1. geotechnical instrumentation and monitoring (revised 2-2-2022)

Description. Geotechnical instrumentation and monitoring will be completed by others, under the direction of the Project Manager, and in coordination with the MDT Geotechnical Section.

Instrumentation. The instrumentation for this project will consist of the following:

Station 55+50: 1 Vibrating Wire Settlement Cell and 4 Vibrating Wire Piezometers. The settlement cell will be placed on native ground at the project centerline of this station. The piezometers will be placed in 4 separate borings adjacent to the settlement cell. One piezometer will be placed in each boring. One piezometer will be placed at each of the following depths below ground surface: 10, 20, 30, and 45 feet.

Station 62+00: 1 Vibrating Wire Settlement Cell and 3 Vibrating Wire Piezometers. The settlement cell will be placed on native ground at the project centerline of this station. The piezometers will be placed in 3 separate borings adjacent to the settlement cell. One piezometer will be placed in each boring. One piezometer will be placed at each of the following depths below ground surface: 8, 13, and 18 feet.

Construction Requirements.

Do not place any fill before instrumentation has been placed, data transfer cable trenching and backfilling is complete, and instrumentation has been installed to the satisfaction of the MDT Geotechnical Section and the Project Manager.

Trench data transfer cables for the instrumentation to locations outside the construction limits of the embankments. Refer to the Staged Construction Special Provision for trenching and backfilling requirements.

Data loggers and other readout equipment will be located outside the construction limits of the embankments.

Horizontal and vertical surveys of the instrumentation locations, data cable trenches, and data logger locations are required prior to embankment construction.

An initial horizontal and vertical survey of the railroad tracks is required prior to embankment construction. This survey will serve as the baseline survey during monitoring.

Monitoring Requirements. The monitoring for this project will include the following:

Readings of the settlement cells/plates and piezometers will be conducted several times daily during placement of embankment fill, or as directed by the Project Manager and the MDT Geotechnical Section.

Daily horizontal and vertical surveys of the railroad tracks for comparison with the baseline survey of the railroad tracks.

Discontinue construction of the embankments immediately if movement occurs in the railroad tracks or significant pore water pressures are measured in the piezometers. Do not resume embankment construction without approval from the Project Manager.

The rate of construction and the length of the waiting period of the staged construction will be determined by the Project Manager, based on the results of the instrumentation and monitoring as interpreted by the MDT Geotechnical Section. See the Staged Construction Special Provision for reference.

Access to the site for installation, maintenance, and monitoring of the instrumentation must be maintained at all times for MDT and their designated representatives.

Repair damage to instrumentation installations at no additional cost to the Department. Costs related to repairing damaged instrumentation, up to and including complete replacement of damaged instrumentation, are the sole responsibility of the Contractor.

Measurement and Payment. No additional compensation is provided for cooperation with the tasks required to complete these tasks.