

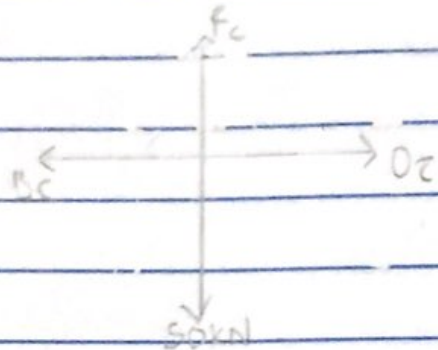
James Harrison

17/ENG03/024

Civil Engineering

CVE 304 (Structural Mechanics Assignment)

At joint C =



From previous calculated example

$$BC = 50\text{kN} \text{ (Resulting for Horizontal)}$$

$$\therefore -BC + DC = 0$$

$$-50 + DC = 0$$

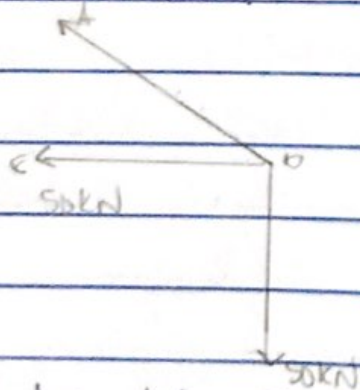
$$DC = 50\text{kN} \text{ (Tension)}$$

(Resulting for vertical)

$$-50\text{kN} + F_c = 0$$

$$F_c = 50\text{kN} \text{ (Tension)}$$

At joint D =



$$\therefore \text{Resulting to horizontal} = -50\text{kN} - DB \cos 45 = 0$$

$$50 \text{ kN} = -DE \cos(45)$$

$$DE = \frac{50}{\cos 45} = -70.7$$

$$DE = 70.7 \text{ (compressional)}$$

Member	P (kN)	b (cm)	a (m ²)	$P = \frac{P}{a}$ (kN/m ²)	u	Pul
AF	-70.71	4.24	0.0004	-17677.9	-0.471	353026.95
AB	50	3	0.0004	125000	0.333	124875
BC	50	3	0.0004	125000	0.666	249750
BF	50	3	0.0004	125000	0.333	124825
FE	50	3	0.0004	125000	-0.333	-124825
BE	0	4.24	0.0004	0	-0.471	0
EC	50	3	0.0004	125000	1.000	375000
ED	-70.71	4.24	0.0004	-17677.9	-0.942	706053.492
CD	50	3	0.0004	125000	0.666	249750
						$\Sigma = 2058455.24$

$$\frac{\Sigma PUL}{\Sigma} = \frac{2058455.24}{200000} = 10.29 \text{ mm}$$

$$\Sigma = 200000$$