Tampa International Airport - bridge reconstruction

Tampa, United States

Drilled shafts on bridge construction for major airport expansion

The project

The project included phased removal of the existing bridge superstructure and construction of a new, approximately 300 ft-long and 214 ft-wide bridge at the same location. The new bridge is supported by two abutments and three intermediate piers built on 42-inch and 48-inch diameter drilled shaft foundations installed by Keller.

The challenge

Primary challenges included limited height restrictions for the drill and crane required for the foundation work, the need for Keller to dovetail its operations with superstructure demolition and reconstruction phases, and the sand and porous limestone subsurface conditions with a high groundwater table.

The solution

Key to the overall success of the project was the close cooperation of the general contractor, which created a 35-ft wide by 300-ft long work area cut down 5-6 ft below grade for each phase of the work to cater to crane height restrictions. Keller also modified its crane boom to ensure adequate clearance. A continuous French drain controlled the otherwise high water table.

Prior to production work, two method tests were conducted, one for each shaft diameter, to verify the installation process. One shaft was then utilised as a production shaft for a project total of 132 shafts. At each shaft location, temporary casing was advanced to design depth under natural slurry and seated approximately 2ft into the limestone before rock sockets were drilled. Following cleaning of each shaft, a full length reinforcing cage was installed and 5000 psi concrete tremie-poured to complete the installation. Required cross-hole sonic logging (CSL) testing was completed ahead of schedule.

Project facts

Owner(s)
Hillsborough County Aviation Authority

Keller business unit(s)
Keller North America

Main contractor(s)
Johnson Brothers

Solutions
Heavy foundations

Markets
Infrastructure

Techniques
Bored piles / drilled shafts