

SLIDE 5 EMBANKMENT, TRANS CANADA HIGHWAY #1 FRASER CANYON, BC, CANADA

ROCK FALL EMBANKMENT Product: Terramesh® System

Problem:

Initially constructed in 1958, this section of the Trans Canada Highway #1 through the Fraser Canyon, located approximately 53km east of Hope, BC, began displaying signs of instability shortly after completion. Over 40 years, the slide scarp has regressed approximately 200m. In 1961, a low height (2.4m H x 255m L) concrete barrier wall was constructed for rockfall protection (referred to as the Ferrabee Wall). In 1976, the highway was relocated in order to provide an additional 10m of rockfall catchment area. Since 1966, there have been over 60 rockfall events.

The catchment area behind the existing wall varies in width from 8m to 22m. In 2005, the British Columbia Ministry of Transportation (BC MoT) determined that a new rockfall protection structure was required at the narrowest point along the length of the concrete wall.

Solution:

In January 2006, BC MoT approached Maccaferri Canada Ltd. in order to discuss the feasibility of designing a rockfall embankment for this site.

Simulations and rolling rock tests conducted by BC MoT resulted in a series of design parameters that required that the structure must start at 6m in height and increase to 8m, have a maximum base width of 7m, and be able to withstand a maximum rockfall impact energy of 10,000kJ. Previous design concepts considered for this site included rockfall catch fences, but currently no catch fence systems are rated for 10,000kJ design impacts. The length of the structure was set at 96m.

Maccaferri Canada Ltd. proposed using a Terramesh® System reinforced earth embankment for the basic structure on the site. The Terramesh® System was then modified to have a single unit, double side woven wire gabion facing and to be a free standing structure. The width of the structure was partially dependent upon the impact conditions resulting from a 10,000kJ impact on the structure.

Client:

British Columbia Ministry of Transportation

General Contractor:

Gable Construction

Gabion Installer:

Gabion Wall Systems

Designer:

Maccaferri Canada Ltd.

Products used:

Terramesh® System, MacTex Geotextiles

Date of construction

July— August 2008



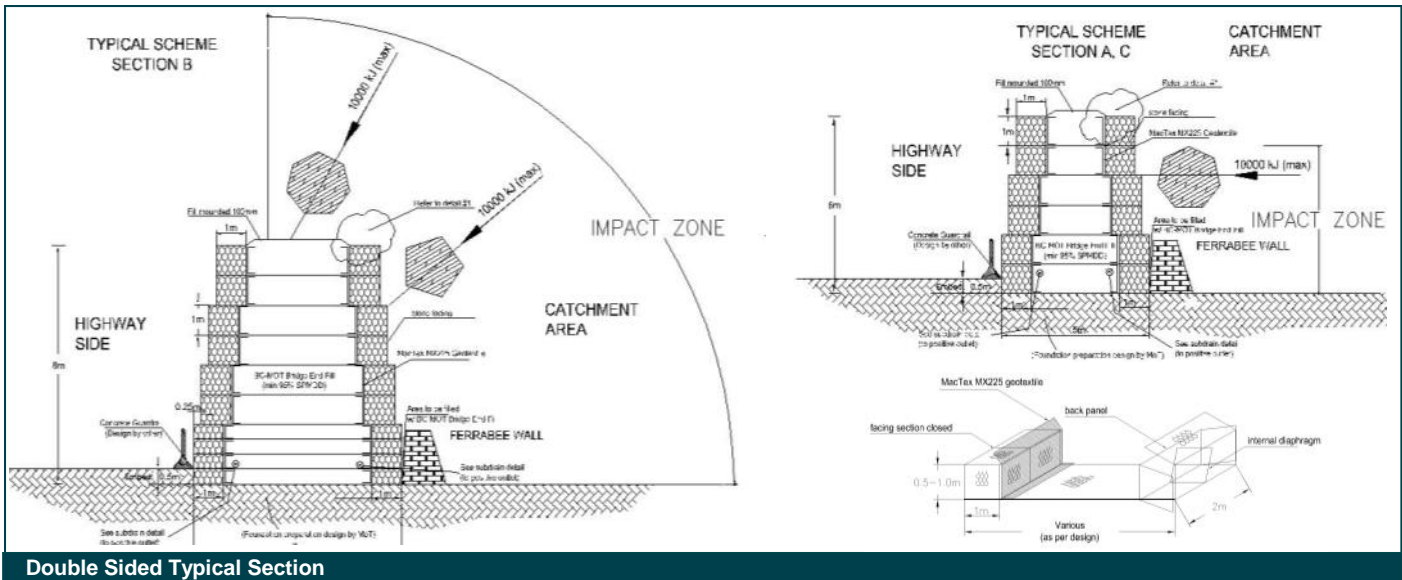
Existing Concrete Barrier Wall and Rock Slope Conditions



North End Access Ramp During Construction



Double Sided Terramesh® Units



The custom Terramesh® System Units were ordered by BC MoT in late 2007. The installation contract was tendered and awarded to Gable Construction. Specialist constructor Gabion Wall Systems was sub-contracted to handle the installation of the Terramesh® System. Construction of the rockfall embankment began in July 2008 and was finished in August 2008.

MACcaferri Rockfall (MAC.RO.™) protection systems have been used successfully throughout Canada and around the world for over 40 years. The MAC.RO. design philosophy incorporates both active and passive rockfall stabilization solutions to solve rockfall instability problems.

Active Systems are solutions that limit the excessive movement once a rock detachment has occurred. They include various types of steel wire and steel cable meshes (Maccaferri HEA Panels and Rock Mesh BO) that are anchored to the rock slope.

Passive Systems are solutions that do not stop rocks from detaching but rather intercept the falling debris as it makes its way down the slope in a controlled manner. They include various mesh drapery systems (Rock Mesh MO, HEA cable mesh panels and double twisted woven mesh), flexible rock fall barriers/fences and reinforced soil embankments (Green Terramesh® or Gabion faced).



Completed North End of Structure



Completed Structure, August 2008