NORTHEASTERN STATE UNIVERSITY

TAHLEQUAH CAMPUS TREE CARE PLAN

2010

The Northeastern State University Tree Care Plan has been liberally derived from the extensive plans developed by Virginia Tech University and Georgia Tech University and modified for our specific climate and unique requirements. The Committee expresses its gratitude to these two entities for making these plans available.

# PURPOSE

The purpose of the Northeastern State University campus tree care plan is to identify the policies, procedures, and practices that are used in establishing, protecting, maintaining, and removing trees on the Northeastern State University campus. The overall goal of the plan is to ensure a safe, attractive, and sustainable campus urban forest. The specific objectives of the plan are:

* Ensure proper species selection, high-quality nursery stock acquisition, and industry-consensus planting procedures.
* Promote species diversity and proper age structure in the tree population.
* Promote tree health and safety by utilizing the International Society of Arboriculture best management practices when maintaining campus trees.
* Ensure that trees are reasonably replaced when there is mortality due to weather, pest infestations, injury, or construction displacement.
* Encourage campus community members to respect and value the campus urban forest.

# RESPONSIBLE DEPARTMENT

Northeastern State University Grounds Department located within the Physical Plant Department under the direction of the Director of Physical Plant.

# CAMPUS TREE ADVISORY COMMITTEE

* The committee is comprised of faculty, students, and staff from the University and members of the local community.
* The committee meets bimonthly, and provides important input in to care and improvement of the campus landscape.

# CAMPUS ARBORICULTURE PRACTICES

## Plant Selection

* Plants are selected to meet physical conditions, serviceability and based on site orientation, drainage, soil condition, use, etc.
* Where appropriate, the best plant shall be selected for a given site, which may or may not be “native”.
* Trees to be used on campus must be preselected at the farm or nursery for good quality and tagged.
* Only trees of 2”-2 ½” minimum caliper and maximum of 4”-4 ½” caliper will be planted.

## Site Preparation

* The planting hole should be dug no deeper than the root ball when measured from the bottom of the root ball to the trunk flare.
* If the hole is deeper than the root ball, it often results in the settling of the plant above the trunk flare and structure roots which can result in the root ball being planted too deep.
* The width of the hole should be at least 2 to 3 times the diameter of the root ball with sloping sides.

## Proper Planting Technique

* Plants must be set with trunk flare 1”-2” above the existing grade.
* Once the plant is properly placed, all visible ropes and burlaps at the top 1/3 should be cut away.
* The top 8”-16” of the wire basket should be removed once the root ball is stable in the planting hole; backfill the planting hole with the existing soil.
* If the existing soil is of a poor quality, addition of soil amendment as recommended by a soil analysis.
* The backfill soil should be tamped firm enough to remove large air pockets, but not too firm as to remove all fine air spaces needed for a well aerated soil for root development.
* Complete the backfill by making sure that the trunk flare is completely exposed.
* Spread mulch at 2”-4” depth but not touching the trunk.
* Water the root ball and the planting area deeply.
* Newly planted trees must receive adequate water weekly during the entire first growing season right up until dormancy in the fall, by irrigation or hand watering.

## Transplanting

* Desirable trees shall be transplanted by staff if the tree caliper is between 2”-4” where there is an acceptable location and during the planting season (October to March).

## Fertilizing

* Newly planted trees should not receive fertilization during the first growing season except in a situation where a soil test recommends its use.
* A slow release type of fertilizer should be used around the tree basin.
* Trees in poor condition should receive deep root fertilization of 5-35-10 plus micro nutrients, with repeat application if necessary.
* Use 10-20-10 for evergreen trees and 25-10-10 for general application.
* Routine tree fertilization is not recommended.

## Staking

* Staking of trees at planting is not required if the root ball is stable.
* If staking must be done, it will be done in accordance with American National Standards Institute (ANSI) most recent edition.

## Pruning Technique

The maintenance pruning schedule shall be dictated by tree species, age, function, and placement.

* Trees less than 7 years old should receive structural pruning on an annual or biennial basis.
* Trees 7-20 years old should receive structural pruning every two to five years.
* Trees 20 years old and older receive maintenance pruning every five to seven years to clean dead, diseased, dying, and defective branches from the crown.
* Trees adjacent to roadways, walkways, signs, and street lights are annually inspected for safety and clearance issues and maintenance pruned as necessary.

## Pruning Practices

To encourage the development of a strong, healthy tree, the following guidelines shall be followed when pruning.

* Pruning shall not be conducted without a clear objective or outcome.
* Prune first for safety, next for health, and finally for aesthetics.
* When removing branches, the pruning cut shall not damage the branch bark ridge and branch collar.
* Internodes (heading) cuts should not be used except in storm response and crown restoration procedures.
* Branch reduction or thinning should be used to achieve pruning objectives rather than making large (>8” diameter) branch removal cuts.

## Cleaning

* Thinning shall be performed to remove dead, diseased, dying, and a defective branch, which reduces hazards, promotes, health and improves appearance.
* Large branches should be removed with the aid of ropes and rigging equipment to minimize the risk of tree injury from falling debris.

## Thinning

* Thinning shall be performed to reduce the density of branches, which increases light penetration, improves visibility, and decreases wind load.
* Assess how a tree will be pruned from the top down.
* Favor branches with strong, U-shaped angles of attachment.
* Remove branches with weak, V-shaped angles of attachment and/or included bark.
* Ideally, lateral branches should be evenly spaced on the main stem of young trees.
* Remove any branches that rub or cross another branch.
* Make sure that lateral branches are no more than one-half to three-quarters of the diameter of the main stem to discourage the development of co-dominant stems.
* Do not remove more than one-quarter of the living crown of a tree at one time. If it is necessary to remove more, do it over successive years.

## Raising

* Raising shall be performed to provide vertical clearance from thoroughfares, signs, street lights, and structures.
* Always maintain live branches on at least two-thirds of a tree’s total height.
* Removing too many lower branches will hinder the development of a strong main stem.
* Remove basal sprouts and sprouts.

## Reduction

* Reduction shall be performed to decrease the overall height of a tree or to decrease the length of an individual branch.
* Use reduction pruning only when absolutely necessary.
* Make the pruning cut at a lateral branch that is a least one-third the diameter of the stem to be removed.
* If it is necessary to remove more than half of the foliage from a branch, remove the entire branch.

## Cultural Practices Mulching and Irrigation

* Tree mulching – every two years for trees up to approximately 6”.
* Periodically, drip lines of larger trees and tree groupings are mulched extensively with waste wood chips.

## Fertilization and Pest Management

* Trees are treated for pest problems as needed.
* There is no regular tree fertilization beyond treatment received as a result of a diagnosed deficiency.
* Specimen or high-value trees may receive prescription fertilization when severe nutrient deficiencies are diagnosed.

## Tree Removals

* Live trees are generally removed only when required to protect the public safety or are detracting from the quality of the landscape.

## Stump Grinding

* After trees are removed the stumps are then scheduled for grinding, provided there is adequate access to the site.
* When the stump is ground out, the grindings are raked and left slightly mounded to allow for decay and settling.

## Protection and Preservation Policies and Procedures

* Tree protection zones shall be established and maintained for all trees to be preserved in a construction site.
* Construct a simple barrier for each tree or grouping to protect the trunk and root systems. This reduces damage from heavy equipment and trucks. Wood, plastic or chain link 4’ fencing would be suitable.
* Install the barrier fence with a radius of one foot for every inch diameter of that tree’s diameter breast height (DBH), provided that in no case shall the protection zone be less than a radius of 2.5 feet.
* No root disturbance shall be allowed within any tree protection zone at any time during clearing, grading or construction of a project.
* No equipment or vehicle shall be parked or construction material stored, or substances poured or disposed of or placed within any tree protection zone at any time during clearing or construction of a project.
* To the extent possible, all site work shall be planned and conducted in a manner that will minimize damage to protected trees from environmental changes such as altered site drainage or any other land disturbance within or immediately adjacent to the critical root zone of the tree.

## Goals and Targets

* Develop link between the Campus Tree Care Plan and NSU’s Sustainability Committee for future tree selection and planting. Include minutes of meetings of NSU’s Sustainability Committee and documentation of desirable list of trees.
* Establish and update a list of recommended and prohibited tree species.

## Storm Response and Recovery

* Storm response and recovery are generally accomplished by the Physical Plant Department.
* The first priority is to remove tree debris that blocks campus thoroughfares, disrupts campus operations, or poses hazards to the campus community.
* A prioritized recovery plan is implemented during which unsalvageable trees are systematically removed and salvageable trees are pruned to restore their health and structure.
* As the tree planting budget permits, lost trees are strategically replaced to restore the structure and function of the campus urban forest in a reasonable time frame.

## Prohibited Practices

Under no condition shall a tree be planted on the NSU campus without pre-approval from the Director of the Physical Plant.

# DEFINITIONS

* Branch bark ridge – Raised strip of bark at the top of a branch union, where the growth and expansion of the trunk or parent stem and adjoining branch push the bark into a ridge.
* Branch collar – Area where a branch joins another branch or trunk that is created by the overlapping vascular tissues from both the branch and the trunk. Typically enlarged at the base of the branch.
* Caliper – The diameter or thickness of the main stem of a young tree or sapling as measured at six (6”) inches above ground level. This measurement is used for nursery-grown trees having a diameter of four inches or less.
* Clearing – The removal of trees or other vegetation of two inches DBH or greater.
* Critical Root Zone – The minimum area surrounding a tree that is considered essential to support the viability of the tree and is equal to a radius of one foot per inch of trunk diameter (DBH).
* Crown restoration – Method of restoring the natural growth habit of a tree that has been topped or damaged in any other way. Restoration pruning.
* Diameter, breast height (DBH) – The diameter or width of the main stem of a tree as measured 4.5 feet above the natural grade at its base. Whenever a branch, limb, defect or abnormal swelling of the trunk occurs at this height, the DBH shall be measured at the nearest point above or below 4.5 feet at which a normal diameter occurs.
* Dormancy – Period of naturally reduced physiological activity in the organs of a plant with the potential for reactivation of growth.
* Heading (heading back) – Cutting a shoot back to a bud or cutting branches back to buds, stubs, or lateral branches not large enough to assume apical dominance. Cutting an older branch or stem back to a stub in order to meet a structural objective.
* Included bark – Bark that becomes embedded in a crotch (union) between branch and trunk or between codominant stems. Causes a weak structure.
* Native tree – Any tree species which occurs naturally and is indigenous within the region.
* Thinning – In pruning, the selective removal of live branches to provide light or air penetration through the tree or to lighten the weight of the remaining branches.
* Tree protection zone – The area surrounding a preserved or planted tree that is essential to the tree’s health and survival, and is protected within the guidelines of these regulations.
* Trunk flare – Transition zone from trunk to roots where the trunk expands into the buttress or structural roots.
* Soil amendment – Material added to soil to improve its physical, chemical, and/or biological properties.
* Sustainable – Development that meets the needs of the present without compromising the ability of future generations to meet their own needs, the most widely accepted definition comes from "Our Common Future," Report of World Commission on Environment and Development, commonly called the The Brundtland Report.