



## B-30 – LANDSCAPE ARCHITECTURE ELEMENTS

### B-30.1 – Tree and Plant Protection

A Tree Protection Plan is required for all projects, beginning with the SD phase. This plan is developed by the designer in consultation with UNC Grounds Services University Forester and the University's Facilities Planning & Design Project Manager. Placement of tree and landscape protection measures, such as fences (plastic or metal), protective mulch, protective fabric, and logging mats, should be indicated, as detailed below.

The Tree Protection plan sheet should include:

1. Tree diameter, canopy edge, species name and location of all trees within the project limits (this should be part of the survey information completed for the project)
2. Understory trees (for example dogwoods and redbuds) with a caliper 2" or greater measure at ground level
3. a symbol should indicate which trees and shrubs are to be removed from the site
4. a list of trees to be removed with a total # of diameter/inches
5. a note on the demolition plans should be provided: When trees and shrubs are removed, care must be taken to protect trees and other landscape elements that are to remain
6. access routes and limits of excavation for all trenches necessary for installation of underground utility lines
7. the areas designated for project construction staging, parking, material storage, and waste removal
8. definition of the overall project limits

#### Tree Loss Replacement Program

Projects that lose trees due to project impacts must pay for the tree loss. The fee for tree loss becomes a part of the UNC Tree Loss Replacement Program. The project will follow the protocol below.

1. Using the project survey, the Project Landscape Architect (LA) or University Arborist if the project doesn't include a LA is responsible for producing an Existing Condition/Tree Survey/Plan identifying trees to be removed, and a list of those trees identified with Species name, caliber (size), and quantities. The LA will also generate a report that lists the Species name, caliber (size), quantities, and associated cost per diameter in inches (\$200 x diameter inches) per tree, and a total cost. This information can be included on the required tree protection plan.
2. Survey/Plan and report is submitted to UNC Design Project Manager (PM), the report is reviewed and approved by UNC PM, Facilities Planning landscape architect, and UNC Arborist.
3. UNC design PM adds this cost as a line item in their project budget, this line item is not a part of the general contract.
4. Adjustments to tree loss costs: if tree loss changes during design or construction, Project LA will submit changes to UNC Arborist and Construction Manager (CM)/PM, who will in turn review and approve with the Facilities Planning landscape architect.

Requirements for tree protection during the construction project include:

1. The University Forester will identify the critical root zone for trees within the project limits, and any trees outside of the project limits with root zones that may be impacted.
2. Staging areas for the project should be outside of the critical root zone.
3. If staging must be within the critical root zone, the University Forrester will identify how mulch and



- other materials can be used to mitigate damage.
4. Trenches must be designed to avoid encroachment into the critical root zone of trees. In some cases, tunneling may be necessary to avoid damaging tree roots.
  5. Severed tree roots over 1" are to be cut clean and covered with topsoil. This note should be included in the tree protection plan.
  6. Definition of the areas designated for project construction staging, parking, material storage, and waste removal. Coordinate with the University Forester the following measures to mitigate compaction damage:
    - a. Severe compaction zones (any staging within the drip line, travel lanes, vehicle parking in the root zone) - Provide fabric, logging mats and mulch.
    - b. Moderate compaction zones (material storage) - Provide fabric and mulch, or mulch only.
    - c. No compaction (e.g. trailer location) - No protection required. Indicate trees that require limbing up to avoid damage during construction.
  7. Coordination of the following with the University Forester:
    - a. Logging mats, fabric, and mulch: installed by Grounds Services. If Grounds Services installs measures, the project will provide funding designated as a separate line item (not a part of the general contract) for material and labor.
    - b. Tree protection fencing is to be installed by Contractor. Fences should be checked daily. Locate utilities prior to driving any posts into the ground.
  8. The University Forester is available to meet as needed during construction to review any tree issues.

### B-30.2 - Landscape Design and Plant Selection

The Designer is responsible for a landscape plan and estimate, as part of basic design services. The UNC-Chapel Hill Grounds Services (Grounds) will review and comment on the plan and estimate. **Grounds will provide and install all plant material according to the landscape plan.** The designer's estimate will be used as a reserve in the project budget to cover this work. The cost to install the landscape plan should be held as a separate line item in the overall project budget – this is not part of the general contractor's contract.

The guidelines for planting are contained in the 2005 Landscape Heritage and Plant Diversity Task Force Report ([add link here](#)). The type of plantings may be influenced by the flora in and around the existing area.

In general, landscapes should be self-sustaining, low maintenance, and should support conservation and restoration of biological and water resources, including species diversity and habitat protection, soil stability, fertility, and aeration. Outdoor seating areas are encouraged where possible.

The landscape is a shared space with under and above ground utilities, and stormwater control measures (SCM). While there can be a separate landscape plan for estimating purposes, a landscape plan with all utilities, utility surface features, and SCM's should be prepared for review.

For plantings in the vicinity of underground utilities, select plant materials appropriate to those locations, that will not be detrimental to the utility or block access to maintenance or control points (valves, meters, manholes, etc.) of utilities.



Preservation of the native flora is encouraged in those areas of campus where mature vegetation stands remain. Native plantings are encouraged where possible. Pollinator-friendly species and edible landscaping are encouraged where appropriate.

Invasive exotics as defined by the UNC Landscape Heritage and Plant Diversity Task Force Report in Appendix XI: <https://facilities.unc.edu/master-plan/historical-plans/2008-historic-landscape-master-plan/landscape-heritage-plant-diversity/> are not allowed, except for the historic campus, and even there, they should be closely scrutinized for any potential long-term impacts.

Preferred plant types:

- i. Low-maintenance native landscape is preferred over high-maintenance plantings.
- ii. Specialized plantings should be limited to designated high profile areas defined during the programming of a particular project.
- iii. Grass. If a lawn area is included within the project limits, UNC Grounds will determine, in coordination with the Facilities Planning Landscape Architect and the end users, what type of lawn will be planted.
- iv. A reference for preferred plantings can be found in Appendix XI of the UNC Landscape Heritage and Plant Diversity Task Force Report: : <https://facilities.unc.edu/master-plan/historical-plans/2008-historic-landscape-master-plan/landscape-heritage-plant-diversity/>.

**B-30.3 - Topsoil and Soil Preparation**

The designer is responsible for including the following information for topsoil and soil preparation in the plans and/or specifications.

Topsoil is to be provided for in the contract and installed by the contractor prior to the site being turned over to UNC. The Designer shall approve all topsoil prior to installation. The Contractor shall provide soil tests for any topsoil brought onto the site and obtain approval from the University before delivery. The Contractor shall insure that all topsoil is screened so that it contains no material larger than 1.0 inches in diameter or length and shall not contain slag, cinders, stones, lumps of soil, sticks, roots, trash, or other extraneous materials. The Contractor shall insure topsoil is free of plants or plant parts of Bermuda grass, Johnson grass, nut sedge, poison ivy, or other noxious weeds. The Contractor shall insure that topsoil is free of pollutants and toxic contaminants. The Contractor shall provide the source of the topsoil.

Prior to topsoil application, the contractor will scarify the soil areas where topsoil is to be applied to a depth of one foot (1') and remove and haul off all construction debris before spreading the topsoil. No scarification or subsoiling should be done within the dripline of any existing tree. The first 4" of topsoil needs to be mixed into the scarified top layer of existing soil. Continue adding soil in 4" lifts until finish grade is established.

A minimum of four inches (4") of topsoil is to be applied in all disturbed areas. A minimum of twelve inches (12") of topsoil is to be applied in all landscape plant bed areas. Exceptional care should be taken when spreading topsoil around trees. Soil around existing trees should not exceed the grade which existed prior to construction.

Grade lawn areas and beds to conform to finish grades and profiles indicated on drawings, assuring uninterrupted drainage pattern, free of hollows and pockets. In areas where subgrade is poorly drained,



provide corrective drainage indicated on drawings. If these measures do not correct drainage notify the Designer for direction prior to furtherwork.

***An inspection of the construction site with Grounds, including site stabilization will occur prior to Grounds accepting the site.***

#### Topsoil Mix

Topsoil should be purchased pre-mixed or mixing should be done off site prior to soil testing unless otherwise approved by the project Architect. The mix should be unless otherwise specified:

- 3 parts sandy-loam topsoil with additive required to bring pH to 5.5-6.5 range.
- 1 part composted pine bark organic material

#### **B-30.4 - Site Stabilization at end of Construction**

Repair and seed all areas that are disturbed during construction. Till disturbed area to a depth of 6 inches. Incorporate 18-24-12 fertilizer at a rate of 10 lb. per 1000 square feet. Evenly distribute Turf Type Fescue Blend grass and perennial rye seed at a rate of 10 lb. per 1000 square feet. Lightly rake seeded areas, mulch with 1" clean wheat straw, and water thoroughly. Areas that will be converted to plant beds can be stabilized using pine straw or organic mulch.

#### Clean Up

After the soils have been ripped, and before the required topsoil is spread, and final grades approved, clear the site of all surface trash and other objects that will hinder the installation and maintenance of the planted areas. The clean-up includes plant bed areas, lawn areas, rights-of-way adjacent to the site, buffer areas, and lay down areas.

#### **B-30.5 - Irrigation Systems**

Landscape irrigation plans should be designed and installed as part of the construction contract for all areas of lawn and landscape in the project. The irrigation systems should be developed in consultation with the University Grounds Services and must be approved by them. If there are site changes during construction that affect the landscape, Grounds Services should be contacted prior to installation to approve any changes to the irrigation system. The contractor will be responsible for installation of the irrigation system unless otherwise specified by UNC Grounds.

A water source for irrigation of landscape should be identified by UNC early in the design plan process. Coordination with UNC Grounds and Energy Services for water source is required. For water conservation, UNC's preference is for a non-potable water source where possible.

Potential sources in order of preference:

1. Non-Potable Water (Reclaimed Water or Harvested Rainwater) – Refer to Guidelines Section B-22
2. Groundwater from Existing Well
3. Potable Water – Refer to Guidelines Section B-21



A permanent pop-up landscape irrigation system should be designed and installed as part of the construction contract for all areas of lawn. Drip irrigation may be designed and installed as part of the construction contract for all landscape beds. The irrigation systems should be developed in consultation with the University Grounds Services and must be approved by them. On some projects, Grounds may prefer to install drip irrigation themselves, therefore, the designer should always ask Grounds what they prefer. If there are site changes during construction that affect the landscape, Grounds Services should be contacted prior to installation to approve any changes to the irrigation system.

Below are some general guidelines on irrigation preferences:

- Sprinkler system spray patterns shall be directed away from the building façade and foundation areas (From EHS design for Indoor Air Quality).
- Spray irrigation must also be directed away from sidewalks, roads, and other impervious area. For systems using reclaimed water, see Guidelines Section B-22 for additional information on spray pattern requirements.
- Systems shall be designed for future conversion to non-potable water (reclaimed water or harvested rainwater) by using purple-colored pipes, valve boxes, etc., with labeling as defined in the Non-Potable Water Guidelines For specifics on labeling, materials, and color-coding, see the UNC Non-Potable Water Guidelines (Section B-22).
- Irrigation systems must have a separate meter and backflow preventer. They may not be connected to building domestic meters.
- Toro brand irrigation should be included as a preferred alternate. UNC Grounds can provide additional information on system requirements.
- A smart irrigation controller should be a part of the irrigation system.
- All irrigation systems shall be turned over to UNC Grounds with appropriate training and manuals. Irrigation systems using non-potable water (reclaimed water or harvested rainwater) shall include Energy Services and EHS in the turnover process, as specified in the UNC Non-Potable Water Guidelines (Section B-22).