Atlantic Industries Limited

PROJECT PROFILE

October 20, 2020

AIL value engineers Polymer-Coated Super•Cor Arch and MSE Wall package for NSTIR's railway tunnel project at Windsor, NS

VALUE ENGINEERING CASE STUDY

AIL is proud to have another Super•Cor and MSE Panel Wall project completed in Nova Scotia. In this case, we were able to support the contractor, Dexter Construction, early on in their design-build proposal with an innovative and economical packaged solution to carry forward to the Nova Scotia Department of Transportation and Infrastructure Renewal (NSTIR).

Railway overpass featured two-stage construction, skewed design, innovative footings

This highway twinning rail tunnel project required a two-stage construction sequence, with the structure for the new west-bound lanes being built first with a temporary MSE Wire Wall on the median side. Once this crossing was complete and opened to two-

Project at a glance:

Name: Windsor Railroad Overpass

Location: Windsor, Nova Scotia

Owner: Nova Scotia Transportation and Infrastructure Renewal (NSTIR)

Engineer: Harbourside Geotechnical Consultants

Contractor: Dexter Construction Company Limited

Sector: Transportation

Application: Railway Overpass

Product: Super•Cor Box Culvert with Best•Kote Polymer Coating

Arch Dimensions: Span 16.5 m, Rise 8.4 m, Length 94 m

Installation Time: Six weeks for Phase One and eight weeks for Phase Two

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way traffic, the old three-span concrete bridge could be demolished in preparation for the new and re-aligned east-bound roadway to be constructed adjacent to the west-bound.

The skewed alignment of Highway 101 to the railway tunnel was 50 degrees, which posed a particular challenge in developing the temporary MSE wall configuration that would support the new west-bound lanes, but not undermine the existing live east-bound lanes of Highway 101.

AIL engaged the services of Harbourside Geotechnical Consultants to analyze the cut slopes and propose a construction sequence that would mitigate the risks of slope failure and approve the underlying foundation capacity to support the applied loads of the MSE Walls and the Super•Cor Arch footings.

Phase Two of the project started mid July 2020 when the Highway 101 detour opened over the Phase One tunnel section. At the same time, the existing highway was closed to traffic, the existing steel girder bridge was demolished/removed and the site was excavated in order to prepare the foundation and install the concrete footings.

The tunnel assembly of Phase Two began in early September 2020 and took three weeks to complete, with another four weeks to assemble the MSE Precast Panel Headwalls and Wingwalls. Dexter considered our contract substantially completed by November 30 and all project partners are pleased with AIL's engineering and supply services. Final grading and paving is being completed under a separate contract called in the spring of 2021.

Phase Two: Structure completed, awaiting final grading and paving
Over the past few years, NSTIR has seen the benefits of including AIL's packaged solutions of buried metal arches and MSE Walls in their tender callings on Highways 103 and 107, and with recent projects that have been completed at Kieley Brook/Ingramport and East River Bridge near Chester.

Head Office:
32 York Street
Sackville, New Brunswick
Canada E4L 4R4
1-877-245-7473

Phase Two: Plate assembly nearing completion, backfilling underway

Phase Two: Structure completed, awaiting final grading and paving

Take a 360° video tour through the different phases of this project

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