City of Encinitas

3.23.16 Assessment of Ficus Trees

SUBMITTED TO:

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MARCH 23, 2016

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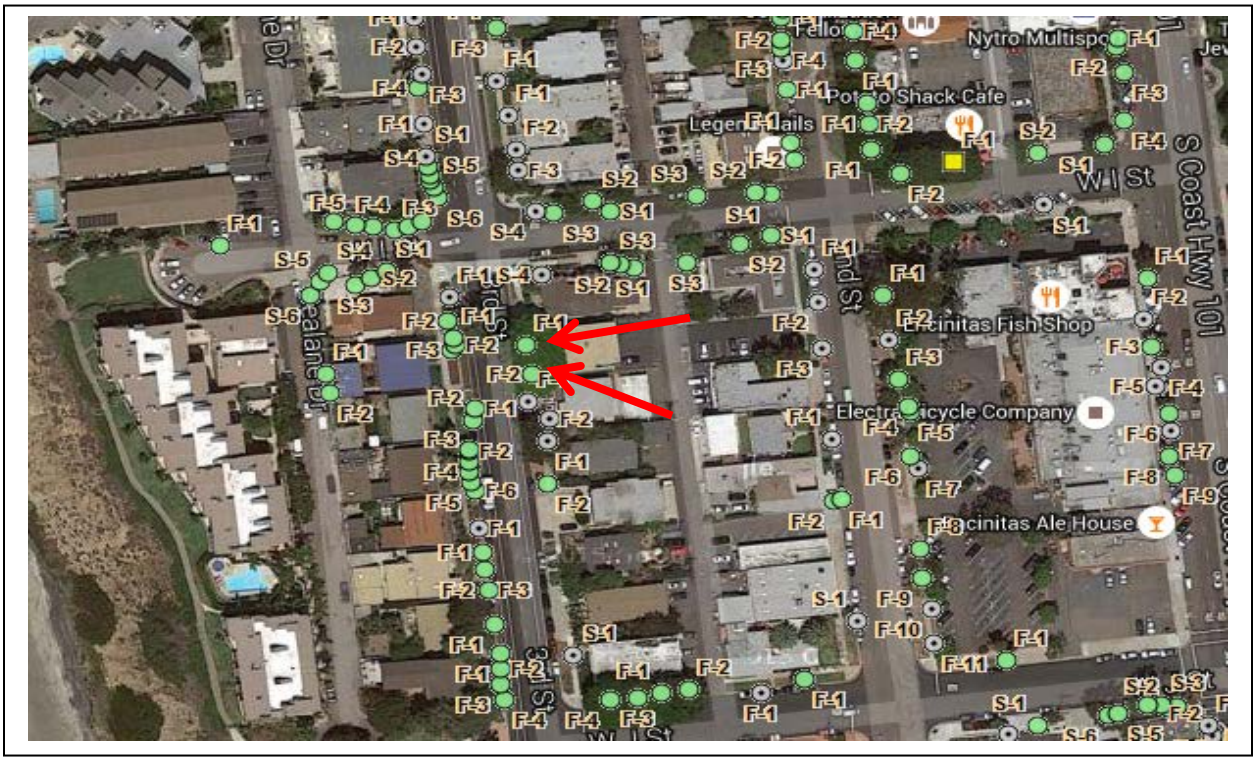
BACKGROUND AND ASSIGNMENT

In March of 2016, West Coast Arborists (WCA) was contacted by John Ugrob (City of Encinitas – Parks Department) in regard to the assessment of two Indian Laurel Fig trees (*Ficus microcarpa nitida*) located at 1011 3rd St. (see **red arrows** in photo below). In ArborAccess (WCA's tree inventory database), the two trees are inventoried as "Front 1" and "Front 2."

Mr. Ugrob requested a tree risk assessment to be completed. The risk assessment performed in this report is valid for a period of three years from the date of inspection (3.23.16). This report is intended to be used by Mr. Ugrob and The City of Encinitas to help determine management decisions in regards to the trees.



OBSERVATIONS

I inspected the subject trees on March 23, 2016 (see Photo #1 in Appendix A). On site, I performed a **Level 2**: **Basic Assessment**[1]**.** I assessed the health and structural integrity of the trees using the **Best Management Practices (BMPs)** for tree risk assessment. I visually inspected the **crown** and **stem** of the tree, looking for structural defects such as **included bark**, **cavities**, **fungal fruiting bodies**, and/or **decay**. My inspection of defects in the crown was limited to a ground-level visual inspection. On site, I observed the following:

Front 1 (Indian Laurel Fig)

- The tree was in fair condition based on the color and density of the foliage for the given species at this time of year (see Photo #1 in Appendix A).
- The tree had a DSH[2] of 31 inches and an approximate height of 50 feet.
- The tree had multiple stems coming out of the main trunk indicating attributes of poor structure but not uncommon to this species (see Photo #2 in Appendix A).
- There were a number of smaller cavities on the trunk but the decay appeared to be **compartmentalized** (see Photo #3 in Appendix A).
- Some of the stems growing from the trees trunk had included bark showing signs of a more weakly attached growth (see Photo #4 in Appendix A).
- There were signs of die back on the tips of the limbs on the North side of the tree. (see Photo #5 in Appendix A).
- The roots of the tree appeared to be pruned back from the street but did not show signs serious decay (see Photo#6 in appendix A).
- The tree had numerous Chains wrapping around the limbs. One chain in particular that was girdling a stem and had tree growth around it (see Photo #7 in Appendix A).

[1] Terms appearing in boldface type are defined in the Glossary at the end of this report.
[2] Diameter at Standard Height (DSH) is the trunk diameter measured 4.5 feet above ground level.

Front 2 (Indian Laurel Fig)

- The tree was in fair health based on the color and density of the foliage for the given species at this time of year (see Photo #1 in Appendix A).

- The tree had a DSH of 37 inches and an approximate height of 50 feet.

- The tree had multiple stems coming out of the main trunk indicating attributes of poor structure but not uncommon to this species (see Photo #8 in Appendix A).

- There were a number of smaller cavities on the trunk but the decay appeared to be **compartmentalized** (see Photo #9 in Appendix A).

- The roots of the tree appeared to be pruned back from the street but had responded with vigor compartmentalizing the wounds to mitigate decay. I also did not see any visual indications of up uprooting in the surrounding

- The tree had numerous Chains wrapping around the limbs from hanging pots and adornments (see Photo #10 in Appendix A).

Site Observations

- Both trees were located in front of a resident home at 1011 3rd Street and the canopies cover a large portion of the street as well as some driveways and private properties. The **targets** were pedestrians, parked cars and homes. The **target zone** appeared to be occupied somewhat frequently during day.

RISK ASSESSMENT

Data collected from tree inspection is used to derive a level of risk based on the matrices found in the BMPs for tree risk assessment (see Appendix B). The level of risk determined (low, moderate, high, or extreme) is to be used by risk managers to help in tree management decisions. When assessing risk, the value of targets is taken into consideration in order to categorize the consequences of failure (negligible, minor, significant, or severe). The people who use and frequent the target zone are generally the most important target with buildings, structures, and cars being secondary in importance.

Front 1 (Indian Laurel Bay Fig)

Likelihood of Failure[3]

The *likelihood of failure* for this tree is *possible* since many of the stems grow in a horizontal nature which constitutes a large bending moment one in particular that is being girdled by a chain.

Likelihood of Impacting Target

The target zone includes the homes, driveways, the street and the side walk. The targets are the people using the sidewalk as well as parked vehicles. Since the target zone appeared to be used somewhat frequently during day, the *likelihood of impacting a target* is *high*.

Consequences

Since the tree is large in size, the consequences of failure would be *severe.*

Based on the categorization of the above risk factors, this tree is currently presenting an overall moderate risk if no mitigation pruning is performed.

[3] Italicized terms are those terms used in the risk rating matrices (see Appendix B).

Front-2 (Indian Laurel Fig)

The *likelihood of failure*

For this tree is *possible* since many of the stems are growing in a horizontal nature which constitutes a large bending moment.

Likelihood of Impacting Target

The target zone includes the homes, driveways, the street and the side walk. The targets are the people using the sidewalk as well as parked vehicles. Since the target zone appeared to be used somewhat frequently during day, the *likelihood of impacting a target* is *high*.

Consequences

Since the tree is large in size, the consequences of failure would be *severe*.

Based on the categorization of the above risk factors, this tree is currently presenting an overall moderate risk if mitigation pruning is not performed.

According to the *Tree Risk Assessment Manual*, published by the International Society of Arboriculture (ISA), it is impossible to maintain trees free of risk. There is no way to guarantee that a tree will not fail. Tree benefits increase as the age and size of trees increase; however, some level of risk must be accepted to experience the benefits provided. The goal in assessing and managing trees is to strike a balance between the risk that a tree poses and the benefits that individuals and communities derive from trees.

RECOMMENDATIONS

Both subject trees are in fair to good health and are currently presenting a moderate risk. I would recommend removing as much of the chains and cords around the limbs as possible. I would also recommend doing a gradual crown reduction over a 5 year period at a rate of no more than 5-6 feet per year to maintain a squattier height and reduce the some stress from the overextended and horizontal growth. Doing this with the structure and canopy balance of the tree in mind should bring down the risk of failure from moderate to low and would be my suggested course of action.

APPENDIX A – PHOTOS

Photo #1

Shown are the two Indian Laurel Figs F-1 (**red arrow**) and F-2 (yellow arrow) you can also see the trees are in fair health from the color and density of the foliage.

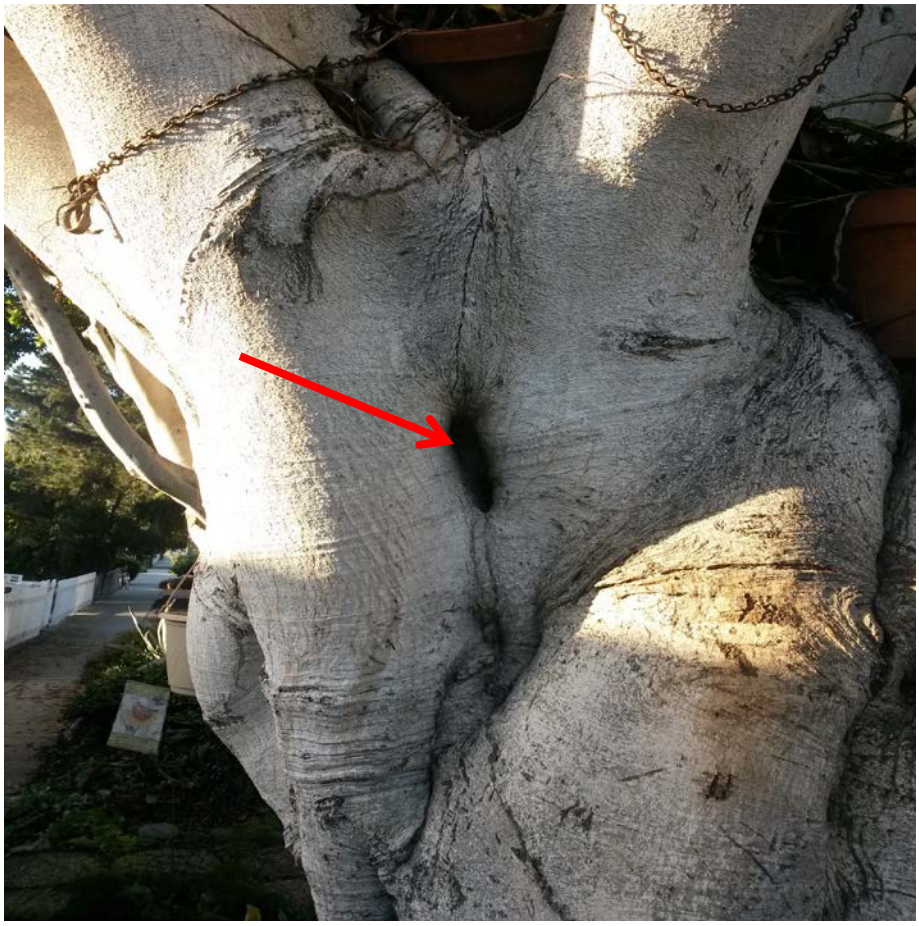
APPENDIX A – PHOTOS

Photo #2

Front-1 (Indian Laurel Fig)
Shown are some of the multiple stems growing from the main trunk (**red arrows**) indicating poor structure.

APPENDIX A – PHOTOS

Photo #3



Front-1 (Indian Laurel Fig)

In the picture above you can see an example of one of the cavities around the trunk of the tree (red arrow).

APPENDIX A – PHOTOS

Photo #4

Front-1 (Indian Laurel Fig)

In the picture above you can see one of the largest areas of included bark (red arrow) signifying a more weakly attached growth.

APPENDIX A – PHOTOS

Photo #5

Front-1 (Indian Laurel Fig)

Shown above you can see some of the die back on the north side of the tree possibly a result of the girdled stems (red arrow).

APPENDIX A – PHOTOS

Photo #6

Front-1 (Indian Laurel Fig)

Shown above you can see where the roots have been pruned back and compartmentalized (red arrow).which is a sign of vigor and good responsive growth.

APPENDIX A – PHOTOS

Photo #7

Front-1 (Indian Laurel Fig)

Shown above you can see one of the chains girdling a stems of the tree (red arrow).

APPENDIX A – PHOTOS

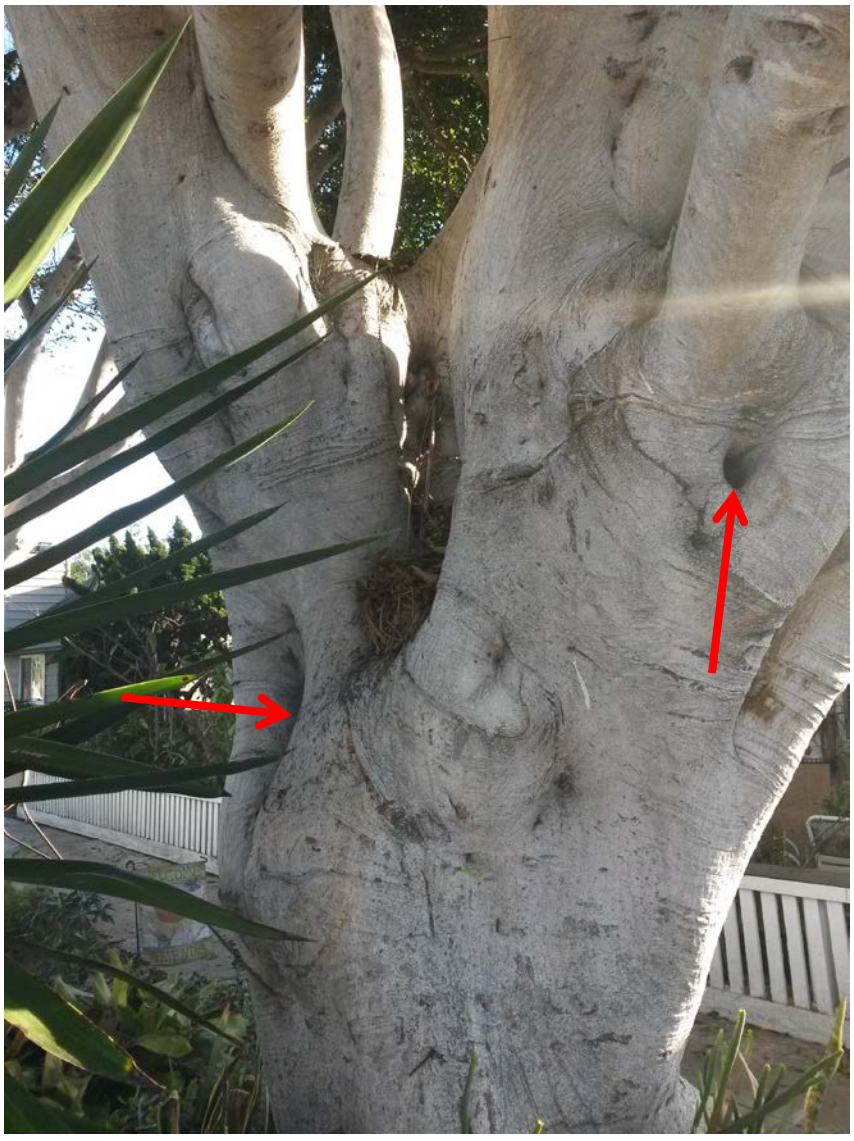
Photo # 8

Front-1 (Indian Laurel Fig)

Shown above you can see the poor structure of the tree with the multiple stems coming from the main trunk (red arrows).

APPENDIX A – PHOTOS

Photo #9



Front-1 (Indian Laurel Fig)

Shown above are examples of some of the cavities around the trunk of the tree (**red arrows**) which appeared to be well compartmentalized.

APPENDIX A – PHOTOS

Photo #10

Front-1 (Indian Laurel Fig)

Shown in the photo above is one of the multiple chains and adornments on the tree (red arrows) that could potentially girdle and cause structural and health issues in the future.

APPENDIX B – TREE RISK MATRICES

Matrix 1

This matrix is used to estimate the likelihood of a tree impacting a specified target. The red arrows exemplify the subject trees.

Likelihood of Failure	Likelihood of Impacting Target			
	Very Low	**Low**	**Medium**	**High**
Imminent	Unlikely	Somewhat Likely	Likely	Very Likely
Probable	Unlikely	Unlikely	Somewhat Likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat Likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2

This matrix is used to determine the level of risk as the combination of likelihood of a tree failing and impacting a target, and severity of the consequences. The red arrows exemplify a moderate risk.

Likelihood of Failure and Impact	Consequences			
	Negligible	**Minor**	**Significant**	**Severe**
Very likley	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

ASSUMPTIONS AND LIMITING CONDITIONS

1. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the Consultant can neither guarantee nor be responsible for the accuracy of information provided by others. Standard of Care has been met with regards to this project within reasonable and normal conditions.

2. The Consultant will not be required to give testimony or to attend court by reason of this report unless subsequent contractual agreements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.

3. Loss or alteration of any part of this report invalidates the entire report.

4. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior written consent of the Consultant.

5. This report and any values expressed herein represent the opinion of the Consultant, and the Consultant's fee is in no way contingent upon the reporting of a stipulated result, a specified value, the occurrence of a subsequent event, nor upon any finding to be reported.

6. Unless expressed otherwise: 1) information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and 2) the inspection is limited to visual examination of accessible items without dissection, excavation, or coring, unless otherwise stated. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the tree(s) or property in question may not arise in the future.

7. Arborists are tree specialists who use their education, knowledge, training, and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees. It is highly recommended that you follow the arborist recommendations; however, you may choose to accept or disregard the recommendations and/or seek additional advice.

8. Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions

9. are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specific period of time.

10. Any recommendation and/or performed treatments (including, but not limited to, pruning or removal) of trees may involve considerations beyond the scope of the arborist's services, such as property boundaries, property ownership, site lines, disputes between neighbors, and any other related issues. Arborists cannot take such considerations into account unless complete and accurate information is disclosed to the arborist. An arborist can then be expected to consider and reasonably rely on the completeness and accuracy of the information provided.

11. The author has no personal interest or bias with respect to the subject matter of this report or the parties involved. He/she has inspected the subject tree(s) and to the best of their knowledge and belief, all statements and information presented in the report are true and correct.

12. Unless otherwise stated, trees were examined using the risk assessment criteria detailed by the International Society of Arboriculture's publications *Best Management Practices – Tree Risk Assessment* and the *Tree Risk Assessment Manual*.

BIBLIOGRAPHY

Harris, Richard W., James R. Clark, and Nelda P. Matheny. *Arboriculture: Integrated Management of Landscape Tree, Shrubs, and Vines.* New Jersey: Prentice Hall, 2004. Print (ISA) *International Society of Arboriculture*. Web. 15 March 2014.

Smiley, Thomas E., Nelda Matheny, and Sharon Lilly. *Best Management Practices: Tree Risk Assessment.* Illinois: International Society of Arboriculture, 2011. Print.

GLOSSARY

Best Management Practices (BMPs) – The International Society of Arboriculture has developed a series of Best Management Practices (BMPs) for the purpose of interpreting tree care standards and providing guidelines of practice for arborists, tree workers, and the people who employ their services.

Bending Moment - The algebraic sum of all the moments to one side of a cross-section ofa beam or other structural support.

Buttress Root- Large structural roots most common to trees native to rainforest soils where nutrients are not as abundant or accessible in the deeper soil layers.

Canopy – The part of the crown composed of leaves and small twigs (Harris, Clark, and Matheny 526).

Cavity – An open wound, characterized by the presence of decay and resulting in a hollow (Harris, Clark, and Matheny 527).

Codominant – Equal in size and relative importance, usually associated with either the trunks/stems or scaffold limbs/branches in the crown (Harris, Clark, and Matheny 527).

Compartmentalization – Natural defense process in trees by which chemical and physical boundaries are created that act to limit the spread of disease and decay organisms.

Crown – The leaves and branches of a tree measured from the lowest branch on the trunk to the top of the tree (Harris, Clark, and Matheny 527).

Decay – Process of degradation of woody tissues by fungi and bacteria through the decomposition of cellulose and lignin (Harris, Clark, and Matheny 527).

Elevated Root Bridging- Root bridging and ramps can be used to create a spatial separation between infrastructure elements (typically sidewalks) and the root zone. This is an important yet costly remedial design option when root pruning is not possible. An added benefit of this technique is the facilitation of root evaluation when fitted with removable steel plates. Coarse aggregate material and drains can be implemented to reduce water and debris accumulation within the gap if necessary.

Failure – Breakage of stem, branch, roots, or loss of mechanical support in the root system (Smiley, Matheny, and Lilly 48).

Fungal Fruiting Bodies – Any complex fungal structure that contains or bears spores.

Frass- Solid fecal matter produced by certain insects.

Included Bark – Pattern of development at branch junctions where bark is turned inward rather than pushed out (Harris, Clark, and Matheny 529).

Level 2: **Basic Assessment -** A Level 2 or basic assessment is a detailed visual inspection of a tree and its surrounding site, and a synthesis of the information collected. It requires that a tree risk assessor walk completely around a tree looking at the site, buttress roots, trunk, and branches. A basic assessment may include the use of simple tools to gain additional information about the tree or defects. This is the standard assessment that is performed by arborists in response to a client's request for tree risk assessment (Smiley, Matheny, and Lilly 15).

Level 3: Advanced Assessment – Advanced assessments that are performed to provide detailed information about specific tree parts, defects, targets, or site conditions. Specialized equipment, data collection and analysis, and/or expertise are usually required for advanced assessments. Information collected from advanced assessments can aid in making a final tree removal or retention recommendation.

Live Crown Ratio – The ratio of the height of the live crown to the height of the entire tree.

Minor Consequence – A consequences that involves low to moderate property damage, small disruptions to traffic or communication utility, or a very minor injury. Examples include:

- A small branch striking a house roof from a high height.
- A medium sized branch striking a deck from a moderate height.
- A large part striking a structure and causing moderate monetary damage. In my opinion, this is moderate monetary damage has a rough equivalent range of $500 - $5,000 in damages.
- Short term disruption of power at a service drop to a house.
- Temporary disruption of traffic on a neighborhood street.

Negligible Consequence – A consequence that involves low-value property damage or disruption that can be replaced or repaired; they do not involve personal injury. Examples include:

- A small branch striking a fence.
- A medium-sized branch striking a shrub bed.
- A large branch striking a structure and causing low monetary damage. In my opinion, this is low monetary damage has a rough equivalent range of $1- $500 in damages.
- Disruption of power to landscape lighting.

Reduction Pruning – Pruning cut that reduces the length of a branch back to live lateral branch large enough to assume apical dominance. Typically at least one-third the diameter of the cut parent branch.

Response Growth - New wood produced in response to loads to compensate for higher strain in marginal fibers; includes reaction wood (compression and tension) and woundwood (Smiley, Matheny, and Lilly 50).

Removal Pruning Cut: A pruning cut that takes off a branch back to the trunk or parent stem to just beyond the branch collar.

Risk – The combination of the likelihood of an event and the severity of the potential consequences. In the context of trees, risk is the likelihood of a conflict or tree failure occurring and affecting a target, and the severity of the associated consequence—personal injury, property damage, or disruption of activities (Smiley, Matheny, and Lilly 50).

Severe Consequence – A consequence that could involve serious personal injury or death, disruption of important activities, damage to high-value property (in my opinion equating to a rough equivalent range of $25,000 or more). Examples include:

- Injury that may result in hospitalization or permanent damage.
- A medium- sized part striking an occupied vehicle.
- A large part striking an occupied house.
- Serious disruption of high-voltage distribution and transmission powerline.
- Disruption of arterial traffic or motorways.

Significant Consequence – A consequence that involves property damage of moderate – high value, considerable disruption, or personal injury. Examples include:

- A medium sized part striking an unoccupied vehicle from a moderate to high height.
- A large part striking a structure and resulting in high monetary damage. In my opinion, this is high monetary damage has a rough equivalent range of $5,000- $25,000 in damages.
- Disruption of distribution primary or secondary voltage power lines, including individual services and street- lighting circuits.
- Disruption to traffic on a secondary street.

Stem – The main trunk of a tree or other plant (Harris, Clark, and Matheny 533).

Structural Pruning – Pruning that influences the orientation, spacing, growth rate, strength of attachment or ultimate size of branches and stems, resulting in a strong tree.

Target – People, property, or activities that could be injured, damaged, or disrupted by a tree (Smiley, Matheny, and Lilly 50).

Target zone – The area where a tree or branch is likely to land if it were to fail (Smiley, Matheny, and Lilly 50).