Main Campus Urban Forest and Landscape Management Policy and Plan

Policy

Clemson University is committed to providing a safe, attractive, educational and sustainable campus urban forest that faculty, staff, students, and guests can use as a resource for teaching and learning as well as for respite and recreation. This Main Campus Urban Forest and Landscape Management Policy enables that commitment through the following requirements:

- The Division of University Facilities is authorized to promulgate and enforce procedures and requirements for achieving the purpose of this policy and its implementation ("Main Campus Urban Forest and Landscape Management Plan.")
- All projects, utility modifications, and landscape/hardscape improvements in which trees on University property may be affected shall comply with the Main Campus Urban Forest and Landscape Management Plan.
- This policy does not apply to the University Forest Lands, Research & Education Centers or any other University owned property separate from the main campus.

Purpose

The University has an aspirational goal of maintaining a zero net loss of tree canopy on its main campus, to the extent possible, through preservation of existing trees and new tree plantings, to retain the maximum aesthetic and functional benefits provided by the multi-aged landscape tree population.

The thousands of large trees on the main campus are the most significant source of the acknowledged beauty of the University grounds. However, many activities and prohibited practices of employees, students, visitors, and contractors can and have caused tree damage, decline, and death.

Trunk and branch damage is caused by cutting, breaking, or attaching objects to them. Root damage, especially in the critical root zone (the area from the trunk extending in all directions for a distance 1.5 times the branch spread) can be even more serious. Damage is caused by vehicle traffic and parking, excavation, utility installation, material storage, etc.

As development of the campus becomes denser, the potential for such impacts will increase. For this reason, all construction/renovation projects shall be carefully reviewed early in the planning process, during the design process, and during the construction process to consider potential impacts on existing trees, damage prevention and/or mitigation approaches, or the necessity of tree removal and replacement. The University has an active landscape tree management, maintenance, and replacement program, and this policy establishes tree protection/preservation as an integral part of that program.

Responsible Department: Division of University Facilities Approval Date:

May 4th, 2015 – Approved by Administrative Council

Published location of this policy: https://cufacilities.sites.clemson.edu/support/standardsProcedures

Plan

These Guidelines and Procedures are in accordance with Clemson University Main Campus Urban Forest and Landscape Management Policy

Guideline

A tree may be considered for removal for the following reasons: it is determined to be dead or diseased beyond preservation; its location, condition, or deterioration constitutes a safety hazard; its location affects the preservation and maintenance of adjacent buildings; the tree is damaged from the elements or disease to the extent that its appearance is unduly affected; its location is determined to be an obstruction or hazard to utility lines; its location interferes with the construction of facilities and associated site development; or for other appropriate reasons. The determination of trees meeting the above conditions is the responsibility of the Director of the Landscape Services.

Prohibited Practices & Damage Assessment & Penalties

- Nailing, bolting, using trees as anchorage for ropes, power lines, cables, etc.
- Cutting breaking, skinning and abrasion of roots, branches and bark.
- Damage or removal of the tree protection fencing without approval from the University Arborist.
- Unauthorized filling, excavating, trenching or auguring within “protected root zone”.
- Compaction/driving/parking over the “protected root zone”.
- Storage of any materials or vehicles within the “protected root zone”. Dumping of construction wasted or materials (including liquids) within the “protected root zone”.
- Unauthorized removal or relocation of woody plants.
- Performing University Arborist responsibilities as indicated above.

The penalty for damage to trees will be assessed and fines levied up to 100% of the value listed below:

1” – 3” caliper	**$200/ inch**
3” – 6” DBH	**$300/ inch**
6” – 9” DBH	**$400/ inch**
9” – 12” DBH	**$500/ inch**
12” – 15” DBH	**$600/ inch**
15” DBH or more	**$700/ inch**

For construction projects, the University Project Manager is responsible for monitoring the site and reporting any prohibited practices and damage during the construction process to the University Arborist. The University Arborist will also make periodic site visits. Damage to University trees will include, but not limited to, any of the prohibited practices listed above and will be determined by the Director of Landscape Services or University Arborist. The University Arborist will notify the Project Manager of the damage assessment. The Project Manager will inform the responsible contractor and/or person, organization, or agent of the value of the assessed damage and work through options for corrective measures. While these guidelines and procedures apply to tree protection, protection of University shrubs, vines and ground covers within the project site are also of concern.

Definitions

Professional of Record	The A/E firm responsible for construction documentation & specification.
Site Survey	A measurable site plan that maps existing conditions of a given area being considered for new construction activities. This map becomes the basis for design decisions of proposed built elements and site modifications. The accuracy of such a plan is certified by a registered land surveyor.
Tree Survey	A measurable site plan that maps existing trees within a given area being considered for new construction. This survey can coincide with the Site Survey and it includes the following minimal information; scientific name of species, trunk caliper size, and canopy outline. This survey can be conducted by a registered land surveyor –and when required-working in conjunction with a trained and qualified arboriculturalist.
Tree Protection Plan	A measurable site plan that maps existing trees within a given area being considered for new construction. This survey identifies individual trees and tree groups to be protected during construction. The plan always shows tree protection areas and associated fence lines where land disturbance activities are prohibited. Construction details can be included to address areas where special mitigation factors are required. This plan is part of the construction documents that the contractor is responsible for implementing. The plan is produced by the Professional of Record in consultation with a trained and qualified arborist.
Critical Root Zone	The area from the trunk extending in all directions for a distance 1.5 times the branch spread
Protected Root Zone	The area that is one and a half the distance of the tree canopy dripline outward from the trunk (1.5x the radius)
Tree Protection Area	An area identified in the Tree Protection plan to be kept free of physical or chemical influences that may damage trees.
Tree Protection Fencing	6’ chain link fence placed on the circumference of the “Protected Root Zone”.
Compaction	Soils whose structure has been altered due to vehicular, heavy equipment and foot traffic.
Dripline	The vertical line beginning at the outermost portion of the canopy of a tree and extending to the ground.
Caliper	The trunk diameter measured 6” above the ground.
DBH	Diameter of trunk, measured at breast height (4.5 ft above ground).

Minimum Required Elements of a Tree Protection Plan

A Tree Protection Plan is required for all Construction Projects that will have an impact on existing trees and landscape. The Plan is provided by the Professional of Record in consultation with the University Landscape Architect, University Horticulturist and University Arborist. The Plan will be submitted with other documents as part of the overall project approval process. It should be a separate document and will include the following information.

Definition of spatial limits. Limits of land disturbance, clearing, grading, and trenching; “Tree Protection Zones”; specimen trees; and areas of re-planting.

Construction Details for tree protection measures and their location. Location, species and size DBH of existing trees and an indication of trees to remain on site; tree fences; erosion control fences; tree protection signage; tree wells, irrigation systems and other applicable drawings as determined by the Landscape Services Department.

All utility lines existing and proposed. The Professional of Record shall coordinate as needed with University Facilities to verify the location of all utility lines to prevent root damage within the Critical Root Zones of Protected Trees and to minimize damage to trees located in Protected Root Zones.

Procedures and schedules for the installation and maintenance of tree protection measures shall be included in the Plan. Adherence to the Plan is the responsibility of the contractor, and/or person, organization, or agent making physical changes to the environment.

Issuance of the Notice to Proceed by the University Project Manager shall be conditional on the approved Construction Documents and Tree Protection Plan and on conformance to the provisions of these Guidelines and Procedures.

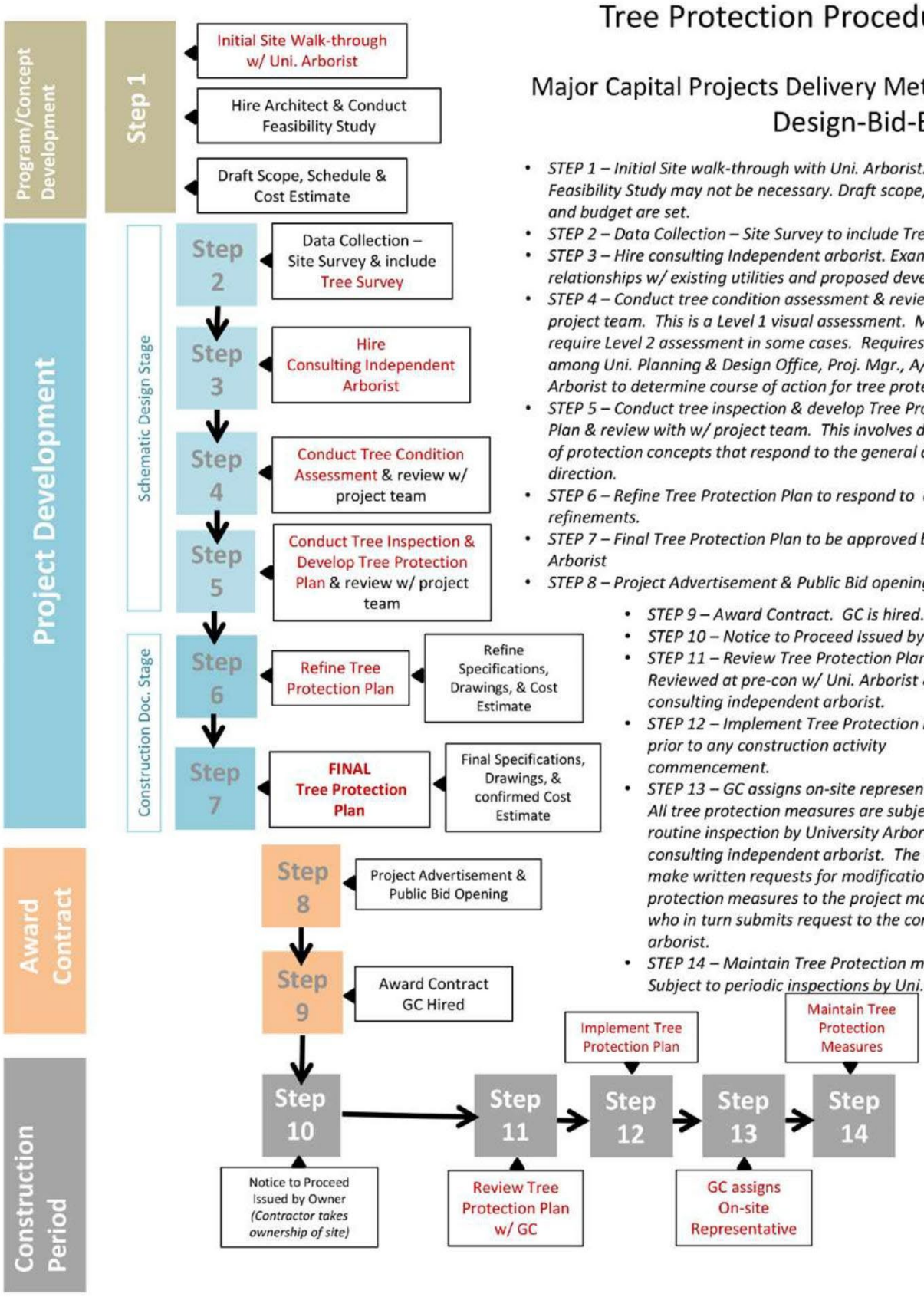
There will be no **Certificate of Substantial Completion** issued for exterior site work by the University Project Manager until the Director of Landscape Services or University Arborist has inspected the site. The Director of Landscape Services and University Arborist shall confirm that all existing trees to remain are in healthy condition and all replacement trees have been planted in accordance with this section.

Procedures for Implementing Tree Protection Plan

The following two pages outline the steps necessary for managing tree related issues for new construction. Depending on the scope of the project, smaller or emergency projects will be dealt with on a case by case basis.

Tree Protection Procedures

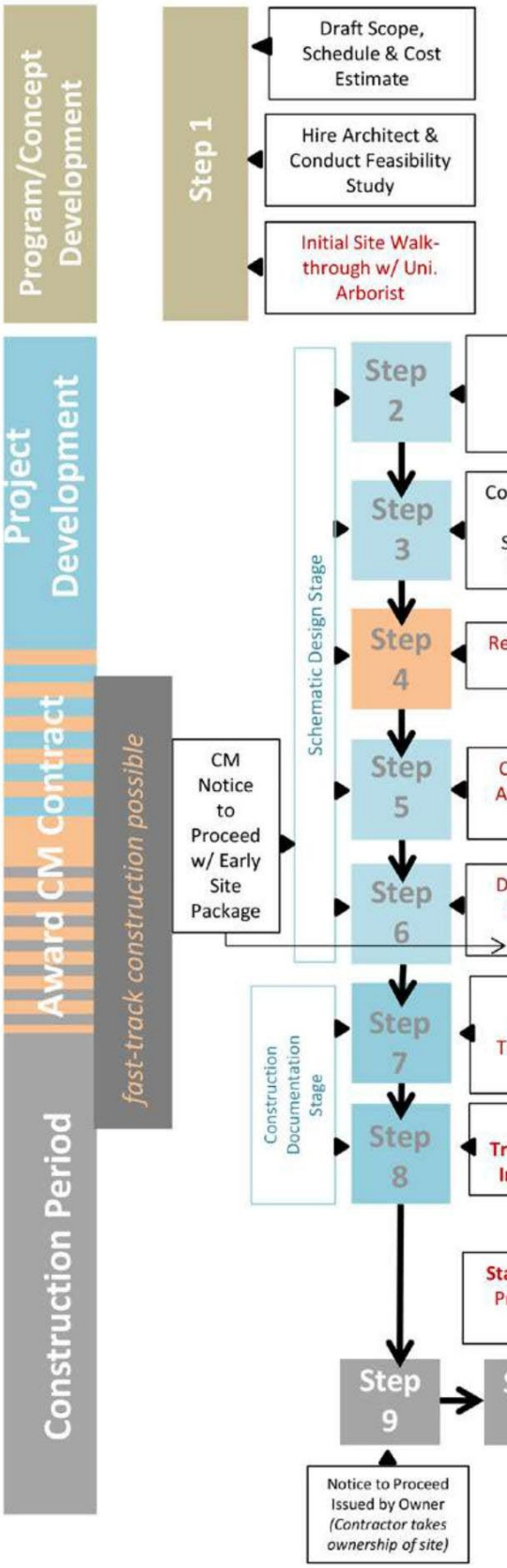
Major Capital Projects Delivery Method: Design-Bid-Build



- *STEP 1 – Initial Site walk-through with Uni. Arborist. Feasibility Study may not be necessary. Draft scope, schedule and budget are set.*
- *STEP 2 – Data Collection – Site Survey to include Tree Survey.*
- *STEP 3 – Hire consulting Independent arborist. Examine relationships w/ existing utilities and proposed development.*
- *STEP 4 – Conduct tree condition assessment & review w/ project team. This is a Level 1 visual assessment. May require Level 2 assessment in some cases. Requires meeting among Uni. Planning & Design Office, Proj. Mgr., A/E & Arborist to determine course of action for tree protection.*
- *STEP 5 – Conduct tree inspection & develop Tree Protection Plan & review with w/ project team. This involves draft plan of protection concepts that respond to the general design direction.*
- *STEP 6 – Refine Tree Protection Plan to respond to design refinements.*
- *STEP 7 – Final Tree Protection Plan to be approved by Uni. Arborist*
- *STEP 8 – Project Advertisement & Public Bid opening.*
- *STEP 9 – Award Contract. GC is hired.*
- *STEP 10 – Notice to Proceed Issued by Owner.*
- *STEP 11 – Review Tree Protection Plan w/ GC. Reviewed at pre-con w/ Uni. Arborist &/or consulting independent arborist.*
- *STEP 12 – Implement Tree Protection Plan. prior to any construction activity commencement.*
- *STEP 13 – GC assigns on-site representative. All tree protection measures are subject to routine inspection by University Arborist &/or consulting independent arborist. The GC is to make written requests for modifications of tree protection measures to the project manager who in turn submits request to the consulting arborist.*
- *STEP 14 – Maintain Tree Protection measures. Subject to periodic inspections by Uni. Arborist.*

Tree Protection Procedures

Major Capital Projects Delivery Method: Construction Manager @ Risk(CM@R) & Design-Build (D-B)



- *STEP 1 – Draft Scope, Schedule, and Cost Estimate. Hire A/E to conduct feasibility Study. Feasibility Study may not be necessary. Initial Site Walk-through w/ Uni. Arborist.*
- *STEP 2 – Project team Selection Process.*
- *STEP 3 – CM Selection Process. Data Collection – Site Survey to include Tree Survey.*
- *STEP 4 – Review Tree Survey & hire consulting Independent Arborist.*
- *STEP 5 – Conduct Tree Condition Assessment & review with project team.*
- *STEP 6 – Develop Early Action Tree Protection plan & implement. As the design is refined, adjustments are made to the tree protection plan. Release of early site package & Notice to proceed necessitates release of initial tree protection plan and early action implementation before activity related to early site construction package begins.*
- *STEP 7 - Stage 2 Preliminary Tree Protection plan is drafted. To be approved by Uni. Arborist prior to implementation.*
- *STEP 8 – Stage 2 Tree Protection Plan is implemented to respond to changes in the construction zone.*
- *STEP 9 – Notice to Proceed issued by Owner to CM for full work scope*
- *STEP 10 – Stage 3 Tree Protection Plan is finalized as final construction documents are completed.*
- *STEP 11 – Stage 3 Tree Protection is implemented.*
- *STEP 12 – Maintain Tree Protection. Subject to periodic inspections by Uni. Arborist. Damage assessments to be reported.*

(end of section)