

SECTION 329119 – TOPSOILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Prepare subsoil.
 - 2. Furnish topsoil required from approved sources located outside the project limits, and place as shown on drawings.
- B. Related Sections:
 - 1. Division 32 – Amended Soils
 - 2. Division 32 - Seeding
 - 3. Division 32 – Planting

1.3 STANDARDS

- A. The quality of materials and performance of work specified in this section shall be in accordance with the most recent edition of the Maryland Department of Transportation Standard Specifications for Road and Bridge Construction.
 - 1. Section 733: Topsoiling

1.4 SUBMITTALS

- A. Legal Documents
 - 1. Submit a complete materials list of items proposed to be provided under this section for approval by the Owner's Representative before the purchase of any material.
 - 2. Submit a list of proposed methods of execution of work under this section for approval by the Owner's Representative when proposed methods are different from or supplementary to those specified herein.
 - 3. Submit copies of soil test recommendations called for in this section.
- B. Delivery Slips
 - 1. Accompany all shipments of topsoil with delivery slip showing the product weight and name of supplier.

1.5 PRODUCT DELIVERY AND STORAGE

- A. Obtain all legal rights or easements necessary from private owners on whose lands topsoil may be stored. Furnish rights or easements in written form and signed by both CONTRACTOR and property OWNER involved, or their duly authorized representatives.
- B. Fertilizer and lime shall be delivered and stored in original unopened packages, kept dry, and not opened until needed for use. Damaged or faulty packages shall not be used.

1.6 JOB CONDITIONS

A. Existing Conditions

1. Perform topsoiling only after preceding work affecting ground surface is completed.

B. Environmental Requirements

1. Topsoil shall not be moved or spread in frozen or muddy condition.

C. Protection

1. Protect trees and shrubs to remain as part of final landscaping against damage.

PART 2 - PRODUCTS

2.1 TOPSOIL

A. Topsoil furnished from within or outside the project limits.

Contractor shall provide required quantity of topsoil to create a uniform depth of 8" after settlement on areas to be seeded or planted beds. If additional topsoil is required from off-site sources, it shall meet the following requirements:

1. Topsoil shall consist of natural loam topsoil free from subsoil, obtained from an area that has never been stripped. It shall be of uniform quality, free from hard clods, stiff clay, sods, stone, lime, cement, ashes, slag, or other undesirable material.
2. Topsoil shall contain a minimum of 5% organic matter, determined by loss of ignition of moisture-free samples dried in accordance with the current method of the Association of Official Agricultural Chemists. The acidity range shall be pH 5.0 to 7.0 inclusive. Maximum soluble salts: 500 ppm. The mechanical analysis of the soil shall be as follows:

Passing	Retained	Percentage
1" screen	--	100
1" screen	¼" screen (gravel)	3 (maximum)
¼" screen	No. 100 U.S.S. mesh sieve (sand)	40 – 60
No. 100 U.S.S. mesh sieve sand	Very fine sand, silt, or clay	40 – 60

3. The Contractor shall furnish certified report(s) of the testing laboratory showing the analysis of a representative sample of the topsoil for Lawn and Garden use he proposes to use. A separate report shall be furnished for each source of topsoil. The Contractor shall furnish the reports to the Owner's Representative before any topsoil is delivered to the site.
4. The Owner's Representative reserves the right to reject topsoil in which more than 60 percent of the material passing the No. 100 U.S.S. Mesh Sieve consists of clay as determine by the Bouyoucous hydrometer or by the Decantation method. All percentages are to be based on dry weight of sample. If the Owner's Representative directs, topsoil which varies only slightly from the Specifications may be acceptable by such corrections, as the Owner's Representative deems necessary.

5. If necessary, add peat, or approved composted leaf mold, at rate necessary to attain minimum organic content.

2.2 SOIL AMENDMENTS PER SOIL TEST RECOMMENDATIONS

A. Peat:

1. Shall be peat obtained from fresh water sites of sedge peat, reed peat, and sphagnum deposits consisting of organic matter of incompletely decomposed plant residues containing a negligible amount of woody matter, shredded to resemble texture of cultivated peats. Peat material, not cultivated or aged, shall meet the following requirements: minimum of 85% pure organic matter, maximum of 60% moisture by weight as received, minimum of 100% water absorption for each 24 hours submersion in water by weight, minimum of 350% water absorption from a dry basis by weight, maximum weight as received 30 pounds per cubic foot, equivalent to 2.47 cubic yards/ton.

Material shall pass a 1-inch sieve and not less than 50% be retained on a 1/2-inch sieve.

2. At the discretion of the Owner's Representative, obtain analysis from an accredited soils lab at the Contractor's cost.
3. If required, add peat to topsoil obtained from sources project limits, at rate necessary to attain minimum organic content of 5 percent.

- ### B. Mulch:
- Shall be shredded hardwood bark, 3/4" to 1 1/2" diameter as provided by the Contractor. It should be spread at 3" thick. There is to be no mulch at the crown of the plants. Note on color – not dyed mulch.

- ### C. Dolomite Lime:
- Shall be agricultural grade mineral soil conditioner containing 35% minimum magnesium carbonate and 49% minimum calcium carbonate, 100% passing No. 65 sieve, Kaiser Dolomite 65 AG or approved equal.

2.3 PLANTING SOIL MIX

- ### A. Planting Soil Mix:
- Mix topsoil with the following soil amendments and fertilizers in the following quantities:

Ratio of Loose Compost to Topsoil by Volume: 1:4

Weight of Slow-Release Fertilizer per 1000 Sq. Ft.: 1 to 2 pounds of water-insoluble nitrogen with a NPK ratio of either 3-1-2 or 3-1-1, unless otherwise indicated by soil tests.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Verify that clearing, earthwork, grading and other preceding work affecting ground surface have been completed.
- B. Final subgrade elevation and contours shall be smooth and uniform. All variations, lumps, ridges, and depressions in subgrade shall be corrected before topsoil work is started. Do not move heavy objects over the proposed subgrade planting areas.
- C. The subsoil shall be loosened to a depth of no less than 6", or as directed by the Owner's Representative.
- D. Do not proceed with topsoiling until conditions are satisfactory.
- E. Preparation of Subsoil
 1. Shape and dress area to be topsoiled. This work includes grading to required lines and elevations; removal of all stones, clods, lumps two inches or larger in any dimension; removal of all wires, cables, pieces of concrete, tree roots, and debris or other unsuitable material.
 2. Do not proceed with installation of topsoil until this work has been approved.

3.2 INSTALLATION

- A. Place an even layer that will produce required thickness.
Planting Areas – as shown on details.
Seeding Areas – 4" topsoil + 2" organic matter, mixed thoroughly;
- B. Adjust quantities of lime and fertilizer to correspond with soil test results.
- C. Remove stones, lumps, roots and other objects larger than one inch in any dimension from graded topsoil surface.

3.3 DEWATERING

- A. See Division 31 Section "Earth Moving" for dewatering measures.

3.4 STORAGE OF SOIL MATERIALS

- A. Stockpile satisfactory salvaged surface soil materials as well as imported topsoil, compost, soil amendments, etc. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.5 UTILITY TRENCH BACKFILL

- A. After utility trench has been backfilled satisfactorily to subgrade, amend subsoil as specified below and fill trench to finished grade with topsoil. To the following depths:
 - 1. Under proposed sod / seeding areas: min. 6 inches of topsoil
 - 2. Under proposed plant beds: min. 6 inches of topsoil.

3.6 FILL

- A. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.
- B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- C. Place and compact fill material in layers to required elevations as follows:
 - 1. Under seeding and planted areas, use satisfactory soil material.
 - 2. Under footings and foundations, use satisfactory soil material.

3.7 MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
 - 1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.8 COMPACTION OF BACKFILLS AND FILLS

- A. See Division 02 Section Earth Moving for specifications regarding backfill and fill.
- B. For the upper level of subgrades under lawn and plant bed areas, compact soil to the following percentages of maximum dry unit weight according to ASTM D 698:

1. Under lawn areas, compact the upper 12 inches below subgrade at 85 percent.
2. Under plant bed areas, compact the upper 24 inches below subgrade at 85 percent.

3.9 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 1. Provide a smooth transition between adjacent existing grades and new grades.
 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 1. Unpaved Areas: Plus, or minus 1 inch.
 2. Walks: Plus, or minus 1 inch.
 3. Pavements: Plus, or minus 1/2 inch.

3.10 SOIL PREPARATION FOR SEEDING AREAS

- A. Limit seeding subgrade preparation to areas to be planted.
- B. Disturbed areas and areas stripped of topsoil:

Loosen subgrade to a minimum depth of 4 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

 1. Apply compost and fertilizer directly to subgrade before loosening.
 2. Thoroughly blend planting soil mix off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.
 - a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
 - b. Mix lime with dry soil before mixing fertilizer.
 3. Spread planting soil mix to a depth of 6 inches but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
 - a. Spread approximately one-half the thickness of planting soil mixes over loosened subgrade. Mix thoroughly into 4 inches of subgrade. Spread remainder of planting soil mix.
 - b. Reduce elevation of planting soil to allow for soil thickness of sod.
- C. Undisturbed area: If lawns are to be planted in areas unaltered or undisturbed by excavating, grading, or surface soil stripping operations, prepare surface soil as follows:
 1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
 2. Loosen surface soil to a depth of at least of 4 inches. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 6 inches of soil. Till soil to a homogeneous mixture of fine texture.
 - a. Apply fertilizer directly to surface soil before loosening.
 3. Remove stones larger than 1 inch in any dimension and sticks, roots, trash, and other extraneous matter.
 4. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.
- D. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges,

and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future.

- E. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- F. Restore areas if eroded or otherwise disturbed after finish grading and before planting.

3.11 SOIL PREPARATION AT PLANTING BEDS

- A. Loosen subgrade of planting beds to a minimum depth of 12 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 - 1. Spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.
 - a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
 - b. Mix lime with dry soil before mixing fertilizer if necessary from soil test recommendation.
 - 2. Spread planting soil mix to a depth of 6 inches but not less than required to meet finish grades after natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
 - a. Spread approximately one-half the thickness of planting soil mixes over loosened subgrade. Mix thoroughly into to 4 inches of subgrade. Spread remainder of planting soil mix.
- H. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Rake, remove ridges, and fill depressions to meet finish grades.
- I. Restore planting beds if eroded or otherwise disturbed after finish grading and before planting.

3.12 PROTECTION

- A. When required, erect temporary signs and barriers to protect topsoiled area.

3.13 MAINTENANCE

- A. Immediately before establishment of planting material, re-topsoil and re-grade areas which become eroded, settled or otherwise disturbed.
- B. Perform all maintenance work in accordance with the Specifications without additional compensation.
- C. Maintenance period to extend until installation of planting material.

3.14 CLEANING

- A. Immediately clean spills, soil, and conditioners on paved and finished areas.
- B. Haul and dispose of topsoil more than the quantity required for the project off site.
- C. Dispose of protective barricades and warning signs at termination of maintenance period.

END OF SECTION 329119

