



Appendix C-1
Protection of Plantings and Landscape Features in a Construction Zone
WMU Landscape Services

This document contains guidelines for Contractors to follow, and shall be used in conjunction with the specific instructions and details found in Appendix C-2, *Campus Woody Plant Protection Definitions*.

Damage to WMU-owned trees, shrubs, and other plant material due to contractor negligence or accident shall be repaired only by the staff the 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 and billed accordingly.

WMU Landscape Services Department shall be contacted (through the WMU Project Manager) at least three (3) business days prior to the set-up for any construction or maintenance occurring on campus grounds. All landscaped campus areas including turf should be considered **protected areas** and be treated as such.

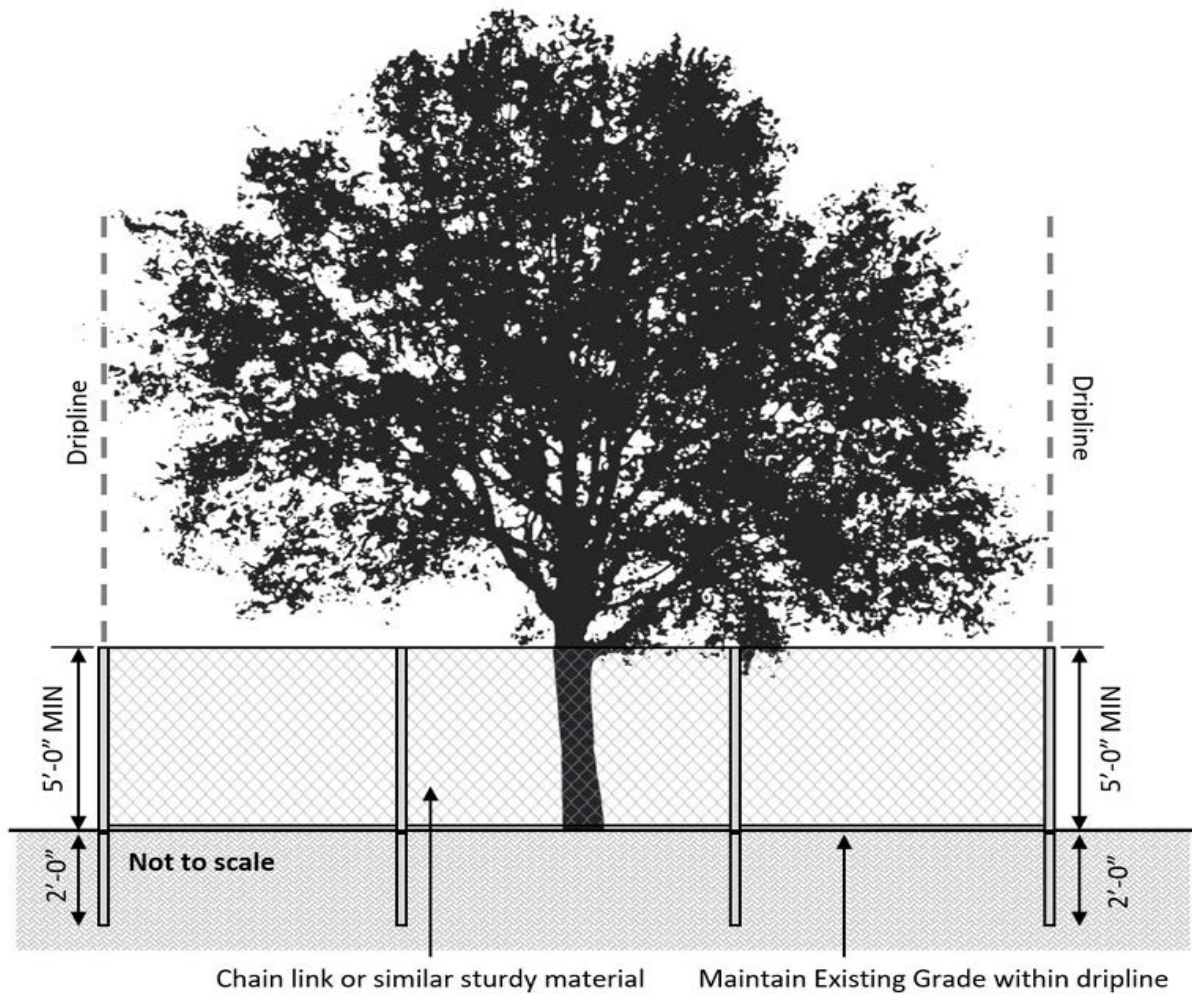
The following guidelines were developed to help you make the best choices which will do the least amount of harm to the campus environment. Vehicles on turf areas cause compaction of soils, especially around trees and plants. Once the soil is compacted, it is difficult to return to its normal condition. Trees and plants cannot grow properly, if at all, in soil that has no air space. The following specific responsibilities are required of the contractor when marked:

- Tree protection barricades and memorial garden/special interest garden barricades shall be erected to define the protected zones (see tree protection diagram below). All unpaved area within the zones of each tree and memorial gardens/special interest gardens in the construction site shall be fenced. The fencing shall be installed *prior to* set-up for construction. In addition, any trees outside the formal construction fencing that may be affected by the work shall also be evaluated and protected in kind. Contractor to contact the WMU Project Manager to assist in assessing each situation as they arise.

- 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 one and a half times the drip line (outermost reach of branches referred to as protected zone) of trees. **NO** chemicals, rinsates, or petroleum products shall be deposited within the protected zones of trees. **Practices prohibited** by WMU faculty, staff, students and/or contractors include:
 - o Breaking of branches, scraping of bark, or unauthorized cutting
 - o Nailing or bolting into plants
 - o Chaining, bolting or cabling equipment to trees
 - o Unauthorized filling, excavating, trenching or augering
 - o Compaction/driving over the protected areas
 - o Storage of any materials or vehicles within the protected areas
 - o Dumping of construction waste or material (including liquids)
 - o Unauthorized removal or relocation of woody plants



WMU Design Guidelines



- 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 with the approval of WMU Landscape Services. WMU Landscape Services should be notified to provide some form of protection against compacting the soil including but not limited to landscape mats, planking, mulch, etc. Please contact the WMU Project Manager to make arrangements prior to the work.
- 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

<u>Tree Size</u> <u>(diameter/inches)</u>	<u>Minimum Undisturbed Radius</u> <u>(measured from face of trunk)</u>	<u>Minimum Depth</u> <u>of Tunnel/Bore</u>
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



WMU Design Guidelines

- The top four (4) feet of all excavations in the protected zone shall be backfilled **only** with clean, viable soil. **NO** concrete, slurry, gravel, stone, sand, or other such materials shall be used for backfill. Flush backfilled excavations to settle material. Restoration shall be to original grade, unless otherwise specified.
- Cables, ducts, conduits, gas lines, and all other underground utilities installed in protected zones shall be placed so any topmost surface or part is a minimum depth of three (3) feet.
- A pre-construction site walk-thru will be scheduled with the Owner 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 trees, shrubs, vines, perennials and tree branches on WMU property. The WMU Landscape Services Department shall be contacted (through the WMU Project Manager) at least three (3) business days prior to the set-up for any construction to discuss problems of overhanging branches which may be damaged. The Landscape Services Project Representative shall evaluate damage and establish proportional fines up to 100% of the value, regardless of the current disposition of the plant. The replacement value for shrubs, vines and perennials shall be assessed at current market cost. The value for trees shall be assessed at the current value schedule as follows:
 - 1"-3" caliper \$120/inch*
 - 3"-6" DBH \$180/inch*
 - 6"-9" DBH \$240/inch*
 - 9"-12" DBH \$300/inch*
 - 12"-15" DBH \$420/inch*
 - 15" or more DBH \$600/inch*

*Tree value listed is approximate and will be evaluated on the Michigan Tree Evaluation Guide, Michigan Forestry & Park Association, Inc., 11th Revision, January 2011.

- Contractor shall immediately contact the WMU Project Manager should protected plants be compromised in violation of agreed upon fencing and limits. Damage to WMU-owned trees, shrubs, and other plant material due to WMU faculty, staff, students and/or Contractor negligence or accident shall be repaired or removed only by the staff of WMU Landscape Services Department, or designated Contractor. If designated Contractor is determined responsible for repairing damages, repairs must occur within fourteen (14) business days unless previously agreed upon. The costs of all such repairs, removals, replacements and an amount of value lost will be the liability of WMU faculty, staff, students and/or Contractor and billed accordingly. Failure to communicate promptly could result in 100% damage assessment of fines (see value schedule above).
- WMU understands that not every situation is the same. When in doubt, or in case of an emergency, please contact the WMU Project Manager as soon as possible.

END OF APPENDIX C-1