

PROJECT PROFILE



BC emergency crossing engineered for flooding and settlement needs

A stream crossing on a new emergency access road to Forensic Psychiatric Hospital in Coquitlam, BC, had specific requirements, being in a flood zone. The project team selected a Super•Cor Low Profile Arch for its flexible design and its ability to withstand a flood event and keep the emergency route open.

There was also a settlement issue in this soft, marshy site. Our inhouse engineering team collaborated with a geotechnical consultant to ensure that our design met the requirements and to help value engineer an efficient solution for the soft foundation soils.

Value engineering from the bottom up

The structure was originally designed to be supported on stone columns. After reviewing our system with the consultant and performing a seismic design, the original foundation was reconsidered. Site-specific results indicated that the soil conditions were more favourable than previously assumed, so we could use a more cost-effective and relatively faster solution.

Project at a glance:

Name: Forensic Psychiatric Hospital **Location:** Coquitlam, BC

Owner: Ministry of Technology, Innovation and Citizens' Services

Engineer: McElhanney Consulting Services

Geotechnical Consultant: Thurber Engineering

Finite Element Modeling Consultant: Naesgaard-Amini Geotechnical Limited

Contractor: Hall Constructors

Product: Super-Cor Arch

Sector: Public Works

Application: Stream crossing for emergency access road

Dimensions: Span 11.42m, Rise 4.21m, Length 13.03m **Installation Time:** Five days for assembly, 10 days for backfill



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The new solution used Rapid Impaction Compaction (RIC) to create a densified crust in the foundation soils (up to 5 m below the footings), which met the seismic performance of the culvert and allowed for lower cost concrete strip footings.

Sheet pile was installed to facilitate excavation on the edges of the watercourse — this had the secondary benefit of confining the foundation soils and offering a level of scour protection.

The project was under a tight timeline requiring the project team to be organized to meet the completion dates. The AIL engineering and manufacturing teams worked closely with the customer to ensure that the project was moving ahead as planned and the product was delivered to the site well ahead of the contractor's requirements. Post-project feedback from the owner's consultant and the contractor has been very positive.

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