

## SECTION 32 93 00 - PLANTS

### PART 1 - GENERAL

#### 1.1 General Design Information:

- A. Design Requirements
  - 1. Avoid using isolated islands or berms as they are labor intensive.
  - 2. Design in context with adjacent spaces.
- B. Performance Requirements
  - 1. Protect existing landscape features, especially trees and shrubs.

#### 1.2 Repair of Landscape or Irrigation System Damage:

- A. Performance Requirements
  - 1. Include the cost of restoration to existing landscape for damage associated with construction in the bid proposal. Repairs include damage outside of construction zones if damage results from some effect of project such as rerouting of pedestrian traffic across a grassy area in lieu of a previous sidewalk path.
  - 2. At the contractor's option, restoration work may be completed by the University through the University Project Manager or by a prequalified Landscape Contractor. Competitive bidding between the University and Landscape Contractors is not permitted.
  - 3. Establish the extent of restoration work in the following manner:
    - a. Prior to construction, survey the site with the University Project Manager, A/E, and Contractor.
    - b. Document the initial condition through mutual agreement, written description, sketches and/or photographs.
    - c. After construction, survey the site with the same group and document the final condition through the same procedure.
  - 4. Include restoration work in the Construction Documents and encompass intermediate or temporary repairs. Temporary repairs may be necessary to keep irrigation systems active. Inactive irrigation systems may result in additional damage to turf areas which may require restoration work.

#### 1.3 Layout of New Trees:

- A. Design Requirements
  - 1. The use of street trees is encouraged in all designs. Coordinate with the University Campus Architect through the University Project Manager.
  - 2. Provide a minimum 3 feet diameter mulch area around all trees. Cover with shredded cedar mulch.
  - 3. Do not plant trees above underground utilities. The following table identifies the minimum and recommended distances from trees to utilities and other site items.

Item	Minimum Distance (feet)	Preferred Distance (feet)
Curbs	2.5 CE	3-5 CE
Sidewalks	2.5 CE	3-5 CE
Electric Buried Cable	4 CC	5-6 CC
Water Lines	6 CC	7-8 CC
Sewer Lines	10 CC	15+ CC
Steam/Condensate Lines	10 CC	15+ CC
Gas Lines	4 CC	5-6 CC
Street Lights-Shade Trees	40 CC	

Street Lights – Ornamental Trees	15 CC	
Street Signs	7 CC	
Intersections	30 CC	
Vaults and Pits	5-10 CC	10 CC
Tree to Tree – Shade	35 CC	
Tree to Tree – Ornamental	20 CC	
CE = Center of Tree to Edge of Utility CC = Center of Tree to Center of Utility EE = Edge of Tree to Edge of Utility		

#### 1.4 Landscape Requirements:

##### A. Design Requirements

1. Provide a weed control blanket underlay of polyester nylon mesh at all planting beds. Do not polypropylene.
2. Provide a minimum of three inches of depth of shredded cedar mulch in the shrub beds after setting.
3. Gravel or rock larger than 1" is prohibited.

#### 1.5 Protection and Preservation of Existing Trees:

##### A. Design Requirements

1. Show all existing trees on landscape plans. Indicate trees to be saved or removed.
2. Do not locate curbs closer than 5 feet from the trunk of the tree where possible. Do not provide paving or asphalt closer than 5 feet from the tree trunk.
3. Locate new sidewalks, paving or asphalt to allow breathing space for tree roots. The following should be used as a guideline:
  - a. For trees up to 4 inches in trunk caliper, provide 25 square feet of porous area.
  - b. For each additional 2 inches of tree caliper, provide 10 additional square feet of porous area.

##### B. Performance Requirements

1. Cut any severed roots caused from trenching outside the drip line of a tree with smooth and flush cuts. Backfill trenches immediately to prevent roots from drying out.
2. Provide properly constructed barrier fences at trees to be saved to protect the total area within the drip line. The drip line is defined as the area on ground covered by spread of branches.
3. Do not park or store equipment or materials within the drip line of the tree.
4. Prohibit trenching or boring inside the drip line of trees. Trenching or boring will be permitted inside the drip line of a tree only with approval from the University Project Manager.

#### 1.6 Selection of New Plants:

##### A. Performance Requirements

1. Supply plants from propagating houses, beds, frames or nurseries. Do not provide "Collected" stock unless specified or approved by the University Grounds and the University Project Manager as a substitute.
2. Provide plants with well formed buds of size normal for the species.
  - a. Growth increments of shoots for the previous year of a size normal for the season, i.e., not showing stunted growth will be accepted.
  - b. Plants that have been in storage for more than one growing season will not be accepted.
3. Provide sound, healthy, and vigorous plants free of harmful insects, diseases and major mechanical injuries. Major mechanical injuries include damages to trunk or branches to the extent it would affect normal growth and/or appearance, or would require pruning or wound treatment.
4. Provide symmetrical plants typical for species and variety.

5. Plant trees in rows that exhibit consistent branching habit, size, form and height.
6. Specify plant sizes.
7. Select plants from specified growing areas as defined below:
  - a. Colorado Grown: plants grown in Colorado nursery fields for the major portion of their life.
  - b. Colorado Fielded: plants shipped in, which have grown in Colorado for one full growing season or more prior to delivery.
  - c. Northern Grown: plants grown in nurseries one year or more located in Hardiness Zones 1 through 5, as shown in USDA Map.
  - d. Alternate plants may be proposed by the Contractor if specified types are not available. Gain approval of substitutes by the University Project Manager.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Transportation of Plants:
  1. Protect all plants, bare root, container or balled and burlapped from the time of digging to the time of planting from any conditions that would adversely affect the continued growth of the plant.
  2. Schedule and coordinate delivery and planting with other landscape work.

#### 1.8 WARRANTY

- A. Provide a warranty for a period of one (1) growing season after Final Acceptance of landscape work and at no additional cost to the University. Replace any trees, shrubs, ground cover or bulbs that are dead or that are, in the opinion of the University, in unhealthy or unsightly condition, or that have lost their natural shape due to dead branches or excessive pruning of dead branches.
- B. The warranty period begins anew for each replaced area or item and extends each time the area or item requires replacement. Replace plantings in accordance with the original specifications.

#### PART 2 - PRODUCTS (Not Applicable)

#### PART 3 - EXECUTION

##### 3.1 INSTALLATION, GENERAL

- A. Planting Seasons:
  1. Plant only after April 15 and before October 1 or as specified on the Drawings without written approval from Architect.
  2. Plant only when weather and soil condition permit in accordance with locally accepted practice. Do not plant during periods of prolonged cold or heat, or during excessively wet or dry periods.
- B. Planting:
  1. Stake and verify locations for plants according to the landscape plan.
  2. Prior to any excavation, identify all underground utilities with Utility Services through the University Project Manager.
  3. Plant container grown and balled and burlapped plants as follows:
    - a. In clay or clay loam soil, provide a planting pit 2 to 4 inches more shallow than the height of the soil ball, and a minimum of 1 foot larger in diameter.
    - b. In sandy loam soil, which is well drained, provide a planting pit depth no deeper than the height of the root ball and a minimum of 1 foot larger.
    - c. Remove container plants and tease, manipulate, or scar the fibrous roots with a knife to discourage circling roots. Care should be taken not to break the root ball.
    - d. Set balled and burlapped plants in the planting pit at the proper depth, remove all twine from the trunk, and cut excess burlap from the top of the root ball prior to backfilling.

- e. Provide tree planting holes twice the size of the root ball and provide proper amended soils mix such as Eco/Bio Planters Mix.
  4. Amend backfill soil for bare root plants according to recommendations of the Architect/Engineer. Add backfill and water thoroughly. Settle soil with water to eliminate all air pockets. Do not compact backfill by tamping. If area is irrigated, do not provide a basin. If area is not irrigated, form a basin for water.
  5. Provide percolation test to check for adequate air and water movement. If site soil fails the test, notify the University Project Manager. Perform improvement of soil drainage prior to planting. Obtain recommendations through the design team from a soil testing laboratory and/or an agricultural drainage consultant as required.
  6. Verify backfill amendments are of a consistency to allow for air and water movement without compacting.
  7. Use wire baskets. Remove the bottom of the basket up to the first tier of wire prior to placing the tree in pit. Place the balled tree in the hole at the proper depth, backfill and compact the soil up to the first tier of wire above the bottom of the ball to stabilize it. Remove the remainder of the wire and backfill and compact the soil up to approximately one-third of the bottom portion of the ball. Finish backfilling with loose soil and thoroughly puddle with water.
  8. Provide staking, guying and tree wrap. Wrap trees with approved material, e.g. the standard 4 inch crepe wrap. Wrap from the ground line up to the second whorl of branches and secure. Apply wrap approximately November 15 and remove approximately April 15 of the following year. When guy wires are used, they shall be flagged with a conspicuous material and replaced as required by the University Project Manager until guy wires are removed.
  9. Prune any injured or broken roots or branches. Trim to a clean, smooth cut without disturbing branch collar. Trim damaged evergreen branches in such a manner that the form of the tree is not affected.
  10. Provide safety devices at all open holes or pits to protect the University from liability for personal accidental injury.
- C. Plant Maintenance:
1. General: Maintain plants by watering, fertilizing, pruning, restoring planting saucers, tightening and repairing stake supports, resetting trees and shrubs to proper grades or vertical position, spraying as required to keep trees and shrubs free of insects and disease, cultivating and weeding as required for healthy growth or as directed by the Architect.
    - a. Monitor watering of plants and lawns to verify overwatering is not causing stress to trees, especially when planted in turf.
    - b. Tree wrap:
      - 1) Apply a coating of insecticide and fungicide to the tree trunk area to be wrapped.
      - 2) Apply wrap to overlap 1 ½" from ground line up to lowest branch. Wrap trunks in late fall (approximately November 15).
      - 3) Tie securely in at least five places with jute twine, placed at least 12" apart.
      - 4) Remove tree wrap at the beginning of the growing season (approximately April 15).
  2. Maintenance Period: Begin maintenance immediately after planting. Maintain plants until the end of the Warranty period. If planting occurs in autumn and maintenance has not been performed, or if work was not yet acceptable at the end of the autumn growing season (October 1), continue maintenance the following spring beginning March 15 (or sooner, weather permitting) and continue to the end of the warranty period.

**END OF SECTION 32 93 00**