

WP 07-EU1308

Revision 2

Installing Wire Extensometers

Technical Procedure

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APPROVED FOR USE

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INTRODUCTION ¹

This procedure describes the steps necessary to install remotely and manually read wire extensometers (WEX). This work includes drilling the anchor holes, installing the WEX, and taking the initial reading. It does not include the additional wiring required to connect the extensometer for being read remotely or manually.

The record produced by the use of this procedure is the GIS Initial Data Sheet (Attachment 1 of WP 07-EU1303). Completed data sheets are maintained in accordance with the Geotechnical Engineering Records Inventory and Disposition Schedule.

REFERENCES

BASELINE DOCUMENTS

- WP 07-1, WIPP Geotechnical Engineering Program Plan

REFERENCED DOCUMENTS

- WP 07-EU1303, Geomechanical Instrument Data Processing

EQUIPMENT AND MATERIALS

- Personal protective equipment
- Wire extensometer unit
- Small-diameter nylon-coated aircraft cables
- Expansion anchors
- Numbered setting rods
- Wire clamps or wire crimps and crimping tool
- Rotary hammer drill or other hand drills
- Masonry or standard drill bits
- Hilti-type expansion bolts with nuts and washers
- Digital volt meter
- Potentiometer interface box (PIB)

- Marking pens
- Hand tools (hammer, screwdrivers, pliers, crescent wrenches, level, measuring tape, crimping tool, socket wrenches, etc.)

PREREQUISITE ACTIONS

- Personnel using this procedure shall examine their work place, tools, and equipment for unsafe conditions and practices. Unsafe conditions or practices shall be corrected before any work is performed in work area.
- The cognizant engineer shall determine the location for installation of the WEX.

PERFORMANCE

1.0 INSTALLATION OF WIRE EXTENSOMETERS

- 1.1 Determine and mark the placement of the two anchor bolts by aligning the WEX box sheave hole with the instrument hole.
- 1.2 Drill the anchor bolt holes to a depth sufficient to provide support for the WEX box.
- 1.3 Screw a nut on the end of each anchor bolt and drive the anchor bolts in the holes, allowing enough bolt length to protrude from the back to provide adequate space for attaching the WEX box.
- 1.4 Install the wires in the instrument hole, using the setting rods, and designating the wire lengths on each wire using colored tape.
- 1.5 Insert the deepest anchor first, the midpoint anchor next, and the shallow anchor last, keeping the wires separated to prevent tangling.
- 1.6 Attach the WEX box to the anchor bolts.
- 1.7 Secure and level the unit with two washers and two nuts per anchor bolt, adjusting the WEX box to be as level as possible.
- 1.8 Feed the anchor wires through the sheave hole and attach each anchor wire to its assigned potentiometer.

NOTE

In Step 1.9, the potentiometer leads should be extracted no further than necessary.

- 1.9 Make a small loop by running the anchor wire through the potentiometer cable eye.

1.10 Attach the anchor wire to the potentiometer eye with crimps or wire clamps.

1.11 Stagger the clamps/crimps on each wire to prevent entanglement.

2.0 INITIAL READING

NOTE

When manually reading the instrument, the connection for J2 on the circuit board must not be made.

NOTE

Initial instrument voltmeter readings should be recorded on a GIS Initial Field Data Sheet.

2.1 Connect the WEX readout cable to connector P1 on the PIB.

2.2 Connect the voltmeter to connector P2 on the PIB.

2.3 Ensure the voltmeter is set to read DC voltage.

2.4 Read and record the voltage with PIB interface selector switch set to the "Vex" position.

2.5 Read and record the voltage with the PIB selector switch set to "Vin" position.

2.6 Read and record the instrument output voltage (V_{out}) with the PIB interface selector switch set to the "A" position.

2.7 Read and record the instrument output voltage (V_{out}) with the PIB interface selector switch set to the "B" position.

2.8 Read and record the instrument output voltage (V_{out}) with the PIB interface selector switch set to the "C" position.