Section 2106. Settlement Plates

2106.01 DESCRIPTION.

A. Furnish and install settlement plates consisting of a base plate, steel bar, steel riser pipe sections, PVC casing, inspection cover, and additional hardware and couplers which may be required as shown in the contract documents. The number of settlement plates will be shown in the contract documents.

B. Monitor settlement plate installations and report settlement results.

2106.02 MATERIALS.

Meet the requirements of Division 41.

A. Base Plate and Steel Bar.
Apply Section 4153.

B. PVC Casing.
Apply ~~Article 4146.04~~ Section 4149.

2106.03 CONSTRUCTION.

A. General.

1. Furnish and install settlement plates at the locations specified in the contract documents.

2. Establish benchmarks in the adjacent area before installing settlement plates.
- **a.** Obtain the Engineer's approval for the method of determining alignments and elevations and the method of preserving control points. This approval does not act to relieve the Contractor of the responsibility for the correctness of the survey work.
- **b.** Do not use plan cross-sections for vertical or horizontal control.

3. Obtain the Engineer's approval for settlement plates before beginning embankment construction.

B. Initial Installation.

1. Install the base plate at least 6 inches (150 mm) below natural ground, firmly seated on a level surface. Place the PVC casing on the base plate, centered on the steel bar attached to the base plate. Fill the void between the casing and bar with commercial grade oakum, tightly packed, in order to keep the casing centered on the bar.

2. Construct an inspection cover as shown in the contract documents and place over the top of the casing. Leave the cover in place at all times, except when inspecting or monitoring the riser pipe.

C. Adding Extensions.

1. Add riser pipe extensions and couplers, as necessary, in 3 foot (1 m) increments as construction of the embankment progresses. Install extensions in a plumb line.

2. Add sections of PVC casing and couplers, as necessary, in order to prevent fill material from coming into contact with the steel pipe extensions.

D. Final Cleanup.

1. After all embankment construction and monitoring has been completed, adjust the tops of the riser pipe and PVC casing so they terminate below the final elevation of the embankment.

2. Remove riser pipe sections protruding above the surface of the embankment. Then cut the PVC casing at a point below the surface of the embankment. Cover with a PVC cap, solvent welded to the casing, in order to prevent the intrusion of soil and water.

E. Monitoring.

1. Monitoring consists of:
- Inspecting the riser pipe,
- Accurately measuring the elevation of top of the riser pipe, and
- Recording, to the nearest 0.01 foot (0.3 mm), the elevation readings on a form supplied by the Engineer.

2. Record elevation readings daily during normal construction and weekly during delays and following the completion of embankment construction. During the course of embankment construction, submit completed forms to the Engineer weekly. Following the completion of embankment construction, submit forms weekly unless the Engineer instructs otherwise.

3. During periods of work suspension, the Engineer will record elevation readings.

F. Limitations.

1. Take all necessary precautions to keep the alignment of the riser pipe and PVC casing in a plumb position.

2. Operate equipment so that the riser pipe and PVC casing are not damaged, displaced, or tilted out of plumb. Repair or replace all pipes that are damaged, displaced, or tilted out of plumb, at the discretion of the Engineer (at no additional cost to the Contracting Authority.)

2106.04 METHOD OF MEASUREMENT.
Settlement plates will not be measured directly for payment.

2106.05 BASIS OF PAYMENT.
Furnishing, installing, extending, and monitoring settlement plates is incidental to embankment or excavation.