

## **Section 2123. Earth Shoulders for Pavements and Bases**

### **2123.01 DESCRIPTION.**

- A.** Construct or finish earth shoulders. In general, earth shoulder construction for pavements and bases relates to the earthwork above subgrade elevation, adjacent to the sides of pavement or base. It may involve minor or major reshaping and replacement of embankment material.
- B.** This specification will not apply to Rebuilding Shoulders specified in [Article 2213.03, J](#), or to Shoulders specified in [Article 2302.03, F](#).

### **2123.02 MATERIALS.**

- A.** For material deposited above an elevation 6 inches (150 mm) below subgrade elevation, use select treatment materials of [Article 2102.02, D, 1](#), if available and coordinated with the Engineer, or suitable soils of [Article 2102.02, D, 2](#). ~~Do not use unsuitable soils of Article 2102.02, D, 3, or topsoils.~~ Place topsoil as required by [Article 2105.03, B](#).
- B.** Select earth for use that is reasonably free of roots, granular material, rocks with dimensions greater than approximately 2 inches (50 mm) in the top 3 inches (75 mm), or other materials which will not form a good seedbed.

### **2123.03 CONSTRUCTION.**

#### **A. General.**

- 1. At elevations more than 6 inches (150 mm) below subgrade elevation, treat material placed during shoulder operations as embankment construction, unless specified otherwise.
- 2. Never deposit shoulder material on pavement or base.

#### **B. Constructing Earth Shoulders.**

- 1. Construct and finish earth shoulders by:
  - a.** Placing and consolidating suitable materials adjacent to a previously constructed pavement or base, as shown in the contract documents.
  - b.** Placing, in an acceptable condition, other sections of right-of-way disturbed by operations of the Contractor.
  - c.** Placing material resulting from subgrade trimming operations and completing construction with a minimum of 4 inches (100 mm) of topsoil.
- 2. Spread the material more than 3 inches (80 mm) below the upper edge of the pavement or base in uniform layers no more than 6 inches (150 mm) in loose thickness. Roll at least three times. The final 3 inch (80 mm) layer need not be rolled except for 1 foot (0.3 m) adjacent to the pavement or base.

3. Where the width of shoulder will permit, use a roller meeting the requirements of [Article 2001.05, C](#), or [D](#). The Engineer may permit use of other rollers or other compactive methods that will produce equivalent results. Where the width of shoulder is less than 6 feet (1.8 m), wheels of pneumatic tired equipment may be used in lieu of the roller. Ensure thorough compaction against and adjacent to the edge of the base or pavement. Wheels of pneumatic tired equipment may be used for this purpose.
4. Where unpaved side roads, drives, or entrances extend through the shoulder area, excavate them, or fill them with earth, to the extent necessary to provide a suitable approach with the design shoulder slope, as directed by the Engineer. When the contract item for shoulders is Earth Shoulder Construction, carry the operations beyond the outside shoulder line for a distance of 1 foot (250 mm) for each 1/2 inch (10 mm) of the depth of pavement plus base (where base is used).
5. If the tool or machine used in finishing the shoulder produces a groove in the earth at the edge of the pavement or base, carefully fill the groove and thoroughly compact.
6. Refer to [Articles 1105.12](#) and [2102.03, L](#), for restrictions on use of heavy equipment.
7. Commence shouldering operations when the pavement or base has attained the age requirements for opening to the Contractor, unless the Engineer specifically advises to delay starting, pending strength requirements or satisfactory surface conditions. Assign adequate equipment and organization so that the major portion of shouldering work may be completed within 6 working days after the Engineer releases the pavement for shoulder work.
8. The time for opening pavements and bases to the Contractor will be no less than that provided in [Division 23](#). In addition to age requirements, Class A, C, or M Portland cement concrete must show a flexural strength of 500 psi (3.5 MPa) or more and Class B Portland cement concrete placed after September 15 must show a flexural strength of 400 psi (2.8 MPa) or more.

#### **C. Finishing.**

1. After earth shoulders have been compacted, shape to the specified cross section and smooth to a condition acceptable to the Engineer.
2. Smooth and finish earth surfaces which have been constructed under the contract.
3. Restore to an acceptable condition sections of right-of-way that have been disturbed by the operations.

## **2123.04 METHOD OF MEASUREMENT.**

- A.** Contracts involving shoulder work will contain either items for both excavated material in cubic yards (cubic meters) and earth shoulder finishing, or a single item for earth shoulder construction. Measurement will be as follows:
  - 1. Earth Shoulder Finishing.**
    - a.** Stations (meters) shown in the contract documents along each edge of the pavement.
    - b.** The Engineer will measure material excavated involved with earthwork finishing and shoulders according to [Article 2102.04](#).
    - c.** Unless provided otherwise in the contract documents, overhaul will be measured according to [Article 2108.04](#).
  - 2. Earth Shoulder Construction.**

Stations (meters) shown in the contract documents along each edge of the pavement.
- B.** For shoulders built adjacent to paved, intersecting highways, measurement along the edge of pavement or base will terminate at the point where the intersecting highway shoulder merges with the shoulder of the road under construction. Measurement will then be continued from this merging point along the shoulder line of the intersecting highway and continued to a point where shoulder work under the current contract is terminated. There will be no overlapping or duplication in these measurements.
- C.** Shoulder work in connection with raised, unpaved medians will be measured and computed on the basis of a single measurement for the length of the median.
- D.** For work done in conjunction with shoulders adjacent to farm drives, approaches, and unpaved, intersecting roads, additional measurement will not be made for shoulders along the drive, approach, or intersecting road, nor will any deduction be made in the measurement along the edge of pavement or base.
- E.** Shoulder work in connection with unpaved islands will be considered incidental to island construction and will not be measured for payment.
- F.** For shoulder work completed in conjunction with paved driveways and entrances, additional measurements will not be made for shoulders built along the drive or entrance unless it is more than 25 feet (8 m) in length. If more than 25 feet (8 m) in length, measurements will be made from edge of pavement to the point of shoulder work termination. The width of drives or entrances along the pavement edge will not be measured for payment. Deductions or additional measurements will not be made for unpaved driveways or entrances.
- G.** When all or a portion of the work is done under general traffic, measurements or payment will not be made for traffic control, decreased production, or other items directly related to this traffic.

## **2123.05 BASIS OF PAYMENT.**

### **A. Payment will be as follows:**

#### **1. Earth Shoulder Finishing.**

- a.** Payment will be the contract unit price for the following:
  - 1)** Earth Shoulder Finishing: per station (meter).
  - 2)** Excavation: per cubic yard (cubic meter), as provided in [Article 2102.05, A, 1.](#)
  - 3)** Overhaul: per station yard (cubic meter per metric station), unless the contract provides otherwise.
- b.** Payments are full compensation for all work of building shoulders.

#### **2. Earth Shoulder Construction.**

- a.** Payment will be the contract unit price per station (meter).
- b.** Payment is full compensation for all costs including the cost of excavating, hauling, placing, compacting, rebuilding approaches, and finishing work.

### **B. Payment includes costs associated with work done under traffic.**