DISSEN & JUHN COMPANY

CASE STUDY

Project:
New Castle Pier
City of New Castle, DE

Prime Contractor:
Dissen & Juhn Company, Stevensville, MD

Subcontractors:
Cahill Plumbing & Heating, Newark, DE
Fence and Deck Connection, Annapolis, MD
GFP Cement Contractors, LLC, Newport, DE
Preferred Electric, New Castle, DE

PROJECT SCOPE:
In 2009, town administrators at the City of New Castle were discussing enhancing its community pier to allow the town to accommodate tall ships like the Kalmar Nyckel, a replica of a 1600s Swedish merchant ship. In 2012, Hurricane Sandy roared through New Castle, reducing the pier to a pile of rubble. The city wanted to rebuild a stronger pier using a robust steel design that could hold up to damaging ice that comes down the river, and strong storms that frequent the area.

The pier is constructed primarily of steel – steel framing members on steel pipe piles. The only parts that are timber are the joists and IPE decking. IPE is an exotic hardwood known for its durability and appearance qualities. The new pier extends 174' out into the Delaware River, and features a 100' long "T" head.

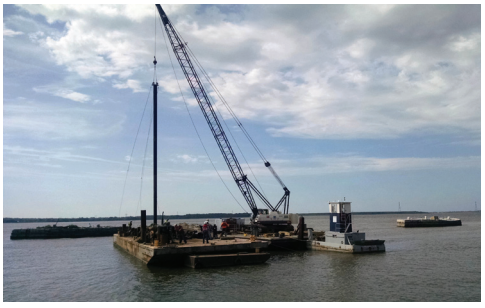
A unique feature of the pier's construction is the steel frame, which lends itself to being prefabricated, or "panelized." The "panels", which ranged in size from 28' L x 12' W to 25 'Lx 6' W, were pre-fabricated and galvanized at the supplier, trucked to the job site, then installed with a floating crane.

This approach resulted in a substantial timesaving, but required utmost precision in the placement of the concrete-filled steel pipe piles. The corner of each panel had to be centered on top of a steel pile cap mounted on each pile. Once the panel was secured to the pile cap, the adjacent panel was installed the same way, and the two panels were then spliced together. A total of 10 panels were installed in this manner.

CHALLENGES AND SOLUTIONS:
The New Castle Pier was built from barges in very shallow water. The crew only had a few hours each day to do the shallow water work before the tide went out. In fact, when Dissen & Juhn originally bid the job, they planned on doing the shallow water work from land. However, the results of their pre-construction survey of the river bottom (bathymetry) suggested that if they timed the tides right, they could build the entire pier from the water. This was particularly advantageous since the load bearing capacity of the land and bulkhead adjacent to the pier was suspect.

Another challenge was maintaining positional accuracy of the pile driver in strong currents and ship-induced waves since they were working close to the shipping channel, which required constant communication with ships to get them to slow down during critical operations.

The job couldn't get started until after July1st to work around the sturgeon migration in the river, but needed to be completed by December 25th to meet the FEMA deadline for funding for the project. That translated into a very aggressive construction schedule. The job was started on August 8, 2017 and was substantially complete by December 25th, and was not only delivered on time, but also on budget.



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