

be done by the Contractor without additional compensation. If the work has been properly constructed, completely drained and properly protected and damage to the embankment occurs due to natural causes, such as storms, cloud bursts, floods, slides, subsidence, etc., the Contractor will be paid at the contract unit price for the items necessary in making the repairs or replacement.

**205.09 Measurement and Payment.** When specified in the contract, embankments constructed will be measured and paid for in accordance with the terms set forth. Unless otherwise provided, embankments will not be paid for directly, but will be considered a necessary part of the work paid for under the items included in the contract prescribed under Sections **203** and **204**. This payment shall include and be full compensation for all labor, equipment, tools, and incidentals necessary to satisfactorily complete the work.

## **SECTION 206**

### **EMBANKMENT IN-PLACE**

**206.01 Description.** This work shall consist of the construction of embankment by dredging and pumping acceptable material from rivers, canals or other areas or by excavating, loading and hauling acceptable material from pits and depositing such material at locations shown on the plans in accordance with these specifications and in conformity with the lines, grades and cross-sections indicated on the plans or as established by the Engineer. Unless otherwise provided, embankment in-place may be hydraulically constructed or hauled in from pits.

The Contractor shall, without additional compensation, furnish the necessary borrow pits and haul roads; restore the premises over which a haul road has been constructed; pro-

cure necessary dredging permits and other necessary permits; comply with the laws and regulations pertaining to dredging and pollution; and remove and dispose of the stripping from pits.

All work under this section shall be performed in a manner that will insure compliance with Subsection **107.26**, Environmental Protection and Water Pollution Control. The Contractor shall conduct his operations in a manner consistent with good erosion control practices to minimize soil erosion, and to the extent practicable, prevent sediment from leaving the site. Throughout the life of the project, the Contractor shall take the necessary measures to control erosion and to minimize the deposition of sediment into adjacent water-courses, wetlands, and impoundments.

The Engineer may limit the surface area of erodible material exposed. In order to limit the area of erodible material, the Engineer may require that partially completed slopes be brought to the required slope and that the seeding be performed at that time in accordance with Section **810**.

The Contractor shall comply with the provisions of any required permits for the project, which limit the surface area of exposed erodible material.

The Department may, at the discretion of the Engineer, exercise its right of Eminent Domain in the acquisition of the land for pits. All related costs shall be borne by the Contractor.

## MATERIALS

### **206.02 Materials.**

**A. Hydraulic Construction Material.** The materials used in the embankment when hydraulically constructed shall be excavated by dredging from nearby areas if so designated in the plans or special provisions. The em-

bankment shall be formed of a material consisting of sand, marl or clay marl with a maximum of 25% by weight of the materials passing the No. 200 sieve. Muck or other objectionable material more than the maximum allowable percentage stated above shall not be placed in the embankment. The determination of the material passing the No. 200 sieve shall be by the wash method. All unsuitable material shall be disposed of in a manner and at a location satisfactory to all parties concerned.

**B. Hauled-In Construction Material.** When using hauled-in material to construct the embankment, the material shall be furnished by the Contractor and approved by the Engineer before being used. Except for the top 18 inches of the embankment, materials that will be acceptable are classified according to AASHTO M 145 as: A-1, A-2, A-3, A-4, A-5 or A-6. A maximum of 25% by weight of recycled glass aggregate may be mixed with these materials in constructing the embankment.

The recycled glass shall be free of organic and toxic materials, hypodermic needles and any hazardous materials, and must meet South Carolina DHEC regulations as a non-hazardous material. The maximum particle size for recycled glass aggregate shall be 1/2 inch. The lead content for the glass aggregate shall not exceed 5ppm, and the silver content shall not exceed 5 ppm. The aggregate shall also meet the limits established by the EPA for the primary and secondary drinking water standards. Before any glass is placed on projects, the glass supplier shall furnish the Department certified test results showing that the glass meets the requirements listed herein. These test results shall be no more than one year old at the time it is furnished to the Department. The glass aggregate shall contain not more than one percent by weight of the non-glassy material and shall not contain any portion from mirror glass.

The top 18 inches of the embankment shall, unless

otherwise provided, generally be constructed of material meeting one of the following: A-1, A-2-4, A-2-5, A-3 and the better soil of A-2-6 and A-4 classification according to AASHTO M 145.

## CONSTRUCTION REQUIREMENTS

### 206.03 General.

**A. Hydraulic Construction.** When the embankment is hydraulically constructed, the Engineer may, in order to prevent possible slides and maintain a buffer zone, limit the distance between the pit furnished by the Contractor and the right of way line. The Engineer shall approve the location of the pit. In general, no material shall be excavated or dredged within 300 feet of the toe of the proposed embankment.

Embankment shall be carried ahead in a continuous section insofar as practicable. Every precaution must be used to prevent muck from being trapped within the fill section in order that a compact fill of acceptable material will be obtained throughout the embankment volume.

When it is necessary to remove unstable material before placing the hydraulic embankment, the unstable material shall be removed well in advance of placing the embankment material. It shall be moved a sufficient distance away from the excavation site to permit the taking of final cross-sections outlining the limits of the removed unstable material, and so that the embankment material will not come in contact with the unstable material.

The Contractor may use baffles or any form of construction he may select so long as the slopes of the embankments are not steeper than indicated on the plans. All timber use in such baffles, etc., shall be subsequently removed from the embankment and the holes thus formed shall be filled and thoroughly compacted.

The Contractor shall also provide earth dams, timber baffles, or other means necessary to prevent damage to property beyond the right of way.

A reasonable amount of the excess material placed outside of the prescribed slopes may be used for raising the fill and dressing slopes. When such excess material is used to raise the embankment 2 feet or more, the raised portion shall be formed and compacted as specified in Section **205**.

Any material that is allowed to invade openings left in the embankment for bridge sites shall be removed by the Contractor without extra compensation to provide the same depth of channel as existed before the construction of the embankment.

If dredge material is stockpiled and later hauled to the site, the construction of the embankment shall be performed in accordance with Section **205**.

**B. Construction Using Hauled-in Material.** Embankment in-place constructed using hauled-in material shall be constructed in accordance with the requirements of Section **205**. After the embankment is constructed to an elevation not subject to the action of ground water, the hauled-in material shall be compacted in layers to not less than 95% of maximum density determined in accordance with AASHTO T 99. When the embankment being constructed is subject to ground water, a material not stable under such conditions shall not be permitted.

When it is necessary to remove unstable material before placing the hauled-in material, the unstable material shall be removed well in advance of placing the embankment material. It shall be moved a sufficient distance away from the excavation site to permit the taking of final cross-sections outlining the limits of the removed unstable

material, and so that the embankment material will not come in contact with the unstable material.

When using glass aggregate in embankment material, the glass aggregate shall be spread uniformly on the uncompacted layer of hauled-in material. The spreading shall be accomplished in such a manner that the finished embankment will conform to the lines, grades, dimensions and typical cross-sections as shown on the plans or as directed by the Engineer. The glass aggregate material shall then be thoroughly mixed with the hauled-in material to a depth specified by the Engineer. During the mixing operation, sufficient water shall be added as necessary to bring the moisture to that required for proper compaction. The mixture of soil and the glass aggregate shall be spread and shaped to a uniform thickness, and while at optimum moisture content, shall be consolidated until the glass aggregate is bonded and the embankment thoroughly and satisfactorily compacted. A uniform, dense surface, free from loose material shall be required.

**206.04 Maintenance and Stability.** The requirements set forth in Subsection **205.08** shall apply.

**206.05 Method of Measurement.** Embankment In-Place will be measured in cubic yards of roadway embankment completed and accepted, determined as follows:

The volume will be calculated by the average end area method. The length for computation will be the actual length of the embankment accepted. The cross-section area for the calculation will be the neat area of the cross-section shown on the plans above the original ground line, determined before the placing of any fill material, and below the subgrade elevation and slopes shown on the plans. Should the plans or special provisions require, or the Engineer direct, the removal of unstable or unsuitable material from underneath the roadbed, the trapezoidal area below the

original ground line as shown by the plans or stated in the special provisions will be included in the cross-section area for the calculation. Embankment material used to replace material excavated beyond the lines and grades shown on the plans or directed by the Engineer will not be measured or considered in the pay quantities, unless the placing of such material shall have been specifically authorized in writing by the Engineer.

The removal of unstable material, when required will be measured and paid for as provided in Subsections **203.15** and **203.16**.

The Contractor shall make his own estimate of the volume of material actually necessary for constructing the embankment to the cross-section shown or designated and no payment will be made for materials that may be deposited or flow outside the neat lines as described above.

**206.06 Basis of Payment.** The quantity, determined as provided above, will be paid for at the contract unit price for Embankment In-Place, which price and payment shall constitute full compensation for acquiring borrow pits, obtaining permits, stripping borrow pits, haul roads and for excavating, hauling, dredging, pumping and placing of all material; for constructing the embankment complete, subsidence, and the maintenance thereof; disposal of all unsuitable material and effluent water from the embankment area; and for all labor, equipment, tools and incidentals necessary to satisfactorily complete the work.

Payment for overhaul will not be allowed for material used in the construction of Embankment In-Place.

Unless otherwise indicated on the plans, no payment shall be made for any clearing and grubbing of the pit areas. Where no item of clearing and grubbing within the right of way or roadway is specified in the plans or included in the

proposal, the cost of clearing and grubbing shall be included in the contract unit price for Embankment In-Place.

Payment for each item includes all direct and indirect costs and expenses required to complete the work.

Payment will be made under:

Item No.	Pay Item	Pay Unit
2061000	Embankment In-Place	Cubic Yard

## SECTION 207

### OVERHAUL

**207.01 Description.** This work shall consist of hauling locally excavated material more than 3000 feet in constructing the improvement in accordance with the plans and special provisions.

**207.02 Method of Measurement.**

In all cases, the length of overhaul will be the distance between the centers of volumes of the material in its original position, and after placing, less 3000 feet. The overhaul distance will be based on the shortest practicable route and any part of the overhaul distance not regarded by the Engineer, as reasonably necessary will be disregarded in computing the overhaul quantity to be paid.

In determining overhaul, the overhaul distance will be measured in half-mile units from the free haul limit of 3000 feet. The first half-mile unit of overhaul will apply to material hauled more than 3000 feet and not more than 5640 feet. The second half-mile unit of overhaul will apply to material hauled more than 5640 feet and not more than