CropHealth Advising & Research
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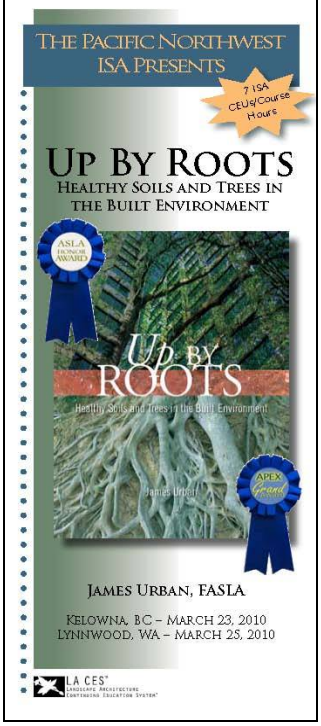
To | Date

March 23, 2010

2 pages from Jeanette Merrick



James Urban, a renowned USA landscape architect, reviewed materials from his 2008 book "Up By Roots: Healthy Soils and Trees in the Built Environment".

Attendance was 48% municipal employees; 12% landscape architects; 11% consultants; 9% landscape installation; 8% arborists, 3% educators, 9% others.

The workshop was organized by our company and sponsored by the International Society of Arboriculture.

Afternoon field stations

Tools with James Urban
Dutch augers, compaction probes and bulk density

Soil profile with Dr. Scott Smith (Ag Canada)
History of soil layers by examining a 4'x 6' trench.

Soil texture by feel with Sonja Peters
Hands on process of identifying soils of 5 different types.

Trees with Jeanette Merrick
Roots examined on a container-grown tree

Successful 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
Consider 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
Make science-based specifications for all persons involved.

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.

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.

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^3 or g/cm^3. A penetrometer can be used to continually test areas throughout the construction process.

Organic matter and compost need to be incorporated into the soils at an appropriate rate. Organic matter should be 2 to 5% content 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.

An application of 10-cm thick (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. On old trees, take samples within the drip line and at varying distances from the trees base.