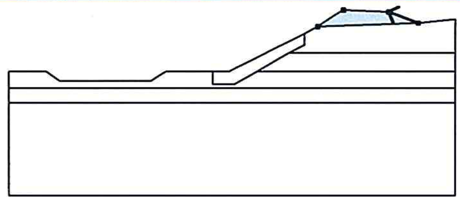
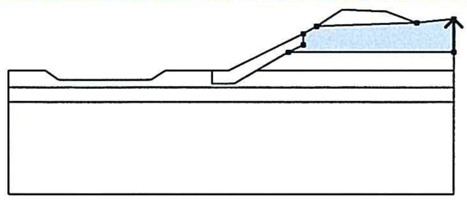
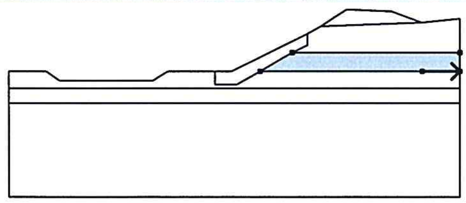
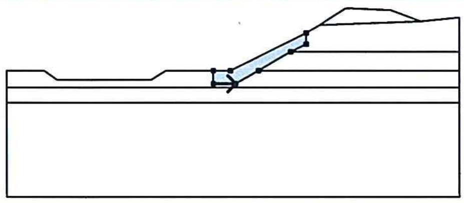
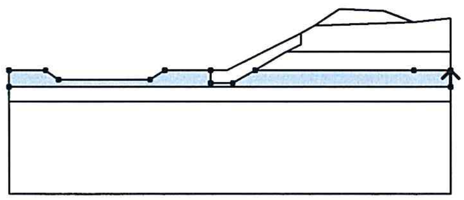
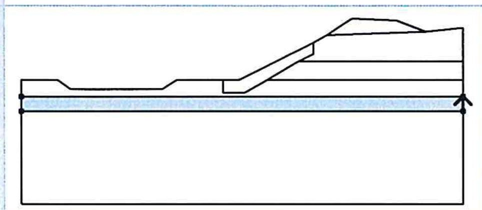
Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
8,63	4,00	10,94	3,73	13,26	3,94	15,48	4,62	17,52	5,74
19,29	7,25								

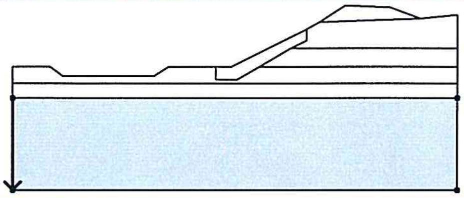
Analysis of the slip surface without optimization.

Slope stability verification (Janbu)
Factor of safety = 1,57 > 1,25
Slope stability ACCEPTABLE

Input data (Stage of construction 2)

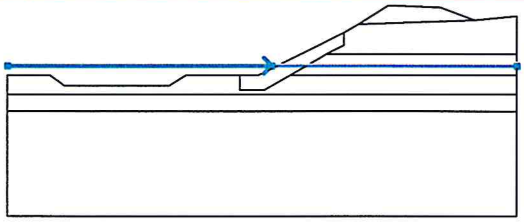
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m] x	z	x	z	Assigned soil
1		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			
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	

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
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	4,50	12,50	4,50	24,00	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)

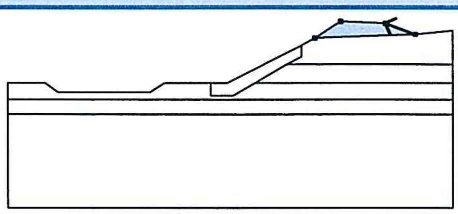
Polygonal slip surface

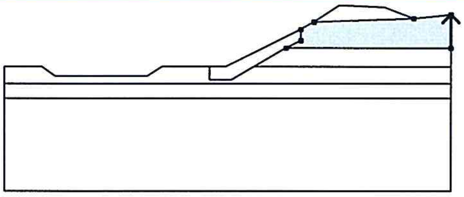
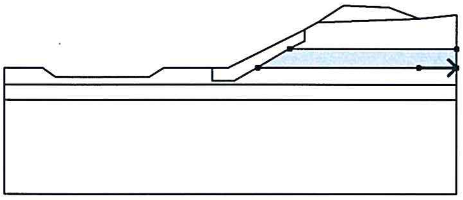
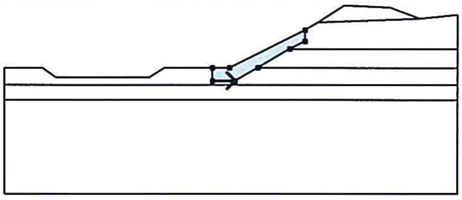
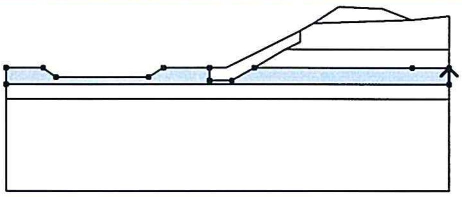
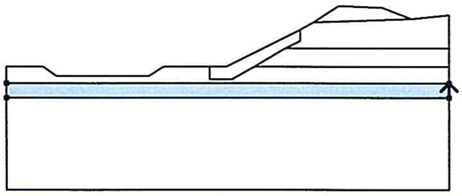
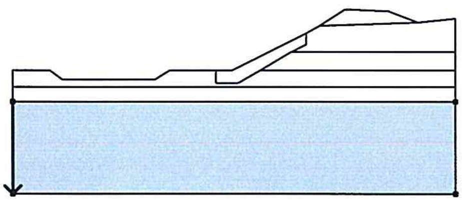
Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
8,63	4,00	10,94	3,73	13,26	3,94	15,48	4,62	17,53	5,74
19,29	7,25								
Analysis of the slip surface without optimization.									

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

Input data (Stage of construction 3)

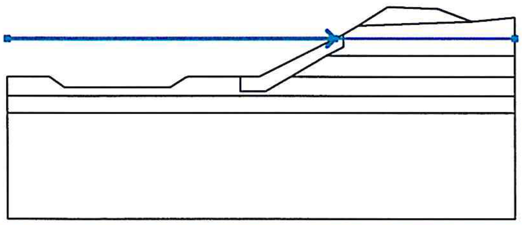
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		22,00	6,60	20,40	7,20	nasip
		18,00	7,30	16,60	6,40	

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
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			
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	5,80	15,50	5,80	24,00	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)

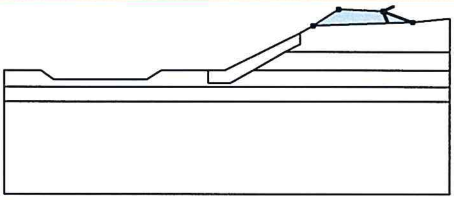
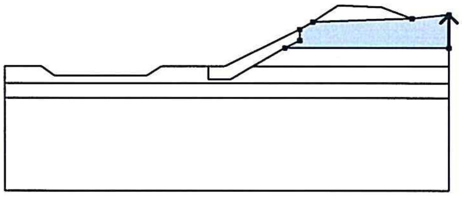
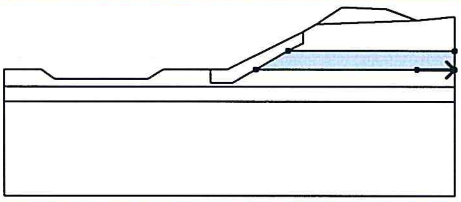
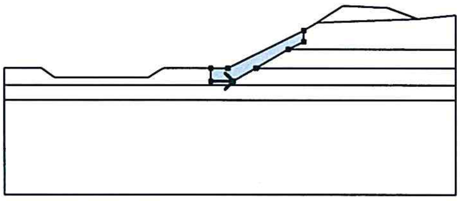
Polygonal slip surface

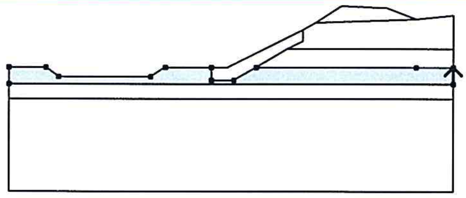
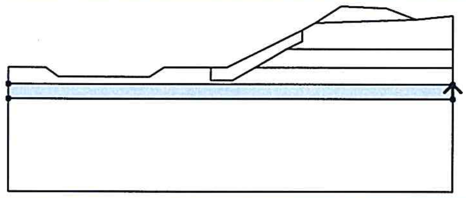
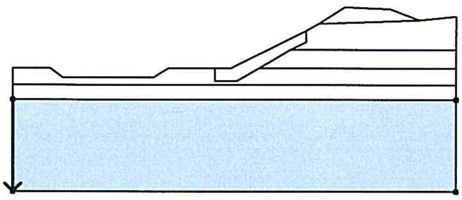
Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
8,64	4,00	11,11	3,74	13,58	4,01	15,94	4,81	18,07	6,09
19,29	7,25								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 1,45 > 1,25
Slope stability ACCEPTABLE

Input data (Stage of construction 4)

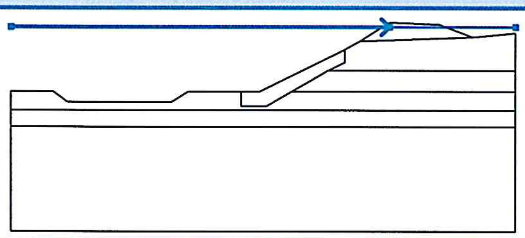
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		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			
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	

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
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	7,10	18,00	7,10	24,00	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

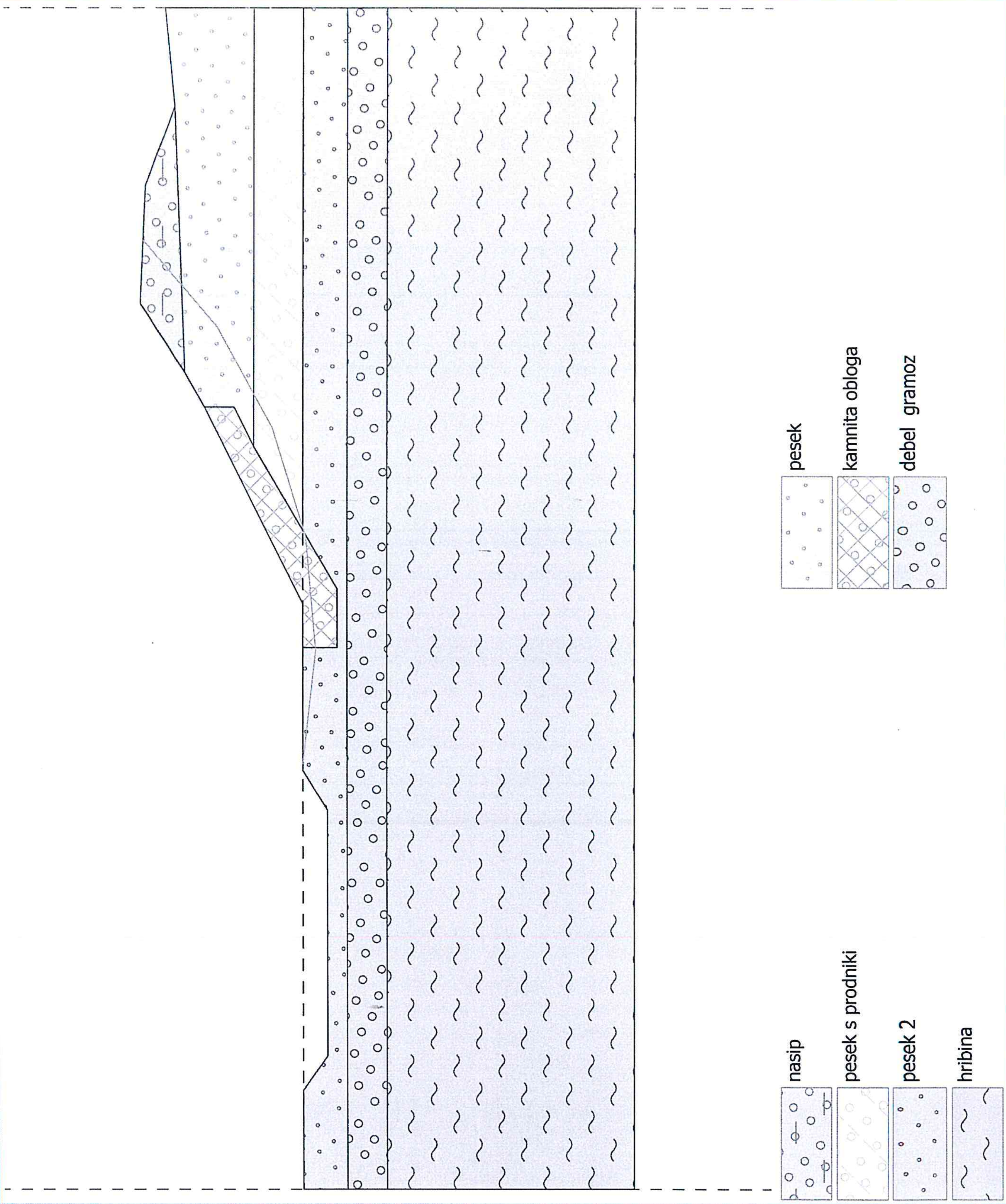
Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
8,64	4,00	11,11	3,74	13,58	4,01	15,94	4,81	18,07	6,09
19,29	7,25								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)

Factor of safety = 1,66 > 1,25

Slope stability ACCEPTABLE

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



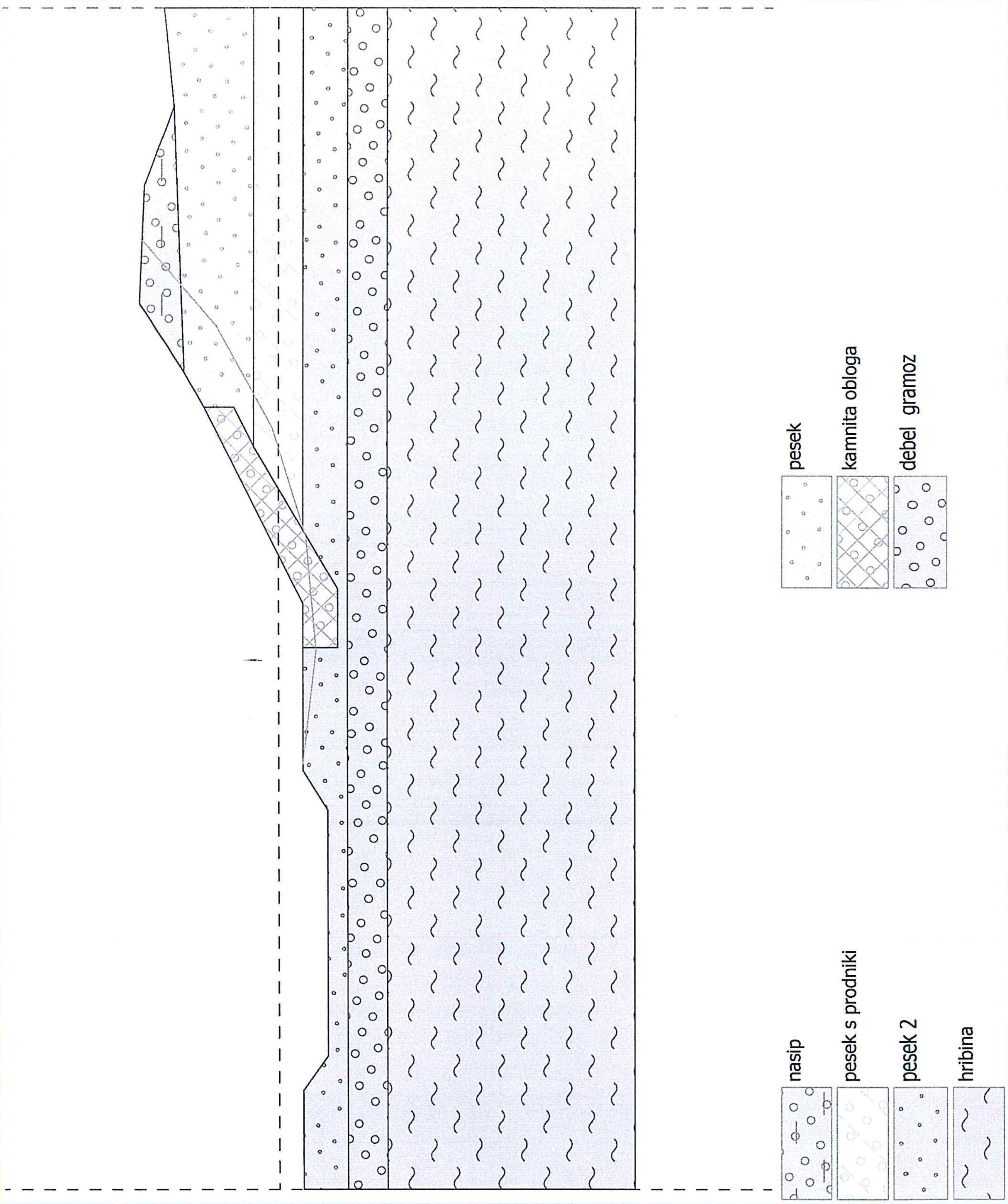
Analysis of the slip surface without optimization.

Slope stability verification (Janbu)

Factor of safety = 1,57 > 1,25

Slope stability ACCEPTABLE

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



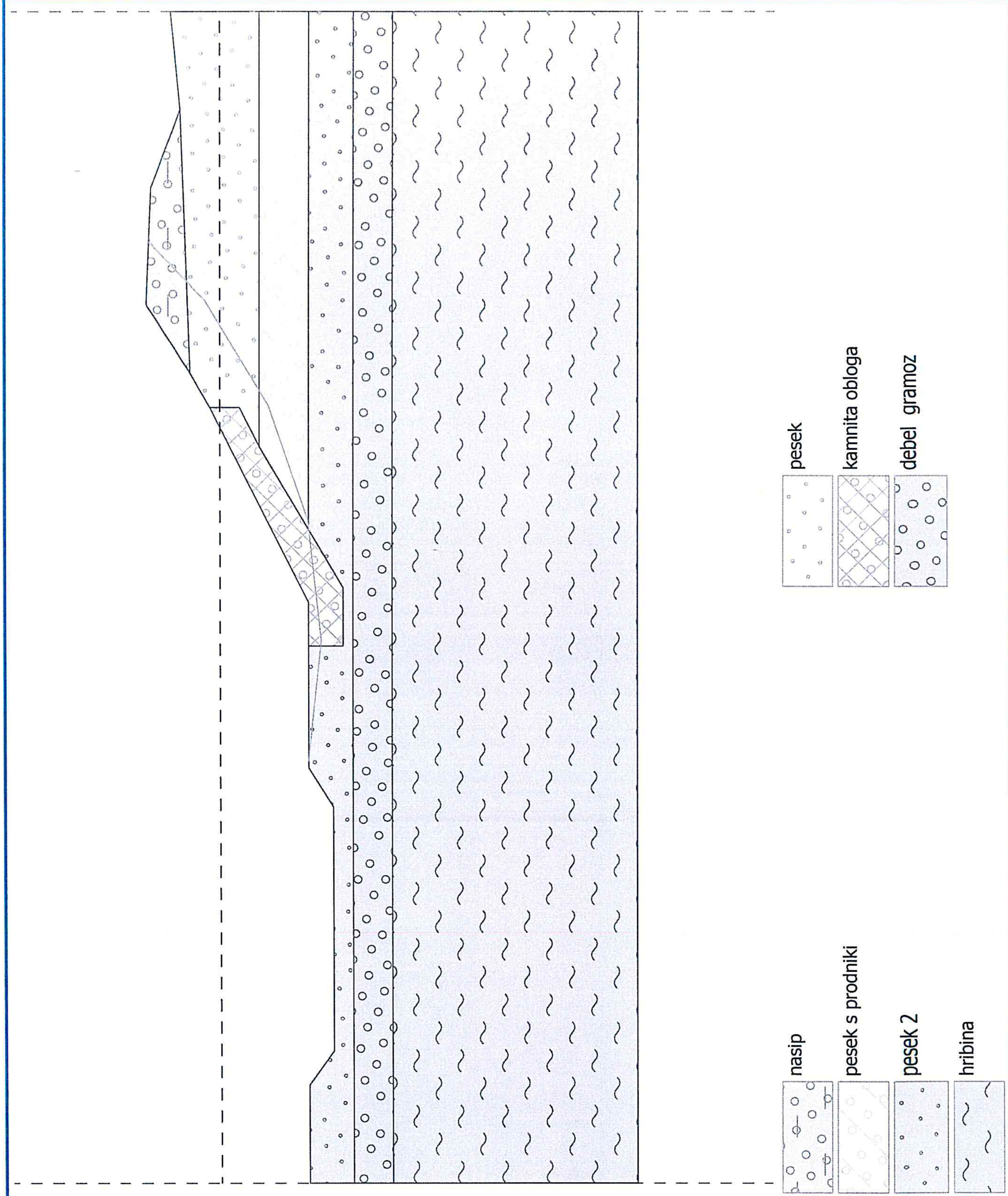
Analysis of the slip surface without optimization.

Slope stability verification (Janbu)

Factor of safety = 1,50 > 1,25

Slope stability ACCEPTABLE

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



Analysis of the slip surface without optimization.

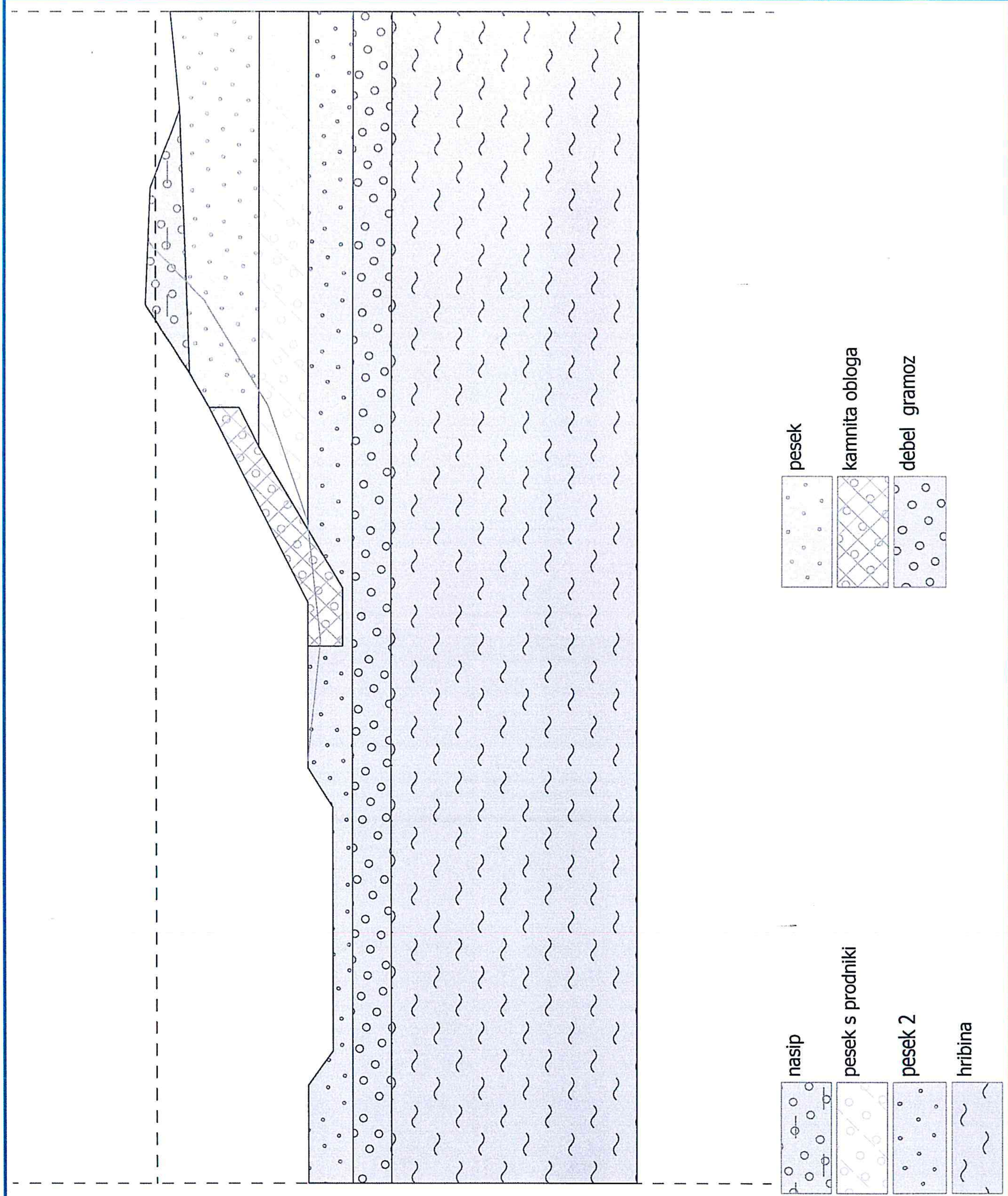
Slope stability verification (Janbu)

Factor of safety = 1,45 > 1,25

Slope stability ACCEPTABLE

UREDITEV MEŽE IN MISLINJE V OTIŠKEM VRHU
Območje Mislinje (M31, desni breg)

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



Analysis of the slip surface without optimization.

Slope stability verification (Janbu)
Factor of safety = 1,66 > 1,25
Slope stability ACCEPTABLE

Slope stability analysis

Input data

Project

Task : UREDITEV MEŽE IN MISLINJE V OTIŠKEM VRHU
Part : Območje Mislinje (M41)
Description : stabilnost ukopa in nasipa: M41
Customer : VGB Maribor d.o.o.
Date : 24. 09. 2020

Settings

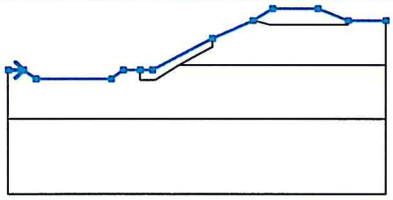
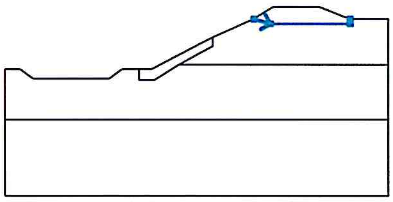
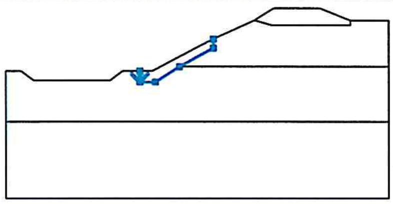
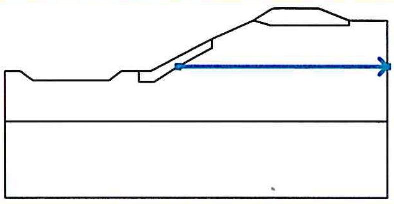
Standard - EN 1997 - PP3 (7)

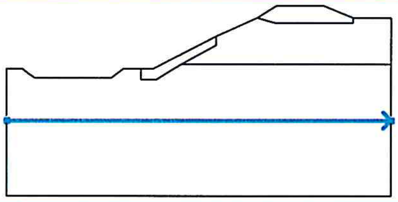
Stability analysis

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	3,30	1,00	3,30	1,80	2,70
		6,80	2,70	7,60	3,30	8,70	3,30
		9,50	3,30	13,50	5,40	16,20	6,60
		17,50	7,40	20,50	7,40	22,50	6,60
		25,00	6,60				
2		16,20	6,60	17,30	6,30	22,50	6,30
		22,50	6,60				
3		8,70	3,30	8,70	2,60	9,70	2,60
		11,30	3,60	13,50	4,80	13,50	5,40
4		11,30	3,60	25,00	3,60		

No.	Interface location	Coordinates of interface points [m]					
		x	z	x	z	x	z
5		0,00	0,00	25,00	0,00		

Soil parameters - effective stress state

No.	Name	Pattern	φ_{ef} [°]	c_{ef} [kPa]	γ [kN/m³]
1	nasip		34,00	0,00	20,00
2	obst. nasip		32,00	0,00	19,00
3	kamnita obloga		36,00	0,00	23,00
4	prod		34,00	0,00	19,50
5	hribina		36,00	15,00	22,00

Soil parameters - uplift

No.	Name	Pattern	γ_{sat} [kN/m³]	γ_s [kN/m³]	n [–]
1	nasip		20,00		
2	obst. nasip		19,00		
3	kamnita obloga		23,00		
4	prod		19,50		
5	hribina		22,00		

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

obst. nasip

Unit weight :	γ	=	19,00 kN/m3
Stress-state :	effective		
Angle of internal friction :	φ_{ef}	=	32,00 °
Cohesion of soil :	c_{ef}	=	0,00 kPa
Saturated unit weight :	γ_{sat}	=	19,00 kN/m3

kamnita obloga

Unit weight :	γ	=	23,00 kN/m3
Stress-state :	effective		
Angle of internal friction :	φ_{ef}	=	36,00 °
Cohesion of soil :	c_{ef}	=	0,00 kPa
Saturated unit weight :	γ_{sat}	=	23,00 kN/m3

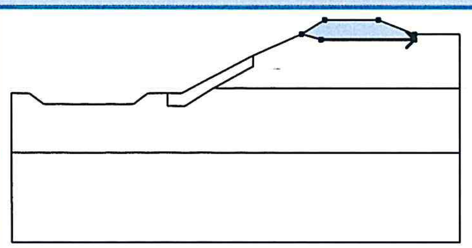
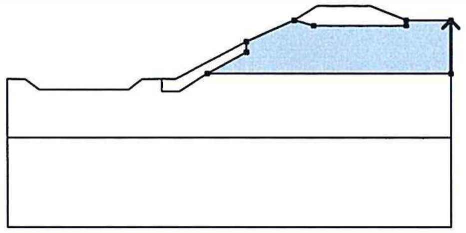
prod

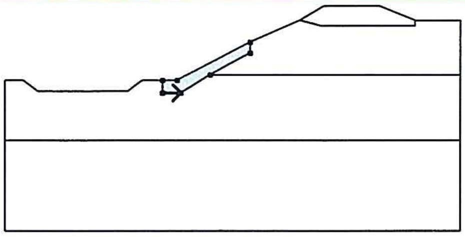
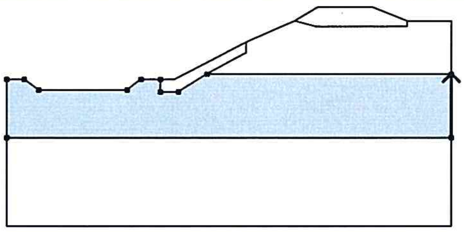
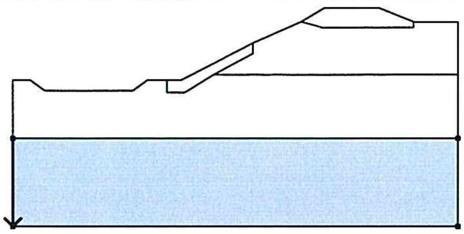
Unit weight :	γ	=	19,50 kN/m3
Stress-state :	effective		
Angle of internal friction :	φ_{ef}	=	34,00 °
Cohesion of soil :	c_{ef}	=	0,00 kPa
Saturated unit weight :	γ_{sat}	=	19,50 kN/m3

hribina

Unit weight :	γ	=	22,00 kN/m3
Stress-state :	effective		
Angle of internal friction :	φ_{ef}	=	36,00 °
Cohesion of soil :	c_{ef}	=	15,00 kPa
Saturated unit weight :	γ_{sat}	=	22,00 kN/m3

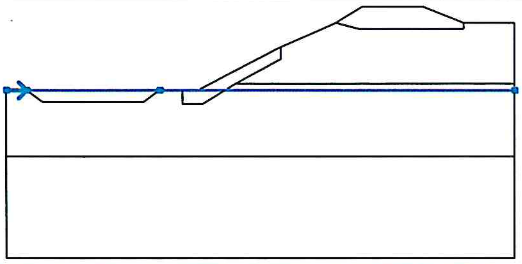
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		17,30	6,30	22,50	6,30	nasip
		22,50	6,60	20,50	7,40	
		17,50	7,40	16,20	6,60	
2		25,00	3,60	25,00	6,60	obst. nasip
		22,50	6,60	22,50	6,30	
		17,30	6,30	16,20	6,60	
		13,50	5,40	13,50	4,80	
		11,30	3,60			

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
3		8,70	2,60	9,70	2,60	kamnita obloga
		11,30	3,60	13,50	4,80	
		13,50	5,40	9,50	3,30	
		8,70	3,30			
4		25,00	0,00	25,00	3,60	prod
		11,30	3,60	9,70	2,60	
		8,70	2,60	8,70	3,30	
		7,60	3,30	6,80	2,70	
		1,80	2,70	1,00	3,30	
		0,00	3,30	0,00	0,00	
5		0,00	0,00	0,00	-5,00	hribina
		25,00	-5,00	25,00	0,00	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	3,30	1,00	3,30	7,60	3,30
		25,00	3,30				

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

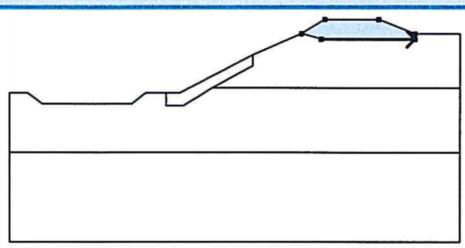
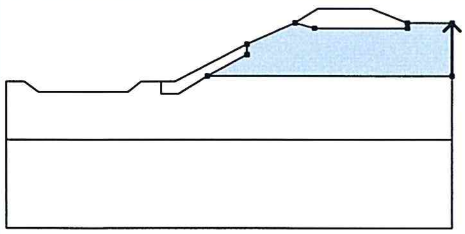
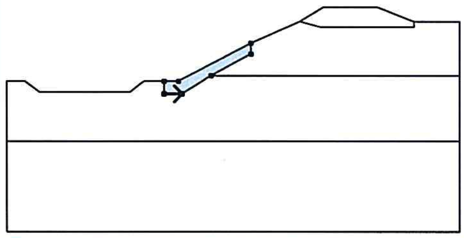
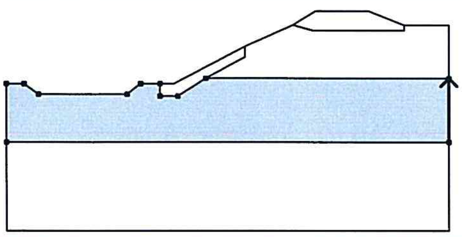
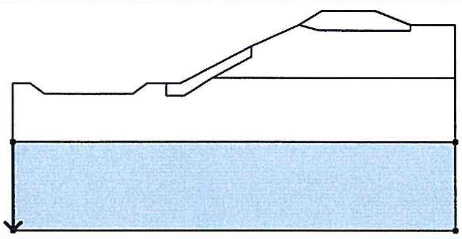
Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
9,69	3,40	11,47	3,86	13,19	4,50	14,84	5,31	16,41	6,28
Analysis of the slip surface without optimization.									

Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
17,87	7,40								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 1,41 > 1,25
Slope stability ACCEPTABLE

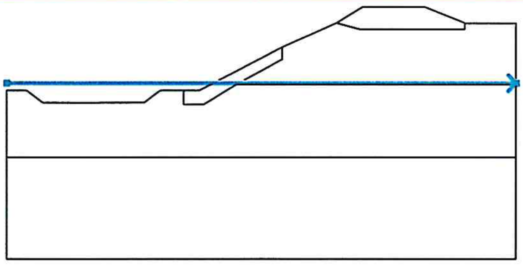
Input data (Stage of construction 2)

Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		17,30	6,30	22,50	6,30	nasip
		22,50	6,60	20,50	7,40	
		17,50	7,40	16,20	6,60	
2		25,00	3,60	25,00	6,60	obst. nasip
		22,50	6,60	22,50	6,30	
		17,30	6,30	16,20	6,60	
		13,50	5,40	13,50	4,80	
		11,30	3,60			
3		8,70	2,60	9,70	2,60	kamnita obloga
		11,30	3,60	13,50	4,80	
		13,50	5,40	9,50	3,30	
		8,70	3,30			
4		25,00	0,00	25,00	3,60	prod
		11,30	3,60	9,70	2,60	
		8,70	2,60	8,70	3,30	
		7,60	3,30	6,80	2,70	
		1,80	2,70	1,00	3,30	
		0,00	3,30	0,00	0,00	
5		0,00	0,00	0,00	-5,00	hribina
		25,00	-5,00	25,00	0,00	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	3,70	25,00	3,70		

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)

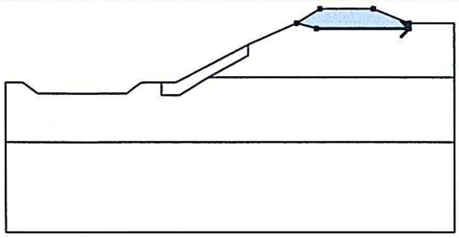
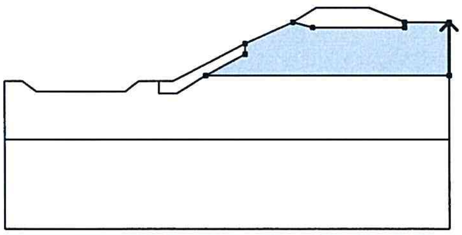
Polygonal slip surface

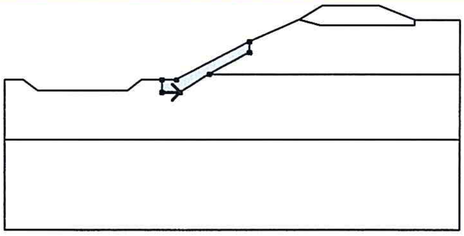
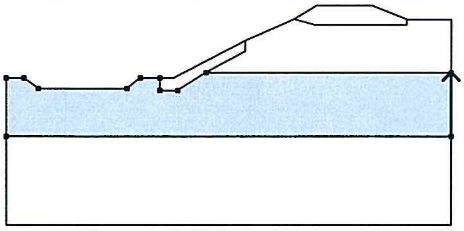
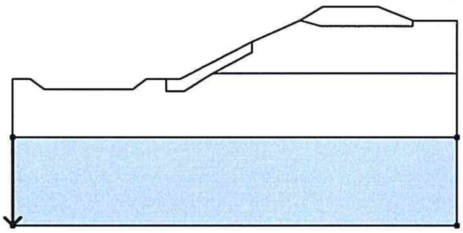
Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
9,67	3,39	11,48	3,70	12,72	4,37	15,85	6,05	17,78	7,38
17,86	7,40								
The slip surface after optimization.									

Slope stability verification (Janbu)
Factor of safety = 1,34 > 1,25
Slope stability ACCEPTABLE

Input data (Stage of construction 3)

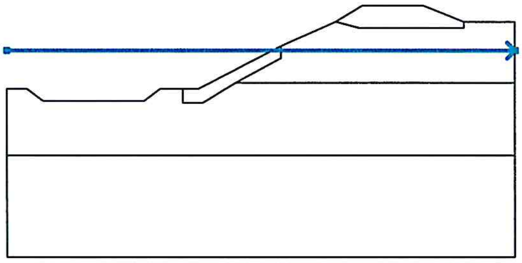
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		17,30	6,30	22,50	6,30	nasip
		22,50	6,60	20,50	7,40	
		17,50	7,40	16,20	6,60	
2		25,00	3,60	25,00	6,60	obst. nasip
		22,50	6,60	22,50	6,30	
		17,30	6,30	16,20	6,60	
		13,50	5,40	13,50	4,80	
		11,30	3,60			

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
3		8,70	2,60	9,70	2,60	kamnita obloga
		11,30	3,60	13,50	4,80	
		13,50	5,40	9,50	3,30	
		8,70	3,30			
4		25,00	0,00	25,00	3,60	prod
		11,30	3,60	9,70	2,60	
		8,70	2,60	8,70	3,30	
		7,60	3,30	6,80	2,70	
		1,80	2,70	1,00	3,30	
		0,00	3,30	0,00	0,00	
5		0,00	0,00	0,00	-5,00	hribina
		25,00	-5,00	25,00	0,00	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	5,20	25,00	5,20		

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
9,67	3,39	11,48	3,70	13,11	4,37	16,24	6,05	17,78	7,39
The slip surface after optimization.									

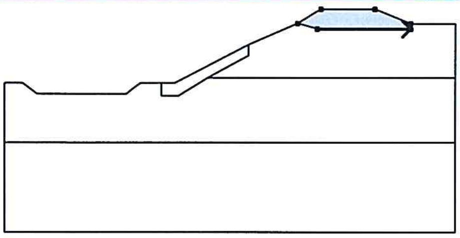
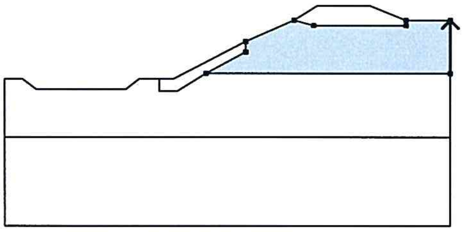
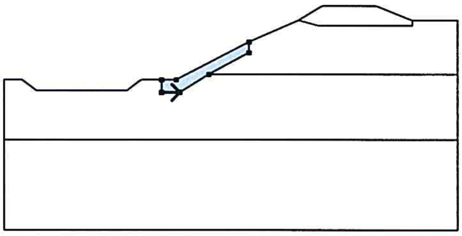
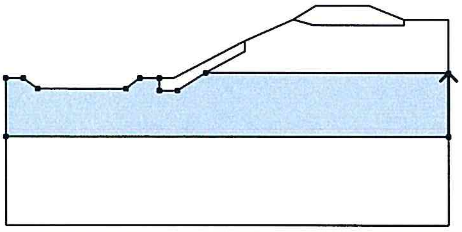
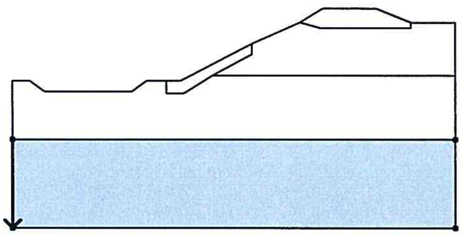
Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
17,82	7,40								

The slip surface after optimization.

Slope stability verification (Janbu)
Factor of safety = 1,29 > 1,25
Slope stability ACCEPTABLE

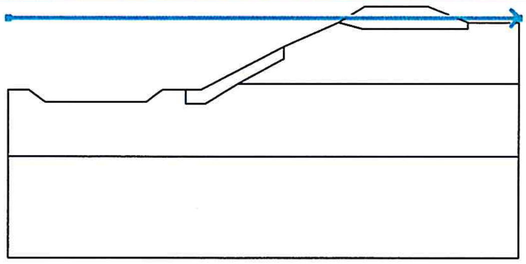
Input data (Stage of construction 4)

Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		17,30	6,30	22,50	6,30	nasip
		22,50	6,60	20,50	7,40	
		17,50	7,40	16,20	6,60	
2		25,00	3,60	25,00	6,60	obst. nasip
		22,50	6,60	22,50	6,30	
		17,30	6,30	16,20	6,60	
		13,50	5,40	13,50	4,80	
		11,30	3,60			
3		8,70	2,60	9,70	2,60	kamnita obloga
		11,30	3,60	13,50	4,80	
		13,50	5,40	9,50	3,30	
		8,70	3,30			
4		25,00	0,00	25,00	3,60	prod
		11,30	3,60	9,70	2,60	
		8,70	2,60	8,70	3,30	
		7,60	3,30	6,80	2,70	
		1,80	2,70	1,00	3,30	
		0,00	3,30	0,00	0,00	
5		0,00	0,00	0,00	-5,00	hribina
		25,00	-5,00	25,00	0,00	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	6,90	25,00	6,90		

Tensile crack

Tensile crack not inputted.

Earthquake

Earthquake not included.

Settings of the stage of construction

Design situation : permanent

Results (Stage of construction 4)

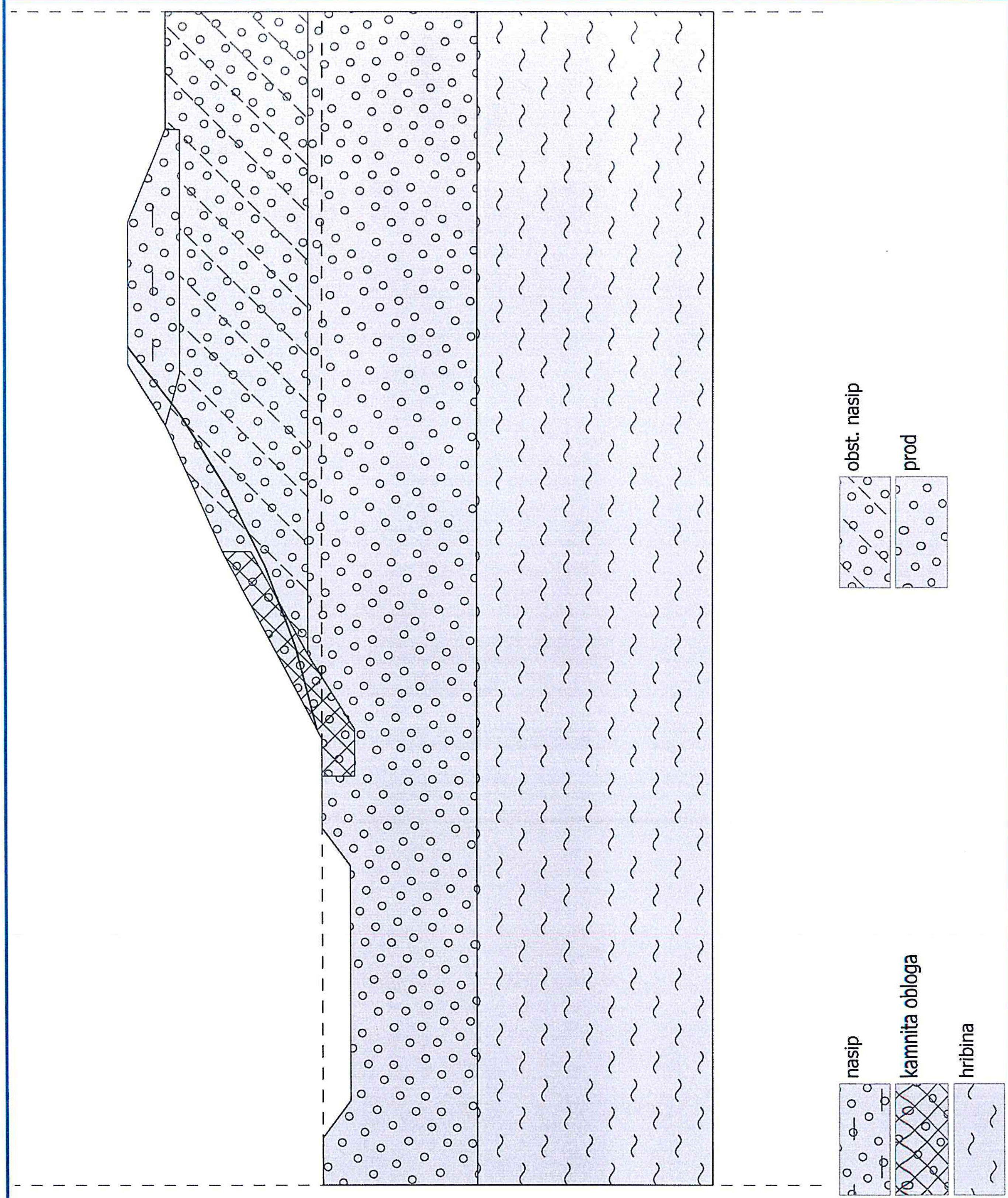
Analysis 1 (stage 4)

Polygonal slip surface

Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
9,51	3,31	11,48	3,70	13,11	4,55	17,01	6,29	17,78	7,39
17,82	7,40								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 1,31 > 1,25
Slope stability ACCEPTABLE

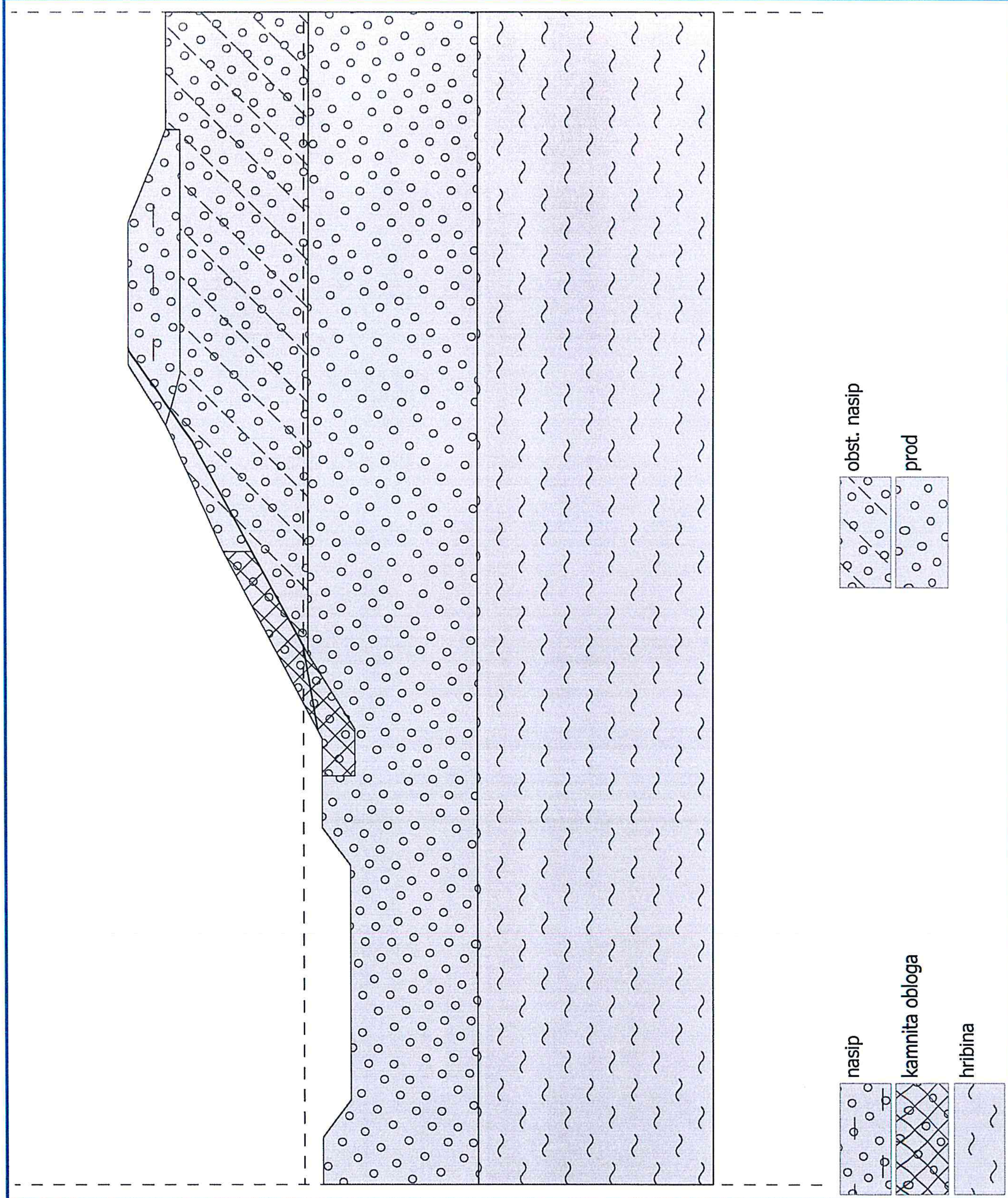
Name : **Stage - analysis : 1 - 1**



Analysis of the slip surface without optimization.

Slope stability verification (Janbu)
Factor of safety = 1,41 > 1,25
Slope stability ACCEPTABLE

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



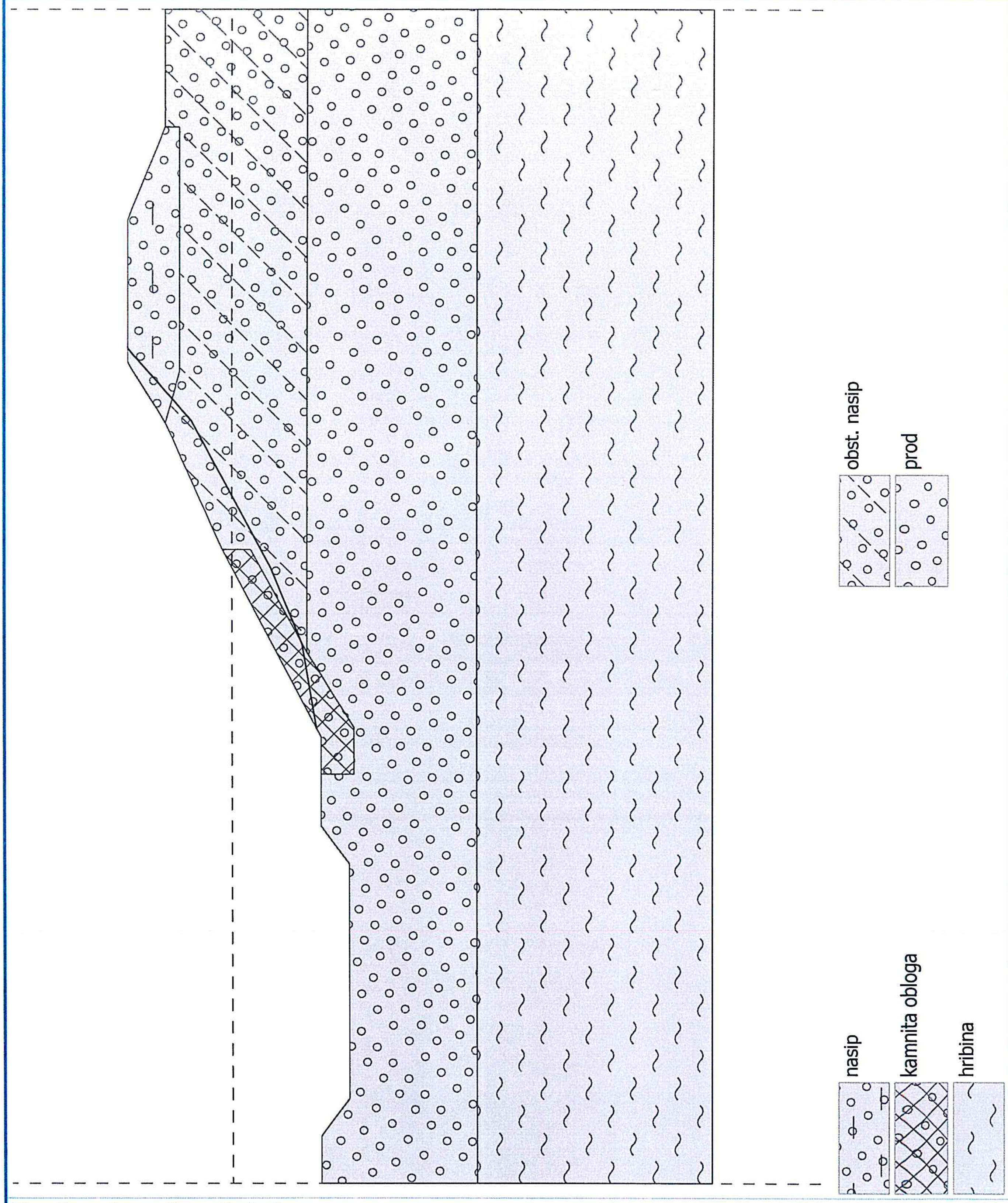
The slip surface after optimization.

Slope stability verification (Janbu)

Factor of safety = 1,34 > 1,25

Slope stability ACCEPTABLE

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



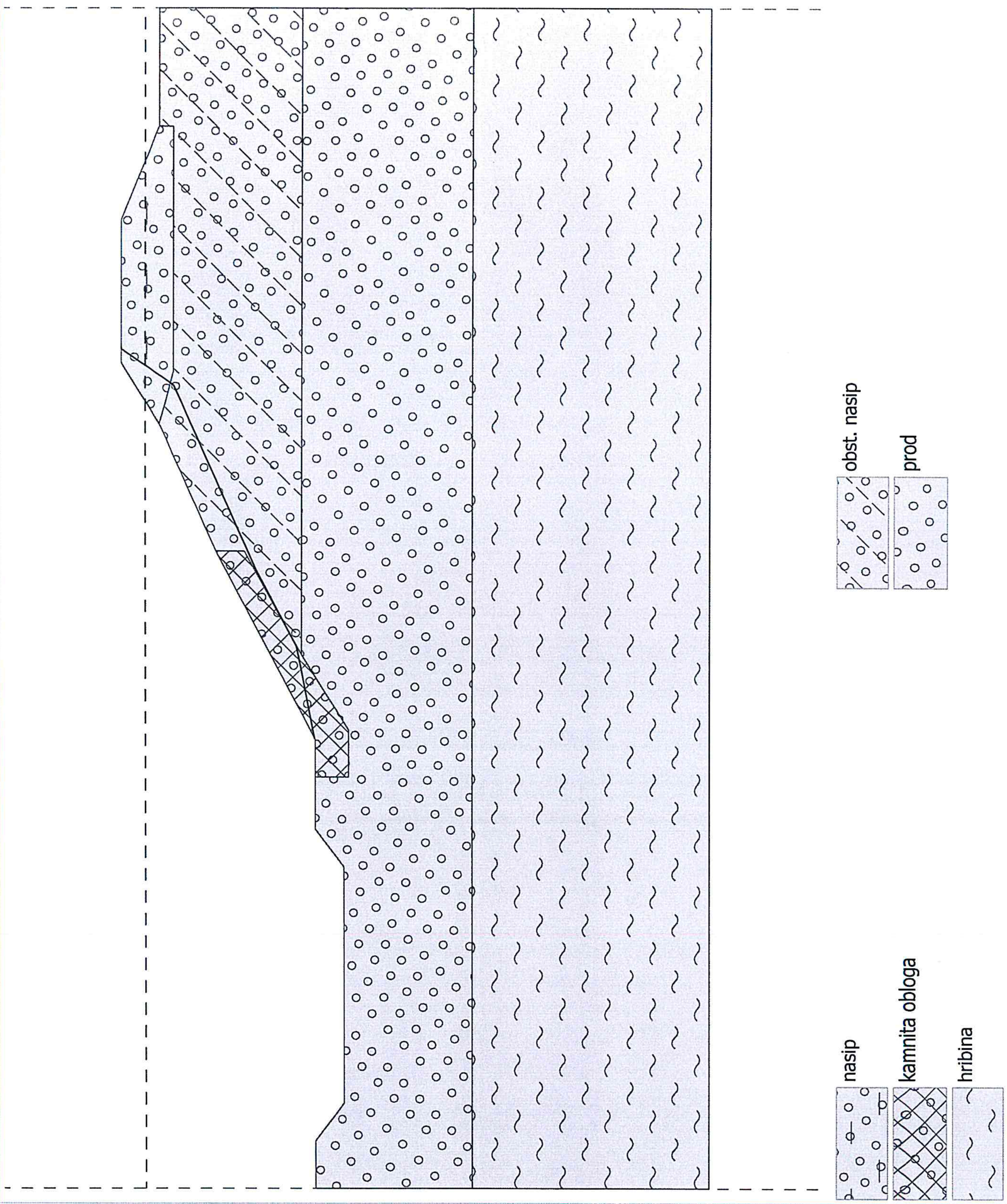
The slip surface after optimization.

Slope stability verification (Janbu)

Factor of safety = 1,29 > 1,25

Slope stability ACCEPTABLE

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



Analysis of the slip surface without optimization.

Slope stability verification (Janbu)

Factor of safety = 1,31 > 1,25

Slope stability ACCEPTABLE

Slope stability analysis

Input data

Project

Task : UREDITEV MEŽE IN MISLINJE V OTIŠKEM VRHU
Part : Območje Mislinje (M51)
Description : stabilnost ukopa in nasipa , M51
Customer : VGB Maribor d.o.o.
Date : 25. 09. 2020

Settings

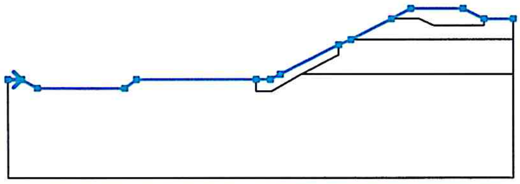
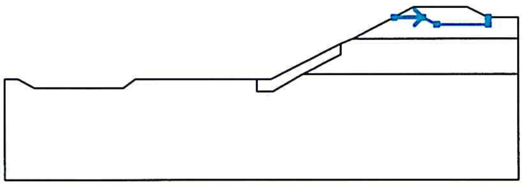
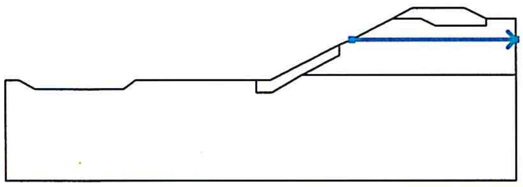
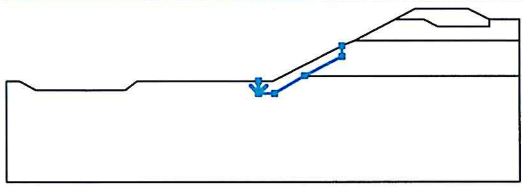
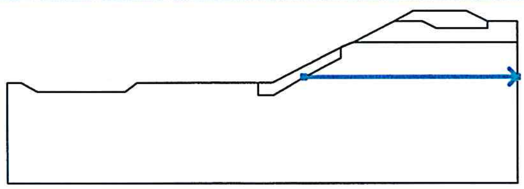
Standard - EN 1997 - PP3 (9)

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	0,80	4,00	1,70	3,50
		6,70	3,50	7,40	4,00	14,30	4,00
		15,10	4,00	15,68	4,30	19,00	6,00
		19,70	6,30	22,00	7,50	23,10	8,10
		26,10	8,10	27,30	7,50	29,00	7,50
2		22,00	7,50	23,60	7,50	24,40	7,10
		27,30	7,10	27,30	7,50		
3		19,70	6,30	29,00	6,30		
4		14,30	4,00	14,30	3,30	15,20	3,30
		16,90	4,30	19,00	5,40	19,00	6,00
5		16,90	4,30	29,00	4,30		

Soil parameters - effective stress state

No.	Name	Pattern	φ_{ef} [°]	c_{ef} [kPa]	γ [kN/m3]
1	nasip		34,00	0,00	20,00
2	pesek		29,00	0,00	18,40
3	droben gramoz		38,00	0,00	19,40
4	gramoz		43,00	0,00	21,00
5	kamnita zložbe		34,00	0,00	23,00

Soil parameters - uplift

No.	Name	Pattern	γ_{sat} [kN/m3]	γ_s [kN/m3]	n [–]
1	nasip		20,00		
2	pesek		18,40		
3	droben gramoz		19,40		
4	gramoz		21,00		
5	kamnita zložbe		23,00		

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} =	29,00 °

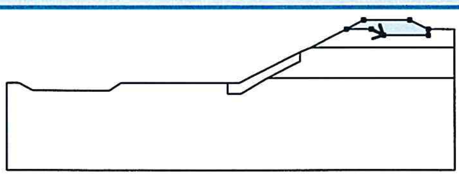
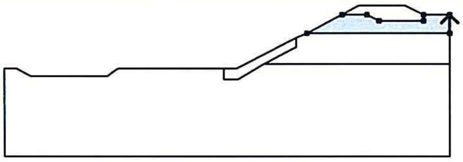
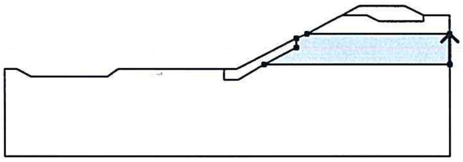
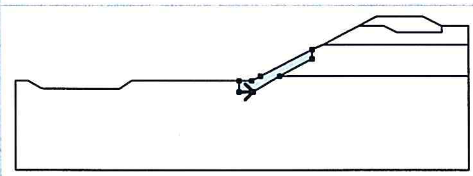
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 18,40 kN/m3

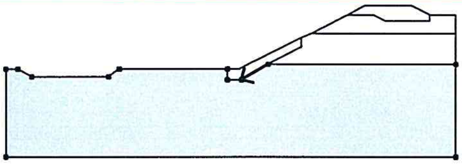
droben gramoz
Unit weight : γ = 19,40 kN/m3
Stress-state : effective
Angle of internal friction : φ_{ef} = 38,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 19,40 kN/m3

gramoz
Unit weight : γ = 21,00 kN/m3
Stress-state : effective
Angle of internal friction : φ_{ef} = 43,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 21,00 kN/m3

kamnita zložbe
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

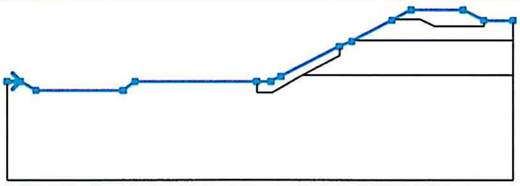
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m] x	z	x	z	Assigned soil
1		23,60	7,50	24,40	7,10	nasip
		27,30	7,10	27,30	7,50	
		26,10	8,10	23,10	8,10	
		22,00	7,50			
2		29,00	6,30	29,00	7,50	pesek
		27,30	7,50	27,30	7,10	
		24,40	7,10	23,60	7,50	
		22,00	7,50	19,70	6,30	
3		29,00	4,30	29,00	6,30	droben gramoz
		19,70	6,30	19,00	6,00	
		19,00	5,40	16,90	4,30	
4		14,30	3,30	15,20	3,30	kamnita zložbe
		16,90	4,30	19,00	5,40	
		19,00	6,00	15,68	4,30	
		15,10	4,00	14,30	4,00	

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
5		16,90	4,30	15,20	3,30	gramoz
		14,30	3,30	14,30	4,00	
		7,40	4,00	6,70	3,50	
		1,70	3,50	0,80	4,00	
		0,00	4,00	0,00	-1,70	
		29,00	-1,70	29,00	4,30	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	4,00	0,80	4,00	7,40	4,00
		29,00	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)

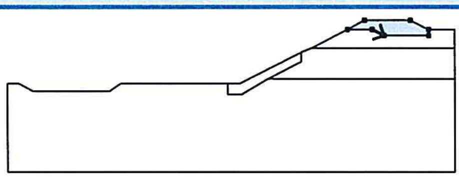
Polygonal slip surface

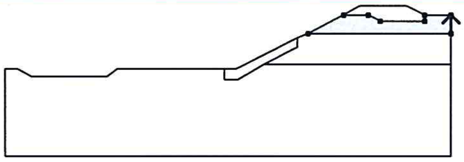
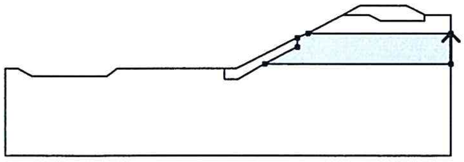
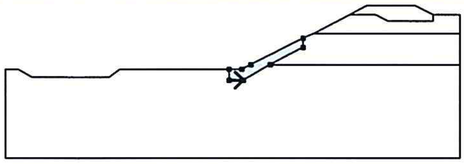
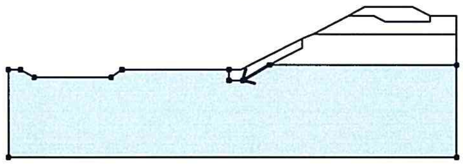
Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
8,86	4,00	11,99	3,52	15,15	3,72	18,19	4,58	20,98	6,06
23,40	8,10								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 2,03 > 1,25
Slope stability ACCEPTABLE

Input data (Stage of construction 2)

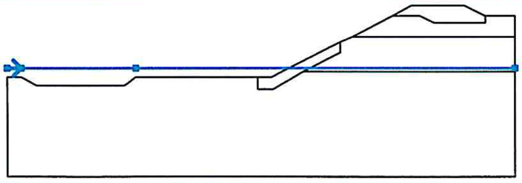
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		23,60	7,50	24,40	7,10	nasip
		27,30	7,10	27,30	7,50	
		26,10	8,10	23,10	8,10	
		22,00	7,50			

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
2		29,00	6,30	29,00	7,50	pesek
		27,30	7,50	27,30	7,10	
		24,40	7,10	23,60	7,50	
		22,00	7,50	19,70	6,30	
3		29,00	4,30	29,00	6,30	droben gramoz
		19,70	6,30	19,00	6,00	
		19,00	5,40	16,90	4,30	
4		14,30	3,30	15,20	3,30	kamnita zložbe
		16,90	4,30	19,00	5,40	
		19,00	6,00	15,68	4,30	
		15,10	4,00	14,30	4,00	
5		16,90	4,30	15,20	3,30	gramoz
		14,30	3,30	14,30	4,00	
		7,40	4,00	6,70	3,50	
		1,70	3,50	0,80	4,00	
		0,00	4,00	0,00	-1,70	
		29,00	-1,70	29,00	4,30	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	4,50	0,80	4,50	7,40	4,50
		29,00	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

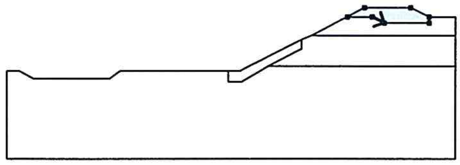
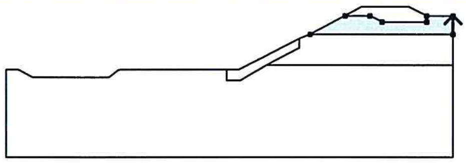
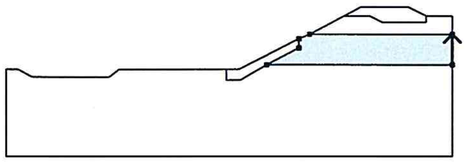
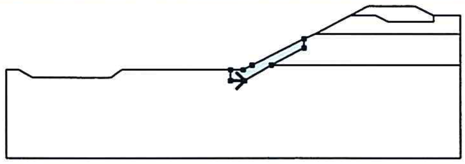
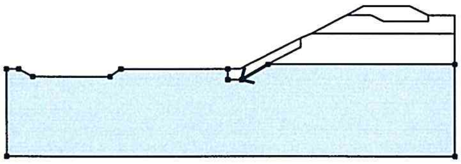
Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
9,51	4,00	12,60	3,61	15,71	3,84	18,71	4,69	21,47	6,13
23,89	8,10								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)

Factor of safety = 1,87 > 1,25
Slope stability ACCEPTABLE

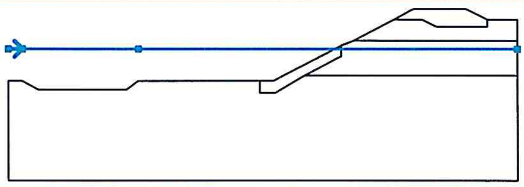
Input data (Stage of construction 3)

Assigning and surfaces

No.	Surface position	x	z	x	z	Assigned soil
1		23,60	7,50	24,40	7,10	nasip
		27,30	7,10	27,30	7,50	
		26,10	8,10	23,10	8,10	
		22,00	7,50			
2		29,00	6,30	29,00	7,50	pesek
		27,30	7,50	27,30	7,10	
		24,40	7,10	23,60	7,50	
		22,00	7,50	19,70	6,30	
3		29,00	4,30	29,00	6,30	droben gramoz
		19,70	6,30	19,00	6,00	
		19,00	5,40	16,90	4,30	
4		14,30	3,30	15,20	3,30	kamnita zložbe
		16,90	4,30	19,00	5,40	
		19,00	6,00	15,68	4,30	
		15,10	4,00	14,30	4,00	
5		16,90	4,30	15,20	3,30	gramoz
		14,30	3,30	14,30	4,00	
		7,40	4,00	6,70	3,50	
		1,70	3,50	0,80	4,00	
		0,00	4,00	0,00	-1,70	
		29,00	-1,70	29,00	4,30	

Water

Water type : GWT

No.	GWT location	x	z	x	z	x	z
1		0,00	5,80	0,80	5,80	7,40	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)

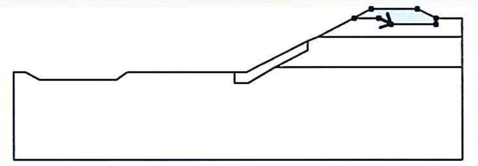
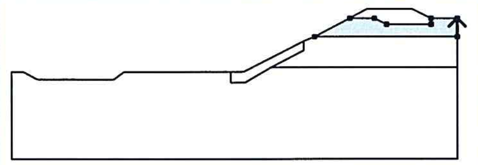
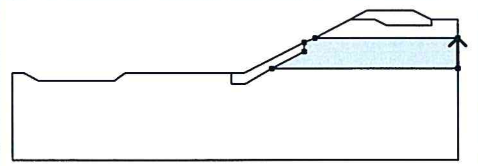
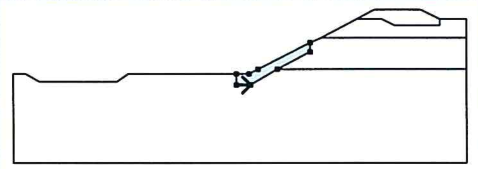
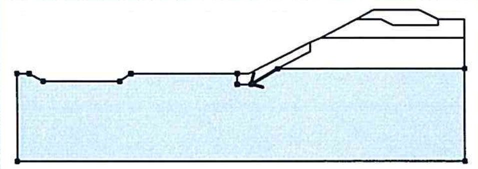
Polygonal slip surface

Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
9,51	4,00	12,60	3,61	15,71	3,84	18,71	4,69	21,47	6,13
23,89	8,10								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 1,83 > 1,25
Slope stability ACCEPTABLE

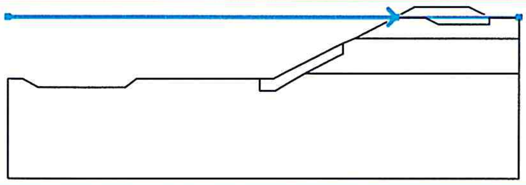
Input data (Stage of construction 4)

Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		23,60	7,50	24,40	7,10	nasip
		27,30	7,10	27,30	7,50	
		26,10	8,10	23,10	8,10	
		22,00	7,50			
2		29,00	6,30	29,00	7,50	pesek
		27,30	7,50	27,30	7,10	
		24,40	7,10	23,60	7,50	
		22,00	7,50	19,70	6,30	
3		29,00	4,30	29,00	6,30	droben gramoz
		19,70	6,30	19,00	6,00	
		19,00	5,40	16,90	4,30	
4		14,30	3,30	15,20	3,30	kamnita zložbe
		16,90	4,30	19,00	5,40	
		19,00	6,00	15,68	4,30	
		15,10	4,00	14,30	4,00	
5		16,90	4,30	15,20	3,30	gramoz
		14,30	3,30	14,30	4,00	
		7,40	4,00	6,70	3,50	
		1,70	3,50	0,80	4,00	
		0,00	4,00	0,00	-1,70	
		29,00	-1,70	29,00	4,30	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	7,60	22,00	7,60	29,00	7,60

Tensile crack

Tensile crack not inputted.

Earthquake

Earthquake not included.

Settings of the stage of construction

Design situation : permanent

Results (Stage of construction 4)

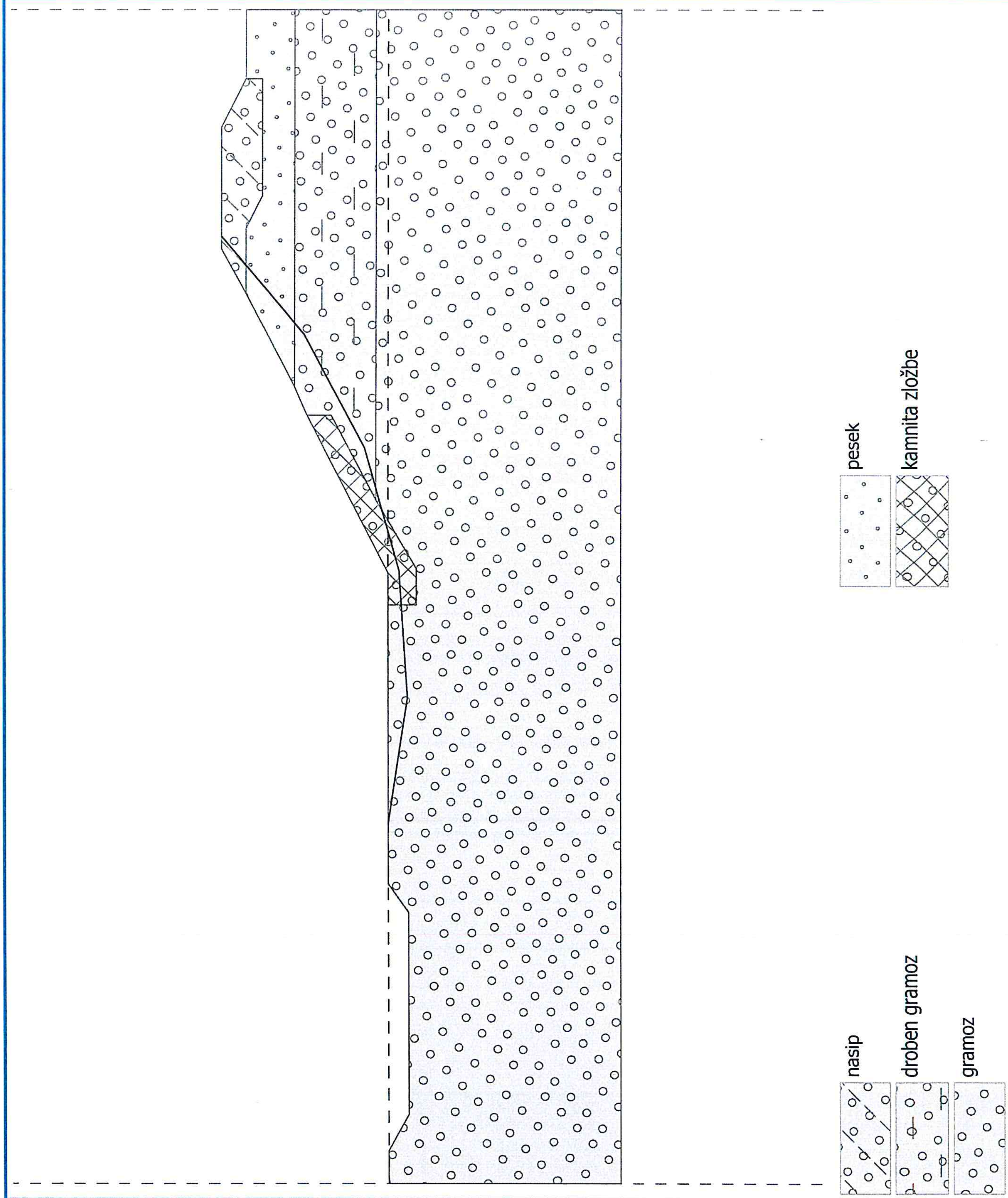
Analysis 1 (stage 4)

Polygonal slip surface

Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
10,08	4,00	13,06	3,64	16,06	3,90	18,94	4,75	21,59	6,17
23,89	8,10								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 2,06 > 1,25
Slope stability ACCEPTABLE

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



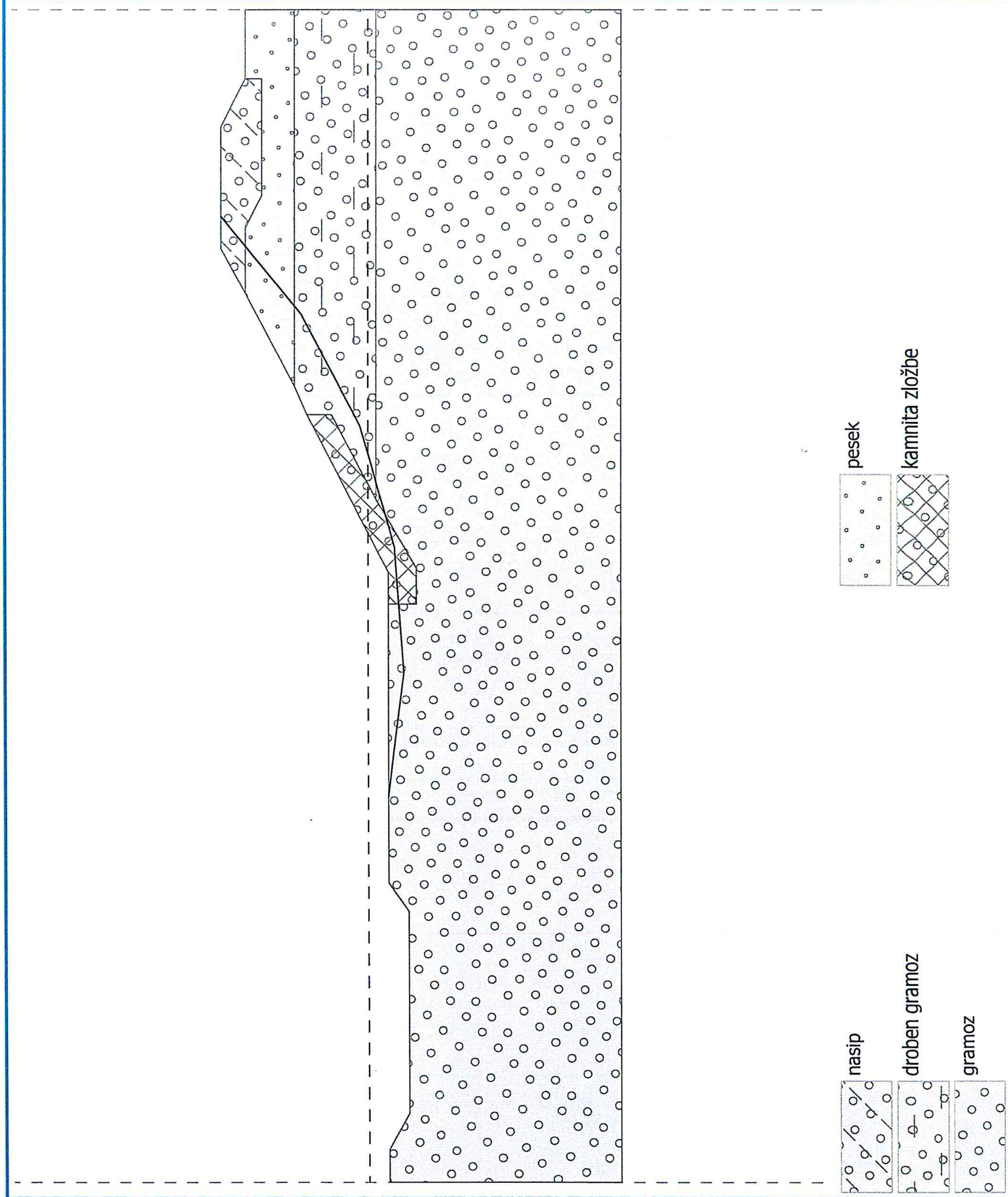
Analysis of the slip surface without optimization.

Slope stability verification (Janbu)

Factor of safety = 2,03 > 1,25

Slope stability ACCEPTABLE

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



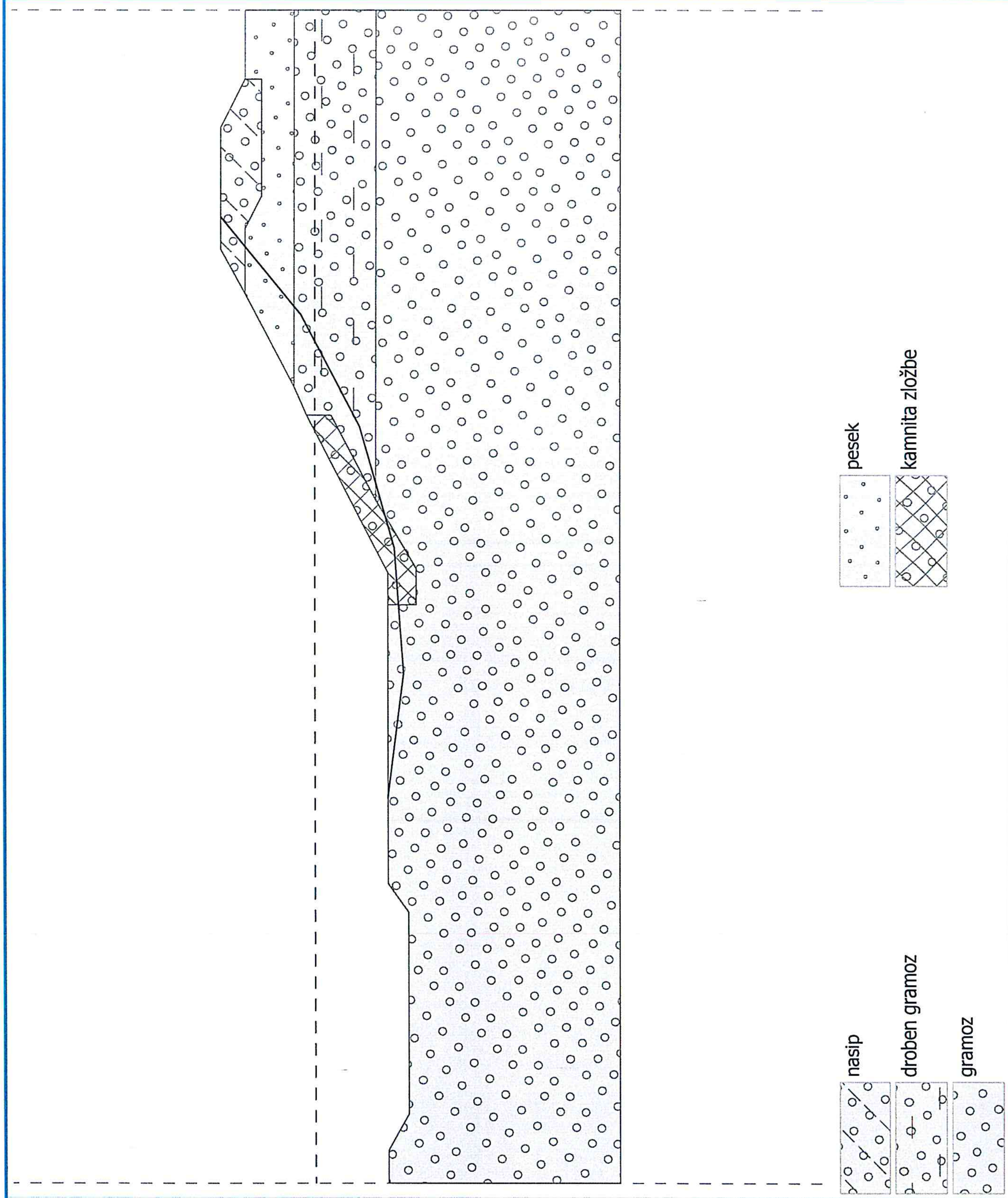
Analysis of the slip surface without optimization.

Slope stability verification (Janbu)

Factor of safety = 1,87 > 1,25

Slope stability ACCEPTABLE

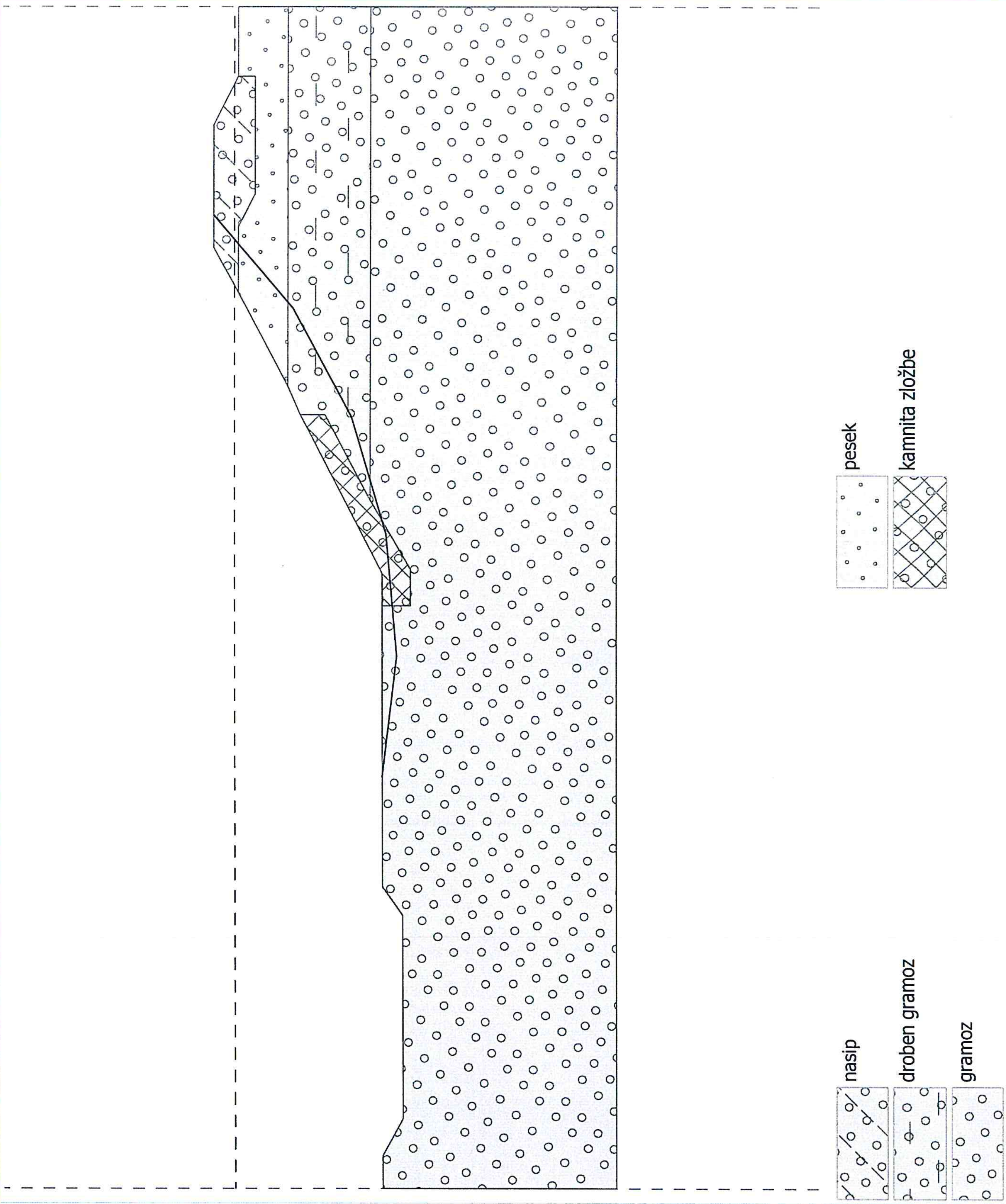
Name : **Stage - analysis : 3 - 1**



Analysis of the slip surface without optimization.

Slope stability verification (Janbu)
Factor of safety = 1,83 > 1,25
Slope stability ACCEPTABLE

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



Analysis of the slip surface without optimization.

Slope stability verification (Janbu)

Factor of safety = 2,06 > 1,25

Slope stability ACCEPTABLE

Slope stability analysis

Input data

Project

Task : UREDITEV MEŽE IN MISLINJE V OTIŠKEM VRHU
Part : Območje Mislinje (M61)
Description : stabinost ukopa , M61
Customer : VGB Maribor d.o.o.
Date : 25. 09. 2020

Settings

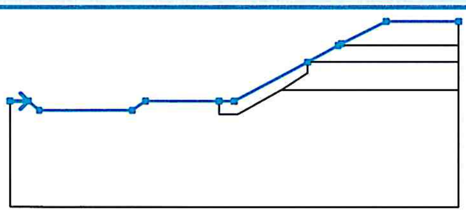
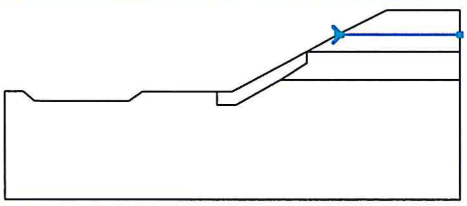
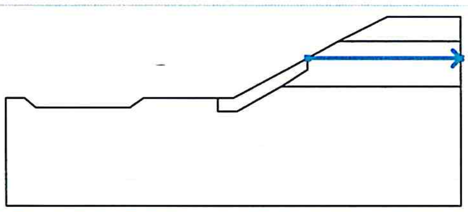
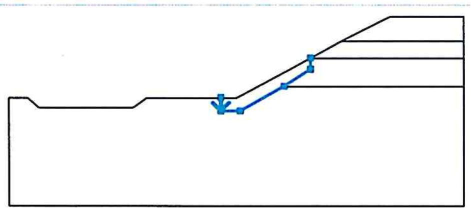
Standard - EN 1997 - PP3 (9)

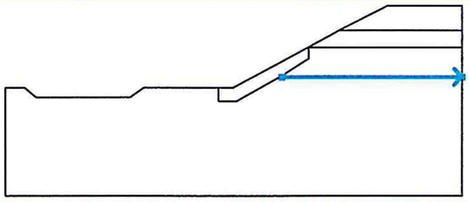
Stability analysis

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	1,00	4,00	1,60	3,50
		6,60	3,50	7,30	4,00	11,20	4,00
		12,00	4,00	15,90	6,10	17,52	7,00
		17,70	7,10	20,10	8,30	24,00	8,30
2		17,52	7,00	17,70	7,00	24,00	7,00
3		15,90	6,10	24,00	6,10		
4		11,20	4,00	11,20	3,30	12,20	3,30
		14,50	4,60	15,90	5,50	15,90	6,10

No.	Interface location	Coordinates of interface points [m]					
		x	z	x	z	x	z
5		14,50	4,60	24,00	4,60		

Soil parameters - effective stress state

No.	Name	Pattern	φ_{ef} [°]	c_{ef} [kPa]	γ [kN/m^3]
1	nasip		39,00	0,00	19,20
2	pesek		29,00	0,00	18,40
3	droben gramoz		35,50	0,00	19,20
4	gramoz		42,00	0,00	20,70
5	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		19,20		
2	pesek		18,40		
3	droben gramoz		19,20		
4	gramoz		20,70		
5	kamnita obloga		23,00		

Soil parameters

nasip

Unit weight : γ = 19,20 kN/m3
Stress-state : effective
Angle of internal friction : φ_{ef} = 39,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 19,20 kN/m3

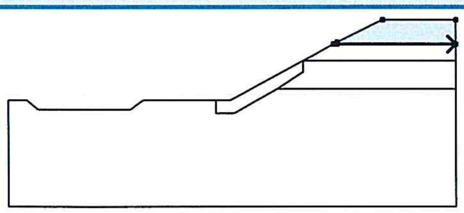
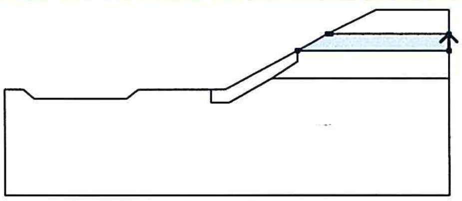
pesek
Unit weight : γ = 18,40 kN/m3
Stress-state : effective
Angle of internal friction : φ_{ef} = 29,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 18,40 kN/m3

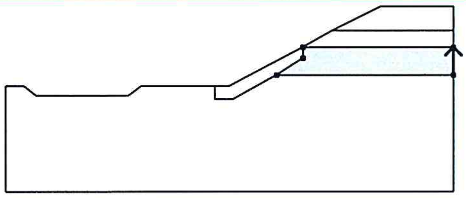
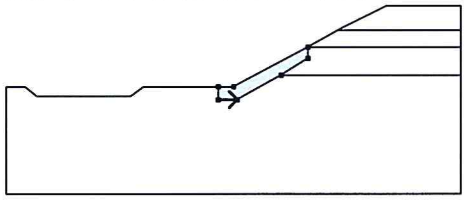
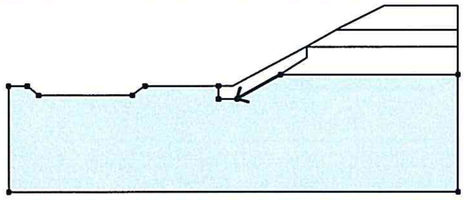
droben gramoz
Unit weight : γ = 19,20 kN/m3
Stress-state : effective
Angle of internal friction : φ_{ef} = 35,50 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 19,20 kN/m3

gramoz
Unit weight : γ = 20,70 kN/m3
Stress-state : effective
Angle of internal friction : φ_{ef} = 42,00 °
Cohesion of soil : c_{ef} = 0,00 kPa
Saturated unit weight : γ_{sat} = 20,70 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

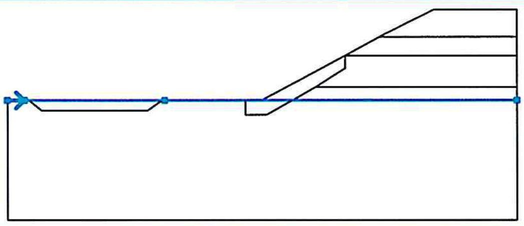
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		17,70	7,00	24,00	7,00	nasip
		24,00	8,30	20,10	8,30	
		17,70	7,10	17,52	7,00	
2		24,00	6,10	24,00	7,00	pesek
		17,70	7,00	17,52	7,00	
		15,90	6,10			

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
3		24,00	4,60	24,00	6,10	droben gramoz
		15,90	6,10	15,90	5,50	
		14,50	4,60			
4		11,20	3,30	12,20	3,30	kamnita obloga
		14,50	4,60	15,90	5,50	
		15,90	6,10	12,00	4,00	
		11,20	4,00			
5		14,50	4,60	12,20	3,30	gramoz
		11,20	3,30	11,20	4,00	
		7,30	4,00	6,60	3,50	
		1,60	3,50	1,00	4,00	
		0,00	4,00	0,00	-1,70	
		24,00	-1,70	24,00	4,60	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	4,00	0,80	4,00	7,40	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)

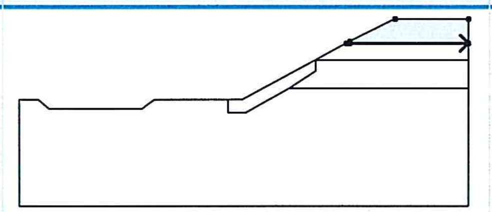
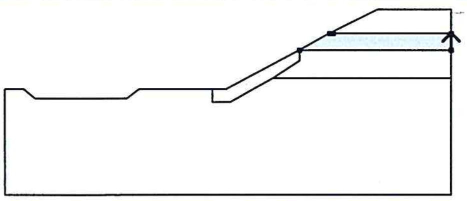
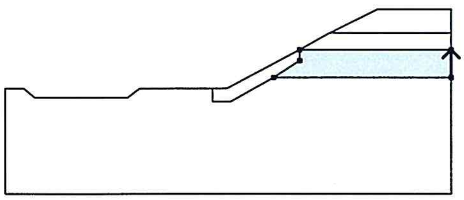
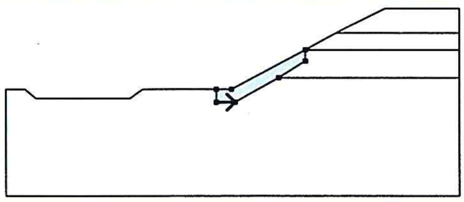
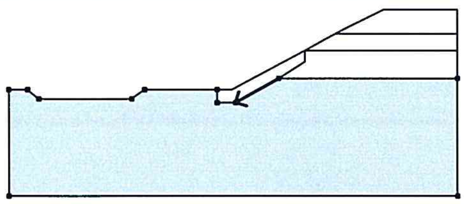
Polygonal slip surface

Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
9,69	4,00	12,20	3,36	14,78	3,52	17,19	4,47	19,18	6,12
20,57	8,30								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 2,08 > 1,25
Slope stability ACCEPTABLE

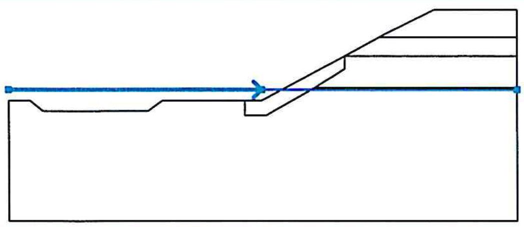
Input data (Stage of construction 2)

Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		17,70	7,00	24,00	7,00	nasip
		24,00	8,30	20,10	8,30	
		17,70	7,10	17,52	7,00	
2		24,00	6,10	24,00	7,00	pesek
		17,70	7,00	17,52	7,00	
		15,90	6,10			
3		24,00	4,60	24,00	6,10	droben gramoz
		15,90	6,10	15,90	5,50	
		14,50	4,60			
4		11,20	3,30	12,20	3,30	kamnita obloga
		14,50	4,60	15,90	5,50	
		15,90	6,10	12,00	4,00	
		11,20	4,00			
5		14,50	4,60	12,20	3,30	gramoz
		11,20	3,30	11,20	4,00	
		7,30	4,00	6,60	3,50	
		1,60	3,50	1,00	4,00	
		0,00	4,00	0,00	-1,70	
		24,00	-1,70	24,00	4,60	

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	24,00	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)

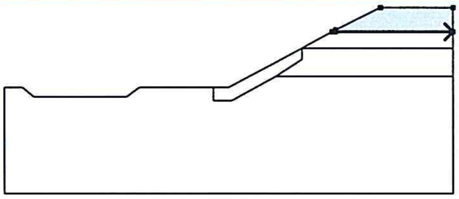
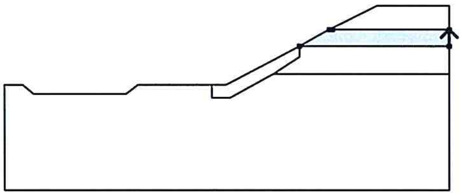
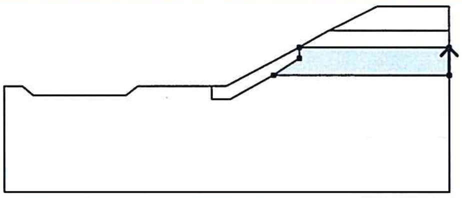
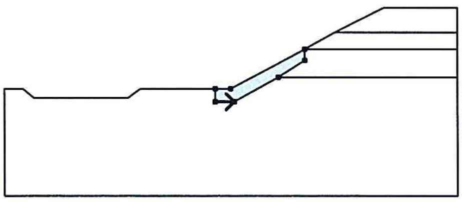
Polygonal slip surface

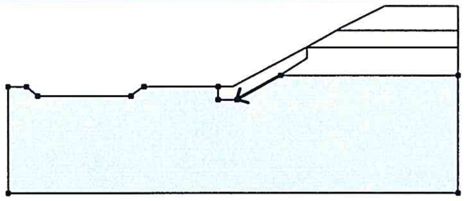
Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
8,43	4,00	11,12	3,10	13,95	3,14	16,62	4,10	18,82	5,89
20,31	8,30								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 2,10 > 1,25
Slope stability ACCEPTABLE

Input data (Stage of construction 3)

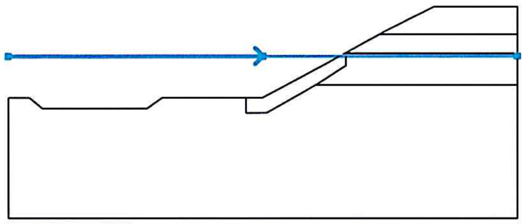
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		17,70	7,00	24,00	7,00	nasip
		24,00	8,30	20,10	8,30	
		17,70	7,10	17,52	7,00	
2		24,00	6,10	24,00	7,00	pesek
		17,70	7,00	17,52	7,00	
		15,90	6,10			
3		24,00	4,60	24,00	6,10	droben gramoz
		15,90	6,10	15,90	5,50	
		14,50	4,60			
4		11,20	3,30	12,20	3,30	kamnita obloga
		14,50	4,60	15,90	5,50	
		15,90	6,10	12,00	4,00	
		11,20	4,00			

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
5		14,50	4,60	12,20	3,30	gramoz
		11,20	3,30	11,20	4,00	
		7,30	4,00	6,60	3,50	
		1,60	3,50	1,00	4,00	
		0,00	4,00	0,00	-1,70	
		24,00	-1,70	24,00	4,60	

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	24,00	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)

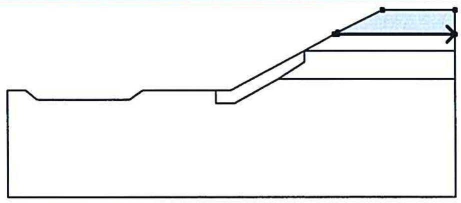
Polygonal slip surface

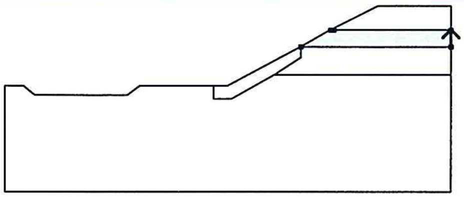
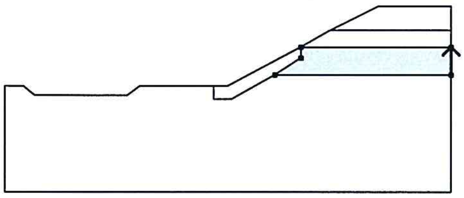
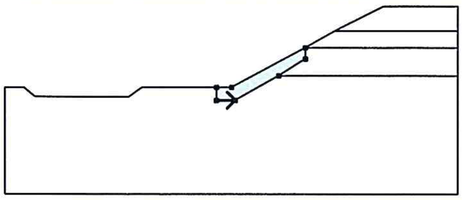
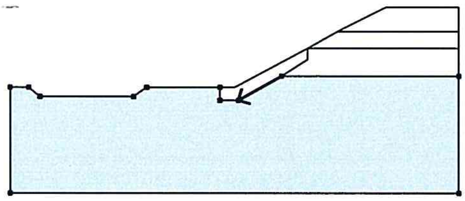
Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
9,01	4,00	11,03	3,67	13,07	3,87	14,99	4,56	16,68	5,72
18,02	7,26								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 1,79 > 1,25
Slope stability ACCEPTABLE

Input data (Stage of construction 4)

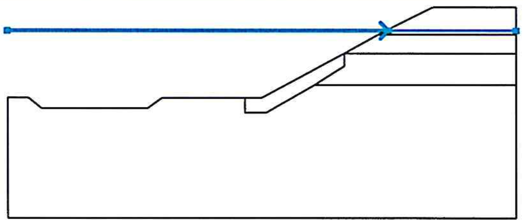
Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		17,70	7,00	24,00	7,00	nasip
		24,00	8,30	20,10	8,30	
		17,70	7,10	17,52	7,00	

No.	Surface position	Coordinates of surface points [m] x	z	x	z	Assigned soil
2		24,00	6,10	24,00	7,00	pesek
		17,70	7,00	17,52	7,00	
		15,90	6,10			
3		24,00	4,60	24,00	6,10	droben gramoz
		15,90	6,10	15,90	5,50	
		14,50	4,60			
4		11,20	3,30	12,20	3,30	kamnita obloga
		14,50	4,60	15,90	5,50	
		15,90	6,10	12,00	4,00	
		11,20	4,00			
5		14,50	4,60	12,20	3,30	gramoz
		11,20	3,30	11,20	4,00	
		7,30	4,00	6,60	3,50	
		1,60	3,50	1,00	4,00	
		0,00	4,00	0,00	-1,70	
		24,00	-1,70	24,00	4,60	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m] x	z	x	z	x	z
1		0,00	7,20	18,00	7,20	24,00	7,20

Tensile crack

Tensile crack not inputted.

Earthquake

Earthquake not included.

Settings of the stage of construction

Design situation : permanent

Results (Stage of construction 4)

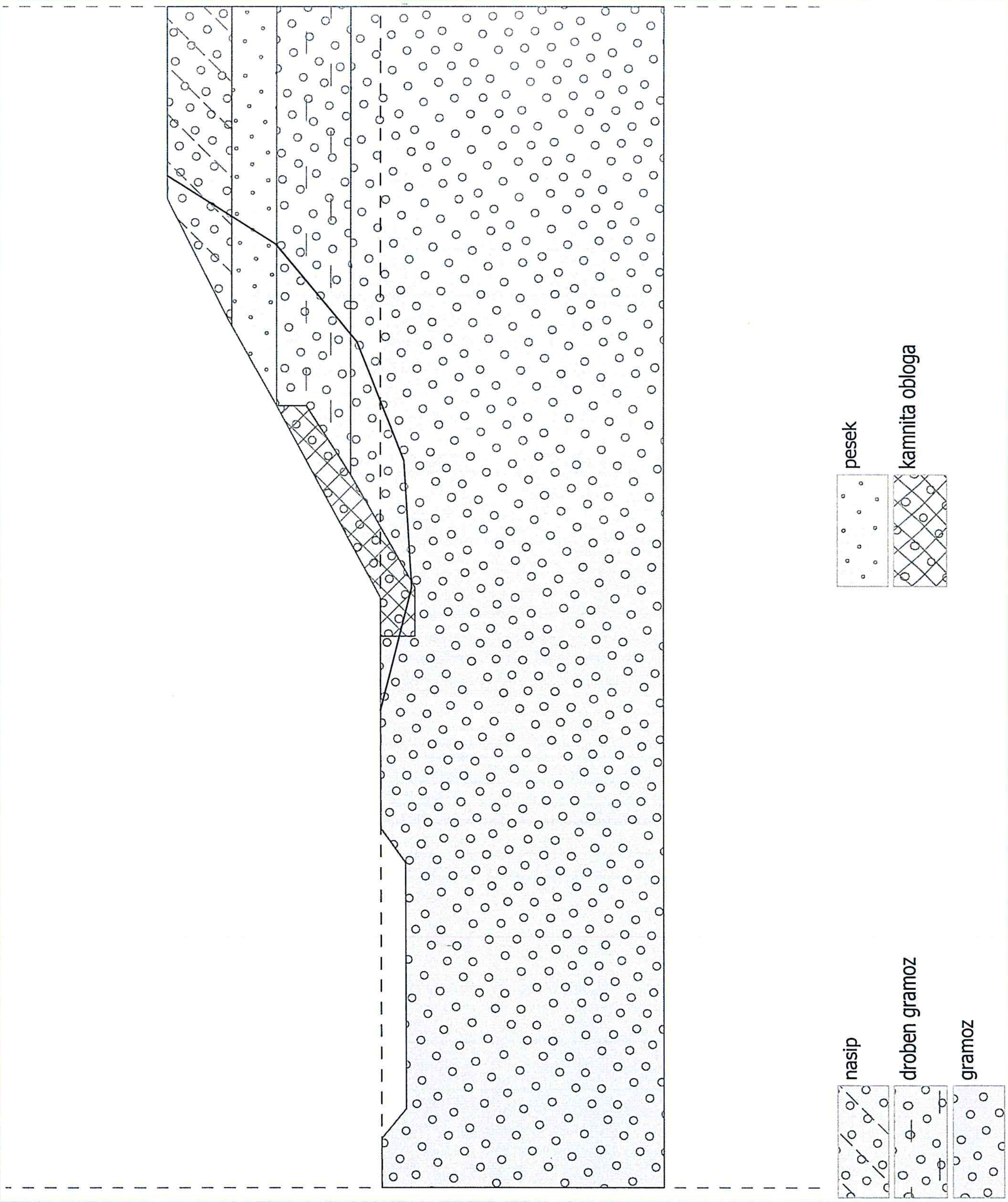
Analysis 1 (stage 4)

Polygonal slip surface

Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
10,21	4,00	12,35	3,78	14,48	4,11	16,46	4,96	18,17	6,29
19,49	7,99								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 1,80 > 1,25
Slope stability ACCEPTABLE

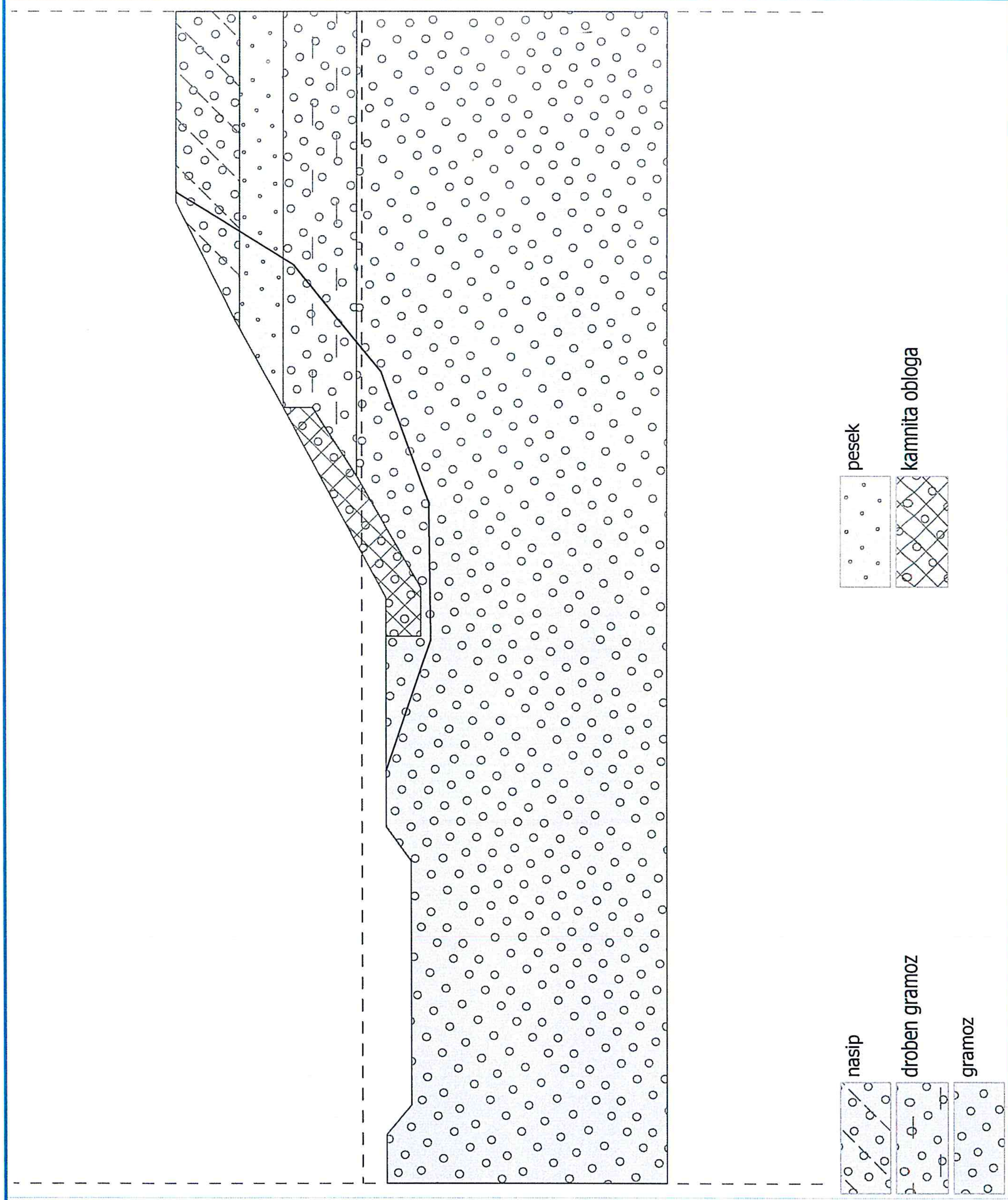
Name : **Stage - analysis : 1 - 1**



Analysis of the slip surface without optimization.

Slope stability verification (Janbu)
Factor of safety = 2,08 > 1,25
Slope stability ACCEPTABLE

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



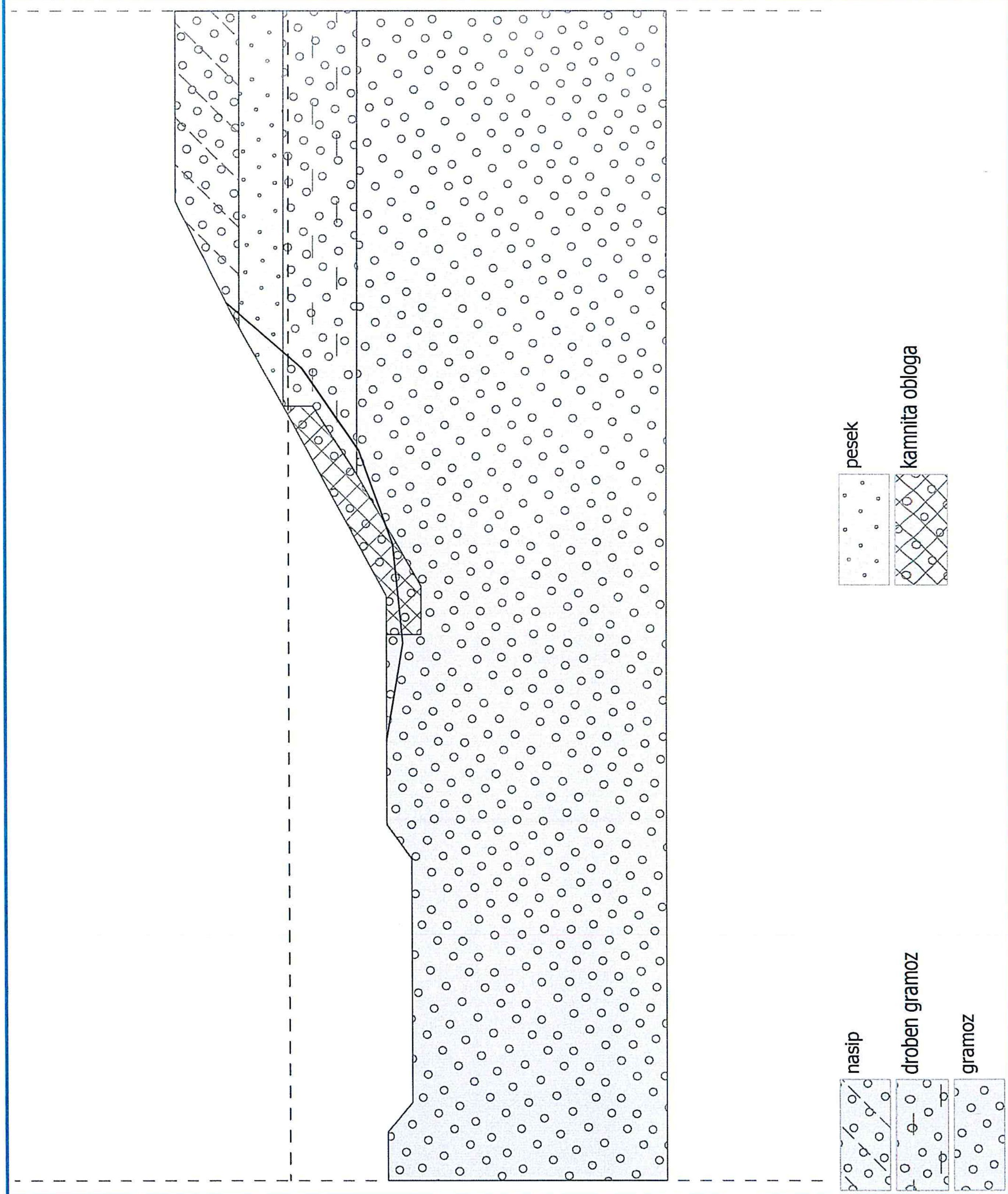
Analysis of the slip surface without optimization.

Slope stability verification (Janbu)

Factor of safety = 2,10 > 1,25

Slope stability ACCEPTABLE

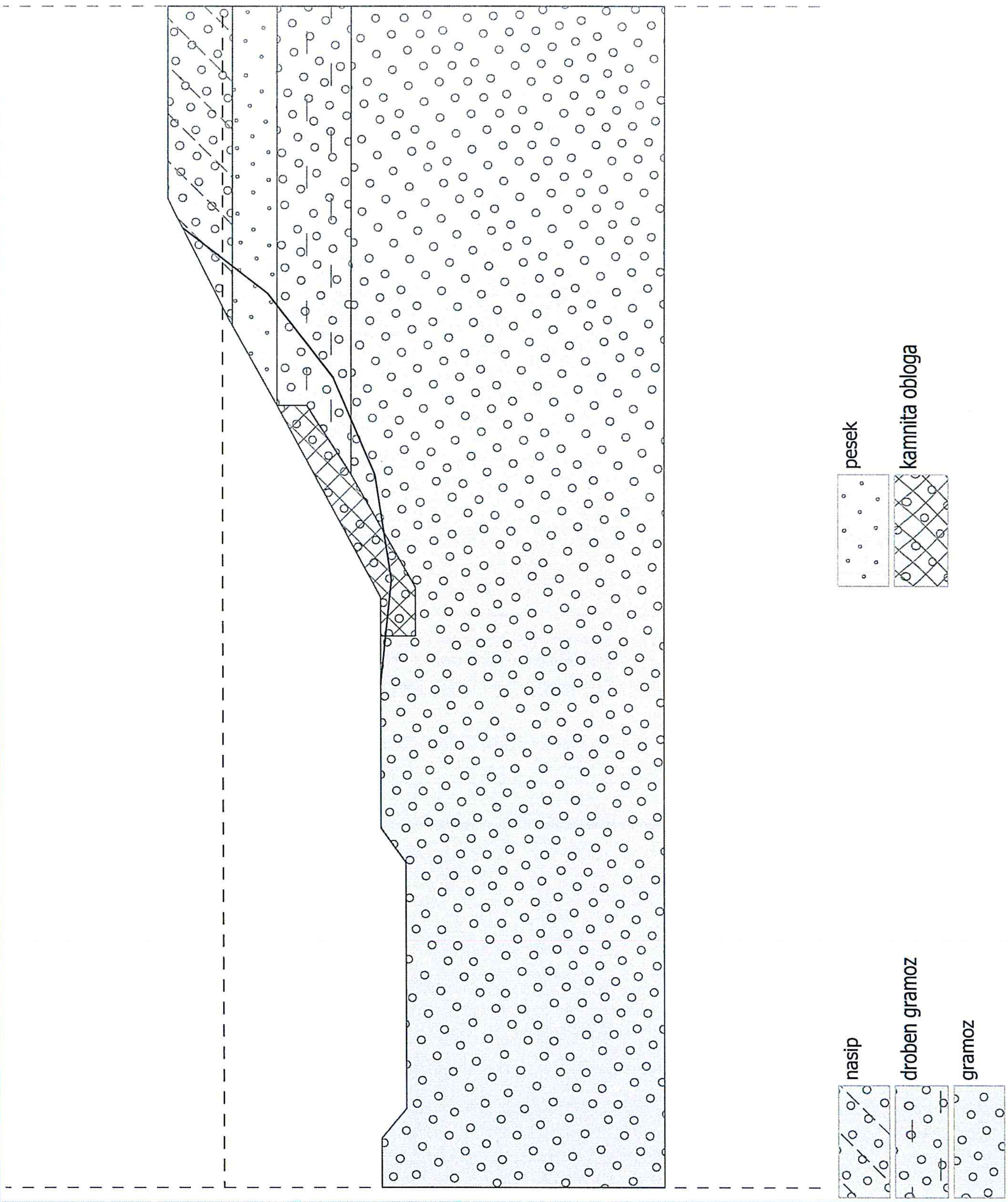
Name : **Stage - analysis : 3 - 1**



Analysis of the slip surface without optimization.

Slope stability verification (Janbu)
Factor of safety = 1,79 > 1,25
Slope stability ACCEPTABLE

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



Analysis of the slip surface without optimization.

Slope stability verification (Janbu)
Factor of safety = 1,80 > 1,25
Slope stability ACCEPTABLE

Slope stability analysis

Input data

Project

Task : UREDITEV MEŽE IN MISLINJE V OTIŠKEM VRHU
Part : Območje Mislinje (P12)
Description : stabilnost nasipa, P12
Customer : VGB Maribor d.o.o.
Date : 25. 09. 2020

Settings

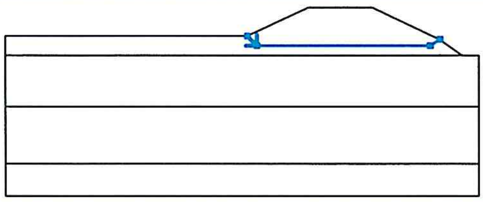
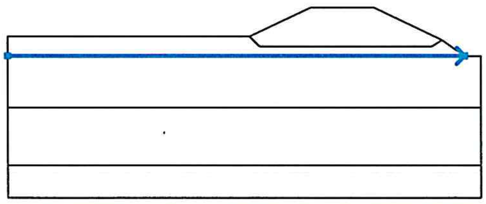
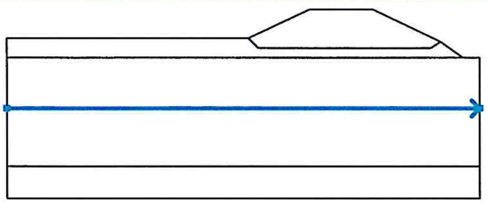
Standard - EN 1997 - PP3 (9)

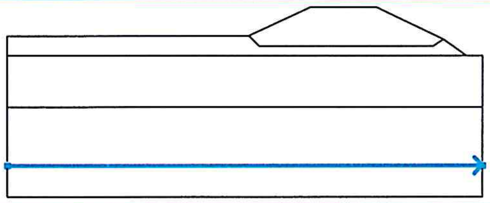
Stability analysis

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	5,00	7,50	5,00	9,40	5,90
		11,40	5,90	13,50	4,90	14,20	4,40
		14,70	4,40				
2		7,50	5,00	7,80	4,70	13,20	4,70
		13,50	4,90				
3		0,00	4,40	14,20	4,40		
4		0,00	2,80	14,70	2,80		

No.	Interface location	Coordinates of interface points [m]					
		x	z	x	z	x	z
5		0,00	1,00	14,70	1,00		

Soil parameters - effective stress state

No.	Name	Pattern	φ_{ef} [°]	c_{ef} [kPa]	γ [kN/m³]
1	nasip		34,00	0,00	20,00
2	zasip		36,00	0,00	19,10
3	pesek s prodniki		32,00	0,00	18,70
4	droben gramoz		35,00	0,00	19,20
5	gramoz		41,00	0,00	20,60

Soil parameters - uplift

No.	Name	Pattern	γ_{sat} [kN/m³]	γ_s [kN/m³]	n [–]
1	nasip		20,00		
2	zasip		19,10		
3	pesek s prodniki		18,70		
4	droben gramoz		19,20		
5	gramoz		20,60		

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

zasip

Unit weight :	γ	=	19,10 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}	=	19,10 kN/m^3

pesek s prodniki

Unit weight :	γ	=	18,70 kN/m^3
Stress-state :	effective		
Angle of internal friction :	φ_{ef}	=	32,00 °
Cohesion of soil :	c_{ef}	=	0,00 kPa
Saturated unit weight :	γ_{sat}	=	18,70 kN/m^3

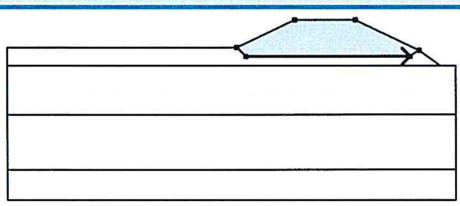
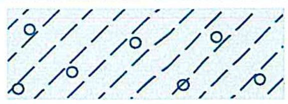
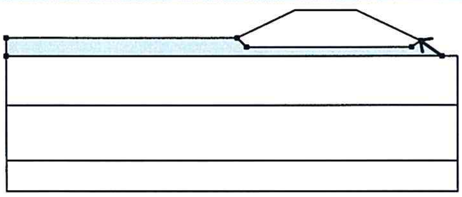
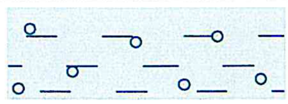
droben gramoz

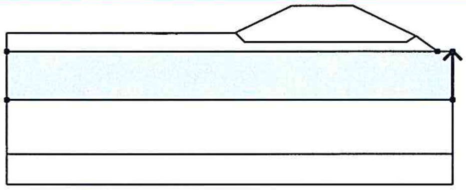
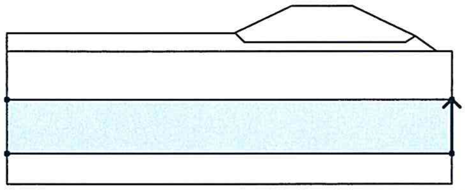
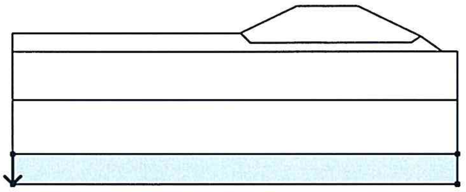
Unit weight :	γ	=	19,20 kN/m^3
Stress-state :	effective		
Angle of internal friction :	φ_{ef}	=	35,00 °
Cohesion of soil :	c_{ef}	=	0,00 kPa
Saturated unit weight :	γ_{sat}	=	19,20 kN/m^3

gramoz

Unit weight :	γ	=	20,60 kN/m^3
Stress-state :	effective		
Angle of internal friction :	φ_{ef}	=	41,00 °
Cohesion of soil :	c_{ef}	=	0,00 kPa
Saturated unit weight :	γ_{sat}	=	20,60 kN/m^3

Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		7,80	4,70	13,20	4,70	nasip 
		13,50	4,90	11,40	5,90	
		9,40	5,90	7,50	5,00	
2		14,20	4,40	13,50	4,90	zasip 
		13,20	4,70	7,80	4,70	
		7,50	5,00	0,00	5,00	
		0,00	4,40			

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
3		14,70 14,20 0,00	2,80 4,40 2,80	14,70 0,00	4,40 4,40	pesek s prodniki
4		14,70 0,00	1,00 2,80	14,70 0,00	2,80 1,00	droben gramoz
5		0,00 14,70	1,00 0,00	0,00 14,70	0,00 1,00	gramoz

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 (stage 1)

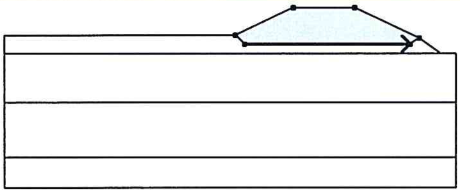
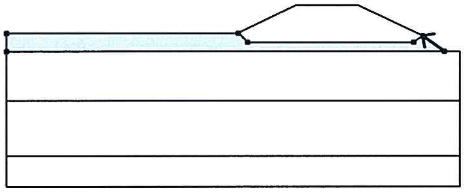
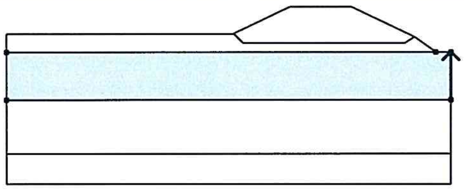
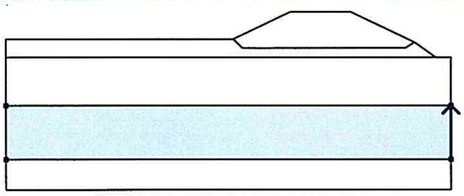
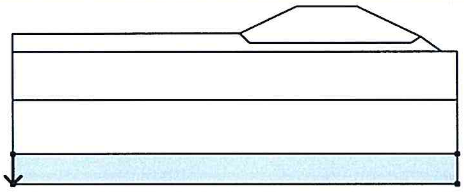
Polygonal slip surface

Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
6,79	5,00	7,58	4,76	8,40	4,74	9,20	4,93	9,92	5,33
10,51	5,90								
Analysis of the slip surface without optimization.									

Slope stability verification (Janbu)
Factor of safety = 2,53 > 1,25
Slope stability ACCEPTABLE

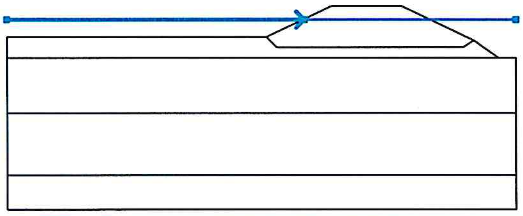
Input data (Stage of construction 2)

Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		7,80	4,70	13,20	4,70	nasip
		13,50	4,90	11,40	5,90	
		9,40	5,90	7,50	5,00	
2		14,20	4,40	13,50	4,90	zasip
		13,20	4,70	7,80	4,70	
		7,50	5,00	0,00	5,00	
		0,00	4,40			
3		14,70	2,80	14,70	4,40	pesek s prodniki
		14,20	4,40	0,00	4,40	
		0,00	2,80			
4		14,70	1,00	14,70	2,80	droben gramoz
		0,00	2,80	0,00	1,00	
5		0,00	1,00	0,00	0,00	gramoz
		14,70	0,00	14,70	1,00	

Water

Water type : GWT

No.	GWT location	Coordinates of GWT points [m]					
		x	z	x	z	x	z
1		0,00	5,50	8,60	5,50	14,70	5,50

Tensile crack

Tensile crack not inputted.

Earthquake

Earthquake not included.

Settings of the stage of construction

Design situation : permanent

Results (Stage of construction 2)

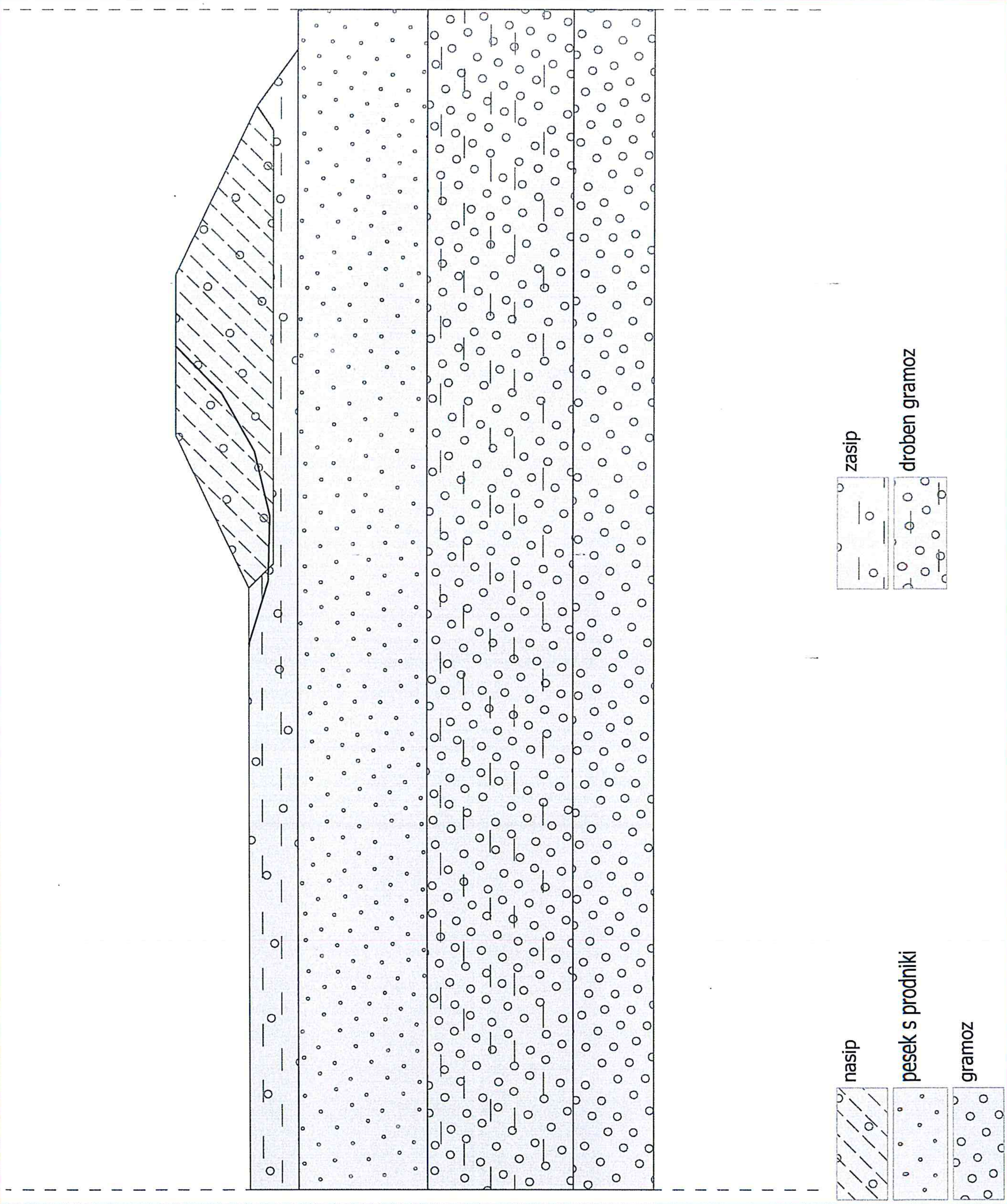
Analysis 1 (stage 2)

Polygonal slip surface

Coordinates of slip surface points [m]									
x	z	x	z	x	z	x	z	x	z
7,88	5,18	8,11	5,25	8,45	5,34	8,74	5,47	8,96	5,63
9,25	5,83								
The slip surface after optimization.									

Slope stability verification (Janbu)
Factor of safety = 1,35 > 1,25
Slope stability ACCEPTABLE

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



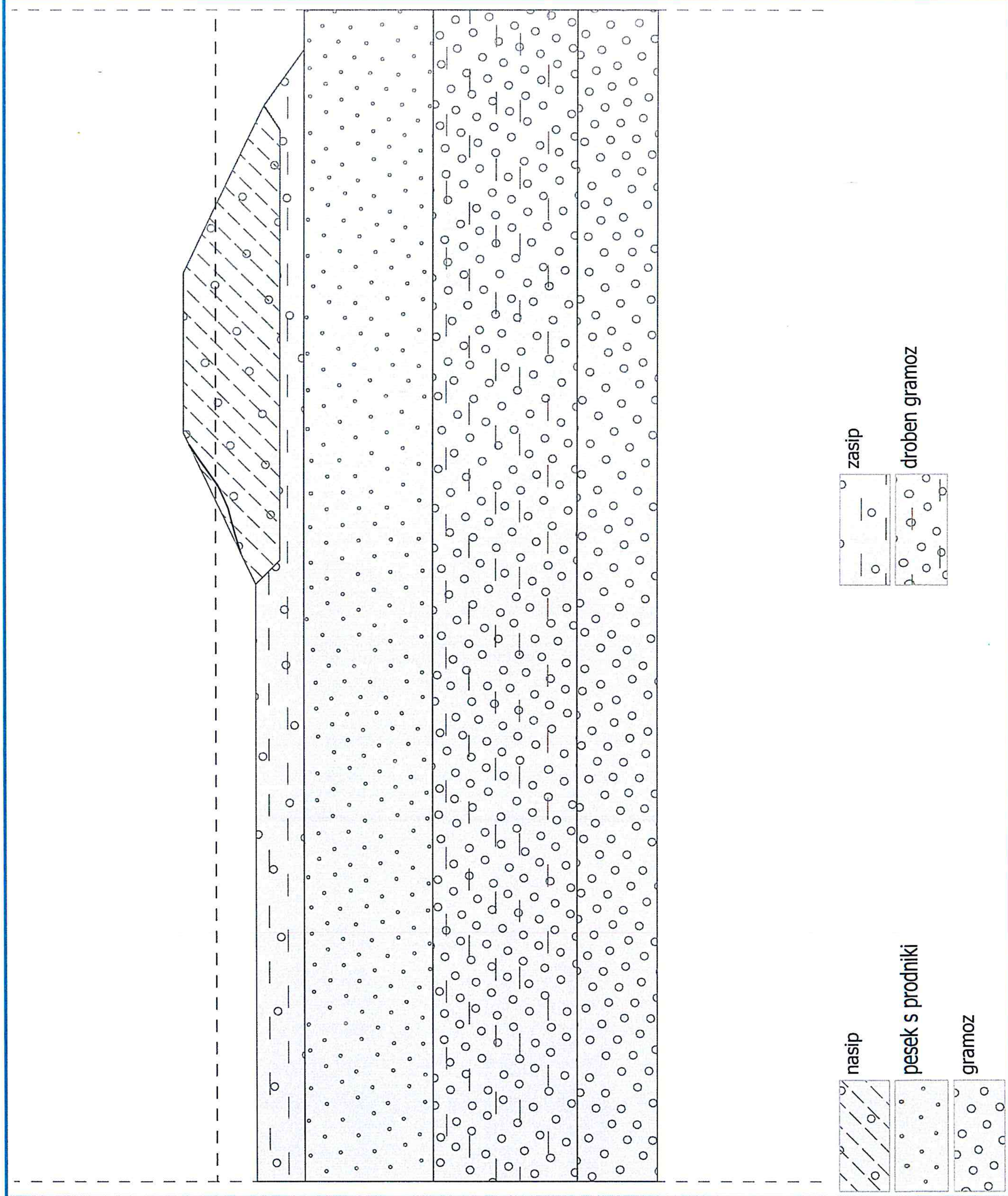
Analysis of the slip surface without optimization.

Slope stability verification (Janbu)

Factor of safety = 2,53 > 1,25

Slope stability ACCEPTABLE

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



The slip surface after optimization.

Slope stability verification (Janbu)

Factor of safety = 1,35 > 1,25

Slope stability ACCEPTABLE