Correspondence

Dear Editor:

Your "Notes from the Editor's Desk" feature in the November 2000 issue of Modern Steel Construction pointed out some non-altrustic reasons for a firm to participate in AISC's Engineering Awards of Excellence. As an engineering professor, I'd like to add to your list. Strong graduating structural engineering students, as well as young engineers in practice, look at engineering awards programs such as this to identify firms of which they want to be a part. When business is good, firms are competing for good designers. The informed graduate knows participation in the awards process indicates a firm interested in good engineering, not just the "bottom line." This puts a very visible gold star on those firms likely to be the best employers and thus sought out by good employees.

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Dear Editor:

The August 2000 issue of Modern Steel Construction contained a letter by Mr. Jon Cavallo addressing concerns over research investigating and whether or not edge preparation was necessary when using inorganic zinc-rich primer systems (reference Modern Steel Construction June 2000).

The three year research effort was sponsored by the National Steel Bridge Alliance (NSBA) and was directed by Advisory Committee members of industry professionals representing the NSBA, Federal Highway Administration, Departments of Transportation, coating manufacturers, shop owners and industry consultants.

Mr. Cavallo expresses considerable concern that the research did not address topcoated zinc-rich primers. The research program was intentionally restricted to the investigation of primer systems, and did not include evaluating the performance of topcoated primers. Since the committee was interested in the performance of zinc-rich primers on various corner treatments, and the application of midcoats and topcoats would likely mask the performance of the primer, the zinc primers were tested untopcoated. The committee also recognized that it is not uncommon for structural steel coated with shop-applied primers to receive topcoats after field erection, or to remain untopcoated for years. Further, Mr. Cavallo incorrectly states that the epoxy coating layer in a three coat system (zinc/epoxy/urethane) is designed to provide "the primary corrosion protection of the steel substrate." In fact, as the committee recognized, the zinc primer fulfills that role; while the role of the epoxy midcoat is to protect the underlying zinc primer. In like fashion, the urethane topcoat provides protection for the underlying coats by affording atmospheric protection, color and gloss retention, etc. Recognition of these coating system design characteristics is the reason why the committee opted to test the primer alone.

The article did state that coating performance was the same, independent of whether the corner was unprepared, or whether it was ground to a 1/8" radius (and 3 corner conditions in between). The term "unprepared" is somewhat misleading, as all corners were blast cleaned with steel shot prior to coating application. Blast cleaning did in fact round the corners slightly. Therefore, if abrasive blast cleaning with steel shot is performed, even 90o corners receive some level of preparation.

Zinc-rich primers prevent steel from corroding using galvanic protection, as Mr. Cavallo points out. However, to ensure that the corner condition was not affected by the sacrificial properties of the zinc, the committee included cross-sectional photographs (in addition to accelerated corrosion resistance testing) to confirm the corner-build characteristics of the zinc primers. These photomicrographs clearly illustrate the same buildup of zinc primer on the 90 degree corner as the corner ground to a 1/8 in. radius.

The research project was not without challenges. That is, even with the use of conventional spray and control of the spray pattern and fluid flow, the target thicknesses were difficult to achieve, due to the configuration of the test specimen. Airless spray may have produced excessive thicknesses and mudcracking. The advantages of using conventional spray included convenience of application on test specimens of a manageable size, ability to achieve full coverage, and the ability to control thickness and film continuity. It is true that the flow properties of coatings applied by airless spray are different that those applied with conventional spray. As a result, the committee designed Phase II of the research using airless spray equipment.

The committee fully agrees with one point raised. If the coating applicator fails to coat the corner, lack of corrosion protection will surely result. This indicates an obvious need to assure corner coating. This is effectively accomplished by striping in accordance with SSPC-PA 1 "Shop, Field, and Maintenance Painting," Section 6.6. Striping is a cost-effective means to ensure corner coverage, and is already widely specified by DOTs. Rounding of corners by expensive grinding will not help at all in spray coverage, nor in corner film build, as the study clearly indicates. The use of corner grinding in DOT specifications is an expensive answer to a simple problem. It is unfortunate that the steel bridge industry must bear the burden of such added costs without added value.

On behalf of the committee, we invite Mr. Cavallo (and others) to actively participate (in advance of testing) in any future work surrounding the issue of corning grinding.

William D. Corbett
KTA-Tator, Inc.

Dear Editor:

I am responding to Mr. Richard Rogovin's letter in your September issue commenting on the NSBA Prize Bridge Award given to NYS Department of Transportation (NYSDOT) for the Route 367 bridge deck replacement project in Wellsburg, N.Y.

Most engineers in the bridge business are excited about the potential uses of fiber reinforced polymer (FRP) composite materials. These strong, lightweight materials have many applications, from the repair and strengthening of bridge elements to entire new bridges. NYSDOT and many other state highway agencies have recognized this potential and are introducing FRP into their bridge programs. We know there is much to learn, composites are a significant departure from steel and concrete, and we are proceeding cautiously but steadily. Certainly, there is a price to pay for progress, but for the Rte. 367 bridge that price was relatively small.

The "value" of the project, as reported in the July article, was $876,000; a large part of that was the estimated cost of the FRP deck that was donated by the manufacturer. Consequently, the true "cost" to New York State was quite small. But the "value" should not be based on cost alone. This project, and several others we are progressing using FRP, will allow us to expand our knowledge of these materials, test and evaluate them and gradually incorporate FRP as a viable bridge material. One need only look to the attention shown to FRP by such professional organizations as AASHTO, ASCE, ACI and others to verify the widespread interest in these new materials. In 10 years, perhaps less, I expect that the use of FRP will be common, accepted practice in bridge engineering.

Bridge engineers at the state and federal levels must look beyond individual bridge projects to system-wide solutions to bridge problems. Contrary to Mr. Rogovin's statement, we have found that many county level engineers are similarly committed to finding new and better solutions. What is an acceptable price for innovation? Mr. Rogovin puts it at somewhat less than the cost of two of his bridges. I believe that thinking is short-sighted and certainly not consistent with good engineering practice.

NYSDOT thanks NSBA for their award, and commends them for their proactive approach to innovation in bridge engineering.

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