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AT&T Project at Calistoga Fairgrounds Tree Evaluation and Construction Impact Assessment Report

October 29, 2013

PREFACE

This report is an evaluation of trees growing on the proposed AT&T Mobility Site #CCU0808 located at the Calistoga Fairgrounds in Calistoga, CA. The site evaluation was performed on September 4, 2013. This report is based upon the site and project plan set dated July 29, 2013, prepared by Streamline Engineering and Design. This report evaluates the health and structural condition of the trees and provides an assessment of probable construction impacts occurring as the result of the proposed project.

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Unless expressed otherwise, the information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection. The inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the trees in questions may not arise in the future.

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Assignment:

This report is an evaluation of trees growing on the proposed AT&T Mobility Site #CCU0808 located at the Calistoga Fairgrounds in Calistoga, CA. The site evaluation was performed on September 4, 2013. This report is based upon the site and project plan set dated July 29, 2013, prepared by Streamline Engineering and Design.

The purpose of this evaluation is to:

- Assess the health and structural condition of the trees growing within and bordering the proposed project construction limits.
- Assess the probable construction impact of the evaluated trees based upon the site plans.

The locations of the evaluated trees are shown on the Site Plan (Sheet A-2) (attached). Five (5) trees are evaluated as part of this report. The individual tree data is provided on the attached tree database (Appendix A). Tree protection specifications are provided for trees potentially impacted by construction and/or when grading/excavation works occurs within the designated root protection zones (as described in the City of Calistoga Tree Ordinance 19.01.00).

Site and Tree Descriptions:

The primary project area is a proposed antenna cellular site consisting of an equipment building, generator slab, and an antenna structure (existing light pole) located adjacent to the auto racetrack at the Calistoga Fairgrounds. The immediate project area is flat and near an existing concessions building.

The underground utility route is shown on the site plans with the point of connection at a utility post southeast of the antenna and equipment shelter locations. The route extends northwest to a utility pole and then north to the proposed equipment building and antenna site east and north of the concession building.

There are no native trees growing in the vicinity of the project with all of the trees common landscape species. The five trees located close to the project limits include Chinese hackberry (*Celtis sinensis*), European hackberry (*Celtis australis*), and silver maple (*Acer saccharinum*). Other trees in the vicinity but not impacted are one Canary Island palm (*Phoenix canariensis*), and Colorado blue spruce (*Picea pungens* 'Glauca'). With the exception of the Colorado blue spruce, all of these trees qualify as 'Protected Trees' as defined by the city of Calistoga Tree Ordinance.

The overall condition of the trees is generally poor to marginal due to lack of maintenance and chronic water stress due to lack of landscape irrigation. Detailed tree descriptions including health and structural ratings are provided in Appendix A.

Construction Impact and Protected Trees:

Building/Antenna Site:

The proposed project includes the construction of a single story equipment building and a generator slab. The antenna components will be placed on a replacement light pole at the same existing light pole location adjacent to the racetrack. The building foundation design for this type of structure is typically a perimeter/slab type with excavation depths of two to three feet.

Because the equipment building and generator slab are located within five to seven feet of trees #2 and #3, a pier and grade beam type foundation is recommended. This type of foundation will avoid significant root impact by bridging over the root zones of these two trees. Generally root protection

and, possibly, root pruning procedures, will be required as described in the tree protection procedures provided in this report.

An alternative recommendation is to relocate the equipment shelter to an open area near the access road gate. This area previously had a large water tank, which is shown on the plans, but has been removed since the site survey work in July. If practical, this alternative location would reduce potential impacts to trees #2 and #3.

Utility Trench Route:

The preferred method for installation of the underground utilities is directional boring. As long as the boring depth is at least four feet deep there should be no significant impact to tree root systems and no adverse effects. If an open trench is required, then the root protection requirements described in the tree protection procedures will apply.

Individual Tree Evaluations

Following is a description of the various data used in the evaluations.

Tree #:

The trees have been assigned a number as indicated site plans.

Common and Botanical Name (Species):

The botanical name and common name are provided for each tree.

Trunk Diameter and # of Trunks:

Trunk diameter refers to the measurement of the trunk diameter at 24 inches above grade (Monterey County requirement). The # of trunks notes single or multiple trunk trees. Trunks must occur at or below 24 inches above grade for a tree to be considered as having multiple trunks for purposes of measurement. Trunk measurements may differ from that shown on the plans due to the method of measurement.

Height and Crown Diameters:

These fields are approximate visual estimates of the tree's height and crown spread. Accuracy is within plus or minus 10% of the indicated measurement.

Health and Structural Ratings and Descriptions:

The following chart describes the health and structural rating system used in the evaluation. It is a rating of relative conditions such as vigor, extent of decay, structure, and insect or disease problems. Good and moderate ratings indicate limited structural problems, acceptable vigor, and an absence of significant pest or disease problems. Poor and marginal ratings indicate serious health or structural problems especially if the tree is situated near structures or public areas. Trees rated as poor or marginal are often hazardous.

Rating Chart:

3.0	Moderate condition	Normal and correctable problems of structure or pests and diseases.
2.0	Marginal condition	Indicates serious problems with structure, decay, or significant insect or disease problems.
1.0	Poor condition	Indicates very poor health, vigor, or hazardous structural condition

Trees may be rated between two conditions, such as 2.5 or 3.5. This indicates the tree does not precisely meet the criteria for either of the two categories and allows the rating system to be used as a continuum.

The comments and observations describe the basis for the health and structural rating. The specific pests, disease, and structural defects observed are described and identified, if possible.

This evaluation is of above ground structure only and additional defects may exist at the root collar. Often, larger mature and over-mature trees require a root collar examination to evaluate the primary structural roots and root collar for decay and disease. In addition, an aerial inspection of the limb structure may be required.

Comments/Observations:

This is summary discussion of the health and structural ratings as well as identification of any significant pest or disease issues or structural defects.

Suitability For Preservation:

A rating has been provided for suitability for preservation based upon a tree's ability to tolerate construction impact. The age, species, and condition of the tree affect this rating. Grading or site layout requirements may take precedent over this rating.

Construction Impact:

An assessment of potential impact based upon the tree location relative to grading limits and type of construction activity.

Protected Tree Status:

Status of tree as defined by the City of Calistoga Tree Ordinance. Protected trees are trees with diameter (DBH) of 12 inches or greater, any native oak with a trunk diameter of 6 inches or greater, or valley oak seedling, sapling, or older. Also included is any tree bearing an active nest of a fully protected bird.

Root Protection Zone:

The RPZ is specified by the City of Calistoga Tree Ordinance as a radial distance from the trunk equal to 1.5 times the crown drip line.

Tree Impact Code:

Code for showing construction impact is used for sorting as part of the tree database.

Tree Protection Procedures

Development of the project infrastructure, including roads, utilities, drainage facilities, etc. will alter the natural terrain and affect existing trees growing close to the construction areas. Impacts will primarily occur as a result of the site grading requirements. The following guidelines are recommended to maximize tree survivability.

1.0 Tree Protection Zone

- 1.1 All construction activity (grading, filling, paving, landscaping) will respect a Tree Protection Zone (TPZ) around trees to be protected. The TPZ will be a distance of one-foot radial distance from the trunk for each one-inch of trunk diameter. Exceptions to this standard may occur depending upon the age and condition of individual trees.

2.0 Construction Observations and Supervision

- 2.1. All arboricultural and related soil work should be performed under the observation of an International Society of Arboriculture (ISA) Certified Arborist, or County designated representative.
- 2.2. All specified arboricultural work should be completed prior to site grading (root pruning, canopy pruning, fencing, etc.)
- 2.3. The contractor is required to meet with the Supervising Arborist or County designated representative to review all the tree protection requirements.

3.0 Tree Protection Fencing

- 3.1 Fencing at a minimum of four feet in height and clearly marked to prevent inadvertent encroachment by heavy machinery should be installed either at the edge of the Tree Protection Zone (TPZ), crown drip line (whichever is further from the trunk), or at the edge of the construction zone if the construction zone protrudes into the TPZ. The Supervising Arborist, or City designated representative, should approve location of the fencing. All fencing should be in place prior to any site grading.
- 3.2. Contractor should maintain the protection fencing and prohibit all access to fenced areas by construction personnel or equipment until all site work is completed.
- 3.3. All structures including construction trailers, equipment storage areas and any other construction traffic are prohibited within fenced areas. Burning or debris piles are prohibited within fenced areas. No materials, equipment, spoil, waste, or washout water should be deposited or stored within fenced areas. Fences may not be moved without written permission of the Supervising Arborist or City designated representative.
- 3.4 If temporary access within a fenced area is determined to be necessary then a six-inch layer of bark mulch should be placed in all areas requiring access. This requirement for mulching should apply to all areas within the fenced area and subject to access. If equipment access is required, then the mulch should be overlaid with metal plates of sufficient thickness to adequately distribute bearing load.

4.0 Demolition/Site Clearing

- 4.1 A qualified arborist should review any tree removal work within 50 feet of a TPZ. Trees requiring removal should be felled away from protected trees. Roots of trees to be

removed may require pruning with approved root cutting equipment prior to felling if intermingled with roots of retained trees.

- 4.2 Excavation equipment should operate from outside the TPZ. Brush and wood chips generated from tree and brush removal should be placed in the TPZ to a maximum depth of six inches.
- 4.3 All required pruning should conform to the pruning section of these guidelines.
- 4.4 All brush removal should be performed with hand equipment when within a TPZ.

5.0 Site Grading, Trenching, and Root Pruning

- 5.1 Keep site grading within designated construction zones. Grading cuts or trenching within the TPZ of a retained tree trunk requires special trenching procedures. Trenches should be dug manually with an air spade or with the use of a root cutting machine, rock cutter, or other approved root-pruning equipment. This root-pruning trench should be placed one foot inside the edge of the grading cut or trench edge. The depth of the trench should equal the depth of the grading cut to a maximum depth of 40 inches.
- 5.2 A trench may be mechanically dug toward a tree until the edge of the TPZ is reached. From the edge of the TPZ, the special trenching procedures should apply.
- 5.3 Underground utilities, drain, and irrigation lines should be routed outside the TPZs. When lines must cross the TPZ, the lines should be bored or tunneled through the area at a depth approved by the supervising arborist. In these instances, a single shared utility conduit should be used to reduce impacts to trees.
- 5.4. Any roots one inch in diameter or larger requiring removal should be cut cleanly in sound tissue. The roots and surrounding soil should be moistened, and covered with a thick mulch (4") to prevent desiccation. No pruning seals or paints should be used on wounds. Cut and exposed roots should be protected from drying. A water absorbent material (i.e. burlap) should be secured at the top of the trench and should be draped over the exposed roots. This material should be kept moistened and soil should be replaced as soon as practicable.
- 5.5 Use of retaining walls is recommended to protect retained trees rather than mass grading.
- 5.5. Fill placement areas covering 30% or more of the TPZ of trees larger than 24 inches dbh and over one foot in depth should be mitigated with a retaining wall or well. Installation of aeration systems may also be required depending upon the extent, depth, and type of the fill.
- 5.6 The established method for protecting trees subjected to deep grading fills is to construct a well around the trunk and install an aeration system over the root system at the original grade level. The aeration system utilizes perforated plastic pipe laid out in a radially spaced pattern from the tree well with vertical pipes providing connection to surface oxygen and water. This aeration system should facilitate drainage away from the trunk. The fill is then placed over the aeration system.
- 5.7 Porous pavements are recommended for use within the TPZ. Construction of the pavement sub-base should avoid grading cuts where possible.

6.0 Foundation and Wall Construction

- 6.1. Foundation construction within the TPZ of retained trees is recommended to be either a pier and grade beam construction which bridges root areas, cantilevered structures, or raised foundations using pier footings.
- 6.2. Wall construction within a TPZ should be a design that requires minimal excavation within the TPZ. Walls requiring over-excavation for tieback structures should not be used within a TPZ.

7.0 Site Drainage

- 7.1 All grading shall be designed to provide positive drainage away from the base of the tree trunk, and not create ponding within the TPZ.
- 7.2 Drainage features such as v-ditches and French drains will be utilized upslope from existing trees to divert runoff away from roots and the TPZ. These v-ditches are best-utilized downslope of any irrigated landscape areas.

8.0 Pruning and Cabling

- 8.1 Any tree pruning, cabling, or other similar activity which may be proposed as part of site construction will be included on site plans and be reviewed by a qualified arborist or City representative.
- 8.2 Pruning methods shall conform to the ANSI A 300-2008 Pruning Standard Practices and performed by an ISA Certified Arborist or Certified Tree Worker. Cabling or other support systems shall conform to the ANSI A 300 (part 3)-2006 Standard Practices

9.0 Tree Damage Mitigation

- 9.1 Trees damaged during construction shall be evaluated by the Supervising Arborist or City representative. Proper mitigation measures shall be specified and may include:
 - a.) Pruning of damaged and dead wood.
 - b.) Installation of a drip irrigation system to provide supplemental irrigation for three to five seasons following damage.
 - c.) Proper low nitrogen fertilization timed to growth response and phenological development of the tree.
 - d.) Periodic hazard evaluation of tree.
 - e.) Replacement of tree per city requirements.
 - f.) Alleviation of severe compaction by vertical mulching with augers or hydraulic soil probes.
 - g.) Alleviation of surface compaction by light cultivation or raking and the application of a mulch.

Appendix A

Tree Inventory and Construction Impact Assessment

ATT Project at Callisoga Fairgrounds- Appendix A
Tree Evaluation and Construction Impact Assessment

ATT Project at Callisoga Fairgrounds: Tree Evaluation and Construction Impact Assessment

Health and Structural Rating Key: 3.0 = moderate or better condition
2.5 = marginal to moderate
2.0 = marginal condition
1.5 = poor to marginal condition
1.0 = poor condition

Construction Impact Code: RC= Removal Due to Construction
RR- Removal Recommended Due to Condition
PI= Possible Impact- Tree Protection Required
NI= No Impact

Tree #	Species	Trunk Diameter (inches) @ 4.5'	# of Trunks	Crown Height	Crown Diameter (average)	Health Rating	Structural Rating	Comments/Observations	Suitability for Preservation (Based on Condition)	Construction Impact	Protected Tree Status	Road Protection Zone (Radius in Feet)	Impact Code
Building/Antenna Site													
1	European hackberry (<i>Celtis australis</i>)	30"	1	56'±	60'±	2.5	2.5	Mature tree with moderately asymmetrical crown extending to the south. Three trunks form at 6'-9'. Deep buttress flares on trunk. Narrow trunk union with seam and reaction wood ridge. Limited history of pruning, possibly partially topped in past. Vigor and foliage density are variable with upper crown having areas of branch and twig dieback. Growing in non-irrigated area. Recent shallow excavation work near trunk.	Marginal to Moderate	Located 35'-40' from equipment shelter locations. 22' from underground fiber optics route. No significant impact expected.	Yes	45'	NI
2	Chinese hackberry (<i>Celtis sinensis</i>)	24"	1	50'±	60'±	2.5	2.0	Mature tree with three closely spaced secondary trunks at 10'. Moderately asymmetrical crown form extending to south. Old, decayed trunk wound on north side. South trunk is included with an apparent fissure at union. This trunk is at risk of failure. Vigor and foliage density are variable with limited branch and twig dieback occurring. Growing in non-irrigated area.	Marginal	Located 5'-7' from equipment shelter and generator slab. Possible impact.	Yes	45'	PI
3	London plane tree (<i>Platanus acerifolia</i> "Bloodgood")	29"	1	60'±	50'-55'±	2.5	2.5	Mature tree with three secondary trunks forming at 10'-12'. Trunk unions appear sound. Probable history of old topping pruning cuts. Moderately asymmetrical crown extending south. Open limb structure. Probable lower trunk cankers (dead sapwood) on east and west sides. Growing in non-irrigated area.	Marginal to Moderate	Located 5'-7' from equipment shelter and generator slab. Possible impact.	Yes	35'	PI
4	silver maple (<i>Acer saccharinum</i>)	33"	3 @ 6'-7'	50'±	50'±	1.5	2.0	Mature tree with three trunks forming at 6'-7'. Symmetrical crown form. Growing in small planter surrounded by asphalt pavement. Electrical utility at base of tree. Significant root damage and decay evident. Vigor and foliage density are low with significant limb dieback occurring.	Poor	Located 10'-12' from underground fiber optics route. Possible impact.	Yes	35'	PI

ATT Project at Callistoga Fairgrounds- Appendix A
 Tree Evaluation and Construction Impact Assessment

Tree #	Species	Trunk Diameter (inches) @ 4.5'	# of Trunks	Crown Height	Crown Diameter (average)	Health Rating	Structural Rating	Comments/Observations	Suitability for Preservation (Based on Condition)	Construction Impact	Protected Tree Status	Root Protection Zone (Radius in Feet)	Impact Code
5	European hackberry	12", 12", 14"	3	45'±	45'-50'±	2.5	3.0	Multiple trunk tree with generally upright and symmetrical crown form. Limited decay observed at older pruning wounds. No significant structural defects observed. Vigor and foliage density are moderately low due to lack of irrigation. Growing on slope below racetrack wall.	Moderate	Located away from current project area. Located 40' from suggested alternative shelter location. No impact expected.	Yes	75'	NI

Appendix B
Site and Tree Images



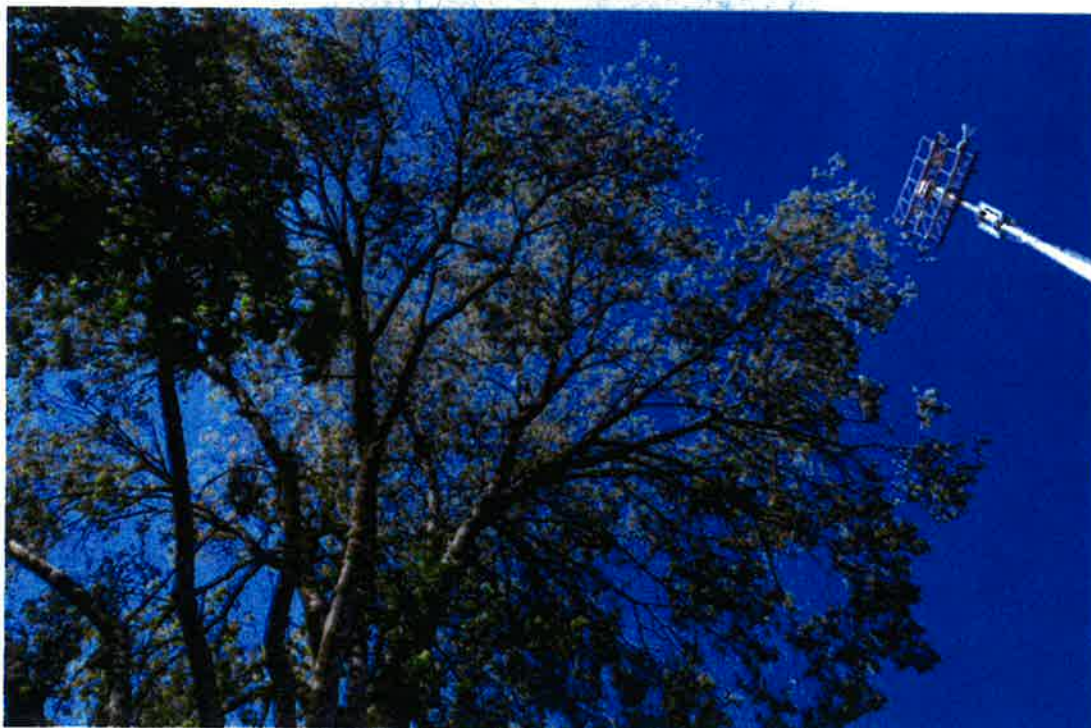
View from south of trees #1-#3. Arrow indicates proposed location of AT&T equipment shelter between trees #2 and #3.



Tree #1, European hackberry.



Lower trunk of tree #1.



Upper crown of tree #1 with low foliage density due to chronic drought stress.



Tree #2, Chinese hackberry.



Lower trunk of tree #2.



Old decayed wound on north side of tree #2



Fissure at trunk union of tree #2. Trunk is at risk of failure.



Tree #3, London plane tree (sycamore).



Lower trunk with probable sapwood cankers.



Upper crown of tree #3.



Lower trunk, tree #4, silver maple with electrical box.



Tree #4 and decayed roots.



Upper crown of tree #3 and extensive limb dieback.



Tree #5, European hackberry, on slope above access road.



Lower trunk of tree #5.

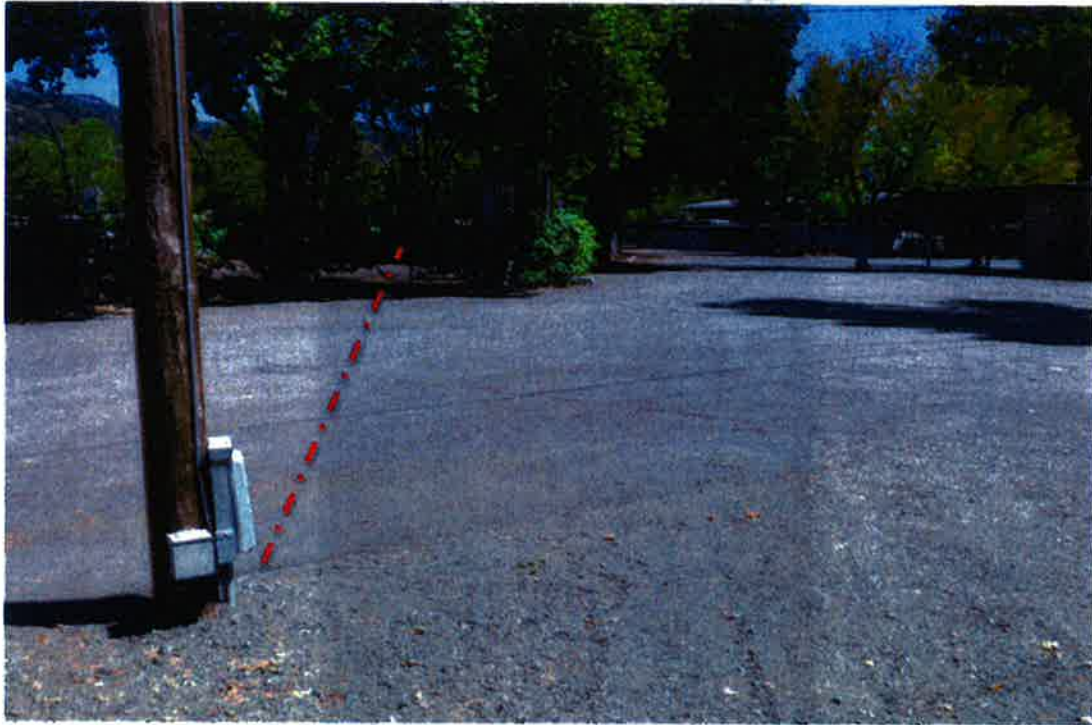


Canary Island palm and Colorado blue spruce above access road. No impact expected.



Post is AT&T fiber point of connection. Underground utility run is to pole in background and then to equipment shelter to trees on right.

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Underground utility runs from this pole to equipment shelter between trees #2 and #3.



Arrow indicates suggested alternative equipment shelter location to right of tree #3 near access road gate (red arrow). Yellow arrow indicates current shelter location.

Appendix C

Tree Numbering and Location Plan

