

# GEOSTUDIO

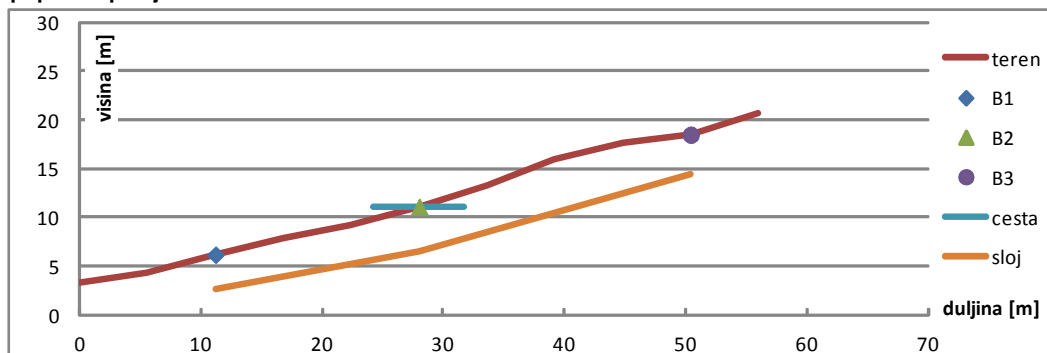


Internet stranica: [www.geoslope.com](http://www.geoslope.com)

## ZADATAK:

STUDENT: \_\_\_\_\_

poprečni presjek kosine:



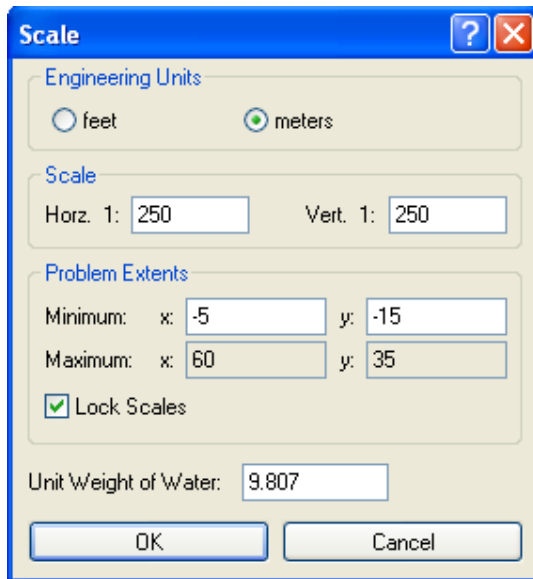
tlo:						teren:			
tip tla - 1	CL					no.	x [m]	y [m]	
tip tla - 2	CH					1	0	3.3	
Geotehnički profil tla (terenska klasifikacija + indeks plastičnosti Ip)						2	5.6	4.4	
dubina [m]	B1		B2		B3		3	11.2	6.2
	tip tla	Ip	tip tla	Ip	tip tla	Ip	4	16.8	7.8
0.5	1	25	1	24	1	29	5	22.4	9.3
1	1	26	1	25	1	25	6	28	11.1
1.5	1	29	1	30	1	28	7	33.6	13.2
2	1	30	1	31	1	28	8	39.2	15.9
2.5	1	24	1	29	1	24	9	44.8	17.6
3	1	26	1	23	1	27	10	50.4	18.5
3.5	2	47	1	26	1	29	11	56	20.6
4	2	45	1	25	2	49	cesta: x [m] y [m]		
4.5	2	49	2	44	2	51	os	28.0	13.2
5	2	44	2	45	2	51	širina =	7.5	m
5.5	2	50	2	50	2	50	bušotine: x [m] y [m]		
6	2	48	2	49	2	49	B1	11.2	6.2
6.5	2	51	2	51	2	44	B2	28.0	11.1
7	2	51	2	45	2	45	B3	50.4	18.5
7.5	2	49	2	51	2	49			

## ZADATAK:

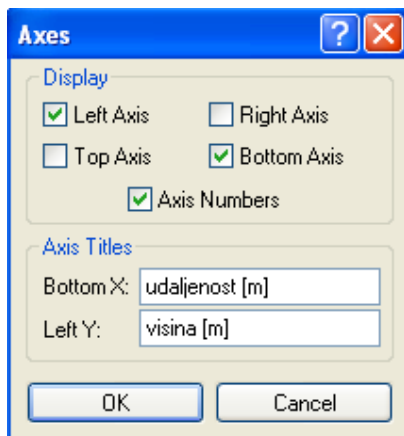
- kontrola stabilnosti kosine prije zahvata (voda na površini terena)
  - kontrola stabilnosti kosine iznad prometnice za drenirano stanje u uvjetima 'spriječenih'
  - kontrola stabilnosti kosine ispod prometnice za drenirano stanje u uvjetima 'spriječenih'
  - kontrola stabilnosti kosine ispod prometnice za drenirano stanje u uvjetima većih deformacija
- \* osigurati stabilnost kosine za trajno stanje uz primjenu elemenata stabilizacije kosine: gravitacijski potporni zid ( $c = 100 \text{ kN/m}^2$ ,  $f_i = 45 \text{ stup.}$ ,  $\gamma = 24 \text{ kN/m}^3$ ); nasip od zbijenog krupnozrnatog materijala ( $c = 0$ ,  $f_i = 35 \text{ stup.}$ ,  $\gamma = 22 \text{ kN/m}^3$ ); kopani drenovi u zoni ispod prometnice do dubine maksimalno 3 m te bušeni drenovi u zoni iza potpornog zida pod nagibom 10 stup. maksimalne duljine 10 m); planiranje

## Priprema radnog prostora

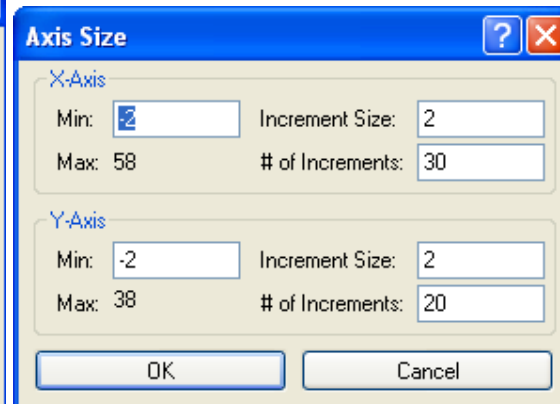
- Set
  - Page
  - Scale
  - Grid
  - Axes



The Scale dialog box is used to configure the units and scales for the analysis. It features a blue title bar with a question mark and a close button. The main area is divided into several sections: 'Engineering Units' with radio buttons for 'feet' and 'meters' (selected); 'Scale' with input fields for 'Horz. 1: 250' and 'Vert. 1: 250'; 'Problem Extents' with input fields for 'Minimum: x: -5, y: -15' and 'Maximum: x: 60, y: 35'; a checked 'Lock Scales' checkbox; and 'Unit Weight of Water: 9.807'. At the bottom are 'OK' and 'Cancel' buttons.



The Axes dialog box allows users to control the display and titles of the axes. It has a blue title bar with a question mark and a close button. The 'Display' section includes checkboxes for 'Left Axis' (checked), 'Right Axis', 'Top Axis', 'Bottom Axis' (checked), and 'Axis Numbers' (checked). The 'Axis Titles' section has input fields for 'Bottom X: udaljenost [m]' and 'Left Y: visina [m]'. 'OK' and 'Cancel' buttons are at the bottom.



The Axis Size dialog box is used to set the scale and range for the X and Y axes. It has a blue title bar with a question mark and a close button. The 'X-Axis' section has input fields for 'Min: 2', 'Increment Size: 2', 'Max: 58', and '# of Increments: 30'. The 'Y-Axis' section has input fields for 'Min: -2', 'Increment Size: 2', 'Max: 38', and '# of Increments: 20'. 'OK' and 'Cancel' buttons are at the bottom.

## Postavke analize

- KeyIn
  - Analysis Settings
    - Method (metoda proračuna)
    - PWP (porni pritisak - moguće preuzimanje iz drugih GEOSTUDIO analiza!)
    - Slip Surface (definiranje kliznih ploha - smjer i način određivanja)

**Analysis Settings** [?] [X]

Project ID | Method | PWP | Slip Surface | FDS Distribution | Advanced

Limit Equilibrium

Bishop, Ordinary, Janbu and:

Morgenstern-Price Side Function: Half-sine function [v] Fn Values

Spencer

GLE Side Function: Half-sine function [v] Fn Values

Corps of Engineers #1

Corps of Engineers #2

Lowe-Karafiath

Janbu Generalized

Sarma (Vertical Slice Only) Cohesion: 0 Phi: 0

only Bishop, Ordinary and Janbu

Finite Element

Filename:

SIGMA/W Static [ ] [ ] [ ] [Clear]

QUAKE/W Static [ ] [ ] [ ] [Clear]

QUAKE/W Dynamic [ ] [ ] [ ] [Clear]

[OK] [Cancel]

**Analysis Settings** [?] [X]

Project ID | Method | PWP | Slip Surface | FDS Distribution | Advanced

Use pore-water pressures

Pore-water pressures are identified by:

Ru / B-bar Choose parameter  Ru  B-bar

Piezometric lines with Ru / B-bar

Apply phreatic correction

Grid of pressure heads

Grid of pressures

Grid of Ru coefficients

From another GeoStudio Analysis:

Filename:

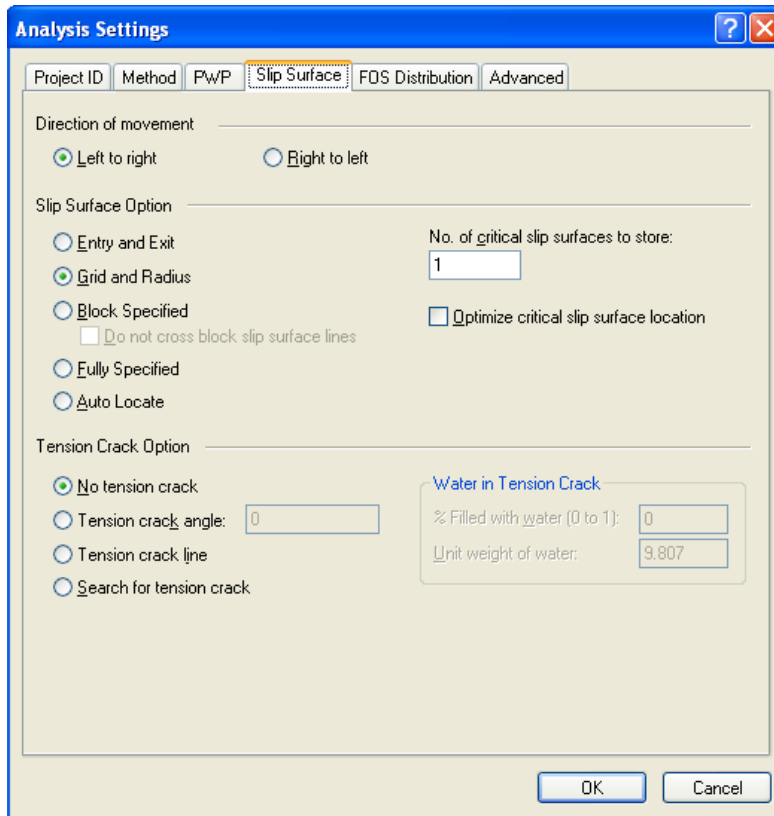
SEEP/W total head [ ] [ ] [ ] [Clear]

SIGMA/W PWP [ ] [ ] [ ] [Clear]

QUAKE/W PWP [ ] [ ] [ ] [Clear]

VADOSE/W total head [ ] [ ] [ ] [Clear]

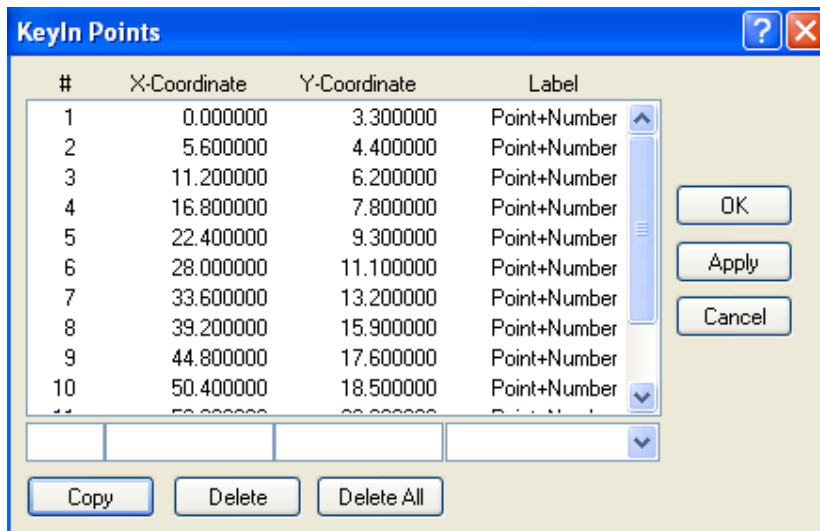
[OK] [Cancel]



## Unos točaka

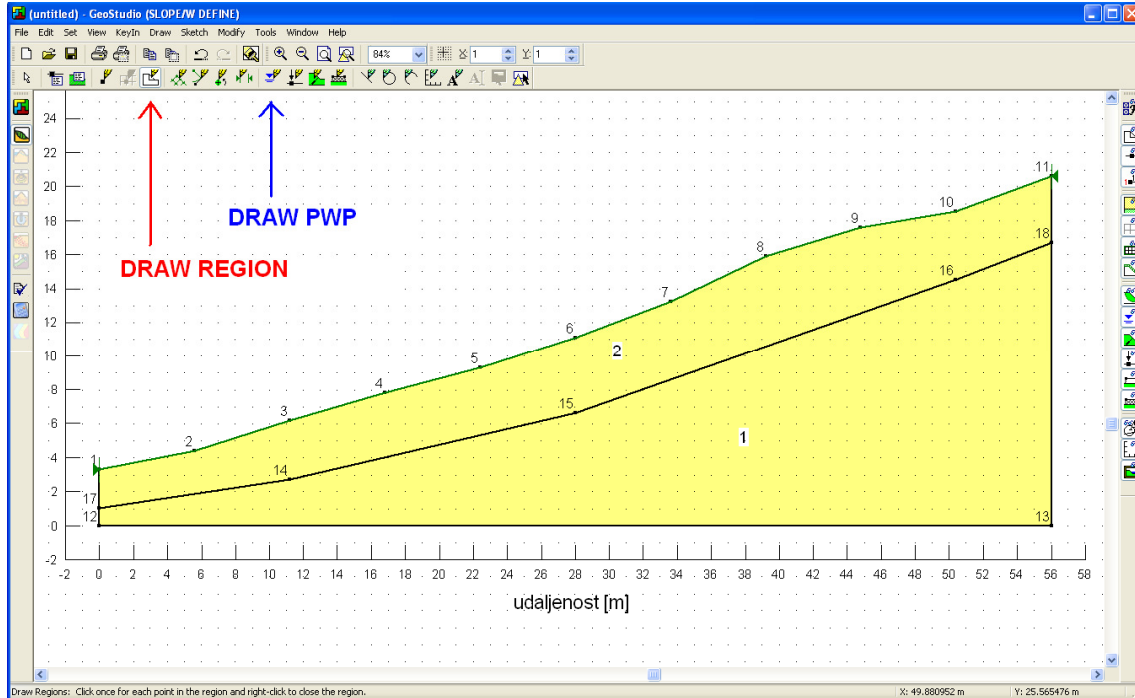
- KeyIn  
 → Points

Unošenje zadanih točaka, alternativa je ručno „klikanje“. Zadaje se točka za svaki lom geometrije, rubove strukturnih elemenata, granice slojeva itd. Točke služe za definiranje regija.



## Kreiranje regija i zadavanje podzemne vode

Kad su točke unesene, kreirati regije pomoću naredbe DRAW REGION (na grafičkoj alatnoj traci), ili Draw → Regions na toolbaru. Pomoću alata DRAW PWP ucrtava se položaj vodnog lica (u slijedećem izborniku potrebno označiti: Apply to materials → All)



## Karakteristike materijala

- KeyIn  
→ Material Properties

KeyIn Material Properties

Matl	Strength Model	Description	Color
1	Mohr-Coulomb	CL	
2	Mohr-Coulomb	CH	

1 | Mohr-Coulomb | CL | | Set...

Basic Parameters

Unit Weight: 21 | Phi: 24.86

Cohesion: 0

Advanced Parameters

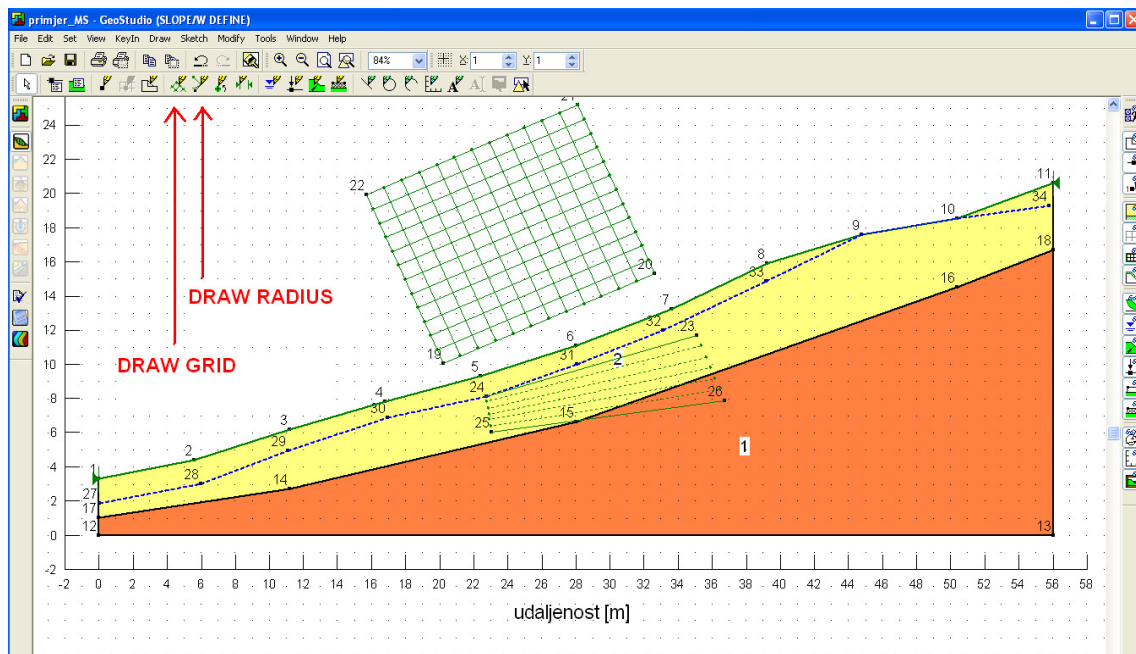
Unit Wt. above WT: 0 | Phi B: 0 | Anisotropic Fr.: 0

Copy | Insert | Delete | OK | Cancel

Zadane karakteristike materijala se potom dodjeljuju kreiranim regijama preko KeyIn → Regions → Properties

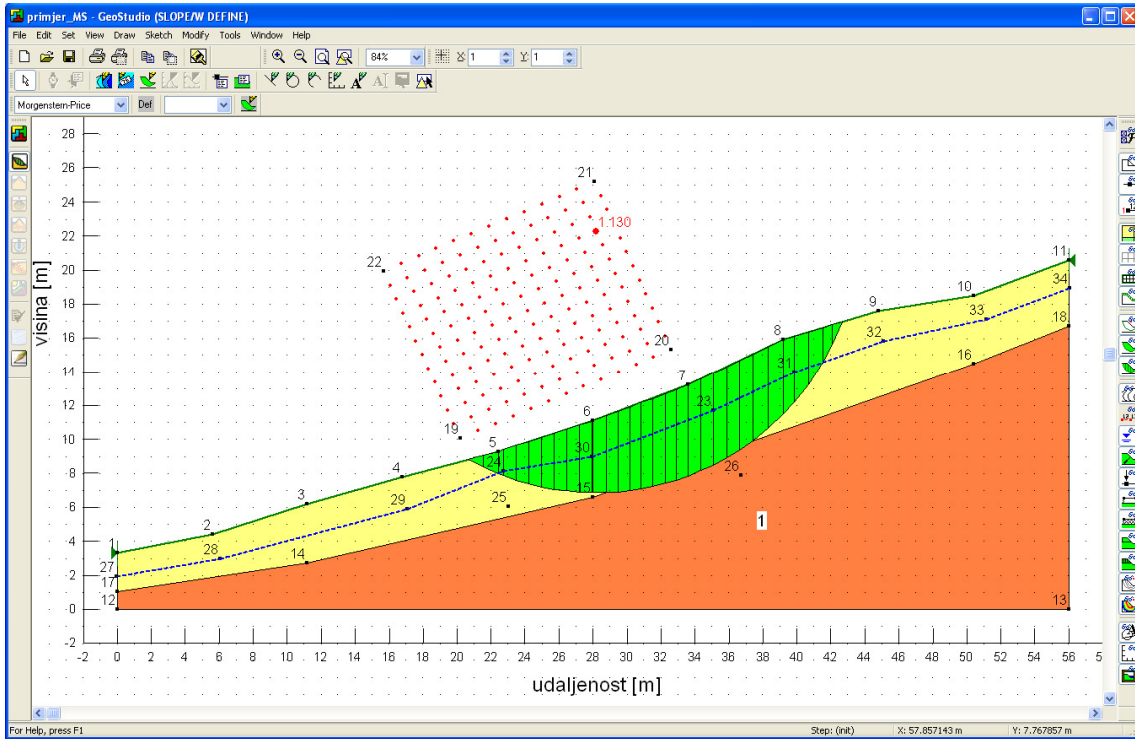
### Zadavanje obilježja kliznih ploha

Ako klizne plohe zadajemo preko opcije *Grid and Radius*, potrebno je zadati mrežu točaka središta kružnica (Grid) i tangente kružnica (Radius). Alati za zadavanje se nalaze na grafičkoj alatnoj traci (Draw Slip Surface Grid i Draw Slip Surface Radius).



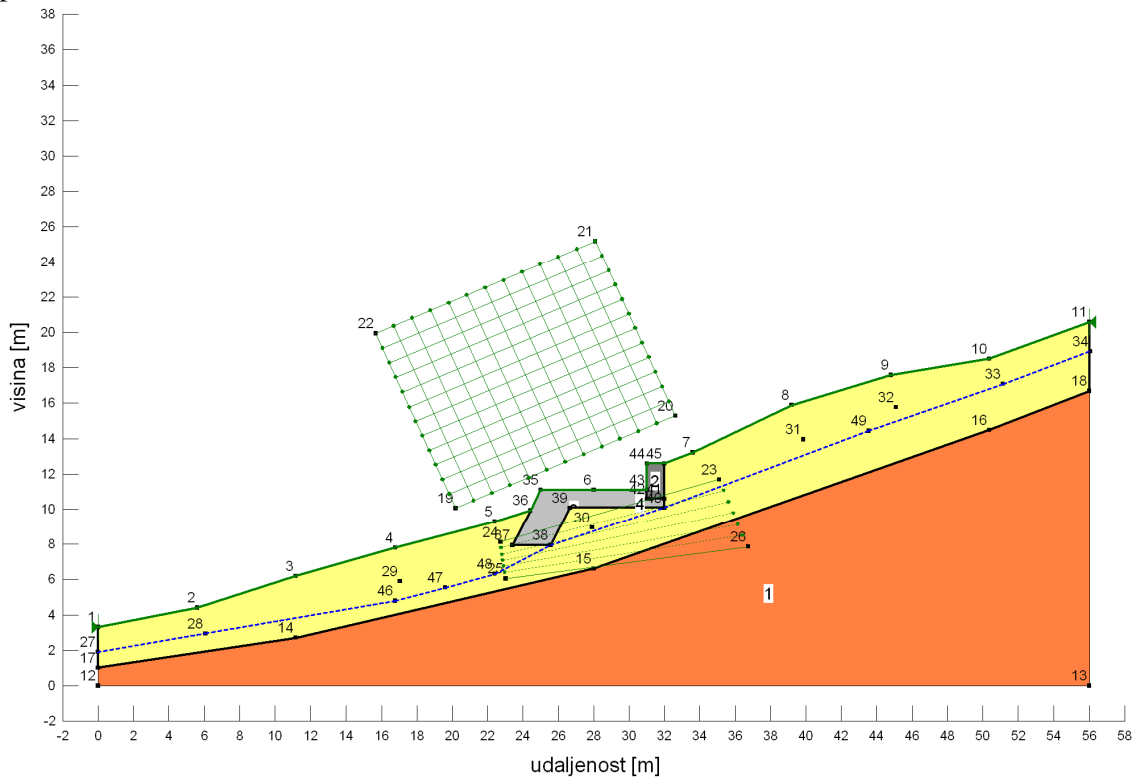
### Pregled rezultata

- lijeva bočna alatna traka
  - Verify
  - SOLVE
  - Contour (nakon Solve-a, pregled rezultata)



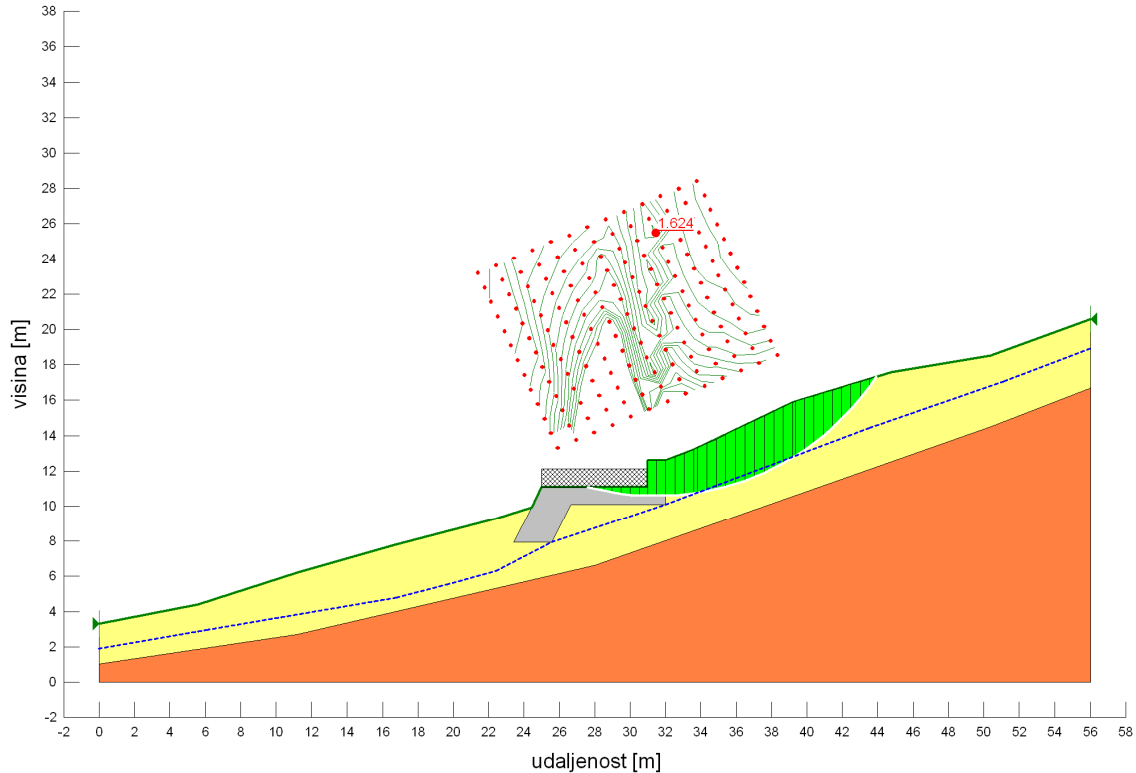
### Iskop i nasip za gradnju prometnice

Ucrtati geometriju u AutoCad-u, izvući karakteristične točke, promijeniti Slope model po prethodnim koracima



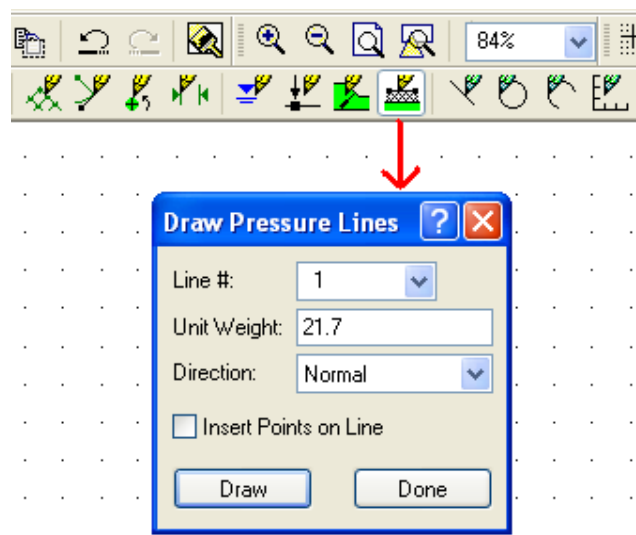


Kontrola stabilnosti iznad prometnice za drenirano stanje u uvjetima 'spriječenih' deformacija:

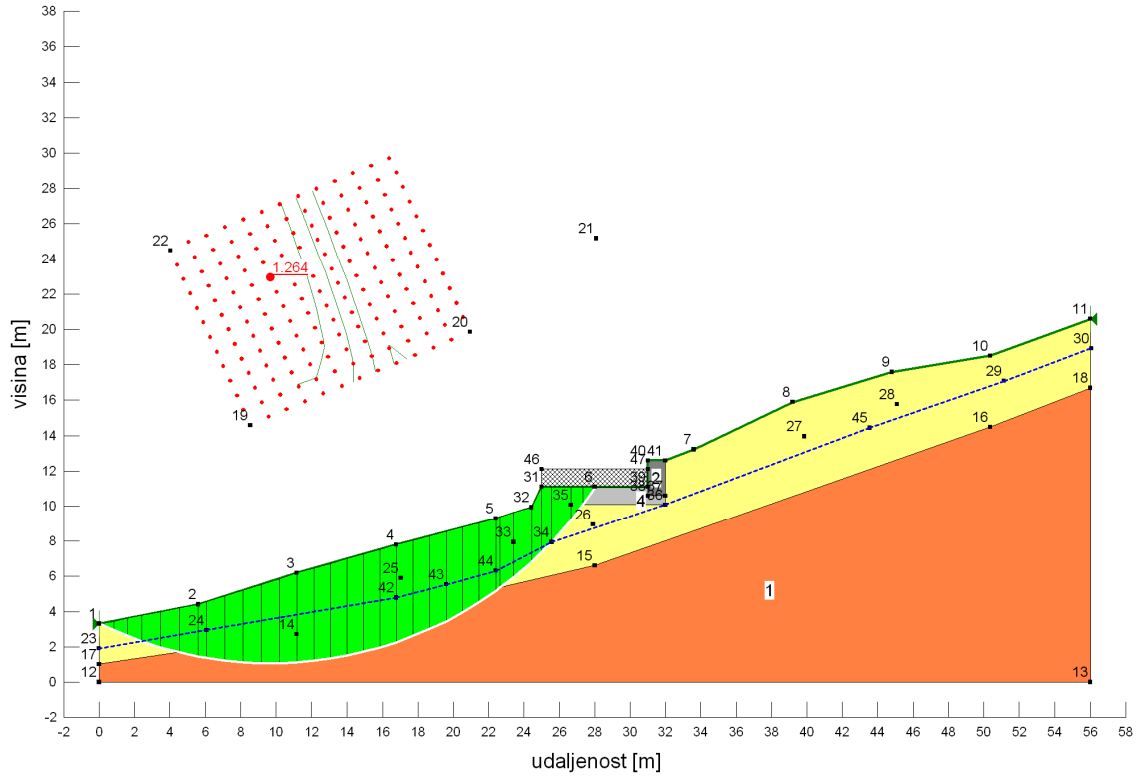


Klizna ploha se postavlja tako da prolazi rubnom točkom potpornog zida. To se čini tako da se izbrišu postojeće tangente, odabere alat *Draw Radius*, i klikne 4 puta na točku koju trebamo.

Opterećenje na cestu dodajemo tako da ucrtamo liniju opterećenja 1 metar iznad ceste (*Draw Pressure Lines* na grafičkoj alatnoj traci), i u slijedećem izborniku upišemo vrijednost opterećenja.



Kontrola stabilnosti ispod prometnice za drenirano stanje u uvjetima 'spriječenih' deformacija:



Kontrola stabilnosti ispod prometnice za drenirano stanje u uvjetima većih deformacija:

