



## Analysis of rock stability

### Input data

#### Project

Date : 2.11.2015

#### Settings

Standard - safety factors

#### Stability analysis

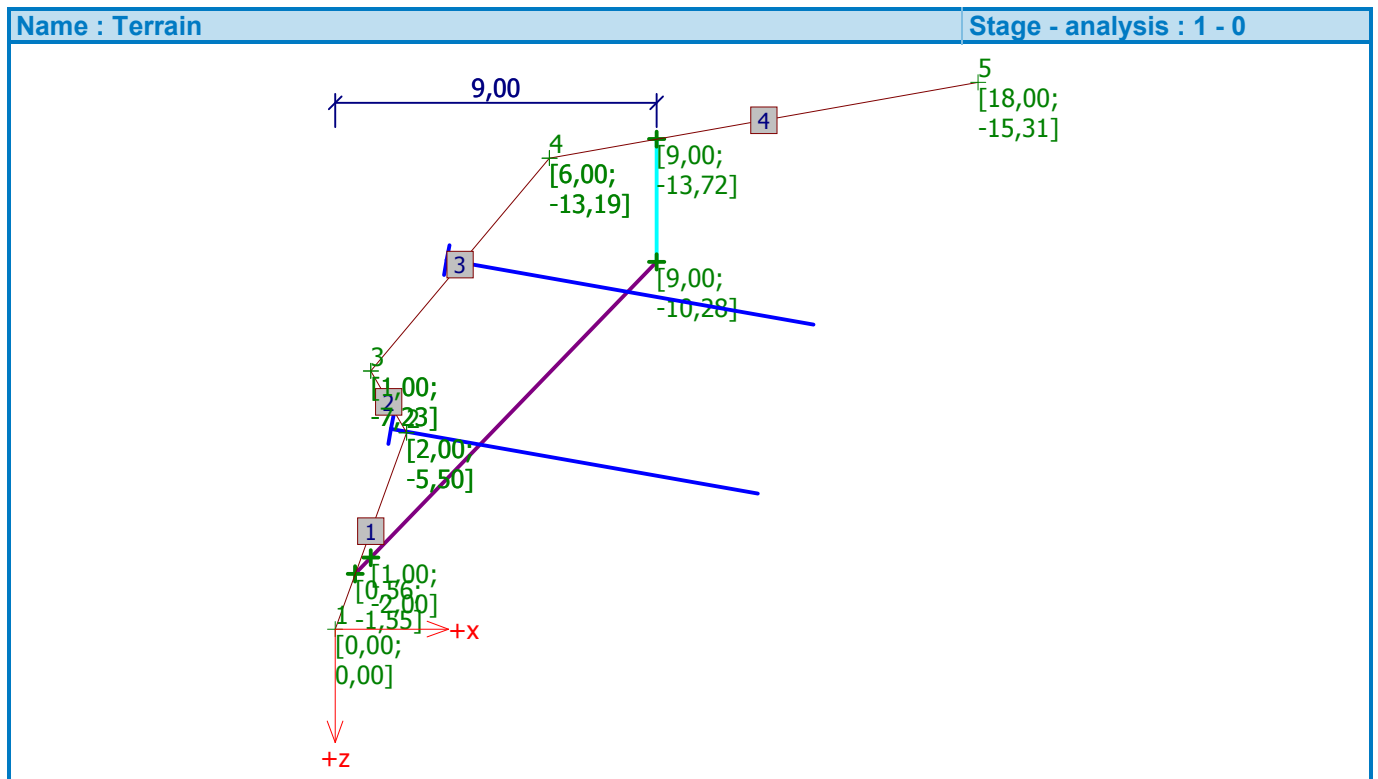
Verification methodology : Safety factors (ASD)

Safety factors		
Permanent design situation		
Safety factor :	SF <sub>s</sub> =	1,50 [-]

### Terrain

#### Terrain sections

No.	Gradient $\alpha$ [°]	Overall length $l$ [m]	Horizontal length $l_h$ [m]	Height $l_v$ [m]
1	70,00	5,85	2,00	5,50
2	120,00	2,00	-1,00	1,73
3	50,00	7,78	5,00	5,96
4	10,00	12,19	12,00	2,12



### Rock

Unit weight  $\gamma = 15,00 \text{ kN/m}^3$

Shear strength : Mohr-Coulomb

Angle of internal friction  $\varphi = 36,00^\circ$

Cohesion  $c = 15,00 \text{ kPa}$



### Slip surface

No.	Coordinate	
	x[m]	y[m]
1	0,56	-1,55
2	9,00	-10,28
3	9,00	-13,72

Slip surface gradient  $\alpha = 46,00^\circ$   
 Tension crack gradient  $\varphi = 0,00^\circ$   
 Distance of tension crack  $x = 9,00$  m  
 Type of slip surface: smooth

### Water

Influence of ground water table is not considered.

### Defined anchors

No.	New anchor	Origin		Length l [m]	Gradient $\alpha$ [°]	Spacing b [m]
		x[m]	z[m]			
1	Yes	1,98	-5,53	10,00	10,00	1,00
2	Yes	3,54	-10,26	10,00	10,00	1,00

No.	Anchor type	Post-stressing	Force F [kN]	Bearing cap. $R_t$ [kN]
1	active		95,00	
2	active		95,00	

### Earthquake

Factor of horizontal acceleration  $K_h = 0,0000$   
 Factor of vertical acceleration  $K_v = 0,0000$

### Global settings

Analysis type : plane slip surface

### Settings of the stage of construction

Design situation for stability analysis : permanent

### Analysis No. 1 (Stage of construction 1)

#### Plane slip surface analysis

Resisting force  $T_{res} = 600,98$  kN/m  
 Driving force  $T_{act} = 327,54$  kN/m

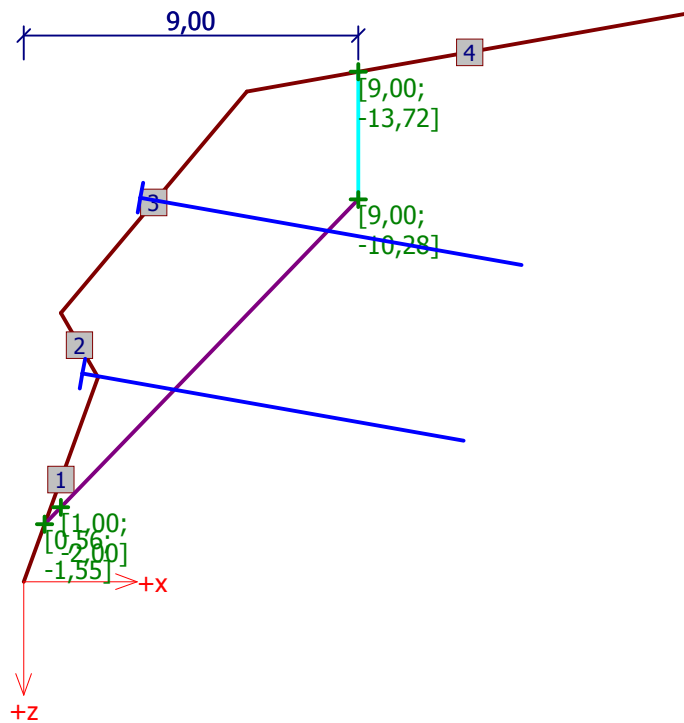
Factor of safety = 1,83 > 1,50

**Stability of rock slope is SATISFACTORY**



Name : Analysis

Stage - analysis : 1 - 1



## Input data (Stage of construction 2)

### Rock

Unit weight  $\gamma = 15,00 \text{ kN/m}^3$

Shear strength : Mohr-Coulomb

Angle of internal friction  $\varphi = 36,00^\circ$

Cohesion  $c = 15,00 \text{ kPa}$

### Slip surface

No.	Coordinate	
	x[m]	y[m]
1	0,56	-1,55
2	9,00	-10,28
3	9,00	-13,72

Slip surface gradient  $\alpha = 46,00^\circ$

Tension crack gradient  $\varphi = 0,00^\circ$

Distance of tension crack  $x = 9,00 \text{ m}$

Type of slip surface: smooth

### Water

Influence of ground water table is not considered.

### Defined anchors

No.	New anchor	Origin		Length l [m]	Gradient $\alpha$ [°]	Spacing b [m]
		x[m]	z[m]			
1	No	1,98	-5,53	10,00	10,00	1,00
2	No	3,54	-10,26	10,00	10,00	1,00



No.	Anchor type	Post-stressing	Force F [kN]	Bearing cap. R <sub>t</sub> [kN]
1	active		95,00	
2	active	Yes	95,00	

### Earthquake

Factor of horizontal acceleration  $K_h = 0,0000$

Factor of vertical acceleration  $K_v = 0,0000$

### Settings of the stage of construction

Design situation for stability analysis : permanent

### Analysis No. 1 (Stage of construction 2)

#### Plane slip surface analysis

Resisting force  $T_{res} = 600,98$  kN/m

Driving force  $T_{act} = 327,54$  kN/m

Factor of safety = 1,83 > 1,50

**Stability of rock slope is SATISFACTORY**