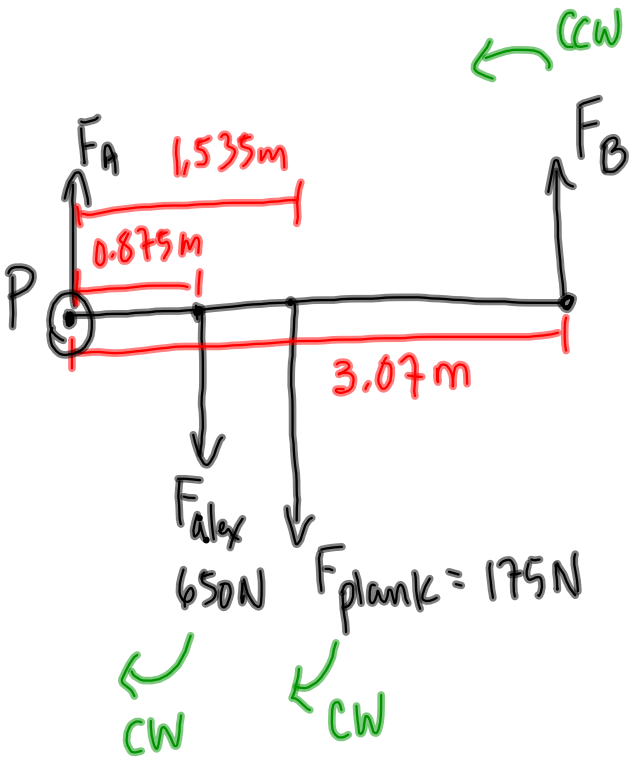
A Bridge Problem

$F_g = 650N$ (Alex)

$F_A = 90N$
$F_B = 85N$ } $175N = F_{plank}$



Recall: $\tau = r_\perp F$

$\sum \tau_{CCW} = \sum \tau_{CW}$

$\tau_B = \tau_{Alex} + \tau_{plank}$

$(3.07m)F_B = (0.875m)(650N) + (1.535N)(175N)$

$(3.07m)F_B = 568.75N\cdot m + 268.625N\cdot m$

$(3.07m)F_B = 837.375N\cdot m$

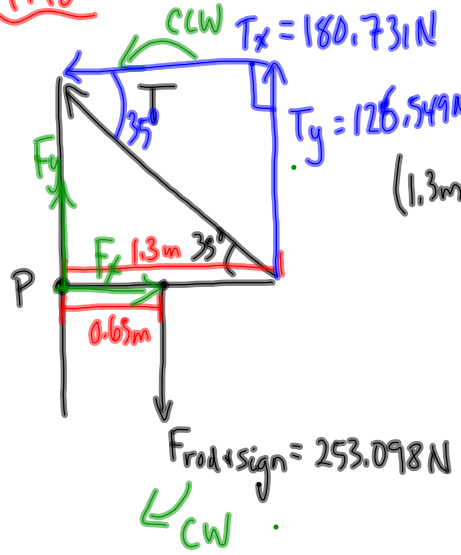
$F_B = 273N$ 250N

Vertically: $F_A + F_B = F_{plank} + F_{Alex}$

$F_A = 175N + 650N - 273N$

$F_A = 552N$ 575N

MP/498



$\Sigma \tau_{CCW} = \Sigma \tau_{CW}$

$\tau_T = \tau_{rod+sign}$

$(1.3m)(T)\sin 35^\circ = (0.65m)(253.098N)$

$T = 220.631\,N$

$\boxed{T \doteq 2.2 \times 10^2 N}$

$T_x = (220.631N)\cos 35^\circ$

$\boxed{T_x = 180.731N}$

$T_y = (220.631N)\sin 35^\circ$

$\boxed{T_y = 126.549N}$

Horizontally:

$F_x = T_x$

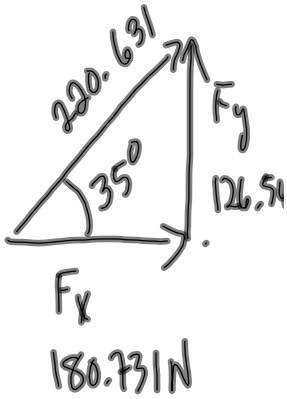
$\therefore \boxed{F_x = 180.731N}$

Vertically:

$F_y + T_y = F_{rod+sign}$

$F_y = 253.098N - 126.549N$

$\boxed{F_y = 126.549N}$



The force at the wall is:

$2.2 \times 10^2 N$ [away from wall @ 35° above hori

TO DO:

① PP|501

② FINISH FOP|PP