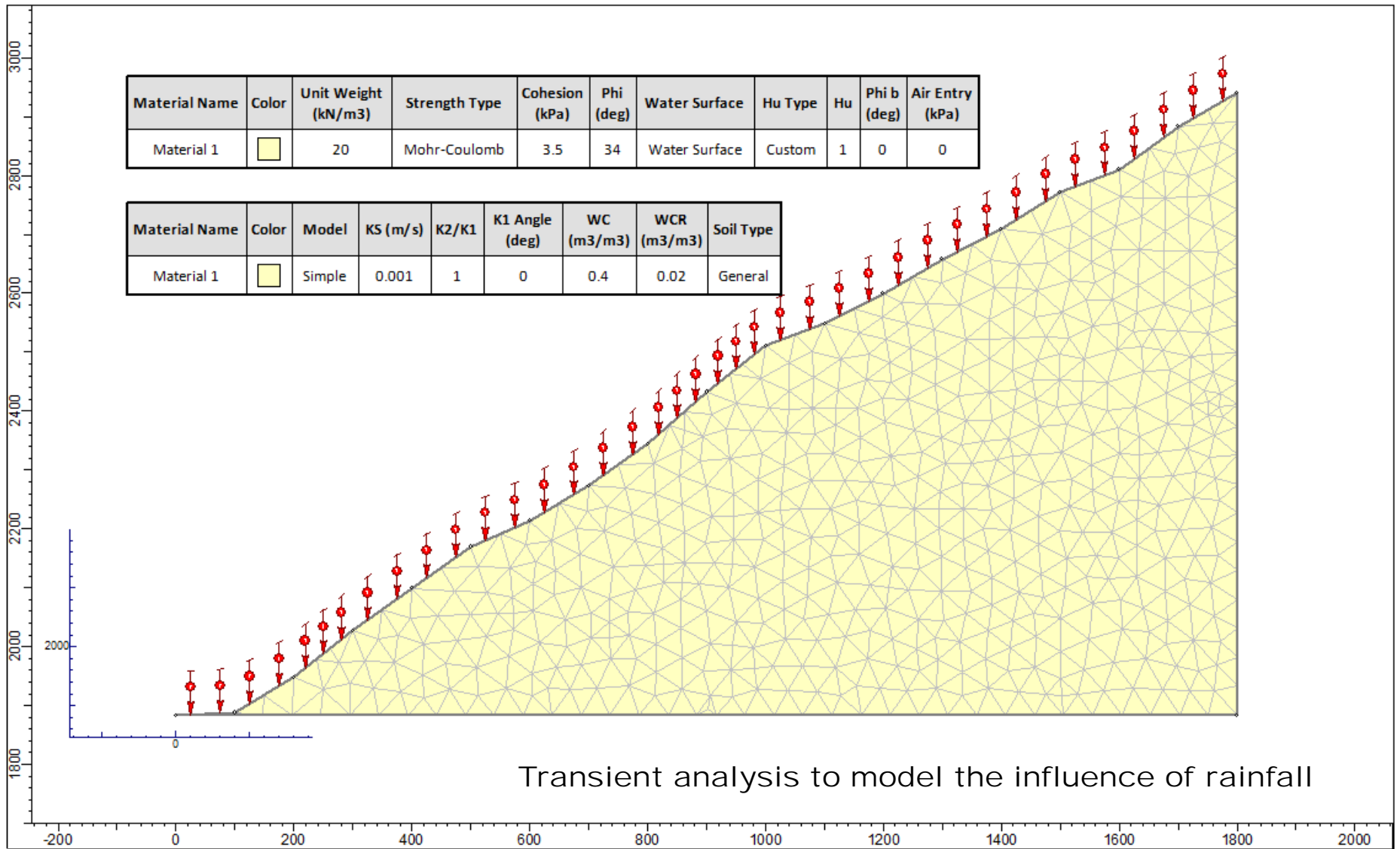
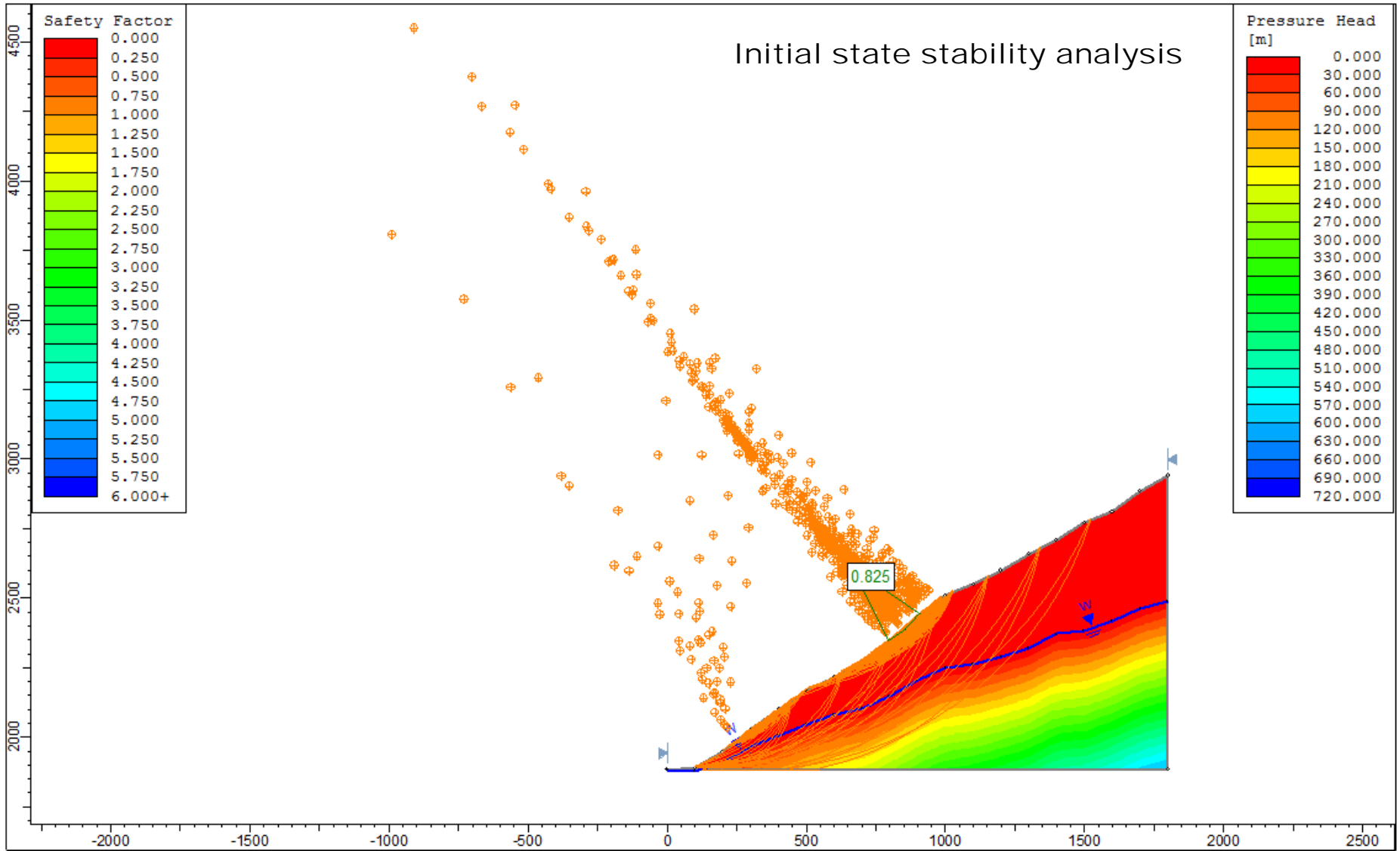


Site geometry for slope stability analysis

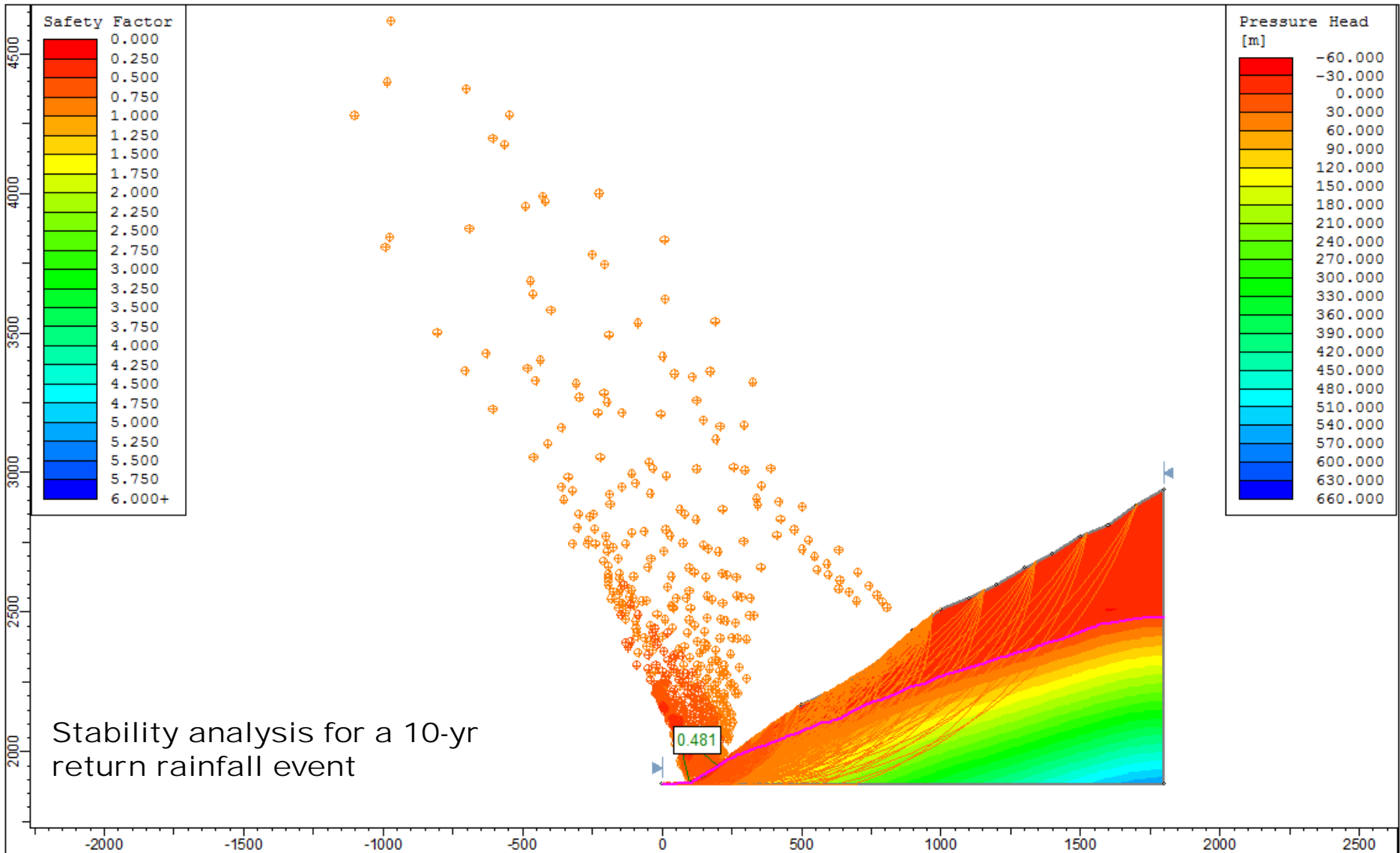


Transient analysis to model the influence of rainfall

Initial state stability analysis



				Transportation Geohazard DSS: Afghanistan			
<i>Transient slope stability analysis using method of slice</i>							
Analysis by: Dr. Thomas Oommen Ph.D.			Scale: 1:18728		Company: Michigan Technological University		
Date: 2/20/2017, 11:52:33 PM			File Name: Hazard Analysis.slim				

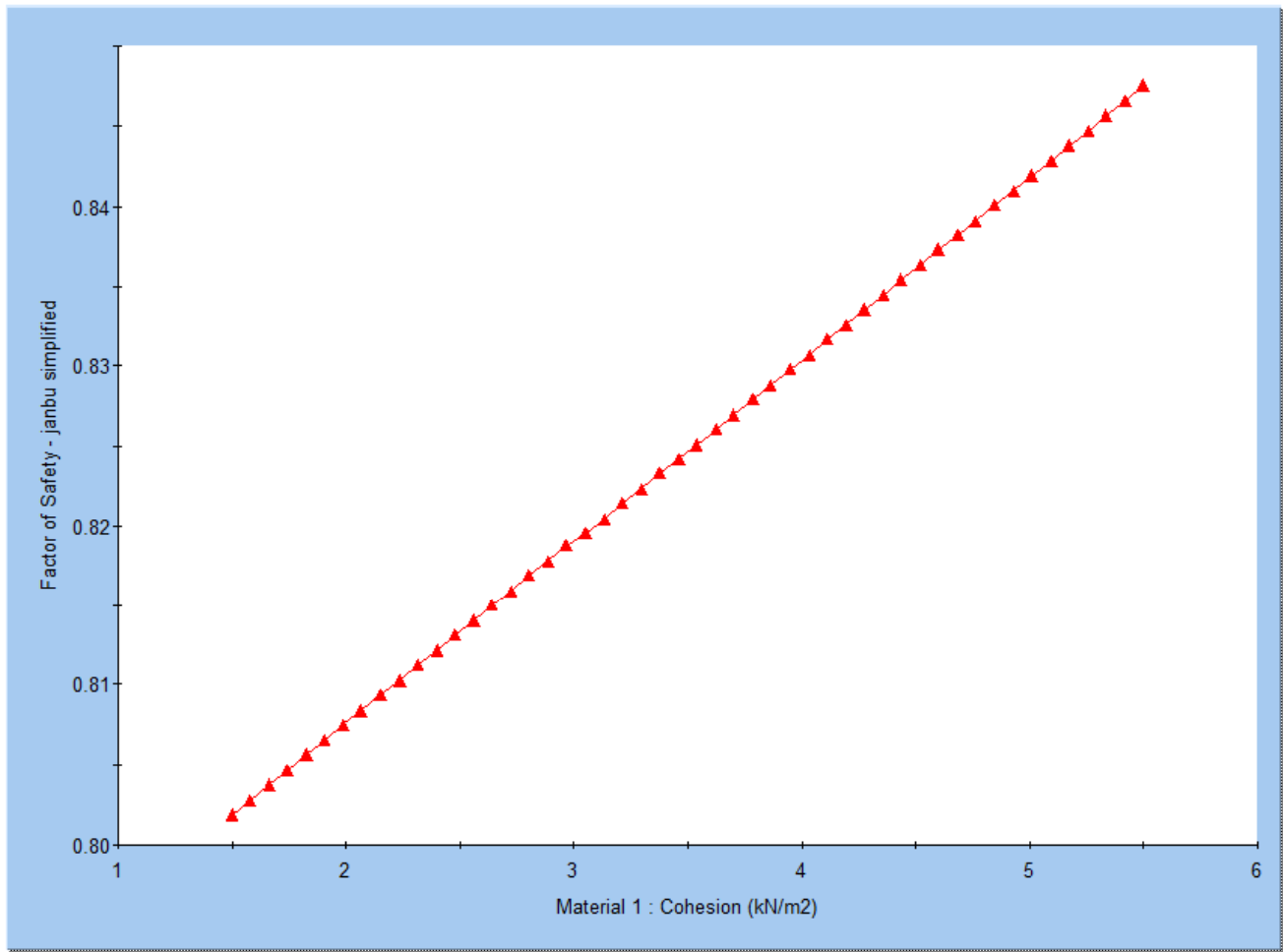


Stability analysis for a 10-yr return rainfall event

Transportation Geohazard DSS: Afghanistan

THE WORLD BANK Michigan Tech Michigan Tech Research Institute

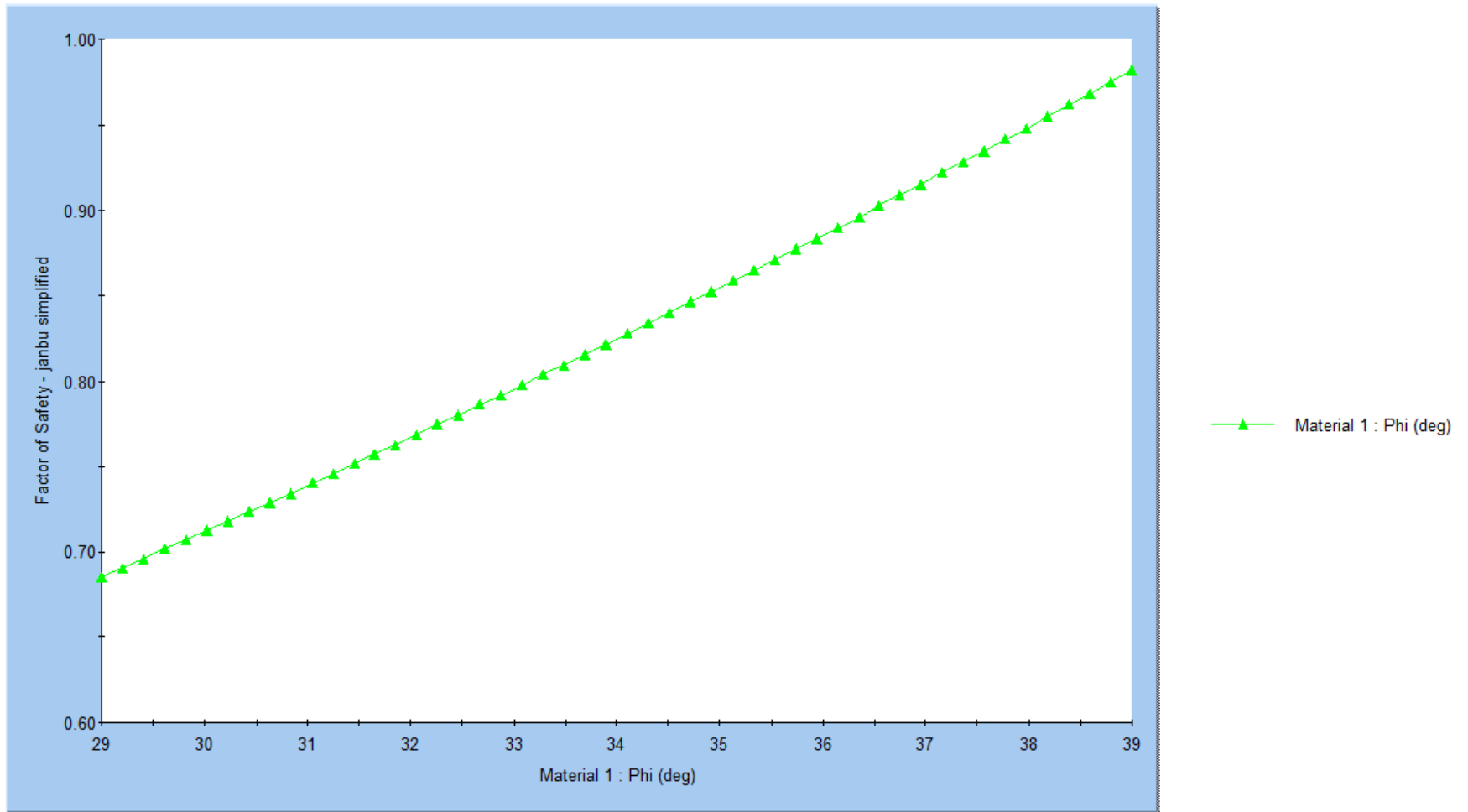
Transient slope stability analysis using method of slice			
Analysis by: Dr. Thomas Oommen Ph.D.	Scale 1:18728	Company	Michigan Technological University
Date	2/20/2017, 11:52:33 PM	File Name	Hazard Analysis.slim



Material 1 : Cohesion (kN/m²)

Initial Stage

Sensitivity Analysis



Initial Stage

Sensitivity Analysis



THE WORLD BANK Michigan Tech

Transportation Geohazard DSS: Afghanistan

Transient slope stability analysis using method of slice

Analysis by: Dr. Thomas Oommen Ph.D.

Scale

Company

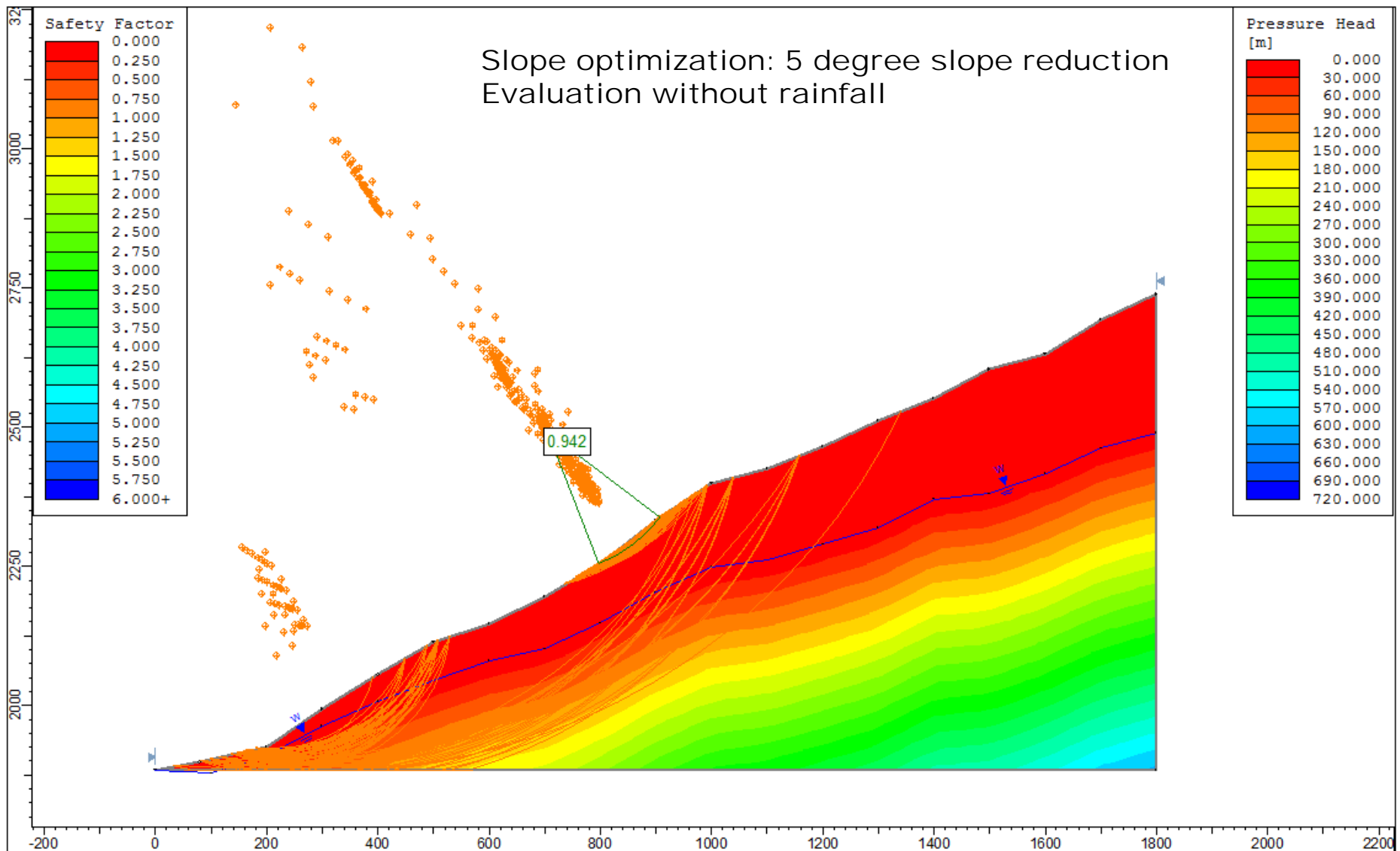
Michigan Technological University


Date

2/20/2017, 11:52:33 PM

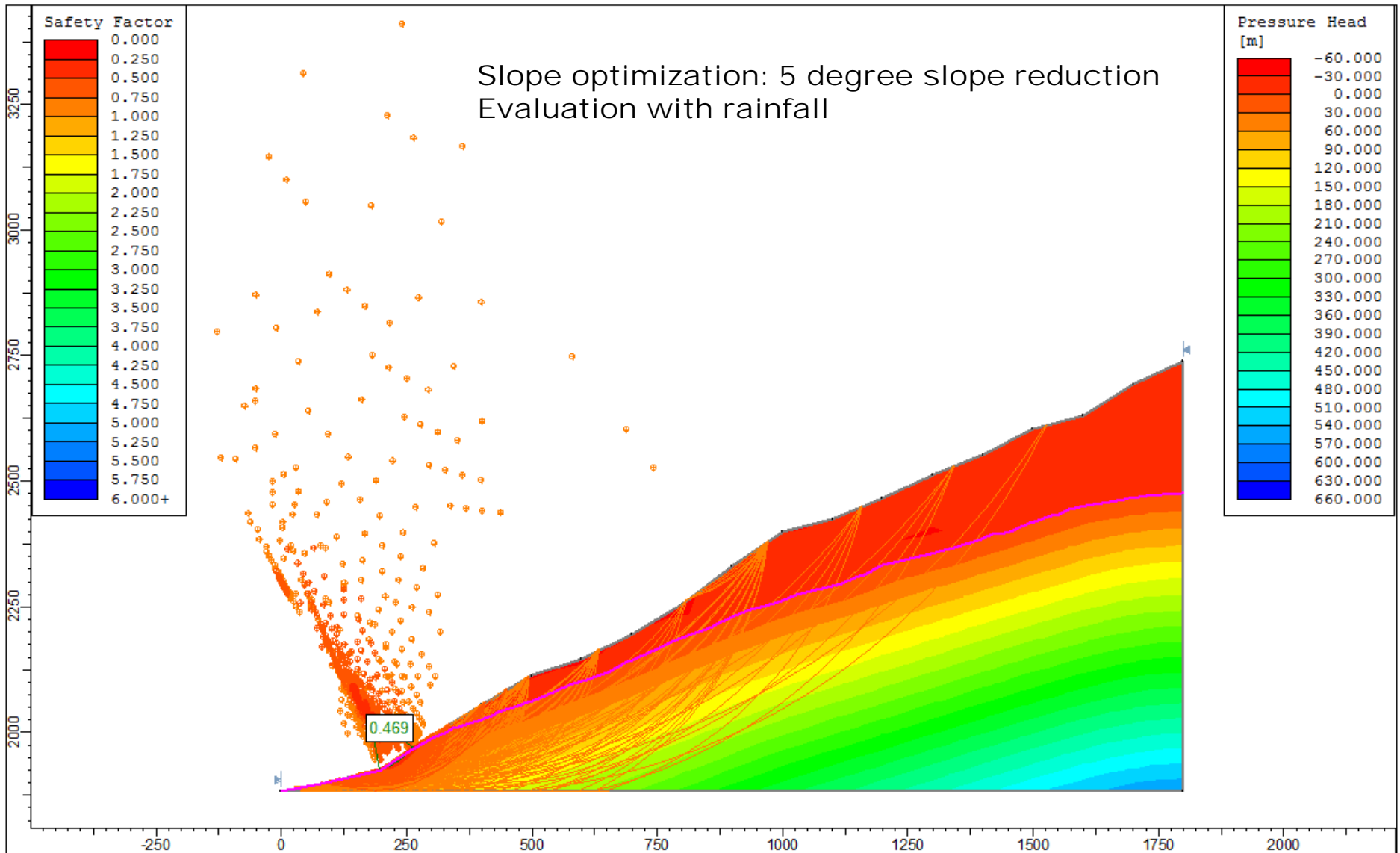
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Hazard Analysis_Sensitivity.slm

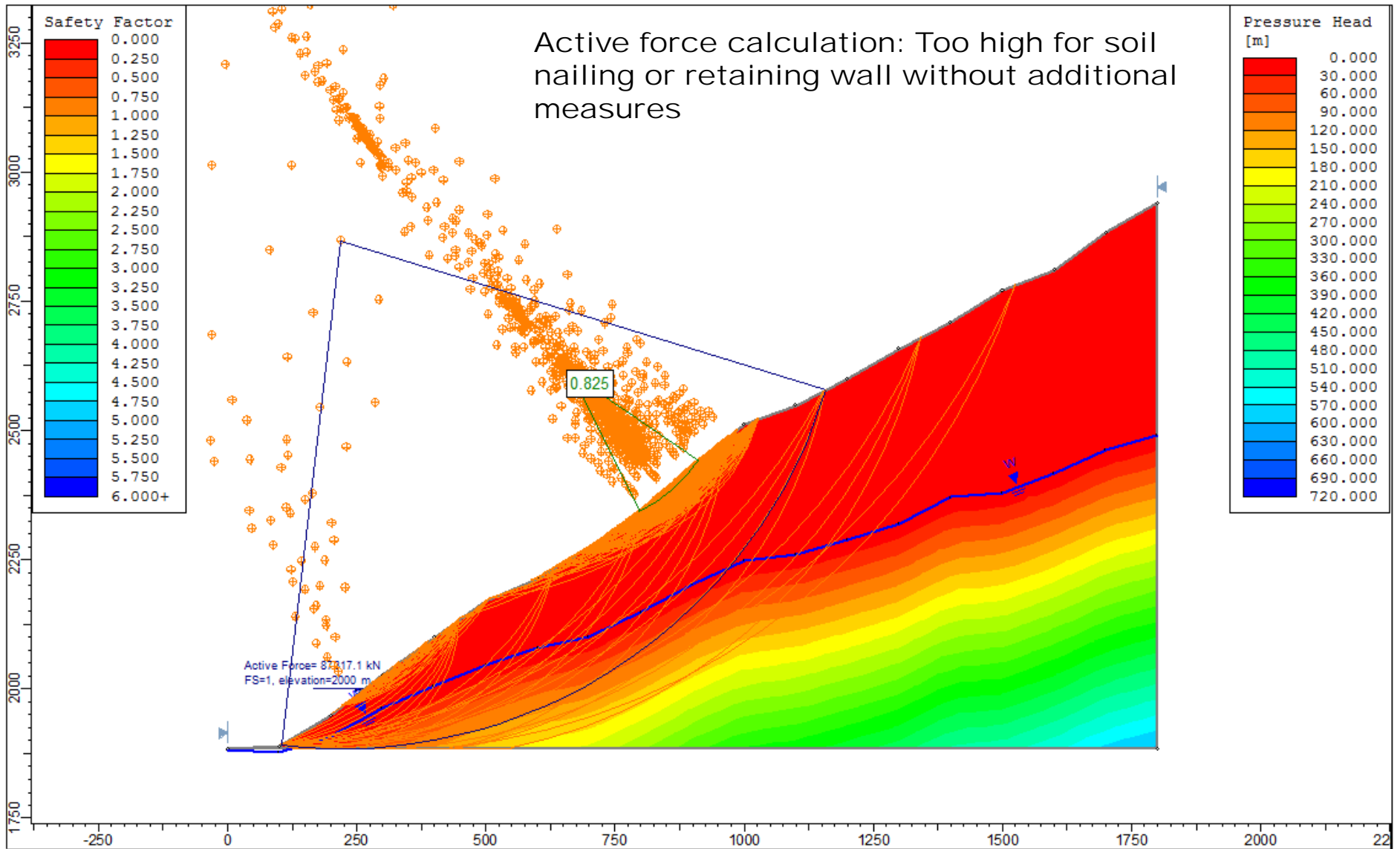


Transportation Geohazard DSS: Afghanistan			
<i>Transient slope stability analysis using method of slice</i>			
	Analysis by: Dr. Thomas Oommen Ph.D.	Scale 1:9359	Company Michigan Technological University
Date 2/20/2017, 11:52:33 PM		File Name Hazard Analysis_slope_Optim.slim	

SLIDEINTERPRET 6.035



 <p>THE WORLD BANK Michigan Tech Michigan Tech Research Institute</p>	Transportation Geohazard DSS: Afghanistan		
<i>Transient slope stability analysis using method of slice</i>			
Analysis by: Dr. Thomas Oommen Ph.D.	Scale: 1:10399	Company: Michigan Technological University	
Date: 2/20/2017, 11:52:33 PM	File Name: Hazard Analysis_slope_Optim.slim		



Active force calculation: Too high for soil nailing or retaining wall without additional measures

Active Force= 83317.1 kN
FS=1, elevation=2000 m

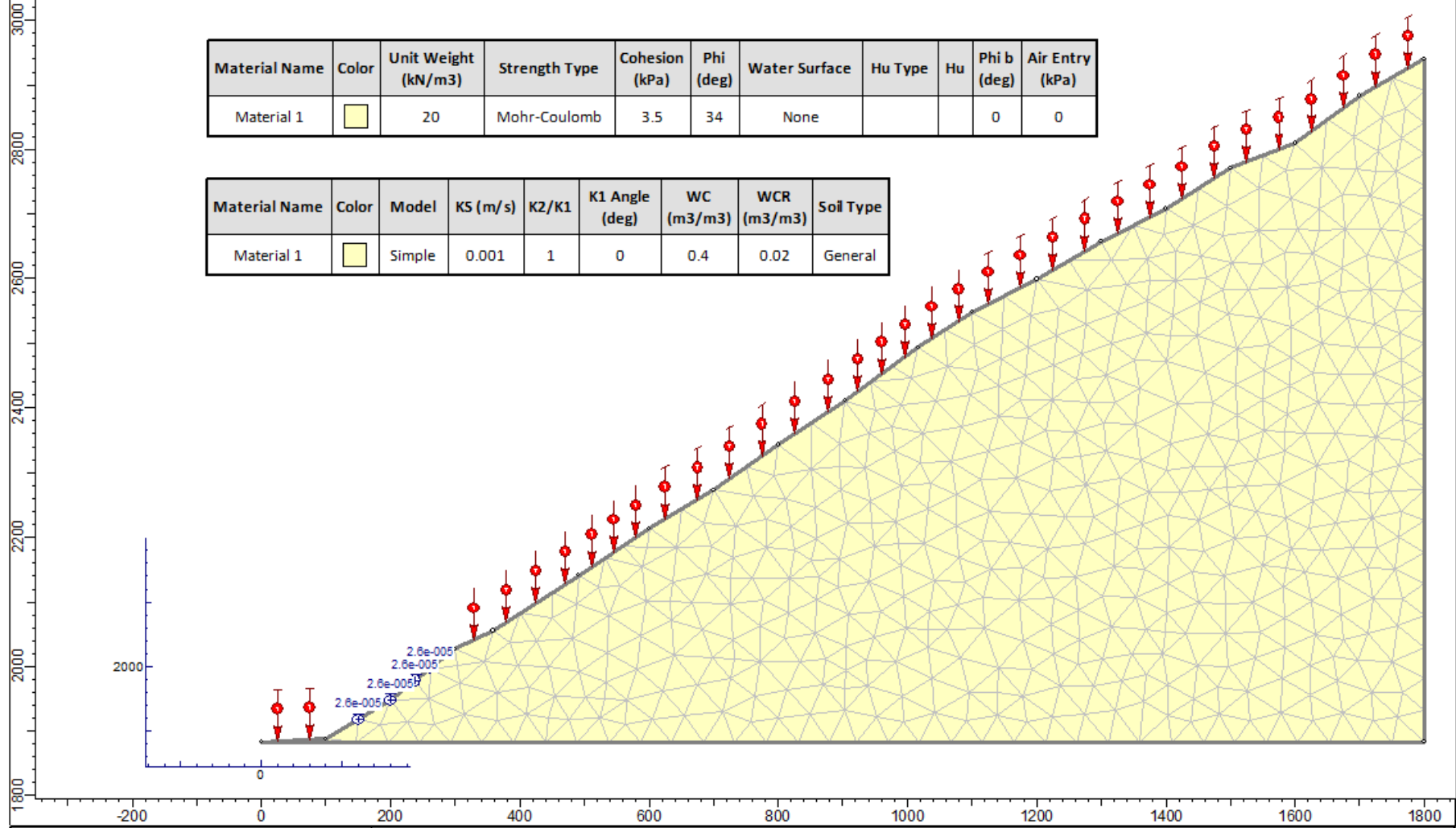
0.825


		Transportation Geohazard DSS: Afghanistan	
<i>Transient slope stability analysis using method of slice</i>			
Analysis by: Dr. Thomas Oommen Ph.D.		Scale: 1:10055	Company: Michigan Technological University
Date: 2/20/2017, 11:52:33 PM		File Name: Hazard Analysis_Sensitivity.slim	

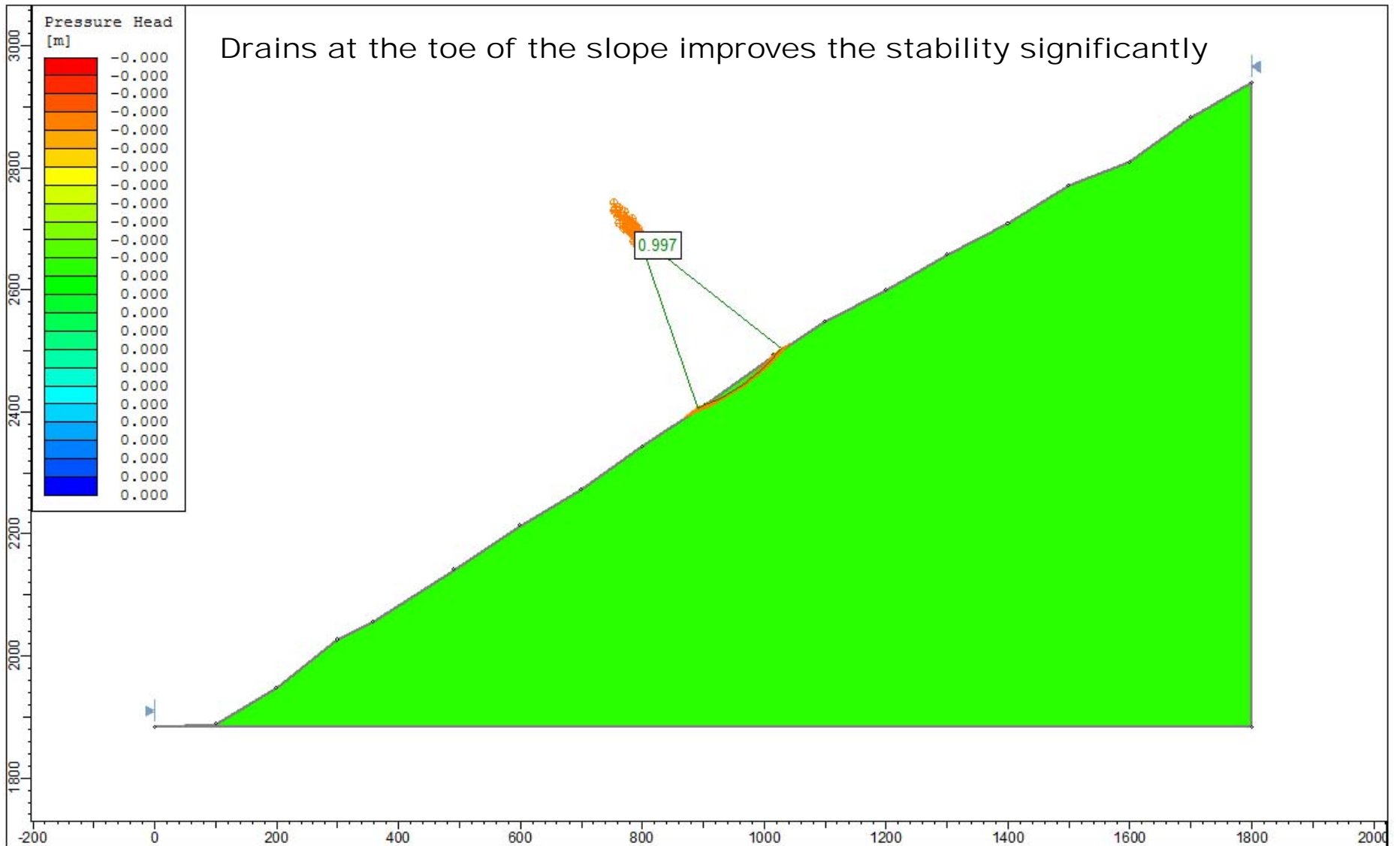
Drains at the toe of the slope to lower the ground water table

Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu	Phi b (deg)	Air Entry (kPa)
Material 1	Yellow	20	Mohr-Coulomb	3.5	34	None			0	0

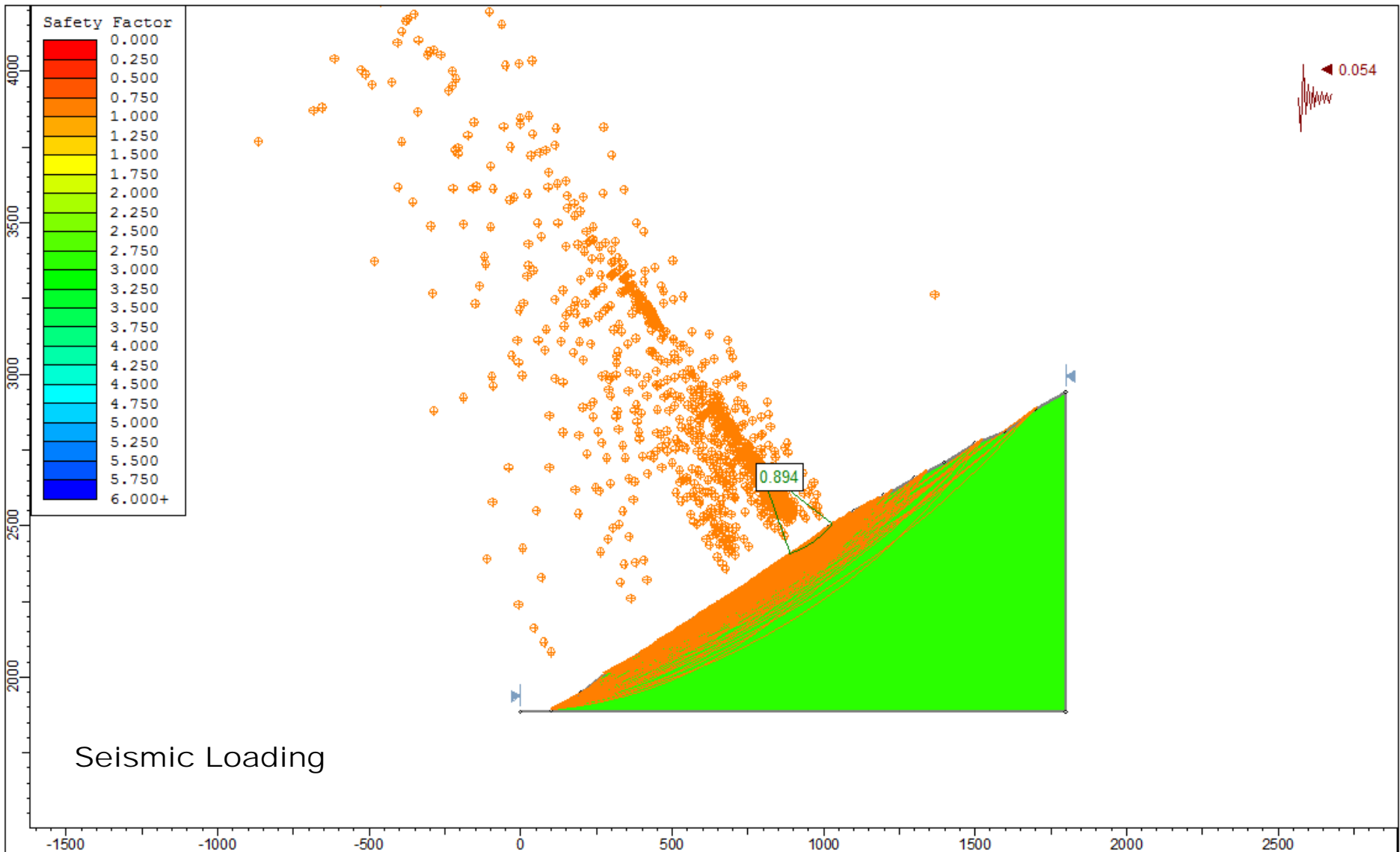
Material Name	Color	Model	KS (m/s)	K2/K1	K1 Angle (deg)	WC (m ³ /m ³)	WCR (m ³ /m ³)	Soil Type
Material 1	Yellow	Simple	0.001	1	0	0.4	0.02	General



		Transportation Geohazard DSS: Afghanistan	
<i>Transient slope stability analysis using method of slice</i>			
Analysis by: <i>Dr. Thomas Oommen Ph.D.</i>		Scale: 1:8395	Company: Michigan Technological University
Date: 2/20/2017, 11:52:33 PM		File Name: Hazard Analysis_Slope angle and Water control.slim	



				Transportation Geohazard DSS: Afghanistan	
<i>Transient slope stability analysis using method of slice</i>					
Analysis by: <i>Dr. Thomas Oommen Ph.D.</i>			Scale: 1:8497	Company: Michigan Technological University	
Date: 2/20/2017, 11:52:33 PM			File Name: Hazard Analysis_Slope angle and Water control.slim		



				Transportation Geohazard DSS: Afghanistan	
<i>Transient slope stability analysis using method of slices</i>					
Analysis by: <i>Dr. Thomas Oommen Ph.D.</i>			Scale: 1:17240	Company: Michigan Technological University	
Date: 2/20/2017, 11:52:33 PM			File Name: Hazard Analysis_Slope angle and Water control.slim		