



TERAGAN & ASSOCIATES, INC. ARBORICULTURAL CONSULTANTS

MEMORANDUM

DATE: October 4, 2019

TO: Kyle Bertelsen (Phelan Development Company)

FROM: Todd Prager, RCA #597, ISA Board Certified Master Arborist

RE: Tree Removal and Protection Plan for Tualatin Industrial

Summary

This report includes tree removal and protection recommendations for the construction of the Tualatin Industrial project in Tualatin.

Background

Phelan Development Company is proposing to construct the Tualatin Industrial project in Tualatin. The proposed site plan with proposed grading and existing tree locations is provided in Attachment 1.

The purpose of this report is to:

1. Provide tree removal findings and recommendations based on the proposed site plan; and
2. Provide recommendations for adequately protecting the trees to be retained during construction.

Tree Assessment

On September 30, 2019, I completed the inventory of all trees over 8-inches in trunk diameter (DBH) at the project site. The complete inventory data is provided in the tree inventory spreadsheet in Attachment 2. The data collected for each tree includes the tree number, species (common and scientific names), DBH, tree health condition, tree structural condition, pertinent comments, and treatment (remove/retain). The tree numbers in the tree inventory in Attachment 2 correspond to the tree numbers on the proposed site plan in Attachment 1. The onsite trees were also tagged with their corresponding numbers in the field.

Proposed Tree Removal

A typical minimum recommended tree protection zone encompasses a radius around a tree that is .5 feet per inch of trunk diameter. For example, a tree with a 24-inch trunk diameter would have a minimum protection radius of 12 feet. However, this standard may need to be adjusted on a case by case basis due to tree health, species characteristics, root distribution, whether the tree will be impacted on multiple sides, and other factors. In some cases such as when the tree will be impacted on multiple sides, the tree protection zone will be increased to a radius of up to one foot per inch of trunk diameter.

Attachment 1 shows the proposed construction and grading impacts in relation to the trees. Onsite trees 10056 through 10063, 10111, 10112, 10149, 10586, 10805, 10827, and 20042 are within the construction and grading footprint and will be removed for construction purposes. In addition, property line trees 10783, 10784, 10785, 10828, and 20011 are within the grading footprint and either nuisance species (sweet cherry, *Prunus avium*) or lower value species (black cottonwood, *Populus trichocarpa*). Note that the neighbor will need to approve the removal of property line trees since they are shared property. The proposed removal of these onsite and property line trees meets the tree removal criteria in section 34.230.1(c) of the Tualatin Code because their removal is required "to construct proposed improvements".

Protection recommendations for the remaining trees to be retained at the site are provided in the next section of this report.

Tree Protection Recommendations

The following tree protection measures will be necessary to protect the trees during construction:

- *Tree Protection Fencing*: Erect six foot metal tree protection fencing in the locations shown in Attachment 1 to protect the trees from construction.
- *Retaining Wall Construction*: A retaining wall or other method for shifting grading to outside the tree protection zones will be required to protect trees 10162 through 10179, 10797, 10820, and 10822 through 10826 as shown in Attachment 1.
- *Tree Pruning*: Some of the trees to be retained may need to be reduction and/or clearance pruned prior to construction in accordance with ANSI A300 pruning standards the minimum necessary to allow for construction.

Additional tree protection recommendations that are consistent with City of Tualatin standards are provided in Attachment 3.

Conclusion

Twenty trees are recommended for removal with construction. The 28 trees to be retained will be adequately protected during construction by adhering to the recommendations in this report. Any change to the tree protection plan should be completed by the project arborist to ensure that the trees to be retained are properly protected.

Please contact me if you have questions, concerns, or need any additional information.

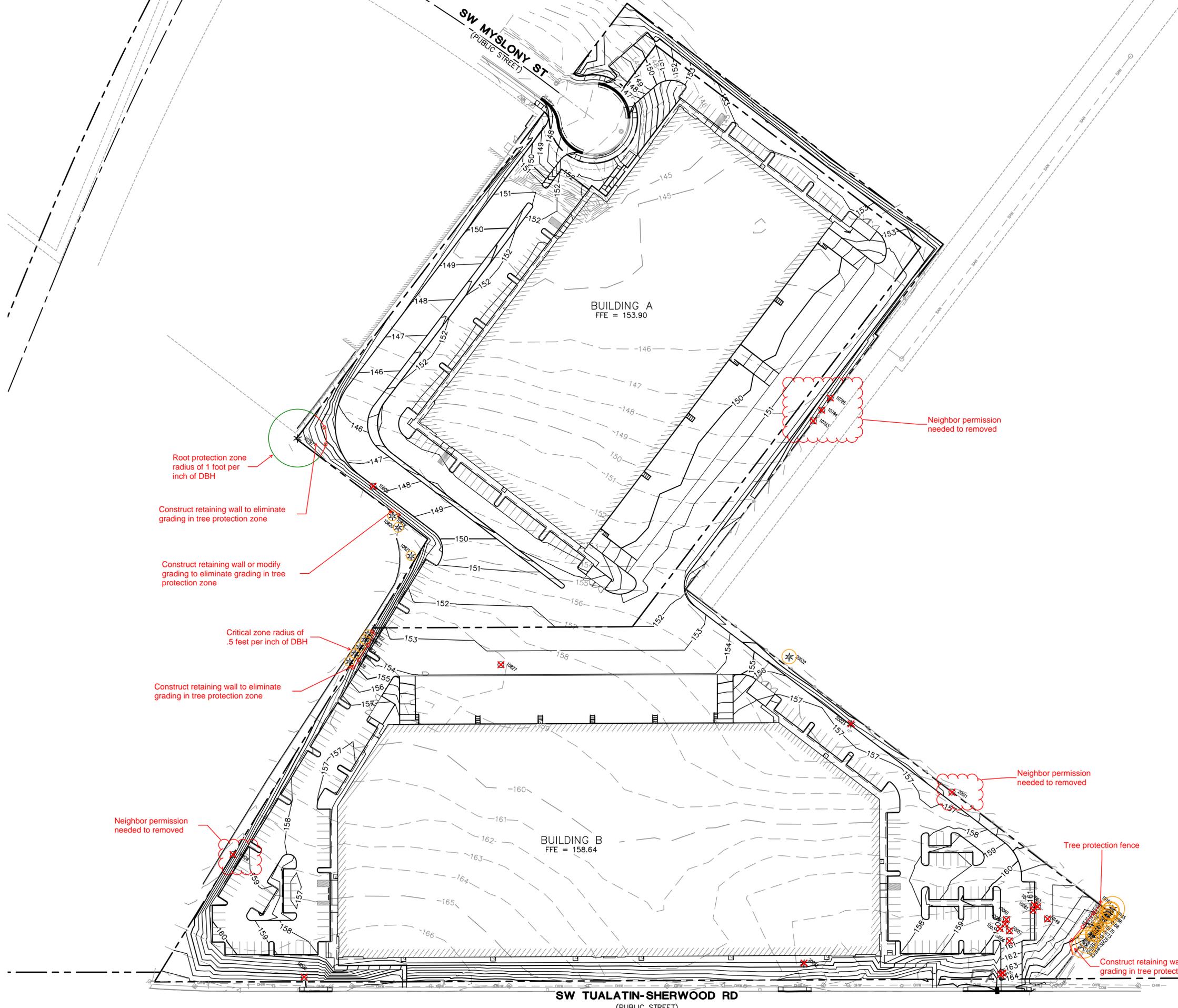
Sincerely,



Todd Prager

*ASCA Registered Consulting Arborist #597
ISA Board Certified Master Arborist, WE-6723B
ISA Qualified Tree Risk Assessor
AICP, American Planning Association*

Enclosures: Attachment 1 – Site Plan with Tree Removal and Protection
Attachment 2 – Tree Inventory
Attachment 3 – Tree Protection Recommendations
Attachment 4 – Assumptions and Limiting Conditions



- SHEET NOTES**
1. CURB HEIGHTS ARE 6" UNLESS NOTED OTHERWISE.
 2. LANDINGS ON ACCESSIBLE ROUTES SHALL NOT EXCEED 2% IN ANY DIRECTION.
 3. ALL ACCESSIBLE ROUTES SHALL COMPLY WITH CURRENT ADA ACCESSIBILITY GUIDELINES FOR BUILDING AND FACILITIES (ADAAG).
 4. ALL WALKWAYS FROM ACCESSIBLE UNITS ARE DESIGNED TO NOT REQUIRE HANDRAILS. THEREFORE, RAMPS WITH SLOPES STEEPER THAN 5.0% AND LESS THAN 8.33% SHALL NOT EXCEED 0.5' RISE OR 6.0' LENGTH.
 5. FINISH GRADES ARE TO BE BROUGHT TO WITHIN 0.08 FT IN 10 FT OF THE GRADES SHOWN AT SUBGRADE AND TO WITHIN 0.03 FT IN 10 FT AT FINISH GRADE. CONTRACTOR TO ALLOW FOR PLACEMENT OF REQUIRED TOPSOIL IN ROUGH GRADING.
 6. GRADING ELEVATIONS AS SHOWN ON SITE AND LANDSCAPE PLANS ARE FINISHED GRADE WHICH INCLUDES SUBGRADE SOIL, TOPSOIL, SOIL AMENDMENTS, ROCKERY AND RUNOFF PROTECTION CONTRACTOR IS RESPONSIBLE TO COORDINATE GRADING WITH BOTH EXCAVATOR AND LANDSCAPE CONTRACTOR.

GRADING LABEL LEGEND

CALLOUT	DESCRIPTION
XX.XX	SPOT ELEVATION
XX	DESCRIPTION LISTED BELOW.
FFE	FINISHED FLOOR ELEVATION
TP	TOP OF PAVEMENT

LEGEND

EXISTING CONTOUR MINOR	---	102
EXISTING CONTOUR MAJOR	---	100
PROPOSED CONTOUR MINOR	---	102
PROPOSED CONTOUR MAJOR	---	100

Attachment 1



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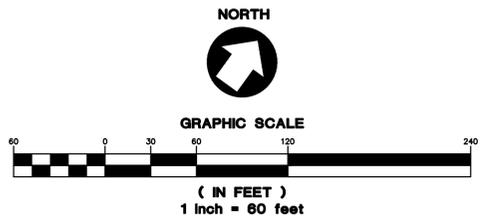
TUALATIN INDUSTRIAL
 TUALATIN, OR

SHEET TITLE
GRADING PLAN
 DATE: 09/09/19
 DRAWN: NJD
 CHECKED: DSE
 REVISIONS:

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 SHEET NUMBER

EX2

JOB NUMBER: A19173.10



Attachment 2

TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH ¹	CONDITION ²	STRUCTURE ²	COMMENTS	TREATMENT
10056	bigleaf maple	<i>Acer macrophyllum</i>	18,18, 18	fair	fair	multiple leaders at 3' with decay, history of branch failure	remove
10057	sweet cherry	<i>Prunus avium</i>	8	fair	fair	one sided, overtopped by adjacent tree, large wound with decay at lower trunk	remove
10058	sweet cherry	<i>Prunus avium</i>	11,9	fair	fair	codominant at ground level with included bark, one sided	remove
10059	sweet cherry	<i>Prunus avium</i>	11,9	very poor	very poor	dead	remove
10060	sweet cherry	<i>Prunus avium</i>	16,15, 10	poor	poor	multiple leaders at ground level with decay, significant branch dieback	remove
10061	sweet cherry	<i>Prunus avium</i>	16	good	fair	one sided	remove
10062	sweet cherry	<i>Prunus avium</i>	16,16, 16,15, 13	fair	fair	multiple leaders at 2' with included bark	remove
10063	sweet cherry	<i>Prunus avium</i>	20	good	fair	codominant at 8', one sided	remove
10111	English walnut	<i>Juglans regia</i>	8,8,8,8, 7	good	fair	multiple leaders at 2' with included bark	remove
10112	English hawthorn	<i>Crataegus monogyna</i>	8,8,5	good	fair	multiple leaders at ground level	remove
10149	English holly	<i>Ilex aquifolium</i>	7,6,5,5, 5	fair	fair	multiple leaders at ground level, moderately thin crown	remove
10162	incense cedar	<i>Calocedrus decurrens</i>	30	fair	fair	excessive competition with adjacent trees due to close spacing	retain
10163	incense cedar	<i>Calocedrus decurrens</i>	20	fair	fair	excessive competition with adjacent trees due to close spacing	retain
10164	incense cedar	<i>Calocedrus decurrens</i>	22	fair	fair	excessive competition with adjacent trees due to close spacing	retain
10165	incense cedar	<i>Calocedrus decurrens</i>	18	fair	fair	excessive competition with adjacent trees due to close spacing	retain
10166	incense cedar	<i>Calocedrus decurrens</i>	18	fair	fair	excessive competition with adjacent trees due to close spacing	retain

Attachment 2

TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH ¹	CONDITION ²	STRUCTURE ²	COMMENTS	TREATMENT
10167	incense cedar	<i>Calocedrus decurrens</i>	26	fair	fair	excessive competition with adjacent trees due to close spacing	retain
10168	incense cedar	<i>Calocedrus decurrens</i>	18	fair	fair	excessive competition with adjacent trees due to close spacing	retain
10169	incense cedar	<i>Calocedrus decurrens</i>	12	fair	fair	excessive competition with adjacent trees due to close spacing	retain
10170	incense cedar	<i>Calocedrus decurrens</i>	24	fair	fair	excessive competition with adjacent trees due to close spacing	retain
10171	incense cedar	<i>Calocedrus decurrens</i>	15	fair	fair	excessive competition with adjacent trees due to close spacing	retain
10172	incense cedar	<i>Calocedrus decurrens</i>	12	fair	fair	excessive competition with adjacent trees due to close spacing	retain
10173	incense cedar	<i>Calocedrus decurrens</i>	11	fair	fair	excessive competition with adjacent trees due to close spacing	retain
10174	incense cedar	<i>Calocedrus decurrens</i>	12	fair	fair	excessive competition with adjacent trees due to close spacing	retain
10175	incense cedar	<i>Calocedrus decurrens</i>	23	fair	fair	excessive competition with adjacent trees due to close spacing	retain
10176	incense cedar	<i>Calocedrus decurrens</i>	16	fair	fair	excessive competition with adjacent trees due to close spacing	retain
10177	incense cedar	<i>Calocedrus decurrens</i>	14	fair	fair	excessive competition with adjacent trees due to close spacing	retain
10178	incense cedar	<i>Calocedrus decurrens</i>	20,18	fair	fair	excessive competition with adjacent trees due to close spacing	retain

Attachment 2

TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH ¹	CONDITION ²	STRUCTURE ²	COMMENTS	TREATMENT
10179	incense cedar	<i>Calocedrus decurrens</i>	24,16	fair	fair	excessive competition with adjacent trees due to close spacing	retain
10586	American chestnut	<i>Castanea dentata</i>	48,10,8	very poor	very poor	extensive top dieback, topped for overhead power clearance	remove
10783	sweet cherry	<i>Prunus avium</i>	14	good	fair	multiple leaders	remove
10784	sweet cherry	<i>Prunus avium</i>	12,10,8	good	fair	multiple leaders at 2'	remove
10785	sweet cherry	<i>Prunus avium</i>	10,10	good	fair	codominant at 1'	remove
10797	Douglas-fir	<i>Pseudotsuga menziesii</i>	36	good	fair	one sided, retaining wall cut at 12 feet from NW side of tree	retain
10805	orchard apple	<i>Malus domestica</i>	10,10,10,10,7.7.3	fair	fair	not maintained for fruit production	remove
10819	western redcedar	<i>Thuja plicata</i>	12	good	good		retain
10820	western redcedar	<i>Thuja plicata</i>	12	good	good		retain
10821	incense cedar	<i>Calocedrus decurrens</i>	12	good	good		retain
10822	western redcedar	<i>Thuja plicata</i>	8,6	good	fair	codominant at 1'	retain
10823	western redcedar	<i>Thuja plicata</i>	12,4	good	fair	codominant at 1'	retain
10824	western redcedar	<i>Thuja plicata</i>	12	good	good		retain
10825	western redcedar	<i>Thuja plicata</i>	12	good	good		retain
10826	western redcedar	<i>Thuja plicata</i>	12	good	good		retain
10827	orchard pear	<i>Pyrus sp.</i>	18,16,10	fair	fair	not maintained for fruit production	remove
10828	black cottonwood	<i>Populus trichocarpa</i>	32	good	good		remove
20011	sweet cherry	<i>Prunus avium</i>	12	good	fair	one sided, multiple leaders	remove
20023	n/a	n/a	n/a	n/a	n/a	not located	n/a
20032	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	good	fair	one sided	retain
20042	western hemlock	<i>Tsuga heterophylla</i>	38	good	fair	lost top, upright competing leader at 15'	remove

¹DBH is the trunk diameter in inches measured per International Society of Arboriculture (ISA) standards.

²Condition and Structure ratings range from very poor, poor, fair, to good.

Attachment 3 Tree Protection Recommendations

The following recommendations will help to ensure that the trees to be retained are adequately protected:

Before Construction Begins

1. Notify all contractors of tree protection procedures. For successful tree protection on a construction site, all contractors must know and understand the goals of tree protection.
 - a. Hold a tree protection meeting with all contractors to explain the goals of tree protection.
 - b. Have all contractors sign memoranda of understanding regarding the goals of tree protection. The memoranda should include a penalty for violating the tree protection plan. The penalty should equal the resulting fines issued by the local jurisdiction plus the appraised value of the tree(s) within the violated tree protection zone per the current Trunk Formula Method as outlined in the current edition of the *Guide for Plant Appraisal* by the Council of Tree & Landscape Appraisers. The penalty should be paid to the owner of the property.
2. Fencing
 - a. Trees to remain on site will be protected by installation of tree protection fencing as shown in Attachment 1.
 - b. The fencing should be put in place before the ground is cleared in order to protect the trees and the soil around the trees from disturbances.
 - c. Fencing should be established by the project arborist based on the needs of the trees to be protected and to facilitate construction.
 - d. Fencing should consist of 6-foot high steel fencing on concrete blocks or 6-foot metal fencing secured to the ground with 8-foot metal posts to prevent it from being moved by contractors, sagging, or falling down.
 - e. Fencing should remain in the position that is established by the project arborist and not be moved without approval from the project arborist until final project approval.
3. Signage
 - a. All tree protection fencing should have signage as follows so that all contractors understand the purpose of the fencing:

TREE PROTECTION ZONE

**DO NOT REMOVE OR ADJUST THE LOCATION OF THIS
TREE PROTECTION FENCING**

UNAUTHORIZED ENCROACHMENT MAY RESULT IN FINES

Please contact the project arborist if alterations to the location of the tree protection fencing are necessary.

Todd Prager, Project Arborist, Teragan & Associates, 971-295-4835

- b. Signage should be placed every 75-feet or less.

During Construction

1. Protection Guidelines Within the Tree Protection Zones:
 - a. No new buildings; grade change or cut and fill, during or after construction; new impervious surfaces; or utility or drainage field placement should be allowed within the tree protection zones.
 - b. No traffic should be allowed within the tree protection zones. This includes but is not limited to vehicle, heavy equipment, or even repeated foot traffic.
 - c. No storage of materials including but not limiting to soil, construction material, or waste from the site should be permitted within the tree protection zones. Waste includes but is not limited to concrete wash out, gasoline, diesel, paint, cleaner, thinners, etc.
 - d. Construction trailers should not to be parked/placed within the tree protection zones.
 - e. No vehicles should be allowed to park within the tree protection zones.
 - f. No other activities should be allowed that will cause soil compaction within the tree protection zones.
2. The trees should be protected from any cutting, skinning or breaking of branches, trunks or woody roots.
3. The project arborist should be notified prior to the cutting of woody roots from trees that are to be retained to evaluate and oversee the proper cutting of roots with sharp cutting tools. Cut roots should be immediately covered with soil or mulch to prevent them from drying out.
4. Trees that have woody roots cut should be provided supplemental water during the summer months.
5. Any necessary passage of utilities through the tree protection zones should be by means of tunneling under woody roots by hand digging or boring with oversight by the project arborist.
6. Any deviation from the recommendations in this section should receive prior approval from the project arborist.

After Construction

1. Carefully landscape the areas within the tree protection zones. Do not allow trenching for irrigation or other utilities within the tree protection zones.
2. Carefully plant new plants within the tree protection zones. Avoid cutting the woody roots of trees that are retained.
3. Do not install permanent irrigation within the tree protection zones unless it is drip irrigation to support a specific planting or the irrigation is approved by the project arborist.
4. Provide adequate drainage within the tree protection zones and do not alter soil hydrology significantly from existing conditions for the trees to be retained.
5. Provide for the ongoing inspection and treatment of insect and disease populations that are capable of damaging the retained trees and plants.
6. The retained trees may need to be fertilized if recommended by the project arborist.
7. Any deviation from the recommendations in this section should receive prior approval from the project arborist.

Attachment 4

Assumptions and Limiting Conditions

1. Any legal description provided to the consultant is assumed to be correct. The site plans and construction information provided by Phelan Development Company and their consultants was the basis of the information provided in this report.
2. It is assumed that this property is not in violation of any codes, statutes, ordinances, or other governmental regulations.
3. The consultant is not responsible for information gathered from others involved in various activities pertaining to this project. Care has been taken to obtain information from reliable sources.
4. Loss or alteration of any part of this delivered report invalidates the entire report.
5. Drawings and information contained in this report may not be to scale and are intended to be used as display points of reference only.
6. The consultant's role is only to make recommendations. Inaction on the part of those receiving the report is not the responsibility of the consultant.
7. The purpose of this report is to:
 - Provide tree removal findings and recommendations based on the proposed site plan; and
 - Provide recommendations for adequately protecting the trees to be retained during construction.