

ABSTRACT

The use of deicing salts in this part of the country is a necessity to remove ice from our bridges. The use of these salts has always been a problem since the chloride-ions penetrate the concrete and reach the steel and cause corrosion which eventually cause deterioration of both the steel and concrete.

One method used to try to prevent this from happening was to apply a waterproof membrane to the concrete after it was placed. This method did help, but was not cost effective as the longevity of the membrane system was of relatively short duration.

For this reason, this research project was initiated. After the original deck was placed a second layer of concrete about 1 1/2" thick was placed on top.

Biennial evaluation of the decks included testing for delaminations and steel corrosion. Cores were also obtained for a chloride analysis.

Testing and observations showed the two-layer bridge deck to be effective in preventing corrosion.

Since the time this project was initiated, epoxy steel has been introduced and is a cost effective way to protect the steel from corrosion.