**EMBANKMENT SETTLEMENT GAUGES:**

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| (7-1-95) (Rev. 8-18-15) | 235 | SP2 R75 |

Revise the *2012* *Standard Specifications* as follows:

**Page 2-22, Article 235-1 DESCRIPTION,** add the following:

Surcharges and waiting periods may be required for embankments and retaining walls to minimize and control the effects of settlement on structures, approach slabs, pavements, pipes, utilities, etc. Settlement gauges may be required to monitor settlement at approximate locations shown in the plans and as directed.

**Page 2-22, Article 235-2 MATERIALS,** add the following:

Provide Schedule 40 black steel pipes and couplers with steel or wood bases for settlement gauges. Use steel plates with yield strength of at least 36 ksi and pressure treated wood boards for bases of settlement gauges.

**Page 2-24, Article 235-3 CONSTRUCTION METHODS,** add the following:

**(E) Surcharges and Waiting Periods**

Place surcharges at locations shown in the plans. Unless required otherwise in the contract, surcharge embankments after embankments are constructed to the grade and cross section shown in the plans. Construct surcharges with side slopes as directed,
2:1 (H:V) end slopes outside of surcharge limits and surcharge heights shown in the plans. Place and compact surcharge material in accordance with Subarticles 235-3(B) and 235-3(C). Construct and maintain adequate drainage of surface runoff to prevent erosion of surcharge material.

Waiting period durations are in accordance with the contract and as directed. Surcharge waiting periods apply to surcharge locations shown in the plans and begin after surcharges are constructed to the height shown in the plans.

Unless required otherwise in the contract, bridge waiting periods are required in accordance with the following:

* 1. Apply to bridge embankments and retaining walls within 100 ft of end bent and bent locations shown in the plans and
	2. Begin after bridge embankments and retaining walls are constructed to the elevations noted in the plans.

Unless required otherwise in the contract, embankment waiting periods are required in accordance with the following:

* 1. Apply to embankment locations shown in the plans and retaining walls for embankments with waiting periods and
	2. Begin after embankments and retaining walls are constructed to the elevations, grade and cross section shown in the plans.

Except for maintaining embankments, do not perform any work on embankments or structures with waiting periods until waiting periods end unless otherwise approved. Place and compact additional material in accordance with Subarticles 235-3(B) and
235-3(C) to maintain embankment grade elevations during waiting periods. Remove surcharges to the grade and cross section shown in the plans after surcharge waiting periods end.

**(F) Embankment Monitoring**

Fabricate and install settlement gauges in accordance with the contract. Make settlement gauges highly visible so gauges are not disturbed while monitoring settlement. Use only hand operated compaction equipment to compact fill material around gauges.

Do not damage settlement gauges. Damaged settlement gauges may require replacement or additional gauges and waiting period extensions as determined by the Engineer.

**Page 2-24, Article 235-5 MEASUREMENT AND PAYMENT,** add the following:

*Borrow Excavation* for surcharge material and additional material for maintaining embankment grade elevations will be measured and paid in accordance with Article 230-5. *Unclassified Excavation* for surcharge material, additional material for maintaining embankment grade elevations and removing surcharges will be measured and paid in accordance with Article 225-7. When there is no pay item for *Borrow Excavation* or *Unclassified Excavation* in the contract, surcharge material and removing surcharges will be included in the lump sum payment for *Grading*. Additional material for maintaining embankment grade elevations will be paid as extra work in accordance with Article 104-7.

*Embankment Settlement Gauges* will be measured and paid in units of each. Settlement gauges will be measured as one per gauge location. The contract unit price for *Embankment Settlement Gauges* will be full compensation for fabricating and installing settlement gauges including placing and compacting fill material around gauges, adding pipes and couplers until embankment monitoring ends and any incidentals necessary to monitor settlement. No payment will be made for interfering with the Contractor’s operations due to embankment monitoring or damaged settlement gauges as determined by the Engineer.

Payment will be made under:

|  |  |  |
| --- | --- | --- |
| **Pay Item** |  | **Pay Unit** |
| Embankment Settlement Gauges | Each |