

**Richard Tant Associates**

Consulting Civil & Structural Engineers

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Job No.

Sheet No.

Rev.

4447

P1

Member/Location

Job Title

15 RUDALL CIRCULAR

Org. Ref.

RETAINING WALL CALCS

Made by

AT

Date

FEB 2017

Chd.

RETAINING / UNDER PIN DESIGNBEARING PRESSURE CHECK

ATTACHES 14m OF 327 WALL + 1m OF 327 R.C. WALL, ASSUME JOISTS SPAN PARALLEL, ATTACHES 3m OF ROOF:

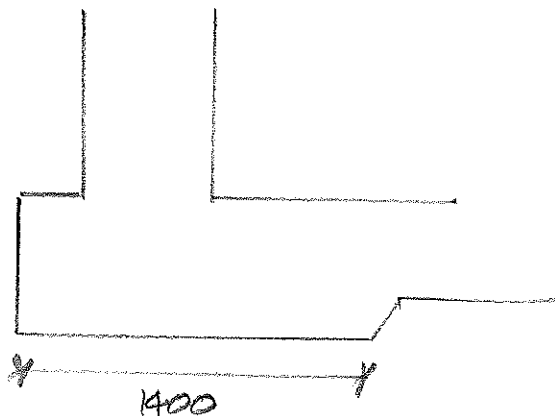
∴ DEAD LOAD: kN/m

LIVE LOAD: kN/m

$$\begin{array}{rcl}
 14 \times 7.5 & = & 105 \\
 1 \times 0.327 \times 29.5 & = & 8 \\
 3 \times 16 & = & 48 \\
 \hline
 & & 157 \text{ kN/m}
 \end{array}$$

$$3 \times 0.75 = 3 \text{ kN/m}$$

$$\text{TOTAL} = 120 \text{ kN/m (UPL)} \quad \text{--- (Note: handwritten calculation shows 157 + 3 = 160, but text says 120)} \quad \text{--- (Note: handwritten calculation shows 157 + 3 = 160, but text says 120)}$$



$$\therefore \sigma = 120 \text{ kN} / 1400 = 86 \text{ kN/m}^2$$

SAFE BEARING CAP = 100 kN/m²
(ASSUMED)

∴ BEARING PRESSURE
O.K. ✓

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RETAINING WALL CALC'S

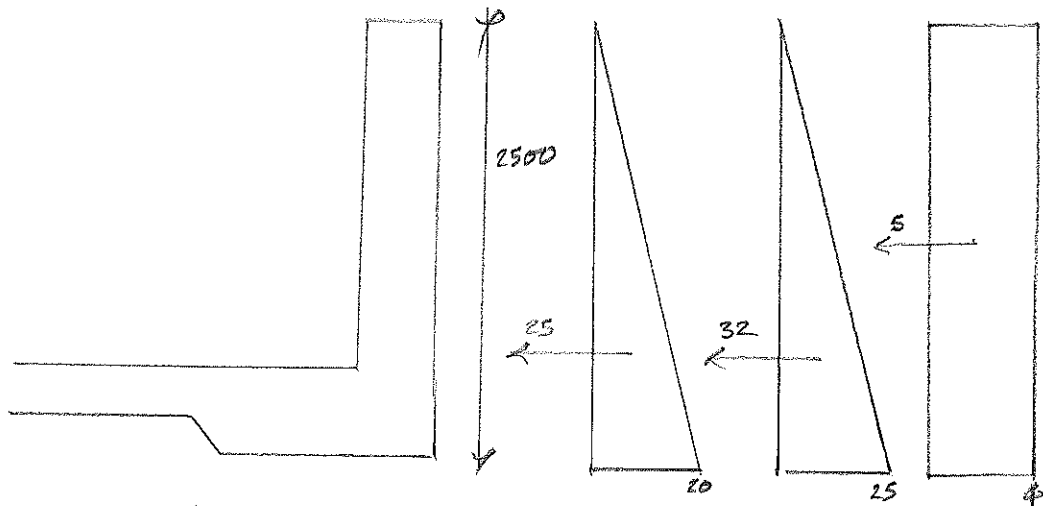
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$$K_0 = 0.8 \quad \text{ACTIVE/REST}$$

$$\begin{aligned} \text{SOIL} &= 2.5 \times 10 \times 0.8 = 20 \text{ kN/m}^2 \\ \text{WATER} &= 2.5 \times 10 = 25 \text{ kN/m}^2 \\ \text{SURCHARGE} &= 5 \times 0.8 = 4 \text{ kN/m}^2 \end{aligned}$$

$$\therefore \text{MAX CASE B.M.} = (20 + 25) 0.84 + 5 \times 1.3 = 45 \text{ kNm/m CLAR}$$

$$\times 1.5 = 67 \text{ kNm/m (ULT)}$$

$$K = \frac{67}{1000 \cdot 277^2 \cdot 40} = 0.02$$

$$A_s = \frac{67}{0.95 \times 460 \times 0.94 \times 277} = 590 \text{ mm}^2/\text{m}$$

$$\text{SPAN}/d = \frac{2500}{277} = 9 \quad \text{M.F. REQ'D} = 1.3$$

$\therefore$ PROVIDE B16-150 BOTH FACES (1340 mm²/m)

