

Our Ref: PSM71-320L Rev 1

15 August 2024

MP4 Project Manager
OceanaGold
Golden Point Road
RD3, Macraes Flat
East Otago 9483
dean@rarl.co.nz

Attention: Dean Fergusson

Dear Dean,

G3 56 Delhi Road
North Ryde NSW 2113
P +61-2 9812 5000
E mailbox@psm.com.au
www.psm.com.au

RE: CONSENT APPLICATION RM24.184 - SECTION 92(1) REQUEST FOR FURTHER INFORMATION

1. Response to ORC RFI

An initial assessment of the resource consent for MP4 LoM (Consent Application Number RM24.184) was undertaken by the Otago Regional Council (ORC), Waitaki District Council (WDC) and Dunedin City Council (DCC) who were supported by GeoSolve Engineering Consultants to provide a technical audit of the application.

GeoSolve has listed two review comments relating to the Coronation North Backfill Stability Assessment within the broader Project Element 4.3.2 "Open Pit Extension" Report¹. These comments form the basis of an RFI submitted to OceanaGold NZ by the ORC requested under section 92(1) of the Resource Management Act (the Act) and are presented in Table 1, together with PSM's responses.

¹ PSM71-297R Rev 1 "Project Element 4.3.2: "Open Pit Extensions" dated 02 February 2024

Table 1 – PSM Responses to s92 RFI Queries

RFI ID	GeoSolve Review Comment	PSM Response
2.8	<i>The AEE (s3.7.3) suggests that Coronation North Pit will be backfilled to a maximum height of 600 m RL but the PSM analysis shows a rock fill level above 600 m RL. Please clarify the maximum backfill height.</i>	OceanaGold have confirmed the maximum backfill height at Coronation North is 600mRL which is consistent with the stability assessments undertaken in our assessment.
2.9	<i>There is significant ongoing instability in the Coronation North pit and the backfill of the pit should buttress any unstable ground. However, to do this a minimum level of backfill is required to ensure that when the mine is closed the ground is stable. Please propose a minimum backfill level for the Coronation North Pit and justify why this is geotechnically appropriate.</i>	<p>The stability of the southwest pit slope in Coronation North is controlled by planar sliding along shallow to moderately dipping foliation shears which daylight in the upper slope or act in combination with toe breakout through the failed pelitic schist rock mass. The underlying Footwall Fault also acts as a sliding plane that can mobilise along SE dipping ramp shears that daylight in the pit floor.</p> <p>Three failure mechanisms were reviewed using 2D limited equilibrium slope stability analyses (<i>SLIDE2D</i>) to assess the minimum backfill level:</p> <ul style="list-style-type: none"> • Shallow planar sliding on foliation shears above water table • Planar sliding on foliation shears below water table • Combination sliding on the FF and ramp shears. <p>Table 2 presents the stability modelling for this scenario and graphical outputs are included in Appendix A. With a minimum backfill level of 560 mRL, the slope maintains a minimum FoS >1.0 under Maximum Design Earthquake (MDE) seismic loading. The final design backfill level of 600mRL exceeds FoS of 1.5 for all analysis scenarios.</p>

Table 2 – Summary of Coronation North Backfill Stability Results

Backfill Level (mRL)	Seismic Load	Factor of Safety		
		Planar sliding along foliation shears AWT	Planar sliding along foliation shears BWT	Combination - Planar sliding along FF and ramp shears
As Built ⁽¹⁾	Static	1.46	1.03	0.89
560	Static	1.53	1.52	1.77
	MDE	1.12	1.15	1.15
570	Static	1.60	1.72	2.02
	MDE	1.16	1.33	1.29
580	Static	2.07	2.02	2.34
	MDE	1.43	1.53	1.42
600	Static	3.75	3.34	3.22
	MDE	2.47	2.20	1.72

(1) Assumes current pit lake level at approximately 510mRL.

Yours Sincerely

Handwritten signature of Kelly Horrocks in black ink.

**KELLY HORROCKS
SENIOR ENGINEERING GEOLOGIST**

Encl:

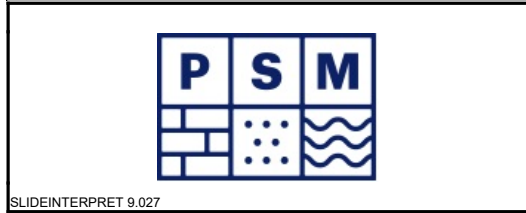
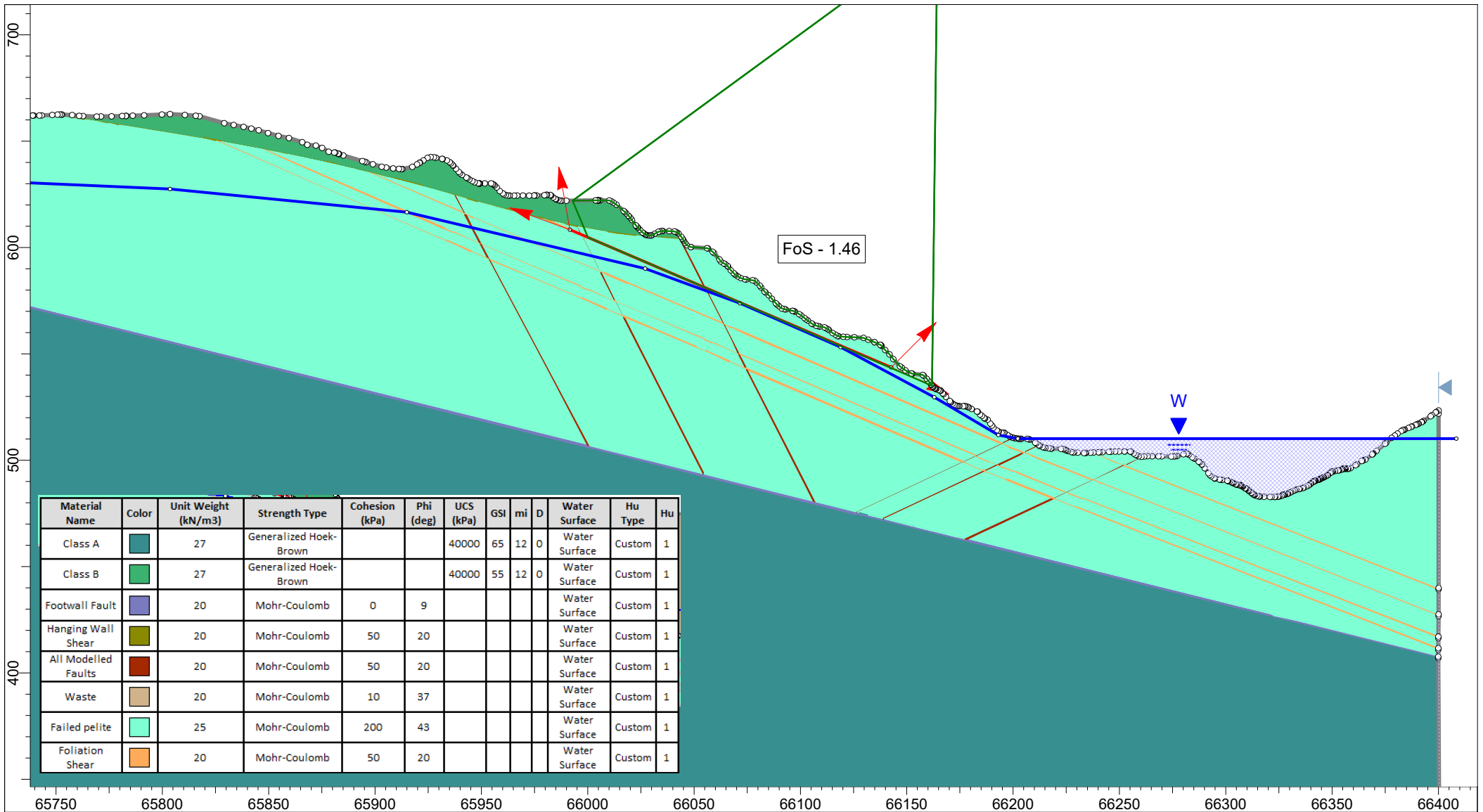
Appendix A – Stability Analysis

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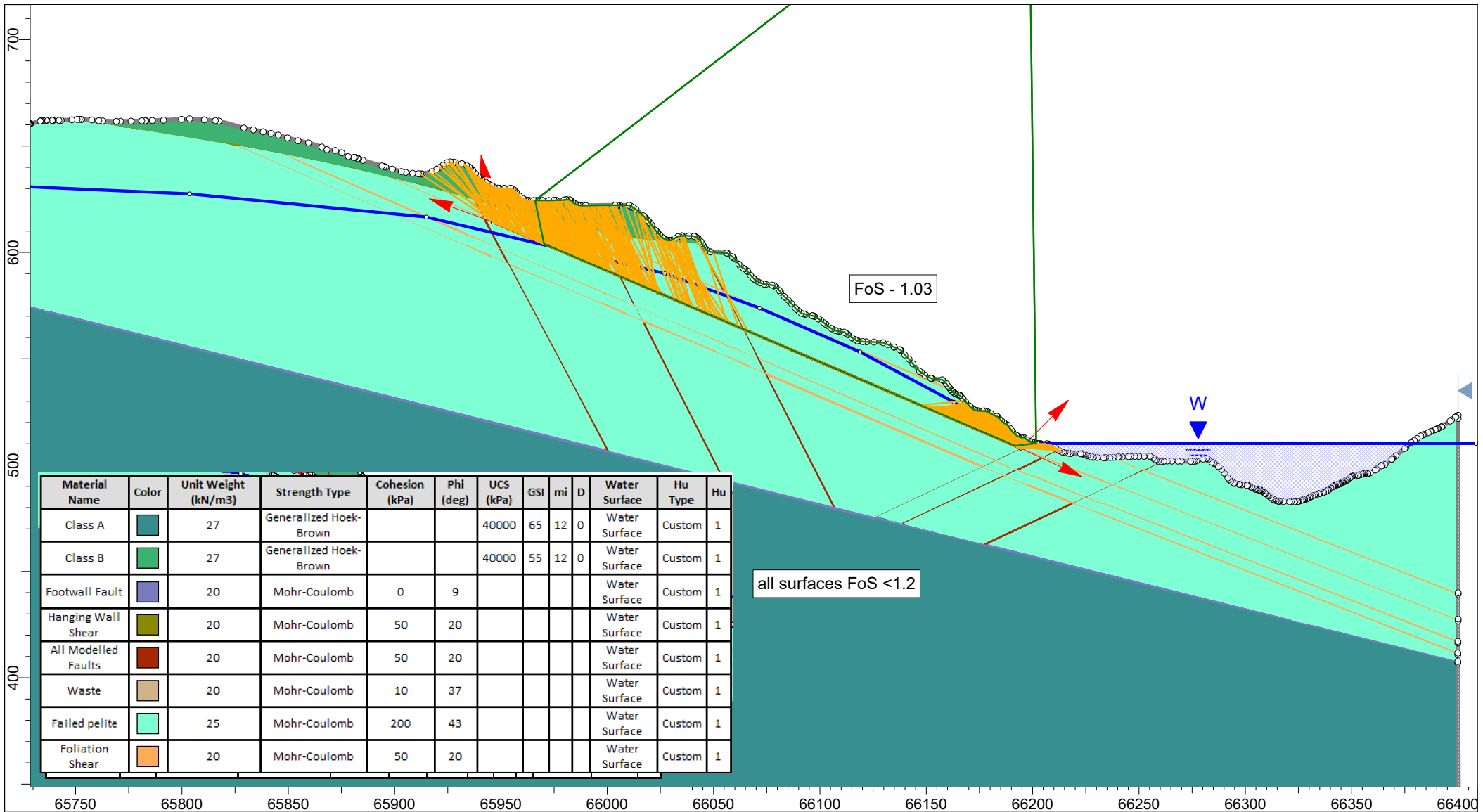
**RICHARD BREHAUT
PRINCIPAL**

Appendix A

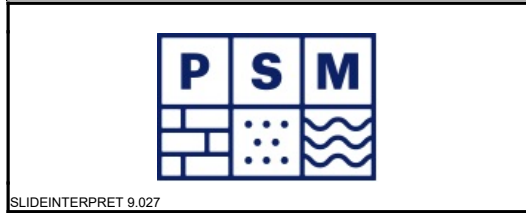
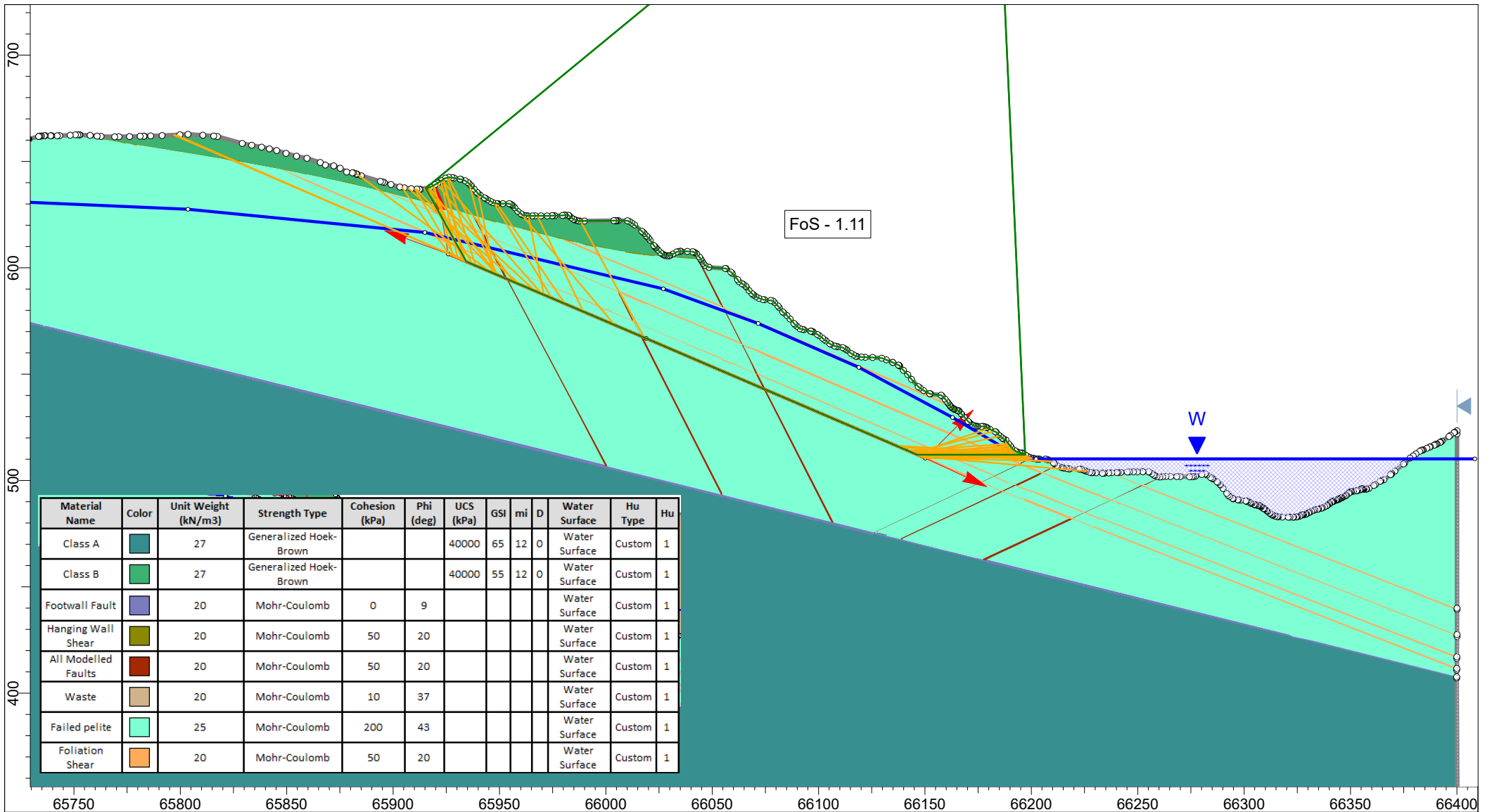
Stability Analyses



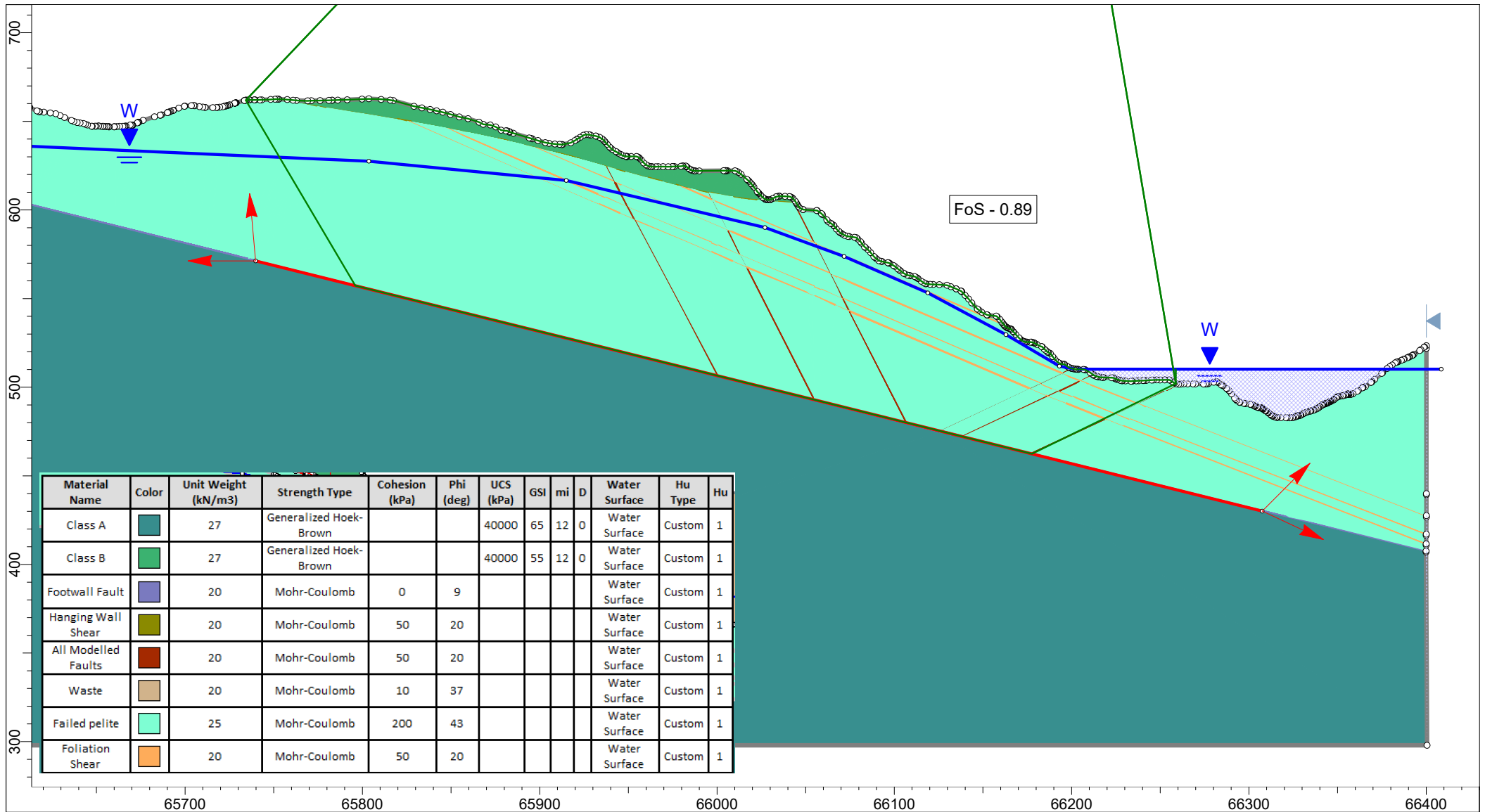
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Project:	Macraes Phase 4 Consenting								
Location:	Coronation North Backfill - Southwest slope								
Analysis description:	As-built with current pit lake								
Job No:	PSM71	By:	KH	Date:	12/08/2024	Scale:	1:2500	Run ID:	AWT Foliation Shear



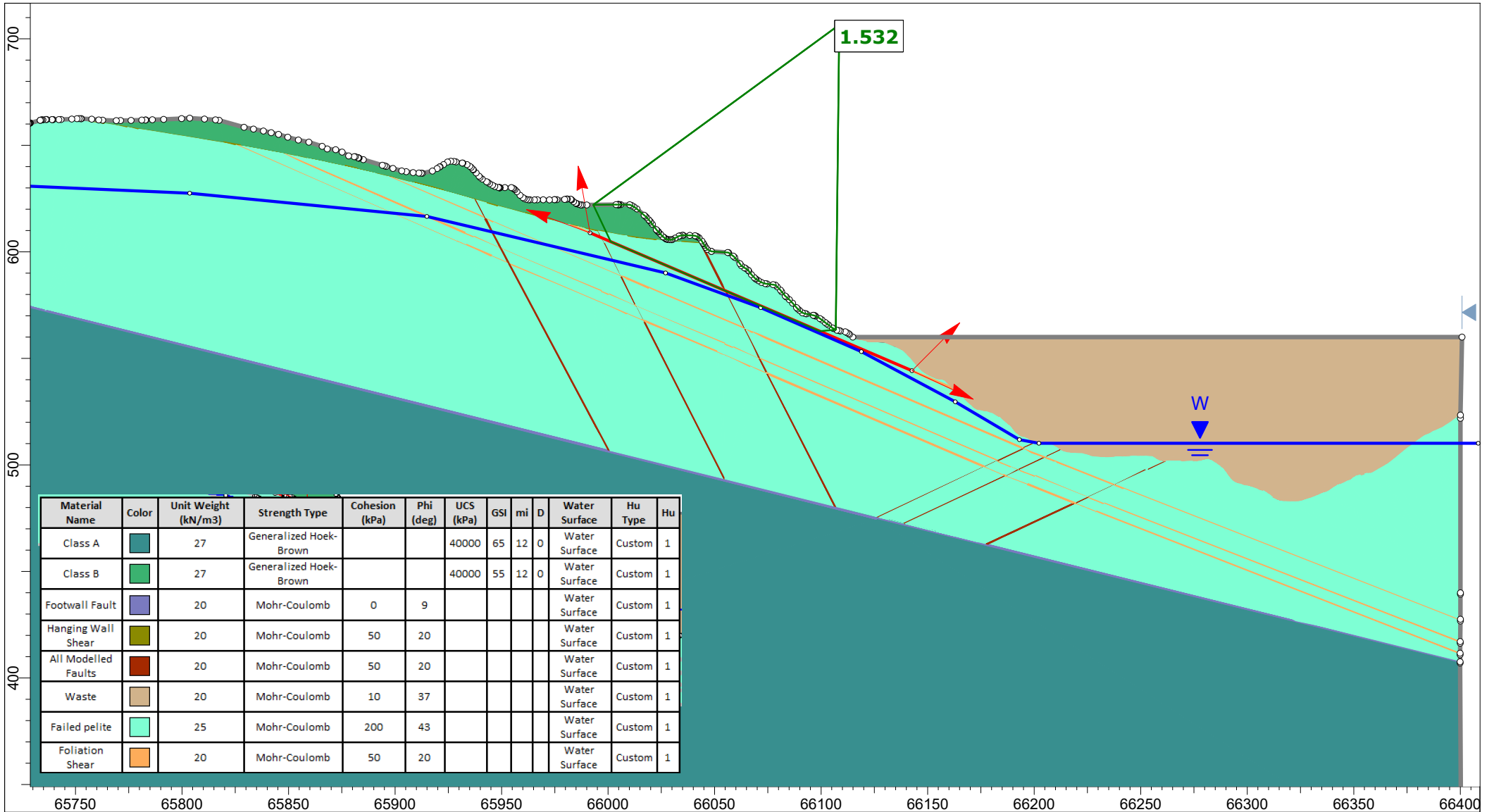
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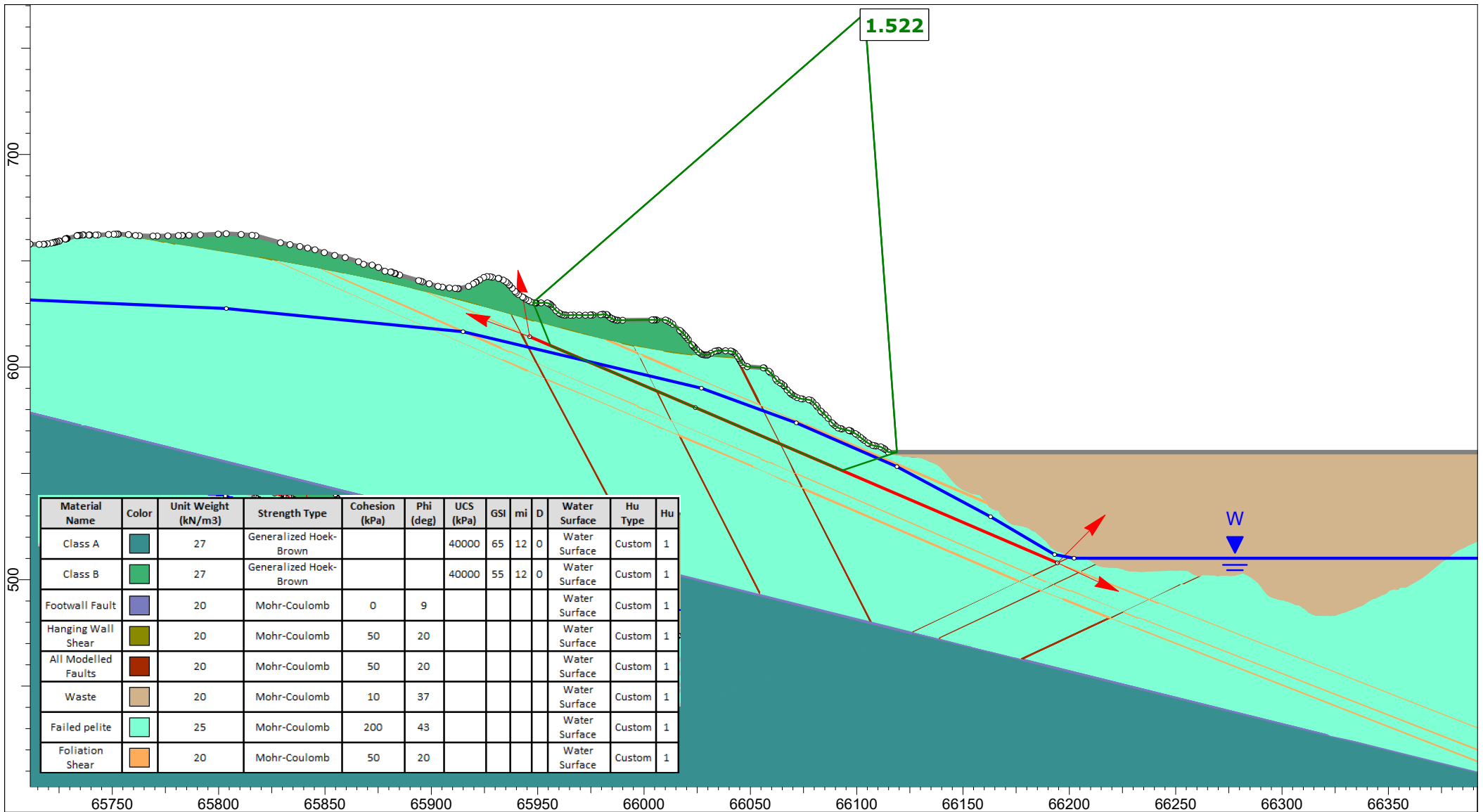
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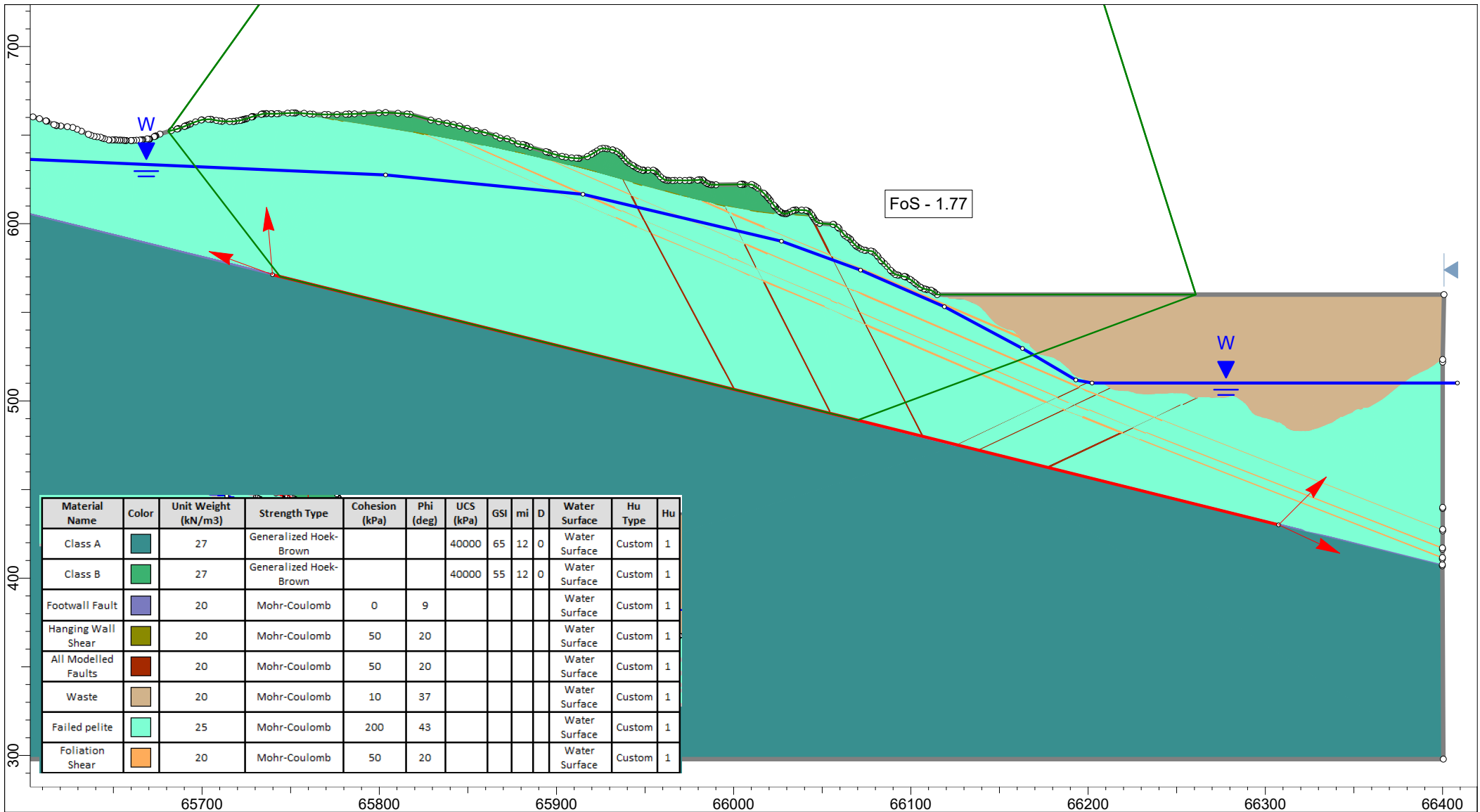
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Scale: 1:3000		Run ID: Planar Sliding FF



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	Project:	Macraes Phase 4 Consenting							
	Location:	Coronation North Backfill - Southwest slope							
	Analysis description:	Backfill - 560 mRL Static							
Job No:	PSM71	By:	KH	Date:	12/08/2024	Scale:	1:2500	Run ID:	AWT Foliation Shear



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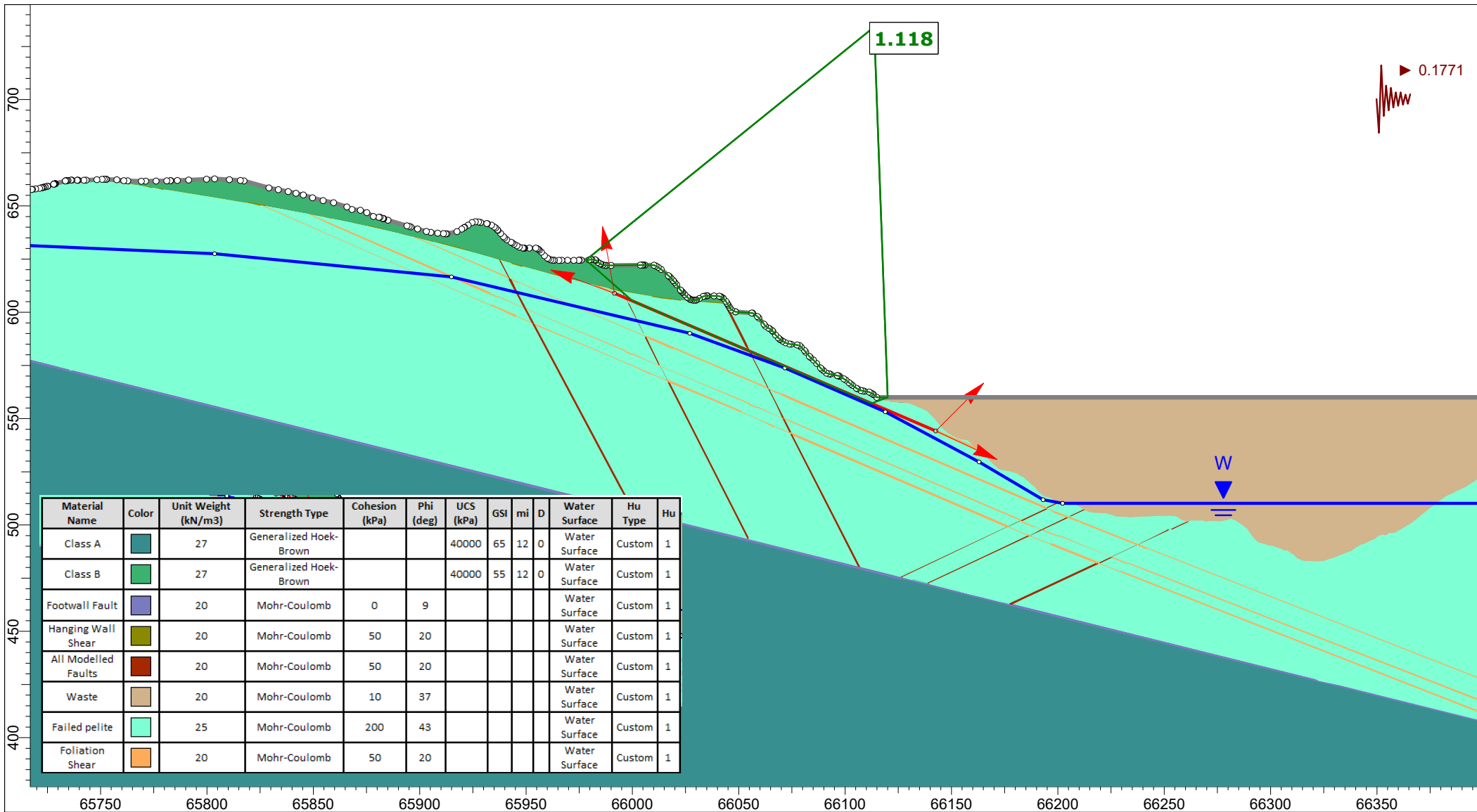


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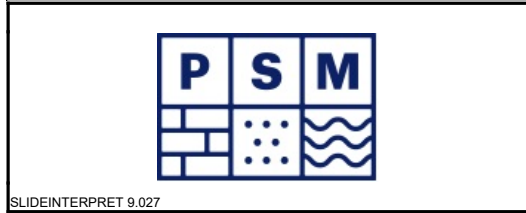
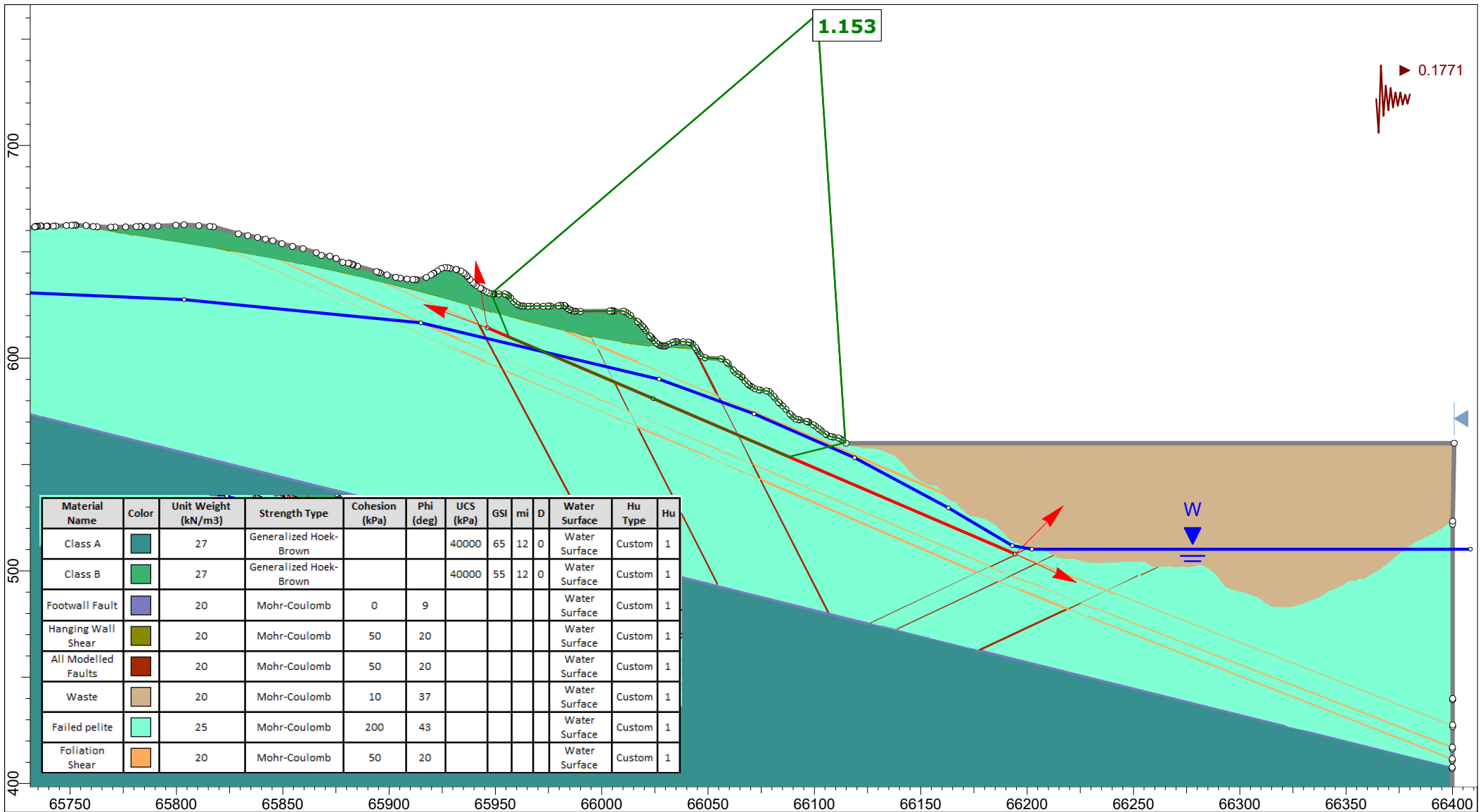
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Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
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Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1
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SLIDEINTERPRET 9.027

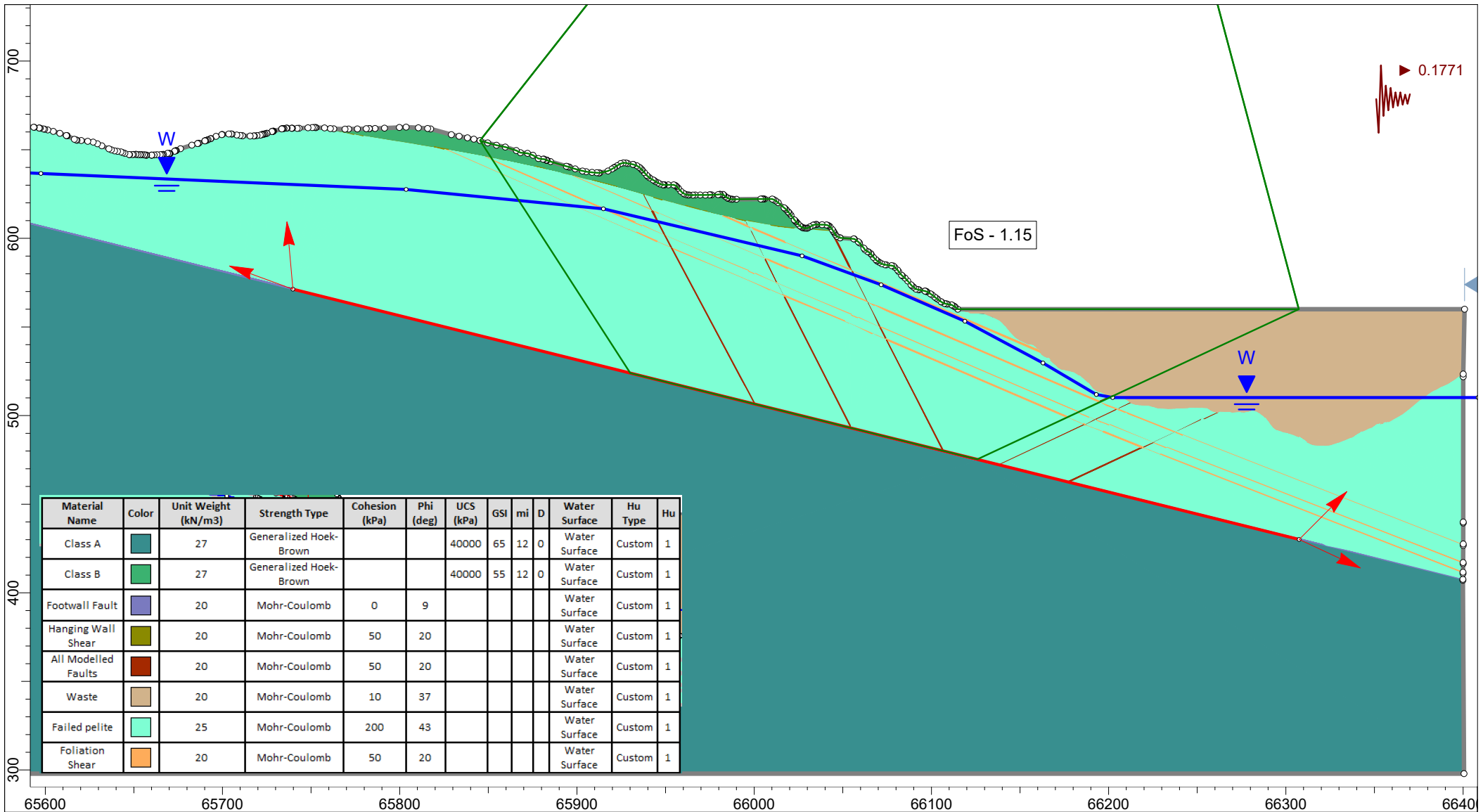
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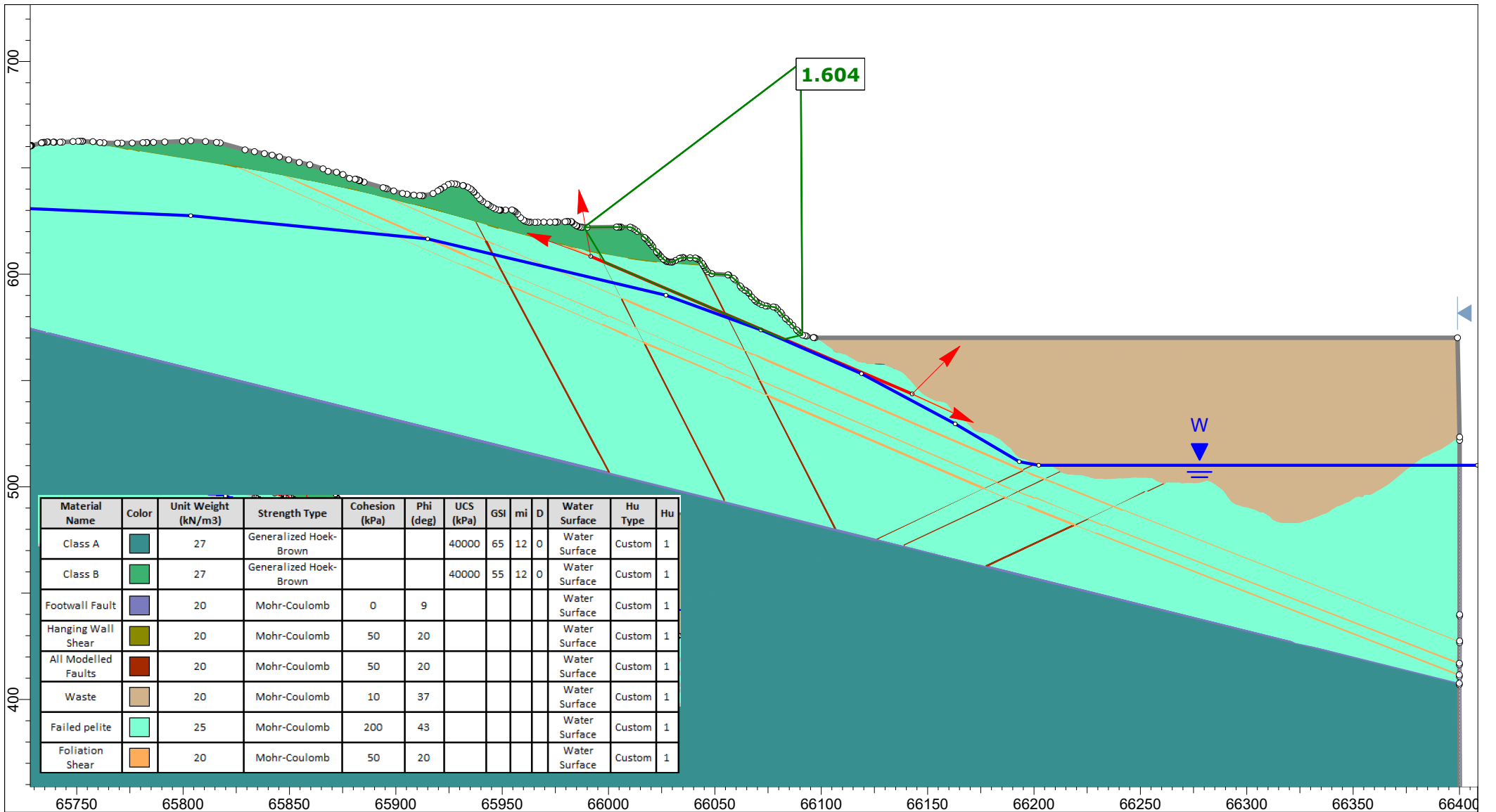


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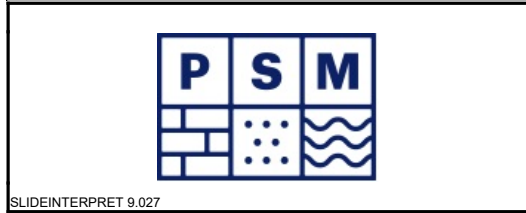
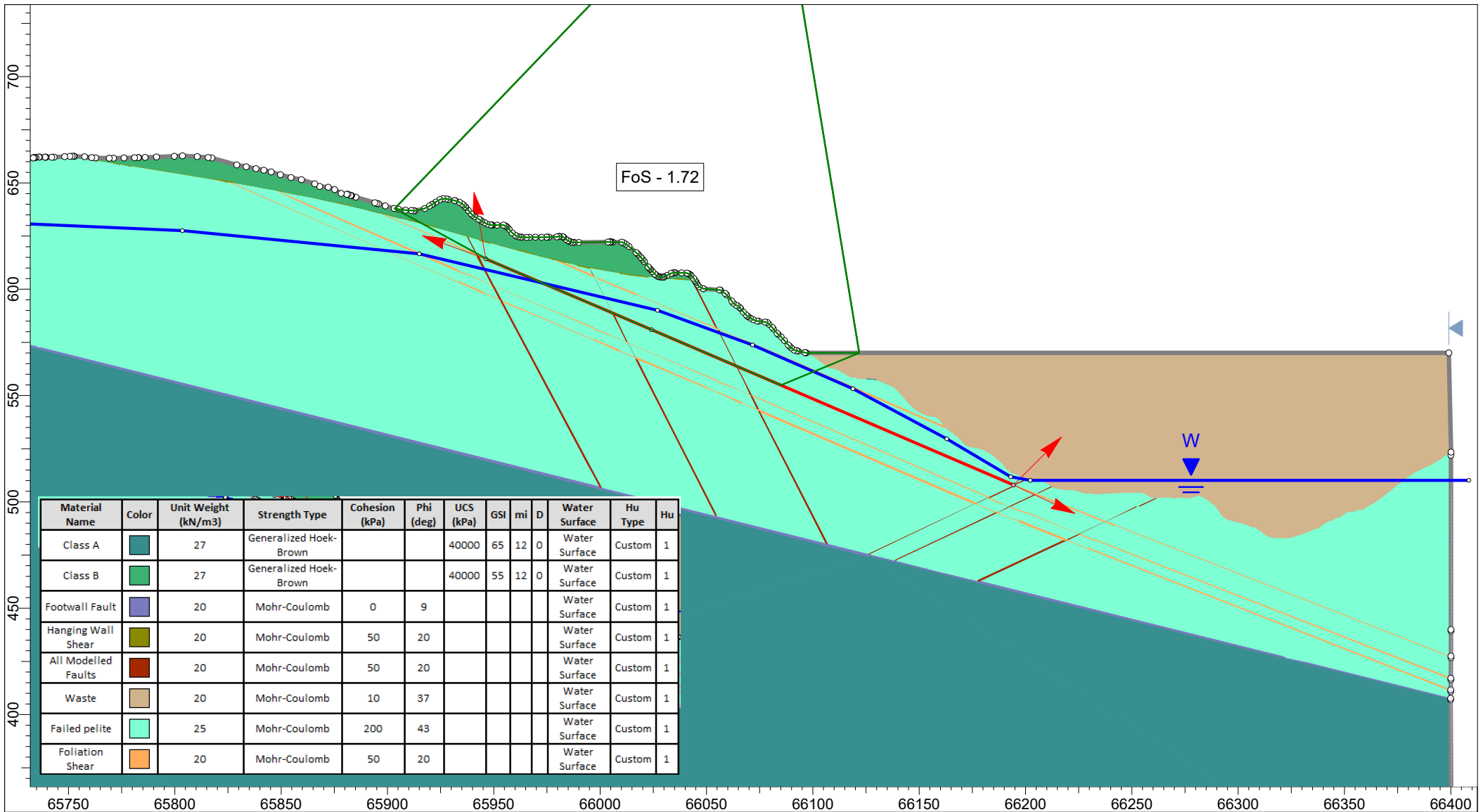


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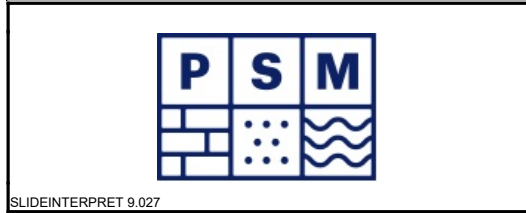
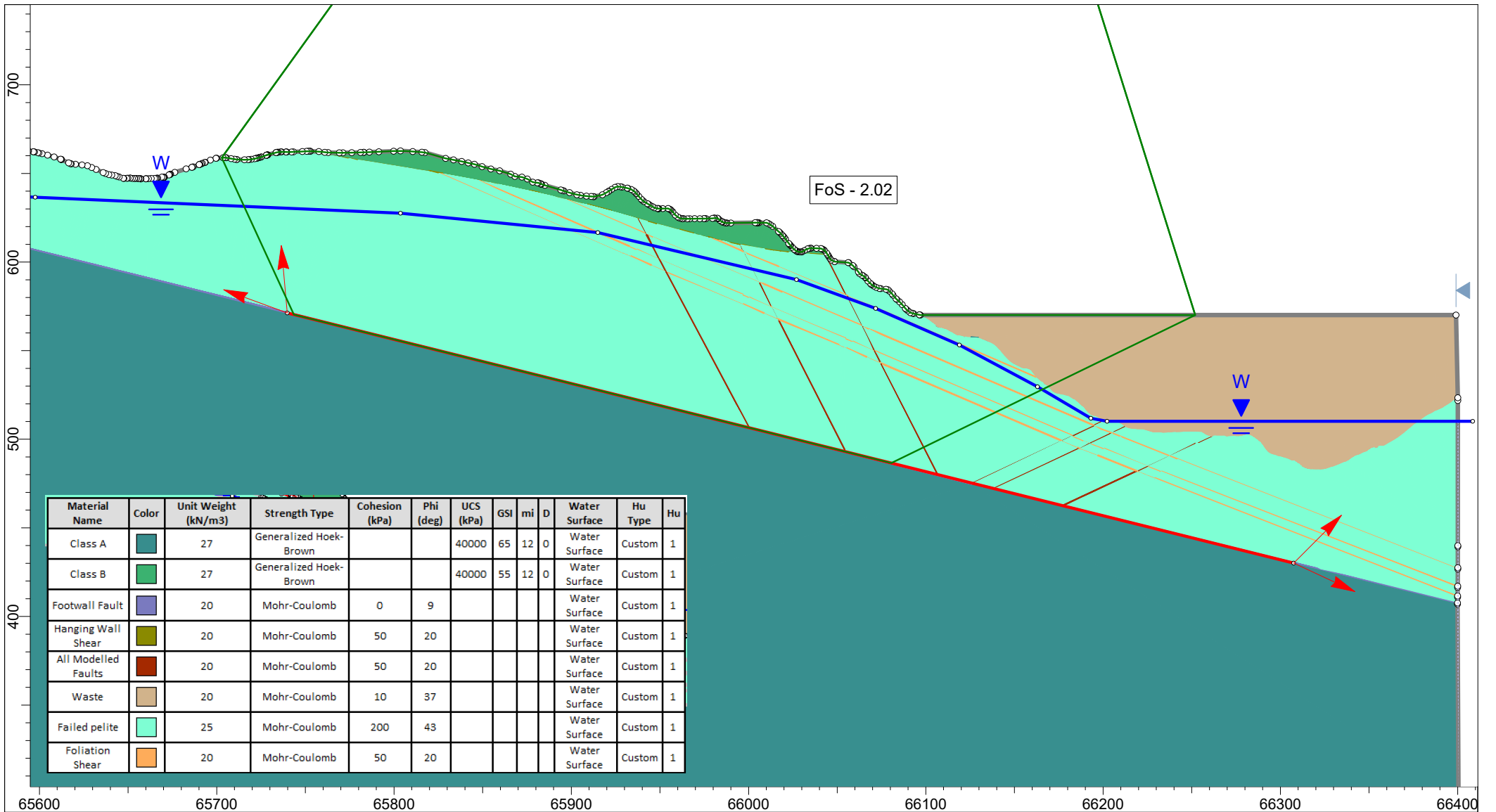
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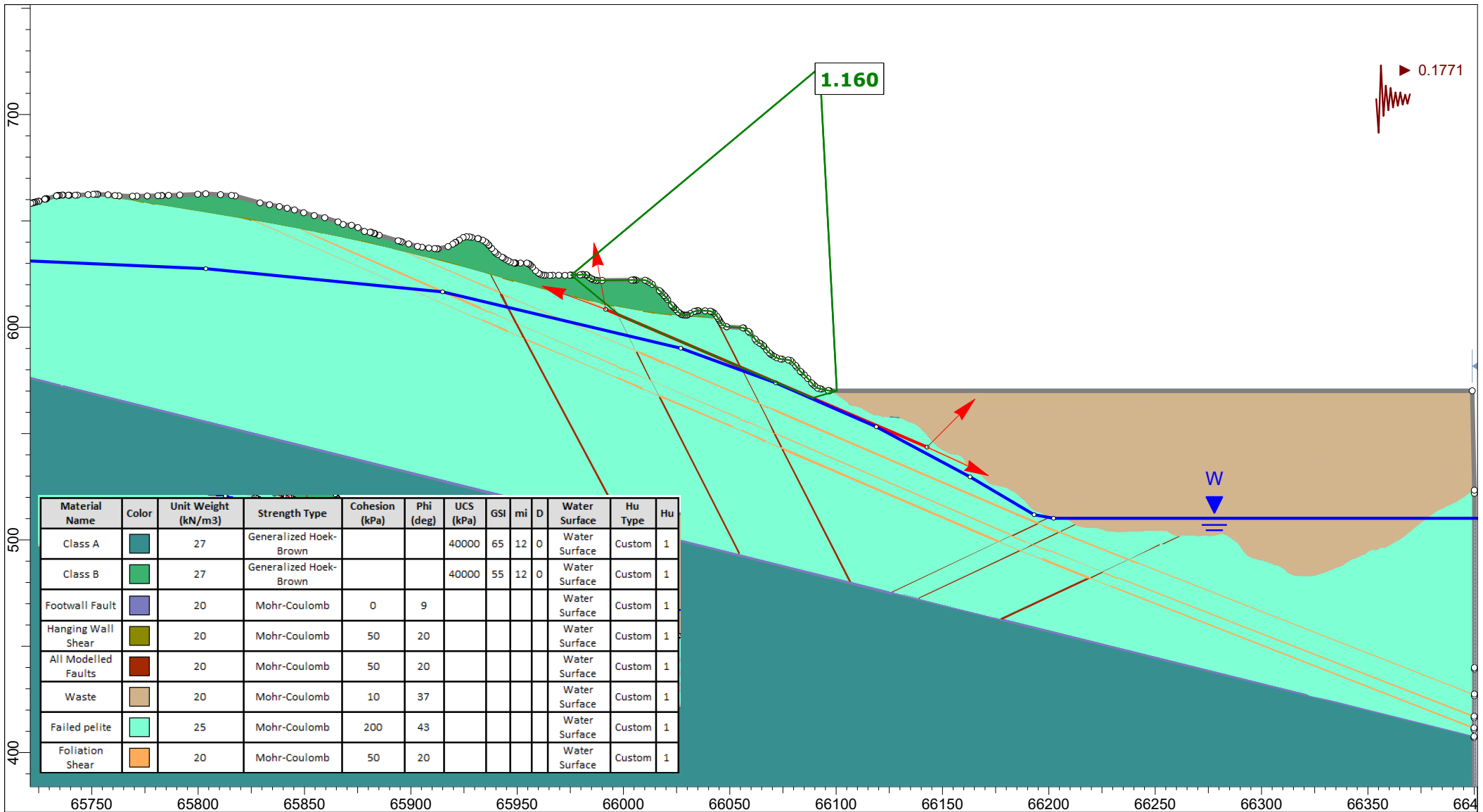
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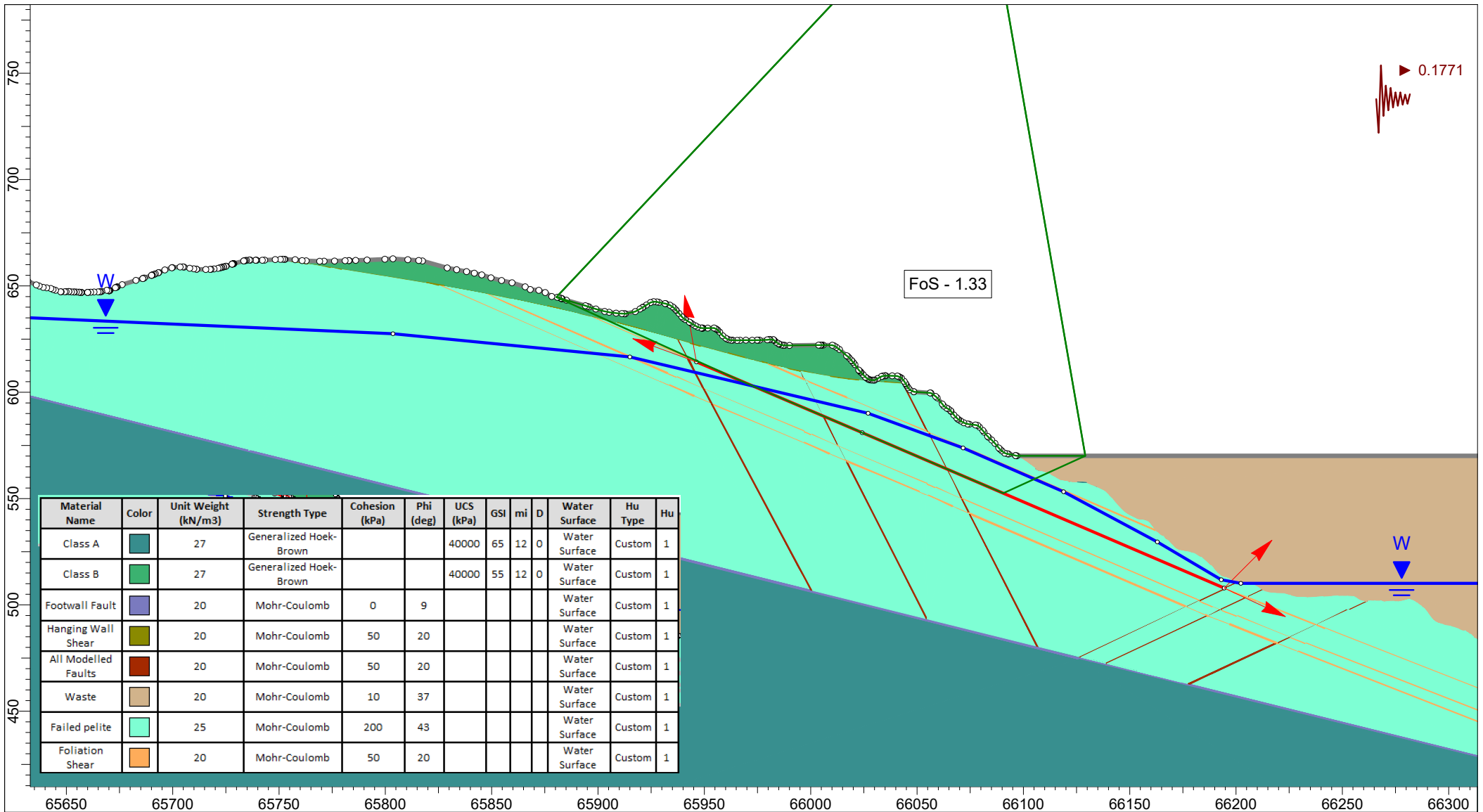


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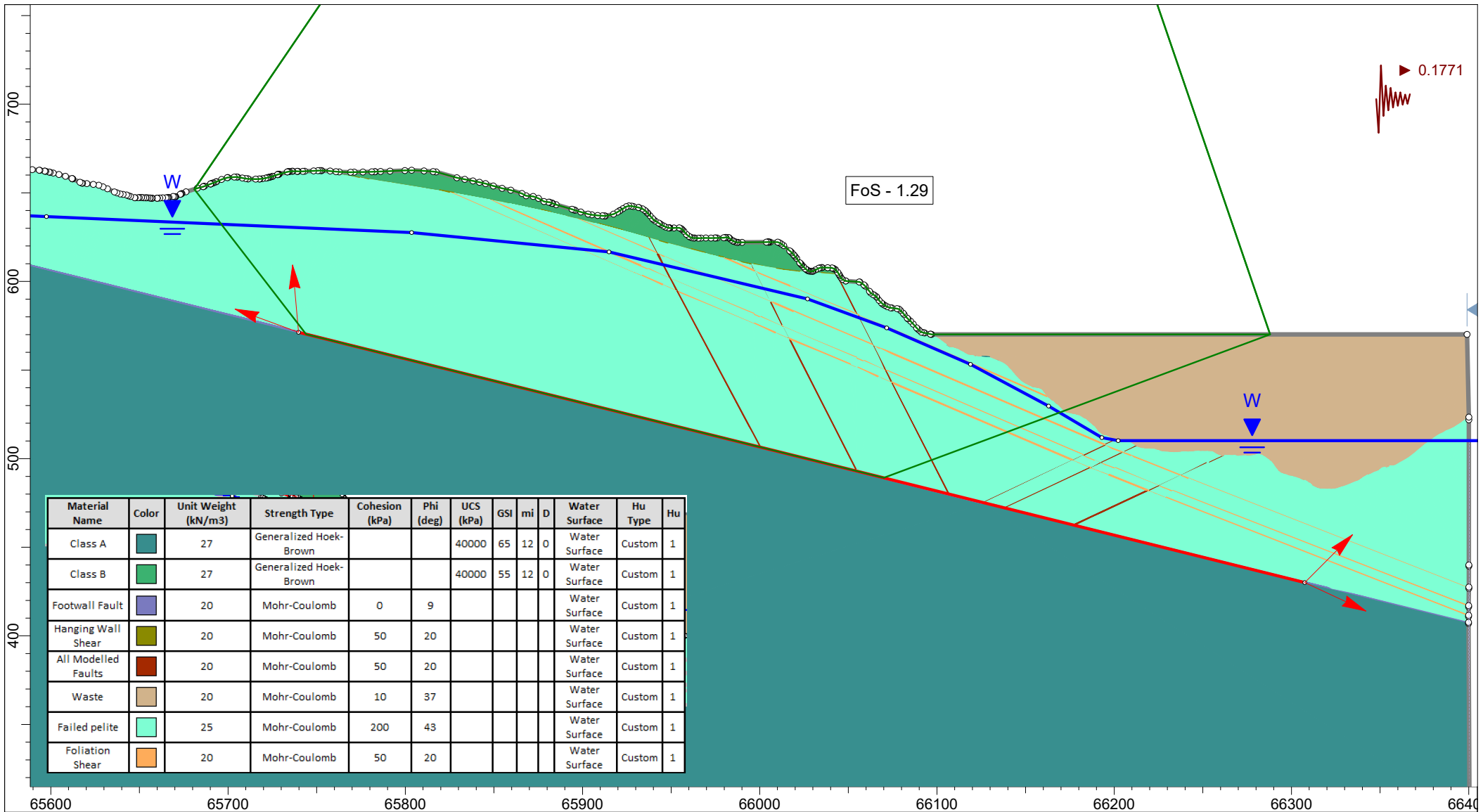
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Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
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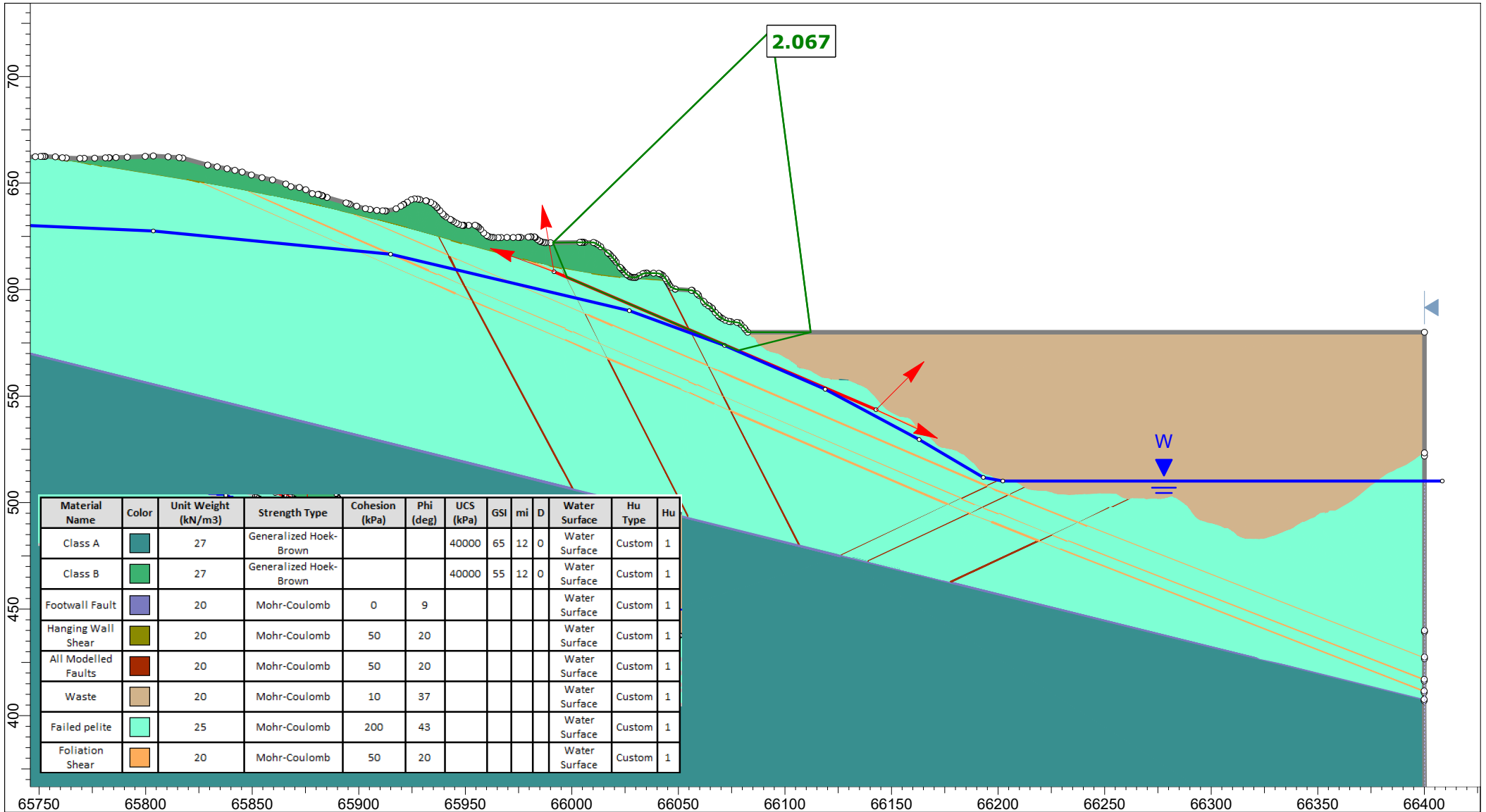
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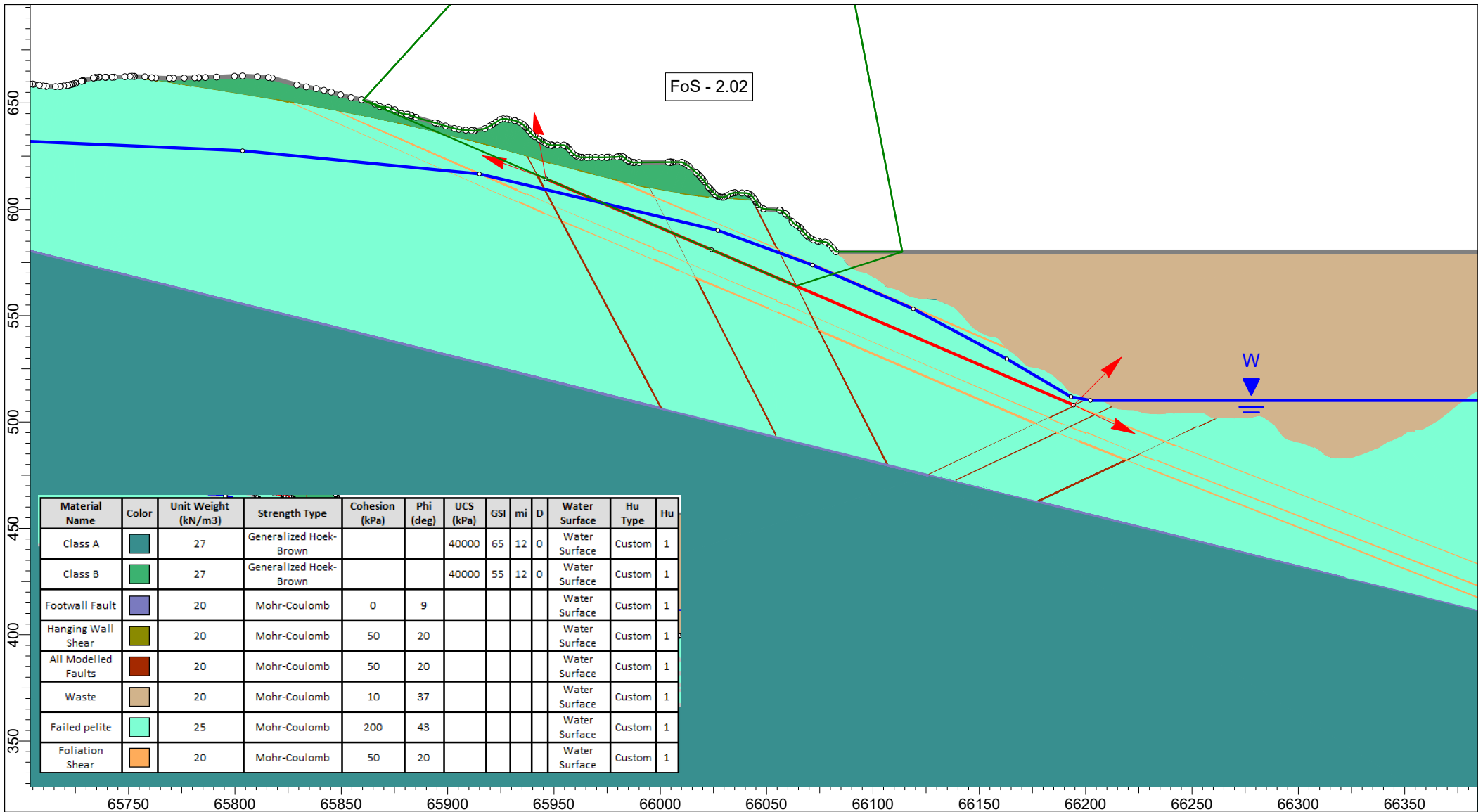
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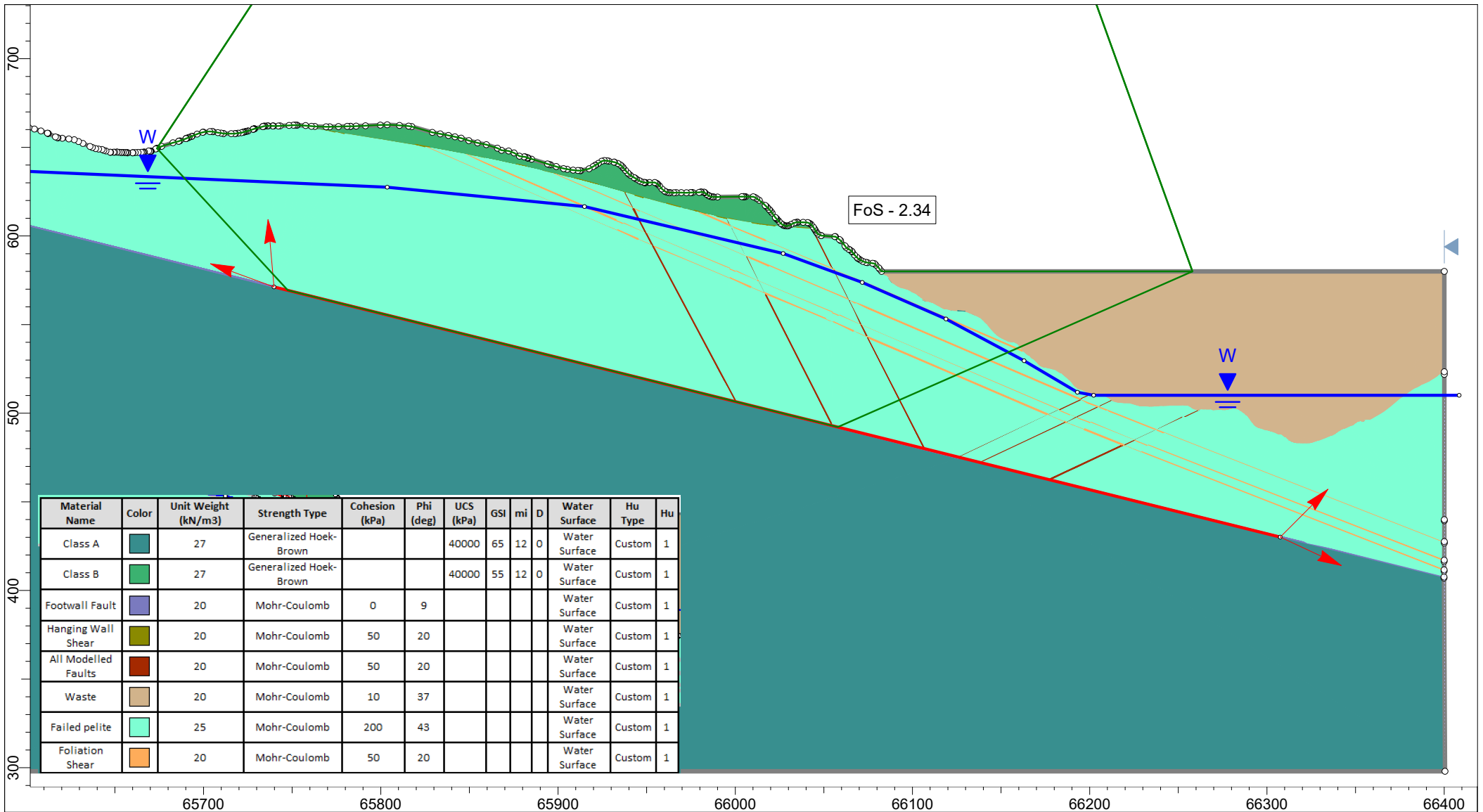


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Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
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	Analysis description: Backfill - 580 mRL Static								
Job No:	PSM71	By:	KH	Date:	12/08/2024	Scale:	1:2500	Run ID:	AWT Foliation Shear



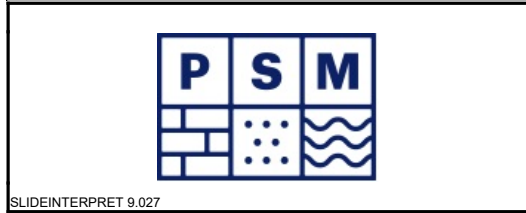
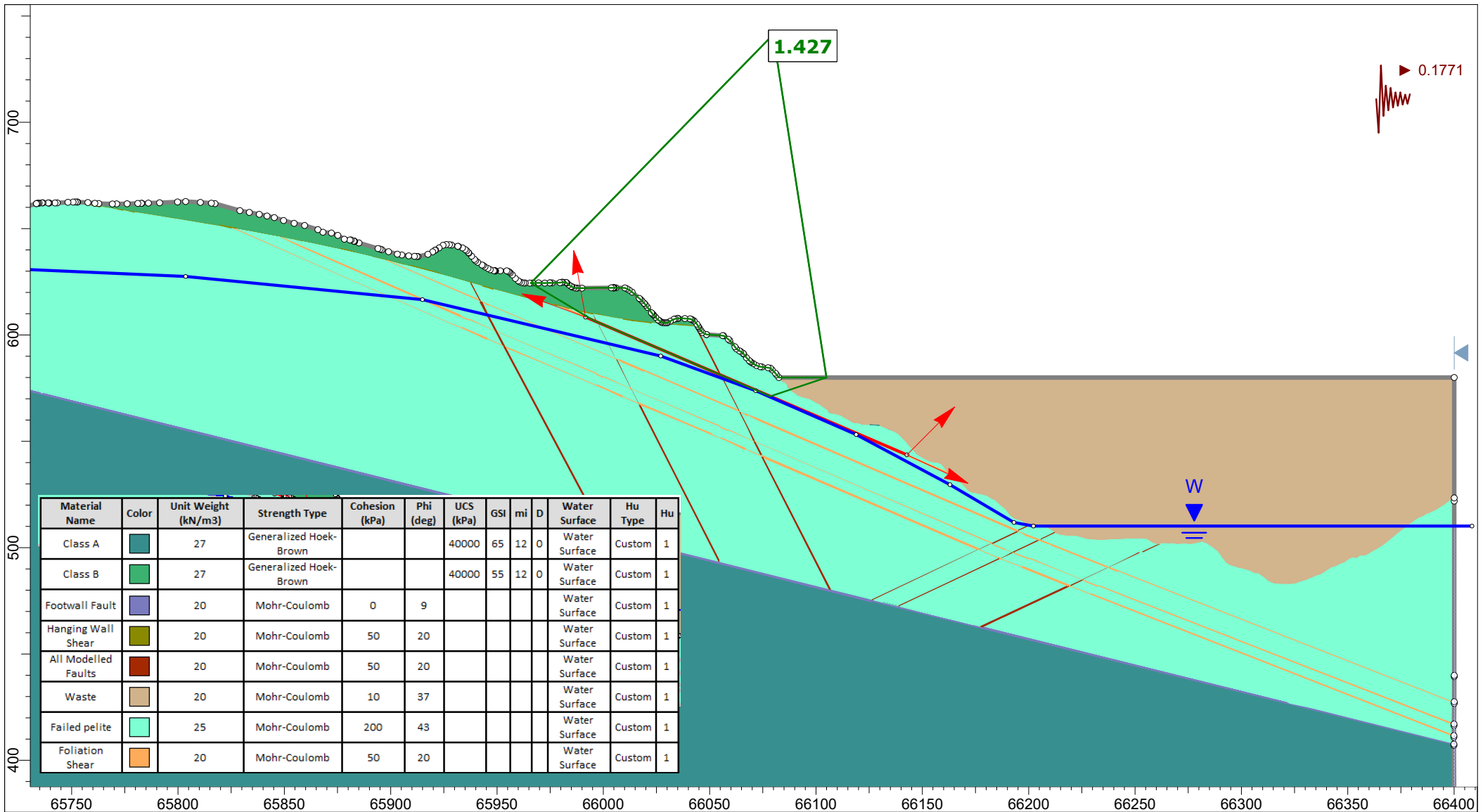
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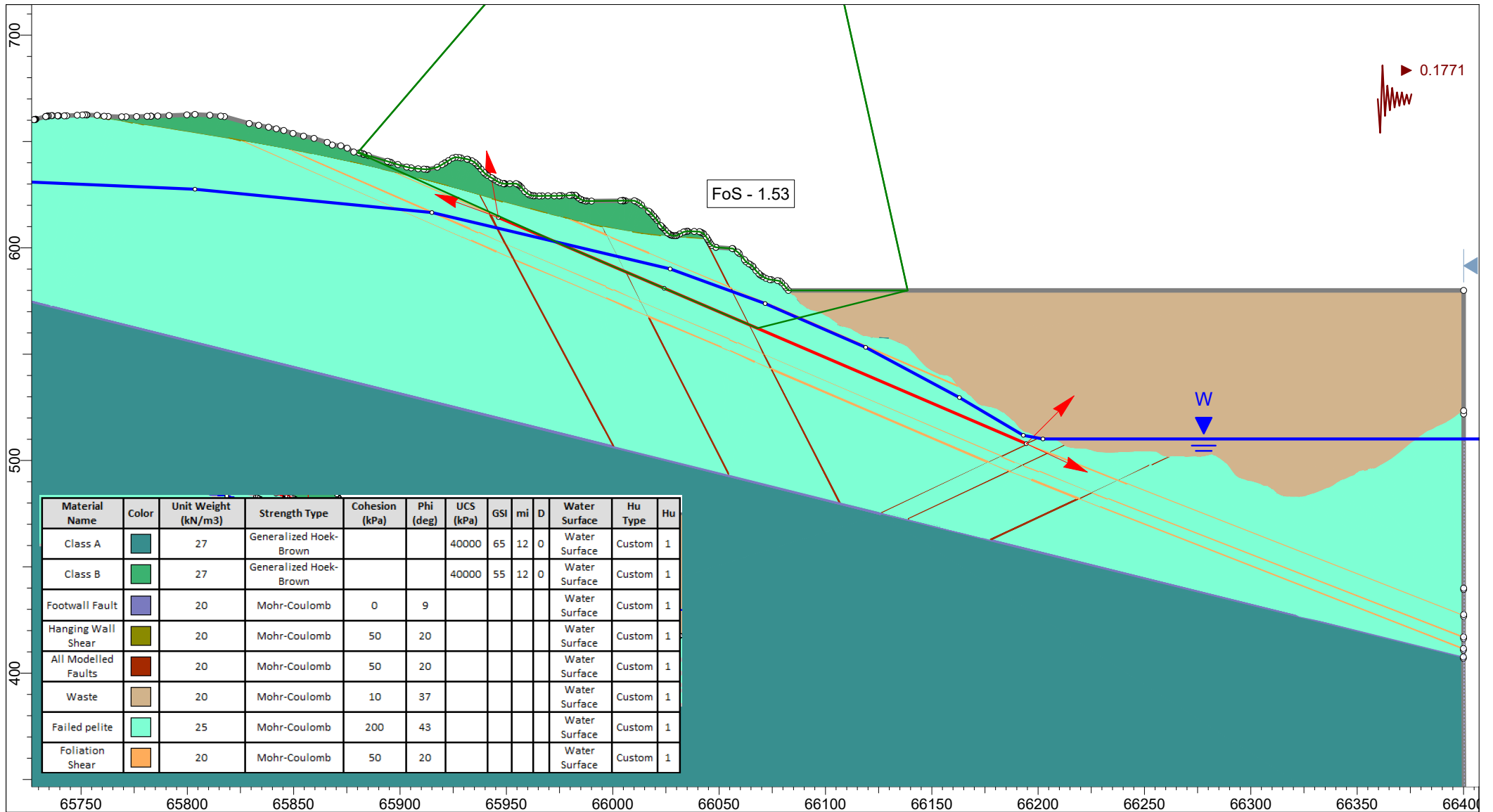
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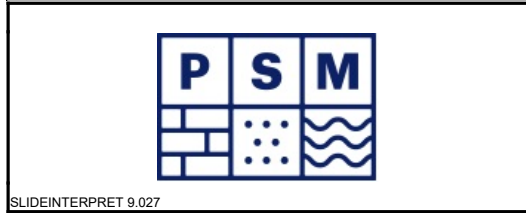
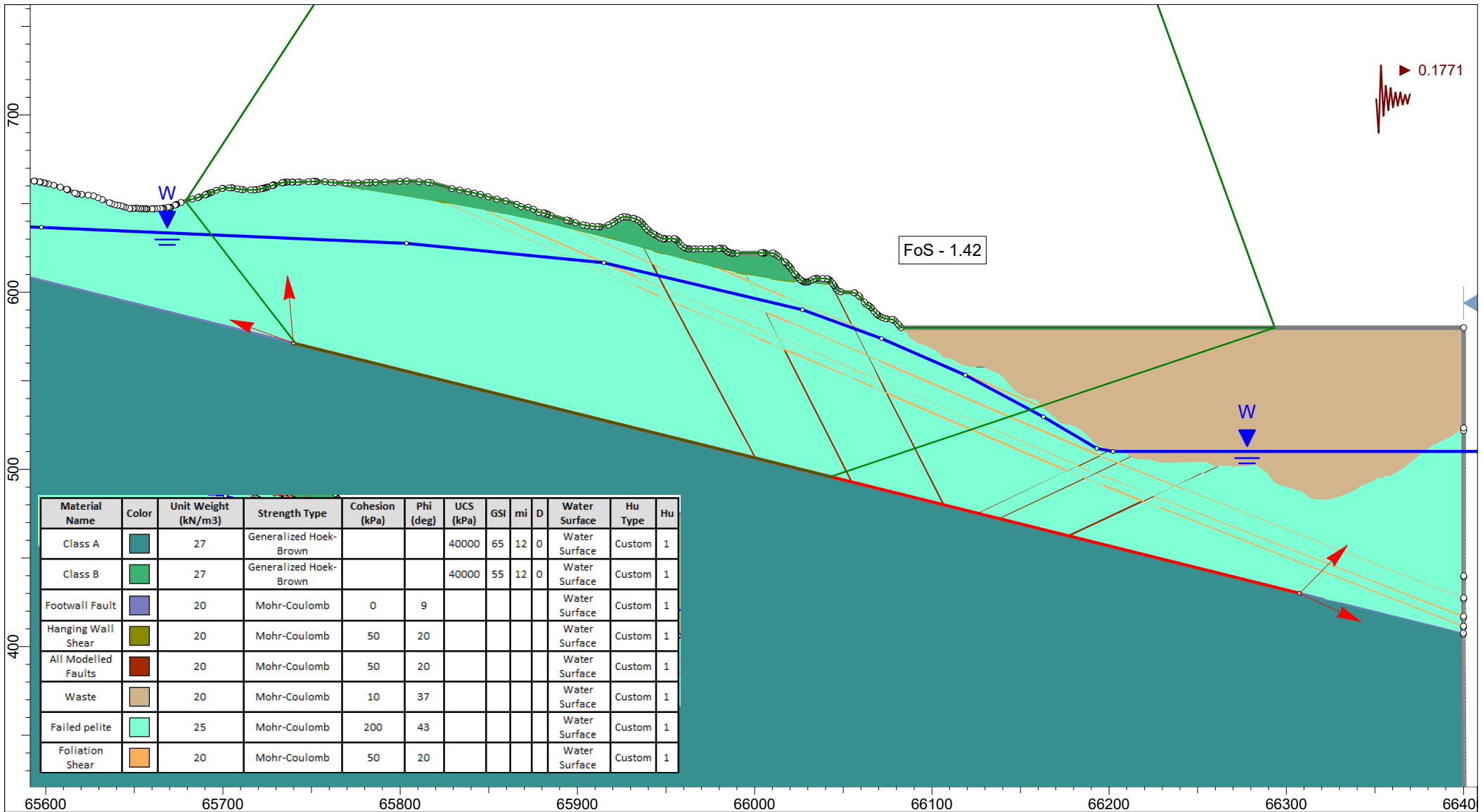
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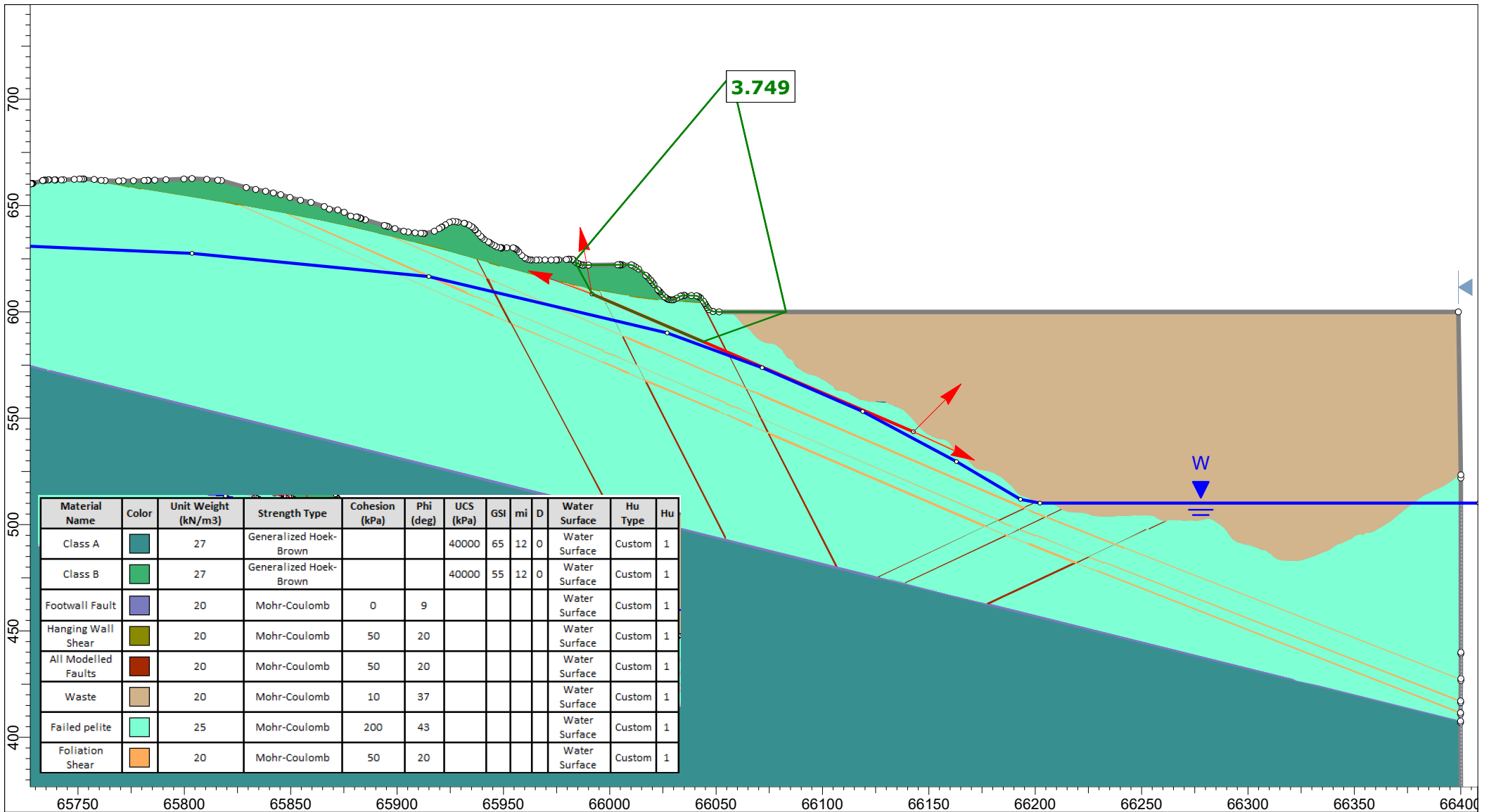
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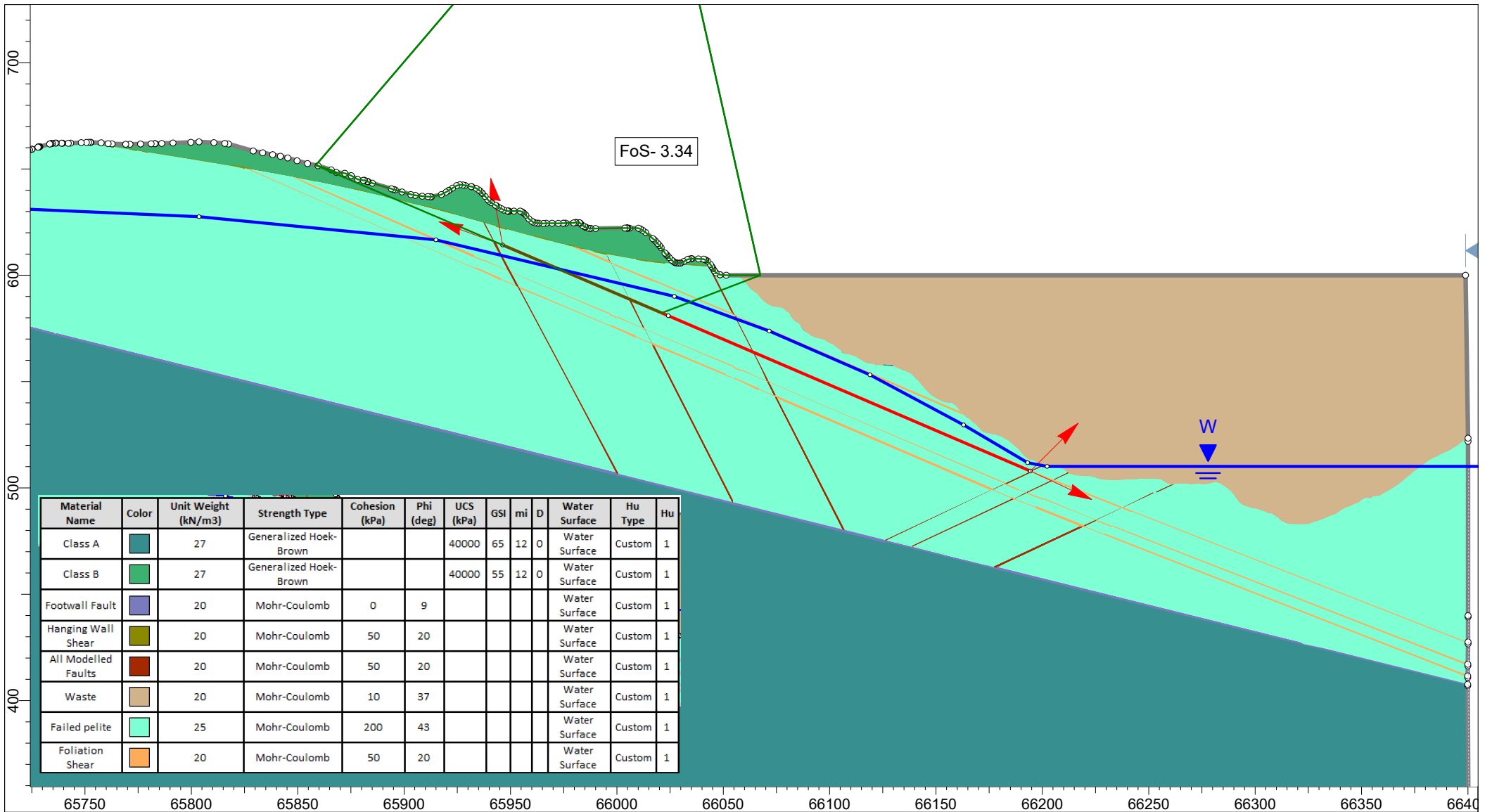
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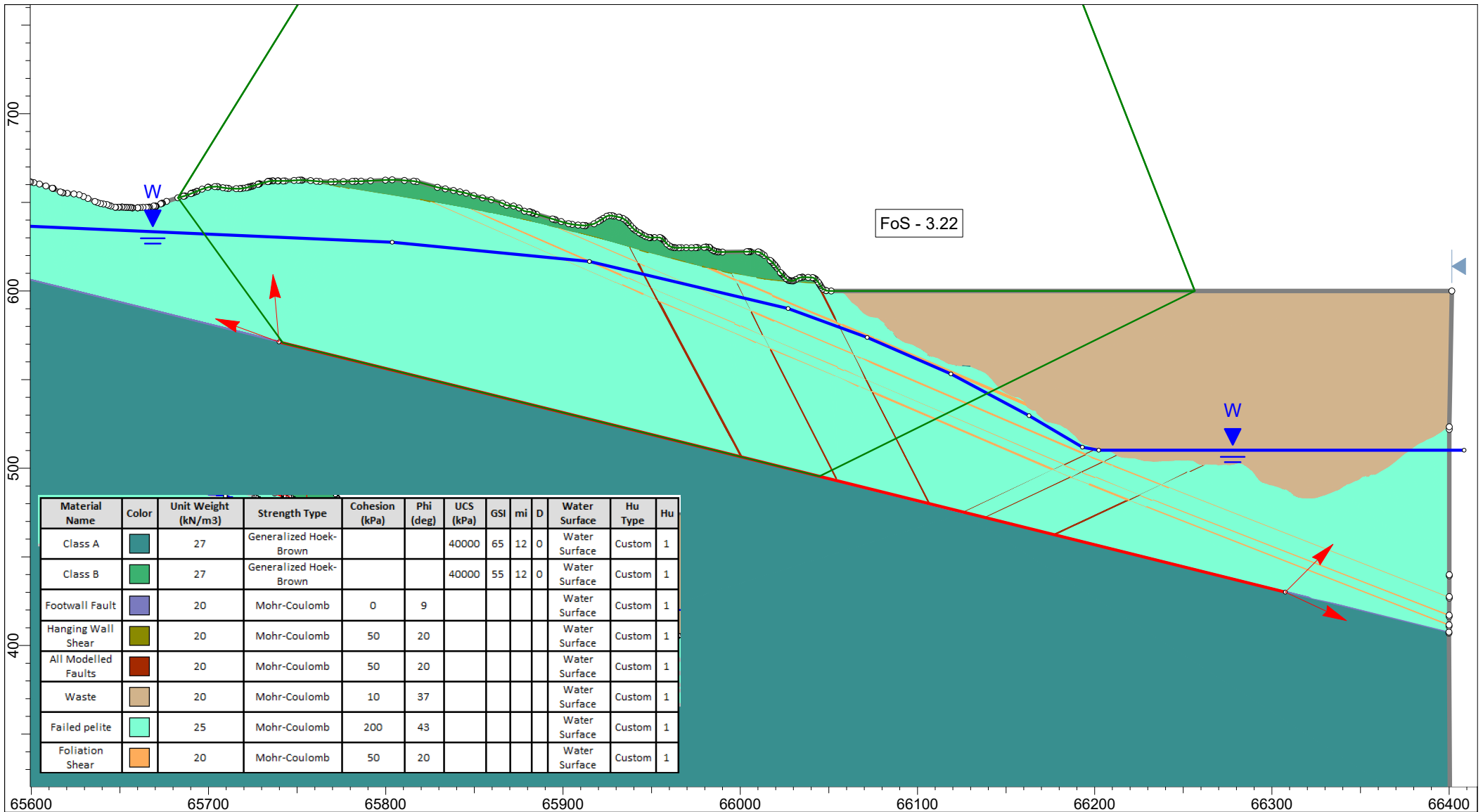
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Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
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SLIDEINTERPRET 9.027

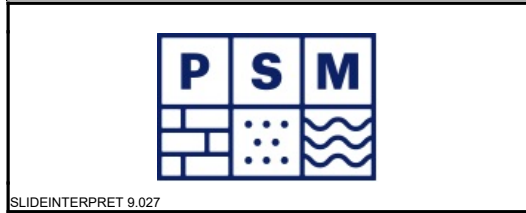
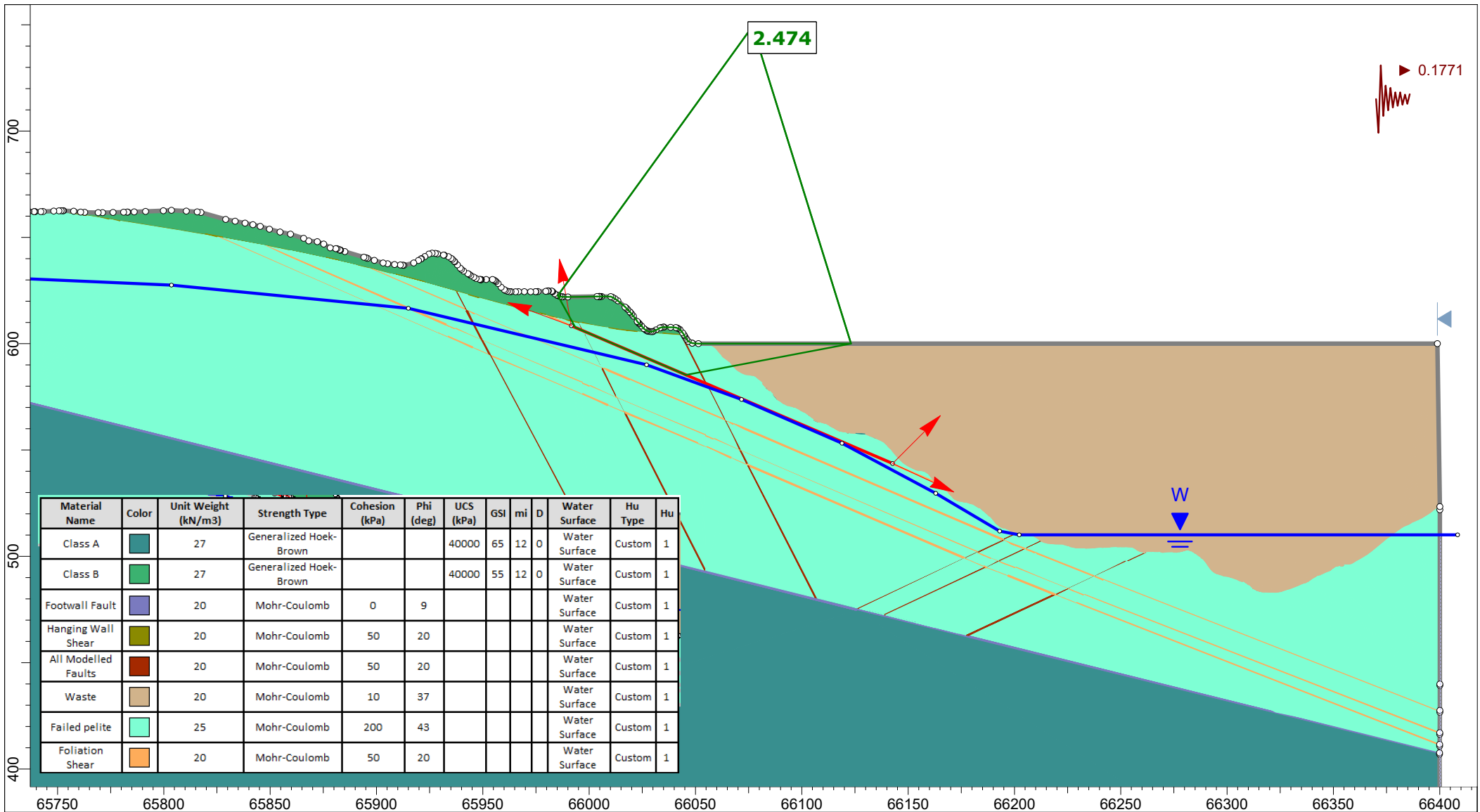
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Analysis description:		Backfill - 600 mRL Static							
Job No:	PSM71	By:	KH	Date:	12/08/2024	Scale:	1:2500	Run ID:	BWT Foliation Shear



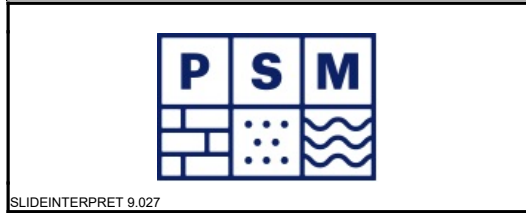
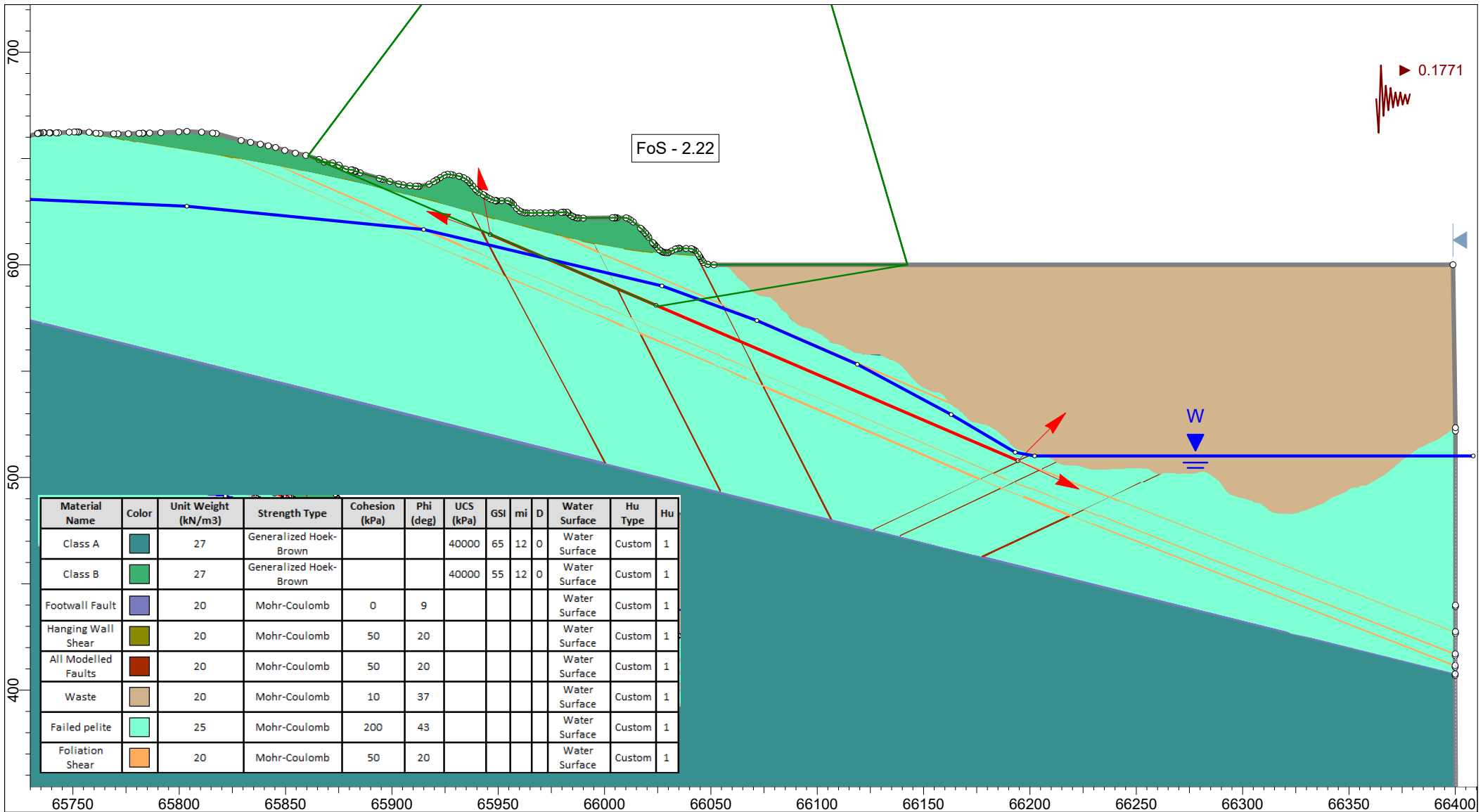
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1
Failed pelite		25	Mohr-Coulomb	200	43					Water Surface	Custom	1
Foliation Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1

SLIDEINTERPRET 9.027

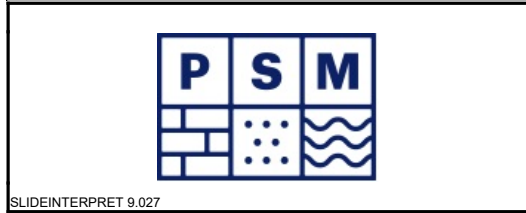
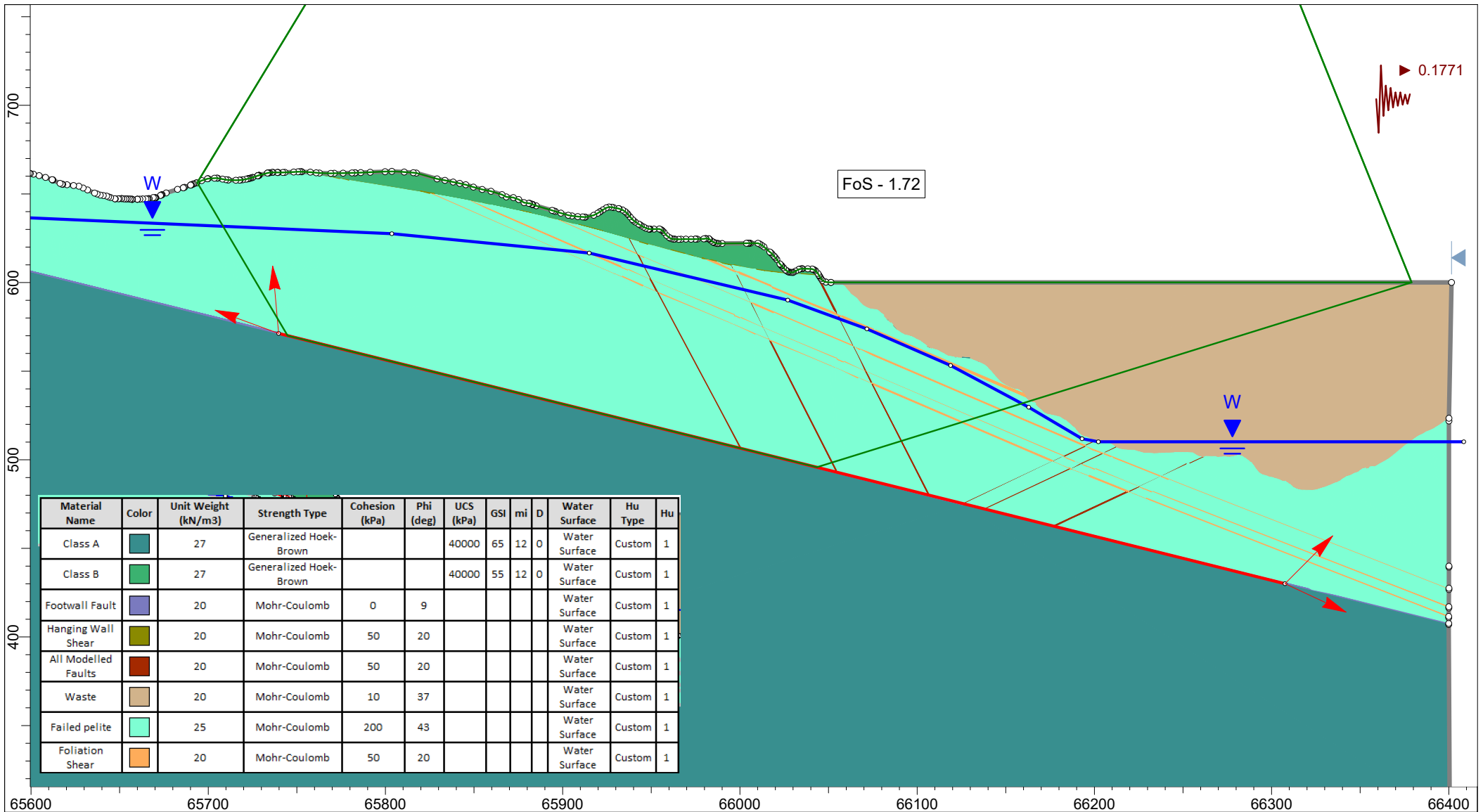
Client:		OceanaGold							
Project:		Macraes Phase 4 Consenting							
Location:		Coronation North Backfill - Southwest slope							
Analysis description:		Backfill - 600 mRL Static							
Job No:	PSM71	By:	KH	Date:	13/08/2024	Scale:	1:3000	Run ID:	Planar Sliding FF



Client:	OceanaGold		
Project:	Macraes Phase 4 Consenting		
Location:	Coronation North Backfill - Southwest slope		
Analysis description:	Backfill - 600 mRL MDE		
Job No:	PSM71	By:	KH
Date:	12/08/2024	Scale:	1:2500
Run ID:	AWT Foliation Shear		



Client:	OceanaGold		
Project:	Macraes Phase 4 Consenting		
Location:	Coronation North Backfill - Southwest slope		
Analysis description:	Backfill - 600 mRL MDE		
Job No:	PSM71	By:	KH
Date:	12/08/2024	Scale:	1:2500
Run ID:	BWT Foliation Shear		



Client:		OceanaGold							
Project:		Macraes Phase 4 Consenting							
Location:		Coronation North Backfill - Southwest slope							
Analysis description:		Backfill - 600 mRL MDE							
Job No:	PSM71	By:	KH	Date:	13/08/2024	Scale:	1:3000	Run ID:	Planar Sliding FF