

YELLOW FALLS HYDROPOWER PROJECT



PROJECT CREDITS

OWNER

Boralex

ENGINEER OF RECORD

Stantec Consulting Limited

GENERAL CONTRACTOR

Pomerleau Construction

MATERIAL SUPPLIERS

Lafarge Canada Inc.

ADDITIONAL PARTICIPANTS

BASF Canada

Carpenters Union Local 1669

PROJECT FACTS

LOCATION Smooth Rock Falls, Ontario

TYPE Run of River Hydroelectric Power Station

SIZE 16 MW Hydropower Project

PROJECT FACTS & FEATURES

- **POWER GENERATOR:** 87,000 megawatt-hours of renewable energy annually; enough electricity to power approximately 12,000 average Ontario homes
- **READY-MIX CONCRETE COMPONENTS:** 20,600 m³
- **CONSTRUCTION TIME:**
 - Plant erection - 10 Working Days
 - Concrete production & supply - 9 months total
 - Plant dismantle - 5 Working Days
- **SAFETY RECORDS:** Zero Injury



ONTARIO
CONCRETE
Awards



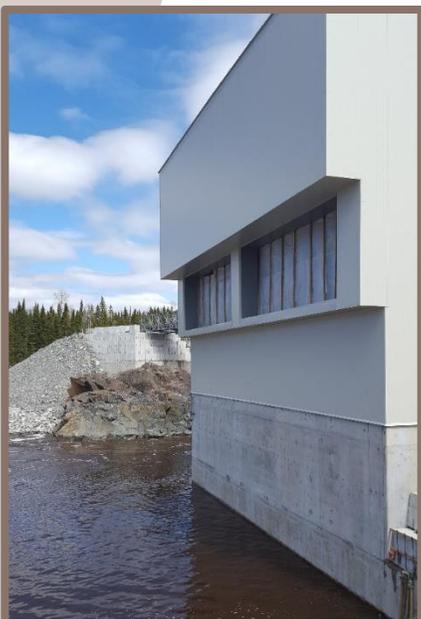
PROJECT DESCRIPTION

Boralex and First Nation partners Taykwa Tagamou Nation (TTN) and the Mattagami First Nation worked together as a team to complete this technically challenging project. It consisted of a combined intake and powerhouse in a close-coupled arrangement near the west bank of the river, with two 8 MW turbine-generator units housed in the plant. A spillway with three vertical-lift, fixed-roller gates and one set of stop logs was built adjacent to the powerhouse and the powerhouse was flanked by two sections of dam, each about 15 meters high.

PROJECT CHALLENGES

Remote location:

- Remote / isolated site in northern Ontario
- 36 km from the nearest community (Smooth Rock Falls, population 1,300)
- Nearest major urban center was Timmins (140 kms)



Access to site: First 18 kms off of Hwy 11 was on Red Pine road. This road was a single lane “seasonal” long haul road, that was not conducive to hauling equipment or materials to site most of the year. An additional 8 kms of access road had to be built from scratch over rough terrain.

2 two new bridges had to be installed

Accessing the opposite side of the river for construction:

- There was no road access to the other side of the river so construction work required on opposite side had to be accomplished during the winter months.
- An ice road had to be built to accommodate this, with equipment, materials, and concrete using this road.

Winter work with mass pours: Temperatures during the winter months were regularly in the -40C range. Heavy snow conditions were encountered. Concrete including several large mass pours (500m³) were required.

Aggregate supply logistics: All concrete aggregates had to be hauled to site. Concrete sand needed to be delivered from a pit approximately 8 kms away which was on road that was only accessible during the winter, and the concrete stone source was 45 kms away.

THE LAFARGE SOLUTION

With all the above challenges such as **isolated location** that had **limited access** and combined with the **requirement of high-quality concrete** for **mass pours** during **extreme weather conditions**, Lafarge proposed installing a portable plant right at the project site. This meant that the general contractor could rely on Lafarge to be able to provide concrete on time, and there would not be any concerns regarding delays due to site access. Furthermore, this also eliminated any concerns regarding

the impact of long-haul distances that are common in northern Ontario.

Lafarge also provided a dedicated team to operate the plant and deliver the concrete. We provided one of our 'Projects' teams, which all have extensive experience in working on remote, isolated projects. This meant that the general contractor could be assured that we were able to provide concrete at a moment's notice, and not have to wait until a crew was brought in for any sudden change in schedule. It also meant that they could be assured that if troubleshooting was required, these key individuals have the experience and know-how to be able to find solutions to get production both started, and to keep it going, under any circumstances.

Plant installation included preparation of the plant and site for both extreme weather conditions. The cold weather conditions required the plant to be enclosed and insulated; a necessity to have a boiler installed being used during winter months; as well as ice supplied and added during the summer months (delivered from Toronto 800 kms away). A heated garage was also installed that allowed maintenance to be done inside during the winter months. These measures insured that concrete could be

produced and supplied to the contractor whenever requested, and under extreme conditions that existed on the site. With careful preparation, we were able to successfully complete a mass pour of approximately 500 m³ of concrete with temperatures in the -35 to -45C range. This resulted in the contractor being able to maintain their tight construction schedule. Lafarge also developed mixes with a very high supplementary cement content to manage the heat of hydration of the concrete given the significant number of mass pours on the project. This enabled the production of concrete that met all project specifications while avoiding the thermal challenges of mass concrete placements.

Giving back to the community: Lafarge worked with First Nations communities to provide opportunities to participate in this project and established a scholarship managed by Indspire that ultimately provided \$48,000 in post-secondary training and education for Indigenous youth across the north in the construction industry.

Watch the video:

<https://www.youtube.com/watch?v=AhOqpicVqhl>

