



WATERBORNE ACRYLIC RESINS FOR PROTECTIVE COATINGS

CASE HISTORY:

Neuse River Bridge in New Bern, North Carolina



Bridge during construction.

The North Carolina Department of Transportation began the testing of waterborne acrylic coatings for bridge applications in 1984 at their Manns Harbor test site. The development of a North

Carolina DOT specification was motivated by favorable testing from these test, along with pressure from the EPA to lower the amount of volatile organic content (VOC) in industrial maintenance coatings. In the early 1990's, the NC DOT specifications began to require shop painting of the ends of weathering steel girders with a four-coat waterborne system. Few problems were encountered once shop applicators became familiar with the waterborne system, and the waterborne system began to be used for other applications in the mid-1990's. The largest project using a waterborne system has been the construction of the Neuse River Bridge in New Bern, NC.

DETAILS OF PROJECT

PRIMER:

1 coat of brown WB acrylic primer plus 1 coat of white WB acrylic primer.

TOPCOAT:

1 coat of green WB acrylic, followed by 1 coat of gray WB acrylic.

DFT:

2 to 4 mils per coat, for a total DFT of 8 to 16 mils.

Steel beams painted in the fabrication shop, with touch-up on site.

SURFACE PREPARATION & COATING APPLICATION

The bridge consists of 879 steel girders painted with a four-coat waterborne acrylic paint system, consisting of 2 primer coats and two finish coats. All paints were applied in a shop to an SSPC SP-6 prepared surface, except for connection areas and touchup which were done on site. Structural steel fabrication and shop painting started in May of 1996 and continued through July of 1998. The steel beams were made in

Wisconsin and shipped by rail to the site. After construction, connections were blast cleaned and painted with the 4-coat system. In order to continue painting through cold weather, some of the connections were primed with a solventborne zinc-rich primer, then finished at a later time with the WB paints.

Shop painted beams waiting to be erected

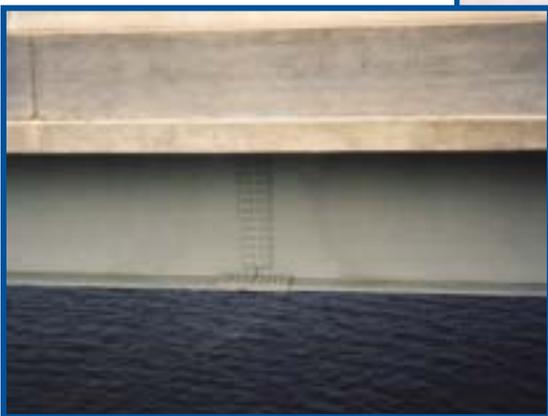


PROJECT ASSESSMENT:

In July 2001, an independent evaluation of the bridge was conducted. Areas inspected included some of the first girders to be painted. Overall, the paint system is doing very well, with no significant problems. Although there were numerous areas of damage to the coating system during the erection, the damage was easily repaired during the touchup operations. The coatings were found to be user-friendly during both their

application and clean-up. This case shows the excellent performance that can be achieved with a properly

applied waterborne acrylic system, and the coatings used should provide years of protection for the bridge.



Beam – taken in summer 2001.



Picture taken in summer 2001.