



St. Croix Bridge and Load Test Program Stillwater, Minnesota

Owner: Minnesota DOT (MnDOT)

Structural Designers:

HDR, Inc.
Buckland & Taylor, Ltd.

Contractors:

Edward Kraemer & Sons
Carl Bolander & Sons Co.
Case Foundation Company
Applied Foundation Testing, Inc. (AFT)
Loadtest, Inc.



Years of Project: 2012—2017

Estimated Project Cost: \$571 to 676 million

Client Reference: Rich Lamb, P.E.
(MnDOT—651-366-5595)

Project Highlights:

DBA was retained by MnDOT as a geotechnical and load testing consultant for the design phase load test program and foundation design of a new bridge between Minnesota and Wisconsin crossing the the St. Croix River near Stillwater, Minnesota. The new bridge carries State Highway 36 across the river, replacing the 80-year-old Stillwater Lift Bridge, which has been converted into a pedestrian bridge. The new structure is an extradosed bridge with five pier towers. Originally planned to have six towers and shorter spans, one of the pier towers was eliminated as a result of the load test program. Each pier is founded on two groups of four large diameter drilled shafts.

The load test program consisted of an 8-foot test shaft, two 24-inch test piles, and two 42-inch test piles. All four piles were tested axially using a pile dynamic analyzer (PDA) and a Statnamic device. The test shaft was tested axially using an O-cell. The test shaft and one of each size of pile were tested laterally using a Statnamic device. The results of the load allowed for optimization of the foundations and increased span lengths.

This extradosed bridge is the first extradosed bridge in the Midwest and the second in the United States. The bridge opened to traffic in August of 2017.

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