

02841 SOIL AMENDMENT GREEN INFRASTRUCTURE STRATEGY

[NTS: This specification is intended to be used as part of the Milwaukee Metropolitan Sewerage District's Green Solutions Program for implementation of green infrastructure strategies into Contract Documents by local municipalities or other entities. The specification is also intended to be used in conjunction with the Green Infrastructure Sizing Calculator and the Green Infrastructure Typical Details developed for the Green Solutions Program. The specification is considered to be a technical guidance document to assist users with the design of green infrastructure strategies. It is the responsibility of the local municipality or design engineer to make revisions to the specification as needed for specific design projects. It is recommended the documents are reviewed by a licensed professional engineer before releasing for construction. Note that the specification was last updated by the District in 2016.]

A. SCOPE

This Section covers the work necessary to furnish and install soil amendment green infrastructure strategies, including the incorporation of compost into the existing soil and soil stabilization following incorporation.

1. GENERAL

[NTS: Update language of this Section as necessary based on applicable references to front-end specifications.]

See CONDITIONS OF THE CONTRACT, and Division 1, GENERAL REQUIREMENTS, which contain information and requirements that apply to the work specified herein and are mandatory for this project.

2. RELATED WORK

[NTS: The list below may not be fully inclusive depending upon the specifics of each individual project. Update language of this Section as necessary based on applicable references to other technical specification sections.]

The applicable requirements, materials and workmanship specified in the following Sections are included by reference in this Section. The list below is from the Wisconsin Department of Transportation (WisDOT) Standards and Specifications for Highway and Structure Construction, latest edition.

Section 201 Clearing and Grubbing
Section 627 Mulching
Section 628 Erosion Control
Section 630 Seeding

The following specification as developed for the Milwaukee Metropolitan Sewerage District's Green Solutions Program may also include related work.

Section 02840 Exterior Plants (Native Landscaping and Stormwater Trees)

3. SUBMITTALS

a. SUBMITTALS REQUIRED PRIOR TO BID OPENING

Prebid approval of materials is not required. Suppliers and products have been identified as a means of establishing quality, but not for purposes of limiting competition.

b. SUBMITTALS DURING CONSTRUCTION

[NTS: Update language of this Section as necessary based on applicable references to front-end specifications.]

Submittals during construction shall be made in accordance with Section 01300 in Division 1, GENERAL REQUIREMENTS. In addition, the following specific information shall be provided:

1. Compost Analysis: CONTRACTOR shall submit compost analysis by a qualified soil-testing laboratory showing conformance with compost specifications. Submit compost analysis to OWNER for review and approval prior to installation.

4. DEPARTURES FROM PLANS AND SPECIFICATIONS

Submit in writing to the OWNER for review, details of any proposed departures from these Contract Documents, and the reasons therefor. Submit such requests as soon as practicable after the Notice to Proceed. Make no such departures without prior written acceptance of the OWNER.

5. SHOP DRAWINGS, MATERIAL REVIEW AND SAMPLES

- a. Compost Analysis

6. TOLERANCES

Tolerances for soil amendment green infrastructure strategy construction and materials shall conform to the requirements hereinafter specified. The depths of roto-tilling shall be within 0.25 feet (+) and 0.08 feet (-) and the depths of compost shall be within 0.08 feet (+) and 0.04 feet (-) of the depths specified in the drawings.

B. MATERIALS

1. GENERAL

All soil amendment green infrastructure strategies shall meet the requirements of the

following specifications. The OWNER reserves the right to take samples of materials whenever deemed necessary.

2. COMPOST

The compost shall conform to the following specifications:

- a. The compost shall meet the requirements of Wisconsin Department of Natural Resources Specification S100, Compost, as follows:
 1. Particle Size – 98% of the compost shall pass through a 0.75-inch screen.
 2. Physical Contaminants – Less than 1% combined glass, metal and plastic.
 3. Organic Matter/Ash Content – At least 40% organic matter; less than 60% ash content.
 4. Carbon to Nitrogen Ratio – 10-20:1 C:N ratio.
 5. pH – Between 6 and 8.
 6. Soluble Salt – Electrical conductivity below 10 dS m⁻¹ (mmhos cm⁻¹)
 7. Moisture Content – Between 35% and 50% by weight.
 8. Maturity – The compost shall be resistant to further decomposition and free of compounds, such as ammonia and organic acids, in concentrations toxic to plant growth.
 9. Residual Seeds & Pathogens – Pathogens and noxious seeds shall be minimized.
 10. Pathogens – The compost shall meet the Class A requirements for pathogens as specified in s. NR 204.07(6)(a), Wis. Adm. Code.
 11. Other Chemical Contaminants – The compost shall meet the high quality pollutant concentrations as specified in s. NR 204.07(5)(c), Wis. Adm. Code.

C. WORKMANSHIP

1. CONSTRUCTION SITE STABILIZATION

- a. CONTRACTOR shall not construct soil amendment strategies until all of the contributing drainage areas are stabilized to the satisfaction of the OWNER. Do not use the soil amendment strategies as temporary sediment control facilities during construction. It is the responsibility of the CONTRACTOR to sequence the construction of the soil amendment strategies in a manner such to prevent sediment from entering the soil amendment strategies as a result of construction activities.
- b. Construction site runoff from disturbed areas shall not be allowed to enter the soil amendment strategies. CONTRACTOR shall use sediment control measures as necessary to prevent construction site runoff from entering the soil amendment strategies. Sediment control measures indicated on design

drawings are not intended to limit the CONTRACTOR in the manner and techniques to control erosion. It is the responsibility of the CONTRACTOR to control erosion from this site during construction.

- c. Sediment that enters the soil amendment strategies during construction as a result of construction activities shall be removed by the CONTRACTOR at no cost to the OWNER. In circumstances where, in the opinion of the OWNER, sediment significantly impacts the functionality of the soil amendment strategy, 1 inch of additional composts shall be added and rototilled into the soil in accordance with the drawings. Reconstruction of soil amendment strategy shall be completed by the CONTRACTOR at no cost to the OWNER.
- d. CONTRACTOR shall not store any equipment or materials within the perimeter of the soil amendment strategy area.

2. SUITABLE WEATHER

- a. Construction of the soil amendment strategies shall be suspended during periods of rainfall or snowmelt. Construction shall remain suspended if ponded water is present or if residual soil moisture contributes significantly to the potential for clumping or other forms of compaction within the soil amendment strategies. CONTRACTOR shall inspect and maintain all sediment control measures protecting both the soil amendment strategies and the entire project site following periods of rainfall or snowmelt.

3. COMPACTION AVOIDANCE

- a. Compaction of the soils in the area the soil amendment strategy shall be minimized. During site development, the area dedicated to the soil amendment strategy shall be cordoned off to prevent access by heavy equipment. Acceptable equipment for constructing the soil amendment strategy includes light equipment with turf type tires, marsh equipment, or wide-track loaders.
- b. If compaction of the soil amendment strategy occurs, additional roto-tilling shall be completed to the satisfaction of the OWNER. Additional roto-tilling shall not be used by CONTRACTOR in lieu of proper compaction avoidance techniques.

4. INSTALLATION OF SOIL AMENDMENT STRATEGY

- a. Installation of Soil Amendment Strategy - The following apply:
 - 1. The 4 inches of subsoil below the 8 inches of the soil amendment layer shall be scarified or loosened by CONTRACTOR by roto-tilling prior to placement of compost. If soil is too dense for use of

roto-tiller, soil should first be loosened using soil ripper then roto-till.

2. CONTRACTOR shall roto-till soil amendment strategy to a depth of 8 inches. If soil is too dense for use of roto-tiller, soil should first be loosened using soil ripper then roto-tilled.
3. CONTRACTOR shall evenly distribute 2 inches of compost over the entire, loosened surface of the soil amendment strategy.
4. Following distribution of the compost, CONTRACTOR shall roto-till the entire soil amendment strategy area several times to incorporate soil amendment compost. Roto-tilling passes shall be completed in the perpendicular direction to the previous pass.
5. After roto-tilling has been completed and accepted by OWNER, CONTRACTOR shall water or hand roll soil amendment strategy area for compaction and rake to fine grade to match existing ground surface.
6. CONTRACTOR shall seed and mulch soil amendment strategy area in accordance with the drawings. If seeding and mulching is not shown on drawings (unless specifically noted that area is not to be seeded), CONTRACTOR shall completing seeding in accordance with WisDOT Standards and Specifications for Highway and Structure Construction Section 630 - Seeding and complete straw mulching in accordance with WisDOT Standards and Specifications for Highway and Structure Construction Section 627 - Mulching.

5. NOTIFICATION

- a. CONTRACTOR shall notify OWNER following the loosening or scarifying of subsoil, prior to placement of compost, prior to roto-tilling of compost, and prior to watering or hand rolling for compaction. CONTRACTOR shall only proceed with the installation of placement of compost, roto-tilling of compost, and watering or handrolling for compaction of the soil amendment strategy with approval of the OWNER.

D. PAYMENT

Except as noted otherwise hereinafter payment for the work in this Section will be based on the quantities and unit bid prices for each of the individual bid items for the soil amendment green infrastructure strategy. Payment will be made at the unit prices stated in the Bid. The unit prices shall constitute full compensation for all labor, equipment, materials, and incidentals necessary for the satisfactory completion of the work.

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