

# BRIDGE FEATURES STATE-OF-THE-ART CONCRETE

By Lynne Wells

The new Petitcodiac River Bridge is a showcase that does the Victorian Age proud, but no Victorian-era engineer would have been able to build it. The 440-metre span links Moncton and Riverview and replaces the Gunningsville Bridge, built in 1910, which will be dismantled.

"The new bridge was certainly a necessity," says Len MacFarlane of Fundy Contractors. "You had to fold in your car's outside mirrors when you went across the old bridge!"

The bridge wasn't only designed to better accommodate the traffic demands of today with its four lanes, pedestrian walkways and observation platforms. It was also built to be aesthetically pleasing. MacFarlane estimates that more than \$1 million was spent to give the bridge a pleasing appearance.

"We're proud of work on the project, and we did learn a lot of about self-consolidating concrete during the bridge's construction," MacFarlane says.

Self-consolidating concrete (SCC) is a new product for the New Brunswick Department of Transportation to specify in its tender documents. When Fundy Contracting was awarded the contract to build the bridge deck and barrier walls, the company was confident it could produce SCC for the barrier walls.

According to MacFarlane, Fundy developed a mix that met specifications after a great deal of fieldwork.

"We brought in Jacques Whitford to help us

and Quality Concrete with the development," he says. "SCC was used before in this region, but never to this scale. The barrier walls ran almost 900 metres along both sides of the bridge.

"Jacques Whitford developed the theoretical mix, and then we spent two to three weeks pouring trial batches on the ground. It's a finicky product – very sensitive to the amount of water in the mix. We were down to just kilograms of water per load. We had to add a lot of other chemicals – shrinkage reducers, viscosity modifiers, etc. – to keep the mix from segregating. You walk a fine line in developing a SCC mix to meet your needs.

"SCC is a highly flowable product, requiring little or no vibration," MacFarlane continues. "It's very dense and provides a smooth finish with few bug holes. We needed it to meet the barrier walls' design, which would appear to have a random stone finish."

Using stone panel liners to provide the pattern, then water curing the concrete and eliminating variations in the colour of the concrete before applying an acid-stain colour and a graffiti-proof sealer, Fundy has produced a look that belies the time and trouble involved.

Just pouring the barrier walls took six to seven weeks. "We poured in 9.8 linear metre batches, from pilaster to pilaster, in order to preserve the random stone pattern," MacFarlane says.

Even the two observation decks off the pedestrian walkways have a stamped concrete topping.

"Every effort was made to provide a cohesive and attractive look reminiscent of a much earlier time period," MacFarlane says. "The powder-coated aluminum railings and light standards



The new Petitcodiac River Bridge between Moncton and Riverview, New Brunswick was opened to traffic on November 19, 2005. The project featured several innovative concrete construction techniques, including the use of self-consolidating concrete (SCC), form liners and acid-stain colour to provide a durable, detailed, coloured stone pattern for the barrier walls.

– made to look like cast iron – are another feature of the Victorian styling that elevates this bridge into the showcase category. The people of Moncton and Riverview can be very proud of the finished product."

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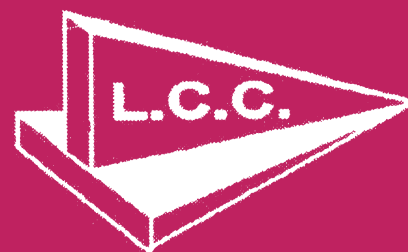
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Our company was very pleased to have been chosen as supplier to Fundy Contractors for expansion joints, Fre. duct, and NCA anchors to the Petitcodiac River Bridge.

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## LANCOR CONCRETE CONTRACTORS LTD.

Congratulations on the opening of the new Petitcodiac River Bridge, Lancor was proud to be a part of this project as the formwork contractor for the deck, end posts and barrier walls.

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