Superior Midwest Energy Terminal Gets Superior Pile Remediation

**BACKGROUND**  Corrosion of steel H-shaped piles in Duluth – Superior Harbor

The Superior Midwest Energy Terminal (SMET) of Duluth-Superior Harbor was commissioned in 1976 to help accommodate the low-sulfur western coal needs of the DTE Electric power plants around the Great Lakes. The terminal is owned and operated by the Midwest Energy Resource Company (MERC) and includes a wharf structure elevated on steel H-shaped piles.

**CHALLENGE**

Microorganisms were accelerating the corrosion of infrastructure piles in the harbor. The Terminal owners needed a remedy that could hold up to the extreme winter environment and the impact of ice pushed by ships into the pilings.

**SOLUTION**

The contractor installed the Simpson Strong-Tie FX-70 pile repair and protection system.

**RESULTS**

The project was completed before winter, and the pier was fully operational and protected from the corrosive elements of the harbor.

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**PROJECT INFORMATION**

**Category**  Bridge and Marine

**Project Owner**  Midwest Energy Resource Company

**FRP Installer**  Nordic Underwater Services

**Application**  Repair and protection of corroded H-shaped steel infrastructure piles in the harbor

**Simpson Strong-Tie Products**  FX-70 structural pile repair and protection system

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View of terminal where 240 steel piles were prepared with FX-70 pile protection system.

Repair consisted of 9', 11' and 13' fiberglass jackets.

13' H-pile jackets installed.
THE CHALLENGE  Find a strengthening system that would protect piles against corrosion and ice floes

In 1998, it was noticed that microorganisms were accelerating the corrosion of infrastructure piles in the harbor. From 2004–2006, AMI Consulting Engineers and MERC identified the need to repair and protect numerous seriously corroded H piles on the SMET pier. A major challenge of the project was providing a corrosion protection system that would hold up to the extreme winter environment and the impact of ice pushed by ships into the pilings.

THE SOLUTION  FX-70® pile repair and protection system with fiberglass jackets and pumpable epoxy grout

On the advice of AMI, dive inspections were conducted to ascertain the location and extent of the corrosion damage. AMI tested many different pile repair products over a period of five years. The contractor, Nordic Underwater Services, along with AMI, determined that an FRP jacket product similar to the Simpson Strong-Tie FX-70® pile repair and protection system would be the most cost-effective solution for repair and long-lasting protection of the piles. It was also agreed that the epoxy grout should be pumped into the jacket rather than poured, to minimize the formation of air pockets in the material.

THE RESULTS  Pier fully operational and protected from the elements before winter arrived

The total repair took approximately 5½ months to complete. The key to the timely execution was excellent communication throughout every stage of the project from pre-construction and manufacture through mobilization and installation. Simpson Strong-Tie RPS specialists and RPS logistics coordination teams, along with their manufacturing and product management in West Chicago, worked closely with the contractor to ensure a seamless process and successful project installation. Before the cold winter weather could intrude, the pier was fully operational and protected from the corrosive elements of the harbor.

For complete information regarding specific products suitable to your unique situation or condition, please visit strongtie.com/fx70 or call your local Simpson Strong-Tie RPS Specialist at (800) 999-5099.