



Atlantic Industries Limited

PROJECT PROFILE



September 28, 2019

Partially coated Bolt-A-Plate best solution for BC MoTI culvert replacement

A multi-span beam bridge was initially considered but was found to be significantly more costly

Climate change is impacting Northern British Columbia, with increased precipitation putting added stress on drainage structures. A 2016 storm overwhelmed the existing 3.05 m diameter culvert at Zonnebeke Creek on Highway 29, east of Chetwynd, BC — washing out the upstream embankment and temporarily shutting down the highway.

The BC Ministry of Transportation and Infrastructure (BC MoTI) retained Stantec to design a new crossing, with support from Northwest Hydraulics Consultants Limited and GeoNorth Engineering Limited. Because of the site topography, a 6.47 m diameter partially coated Bolt-A-Plate Culvert from AIL was selected as the most economical solution. A multi-span beam bridge was initially considered but was found to be significantly more costly.

Project at a glance:

Name: Zonnebeke Culvert

Location: Chetwynd, BC

Owner: BC Ministry of Transportation and Infrastructure

Design Engineer: Stantec Incorporated

Hydraulics/Hydrology Engineer: Northwest Hydraulics Consultants Limited

Geotechnical Engineer: GeoNorth Engineering Limited

Contractor: Belvedere Place Contracting Limited

Sector: Transportation, Northern

Application: Culvert

Products: Bolt-A-Plate Round with partial Best-Kote

Dimensions: Diameter 6.47 m, Length 71 m

Installation Time: Two months from start of plate assembly (following delays)



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Polymer-coated protection where it's needed most

AIL provided technical support to Stantec during the design phase, offering help on the Best-Kote polymer coating coverage, bed load retainers and concrete end treatments. Keeping the polymer coating to the lower plate sections of the culvert (where it is needed most for corrosion and abrasion protection) helped control the cost of the structure.

BC MoTI tendered the project as a Proprietary Structure and awarded it to Belvedere Place Contracting Limited, who then purchased the structure from AIL. Our scope included design, preparation of sealed shop drawings, construction field reviews during assembly and backfill and overall certification of the structure following completion.

Heavy summer rains caused additional flooding, which delayed the start of bedding installation and plate assembly. These unforeseen delays pushed the backfill installation into the colder fall months and special precautions were taken to avoid frozen backfill. AIL worked with Belvedere and GeoNorth to overcome these challenges, with frequent visits and technical support until the backfill zone around the structure was completed.

AIL provided on-site support during plate assembly and assisted with setting up a shape-monitoring program during the backfill process. Good feedback on our role in the project was received from Belvedere:

"AIL did an excellent job supporting Belvedere with the proprietary structure, design and supply. The structure was delivered on time. It was appreciated how flexible the AIL Field Reviewer was with regards to supporting the project's installation schedule. I look forward to working with AIL again."

— Bruce Kitsch, Belvedere Place Contracting Limited

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Outlet End View

Photo courtesy of Northwest Hydraulics Consultants Limited



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