Payment will be made under:

Item No.	Pay Item	Pay Unit
2041000	Structure Excavation for Culverts	Cubic Yard
2041005	Structure Excavation for Retaining Walls	Cubic Yard
2042000	Dry Excavation for Bridges	Cubic Yard
2043000	Wet Excavation for Bridges	Cubic Yard
2043500	Wet & Dry Excavation for Bridges	Cubic Yard
2044000	Rock Excavation for Bridges	Cubic Yard
2045000	Cofferdam	Each
2045010	Cofferdam - Type 1 (0 – 10,000 CF)	Each
2045020	Cofferdam - Type 2 (10,001 – 20,000 CF)	Each
2045030	Cofferdam - Type 3 (20,001 – 30,000 CF)	Each
2045040	Cofferdam - Type 4 (30,001 – 40,000 CF)	Each
2045050	Cofferdam - Type 5 (40,001 – 50,000 CF)	Each
2045060	Cofferdam - Type 6 (>50,000 CF)	Each
2047000	Temporary Sheet Piling	Linear Foot
2047200	Permanent Sheet Piling	Square Yard

SECTION 205

EMBANKMENT CONSTRUCTION

205.01 Description. This work shall consist of the formation of embankments in accordance with these specifications and in reasonable conformity with the lines, grades and cross-sections indicated on the plans or established by the Engineer, and shall include preparation of the areas upon which

they are to be placed, the construction of dikes or other necessary embankment formations within or outside the right of way; the placing and compacting of approved material within roadway areas where unsuitable material has been removed; and the placing and compacting of embankment material in holes, pits and other depressions within the roadway area. Embankment construction shall also include restoration, compaction, and stability of the embankment and the disposal of surplus and unsuitable material.

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. The Contractor shall take the measures necessary to control erosion and to minimize the deposition of sediment into adjacent watercourses, wetlands, and impoundments throughout the life of the project.

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 that limit the surface area of exposed erodible material.

Only approved materials shall be used in the construction of embankments and backfills. Unless otherwise provided, embankments shall be constructed of suitable materials excavated under Sections **203** and **204**.

CONSTRUCTION REQUIREMENTS

205.02 General. Rocks, broken concrete, or other solid

materials shall not be placed in embankment areas where piling is to be driven. Likewise, the top 6 inches of embankments shall not contain any material larger than can pass a 3 inch sieve.

Grading operations shall be so conducted that all suitable material shall be used where required for the formation of embankments, subgrade, shoulders, approaches, intersections, drives and for backfilling around structures. The work shall be done in such a manner and sequence with selective grading and necessary cross-hauling that the most suitable soil shall be reserved for topping the embankments to the extent practicable.

The embankment shall be maintained as provided in Subsections **104.07** and **205.08**.

All clearing and grubbing shall have been completed in accordance with Section **201** of these specifications, and stump holes and depressions filled and compacted before proceeding with the embankment construction.

Embankment shall be formed by placing, spreading and compacting the material in successive, uniform, horizontal layers of not more than 8 inches in depth, loose measurement, for the full width of the cross-section, except as set forth in Subsection **205.04** where the depth may exceed 8 inches. Compaction shall be in accordance with Subsection **205.07**. Each layer of the embankment material shall be kept uniform and shaped to drain for the full width of the cross-section by the use of blade graders, bulldozers, or other suitable equipment.

Where the embankment is to be constructed in low, undrained areas or where the earth material on which the embankment is to be constructed has a low support value, the Engineer may, at his discretion, permit the depth of the first layer to exceed 8inches. Unless otherwise provided, dragline casting will not be allowed in constructing embank-

ments unless the material so handled can be placed in layers and compacted as specified herein.

205.03 Embankment Over and Around Structures. No fill shall be placed against any new masonry abutment, wingwall, retaining wall, or culvert, nor over any box culvert, pipe culvert, bridge, or arch, until permission has been given by the Engineer. Backfill behind new structures that will cause unbalanced earth pressure will not be permitted to full height until the concrete has cured for fourteen (14) days. If not subject to unbalanced earth pressure, backfill around piers or bents may be placed after the concrete has cured for three (3) days. Embankment around and over concrete box culverts or retaining walls will not be permitted until the concrete has cured for fourteen (14) days, unless tests of cylinders indicate that the concrete has obtained the required strength. When backfilling around box culverts, if the embankment is brought higher than 1/2 the height of the box, it shall be continued without delay to provide a cover of not less than 12 inches over the top slab. Embankment over and around pipes, culverts, arches, bridges, or other structures shall be of selected materials and shall be thoroughly tamped.

Fill around culverts, bents and piers, and fill below the natural ground surface at abutments, wings, and retaining walls shall be deposited on both sides to approximately the same elevation at the same time. Piers or bents shall not be displaced and shall be checked for proper location as the work progresses. Corrective measures shall be taken if necessary. Fill at arch structures shall be carried up in horizontal layers, symmetrically from haunch to crown and simultaneously over and against all piers, abutments, and arch rings.

Special precaution shall be taken to prevent wedging action of filling material against structures. If directed, back slopes of excavation shall be destroyed by stepping or serrating.

205.04 Rock Embankment. Where rock is used for em-

bankment, no large stones shall be allowed to nest but shall be distributed over the area to avoid pockets. Voids shall be filled carefully with small stones. The final 2 feet of the embankment just below the subgrade elevation shall be composed of suitable material placed in layers not exceeding 8 inches loose measurement and compacted to the required density.

Where the depth of an embankment exceeds 5 feet and will consist entirely of rock, the rock shall be deposited in lifts not to exceed the top size of the material being placed but in no event exceeding 4 feet. The rock for any particular lift shall be deposited on and pushed over the end of the lift being constructed by means of bulldozers or other approved equipment. Depositing of rock over the end of any lift from hauling equipment will not be permitted. If the voids of the last lift are not sufficiently closed, they shall be choked with small broken stone or other suitable material and compacted as directed.

Where the depth of embankment is 5 feet or less, or where the material being placed does not consist entirely of rock, the material shall be placed in lifts not to exceed the top size of the rock being placed but in no event exceeding 2 feet. Each layer shall be choked thoroughly with broken stone or other suitable material and shall be compacted to the required density or as directed.

When a rock fill is to be placed over a structure, the structure shall first be covered with a minimum of 2 feet of earth or other approved material and properly compacted before the rock is placed. This covering shall be placed in accordance with Subsection **205.03**.

205.05 Embankment On Hillsides and Slopes. Before the embankment is placed on hillsides or against existing embankments, the existing ground surface should be plowed, deeply scarified, or benched depending upon the slope of the existing ground or embankment. When the existing slope is steeper than 3:1 when measured at right angles to the road-

way, the area shall be benched continuously in not less than 12 inch rises. The benching shall be of sufficient width that the embankment may be brought up in layers. Each horizontal cut shall begin at the intersection of the ground line and the vertical face of the previous bench. All such precautionary work shall be done as directed. No direct payment will be made for plowing, scarifying or benching, the cost thereof to be included in the various pay items of the contract.

205.06 Embankment Over Existing Roadbeds. If embankment for new pavement is to be placed over an area where a rigid pavement or any pavement having a concrete base is in place (or in other cases when required), the upper surface of which is 12 inches or less below the subgrade elevation of the proposed new pavement, the existing old pavement, including any concrete base, shall be removed. The method of removal, disposal, and basis of payment shall be as set forth in Section **202**.

If embankment for new pavement is to be placed over an area where an existing rigid pavement, such as concrete pavement, concrete base with asphaltic concrete overlay, cement stabilized bases with asphaltic concrete pavement, or brick or cobblestone pavement with or without asphaltic concrete overlay, the upper surface of which is more than one foot but less than 2 feet below the subgrade elevation of the proposed new pavement (or in other cases, when required), the existing pavement shall be broken, plowed and recompacted, when so directed. When directed, the pavement shall be broken so the area of any individual unbroken slab or section does not exceed one square yard. No direct payment will be made for this breaking, plowing and compacting of pavement, the cost thereof to be included in the various pay items of the contract.

If embankment for new pavement is to be placed over an area where a flexible type base and pavement is in place, the upper surface of which is 12 inches or less below the subgrade elevation of the proposed new pavement, the existing

old pavement shall be removed. The method of removal, disposal, and basis of payment shall be as set forth in Section **202**.

If embankment is to be placed over an area where a flexible type base and pavement is in place, the top of which is more than one foot, but less than two feet, below the subgrade elevation of the proposed new pavement, the existing pavement, when directed, shall be loosened (scarified) and re-compacted for its full depth to prevent the possible trapping of water above the existing surface and to eliminate cleavage planes. No direct payment will be made for this loosening and compacting, the cost thereof to be included in the various pay items in the contract.

205.07 Embankment Compaction. Each layer of embankment shall be compacted to not less than 95% of maximum density before successive layers are applied unless otherwise provided. The compaction shall be accomplished by using suitable construction procedures and while the material is at a suitable moisture content. Maximum densities will be determined by either AASHTO T 99 (Method A or C as applicable), or SC T-29.

On projects where the base and pavement is to be constructed under a later contract, each layer of embankment shall be compacted as specified above.

205.08 Maintenance and Stability. Embankments shall be maintained to the grade and cross-section shown on the plans, or established by the Engineer, until the completion and acceptance of the project.

The Contractor shall be responsible until final acceptance for the stability of all embankments made under the contract and shall replace any portion which, in the opinion of the Engineer, has become displaced or damaged. If, in the opinion of the Engineer, the displacement or damage is due to negligent work on the part of the Contractor, the replacement shall

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-