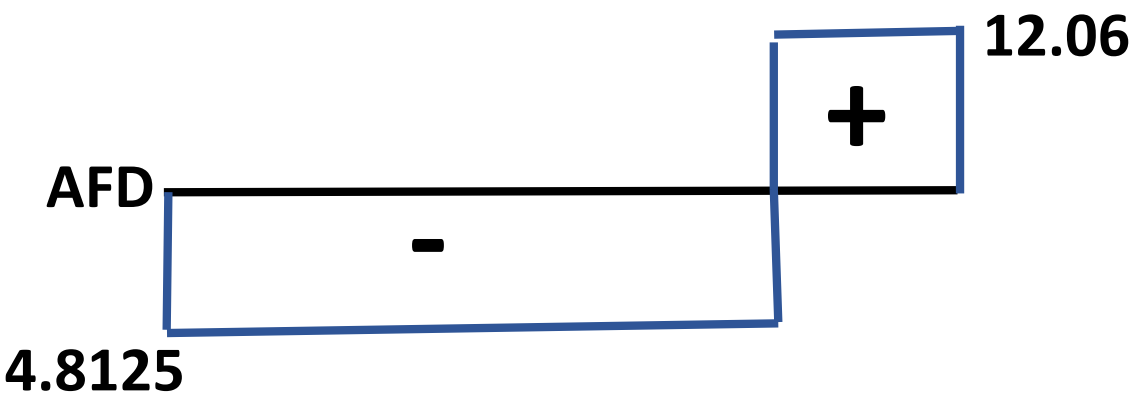

75
+
BMD
-
135

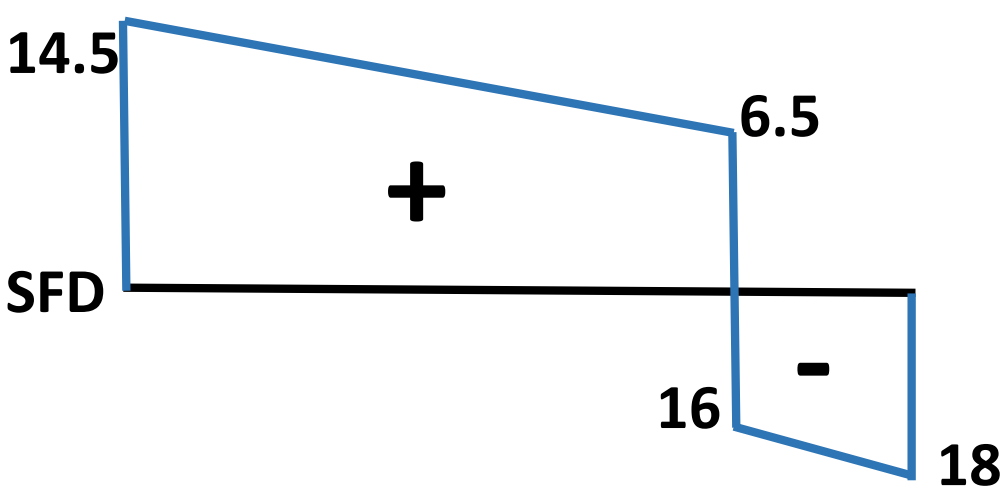

16.5
4.5
+
SFD
-
13.5
16.5

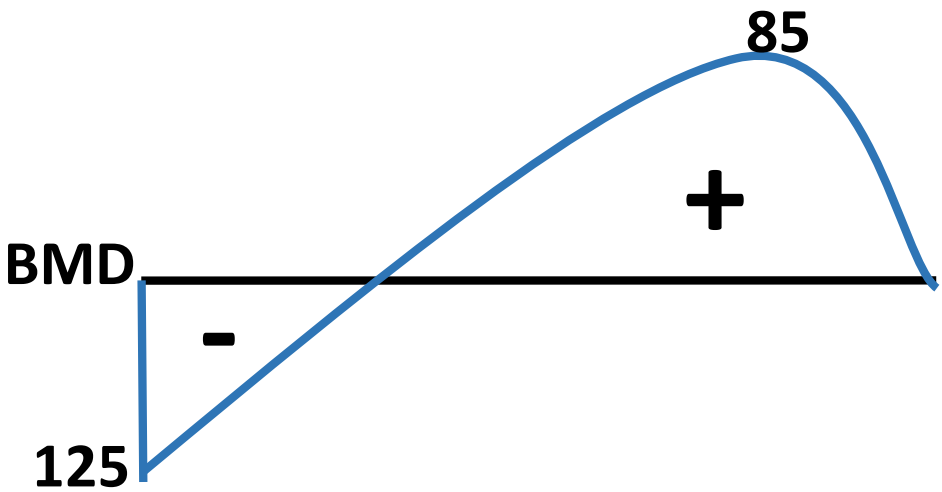

0.813
+
AFD
-
12.7






12.06
+
AFD
-
4.8125


14.5
6.5
+
SFD
-
16
18


85
+
BMD
-
125