

## The Rehabilitation of The Covered Bridge Leclerc (P-00249) Passing Over the Bouchard Stream in LaSarre, Quebec

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**Abstract :** The original Leclerc Bridge is a covered wooden bridge that is considered a Quebec heritage structure with an index of 60, making it a very important provincial bridge from a historical point of view. It was constructed in 1927 and is in the rural area of Abitibi-Temiscamingue. It is a "town Québécois" type of structure, which is generally rare but common for covered bridges in Abitibi-Temiscamingue. This type of structure is composed of two trusses on both sides formed with diagonals, internal bracings, uprights and top and bottom chords to allow the transmission of loads. This structure is mostly known for its solidity, lightweightness, and ease of construction. It is a single-span bridge with a length of 25.3 meters and allows the passage of one vehicle at a time with a 4.22-meter driving lane. The structure is composed of 2 trusses located at each end of the deck, two gabion foundations at both ends, uprights and top and bottom chords. WSP (Williams Sale Partnership) Canada inc. was mandated by the Transport Minister of Quebec in 2019 to increase the capacity of the bridge from 5 tons to 30.6 tons and rehabilitate it, as it has deteriorated quite significantly over the years. The bridge was damaged due to material deterioration over time, exposure to humidity, high load effects and insect infestation. To allow the passage of 3 axle trucks, as well as to keep the integrity of this heritage structure, the final design chosen to rehabilitate the bridge involved adding a new deck independent from the roof structure of the bridge. Essentially, new steel beams support the deck loads and the desired vehicle loads. The roof of the bridge is linked to the steel deck for lateral support, but it is isolated from the wooden deck. The roof is preserved for aesthetic reasons and remains intact as it is a heritage piece. Due to strict traffic management obstacles, an efficient construction method was put into place, which consisted of building a temporary bridge and moving the existing roof onto it to allow the circulation of vehicles on one side of the temporary bridge while providing a working space for the repairs of the roof on the other side to take place simultaneously. In parallel, this method allowed the demolition and reconstruction of the existing foundation, building a new steel deck, and transporting back the roof on the new bridge. One of the main criteria for the rehabilitation of the wooden bridge was to preserve, as much as possible, the existing patrimonial architectural design of the bridge. The project was completed successfully by the end of 2021.

**Keywords :** covered bridge, wood-steel, short span, town Québécois structure

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