

Illinois Wesleyan University **Campus Tree Care Plan**

Purpose

The purpose of the Illinois Wesleyan University Tree Care Plan is to identify and implement policies, procedures, and practices that will be utilized in preserving, establishing, maintaining, and removing trees on the Illinois Wesleyan University (IWU) campus. This Tree Care Plan will be utilized as a source for contractors, designers, and Illinois Wesleyan grounds maintenance staff to reference when planning, designing, and implementing construction and/or tree care projects on Illinois Wesleyan's property that may impact campus trees. As Illinois Wesleyan University strives for sustainability, the goal of this Tree Care Plan is to provide a campus that provides a safe, inviting, and sustainable experience for all who visit its grounds.

The objectives of the Tree Care Plan are:

- Educating the Illinois Wesleyan community to value and admire their campus canopy.
- Implementing a tree protection plan to protect and preserve high-value trees during development, construction, and renovation projects.
- Utilizing proper tree and site selection, obtaining high-quality nursery stock, and installation in accordance with the most recent industry standards and research.
- Providing a campus urban forest with a sustainable tree population that has proper species diversity and tree size distribution.
- Maintaining and promoting proper tree health and structure as well as tree worker safety by implementing ANSI Standards and ISA's Best Management Practices.
- Developing and implementing a tree planting and replacement program for when a viable planting space is identified and/or when campus trees are removed due to weather events, pest infestations, disease infections, construction injury, or displacement during development projects.

Responsible Department

IWU Grounds Services located within the Physical Plant, under the direction of the Director of Physical Plant and Supervisor of Grounds Services.

Campus Tree Advisory Committee

The Campus Tree Advisory Committee is composed of faculty and staff from environment-related academic programs, the current Student Senate Sustainability Commissioner, IWU Grounds Services, and a Consulting Arborist. The committee meets a minimum of 2 times per school year to provide feedback for campus plans, and member terms are 1 school year.

Campus Tree Care Policies

All tree care practices shall conform to ANSI Z133 Safety Standards and ANSI A300 Standards

Planting Specifications

Tree planting shall include excavating all planting holes, planting of trees, and maintenance.

- [Approved tree species can be found here](#)
- [Prohibited tree species can be found here](#)

All tree planting work shall be performed in accordance with *ANSI A300 Part 6: Tree, Shrub, and Other Woody Plant Management - Standard Practices (Transplanting)* - and to the approval of IWU Department of Grounds Services.

During tree planting procedures, the tree planting contractor shall submit a ticket for an underground utility locate (JULIE) as well as any private University utility from the appropriate department. Professional excavators are required by Illinois state law to notify JULIE at least two business days (excluding weekends and holidays) in advance of the start of their project. Once excavation begins, the excavator takes ownership of the planting sites. Any excavated material that is not backfilled into the planting site shall be removed from University grounds and disposed of, unless noted otherwise.

When determining planting site selection, all available space shall be considered: vertical, horizontal, and belowground. Care shall be taken that tree canopies do not impact structures, existing vegetation, overhead utilities, and ground obstructions, such as sidewalks and curbs. Should an underground obstruction (utilities, sprinklers) be damaged during excavation, the installer shall restore the damaged area to its original condition. If a tree is unable to be installed due to an underground obstruction then a new planting site will be utilized. Installers are liable for any damage to property caused by planting operations. All damaged areas shall be returned to their original state upon completion of the planting project.

In addition to space requirements, tree selection shall also take tree species characteristics into consideration. These characteristics include, but are not limited to: soil pH, soil type and texture, nutrient availability, and organic matter. Soil analysis is recommended in order to improve tree performance after planting.

Plant Material Transportation

During transportation of trees to the planting site, the contractor shall incorporate adequate protection against tree injury and desiccation of leaves. If transported in an open vehicle, trees shall be entirely covered by protective tarps or other suitable protective material(s). During warm weather, protective tarps shall be removed immediately after arriving at the planting site to avoid heat buildup under the covering. To avoid damage to larger trees with spreading branches during harvest and shipping, branches shall be tied to reduce their spread.

If not immediately planted, balled and burlapped (B&B) trees shall be set on the ground and covered with loose, damp wood chips or sawdust, or wrapped with white plastic shrink- or stretch-wrap. Until materials are planted, they shall be adequately watered.

When trees need to be moved on-site, they shall only be lifted by their root balls. If any part of a lifting mechanism touches the trunk, the installer shall protect the trunk with padding. A wide sling should be used to avoid digging into bark tissue.

Plant Material Inspection

Once plant materials are delivered to the site, IWU Supervisor of Grounds Services reserves the right to reject plant materials which do not meet the minimum requirements set forth within the Planting Specifications.

- **Crown**
 - The form and density of the crown must be typical for young specimen of the species/cultivar.
 - Trees must have a single, relatively straight trunk, and central leader. They must be free of codominant stems and vigorous, upright branches that compete with the central leader.
 - Branch diameter must be no larger than one-half the diameter of the central leader measured 1 inch above where the branch is attached.
 - The attachment of the largest scaffold branches must be free of included bark.
 - Temporary branches may be present and the clear trunk must be no more than 30 percent of the total height of the tree.
- **Trunk**
 - The tree trunk shall be relatively straight, vertical, and free of wounds which aren't a result of proper pruning cuts. Trunks shall be void of open, sunburned areas, conks (fungal fruiting bodies), wood cracks, bleeding areas, signs of boring insects, cankers, girdling ties, or mechanical injury wounds.
- **Roots**
 - The root system shall be substantially free from insects/pathogens and environmental (herbicide, salt, mechanical injury) agents.
 - The uppermost roots or root collar shall be within the upper 2 inches of the soil media of the root ball. Depth of the root-ball shall be measured from the top of the ball, which in all cases shall begin at the trunk flare. Soil above the trunk flare shall not be included in the root ball depth measurement, and must be removed.
 - The root collar and the inside portion of the root-ball shall be free of defects, including circling, kinked, and stem-girdling roots. Soil removal or root washing near the root collar may be necessary to inspect for root defects.
 - Root distribution shall be uniform throughout the root ball. Structure and growth shall be appropriate for the species/cultivar. When the burlap, container or fabric is removed, the root ball shall remain intact. When the trunk is lifted both the trunk and root system shall move as one.
 - Two or more structural roots (first order lateral roots) shall be located within 1-3 inches of the soil surface. If the roots are deeper than 3 inches, IWU Supervisor of Grounds Services reserves the right to reject the plant material due to undersized root balls.
- **Root Ball Depths (ANSI Z60.1 - 2014)**
 - Root balls with diameters less than 20 inches - depth not less than 65% of the diameter of the ball.
 - Root balls with diameters of 20 inches and up - depth not less than 60% of the diameter of the ball.

- **Leaves**

- The size, color, and appearance of leaves shall be typical for the time of year and stage of growth of the species or cultivar. Trees shall not show signs of prolonged moisture stress as indicated by wilted, shriveled, or dead leaves.

Tree Planting Timing

Tree planting timing is dependent upon tree species. Most trees shall be planted in the fall from October 1 through December 15, and in the spring from March 1 through May 15, unless noted otherwise below. No planting is permitted during the summer unless approved by the IWU Supervisor of Grounds Services.

Tree species which require specific planting timing are listed below:

- **Fall Planting**

- Buckeye
- Red Horsechestnut
- Catalpa
- Hackberry
- Honeylocust
- Kentucky Coffeetree
- Maple
- Oak
- Sycamore
- Pine
- Spruce

- **Spring Planting**

- Baldcypress
- American Hornbeam
- Ginkgo
- Magnolia
- Tuliptree

Tree Installation Practices

All planting hole materials shall be removed from the hole prior to tree installation. If sod is present it shall be removed to match the width of the planting hole or mulch area, whichever is greater. Any removed sod shall be properly disposed of.

Root Depth

According to ANSI A300 Part 6 - Planting and Transplanting: "The bottom of the trunk flare shall be at or above the finished grade." Trunk flare is defined as "the area of transition between the root system and trunk". The nature of the trunk flare can vary with tree species, age, and nursery production method. The trunk flare can be a distinct curve when roots are horizontally oriented, or a gentle slope on very obliquely angled roots. On very small trees, the trunk flare may be quite inconspicuous until a curve develops from enlargement of the top of the roots and base of the trunk. The ANSI A300 Part 6 Best Management Practices defines the bottom of the trunk flare as the upper surface of the root at the point on the trunk flare when the roots become distinctly separated from the base of the trunk. Each root at the base of the tree has a trunk flare but they are not all located at the same depth.

The shallowest “bottom of the trunk flare” determines the planting depth. Planting medium shall be removed from the surface of the root ball until a proper trunk flare is exposed prior to planting.

Planting Hole Depth

To minimize settling, do not disturb the soil under the root ball. Re-compact the soil if it has been disturbed. B&B root balls with the bottom of the trunk flare correctly located at the surface, the planting hole can be 1-2 inches shallower than the root ball depth, in anticipation of some minor settling and flattening of the root ball. Container-grown trees may be 1.5-2.5 inches shallower than the container’s depth.

Planting Hole Width

Planting holes shall facilitate appropriate root establishment. Planting holes shall be dug to a width that is at least two (2) times the width of the root ball. Planting holes shall have sloped sides for vigorous root growth. For efficiency, planting holes may be dug to a width of one and one-half (1.5) times the width of the root ball diameter. After the tree has been set, but before the hole is backfilled, the sides may be sloped, utilizing a shovel, to about half the planting hole’s depth and allow the soil to fall in the planting hole.

Planting Hole Considerations: Glazing and Drying

Glazing is the localized compaction of soil that may restrict root development. When digging planting holes with an auger or mechanical tree spade, the perimeter of the planting hole may contain glazed soil. Roots may have difficulty establishing through glazed surfaces. When augers or mechanical tree spades are utilized to aid in tree planting, or if planting holes become dry, planting hole perimeters shall be broken up with a sufficient hand tool to aid in root establishment.

Root Ball Preparation for Planting

All tree root balls shall be properly prepared before planting. For containerized trees, containers shall be cut or pulled off before placing the root ball in the planting hole. For fabric bag trees, fabric shall be entirely removed before placing the root ball in the planting hole. B&B trees with root balls covered with synthetic burlap or plastic shall have these materials removed prior to placing the root ball in the planting hole. B&B trees with a root ball wrapped with a wire basket and natural burlap shall have the wire basket and natural burlap entirely removed after the root ball is placed in its planting hole. All removed root ball materials including, but not limited to, nails, wire, plastic, or burlap shall be properly disposed of by the installer.

Once the root ball is exposed, circling (girdling) and/or defective roots shall be removed. Roots growing against the inside of the container wall shall be removed with a shovel. Root ball perimeters and the bottom shall be lightly shaved at least 0.5 to 1 inch toward the inside of the root ball in order to reduce future root defects and encourage root growth. Roots may need to be oriented toward the planting hole by hand to ensure proper growth direction.

After the planting hole and root ball are prepared for planting, carefully place the tree in the middle of the hole, supporting the trunk in the vertical position. Stabilize the root ball by tamping soil firmly around its base. Add the remaining backfill soil in layers, or ‘lifts’, typically 6 inches at a time. Lightly tamp or thoroughly water each lift to reduce the number of large voids. If the soil is at all dry, apply water after

each lift is tamped. All tree planting holes shall have their soil amended with biochar or biochar/humate organic matter. Application rates will vary based on the manufacturer's label.

Watering After Planting

After the soil has been backfilled into the planting hole, the tree shall be watered with at least 20 gallons of water. The water used shall not have a high salt content. A tree watering bag, with a volume of at least 20 gallons, may be utilized for 1-3 years following planting to aid in tree establishment. Approximately 20 gallons of water is recommended per week, unless drought conditions are present. If drought conditions are present, watering may need to be increased.

If water infiltration into the root ball's soil is slow after the fill soil is added, create a ring of soil around the outer edge of the root ball. This soil ring can aid in water penetration into the root ball without running off into adjacent soil. Mulch and soil shall not erode and trees shall not uproot as a result of watering practices.

If planting hole soil has settled after initial watering, the installer shall add enough topsoil to bring the soil level up to its initial grade.

Mulching

Woody material such as arborist chips or coarse mulch with a mixture of fines shall be applied as a ground cover to the surface of all planting beds and tree planting holes. Mulch shall maintain a level depth of 3 inches. A space of 1-3 inches between the tree trunk and mulch shall be maintained as mulch-free. Mulch which contacts the trunk may lead to bark injury from fungi or rodents.

The size of the area to mulch depends on the size of the tree. For landscape trees up to 3-inch caliper, a 4- to 6-foot diameter circle of mulch will suffice.

Staking and Winter Care

Following planting, trees shall be staked by the contractor for 1 year to ensure stability and that the tree is plumb. Should the tree require further staking after 1 year due to instability as determined by the Consulting Arborist, the stakes shall be reinstalled for 1 additional year.

Stakes shall be made of steel, driven a minimum of 2 feet into soil outside of the planting hole, and have an above ground height of 5 feet.

Tree stabilizing material attached to stakes shall be broad, smooth, and flexible (Arbortie Green). Arbortie Green shall be secured no higher than 50% of the tree's height. Arbortie Green shall be secured to the tree's trunk tight enough to provide stability but not too tight so that the tree is not able to flex in response to wind.

During dormancy, trunks (from the top of the root collar to the lowest branch) of newly planted trees should be wrapped with a biodegradable paper tree wrap. Tree wrap paper shall be wrapped in a spiral direction starting from the bottom, overlapping the next layer by 1/4- to 1/2-inch in order to create a shingle effect. When low ambient temperatures are consistently above freezing the tree wrap shall be removed.

Warranty

All newly planted trees shall have a warranty period of 1 year.

Pruning Specifications

All pruning shall conform to ANSI A300 Part 1: Pruning Standards and ANSI Z133 Safety Requirements

To ensure that campus trees develop strong health and structure, the following guidelines shall be followed while pruning. When considering pruning, prune first for safety, second for tree health, and last for tree aesthetics.

Pruning Standard Practices

- Identify reason(s) for pruning
 - Reduce risk, improve or maintain health, develop desired structure and appearance, prevent interference with the built environment, and other specific objectives.
- Define pruning objective(s)
 - Manage risk, manage health, develop structure, provide clearance, manage size or shape, improve aesthetics, manage production of fruit, flowers, or other products, and manage wildlife habitat
- Consider tree species, age & placement
- Select pruning system
 - A pruning system should be specified to achieve the desired long-term form of the plant. Consideration shall be given to the ability of the plant to respond to the selected pruning system.
 - Pruning systems include: natural, pollarding, topiary, espalier, and pleaching. Topping shall not be considered an acceptable pruning system.
- Consider amount, location, cut type, cut size, pruning cycle/interval
 - Pruning operations should remove no more living material than what is necessary to achieve specified objectives. This is usually between 5-20% of live crown, depending on tree age, size, and health.
- Write specification(s)
 - Pruning specifications should include: physical location of the plants to be pruned, pruning objectives, pruning system, types of parts to be removed, pruning amount (percent or number of branches), location in crown of parts to be removed, pruning cut types, size range, plan for disposal of debris, time frame for completion, and other information as necessary (clearance/reduction distances, desired views, line of sight).
- Complete work
- Review/inspect work and/or recommend monitoring/follow-up interval

Pruning Cuts - General

- Pruning cuts shall be made so that the branch protection zone stays intact; A branch removal cut shall be made without cutting into the branch bark ridge or branch collar, or leaving a stub.
 - When a branch collar is not apparent, the cut shall be made without cutting into the branch bark ridge, parent stem, or leaving a stub.
- A flush-cut is not an acceptable pruning practice.
- Topping is not an acceptable pruning practice.
- Heading cuts should not be used except in the case of crown restoration as a result of storm damage or retrenchment.
- The smallest diameter cut that meets the objective should be preferred.
- The number and size of cuts that expose heartwood should be minimized.
- Branches shall be precut when necessary to avoid splitting of the wood or tearing of the bark.
- When removing a branch with a narrow angle of attachment, the cut should be made from the outside of the branch to prevent damage to the remaining branch or stem.
- When removing a branch with included bark, the cut should be made as close as possible to the point where the wood of the stems join without damaging the remaining stem.
- The final pruning cut should leave adjacent bark firmly attached.
- Interior and lower branches should be retained when compatible with objectives and pruning system.
- When removing live branches, the majority of cuts should be in the outer portion of the crown.

Pruning Objectives

All pruning shall conform to ANSI A300 Part 1: Pruning Standards and ANSI Z133 Safety Requirements

Cleaning

- Cleaning is utilized to remove dead, diseased, infested, and/or broken branches in order to reduce risk, promote health, and improve tree appearance.
- When removing a dead branch or stem, the final cut shall be made just outside the collar of living tissue, without leaving a dead stub.

Reducing Density (previously called Thinning)

- Thinning is utilized to reduce the density of live branches along the perimeter of the crown to manage tree health, or to increase light penetration.
 - Reducing density may be achieved in combination with improving tree structure.
- During the process of thinning, the removal of live interior and lower lateral branches shall not be removed unless to increase appropriate branch spacing.

Raising

- Raising shall be utilized to provide vertical clearance from streets, sidewalks, structures, and signs.
- Tree age and structure shall be taken into consideration before branch removal.
 - Removing too many lower branches of young trees may prevent stem taper.
- Common clearance distances, as measured from the object or area of concern to the branch, are below:
 - Sidewalk clearance - 8 ft
 - Residential street clearance - 14 to 18 ft
 - Arterial road - 15 to 20 ft
 - Structure roof - 6 ft

Reduction

- Reduction shall be utilized to decrease the overall height of a tree while maintaining its natural shape.
- Reduction may also be utilized to provide horizontal clearance from streets, sidewalks, structures, and signs.
- Reduction shall utilize branch removal cuts, reduction cuts, or rarely, heading cuts.
 - Reduction pruning cuts should be as small as possible to reduce risk of decay entry.
 - On decay-prone species, cuts less than 4 inches in diameter are preferred.
 - Reduction pruning cuts remove the larger of two or more branches, stems, or codominant stems to a live lateral branch or stem, typically at least one-third the diameter of the stem being removed.

Pruning Schedule

All pruning shall conform to ANSI A300 Part 1: Pruning Standards and ANSI Z133 Safety Requirements

- Structural pruning for young trees shall be completed once every 3-4 years, or more frequently as needed.
- Structural pruning for all other campus trees shall be completed as needed, at the discretion of the IWU Supervisor of Grounds Services.
- Maintenance pruning to remove dead, diseased, dying, or defective branches shall be completed as needed, at the discretion of the IWU Supervisor of Grounds Services.
- Safety pruning shall be assessed biannually by the IWU Campus Safety Walk Team. Safety issues assessed include, but are not limited to, trees or tree parts too close to structures, streets, sidewalks, signs, building entrances/exits, and lights.
- All Oak and Elm species on campus shall be pruned during dormancy only.

Tree Removals

All tree removal practices shall conform to ANSI Z133 Safety Requirements

IWU campus trees shall not be removed unless approved by the IWU Supervisor of Grounds Services, following consultation with the Tree Advisory Committee.

On some occasions, a Tree Risk Assessment by a qualified third party consulting arborist may be required before tree removal is approved or denied. Tree Risk Assessment results may be given verbally or in writing.

All woody materials generated through the tree removal process shall be taken off campus grounds for disposal, unless noted otherwise.

Cultural Practices

All cultural tree care practices shall conform to ANSI A300 Best Management Practices

Mulching

Mulch shall be applied to all newly planted trees to a depth of no more than 3 inches, in a diameter of at least 4 feet. Existing campus trees which are currently mulched should have their mulch maintained to a depth of no more than 3 inches. A space of 1-3 inches between the tree trunk and mulch shall be maintained as mulch-free. Mulch which contacts the trunk may lead to bark injury from fungi or rodents.

Plant Health Care

Trees experiencing stress from a pest or environmental disorder may be treated as needed by an Illinois licensed pesticide applicator. Tree treatments should be under the recommendation of the Consulting Arborist.

IWU does not have an annual tree fertilization program. On an as needed basis, high value trees may receive fertilization and/or plant growth regulator treatments in order to increase tree longevity.

Watering

Watering of newly planted trees shall be completed by WIU Grounds Services throughout the 2-year guarantee period. Approximately 15-20 gallons of water per tree shall be used every 4-7 days, depending on weather conditions, soil moisture, or other factors. The IWU Supervisor of Grounds Services reserves the right to increase or decrease watering frequency based on environmental conditions.

Watering shall not displace stakes, soil, or mulch. Watering shall not cause uprooting or cause exposure of roots to the air.

Tree and Soil Protection During Construction

All construction-related tree care practices shall mirror ANSI A300 Best Management Practices Part 5: Management of trees and Shrubs During Site Planning, Site Development, and Construction & Part 8: Root Management

Tree Protection Zone

All tree protection zones (TPZ) shall be made of 6 to 8 foot tall post driven galvanized chain link fencing for all designated trees associated with a construction project. Any other materials are not acceptable.

Trees designated for preservation within a construction zone shall have TPZ fencing radius installed and maintained at a distance equal to 1.25 feet per inch of trunk diameter, measured at 4.5 ft above grade (DBH), or the tree's dripline, whichever distance is greater. For example, a tree with a 20-inch trunk diameter shall have a TPZ fencing radius of 25 feet, with a total TPZ fencing diameter of 50 feet.

TPZ fencing shall be installed prior to construction activities and shall be maintained throughout the duration of the construction project. Fencing shall not be moved or removed without the authorization of the Consulting Arborist and IWU Supervisor of Grounds Services.

All TPZ fencing shall have signage attached indicating that the TPZ is a "No Entry" area except for authorized personnel. Signage shall be visible to all contractors and bystanders. Authorized personnel include the Consulting Arborist and IWU Supervisor of Grounds Services. Other parties may be permitted within the TPZ at the discretion of the Consulting Arborist and IWU Supervisor of Grounds Services.

In some instances, a TPZ diameter may need to be decreased in order to complete construction activities. When this is necessary a 6-inch layer of wood chips shall be installed over the tree's decreased TPZ area so that the TPZ area is compensated. Wood chips shall be maintained to a depth of 6 inches and irrigated so that the tree's root system is protected.

Any area designated as a tree planting site shall have a 6-inch layer of wood chips installed in order to reduce soil compaction. Should designated tree planting sites be impacted by material storage, equipment transport, or compaction then the contractor shall restore the affected area to its pre-construction state.

Material storage and equipment transport shall not occur in designated planting areas.

Soil, tools, or any other construction-related materials shall be stockpiled outside of designated TPZs or drip lines, whichever distance is greater.

Critical Root Zone

The Critical Root Zone (CRZ) is an area of soil around a tree where the minimum amount of roots considered critical to the structural stability or health of the tree are located. Unless indicated otherwise, the CRZ radius is considered to be 1 foot for every 1 inch of trunk diameter. Unless noted otherwise, no root pruning or construction activities are permitted within the CRZ. Any root pruning within a CRZ shall be under the direct supervision of the Consulting Arborist.

Establishing A Tree Protection Zone

A TPZ shall be identified through IWU's tree inventory software, TreePlotter. Any tree impacted by construction activities shall have their TPZ recorded in TreePlotter and incorporated into the project's tree preservation plan.

Root Cutting, Soil Disturbances, and Grade Changes Outside of and Within Tree Protection Zones

Any construction activity that involves root cutting, soil disturbance, and grade change within a TPZ shall be planned and supervised by the Consulting Arborist and IWU Supervisor of Grounds Services. A root pruning and tree preservation plan shall be developed before any construction activity inside a TPZ occurs. When possible, non-invasive construction activities (hydro-vac excavation, air-spade/knife, directional boring) shall be considered before any excavation-like construction activities are utilized.

Any root pruning which occurs inside of a TPZ shall be outside of the designated CRZ in order to preserve tree structural stability and/or health. Any root pruning within a CRZ shall be under the direct supervision of the Consulting Arborist.

Root pruning shall only be completed with tools which make clean, precise cuts (chainsaw, handsaw, or root pruner such as a Dosko or Vermeer Root Pruner). Any roots 1 inch in diameter should be pruned rather than left torn or crushed. Tools or machinery which bend, fracture, or break roots, such as trenchers, excavators, or backhoes, should not be utilized whenever possible. If this type of excavation is done, damaged root ends shall be pruned to a flat surface with adjacent bark firmly attached. Utilizing a non-invasive method, such as air-spade/knife hydro-vac excavation, to excavate the affected area prior to root pruning is the preferred method.

Boring and Augering Underneath Tree Roots

When possible, non-invasive construction activities shall be considered. Boring and augering underneath tree roots are considered to be non-invasive. Depth of the hole should be a minimum of 2 to 3 feet depending on root depth of the tree. It is best to tunnel 1 to 2 feet away from the tree's center to avoid a tap or heart root. Minimum distance requirements for boring or augering underneath tree roots are below:

Tree Diameter (DBH)	Minimum Offset Distance from Trunk Face	Minimum Length of Bore Hole (centered on trunk) DBHx12
Inches	Feet	Feet
Less than 6	Dripline of tree	3 to 5
6 to 9	5	6 to 9
10 to 14	10	10 to 14
15 to 19	12	15 to 19
Greater than 19	15	20+ (1 foot per inch diameter)

Material Storage and Equipment Movement Within A Construction Zone

Should construction equipment, or any vehicle associated with a construction project, conflict with tree branches the contractor shall notify the Consulting Arborist and IWU Supervisor of Grounds Services before proceeding further.

Tree Protection Zone Violations

Tree preservation and canopy restoration are key elements of the IWU Tree Care Plan. A method to fund tree planting and preservation is to fine parties who violate a designated TPZ.

Any unauthorized party found to be in violation of a designated TPZ shall be fined \$1,500 per offense per 24-hour period. For example, if a party is found to have stored tools inside a designated TPZ, they will incur a \$1,500 fine. If the same party has not removed those tools 24 hours later then they shall incur a second \$1,500 fine. \$1,500 fines will recur every 24 hours until the items are removed.

Tree Protection Zone Violations for High Value Trees

Construction-related stress may take multiple years to manifest in a tree. By this time, the construction project may have been completed but contractors will still be held accountable for tree decline caused by damages outside of a tree's preservation plan. IWU campus trees designated as "High Value" specimens shall have a secondary fine associated with tree decline and/or death associated with construction-related stress.

IWU's protocol for assigning fines for violating TPZs of High Value trees is below:

- High Value trees will be assessed quarterly by the Consulting Arborist for 2 years following the completion of construction activities surrounding a tree.
- If a party is found to have caused tree decline beyond repair as a result of construction activities inside a designated Tree Protection Zone, as determined by the Consulting Arborist within the 2 year waiting period, the contractor shall be fined the affected tree's original appraised value.
- Tree value appraisals shall be calculated by the Consulting Arborist utilizing the "*Council of Tree & Landscape Appraisers Guide for Plant Appraisal 10th Edition (2nd printing, 2019)*" Trunk Formula Technique - Reproduction Method.
 - If an affected High Value tree is of replaceable size, then the tree's appraised value shall be calculated by the Consulting Arborist utilizing the "*Council of Tree & Landscape Appraisers Guide for Plant Appraisal 10th Edition (2nd printing, 2019)*" Reproduction Method - Direct Cost Technique.

Contractor Liability

Contractors that damage trees beyond repair as a result of construction activities shall pay for tree replacement, planting costs, as well as any associated costs required to restore the site to its pre-construction state, in addition to any violation fines.

Tree Preservation During Design Phase

During the design phase, decisions about the location, size, and shape of the building and other infrastructures are documented on a site plan. Using the information provided on the site plan and information collected in the tree inventory, the IWU Supervisor of Grounds Services and Consulting Arborist should make recommendations for which trees should be retained, removed, transplanted, or protected. Trees that are to be preserved should have any work completed on them prior to construction activities taking place.

The tree preservation plan shall specify which trees are most suitable for preservation and which trees should be removed due to expected damage caused by construction of the building, infrastructure, and other onsite activities. On IWU's campus, many young trees are designated as memorial or donor trees. Donors, or families of donors, shall be contacted for guidance prior to any construction or tree removal activity taking place.

Campus Policies

Tree Selection and Diversity Requirements

IWU's mission is to provide a strong and sustainable tree canopy which will not falter as a result of invasive insects, mites, or pathogens. To achieve this, IWU has established a diversity requirement goal of 15/10/5. The campus canopy should be comprised of:

- No more than 15% of any one family
- No more than 10% of any one genus
- No more than 5% of any one species

As of January 1, 2023, IWU's *Acer* and *Malus* population each exceed 10%. However, the goal of 15/10/5 shall be a high priority. Any new tree plantings which take place on the IWU campus shall take current tree diversity into consideration. Native trees should be utilized whenever possible, unless a species is limited by soil conditions, availability, and the threat of invasive insects, mites, or pathogens.

Storm Response & Recovery

Any weather event which causes tree damage or failure, the first priority is for IWU Grounds Services to remove tree debris which blocks streets, sidewalks, building entrances and exits, disrupts campus operations, or poses an imminent risk to the IWU campus community. Should IWU Grounds Services not be able to complete debris removal, a tree care business shall be subcontracted to remove the debris. Following debris cleanup, damaged trees shall be visually inspected by the Consulting Arborist to determine structural integrity of the affected trees and formulate a mitigation plan.

Mitigation options include, but are not limited to:

- Pruning to reduce risk, restore health, and restore structure
- Tree removal

When planting budget permits, trees lost as a result of weather events should be replaced within a reasonable time frame to restore the lost canopy.

Assessment, Enforcement, and Penalties of Tree Damage

No person shall:

- Damage, cut, carve, transplant, or remove any tree or injure the bark;
- Attach any rope, wire, or other device to any tree;
- Cause or permit any wire charged with electricity to come in contact with any tree or allow any gaseous, liquid, or solid substance which is harmful to such trees to come in contact with them;
- Build fires on soil under trees

Any tree damage shall first be assessed by the IWU Supervisor of Grounds Services. If required, a Consulting Arborist may be employed to assess damages.

Communication Strategy

The Campus Tree Care Plan will be hosted on IWU's website for viewing and will be shared with developers, designers, and project managers through IWU's Construction Manual.

Campus Tree Care Plan Glossary

ANSI A300 Standards: in the United States, industry-developed, national consensus standards of practice for tree care.

ANSI Z133 Standards: in the United States, industry-developed, national consensus safety standards of practice for tree care.

Appraisal: (1) the act or process of developing an opinion of value, cost, or some other specified assignment result. (2) a report stating an opinion of appraised value. (3) particularly outside the United States, an evaluation of nonmonetary landscape or plant characteristics.

Arborist: professional who cares for trees and other woody plants and holds a certification from the International Society of Arboriculture.

Balled and Burlapped (B&B): tree or other plant dug and removed from the ground for transplanting, with the roots and soil wrapped in burlap or a burlap-like fabric.

Best Management Practices: best-available, industry-recognized courses of action, in consideration of the benefits and limitations, based on scientific research and current knowledge and standards.

Compaction: compression of the soil, often as a result of vehicle or heavy-equipment traffic, that breaks down soil aggregates and reduces soil volume and total pore space, especially macropore space.

Contractor: a person or company that undertakes a contract to provide materials or labor to perform a service or do a job.

Critical Root Zone: area around a tree where the minimum amount of roots that are biologically essential to the structural stability and health of the tree are located.

Environmental Stress: also referred to as “abiotic agents”. Nonliving cause of plant disorders.

Family: a taxonomic group under the order level and above the genus level.

Genus: taxonomic group, composed of species having similar fundamental traits. Botanical classification under the family level and above the species level.

Mitigation: the act of making a condition or consequence less severe. In tree risk management, the process for reducing risk.

Mulch: any material such as wood chips, straw, and leaves that is spread on the surface of the soil to protect the soil and plant roots from temperature extremes, mechanical damage, and compaction.

Plant Health Care: comprehensive program to manage the health, structure, and appearance of plants in the landscape.

Pruning Objective: the defined purpose(s) for pruning (e.g. provide clearance, reduce risk, reduce crown density)

Root System: vascular plant part located underground that is responsible for anchorage, absorption of water and minerals and conduction of these to the stem, and storage of reserve foods.

Shall: as used in the ANSI standards (United States), denotes mandatory requirement.

Should: as used in the ANSI standards (United States), denotes an advisory recommendation.

Soil: dynamic body composed of biological, chemical, and physical properties responsible for plant growth.

Species: taxonomic group of organisms composed of individuals of the same genus that can reproduce among themselves and have similar offspring.

Specifications: detailed plans, requirements, and statements of particular procedures and/or standards used to define and guide work.

Tree Protection Zone: area defined during site development, where construction activities and access are limited to protect the tree(s) and soil from damage, and to sustain tree health and stability.

Tree Risk Assessment: a systematic process to identify, analyze, and evaluate tree risk.

Tree Risk Management: application of policies, procedures, and practices to identify, evaluate, mitigate, monitor, and communicate tree risk.