Urban Forest Appendix
Details For Section M – Development Manual
Tree Planting & Establishment
Best Management Practices

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<th>Soils</th>
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<tr>
<td>UF.3.1</td>
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<td>UF.3.5</td>
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Initial Acceptance Certificate – Tree Planting and Soil Habitat

Date of Inspection: ___________________________ Subdivision #: 30T-_________________
Subdivision Name: ___________________________ Stage #: _______________________
Subdivider : _________________________________ Registered Plan #: 58M-___________
Inspection Area (street, lot number etc.): ____________________________________________

Verification of Site Conditions as per Development Manual and Approved Street Tree Planting Plan

☐ Root pathways constructed
☐ Boulevard soil habitat constructed to 450mm depth
☐ Front yard soil habitat topsoil depth ☐ 900mm; or
☐ other (specify depth of topsoil) __________mm (min 450mm)
☐ Front yard soil habitat scarified to 900mm depth
☐ Street tree installation

Comments: ______________________________________________________________________

Affirmation

☐ I have inspected the site in accordance with the approved subdivision agreement, and hereby recommend that the elements inspected are constructed in accordance with the City of Kitchener Subdivision Manual and Approved Street Tree Planting Plan and meet all the requirements for Initial Acceptance.

Consultant (Name)  Consulting Firm

Signature  Date

cc: City of Kitchener, Engineering  
     City of Kitchener, Operations
Minimum Soil Volume (SV) Requirements by Tree Size

<table>
<thead>
<tr>
<th></th>
<th>Large Stature Tree (LST) ≥50cm</th>
<th>Medium Stature Tree (MST) ≥40cm</th>
<th>Small Stature Tree (SST) 20 cm</th>
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<tr>
<td>Minimum SV for one tree</td>
<td>45 m³</td>
<td>28 m³</td>
<td>17 m³</td>
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<tr>
<td>Minimum SV per tree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>where soils shared</td>
<td>30 m³</td>
<td>18.5 m³</td>
<td>11 m³</td>
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<tr>
<td>Allowable shared soil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>volume</td>
<td>15 m³</td>
<td>9.5 m³</td>
<td>6 m³</td>
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Minimum Soil Depths for Residential Street Tree Plantings

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<tr>
<th></th>
<th>Boulevard with utilities</th>
<th>All other areas</th>
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<tbody>
<tr>
<td>Restored Soil Depth</td>
<td>0.45 m</td>
<td>0.90 m</td>
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Soil Depth Will Not Exceed 1 m

NOTE:
This detail shows a typical design where the tree is planted in the boulevard. Where trees are planted elsewhere (e.g. flank, park) the soil area layout will vary.

Soil Habitat Zones & Volume Requirements for Trees in Boulevards

See drawing UF.3.2 for Tree Root Pathway detail
Note: A minimum of three root pathways will be accepted for small stature trees under special circumstances.

**PLAN**
Scale 1:100

**SECTION**
Scale 1:100

Notes: If Granular 'A' exceeds 150mm depth - excess will be removed in the root pathway area and replaced with parent material.

A minimum of five root pathways required for large and medium stature trees, while three root pathways will be accepted for small stature trees under special circumstances.
Type 2 Root Pathways will be used where the soil volumes in the boulevard and front lawn are not sufficient to meet the minimum soil volume requirements for large or medium stature trees. The minimum number of required Silva Cells for root pathways below the sidewalk is six. Where lot setbacks and soil volumes are limited, Silva Cells will need to be maximized to achieve the required soil volumes. Refer to UF.3.1 for required soil volumes.

See drawing UF.3.1 for Soil Habitat and Volume Requirements for tree size.

Install Silva Cell system or approved alternate to meet soil volume requirements for trees. See Silva Cell Detail (UF.3.5) for detailed information.
Subgrade Preparation

1. Scarify (subgrade) parent material with a toothed blade to a depth of 100mm where there are no underground utilities.
2. Where drain lines are identified slope the subgrade to the drain.
3. Drain lines if required.
4. Slopes adjacent to infrastructure are to be 1:1.

Soil Installation

1. 300 mm soil lifts
2. Lifts to be compacted to 80% standard proctor density.
3. Compost added to top lift (A Horizon) if specified.
NOTE: Soil volumes will be consistent with the City of Kitchener standards.

**SAMPLE SILVA CELL LAYOUT WITH PASSIVE IRRIGATION**

Scale 1:200

Note: The location, size and design of the passive irrigation system, and soil testing/line inspection port shall be determined by the Project Designer and Irrigation Consultant, and approved by Operations. All irrigation systems will be approved by Operations staff and will be consistent with current City of Kitchener Operations standards.

SECTION

Scale: N.T.S.

This detail has been provided by Deep Root, with minor modifications. All Silva Cell designs will be reviewed and approved by Deep Root and City of Kitchener Operations staff.
TREE MUST BE STRAIGHT IN HOLE WITHOUT ANY SUPPORT

TREE TRUNK AND BRANCHES WILL NOT BE DAMAGED DURING TRANSPORT OR PLANTING AND WILL BE FREE OF WOUNDS AT TIME OF INSPECTION

PRUNE TO REMOVE BROKEN AND/OR INTERFERING BRANCHES ONLY. DO NOT PRUNE LEADER. REMOVE ALL NURSERY TABS/TIES, ETC.

TIES SHALL BE GREEN ARBORITE, OR APPROVED EQUIVALENT. TIES SHALL FORM A LOOSE LOOP AROUND THE STAKE AND LOOP IN A FIGURE '8' AROUND THE TRUNK OF THE TREE. SECURE ARBORITE TO THE STAKE USING 1" GALVANIZED ROOFING NAILS (SEE FOLLOWING SHEET FOR DETAIL).

2 x 2 WOODEN STAKES WITH FLEXIBLE TIES, PERMITTING TREE TO MOVE.

EXPANDABLE PROTECTIVE TREE GUARD
200mm HIGH

STRUCTURAL ROOTS WILL BE JUST BELOW SURFACE (2.5-7.5CM); ROOT FLARE MAY NOT BE VISIBLE ON YOUNG TREES. SEE STRUCTURAL ROOT DEPTH DETAIL.

50mm ORGANIC MULCH OR SHREDDED BARK. DO NOT MOW AT BASE OF TRUNK. MULCH TAPERED TO GROUND LEVEL AT TRUNK.

100mm X 150mm WIDE SOIL RING

450mm (18") TO 900mm (36") SOIL DEPTH TREE PLANTING PER APPROVED TREE PLANTING PLAN.

BREAKUP COMPACTED SOIL FROM HOLE AND BACKFILL IN 150mm LIFTS. TAMPER TO PREVENT SETTLEMENT.

REMOVE BURLAP AND TWINE FROM TOP 1/2 OF ROOT BALL. CUT TOP HORIZONTAL WIRE OF WIRE BASKET IN FOUR PLACES AND FOLD DOWN INTO PLANTING SOIL UNLESS BASKET IS A LOW PROFILE.

WIDTH OF TOP OF PLANTING HOLE WILL BE AT LEAST 1.5 TIMES ROOTBALL DIAMETER.

PLACE ROOTBALL ON UNDISTURBED SOIL. IF HOLE IS DUG TO DEEPER COMPACT SOIL UNDER TO MAINTAIN REQUIRED DEPTH OF STRUCTURAL ROOTS. COMPACT SOIL.

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**A DECIDUOUS TREE PLANTING DETAIL**

**SCALE: N.T.S.**

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**B STRUCTURAL ROOT DEPTH DETAIL**

**SCALE: N.T.S.**

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**STRUCTURAL ROOT DEPTH**

Depth of roots at planting time is critical. It cannot be assumed that structural roots will be near the top of B&B stock. All B&B or tree container stock is to be planted so that the uppermost structural roots are within 2.5 to 7.5 cm when measured 10 cm from the trunk. The location of structural roots will be determined prior to the excavation of any tree planting holes are dug to ensure that the proper depth of the planting hole is achieved. Once planted any excess soil will be removed to meet the above standard. If the removal of the soil would result in an unstable root ball the tree is not to be planted and there will be no charge to the City for its replacement. At no time is this process to result in the exposure of the structural roots, and/or the root ball being planted too high.
C. TREE TRUNK TIE DETAIL  
SCALE: N.T.S.  

D. TREE PLANTING - SLOPE DETAIL  
SCALE: N.T.S.  

TREE PLANTING DETAILS

1. DAMAGED TREES, TREES WITH POOR FORM OR ROOT STRUCTURE AND TREES NOT MEETING THE CANADIAN STANDARDS FOR NURSERY STOCK WILL BE REFUSED. THE CONTRACTOR IS ALSO RESPONSIBLE TO ENSURE THAT ALL PLANT MATERIAL, INCLUDING CULTIVARS AND TREE SIZES ARE PROVIDED AND INSTALLED AS STATED ON THIS PLAN. NO ALTERNATIVES, INCLUDING SPECIES, TREE SIZE WILL BE ACCEPTED UNLESS APPROVED BY THE COMMUNITY SERVICES DEPARTMENT.

2. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE LOCATION OF ALL UTILITIES AND OTHER OBSTRUCTIONS ABOVE AND BELOW GROUND.

3. DURING THE TRANSPORTING, STORAGE AND PLANTING OF THE TREES THE CONTRACTOR WILL USE APPROPRIATE WORK PRACTICES TO NOT DAMAGE THE TREE, OR ROOT BALL. THE CONTRACTOR WILL ALSO ENSURE THAT THE TREE DOES NOT SUFFER DROUGHT STRESS DURING THIS OPERATION.

4. ALL TWINE AND BURLAP WILL BE BIO-DEGRADABLE. IF THE TREE HAS BEEN REBURLAPED THE OUTER BURLAP OUTSIDE OF THE WIRE BASKET WILL BE REMOVED.

5. TREES WILL BE PLANTED IN ACCORDANCE TO THE PLANTING DETAIL, THE DEPTH OF THE PLANTING HOLE WILL BE DETERMINED BY THE DEPTH OF THE ROOT BALL, ENSURING THAT THE TREES STRUCTURAL ROOTS ARE 2.5 TO 7.5 CM WITHIN THE FINISHED GRADE. SEE DETAIL 4

6. A 100 MM HIGH AND 150 MM WIDE SOIL RING WILL BE CREATED AT THE EDGE OF THE TREE HOLE. EXCESS SOIL WILL NOT BE ADDED TO THE ROOTBALL, ALL EXCESS SOIL WILL BE REMOVED FROM THE SITE.

7. 50 MM OF AN ORGANIC MULCH WILL BE APPLIED TO THE SURFACE OF THE SOIL RING AND ROOTBALL. THE MOUNDING OF SOIL AND MULCH WITHIN THE ROOTBALL AND AGAINST THE TREE TRUNK IS PROHIBITED.

8. THE TREE WILL BE WATERED IMMEDIATELY AFTER PLANTING AND THE PLACEMENT OF THE MULCH, WITH THE TREE SAUCER BEING COMpletely FILLED WITH WATER.

9. AN EXPANDABLE TREE COVER 200MM HIGH WILL BE PLACED AROUND THE BASE OF THE TREE.

10. TWO WOODEN STAKES 50MM X 50 MM X 2 M WILL BE PLACED OUTSIDE OF THE ROOT BALL AND FLEXIBLE TIES WILL BE USED.

11. TREES NOT PLANTED TO THIS SPECIFICATION, AND NOT AT THE APPROVED DEPTH, OR TREES THAT SETTLE AFTER PLANTING WILL BE REMOVED AND REPLANTED AT THE CONTRACTORS EXPENSE. IF THE TREE BALL CANNOT BE REMOVED FROM THE HOLE INTACT TO THE SATISFACTION OF GSD, THE TREE WILL BE REPLACED AT THE CONTRACTORS FULL EXPENSE.

12. TREE TO BE WATERED AND MULCHED IMMEDIATELY FOLLOWING PLANTING.

13. TREE SHALL BEAR SAME RELATION TO FINISHED GRADE AS IT BORE TO PREVIOUS EXISTING GRADE, FOLLOWING SETTLEMENT.