

# WP 07-EU1306

Revision 4

## Installing Rock Bolt Load Cells

Technical Procedure

EFFECTIVE DATE: 10/19/09

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APPROVED FOR USE

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## INTRODUCTION <sup>1</sup>

This procedure details the steps necessary to install rock bolt load cells.

- 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-EU1301, Manually Acquired Geomechanical Instrument Data
- WP 07-EU1303, Geomechanical Instrument Data Processing
- Instruction Manual - Model 3000: Load Cell; Geokon, Inc., Lebanon, New Hampshire

## EQUIPMENT

- Load cells (including the signal cable)
- Bearing plates, copper shim stock, and centralizing bushings (as required)
- Roof bolt (with anchor)
- Rock bolt installation equipment
- Cement grout (as required)
- Portable strain indicator readout device, or necessary data acquisition equipment

## PREREQUISITE ACTIONS

- 1.0 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.
- 2.0 The cognizant instrumentation engineer shall determine the location for installation of the rock bolt load cell.

**PERFORMANCE**

## 1.0 INSTALLATION

**NOTE**

If rock bolt load cell is to be installed on previously installed rock bolts, Steps 1.1 and 1.7 may be skipped.

1.1 Drill a borehole at the designated location, to the depth and diameter required to install the rock bolt.

1.2 Obtain an unloaded load cell reading.

**NOTE**

The unloaded reading should be documented in the "Comments" section of the GIS Initial Data Sheet (WP 07-EU1303, Attachment 1) as the "unloaded reading."

1.3 Record reading on GIS Initial Data Sheet (WP 07-EU1303, Attachment 1).

1.4 Verify smooth bearing surfaces.

**NOTE**

Grout may be required between the upper bearing plate and the in situ rock to provide a smooth surface.

1.5 Install required washers and bearing plates on a rock bolt. (Reference Typical Rock Bolt Load Cell Installation Detail, Attachment 1.)

1.6 Verify alignment of bearing plates and load cell on bolt.

1.7 Install the rock bolt in the hole (restrain load cell case while tensioning the rock bolt).

1.8 Record a reading on GIS Initial Data Sheet (WP 07-EU1303, Attachment 1) from the loaded load cell after bolt has been tensioned.

1.9 Route the load cell cable with cable tie-offs along the roof and secure to the rib at a convenient reading height.

Attachment 1 - Typical Rock Bolt Load Cell Installation Detail

