

# Russell Street Bridge Replacement

Missoula, Montana



Existing 2-lane bridge

Project Information	
Owner:	Montana DOT
Client:	Inland Foundation Specialties
Project Name:	Russell Street Bridge over Clark Fork River in Missoula, Montana
Test Foundation Type & Size:	BDSLT- 71-in-Dia. Drilled Shaft TIP- 71-in-Dia. Drilled Shaft
Testing Completion Date:	June 2018
GRL Services Provided	
	<ul style="list-style-type: none"><li>▪ Bi-Directional Static Load Test (BDSLT)</li><li>▪ Thermal Integrity Profiling (TIP)</li></ul>
<b>GRL OFFICE:</b> CENTRAL	

The existing 2-lane Russell Street Bridge in Missoula, Montana, a major highway with high traffic volume, was in need of reconstruction. GRL was contacted to perform a bi-directional static load test ("BDSLT") on a representative test shaft. The test shaft had a diameter of 71 inches, and a length of 75 feet. The embedded bi-directional jack assembly contained three 2,200-kip **GRL-Cells**, resulting in a potential test load of 13,200 kips. GRL provided thermal integrity profiling ("TIP") services to assess concrete quality and post-concreted geometry of the test shaft. Six Thermal Wire® cables from Pile Dynamics, Inc. were installed full-depth on the reinforcing cage. The TIP data were used to compute effective average radii, and thereby develop a model of shaft cross-sectional area vs. depth. This model is integral to determining unit shaft resistance values from the BDSLT.

Other embedded instrumentation including strain gages, displacement transducers, and telltales provided information on structural and geotechnical foundation response to test loading. Test results included jack assembly bearing plates' displacements, internal force profiles, mobilized shaft and base resistances, foundation displacement, an equivalent top-loading curve, and an assessment of creep behavior. When applied to design values, resistances factors, and construction conditions encountered, these test results provided the basis for significant savings in foundation costs.



TIP Wires and Strainmeters on Reinforcing Cage



Bi-Directional Static Load Test Jack Assembly in Reinforcing Cage

For additional information, please contact: [info@grlengineers.com](mailto:info@grlengineers.com)