



Table of Contents for Carpenter Hall Site Plan
Heritage Tree Variance Package

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**ITEM FOR PLANNING COMMISSION AGENDA****COMMISSION****DATE REQUESTED:** January 10, 2017**ADDRESS****OF PROPERTY:** 400 Josephine Street**SITE PLAN #:** SP-2016-0073**NAME OF APPLICANT:** Stantec, Inc. (formerly Bury, Inc.)**CITY ARBORIST:** Keith Mars, 512-974-2755
keith.mars@austintexas.gov**ORDINANCE:** Heritage Tree Ordinance (LDC 25-8-641)**REQUEST:** The applicant is requesting to remove two heritage trees, each with a single-stem greater than 30" in diameter.**STAFF****RECOMMENDATION:** The request meets the City Arborist approval criteria set forth in LDC 25-8-624(A)(2), thus the variance is recommended.



MEMORANDUM

TO: Stephen Oliver, Chair
Planning Commissioners

FROM: Keith Mars, City Arborist
Development Services Department

DATE: January 10, 2017

SITE PLAN: The Carpenter (SP-2016-0073C)

REQUEST: The applicant is requesting to remove two heritage trees, each with a single-stem greater than 30 inches as allowed under LDC 25-8-643

Project Description

The subject property is located at 400 Josephine Street. The lot size is 1.389 acres and is zoned CS-General Commercial. The current use is office/commercial and the desired use is to convert the existing Carpenter's Hall to a hotel lobby and kitchen, and new construction of hotel, parking lot, pool area and pool pavillion. The proposed impervious cover is ~61% and the allowable impervious cover is 95%. The proposed building height is ~51 feet and the FAR is .92:1. The site meets, but does not exceed, code required parking. The property is located in the West Bouldin Creek Watershed classified as an urban watershed.

There are six protected and twelve heritage trees onsite. The project proposes to preserve four of the six protected trees and six of the 12 heritage trees. Except three trees, all of the regulated trees onsite are Pecans. The tree conditions range from structurally and biologically sound to hazardous. There are two Pecans that exceed 30" in diameter that are requested for removal that, per the Land Development Code, necessitate a Land Use Commission variance.

Tree Evaluation

Measurements

The subject trees are two heritage Pecan trees. Tree #908 is a 31" Pecan and tree #919 is a 33" Pecan.

Canopy Conditions

Both canopies display minor to major asymmetry as a result of prior limb failures (Exhibit 1). Storm damage is evident in the canopy as most leaders have abrupt termination of the tapering to branches (Exhibit 2). Tree #908 displayed a heightened

loading on the stems as a result of the length and excessive end weight on the branches (Exhibit 3).

Trunk

There is a 2'x2' wound and cavity on tree #919 and a small cavity is present just above the lateral union of tree #908 (Exhibit 4).

Root System

Both root systems are entirely covered with disturbed and compacted cover (Exhibit 5). Tree #919 has been buried to an unknown depth as the root flare is not visible (Exhibit 6).

Overall Condition

Tree #919 is likely hazardous due to: (1) the location and size of the cavity, and (2) the cavity occurs in the plane of the lean away from upright further compromising the mechanical integrity of the trunk to remain upright. Tree #908 is in fair condition. More details on the overall condition can be found in the City Arborist Tree Evaluations (Exhibit 7).

Variance Request

The variance request is to allow removal of two heritage trees, each with one stem greater than 30 inches as allowed under LDC 25-8-643.

Recommendation

The City Arborist recommends removal of both trees under differing rationales. Tree #919 is a hazardous tree and recovery of the tree is unlikely given the aforementioned defects. Since the tree is not likely an imminent hazard a Land Use Commission variance is necessary.

Tree #908 displays canopy and structural defects relatively common for planted Pecans in a landscape setting. The canopy asymmetry is not correctable due to storm damage. Preserving this tree in situ is possible, but doing so would result in moving or reducing the size of the structure that would impact adjacent protected and heritage trees proposed to be preserved. The City Arborist and applicant have met on numerous occasions to develop a plan that preserves the healthiest trees on the property and explore options that would preserve trees in place. Plan modifications and waivers have been explored that, in part, have resulted in 61% impervious cover (zoning allows up to 95%) and numerous parking reductions that results in more trees preserved. This tree is not a suitable transplant candidate due to the existing impervious cover and the canopy architecture, particularly given the length of the main leaders that have a greater likelihood of failure as compared to the expected canopy form of a Pecan.

Therefore, the City Arborist recommends it is not reasonable to incorporate the two trees into the design given the tree condition (tree #919) and reasonable use of the property (tree #908) of the property. The variance request meets approval criteria for the City Arborist per LDC 25-8-624(A) (2).

Mitigation

The Environmental Criteria Manual standard is 300% mitigation. Due to the tree condition it is standard practice per the Environmental Criteria Manual to reduce the mitigation. Consequently, the suggested mitigation rates are 100% of tree #919 and 200% for tree 908. That would equate to 95 inches of mitigation. Diversifying the age structure of trees onsite and tree care for existing trees onsite is recommended for this site. Therefore, the mitigation recommendations should pursue a combination of ensuring trees are planted both interior to the project and along the perimeter streetscape and a certified arborist tree care plan for all trees to be preserved.

Please contact 512-974-2755 or keith.mars@austintexas.gov if you have questions.

Keith W. Mars

Keith Mars, City Arborist
Development Services Department

**ENVIRONMENTAL COMMISSION MOTION 20161019 008a**

Date: October 19, 2016

Motion by: Hank Smith

Seconded by: Andrew Creel

Subject: RRRTI Breadmakers, LP request to remove two heritage trees with stems greater than 30" in diameter as allowed under LDC 25-8-643 in accordance with site plan SP-2016-0073C

RATIONALE:

Whereas, the proposed redevelopment of this site will cover approximately 65 percent out of an allowable 95 percent and the Environmental Commission has determined the basis for removal is that the trees prevent a reasonable use of the property; and

Whereas, the City Arborist recommends removal of both trees.

Therefore, the Environmental Commission recommends approval of the request for removal of the two heritage pecan trees with stems greater than 30" in diameter as allowed under LDC 25-8-643 with the following;

Staff Conditions:

- 191" of mitigation would be required and diversifying the age structure of trees onsite and tree care for existing trees onsite is recommended.
- The mitigation recommendations should pursue a combination of ensuring trees are planted both interior to the project and along the perimeter streetscape and a certified arborist tree care plan for all trees to be preserved

Environmental Commission Conditions:

- Reuse the wood from the removed trees on the site in the form of something other than mulch as a public benefit

VOTE 7-1-2

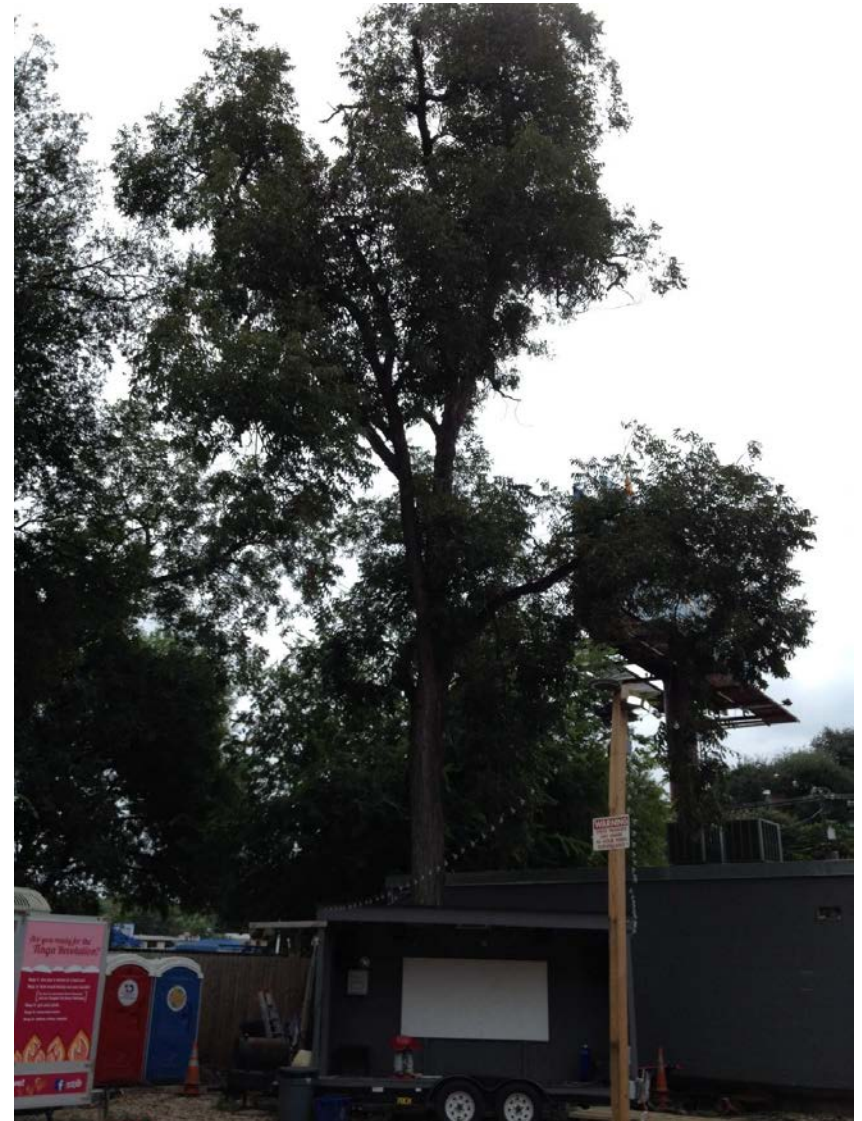
For: Creel, Guerrero, B. Smith, H. Smith, Grayum, Perales, Thompson
Against: Maceo
Abstain: None
Recuse: None
Absent: Neely, Moya

Approved By:

Marisa Perales, Environmental Commission Chair



Exhibit 1



Item C-23

Tree #908



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Tree #919



Exhibit 2



The City Arborist Program

Tree Preservation and Replenishment







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Tree #919

Exhibit 6



The City Arborist Program

Tree Preservation and Replenishment



CITY ARBORIST TREE EVALUATION

Property address: 400 Josephine St.
 Date: 9/27/16
 Evaluator: Keith Mall
 SIGNATURE: [Signature]
 ISA/ASCA Certification #: TX-3677AN

Tree # 919

1. TREE CHARACTERISTICS

DBH of each trunk: 33 Common & Latin name: Pecan Carya illinoensis
 Location: Private / Public Estimated height & canopy spread (ft): 70' x 50' 50x40'
 Age class: young / mature / over-mature / dead (if dead, there is no need to fill out section 2)
 Deadwood: 0% 0-10% 10-25% 25-50% >50%
 Form: generally symmetric / minor asymmetry / major asymmetry / stump sprout
 Pruning history: crown cleaned / excessively thinned / topped / crown raised
 pollarded / crown reduced / utility clearance / storm damage cleaning / none
 Crown class: dominant / co-dominant / intermediate / suppressed

General Condition: Poor

2. TREE HEALTH

Foliage color: normal / chlorotic / necrotic Epicormics: Y / N
 Foliage density: normal / sparse Leaf size: normal / abnormal
 Annual shoot growth: 2-4 inches Twig dieback: Y / N
 Callus development: Y / N If so, is callusing: excellent average / fair / poor
 Vigor class: excellent / average / fair / poor
 Major pests/diseases: _____

3. SITE CONDITIONS

Site character: residence / commercial / industrial / park / open space / natural / other (see below)
 Landscape type: parkway / raised bed / container / open / other (see below)
 Irrigation: none / adequate / inadequate / excessive / trunk wetted
 Dripline paved: 0% 10-25% 25-50% 50-75% 75-100%
 Dripline w/ fill soil: 0% 10-25% 25-50% 50-75% 75-100%
 Dripline grade lowered: 0% 10-25% 25-50% 50-75% 75-100%
 Dripline grade raised: 0% 10-25% 25-50% 50-75% 75-100%
 Soil problems: drainage / shallow / compacted / small volume / other (see below)
 Obstructions: lights / signage / line of sight / view / overhead lines / traffic / other (see below)
 Wind (tree position): single tree / below canopy / above canopy / recently exposed / canopy edge
 Other: _____

4. TREE DEFECTS – IDENTIFY ALL AREAS AND SEVERITY THAT APPLY TO EACH DEFECT

33" Perian

DEFECT TYPE	DEFECT AREA	DEFECT SEVERITY	NOTES	LEGEND
Poor taper	S, B	M		AREA T – Trunk(s) R – Root Flare L – Lateral Roots S – Scaffolds B – Branches
Codominants/forks	S	M, S, M, L	evidence of mechanical failure	
Multiple attachments				SEVERITY S – Severe M – Moderate L – Low
Included bark				
Excessive end weight	B	M		
Cracks/splits				
Hangers				
Girdling				
Wounds	T	S		
Decay				
Cavity	T	S	2' x 2' cavity	
Conks/Mushrooms				
Bleeding				
Loose/cracked bark				
Nesting hole/bee hive				
Deadwood/stubs	B	L		
Borers/termites/ants				
Cankers/galls				
Previous failure	B	M		

7. OTHER FEATURES

Lean: ~15 degrees from vertical

natural or unnatural

Soil heaving: Y / N

Decay in plane of lean: Y / N

Roots exposed: Y / N

Soil cracking: Y / N

Lean severity: S / M / L

Compounding factors: cavity (void space)

Suspect root rot: Y / N

Mushroom/conk present: Y / N ID: _____

Exposed roots: S / M / L

Undermined: S / M / L

Root pruned: _____ feet from trunk

Root area affected: _____ %

Buttress wounded: Y / N

Restricted root area: S / M / L

Potential for root failure: S / M / L

6. TARGET AND ABATEMENT

Use under tree: building / parking / traffic / pedestrian / recreation / landscape / hardscape

Occupancy: occasional use / medium, intermittent use / frequent use Can target be moved: Y / N

RISK ABATEMENT

Action: prune / remove / other

Comments: _____

Remove due to (1) extent of decay, (2) decay in lean of tree, (3) storm damage canopy & (4) unlikely to survive construction

7. COMMENTS OR OTHER RISK FACTORS



CITY ARBORIST TREE EVALUATION

Property address: 400 Josephine St.

Date: 9/27/16

Evaluator: Keith Mairs

SIGNATURE: [Signature]

ISA/ASCA Certification #: TX-3677AM

1. TREE CHARACTERISTICS

DBH of each trunk: 31 Common & Latin name: Pecan Carya illinoensis

Location: Private / Public Estimated height & canopy spread (ft): 60' 50'

Age class: young / mature / over-mature / dead (if dead, there is no need to fill out section 2)

Deadwood: 0% 0-10% 10-25% 25-50% >50%

Form: generally symmetric / minor asymmetry / major asymmetry / stump sprout

Pruning history: crown cleaned / excessively thinned / topped / crown raised
pollarded / crown reduced / utility clearance / storm damage cleaning / none

Crown class: dominant / co-dominant / intermediate / suppressed

2. TREE HEALTH

Foliage color: normal / chlorotic / necrotic

Foliage density: normal / sparse

Annual shoot growth: 4 inches

Callus development: Y / N

If so, is callusing:

Vigor class: excellent / average / fair / poor

Major pests/diseases: None observed

Epicormics: Y / N

Leaf size: normal / abnormal

Twig dieback: Y / N

excellent / average / fair / poor

3. SITE CONDITIONS

Site character: residence / commercial / industrial / park / open space / natural / other (see below)

Landscape type: parkway / raised bed / container / open / other (see below)

Irrigation: none / adequate / inadequate / excessive / trunk wetted

Dripline paved: 0% 10-25% 25-50% 50-75% 75-100%

Dripline w/ fill soil: 0% 10-25% 25-50% 50-75% 75-100%

Dripline grade lowered: 0% 10-25% 25-50% 50-75% 75-100%

Dripline grade raised: 0% 10-25% 25-50% 50-75% 75-100%

Soil problems: drainage / shallow / compacted / small volume / other (see below)

Obstructions: lights / signage / line of sight / view / overhead lines / traffic / other (see below)

Wind (tree position): single tree / below canopy / above canopy / recently exposed / canopy edge

Other: None

4. TREE DEFECTS – IDENTIFY ALL AREAS AND SEVERITY THAT APPLY TO EACH DEFECT

DEFECT TYPE	DEFECT AREA	DEFECT SEVERITY	NOTES	LEGEND
Poor taper	S, B	M	storm damage	AREA T – Trunk(s) R – Root Flare L – Lateral Roots S – Scaffolds B – Branches
Codominants/forks	S	M, S	mechanical stress due to length of forks	
Multiple attachments				
Included bark				
Excessive end weight	B	M	storm damage	
Cracks/splits				SEVERITY S – Severe M – Moderate L – Low
Hangers	B	L	visible small ports	
Girdling				
Wounds				
Decay	T	L		
Cavity	T	L		
Conks/mushrooms				
Bleeding				
Loose/cracked bark				
Nesting hole/bee hive				
Deadwood/stubs	B	M	storm damage	
Borers/termites/ants				
Cankers/galls				
Previous failure	S, B	M	storm damage	

7. OTHER FEATURES

Lean: ~0° degrees from vertical

natural or unnatural

Soil heaving: Y / ☒ NDecay in plane of lean: Y / ☒ NRoots exposed: Y / ☒ NSoil cracking: Y / ☒ N

Lean severity: S / M / L

Compounding factors: _____

Suspect root rot: Y / ☒ NMushroom/conk present: Y / ☒ N ID: _____

Exposed roots: S / M / L

Undermined: S / M / L

Root pruned: _____ feet from trunk

Root area affected: _____ %

Buttress wounded: Y / N

Restricted root area: S / M / L

Potential for root failure: S / M / L

6. TARGET AND ABATEMENT

Use under tree: building / parking / traffic / pedestrian / recreation / landscape / hardscapeOccupancy: occasional use / medium, intermittent use / frequent use Can target be moved: ☒ Y / ☒ N

RISK ABATEMENT

Action: prune / remove / otherComments: Removal is not warranted inexisting conditions.

7. COMMENTS OR OTHER RISK FACTORS

Condition Definitions

Excellent: The tree is nearly perfect in condition, vigor, and form. This rarely used category is generally applicable to small trees or shrubs that have been recently transplanted and are well established. It also applies to large trees that have established themselves successfully in the landscape.

Very Good: Overall, the tree is healthy and satisfactory in condition, vigor, and form. The tree has no major structural problems, no mechanical damage, and may only have insignificant aesthetic, insect, disease, or structure problems.

Good: The tree has no major structural problems, no significant mechanical damage, may have only minor aesthetic insect, disease, or structure problems, yet is in good health.

Fair: The tree may exhibit the following characteristics: minor structural problems and/or mechanical damage, significant damage from non-fatal or disfiguring diseases, minor crown imbalance or thin crown, or stunted growth compared to adjacent trees or shrubs. This condition can also include trees that have been topped, but show reasonable vitality and show no obvious signs of decay.

Poor : The tree appears unhealthy and may have structural defects such as codominant stems, severe included bark, or severe trunk and/or limb decay. A tree in this category may also have severe mechanical damage, crown dieback, or poor vigor threatening its ability to thrive. Trees in poor condition may respond to appropriate maintenance procedures, although these procedures may be cost prohibitive to undertake.

Critical: The tree has a major structural problem that presents an unacceptable risk, has very little vigor, and/or has an insect or disease problem that is fatal and, if not corrected, may threaten other trees on the property.

Dead: This category refers to dead trees only.

To: Marisa Perales
Chair, City of Austin
Environmental Commission,
and Honorable Environmental
Commissioners

From: Carp 1266, L.P.

File: Land Use Commission Request **Date:** October 5, 2016

Site: The site is located at 400 Josephine Street, Austin, Texas 78704 on the corner of Josephine Street and Butler Road.

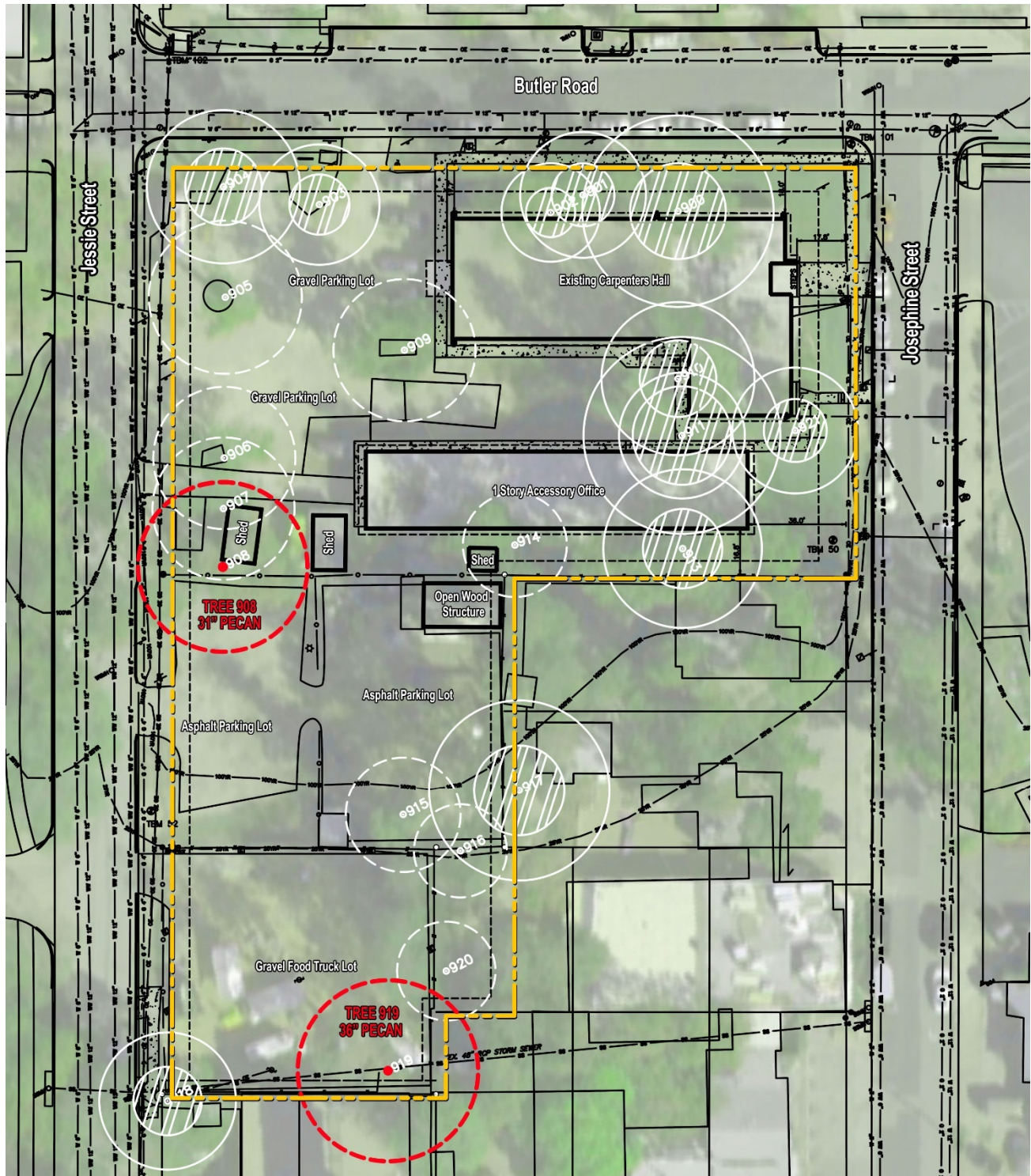


Site Conditions: Currently, the site is made up of the existing Carpenters Hall, an accessory office, several sheds, one (1) asphalt parking lot and two (2) informal gravel areas used to park vehicles.

There are currently two heritage trees on the site being requested for removal, (1) 31" Pecan and (1) 36" Pecan (EXHIBIT A).

October 5, 2016
Marisa Perales
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EXHIBIT A EXISTING CONDITIONS



October 5, 2016
Marisa Perales
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Constraints:

The property consists of 1.390 acres (60,527 square feet) and is zoned General Commercial Services (CS) (EXHIBIT A). The developable area is limited due to the preservation of the Carpenters Hall, existing heritage trees on and off site, and the zoning height restriction of sixty feet. The site is also required to comply with Subchapter E requirements controlling the placement of the proposed building and driving the request for removal of tree 908.

The allowable impervious cover is ninety-five percent; however, the site plan only proposes sixty-eight percent impervious cover. The site plan utilizes the maximum parking reductions allowed by the City's Land Development Code. Fifty-eight percent of the parking is located in the ground floor garage of the proposed 4-story hotel building, which further reduces impacts on healthy existing trees. The remainder of the required parking is located adjacent to tree 919. Because of this, as well as the condition of the tree based on Bartlett Tree Experts report, we are requesting removal of tree 919.

Given the existing Carpenters Hall that will remain on site, the numerous protected canopies and root zones, and Subchapter E requirements controlling the location of the proposed structure, reasonable development on this site is highly limited and becomes impractical without a variance to remove tree 908.

Given the limited space to meet parking requirements, Subchapter E controlling the layout of the site, and the condition of tree 919, preservation is not practical.

Desired Reason:

Tree 908, a 31" Pecan, depicted on (EXHIBIT B), is being requested for removal based on the limitations of how the site can be developed, and its potential risk to the public.

Tree 919, a 36" Pecan, depicted on (EXHIBIT B), is being requested for removal based on the condition of the tree, and its potential risk of causing personal injury, property damage, or both.

The development of this site was predicated on maintaining the existing Carpenters Hall building and preserving as many trees as possible. The business model hinges on its ability to work within those constraints and to ground itself in a genuine sense of place.

The original siting of the new building preserved tree 908 and 919. However, due to Subchapter E standards for sidewalks and building placement, the structure had to be placed directly in the path of tree 908 and the subsequent shift in parking impacted tree 919.

Both trees have recently been evaluated by a certified arborist with Bartlett Tree Experts. A tree assessment was performed and both trees received a risk rating of “moderate” and a health rating of “fair”, as presented in (EXHIBIT C).

Further, due to the existing poor environment in which the trees are located, the health of the trees, and the significant site constraints, it was determined that these trees are not candidates for transplant, and thus it is the Applicants desire to mitigate for removal of the trees from the site.

The Applicant has provided 100% percent mitigation and gone beyond the City requirements by committing to \$31,400 of tree care efforts for existing trees, over the next five years (EXHIBIT D). These efforts also include special construction methods to minimize impacts to existing root zones and canopies. The Applicant is not receiving City of Austin incentives to provide these extra efforts but has chosen to do so because maintaining the character of this place (ecological, cultural, historical) matters as much to them- and their business- as it does to the neighborhood and the City.

Land Development Code 25-8-643 – Land Use Commission Variance*(Full tree assessment report provided as Exhibits C to this report)*

- (A) The Land Use Commission may grant a variance from Section 25-8-641 (Removal Prohibited) to allow removal of a heritage tree that has at least one stem that is 30 inches or larger in diameter measured four and one-half feet above natural grade only after determining, based on the city arborist's recommendation, that the heritage tree meets the criteria in Section 25-8-624(A) (Approval Criteria) [SEE BELOW], and that:

Response: The Applicant has no other course of action to allow reasonable use of the Property. The city staff required compliance with Subchapter E and existing heritage trees blanket the site significantly restricting development. No variances can be pursued which would eliminate the removal of the heritage trees and preserve the existing Carpenters Hall.

(2) removal of the heritage tree is not based on conditions caused by the method chosen by the applicant to develop the property, unless removal of the heritage tree will result in a design that will allow for the maximum provision of ecological service, historic, and cultural value of the trees on the site.

Response: The requested removal of tree 908 and 919 is not based on a condition caused by the method chosen to develop the property. The trees are in fair health, and the limited dimensions of the site effectively require the removal of tree 908 and 919 to minimize further impacts of development. The removal of these trees is the most efficient way to minimally develop the site while reducing impacts to the healthy existing trees.

Further, the Applicant has voluntarily committed to \$31,400 worth of tree care work to ensure the health and survival of preserved trees on site, reference (EXHIBIT D). The tree care plan includes deep root fertilization, pruning, and vertical mulching for five years.

October 5, 2016
Marisa Perales
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Land Development Code 25-8-624 – Approval Criteria

(A) The Planning and Development Review Department may approve an application to remove a protected tree only after determining that the tree:

- Prevents a reasonable use of the property;

Response: The Applicant has no other course of action to allow reasonable use of the property. The Applicant has voluntarily limited the development on the East side of the property to preserve the existing Carpenters Hall structure and to preserve existing trees (both critical root zone and canopy) on site.

Given the limited open area of the site and the 60-foot height limitation, without a variance to remove tree 908 and 919, development is constrained due to the inability to construct a taller structure and reduce the proposed footprint.

- Is an imminent hazard to life or property, and the hazard cannot be reasonably be mitigated without removing the tree;

Response: Tree 908 has been assessed to have decay along the west stem and this part of the tree especially is of concern. The load of this stem is significant and the likelihood of failure for this tree part is probable. The overall risk rating for this tree is considered moderate (EXHIBIT C).

Tree 919 has a large cavity at five feet about grade. The likelihood of stem failure received a rating of possible. The overall risk rating for this tree is considered moderate (EXHIBIT C).

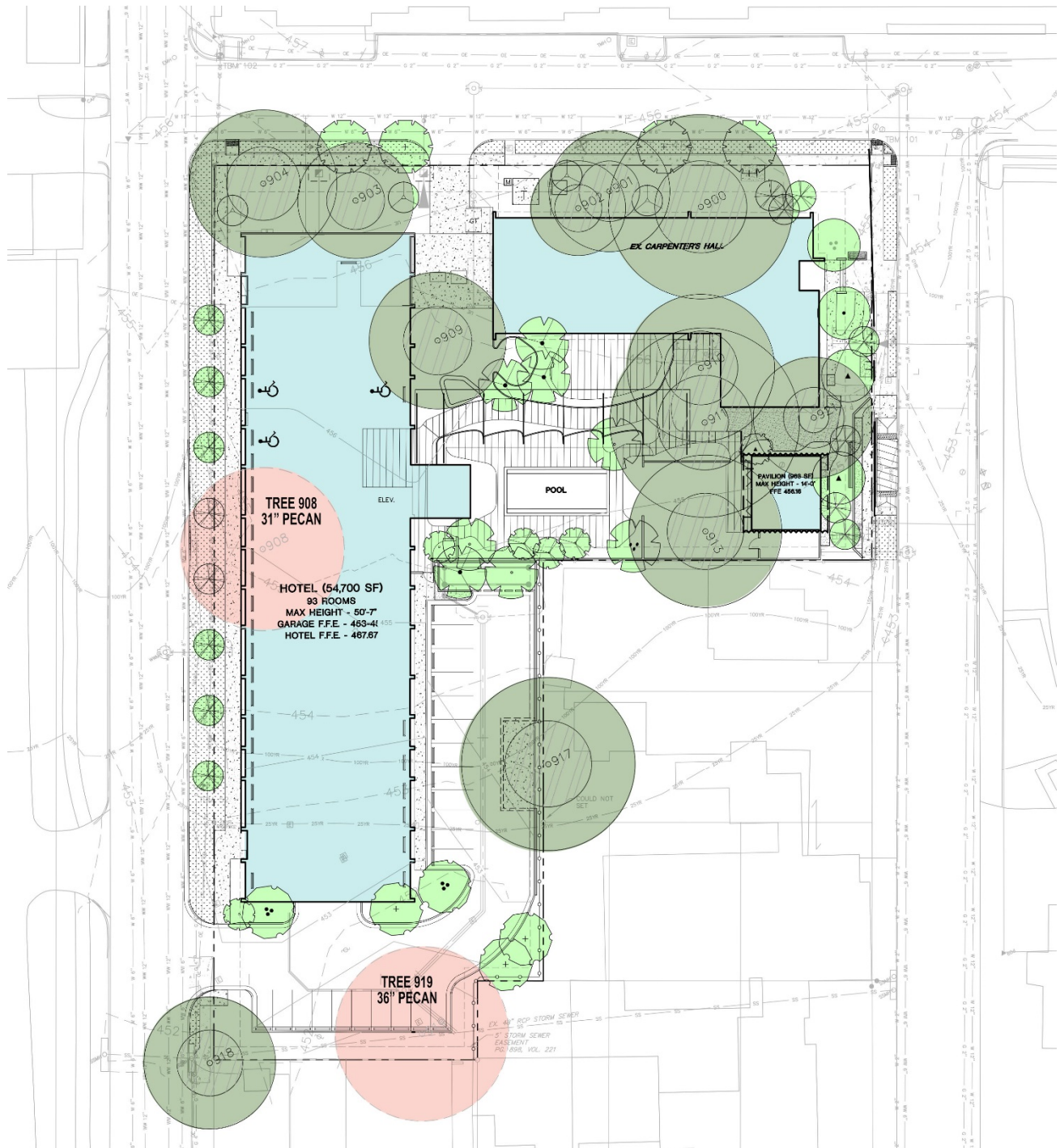
As very poor candidates for transplanting, the best solution for these trees is removal with mitigation.

- Is diseased, and:
 - Restoration to sound condition is not practicable;

Response: The tree's canopies have become weakened and unbalanced from branch failures during storms. The paving around the trees and compaction from vehicles has taken a toll on the tree's root systems.

October 5, 2016
Marisa Perales
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EXHIBIT B PRELIMINARY SITE PLAN



October 5, 2016
Marisa Perales
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EXHIBIT C
BARTLETT TREE EXPERTS – TREE ASSESSMENT REPORT

DRAFT

Bartlett Tree Experts

Tree Risk Assessment Report

Two Pecan Trees at 400 Josephine in Austin, Texas

Prepared for
Joecarp Partners, LLC
210 Barton Springs, Ste. 550
Austin, Texas 78704

Submitted by
Nicholas Crowther, Arborist Representative
ISA Certified Arborist #TX-3354A
Bartlett Tree Experts
757 Shady Lane
Austin TX 78702
512-385-6604

September 25, 2016



Tree Risk Assessment Report

Two Pecan Trees at 400 Josephine in Austin, Texas

INTRODUCTION & SUBJECT TREE

This report presents the risk assessment of and recommendations for two trees: the 31-inch **DBH**¹ pecan tree located at the west side of the property, and a 36-inch DBH pecan tree located to the south of the property. The inspection was performed on September 23, 2016. The following presents the assignment and other report components. Tomographic images are appended, as are a glossary and risk-assessment statement.

ASSIGNMENT

1. Perform a Level 3 advanced assessment (as defined in the *International Society of Arboriculture's (ISA's) Best Management Practices (BMP) for Tree Risk Assessment* and the *ANSI A300 Part 9 Standard for Tree Risk Assessment*) to include a visual inspection from the ground, an aerial inspection, and sonic tomography to determine presence and extent of any internal decay at selected tree locations.
2. Assign a health rating to each tree based on *excellent, good, fair, poor, and declining/dead*.
3. Make recommendations, as appropriate, to reduce risk.
4. Make a determination regarding relocation feasibility.
5. Provide a written report that documents the level of risk based on tree and site conditions observed at the time of the inspection.

PURPOSE OF THIS REPORT

The purpose of this report is to

- provide information on the assessment of the subject trees and of the site conditions at the property,
- determine the level of risk of the subject trees and their feasibility for relocation, and
- provide mitigation recommendations to reduce risk.

The information provided in this report is based on the conditions identified at the time of inspection. Tree conditions do change over time; unless removal is advised, reassessment is recommended annually and after major storm events.

This report is the property of Joecarp Partners, LLC. It may only be used for the purpose of making decisions regarding risk mitigation and tree relocation involving the subject trees.

¹ Terms in bold in the text are defined in the appended glossary.

RISK ASSESSMENT METHODOLOGY

This assessment is based on the guidelines presented in the International Society of Arboriculture's *Best Management Practices for Tree Risk Assessment* and those developed by the Bartlett Tree Research Laboratories. Accordingly, tree risk ratings are derived from a combination of three factors: *likelihood of failure*, the *likelihood of the failed tree part impacting a target*, and the *consequences* of the target being struck. Each of these categories has four levels of likelihood:

- improbable, possible, probable, or imminent for likelihood of failure
- very low, low, medium, and high for likelihood of impacting a target, and
- negligible, minor, significant, and severe for consequences of failure.

These factors are then used to categorize tree risk as *Low*, *Moderate*, *High*, or *Extreme*.

TARGETS AND OTHER SITE CHARACTERISTICS

Targets refer to people, property, or activities that could be injured, damaged, or disrupted by a tree failure. At this site, the following high-value targets were identified for this report:

Tree #908

1. parking lot
2. street
3. utility lines
4. sidewalk

Tree #919

1. food court with picnic area
2. building
3. building

FINDINGS OF VISUAL AND AERIAL INSPECTIONS

Tree #908

This 31-inch diameter pecan tree is approximately 80 feet in height with a crown spread of about 60 feet. **Codominant stems** appear at about 12 feet above grade, the east stem over a parking lot, and the west stem over a road. A cavity is present on the east stem, and cavities appear in the west stem above the crotch that connects to the main stem. Most of the foliage appears normal in density and color, although about 5% of it displays **chlorosis**. Aphids are present on some foliage. Dead wood is visible to three inches in diameter in approximately 10% of the canopy. About five broken branches to three inches in diameter are visible, and the tree displays over-extended branches. Previous branch failures are evident and display isolated pockets of **heartwood** decay. The trunk, or main stem, appears to have lightning damage. A cavity is present on the main stem, below which decay is visible. The soil is compacted in the **critical root zone** (CRZ).

Health Rating

The over health condition of this tree is fair, based on *excellent*, *good*, *fair*, *poor*, and *declining/dead*. The criteria for these categories appear in the appendix.

Tree #919

This 36-inch diameter pecan tree is approximately 80 feet in height with a crown spread of about 40 feet. Most of the foliage appears normal in density and color, although about 10% of it displays chlorosis. Aphids are present on some foliage. Dead wood is visible in approximately 5% of the canopy, and the tree displays multiple over-extended branches. Previous branch failures are evident. At five feet above grade, a cavity is present on the stem that covers about 25% of the circumference and is 14 inches deep. The soil is compacted in the critical root zone (CRZ).

Health Rating

The overall health condition of this tree is fair, based on *excellent*, *good*, *fair*, *poor*, and *declining/dead*. The criteria for these categories appear in the appendix.

SONIC TOMOGRAPHY

We used the Arborsonic 3D Acoustic Tomograph that measures sound velocity between sensors placed around the trunk or large branch. If decay is present, the velocity slows, and this activity produces an estimate of the percentage of decayed area in the tree. The instrument software produces an image of that estimate. The findings follow, and the tomographs are appended.

Tree #908

We examined five sites and results appear in the table below.

TREE PART	LAYER #	LOCATION ABOVE GRADE	% DECAY
East Stem	N/A	Below cavity approximately 35 feet above grade	1
West Stem	N/A	9.5 feet	31
Main Stem	1	8.5 inches	0
Main Stem	2	37.5 inches	1
Main Stem	3	7.5 feet	13

Comment

The decay detected at the tomographic examination sites on tree #908 is negligible, with the exception of the west stem. That tree part is addressed in the results section below.

Tree #919

We examined four sites on this tree. The table below provides results.

TREE PART	LAYER #	LOCATION ABOVE GRADE	% DECAY
Main Stem	1	12 inches	4
Main Stem	2	31.5 inches	2
Main Stem	3	3.8 feet	4
Main Stem	4	7 feet	0

Comment

The decay detected at the tomographic examination sites on tree #919 is negligible.

RESULTS OF RISK ASSESSMENT AND RECOMMENDATIONS**Tree #908**

The *overall risk rating* for this tree is considered *Moderate*, indicated by the highest likelihood of failure for the tree parts assessed, which is *Possible* for likelihood of failure, *High* for likelihood of impacting a target, and *Significant* for consequences of that impact.

Regarding the west stem in particular, while solid wood appears mostly to surround the decay column, the decay does connect to the exposed cavity, which is large. This condition makes it likely that the decay will increase faster than wound closure. The location of this decay just above the crotch of the main stem also creates concern. The load on the west stem is *significant*, and the likelihood of failure for this tree part is *probable*.

Regarding the east stem, the tomograph at 1% decay is negligible and indicates that the observed cavity is fairly shallow and should seal.

Recommendations

- Remove the west stem.
- Prune the remaining tree to reduce weight at branch ends and to clean the canopy of dead branches one inch in diameter and greater.
- Install support cabling in the upper third of the canopy to provide mechanical support to weak branch unions to reduce risk of failure.
- Aerate the soil within the entire CRZ with a specialized tool, such as an Airspade, to reduce compaction.

Tree #919

The *overall risk rating* for this tree is considered *Moderate*, indicated by the highest likelihood of failure for the tree parts assessed, which is *Possible* for likelihood of failure, *High* for likelihood of impacting a target, and *Significant* for consequences of that impact.

One of the main concerns for this tree is the large cavity at five feet above grade. The Layer 3 and 4 tomographs were taken above and below the cavity to determine if the tree had compartmentalized (walled off) this wound or if a decay column was forming inside the stem instead. The absence of internal decay shown in the Layer 3 and 4 locations suggests that adequate solid wood is present in the stem and that the likelihood of stem failure is *possible*, but not *probable* or *imminent*.

Recommendations

- Prune the remaining tree to reduce weight at branch ends and to clean the canopy of dead branches one inch in diameter and greater.
- Install support cabling in the upper third of the canopy to provide mechanical support to weak branch unions to reduce risk of failure.
- Aerate the soil within the entire CRZ with a specialized tool, such as an Airspade, to reduce compaction.

FEASIBILITY OF RELOCATING TREES #908 AND 919

I do not believe the subject trees are viable candidates for relocation on the property. Their vigor - ability to grow and resist stress – appears normal for their age and size, but this presupposes their *in situ* condition. Transplant candidates need to be in excellent condition and possess exceptional vigor to compensate for the unusual stresses that come with the relocation process. Furthermore, while tap roots of some trees can lose their significance over time and be overtaken by horizontal roots, especially in urban settings, pecan trees appear to be an exception. Generally speaking, they will show evidence of a tap root, even in urban settings, into maturity. Such trees are known to be more difficult to transplant than some other species, and must be dug at greater depth to capture as much tap root as possible. The subject trees are in fair health condition. Even with proper preparation and aftercare, they are unlikely to withstand transplanting.

RISK ASSESSMENT SUMMARY AND CONCLUSION

Using the methods outlined in this report and the results of the examination of these trees, it is my professional judgment that Trees #908 and 919 are each a *moderate* risk of failure. If this level of risk is not acceptable to you, then mitigation actions should be taken as soon as practical to reduce the risk to an acceptable level.

Thank you for the opportunity to provide this information. Please contact me if you have any questions.

CERTIFYING STATEMENT

I, Nicholas Crowther, certify that:

- I have personally overseen the inspection of this tree and property referred to in this report, and have stated my findings accurately. The extent of the assessment is stated in the attached report and the terms of assignment.
- I have no current or prospective interest in the vegetation or the property that is the subject of this report and have no personal interest or bias with respect to the parties involved.
- The analysis, opinions, and conclusions stated herein are my own.
- My compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party.



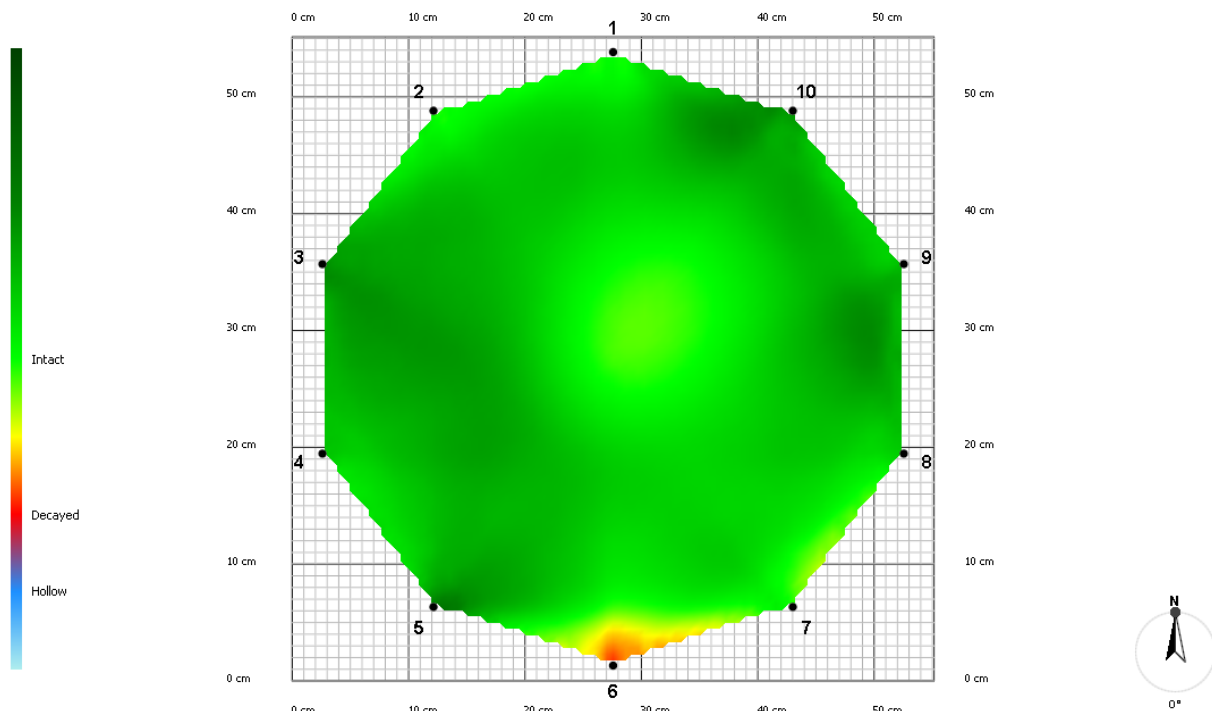
Nicholas Crowther

September 25, 2016

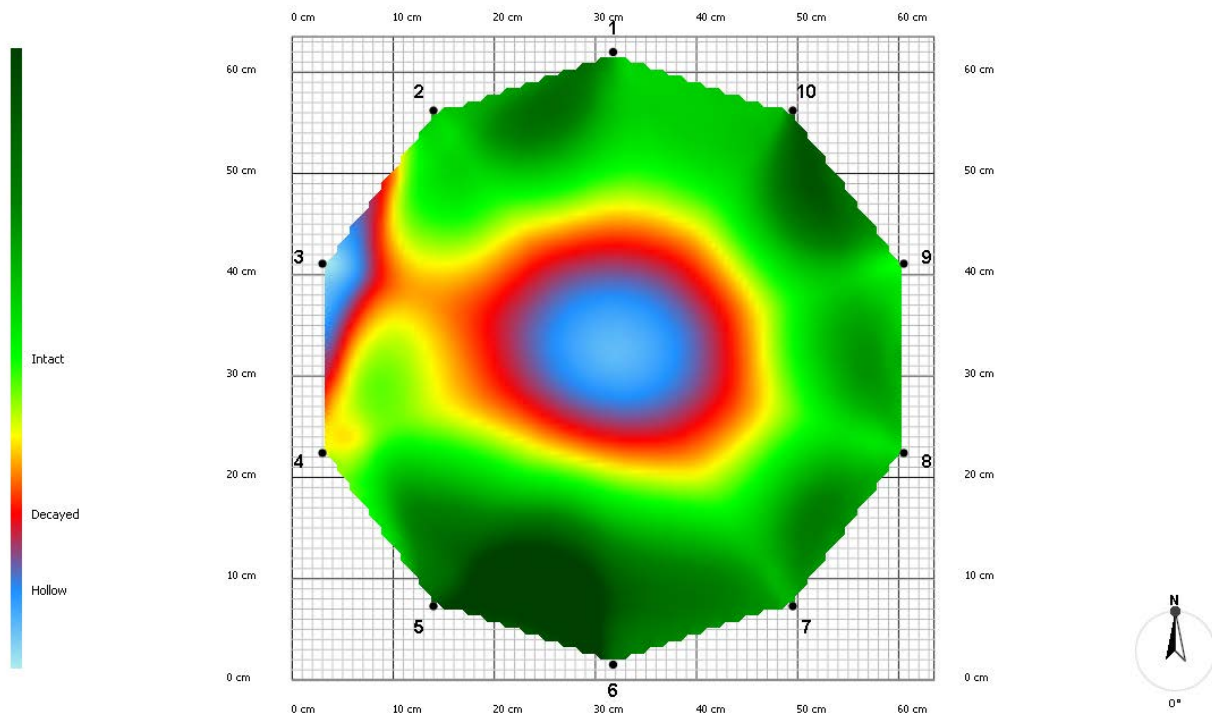
Date

APPENDIX

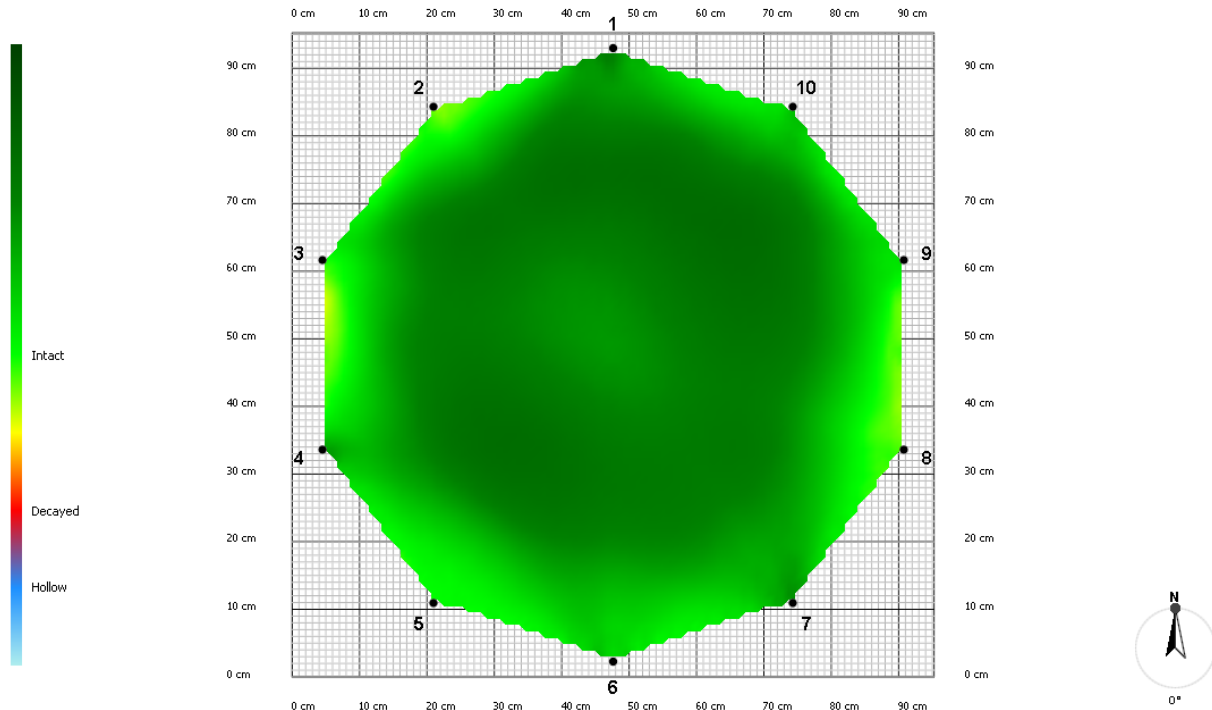
Appendix A: Arborsonic™ Tomographs



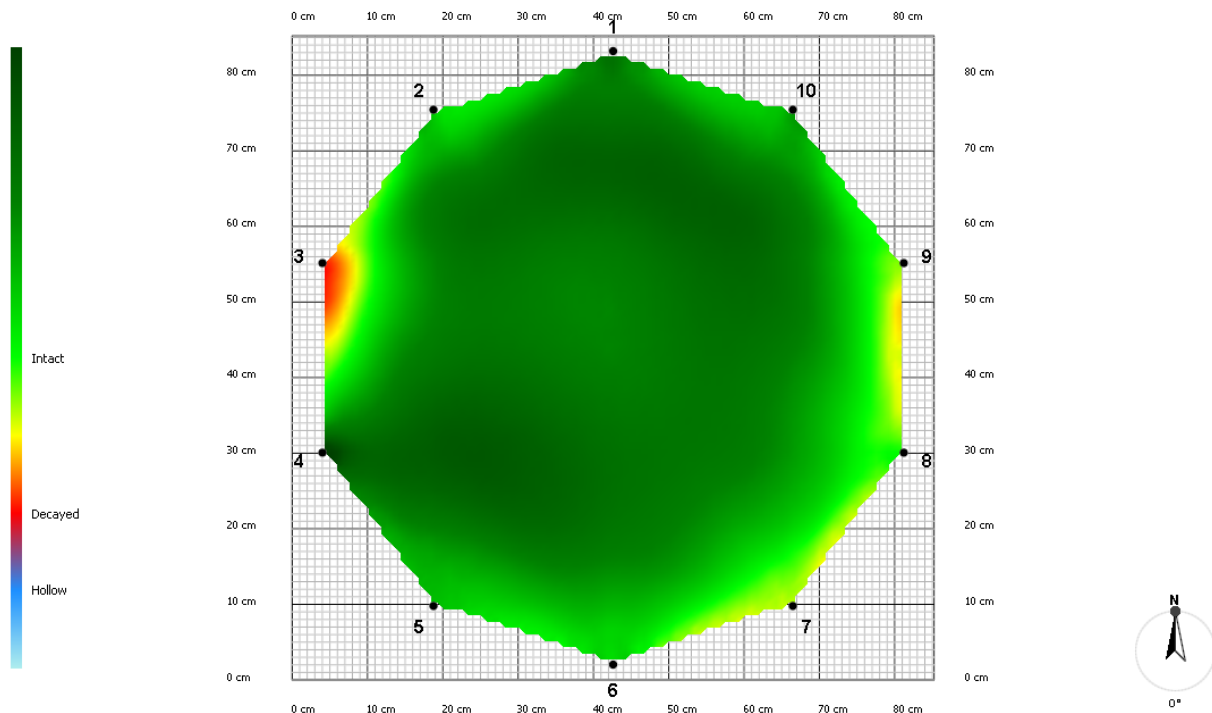
Tree #908: East stem tomograph below cavity showing 1% decay



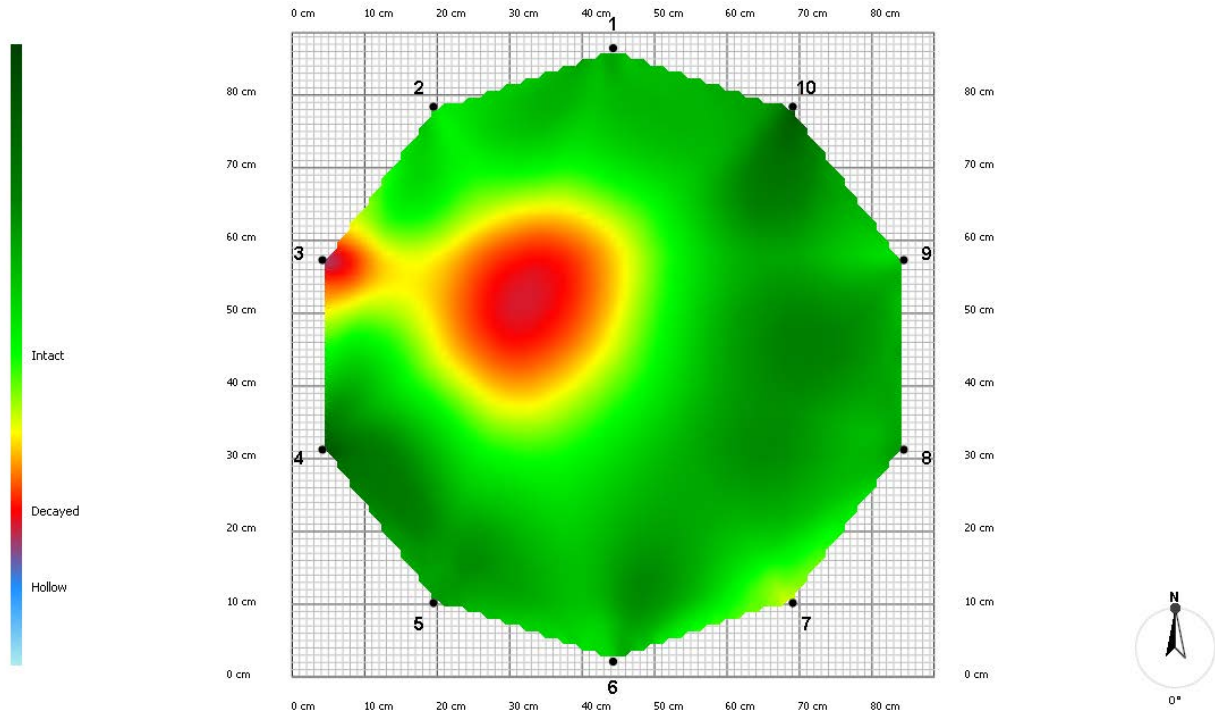
Tree #908: West stem tomograph near crotch at 9.5 feet above grade showing 31% decay



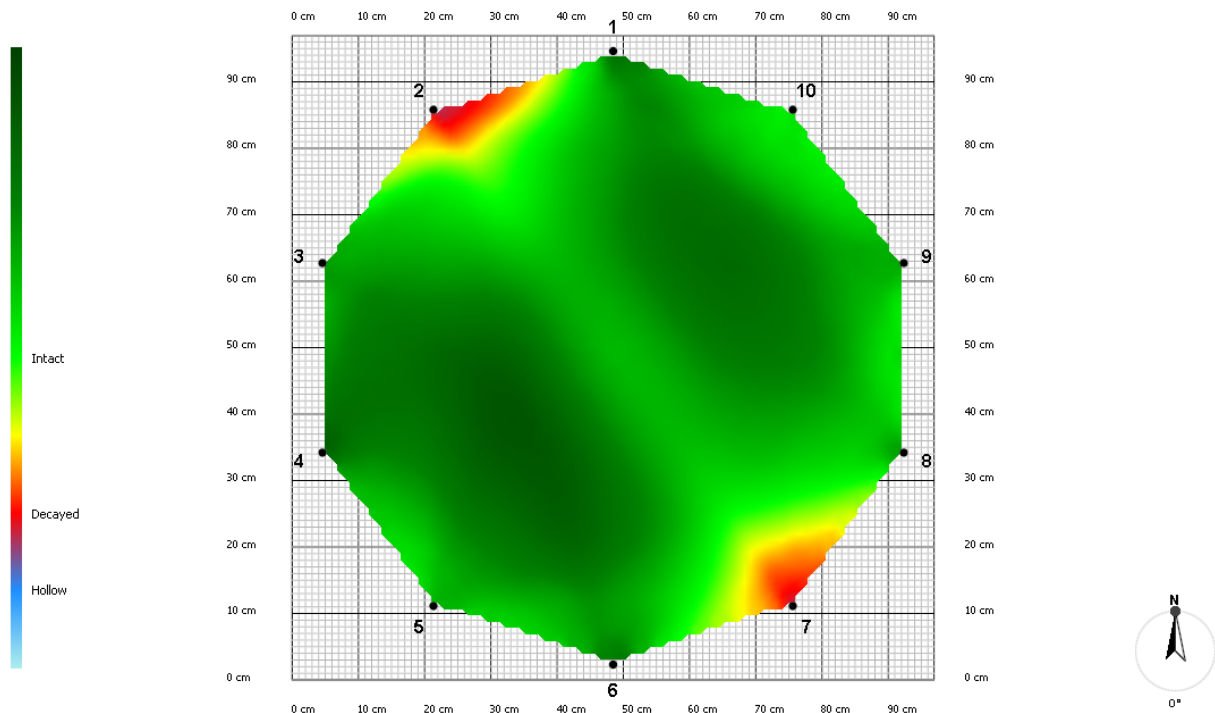
Tree #908: Layer 1 tomograph at 8.5 inches above grade showing 0% decay



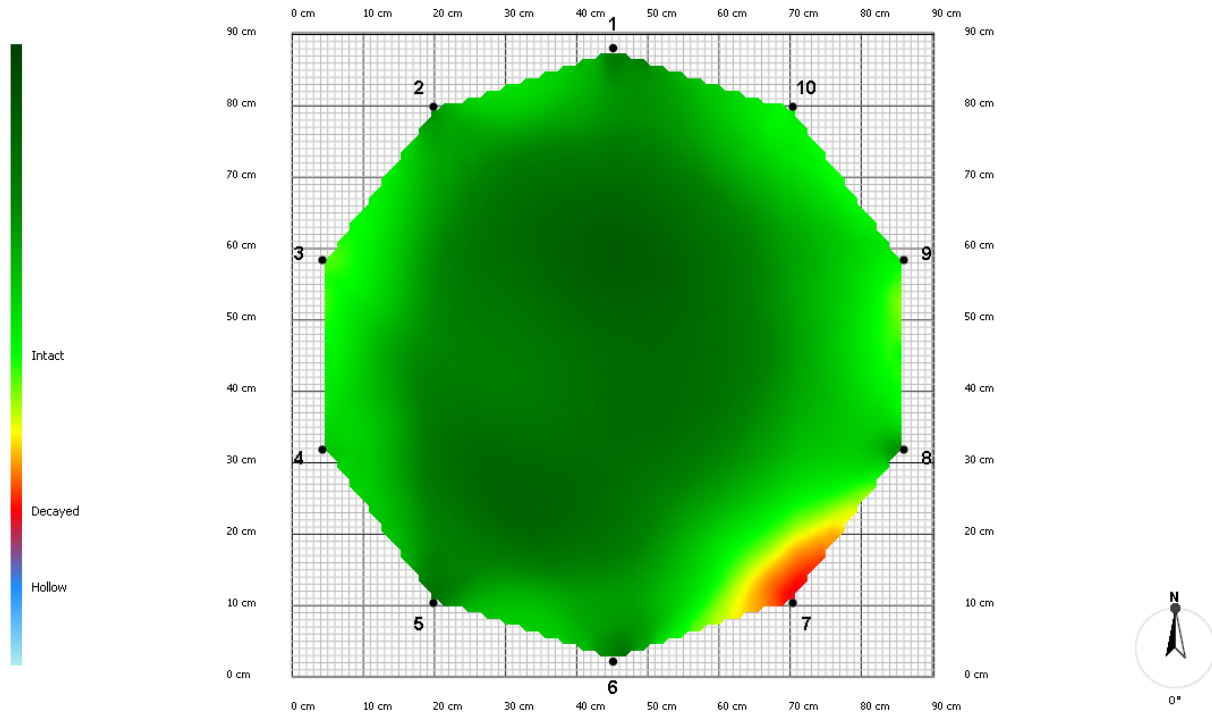
Tree #908: Layer 2 tomograph at 37.5 inches above grade showing 1% decay



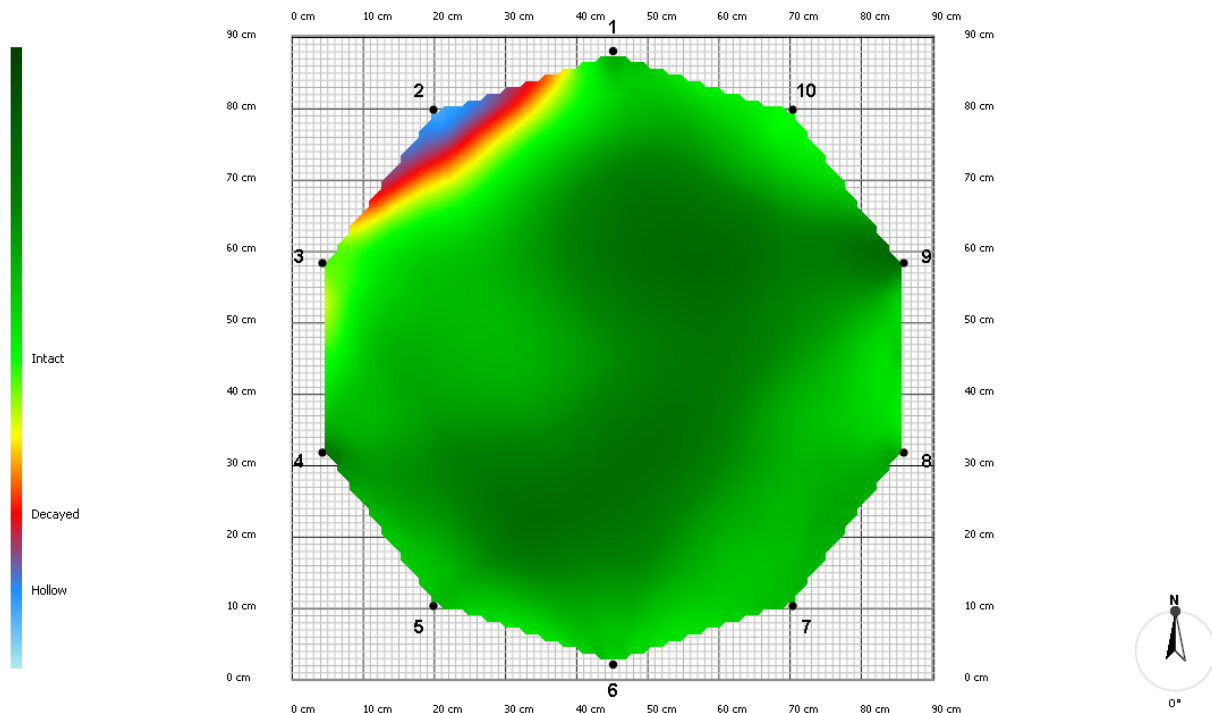
Tree #908: Layer 3 tomograph at 7.5 feet above grade showing 13% decay



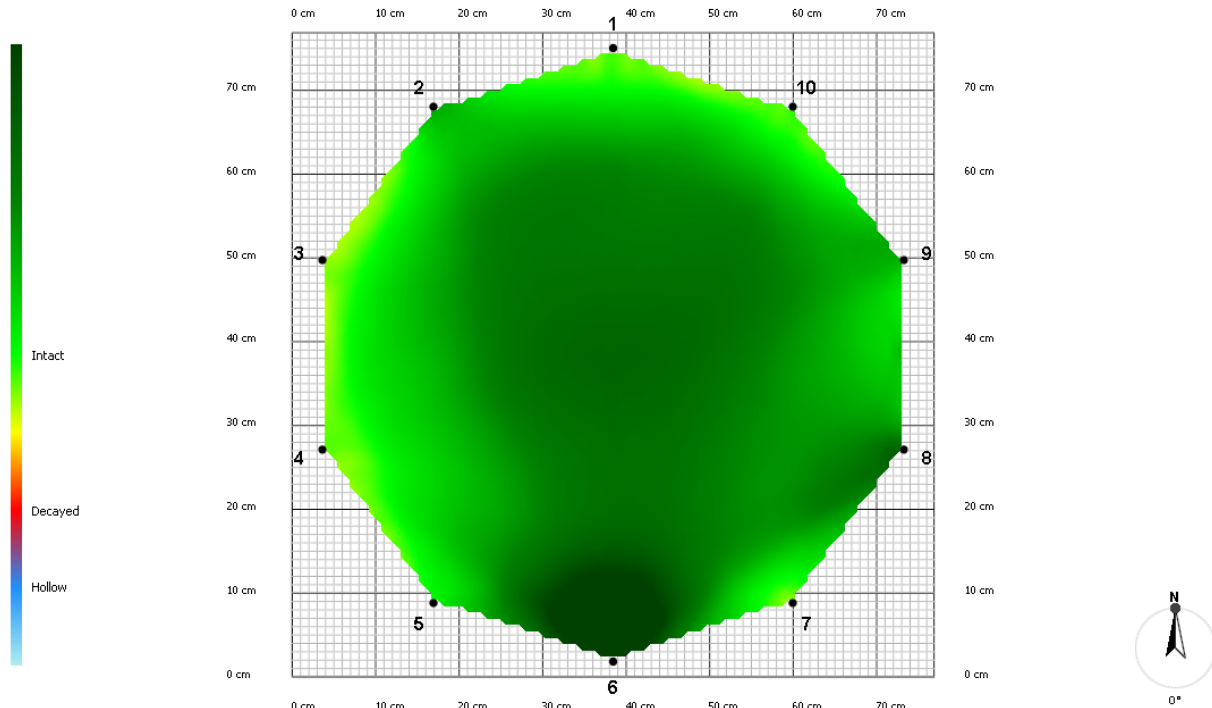
Tree #919: Layer 1 tomograph at 12 inches above grade showing 4% decay



Tree #919: Layer 2 tomograph at 31.5 inches above grade showing 2% decay



Tree #919: Layer 3 tomograph at 46 inches above grade showing 4% decay



Tree #919: Layer 4 tomograph at 7 feet above grade showing 0% decay

Appendix B: Glossary

Chlorosis	Whitish or yellowish leaf discoloration caused by lack of chlorophyll. Often caused by nutrient deficiency.
Codominant Stems	Forked branches or stems nearly the same size in diameter, arising from a common junction and lacking a normal branch union.
Critical Root Zone	Area of soil around a tree where the minimum amount of roots considered critical to the structural stability or health of the tree are located. Sometimes considered to be to the tree drip line but can vary based on site conditions.
DBH	Diameter at breast height, a standard diameter measure in the United States.
Heartwood	Wood that is altered (inward) from sapwood (outer wood) and provides chemical defense against decay-causing organisms and continues to provide structural strength to the trunk. Trees may or may not have heartwood.

Appendix C: Overall Health Rating Criteria

Excellent Condition - Only minor leaf damage from insects or disease may be present. Overall color and terminal shoot growth appear exceptional for the species. The canopy appears full with new growth throughout the canopy to the branch tips.

Good Condition - Leaf damage from insects or disease is present. Overall color and terminal shoot growth appear normal for the species. Canopy foliage is full; however, depending on the species limited epicormic sprouting may be present along some scaffold limbs.

Fair Condition - Leaf damage from insects or disease is present and may be severe. Overall color and terminal shoot growth may appear abnormal for the species. This would include chlorosis and reduced shoot growth. Canopy foliage may be thinner than normal and depending on the species epicormic sprouting may be present along scaffold limbs and the trunk.

Poor Condition - Leaf damage from insects or disease is present and may be severe. Overall color or shoot growth is abnormal for the species. This would include chlorosis and minimal shoot growth. Canopy foliage is thin and depending on species, epicormic sprouting may be present along scaffold limbs and the trunk.

Declining or Dead Condition - The tree is dead or either in severe decline with very little chance of recovery. Canopy foliage is sparse, terminal branch tips are dead, and depending on the species, epicormic sprouting may be severe along scaffold branches and along the trunk.

Appendix D: Limitations of Tree Risk Assessments

It is important for the tree owner or manager to know and understand that all trees pose some degree of risk from failure or other conditions. The information and recommendations within this report have been derived from the level of tree risk assessment identified in this report, using the information and practices outlined in the *International Society of Arboriculture's Best Management Practices for Tree Risk Assessment*, as well as the information available at the time of the inspection. However, the overall risk rating, the mitigation recommendations, or any other conclusions do not preclude the possibility of failure from undetected conditions, weather events, or other acts of man or nature. Trees can unpredictably fail even if no defects or other conditions are present. Tree failure can cause adjacent trees to fail resulting in a “domino effect” that impacts targets outside the foreseeable target zone of this tree. It is the responsibility of the tree owner or manager to schedule repeat or advanced assessments, determine actions, and implement follow up recommendations, monitoring and/or mitigation.

Bartlett Tree Experts can make no warranty or guarantee whatsoever regarding the safety of any tree, trees, or parts of trees, regardless of the level of tree risk assessment provided, the risk rating, or the residual risk rating after mitigation. The information in this report should not be considered as making safety, legal, architectural, engineering, landscape architectural, land surveying advice or other professional advice. This information is solely for the use of the tree owner and manager to assist in the decision making process regarding the management of their tree or trees. Tree risk assessments are simply tools which should be used in conjunction with the owner or tree manager's knowledge, other information and observations related to the specific tree or trees discussed, and sound decision making.

October 5, 2016
Marisa Perales
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EXHIBIT D
THE DAVEY TREE EXPERT CO. – TREE CARE PLAN

DRAFT