

SECTION 02200 – EXCAVATING, FILLING AND GRADING

PART 1 – GENERAL

A.1 WORK INCLUDED IN THIS SECTION:

- A. Excavating, filling and grading required for this work includes, but is not necessarily limited to:
 - 1. Excavating, filling and backfilling for streambank stabilization.
 - 2. Rough and finish grading of streambank.
 - 3. Preparation of sub-grade for areas to be seeded, planted with trees and shrubs, and/or mulched.

1.2 RELATED WORK IN OTHER SECTIONS:

- A. Clear and Grubbing: Section 02101

1.3 JOB CONDITIONS:

- A. Dust Control:
 - 1. Use all means necessary to control dust on and near the work and on and near all offsite borrow areas, if such dust is caused by the Contractor's operations during performance of the work, or if resulting from the condition in which the Contractor leaves the site.
- B. Protection: Use all means necessary to protect all materials of this section before, during, and after installation, and to protect all objects designated to remain. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Sponsor. Protect tops, trunks and roots of existing trees on project site which are to remain.
- C. Notification: The Contractor shall notify the Engineer prior to installation of specified portions of the work to allow the inspector sufficient time to inspect the work and shall obtain approval of all material prior to commencing construction. Any portion of the work installed without inspection may be removed to allow for inspection. Any eventual difficulty or loss of time caused by the Contractor failing to meet permit requirements shall be borne solely by the Contractor.

1.4 LINES AND GRADES:

- A. All excavation, filling and backfill shall be done to the lines and grades shown on the drawings.

1.5 BENCH MARKS AND MONUMENTS:

- A. Maintain carefully all bench marks and reference points, which are shown on the drawings. The Contractor shall pay for the replacement of such reference points if disturbed by the Contractor during construction.

1.6 REFERENCES:

- A. The publications listed below form a part of this specification. The latest revision of the following standards shall apply to work hereunder:

Associated General Contractors of America, Inc.
“Manual of Accident Prevention in Construction”

PART 2 – PRODUCTS

2.1 FILL MATERIAL, GENERAL:

- A. All fill material for embankment construction shall come from onsite unless otherwise specified by the engineer. All fill material shall be subject to approval of the Engineer.

2.2 IMPORTED FILL MATERIAL:

- A. If imported fill material is required to finish embankments or subgrade. The Contractor shall be responsible for providing a borrow area for imported fill.

2.3 TOPSOIL:

- A. All areas disturbed by construction operations, which are not to be paved or rocked under this contract, shall be provided with a 6-inch compacted layer of topsoil approved by the Engineer. Topsoil from areas within the project limits may be stockpiled and used where such topsoil is considered satisfactory to sustain plant growth. Additional materials, if required, shall be brought to final grade, as shown on the drawings, and shall be lightly compacted.

2.4 OTHER MATERIAL:

- A. All other materials not specifically described, but required for proper completion of the work of this section, shall be as selected by the Contractor, subject to the approval of the Engineer.

PART 3 – INSTALLATION

3.1 GENERAL:

- A. Familiarization: Prior to all work in this section, become thoroughly familiar with the site, the site conditions, and all portions of the work falling within this section.
- B. Backfilling Prior to Approval
1. Do not allow or cause any of the work installed to be covered up or enclosed by work of this section prior to all required inspections, tests, and approval.
 2. Should any of the work be so enclosed or covered up before it has been approved, uncover all such work at no additional cost to the Sponsor.
- C. Site Drainage: During construction, excavation and fill shall be performed in a manner and sequence that will provide drainage at all times.

3.2 EXCAVATION AND FILLING:

- A. General: Excavation, as hereinafter specified, shall comprise the satisfactory removal and disposition of all material. After topsoil removal has been done, excavation of every description and of whatever substances encountered, shall be performed to the lines and grades indicated on the drawings. After backfilling of key trenches has been completed, any surplus of excavated material shall be known as "waste" and shall be disposed of at the location approved by the Engineer. Any additional fill material required, that is not available from excavation within the immediate project area, shall be obtained from borrow area locations approved by the Engineer. During construction, excavation, key trenching, and backfilling shall be performed in a manner and sequence that will provide drainage at all times.
1. Classification of Excavation: Excavation shall be unclassified.
 2. Earth and Rock Excavation shall be unclassified. Earth and Rock Excavation shall include earth, clay, silt, sand, gravel, hard pan, loose shale, loose stone masses, boulders, rock material in ledges, bedded deposits, unstratified masses, and conglomerate deposits so firmly cemented that they possess the characteristics of solid rock, which cannot be removed without systematic drilling.
- B. Depressions Resulting from Removal of Obstructions: Where depressions result from, or have resulted from, the removal of surface or subsurface obstructions, open the depression to equipment working width and remove all debris and soft material, as directed by the Engineer.
- C. Sloped Surfaces: Sloped ground surfaces steeper than 1 vertical to 4 horizontal, on which fill is to be placed, shall be plowed, stepped (benched) or broken up, in such manner that the fill material will bond with the existing surface.
- D. Fill and Backfill: All fill or backfill material shall consist of earth or other approved material with all undesirable material removed. Unless otherwise specified, all fill shall be uniformly placed uniform layers to achieve a 3H:1V slope and then compacted by equipment.
- E. Over-excavation: Backfill and compact all over-excavation areas, as specified for fill, at no additional cost to the Sponsor.
- F. Unfavorable Weather: Ground frozen or too wet - do not place, spread, or roll any fill material during unfavorable weather conditions. Do not resume operations until moisture content and fill density are satisfactory to the Engineer.
- G. Overbank flow: To prevent erosion of finished slopes from overland flow, provide berms and rock chutes or slope drain devices along sections of disturbed bank where drainage is towards the disturbed bank.
- H. Soften Sub-grade: Where soil has been softened or eroded by flooding or placement during unfavorable weather, remove all damaged areas and re-compact as specified for fill and compaction below.
- I. Dewatering: Provide and maintain at all times during construction, ample means and devices with which to promptly remove and dispose of all water from every source entering the

excavations or other parts of the work. Dewater by means, which will insure dry excavation and the preservation of the final lines and grades of bottoms of excavation.

3.3 BACKFILLING:

- A. General Backfill: Unless otherwise specified, all channel slopes shall be shaped to a 3H:1V slope which smoothly transitions into the existing slope at each end of the project.
- B. Responsibility of Contractor for Backfill Settlement:
 - 1. The Contractor shall be responsible for the satisfactory compaction and maintenance of all backfill of any description required under this contract. If, prior to the final acceptance of this entire contract, any backfilled areas are found to have settled, they shall immediately be reworked by the Contractor and restored to the specified grades.

3.4 FINISH GRADING

- A. The finishing of side slopes, cuts and fills shall be to reasonably smooth uniform surfaces that will merge with the adjacent terrain without noticeable break. Finishing shall be done in accordance with grades shown on the drawings, and without variations that are readily discernible.
- B. Finish grading shall be performed to the lines and grades shown on the drawings. All areas disturbed by the Contractor during construction operations shall be bladed smooth, shaped, and compacted, as specified herein before. The finished grade shall provide for topsoil that is free from perennial vegetation and is loosened to depth of twelve (12) inches for areas disturbed under this contract.
- C. Newly graded areas shall be protected from traffic, erosion, and any settlement or washing away that may occur from any cause, prior to acceptance, shall be repaired and grades reestablished to the required elevations and slopes. Damaged areas shall be revegetated, if necessary.
- D. Haul roads into the work sites shall be ripped to loosen compacted soils prior to removing equipment from the project site.

3.5 BORROW AND SPOIL AREAS:

- A. Borrow and spoil areas shall be graded to promote positive drainage at the completion of the work. No borrow or spoil slopes shall be greater than 3 horizontal to 1 vertical.
- B. Erosion controls shall be implemented to prevent erosion into waterways.
- C. Borrow and spoil areas shall be seeded and mulching shall be applied at the completion of construction.

3.6 CLEANING UP:

- A. Upon completion of the work of this section, immediately remove all debris and excess earth materials from the site.

PART 4 – MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT:

- A. Work will be measured by bid quantity of cubic yards of soil. Contractor shall maintain weight tickets for soil trucked to the site. Material moved on site by earth moving equipment will be paid at the contract unit price and units indicated.

4.2 Basis of Payment:

- A. The amount of work completed and approved, as stated above, shall be paid for at the contract unit price. Such payment shall constitute full compensation for all labor, equipment, tools and all other items necessary and incidental for the completion of the work.

END OF SECTION 02200