

Acrow Bridge Designs and Installs Permanent Steel Pipe Trestle Bridge for North Carolina State Ports Authority

Fully-customized structure in Wilmington facilitates expanded Panama Canal shipping needs



Due to the recent expansion of the Panama Canal, the Cape Fear River at the port of Wilmington, NC needed to be widened to accommodate turning movements of larger vessels. As a result, the existing pipe trestle needed to be abandoned and reconstructed outside the river dredging limits.

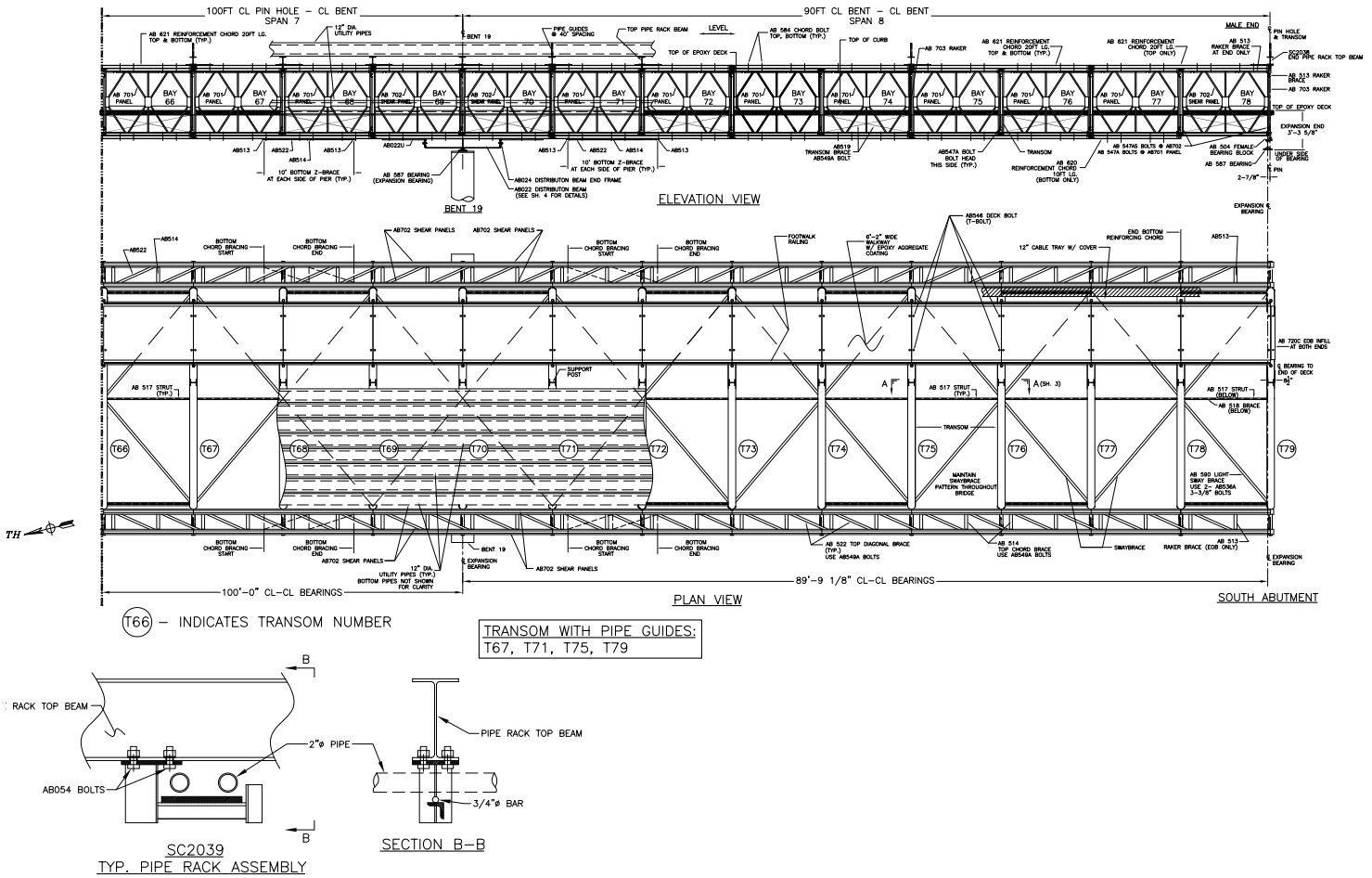
Acrow's new structure was designed and constructed as a replacement and expansion of the original piping network to transfer bulk liquids from the tankers to the storage tank farm. The fully-customized bridge carries two levels of pipes as well as a pedestrian/small vehicle walkway. To accommodate the pre-determined piping configuration, it was necessary to create many specially fabricated components such as pipe racks, pipe guides, cable trays and bracing components. The Acrow structure has a total length of 780 feet and is comprised of eight continuous spans. The six middle spans were each 100 feet in length, and the two end spans each 90-feet long.

An additional challenge of this project was the tight delivery time. After the contracts were awarded in the first week of January 2016, the structure needed to be designed and delivered by early March.

The Acrow team was able to meet the strict project schedule and accomplish an on-time completion to accommodate the first shipments from the larger tankers.

The project and bridge was ordered by the North Carolina State Ports Authority, and the trestle contractor was Precon Marine of Chesapeake, Virginia. The design was coordinated between the Acrow engineering team and the North Carolina Ports' consultant, AECOM.

"While this unique project posed special challenges, it was very gratifying to be a part of the expansion of a key Atlantic port to accommodate the New Panamax vessels," said Scott Patterson, Vice President of Engineering at Acrow. Added Bill Killeen, President and CEO of Acrow Bridge, "The strength and expertise of the Acrow engineering team provides government agencies and their contractors with highly customizable solutions that help keep critical projects on, or ahead of, schedule and within budget."



Specifications

Bridge length:

780 feet

Bridge width:

30 feet 6 inches outside-to-outside of bridge.

The bridge utilized customized 24ft wide roadway transoms.

Live Load:

Special

Deck surface:

The bridge carried two levels of pipes. One directly on the transom and one on a pipe rack elevated above the transom beams. The bridge was also supplied with a 6ft wide pedestrian/light vehicle access using Acrow orthotropic deck units with an epoxy aggregate non-slip surface.

Bridge finish:

- All major components galvanized to AASHTO M111 – ASTM A 123
- All bolts are hot dipped galvanized
- All pins are electro galvanized

Bridge erection:

Each individual span was pre-assembled and lifted into place using an on-site barge crane.

Bridge design:

- (A) Panel chords, diagonals, verticals, panel reinforcing chords, rakers to AASHTO M223 GD 65
- (B) Raker brace, transom, top chord brace, swaybrace, transom brace, diagonal chord brace to AASHTO GD 50
- (C) Panel pins to ASTM A 193 GD b7
- (D) Bolts to AASHTO M164M – A325