



# Assignment 4-5 Rekayasa Pondasi I

## Retaining Walls

(duration of task : 2 weeks)

Lecture : Sherly Meiwa ST., MT

Note :

YOU ARE REQUESTED to complete this task and make a report. Assignments can be handwritten or typed but must be in pdf format.

**Assignment 4 : Problem 1-2** due dates 22 December 2020

**Assignment 5 : Problem 3** due dates 29 December 2020

### Problem No 1

In general, retaining walls can be divided into two major categories: (i) conventional retaining walls and (ii) mechanically stabilized earth walls. Conventional retaining walls can generally be classified into four varieties. What are they? Please, explain your answer!

### Problem No 2

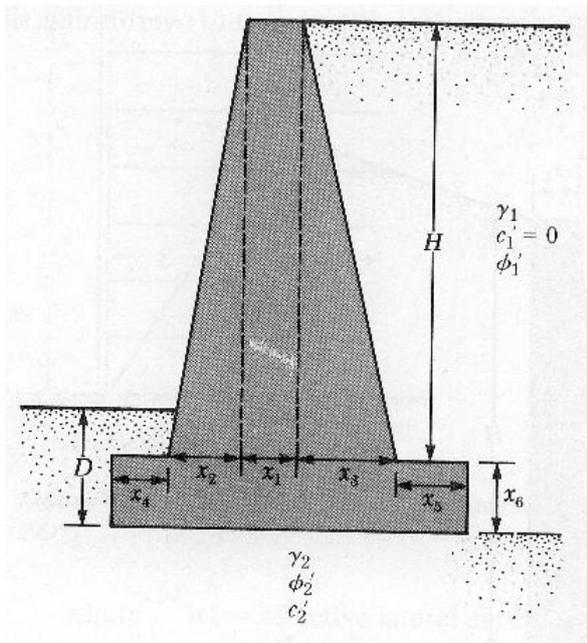


Figure 1

A gravity retaining wall is shown in **Figure 1**. Calculate the factor of safety with respect to overturning and sliding, given the following data:

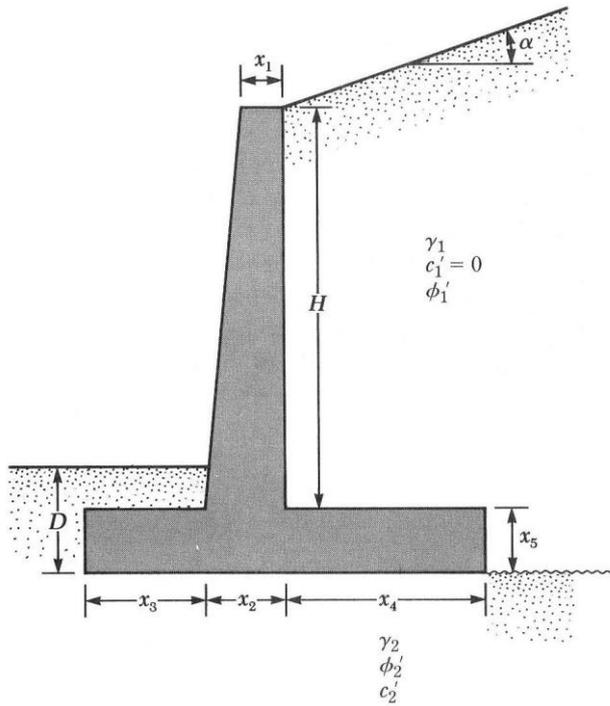
#### Wall dimensions:

$H = 5.75, 6.0, 6.25$  m,  $x_1 = 0.55, 0.6, 0.65$  m,  
 $x_2 = 1.9, 2.0, 2.1$  m,  $x_3 = 1.9, 2.0, 2.1$  m,  
 $x_4 = 0.45, 0.5, 0.55$  m,  $x_5 = 0.70, 0.75, 0.8$  m,  
 $x_6 = 0.75, 0.80, 0.85$  m  
 $D = 1.45, 1.50, 1.55$  m

#### Soil properties:

$\gamma_1 = 16.5, 17.0$  kN/m<sup>3</sup>,  $\phi_1' = 30^\circ, 32^\circ$   
 $\gamma_2 = 18.0, 18.5$  kN/m<sup>3</sup>,  $\phi_2' = 22^\circ, 24^\circ$   
 $c_2' = 35, 40$  kN/m<sup>3</sup>.

### Problem No 3 Cantilever Retaining Walls



bearing capacity.

For the cantilever retaining wall shown in **Figure 2**, let the following data be given:

#### Wall dimensions:

$H = 7.5, 8.0, 8.5$  m,  $x_1 = 0.35, 0.40, 0.45$  m,  
 $x_2 = 0.55, 0.60, 0.65$  m,  
 $x_3 = 1.45, 1.50, 1.55$  m,  $x_4 = 3.4, 3.5, 3.6$  m,  
 $x_5 = 0.90, 0.96, 1.0$  m,  
 $D = 1.70, 1.75, 1.80$  m,  $\alpha = 10^\circ$ .

#### Soil properties:

$\gamma_1 = 16.8, 17.0$  kN/m<sup>3</sup>,  $\phi_1' = 30^\circ, 32^\circ$   
 $\gamma_2 = 17.6, 18.0$  kN/m<sup>3</sup>,  $\phi_2' = 26^\circ, 28^\circ$   
 $c_2' = 30, 35$  kN/m<sup>3</sup>.

#### Question:

Calculate the factor of safety with respect to overturning, sliding and