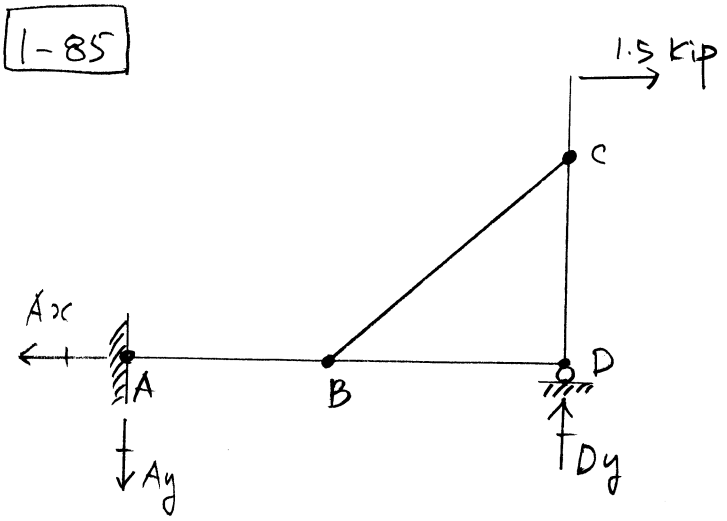
1-85



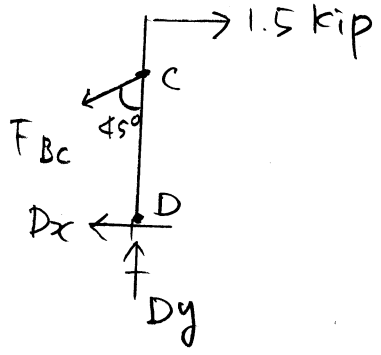
$\Sigma F_x = 0$; $A_x - 1.5 = 0$; $A_x = 1.5$ kip

$\Sigma F_y = 0$; $A_y - D_y = 0$; $A_y = D_y$

$\Sigma M_A = 0$; $D_y(10) - 1.5(1) = 0$

$D_y = 1.05$ kip $= A_y$

From FBD of $\overline{CD}$



$\Sigma M_D = 0$; $F_{BC}(5)(\cos 45) - 1.5(1) = 0$

$F_{BC} = 2.97$ kip

(At A) Double shear

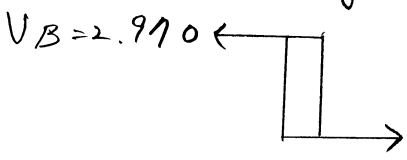
$F_A = \sqrt{A_x^2 + A_y^2} = 1.83$ kip

$V_A = \frac{F_A}{2} = 0.915$ kip

$\tau_{allow} = \frac{V_A}{A_A}$; $6 = \frac{0.915}{\frac{\pi}{4}(d_A)^2}$

$d_A = 0.441$ (in)

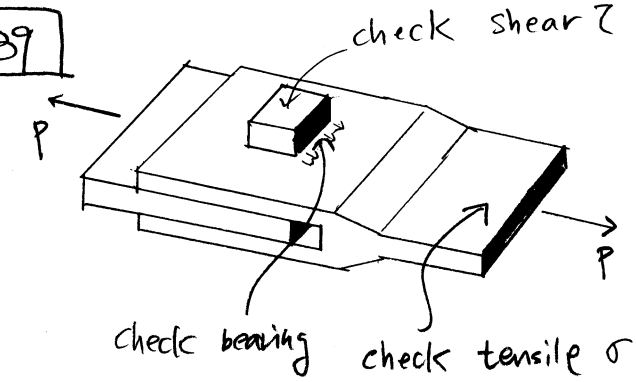
(At B) Single shear



$\tau_{allow} = \frac{V_B}{A_B}$; $6 = \frac{2.910}{\frac{\pi}{4}(d_B)^2}$

$d_B = 0.194$ (in)

1-89



< Tensile >

$\sigma_t = \frac{P}{A}$; $175(10^6) = \frac{P}{(0.025)(0.01)}$

$P = 43.75$ kN

< Bearing >

$\sigma_B = \frac{P}{A}$; $400(10^6) = \frac{P/2}{(0.005)(0.01)}$

$P = 40.0$ kN

< Shear >

$\tau_b = \frac{V}{A}$; $125(10^6) = \frac{P/2}{(0.015)(0.01)}$

$P = 37.5$ kN ← Soln.