

DIVISION 32 – EXTERIOR IMPROVEMENTS

32 90 00 LANDSCAPING

PART 1 - GENERAL

1.01 SCOPE:

- A. This document provides guidelines that shall be used for all WSU facilities that require Landscape Architectural (LA) design and construction services.
- B. References: Project specifications and work execution shall comply with the most current edition of the following:
 - 1. "American Standard for Nursery Stock" ANSI Z60.1, regarding:
 - i. Size
 - ii. Nomenclature
 - iii. Handling
 - 2. ANSI A300

1.02 SCOPE OF WORK

- A. Construction Documents shall include provisions for all material, labor, supervision, security, supplies, and equipment for a complete project. The Landscape Architect (LA) Designer shall develop requirements and specifications for the following:
 - 1. Inspection of all plants and related materials. Inspection requirements shall address quality assurance at the source nurseries, upon delivery, during installation, throughout the warranty period, and at the end of warranty and final acceptance.
 - 2. Staging plans for plants, materials, and equipment.
 - 3. Stabilization of sensitive plant stocks at delivery.
 - 4. Timely installation and maintenance.
 - 5. Protection of plants (including existing trees and plants at the project site and adjacent areas), soils, and other plant related materials from contamination or damage.

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1.03 DESIGN CONSIDERATIONS

A. Selection of Plant Materials:

1. The LA Designer shall submit a preliminary planting plan not later than the 50% Design Development document submittal. Plan shall be reviewed by the WSU Grounds Staff and LA Professional Staff, coordinated by the WSU PM. The plan shall include, but is not limited to:
 - i. A list of all plants intended to be used on site, identified by botanical and common names, including variety and their intended functions.
 - ii. The location of all plants on the Landscape Plan.

B. Safety:

1. Human health, safety, security, accessibility and welfare shall be the primary considerations in all Landscape Architecture design.
2. Visibility:
 - i. Landscaping shall not inhibit area lighting and visibility, or provide hiding places. Consideration shall be given to visibility requirements at vehicular traffic and pedestrian sight lines. Visibility shall not be inhibited by new planting or future growth.
3. Pedestrian Hazards:
 - i. Designs shall not allow buildup of ice or mud on constructed pedestrian surfaces. Ensure no unsafe conditions are created, especially in the winter when daily freeze/thaw cycles can create icy pedestrian surface conditions and/or damage constructed elements.
 - 1) Design for management of surface flow from irrigation, precipitation, and ice/snowmelt.
 - 2) Prevent surface flow or runoff from moving over any constructed pedestrian surface.
 - 3) Pay particular attention to drainage next to stairs, especially those equipped with automatic snowmelt.

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- ii. Fruiting and cone-bearing trees and plants shall not be used near paved pedestrian surfaces. Their use is allowed in turf or grass-covered pedestrian areas, except for conifers bearing large cones (greater than 4–inches long) which can interfere with mowers.

4. Plant Placement:

- i. Obstructions and Damage: Do not site plant material next to building air exhausts or building air intakes. Do not site plants so that they block access to or function of emergency equipment, maintenance access or security equipment. Do not use species next to constructed surfaces that will develop root systems that will heave, crack or otherwise damage those surfaces.
- ii. Poisonous or Dangerous: Do not locate plants that pose physical or chemical hazards in the campus core, next to child care facilities, campus housing or in proximity to any pedestrian traffic. In areas adjacent to agricultural or veterinary livestock do not specify plants that pose a physical or chemical hazard to any animals.
- iii. Pest Management: Leave at least a three foot bare swath of ground around structures to minimize pest harborage and pests entering buildings.

C. Landscape Grading and Drainage:

- 1. Coordinate all landscape grading and drainage with civil designs. Components shall be compatible with existing campus grading and drainage systems (see Section 33 40 00 “Storm Drainage Utilities”) and approved by the WSU Project Manager and WSU Landscape Architect staff.
- 2. Slopes shall be carefully considered with regard to maintenance constraints, stormwater management, snow melt management, and human safety.
- 3. Drainage:
 - i. Minimum grades shall ensure adequate surface drainage, with 25:1 (4%) being the preferred minimum in drainage areas.

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- ii. Where possible, use maximum grades of 3:1 (33%) or less. If grades steeper than 3:1 are required, consider using retaining walls.

D. Pedestrian Access and Circulation:

1. **Pedestrian Desire Lines:** The Designer shall identify pedestrian traffic paths and desire lines over all surfaces. Design pedestrian surfaces and plantings to facilitate traffic flow on these paths and desire lines.
2. **Accessibility:** To the extent possible on a given site, landscaped areas intended for public use shall be ADA accessible.

E. Maintenance Considerations:

1. **Groundcover:** Do not design large areas of ground cover plantings.
2. **Protecting Fixtures:**
 - i. In areas that will be maintained by lawnmowers or snow removal equipment, design the landscape furnishings and systems to protect components from maintenance equipment. Ensure an 8 foot wide area of access.
3. **Plant Spacing:**
 - i. Space plantings at 80% of the anticipated diameter of plants at maturity.
4. **Planting Beds:**
 - i. Planting beds shall be covered with Red Fir, medium course bark mulch within 24 hours of planting. Place to a maximum depth of 2–inches, ensuring placement is at least 1/2–inch below grade at walk edges. Keep bark mulch 3–inches away from plant stems.
 - ii. Do not specify weed control fabric in planting beds.
5. **Lawn Mower Access:**
 - i. Lawns, other planting, and constructed elements shall be designed to allow access by an 8 foot wide lawn mower. Design lawn edges with corners rounded at a radius not less than 5 1/2 feet.
 - ii. **Mowed Surfaces**

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- 1) If a slope is to be planted as a lawn and machine mowed, then a 3:1 (33%) grade is the maximum grade that shall be allowed.
 - 2) For surfaces that are to be machine mowed, round the tops and toes of slopes to ensure that an 8 foot wide mower deck does not contact the soil and cause damage.
- iii. Mow-strips: Design concrete mow-strips where lawns abut vertical surfaces. See Section 32 17 00 “Paving Specialties.”
 - iv. Do not specify metal edging adjacent to lawn areas.
6. Snow Removal:
- i. The Designer shall prepare a snow plowing route, stacking, and removal plan that includes provisions for conveyance of snow melt and ice formation away from buildings, traffic and pedestrian surfaces. Vertical elements such as trees, shrubs and light poles shall be set back a minimum of one foot from each side of maintained pedestrian surfaces. The Designer shall coordinate with WSU Grounds Staff and LA Professional Staff through the WSU PM.
 - ii. Design snow storage areas that do not produce pedestrian hazards.
 - iii. Automatic Snowmelt: See Sections 32 17 43 “Pavement Snow Melting Systems – Hydronic and Electric”.

1.04 QUALITY ASSURANCE

- A. The Designer shall specify requirements for all submittals (including Safety Data Sheets) related to this section, to include but not be limited to: plants, grass seed and sod, soils, soil amendments, testing, mulch, fertilizers, chemicals and other items listed below.
- B. Plant Material Inspection Certificates: Submit all inspection certificates that are required by law or by these specifications to accompany each shipment of plant materials.
- C. Plant and Seed Bags Tags: Delivered plants and seed bags shall each have a legible label giving the common and botanical plant name in accordance with the "Standardized Plant Names", as issued by the "American Joint Committee on Horticulture Nomenclature". If plants are bundled or in multiple unit containers, one tag shall be placed on the bundle and shall additionally give the number of plants contained in the bundle or container.

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- D. Plant Condition: Plants shall be in vigorous health, relatively free of wounds or damage, and free of all pests and diseases. They shall conform to all size and form specifications. Measurements for making these determinations on B&B stock shall be taken from the top of root flair.

PART 2 - PRODUCTS AND MATERIALS

2.01 GENERAL

- A. Chemical Usage: Contractor shall coordinate with the Facilities Services CM to notify those on the Chemical Sensitivity Notification List.
- B. Plant Material Substitution: If a specified plant cannot be obtained, coordinate substitution through the WSU CM, for approval by the WSU Grounds Staff or LA Professional Staff.

PART 3 - EXECUTION

3.01 PROTECTION

- A. Existing Trees and Plants
 - 1. Existing plants designated to remain on the project site or adjacent to the project site shall be protected from all project activities, including chemical use and shut-off of irrigation.
 - 2. The Contractor shall be responsible for the protection of existing plants. Existing trees shall have their "Critical Root Zone" (CRZ) protected from any construction disturbance. The CRZ is defined as a circle around the trunk that is one (1) foot in radius for every one (1) inch of trunk diameter measured 4-1/2 feet above grade (Diameter at Breast Height, DBH). In the case of trees with significant importance to the campus as determined by WSU Grounds or Landscape Architecture staff, the CRZ may be increased up to one and one-half (1.5) foot radius for every one (1) inch in DBH. In no case shall the CRZ be less than eight (8) feet. Exceptions need to be approved by WSU PM or CM prior to execution.
 - 3. WSU will evaluate and establish a replacement value for all trees within the construction site prior to the start of construction activities. In addition, the WSU PM or CM shall document construction related damages and shall notify the WSU Grounds Staff or Landscape Architect Staff to assess tree damage. In general, any tree or other type of plant that has suffered damage that threatens its viable structure as a consequence of construction-related activities shall be considered for replacement. WSU

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will determine whether Direct Replacement, Assessed Valuation, or a combination will be used.

- i. Tree Valuation: The tree assessment and replacement value shall be established using the International Society of Arboriculture Guidelines and the WSU Tree Removal and Replacement Policy (see Appendix A of Section 32 93 43 “Trees”).
 - ii. Direct Replacement: Plants shall be replaced commensurate with their value. Replacement plants shall be installed using the same procedures, specifications, grading standards, and warranty as required for installation of new plants, at no cost to WSU.
 - iii. Assessed Valuation: The Contractor shall be assessed damages in accordance with established values in the WSU Tree Removal and Replacement Policy.
4. If Contractor damages areas outside the contract limit, the Contractor shall fully restore these areas to their original condition, at no cost to WSU.
- B. Newly Planted Plants: Protection of newly planted plants shall be the sole responsibility of the Contractor. WSU will exercise its right to reject plantings that have been impacted or compromised.
- C. Roots:
1. No equipment, material stockpiling, equipment/material wash-down or maintenance drainage, chemical dispersing or work shall be permitted within the CRZ. No fluids or chemicals (wet or dry) brought to the site shall be allowed to move into the CRZ by either surface flow, subsurface flow, or wind, unless intended for use within the CRZ and applied in accordance with the project specifications and manufacturer’s instructions.
 2. Removal of Interfering Roots, Stems and Trimmings: Removal of interfering roots and branches shall be supervised by WSU Grounds Staff or LA Professional Staff.
 3. Open trenches shall not be routed within the CRZ of plants that are to be preserved.
- D. Water Stress: Contractor shall prepare a watering plan to ensure that all plants on site and in adjacent areas do not experience water stress.

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- E. Protective Fencing: Existing trees and plants whose CRZ is within the construction zone shall have their CRZ be fully enclosed by sturdy, immobile protective fencing that entirely encloses the CRZ of any protected trees. No construction activities, materials or waste storage, or parking shall take place within the CRZ.
- F. Temporary Platforms within Protected Areas: If approved by the WSU CM and Grounds Staff or LA Professional Staff, the Contractor may build a temporary work platform over protected plants. The protective platform shall be designed to prevent soil compaction and to permit the passage of water and air to plant root systems by using minimum ground contact supports, bark mulch cushioning, and choosing equipment that minimizes footprint PSI. All protective measures shall be completed before any work is started within protected area.

3.02 CONSTRUCTION ACTIVITIES

- A. Care of Landscape Areas: If at any time the Contractor judges that the protection of a tree or other plant type is incompatible with required work, the Contractor shall immediately notify the WSU CM and does no further work affecting the plants until the CM has issued clarification.
- B. General Submittal Requirements: The Contractor shall ensure receipt, distribution, review and approval by the LA Designer and the WSU Grounds Staff or LA Professional Staff (through the WSU CM) of all submittals, including but not limited to: plants, chemicals, organic amendments, mulches, fertilizers, additives and other items addressed in this section. Contractor shall provide a site plan showing the Critical Root Zones of each existing tree to be preserved and the location of protective fencing. Submittals shall include all appropriate Safety Data Sheets (SDS).
- C. Inspections of Planting and Seed Stocks
 - 1. Inspections: Formal inspections shall be identified on the Contractor's Quality Assurance & Control Program checklist. The WSU Grounds Staff or LA Professional Staff shall notify the WSU CM of the inspection outcomes.
 - i. The first inspection shall be at the time of delivery of plants to the project site. The Contractor shall notify the WSU CM 48 hours prior to delivery on campus.

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- ii. The WSU Grounds Staff or LA Professional Staff shall monitor conditions – in conjunction with the WSU Construction Manager – and make on-site adjustments and corrections as plants are being installed.
 - iii. See details below for Landscaping Substantial Completion inspection.
2. Inspection Criteria: All plant and seed stocks shall meet or exceed the following, deliverable at the time of installation:
- i. Accurately named and labeled.
 - ii. Be healthy, free of pests and disease, and well-formed.
 - iii. Be accompanied by inspection certificates required by law, certifying that plants have passed inspection for plant diseases and pest infestations. Inspection certificates shall be provided to the WSU CM.

3.03 PLANT MATERIALS PLANTING

- A. Protection: Protect plants at all times during planting operations. Prevent roots from drying out. When materials detrimental to plant growth are encountered, such as hardpan, rubble fill, adverse drainage conditions, or obstructions, notify the WSU CM before planting. No planting shall be done during freezing weather or similarly unfavorable planting conditions.
- B. Water Infiltration: Flood 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; immediately notify the WSU CM to determine alternatives.
- C. Handling Plants Supplied as Balled and Burlap (B&B) Stock:
 - 1. Installation:
 - i. Install plants so that the root flair is at or slightly above grade. Remove burlap, twine, wire supports, baskets, and other debris from the planting pit. Dispose legally off campus.
 - ii. Handle plants by root ball only and so as to prevent damage to roots or disturbance of root ball. Plant without delay.
 - 2. Backfill and Watering:
 - i. Topsoil taken from the planting pits shall be used as backfill for the plant material.

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- ii. Planting pit diameter shall be at least twice that of the root ball.
- iii. During backfilling, gently work topsoil in and around the root ball, filling all voids, and moistening soil as needed. Topsoil shall be in firm contact with entire top outer edge of root ball. When backfill is complete, water slowly and thoroughly until the root ball and backfill are saturated. If settling occurs in backfill, add topsoil to bring back to finish grade without delay.

3.04 LANDSCAPING SUBSTANTIAL COMPLETION

- A. To determine Landscaping Substantial Completion, the Contractor, LA Designer, WSU CM, WSU Grounds staff, and WSU LA staff shall conduct an inspection of all Landscape Architecture elements. At completion of this inspection:
 - 1. The WSU CM shall prepare a Punch List of all additional landscape requirements.
 - 2. The Punch List shall include a list of all plants on watch list or designated for replacement along with scheduling of replacements.
- B. The WSU CM shall publish in writing the date of Landscaping Substantial completion. The date of Landscape Substantial Completion shall:
 - 1. Initiate the 90/120-day Maintenance Period by Contractor.
 - 2. Initiate the start of the one-year warranty period for all plants (except trees).
 - 3. Determine which Warranty Growing Seasons will constitute the two-season warranty period for trees (see Section 32 93 43 “Trees”).

3.05 90/120-DAY MAINTENANCE PERIOD

- A. Landscaping (General): The Contractor shall continue to be responsible for a period of 90 days after Landscaping Substantial Completion for all landscaping elements (except for grass-seeded areas and hydroseed; see below).
- B. Grasses (Seed and Hydroseed): The Contractor shall continue to be responsible for grass-seeded and hydroseed areas for a period of 120 days after Landscaping Substantial Completion.

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- C. The Contractor shall supply all labor, supervision, materials, and equipment to meet all specifications during this period. After completion of the Maintenance Period, the Contractor shall turn over management of the site to WSU Grounds, using a written agreement coordinated through the WSU CM.

3.06 OPERATIONS AND MAINTENANCE (O&M) MANUALS

- A. Not later than 30 days after date of Landscaping Substantial Completion, the Contractor shall submit maintenance documents for all constructed elements, including O&M manuals, to the WSU CM for approval. At a minimum, these documents shall specify:
 - 1. The end date the 90/120-day Maintenance Period and handover of landscaping maintenance to Grounds staff.
 - 2. The scheduled dates for the one-year and two-year Warranty Final Inspections.
 - 3. O&M requirements for all electrical, mechanical, and stormwater management systems.
 - 4. Irrigation schedule

3.07 WARRANTY

- A. Warranty Periods: Warranty on all landscape elements and plants (except trees), shall be one year from date of Landscaping Substantial Completion. For tree warranties, see Section 32 93 43 “Trees”.
- B. Replacement of Plant Stocks during Warranty Period:
 - 1. Replacement shall be as soon as general site and seasonal conditions allow.
 - 2. Removed plants shall be replaced using direct replacement. All certifications, standards and grades that apply to original plant stocks shall apply to replacement plant stocks.
 - 3. Scheduled inspections shall be conducted by the Contractor, WSU CM, WSU Grounds Staff, WSU LA Staff, and in select cases the LA Designer. WSU CM shall schedule and coordinate inspections.
 - i. Regular Ongoing Inspections: The WSU CM and Grounds Staff shall regularly conduct unscheduled inspections of the project site

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throughout the 90/120-day Maintenance Period and the one and two-year Warranty Periods.

- ii. First Year: A scheduled inspection of all Landscape Architecture elements shall be conducted prior to one year 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.
- iii. Second Year: 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.

PART 4 - QUALITY (NOT APPLICABLE)

PART 5 - WARRANTY (NOT APPLICABLE)

PART 6 - TRAINING REQUIREMENTS (NOT APPLICABLE)

PART 7 - STOCK AND SPARE PARTS (NOT APPLICABLE)

PART 8 - PRE-INSTALL REQUIREMENTS (NOT APPLICABLE)

PART 9 - SPECIAL INSPECTIONS (NOT APPLICABLE)

PART 10 - SHOP DRAWINGS (NOT APPLICABLE)

PART 11 - SPECIAL INSTRUCTIONS OR PROVISIONS (NOT APPLICABLE)

END OF SECTION