Tree Care Plan Introduction
Iowa State University

Initiated December 2015, Updated December 2024

Iowa State University is recognized nationally for its beautiful campus landscape.

The ISU campus consists of nearly 2,000 acres of land. The plant collection includes over 6,500 canopy and understory trees, 4,000 ornamental trees, 2,600 evergreen trees, and 23,000 shrubs inventoried on plant maps with hundreds more trees non inventoried in forests and wooded properties. Trees and the care of trees are vitally important to the ISU community and have been since the university's founding back in 1858.

Thomas Gaines, in *The Campus as a Work of Art* (1991), proclaimed the Iowa State Campus to be one of the thirty-three most beautiful campuses in the country. Gaines noted the park-like expanse of central campus, and the use of trees and shrubbery to draw together Iowa State's varied building architecture.

In 1999 the American Society of Landscape Architects (ASLA) commemorated its centennial by selecting more than 300 significant landscapes across the country and designating them as "medallion" sites. Thirteen of these medallion sites were on college campuses but only three are located on a main or central campus – Yale University, the University of Virginia and Iowa State University. The 3 sites were selected because they represented places that were special to the heart and soul – places where the landscape architecture of the space had something to do with making them what they are today.

In October 2015, BuzzFeed, the internet media company with claims of over 200 million viewers, listed Iowa State University as number 5 in their members' poll of the "25 of the Most Beautiful College Campuses in the World".

In December 2015, ISU applied and received recognition as a 'Tree Campus USA'.

In 2016 when USA Today asked the question "What's the most Instagrammed place in every state?" for the state of Iowa the answer was Iowa State University's campus. In 2017, Travel and Leisure magazine selected Iowa State University as the most beautiful college in Iowa.

From its earliest conception, the original vision of the Iowa State campus was to be an open central landscaped lawn bordered by buildings and surrounded by a road. Faculty planned the early landscaping along with students who maintained and worked with the plants. Peter Melendy, Superintendent in 1865, wrote in the Sixth Annual Report:

"There have been several hundred ornamental and shade trees, and shrubbery, set out. I deemed it essential to make an ample lawn, with here and there a tree, with shrubs for fragrance, and evergreens to relieve the golden of the summer day; with bordered walks and quiet nooks, the embowering shade of trees, with beautiful trailing vines, and shrubs, and flowers… By the judicious employment of trees we may affect almost any amount of alteration and improvement within the scope of landscape scenery… Plant trees most certainly, and wherever they would be a beauty of refreshment, let their roots being to pierce the mould above which their branches may year after year wave with a fascinating grace and a variety – like which there is nothing else in nature."

"A culture of every tree being valued has become the basic understanding of the ISU campus community"

Purpose of the Tree Care Plan

To further the continued care and management of our beautiful campus landscape and its trees, this ISU Tree Care Plan was developed as a means to establish a clear set of policies, procedures, and practices for use in protecting and maintaining our landscape plantings on the Iowa State University campus located in Ames, Iowa.

1. **Goals and Objectives of the Tree Care Plan:**
    - Sustain, protect, and preserve the award winning and historic landscape character of Iowa State University's central campus and to extend that character throughout campus for the enjoyment of its students, staff, and alumni.

    - Continue to promote the campus outside environment as an outdoor teaching lab for the use of faculty and students by procuring and maintaining a widely varied collection of landscape plantings.

    - Maintain a detailed inventory of campus plants in order to better understand and enhance the quantity and diversity of the existing landscape plantings.

- Manage the campus tree canopy through new additions and selective removals to better achieve a healthy diversity of plant species which will in turn promote the sustainable long-term health of the campus forest.

- Ensure the proper species selection, high quality nursery stock acquisition and industry consensus planting procedures for new landscape plantings.

- Evaluate, protect, and maintain trees during construction and utility projects with the use of best management practices.

- Encourage campus and community members to respect and value the campus urban forest through the support of various campus sustainable initiatives.

2. Responsible Authority

Ultimate responsibility for the care of campus trees resides with the Facilities, Planning and Management Department under the direction of the Business and Finance Division of Iowa State University and, specifically within the operations of the Campus Services unit.

3. Campus Tree Advisory Committee

The Campus Tree Advisory Committee (CTAC) functions as an advisory group to Campus Services, to Capital Planning, and to Landscape Design Services within the divisions of Facilities, Planning and Management and Real Estate and Capital Planning for Iowa State University.

a. Committee's Charge

- The committee will serve to advise Facilities Planning and Management and Real Estate and Capital Planning on all aspects of the campus tree canopy. The Campus Tree Advisory Committee (CTAC) mission is to help ensure the sustainability of campus trees and to provide direction and vision for the continuation of a healthy campus tree landscape.

- Committee membership will consist of a mix of ISU faculty with specific interests in the general health and make up of the campus landscape, community members with similar responsibilities and interests, and undergraduate and / or graduate student representatives in those ISU departments with specific interests in tree and plant health. Ad Hoc members of the committee may be Facility groundskeepers, arborists, landscape architects, or planners. The CTAC chair will be a representative from Facilities, Planning

and Management and will report to leadership within Facilities, Planning and Management and Real Estate and Capital Planning.

- Committee duties will include annually reviewing ISU's Tree Care Plan goals and objectives, providing review and discussion regarding latest best practices of tree care management, and attending a minimum of one meeting per year of the committee.

  See Appendix A for a current CTAC committee membership list.

4. Other Advising Resources

Periodically campus planners and landscape architects have met or consulted with the Outdoor Teaching and Learning Committee (OTLC), which is under the direction of the Office of the Provost, on campus tree and landscape plant removals and any potential impacts to current academic and research programs. Additionally, the OTLC would advise facility staff on the sustainability of future plant purchases and the latest techniques to protect and preserve existing trees and habitats.

ISU's Tree Care Plan

Tree Maintenance Policies and Guidelines

The importance of trees to students, staff and visitors to ISU's campus cannot be understated. Iowa State University is known for its award winning and historic grounds and our campus trees are much of the reason why. Additionally, campus trees serve as a valuable outdoor teaching resource used by both faculty and students. The specific maintenance polices and guidelines that relate to campus trees and landscape planting in general are as follows:

1. Tree Inspection, Scouting, Notification, Tree Evaluation, Risk Assessment, and Strom Damage Response for Trees

a. Tree Inspection

In order to maintain and preserve campus trees, Campus Service staff and arborists provide an active scouting program for tree condition, health, disease and more. In addition to regular scouting activities, staff monitors significant trees and maintains a tree 'watch list'.

b. Scouting

Scouting for problems is a daily, on-going team effort by the following people/areas:

- Arborist
- Tree Trimmer
- Groundskeeper
- Forestry Department
- Plant Pathology Department
- Entomology Department
- University Community

c. Notification

For the purpose of communicating tree removals the campus has been divided into four zones with differing levels of historic and aesthetic significance, landscape characteristics, management practices and land use functions.

Zone 1 – Central Campus:

- Storm damaged trees with severe damage are photographed and removed.
- For all other trees (dead, hazard, significant damage, diseased) an arborist will evaluate the tree and prepare a condition report with photo documentation and a location map. LA staff with support from C.S. staff will review the request and visit the tree if needed to verify the arborist's recommendation.
- The notification of removal containing the arborist report and photo will be distributed to the Director and Assistant Director for Facilities Services who can forward the removal notice to the AVP for Facilities if needed. LA staff will forward the removal recommendation and documentation to CTAC and OTLC if the tree is determined to be a valuable teaching asset or significant to the campus landscape. A request to respond with inquiry or comments within a two-week period unless special conditions exist will be required from all parties.
- Inventory records updated and maintained.

Zone 2 - North and South Campus, ASC:

- Storm damaged trees with severe damage are photographed and removed.
- All other trees (dead, hazard, significant damage, diseased) an arborist will evaluate the tree for removal, no formal report filed.
- Generally, a notification of removal is not distributed unless the tree is unique or significantly large for the species.
- Inventory records are updated and maintained.

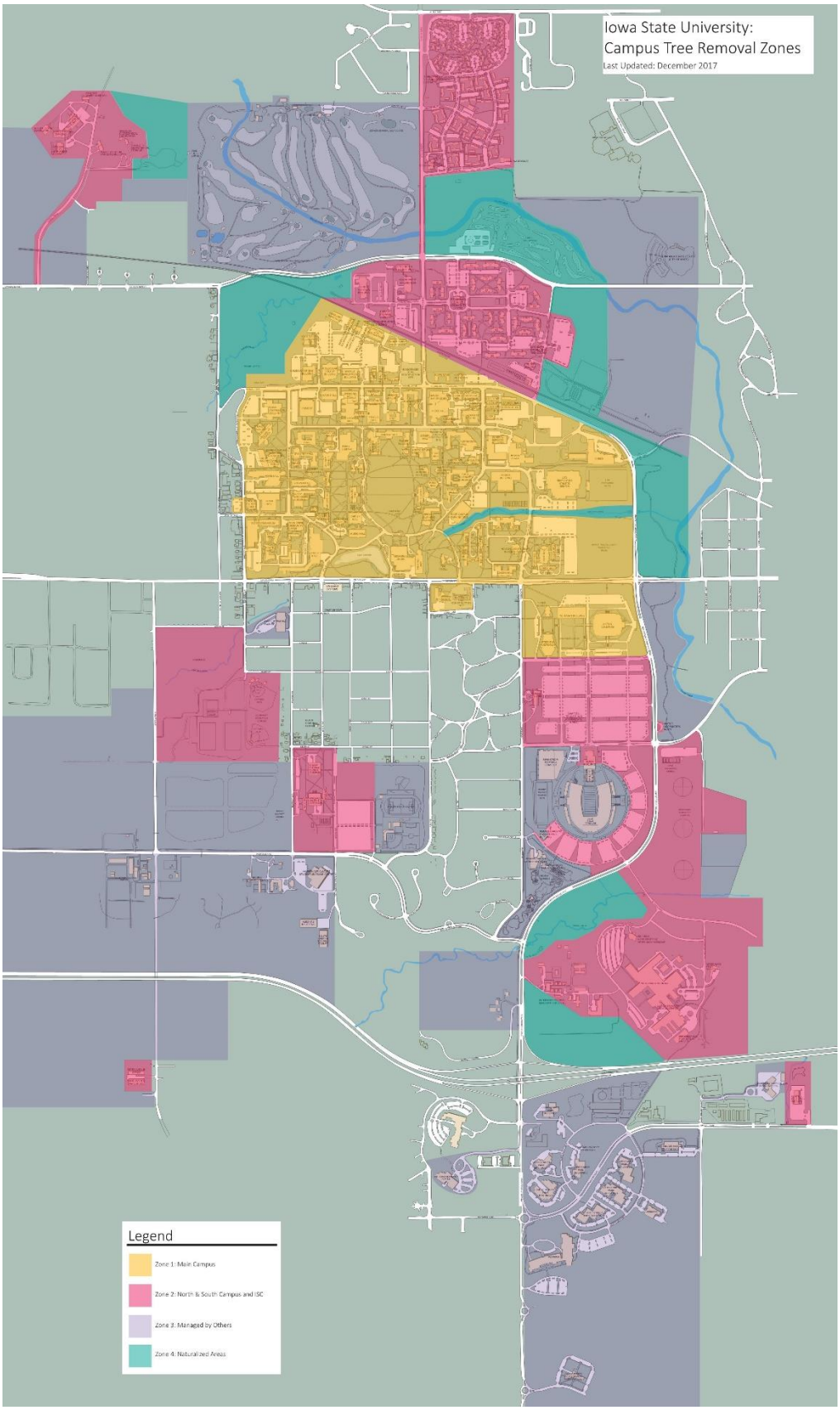
Zone 3 – Areas Managed by Others (Veenker, Reiman, Agriculture Farms, Research Park, Ames Parks:

- Tree removals are arranged by management unit.
- No notifications are sent by FPM.
- Inventory records are limited and therefore not updated.

Zone 4 – Naturalized Areas, Pammel and Applied Sciences Woodlands, Arboretum, Prairie areas, Creeks:

- Trees identified for removal (dead, hazard, storm damage, diseased) are reviewed by arborist, no report filed.
- No notifications are sent.
- These areas do not have a tree inventory; therefore, records are not updated.

Not all standing dead trees must be removed. Depending on the location of the standing dead tree, some might be preserved in place for use as animal or bird habitat provided the tree does not pose any risk to people or property.


Iowa State University:
Campus Tree Removal Zones
Last Updated: December 2017
Legend
Zone 1: Main Campus
Zone 2: North & South Campus and ISC
Zone 3: Managed by Others
Zone 4: Naturalized Areas

d. Tree Evaluation

ISU trees are evaluated and ranked into Campus Tree Categories. These categories are used to explain to staff, faculty, students, project managers, project designers, and administration the differences between highly significant trees, significant trees, and campus trees. It also defines the different levels of required tree protection methods to be used when construction operations are close to the tree's drip line. Included in the tree categories is an explanation on how trees are evaluated for removal.

ISU Campus Tree Categories

When planning for construction projects, the site's existing trees will be evaluated by Facilities Planning and Management's tree professionals using the following categories:

A Highly Significant Trees

Highly Significant Tree designation is given to trees that have a combination of qualities (size, age, unusual plant species, unique placement, importance to teaching community, or unique placement) that make them rare or unique for the ISU campus. Included in this category is any tree that was planted as a memorial or commemorative tree. Highly Significant Trees shall be given special protection from construction impacts. FP&M arborists shall be involved in site planning, the development of a tree protection plan and the execution of work around the tree in order to minimize harm to the tree's canopy, roots, and structure.

B Significant Trees

Significant Tree designation is given to trees that have at least one quality (size, age, unusual plant species, unique placement, importance to teaching community, and unique placement) that make them special for the ISU campus. Significant Trees shall be protected from campus impacts and disturbance under the tree's canopy. Additional tree protections will be required to minimize the harm to the tree's canopy, roots, and structure.

C Campus Trees

All ISU campus trees are highly valued. Unless specifically called out on construction documents or by FP&M's site representative, all campus tree removals or pruning will be done by FP&M arborists and tree workers. Additionally, all existing site plantings shall remain in place and unharmed unless otherwise indicated in the construction documents.

R Removal Recommended

Trees may be recommended for removal by FP&M's tree professionals because of the following conditions: substantial decline, major damage and / or trees at risk for targeted insect infestations or diseases. Included in this category are tree removals which will improve the overall long-term health of ISU's tree canopy.

Highly Significant Tree Protection Zone

To protect Highly Significant Trees, a recommended no-work zone shall be clearly shown on the site plans.

e. Risk Assessment

The safety of everyone on campus is the number one priority of our tree care program. We utilize a standardized method for assessing the risk levels of our trees and use that to help guide removal or retention/preservation policy decisions.

Risk assessment levels:

1- low

2-moderate : place on prune list

3-intermediate: mitigate risks and place on retain and monitor list (after wind events, heavy snow/ice) includes pictures , measurements of defects, and write up.

4-high: mitigate or remove (discussion and decision from CTAC) pictures and write up provided with notifications.

5-immediate removal (tree is actively failing, dead, etc.)

f. Storm Damage Response Plan for Trees

During regular hours:

When a severe storm occurs on campus and causes tree damage during the regular workday, all ground shop employees will report to the shop as soon as possible. The managers and tree crew will survey the campus to compile a list of tree damage and work needing to be done. After the initial assessment, the manager will discuss damage with the arborist. Manager will set priorities. The arborist will direct the tree crew and help perform the needed work.

Priorities will be to open roadways, main walks and building entrances. Hangers over sidewalks, doorways and emergency exits are priorities. Damage to public and personal property are also a priority. This would include limbs on cars or buildings. Damage that affects building integrity such as broken windows or damaged roofs need to be taken care of as soon as possible. Building damage will be reported to the building maintenance manager. Once emergency items are taken care of, work on the list of lower priorities will be undertaken.

After hours:

If a severe storm with tree damage happens after hours, the managers will report to campus to assess damage. If additional staff are needed, they will be notified by phone call or text. Absolute emergencies will be dealt with. Non-emergency work will be prioritized and assigned to crews during daylight hours.

Roads and Sidewalks:

Equipment operators will be in backhoes, end loaders, and bobcats checking campus roads and sidewalks for heavy debris, removing what they can and reporting back damage.

Tree Cleanup:

Ground maintenance staff that are trained to use chainsaws will assist in the campus clean- up. They will prune and do removals of smaller trees that are damaged. Management will communicate with all staff to set priorities and direct work.

General Cleanup:
Other grounds shop staff will be assigned duties as needed in response to the cleanup. They may be involved by assisting with dragging brush, running the chipper, stumping after removal, and working on the smaller trees that can be reached from the ground with hand tools.
Groundskeepers with assigned bedding routes will scout their areas and report back to supervisors of any tree damage and large cleanups they cannot handle. They will be able to assist with smaller damage.

2. Tree Maintenance

a. Tree Pruning

Training and Standards: ISU tree care staff are professionals trained to follow the guidelines and national standards for pruning and safety as developed by the International Society of Arboriculture (ISA) and by the American National Standards Institute (ANSI).

Frequency of Pruning: ISU's tree care professionals try to scout new tree plantings every year starting on their second year from planting up until the time the tree is 7 to 10 years old, and they will perform maintenance pruning on those new trees every 2 years over that same time period.

Proper pruning of landscape trees improves their structural strength, maintains their health, enhances beauty, and increases their value. Pruning becomes advisable under the following circumstances:

- Corrective pruning of crossing branches, weak branch unions, or other defects.
- Branches are dead, dying, broken from storm damage, decayed, or potentially hazardous.
- Branches block visibility of signs or walk lighting.
- Branches are growing into buildings or utility wires.
- Tree limbs are hanging over buildings potentially giving access to squirrels and raccoons to building rooftops.
- Low hanging branches are removed to allow for adequate clearance for pedestrians or vehicles). 14' clearance required above roadways and 8' above ground for clearance over sidewalks.
- Branches or limbs may be removed or pruned back to allow for better plant of grass establishment.
- To avoid oak wilt, oaks should be trimmed during the colder months of the year when temperatures are at freezing or below. Pruning of oaks is allowed outside those months if it is an emergency, a hazard or to clean up after storm damage.

b. Tree Damage Repair and Mitigation

Trees can be damaged by storms, vehicle accidents, and mechanical equipment. Depending on the type and location of the injury, the following techniques can be used to help repair the damage and strengthen the tree's health:

- Trimming
- Bark Tracing
- Root Pruning
- Aeration
- Fertilization
- Bracing and Cabling

These techniques should be done according to ISA and ANSI guidelines.

Trimming: This is the removal of damaged/broken limbs, shapes tree, and improves the aesthetics of the tree.

Bark Tracing: This method used to trim back bark that has been damaged and separated from the cambium layer. Process is done with a sharp utility knife and by making cuts at 90o angle into the shape of an oval around the wound.

Root Pruning: Roots are often damaged by mechanical digging in tree root zones. Once this occurs, the tree care experts need to prune off the damaged roots leaving a clean cut and then backfill the hole with good topsoil as soon as possible. If soil is not immediately provided or if soil cannot be placed until the construction is complete, place burlap over and around the exposed roots. The burlap is to be kept moist and intact until soil can be placed around the roots. This will help heal the roots and minimize the exposure to the air.

Aeration: The most common aeration method is breaking up compacted soils around trees so water and nutrients can be more readily absorbed by the roots. The other method is accomplished by using beam sprayer, which is water injected into the root zone. The two processes are described below:

1) **Drill Holes**
    - 2 inches in diameter
    - 12" to 18" deep
    - Every 2 to 3 feet apart in concentric circles around the tree extending away from the tree the entire drip line plus 50% of the height of the tree.
    - Starting 3 to 5 feet away from the root crown
    - Backfill with compost, perlite, fertilizer, sand, and peat
2) **Inject with water using a beam sprayer**
    - Every 2 to 3 feet apart in concentric circles around the tree extending away from the tree the entire drip line plus 50% of the height of the tree.
    - Starting 3 to 5 feet away from the root crown
    - 12" to 18" deep until you see the water come to the surface

Fertilization: Fertilization supplies nutrients to trees and contributes to their overall health. Several methods are use: the drill hole method, water injection method, trunk injection method, and broadcast spread method of fertilization.

For the broadcast spread method, the following activity is performed:

1) apply as prescribed by soil analysis
2) slow-release fertilizer at the rate of 2-4 lbs. of actual nitrogen per 1000 sq. ft. of root area
3) 1/4 - 1/2 pound per inch DBH (diameter breast high)
4) recommendation of ISU forester
5) trunk injection of nutrients

Bracing and Cabling: Bracing, cabling, guying, or props should only be done under limited circumstances and should not be considered a permanent fix. These tree support systems reinforce critical areas of the tree by limiting the movement of branches or leaders. They help reduce the risk of injury to humans and damage to property by providing supplemental support for structurally weak areas of the tree. However, it is important to understand that not all risk can be mitigated by tree support installations. Also, not all trees can be reinforced with supplemental support. A qualified arborist (e.g., an International Society of Arboriculture Certified Arborist) should be consulted to determine a tree's eligibility for a support system.

c. Mulching

Mulch protects tree roots from wide variations of temp changes in the environment and also to retain moisture. Mulch provides a barrier for mowers and string trimmers.

Mulch placement for new plantings should:

- Cover the entire root ball or planting area around the tree
- Be at least 2 to 3 inches deep and no more than 5" deep
- The mulch should not touch the root crown or tree trunk

3. Tree Removals

a. Tree Removals

Campus Services performs the majority of needed tree removals on campus. For construction project required removals or after large tree damaging events, ISU has allow contracted tree removals provided the on-site tree removal supervisor has ISA (International Society of Arboriculture) certification or similar qualification.

Trees are removed only when they are:

- standing dead

- a hazardous tree or safety risk
- have significant storm damage
- heavily diseased and lack promise of recovery
- the removal will improve the overall long-term health of ISU's tree canopy

After a tree is removed, the stump will be ground out and the site seeded.

b. TreeCycle Sustainable Program

Campus tree removals are evaluated for suitability for inclusion into the ISU TreeCycle Program. If the tree trunk is large enough, is in good condition, there is space for the lumber to be stored, and if the wood is considered valuable for furniture or wood working, then the lumber from the tree is preserved for re-use on a campus building project, a furniture project, or another campus purpose. Some of the collected wood can also be sold to students for use on class-supported projects. A small amount of the wood will be sold to the public through the ISU Surplus program. The remainder of the tree, not suitable for the sustainable program, is chipped into mulch and spread on the campus plant beds. Links to more stories about preserving the wood from campus trees can be found here:

- http://www.inside.iastate.edu/article/2015/05/07/bench
- https://www.inside.iastate.edu/article/2017/10/19/treecycle

4. Tree Protection Guidelines

ISU takes the protection of our existing campus trees very seriously. Tree protection guidelines, policies, and oversight are required in order to minimize negative impacts on tree health, structure and stability and reduce or eliminate conflict between trees and building maintenance, construction projects, and campus outside events.

a. Tree Protection Starts in the Planning Phase

Tree protection efforts should start well before any actual on-site work. ISU's Facility tree care specialists (Grounds Managers, Landscape Architects and Arborists) should be brought into in all stages of any construction project (planning, design, pre-construction, construction, and landscaping) which will either involve the removal of existing trees or if the work is located in close vicinity to campus trees.

1) Trees identified for retention should be included in blueprints, discussed at preconstruction meeting, and signs should be posted at job site.
2) All site plans should note:

- All campus tree removals or tree pruning is to be done by Owner unless otherwise indicated in the construction documents.
- All existing site plantings and trees shall remain in place and un-pruned unless otherwise indicated in the construction documents.

3) Tree Protection Zones (TPZ) shall be established with consultation by ISU's tree care specialists. TPZ zones shall be delineated on construction site plans and tree protection fencing will be installed on the TPZ boundaries for the duration of the construction project. The tree protection fencing will be provided, installed, and maintained by ISU's Campus Services. Campus Service staff shall be responsible for making regular weekly site visits of the TPZ fencing to make sure it remains in place and is secured.

4) ISU's Arborist or tree care specialist should be involved in all stages of the construction project. Planning, design, pre-construction, construction and then landscaping.

5) No compaction, excavation, storage, parking, or disruption shall occur within the canopy area of trees or shrubs outside of the construction fence. The canopy area is defined as the area within the drip line of the tree, and includes the area within the vertical line extended above and below this drip line location. In locations where the construction fence is placed within the drip line of the tree, in order to allow for construction activities, the disruption to the roots and canopy of the tree shall be minimalized to the extent necessary for demolition or construction only.

6) Prior to any excavation (regardless of project size) within the drip line of a campus tree; the Contractor, ISU utility member, or ISU project manager shall contact ISU's Arborist or tree care specialists and have an on-site discussion regarding mitigation methods that might be needed based on the extent of the disturbance to the tree's root zone and the classification of the tree.

b. Damage Prevention Prior to Construction Activities

Contactors working on the campus are informed of the importance of campus trees and the need for tree protection vigilance in both pre-bid and pre-construction meetings scheduled through the FP&M - Construction Management Division.

Depending on the recommendations from ISU's Facilities Arborist or tree care specialist, Campus Services can provide the following practices with trained staff to prevent or minimize damage to campus trees prior to the start of construction operations:

- Elevating tree limbs (to make room for equipment)
- Trimming or pruning branches (away from the construction or work area)
- Installing short term restraints or tie backs (to pull back branches from the work area)
- Provide root pruning in advance of construction activities. Typically root pruning involves using a 6" wide trencher to cut a trench 3 to 4 feet outside the tree's drip line and 2 to 3' deep. Ideally this root

pruning operation is performed up to a year in advance of any construction activity within the trees drip line.

- Aerate and/or fertilize around impacted trees. This helps to stabilize, promote, and protect the health of trees in proposed construction areas.

c. Mulching To Reduce Harm to Trees During Construction Activities

Mulch on construction sites consists of wood chips installed in the following manner to protect trees shrubs and lawn areas from compaction and damage:

- 3" to 4" layer is spread at a time
- The mulch should be freshened up every 2 weeks as needed
- Over time the maximum depth of the mulch layer should not exceed 12 inches
- Do not cover the root crown or trunk of the tree being protected
- Spread the mulch out to ½ the height of the tree past the drip line or as the situation allows

d. Damages to Trees or Shrubs

If any tree not designated for removal is damaged as a result of construction operations, the Contractor or ISU's employee responsible shall notify ISU's project manager within 48 hours. Damage to a protected tree or any other campus tree not designated for removal shall be determined by an ISU Facilities tree care specialist and shall include but not be limited to:

- Scratched or gouged bark
- Broken branches
- Compaction of soil within the specified tree protection zone
- Storage of materials within the tree's protection zone
- Operation of equipment within the Tree's protection zone
- Parking of vehicles or equipment within the tree's protection zone
- Spilling of harmful substances around or within a tree's critical root zone.

e. Landscape Damage Assessment Policy – DRAFT UNDER REVIEW

1) A minimum $500 fine will be assessed per incident for unauthorized construction activity outside of established construction limits, or within designated tree protection zones.

2) Fines will be assessed based upon the value of the trees according to the ISA Guide, as determined by appraisal by a certified arborist hired by the Owner.

3) Trees visibly damaged will cause the Owner to withhold an assessed amount conforming to the requirements stipulated above for a period of two years. After that period, any impact of the damage to trees will be assessed accordingly.

4) If the designated trees or shrubs are damaged and replacement is required, a quantity and diameter of trees and shrubs of the same species and variety, or as specified by ISU's tree care specialists along with consult from the Owner and the Architect, shall be obtained, and installed by the Owner

at the Contractor's expense. The total inch diameter of the replacement trees or shrubs shall equal the total diameter of the trees and shrubs to be replaced.

5) The Contractor shall notify the Owner immediately in cases of accidental damage so the Owner can make proper repairs. The Contractor shall not attempt to make tree repairs. Cost of repairs shall be assessed to the contractor.

6) If the ISU project manager, after consult with ISU's tree care specialist, determines the damaged tree or shrub needs to be removed then the cost for that removal and restoration of the site will be assessed to the Contractor.

5. Tree Purchase and Planting Guidelines

a. Tree and Plant Purchasing Guidelines

All plant material purchased through the ISU Purchasing Department for installation on the ISU campus shall meet the following minimum standards:

1) The provided plants shall be true to the genus, species and variety and be provided with a name tag. Plants shall meet the required sizes, quantities, and any other special requirements such as branching form as listed on the quote documents. No substitutions of the quoted plants will be allowed unless approved in writing by the ISU purchasing agent prior to the delivery of the plants to the ISU campus.

2) All plants shall comply with the American Standard for Nursery Stock, ANSI Z60.1 current edition.

3) All plants shall be nursery grown in a similar climatic zone and soil profile as the ISU Ames, Iowa campus. Plants grown in nurseries located in zones 6A or higher (U.S.D.A. Plant Zones Research map current edition) are not acceptable.

4) One-sided branching plants from tightly planted nursery rows will be rejected.

5) All plants shall be healthy specimens without objectionable deformities, voids, and open spaces, with well-developed branch and root systems, true to height, shape, and character of growth of the species or varieties. Plants shall show appearance of good health and vigor.

6) All plants shall be free of injurious insects, insect eggs, borers and all forms of infestation, plant diseases, moldy or dried roots or damage to trunk, bark, branches, leaders, or root systems or cut leaders. All plants shall be free of defects, disfiguring knots, sunscald injuries and frost cracks. All plants to be free of rodent damage to the bark or buds.

7) All B&B plants shall be delivered with firm un-broken root balls. Container plants shall have been held in the container for a period of one growing season or less. The root collar (trunk flare, root flare) shall be at the surface of the root ball (container media). The plant root ball shall be free of stem girdling (circling) roots.

8) All plants shall be dug, packed, handled, and transported in a manner that insures its arrival to the ISU campus in good condition. Plant root systems shall be protected with wet straw, moss or other suitable material which will assure its arrival to the ISU campus with its roots systems in a moist and healthy condition. Plants transported in open vehicles without tarpaulins could be rejected by upon arrival at the ISU campus. Should the roots be dried out, large branches broken, root balls broken or loosed and / or large areas of the tree's bark arrive torn or scraped at the time of delivery then the ISU Plant Services Supervisor may reject the injured tree(s) and require that they be replaced at no additional cost to ISU.

9) Plants will be inspected at the time of delivery by the ISU Plant Services Supervisor. ISU reserves the right to un-wrap, probe or otherwise destructively examine the root balls of up to 2% of each plant shipment for compliance with the plant purchasing guidelines at no additional compensation to the supplier. If any irregularities regarding the plant's required criteria are found or if damage to the plants during shipment is discovered, then a portion or all of the plant shipment maybe rejected, and the order canceled with no additional compensation due to the supplier.

10) If asked the plant vender must supply 3 references from municipal or collegiate institutions for plant deliveries of similar size within the past 36 months. References must include company name, contact person responsible for the plant purchases, current phone numbers and locations of the planting jobs.

11) All deliveries will be to the ISU nursery located northeast of the intersection of Scholl and Kingman Road in Ames, Iowa unless delivery to a different address on campus is stated in the quote documents.

12) Hours of plant deliveries are from 7:30am to 1:30pm Monday to Thursday. 48-hour advance notice is required prior to delivery.

13) ISU Contact: David Madsen 515-686-0952; Secondary ISU Contact: Joel Bender 515-686-0933, Third ISU Contact Barb Steiner; 515-290-2307.

b. Pre-Planting Process

1) Landscape plans are developed by FP&M Campus Landscape Architects and reviewed by Campus Services staff. The plans are reviewed for maintenance issues and problematic plant selections. Plant acquisition is accomplished through competitive quotes managed by ISU's Purchasing agents. Suppliers are instructed to delivered either to the job site or to the campus nursery off Scholl Road.

2) Plants are inspected upon delivery for overall health and if there are any signs of damage or disease. Campus Service staff will check under any tree wrap around the trunks looking for insect or mechanical damage to the bark. Staff will check for obvious large girdling roots and check to see

if the tree root flare is at the top of the root ball and not buried under too much soil. If significant problems are found the plant material is rejected.

3) Once the plants are unloaded, they are heeled in with mulch and watered until the planting site is ready. When plants are held at the nursery, nursery staff will check frequently to see they are adequately protected from the climate and have plenty of water. Plants in pots above ground can dry out quickly. The plants are set out with space between the plants for easy maintenance.

4) Once the planting site is graded and ready for planting, the campus landscape architect will place a wood stake to locate each tree's final position on the site. Stakes can also be used for each shrub if the job is small or painted lines can be used to indicate plant bed boundaries. After the plant locations are staked, utility locates are turned in by the planting crew. If the new plants are located in lawn areas the bed lines are painted on the ground and the grass is killed using glyphosate spray applications. Once the utility locates are done planting will begin.

c. General Planting Process

1) The planting crew will make sure locates are completed prior to any digging on site and will make sure to familiarize themselves with where all utilities might be in conflict with proposed plantings. If necessary, the crew leader will work with the campus landscape architect to reposition trees to avoid planting over buried utilities, to avoid causing conflicts with winter snow maintenance operations and if possible, simplify plant beds to reduce by hand lawn trimming.

2) When handling the plants care is taken to only move the plants by the containers handles or with lifting straps for B&B material. Grabbing a plant by the stem or by the tree trunk will damage its small feeder roots. Balled and burlaped trees are moved by using the bobcat forks to lift the root balls from the bottom and not by jabbing or squeezing the root balls with the bobcat forks.

3) Prior to any tree planting approximately 10% of the tree planting holes shall be pre-excavated to test for proper drainage. If insufficient drainage is discovered the landscape crews will install French drains in the planting holes.

4) Do Not Plant Too Deep!! It is important to find the root flare for each tree. Sometimes the root flare can be buried several inches deep down into the root ball and all that excess soil on top of the flare needs to be removed. In digging down to the root flare, it is common to also find girdling roots which if left un-pruned can eventually strangle and kill a growing tree. Ideally the root flare should end up resting approximately 1" or 2" above the existing or finished grade when the tree is planted. When the plant hole is dug using an auger, care needs to be taken not to dig a deeper plant hole than the root ball. This is because the soil in over dug holes will settle and drop the elevation of the tree thus the root flare ends up being buried too deep in the soil. It is relatively easy to add water to a tree that is planted too high in the ground but preventing a tree that was planted too low in the ground from getting too much water is very hard to fix.

5) Once the tree is set in the plant hole the crew will stand back and make sure the tree is standing straight. If a tree has a wire basket around the root ball the crew will remove as much of the wire cage, burlap and rope or twine as possible without damaging the integrity of the root ball. The backfill soil is carefully added around the root ball and is tamped firm enough to remove air pockets, but not so compacted as to remove all air spaces.

6) The planting hole should be dug twice as big as root ball. When hand digging, the crew will place the soil on a tarp. This is used to back fill the hole and if there is extra, the crew will use the excess soil to create a small berm or dish around the tree to hold water. The berm is removed or not used in extremely wet years. Any remaining soil is used in the area lawn to fill low spots or hauled away. If an auger is used to dig the hole…don't go to deep. Try to dig only as deep as the root ball. Otherwise, we get settling and again the tree ends up planted to deep. Any remaining excess soil can be used to fill in dips or holes in the lawn or hauled away.

7) In the case of planting around new buildings the planting bed areas are graded with amended soil/compost to a depth of 18 inches, which comes from the campus compost facility. If the planting occurs in existing soil around campus, we do not amend except in extreme cases of poor soil.

8) Pots are pulled off or cut away from the root ball. In cases where the container plant is bound up with circling roots, the crew will cut through the root tangle using utility knives and saws. They will also scrape and roughen up the sides of the root bound plant ball to try to loosen up the compacted roots.

9) Two to three inches of wood mulch is placed around the tree. Mulch is pulled away from the trunk 2-3 inches. Tree staking may be required in the first year to keep the tree standing straight.

10) The final step is to water the plant and make it is also added to the water list. Very new plantings will be watered 2 or 3 times in the first two weeks after planting. The goal is to water each new plant once/week throughout the summer until the ground freezes in the fall. Initially some trees may require watering more frequently. A rough measurement of how much water a tree needs is 10 gallons of water per caliper inch of tree trunk.

11) During the original plant installation, the crew will prune out any crossing, dead or broken branches.

d. Final Planting Check List

- Planting crew removes tags from plants
- Locate flags are pulled from the area.
- Site trash is picked up, tools put away and general area is left in a neat appearance.
- Staking is only done on an as needed base.

- In certain locations and with some species we put up rabbit wire to prevent trunk damage.
- We use our watering list to revisit tree plantings to do structural pruning 1-2 years after installation. After that they are looked at for pruning needs every 2-3 years.

Maintenance / After care (UNDER DEVELOPMENT)

ISU Tree Care Plan
Appendix (updated 2026)

Table of Contents *Page*

A. ISU Campus Tree Advisory Committee (CTAC)

Membership List **Last Update 02/25/2026**

ISU Faculty Members

Jeff Iles, Professor, Horticulture Department head
Office Phone: 515-294-3718
Email: iles@iastate.edu

Laura Jesse Iles, Extension, Plant Pathology and Microbiology
Office Phone: 515-294-0581
Email: ljesse@iastate.edu

Julie Stevens, Assistant Professor, Landscape Architecture
Office Phone: 515-294-6927
Email: jstevens@iastate.edu

Miranda Curzon, Assistant Professor
Natural Resource Ecology & Management
Office Phone: 515-294-1587
Email: mcurzon@iastate.edu

Area Community Members

Gabby Edwards City Forester, City of Ames
Office Phone: 515-239-5342
Email: gabriele.edwards@cityofames.org

Jeff Carstens USDA Plant Introduction Station
Cell Phone: 515-460-4869
Email: jeffrey.carstens@usda.gov

ISU Student Members

Nick Michel, LA Student
Email: nmichel@iastate.edu

Samantha Conrad, LA Grad. Student
Email: sconrad8@iastate.edu

Delaney Graef, Forestry Student
Email: dgraef@iastate.edu

ISU Facility, Planning and Management Members

Chris Strawhacker, Operations and Finance Campus Planner
Office Phone: 515-294-7071
Email: csbrown@iastate.edu

Rhonda Martin, Campus Landscape Architect
Office Phone: 515-294-9885
Email: rhjmarti@iastate.edu

Ex Officio Members

Barb Steiner, Manager Facilities, Campus Services Landscape Dept.
Office Phone: 515-290-2307
Email: bsteiner@iastate.edu

Brad Spainhower, Campus Arborist
Office Phone: 515-290-4006
Email: bspainho@iastate.edu

Brandt Jelken, Facility Service Coordinator
Office Phone: 515-450-8731
Email: bjelken@iastate.edu

B. Supplemental ISU Tree Care Management Documents

1. Insect and Disease Treatment Methods

Iowa State University uses an IPM approach to control insect and disease problems with campus trees. Scouting is used to evaluate when chemical applications are needed. Once it is determined that a treatment is needed the following methods are used to apply the chemicals.

a. Beam Sprayer: High pressure sprayer used for foliar and trunk drench applications.

b. Micro Injection: process of injecting fertilizers, insecticides, and fungicides directly into the sap stream of the tree. Treatment is hastened as it moves quickly to where it is needed most.

c. Macro Infusion: tree care tool that enables the arborist to efficiently deliver a large volume of diluted fungicide solution directly into the water conducting tissues of a tree through the root flares.

2. Treatment Charts

The following trees are currently being treated on campus:

Tree	Current Problem	Chemical Applied	Technique	Dates
Scotch Pine	Ips Beetle	Astro Insecticide	Beam Sprayer- applied to main trunk	April & August - when male beetle shows up in the pheromone traps. As per study by Dr. Mark Shour- entomology
Sycamore & Hardwood Maples	Aphids	Imicide & Astro Insecticide	Micro Injection - Imicide to root crown. Beam Sprayer - Astro over entire canopy	June (if problem)
Oaks	Anthracnose & Oak Wilt	Fungisol & Alamo Fungicide	Micro Injection - Fungisol in root crown. Macro Infusion - Alamo in root crown	July (if needed)
Tree	Current Problem	Chemical Applied	Technique	Dates
American & Red Elms	Dutch Elm disease	Imisol & Alamo	Micro Injection - Imisol to root flare Macro Infusion - Alamo to root flare	May - every other year for preventative maintenance on 14 elms
Scotch & Austrian Pines	Diplodia & Dothistroma	Daconil 2787 Fungicide	Beam Sprayer - spray entire tree, 2 applications, 2 weeks apart	May - when new growth of 1" appears
Various	Stressed	Depends on evaluation results	Depends on evaluation results	Spring, Summer, or Fall (as needed)

3. Sample Tree Risk Evaluation Forms

Short Form

Iowa State University

Tree Risk Evaluation - Short Form

Date: _____

Tree Species: _____

Estimated DBH: _____

Estimated Height: _____

Tree Location: _____

Tree Condition: _____

_____

_____

_____

Recommendation: _____

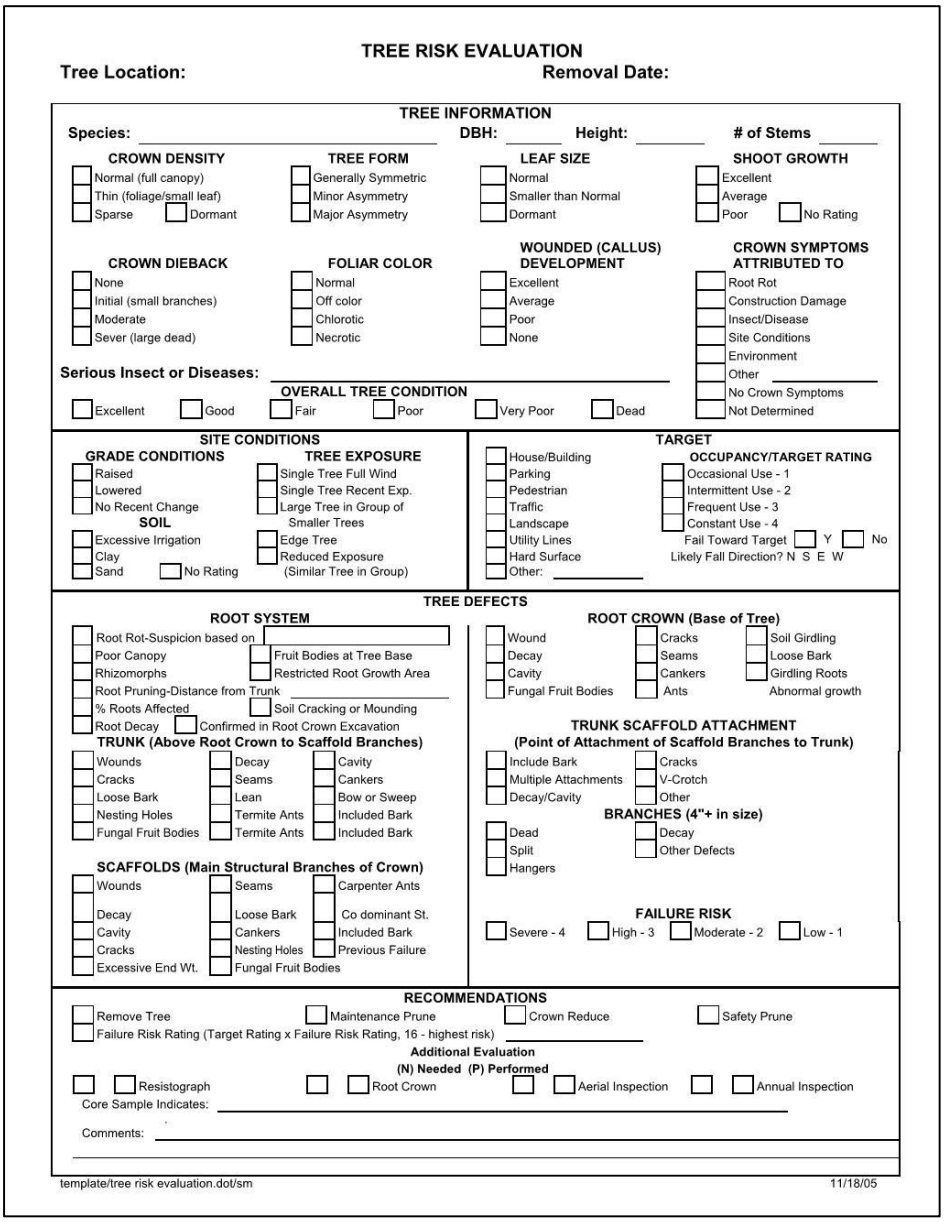
_____

Prepared By: _____

Use the **Tree Risk Evaluation - Long Form** for trees considered special or unique to campus.

Creation Date: 08/10/16

Long Form



TREE RISK EVALUATION

Tree Location: Removal Date:

TREE INFORMATION

Species: DBH: Height: # of Stems

CROWN DENSITY
- Normal (full canopy)
- Thin (foliage/small leaf)
- Sparse
- Dormant

TREE FORM
- Generally Symmetric
- Minor Asymmetry
- Major Asymmetry

LEAF SIZE
- Normal
- Smaller than Normal
- Dormant

SHOOT GROWTH
- Excellent
- Average
- Poor
- No Rating

CROWN DIEBACK
- None
- Initial (small branches)
- Moderate
- Sever (large dead)

FOLIAR COLOR
- Normal
- Off color
- Chlorotic
- Necrotic

WOUNDED (CALLUS) DEVELOPMENT
- Excellent
- Average
- Poor
- None

CROWN SYMPTOMS ATTRIBUTED TO
- Root Rot
- Construction Damage
- Insect/Disease
- Site Conditions
- Environment
- Other
- No Crown Symptoms
- Not Determined

Serious Insect or Diseases:

OVERALL TREE CONDITION
- Excellent
- Good
- Fair
- Poor
- Very Poor
- Dead

SITE CONDITIONS

GRADE CONDITIONS
- Raised
- Lowered
- No Recent Change

SOIL
- Excessive Irrigation
- Clay
- Sand
- No Rating

TREE EXPOSURE
- Single Tree Full Wind
- Single Tree Recent Exp.
- Large Tree in Group of Smaller Trees
- Edge Tree
- Reduced Exposure (Similar Tree in Group)

TARGET
- House/Building
- Parking
- Pedestrian
- Traffic
- Landscape
- Utility Lines
- Hard Surface
- Other:

OCCUPANCY/TARGET RATING
- Occasional Use - 1
- Intermittent Use - 2
- Frequent Use - 3
- Constant Use - 4

Fail Toward Target Y No

Likely Fall Direction? N S E W

TREE DEFECTS

ROOT SYSTEM
- Root Rot-Suspicion based on
- Poor Canopy
- Rhizomorphs
- Root Pruning-Distance from Trunk
- % Roots Affected
- Root Decay
- Fruit Bodies at Tree Base
- Restricted Root Growth Area
- Soil Cracking or Mounding
- Confirmed in Root Crown Excavation

ROOT CROWN (Base of Tree)
- Wound
- Decay
- Cavity
- Fungal Fruit Bodies
- Cracks
- Seams
- Cankers
- Ants
- Soil Girdling
- Loose Bark
- Girdling Roots
- Abnormal growth

TRUNK (Above Root Crown to Scaffold Branches)
- Wounds
- Cracks
- Loose Bark
- Nesting Holes
- Fungal Fruit Bodies
- Decay
- Seams
- Lean
- Termite Ants
- Termite Ants
- Cavity
- Cankers
- Bow or Sweep
- Included Bark
- Included Bark

TRUNK SCAFFOLD ATTACHMENT (Point of Attachment of Scaffold Branches to Trunk)
- Include Bark
- Multiple Attachments
- Decay/Cavity
- Cracks
- V-Crotch
- Other

BRANCHES (4"+ in size)
- Dead
- Split
- Hangers
- Decay
- Other Defects

SCAFFOLDS (Main Structural Branches of Crown)
- Wounds
- Decay
- Cavity
- Cracks
- Excessive End Wt.
- Seams
- Loose Bark
- Cankers
- Nesting Holes
- Fungal Fruit Bodies
- Carpenter Ants
- Co dominant St.
- Included Bark
- Previous Failure

FAILURE RISK
- Severe - 4
- High - 3
- Moderate - 2
- Low - 1

RECOMMENDATIONS
- Remove Tree
- Maintenance Prune
- Crown Reduce
- Safety Prune
- Failure Risk Rating (Target Rating x Failure Risk Rating, 16 - highest risk)

Additional Evaluation

(N) Needed (P) Performed
- Resistograph
- Root Crown
- Aerial Inspection
- Annual Inspection

Core Sample Indicates:

Comments:

template/tree risk evaluation.dot/sm 11/18/05

Target Risk

1 = No target or very infrequent. Example inside Pammel Woods

2 = In the vicinity of either a sidewalk, building entrance or road

3 = close to either a sidewalk, building entrance or road

4= Immediately adjacent to a sidewalk, building entrance or road

Failure Risk

1 = Tree is in good health

2 = Tree has some defects and minor dieback of outer limbs

3 = Tree has visible cavities and significate dieback

4 = Tree is dead or almost dead

4. Links to News Articles about the ISU Campus Landscape and Trees

2016 News and Events :

http://www.amestrib.com/news/iowa-state-trees-transform-campus-treasures
Classic look for an oft-used lawn • Inside Iowa State for faculty and staff • Iowa State University
Fountain plaza project to begin in May • Inside Iowa State for faculty and staff • Iowa State University
http://www.iowastatedaily.com/opinion/editorials/article_39c76e94-76c5-11e6-8203-5f28088a6ddc.html
http://www.inside.iastate.edu/article/2016/10/20/leaves
https://twitter.com/iastate_pres/status/804463290021773312?refsrc=email&s=11
http://www.iowastatedaily.com/living/article_f1808a44-8583-11e6-96b5-abdda7431637.html
http://www.iowastatedaily.com/news/academics/article_99908002-066f-11e6-8157-b7fcd2f977d2.html
Creating Witchhazel Walk • Inside Iowa State for faculty and staff • Iowa State University
Students plant trees as part of Arbor Day – Iowa State Daily
http://www.livegreen.iastate.edu/news-and-events/earth-month-2016

2017 News and Events:

http://www.iowastatedaily.com/news/article_29a466ce-c625-11e7-b0cf-838e88546db0.html
Medallion honoring campus landscape goes missing • Inside Iowa State for faculty and staff • Iowa State University
https://www.inside.iastate.edu/article/2017/08/03/sculpture
https://www.inside.iastate.edu/article/2017/06/22/planter
Rare trees added to central campus landscape • Inside Iowa State for faculty and staff • Iowa State University
https://www.inside.iastate.edu/article/2017/05/11/tree
Fallen trees find new life on campus • Inside Iowa State for faculty and staff • Iowa State University
http://www.internal.fpm.iastate.edu/news/monthly%20staff%20briefing/2017/November%202017%20Briefing.docx
http://www.internal.fpm.iastate.edu/news/monthly%20staff%20briefing/2017/October%202017%20Briefing.docx
http://www.internal.fpm.iastate.edu/news/monthly%20staff%20briefing/2017/July%202017%20Briefing.docx
http://www.internal.fpm.iastate.edu/news/monthly%20staff%20briefing/2017/April%202017%20Briefing.docx
http://www.travelandleisure.com/attractions/colleges-universities/most-beautiful-colleges-every-state
https://www.youtube.com/watch?v=MGoE_RkQrTE&feature=em-share_video_user

2018 News and Events:

http://www.iowastatedaily.com/news/tree-killing-bug-returns-to-ames/article_f2dea8a6-6b84-11e8-a15a-03eaffe9ce98.html
Ash tree threat changes landscape • Inside Iowa State for faculty and staff • Iowa State University
New hammock posts take pressure off trees • Inside Iowa State for faculty and staff • Iowa State University

Work resumes south of football stadium • Inside Iowa State for faculty and staff • Iowa State University

2019 News and Events:
Ash tree threat changes landscape • Inside Iowa State for faculty and staff • Iowa State University
Campus landscape is being mapped with GIS tech • Inside Iowa State for faculty and staff • Iowa State University
Editorial: Hammocks damage our trees – Iowa State Daily
Additional hammock poles placed to provide relief to trees – Iowa State Daily

2020 News and Events:
Finishing touches • Inside Iowa State for faculty and staff • Iowa State University
Reiman Gardens prepares to reopen • Inside Iowa State for faculty and staff • Iowa State University
Fruit trees and shrubs planted for 'Think Globally, Plant Locally' project – Iowa State Daily

2021 News and Events:
Assisting Mother Nature • Inside Iowa State for faculty and staff • Iowa State University
Iowa State's Landscape Design, Installation and Management program pays off for the university and its students – Iowa State Daily

2022 News and Events:
Pollinator planting kicks off statewide project • Inside Iowa State for faculty and staff • Iowa State University
Despite lack of moisture, campus expected to pop this spring • Inside Iowa State for faculty and staff • Iowa State University
Invasive species threatens ash trees in Ames – Iowa State Daily

2023 News and Events:

2024 News and Events:
A look behind the scenes of Iowa State's landscape architecture – Iowa State Daily
Campus treasures: remarkable sculptures and ancient trees around Iowa State – Iowa State Daily

C. Definitions

Caliper – The diameter or thickness of a main stem of a young tree or sapling as measured at six inches (6") above ground level. This measurement is used for nursery-grown trees having a diameter of four inches (4") or less.
Campus Services – A division of FP&M devoted to the maintenance and improvements of the campus grounds.
Canopy Tree – A deciduous tree that will grow to a mature height of at least 40 feet in height with a spread of at least 30 feet.
Critical Root Zone – The minimum area surrounding a tree that is considered essential to support the viability of the tree and is equal to a radius of one foot per inch of trunk diameter (DBH).
CTAC – Campus Tree Advisory Committee. A group of faculty, facility staff, students and community members that advise and guide the care and maintenance of the ISU campus trees.

Diameter, breast height (DBH) – The diameter width of the main stem of a tree as measured 4.5 feet above the natural grade at its base. Whenever a branch, limb, defect or abnormal swelling of the trunk occurs at this height, the DBH shall be measured at the nearest point above or below 4.5 feet at which a normal diameter occurs.

Evergreen Tree – A tree that will grow a minimum of 10 feet tall and maintains its leaves all through the winter.

FP&M – Facilities Planning and Management is a division of Iowa State Universities business and finance department which provides the ISU campus with all its service needs from new building construction to trash removal.

Green space – Any area retained as permeable, unpaved ground and dedicated on the site plan to supporting vegetation and university or campus activities.

Landscape plan – A map and supporting documentation which describes for a particular site where vegetation is to be retained or provided in compliance with the requirements of this policy.

Laydown area – A space designated on a construction plan and on a construction site that allows a contractor to offload, store and manipulate products coming to and leaving the site.

Native tree – Any species which occurs naturally and is indigenous within the region.

Ornamental/ Understory Tree – A deciduous tree that will stay under 25' in height.

OTLC – The Outdoor Teaching and Learning Committee. A faculty committee from various academic departments who use the campus landscape environments as an outdoor teaching resource and who advise ISU Facilities Planning and Management staff on the priorities for tree care and protection of natural areas of campus.

Plant Maps – Scale maps of the campus that denotes the location and species of every plant within the campus recorded boundaries. Does not include woodlands and farms. Associated with the plant maps is an inventory table summarizing the campus tree species and their locations on campus.

Pre-bid meeting – A mandatory meeting of all prospective bidders for any university construction project during which clarifications are made and addenda, if necessary, are identified.

Pre-construction meeting – A mandatory meeting of the successful bidder and Owner representative prior to the start of work on any university construction project.

Preferred Trees - a list of trees provided to outside design consultants to guide their plant palette so that their design is in keeping with the overall character of the campus landscape. Each preferred list of plants is specific to the site and to the campus communities' needs at the time of the construction. When possible, plants, which are native, drought tolerant and climate adapted will have preference over non-native plants unless the proposed plants are necessary to further the teaching needs of the campus environment.

Prohibited species – Prohibited species include any species listed on the Iowa Department of Natural Resources terrestrial restricted species list. Prohibited species may be planted on campus for educational purposes only as long as the species is sufficiently controlled. Trees and shrubs that require excessive maintenance should be minimized.

Tree protection plan – A map and supporting documentation which describes for a particular site, where existing trees are to be retained and protected from harm during construction or utility projects.