

Vector™
Galvanode® DAS
Project History

Manitoba Infrastructure and Transportation
Hwy. 59 and Hwy. 100 Grade Separation, Girder End Protection

Structure: Highway 59 and Highway 100 Grade Separation

Location: Winnipeg, Manitoba, Canada

Client: Manitoba Infrastructure and Transportation

Project Date: 2007 - 2009

Project Description:

The bridge structure, built in the late 60s, is a box girder construction with an asphalt overlay. The Department of Transportation wanted to increase the carrying capacity of the structure and extend the service life an additional 30+ years. Due to failing expansion joints the pier and pier caps as well as the box girder ends were suffering from concrete spalls and delaminations due to high levels of chlorides at the level of the reinforcing steel causing corrosion. With the exception of the ends of the girders, the mid-span of the box girders were found to be in good condition

Project Solution:

The use of Galvanode DAS anodes was selected to provide long-term corrosion control to the girder ends and the pier caps where the highest level of chloride contamination was to be found. The pier cap was overbuilt in phase 1 with additional reinforcing added to increase capacity of the structure. Galvanode DAS anodes were installed in the jacket to provide active protection to the embedded steel in the parent concrete. The girder ends were a greater challenge and were addressed in phase 2 of the project. The girders were raised so that the bearings could be replaced. While raised, concrete was removed from the underside of the girder ends and DAS anodes were installed to protect the lower portion of the girder end and grouted in place. The girders were lowered back on to their bearing pads.

In phase 3 of the project a concrete overlay was placed over the box girders and new expansion joints were installed where

required. Prior to the installation of the overlay and expansion joints the vertical face of the box girder ends was removed to a depth of 150 mm. Galvanode DAS anodes were installed in the void and were grouted back in place.

Due to failing expansion joints, the pier, pier caps, and box girder ends were suffering from concrete spalls and delaminations due to chloride induced corrosion of the reinforcing steel. The solution selected will provide long term corrosion protection to the targeted areas exhibiting distress thus extending the service life of the structure.



Pier caps jacketed with embedded Galvanode DAS anodes for corrosion control of chloride contaminated concrete



Galvanode DAS anodes installed within bearing area of box girders for corrosion mitigation of embedded steel

14302 - 2009Nov20

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Patents: US 6165346, 6572760, 7226532, 7726144, 742665 and other US and International patents pending.
 Printed in Canada

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