

LANDSCAPING UNDER BIG TREES

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Trees are complex, long-lived organisms with a permanent architecture.



Root myths & misconceptions

Misunderstandings about tree roots have resulted in the loss of many valuable trees not readily replaced in our lifetimes.

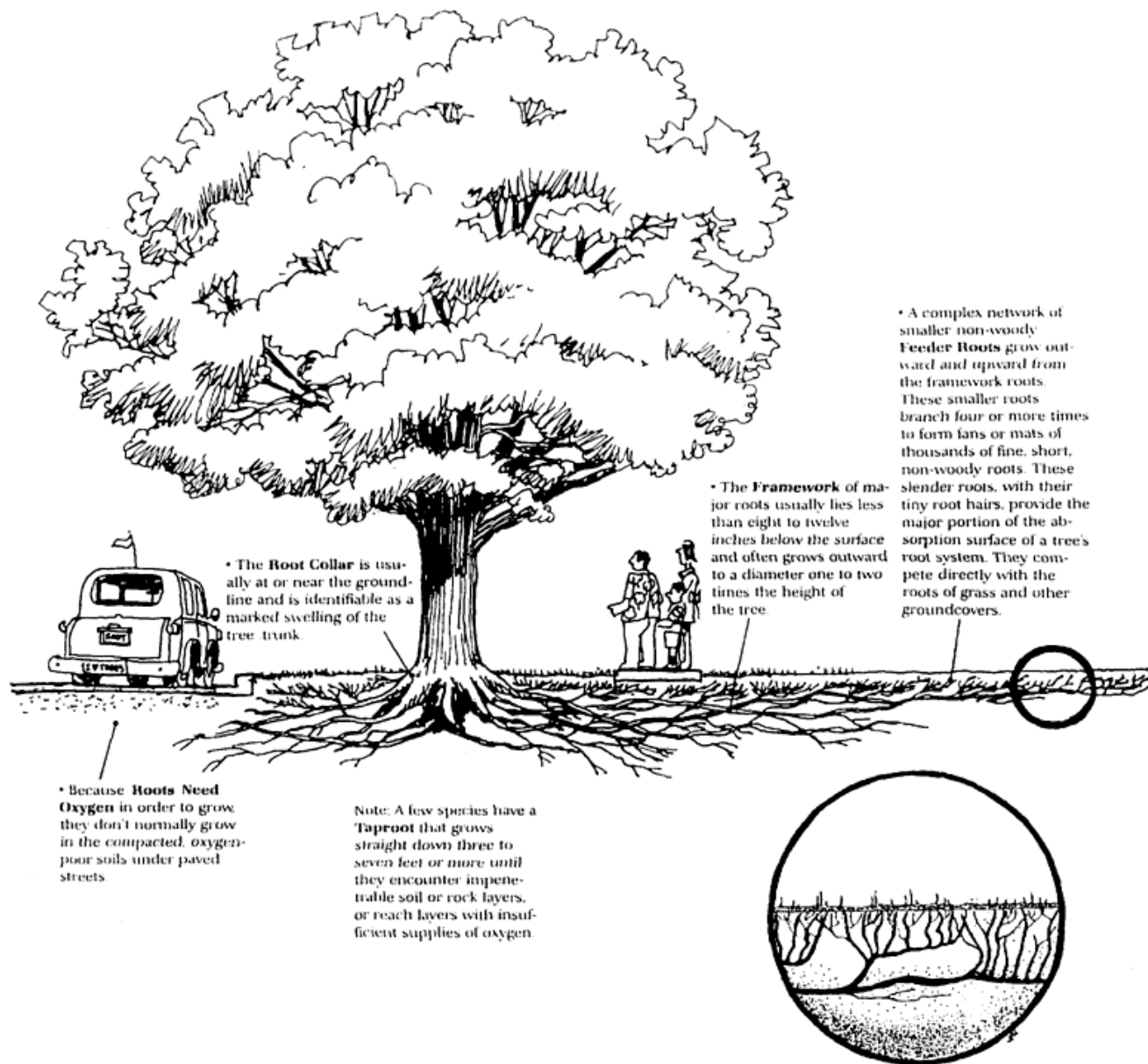
What's wrong with this picture?

*Conventional wisdom mistakenly says
that tree roots spread out and down
in a mirror image of the branches
above, as the drawing shows.*









• The **Root Collar** is usually at or near the ground-line and is identifiable as a marked swelling of the tree trunk.

• Because **Roots Need Oxygen** in order to grow they don't normally grow in the compacted, oxygen-poor soils under paved streets

Note: A few species have a **Taproot** that grows straight down three to seven feet or more until they encounter impenetrable soil or rock layers, or reach layers with insufficient supplies of oxygen.

• The **Framework** of major roots usually lies less than eight to twelve inches below the surface and often grows outward to a diameter one to two times the height of the tree

• A complex network of smaller non-woody **Feeder Roots** grow outward and upward from the framework roots. These smaller roots branch four or more times to form fans or mats of thousands of fine, short, non-woody roots. These slender roots, with their tiny root hairs, provide the major portion of the absorption surface of a tree's root system. They compete directly with the roots of grass and other groundcovers.

Fig. 1.10 How roots grow.



Root injury and tree health

- ❖ Root loss upsets the root:crown balance.
- ❖ The more roots cut, the greater the potential harm.
- ❖ Branch death and dieback are common symptoms.
- ❖ Symptoms may be immediate, or may take a few years to be evident.
- ❖ An ounce of prevention is worth a ton of cure.

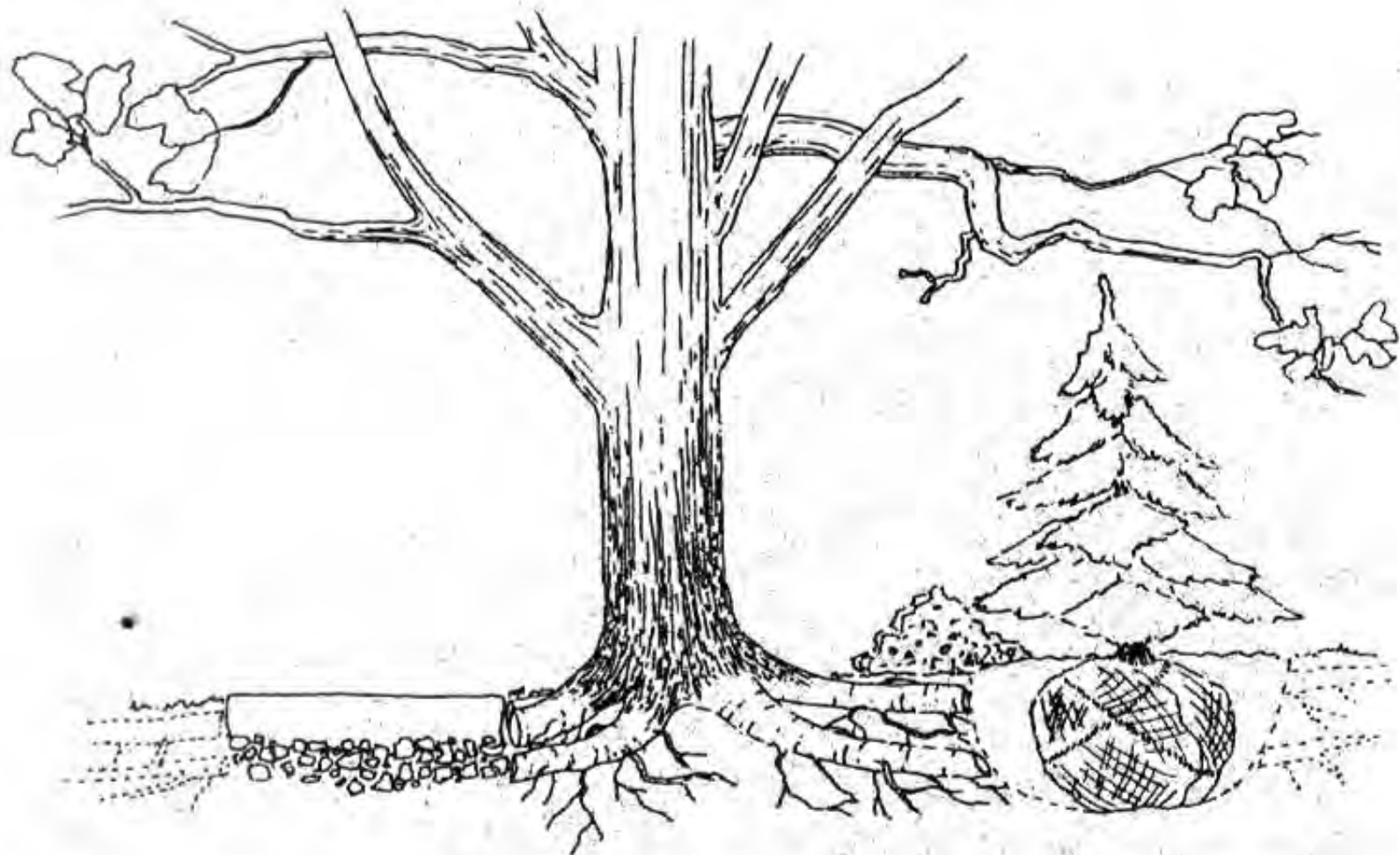
Repeated cultivation for bulbs & perennials is not a good fit in tree root zones.



Use bulbs & perennials that don't require routine digging and dividing.



Autumn crocus 'Waterlily'



Disturbing a small area of the root system for sidewalk repair or new plantings can result in loss of a large portion of the root system

from: "Root Injury and Tree Health" by Gary W. Watson, Morton Arboretum

















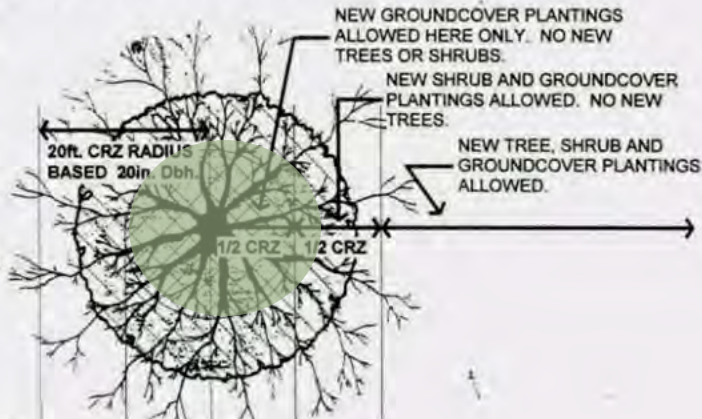
CRITICAL ROOT ZONE PLANTING DETAIL

NOT TO SCALE

NEW LANDSCAPE PLANTINGS MAY BE DESIRABLE OR REQUIRED NEAR PRESERVED TREES. THIS DETAIL SHOWS WHERE PLANTINGS ARE ACCEPTABLE IN RELATION TO A PRESERVED TREE'S CRITICAL ROOT ZONE (CRZ)

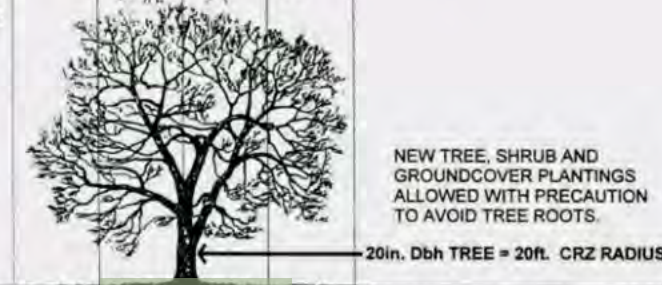
SITE PERSPECTIVE

CRITICAL ROOT ZONE (CRZ) IS A CIRCULAR AREA UNDER TREES TO BE PROTECTED FROM CONSTRUCTION ACTIVITIES. A RADIUS EXTENDED FROM THE TREE IN QUESTION IS EQUAL TO 1ft. FOR EVERY 1in. OF TREE DIAMETER MEASURED AT 4.5ft. ABOVE GROUND.



PROFILE PERSPECTIVE

NEW TREE, SHRUB AND GROUND COVER PLANTINGS ALLOWED WITH PRECAUTION TO AVOID TREE ROOTS.



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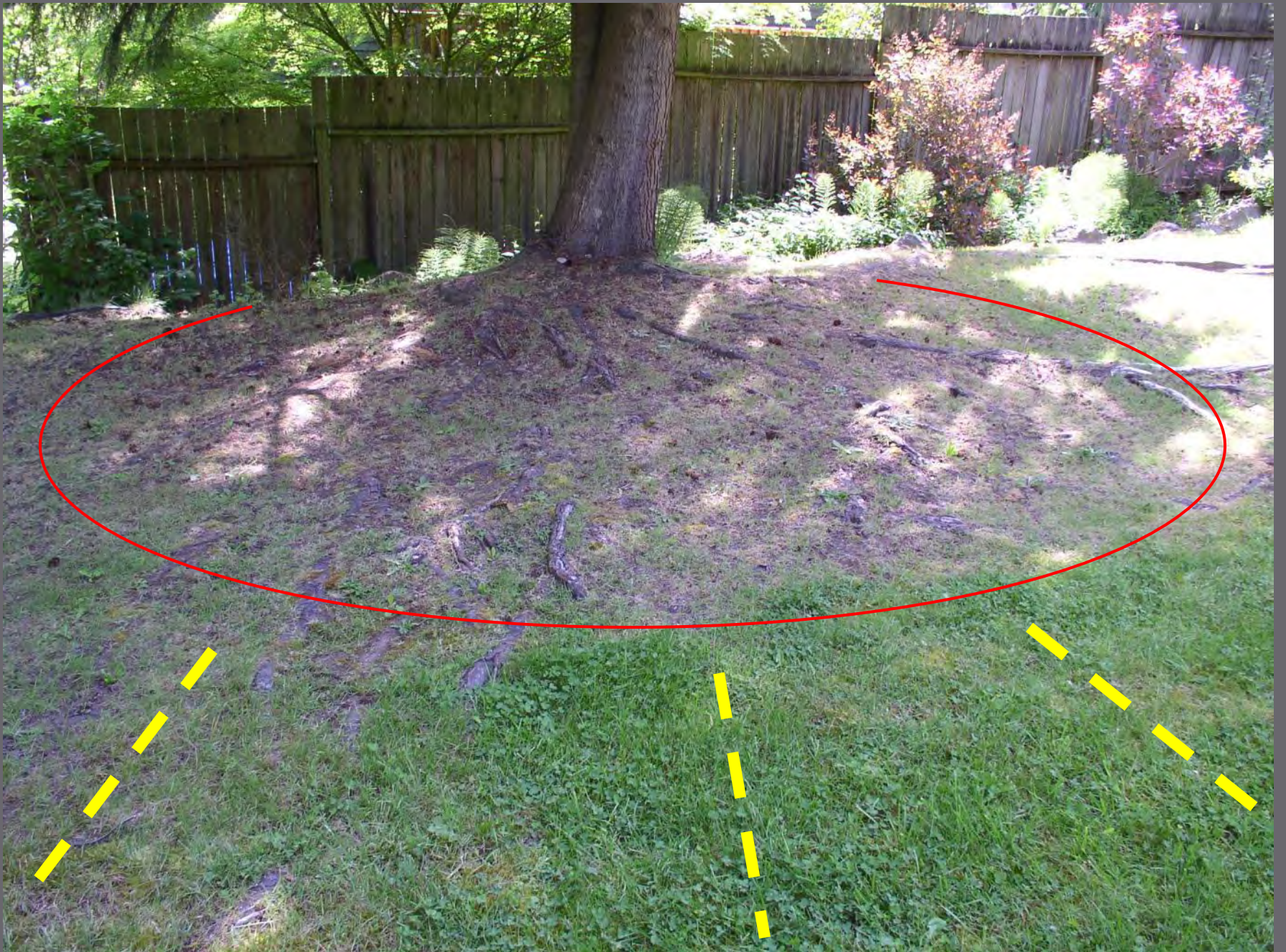
NEW SHRUB AND GROUND COVER PLANTINGS ONLY WITH PRECAUTION TO AVOID TREE ROOTS.

NEW GROUND COVER PLANTINGS ALLOWED ONLY WITH PRECAUTION TO AVOID TREE ROOTS.

NEW SHRUB AND GROUND COVER PLANTINGS ONLY WITH PRECAUTION TO AVOID TREE ROOTS.

SHEET TITLE		CRITICAL ROOT ZONE		FOR	
PLANTING DETAIL					
	NOT TO SCALE	12-02-1998	URBAN FORESTRY SERVICES, INC. 15119 McLEAN ROAD MOUNT VERNON, WA 98273	JIM BARBORDNAS & SCOTT RUGGINS	
SHEET #	SCALE	DATE	PREPARED BY	DRAWN BY	









At-grade irrigation options





Root pruning – make clean cuts!

New roots grow from a clean cut



No new growth from frayed ends of damaged roots



Tree and Turf Wars

Their roots occupy the same soil spaces.

They come from inherently different ecological conditions. Over the long term, one or the other will lose out when they are placed too close together.

Grass

Mulch



Figure 3. Sugar maple root development is reduced when lawn is present.















Fragaria 'Pink Panda'





Tips for success

- ❖ Minimize root disturbance.
- ❖ Minimize soil and moisture changes.
- ❖ Match plants to habitat beneath the trees.
- ❖ Use smaller nursery stock to minimize digging.
- ❖ Plant in the fall.
- ❖ Use coarse organic mulch.
- ❖ Use surface-laid drip style irrigation lines during establishment of new plants.



