



Case Study: North Carolina Department of Transportation

For several years NCDOT has been evaluating various materials for patching spalled concrete on the underside of bridges. Constant flexing of the bridges, in some cases several feet, along with impact from heavy trucks, have resulted in excessive spalling of the deck, to the point where significant rebar is exposed in some cases.

Our North Carolina sales representative, Steve Williams of Protective Coating Sales, has established good rapport over the years with his sales of metal coatings to NCDOT. When informed of their needs in bridge repairs, Steve contacted Milamar Coatings and asked which of our products could meet these following needs: 1. Ability to be installed overhead up to 6" thick in a single application 2. Ability to withstand severe flexing (up to several feet on some bridge spans) 3. Good outdoor weather ability 4. Excellent adhesion to dry or damp concrete 5. User friendly enough to permit NCDOT employees to install themselves 6. Impervious to moisture penetration.

Given the above criteria, a modified version of our ICO Lastic Gun Grade material was selected for trials, beginning in early 2001.

After several trials, NCDOT and Steve came up with the following procedures: 1. Sand blast or grind the loose concrete and metal 2. Apply a direct-to-metal primer over the metal rebar 3. Prime all surfaces with ICO Primer LV and allow to tack up 4. Mix in one gallon of ICO Lastic Gun Grade liquid with about 2½ gallons of ICO Gel Fill powder (about 20#) to obtain a dough-like consistency 5. Work in mix by hand into spalled area, similar to kneading in dough. Smooth out with water-moistened trowel, as necessary.

Patches of ICO Lastic have been in for over a year now without any failures. As a result NCDOT has specified the ICO Lastic Gun Grade system for all their bridge repairs. Currently, almost 1,200 kits have been ordered to complete several large expansion bridges. In four days of work, about 250 kits are being used on a single bridge repair job.



Steve is currently working with NCDOT to use our ICO Floor Coating on the top bridge deck and expects to have his first order shortly.

First and foremost, the success of this project can be attributed to Steve Williams and the NCDOT for seeing a need, recognizing the potential application of one of our products, and then through extensive trials coming up with a modified product that satisfies the job requirements. Kudos to Steve for excellent problem solving!

One of the keys to success was the combined properties of epoxy and urethane in our ICO Lastic. The product would not have worked without the elastomeric qualities provided by the urethane portion of the ICO Lastic, nor would the job have succeeded without the strength and adhesive qualities of the epoxy portion. The fact that there was no solvent enabled the installation crews to install this mix in virtually any thickness without shrinkage or cracking. Of course, the addition of the filler was essential in allowing such applications up to 6" in a single application.

References

- Steve Williams: 336-676-0074
- Fred Mefar, NCDOT, Bridge Maintenance Engineer: 919-733-4362