



## Award of Merit

### Composite Barrier Wall/Rock Shed Structure



#### Consultant

Klohn Crippen Berger

#### Owner/Client

Canadian National Railway Company

#### Category

Transportation & Bridges

For more information, please contact:

Kathy Fowler  
Klohn Crippen Berger  
☎ (604) 669-3800  
kfowler@klohn.com

On November 25th, 2012 a 53,000 m<sup>3</sup> rock landslide occurred along the Canadian National Railway (CN) track, at Mile 109.43, between Lytton and Boston Bar, British Columbia. The slide debris covered 70 m of track with debris up to 10 m deep and destroyed a 21 m long concrete rock shed, causing a 4-day service disruption. This section of CN's single-track mainline is part of the CN/CP Rail joint running initiative which sees all CN and CP Rail westbound traffic (Kamloops to Vancouver) running on CN tracks. This service disruption on this line caused significant business losses to both railways.

Klohn Crippen Berger (KCB) was contracted by CN to characterize and assess rock landslide hazard at the site; and recommend, design and implement passive measures to improve safety and protect train service at track level. Two protection structures were designed and constructed: a mesh attenuation curtain was required as a short term rock fall barrier to provide safe working conditions to the onsite construction personnel, while a composite barrier wall/rock shed structure is a long term structure to passively protect the track from all identified potential rock landslides.

In order to obtain realistic estimation of design parameters for the protection structures, KCB incorporated innovative rock slope characterization and modeling techniques into the rockslide risk management process, including terrestrial LiDAR, discrete fracture network modeling and dynamic run-out analysis. The designed protection structure used modular components, facilitating construction under railway traffic and reducing track service disruptions.