DIVISION 32 – EXTERIOR IMPROVEMENTS
32 90 00 LANDSCAPING
32 93 43 TREES

PART 1 - GENERAL

1.01 SCOPE

A. Work covered by this section includes all of the planning, compliance, design, installation, and warranty elements for new landscaping using trees. Contractor shall furnish all materials, equipment, supervision and labor necessary for site preparation, installation/application, fertilizing, mulching, watering and protection needed for complete installation of trees. Scope shall include coordination of work with all other trades.

B. References:

1. ANSI A300, *American National Standard for Tree Care Operations*

2. *Best Management Practices: Tree Planting*, by G. Watson and E.B. Himelick, Printec Press, Champaign, IL, 2005.

1.02 DESIGN CONSIDERATIONS

A. Tree Location and Orientation: Designer shall specify how to excavate planting pit and place trees, by type, both on level ground and on slopes as found on project site. This should include orientation of main stem, elevation of root flair, orientation of root ball on uphill and downhill sides, and orientation and depth of backfill and rain basin relative to root flair and root ball. Provide planting detail graphics that represent actual site conditions, not simply generic graphics.

B. Visibility: Trees shall not inhibit area lighting and visibility or provide hiding places. Design Consultant shall consider visibility requirements at vehicular traffic and pedestrian sight lines. Vehicular traffic sightlines shall not be inhibited by existing or future tree growth.

C. Preventing Root Damage to Pavements and Underground Utilities:

1. In selecting species for placement near constructed surfaces or underground utilities (particularly water and sewer lines), ensure that tree roots will not eventually cause damage. As needed, use vertical root barriers to minimize root growth beneath surfaces. Ensure roots will not become pedestrian hazards as trees mature.

2. Tree Placement: Plant trees a minimum of 1 1/2 times their mature radius of dripline, or 10 feet (whichever is greater) away from any constructed vehicular surface or underground utility. Large trees shall be sited away from buildings a minimum of 1 3/4 times their mature radius of dripline. Exceptions require approval from the WSU PM and Landscape Architecture Staff where physical

function of trees requires closer placement. (i.e., placement of trees to create shade area in a parking lot.)

PART 2 - PRODUCTS AND MATERIALS

2.01 SILVA CELLS

A. Design and install in accordance with manufacturer's specifications. Select products based on site conditions, intended functions (tree rooting, water retention, runoff collection and storage, etc.) and product characteristics. Coordinate design of Silva cells with Civil, Mechanical, and Electrical designers.

2.02 TREES:

A. Trees shall have a caliper of 2–inches, or less. If physical function in design or species characteristics requires larger planting stocks, variance requires approval from the WSU PM and Landscape Architecture Staff or Grounds Staff.

B. Write specifications for each species used as outlined in ANSI Z60.1. Do not use blanket statements such as "…..in accordance with ANSI Z60.1…". It is incumbent on the Landscape Architect Designer to specify standards for trees based on site, design and physical function.

PART 3 - EXECUTION

3.01 EXISTING SITE

A. Protection of Trees Intended To Remain On and Near Site

1. WSU has inventoried the majority of Pullman campus trees. Upon request, WSU can provide the location, description, and an assessment value for existing trees. The LA Designer shall request this as part of Inventory and Analysis, early in the design phase.

2. See protection and replacement requirements in Section 32 90 00 "Landscaping" and the WSU Tree Removal and Replacement Policy (Appendix A of this section).

B. Valuation of Trees Intended for Removal by Design:

1. The value of all new trees and plantings installed by the project shall meet or exceed the total value of trees scheduled for removal.

2. When the value of new trees and plantings is less than the value of trees scheduled for removal, the project shall reimburse the difference to the WSU Tree Replacement Fund.

C. *Valuation of Trees to be Salvaged and Relocated:* If a tree has been identified for relocation, either within the project boundaries or elsewhere on campus, the project shall fund salvage and removal by a third party agency. The WSU PM will coordinate through the WSU Tree Committee. Any such salvage and relocation of trees by WSU shall be accomplished prior to the Contractor's Notice to Proceed.

3.02 PRIOR TO CONSTRUCTION

A. Pruning: Removal of Interfering Branches and Trimmings:

1. No pruning shall be done until approved by the WSU CM and LA Staff or Grounds Staff, and shall be supervised by the CM or Grounds Staff.

B. Trenching:

1. Do not route open trenches within the dripline of trees that are to be preserved. Trenching within driplines (when necessary) requires specific approval from the WSU CM and WSU Grounds Staff.

   i. Contractor shall minimize damage by careful placement of trenches to avoid large roots, or by tunneling around roots.

   ii. As a last resort, roots shall be cleanly cut using Best Management Practices. Immediately after cutting, cover ends of cut roots with wet burlap, tie in place, keep burlap wet during exposure, and remove burlap as trench is backfilled.

   iii. Cutting roots does not relieve the Contractor from responsibility if the tree suffers significant damage due to construction-related activities within the two-year Warranty Period.

3.03 TREE PLANTING

A. General: Designer shall specify Best Management Practices for installation of trees. Specifications shall be appropriate to plant type, location, season and root-ball handling/shipping mode (bare-root, containerized, or B&B stocks). See general guidelines for all landscape materials planting in Section 32 90 00 "Landscaping".

B. Soil Percolation Tests:

1. Contractor shall flood all planting pits and ensure that local infiltration allows drainage of water from pit within 24 hours. If one or more pits do not drain within 24 hours, do not plant in the affected locations and immediately notify the WSU CM to determine alternatives.

2. Protect trees at all times during planting operations. Prevent roots from drying out. Schedule and complete percolation tests before removing plants from shipping materials.

3. Contractor shall not remove trees from containers by pulling on the main stem.

4. Contractor shall handle B&B stocks using only the basket or binding.

5. Contractor shall not break containers or remove shipping materials until tree is at site of placement.

C. Excavation of Planting Pit:

1. Excavations: Planting pit diameter shall be at least twice that of the root ball; pit depth shall be equal to the root ball depth. If pit location will not permit root ball to be placed on clean subgrade soils that support vigorous plant growth, do not plant in the affected locations; immediately notify the WSU CM to determine alternatives.

2. Contractor shall roughen sides of each planting pit to eliminate 'glazed' surfaces that are difficult for roots to penetrate.

3. Contractor shall remove all foreign material excavated from planting holes and shall be legally disposed off-campus.

D. Placement: Contractor shall set trees in the center of planting pits in a natural position. Place in accordance with planting details for each plant type and location.

E. Removal of Shipping Materials

1. Contractor shall remove all shipping materials from tree, root ball and pit, including burlap and twine, wires, wire baskets, wooden boxes, tags, flags, and pots. Remove shipping materials so as not to disturb the root ball.

2. Contractor shall legally dispose debris off campus.

F. Root Flair

1. Contractor shall place trees so that root flair is at, or slightly above, finish grade. After backfill, topsoil shall meet finish grade and extend at this elevation to a diameter of at least twice the diameter of the root ball. Topsoil shall be in firm contact with entire top outer edge of root ball.

2. If placed on a slope, place backfill and rain basin in accordance with planting details. Ensure down slope berm fully surrounds and covers downhill portion of root ball at elevation of root flair, extending laterally to a distance of at least twice the diameter of the root ball. Compact fill and place rain basin on top of berm so as to ensure that rain basin will hold water without washout, or otherwise failing. Slope downhill sides of berm to meet grade without becoming unstable.

G. Backfill: Topsoil taken from the planting pits shall be used as backfill for the plant material. Backfill in 6–inch lifts using firm manual tamping and watering of each lift to eliminate air voids.

H. Temporary Basin: Provide trees a temporary rain basin consisting of a ridge or berm of topsoil 3 to 4 inches high and slightly smaller than the diameter of the planting pit. Immediately fill each basin with water. Continue watering until all backfill is saturated. Water additionally as needed to keep soil moist without flooding. Maintain basin structures to assure they do not wash out or otherwise fail to retain water. Coordinate with CM when rain basins are to be removed and site leveled to finish grade.

I. Support for Trees Over 6 Feet in Height

1. Contractor shall use an approved commercial support system appropriate to the conditions and manufacturer's recommendations.

2. If staking is chosen as a support system, then the following shall apply:

i. At planting, stake all trees over 6 feet in height, in accordance with the specifications of ANSI A300 (unless otherwise specified).

ii. At the beginning of the second warranty growing season, tree stakes shall become the responsibility of WSU.

J. Wrapping Trees: Designer shall specify which trees are to be wrapped based on site, susceptibility, species characteristics and time of planting. Consult WSU LA Professional Staff.

3.01 MAINTENANCE AND WARRANTY:

A. Maintenance Period: See Section 32 90 00 "Landscaping".

B. Warranty Period: See Section 32 90 00 "Landscaping".

1. Trees shall have a minimum of four inspections through the two-year Warranty Period, which encompasses two Warranty Growing Seasons. A final scheduled inspection of all trees shall be conducted just prior to two years from the date of Landscaping Substantial Completion. Defects in materials and workmanship shall be the responsibility of the Contractor and covered under warranty. Damages from other causes shall be the responsibility of WSU.

END OF SECTION