

Sliding (passive resistance ignored)

Sliding force		$sf = sfe + sfs + xv = 8.804 + 0 + 0 = 8.804$
Details of bearing stratas		
angle of friction		$\text{phib} = 40^\circ$
cohesion		$cu = 0 \text{ kN/m}^2$
Coefficient of friction		$cf = \text{TAN}(\text{RAD}(\text{phib} * 2/3))$ $= \text{TAN}(\text{RAD}(40 * 2/3))$ $= 0.5022$
Resisting force	fill	$rff = wf * cf = 23.04 * 0.5022 = 11.57 \text{ kN}$
	base	$rfb = wb * cf + tb * cu / 2$ $= 6.84 * 0.5022 + 0.95 * 0 / 2$ $= 3.435 \text{ kN}$
	surcharge	$rfs = ws * (t + th) * cf = 0 * (0.65 + 0.15) * 0.5022$ $= 0 \text{ kN}$
	total	$rf = rff + rfb + rfs = 11.57 + 3.435 + 0$ $= 15.01 \text{ kN}$
Factor of safety		$fss = rf / sf = 15.01 / 8.804 = 1.704$

Bearing pressure

Weight of surcharge	$sw = ws * (t + th) = 0 * (0.65 + 0.15)$ $= 0 \text{ kN}$
Moments about centre of base	$m = om + (wf + sw) * (tb / 2 - ef)$ $= 5.576 + (23.04 + 0) * (0.95 / 2 - 0.55)$ $= 3.848 \text{ kNm}$
Section modulus of base	$zb = tb^2 / 6 = 0.95^2 / 6 = 0.1504 \text{ m}^3$
Total weight	$tw = wf + sw + wb = 23.04 + 0 + 6.84$ $= 29.88 \text{ kN}$
Pressure due to weight	$pw = tw / tb = 29.88 / 0.95 = 31.45 \text{ kN/m}^2$
Pressure due to moment (+/-)	$pm = m / zb = 3.848 / 0.1504 = 25.58 \text{ kN/m}^2$
Maximum pressure	$pmax = pw + pm = 31.45 + 25.58 = 57.04 \text{ kN/m}^2$
Minimum pressure	$pmin = pw - pm = 31.45 - 25.58 = 5.869 \text{ kN/m}^2$

Summary of stability check

Factor of safety overturning	2.855
Factor of safety sliding	1.704
Maximum base pressure	57.04 kN/m ²