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## Question: Please explain all parts and write neat and clean This question...

Please explain all parts and write neat and clean

This question is from geo technical engineering 1 kindly please write neat and clean so i can understand the solution

Thanks a lot and have a nice day 😊

Q-6: An 5-m-high retaining wall is shown in Figure 2. Determine

- Rankine active force per unit length of the wall and the location of the resultant
- Rankine passive force per unit length of the wall and the location of the resultant

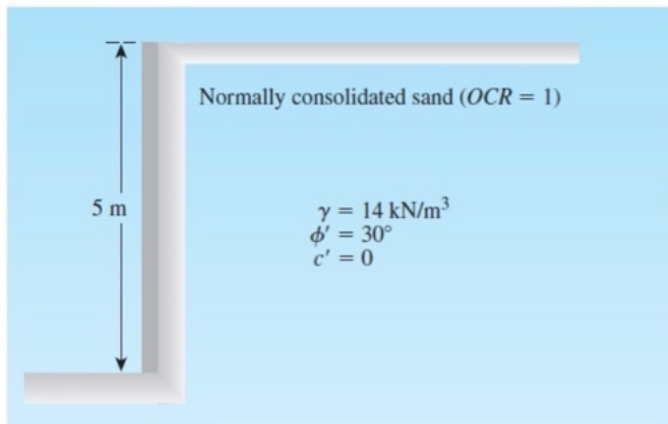


Figure 5m high retaining wall

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## Expert Answer



Umar Bashir answered this  
2,785 answers

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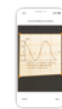
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Active earth pressure at the top of wall = 0

Active earth pressure at the base of wall =  $p = K_a \gamma H = (1/3)(14)(5) = 23.33 \text{ kN/m}^2$

The active earth pressure distribution is shown

Resultant active force per unit length is the area of the earth pressure diagram

$F = (1/2)(p \times H) = (1/2)(23.33 \times 5) = 58.33 \text{ kN/m}$

Its location from the bottom of wall =  $H/3 = 5/3 = 1.667 \text{ m}$

**b) Coefficient of passive earth pressure is given as**

$K_p = (1 + \sin \phi') / (1 - \sin \phi') = (1 + \sin 30) / (1 - \sin 30) = 3$

Passive earth pressure at the top of wall = 0

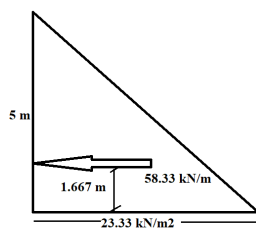
Passive earth pressure at the base of wall =  $p = K_p \gamma H = (3)(14)(5) = 210 \text{ kN/m}^2$

The passive earth pressure distribution is shown

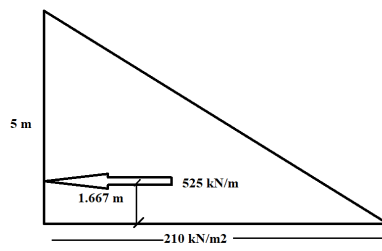
Resultant passive force per unit length is the area of the earth pressure diagram

$F = (1/2)(p \times H) = (1/2)(210 \times 5) = 525 \text{ kN/m}$

Its location from the bottom of wall =  $H/3 = 5/3 = 1.667 \text{ m}$



Active earth pressure



Passive earth pressure

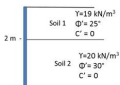
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**QUESTION 22 A**  
frictionless retaining wall is shown in the

**QUESTION 22**

A frictionless retaining wall is shown in the figure. Assume active conditions develop.

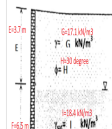


Soil 1  
 $\gamma = 18 \text{ kN/m}^3$   
 $\phi' = 25^\circ$   
 $c' = 0$

Soil 2  
 $\gamma = 20 \text{ kN/m}^3$   
 $\phi' = 30^\circ$   
 $c' = 0$

[See answer](#)

the retaining wall is supporting 2 layers of soil with different properties as



[See answer](#)


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Q: C.) A vertical wall 6m high, above the water table, retains a  $20^\circ$  soil slope, the retained soil having a unit weight of  $18 \text{ kN/m}^3$ ; the appropriate shear strength parameters are  $c' = 0$  and  $\phi' = 40^\circ$ . Determine a.) Rankine active force per unit length of the wall and the location of the resultant. b.) Rankine passive force per unit length of the wall and the location of the resultant.

per unit length of the wall and the location of the resultant (with respect to bottom of the wall) for  $H=10$  m,  $H_1=4$  m,  $y_1=16$  kN/m<sup>2</sup>,  $y_2=20$  kN/m<sup>2</sup>,  $d_1=35^\circ$ ,  $d_2=42^\circ$ ,  $q=50$  kPa. Surcharge = 9 Sand H G=0 Groundwater table H Frictionless wall Sand 72 (saturated unit weight) C...

A: [See answer](#) 100% (2 ratings)

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