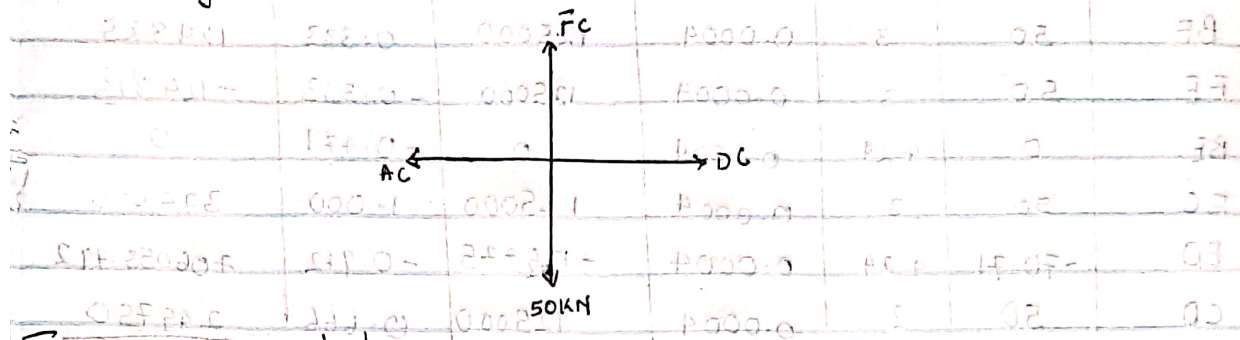


Okiemute Waterway

17/ENG08/056

Civil Engineering -

1) At joint C →



From previous calculation

$$BC = 50 \text{ kN}$$

$$\therefore -BC + DC = 0 \text{ [Resolving to horizontal]}$$

$$-50 + DC = 0$$

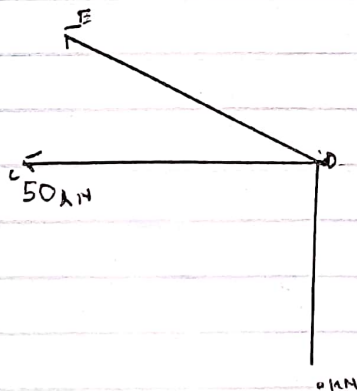
$$DC = 50 \text{ kN (Tensional)}$$

Resolving vertically

$$\Rightarrow -50 \text{ kN} + FC = 0$$

$$FC = 50 \text{ kN (Tensional)}$$

At joint D



$$\text{Resolving horizontally} = -50 \text{ kN} - DE \cos 45 = 0$$

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

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

$$\therefore DE = 70.7 \text{ (Compression)}$$

Member	P (kN)	l (m)	a (m <sup>2</sup> )	P = P/a	u	P <sub>ub</sub>
AF	-70.71	4.24	0.0004	-176775	-0.471	353026.75
AB	50	3	0.0004	125000	0.333	424875
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	-124875
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	-176775	-0.942	706053.492
CD	50	3	0.0004	125000	0.666	249750
						<u>2058455.24</u>

$$\sum P_{ub} = \frac{2058455.24}{200000} = 10.2922762 \approx 10.29 \text{ mm}$$

$$E = 200000$$