Stabilnostna presoja

Št. priloge: 7.2.2.1.24

Slope stability analysis

Input data

Project

Task : UREDITEV MEŽE IN MISLINJE V OTIŠKEM VRHU
Part : Območje Mislinje (M8)
Description : stabilnost ukopa, M8
Customer : VGB Maribor d.o.o.
Date : 22. 09. 2020

Settings

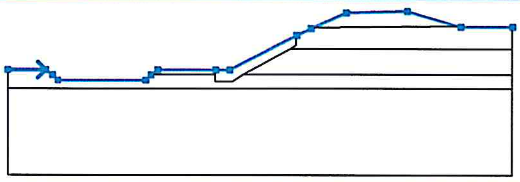
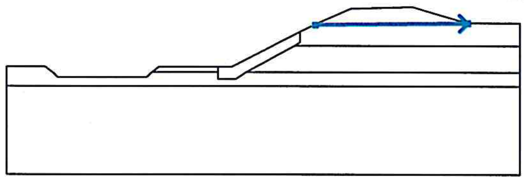
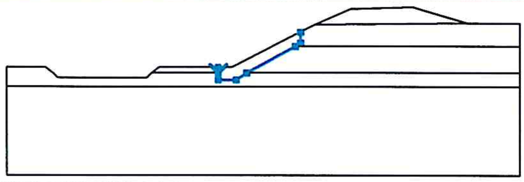
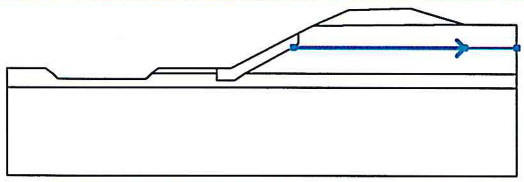
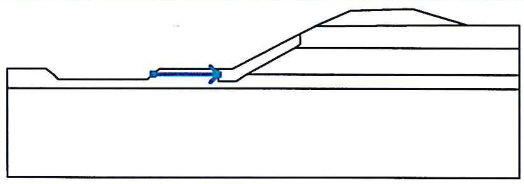
Standard - EN 1997 - PP3 (8)

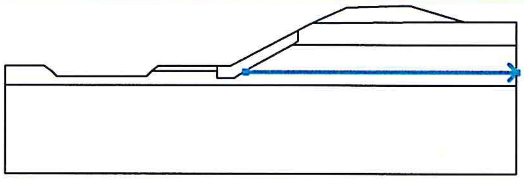
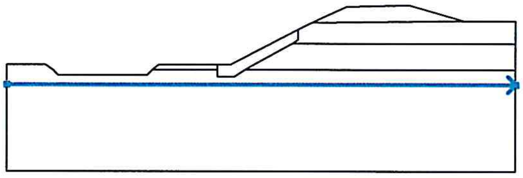
Stability analysis

Earthquake analysis : Standard
Verification methodology : Safety factors (ASD)

Safety factors			
Permanent design situation			
Safety factor :	SF_s =	1,25	[–]

Interface

No.	Interface location	Coordinates of interface points [m]					
		x	z	x	z	x	z
1		0,00	3,80	2,20	3,80	2,60	3,50
		2,90	3,20	8,00	3,20	8,30	3,50
		8,70	3,80	12,00	3,80	12,80	3,80
		16,60	5,80	17,40	6,20	19,40	7,10
		22,90	7,20	26,00	6,30	29,00	6,30
2		17,40	6,20	26,00	6,30		
3		12,00	3,80	12,00	3,50	12,00	3,10
		13,00	3,10	13,60	3,50	16,30	5,00
		16,60	5,20	16,60	5,80		
4		16,30	5,00	26,00	5,00	29,00	5,00
5		8,30	3,50	12,00	3,50		

No.	Interface location	Coordinates of interface points [m]					
		x	z	x	z	x	z
6		13,60	3,50	29,00	3,50		
7		0,00	2,70	29,00	2,70		

Soil parameters - effective stress state

No.	Name	Pattern	φ_{ef} [°]	c_{ef} [kPa]	γ [kN/m^3]
1	nasip		28,00	0,00	18,30
2	pesek		28,00	0,00	18,30
3	droben gramoz		35,00	0,00	19,10
4	droben gramoz(2)		35,00	0,00	19,10
5	kamnita obloga		34,00	0,00	23,00
6	gramoz		41,00	0,00	20,50
7	debele gramoz		41,00	0,00	20,50

Soil parameters - uplift

No.	Name	Pattern	γ_{sat} [kN/m^3]	γ_s [kN/m^3]	n [–]
1	nasip		18,30		
2	pesek		18,30		

No.	Name	Pattern	γ_{sat} [kN/m3]	γ_s [kN/m3]	n [–]
3	droben gramoz		19,10		
4	droben gramoz(2)		19,50		
5	kamnita obloga		23,00		
6	gramoz		20,50		
7	debele gramoz		20,50		

Soil parameters

nasip
Unit weight : γ = 18,30 kN/m3
Stress-state : effective
Angle of internal friction : φ_{ef} = 28,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 18,30 kN/m3

pesek
Unit weight : γ = 18,30 kN/m3
Stress-state : effective
Angle of internal friction : φ_{ef} = 28,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 18,30 kN/m3

droben gramoz
Unit weight : γ = 19,10 kN/m3
Stress-state : effective
Angle of internal friction : φ_{ef} = 35,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 19,10 kN/m3

droben gramoz(2)
Unit weight : γ = 19,10 kN/m3
Stress-state : effective
Angle of internal friction : φ_{ef} = 35,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 19,50 kN/m3

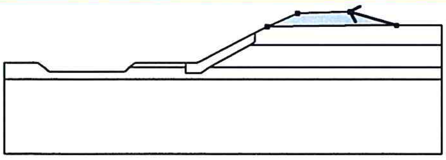
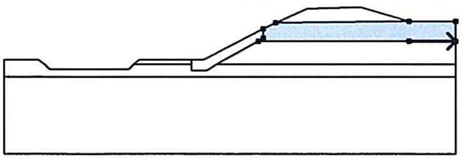
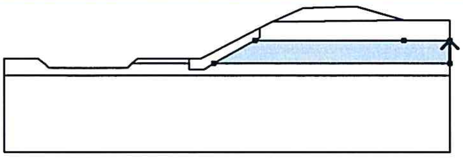
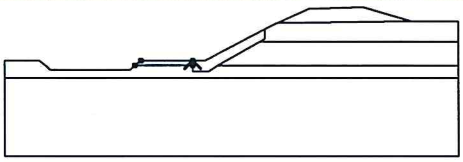
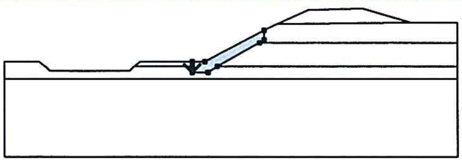
kamnita obloga
Unit weight : γ = 23,00 kN/m3
Stress-state : effective
Angle of internal friction : φ_{ef} = 34,00 °

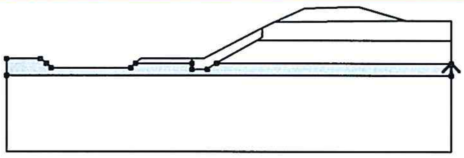
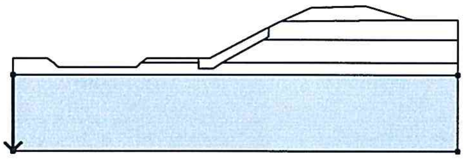
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 23,00 kN/m3

gramoz
Unit weight : γ = 20,50 kN/m3
Stress-state : effective
Angle of internal friction : φ_{ef} = 41,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 20,50 kN/m3

debele gramoz
Unit weight : γ = 20,50 kN/m3
Stress-state : effective
Angle of internal friction : φ_{ef} = 41,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 20,50 kN/m3

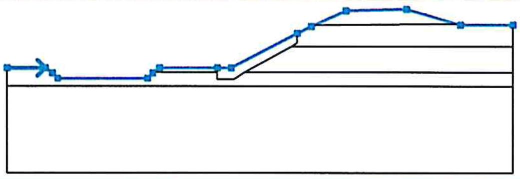
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m] x	z	x	z	Assigned soil
1		26,00	6,30	22,90	7,20	nasip
		19,40	7,10	17,40	6,20	
2		26,00	5,00	29,00	5,00	pesek
		29,00	6,30	26,00	6,30	
		17,40	6,20	16,60	5,80	
		16,60	5,20	16,30	5,00	
3		29,00	3,50	29,00	5,00	droben gramoz
		26,00	5,00	16,30	5,00	
		13,60	3,50			
4		12,00	3,50	12,00	3,80	droben gramoz(2)
		8,70	3,80	8,30	3,50	
5		12,00	3,50	12,00	3,10	kamnita obloga
		13,00	3,10	13,60	3,50	
		16,30	5,00	16,60	5,20	
		16,60	5,80	12,80	3,80	
		12,00	3,80			

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
6		29,00	2,70	29,00	3,50	droben gramoz(2)
		13,60	3,50	13,00	3,10	
		12,00	3,10	12,00	3,50	
		8,30	3,50	8,00	3,20	
		2,90	3,20	2,60	3,50	
		2,20	3,80	0,00	3,80	
		0,00	2,70			
7		0,00	2,70	0,00	-2,30	debele gramoz
		29,00	-2,30	29,00	2,70	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	3,80	2,20	3,80	12,00	3,80
		29,00	3,80				

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 (stage 1)

Polygonal slip surface

Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
11,76	3,80	13,79	3,77	15,79	4,11	17,70	4,80	19,46	5,83
21,01	7,15								
Analysis of the slip surface without optimization.									

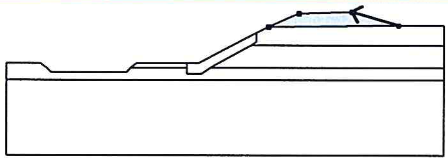
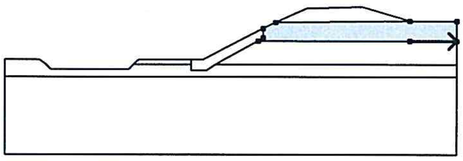
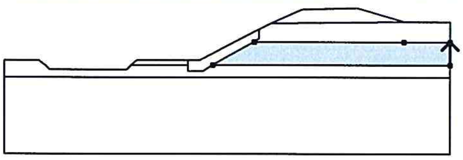
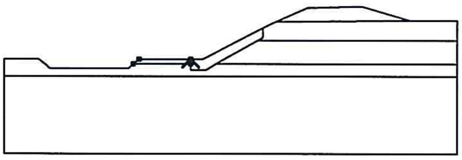
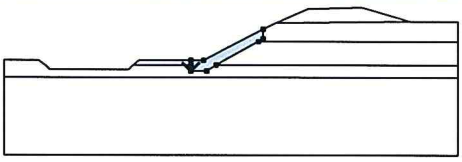
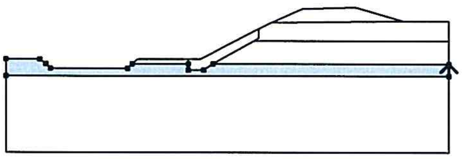
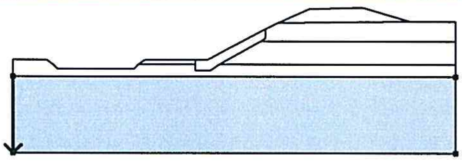
Slope stability verification (Janbu)

Factor of safety = 1,69 > 1,25

Slope stability ACCEPTABLE

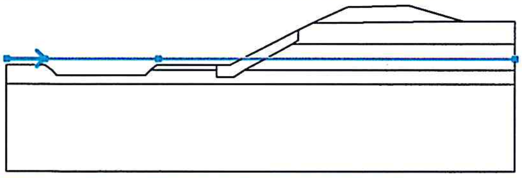
Input data (Stage of construction 2)

Assigning and surfaces

No.	Surface position	Coordinates of surface points [m] x	z	x	z	Assigned soil
1		26,00	6,30	22,90	7,20	nasip
		19,40	7,10	17,40	6,20	
2		26,00	5,00	29,00	5,00	pesek
		29,00	6,30	26,00	6,30	
		17,40	6,20	16,60	5,80	
		16,60	5,20	16,30	5,00	
3		29,00	3,50	29,00	5,00	droben gramoz
		26,00	5,00	16,30	5,00	
		13,60	3,50			
4		12,00	3,50	12,00	3,80	droben gramoz(2)
		8,70	3,80	8,30	3,50	
5		12,00	3,50	12,00	3,10	kamnita obloga
		13,00	3,10	13,60	3,50	
		16,30	5,00	16,60	5,20	
		16,60	5,80	12,80	3,80	
		12,00	3,80			
6		29,00	2,70	29,00	3,50	droben gramoz(2)
		13,60	3,50	13,00	3,10	
		12,00	3,10	12,00	3,50	
		8,30	3,50	8,00	3,20	
		2,90	3,20	2,60	3,50	
		2,20	3,80	0,00	3,80	
		0,00	2,70			
7		0,00	2,70	0,00	-2,30	debele gramoz
		29,00	-2,30	29,00	2,70	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	4,20	2,20	4,20	8,70	4,20
		29,00	4,20				

Tensile crack

Tensile crack not inputted.

Earthquake

Earthquake not included.

Settings of the stage of construction

Design situation : permanent

Results (Stage of construction 2)

Analysis 1 (stage 2)

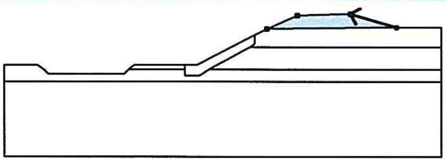
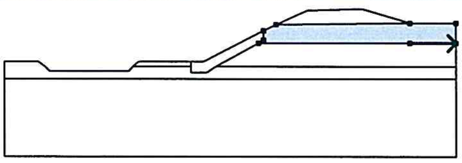
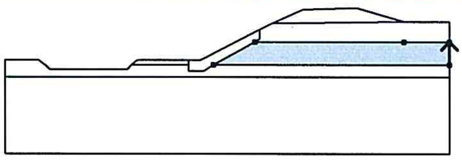
Polygonal slip surface

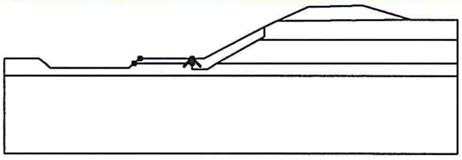
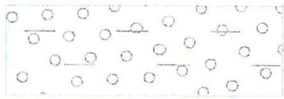
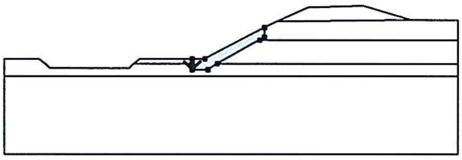
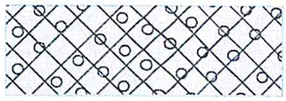
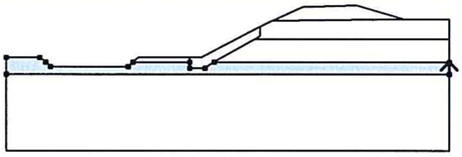
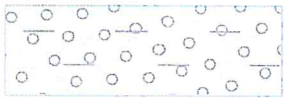
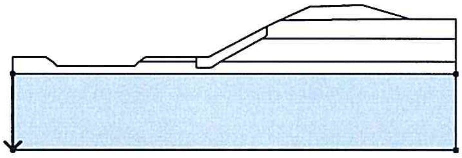
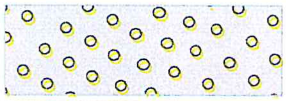
Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
10,04	3,80	12,01	3,25	14,06	3,31	16,00	3,98	17,65	5,20
18,86	6,86								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 1,65 > 1,25
Slope stability ACCEPTABLE

Input data (Stage of construction 3)

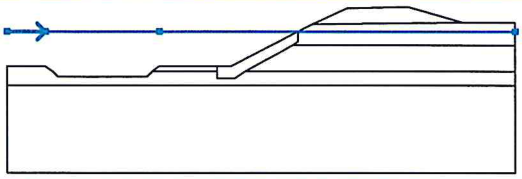
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		26,00	6,30	22,90	7,20	nasip
		19,40	7,10	17,40	6,20	
2		26,00	5,00	29,00	5,00	pesek
		29,00	6,30	26,00	6,30	
		17,40	6,20	16,60	5,80	
		16,60	5,20	16,30	5,00	
3		29,00	3,50	29,00	5,00	droben gramoz
		26,00	5,00	16,30	5,00	
		13,60	3,50			

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
4		12,00	3,50	12,00	3,80	droben gramoz(2) 
		8,70	3,80	8,30	3,50	
5		12,00	3,50	12,00	3,10	kamnita obloga 
		13,00	3,10	13,60	3,50	
		16,30	5,00	16,60	5,20	
		16,60	5,80	12,80	3,80	
		12,00	3,80			
6		29,00	2,70	29,00	3,50	droben gramoz(2) 
		13,60	3,50	13,00	3,10	
		12,00	3,10	12,00	3,50	
		8,30	3,50	8,00	3,20	
		2,90	3,20	2,60	3,50	
		2,20	3,80	0,00	3,80	
		0,00	2,70			
7		0,00	2,70	0,00	-2,30	debele gramoz 
		29,00	-2,30	29,00	2,70	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	5,80	2,20	5,80	8,70	5,80
		29,00	5,80				

Tensile crack

Tensile crack not inputted.

Earthquake

Earthquake not included.

Settings of the stage of construction

Design situation : permanent

Results (Stage of construction 3)

Analysis 1 (stage 3)

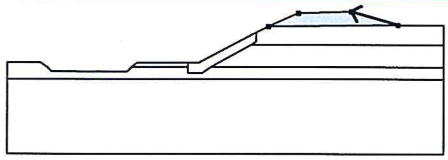
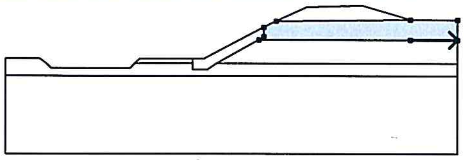
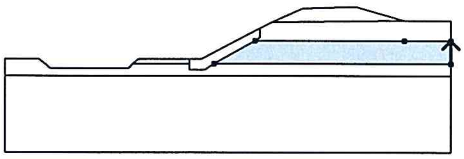
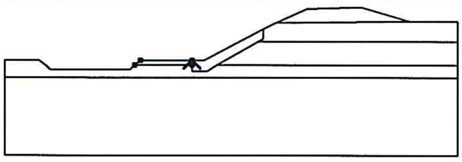
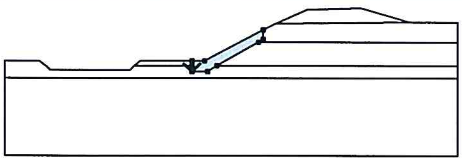
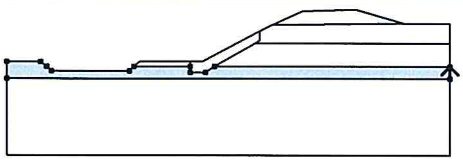
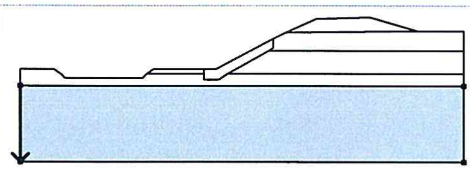
Polygonal slip surface

Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
11,67	3,80	13,40	3,63	15,11	3,90	16,70	4,58	18,08	5,63
19,15	6,99								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 1,50 > 1,25
Slope stability ACCEPTABLE

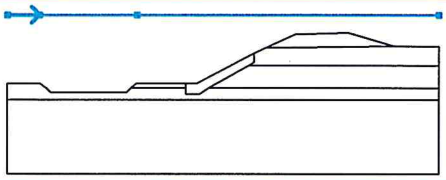
Input data (Stage of construction 4)

Assigning and surfaces

No.	Surface position	Coordinates of surface points [m] x	z	x	z	Assigned soil
1		26,00	6,30	22,90	7,20	nasip
		19,40	7,10	17,40	6,20	
2		26,00	5,00	29,00	5,00	pesek
		29,00	6,30	26,00	6,30	
		17,40	6,20	16,60	5,80	
		16,60	5,20	16,30	5,00	
3		29,00	3,50	29,00	5,00	droben gramoz
		26,00	5,00	16,30	5,00	
		13,60	3,50			
4		12,00	3,50	12,00	3,80	droben gramoz(2)
		8,70	3,80	8,30	3,50	
5		12,00	3,50	12,00	3,10	kamnita obloga
		13,00	3,10	13,60	3,50	
		16,30	5,00	16,60	5,20	
		16,60	5,80	12,80	3,80	
		12,00	3,80			
6		29,00	2,70	29,00	3,50	droben gramoz(2)
		13,60	3,50	13,00	3,10	
		12,00	3,10	12,00	3,50	
		8,30	3,50	8,00	3,20	
		2,90	3,20	2,60	3,50	
		2,20	3,80	0,00	3,80	
		0,00	2,70			
7		0,00	2,70	0,00	-2,30	debele gramoz
		29,00	-2,30	29,00	2,70	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	8,50	2,20	8,50	8,70	8,50
		29,00	8,50				

Tensile crack

Tensile crack not inputted.

Earthquake

Earthquake not included.

Settings of the stage of construction

Design situation : permanent

Results (Stage of construction 4)

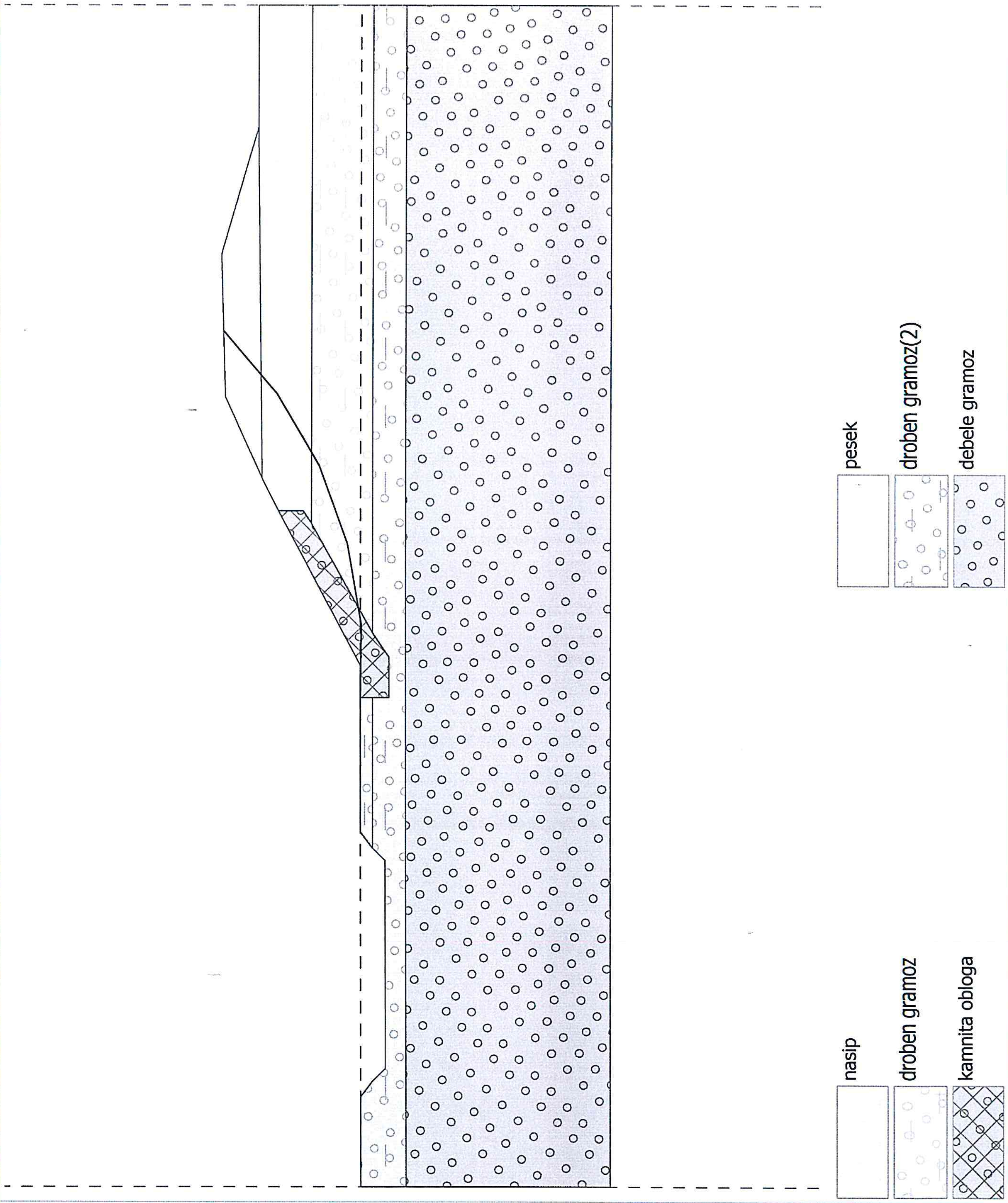
Analysis 1 (stage 4)

Polygonal slip surface

Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
12,85	3,83	14,36	4,05	15,82	4,51	17,19	5,18	18,44	6,05
19,54	7,10								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 1,50 > 1,25
Slope stability ACCEPTABLE

Name : **Stage - analysis : 1 - 1**



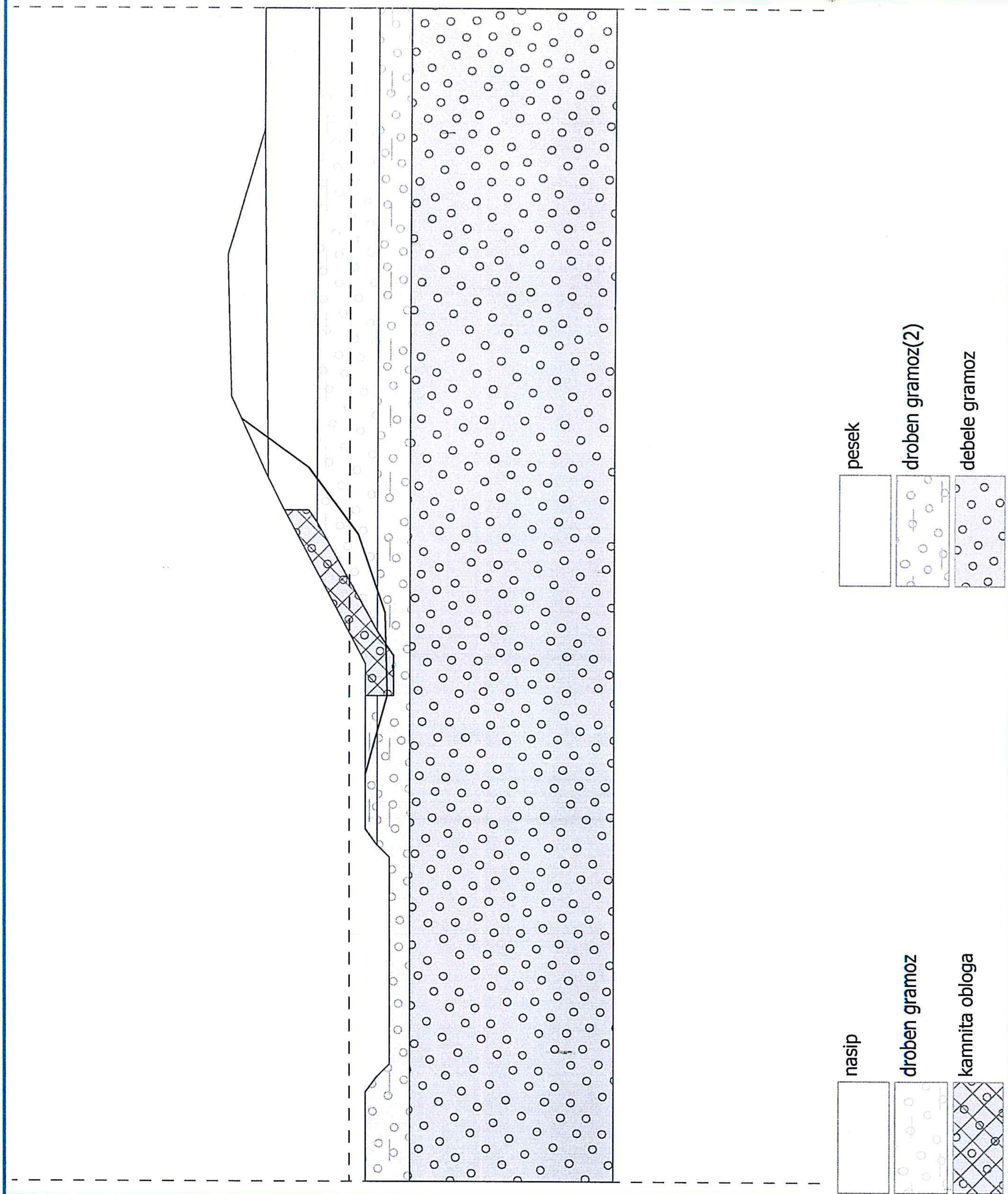
Analysis of the slip surface without optimization.

Slope stability verification (Janbu)

Factor of safety = 1,69 > 1,25

Slope stability ACCEPTABLE

Name : **Stage - analysis : 2 - 1**



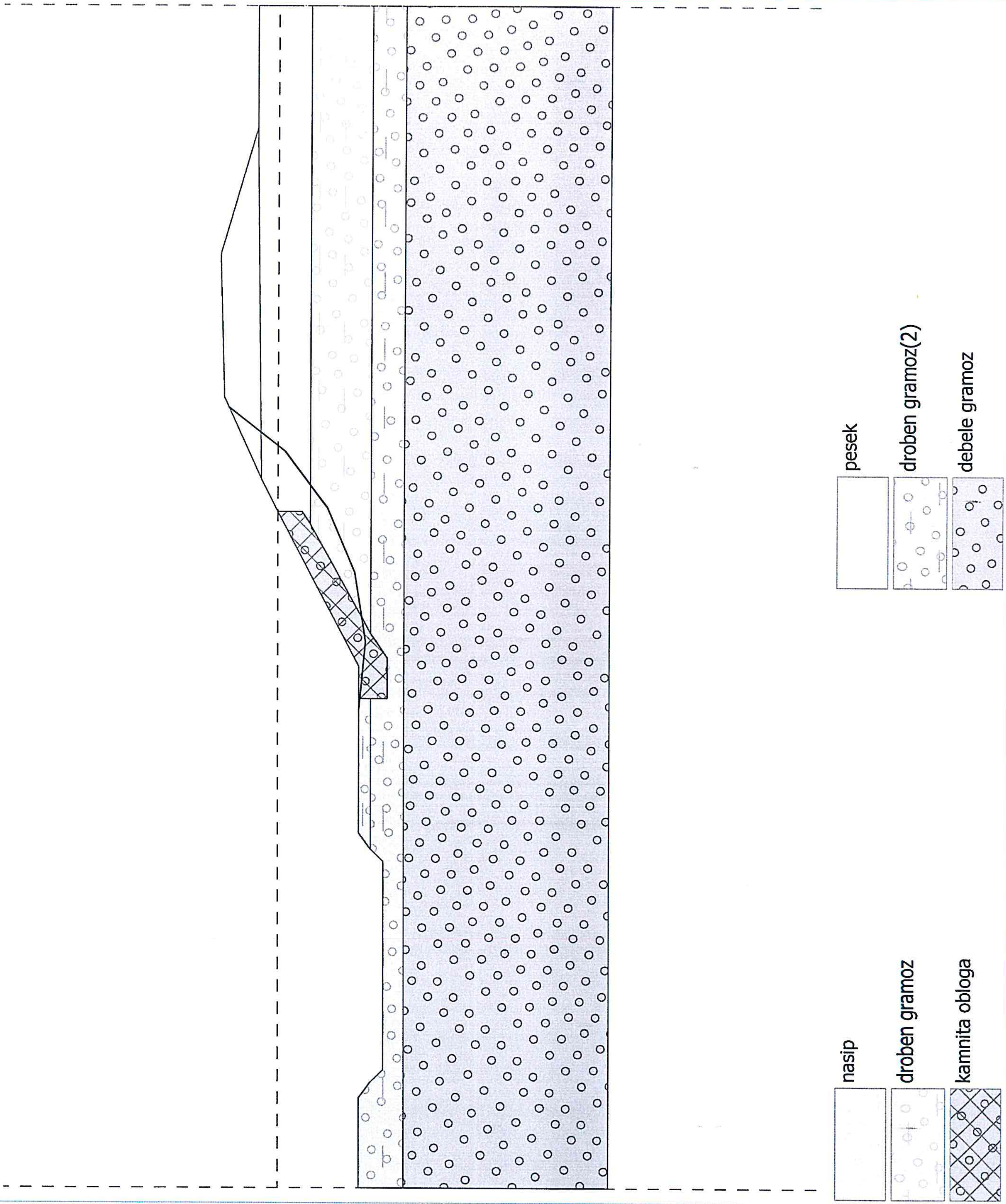
Analysis of the slip surface without optimization.

Slope stability verification (Janbu)

Factor of safety = 1,65 > 1,25

Slope stability ACCEPTABLE

Name : **Stage - analysis : 3 - 1**



Analysis of the slip surface without optimization.

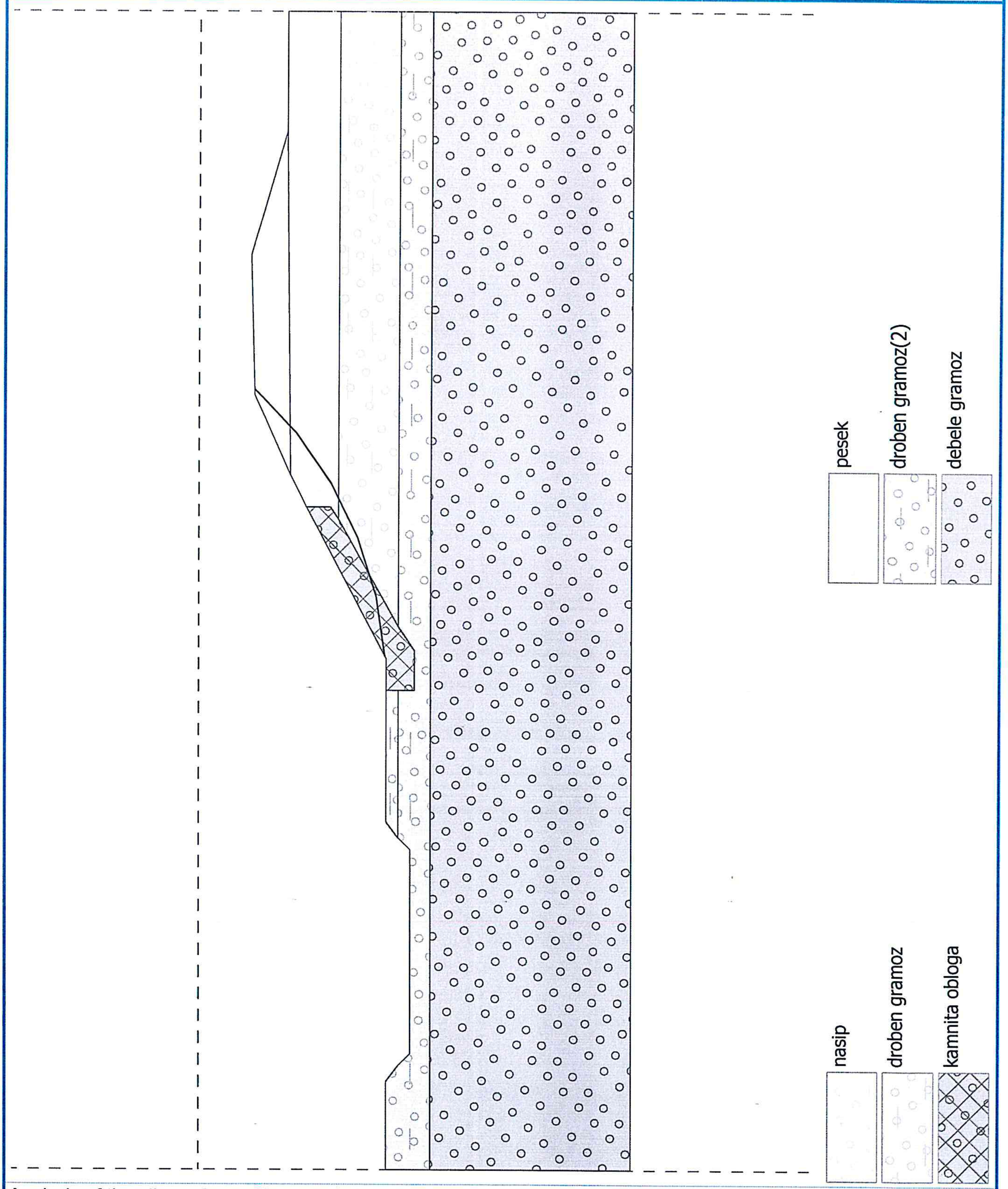
Slope stability verification (Janbu)

Factor of safety = 1,50 > 1,25

Slope stability ACCEPTABLE

UREDITEV MEŽE IN MISLINJE V OTIŠKEM VRHU
Območje Mislinje (M8)

Name : **Stage - analysis : 4 - 1**



Analysis of the slip surface without optimization.

Slope stability verification (Janbu)
Factor of safety = 1,50 > 1,25
Slope stability ACCEPTABLE

Slope stability analysis

Input data

Project

Task : UREDITEV MEŽE IN MISLINJE V OTIŠKEM VRHU
Part : Območje Mislinje (M15)
Description : stabilnost ukopa in nasipa, M15
Customer : VGB Maribor d.o.o.
Date : 22. 09. 2020

Settings

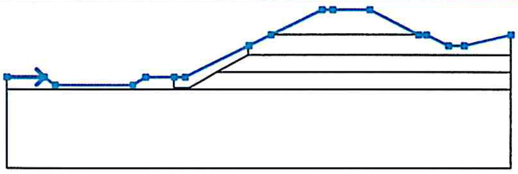
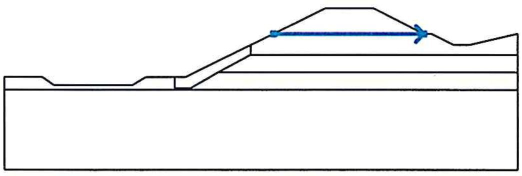
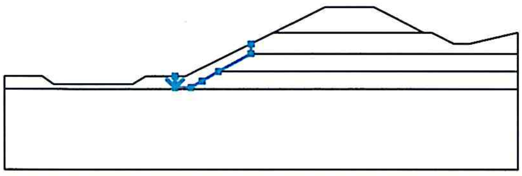
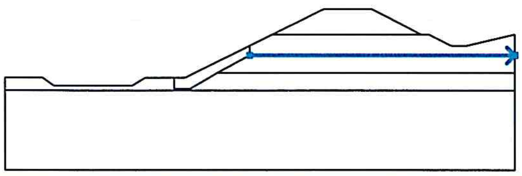
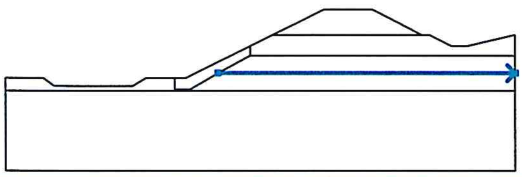
Standard - EN 1997 - PP3 (9)

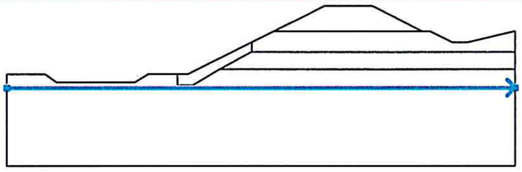
Stability analysis

Earthquake analysis : Standard
Verification methodology : Safety factors (ASD)

Safety factors			
Permanent design situation			
Safety factor :	SF_s =	1,25	[–]

Interface

No.	Interface location	Coordinates of interface points [m]					
		x	z	x	z	x	z
1		0,00	4,00	2,40	4,00	3,10	3,50
		8,10	3,50	8,90	4,00	10,70	4,00
		11,40	4,00	15,40	6,00	16,80	6,70
		20,00	8,30	20,67	8,30	23,00	8,30
		26,10	6,70	26,60	6,70	28,00	6,00
		29,00	6,00	32,00	6,70		
2		16,80	6,70	26,10	6,70		
3		10,70	4,00	10,70	3,30	11,70	3,30
		12,40	3,70	13,40	4,30	15,40	5,40
		15,40	6,00				
4		15,40	5,40	32,00	5,40		
5		13,40	4,30	32,00	4,30		

No.	Interface location	Coordinates of interface points [m]					
		x	z	x	z	x	z
6		0,00	3,20	32,00	3,20		

Soil parameters - effective stress state

No.	Name	Pattern	φ_{ef} [°]	c_{ef} [kPa]	γ [kN/m^3]
1	nasip		34,00	0,00	20,00
2	pesek		30,00	0,00	18,80
3	pesek do droben gramoz		34,00	0,00	19,30
4	droben gramoz		36,00	0,00	19,50
5	gramoz		40,00	0,00	20,60
6	kamnita obloga		34,00	0,00	23,00

Soil parameters - uplift

No.	Name	Pattern	γ_{sat} [kN/m^3]	γ_s [kN/m^3]	n [–]
1	nasip		20,00		
2	pesek		20,00		
3	pesek do droben gramoz		19,30		
4	droben gramoz		19,50		
5	gramoz		20,60		

No.	Name	Pattern	γ_{sat} [kN/m^3]	γ_s [kN/m^3]	n [–]
6	kamnita obloga		23,00		

Soil parameters

nasip
Unit weight : γ = 20,00 kN/m^3
Stress-state : effective
Angle of internal friction : φ_{ef} = 34,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 20,00 kN/m^3

pesek
Unit weight : γ = 18,80 kN/m^3
Stress-state : effective
Angle of internal friction : φ_{ef} = 30,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 20,00 kN/m^3

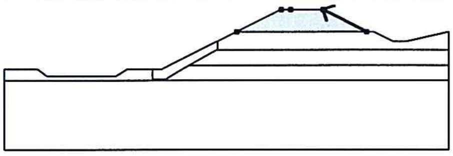
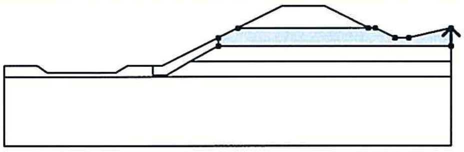
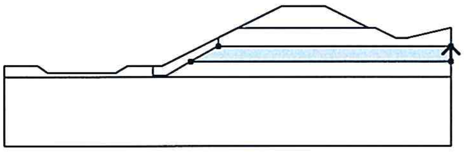
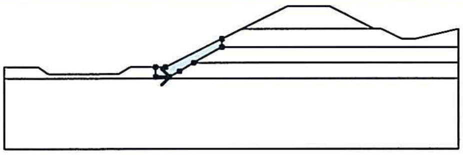
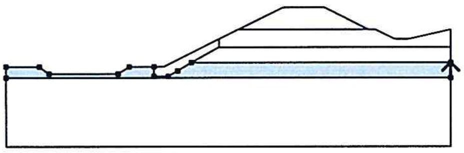
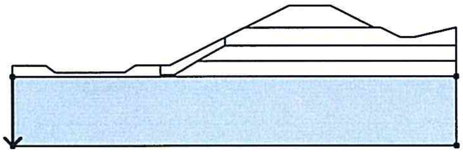
pesek do droben gramoz
Unit weight : γ = 19,30 kN/m^3
Stress-state : effective
Angle of internal friction : φ_{ef} = 34,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 19,30 kN/m^3

droben gramoz
Unit weight : γ = 19,50 kN/m^3
Stress-state : effective
Angle of internal friction : φ_{ef} = 36,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 19,50 kN/m^3

gramoz
Unit weight : γ = 20,60 kN/m^3
Stress-state : effective
Angle of internal friction : φ_{ef} = 40,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 20,60 kN/m^3

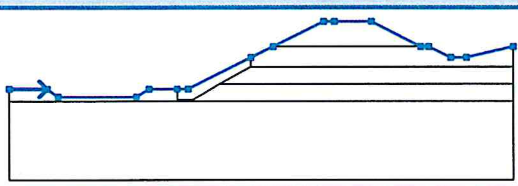
kamnita obloga
Unit weight : γ = 23,00 kN/m^3
Stress-state : effective
Angle of internal friction : φ_{ef} = 34,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 23,00 kN/m^3

Assigning and surfaces

No.	Surface position	Coordinates of surface points [m] x	z	x	z	Assigned soil
1		26,10	6,70	23,00	8,30	nasip
		20,67	8,30	20,00	8,30	
		16,80	6,70			
2		32,00	5,40	32,00	6,70	pesek
		29,00	6,00	28,00	6,00	
		26,60	6,70	26,10	6,70	
		16,80	6,70	15,40	6,00	
		15,40	5,40			
3		32,00	4,30	32,00	5,40	pesek do droben gramoz
		15,40	5,40	13,40	4,30	
4		10,70	3,30	11,70	3,30	kamnita obloga
		12,40	3,70	13,40	4,30	
		15,40	5,40	15,40	6,00	
		11,40	4,00	10,70	4,00	
5		32,00	3,20	32,00	4,30	droben gramoz
		13,40	4,30	12,40	3,70	
		11,70	3,30	10,70	3,30	
		10,70	4,00	8,90	4,00	
		8,10	3,50	3,10	3,50	
		2,40	4,00	0,00	4,00	
		0,00	3,20			
6		0,00	3,20	0,00	-1,80	gramoz
		32,00	-1,80	32,00	3,20	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m] x	z	x	z	x	z
1		0,00	4,00	2,40	4,00	8,90	4,00
		32,00	4,00				

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 (stage 1)

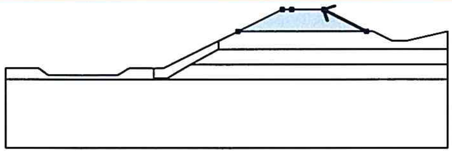
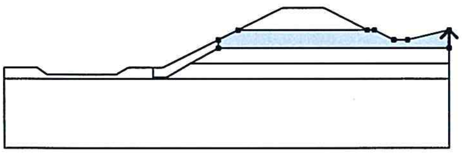
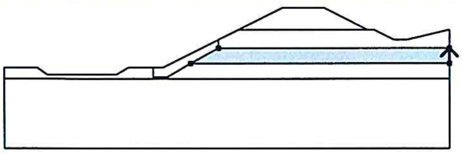
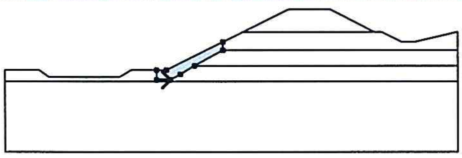
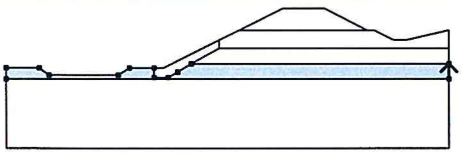
Polygonal slip surface

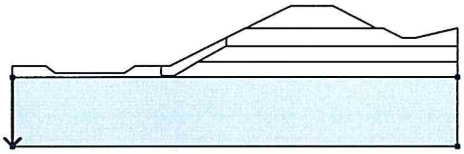
Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
8,78	3,92	11,19	3,93	13,56	4,37	15,82	5,25	17,87	6,51
19,66	8,13								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 1,46 > 1,25
Slope stability ACCEPTABLE

Input data (Stage of construction 2)

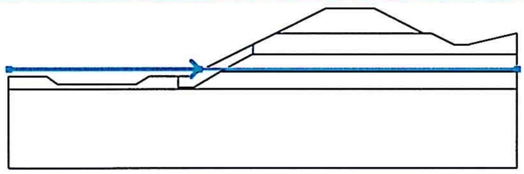
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m] x	z	x	z	Assigned soil
1		26,10	6,70	23,00	8,30	nasip
		20,67	8,30	20,00	8,30	
		16,80	6,70			
2		32,00	5,40	32,00	6,70	pesek
		29,00	6,00	28,00	6,00	
		26,60	6,70	26,10	6,70	
		16,80	6,70	15,40	6,00	
		15,40	5,40			
3		32,00	4,30	32,00	5,40	pesek do droben gramoz
		15,40	5,40	13,40	4,30	
4		10,70	3,30	11,70	3,30	kamnita obloga
		12,40	3,70	13,40	4,30	
		15,40	5,40	15,40	6,00	
		11,40	4,00	10,70	4,00	
5		32,00	3,20	32,00	4,30	droben gramoz
		13,40	4,30	12,40	3,70	
		11,70	3,30	10,70	3,30	
		10,70	4,00	8,90	4,00	
		8,10	3,50	3,10	3,50	
		2,40	4,00	0,00	4,00	
		0,00	3,20			

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
6		0,00	3,20	0,00	-1,80	gramoz
		32,00	-1,80	32,00	3,20	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	4,50	12,00	4,50	32,00	4,50

Tensile crack

Tensile crack not inputted.

Earthquake

Earthquake not included.

Settings of the stage of construction

Design situation : permanent

Results (Stage of construction 2)

Analysis 1 (stage 2)

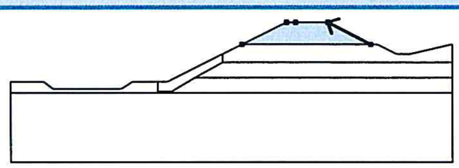
Polygonal slip surface

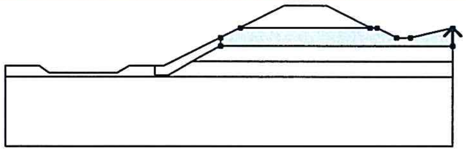
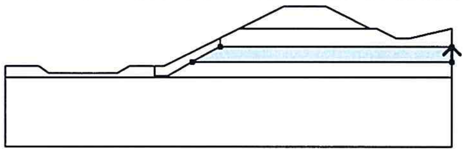
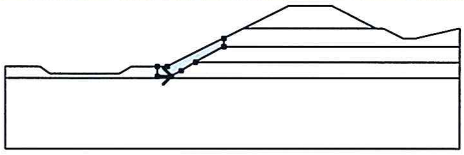
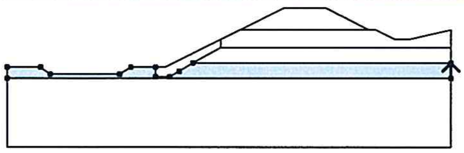
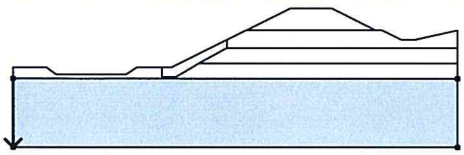
Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
15,32	5,96	16,07	6,16	17,09	6,61	17,82	7,08	18,65	7,56
18,96	7,78								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 1,25 > 1,25
Slope stability ACCEPTABLE

Input data (Stage of construction 3)

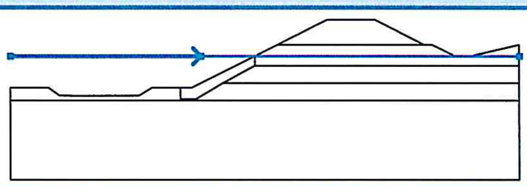
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		26,10	6,70	23,00	8,30	nasip
		20,67	8,30	20,00	8,30	
		16,80	6,70			

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
2		32,00	5,40	32,00	6,70	pesek
		29,00	6,00	28,00	6,00	
		26,60	6,70	26,10	6,70	
		16,80	6,70	15,40	6,00	
		15,40	5,40			
3		32,00	4,30	32,00	5,40	pesek do droben gramoz
		15,40	5,40	13,40	4,30	
4		10,70	3,30	11,70	3,30	kamnita obloga
		12,40	3,70	13,40	4,30	
		15,40	5,40	15,40	6,00	
		11,40	4,00	10,70	4,00	
5		32,00	3,20	32,00	4,30	droben gramoz
		13,40	4,30	12,40	3,70	
		11,70	3,30	10,70	3,30	
		10,70	4,00	8,90	4,00	
		8,10	3,50	3,10	3,50	
		2,40	4,00	0,00	4,00	
		0,00	3,20			
6		0,00	3,20	0,00	-1,80	gramoz
		32,00	-1,80	32,00	3,20	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	6,00	12,00	6,00	32,00	6,00

Tensile crack

Tensile crack not inputted.

Earthquake

Earthquake not included.

Settings of the stage of construction

Design situation : permanent

Results (Stage of construction 3)

Analysis 1 (stage 3)

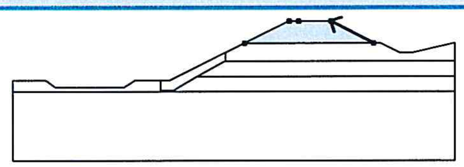
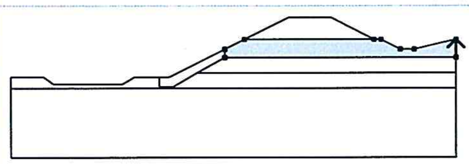
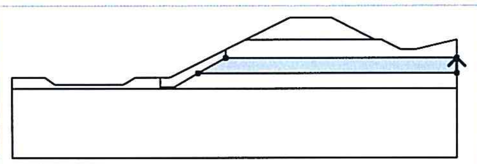
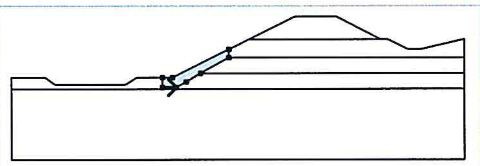
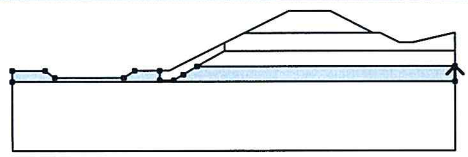
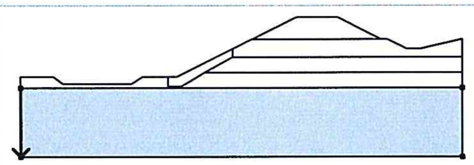
Polygonal slip surface

Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
11,30	4,00	11,37	3,98	14,63	5,02	20,33	8,30		
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 1,30 > 1,25
Slope stability ACCEPTABLE

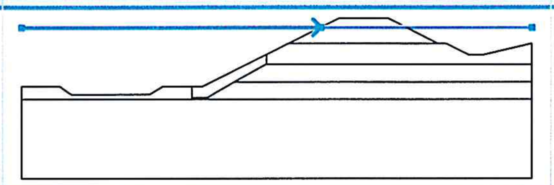
Input data (Stage of construction 4)

Assigning and surfaces

No.	Surface position	Coordinates of surface points [m] x	z	x	z	Assigned soil
1		26,10	6,70	23,00	8,30	nasip
		20,67	8,30	20,00	8,30	
		16,80	6,70			
2		32,00	5,40	32,00	6,70	pesek
		29,00	6,00	28,00	6,00	
		26,60	6,70	26,10	6,70	
		16,80	6,70	15,40	6,00	
		15,40	5,40			
3		32,00	4,30	32,00	5,40	pesek do droben gramoz
		15,40	5,40	13,40	4,30	
4		10,70	3,30	11,70	3,30	kamnita obloga
		12,40	3,70	13,40	4,30	
		15,40	5,40	15,40	6,00	
		11,40	4,00	10,70	4,00	
5		32,00	3,20	32,00	4,30	droben gramoz
		13,40	4,30	12,40	3,70	
		11,70	3,30	10,70	3,30	
		10,70	4,00	8,90	4,00	
		8,10	3,50	3,10	3,50	
		2,40	4,00	0,00	4,00	
		0,00	3,20			
6		0,00	3,20	0,00	-1,80	gramoz
		32,00	-1,80	32,00	3,20	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	7,80	18,80	7,80	32,00	7,80

Tensile crack

Tensile crack not inputted.

Earthquake

Earthquake not included.

Settings of the stage of construction

Design situation : permanent

Results (Stage of construction 4)

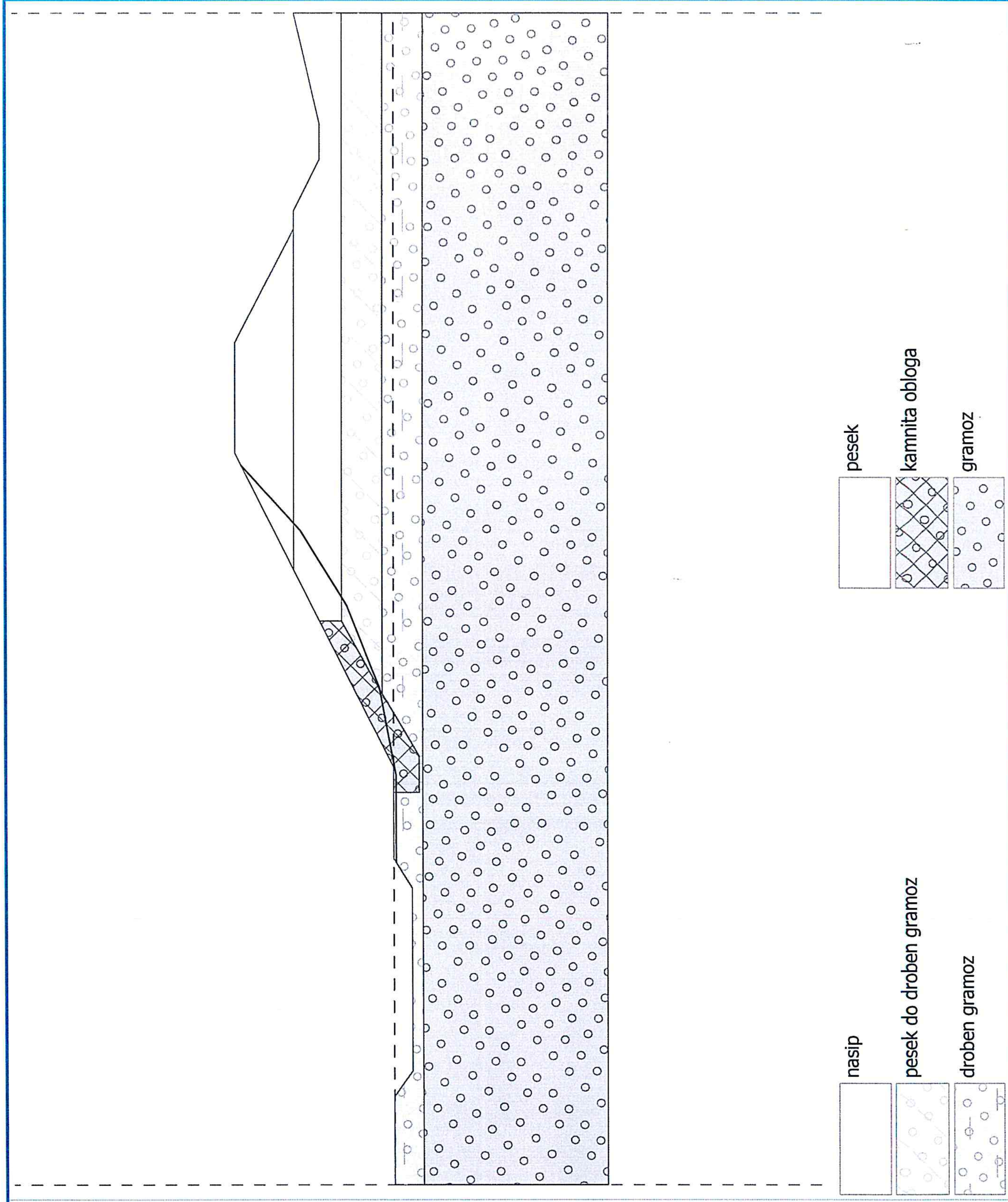
Analysis 1 (stage 4)

Polygonal slip surface

Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
12,01	4,30	12,64	4,56	14,90	5,64	16,29	6,12	18,97	7,30
20,21	8,30								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 1,28 > 1,25
Slope stability ACCEPTABLE

Name : **Stage - analysis : 1 - 1**



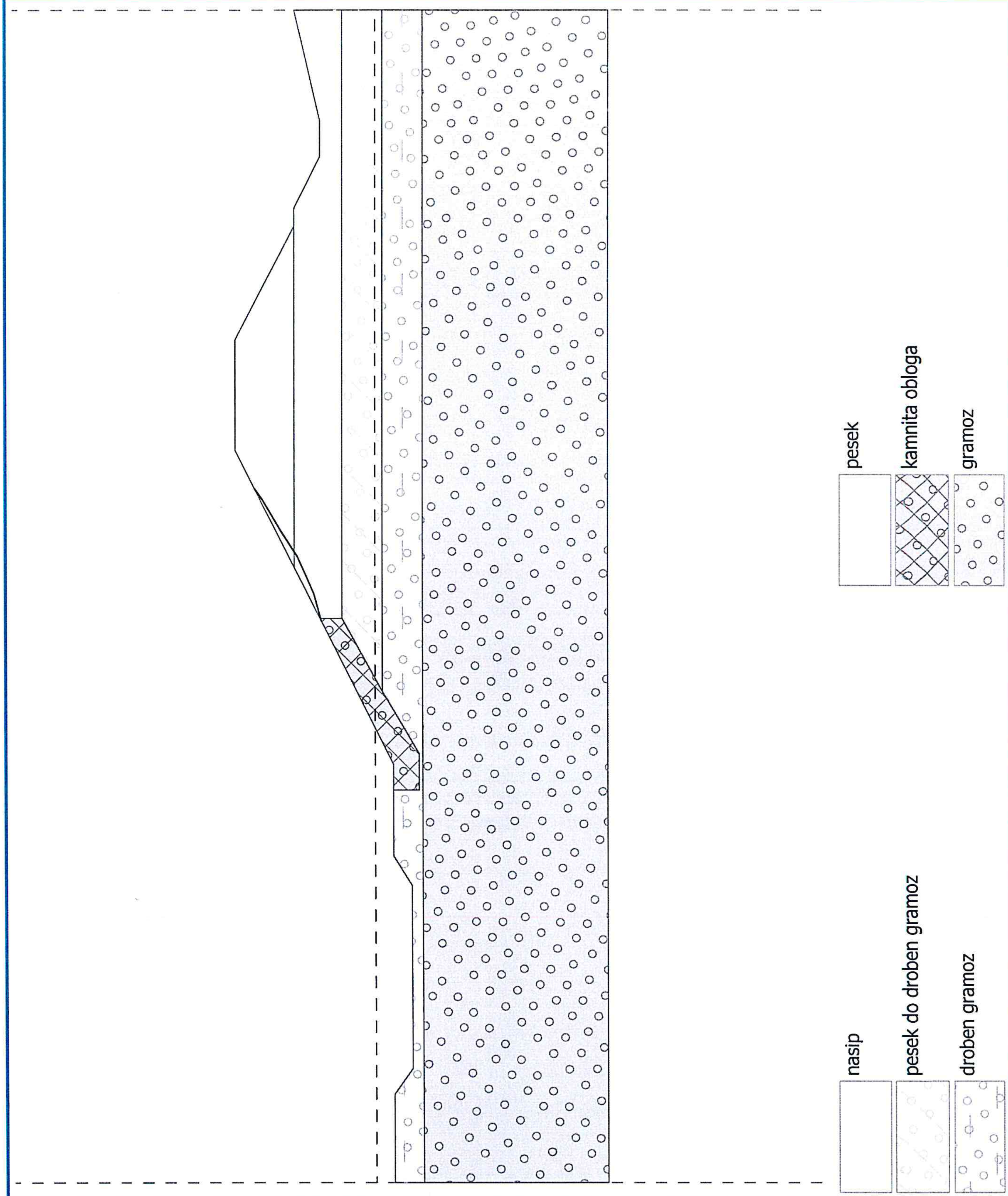
Analysis of the slip surface without optimization.

Slope stability verification (Janbu)

Factor of safety = 1,46 > 1,25

Slope stability ACCEPTABLE

Name : **Stage - analysis : 2 - 1**



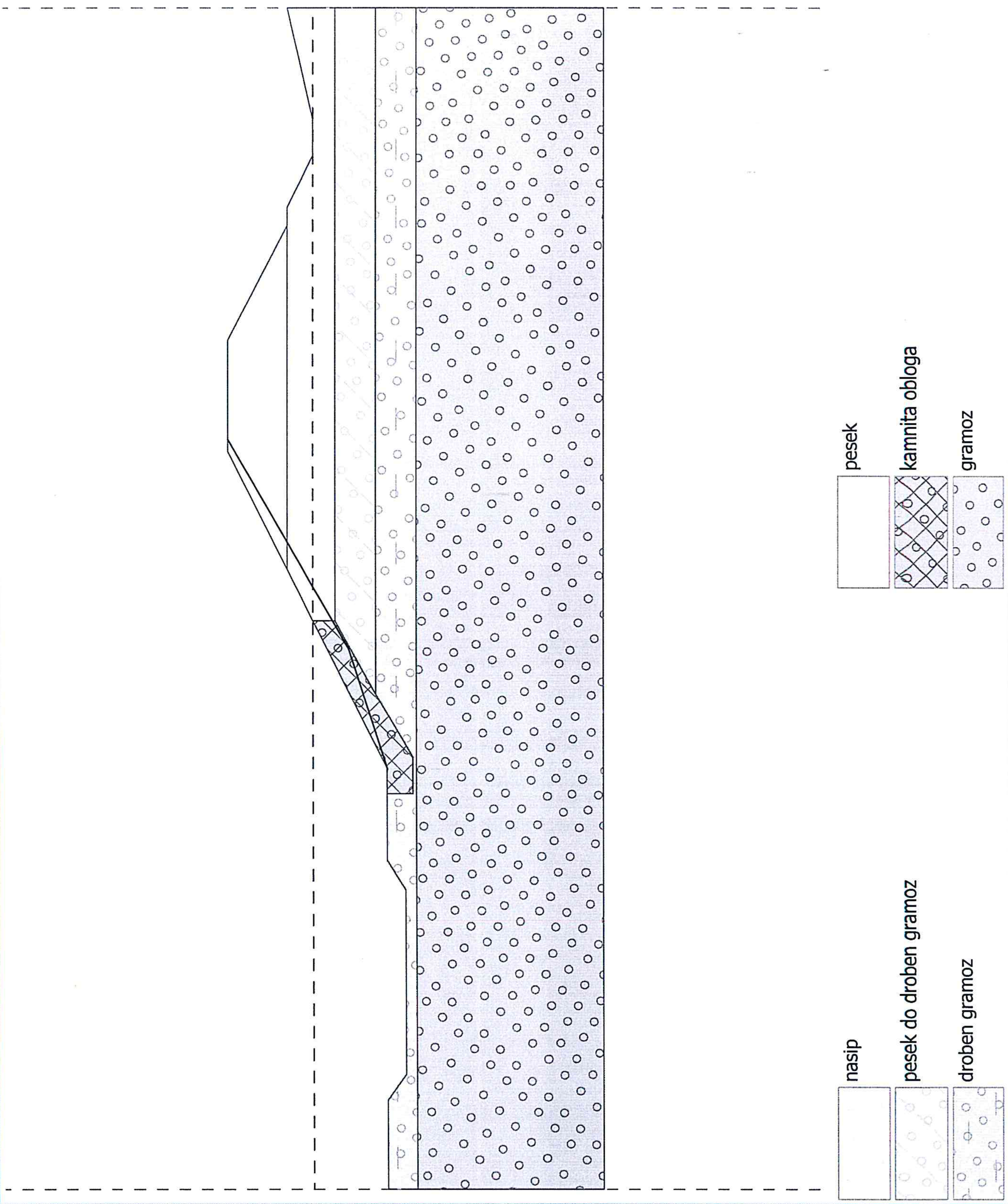
Analysis of the slip surface without optimization.

Slope stability verification (Janbu)

Factor of safety = 1,25 > 1,25

Slope stability ACCEPTABLE

Name : **Stage - analysis : 3 - 1**



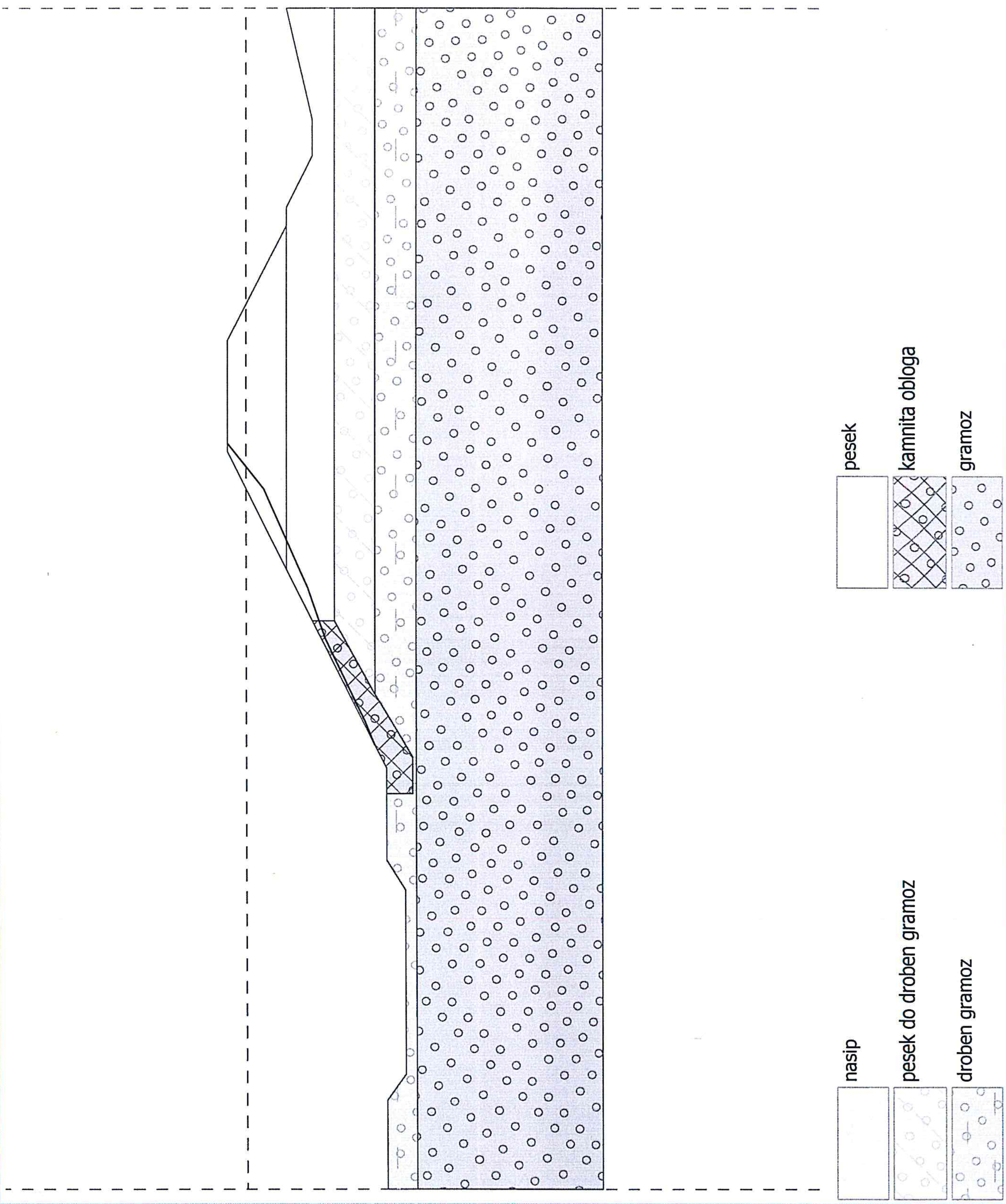
Analysis of the slip surface without optimization.

Slope stability verification (Janbu)

Factor of safety = 1,30 > 1,25

Slope stability ACCEPTABLE

Name : **Stage - analysis : 4 - 1**



Analysis of the slip surface without optimization.

Slope stability verification (Janbu)

Factor of safety = 1,28 > 1,25

Slope stability ACCEPTABLE

Slope stability analysis

Input data

Project

Task : UREDITEV MEŽE IN MISLINJE V OTIŠKEM VRHU
Part : Območje Mislinje (M31- levi breg)
Description : stabilnost ukopa in nasipa M31- levi breg
Customer : VGB Maribor d.o.o.
Date : 22. 09. 2020

Settings

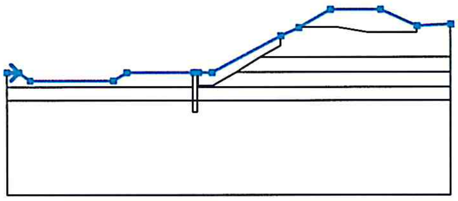
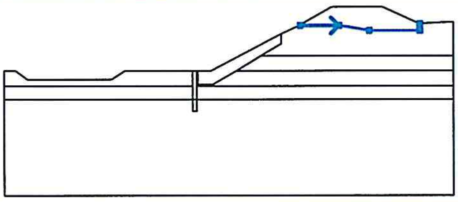
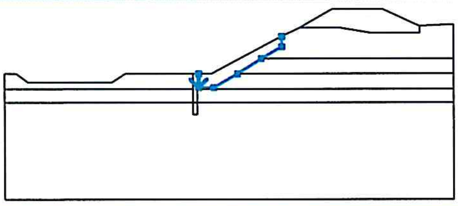
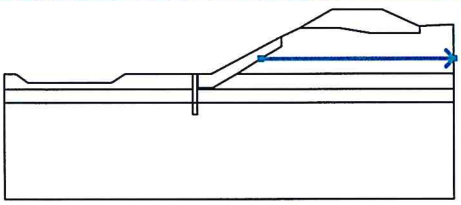
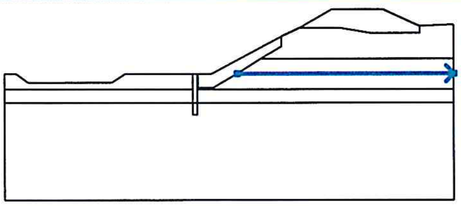
Standard - EN 1997 - PP3 (5)

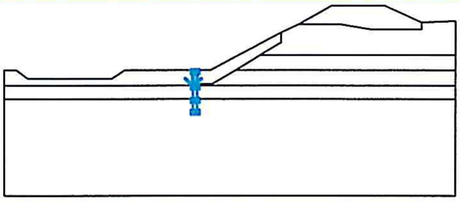
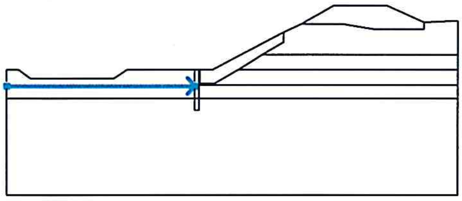
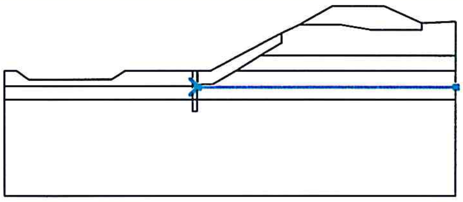
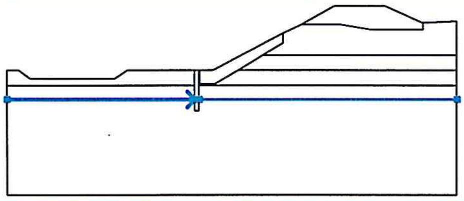
Stability analysis

Earthquake analysis : Standard
Verification methodology : Safety factors (ASD)

Safety factors			
Permanent design situation			
Safety factor :	SF_s =	1,25	[–]

Interface

No.	Interface location	Coordinates of interface points [m]					
		x	z	x	z	x	z
1		0,00	4,00	0,70	4,00	1,40	3,50
		6,40	3,50	7,20	4,00	11,20	4,00
		11,45	4,00	11,50	4,00	12,30	4,00
		16,40	6,20	17,50	6,70	19,40	7,80
		22,40	7,80	24,60	6,80	26,60	6,90
2		17,50	6,70	19,80	6,70	21,60	6,40
		24,60	6,40	24,60	6,80		
3		11,50	4,00	11,50	3,20	12,40	3,20
		13,80	4,00	15,20	4,90	16,40	5,60
		16,40	6,20				
4		15,20	4,90	26,60	4,90		
5		13,80	4,00	26,60	4,00		

No.	Interface location	Coordinates of interface points [m]					
		x	z	x	z	x	z
6		11,20	4,00	11,20	3,10	11,20	2,30
		11,20	1,60	11,45	1,60	11,45	2,30
		11,45	3,10	11,45	4,00		
7		0,00	3,10	11,20	3,10		
8		11,45	3,10	11,50	3,10	26,60	3,10
9		0,00	2,30	11,20	2,30	11,45	2,30
		26,60	2,30				

Soil parameters - effective stress state

No.	Name	Pattern	φ_{ef} [°]	c_{ef} [kPa]	γ [kN/m^3]
1	nasip		34,00	0,00	20,00
2	pesek		30,00	0,00	18,40
3	pesek s prodniki		35,00	0,00	19,10
4	kamnita obloga		34,00	0,00	23,00
5	pesek 2		29,00	0,00	18,40
6	debel gramoz		43,00	0,00	21,10

No.	Name	Pattern	φ_{ef} [°]	c_{ef} [kPa]	γ [kN/m3]
7	leseni pilot		25,00	0,00	16,00
8	hribina		43,00	0,00	21,10

Soil parameters - uplift

No.	Name	Pattern	γ_{sat} [kN/m3]	γ_s [kN/m3]	n [–]
1	nasip		20,00		
2	pesek		20,00		
3	pesek s prodniki		19,10		
4	kamnita obloga		23,00		
5	pesek 2		18,40		
6	debel gramoz		21,10		
7	leseni pilot		16,00		
8	hribina		21,10		

Soil parameters

nasip

Unit weight :	γ = 20,00 kN/m3
Stress-state :	effective
Angle of internal friction :	φ_{ef} = 34,00 °
Cohesion of soil :	c_{ef} = 0,00 kPa
Saturated unit weight :	γ_{sat} = 20,00 kN/m3

pesek

Unit weight :	γ = 18,40 kN/m3
Stress-state :	effective
Angle of internal friction :	φ_{ef} = 30,00 °

Cohesion of soil :	c_{ef} = 0,00 kPa
Saturated unit weight :	γ_{sat} = 20,00 kN/m^3

pesek s prodniki

Unit weight :	γ = 19,10 kN/m^3
Stress-state :	effective
Angle of internal friction :	φ_{ef} = 35,00 °
Cohesion of soil :	c_{ef} = 0,00 kPa
Saturated unit weight :	γ_{sat} = 19,10 kN/m^3

kamnita obloga

Unit weight :	γ = 23,00 kN/m^3
Stress-state :	effective
Angle of internal friction :	φ_{ef} = 34,00 °
Cohesion of soil :	c_{ef} = 0,00 kPa
Saturated unit weight :	γ_{sat} = 23,00 kN/m^3

pesek 2

Unit weight :	γ = 18,40 kN/m^3
Stress-state :	effective
Angle of internal friction :	φ_{ef} = 29,00 °
Cohesion of soil :	c_{ef} = 0,00 kPa
Saturated unit weight :	γ_{sat} = 18,40 kN/m^3

debel gramoz

Unit weight :	γ = 21,10 kN/m^3
Stress-state :	effective
Angle of internal friction :	φ_{ef} = 43,00 °
Cohesion of soil :	c_{ef} = 0,00 kPa
Saturated unit weight :	γ_{sat} = 21,10 kN/m^3

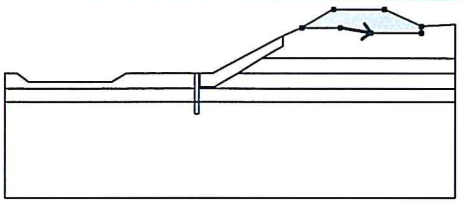
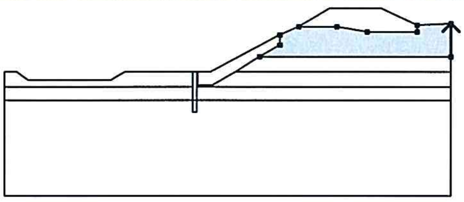
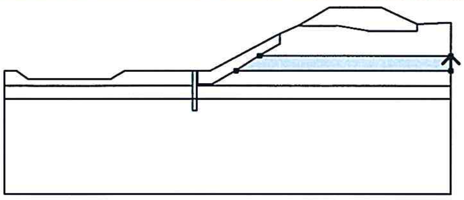
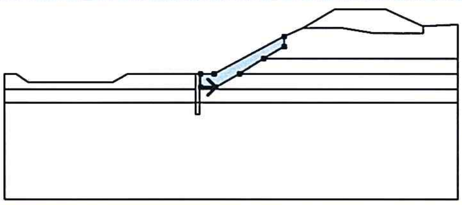
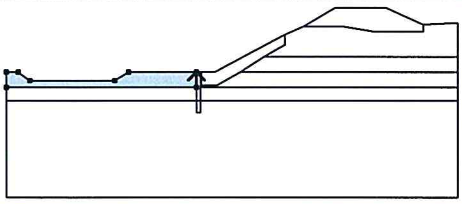
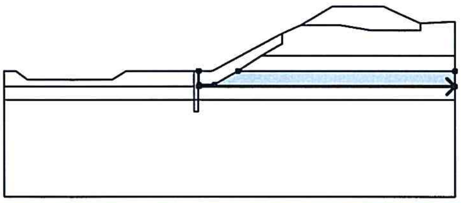
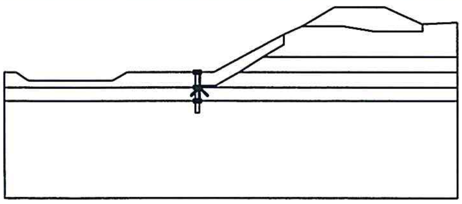
leseni pilot

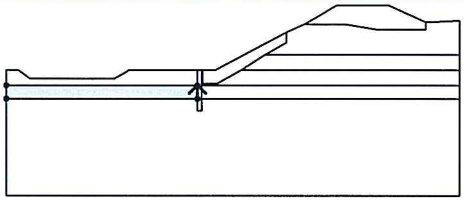
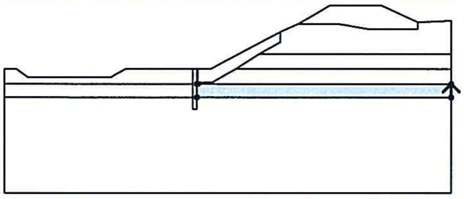
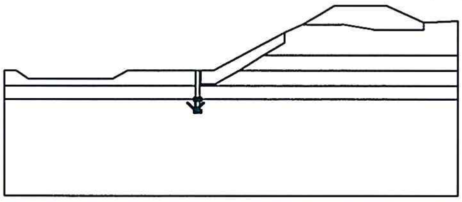
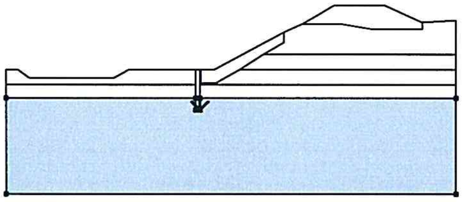
Unit weight :	γ = 16,00 kN/m^3
Stress-state :	effective
Angle of internal friction :	φ_{ef} = 25,00 °
Cohesion of soil :	c_{ef} = 0,00 kPa
Saturated unit weight :	γ_{sat} = 16,00 kN/m^3

hribina

Unit weight :	γ = 21,10 kN/m^3
Stress-state :	effective
Angle of internal friction :	φ_{ef} = 43,00 °
Cohesion of soil :	c_{ef} = 0,00 kPa
Saturated unit weight :	γ_{sat} = 21,10 kN/m^3

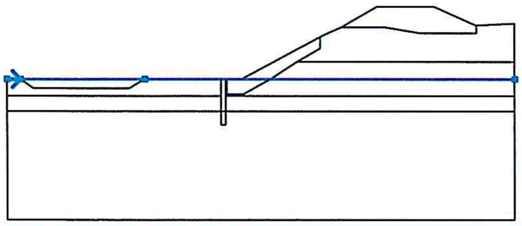
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m] x	z	x	z	Assigned soil
1		19,80	6,70	21,60	6,40	nasip
		24,60	6,40	24,60	6,80	
		22,40	7,80	19,40	7,80	
		17,50	6,70			
2		26,60	4,90	26,60	6,90	pesek
		24,60	6,80	24,60	6,40	
		21,60	6,40	19,80	6,70	
		17,50	6,70	16,40	6,20	
		16,40	5,60	15,20	4,90	
3		26,60	4,00	26,60	4,90	pesek s prodniki
		15,20	4,90	13,80	4,00	
4		11,50	3,20	12,40	3,20	kamnita obloga
		13,80	4,00	15,20	4,90	
		16,40	5,60	16,40	6,20	
		12,30	4,00	11,50	4,00	
5		11,20	3,10	11,20	4,00	pesek 2
		7,20	4,00	6,40	3,50	
		1,40	3,50	0,70	4,00	
		0,00	4,00	0,00	3,10	
6		11,50	3,10	26,60	3,10	pesek 2
		26,60	4,00	13,80	4,00	
		12,40	3,20	11,50	3,20	
		11,50	4,00	11,45	4,00	
		11,45	3,10			
7		11,45	2,30	11,45	3,10	leseni pilot
		11,45	4,00	11,20	4,00	
		11,20	3,10	11,20	2,30	

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
8		11,20	2,30	11,20	3,10	debel gramoz
		0,00	3,10	0,00	2,30	
9		26,60	2,30	26,60	3,10	debel gramoz
		11,50	3,10	11,45	3,10	
		11,45	2,30			
10		11,20	2,30	11,20	1,60	leseni pilot
		11,45	1,60	11,45	2,30	
11		11,45	2,30	11,45	1,60	hribina
		11,20	1,60	11,20	2,30	
		0,00	2,30	0,00	-3,40	
		26,60	-3,40	26,60	2,30	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	4,00	0,70	4,00	7,20	4,00
		26,60	4,00				

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 (stage 1)

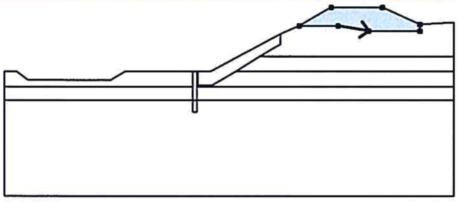
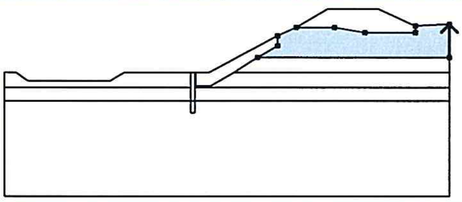
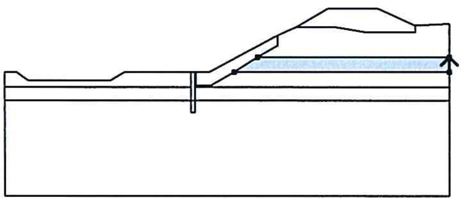
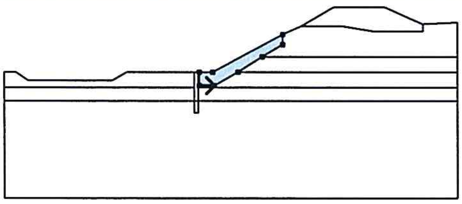
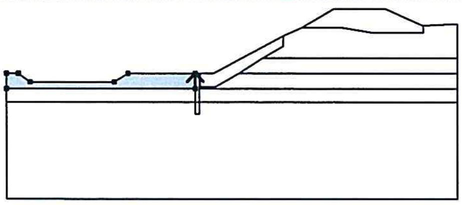
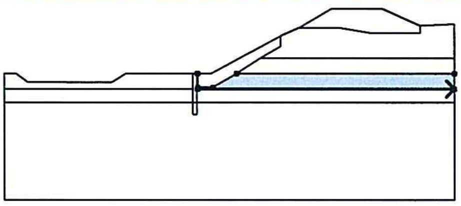
Polygonal slip surface

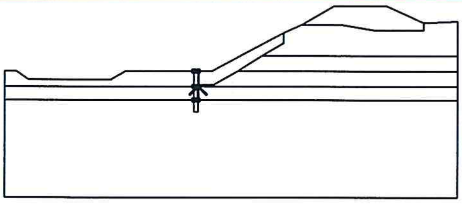
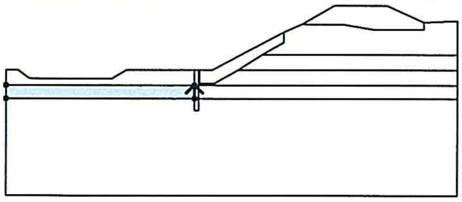
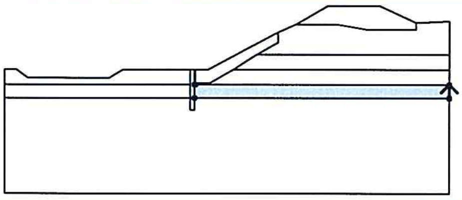
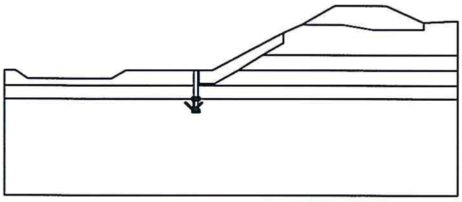
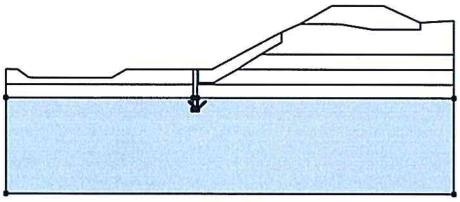
Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
8,64	4,00	11,11	3,74	13,58	4,01	15,94	4,81	18,07	6,09
19,88	7,80								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 1,46 > 1,25
Slope stability ACCEPTABLE

Input data (Stage of construction 2)

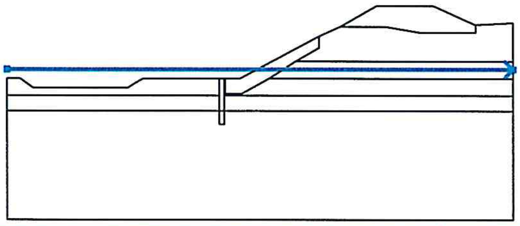
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m] x	z	x	z	Assigned soil
1		19,80	6,70	21,60	6,40	nasip
		24,60	6,40	24,60	6,80	
		22,40	7,80	19,40	7,80	
		17,50	6,70			
2		26,60	4,90	26,60	6,90	pesek
		24,60	6,80	24,60	6,40	
		21,60	6,40	19,80	6,70	
		17,50	6,70	16,40	6,20	
		16,40	5,60	15,20	4,90	
3		26,60	4,00	26,60	4,90	pesek s prodniki
		15,20	4,90	13,80	4,00	
4		11,50	3,20	12,40	3,20	kamnita obloga
		13,80	4,00	15,20	4,90	
		16,40	5,60	16,40	6,20	
		12,30	4,00	11,50	4,00	
5		11,20	3,10	11,20	4,00	pesek 2
		7,20	4,00	6,40	3,50	
		1,40	3,50	0,70	4,00	
		0,00	4,00	0,00	3,10	
6		11,50	3,10	26,60	3,10	pesek 2
		26,60	4,00	13,80	4,00	
		12,40	3,20	11,50	3,20	
		11,50	4,00	11,45	4,00	
		11,45	3,10			

No.	Surface position	Coordinates of surface points [m] x	z	x	z	Assigned soil
7		11,45	2,30	11,45	3,10	leseni pilot
		11,45	4,00	11,20	4,00	
		11,20	3,10	11,20	2,30	
8		11,20	2,30	11,20	3,10	debel gramoz
		0,00	3,10	0,00	2,30	
9		26,60	2,30	26,60	3,10	debel gramoz
		11,50	3,10	11,45	3,10	
		11,45	2,30			
10		11,20	2,30	11,20	1,60	leseni pilot
		11,45	1,60	11,45	2,30	
11		11,45	2,30	11,45	1,60	hribina
		11,20	1,60	11,20	2,30	
		0,00	2,30	0,00	-3,40	
		26,60	-3,40	26,60	2,30	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m] x	z	x	z	x	z
1		0,00	4,50	26,60	4,50		

Tensile crack

Tensile crack not inputted.

Earthquake

Earthquake not included.

Settings of the stage of construction

Design situation : permanent

Results (Stage of construction 2)

Analysis 1 (stage 2)

Polygonal slip surface

Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
9,45	4,00	11,76	3,70	14,07	3,96	16,25	4,77	18,18	6,07
19,73	7,80								
Analysis of the slip surface without optimization.									

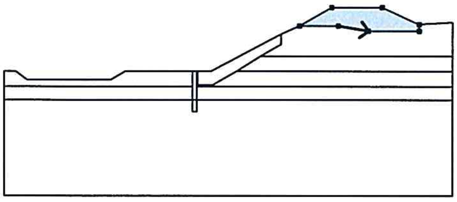
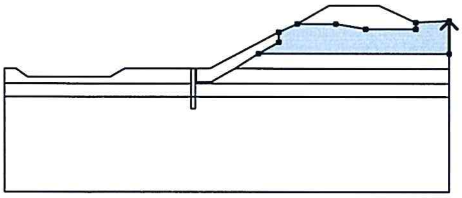
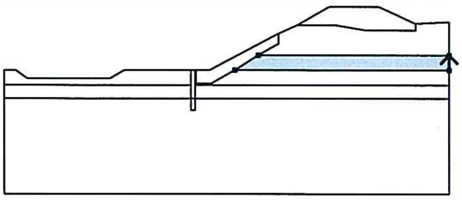
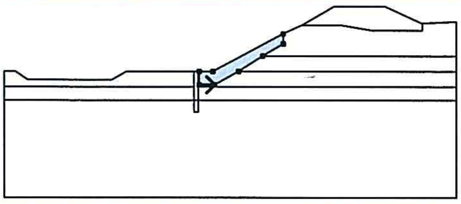
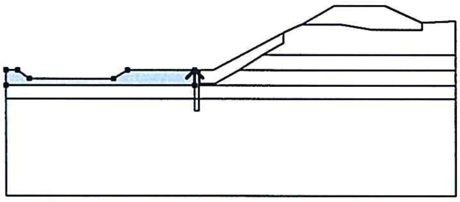
Slope stability verification (Janbu)

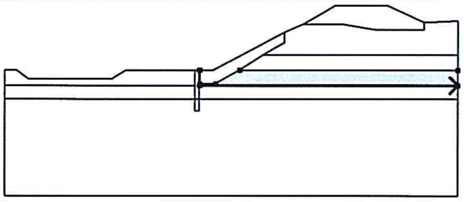
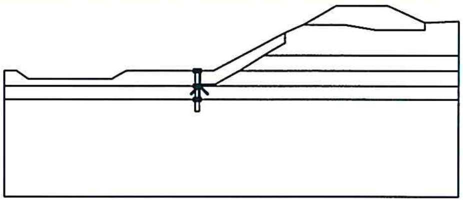
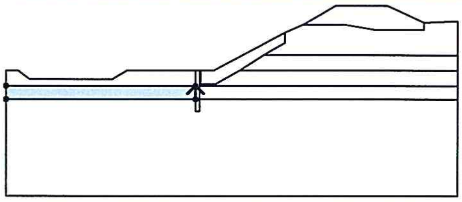
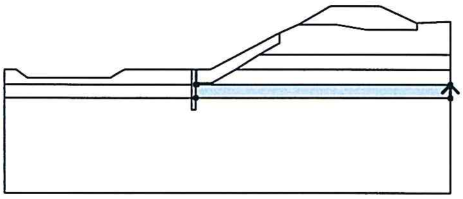
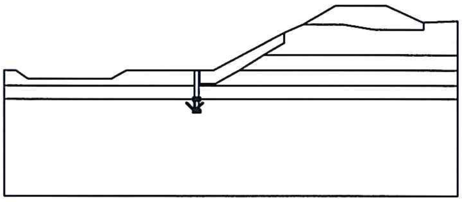
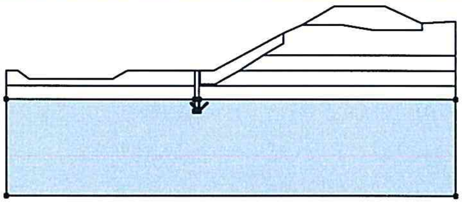
Factor of safety = 1,42 > 1,25

Slope stability ACCEPTABLE

Input data (Stage of construction 3)

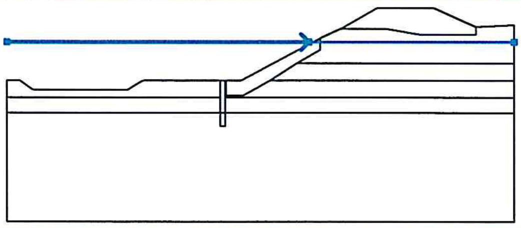
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m] x	z	x	z	Assigned soil
1		19,80	6,70	21,60	6,40	nasip
		24,60	6,40	24,60	6,80	
		22,40	7,80	19,40	7,80	
		17,50	6,70			
2		26,60	4,90	26,60	6,90	pesek
		24,60	6,80	24,60	6,40	
		21,60	6,40	19,80	6,70	
		17,50	6,70	16,40	6,20	
		16,40	5,60	15,20	4,90	
3		26,60	4,00	26,60	4,90	pesek s prodniki
		15,20	4,90	13,80	4,00	
4		11,50	3,20	12,40	3,20	kamnita obloga
		13,80	4,00	15,20	4,90	
		16,40	5,60	16,40	6,20	
		12,30	4,00	11,50	4,00	
5		11,20	3,10	11,20	4,00	pesek 2
		7,20	4,00	6,40	3,50	
		1,40	3,50	0,70	4,00	
		0,00	4,00	0,00	3,10	

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
6		11,50	3,10	26,60	3,10	pesek 2
		26,60	4,00	13,80	4,00	
		12,40	3,20	11,50	3,20	
		11,50	4,00	11,45	4,00	
		11,45	3,10			
7		11,45	2,30	11,45	3,10	leseni pilot
		11,45	4,00	11,20	4,00	
		11,20	3,10	11,20	2,30	
8		11,20	2,30	11,20	3,10	debel gramoz
		0,00	3,10	0,00	2,30	
9		26,60	2,30	26,60	3,10	debel gramoz
		11,50	3,10	11,45	3,10	
		11,45	2,30			
10		11,20	2,30	11,20	1,60	leseni pilot
		11,45	1,60	11,45	2,30	
11		11,45	2,30	11,45	1,60	hribina
		11,20	1,60	11,20	2,30	
		0,00	2,30	0,00	-3,40	
		26,60	-3,40	26,60	2,30	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	6,00	15,80	6,00	26,60	6,00

Tensile crack

Tensile crack not inputted.

Earthquake

Earthquake not included.

Settings of the stage of construction

Design situation : permanent

Results (Stage of construction 3)

Analysis 1 (stage 3)

Polygonal slip surface

Slip surface is not specified

Slope stability verification (Janbu)

Analysis has not been performed.

Analysis 2 (stage 3)

Polygonal slip surface

Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
6,42	3,51	9,37	3,35	12,30	3,72	15,12	4,60	17,73	5,98
20,06	7,80								
Analysis of the slip surface without optimization.									

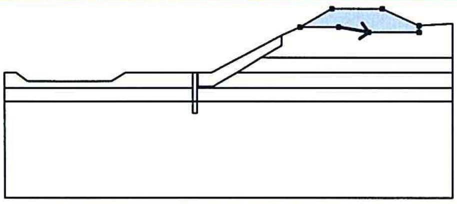
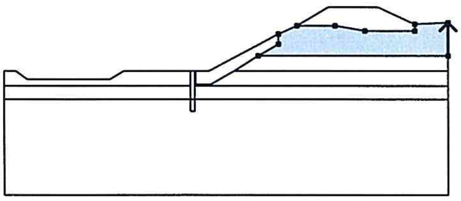
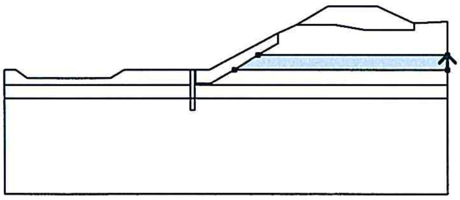
Slope stability verification (Janbu)

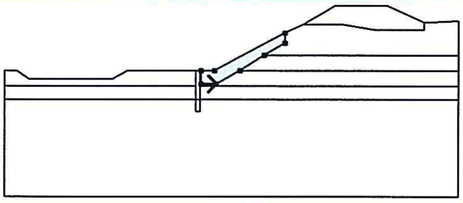
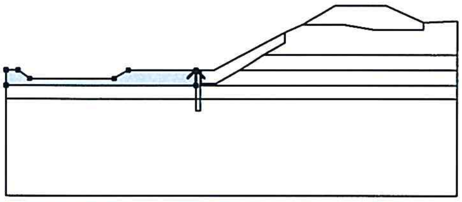
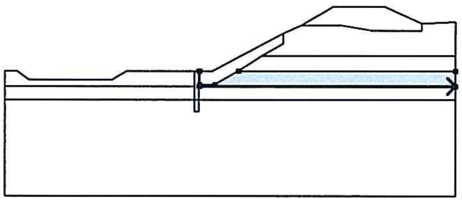
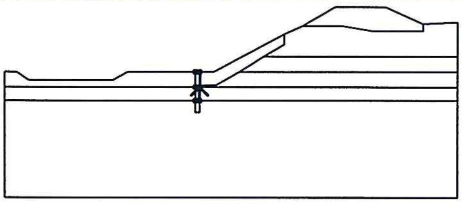
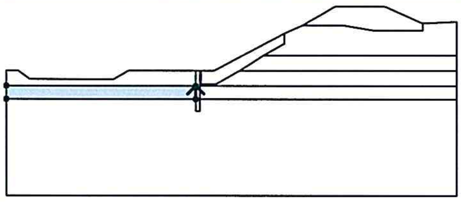
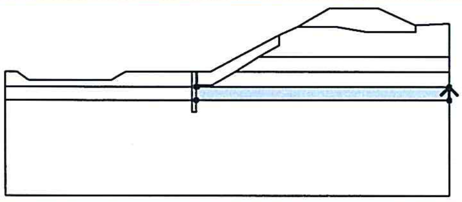
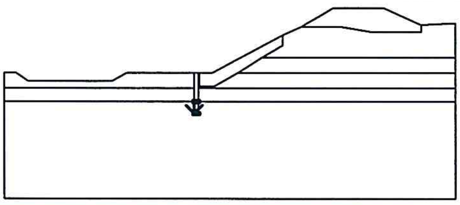
Factor of safety = 1,62 > 1,25

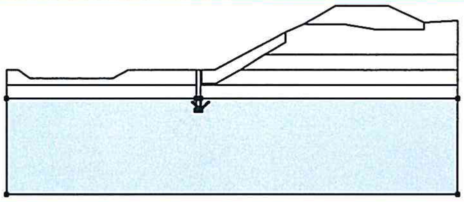
Slope stability ACCEPTABLE

Input data (Stage of construction 4)

Assigning and surfaces

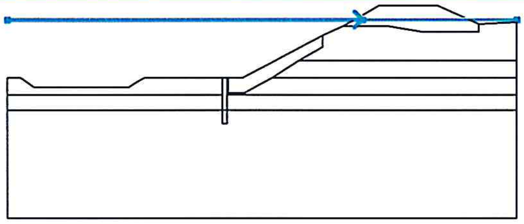
No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		19,80	6,70	21,60	6,40	nasip
		24,60	6,40	24,60	6,80	
		22,40	7,80	19,40	7,80	
		17,50	6,70			
2		26,60	4,90	26,60	6,90	pesek
		24,60	6,80	24,60	6,40	
		21,60	6,40	19,80	6,70	
		17,50	6,70	16,40	6,20	
		16,40	5,60	15,20	4,90	
3		26,60	4,00	26,60	4,90	pesek s prodniki
		15,20	4,90	13,80	4,00	

No.	Surface position	Coordinates of surface points [m] x	z	x	z	Assigned soil
4		11,50	3,20	12,40	3,20	kamnita obloga
		13,80	4,00	15,20	4,90	
		16,40	5,60	16,40	6,20	
		12,30	4,00	11,50	4,00	
5		11,20	3,10	11,20	4,00	pesek 2
		7,20	4,00	6,40	3,50	
		1,40	3,50	0,70	4,00	
		0,00	4,00	0,00	3,10	
6		11,50	3,10	26,60	3,10	pesek 2
		26,60	4,00	13,80	4,00	
		12,40	3,20	11,50	3,20	
		11,50	4,00	11,45	4,00	
		11,45	3,10			
7		11,45	2,30	11,45	3,10	leseni pilot
		11,45	4,00	11,20	4,00	
		11,20	3,10	11,20	2,30	
8		11,20	2,30	11,20	3,10	debel gramoz
		0,00	3,10	0,00	2,30	
9		26,60	2,30	26,60	3,10	debel gramoz
		11,50	3,10	11,45	3,10	
		11,45	2,30			
10		11,20	2,30	11,20	1,60	leseni pilot
		11,45	1,60	11,45	2,30	

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
11		11,45	2,30	11,45	1,60	hribina 
		11,20	1,60	11,20	2,30	
		0,00	2,30	0,00	-3,40	
		26,60	-3,40	26,60	2,30	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	7,10	18,50	7,10	26,60	7,10

Tensile crack

Tensile crack not inputted.

Earthquake

Earthquake not included.

Settings of the stage of construction

Design situation : permanent

Results (Stage of construction 4)

Analysis 1 (stage 4)

Polygonal slip surface

Slip surface is not specified

Slope stability verification (Janbu)
Analysis has not been performed.

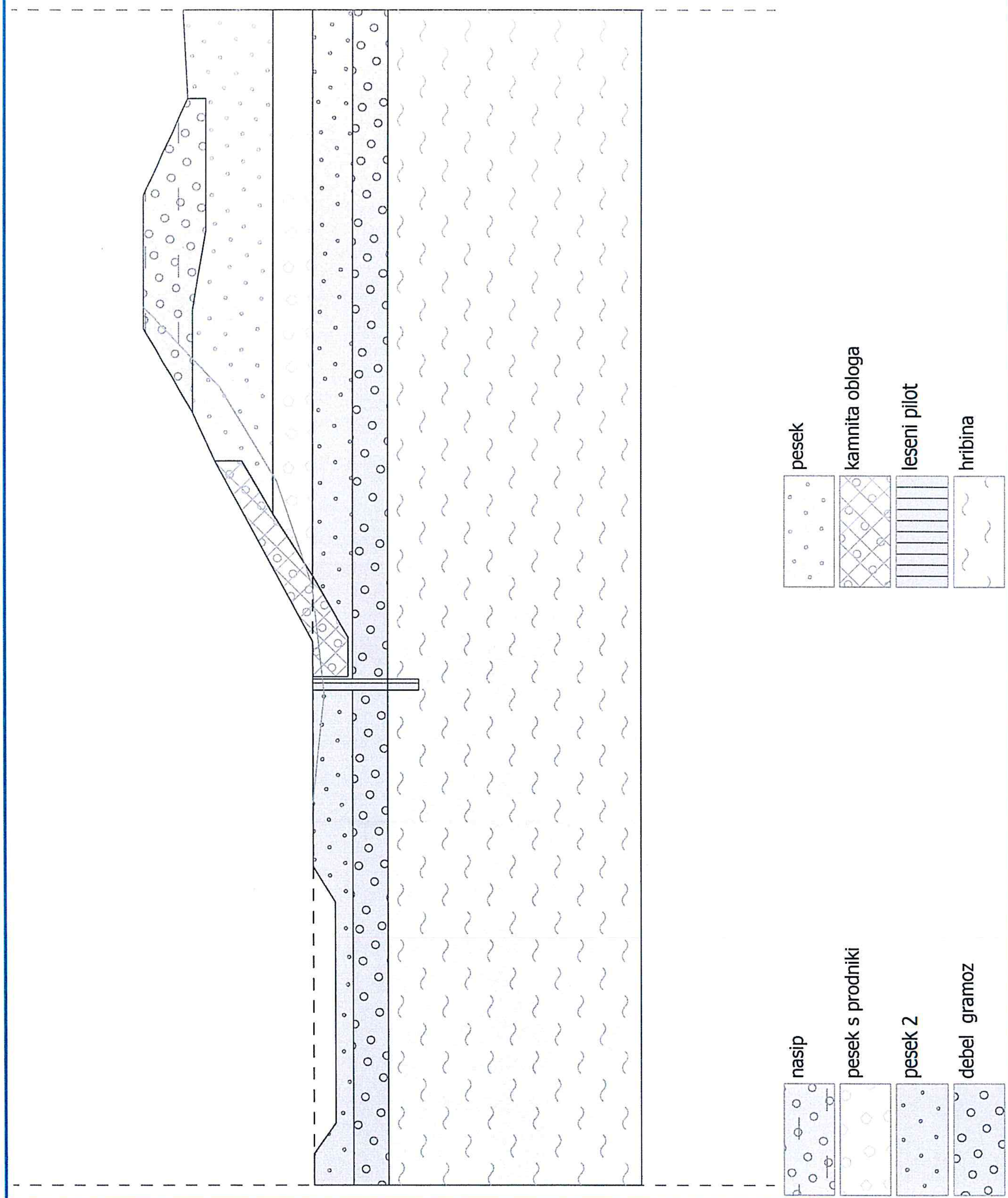
Analysis 2 (stage 4)

Polygonal slip surface

Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
16,86	6,41	17,51	6,55	18,05	6,74	18,48	7,00	18,91	7,34
19,42	7,80								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 1,10 < 1,25
Slope stability NOT ACCEPTABLE

Name : **Stage - analysis : 1 - 1**



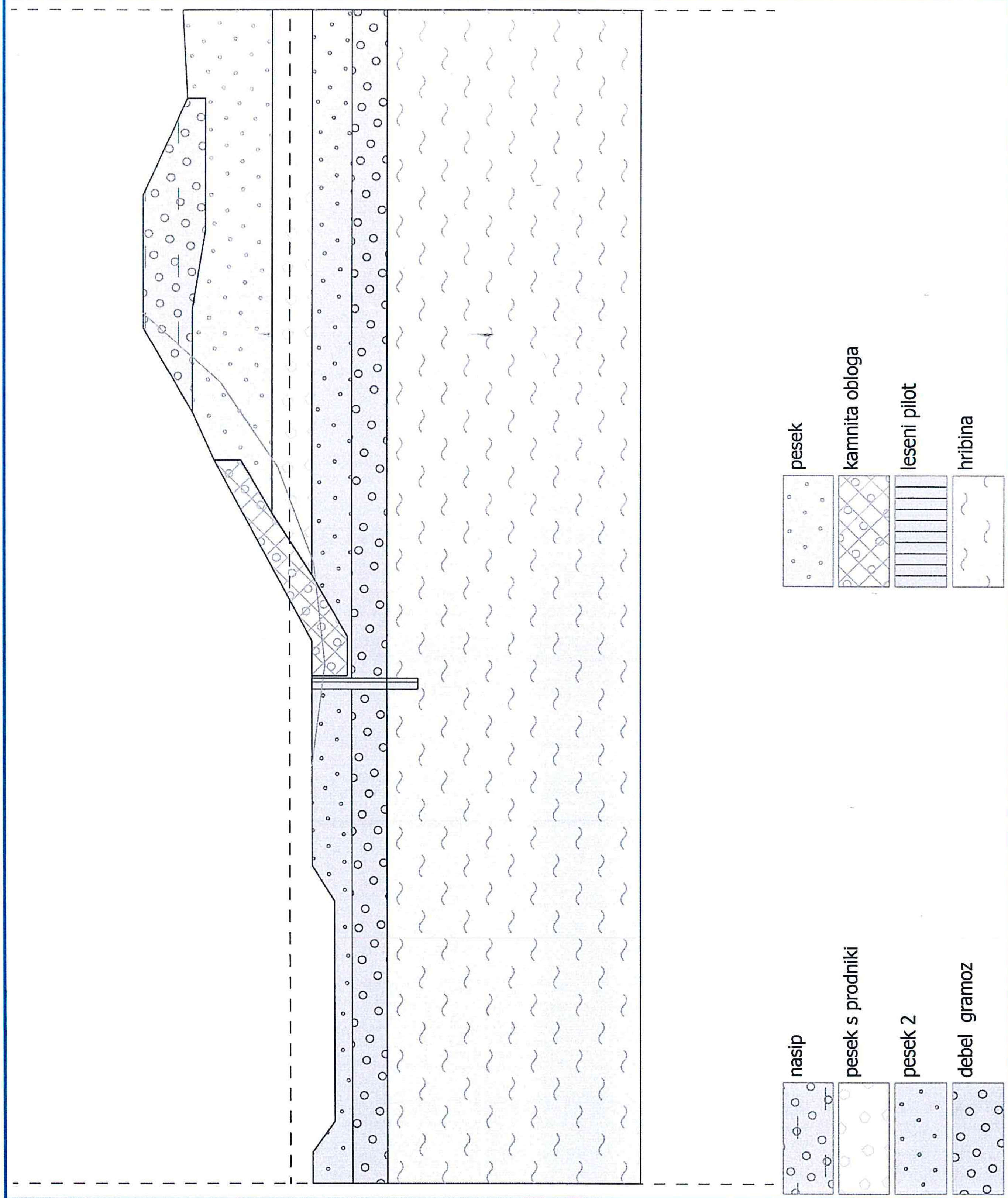
Analysis of the slip surface without optimization.

Slope stability verification (Janbu)

Factor of safety = 1,46 > 1,25

Slope stability ACCEPTABLE

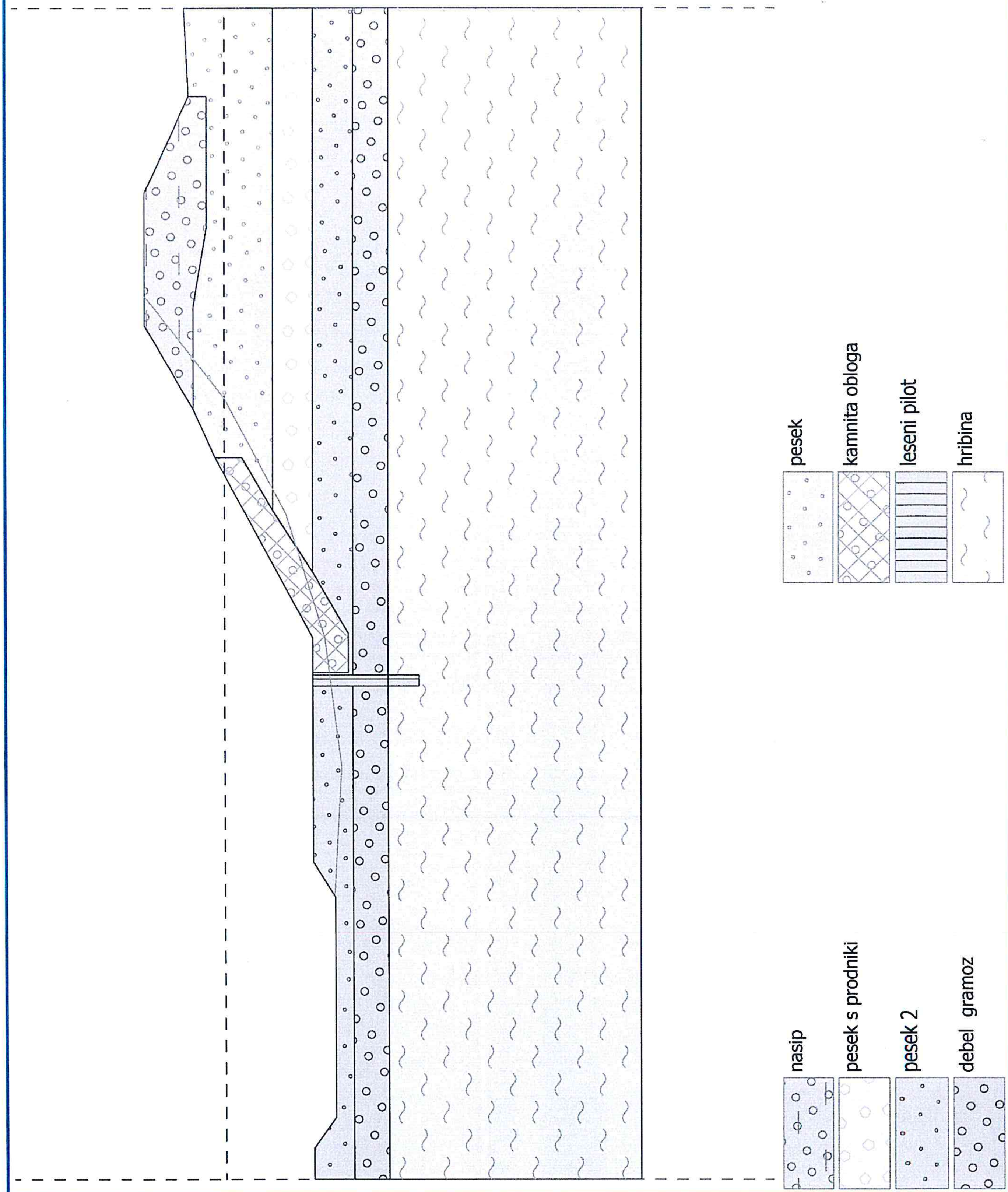
Name : **Stage - analysis : 2 - 1**



Analysis of the slip surface without optimization.

Slope stability verification (Janbu)
Factor of safety = 1,42 > 1,25
Slope stability ACCEPTABLE

Name : **Stage - analysis : 3 - 2**



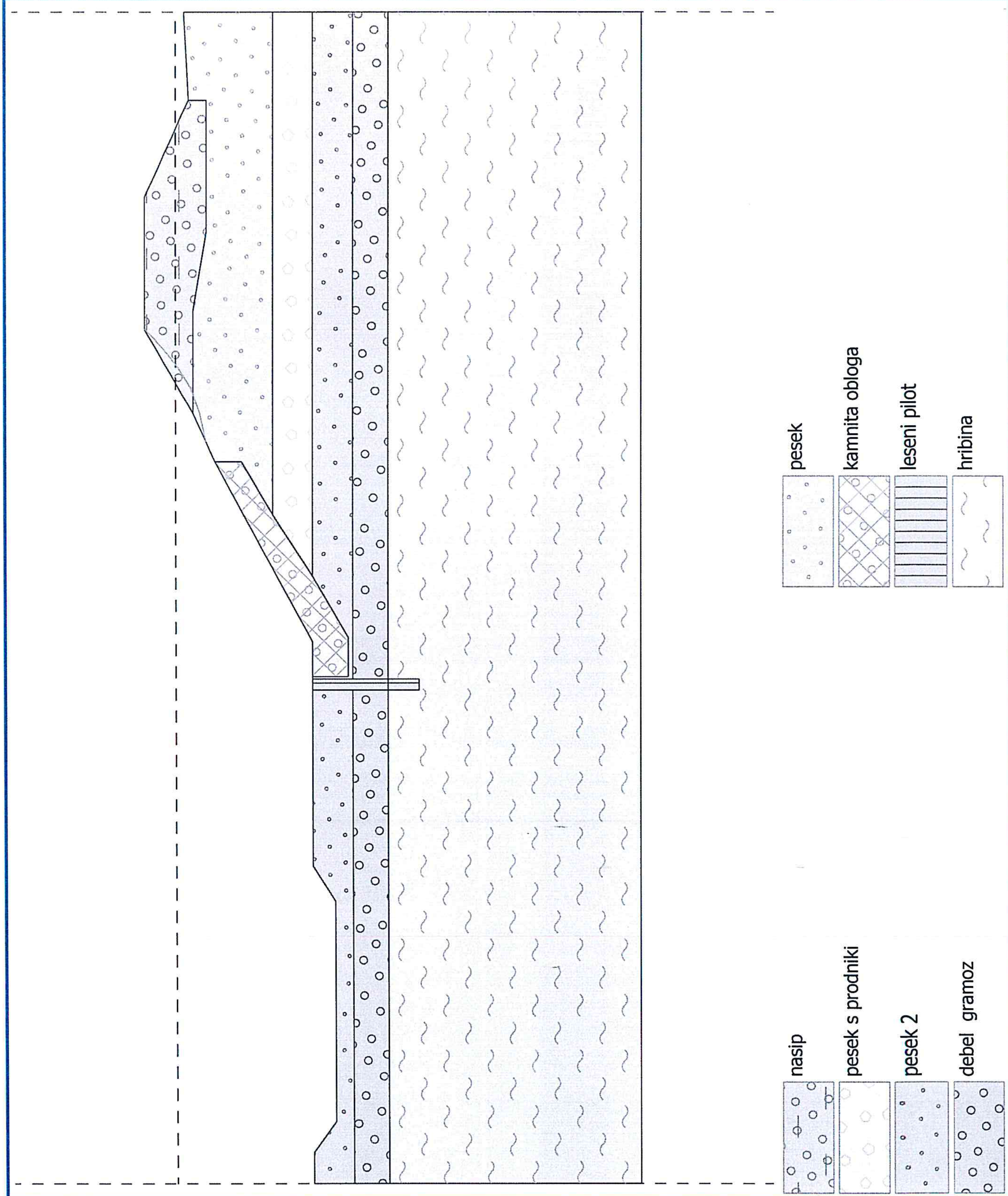
Analysis of the slip surface without optimization.

Slope stability verification (Janbu)

Factor of safety = 1,62 > 1,25

Slope stability ACCEPTABLE

Name : **Stage - analysis : 4 - 2**



Analysis of the slip surface without optimization.

Slope stability verification (Janbu)
Factor of safety = 1,10 < 1,25
Slope stability NOT ACCEPTABLE

Slope stability analysis

Input data

Project

Task : UREDITEV MEŽE IN MISLINJE V OTIŠKEM VRHU
Part : Območje Mislinje (M31, desni breg)
Description : stabilnost ukopa in nasipa, M31- desni breg
Customer : VGB Maribor d.o.o.
Date : 22. 09. 2020

Settings

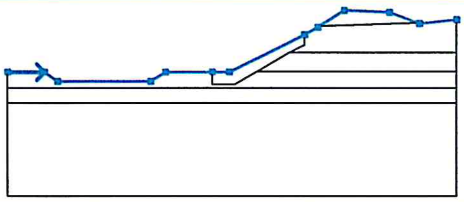
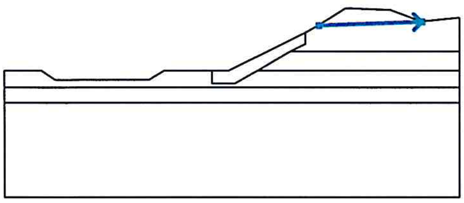
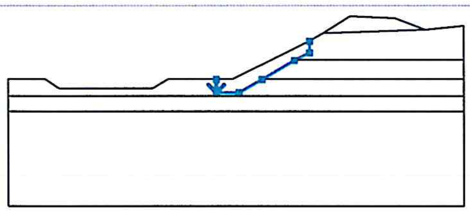
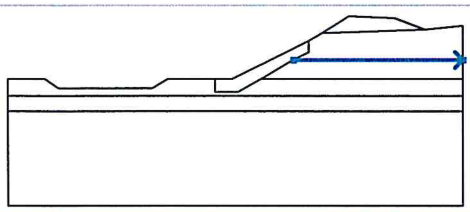
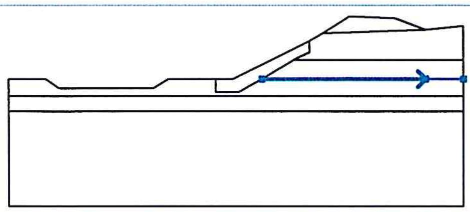
Standard - EN 1997 - PP3 (5)

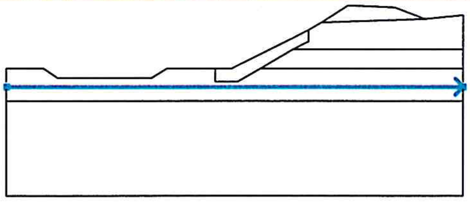
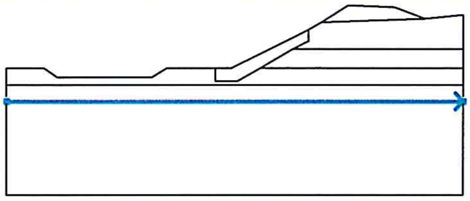
Stability analysis

Earthquake analysis : Standard
Verification methodology : Safety factors (ASD)

Safety factors			
Permanent design situation			
Safety factor :	SF_s =	1,25	[–]

Interface

No.	Interface location	Coordinates of interface points [m]					
		x	z	x	z	x	z
1		0,00	4,00	2,00	4,00	2,70	3,50
		7,70	3,50	8,50	4,00	11,00	4,00
		11,90	4,00	15,90	6,00	16,60	6,40
		18,00	7,30	20,40	7,20	22,00	6,60
		24,00	6,80				
2		16,60	6,40	22,00	6,60		
3		11,00	4,00	11,00	3,30	12,20	3,30
		13,40	4,00	15,10	5,00	15,90	5,40
		15,90	6,00				
4		15,10	5,00	24,00	5,00		
5		13,40	4,00	22,00	4,00	24,00	4,00

No.	Interface location	Coordinates of interface points [m]					
		x	z	x	z	x	z
6		0,00	3,10	24,00	3,10		
7		0,00	2,30	24,00	2,30		

Soil parameters - effective stress state

No.	Name	Pattern	φ_{ef} [°]	c_{ef} [kPa]	γ [kN/m^3]
1	nasip		30,00	0,00	18,40
2	pesek		30,00	0,00	18,40
3	pesek s prodniki		35,00	0,00	19,10
4	kamnita obloga		34,00	0,00	23,00
5	pesek 2		29,00	0,00	18,40
6	debel gramoz		34,00	0,00	19,30
7	gramoz		43,00	0,00	21,10
8	hribina		43,00	0,00	21,10

Soil parameters - uplift

No.	Name	Pattern	γ_{sat} [kN/m^3]	γ_s [kN/m^3]	n [–]
1	nasip		18,40		

No.	Name	Pattern	γ_{sat} [kN/m³]	γ_s [kN/m³]	n [–]
2	pesek		20,00		
3	pesek s prodniki		19,10		
4	kamnita obloga		23,00		
5	pesek 2		18,40		
6	debel gramoz		19,30		
7	gramoz		21,10		
8	hribina		21,10		

Soil parameters

nasip
Unit weight : γ = 18,40 kN/m³
Stress-state : effective
Angle of internal friction : φ_{ef} = 30,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 18,40 kN/m³

pesek
Unit weight : γ = 18,40 kN/m³
Stress-state : effective
Angle of internal friction : φ_{ef} = 30,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 20,00 kN/m³

pesek s prodniki
Unit weight : γ = 19,10 kN/m³
Stress-state : effective
Angle of internal friction : φ_{ef} = 35,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 19,10 kN/m³

kamnita obloga
Unit weight : γ = 23,00 kN/m³
Stress-state : effective
Angle of internal friction : φ_{ef} = 34,00 °
Cohesion of soil : c_{ef} = 0,00 kPa

Saturated unit weight : γ_{sat} = 23,00 kN/m^3

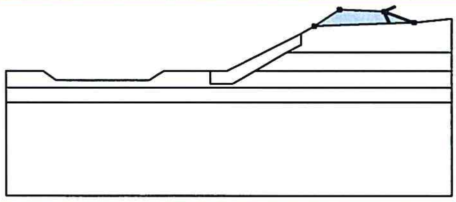
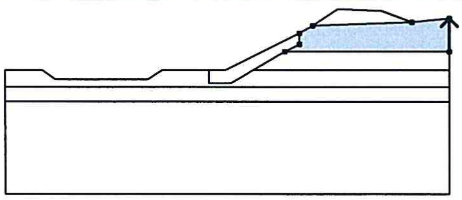
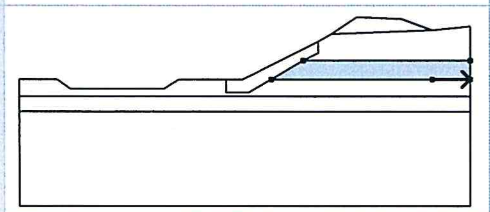
pesek 2
Unit weight : γ = 18,40 kN/m^3
Stress-state : effective
Angle of internal friction : φ_{ef} = 29,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 18,40 kN/m^3

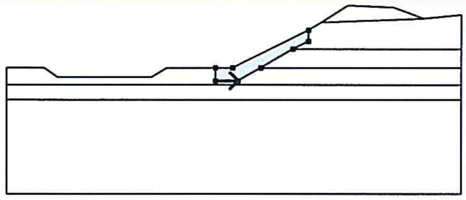
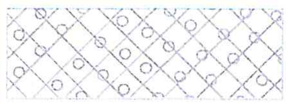
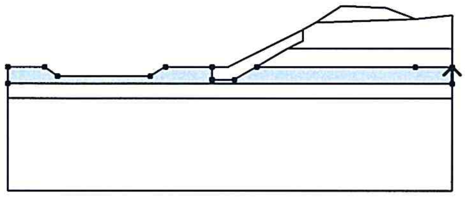
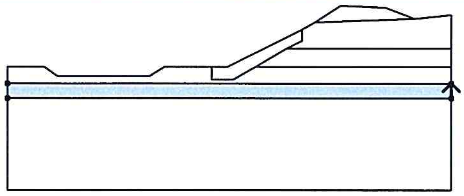
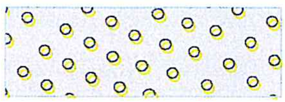
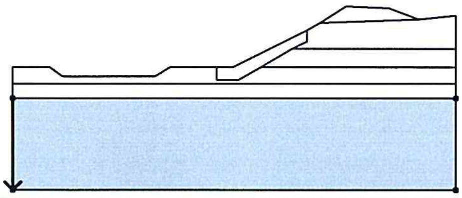
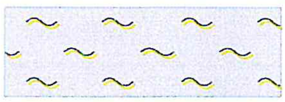
debel gramoz
Unit weight : γ = 19,30 kN/m^3
Stress-state : effective
Angle of internal friction : φ_{ef} = 34,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 19,30 kN/m^3

gramoz
Unit weight : γ = 21,10 kN/m^3
Stress-state : effective
Angle of internal friction : φ_{ef} = 43,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 21,10 kN/m^3

hribina
Unit weight : γ = 21,10 kN/m^3
Stress-state : effective
Angle of internal friction : φ_{ef} = 43,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 21,10 kN/m^3

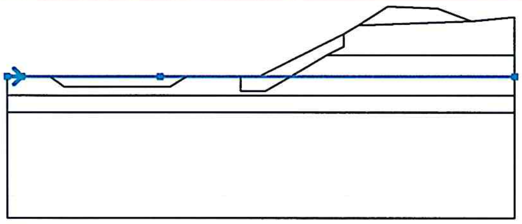
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m] x	z	x	z	Assigned soil
1		22,00	6,60	20,40	7,20	nasip
		18,00	7,30	16,60	6,40	
2		24,00	5,00	24,00	6,80	pesek
		22,00	6,60	16,60	6,40	
		15,90	6,00	15,90	5,40	
		15,10	5,00			
3		22,00	4,00	24,00	4,00	pesek s prodniki
		24,00	5,00	15,10	5,00	
		13,40	4,00			

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
4		11,00	3,30	12,20	3,30	kamnita obloga
		13,40	4,00	15,10	5,00	
		15,90	5,40	15,90	6,00	
		11,90	4,00	11,00	4,00	
5		24,00	3,10	24,00	4,00	pesek 2
		22,00	4,00	13,40	4,00	
		12,20	3,30	11,00	3,30	
		11,00	4,00	8,50	4,00	
		7,70	3,50	2,70	3,50	
		2,00	4,00	0,00	4,00	
		0,00	3,10			
6		24,00	2,30	24,00	3,10	debel gramoz
		0,00	3,10	0,00	2,30	
7		0,00	2,30	0,00	-2,70	hribina
		24,00	-2,70	24,00	2,30	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	4,00	0,70	4,00	7,20	4,00
		24,00	4,00				

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 (stage 1)

Polygonal slip surface