

629-R-630 PLANT GROWTH LAYER

(Revised 11-15-17)

The Standard Specifications are revised as follows:

SECTION 629, BEGIN LINE 1, INSERT AS FOLLOWS:

SECTION 629 – PLANT GROWTH LAYER

629.01 Description

This work shall consist of developing, furnishing, and placing an approved plant growth layer suitable for supporting the growth of permanent vegetation in accordance with 105.03.

MATERIALS

629.02 Materials

Materials shall be in accordance with the following:

<i>Clay</i>	<i>903.01</i>
<i>Compost</i>	<i>914.03(b)</i>
<i>Fertilizer</i>	<i>As Defined*</i>
<i>Lime</i>	<i>913.04(b)1</i>
<i>Sand</i>	<i>903.01</i>
<i>Silt</i>	<i>903.01</i>
<i>Topsoil</i>	<i>914.01</i>
<i>Water</i>	<i>913.01</i>

** Fertilizer shall be a blend of commercially available materials such that when used, the requirements for phosphorus and potassium are in accordance with 914.01(a), Table 1.*

Soils for the plant growth layer shall be obtained from one or more of the following approved sources:

- (a) existing soils within the construction limits;*
- (b) commercial sources;*
- (c) project specific borrow pits.*

The plant growth material shall be a fertile, friable and loamy soil of uniform quality in accordance with 914.01. The pH requirements for compost shall be in accordance with 914.03(b). The materials used shall be free from any objectionable plant material or undesirable vegetative debris which would be harmful to plant life or may prevent the formation of a suitable seedbed.

All material used for the plant growth layer shall be stored in a manner that minimizes the potential for erosion.

The Contractor shall provide all necessary components for the plant growth layer.

CONSTRUCTION REQUIREMENTS

629.03 General Requirements

The plant growth layer shall consist of materials suitable for the healthy growth of permanent vegetation in accordance with 327 IAC 15-5. Growth layer components shall be blended in accordance with 914.01. If necessary, prior to placement, growth layer materials shall be treated with a broad spectrum herbicide with no residual effect in a manner that assures that all noxious weeds and invasive plants are killed.

629.04 Process Control

An estimate of the existing top soil profile conditions shall be obtained from the geotechnical report. The Contractor shall be responsible for all tests required to determine the recommended component type and content for the growth layer. Prior to installation, the Contractor shall prepare and submit to the Engineer a list of all proposed growth layer components, their application rates, their material sources, and an installation timeline. This list shall provide specifics describing all components necessary to bring the plant growth layer into compliance with 914.01. The list shall be specific to the contract, and be signed and dated by the Contractor.

629.05 Installation and Finishing

When modifications are necessary for the existing surface to meet the requirements of 914.01, the plant growth layer shall be installed uniformly in the locations shown on the plans. The area on which the plant growth layer is to be placed shall be free of all loose and foreign material greater than 1 in. in diameter.

Prior to placement of the growth layer, the existing surface shall be scarified to a nominal depth of 3 in. to ensure bonding of the growth layer with the existing surface.

The Contractor shall have the option of placing the plant growth layer for any designated area using one of the following methods:

- (a) Placement of the necessary components directly on the existing scarified soil then tilling to produce a minimum uniformly consistent 6 in. depth of plant growth layer.*
- (b) Placement of 3 in. of prepared growth layer material on the existing scarified soil and tilling to thoroughly mix the soils. The Contractor shall then spread 2 in. of comparably prepared growth layer material over the tilled soil in a uniform manner.*
- (c) If existing soils are found to meet the requirements of 914.01 without adding additional components, the soils shall be tilled to produce a minimum uniformly consistent 6 in. depth.*

Within 24 h after final tilling, acceptance samples shall be taken in accordance with ITM 515. All acceptance testing of growth layer materials shall be performed by a Department approved geotechnical lab. The growth layer shall then be lightly compacted in order to produce a uniform final graded surface conducive to plant growth. Seeding or sodding shall take place within seven calendar days after final growth layer compaction. Seeding of the growth layer shall be in accordance with 621.05(b) and 621.05(c). Sodding of the growth layer shall be in accordance with 621.09.

629.06 Method of Measurement

Plant growth layer will be measured by the square yard, complete in place.

629.07 Basis of Payment

The accepted quantity of the plant growth layer will be paid for at the contract unit price per square yard, complete in place.

Payment will be made under:

Pay Item	Pay Unit Symbol
Plant Growth Layer.....	SYS

The cost of all soil sampling, testing, component recommendations, preparation of the growth layer component list, placing, tilling, compaction, and final grade preparation shall be included in the cost of the plant growth layer.

The cost of furnishing of all materials and equipment, and all necessary incidentals shall be included in the costs of plant growth layer.

Erosion control methods used for the protection of stockpiled plant growth layer materials will not be measured for payment and shall be included in the cost of plant growth layer.

SECTION 914, BEGIN LINE 3, DELETE AND INSERT AS FOLLOWS:

914.01 ~~Special~~ Topsoil for Roadside Development

~~This topsoil shall consist of loose friable soil, free of refuse, stumps, large roots, rocks over 2 in. in diameter, brush, weeds, or other material which would be detrimental to the proper development of vegetative growth. It shall be capable of supporting normal vegetation as demonstrated by the growth of healthy vegetation on it. It shall not be taken from a source known to contain any of the noxious weeds defined as such in the Indiana State Seed Law, IC 15-4-1.~~

~~Topsoil shall have a pH value of 6.2 to 7.4. Testing for pH value shall be performed in accordance with AASHTO T 289. Agricultural limestone may be added to topsoil in order to raise the pH to meet specification requirements. The addition of agriculture limestone shall be determined based on tests performed by a laboratory approved by the Office of Geotechnical Services. Topsoil shall not be incorporated into the work until it is approved.~~

All material shall be limited to loose friable soil, free from refuse, stumps, large roots, rocks over 1 in. in diameter, brush, asphalt, concrete, heavy clay clumps, toxic substances, weeds or other material which would be detrimental to plant establishment. All materials shall be capable of supporting the required vegetation in accordance with 327 IAC 15-5 as demonstrated by the growth of installed, healthy vegetation. All materials used shall be free of known weeds and productive plant parts classified in the IC 15-16-7-2 as a noxious weed species, and any plants listed on the Indiana Invasive Species Council Invasive Plant List under the high invasive rank category.

(a) Topsoil Requirements

The clay, silt and sand components may be composed of existing materials from the construction site, commercial source materials, or an approved composition of existing and manufactured materials. Topsoil shall meet the requirements shown in Table 1 below. All acceptance testing shall be performed by a Department approved geotechnical lab.

The sum of the combined percentages of all sand, silt, and clay components utilized in any topsoil mixture shall be no less than 90% of the total weight of the mixture.

The amount of phosphorus added as an amendment to any topsoil mixture shall be limited to 150 lbs per acre per year.

TOPSOIL REQUIREMENTS AFTER INSTALLATION			
<i>Requirement</i>	<i>Measurement</i>	<i>Range</i>	<i>Test Method</i>
<i>pH</i>		6.0 - 7.3	AASHTO T 289
<i>Clay</i>	<i>Weight</i>	5% - 30%	AASHTO T 88 and T 89
<i>Silt</i>	<i>Weight</i>	30% - 80%	AASHTO T 88 and T 89
<i>Sand</i>	<i>Weight</i>	5% - 50%	AASHTO T 88 and T 89
<i>Organic Material</i>	<i>Weight</i>	3% - 10%***	AASHTO T 267 and AASHTO T 21***
<i>Phosphorus</i>	<i>Weight</i>	20 - 80 ppm*	North Central Regional Research Publication 221, Chapter 6, Bray P-1
<i>Potassium</i>	<i>Weight</i>	105 - 250 ppm**	North Central Regional Research Publication 221, Chapter 7
* Alternatively 40 - 160 lb/ac ** Alternatively 210 - 500 lb/ac *** In the counties of Daviess, Gibson, Knox, Pike, Posey, and Vanderburgh AASHTO T 21 shall also be performed and the organic material content shall be from 4% - 10%			

Table 1

(b) Certification

Topsoil furnished under this specification shall be covered by a type A certification in accordance with 916.

914.02 Temporary Seed

Temporary seed will be approved for use by visual inspection of the Engineer. Temporary seed may be purchased from any commercial source provided the seed's package is clearly marked and labeled by the manufacturer as to its content and weight.

914.03 Fertilizer/Soil Amendments

(a) Fertilizer

Fertilizer shall be standard commercial fertilizer with an analysis of 12-12-12.

Tests will not be required, but fertilizer standards shall be governed by the rulings of the Indiana State Seed Commissioner.

(b) Compost

Compost shall be well decomposed, stable organic matter. It shall be derived from agricultural, food, or industrial residuals; bio-solids including treated sewage sludge, yard trimmings, vegetable matter or source-separated or mixed solid waste. The product shall contain no substances toxic to plants and shall be well composted so as not to possess objectionable odors or resemble the raw material from which it was derived. Compost shall be 98% free of any inert objects such as textiles, glass, plastics, and metal objects. Compost used shall be free of known weeds and productive plant parts classified in the IC 15-16-7-2 as a noxious weed species, and any plants listed on the Indiana Invasive Species Council Invasive Plant List under the high invasive rank category.

Compost shall have a pH range of 5.5 to 8.0. Compost shall have a minimum of 30% organic matter in accordance with AASHTO T 267. The moisture content shall range from 30 to 60% by dry weight in accordance with AASHTO T 265. Compost particle size shall have 98% passing the 3/4 in. sieve.

All bio-solids, industrial and yard waste compost suppliers shall be IDEM certified. Certification of compost suppliers shall be as follows:

- 1. Bio-solids and industrial waste compost suppliers shall possess an IDEM Marketing and Distribution Permit.*
- 2. Yard waste compost suppliers shall be an IDEM Registered Yard Waste facility.*

All bio-solids shall be in accordance with 40 CFR Part 503 and 327 IAC 6.1.
