

M CON Products Provides Box Culvert Solution for Dam Replacement

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Precast Producer: M CON Products Inc.

Located approximately 30 kilometres north of Kingston, Ontario, in the Township of South Frontenac, the Thirteen Island Lake Dam was coming to the end of its service life. The existing structure consisted of four corrugated steel pipe culverts and some dam components to enable water level control and outflow control.

Jewell Engineering was awarded the engineering, design, and inspection contract. General Contractor for the project was awarded to Doornekamp Construction.

Long service life and durability was a key consideration during the design phase, and a precast concrete structure was selected to provide these characteristics, given the critical nature of the infrastructure being replaced.

The design for the new structure was composed of a triple-cell (three parallel runs) of 1800 mm x 900 mm precast concrete box culvert, a new cutoff wall, provisions for water control stop logs, and a pedestrian safety railing.

For production speed, most of the pieces used provincial standard OPSS 1821 drycast box culvert sections. However, the Township of South Frontenac needed a cast-in stop log system to control water flow into Thirteen Island Lake.

M CON Products was selected as the precast concrete supplier for this project. M CON's engineering department provided a solution to have standard 800 mm x 900 mm box sections to include some custom modifications to allow for the cast-in stop log system to be incorporated in the box culvert end units. M CON manufactured the end units using their custom wet-cast expertise, with 100 mm deep C-channels cast into the walls to hold the 150 mm x 150 mm stop logs



Completed box culvert dam structure.

and thicker side walls. This was done while keeping the floor and top slabs the same thickness as the rest of the culvert for ease of installation and aesthetics. Custom locking grates were also incorporated in the top slab of the end units to allow Quinte Conservation Authority staff access to add and remove the stop logs when required for flow control.

The twelve drycast units were produced in two days, and each of the three custom end pieces took one day.

Precast concrete boxes offer long service life and durability. They also enable extensive customization of the dam/culvert structure, all while ensuring a remarkably short production and delivery time, crucial in meeting the project's schedule.

I want to thank the M CON Products manufacturing and engineering departments for their support and expertise that helped us meet the project challenges and provide the Township of South Frontenac with durable and resilient infrastructure that will be in service for many years to come.