1. STATIC PILE LOAD TEST (revised 2-2-2022) (must have bridge load test detail in plans also)

Description. This work is installing the load frame, performing static compression load testing in accordance with ASTM D 1143, Section 559, and in conjunction with dynamic load testing to determine driving criteria for piling, loading of and transport of the load frame.

Materials.

The Department will furnish the Load Frame, Sliders, Reaction Anchors (x4), Anchor Plates (x4), and Couplers necessary for installation of the Load Frame.

Provide a testing apparatus which must include, but is not limited to, a load cell and jack capable of applying a minimum of 500 kip compressive force to the test pile.

Provide all instrumentation including electronic or dial gage displacement indicators and a mirrored scale with wire line reference in accordance with ASTM D1143. Use piling identified in the contract drawings as reaction piles.

All appurtenances including the jack, instrumentation, bearing plates not affixed (bolted) to the frame, and spherical bearing element(s), remain the property of the Contractor.

Load Frame Transport and Return.

Transport the load frame from the MDT Field Investigation Unit yard, located at 2701 Prospect Ave. in Helena, MT. Contact the MDT Geotechnical Section at (406) 444-6281 a minimum of 5 business days before transportation and return delivery of the frame.

At the completion of the test, return the Load Frame, Sliders, and Reaction Anchors to the MDT Field Investigation Unit yard.

The Contractor is responsible for the condition of the load frame. Any damage incurred due to mishandling or incorrect installation is the responsibility of the Contractor and must be repaired prior to return of the load frame to the MDT Field Investigation Unit.

Construction. Set up and install the furnished Load Frame in accordance with ASTM D 1143 and the plans.

Provide a minimum of 3 feet of pile length above ground surface at the test pile during the static load test. Conduct the static compression load test (quick method) on the pile shown on the contract drawings.

In addition to the requirements of Section 559, the mirror scales as described in ASTM D 1143 must be attached to the test pile using 2 part epoxy glue.

Shelter the instrumentation, test pile, reaction piles, and reference beams from sun, wind, rain, and vibrations. Maintain an ambient air temperature between 32° and 100° during the duration of the test.

Submittals and Notifications. At least 30 calendar days prior to conducting the load test, submit an electronic copy (PDF format is preferred) of the following to the Project Manager for review:

Calibration curves for proposed load cell and jack. Calibrate the load cell and jack at 25 kip intervals, verified by an NIST certified independent testing laboratory, up to the required axial force to be applied to the pile.

Equipment specifications, dimensions, weight, serial numbers, manufacturer, model numbers, and photographs for the proposed load cell and jack.

Notify the Project Manager a minimum of 5 business days prior to beginning the load test. The Project Manager will coordinate with the MDT Geotechnical Section and Bridge Bureau to ensure appropriate Department personnel are on site prior to and during testing. Prior to initiation of test, the Bridge Bureau representative must certify that the Load Frame and testing apparatus have been installed in accordance with contract requirements. This approval must be completed on-site before the load test can begin.

During the test, Department representatives will record readings from gauges, scales, and the load cell. Provide instrumentation accessible to Department personnel and ensure that the instruments are working properly.

Test Requirements.

Drive the test pile and reaction piling shown on the plans in accordance with Section 559. Do not drive other production piling until after the static load test is complete.

Loading Procedure. Perform a re-drive (monitored with the PDA) on the static load test pile a minimum of 48 hours and maximum of 96 hours after completion of initial driving. Begin the static load test a minimum of 48 hours and maximum of 96 hours after the re-drive with the PDA is completed. Perform the load test to an axial compressive load of 500 kips or to settlement failure as defined in Section 559.

Re-driving Reaction Piles. After the load test is completed, re-drive the reaction piles to the elevations at which the test was started and to the required ultimate capacity as directed by the Project Manager.

Method of Measurement and Basis of Payment. Method of measurement and basis of payment is in accordance with Section 559. All appurtenances including the jack, instrumentation, bearing plates not affixed to the frame, and spherical bearing element(s) are included in the cost of the Static Load test bid item. Pile length needed beyond cut-off length for connection to the reaction frame is not measured for payment and is included in the Static Load test bid item. Loading, unloading, and transporting the load frame to and from the project is considered incidental to the work and no additional measurement of payment will be made.