

**SECTION 02930 – LANDSCAPING
CONSTRUCTION STANDARD**

LANDSCAPING

PART 1: GENERAL

1.01 Scope of Standard

- A. This standard provides general guidance concerning the specific preferences of the University of Texas at Austin for bed preparation, plant pits, pruning, planting, supplements, backfill, wrapping, staking and guying, protection, edging, and maintenance.
- B. UT recognizes that project conditions and requirements vary, thus precluding the absolute adherence to the items identified herein in all cases. However, unless there is adequate written justification, it is expected that these guidelines shall govern the design and specifications for UT projects.

1.02 Quality Control

- A. Guidelines for pruning/trimming trees are those as per Arborist Standards Class II. Prior to the application of any tool to a tree, the tool must be sterilized. The tool does not need to be sterilized again until immediately prior to use on another tree.

1.03 General Requirements

- A. Tree Maintenance: It is preferred that there be no trenching within the tree drip line area. However, if necessary to do so, all trenching must be by hand, not by machine. Roots 1” and larger must not be disturbed. If the larger roots are in the path of the trench, route the trench beneath the root.
- B. Planting Maintenance: Specify that contractor shall maintain all existing plantings that are to remain throughout the duration of construction. If there are existing mature trees within the construction limits, prior to construction start, an arborist shall set a maintenance schedule, to supervise trimming of major branches, and to recommend additional maintenance during dry spells.
- C. Substantial Completion: Specify that contractor shall maintain all new plantings and lawn areas until substantial completion acceptance. This shall include weeding, mowing, and trimming, as needed to maintain new landscape work in a neat condition.

1.04 Trees and Natural Area Protection

- A. All trees and natural areas to be preserved shall be protected during construction with chain link fence. Location of fences and installation details shall be included in construction documents.

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- B. Protective fences shall be installed prior to the start of any site preparation work (clearing, grubbing or grading), and shall be maintained throughout all phased of the construction project.
- C. Erosion and sedimentation control barriers shall be installed or maintained in a manner, which does not result in soil build-up within tree drip lines.
- D. Protective fences shall surround trees or groups of trees and shall be located at the outermost limit of branches (drip line), or natural areas. Protective fences shall follow the limit of construction line, in order to prevent the following:
 - 1. Soil compaction in the root zone resulting from vehicular traffic or storage equipment or materials.
 - 2. Root zone disturbances due to grade changes (greater than 6 inches cut or fill), or trenching not reviewed and authorized.
 - 3. Wounds to exposed roots, trunk or limbs by mechanical equipment.
 - 4. Other activities detrimental to trees such as chemical storage cement truck cleaning, and fires.
- E. Exceptions to installing fences at tree drip lines may be permitted in the following cases:
 - 1. Where there is to be an approved grade change, impermeable paving surface, tree well, or other such site development, erect the fence approximately 2 to 4 feet behind the area in question;
 - 2. Where permeable paving is to be installed within a tree's drip line, erect the fence at the outer limits of the permeable paving area prior to grading to minimize root damage.
 - 3. Where trees are close to proposed building consult a licensed Arborist and the University Project Representative for the best protection procedures.
 - 4. Where there are severe space constraints due to tract size, or other special requirements, contact the University Project Representative and consult a licensed Arborist to discuss alternatives.
 - 5. For protection of natural areas, no exceptions to installing fences at the limit of construction line shall be permitted.
- F. Where any of the above exceptions result in a fence being closer than 4 feet to a trunk, protect the trunk with strapped on planking to a height of 8 feet (or to the limits of the lower branching) in addition to the fencing provided.
- G. Trees approved for removal shall be removed in a manner, which does not impact trees to be preserved.

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- H. Any roots exposed by construction activity shall be pruned flush with the soil. Backfill root areas with good quality topsoil as soon as possible. If exposed root areas are not back filled within 2 days, cover them with organic material in a manner, which reduces soil temperature and minimizes water loss due to evaporation.
- I. Any trenching required for the installation of the landscape irrigation shall be placed as far from existing tree trunks as possible.
- J. No landscape topsoil dressing greater than 4 inches shall be permitted within the drip line of trees. No soil is permitted on the root flare of any trees.
- K. Pruning to provide clearance for structures, vehicle traffic and equipment shall take place before damage occurs (ripping of branches, etc.).
- L. All tree work shall be accomplished by a licensed Arborist. All pruning shall be done according to recognized, approved standards of the industry (reference the National Arborist Association Pruning Standards for Shade Trees).
- M. Prior to excavation or grade cutting within tree drip lines, make a clean cut between the disturbed and undisturbed root zones with a rock saw or similar equipment to minimize damage to remaining roots.
- N. Where any of the above exceptions to fencing at a tree's drip line results in areas of unprotected root zones (under drip lines) and heavy traffic or material storage is expected, cover those areas with 6 inches of organic mulch to minimize compaction. The depth of 6 inches of organic mulch shall be maintained through the completion of the project.
- O. All grading within protected root zone areas shall be done by hand or with small equipment to minimize root damage.
- P. Trees shall be maintained by watering deeply once a week during hot dry weather. Tree crowns shall be sprayed with water periodically to reduce dust accumulation on the leaves.
- Q. No dumping of waste materials shall occur under the drip lines of trees. This includes washing of concrete trucks.

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PART 2: PRODUCTS

2.01 Landscape Products

- A. Bed Preparation/Pit Planting: Specify sterilized planting mix that is high in organic content and well-draining. Continuous planting beds shall receive a weed killer application of EPTAM prior to planting. Excavate beds to 4” deeper than the root ball and excavate planting pits to 8” deeper and 12” larger diameter than the root ball.
- B. Topsoil: Provide 4” layer of topsoil at all new lawn areas. Where additional topsoil is required, topsoil shall be secured from an approved off-site location. It shall be fertile, friable, natural loam, free of stone, clods of hard earth, plant material, or other extraneous matter.
- C. Plantings: Specify container-grown plantings only, unless otherwise approved by University Project Representative. Plants shall be first quality, healthy, vigorous and densely foliated. Plants with diseases, pests or other objectionable characteristics shall be rejected. No trees shall be lifted by the trunk or be bound at anytime that causes damage to the trunk or branches.
- D. Mulch: All planting beds and planting pits shall be covered by a continuous 3” deep layer of shredded cypress bark furnished in marked bags.
- E. Supplements: Specify that fertilizer shall be supplied as recommended by a soil analysis which the contractor shall be required to obtain prior to the start of planting operations. Also, all new trees and shrubs shall receive an application of root stimulator at time of planting.
- F. Backfill: Use only approved soil mix backfilled in maximum six-inch lifts. Wet each lift installed.
- G. Wrapping: Specify tree trunk wrapping only if necessary to protect younger tree trunk bark.
- H. Staking/Guying: Specify only if needed. If used, do not create trip hazards with guywires.
- I. Edging: Standard is 1/4” thick painted steel edging, in a green color, by Ryerson, or equal as approved by University Project Representative.
- J. PLANTS: The list of plants below has been altered from the general plant palette provided in the Master Plan. Some plants have been added and others have been removed. The plants removed do not do well in this area.

We have not divided the campus into sections with different plant palettes, because we believe this would further divide the campus rather than tie the campus together. There shall be microclimates, such as Waller Creek, on the campus that would limit the plant

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palette in the area. Many plants could be used around Waller Creek that could not be used any place else on the campus due to the microclimate of the creek.

Providing a separate plant palette for different sections of the campus presents some problems that need to be addressed. An example of one problem would be the Forty Acres Plant Palette included in the Campus Master Plan's Architectural Design Guidelines. The selection of shrubs for this area is very limited and some of the plants are unacceptable. Yuccas and Prickly Pear cactus are not going to be well accepted, and another plant Texas Lantana is a nice plant but it shall be classified as a perennial. Remove these plants from the shrub list and we have only four selections to choose for use on the forty acres.

The groundplane plant list includes a large number of plants, some plants have been added to the list and there are others that could be added. This list contains a large number of plants that could only be used near moist shady areas such as Waller Creek. The list also contains a large number of plants that could only be used as wild flowers for rough low maintenance areas; there is very limited area on the campus for wild flowers. One plant on the list must be removed due to its persistence as a weed, as implied by its name, Ironweed *Vernonia baldwinii*.

The general plant palette list shall not be considered an all-inclusive list. Plants have been added to the list provided, but there are more than likely some that have been missed that could be used on the campus. In addition for the future there are many plants being developed that may be well suited for the campus.

Turf is included in the groundplane list, but what is meant by Turf on the list is not clear. The only turf plant listed is Buffalo grass. There are some areas on campus that Buffalo grass could be used, but with all the buildings and trees on the campus Buffalo grass effectiveness would be very marginal. If Buffalo grass were the only grass used on campus there would be very large areas, which would need to be planted with other ground covers. Currently on the market are some newer varieties of Zoysia grass that are drought tolerant, and tolerate some shade while still being a fast growing grass so they could tolerate some foot traffic. 'El Toro' Zoysia grass has been tested by Texas A&M and has shown better drought tolerance than Buffalo grass. There are several other varieties currently being developed and tested that show promise for the future. If we do not address the use of some turf in shaded areas then all shaded areas shall by necessity then be planted with shrubs or ground covers. The University Community uses the shaded areas for relief from the summer heat and we feel that this is something that shall continue.

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OVERSTORY TREES

Cedar Elm	<i>Ulmus crassifolia</i>
Live Oak	<i>Quercus virginiana</i>
Pecan	<i>Carya illinoensis</i>
Texas Red Oak	<i>Quercus texana</i>
Mexican Buckeye	<i>Ungnadia speciosa</i>
Chinquapin Oak	<i>Quercus muhlenbergii</i>
Bur Oak	<i>Quercus macrocarpa</i>
American Elm	<i>Ulmus americana</i>
Arizona Cypress	<i>Cupressus glabra</i>
Bald Cypress	<i>Taxodium distichum</i>
Lacebark Elm	<i>Ulmus parvifolia</i>
Monterey Oak	<i>Quercus</i>
Big Tooth Maple	<i>Acer grandidentatum</i>
Deodar Cedar	<i>Cedrus deodara</i>

UNDERSTORY TREES

Carolina Buckthorn	<i>Rhamnus caroliniana</i>
Cherry Laurel	<i>Prunus caroliniana</i>
Desert Shallow	<i>Chilopsis linearis</i>
Eve's Necklace	<i>Sophora affinis</i>
Honey Mesquite	<i>Prosopis glandulosa</i>
Lacey Oak	<i>Quercus glaucooides</i>
Mexican Buckeye	<i>Ungnadia speciosa</i>
Mexican Plum	<i>Prunus mexicana</i>
Possumhaw	<i>Ilex decidua</i>
Prairie Flameleaf Sumac	<i>Rhus lanceolata</i>
Texas Redbud	<i>Cercis canadensis var. texensis</i>
Rusty Blackhaw Viburn.	<i>Viburnum rufidulum</i>
Texas Pistachio	<i>Pistacia texana</i>
Texas Smoke Tree	<i>Cotinus obovatus</i>
Texas Mountain Laurel	<i>Sophora secundiflora</i>
Yaupon Holly	<i>Ilex vomitoria</i>
Wax Myrtle	<i>Myrica cerifera</i>
Crepe Myrtle	<i>Lagerstromia indica</i>
Loquat	<i>Eriobotrya japonica</i>
Callery Pear	<i>Pyrus calleryana var. aristocrat</i>
Chaste Tree	<i>Vitex agnus-castus</i>
Kidneywood	<i>Eysenhardtia texana</i>
Persimmon Tree	<i>Diospyros virginiana</i>
Scarlet Buckeye	<i>Aesculus pavia</i>
Mexican Redbud	<i>Cercis canadensis mexicana</i>
Texas Persimmon	<i>Diospyros texana</i>
Yaupon Holly	<i>Ilex vomitoria</i>

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SHRUBS

Agarito	<i>Berberis trifoliolata</i>
American Beautyberry	<i>Callicarpa americana</i>
Autumn Sage	<i>Salvia greggii</i>
Aromatic Sumac	<i>Rhus aromatica</i>
Purple (Texas) Sage	<i>Leucophyllum frutescens</i>
Coralberry (Limited use to creek area)	<i>Symphoricarpos srbiculatus</i>
Dwarf Yaupon	<i>Ilex vomitoris nana</i>
Evergreen Sumac	<i>Rhus virens</i>
Flame Acanthus	<i>Anisacanthus quadrifidus var.</i> <i>wrightii</i>
Mountain Sage	<i>Salvia regla</i>
Nandina	<i>Nandina domestica</i>
Rosemary	<i>Rosmarinus officinalis</i>
Texas Barberry	<i>Berberis swaseyi</i>
Glossy Abelia	<i>Abelia grandiflora var. Edward</i> <i>Goucher</i>
Dwarf Abelia	<i>Abelia grandiflora var. prostrata</i>
Boxwood	<i>Buxus microphylla japonica</i>
Bottlebrush	<i>Callistemon citrinus</i>
Grey Cotoneaster	<i>Cotoneaster glaucophyllus</i>
Rock Cotoneaster	<i>Cotoneaster horizontalis</i>
Eleagnus	<i>Eleagnus pungens var. ebbengi</i>
Chinese Holly	<i>Ilex cornuda</i>
Burford Holly	<i>Ilex cornuda var. burford</i>
Dwarf Burford Holly	<i>Ilex cornuda var. burfordii nana</i>
Carissa Holly	<i>Ilex cornuda var. carissa</i>
Dwarf Chinese Holly	<i>Ilex cornuda var. rotunda nana</i>
Dwarf Crepe Myrtle	<i>Lagerstroemia indica</i>
Pomegranate	<i>Punica granatum</i>
Spirea	<i>Spirea sp.</i>
Pendulous Yucca	<i>Yucca recurvifolia</i>
Twisted-leaf Yucca	<i>Yucca rupicola</i>
Pavonia	<i>Pavonia lasiopetala</i>
True Lavendar	<i>Lavendula officinalis</i>
Primrose Jasmine	<i>Jasmine mesnyi</i>
Red Yucca	<i>Hesperaloe parviflora</i>
Arrow Wood	<i>Viburnum dentatum</i>
Black Dalea	<i>Dalea frutescens</i>
Mahonia	<i>Mahonia spp.</i>

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GROUNDPLANE: PERENNIALS AND GROUNDCOVERS

Asiatic Jasmine	<i>Trachelospermum asiaticum</i>
Black Sampson	<i>Echinacea augustifolia</i>
Blue Boneset	<i>Eupatorium coelestinum</i>
Blackfoot Daisy	<i>Melampodium leucanthum</i>
Calylophus	<i>Calylophus</i>
Cedar Sage	<i>Salvia roemeriana</i>
Cardinal Flower	<i>Lobelia cardinalis</i>
Canyon Senna	<i>Cassia wislizenii</i>
Coral Honeysuckle	<i>Lonicera sempervirens</i>
Cutleaf Daisy	<i>Engelmannia pinnatifida</i>
Four Nerve Daisy	<i>Hymenoxys scaposa</i>
Fragrant Phlox	<i>Phlox pilosa</i>
Greenthread	<i>Thelesperma filifolium</i>
Horseherb	<i>Calyptocarpus vialis</i>
Inland Seoats	<i>Chasmanthium latifolium</i>
Indian Blanket	<i>Gallardia pulchella</i>
Lanceleaf Coreopsis	<i>Coreopsis lanceolata</i>
Little Bluestem Grass	<i>Schizachyruim scoparium</i>
Mealy Blue Sage	<i>Salvia farinacea</i>
Purple Coneflower	<i>Echinacea purpurea</i>
Spiderwort	<i>Tradescantia</i>
Violets	<i>Viola missouriensis</i>
Virginia Creeper	<i>Parthenocissus quinquefolia</i>
Wild Blue Asters	<i>Aster spp.</i>
Wild Red Columbine	<i>Aquilegia canadensis</i>
Wood Fern	<i>Thelypteris kunthii</i>
Wild Foxglove	<i>Penstemon cobaea</i>
Winecup	<i>Callirhoe involucrata</i>
Yellow Columbine	<i>Aquilegia spp.</i>
Zexmania	<i>Wedelia hispida</i>
Lowfast Cotoneaster	<i>Cotoneaster dammeri var. lowfast</i>
Carolina Jassamine	<i>Gelsemium sempervirens</i>
Grey Santolina	<i>Santolina</i>
<i>chamaecyparissus</i>	
Green Santolina	<i>Santolina virens</i>
Bigleaf Periwinkle	<i>Vinca major</i>
Coral Vine	<i>Antigonon leptopus</i>
Trumpetcreeper	<i>Campsis radicans</i>
Liriope	<i>Liriope muscare</i>
Mondo Grass	<i>Ophiopogon japonicum</i>
Confederate Jasmine	<i>Trachelospermum jasminoides</i>
(protected area)	
Lantana	<i>Lantana spp.</i>
Artemesia	<i>Artemesia ludoviciana</i>
Daylillies	<i>Hemerocallis spp.</i>

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Cross Vine	<i>Anisostichus capreolata</i>
Texas Wisteria	<i>Wisteria sinensis</i>
Daffodils	<i>Narcissus spp.</i>
Iris	<i>Iris spp.</i>
Yarrow	<i>Achillea millefolium</i>
Bear Grass	<i>Nolina texana</i>
Big Muhly	<i>Muhlenbergia lindheimeri</i>
Gulf Muhly	<i>Muhlenbergia capillaris</i>
Maiden Grass	<i>Miscanthus sinensis var. gracellimus</i>

PART 3: EXECUTION

- 3.01 All landscaping activities shall be performed in a manner that reduces the discharge of pollutants to the storm sewer system. Applicators of fertilizer, pesticides, and herbicides must be trained and appropriately, certified. Application of all fertilizer, pesticides, and herbicides shall be in a manner that minimizes their application to impervious cover and unvegetated areas. Storage shall be in rainfall protected location within secondary containment. Unused fertilizer, pesticides, and herbicides and their residues and containers shall be properly disposed of according to applicable state and federal regulations. Spills shall be cleaned up immediately and disposed of properly.

END OF STANDARD 02930