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Question: For the retaining wall shown in figure below, determine the fo...

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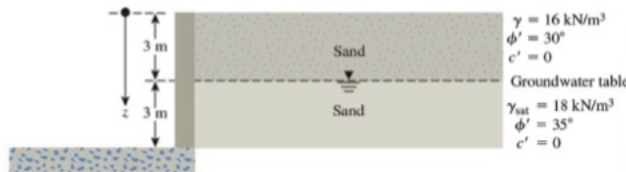
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For the retaining wall shown in figure below, determine the force per unit length of the wall for Rankine's active state. Also find the location of the resultant.



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Expert Answer ⓘ



Anonymous answered this
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$$k_{a1} = \frac{1 - \sin 30^\circ}{1 + \sin 30^\circ} = 0.33$$

$$k_{a2} = \frac{1 - \sin 35^\circ}{1 + \sin 35^\circ} = 0.27$$

Active force (P_a)

$$= \frac{1}{2} \times (16 \times 3 \times 0.33) \times 3 + (16 \times 3 \times 0.27) \times 3 + \frac{1}{2} \times (8.19 \times 3 \times 0.27) \times 3 + \left(\frac{1}{2} \times 9.81 \times 3 \right) \times 3$$

$$= 116.74 \text{ kN/m}$$

Location of resultant from bottom

$$= \frac{\left[\frac{1}{2} (16 \times 3 \times 0.33) \times 3 \times 4 + (16 \times 3 \times 0.27) \times 3 \times 1.5 + \frac{1}{2} (8.19 \times 3 \times 0.27) \times 3 \times 1 + \left(\frac{1}{2} \times 9.81 \times 3 \right) \times 3 \right]}{116.74}$$

$$= 1.78 \text{ m}$$

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4. For the retaining wall shown in Figure 3, determine the force per unit length

[See answer](#)

Please assist to provide detail workings for easier understanding. Thank

[See answer](#)

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Q: For the retaining wall shown in the following figure determine the force per unit length of the wall for Rankine's active state. Also find the location of the resultant forces. (after Das, 2009) Assume $\gamma = 18 \text{ kN/m}^3$ $\phi = 30^\circ$ $c = 0$

A: [See answer](#)

Q: For the retaining wall shown in figure below, determine the force per unit length of the wall for Rankine's active state. Also find the location of the resultant. $\gamma = 16 \text{ kN/m}^3$, $\phi = 30^\circ$. Sand Groundwater table sat-18 kN/m³ 3 m Sand $\phi = 35^\circ$ $c = 0$

A: [See answer](#)

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