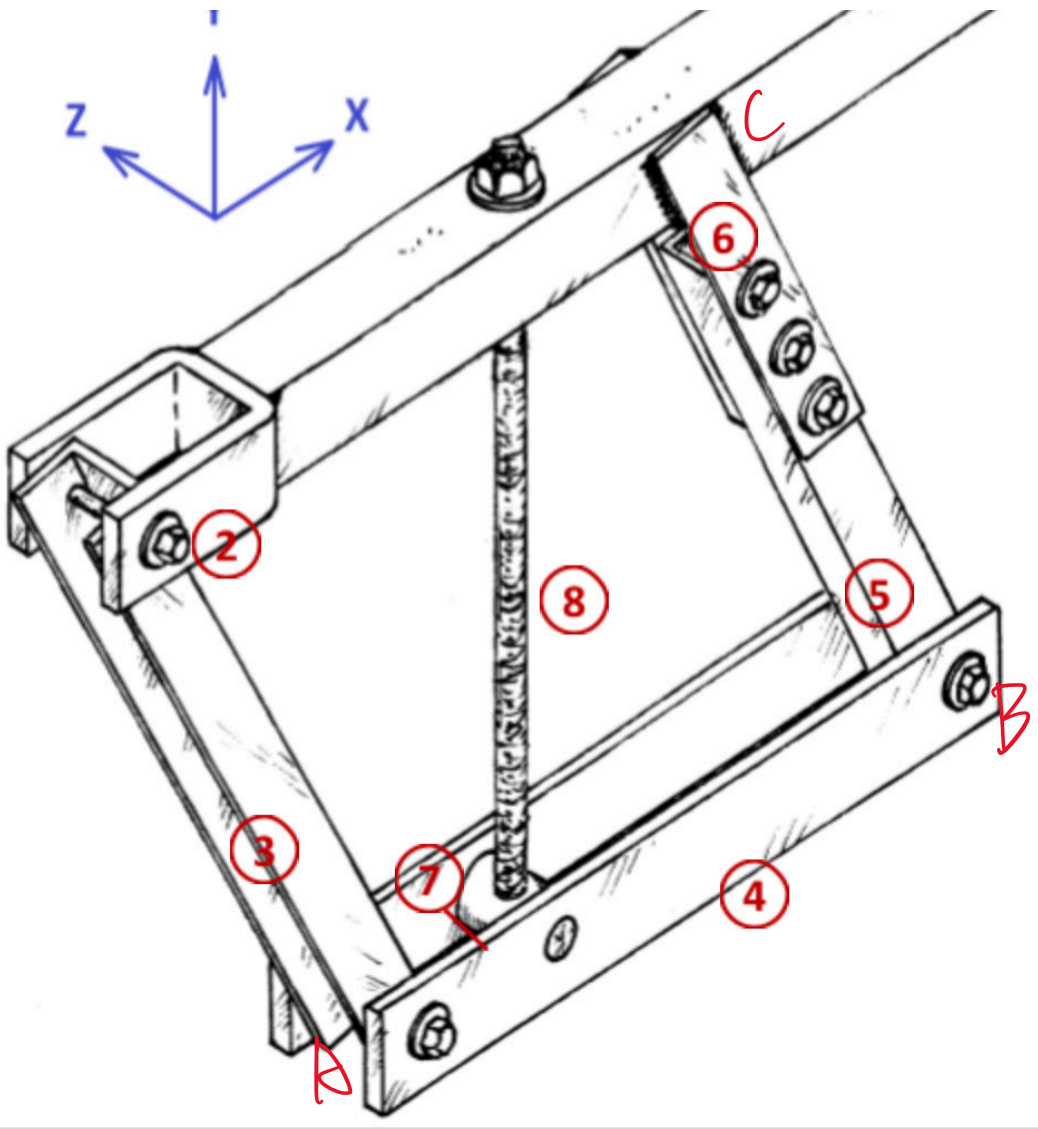
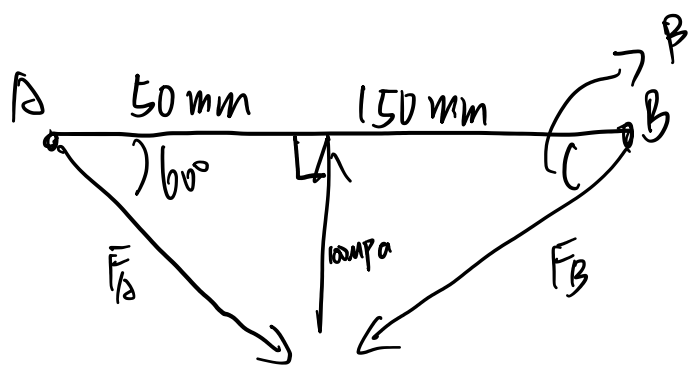
Hand calculation

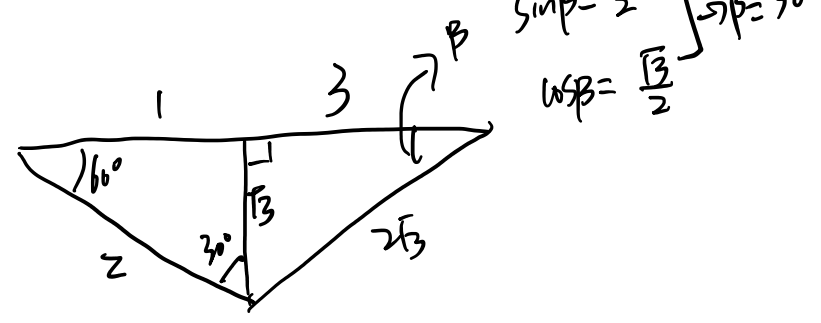
2020年9月23日 星期三　　下午2:05



assume Force on Tie = 100 N

Beam:





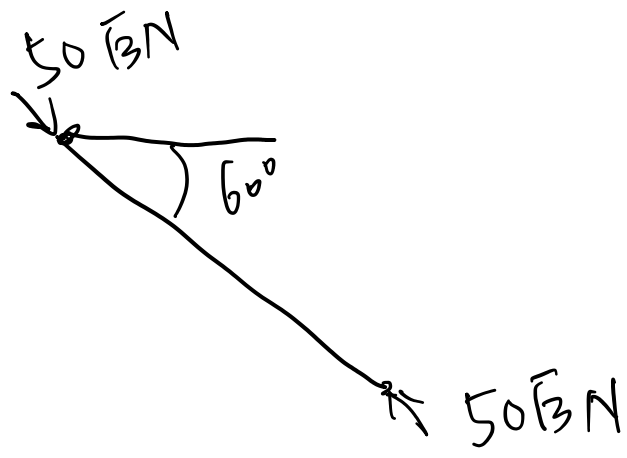
$F_A \sin 60° + F_B \sin\beta = 100$ mpa

$F_A \cos 60° = F_B \cos\beta$

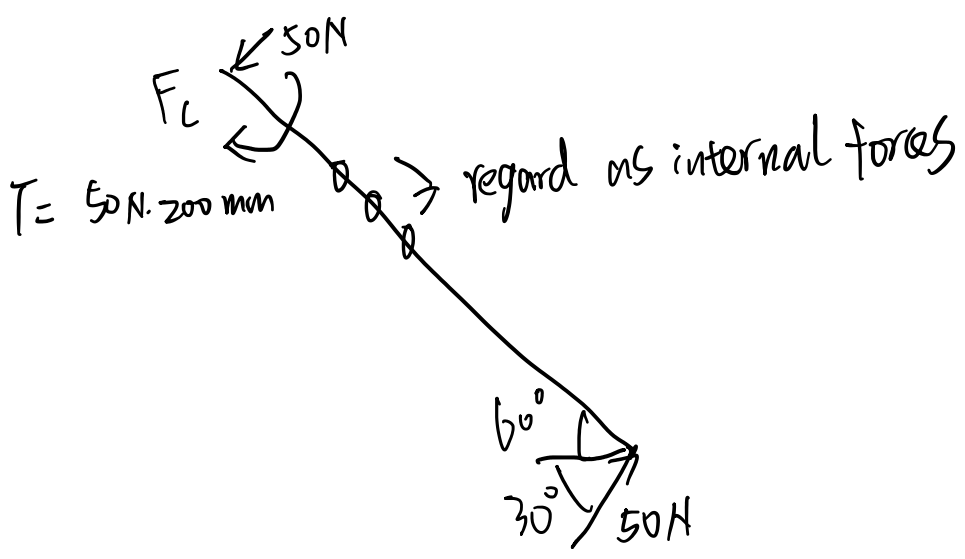
$\Rightarrow$ $F_A = 50\sqrt{3}$ N

$F_B = 50$ N

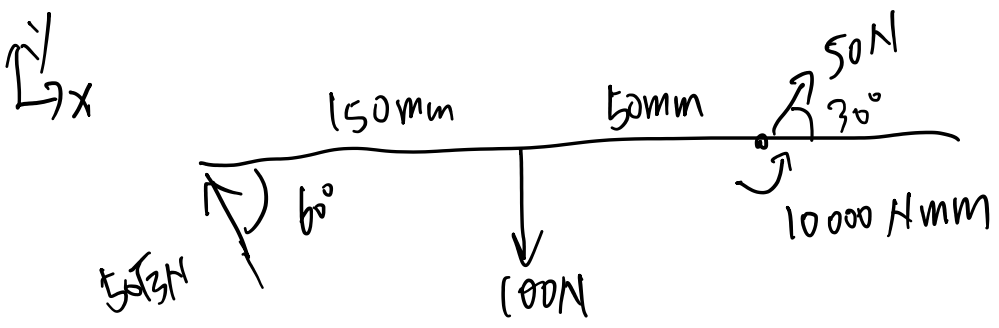
Strut



Link and Base Link:



Base:



check equib.

$\Sigma F_x = 0$: $-50\sqrt{3}\cos 60° + 50\cos 30° = 0$

$-25\sqrt{3} + 25\sqrt{3} = 0$ ✓

$\Sigma F_y = 0$ $\quad 50\sqrt{3}\sin 60° + 50\sin 30° - 100 = 0$

$50\sqrt{3} \times \frac{\sqrt{3}}{2} + 50\frac{1}{2} - 100 = 0$ ✓

ΣM at Left $= 0$ $\quad 100 \times 150 - 50\sin 30° \cdot 200 - 10000 = 0$

$15000 - 25 \cdot 200 - 10000 = 0$ ✓