

# Odränerad Analys

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## File Information

Created By: [Petter Karlsson](#)  
Revision Number: 37  
Last Edited By: [Karlsson, Petter](#)  
Date: [2011-03-19](#)  
Time: [10:40:42](#)  
File Name: [V25900\\_odränerad.gsz](#)  
Directory: [V:\\\_UPPDRAG\227763\G\\\_Text\V25900, U05151-U05156\](#)  
Last Solved Date: [2011-03-19](#)  
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## Project Settings

Length(L) Units: [meters](#)  
Time(t) Units: [Seconds](#)  
Force(F) Units: [kN](#)  
Pressure(p) Units: [kPa](#)  
Strength Units: [kPa](#)  
Unit Weight of Water: [9.807 kN/m<sup>3</sup>](#)  
View: [2D](#)

## Analysis Settings

### Odränerad Analys

Kind: [SLOPE/W](#)  
Method: [Morgenstern-Price](#)  
Settings  
Apply Phreatic Correction: [No](#)  
Side Function  
Interslice force function option: [Half-Sine](#)  
PWP Conditions Source: [Piezometric Line](#)  
Use Staged Rapid Drawdown: [No](#)  
Slip Surface  
Direction of movement: [Right to Left](#)  
Use Passive Mode: [No](#)  
Slip Surface Option: [Entry and Exit](#)  
Critical slip surfaces saved: 5  
Optimize Critical Slip Surface Location: [Yes](#)  
Tension Crack  
Tension Crack Option: [Tension Crack Line](#)  
Percentage Wet: [0.5](#)  
Tension Crack Fluid Unit Weight: [9.807 kN/m<sup>3</sup>](#)  
FOS Distribution  
FOS Calculation Option: [Constant](#)

## Advanced

Number of Slices: 30  
Optimization Tolerance: 0.01  
Minimum Slip Surface Depth: 0.1 m  
Optimization Maximum Iterations: 2000  
Optimization Convergence Tolerance: 1e-007  
Starting Optimization Points: 8  
Ending Optimization Points: 16  
Complete Passes per Insertion: 1  
Driving Side Maximum Convex Angle: 5 °  
Resisting Side Maximum Convex Angle: 1 °

## Materials

### Crust

Model: Mohr-Coulomb  
Unit Weight: 18 kN/m<sup>3</sup>  
Cohesion: 30 kPa  
Phi: 0 °  
Phi-B: 0 °  
Pore Water Pressure  
Piezometric Line: 1

### Sa

Model: Mohr-Coulomb  
Unit Weight: 19.5 kN/m<sup>3</sup>  
Cohesion: 0 kPa  
Phi: 32 °  
Phi-B: 0 °  
Pore Water Pressure  
Piezometric Line: 1

### CI 1

Model: S=f(datum)  
Unit Weight: 16.6 kN/m<sup>3</sup>  
C-Datum: 21 kPa  
C-Rate of Change: 0 kPa/m  
Limiting C: 0 kPa  
Elevation: 17 m  
Pore Water Pressure  
Piezometric Line: 1

### CI 2

Model: S=f(datum)  
Unit Weight: 16.6 kN/m<sup>3</sup>  
C-Datum: 21 kPa  
C-Rate of Change: 1.24 kPa/m  
Limiting C: 0 kPa  
Elevation: 7 m  
Pore Water Pressure

Piezometric Line: 1

CI 3

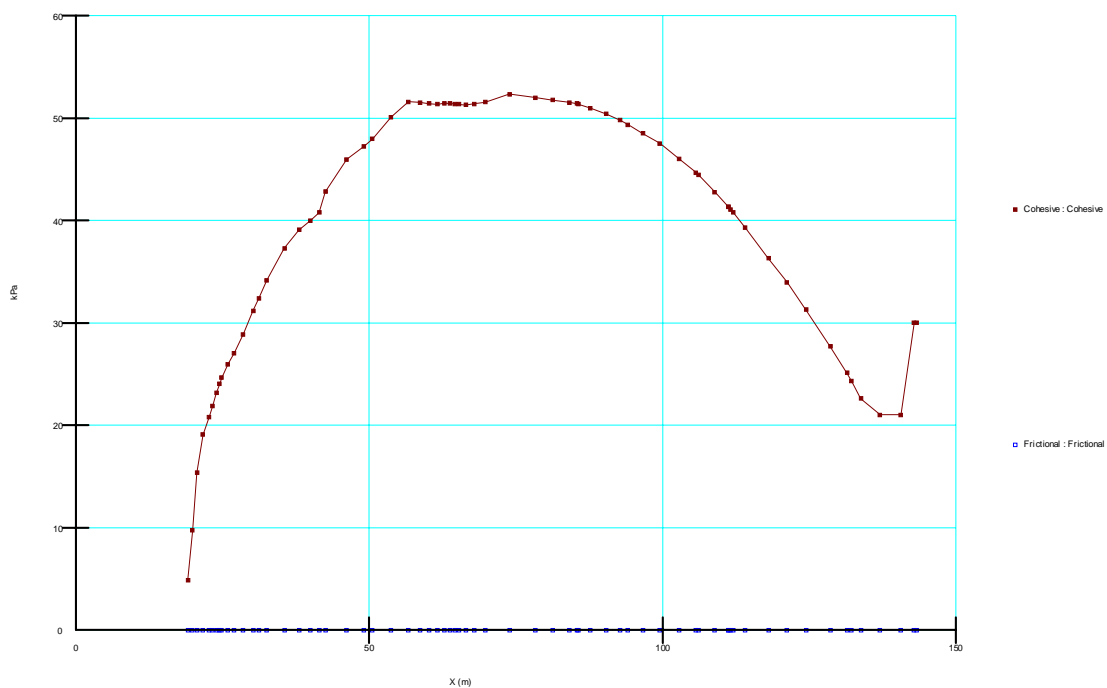
Model:  $S=f(\text{datum})$   
 Unit Weight: 16.2 kN/m<sup>3</sup>  
 C-Datum: 21 kPa  
 C-Rate of Change: 1.24 kPa/m  
 Limiting C: 0 kPa  
 Elevation: 7 m  
 Pore Water Pressure  
 Piezometric Line: 1

CI 4

Model:  $S=f(\text{depth})$   
 Unit Weight: 16.4 kN/m<sup>3</sup>  
 C-Top of Layer: 3 kPa  
 C-Rate of Change: 7.5 kPa/m  
 Limiting C: 18 kPa  
 Pore Water Pressure  
 Piezometric Line: 1

CI 5

Model:  $S=f(\text{depth})$   
 Unit Weight: 16.4 kN/m<sup>3</sup>  
 C-Top of Layer: 18 kPa  
 C-Rate of Change: 1.5 kPa/m  
 Limiting C: 0 kPa  
 Pore Water Pressure  
 Piezometric Line: 1



Figur 1. Kohesion och friktion.



# KLIMATANPASSNING SKREDFÖRUTSÄTTNINGAR I GÖTA ÄLVDALLEN

Sektion: V25900  
 Delområde: Intagan - Ström  
 Analysmetod: Odränerad analys

Slip Surface Option: Entry and Exit  
 Method: Morgenstern-Price  
 PWP Conditions Source: Piezometric Line  
 Date: 2011-03-19  
 Created By: Petter Karlsson  
 Last Edited By: Karlsson, Petter

Skala 1:1000 (A3)

Name: Crust  
 Model: Mohr-Coulomb  
 Unit Weight: 18 kN/m<sup>3</sup>  
 Cohesion: 30 kPa  
 Phi: 0 °

Name: Sa  
 Model: Mohr-Coulomb  
 Unit Weight: 19.5 kN/m<sup>3</sup>  
 Cohesion: 0 kPa  
 Phi: 32 °

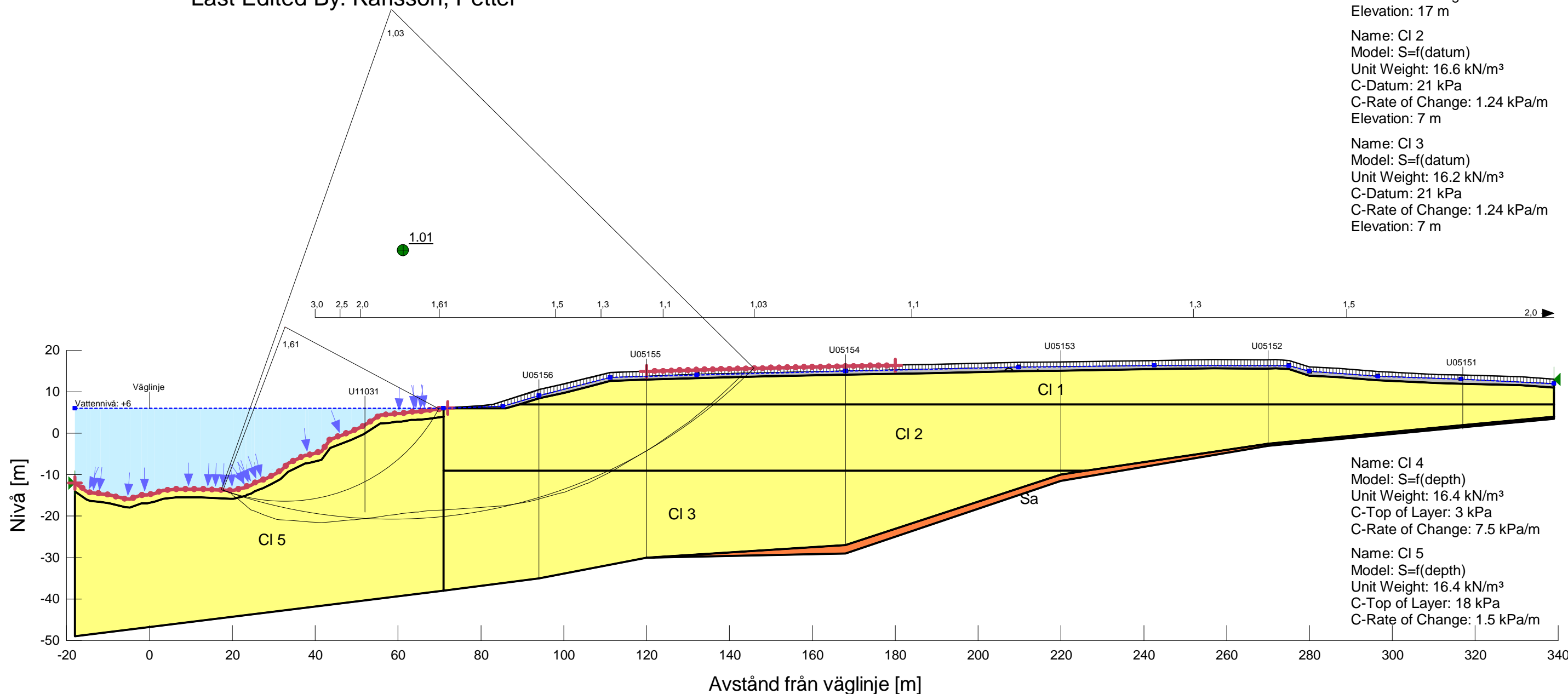
Name: CI 1  
 Model: S=f(datum)  
 Unit Weight: 16.6 kN/m<sup>3</sup>  
 C-Datum: 21 kPa  
 C-Rate of Change: 0 kPa/m  
 Elevation: 17 m

Name: CI 2  
 Model: S=f(datum)  
 Unit Weight: 16.6 kN/m<sup>3</sup>  
 C-Datum: 21 kPa  
 C-Rate of Change: 1.24 kPa/m  
 Elevation: 7 m

Name: CI 3  
 Model: S=f(datum)  
 Unit Weight: 16.2 kN/m<sup>3</sup>  
 C-Datum: 21 kPa  
 C-Rate of Change: 1.24 kPa/m  
 Elevation: 7 m

Name: CI 4  
 Model: S=f(depth)  
 Unit Weight: 16.4 kN/m<sup>3</sup>  
 C-Top of Layer: 3 kPa  
 C-Rate of Change: 7.5 kPa/m

Name: CI 5  
 Model: S=f(depth)  
 Unit Weight: 16.4 kN/m<sup>3</sup>  
 C-Top of Layer: 18 kPa  
 C-Rate of Change: 1.5 kPa/m



# Kombinerad Analys

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## File Information

Created By: [Petter Karlsson](#)  
Revision Number: 51  
Last Edited By: [Karlsson, Petter](#)  
Date: [2011-03-19](#)  
Time: [11:02:32](#)  
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Directory: [V:\\\_UPPDRAG\227763\G\\\_Text\V25900, U05151-U05156\](#)  
Last Solved Date: [2011-03-19](#)  
Last Solved Time: [11:04:20](#)

## Project Settings

Length(L) Units: [meters](#)  
Time(t) Units: [Seconds](#)  
Force(F) Units: [kN](#)  
Pressure(p) Units: [kPa](#)  
Strength Units: [kPa](#)  
Unit Weight of Water: [9.807 kN/m<sup>3</sup>](#)  
View: [2D](#)

## Analysis Settings

### Kombinerad Analys

Kind: [SLOPE/W](#)  
Method: [Morgenstern-Price](#)  
Settings  
Side Function  
Interslice force function option: [Half-Sine](#)  
PWP Conditions Source: [Pressure Head Spatial Function](#)  
Pressure Head Spatial Fn.: [Nulägesanalys](#)  
Slip Surface  
Direction of movement: [Right to Left](#)  
Use Passive Mode: [No](#)  
Slip Surface Option: [Entry and Exit](#)  
Critical slip surfaces saved: [5](#)  
Optimize Critical Slip Surface Location: [Yes](#)  
Tension Crack  
Tension Crack Option: [Tension Crack Line](#)  
Percentage Wet: [0.5](#)  
Tension Crack Fluid Unit Weight: [9.807 kN/m<sup>3</sup>](#)  
FOS Distribution  
FOS Calculation Option: [Constant](#)  
Advanced

Number of Slices: 30  
Optimization Tolerance: 0.01  
Minimum Slip Surface Depth: 0.1 m  
Optimization Maximum Iterations: 2000  
Optimization Convergence Tolerance: 1e-007  
Starting Optimization Points: 8  
Ending Optimization Points: 16  
Complete Passes per Insertion: 1  
Driving Side Maximum Convex Angle: 5 °  
Resisting Side Maximum Convex Angle: 1 °

## Materials

### Crust

Model: Combined,  $S=f(\text{depth})$   
Unit Weight: 18 kN/m<sup>3</sup>  
Phi: 30 °  
C-Top of Layer: 0 kPa  
C-Rate of Change: 0 kPa/m  
Cu-Top of Layer: 30 kPa  
Cu-Rate of Change: 0 kPa/m  
C/Cu Ratio: 0.1

### Sa

Model: Mohr-Coulomb  
Unit Weight: 19.5 kN/m<sup>3</sup>  
Cohesion: 0 kPa  
Phi: 32 °  
Phi-B: 0 °

### Cl 1

Model: Combined,  $S=f(\text{datum})$   
Unit Weight: 16.6 kN/m<sup>3</sup>  
Phi: 30 °  
C-Datum: 0 kPa  
C-Rate of Change: 0 kPa/m  
Cu-Datum: 21 kPa  
Cu-Rate of Change: 0 kPa/m  
C/Cu Ratio: 0.1  
Elevation: 17 m

### Cl 2

Model: Combined,  $S=f(\text{datum})$   
Unit Weight: 16.6 kN/m<sup>3</sup>  
Phi: 30 °  
C-Datum: 0 kPa  
C-Rate of Change: 0 kPa/m  
Cu-Datum: 21 kPa  
Cu-Rate of Change: 1.24 kPa/m  
C/Cu Ratio: 0.1

Elevation: 7 m

### CI 3

Model: Combined,  $S=f(\text{datum})$

Unit Weight: 16.2 kN/m<sup>3</sup>

Phi: 30 °

C-Datum: 0 kPa

C-Rate of Change: 0 kPa/m

Cu-Datum: 21 kPa

Cu-Rate of Change: 1.24 kPa/m

C/Cu Ratio: 0.1

Elevation: 7 m

### CI 4

Model: Combined,  $S=f(\text{depth})$

Unit Weight: 16.4 kN/m<sup>3</sup>

Phi: 30 °

C-Top of Layer: 0 kPa

C-Rate of Change: 0 kPa/m

Cu-Top of Layer: 3 kPa

Cu-Rate of Change: 7.5 kPa/m

C/Cu Ratio: 0.1

### CI 5

Model: Combined,  $S=f(\text{depth})$

Unit Weight: 16.4 kN/m<sup>3</sup>

Phi: 30 °

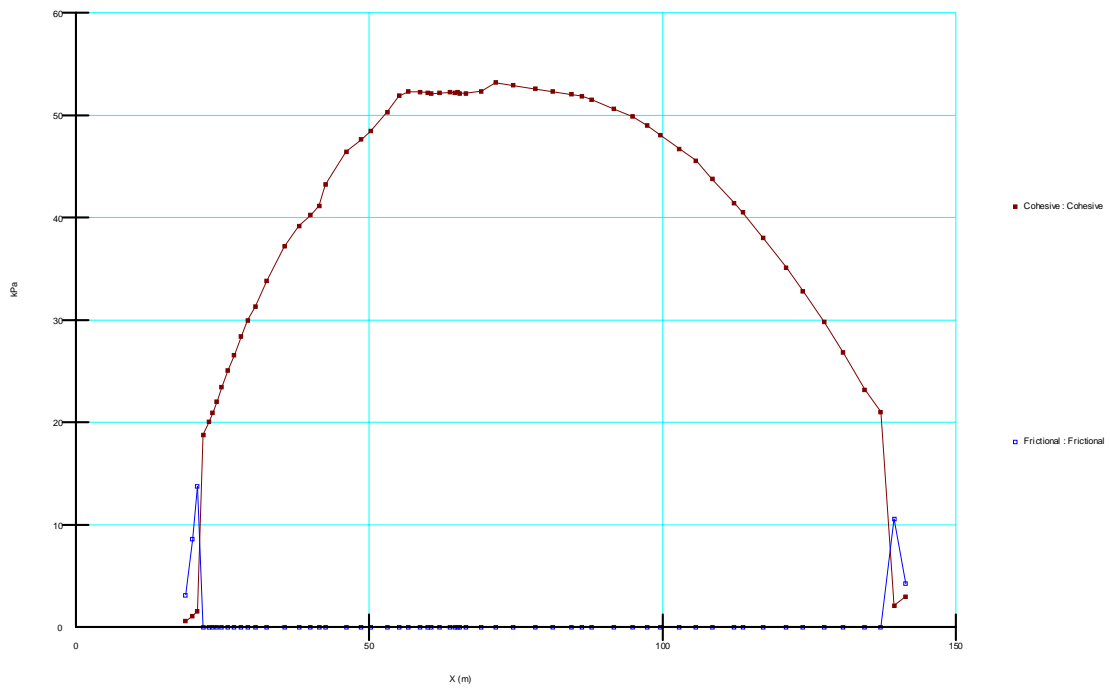
C-Top of Layer: 0 kPa

C-Rate of Change: 0 kPa/m

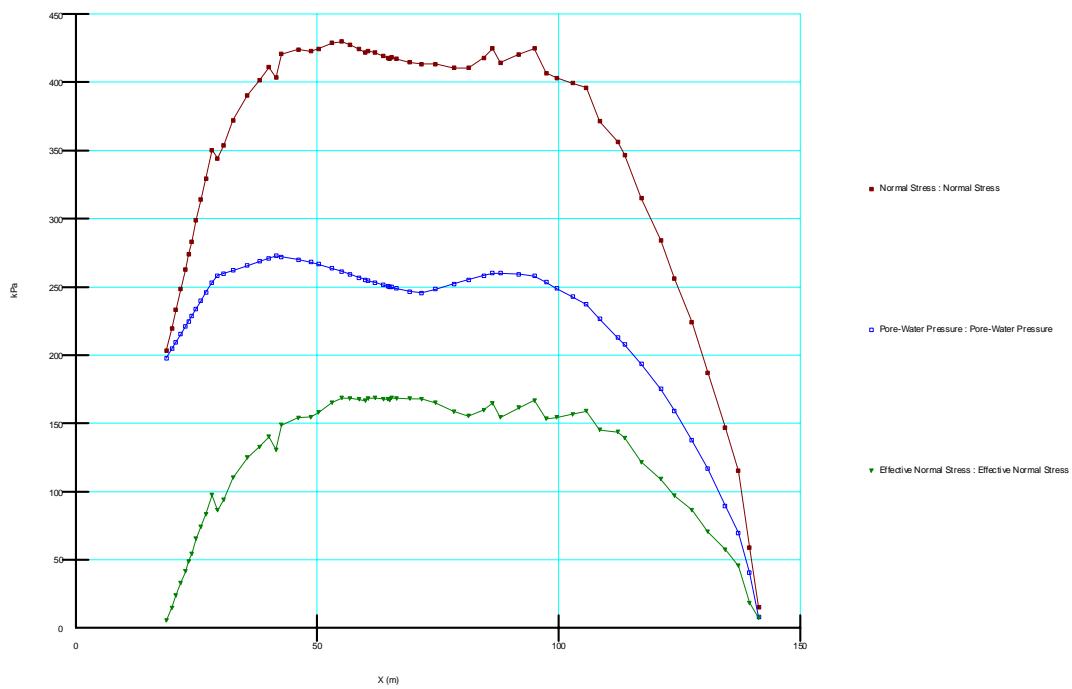
Cu-Top of Layer: 18 kPa

Cu-Rate of Change: 1.5 kPa/m

C/Cu Ratio: 0.1



Figur 1. Kohesion och friktion.



Figur 2. Totalspänning, effektivspänning och portryck.





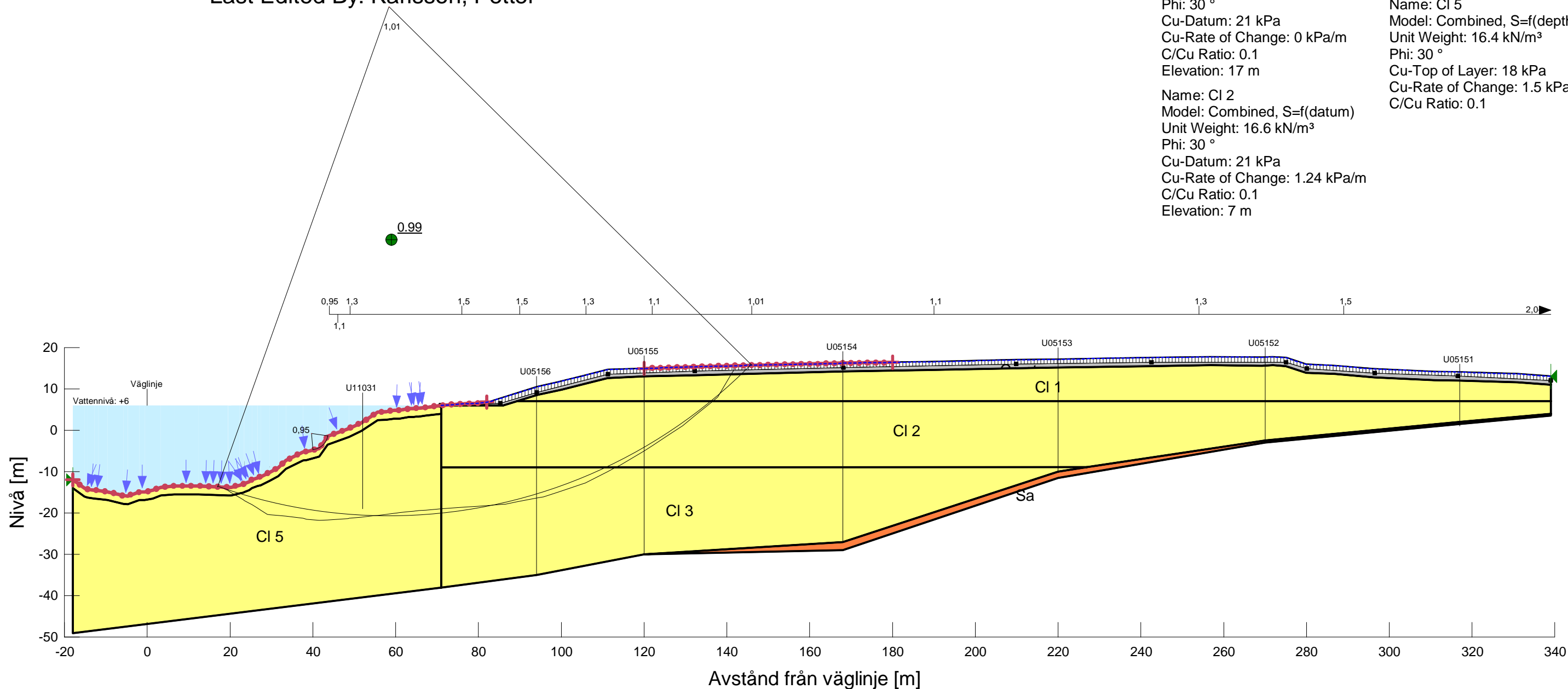
# KLIMATANPASSNING SKREDFÖRUTSÄTTNINGAR I GÖTA ÄLVDALLEN

Sektion: V25900  
 Delområde: Intagan - Ström  
 Analysmetod: Kombinerad analys

Slip Surface Option: Entry and Exit  
 Method: Morgenstern-Price  
 PWP Conditions Source: Pressure Head Spatial Function  
 Date: 2011-03-19  
 Created By: Petter Karlsson  
 Last Edited By: Karlsson, Petter

## Skala 1:1000 (A3)

- |   |   |
|---|---|
| Name: Crust<br>Model: Combined, S=f(depth)<br>Unit Weight: 18 kN/m <sup>3</sup><br>Phi: 30 °<br>Cu-Top of Layer: 30 kPa<br>Cu-Rate of Change: 0 kPa/m<br>C/Cu Ratio: 0.1                | Name: CI 3<br>Model: Combined, S=f(datum)<br>Unit Weight: 16.2 kN/m <sup>3</sup><br>Phi: 30 °<br>Cu-Datum: 21 kPa<br>Cu-Rate of Change: 1.24 kPa/m<br>C/Cu Ratio: 0.1<br>Elevation: 7 m |
| Name: Sa<br>Model: Mohr-Coulomb<br>Unit Weight: 19.5 kN/m <sup>3</sup><br>Cohesion: 0 kPa<br>Phi: 32 °  | Name: CI 4<br>Model: Combined, S=f(depth)<br>Unit Weight: 16.4 kN/m <sup>3</sup><br>Phi: 30 °<br>Cu-Top of Layer: 3 kPa<br>Cu-Rate of Change: 7.5 kPa/m<br>C/Cu Ratio: 0.1              |
| Name: CI 1<br>Model: Combined, S=f(datum)<br>Unit Weight: 16.6 kN/m <sup>3</sup><br>Phi: 30 °<br>Cu-Datum: 21 kPa<br>Cu-Rate of Change: 0 kPa/m<br>C/Cu Ratio: 0.1<br>Elevation: 17 m   | Name: CI 5<br>Model: Combined, S=f(depth)<br>Unit Weight: 16.4 kN/m <sup>3</sup><br>Phi: 30 °<br>Cu-Top of Layer: 18 kPa<br>Cu-Rate of Change: 1.5 kPa/m<br>C/Cu Ratio: 0.1             |
| Name: CI 2<br>Model: Combined, S=f(datum)<br>Unit Weight: 16.6 kN/m <sup>3</sup><br>Phi: 30 °<br>Cu-Datum: 21 kPa<br>Cu-Rate of Change: 1.24 kPa/m<br>C/Cu Ratio: 0.1<br>Elevation: 7 m |   |





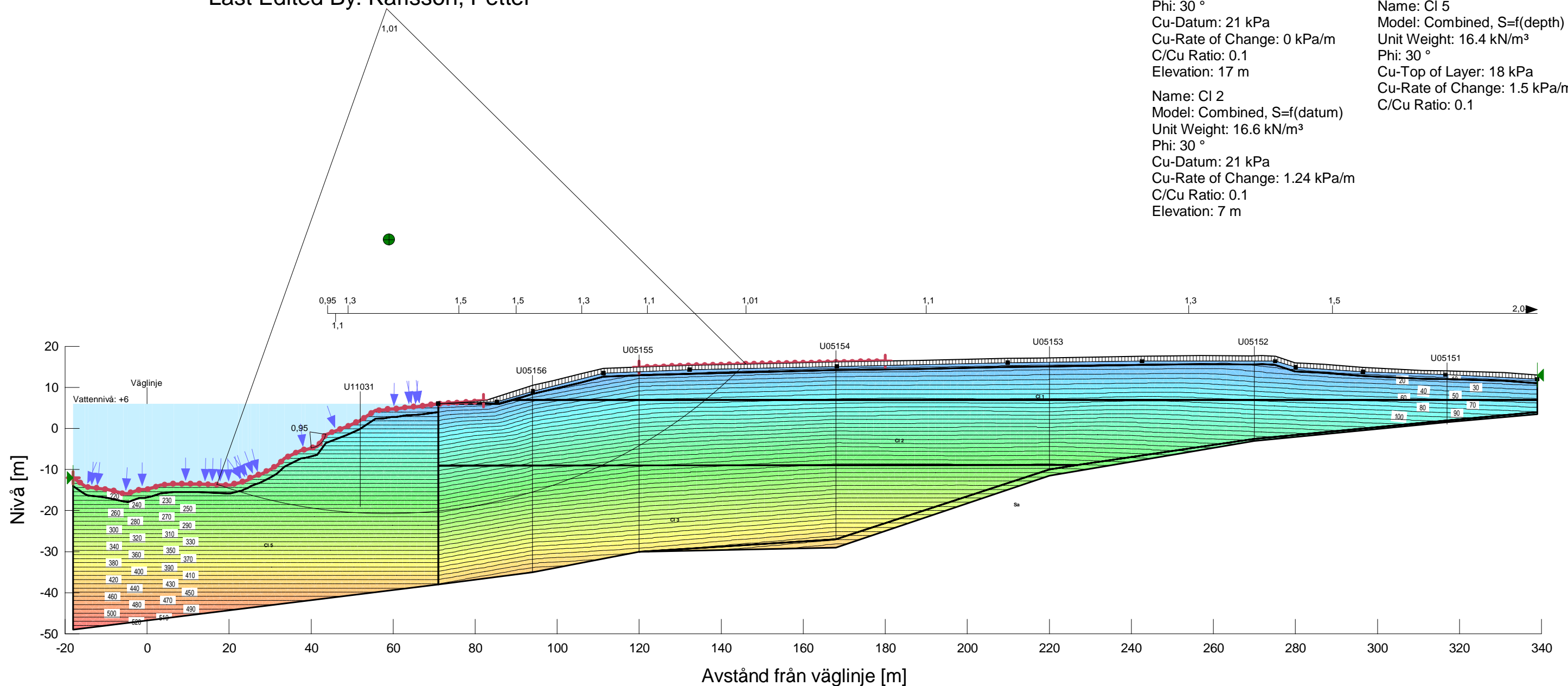
# KLIMATANPASSNING SKREDFÖRUTSÄTTNINGAR I GÖTA ÄLVDALEN

Sektion: V25900  
 Delområde: Intagan - Ström  
 Analysmetod: Kombinerad analys

Slip Surface Option: Entry and Exit  
 Method: Morgenstern-Price  
 PWP Conditions Source: Pressure Head Spatial Function  
 Date: 2011-03-19  
 Created By: Petter Karlsson  
 Last Edited By: Karlsson, Petter

## Skala 1:1000 (A3)

Name: Crust	Name: CI 3
Model: Combined, S=f(depth)	Model: Combined, S=f(datum)
Unit Weight: 18 kN/m <sup>3</sup>	Unit Weight: 16.2 kN/m <sup>3</sup>
Phi: 30 °	Phi: 30 °
Cu-Top of Layer: 30 kPa	Cu-Datum: 21 kPa
Cu-Rate of Change: 0 kPa/m	Cu-Rate of Change: 1.24 kPa/m
C/Cu Ratio: 0.1	C/Cu Ratio: 0.1
	Elevation: 7 m
Name: Sa	Name: CI 4
Model: Mohr-Coulomb	Model: Combined, S=f(depth)
Unit Weight: 19.5 kN/m <sup>3</sup>	Unit Weight: 16.4 kN/m <sup>3</sup>
Cohesion: 0 kPa	Phi: 30 °
Phi: 32 °	Cu-Top of Layer: 3 kPa
Name: CI 1	Cu-Rate of Change: 7.5 kPa/m
Model: Combined, S=f(datum)	C/Cu Ratio: 0.1
Unit Weight: 16.6 kN/m <sup>3</sup>	Name: CI 5
Phi: 30 °	Model: Combined, S=f(depth)
Cu-Datum: 21 kPa	Unit Weight: 16.4 kN/m <sup>3</sup>
Cu-Rate of Change: 0 kPa/m	Phi: 30 °
C/Cu Ratio: 0.1	Cu-Top of Layer: 18 kPa
Elevation: 17 m	Cu-Rate of Change: 1.5 kPa/m
Name: CI 2	C/Cu Ratio: 0.1
Model: Combined, S=f(datum)	
Unit Weight: 16.6 kN/m <sup>3</sup>	
Phi: 30 °	
Cu-Datum: 21 kPa	
Cu-Rate of Change: 1.24 kPa/m	
C/Cu Ratio: 0.1	
Elevation: 7 m	



Directory: V:\UPPDRAG\227763\G\_Text\V25900, U05151-U05156\  
 File Name: V25900\_kombinerad.gsz