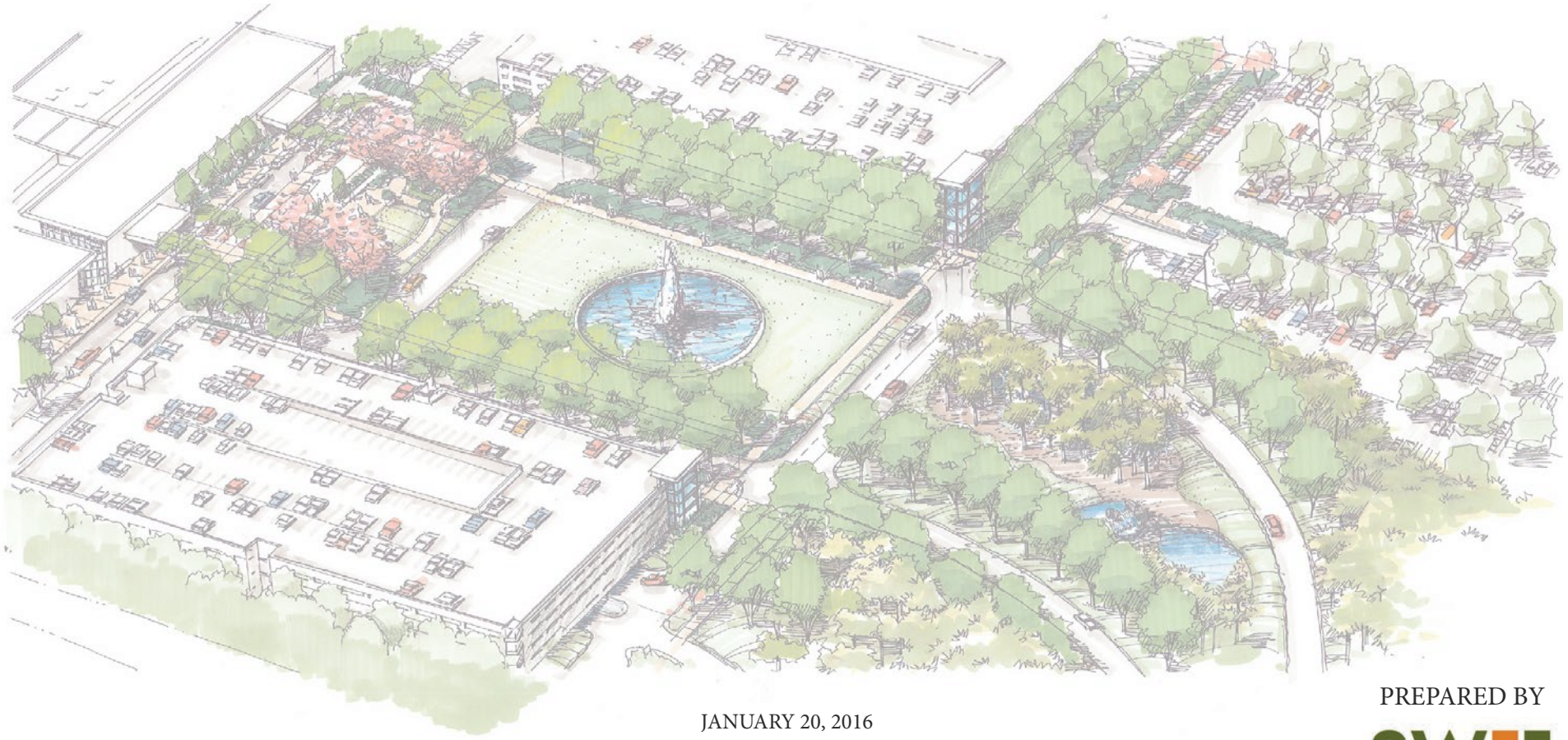
GSP INTERNATIONAL AIRPORT

LANDSCAPE MASTER PLAN



JANUARY 20, 2016

PREPARED BY

SEAMONWHITESIDE

TABLE OF CONTENTS

(Above) The Airside Garden at GSP International Airport.

ACKNOWLEDGMENTS

The design team wishes to thank the following, without whom this project would not have been possible.

GSP INTERNATIONAL AIRPORT

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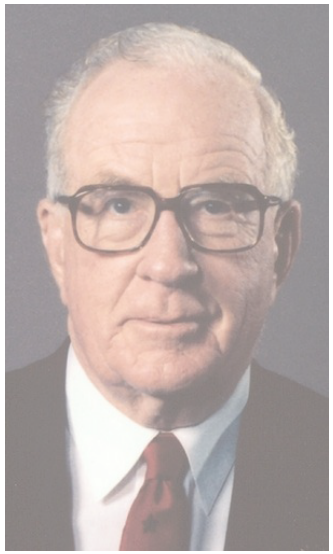


"My interest in the airport stems from wanting to make it work and be attractive. You only have one chance to make a first impression."

-Roger Milliken

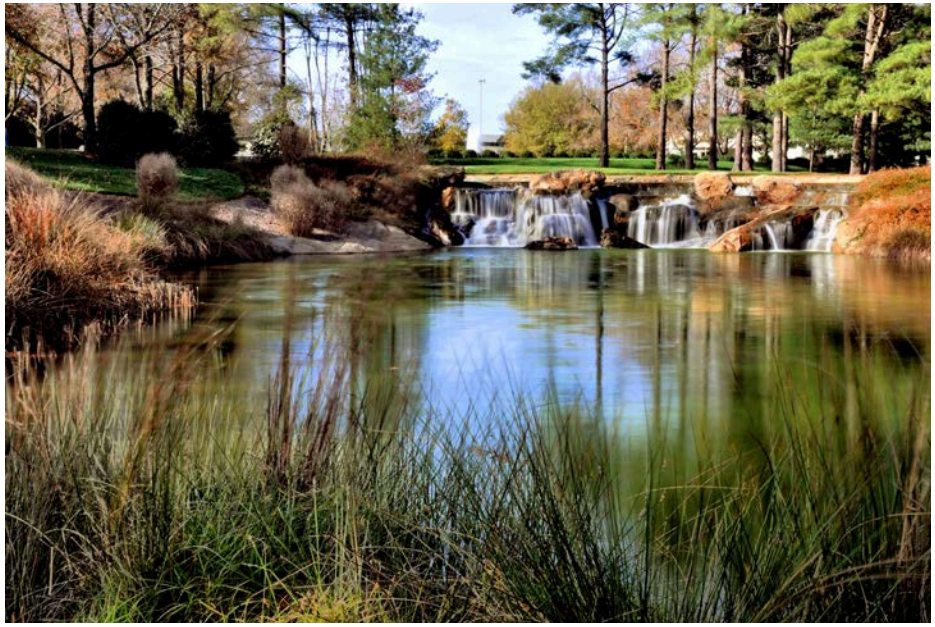
Key Founder and Chairman of the Greenville Spartanburg Airport Commission (1959-2010)

SECTION ONE: EXECUTIVE SUMMARY

MISSION AND PURPOSE

Greenville Spartanburg International Airport (GSP) was created in 1962 to provide quality air service to the Upstate of South Carolina. Throughout the years, multiple expansions and upgrades have created a modern facility that transports over 1.8 million passengers per year. In addition, GSP's campus of over 3,000 acres puts it in a unique position to provide continued economic growth and development to the Upstate. From its inception, GSP has strived to create and maintain a unique and high-quality campus landscape. From the initial mid 20th-century landscape to the present, much effort has been made to maintain and improve the landscape of the campus and make the GSP experience one-of-a kind.

In late 2013, a design team led by Seamon Whiteside, with the assistance of Greenville Spartanburg Airport District (District) staff and the Greenville Spartanburg Airport Commission Landscape Master Plan Task Force (Task Force), began a landscape master planning process that will be used as a guide for GSP in the future. Over the course of 2014, the design team met with District staff and appropriate contacts, made numerous site reconnaissance visits to the GSP campus, gathered information from a variety of sources, conceptualized landscape improvements, and made recommendations that are presented in this document.



(Right) The GSP International Airport is varied and diverse, with both highly designed urban spaces, and rural wooded drives.

THE PLANNING PROCESS

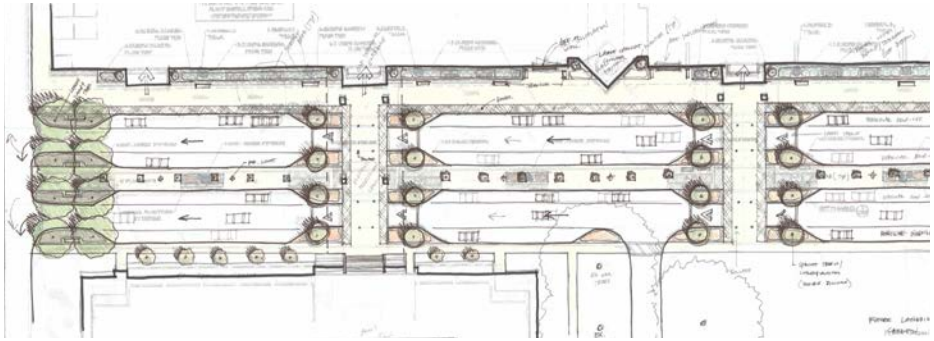
Much effort was made by the design team to utilize a comprehensive planning process during the creation of the landscape master plan. With this approach, there are three distinct parts of the document: analysis of existing landscapes, concepts for landscape improvements, and design standards and guidelines to achieve this vision. The team utilized this process to create an impactful and comprehensive landscape master plan for GSP.

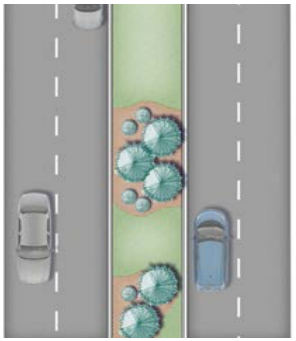
Analysis led to the identification of a vital core campus space, herein referred to as the **CAMPUS GREEN**. This space was identified as the historic heart of the landscape, and possesses the overall visual quality that the District would like to extend to the rest of the campus. An introductory signage analysis identified the need to implement identification methods across the expansive campus, including both physical signs and common landscapes themes. Also identified during the analysis phase of the process was the need for beautification along existing roadways, and the need for future design standards.

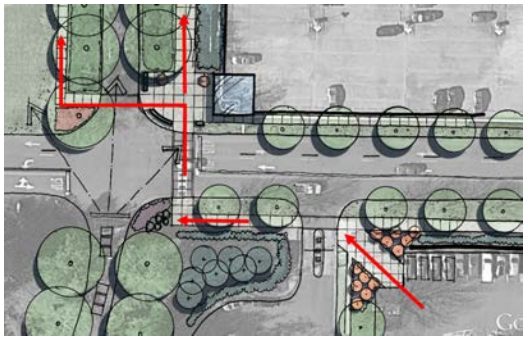
These needs were visualized through conceptual sketches, which were then used to create the comprehensive landscape master plan. Design Standards were written, and guidelines were put in place to ensure the quality of future designs. A 15-year capital improvement schedule was created, providing goals for the District to carry the campus into the future.

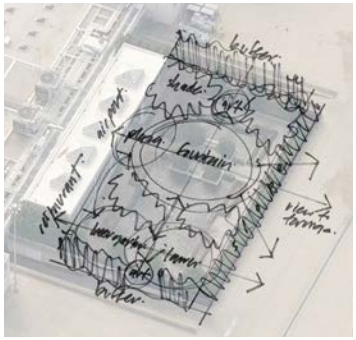
INVENTORY & ANALYSIS

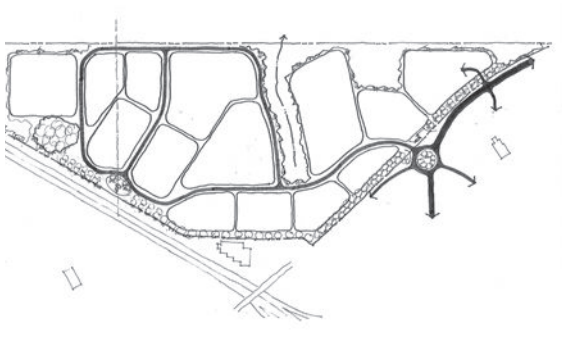
The first step for the design team was to conduct a thorough site analysis of the GSP Campus. Over 600 Trees were tagged and identified, irrigation on site was tested and analyzed, the overall GSP history and landscape were researched and understood, and a preliminary signage analysis was completed.
Along with this research, the design team met often with GSP staff, the Landscape Master Plan Task Force, and appropriate authorities to help fully understand the campus.

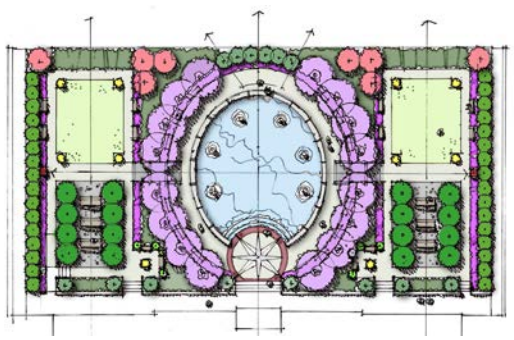












INITIAL DESIGN AND EXPLORATION

The next step involved the design team taking the information learned in the analysis phase and developing concepts that addressed the key issues identified. These initial designs were presented to the Task Force & Staff, and from the feedback from these groups, as well as others, these initial designs were refined and taken to the next level to create the landscape master plan.

LANDSCAPE MASTER PLAN

The final landscape master plan consists of a series of recommended improvements to key GSP Campus landscape spaces, as well as design standards for new development. These improvements vary in size and scope, but work together to enhance the GSP Campus, and create a sustainable landscape that will respect the history of the campus core while continuing the GSP landscape legacy into the future, and allowing GSP to serve as a community leader in regionally sensitive and sustainable design.

EXECUTIVE SUMMARY CONTENTS

The GSP Landscape Master Plan is broken down to a series of improvements to key landscape spaces. The following aspects are detailed further in this document:

A) Tree Replacement (Core Campus)
B) Two and Four-Lane Future Road Standards
C) Existing Road Improvements
D) Campus Green Improvements
    i) Terminal Approach
    ii) Terminal Mall
    iii) Terminal Drop Off
    iv) Airside Garden
E) Iconic Sign
F) Gateway Corner Improvements
G) Tract and Parcel Signage Standards

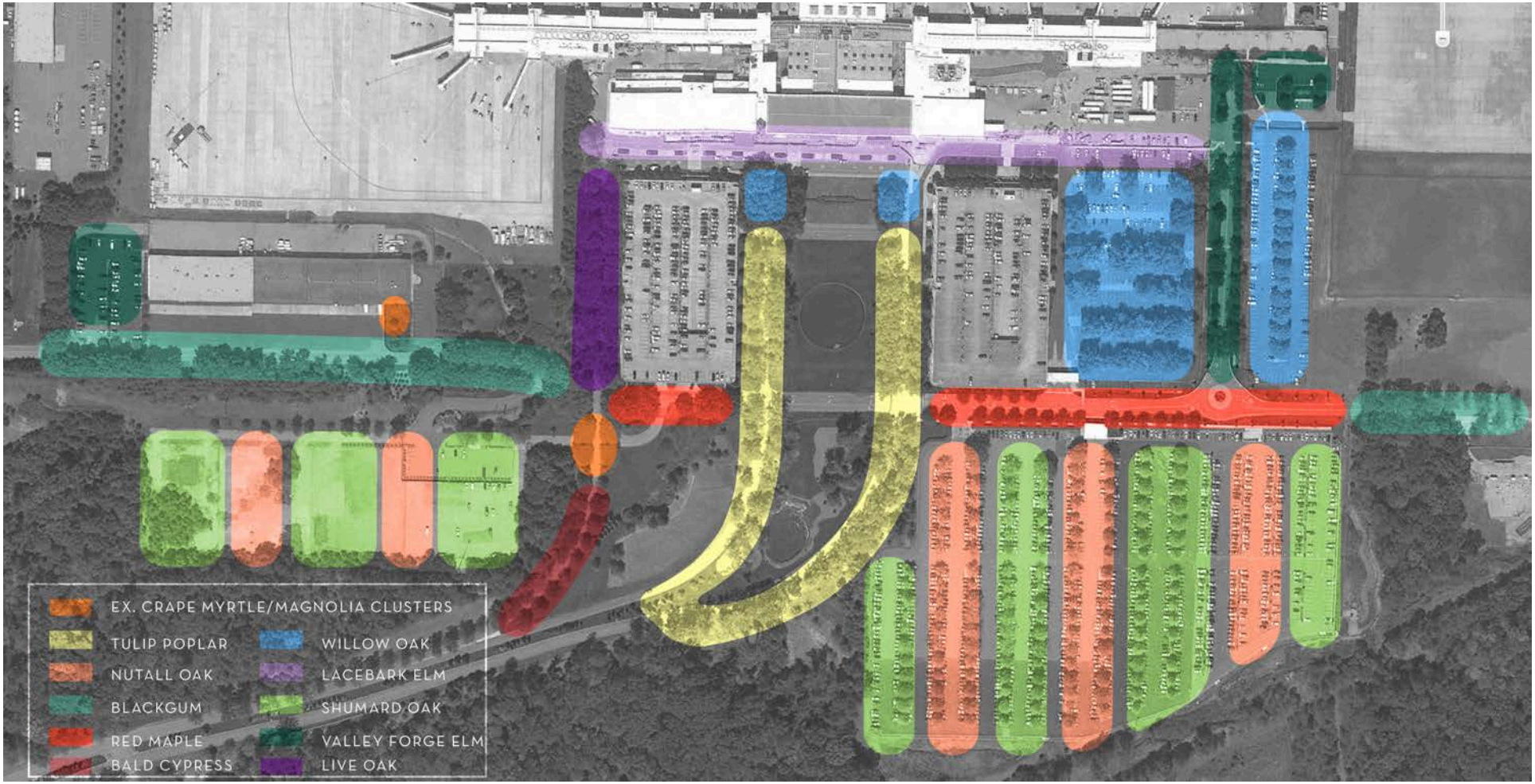
TREE REPLACEMENT

GSP International Airport has historically made an effort to plant and maintain a mature tree canopy over the roadways and parking areas.

Trees planted in an urban environment have been proven to have tremendous positive impacts on a space, including reducing traffic speeds, creating safer and more enjoyable walking environments, lowering air temperatures, and adding value to surrounding uses. Many of the originally planted trees are declining and in need of replacement. The Tree inventory revealed an existing monoculture on the campus, dominated by two main species, which puts GSP at an increased risk for large die-offs and disease outbreaks.

These trees should be replaced, area by area, with tree species that will be better suited to the often difficult conditions in which they are placed. As part of the master plan, different phasing options were weighed, and a tree master plan was prepared to provide a guide for the future tree canopy of GSP.

(Above) The proposed landscape palette for GSP International Airport blends a variety of plant materials together to create four-season interests.



(Above) Long-term tree replacement plan. The tree inventory revealed a monoculture dominated by two main species. The above plan indicates a desired tree planting plan. This plan would allow the original design intent to be maintained, while introducing more variety and improved species.

ROAD IMPROVEMENTS

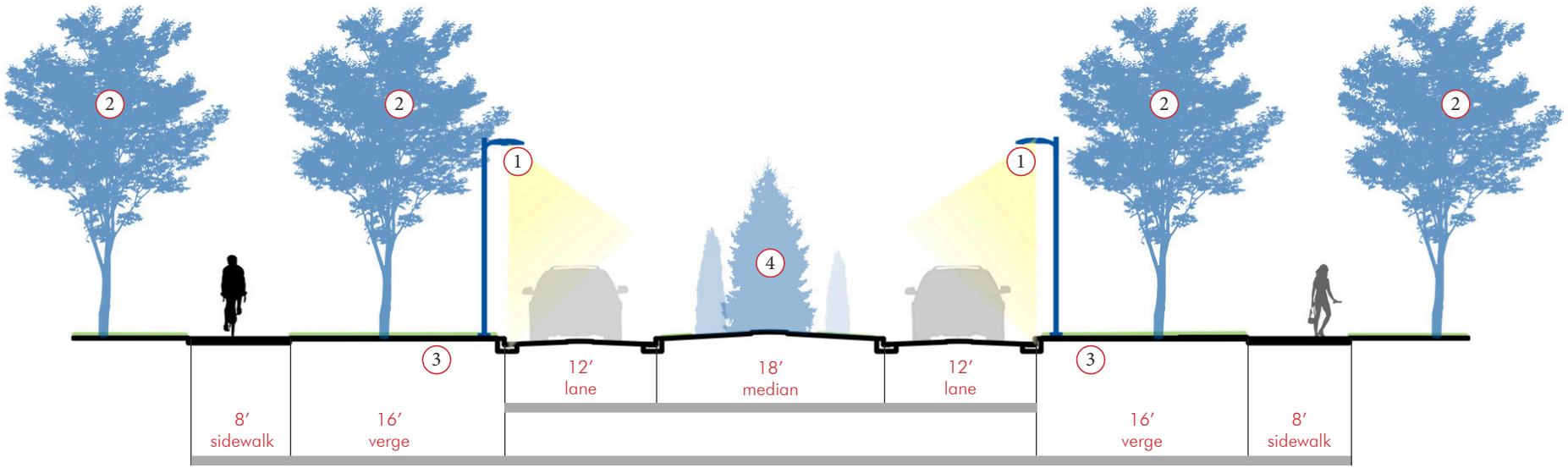
Both existing and future campus roadways are key corridors that are critical to the overall quality of the campus landscape. The inclusion of large canopy street trees helps to tie these vital connectors to the naturalistic landscape theme that defines GSP.

New roads will have sidewalks and ample tree lawns to ensure a functional yet beautiful campus connection. New roads will also include a planted median where feasible. Emphasis will be placed on the use of high-quality materials and scale-appropriate landscape design along future roadways.

Existing roads will be visually improved and connected to the overall GSP landscape aesthetic through the planting of strategic medians and canopy trees. Areas where aviation clearance is required will be treated with landscaped berms in lieu of canopy trees.

(Above Left) LED streetlights create a safe, welcoming environment.
(Above Right) The use of large canopy trees along roadways is one of the key tenets of the GSP landscape. All new roads shall include space for large trees to develop.

PROPOSED TWO-LANE STANDARD ROAD



KEY:

1. Roadway Lighting - LED Roadway Fixture (see lighting standards) Lights to be spaced min. 15’ from street trees and 75’ O.C.

2. Type “B” Street Tree, to be selected from provided approved tree list (see appendix 6.6). Tree to be centered in verge and min. 15’ from all inlet structures and lights. (See typical planting details in appendix.)

3. Verge to be turf. Maintenance of turf to follow recommended maintenance practices. (See appendix 6.8)

4. Planted median to follow guidelines in this document. Native or naturalized plantings with a variety of forms and colors are encouraged. Any plant with a mature height of over 3’ shall be placed min. 5’ from back of curb.

TERMINAL APPROACH

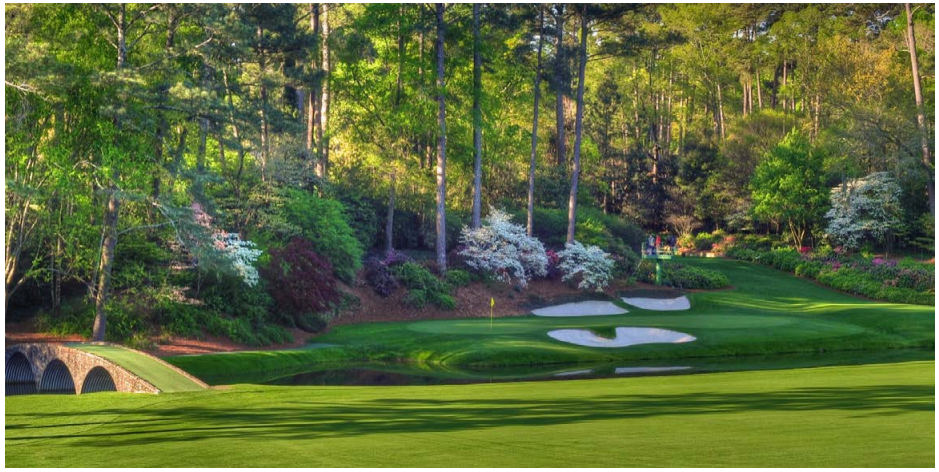
Upon arrival at GSP, the first landscape space a visitor encounters while approaching the Terminal is the sweeping bend along Aviation Parkway, herein referred to as the Terminal Approach.

It is from this space that the visitor to the campus first glimpses the iconic Charlie Daniel fountain, and the historic axis connecting the Approach to the Terminal building. The District has undertaken landscape improvements in this area before, most notably the waterfall feature, which gives the space a regionally appropriate character.

Site analysis indicated an overabundance of directional signage in this area, and the lack of a welcoming feature unique to GSP. Past storms had also damaged a large part of this landscape.

Improvements to this area seek to enhance and strengthen the axis created, while maintaining the original intent of Roger Milliken and the original designers of the airport. The ornamental plantings in this area will be supplemented, emphasizing the character of the Piedmont region. An example of this aesthetic is the famous golf course at Augusta National in Georgia.

Unique signage will also be added to this area, taking care to not disrupt the visual axis of the space. Similar signage has been used successfully at Los Angeles International Airport. The use of this type of sign is made even more powerful due to the number of people who identify Greenville Spartanburg International Airport by the letters "GSP".



(Top) Existing conditions of Terminal Approach. Note overabundance of directional signage. (Above) Augusta National Golf Club has many of the same landscape characteristics as the Terminal Approach, including a pine overstory with flowering ornamental plantings.

(Above) Proposed improvements to the Terminal Approach include increasing the ornamental plantings under the mature pine canopy, as well as the addition of unique signage that would serve as a welcoming element to GSP. Care has been taken to maintain the original visual axis to the Charlie Daniel Fountain.

TERMINAL MALL

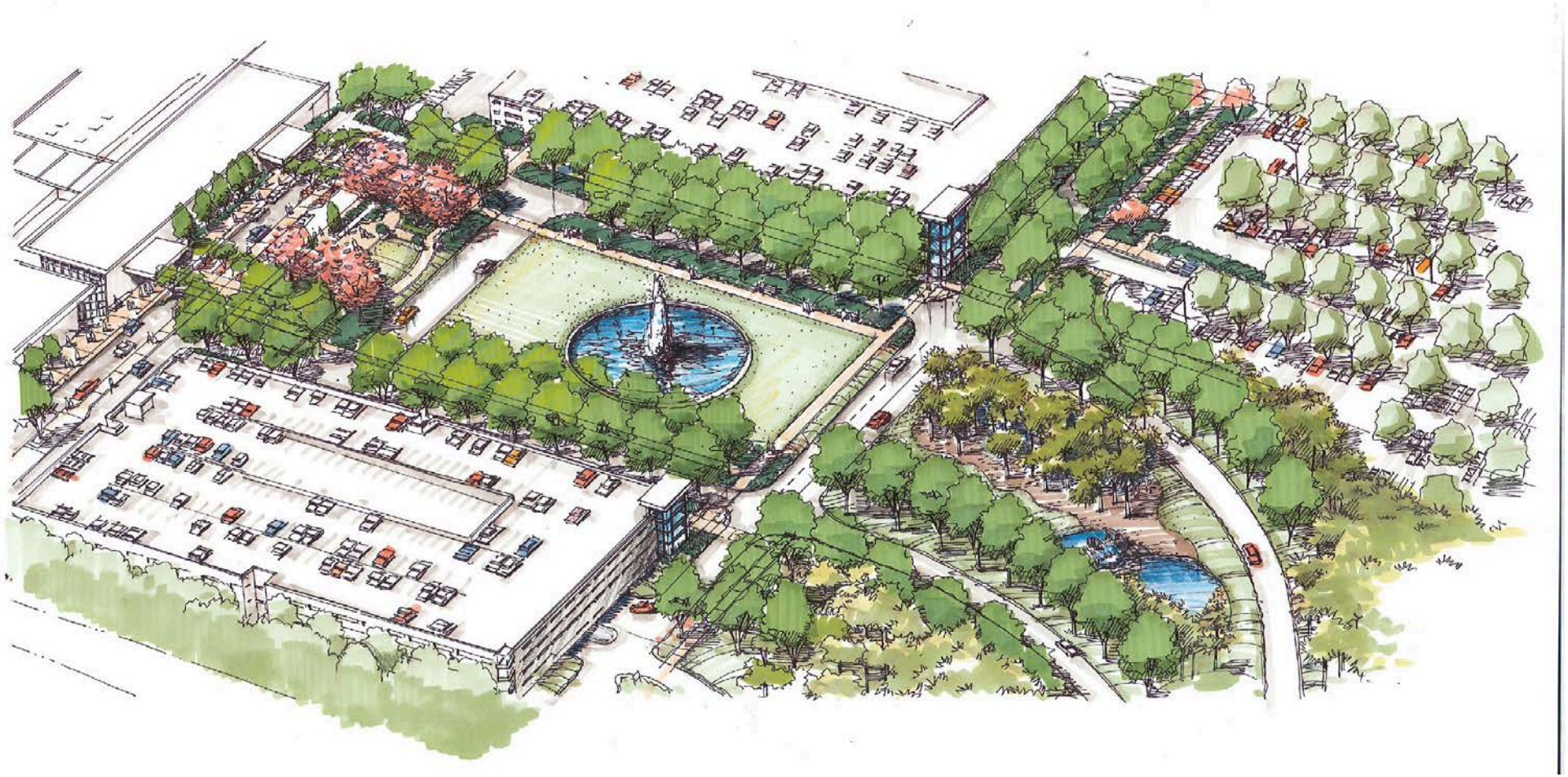
The Terminal Mall consists of the grand lawn in the front of the Terminal, the Charlie Daniel fountain, the tree-covered streets along the lawn, and the area that will be the future landside garden. This area is framed symmetrically by the parking garages and the Terminal building.

Site analysis revealed this area as a highly designed and beautiful yet underutilized space. There was no physical connection to the lawn and fountain present, and the space was seemingly used solely for its visual appeal. Narrow pedestrian sidewalks make up an incomplete and unsafe pedestrian network in this space. The garages were identified as having low visual quality and detracting from the overall quality of the space.

The proposed improvements in this area include anchoring the garage corners with a glass enclosure or artistic banner-like material to help visually connect the garages to the Terminal building. Sidewalk additions and the creation of groundcover beds help to unite the grand lawn to the rest of the spaces, while maintaining the original design intent and the security of the space.

The pedestrian network will be completed as part of the Terminal Mall improvements, and the landside garden will be used to terminate the main axis with garden space that compliments the Airside Garden.

(Top) Groundcover underneath canopy trees helps to anchor the landscape. This connection would link the Terminal Mall area to the proposed Landside Garden.
(Above) Garage corner treatments could range from advertising banners to a glass enclosure.



(Above) Proposed improvements to the Terminal Mall. Note the aesthetic treatment of the parking garage corners, as well as the completed pedestrian network. These linkages would help bring users to the main lawn and provide a stronger visual axis to the terminal. With the improvements shown above, each individual space is linked to each other through the landscape.

TERMINAL DROP-OFF

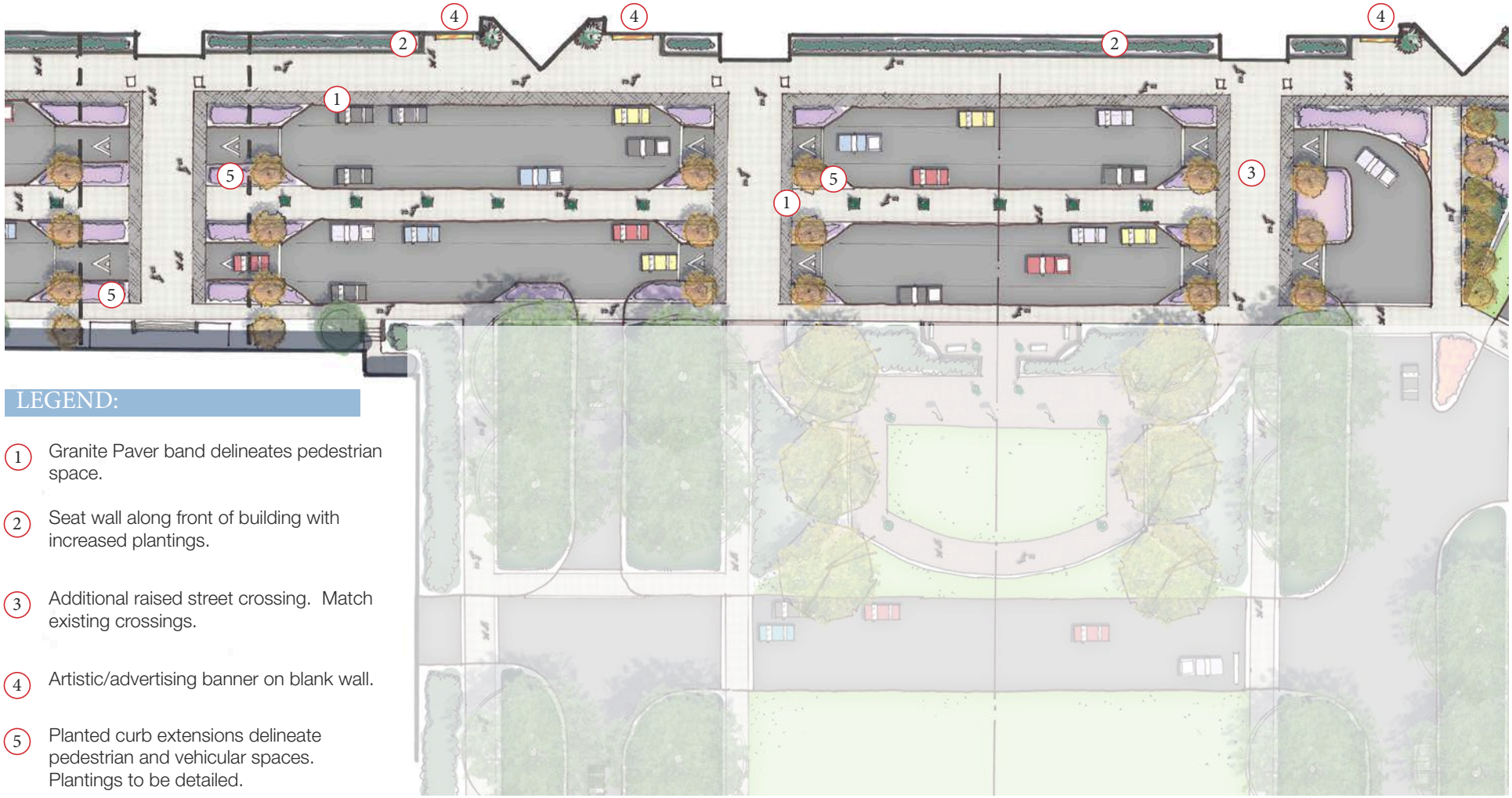
The Terminal Drop-off area is the most hardscape-heavy of all the spaces at GSP, and because of this, feels disconnected from the rest of the heavily landscaped campus. Security and pedestrian/vehicular movement are of very high importance in this area.

Analysis revealed this area to be stark compared to the rest of the campus, with many pedestrian/vehicular conflicts. Landscape improvements to this area include the addition of vegetated curb extensions to more effectively manage vehicles through the drop-off loop, and to reduce pedestrian crossing distances, improving safety. These areas also create the opportunity to appropriately re-vegetate the drop-off area and make it more visually connected to the rest of GSP. High-quality materials are proposed in this area to enhance the visitor experience at GSP.

(Above) View of proposed improvements. Note shortened pedestrian crossing, improving safety for drivers and pedestrians.

(Top) Planted curb extensions create a safe barrier between pedestrians and vehicles. Image courtesy BusinessInsider.com.
(Above) Plantings inside the curb extensions bring landscape opportunities to the space.

(Below) Proposed Terminal Drop-off improvements. Plantings have been selectively added to the space to bring sense of scale and high landscape quality to the space.



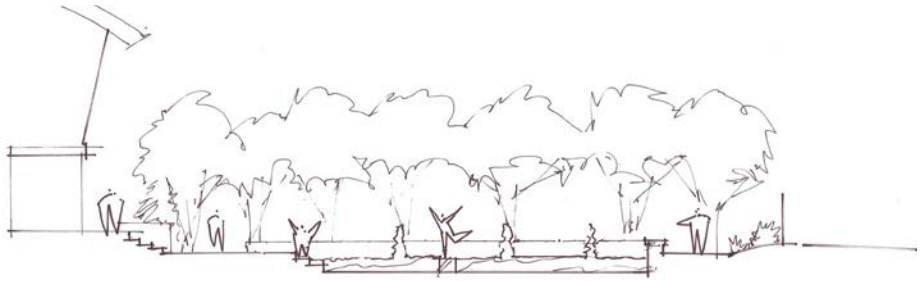
LEGEND:

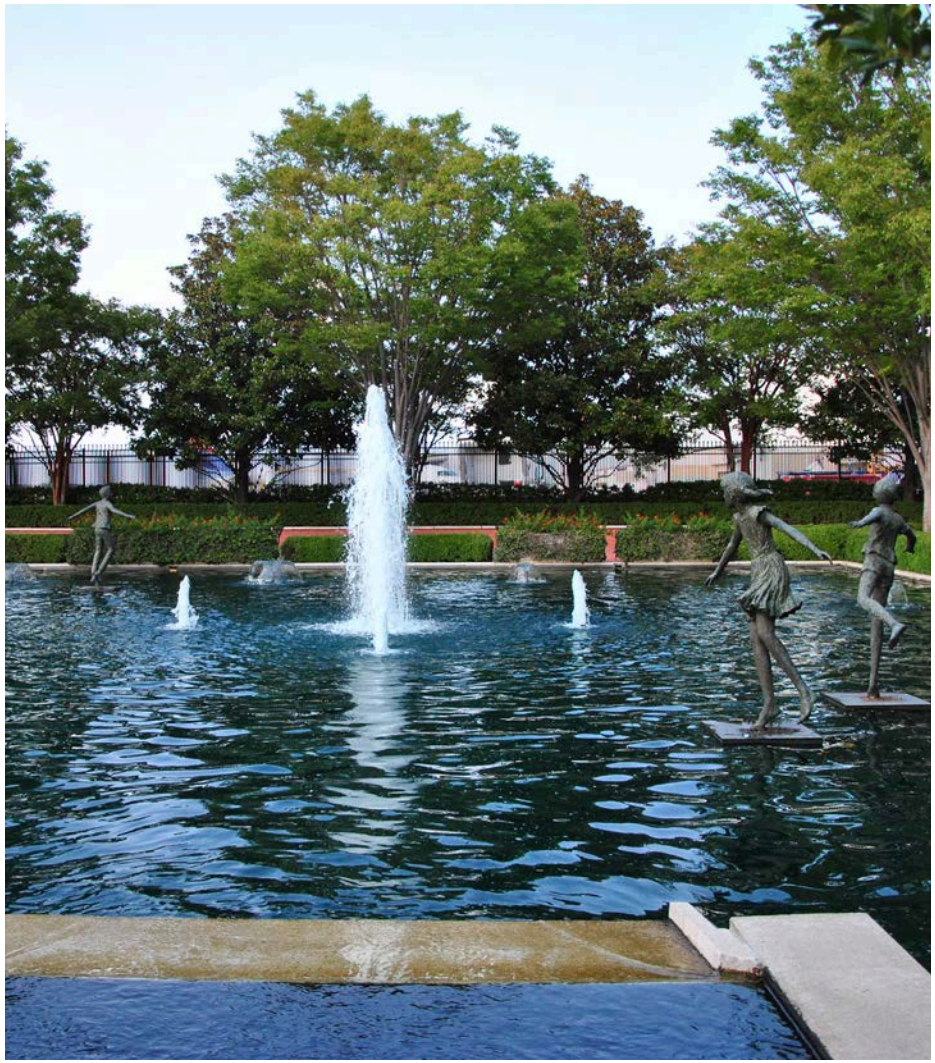
1. Granite Paver band delineates pedestrian space.
2. Seat wall along front of building with increased plantings.
3. Additional raised street crossing. Match existing crossings.
4. Artistic/advertising banner on blank wall.
5. Planted curb extensions delineate pedestrian and vehicular spaces. Plantings to be detailed.

AIRSIDE GARDEN

The Airside Garden is the one landscape feature that is unique to GSP on a global level. No other airport in the world has such a radically defining landscape feature in such a unique location. GSP's Airside Garden, originally conceived by Roger Milliken, was redesigned in 1989 to what exists today.

Site analysis revealed an overgrown and dated space that will no longer function as intended once the Terminal improvements are complete. The design team saw the Airside Garden as a critical landscape space at GSP that should be designed and executed at the highest level. An in-depth analysis of the space led to a renewed concept for the garden, which would update and create usable and unique landscape spaces that could serve a variety of uses. As part of the landscape improvements, design challenges would be addressed while maintaining the original forms of the design. The restored airside garden would use a similar palette of materials as the rest of campus, and would amplify the original ideas that created the space.

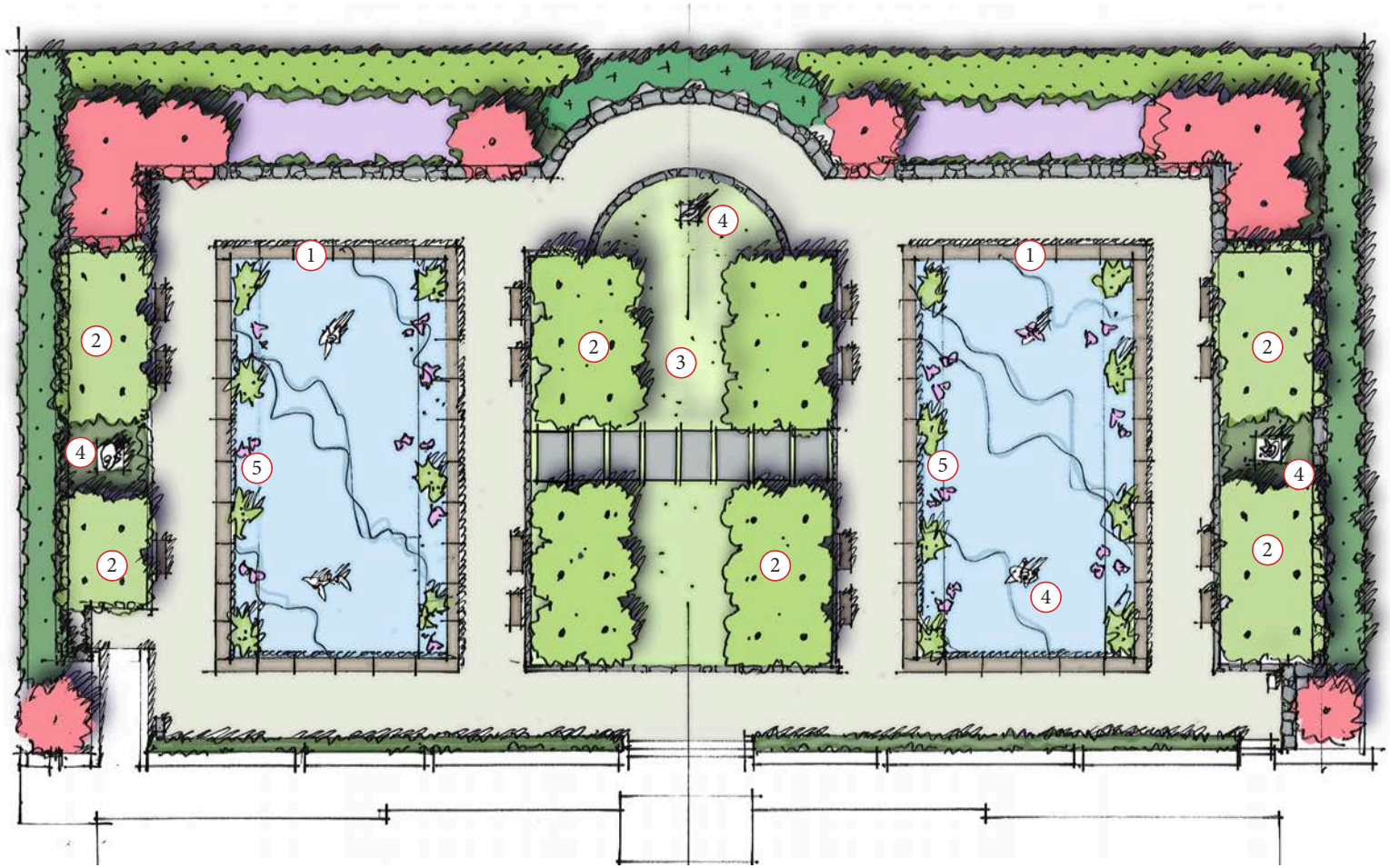




(Left) Conceptual cross-section of the Airside Garden.
(Above) Existing Airside Garden is designed around a pair of iconic water fountains. These fountains are one of the key features of the garden.

LEGEND:

1. Cut stone seat wall cap. Retains fountain edge.
2. Groves of specimen trees help to frame the space and provide shade.
3. Formal lawn space provides gathering space.
4. Sculpture is still used throughout the garden.
5. Pond shelf plantings add special detail to the garden.



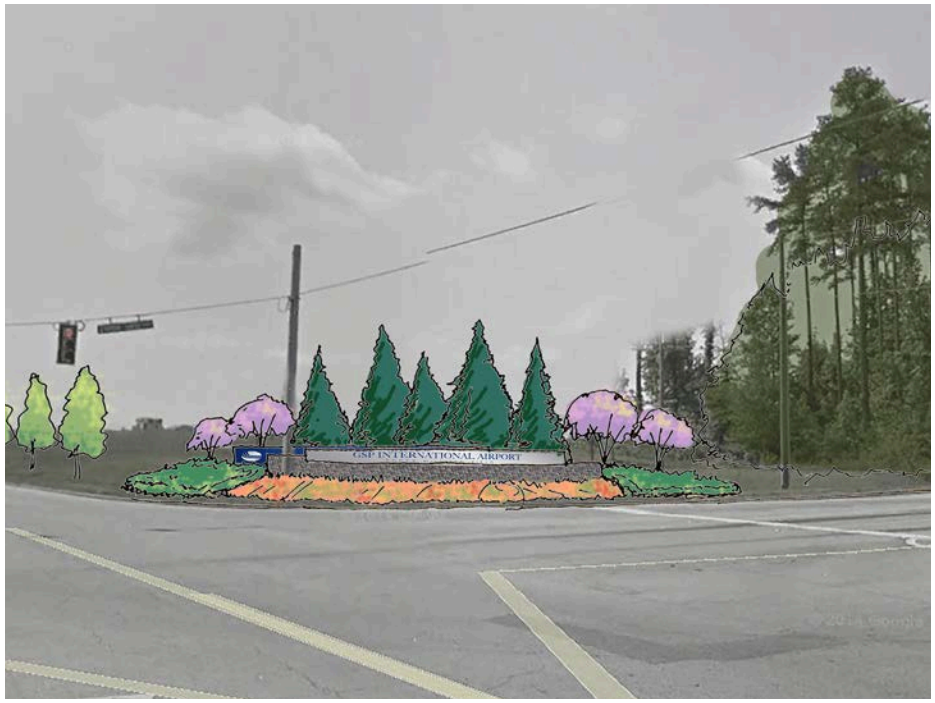
(Above) One version of the Airside Garden Improvements. The existing fountains have been reshaped and reformed to frame a centralized gathering space consisting of a lawn area surrounded by groves of specimen trees. Art and sculpture remain as a key tenet of the garden, while views to the airfield are reinforced and strengthened by the symmetrical design. The space is an extension of the Terminal. Other alternatives were explored as part of this process. (see page 122)

GSP GATEWAYS

A campus as large as GSP demands adequate identification signage. One of the items mentioned in initial meetings with District staff and the Task Force was the desire for adequate campus branding, especially at the perimeter of the Campus.

Site analysis confirmed the need for GSP identification signage as one moves away from the core Terminal Area. In keeping with the goals of the GSP 360 study, branding the campus is a key part of future airport development.

The GSP Gateway signage design would utilize a low wall form, attaching lettering and using natural stone in combination with more modern materials to complement the established design aesthetic at GSP. This sign, present on one corner of an intersection, would be strengthened by a planted ornamental landscape that would extend across the intersection to other areas.



(Top) Conceptual view of Gateway Sign and landscape improvements. Landscape improvements would continue across the intersections.
(Above) Elevation view of a typical Gateway sign.

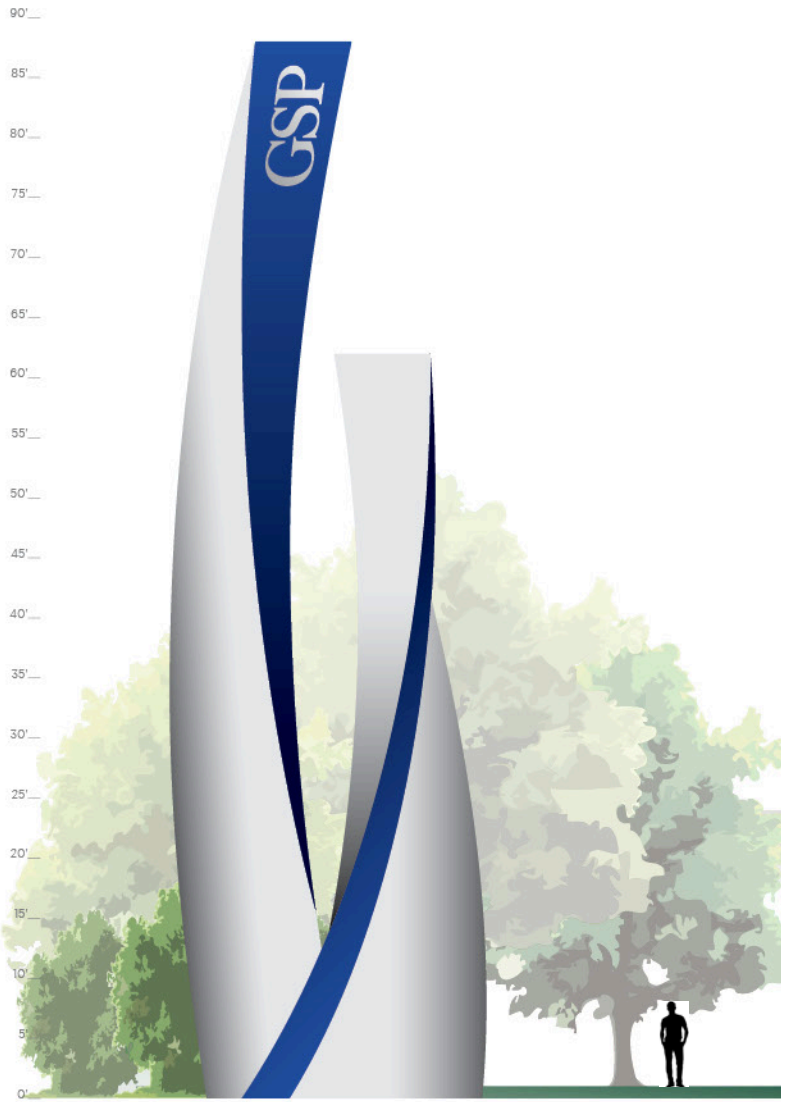
ICONIC SIGN & BRIDGE ENHANCEMENTS

District Staff and the Task Force asked the design team to look at improving signage at the I-85 & Aviation Parkway Interchange. This effort led to two distinct yet important sign opportunities for GSP.

The I-85 & Aviation Parkway interchange is challenged visibly. Drivers from Spartanburg do not have a great opportunity to view a stand-alone sign at the interchange. This analysis finding led to a proposal to affix lettering onto the existing interstate overpass bridge (on both sides) to identify GSP at the interchange to passing motorists on Interstate 85. This type of signage would have a capture audience of over 93,000 vehicles per day.

The idea of an iconic, stand alone sign was not abandoned, but moved to an area along the interstate with better visibility. This iconic sign could take a form similar to the one shown at right, and be incorporated into a landscaped park within “Development Tract G”, as identified in the GSP 360 Study. A existing grove of historic oak trees would serve as a landscape backdrop to this monument.

(Top) Conceptual elevation of bridge signage for overpass.
(Right) Sample elevation of an Iconic Sign element.



PHASING APPROACH

Improvements were phased based on the following goals. For complete phasing schedule, see pages 144-149.

1. **Complete the improvements to the Terminal Landscapes**
   By viewing the Campus Green spaces as extensions of the Terminal building, the goal is to finish these spaces quickly to coincide with the ongoing Terminal Improvements already underway.
2. **Improve the Safety and Health of the GSP Campus**
   This goal includes replacement of unhealthy and hazard trees, as well as lighting upgrades and replacements.
3. **Enrich the Arrival Sequence**
   Roger Milliken once said “you only have one chance to make a first impression.” By improving the arrival sequence for visitors, GSP can improve it’s image and overall campus.
4. **Extend the GSP Brand**
   By extending the GSP landscape and signage themes to the outer limits of the property, GSP can promote itself to the larger world.
5. **Promote GSP’s Commitment to the Landscape**
   The District has a history of taking the extra step to ensure that the campus landscape is a key feature of the space. This goal builds on that premise, and promotes a commitment to the larger landscape.

DESIGN GUIDELINES

In order to effectively implement the strategies put forth in this landscape master plan, the design team worked alongside District staff to establish a package of design standards and guidelines that will be put in place and enforced by the District.

These standards are not meant to be restrictive to future development, but rather to ensure that the landscape quality is maintained at GSP as development occurs.

Material standards were included as part of this package, which will ensure both plantings and hardscape elements (i.e. pavers, retaining walls, furnishings, and lights) of future developments and future projects not yet identified within this document meet the high level of visual quality that the GSP campus commands.

The full design standards and guidelines are included in Section Five of this document.

"The greater damage for most of us is not that our aim is too high and we miss it, but that it is too low and we reach it."

– Michelangelo

SECTION TWO: SITE ANALYSIS

SITE CONTEXT

GSP SITE CONTEXT

GSP opened on October 15, 1962, after a decades-long planning and construction period. GSP was the result of many years of planning and work by many leaders of the Upstate, including Roger Milliken, Charlie Daniel, and Richard Webel, among others. These prominent businessmen sought an airport for the Upstate that would not only be functional, but beautiful as well.

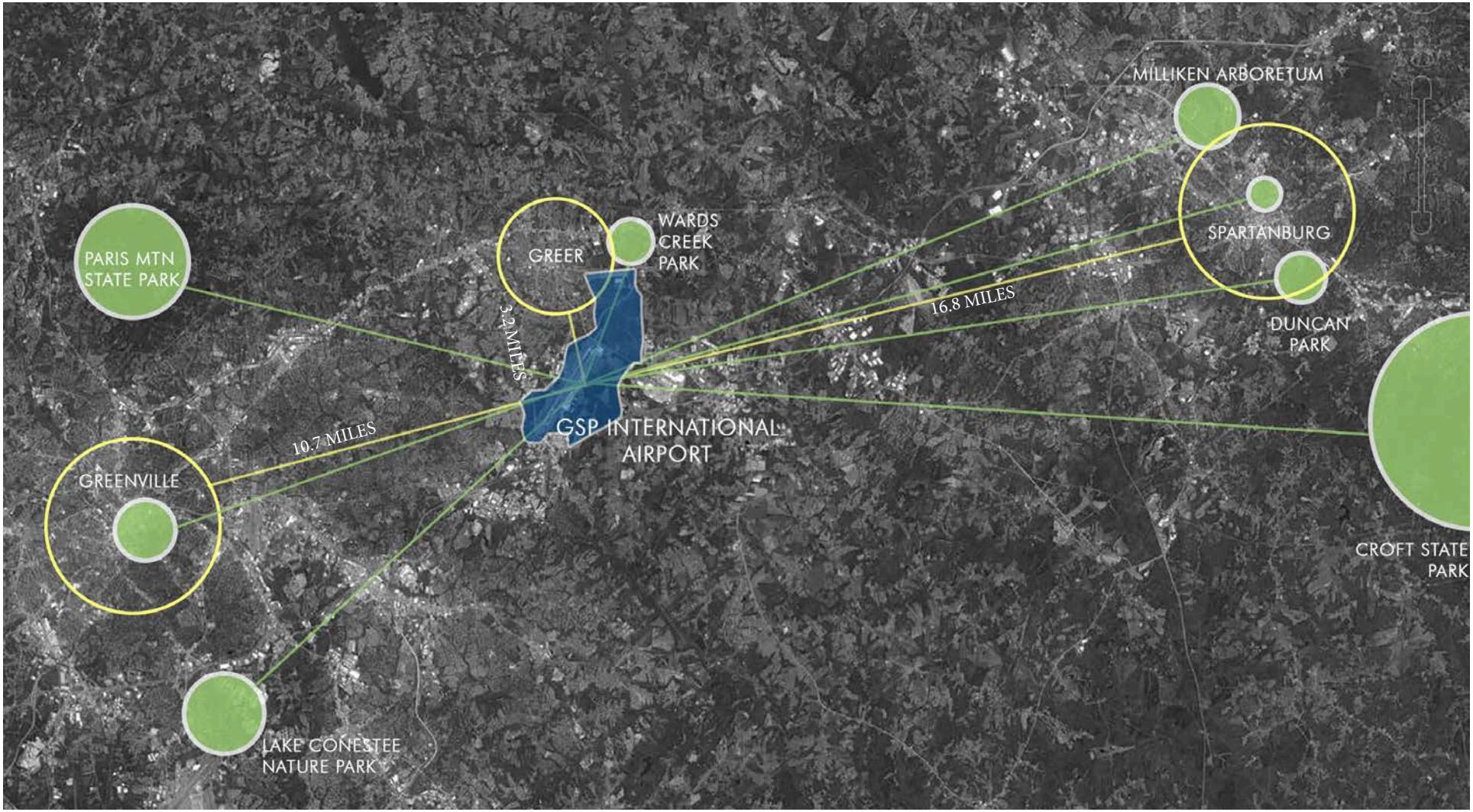
From the initial planning stages, the airport was designed to maintain as much of the beautiful rolling terrain and natural vegetation as possible. Richard K Webel, the original landscape architect of the airport, was brought into the project early in the process to ensure that the landscape took a top priority. Throughout the years, as the airport grew, this vision was maintained. From terminal expansions to the widening of Aviation Parkway, a priority was placed on a high quality landscape. This master plan seeks to expand on that vision.

GSP sits approximately halfway between Upstate South Carolina's two largest metropolitan centers, Greenville and Spartanburg. The nearby City of Greer is rapidly expanding towards the airport campus, and Greenville and Spartanburg have been growing at a rapid pace. This unique context puts the District at an enviable position of being a leader in the economy of the entire region.

The District maintains a large parcel of land, some of which could become park space as the airport grows. GSP is in an area that is surrounded by quality state and city parks, but has the opportunity to utilize some of its vast property holdings to add to this already impressive system.

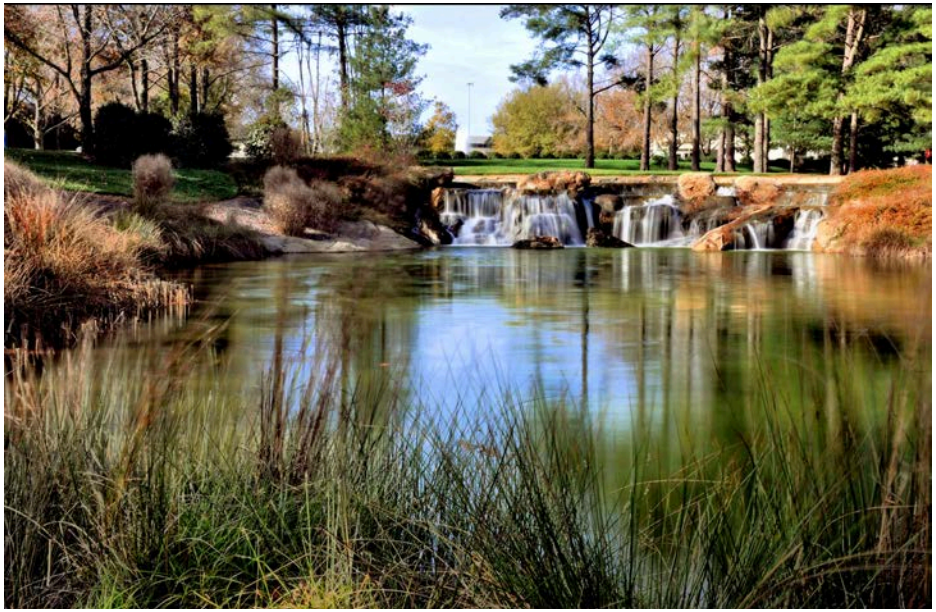
Even within future development areas, the District can improve the visual quality of the landscape through the use of high quality and regionally sensitive design. Roadways can become parkways, lawns can become public greens, and GSP could set standards for landscape design and sustainability for the Upstate.

(Top Left) Original GSP Airport terminal under construction in 1962.



(Above) GSP is situated approximately halfway between the Upstate regional centers of Greenville and Spartanburg, and immediately adjacent to the growing city of Greer. Many park spaces (shown in green), are used to celebrate the diverse upstate landscape, and GSP has the opportunity to be a key piece of this park network.

GSP CAMPUS LANDSCAPE DEFINED



GSP CAMPUS OVERVIEW

GSP's campus, in excess of 3,600 acres in total, is separated into a series of key corridors which link important landscape spaces. Much of the developed area within the campus exists in the heart of the property boundaries.

The primary corridor connecting GSP to the region also forms its southern boundary. Interstate 85 is the major linkage from Charlotte to the northeast and Atlanta to the southwest. GSP currently has a vast supply of frontage along this vital artery, which is very marketable in today's economy. From this main linkage, Aviation Parkway is a divided parkway leading to the Terminal. This road, originally two lanes, was expanded in the early 1990's and landscaped with a variety of distinctive conifers. This landscape works with the creek that flows along the parkway and natural stone walls to create a Blue Ridge Parkway-like character.

The Terminal Core is centered on a main axis connecting several distinct landscape spaces. These spaces form a legacy landscape that has defined GSP since the airport began. This landscape is the GSP **Campus Green**. One of these spaces sets GSP apart from all other commercial airports - the Airside Garden. This space serves the passengers flying in and out of GSP, and is situated in a prime area along the gates.

A series of secondary roads crosses the airport core, forming vital side connections that are used heavily. These roads have a varied landscape, from undeveloped areas to planted pine forest, to formal rows of street trees.

Finally, three major highways either bisect or form major boundaries to the GSP campus. Where these highways meet to form major corners, GSP has the opportunity to create an identifiable brand for itself.

(Top Left) Waterfall feature at the GSP Terminal Approach.




(Above) The GSP Landscape ranges from the historic tree-lined streets along the Terminal, to the newer, and often lower landscape quality of the newer developments. The goal of the Landscape Master Plan is to improve the existing designed landscapes, while extending a design intent to the newly developed properties.

AVIATION PARKWAY

The design team used a Strengths, Weaknesses, Opportunities, and Constraints analysis process to examine each of the key GSP corridors and landscape spaces. This information, presented here, was used as the basis for the landscape improvements proposed in the landscape master plan.

Strengths:

- Aviation Parkway is the primary passenger entrance into GSP, and therefore has been heavily designed and is maintained at a high level of care. Recent plantings of evergreen and conifer trees, as well as the use of stone in this area provides a scenic highway-like feel. The median dividing the Parkway breaks down the scale of the space and provides a pleasant experience.
- Plantings are well executed, providing a range of color and form throughout the year.
- Aviation Parkway follows Dillard Creek for a portion of the parkway, providing an inviting natural view on the side overlooking the creek.
- Current condition is meeting the design intent.

Weaknesses:

- Turf is struggling to establish in some areas along I-85. There is also a lot of turf in this area that must be maintained.
- Vehicles pull off onto the grass, damaging the turf and irrigation areas along the parkway.
- The banks of Dillard Creek are eroded and in need of stabilization.
- The Spartanburg side of the I-85 interchange does not have the same visual quality as the Greenville side; this is due to the design of the interchange.

(Top Left) Aviation Parkway (driving towards GSP Terminal).
(Above) Issues on Aviation Parkway include stream erosion, struggling turf, and sightline challenges.

- In the winter, views from Aviation Parkway into the recently logged areas are not well buffered, and very evident.
- Four lane design encourages high speeds, creating a dangerous situation for maintenance personnel and other vehicles.

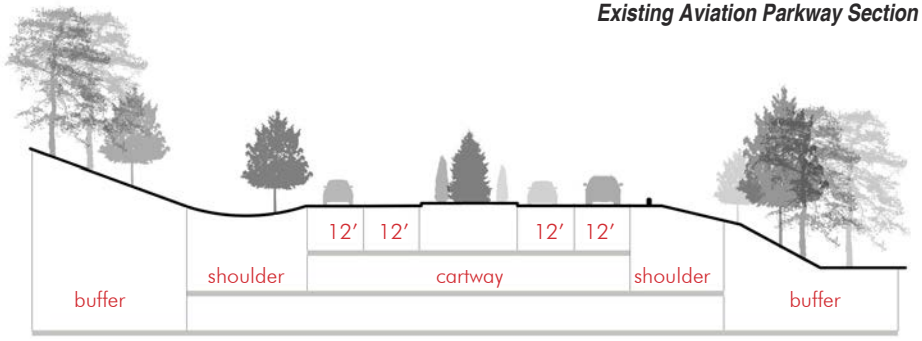
Opportunities:

- Elevation at the I-85 Interchange provides a prominent place to install monument/iconic signage, with high visibility.
- Plant material/hardscape materials in this area are established and could be expanded to further the design intent.
- Large turf expanses offer the opportunity to be substituted, to keep the aesthetic quality of the space while reducing maintenance requirements.

Constraints:

- DOT Right-of-way from I-85 extends into the property, making a joint maintenance agreement necessary and also extending the approval process of any improvements.
- High speeds create dangerous situations
- Further tree removal and development should be adequately screened to protect views in this area.

Existing Aviation Parkway Section



(Top Right) Aviation Parkway typical cross-section.
(Right) Signage opportunities are limited here due to topographic challenges.

THE HIGHWAYS

Strengths:

- These high-volume roads connect a the region and a large volume of people to GSP.
- These roads provide significant frontage for future development.

Weaknesses:

- Roads have little aesthetic design intent
- These high speed and high traffic roads are not part of the larger landscape of the airport.
- Road banks are difficult and dangerous to maintain due to volume and speed of traffic.

Opportunities:

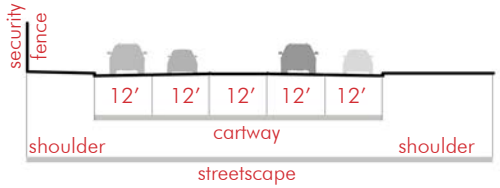
- These major roads will be valuable in marketing future development tracts.
- Identity signage could help tremendously in these areas.
- Relatively simple landscape treatments (i.e. street trees) could differentiate GSP areas from non-GSP areas.
- Opportunity for SCDOT funding for improvements.

Constraints:

- Rights-of-Way will lengthen permitting process.
- Overhead power will conflict some areas.
- Width of roadbed makes it difficult to achieve a human-scale aesthetic.
- Steep topography in some areas will limit access points for future development.

(Top Left) Highway 14 headed towards I-85. GSP on left.
(Above) Highway 101. These highways, while functional, are devoid of landscape character.

Existing Highway Section



(Above) Brockman McClimon Road. GSP Campus on right.

CAMPUS CONNECTORS

Strengths:

- Secondary access roads reduce vehicular load on other roads.
- Two-lane road design has minimal impact on the surrounding landscape. Roads are at an appropriate scale.
- Some buffering along these roads is successful.
- Natural forest experience along Stevens Road is scenic and park-like.
- Lower maintenance required in naturally forested areas.
- Design intent is somewhat met in these areas, primarily through buffering adjacent uses.

Weaknesses:

- There is a lack of defined entrances and identity; nothing to make visitors aware they are on GSP property.
- Some service areas are not buffered adequately.
- Lack of directional signage makes navigation difficult and confusing along these roads.

Opportunities:

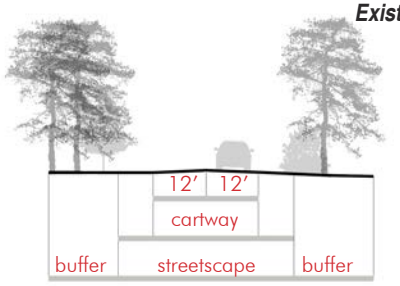
- Elements pulled from Aviation Parkway would make these areas feel like part of the overall GSP campus.
- Keeping the secondary roads two-lane will keep speeds down.
- These roads will provide primary access points to future developments.
- Private ownership makes improvements easier to permit and construct.

Constraints:

- Increased vehicular use as parcels become developed.
- Speed of drivers creates a safety issue here, could worsen in time.
- Once parcels are developed, an effective buffer will be necessary to keep edge natural.
- Secondary roads will be pressured to be widened.

(Top Left) GSP Drive headed towards Highway 14.
(Above) GSP Drive adjacent to GSP Facilities Building.

Existing Secondary Road Section



(Top) Typical Secondary road cross-section.
(Above and Right) Gateway Drive. Note wide expanse of asphalt and lack of a defining feature.

BOUNDARY ROADS

Strengths:

- Provides high volume, high visibility frontage for GSP
- Existing pastoral effect is nice in some areas.
- Provides visitors with a large-scale view of the overall GSP landscape.

Weaknesses:

- High speed and limited access dictates a large scale landscape approach and design requirement.
- No aesthetic design intent in these areas.

Opportunities:

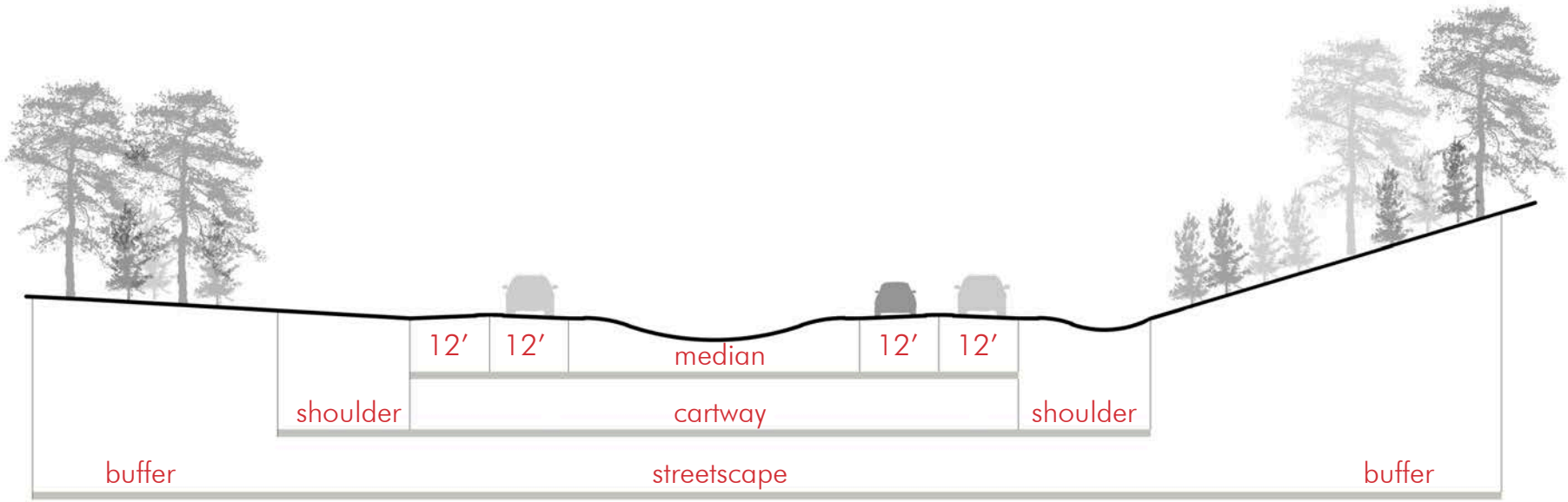
- Several high points provide interesting ,vast views into the GSP site.
- Buffering of adjoining uses will be key in these areas.

Constraints:

- Landscape is large in scale and will amplify maintenance requirements.
- Topography is a challenge along some portions of these roads
- Limited access may present maintenance conflicts.
- DOT Rights-of-Way limit improvement potential.

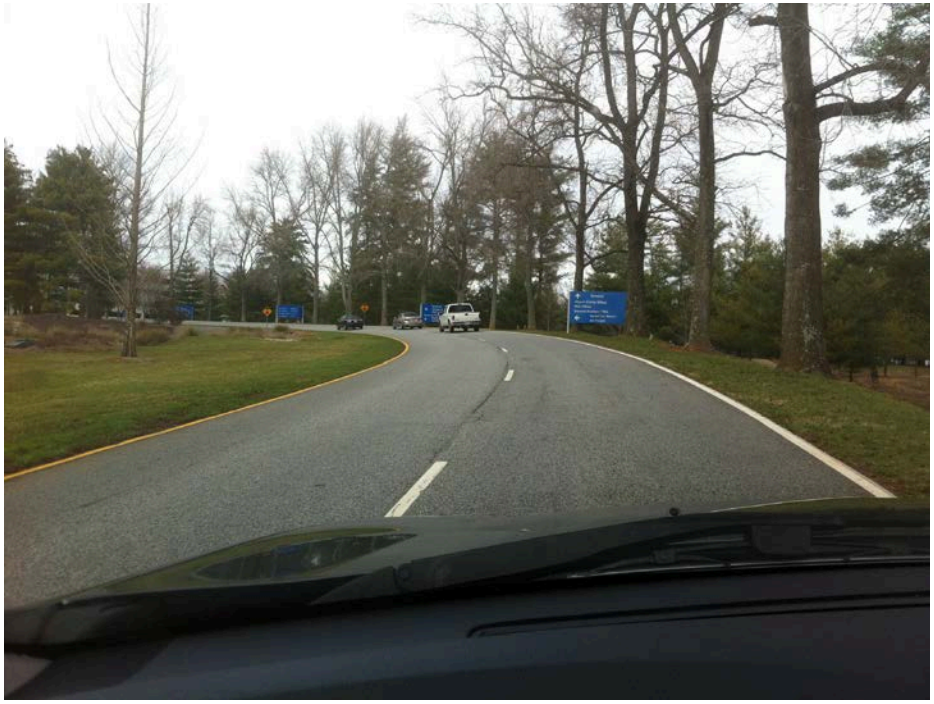
(Top Left) SC-80 (Verne Smith Parkway).
(Above) I-85 Southbound towards Aviation Parkway.

Existing SC-80 (Verne Smith Parkway) Road Section



(Above) Typical cross-section of SC-80 (Verne Smith Parkway). Interstate 85 has a similar edge condition.

TERMINAL APPROACH



Strengths:

- This area leading up to the terminal makes the transition from the linear Aviation Parkway to the Terminal area.
- The naturalistic water feature gives the area a regional feel.
- The axis created here directs views to the Charlie Daniel Fountain and the Terminal.

Weaknesses:

- Many signs exist, each giving out directional information.
- The quality of the signs is lower than the quality of the landscape in this space.
- Past storms brought down a number of trees in this area, and the landscape has not readjusted to this change in conditions.

Opportunities:

- This area has the opportunity to be a very welcoming entrance to the core terminal area at GSP.
- The water feature could be improved through increased ornamental planting and better lighting at night
- The directed view to the Terminal Mall could be amplified without heavy landscape interventions.
- Reduction/simplification of the directional signage will make this area easier to navigate for first-time visitors

Constraints:

- The view corridor across the Charlie Daniel fountain and the Terminal mall must be maintained.
- Any signage in this area needs to be concise and direct
- Signage needs to have the same level of refinement and design as the landscape
- Pedestrian uses are not recommended here due to the traffic flow through the area.

(Top Left) Aviation Parkway approaching the GSP Terminal building. Note the multitude of signs and the detrimental effect it has on the landscape.

TERMINAL MALL

Strengths:

- Area has a strong and intentional landscape design.
- Screening of terminal drop off from entrance drive creates a more natural aesthetic.
- Fountain creates white noise that calms the space
- Area serves as “Front Lawn” for the terminal
- Area has a strong formal, symmetric design.
- Mature trees create positive allee effect to Terminal building.

(Top Left) Looking from the future landside garden towards the Charlie Daniel Fountain.
(Top Right) Analysis in this area indicated struggling plantings and inadequate sidewalk space for passengers and luggage.

Weaknesses:

- Some trees are over mature, declining.
- Lack of pedestrian scale detail and pedestrian routes to terminal.
- Signage is cluttered in area and detracts from the visual quality of the space
- Lighting is dated and in need of updates. Light quality varies.
- Lack of seasonal interest through the plantings.

Opportunities:

- Landside Garden to be added to the area, and connect terminal to lawn area.
- Area is accessible to the general public and could be used more.
- High visibility offers high-impact chance for landscape improvement.

Constraints:

- Any improvements should retain the original, historical design intent and not conflict with the legacy landscape.
- Any tree replacement would need to occur in one step.

TERMINAL DROP-OFF

Strengths:

- Terminal is recently renovated and front of building has become more transparent & welcoming.
- Forms a strong edge to the Quad area landscape.
- Provides a pedestrian experience in an otherwise large-scale landscape.

Weaknesses:

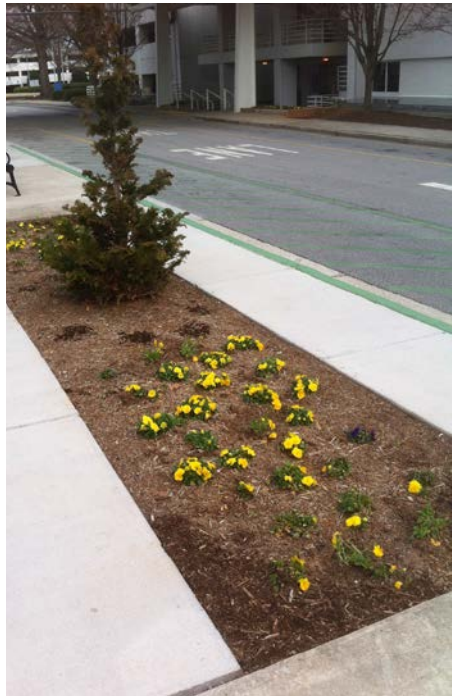
- Sidewalk crossings in median are awkward & limit ability to have large trees. Crossings are unsafe and present conflicts.
- Minimal green spaces exist in the Terminal area.
- Landscape treatment is out of scale with the building.
- Site furnishings are not consistent across area.
- Character of the area is not consistent with the GSP theme.
- Terminal drive ends awkwardly at a service drive.

Opportunities:

- Pedestrian experience can be significantly enhanced through improved landscape and lighting. Pedestrian -level details can enhance area.
- Chance to connect and strengthen main axis.

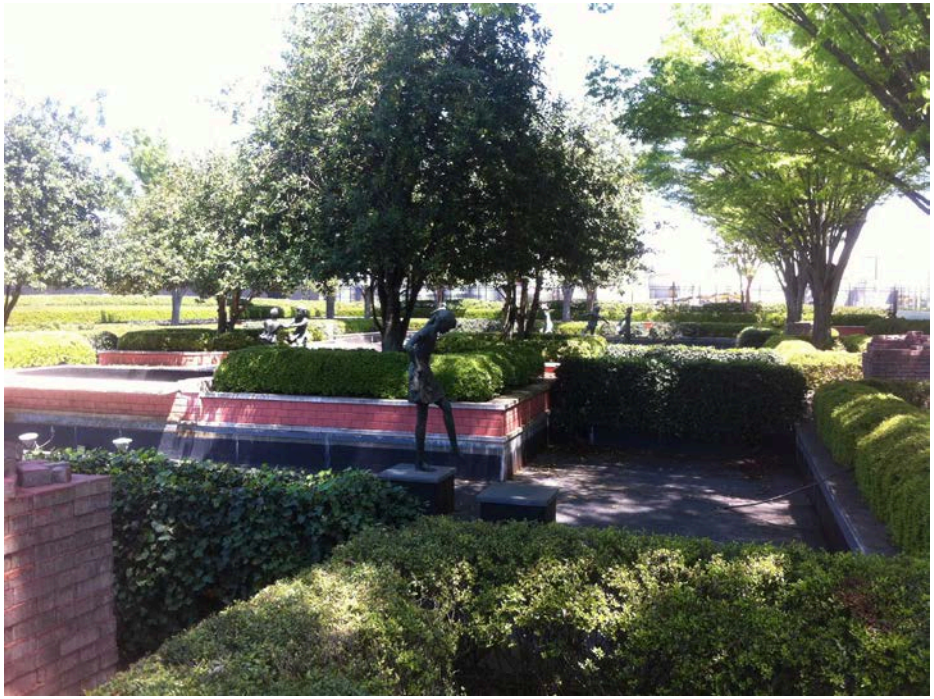
Constraints:

- Need to maintain flow of passengers and keep terminal visible.
- Need to maintain visibility in this area for security post 9-11.



(Top Left) Terminal Drop-off area. Note the lack of appropriately scaled landscape treatment. (Above) Detailed plantings and high-quality lighting, paving, and furnishings are lacking in this area.

AIRSIDE GARDEN



Strengths:

- Area is unique among airports and provides a “once-in-a-lifetime” view to the airfield.
- Connection to the interior food service areas strengthens the use of this area.

Weaknesses:

- New Terminal design makes the Airside Garden a post-security feature, which will reduce the overall use of this area.
- Very little gathering space exists.
- Area is loud due to the proximity to idling aircraft.
- Area is dated and in need of repair. Sunken approach to the garden limits the views out to the airfield.
- Garden has been damaged and unable to be maintained during Terminal Construction.

Opportunities:

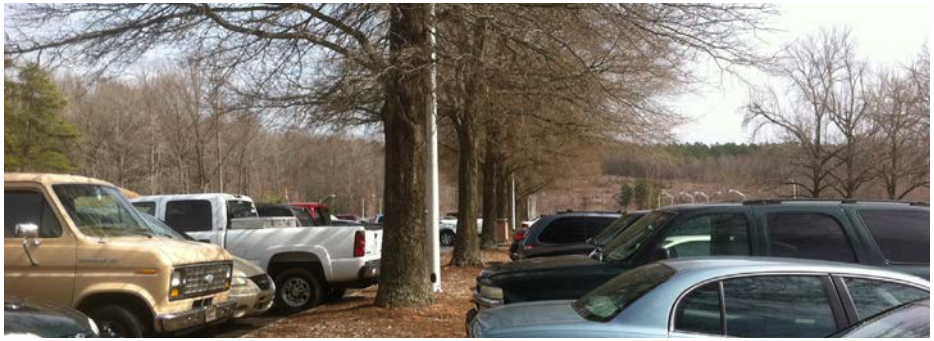
- A properly designed garden will provide a unique opportunity to reintroduce the space to the public.
- Gathering spaces could be used for outdoor dining for passengers waiting on airplane boarding.
- Improved views to the runway will allow passengers to view aircraft as originally intended.

Constraints:

- Construction will be difficult due to security and access issues.
- Ideal timeline for improvements is tight due to estimated completion date of Terminal.

(Above) Existing Airside Garden. Note plantings are struggling and overgrown.
(Right) Dated materials lower the overall quality of the space.

PARKING LOTS



Strengths:

- Tree canopy is established and correct to the scale of the parking.
- Reduced heat island effect through shade of trees.
- A large part of the “green” perception of GSP comes from these parking areas. Imagine the parking lots without trees.
- Parking areas are distributed throughout the terminal area.

Weaknesses:

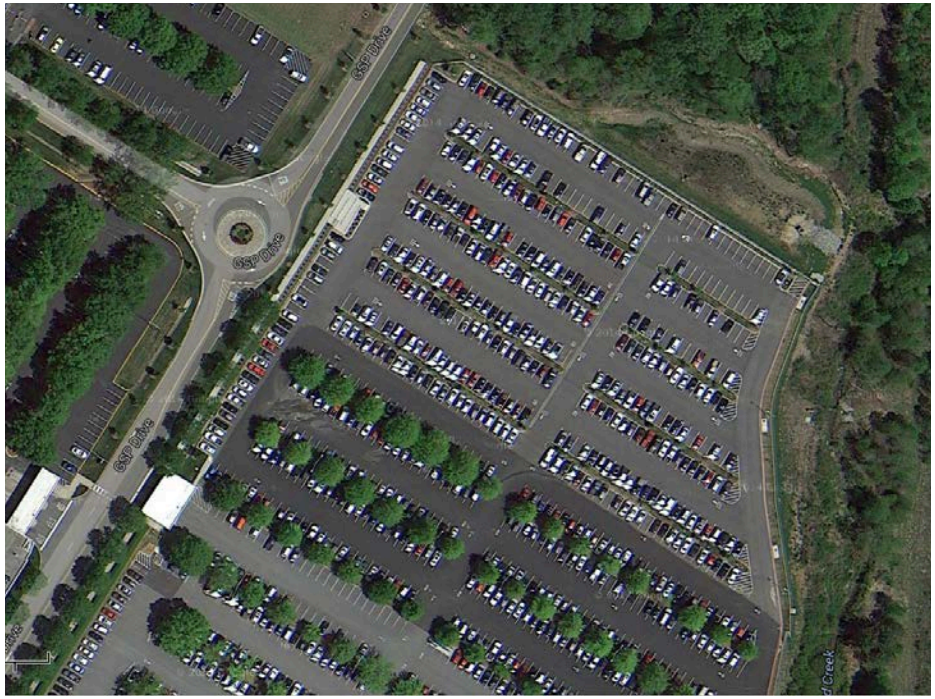
- Existing trees are declining/over-mature.
- Species selection creates litter and tripping hazards for pedestrians.
- Current parking lots are not well signed and navigated.
- Monocultures are susceptible to pest and disease outbreaks.

Opportunities:

- Opportunities to maintain tree canopy and improve species selection and diversity
- Opportunity for stormwater management through parking islands.
- Opportunity exists to continue the urban forest of GSP.

Constraints:

- Tree replacement will need to be coordinated through one replacement effort in some areas, and phased approach in others.
- Limited soil volumes will create tough survival conditions for trees.
- Appropriate tree selections should be made to avoid future conflicts.



(Top Left) Mature oak trees define the parking areas at GSP.
(Above) Old and new parking lots and tree plantings. Many of the existing trees in the parking areas are struggling and in need of replacement.

GSP GATEWAYS

Strengths:

- Gateways are evenly distributed at four corners of the campus
- Three of the four gateway corners have very high visibility.
- Gateway corners provide an opportunity to strengthen brand for Greenville Spartanburg International Airport.

Weaknesses:

- Sites are currently underutilized and have little to no differences between airport property and non-airport property.
- Utilities take up a large portion of the visible space at the intersection
- SCDOT Rights-of-way extend into the site at varying depths.

Opportunities:

- Similar large campuses have used signature corners such as these to create a brand and a sense of place
- Signature corners will provide an added incentive to future development on GSP tracts.

Constraints:

- Development of these corners may require SCDOT permitting and adjustment of rights-of-way to allow for the intended design.
- Irrigation may be a challenge for these areas, as they are currently out of range of the main systems
- One gateway corner, at the intersection of Hwy 14 and GSP Drive is within the campus and not as visible as the other corners.

(Top) Typical existing gateway corner.
(Right) Similar campuses have used gateway signs at key intersections to help define the limits of their property. CUICAR shown.

BUFFERS

The buffers at GSP exist in varying degrees of effectiveness across the campus. While effective in the summer seasons, winter buffers lose most of the opacity and effectiveness.

Buffers at GSP should be implemented to separate streetscapes from forestry areas and future development areas. The visual quality of the roadways is dependent on these buffers being successful.

TREE INVENTORY AND ANALYSIS

Trees are the key piece of the natural landscape that ties GSP together. Through Roger Milliken's vision, the use of large, canopy trees, or "noble trees", is established as a key theme in the overall GSP experience. Large canopy trees provide many benefits in the landscape, from creating outdoor spaces, to noise and heat reduction, to cleaning the air we breathe.

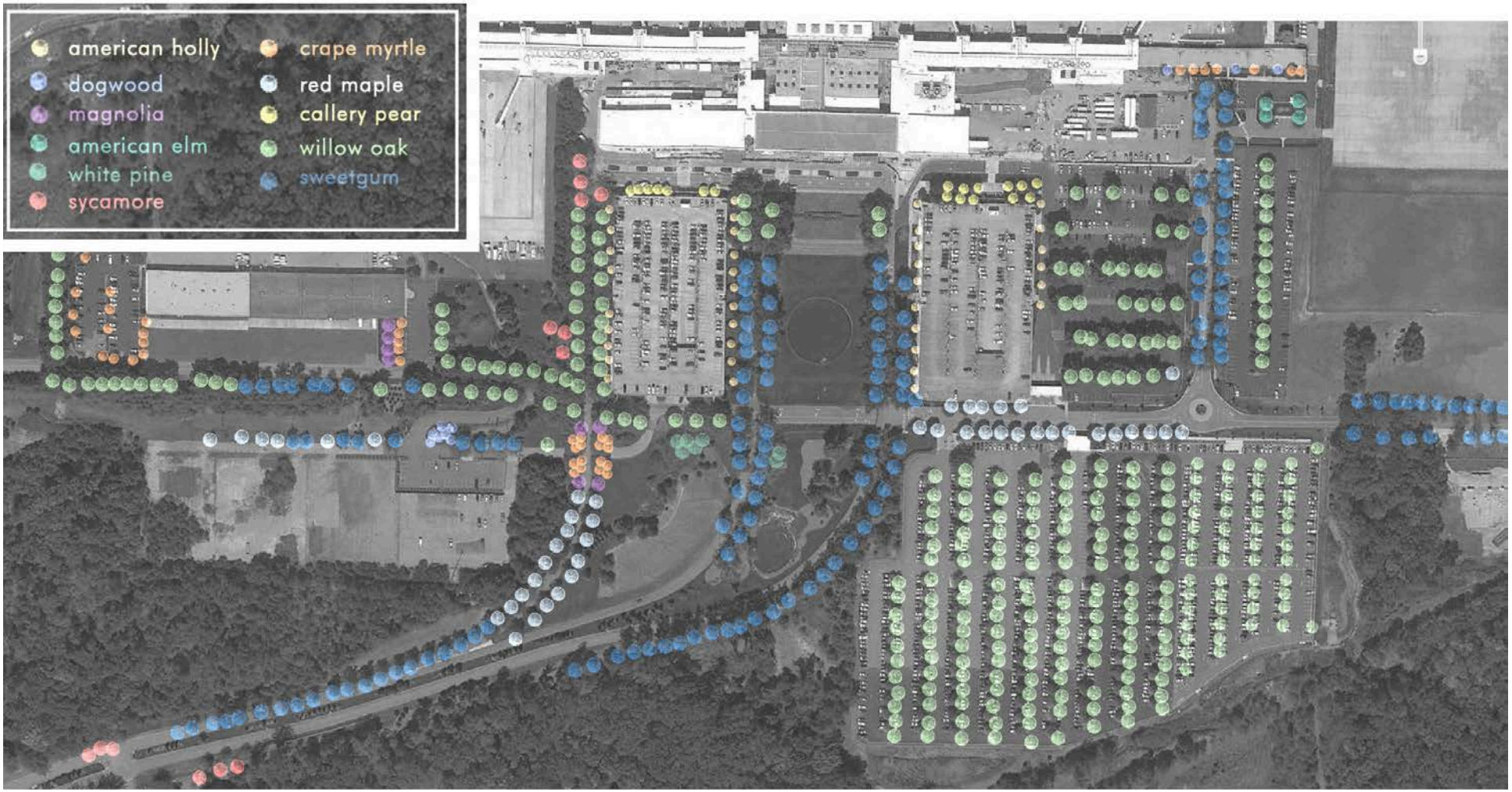
GSP is fortunate and unique among airports to have an established tree canopy. This theme of an established urban tree canopy is one that is cherished at GSP, and should be carried throughout any new developments. As part of this planning document, over 600 trees in the terminal vicinity were identified, graded, and tagged by a certified arborist. This information was used to build a spreadsheet which will allow GSP to effectively manage the urban forest on campus. (See final arborist report in appendix) Currently, the trees at GSP are in various stages of growth and development, and, unfortunately, many of these cherished trees are declining and in need of replacement or corrective action.

(Top Left) Wooded buffer along Aviation Parkway.
(Above) Mature canopy trees define the GSP landscape. Many of these trees are in decline and should be replaced.

TREE INVENTORY AND ANALYSIS

(Above) A full tree inventory was completed, and trees were graded based on their condition. This information was used to determine a replacement schedule and identify priority tree replacement areas. Original design intent was seen as important to the design team and will be maintained throughout the tree replacement process.

TREE INVENTORY AND ANALYSIS



(Above) The tree survey revealed a landscape dominated by two main species, Willow Oaks (Quercus phellos) and Sweetgum (Liquidambar styriciflua). This monoculture is an unhealthy landscape for GSP and is highly susceptible to disease and pest outbreaks. The design team used this information to recommend a more diverse tree selection.

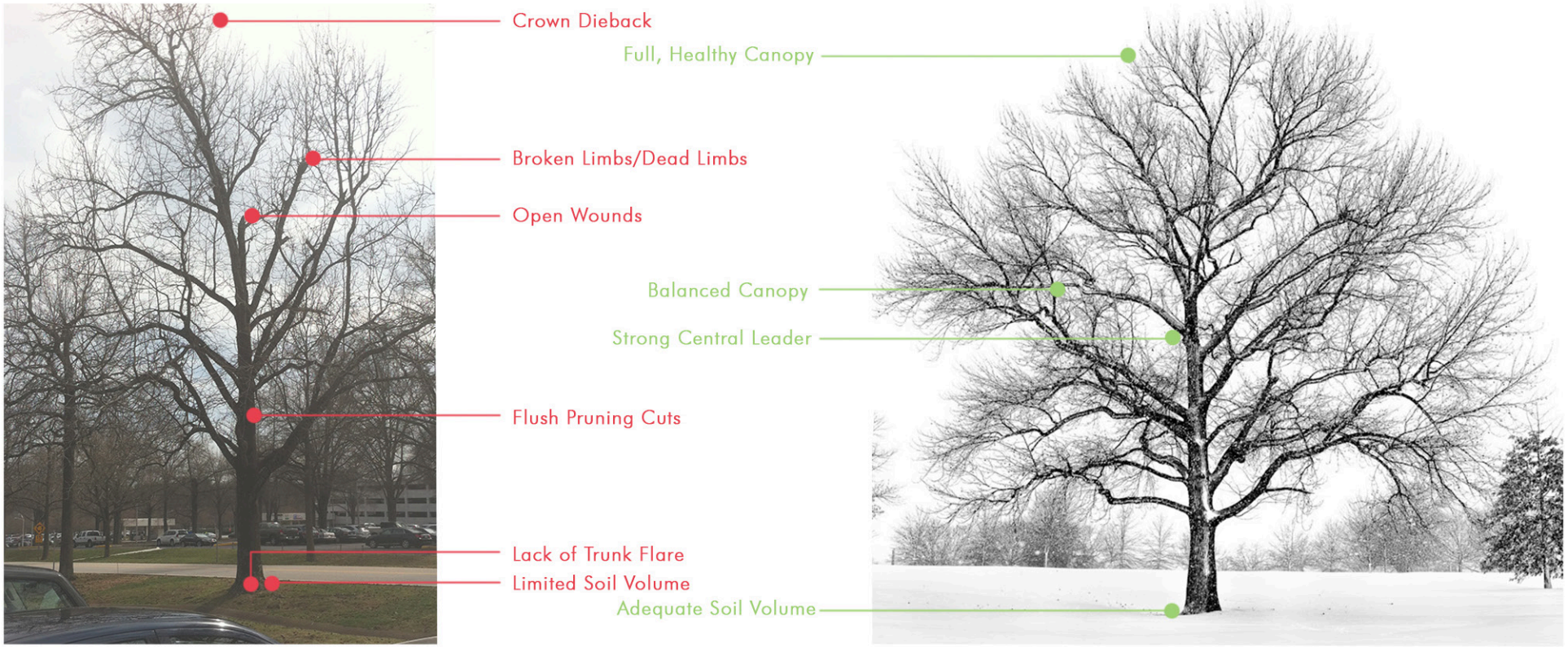
COMMON NAME	BOTANICAL NAME	COUNT
American Beech	Fagus grandifolia	1
American Elm	Ulmus americana	5
American Holly	Ilex opaca	36
American Sweetgum	Liquidambar styraciflua	161
Amercan Sycamore	Platanus occidentalis	12
Bradford Pear	Pyrus calleryana 'Bradford'	18
Crape Myrtle	Lagerstroemia indica	42
Deodar Cedar	Cedrus deodara	3
Dogwood Species	Cornus spp.	10
European Beech	Fagus sylvatica	1
Goldenrain Tree	Koelreuteria paniculata	7
Japanese Cedar	Cryptomeria japonica	1
Laurel Oak	Quercus laurifolia	1
Maidenhair Tree	Ginkgo bilboa	4
Red Maple	Acer rubrum	45
Southern Magnolia	Magnolia grandiflora	4
Willow Oak	Quercus phellos	262
TOTAL COUNT		613

Much of the tree canopy at GSP is made up of a handful of species, particularly Willow Oaks and American Sweetgums. While these two species form a mature canopy, each has its drawbacks. Willow Oaks are susceptible to insects and disease, and sweetgums have nuisance fruit that creates trip hazards. Such a monoculture is unnatural and very susceptible to long-term failure. Another challenge to GSP is the fact that many of the trees were planted within the same time frame and are approximately the same age.
This leads to an unstable urban forest condition which is susceptible to large scale die-offs.

Any new plantings at GSP should work to diversify the tree canopy and urban forest age. A healthy urban forest mimics a natural forest in that the trees are diverse in both age and species.

(Top) A planted pine plantation exhibits a monoculture where all the trees are the same age and species. This is an unhealthy condition.
(Below) A healthy forest has a diversity of tree species and ages. This is sustainable over the long term and more resistant to disease and pest outbreaks.

TREE INVENTORY AND ANALYSIS



(Above) What makes a tree healthy vs unhealthy? The above graphic illustrates some of the key indicators of tree health that the arborist used to determine the health of the trees at GSP. The environment that the tree is planted in determines much of the ultimate health of the tree.

KEY TAKEAWAYS

- GSP tree inventory shows a monoculture heavy with two species, Willow Oak and Sweetgum.
- Improper planting and maintenance practices are leading to tree decline.
- GSP trees are susceptible to pest and disease outbreaks. Replacement strategy is recommended.

(Above) Many minor tree issues exist, which combine to lead to the decline of the canopy trees. (Right) This sweetgum tree is in poor condition and presents a risk to people who use the sidewalk. This tree should be replaced.

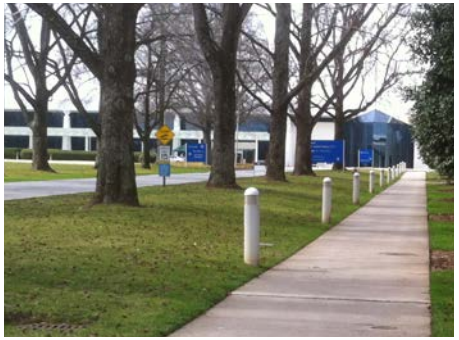
LIGHTING ANALYSIS

GSP lighting varies from zone to zone. Current landscape lighting consist of uplights in the median plantings along Aviation Parkway, and pole lights of varying styles in the Terminal Area and Parking zones.

- Different ages and types of lighting create disjointed spaces with inadequate nighttime light levels.
- Landscape up-lights are in varying states of disrepair and/or not correctly located.
- Recently-developed or redeveloped portions of the campus have differing light types, further negating the identity of the overall GSP campus.
- Site is currently not adequately lit at night, and opportunities are missed at GSP site entrances.
- Current lights are high-pressure sodium, requiring much more energy to power and requiring more ongoing maintenance.
- Lighting at GSP is not dark-sky compliant, and contributes to light pollution.

KEY TAKEAWAYS

- Variety of fixtures installed over time leading to a disjointed lighting pattern.
- High pressure sodium requires more energy and maintenance.
- Poor or improper placement decreases the effectiveness of the existing campus lights.



(Above) Many different types of lighting exist at GSP. Each fixture has a differing light quality, leading to a disjointed campus.

IRRIGATION ANALYSIS

Irrigation at GSP has been installed over the years in phases (usually each time a capital improvement project was completed). Irrigation is supplied from local municipal water sources, with the sole exception being the new GSP International Logistics Park entrance drive.

An analysis of the irrigation systems on campus uncovered a variety of issues with the systems, some of which are listed below. For complete irrigation report, see appendix 6.2.

All irrigation systems at GSP are experiencing very large and damaging water pressure swings, due to fluctuating pressures from the municipal sources. These pressure swings are causing a variety of issues with the systems, from nozzle fogging to pipe and valve bursts. Each of these issues adds to overall water usage and adds to the irrigation cost demands to the District.

Due to the different systems that were installed over time, many of the systems on campus do not work together, nor do they use similar controller systems. This makes management of the various irrigation systems time-consuming and inefficient. Many of the irrigation systems on campus do not include a rain sensor, which could reduce water usage by 25-40%.

(Top Right) Irrigation overspray onto paved surfaces should be avoided.
(Right) Rain sensors can reduce overall water consumption of an irrigation system. Current GSP irrigation does not have rain sensors installed.

SIGNAGE ANALYSIS

As part of the analysis process, existing signage was reviewed to see what types of signage were currently in place at GSP, as well as the effectiveness of the existing signage.

- Existing GSP signage is a random assortment of standard road signs and DOT-style metal directional signs.
- Current signage is scattered on the site and creates visual clutter along Aviation Parkway. Signage is unclear and causes many people to pull off onto the grass.
- Signage is detracting from the visual quality of the spaces.
- Information overload occurs at the Terminal Approach due to the amount of differing signage.
- There is a lack of identification signage at the corners of the Terminal Mall. This leads to confusion for first-time visitors.
- The fountain, which serves as an identification feature, is not visible from the approach when not running.
- Sign placement could be improved to make legibility better.
- There is a lack of signage indicating which parking areas are for which use.

The analysis points identified above were used by the design team to conceptualize different types of signage necessary for GSP. A full signage analysis is included in this document. (See appendix 6.1)

(Above) Signage varies across the campus. Note the multitude of signage and the differing information indicated by each. Many first-time visitors are confused by this approach.

KEY TAKEAWAYS

- Campus is over-populated with directional signage
- Campus lacks clear & proper identification signage and labeling of spaces on the campus
- Mixture of visitor and employee signage causes confusion
- Lack of signage along entry drives causes confusion for first-time airport visitors.
- Back of signs not utilized, creates visual clutter.

SECTION THREE: THE GSP LANDSCAPE MASTER PLAN

"...coming here to GSP is like going to a state park. I've been to a lot of airports and there's not a more beautiful airport in the country"

– Larry Baker

Former Vice President of Operations,
Stevens Aviation

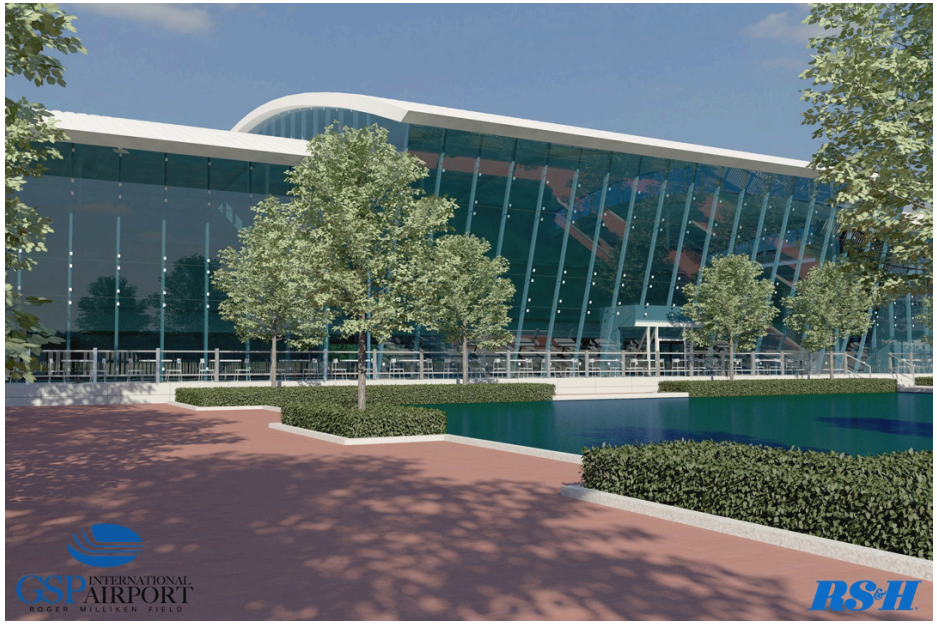
CAMPUS DESIGN STYLE

The design aesthetic at GSP is primarily defined by the improvements made on Aviation Parkway and the Terminal Mall. Landscape features in these areas have historically defined the airports character.

The following principles are keystones of the GSP Landscape Design Style:

- Large, mature canopy trees in formal plantings along the roadways and landscape spaces
- The use of naturalistic features (i.e. stone seatwalls & water features) to define key areas of the campus
- Sidewalks and pathways connecting key areas across campus (this network should be completed)
- Unified signage families & unified materials.
- The use of conifers in the median along Aviation Parkway

Using these common landscape themes, the design team recommends appropriate improvements to the overall campus landscape. Any future projects that take place on at the GSP campus should consider these common landscape themes, as well as any additional landscape themes that will develop over time.



(Above) GSP's landscape is defined by certain key characteristics, such as ordered street trees and a conifer-driven landscape. Future projects should reflect these characteristics.

TREE REPLACEMENT STRATEGIES

Trees have been a very important part of GSP since its inception. As these trees have matured, they have created an iconic landscape that has many benefits to the GSP Campus.

Unfortunately, many of these trees were not planted in beneficial conditions and have not been correctly maintained. As such, many of the trees surveyed by the arborist as part of the landscape master plan were identified in poor condition. These trees should be replaced relatively soon to prevent tree failures and hazards to both vehicles and pedestrians.

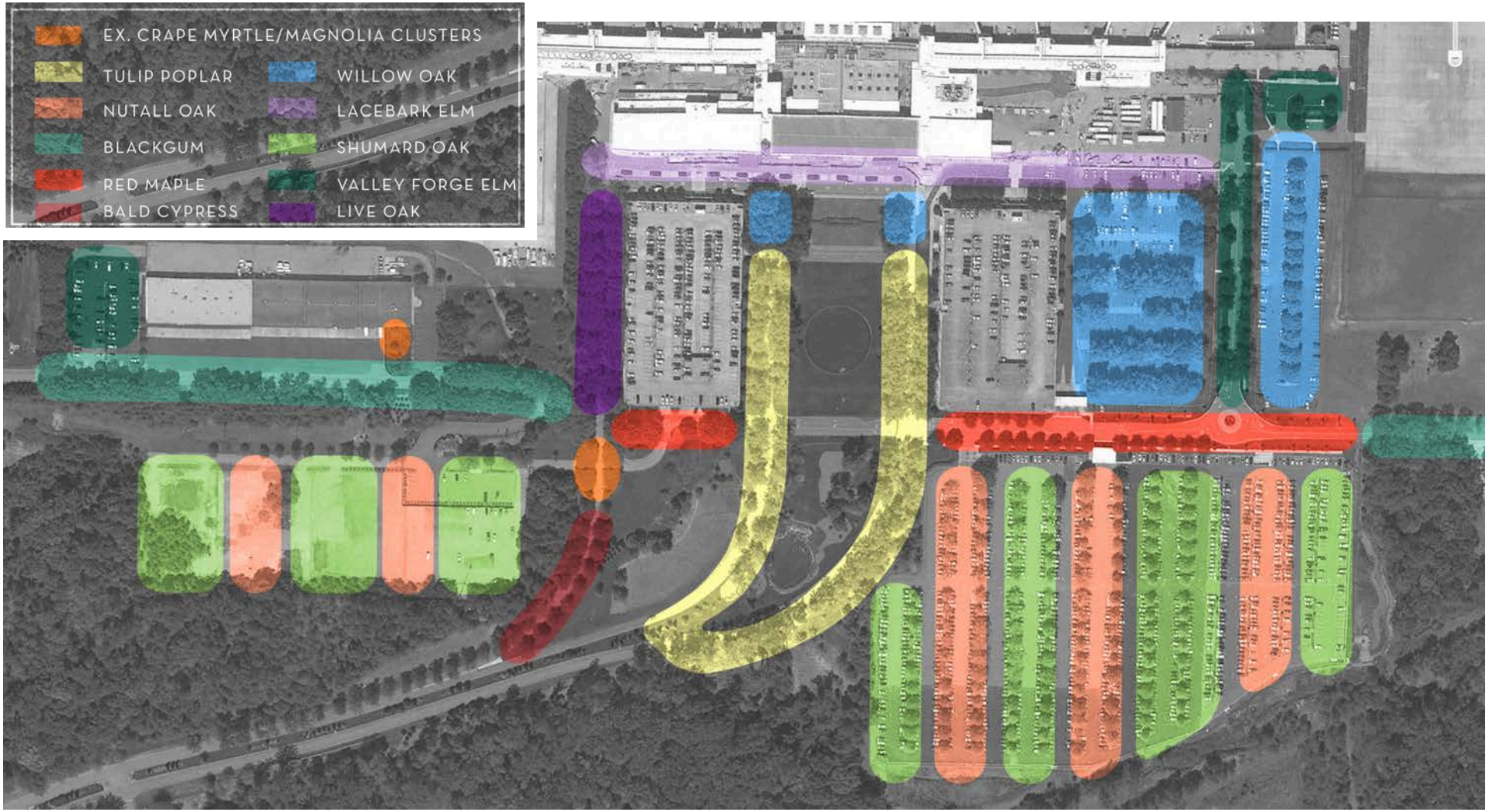
Using data collected from the arborist report, the diagram at right was generated, showing approximately which tree areas should be replaced first, second, and so on. Note that it will be critical to replace some tree areas in symmetrically-designed areas, such as the Terminal Mall lawn, at one time in order to maintain the design intent of the original vision.

Priority has been given to areas that have experienced high failure rates, as well as areas that are high-risk due to the presence of vehicles or pedestrians.

(Left) Tree replacement strategies are needed to prevent gaps in the GSP tree canopy as older trees decline and die.

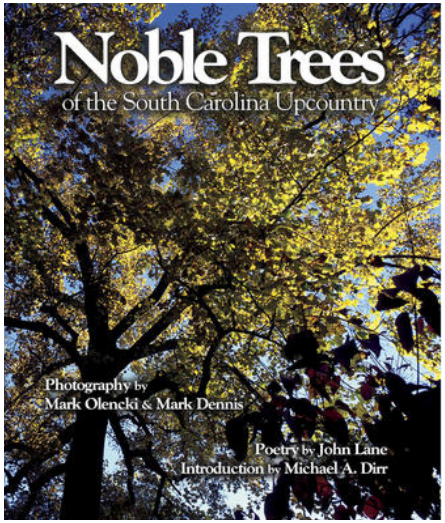
(Above) Tree replacement should be phased, replacing high priority areas, and areas with the highest concentrations of poor quality trees first. Note that certain areas, such as the formal allees leading to the terminal, should be replaced in one step to maintain the original design intent. Parking bays will be replaced one bay at a time.

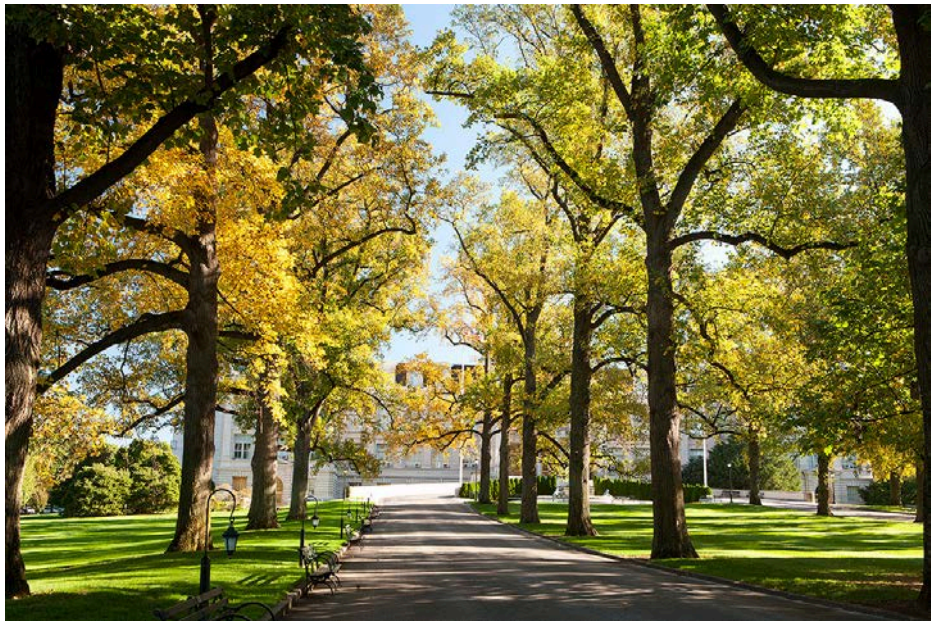
TREE REPLACEMENT STRATEGIES

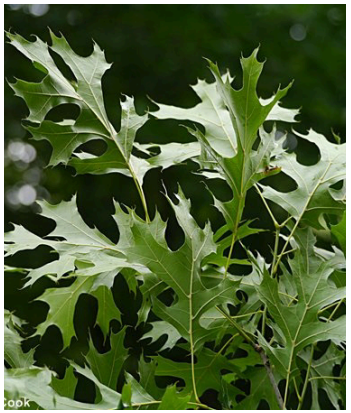


(Above) Planted trees will reflect the following plan. Species have been carefully selected based on their ability to tolerate urban conditions, scale of the landscape, strength, and longevity. Compare this diagram to the existing tree species diagram on page 48. Newly planted trees will break up the monoculture at GSP and add diversity to the landscape.

During the analysis phase of the project, two dominant species were identified that form the majority of the tree canopy. Improving the tree canopy not only involves replacing declining trees, but adding a diversity of species. The tree planting guide (pg 62) highlights a recommended tree planting strategy. Much care was taken to select trees that would thrive in the locations specified, and would keep similar form to the legacy landscapes on the campus. Emphasis was placed on North American native tree species, as well as the use of Noble Trees, as championed by one of the airport's founders, Roger Milliken.







(Above & Right) Tree replacement recommendations have been selected to add diversity and longevity to the GSP landscape. Original design intentions will be maintained, and large canopy trees, or 'noble trees', are recommended for the campus.

TREE REPLACEMENT STRATEGIES

Tree replacement can be a dramatic change to a mature landscape. However, studies have shown that planting quality material the correct way can significantly reduce the time required to restore an urban forest. The study area above shows the growth of street trees from planting to approximately six years. At a similar growth rate, GSP could see tree replacements come full-circle within a decade.

Proper tree replacement will add diversity and overall strength to the GSP Campus.

(Above) Proper tree selection and planting practices lead to a restored tree canopy in a relatively short amount of time. Image courtesy SelectTrees, Inc.

"The best time to plant a tree was 20 years ago. The second best time is now".

–Chinese Proverb

CORRIDOR IMPROVEMENT GOALS

EXISTING STREETSCAPE IMPROVEMENTS - GOALS

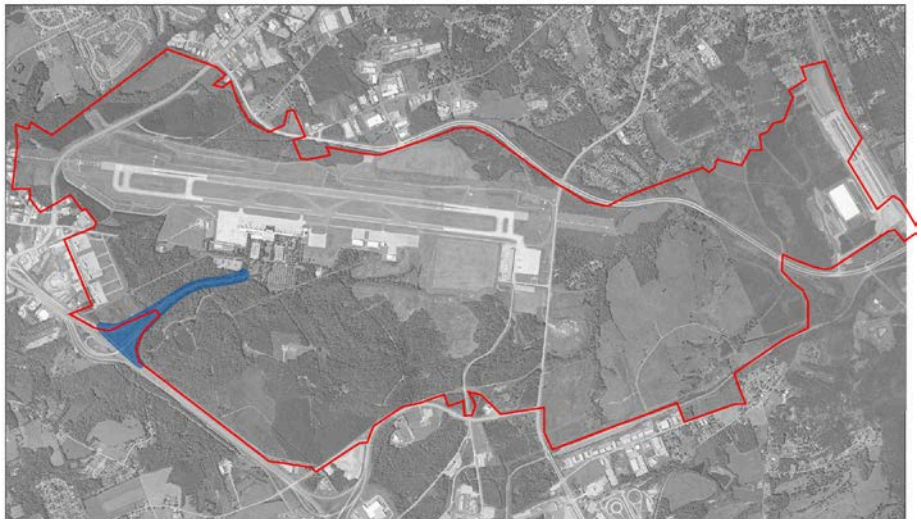
- Retain the character of the GSP campus through the preservation of the Aviation Parkway corridor as a key naturalistic passenger entrance
- Pull landscape principles from both the Upstate SC ecological processes as well as successful landscapes at GSP
- Unite existing non-performing streetscapes to the overall GSP Campus through landscape and lighting
- Improve visual quality of the GSP campus through the driver's eyes

The improvement plan for the existing streets at GSP included in this booklet outlines various ways in which the landscape quality of the roads can be improved. A large portion of the public perception of GSP comes directly from the experience they get from the driver's seat upon entering the campus. Currently, this experience ranges from the excellent, although confusing drive along Aviation Parkway, to the utilitarian drive along Brockman McClimon Road.

This design guide offers a variety of design tools and principles and criteria with which to apply these principles and materials to the existing streetscapes at GSP.
The scope of the existing GSP streetscape improvement plan includes all existing roads & corridors within the GSP property limits. This master plan seeks to unite the entire GSP campus with a common landscape theme.

(Left) Most of the visitors to GSP experience the landscape from a vehicle, making the streetscapes a key part of the GSP campus character.

AVIATION PARKWAY IMPROVEMENTS



(Above) Aviation Parkway is the primary passenger and first-time visitor entrance to GSP.

KEY TAKEAWAYS

- The corridor is the most designed and maintained corridor on the campus at GSP, and has a unique character and sense of place
- Corridor has long stretches without identification signage, confusing first-time passengers
- Lighting in this area is not adequate enough for the entrance to GSP, and many of the fixtures are not functioning correctly.
- High speed of traffic creates a safety issue for visitors who may be confused of where they are.

Aviation Parkway is the primary campus entrance for passengers and first-time visitors to GSP. Being such an important corridor warrants an intensive design and maintenance approach, which has been completed previously by the District. This corridor currently provides the most visually pleasing driving experience at GSP.

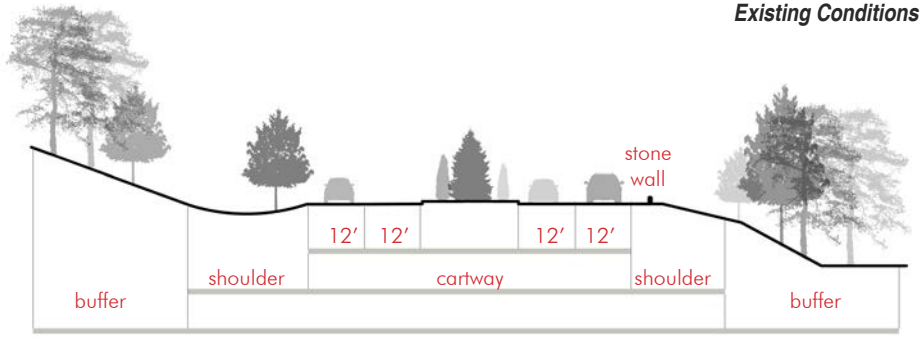
Despite the high-quality landscaping along the parkway, certain challenges exist. One of key takeaways from the analysis portion of this project is that the corridor is not correctly signed, and provides first-time visitors with a confusing experience. Long stretches of roadway exist without any signage whatsoever, while leaving the airport, patrons are presented with a sudden and confusing split in the roadway, leading to pull-offs and hazards for drivers. This landscape master plan proposes to add tasteful welcoming and directional signage along the parkway, to reassure visitors that they are in the correct place and provide easily navigable direction to the terminal.

Lighting in this area also needs to be upgraded to provide a quality visual experience. Standard roadway lighting would be detrimental to the naturalistic feeling of this corridor, thus improvements to the landscape uplighting, as well as specific lights on the proposed signs, will help unify this space and improve safety.

Part of the uniqueness of this parkway is the use of stone and the naturalistic plantings along the corridor. The repetitive planting of ‘soldiered’ street trees is discouraged in this area, and a planting theme based on natural forest conditions is encouraged.

AVIATION PARKWAY IMPROVEMENTS

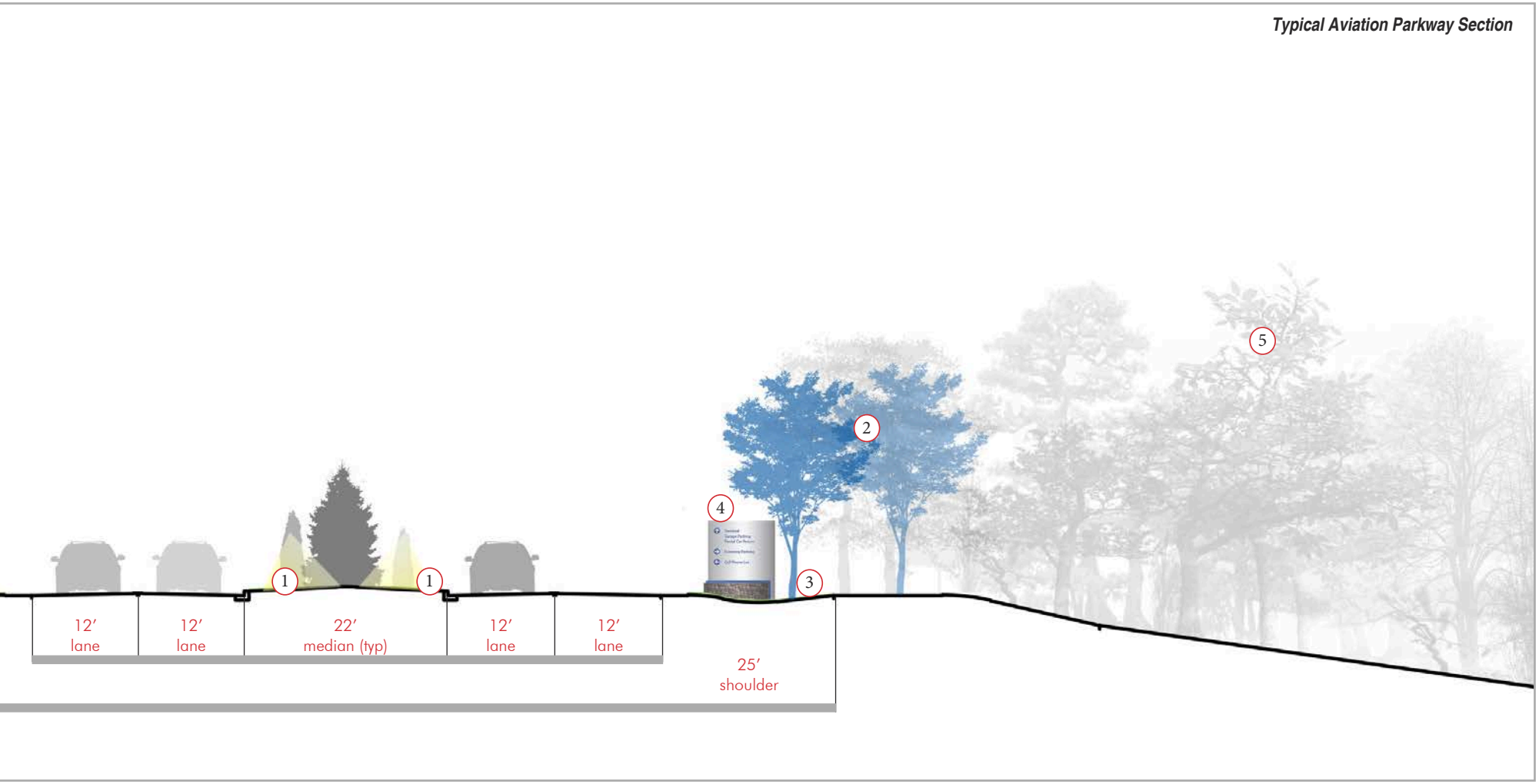
Existing Conditions



KEY:

1. LED Landscape Lighting. Lights to be supplemented and moved as needed to allow for plant material to mature. Lights to be placed in mulch areas to allow for mowing.
2. Type A/B/D Street Tree, to be selected from provided approved tree list (see approved plant list). Tree to be planted in naturalistic groupings. See approved street tree list (appendix 6.6)
3. Road shoulder to be turf. See GSP buffer section for details. Maintenance of turf to follow maintenance guidelines (appendix 6.8) Install irrigation along Aviation Parkway.
4. Identification & placemaking signage. See signage report (appendix 6.1) for recommendations. To be placed min. 8' from edge of travelway.
5. GSP streetside buffer. See buffer section of this document for details and required widths.

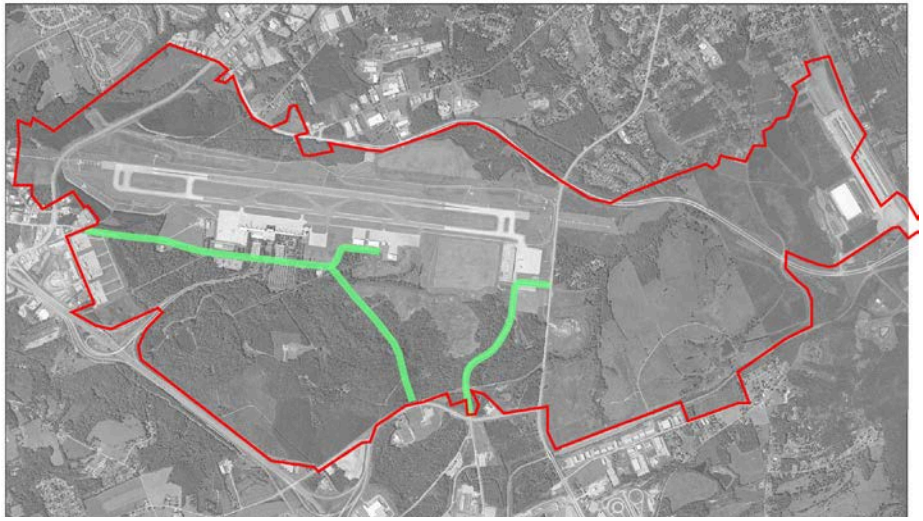
Typical Aviation Parkway Section



"We abuse the land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect."

–Aldo Leopold

GSP DRIVE / GATEWAY DRIVE / STEVENS RD IMPROVEMENTS



(Above) Secondary roadways bisect the heart of GSP's campus.

KEY TAKEAWAYS

- Corridors have no cohesiveness and lack a defined character.
- Lack of identification signage at entrances provide little clarity about where GSP property actually begins.
- Corridors require little maintenance as they exist currently, any new design should not increase maintenance needs dramatically.
- Use of corridors will increase as construction and development of GSP outparcels occurs.

GSP Drive, Gateway Drive, and Stevens Road are secondary entrance roads into the GSP property. These roads are two-lane without a median, and primarily used as cut-throughs for frequent visitors and employees of the GSP campus.

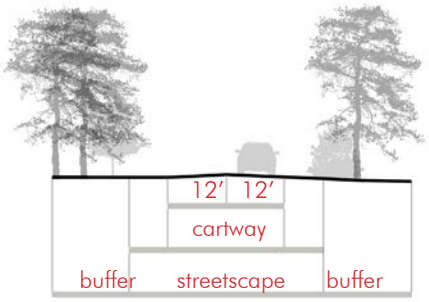
Though limited efforts have been made to create a beautified streetscape in these areas, the character ranges from tree-lined roads near the terminal, to logging-road like conditions on the perimeter.

Signage is needed along these corridors, especially at the edges of the property, and the Terminal Area. Patrons of the airport frequently mistakenly take these roads out of the airport due to confusion about where they should go. Lighting in this area also needs to be upgraded to provide a quality visual experience. Roadway lighting along these streets is encouraged, and should be standardized to a typical fixture or family of fixtures.

Due to the scale and character of these corridors, street trees in formal rows are encouraged. Some areas along GSP Drive already capture this design theme, while others are barren. Vegetated screening will be important in these areas to hide and/or camouflage utility areas or surface parking areas. See roadside buffer studies for recommendations.

GSP DRIVE / GATEWAY DRIVE / STEVENS RD IMPROVEMENTS

Existing Conditions

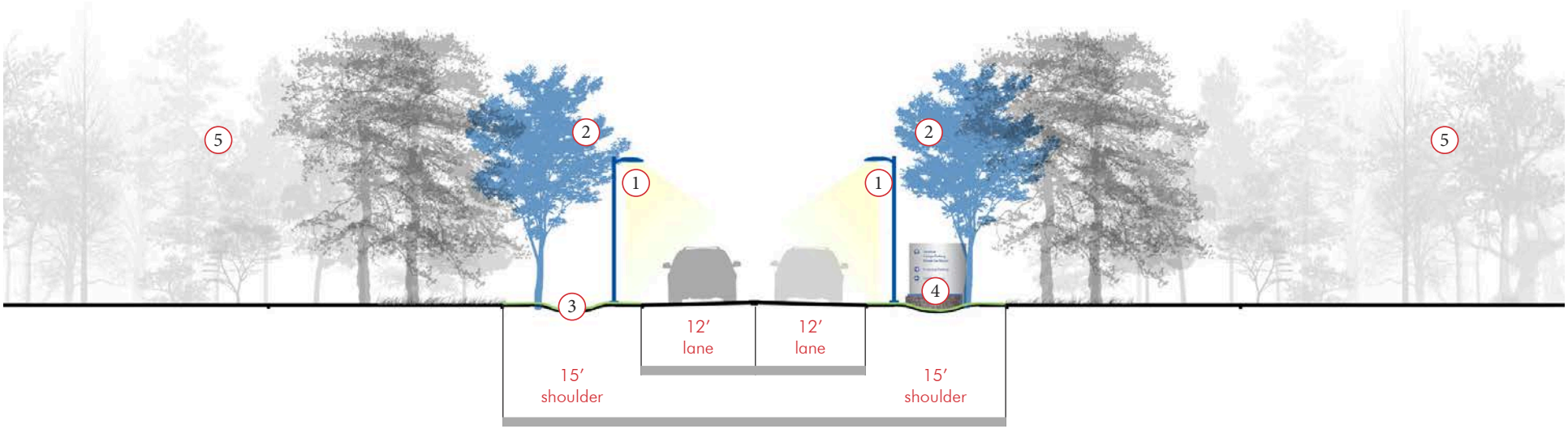


KEY:

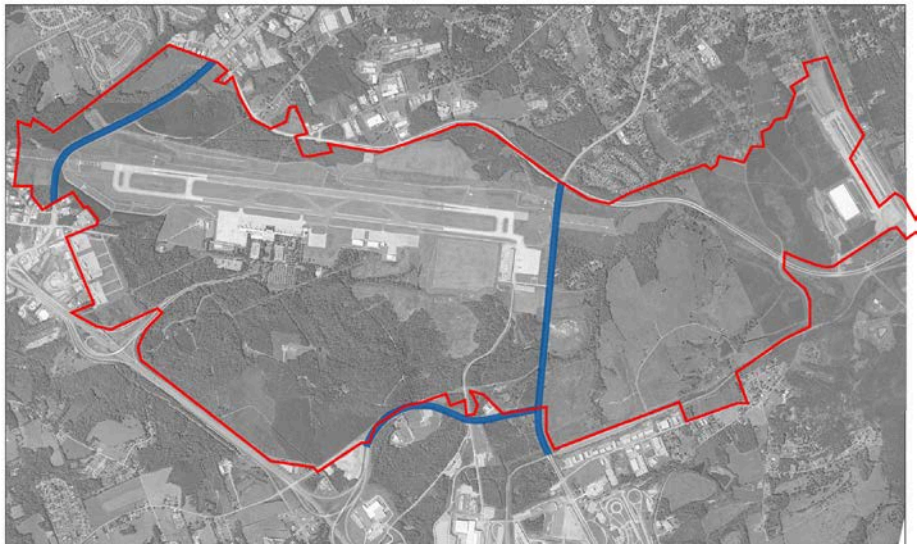
1. Roadway Lighting - LED Fixture (see lighting section) Lights to be spaced min. 15' from street trees and 75' O.C.
2. Type B Street Tree, to be selected from provided approved tree list. Tree to be centered in verge and min. 15' from all inlet structures. See typical planting details (appendix 6.8)
3. Road shoulder to be turf. See GSP buffer section for details. Maintenance of turf to follow maintenance guidelines (appendix 6.8) Road shoulder to be irrigated.
4. Identification & placemaking signage. See signage report (appendix 6.1) for recommendations. To be placed min. 8' from edge of travelway.
5. GSP streetside buffer. See buffer section of this document for details and required widths.

(Left) GSP secondary roads range in landscape character from the designed, formal street trees of GSP Drive near the Terminal, to the logging-road typology of Gateway Drive.

Proposed Secondary Road Section



HIGHWAY 14 / HIGHWAY 101 / BROCKMAN-McCLIMON ROAD IMPROVEMENTS

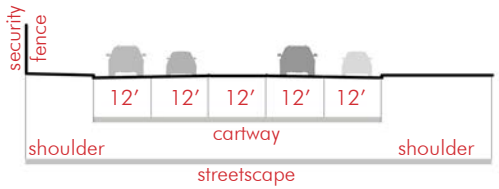


(Above) State-owned highways form boundaries at GSP.

KEY TAKEAWAYS

- These high-volume corridors have little aesthetic design intent, and are almost purely functional in purpose.
- SCDOT ownership of these corridors will present permitting challenges to design concepts.
- Corridors are vehicular-use only and have little to no pedestrian usage.
- Clearance zones for the existing runway will create design challenges for streetscape standards.

Existing Conditions

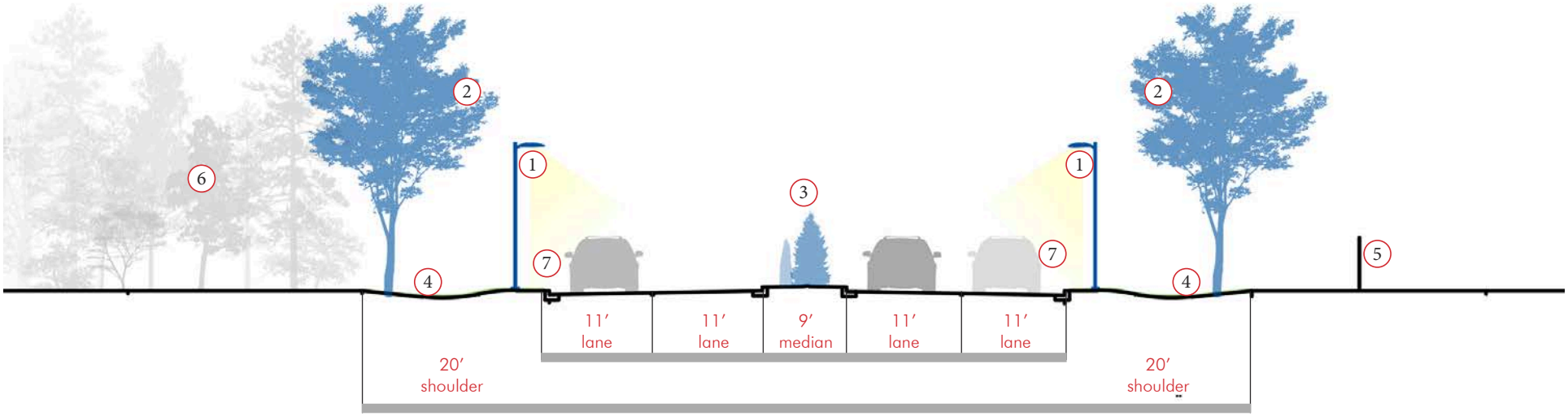


KEY:

1. Roadway Lighting - LED Fixture (see lighting standards) Lights to be spaced min. 15' from street trees and 75' O.C.
2. Type A Street Tree, to be selected from provided approved tree list. (appendix 6.6) Tree to be planted in accordance to SCDOT landscaping guidelines. To be placed min. 15' from all inlet structures. See typical planting details (appendix 6.8)
3. Conifer median to be planted according to the guidelines. Native plantings and a variety of forms encouraged. Mix to include understory and small trees.
4. Turf road shoulder. See guidelines in GSP buffer section of this document.
5. Security fence. Location to be adjusted as needed for street tree planting.
6. See GSP Buffer section for details.
7. Future bike lane (Hwy 14 Only). From Greer Community Master Plan, 2015

Due to the scale of these roads and the high traffic volume, landscape improvements are limited to the addition of a planted median where the two-way center turn lane exist currently. Turn lanes shall be strategically placed according to SCDOT standards. Large canopy trees are proposed as street trees, to be placed min. 10' from the edge of pavement along these corridors. Lighting will upgraded to match the desired GSP aesthetic. GSP could seek joint funding from the SCDOT for improvements to these roads.

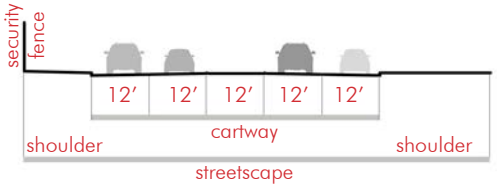
Proposed Highway Section

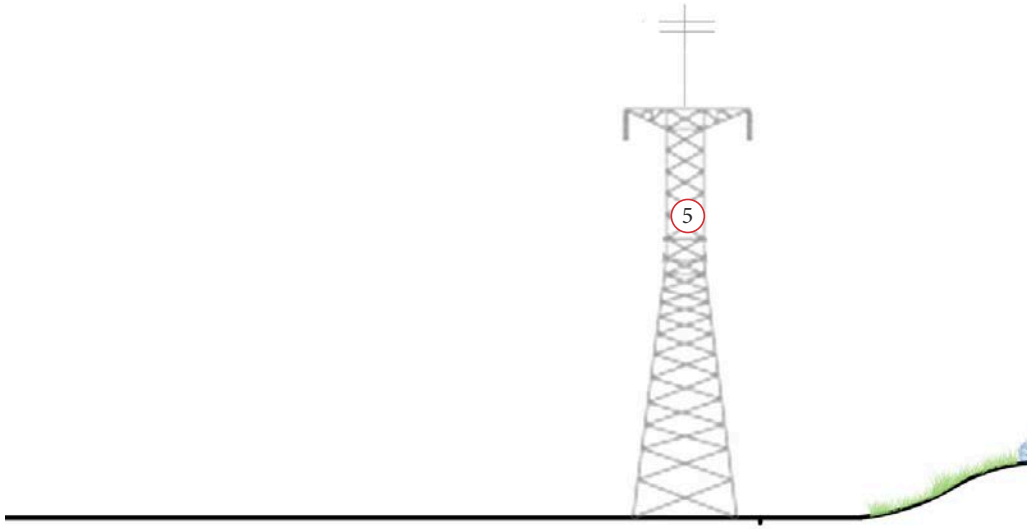


HIGHWAY 14 / HIGHWAY 101 / BROCKMAN-McCLIMON ROAD IMPROVEMENTS

Where the Hwy 14 & 101 corridors transect FAA clearance zones, the street trees are to be replaced by a berm min. 6' height and max. slope of 3:1. Berm is to be planted with a mixture of deciduous and evergreen shrubs and grasses. Plants native to the upstate region of South Carolina are encouraged. The planted median will continue through the zone, but shrub-form conifers will substitute for the larger median planting material.

Existing Conditions





(Left) Where the highways cross into the FAA-required clearance zones, street trees will not be allowed. A landscaped berm shall be used in lieu of the street trees.

KEY:

1. Roadway Lighting - LED Fixture (see lighting standards) Lights to be spaced min. 15’ from street trees and 75’ O.C.

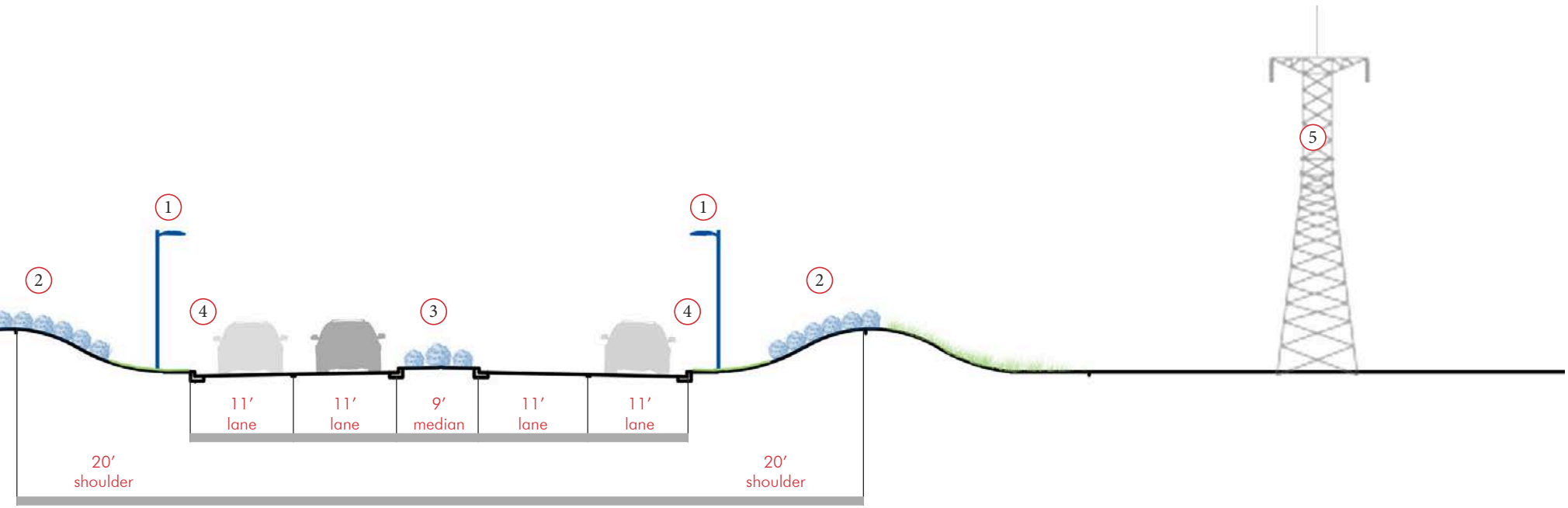
2. Min. 6’ height landscaped berm. Max slope shall be 3:1. Berm shall be planted with a mixture of shrubs and ornamental grasses, with preferably native material that shall not mature to a height above the clearance zone requirements.

3. Median plantings to continue through the clear zone, using plant material of a shrub form. Small trees may be used provided they do not mature to a height above the restrictions.

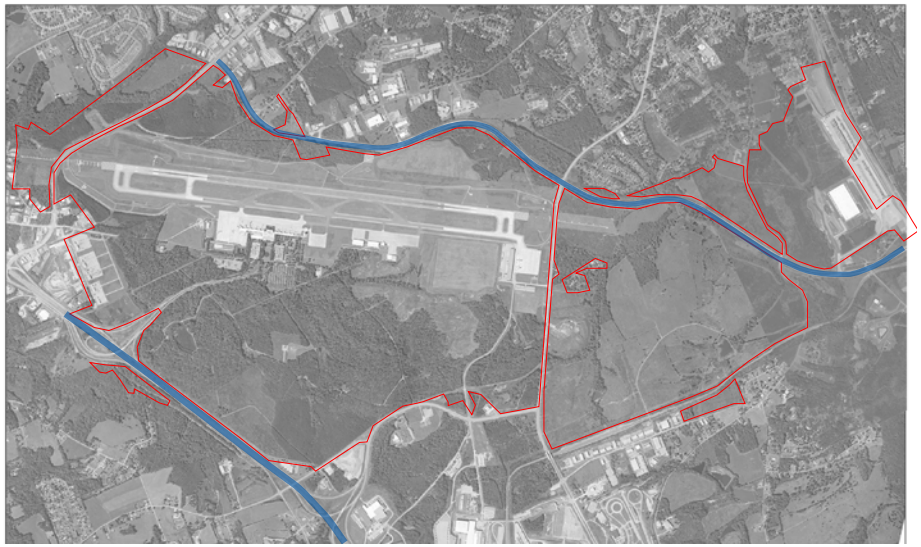
4. Future bike lane (Hwy 14 Only). From Greer Community Master Plan, 2015

5. Existing FAA Tower.

Proposed Highway Section at clearance zone.



I-85 AND VERNE SMITH IMPROVEMENTS

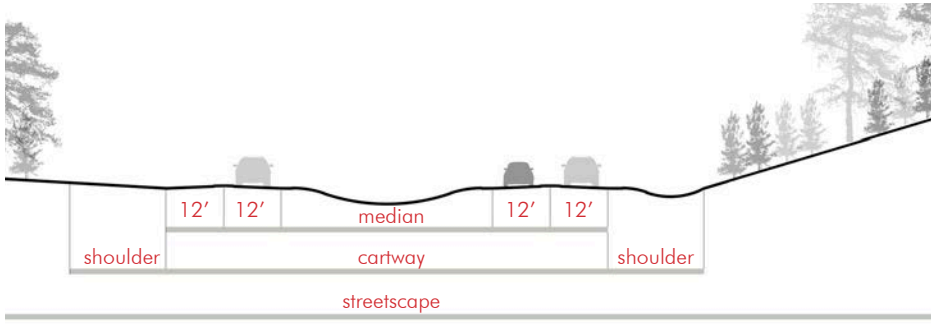


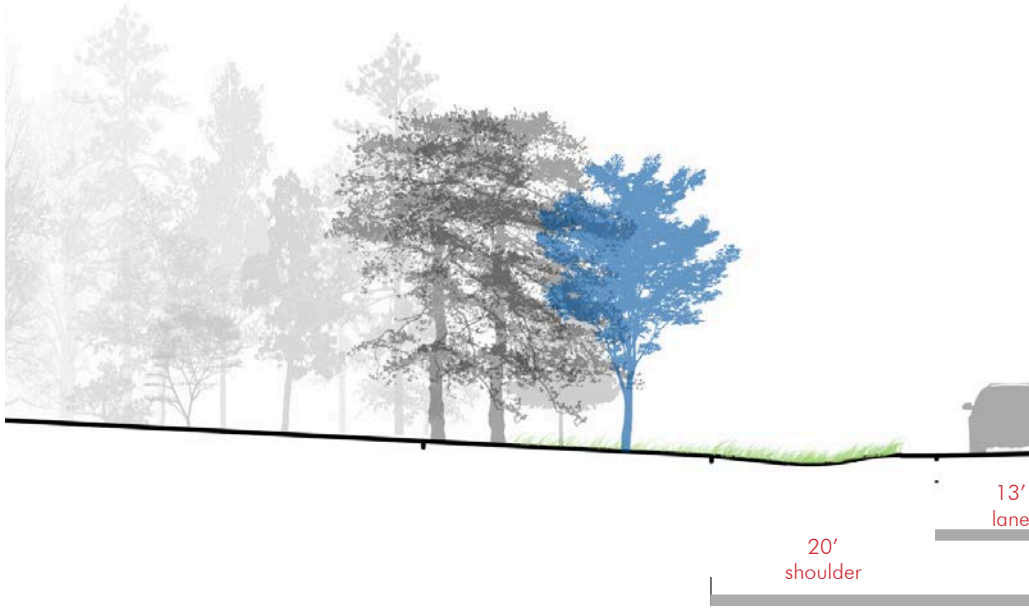
(Above) Limited access highways provide valuable visibility to the GSP campus.

KEY TAKEAWAYS

- As limited-access highways, these corridors serve more of a visual purpose than actual access for development tracts
- Visibility should be maintained, and unattractive uses screened from the public view to maintain an attractive corridor
- Large-scale landscape needed per scale of the road
- Important opportunity for monument signage along these corridors

Existing Conditions



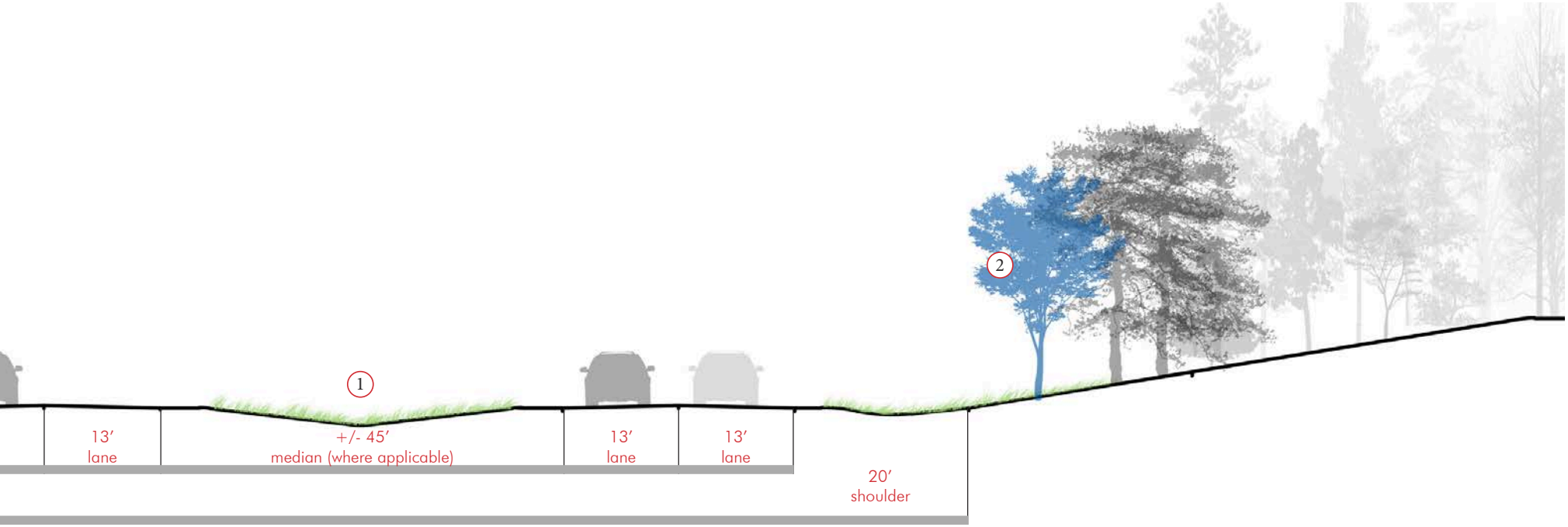


KEY:

1. Road median and shoulders to be planted with a native grass/ wildflower mixture. Maintenance of these areas to follow the maintenance guidelines (appendix 6.8)
2. Type A Street Tree, to be selected from provided approved tree list (appendix 6.5) Tree to be planted in accordance with SCDOT landscape guidelines. See typical planting details, (appendix 6.8)

As limited-access highways, improvements along these two corridors is limited to primarily ground-level improvements. Any buffer or street trees added shall conform to SCDOT landscaping guidelines. Inside the GSP Campus, placemaking along these roads could be accomplished thorough the use of native grass & wildflower meadows, which would be both ecologically sensitive and low maintenance.

Proposed limited-access highway section



NEW ROAD DESIGN STANDARDS

GOALS OF NEW GSP STREETSCAPE

- Create an attractive, high-quality environment that evokes a unique sense of place and belonging, and enhances the original design intent and principles that established GSP.
- Utilize smart, thoughtful streetscape design to establish a consistent campus theme, effectively screen obstructive uses, and manage traffic and speed.
- Provide site identification and wayfinding along the GSP corridors through a consistent and successful signage family.
- Increase pedestrian movement opportunities within the GSP campus, while maintaining a safe environment for drivers, pedestrians, and passengers at GSP.

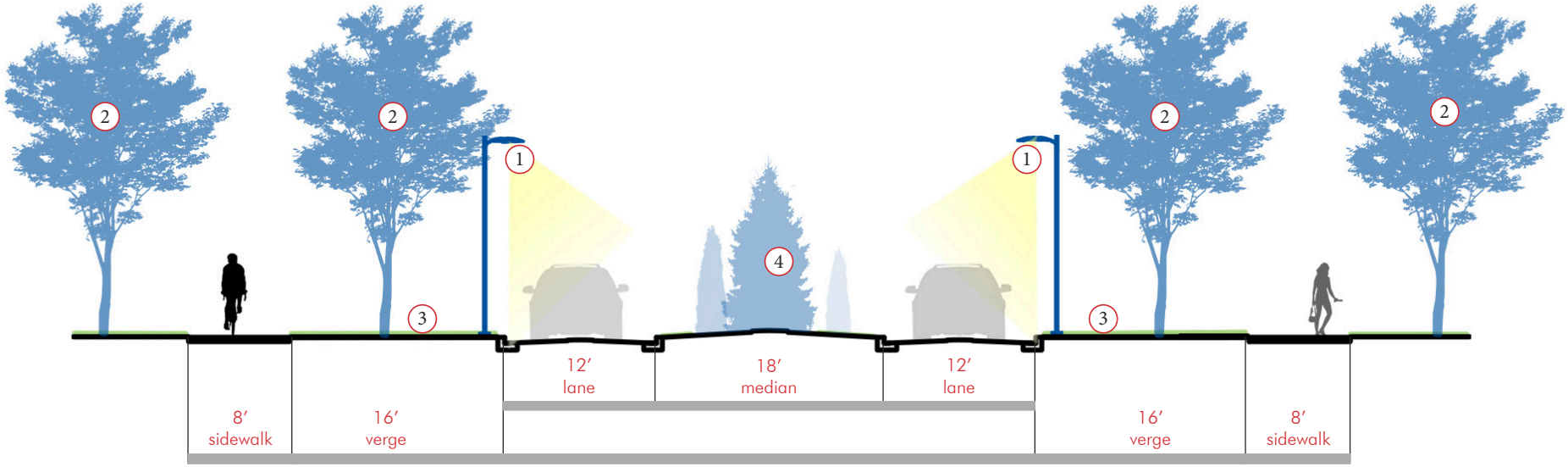
As new development opportunities come to the GSP campus, new challenges arise. One of the key features of the GSP campus is the perceived naturalistic landscape, and the natural beauty of the campus. Currently, the GSP campus is one of the region's largest undeveloped land parcels.

An important purpose of this document is to allow for the development of the outparcels at GSP while maintaining the naturalistic, high-quality feeling that defines the space today. Setting streetscape standards is a very effective way to do this, for as the parcels develop and become limited access or private property, the streets themselves will remain accessible to the public, and visitors to the GSP campus.

The following pages set standards for both a two-lane road with a planted median, and a four-lane road with a planted median. GSP is encouraged to apply these guidelines and principles to new roads, while also planning for the future of the property.

PROPOSED TWO-LANE STANDARD ROAD

Proposed Two-Lane Road Section



KEY:

1. Roadway Lighting - LED Fixture (see lighting standards) Lights to be spaced min. 15’ from street trees and 75’ O.C.

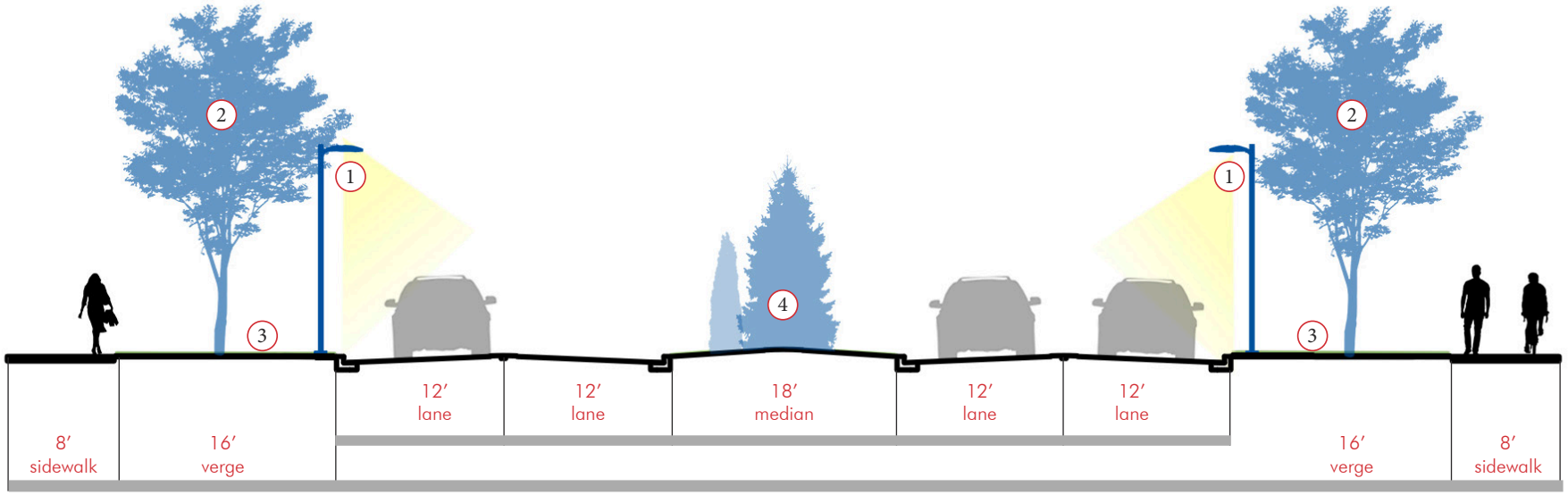
2. Type B Street Tree, to be selected from provided approved tree list (appendix 6.6) Tree to be centered in verge and min. 15’ from all inlet structures. See typical planting details, (appendix 6.8)

3. Verge to be turf. Maintenance of turf to follow maintenance guidelines (appendix 6.8)

4. Planted median. Native plantings with a variety of forms and colors are encouraged. Any plant with a mature height of over 3’ shall be placed min. 5’ from back of curb.

PROPOSED FOUR-LANE STANDARD ROAD

Proposed Four-Lane Road Section



KEY:

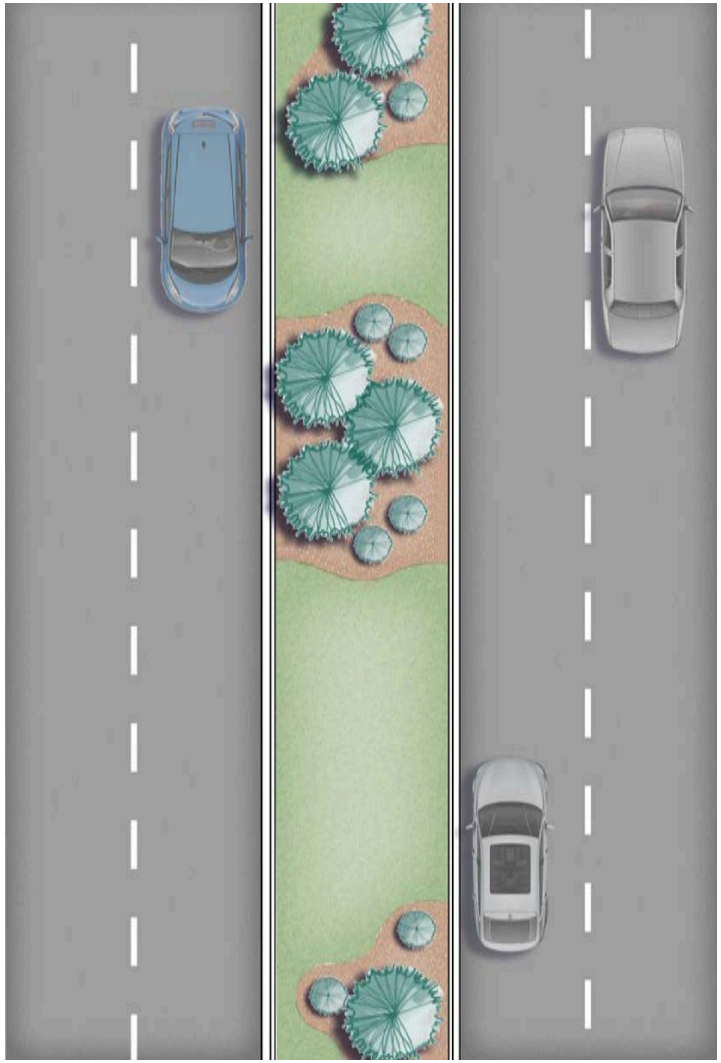
1. Roadway Lighting - LED Fixture (see lighting standards) Lights to be spaced min. 15’ from street trees and 75’ O.C.

2. Type B Street Tree, to be selected from provided approved tree list (appendix 6.6) Tree to be centered in verge and min. 15’ from all inlet structures. See typical planting details (appendix 6.8)

3. Verge to be turf. Maintenance of turf to follow maintenance guidelines (appendix 6.8)

4. Planted median. Native plantings with a variety of forms and colors are encouraged. Any plant with a mature height of over 3’ shall be placed min. 5’ from back of curb.

MEDIAN PLANTINGS

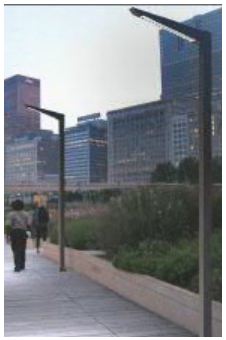


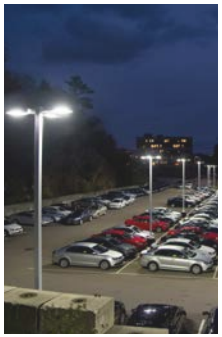
Median plantings for both existing and proposed roads shall consist of a mixture of conifer/evergreen plantings of similar character to the conifers along aviation parkway. Native or naturalized species are recommended.

A mixture of colors and heights shall be used, and turf relief areas shall be mixed in to the plan at a 50% ratio. (See exhibit at left for sample layout)

(Left) Conifer medians are a key tenet of the GSP campus landscape. New roads shall include space for a planted median, which shall include a mixture of conifer trees, shrubs, and groundcovers.

STREET LIGHTING



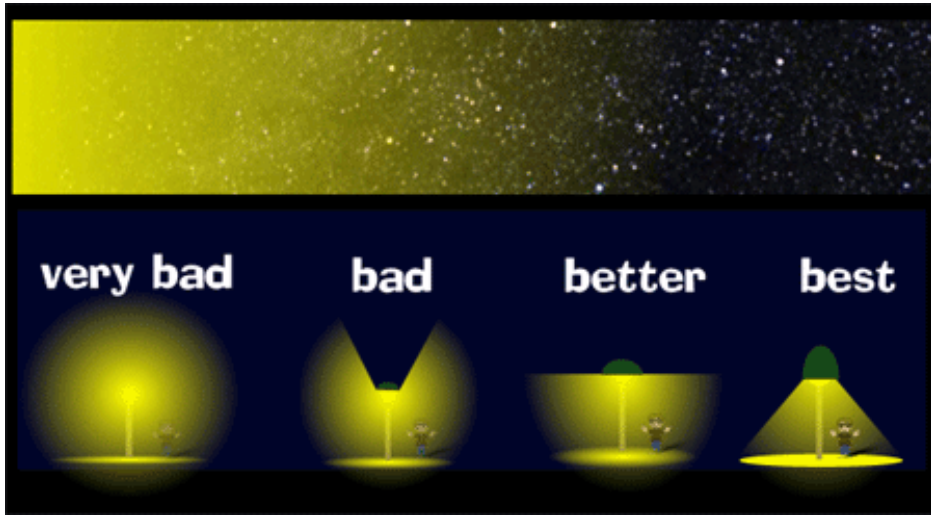


Lighting on an airport campus is a very important consideration as it affects both safety and aesthetics. The airport is active in both the early morning and evening hours, even continuing into the night. It is important that adequate site lighting is available to ensure safe and effecient airport operation.

Passengers entering the airport campus should feel safe and confident of where they are headed. Roadway signs should be lit adequately, and parking areas should be clearly delineated.

The current lighting on the District campus is marginally acceptable in areas near the Terminal, while other areas are completely unlit. The parking areas and roadways are generally darker than what is recommended for safety. This is likely due to the older fixtures as well as the tree/light conflicts.

Full lighting standards are detailed in the design standards section of this landscape master plan. For street lighting, an effort should be made to upgrade all of GSP street lighting to energy



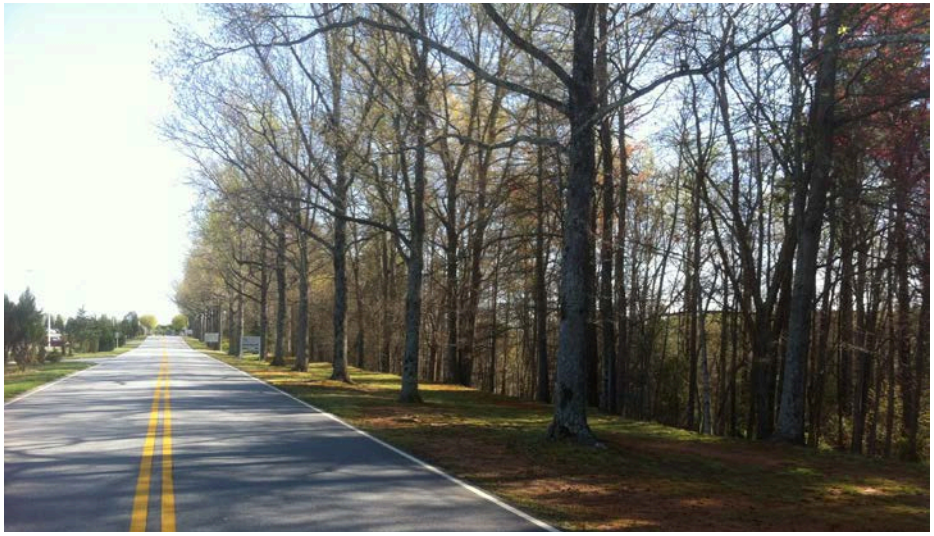
efficient light-emitting diode (LED) fixtures. To combat light polllution, every effort should be made to use full cut-off fixtures, or fixtures that are Dark-Sky Compliant. (www.darksky.org)

Due to the unique nature of the Parkway entrance to the GSP Terminal, overhead street lighting is not recommended for the parkway.

Every other street in the DIstrict should have some level of street lighting. Full standards are illustrated in the design guidelines section of the document.

(Above Left) A variety of street light types are available. (Top) Full Cutoff fixtures (right of the image) help to control light pollution as compared to typical fixtures (left of image).

STREET TREE SELECTIONS



BENEFITS OF STREET TREES

- Street trees reduce speed of traffic by allowing drivers to accurately gauge their speed. Reductions of 5-15 mph have been documented
- Street trees reduce air temperatures, and trees within close proximity of a street absorb 9 times the pollutants of distant trees
- Trees along streets have been shown to help to reduce perceived trip distances, while improving overall mood and psychological health.
- Studies in California have shown that properly placed street trees can add 40-60% more life to asphalt pavement.

TYPES OF STREET TREES
(Reference Approved Plant List (Appendix 6.6))

TYPE A

- Type A canopy trees are large canopy trees, to match the large-scale applications of these trees. Emphasis is placed on North American native selections, in keeping with the Noble Tree approach created by Roger Milliken. These trees shall be placed between 8' – 15' from the curb line or edge of pavement, and shall be placed at 45' on-center. Due to litter concerns, Type A trees shall not be planted within 15' of any paved pedestrian walkway.

TYPE B

- Type B Trees are medium-to-large canopy trees with a more formal form than Type A trees. Type B trees are intended to be planted as formal street trees along the roads, and shall be planted at 40' on-center. These trees shall be placed at between 6'-12' from the curb or edge of pavement, and in a situation where a sidewalk exist separated by a tree lawn, these trees shall be planted in rows in the tree lawn where the center of the trunk is at least 4' from all pavement.

Note: Along Aviation Parkway, Type A & B trees may be used provided they are at least 20' from edge of pavement, and no more than 3 of any one species are used in the same planting. Trees along Aviation Parkway shall be planted in a naturalistic, clustered pattern reminiscent of a natural forest, and shall not be planted in formal rows or "soldiered" along the road.

(Top Left) Street trees are an important landscape theme that has been created at GSP. Much of the success or failure of a street tree depends on selecting the right type of tree for the right space. This guide will help determine appropriate tree species.

TYPE C

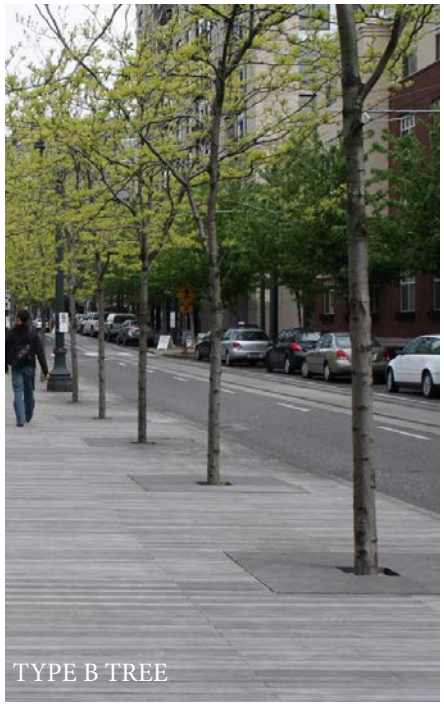
• Type C trees are specially selected for urban environments, and shall be used in areas shown in the Street tree selection map on the next page. These trees are selected for their toughness and durability in urban environments, lack of litter and slipping hazards, and proven urban forest potential. Formal plantings of these trees are encouraged to capture the intended design intent.

TYPE D

• Type D canopy trees are North American native selections intended to bring a diversity of species back to the GSP campus. These trees are all native to the Upstate of SC, and have a variety of forms, textures, and colors. Because of this, a diversity of these selections is encouraged in any planting. These trees are intended to be planted in informal, natural groupings, and shall be located in the buffers. These trees shall not be used as street trees. Due to litter concerns with these trees, they shall not be planted within 10' of any existing paved pedestrian walkway.

All trees to be planted per the guidelines of this document. See appendix 6.8 for applicable planting details.

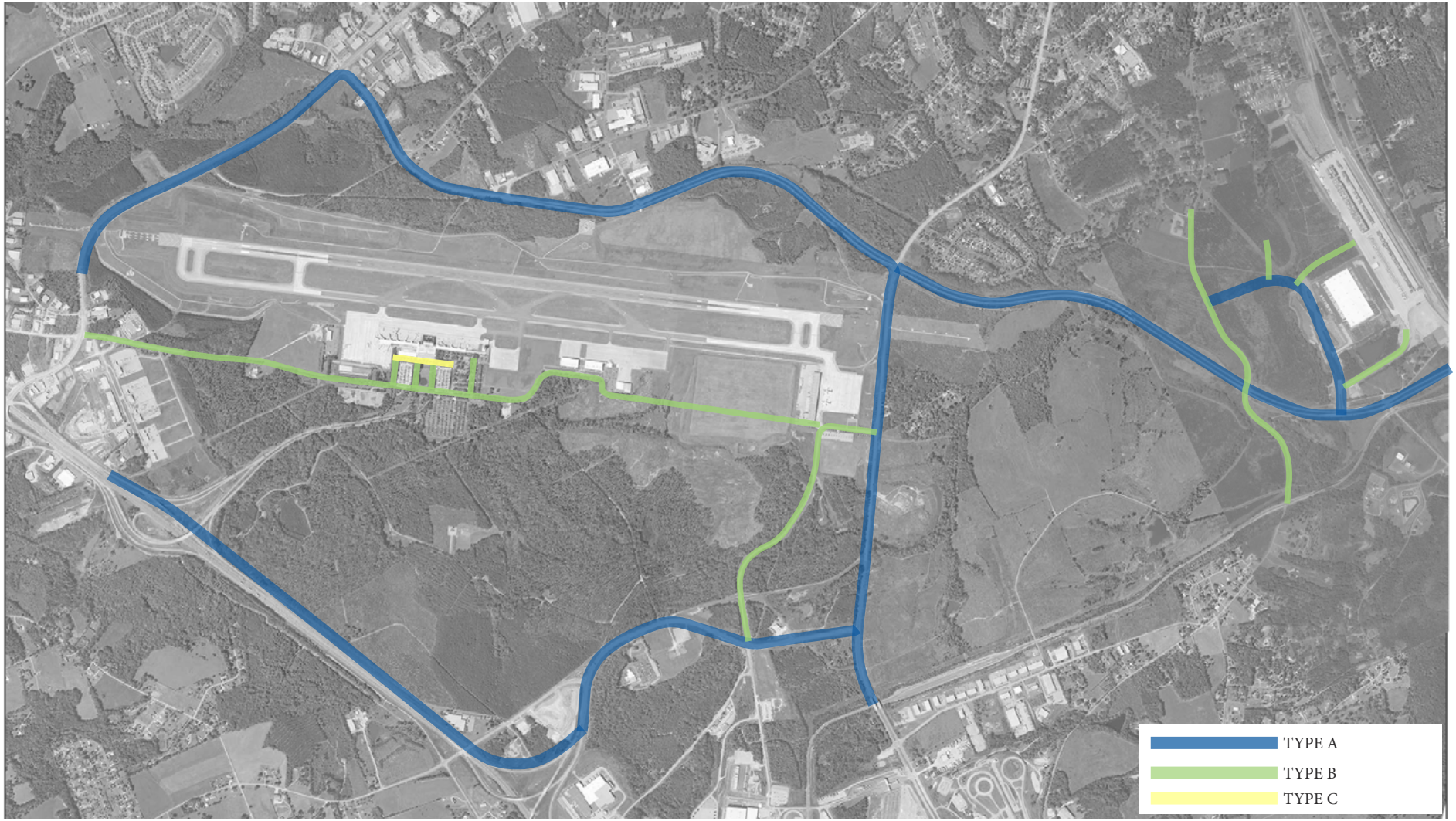

TYPE A TREE


TYPE B TREE

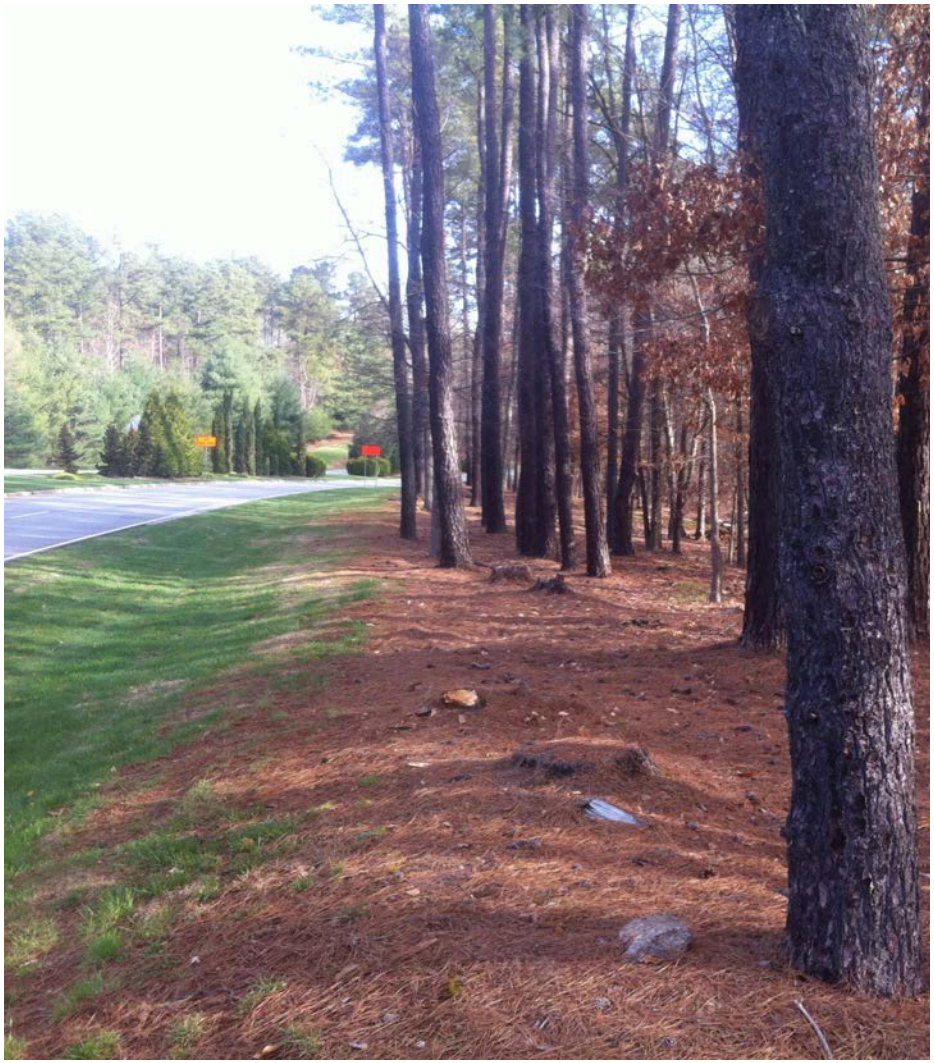

TYPE C TREE


TYPE D TREE

STREET TREE SELECTIONS



(Above) On existing roadways, street tree plantings should follow the above guide. Street tree types have been selected based on the scale of the roadways and future uses along these roads. Note that Type D trees are primarily buffer trees meant to bring a diversity to the GSP campus, and should not be used as street trees. Aviation Parkway is not recommended to have formal street tree plantings.



(Above) Successful buffers will help maintain the visual character of the streetscapes and will allow GSP to develop as an economic center while maintaining a naturalistic feel.

GOALS OF THE BUFFERS AT GSP

- Protect and enhance views along the corridors
- Utilize smart, thoughtful streetscape design to effectively screen obstructive uses
- Buffer industrial and utilitarian uses from the GSP corridors, maintaining a parkway-like atmosphere
- Enable new development while maintaining the natural beauty of the GSP campus

Buffers at GSP will be used to maintain the naturalistic feel of the campus, and allow visitors to the campus to experience GSP as a beautiful yet functional part of the Upstate region..

Buffers will be divided into **three main categories:**

(1) GSP Perimeter buffer, to be used wherever GSP property abuts another property owner (as opposed to abutting a right-of-way)
(2) GSP Streetscape Buffer, to be used along existing and proposed roads. The buffer proposed here uses natural processes to dictate the form and material of the buffer, and may be supplemented as needed.
(**3) Buffers between uses.** The intent of these buffers is to eliminate conflicts between parcel owners and users of the GSP development parcels.

Thoughtful application of the buffer standards set forth will ensure a quality campus experience for GSP employees, tenants, visitors, and passengers, and will maintain the original landscape principles of GSP.

3 TYPES OF BUFFERS

THREE TYPES OF BUFFERS

(A) GSP PERIMETER BUFFER

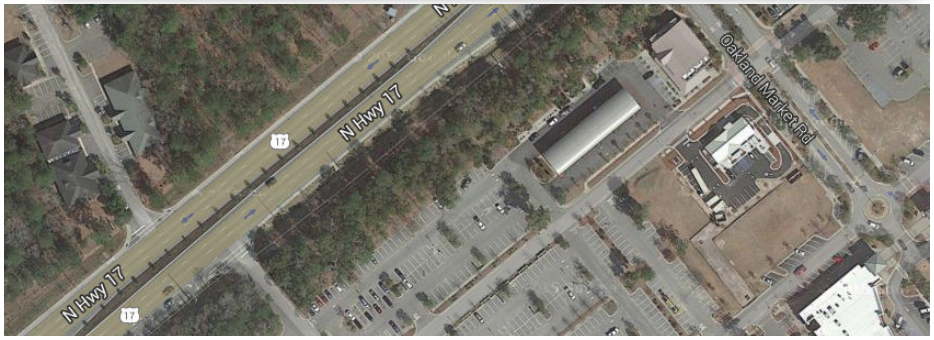
This buffer separates any proposed development from adjacent property owners. By implementing and maintaining this buffer, GSP will remain a responsible neighbor to the property owners in the vicinity of the campus.

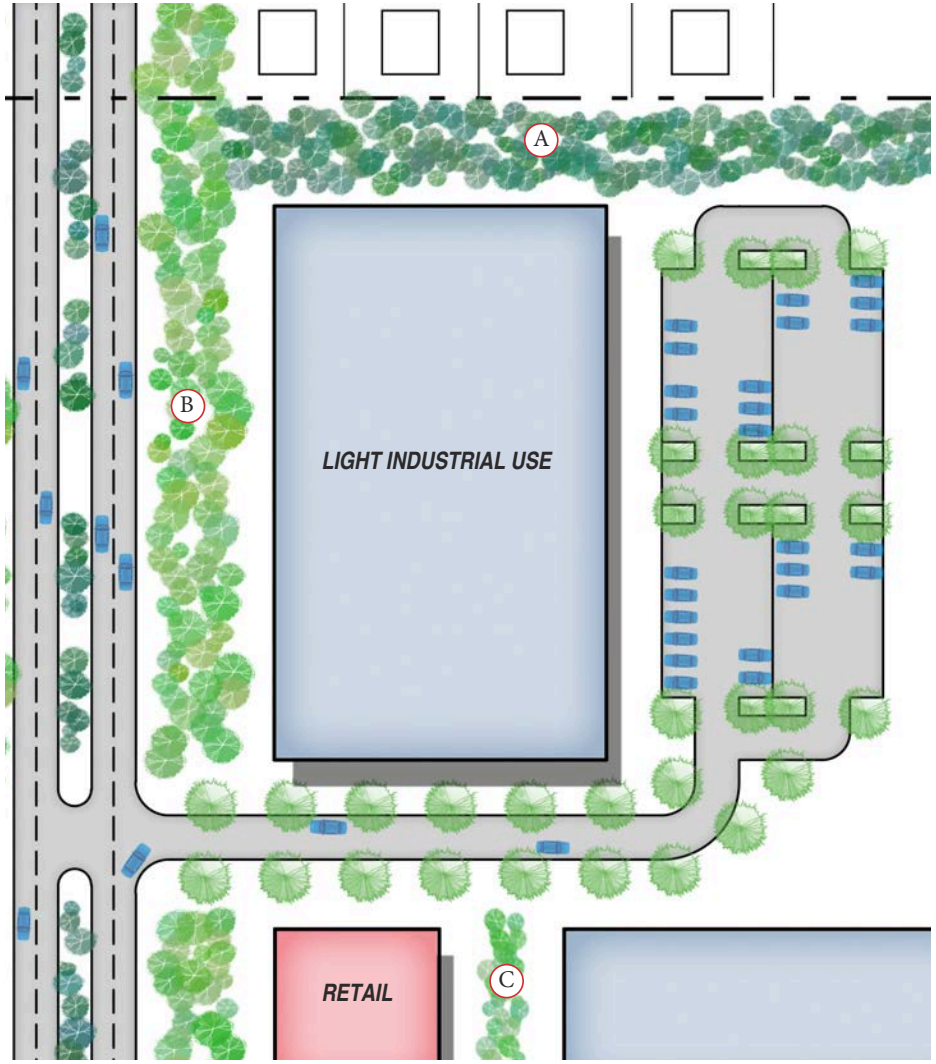
(B) GSP STREETSCAPE BUFFER

This buffer works to maintain the perception of a natural campus to the visitor to the campus. By using natural succession principles as keys for the design of this buffer, maintenance is minimized, and visual quality is maximized along the streetscape.

(C) BUFFERS BETWEEN USES

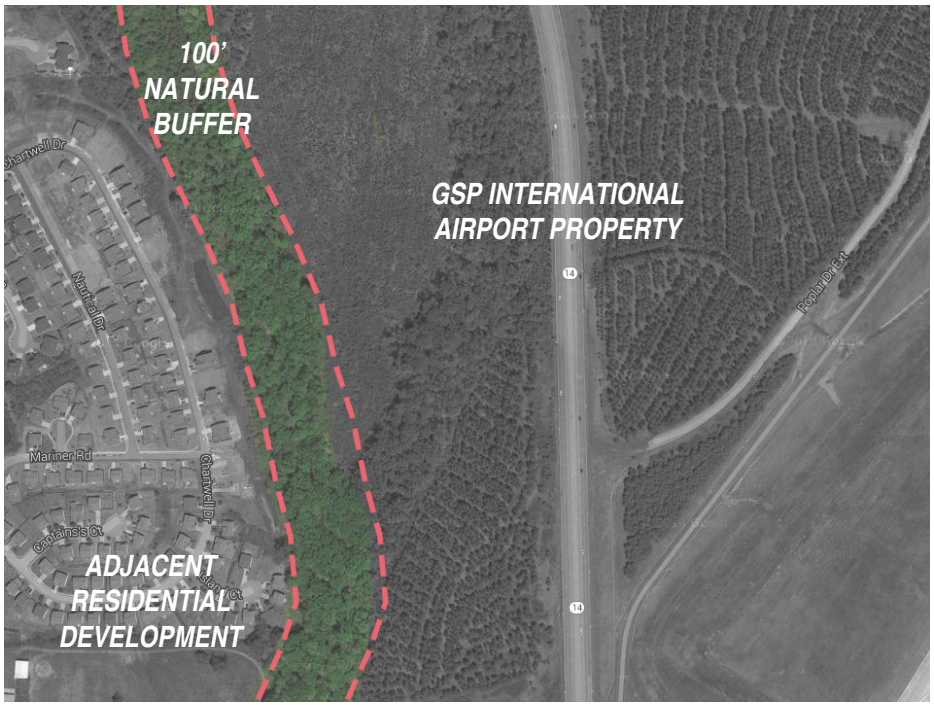
This buffer will allow multiple users to take advantage of the opportunities of the GSP development tracts. Separating differing uses through the use of landscaped buffers allows close proximity, yet privacy for current and future tenants.

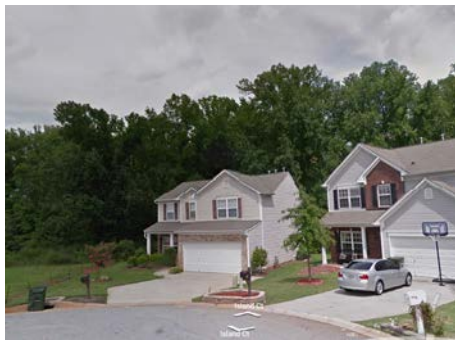




(Above) The three types of buffers described in this document are shown in the diagram above. The perimeter buffer (A) provides separation betwen GSP and adjacent properties. The street buffer (B) maintains visual quality along the streets, and the buffer between uses (C) adds property value to the development parcels and ensures high-quality future development..

GSP PERIMETER BUFFER





Greenville-Spartanburg International Airport has been part of the Upstate SC region for over half a century. When initially developed, much of the surrounding property was farmland or forested. As both the GSP campus and the surrounding properties develop, it is important to maintain a buffer between future uses and neighboring parcels. A 100' natural buffer is proposed between all GSP property and adjacent landowners. This buffer shall remain forested, and shall only be modified if there is an imminent threat to either GSP or a neighboring parcel.

(Above) A 100' natural buffer shall be applied wherever GSP property abuts neighboring properties.
(Right) Adjacent properties range in use and density. Where roads serve as property boundaries, the streetscape buffers shall apply.

ECOLOGICAL SUCCESSION

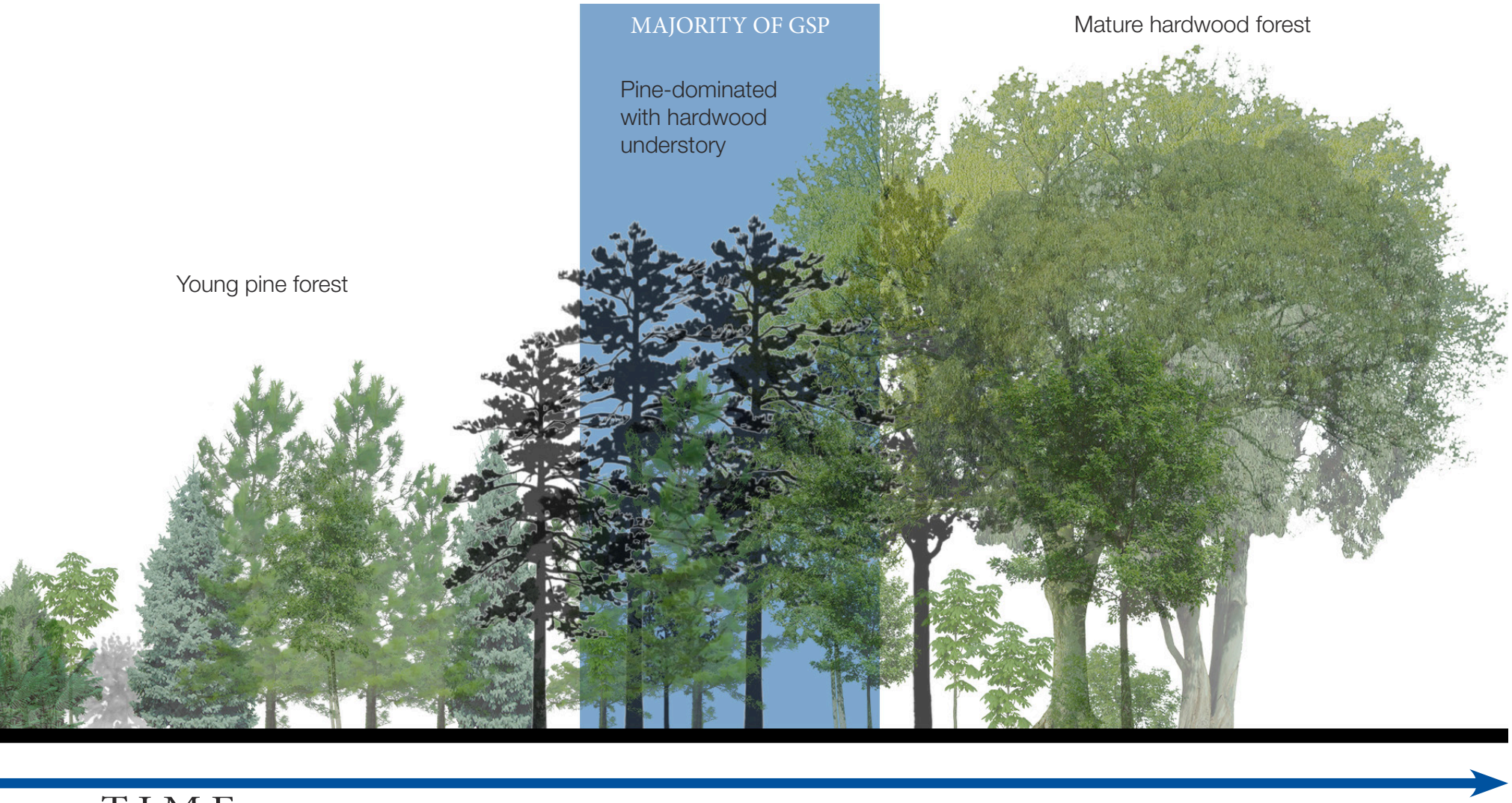
WHAT IS ECOLOGICAL SUCCESSION?

- Ecological succession refers to the natural changes that occur in an undisturbed natural setting over time, culminating in a self-sustaining climax community.
- In Upstate SC, all ecological succession eventually leads to the climax community of a hardwood-dominated forest, dominated by Oak, hickory, and beech species.
- Pine plantations at GSP have skipped the first phases of ecological succession and gone directly into the pine forest stage.
- Street buffers at GSP are designed to reflect the ecological succession of Upstate SC forests, based upon the current conditions of much of the plantings at GSP.

Grasses, herbaceous material, forbs

Shrub and Pioneer tree species, seedling pine

(Above) As time progresses, an undisturbed space will eventually grow into a mature hardwood forest in Upstate SC. This is the climax community, which is self-sustaining. The ultimate goal is for the buffers at GSP to reach this ecological state, reducing maintenance of the buffers.


MAJORITY OF GSP
Pine-dominated with hardwood understory
Mature hardwood forest
Young pine forest
TIME

TRANSLATING SUCCESSION THEORY INTO DESIGN

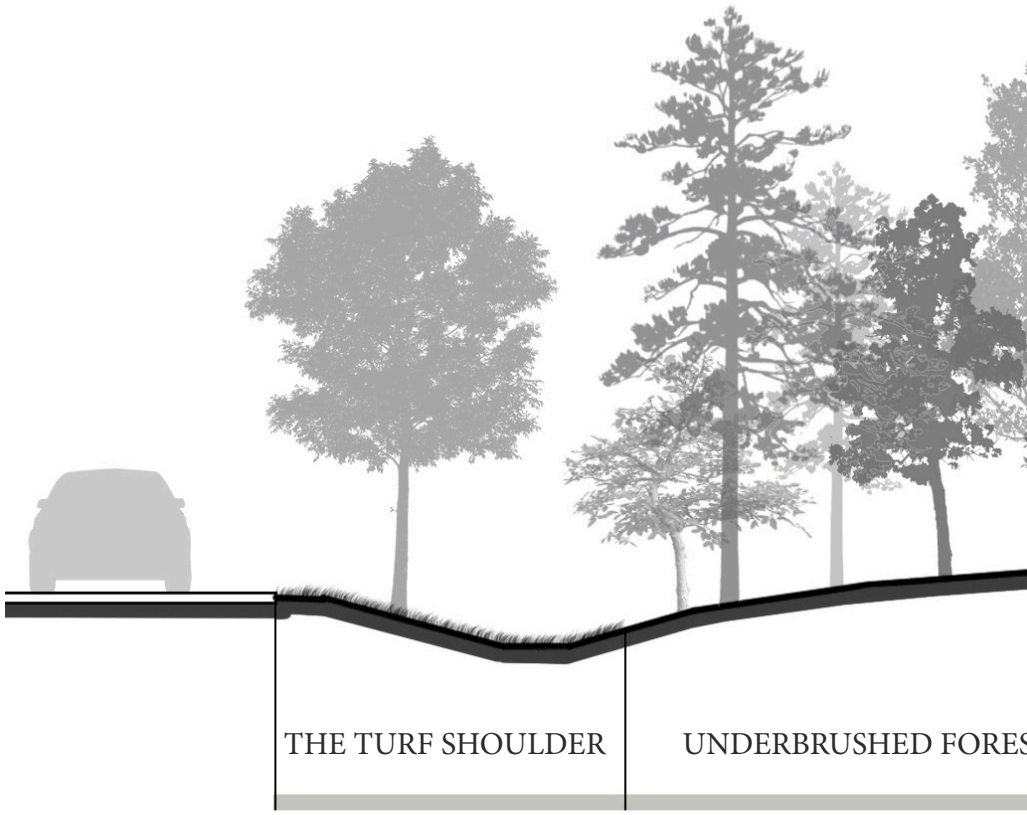
LAYERS OF THE BUFFER

The Turf Area. This area provides visual relief and a safety mechanism for drivers in the event of a crash or vehicle failure. This area shall be mown regularly, and kept as a lawn. Street trees, if applicable, are located here.

The Underbrushed Forest. This area is critical to provide visual depth into the forest, as well as a safety mechanism for drivers to protect them from wildlife that may jump into the roadway. These areas shall be maintained with a leaf litter or applied mulch, and any trees that die/fall in these areas shall be removed, taking care to not destroy surrounding vegetation. In the event that a large removal causes a large forest opening, these areas may be replanted.

The Natural Forest. This layer shall be allowed to progress naturally through the ecological succession pattern, and shall not be disturbed in any way except to remove invasive species. Any fallen trees in this area shall not be removed unless they pose an immediate and significant threat to safety.

The Transition. This meadow strip provides relief from the buffer for adjoining properties at the rear of the buffer. This area shall be planted with native meadow grasses and rough-mowed up to three times annually.

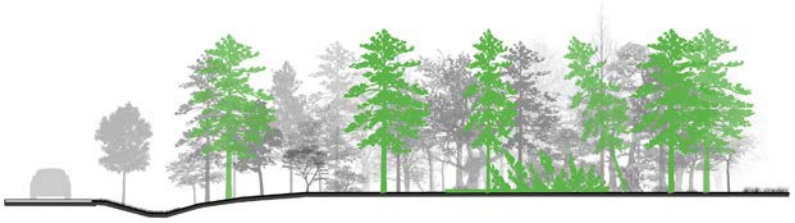


Proposed Street Buffer Section

KEY BENEFITS TO THE ECOLOGICAL SUCCESSION APPROACH

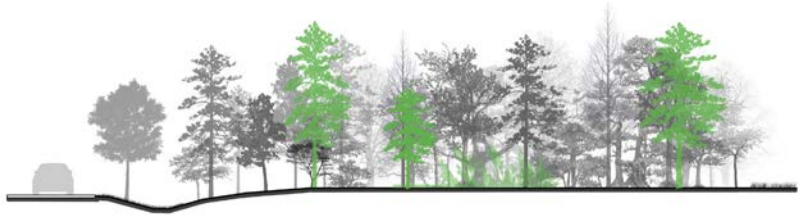
CURRENT PERIOD: PEAK-PINE Year 0

The diagram at left represents much of the existing street buffer at GSP currently. The pines that have long dominated the forest are nearing maturity or are post-maturity, and headed into a decline phase. Hardwood trees wait in the understory for the chance to reach for the canopy. The forest appears stable, but change is coming



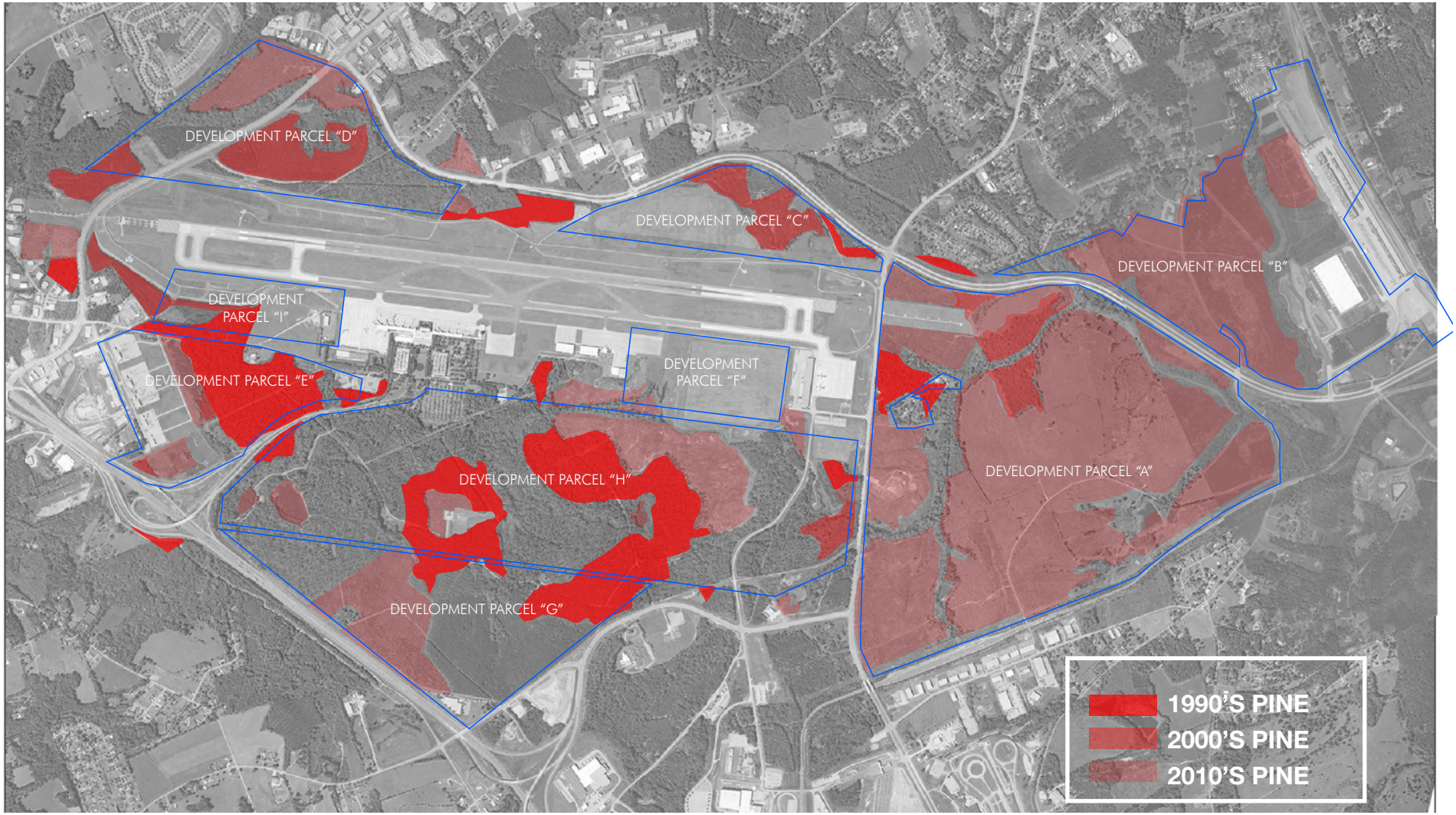
5-10 YEARS-DECLINE BEGINS Year 5

As shown in the diagram, over the next 5-10 years, the pine forest that was at maturity is now over-mature, and the pines are reaching the end of their natural lifespan. They begin to decline and fail, either slowly and constantly, or in a sudden event such as an ice storm or thunderstorm. This is the most dangerous time to be near the natural forest in terms of tree failure and safety.



10-15 YEARS AND FORWARD- A STABLE FOREST Year 15

At this stage in the natural succession, the forest is stabilizing. Much of the original pine forest has fallen and given way to a mixed hardwood forest, dominated by oak and hickory trees. A few strong pines remain, but no longer form the entire forest canopy. This is considered a climax community, and will continue in perpetuity unless a catastrophic event occurs (i.e. pest/disease introduction, wildfire, etc.)



(Above) Due to GSP's history of forestry operations, pine has been planted at various stages throughout the last half century. As a rule of thumb, once a pine planting reaches approximately 50 years old, the decline of the stand begins. The diagram above shows how this declining stage will spread throughout GSP over the next 30 years.

GSP STREETSCAPE BUFFER

AVIATION PARKWAY

Total Length 175'

GSP DRIVE / GATEWAY DRIVE / STEVENS ROAD / 2-LANE STANDARD

Total Length 145'

HWY 14 / 101 / BROCKMAN McCLIMON / 4-LANE STANDARD

Total Length 175'

BUFFERS BETWEEN USES

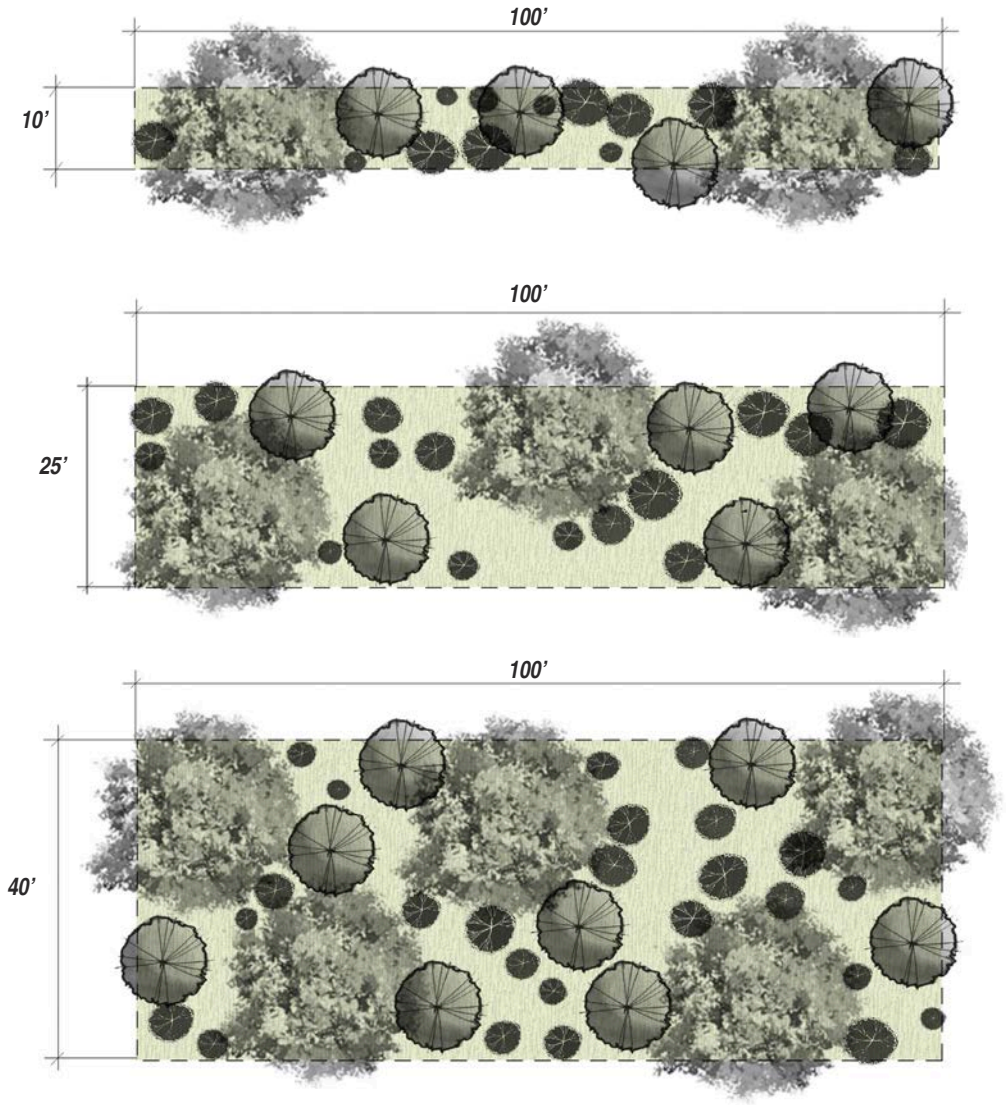
TABLE OF BUFFERYARD REQUIREMENTS

PROPOSED LAND USE	EXISTING LAND USE			
	COMMERCIAL /OFFICE	HOSPITALITY/ CONFERENCE CENTER	MIXED-USE	INDUSTRIAL/ WAREHOUSE
COMMERCIAL/OFFICE	TYPE A	TYPE A	TYPE A	TYPE C
HOSPITALITY /CONFERENCE CENTER	TYPE A	TYPE A	TYPE A	TYPE C
MIXED-USE	TYPE A	TYPE A	TYPE A	TYPE C
INDUSTRIAL/ WAREHOUSE	TYPE C	TYPE C	TYPE C	TYPE B

Along with buffers along the streetscapes of GSP and the perimeter buffer around the campus, buffers between uses will be required between differing uses as the GSP 360 Tracts develop.

Note that these buffers will be required where differing uses abut each other, and serve to screen unattractive uses and service uses from adjacent uses. These buffers shall remain natural where feasible, and shall be supplemented as needed to meet the requirements.

Where no natural buffer exist or cannot be maintained through construction, the required buffers shall be planted per the requirements listed on page 101.



TYPE A - 10' WIDTH

PER 100' OF BUFFER:

-2 canopy trees
-4 understory
-12 shrubs
-min. 6 evergreens/conifers per 100'
-Meadow Grasses

TYPE B - 25' WIDTH

PER 100' OF BUFFER:

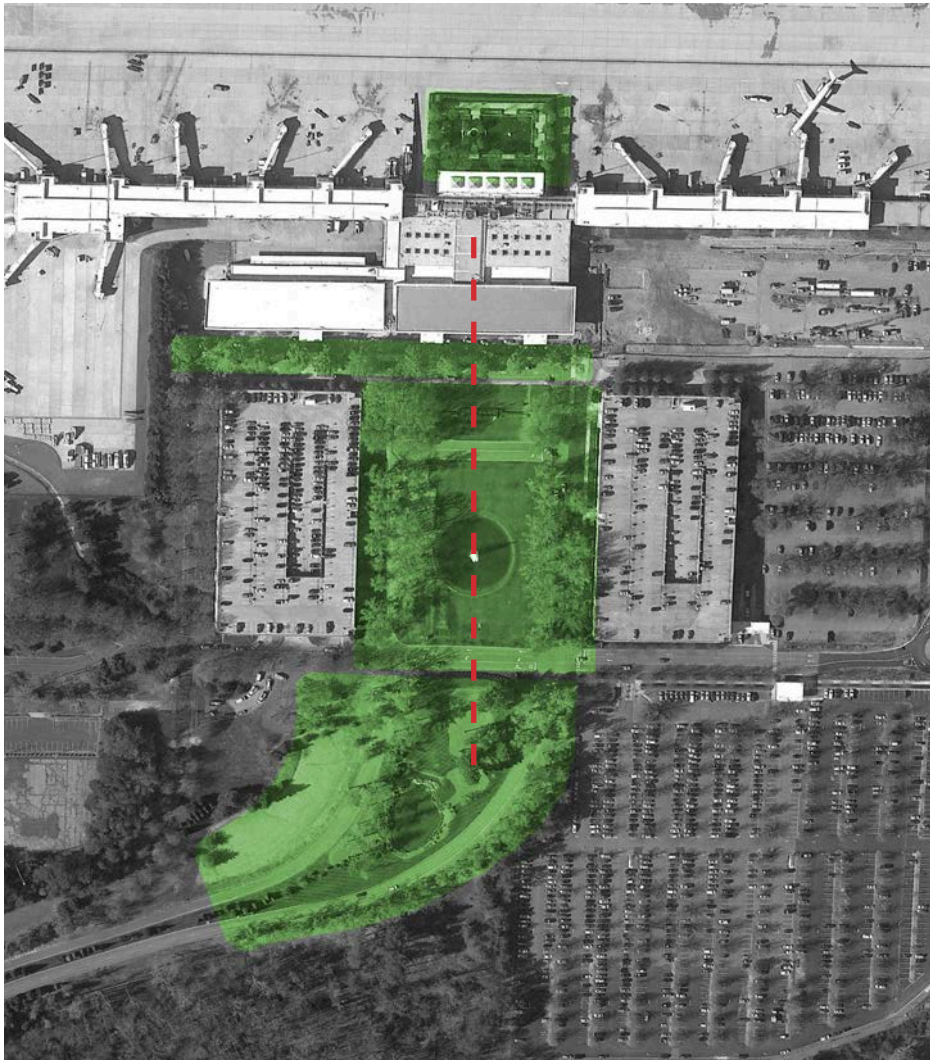
-3 canopy trees
-5 understory
-15 shrubs
-min. 8 evergreens/conifers per 100'
-Meadow Grasses

TYPE C - 40' WIDTH

'ER 100' OF BUFFER:

-5 canopy trees
-8 understory
-25 shrubs
-min. 12 evergreens/conifers per 100'
-Meadow Grasses

THE CAMPUS GREEN



A progression of landscape spaces begins at the bend of Aviation Parkway, continues through the Terminal Approach, the Terminal Mall, across the Terminal Drop-off and continues through the Terminal to the Airside Garden.

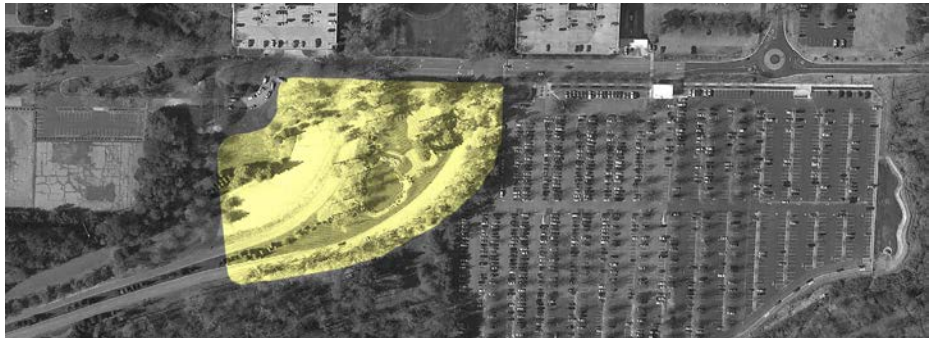
This series of spaces forms a spine through the center of the historic campus, and works together to form a Campus Green. This Campus Green is defined by **formal plantings of trees** along a **grand lawn**, a **defined pedestrian network**, and **water features** also work together in this space to define the Green.

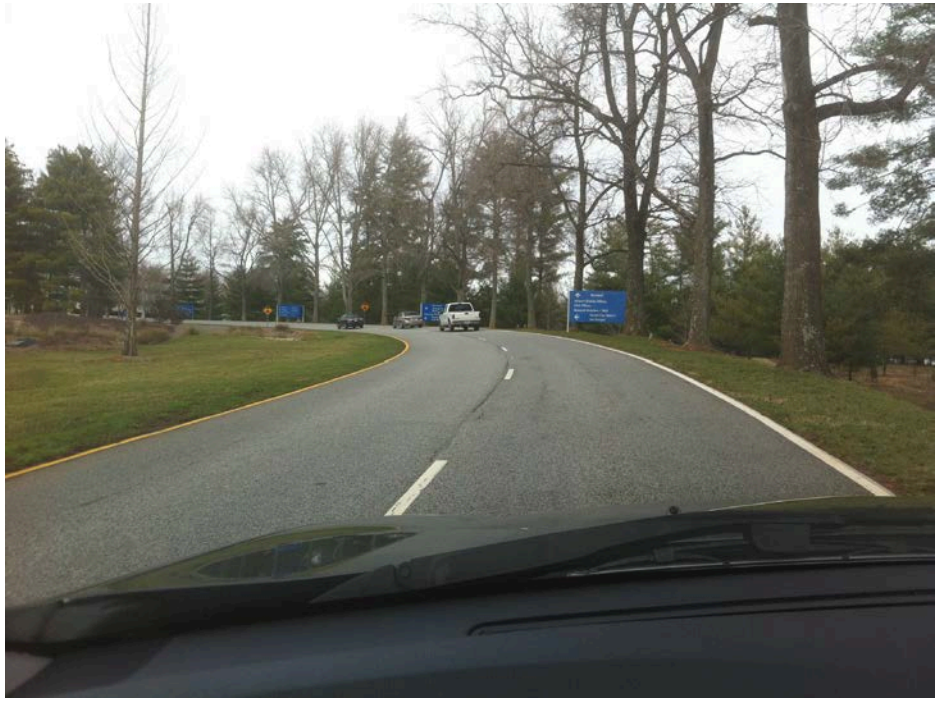
These spaces should be thought of as extensions of the Terminal itself, and demand a higher level of attention and detail. This Campus Green is also the key pedestrian connection across the campus, and warrants the use of high-end materials and the formation of a pedestrian landscape palette. Such a palette would strengthen the overall pedestrian experience at GSP.

By concentrating high-level design in this Campus Green area, the District has the opportunity to get the most bang-for-buck and restore the heart of the legacy landscape.

(Above Left) The Campus Green includes those landscape spaces that are extensions of the Terminal building itself. These landscape spaces are defined by several key features and a formal design. Areas within the Campus Green deserve a higher level of finish.

THE TERMINAL APPROACH





The design team recommended improvements to the Terminal Approach that would build from and strengthen the axis currently created in the space, while correcting some of the issues identified during the analysis phase. One of these key issues was the lack of welcoming signage, and the overuse and low quality of the vehicular directional signs.

The space currently has the makings of a southern regional design aesthetic, dominated by a pine over-story and ornamental tree and shrub plantings underneath. One of the most famous examples of this design theme is the golf course at Augusta National.

This landscape theme should be strengthened in the Terminal Approach area through increased ornamental plantings. These plantings should be done in a way to highlight the waterfall feature, and special care should be taken to preserve the view corridor to the Charlie Daniel fountain the Terminal building.

(Top) The Terminal Approach is the primary entrance into the Campus Green.
(Right) Existing Terminal Approach conditions. The area is currently dominated by a naturalistic waterfall feature and a plethora of signage.

THE TERMINAL APPROACH

(Left) The landscape in the Terminal Approach is formed by a pine overstory with ornamental understory plantings. This theme should be reinforced and strengthened through additional plantings. A similar landscape theme successfully defines the Augusta National Golf Club.

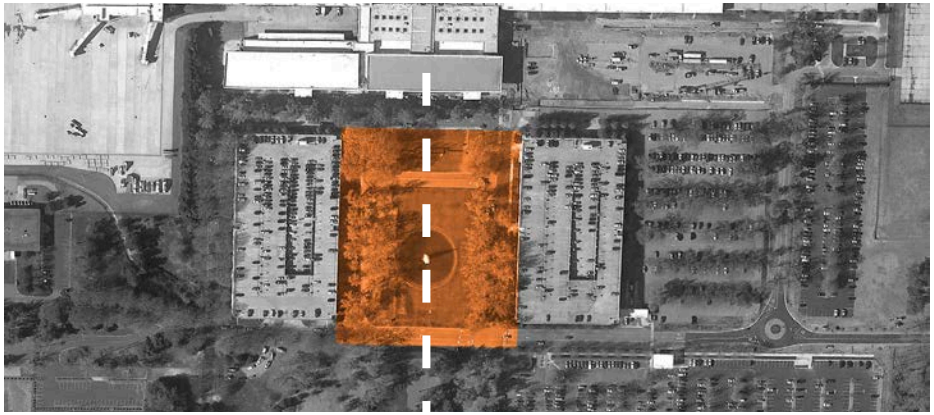
The Terminal Approach was one of the originally designed spaces at GSP to be influenced by a landscape architect. This space should greet visitors to the Terminal Area.

A key issue identified in the site analysis phase of the master plan was the lack of a welcoming sign to the Terminal Area. These types of signs take many forms, but the design team felt that the strongest form may be one of simple letters placed within the landscape. (See opposite page for full design concept).

(Above) The Terminal Approach lacks a welcoming sign. An innovative method of signage to identify a space was created at Los Angeles International Airport. A similar sign type could be successful in the Terminal Approach.

(Above) The design team recommendations for the Terminal Approach include additional ornamental plantings and the placement of a unique welcoming sign feature. Directional signage on the right side of Aviation Parkway should be condensed to one key sign (see full signage study in appendix 6.1). The original design intents of screening vehicles from the view and framing the Charlie Daniel fountain are vital to the space, and will be maintained with the landscape improvements.

THE TERMINAL MALL

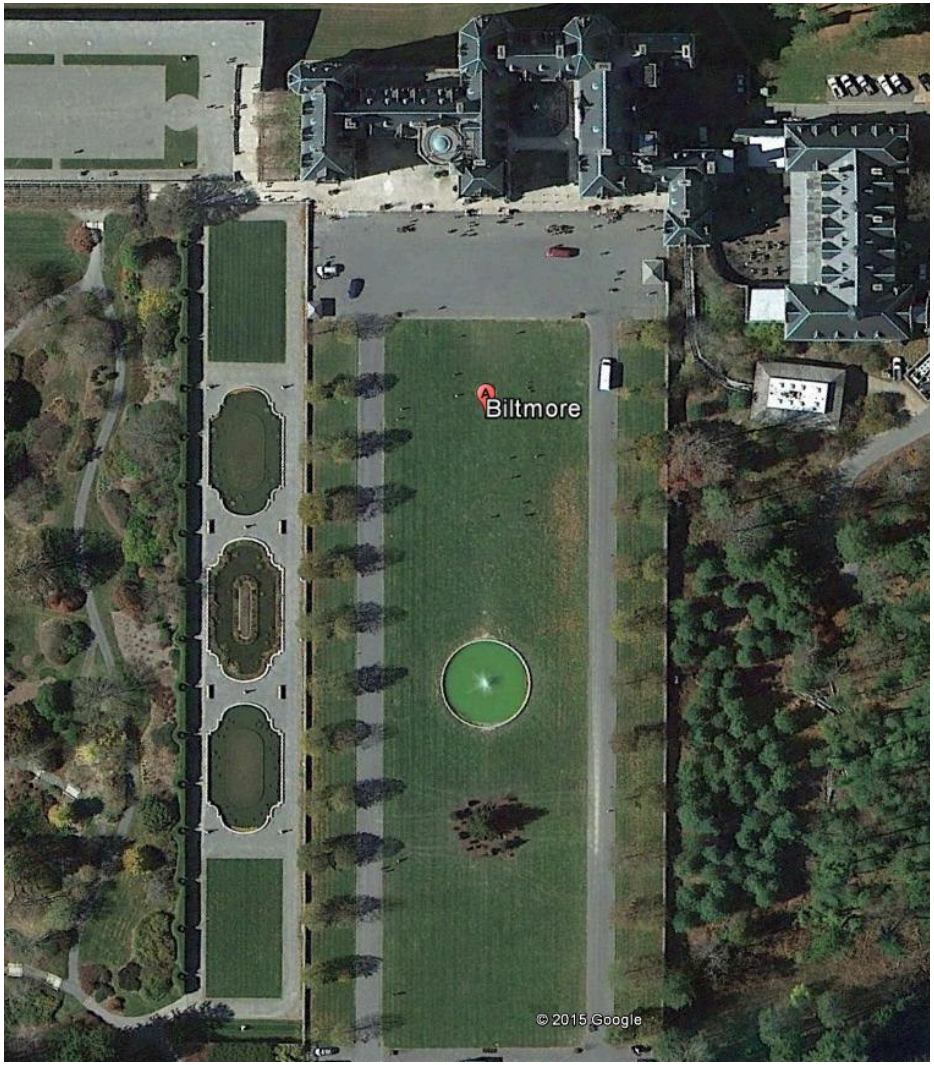


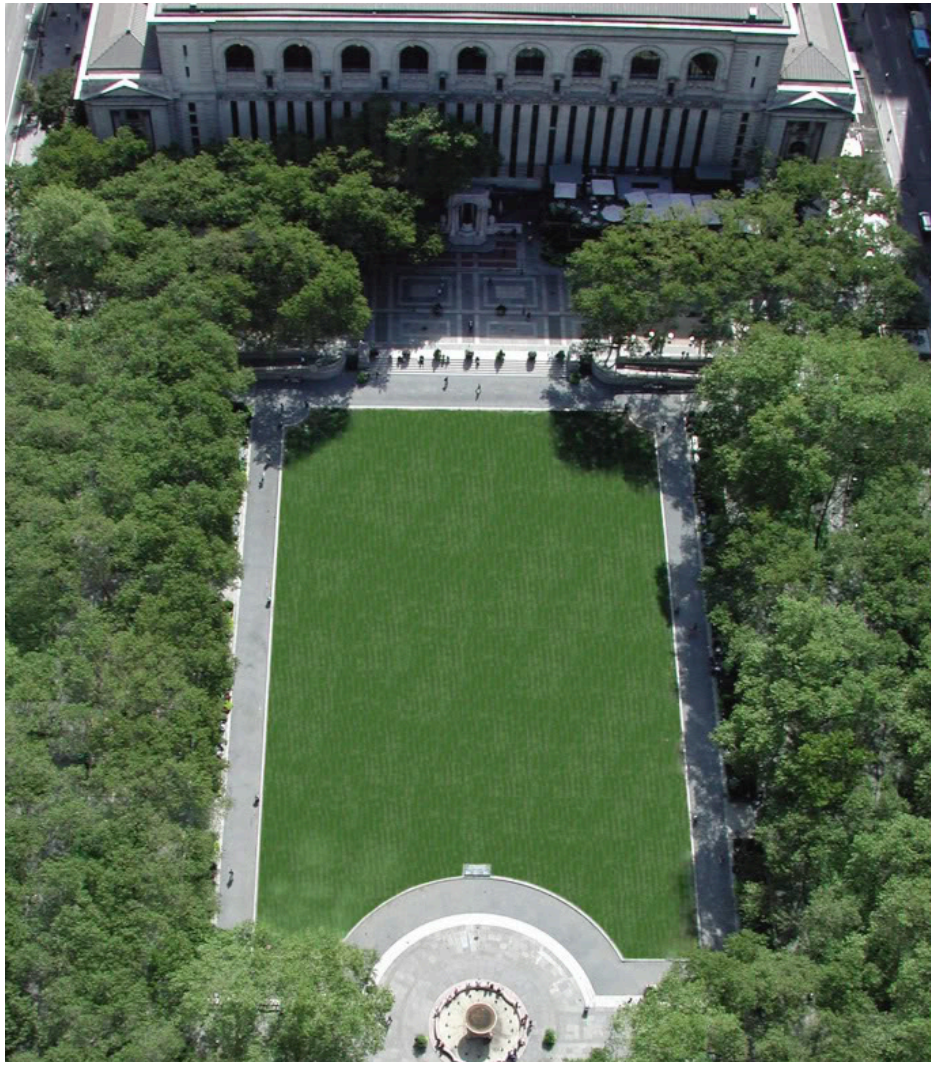
The grand lawn in front of the Terminal at GSP has long been the signature landscape element of the campus. This was strengthened with the addition of the Charlie Daniel fountain in the center of the space. This formal lawn, arranged on an axis, and tree-lined entrance drive makes up the space referred to as the Terminal Mall.

Strong symmetry and directed views define this landscape space. The landscape is dominated by two double rows of American Sweetgum trees. The analysis phase of this project indicated that these defining trees were in various states of decline and need to be replaced. Analysis also revealed a high quality yet seldom used landscape at the Terminal Mall. An incomplete pedestrian network links the spaces together. There is also a disconnect between the Terminal Approach and the Terminal Mall.

Similar spaces include the Grand Lawn at Biltmore and Bryant Park in New York City.

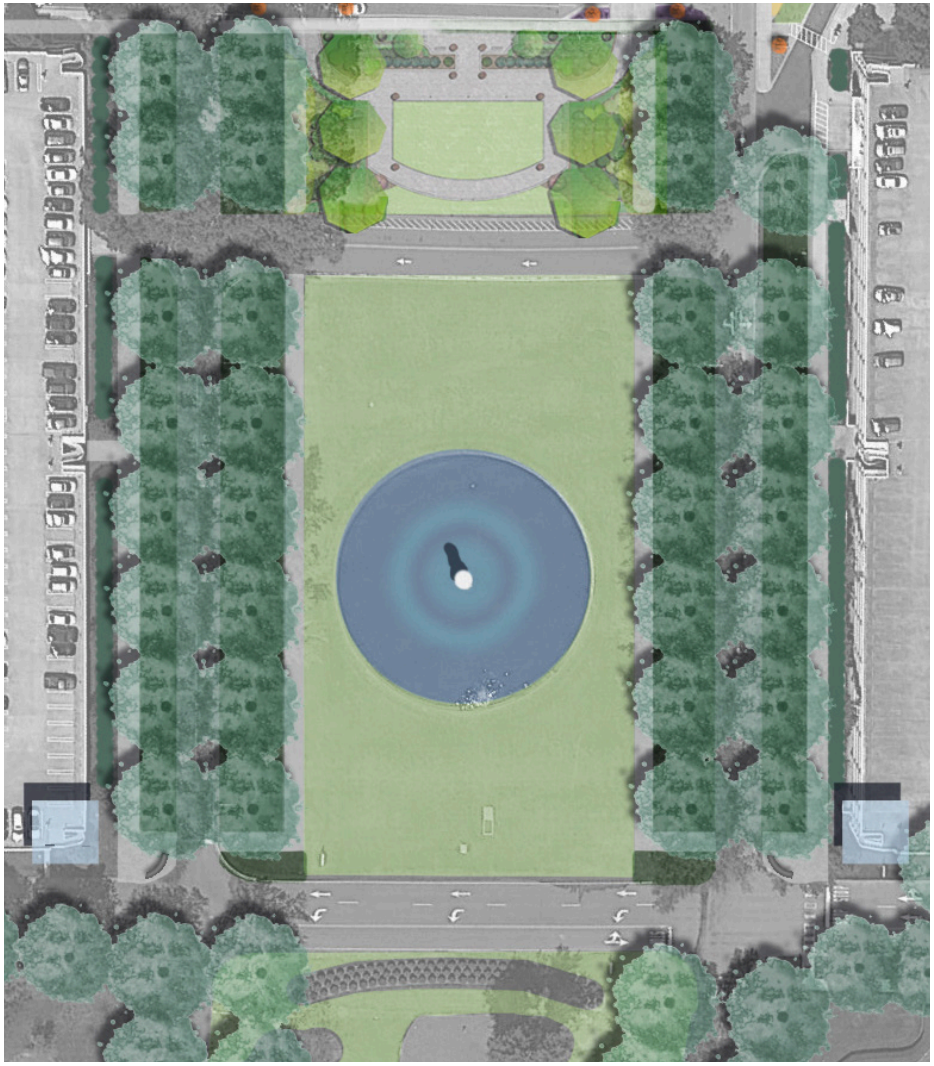
(Top Left) The Terminal Mall is formally arranged on a central axis.
(Above) Existing conditions in the Terminal Mall. Note the lack of a pedestrian connection to the central feature, the Charlie Daniel fountain.





(Above) Similar formal lawns that define spaces. The Biltmore Estate, Asheville, NC (Left), and Bryant Park, New York City (Right).

THE TERMINAL MALL



The Terminal Mall improvements maintain the original design intentions of the space while addressing some of the key issues revealed during the site analysis.

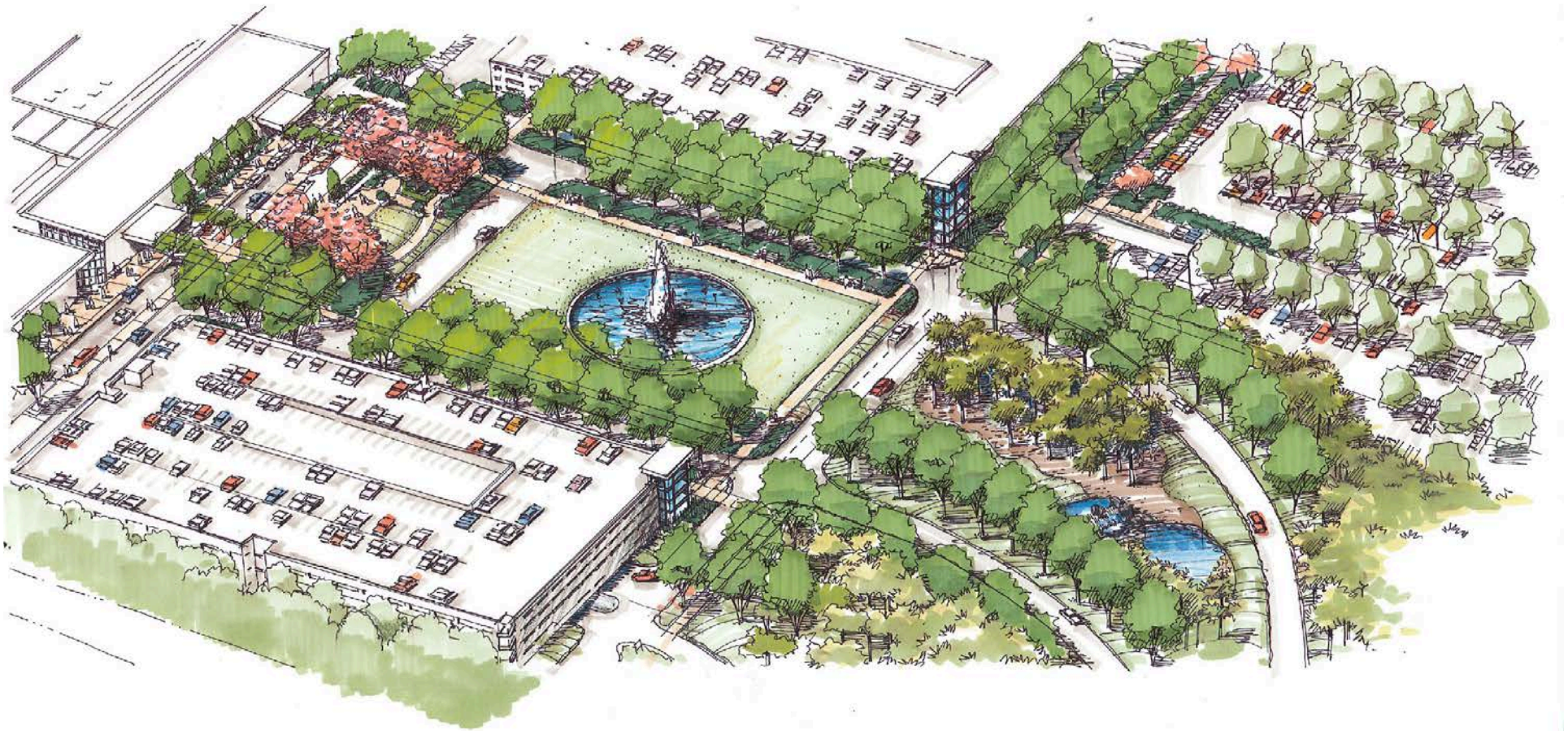
Sidewalks have been added to the fountain side of the entrance drives, pulling visitors into the landscape space and allowing better views to the Charlie Daniel Fountain. The original sidewalks to the Terminal have been widened to accommodate increased visitors and luggage.

Over-mature and declining trees will be replaced with a lower-maintenance species, yet the original tree-lined character will remain. Parking garage A & B corners that frame the space have been surfaced with an architectural element, and corner plazas will provide a welcoming space for pedestrians to relax.

The future landside garden has been slightly modified to accept the new sidewalk network, but serves as a key node to the space. Lighting will be updated and modified to provide a safer connection to the Terminal. Signage will be consolidated and updated as well.

A pedestrian-scaled palette of colorful, seasonal interest plants and warm, natural materials will enrich the space the space, and introduce a detailed level of design and landscape back into the space.

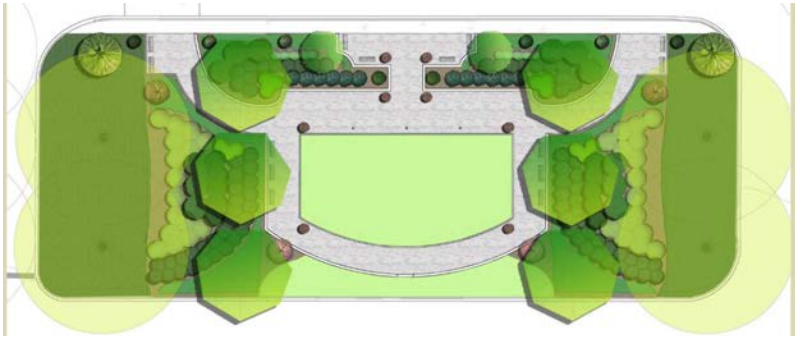
(Top Left) Terminal Mall landscape improvements. Note the completed pedestrian network. New groundcover beds connect the Landside Garden to the Terminal Approach through the space, while creating a healthier environment for the newly-replanted tree allees.



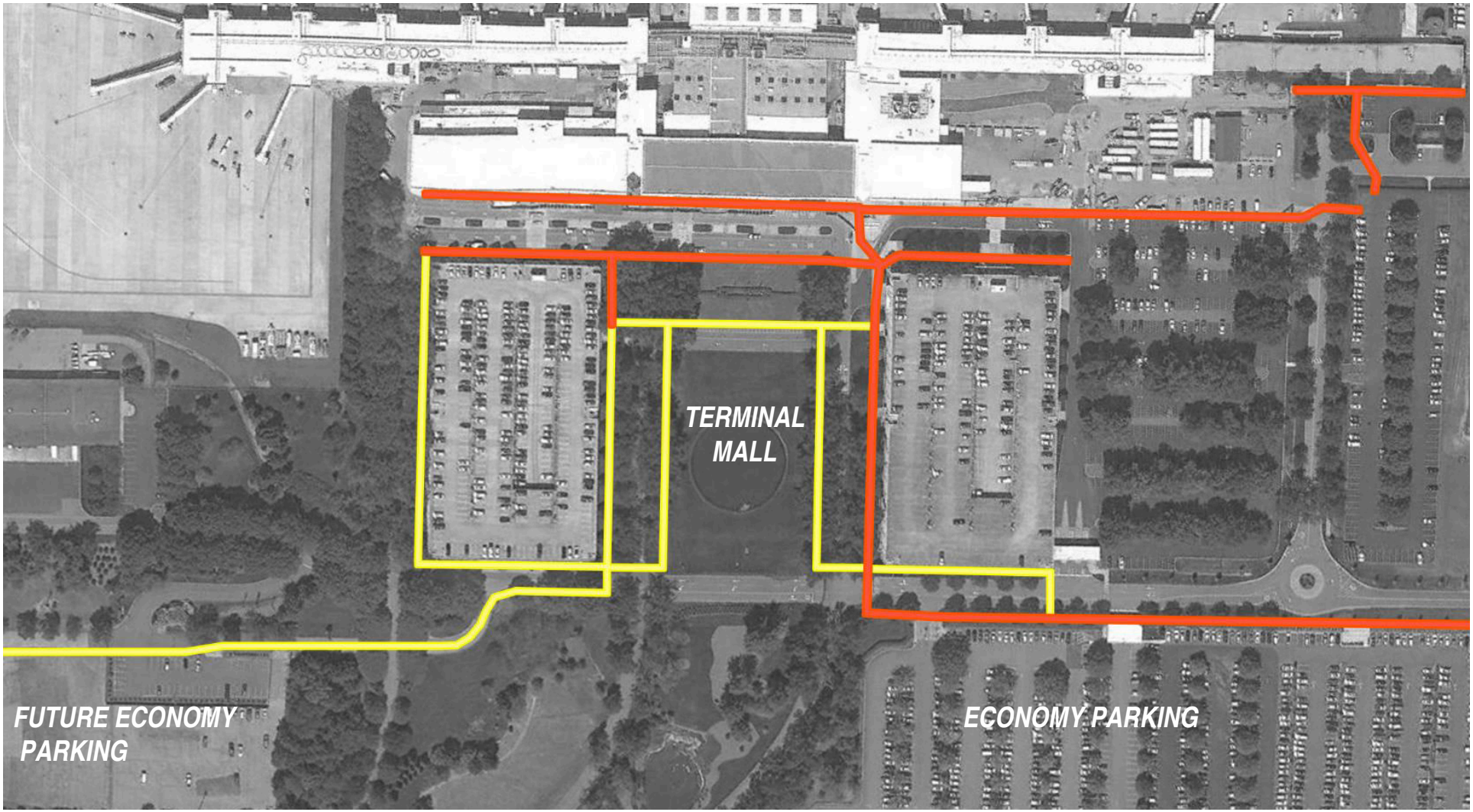
(Above) A bird's-eye perspective view of the Terminal Mall improvements. Note the corner plazas which frame the grand lawn.

THE TERMINAL MALL

(Above) Groundcover beds under trees provide a healthier growing environment for trees and would visually connect the Landside garden and the Terminal Approach.



(Top) A future sidewalk connection would activate the grand lawn space and provide viewing opportunities for the Charlie Daniel fountain.
(Above) Proposed Landside Garden design (by Innocenti & Webel).



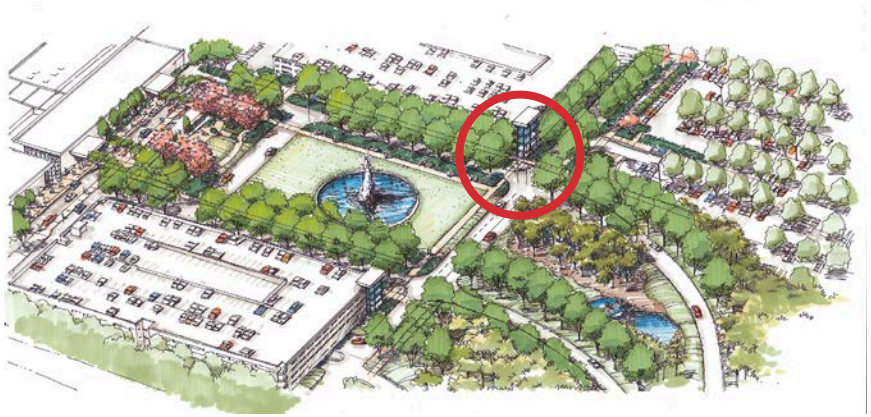
(Above) The sidewalk network will be completed as part of the Terminal Mall Improvements. Existing walks are shown in RED, while proposed sidewalks are shown in YELLOW..

THE TERMINAL MALL

One of the spaces the design team explored was the old rental car facility. The design team recommends that this space is the most advantageous space to expand long-term parking, and could be connected to the Terminal using the existing service drive.

One of the themes to come from this study was the recommendation of the formation of a pedestrian material palette, that would be used wherever important pedestrian connections are made. This would include the use of natural stone and groupings of columnar trees.

(Above) The old rental car location is a prime space for long-term parking expansion. This area should be landscaped with a similar style as the existing long-term parking. Preliminary studies indicate that this location could yield approximately 410 spaces. Connection to the Terminal could utilize the existing service corridor, which could be lined with unique columnar trees and stone material. This palette of materials should be repeated wherever there are significant pedestrian features.

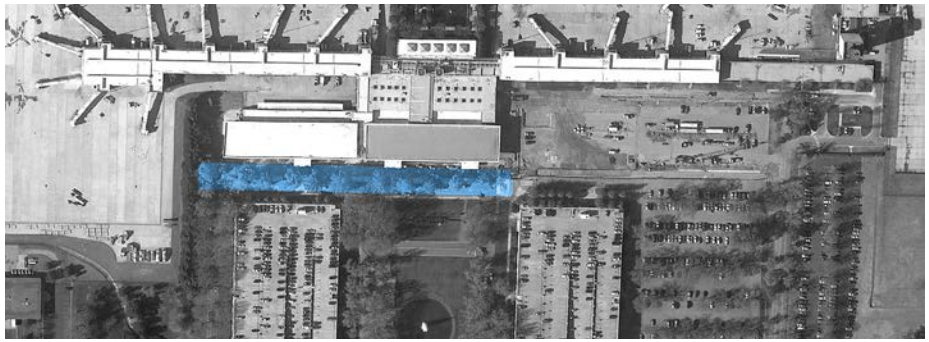


The garage corners form an important gateway to the Terminal Mall. Currently, they are screened by landscaping and feel detached from the space. A glass enclosure treatment, similar to the approach used at the Terminal, would open the space and help to define the corners of the Terminal Mall. Other options could be the use of artistic banners or screening vegetation.

Enhanced pedestrian spaces at these corners could use similar materials from the pedestrian landscape palette, and provide gathering and informational signage opportunities.

(Top Left) The parking garage corners form key nodes within the Terminal Mall. (Above) Improvements to the parking garage corners include the addition of a plaza space, which would feature natural stone seatwalls and detailed plantings. An architectural element on the parking garage would anchor the space.
(Right) Options for garage corner treatments could include glass enclosures, advertising banners, or a green screen.

THE TERMINAL DROP-OFF

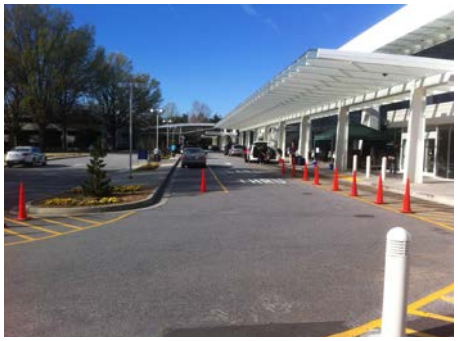


The Terminal Drop-Off is the most urban of all of the spaces at GSP. It is dominated by hardscape materials, primarily concrete and asphalt. This space was recently modified as part of the Terminal Improvement Project.

It important to maintain security and traffic flow through this area. Pedestrian safety is also of prime importance in this area, as there are many pedestrian-vehicle conflict zones in the current configuration.

GSP has used some traffic calming methods in this area, such as street table crossings, but more should be done to minimize pedestrian safety risks. Landscaping should also be added to this area to help soften the starkness of it and blend it into the rest of the GSP Campus.

The design team proposes the use of planted curb extensions along the drop off loop to help reduce vehicular/pedestrian conflict zones, shortening pedestrian crossing distances, and effectively managing traffic flow.



(Top Left) The Terminal Drop-off is the primary pedestrian space at GSP.
(Above) Existing conditions at the Terminal Drop-Off. Compared to the rest of campus, the drop-off is stark, with minimal landscape and an overabundance of pavement.

These planted curb extensions also allow for plantings of columnar trees that would soften the Terminal facade without blocking views of the building for security purposes.

Stone pavers are also recommended for this area to help draw in the established GSP landscape theme of natural stone in the landscape. This paver band will be inset into the existing concrete sidewalk and will help to define the pedestrian zone.

Lighting and furnishings should also be upgraded in this area to meet the high quality standards set for the Campus Green. Finally, the haphazard planter cutouts in the current median will be formalized through the use of vertical planters placed at regular intervals.

(Top Left) An existing street table pedestrian crossing. An additional crossing is proposed. (Top Right) The existing drop-off is stark compared to the adjacent campus landscapes. Note the long crossing distance for pedestrians, creating safety risks.

THE TERMINAL DROP-OFF

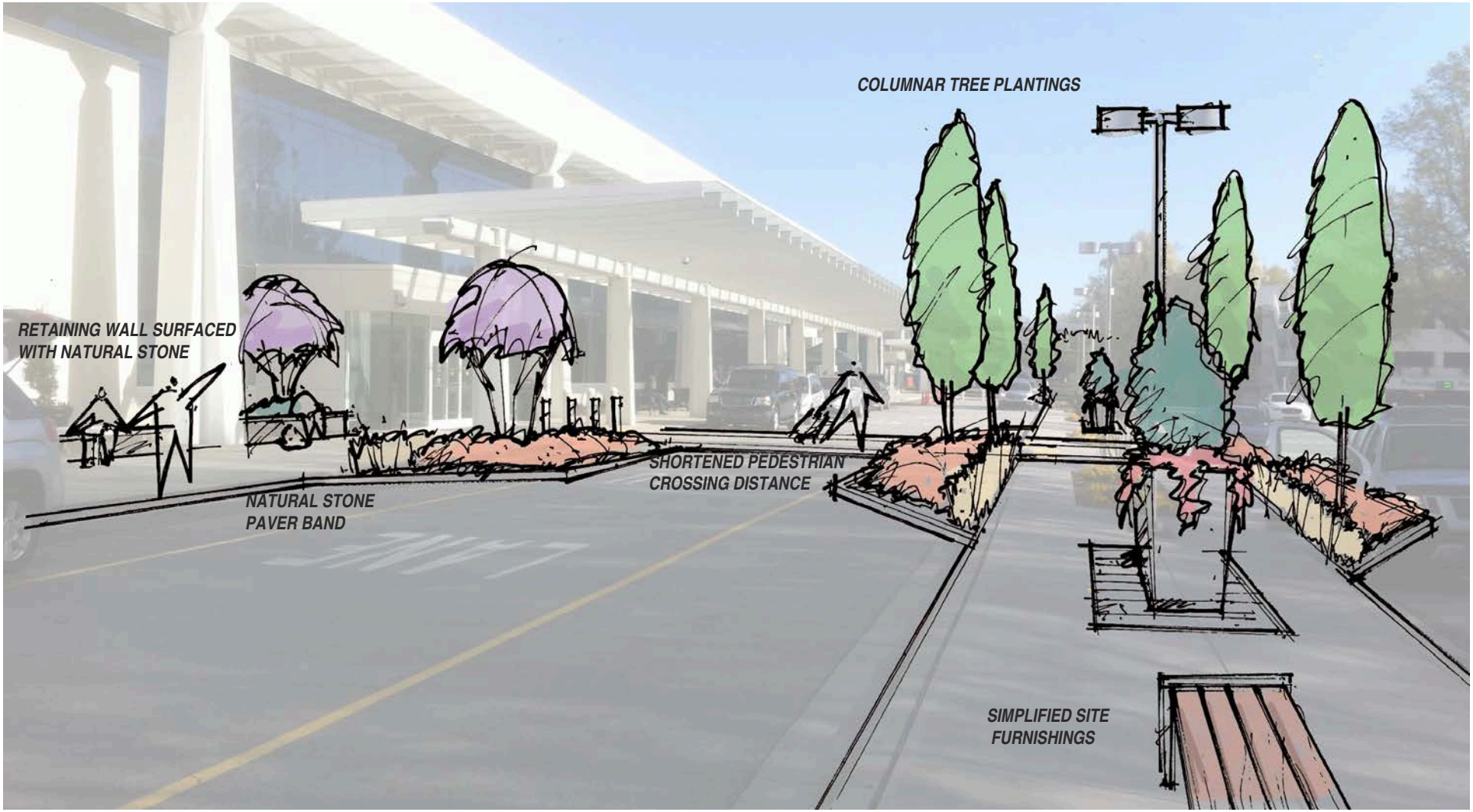
(Above) Curb extensions have several benefits in a location such as the GSP Terminal Drop Off. Not only do they provide additional landscape space, thus softening the Terminal facade, they also reduce pedestrian crossing distances and improve safety in the space.

Curb extensions help to manage traffic flow through the Terminal Drop-Off area. These curb extensions will be planted with a columnar tree, reflecting the other similar pedestrian plantings proposed, and will work with the pavers, lights, and furnishings to enhance the visual appeal of this area.

By planting trees in these curb extensions, GSP will be able to soften the appearance of the Terminal Building and help blend it into the rest of the campus landscape without removing valuable sidewalk space. Curb extensions places adjacent to both existing and proposed street table crossings will help to calm traffic flow through the space and provide pedestrians with a safe crossing from the parking garages to the Terminal.

A seat wall that will retain plantings along the Terminal building is proposed as part of the improvements in this area. This will provide enhanced security to the Terminal from vehicular attacks and provide another opportunity to include a natural stone material into the landscape. The inclusion of a seat wall will also provide seating space for passengers awaiting a shuttle or a pick-up.

By including additional detailed plantings in this space, simplifying the furnishings palette, and adding natural stone elements, the improvements to this area will help the Terminal Drop-Off belong to the rest of the campus.



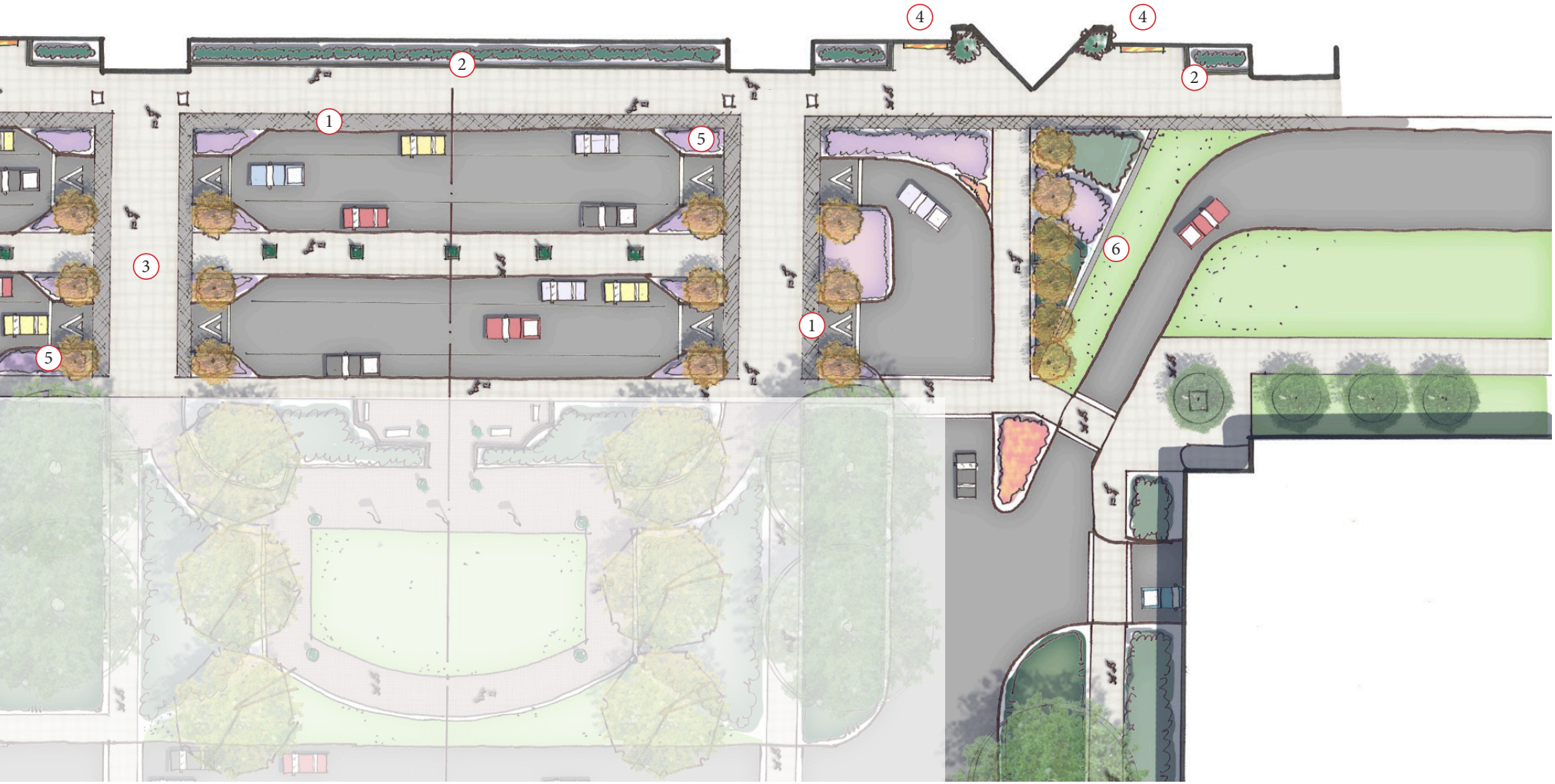
(Above) A cross-section of the Terminal Drop-Off improvements. Note the addition of appropriately-scaled plant material, the simplification of site furnishings, and the shortened pedestrian crossing distance.

THE TERMINAL DROP-OFF

LEGEND:

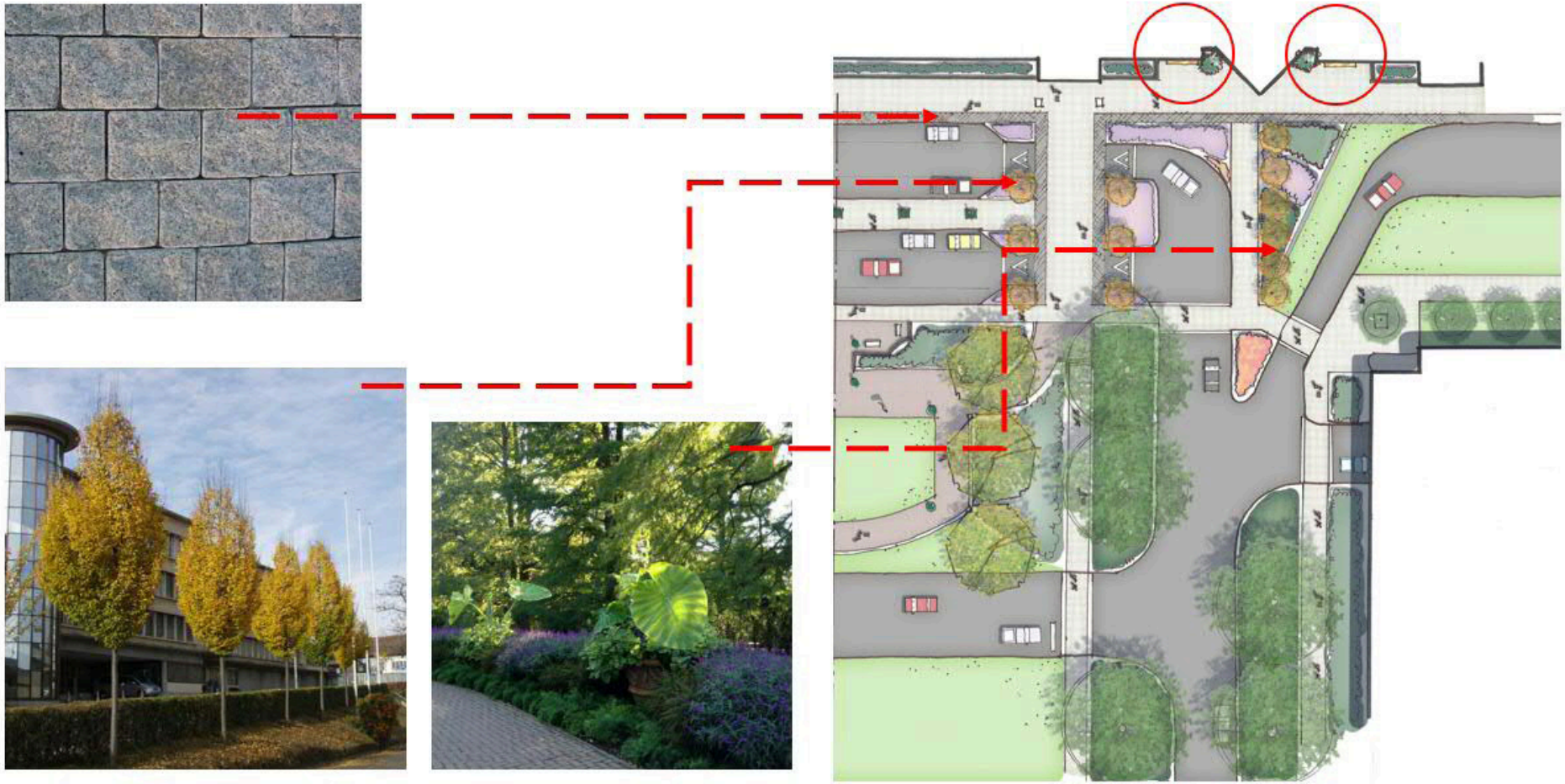
1. Granite Paver band delineates pedestrian space.
2. Seat wall along front of building with increased plantings.
3. Additional raised street crossing. Match existing crossings.
4. Artistic/advertising banner on blank wall.
5. Planted curb extensions delineate pedestrian and vehicular spaces. Plantings to be detailed.
6. Pocket park takes the place of a large concrete expanse.

(Below) Improvements to the Terminal Drop-off include the addition of natural stone pavers, pedestrian-detail level plantings, artistic banners, upgraded lighting, and more connections to adjacent spaces. Every opportunity to add green space has been utilized, including the creation of a pocket park.



THE TERMINAL DROP-OFF

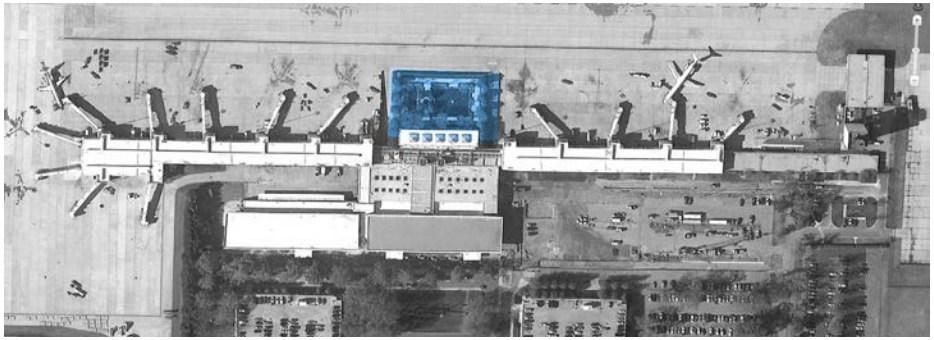
(Below) Artistic banners could be used to cover the large blank walls on the Terminal building. See detail at right.



(Above) Material selections at the Terminal Drop-Off should be at a high level of quality, as this is the space where visitors will predominately view. The design team suggest a common palette of hardscape and plant materials be used on the GSP campus wherever there is a pedestrian connection. This palette will help to reinforce visitors and will work with lighting and signage to complete the pedestrian experience at GSP International Airport.

(Above) Terminal Drop-off pocket park. Adding plantings to the Terminal Drop-off area will soften the space and provide four-season interest, as well as serving as a focal point on the entrance drive. Banners on the wall break up the expansive concrete, and could be used to advertise GSP events or headlines.

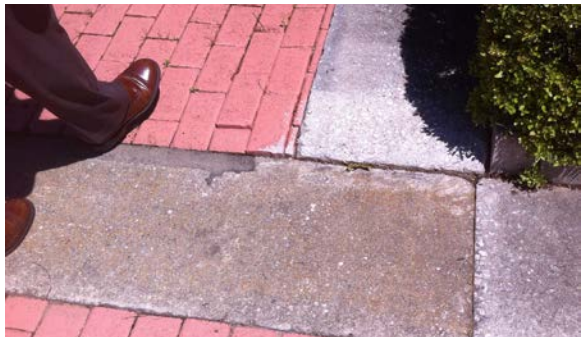
THE AIRSIDE GARDEN



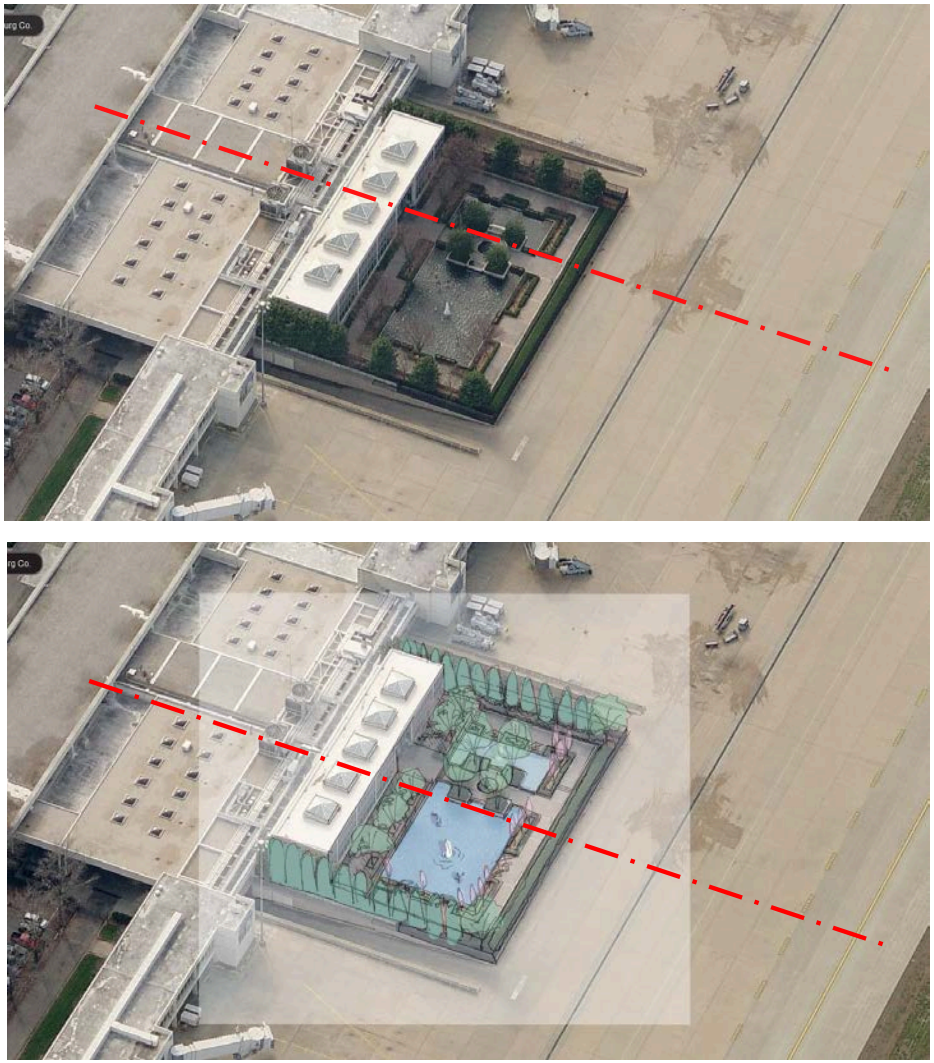
The Airside Garden is the landscape feature that sets GSP apart from all other commercial airports. This space, originally created by one of the airport's founders, Roger Milliken, to be a prime spot for relaxing and viewing airplanes taking off and landing. His original idea occurred while sitting in a beer garden in Germany. The use of prime aircraft space for a garden was unique, and Milliken faced criticism at first, but the Airside Garden came to be one of the defining features of the airport. This original garden was redesigned and enlarged in 1989.

The Garden today is visibly dated. Plants are mature or overmature, and the hardscape elements are showing wear. This area is such a prime spot on the GSP campus that it deserves a high level of treatment and a high attention to detail.

The Airside Garden has up until this point been accessible to the general public, but with the current proposed Terminal renovations, the Airside Garden will be a post-security feature that will be used by ticketed passengers only.



(Top Left) The Airside Garden is unique among airports to GSP.
(Above) Analysis revealed a very dated and worn Airside Garden. Much of the vegetation is overgrown and declining, and the hardscape materials are showing wear and tear.



(Top) The existing Airside Garden is based around an axis that will no longer exist when the Terminal updates are completed. (Above) The new axis shifts to the middle of the building, thus presenting the design team with the opportunity to reimagine the space.

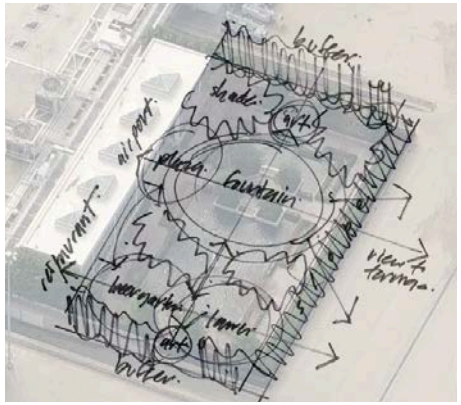
The existing garden design is based on an axis that tied into the former Terminal interior. With the redesign of the Terminal Building, set to be completed in 2016, the entrance point to the Airside Garden has shifted to the center of the space (see the diagram at left for before and after configuration).

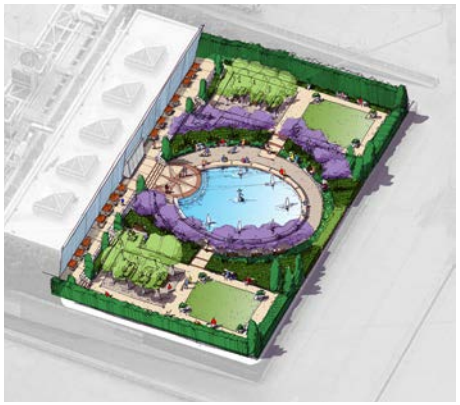
With this information, along with the dated materials in the current Garden, the design team took the approach of re-imagining the space instead of just refurbishing a no longer relevant design.

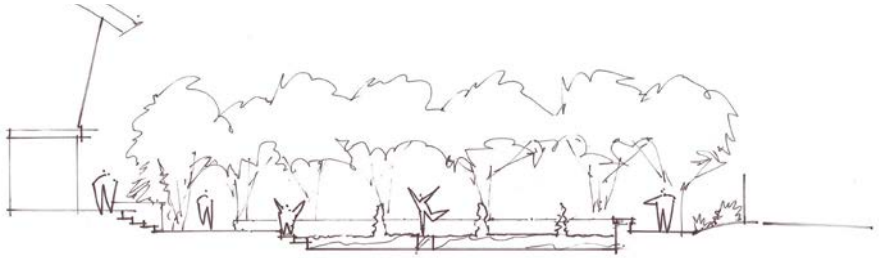
One of the realizations upon a detailed design was the lack of spaces within the design. The team heard of events that have happened in this space in the past and the challenges they faced. The team wanted to make the space usable in the way that it was originally intended.

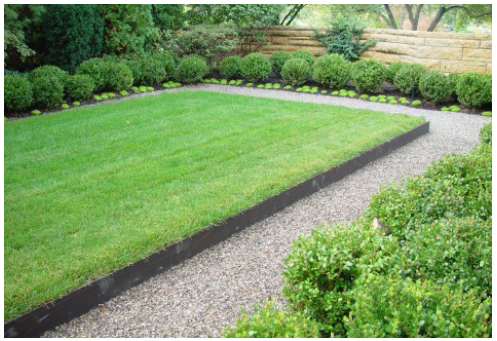
This lead to the design team to examine the Airside Garden with unique gathering and reflection spaces, providing an upgrade in materials and character to the space, while maintaining much of the original design. The proposed design for the Airside Garden mixes fountains, art, plants, and hardscape to create a memorable space that will reflect on the historic nature of the garden while adapting to the changing nature of GSP.

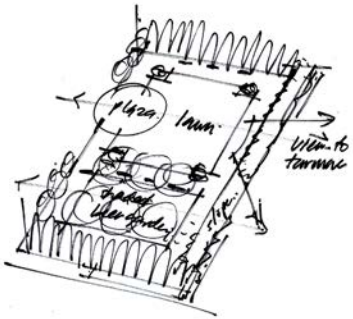
THE AIRSIDE GARDEN











When the design team began looking at the spaces that could be created in the Airside Garden, it became evident that the current design does not allow for the uses that the garden was originally intended to have.

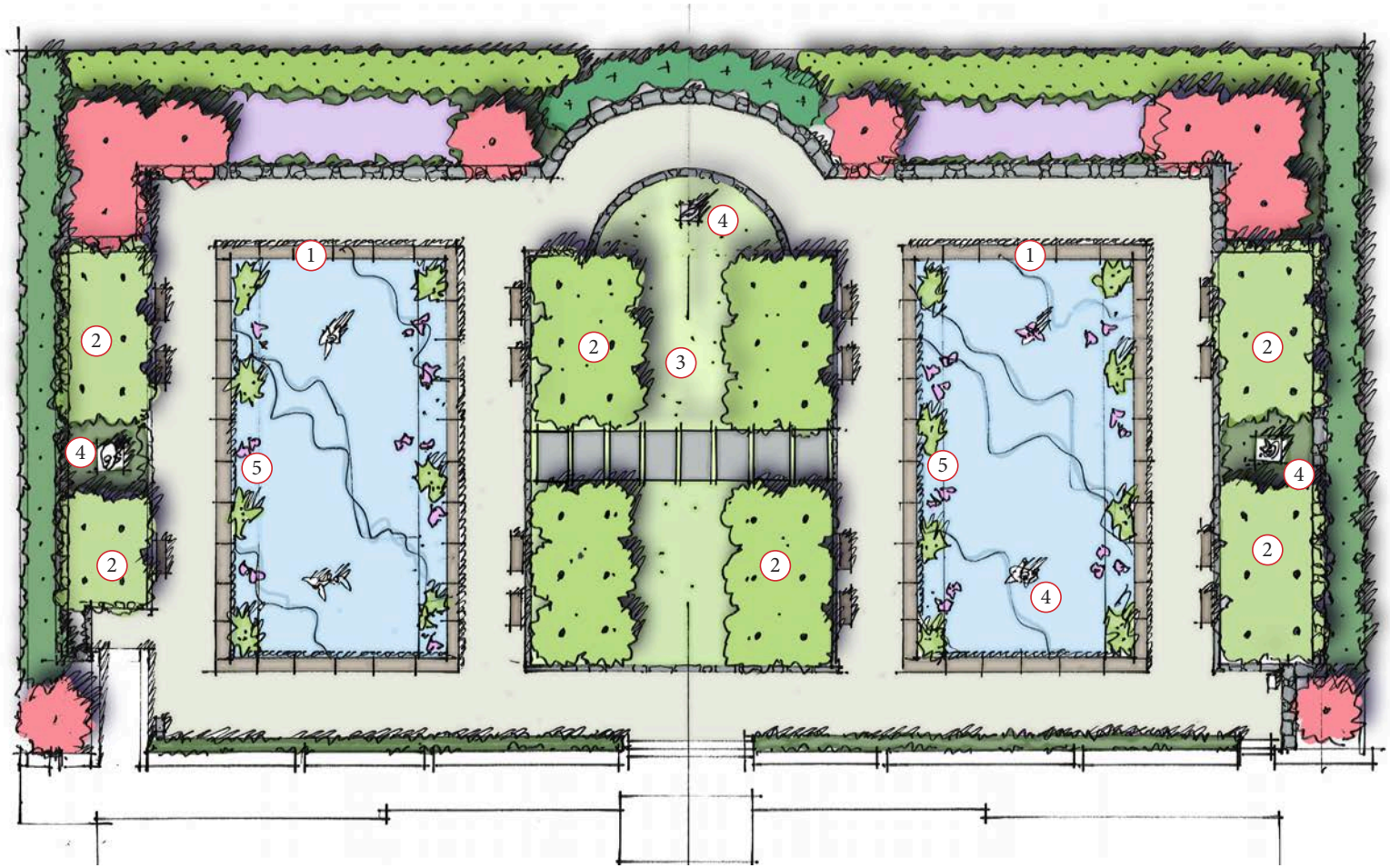
The conceptual plan for the Airside Garden (at right) shows a refresh and reimagining of the current design to open the space and create a usable central gathering lawn. Upon entering the space on the newly centered axis, the lawn, flanked by specimen trees, would be the foreground of a view out to the airfield. Symmetrical fountains, to the left and right of the lawn, provide quiet reflection spaces for passengers to enjoy.

Art, long associated with the garden, would be re-used to terminate cross axes within the site, while the outer path could provide space for passengers and pets to stretch after a long flight.

(Left) The design team explored creative ways to reuse the space and create outdoor rooms. (Above) Originally conceived in a beergarden, outdoor gathering space was a key factor driving the design.

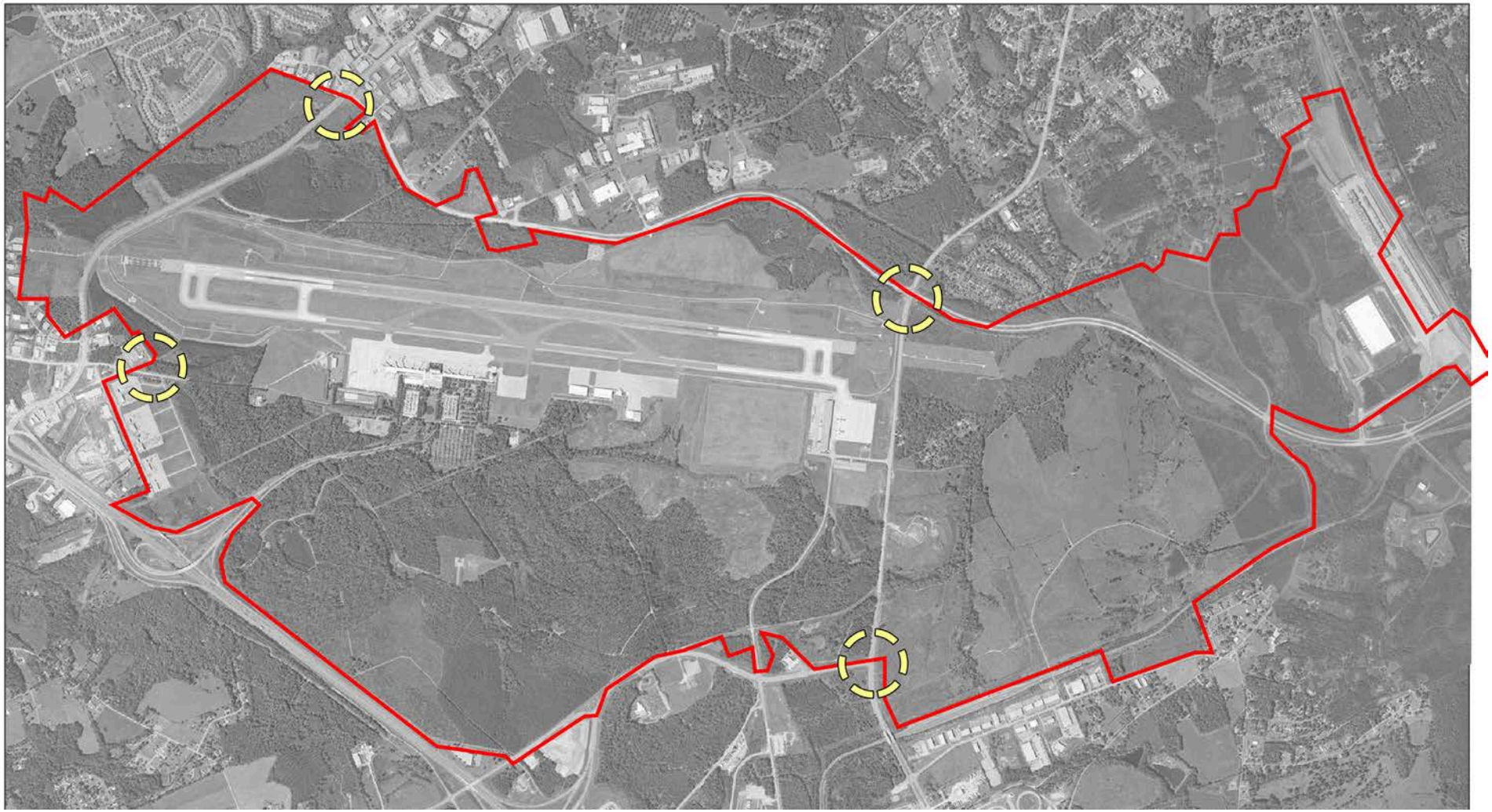
LEGEND:

1. Cut stone seat wall cap. Retains fountain edge.
2. Groves of specimen trees help to frame the space and provide shade.
3. Formal lawn space provides gathering space.
4. Sculpture is still used throughout the garden.
5. Pond shelf plantings add special detail to the garden.



(Above) Proposed improvements to the Airside Garden. Similar plants and materials would connect this space to the rest of the Campus Green.

THE GATEWAYS



(Above) Gateway corners at GSP International Airport mark key entrances into the campus property, and should be marked with a monumental-type identification sign and associated landscaping.

The four key corners identified in the diagram at left indicate key Gateway locations that could have identification signs added that would define these intersections as gateways to the GSP Campus.

The signs would have a wall-like form and would include a combination of natural stone materials and more modern materials to reflect the common themes of the GSP landscape. Landscape improvements around the signs would stretch across the intersections and work with the proposed highway improvements to form an identifiable gateway into the GSP campus.

This signage approach would increase the visibility and help spread the brand of GSP, and would help to bring a refined landscape treatment to the far corners of the comprehensive overall campus.

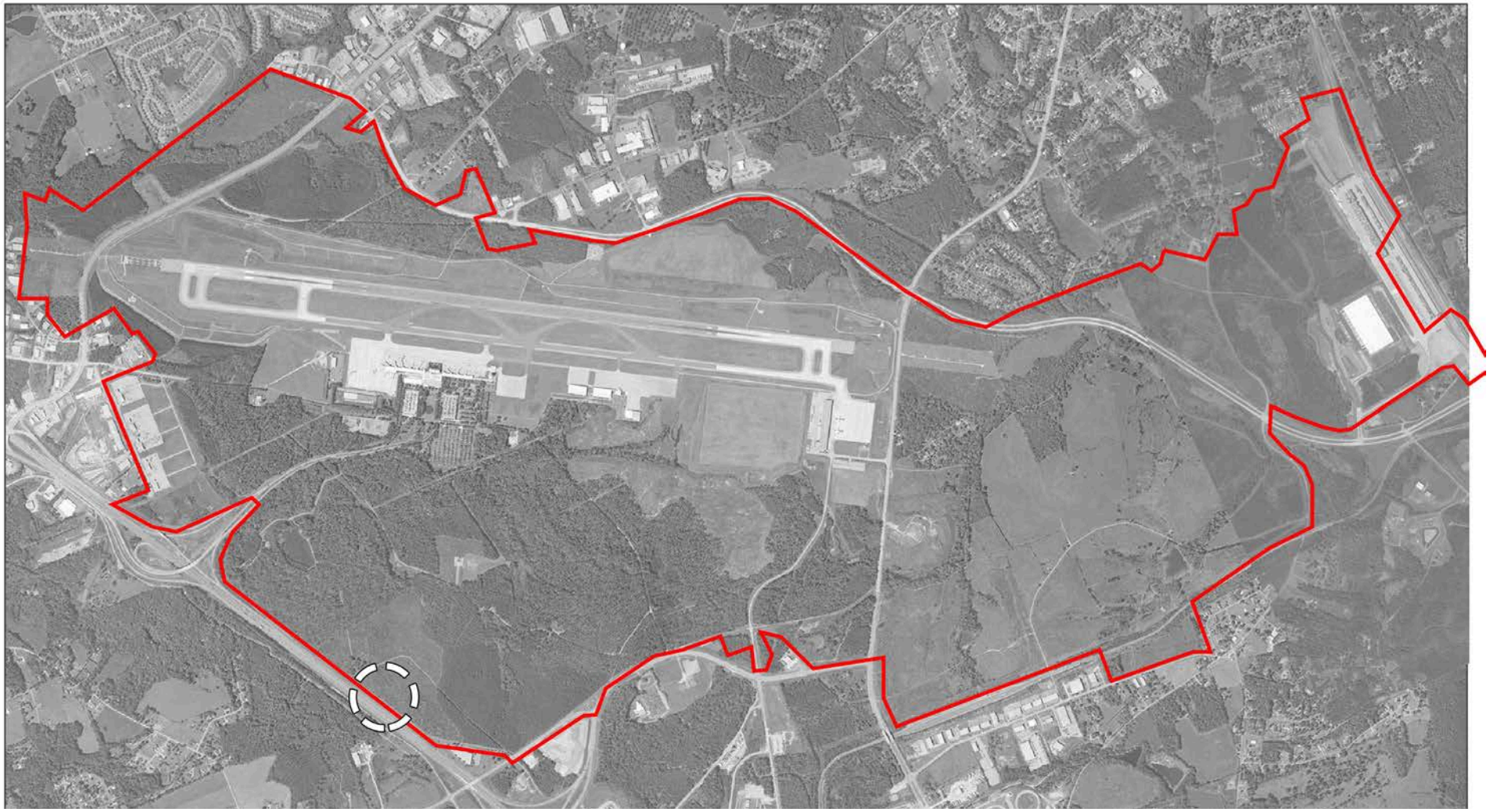
Future development tracts would also benefit from the Gateway signs, and the landscapes at these signs would inform development parcel landscape designs.

(Top Right) A sample Gateway sign at the corner of SC-80 and Hwy 101. The use of natural and modern materials relates to the Terminal area of GSP.
(Above) An elevation of a sample Gateway Sign from the preliminary signage study.

THE GATEWAYS

(Above) Gateway corner at GSP. The Gateway sign combined with the road improvements announce entrance into the GSP International campus.

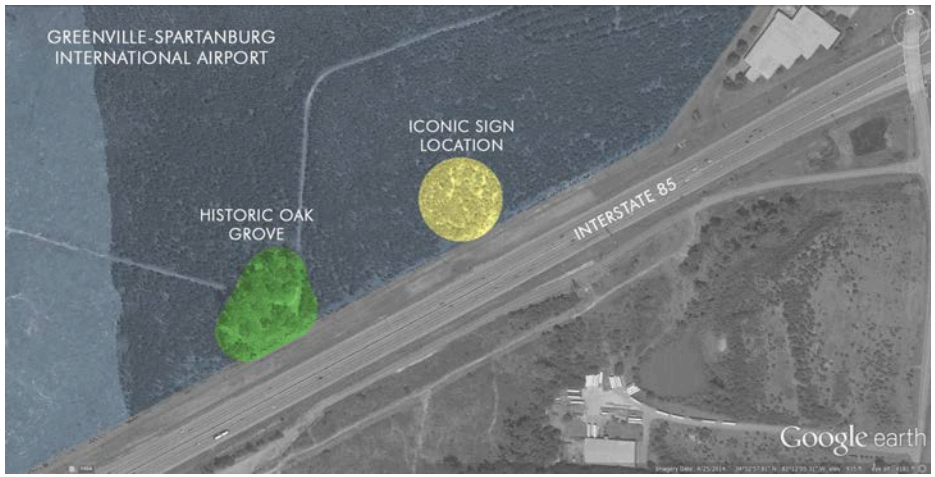
THE ICONIC SIGN PARK



(Above) Placement of the Iconic Sign and Park will allow equal visibility from either I-85 Northbound or Southbound. It also sits on the same axis as the Terminal Mall.

The Iconic Sign and associated landscaping would form a signature park that would help give GSP a more regional presence along Interstate 85. The sign could take a form similar to the one shown below (ex. BMW sign shown for scale) Form studies were part of the landscape master planning process, and this example form was selected based on the forward thinking nature of GSP. Modern materials would be representative of GSP's commitment to the future and technology, while including a signature landscape with the sign would speak to the GSP landscape.

(Top Right) The Iconic Sign would be set in a small park space, that would utilize existing oaks as a feature within the landscape.
(Above) Elevation of the proposed Iconic sign and placement within the landscape.



The sign uses the existing grove of historic oak trees as a backdrop and the basis for landscape improvements that would surround the sign. All of this would be included in future development tract "G", which would serve as the retail and hospitality core of the campus. By retaining the existing grove and using it as the backdrop for the modern iconic sign, a memorable and signature landscape can be created to effectively brand GSP.

THE ICONIC SIGN PARK

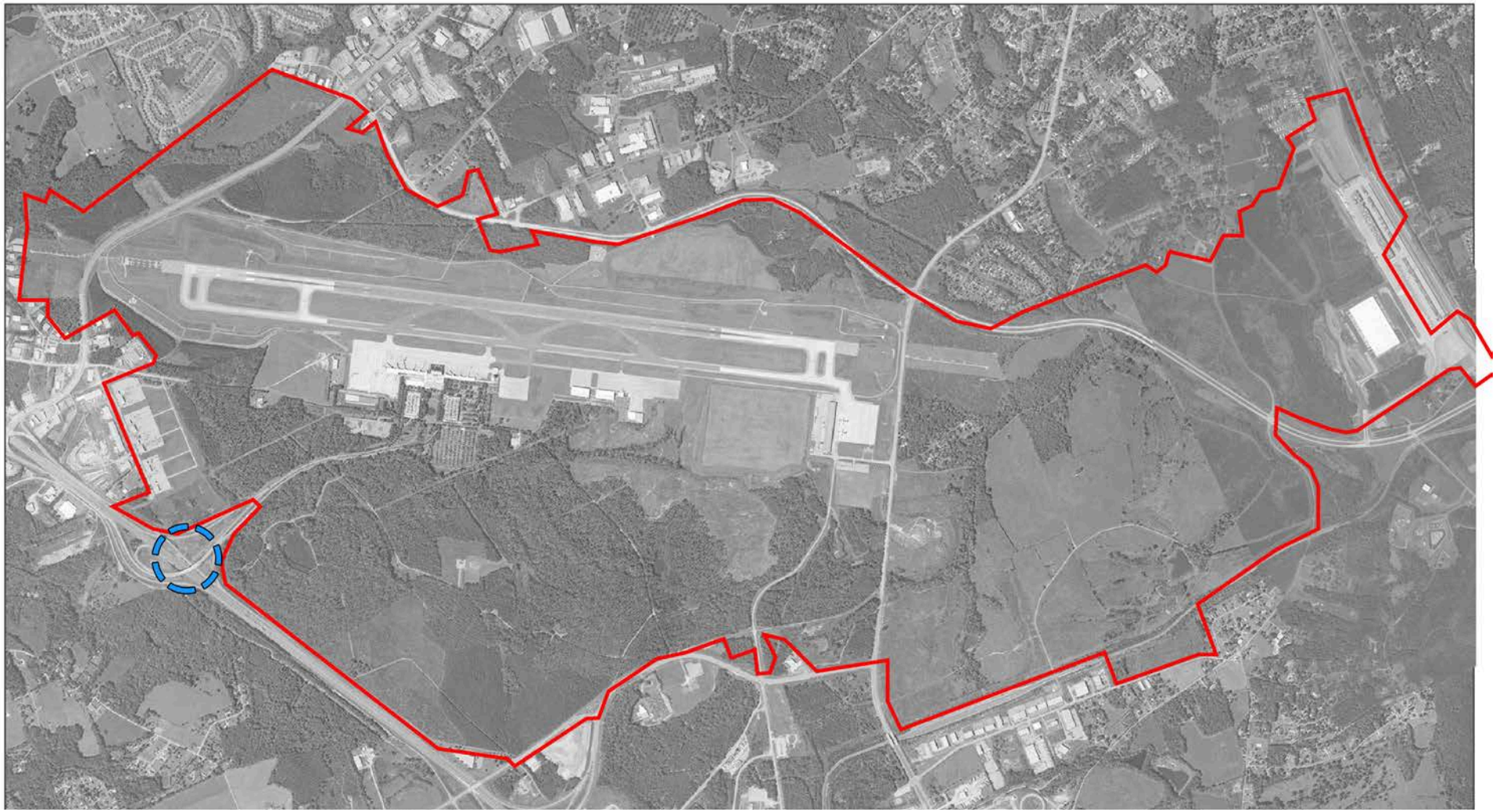
(Above) The Iconic Sign and signature park. Note the visibility from Interstate 85 and the existing grove of historic oaks that are retained, reflecting GSP's commitment to the past, present, and future.

By placing the Iconic Sign within a signature park, different view corridors are created and a signature space is created within GSP 360 Development Tract G.

Future development in this area will be retail / hospitality-type development, and this park space will be a key amenity to the space, while serving to brand all of the GSP campus.

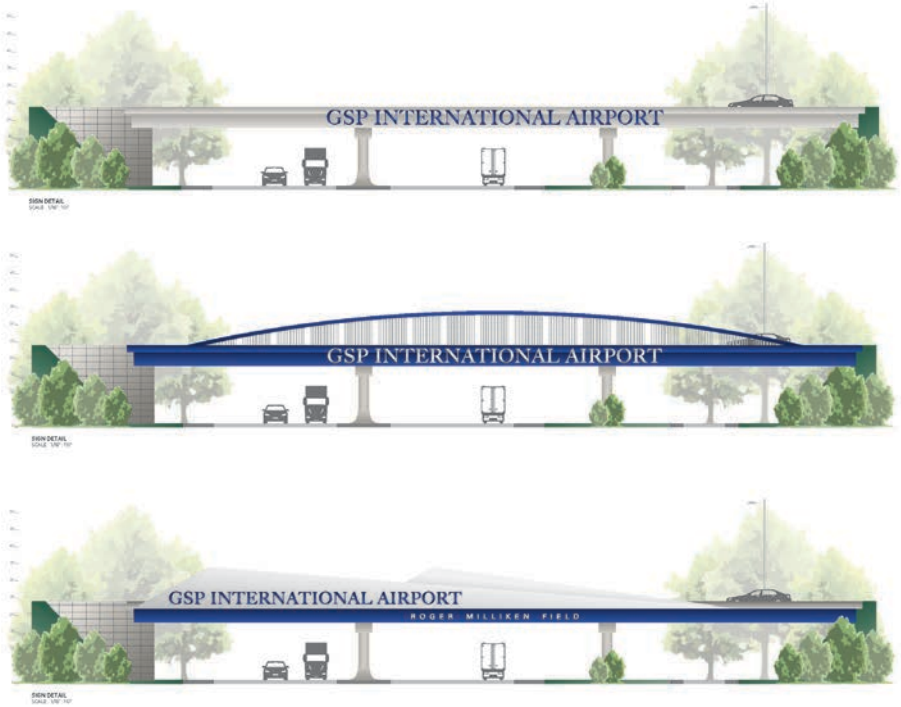
Similar large scale developments, such as BMW and CUICAR use large iconic signs alongside the interstate to brand themselves.

THE BRIDGE SIGNAGE

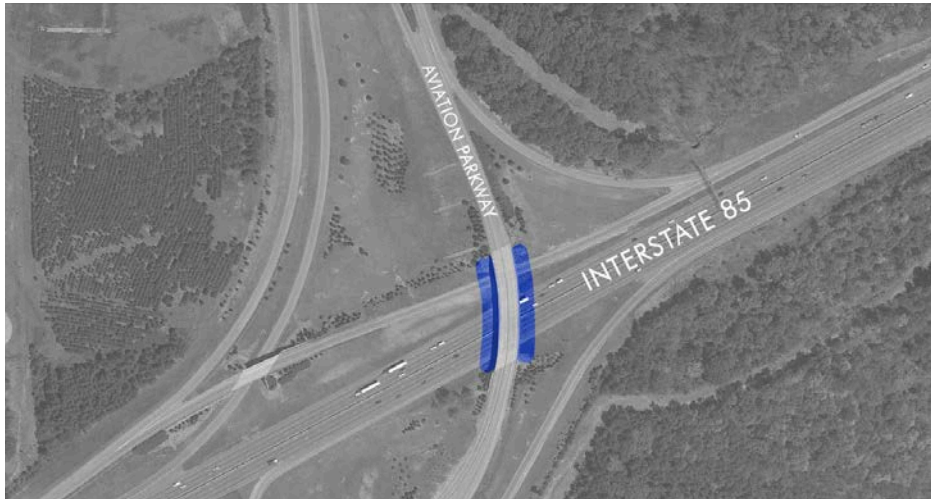


(Above) A welcoming entrance sign, placed on the existing Aviation Parkway / I-85 overpass bridge, would be a relatively simple way to reach a broad audience.

The Interstate 85 overpass signage gives GSP the opportunity to provide a high-visibility welcome to visitors coming from the interstate. This sign opportunity would utilize the existing overpass bridge to provide identification and landscape improvements on both sides of the overpass as shown in the diagram on the right.
Similar treatments to interstate overpasses have been utilized in other states. Based on SCDOT traffic count data, this type of sign would reach over 93,000 people per day.



(Above) The design team created several different concepts which were reviewed with the Task Force and SCDOT.



(Top) Location of the bridge sign. Daily traffic on I-85 would see the sign from both directions.
(Above) A similar sign location at the Pro Football Hall of Fame in Canton, Ohio.

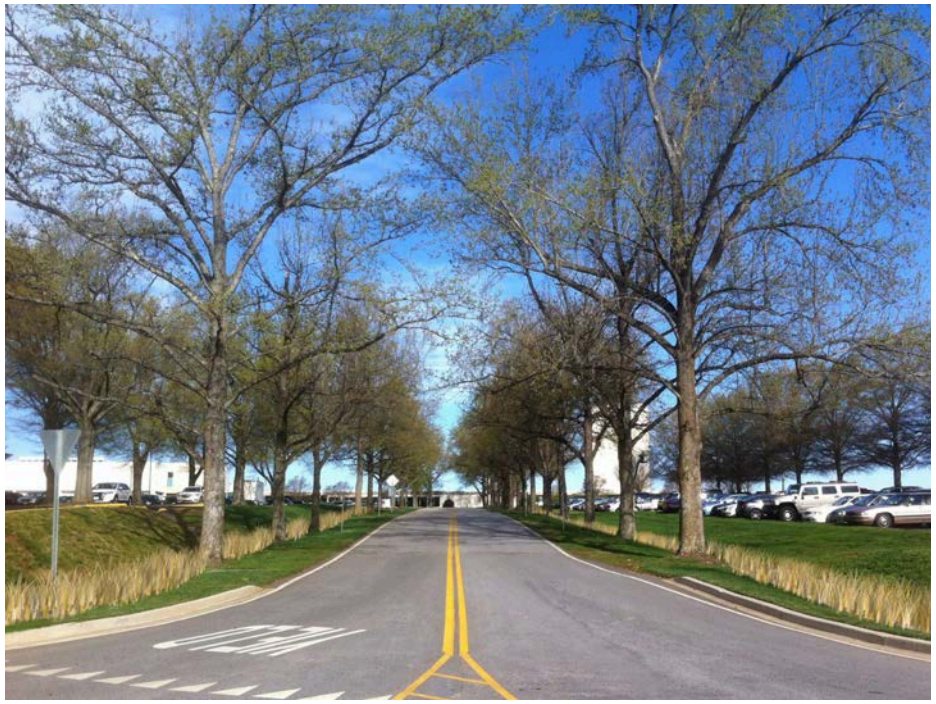
THE BRIDGE SIGNAGE

(Top) Conceptual rendering of the I-85 bridge sign headed northbound from Greenville.
(Bottom) Conceptual rendering of the I-85 bridge sign headed southbound from Spartanburg.

(Above) Conceptual elevation view of bridge sign selected by the Task Force.

SUSTAINABILITY

GSP has the opportunity to lead the region in sustainable design. Small measures can make a large difference in the overall sustainability of a site. Examples of this could include switching out the concrete flumes along Administrative Drive for vegetated swales, or the restoration of Dillard Creek along Aviation Parkway.
Other opportunities exist to partner with several groups working to promote sustainable design. Many of these opportunities could be accomplished at a campus as large as GSP, allowing yet another way for the airport to promote themselves to the community, and celebrate the larger sustainable campus at a more visual, detailed scale.



(Above) Existing concrete flumes are damaged and in need of replacement. More sustainable options are available. (Top Right) A conceptual rendering of vegetated swales replacing the concrete flumes. This would serve as a type of bioswale, treating stormwater before it reached streams and wetlands. (Bottom right) A similar feature installed at Converse College in Spartanburg.

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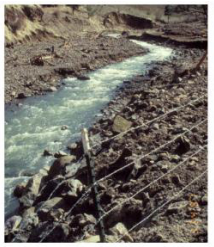
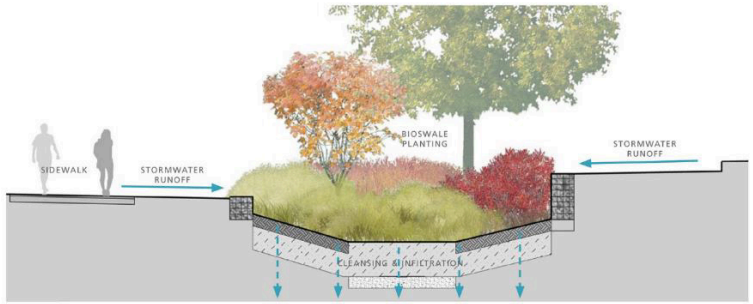
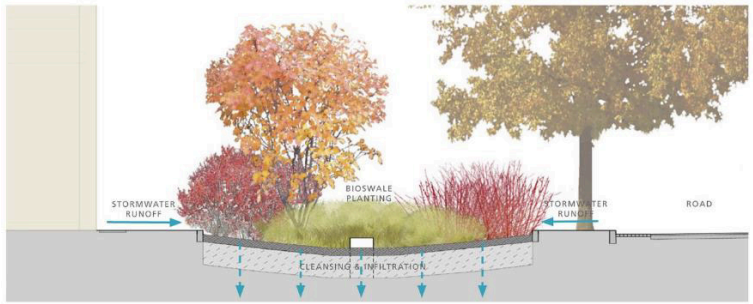


BIOSWALE

The site bioswales are a key component of the site stormwater management systems. These retangular basins mimic the planted character of the Fairfield Way grass swathes, but in a more controlled and functional manner. A series of gabion walls or curbs delineate these swales and assert their significance to the site user. Stormwater collected from the building rooftops and surrounding site discharges into the swales and can then passively infiltrate into the watertable. The soils in these swales have been engineered and layered in a specific manner so as to promote peak infiltration while the native plantings add to the diversity of the site.



GABION BIOSWALE



CURB BIOSWALE

(Above) In order to promote sustainability, GSP should seek to partner with various organizations and non-profits to establish themselves as a community leader in ecologically-sensitive yet economically viable development. Promotional articles and kiosks should be utilized whenever possible.

IRRIGATION RECOMMENDATIONS

There are several improvements that could be made to the existing irrigation systems at GSP. Some of the key items are listed below:

IMPROVE SYSTEM EFFICIENCY

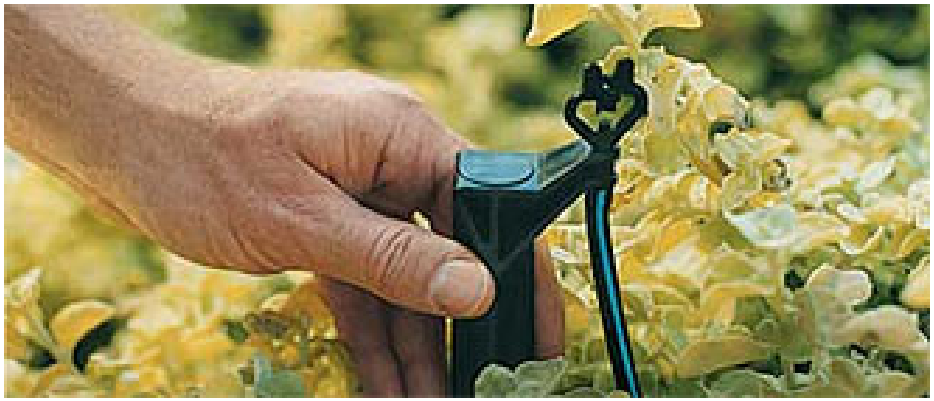
Key improvements would include switching out existing heads for high-efficiency heads, and the installation of water pressure regulators to manage the erratic pressure swings that have been damaging the system. There are certain systems that would require some modification and repair. See appendix 6.2 for full irrigation report.

CENTRALIZE SYSTEM CONTROL

Centralizing the multiple irrigation systems at GSP would allow for much more efficient management of the systems on campus. A relatively inexpensive software program could help to bring all of the various systems under one control system.

CONSOLIDATE AND CONVERT WATER SUPPLIES

Key improvements would include consolidation of smaller systems at GSP to simplify the irrigation, and the gradual conversion from municipal water supplies to local water sources, such as ponds and irrigation wells. Though a larger initial investment would be required, long-term costs could be reduced.



"Setting a goal is not the main thing. It is deciding how you will go about achieving it and staying with that plan."

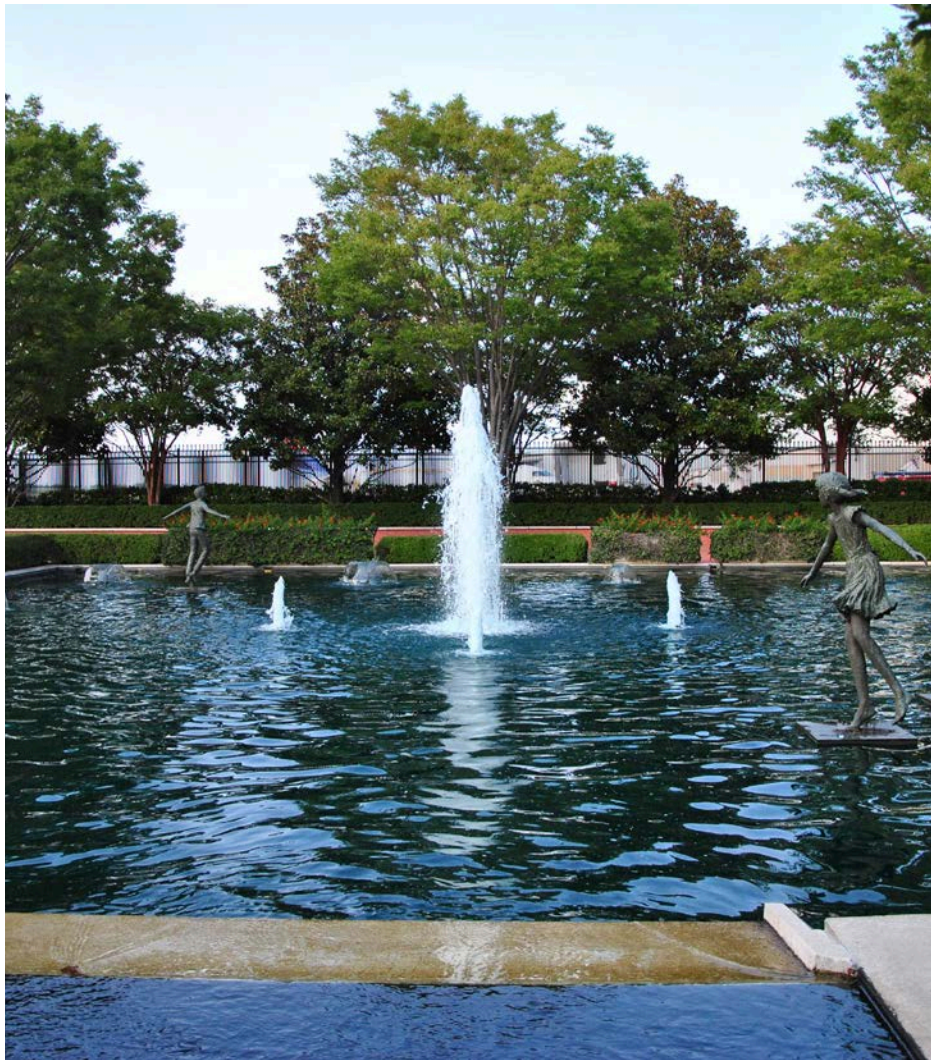
-Tom Landry

GOALS OF THE LANDSCAPE MASTER PLAN

Based on the information presented on the previous pages of the Landscape Master Plan, the design team began to form a series of goals for GSP, and using these goals, formulated a plan to phase in all of the recommended improvements.

The design team worked with GSP staff and the Task Force to form the following five goals:

1. **Complete the improvements to the Terminal Landscapes**
   By viewing the Campus Green spaces as extensions of the Terminal building, the goal is to finish these spaces quickly to coincide with the ongoing Terminal Improvements already underway.
2. **Improve the Safety and Health of the GSP Campus**
   This goal includes replacement of unhealthy and hazard trees, as well as lighting upgrades and replacements.
3. **Enrich the Arrival Sequence**
   Roger Milliken once said “you only have one chance to make a first impression.” By improving the arrival sequence for visitors, GSP can improve it’s image and overall campus.
4. **Extend the GSP Brand**
   By extending the GSP landscape and signage themes to the outer limits of the property, GSP can promote itself to the larger world.
5. **Promote GSP’s Commitment to the Landscape**
   GSP has a history of taking the extra step to ensure that the campus landscape is a key feature of the space. This goal builds on that premise, and promotes a commitment to the larger landscape.



2015-2020

GOAL 1: COMPLETE THE IMPROVEMENTS TO THE TERMINAL LANDSCAPES

GSP has undertaken a project to update and upgrade the Terminal building, in anticipation of increased passenger growth. One of the key concepts of the landscape master plan is thinking of the outdoor spaces adjacent to the Terminal as extensions of the structure itself. These landscapes deserve a high level of attention and detail to promote themselves to the passengers at GSP.

These landscape improvements should be a top priority, and should be completed to coincide with the upgraded Terminal building.

- Establish a pedestrian plant and hardscape materials palette
- Complete the improvements to the Terminal Drop-off, including planted curb extensions and natural materials
- Complete the Airside Garden improvements, using high-quality and timeless materials
- Upgrade lighting in both the Airside Garden and Terminal Drop-Off.
- Study a Pod Car system & determine feasibility

GOAL 2: IMPROVE THE SAFETY AND HEALTH OF THE GSP CAMPUS

Site analysis indicated poorly-lit areas and a declining tree canopy at GSP. The design team looked specifically at these two aspects of the campus, as well as other safety issues, such as vehicle/pedestrian conflicts, to determine what improvements would make the biggest impacts to improve the safety and health of the campus.

By implementing these improvements, GSP will be able to ensure a safe, healthy campus for all passengers and users of the airport.

- Diagnose and repair all existing irrigation systems to improve overall plant health.
- Replace trees in the current long-term parking lots.
- Replace and upgrade lighting in the long-term parking lot.
- Replace trees and lights along Administrative Drive
- Implement on-property maintenance classes for landscape maintenance staff

2021-2025

- Complete the landside garden, modifying the design slightly to accommodate Terminal Mall improvements
- Construct the additional long-term lot at the location of the old rental car facilities.
- Connect the new long-term lot to the Terminal through a landscaped pedestrian walk. Use natural materials to surface the small tunnel on the existing service drive.

- Study feasibility of future parking garage at the existing daily lot; if not feasible, replace trees and lighting in this lot.
- Begin tree and lighting replacement along GSP Drive, with trees graded as ‘poor’ receiving top priority.
- Continue ongoing landscape maintenance classes for staff

2026-2030

- Complete an additional parking garage in the current daily lot.
- Complete a Pod-car system to connect the Terminal to the long term lots.

- Finish tree replacement along GSP Drive.
- Lighting upgrades along GSP Drive
- Replace trees and lights in the employee parking lot.
- Continue ongoing landscape maintenance classes for staff

2015-2020

GOAL 3: ENRICH THE ARRIVAL SEQUENCE

It was the airport's founder who best understood why a first impression was critical to someone's memory of a specific space. Because of this belief, he endeavored to make the arrival sequence at GSP among the best in the world.

GSP is the gateway from which many people experience the Upstate of South Carolina for the first time. By improving the arrival sequence at GSP, as well as the connections to the larger region, GSP can continue to set the standard for making memorable first impressions.

- Complete landscape and signage improvements to the Terminal Approach.
- Upgrade landscape lighting along Aviation Parkway to achieve adequate lighting levels
- Begin working with SCDOT to implement improvements to the I-85 interchange as the interstate is widened.

GOAL 4: EXTEND THE GSP BRAND

Much of the best GSP landscape features are concentrated around the Terminal building itself, leaving the remainder of campus as an afterthought.

As GSP seeks to promote itself as an economic driver for the region, it should extend the GSP landscape character to the edges of it's campus, utilizing signage and landscape to identify property limits and establish a presence on Interstate 85.

- Complete the Interstate 85 / Aviation Parkway bridge overpass sign.
- Complete a full signage study, to build from the work completed as part of the landscape master plan, and including additional branding items such as interior signage, website design, etc.
- Complete a detailed development standards manual, using guidelines from this master plan document, as a legally binding document, and begin enforcing it on all projects at GSP.

2021-2025

- Complete the improvements to the Terminal Mall. This includes tree replacement around the grand lawn and Charlie Daniel Fountain.
- Upgrade lighting at the Terminal Mall.

- Complete the Gateway Signs at the four key corners of the GSP Campus.
- Begin updates per the signage study completed in phase 1 to re-brand the GSP Campus.
- Complete Stevens Road and Gateway Drive streetscape improvements per the landscape master plan.

2026-2030

- Re-study the arrival sequence and update as needed. Note any improvements that will need to be made.

- Construct the Iconic Sign and Signature Park along Interstate 85.
- Complete Highway 14, Highway 101, and Brockman McClimon Road streetscape improvements. Seek to partner with SCDOT for funding assistance.

2015-2020

GOAL 5: PROMOTE GSP'S COMMITMENT TO THE LANDSCAPE

GSP has long been associated with a high-quality and natural landscape. From the initial bold idea of converting key aircraft space to a public garden, to creating a parkway entrance, this association has increased over the years.

As GSP continues to grow, it should embrace this legacy of commitment to the landscape, and promote sustainable projects and partnerships. By keeping the commitment to the landscape and ecology of the Upstate region, GSP can continue a dream of the airport's original founders.

- Begin buffer plantings and maintenance along GSP perimeter boundary and future development parcels.
- Replace paved flumes with bioswales wherever possible.
- Begin stream restoration project at Dillard Creek. Partner with upstate colleges and universities where possible.
- Begin a tree maintenance plan per arborist recommendations. Plan would include pruning and maintenance of existing trees.
- Promote LED and dark-sky compliant lighting upgrades.
- Install rain sensors on all irrigation systems.

Note: Future streetscape improvements from this manual, as well as buffers between uses, shall be implemented as needed per development of the GSP 360 parcels and do not necessarily follow a timeline.

2021-2025

- Continue ongoing tree maintenance plan.
- Explore alternative irrigation sources (on-site wells)
- Promote GSP sustainability through media and partnerships.
- Study arboretum feasibility
- Implement and enforce development manual created in phase 1.
- Complete Dillard Creek Stream Restoration

2026-2030

- Be a world leader in sustainable design
- Implement a public space (i.e. arboretum) or tree farm
- Continue implementation and updates to development manual to utilize the best new technology and techniques.

DESIGN STANDARDS CONTENTS

Note: These standards are meant to serve as a comprehensive overall guide for site development at GSP International Airport. Any site development should follow the principles set forth in this guide, while still adhering to the following ordinances:

1. The Zoning Text of the appropriate jurisdiction
2. Local building codes and regulations.

The Design Guidelines may be amended to serve the needs of an evolving community.

The Landscape Master Plan

The Landscape Master Plan is designed to provide the District with an attractive, harmonious, coherent, and practical natural environment. These design guidelines shall be considered supplemental to the applicable zoning use provisions and development standards and any other Federal, State, or local regulation governing development. They are intended to assist in establishing and maintaining a character and quality of development consistent with the goals of the District.

The intended landscape character of the GSP campus varies greatly. There will be natural forest settings where the restored hardwood forest has new woodland edges and meadow environments, ponds, and protected wetlands, with very limited development other than trails. These natural forest settings will, with their native plant palette and naturalistic character, transition to developed areas, finally transitioning to the Terminal area, which dictates a heavily designed landscape and refined materials.

Use of a Landscape Architect

The design guidelines requires the owner/builder to employ the services of a landscape architect registered in the state of South Carolina to develop a landscape plan reflecting the principles set forth in this master planning document and continue the rich history of outdoor spaces designed by landscape architects on the GSP Campus.

Design Review Board

The landscape master plan recommends that the District form a design review board for the District. This board would typically consist of District representation, along with a consulting landscape architect, architect, contractor, or qualified representitive. This board would be responsible for reviewing any development plans and ensuring that these plans comply with the guidelines of the District.

Site Clearing, Grading and Drainage

Every effort should be made to develop site plans consistent with natural drainage flow. Site clearing of a specific parcel shall be kept to a minimum and alterations to natural drainage systems shall be avoided if possible. All trees 10" or greater caliper (excluding pines) shall require approval before removal. Any necessary grading shall maintain a natural appearance, producing graceful contours and providing smooth transitions at the head and toe of slopes. Fill dirt brought on site must be placed to reflect the natural characteristics of the land. Excessive fill dirt, which adversely affects existing trees, vegetation and adjoining property, is not permitted. Tree protection fencing should be in place prior to plan approval.

Tree Preservation

Existing trees and natural areas are regarded as an essential part of the Upstate South Carolina ecology and must be preserved where possible. One of the primary goals is to minimize the disturbance of the existing ecological systems and to preserve existing trees. Owners and builders may not remove trees larger than 10" prior to final approval of plans by District staff or the GSP Design Review Board.

The following measures will be undertaken to ensure preservation of existing vegetation:

1. A tree survey should be obtained that shows the location, species, and canopy width of trees 10 inches in caliper and above. It will ultimately be the responsibility of the contractor to verify that the information contained on the tree survey is accurate or has not been changed prior to the commencement of construction.

2. Mitigation requirements for the replacement of trees removed without permit or damaged during construction will be at the expense of the contractor.

3. The tree survey shall be used as an aid in developing preliminary plans. Tree preservation should be a high priority in siting buildings, drives, and other site elements.

4. Final plans must clearly delineate trees to be preserved and a limit of disturbance line. This should be cross-referenced with all aspects of the development such as utilities, grading, layout, etc. Final grades should eliminate uneven low areas.

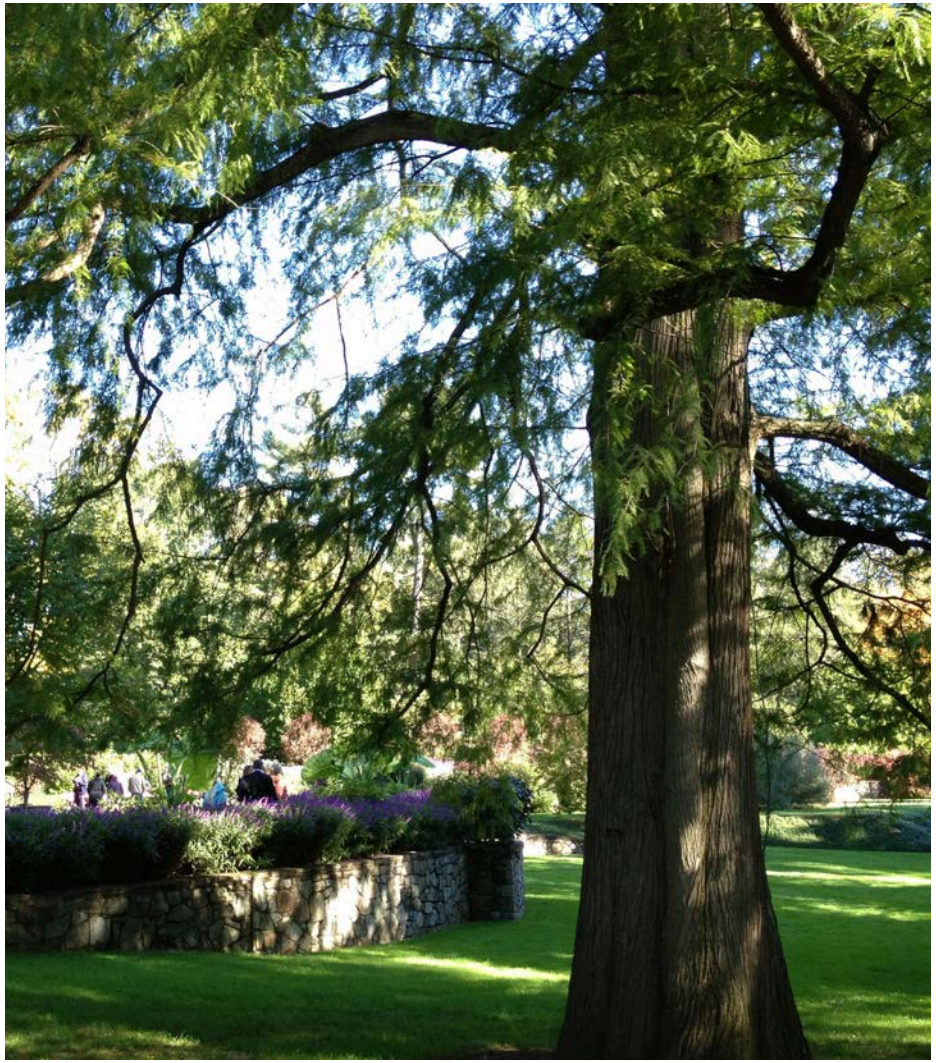
5. Tree protection fencing will be required for all existing trees and natural areas shown to be preserved on the approved Site Plan. Fencing should be placed at the limit of disturbance line and must be conspicuous and high enough to be seen by equipment operators. Fencing to follow typical GSP tree protection fence detail. Fencing on individual trees must be installed around the tree at the ratio of 1 foot diameter circle per 1" of tree to be preserved. Where multiple trees are to be preserved, larger tree preservation groupings are encouraged.

6. No equipment storage or parking will be allowed within these preservation areas. Weed and debris removal within these areas must be done with hand tools.

7. Tree protection fencing, as well as silt fencing to protect the Visual Buffer Zone and the Street from storm water runoff, will be required to be installed prior to plans being permitted by the District. All fencing must be maintained in good condition until construction is completed.

8. To ensure proper adherence to the above requirements, strict construction supervision will be required. The District may impose monetary fines for damage to trees during construction and for tree protection fencing that is not properly maintained.

(Above) Granite pavers show a high level of refinement in the developed areas around the Terminal.



(Above) An example of a successful multi-layer landscape with canopy trees, retaining walls, and ornamental shrubs and perennials.

Street Design

The streets are designed as pleasant multi-modal landscape corridors to encourage interaction among the individual landscape spaces. Sidewalks will be provided on both sides of the street. Street trees will be planted to create visual corridors that frame views down streets. Attractive streetlights will be installed to promote extended use of the corridor to encourage safe use at all hours.

Sidewalks

Concrete sidewalks are required on both sides of the street in the areas shown in the proposed streetscape sections. These sidewalks shall adhere to the dimensions laid out in the plans, paying special attention to the tree lawn between the back of curb and the sidewalk. Minor deviations will be considered on a case-by-case basis by the District. The purpose for these sidewalks is to create a pleasant landscape space & to encourage interaction among the landscape spaces. All sidewalks shall be concrete.

Fences and Walls

The Master Plan concept is to encourage a feeling of open space and the unity of spaces throughout the campus. Traditionally, fences have been used as a physical and visual separation of two pieces of property, or for screening or unattractive uses. Fences and walls must harmonize in character with the existing landscape at GSP. Stone -surface walls are encouraged to reflect the precedents established along Aviation Parkway. Both sides of all fences are to be painted or stained, unless it is a District approved natural or “living” fence that meets the guideline requirements.

(Above) Street trees frame an attractive streetscape. Ample tree lawns provide adequate root space for the trees.

Maintenance on all fences is the responsibility of the individual parcel owner/ leasee.
The following is a list of approved material for the construction of fences and walls:

Fences

1.Picket and solid fences must be made of smooth cedar, cypress, redwood, or pressure treated pine. Vinyl fencing and rough-cut lumber of any type will be considered on a case-by-case basis, but are generally discouraged. Fences must be painted black or another darker neutral color. The finished fence should not detract from the landscape.

2. Chain link fencing constructed of black vinyl is acceptable for security and service areas. The fence must be landscaped on all sides.

3. The bottom of the fence should be 1" – 2" off finished grade, pickets should be spaced no farther than 1-1/2" apart, posts should have decorative caps and be no larger than 6" x 6".

Walls:

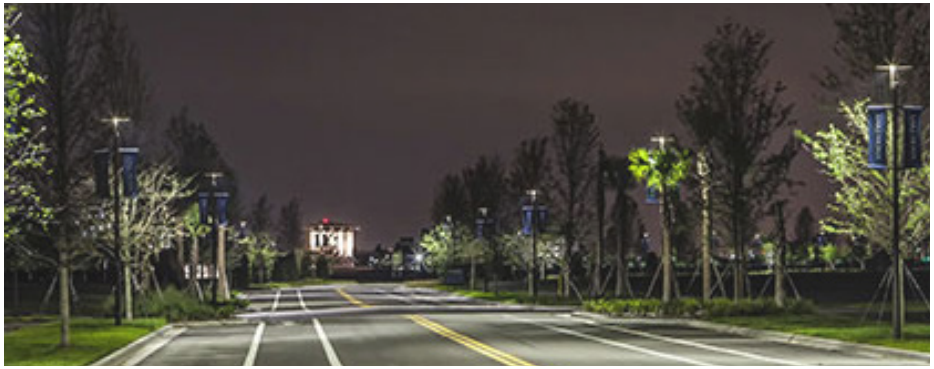
1.Freestanding seat walls: The preferred wall surfacing material is stone of a similar character to natural stone in the Upstate. Any walls built as seat wall must be between 1'-0" and 2'-0" high, with a minimum width of 8".

2. Retaining walls that are visible from the street should be of a natural color in order to blend into the landscape. Segmental block retaining systems are allowed provided that the finish color does not detract from the natural character of the campus.

Site Furnishings:

1.Consistency of site furnishings, while seeming insignificant, are part of what makes a campus feel cohesive. The use of the same style of furnishings throughout a campus has a significant impact on the way a campus is perceived. All site furnishings should be made of the same material, be of the same color, and of the same or a similar material. Site furnishings should preferably be of the same design style by the same manufacturer. Placement of site furnishings shall be deliberate.

Use of the same family of furnishings campus-wide will reduce maintenance costs and challenges.



Site Lighting

All proposed site and landscape lighting shall be detailed on the Site or Landscape plans. Lighting should be subtle in nature and conform to the lighting standards set forth in this document and conform to standards set forth by the IES (illumination Engineering Society of North America.

Lighting on an airport campus is very important as it affects both safety and aesthetics. With the committment of the District to maintaining a beautiful campus, every effort shall be made to include lighting early in the design process, rather than being treated as an afterthought. Lighting consultants shall work with engineers and landscape architects to ensure tree/light conflicts are avoided.

GSP District lighting is divided into four (4) main types. These are:

1. Aviation Parkway Lighting
2. Street lighting
3. Parking lot lighting
4. Pedestrian-level lighting

Specifications for each type follow.

1. AVIATION PARKWAY LIGHTING

Due to the naturalistic, parkway-like appearance of Aviation Parkway, the primary passenger entrance, overhead street lighting shall be avoided in this area. From the interchange with I-85 to the Terminal Approach, only landscape uplighting shall be used. This will ensure a clean, crisp appearance of the Parkway during the day, and a safe, attractive entrance at night.

Design Guidelines:

1. Type of fixtures and bulbs.
   a. LED lights should be used to the extent possible.
   b. All lights on site shall be consistent in style, design, placement, size and light color.
   c. Lighting shall be placed at a regular spacing to the extent possible. Select specimen trees should be uplit on both shoulders of the road and the median
   d. All lighting plans shall be approved by the District.

(Above) Existing uplights along Aviation Parkway. Existing parkway lights shall be either adjusted and added to, or replaced to form a regularly-spaced system of landscape uplighting along Aviation Parkway. Ensure lights are functioning and placed properly.

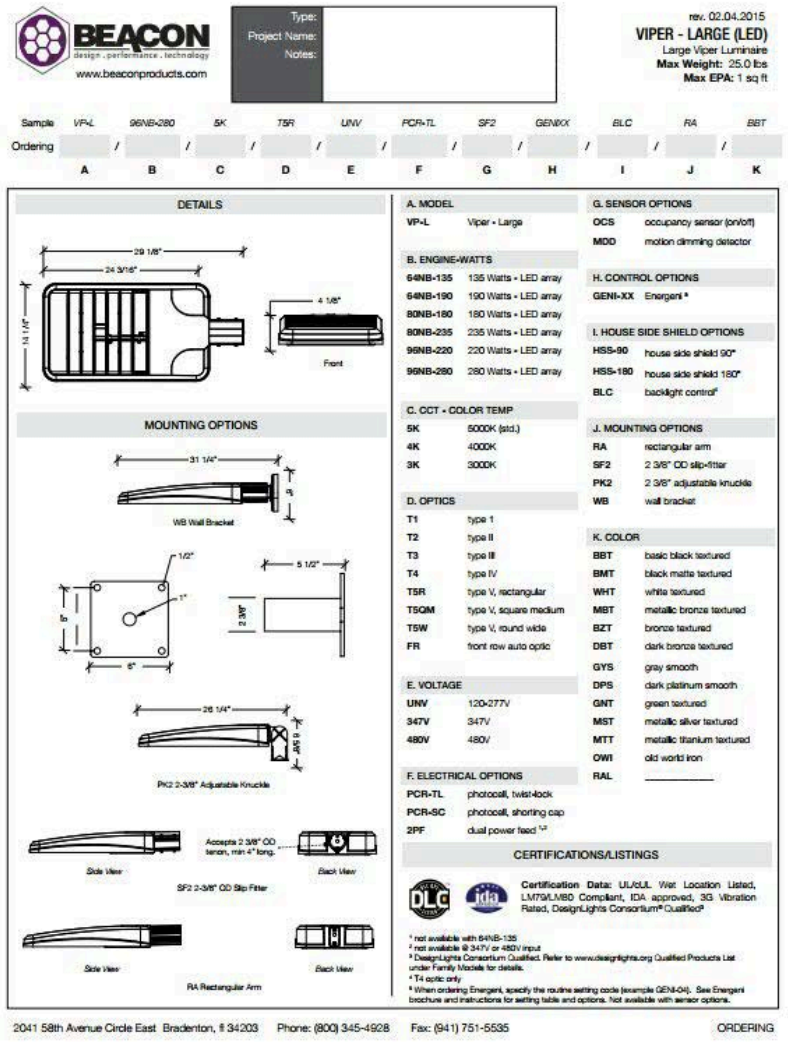
2. STREET LIGHTING

Every effort shall be made to adequately light the streetscapes at GSP. It is recommended that existing streetlights be upgraded to meet today's standerds, and any future lights should follow modern guidelines. Streetlights shall be LED fixtures, full-cutoff or Dark Sky approved fixtures. Ensuring modern, efficient lights will help to reduce light pollution at the District, as well as reducing utility costs and wasteful overspill of lights.

Lighting shall be treated as an important part of any street design, and shall be included early in the design process, rather than be treated as an afterthought.

Design Guidelines:

1. Type of fixtures and bulbs.
   a. Streetlights shall be mounted at a height no greater than thirty feet (30') and must use ninety (90) degree cutoff luminaries (down lighting).
   b. All lights on site shall be consistent in style, design, height, size and color.
   c. Poles shall be either black in color or a dark gray. White poles will be avoided.
   d. Pole bases to be either direct-bury or flush with ground to the extent possible. Avoid having a visible concrete footing on the pole itself.
   e. Lights shall be uniformly spaced and staggered on both sides of the road. Spacing shall be determined based on minimum lighting requirements set forth by the District.
   f. Streetlights shall be spaced minimum 25' from all street trees.



(Above) Example of a modern LED streetlight fixture.

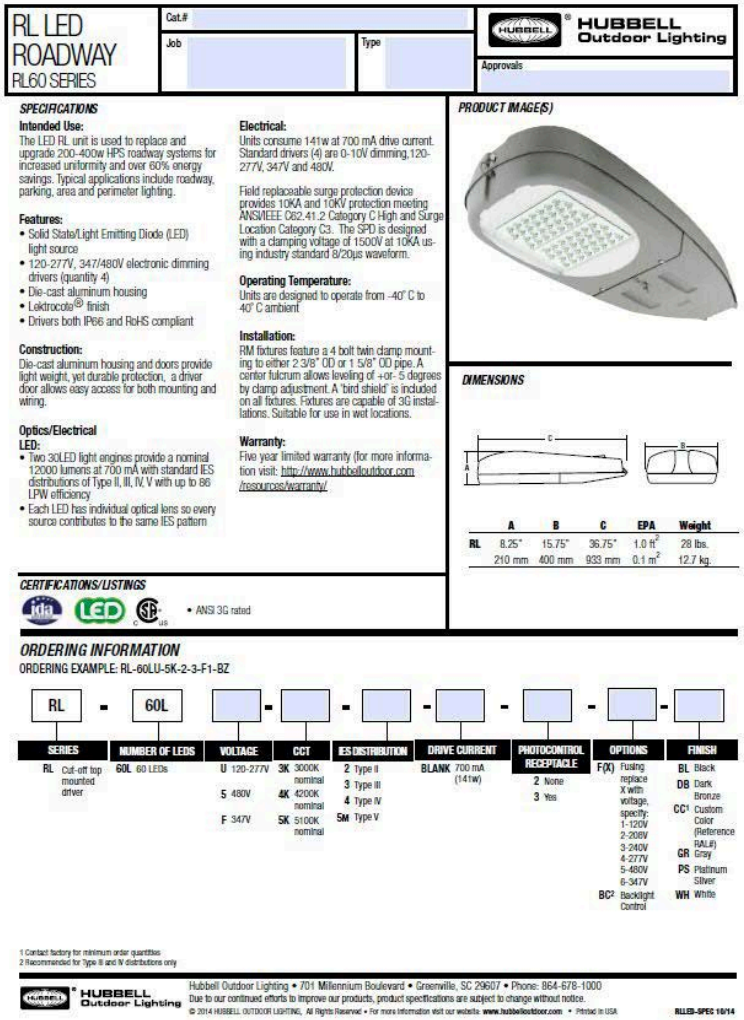
3. PARKING LOT LIGHTING

Parking lot lighting shall be used to enhance the safety of the parking areas and provide adequate lighting in these areas. Existing lighting should be upgraded when possible to meet the criteria set forth.

Two options for fixtures are shown, the first as a head replacement for existing poles, and the second as a entirely new pole.

Design Guidelines:

1. Type of fixtures and bulbs.
   a. Parking lot lighting shall be mounted at a height no greater than twenty feet (20') and must use ninety (90) degree cutoff luminaries (down lighting).
   b. All lights on site shall be consistent in style, design, height, size and color.
   c. Poles shall be either black in color or a dark gray. White poles will be avoided.
   d. Pole bases to be either direct-bury or flush with ground to the extent possible. Avoid having a visible concrete footing on the pole itself.
   e. Lights shall be staggered amongst parking lot trees. Spacing shall be determined based on minimum lighting requirements set forth by the District.
   f. Parking lot lights shall be spaced minimum 25' from all street trees.



RL LED ROADWAY
RL60 SERIES

Cat.# | Job | Type

HUBBELL Outdoor Lighting

Approvals

SPECIFICATIONS

Intended Use:
The LED RL unit is used to replace and upgrade 200-400w HPS roadway systems for increased uniformity and over 60% energy savings. Typical applications include roadway, parking, area and perimeter lighting.

Features:
- Solid State/Light Emitting Diode (LED) light source
- 120-277V, 347/480V electronic dimming drivers (quantity 4)
- Die-cast aluminum housing
- Lektrocote® finish
- Drivers both IP66 and RoHS compliant

Construction:
Die-cast aluminum housing and doors provide light weight, yet durable protection, a driver door allows easy access for both mounting and wiring.

Optics/Electrical
LED:
- Two 30LED light engines provide a nominal 12000 lumens at 700 mA with standard IES distributions of Type II, III, IV, V with up to 86 LPW efficiency
- Each LED has individual optical lens so every source contributes to the same IES pattern

Electrical:
Units consume 141w at 700 mA drive current. Standard drivers (4) are 0-10V dimming,120-277V, 347V and 480V.

Field replaceable surge protection device provides 10KA and 10KV protection meeting ANSI/IEEE C62.41.2 Category C High and Surge Location Category C3. The SPD is designed with a clamping voltage of 1500V at 10KA using industry standard 8/20µs waveform.

Operating Temperature:
Units are designed to operate from -40° C to 40° C ambient

Installation:
RM fixtures feature a 4 bolt twin clamp mounting to either 2 3/8" OD or 1 5/8" OD pipe. A center fulcrum allows leveling of +or- 5 degrees by clamp adjustment. A 'bird shield' is included on all fixtures. Fixtures are capable of 3G installations. Suitable for use in wet locations.

Warranty:
Five year limited warranty (for more information visit: http://www.hubbelloutdoor.com/resources/warranty/

PRODUCT IMAGE(S)

DIMENSIONS

	A	B	C	EPA	Weight
RL	8.25" / 210 mm	15.75" / 400 mm	36.75" / 933 mm	1.0 ft² / 0.1 m²	28 lbs. / 12.7 kg.

CERTIFICATIONS/LISTINGS

• ANSI 3G rated

ORDERING INFORMATION

ORDERING EXAMPLE: RL-60LU-5K-2-3-F1-BZ

RL - 60L - ____ - ____ - ____ - ____ - ____ - ____ - ____

SERIES	NUMBER OF LEDS	VOLTAGE	CCT	IES DISTRIBUTION	DRIVE CURRENT	PHOTOCONTROL RECEPTACLE	OPTIONS	FINISH
RL Cut-off top mounted driver	60L 60 LEDs	U 120-277V 5 480V F 347V	3K 3000K nominal 4K 4200K nominal 5K 5100K nominal	2 Type II 3 Type III 4 Type IV 5M Type V	BLANK 700 mA (141w)	2 None 3 Yes	F(X) Fusing replace X with voltage, specify: 1-120V, 2-208V, 3-240V, 4-277V, 5-480V, 6-347V BC² Backlight Control	BL Black DB Dark Bronze CC¹ Custom Color (Reference RAL#) GR Gray PS Platinum Silver WH White

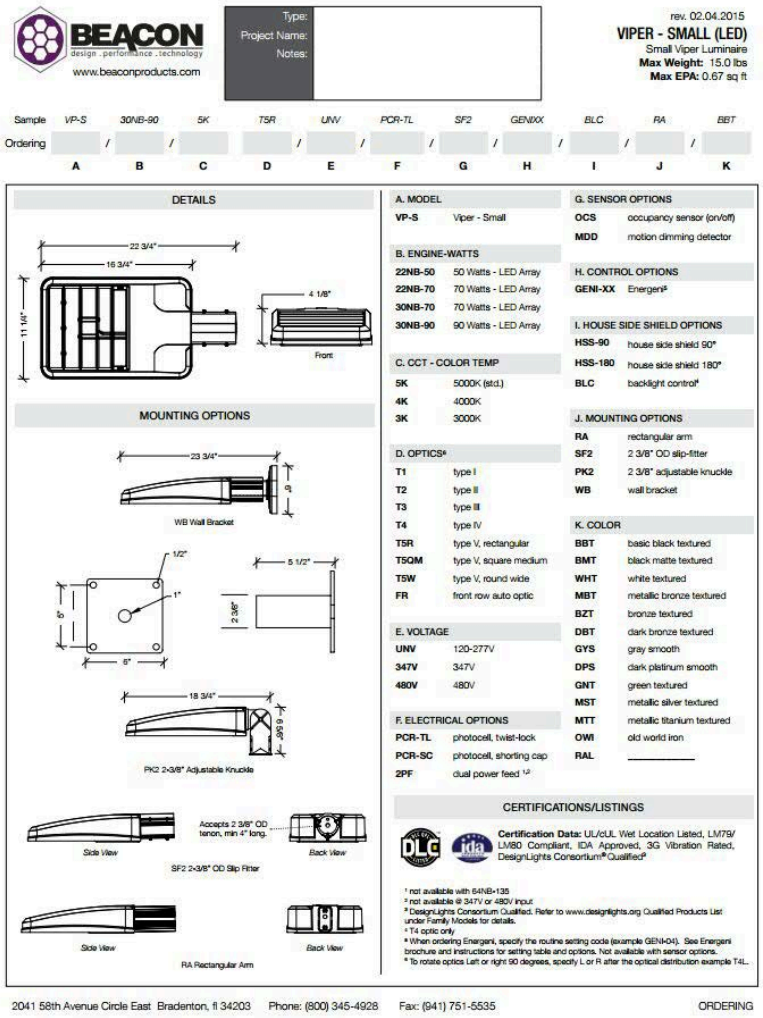
1 Contact factory for minimum order quantities
2 Recommended for Type II and IV distributions only

HUBBELL Outdoor Lighting

Hubbell Outdoor Lighting • 701 Millennium Boulevard • Greenville, SC 29607 • Phone: 864-678-1000
Due to our continued efforts to improve our products, product specifications are subject to change without notice.

RLLED-SPEC 10/14

(Above) LED replacement for a Cobra-head type fixture. (head replacement only)



BEACON
design . performance . technology
www.beaconproducts.com

Type:
Project Name:
Notes:

rev. 02.04.2015
VIPER - SMALL (LED)
Small Viper Luminaire
Max Weight: 15.0 lbs
Max EPA: 0.67 sq ft

Sample Ordering	VP-S	30NB-90	5K	T5R	UNV	PCR-TL	SF2	GENIXX	BLC	RA	BBT
	A	B	C	D	E	F	G	H	I	J	K

DETAILS

MOUNTING OPTIONS

WB Wall Bracket

PK2 2-3/8" Adjustable Knuckle

SF2 2-3/8" OD Slip Fitter

RA Rectangular Arm

A. MODEL
VP-S Viper - Small

B. ENGINE-WATTS
22NB-50 50 Watts - LED Array
22NB-70 70 Watts - LED Array
30NB-70 70 Watts - LED Array
30NB-90 90 Watts - LED Array

C. CCT - COLOR TEMP
5K 5000K (std.)
4K 4000K
3K 3000K

D. OPTICS[4]
T1 type I
T2 type II
T3 type III
T4 type IV
T5R type V, rectangular
T5QM type V, square medium
T5W type V, round wide
FR front row auto optic

E. VOLTAGE
UNV 120-277V
347V 347V
480V 480V

F. ELECTRICAL OPTIONS
PCR-TL photocell, twist-lock
PCR-SC photocell, shorting cap
2PF dual power feed [1,2]

G. SENSOR OPTIONS
OCS occupancy sensor (on/off)
MDD motion dimming detector

H. CONTROL OPTIONS
GENI-XX Energeni[5]

I. HOUSE SIDE SHIELD OPTIONS
HSS-90 house side shield 90°
HSS-180 house side shield 180°
BLC backlight control[6]

J. MOUNTING OPTIONS
RA rectangular arm
SF2 2 3/8" OD slip-fitter
PK2 2 3/8" adjustable knuckle
WB wall bracket

K. COLOR
BBT basic black textured
BMT black matte textured
WHT white textured
MBT metallic bronze textured
BZT bronze textured
DBT dark bronze textured
GYS gray smooth
DPS dark platinum smooth
GNT green textured
MST metallic silver textured
MTT metallic titanium textured
OWI old world iron
RAL _____

CERTIFICATIONS/LISTINGS

Certification Data: UL/cUL Wet Location Listed, LM79/LM80 Compliant, IDA Approved, 3G Vibration Rated, DesignLights Consortium® Qualified[3]

[1] not available with 64NB-135
[2] not available @ 347V or 480V input
[3] DesignLights Consortium Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.
[4] T4 optic only
[5] When ordering Energeni, specify the routine setting code (example GENI-04). See Energeni brochure and instructions for setting table and options. Not available with sensor options.
[6] To rotate optics Left or right 90 degrees, specify L or R after the optical distribution example T4L.

2041 58th Avenue Circle East Bradenton, fl 34203 Phone: (800) 345-4928 Fax: (941) 751-5535 ORDERING

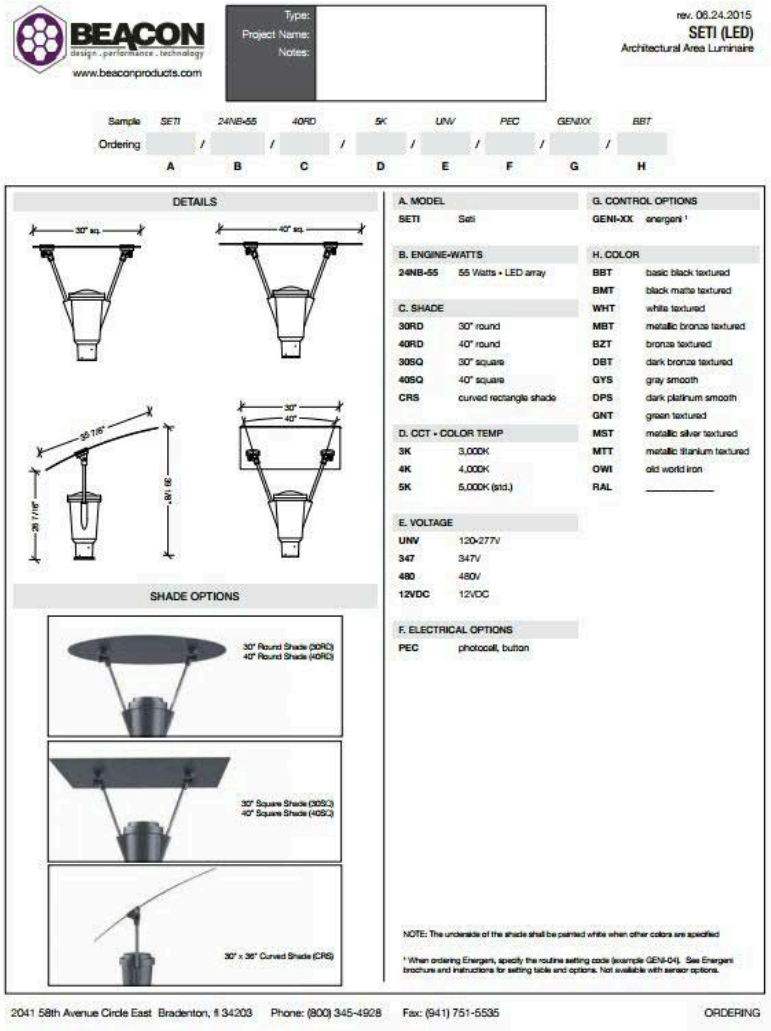
(Above) Typical LED Parking Lot Light (complete pole and head replacement)

4. PEDESTRIAN LIGHTING

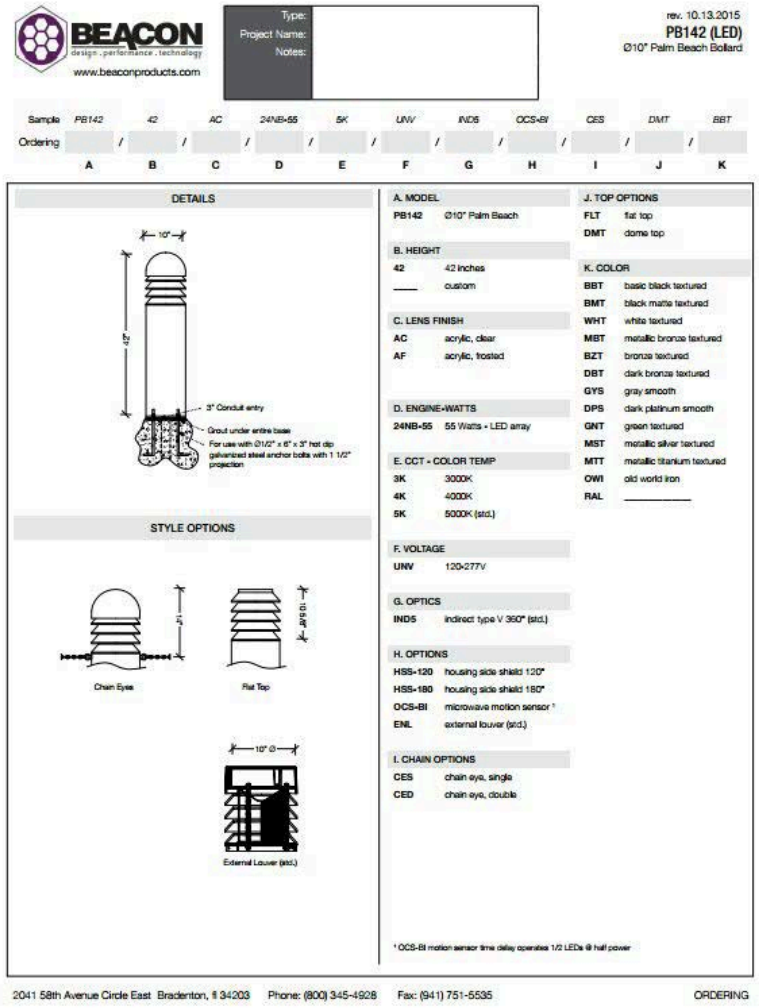
Pedestrian level lighting shall be utilized in key spaces around the Terminal, specifically those spaces described as the Campus Green. Pedestrian lights shall include, but not be limited to, vertical, lamp-post style lighting, in-wall lights, in-stair lights, bollard lights, landscape lighting, and accent lighting on structures.

The current bollard light is established at the Terminal area, and shall be maintained. No specification will be made for specialty lighting, but sound placement principles shall be utilized when pedestrian lighting is installed. It is recommended that pedestrian lighting be utilized extensively in the Campus Green areas to bring a fine-scale approach to the landscape. Lighting to highlight or illuminate architecture and signs shall be attractive without significant spillage of light upward or outward. Only LED bulbs shall be used in all pedestrian light fixtures.

(Above Left) Existing bollard light at Terminal.
(Above Right) Existing Lightpost at Terminal.



(Above) Sample modern fixture for Terminal Spaces.



(Above) Bollard and low-level lighting should continue to use the existing style fixtures.

Signage

All site signage shall conform to the regulations set forth by the DIstrict. A further, detailed signage study and comprehensive plan with guidelines is encouraged for GSP.

Purpose of the Landscape Standards

The purpose and intent of these landscape guidelines is to achieve a cohesive landscape, which provides the following:

1. A more or less continuous over-story of filtered shade in the developed areas.
2. Planting which is appropriate to the scale, setting and environmental conditions of the area. This includes the use of minimum size specifications, and appropriate (especially deer resistant), primarily native, plant material.
3. A landscape in which each space compliments its surroundings.
4. The use of layering i.e., planting 2-3 levels of differently sized plant material around the foundation of structures.
5. Preservation of the maximum possible existing vegetation, and its integration into the planned landscaping.
6. The quality image of the development. Imaginative landscape design that solves the functions of screening, color, textures, and enhancement of the architecture can set the standard for a high quality development.
7. The plant material proposed is compatible with environmental conditions and tolerant of upstate wildlife and climate for year-round landscape beauty.
8. A soil sample, taken to the local horticultural extension service for analysis prior to planting is strongly encouraged.

The GSP Plant Palette

The approved plant list (see appendix) is a guide for plant selections at GSP. Substitutions are permissible providing that the following criteria are met:

- Native material shall be used as much as possible. Using native material reduces maintenance requirements, and provides habitat for native wildlife that have evolved alongside the plants.
- A variety of plant materials shall be used. Monocultures shall be avoided due to the fragility of landscapes built around just a few species. Formal tree allees of a single species shall be allowed, however.
- Plant selections shall be made keeping with the desired scale of the finished landscape. Adequate space shall be provided for each plant to reach maturity.
- Plant selections shall be deer-resistant as much as possible.
- Drought-tolerant plants shall be considered in non-irrigated areas of the GSP landscape.

The Natural Planting Approach

Plant materials should complement native species and be compatible with existing environmental and ecological conditions. Where there is existing vegetation, it should be preserved as much as possible. Views can be obtained without extensive clearing.

The thinning of the forest under-story may be done to open up views but should be kept to a minimum, leaving the vegetation for buffering, privacy, and landscape definition. In cases where any under-story is not present, the addition of small flowering trees, grouped in clusters, should be considered in the landscape plan.

The landscaping approach should concentrate planting efforts adjacent to high-intensity uses (i.e. building entries, pedestrian pathways). Ornamental plants, if used correctly, will provide a transition from the natural character of the campus perimeter to the more finished areas closer to the Terminal. For maximum appeal, mix textures and colors but keep the plan simple. A better effect can be achieved from using quantities of a few species rather than a few plants each of many species.

The planting plan itself should sufficiently screen utility areas, break up the foundation of buildings, buffer service and parking areas adjacent to property lines or roadways, and provide cover for areas disturbed during construction. Plants for screening should be appropriate and of sufficient size and spacing to ensure an adequate buffer within a year or two.

All street utility boxes should have adequate screening from the street. All plumbing and water shutoff valves should be flush to the ground.

Street Trees

Street trees with a minimum caliper of 2 ½ inches 1 foot above the ground are to be planted on both sides of all streets in the right-of-way, with spacing no greater than 40 feet on center throughout the campus, as prescribed in the streetscape master plan. The tree shall be centered between the curb and sidewalk, and no tree shall be planted within five feet (5') of any type of paving. The timing of planting shall be coordinated with the growing season. Initial trees shall be guaranteed for one year from the time of installation. Should the tree die after the one year guarantee, it is the owner's/leasee's responsibility to remove and replace the tree. In order to maintain a consistent landscape, replacements shall be of the same species. All street tree plantings shall strictly adhere to the details in this document, and the material shall meet ANSI standards for landscape plants. (See appendix)

Trees within the Landscape

Trees are a valuable part of any landscape and form the framework around which the space is created. All planted trees shall be minimum 2 ½" caliper measured one foot above finished grade at time of installation. All trees shall be planted in strict adherence to the planting details provided as part of this document. (See appendix). If trees are in a non-irrigated area, GatorBags (or equivalent) shall be provided for a period of one (1) year, to establish the tree in the landscape. All trees shall either be located in a landscape bed, or have a minimum 6' radius mulch ring, to be maintained at 3" depth and kept min. 6" from the tree trunk. In no instance shall turf come all the way up to the trunk of a planted tree.

Hedges

A minimum 36” height evergreen hedge shall be required to screen parking wherever a surface parking lot is immediately adjacent to a street. These shall be planted in a buffer no less than 8’ wide. Shrubs shall be minimum 3-gallon container size at planting, and shall be planted at an appropriate spacing to form a continuous hedge at plant maturity.

Groundcovers

Groundcovers shall be planted at an appropriate spacing where the plants will grow together and form a continuous layer of material at maturity. In general, no open areas of mulch or exposed earth over 100 SF contiguous shall be permitted. Special care shall be used when selecting groundcovers that may aggressively invade other natural areas, and these plants shall be used only in areas where they can be contained. It is encouraged that groundcovers, rather than lawn, be used in areas of deep shade, where turf grass will prove difficult to grow.

Lawns

Bermuda & Fescue are the preferred grasses for the GSP campus. However, other permanent grasses, such as zoysia are acceptable. Sod is encouraged over seed to establish lawn areas; however seed shall be allowed provided that adequate grass coverage is established within 1 year of seeding. All turf areas shall be irrigated using either spray heads or rotors. See appendix for irrigation standards.

Mulch

Landscape areas shall be mulched adequately per typical industry standards with aged, non-dyed organic material. Mulch should be kept away from the base of all trees a minimum of 6” and away from the base of all shrubs a minimum of 3”. Mulch shall be maintained at a depth of approximately 3”.

Note: In natural forested areas, leaf litter shall serve as an acceptable natural mulch.

(Above) Example of a successful multi-layer landscape.

Irrigation

An automatic irrigation system providing 100% coverage is required for maintaining lawn and landscape areas in healthy condition. Water conserving systems such as drip irrigation systems with moisture sensors are encouraged. Care should be taken to avoid irrigation overspray into natural buffers, walkways, and buildings. Turf areas shall be irrigated separately from shrub and groundcover areas.

- Drip irrigation systems are encouraged where applicable to reduce water consumption.
- All exterior potted plants shall be irrigated using a drip system.
- All aboveground equipment including, but not limited to, controllers and backflow preventers should be located inside the building or appropriately screened from public view.
- On site stormwater ponds or irrigation wells are encouraged as alternative water sources from public utilities.
- Materials
    1. Controller to be compatible with campus central control system
    2. Spray sprinklers to include pressure regulating stems of 30 PSI for standard spray nozzles
    3. Spray sprinklers to include pressure regulating stems of 45 PSI for multi-stream rotating nozzles
    4. Rotary sprinklers to be commercial grade
    5. Electric control valves to have a minimum of 200 PSI pressure rating and flow control
    6. Drip tubing to be in-line emitter check valves, 0.5 GPH, 12" emitter spacing along tubing
    7. Mainline and lateral piping to be Schedule 40 PVC
    8. Wire to be minimum 14 AWG single strand or 14AWG two wire cable (for decoder systems)
- Design
    1. Sprinklers to be spaced at a maximum of 90% of their radius of throw
    2. Drip tubing to be installed in rows 18" apart and interconnected with a supply header from the valve and exhaust headers at the ends of the tubing runs
    3. Mainline pipe to be buried 24" deep, later pipe 18" deep
    4. All pipe and wire crossing beneath hardscapes to be sleeved wire to be sleeved separately from pipe
    5. Landscape beds to be zoned separately from turf areas
    6. Seasonal color plantings to be zones separately from turf and landscape beds
    7. Sprinklers of different types to be zoned separately from each other
    8. Grounding at the controller and decoders to be provided per manufacturer's recommendations

Visual Buffer Zone Planting Requirements

Much of the buffering at GSP is created through the use of existing naturally forested areas. Whenever possible, these forested areas shall be maintained at the width specified, and only disturbed per the master plan. However, if there is an area where buffers are required but not present, a visual buffer shall be established through the planting specified below. GSP may require additional trees and shrubs beyond the

minimum requirements listed below and in some instance may require a living fence (defined as a wood member fence with vinyl-coated wire mesh in-fill and planted with vines) to be installed or a hedge planted just outside of the Visual Buffer Zone:

See Appendix 6.8, sections 3 and 4, for street buffer planting requirements.