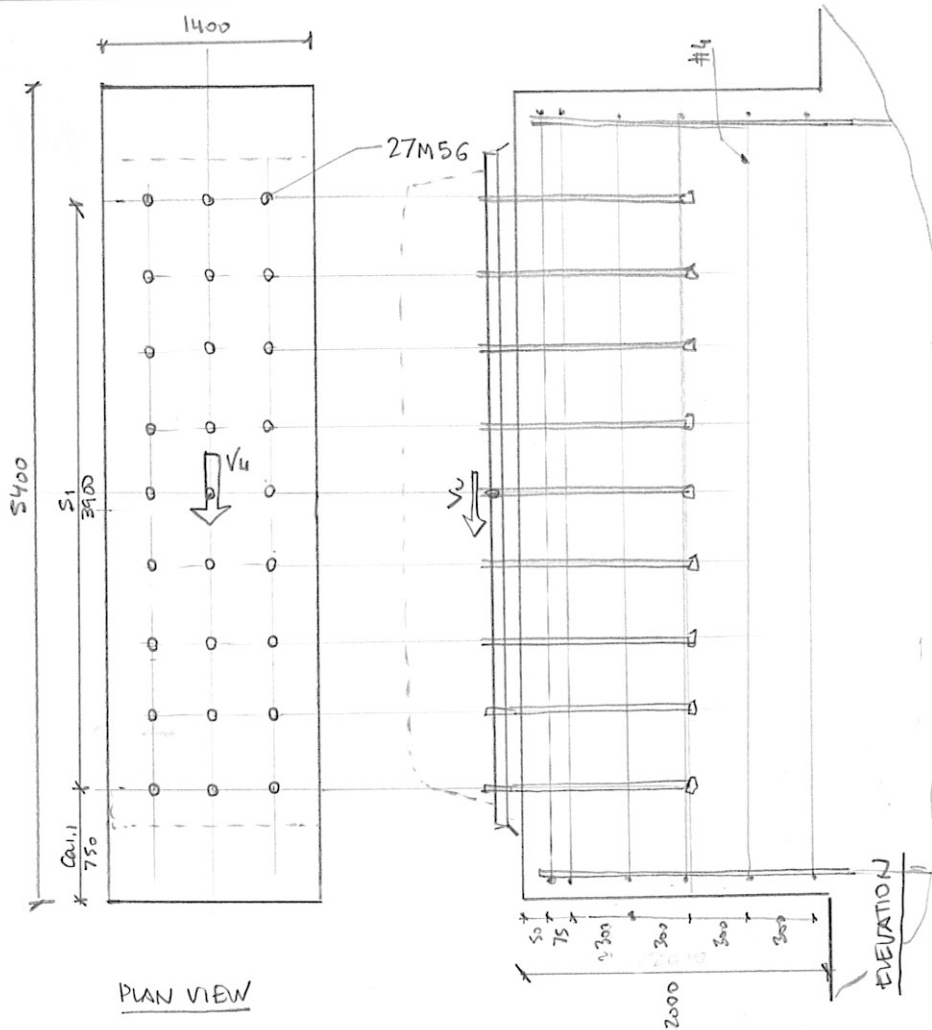
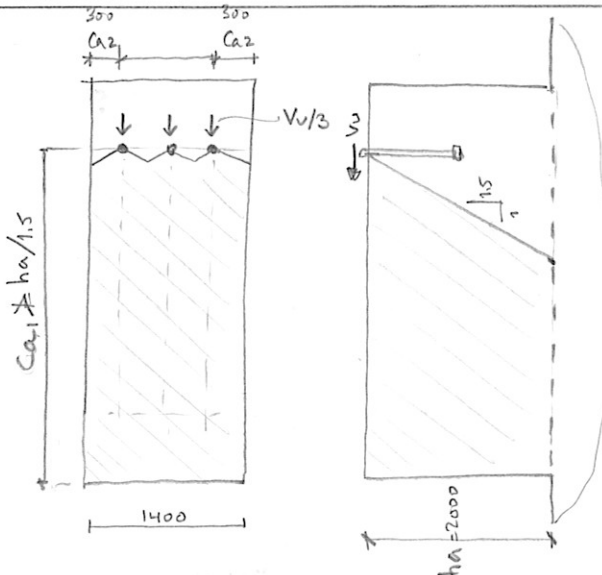


GEOMETRY



CONCRETE BREAKOUT STRENGTH

$$f'_c = 25 \text{ MPa}; f_y = 400 \text{ MPa}$$



CASE 2

(c_{a1} limited to $h/1.5 = 1333 \text{ mm}$)

$$A_{VC} = 1400 \times (1.5 \times c_{a1}) = 2800.000 \text{ mm}^2 \quad \left| \frac{A_{VC}}{A_{fco}} = 0.35 \right.$$

$$A_{VC0} = 4.5 \times c_{a1}^2 = 7.996.000 \text{ mm}^2$$

$$c_{a2} = 300 \leq 1.5 c_{a1} \rightarrow \phi_{c,dv} = 0.7 + 0.3 \times \frac{c_{a2}}{1.5 c_{a1}} = 0.75$$

$$\phi_{c,v} = 1.2$$

$$\phi_{h,v} = 1.0$$

$$l_e = 8 d_a = 448 \text{ mm}$$

$$V_b = \min \left\{ \begin{array}{l} 0.6 \left(\frac{l_e}{d_a} \right)^{0.2} \sqrt{d_a} \cdot \lambda_n \cdot \sqrt{f'_c} \cdot (c_{a1})^{1.5} \times 10^{-3} = 1639 \text{ kN} \\ 3.7 \cdot \lambda_n \cdot \sqrt{f'_c} \cdot (c_{a1})^{1.5} \times 10^{-3} = 900 \text{ kN} \end{array} \right.$$

$$\phi V_{cbg} = 0.65 \times 0.35 \times 0.75 \times 1.2 \times 1.0 \times 900 = 184 \text{ kN}$$

$$W = 3600 \text{ kN} \gg \phi V_{cbg} = 184 \text{ kN}$$

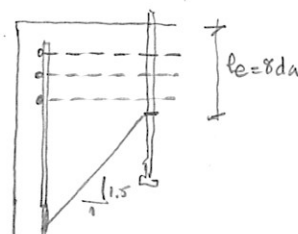
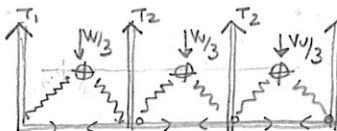
PROVIDE REINFORCEMENT

REINFORCEMENT:

STRUTS & TIES MODEL (SIMPLIFIED)

$$\text{WORST TIE: } T_2 = V_u/3 = 3600/3 = 1200 \text{ kN}$$

$$A_{s, \text{req}} = 1200 \times 10^3 / (0.75 \times 400) = 4000 \text{ mm}^2 / \text{TIE}$$



8#B !!!
(WITHIN l_e)