



Atlantic Industries Limited

# PROJECT PROFILE



November 25, 2022

## Ultra•Cor Buried Metal Bridge to support heavier Leopard 2 Tank live load on CFB Gagetown stream crossing

Defence Construction Canada (DCC) is a Crown Corporation that delivers infrastructure and environmental projects for the armed forces. When DCC needed larger and stronger arches to carry the increased live loads of their newer Leopard 2 Tanks over waterways at CFB Gagetown, AIL's deep-corrugated Ultra•Cor was the perfect choice.

AIL had previously designed and supplied a 9.3 m span Super•Cor stream crossing for CFB Gagetown in 2019. DCC had shown a keen interest in using another buried metal bridge for this stream crossing ever since then. Ultra•Cor, with its superior load-carrying ability at wide spans, provided a great solution for the increased load capacity of this 19.6 m project.

We also designed and supplied an efficient headwall/wingwall solution via our MSE Precast Panel Walls. In this latest project, we value engineered the structure with a protective epoxy coating, on the leg sections only, to deliver a design service life of over 75 years.

### Project at a glance:

**Project Name:** Swan Creek Crossing

**Location:** Canadian Forces Base (CFB) Gagetown, NB

**Owner:** Government of Canada, Defense Construction Canada (DCC)

**Consultant:** Englobe Corp

**Contractor:** Philson Ltd.

**Sector:** Public Works

**Application:** Stream Crossing

**Products:** Ultra•Cor, MSE Precast Panel Walls

**Dimensions:** Span 19.6 m, Rise 6.3 m, Length 24 m





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## Load and soil conditions required extensive pre-design analysis

This wider span arch with a heavy live load had to be analyzed to validate the design of the structure under dead and live load conditions. Additionally, the bearing capacity of the underlying foundation soils was low and needed analysis to determine design limits for the foundation design.

We arrived at the solution by using AIL's Finite Element Method (FEM) design programs. We have performed extensive research in developing our design programs to meet all the requirements of the Canadian Highway Bridge Design Code (CHBDC) S6-19. The supporting foundation was designed with driven steel pile based on load reactions provided by AIL's Engineering Team.

We worked with DCC's consulting engineering firm, Englobe Corp, to develop preliminary working budgets and timelines for the Ultra•Cor Arch, our MSE Precast Panel Headwalls and the supporting foundations, prior to tender call.

We'd also like to give a shout out to Philson Ltd., the contractors on both this project and the 2019 one. It was great to work with their team again.

## Ultra•Cor buried metal bridge spans can exceed 35 m

As one of AIL's latest innovations, Ultra•Cor Structural Steel Plate is taking engineered buried arch bridges to new dimensions in capability and performance. With an impressive 500 mm pitch and 237 mm depth, Ultra•Cor's ultra-deep corrugations allow it to reach greater spans and withstand the heaviest of loads. It combines all the advantages of lightweight construction with previously unheard-of strength and durability to create the largest buried arch bridges, tunnels, box culverts and many other types of structures. And, just like all AIL-engineered arch bridge solutions, Ultra•Cor ships and installs easily with minimal equipment and labour requirements.



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