CRSI ANTI-CORROSION TIMES

REPORTING ON INDUSTRY NEWS, NOTEWORTHY APPLICATIONS & NEW DEVELOPMENTS ON FUSION BONDED EPOXY COATINGS FOR CORROSION PROTECTION OF REINFORCING STEEL

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In this issue

ANTI-CORROSION TIMES

is a publication of the Concrete Reinforcing Steel Institute, a not-for-profit trade association providing valuable resources for the design and construction of quality cast-in-place reinforced concrete.Published biannually, the Anti-Corrosion Times is produced to help specifiers, engineers, architects, fabricators and end-users receive the most recent information about how and where epoxy-coated reinforcing steel is used, recent technical changes and information resources. Send any questions or comments regarding the Anti-Corrosion Times to John M. Prentice, Manager of Corrosion Protection at CRSI.

Epoxy-Coated Continuously Reinforced Concrete Used In Illinois for I-70 Rehab

One of the largest reconstruction projects in the Illinois FIRST program was completed in the fall of 2002.

Located in Clark County, this $74 million reconstruction of ten miles of Interstate 70 from the Indiana state line, west into Illinois, was the first segment in a 21-mile, $135 million reconstruction project.

6,000 tons of epoxy-coated rebar were used

Originally opened in 1969, this section of I-70 had exceeded its original design life by 13 years. Reconstruction was required to reduce the number of accidents, improve and enhance safety features, reduce the present and future costs of roadway maintenance and bring the roadway up to current standards, which include Epoxy-Coated reinforcement, to enable the new pavement performance to surpass the old.

The roadway was reconstructed in accordance with current design practices to improve both operations and safety as well as address poor sub-surface conditions. Improvements were also made to the truck weigh stations to provide for more efficient movement on this artery that currently carries nearly 21,000 vehicles per day.

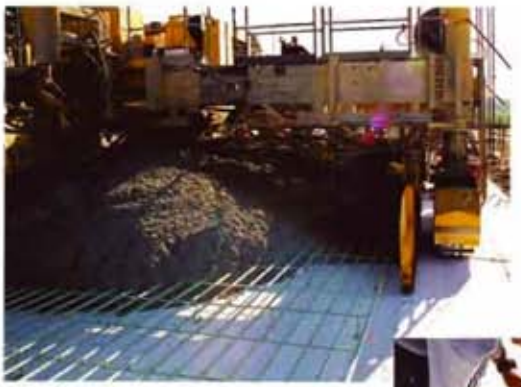
The Illinois Department of

continued on next page

2003 Marks 30 Years Of Epoxy-Coated Rebar

The CRSI Epoxy Marketing Committee is proud to announce the celebration of our 30th year of successful projects for epoxy-coated reinforcing steel as an outstanding corrosion protection solution. To commemorate this milestone, all epoxy communications materials distributed to the public throughout 2003 will include this mark.

I-70 Rehab . . . continued from page 1



Transportation oversaw the demolition and reconstruction of ten miles of the eastbound and westbound pavement. With a 40-year pavement design, Continuously Reinforced Concrete Pavement (CRCP) with epoxy-coated reinforcing bars was the material of choice. IDOT reognizes its proven performance, quality, long service life and lower maintenance costs. In all 6,000 tons of epoxy-coated bar were used along with 924,734 cubic yards of concrete. An additional 1,000 tons of epoxy-coated reinforcement was used in bridge structures on this highway.

Preliminary work in advance of this major reconstruction project began on January 2, 2002. It included deck replacement and raising the height of local road bridges over I-70 to accommodate the new pavement and the construction of emergency access roads. Township roads were temporarily closed for some of the work. Other construction included reconstruction of local roads 1,000 feet north and south of the interstate, as well as improvements to turn lanes and ramps at interchanges. In addition, rest area parking lots and truck weigh stations were improved. An ambitious program, the complete project also included rehabilitating the US40 Bridge over I-70, resurfacing the highway approaches to the bridge, and realignment and reconstruction of interchange ramps. The Illinois 1 access ramps were also realigned and reconstructed; the highway approaches were resurfaced. Updated traffic signals were installed at the intersection of Illinois 1 and the entire intersection was widened. Construction of the pavement began on March 1, 2002, and the ten miles of pavement was completed October 2002.

As with all projects, cooperation of all agencies and suppliers was critical to keep the job on schedule, all epoxy-coated reinforcement was pre-approved by the Illinois DOT at the CRSI Certified plant located in Kankakee, IL before shipping to the job site. As an incentive, the contractor was eligible for up to $1 million for early completion of the work. The contractor could also be fined for late completion, with no cap on penalties. ■

Staging

January 2, 2002

Miscellaneous work, including lane closures. Stage construction on US40 over I-70.

March 1 – July 3, 2002

Eastbound lanes diverted to westbound lanes utilizing median crossovers and temporary concrete barriers to separate traffic. Only one lane of traffic in each direction. Accelerated schedule to assure opening of the 2.5 mile four lane segment from Indiana west to US40 prior to Memorial Day.

July 7 – October 31, 2002

Westbound lanes diverted to eastbound lanes utilizing median crossovers and temporary concrete barriers to separate traffic. Only one lane of traffic in each direction. Accelerated schedule to assure opening of the 2.5 mile four lane segment east from US40 to Indiana prior to Labor Day.

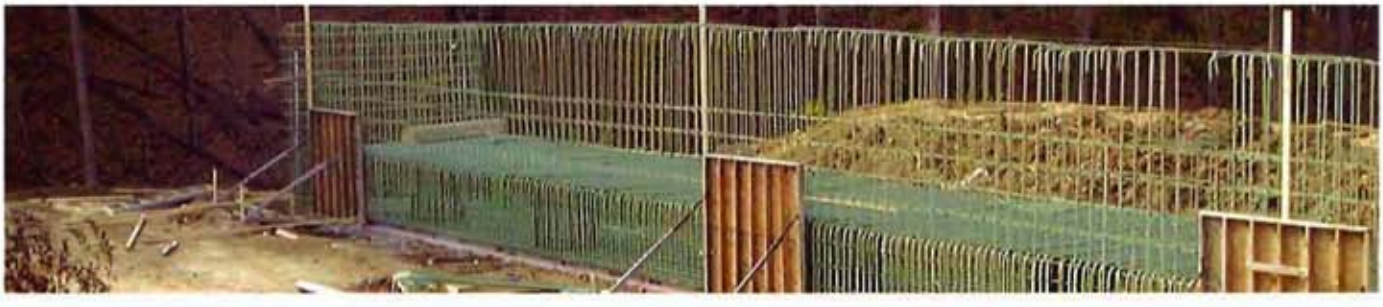
- Owner
  Illinois Department of Transportation
- Contractor
  Walsh Construction Co., Chicago, Illinois
- Epoxy-Coater
  Toltec Steel Services, Inc., Kankakee, Illinois

Creve Coeur Memorial Bridge Set To Open Spring 2003

The Creve Coeur Memorial Park Bridge is part of a new roadway, Route 364, which is under construction in St. Louis, Missouri. The project consists of two parallel five-lane wide bridges. Approximately 2,700 feet long and 86 feet wide, each bridge consists of nine spans, eight piers and two abutments. Each has two separate "box cells," with a maximum depth of 26.4 feet and a minimum of 15.75 feet. Depth of the superstructure at mid-span is 12.5 feet, and 9.2 feet for the rest of the spans, including the end spans that run from the end of the balanced cantilever segments to the abutments.

The bridge deck is of segmental design and uses the proven performance of epoxy-coated reinforcing bars to extend the life of the bridge. In all 11,300 tons of steel reinforcing bars were used in the structure. 7,000 tons of those are epoxy-coated and these bars are used at the top of the piers, in the bridge decks and for railings and approaches. Epoxy-coated bars were specified by the Missouri Department of Transportation as the material of choice for corrosion protection.

Built to transfer and relieve traffic on the I-70 Blanchett Bridge going into St. Charles County, Missouri, construction began in 1999 and is targeted for completion in the Spring of 2003. ■



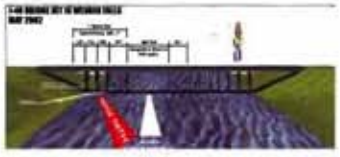
Owner	Contractor	Engineer	Construction Engineer	Steel Supplier	Epoxy-Coater
State of Missouri	Walter Construc. USA, Inc.	Jacobs Sverdrup Civil	Parsons	City Steel Sterling, Illinois	RJ Rebar Muncie, Indiana

Collapsed Bridge on I-40 in Oklahoma Reconstructed in Record Time....65 Days From the Date of the Disaster to Reopening

After barge collision, June 2, 2002

Reopened to traffic, July 26, 2002

The actual reconstruction of the Interstate-40 Bridge over the Arkansas River at Webbers Falls Oklahoma, after it collapsed from a barge collision, took only 47 days. The Federal Highway Planning Administration would normally expect a project like this to take at least six months. The reconstruction included replacing four fallen spans and three piers, each of which had two columns.



Planning

The Oklahoma Department of Transportation (ODOT) took an aggressive position. The reconstruction of the 600-foot portion of the bridge was put out for bid with the requirement for completion in 72 days. The contractor who proposed a 57-day schedule actually beat its proposal by more than ten days, resulting in an incentive payment of slightly more than $1.5 million, $6,000 for each hour it beat its proposed schedule. The contractor would have paid the same hourly fee if it had missed its proposed schedule. Using a modified design-build approach, total costs of the reconstruction, including detours around the bridge are estimated at $24 million.

Committed suppliers, a team of three state engineers called out of retirement to oversee the project, the FHWA Oklahoma Division and ODOT worked closely together to make the project work. During construction, meetings were held two to three times a day to monitor progress and to keep communica-

I-40 Bridge at Webbers Falls, OK . . . Project Overview

June 2, 2002

- Clean-up and Demolition
- Demolition/Debris Removal
- Survey
- Pre-Bid Conference
- Media Presentations by State and National Officials
- Underwater Demolition
- Preparation of Detour Roads
- Bridge Inspection
- Preparation of Reinforcing Steel
- Site Preparation

[. . . June 2 ——— June 19. . .][. . . July ———

tion lines open. ODOT Director Gary Riddey said, "The many organizations we have partnered with on this project have also given the utmost in work and cooperation." Riddey went on to say, "With a major coast-to-coast traffic artery interrupted by the bridge disaster, rapid reconstruction was imperative, and all parties came through brilliantly. We had a safe, well-coordinated project and an early completion on a sound, properly designed structure."

Design/Build

235 tons of epoxy-coated rebar were used in the project. Not only was quick reconstruction a priority, a long service life with lower maintenance costs were very important. The proven performance of epoxy-coated reinforcement, in use in bridge decks for 30 years, made it the material of choice for long-life and lower maintenance costs.

The project was completed in three phases. The first included recovery of the vehicles lost in the accident and stabilization of the damaged sections. Costs during this phase were $500,000.

The second phase of the project was demolition of the damaged spans and piers at a cost of about $850,000. Demolition and removal of the damaged section took about two weeks. During this phase preparation for phase three, the actual bridge repair, took place.

Phase three, reconstruction of the overpass, started before the section removal was complete. During phase three, rebuilding and securing the bridge piers was the primary focus of the work crews, the piers were first drilled, then reinforced with epoxy-coated rebar and concrete was placed. Crews worked 24-hours-a-day to complete the project. With the combined efforts of all parties this important east-west transportation corridor was re-opened for use on July 29, 2002. ■

- Owner
  Oklahoma Department of Transportation
- Contractor
  Gilbert Central Corp., Texas
- Epoxy-Coater & Fabricator
  ABC Coating Company, Inc., Waxahachie, Texas

July 27, 2002

- Clean Broken Concrete
- Drive Piles
- Resurface Detour Routes
- New Signage on Detour Route
- Prepare Pier Forms
- Place Reinforcing Steel in Pier Forms
- Material Delivery
- Four Deck Preparation Pours
- Hang Steel and Concrete Beams

July 27

- Bridge Reopening/Dedication

July 26. . .

Photos courtesy of the Oklahoma Department of Transportation

Illinois and Iowa Require Epoxy-Coated Rebar From Certified Plants

The Illinois and Iowa Departments of Transportation recently made changes to their specifications concerning the use of epoxy-coated steel reinforcement in state projects. They are the 15th and 16th states to require that epoxy-coated reinforcement come only from plants in the CRSI Epoxy Plant Certification Program. The Illinois directive takes place on January 17, 2003; the Iowa directive was put into effect on April 30, 2002.

Illinois

The directive from the Bureau of Materials and Physical Research of the Illinois DOT has three portions. First, all epoxy-coated reinforcing steel and dowel bars are to be coated by plants in good standing in the certification program. Secondly, all dowel bars used in concrete pavement and patching are to be epoxy-coated.

And lastly, all powders used in the process must be pre-qualified and on the department's approved supplier list. Acceptance of material includes inspection reports, samples submitted upon request, or random bar sampling from the coaters or fabricators facility or at the job site.

Iowa

The directive from the Iowa Department of Transportation states, "acceptance of epoxy-coated steel reinforcement will be on the basis of certification from an approved manufacturer of steel reinforcement, and approved coater and an approved distributor of steel reinforced products subject to the testing of acceptance and verification samples..."

Many other requirements are also noted. They include overall quality, sur face preparation of steel bars and coating requirements including coating thickness.

EPOXY COATING PLANT CERTIFICATION
CONCRETE REINFORCING STEEL INSTITUTE

CERTIFIED PLANT

The Iowa Central Materials Office has to approve the coating companies, each must be certified by CRSI and must submit their three most recent inspection reports. Epoxy powder manufacturers have to be approved before they can supply material to the coaters, other items covered in the directive include bar acceptance procedures, including verification sampling and testing.

For a copy of the state reports or for more information about the Certification Program for Fusion-Bonded Epoxy Coating Application Plants contact Scott Humphreys, Certification Program Administrator at CRSI, or John Prentice, Manager of Corrosion Protection at CRSI. ■

New Brochure illustrates "the many uses of epoxy-coated rebar"

This new 6-page, 4-color brochure, Epoxy-Coated Rebar, The Many Uses in Corrosion Protection, was developed for architects, consultants, state agencies, owner/developers, engineers, manufacturers, contractors and others involved in concrete construction. The brochure was developed to quickly show where epoxy-coated rebar is used in cast-in-place and precast construction..

Specific product uses are listing under major headings: Transportation, Commercial, Public Works, Parking Garages, Marine Facilities and Residential. Projects in progress are shown in a series of photographs as are finished projects. The brochure is available at no charge.

For your copy of the Epoxy-Coated Rebar, The Many Uses in Corrosion Protection brochure, contact:
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Concrete Reinforcing Steel Institute
933 N. Plum Grove Road
Schaumburg, Illinois 60173-4758
Telephone: 847/517-1200; Fax: 847/517-1206;
Website: www.crsi.org; E-mail: jprentice@crsi.org ■

MDOT Builds M-6 Freeway In Western Michigan

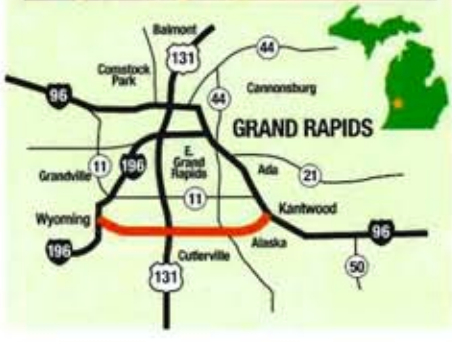
The Project

The Michigan Department of Transportation is constructing its new M-6 (South Beltline/Paul B. Henry Freeway) connecting with US-131.

Included are construction of a freeway-to-freeway interchange, construction of M-6, twenty-seven new bridges and fourteen new ramps. Existing roads connecting with M-6 will be reconstructed and widened.

This 20-mile, $160 million project is divided into three stages with work that started in the spring of 2001. Final phases will be open to traffic by 2005.

Location



April 2001 — M-6 construction in Kent County required 3221 tons of Epoxy-Coated Rebar

Phase I

Preliminary work is the reconstruction of US-131. Included is the construction of 5.7 miles of new pavement and two interchanges.

Phase II

A 7.4 mile stretch of new pavement, along with two interchanges is currently under construction and slated for completion by 2005. The new six-lane 68th street bridge was removed and replaced in record time. Closed in early April 2002, completion was scheduled for August 2002. The bridge was open two months early, in time for the Fourth of July holiday.

Phase III

Phase II is under construction simultaneously with Phase III. The 6.9-mile pavement is also slated for completion in 2005. Four major interchanges are part of the construction. Originally planned to start in 2003, work began early as other projects were completed ahead of schedule. Paving contracts will be let in 2003.

Planned for more than 20 years, this important new link in western Michigan is constructed with two 12-foot lanes in each direction with an 80-foot wide grassy median. This median width allows for the addition of a third lane in each direction as future needs dictate. Benefits of the freeway include alleviating traffic and congestion on local roads as well as reduced travel times throughout the area by an estimated fifty percent.

continued on next page

April 2002 — construction continues on interchange at Byron Center requiring 385 tons of Epoxy-Coated Rebar

Time Table

Phase	One	Two	Three
Length	5.7 miles	7.4 miles	6.9 miles
Location	I-96 west to M-37	M-37 west to US-131	US-131 west to I-196
Open by	Nov. 2001	2005	2005
Construction	Completed	In Progress	In Progress

Calendar of Events 2003

The CRSI Epoxy Marketing Group will be participating in the following conferences / expositionsthis year.

March 23-27

National Association of County Engineers Exposition
Biloxi, MS

April 16-17

APWA Conference/Trade Show
Daytona Beach, FL

May 6-8

Infrastructure System Conference
Booth 527
Las Vegas, NV

May 8-10

AIA Conference/Trade Show
Booth 952, San Diego, CA

June 8-11

International Bridge Conference
Pittsburgh, PA

October 5-8

Western Bridge Conference
Reno, NV

For additional information
contact John Prentice at jprentice@crsi.org

MDOT builds . . . *continued from page 7*

To keep the construction on schedule, sections of the pavement, as well as interchange work is underway by a number of contractors, all of whom work with the epoxy-coater supplying the reinforcement for the reconstruction. Corrosion resistant, epoxy-coated rebar is used throughout on bridge decks, foundations, barrier walls, columns, parapet walls, etc. More than 4,450 tons of epoxy-coated rebar were used in initial phases of construction. ■

May 2002 — construction at Hudsonville required 416 tons of Epoxy-Coated Rebar

May 2002 — construction of the 68th Street Bridge

- Owner
  Michigan Department of Transportation
- Contractors
  Whaley Steel Corporation/C. A. Hull/Milbrocker and Sons
- Epoxy-Coater
  ABC Coating Company of Michigan, Inc.

Acknowledgments

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Oklahoma Department of Transportation
Bob Anderes, ABC Coating Company, Inc.
Waxahachie, TX

ILLINOIS I-70
Tim Smock, Toltec Steel Services, Inc.
Kankakee, IL

M-6 FREEWAY
Michigan Department of Transportation
Daniel Acuna, ABC Coating Company of Michigan
Wyoming, Michigan

CREVE COEUR MEMORIAL BRIDGE
Mike Barrett, RJ Rebar
Muncie, IN

errata:
Thanks to O.T. Anderson, GLF Construction, whose name was incorrectly listed in the Summer 2002 ACT, for his assistance on the Cape Fear Bridge article.