

Miami 6-Arch Signature Bridge

Miami, Florida

Keller installs auger cast piles for the first FDOT project in over half a century, supporting a new bridge in Miami.



The project

As part of road enhancements along the I-395 string from the Midtown Interchange to the MacArthur Causeway, the Florida Department of Transportation (FDOT) proposed a bridge spanning over 1000 ft between NE 2nd Avenue and Biscayne Boulevard. With six sweeping arches, the area under the bridge will be used as community spaces, a children's play area, a market plaza, and a trail and pedestrian area.

Subsurface conditions consisted of sand layers and Miami limestone. Groundwater is present between 3 ft to 10 ft below grade.

The challenge

Precast piles, the FDOT's preferred foundation method, would not provide enough load capacity for the structure, and the construction of drilled shafts would exceed the project schedule requirements. Therefore, an alternative solution was needed.

The solution

Auger cast piles were a potential solution, but due to a bad experience with a piling subcontractor over 40 years ago, the FDOT was reluctant to use them. After multiple discussions with Keller, noting Keller's successful use of auger cast piles in more than a thousand structures in the Miami area, the FDOT design team was comfortable with an auger cast pile solution. The design and methods were presented and accepted by FDOT, consultants, and the general contractor. Keller installed over 2000 auger cast piles up to 134 ft deep in six working locations spanning the length of the bridge. Keller installed auger cast piles in low-headroom areas, allowing foundation installation to continue without demolishing the original bridge or impacting the surrounding communities. Work was performed during low-traffic times to minimize disruption and improve material deliveries. Close coordination was required between Keller and the suppliers to ensure efficient and safe delivery and spoil removal. A rigorous pile testing program was conducted during construction with support from Keller company GEO-Instruments to ensure design requirements were met.

Project facts

Owner(s)

Florida Department of Transportation

Keller business unit(s)

Keller

Main contractor(s)

Archer Western - de Moya JV

Engineer(s)

Corven Engineering, Inc., Universal Engineering Services, Inc.

Solutions

Deep foundations

Markets

Infrastructure
Transportation

Techniques

CFA (auger cast) / ACIP piles

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