

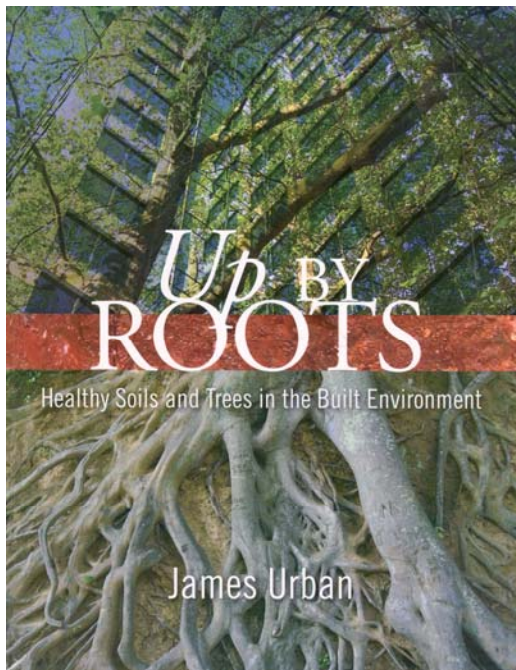
To

Date

March 23, 2010

*2 pages from Jeanette Merrick*

## UP BY ROOTS



This workshop is based on the book *Up By Roots, Healthy Soils and Trees in the Built Environment* by Jim Urban. Held in Kelowna.

The afternoon session was field stations:

**Tools**, Jim Urban: Dutch augers, compaction probes and bulk density.

**Soil profile**, Dr. Scott Smith: history of the soil layers by examining a 4' deep x 6' long trench.

**Soil texture by feel**, Sonja Peters: hands on process of identifying soils of 5 different types.

**Trees**, Jeanette Merrick: Mature and container grown roots examined and discussed.

The demographics of registrations were: 48% Municipal employees; 12% Landscape Architects; 11% Consultants (mixture of landscape and architects); 9% Landscapers & installation companies; 8% Arborists, 3% Educators, 9% unidentified.

### Physical Properties of Soils:

Texture, Structure, Organic Activity, Profile, Compaction, Water movement and Nutrient-Holding capacity are the important features to preserve during construction. To incorporate or amend soils, the original soil structure and history is required. Natural soils are not screened nor are the structures of uniform shape, color or texture.

**Compaction:** Engineers are looking for 90 – 99% compaction to fill all the pores between the large peds. Arborists & Architects look for compaction of 80 – 70% to preserve water movement and root penetration. Less than 70% causes settlement and loss of soil height.

Request that planting areas be tested at the same time as concrete with a densiometer. Another method of measurement is by bulk density: dry weight divided by volume = Mg/m<sup>3</sup> or g/cm<sup>3</sup>. A penetrometer can be used to continually test areas throughout the construction process.

These soil properties are important to ensure water movement, root penetration and nutrient availability. An integrated transition between the layers of soils ensures water infiltration. Unless a perched water table is required for trees that prefer wet conditions, the layers need to be roughed up. This specification should be included in the drawings as well as in the instructions at time of soil replacement or amendment. Golf courses and sports fields use perched water tables to support grasses because the soils are generally a high percentage of sand.

Organic matter, compost, needs to be incorporated into the soils and at an appropriate rate. Organic matter should be 2 – 5% by weight. Less than 1% restricts percolation and chemical balance. Greater than 5% can cause volume loss. Soil organic activity can be maintained with compost tea applications. However, the environment, adequate conditions are required for long term management. The application of 10cm (3 – 4”) of compost to the top layer should also be lightly incorporated.

### **Site Considerations**

Historic changes to the landscape can be researched through a variety of sources: geology sources, old maps, local historical societies, historic pictures, city plans, aerial photographs, and active construction at nearby locations, interviews and native plant material.

Soil sampling should be taken along property lines which are usually preserved for as long as the properties have been divided. Old trees, take samples within the drip line and at varying distances from the trees base.

### **Steps to follow**

Step 1 – Plant the Easy Places First

Landscape designs need to be included at the beginning of a project.

Step 2 – Make Larger Planting spaces

Plant quality trees in quality locations instead of multiple small areas.

Step 3 – Preserve and Reuse Existing Soil

Use light weight machinery, do not work wet soils, do not screen soils.

Step 4 – Improve Soil and Drainage

As the soil volume decreases the quality of soil needs to increase.

Step 5 – Respect the Base of Trees

Preservation of trees already on-site and future growth of trees.

Step 6 – Make Space for Roots

Design space for roots beneath pavement in small planting areas.

Step 7 – Select the Right Tree

Diversity, spacing, size and design.

Step 8 – Establish Reasonable Tree and Soil Budgets

Reduces long-term maintenance.

Step 9 – Detailed Tree and Soil Construction Documents

Science-based specifications for all persons involved.



Above: Overview of the room during the morning presentations.  
Below: Dr. Scott Smith (Agriculture Canada) explaining soil profiles in the region.



## WORKSHOP

### Up By Roots: Healthy Soils and Trees in the Built Environment

Presented by James Urban

Up By Roots is a one-day workshop that highlights the principles of soil science and their use in facilitating the growth of healthy trees and developing water-efficient landscapes. This workshop includes lectures and field work intended to introduce the underlying scientific principles guiding tree biology and soil-water relations. It is only through a healthy respect for these guiding principles that one can effectively design, install, and manage soils and trees in the urban landscape.



James Urban, FASLA and ISA member, is a landscape architect with more than 30 years of experience in the field of urban development. Over the past three decades, Jim has routinely dealt with the challenge of planting

trees in difficult urban sites. Since 1982, he has researched and tested various methods of tree installation in the urban environment. Jim has developed applications for practicing arborists and landscape architects that include the testing of new urban tree systems and planting concepts, developing new approaches to landscape architectural design, and detailing and specifications in the area of trees and urban soils.



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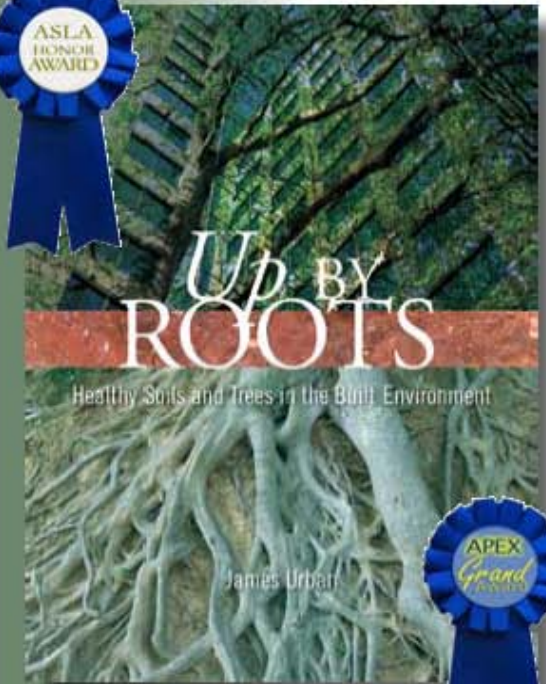


THE PACIFIC NORTHWEST  
ISA PRESENTS

7 ISA  
CEUs/Course  
Hours

## UP BY ROOTS

HEALTHY SOILS AND TREES IN  
THE BUILT ENVIRONMENT



JAMES URBAN, FASLA

KELOWNA, BC - MARCH 23, 2010  
LYNNWOOD, WA - MARCH 25, 2010

