

**CROWSNEST PASS ROCKFALL EMBANKMENT  
HWY 3 CROWSNEST LAKE, ALBERTA, CANADA**

Rockfall Embankments

**Problem**

Crowsnest lake site is subject to rockfall hazard and has been a part of Southern region Rockfall Hazard Assessment program since 1999.

A major event occurred in June of 2013, when water ran over rock cut across much of the site and dislodged rock on site.

The Site is located at Sentury Mountain along Highway 3. The initial assessment and preliminary design were done by Amec Foster Wheeler. Alberta Transportation wanted to have a more permanent solution and approached Maccaferri Canada Ltd in order to discuss the feasibility of designing a rockfall embankment for this site.

**Solution**

Simulations and rolling rock tests conducted by Ministry of Alberta resulted in a series of design parameters that required the structure must be 5.32m in height , have a maximum base width of 6.87m, and be able to withstand a maximum rockfall impact energy of 2300kj. Terramesh System was selected for this. The Construction was started in June 2016 and ended in August 2016. Maccaferri supplied 600 sq. m of Terrawall system with all accessories. The length of embankment was a set at 80 m.

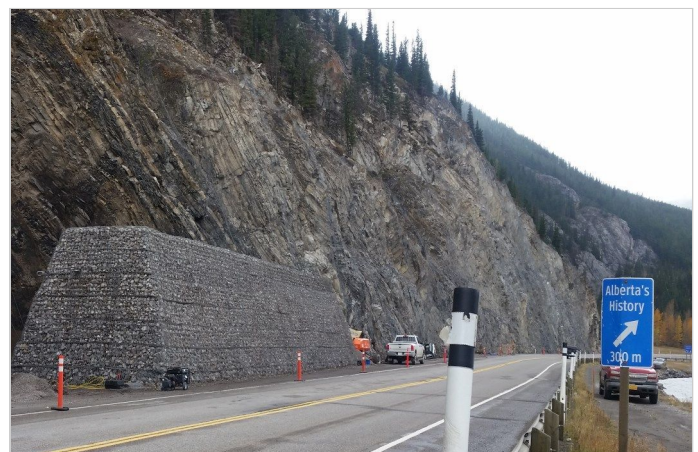
**Client:** Alberta Transportation

**Designer / Consultant:** Amec Foster Wheeler / Maccaferri

**Products used (Qty.)**

- Terrawall 600 sq.m.

**Date of construction:** 06/2016 - 08/2016



Finished Embankment with Terrawall System



Installation of Terrawall System



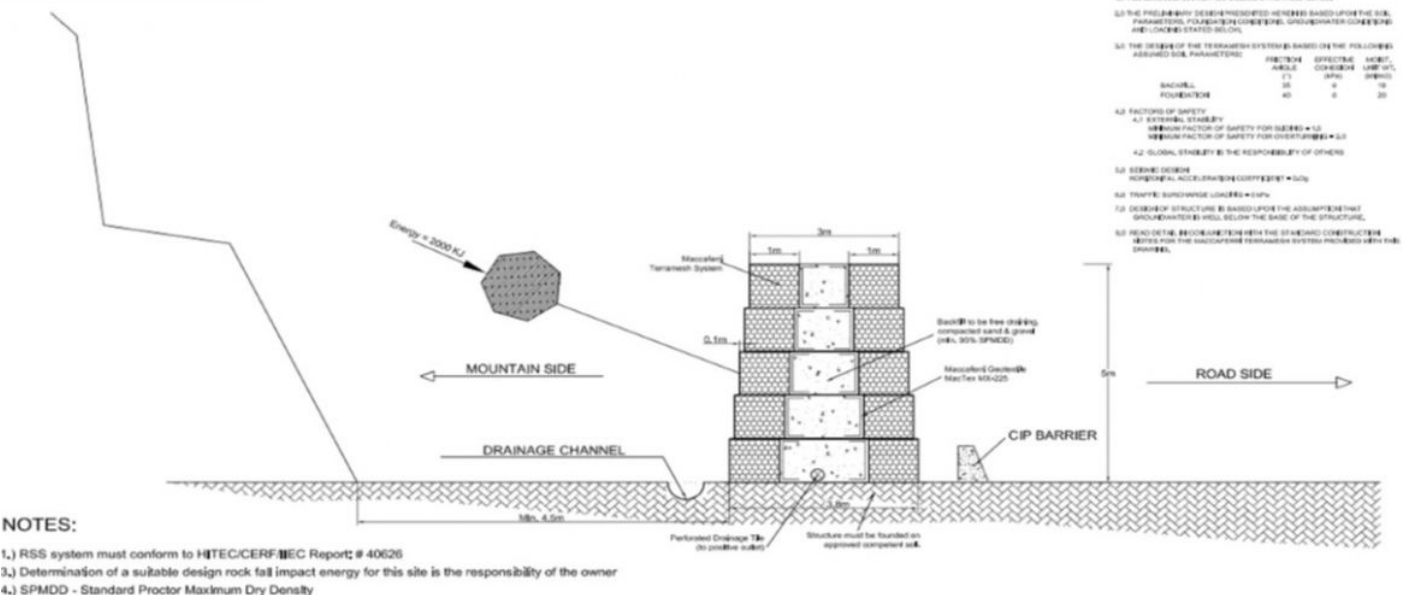
Construction



Completed Embankment



Installation of Terrawall System



1.) ALL DIMENSIONS IN METERS UNLESS OTHERWISE NOTED.  
 2.) THE PRELIMINARY DESIGN PRESENTED HEREIN IS BASED UPON THE SOIL PARAMETERS, FOUNDATION CONDITIONS, LOADS AND WATER CONDITIONS AND LOADS STATED BELOW.  
 3.) THE DESIGN OF THE TERRAMESH SYSTEM IS BASED ON THE FOLLOWING ASSUMED SOIL PARAMETERS:

SOIL TYPE	FOUNDATION	PERCENTAGE	EFFECTIVE COHESION (kPa)	EFFECTIVE ANGLE OF INTERNAL FRICTION (degrees)	SURFACE COEFFICIENT
CLAY	FOUNDATION	40	0	10	0.30

4.) FACTORS OF SAFETY:  
 A.) EXTERNAL STABILITY:  
 - MINIMUM FACTOR OF SAFETY FOR DESIGN = 1.2  
 - MINIMUM FACTOR OF SAFETY FOR CHECKING = 1.1  
 B.) GLOBAL STABILITY IS THE RESPONSIBILITY OF OTHERS.  
 5.) DESIGN LOADS:  
 - HORIZONTAL ACCELERATION COEFFICIENT = 0.05  
 - LIVE LOAD SURCHARGE LOADS = 0.05  
 6.) DESIGN STRUCTURE IS BASED UPON THE ASSUMPTION THAT FOUNDATION IS WELL BELOW THE BASE OF THE STRUCTURE.  
 7.) READ THE INSTRUCTIONS WITH THE STRUCTURAL CONSTRUCTION NOTES FOR THE MACCAFERRI TERRAMESH SYSTEM PROVIDED WITH THIS DRAWING.

Maccaferri Canada Ltd. assumes no responsibility for the drawings and calculations it provides, as they are intended as a general indication to suggest the proper use of its products.

Drawing Title: CROSS SECTION Maccaferri Terramesh Rockfall Barrier		Designed: LG	Date: 15/06/15	Project Title: 2000kJ Rockfall Embankment	<b>MACCAFERRI</b>
Project No: 15-0000		Drawn: LG	Date: 15/06/15		

## Cross Section

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