



**Illinois State University  
Tree Care Plan  
November 2008**

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## Illinois State University Campus Tree Care Plan

### Intent:

“He who plants a tree and cares for it, does something for posterity.” –Jesse Fell

It is hard to envision while standing on the campus of Illinois State University today that it once was an undeveloped plot of land; a blank canvas awaiting the visions of the institution’s forefathers, especially those of Jesse Fell. Fell, one of the most renowned founders of the University and the town of Normal, is remembered as a “lover and planter of trees with his hopes being that every kind of tree that would flourish in Central Illinois would be planted on the University’s grounds so that the studies of botany and forestry could be pursued. In 1867 Jesse Fell obtained \$3,000.00 from the state legislature for campus landscaping and planted approximately 1,740 trees that year and another 107 the following. Although his original goal was never realized, his principles hold true for the University today and with a firm foundation laid by Fell we now have an impressive collection of trees on our campus.

In order to continue Fell’s vision, the University applied for and was granted in 1995 status as an official arboretum. Today, those involved with Fell Arboretum work together to carry forward Jesse Fell’s vision and strive to preserve and expand the existing campus landscape that serves not only as an aesthetic experience for our campus community and visitors, but most importantly, *as a learning laboratory for our students majoring in the field of horticulture.*

### **Standard # 1--Campus Tree Advisory Committee:**

Established October of 2008, the Illinois State University Campus Tree Advisory Committee plays an important role in maintaining and furthering the vision of Jesse Fell as well as focusing efforts to expand our Arboretum to its full potential as a valuable learning tool for our students as well as our community. The group will continue to look for opportunities to reach out to our Biology and Horticultural students and provide them with “hands on” opportunities in regards to designing, planting, and greenhouse projects in order to give them field experience that can enhance their classroom education. The committee will also look for ways to bring surrounding communities to campus in order for them to enjoy its beauty as well as its educational opportunities. The advisory committee includes a representative from the following and meets quarterly for planning and discussion.

*Mike O’Grady--Director of Grounds and Fleet ISU	meogrady@ilstu.edu
*Darcy Loy--Assistant Director of Grounds ISU	daloy@ilstu.edu
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*Bobby Jones--Town of Normal Parks and Recreation Department	bjones@normal.org

Meeting dates: January 15, May 14, August 13 and November 19 of 2009

### **Enforcement of Campus Tree Care Plan:**

Responsibility for enforcement of the plan will be shared between several departments, with the majority being within the Grounds Department’s via our arborist. Facilities’ Planning will also be involved in regards to enforcement of planting, warranty, plant protection, etc. specifications that are provided to contractors when landscaping is part of a campus project. Project manager from the Facilities Department will be responsible for the implementation of certain aspects of the plan, such as tree protection, site preparation, and plant quality control to name a few, as they will have day to day contact with contractors. Our department has formed a very good relationship with our project manager unit and they are willing to work with us to achieve the final goal that we have in mind both aesthetically and in regards to future maintenance. The Campus Tree Advisory Committee will also play a role in regards to future planning and projects.

## Standard #2—Tree Care Plan

### Campus Tree Care Policies:

**Planting:** Tree plantings will be approved by the Grounds' Department's arborist and unless contracted out via a project, will be performed by the arborist and tree crew. Species selection will be at the discretion of the arborist, taking into consideration current inventory and the desire to diversify species as needed. Most trees will be at least 2.5" in diameter, with the exception being bare root stock plantings. When utilizing a contractor, trees will be inspected by the arborist upon arrival to the job site and I.S. U. reserves the right to refuse any plant material due to damage, small size, insect/disease problems or any other visible problem that would jeopardize the vigor of the tree. I.S.U. also reserves the right to reject a planting due to improper techniques at the time of installation. Specifications for planting of trees and shrubs have been developed by the Grounds' Department's arborist and appear on the Facilities Planning website. They are as follows:

### 32 93 00 Exterior Plants

#### 1.0 General

- A. The Illinois State University campus is a registered Arboretum, therefore the care of trees and plants is a high priority on campus.
- B. Contractor to provide: topsoil for plant installation; trees and plants; mulch, fertilizer, landscape accessories, soil amendments; and replacement warranty.
- C. Contractor shall furnish the Owner with a warranty against defective materials and workmanship for a period of one year growing season.
  - 1. Replacement of all plant materials found dead or not in a healthy growing condition at no expense to the University.
  - 2. Replacements will be plant materials of same size and species with a new warranty commencing on date of replacement.

D. See Appendix A2- Typical Shrub Planting.

E. See Appendix A3- Typical Tree Planting.

## 2.0 Products

A. Plant names indicated shall comply with “Standardized Plant Names” as adopted by the latest edition of the American Joint Committee of Horticultural Nomenclature. Names of varieties not listed conform generally with names accepted by the nursery trade. Provide stock true to botanical name and legibly tagged.

B. Comply with sizing and grading standards of the latest edition of “American Standard for Nursery Stock ANSI 760.1-1980.” A plant shall be dimensioned as it stands in its natural position. All tree diameters will be at “breast” height.

C. The quality and size of plants shall comply with standard of American Association of Nurserymen: normal growth habit, free from disease, insect infestation or damage or weeds.

D. Arrange the delivery in sufficient quantities and time to maintain the approved construction schedule as amended.

E. Move plant materials in solid root balls, wrapped in burlap or grown in containers.

F. Deliver plant materials immediately prior to placement. Keep plant materials moist.

- G. Species and sizes of trees and plants shall be as identified in the Plant Material Schedule on the drawings, grown in climatic conditions similar to those in climatic conditions work. Include labels on each plant with correct botanical name, size and nursery source.
- H. Peat moss or compost shall be shredded, loose, brown fibrous vegetable material, free of lumps, roots, inorganic material or acidic materials minimum of 85% organic material measured by oven dry weight; 4 – 5 pH range; moisture content 30%.
- I. Water shall be clean, fresh, and free of substances or matter which would inhibit vigorous growth of plants. Water may be available from the University depending on the location. Availability and location to be determined at site visit.
- J. Mulching material shall be fine grade shredded Hardwood Bark, dry and free from weeds and foreign matter detrimental to plant life. Large chunks of bark or wood, hay, chopped cornstalks, or litter are not acceptable.
- K. Wrapping materials shall be tree wrap paper, brown, crinkled bituminous impregnated crepe paper four inches wide.
- L. Support stakes shall be painted steel T posts that are five foot minimum length. Three stakes per tree.
- M. Cables and wires shall be non-corrosive, of sufficient strength to withstand pressure and resultant movement of plant life, but not less than 14 gauge.
- N. Plant protectors shall be rubber sleeves over cable to protect plant stems, trunks and branches.

### 3.0 Execution

#### A. Delivery, Storage and Handling

1. All plants shall be sound, healthy specimens of plants, representative of their species with well formed tops and good, healthy root systems.
  - a. Plants shall be free from injurious pests, pest damage, disease, broken branches, objectionable disfigurements, etc.
  - b. Plants shall be nursery grown.
  - c. Plants which have unsymmetrical heads, sparse branch structure, damaged roots balls, are of wrong species, have evidence of insects or insect damage, disease, or weeds or are undersized may be rejected by the University.
  - d. No waiver or responsibility for defective work shall be claimed or allowed due to failure to report unfavorable conditions affecting the work.

#### B. Preparation

1. Verify with University's Project Manager and Superintendent of Grounds that topsoil is ready to receive the work.
2. Prepare topsoil to receive plant materials.

#### B. Installation

1. Plant installation shall include all provision and placement of plants, digging, soil preparation and all other operations in accordance with specifications and Drawings.

2. Plants marked "B & B" shall be balled and burlapped with ball diameters as specified in the "American Standard for Nursery Stock ANSI 760.1-1980".
  - a. No plant will be accepted when the ball has been cracked or broken in moving or during the process of planting or when the burlap and ropes have been removed.
  - b. All balled and burlapped plants that cannot be planted immediately on delivery shall be set on the ground with the balls well covered with soil or other acceptable mulch material and shall be kept moist until planted.
  - c. All plants shall be handled so that the roots are adequately protected at all times.
  - d. All plants shall be properly protected by a tarpaulin or other suitable covering during shipment.
  - e. 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.

C. Planting Details

1. Prior to installations Contractor shall stake tree planting locations that have been authorized by the University's Superintendent of Grounds. Layout of plant material needs Owner approval prior to installation.
2. All balled and burlapped shade trees, shrubs and ornamental trees shall be planted in excavated holes.
  - a. Pits for plants shall be dug prior to moving plants to the pit location.
  - b. Sides shall be vertical with a diameter of two times greater than the root ball or container diameter.
  - c. Plant pits shall be filled with topsoil and compacted to accommodate for settling.

- d. The ball shall be covered to approximately  $\frac{3}{4}$  of its depth with the planting soil mixture and thoroughly watered in place.
  - e. All twine or rope shall be cut from the trunk and the burlap folded away from the top of the ball.
  - f. The remaining  $\frac{1}{4}$  fill shall be dry soil and settled in place.
3. Enough planting mixture shall be used to bring the surface, when settled, to the required grade.
- a. The grading of the tree and shrub pits shall form a saucer at least four inches in depth and the diameter of the planting pit.
  - b. The saucer shall be filled with mulch, as specified, to a depth of three inches.
4. All deciduous trees shall be wrapped.
- a. Wrappings shall start at the base of the tree and extend up the entire trunk to the height of the first branches.
  - b. Each turn shall overlap the preceding wrap by two inches.
  - c. Each wrap shall be taped at the top and bottom
5. When noted on the drawings, a continuous mulch bed of three inches thickness shall be installed under shrubs. Finish grade of shrub bed areas shall be adjusted prior to planting to an elevation which is three inches below existing curbs, walks and adjacent lawns.

D. Maintenance

- 1. Maintain plant life immediately after placement until plants are well established and exhibit a vigorous growing condition.

2. Continue maintenance until all plant installation is complete and accepted; and for one month following that date.
3. Maintenance shall include:
  - a. Cultivation and weeding of plant beds and tree pits.
  - b. Irrigation sufficient to saturate root system.
  - c. Trimming and pruning, including removal of clippings and dead or broken branches; and treatment of pruned areas or other wounds.
  - d. Maintain wrapping, guys and stakes. Adjust guy accessories when and as required.
  - e. Addition of shredded bark mulch as required.
  - f. Provide adequate protection to prevent plant materials from damage until final acceptance.

**Landscaping:** Depending upon scope of project or time restrictions, landscape designs may be provided via in-house or per landscape architect/contractor. Illinois State University Grounds' Department reserves the right to review all landscape design plans when an outside contractor is utilized, and to make suggestions, refuse species and request substitutions as needed in order to address maintenance or species issues. When utilizing an outside contractor, the arborist will be at the site upon delivery of plant material and I.S.U. reserves the right to refuse any plant that does not meet specifications, is damaged, or has signs of disease, insects, or poor cultural traits. Specifications for soil preparation in regards to seeding, installation of sod, or plant beds have been developed by the Grounds' Department and appear on the Facilities Planning website. They are as follows:

## **32 90 00 Planting**

### 1.0 General

- A. It is understood that landscaping is an integral part of overall exterior development and aesthetics of a facility and it is expected that the project architect will develop a conceptual landscaping scheme. Interior planters should be avoided. The stockpiling of debris free topsoil (including turf) on campus on each construction project is required. Reserve excavated earth on campus when requested.

Topsoil preparation - Provide a Combination 3-1-2 fertilizer at 3# nitrogen/1000sq.ft for areas to be sodded and a Combination 2-3-2 fertilizer at 5# nitrogen/1000 sq.ft for areas to be seeded.

### 2.0 Products

- A. Imported Topsoil shall be natural, fertile, agricultural soil typical of locality, capable of sustaining vigorous plant growth from well drained site free of flooding, not in frozen or muddy condition, not less than six percent organic matter and PH value between 5.4 and 7.0. Free from subsoil, slag, clay, stones, lumps, live plants, roots, sticks, crabgrass, coughgrass, noxious weeds and foreign matter. Use topsoil excavated from site only when it conforms to these specifications.
- B. All fertilizers shall be granular, non-burning product composed of not less than 50% organic slow acting, guaranteed analysis professional turf fertilizer.

- C. Contractor shall apply necessary fertilizer with combination of 2-3-2 at a rate of five pounds nitrogen per 1,000 square feet of seeded area.
- D. Contractor shall apply the necessary fertilizer with combination of 3-1-2 at a rate of three pounds per 1,000 square feet of sodded area.
- E. Contractor shall apply fertilizer by mechanical means with proper calibration of spreading machine and spread evenly over area scheduled to be seeded or sodded.
- F. Water shall be clean, fresh, and free of substances or matter which would inhibit vigorous growth of grass.

### 3.0 Execution

- A. Carefully inspect all prior work and existing conditions. Notify the University's Grounds Superintendent immediately of all conditions that would impair proper execution of the work. Failure to notify or start of work constitutes acceptance of existing conditions.

### 4.0 Preparation of Sub grade

- A. Soil Preparation
  - 1. Contractor shall eliminate uneven and depressed areas. Remove any debris, roots, branches, stones and gravel in excess of 1/2 inch in size. Remove subsoil contaminated with petroleum products.
  - 2. Contractor shall scarify sub grade to a depth of 12 inches where topsoil is scheduled. Scarify all areas where equipment has compacted subsoil.
  - 3. The University's Superintendent of Grounds must approve all scarified areas prior to the application of topsoil.

B. Topsoil

1. Contractor shall provide topsoil level to grade and place in areas where seeding or sodding is scheduled.
2. Contractor shall install topsoil during favorable weather conditions. Topsoil and installation area must be dry.
3. Topsoil shall be placed over all backfilled trenches, excavations and disturbed areas that are not scheduled for paving.
4. Topsoil shall be placed to a depth of 12 inches where possible.

C. Finish Grading

1. Contractor shall mechanically cultivate to a minimum 4" (four inch) depth and fine grade topsoil eliminating rough, uneven or depressed areas. Maintain levels, profiles and contours of sub grade. All vegetation shall be removed.
  - a. Finished grade shall provide positive drainage away from buildings at all times and shall prevent pooling or puddling of water at any/all locations.
  - b. Finished grade top or topsoil tolerance shall be plus or minus one inch.
  - c. Finished grade to be level, firm and sufficient to prevent areas from settling when irrigation is applied.
  - d. Cultivate mechanically inaccessible areas by hand. Rake until surface is smooth.
  - e. Grade to perimeter contours to allow for proper drainage.
2. Contractor shall remove stones, roots, grass, weeds, debris, and foreign materials while grading. Do not bury foreign material.

**Maintenance:** Specifications for maintenance of trees and shrubs have been developed by the Grounds' Department's arborist. They are as follows:

The purpose of this plan is to make a continual effort to provide a safe, attractive environment for students and faculty. This presents a unique challenge to balance the needs and requirements of the trees with those of the human population that coexist in the same environment with as little intervention as possible. All trees are different; they will have different shapes, sizes, colors, textures (evergreens) and reasons for being the way that they are. It is the desire of the arborist to maintain the character of each tree; to treat every tree as an individual and stand back to assess the tree before initial pruning starts. Think before you cut.... minimal pruning is desired in order to create a naturally appealing campus.

Pruning areas are broken up into five sections of campus in an effort to winter prune every five years. Some areas will be fine pruned in the late summer to accommodate overhead clearance. These sections apply to winter pruning trees only. Shrubs are on an as needed basis until a reduction of overgrown plant material is under control.

1. Central campus (this is the quad and all surrounding buildings including In-exchange, Metcalf, Atkin-Colby)
2. East campus (Bone student center, Milner Library, any parking areas, New Science, Julian, Watterson, Hamilton-Whitten and Beaufort Banks including South Park)
3. West campus (Buildings along Main St. to the west, College and Main St. underpass and all areas to Adelaide St.)
4. Outlying campus (Credit Union, Shelbourne Apartments, Horse Barn, Rec. Center, Gregory St. Rec. fields)
5. North Campus (Facilities, President's Residence, Parking and all parking lots to the north of Gregory St.)

### **Pruning Established Trees**

#### Adopted Guidelines and Standards

The following are adopted guidelines and standards as part of this policy:

ANSI A133.1-2006 American National Standard for Arboricultural Operations-Safety Requirements

ANSI A300(Part 3)-2000 American National Standard for Tree Care Operations-Tree, shrub, and other Woody Plant Maintenance-Standard Practices(Support Systems a. Cabling, Bracing, and Guying)

ANSI A300(Part 1)-2001 Pruning American National Standard for Tree Care Operations-Tree, Shrub, and Other Woody Plant Maintenance- Standard Practices(Pruning)

ANSI Z133.1-2000-American National Standard for Arboricultural Operations-Pruning, Repairing, Maintaining, and Removing Trees, and Cutting Brush-Safety Requirements

### **General guidelines for pruning shrubs**

- Remove dead, damaged, and diseased wood
- Remove unwanted sucker growth
- Prune into desired shrub structure

### **Pruning deciduous shrubs**

- Prune spring flowering shrubs after they bloom, remove app. 1/3 of the old growth to the ground, thin out any weak smaller growth and prune any remaining stems to one or two side laterals near their base
- Shrubs flowering on current season growth can be cut back to ground level
- Broad-leaved evergreen shrubs planted to allow for optimal growth will require minimal pruning, it is the arborists desire to maintain naturally and not shear, unless in a formal setting
- Pruning of evergreen shrubs requires annual pruning to control size desired form, prune in early spring and possibly after second flush of growth

### **Pruning hedges**

- To prune an informal hedge head back to at least half way to encourage low dense branching, after controlled size is met hand prune individual branches with thinning cuts
- For a formal hedge once the desired height has been met, shear according to the amount and cycle of growth, broad leaved hedges can be pruned back severely just before growth begins in the spring to allow it to be bare for a short period of time

### **Vine Management**

Prune vines on building once a year before new growth begins and again during growing season as needed. Remove any large vines that could become top-heavy and fall from structure. Occasionally vines will be reduced to the lowest level of the building to renew smaller growing canes.

- Remove vines from windows, doorways, and fire exits
- Remove from exterior structures such as stairs, railings, electrical boxes, any historical architectural structure
- Remove from rooftop, gutter, rain spouts
- Remove from all other plant material in the area.

Groundcover vines should be removed from all hard surfaces, shear ivy as needed before new growth in the spring. Fertilize groundcover as needed.

### **Training young trees**

After initial planting of trees on campus shall be inspected the following year for the following:

- Damage from winter (frost cracks), animal damage, or vandalism.
- Removal or re-adjusting stakes and wires as needed
- Supply tree with a water bag for the growing season for the first two year
- Mulch as needed
- Prune only dead, diseased, or damaged branches on newly planted trees

The second year trees shall be pruned to develop a strong central leader and allow for the development of good crown structure. The first three to five years are the most important in the training of the trees structure.

- Remove dead, diseased, or dying branches
- Select or maintain a central leader prune any branches that could compete with your leader
- Select and establish the lowest permanent scaffold branches with the strongest attachment, remove or cut any competing branches
- Select scaffold branches that are well spaced on the trunk of the tree

### **Pruning Mature Established trees**

The goal of pruning mature trees on campus is to enhance health and structure, as appropriate for the species of tree, desired results, and existing conditions.

- Clean the crown of the tree by removing diseased, crossing, weak, and dead wood, not exceeding 2" in diameter
- Selectively remove branches to increase light penetration and air movement and to decrease branch weight, not to exceed 2" in diameter
- Remove any epicormic ("suckers") from the trunk and base of tree
- Prune off broken or dead stubs back to developing collar
- Remove lower branches to allow for clearance preferably in the summer when branches are the heaviest, sidewalk clearance on campus is 7 feet, vehicular access should be a clearance of 12'
- Inspect any existing cables or support systems in mature trees
- Inspect tree for any insect or disease infestations

Occasionally trees will require more extensive pruning due to vandalism, storm damage, or improperly pruned trees. Some trees may be candidates for a support system. If at all possible all pruning practices should be evaluated before this decision is to be considered. If necessary, trees should be removed. Support systems are not appropriate for all trees and can fail. Some trees do not compartmentalize as well as others and therefore may not be appropriate. These pruning determinations shall be made by the arborist and/or the Director of Grounds.

**ISU shall not prune any trees to control growth around utility lines. Any power line should be considered energized and it is not permissible to prune trees with power lines through them. The utility company will be notified.**

### **Disease and Pest Management**

ISU approach to disease and pest management is a good basis of plant health care. Good pruning, watering, and fertilizing make for good trees to grow vigorously and have good structure. Trees are attractive, safe, and function appropriately. Under this program healthy trees are better able to resist environmental stress, diseases, insects, as well as any other stresses that may occur in a campus setting. Until the introduction of the Emerald Ash Borer and the recent increase in the amount of Japanese Beetles, ISU's approach to insect was no chemical intervention. This makes for a safer environment by not applying chemicals into the air. It will also help encourage any biological control. We have recently started an Emerald Ash Borer reduction plan and will treat trees until the cost outweighs that of removal. We are injecting trees using the Arbor-jet system (Ima-jet). This same chemical was also used on several Linden trees in area and determined by the arborist to be aesthetically necessary. A foliar spray (Tal-star) on affected (Japanese Beetles) shrubs and roses is applied every 7-10 days as long as the beetles are present. Trees and shrubs are to be monitored on a regular basis for any pest or disease infestation to be able to determine what is an appropriate level of infestation before chemical intervention is necessary.

### **Genevieve Green Gardens at Ewing Cultural Center**

ISU recently was given the gift of a green space that renovated an existing property at the Ewing Cultural Center. This renovation made a wooded lot a very open public space. Many trees were removed in the project. The remaining trees will be evaluated for any hazards and put onto a pruning schedule. Inspection of current support systems will be done as well as the addition of any further support in existing trees to obtain and protect any historically valuable trees. All deciduous shrubs will be maintained by naturalizing unless otherwise directed by the arborist.

**Safety:**

The Grounds' Department's arborist and an officer from Health and Safety have collaborated to develop a departmental safety plan for the pruning, trimming or removal of trees on campus. This safety plan not only protects staff during these procedures, but also the University community. The safety plan is as follows:

## **Illinois State University Facilities Management Pruning, Trimming and Tree Removal Procedure**

### **1.0 Purpose and Scope**

The purpose of Illinois State University's (ISU) Pruning, Trimming and Tree Removal Procedure is to insure that all reasonable efforts are taken to safeguard the public and Grounds employees during pruning, trimming, and tree removal operations. This Policy pertains to all Grounds crews involved in the removal of trees and limbs.

### **2.0 References**

2.1 ANSI Z133.1

### **3.0 Attachments**

NONE

### **4.0 Definitions**

### **5.0 Responsibilities**

5.1 Environmental Health and Safety Office

- 5.1.1 Review and update the Illinois State University Pruning, Trimming and Tree Removal Procedure to conform to current Occupational Safety and Health Administration regulations.
- 5.1.2 Monitor compliance with standards set forth in the program by periodic inspections.
- 5.1.3 Provide guidance for the proper selection and use of appropriate personal protective equipment to meet the requirements of this program.

## 5.2 Supervisors

- 5.2.1 Ensure that all employees perform their assigned duties as outlined in this procedure.
- 5.2.2 **Ensure** employees are trained for the appropriate tasks assigned to them.
- 5.2.3 Ensure employees are provided with and use appropriate protective equipment.
- 5.2.4 Ensure that all equipment is in proper working order and has been inspected.

## 5.3 Employees

- 5.3.1 Follow the work practices described in this document.
- 5.3.2 Attend all training required.

## 6.0 Training

- 6.1 All personnel engaged in pruning, trimming, and tree removal must be properly trained by their supervisor in accordance with this procedure.
- 6.2 Employees must complete training upon initial assignment or when there is a change that presents a hazard about which employees have not been trained.
- 6.3 Training records will be maintained by Facilities Management. These records must include the date(s) of the training, the name of the instructor, and the name of the employee(s) to whom the training was given.
- 6.4 The training shall include the following topics as applicable:
  - 6.4.1 The use of personal protective equipment.
  - 6.4.2 Traffic control around jobsites.
  - 6.4.3 Overhead electrical hazards.
  - 6.4.4 The safe use of vehicles and aerial equipment.
  - 6.4.5 The use of portable power hand tools.
  - 6.4.6 Other requirements contained in this procedure.

## 7.0 Work Procedure

- 7.1 Before any tree removal operation, the crew leader shall carefully consider all relevant factors pertaining to the tree/site and shall take appropriate actions to ensure a safe removal operation. The following factors should be considered:
  - 7.1.1 The area surrounding the tree to be removed, including nearby trees.
  - 7.1.2 Lean of the tree.
  - 7.1.3 Loose limbs, chunks, or other overhead material.
  - 7.1.4 Wind force and direction.
  - 7.1.5 Decay or weak spots throughout the tree.
  - 7.1.6 Location and means to protect other persons, property, and electrical hazards.
  - 7.1.7 Size and terrain characteristics or limitations of the work area.
- 7.2 Workers not directly involved in the removal operation shall be clear of the work area.
- 7.3 The crew leader shall determine the number of workers necessary for tree removal operations.
- 7.4 Wedges, blocks and tackle, rope, wire cable (except where an electrical hazard exists), or other appropriate devices shall be used when there is a danger that the tree or trees being removed may fall in the wrong direction or damage property.

- 7.5 When a pull line is being used, workers involved in removing a tree or trunk shall be clear by a minimum of one tree length.
- 7.6 Workers not directly involved in manual land clearing operations shall be at least two tree lengths away from the tree or trunk being removed.
- 7.7 Notching shall be used on all trees and trunks greater than 5 inches in diameter at breast height.
- 7.8 Communications among workers on the ground shall be established before cutting and dropping limbs.
- 7.9 Cut branches shall not be left in trees upon completion of work.

## **8.0 Aerial Devices**

- 8.1 Prior to use an inspection shall be made in accordance with the aerial lift truck training.
- 8.2 All individuals must be trained before operating an aerial lift.
- 8.3 Aerial devices shall have an approved point of attachment on which to secure a full body harness with energy- absorbing lanyard.
- 8.4 Booms, buckets, or any other aerial device shall not be allowed to make contact or violate minimum approach distances with electrical hazards.
- 8.5 Only insulated aerial devices shall be used when an electrical hazard is present.

- 8.6 Aerial devices shall not be used as cranes or hoists.
- 8.7 Wheel chokes shall be set before using an aerial device unless specified by manufacturer.
- 8.8 One person buckets shall not have more than one person in them during operations.

## 9.0 Electrical Hazards

- 9.1 All overhead electrical hazards shall be considered energized with potentially fatal voltage until verified otherwise.
- 9.2 An inspection of the work site will be completed by the crew leader to determine whether an electrical hazard exists.
- 9.3 All employees shall maintain minimum approach distances from electrical hazards in accordance with the following chart.

<b>Minimum Approach Distances</b>		
<b>Voltage</b>	<b>ft-in</b>	<b>m</b>
51 v - 300 v	<b>Avoid Contact</b>	
301 v - 750 v	1 - 01	0.33
751 v - 15000 v	2 - 05	0.7
15100 v - 36000 v	3 - 00	0.91
36100 v - 46000 v	3 - 04	1.01
46100 v - 72500 v	4 - 02	1.26
72600 v - 121000 v	4 - 06	1.36

- 9.4 A second crew member shall be within visual or voice communication whenever work is within 10 feet of an electrical hazard.
- 9.5 Only insulated aerial devices shall be used when an electric hazard is present.
- 9.6 Branches hanging on an energized electrical hazard shall be removed using nonconductive equipment.
- 9.7 Rubber gloves, with or without leather or other protective covering, shall not be considered as providing any measure of safety from electrical hazards.
- 9.8 Ladders, platforms, and aerial devices, including insulated aerial devices, shall be subject to minimum approach distances in accordance with the chart above (section 9.3).

## **10.0 Personal Protective Equipment**

- 10.1 Personal protective equipment shall be required when there is a reasonable probability of injury or illness that can be prevented by such protection. See the Job Hazard Assessment for details.
- 10.2 Workers engaged in pruning, trimming, and tree removal shall wear head protection that conforms to ANSI Z89.1.
- 10.3 Clothing and footwear must be approved by Facilities Management and worn by the employees.
- 10.4 Hearing protection shall be worn while operating all power hand tools (i.e. chainsaws).
- 10.5 Eye protection shall be worn at all times while pruning, trimming, and tree removal.
- 10.6 Chainsaw resistant leg protection shall be worn while operating a chainsaw.

## 11.0 Portable Power Hand Tools

- 11.1 Corded electric power tools shall not be used in trees or aerial devices near energized electrical hazards.
- 11.2 All power tools must be maintained in good working order.
- 11.3 Power tools shall not be operated unless the manufacturers' safety devices are in proper working order.
- 11.4 When working in a tree other than from an aerial device, power tools weighing more than 15 pounds shall be made safe against falling.
- 11.5 Only workers operating the equipment shall be within 10 feet of the cutting head of all cutting power tools.
- 11.6 Engines shall be stopped for all cleaning, refueling, adjustments, and repairs.
- 11.7 Power tools with poles made of metal shall not be used in operations where electrical hazards exist.

## 12.0 Traffic Control

- 12.1 Effective means for controlling pedestrians and vehicular traffic shall be instituted on every jobsite.
- 12.2 Barricades, danger tape, and signs stating "DANGER!! TREE REMOVAL IN PROCESS DO NOT ENTER" or "DANGER!! TREE PRUNING IN PROCESS DO NOT ENTER" shall be posted around every jobsite. For small jobs a person may be posted around the job site instead of signs.

## List of Recommended Species:

### Illinois State University

#### Preferred Plant List

As a designated Arboretum we, at Illinois State University, continue to strive towards a goal of providing a diversified group of trees and shrubs on our campus. Specific plant species are chosen for their hardiness to this region, growth habits, and interesting characteristics. This diversification in plant material allows us to meet one of the main objectives of the Fell Arboretum- the creation of a complete, living laboratory for instructors, students and visitors. It is with this strive for diversification that we only have a preferred plant list; we do not prohibit specific species. We will reserve the right to make recommendations and request substitutions if we have specific species that we view as more pertinent to our goal over something we see as less desirable. The addition of any plant species, onto the campus of Illinois State University, should be done with this objective in mind.

Listed below are the primary plants that should be considered when designing campus landscape improvements:

#### Preferred Trees:

White Fir/ *Abies concolor*

Red Maple Group (*Acer rubrum* spp.)

Species Red Maple / *A. rubrum*

October Glory Red Maple / *A. rubrum* 'October Glory'

Red Sunset Maple / *A. rubrum* 'Red Sunset'

Autumn Flame Maple / *A. rubrum* 'Autumn Flame'

Brandywine / *A. rubrum* 'Brandywine'

Burgundy Belle / *A. rubrum* 'Burgundy Belle'

Karpick / *A. rubrum* 'Karpick'

#### Sugar Maple Group (*Acer saccharum* spp.)

Species Sugar Maple / *A. saccharum*

Green Mountain Sugar Maple / *A. saccharum* 'Green Mountain'

Fall Fiesta / *A. saccharum* 'Fall Fiesta'

Commemoration Maple / *A. saccharum* 'Commemoration'

Majesty / *A. saccharum* 'Majesty'

#### Norway Maple Group (*Acer platanoides* spp.)

Emerald Lustre / *A. platanoides* 'Emerald Lustre'

Emerald Queen / *A. platanoides* 'Emerald Queen'

Millers Superform / *A. platanoides* 'Superform'

Royal Red / *A. platanoides* 'Royal Red'

Other Maples (*Acer* spp.)

Hedge Maple / *A. campestre*

Paperback Maple / *A. griseum*

Trident Maple / *A. buergerianum*

Japanese Maple / *A. palmatum* varieties

Tatarian Maple / *A. tataricum*

Buckeye Group (*Aesculus*)

Bottlebrush buckeye / *A. parviflora* (natural settings)

Serviceberry Group (*Amelanchier* spp.)

Serviceberry / *A. canadensis*

Autumn Brilliance Serviceberry / *A. x grandiflora* 'Autumn Brilliance'

Ballerina / *A. x grandiflora* 'Ballerina'

Cumulus / *A. x laevis* 'Cumulus' (use where lateral branching is restricted)

Robin Hill / *A. x grandiflora* 'Robin Hill' (tree form)

Pawpaw (*Asimina triloba*)

Birch Group (*Betula* spp.)

Species River Birch / *B. nigra*

Heritage River Birch / *B. nigra* 'Heritage'

Gray Birch / *B. populifolia*

Hornbeam Group (*Carpinus* spp.)

American Hornbeam / *C. caroliniana*

European Hornbeam / *C. betulus* (and weeping or columnar varieties – ‘pendula’ or ‘fastigiata’)

Hop Hornbeam/ ***Ostrya virginiana***

Hickory Group (*Carya* spp.)

Shagbark Hickory/ *C. ovata*

Shellbark Hickory/ *C. laciniosa*

Mockernut Hickory/ *C. tormentosa*

Yellowbud (Bitternut) Hickory/*C. cordiformis*

Catalpa (*Catalpa speciosa*)

Katsura Tree (*Cercidiphyllum japonica*)

Redbud Group (*Cercis* spp.)

Species Redbud / *C. canadensis*

Forest Pansy Redbud / *C. canadensis* ‘Forest Pansy’ ( Tree form or multi-stemmed)

White Redbud / *C. canadensis* ‘alba’

Oklahoma / *C. Canadensis* ‘Oklahoma’

White Fringe Tree (*Chionanthus virginicus*)

American Yellow-wood (*Cladrastis lutea*)

Dogwood Group (*Cornus* spp.)

Species Flowering Dogwood / *C. florida*

Cherokee Princess Dogwood / *C. florida* 'Cherokee Princess'

Cherokee Brave Dogwood / *C. florida* 'Cherokee Brave'

Cloud 9 Dogwood / *C. florida* 'Cloud 9'

Kousa Dogwood / *C. kousa*

Pagoda Dogwood/*C. alternifolia*

*Cornus mas*

Turkish Filbert (*Corylus colurna*)

Hawthorne Group (*Crataegus* spp.)

Washington Hawthorne / *C. phaenopyrum*

Lavalle Hawthorne / *C. x lavalleyi*

Thornless Cockspur Hawthorne / *Crataegus crusgalli inermis*

Common Persimmon/ *Disopyros virginiana* (natural or park settings)

Beech Group (*Fagus* spp.)

American Beech / *F. grandifolia*

European Beech / *F. sylvatica*

Atropunicea ('Purpurea') / *F. sylvatica* 'Atropunicea'

Riversii / *F. sylvatica* 'Riversii'

Rohanii / *F. sylvatica* 'Rohanii'

Ginkgo (*Ginkgo biloba* – male trees only)

Autumn Gold / *G. biloba* 'Autumn Gold'

Kentucky Coffee Tree (*Gymnocladus dioica*)

Carolina Silverbell (*Halesia carolina*)

Witchhazel Group (*Hamamelis* spp.)

Common Witchhazel / *H. virginiana*

Vernal Witchhazel / *H. vernalis*

Arnold Promise / *H. intermedia* 'Arnold Promise'

Diane / *H. intermedia* 'Diane'

Butternut/ *Juglans cinerea*

European Larch/ *Larix deciduas*

Tulip tree (*Liriodendron tulipifera*)

Magnolia Group (*Magnolia* spp.)

Cucumber Magnolia / *M. acuminata* Saucer

Magnolia / *M. soulangeana* Star

Magnolia / *M. stellata*

Sweetbay Magnolia / *M. virginiana*

Crabapple Group (*Malus* spp.) These are the crabapples preferred for good to excellent disease resistance or persistent fruit:

‘Coralburst’

‘David’

‘Donald Wyman’ (persistent fruit)

‘Firebird’ (persistent fruit)

‘Golden Raindrops’

‘Harvest Gold’ (persistent fruit into spring)

‘Lollipop’

‘Lousa’

‘Prairie Fire’

'Molten Lava'

'Pink princess'

'Purple Prince'

'Red Jewel'(persistant fruit)

'Sargent'

'Strawberry Parfait'

'Sugar Tyme'(persistant fruit)

'Tina'

Dawn Redwood (*Metasequoia glyptostroboides*)

Black Gum (*Nyssa sylvatica*)

Water Tupelo/ *Nyssa aquatica*

Spruce Group (*Picea* spp.)

Norway Spruce / *P. abies*

White Spruce / *P. glauca*

Colorado Blue Spruce / *P. pungens*

Fat Albert / *P. pungens* 'Fat Alber"

Hoopsii / *P. pungens* 'Hoopsii'

Serbian Spruce / *P. omorika*

Pine Group (*Pinus* spp.)

Japanese Black Pine / *P. thunbergi*

Eastern White Pine / *P. strobus*

Lacebark Pine/ *P. bungeana*

Limber Pine/ *P. flexilis*

Red Pine/ *P. resinosa*

Shortleaf Pine/ *P. echinata*

London Plane Tree (*Platanus x acerifolia* 'Bloodgood')

Sargent Cherry (*Prunus sargentii*)

Accolade / *P. sargentii* x *P. subhirtella* 'Accolade'

Japanese Flowering Cherry (*Prunus serrulata*)

Kwanzan / *P. serrulata* 'Kwanzan'

Flowering Pear (*Pyrus calleryana*)

Aristocrat / *P. calleryana* 'Aristocrat'

New Bradford / *P. calleryana* 'New Bradford'

Douglas Fir (*Pseudotsuga taxifolia*)

Oak Group (*Quercus* spp.)

Sawtooth Oak / *Q. acutissima*

Swamp White Oak / *Q. bicolor*

White Oak / *Q. alba*

Bur Oak / *Q. macrocarpa*

Scarlet Oak / *Q. coccinea*

Chinquapin Oak / *Q. muhlenbergii*

Northern Red Oak / *Q. borealis (rubra)*

Red Oak/ *Q. rubra*

Post Oak/ *Q. stellata*

Black Oak/ *Q. velutina*

Shingle Oak / *Q. imbricaria*

Shumard Oak/ *Q. shumardii*

English Oak / *Q. robur*

Skyrocket / *Q. robur* 'Skyrocket'

Japanese Pagoda Tree (*Sophora japonica*)

Japanese Tree Lilac (*Syringa reticulata*)

Ivory Silk / *S. reticulata* 'Ivory Silk'

Pekin Lilac (*Syringa pekinensis*)

Summer Charm / *S. pekinensis* 'Summer Charm'

Bald Cypress (*Taxodium distichum*)

Linden Group (*Tilia* spp.)

American Linden / *Tilia americana*

Legend Linden / *T. Americana* 'Legend'

Redmond Linden / *T. Americana* 'Redmond'

Littleleaf Linden / *Tilia cordata*

Corinthian Linden / *T. cordata* 'Corinthian'

Glenleven Linden / *T. cordata* 'Glenleven'

Greenspire Linden / *T. cordata* 'Greenspire'

Silver Linden (*Tilia tomentosa*)

Green Mountain / *T. tomentosa* 'Green Mountain'

Sterling Silver / *T. tomentosa* 'Sterling Silver'

Hemlock (*Tsuga canadensis*)

Lacebark Elm (*Ulmus parvifolia*)

Elm/ *Ulmus serotina*

Other *Ulmus* hybrids

Sassafras / *Sassafras albidum* (natural setting)

Red Sassafras/ *S. albidum* var. *molle*

**Preferred Plant List****Shrubs**

False Indigo/ *Amorpha fruticosa*

Red Chokeberry / *Aronia arbutifolia*

'Brilliantissima'

Black Chokeberry / *Aronia melancarpa*

Barberry / *Berberis thunbergii*

'Crimson Pygmy'

'Rose Glow'

Boxwood / var. *koreana* x *B. sempervirens*

'Green Velvet'

'Green Mountain'

Carolina Allspice / *Calycanthus floridus*

New Jersey Tea/ *Ceanothus americanus*

Buttonbush/ *Cephalanthus occidentalis*, or var. *pubescens*

Clethra

*Clethra alnifolia* "Hummingbird"

American Filber/ *Corylus Americana*

Winged Euonymus / *Euonymus alatus*

'Compactus'

'Rudy Haag'

Fothergilla/ *Fothergilla gardenia*

'Blue Mist'

'Mount Airy'

*Fothergilla major*

Hydrangea Group

*Hydrangea quercifolia* 'Pee Wee'

*Hydrangea quercifolia* 'Snow Queen'

*Hydrangea arborescens* "Annabelle"

*Hydrangea paniculata* 'Tardiva'

*Hydrangea* 'Endless Summer'

Hydrangea 'Limelight'

Hydrangea '

Pink Diamond'

Hollies/ Ilex spp.

Meserver Hybrids

'Blue girl'

'Blue Boy'

'China Girl'

'China Boy'

Common Winterberry / Ilex verticullata

Red Sprite Winterberry Holly

Virginia Sweetspire / Itea virginica

'Henry's Garnet'

'Little Henry'

European Privet / Ligustrum vulgare

'Cheyenne'

Spicebush/ Lindera benzoin

Sweet Mockorange / *Philadelphus coronarius*

'Buckley's Quill'

Purple Leaf Sandcherry / *Prunus x cistena*

Fragrant Sumac / *Rhus aromatica*

'Gro-low'

Alpine Currant / *Ribes alpinum*

'Green Mound'

Pussywillow/ *Salix discolor*

Silky Willow/ *Salix sericea*

False Spirea / *Sorbaria sorbifolia* (slopes and natural settings tends to sucker)

Manchurian Lilac

'Miss Kim' lilac

Spirea

Bladdernut/ *Staphylea trifolia*

Sumac

Japanese yew / *Taxus cuspidata*

'Capitata'

'Densa'

Anglojap yew / *Taxus x media*

'Brownii'

'Densiformis'

'Everlow'

Eastern Arborvitae / *Thuja occidentalis*

'Emerald'

'Holmstrup'

'Little Gem'

'Nigra'

'Techny'

Farkleberry/ *Vaccinium arboreum*

Burkwood Viburnum / *Viburnum x burkwoodii*

'Mohawk'

Koreanspice Viburnum / *Viburnum carlesii*

'Cayuga'

'Compactum'

Judd Viburnum / *Viburnum x Juddii*

Arrowood Viburnum / *Viburnum dentatum*

Wright Viburnum / *Viburnum wrightii*

Wayfaringtree Viburnum / *Viburnum lantana*

'Mohican'

European Cranberry Bush / *Viburnum opulus*

'Compactum'

Doublefile Viburnum / *Viburnum plicatum* var. *tomentosum*

'Mariesii'

'Shasta'

Blackhaw Viburnum / *Viburnum prunifolium*

American Cranberry Bush / *Viburnum trilobum*

'Compactum'

Weigela

'Midnight wine'

'French lace'

'Minuet'

'Red Prince'

'Wine and Roses'

Additional Shrubs :

Common Lilac

Rose of Sharon

Daphne x burkwoodii 'Carol Mackie'

Rhododendrons

Azaleas

Globe Blue Spruce

Mugo Pine

Birds nest Spruce

Dwarf Alberta Spruce

Compactum White Pine

Rose

Carefree series

Knockout series

**Preferred Plant List****Groundcovers**

*Ajuga reptans*

'Burgundy Slow'

*Ceratostigma plumbaginoides*

*Geranium sanguineum*

*Gypsophila repens*

Creeping Baby's Breath

*Hedera helix*

English Ivy

*Hydrangea anomala* spp. *Petiolaris*

Climbing Hydrangeas

*Liriope muscari*

Lily Turf

*Lysimachia nummularia*

Creeping Jenny

*Pachysandra terminalis*

*Parthenocissus quinquefolia*

Virginia Creeper

*Parthenocissus tricuspidata*

Boston Ivy

*Sedum* species

*Stephanandra incisa* 'Crispa'

*Vinca minor*

*Waldsteinia ternata*

Barren Strawberry

Additional Groundcovers and vines

Sweet Autumn Clematis

Blue Moon Wisteria

## **Managing for Catastrophic Events:**

Catastrophic events are not only categorized by losses due to some type of weather related event, but also can be the result of an insect or disease problem that makes a significant impact to our tree inventory on campus. Measures have been taken by the Grounds' Department to manage both types of events if necessary and they are as follows:

### **Emerald Ash Borer:**

With emerald ash borer currently being in the forefront of the news our campus arborist has developed a management plan for this particular pest. It is as follows:

### **Emerald Ash Borer Management Plan**

Emerald Ash Borer is a small metallic green beetle,  $\frac{1}{2}$  to  $\frac{3}{8}$  of an inch long. No bigger than a penny, this exotic beetle came from Asia and was first discovered on Ash trees in southeastern Michigan. The beetle lays eggs on the bark of the tree, in the fall the eggs hatch and become larvae that bore into the cambium layer of the tree, thereby cutting off the tree's nutrient supply which causes the tree's decline and ultimately the death of the tree.

Emerald Ash Borer is difficult to detect when it first arrives on the tree. The tree can be a host for 3-5 years before symptoms become noticeable to anyone including the trained eye.

Emerald Ash Borer has killed trees of various sizes and conditions. Larvae have developed in trees as small as 1 inch up to 55 inches in diameter. Ash trees under stress are especially vulnerable however; it has killed vigorous trees in woodlots and trees under fertilization and irrigation.

Emerald Ash Borer or EAB was first detected in Illinois in 2006. EAB is currently in ten states including some parts of Canada. EAB's natural spread is moderate, but its artificial spread can be rapid by people unwittingly transporting this pest through infested firewood, and landscape waste.

Ash trees are very common as a landscape use and most species are native to Illinois forests. Ash trees are any tree in the *Fraxinus* species (Green, White, Black, Blue, and Pumpkin Ash). This does not include Mountain Ash this tree is from the species *Sorbus*. Some characteristics of an ash tree are:

- Compound leaves made up of seven small, glossy green leaflets(5-9 leaflets)
- Leaves, twigs and branches grow symmetrically in opposite pairs.
- Bark of a mature tree is gray and furrowed, often in a diamond pattern.
- Some ash trees produce small canoe paddle-shaped seeds
- Seedless ash trees are very common.
- Some ash produce conspicuous hard, brown “flower galls” on their twigs.

The most visible sign of infestation is tree crown dieback. Branches die from the top down as a result of the damage to the cambium layer of wood which is where the transport of food and water is in a tree. As the tree declines epicormic shoots or ‘suckers’ will sprout from the base of the tree or the trunk. In the first two years of infestation the tree will lose 30-50% of the canopy and initially death of the tree after 3-4 years. The bark on the tree may split vertically revealing serpentine tunnels under the bark of the tree. Woodpecker damage may be apparent on the bark as well. However, woodpeckers are not effective enough to be considered a biological control. Adult beetles will leave a unique “D” shaped emergence hole in the bark turned any which way; which is defining of the beetles flat topped body with a rounded bottom side. These holes can appear anywhere on the tree which is one of the reasons this little bug is so difficult to locate on a tree. Ash trees can suffer from a number of other problems and insects the cause similar symptoms. Native ash borers also attack and leave different shaped emergence holes. These holes are either round or oval and larger or smaller than the EAB. Other factors that affect ash trees and can reveal similar symptoms: include, drought stress, root damage from construction and general ash decline.

The Illinois State University/Fell Arboretum has approximately 175 Ash trees on campus. Over the course of 10 years Illinois State University will begin an Ash reduction plan. Small diameter (10” or less) will be removed before they show any signs of infestation to allow for new trees to begin growing in their place. Treatment of approximately 20 trees that are currently in good health and range in sizes from 10” DBH to 15” DBH will continue every other year by injecting Ima-jet which contains Imidacloprid. Treatment will continue as annual budget allows or until upon further consideration removal outweighs treatment. The remainder of the Ash trees 16” DBH and up that are undesirable trees will remain under annual pruning schedule as needed to

remove hazardous limbs and will be removed as they show signs of infestation of EAB or become hazardous trees. All locations where Ash trees are removed will be considered for replanting of trees of desirable species. Illinois State University will comply with the Intra-State Quarantine Restrictions. No removal procedures of ash trees will occur during the flight season from May 1<sup>st</sup> to September 1<sup>st</sup>. Any branches of ash trees if necessary to remove will be covered during this flight season. In addition, brush including logs will be taken to the Town of Normal to be mulched into one inch wood chips.

On a further note we are going to collect seeds from any of the larger ash trees that will produce seeds to send to Rose Lake Plant Materials Center where they will be sorted and sent to a lab with the Forest Service to be frozen for their future use and study.

### **Nature-Based Catastrophic Events:**

A plan has been developed by the Grounds' Department that would address how we would manage a catastrophic event due to perhaps a tornado or ice storm. As a designated arboretum, our tree population is tagged and a specific inventory number has been assigned to each tree; that information is housed in a data-base which is frequently updated. We also have access to a digital tree map of our main quadrangle area which is where a significant amount of our tree population exists. Each species is designated by a specific number and correlates to a symbol on the map. We are currently working with our Geology-Geography Departments in regards to a GIS project. They have mapped half of our tree inventory and will be working towards finishing that phase of the project by the summer of 2009. This data will not only be accessible in our office, but also theirs, as well as on the University's mainframe. With all of these in place we are confident that we would be able to go in after catastrophic weather event and know what we have lost.

We have had conversations and have acquired verbal commitment from several outside contractors that Illinois State would take precedence in the event of a major loss, and that they would assist in removal and clean-up as needed. Discussion has also taken place in the Department that we pursue verbal agreements and partner with other State Universities that would be willing to send staff and equipment to our site in the event of a disaster. Our hopes are to have those arrangements in place in the very near future. We also currently are in the process of stocking a "doomsday" box with older equipment like chain saws, pruning saws, etc. that would be necessary in the event of a major clean-up.

We are fortunate to have several venues that would be able to support the financial commitment we would need to make in order to re-establish tree plantings if we were to have catastrophic event on our campus. Since we are a registered arboretum, we currently have an endowment in the neighborhood of \$40,000.00 that we could use as a resource for tree purchases. We also are in an arrangement with our Agriculture Department to receive a permanent, annual transfer of \$10,000.00 into our account that is to be used exclusively to purchase trees each fiscal year. Both of these would allow us to immediately begin a re-planting plan.

## **Protection and Preservation Policies and Procedures:**

Currently our policies and procedures for protection of trees within a construction zone are vague and enforcement of what is written is a struggle as we do not have the full support of the necessary departments to do so. The following is what currently exists and it is our intention to develop a more structured and stricter set of policies, as well as a tree assessment plan, in the very near future, while working to bring on board the support of the Office of Facilities Planning in regards to implementation.

### **Protection of the Trees**

The Contractor shall be responsible for the protection of tops, trunks and root systems within the drip line of existing trees and shrubs on the project site. Existing trees and shrubs subject to construction damage shall be protected by a protective, durable, structure to a 4' minimum height.

Installation of protective structure shall be made before any work is started and not removed until directed by the Owner's Representative.

Do not permit heavy equipment or stockpiles within the branch spread of trees or shrubs (drip line).

No ropes, wires, cables or other devices shall at any time be affixed to a tree or shrub so as to damage the bark, break branches, or destroy its natural shape.

The Contractor shall notify the Owners immediately in cases of accidental damage so that proper repairs can be made. Cost of such repairs, are to be assessed to the Contractor. The Contractor shall not attempt to make such repairs himself. Evaluation of trees or shrubs damaged beyond repair shall be made on the basis of replacement cost, if replaceable, with material of equal size. In cases where it would not be possible to replace a tree with one of equal size, trees shall be evaluated on the basis of the "Shade Tree Evaluation" formula of the International Shade Tree Conference, current edition.

In the event that the contractor does not abide by the set above specifications, the Grounds Department is proactive and does install either protective fencing or applies a thick layer of wood mulch around the trees within the construction zone.

## **Goals and Targets:**

One of the major obstacles that we face on our campus is the lack of a stringent program in regards to tree damage assessment; it basically doesn't exist, but is desperately needed in order for us, as a University, to be able to hold contractors as well as vandals financially responsible for damage done to our trees on campus. Time and time again we face contractors' equipment breaking off branches and damaging bark, maintenance and vendor trucks doing the same, as well as vandals literally breaking off newly planted trees throughout campus and our parking lots, with no way at the present to Our goal and main focus target for our Campus Tree Plan will be to develop a damage assessment plan, present is to our Facilities Planning Department, bring them on board with the concept and join in a partnership to implement and enforce the policy.

A second goal will be to finish the GIS mapping of our campus. Two years ago we partnered with our Geology/Geography Departments and began the project. We have provided them with financial support to hire graduate assistants within their program to do mapping and locating; a win-win situation for both parties. We will be the recipient of an accurate map of our campus that includes turf areas, planting beds, tree locations, irrigation, etc and their students are receiving practical experience using the software and well as field experience as they map trees. They currently have 75% of the tree locating complete and continue this semester to finish that part of it. Our arborist will soon be providing them with attributes that will track planting dates, tree sizes, fertilizer and insecticide applications and numerous other items. Completion of this project will enable us to better track our species inventory as well as location of our donor trees.

Another goal that we would like to see achieved in the next year would be that of programming at a newly renovated site that is part of our Arboretum. This off campus site, given to the University as a gift many years ago just under-went a \$2.5 million dollar landscape renovation, made possible by a donor gift to the University. We would like to establish various classes that would be offered to the campus community and the community as a whole and would include topics on landscape and garden design, container growing, tree selection and maintenance for the home owner as well as many others.

## **Established Community Involvement Practices:**

Illinois State University currently has in place numerous activities and that not only draws both our campus as well as outlying communities to our site, but also programs that that provides ways for people to give back to the University in the way of a “natural” gift.

### **Activities:**

**Fell Arboretum Plant Sale:** Once a year the Fell Arboretum holds a plant sale on the grounds of the University. This sale serves three purposes: It serves as a fundraiser for the Arboretum provides unique plants to our customers that they might not be able to locate locally and it brings people to campus that may have never been. The sale also provides opportunities for our horticulture students as they grow some of the plant material in their greenhouse and also volunteer to work the sale assisting customers with their purchases. The sale is advertised via flyers, as well as University publications and radio. Proceeds from the sale are used for special projects or plantings done on campus. This past year we offered a container garden class as well as a guided tree tour of our quad area to our customers.

**Concerts on the Quad:** During the summer months Illinois State University hosts “Concerts on the Quad” each Monday evening. Patrons bring their lawn chairs, snacks are sold and each week a different musical venue is provided. Once again, this event brings people from the community to our campus. Many come early to stroll the grounds, view the display gardens, as well as enjoy numerous varieties of hundreds of trees located in this space. Trees are identified with species tags which gives them the opportunity to identify something that they have seen that they may wish to incorporated into their home landscape.

**Bike Path:** This past year our department worked in conjunction with the Town of Normal to bring their bike path through our campus. The path is very extensive and is heavily used by the community. We looked at it as a perfect opportunity to bring members of the community that might never had been, onto our campus. The bike path extends through our main quad area, and through west campus and out past the University’s golf course.

**Sugar Creek Arts Festival:** In mid-summer, the Town of Normal hosts a weekend-long art show that not only draws artists from all over the United States, but thousands of patrons on a daily basis. In the past, the event has been exclusively held in the up-town area, but due to development and heavy construction, the Festival Committee came to the University requesting use of space on our quad in order to recover what they were losing due to the renovation of the area. Due to a very strong Town and Gown relationship, the offer was extended by the University to the Festival to use what areas they needed in order to accommodate their artists and visitors. The plan was a huge success and the Festival had such a positive feedback from their vendors, they used the space again this past summer; yet, another wonderful opportunity to bring people onto our campus in order to enjoy its beauty. We are hopeful that upon completion of the up-town renovation, that the Festival will still choose to utilize our space.

**Tree Walks/Maps:** We currently have available a map of the trees that are represented on our quadrangle. The map was designed to allow anyone interested in trees to locate and identify the species growing in the Fell Arboretum in this specific area. Tree locations are indicated by one of two symbols on the map, representing conifers or broadleaf type trees. The number enclosed within the symbol identifies the plant and corresponds to the species key on the map. The map is useful for those wanting to take a self-guided, walking tour of the quad area. We have these maps available at the Arboretum's plant sale and they are distributed to our horticultural students. Guided tours are also offered, usually in the spring and are led by the horticulturalist from the Office of Biological Sciences. This information is available on the Fell Arboretum web site, and is also promoted via a weekly University radio program that features the "Dean of Green", as well as broadcasted on the internet and on pod cast.

**Website:** As a coordinated effort with our departmental technology staff, the Grounds Department at Illinois State University recently launched a new website. This site not only provides general information, but also has links to the following: The Campus Tree Map, the Fell Arboretum Donor Tree Program and form, our Emerald Ash Bore Plan, Pesticide Practices, as well as an "Ask the Arborist" page in which an email address and phone number is provided so that individuals needing answers to tree or shrub questions, can contact our arborist.

**Programs:** Currently the Fell Arboretum has in place a donor tree program. This program is available to any University faculty, staff or student or any person within our surrounding communities. Through a gift to the Fell Arboretum, the program is a wonderful way for a group or individual to give back a living tribute or memorial to the University. A one-time gift of \$500.00 is requested with half of that money used for purchase of the tree, while the remainder is placed in the Arboretum's endowment for the care and maintenance of that tree. The group or individual works exclusively with the University's arborist to choose a species and planting site for the memorial/tribute tree. Final determination of species and site planting is left to the arborist, as we strive to diversify our collection. The tree is tagged as a donor tree and individuals have the opportunity to include two lines of text in order to honor the person it's planned for. Tree planting ceremonies are available and range from a simple gathering to throw dirt on the tree to ones that have included music and poetry readings.



This is a sample of how we tag our donor trees. The tree also receives an inventory tag that includes a bar code, as well as the species and common name.



A family poses in front of a tree planted in memory of a family member after the dedication ceremony.

**Donor Gifts/Gardens:** Recently we have been fortunate enough to receive gifts from three, individual donors, which were to be specifically used to create memorial garden/seating areas on campus. The Grounds Department worked closely with family members, providing landscape drawings, renderings and plant selection lists to the donors. The areas have provided a wonderful place to sit, enjoy the beauty of the garden and offer a place for quiet contemplation. Below are two photos of “Muffet’s Place, one of the memorial gardens.



**MUFFET'S PLACE**  
Recognizing a Lifelong Volunteer  
of  
Special Olympics Illinois  
and  
Illinois State University Graduate  
  
**Margaret Ann Flott**

The largest gift made possible the complete landscape renovation of one of our off-site properties. The Genevieve Green Gardens provide the community with a beautiful space to visit or hold events at. The project was completed in the fall of 2007, and included new hardscape, brick path-ways, ornamental and trees plantings, as well as annual and theme display gardens. The site was already the home to our Japanese garden; a variety of plant species were used on the site and it was the plan of those involved in its conception and execution, that it would provide the perfect opportunity for our Biology and Horticulture Departments, as well as our community school districts, to utilize it as a hands-on, learning laboratory. Two photos of this site follow:





Due to budgetary constraints within our department, these beautiful spaces and trees would not have been possible without the generous gifts of the donors. It is with the help of these individuals that allows us to expand the Arboretum in conjunction with our annual tree planting plan that we have in place.

### **Standard #3--Dedicated Expenses:**

We are a State University (state funded) and our department has not seen an increase in our operating budget for ten years, therefore we are somewhat limited to what we can do in regards to our tree program. We do annually allocate dollars for our tree program and these funds cover a wide range of purchases. We have been fortunate within this past year to work with our Agriculture Department, and they have agreed to dedicate \$10,000.00 annually to our budget for the purchase of trees. We also have the support of Fell Arboretum, and are able to request dollars from the endowment for a special project s. The Arboretum also finances a few tree purchases each year. The following is a breakdown of our yearly expenditures for tree installation and maintenance.

#### **Tree purchases:**

Departmental:	\$2,500.00
Department of Agriculture Contribution:	\$10,000.00
Fell Arboretum Contribution:	\$ 500.00
<b>Annual Total:</b>	<b>\$13,000.00</b>

#### **Equipment:**

Large (chain saws, power poles pruners, sheers, etc)	\$2,000.00
(This type of equipment is on an annual rotation for replacement.)	
Miscellaneous:	\$5,000.00
(This includes hand tools, pole saws, tree bags, etc.)	
<b>Annual Total:</b>	<b>\$7,000.00</b>

**Tree Removal:**

Removal by Contractor:	\$2,000.00
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<b>Chemicals:</b>	\$5,000.00
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**Association/Membership:**

International Society of Arboriculture and Local Chapter	\$175.00
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**Personnel:**

1 Tree Surgeon (Certified Arborist)	\$35,548.00
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1 Tree Crew Assistant:	\$31,005.00
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*4 Seasonal Tree Crew Assistants:	\$38,160.00
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1 summer seasonal assistant:	\$ 1,700.00
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\*During the months of December through March we move 4 staff members to the tree crew to assist with winter pruning and brush pick-up.

<b>Annual Cost of Labor:</b>	\$106,400.00
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As much as we would like to be able to dedicate more dollars to our tree care program, budgetary restrictions do not allow us the opportunity. We find ourselves in 2008 operating on the same budget that we did in 1996 and we continually strive to seek other avenues, be it donor or other resources that would allow us to further our program.

**Standard # 4--Arbor Day Observance:**

Each year, money is allocated through the Fell Arboretum to provide a tree to be planted in recognition of Arbor Day. The tree is tagged like our donor trees, with a label stating the species that it was for Arbor Day, and the date that the tree was planted. In the past, small ceremonies have been held to dedicate the tree as part of the Arbor Day observance. This past year our arborist chose a European Larch as our Arbor Day tree.

This past year our department also worked with our laboratory High School's Earth Club to select a species and site for them to plant a tree in observance of Arbor Day. A Japanese maple was added to the memorial garden that exists on the school grounds. Our arborist dug the hole and set the tree for the Earth Club. A planting ceremony was held on April 22 and a small presentation was made by the clubs' sponsor. It concluded with each participating student placing a shovel-full of dirt on the tree as their sponsor read a stanza from the poem entitled "Advice from a Tree". Staff returned the following day to finish the planting, staking, and watering of the tree.





## **Standard # 5--Service Learning Project:**

Currently we have several opportunities on campus that engage some of our student population as well as community members in projects related to trees. They are as follows:

### **Tree Identification and Labeling:**

Each semester a few students are utilized to go about campus identifying specific trees and labeling them with inventory tags. A list of recently planted trees, as well as their locations, is given to a professor in the biology department. He usually hires one student per semester that is a horticulture major, to take care of this task. This provides a wonderful opportunity for the student to have hands on experience in the identification of trees. The professor usually accompanies the student to make sure that trees are correctly tagged.

### **GIS:**

Over a year ago we contacted our Geology/Geography department in regards to providing the service of mapping our campus rather than hiring an outside firm to complete the task. We needed a precise account of our acreage, as well as details regarding parking lots, turf and mulch areas, sidewalks and most importantly the exact locations of our trees. The merging of both departments to work on this project has deemed beneficial to both parties. Although it continues to be an on-going venture, they have presented us with several pieces regarding our initial requests, one of them being our tree inventory on our main quadrangle area. The venture has provided our department with an economical way to get our campus mapped to our specifications, (we stipend the department for their services), as well as providing the students involved with the project hands on experience as they go out into the field with hand-held units to record data. We will be giving them attributes for the tree layer that will benefit our arborist in the tracking of species, planting dates, locations, trimming and fertilizing schedules as well as other vital information that will enhance our tree maintenance plan.

**Pruning and Trimming Instruction:**

In the past our arborist has also provided instruction in regards to tree trimming and pruning procedures to both horticultural students, as well as to our Extension Office's Master Gardener Program. Both groups were provided with hands-on training in the field on the techniques used to trim and prune trees and shrubs.

**Service Learning Project**

Habitat for Humanity plays a vital role within our community providing affordable housing for deserving families. When considering a service learning project that our department would like to be involved with, Habitat for Humanity came to mind. The following is an outline of what we would like our project to entail. We feel that the benefits are two-fold.; Illinois State University's students get to participate in a project that gives back to the community and deserving families receive the beauty of trees, something they might not be able to afford on their own. The project is as follows:

Each year Illinois State University's campus Habitat program builds a house for a deserving family with the support of student labor. It is with this in mind that our department would like to take that project one step further and involve another sector of the student population; our horticultural students and horticulture club members.

Within the scope of this project we would work with our Horticulture department. We currently offer an Ag-Business degree with an emphasis in horticulture. Our students have the opportunity to take courses such as landscape design and woody plant identification as part as their curriculum and they also have an active horticulture club that provides both plant material for our annual Fell Arboretum plant sale. It is our belief that any field experience our department can provide them with only enhances their classroom work, so we do try to involve them in some of our projects when it is applicable.

As our service learning project and with the guidance and supervision of our arborist, we would ask our horticulture students to choose planting sites and tree species for the ISU Habitat house. In the past several years our community's Habitat organization has chosen to build numerous Habitat houses in one location, resulting in Habitat neighborhoods, if you will. To take our service learning project one step further, we would also like to provide this service to an entire Habitat for Humanity neighborhood. With the financial support of the Fell Arboretum in the purchase of trees, and the support of our department in regards to tools, staking materials and mulch, we would call upon our students to assist our arborist in the installation of the plant material. This project would allow us the opportunity to teach and guide our students in all aspects of a project such as this; from JULIE locates, to choosing the proper species, to correct planting technique, it gives them hands on experience that they is crucial to a successful, learning process. It also gives them the opportunity to give back to the community that they call "home" for eight months out of the year, and hopefully a sense of satisfaction that they were able to make a difference in someone else's life. For the Habitat for Homes Community, it provides them with quite simply, the beauty of nature---trees, as well realizing that someone cares about not only helping them have a house, but with the addition of trees a true sense of a home.

This project is in its beginning stages. We have made contact with our Campus Habit for Humanity representative, who has in turn given us a contact for the community Habit for Humanity. We would hope to have this project organized by the end of January, work with the students during the spring semester in regards to choosing species and designating locations, with planting to take place next fall.