

PROJECT PROFILE



April 4, 2020

Buried bridge with GRS headwalls and backfill only half the cost of traditional span bridge

To replace a failing 2.5-m pipe arch culvert on Vancouver Island's Highway 19A, the British Columbia Ministry of Transportation and Infrastructure (BC MoTI) selected an AIL Super•Cor buried bridge with some added innovations.

Beyond the estimated 50% (or more) savings over a traditional span bridge, BC MoTI's choice brought several other key benefits:

- An 11-m-wide, open-bottom design ready for 200-year flood events
- A no-maintenance solution with +75-year design service life
- Improved load bearing resistance and increased scour protection
- Enhanced fish and wildlife passage
- Reduced construction road closure times

Project included a number of innovative "firsts"

This was quite the innovative project for AIL and BC MoTI, with a number of key "firsts":

Project at a glance:

Name: McNaughton Crossing

Location: Highway 19A south of Fanny Bay, BC

Owner: BC Ministry of Transportation and Infrastructure

Consultant: Terratech Consulting Ltd.

Contractor: BC MoTI Internal Crew

Sector: Transportation

Application: Stream Crossing

Product: Super-Cor with GRS Headwalls and Backfill

Dimensions: Span 11.02 m, Rise 3.12 m, Length 18.3 m

Installation Time: Approximately one month from excavation to backfill completion



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- A partially coated Super•Cor Box Culvert with polymer-coated haunches and a galvanized crown
- Geotextile Reinforced Soil (GRS) technology for the headwalls and backfill
- A mesh-wrapped rock foundation to improve load-bearing resistance and reduce risk of scour
- Grouted-in precast concrete footings

The culvert replacement project on the popular coastal highway south of Courtenay was aligned with a rapidly closing fish window, but was also during peak tourist season. The controversial road closure was going to impact businesses and residents in the area.

Accelerated construction with minimal road closure needed

To help ensure this project stayed within the six-week schedule, AIL needed to make sure we were very well coordinated to have all components delivered on time:

- We worked ahead of time to coordinate with engineering, manufacturing, coating and delivery logistics to have all products at the site ahead of time.
- Part of the BC MoTI installation crew pre-assembled the Super•Cor in three ring sub-assemblies while the rest of the crew removed the old culvert and prepared the channel and foundation.
- We supplied precast footings that were designed to have the pre-assembled Super•Cor segments dropped in by crane and grouted. This reduced on-site crane time to one eight-hour day. After the grout reached its design strength, backfill commenced immediately.
- Our Engineer was on-site to provide technical support to the Ministry and their consultant.

Including removal of the existing culvert, our solution was installed and backfilled within one month of the planned six-week road closure.

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Unlike the old culvert, which was designed to surcharge during design flow events, the new Super•Cor Box Culvert is sized to suit the upstream and downstream natural channel width. This increase in opening size will not only provide greater fish passage, but also greater resilience to conveying potential extreme flood flows and debris, which are more common now in our changing climate. Plus, the steel is no longer near the wetted stream perimeter and therefore not subject to abrasion.

The client was happy with the outcome and we continue to pursue future work of this nature with them.

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