

# Trees & Construction

ELC Workshop April 2024

## Agenda

- 8:30 Introduction & The Benefits of Trees
- 9:00 Construction Sites & BMPs
- 9:30 The Planning Phase
- 10:00 Break
- 10:15 Outdoor Data Collection Practice
- 11:00 The Design Phase
- 12:00 Lunch (Provided)
- 12:30 The Pre-Construction Phase
- 12:45 The Construction Phase
- 1:30 Outdoor Demonstration
- 3:30 The Post-construction Phase & Wrap up
- 4:00 CEUs and Goodbyes

Development Phase	Arborist involvement *
<b>Planning</b>	Resource evaluation Permitting needs Suitability for preservation Tree Inventory
<b>Design</b>	Tree impact assessment Tree protection plan Tree Protection Zones (TPZ) Landscape plan review
<b>Pre-construction</b>	Contractor communication TPZ barrier installation Arboricultural treatments
<b>Construction</b>	Site monitoring Assessing impacts Maintaining TPZ Arboricultural treatments
<b>Landscaping</b>	Site Monitoring TPZ barrier adjustments Mitigate tree impacts
<b>Post-construction</b>	Site Monitoring TPZ barrier removal Mitigate tree impacts Plan for maintenance

## Condition Ratings (modified from Guide for Plant Appraisal)

	Health	Structure	Form
<b>Excellent</b>	Vigor nearly perfect with little or no twig dieback, discoloration or defoliation.	Strong branch attachments with few or no features affecting tree or branch stability.	Tree shape highly functional and aesthetic in landscape.
<b>Good</b>	Typical vigor with minor twig dieback, defoliation or discoloration.	Good branch attachments with minor and correctable features affecting tree or branch stability.	Tree shape functional and aesthetic in landscape.
<b>Fair</b>	Reduced vigor with moderate twig dieback, defoliation, and/or discoloration.	A single feature significantly affecting or multiple features moderately affecting tree or branch stability that would not be practical to correct or would require multiple treatments over several years.	Tree shape compromises function and/or aesthetics in landscape.
<b>Poor</b>	Compromised vigor with extensive twig and/or branch dieback and defoliation.	A single feature seriously affecting or multiple features significantly affecting tree stability that cannot be corrected.	Tree shape significantly detracts from function and/or aesthetics to a significant degree.
<b>Very Poor</b>	Poor vigor with little live foliage or branches.	Multiple features seriously affecting tree stability that cannot be corrected.	Tree shape provides little to no function and is visually unappealing in landscape.
<b>Dead</b>	No live foliage or branches	Tree failed.	-

## Suitability for Preservation\*

**Suitability for preservation** is a categorization of a tree's potential to be an asset to the project following development. While it is future focused, ratings of suitability for preservation are based on the species, current size, current condition, and species tolerance to construction. It is not based on specific construction plans or anticipated impacts to the tree, which may be unknown in the planning phase.

Trees with **low suitability for preservation** include those that are in poor condition, have short remaining life span, have poor aesthetics, are intolerant of construction damage **or** are invasive.

Trees with **high suitability for preservation** are in good condition, have long remaining life span, are desirable, **and** are species that tolerate construction damage.

Trees with **moderate suitability for preservation** are in between these two categories. They may have conditions or qualities that could be mitigated with arboricultural treatments such as pruning, pest management, soil management, or supplemental irrigation.

### High

Red maple (*Acer rubrum*)  
Horsechestnut (*Aesculus hippocastanum*)  
Oregon ash (*Fraxinus latifolia*)  
Ginkgo (*Ginkgo biloba*)  
Sweetgum (*Liquidambar styraciflua*)  
London plane (*Platanus x hispanica*)

### Moderate

Big-leaf maple (*Acer macrophyllum*)  
European hornbeam (*Carpinus betulus* 'Fastigata')  
Deodar cedar (*Cedrus deodara*)  
Ponderosa pine (*Pinus ponderosa*)  
Doug-fir (*Pseudotsuga menziesii*)  
Scarlet oak (*Quercus coccinea*)  
Oregon white oak (*Quercus garryana*)

### Low

Red alder (*Alnus rubra*)  
European white birch (*Betula pendula*)  
Katsura (*Cercidiphyllum japonicum*)  
European beech (*Fagus sylvatica*)  
Black cottonwood (*Populus trichocarpa*)  
Western redcedar (*Thuja plicata*)

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## Definitions\*

**tree protection zone (TPZ)** – area within which certain activities are prohibited or restricted to prevent or minimize potential injury to designated trees, especially during construction or development. The TPZ should encompass the Critical Root Zone, based on the judgment of the arborist.

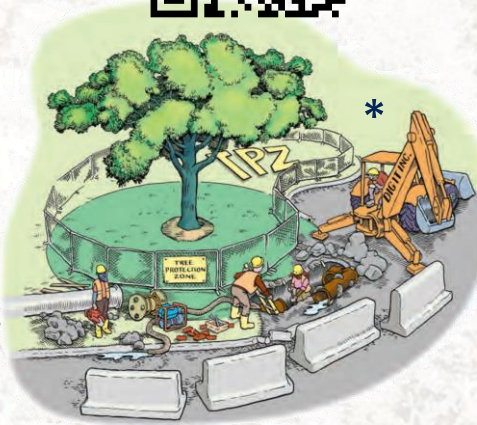
**critical root zone (CRZ)** – area of soil around a tree where the minimum amount of roots considered critical to the health of the tree or structural stability are located.

**calculated tree protection zone** – a TPZ that is calculated using the trunk diameter and a multiplication factor based on the species tolerance to construction and age of the tree.

**specified tree protection zone** – a TPZ that is adjusted in size or shape to accommodate the existing infrastructure, planned construction, and specific aspects of the site, while also taking into consideration tree canopy conformation, visible root orientation, size, condition, maturity, and species response to construction.

## This is an interactive document

Links are live and clickable if you download this document from the QR code or [www.nidusconsulting.com/handout4-26-24](http://www.nidusconsulting.com/handout4-26-24).



Species Tolerance to Construction Damage	Relative Tree Age*	Multiplication Factor for trees in good condition *
High	Young or semimature	6
	Mature	8
	Old	12
Medium	Young or semimature	8
	Mature	12
	Old	15
Low	Young or semimature	12
	Mature	15
	Old	18

\*Young to semimature = less than 40 percent life expectancy, Mature = 40 to 80 percent life expectancy; old = greater than 80 percent life expectancy

\*Graphics and definitions are from the ISA Trees and Construction BMPs

## Additional Resources

- [The Power of Trees](#)
- [Elon Musk will award \\$100 million](#)
- [The effects of Historical Housing Policies on Resident Exposure to Intra-Urban Heat](#)
- [Health Impacts for Excessive Heat Events in Multnomah County, Oregon, 2021](#)
- [Economic values of metro nature health benefits: a life course approach](#)
- [The association between tree planting and mortality](#)
- [Trees for Life – Instagram](#)
- [Tree Canopy Monitoring](#)
- [Portland Yard Tree Giveaway](#)
- [Portland – Title 11](#)
- [Lake Oswego Urban & Community Forestry](#)
- [Milwaukie Tree Code – 16.32](#)
- [Tigard Tree Code – Title 8](#)
- [Tree Protection on Construction & Development Sites](#)
- [ISA's Trees & Construction BMPs 3<sup>rd</sup> Ed.](#)
- [Guide for Plant Appraisal 10<sup>th</sup> Edition](#)
- [Trees and Construction: Which trees should we focus on preserving?](#)
- [Portland Nuisance Plant List](#)
- [When are west coast ash trees suitable for preservation?](#)
- [Trees and Construction: Is this tree likely to survive construction?](#)
- [Roots: A field guide for identification](#)
- [Trees and Development](#)
- [ISA's BMPs for Construction near Trees Video](#)
- [A test of tree protection zones: Responses of Quercus virginiana trees to root severance treatments](#)
- [How should we measure the DBH of multi-stemmed urban trees?](#)



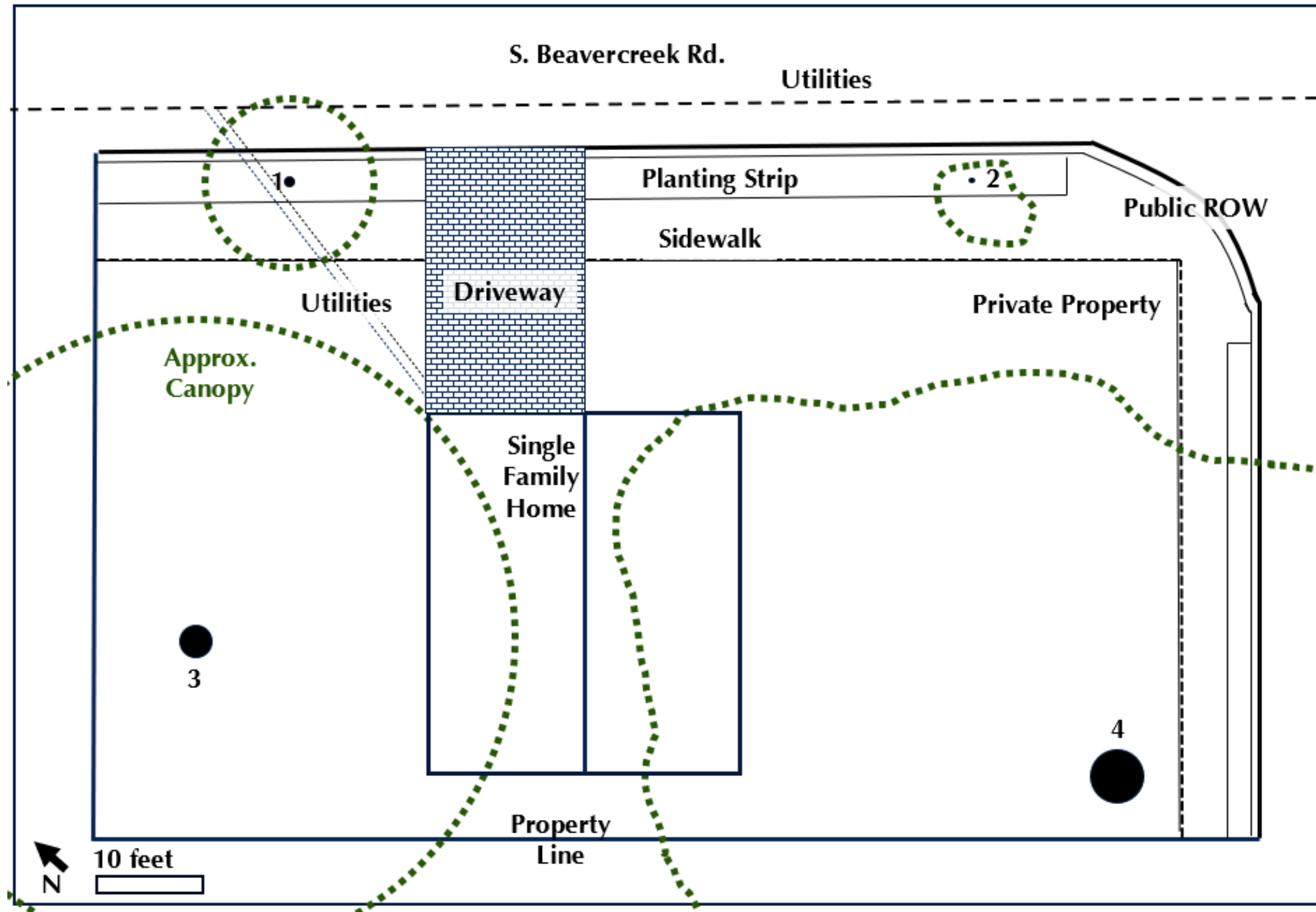
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# Practice Site Plan

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# Practice Data Collection

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## Tree #1

Species: \_\_\_\_\_

DBH: \_\_\_\_\_

Canopy Radius: \_\_\_\_\_

Condition: \_\_\_\_\_

Suitability for Preservation: \_\_\_\_\_

Comments: \_\_\_\_\_

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## Tree #2

Species: \_\_\_\_\_

DBH: \_\_\_\_\_

Canopy Radius: \_\_\_\_\_

Condition: \_\_\_\_\_

Suitability for Preservation: \_\_\_\_\_

Comments: \_\_\_\_\_

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## Tree #3

Species: \_\_\_\_\_

DBH: \_\_\_\_\_

Canopy Radius: \_\_\_\_\_

Condition: \_\_\_\_\_

Suitability for Preservation: \_\_\_\_\_

Comments: \_\_\_\_\_

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## Tree #4

Species: \_\_\_\_\_

DBH: \_\_\_\_\_

Canopy Radius: \_\_\_\_\_

Condition: \_\_\_\_\_

Suitability for Preservation: \_\_\_\_\_

Comments: \_\_\_\_\_

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