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Registered Engineer

ACENZ

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Canada Signs.

Transalta Signs

Job No.

95013

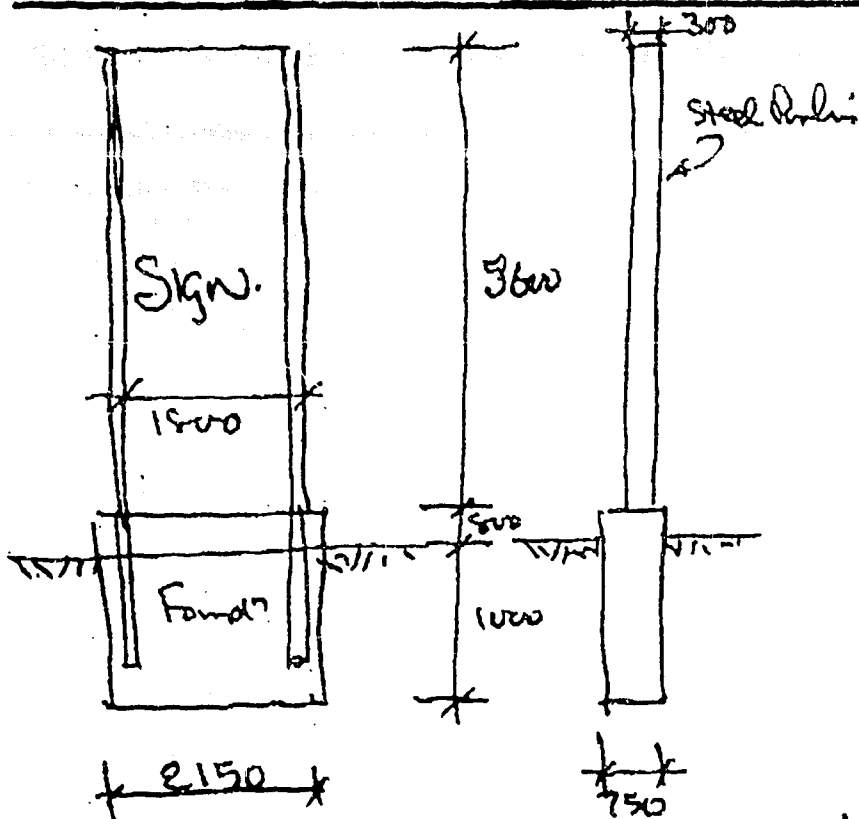
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Date: 12/5/95.

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Wind Load

$$V_s = S_1 S_2 V$$

$$V = 37 \text{ m/sec.}$$

$$S_1 = 1.0$$

$$S_2 = 3A = 0.78$$

$$\therefore V_s = 1.0(0.78)(37) = 28.86 \text{ m/sec.}$$

$$q = 0.613 V_s^2 = 0.613(28.86)^2 = 511 \text{ Pa.}$$

$$\frac{\text{width}}{\text{height}} = \frac{2150}{5600} = 0.39$$

Take $C_f = 1.3$

$$\therefore \text{Force} = 1.3(511)(5.6 \times 1.8) = 6696 \text{ N.}$$

$$\text{Moment at base} = 6696 \left(\frac{5.6 + 0.8}{2} \right)$$

$$= 21428 \text{ Nm.}$$

$$\therefore \text{moment to single Pole member} = 10714 \text{ Nm}$$

300 DH315

$$I_{xx} = 11.645 \times 10^6 \text{ mm}^4$$

$$\therefore Z_x = 77.63 \times 10^3 \text{ mm}^3$$

$$\therefore f_{bc} = \frac{10714}{77.63} = 138 \text{ MPa}$$

$$P_{bc} = 0.6 F_y (1.33) \text{ Found} = 0.6(500)(1.33) = 400 \text{ MPa} > 138. \therefore \text{Ok.}$$

$$\text{Deflection} = \frac{WL^3}{3EI} = \frac{6696 (5.6)^3 10^3}{2 (20 \times 10^{10}) (11.645 \times 10^6)^3} = 89 \text{ mm.}$$

$$\frac{H}{90} = \frac{5600}{90} = 62.00 \text{ mm as ideal.}$$

Gaps in sign will reduce area of windage & also negative pressure on leeward sign & hence deflection.

Stability

$$\text{wt of Found} = (2.15 \times 1.8 \times 0.75) 24000 = 69660 \text{ N}$$

$$RM = 69660 \left(\frac{0.75}{2} \right) = 26122.5 \text{ Nm} > 21428.$$

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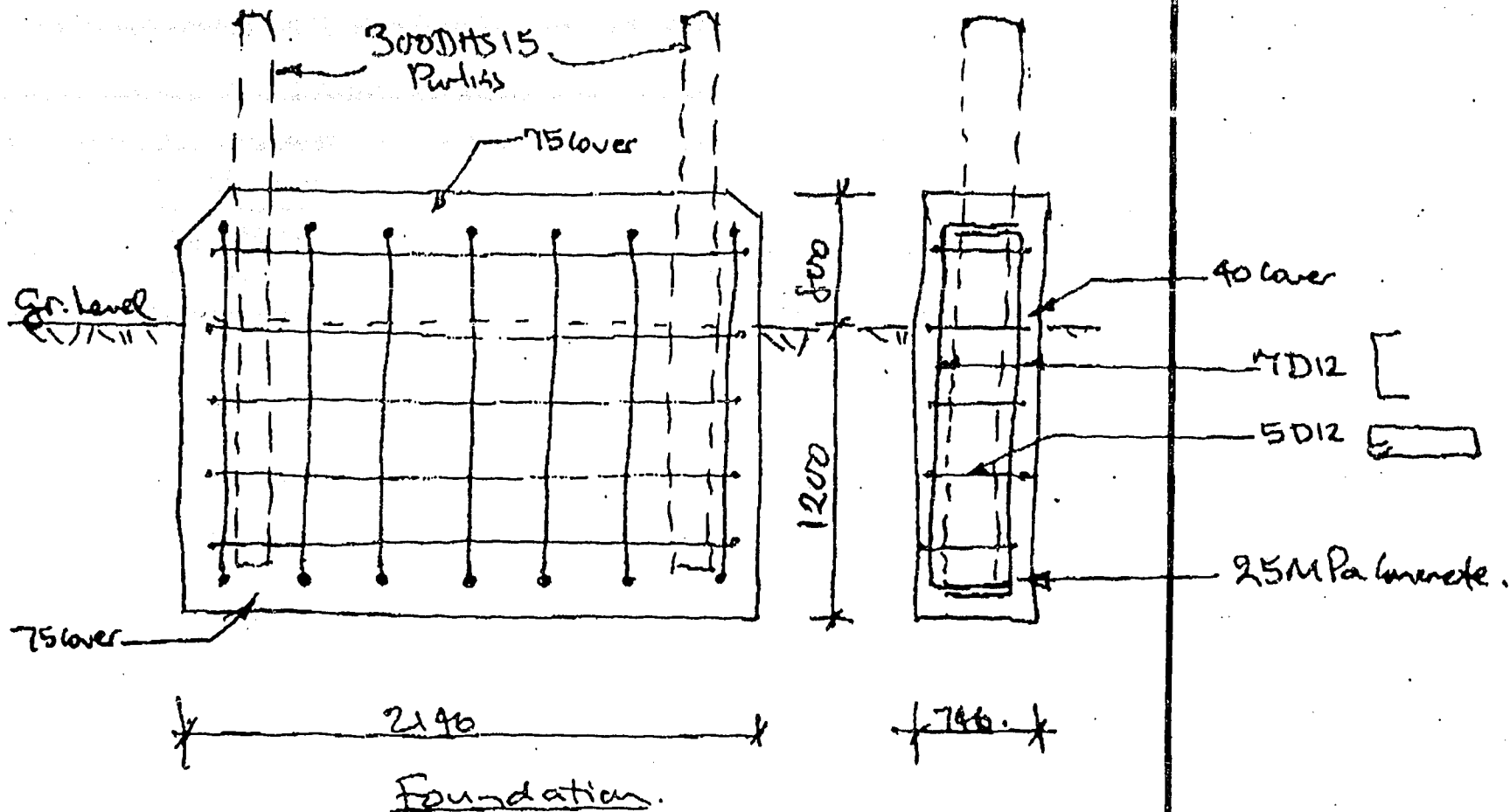
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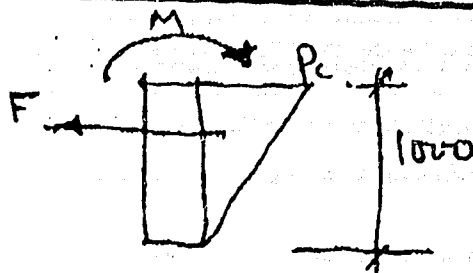
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Bearing



$$F = \frac{P_c}{2} (1.0)(2.15) \quad \text{with sign in natural ground take } P_c = 30 \text{ kPa}$$

$$\therefore F = 15000(2.15) = 32250 \text{ N}$$

$$\text{Stabilising moment from bearing} = 32250(0.67) = 21607.5 \text{ Nm}$$

Preferable to take base to 1200

$$\text{Then } RM = \frac{2.0(26122.5)}{1.8} = 29025 \text{ Nm}$$

$$\& \text{ Bearing Moment} = 24009 \text{ Nm}$$

Reinft to footing

$$A_s = \frac{29025}{140 \times 0.62 \times 0.6} = 421 \text{ mm}^2$$

$\therefore$ Use nominal reinft.