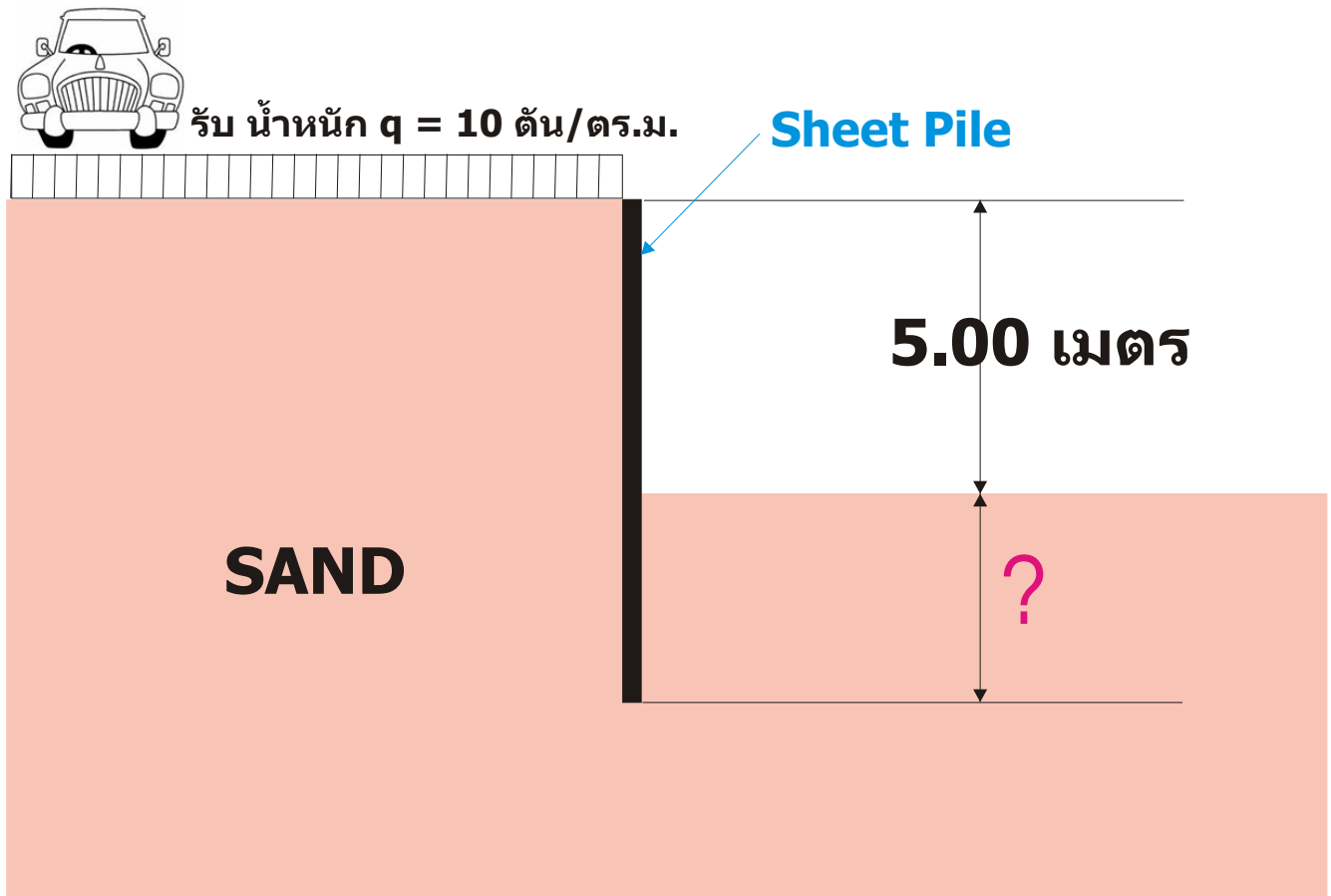


ตัวอย่าง

ตัวอย่าง

รายการคำนวณ

SHEET PILE WALL



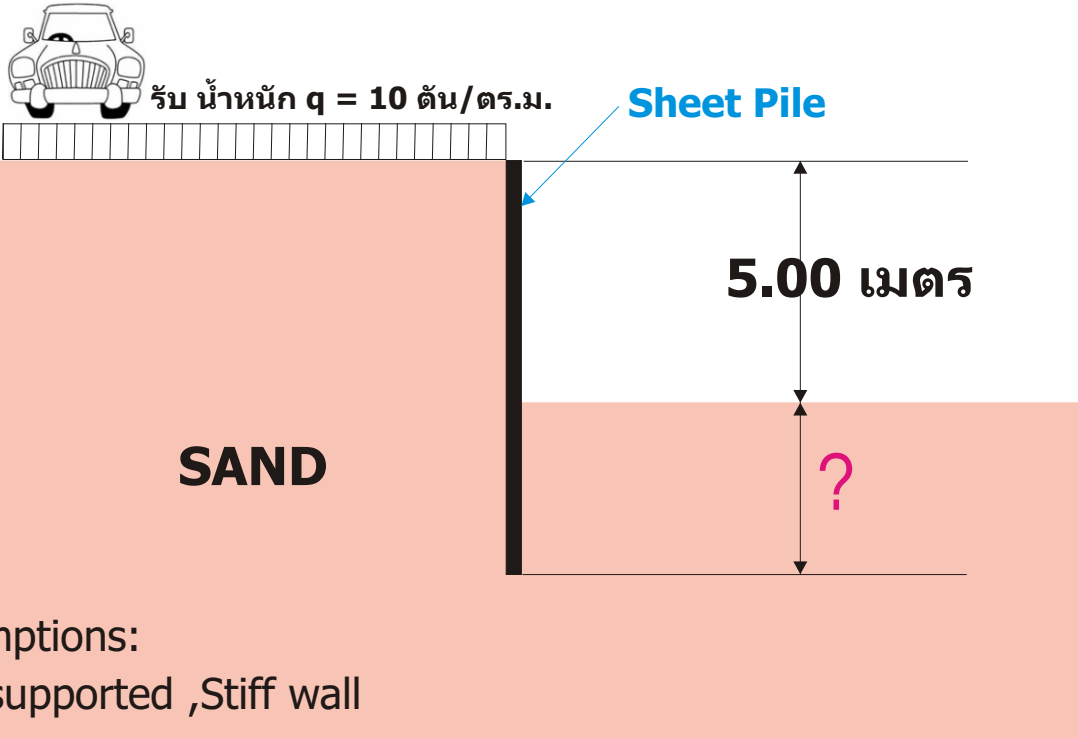
By
Gnem Rvc

กลุ่มแบ่งปัน E-Book วิศวกรรม
Tumcivil.com

2012, June

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Example Sheet Pile Wall



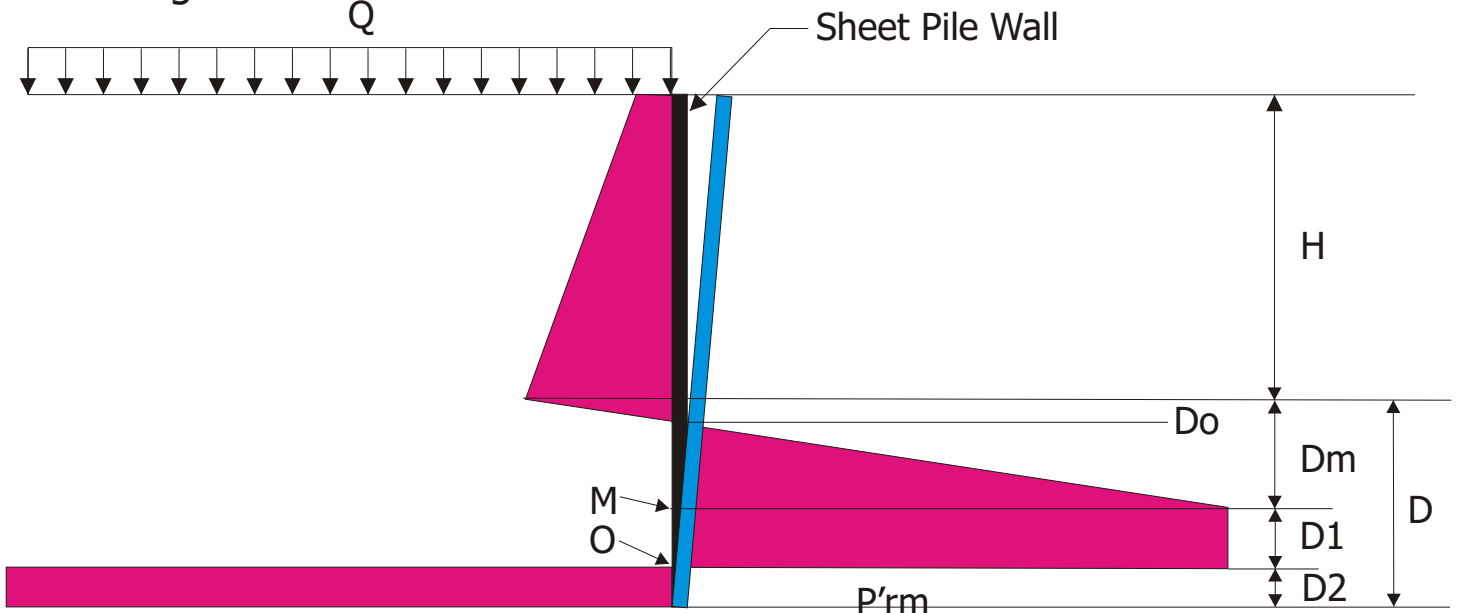
Assumptions:

Unsupported ,Stiff wall

Standard Earth Pressure

The entire wall will be positioned above the ground water level.

Roughness $r = 0.5$
 Q



Calculated base on the resulting earth pressure($p_r = p_P - p_A$)

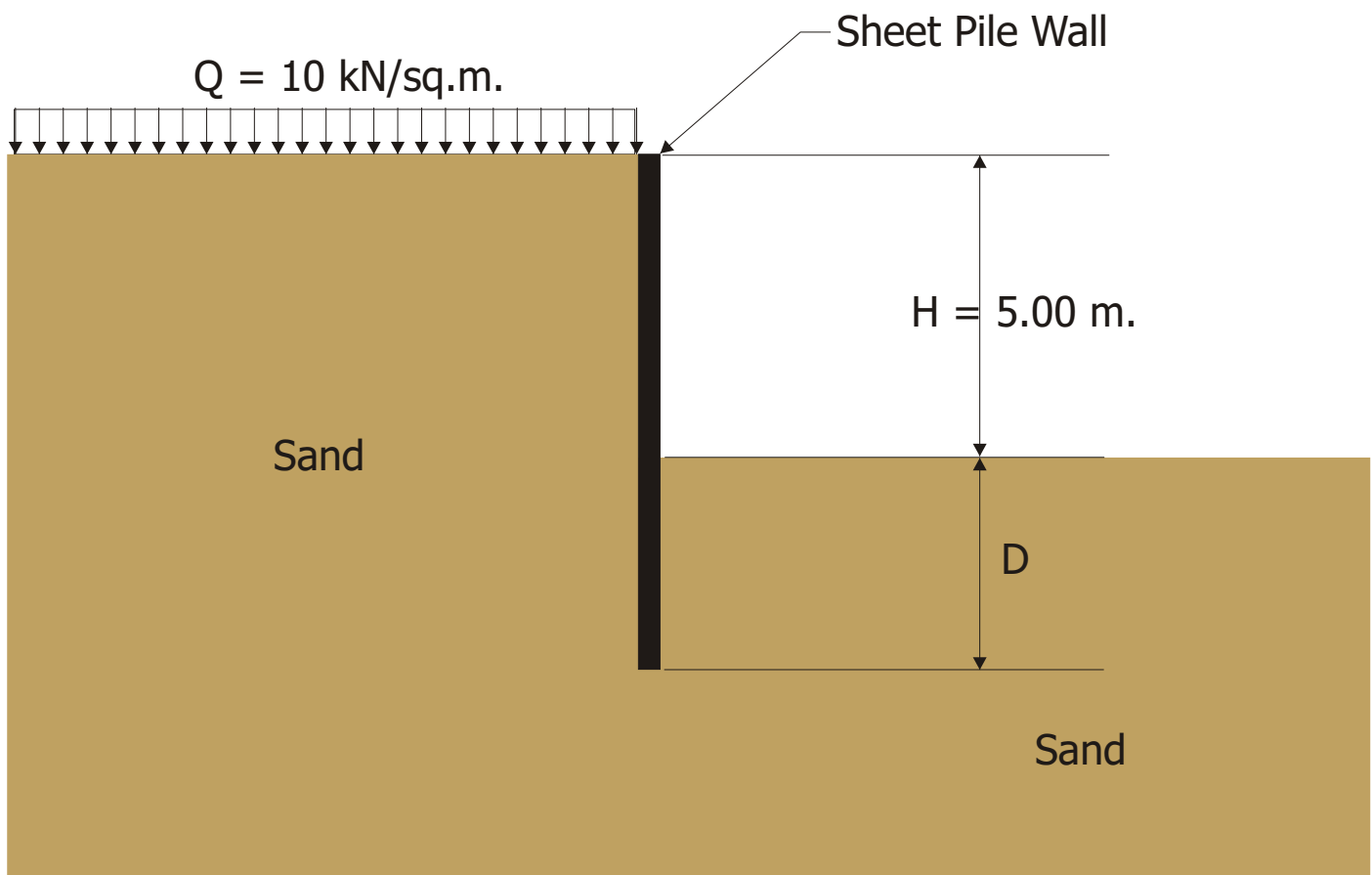
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Material Properties

คุณสมบัติวัสดุ

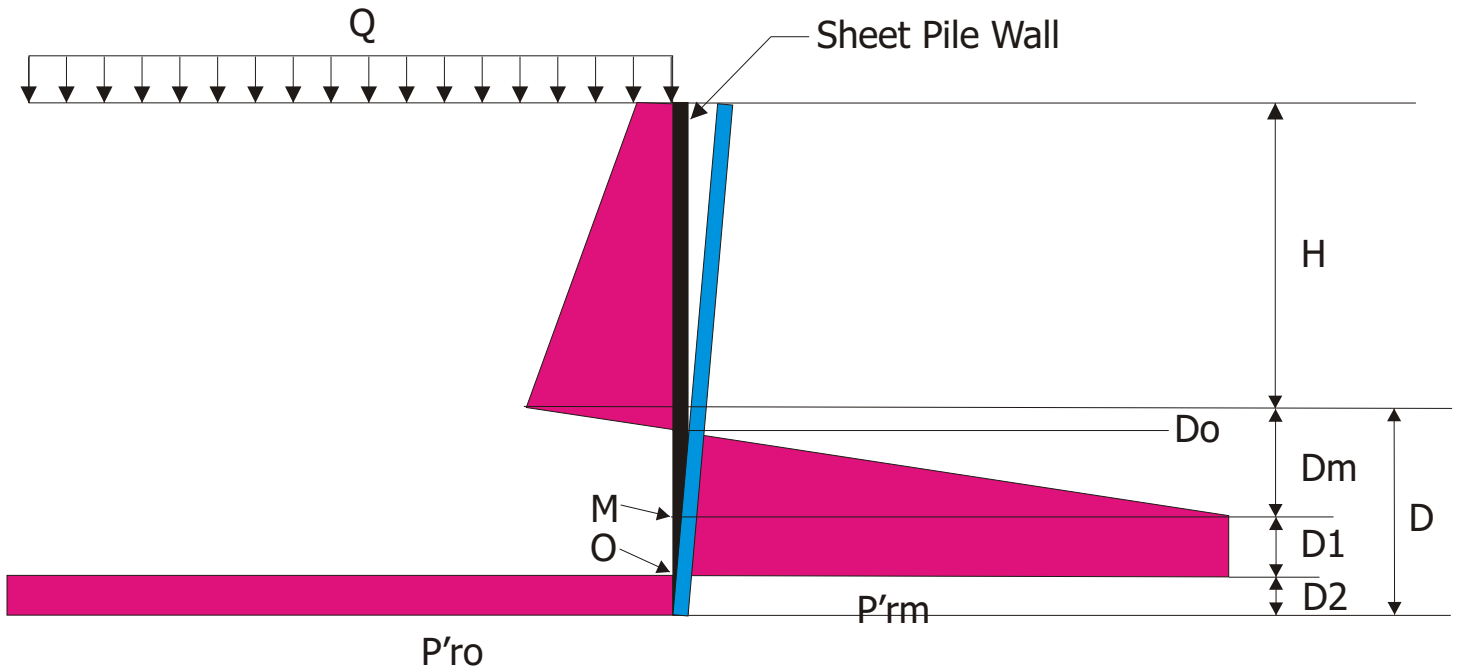
Material	Unit weight above G.W.L. γ [kN/m ³]	Friction angle ϕ	$\tan\phi$	$\tan\phi = \frac{\tan\phi}{F}$	Earth pressure coefficient	
					Active K_A	Passive K_P
Sand	$\gamma_{\text{sand}} = 18$	39	0.81	0.54	0.3	4

Use a safety factor of $F = 1.5$



Sheet Pile Wall with original materials

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Depth [m]	Calculation	Result [kN/m ²]
0	$p'_A = K'_A \cdot (q + \gamma_{sand} \cdot 0)$	3
5	$p'_A = K'_A \cdot (q + \gamma_{sand} \cdot H)$	30
5 + D _m	$p'_{rm} = p'_p - p'_A = K'_p \cdot \gamma_{sand} \cdot D_m - K'_A \cdot \gamma_{sand} (H + D_m)$	66.6 D _m - 30
5 + D _m + D ₁	$p'_{ro} = p'_p - p'_A = K'_p \cdot \gamma_{sand} (H + D_m + D_1) - K'_A \cdot \gamma_{sand} (D_m + D_1)$	66.6 (D _m + D ₁) + 360

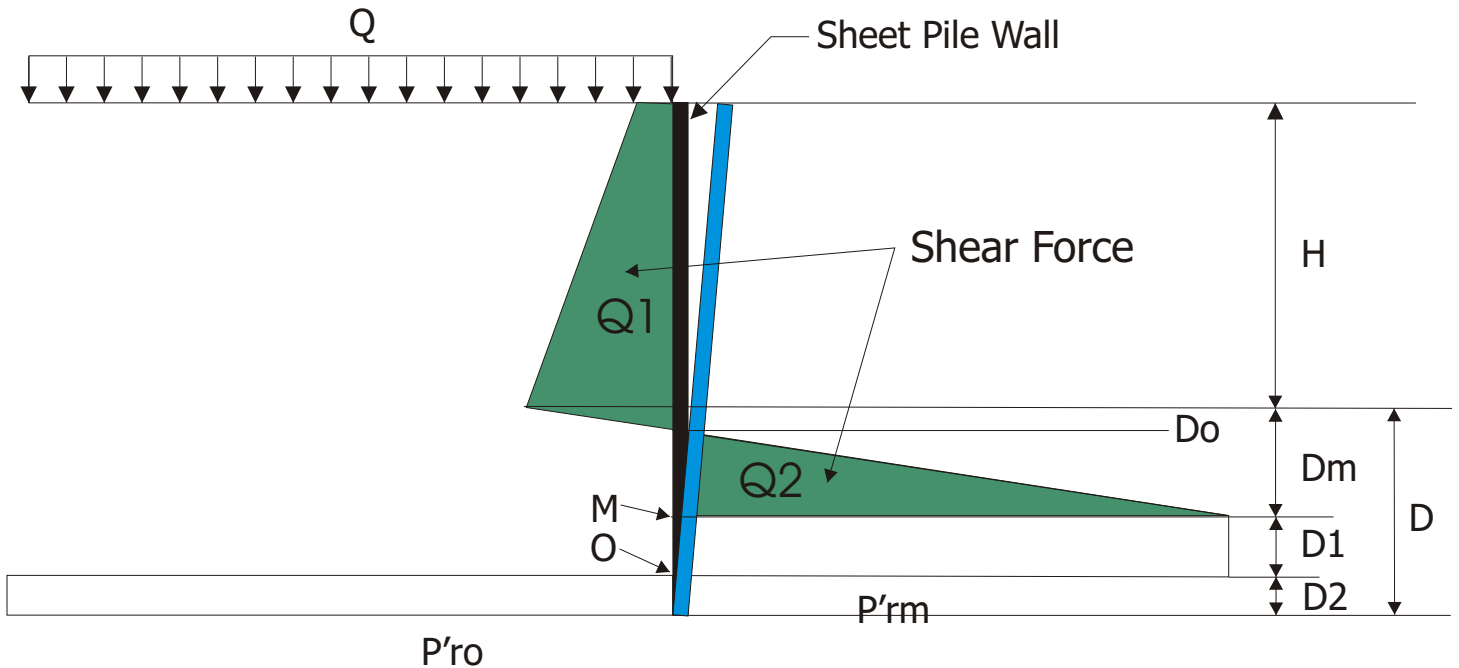
Calculation of resulting earth pressure at relevant depths

Calculate D₀ :

$$K'_A [q + \gamma_{sand} (H + D_0)] = K'_p \cdot \gamma_{sand} \cdot D_0$$

$$D_0 = 0.45$$

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Maximum moment (M_{max}) at point M results in 0 shear force (Q) at the same point. This gives D_m which then gives M_{max} .

$$Q_1 = Q_2 \quad D_m = 2.09 \text{ m.} \quad M_{max} = 285.5 \text{ kNm./m.}$$

D_1 and D_2 are calculated from:

$$P'_{rm} \cdot D_1 = P'_{ro} \cdot D_2$$

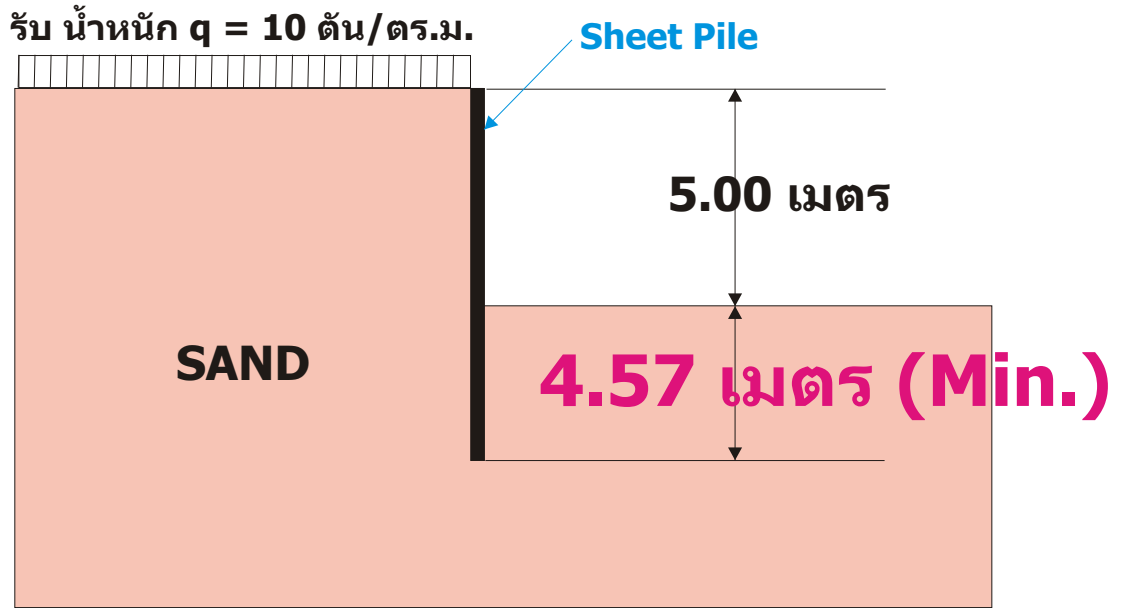
and

$$D_1 = 2.12 \text{ m and } D_2 = 0.36$$

$$P'_{rm} \cdot D_1 \cdot \frac{1}{2}(D_1 + D_2) = M_{max}$$

$$\underline{D} = D_m + D_1 + D_2 = 2.09 + 2.12 + 0.36 = \underline{4.57 \text{ m}}$$

เฉลยคำตอบ



uses a safety factor of $F = 1.5$ for the structure.

Material	Unit weight above γ [kN/m ³]	Friction angle ϕ	$\tan\phi$	$\tan\phi = \frac{\tan\phi}{F}$	Earth pressure coefficient	
					Active K_A	Passive K_P
Sand ทราย	$\gamma_{\text{sand}} = 18$	39	0.81	0.54	0.3	4

Material properties.

คำตอบคือ

A. 4.57 เมตร

B. 5.00 เมตร

C. 5.25 เมตร

จบตัวอย่างนี้
THE END