Tangier Island Bridge

Tangier, Virginia

Project:
82-foot Span Crane Runway
Niagara Falls, Ontario
Owner:
Salit Steel Corporation
Niagara Falls, Ontario
Contractors:
Newman Bros. Limited
St. Catharines, Ontario
(Job site layout, supervision, and concrete forming and pouring)
O'Brien's Installations
Stoney Creek, Ontario
(Structural fabrication and erector)
Ryko Electric
Niagara Falls
(Power supply)
Product:
Pre-welded rebar for the concrete footings and piers. And the duct bank reinforcing in two halves (10 foot lengths). Duct cages had pre-welded cross bars for plastic conduit spacing.

Tangier Island, Virginia is about one mile wide and three miles long located in the middle of Chesapeake Bay. The community of Tangier is the only settlement on the island, linked to the mainland by ferries and air service. Many of its residents claim lineage to the first settlers who arrived in 1620 from Cornwall England after Captain John Smith visited in 1608. The community's economy is largely based on fishing, crabbing and a small tourism industry.

Even a community of this size requires modern infrastructure to keep its residents and visitors safe and healthy. Tangier has its own water and wastewater treatment facilities, solid waste incinerator, school, retail shops, health clinic, police and fire service. Its main roadways are narrow and vehicles limited to golf carts, mopeds, bicycles and about a dozen motor vehicles. Its infrastructure serves its resident population of 700 and approximately 500 tourists during the summer.

The island can be characterized as low lying with three north-south ridges and an extensive marsh. Because of the maritime environment and flooding conditions, there is considerable rot of foundations and infrastructure made of wood.

Housing is located along the three ridges. Access between these three areas has been provided over wetland by narrow wooden bridges. Since the bridges are close to the water level of the wetlands, difficult to maintain, and exceeded the carrying capacity for fire service vehicles, they had to be repaired or replaced.

Stainless steel reinforcing was specified to address construction in a marine environment and any issues related to corrosion. By using stainless steel reinforcing, the useful life of a bridge is dramatically increased. The integrity of the concrete is enhanced significantly, and maintenance costs are much lower or non-existent when stainless steel reinforcing is used.

North Star Construction Corp. was awarded the contract for replacement of the bridges. It contracted Bayshore Concrete Products in Cape Charles, VA, to produce two abutments for one of the bridges.

continued on page 2

continued from page 1

The company contacted Salit Specialty Rebar of Niagara Falls, New York to supply stainless steel reinforcing for precast bridge abutments. This was a VDOT special provision. All of the reinforcing was required to meet ASTM A955/955M. Stainless steel grade 2205 duplex material was used because of its high corrosion resistance, greater strength, and proven reliability.

Pre-assembled cages were preferred to reduce the labor costs in the remote Tangier location. The welding had to be accomplished in accordance with AWS D1.5 and D1.6. Salit worked with StelCrete of Niagara Falls, Ontario to provide the cages for several reasons. Foremost, Salit needed to be involved in the fabrication process. As a sister company in the Salit Steel Group the collaboration allowed the input and supervision necessary to undertake this complicated and intricate fabrication. Secondly, StelCrete has an excellent record of accomplishments and reputation for precision welding. The company has demonstrated this repeatedly, supplying large and project-critical pre-welded steel reinforcement products to the precast industry. In addition, StelCrete has the certified welders necessary to meet the VDOT requirements for certification.

Once StelCrete was approved for supplying the pre-welded cages, Salit cut and bent the rebar for the abutments and shipped the fabricated rebar to StelCrete. The order consisted of five tons of stainless steel reinforcing with 2 ½ tons of material in each abutment. Once the cages were assembled, welded and inspected, they were trucked to Bayshore where they were placed in a mold and covered with concrete.

Precast abutments shipped from Bayshore facility to Tangier Island.

Specially designed superstructure placed on precast abutments with pre-welded stainless steel reinforcement.

By precasting the abutments, the contractor was able to ship the bridge components by barge to Tangier Island and place them into position, without incurring the costs of on site cast-in-place construction. From beginning to end the entire prefabrication job took 14 days. A purchase order was received on April 11 and the welded cages were on a truck and for delivery to Bayshore by April 25, 2006.

StelCrete

We reinforce your business…
That's a promise cast in concrete

StelCrete Industries Limited
7771 Stanley Avenue P.O. Box 837 Niagara Falls Ontario L2E 6V6 Canada
T: 905.354.5691 Toll Free: 800.263.7110 F: 905.356.0809 www.stelcrete.com