

October 3, 2023

Todd Sherman
Design Build Homes
11400 SE 8th Street, Suite 415
Bellevue, WA 98004

Site: 4719 86th Ave SE SP
Mercer Island, WA 98040
TPN: 7598100420
Area: 28,644 sq ft. = .66 acres

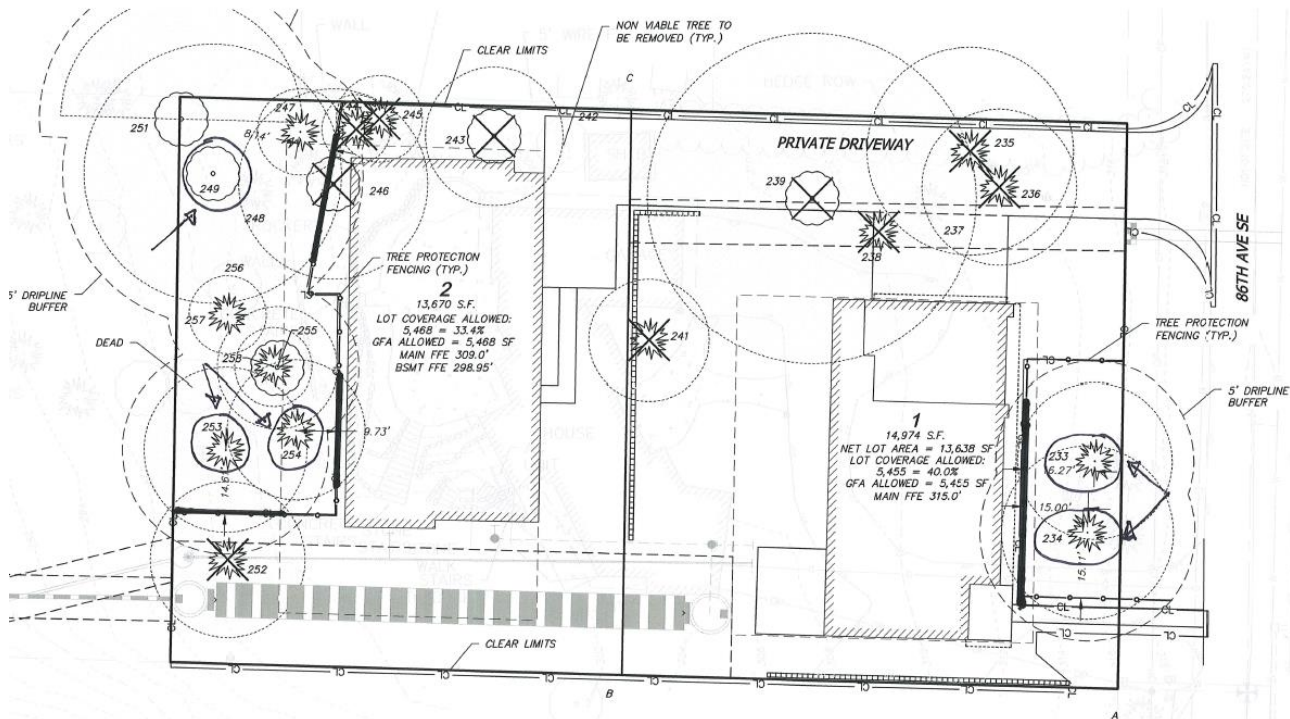
Re: Results of air-vac-ing the soil at the CRZ of trees 233, 234, 249, 253, 254

Comment from City Arborist:

8. Please move the building pad and over excavation outside of the critical root zones of trees 233, 234, 249, and 253. Air excavation root analysis will need to be provided prior to construction to demonstrate that these trees will not be damaged by the proposed work. The analysis will need to call out the specifics of the project design. Alternatively, these trees could be proposed to be removed if the minimum required number of regulated trees will be retained.

Results of air excavating:

On September 19th, 2023, a team from Root Causes, LLC, exposed the roots of five (5) trees, numbered 233, 234, 249, 253, and 254. The work was completed from the edges of the driplines of each retained tree, to the depth of the proposed excavation as indicated with the dark lines on the exhibit below:



Summary:

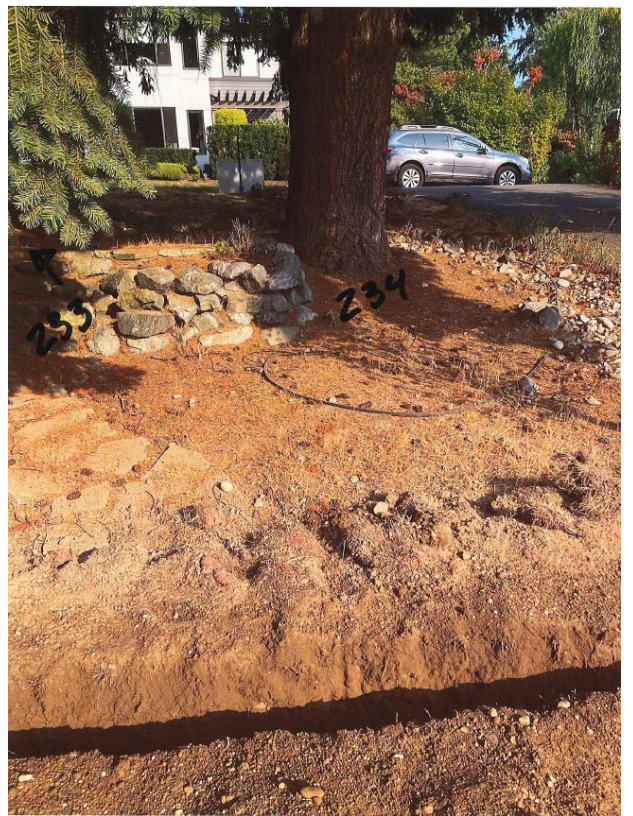
#	Tree Tag #	Species ID	DBH (in)	Drip-line radius (ft)	Health	Defects/Comments	CRZ/TPZ/LOD				Exceptional tree DBH > 24"	Results of Air excavation@ proposed point of development improvements
							Radius in feet					
							N	W	E	S		
1	233	Douglas fir	21	18	OK	Typical of species	18	13	18	18	N	No visible roots
2	234	Douglas fir	28	20	OK	Self-corrected lean towards west, dead wood, broken branches, dead twigs, typical of species	20	15	20	15	Y	No visible roots
3	249	Bigleaf maple	16, 44	30	Fair/OK in grove	Co-dominant leaders with included bark x2 @ 4', exposed roots, calloused wound, dead wood, broken branches, asymmetric canopy towards north	30	30	21	30	Y	(1) 4" root & (2) 2" roots, though they appear to be originating from tree 246 adjacent to the clearing limits, which is proposed to be removed
4	253	Douglas fir	36	19	OK	Dead wood, broken branches, previous top loss, carpenter ants bark only	19	19	7	19	Y	(1) 3" root exposed
5	254	Douglas fir	36, 28	16	OK	Co-dominant leaders with included bark x2 @ 1', previous top loss @ 50', strong laterals, dead wood, broken branches, abnormal bark, popping bark, woodpecker activity	16	16	16	6	Y	(1) 3" root growing to the east. No other roots visible.

Photographs:

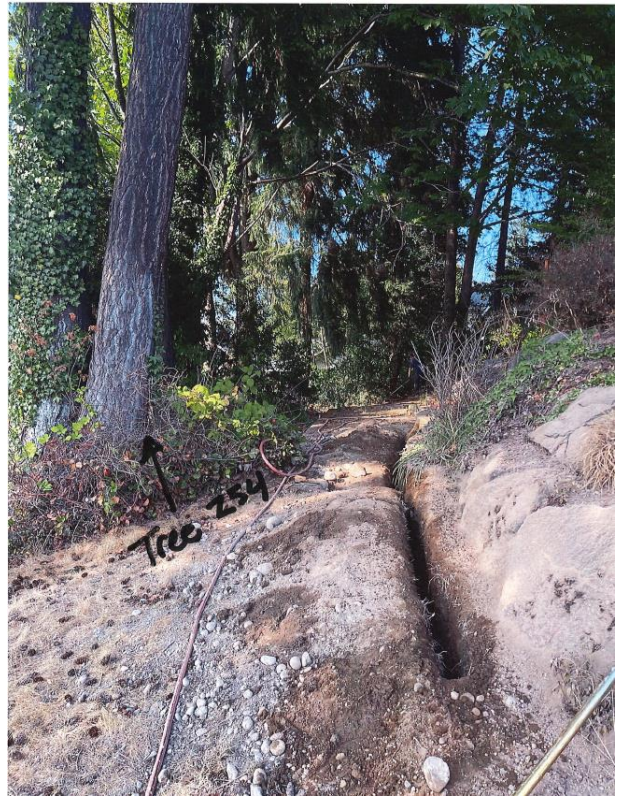
Tree #253 & 249



Tree #233 & 234:



Tree # 254



Discussion:

Tree #253:

One 3" root was exposed from the air-evacuation of the soil around tree #253. The root can be cut cleanly and should not destabilize the tree, nor significantly impact the absorption of water and nutrition.

Tree # 254:

One 3" root was exposed from the air-evacuation of the soil around tree #254 growing to the east. The root can be cut cleanly and should not destabilize the tree, nor significantly impact the absorption of water and nutrition.

Tree # 249:

This tree is located among a group of similar trees. At the point of air=evacuation, three (3) roots were uncovered. One (1) was a four (4") diameter root that appears to be from tree #246 – a tree proposed to be removed, and two (2") roots that appear to originate from this tree. Cutting of these roots should not destabilize nor significantly negatively impact the tree.

Tree # 233 & 234:

The air-evacuation of the soil along the proposed point of excavation for the new building footing did not expose any roots.

The air-evacuation of the soil at the point of proposed encroachment of these five (5) trees did not expose any large diameter roots, or any group of roots that would, in my opinion, warrant tree removal.

As in all cases of trees impacted by site construction, including the redirecting of water to storm water pipes, the driplines of those trees should be covered with 4" of arborist mulch (hog fuel) and temporary water should be provided during periods of drought.

If you have any questions, please contact me. I can be reached on my cell phone: 425.890.3808 or by email: sprince202@aol.com

Warm regards,



Susan Prince

Creative Landscape Solutions

ISA Certified Arborist #1481

TRAQ Certified Arborist #481

Landscape Designer

425.890.3808

*The City of Mercer Island defines a *significant tree* as an existing tree over 10" in diameter

Glossary:

ANSI A300: American National Standards Institute (ANSI) standards for tree care

Chlorotic: discoloration caused by lack of chlorophyll in the foliage

Conifer: A tree that bears cones and has evergreen needles or scales

Crown: the above ground portion of the tree comprised of branches and their foliage

Crown raise pruning: a pruning technique where the lower branches are removed, thus raising the overall height of the crown from the ground

DBH or DSH: diameter at breast or standard height; the diameter of the trunk measured 54 inches (4.5 feet) above grade

Deciduous: tree or other plant that loses its leaves annually and remains leafless generally during the cold season

Epicormic: arising from latent or adventitious buds

Evergreen: tree or plant that keeps its needles or leaves year-round; this means for more than one growing season

Increment: the amount of new wood fiber added to a tree in a given period, normally one year.

ISA: International Society of Arboriculture

Landscape function: the environmental, aesthetic, or architectural functions that a plant can have

Lateral: secondary or subordinate branch

Limits of disturbance: The boundary of minimum protection around a tree, the area that cannot be encroached upon without possible permanent damage to the tree. It is a distance determined by a qualified professional and is based on the age of the tree, its health, the tree species tolerance to disruption and the type of disturbance. It also considers soil and environmental condition and previous impacts. It is unique to each tree in its location.

Limited visual assessment: a visual assessment from a specified perspective such as foot, vehicle, or aerial (airborne) patrol of an individual tree or a population of trees near specified targets to identify specified conditions or obvious defects (ISA 2013)

Live crown ratio: the percentage of living tissue in the canopy versus the tree's height. It is a good indicator of overall tree health and the trees growing conditions. Trees with less than a 30% Crown ratio often lack the necessary quantity of photosynthetic material necessary to sustain the roots; consequently, the tree may exhibit low vigor and poor health.

Monitoring: keeping a close watch; performing regular checks or inspections

Owner/manager: the person or entity responsible for tree management or the controlling authority that regulates tree management

Pathogen: causal agent of disease

Phototropic growth: growth toward light source or stimulant

ROW: Right-of-way; generally referring to a tree that is located offsite on a city easement

Reaction wood: Specialized secondary xylem which develops in response to a lean or similar mechanical stress, it serves to help restore the stem to a vertical position

Self-corrected lean: a tree whose trunk is at an angle to the grade but whose trunk and canopy changes to become upright/vertical

Significant tree: a tree measuring a specific diameter determined by the municipality the tree grows in. Some municipalities deem that only healthy trees can be significant, other municipalities consider both healthy and unhealthy trees of a determined diameter to be significant

Snag: a tree left partially standing for the primary purpose of providing habitat for wildlife

Soil structure: the size of particles and their arrangement; considers the soil, water, and air space

Sounding: process of striking a tree with a mallet or other appropriate tool and listening for tones that indicate dead bark, a thin layer of wood outside a cavity, or cracks in wood

Structural defects: flaws, decay, or other faults in the trunk, branches, or root collar of a tree, which may lead to failure; may be genetic, or environmental

Tree credit: A number assigned to a tree by a municipality that may be equal to the diameter of the tree or a numerical count of the tree, or related to diameter by a factor conveyed in a table of the municipal code

Trunk area: the cross-sectional area of the trunk based upon measurement at 54 inches (4.5 ft.) above grade

Visual Tree Assessment (VTA): method of evaluating structural defects and stability in trees by noting the pattern of growth. Developed by Claus Mattheck (Harris, et al 1999) detailed visual inspection of a tree and surrounding site that may include the use of simple tools. It requires that a tree risk assessor walk completely around the tree trunk looking at the site, aboveground roots, trunk, and branches (ISA 2013)

References

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2. It is assumed that any property is not in violation of any applicable codes, ordinances, statutes or other governmental regulations.
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