1. STATIC PILE LOAD TEST (revised 2-2-2022)

Description. This work is static compression load testing for capacity verification and driving criteria on driven piling at the locations and capacities as shown in the Contract.

General. The static compression load test will be used in conjunction with the dynamic load test to determine the ultimate pile capacities and to set driving criteria for Location of bent to be tested and pile to be tested.

Conduct the static compression load test (quick method) in accordance with Section 559 and ASTM D 1143 on (Pile location and description).

Submittals. A minimum of 30 calendar days prior to conducting the load test, submit to the Project Manager electronic copies (PDF format is preferred) of the following:

Load Frame Design and supporting calculations.

Calibration curves for the proposed load cell and jack.

The load cell and jack must be calibrated 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.

Construction Requirements.

Provide a Load Frame and testing apparatus (including but not limited to the load cell and jack) capable of applying a minimum of twice (2x) the required bearing capacity during driving shown on the Plans.

The remaining #### piles in Bent # may be used as reaction/anchor piles. If the piles in the Bent are used as reaction/anchor piles, all #### piles must be used.

The Load Frame must be designed by a Montana licensed Professional Engineer.

In addition to the requirements of Section 559 and ASTM D 1143, design the reference beams to withstand a 0.25 kip load with a deflection less than or equal to 0.2 inches in the vertical direction, and 0.25 kip load with a deflection less than or equal to 0.25 inches in the horizontal direction.

The test pile must have a minimum of 3 feet of stickup above ground elevation.

Monitor the static load test pile (and reaction/anchor piles) with a Pile Dynamic Analyzer (PDA) during driving. (Drive the reaction piles after the test pile using results from the PDA) and drive all piles with the same pile driving apparatus that will be used for driving at Bent #.

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

Instrumentation. In addition to the requirements of Section 559 and ASTM D 1143, provide a load cell that reads in units of force. The mirror scales as described in ASTM D 1143 must be attached to the test pile using epoxy glue.

Shelter. 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.

Frame Approval. Prior to initiation of test, the designing Engineer must certify that the Load Frame and testing apparatus have been fabricated and installed according to submitted plans. This certification must be done on-site, and in person, by the designing Professional Engineer before the load test can begin.

Test Requirements.

Loading Procedure. Perform a re-strike monitored with the PDA on the static load test pile a minimum of 72 hours and maximum of 96 hours after completion of initial driving. Begin the static load test a minimum of 48 hours and maximum of 72 hours after the re-strike with the PDA is completed. Perform the load test to a minimum axial compressive load of twice (2x) the required bearing capacity during driving shown on the Plans.

Notify the MDT Geotechnical Section through the Project Manager a minimum of 5 working days prior to beginning the static pile load test.

Re-striking Reaction Piles. After the static pile load test is completed, re-strike the reaction piles to the elevations at which the test was started or to the required ultimate capacity as directed by the project manager.

Method of Measurement and Payment. Method of measurement and payment is in accordance with Section 559. Additional pile length required beyond cut-off length for connection to the reaction frame is not measured for payment. Include the cost of this additional pile length in the unit price bid for Static Load Test.