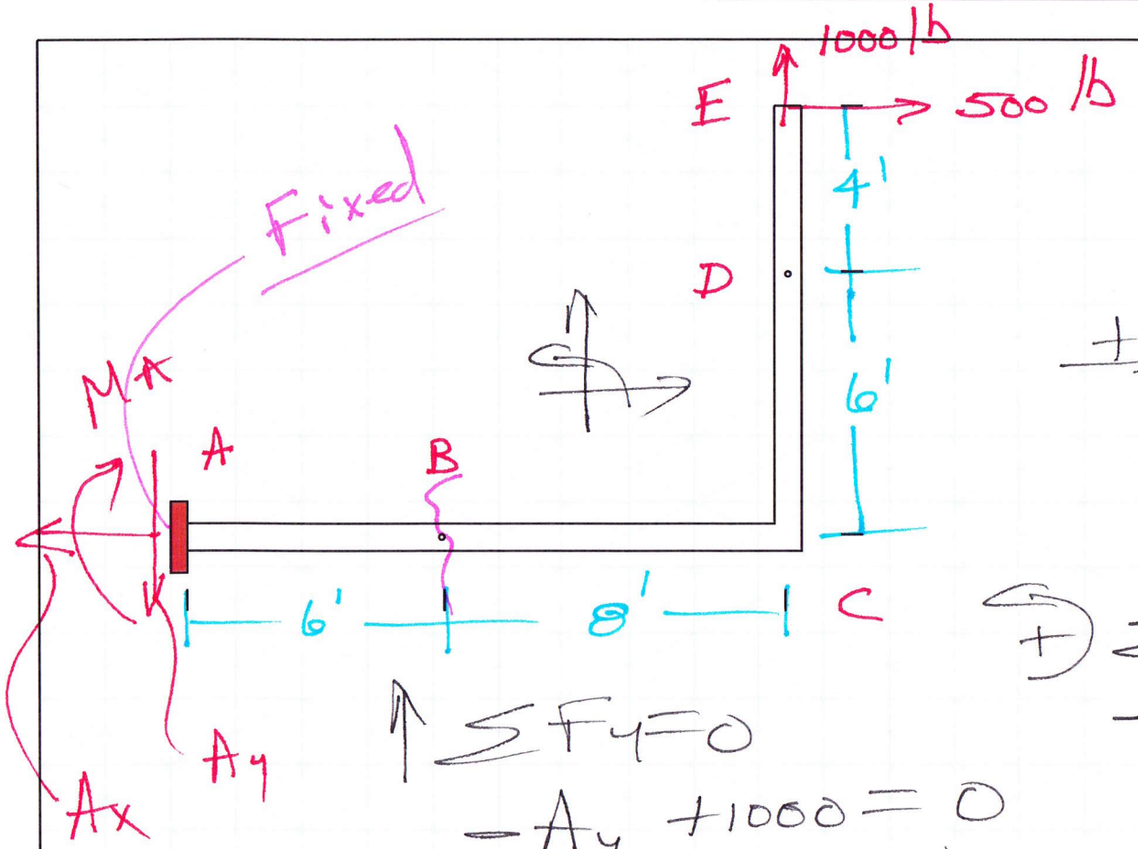


Internal Forces

2-D situations

$\rightarrow \Sigma F_x = 0$

$-A_x + 500 = 0$

$A_x = 500\ lb \leftarrow$ as shown

$\circlearrowleft + \Sigma M_A = 0$

$-M_A + 1000(4) - 500(16) = 0$

$M_A = 9000\ ft\text{-}lb \circlearrowright$

as shown

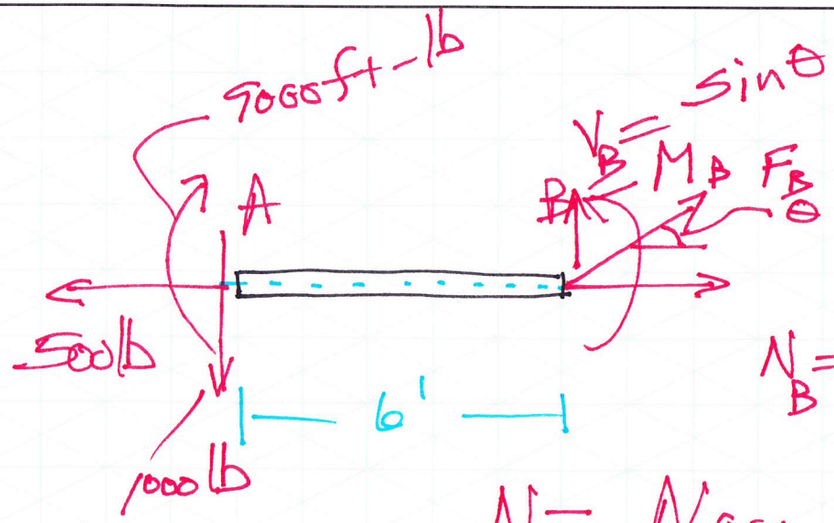
$\uparrow \Sigma F_y = 0$

$-A_y + 1000 = 0$

$A_y = 1000\ lb \downarrow$

as shown

Internal Forces at B



$N_B = F_B \cos\theta$

$V_B = \sin\theta\ F$

N_B – Normal Force

V_B – Shear force

$\rightarrow \Sigma F_x = 0$

$-500 + N_B = 0$

$N_B = 500\text{ lb} \rightarrow$

as shown

$+\uparrow \Sigma F_y = 0$

$-1000 + V_B = 0$

$V_B = 1000\text{ lb} \uparrow$

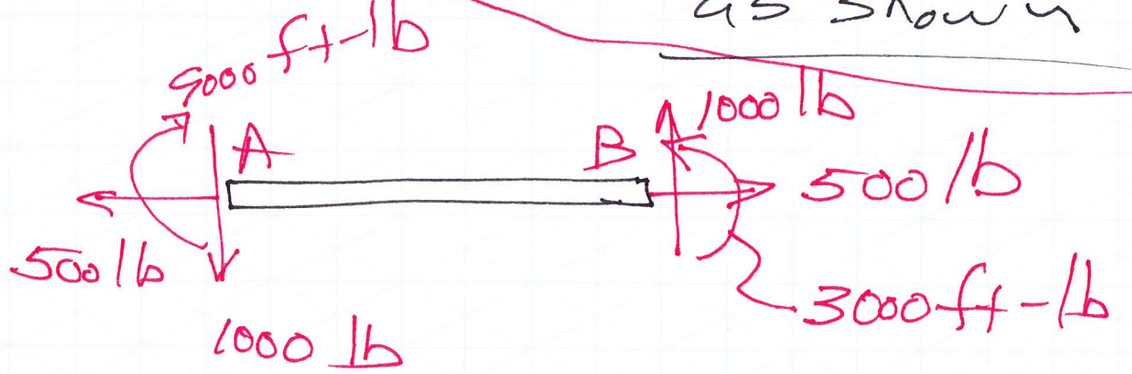
as shown

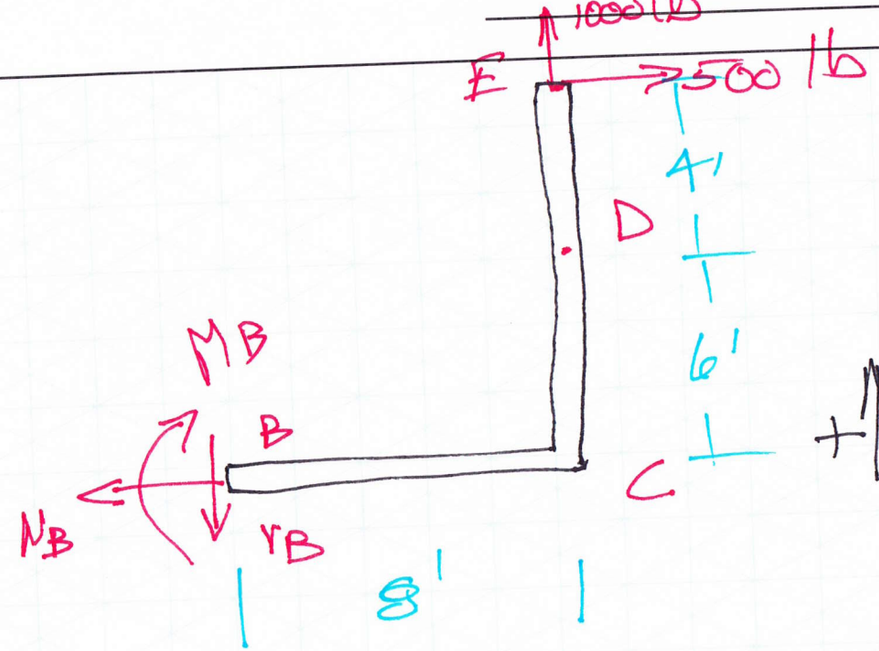
$+\circlearrowleft \Sigma M_{cut} = 0$

$M_B - 9000 + 1000(6) = 0$

$M_B = +3000\text{ ft-lb}$ ↻

as shown





$\pm \rightarrow \sum F_x = 0$

$+500 - N_B = 0$

$N_B = 500 \text{ lb} \leftarrow$ as shown

$+\uparrow \sum F_y = 0$

$-V_B + 1000 = 0$

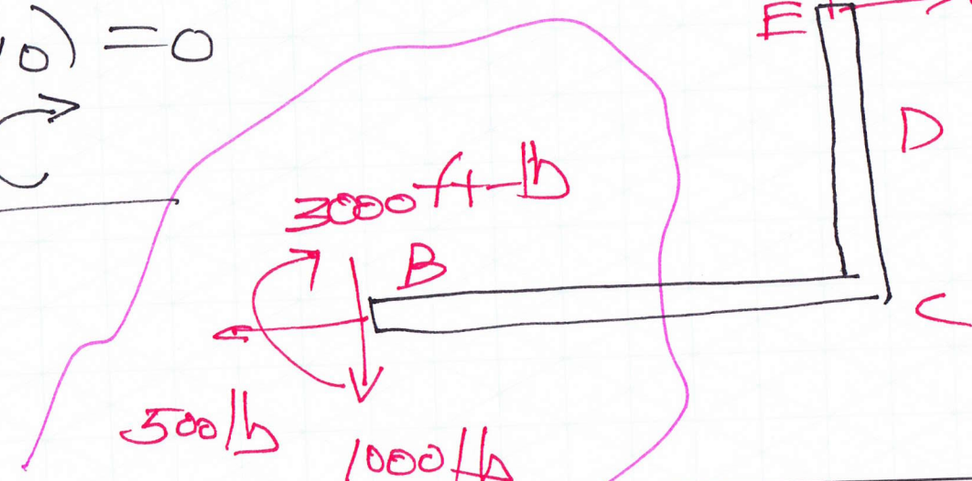
$V_B = 1000 \text{ lb} \downarrow$ as shown

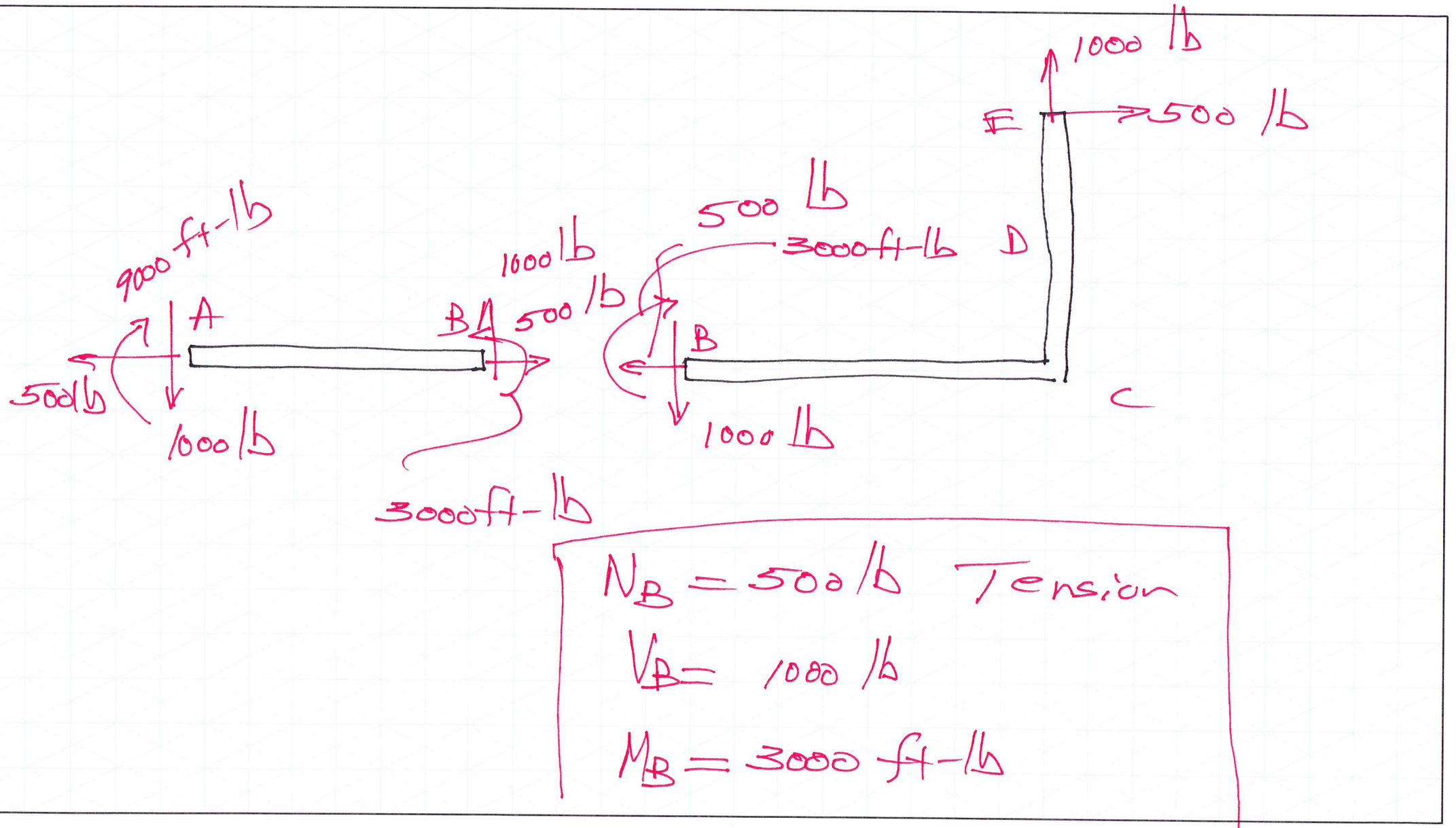
$+\circlearrowleft \sum M_{cut} = 0$

$-M_B + 1000(8) - 500(10) = 0$

$M_B = 3000 \text{ ft-lb} \circlearrowright$

$M_B = 3000 \text{ ft-lb}$ as shown

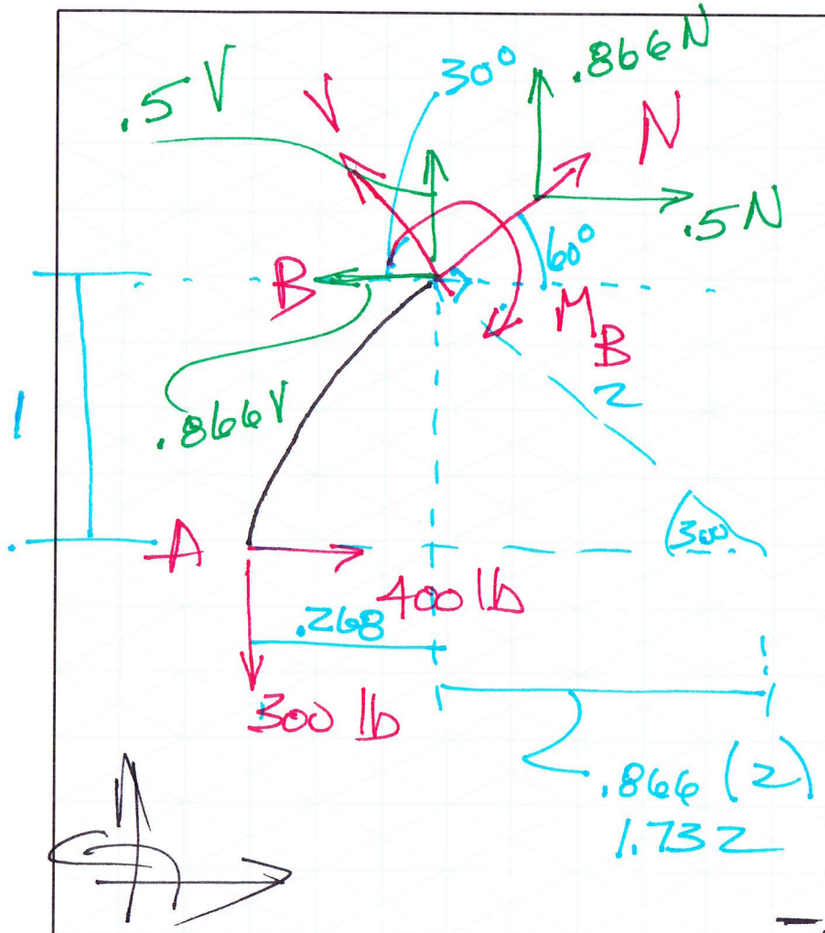




$N_B = 500\ lb$ Tension

$V_B = 1000\ lb$

$M_B = 3000\ ft\text{-}lb$



$\circlearrowleft + \sum M_B = 0$

$-M_B + 400(1) + 300(.268) = 0$

$M_B = 480.4$ ft-lb $\circlearrowright$ asshaun

$\rightarrow + \sum F_x = 0$

$.500N - .866V + 400 = 0$

$N = 1.732V - 800$

$\uparrow + \sum F_y = 0$

$-300 + .5V + .866N = 0$

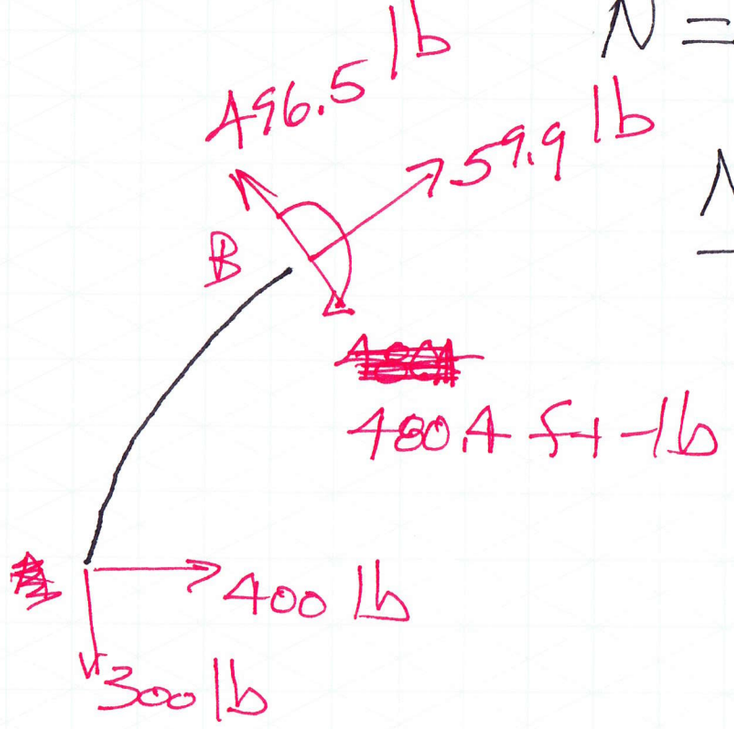
$N = 346.4 - .5774V$

$1.732V - 800 = 346.4 - .5774V$

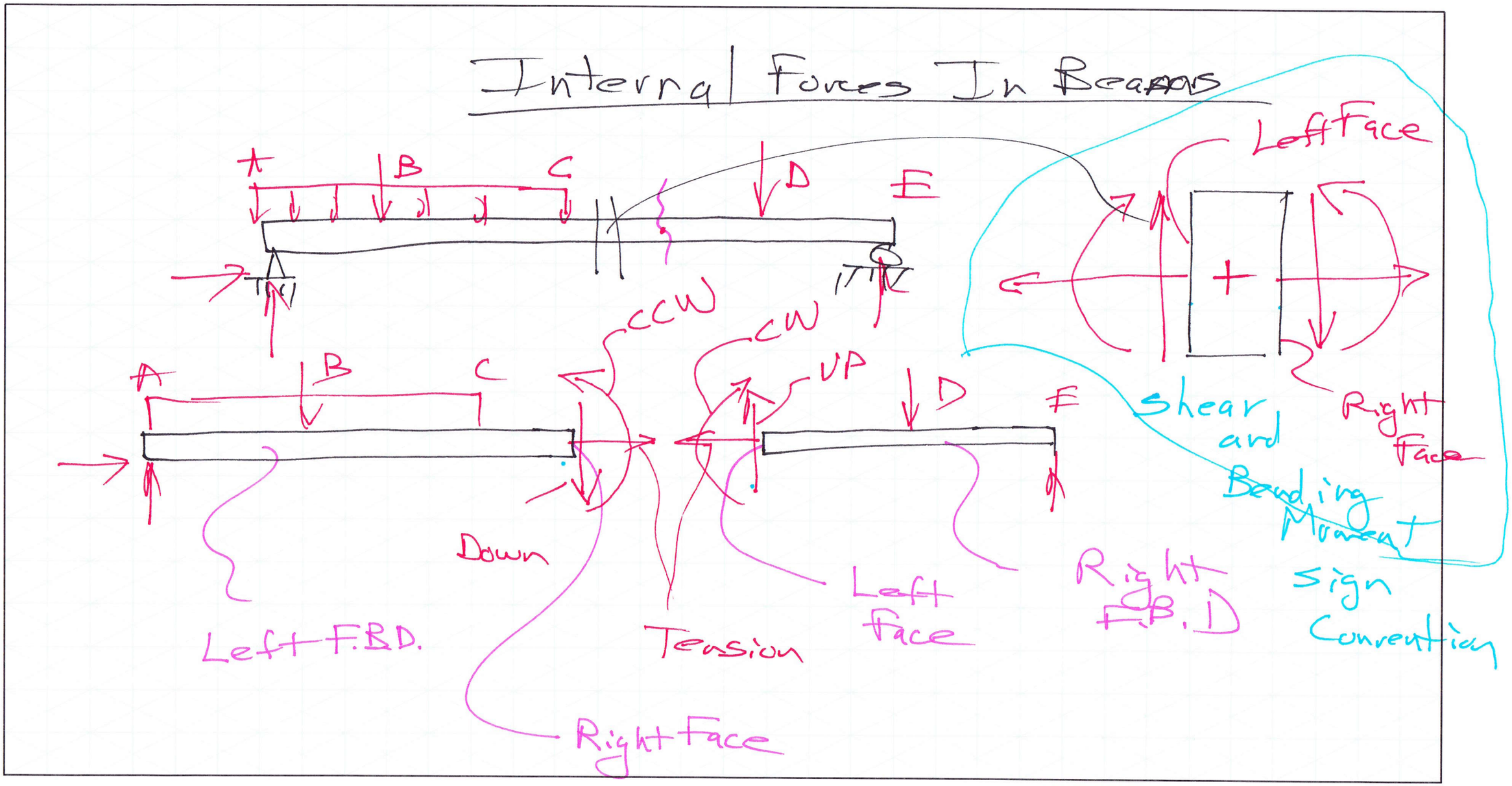
$V = 496.5$ lb ↑ as shown

$N = 1.732V$ → 496.5

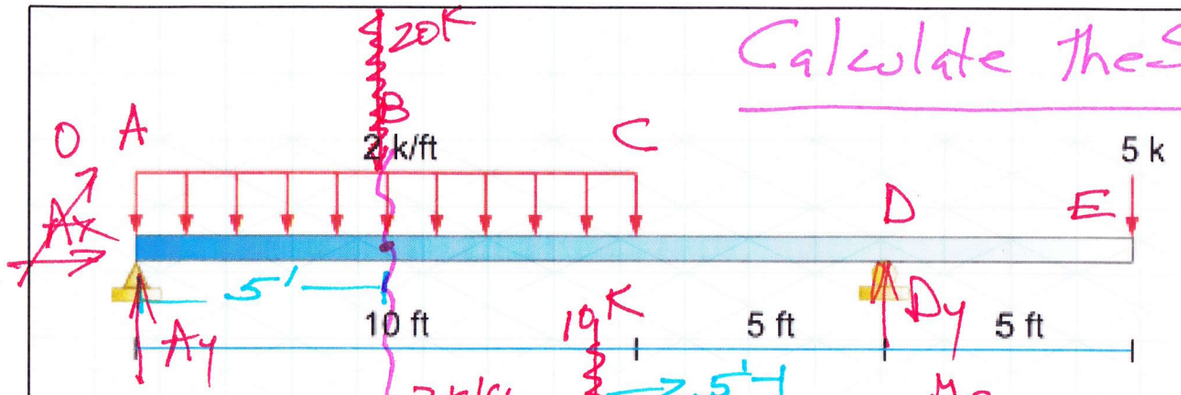
$N = 59.9$ lb → as shown



Internal Forces In Beams



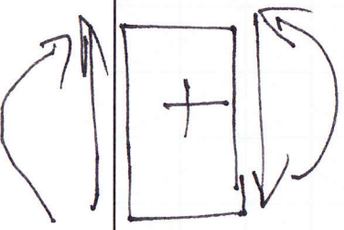
Calculate the Shear and Moment at B

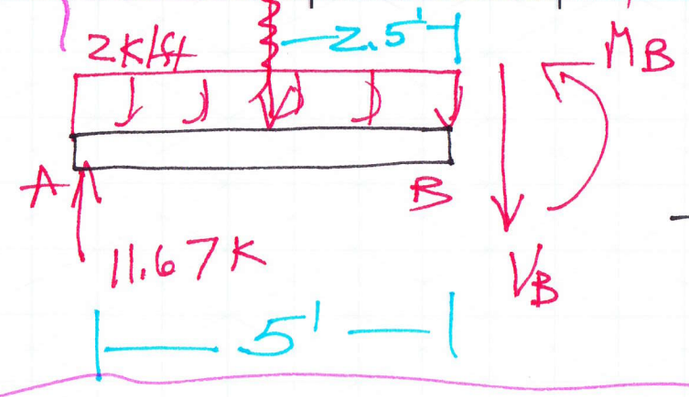


$\circlearrowleft + \sum M_D = 0$

$-A_y(15) + 20(10) - 5(5) = 0$

$A_y = 11.67\text{k} \uparrow$ as shown

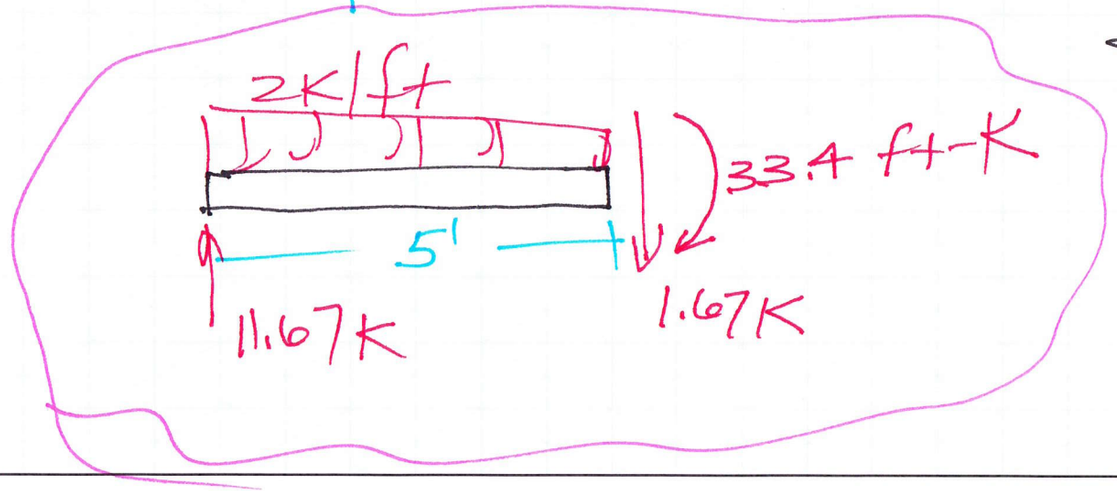




$+\uparrow \sum F_y = 0$

$11.67 - 10 - V_B = 0$

$V_B = +1.67\text{K}$



$\circlearrowleft + \sum M_{cut} = 0$

$+M_B + 10(2.5) - 11.67(5) = 0$

$M_B = -33.4 \text{ ft-K}$