

APPENDIX D

**DAMS AND EARTH STRUCTURES
STABILITY ANALYSES**

PART

OF

CLOSURE PLAN FOR

TAILINGS CONTAINMENT AREA

Prepared for

Kinross Gold Corporation

LUPIN OPERATION

LIST OF FIGURES

Figure D 1. K Dam stability analysis, Frozen Dam	1
Figure D 2. K Dam stability analysis, thawed with low groundwater	2
Figure D 3. K Dam stability analysis, thawed with high groundwater	3
Figure D 4. K Dam stability analysis, thawed section with stabilizing berm and high groundwater	4
Figure D 5. 3D Dam, frozen section, stability thru rock zone	5
Figure D 6. 3 Dam, frozen section, stability thru frozen esker	6
Figure D 7. 3Daam, thawed section, stability through rockfill	7
Figure D 8. 3 Dam. rock zone graded to 2.5h : 1v slope	8
Figure D 9. M Dam, frozen section	9
Figure D 10. M Dam, thawed dam	10
Figure D 11. M Dam, stabilized with 2.5h : 1v rock berm	11

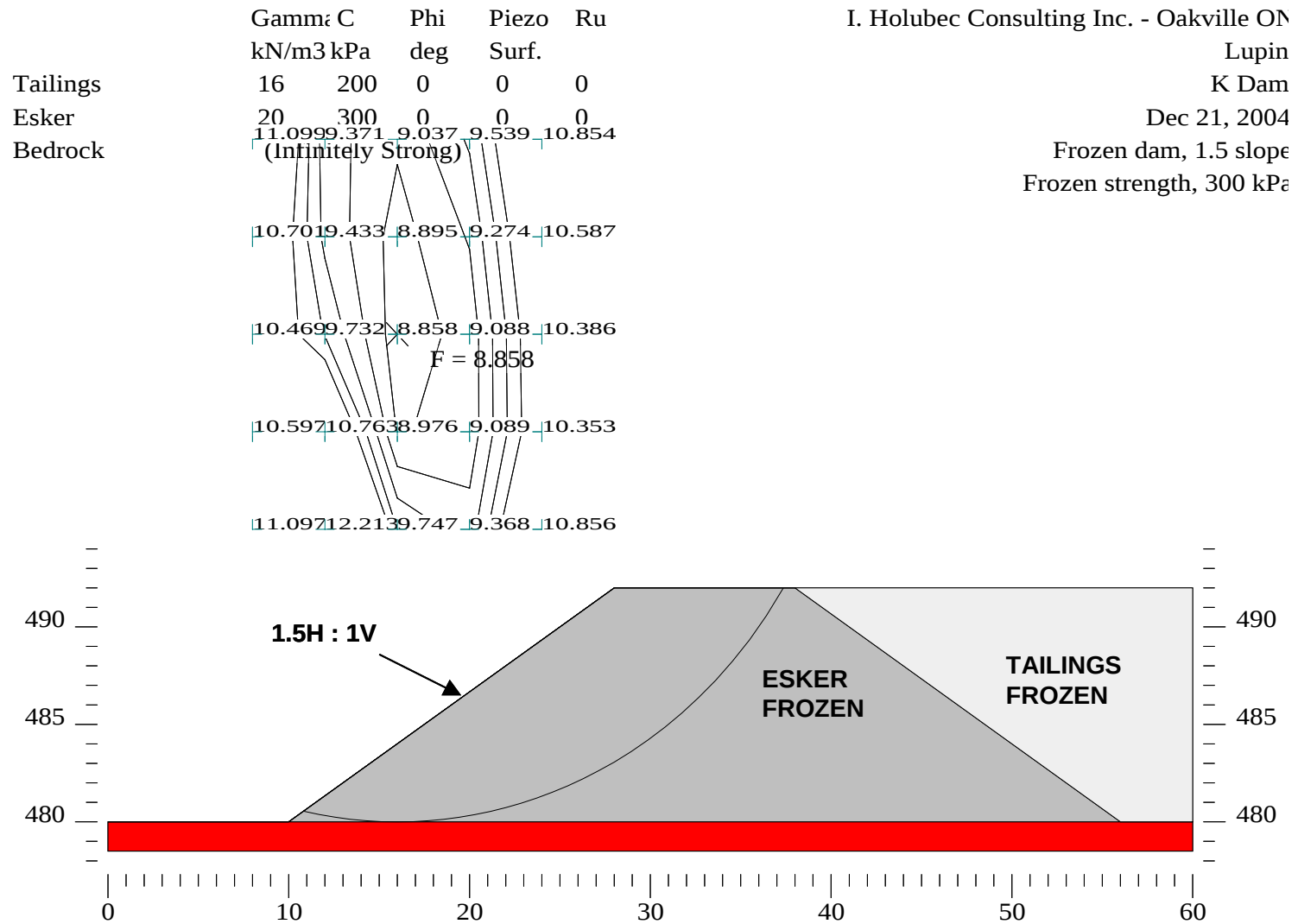


Figure D 1. K Dam stability analysis, Frozen Dam

	Gamma C		Phi	Piezo	Ru
	kN/m3 kPa		deg	Surf.	
Tailings	16	0	31	1	0
Esker	20	0	33	1	0
Bedrock	(Infinitely Strong)				

I. Holubec Consulting Inc. - Oakville ON

Lupin

K Dam

Dec 22, 2004

Thawed Dam

Low groundwater

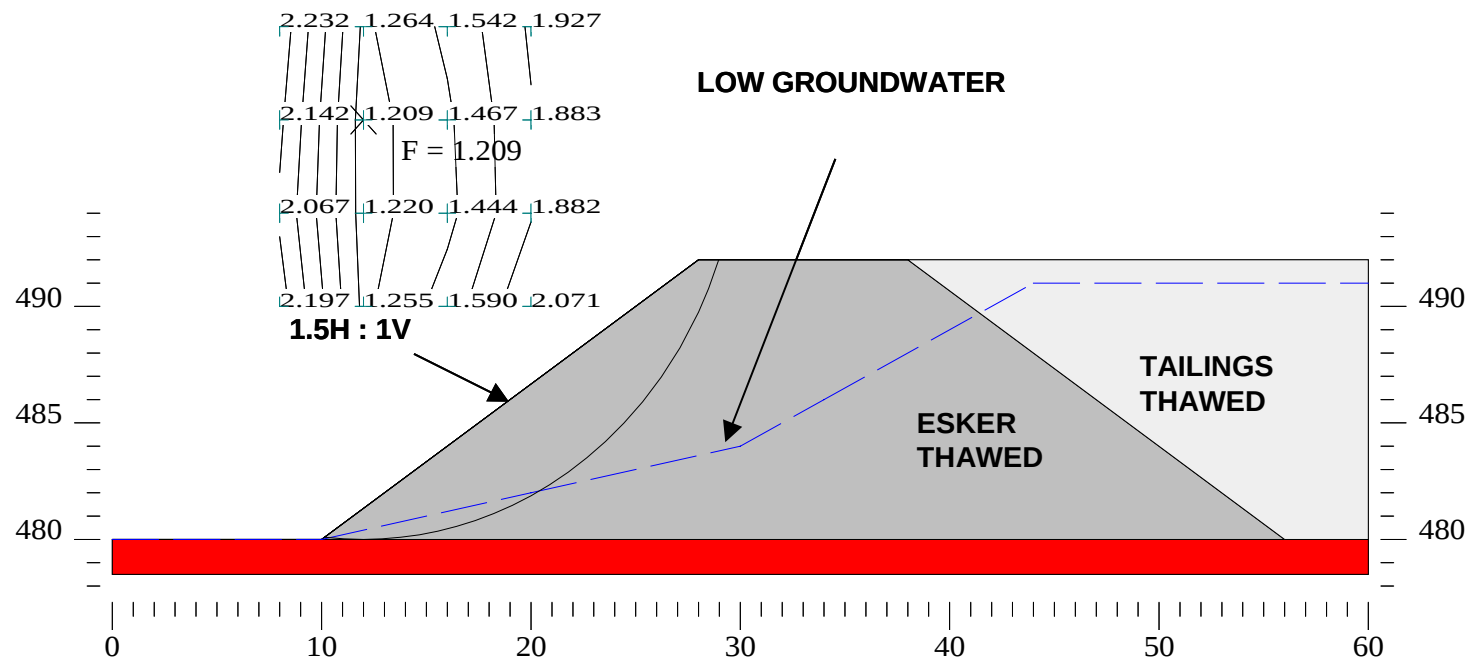


Figure D 2. K Dam stability analysis, thawed with low groundwater

	Gamma: C		Phi	Piezo	Ru
	kN/m3 kPa		deg	Surf.	
Tailings	16	3	30	1	0
Esker	20	0	33	1	0
Bedrock	(Infinitely Strong)				

I. Holubec Consulting Inc. - Oakville ON

Lupin

K Dam

Dec 22, 2004

Thawed Dam

High Groundwater

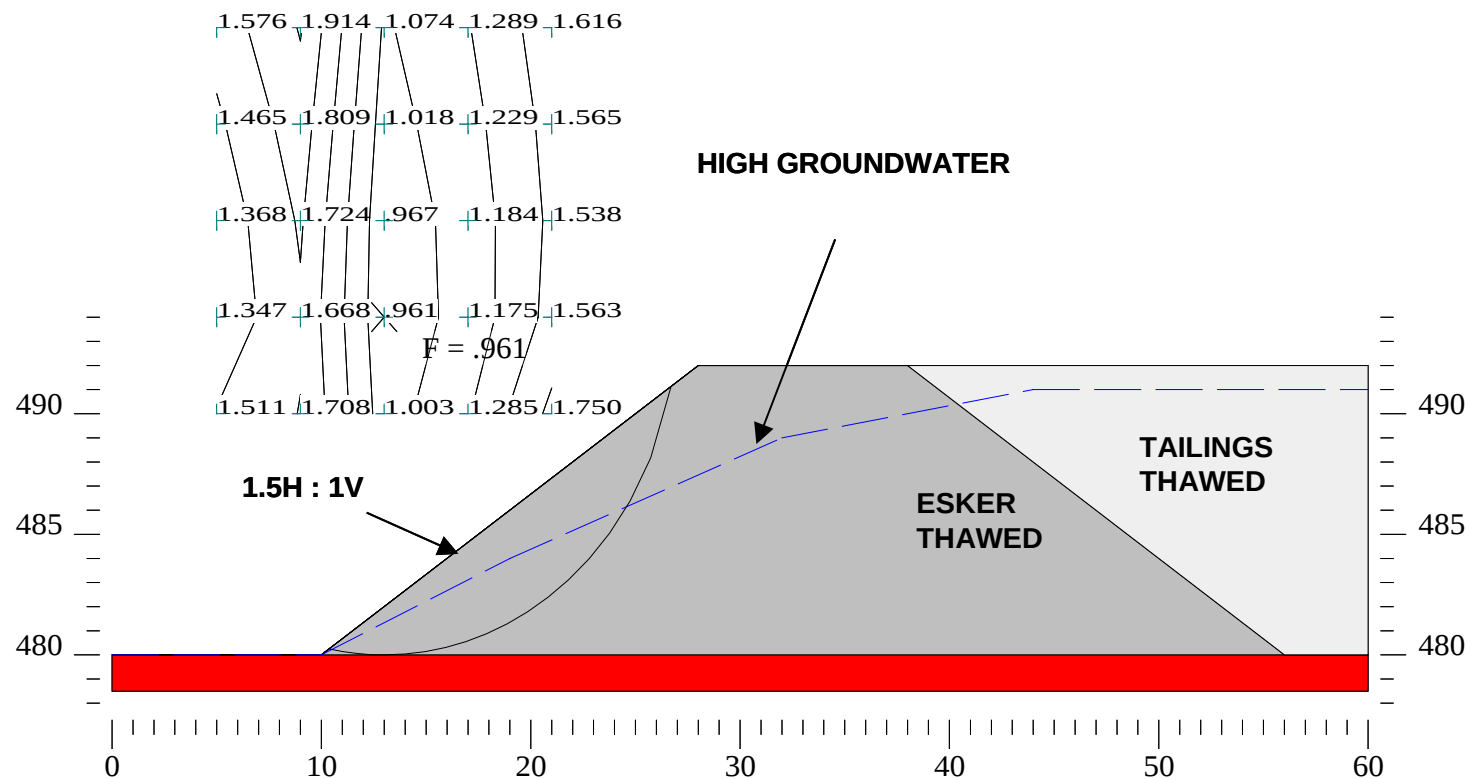


Figure D 3. K Dam stability analysis, thawed with high groundwater

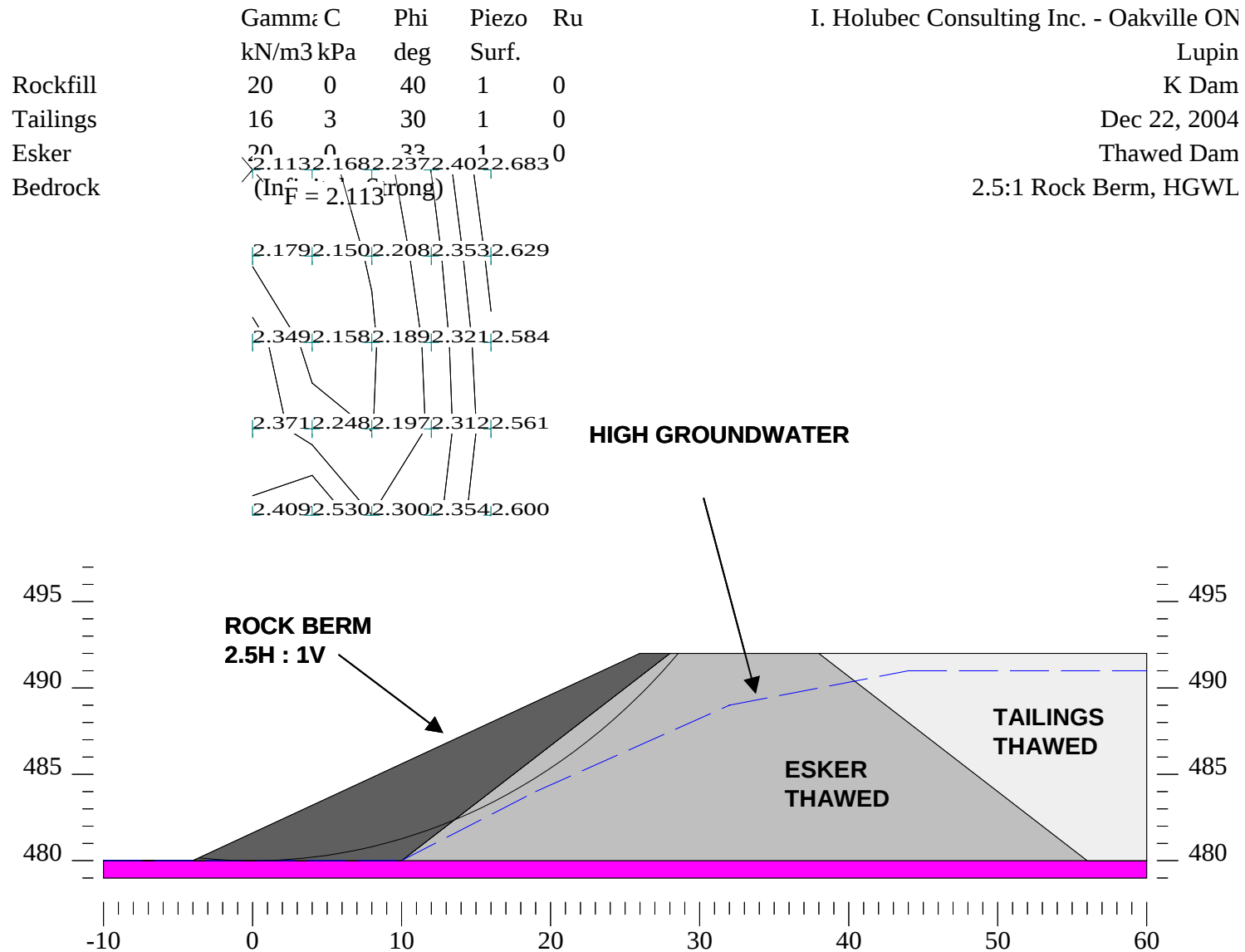


Figure D 4. K Dam stability analysis, thawed section with stabilizing berm and high groundwater

	Gamma C		Phi	Piezo	Ru
	kN/m3 kPa		deg	Surf.	
Water	9.8	0	0	1	0
Rock	22	0	40	1	0
Tailings	16	200	0	1	0
Esker	20	300	0	1	0
Bedrock	(Infinitely Strong)				

I. Holubec Consulting Inc. - Oakville ON
Lupin
3D Dam
Dec 22, 2004
With existing pond El 484.5
Frozen esker & tailings

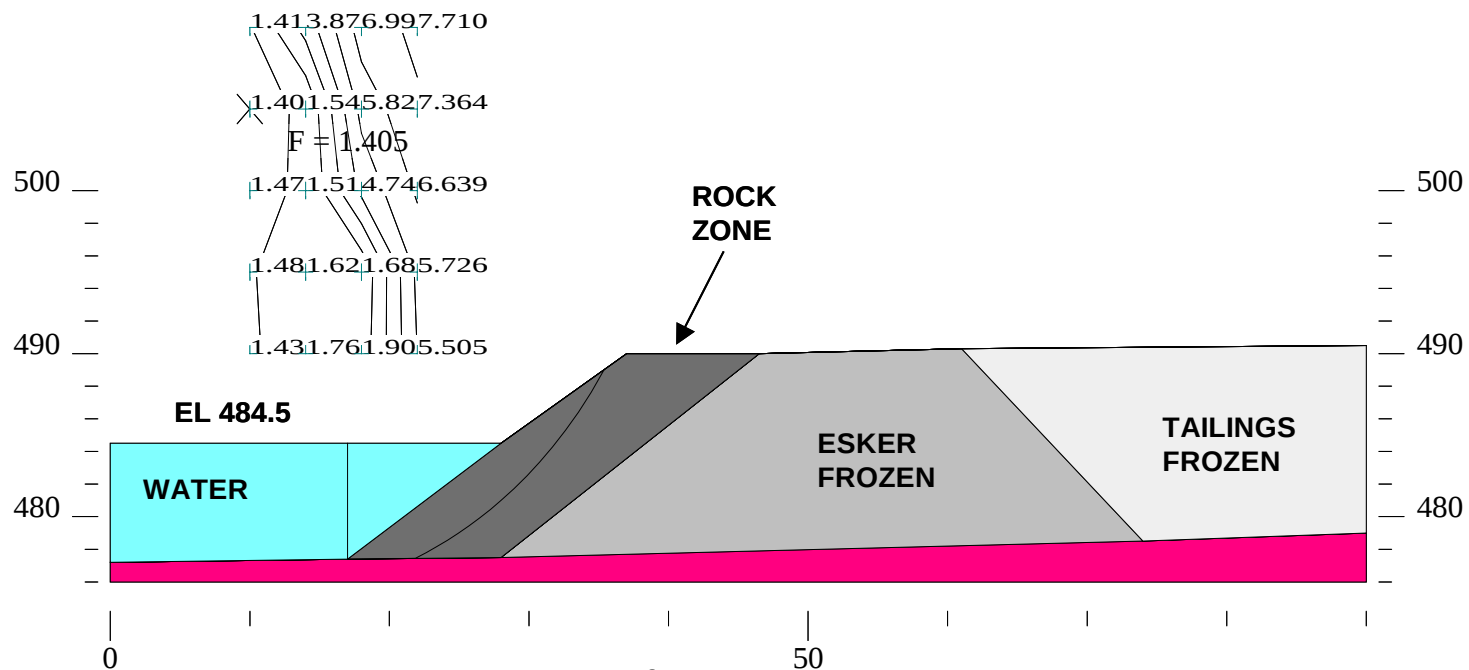


Figure D 5. 3D Dam, frozen section, stability thru rock zone

I. Holubec Consulting Inc. - Oakville ON

Lupin

3D Dam

Dec 22, 2004

With existing pond El 484.5

Frozen esker

	Gamma C		Phi	Piezo	Ru
	kN/m3	kPa	deg	Surf.	
Water	9.8	0	0	1	0
Rock	22	0	40	1	0
Tailings	16	200	0	1	0
Esker	20	300	0	1	0
Bedrock	(Infinitely Strong)				

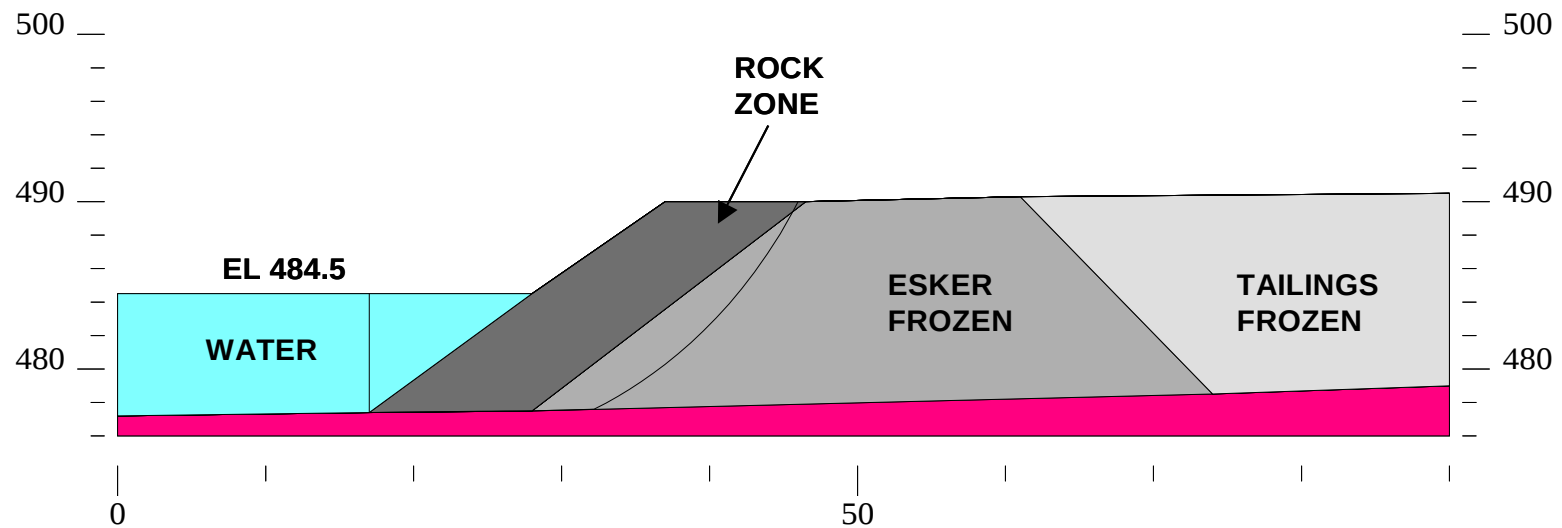
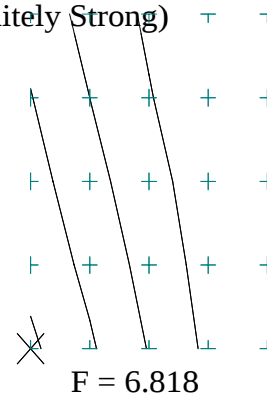


Figure D 6. 3 Dam, frozen section, stability thru frozen esker

I. Holubec Consulting Inc. - Oakville ON
Lupin
3D Dam
Dec 22, 2004
With closure pond El 479.5
Thawed section, existing slope

	Gamma: C		Phi	Piezo	Ru
	kN/m3 kPa		deg	Surf.	
Water	9.8	0	0	1	0
Rock	22	0	40	1	0
Tailings	16	3	30	1	0
Esker	20	0	33	1	0
Bedrock	(Infinitely Strong)				

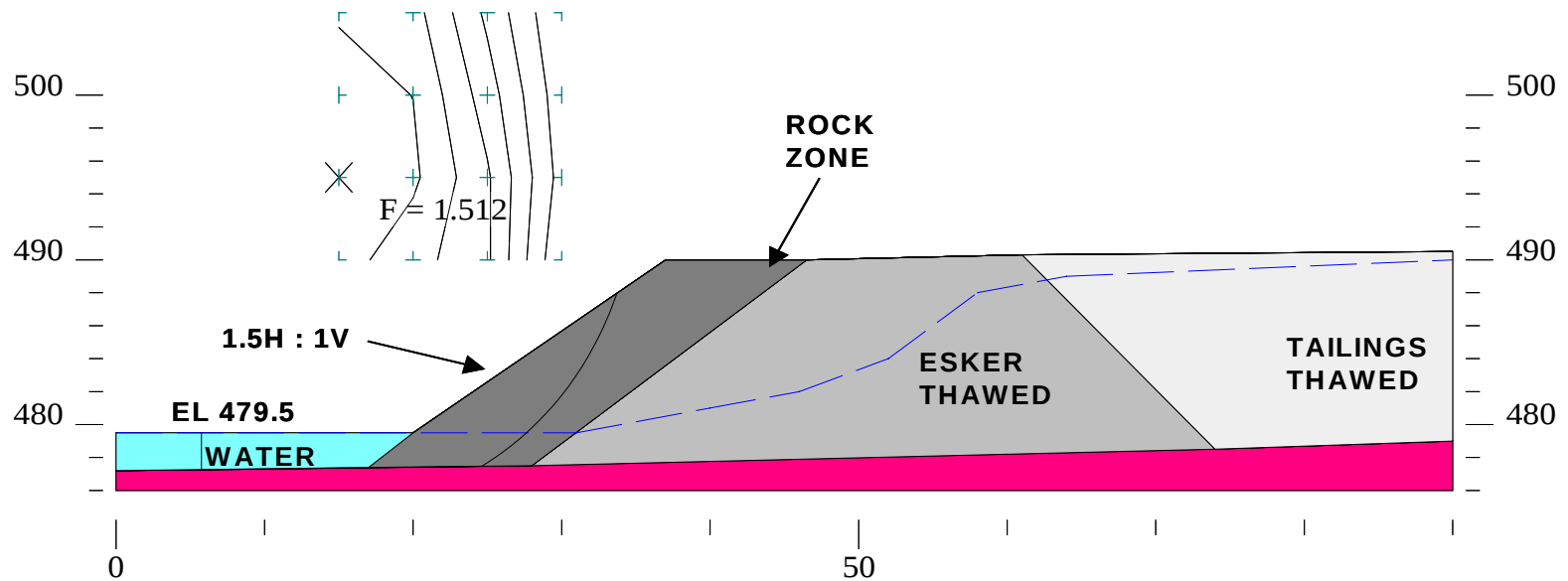


Figure D 7. 3Daam, thawed section, stability through rockfill

	Gamma: C		Phi	Piezo	Ru
	kN/m3 kPa		deg	Surf.	
Water	9.8	0	0	1	0
Rock	22	0	40	1	0
Tailings	16	3	30	1	0
Esker	20	0	33	1	0
Bedrock	(Infinitely Strong)				

I. Holubec Consulting Inc. - Oakville ON
Lupin
3D Dam
Dec 22, 2004
With existing pond El 479.5
Thawed section, Slope 2.5:1

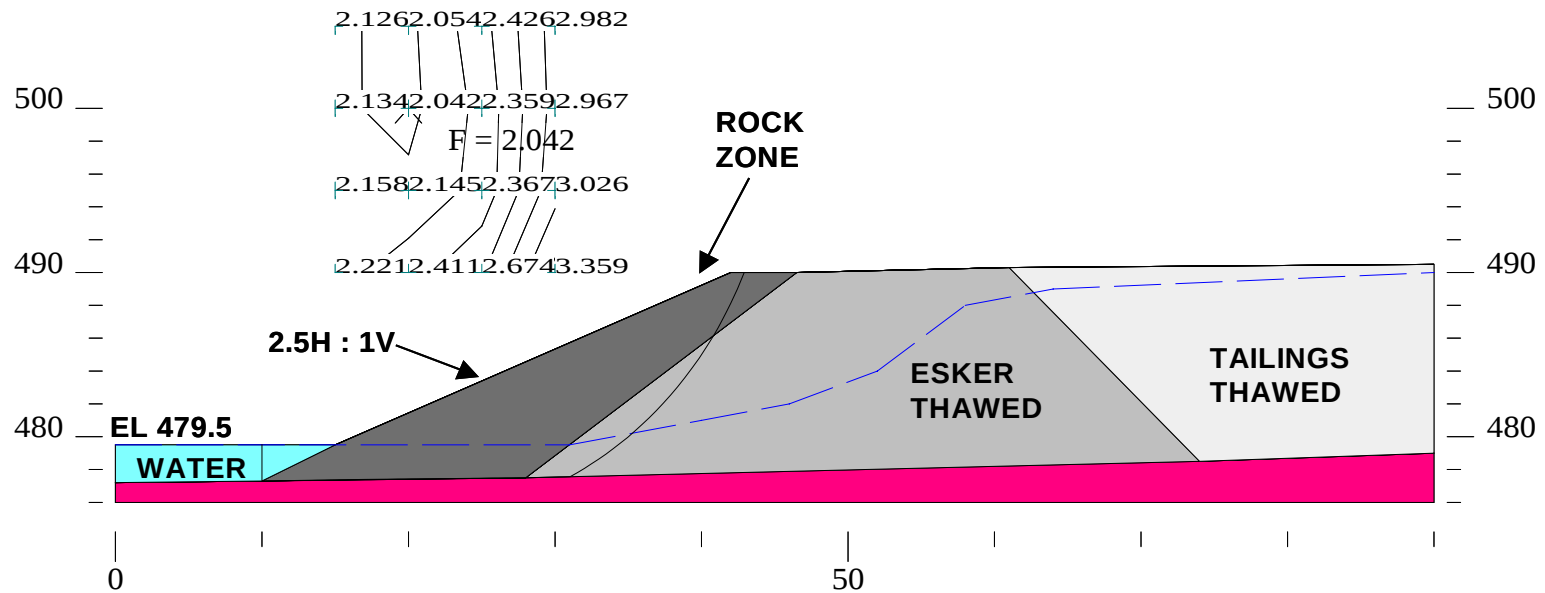


Figure D 8. 3 Dam. rock zone graded to 2.5h : 1v slope

I. Holubec Consulting Inc. - Oakville ON

Lupin

M Dam

Dec 22, 2004

Frozen conditions

	Gamma	C	Phi	Piezo	Ru
	kN/m3	kPa	deg	Surf.	
Upper tails	14	200	0	1	0
Esker	20	300	0	1	0
Rock	21	0	36	1	0
Lower tails	15	200	0	1	0
Bedrock	(Infinitely Strong)				

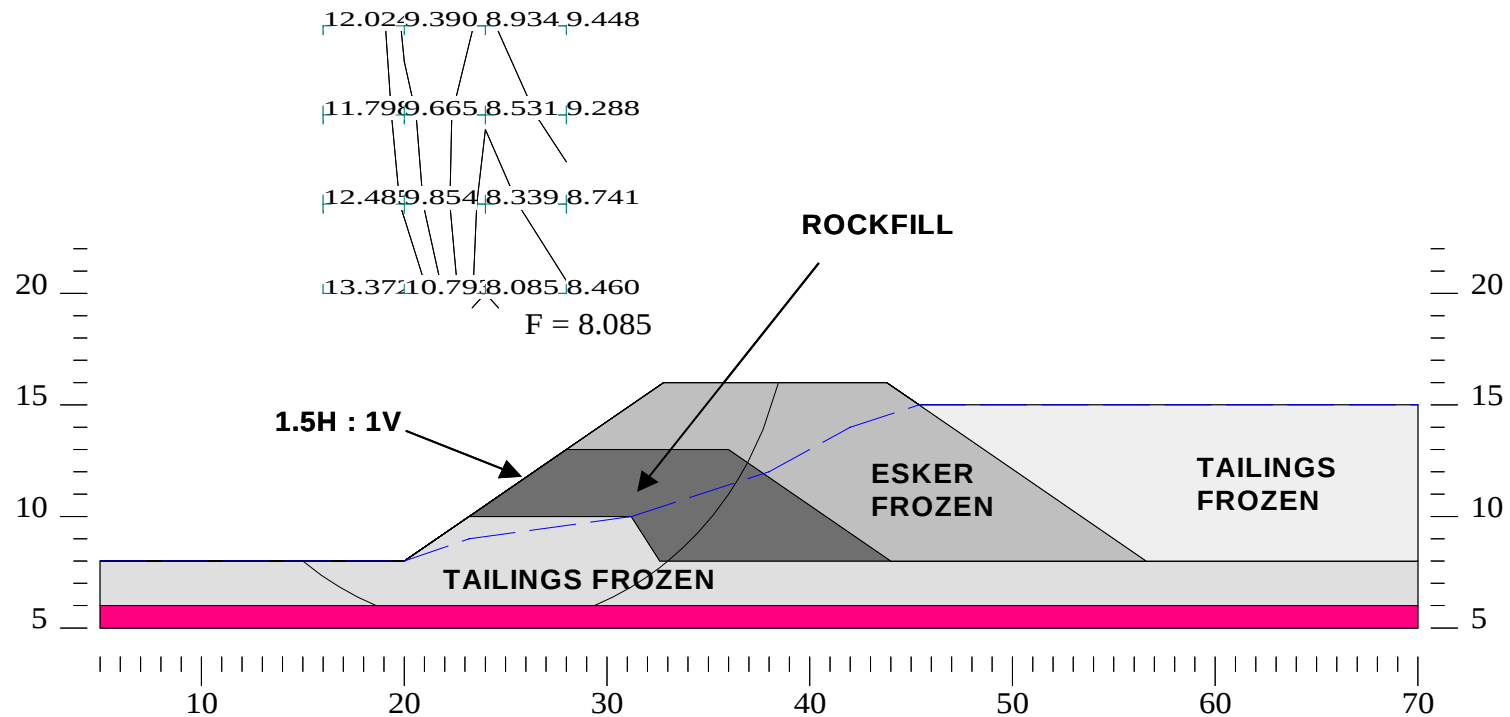


Figure D 9. M Dam, frozen section

I. Holubec Consulting Inc. - Oakville ON

Lupin

M Dam

Dec 22, 2004

Thawed conditions

Existing geometry

	Gamma: C		Phi	Piezo	Ru
	kN/m3	kPa	deg	Surf.	
Upper tails	14	0	30	1	0
Esker	20	0	34	1	0
Rock	21	0	36	1	0
Lower tails	15	5	31	1	0
Bedrock	(Infinitely Strong)				

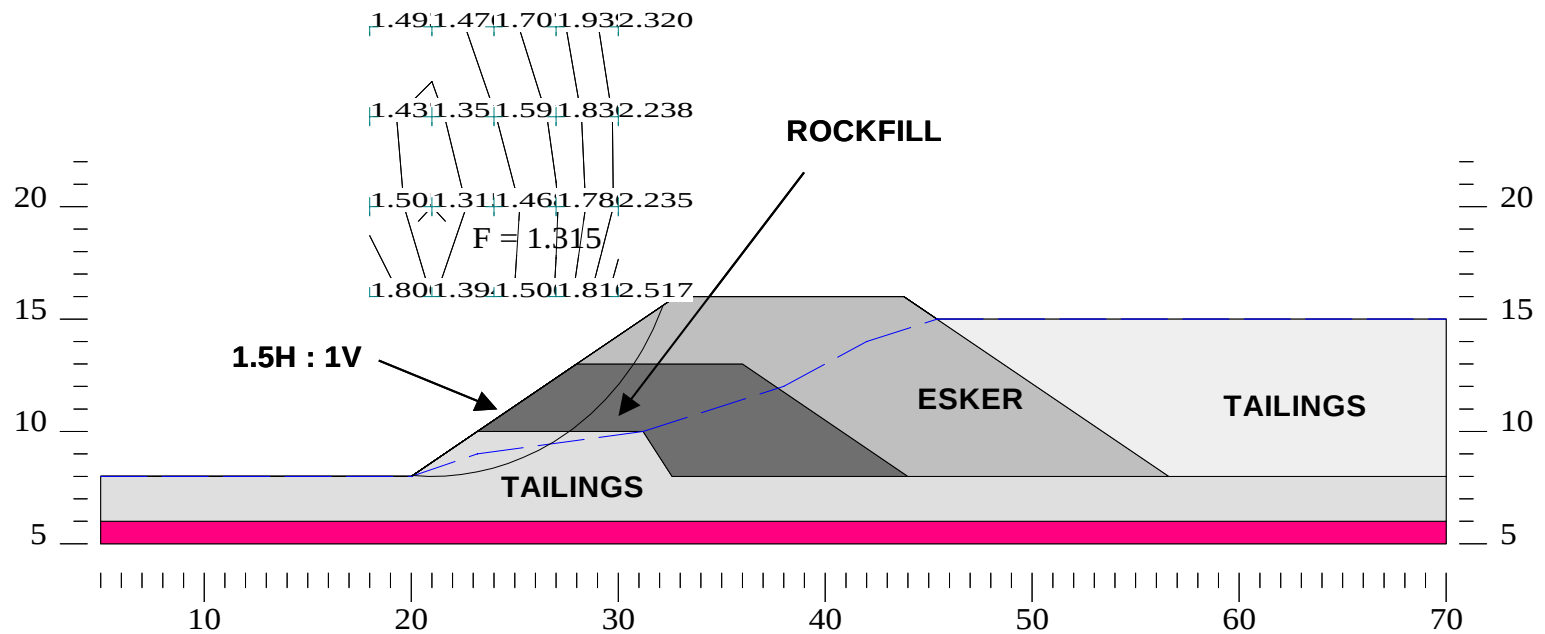


Figure D 10. M Dam, thawed dam

	Gamma: C		Phi	Piezo	Ru
	kN/m3	kPa	deg	Surf.	
Rock Berm	21	0	36	1	0
Upper Tailings	14	0	30	1	0
Esker	20	0	34	1	0
Rock	21	0	36	1	0
Lower Tailings	15	5	31	1	0
Bedrock	(Infinitely Strong)				

I. Holubec Consulting Inc. - Oakville ON

Lupin

M Dam

Dec 22, 2004

Thawed conditions

Reinforced dam, 2.5h:1v slope

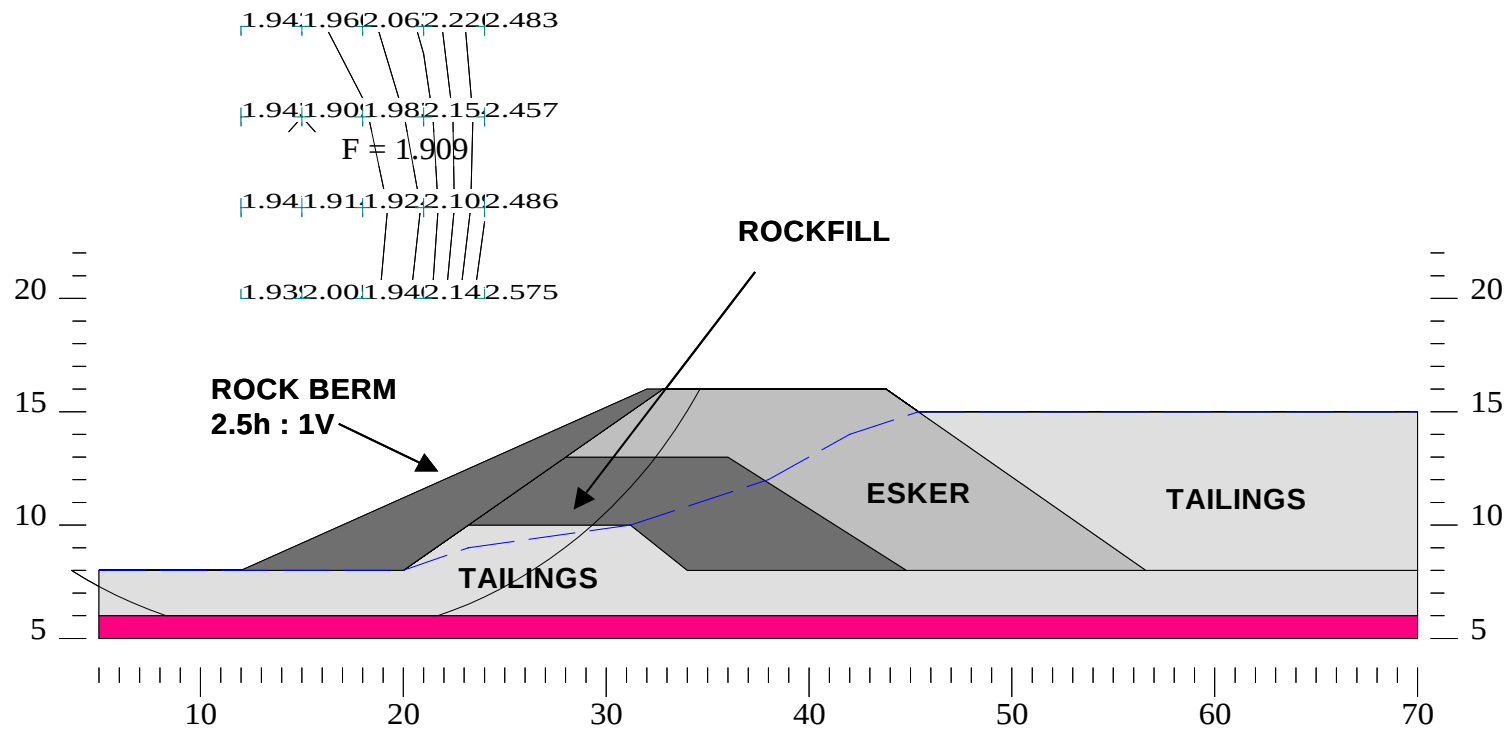


Figure D 11. M Dam, stabilized with 2.5h : 1v rock berm