Campus Master Plan Update 2016
Landscape & Grounds Maintenance
Annual Landscape and Grounds Maintenance

Founded in 1961, the University of Alabama in Huntsville is located in Huntsville, Alabama. From a Landscape and grounds point of view it is quickly becoming a unique and contemporary university campus. Magnificent, mature Oaks, specimen trees around the beautiful lakes, and a new central core greenway with defined flower beds give the campus sense of charm that only enhances the contemporary feel. Add to that the historical oaks planted during the Von Braun era at the founding of the University, as well as the continued diverse tree palette, and it is easy to see how it earned a Tree City Campus designation. This strategic plan will serve as the primary roadmap to ensure the campus landscape and grounds continues to be one of the most prominent assets of this growing campus.

A well cared for and properly maintained campus landscape adds to the beauty of the entire campus, and is critical to recruiting students. Dr. Phillip Waite, Associate Professor in Landscape Architecture at Washington State University directed his research at the effective power of place and how the landscape of a campus affects student recruitment, retention, and learning performance. He found that 62% of high school seniors make their choice of institution on the basis of the appearance of the campus buildings and grounds. The beauty of this campus also translates into an incredible recruitment tool to attract quality faculty and staff and serves as a foundation for a conducive environment to study, teach, research, work, entertain, recreate and relax.

With this beautiful landscape comes the enormous challenges of maintaining a high level of landscape excellence, including installation and integration of new special landscape projects, meticulous planning for future landscaping on capital construction and, most importantly, paying close attention to details on daily grounds and landscape maintenance. The annual grounds maintenance requirements, from daily routines to annual cycles, will be outlined in detail in Part 1 of this plan. Descriptions of campus landscape and grounds projects are provided in Part III. Ultimately, this Landscape and Grounds Strategic Plan will serve as a detailed reference and timeline to ensure the most critical campus landscape needs and requirements are addressed over both the short and long term, as well as to formulate a solid plan for campus special projects in the landscape arena.

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A. General Information and Requirements

No landscape maintenance can be performed correctly without properly functioning equipment. All University landscape and grounds equipment (the term equipment includes vehicles in the document) shall be maintained to safe operating condition for performing work on the UAH campus. All equipment, without exception, shall have proper safety devices maintained at all times while in use. If any equipment does not have proper safety devices, that equipment shall be removed from service until the deficiency is corrected to the satisfaction of the Assistant Vice President for Grounds. The same is true for the unsafe operation of any equipment by personnel employed or contracted by the University when working on this campus.

Contractor personnel performing landscape and grounds maintenance on campus will be in compliance with all contract requirements. In addition, contracted personnel will be properly identified and present themselves in a neat and professional manner at all times. All vehicles should also be properly identified and have a clean appearance while operated in campus. The contractor shall be responsible for storing their ground equipment and supplies at an off campus location. Their equipment will not be stored on University property.

B. Campus Irrigation Systems

The integrated application of water into the project for grass, shrubs, flowers, and trees is an important part of the landscape design. The most effective and efficient way of maintaining a healthy landscape is by using irrigation systems.

Currently, UAH has twenty eight operating irrigation systems on the main campus (See Figure 5.1 and Figure 5.2). To establish and maintain healthy, inviting and aesthetically pleasing landscapes, these irrigation systems must stay in good operational condition. Irrigation systems that do not operate correctly due to controller malfunctions, breaks to the systems, or inadequate coverage; or are wasteful due to watering the street/sidewalks instead of the green areas, are not effective or resourceful. To avoid this, a dedicated maintenance repair schedule should be implemented.

This maintenance should be on a daily basis. The short term goals will be to inspect each system at least once a week. The Grounds Team and Irrigation Technician can do this every Monday by evaluating the systems in areas under their purview. Also, all Campus Grounds team members are trained to note irrigation operations that appear to be problematic. Leaks, malfunctions, and pooling of water will be reported so that a work order can be issued for immediate action and repair. All irrigation systems are to be marked with Global Positioning Satellite (GPS) technology. The following items should be included in this documentation: meters, controllers, clocks, wire splices, soil moisture sensors, weather sensors, hose-bibs, quick couplers, valves and all irrigation heads. The ability to quickly locate system components that are underperforming would translate into significant cost savings.

Lastly, all irrigation systems on the campus are electrical. For better system performance, compatibility, training and maintenance all future installations on the campus should be electric systems. Also, all new sidewalks/service roads should take into account the existing irrigation as well as the potential to add irrigation in areas in the future. With sleeving added as part of new sidewalk and service road construction, systems that need to be repaired or replaced due to damage caused by the new installation can be scheduled and completed immediately.

C. Campus Seasonal Planting — Flowers and Shrubs

For a growing campus like UAH, an exhaustive horticulture list as well as a plan for seasonal planting, is very important (See Figure 5.3). This plan lists the best flowers and shrubs to be incorporated into beds, baskets, and pots on campus. This will include the plants currently being successfully used on campus. Seasonal color plants in particular will be strictly coordinated with the season for the best potential display. This will emphasize the southern landscape and contemporary design background of the university. For each color of bloom desired in specific color areas, proven back-up flowers or shrubs will also be assigned in case the first choice is not available. Any proposed plants, in addition to the comprehensive list, should be approved by a Campus Landscape and Grounds Committee.

The definitive objective for all seasonal color planting is to follow a strict schedule which will relate to the four seasonal cycles for the majority of the campus each year. Certain areas may be planted biannually with all areas designed on the timetable (See Figure 4.5 and 5.5).

D. Campus Tree Care

One of UAH’s greatest assets is the number of appealing, mature trees. An impressive overhead canopy of large trees, in addition to specimen trees, creates a delightful outdoor environment for students, faculty, staff and visitors to the University. Represented species include: Red Maple, Dogwood, Oak, Crape Myrtle, Hollie, and Magnolia as well as pines, elms and other beautiful trees (See Figure 5.6).

The impressive number of trees on campus necessitates their constant care and grooming, as well as removal and replacement as necessary to maintain both the beauty and health of each tree. Events that cause stress to the trees such as storm damage, pruning, feeding and mulching, must be taken into account during the year. The Deep South location can also create a need for additional maintenance such as supplemental watering during droughts. It is essential to maintain a Grounds Team that can react to the extreme weather events common in the Tennessee Valley such as extreme heat, cold, snow/ice, or even tornadic conditions.

The short term goal for this care would include a campus inspection and evaluation of each tree on a monthly basis. This should be a joint task performed by members of the Grounds Team, a Horticulture Manager, a consulting University Forester and a Landscape Architect. When a tree has concluded its life cycle, it is not cut down until the entire team has concurred and the Forester has made the final decision after including the University’s senior leadership. When appropriate, dead trees should be replaced by new ones. If a tree is deemed to be in an inappropriate location due to factors such as new construction or power lines, transplanting the tree should be considered. When an existing tree cannot be transplanted, a new tree should be planted in a proper location to replace it (See Figure 5.7).

E. Campus Turf Care

Proper care for the various species of grasses present on the UAH Campus requires patience, dedication, monitoring, and research, but it will foster a green look that can be signature to the UAH landscape.

There are four primary elements that aid in making turf density and color the best it can be. If any one of these elements are lacking, turf health and color will suffer.

1. Proper amounts of sunlight is the most crucial contributor to turf health. Some grasses perform better in shade than others, but no turf will thrive in heavy shade. The two types of turf that are better suited to shade are Fescue and Zoysia varieties. Whenever possible, one of these two should be used with the preference belonging to the Zoysia variety. As new turf areas are identified for installation, the task force mentioned above should be consulted to perform strategic pruning of existing trees in an effort to provide more sunlight through the canopy to the turf area.

2. Adequate water is also vital to the health of turf grass. Water aids in the photosynthesis process, provides the turf with the sugar to keep it standing upright, and helps the plant keep itself cool. As such, it is vital that the irrigation water supply be tested a minimum of one time per year for pH balance, and to ensure that there has not been any accumulation of impurities that might be detrimental to a plant’s health.

3. Supplying oxygen to the plant’s roots is another essential part to maintaining healthy turf areas. Texturally, soils contain areas of solids and pockets of empty space. Ideally, a mixture of half water to half oxygen should occur in these soil voids. There are multiple ways to ensure this is happening. Core aeration, which creates a hole in the soil surface, allows these voids to be created. The voids allow water and food to more easily reach the root zones. Proper drainage is also key to keeping the
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soil oxygen levels up. When an area becomes water logged, it is a sure sign that there is little oxygen getting to the root zone. Standing water suffocates the root system which will lead to plant death.

4. Lastly, proper fertility is vital to great looking turf grass. Testing of soil and turf tissue should be conducted at least two times per year. These tests will reveal the current growing conditions in the soil, and help predict the soil’s condition in the future. Regular tests will give the Grounds Department a baseline soil condition and help identify the nutrients required in each area of campus to maintain optimal growing conditions. It will also prevent unnecessary fertilizer applications that could be detrimental to the plants (See Figure 6.1 and 6.2).

These four elements have a significant impact to the health of turf-grass but there are other factors which can be done to aid in turf’s color and beauty. Regular mowing is an absolute necessity to help maintain a consistent green color. Mowing of these areas should be performed a minimum of one time per week. Patterns should be alternated weekly to keep grass upright. Once decided upon, the mowing height should not change throughout the remainder of the growing season. (See Figure 6.3).

F. General Grounds Maintenance, Leaf Removal and Mulch Application/Cycles

To properly maintain the landscape year round, groundkeepers must be trained to handle every aspect of landscape care. By utilizing proper techniques in day to day landscape care, the grounds team will sustain healthier and more attractive looking plants.

General Ground Maintenance & Leaf Removal

The Grounds Manager is responsible for determining and providing detailed daily instructions for the grounds keepers to follow. He should identify the areas to be mowed, and define the appropriate tools for each job. While sometimes a push mower or trimmer are appropriate, other times the task may require a riding mower or bush hog. The Grounds Manager will consider the type of turf to be mowed, the current season of the year, and the lay of the land in determining and setting the correct height for the mower blades for each area to be mowed. (See Figure 6.3). Hillsides will have varying requirements over areas of flat turf. The direction of the cut must be changed each week. This style of cutting in a crisscross pattern will help to establish healthy, vertical growth, and provides a clean-cut look to the grass.

The Grounds Manager is also responsible for creating a weekly grounds maintenance schedule. The majority of the general grounds maintenance work on campus (edging, trimming, mowing and blowing) is best accomplished between the hours of 6:00 a.m. and 2:30 p.m. Monday through Friday. This timing is ideal for several reasons. Starting early in the morning means cooler temperatures, less dust (due to damp surfaces), fewer pedestrian conflicts, and easier access to areas that are typically more difficult to service such as parking lots, pedestrian areas, and streets.

One exception to this early morning policy should be maintenance around the Residential Living Facilities on campus. The Residential Living category includes 10 facilities such as halls, apartments, dorms, and fraternity and sorority areas. (See Figure 6.4). Maintenance around these facilities should not start before a time agreed upon between the students and campus administration. This courtesy is extended in an effort to keep loud equipment away from living facilities during normal sleeping hours, and during the time when faculty and students could be on their way to early morning classes (typically 8:00 am). During ‘dead week’ each semester, work should not start before 9:00 a.m. for the benefit of students preparing for exams.

When working near these residential living facilities, crews should begin away from the buildings and work towards them. With this strategy, most students with early classes will have left the facility by the time the grounds crew begins work around the building.

Edging around sidewalks, patios, curbs and shrub beds is the most important technique for keeping a space well groomed. These areas should be edged between 1–1 1/2 inch deep, and 1/4 – 1 inch wide at sidewalks, curbs, and other hard surfaces.

Once areas have been mowed and edged, they should be “fine-tuned” by using a trimmer to remove any unappealing stray grass, ground-cover or weeds. This work should focus around areas that are hard to reach such as cracks in the curb or sidewalk; around poles, signage, and bollards; and near buildings where mowers may cause damage to the façade. All pedestrian walkways should be blown free of debris. Care should be exercised to not blow this debris toward people or vehicles. This debris should be blown to a centralized area, and then removed by vacuuming or raking. This strategy should also be followed for removing fallen leaves. At no time should this landscaping debris be placed in campus dumpsters. It should be taken to either the city dump, or to a composting area on campus.

Mulch Application

Utilizing the correct technique for installing mulch in landscaped areas on campus will add beauty to the grounds, provide moisture during heat stressed periods, and protect the plants’ roots during inclement weather periods. This protective layer is one of the simplest and most beneficial steps that can be taken to maintain healthy plants. Maintaining proper root moisture is key and lack of water is the main cause of stress to plants – especially in newly planted landscapes. Mulching these areas can provide a safeguard when grounds personnel may not be available to provide daily watering. With correct thickness, this layer of cover will insulate soils, help to keep weeds down, retain moisture, and prevent soil compaction. It will also improve soil oxygen levels, soil temperature, and moisture available to the plant and create better soil structure.

The standard technique for preparing all beds (tree, shrub and flowers, etc.) for installation of mulch should be to install a trench cut border on the outside of the bed. This “shovel-cut” edge should be at a depth of 6 inches. It then creates a trough or moat that helps to catch debris (mulch, dirt, leaves etc.) and helps stop it from spreading across areas of turf and hardscapes after weather events. This “shovel-cut” edge can also make it easier to replace material in landscape areas after heavy weather events. The cut should be a clean, straight cut that follows the outline of the bed. Mulch should be installed in all beds a minimum of one time per year but not more than two times per year. (See Figure 6.5). The following should be completed before the installation of the mulch:

1. All grass and weeds within the mulch area are to be removed.
2. Recut the trench or “shovel-cut”.
3. Installation of the mulch should not cover up the flare on trees at any time. Ensure that mulch does not touch the trunk of the tree. Mulched areas beyond the flare and on top of the root ball should be installed no more than 3” thick total above the surrounding grade.
4. Mulch should not touch the trunks of shrubs if possible.
5. Layer the mulch so that it promotes positive water flow away from the plant material towards the edge of the landscape beds.
6. Water new mulch to maintain adequate moisture and “settle” mulch down.

Certain areas of campus were observed to be in need of specific and timely maintenance. While not exhaustive, these recommendations are intended to provide immediate improvements, and generate momentum for other changes recommended in these documents. (See Figure 6.6)

G. Campus Fertilizing Care/Cycles

Proper application of fertilizer is necessary for the continued health of turf, shrubs, flowers and trees. Fertilizer will promote healthy root growth and lead to more vibrant looking shoots (blades of turf, flowers and branching). This will create stronger plants that will be better equipped to fight weeds and pests, and enable the plant to be a longer lasting specimen. Thicker and healthier roots help to minimize erosion which can reduce overall landscape maintenance.

The timely application of fertilizer is critical to this process. (See Figure 6.7). The immediate goal is to ensure that the schedule is followed strictly and that the appropriate fertilizer in the correct volume is used at the right time in the agricultural schedule. After each installation, it is important to follow up with
correct watering as specified. Horticultural experts recommend fertilizing once or twice a year but there are exceptions to this depending on location.

H. Campus Pesticide Use

From time to time, plants will become stressed due to pests such as weeds, fungi, and insects. When these pests occur, the application of both chemical and organic treatments may be necessary to reestablish the plant’s health. Applying seed and granular pesticides can take significant amounts of time and skill, and requires the careful attention of the applicator. Safety and timing of applications is extremely important. There is little room for error and it must be done precisely at the time of first application. If not done correctly, it can be disastrous and costly. (See Figure 6.1).

PART 2 — CAMPUS GROUNDS PRIORITY AREAS

The following areas are recommended as, or already being treated as priority areas of the campus.

A. Priority “A” Areas:
   1. The length of Sparkman Drive
      a. From S65 north to the exit onto University Drive East.
      b. Special focus on the lake area from the Technology gateway north to Holmes Avenue and again at the entrance in front of the Bevill Center.
   2. The length of University Drive from Sparkman east to edge of campus.
   3. Entry at Holmes Avenue
   4. The Central Core Greenway and Library Greenway.
   5. The Student Services Building
   6. Charger Union
   7. Shelby Center
   8. Shelby King Hall
   9. Conference Training Center
   10. Salmon Library
   11. University Fitness Center

B. Priority “B” Areas:
   1. Areas surrounding all core campus Athletic Facilities
   2. All residential halls
   3. All Greek housing
   4. Areas south of Technology drive to tree line
   5. Optics and Materials building
   6. Engineering and Von Braun Halls
   7. Roberts Hall
   8. Nursing Building
   9. University Fitness Center
   10. University Place School
   11. Rise School
   12. Olin King Hall
   13. SW/IRLL Building

C. Priority “C” Areas
   1. All other core campus areas
   2. Bud Cramer Hall
   3. University Park
   4. Buildings south of John Wright Drive
PART 3 — CAMPUS LANDSCAPE AND GROUNDS PROJECTS

A. Irrigation Master Control System

The most important element to achieving a healthy landscape is the application of water. Bringing the campus landscaping to the desired level of excellence will require an irrigation supply to all critical areas, and eventually to all turf, shrubs, and flowers across the entire campus.

Gaining control over all the irrigation systems existing on campus, as well as proposed systems for new projects will also be essential to achieving top results for the landscape. Properly monitored and controlled landscape irrigation will also ensure that the university is using only the minimum amount of water necessary for a healthy landscape.

The best way to do this is to utilize “smart” water management systems which can be centrally monitored via the campus’ Wi-Fi network. These types of systems can alert the Grounds Manager problems and help expedite repairs. Currently, there are 5 systems on campus which have smart control system capabilities. With these systems, the university has the ability to manage scheduling between controllers, manage the number of valves allowed to run at one time, utilize alert systems, and monitor soil moisture. The systems can also be set to shut down during and immediately after rain events.

The other existing irrigation systems should be evaluated by a professional irrigation consultant. The system components should be marked with GPS technology. These systems should be evaluated for compatibility with existing smart controllers to minimize the number of controllers that must be monitored. As new irrigation systems are installed through either new construction or special projects, it will be necessary to utilize “smart” water management systems that will tie seamlessly into the existing campus irrigation system.

Existing systems can be retrofit with technology to bring them online to the master control computer or an existing smart controller nearby. To date, the “Central Core Greenway Controller” controls the Greenway and Chargier Union and will control the Student Services Building when it is completed. The SWIRRLL Building, Shelby King Hall and Bevill Center each have smart controllers with room available for bringing additional buildings onto these systems. The Salmon Library controller controls the Greenway from Holmes to the Library and the New Nursing Building. It is also sized to add the next section of the Greenway as well as Roberts Hall irrigation.

B. Irrigation System Upgrades

Maintaining a dedicated irrigation team will be effective in providing cost savings when the need for repairs arises, and during special project installations. This team will be able to assess existing systems determine whether repair is a cost effective solution, and can recommend a replacement system which can meet the smart control requirements above. The irrigation team can assess unirrigated areas and determine whether those areas should have new systems installed.

Any future sidewalks and hardscapes to be installed on the campus should be designed with existing and potential future irrigation systems in mind. These sidewalks should always be built with a minimum of (2) 4” diameter sleeves installed.

PART 4 — CAMPUS LANDSCAPE AND GROUNDS POLICY

A. Tree Policy

Trees provide numerous benefits to the UAH campus, and the University should strive to maintain and enhance the trees on the campus. The University also should look to increase the canopy longevity and health of the tree population with safeguards and guidelines for removal of the tree canopy. These guidelines should regulate the removal of trees and should provide tree replacement plans. The canopy should be cared for in a manner which is consistent with tree health maintenance criteria both locally and on a national level.

Criteria for Tree and Vegetation Work: During the tree inventory conducted in 2015, certain criteria was used to evaluate the health of the tree and benefit of the tree to the campus. Limiting tree removal was noted as a high priority. Areas where additional tree canopy is needed was evaluated as well. For a tree to be removed, the following elements should be met:

1. Tree is dead or has reached/ exceeded its expected lifespan and is creating a danger to life and property.
2. Safety Hazard
3. Hazard to utility lines
4. Interference with new construction
5. Incorrect placement such as too close to a structure, sidewalk, parking areas.
6. Natural damage
7. Trees not consistent with master plan goals
8. Approval by Grounds Team.

Trees assigned with a “1” on the survey should be considered for removal under the above criteria.

Trees assigned with a “2” on the survey have been recommended for removal with concurrence from the owner.

Trees assigned with a “3” on the survey need minimal pruning to achieve a healthy, vibrant plant.

Trees assigned with a “4” on the survey are in good health and should be maintained.

Hazardous Tree Management: Public health, safety and welfare is to be maintained with the use of professional practices to treat trees so that risks to people and property are minimized. Proper selection, placement and maintenance will be sought after for risk reduction.

Pruning Standards: Pruning standards established by the International Society of Arboriculture will be used to maintain vegetation on the campus. Pruning should occur on an as needed basis. Trees should be evaluated by the grounds crew and by an outside professional before they are scheduled for pruning.

Topping Disallowed: Topping shall not be practiced. Topping causes permanent damage to the tree, opens up the entire canopy to insects and disease, and leads to weak branching structure. Additionally, topping is detrimental to tree health and beauty. Trees should be evaluated by the grounds crew and by an outside professional to determine an alternative solution.

Tree Retention and Protection (Daily/ Construction Site): Any misuse of trees is prohibited. Some examples of misuse include climbing, ropes, signage affixed to the tree, slack-lines, zip-lines hammocks etc. These examples can cause stress and scarring as well as broken branches which can lead to disease and possibly death of an otherwise healthy tree. The breaking off of limbs and branches for personal convenience is strictly prohibited.

Existing trees on new construction sites are to be protected wherever possible. These trees which are noted to be saved will be protected from impacts according to plans and specifications. No equipment, construction materials, or vehicles shall be parked beneath the trees. Workers should not use the trees as a “break space”. Disposal of substances such as paint or other chemicals should not be done within the tree protection fencing. Standard grounds management techniques (watering, feeding, mulching, traffic etc.) and protection requirements as noted in the plans and specifications will be strictly enforced throughout the construction process. Fines should be established for failure to comply with these techniques and specifications.

Conservation of Rare Specimens: UAH has several trees that are uncommon in this area or have significant historical meaning and are considered rare. Trees with marker designations have been noted on the tree survey and should be given extra protection and consideration to be saved.

Diseased or Infested Plants Which Pose Risk to Trees: Action should be taken to decrease the risk of pest and diseases. This will include pesticide treatments, the removal and destruction of infected materials, and alternatively accepted practices. Local and State Cooperative Extensions should be consulted as needed and the Grounds Manager should, at a minimum, make an assessment and report any recommendations to the board.
Damage, Vandalism and Illegal Cutting: Action should be taken to investigate and prosecute misuse of trees (see paragraph titled ‘Tree Retention and Protection’). This policy will make it illegal for anyone to cut or vandalize trees or other vegetation on the UAH campus. Compensation will be sought for damages based on the appraised value of the vegetation.

Tree Replacement: At least one new tree will be planted for every tree that is removed from the campus. The replanting may not always be at the same location as the removed tree due to construction or other location limiting factors. Trees that are removed in construction areas shall be replaced so that the tree volume is equal to the existing (See Figure 5.7). Replacement tree(s) species and locations will be selected so that the mature canopy volume will be maintained, or the tree(s) coincide with the landscape and building needs for the complete aesthetics of the campus.
### Figure 5.1: Irrigation Systems

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<tr>
<th>Functional Smart Systems</th>
<th>Functional Traditional Systems</th>
<th>Non-Functional Systems</th>
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<tr>
<td>Shelbie King Hall</td>
<td>Business Administration Building</td>
<td>Engineering Building</td>
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<tr>
<td>SWIRLL</td>
<td>Morton Hall</td>
<td>Business Services</td>
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<tr>
<td>Central Core Greenway /</td>
<td>Frank Franz Residence Hall / North Campus Housing</td>
<td>Conference Training Center / Admissions</td>
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<tr>
<td>Charger Union / Student</td>
<td>Courtyard only</td>
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<td>Services Building (Spring 2016)</td>
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<tr>
<td>Library Greenway/Nursing</td>
<td>Roberts Hall</td>
<td>Bud Cramer Hall</td>
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<tr>
<td>S.E. Housing Front</td>
<td>University Fitness Center</td>
<td>S.E. Housing Parking</td>
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<td>Bevill Center</td>
<td>Shelby Hall</td>
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<td>Greek Housing</td>
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<td>Intermodal Parking</td>
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<td>Wilson Hall</td>
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<td>Baseball Field</td>
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<td>Athletics Parking Lot</td>
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<td>Softball/Competition Soccer</td>
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<td>Lacrosse Practice Field*</td>
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<td>Optics Building*</td>
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<td>University Drive Entrance</td>
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<td>Intermural Fields</td>
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Figure 5.2
Supplement to Master Plan: Campus Irrigation Systems

Irrigation Legend:
1. Existing Smart Controller System Functioning/in good operational standpoint, should be the standard
2. Existing Traditional Controller System- Functioning/in good operational standpoint
3. System is currently being constructed or is under design.
4. Existing system-has reached its usefulness or is not in a working order and needs replacement.

Scale: 1” = 600'-0"
### Figure 5.3: Perennials / Annuals List

#### ANNUALS

- **Spring / Summer**
  - Alternanthera ficoides
  - Angelonia angustifolia
  - Asparagus densiflorus
  - Begonia semperflorens-cultorum
  - Begonia x hybrid 'Dragon Wing'
  - Caladium bicolor
  - Calibrachoa hybrids
  - Cordyline indivisa
  - Colocasia esculenta
  - Cuphea hyssopifolia
  - Cuphea llavea
  - Dianthus chinensis x barbatus
  - Evolvulus pilosus
  - Impatiens walleriana
  - Ipomoea batatas
  - Iresine hybrids
  - Lantana camara
  - Pelargonium x hortorum
  - Petunia x hybrid
  - Salvia guaranitica
  - Salvia splendens
  - Salvia x 'Indigo Spires'
  - Scaevola aemula
  - Tagetes patula
  - Torenia fournieri
  - Tulipa hybrids
  - Verbena hybrids
  - Zinnia elegans

- **Fall / Winter**
  - Joseph's Coat
  - Summer snapdragon
  - Asparagus fern
  - Wax begonia hybrids
  - Dragon wing begonias
  - Caladiums
  - Million Bells
  - Dracaena spike
  - Elephant Ear
  - Bat-faced cuphea
  - Becky' Daisy
  - Black and Blue Salvia
  - Ornamental Sweet Potato
  - Peroselinum crispum
  - Impatiens
  - Ornemental Sweet Potato
  - Red Salvia
  - Indigo Spires salvia
  - Fanflower
  - Marigolds
  - Torenia
  - Tulips
  - Verbena
  - Zinnia

#### PERENNIALS

- Leucanthemum x superbum 'Becky'
- Echinacea purpurea
- Rudbeckia fulgida 'Goldsturm'
- Persicaria

### Figure 5.4: Seasonal Color Chart

#### Primary

1. Sparkman Drive Main Entrance
2. University Drive Main Entrance
3. Bevill Center Entrance
4. Memorial Garden on Greenway

#### Secondary

1. Union Grove Art Gallery - sidewalk trees/bed areas
2. Technology Drive Entrance at Sparkman Drive
3. Cramer Hall South Entrance
4. Von Braun Hall Main Entrance
5. Southeast Housing
6. Business Administrative Building - rear patio and planters

#### Additional Concerns

1. Service Drive for Charger Union on Holmes Avenue - recommend thicker screening.

### Figure 5.5: Color Schedule

<table>
<thead>
<tr>
<th>Month</th>
<th>Maintenance Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>Routine maintenance of all Fall/Winter Color</td>
</tr>
<tr>
<td>February</td>
<td>Routine maintenance of all Fall/Winter Color</td>
</tr>
<tr>
<td>March</td>
<td>Begin routine maintenance of Spring/Summer Color</td>
</tr>
<tr>
<td>April</td>
<td>Remove tulips and begin installation of Spring/Summer Color</td>
</tr>
<tr>
<td>May</td>
<td>Begin routine maintenance</td>
</tr>
<tr>
<td>June</td>
<td>Routine maintenance of all Spring/Summer Color</td>
</tr>
<tr>
<td>July</td>
<td>Routine maintenance of all Spring/Summer Color</td>
</tr>
<tr>
<td>August</td>
<td>Remove summer color and begin installation of Fall/Winter color and tulips as weather permits, begin routine maintenance</td>
</tr>
<tr>
<td>September</td>
<td></td>
</tr>
<tr>
<td>October</td>
<td></td>
</tr>
<tr>
<td>November</td>
<td></td>
</tr>
<tr>
<td>December</td>
<td></td>
</tr>
</tbody>
</table>
Figure 5.6: Tree List

<table>
<thead>
<tr>
<th>Large Trees</th>
<th>Small Trees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acer rubrum</td>
<td>Tulip tree</td>
</tr>
<tr>
<td>Quercus nigra</td>
<td>Acer buergerianum</td>
</tr>
<tr>
<td>Acer saccharinum</td>
<td>Magnolia spp.</td>
</tr>
<tr>
<td>Quercus phellos</td>
<td>Acer palmatum</td>
</tr>
<tr>
<td>Quercus muehlenbergii</td>
<td>Trident Maple</td>
</tr>
<tr>
<td>Quercus falcata</td>
<td>Magnolia 'Autumn Brilliance'</td>
</tr>
<tr>
<td>Quercus alba</td>
<td>Magnolia 'Serviceberry'</td>
</tr>
<tr>
<td>Platanus occidentalis</td>
<td>Cercis canadensis</td>
</tr>
<tr>
<td>Pistacia Chinese</td>
<td>Eastern Redbud</td>
</tr>
<tr>
<td>Pinus spp.</td>
<td>Chinonanthus retusus</td>
</tr>
<tr>
<td>Ostrya virginiana</td>
<td>Chinese Fringe Tree</td>
</tr>
<tr>
<td>Nyssa sylvatica</td>
<td>Black Gum</td>
</tr>
<tr>
<td>glyptostrobides</td>
<td>Chinonanthus virginiana</td>
</tr>
<tr>
<td>Magnolia virginiana</td>
<td>American Fringe Tree</td>
</tr>
<tr>
<td>Magnolia macrophylla</td>
<td>Magnolia 'Foster'</td>
</tr>
<tr>
<td>Liriodendron tulipifera</td>
<td>Magnolia 'Winterking Hawthorne'</td>
</tr>
<tr>
<td>Cupressus x leylandii</td>
<td>Sequoia sempervirens</td>
</tr>
<tr>
<td>Zelkova serrata</td>
<td>Chinese Pistache</td>
</tr>
<tr>
<td>Fagus grandifolia</td>
<td>Ilex cornuta 'Sizzler'</td>
</tr>
<tr>
<td>Fagus ssp.</td>
<td>Ilex R. Stevens 'Sizler'</td>
</tr>
<tr>
<td>Fraxinus Pennsylvania</td>
<td>Sugar Maple</td>
</tr>
<tr>
<td>Sugar Maple</td>
<td>Willow Oak</td>
</tr>
<tr>
<td>Ginkgo biloba</td>
<td>English Oak</td>
</tr>
<tr>
<td>Juglans regia</td>
<td>Ligustrum japonicum</td>
</tr>
<tr>
<td>Juniperus virginiana</td>
<td>Crape myrtle</td>
</tr>
<tr>
<td>River Birch</td>
<td>Crape myrtle</td>
</tr>
<tr>
<td>Koelreuteria paniculata</td>
<td>Weeping Willow</td>
</tr>
<tr>
<td>Liquidambar styraciflua</td>
<td>Malus spp.</td>
</tr>
<tr>
<td>Pecan</td>
<td>Crabapple</td>
</tr>
<tr>
<td>Liriodendron tulipifera</td>
<td>Pecan</td>
</tr>
<tr>
<td>Shagbark Hickory</td>
<td>Myrica cerifera</td>
</tr>
<tr>
<td>Magnolia grandiflora spp.</td>
<td>Souther Wax myrtle</td>
</tr>
<tr>
<td>Blue Atlas Cedar</td>
<td>Pinus sylvestris</td>
</tr>
<tr>
<td>Bald Cypress</td>
<td>Scotch Pine</td>
</tr>
<tr>
<td>Magnolia virginia</td>
<td>American Elm</td>
</tr>
<tr>
<td>Hackberry</td>
<td>American Beech</td>
</tr>
<tr>
<td>Magnolia virginia</td>
<td>Vitex agnus-castus</td>
</tr>
<tr>
<td>Metasequoia glyptostroboides</td>
<td>Dogwoods</td>
</tr>
<tr>
<td>Dogwoods</td>
<td>Chinese Elm</td>
</tr>
<tr>
<td>Nyssa sylvatica</td>
<td>Pyrus calleryana</td>
</tr>
<tr>
<td>Cryptomeria</td>
<td>Bradford Pear</td>
</tr>
<tr>
<td>Leyland Cypress</td>
<td>Japanese Zelkova</td>
</tr>
<tr>
<td>Magnolia virginia</td>
<td>Viburnum spp.</td>
</tr>
<tr>
<td>Pinus spp.</td>
<td>Viburnum</td>
</tr>
<tr>
<td>Pistacia Chinese</td>
<td>Beech</td>
</tr>
<tr>
<td>Platanus occidentalis</td>
<td>Ash</td>
</tr>
<tr>
<td>Quercus acutissima</td>
<td>Ginkgo</td>
</tr>
<tr>
<td>Quercus alba</td>
<td>Walnut</td>
</tr>
<tr>
<td>Quercus falcata</td>
<td>Eastern Red Cedar</td>
</tr>
<tr>
<td>Quercus irryta</td>
<td>Golden Raintree</td>
</tr>
<tr>
<td>Quercus muehlenbergii</td>
<td>Sweetgum</td>
</tr>
</tbody>
</table>

Figure 5.7: Tree Replacement Policy

<table>
<thead>
<tr>
<th>Diameter of Removed Tree (inches)</th>
<th>Diameter of Replacement Tree (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&quot;</td>
<td>1 tree</td>
</tr>
<tr>
<td>2&quot;</td>
<td>2 tree</td>
</tr>
<tr>
<td>3&quot;</td>
<td>3 tree</td>
</tr>
<tr>
<td>4&quot;</td>
<td>4 tree</td>
</tr>
<tr>
<td>5&quot;</td>
<td>5 tree</td>
</tr>
<tr>
<td>6&quot;</td>
<td>6 tree</td>
</tr>
<tr>
<td>7&quot;</td>
<td>7 tree</td>
</tr>
<tr>
<td>8&quot;</td>
<td>8 tree</td>
</tr>
<tr>
<td>9&quot;</td>
<td>9 tree</td>
</tr>
<tr>
<td>10&quot;</td>
<td>10 tree</td>
</tr>
<tr>
<td>11&quot;</td>
<td>11 tree</td>
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<td>12&quot;</td>
<td>12 tree</td>
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<td>13&quot;</td>
<td>13 tree</td>
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<tr>
<td>14&quot;</td>
<td>14 tree</td>
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<tr>
<td>15&quot;</td>
<td>15 tree</td>
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<tr>
<td>16&quot;</td>
<td>16 tree</td>
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<td>17&quot;</td>
<td>17 tree</td>
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<tr>
<td>18&quot;</td>
<td>18 tree</td>
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<tr>
<td>19&quot;</td>
<td>19 tree</td>
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<td>20&quot;</td>
<td>20 tree</td>
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<td>21 tree</td>
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<tr>
<td>22&quot;</td>
<td>22 tree</td>
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<tr>
<td>23&quot;</td>
<td>23 tree</td>
</tr>
<tr>
<td>24&quot;</td>
<td>24 tree</td>
</tr>
<tr>
<td>25&quot;</td>
<td>25 tree</td>
</tr>
</tbody>
</table>
PART 6: ANNUAL MAINTENANCE STANDARDS, FIGURES, AND TIMETABLES

**Figure 6.1: Turf Pesticide Timeline**

<table>
<thead>
<tr>
<th>Month</th>
<th>Cool Season Turf</th>
<th>Warm Season Turf</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>Application of a non-selective post-emergent weed control (Round-up) if needed</td>
<td></td>
</tr>
<tr>
<td>February</td>
<td>Application of pre-emergent herbicide</td>
<td>Application of pre-emergent herbicide</td>
</tr>
<tr>
<td>March</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April</td>
<td>Application of a fungicide to protect Zoysia grass from Zoysia patch</td>
<td></td>
</tr>
<tr>
<td>May</td>
<td>Application of selective post-emergent weed if needed</td>
<td>Application of a selective post-emergent herbicide if needed</td>
</tr>
<tr>
<td>June</td>
<td>Possibility of an application of a broad spectrum fungicide, this will be dependent of disease pressure which is primarily dictated by weather patterns</td>
<td></td>
</tr>
<tr>
<td>July</td>
<td></td>
<td></td>
</tr>
<tr>
<td>August</td>
<td>Application of a pre-emergent herbicide</td>
<td></td>
</tr>
<tr>
<td>September</td>
<td>Application of a fungicide to combat grubs and/or fall army worms as well as</td>
<td></td>
</tr>
<tr>
<td>October</td>
<td>Application of a selective post-emergent weed control if needed.</td>
<td>Application of fungicide to protect against zoysia patch</td>
</tr>
<tr>
<td>November</td>
<td></td>
<td></td>
</tr>
<tr>
<td>December</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 6.2: Turf Fertility Timeline**

<table>
<thead>
<tr>
<th>Month</th>
<th>Cool Season Turf</th>
<th>Warm Season Turf</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>Fertilize with a 1-1-3 at a minimum of 1 pound potassium per 1000 square feet</td>
<td>Fertilize with a 1-1-3 at a minimum of 1 pound nitrogen per 1000 square feet.</td>
</tr>
<tr>
<td>February</td>
<td>Fertilize with a 3-2-1 with quick release at a maximum of 1 lb. nitrogen per 1000 square feet</td>
<td>Fertilize with a 3-1-1 with quick release at 1 lb per 1000 square feet.</td>
</tr>
<tr>
<td>March</td>
<td>Fertilize with a 3-2-1 product that will release 1.5 pounds nitrogen over approx. 16 weeks</td>
<td>Fertilize with a 3-2-1 product that will release 2 pounds nitrogen over approx. 16 weeks.</td>
</tr>
<tr>
<td>April</td>
<td>Fertilize with a 3-1-3 that will supply 1/2 lb. nitrogen quick release and 1/2 lb. nitrogen slow release.</td>
<td>Application of a selective post-emergent herbicide if needed</td>
</tr>
<tr>
<td>May</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July</td>
<td></td>
<td></td>
</tr>
<tr>
<td>August</td>
<td>Fertilize with a 2-1-3 at a minimum of 1 pound potassium per 1000 square feet. It should contain a pre-emergent herbicide.</td>
<td>Fertilize with a 1-2-3 at a minimum of 1 pounds phosphorous and 1.5 pounds potassium per 1000 square feet.</td>
</tr>
<tr>
<td>September</td>
<td>Fertilize with a 1-1-1 at a minimum of 1.5 pounds potassium per square feet.</td>
<td>Fertilize with a 1-1-3 at a minimum of 1.5 pounds phosphorous and 1.5 pounds potassium per 1000 square feet.</td>
</tr>
<tr>
<td>October</td>
<td>Fertilize with a 1-3-1 at a minimum of 1 pound nitrogen and 1 pound potassium per 1000 square feet.</td>
<td>Fertilize with a 1-1-3 at a minimum of 1.5 pounds of potassium per 1000 square feet.</td>
</tr>
<tr>
<td>November</td>
<td></td>
<td></td>
</tr>
<tr>
<td>December</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 6.3: Turf Cutting Height**

<table>
<thead>
<tr>
<th>Cool Season Turf</th>
<th>Warm Season Turf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bermuda</td>
<td>3.0&quot; - 3.5&quot;</td>
</tr>
<tr>
<td>Fescue</td>
<td>3.25&quot; - 3.5&quot;</td>
</tr>
<tr>
<td>Zoysia</td>
<td>3.0&quot; - 3.5&quot;</td>
</tr>
</tbody>
</table>
Figure 6.4: Residential Facilities on Campus

<table>
<thead>
<tr>
<th>Halls</th>
<th>Fraternities</th>
<th>Sororities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charger Village</td>
<td>Sigma Nu</td>
<td>Kappa Delta</td>
</tr>
<tr>
<td>Southeastern Housing</td>
<td>Delta Chi</td>
<td>Delta Zeta</td>
</tr>
<tr>
<td>Frank Franz Hall</td>
<td>Alpha Tau Omega</td>
<td></td>
</tr>
<tr>
<td>North Campus Hall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Campus Hall</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 6.5: Mulching Schedule

<table>
<thead>
<tr>
<th>Area</th>
<th>Spring</th>
<th>Summer</th>
<th>Fall</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area A</td>
<td>Spring</td>
<td>Summer</td>
<td>Fall</td>
<td></td>
</tr>
<tr>
<td>Area B</td>
<td>Spring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area C</td>
<td>Spring</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 6.6: Immediate Action Items

1. Sparkman Drive Main Entrance: behind Southern brick sign walls, replace sod between trees and waterline with Miscanthus.
2. Sparkman Drive Main Entrance: correct symmetry of trees behind sign walls.
3. Sparkman Drive Main Entrance: concrete strips to be re-painted to match rest of campus.
4. Cramer Hall: address multitude of small planting beds (combine where possible).
5. Cramer Hall: remove Eleagnus.
6. Technology Hall Parking Lot: replace Crapemyrtles in parking lot islands with Large Shade Trees.
7. Technology Hall: address appearance of raised planter beds.
8. Spragins Hall: clean up Western buffer to residential properties and extend plantings along entire fenceline.
9. Spragins Hall: clean up planting area on top of wall next to former University Elementary School.
10. Spragins Hall: combine planting beds under 2 large magnolias along Ben Graves Drive.
11. Tennis Courts: clean up Western buffer to residential properties and extend plantings along entire fence line.
12. Tennis Courts: provide pedestrian path from Clayrest Drive to existing sidewalks.
13. Southeast Housing: significant drainage issues between Building 704 and 706.
15. Technology Drive: remove burlap from newly planted trees.
17. North Residence Halls Parking Lots: address appearance of fence line plantings next to former University Elementary School.
18. University Conference Center: address appearance of planting beds to the North of building.
19. University Conference Center: address appearance of beds at the South Entrance, remove trash from area next to Volleyball court.
20. Salmon Library: address Poison Ivy in beds to the West of library.
21. Central Campus Residence Hall: address slope and sidewalk at Eastern entrance.
22. Central Campus Residence Hall: address overgrown plantings in Northwest corner - poses safety hazard.
23. Wilson Hall: increase planting bed under Cherry’s planted to the West of building - combine beds and add mulch to dripline.
24. Wilson Hall: increase planting bed under Large Cedar South of building.

Figure 6.7: Fertilizing Schedule

<table>
<thead>
<tr>
<th>Area</th>
<th>Spring</th>
<th>Summer</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area A</td>
<td>Spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area B</td>
<td>Spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area C</td>
<td>Spring</td>
<td>Summer</td>
<td></td>
</tr>
</tbody>
</table>