



LANDSCAPE STRATEGIC PLAN

FUTUREVU 
A vision for the future of Vanderbilt's campus

March 2020

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REFERENCE PLANS

FutureVU (Land Use Master Plan)

<https://www.vanderbilt.edu/futurevu/>

Plans and strategies that fall under FutureVU

- Transportation & Mobility (MoveVU plan):

<https://www.vanderbilt.edu//movevu>

- Sustainability:

<https://www.vanderbilt.edu//sustainability/>

- Accessibility (Accessibility Master Plan):

<https://www.vanderbilt.edu/futurevu/accessibility>

Vanderbilt Architecture and Engineering Standards:

<https://www.vanderbilt.edu/campusplanning/contract-documents/>

Vanderbilt Sustainable Building Standards:

<https://www.vanderbilt.edu/campusplanning/contract-documents/>

INTRODUCTION



PURPOSE

In support of [FutureVU](#) and the [Academic Strategic Plan](#), this document understands that Vanderbilt is a university that resides in a unique and distinctive park-like setting, and seeks to strengthen and expand the university's aesthetic character. Identifying memorable spaces and preserving them, while considering new memorable spaces, will personalize the landscape. The university aims to ensure that future development reinforces the park-like setting. In support of this vision, the Landscape Strategic Plan sets standards and governance for the campus outdoor spaces. This is accomplished by establishing long-term goals, maintenance standards, record keeping procedures, governance and targets for the university landscape.



VISION

“We should consider Vanderbilt our home base, our sacred ground, and treat it as such.”

- Nicholas S. Zeppos, Emeritus Chancellor
Campus Land Use Symposium, November 2015

Vision (as articulated in FutureVU executive summary)

CLARIFY & STRENGTHEN | Strengthen the beauty and diversity of the campus by clarifying and building on the unique characteristics of each campus neighborhood.

INTERACT | Protect and strengthen existing open spaces and create new open spaces as vibrant places of intellectual and social interaction.

CONNECT | Campus edges, spaces and destinations with a legible and logical Greenway, providing strong and appropriate paths of circulation for pedestrians, bikes and vehicles.

VIEW | Open visual connections into and within the campus to increase the clarity of new and existing spaces.

MITIGATE | Mitigate those factors that contribute adversely to the campus experience.

SUPPORT | Create support systems to safeguard and conserve the campus physical resources and allow it to flourish, grow and sustain itself into the future.



THE BEGINNING

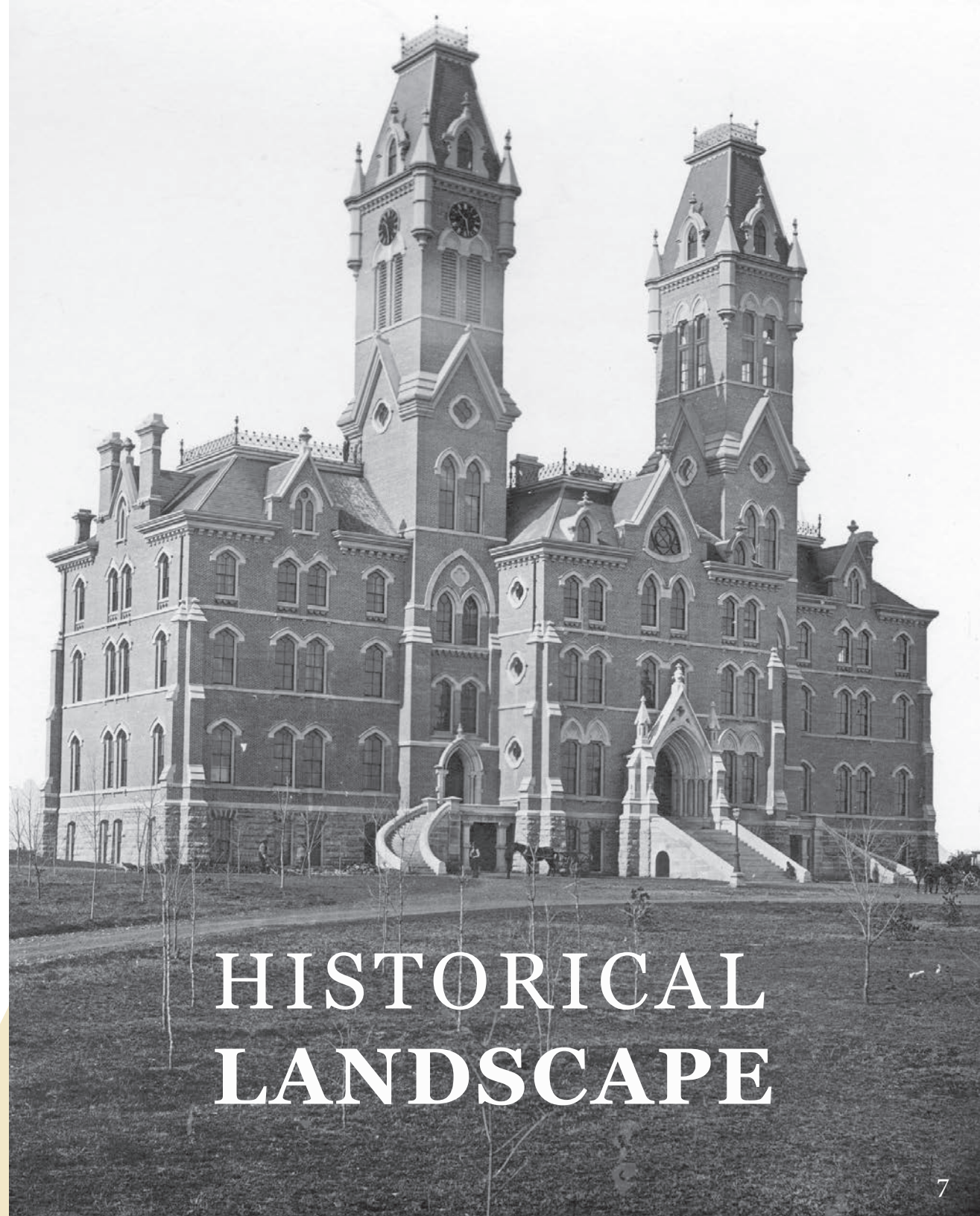
From its inception, Vanderbilt University has been defined by the character of the landscape. In March of 1873 Bishop Holland McTyeire convinced Cornelius Vanderbilt to contribute a million dollars to found Vanderbilt University. The proposed land was rural; a corn field and nursery for plants were among the only agricultural uses of five combined plots; except for along roadways, there were very few trees. However, near the farm residence (Old Central) were several large oaks that can still be admired today. As president of the Board of Trust, Bishop McTyeire immediately began to shape the character of the campus with a massive tree-planting campaign. Around Old Main (the only academic building on campus at that time), McTyeire supervised the planting of hundreds of small trees, he reported that approximately 200 trees were planted on the grounds in November of 1873.

THE ARBORETUM

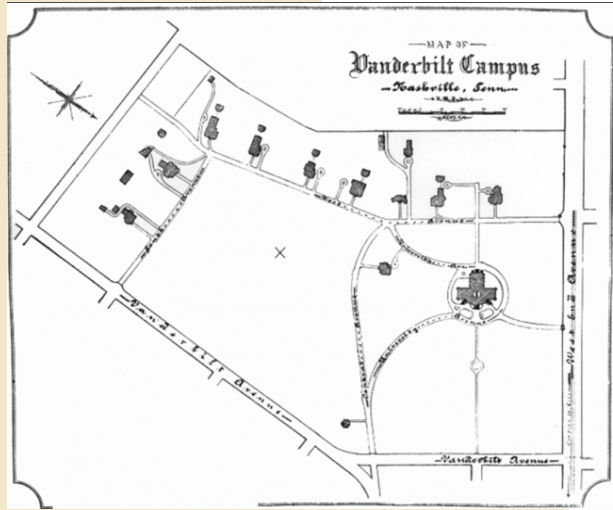
For McTyeire, the trees served an educational purpose as well as an aesthetic one. His educational mission is reflected in the designation of the campus grounds as “the Arboretum” as early as 1878. Dr. Safford, a professor of botany, with landscape gardener Mr. Douglass, recorded over 500 donated trees in the Catalogue of the Species and Varieties of Plants the Vanderbilt Arboretum in May 1879. By 1900, the trees in Bishop McTyeire’s original planting scheme came to maturation. Students had already become attached to the trees on campus by the time Furman Hall was being built in 1907. In the first such controversy on campus, students protested the cutting of large trees that would allow Furman Hall and for the paths between West End and the new building to be constructed.

VANDERBILT PLANNING HISTORY

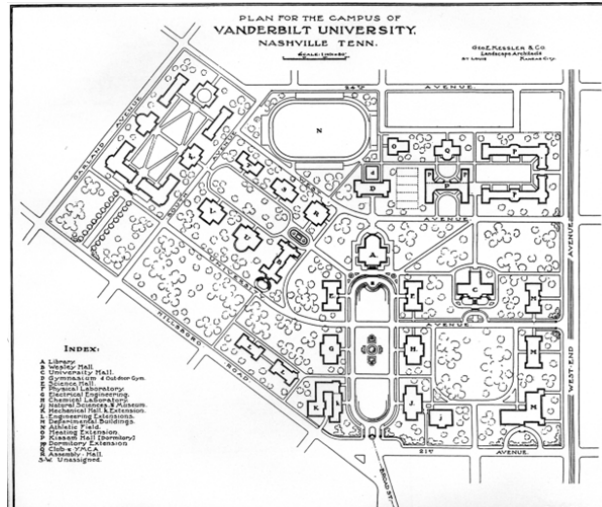
University campuses embark on campus master planning efforts, or land use planning efforts, regularly throughout their history. Often referred to as the physical manifestation of a university’s strategic plan, campus master planning results in a long-range strategy for the growth and transformation of a campus. To learn more about Vanderbilt’s campus planning history, please visit the following web page: <http://www.vanderbilt.edu/futurevu/history/>.



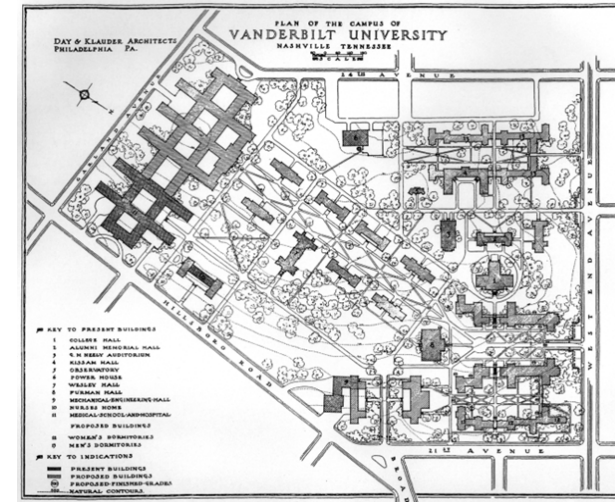
HISTORICAL
LANDSCAPE



The original campus, comprising only 75 acres, included 11 structures and was situated on a pasture with sprawling views of downtown Nashville.



As early as 1905, when the George E. Kessler and Company Master Plan was created, trees and green spaces were a priority in defining the Vanderbilt Environment.



The 1965 Master Plan (Clarke and Rapuano) highlights the importance of the Magnolia screen to demarcate the periphery of campus.

OFFICIAL RECOGNITION | Campus landscape architect Tara Armistead secured official arboretum status for the university in 1989 from the American Association of Botanical Gardens and Arboreta (now American Public Gardens Association). Because the arboretum is contiguous with the Vanderbilt campus, the Campus Planning and Construction office and University Landscape Architect manage the arboretum.

THE MAGNOLIA SCREEN | Margaret Branscomb, wife of Chancellor Harvie Branscomb, revived the Garden Club to supervise the planting of trees to beautify the areas around the new buildings of the Branscomb administration. The Magnolia screen on the campus perimeter during the 1950s and plantings around the new Branscomb Quadrangle during the late 1960s are still loved today. The Garden Club disbanded in the fall of 2006, after ceding landscaping responsibilities to professional crews.





GOALS & TARGETS

DIVERSITY AND INCLUSION

LANDSCAPE EFFORTS MUST ALIGN WITH ACCESSIBILITY MASTER PLAN

In May of 2017, the university launched a comprehensive accessibility study with the long-term goal of making indoor and outdoor areas accessible and inclusive for all members of the Vanderbilt community. The first step of this process included critically assessing and documenting the different accessibility features on campus. A student work force inventoried and gathered pertinent data regarding existing conditions of the built environment. Vanderbilt Facilities, along with an external consultant, imported the collected data into a GIS platform that is integrated with VU technologies and abilities. This virtual information constitutes the authoritative database for accessibility and other issues (gender neutral restrooms, lactation rooms, showers, etc.), and will be made available to all university departments and organizations for appropriate and responsible use. VU Facilities will manage and update this database as standard operating procedure as changes occur to the built environment resulting from on-going remodels and improvements.

The university also launched the Advisory Accessibility Task Force (AATF). Task force efforts resulted in the completion and endorsement of an Accessibility Master Plan. The Accessibility Master Plan articulates goals, outlines identified needs, reviews standards for accessible design and outlines and prioritizes proposed improvements.

View the Accessibility Master Plan: vanderbilt.edu/futurevu/accessibility

AMERICANS WITH DISABILITIES ACT

TITLE III INSTITUTIONS:

Education program related spaces and support facilities that support them (in priority order):

1. Site Elements: all programs and facilities used by the public must be on an accessible route with an accessible entrance.
2. Educational Program Spaces and path of travel to primary function area of building accessible route, toilet rooms, drinking fountains, telephones, reception area, if related.
3. Direct support buildings, libraries, research facilities, used by students, computer labs, plus path of travel issues to all spaces used by students under this category.
4. Support facilities used by students while attending classes or living on campus.
5. Sports facilities.





UPGRADED TREE INVENTORY & INTERACTIVE TREE WEBSITE

EXPAND THE TREE LABELING PROGRAM

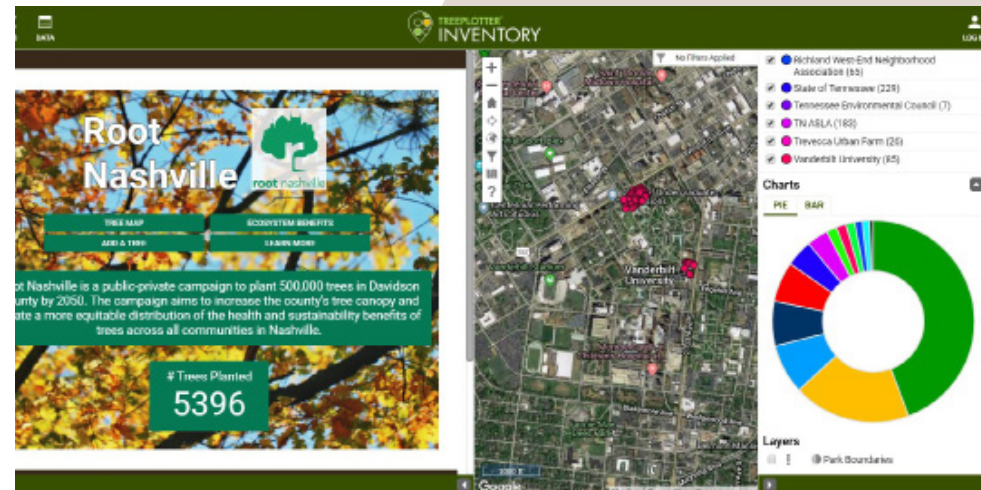
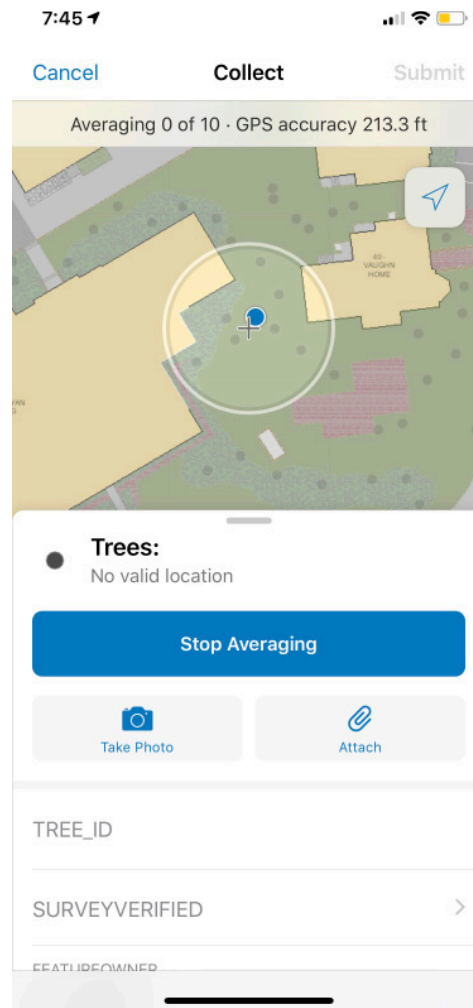
The labeling program should be expanded to not only include additional trees on campus, but also to include other information about the characteristics of a given genus, species, or variety. Use of digital resources is an opportunity to contribute to public education and will minimize the use of physical signage throughout campus.

TRACK TREE INVENTORY

Tracking campus trees should be accomplished as part of the GIS and AIM services used by Vanderbilt Facilities. All maintenance data should occur in these formats and updated when work is complete.

PARTICIPATE IN ROOT NASHVILLE PROGRAM

Root Nashville is a public-private campaign, led by Metro Nashville and the Cumberland River Compact. The goal is to plant 500,000 trees across Davidson County by 2050. Through tracking tree inventory, the university should participate in the program and submit data on trees added each year.



GREEN SPACE

INCREASE GREEN SPACE TO 50% OR MORE

FutureVU builds on the park-like setting most notably found in the Historic Core of campus, and aims to strengthen the beauty and diversity of campus. Increasing campus green spaces is a core component of the university's long-term sustainability strategy. Setting an overarching site and landscape target is core to achieving the goals outlined in FutureVU, and the university aims to increase green space overall on campus to 50% or more. To be accomplished through the following methods:

- Outdoor thermal comfort should be considered when developing landscaped areas of campus. Landscape strategies should be tailored to address criteria at local and regional level for the following parameters: solar radiation, infrared radiation from surrounding buildings, air temperature, humidity, and wind speed.
- When developing landscape strategies to mitigate effects of solar radiation and heat island effect, the university should look at the Historic Core neighborhood for inspiration.

- Locate rows of trees perpendicular to northern prevailing winds along main walkways.
- Decrease the amount of medium to low-growth vegetation near pedestrian walkways to optimize air movements.
- Stagger vegetation in open spaces to fragment wind gusts.
- Use deciduous species for plants perpendicular to shoulder-season prevailing winds.
- Provide dedicated areas of respite near building entrances for 5% of the programmed building space.
- Include at least one shaded seat for every 200 square feet of dedicated outdoor space that is accessible from the pedestrian walkways.
- Specify a variety of native/adaptive vegetation from the Metro Nashville region, and provide functional green space that manages rainwater and create comfortable outdoor environments.
- Set a minimum target of 25% overall increase in the Biomass Diversity Index campus wide and

track progress as FutureVU is implemented.

- Prioritize plant nurseries that specialize in Integrated Pest Management and Plant Health Care.
- Identify and enforce fertilizer/pesticide-free zones.

SOIL AND FERTILIZER TARGETS

- Expand the use of campus generated compost teas instead of chemical based fertilizers.
- Develop a soil management plan (SMP) identifying areas for soil preservation/restoration.
- Restore disturbed soils post-construction to a depth of at least 12 inches.
- Introduce organic matter into disturbed topsoil to a minimum of 3% by volume or to the level of organic matter present in the reference soil.
- Create treatment plans that target each soil restoration zone.
- Identify the reference soils to establish performance criteria for the campus.



HARDSCAPE

REDUCE HARDSCAPE TO 25% OR LESS

As part of the overarching site and landscape target, the university aims to reduce hardscape area (roadway/parking and pedestrian walkways) to 25% or less by reducing hardscape, particularly non-essential roadways and parking areas. Further details, including principles surrounding the pathway network on campus, can be found in the Hardscape and Site Furnishings section of this document.



HEAT REDUCTION

PROVIDE 50% OF GROUND SURFACES WITH SHADE OR SRI COMPLIANT PAVEMENTS, AND BUILDING ROOF WITH GREEN ROOF OR SRI COMPLIANT ROOF MATERIALS WHERE POSSIBLE

To be accomplished through the following methods:

- Integrate SRI compliant (SRI>29) and pervious hardscape where possible, particularly for pedestrian walkways. Loose fill materials (gravel) and open grid paving will reduce heat from pedestrian pathways and also reduce storm water runoff through porous constructions, while allowing accessibility.
- Shade non-SRI compliant hardscape area where possible with natural (trees) or architectural features that shade during summer months but allow for solar access in the winter months.
- Incorporate SRI compliant roof materials (SRI 78) or green roof to mitigate regional heat island effect caused by exposed building roofs and reduce storm water runoff.

WATER

BY 2030, Achieve a total campus-wide capture and retention of the 85th percentile metro Nashville storm event.

- Incorporate “greening” into the campus by converting parking lots and hardscape to landscape areas.
- Incorporate Best Management Practices (BMPs) and Low Impact Design (LID) techniques in addition to reducing impervious area that can be used to meet the campus storm water goals.
- Manage the 95th percentile storm event on-site for new building projects.
- Separate storm water and sanitary systems throughout campus as opportunities arise.
- Establishing a “bank” of storm water credits by negotiating with metro Nashville to promote shared campus-wide value and benefit for storm water improvements.

BY 2050, Achieve a total campus-wide capture and retention of the 95th percentile storm event.

- Incorporating rainwater harvesting systems (cisterns) into new building projects.
- Installing storm water management projects campus-wide that use various green infrastructure and low-impact development practices such as bioswales, infiltration and water receiving landscape features, with or without new building projects.

MEET CAMPUS-WIDE POTABLE WATER REDUCTION TARGET 30% BY 2030 AND 50% BY 2050 FROM CURRENT USE

To be accomplished through the following methods:

- Harvest non-potable sources of water such as storm water, greywater, and dewatering for non-potable applications including flushing, irrigation, boil and cooling tower make-up water, etc.
- Use collected storm water for cooling tower and boiler make-up water. If excess water is available, direct the water to building non potable water use or irrigation.
- Separate storm water and sewage lines to enable effective recycling of both water streams.
- Specify native and adaptive vegetation to reduce and/or eliminate irrigation demand.
- Renovate existing irrigation system to drip irrigation in planter beds and non-turf areas.
- Replace standard irrigation controllers with weather-based equivalents.
- Provide accurate real-time sub-metering that separates building fixture consumption from irrigation, domestic hot water use, process water, cooling tower make-up water, and boiler make-up water.
- Compile metered water data into monthly and annuals reports.

STORM WATER MANAGEMENT WITH VEGETATION

Campus tree planting plays a significant role in storm water management. Tree canopies intercept rainfall, thereby reducing the volume and speed at which runoff reaches the ground plane. Erosion is limited by the reduction of the rainfall’s impact velocity upon the ground. By slowing the speed at which rainfall reaches the ground, water has an increased opportunity to infiltrate, promoting capture by the tree root system.



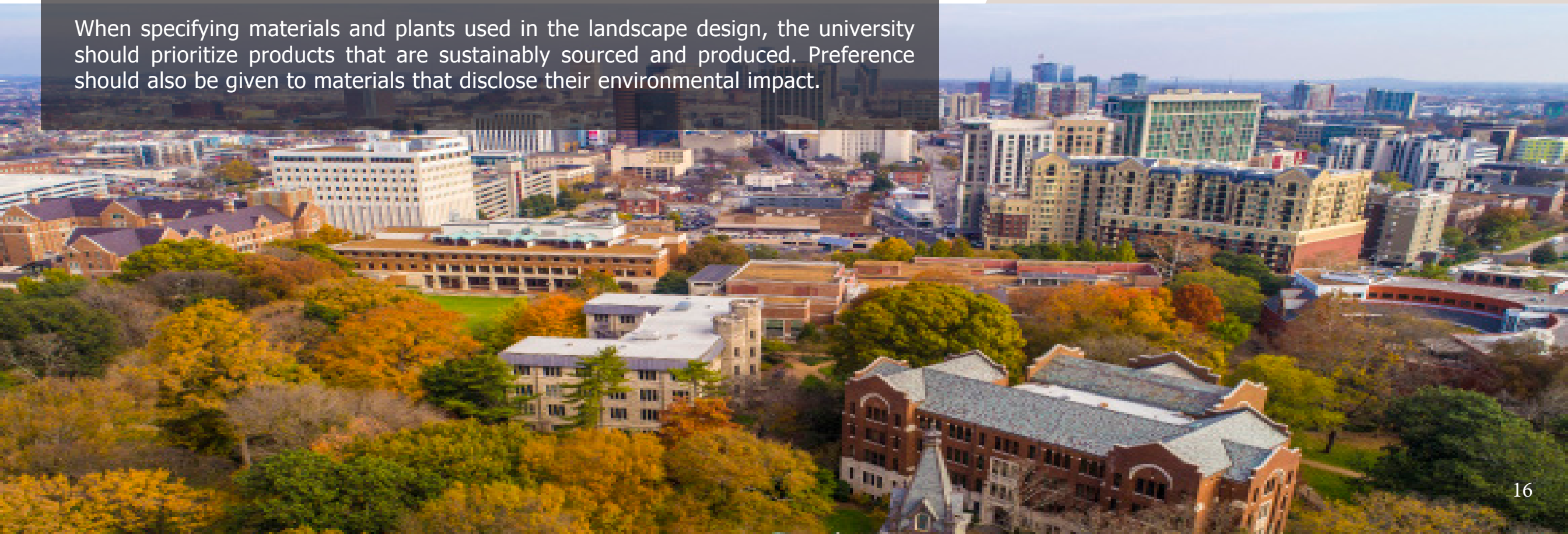
SUSTAINABLE MATERIALS

Sustainable design practices in the United States have recently begun to shift their focus towards life cycle environmental impact assessment and reduction. Emphasizing this performance metric urges building and landscape designers to think not only about the use and operation of their designs but also the carbon emitted from the production and sourcing of the materials used.

To reduce the life cycle impact of the landscape, the focus should stay on resource use reduction (also called resource conservation) and product reuse before specifying plants and materials. The university can work to retain any non-invasive plants, especially heritage trees, on site.

When specifying materials and plants used in the landscape design, the university should prioritize products that are sustainably sourced and produced. Preference should also be given to materials that disclose their environmental impact.

- Select landscape materials and outdoor furnishings made from FSC certified wood.
- Salvage and reuse plant material uprooted during campus construction.
- Opt for salvaged materials and plants or materials that include recycled content.
- Source local materials from vendors that exhibit sustainable corporate practices.
- Select products that include EPDs and LCAs and promote safe chemistry.





ARBORETUM & LANDSCAPE STRATEGIES

TREE CARE PLAN

PURPOSE

The benefits of the campus's mature tree canopy are numerous. Trees create a sense of scale and structure in open spaces, define recognizable thresholds at campus edges and establish a physical and psychological buffer between vehicular and pedestrian traffic. Trees also offer many less obvious functional benefits including carbon sequestration, production of oxygen, and mitigation of soil compaction. Tree canopies slow the rate of inundation during heavy rainfall and roots uptake storm water, reducing the quantity of runoff. Canopies also create shade, allowing for cooler-temperature micro-climates. While all trees provide these benefits to campus, context promotes or diminishes a tree's ability to offer specific benefits based on overall tree health, stress levels and available resources. A tree needs below ground support to flourish. Low levels of soil compaction, carefully balanced soil biology, and adequate soil volumes help promote root growth and provide nutrients, air, and water for overall plant health. Although all trees may perform best under ideal circumstances, some trees have more tolerance for environmental stresses than others.

The purpose of the Landscape Strategic Plan is to set guidelines for the protection and maintenance of the campus' urban forest and landscape, promote best management practices in tree care, reduce risks to public safety related to hazardous trees, and ensure a sustainable campus urban forest through species diversity. The Landscape Strategic Plan pulls content from the various [FutureVU Guidelines](#) developed as part of the FutureVU planning process.

The following objectives aim to ensure a safe, attractive and sustainable urban forest by protecting a canopy of trees to be enjoyed by our campus community:

- Enhance and maintain a healthy tree canopy on campus.
- Protect trees during construction and renovation.
- Replace trees lost to campus development, disease, or old age.
- Promote species diversity and plant appropriate, high quality trees.
- Manage invasive plants throughout campus.
- Encourage campus community to discover, identify, and value trees on campus.



TREE CARE PLAN

HERITAGE ZONE

The heritage zone is comprised of a wide variety of species that contribute to the campus-wide arboretum distinction. Each campus neighborhood should showcase a different mix of three to six tree species to support its unique character. The heritage zone occurs in areas designated as the shaded lawn typology described in the [FutureVU framework](#). To achieve the visually open ground plan of the shaded lawn, low branching should typically be avoided. This zone may be comprised of a mix of evergreen and deciduous trees. This zone should include both native and non-native specimen trees in order to maintain a diverse collection as part of the larger campus arboretum.



London Plane
(Planatus acerfolia)



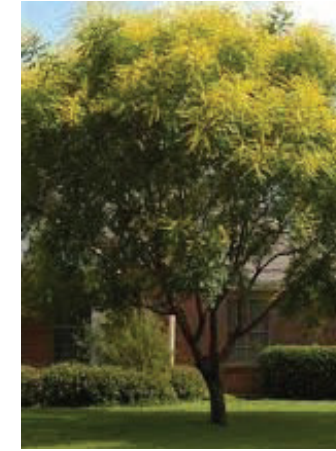
European Beech
(Fagus sylvatica)



American Sweetgum
(Liquidambar styracilua)



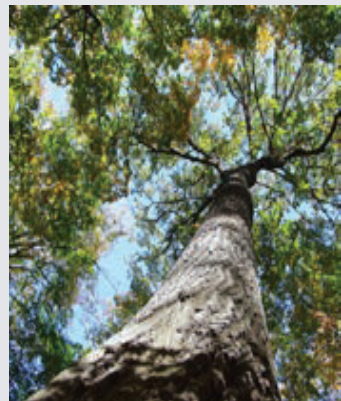
Maidenhair Tree
(Ginkgo Biloba)



Golden Rain Tree
(Koelreuteria paniculata)



Honey Locust
(Gleditsia triacanthos)



Red Oak
(Quercus Rubra)



Chestnut Oak
(Quercus prinus)



American Elm
(Ulmus americana)



American Buckeye
(Aesculus glabra)



Yellow Buckeye
(Aesculus flava)
UNIVERSITY



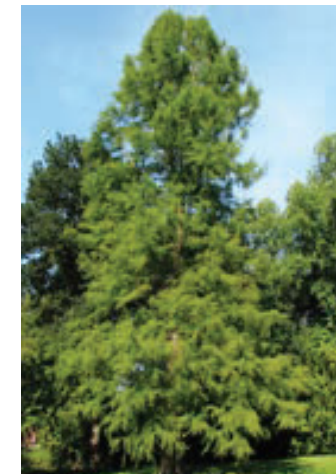
Dawn Redwood
(Metasequoia glyptostoboides)



European Larch
(Larix decidua)



Virginia Pine
(Pinus virginiana)



Bald Cypress
(Taxodium distichum)

TREE CARE PLAN

URBAN ZONE

The urban zone planting palette should be comprised of deciduous trees to allow for a mix of shade in the summer and warmth from sun exposure in the winter. Native tree species should be considered to promote a sense of identity while reinforcing a regionally appropriate sense of place along campus's outward facing edges. The Magnolia screen has played a major role in defining the West End and 21st Avenue edges of campus since the 1950's. The planting strategy has been successful in creating a physical and perceptual buffer between campus and the urban streets at its perimeters. Over time, attitudes about the desired relationship between Vanderbilt and its neighbors have evolved, leading to the current desire to engage the community. Moving forward consideration should be given to specific edge conditions and whether an evergreen barrier is beneficial or a more porous edge condition is more appropriate.



Pin Oak
(*Quercus palustris*)



American Beech
(*Fagus grandifolia*)



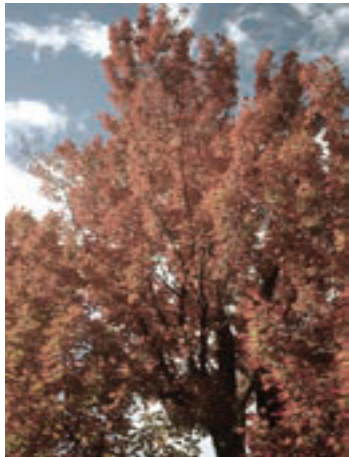
Black Gum
(*Nyssa sylvatica*)



Tulip Tree
(*Liriodendron tulipifera*)



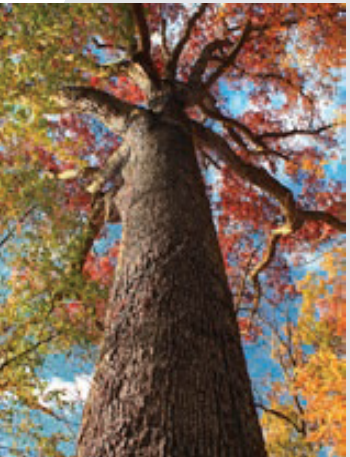
Sugar Maple
(*Acer saccharum*)



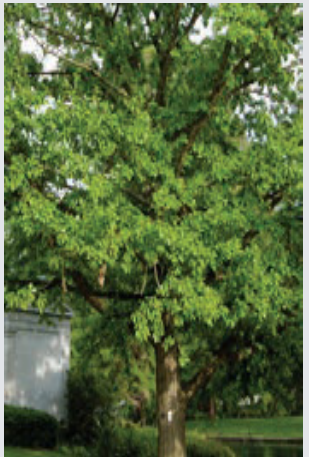
Red Maple
(*Acer rubrum*)



Sweetgum
(*Liquidambar styraciflua*)



White Oak
(*Quercus alba*)



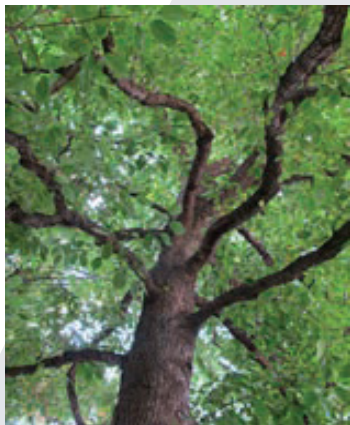
Swamp White Oak
(*Quercus bicolor*)



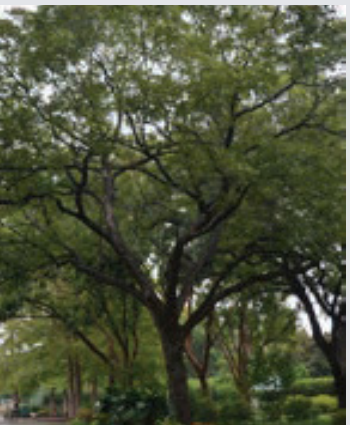
Shumard Oak
(*Quercus shumardii*)



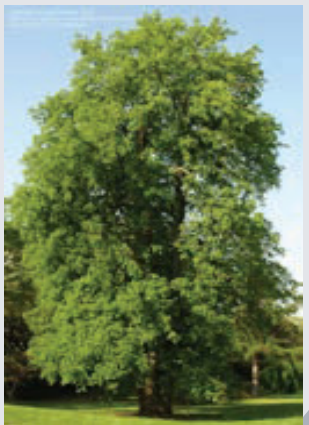
Southern Magnolia
(*Magnolia grandiflora*)



Cucumbertree
(*Magnolia acuminata*)



Pecan
(*Carya illinoensis*)



Yellow Buckeye
(*Aesculus flava*)



Northern Catalpa
(*Catalpa speciosa*)

TREE CARE PLAN

UNDERSTORY TREES

Neighborhood specific species should provide various types of seasonal interest such as fruit, leaf color and flowers. Spring and early summer flowering understory trees should be utilized to bloom while classes are in session and during commencement. Tree habit should be open and transparent to promote safety while providing a scrim of color and texture. The use of understory trees should be limited to small gathering spaces, gardens and courtyards, and perimeter conditions where they can be used to define edges. Existing understory trees should be removed, to the extent possible, from areas designated as open shaded lawns, in order to promote unobstructed views and pedestrian circulation across those areas.



Serviceberry
(*Amelanchier laevis*)



Eastern Redbud
(*Cercis canadensis*)



Sweet Bay Magnolia
(*Magnolia virginiana*)



Pagoda dogwood
(*Cornus alternifolia*)



Autumn Cherry 'Autumnalis'
(*Prunus subhirtella* 'autumnalis')



Japanese Stewartia
(*Stewartia pseudocamellia*)



Cherokee Princess Dogwood
(*Cornus florida non-anthracnose*)



TREE CARE PLAN

TREE SELECTION AND PLANTING

Mature trees play a significant role in Vanderbilt's campus identity. Vanderbilt should work with a landscape architect to establish a succession strategy to manage tree loss and replanting strategies as specimens age and decline. Because it can take decades for trees to develop into mature specimens, planting of replacement trees should take place prior to the decline and death of existing trees. Individual trees planted on campus should also be carefully chosen with the help of a landscape architect. Locate rows of trees perpendicular to winter northern prevailing winds along main walkways. Trees should be selected with consideration for habit, health and size appropriate for the implementation area and overall design intent. They should also be free of trunk wounds and girdling roots to avoid problems with tree health and stunted growth. Soil biology and physical makeup should be tested for all areas of proposed planting, and amended as needed prior to installation of plant material. In urban zones, consider use of sand-based structural soil and aeration infrastructure or suspended pavements. Where too compacted for sufficient water percolation, sub-drainage should be established under planting areas. Soil volumes should be sufficient to support proper tree growth, targeting 1200 cubic feet minimum per understory tree.

PUBLIC OUTREACH PROGRAMS

Vanderbilt has a desire to be an active member of the community and wants to extend partnerships with its neighbors.

Current Partners: Cheekwood, University Partnership (TSU, Belmont, Sewanee)



PRUNING PRACTICES

Any new plant material shall be pruned while supervised by an ISA Certified Arborist. Large pruning projects shall be planned and reviewed with the University Landscape Architect and Grounds Manager prior to commencing work.

DISEASE CARE | Trees shall be inspected on a regular basis for symptoms of disease, insect infestation, and general overall poor health. Efforts will be made to treat any tree health problems with the goal of preserving the trees, especially the oldest specimens, before any consideration is given to their removal. If a tree is suspected of having contracted a disease, the staff should be contacted immediately for proper care and treatment. Due to the historic value and potential for long life of these trees, treatment should be evaluated and efforts made to prolong tree life and health.

RECORD KEEPING PROCEDURES

The location of trees is kept within the G.I.S system. All collected information will be in G.I.S. format for annual reporting. Maps of the Vanderbilt trees can be found in the appendices.



TREE CARE PLAN

PROHIBITED ACTIVITIES

- ground disturbance
- activity involving vehicle or equipment access (unless the access is on an existing street or driveway)
- storage of equipment or materials (including soil)
- temporary or permanent stockpiling
- proposed buildings
- impervious surfaces
- underground utilities
- excavation or fill
- trenching
- other work activities

ROOT PROTECTION | The root protection trenching operation shall be completed by the Contractor and shall consist of the following: where excavation, grade cutting, or tree removal is to occur within a tree root zone, make a clean cut, 3 feet deep minimum, between the designated disturbed and undisturbed root zone area with a rock saw or chain trencher to minimize damage to undisturbed root zone; trenching area shall be designated on the Site Demolition Plan and exact trench location shall be painted on the ground by the University Landscape Architect; protective root cuts shall be backfilled with topsoil immediately after trenching; where cuts are over 3' in depth and in a root zone area, a chain trencher shall first be used to cut a vertical edge prior to further excavation; and protective root cutting shall also be used to cut roots of trees to be removed out of root zones of trees to remain.

Cutting a large percentage of tree roots can be dangerous as most large roots are structural roots. If large roots are injured or removed, the tree may fall, decline, or die. If root cutting is unavoidable, a certified arborist must approve and oversee the process. Roots over 4 inches in diameter should not be cut. Sharp tools should be used to make clean cuts to ensure healthy wound repair and prevent decay.

In some cases, when it is not possible to establish a root protection zone to the specifications listed above, alternative measures may be implemented to modify the root protection zone. However, the following standards must be met:

- The alternative protection zone must be prepared by an arborist who has examined the tree's size, location, and extent of root cover, evaluated the tree's tolerance based on species and health, and identified existing vulnerabilities within the root zone
- The arborist must prepare an alternate protection plan including a description of how the plan provides an adequate level of protection. The plan should be signed by the arborist and include their contact information.
- After the arborist prepares the protection plan, surround the root protection zone with fencing and post signage including contact information for the arborist.
- If possible, the arborist should be on site during construction, and signed contract should be in place for those services. The contract should include a final report from the arborist documenting all inspections and verifying the viability of the trees after the construction phase.
- Alternative construction techniques may be required in response to the revised protection method. In this case, an explanation of the techniques used should be included in the protection plan.

TREE CARE PLAN

TREE REMOVAL POLICY

Approval Process for Removal:

- For trees up 24" diameter at breast height, an approval process must be used before removing. The approval process includes the involvement of the Landscape Architect, the Grounds Manager, and the Assistant Vice Chancellor of Plant Operations.
- For trees up 36" diameter at breast height, an approval process must be used before removing. The approval process includes the involvement of the Landscape Architect, the Grounds Manager, the Assistant Vice Chancellor of Plant Operations, and the Associate Vice Chancellor and Chief Facilities Officer.
- For trees over 36" diameter at breast height, an approval process must be used before removing. The approval process includes the involvement of the Landscape Architect, the Grounds Manager, the Assistant Vice Chancellor of Plant Operations, and the Associate Vice Chancellor and Chief Facilities Officer. Finally, the signature of a Vice Chancellor must be obtained.

Hazard trees are trees that are dead or are in bad health, creating a potential dangerous situation for the campus community (i.e. fallen trees). These trees need to be removed immediately.

TREE REPLACEMENT STRATEGY

Annual Tree Planting:

The number of trees planted each year, will be tracked as part of the overall campus strategy. These numbers are kept within the G.I.S. system and will be in G.I.S. format for annual reporting.

Total Maximum Tree Installation per Year:

The total number of trees planted by both the grounds crew and through capital projects must not exceed 250. For example, if a capital project plants the maximum number of trees, the grounds crew will not plant additional trees that year.



TREE CARE PLAN

WOOD UTILIZATION POLICY

Whenever a tree is removed, large sections should be saved for reuse if the tree meets quality standards and is one of the following species:

- Hackberry
- Oak
- Magnolia
- Elm
- Osage Orange
- Maple

Trees will be removed, dried, milled and stored. This process will be approved through PUC or the Project Steering Committee.

Recovered wood should be used for the following in this order:

- Lumber and building board use
- Interior veneer
- Awards and specialty carvings
- Mulching

TREE DAMAGE ASSESSMENT

A certified ISA Arborist must inspect trees and tree appraisals must be performed before the removal of a tree.

RESILIENCY PLAN

The annual tree planting plan must be reinforced to ensure that no overpopulation occurs. In addition, proactive steps should be taken in addressing disease and pests.

TREE CARE PLAN

INVASIVE SPECIES.

There should be no introduction of invasive species including:

- Tree of Heaven (*Ailanthus altissima*)
- Mimosa, Silktree, Silky Acacia (*Albizia julibrissin* Durazz.)
- Sessile Joyweed (*Alternanthera sessilis*)
- Cheat Grass, Downy Brome, Downy Chess (*Bromus tectorum*)
- Asian Bittersweet, Oriental Bittersweet (*Celastrus orbiculatus* Thunb.)
- Chinese Yam, Cinnamon Vine (*Dioscorea oppositifolia*)
- Autumn Olive (*Elaeagnus umbellata* var. *parviflora*)
- Hydrilla, Water Thyme (*Hydrilla verticillate*)
- Common St. John's-wort, Goatweed (*Hypericum perforatum*)
- Cogongrass, Japanese Bloodgrass (*Imperata cylindrica*)
- Korean Clover, Korean Lespedeza (*Kummerowia stipulacea*)
- Bicolor Lespedeza, Shrubby Bushclover, Shrubby Lespedeza (*Lespedeza bicolor* Turcz.)
- Chinese Lespedeza, Sericea Lespedeza (*Lespedeza cuneate*)
- Chinese Privet (*Ligustrum sinense* Lour.)
- Common Privet, European Privet (*Ligustrum vulgare*)
- Japanese Honeysuckle (*Lonicera japonica* Thunb.)
- Purple Loosestrife (*Lythrum salicaria*)
- Japanese Stiltgrass, Nepalese Browntop, Nepalgrass (*Microstegium vimineum* Trin.)
- Empress Tree, Princess Tree, Royal Paulownia (*Paulownia tomentosa* (Thunb.))
- Fleecflower, Japanese Knotweed, Mexican Bamboo (*Polygonum cuspidatum* Seib. & Zucc.)
- Kudzu (*Pueraria montana* var. *lobata* Willd.)
- Multiflora Rose (*Rosa multiflora* Thunb. ex Murr.)
- Itchgrass (*Rottboellia cochinchinensis* Lour.)
- Aquarium Water-moss, Giant Salvinia (*Salvinia molesta* Mitchell)
- Tropical Soda Apple (*Solanum viarum* Dunal)
- Johnson Grass (*Sorghum halepense*)

All invasive species found on campus should be removed in a timely manner. A complete list of invasion species in the Nashville area can be found in the appendices.



SOIL

SOIL MANAGEMENT PLAN

The soil management plan must be tailored to the reference soil: the soil profile that existed before the development is scheduled to occur. Campus vegetation should be identified, and soil protection zones (VSPZs) and soil restoration zones should be identified. Targeted treatment can thus be provided to the zones that require restoration.

Proposed tactics include:

- Identify the reference soils to establish performance criteria for the campus. Run the test every 5-years. Compost testing before and after.
- Create treatment plans that target each soil restoration zone.
- Restore disturbed soils post-construction to a depth of at least 12 inches.
- Introduce organic matter into disturbed topsoil to a minimum of 3% by volume or to the level of organic matter present in the reference soil.

SOIL STRUCTURE (TREES)

Soil health, structure, and biology are all critical to the success of trees on campus in both the urban and heritage zones. Soil biology and physical makeup should be tested for all areas of proposed planting, and amended as needed prior to installation of plant material to provide the correct organic matter, nutrients and soil structure for plant success. In urban zones, where soil resources are challenged by over compaction or lack of sufficient volume, consider use of sand based structural soils and aeration infrastructure or suspended pavements. Subgrade porosity should be tested. Where it is too compacted for sufficient water percolation subdrainage should be established under planting areas. Soil volumes should be sufficient to support proper tree growth, targeting 1200 cubic feet minimum per canopy tree and 800 cubic feet minimum per understory tree.



LAWN TYPES

LAWN

EVENT LAWNS

Event lawns include Alumni Lawn, Library Lawn, Curry Field, Commons Lawn, South Patio Lawn and Magnolia Lawn. Event lawns often play host to major university events (i.e. Commencement, Rites of Spring, etc). They require regular and thorough maintenance, and need recovery times throughout the year. Event lawns are 419 hybrid Bermuda grass that is overseeded with Perennial Ryegrass in the fall. Fertilization, mowing, watering and cultural practices are monitored more closely and are performed more frequently.

ATHLETIC FIELDS

The Soccer/Lacrosse Field, Natchez Track, Purdy Field, Sports Club Field and Capers Field are natural grass fields. They are sand based fields with 419 hybrid Bermuda grass, with the exception of Soccer/Lacrosse which is Latitude 36 Bermuda. These fields have irrigation systems. Purdy Field, Capers Field and Natchez Track are fed reclaimed downshaft water. Normal cultural practices (aerification, vertical mowing, topdressing, etc.) occur on an annual basis. Soil tests are used to determine nutrient needs and fertilizer frequency.

Dudley Field, Hawkins Field, Football Practice Field, Natchez Field and the indoor fieldhouse are synthetic turf surfaces. Fields are maintained with litter removal and regular, scheduled grooming. Infill depths are checked to insure proper levels of crumb rubber are met. A third party is used to conduct all deep cleanings and hardness testing (GMAX and Clegg).

GENERAL LAWNS

General lawns are all of the areas that do not fit into the Event Lawn and Athletic Field categories. General lawns are a mix of Bermuda and Fescue grass. Some aeration occurs in high-traffic areas and on an as needed basis. All areas are overseeded annually with a 3-way Fescue blend and/or Ryegrass. Many general lawns are irrigated. Pesticides (insecticide, herbicide, fungicide, etc.) are not used to allow lawns to remain as natural as possible. General lawns are regularly mowed and edged to maintain an aesthetic appearance, however, are not meant to be immaculate.

SEED & SOD

GRASS SEED

Grass seed should be fresh, clean, new-crop seed complying with tolerance for purity and germination established by the Official Seed Analysts of North America. 3-way Fescue blend is utilized.

SOD

Sod should be Fescue or Bermuda type, as well as weed and insect free. Sod root zone thickness shall be 3/4" for Fescue and 1/2" for Bermuda grass. Density to be approved by owner before installation.



INTEGRATED PEST MANAGEMENT

Integrated Pest Management (IPM) is the coordinated use of pest and environmental information to design and implement pest control methods that are economically, environmentally and socially sound. IPM promotes prevention over remediation, and it advocates the integrations of at least two or more strategies to achieve long-term solutions.

STRATEGY: IDENTIFY

Properly identify the pest to know if it is an insect, disease or weed. Certain insects are beneficial. Some diseases are indicators of environmental conditions that can be altered. Some weeds are indicators of cultural conditions that can be altered.

STRATEGY: LEARN PEST AND HOST LIFE CYCLE AND BIOLOGY

There is a stage of the life cycle that is susceptible to preventative actions. If the host and pest is properly identified, the proper preventative measures can be determined.

STRATEGY: ESTABLISH ACTION THRESHOLDS

In some cases, a certain number of pests can be tolerated. However, action thresholds should be identified. For instance, an economic threshold may be if the cost or damage by the pest is more than cost of control. Tolerance of pests varies by whether or not they are a health hazard or merely cosmetic damage.

STRATEGY: MONITOR & SAMPLE ENVIRONMENT FOR PEST POPULATIONS

Preventative actions must be taken at the correct time if they are to be effective. Once the pest is correctly identified, monitoring should begin. Perform soap tests, trapping and other measures to determine the pest population. Testing determines how widespread the issue is, if pests are increasing or decreasing in number, and data can be used for future pest management strategies.



IPM METHODS AND TACTICS

The goal of using multiple tactics is to effectively suppress pests below injurious levels and avoiding outbreaks. Many tactics keep pest populations off-balance and avoids development of resistance to pesticides. Less-toxic, effective methods are used before more toxic ones whenever possible.

CULTURAL METHODS

Suppress pest problems by minimizing the conditions they need to live (water, shelter, food). Plants should be selected based on the environment they will be living in, and growing conditions, ensuring proper placement, and providing attention to water and nutrients must be considered.

PHYSICAL METHODS

Prevent pest access to the host or area or, if the pests are already present, physically remove them by appropriate means. Methods may include barriers, traps, vacuuming, mowing and tillage depending upon the pest type.

GENETIC METHODS

Use pest-resistant plant varieties developed by classical plant breeding. Recently, this category has been expanded to include genetically engineered pest resistance.

BIOLOGICAL METHODS

Use predators, parasites and diseases of pests in a targeted way to suppress pest populations. Use of microbial diseases of pests have become part of the chemical pesticide registration process.

CHEMICAL METHODS

There are many “chemicals” that are used in pest management situations, but not all chemicals are alike from the standpoint of their range of action, toxicity, or persistence in the environment. Biorational chemicals are those that are less universally toxic and target a specific aspect of pest biology. Conventional pesticides currently refer to synthetically produced compounds. Regulatory control refers to the role played by government agencies in trying to stop the entry or spread of pests via inspection, quarantine, destruction of infested material, and other methods.

RESULTS SHOULD BE ANALYZED

The following questions should be considered when analyzing results: (1) Did actions have the desired effect; (2) Was the pest prevented or managed to satisfaction; (3) Were there unintended side effects; (4) What can we do in the future for this pest situation?

ANNUALS AND PERENNIALS

Vanderbilt University encourages the community to walk through campus to enjoy the many aspects of nature and horticulture. The university has many perennial beds that are designed intentionally based on site, seasonal color, habitats and backgrounds. Vanderbilt displays both new, traditional and native perennials. Flowering season begins in early spring with blooming bulbs, to the sea of summer color. Fall enters with blooming perennials, and seasons end with winter interest of berries and the rustle of ornamental grass beds. Vanderbilt utilizes sustainable gardening practices and demonstrates ways that eco-friendly gardening practices can enhance the landscape. Looking at the seasonal aspects of gardening in Tennessee reminds us that our landscape is both art and science.

Annual color beds utilize color as a design element. Beds are changed out twice a year. Cool season flowers are changed in October and replaced with warm season annuals in April. Color comes from both the profusion of flowers and from colorful foliage.





WATER

STORM WATER

GOALS AND TARGETS:

FOR A FULL LIST OF STORM WATER GOALS AND TARGETS, SEE GOALS AND TARGETS SECTION. A FEW GOALS TO HIGHLIGHT INCLUDE...

By 2050, achieve a total campus-wide capture and retention of the 95th percentile storm event.

- Install storm water management projects campus-wide that use various green infrastructure and low-impact development practices such as bioswales, infiltration and water receiving landscape features, with or without new building projects. See page 15 for more details.

Provide 50% of ground surfaces with shade or SRI compliant pavements, and building roof with green roof or SRI compliant roof materials where possible

- Incorporate SRI compliant roof materials (SRI 78) or green roof to mitigate regional heat island effect caused by exposed building roofs and reduce storm water runoff. See page 14 for more details.

Meet campus-wide potable water reduction target 30% by 2030 and 50% by 2050

- Specify a variety of native/adaptive vegetation from the Metro Nashville region, and provide functional green space that manages rainwater. See page 15 for more details.

CISTERNS

Cisterns are underground storage tanks that harvest and store rainwater, primarily from rooftops, for re-use in non-potable applications. Since rainfall is unpredictable should be sized accordingly as a drought period may deplete the system. A secondary source of water should be available if needed. Typically these are included as part of building projects to bridge the gap between attainable LID volumes and regulatory requirements.

In many areas of the existing campus, buildings or other structures impede the natural flow of storm water to topographic low points. The existing campus intervention strategy focuses on detaining runoff in rain gardens adjacent to buildings. These rain gardens are sized to manage large storm events, resulting in deep basins with large overflow pipes. Where future building and redevelopment occurs, it is recommended to use a combination of swales and low planting to direct and slow water incrementally across a wider area, not just at buildings. Reducing the concentration and volume of detained water at buildings and encouraging runoff to infiltrate and divert to natural low points where it can be collected will reduce the risk of flooding and alleviate the need for deep basins. A campus-wide treatment approach will reduce infrastructure cost and allow for small scale interventions to be more integrated into the landscape.

Expression of storm water should be concentrated in areas where large-scale interventions are appropriate. Aesthetically, the landscape context can be utilized to frame and emphasize water as a beautiful feature. In these conditions, landscape open space can be paired with a water feature to promote the feature as a place for pedestrians to gather and interact or find personal respite.

IRRIGATION

IRRIGATION STRATEGIES

- Specify native and adaptive vegetation to reduce and/or eliminate irrigation demand.
- Renovate existing irrigation system to drip irrigation in planter beds and non-turf areas.
- Replace standard irrigation controllers with weather-based equivalents

GREY WATER STRATEGIES

- Create a closed loop system that connects multiple irrigation areas to provide flexibility.
- Implement in buildings where LBC Water Petal goals are being applied.



Kissam - Curry Lawn
Bioretention Area



McGugin
Bioretention Area



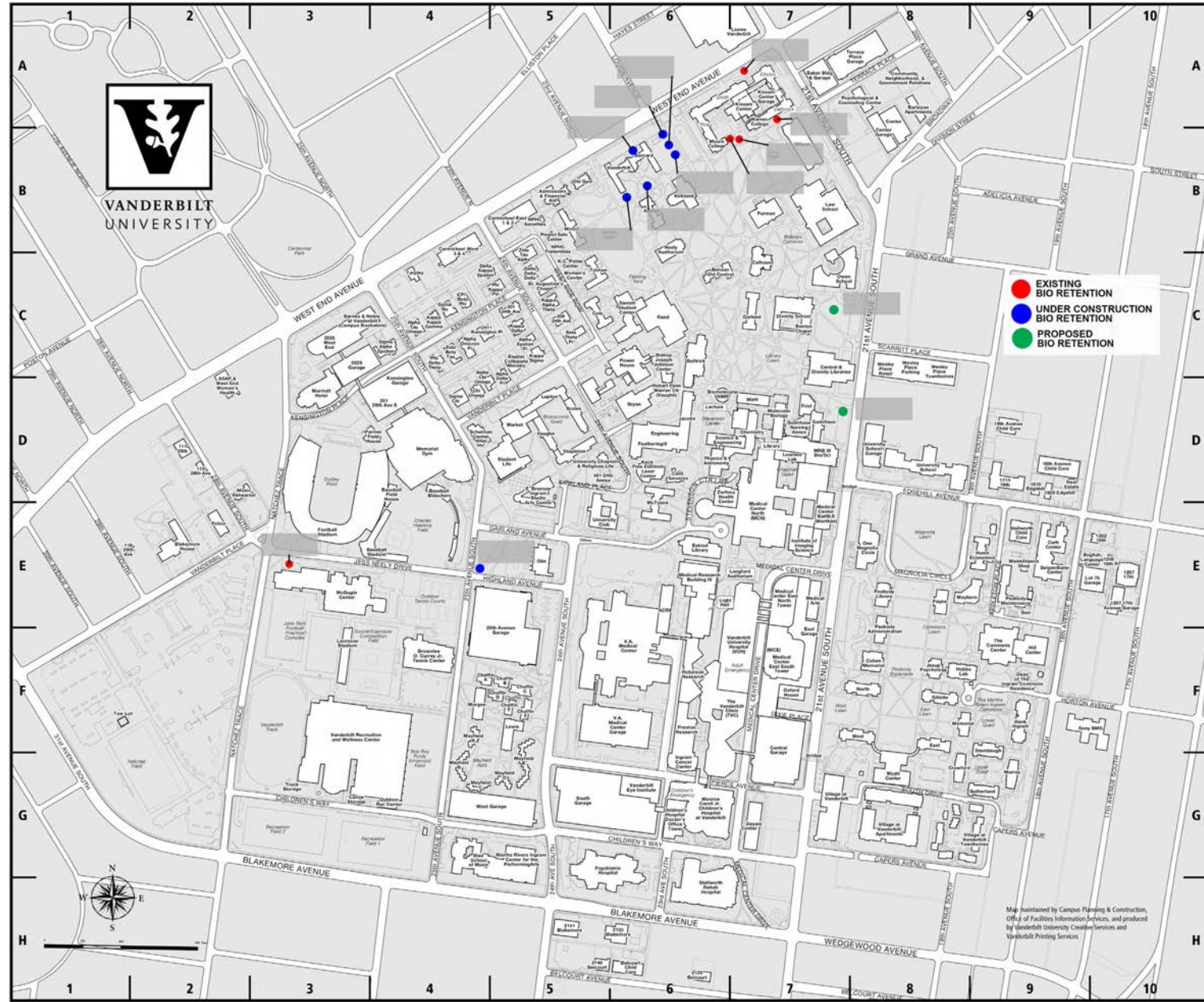
Kissam Center
Bioretention Area

BIORETENTION

Bioretention is a technique that uses soils and plants to treat storm water before it is infiltrated. Bioretention areas are shallow depressions filled with sandy soil topped with mulch and vegetation. Runoff is directed into the depression and is treated through the soil media prior to infiltration.

Storm water management projects should be installed campus-wide utilizing various green infrastructure and low-impact development practices such as bioretention techniques in order to achieve storm water goals as outlined on page 15.

A map of current bioretention areas on campus is outlined on the right. Routine maintenance is performed in house by Vanderbilt Grounds with yearly inspections performed by the University Landscape Architect.





HARDSCAPE AND SITE FURNISHINGS

PAVEMENT

GOALS AND TARGETS:

FOR A FULL LIST OF GOALS AND TARGETS, SEE GOALS AND TARGETS SECTION.

Landscape efforts must align with Accessibility Master Plan. See page 11 for more details.

Increase green space to 50% or more

- Decrease the amount of medium to low-growth vegetation near pedestrian walkways to optimize air movements. See page 13 for more details.

Reduce hardscape area to 25% or less by reducing hardscape. See page 14 for more details.

Provide 50% of ground surfaces with shade or SRI compliant pavements. See page 15 for more details.

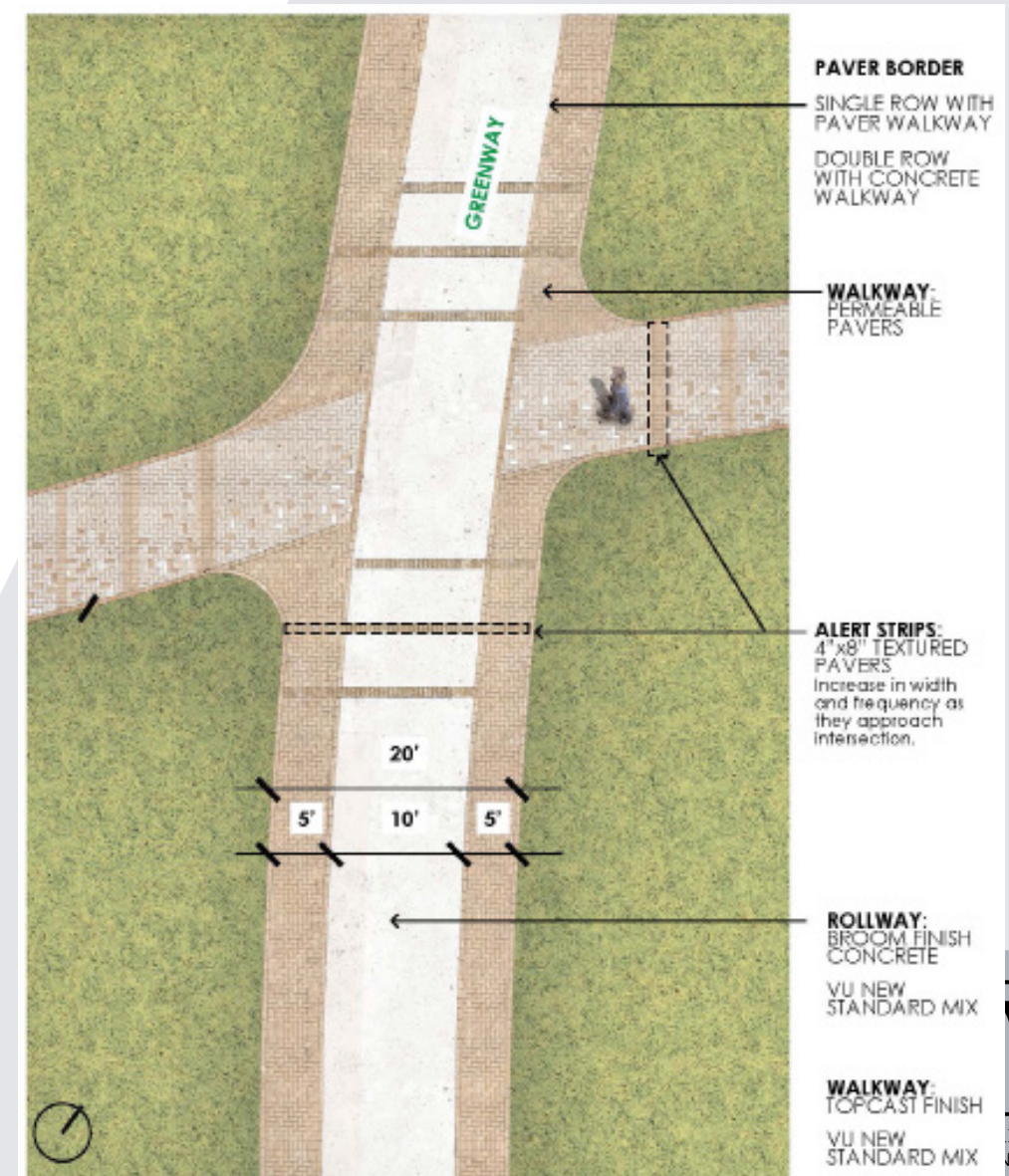
- Integrate SRI compliant (SRI>29) and pervious hardscape where possible, particularly for pedestrian walkways. Loose fill materials (gravel) and open grid paving will reduce heat from pedestrian pathways and also reduce storm water runoff through porous constructions, while allowing accessibility.
- Shade non-SRI compliant hardscape area where possible with natural (trees) or architectural features that shade during summer months but allow for solar access in the winter months.

THE GREENWAY NETWORK

Connections between neighborhoods are essential to the formation of a coherent campus fabric. Vanderbilt's neighborhoods define the campus, but there is little that binds them to each other. The Greenway network was conceived as an organic instrument of connection between edges, spaces and destinations. A defined Greenway network will be created toward establishing recognizable connections between campus places and spaces.

These connections will weave the elements of buildings, spaces and paths into a cohesive campus fabric. Establishing clear and safe connections between neighborhoods will create a more unified and accessible campus, in keeping with the Vanderbilt principles of community and inclusion. The Greenway network was originally conceived as part of the FutureVU land use process as a north/south, east/west Greenway. However, as further planning discussions continued, the network was expanded to include a vision for primary Greenway paths, secondary paths, and a "Walk & Roll loop" around the campus edge.

A precedent image for future primary Greenway network paths is shown to the right.



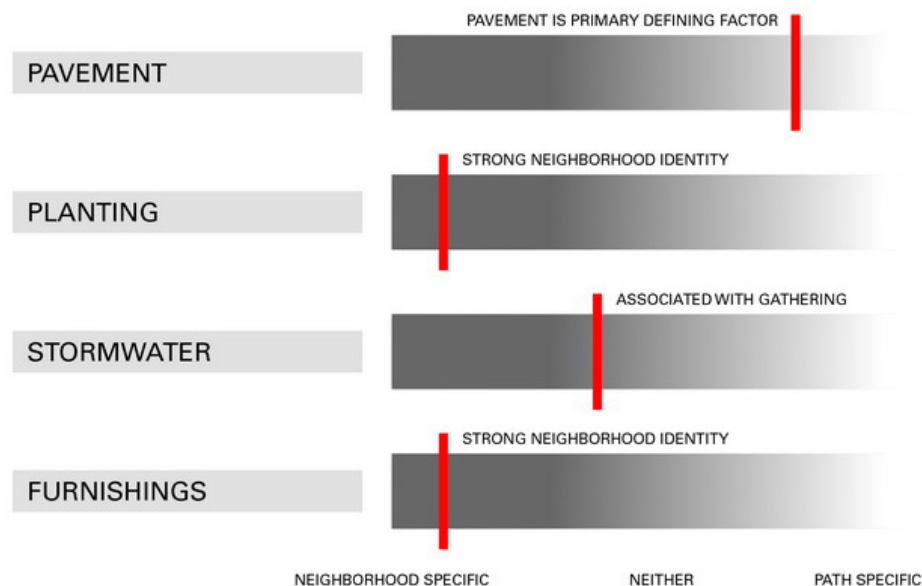
THE GREENWAY NETWORK

The Greenway network establishes an identifiable character that ties together Vanderbilt's distinct neighborhoods. Pavement has been identified as one opportunity to reinforce this goal. It is recommended that pavement character be consistent as the Greenway path network extends from neighborhood to neighborhood. Path materiality along the Greenway network should be consistent between primary, secondary and tertiary paths. These paths are distinguished from one another by subtle changes in surface color, texture and scale. Performance and durability should be considered when defining the materiality of the Greenway. Paving should be simple and cost effective to patch and replace, while maintaining the ability to match older surfacing material.

Pavement not associated with the Greenway network should match the existing palette of asphalt, brick and exposed aggregate surfacing used in the Historic Core and other areas of campus. Existing distribution of brick paving should be studied to establish a rationale for the appropriate future use of this material that currently only occurs in limited locations.

Where feasible, permeable/porous pavement materials should be implemented. These materials allow water to pass through and infiltrate into the subsoil. They provide an opportunity for blurred lines between paved and grassy areas, and create a reduced perception of the amount of hardscape. Permeable/porous materials are particularly appropriate where wide paths or reinforced edges are required, such as limited access streets or pedestrian paths that must accommodate occasional vehicular use. Paved surfaces with enlarged joints provide an easily maintainable solution. Grass/concrete options are attractive but require significant care to ensure that grass will survive and should be used only when proper maintenance can be sustained. Impermeable surfaces should be limited to promote the sustainability goals of FutureVU.

Future pathway development should adhere to the Greenway network principles as outlined on the following pages.



THE GREENWAY NETWORK PRINCIPLES

PRIMARY INTERNAL CAMPUS PATHWAYS

Accessible & Inclusive

- A solid, smooth surface should be incorporated into primary pathways. Materiality should include a mixture of pervious and smooth surfaces. Smooth surfaces are meant to ensure the pathway is accessible for wheelchairs, and bicycles and scooters can roll along the surface in a safe manner.
- Close attention should be paid to ensure primary pathways are easy navigable by a diverse range of community members, including those with disabilities.

Sustainable

- When selecting materials, need to consider sustainability. This includes, but is not limited to, reflectivity, sustainability of materials, water run-off, regionally or locally sourced, etc.
- Stormwater should be carefully considered along primary pathways. Consider a network of bio-swales that are associated with gathering.
- Must consider path editing when designing primary pathways and more specifically considering secondary and tertiary paths. Need to ensure that along with the additional hardscape added for wider primary pathways, we are also considering path editing and ensuring that we meet campus open spaces targets.

Intuitive

- Primary pathways should incorporate implied design. Pathways should be designed as best possible where users separate naturally without actual signage.
- Primary pathways should be intuitive to navigate.
- Primary pathways should be wide enough that it reduces chance for conflict, and people feel comfortable no matter if they are walking, biking or on a scooter.
- Primary pathways should promote limited speed of wheeled vehicles.

Community Focused

- The pedestrian experience should always be at the forefront of primary pathway design. Design should ensure all users feel safe including pedestrians, and those on bikes and scooters.
- Careful consideration to the types of users should be considered, including incorporation of hydration stations, bike parking and/or fix-it stations. Pedestrian and bicycle facilities should be constructed or enhanced in critical need areas.
- Gathering spaces should be considered along primary pathways to create an element of balance that provides opportunities for social gathering. This includes areas of refuge, green spaces, places to gather, and places to sit. A diversity of space types will provide for active and passive users.
- Safety should be carefully considered, and consistent lighting should enhance security along primary pathways.

A Wayfinding Mechanism that is Clearly VU

- Art should be placed along primary pathways strategically to serve as a way finding mechanism. Art can complement the network of pathways, and also provide opportunities for the community to engage with the campus.
- Banners and VU signage should be strategically considered along primary pathways. They should complement and reinforce to the user that you are on Vanderbilt's campus.

Future Proof

- Careful consideration should be made to the future. When designing pathways, need to strategically think about future technology needs and incorporate into the design (i.e. power needs, low voltage, wifi, conduit for future services, etc.) for kiosks, wayfinding, charging, etc.
- Consideration to designated fire lanes and safety requirements needs to be made, however, focus should be on designing for pedestrians and bicycles. Motorized vehicle use is discouraged on primary pathways.

THE GREENWAY NETWORK PRINCIPLES



EDGE "WALK AND ROLL" NETWORK PRINCIPLES

Be Future Proof

- Plan for a great number of walkers and rollers.

Make the Journey a Destination

- Making the edge a beloved attraction in Nashville. The edge should make the campus feel inviting.
- Look for opportunities to connect with regional bike and pedestrian networks.
- Look for opportunities to connect to regional transit networks.

Remember the Software

- Programmed activities and walking/jogging as a part of making the edge work.
- Branding and signage should be strategically considered, and communicate with the broader community, announcing the Vanderbilt campus.

Separate When Possible and Design for Mixing When It's Not

- Design high-quality mixing zones.
- Pay special attention to transit stops.
- Incorporate 'calming' strategies to mitigate conflicts, as appropriate.

Establish Gateways

- The campus does not have a singular entry or gateway. FutureVU endeavors to create equal, visual and identifiable thresholds into the campus as it many entry points rather than a single gateway.
- Should consider clear breaks or portals with views into the campus open spaces in order to transform the perception of Vanderbilt's presence in the city and create understandable moments of arrival.
- Consider removing fencing or sections of fencing when possible. Porosity is good.
- Should consider making the original gates of campus a feature.

Maintain Consistency

- Should consider a level of consistency for the entirety of the edge when possible.



SITE FURNISHINGS

SITE FURNISHINGS

Furniture should be utilized as a tool to reinforce the unique identity of each campus neighborhood. While being neighborhood specific, the university-wide palette of furnishings should also relate to one another. Simple forms help site furnishings recede from the visual field, giving appropriate prominence to campus architecture and landscape. All future furnishings should meet Vanderbilt Sustainable Building Standards.

SEATING

Vanderbilt's paths and gathering spaces currently suffer from a lack of seating. Provision of a variety of seating types and locations will promote social engagement among students, faculty, staff and visitors. Guidelines for seating should take into consideration material, color, sustainability and accessibility. Wood furnishings are appropriate for use in both sunny and shady conditions. Where metal furnishings are used, specify light color finish or a finish that dissipates heat. ADA accommodations include incorporation of seat backs, arm rests and companion seating areas. Fixed seating is appropriate for use along paths at shaded lawns and along perimeters of small gathering spaces. Movable seating is appropriate for use in open and shaded lawns. Include at least one shaded seat for every 200 square feet of dedicated outdoor space that is accessible from the pedestrian walkways.

FENCES

Limit use of fences to areas where required to meet safety and ADA standards or needed to prevent access to private-use areas such as athletic fields and service areas. Existing fences should be removed where pedestrian circulation and view corridors are obscured; such as around planting areas and along the campus perimeter.

RECEPTACLES

Recycling and trash receptacles should accommodate separate collection of litter, recycling and compostable items. Side opening lids are ideal in their ability to limit visibility of contents and deter rainfall from filling the receptacle. A size range of twenty to forty gallons helps to balance the frequency of maintenance with the desire to minimize aesthetic impacts.

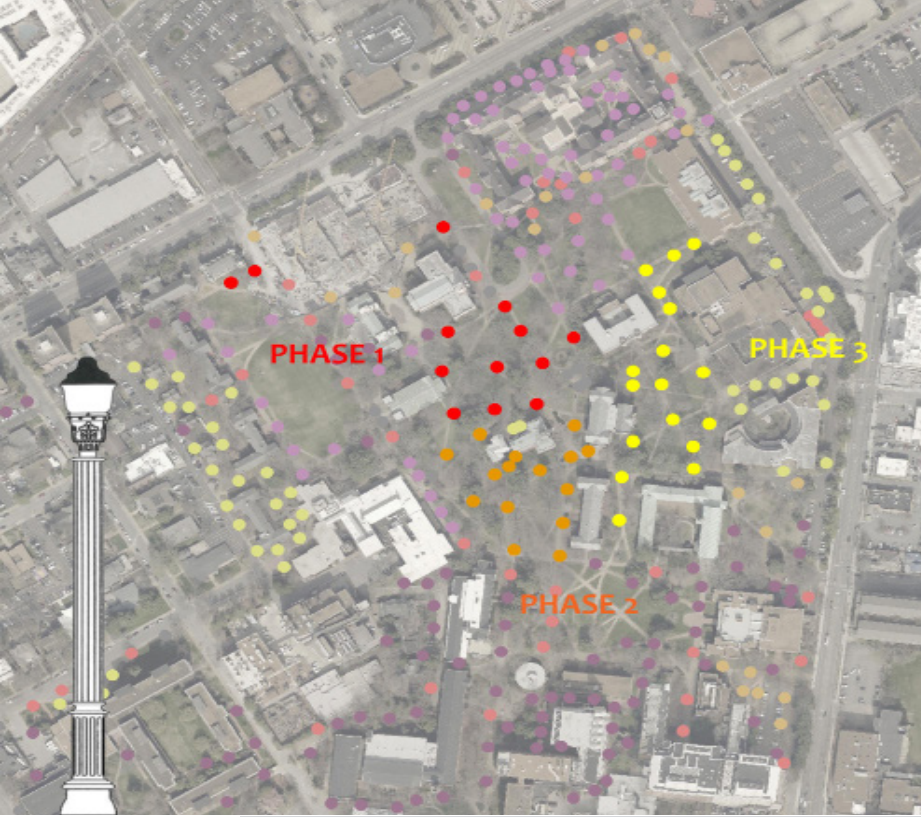
Signage and Wayfinding

Pedestrian wayfinding on campus will be facilitated by the Greenway network, which will function as an implicit wayfinding element. Distinct pavement, clear view of corridors and clarification of path hierarchy throughout campus will direct pedestrian circulation. Strong thresholds that announce arrival onto campus or into new neighborhoods will be created, and art installations will reinforce these important thresholds. Maintenance should be considered when determining the approach to sign construction. Building identification will be incorporated at building entrances and campus map kiosks will be strategically located. Signage should have consistent character and should be coordinated with the Vanderbilt Department of Communications.



LIGHTING





Lighting Phase Plan

EXTERIOR LIGHTING PLAN

REDUCE UPLIGHT

Open parking lots shall use luminaries with a "U" BUG rating (Backlight Uplighting Glare) of 0 without external shields. Luminaries shall have a Correlated Color Temperature (CCT) of 3000 Kelvin or below. Principal walkways and parking shall have a maintained minimum luminance of 0.2 foot candles at grade and with a 12:1 maximum to minimum.

REDUCE LIGHT TRESPASS

The average light level is not to exceed 1.0 foot candles. Spill light at the property shall not to exceed 0.1 foot candles measured at 3' above grade.

FutureVU aims to increase pedestrian safety, reduce energy use and establish a consistent aesthetic character for lighting in each neighborhood. Light fixtures along paths and small scale gathering spaces should be pedestrian in scale, using poles with mounting heights between twelve to fourteen feet, and indirect fixtures. Taller poles with multiple fixtures or tree-mounted fixtures illuminate open spaces while minimizing the quantity of poles required. Directing light through tree canopies with flood or spot fixtures creates an atmospheric, moonlighting effect that extends use into the evening hours.

LIGHTING REQUIREMENTS AT PARKING AND SERVICE AREAS

These areas differ from pedestrian areas with regard to illumination levels and fixture type. Color temperature and fixture types should fit within the overall campus palette. Avoid use of poles where building mounted fixtures are appropriate to achieve appropriate levels of illumination for service areas. A single style of light pole shall be used for all large-scale surface parking areas.

Target light levels will vary depending on location and environmental conditions. Color temperature should be warm, in the range of 3000K for all fixtures (pedestrian path, courtyards and building entry - all indirect/3000K; open space, egress path, parking area, back of house/service areas – all direct/3000K). For more information, see the Lighting Master Plan in appendices.

EXTERIOR LIGHTING

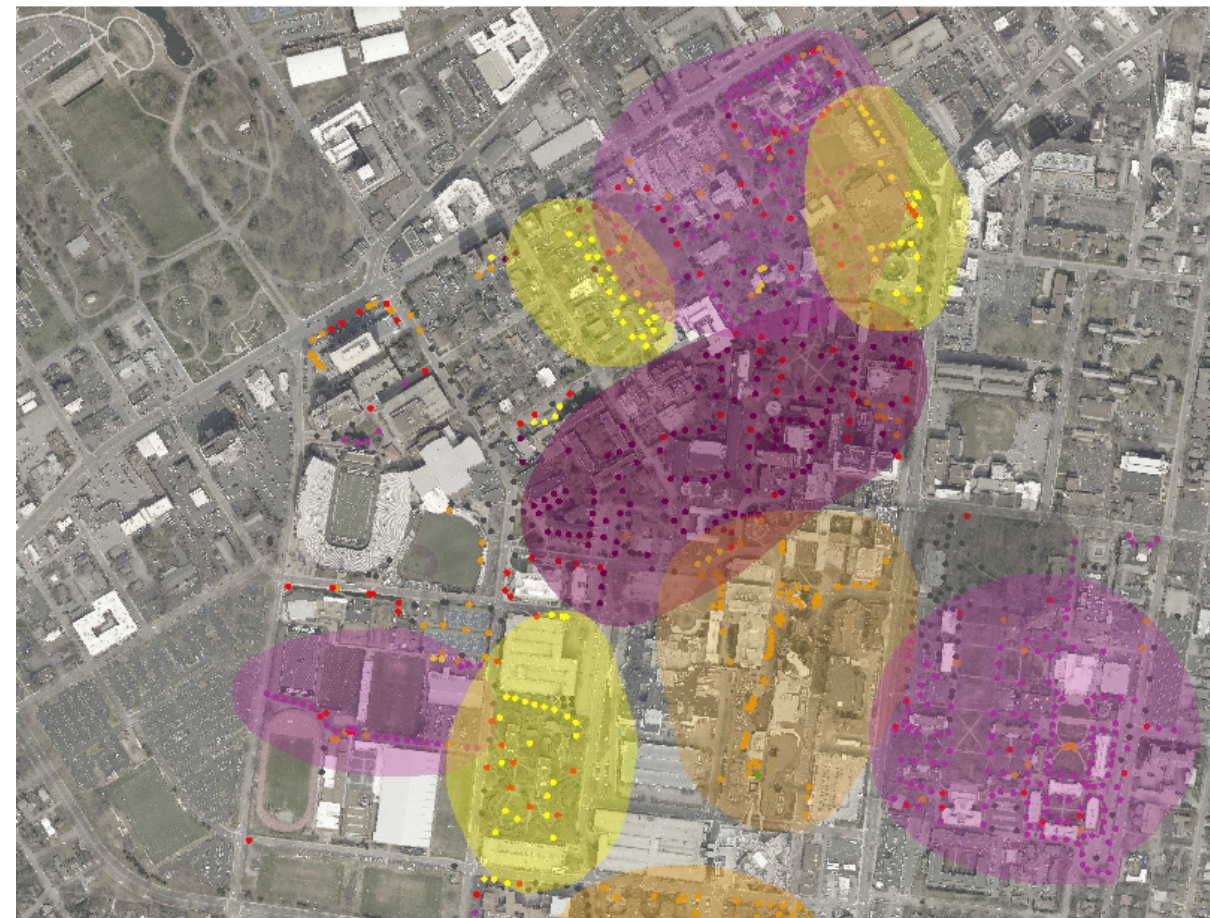
REDUCE LIGHT POLLUTION

- Avoid carpet lighting when possible.
- Establish automatic shutoff lighting controls for exterior lights on building facades and other parts of the campus not crucial to safety and wayfinding from midnight until 6am.
- Select outdoor lighting features with low backlight, uplight, and glare and energy efficiency.
- For additional light control measures see the Vanderbilt Sustainable Building Standards.



EXTERIOR LIGHTING AT VANDERBILT UNIVERSITY

- AAL Globe (Extant)
- Hapco 'Mushroom' (Old)
- Hapco 'Mushroom' (Newer)
- Holophane Granville II LED
- AAL Globe (Current)
- Specialty Lighting (Other)



HOW EXTERIOR LIGHTING VARIES BY NEIGHBORHOOD





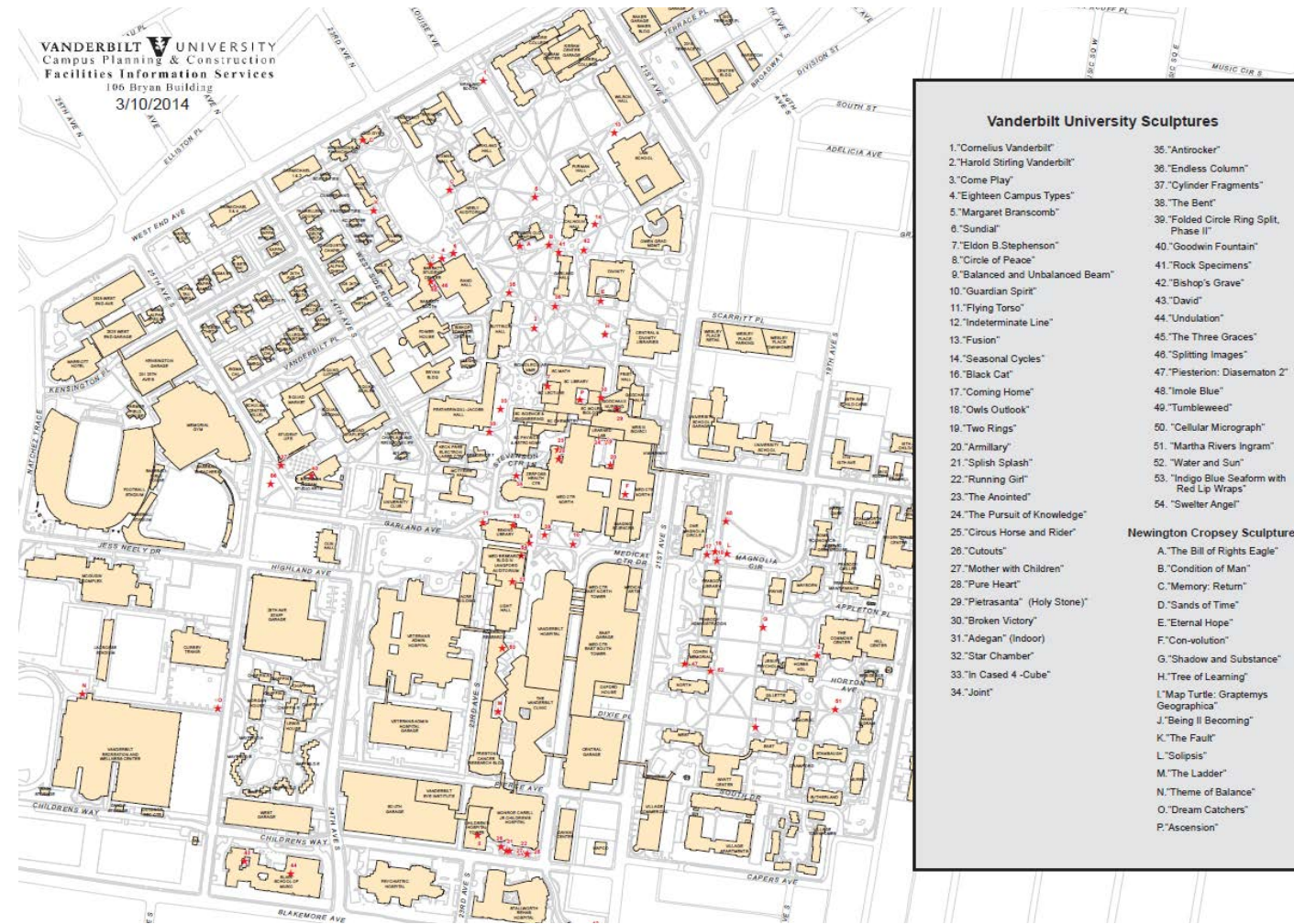
SCULPTURE AND ART

SCULPTURE & ART

Vanderbilt features more than 60 public sculptural and multi-media artworks in all neighborhoods of campus. Like other landscape features, art and sculpture elements can help create a cohesive identity and serve way-finding along pathways.

As outlined in the [FutureVU framework](#), art on campus has the potential to create cross-disciplinary engagement and activate spaces. As the campus expands its art collection, the placement of large sculpture pieces at gateways is appropriate. Similarly, large pieces sited at major entrances and intersections along the Greenway network can create a rhythm for campus movement. Art pieces can also be placed strategically as participants within the construct of the built environment.

A range of installation and performance art could be showcased in major open spaces. Placement of art pieces reinforces routes of primary pedestrian circulation.



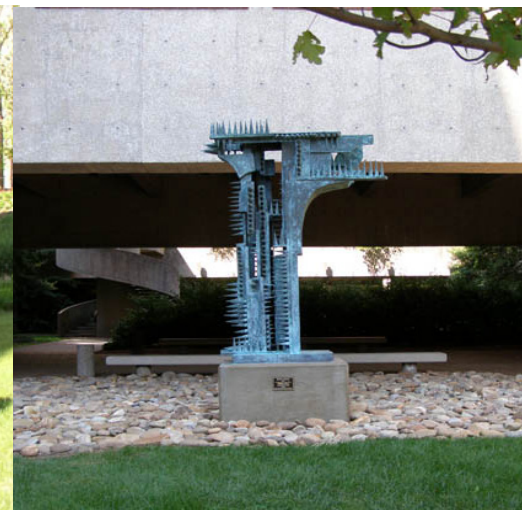
"Condition of Man"
Larisa Fuchs

"Tree of Learning"
Greg Wyatt

"Solipsis"
Alex Simon

"Fusion"
Mark Stasz

"Broken Victory"
William Tarr



EXTERIOR ART MAINTENANCE

Existing Collection Maintenance

Exterior art is maintained by Vanderbilt Facilities. A conservator is hired to assess exterior pieces. Annual maintenance is funded PUC.

Relocation & Reductions of Existing Collection

The relocation and reduction of existing exterior art is maintained by Vanderbilt Facilities. Relocation and/or reductions to be based on need, not opinion, and specific projects are often a driver. Facilities to make decision on final locations in conjunction with FutureVU plans and vision.

Approving New Art

Initial requests for new art should flow through the university arts governance process. Vanderbilt Facilities representatives to assess impact to physical space, as well as determination of maintenance needs. FutureVU Hub to assess potential locations in accordance with FutureVU vision. Recommendation to be prepared with University Arts Collections Governance subcommittee, Facilities, FutureVU Hub combined thoughts and taken to Facilities Review Committee. Following the above process, art to be taken to leadership for approval.

Approving Temporary Art

Temporary projects to be installed for 1 day to 1 month

- If academic in nature (i.e. results from academic program or class), Facilities Review Committee to review. Their review is meant to be agnostic and aid in the process.

Temporary projects to be installed for 1 month to 1 year

- If academic in nature (i.e. results from academic program or class), Facilities Review Committee to review. Their review is meant to be agnostic and aid in the process.
- Leadership (Provost and Vice Chancellor for Administration) to be made aware in advance of implementation.

SIGNAGE

The following guidelines must be followed when hanging signage on campus:

- Nails, tacks, tape, or staples may not be used to attach posters to trees or buildings. Posters and banners may be tied to tree trunks with string.
- Stakes bearing signs may not be driven into the ground. From time to time, University departments may install directional signs similar in design to those signs placed in yards for political campaigns. Student organizations desiring to use such signs must obtain authorization from the Director of Student Organizations, or the director's designer. Note that the use of such signs is reserved for directions, only, that they may not be used for general advertising or promotion, and that they must be removed immediately at the conclusion of the event for which they are installed.
- Banners may not be hung from trees, between trees, or from other objects such as lampposts.
- With the endorsement and cooperation of student government, a series of poles with rigging especially designed for the hanging of banners has been installed on the east side of Rand Hall, to consolidate the display of banners.
- Using markers and permanent paint on any surface other than banners, posters or fliers is prohibited, as is using self-adhesive labels or stickers. Individuals and organizations may be charged for repair or cleaning of damaged surfaces.

At times, campus groups (staff, faculty, student) may have requests to utilize various mediums (installation of temporary signage, utilization of chalk paint, etc.) for university events on a temporary basis. Similar to the approval of temporary art, such signage and/or methods must be taken to the Facilities Review Committee to review and for approval.



APPENDICES





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