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Extract from CPD course notes

Eurocode 7 – 2^{nd} Generation

Lecture 1 – Design verification procedure

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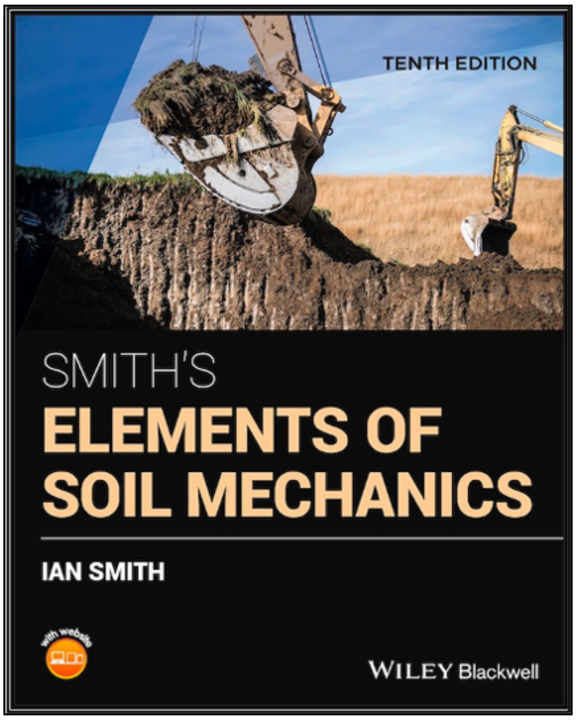
These course notes have been written and compiled by Professor Ian Smith, specifically for <your company name goes here>.

Additional support and reading should be gained from Smith's Elements of Soil Mechanics, 10th Edition.



Specifically, refer to:

Chapter 6 Eurocode 7

Visit the book's website for free downloads…

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August 2025

Eurocode 7: Geotechnical design – Parts 1, 2 and 3

This is the design code that geotechnical engineers across Europe have used since 2010. The ***first generation*** of Eurocode 7, enforced since 2010, is now being replaced by a ***second generation*** of the code. The second generation will be mandatory from mid 2027 and the first generation will be withdrawn in March 2028. On this course we will only use the second generation of the code. Participants interested in learning about the first generation can do so by reading appropriate chapters in *Smith's Elements of Soil Mechanics, 10th Edition*.

Verification of a design against failure through reaching a specific limit state, involves determining ***design values*** of ***actions***, ***material properties*** and ***resistances*** by applying ***partial factors*** of safety to the ***representative*** values of each. In this first lecture we shall cover the procedures used to verify a geotechnical design.

Contents:

1 Definitions

We start our look at Eurocode 7 by defining some of the terms used in the code. You will likely wish to refer back to this section as you get to grips with the design procedure.

Action: A force or load acting on a structure such as a retaining wall or foundation.
Symbols: General – F; Permanent action – G; Variable action – Q

Characteristic value (action): The characteristic value of an action can be:

- a mean value, or
- an upper or lower value, or
- a nominal value (value fixed on a non-statistical basis, e.g. on acquired experience or on physical conditions).

Symbol: F_k

Characteristic value (material property): The characteristic value of a material property is derived from a statistical analysis of a series of tests results.
Symbol: X_k

Consequence class: A consequence class (CC) is a classification assigned to a structure, including geotechnical structures, based on the severity of the consequences of its failure. It is defined in EN 1990. There are 5 CC's, see Section 4.

Consequence factor: Three factors exist (k_F, k_M, k_R) applicable to actions, material properties and resistances. The magnitude of the consequence factor depends on the consequence class of the structure, see Section 4.

Design value: The ***factored*** value of a ground property or action that is considered to affect the occurrence of a limit state. The design value is the result of the representative value combined with the relevant partial factor of safety. Design values are given the subscript "d". See also Section 3.

Dimensions: If the design of the structure is sensitive to deviations in a geometrical property (e.g. height of wall, width of base etc.) the dimension is considered in the design, based on a max/min possible value of the dimension.
Symbol: a

Effect of actions: All actions cause an effect (e.g. creation of a stress or pressure, or a displacement). The *effect* of these actions is a key consideration in the verification process of a design.
Symbol: E

Geotechnical category: A classification system that combines the uncertainty and complexity of the ground, including groundwater and ground-structure interaction, with the consequence of failure of the structure

Resistance: The resistance of the ground to the effects of any applied actions.
Determined by calculation from the soil strength properties, the structure geometry and the applied actions.
Symbol: *R*

Verification case: Refers to a specific combination of partial factors for actions and for effects of actions. These are defined in the head Eurocode, ***EN 1990: Eurocode - Basis of structural and geotechnical design***. There are 4 verification cases, see Section 5.

Zone of influence: The volume of ground that is expected to be affected by the construction works or the structure, or that could affect the behaviour of the structure

2 Partial factors of safety

To enable the limit states to be checked, the ***design*** values of the geotechnical parameters, the ground resistance and the actions (e.g. forces or loads), must first be determined. This is done by combining the ***representative*** values with the appropriate ***partial factors of safety,*** γ. Once the design values are known, the geotechnical analysis can be carried out and thereafter the requirement of the limit state is verified.

The magnitude of a partial factor depends on:

- for actions – the ***verification case*** being followed
- for material properties and resistances – the ***limit state*** being checked and whether MFA or RFA (see Section 6) is being followed.

The magnitudes of partial factors for ***actions*** are given in EN1990:2023.
The magnitudes of partial factors for ***material properties*** are given in EN1997-1:2024.
The magnitudes of partial factors for ***resistances*** are given in EN1997-3:2025.

For convenience, the magnitudes of all partial factors are pulled together and provided in the appendix of this document.

Partial factors are denoted by the symbol γ.
Subscripts are used to identify the particular component of the design to which the partial factor applies.

e.g.

γ_F – actions (general)
γ_M – material properties (general)
γ_R – resistance (general)

Actions:

γ_G – permanent actions
γ_Q – variable (transient) actions
γ_E – effect of actions

Material properties:

- $\gamma_{\tan\phi}$ – peak friction
- γ_c – cohesion
- γ_{cu} – undrained shear strength

Resistances:

- γ_{RN} – bearing resistance
- γ_{RT} – sliding resistance

3 Design values

3.1 Actions

Actions can be permanent (G), variable (transient) (Q), seismic or accidental. In this course we will only consider permanent and transient actions.

Design values of actions are determined by ***multiplying*** the representative value by the partial factor:

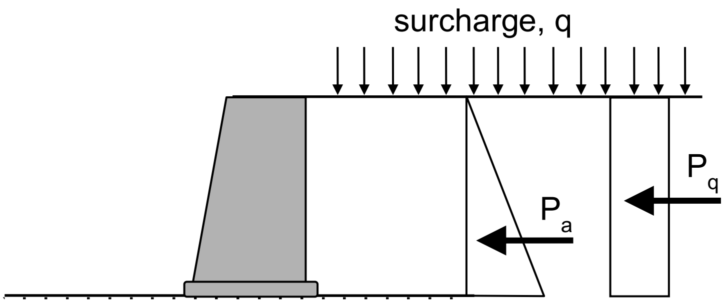
$$\mathbf{G_d = G_k \times \gamma_G \; ; \; Q_d = Q_{rep} \times \gamma_Q}$$

Example 1: Design values – actions

For the wall shown, P_a = 114 kN, P_q = 24 kN

And for a specific verification case (VC1): γ_G = 1.35, γ_Q = 1.5

Determine the design values of the actions.



Solution:

3.2 Effect of actions

Actions cause something to happen. This is referred to as the effect and is given the symbol, E. The magnitude of the effect is influenced by the dimensions of the structure and the ground properties.

$$\mathbf{E_d = \gamma_E E\{\Sigma F_{rep}\ ;\ a_d\ ;\ X_{rep}\}}$$

where {…} represents the combined effects of actions, dimensions and ground properties.

Design values of effect of actions are determined by ***multiplying*** the representative value by the partial factor, γ_E.

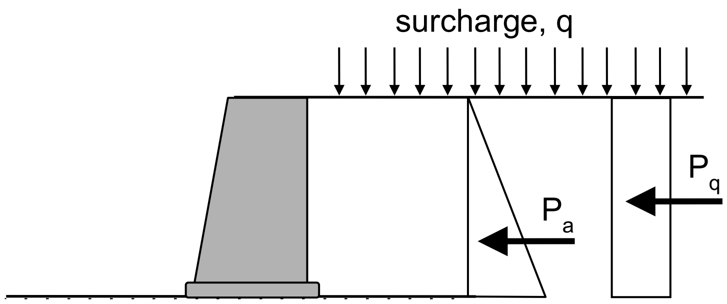
Example 2: Design values – effects of actions

Example – forward sliding

For the wall shown, P_a = 114 kN, P_q = 24 kN

And for a specific verification case (VC4):
γ_G, γ_Q not factored, γ_E = 1.35

Determine the design value of the forward sliding action.



Solution:

3.3 Material properties

Design values of material properties are determined by ***dividing*** the representative value by the partial factor:

$$\boldsymbol{X_d = \frac{X_{rep}}{\gamma_M}}$$

Example 3: Design values – geotechnical parameters

Representative values and partial factors:

$c_{u,rep}$ = 40 kPa; c'_{rep} = 5 kPa; ϕ'_{rep} = 27°

γ_{cu} = 1.4; $\gamma_{c'}$ = 1.25; $\gamma_{\tan\phi'}$ = 1.25

Determine the design values of each property:

Solution:

3.4 Resistances

The *resistance* of the ground applies to any geotechnical structure (slope, wall, foundation etc.) and is the calculated force or pressure which the soil can resist before it collapses due to the applied actions. The resistance is typically *sliding* resistance, *bearing* resistance or *passive earth* resistance.

The design resistance is determined:

$$\boldsymbol{R_d = \frac{R_k}{\gamma_{Rd}}}$$

R_k is the representative value of resistance and is a function of the ground properties (M), the dimensions of the structure (a) and the applied actions (F).

There are two methods which can be used to determine R_d (see Section 6):

- ***Material Factor Approach (MFA)***
- ***Resistance Factor Approach (RFA)***

Part 3 of the code, and the National Annexes, instruct which method(s) should be used for specific limit state checks, for each geotechnical structure.

Table A.1.8 (NDP) — Partial factors on actions and effects for verification cases VC1 to VC4 for persistent and transient (fundamental) design situations								
Action or effect				**Partial factors γ_F and γ_E for verification cases**				
Type	**Group**	**Symbol**	**Resulting effect**	**Structural resistance**[a]	**Static equilibrium and uplift**[b]		**Geotechnical design**	
Verification case				**VC1**[a]	**VC2(a)**[b]	**VC2(b)**[b]	**VC3**[c]	**VC4**[d]
Permanent action (G_k)	All[f]	γ_G	unfavourable /destabilizing	$1,35k_F$	$1,35k_F$	1,0	1,0	G_k is not factored
	Water[l]	γ_{Gw}		$1,2k_F$	$1,2k_F$	1,0	1,0	
	All[f]	$\gamma_{G,stb}$	stabilizing[g]	not used	1,15[e]	1,0	not used	
	Water[l]	$\gamma_{Gw,stb}$			1,0[e]	1,0		
	All	$\gamma_{G,fav}$	favourable[h]	1,0	1,0	1,0	1,0	
Prestressing (P_k)		γ_P[k]						
Variable action (Q_k)	All[f]	γ_Q	unfavourable	$1,5k_F$	$1,5k_F$	$1,5k_F$	1,3	$\gamma_{Q,red}$[j]
	Water[l]	γ_{Qw}		$1,35k_F$	$1,35k_F$	$1,35k_F$	1,15	1,0
	All	$\gamma_{Q,fav}$	favourable	0				
Effects of actions (E)		γ_E	unfavourable	γ_E is not applied				$1,35k_F$
		$\gamma_{E,fav}$	favourable					1,0

Table 2: Partial factors on actions and effects for verification cases VC1 to VC4 for persistent and transient (fundamental) design situations. This is Table A.1.8 (NDP) from EN1990:2023.

The table above (Table 2) is Table A.1.8 in Annex A of the head Eurocode, EN1990:2023 (Eurocode 0). This is where the magnitudes of the partial factors to be applied to actions and to the effects of actions are provided. These values may be overwritten by a country's National Annex.

For VCs 1, 2 and 3: when applying partial factors to actions, the design value of the effect of actions, E_d is determined from Formula (8.4) in EN1990:2023…

$$\mathbf{E_d = E\{\Sigma F_d\ ;\ a_d\ ;\ X_{Rd}\} = E\{\Sigma(\gamma_F \psi_F F_k)\ ;\ a_d\ ;\ X_{Rd}\}} \qquad \text{Formula (8.4), EN1990:2023}$$

For VC4: Formula (8.5) is used…

$$\mathbf{E_d = \gamma_E E\{\Sigma F_{rep}\ ;\ a_d\ ;\ X_{rep}\} = \gamma_E E\{\Sigma(\psi F_k)\ ;\ a_d\ ;\ X_{rep}\}} \qquad \text{Formula (8.5), EN1990:2023}$$

where,

E{…} denotes the combined effect of the enclosed variables;

Σ(…) denotes the combination of actions.

The choice of which VC to use, together with the selection of MFA or RFA, is dictated by the limit state being checked and national preference. Instruction on which combination to use is given in Eurocode 7, Part 3 and in the National Annex.

Note:

To determine bearing resistance of spread foundations or gravity walls under inclined loading (i.e. where vertical and horizontal loading exists), VC4 can be used provided,

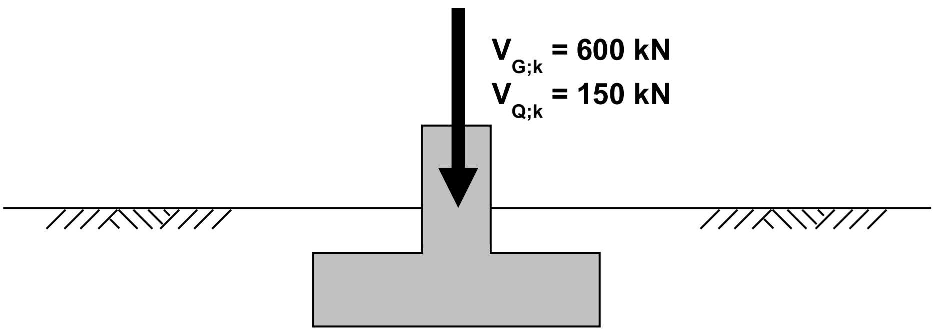
$$\boldsymbol{H/V \leq 0.2}$$

where, H and V are the representative values of the loading actions.

Else, VC1 should be used.

Example 4: Design actions and effects of actions

A concrete foundation is to be cast into a soil deposit as shown.
The foundation has a representative self-weight, W of 50 kN and supports a central column carrying the loads indicated below.



The foundation is from a warehouse storage unit where failure of the foundation would result in a low risk of loss of life, but considerable economic loss.

Checks are to be made for resistance to failure of the foundation through bearing failure of the soil due to the vertical actions.

Solution:

Since the type of failure mechanism under consideration is geotechnical, we would use either an MFA or RFA for the design.

This means that Verification Cases 1, 3 and 4 should be considered and used to establish the design values of the actions and, thereafter, the design effect of the actions.

VC4 can be ruled out as there is no inclined loading in this example.

6 Material Factor Approach (MFA) and Resistance Factor Approach (RFA)

As we saw in Section 3, the resistance of a soil to an applied action is a function of the soil properties, the geotechnical structure's geometry and any other applied actions. To this end, the uncertainties in actions, material and geometry must be considered in the determination of the *design resistance*, R_d.

R_d may be established by applying a *material partial factor* to the material property, or by applying a *resistance partial factor* to the representative resistance, R. These two approaches give rise to two methods of determining the design resistance: a *material factor approach (MFA)* or a *resistance factor approach (RFA).*

i.e.

$$R_d = R\left\{\frac{X_{rep}}{\gamma_M};\ F_d;\ a_d\right\} \qquad \text{(material factor approach, MFA)}$$

or

$$R_d = \frac{R\{X_{rep};\ F_d;\ a_d\}}{\gamma_R} \qquad \text{(resistance factor approach, RFA)}$$

As mentioned in Section 2, the partial factors to be used on material properties (γ_M) are provided in Part 1 of the code (EN1997-1:2024) and those on resistances (γ_R) are provided in Part 3 (EN1997-3:2025).
Also, Part 3 and the National Annexes, instruct which method (MFA or RFA) should be used for specific limit state checks, for each geotechnical structure.

7 Design procedure

There is a four-stage process employed for any geotechnical structure, as depicted in Figure 2.

(i) planning
(ii) site investigation
(iii) design
(iv) construction

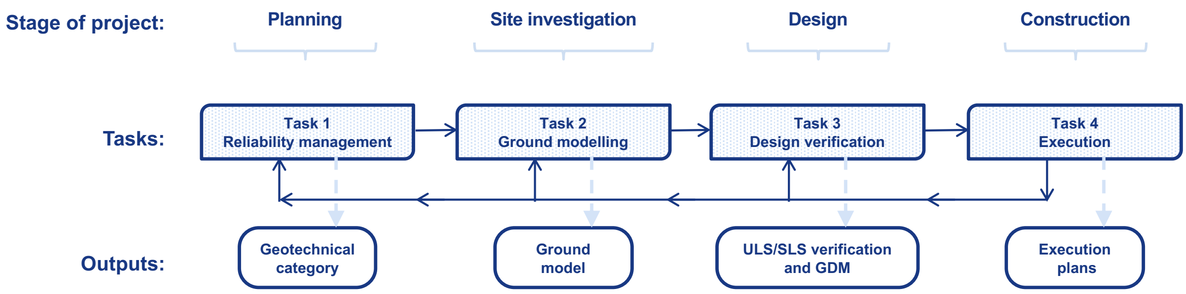


Figure 2. Design procedure.

Task 1: pre-assessment to determine the ***geotechnical category***

Task 2: includes the development of the ***ground model***

Task 3: includes the development of the ***geotechnical design model***

Task 4. construction (execution)

We will look at Tasks 1, 2 and 3 and how the outputs are established.

8 Basis of design

The first stage in a design is the assessment of the Geotechnical reliability (Task 1 in Figure 2). This is specified in Section 4.1.2 of Eurocode7, Part 1 and includes establishing the ***zone of influence***, the ***geotechnical complexity class (GCC)*** and, thereafter, the ***geotechnical category (GC)***.

We have already seen the method used to establish the *consequence class*. The *geotechnical complexity class* considers both the complexity of the structure, the ground and the risks involved. Three geotechnical complexity classes are defined: GCC 1 (low complexity), GCC 2 (medium complexity) and GCC 3 (high complexity), and definitions are provided to ease the classification – see Table 3.

Geotechnical complexity class	Complexity	General features
GCC3	Higher	Any of the following apply: • considerable uncertainty regarding ground conditions • highly variable or difficult ground conditions • significant sensitivity to groundwater and surface water conditions • significant complexity of the ground structure interaction
GCC2	Normal	Where GCC 1 and GCC3 are not applicable
GCC1	Lower	All the following conditions apply: • negligible uncertainty regarding the ground conditions • uniform ground conditions • low sensitivity to groundwater and surface water conditions, • low complexity of the ground structure interaction

Table 3. Selection of geotechnical complexity class.
(This table is Table 4.1 (NDP) in EN1997-1:2023.)

The geotechnical category (GC) is determined from a combination of the consequence class (CC) and geotechnical complexity class (GCC).

By establishing the geotechnical category, the client and design team are then informed of the minimum levels of (i) qualification and experience required of the designers, (ii) design checking required, (iii) inspection required.

Consequence class (CC)	Geotechnical Complexity Class (GCC)		
	Lower (GCC1)	**Normal (GCC2)**	**Higher (GCC3)**
High – (CC3)	GC2	GC3	GC3
Medium – (CC2)	GC2	GC2	GC3
Low – (CC1)	GC1	GC2	GC2

Table 4. Derivation of geotechnical categories.
(This table is Table 4.2 (NDP) in EN1997-1:2023.)

To conclude, recall that the verification case yields the design effects of actions, E_d.

To finalise the verification process, we must check that:

$$E_d < R_d$$

The design effects and resistance depend on the particular design situation and limit state being verified.

The sequence of design verification is shown in Figure 4.

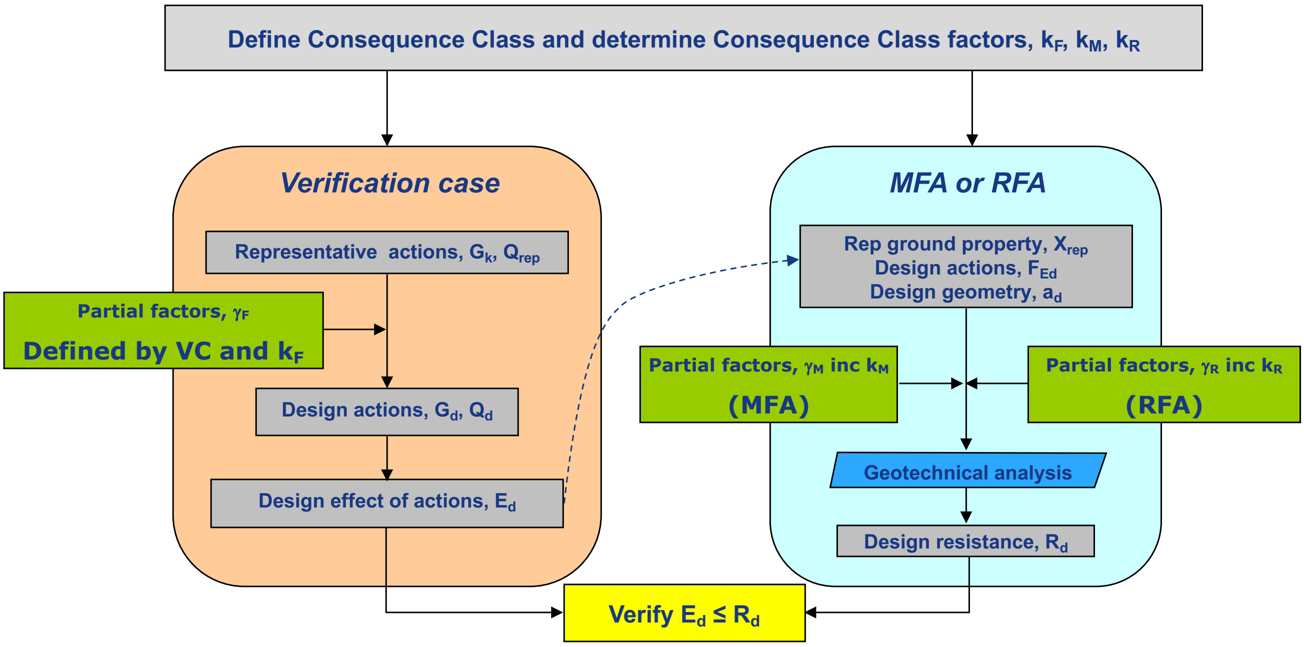


Figure 4. Design verification process.

The ratio of resistance to effects, can be termed the over-design factor:

$$\Gamma = \frac{R_d}{E_d}$$

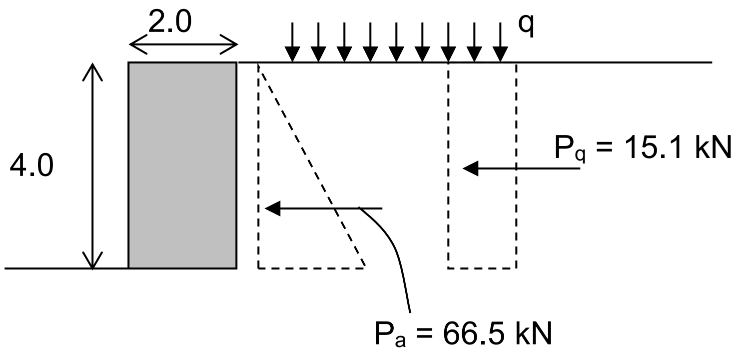
If $\Gamma > 1.0$, the requirement of the limit state verification is satisfied.

Example 5: Static equilibrium – verification case 2

Consider a simple reinforced concrete gravity retaining wall (γ_c = 25 kN/m^3) of width 2 m retaining a homogeneous granular fill to a height of 4 m as shown. The resultant active thrust due to the retained soil is equal to 66.5 kN and the lateral thrust from the surcharge is equal to 15.1 kN.

Check the safety of the wall against loss of static equilibrium through toppling. The wall rests on a stiff layer, such that the ground does not contribute to resistance to movement.

Assume Rankine's conditions prevail, thus the thrusts act normal to the back of the wall.



Solution:

As the wall can be considered a routine structure (i.e. there is nothing complex about the structure) it can be considered as falling into consequence class 2.
From Table A1, k_F = 1.0.

The next step is to consider which verification case to use, so that relevant partial factors can be read from Table A2. Since the failure mechanism is loss of static equilibrium (through toppling where the ground does not contribute to stability), we must use VC2 and check both VC2(a) and VC2(b).

Example 6: Geotechnical design – forward sliding

Consider again the retaining wall of Example 5. Assume now that the wall is founded upon a clay of representative undrained strength 75 kPa. Check the safety of the wall against forward sliding in the short term by verifying the design using the partial factor method.

Solution:

Since wall is CC2, $k_F = k_M = 1.0$

We are considering geotechnical design (so VC3 and VC4 are considered) but the wall (a structural element) contributes to resistance, so we must also consider VC1.

The National Annex would prescribe whether to use MFA or RFA and, if MFA, which "VC and M" combination to follow. For the purpose of aiding learning, in this example we will look at **<u>all</u>** possible combinations (refer to Table A8). That is:

MFA: (VC4 & M1) AND (VC3 & M2)

or

MFA: (VC1 & M2)

RFA: (VC1 or VC4) and γ_{RT}

MFA: (VC4 & M1):

MFA: (VC3 & M2):

MFA: (VC1 & M2):

RFA: VC1 & γ_{RT}:

RFA: VC4 & γ_{RT}:

Example 7: Slope stability – Bishop's conventional and rigorous methods

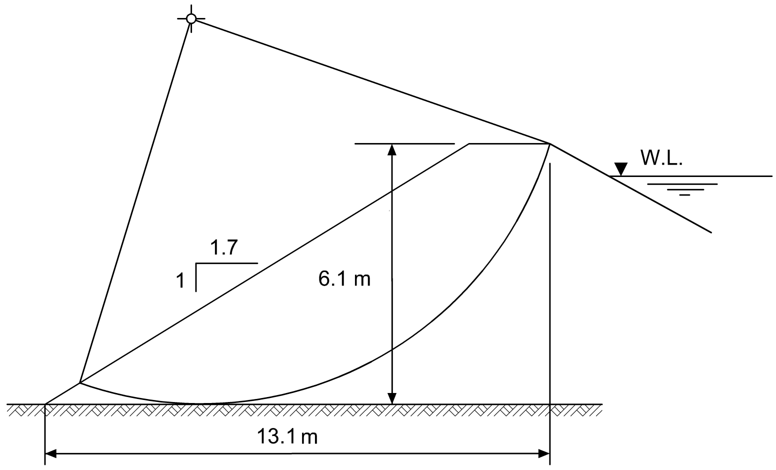
The cross-section of a small irrigation dam sitting on an impermeable base is shown below. The stability of the downstream slope is to be investigated using the slip circle shown and given the following information:

γ_{sat} = 19.2 kN/m^3
c′ = 12 kPa
ϕ' = 20°
R = 9.15 m
Angle subtended by arc of slip circle, θ = 89°

For this circle, check that the rotational failure limit state requirement is satisfied, using:

(a) the conventional method, and
(b) the rigorous method,

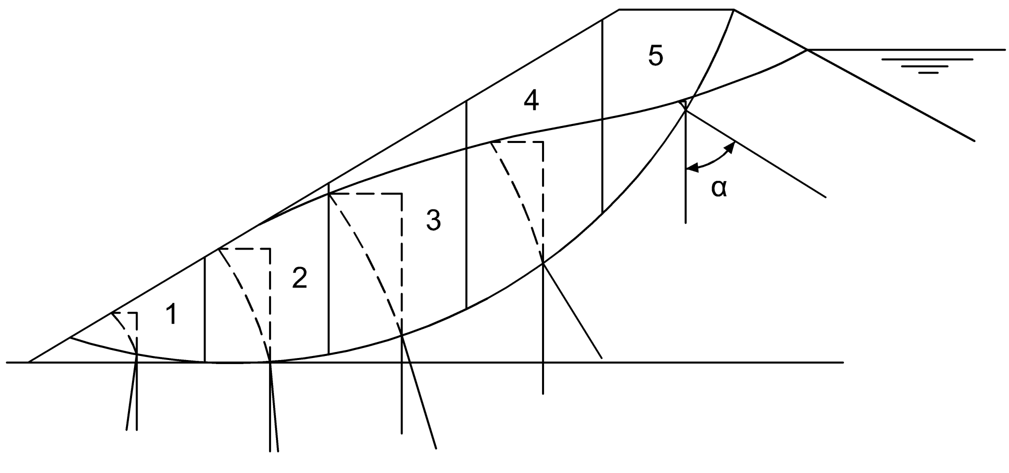
following the procedures of Eurocode 7.



Solution:

Since the structure is a small irrigation dam, it can be considered as being a Consequence Class 2 structure.

The dam is drawn to scale and the choice of slices, and line of the phreatic surface through the dam, have been established:



Appendix

The various tables containing values of factors used throughout the design verification stages are listed in this appendix.

Consequence class	Description of consequence	Loss of human life	Economic, social, environmental consequences	Consequence factors, k_F, k_M, k_R
CC4	Highest	Extreme	Huge	-
CC3	High	High	Very great	1.1
CC2	Normal	Medium	Considerable	1.0
CC1	Low	Low	Small	0.9
CC0	Lowest	Very low	Insignificant	-

Table A1. Consequence class categories and consequence factors, k_F, k_M k_R.

<table>
<tr><th colspan="4">Action or effect</th><th colspan="5">Partial factors γ_F and γ_E for Verification Cases 1 – 4</th></tr>
<tr><th rowspan="2">Type</th><th rowspan="2">Group</th><th rowspan="2">Symbol</th><th rowspan="2">Resulting effect</th><th>Structural resistance</th><th colspan="2">Static equilibrium and uplift</th><th colspan="2">Geotechnical design</th></tr>
<tr><th>VC1</th><th>VC2 (a)</th><th>VC2 (b)</th><th>VC3</th><th>VC4</th></tr>
<tr><td rowspan="5">Permanent action (G_k)</td><td>All</td><td>γ_G</td><td rowspan="2">Unfavourable /destabilising</td><td>1.35 k_F</td><td>1.35 k_F</td><td>1.0</td><td>1.0</td><td rowspan="5">G_k is not factored</td></tr>
<tr><td>Water</td><td>$\gamma_{G,w}$</td><td>1.2 k_F</td><td>1.2 k_F</td><td>1.0</td><td>1.0</td></tr>
<tr><td>All</td><td>$\gamma_{G,stb}$</td><td rowspan="2">Stabilising</td><td rowspan="2">not used</td><td>1.15</td><td>1.0</td><td rowspan="2">not used</td></tr>
<tr><td>Water</td><td>$\gamma_{G,w,stb}$</td><td>1.0</td><td>1.0</td></tr>
<tr><td>All</td><td>$\gamma_{G,fav}$</td><td>Favourable</td><td>1.0</td><td>1.0</td><td>1.0</td><td>1.0</td></tr>
<tr><td rowspan="3">Variable action (Q_k)</td><td>All</td><td>γ_Q</td><td rowspan="2">Unfavourable</td><td>1.5 k_F</td><td>1.5 k_F</td><td>1.5 k_F</td><td>1.3</td><td>$\gamma_{Q,1}/\gamma_{G,1}$</td></tr>
<tr><td>Water</td><td>$\gamma_{Q,w}$</td><td>1.35 k_F</td><td>1.35 k_F</td><td>1.35 k_F</td><td>1.15</td><td>1.0</td></tr>
<tr><td>All</td><td>$\gamma_{Q,fav}$</td><td>Favourable</td><td colspan="5">0</td></tr>
<tr><td colspan="2" rowspan="2">Effects of actions (E)</td><td>γ_E</td><td>Unfavourable</td><td colspan="4" rowspan="2">effects are not factored. γ_E not applied.</td><td>1.35 k_F</td></tr>
<tr><td>$\gamma_{E,fav}$</td><td>Favourable</td><td>1.0</td></tr>
<tr><td colspan="9">Note: $\gamma_{Q,1}/\gamma_{G,1}$ indicates γ_Q of VC1 divided by γ_G of VC1.</td></tr>
</table>

Table A2. Partial factors γ_F and γ_E for Verification Cases 1 – 4.

Geotechnical complexity class	Complexity	General features
GCC3	Higher	Any of the following apply: • considerable uncertainty regarding ground conditions • highly variable or difficult ground conditions • significant sensitivity to groundwater and surface water conditions • significant complexity of the ground structure interaction
GCC2	Normal	Where GCC 1 and GCC3 are not applicable
GCC1	Lower	All the following conditions apply: • negligible uncertainty regarding the ground conditions • uniform ground conditions • low sensitivity to groundwater and surface water conditions, • low complexity of the ground structure interaction

Table A3. Selection of geotechnical complexity class.

Consequence class (CC)	Geotechnical Complexity Class (GCC)		
	Lower (GCC1)	**Normal (GCC2)**	**Higher (GCC3)**
High – (CC3)	GC2	GC3	GC3
Medium – (CC2)	GC2	GC2	GC3
Low – (CC1)	GC1	GC2	GC2

Table A4. Derivation of geotechnical categories.

Ground parameter	Symbol	Set	
		M1	M2
Shear strength in effective stress analysis, τ_f	γ_{tf}	1.0	1.25 k_M
Coefficient of peak friction, tan ϕ'_p	$\gamma_{tan\phi,p}$	1.0	1.25 k_M
Coefficient of residual friction, tan ϕ'_r	$\gamma_{tan\phi,r}$	1.0	1.1 k_M
Peak effective cohesion, c'_p	$\gamma_{c,p}$	1.0	1.25 k_M
Undrained shear strength, c_u	γ_{cu}	1.0	1.4 k_M
Coeff. of ground/structure interface friction, tan δ	$\gamma_{tan\delta}$	1.0	1.25 k_M

Table A5. Partial factors on ground properties.
(Table 4.8 in EN1997-1:2024)

Table 4.2 (NDP) — Partial factors for the verification of ground resistance of slopes, cuttings, and embankments for fundamental (persistent and transient) design situations

Verification of	Partial factor on	Symbol	Material Factor Approach
Overall stability	Actions	γ_F	VC3[a]
	Ground properties[c]	γ_M	M2[b]
Bearing resistance	see Clause 5		

a Values of the partial factors for Verification Case 3 (VC3) are given in EN 1990:2023, Annex A.

b Values of the partial factors for Set M2 are given in EN 1997-1:2024, 4.4.1.3.

c Also includes ground properties of Class AI ground improvement (see Clause 12).

Table A6. Partial factors for verification of ground resistance (slope stability).

Table 5.2 (NDP) — Partial factors for the verification of ground resistance of spread foundations for fundamental (persistent and transient) design situations

Verification of	Partial factor on	Symbol	Material Factor Approach, either both combinations (a) and (b) or the single combination (c)			Resistance Factor Approach, either combination (d) or (e)[c]	
			(a)	(b)	(c)[d]	(d)	(e)
Overall stability	See Clause 4						
Bearing and sliding resistance	Actions, Effects of actions	γ_F ,γ_E	VC1[a]	VC3[a]	VC1[a]	VC1[a]	VC4
	Ground properties	γ_M	M1[b]	M2[b]	M2[b]	Not factored	
	Bearing resistance	γ_{RN}	Not factored			1,4	
	Sliding resistance	γ_{RT}	Not factored			1,1	
	Passive resistance	$\gamma_{RT,face}$	Not factored			1,4	

Table A7. Partial factors on resistances (spread foundations).

[redacted]

Table A8. Partial factors on resistances (retaining walls).