

The Stainless Rebar Standard



Kevin Cornell, Editor May 2008

Glass fiber reinforced polymer deck one of first in Ontario

The replacement of the Merritt Street Bridge in the City of St. Catharines, Ontario included one of the first glass fiber reinforced polymer (GFRP) decks in Ontario. The new bridge is a 18.5-metre (60.7 feet) single-span GFRP and precast, prestressed concrete box girder superstructure, supported by piled integral abutments and Reinforced Earth approach roadway retaining structures.

The existing bridge had aged beyond repair. The new structure was required to accommodate a greater volume of traffic than what the old bridge could handle, along with a pedestrian sidewalk bridge component to link Merritt Street over a CN Rail track from Elm Street to Walnut Lane.

ELLIS Engineering was the prime consultant, responsible for the structural design and the coordination of the contracts of all sub consultants, and full time contract administration.

ELLIS specified GFRP for the deck, and in particular the parapet and barrier walls. With GFRP, there is a guarantee of no rebar corrosion. Glass fiber reinforced polymer was the preferred reinforcement material because the bridge structure was subject to a corrosive environment, and GFRP carries a lower purchase price than standard stainless steel rebar.

Salit Specialty Rebar (SSR) shipped the GFRP rebar for fabrication of the deck. SSR was not



Glass fiber reinforced polymer deck



Concrete pour over GFRP

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required to fabricate any pre-welded products for this project. The rebar was placed and tied on site.

The bridge was constructed in phases. Stage 1 involved construction along the west side of Merritt Street. Two lanes of vehicular traffic (one lane each direction) and a pedestrian sidewalk was maintained along the east side of the street. Stage 2 followed with construction on the east side of Merritt Street. One lane of vehicular traffic (signalized - both directions) and a pedestrian sidewalk was maintained along the west side of the street. Stage 3 called for completion of structural construction along the west side of the street. Two lanes of vehicular traffic (one lane each direction) and a pedestrian sidewalk was maintained along the east side of Merritt Street. The final stage was landscaping and site cleanup. Merritt Street was kept open to normal traffic with local flagging as required throughout the project.

The construction contract was awarded to Rankin Construction in March 2007, and site work began in April 2007. Construction was completed in April 2008 at a cost of \$ 4.5 million.

Virginia DOT first to specify EnduraMet 32[®]

VDOT is the first department of transportation to include EnduraMet 32 in its specification for steel reinforcement. VDOT Specification Section 223 for steel reinforcement has been amended to include the following:

- e) Corrosion Resistant Reinforcement shall conform to the requirements of one of the following standards:
- ? ASTM A1035/A1035M – 05 Standard Specification for Deformed and Plain, Low-carbon, Chromium, Steel Bars for Concrete Reinforcement.
 - ? ASTM A955/A955M - 06a Standard and Specification for Deformed and Plain Stainless Steel Bars for Concrete Reinforcement. UNS Designations: S24100, S30400, S31603, S31653, S32101, S32201, S32205
 - ? AASHTO Designation: MP 13M/MP 13-04, Standard Specification for Stainless Steel Clad Deformed and Plain Round Steel Bars for Concrete Reinforcement.

Section 406.04 Measurement and Payment is amended to add the following:

Corrosion resistant reinforcing steel will be measured and paid for in pounds of steel placed in the structure as shown on the plans. This price shall include fabricating, shipping, furnishing and placing corrosion resistant reinforcing steel in the structure as indicated on the plans.

Payment will be made under:

Pay Item	Pay Unit
Corrosion resistant reinforcing steel	Pound

SSR exhibited and presented paper at MCPX in Denver

Salit Specialty Rebar took its booth to the Colorado Convention Center, Denver at the Manufactured Concrete Products Exposition (MCPX), February 7 to 9. In addition, SSR participated in the education program of the National Precast Concrete Association and presented a paper on *Fabricating Reinforcement Cages* on Friday, February 8. At its booth, Salit Specialty Rebar representatives demonstrated what is new and improved in their operations and range of products that can benefit clients' production operations.



SSR Exhibit at MCPX

The paper presented by SSR presented suggestions about why precasters are increasing their use of pre-welded carbon and stainless reinforcement cages and examined the fundamental differences between stainless and carbon steel.

The presentation included an overview of the many codes covering the specifications and standards most commonly encountered in the industry. It examined the various aspects of an order that fabricators are concerned with in preparing three dimensional and two dimensional cages and mats. The presentation concluded by leaving attendees with suggestions about what is likely to lie ahead in terms of applications and new products to compliment the supply of stainless steel reinforcement.



Kevin Cornell and Mike Price discuss technical information with convention delegates



Mike Price meeting with delegate

The New Precast Show is a fit for SSR

The new Precast Show, running February 20 to 22, 2009 at the George R. Brown Convention Center in Houston is billed to be a built-in audience of manufacturers who are interested in the latest equipment, products and services for their businesses. The Precast Show is all about precast. The National Precast Concrete Association and the American Concrete Pipe Association are continuing their long-running partnership in creating a trade show specifically for the precast industry. In conjunction with The Precast Show, NPCA will conduct its Winter Conference, which features an awards celebration, committee meetings and other special events. ACPA will hold its annual Production Short Course School in conjunction with the trade show as well.



Developed by leading precast suppliers and manufacturers within the industry, The Precast Show feature an expansive trade show floor, and include technical education programming, plant tours, networking events and much more.



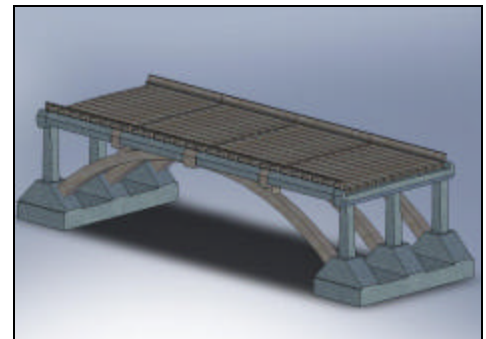
Salit Specialty Rebar will be at booth #1223, featuring the latest stainless steel applications and new products being specified by state DOTs. The booth will be well staffed with specialists who are able to add value to the educational programs being provided by the two host associations. If you plan to be at the precast show, plan to spend some time with Salit Specialty Rebar representatives.

SSR Used for Strength and Durability on Pacific Coast Bridge

The Spencer Creek Bridge, north of Newport, Oregon at Beverly Beach is on the Pacific Coast Highway (US101) and will use approximately 70 tons of 2205 stainless steel rebar (SSR). The bridge is being built to replace a bridge constructed in 1947 that has been closed due to structural problems caused by corrosion.



SSR being placed to reinforce deck
Photo Credit: Dixon Steel



3-Drawing of Spencer Creek Bridge
Photo Credit: Knife River

Since the closure, traffic has been using a detour bridge, so no traffic delays are anticipated during construction. The construction of this arch style span with a 100 year service life should be completed by the end of 2008. Due to its coastal location and being located on three

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faults, design criteria required the ability to withstand earthquakes and large tsunamis. The bridge is being outfitted with instrumentation to document its performance in the event of an earthquake or tsunami.

In a project for the Oregon DOT, Oregon State University Department of Civil and Construction Engineering, as well as University of Hawaii Department of Ocean and Resources Engineering, used the Spencer Creek Bridge design as a case study for tsunami design criteria for coastal infrastructure.

Salit Specialty Rebar's partners in this project have been Dixon Steel (Roseburg, OR) and Knife River (Tangent, OR).

Photo Credit:
Oregon DOT



SSR used in bridge superstructure

Upcoming Events

The International Bridge Conference

Pittsburgh Pennsylvania
June 2 to 4

Sixth National Seismic Conference on Bridges and Highways and Student Bridge Seismic Design Competition

Charleston, South Carolina
July 27 to 30

Canadian Precast/Prestressed Concrete Institute Annual Meeting

Orlando, Florida
October 8 and 9

The Precast Show (NPCA/ACPA)

Houston, Texas
February 20 to 22, 2009

