

THE STAINLESS REBAR STANDARD



Kevin Cornell, Editor October 2009

Two-lane bridge with stainless steel deck replaces 1960s bridge over Siuslaw River



Construction crew assembles stainless steel rebar mats for poured concrete deck.

Photo: Dixon Steel

Replacement of the North Fork Siuslaw River Bridge on Highway 126 over the north fork of the Siuslaw River in Oregon was required because the to meet modern design standards for shoulder width, vehicle crash protection barriers and earthquake sustainability standards. Deterioration of the substructure, deck, and girders had been accelerating over the last 15 to 20 years. The old structure was replaced with a new two-lane bridge in a new alignment just south of the old bridge. The new bridge meets all standards for shoulder width, vehicle crash protection barrier, and earthquake sustainability, and sight distance is improved on North Fork Road.

Salit Specialty Rebar supplied 169 tons of Type 2205 duplex stainless steel. Duplex steels have a mixed microstructure of austenite and ferrite. Duplex steels have improved strength over austenitic stainless steels and improved resistance to localized corrosion, especially pitting, crevice corrosion and stress corrosion cracking. They are characterized by high chromium (19–28%) and molybdenum (up to 5%) and lower nickel contents than austenitic stainless steels. Currently, Type 2205 is the most commonly used stainless steel rebar in structural applications.



Deck comprised of Type 2205 duplex stainless steel.
Photo: Dixon Steel

Located in an estuarine environment, the original structure was exposed to an environment that contributed to the corrosion of its carbon steel reinforcement and deterioration of its deck. It was an 18-span reinforced concrete deck girder structure, supported on timber pile trestle bents with eight piling per bent, and eleven pilings on the two main bents. Construction of in-water members was restricted to a period between November 1 and February 15 to accommodate the biology of fish and other wildlife. The old bridge was removed after the new structure was commissioned, so that traffic disruptions were minimized during construction.

The project was let on Sept 6, 2007, and awarded to Mowat Construction Company on September 27. The construction contract was approximately \$14.5 million.

Stainless steel reinforces Highway 427 structures

Highway 427 was built in the late 1960s to link the Queen Elizabeth Way and Highway 401 as well as to support development in the corridor. The highway is Ontario's second busiest freeway by volume and one of the busiest in North America, and has no fewer than 12 lanes between the QEW/Gardiner Expressway in Toronto and Highway 401. It is divided into a collector-express system similar to that of Highway 401. Notable about Highway 427 are its several multi-level interchanges; the junctions with QEW and Highway 401 were Ontario's first 4-level interchanges constructed in the late 1960s and early 1970s, while the interchanges with Highway 409 and Highway 407 are more recent and, completed in 1992 and 1995.

The highway has operated well since that time, and continues to play a vital role in the Toronto area transportation system. After more than 40 years of use, the highway needed an upgrade to alleviate safety concerns, traffic congestion, and rehabilitation of the driving surface and structures.

Salit Specialty Rebar worked with Brennan Paving & Construction to supply 164,390 pounds of type 2205 stainless steel rebar to the project which began in June, 2007.



Source:
<http://www.427ea.ca>

Highway 409 rehabilitation makes extensive use of stainless steel

The Highway 409 gap between Islington and Highway 427 is widely considered to be the worst major bottleneck on Highway 401 and needed to be reconstructed. Highway 409 is the only direct highway into Pearson International Airport located on the west side of Toronto. Roadwork includes repairs to the concrete base of the main lanes, resurfacing of the entire length of all lanes, reconstruction of the median to install new barriers and lighting, and improvements to drainage. The project also includes extensive bridgework, with repairs to 13 roadway structures. Many of the structures were rehabilitated using stainless steel rebar.



Stainless steel deck on Highway 409
Photo: Salit Steel

Salit Specialty rebar worked with Dufferin Construction to supply 555,439 pounds of Type 2205 stainless steel rebar, as well as stainless steel couplers. Construction of the approximately \$64.7 million project began in 2008 with completion expected in 2011. The owner of the infrastructure is The Ministry of Transportation Ontario.

Introducing Rick Huza, MBA

Richard Huza joined Salit Steel earlier this year in Niagara Falls as the Director, Business Development with cross divisional business development responsibilities. He recently assumed full time responsibility for business development within Salit Specialty Rebar, the stainless steel rebar division, with a view to opening up business opportunities across North America.



Richard started his career in structural design of bridges and buildings and in project engineering with Dominion Bridge. He has a broad business experience base in senior management roles with responsibilities encompassing business turnarounds, restructuring, startups, business development, strategic planning, mergers and acquisitions, and manufacturing management. He received a Bachelor in Engineering from Concordia University (Montreal) in structures and has an MBA from McGill University. Richard is married and has three children.

Upcoming Events 2010

World of Concrete

Las Vegas, Nevada
February 1 to 5

The Precast Show (NPCA/ACPA)

Phoenix, Arizona
February 18 to 20

CRSI Annual Spring Convention

TBA

The International Bridge Conference

Pittsburgh Pennsylvania
June 6 to 9

Precast/Prestressed Concrete Institute Annual Meeting

Washington, D.C.
May 29 to June 2



America's infrastructure should not be allowed to "rust in peace." There are options for repairing and replacing structures that include types of stainless steel reinforcement designed to suit any project.

