

# S-34 TOPSOIL

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### 34.01. SCOPE OF WORK

This specification covers the requirements for the stockpiling, supplying, and placing of topsoil. Use of this specification or any other specification shall be according to the Contract Documents.

The work shall include:

- Topsoil testing analysis and necessary amendments to the topsoil;
- Supply of topsoil;
- Preparation of the site;
- Placement of the topsoil.

### 34.02. REFERENCES

This specification refers to the following standards, specifications, or publications:

- OPSS.MUNI 802 Construction Specification for Topsoil
- OPSS.MUNI 206 Grading
- RULES FOR SOIL MANAGEMENT AND EXCESS SOIL QUALITY STANDARDS

### **34.03. MATERIALS**

Topsoil shall be a fertile loam screened and free from:

1. Debris and stones over 25mm in size;
2. Roots, coarse vegetative material occupying more than 2% of soil volume, in size that cannot be covered by the depth of topsoil specified in the Contract Documents.

Imported topsoil shall not have contaminants that adversely affect plant growth.

### **34.04. QUALITY CONTROL**

The Contractor is responsible for topsoil testing analysis and to identify requirements for amendments to topsoil as specified for sod/seed areas and planting areas within the contract documents. The City Engineer shall review and approve the topsoil source and the soil test report from an Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) accredited laboratory with recommendations for use on lawns or trees and shrubs prior to topsoil deliveries. This testing shall be the responsibility of the Contractor.

**Prior to the topsoil being delivered to the site, the results of the testing shall be presented in writing by the testing laboratory to the City of Windsor, clearly depicting the results of each defined tested category, along with a statement verifying its suitability for its intended use or the remedial action required.**

Soil contaminated with calcium chloride, heavy metal contaminants, petroleum products and other toxic materials shall not be accepted as topsoil and shall not be allowed to be transported on site.

Topsoil shall be tested at least annually and anytime the source of the topsoil has changed. The City shall be notified when a new source of topsoil is to be tested.

The City reserves the right to test the topsoil after delivery. The Contractor shall be notified if the City intends to sample the insitu topsoil. If the Contractor elects to sample or have the topsoil sampled on their behalf, the Contractor or their representative will obtain a QC, QA and referee sample. The Contractor shall hold the QC sample and the City shall hold the QA and referee samples. If the material is determined to be out of specification as a result of the QA testing the topsoil shall be corrected (if possible) as noted in the testing lab's report or removed from the site at the Contractor's cost. The Contractor can request additional testing of the referee sample at their cost. The Contractor shall arrange a mutually agreed OMAFRA accredited lab to test the referee sample. Cost associated with referee testing shall be the responsibility of the Contractor. A copy of the test report and the testing lab's recommendations shall be

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supplied to the City Engineer. Results not meeting the specifications will require that the topsoil shall be corrected (if possible) or removed from the site at the Contractor's cost.

The City shall be granted access to the stockpiles/topsoil sites for monitoring purposes throughout the construction season.

<b>Table 1: Topsoil Chemical Test Requirements</b>	
<b>Criteria</b>	<b>City of Windsor Requirement</b>
pH Level	<b>5.5 to 7.8</b>
Organic matter, % *	<b>Minimum 3.0</b>
Phosphorus (Olsen P), ppm	<b>10 to 60</b>
Total Soluble Salts, (µs/cm or mmhos/cm)	<b>&lt;1.5</b>
Sodium – Base Saturation (%)	<b>&lt;2.0</b>
Atrazine or Sterilants (ppm) **	

***\*Note: To reach required percentage, organic amendment may be required. The Contractor shall be responsible for selecting industry acceptable organic matter sources which shall be free from any pathogen that have potential concerns to the public health & safety.***

***\*\* Testing for the presence of sterilants shall be mandatory when these chemical agents have been identified as being used on the proposed source of topsoil within the past 3 years and the testing lab shall provide comments based on their findings.***

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<b>Table 2: Topsoil Heavy Metals Test Requirements*</b>		
<b>Criteria</b>	<b>Table 1 ESQS** Full Depth Background Site Condition Standards for Residential/Parkland/ Institutional/Industrial/ Commercial/Community Property Use (Unit in µg/g)</b>	<b>City of Windsor Requirement – Table 3.1 ESQS** Full Depth in a Non- Potable Ground Water Condition For Residential/Parkland/ Institutional Property Use (Unit in µg/g)</b>
Antimony	1.3	7.5
Arsenic	18	18
Barium	220	390
Beryllium	2.5	4
Boron (Total)	36	120
Cadmium	1.2	1.2
Chromium Total	70	160
Cobalt	21	22
Copper	92	140
Lead	120	120
Mercury	0.27	0.27
Molybdenum	2	6.9
Nickel	82	100
Selenium	1.5	2.4
Silver	0.5	20
Thallium	1	1

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<b>Table 2: Topsoil Heavy Metals Test Requirements*</b>		
<b>Criteria</b>	<b>Table 1 ESQS** Full Depth Background Site Condition Standards for Residential/Parkland/ Institutional/Industrial/ Commercial/Community Property Use (Unit in µg/g)</b>	<b>City of Windsor Requirement – Table 3.1 ESQS** Full Depth in a Non- Potable Ground Water Condition For Residential/Parkland/ Institutional Property Use (Unit in µg/g)</b>
Uranium	2.5	23
Vanadium	86	86
Zinc	290	340

\*: Standards in this table are the same as those in Table 1 and Table 3.1 of the Rules for Soil Management and Excess Soil Quality Standards. It should be noted that Table 3.1 ESQS is anticipated to be applicable to most project sites; however, topsoil should meet the appropriate excess soil reuse quality standards for the project site in which topsoil is being imported to.

\*\* : ESQS represents the Excess Soil Quality Standards.

### **34.05. CONSTRUCTION**

#### **34.05.01 Stockpiling Topsoil**

Topsoil shall be removed, stockpiled, and managed according to the Contract Documents. If allowed to be piled on site, stockpiles shall be constructed neatly with uniform surfaces. When required, the top surface shall be dished. Topsoil shall not be piled on the road or sidewalk. Topsoil that is removed from a site shall not be brought back to the site or to any other site without retesting in accordance with this specification.

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**34.05.02 Preparation for Topsoil**

Areas where topsoil is to be placed shall be fine graded to a uniform surface according to OPSS.MUNI 206 and Contract Documents. The graded surface shall be free of all debris, roots, branches, and stones in excess of 25mm diameter and other deleterious materials. Any soil contaminated with calcium chloride, toxic materials, petroleum products and other toxic materials shall be removed and disposed of legally off-site at sole costs of the Contractor.

The surface shall be loosened to a depth of at least 50mm prior to placing the topsoil.

If it is determined that the tilling of existing on-site material resulted in deleterious materials, a price for this removal shall be negotiated with the City. All other deleterious material shall be removed at the Contractor's cost.

In case of a dispute, the City reserves the right to seek an opinion from a third party.

These areas shall be maintained in the condition described above until the topsoil is placed.

**34.05.03 Inspection**

Prior to placing the topsoil, the site shall be reviewed by the Engineer, the General Contractor, and Landscaping Sub-contractor. The consequence of omitting the review step shall be fully borne by the Contractor.

**34.05.04 Placement of Topsoil**

The topsoil shall be spread on unfrozen sub-grade, free of standing water, uniformly to a depth of 100mm or as per Contract Documents in the case of sodding or seeding. The imported topsoil may be feathered to meet existing grade. If the area of imported soil is used as beds for shrubs or perennial plants, the depth of placement shall be 500mm.

Topsoil shall be rolled with a mechanical roller of a minimum weight of 220kg, minimum width of 760mm roller, to consolidate it in areas to be seeded or sodded, leaving the surface smooth, uniform, firm against deep foot printing, and to the satisfaction of the Engineer. Before placement of the sod or seed the surface of the topsoil shall be scarified to a depth sufficient to promote root growth into the topsoil.

**34.06 MEASUREMENT FOR PAYMENT**

All topsoil will be measured and paid as imported topsoil. Measurement shall be by volume in cubic metres of topsoil imported and placed. The cost for stockpiling on site for the temporary storage purpose shall be included in the placing price because no extra cost will be paid for this work.

**34.07 BASIS OF PAYMENT**

Payment at the Contract price for the above item shall be full compensation for all labour, equipment, and materials to do the work.