

STRUCTURAL DESIGN CALCULATIONS
FOR GRAVITY RETAINING WALL
AT

HORROCKS CLOSE

MALPAS

NEWPORT

GWENT

NOVEMBER 2025

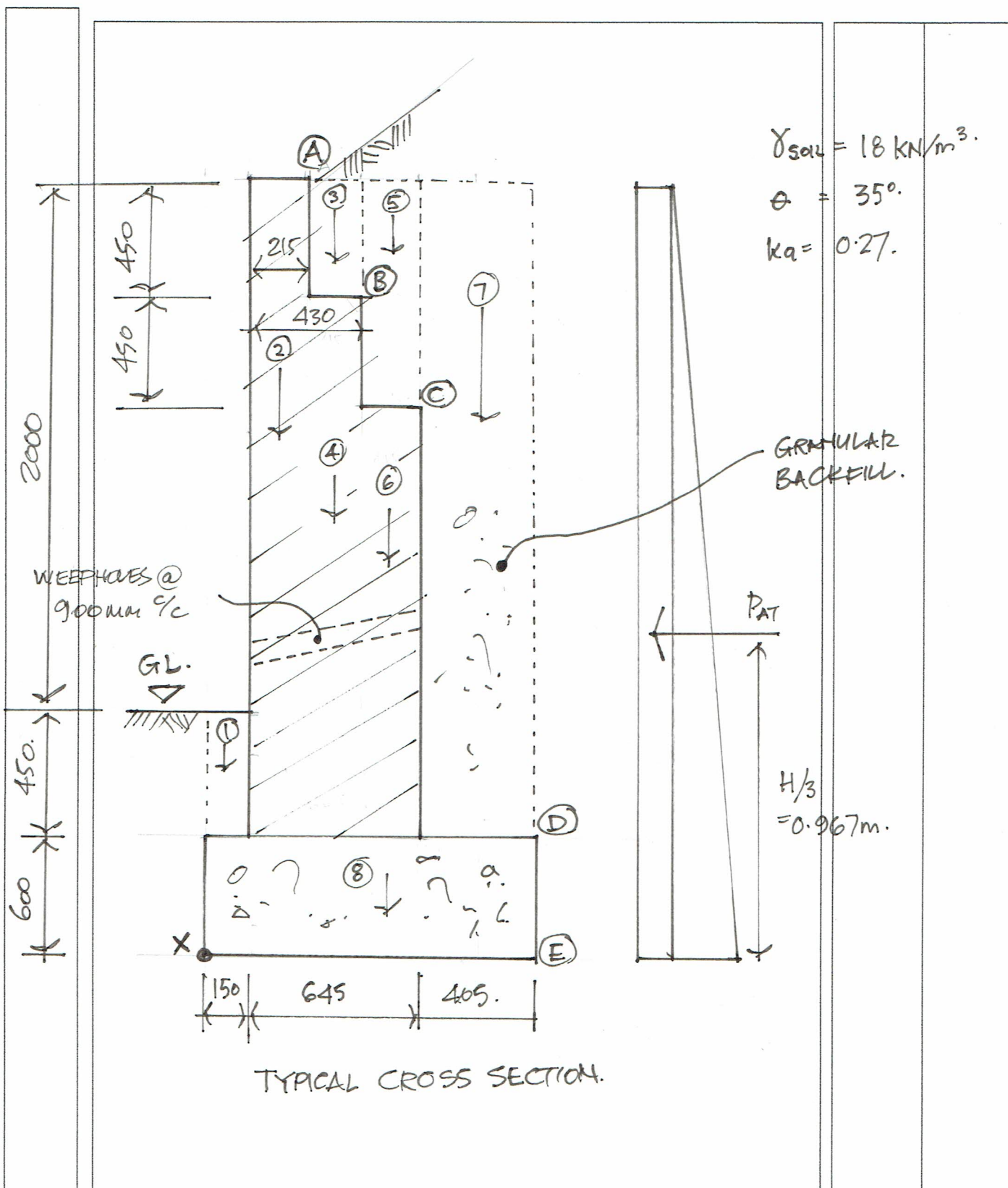
Disclaimer: It is the contractors' responsibility to accurately measure lengths/dimensions of any steelwork prior to ordering. True dimensions may differ slightly to design dimensions and Engineer cannot be held responsible for incorrectly ordered steel lengths.

Job No: 25-084

Job Title:
HORROCKS CLOSE MALPAS

Sheet No:

01-01



Job Title:
HORROCKS CLOSE MALPAS

Sheet No:

01-02

<u>PRESSURES @</u>	<u>H (m)</u>	<u>δ kN/m</u>
A	0	0.
B	0.45	2.2.
C	0.9.	4.4.
D	2.45.	11.9.
E	2.9.	14.1

$$\text{Max thrust } P_{AT} = \frac{1}{2} \times 0.27 \times 18 \times 2.9^2.$$

$$= 20.43 \text{ kN/m run.}$$

Acting @ $\frac{1}{3}$ H From base.

$$= 2.9/3 = 0.967 \text{ m.}$$

$$\text{Applied Moment } 0.967 \times 20.43$$

$$= 19.76 \text{ kN.m}$$

Job Title:
HORROCKS CLOSE MALPAS

Sheet No:

01-03

TAKING MOMENTS @ 'X'

<u>LOAD.</u>	<u>W</u>	<u>LA</u>	<u>M.</u>
① $0.45 \times 0.15 \times 18. = 1.2.$		0.075.	0.1.
② $0.215 \times 2.45 \times 24. = 12.6$		0.258.	3.3
③ $0.215 \times 0.45 \times 18. = 1.74.$		0.473.	0.82.
④ $0.215 \times 2.0 \times 24. = 10.3.$		0.473.	4.9.
⑤ $0.215 \times 0.9 \times 18 = 3.5.$		0.688	2.4.
⑥ $0.205 \times 2.45 \times 18 = 9.0.$		0.898.	8.1
⑦ $1.0 \times 0.6 \times 24 = 14.4.$		0.5.	7.2.
ΣR_V 52.74		ΣM 26.8	
KN		KNM.	

F.O.S_{SLIDING.}

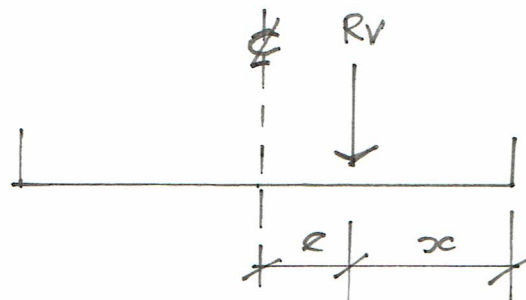
$$\frac{R_V \tan \delta}{P_A} \quad \frac{52.74 \tan 35^\circ}{20.43.}$$

$$= 1.8 > 1.5 \therefore \text{SATISFACTORY IN SLIDING}$$

Job Title:
HORROCKS CLOSE MALPAS

Sheet No:
01-04.

Eccentricity of R_v .



$$R_v x = \sum M_{\downarrow} - \sum M_{\uparrow}$$

$$52.74 x = 26.8 - 20.43$$

$$52.74 x = 6.37$$

$$x = 6.37 / 52.74$$

$$x = 0.12 \text{ m.}$$

$$\therefore e = 500 - 121 = 379 \text{ mm. OUTSIDE MIDDLE } 1/3.$$

$$\text{F.O.S. OVERTURNING} = \frac{\sum M_{\downarrow}}{\sum M_{\uparrow}} = \frac{26.8}{20.43} = 1.3.$$

SUGGEST INCREASED FOUNDATION
WIDTH TO 1200(W)