ITEM 17554.98 M - MSES CORROSION MONITORING BY STATE FORCES

DESCRIPTION

Supply materials and equipment for a corrosion monitoring system. The required number and approximate location of corrosion monitoring stations are shown on the Contract Plans. The material will be installed by State Forces.

This item requires schedule coordination between the Contractor and the State.

MATERIALS AND EQUIPMENT

1. **Working electrode and counter electrode reinforcing members.** Provide one working electrode and one counter electrode at each monitoring point. The electrodes will be full length "dummy" reinforcing members positioned in the MSES backfill.

2. **Test coupons.** Provide two test coupons of plain steel, two of galvanized steel and two of zinc, having a cross-section approximately equal to that of the reinforcing members and 0.5m long, for placement in the MSES backfill at each monitoring point. Steel shall be of the same ASTM designation and grade as used for the reinforcing members. Zinc shall consist of the same alloy composition of that used to galvanize the reinforcing members. The test coupons shall have a wire permanently attached with its insulation color coded in the following manner:

A. Red wire to the working electrode
B. Blue wire to the counter electrode
C. Green wire to the zinc coupon
D. White wire to the galvanized steel coupon
E. Black wire to the plain steel coupon

3. **Monitoring Station Access.** Access to the monitoring station shall consist of the following:

A. Manhole: Provide a 660 mm (inside diameter) manhole with a watertight cover and a minimum 660 mm skirt for each monitoring station.
B. Junction Box: Provide a 254 mm x 254 mm x 100 mm weather-proof junction box for each monitoring station. Junction boxes shall accommodate connections to the working and counter electrodes and to the test coupons.
C. Conduit: Provide 75 mm diameter PVC pipe - Schedule 40. Include all necessary fittings (tee's, elbow's, locknuts, seals, clamps, etc.).

CONSTRUCTION DETAILS

This item requires schedule coordination between the Contractor and the State. The Geotechnical Engineering Bureau will be installing the materials for the corrosion monitoring system as the Contractor constructs the wall. The Geotechnical Engineering Bureau requires two weeks notice of the proposed construction operations along with access to the site during construction.

Monitoring station access shall be provided at each monitoring station for the electrical leads attached to the reinforcing members and test coupons to be monitored and for the reference

electrode. The Contractor shall install the manhole flush with the proposed shoulder surface and sealed within the shoulder pavement section.

For scheduling purposes: The Geotechnical Engineering Bureau will perform the following:
At each monitoring point, one full-length "dummy" reinforcing member will be placed as a working electrode and another as a counter electrode. In addition, at each monitoring point a set of six test coupons will be placed within the MSES backfill -- three (one each of plain steel, galvanized steel and zinc) near the facing panels and three at the far end of the reinforcing members from the facing panels. The surface area of the working and the counter electrodes and of the test coupons will be determined and recorded.

The electrical isolation of the working electrode from other reinforcing members within the same test panel will be ensured at the time of installation.

Permanent connections will be made to the working electrode reinforcing member, to an additional reinforcing member to be used as a counter electrode and to the test coupons for corrosion monitoring. The Contractor shall take care so as not to disturb the connections.

Initial corrosion rate measurements will be made at each monitoring station upon completion of the wall but prior to placing the structure into service.

METHOD OF MEASUREMENT

The quantity of MSES corrosion monitoring stations will be the number of stations satisfactorily installed.

BASIS OF PAYMENT

The unit bid price for each monitoring station shall include the cost of all labor, materials and equipment necessary to complete the work, including the cost of all incidental labor and material necessary to make the work area accessible and the cost of delays these or other corrosion monitoring operations may cause to the Contractor.