

## Hwy 53 Relocation

Virginia, Minnesota



**Owner:** Minnesota DOT (MnDOT)

**Designer:** Parsons Transportation Group

**CM/GC:** Kiewit

**Years of Project:** 2014—2017

**Total Project Cost:** \$350 million

**Client Reference:** Vincent Gastoni, P.E.  
(Parsons—612-656-7070)

**Owner Reference:** Kevin Western, P.E.  
(MnDOT—651-366-4508)

### **Project Highlights:**

MnDOT is relocating TH 53 near Virginia, Minnesota, to allow for iron ore mining at the location of the existing roadway. The new alignment includes Minnesota's tallest bridge across the Rouchleau Mine Pit.

The design phase load test program included three minipiles (large diameter micropiles) installed through over 120ft of mine waste fill and founded in iron ore bedrock with compressive strengths as high as 70,000 psi .

The bridge piers are founded on groups of 30-in diameter minipiles, and the abutments are founded on rock bearing spread footings. One of the abutments includes rock anchors to reduce the longitudinal demands on the very tall piers. In addition to the foundations, there were several challenging rock and soil slope stability issues to contend with. Rock fall protection for construction personnel and the bridge piers was also part of the design.

DBA was contracted as the load test expert and the lead geotechnical designer for foundations, slope stability issues, and rock fall protection. The new section of highway opened to traffic in September of 2017.

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