

## EXPERIMENTAL PROJECTS WORK PLAN

### OSTERBERG (O-CELL) SACRIFICIAL EIGHT FT. DIAMETER DRILLED SHAFT

**Location:** Thompson Falls, Sanders County: Highway 200 (P-6/C000006)

**Project Name:** Thompson River East

**Project Number:** STPP 6-1(87)56

**Experimental Project No.** MT-13-02

**Type of Project:** Osterberg Cell Test Verification

**Principal Investigator:** Craig Abernathy: Experimental Project Manager (ExPM)

#### **Description**

The Department is to replace the existing structure over the Thompson River east of Thompson Falls, MT. The project will construct a new 40 ft. wide bridge north of the existing structure on an offset alignment. The proposed structure is 434 ft. long and is three spans. The superstructure is a steel beam with concrete deck. The foundation consists of two six foot diameter drilled shafts at each abutment and two eight foot diameter drilled shafts at the piers.

A load test is proposed for a sacrificial eight foot diameter drilled shaft near pier 2. This location will provide easy access to conduct the load test and still allow for production shafts to be drilled and other work to continue. For this load test it is proposed to use Osterberg Load Cells (O-Cell) from Load Test Inc. The O-Cell is installed in the test shaft at a predetermined location to maximize skin friction or base resistance for verification of design parameters.

The test shaft needs to be installed prior to the shafts on Pier 2. So the planned tip depth can be confirmed or adjusted.

#### **Experimental Design**

At this site, the drilled shafts will be founded in loose to medium dense sands and gravels with no clear end bearing strata. Different design methods currently used by the

Geotechnical Section have yielded markedly different results in terms of available end bearing and skin friction which in turn, have produced very different requirements for shaft diameter and length. A conservative design will be expensive and an un-conservative design will carry risk.

An Osterberg load test will not only confirm the skin friction and end bearing that is present at this site, but will also provide valuable insight into how conservative or un-conservative MDT's design methodology is in a more general sense.

### **Evaluation Procedures**

Research will document the installation for best practice and any construction concerns germane to the installation and testing of the O-Cell.

**Construction Documentation:** Will include information specific to the installation events of the O-Cell. A special provision will be prepared to instruct Load Test project staff to provide Research with a comprehensive report of results in suitable form for inclusion into the construction report.

**Post Documentation:** All project information will be available on the projects webpage.

Technical Contact for the project is Tyrell Murfitt, [tmurfitt@mt.gov](mailto:tmurfitt@mt.gov) or at 444.9259.

### **Evaluation Schedule**

2014: Posting of the Installation/Construction/Cell Test Analysis and Conclusion Report