Section 723 - LANDSCAPE SOIL (TOPSOIL)

723.01 Description

Landscape soil shall be used for soil preparation and amending existing soil for landscape areas, erosion control areas, and lawn areas. The terms landscape soil and topsoil can be used interchangeably for this specification.

Lawn areas are defined as any area that will support grass either planted as seed or sod including playing fields. Landscape areas are defined as any area that will support perennials, annuals, bulbs, shrubs, and trees.

723.02 Quality Assurance

A. If the Drawings or Specifications disagree among them or the Drawings disagree with the Specifications, the greater quantity and better quality of work shall be bid upon and provided by the Contractor, unless otherwise indicated by the M-NCPPC Construction Manager in writing. If discrepancies are identified, the Contractor shall notify M-NCPPC immediately for direction, prior to proceeding with work.

B. All work shall meet minimum requirements of Montgomery County Department of Permitting Services Topsoil specification as well as what is contained within this specification.

C. The submittals listed below will be made for the landscape soil aspect of this project to the M-NCPPC Construction Manager.

1. Manufacturer's and/or source data for all materials including soils.

2. Certified chemical and mechanical analysis of samples of topsoil, existing soil, soil mixes, soil amendments and organic compost materials used in making of soil mixes.

3. Submit a list of equipment anticipated for soil work, unloading materials, handling and installation.

4. Samples provided by the Contractor shall be typical of material to be delivered to the site and shall provide an accurate indication of color, texture, and the organic make-up of the material. Submit three pound samples of the following:

   a. Organic Matter: one sample of each type of organic matter to be used.
   b. Imported Off-Site Soil Prior to Amendment: one sample
   c. Amended Off-Site Soil: one sample

5. Submit soil tests to the M-NCPPC Construction Manager for all soil to be
obtained from both on-site and off-site as described in 723.02D.

D. Soil Testing

1. All soil testing shall be done at the Contractor’s expense. Soil tests shall be conducted by a state laboratory or recognized commercial laboratory. Each sample shall be extracted from a six-inch deep core and prepared in accordance with recommendations of the soil-testing laboratory.

2. Each soil test shall determine soil texture (mechanical analysis), pH, magnesium, phosphorus, potassium, soluble salts, total calcium, nitrogen, and percent organic matter. If the soil is sandy, it shall also be tested for boron. Soil test results shall include laboratory recommendations for soil amendments to correct deficiencies and accomplish planting objectives. Follow recommendation of Landscape Specification Guidelines, latest edition, Landscape Contractor’s Association of Maryland, Virginia, and The District of Columbia, Seeding and Sodding Section for optimum plant growth and provide course of action based on their recommendation. The Contractor shall submit plans with the soil test results showing the locations of all soil tests. Incomplete test results and plans will be rejected by M-NCPPC, and shall be redone at the Contractor’s expense.

3. For all new soils provided from off-site sources, obtain one soil test for each soil source per 500 cubic yards of soil and submit soil test results and soil amendment recommendations to M-NCPPC Construction Manager for review and acceptance prior to distributing and amending soil.

4. For all existing stockpiled topsoil to be redistributed on site, obtain one soil test per 500 cubic yards of soil prior to application. Submit soil test results and soil amendment recommendations to M-NCPPC Construction Manager for review and acceptance prior to redistributing and amending soil.

5. Where paving and base materials have been removed and the area is to be re-established with lawn or planting, obtain one composite soil test per 10,000 square feet of subsoil material, or at least one composite test for each separate excavated area. Each composite soil test shall consist of no less than five one-half cup samples taken at random from each sampling area. Each sample shall be taken from a six-inch deep core. The five or more samples shall be mixed together to form a composite sample, from which a pint sample shall be extracted, air-dried and tested. Submit soil test results and subsoil amendment recommendations to M-NCPPC Construction Manager for review and approval subsoil amendment recommendations prior to filling the area with soil.

6. For existing soil to remain in place and be amended for landscape areas, submit one composite soil test for each isolated bed area (separated from other beds by paving). For existing soil to remain in place and be amended for lawn areas, submit one composite soil test per 20,000 square feet. Composite tests for planting areas shall be mixed from a minimum of five samples as described in #5.
above. Composite tests for lawn areas shall be mixed from a minimum of ten samples as described in #5 above. Submit soil test results and soil amendment recommendations to M-NCPPC Construction Manager for review prior to amending soil.

7. Following completion of soil amendment operations and fine grading, and prior to planting, 10 additional soil samples shall be taken at random from planting and lawn areas throughout the site. The M-NCPPC Construction Manager shall determine locations of tests. These samples shall not be composite samples and are to assure that soils have been amended properly prior to planting or installation of lawn. Submit soil test results to M-NCPPC for review. If it is apparent that soils have not been amended as specified or protected from contamination, areas not in compliance with specified requirements shall be reworked and retested as required until soils meet specified requirements. All rework and retesting shall be at the Contractor’s expense.

E. Delivery, Storage, and Handling

1. Package materials will be delivered in manufacturer’s unopened container or bundles; they will be identified with name, brand, type, weight, and analysis. Packaged materials will be stored in a manner that will prevent damage or intrusion of foreign matter. Any material that becomes contaminated will be removed from the job site.

2. Organic amendments will not be delivered or installed excessively wet or frozen.

3. Delivery location, stockpile locations and schedule will be coordinated with the M-NCPPC Construction Manager prior to delivery. Soils will be protected from eroding while stockpiled on site.

4. Bulk materials will be stabilized after delivery according to the Sediment Control Plan.

F. Job Conditions

1. The Contractor shall notify the M-NCPPC Construction Manager at least ten (10) calendar days prior to the start of landscape soil installation.

2. Determine location of all underground utilities prior to soil work. Existing utilities, paving, vegetation, and other facilities will be protected from damage caused by soil installation operations. All damaged areas; facilities and materials shall be restored, repaired or replaced as directed by M-NCPPC at the Contractor’s expense.

3. Commencement of work constitutes acceptance of conditions under which work is to be performed. After such acceptance, Contractor will be responsible for correcting unsatisfactory and defective work resulting from unsatisfactory
723.03 M aterials

A. Landscape Soils are amended existing stockpiled topsoil, amended existing in-place soil, or amended soil from an off-site source that has been spread to finish grade, will support plant growth, and meets the following requirements. The soil shall closely match the mechanical analysis (percentage sand, silt and clay) of the existing subsoil. Soil shall be free of cinders, stones, slag, coarse fragments, gravel, sticks, trash, roots, and other debris over 3/4”. Soil will be to a depth of 12” for landscape areas, 6” for lawn areas, and 18” for individual trees and shrubs. It must also be free of plants or plant parts of Bermuda grass, Quack grass, Johnson grass, Nutsedge, Poison Ivy, Phragmites, Canada thistle, or any noxious weeds. The soil shall contain no substances harmful to plant growth. If the existing native subsoil is a bank run gravel, the topsoil or landscape bedding soil shall be a sandy loam.

1. Soil for lawn areas:
   a. The pH shall be between 6.0-7.0.
   b. The acceptable amount of Magnesium shall be 35 pounds per acre; Phosphorus shall be 100 pounds per acre; Potassium shall be 85 pounds per acre, and Nitrogen shall be a minimum of 50 pounds per acre.
   c. Soluble salts shall not exceed 3 mmhos/cm. Calcium levels shall not exceed 2000 parts per million.
   d. Organic Matter shall be greater than three percent.

2. Soil for Landscaping areas
   a. The pH shall be based on the specific plant requirements but will be within the range of 5.5-6.5.
   b. The acceptable amount of Magnesium shall be 71-124 pounds per acre; Phosphorus shall be 62-102 pounds per acre; Potassium shall be 85-160 pounds per acre, and Nitrogen shall be a minimum of 50 pounds per acre.
   c. Soluble salts shall not exceed 4mmhos/cm, Calcium levels shall not exceed 2,000 parts per million.
   d. Organic Matter shall be greater than five percent.

3. The following soil amendments may be used to amend the soil to meet specified requirements. Soil amendments and rates of application are to be determined based on soil test results. Specific recommendations for the type of amendments can be found in the Landscape Specification Guidelines by the Landscape Contractors.
Association of MD, DC, and VA (most recent addition).

a. Sulfur: Sulfur for adjustment of soil pH shall be an unadulterated flower of sulfur.

b. Lime: Ground or pulverized limestone, which contains a maximum of 50 percent total oxides.

c. Organic Matter: To increase organic matter based on soil test results, the following materials can be used:

   I. Yard Debris Compost: Compost made from yard trimmings, such as leaves, grass clippings and pruning that have been properly composted, are mature and have been sieved through a ¾ inch screen. Compost shall be free of trash and contain no toxic substances harmful to plant growth. Acceptable Product: Leafgro, available through Maryland Environmental Services or equivalent approved by M-NCPPC Construction Manager.

   II. Biosolids Compost/Composted Sludge: Compost made from polymer dewatered biosolids, that meets the minimum requirements of EPA 503 standards and permitted by the Maryland Department of the Environment under COMAR 26.04.06. It is mature and has been sieved through a ¾” screen. The pH range shall be 6.2-7.2.

III. 

d. Fertilizer: Fertilizer analysis and rate of application shall be determined based on soil test results. Fertilizer shall be uniform in composition, free flowing and suitable for application with approved equipment. If compost is used to amend soil, fertilizer is usually not required.

e. Sand: Clean, washed, coarse masonry sand, sized up to ¼” particles.

f. Diatomaceous Earth: Diatomite, Isolite, or approved equal.

723.04 Construction

A. Examination and Verification of Conditions

1. The areas and conditions where planting amendments are to be installed will be examined, and the Contractor will be notified of conditions detrimental to proper and timely completion of work. Work will not proceed until unsatisfactory conditions are corrected to permit proper installation of work.

2. Cooperation will be undertaken with other trades working in and adjacent to work areas. Drawings that show the development of the entire project will be examined to gain familiarity with the scope of other required work.
B. Soil Preparation

1. All areas to receive landscape soil shall be free of construction debris, refuse, compressible or decayable materials, stones greater than two inches and standing water to a depth of 12” for landscape areas and 6” for lawn areas. Refer to removals work for depth of excavation of specific areas. Do not place fill when fill materials are wet, frozen or not at the optimum moisture content for proper compaction. Adjust sub grade levels as required to ensure that planting and lawn areas have adequate drainage. Installation of all utilities and irrigation mainlines shall be competed prior to beginning landscape soil work.

2. After the rough grade of the existing soil is accepted by M-NCPPC, the Contractor shall perform soil tests as specified (715.2.B.5-6) and submit test results and soil amendment recommendations to the M-NCPPC Construction Manager.

3. The Contractor shall install soil amendments over the existing soil as approved by M-NCPPC Construction Manager. Soil amendments shall be tilled into the soil to loosen existing soil to a depth of 12” for landscape areas, and 6” for lawn areas. Excavation is not required. Rake the area smooth and compact the subsoil not to exceed 65 percent compaction. Level and regrade planting bed prior to installation of landscape soil. Three inches of landscape soil shall be installed on top unless drawings indicate a different amount.

   a. Athletic Fields: After soil preparation, please refer to section 728 – Soccer/Ball field Construction.

4. Landscape soil shall be amended to meet the criteria of this section. Soil shall be mixed at the stockpile or off site, except for areas of existing soil to be amended in place. Amendments shall be mixed into soil by layering the soil and soil amendments in alternating thin layers (not to exceed six inches) and mixing them uniformly as each layer is added.

5. Fill excavated areas with landscape soil amended to meet the criteria of this section. Soil shall be placed in successive lifts no thicker than six inches and compacted with hand-operated equipment to a maximum dry density of 65 percent. Over compaction of fills, which would be detrimental to planting objectives shall be corrected by loosening fills through tilling or other means and recom pacting to specified limits at no additional cost to M-NCPPC.

6. The soil shall not be tilled or amended when the soil’s moisture level is above field capacity or when soil is frozen.

7. For soil preparation in critical root zone areas of existing trees, all work must be done by hand with shovels and rakes, unless otherwise approved in writing by the M-NCPPC Construction Manager.
723.05 Measurement and Payment

Payment will be full compensation for all material, labor, equipment, tools, and incidental items necessary to complete the work. Payment shall be made on a unit rate or lump sum basis as shown in the bid proposal.