

Val-des-Bois Bridge

Bowman, Quebec

The Val-des-Bois (Valley of Forests) Bridge was one of a series of all hot-dip galvanized bridges erected in the early to mid-1960's, the first of their kind in the world. This 255-foot, traditional truss style bridge has two traffic lanes and entered service in 1964. Crossing the Du Lievre (Jackrabbit) River about one hour north of the Canadian capital of Ottawa this bridge has faced brutal environmental conditions since its erection.

The entire structure was hot-dip galvanized; H-beams and plates for the main structure, cold form plate for the curbs-sidewalk, riveted style steel deck grating and two-layers of guardrail to form railings. Eastern Canada winters are extremely challenging to infrastructure and this area sees at least six months a year of winter conditions with regular application of de-icing salts and abrasives. The severe cold cycles of winter and hot humid summer weather create metal contractions and expansions that quickly degrade paint systems, cracking them and allowing the corrosive salt-laced moisture to begin its dirty work.



As deicing salt use became widespread after World War II, the Ministry of Transportation saw the catastrophic effect on painted steel truss bridges. These painted bridges were experiencing critical corrosion failure sometimes in less than 20 years of service despite nearly constant expensive blast and repaint programs. These failures led to the decision in 1960 to install a series of hot-dip galvanized bridges. Amazingly every single one of this series of bridges is still in service 50 to 60 years later with first maintenance having only being required after almost 50 years of service.

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According to Sylvain Cordeau, the engineer responsible for the Ministry of Transport, the Val-des-Bois Bridge has exceeded all expectations of the Ministry. A thorough 2018 inspection found no steel corrosion on the truss structure; amazingly they still show anywhere from 100% to over 300% of minimum zinc thickness for new construction! Even the deck grating is only beginning to see base metal corrosion, mostly related to over half a century of snowplows and studded snow tires gradually grinding away the steel grating itself.

The only corrosion issue that has required maintenance was the deck grating support beams. A poor design of laying the grating directly on the top flange of these supports trapped corrosive liquid and moisture retaining salt and sand. But even these components are still in service 56 years later. ■



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