

Slope stability analysis

Input data

Project

Settings

Standard - EN 1997 - DA2

Stability analysis

Earthquake analysis : Standard

Verification methodology : according to EN 1997

Design approach : 2 - reduction of actions and resistances

Partial factors on actions (A)					
Permanent design situation					
		Unfavourable		Favourable	
Permanent actions :	$\gamma_G =$	1,35 [-]		1,00 [-]	
Variable actions :	$\gamma_Q =$	1,50 [-]		0,00 [-]	
Water load :	$\gamma_w =$	1,35 [-]			

Partial factors for resistances (R)					
Permanent design situation					
Partial factor on sliding resistance (on slip surface) :			$\gamma_{Rs} =$	1,10 [-]	

Interface

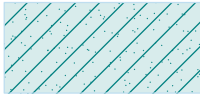
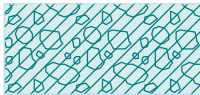

No.	Interface location	Coordinates of interface points [m]					
		x	z	x	z	x	z
1		-13,00	-4,00	-10,00	-3,00	-9,00	-3,00
		-6,00	-2,00	-3,00	-2,00	-2,00	-2,00
		-2,00	-1,00	-1,00	-1,00	-1,00	0,00
		0,00	0,00	4,00	2,00	10,00	2,00
2		-3,00	-2,00	-3,00	-3,00	0,00	-3,00
		0,00	-2,00	0,00	-1,00	0,00	0,00
3		0,00	-2,00	10,00	-2,00		

Soil parameters - effective stress state

No.	Name	Pattern	φ_{ef} [°]	c_{ef} [kPa]	γ [kN/m³]
1	Заскалявка		34,00	0,00	22,00
2	обратен насип		32,00	0,00	20,00

No.	Name	Pattern	φ_{ef} [°]	c_{ef} [kPa]	γ [kN/m³]
3	Речно корито		33,00	0,00	16,00

Soil parameters - uplift

No.	Name	Pattern	γ_{sat} [kN/m³]	γ_s [kN/m³]	n [—]
1	Заскалявка		22,00		
2	обратен насип		20,00		
3	Речно корито		16,00		

Soil parameters

Заскалявка

Unit weight : $\gamma = 22,00 \text{ kN/m}^3$
 Stress-state : effective
 Angle of internal friction : $\varphi_{ef} = 34,00^\circ$
 Cohesion of soil : $c_{ef} = 0,00 \text{ kPa}$
 Saturated unit weight : $\gamma_{sat} = 22,00 \text{ kN/m}^3$

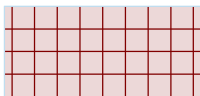
обратен насип

Unit weight : $\gamma = 20,00 \text{ kN/m}^3$
 Stress-state : effective
 Angle of internal friction : $\varphi_{ef} = 32,00^\circ$
 Cohesion of soil : $c_{ef} = 0,00 \text{ kPa}$
 Saturated unit weight : $\gamma_{sat} = 20,00 \text{ kN/m}^3$

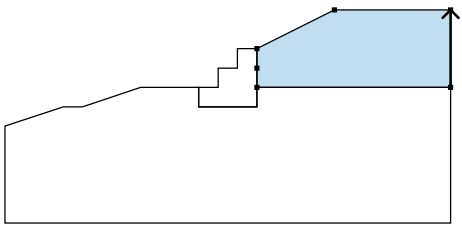
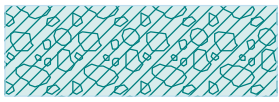
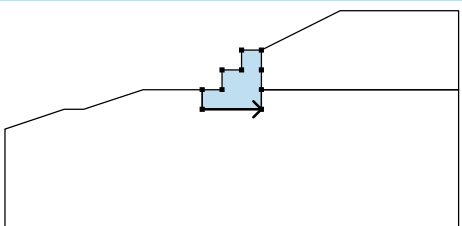
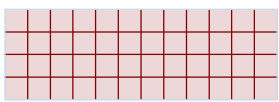
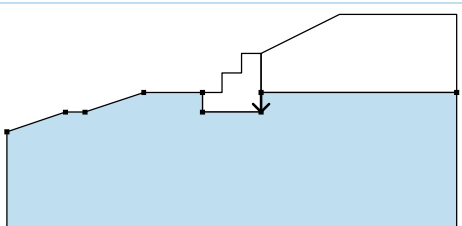

Речно корито

Unit weight : $\gamma = 16,00 \text{ kN/m}^3$
 Stress-state : effective
 Angle of internal friction : $\varphi_{ef} = 33,00^\circ$
 Cohesion of soil : $c_{ef} = 0,00 \text{ kPa}$
 Saturated unit weight : $\gamma_{sat} = 16,00 \text{ kN/m}^3$

Rigid bodies

No.	Name	Sample	γ [kN/m³]
1	Wall material		18,00

Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		10,00	-2,00	10,00	2,00	обратен насип 
		4,00	2,00	0,00	0,00	
		0,00	-1,00	0,00	-2,00	
2		-3,00	-3,00	0,00	-3,00	Wall material 
		0,00	-2,00	0,00	-1,00	
		0,00	0,00	-1,00	0,00	
		-1,00	-1,00	-2,00	-1,00	
		-2,00	-2,00	-3,00	-2,00	
3		0,00	-2,00	0,00	-3,00	Речно корито 
		-3,00	-3,00	-3,00	-2,00	
		-6,00	-2,00	-9,00	-3,00	
		-10,00	-3,00	-13,00	-4,00	
		-13,00	-9,00	10,00	-9,00	
		10,00	-2,00			

Water

Water type : No water

Tensile crack

Tensile crack not inputted.

Earthquake

Earthquake not included.

Settings of the stage of construction

Design situation : permanent

Results (Stage of construction 1)

Analysis 1

Circular slip surface

Slip surface parameters					
Center :	x =	-2,55 [m]	Angles :	α_1 =	24,94 [°]
	z =	13,79 [m]		α_2 =	28,20 [°]
Radius :	R =	13,48 [m]			
Analysis of the slip surface without optimization.					

Slope stability verification (all methods)

Bishop : Utilization = 88,0 % **ACCEPTABLE**
 Fellenius / Petterson : Utilization = 88,0 % **ACCEPTABLE**
 Spencer : Utilization = 88,0 % **ACCEPTABLE**
 Janbu : Utilization = 88,0 % **ACCEPTABLE**
 Morgenstern-Price : Utilization = 88,0 % **ACCEPTABLE**

