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TREE PROTECTION AND REPLACEMENT GUIDELINES

TREE PROTECTION & PRESERVATION (SEE USF TAMPA TREE INVENTORY AT: www.opentreemap.org/tampa/map)

A DEVELOP A TREE PROTECTION PLAN (WWW.HORT.IFAS.UFL.EDU) • TREE PRESERVATION DURING LAND DEVELOPMENT

1. THE FIRST STEP IN A TREE PROTECTION PLAN IS TO DETERMINE WHICH TREES CAN AND SHOULD BE SAVED.
   - ☐ • IS THE TREE A DESIRABLE SPECIES? IS THE TREE HEALTHY? WILL IT PROVIDE SHADE WHERE DESIRED? REMAINING LIFE EXPECTANCY?
   - ☐ • IF THE TREE IS LEFT GROWING IN A SMALL SPACE, WILL IT SURVIVE? WILL IT BE THE DESIRABLE SIZE WHEN IT REACHES MATURITY? WILL IT HAVE ENOUGH GROWING SPACE TO DEVELOP A FULL CANOPY AND ROOT ZONE?
   - ☐ • MOST ADVANTAGEOUS OPTION IS: TO REPLACE THE TREE, TRANSPLANT OR PROTECT IT? CONSIDER THE COST AND SITE CONSTRUCTION SITE LOGISTICS IMPACT REQUIRED TO PROTECT THE TREE DURING CONSTRUCTION?
   - ☐ • WILL THE TREE FIT WELL INTO THE LANDSCAPE PLAN? DOES IT COMPLY WITH UNIVERSITY MASTER PLAN VISION?
   - ☐ • WILL THE TREE KNOWN TO PRODUCE HEAVY POLLEN CONFLICT WITH FRESH AIR INTAKE IN NEW BUILDING?
   - ☐ • IS LOCATION OF DIESEL GENERATOR AND LOCATIONS WITH PROLONGED IDLING DIESEL ENGINES (E.G.: LOADING DOCK) CONFLICT WITH TREE CANOPY?
2. ☐ LARGE TREES WITHIN 10 FEET OF BUILDINGS AND DRIVES MAY BE DAMAGED AND LATER BECOME HAZARDOUS. PLAN TO BUILD A SAFE DISTANCE AWAY FROM LARGE TREES, OR REMOVE THEM BEFORE CONSTRUCTION. DO NOT LOCATE FRESH AIR INTAKE NEAR TREES THAT PRODUCE HEAVY POLLEN.
3. ☐ SOME TREES IN POOR CONDITION SHOULD NOT BE SAVED. IT MAY BE SAFER AND CHEAPER TO REMOVE OLD SLOW GROWING TREES AND THOSE WITH EXTENSIVE ROT OR DISEASED WOODY TISSUE BEFORE CONSTRUCTION BEGINS.
4. ☐ KEEP TREES THAT ARE WELL-LOCATED, VIGOROUS, AND HAVE DESIRABLE CHARACTERISTICS REQUIRE PROTECTION TO SAVE THEM. REMOVE TREES THAT ARE OBVIOUSLY LOCATED IN THE IMMEDIATE CONSTRUCTION AREA AND WILL BE DAMAGED BY SOIL COMPACTION, CUTTING OF ROOTS, OR GRADE CHANGES.

B CLEARLY DEMARCATE DRIP LINE OF TREES TO BE SAVED:

1. ☐ KEEP POTENTIAL SOURCE OF **COMPACTION ACTIVITY** OUT OF THE DRIP LINE.
2. ☐ PROVIDE **RIGID BARRICADE** (USE METAL OR PT WOOD FRAMING LUMBER).
3. ☐ PROVIDE **HIGH VISIBILITY SCREENING** (E.G.: MESH BARRIER/SAFETY FENCING – USF PREFERRED FLUORESCENT YELLOW-GREEN COLOR)
4. ☐ **SILT FENCE**- IF TREE IN LOW SPOT (CONTROL SILT BUILDUP THAT INTERFERES WITH OXYGEN TO ROOTS).
5. ☐ MINIMIZE **SILT BUILDUP** (PERIODIC REMOVAL OF BUILT-UP SILT).

C AVOID INJURY TO THE TREES:

1. ☐ **TREE ROOTS:** PROHIBIT PLACEMENT OF HEAVY OBJECTS INSIDE DRIP ZONE (STORING OR STAGING OF MATERIALS).
2. ☐ **TREE ROOTS:** PROHIBIT ALL VEHICULAR/MACHINERY TRAFFIC OVER DRIP ZONE.
3. ☐ **TREE ROOTS:** DO NOT ALLOW PLACEMENT OR ACCUMULATION OF MATERIAL TOXIC TO TREES- LIME ROCK, CONCRETE WASTE, CEMENT TRUCK WASH, PAINT WASH.
4. ☐ **TREE CANOPY:** AVOID PROLONGED DIRECT EXPOSURE TO ENGINE EXHAUST (PROLONGED STATIONARY HEAVY EQUIPMENT OR VEHICLES).
5. ☐ **TREE CANOPY:** AVOID ALL DIRECT DIESEL ENGINE EXHAUST (E.G.: STATIONARY DIESEL GENERATOR).
6. ☐ **TREE CANOPY:** PLAN ALL CRANE ACTIVITY TO CLEAR CANOPY.
7. ☐ **NEW TREES:** REMOVE ALL TRACES OF MATERIAL TOXIC TO TREES FROM PLANTING AREAS- LIME ROCK, CONCRETE WASTE, CEMENT TRUCK WASH, PAINT WASH.
8. ☐ **TREE WOUNDS:** IF TREES ARE WOUNDED OR STRESSED DURING CONSTRUCTION, THEY ARE MORE SUSCEPTIBLE TO INSECT AND DISEASE ATTACK. ANY WOUNDS TO THE BARK SHOULD BE CLEANED TO SOUND WOOD BY REMOVING LOOSE BARK AND WOOD, LEAVING A SMOOTH EDGE AROUND THE WOUND. COMPLY WITH ARBORIST RECOMMENDATION FOR WOUND DRESSING IF NECESSARY.

C ROOT PRUNING (FOR RELOCATION OF TREES OR TRENCHING OF BURIED WORK):

1. ☐ STAGE MULTIPLE CUTS TO ALLOW FEEDER ROOT DEVELOPMENT. PHASE EXTENSIVE ROOT PRUNING OVER EXTENDED PERIOD TO PROMOTE FEEDER ROOT GROWTH BETWEEN PHASES OF PRUNING.
2. ☐ PROVIDE TEMPORARY DRIP IRRIGATION DURING FEEDER ROOT DEVELOPMENT
3. ☐ WEED ALL GROUND COVER AND GRASSES WITHIN THE TREE CANOPY AREA TO REDUCE COMPETITION, COVER WITH 2-4 INCHES OF MULCH.
4. ☐ **RELOCATION OF TREES:** 8 WEEKS OR MORE FOR FEEDER ROOT DEVELOPMENT PRIOR TO RELOCATION (CONSULT WITH LANDSCAPE ARCHITECT OR ARBORIST).
5. ☐ **TRENCHING:** AVOID TRENCHING WITHIN TREE CANOPY DRIPLINE. IF TRENCHING IN UNAVOIDABLE, MINIMIZE EXPOSURE OF ROOTS TO AIR; STAGE WORK TO BACKFILL THE EXPOSED ROOTS AT THE EARLIEST.
6. ☐ **ROOT CUTTING WHILE TRENCHING:** MAJOR ROOTS GREATER THAN 1" DIAMETER MUST BE SAW CUT; AVOID RIPPING WITH BACKHOE OR OTHER CONSTRUCTION EQUIPMENT.
7. ☐ IN TRENCHING, IF **100% OF TREE CANOPY FOOTPRINT (DRIP LINE) DRIP LINE PRESERVED**- ROOT PRUNING IS PERMISSIBLE.
8. ☐ IN TRENCHING, IF **UP TO 2/3 OF TREE DRIP LINE PRESERVED** – AN ARBORIST AND/OR UNIVERSITY LANDSCAPE ARCHITECT MUST BE CONSULTED.
9. ☐ IN TRENCHING, IF **LESS THAN 2/3 OF TREE DRIP LINE PRESERVED** – TRENCHING IS NOT PERMITTED; CONSIDER REPLACEMENT OR TRANSPLANTING OF TREE.

D BRANCH TRIMMING (SEEK QUALIFIED ARBORIST TO PLAN TREE TRIMMING)

- QUALIFICATIONS OF ARBORIST: **TCIA** (TREE CARE INDUSTRY ASSOCIATION) AND/OR **ISA** (INTERNATIONAL SOCIETY OF ARBORICULTURE)
- COMPLY WITH BEST TREE CARE PRACTICES: **ANSI A300**

1. ☐ CUT EVEN & CLEAN AT LATERALS ALL BRANCHES OF ALL SIZES.
2. ☐ TRIM TO CREATE A NATURAL LOOK. REDUCE VOLUME OF MOSS.
3. ☐ IN TRIMMING, IF **100% OF TREE CANOPY PRESERVED**- MULCH ALONE WILL SUFFICE.

4. ☐ In trimming, IF **up to 2/3 of tree canopy preserved** – irrigate feed & mulch.
5. ☐ IIn trimming, IF **less than 1/3 of tree canopy preserved** – trimming is not permitted; consider replacement or transplanting of tree.

E Maintain Irrigation:

1. ☐ Cap, isolate and/or reroute irrigation lines to maintain existing irrigation system in undisturbed areas and outside the construction site.
2. ☐ Provide temporary drip irrigation during **feeder root development** and/or **tree canopy reduction** until permanent irrigation system is operational.

F USF Tree Replacement Requirement:

1. ☐ Any trees removed from a site that are 6" – 24" in diameter will be replaced with equivalent total diameter of trees, 4"-6" diameter, staked and irrigated. Palms are not considered as suitable tree replacement.
   - Example: removal of 3 trees 12" in diameter each would require replacement of 36". Could be with 9 trees that are 4" in diameter or 6 trees that are 6" in diameter.
2. ☐ Trees over 24" in diameter will be replaced with 1.5 times the diameter, 4"-6" in diameter, staked and irrigated.
   - Example: removal of a 28" diameter tree would require replacement of 42".
   - Example: Could be 11 trees that are 4" in diameter or 7 trees that are 6".
3. ☐ Replacement trees to be Florida Grade #1 or Florida Fancy Live Oak with center leader, unless approved otherwise by USF Landscape Architect.
4. ☐ Location can be on site or elsewhere on campus where needed and consistent with the latest Campus Master Plan.
5. ☐ Consult with USF Landscape Architect to locate trees or bank for future consideration.

G Design Consideration: Fire Smart Plants: (www.ifas.usf.edu) • IFAS Pub No FOR71, Lanscaping in Florida with Fire in Mind

Fire Smart plants: are less likely to ignite from a wildfire or building fire. • Burn less intensely when they do ignite, and spread the fire slower. • Are lower growing or smaller. • Have stems and leaves that are not resinous, oily, or waxy. • Have high moisture content; succulent plants. • Easy to maintain and prune. • Have less accumulated debris and fewer dead branches. • Have an open, loose branching pattern. • Are drought resistant, requiring less irrigation.

1. **Less Flammable Plants** (**more desirable** plants with some fire resistance)
   - ☐ • **Trees:** • Ash • River Birch • Cherry • Cottonwood • Crab Apple • Dogwood • Elm • Hickory • Maple • Live Oak • Plum • Redbud • Southern Magnolia • Sweetbay Magnolia • Tulip Tree (Yellow Poplar) • Willow • Bald Cypress
   - ☐ • **Shrubs:** • Azalea • Barberry (Mahonia) • Bottlebrush • Boxwood • Burning Bush • Butterfly Bush • Camellia • Cleyera • Crape Myrtle • Eleagnus • Forsythia • Gardenia • Hydrangea • Indian Hawthorne • Ligustrum • Liriope • Loripetalum • Mahonia • Muhlenbergia • Oleander • Philodendron • Photinia • Pittosporum • Privet • Pyracantha, Firethorn • Rhododendron • Rose • Russian Olive • Spirea • Viburnum • Weigela • Witch Hazel
   - ☐ • **Groundcovers, Bedding Plants & Vines:** • Blue-eyed Grass • Daylily • Dusty Miller, Senecio • Honeysuckle • Iris • Lantana • Periwinkle • St. Augustine Grass • Stonecrop • Trumpet Creeper • Yarrow • Yellow Jessamine • Yellow-eyed Grass
2. **Highly Flammable Plants** (**less desirable** plants that will ignite faster and burn readily)
   - ☐ • **Trees:** • Eastern Red Cedar • Eucalyptus • Leyland Cypress • Pines
   - ☐ • **Shrubs:** • Arborvitae • Gallberry • Hollies • Junipers • Podocarpus • Saw Palmetto • Wax Myrtle • Yaupon
   - ☐ • **Groundcovers, Bedding Plants & Vines:** • Pampas Grass • Pine Straw

H. Design Consideration: Wind Resistant Trees: (www.usf.edu) • IFAS Pub No FOR120, Tree Species for Wind Resistance

1. **Characteristics of Wind-Resistant Trees:** • Native Species • Slow-Growing • Hard Woods • Low Center of Gravity • Deep Penetrating Radial Roots • Open Branching Character • Heavy, Stout Leaders, Flexible Limbs and Short Leaf Branching • Small, Fine-Textured Leaf • Deciduous Leaves. Trees and shrubs can provide a valuable buffer that can reduce storm damage. Foliage density and topography can modify wind speed and direction; however, high winds and storms can cause damage to trees. Studies of trees following hurricanes offer the ability to place trees in one of two categories – "Survivor Trees" or "Victim Trees."
   - ☐ • **Survivor Tree**: A compact tree that has a major tap root and well-developed secondary roots. It also has a well-tapered trunk, and its center of gravity is low. Survivor trees that are healthy, young-to-middle-aged and well-maintained survive storms well.
   - ☐ • **Victim Tree:** A shallow-rooted tree with a high center of gravity that is weighed down by a dense canopy. Victim trees are generally fast-growing and weak-wooded. In storms they usually either snap or uproot.
2. **Select Survivor Trees** (LSU Landscape Professor D.G. "Buck" Abbey's Top 10 Hurricane-Resistant Trees)
   - ☐ • **Top Ten Survivor**: • Bald Cypress • Live Oak • Sabal Palm • Windmill Palm • Mexican Fan Palm • Black Gum • Cow Oak • Iron Wood • Shumard Oak • Winged Elm
   - ☐ • **Survivor or other Good Wind-Resistant Tree Species:** • American Elm • American Holly • American Hop Hornbean • Black Locust • Catalpa • Cherrybark Oak • Cherry Laurel • Crape Myrtle • Dahoon • Green Ash • Hackberry • Nuttall Oak • Osage Orange • Pond Cypress • River Birch • Savannah Holly • Southern Magnolia • Sycamore • Sweet Bay Magnolia • Sweet Gum • Tulip Tree • Willow Oak
   - ☐ • **Victim or Weak-Wood Trees:** • Pecans • Pines • some Red Oaks • Red Cedars • Ornamental Pears • Willows • Silver Maples • Box Edlers • Cottonwoods • Hickories • some Elms

I. Design Consideration: Xeriscape: (www.fyn.ifas.ufl.edu) • Florida Friendly Landscaping Program

1. USF REQUIRES XERISCAPING: LANDSCAPING STRATEGY WITH SLOW-GROWING, DROUGHT-TOLERANT PLANTS TO CONSERVE WATER AND ESTABLISH A RESOURCE-EFFICIENT LANDSCAPE (RESULTING IN REDUCED MAINTENANCE AND REDUCED FERTILIZER USE). DESIGNING A RESOURCE-EFFICIENT LANDSCAPE REQUIRES THE INCORPORATION OF FEW BASIC DESIGN ELEMENTS:

- ☐ • **ZONING:** GROUP PLANTS IN THE LANDSCAPE ACCORDING TO THEIR WATER REQUIREMENTS. FOR EXAMPLE, WATER-LOVING PLANTS SHOULD BE GROUPED SEPARATELY FROM DROUGHT-TOLERANT PLANTS. THIS ALLOWS FOR THE PROPER AMOUNT OF WATER TO BE DISTRIBUTED TO THE PLANTS AS THEY NEED IT. FOR DROUGHT TOLERANT PLANTING, THE USE OF TEMPORARY DRIP IRRIGATION SYSTEM TO ESTABLISH NEW PLANTING USE IS PREFERRED OVER PERMANENT SPRINKLER PIPING.
- ☐ • **DROUGHT-TOLERANT PLANTS:** THESE PLANTS REQUIRE LESS WATER AND ARE ADAPTED TO DROUGHT CONDITIONS AND SOILS WITH LOW WATER-HOLDING CAPACITIES.
- ☐ • **DROUGHT-TOLERANT TURF:** SELECTION OF GRASS VARIETIES THAT HAVE EXCELLENT DROUGHT TOLERANCE AND WILL GROW WELL IN EXISTING SOIL TYPE. CENTIPEDE GRASS IS APPROPRIATE FOR MOST OF THE SOUTHEAST. THE CENTIPEDE, BAHIA, BERMUDA, AND ZOYSIA GRASSES ALL HAVE EXCELLENT DROUGHT TOLERANCE AND MAY BE SUITABLE FOR USF CAMPUSES, PENDING SOIL CONDITIONS ENCOUNTERED. DURING DRY PERIODS, ALLOW THE TURF TO GO DORMANT; WHEN THE RAIN COMES, THESE GRASSES WILL TURN GREEN AGAIN. BAHIA GRASS IS PREFERRED TURF FOR USF TAMPA CAMPUS INSTALLATION.
- ☐ • **MULCH:** PROVIDE 2"- 4" LAYER OF MULCH TO REDUCE EVAPORATION. DO NOT USE MULCH PRODUCED FROM CYPRESS OR OTHER DESIRABLE NATIVE TRESS HARVESTED FOR THIS PURPOSE. SUITABLE MULCH INCLUDES: WOOD FIBER THAT HAS BEEN COLLECTED FROM SUSTAINABLE SOURCES AND IS FREE OF ALL CHEMICAL ADDITIVES, COLORANTS, STUMPS, ROOTS, SEEDS, WEEDS, GRASSES OR CONSTRUCTION DEBRIS. CONSULT WITH USF FACILITIES MANAGEMENT FOR THE CURRENT USF PREFERRED MULCH TYPE.

J. DESIGN CONSIDERATION: NON-NATIVE INVASIVE SPECIES: (WWW.FLEPPC.ORG) • FLORIDA EXOTIC PEST PLANT COUNCIL INVASIVE PLANT LISTS

1. THE FLORIDA EXOTIC PEST PLANT COUNCIL (**FLEPPC**) MAINTAINS THE FLORIDA EXOTIC PEST PLANT COUNCIL INVASIVE PLANT LISTS WHICH INCLUDES SPECIES CONSIDERED TO BE MOST INVASIVE OR POTENTIALLY INVASIVE IN FLORIDA. THIS LIST IS PERIODICALLY UPDATED TO LIST LATEST CATEGORY I AND II NON-NATIVE INVASIVE PLANTS. NO CATEGORY I AND II PLANTS ARE PERMITTED FOR NEW PLANTING ON USF CAMPUS.

- ☐ • **CATEGORY I:** PROHIBITED PLANTS ON THIS LIST ARE CONSIDERED TO BE NON-NATIVE INVASIVE PLANTS THAT ARE CURRENTLY DISRUPTING NATIVE PLANT COMMUNITIES IN CERTAIN AREAS OR THROUGHOUT THE STATE.
- ☐ • **CATEGORY II:** PLANTS ON THIS LIST HAVE THE POTENTIAL TO DISRUPT NATIVE PLANT COMMUNITIES.

K. DESIGN CONSIDERATION: MICROCLIMATE EFFECT & ENVIROSCAPING: (WWW.IFAS.UFL.EDU)

- IFAS PUB NO EES38, ENVRIOSCAPING TO CONSERVE ENERGY: GROUND COVER FOR CENTRAL FLORIDA
- IFAS PUB NO EES41, ENVIROSCAPING TO CONSERVE ENERGY: TREES FOR CENTRAL FLORIDA
- IFAS PUB NO EES43, ENVRIOSCAPING TO CONSERVE ENERGY: MACROCLIMATE MODIFICATIONS
- IFAS PUB NO EES50, ENVRIOSCAPING TO CONSERVE ENERGY: DETERMINING SHADE PATTERNS FOR CENTRAL FLORIDA

1. BUILDINGS IMPACT MICROCLIMATE; IMPACTING SOLAR GAIN, WINDS, TEMPERATURES & HUMIDITY OF SOIL AND AIR, OF AN AREA AS SMALL AS THE IMMEDIATE BUILDING SITE. URBAN HEAT ISLANDS ARE A TYPE OF MICROCLIMATE EFFECT WHICH CAN IMPACT THE ENERGY PERFORMANCE OF BUILDINGS. LANDSCAPE TREATMENT, INCLUDING USE OF TREE CANOPY AND GREEN ROOF TO REDUCE AREA OF HEAT ISLANDS, CAN PRODUCE POSITIVE CHANGES TO MICROCLIMATE CHARACTERISTICS OF THE SITE, AND THUS IN TURN IMPROVE ENERGY PERFORMANCE OF THE BUILDINGS. USGBC LEED CERTIFICATION RECOGNIZES THE VALUE OF MICROCLIMATE EFFECT IN LANDSCAPE DESIGN IN AWARDING HEAT ISLAND REDUCTION CREDIT FOR UTILIZING TREE CANOPIES AND GREEN ROOFS.

- ☐ • **TREE PLACEMENT:** CONSIDER PLACEMENT OF TREES: E.G.: LOCATE TREES TO SHADE BUILDINGS IN SUMMER AND PROVIDE WIND BREAK AGAINST WINDS IN WINTER.
- ☐ • **TREE SELECTION:** CONSIDER TYPE AND SIZE OF TREES: E.G.: SELECT DECIDUOUS TREES (TYPE) FOR SHADING IN SUMMER, TO PROVIDE CONTINUOUS SHADE CANOPY AT MATURITY (SIZE) AND ALLOW FOR SOLAR GAIN IN WINTER (TYPE).