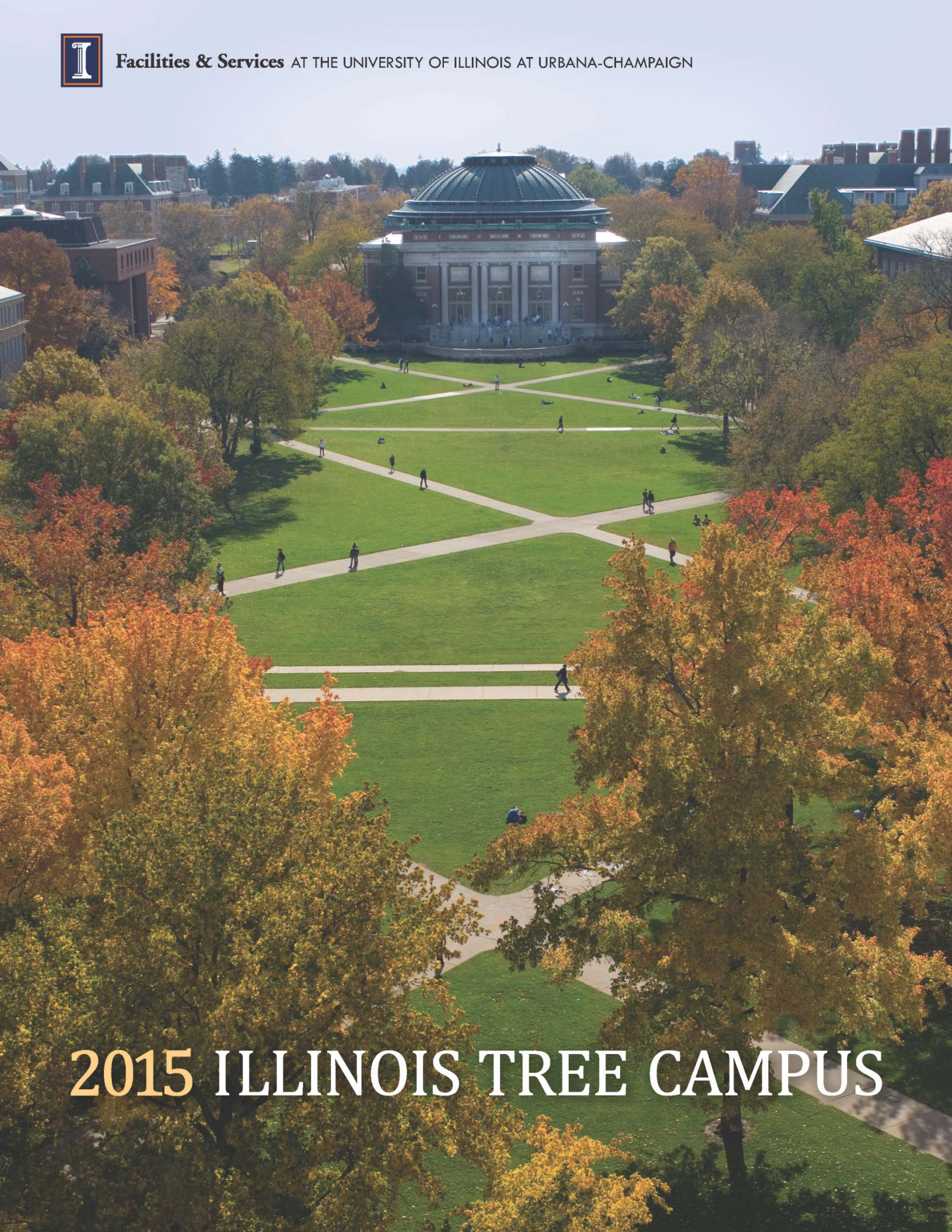
Facilities & Services AT THE UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



2015 ILLINOIS TREE CAMPUS

2015 Illinois Tree Campus

A Tree Care Plan for the University of Illinois at Urbana-Champaign

December 30, 2015

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Standard 1: Campus Tree Advisory Committee

Background

The mission of the University of Illinois at Urbana-Champaign is to enhance the lives of citizens in Illinois, across the nation, and around the world through our leadership in learning, discovery, innovation, engagement, and economic development. The mission of Facilities & Services (F&S) is to provide facilities and services to support the preeminent academic enterprise at Illinois. F&S is responsible for oversight of campus trees.

Campus is committed to educating the future leaders of the world, especially in regard to grand societal challenges like environmental sustainability. The Institute for Sustainability, Energy, and Environment (iSEE) oversees the development of the strategic plan for campus sustainability, called the Illinois Climate Action Plan (iCAP). One objective in our 2015 iCAP is to convert 50 acres of farmland to agro-forestry. Other objectives include developing a sustainable landscape management plan, a tree care plan, and an integrated pest management program.

At Illinois we recognize that trees are an important asset for our campus and the community. They provide habitat for diverse species, sequester carbon from the atmosphere, and have been shown to have a positive effect on human behavior. Each year, we celebrate the environment with major events during April for Earth Week and October for Sustainability Week. This year, we added an Arbor Day celebration.

Campus Tree Advisory Committee

The Executive Director of F&S created the new Campus Tree Advisory Committee in conjunction with the proposal to seek Tree Campus USA designation in 2015. This committee is an advisory body to the Grounds department at F&S and to the campus community on matters relating to campus trees. Responsibilities include:

1. Assist with Tree Campus USA application by December 31, 2015.
2. Recommend policies for the maintenance, removal, planting, and landscaping of trees.
3. Recommend a tree protection plan process for construction and trenching.
4. Recommend a policy for enforcement, penalties, and appeals related to tree damage.
5. Develop a communication strategy to help make the campus community and contractors aware of policies, procedures, and goals of Tree Campus USA.
6. Plan an Arbor Day observance event on the last Friday in April.
7. Review annual expenditures related to tree maintenance.

While responsibility for campus trees is assigned to specific units, including Grounds and the Arboretum, the Campus Tree Advisory Committee assists by providing guidance for future planning, input to a comprehensive campus tree plan, education of the campus community about the benefits of trees, and development of a community connection related to our campus and community trees.

The Campus Tree Advisory Committee is expected to meet at least monthly during the spring and fall semesters, and as needed during the summer months. Committee members are identified annually in January by the Executive Director of F&S, and there is no term limit for committee membership.

Special thanks go to the inaugural 2015 committee members, who assisted with the initial development of the Tree Campus USA program at the University of Illinois at Urbana-Champaign.

2015 Committee Members

Ryan Welch, co-chair	Superintendent of Grounds, F&S; acting Horticulturist
Morgan Johnston, co-chair	Director of Sustainability, F&S
Brent Lewis	F&S Landscape Architect
Kevin McSweeney	Director of Arboretum
Gary Kling	Associate Professor of Crop Sciences
Stephanie Lage	Assistant Director, iSEE
Mike Brunk	City Arborist, City of Urbana
Maggie Thomas	Student
Sonya Grindley, ex-officio	Administrative Assistant, F&S

2015 Meeting Schedule

The committee was charged on 1/22/2015. The first meeting was held on 2/20/2015, and the agenda covered introductions, the charge letter, draft annual expenditures, plans for the Arbor Day event, and a description of the service learning project. The second meeting was held on 3/13/2015, and the agenda focused on plans for the Arbor Day event. At both the 4/1/2015 and 4/13/2015 meetings, the Arbor Day event program was refined and finalized. After Arbor Day, the committee met at the beginning of the fall semester on 9/4/2015. The September agendafocused on the Tree Care Plan, and the committee also discussed hosting a tree walk during Campus Sustainability Week. The next committee meeting occurred on 10/16/2015, with a discussion about the tree walk and the steps needed for writing the Tree Care Plan. The final meeting of the year was on 12/7/2015, where the committee reviewed the draft Campus Tree Care Plan.

Standard 2: Campus Tree Care Plan

1. Purpose of Tree Care Plan

The purpose of the Tree Care Plan is to document and clarify the campus commitment to maintaining our campus trees. The programs and policies previously in place have been updated to reflect the current industry standards and procedures for tree care on campus. With the goal of becoming a recognized Tree Campus USA, this document describes the existing practices and identifies areas for improvement.

2. Responsible Department

The majority of trees on campus are under the responsibility of the Grounds department in F&S. This Tree Care Plan is the responsibility of F&S Grounds.

3. Campus Tree Advisory Committee

The Campus Tree Advisory Committee is described in Standard 1, above.

4. Campus Tree Care Policies

The campus tree care policies for this campus are formally documented in the campus' Facility Standards, published online at http://www.fs.illinois.edu/resources/facilities-standards. Sections of the Facility Standards applicable to the Campus Tree Care Plan are included in the text of this document, for convenience. The F&S Landscape Architect and the Horticulturist have the authority to approve deviations from tree policies, when needed.

The tree program at F&S is managed by two full-time certified arborists, known as "tree surgeons," reporting to the Superintendent of Grounds. The tree surgeons have international arborist accreditation, with annual membership fees and continuing education funded by F&S. The following subsections describe the tree care policies for planting, landscaping, tree maintenance, cultural practices, and managing for catastrophic events.

Tree Planting

Trees planted on the Urbana campus are selected from an *approved plant list* (see figure 1). The list includes trees native to Illinois as well as other desirable, non-native trees. Species diversity is very important; however, site conditions ultimately dictate what species will be selected. Native species will be considered wherever appropriate. Trees that are selected must be at least 2" in caliper and no more than 4". Selected tree must be healthy, vigorous, well branched, and symmetric in form with well-developed root systems. The F&S Landscape Architect or Horticulturist may reject any tree that does not meet these standards. Planting shall only be performed during the acceptable times in the spring and fall, unless otherwise approved.

All tree planting will be in accordance to the latest American National Standards Institute (ANSI) A 300 standards for Tree Care Operations – Tree Shrub and Other Woody Plant Management Standard Practices (Planting and Transplanting).

The planting procedure starts first by digging a broad, shallow hole at least 2-3 times wider than the root ball. The tree is then placed so that the root flare is at or slightly above the existing grade. All burlap, rope, and wire baskets are cut away from the top third of the root ball. The tree is then straightened before back-filling around the base of the root ball with the existing soil. The soil is firmly tamped every few inches of soil added until it is even with the surrounding grade. The tree is then deeply watered and mulched at 2-4" in a saucer like pattern around the tree making sure to keep it 1-2" from the trunk. The tree is only staked if necessary in accordance with the latest ANSI standards. Fertilization is not done at the time of planting.

Tree Replacement Policy

When a university-owned tree is scheduled for removal due to construction work on campus, the project is required to furnish and install a new replacement tree. If a university-owned tree is damaged by any entity and the F&S Landscape Architect or Horticulturist determines the tree should be removed, the entity that caused the damage shall be required to pay a $450 fine per tree to cover the costs to furnish and install the replacement tree. The cost for tree removal will be in addition to the $450 fine and will be assessed based on actual costs, which will vary based on size, location, etc.

All replacement trees shall be a minimum of 2" caliper. Species and location are subject to approval by the F&S Landscape Architect or Horticulturist.

ABIES BALSAMEA	CORNUS KOUSA	PINUS KORAIENSIS
ABIES CONCOLOR	CORNUS MAS	PINUS PARVIFLORA
ABIES FRASERI	CORNUS MAS GOLDEN GLORY	PINUS PEUCE
ABIES KOREANA	CORNUS OFFICINALIS	PINUS PONDEROSA
ABIES NORDMANNIANA	CORYLUS COLURNA	**PINUS STROBUS**
ABIES VEITCHII	COTINUS OBOVATUS	PINUS WALLICHIANA
ACER BUERGERANUM	**CRATAEGUS CRUSGALLI var. INERMIS**	PLATANUS X HISPANICA cultivars
ACER CAMPESTRE	CRATAEGUS X LAVALLEI	PRUNUS MAACKII
ACER X FREEMANII (cult.)	CRATAEGUS NITIDA	PRUNUS SARGENTI
ACER GRISEUM	**CRATAEGUS VIRIDIS 'WINTER KING'**	PRUNUS SUBHIRTELLA
ACER GRISEUM X NIKOENSIS	**DIOSPYROS VIRGINIANA** (male cult)	**PRUNUS VIRGINIANA SHUBERT**
ACER JAPONICUM	EUCOMMIA ULMOIDES	PSEUDOLARIX KAEMPFERI
ACER MIYABEI	**FAGUS GRANDIFOLIA**	PSEUDOTSUGA MENZIESII
ACER NIGRUM	FAGUS QUERCIFOLIA	PTEROSTYRAX HISPIDA
ACER PALMATUM (cult.)	FAGUS SYLVATICA	**QUERCUS ALBA**
ACER PSEUDOPLATANUS	GINKGO BILOBA (male cult.)	**QUERCUS BICOLOR**
ACER RUBRUM	GLEDITSIA TRICANTHOS var. INERMIS cultivars	**QUERCUS COCCINEA**
ACER SACCHARUM	**GYMNOCLADUS DIOICUS**	**QUERCUS IMBRICARIA**
ACER TATARICUM	**HALESIA CAROLINA**	**QUERCUS LYRATA**
ACER TRIFLORUM	HALESIA MONTICOLA	**QUERCUS MACROCARPA**
ACER TRUNCATUM	ILEX OPACA	**QUERCUS MICHAUXII**
AESCULUS X CARNEA	**JUGLANS NIGRA**	**QUERCUS MONTANA**
AESCULUS GLABRA	JUNIPERUS SCOPULORUM cultivars	**QUERCUS MUEHLENBERGII**
AESCULUS HIPPOCASTANUM	**JUNIPERUS VIRGINIANA** cultivars	**QUERCUS PRINOIDES**
AESCULUS OCTANDRA	KOELREUTERIA PANICULATA	**QUERCUS PRINUS**
AESCULUS PAVIA	LARIX DECIDUA	QUERCUS ROBUR
ALNUS INCANA	LARIX KAEMPFERI	**QUERCUS RUBRA**
ALNUS JAPONICA	**LARIX LARICINA**	**QUERCUS SHUMARDII**
ALNUS RUGOSA	**LIQUIDAMBAR STYRACIFLUA**	**QUERCUS VELUTINA**
ASIMINA TRILOBA	**LIRIODENDRON TULIPIFERA**	**SASSAFRAS ALBIDUM**
BETULA NIGRA	**MACLURA POMIFERA** (male thornless cultivars)	SOPHORA JAPONICA
CARPINUS BETULUS (cult.)	**MAGNOLIA ACUMINATA**	SORBUS ALNIFOLIA
CARPINUS CAROLINIANA	MAGNOLIA DENUDATA	STYRAX JAPONICUS
CARPINUS JAPONICA	MAGNOLIA LILIFLORA (cult.)	SYRINGA RETICULATA
CARPINUS ORIENTALIS	MAGNOLIA LOEBNERI	TAXODIUM ASCENDENS
CARYA CORDIFORMIS	MAGNOLIA SOULANGEANA	**TAXODIUM DISTICHUM**
CARYA GLABRA	MAGNOLIA STELLATA	TAXUS CUSPIDATA CAPITATA
CARYA ILLINOENSIS	MAGNOLIA VIRGINIANA	**THUJA OCCIDENTALIS** cultivars
CARYA LACINIOSA	MALUS (cultivars subject to approval)	THUJA PLICATA
CARYA OVATA	METASEQUOIA GLYPTOSTROBOIDES	**TILIA AMERICANA**
CATALPA BIGNONIOIDES	**NYSSA SYLVATICA**	TILIA CORDATA
CATALPA SPECIOSA	**OSTRYA VIRGINIANA**	TILIA EUCHLORA
CELTIS JESSOENSIS	PHELLODENDRON AMURENSE (male cult.)	**TILIA HETEROPHYLLA**
CELTIS LAEVIGATA	PICEA ABIES	TILIA MONGOLICA
CELTIS OCCIDENTALIS	PICEA GLAUCA	TILIA PETIOLARIS
CERCIDIPHYLLUM JAPONICUM	PICEA OMORIKA	TILIA PLATYPHYLLOS
CERCIDIPHYLLUM MAGNIFICUM	PICEA ORIENTALIS	TILIA TOMENTOSA
CERCIS CANADENSIS	PICEA PUNGENS	TSUGA CANADENSIS
CHAMAECYPARIS NOOTKA PENDULA	PINUS ALBICAULIS	TSUGA CAROLINIANA
CHAMAECYPARIS OBTUSA	PINUS AYACAHUITE	TSUGA DIVERSIFOLIA
CHIONANTHUS RETUSUS	**PINUS BANKSIANA**	ULMUS x cultivars
CHIONANTHUS VIRGINICUS	PINUS BUNGEANA	ULMUS PARVIFOLIA.
CLADRASTIS LUTEA	PINUS CEMBRA	**VIBURNUM PRUNIFOLIUM**
CORNUS ALTERNIFOLIA	PINUS DENSIFLORA	ZELKOVA SERRATA
CORNUS FLORIDA	PINUS FLEXILIS	
Bold indicates **Illinois native**		
General Planting Notes:		
Generally avoid trees with heavy fruits/nuts/seeds near pathways and roadways.		
Provide for diversity in planting plans - avoid monocultures		
Preference is for Illinois native plants		

Figure 1: Approved Plant List

Landscaping

Landscaping on the Urbana campus is broadly divided into three distinct categories. Those are streetscapes, civic spaces, and intimate spaces.

Because the street jurisdictions in the University District are varied by location and historic agreements between the campus and local governments, design efforts are made to work harmoniously for streetscape design. Tree selection and right-of-way landscape treatment is also sensitive to the needs and requirements of each streetscape owner while still being identifiable as being on the University of Illinois campus.

Civic spaces are generally larger areas on campus, like those of the Main Quad, Bardeen Quad, and Military Axis. These spaces are defined by a simple and restrained landscape design, limiting the diversity of species within given groups or rows of trees. As these spaces contribute greatly to the campus landscape framework, tree plantings in these areas are focused on longer lived native Illinois trees.

Intimate spaces are those found in between buildings and in smaller spaces, such as the residential quads, courtyards and other interstitial spaces around campus. Here, a more diverse plant palette is used, and uses are more closely aligned with adjacent building and space uses.

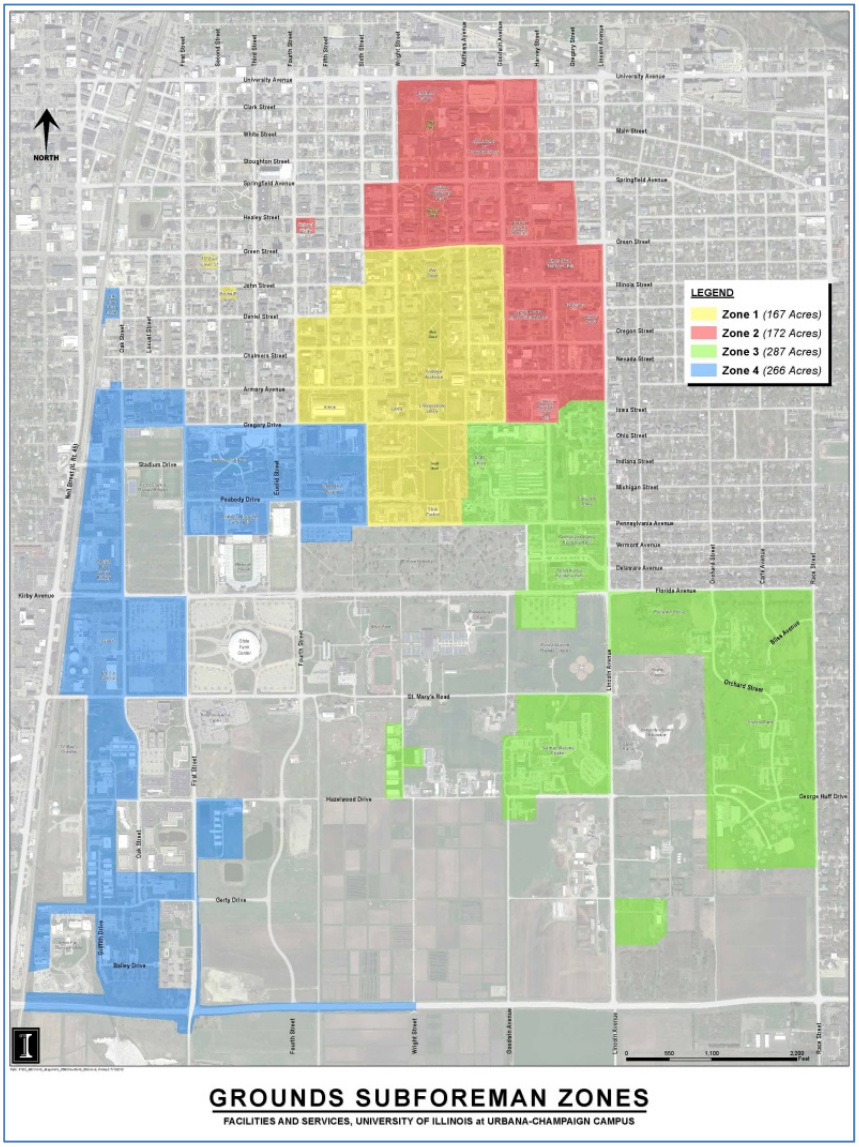


Figure 2: Grounds Maintenance Zones

Integrated Pest Management (IPM)

There is no chemical pest control program for campus trees. Pest control is limited to cultural and mechanical practices and non-chemical applications such as insecticidal soap and dormant oil. Trees that are in distress are mulched with composted wood mulch, put on a watering schedule, and deep root fed in the fall.

Tree Maintenance

Both tree surgeons have a Grounds worker with them at all times, so there are four full-time staff handling tree care. The campus is divided into four zones and each tree surgeon is responsible for two of the four zones (see figure 2). There are certain cultural practices which are administered in concurrence with the prioritized needs of the campus trees. These cultural practices include adding

mulch, watering, and late fall deep root feeding. Trees that have been planted two years or less or specimen trees that display significant stress are given mulch and added to a weekly watering schedule in years with inadequate precipitation. Trees that have been planted for less than two years and specimen trees that display significant stress receive a deep root feeding in late fall with fertilizer plus micro nutrients and mycorrhizae.

In addition to the cultural practices, each tree surgeon is required to submit a weekly work plan to the Grounds foreman at the beginning of every week. The weekly work plan is an outline of what the tree surgeon has scheduled for the upcoming week based on the following priorities:

Order of Priority

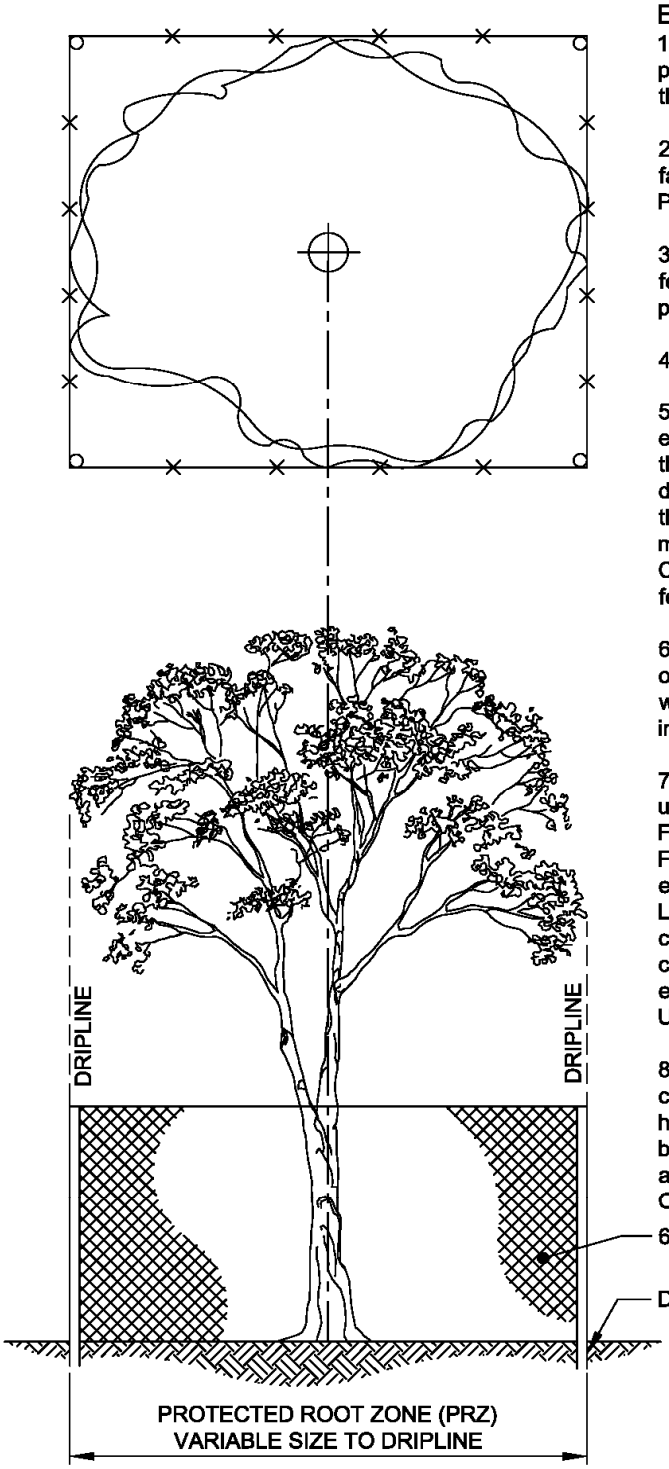
1) Safety: Removal of any tree that is deemed structurally unsafe; clearing a tree of dead, diseased, or broken branches that poses an imminent danger
2) Service Calls: Addressing various concerns that come in from the campus community
3) Raising: Pruning required for building clearance, sidewalk clearance, and street clearance
4) Removals: Trees that do not pose an imminent danger but require removal. Trees are removed when they are damaged in some way, possibly from disease or Emerald Ash Borer (EAB). The priority removals are based on structural integrity. The tree surgeons must fill out a tree removal form that includes basic information about the tree, a picture, and justification of removal. The form is reviewed and approved or denied by the F&S Horticulturist or Grounds foreman. All stumps are scheduled for grinding or removal. If the location is a favorable space for a tree, it will be replaced; otherwise a tree will be planted in the nearest suitable location.
5) Structural Pruning: Pruning may be required within 2-3 years after a tree is planted to ensure proper structure and form when it reaches maturity. Trees are then pruned on a biennial basis until they reach 10 years old. Trees older than 10 years of age are pruned as needed.

Managing for Catastrophic Events

F&S utilizes in-house resources in the wake of a catastrophic event such as a tornado, fire, straight line wind, or ice storm. Grounds, Operating Engineers, and Transportation drivers are called upon to clean up the campus. The first priority is clearing the major streets that provide access to campus, followed by sidewalks and entry ways to critical buildings, then general spaces within the core of campus moving outward as time progresses. If necessary, outside tree removal contractors can be hired to aid in the clean-up effort.

5. Protection and Preservation policies and procedures

All capital construction projects go through a review process that includes identifying the need for space and the anticipated interaction with the campus landscape. Whenever conflicts between construction and the campus landscape arise, projects are required to detail and furnish tree protection fencing. Included in the Facility Standards are Exhibit 01-56-00-01 "Tree Protection Fencing Requirements" (see figure 3) and Exhibit 23-37-00-1 "Utility Requirements Under Tree Root Zones" (see figure 4).



Existing Tree Protection Fencing Notes:

1. Existing trees within the work zone shall be protected by the contractor by erecting fencing along the dripline of the tree.

2. Fencing material shall be 6 ft high chain link fence fastened to metal posts installed in the ground. Plastic orange snow fencing will not be allowed.

3. Actual dimensions and layout of protective fencing shall be indicated on staging plans and site plans showing tree protection fencing.

4. Multiple trees may be fenced together.

5. No vehicles, construction materials, debris, or excavated materials shall enter or be stored within the Protected Root Zone (PRZ), as defined by the dripline and the tree protection fencing. Removal of the protective fencing and entry into the drip line must be approved by the UIUC representative. Construction work shall not be allowed within the fencing.

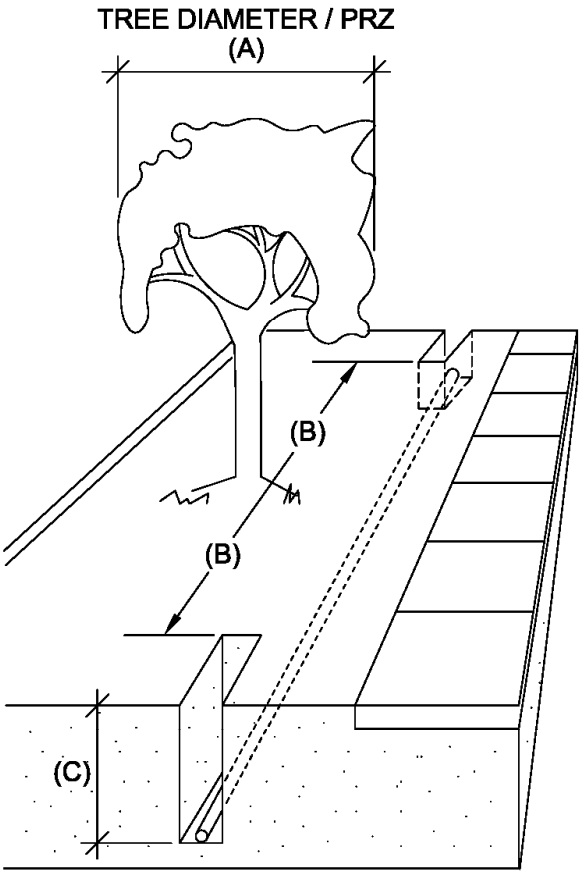
6. In the event approved construction work is to occur within the PRZ, any machinery involved shall work from the outside of the PRZ to an inward path, in order to minimize any further damage.

7. Any utility work within the PRZ shall be tunneled unless specifically approved for trenching by the Facilities & Services (F&S) Landscape Architect or F&S Horticulturist. If trenching is allowed, hand excavation may be required around and under roots. Lateral roots or tap roots are not to be cut. When cutting smaller roots that interfere with new construction, make all cuts cleanly with no ragged edges. See F&S detail for Utility Requirements Under Tree Root Zones.

8. If tree branching is projected to be in the way of construction work or machinery, any tree trimming to have prior approval by the F&S Horticulturist and to be done by F&S Grounds Dept., unless otherwise approved. All tree work to be performed by an ISA Certified Arborist.

TREE PROTECTION FENCING REQUIREMENTS	Date: December 3, 2015
	Dwg. No.: 01 56 00-1

Figure 3: Tree Protection Fencing Requirements



DIRECTIONAL DRILLING SPECIFICATIONS FOR THE INSTALLATION OF PUBLIC UTILITIES WITHIN THE TREE DRIP LINE		
TREE DIAMETER (A)	MIN. DISTANCE OF TUNNEL FROM FACE OF TREE TRUNK-EA. SIDE (B)	RECOMMENDED DEPTH OF TUNNEL (C)
5 IN. - 9 IN.	6 FEET	2 1/2 FEET
10 IN. - 14 IN.	10 FEET	3 FEET
15 IN. - 19 IN.	12 FEET	3 1/2 FEET
20 IN. OR MORE	15 FEET	4 FEET

THE PROTECTED ROOT ZONE (PRZ) OF EACH TREE IS LOCATED WITHIN THE DRIP LINE OF THE TREE. NO OPEN TRENCHING IS TO OCCUR IN THE PRZ WITHOUT APPROVAL OF THE UIUC FACILITIES AND SERVICES LANDSCAPE ARCHITECT OR HORTICULTURIST. UTILITY LINES SHALL BE DIRECTIONAL DRILLED PER THE ABOVE GUIDELINES. VARIATIONS TO THE ABOVE GUIDELINES SHALL BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO WORK.

UTILITY REQUIREMENTS UNDER TREE ROOT ZONES	Date: December 3, 2015
	Dwg. No.: 23 37 00-1

Figure 4: Utility Requirements Under Tree Root Zones

Additionally, the Facility Standards include a specification for Planting and Landscaping, in the General Guidelines specification, and a Technical Section under Division 32 "Exterior Improvements" for Plants, section 32-93-00. The text from these sections is shown below.

General Guidelines for Planting and Landscaping

Quality Requirements: It is the intent of the U of I to receive high quality materials and workmanship both above and below ground level.

Certificates of Inspection: Shall accompany invoices for each shipment of plants as may be required by law for transportation. File certificates with F&S Landscape Architect or Horticulturist prior to acceptance of the material.

Lawns:

Sodding/Seeding: Sodding and seeding are both acceptable methods of lawn establishment or restoration; however, seeding is preferred.

Schedule: Sodding and seeding work should only be accomplished between April 15 and May 15 or between August 15 and October 15.

Methods: Sod handling, seedbed preparation, mulching, fertilizing, watering and ongoing lawn maintenance should be accomplished as directed in the technical sections of these Standards.

Drainage: Drainage tile that empties into a storm water drainage system should be extended to each undrained low point. Drainage should be installed as part of the landscaping work and not as a part of the building construction work.

Trees and Shrubs:

Approved Plants: All plant material should be selected from the list of approved plants for campus or be approved by the F&S Landscape Architect or Horticulturist, and conform to the requirements of the American Standard for Nursery Stock, published by AmericanHort as well as the requirements of the technical sections of these Standards. Native species are preferred. See Exhibit 32 93 00-1, Approved Plant List.

Planting Beds: Soil quality and planting bed preparation (including soil compaction level) should be as directed in the technical sections of these Standards.

Methods: When planting trees and/or shrubs, the guidelines in the most recent version of the ANSI A300 Standards, published by the Tree Care Industry Association should be followed. Guying, staking, wrapping, pruning, mulching, fertilizing, watering and other ongoing maintenance of trees and shrubs should be accomplished as directed in the technical sections of these Standards.

Drainage: Drainage tile that empties into a storm water drainage system should be installed into each planting bed. As mentioned above, it should be installed as part of the landscaping work and not as a part of the building construction work. Drainage tile should be installed in tree plantings if directed by the F&S Landscape Architect or Horticulturist

Documentation and Submittals: The AE shall review the Project Submittal Requirements.

Excavation within Protected Tree Root Zone: When excavation for utility work is required to occur within the protected root zone, all excavation is to be done by directional drilling the utility under the root zone. See Exhibit 23 37 00-1 Utility Requirements Under Tree Root Zones. No trenching is to occur in the PRZ without prior approval by the F&S Landscape Architect or Horticulturist

Tree Replacement Policy: When a University owned tree is scheduled for removal due to construction work on campus, the project is required to furnish and install a new replacement tree unless otherwise approved by the F&S Landscape Architect or Horticulturist.

If a University tree is damaged by a contractor doing work on campus, and the F&S Landscape Architect or Horticulturist determines the tree should be removed due to damage, the contractor shall be required to furnish and install a replacement tree. Costs for removal of the damaged tree, associated stump grinding and landscape restoration shall be included with the costs for furnishing and installing the replacement tree, and shall be at no additional cost to the University.

In both cases of tree replacement, trees shall be a minimum of 2" caliper and meet all F&S standards for species, sizing and installation. Replacement tree type and species will generally follow that of the removed tree type and species. However, final tree species selection and planting location to be approved by the F&S Landscape Architect or Horticulturist. All work for tree removal and tree planting shall be done by an ISA Certified Arborist.

Division 32 "Exterior Improvements" Section 32 93 00 – Plants

PART I - GENERAL

1.1 SECTION INCLUDES

A. Provide landscaping and restoration including:

1. Tree planting, replacement, pruning, and protection.

2. Shrub, groundcover, and perennial planting, replacement, and protection.

1.2 RELATED SECTIONS/DOCUMENTS

A. Section 01 35 00 – Special Procedures

B. Section 01 56 00 – Temporary Barriers and Enclosures

C. Section 32 91 19.13 – Topsoil Placement and Grading

D. Exhibit 32 93 00-1, Approved Plant List

E. Drawing 01 56 00-1, Tree Protection Fencing Requirements

F. Drawing 23 37 00 -1, Utility Requirements Under Tree Root Zones

1.3 REFERENCES

A. Guide for Plant Appraisal, current edition, by Council of Tree and Landscape Appraisers

B. Standardized Plant Names, Horticulture Nomenclature.

C. American Standard for Nursery Stock, ANSI Z60.1, current edition by AmericanHort.

D. ANSI A300 Standards, published by the Tree Care Industry Association.

E. Planting Details and Specifications as published by the International Society of Arborists.

1.4 CERTIFICATION

A. Certificates of Inspection: Shall accompany invoices for each shipment of plants as may be required by law for transportation. File certificates with Owner prior to acceptance of the material.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Planting: Shall be performed at normally accepted times in the spring and fall.

B. Variance: If special conditions exist which may warrant a variance in the normally approved planting dates, a written request shall be submitted to the Owner stating the special conditions and the proposed variance. Permission for the variance will be given if warranted in the opinion of the Owner.

1.6 WARRANTY

A. Substantial Completion: The guarantee period for trees, shrubs and groundcovers shall begin at the date of the Substantial Completion.

B. 1 Year: All plant material shall be guaranteed by the Contractor for a period of 1 year from the date of Substantial Completion to be in good, healthy, and flourishing condition.

C. Repair Damage: The Contractor shall further guarantee that during the period of the guarantee he will make good any defects to the Work and all damage caused to property of the Owner by such defects or by the Work required to remedy such defects.

D. Decision to Replace: At any time within the period of the guarantee, the Contractor is responsible for any plant that is dead, dying, in a declining condition, or that has failed to flourish in such a manner that its usefulness or appearance has been impaired due to inferior or defective materials, workmanship or inadequate protection. The decision of the Owner for making replacements shall be conclusive and binding upon the Contractor. The Contractor shall also make good all damage to persons or property caused by defective workmanship or materials.

E. Trees and Shrubs: Any trees or shrubs found to be unacceptable as described above shall be removed from the site and replaced during the next planting season.

F. Of Same Kind: Plant replacements shall be of the same kind and size as specified in the plant list. All plant replacements shall be inspected, furnished, planted, mulched, and otherwise installed as specified at the Contractor's expense.

G. Repair Damage: Where plants are replaced, the Contractor shall be responsible for repairing any damage caused by this replacement to lawns, pavements, or other areas involved with the replacement.

PART 2 - PRODUCTS

2.1 PLANT SELECTION AND TAGGING

A. Inspection: Plants shall be subject to inspection and approval at their place of growth and upon delivery for conformity to specifications. Such approval shall not impair the right of inspection and rejection during progress of the Work.

B. Written Requests: Written requests for inspection of plant material at their place of growth shall be submitted to the Owner at least 10 calendar days prior to digging. Written requests shall state the place of growth and quantity of plants to be inspected. The Owner may refuse inspection at this time if, in his judgment, a sufficient quantity of plants is not available for inspection.

C. Selected Specimen: Plants identified as "selected specimen" shall be approved and tagged at their place of growth. For distant material, submit photographs for pre-inspection review.

2.2 DIGGING AND HANDLING OF PLANT MATERIAL

A. Ball and Burlap: Ball and burlap (B&B) plants shall have natural balls of earth, of size not less than that recommended in the American Standard for Nursery Stock. Plants moved with a ball will not be accepted if the ball is dry, cracked, or broken before or during planting operations.

B. Freshly Dug: All plants shall be freshly dug. Heeled in plants or plants from cold storage will not be accepted. All nursery grown plants shall have been transplanted or root pruned at least once in the last 3 years.

C. Careful Handling: All plants shall be handled so that the roots, trunk, and branches are adequately protected at all times. During shipment, all plants shall be properly protected by a shade tarpaulin of approximately 90 percent shade material. No plant shall be so bound with rope or wire at any time as to damage the bark, break branches, or destroy its natural shape.

2.3 PLANTS

A. Grown in Accordance with Good Practice: Plants shall be true to species and variety specified and nursery grown in accordance with good horticultural practice under climatic conditions similar to those in the locality of the Project for at least 2 years. Plants shall be freshly dug, unless specified as container stock, and shall not be in leaf at time of digging.

B. Native Species: The use of native species is preferred.

C. Plant Quality: Unless specifically noted otherwise, all plants shall be of specimen quality, exceptionally heavy, symmetrical, so trained or favored in development and appearance as to be unquestionably and outstandingly superior in form, compactness, and symmetry. They shall be sound, healthy, vigorous, well branched and densely foliated when in leaf, free of disease, insects, eggs, or larvae and shall have healthy, well-developed root systems.

D. Pruning: Plants shall not be pruned before delivery. Trees with multiple leaders, unless specified, will be rejected. Trees with a damaged or crooked leader, abrasion of bark, sunscald, disfiguring knots, insect damage, or cuts of limbs over 3/4-inch in diameter not completely callused will be rejected.

E. Plant Size: All plants shall conform to the measurements specified in the plant list and shall conform to the American Standards for Nursery Stock. Plants larger than specified may be used if approved by the

Owner. Use of such plants shall not increase the Contract price. If larger plants are approved, the root ball shall be increased in proportion to the size of the plant.

F. Measurement: All plants and all tree trunks shall be measured when the branches are in their normal position. Dimensions for height and spread refer to the main body of the plant and not from branch tip to branch tip. Measurements specified are minimum size acceptable after pruning where pruning is required. Plants that meet requirements but do not possess a normal balance between height and spread shall be rejected.

G. Labels: All plants shall be labeled with correct plant name and size. Labels shall be securely attached to all plants, bundles, and containers of plant materials delivered.

H. Substitutions: Substitution of plant materials is not permitted unless authorized in writing. If proof is submitted, substantiated in writing, that any plant specified is not obtainable, a proposal will be considered for the use of the nearest available size or similar variety with a corresponding adjustment of the Contract price. See Exhibit 32 93 00-1 for the approved list of plants and shrubs.

I. Replacement: When the plant list is complete, it shall include plants removed and/or damaged beyond reasonable repair during the Project, their correct spacing, and type (ball and burlap, container, etc.). Any damage will be evaluated by the Owner as to whether replacement is necessary. Such replacement shall be the sole responsibility of the Contractor.

2.4 MULCH

A. Mulch Quality: Mulch shall be shredded hardwood bark, chemically inert, nontoxic, free of weeds or any other substance injurious to plant growth. Shredded bark shall have a uniform fibrous texture, free from cakes and lumps. It shall be free of foreign material and of a uniform color. No individual piece shall be larger than 2 square inches.

2.5 TOPSOIL

A. Conform to Section 32 91 19.13 – Topsoil Placement and Grading. Topsoil depth for planting beds shall be a minimum of two (2) feet.

2.6 SLOW RELEASE WATER BAGS

A. Reinforced, UV treated, 10 mil polyethylene bags with heavy-duty nylon zippers with poly pro straps and heat sealed edges shall be provided for each tree over 2 inches in caliper. Each bag shall hold 20 gallons of water. Product shall be Treegator or Owner-approved equal. Treegators are available through Forestry Suppliers, Inc., 205 West Rankin Street, P.O. Box 8397 Jackson, MS 39284-8397 (800.647.5368).

PART 3 - EXECUTION

3.1 EXCAVATING OF PLANTED AREAS

A. Stake Out Excavation: Where required for planting operation, the Contractor shall perform all necessary excavations as part of the Contract price. Stake out plant locations and obtain approval from the Owner before excavation is begun. Excavations shall include complete removal of rock, old concrete, base materials, other debris, and necessary earth excavations.

B. Utilities: The Contractor shall be responsible for locating all underground utilities, and shall take all necessary precautions not to disturb or damage these utilities.

C. Obstructions: When an obstruction of rock, tree roots, utilities or any other object of substantial size and extent is encountered, an alternate location for the plant may be selected by the Owner. Where locations cannot be changed as determined by the Owner, submit cost required for moving or removing the obstruction. Proceed with such revisions only after approval by the Owner.

D. Schedule: Excavation shall be during the specified planting season and shall be scheduled so that it will be followed immediately by the placement of plant materials.

E. Depth: Excavate tree pits to the depth of the tree ball and at least twice the width of the tree ball. Excavate shrub pits to depth of shrub ball or container and one foot wider than the ball or container. Excavate groundcover pits to depth of container or sufficient to plant bare root ground cover to appropriate depth. Depth of all plant pits specified shall be measured from the finish grade.

F. Poor Soil Conditions: Detrimental soil conditions affecting plant growth shall be reported in writing to the Owner. State condition and submit proposal of correcting the condition to the Owner. Ensure proper drainage.

G. Remove Materials From Site: All excess excavated materials shall be disposed of off-site by the Contractor. The Contractor shall be responsible for removing all rubbish, waste materials, or other debris from the site at the completion of each working day.

3.2 PLANTING OPERATIONS

A. Protection: Protect plants at all times from conditions detrimental to the health of the plants. Plants that cannot be planted immediately on delivery shall be kept in shade or sun, according to their specific requirements, with B&B material well protected with soil, wood chips, shredded bark or other acceptable material. Plants shall be kept watered. Plants shall not remain unplanted for longer than 3 days after delivery.

B. Setting Plant: Set plants in planting pits with the root flare at slightly above finish grade. Set plant plumb and brace rigidly into position until prepared topsoil has been tamped solidly around ball and roots so that the plant will be at finish grade of the same depth 1 year later. See ISA Planting Details.

C. Remove Wrapping: Cut and remove ropes, strings and wrapping from the top 1/3 of the ball after plant has been set. Leave balance of wrapping intact around the ball. All waterproof, water repellant, or rot resistant wrappings shall be removed from the ball. Wire baskets shall be removed if the ball will hold together once it is removed. If the ball will not hold together, remove top half of the wire basket once the plant is in the planting hole.

D. Backfill and Water: Backfill plant pits with excavated material. When plant pits have been backfilled about 1/2 full, water thoroughly, eliminating all air pockets.

E. Fill and Repeat Water: After watering, install soil to top of pit and repeat watering. Avoid puddled soil conditions.

F. Saucer: Form saucer around tree and shrub pits as indicated in the Planting Details and Specifications as published by the International Society of Arborists

G. Firm Soil: Ensure the soil is firm around groundcover plants and water thoroughly.

H. Finish Grade: The finish grade around the planting area shall conform to the appropriate grade after full settlement of the soil has occurred.

I. Mulch: Mulch all tree and shrub pits with shredded hardwood bark to a depth of 3-inches immediately after planting. Mulching depth of perennial and groundcover beds will be from 1-inch to 3-inches as appropriate for the planting. Mulch around trees should be pulled back from the trunk with no more than 1" depth within 6" of the trunk.

J. Water: Water all plants thoroughly. The Owner will furnish water to the Contractor from existing facilities. Contractor shall furnish all hose, meters, back flow preventers and other connections necessary for watering plants.

K. Slow Release Water Bag: Connect and place two bags for each tree. Contractor shall fill with water and maintain water in the bag during the maintenance period.

L. All trees, shrubs, and planting beds shall be tiled with 4" plastic drain tile that is wrapped with drainage fabric. The top of tile is to be placed at a depth of 36" below finish grade. If conditions do not permit tile installation at a 36" depth, a 24" minimum depth is permitted after approval by the University.

3.3 GUYING, STAKING, WRAPPING AND PRUNING

A. Guys: If directed by the F&S Horticulturist or Landscape Architect, flag guys with 18-inch sections of 1-inch diameter white PVC pipe if guys extend outside planting area or pose a tripping hazard. Guys shall be completed immediately after planting. Drive anchors into the ground outside of the planting pit to a depth that will securely hold the tree. Attach cables with hose around the trunk. Leave cables with just enough slack that they will go tight in a wind.

B. Stakes: If directed by the F&S Horticulturist or Landscape Architect, use 3 stakes on trees over 2-inches in caliper.

C. Wrap: If directed by the F&S Horticulturist or Landscape Architect, wrap trunks of deciduous trees 1.5-inches or more in caliper with a spiral overlapping tree wrap to a minimum height of the first branch. Wrap from the bottom and tie wrapping securely in place. Consult the Owner for acceptable trunk wrap material.

D. Prune: Prune plants only at time of planting and according to horticultural standards to preserve the natural character of the plant, and only to remove broken, crossing, or damaged branches. Pruning shall be done only with approval from the Owner. Use only clean, sharp tools.

3.4 MAINTENANCE OF TREES, SHRUBS AND GROUNDCOVERS

A. Begin Immediately: Maintenance shall begin immediately after each plant is planted and shall continue until acceptance. The Contractor's maintenance period shall end one year after substantial completion of the Project.

B. Complete Maintenance: Maintenance shall consist of pruning, watering, cultivating, weeding, mulching, tightening, repairing of guys and stakes, wrapping repair, resetting plants to proper grades or

upright condition, restoration of planting saucer, and furnishing and applying such sprays or other items as are necessary to keep the plantings free of insects and disease and in thriving condition.

C. Clean of Debris: Sidewalks and other paved areas shall be kept clean of debris and material resulting from planting and maintenance work.

3.5 FERTILIZING

A. Tree and Shrub Fertilizer: Commercial Fertilizer for trees and shrubs shall be Nutri-Pak controlled release plant food as manufactured by JRP International, Inc. of Fon du Lac, Wisconsin or Owner-approved equal.

Standard Formulation: Guaranteed analysis of 16 percent total Nitrogen, 8 percent available Phosphoric Acid and 8 percent soluble Potash (16/8/8) packaged in a patented controlled release packet.

B. Groundcover and Perennials Fertilizer: Commercial Fertilizer for groundcover and perennials shall be a General Purpose complete plant food (10-10-10), furnished in a uniform granular or pelletized form as approved by the Owner.

Standard Formulation: Guaranteed Analysis of 10 percent total Nitrogen, 10 percent available Phosphoric Acid and 10 percent soluble Potash.

END OF SECTION 32 93 00

Lightning Protection

There are also several specimen trees on campus that have a lightning protection system in place. The systems are inspected and adjusted as needed. All lightning protection systems will be installed in accordance to the latest ANSI A 300 standards for Tree Care Operations – Tree Shrub and Other Woody Plant Maintenance – Standard Practices (Lightning Protection Systems).

6. Goals and Targets

The most urgent issue for campus trees is the decline of the Ash trees due to the presence of Emerald Ash Borer (EAB). At the beginning of 2015, there were approximately 400 Ash trees on campus property, and the goal is to remove them all by fiscal year 2020 (FY20). During 2015, Grounds removed 60 Ash trees, attaining 15% of the FY20 goal.

7. Tree damage assessment

When tree damage occurs during construction, the project manager or coordinator works with the F&S Landscape Architect or Horticulturist to document any damage. This includes any damage above or below ground to any protected part of the tree. A document is then prepared that contains images of the damage, citing sections of the approved contract documents that have been violated. This includes a discussion on the effect such damage has to the longevity and viability of the tree; for example, compaction to roots leading to a slow decline and ultimate death, even if death will occur several years after the construction has ended. This document serves as the violation notice and is given to the construction project team to allow them to respond. Although the University does not have a specific tree damage policy, damage to University property is broadly covered under a general specification for

contracted work on campus. Any fines are then handled through the project manager or coordinator. In the future, the Campus Tree Advisory Committee plans to create a specific tree damage policy for approval on campus.

8. Prohibited practices.

No person may perform any of the following acts without first obtaining written permission from the Campus:

1. Plant on University-owned property, or treat, prune, remove or otherwise disturb any tree, shrub or other plant located on university-owned property.
2. Damage, cut, tap, carve or transplant any tree, shrub, or other plant located on University-owned property. This also includes practices such as topping trees due to utilities, "volcano" mulching trees, and any activity to harvest tree seeds or fruit while still attached to the trees.
3. Attach any rope, wire, nail, sign, poster, or any other man-made object to any tree, shrub, or other plant located on University-owned property.
4. Deposit, store, or maintain any stone, brick, sand, concrete, lumber, tile, pipe, or other material which reasonably may be expected to impede the free passage of water, air, or nutrients to the roots of any tree, shrub, or other plant.
5. Cause any gaseous, liquid, or solid substance which because of the nature or amount reasonably may be expected to be toxic or otherwise harmful to trees, shrubs, or other plants to be located where such substance reasonably may be expected to affect trees, shrubs, or other plants located on University-owned property.
6. Cause any fire to burn on University-owned or private property if such fire, or the heat, smoke, or ash therefrom reasonably may be expected to injure any portion of any tree, shrub, or other plant located on University-owned property.

9. Definitions of terminology related to campus trees.

The campus tree terminology largely matches that of the ANSI A300 standards for tree care. The one exception is due to the State of Illinois Civil Service position terminology for certified arborists, which are called Tree Surgeons on this campus.

10. Communication strategy

F&S maintains a strong partnership with iSEE for sustainability-related communications. In order to promote the Campus Tree Care Plan, F&S will develop a news release regarding the importance of campus trees and progress toward achieving Tree Campus USA designation.

The information in the news release and additional facts about the process will be shared across campus by both F&S and iSEE through various distribution methods, including social media accounts and websites. The Arbor Day Event will be posted on the sustainability calendar and shared on the campus' e-week newsletter as well as the sustainability calendar for Earth Week. Invitations to the Arbor Day event will be sent directly to list-serves on campus and in the community. There will also be an event in the fall, in conjunction with Campus Sustainability Week in October. The fall event will be promoted through the same means as the Arbor Day event.

Additionally, there will be a webpage devoted to the Tree Care Plan on the Illinois Climate Action Plan (iCAP) Portal and on the F&S website. The requirements for protecting the campus trees are included in the Facility

Standards, which all capital projects are required to follow. To raise awareness and understanding about these requirements, the project managers at F&S in the Capital Programs Division will be given a presentation about the Campus Tree Care Plan and the specific requirements.

Standard 3: Dedicated Tree Expenditures

Grounds Tree Program Budget

Annual state funding for the campus trees is managed by Grounds. The current budget is $365,000 for trees, with $175,000 for labor and $190,000 for materials, certifications, and equipment. Of the full budgeted amount, $33,400 is spent on new trees each year.

Grounds is responsible for four maintenance zones, including University Housing and Parking Department areas.

Annual Expenses for Grounds Trees

Tree Program	Annual Budget	Subtotals
Labor		
2 Certified Arborists	$ 125,000	
2 Grounds Personnel	$ 50,000	
Total		$ 175,000
Materials		
New Trees - tree purchases	$ 13,500	
New Trees - related materials	$ 9,100	
Professional Certification Fees	$ 1,000	
Maintenance - related materials	$ 120,800	
Equipment investment	$ 45,600	
Total		$ 190,000
Annual Total		**$ 365,000**

Standard 4: Arbor Day Observance

Event Description

In support of achieving the Tree Campus USA designation for the Urbana campus through the Arbor Day Foundation, the Chancellor proclaimed Friday, April 24, 2015 as a day of celebration. This was a joint proclamation with the City of Urbana and the City of Champaign, each of which are recognized as a Tree City USA. The Arbor Day Celebration occurred on the Main Quad at 11:30 a.m., with the planting of a new tree near the Henry Administration Building. Associate Chancellor Mike DeLorenzo read the proclamation (see Figure 6, next page).

The event was publicized on the Earth Week calendar of events by iSEE and by the Students for Environmental Concerns. F&S sent out a news release and included a notice in the campus' electronic newsletter, e-week. Direct invitations were also sent to campus and community sustainability groups and academic programs. The tree location and area for the celebration is shown in orange on the map image to the right, in front of the Henry Administration Building, on the Main Quad.

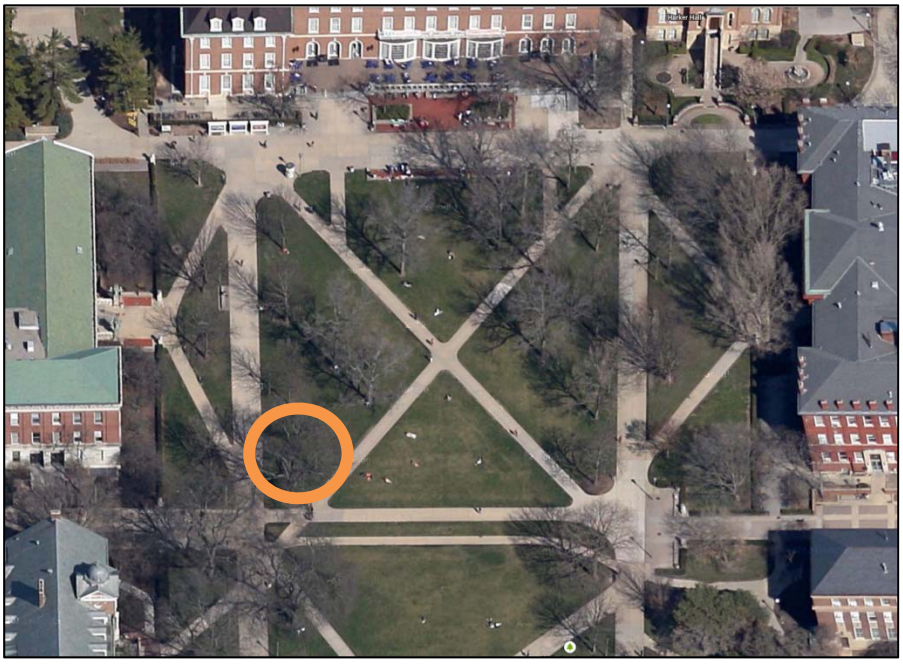


Figure 5: Location of Arbor Day Celebration

Grounds pre-dug the hole and placed the tree on Friday morning, before the celebration. The event included a welcome, proclamation, speech, tree planting, and trivia game. Additionally, shovels were available for the Campus Tree Advisory Committee to add soil around the tree roots, in collaboration with the Grounds tree surgeons. The agenda was:

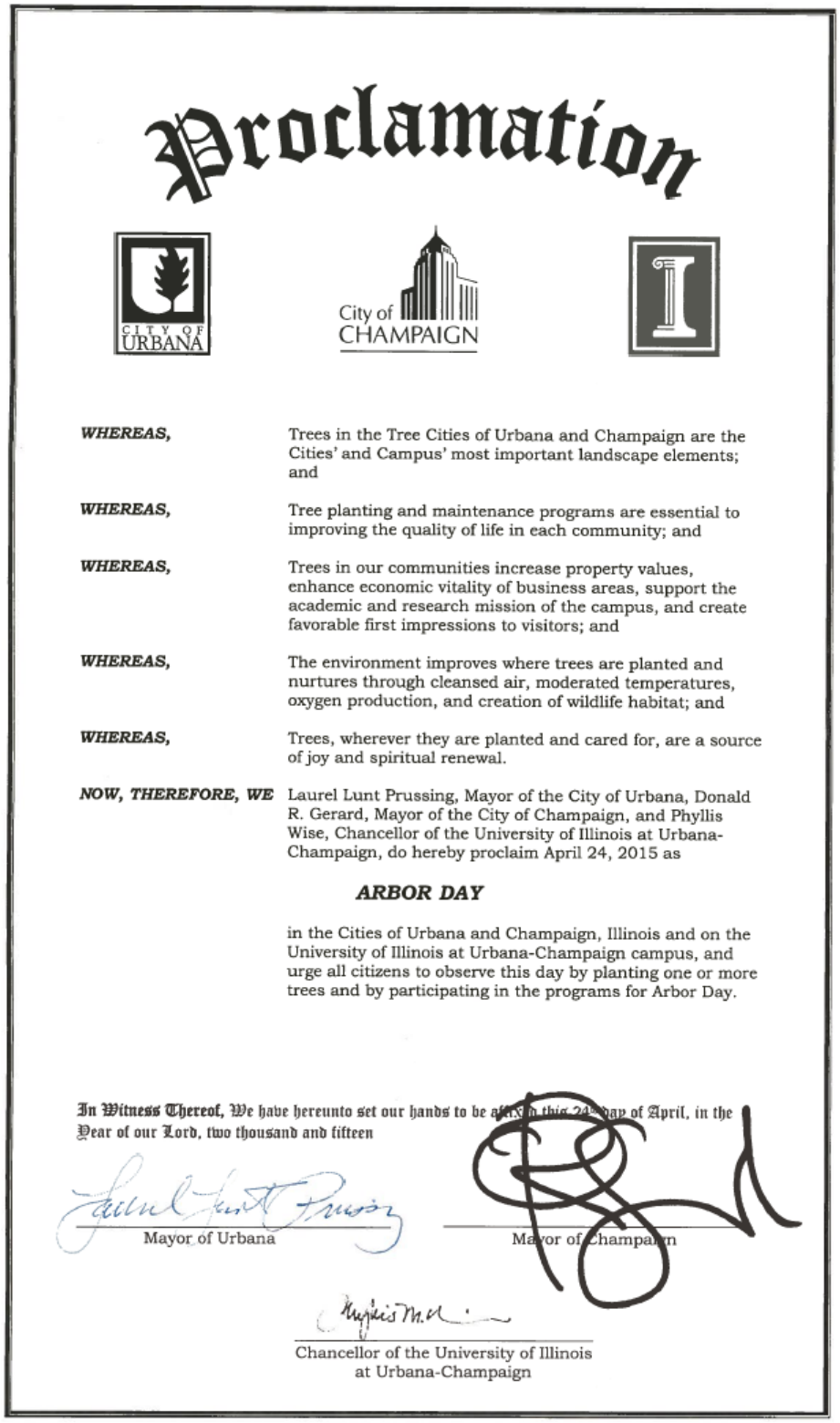
- Welcome by Carl Wegel, Director of Operations, Maintenance, and Alternations
- Proclamation Reading by Mike DeLorenzo, Associate Chancellor
- Speech about trees by Brent Lewis, F&S Landscape Architect, and Ryan Welch, Superintendent of Grounds
- Placing of the tree into the hole by Grounds crew, with shoveling of dirt by students, visitors, and committee members
- Trivia game developed and facilitated by volunteers from the Alpha Phi Omega (APO) service fraternity

High school students from the sustainability club from the University of Illinois at Urbana-Champaign Laboratory High School assisted with welcoming people to the celebration. People passing by on the Main Quad sidewalks were invited to join in planting the tree.

The event received media attention and there is a great album on iSEE's Facebook at https://www.facebook.com/media/set/?set=a.854464337966688.1073741842.152532298159899&type=3. Some of the photos are shown below.

Figure 7: Tree Surgeons prepare tree for event

Figure 8: Sustainability representatives add soil



Proclamation

CITY OF URBANA

City of CHAMPAIGN

WHEREAS, Trees in the Tree Cities of Urbana and Champaign are the Cities' and Campus' most important landscape elements; and

WHEREAS, Tree planting and maintenance programs are essential to improving the quality of life in each community; and

WHEREAS, Trees in our communities increase property values, enhance economic vitality of business areas, support the academic and research mission of the campus, and create favorable first impressions to visitors; and

WHEREAS, The environment improves where trees are planted and nurtures through cleansed air, moderated temperatures, oxygen production, and creation of wildlife habitat; and

WHEREAS, Trees, wherever they are planted and cared for, are a source of joy and spiritual renewal.

NOW, THEREFORE, WE Laurel Lunt Prussing, Mayor of the City of Urbana, Donald R. Gerard, Mayor of the City of Champaign, and Phyllis Wise, Chancellor of the University of Illinois at Urbana-Champaign, do hereby proclaim April 24, 2015 as

ARBOR DAY

in the Cities of Urbana and Champaign, Illinois and on the University of Illinois at Urbana-Champaign campus, and urge all citizens to observe this day by planting one or more trees and by participating in the programs for Arbor Day.

In Witness Thereof, We have hereunto set our hands to be affixed in this 24th day of April, in the Year of our Lord, two thousand and fifteen

Mayor of Urbana

Mayor of Champaign

Chancellor of the University of Illinois at Urbana-Champaign

Figure 6: Signed Joint Proclamation for Arbor Day 2015

Figure 9: Photos from Arbor Day Celebration

Standard 5: Service Learning Project

Description of Project

In fall 2014, Diane Anderson, the Research and Education Specialist at the University's Arboretum, worked with five students in Instructor Michael Woodley's senior design class in the Computer Science department to develop a mobile app for the Arboretum.

The service learning project for this year was a one-year class from fall 2014 to spring 2015, ending on 5/8/2015. According to the project documentation, the students defined the problem statement as "The University of Illinois at Urbana Champaign Arboretum, although a beautiful place for spending your time, cannot provide essential information about the species of plants in the various gardens without cluttering up the gorgeous landscapes. This information can be helpful to the frequent visitors of the gardens and also to the students studying the diversity of the plots. Additionally, casual visitors would love to know about various trivia tidbits about the plants and structures in the gardens such as the plants' practical use and the origins of the statues and gazebos. Also, there is no backbone in place to create cohesive tours around the gardens."

Figure 10: UI Plants database

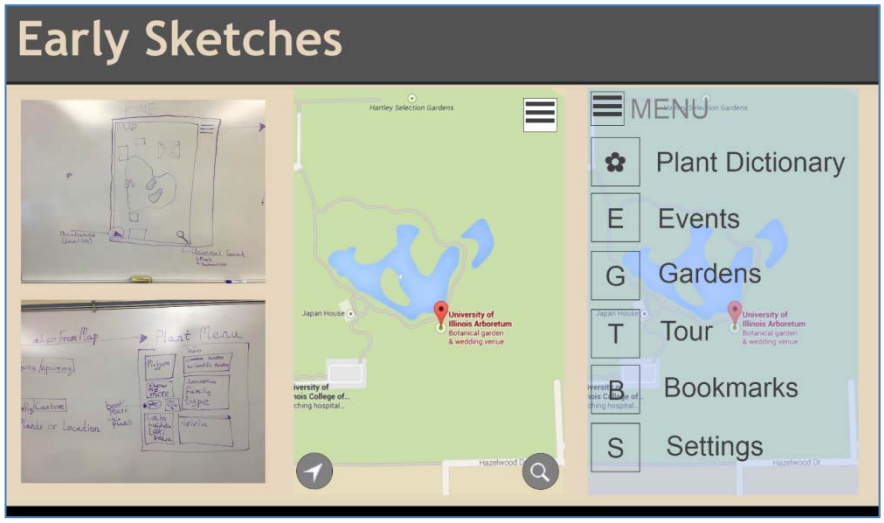


Figure 11: Screen shots from class project

The inventory of trees in the Arboretum was initiated several years ago through the F&S Facilities and Information Resources department. Additionally, the UI Plants database (see Figure 10) is available online at http://woodyplants.nres.uiuc.edu, but it was not directly available when a visitor was walking around the Arboretum.

The students developed a mobile app that connects the UI Plants database to a GPS map for iPhones (see Figure 11). Next year, the students will develop an android version of the same app.

Conclusion

Through the formulation of this Tree Care Plan for the University of Illinois at Urbana-Champaign campus, several areas for improvement were identified. The innaugural members of the Campus Tree Advisory Committee selected the key goal for 2015 to be the elimination of the Emerald Ash Borer, through removal of all infected Ash trees, as quickly as possible, and no later than FY20. However, additional needs were identified and they as listed here, for future efforts:

1. Develop a Tree Damage Policy, separate from the general contractor documents for construction projects.
2. Initiate a service learning project related to more regular updates to the Lightning protection system.
3. Update the campus tree inventory, and institutionalize the regular upkeep of that inventory.
4. Create a learning module for Capital Programs project managers, regarding tree protection and care.
5. Identify additional strategies to increase awareness of the importance and benefits of campus trees.

Trees enhance economic vitality, support the mission of campus, and create favorable first impressions to visitors. The environment improves where trees are planted and nurtured through cleansed air, moderated temperatures, oxygen production, and creation of wildlife habitat, and trees are a source of joy and spiritual renewal. The University of Illinois at Urbana-Champaign is pleased to present this 2015 tree care plan and celebrate the benefits of our campus trees.