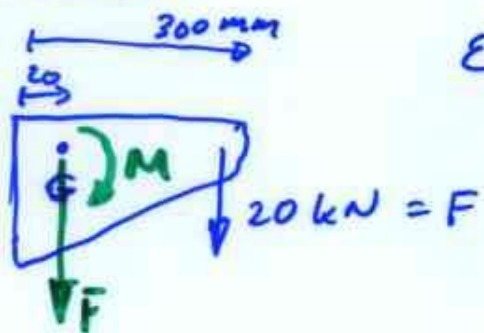


Express LOAD as a force plus a moment.



Effect @ G of F

is Force 20 kN

+ moment of  
(20 kN) (300 - 20 mm)

$$M = 5600 \text{ Nm}$$

$$\text{Direct Shear} = \frac{F}{A} = \frac{20000}{(250)(t)} = \frac{80}{t} \text{ MPa}$$

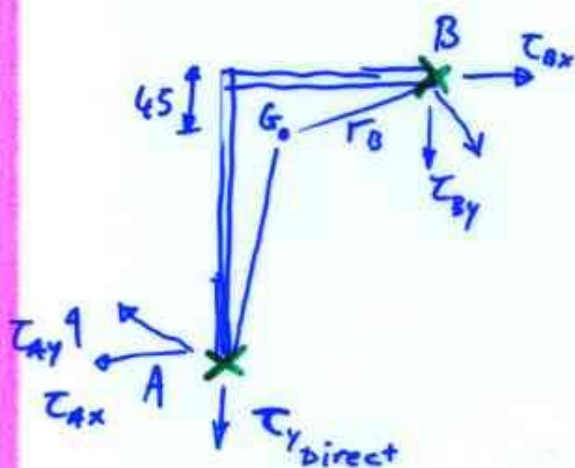
CONSTANT EVERYWHERE

Shear Due to Torque

$$\tau = \frac{T r}{J}$$

$$\tau_{Bx} = \frac{(45)(5600)}{852083t} = \frac{295.7}{t} \text{ MPa}$$

$$\tau_{By} = \frac{(100-20)(5600)}{852083t} = \frac{525.8}{t} \text{ MPa}$$



$$\tau_{Ax} = \frac{(150-45)(5600)}{J} = \frac{690}{t} \text{ MPa}$$

$$\tau_{Ay} = \frac{(20)(5600)}{J} = \frac{131}{t} \text{ MPa}$$

Max occurs @ A (check for yourself @ small's)

$$\frac{1}{t} \sqrt{690^2 + (131-80)^2} = \frac{692}{t} \text{ MPa}$$