



WMU Tree Care Plan and Procedures

PURPOSE

The purpose of the Western Michigan University Tree Care Plan and Procedures is to define protocols and give guidance and direction as to the best practices for any developments affecting woody plants on campus and for selecting, planting and caring for trees being added to the horticultural assets of the WMU campus. This plan will be used by the Landscape Services Department, Planning, Space Management and Capital Projects Department and the WMU Tree Campus Higher Education Subcommittee in executing any of the landscape projects on University properties. The plan and procedures outlined below are in line with other major university campuses around the country and adherence to them will help to ensure we maintain a safe campus environment while protecting the natural heritage of the State of Michigan at the same time.

AUTHORITY

Enforcement of the Tree Care Plan and Procedures and best management practices involving existing and future campus plantings and landscapes resides with the associate vice president's office of facilities management. Additional professional staff involved with the implementation and compliance of the Tree Care Plan include Planning, Construction, Landscape Services, and any associated outside professionals and contractors.

WMU TREE CAMPUS HIGHER EDUCATION SUB-COMMITTEE

The committee is comprised of community members, as well as, WMU faculty, staff and students from several academic and operational departments across campus. The committee meets as a whole at least once a year. A subcommittee appointed by the Landscape Services Director includes members of WMU faculty, students and staff meet more regularly to discuss ongoing projects.

PROTOCOL FOR CAMPUS DEVELOPMENT PROJECTS AFFECTING THE LANDSCAPE (SEE ATTACHMENT AT END OF DOCUMENT)

1. Prior to site design, the Director of Landscape Services will appoint a subcommittee of the WMU Tree Campus Higher Education Subcommittee. This subcommittee must be consulted to ensure that campus planning activities are aligned with the Tree Care Plan and Procedures.
2. Prior to a landscape architect starting a landscape design, the subcommittee will discuss WMU landscape standards and site landscape concepts with the landscape architect.
3. Prior to the start of construction, the subcommittee will develop strategies for on-site woody plants. This will include determining a monetary valuation of trees and initiating a dialogue with the goal of maximizing the value of the campus landscape and minimizing the costs of construction. The amount of the valuation will be placed into the designated tree fund.
4. Prior to the start of construction, the subcommittee will review plans and develop tree protection strategies. Strategies will include but not limited to, relocating, timber harvesting, repurposing, grinding or chipping.
5. During the project, the subcommittee will monitor and oversee adherence to planting specifications and tree protection strategies.



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6. After construction, a representative from the subcommittee will be involved in the final project walk-through and will monitor the plantings covered throughout the warranty period. Plantings that do not meet the Landscape Services specifications throughout the contractor's warranty period will have to be replaced per the contract.

WMU TREE FUND

The purpose of this fund is to manage an equitable value of trees on WMU's campus that are impacted by site modifications, changes and tree replacements and enhancements.

The Director of Landscape Services will manage this fund. Advice will be provided by Landscape Services Department's professional staff. Members of the WMU Tree Campus Higher Education Subcommittee will be advised of use of the funds.

Landscape Services will maintain a GIS map and dataset of WMU trees. Recognizing that resources may not allow an inventory of all campus trees, information for the most strategic areas and/or construction sites will be inventoried. Landscape Services will establish a current value of all campus trees using the most up to date edition of *Plant Appraisal*, developed by the Council of Tree and Landscape Appraisers and *The Michigan Tree Evaluation Supplement*.

If, and when, a project site plan impacts campus trees, the subcommittee and the campus planning staff will review the impacted trees and their respective value. Attempts will be made to adjust the site plan so the trees, and the affected value, will be minimized. Relocation of trees and care for transplanted trees will also be considered. If any tree must be removed, after attempts to save or modify the site have been made, then the project budget will be responsible to move the value of the tree(s) into the fund.

If the trees are damaged during the construction process, then an equivalent value is transferred into the fund.

If a particular project contributed to the fund, the project may have access to those contributed funds to pay for trees that relate to the project. Project funding will not exceed the amount contributed to the fund. Use of the fund for a construction project will not exceed the valuation of trees removed related to the project unless mutually approved by the Project Manager and Director of Landscape.

If the fund has a positive balance, the professional Landscape Services staff, in consultation with the WMU Tree Campus Higher Education Subcommittee will use these funds to meet the intention of the WMU Landscape Master Plan and this document.

TREE CARE SPECIFICATIONS

Plant Selection: Specific plant selection is made by the professional staff of WMU's Landscape Services Department. Plant material provided to WMU will be true to name as confirmed by [Manual of Woody Landscape Plants](#), Michael A. Dirr, Sixth Edition, 2009. Plant material should be from USDA hardiness Zone 5.

The key goal of tree selection is diversity. Trees are selected, both exotic and native, based on site conditions. Locations are selected after consulting the Campus Master Plan. Invasive or problematic species are strongly discouraged. The department consults with the Michigan Invasive Plant Council for information on invasive plants. The department also reviews contracted landscape design proposals and recommends changes as to tree selection and location when necessary.

All shade or street trees will have comparatively straight trunks, well developed leaders, tops, and roots and will be characteristic of the species, cultivar or variety. They will exhibit evidence of proper nursery



pruning practices, have acceptable balance between top and root and be free of the above objectionable features that may affect the future form and beauty of the tree. The minimum acceptable shade tree caliper will be 3" as measured 6" above ground. Ball size will conform to ANSI Z60.1 specification.

Planting: Trees, shrubs and planting beds shall be planted after final grades are established and prior to planting/seeding of lawns, unless otherwise acceptable to the Director of Landscape Services, or his/her designee. If planting of trees, shrubs or planting beds occurs after lawn work is completed, lawn areas shall be protected and any damage done to lawn areas as a result of planting operations shall be promptly repaired.

No planting will be performed when the ground is frozen unless approved by Director of Landscape Services or his/her designee.

Balled and Burlaped (B&B) Plants:

- Set plants in planting hole to proper grade and position and face plants to give the best appearance, relationship with other plants and relationship with adjacent structures. Plants shall be set on undisturbed soil, plumb and in the center of the excavated planting hole.
- Remove wire baskets to a depth of one-half (1/2) the depth of the ball and remove burlap and rope from the top of the ball.
- Place planting mixture around root ball to a depth of one-half (1/2) the height of the root ball. Settle the soil and fill voids around the root ball by watering. Remove burlap and ties to a depth of 1/2 the depth of the ball.
- After the water has been absorbed, fill the remainder of the planting pit, up to grade, with planting mixture. Water again after placing final layer of backfill and form a watering saucer from planting soil mixture when the plant is isolated.
- To provide natural drainage in heavy or compacted soils, root ball must be elevated slightly above grade and planting mixture used to create a mound around the root ball.

Container-grown plant material:

- Container-grown stock will be planted as above specified for B&B plants. Remove containers before planting in a manner which will not damage the root ball.
- Vertically severing or slicing the sides of the root mass will not be necessary as pot bound container material will not be accepted.

Bare-root plant material:

- Sever damaged roots with a clean, sharp pruner before planting.
- Bare-root stock will be planted so that the roots are arranged in a natural position and planting mixture carefully worked-in among roots. Settle the soil and fill voids around the roots by watering.
- Form a watering basin from planting mixture.

Trees Planted with a Tree Spade

- Sever damaged roots with a clean, sharp pruner before planting.
- In heavy soils, the sides of holes dug with a tree spade shall be scarified with a shovel or spade to encourage root penetration into surrounding soil.
- The area outside the root plug and within an area three-times (3X) the plug diameter will be tilled and to a depth of 8". A layer of compost, 3"-5" in depth will be evenly spread over the planting site, 3x the root plug diameter, and tilled a second time as above. Care will be taken not to till the tree-spaded root plug.



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- Settle the soil and fill voids around the roots by watering thoroughly.
- Form a watering saucer from planting soil mixture around the perimeter of the tilled planting site (3x the root plug diameter).

Mulching: Mulching shall take place within 48 hours of plant installation. Trees and shrubs will be mulched to a depth of 3" over each individual planting site and will not be placed within 6" of tree trunks. Keep mulch off sidewalks, curbs, light standards and other structures.

Wrapping: Unless specified by the Director of Landscape Services or their designee, the trunks of deciduous trees shall not be wrapped. If the Director of Landscape Services or their designee, specifies that individual trees need to be wrapped, the material used will be waterproofed crepe paper not less than 2 ½" wide, made up of two layers of crepe craft paper weighing not less than 30 pounds per ream and cemented together with asphalt. When wrapping, begin at the base of the tree and extend wrap up to the first lateral branches. The wrap shall be applied in a spiral manner with an overlap of one-half the width of the paper. The specified twine shall be used to hold wrap in place and will only be tied tightly enough to keep the paper from sliding down the trunk.

Twine will be secured both at the top and bottom and at 18" maximum intervals in between.

Staking: In general, trees are not staked if their soil ball is firm. The moving of the stem in the wind makes for a stronger tree. If guying is necessary, non-abrasive strapping is used, so as not to constrict the stem. Guying remains on the tree for 12 to 18 months and any wires are flagged for safety.

Pruning: Campus trees are maintained by certified arborists. The pruning techniques employed include natural target pruning as developed by the late Dr. Alex Shigo, and structural pruning, as developed by Dr. Ed Gilman. Trees are generally pruned on a three to four-year cycle with damaged or pre-determined hazard trees taking priority.

Transplanting: When necessary, due to construction, trees are moved to new locations. The WMU Landscape Services department's arborists are responsible for site selection and method of transplanting. Tree spades and balled & burlaped are the preferred methods of moving trees.

Fertilizing: The WMU arborists refrain from using synthetic fertilizers for trees. Soil fertility is improved by the breakdown of mulch, inoculation with mycorrhiza fungi and organic sources. Individual nutrients are added, by soil or trunk injection, if shown by soil testing to be deficient. WMU Landscape Services uses ANSI A 300 (Part 2) and the best management practices on tree and shrub fertilization (International Society of Arboriculture, ISA) as guides.

Storm Management and Hazard Tree Assessment: In the event of a storm or condition that results in fallen trees and tree damage, the first line of defense are the public safety personnel who patrol the campus 24 hours/day, seven days a week. When damaged trees are discovered, the Public Safety Department contacts the Director of Landscape Services or subordinate personnel who, in turn, assess the situation and decide what landscape personnel and equipment are required. The WMU staff arborists are responsible for assessing the safety of the situation and removal of the trees to alleviate hazards and clear roads and walks.

The Landscape Services department's certified arborists are responsible for assessing campus trees for hazard potential. The arborists use techniques and equipment, both old and new (sounding and resistograph), to evaluate trees. They also use visual tree assessment techniques as developed by leading researchers.

TREE PROTECTION PROCEDURES



WMU Design Guidelines

The Department of Landscape Services has developed concise guidelines to protect our campus landscape and accommodate the work of the University.

Damage to WMU-owned trees, shrubs, and other plant material due to contractor negligence or accident shall be repaired only by the staff of WMU Landscape Services Department, or their designated contractor. Landscape Services shall remove and replace any trees, shrubs, and other plant material determined to be excessively damaged due to prohibited practices. The costs of all such repairs, removals, replacements, and an amount of value lost will be the liability of the contractor.

The following specific responsibilities are required of the contractor when marked:

- To protect the immediate portion of tree root zones, NO construction equipment or materials; sand, soil, gravel, or any other materials shall be placed, parked, or stored on the surface of any unpaved areas within the radius of one and a half times the drip line (outermost reach of branches referred to as protected zone) of trees. NO chemicals, diluted residual product, or petroleum products shall be deposited within the protected zones of trees.
- Tree protection barricades shall be erected to define the protected zones (see attached tree protection diagram). All unpaved area within the zones of each tree in the construction site shall be fenced. The fencing shall be installed by Landscape Services or contractor as specified prior to set-up for construction.
- It is understood that the proximity of a tree to a worksite may require temporary access to a protected zone. A temporary path may be constructed in these cases with prior approval from the Director of Landscape Services, or their designee.
- To preserve viable root systems and maintain structural stability, it is required that the contractor bore or tunnel beneath the root systems of trees. Open-cut excavating is allowed only up to the distance from various size trees, as listed below. You must bore or tunnel from trench to trench below the minimum depth indicated for the tree size. The surface area and subsoil directly adjacent to trees shall not be disturbed as follows:

Open-Cut Trenching and Boring Specs

Tree Size <i>(diameter/inches)</i>	Minimum Undisturbed Radius <i>(measured from face of trunk)</i>	Minimum Depth of Tunnel/Bore
less than 3"	3 feet	3 feet
3" through 8"	8 feet	3 feet
8" through 14"	14 feet	4 feet
larger than 14"	20 feet	4 feet

- A pre-construction site walk-thru will be scheduled with the Director of Landscape Services, or their designee and contractor prior to any construction being done. This meeting will include the site construction superintendent and a representative of WMU Landscape Services.
- Care shall be taken not to damage tree trunks and branches. The WMU Landscape Services Department shall be contacted at least three (3) business days prior to the set-up for any construction to discuss problems of overhanging branches which may be damaged.
- All excavation in the protected zone shall be backfilled only with clean, viable soil. If possible, native soil from the site should be returned. If not possible, soil returned should match existing soil profile. NO concrete, slurry, gravel, stone, sand, or other such materials shall be used for backfill. Irrigate backfilled excavations to settle material. Restoration shall be to original grade, unless otherwise specified.



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- Contractor shall immediately contact Director of Landscape Services, or his/her designee, should protected plants be compromised in violation of agreed upon fencing and limits. Failure to communicate promptly could result in 100% damage assessment of fines to the contractor.

GOALS AND TARGETS

WMU Landscape Services will be building on our tree inventory database by adding monetary values and hazard classifications to trees on campus. The department will also list highly sensitive areas on campus that contain trees of high historic value. These areas will be mapped and used to guide activities that may impact the trees and their relevance to campus.

Landscape Services is developing a Landscape Services Master Plan coordinated with the Western Michigan University Campus Master Plan. The purpose of the Landscape Services Master Plan is to provide guidance for future campus landscape planning and design which will ultimately enhance the quality of life on campus and its communities, increase the sustainability and ecological health of the campus landscape, and create a defined image for Western Michigan University. The plan outlines goals such as managing campus woodlots for ecological health, increasing sustainability of campus by choosing plants/trees which require less maintenance and using more efficient technology, and choosing native species when feasible.

TREE DAMAGE ASSESSMENT

The Landscape Services Department employs certified arborists charged with the responsibility of assessing tree damage. Tree value is determined by current market value per 1" DBH. Where applicable, large trees are valued using the most current edition for *Plant Appraisal*, developed by The Council of Tree and Landscape Appraisers and *The Michigan Tree Evaluation Supplement*.

PROHIBITED PRACTICES

Our guidelines were developed by the arborists and are part of our landscape specifications sent out to landscape contractors bidding on University projects.

“**Prohibited Practices**” by contractor shall include:

- Breaking of branches, scraping of bark, or unauthorized cutting
- Nailing or bolting into plants; use of plants as temporary support (i.e., cables)
- Chaining, bolting, or cabling equipment to trees
- Unauthorized filling, excavating, trenching, or auguring within protected zone
- Compaction/driving over the protected zone
- Storage of any materials or vehicles within the protected zone
- Dumping of construction waste or material (including liquids)
- Unauthorized removal or relocation of woody plants
- Execution or pre-emption of “Landscape Services arborist responsibilities”
- Removal of tree protection barricades or construction fencing prior to completion of project

DEFINITIONS OF TERMINOLOGY

The glossary of arboricultural terms, published by the ISA is the definitive guide we use to define tree terms. Additionally, some terms are explained in the WMU Campus Woody Plant Protection Definitions document developed by Landscape Services. Terms are defined below.



"Landscape Services Arborist Responsibilities"

- Tie-back of existing trees and shrubs
- Pruning/thinning
- Root pruning and root protection of exposed roots
- Watering of existing trees under stress
- Removal, or relocation, not specified within construction documents

These measures shall be done only by Landscape Services arborists, unless otherwise arranged, as needed to provide either preventative or remedial care to plants on a construction site.

"Construction Fencing"

NO construction work, parking of vehicles, storage of materials, or related activities shall occur within this boundary fencing. Construction fencing shall be chain link, unless otherwise agreed upon.

"Tree Protection Barricade"

Shall be defined as wood rail fencing constructed of 4"x4" posts at eight feet (8') maximum on center, and three 2"x4"(or better) wood rails; lined with at least one four foot (4') tall snow fence (or similar approved construction barrier fencing) which meets existing grade and encircles the entire area. Standard height of top rail shall be eight feet (8'); for variations, refer to site drawings. Failure to install barricades as directed may halt work and plant damage occurring within installed barricades does not absolve contractor from "damage" assessment.

"Temporary Path"

If required, shall be defined as a zone within the specified protected zone of a tree to enable temporary movement of equipment. It shall be eight to ten inches (8- 10") of wood chips as located by the Landscape Services arborist or their designee. Wood chips shall be removed immediately upon completion of work in an area; soil aeration may be required during site restoration.

COMMUNICATION STRATEGY

Landscape Services will be working with various departments to inform them of the uses for this document. The plan will be published on the WMU Landscape Services website and will be publicly available. We will also include information from this plan in our Landscape Services Specifications which will be given to contractors prior to the start of construction projects.

Approved:



AVP Facilities Management

4-18-2019
Date

All units in Facilities Management must follow the WMU Tree Care Plan and Procedures. The WMU Tree Campus Higher Education Subcommittee will provide meeting minutes and notify the Landscape Services Director immediately when there is a discrepancy.