Port of Houston Fireboat Dock Stands Tall with New Pile Protection

BACKGROUND  Deteriorating piles on Port of Houston dock
Like many waterfront structures, the Port of Houston Fireboat Dock in the city’s ship channel was built on wood piles. Over the decades, the marine environment had taken a toll, with eight of the supporting piles showing signs of deterioration both above and below the waterline.

THE CHALLENGE  Keep structure in service during repair
The Port Authority needed to find a way to repair the damaged wood piles or else to replace them completely. Rebuilding with new piles was not a viable option due to excessive construction costs and the importance of keeping the structure in service to support the department’s fireboats and personnel.

SOLUTION
The FX-70® pile repair system was specified, and Simpson Strong-Tie technical staff trained the contractor and worked onsite with them to ensure that the project went smoothly.

RESULTS
By eliminating the need to dewater the site or build cofferdams, the FX-70 system drastically reduced overall repair expenses as well as loss-of-use costs.

PROJECT INFORMATION

Category
Concrete

Market
Bridge and Marine

Application
Wood pile remediation and protection

Simpson Strong-Tie Products
CFX-70® structural pile repair and protection system; FX-225 non-shrink underwater grout

Troweling an epoxy bevel top seal on an FX-70 jacket installation.

Tidal action, current, saltwater exposure, chemical intrusion, floating debris, marine borers and general weathering are all factors affecting how well structures wear in marine environments.
THE SOLUTION  FX-70® pile repair and protection system, with onsite technical support

The Port Authority arranged a site visit from a local Simpson Strong-Tie® representative to determine whether the FX-70® structural pile repair and protection system would be a viable and cost-effective option. The FX-70 system was specified, and Simpson Strong-Tie technical staff trained the contractor and worked onsite with them to ensure that the project went smoothly.

The FX-70 system features custom-made tongue-and-groove fiberglass jackets that provide a corrosion-resistant protective shell for the repaired piles. High-strength, water-insensitive repair grout is used to strengthen damaged piles in marine environments. These products displace existing water and can be easily pumped or poured into the FX-70 jacket even while it is fully submerged.

THE RESULTS  In-service repairs completed weeks early at $300,000 cost savings

By eliminating the need to dewater the site or build cofferdams, the FX-70 system drastically reduced overall not only the overall labor and material expenses, but also loss-of-use costs because the structure could remain in service while the repair was executed.

With careful planning on the part of the contractor and technical advisers from Simpson Strong-Tie, the project was completed two weeks early and without a major disruption to the fire department’s services. All told, by not having to drive new piles or dewater the structure, the Port Authority saved more than $300,000 in construction costs.

Brock Lewis, P.E., chief construction manager for the Port of Houston Authority, lauded the suitability of the Simpson Strong-Tie product solutions to the challenge:

“Everything worked exactly as planned — lower cost, added asset life, and the implementation of a new technique for future pile restoration requirements.”