

Soils & Materials 3

M23357

Coursework assignment

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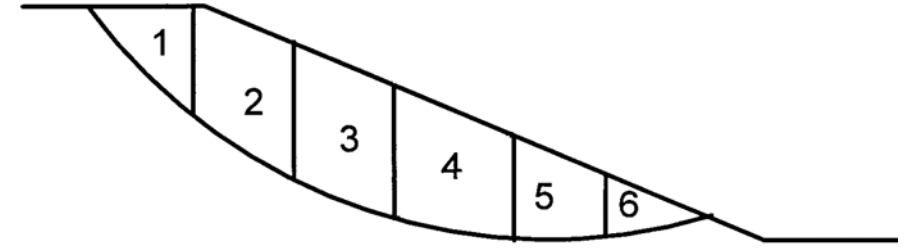
Coursework

- Counts for 40% of the module mark
- See the coursework assignment provided on Moodle for more details
- To be submitted electronically via Moodle before 11 pm on Friday 4/12/20

Coursework

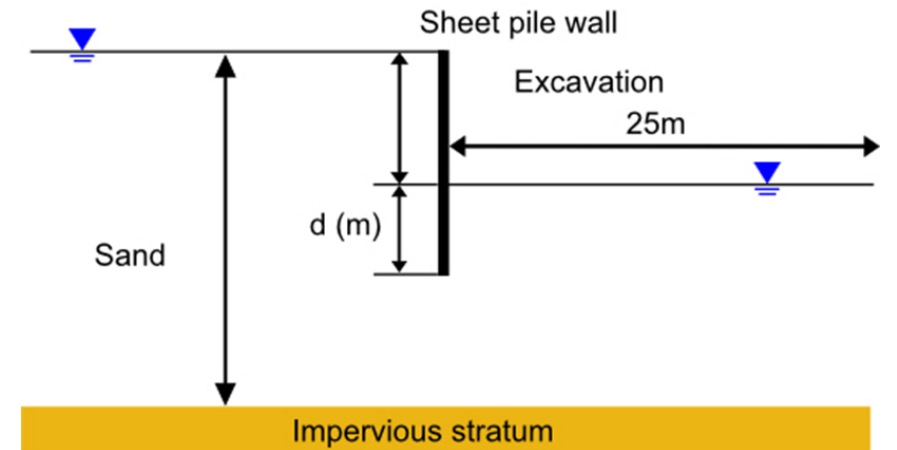
- **1-A – Slope stability Report (60%)**

- Assess the stability of a cut slope in soft clay in the short and long term.
- Evaluate the impact of pore water pressures on slope stability.
- Identify suitable remedial techniques for unstable slopes.



- **1-B – Cofferdam analysis (40%)**

- To present calculations for the embedment depth of a sheet pile cofferdam
- Evaluate stability and construction issues.



Artefact 1-A, Slope stability report

Groups 1&4: $\phi' = 25^\circ$, $c' = 2.6 \text{ kPa}$, $\gamma_d = 17 \text{ kN/m}^3$, $\gamma_{\text{sat}} = 18 \text{ kN/m}^3$

Groups 2&5: $\phi' = 24^\circ$, $c' = 2.5 \text{ kPa}$, $\gamma_d = 18 \text{ kN/m}^3$, $\gamma_{\text{sat}} = 19 \text{ kN/m}^3$

Groups 3&6: $\phi' = 26^\circ$, $c' = 2.3 \text{ kPa}$, $\gamma_d = 18.5 \text{ kN/m}^3$, $\gamma_{\text{sat}} = 19.5 \text{ kN/m}^3$

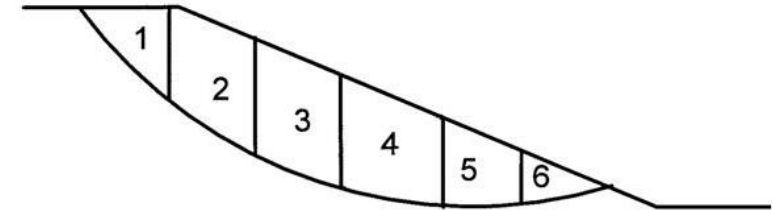


Figure 1

Table 1

Slice	1	2	3	4	5	6
α°	45	33	22	9	-2	-12
Area of slice, m^2	9.61	20.47	23.37	24.25	12.85	5.20
Arc length, m	6.2	4.9	4.6	5.06	3.8	4.2
Mean height of WT. above base of slice, m	0	2.82	4.41	4.05	2.625	0.375

Artefact 1-B, Cofferdam report

Table 1: Soil Properties:

Group ID	Layer	Description	Depth	ρ (Mg/m ³)	c' (kN/m ²)	Φ'	E (MN/m ²)	k (m/s)
1&4	River bed	Sand	25	1.9	0	34	16	2.4×10^{-4}
2&5	River bed	Sand	25	2	0	35	17	4×10^{-4}
3&6	River bed	Sand	25	2.1	0	36	18	6×10^{-4}

Wall properties:

Take the Young's Modulus (E) of the wall to be 3.00×10^7 KN.m²/m.

Take the Moment of Inertia (I) of the wall to be 8.48×10^{-3} m⁴/m run.

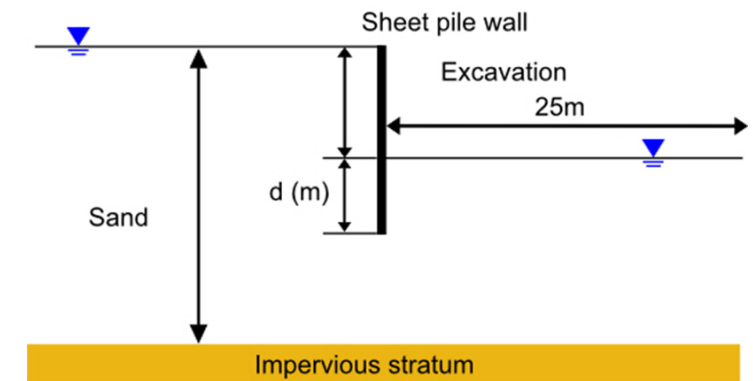
Strut properties:

Take the Young's Modulus (E) of the wall to be 2.00×10^8 KN.m²/m.

Take the Cross Sectional Area (A) of the wall to be 0.0625 m².

Take the Spacing of the struts to be 1m.

Take the Pre-stress/strut to be 100kN.



Submission

- **Must be submitted electronically** through the coursework submission link on Moodle before 11:00 pm on 4/12/20
- This deadline is strictly enforced
- Don't leave it until the last moment
- It can take several minutes to upload your work, especially if the system is busy
- If the work is not uploaded by 11:00pm, it will be treated as a late submission

Submission

- Your report must be a single pdf file
- Include your student number in the filename
(e.g. 858585-coursework.pdf)
- Do not include your name anywhere in the report
- You must include the completed student assignment marks sheet as the first page of the file you submit

Late submission

Your work must be uploaded by the deadline.

- Late submissions are capped at 40%
 - even if only a few minutes late
 - unless you have valid extenuating circumstances

Questions?