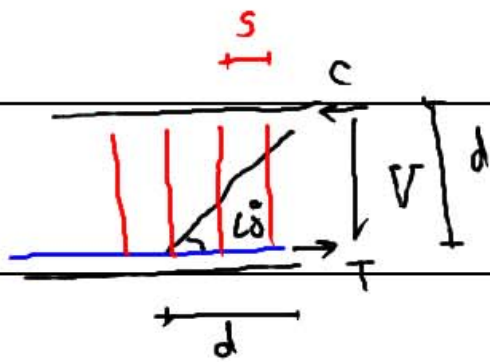


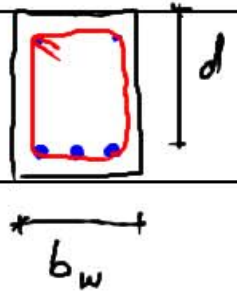
N, 1, 28

باسمہ تعالیٰ



$$V_c = 2 \phi_c \sqrt{f_c} b_w d$$

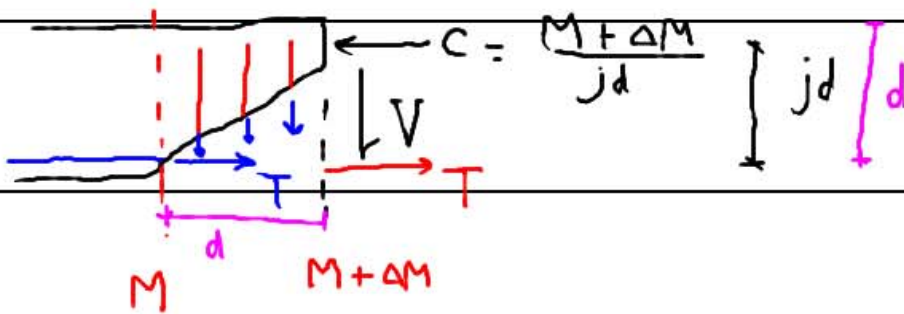
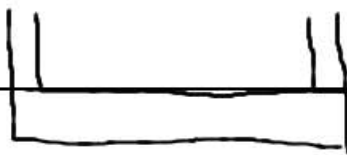
$$V_s = f_{yd} A_v \frac{d}{s} \leq 4 V_c$$



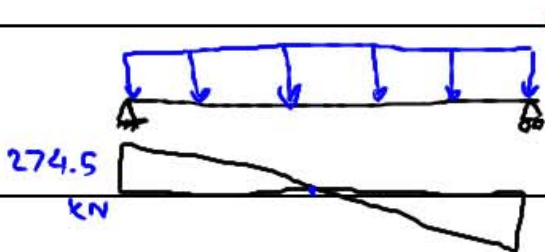
$$V_r = V_c + V_s$$



$$V_r > V_u$$



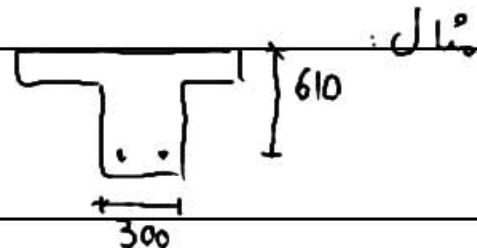
$$c = \frac{M + \Delta M}{j d}$$



$$w_u = 61 \frac{kN}{m}$$

$$DL = 20 \frac{kN}{m}$$

$$LL = 24 \frac{kN}{m}$$



خط تأثیر برش در وسط دهانه



$$q_u = 1.25 \times 20 + 1.5 \times 24 = 61$$

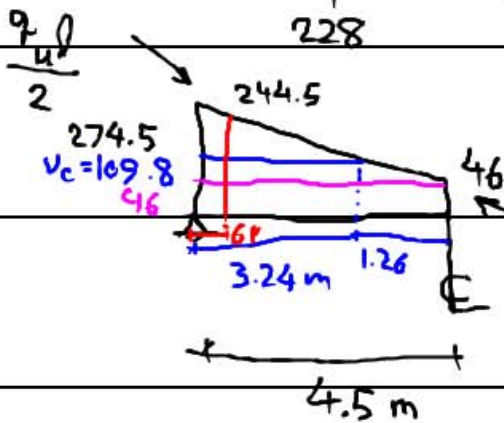
$$q_{ur} = 20 \frac{\text{kN}}{\text{m}}$$



$$136.5$$

$$V_u(4.5) = -46 \text{ kN}$$

$$228$$



پیش برش

$$\frac{q_u l}{8} = \frac{(1.5 \times 24) \times 9}{8} = 40.5 \text{ kN}$$

$$V_r = V_c + V_s \leq 5V_c$$

$$V_c = .2 \phi_c \sqrt{f_c} = .2 \times .6 \sqrt{25} = .6 \text{ MPa}$$

$$V_c = .6 \times 300 \times 610 = 109.8 \text{ kN}$$

$$V_u = 244.5 \text{ kN} \quad \text{نیازمند است$$

$$V_r = 109.8 + V_s > 244.5$$

$$V_s = 134.7 \text{ kN} = f_{yd} A_v \frac{d}{s}$$

$$\frac{A_v}{s} = \frac{134.7 \times 10^3}{.85 \times 300 \times 610} = .87 \text{ mm} > .35$$

$$\frac{A_v}{5b_w} = \frac{.35}{f_y} = \frac{.35}{300} \Rightarrow \left(\frac{A_v}{5}\right)_{\min} = .35 \text{ mm}$$

$$A_v = 2\phi 10 = 157 \text{ mm}^2$$

$$S < 181 \text{ mm} \ll \frac{610}{2} = 305 \text{ mm} \quad V_s = 134.7 < \overbrace{2 \times 109.8}^{V_c}$$

2φ10 @ S = 150 mm

2φ10 @ 300 mm

$$V_s = 157 \times .85 \times 300 \times \frac{610}{300} = 81.4 \text{ kN}$$

$$V_r = 109.8 + 81.4 = 192.2 \text{ kN}$$

274.5

