Keller expertise anchors Florida mega project

Florida, United States

The US is investing more than a trillion dollars in infrastructure projects – with Keller well positioned to help make them happen across the country. One recent example is the Howard Frankland Bridge in Florida, where Keller has worked largely on water to complete a challenging anchor project.

The project

For more than 60 years, the Howard Frankland Bridge has connected Tampa and St Petersburg, transporting more than half a million commuters every day across Tampa Bay.

Over the years, the bridge has undergone various expansions and widening projects, but the most recent involves the building of an entirely new bridge, increasing the number of lanes, adding a bike and pedestrian lane, and boosting capacity by 50%. Importantly, the expansion will not only alleviate congestion but also provide a vital evacuation route during hurricanes.

Construction on the billion-dollar project is being carried out by a joint venture between Archer Western and Traylor Bros. But before they could begin, the shoreline along Tampa Bay needed to be built up and retained by bulkheads to accommodate the new causeway and approach ramps.

Understanding ground conditions

Based on experience, approach to the design and competitive pricing, Keller was selected as the specialist contractor to design and install nearly 1,300 anchors to support those bulkheads.

Anchor loads were heavily influenced by the fill heights and proximity of the bridge's approach ramp fill. In the highest load areas, the ramps reached almost 30ft high and encroached within 5ft of the bulkhead walls, requiring anchor design loads of up to 370kips.

Larger anchors were designed to bond into the limestone bed, which proved difficult due to 100ft variances in limestone depth in some areas. Keller used computer modelling to profile the limestone and best determine anchor lengths – some requiring lengths of more than 200ft.

With drilled shaft foundations and other structures already installed, Keller had to install the anchors at various angles to avoid conflicts with the piping and structures.

Working on water

Alongside the technical challenges, the team also faced environmental ones. "While some of the anchors were drilled from land due to the water depth or access constraints, the majority were drilled from barges," says Trey Davis, Tampa Branch Manager. "That meant we were at the mercy of tidal fluctuations, which ranged from 2-4ft, as well as high winds and even the occasional hurricane.

"We had to constantly adjust our plan to complete the work efficiently while ensuring safety at all times."

In total, Keller installed 1,287 anchors and completed a rigorous testing regimen, with only three replaced for low capacity – a resounding success given the scale of the project and its geotechnical profile.

Trey concludes: "Understanding the limestone through 3D mapping, amending our design where necessary and implementing a smart construction sequence based on weather and tidal conditions meant we were able to complete this difficult project safely and on time. Our field leadership and site team stuck to the plan and delivered a quality project that will make a huge difference to the lives of millions of people."

The bridge expansion is scheduled to be fully completed later in 2026.

Project facts

Owner(s)
Florida Department of Transportation

Keller business unit(s)
Keller North America

Main contractor(s)
Archer Western/Traylor Bros JV

Engineer(s)
BCC
Keller

Solutions
Excavation support

Markets
Infrastructure

Techniques
Anchors - single bond length