Introduction
The GCID South Campus is a joint project of the North Carolina Agricultural and Technical State University (NCA&T) and The University of North Carolina at Greensboro (UNCG). Located less than four miles from downtown Greensboro and the two campuses, this real estate project will benefit the Universities, the city and the region. It will create synergy between the Universities, enhancing their research capabilities and benefiting students. It will be a place that converts innovative ideas into long-term investments, forming partnerships with the private sector and creating quality jobs for the region. Finally, it will be a new gateway for the two universities as well as the City of Greensboro, a place that blends bold architecture with sustainable design.

The South Campus Master Plan will make this vision possible by directing the park's physical design and implementation. It describes the context and vision behind the plan and illustrates the physical design for the buildings and infrastructure. Its design will create a place that respects the site’s existing natural character and strives to protect its integrity for the future.

The leadership at GCID have shepherded the planning process with the research park expertise of Brown Jurkowski Architectural Collaborative (BJAC) of Raleigh, North Carolina in association with Sasaki Associates of Boston, Massachusetts and George, Henry, George Partners of McLean, Virginia.

Planning Process
The planning process consisted of regular meetings with a designated “core group” which included the Executive Director of the GCID, representatives of the facilities departments of both NCA&T and UNCG, as well as representatives of the planning team noted above. The team started with a “clean slate” and began the process with an all day interview session in April 2006. The purpose of the interview session was to solicit input on the vision and goals for the project from various project stakeholders from both universities. Stakeholder attendees at the interview session included provosts, deans, researchers, administrators, and others from both universities, as well as the “core group.” With this information, the planning team proceeded with the research of trends in research parks, investigating the context of the proposed site, and was charged to return two concept alternatives for the site. This information was then presented to the project stakeholders in a working “charette” session in June 2006. At the conclusion of the charette, a clear consensus was reached as to which concept alternative should be developed further. In July 2006 the Draft Master plan, which consisted of detailed development and refinement of the preferred concept alternative, was presented to the “core group”. The feedback from this Draft Master Plan meeting was incorporated into the Final Master Plan document and copies of the minutes from these meetings along with the entire package of concept alternatives was delivered to all participants for final review.

Planning Context
NCA&T and UNCG formed the Greensboro Center for Innovative Development (GCID), a non-profit corporation, to oversee the planning and development process for the two parks.

As part of the planning process for the South Campus, GCID commissioned a financial and fiscal impact analysis for the site. The study found that the Greensboro region's affordability and skilled workforce are critical assets for the new park. It also noted that the other high-profile research parks in the Piedmont Triad and Raleigh-Durham Triangle regions – including Research Triangle Park in Durham, Piedmont Triad Research Park in Winston-Salem and Centennial Campus in Raleigh – represent opportunities for collaboration.

As a result of this and other studies, GCID has determined that South Campus will distinguish itself from other research parks by using academic scholarship, intellectual curiosity and applied problem-solving to attract industry and improve the human condition.
Mission
To be a catalyst for enhancing the research enterprise for NCA&T and UNCG while enhancing/promoting community through economic and cultural development.

Vision
GCID will link NCA&T and UNCG, the Piedmont Triad, the State of North Carolina, and beyond by creating an effective bridge for the educational and research enterprise.

The vision for the park is to support:

1. **Translational Research** – Transform university knowledge and ideas into commercial applications
2. **An Environment Conducive for Start-Up Growth** – Create facilities that will enable start-ups to grow and work to create a community that values and supports high-tech/high-growth start-up companies.
3. **Attraction of Appropriate Industries** – Work with economic development community to attract appropriate companies to the GCID that will complement start-ups and support university goals.
4. **Education and Training** – Provide space and support for new and innovative educational programs and interdisciplinary partnerships.
5. **Accountability** – Foster an organizational culture that is accountable in every way and transparent to the universities and other stakeholders.

Goals and Objectives
The long-term success of the South Campus depends on its ability to foster connections with – and between – NCA&T and UNCG's campuses. It also must create a unique sense of place that distinguishes it from other parks in the region.

Given these factors, the design goals of the GCID are to:

- Create a physical environment that fosters intellectual exchange and creativity.
- Provide facilities to showcase the products and research of the Universities.
- Plan for flexibility, growth and private investment over the long term.
- Create a plan that is sensitive to the natural environment and surrounding land use patterns.

Local and Regional Context
The South Campus location – on the regional, local and site levels – will play a critical role in its success as an economic generator. The research park is located in an unincorporated area of Guilford County, North Carolina, three miles from downtown Greensboro. Greensboro has 224,000 residents and represents a significant market for economic development and growth. The GCID site is also part of the "Piedmont Triad" region that includes Greensboro, High Point and Winston-Salem and encompasses nearly 500,000 people.

While the South Campus is not currently within the Greensboro jurisdiction, the city has designated it a "developing area" in its master plan and identified its future land use as "mixed-use corporate park." It has indicated a desire to extend Florida Street through the site, though this seems unlikely to happen in the near future. The city also has indicated that the proposed rapid transit bus route from the airport will run past the park. These elements suggest that Greensboro may desire to annex the property when the project moves forward.

A critical advantage for the South Campus is its proximity to the region's transportation networks. The park is conveniently located off of I-40 and I-85, two of North Carolina's largest highways, and is thirteen miles east of the Piedmont Triad International Airport. These access points easily put other cities, states and even countries within reach.

The Cape Fear River Basin defines Greensboro and Guilford County's ecology. At over 9,000 square miles, it is the largest watershed in North Carolina and drains to the Cape Fear River.
University Contexts
One of the most challenging – and exciting – aspects of the South Campus is its partnership with two universities. While both are part of the state university system, each has a different history, character and strength. NCA&T is a land grant institution and historically black campus that excels in engineering and the sciences. UNCG was a women’s college until 1964, and today excels in arts and sciences, life sciences, and education.

Site Character
The South Campus site is located just outside of the Greensboro city boundaries. It is three miles south of the NCA&T campus, four miles east of UNCG, and three miles southeast of downtown Greensboro.

The South Campus site features an open meadow with rolling hills and forested land at the periphery. The NCA&T University Farm, which still has active dairy and poultry facilities, bounds the northern side of the site. The proposed Gateway Garden and the 109-acre Barber Park are southwest of the parcel, and feature walking trails, a baseball stadium, a sports pavilion and an outdoor amphitheater. The College Forest residential neighborhood bounds the western edge and NCA&T owns the land immediately to the south (across Lee Street), which currently is undeveloped.

Access is from the south on East Lee Street (Route 6). While East Florida Street intersects with the site's southwestern corner, there are no existing roads through the site. There currently is no access to public transportation or bike paths.

Site Analysis
While the South Campus comprises approximately 75 acres, only two-thirds are developable. The primary features limiting development at the South Campus are hydrology, topography and adjacent land uses. Buffalo Creek and its adjacent floodplains cover the northeastern edge of the property and bar these areas from development. A second, but more minor, limiting characteristic is the property's two hills and valleys. These define the site's character but are not steep enough to prohibit development. A final limitation is the parcel's proximity to the College Forest residential neighborhood, which will require a buffer to minimize the impact of development.

The South Campus property's primary assets are its location, its access to open space and its existing infrastructure. The site is very accessible and visible from East Lee Street, and has easy access to regional highways and downtown Greensboro. It is in close proximity to Barber Park and other open spaces. Finally, the site can easily tie into critical infrastructure systems, including water, electricity and sewer, from East Lee Street.

Design Principles
The design team conducted a survey of research parks across the country and created the following set of design principles to guide planning decisions:

Create a sense of place
- Draw from the best qualities of the two campuses and the city of Greensboro to create a new place.
- Mix uses and amenities to make the research park an attractive location for University and business partners.
- Create a pedestrian-oriented environment to facilitate collaboration and interaction.

Respect natural systems
- Use the site’s natural systems and features – including streams, slopes and forested areas -- to form development patterns and road alignment.
- Make development compact to protect stream corridors and wetlands.
- Plant low-maintenance landscape treatments and native plants.

Improve stormwater management and water quality
- Maintain or improve natural drainage patterns.
• Manage run-off where it falls and allow as much on-site recharge as possible.
• Provide natural vegetated buffers between development zones and steep slopes.
• Maintain tree cover wherever possible.
• Conserve flood plains.
• Minimize erosion.

Respect the climate
• Maximize energy efficiency through site planning and building design.
• Use landscape to provide shade to minimize heat islands and reduce cooling loads.
• Facilitate pedestrian movement with shade, shelter, and activity nodes.
• Orient buildings and choose materials that respond to the climate.

Master Plan
The Master Plan for the South Campus uses these design principles to translate GCID’s collaborative vision into physical form. The result will be a place that creates synergy in and across buildings and that uses sustainable design techniques to balance commercial uses with environmental responsibility.

Development Strategy
The development strategy for South Campus is to establish a visible environment for University research and private investment.

The development program for South Campus will construct 440,000 gross square feet of new office, laboratory and retail space across nine two-story buildings. The program meets the demand identified in the market analysis completed by George, Henry, George Partners (350,000 square feet) and includes additional square feet to allow a broader range of building sizes. The master plan has the flexibility to accommodate some three story buildings should there be market demand. However, should this demand occur, a parking structure will be required as part of the last phase of build-out to meet the overall parking requirements. The program uses the following assumptions:

• Building heights of two to three stories
• Parking provided at three spaces per 1,000 gross square feet

Site Design
The design envisioned for South Campus uses natural features – most notably, the stream, hills and valleys – as the organizing framework for development. This will result in a loosely linear development pattern at the southern end of the site, with two rows of buildings clustered on higher ground. Buildings and parking lots will step down with the topography to echo the landscape.

Site development will begin in the southwestern corner of the site and move eastward over time. As the site develops, the Master Plan will cluster buildings to encourage human interaction and reduce impacts to the site’s natural systems. The tight form of development will give the park an urban character and reinforce its proximity to downtown Greensboro and the university campuses. Moreover, it will preserve the site’s natural topography and preserve a large portion of the site as open space.

It will facilitate interaction within buildings by scattering interior common spaces – including an auditorium, cafeteria, and meeting and conference rooms/classrooms – as well as retail stores and restaurants across the Park. The linear pattern will lend itself to incremental development over time.

To the extent possible, the Master Plan screens parking by tucking it behind the buildings, thereby protecting open views of the Park from East Lee Street. Should a parking structure be built during the latter phase of build-out to allow three-story construction, it is planned to be constructed behind the buildings, with the topography of the site minimizing visual impact to the site.
The Plan will use a series of buffers to protect sensitive areas adjacent to the Park. It will buffer Buffalo Creek by not building upon the one hundred-year floodplain. It will use the parking lots behind the Park to buffer NCA&T's agricultural land from the Park. Finally, it will preserve open space on the western edge of the site to buffer the Park and the College Forest residential neighborhood.

The Master Plan envisions two access points to the Park from East Lee Street. The first will be an extension of East Florida Street, on the western side of the site. The second will be a new entrance on the site's eastern portion. A loop road will connect these two access points to the parking lots behind the Park. In addition, a service road will run in front of the Park, parallel to East Lee Street, to service the buildings. Finally, a series of sidewalks and paths will encourage pedestrian movement throughout the site, focusing especially on the common space between buildings and the paths from the parking lots.

**Landscape Structure**
The landscape structure for South Campus responds to the unique topography and hydrology of the site. The parcel's two valleys will serve as amenities, offering open vistas as well as places to manage stormwater. A bridge will span the western valley to provide vehicular and pedestrian access to the northern portion of the site with minimal disturbance to the existing slopes. The design of buildings and parking also will preserve slopes by "stepping down" with the hills and building up the berm at the southern end of the site. Moreover, it is suggested that each building contribute to the surrounding landscape by installing a green roof. Finally, the Master Plan will preserve the forested areas on the periphery of the Park to protect its water quality, manage stormwater and preserve the character of the site.

Due to the topographical limitations of the northern section of the site (approximately 20 developable acres), it is recommended that a smaller single story footprint be used for future development. Also, due to its proximity to the NCA&T farm, this development style will lend itself to the existing character of current and future development at the NCA&T Farm. Facilities of this nature will be well suited for those functions requiring a more isolated environment.

**Integrated Transportation**
The Master Plan will integrate transportation options at the South Campus and promote alternative transportation usage, including biking and walking paths. By doing so, it will promote public health, encourage interaction between individuals, and reduce the energy used by single-occupant vehicular transportation.

**Pedestrian Circulation**
The pedestrian network at the South Campus will be attractive and convenient, linking the built environment with the natural environment. The goal of the network will be to make it possible – and appealing – to access the Park's amenities without a car. Well-defined pedestrian crossings along the loop road will ensure pedestrian safety. Paths leading between the parking lots and the buildings will have attractive landscaping and terracing to connect the areas visually and make the walk more pleasant. Finally, the Park will install a network of walking paths in the wooded areas surrounding the office building for recreation.

**Bicycle Circulation**
The bicycle circulation network will provide connectivity within South Campus as well as with the two campuses. Within the site, the bike trails will correspond to pedestrian walkways. Recommended amenities are bike racks near the entrances to buildings.

**Transit**
A shuttle bus system between NCA&T, UNCG and the South Campus is an essential alternative to single-occupancy vehicles. The proposed bus network will provide access between the campuses and two bus stops at the Park. This will obviate the need for students and faculty – or employees at the Park – to drive between the three locations.
In addition to the shuttle bus, the Plan recommends that South Campus negotiates with the city of Greensboro to ensure that the proposed bus rapid transit route from Piedmont Triad International Airport stops at the Park.

**Vehicular Circulation**
Service and emergency vehicles will be able to access each of the proposed buildings. Access to the southern corridor of buildings will be from a service road beside the berm, while access to the northern buildings will be from the loop road.

**Parking**
The Master Plan promotes alternative transportation options – namely, pedestrian, bicycle and bus service – to reduce the long-term parking demand for the South Campus. Nonetheless, it also sets aside an average of three parking spaces per 1,000 gross square feet to accommodate vehicular use. In general, parking will be on the northern section of the site, behind the office and laboratory structures. These surface parking lots will feature terracing to preserve the slopes in the area and protect hydrological systems. As the site builds out it may become necessary to build a parking structure to accommodate demand, however this will be driven by market demand.

Paving materials for the surface lots will be semi-permeable to minimize surface run-off. The lots also will use landscaped bio-retention basins to reduce surface run-off by absorbing and filtering water.

**Phasing**
The first phase of the development of the South Campus will begin with the USDA building on the Park’s southwestern corner. Development for later phases will continue west to east along the loop road. Because mixed uses require a critical mass, service and support amenities will be constructed last.

Following the build-out of the South Campus, a second phase of development may extend to the parcel on the other side of Buffalo Creek, adjacent to the NCA&T farm property. Research activity may also drive the need to develop this portion of the site.

**Fulfillment of Design Principles**

**Create a sense of place**
- Draw from the best qualities of the two campuses and the city of Greensboro to create a new place. The South Campuses landscape and architectural character will connect to NCA&T and UNCG’s campuses by using similar building materials and architectural features. By mixing uses and creating a dense, “urban” new campus, the Park also will invoke the character of downtown Greensboro.
- Mix uses and amenities to make the research park an attractive location for University and business partners. The campus will feature restaurants and small-scale retail to serve employees and visitors.
- Create a pedestrian-oriented environment to facilitate collaboration and interaction. The campus will be a compact, walkable environment. Walking paths will center on the collaborative common space between buildings and will emanate to the periphery of the site.

**Respect natural systems**
- Use the site’s natural systems and features – including streams, slopes and forested areas -- to inform development patterns and road alignment. The South Campus will use the existing hills and valleys, as well as Buffalo Creek and its floodplains, to determine site and roadway design.
- Make development compact to protect stream corridors and wetlands. The South Campus will strive to preserve Buffalo Creek and its floodplains by clustering development at the southern end of the site.
- Plant low-maintenance landscape treatments and native plants. The landscape design calls for trees and plants that do not require excessive watering.
Improve stormwater management and water quality

- Maintain or improve natural drainage patterns. Placing bio-retention basins and vegetated swales in the valleys and parking lots will treat the water naturally and on-site.
- Manage run-off where it falls and allow as much on-site recharge as possible. Swales, bio-retention basins, green roofs and permeable or porous paving materials will manage stormwater by reducing run-off and contaminants. They also will support on-site recharge, especially in parking areas.
- Provide natural vegetated buffers between development zones and steep slopes. The campus will incorporate vegetated buffers into the parking lots and valleys to minimize ecological impact.
- Maintain tree cover wherever possible. The campus will preserve as many existing trees as possible, especially in the forested area in the northern and eastern portions of the site.
- Conserve floodplains. The campus will minimize the amount of development that occurs in floodplains.
- Minimize erosion. The campus will avoid developing on steep slopes wherever possible. It also will strive to maintain existing vegetation and will replant areas cleared for construction.

Respect the climate

- Maximize energy efficiency through site planning and building design. The buildings in the South Campus will follow an east-west access to increase their daylight exposure. The west façades of buildings will incorporate shading techniques, including louvers and set-back windows, to minimize heat gain.
- Use landscape to provide shade to minimize heat islands and reduce cooling loads. There will be a landscape buffer along the buildings to provide additional cooling benefits. Green roofs will also serve to protect buildings from the heat island effect.
- Facilitate pedestrian movement with shade, shelter, and activity nodes.
- Choose materials that are appropriate for the climate. The Park will feature concrete instead of asphalt to reduce the generation of heat.

Conclusion

With these established design and development guidelines, the following images show what the site may look like upon full build-out of Phase I of this Master Plan. The first two images (one image of the entire site and a second image zoomed-in on Phase I) show a conservative approach that develops two-story structures with surface parking (approximately 440,000 square feet), while the second set of images looks at how market drivers would deliver a mix of two and three-story buildings with structured parking (approximately 525,000± square feet). In either case, these images represent a well conceived development plan representative of the hard work and effort of numerous stakeholders from across both campuses.

The development approach respects the existing character of the site and its surroundings, harnesses the power that will be generated by leveraging the human capital and financial resources of two outstanding public institutions, and creates a collaborative work environment that will strengthen the area's economy, improve community services, and enrich the quality of life.