

Weight/unit area at depth h

$$gd = (ws + we * h(a)) * \gamma_{maf} / 1000$$

$$= (0 + 18 * 1) * 0.9 / 1000$$

$$= 0.0162 \text{ N/mm}^2$$

Moment of resistance

$$mr = (fb(1) / \gamma_{mam} + gd) * z * 1000$$

$$= (0.15 / 3.1 + 0.0162) * 0.03375 * 1000$$

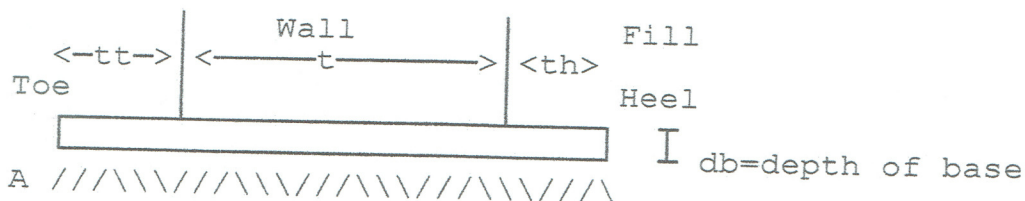
$$= 2.18 \text{ kNm}$$

Applied moment less than moment of resistance (1.138 <= 2.18)
therefore section is satisfactory.

Step 1 width 0.45 m
height 1 m

Step height (m)	Step thicknes (m)	Ultimate Moments (kNm)	
		Resistance	Applied
1	0.45	2.18	1.138
1.6	0.65	5.232	4.662

Stability and bearing check



Width of toe $tt = 0.15 \text{ m}$
Width of heel $th = 0.15 \text{ m}$
Thickness of wall $t = 0.65 \text{ m}$
Height of wall $h = 1.6 \text{ m}$
Width of base $tb = t + tt + th = 0.65 + 0.15 + 0.15 = 0.95$
Depth of base $db = 0.30 \text{ m}$
Overall depth $od = h + db = 1.6 + 0.3 = 1.9 \text{ m}$
Weight of fill and wall $wf = we * (t + th) * h = 18 * (0.65 + 0.15) * 1.6 = 23.04 \text{ kN}$
Eccentricity from A $ef = tt + (t + th) / 2 = 0.15 + (0.65 + 0.15) / 2 = 0.55 \text{ m}$
Weight of base $wb = tb * db * 24 = 0.95 * 0.3 * 24 = 6.84 \text{ kN}$
Earth horizontal force $sfe = ce * we * od^2 / 2 = 0.271 * 18 * 1.9^2 / 2 = 8.804 \text{ kN}$