



St. Croix Bridge and Load Test Program Stillwater, Minnesota

Owner: Minnesota DOT (MnDOT)

Structural Designers:

HDR, Inc.
Buckland & Taylor Ltd.

Load Test Program Contractors:

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



Years of Project: 2012—2016

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 will carry State Highway 36 across the river, replacing the 80-year-old Stillwater Lift Bridge, which will be converted to a pedestrian bridge. The new structure will be 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. The foundations will be able to handle the increased loads from longer spans. Each pier tower will be found 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 testing are being used to optimize the bridge design.

Photo Credits: MnDOT; HDR; Dan Brown and Associates, PC.