Subsurface Constructors

Deep Foundation

Highway 40 seismic retrofit



Low-overhead drilled shafts to retrofit bridge for seismic event

In seismic terms, St. Louis, Missouri is considered in relative proximity to the New Madrid Fault. This fault is predicted to be the epicenter of the next major seismic event in the Midwestern U.S. In the late 1990s, the Missouri Department of Transportation (MODOT) began the long process of retrofitting 15,700 feet of elevated roadway on Highway 40/I-64 in downtown St. Louis.

The retrofit design required the installation of more than 1,000 drilled shafts and hundreds of rock anchors at all structural column locations. All of the drilled shafts had a minimum 5-ft. rock socket, although many required a much deeper socket due to poor rock conditions. Over an 11-year period, Subsurface Constructors installed all of the drilled shafts for the several lettings of this project.

We installed drilled shafts ranging from about 50 feet to 90 feet, operating in overhead limitations as low as 25 feet. Drilling often encountered soft, running silts, making shaft construction and pouring tremendously difficult.

Project details:

Owner: Missouri Department of Transportation
Geotechnical Engineer: Jacobs Civil, Inc.
General Contractor: Fred Weber, KCI, Kramer, St. Louis Bridge Co.
Structural Engineer: Jacobs Civil, Inc.
Services Provided: Ground Improvement, Drilled Shafts
Year: 1990s
Location: St. Louis, Missouri