

SECTION 02330 - EMBANKMENT

PART 1 - GENERAL

1.01 SUMMARY

- A. Bidding requirements, conditions of the contract and pertinent portions of sections in Division 1 of these specifications and MaineDOT Standard of Specifications (current version – as revised), Item 618 Loam, apply to the section as fully as though repeated herein.
- B. Section Includes:
 - 1. Subsoil materials.
 - 2. Topsoil materials.
 - 3. Preparation of subsoil.
 - 4. Soil testing.
 - 5. Placing topsoil.
- C. Related Sections:
 - 1. Section 02310 – Grading
 - 2. Section 02315 – Excavation and Fill
 - 3. Section 02335 – Subgrade and Roadbed

1.02 UNIT PRICES - MEASUREMENT AND PAYMENT

1.03 REFERENCES

- A. American Association of State Highway and Transportation Officials:
 - 1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 10-lb Rammer and an 18-in. Drop.
- B. ASTM International:
 - 1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³).
 - 2. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³).
 - 3. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
- C. MaineDOT Standard Specifications
 - 1. 703.18 Common Borrow
 - 2. 717.09 Humus

1.04 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.
- B. Test Reports: Indicate topsoil nutrient and pH levels with recommended soil supplements and application rates.

- C. Materials Source: Submit name of materials source and material gradation results.

1.05 QUALITY ASSURANCE

- A. Furnish subsoil and topsoil materials from approved source throughout the Work.
- B. Perform Work in accordance with applicable MaineDOT standards.

PART 2 - PRODUCTS

2.01 COMMON BORROW

- A. Common borrow shall consist of earth, suitable for fill or non-structural embankment construction. It shall be free from frozen material, perishable rubbish, peat and other unsuitable material. The moisture content shall be sufficient to provide the required compaction and stable embankment. In no case shall the moisture content exceed 4% above optimum, which shall be determined in accordance with AASHTO T180, Method C or D.

2.02 TOPSOIL MATERIALS

- A. Topsoil: Conforming to MaineDOT standard (Humus 717.09).
- B. Loam shall meet the following requirements:

<u>Organic Content</u>	<u>Percent by Volume</u>
Humus	10% - 20%, as determined by Ignition Test.
pH	5.5 - 8.0
<u>Mineral Content</u>	<u>Percent by Volume</u>
Sand - 0.08 in to 0.002 in diameter	45% - 75%
Silt - 0.002 in to 0.00008 in diameter	20% - 40%
Clay - less than 0.00008 in diameter	5% - 15%

The loam shall be screened, loose, friable, and shall be free from admixture of subsoil, refuse, large stones, clods, roots, or other undesirable foreign matter. It shall be reasonably free of weeds, roots, or rhizomes. The Contractor shall submit loam-testing results; the cost of testing shall be considered incidental to the Pay Item for Loam. The Contractor may elect to manufacture loam from a combination of project materials that the Contractor is entitled to use, combined with other suitable materials furnished by the Contractor.

2.03 SOURCE QUALITY CONTROL

- A. When tests indicate materials do not meet specified requirements, change material and retest.
- B. Furnish materials of each type from same source throughout the Work.

PART 3 - EXECUTION

3.01 EXCAVATION

- A. Excavate subsoil and topsoil from areas designated. Strip topsoil to full depth of topsoil in designated areas.
- B. Stockpile excavated material meeting requirements for subsoil materials and topsoil materials.
- C. Remove excess excavated materials, subsoil and topsoil not intended for reuse, from site.
- D. Remove excavated materials not meeting requirements for subsoil materials and topsoil materials from site.

3.02 STOCKPILING

- A. Stockpile materials on site as designated by Engineer or Owner's Representative.
- B. Stockpile in sufficient quantities to meet Project schedule and requirements.
- C. Separate differing materials with dividers or stockpile apart to prevent mixing.
- D. Stockpile topsoil eight feet high maximum.
- E. Prevent intermixing of soil types or contamination.
- F. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

3.03 STOCKPILE CLEANUP

- A. Remove all excess material stockpiles; leave area in clean and neat condition. Grade site surface to plan grades shown.

END OF SECTION 02330