SECTION 329120 - EXPANDED SLATE STRUCTURAL SOIL FOR TREES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections apply to work of this section.

1.2 SUMMARY

A. Section Includes:

1. Structural Soil for the entire site including within the right-of-way.

B. Related Sections:

1. Section 312000 "Earth Moving" for excavation, filling and backfilling, and rough grading.
2. Section 319100 "Planting Soils" for plants.
3. Section 329300 "Plants" for border edge restraints.
4. Section 334600 "Subdrainage" for subsurface drainage.

1.3 DEFINITIONS

A. Finish Grade: Elevation of finished surface of planting soil.

B. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

C. Planting Soil: Standardized topsoil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

D. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.

E. Subsoil: Usually all soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

F. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1. Expanded Slate Structural Soil: Include product label and manufacturer's installation instructions specific to this Project.

Carolina Stalite Company 800-898-3772 www.permatill.com

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

1. Product Certificates: For soil amendments and fertilizers from manufacturer.

2. Material Test Reports: For imported or manufactured topsoil.

B. Submit manufacturer's technical product data and certified laboratory test results for the following:

1 3/4" Expanded Slate
2. Sandy Clay Loam
3. Backfill topsoil

C. Sample: Provide one (1) quart of each kind of structural soil in heavy duty clear resealable plastic freezer storage bags labeled, “Structural Soil”, and the type and the project name.

1.6 QUALITY ASSURANCE

A. Provide structural soil mix prepared by a firm regularly engaged in the production of the specified items.

B. Preinstallation Conference: Conduct at the Project site.

1.7 DELIVERY, STORAGE AND HANDLING:

A. When stockpiling finished planting mix, cover with plastic tarps to prevent drying out or soil separation from rainfall.

B. Install planting mix within 48 hours of mixing.

C. Do not deliver or place soil in frozen, wet, or muddy conditions.

PART 2 – PRODUCTS

2.1 GENERAL PRODUCT REQUIREMENTS:

A. Provide a structural planting soil using the two components listed below that meet ASTM standards as follows:

1. 3/4” Expanded Slate 80%
2. Sandy Clay Loam 20%

a. Percentages of sand and clay may vary to meet test requirements.

B. Provide expanded slate from Carolina Stalite Company, Salisbury, NC;877-737-6284; www.permatill.com

C. Compaction: When calculating the volume necessary for the project, add approximately 18% to the calculated volume to allow for compaction which occurs during installation due to driving small equipment over the product, in addition to the natural settling process.

2.2 STRUCTURAL SOIL COMPONENTS:

A. Size 3/4" Rotary Kiln Expanded Slate

1. Only non-hazardous fuels such as coal or natural gas may be used to process the slate.
2. Unit Dry Weight loose: 48 lb./c.f. to 55 lb./c.f. (ASTM C29)
   (Saturated surface loose: 55 lbs./c.f. to 60 lbs./c.f.)
3. Specific Gravity: 1.45 to 1.60, Dry bulk (ASTM C127)
4. Gradation: 3/4" - #4 size

Sieve Size	% Passing
1"	100
3/4"	90-100
3/8"	10-50
#4	0-10

5. Test for degradation loss using Los Angeles Abrasion testing in accordance with ASTM C-131 modified method FM 1-T096. No more than 28% of the weight of the aggregate must be lost to degradation.

B. Sandy Clay Loam:

1. Texture: 40 - 65% sand
   15 – 25% silt
   20 – 35% clay
   2 – 5 % organic matter
2. Sandy Clay Loam is for mixing with structural soil only and not to be confused with "Planting Soil" specified in Division 32 "Plants".

3.0 PREPARATION:

A. General:

1. Structural Soil is shown in a public right-of-way or easement. Obtain approvals from proper authorities before and after placing Structural Soil
2. Achieve 90% of maximum dry density for the subgrade. (ASTM D698)

B. Preparing Subgrade:

1. The subgrade shall be prepared according to the following procedure:

   a. Remove all organic matter, debris, loose material and large rocks.
   b. Dig out soft and mucky spots and replace with suitable material.
   c. Loosen hard spots; uniformly compact subgrade to 95% of its maximum dry density.

C. Perforated Underdrain System (if used):

1. Install underdrain system, with sock or soil separator fabric, according to drawings and connected to storm drain.

3.3 INSTALLATION OF STRUCTURAL SOIL MIX:

A. General:

1. Install the soil drains ensuring the structural soil is properly compacted under and around each pipe.
2. Wooden tree pit forms may be used.

B. Placing and Compacting Structural Soil:

1. Place structural soil mix in horizontal lifts not exceeding 12 inches depth. Compact using a vibratory plate compacting machine. Perform a minimum of two passes, of not less than 10 seconds per pass, before moving the vibratory plate to the next adjacent location. Additional passes may be required should the field engineer determine additional compaction is necessary to insure stability of the layer. Continue placing and compacting 12 inch lifts until the specified depth is reached.
2. For large spaces, a vibratory steel roller weighing no more than 12 tons static weight can be used. Horizontal lifts should not exceed 12 inches compacted. The minimum number of passes is two and maximum number is four. Additional passes may be required should the field engineer determine additional compaction is necessary to insure stability of the layer.

3.4 CONCRETE PLACEMENT

A. The concrete subbase for the unit pavers can be placed as specified directly on the approved compacted structural soil.

3.5 TREE PIT PREPARATION:

A. Tree Pit Excavation:

1. Excavate the tree pit using the following procedure:

   a. Excavate the structural soil mix to a depth equal to the height of the root ball of the tree to be planted. Remove the structural soil to within no more than one foot of the edge of the paved area.
   b. Place the tree in the pit and backfill as described below as soon as possible. No tree pit shall remain excavated for more than 2 hours unless forms are used.

B. Tree Pit Backfill Planting Mix:

1. Backfill tree pit using the following procedure:

   a. Remove any wooden forms. Immediately place the tree in the pit as detailed and replace the excavated structural soil with either of the following:
      i. Planting soil for trees as specified in Division 32 section “Planting Soils”.
      ii. A 50-50% mix of paragraph “i” above and structural soil excavated from the tree pit.
   b. Hand tamp the planting mix in 12 inch lifts until the pit is filled to the specified grade.

c. Do not use excavated soil as engineered fill to support paving or structures. Excess excavated structural soil mix may be used for other planting backfill operations.

3.6 CLEANING AND PROTECTION:

A. Use Roadboarding for rubber tired vehicles on the brick paving surfaces if planting occurs after brick pavers are installed.

B. Broom clean paved areas and cover stockpiled material after each day's operations.

END OF SECTION 329120