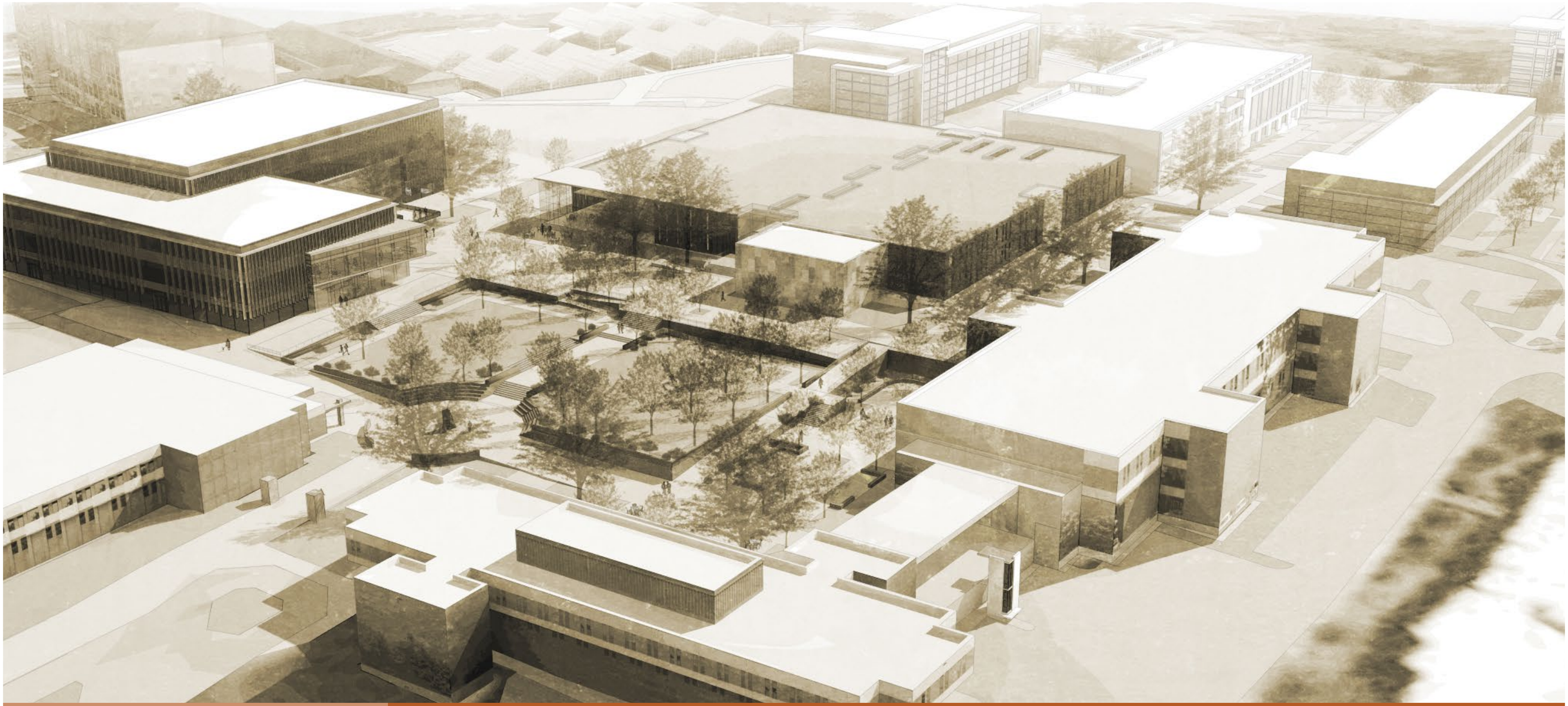

CLEMSON SOUTHEAST PRECINCT MASTER PLAN

The Boudreaux Group | Dober Lidsky Mathey | Johnson & King

August 2013

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MESSAGE FROM THE PLANNING TEAM

The Clemson University Southeast Precinct Master Plan process provided a unique opportunity to celebrate a part of Clemson's heritage as the teacher, leader and advocate for South Carolina's agricultural industry. Since the university's founding in 1893 as the Clemson Agricultural College, Clemson University continues to be a driving force in the prosperity of South Carolina's agriculture and natural resources industries. This master planning process also provided the opportunity to imagine how innovation and collaboration in teaching and research can be manifested through the facilities and grounds of the Southeast Precinct. The plan became a wonderful challenge of respecting this heritage while creating a progressive plan that is fertile ground for new thinking over the next 50 years. The faculty, students and administration who shared their time and ideas with us recognize that they are the stewards of this future and were committed to challenging current thought, perceived boundaries and each other to craft this plan and vision.

This master plan is a roadmap for how the precinct can develop in order to meet the mission of the university, the College of Agriculture, Forestry & Life Sciences (CAFLS), Public Service Activities (PSA), and other existing and future stakeholders. The plan should guide decisions, particularly through the integration of the Guiding Principles as standards for ensuring exemplary and sustainable capital improvements that will advance the vision and mission of the university. The plan also should allow for flexibility and updates to respond to changes in academic programming or capital projects investments or yet-to-be-imagined technologies. In the end, the plan is about how to provide the best learning environments. By improving the facilities within the precinct (quality, relationships and adjacencies, design and construction, systems), Clemson will improve the productivity, collaboration and sense of community of the precinct's tenants.

Cultivating a renewed sense of community and place within the precinct and with CAFLS is sacred to each stakeholder (administration, faculty and students). The buildings, the grounds and the utilization and design of the spaces are critical to this cultivation. Places to engage as a community are vitally important to exemplary learning environments. This master plan emphasizes community and place making.

The Steering Committee provided wonderful leadership, candid critique and thoughtful visioning toward the creation of this master plan. We are thankful for the commitment of each committee member and know they will remain dedicated stewards of this plan.

Respectfully submitted,
The Boudreaux Group

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EXECUTIVE SUMMARY

The Clemson University Southeast Precinct Master Plan provides a roadmap for how the precinct facilities and grounds can be developed in order to meet the needs of the University, existing stakeholders and future stakeholders that may call this precinct home. The College of Agriculture, Forestry & Life Sciences (CAFLS) and Public Service Activities (PSA) are the major stakeholders in the precinct and enjoy a rich tradition of calling the precinct home. While CAFLS was the primary focus for the space analysis and modeling, this plan addresses and provides for the valued relationships with other colleges that are necessary for exemplary educational experiences and supports the broader mission of the entire university.

CLEMSON SOUTHEAST PRECINCT

Two key elements drove the development of the master plan: 1) mission and vision, and 2) space analysis. These two elements provided the foundation on which to build the plan: being responsive to the mission and vision of the university and to CAFLS while addressing the facilities needs of current and projected growth in students, faculty and research investments.

The planning team conducted focus groups and individual interviews with faculty, students and the administration. We evaluated the existing conditions of the facilities and grounds and created an extensive data-base of existing students, faculty, staff and space in order to develop a current snapshot of space utilization based on accepted space standards.


RECOMMENDED

GUIDING PRINCIPLES

Throughout numerous stakeholder focus groups and interviews, the following key themes emerged as major goals of the master plan.

- create a stronger sense of community
- improve the aesthetics of the buildings and grounds
- improve accessibility
- improve productivity and efficiencies

These goals informed the development of guiding principles.

The Southeast Campus Precinct Master Plan presents a vision for guiding development within the precinct. The plan, which includes short- and long-term recommendations for targeted renovation, new development and divestment, builds on the directions of the *Clemson 2020 Roadmap*, the 2002 Campus Master Plan and the strategic planning efforts of precinct stakeholders, including the Vision and the Mission of the College of Agriculture, Forestry and Life Sciences.

The following Guiding Principles are proposed to guide the implementation of this plan for the next 10-15 years. These principles will allow the precinct plan to be flexible and adaptable in order to accommodate and provide for a changing world. Most importantly, these principles marry the vision of Clemson and the vision of CAFLS into a common roadmap for becoming an even more competitive seminary of higher learning.

Guiding Principles for the Southeast Precinct MasterPlan

Preamble

The Southeast Campus Precinct facilities and landscapes will support and advance the core teaching and research missions of Clemson University and the College of Agriculture, Forestry and Life Sciences and inspire the highest levels of scholarship, productivity and efficiency through innovative design and programming and a culture of exemplary stewardship.

- *build to complete*

Principles

- **The Southeast Campus will build to compete for and retain the best students, faculty and staff through high quality facilities, landscapes, and infrastructure.**
  - *attract, retain and reward top people*
- **The Southeast Campus will foster exceptional scholarly performance through facilities and landscapes that engage students, faculty and staff while serving as a collaboration crossroads for interdisciplinary teaching and research the University.**
  - *engagement and leadership*
- **The Southeast Campus Precinct will inspire distinctive intellectual and social experiences for precinct stakeholders and the entire Clemson Community.**
  - *student quality and performance*
- **The Southeast Campus, as the symbolic home to Clemson's land grant heritage, will advance and demonstrate innovative and sustainable practices in order to perpetually improve the prosperity and health of our state, our nation and our world.**
  - *heritage and sustainable future*

MASTER PLAN RECOMMENDATIONS

The analysis and modeling for the precinct's facilities and tenants determined the long-term space needs based on projected growth in the number of faculty and adopted space standards. A summary of the space analysis follows. (All areas are net assignable and are rounded to the nearest 1,000 square feet.)

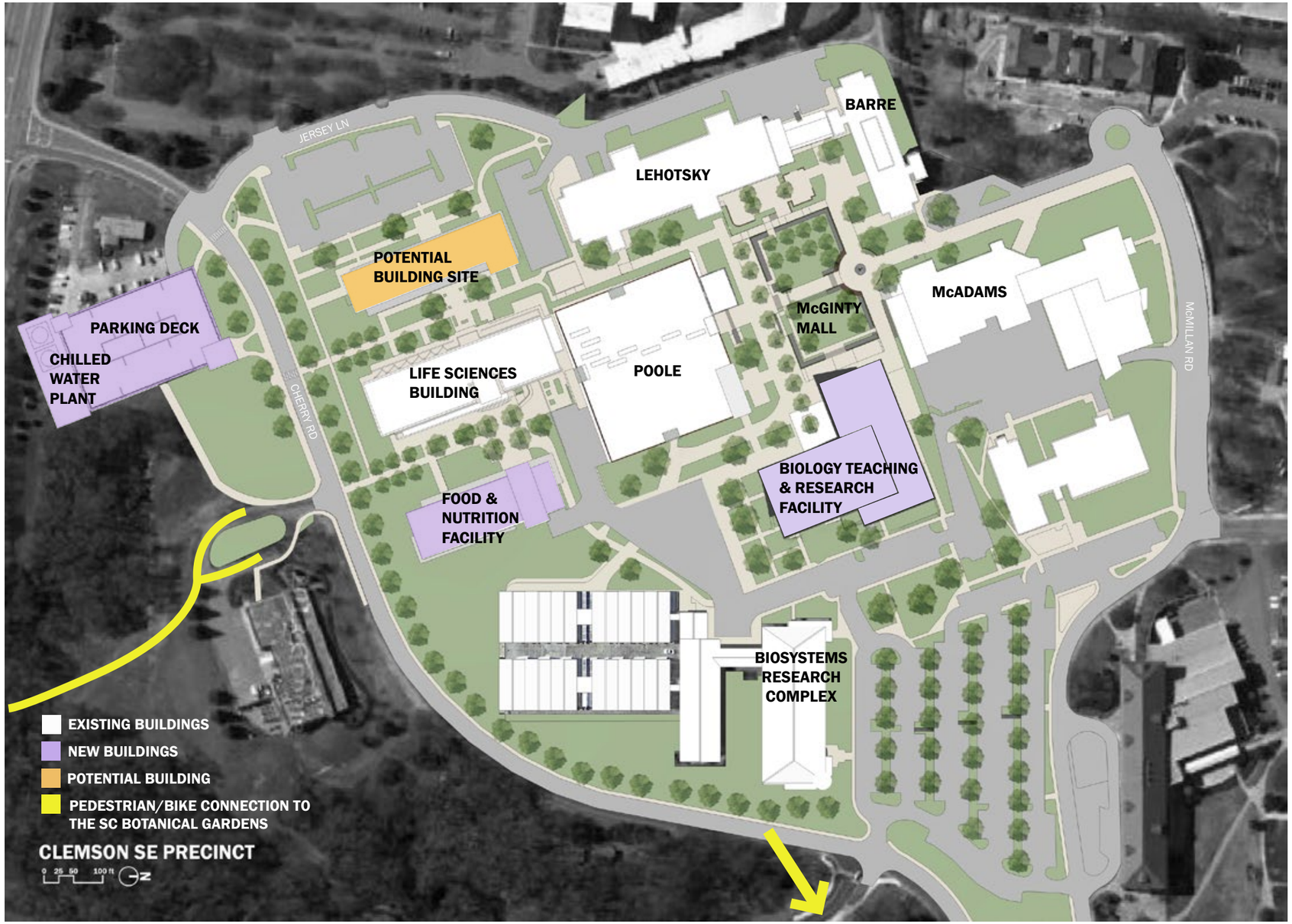
Existing Space	588,000 SF
Projected Space	632,000 to 685,000 SF
Projected Deficit	44,000 to 97,000 SF

Therefore, based on the higher standard model, up to approximately 97,000 NASF of additional space is needed in order to meet projected facilities needs. This master plan proposes actions to meet these needs through a combination of demolition, renovation and new construction and long-term improvements to McGinty Mall. This includes the following projects.

- **Demolish Newman Hall**

- **New Construction**
  - School of Computing Facility (out of precinct)
  - Food and Nutrition Facility
  - Packaging Testing Facility (out of precinct)
  - Parking Deck with relocated Chilled Water
  - Biology Teaching and Research Facility (on Newman site)
  - McGinty Mall Improvements
  - A potential building site also is identified west of the Life Sciences Building.
  - Pedestrian and bike trail connecting the precinct to the SC Botanical Gardens

- **Renovation**
  - McAdams Hall
  - Lehotsky Hall
  - Poole Agricultural Center
  - Biosystems Research Complex



RECOMMENDED PLAN FOR THE SOUTHEAST PRECINCT

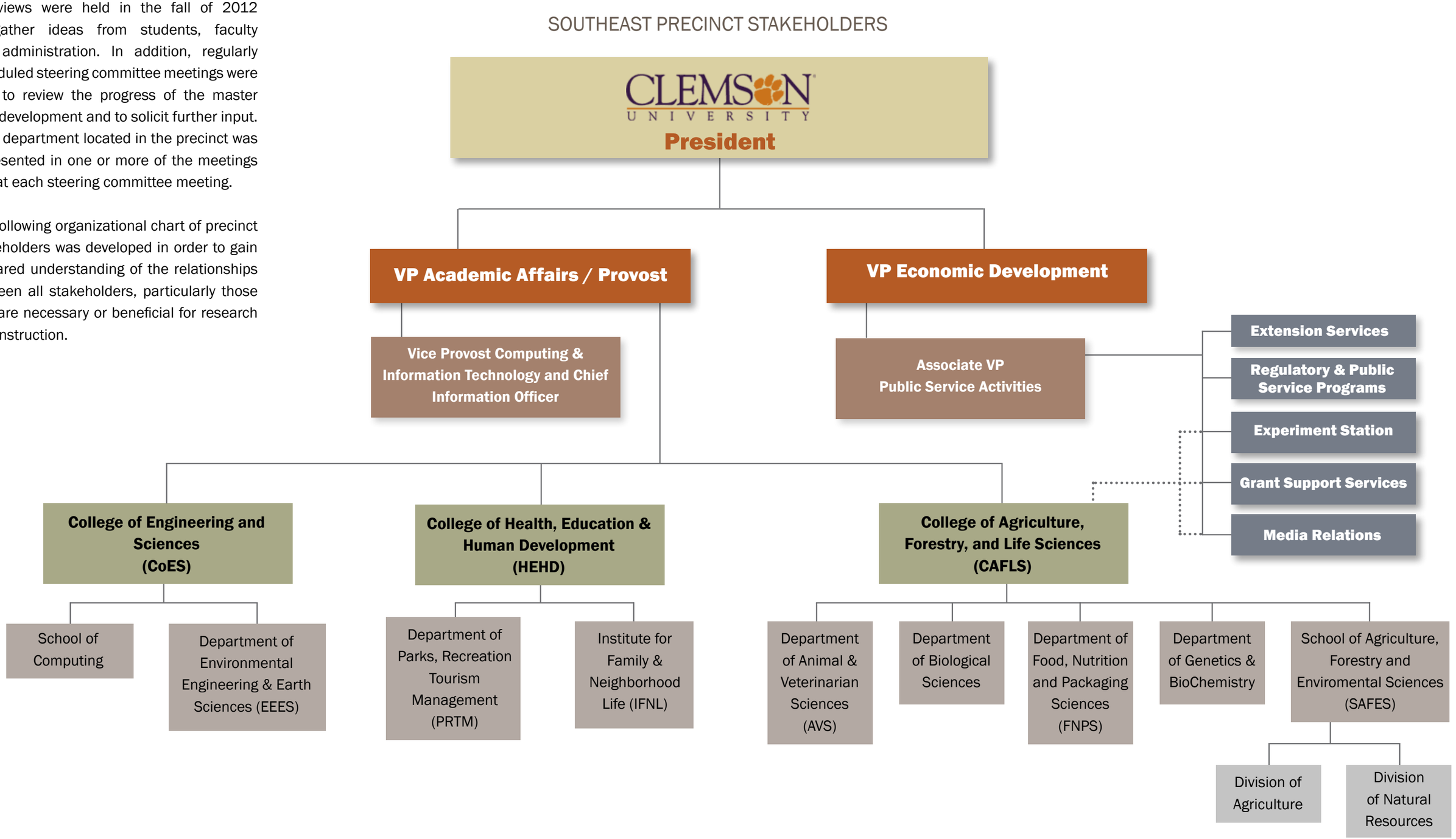
ANALYSIS

Stakeholder Input
Site Analysis
Space Analysis
Facilities Analysis

ANALYSIS
STAKEHOLDER INPUT

Numerous stakeholder meetings and interviews were held in the fall of 2012 to gather ideas from students, faculty and administration. In addition, regularly scheduled steering committee meetings were held to review the progress of the master plan development and to solicit further input. Each department located in the precinct was represented in one or more of the meetings and at each steering committee meeting.

The following organizational chart of precinct stakeholders was developed in order to gain a shared understanding of the relationships between all stakeholders, particularly those that are necessary or beneficial for research and instruction.

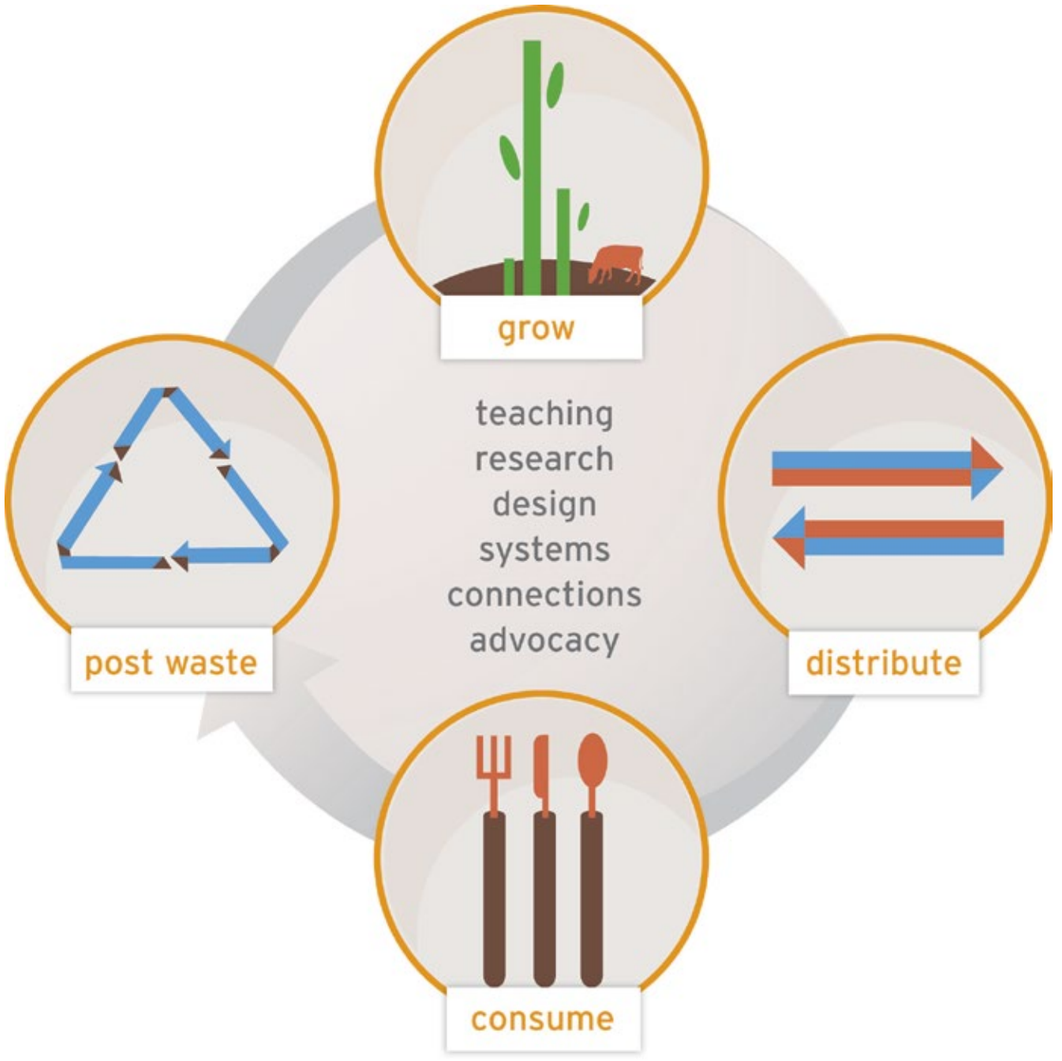


CAFLS IN THE GLOBAL COMMUNITY

While several departments and colleges are located in the Southeast Precinct, it is primarily and traditionally the home of CAFLS. The master plan recommendations, therefore, focus on how the precinct facilities and grounds can advance the mission of CAFLS while enhancing the cross-discipline relationships vital to this mission.

CAFLS - from seed research and crop rotations, from cattle farming to fisheries, from mechanics to packaging design, from biology to cheese production, from alternative fuels and forestry management, from fiber technologies to wildlife stewardship - is fundamental to Clemson's founding, its mission and to its future purpose. These core academic and research programs position CAFLS as a strategic partner in sustaining the global community.

The future of the global community is dependent on sustainable, safe and healthy food supplies. This is one of the greatest challenges of the 21st century and is directly related to national priorities such as health, energy, transportation and the environment. CAFLS is founded on the elements that provide for this food supply - a circle of life for food - and has played and will continue to play a profoundly key role in Clemson's ability to serve the public good and contribute to meeting global needs. The following graphic illustrates this circle of life as understood in the academic mission of CAFLS. Through exemplary teaching, research and advocacy, CAFLS contributes to and leads the nation in the design and implementation of systems, products and cooperative efforts that provide sustainable, safe and healthy food supplies.



SUMMARY OF KEY THEMES FROM STAKEHOLDER FOCUS GROUPS

Throughout the stakeholder focus groups and interviews, the diversity of ideas and opinions shared was broad and passionate. Yet, four key themes consistently emerged with unanimous agreement and became the foundation for the master plan recommendations: 1) strengthening the sense of community; 2) enhancing the beauty of the precinct; 3) improving accessibility; and 4) optimizing productivity and efficiencies. Achieving these goals can inpsire higher levels of scholarship and establish the precinct as an even more special place on campus.

COMMUNITY

Creating a stronger sense of community with CAFLS is a unanimous desire for all faculty, students and the administration. The agricultural traditions of Clemson are deep, yet the buildings and grounds no longer encourage students to linger in the precinct and inspire connections to the place.

- Places to gather, study, eat, meet, showcase
- Heritage and tradition
- Identifiable and iconic home for the college and for each department
- Inter-departmental relationships: faculty and students

AESTHETICS

The condition of the buildings does not represent the value of CAFLS to the University or to the prosperity of the state. The buildings and landscape should be a testament to the traditions, the innovations and the foci of the college. The buildings and grounds should inspire potential students and faculty to make Clemson their home and should instill a sense of pride in students, faculty and alumni.

- Condition of buildings
- Exude innovation in academics and research
- Landscaping in McGinty Mall
- Represent the core areas of the college: agriculture, forestry, horticulture, life sciences

ACCESSIBILITY

Getting around the precinct - the grounds and the buildings - is challenging, particularly for those with physical disabilities. Signage and accessibility needs to be improved throughout the precinct. In addition, access to buildings in the evenings and on weekends limits the ability of students to use the buildings for studying. This also will increase the sense of community.

- ADA Accessibility
- Signage
- Hours of operation

PRODUCTIVITY AND EFFICIENCY

The condition of the buildings and the space utilization and assignments are not ideal for maximizing productivity, efficiency and the academic experience. Improving air quality, adjacencies and support spaces for students will be a good first step in create optimum environments for teaching, learning and collaborating.

- Target student faculty ratio of 15-17:1
- Efficient departmental adjacencies
- Academic support spaces for students: business centers, study areas, showers and locker rooms, outdoor spaces, Creative Inquiry spaces, plugs for laptops
- Quality and quantity of labs, classrooms and offices
- Air quality
- Safety
- Maximize academic experience within the core of the precinct

SITE ANALYSIS

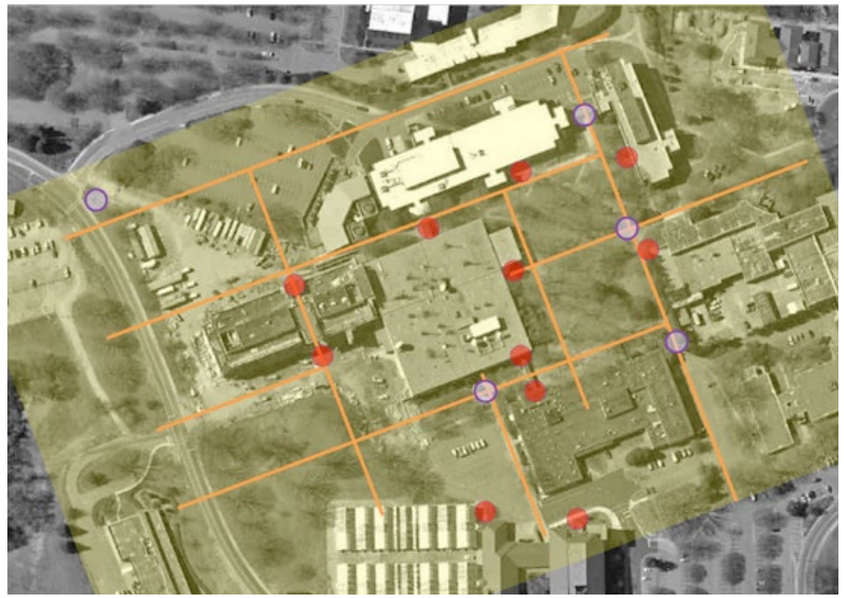
MCGINTY MALL

The Clemson University Preservation Plan stated that the current condition and design of McGinty Mall is not representative of university that is home to exemplary programs in horticulture, forestry, landscape architecture and design. The plan goes further to categorize McGinty Mall as a landscape of low integrity. Clemson's agricultural and land grant heritage deserve more than this.

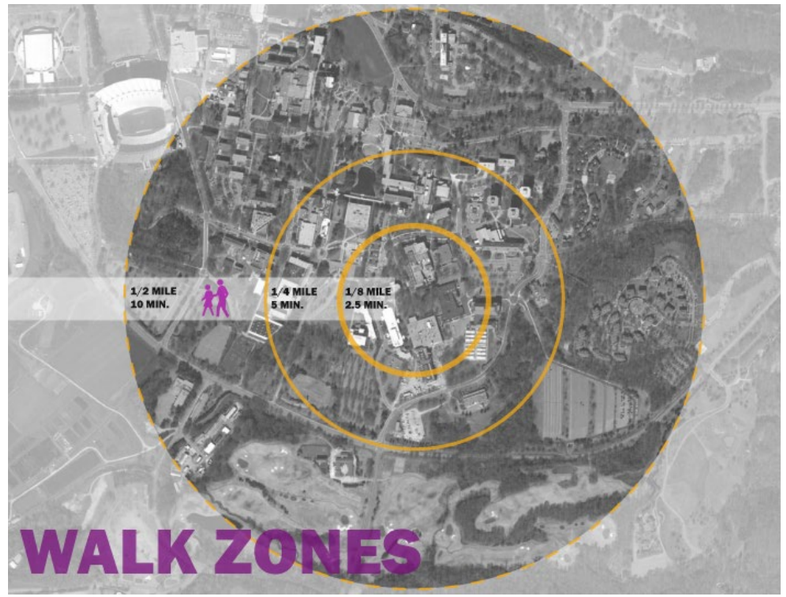
As stated in the *Clemson University Preservation Plan, February 2009:*

> *Within the McGinty Mall area there are various retaining walls that are failing and paving that is settling unevenly, constituting a trip hazard.*
>
> *The mall includes walkways, seating areas and terraces, site furnishings, art and sculpture, and ornamental plantings. Ornamental plantings reinforce the design of these walks, plazas, and seating areas. However, the density of the vegetation associated with the plaza between the buildings obscures a visual understanding of their physical relationships and diminishes the sense of order or organization within the character area.*

McGinty Mall is more than a pass through. McGinty Mall has the potential to become a beloved green space that encourages gathering, large and small and also exemplifies the horticultural, landscape and stewardship ideals and practices taught.



This photo illustrates the primary pedestrian paths through the precinct. These paths can be difficult for those requiring handicapped access, and there is poor signage throughout the precinct directing to accessible entrances.



From the center of McGinty Mall, there are convenient 5 and 10 minute walk zones at a moderate pace. The SC Botanical Gardens and the Arboretum are within the 10 minute zone, which enhances the pedestrian connectivity with the precinct. When considering possible swing space and the location of new parking, these walk zones are important for understanding appropriate and efficient adjacencies and distances.

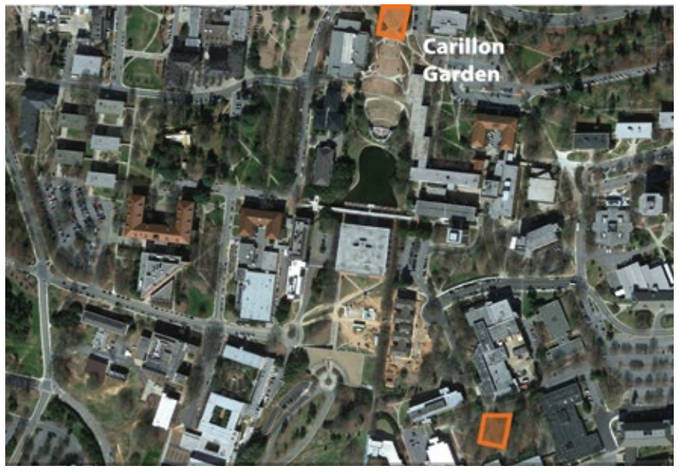
SITE ANALYSIS

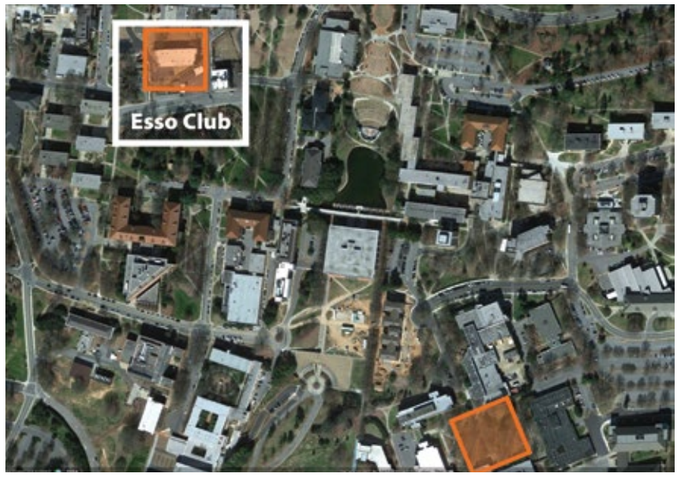
MCGINTY MALL

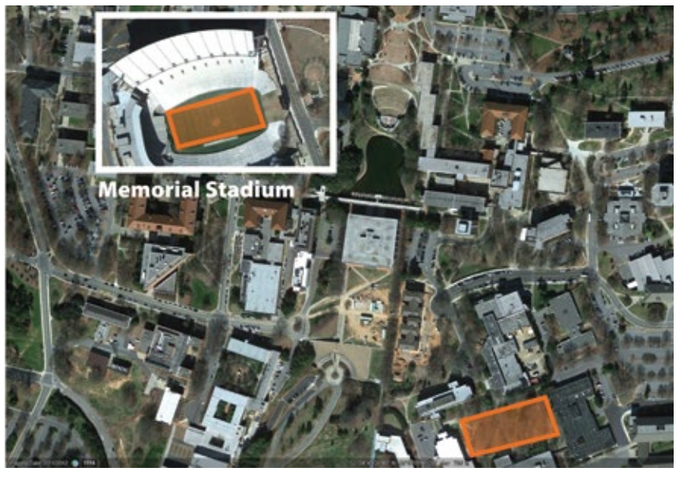
McGinty Mall is a very important space in the Southeast precinct. However, the large size and major tree canopy do not create a place that welcomes people to use for little more than a pass through between classes. The dense tree canopy deters grass from growing, so the Mall is characterized by a network of sidewalks, very little grass and fallen leaves.

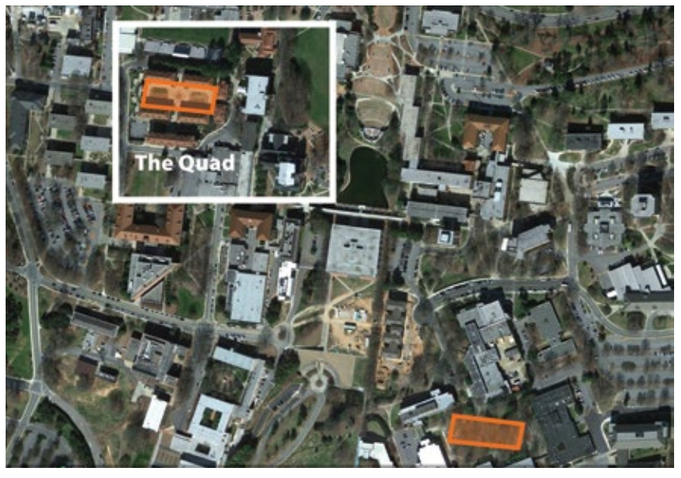
To fully comprehend the size of McGinty Mall, we compared it to other popular Clemson gathering places. The following photos illustrate the large size of McGinty Mall relative to these places. People gravitate to spaces that are open, yet provide defined places for sitting and gathering.

Scale Comparisons









The following photos illustrate elements and qualities that can be incorporated into the redesign and reconstruction of McGinty Mall.

The Grove, University of Mississippi

The Grove at the University of Mississippi is a treasured and popular gathering place. Although a legendary home for tailgating, the Grove is most revered as a park in the center of campus that welcomes people to relax, study and even hosts commencement exercises each spring. The Grove achieves this with a balance of trees providing welcomed shade but allowing a lush lawn to grow.

The Cistern, College of Charleston

The Cistern at the College of Charleston is well-defined by buildings and an allee of canopy trees. The buildings provide a backdrop to the green space as well as a sense of enclosure. The trees provide shade and beauty and work in concert with the nice lawn. The Cistern is also home to numerous academic and social programs and commencement exercises.

Washington Square, NYC

In Washington Square Park, sidewalks are active avenues lined with shade trees and seating. The seating encourages people to sit while still being a part of the action walking and running by on the way to the fountain. These sidewalks are pathways and places, and there is rarely an open seat.

NYC Public Library

The 5th Avenue entrance to the New York Public Library is flanked by elevated and shaded areas for sitting. These spaces provide a nice transition between the busy street and sidewalk and the library steps. Diverse seating along the edges of the spaces provide a welcoming semi-public zone: at the edge of the action, but not in the middle. Movable furnishing allow people to creates personal space and is more conducive to multiples uses.

SPACE ANALYSIS

Interactive Space Allocation Model

(for planning purposes, not for design)

The Clemson University space planning model has been designed to assist in the planning process. This model enables the University, the College of Agriculture, Forestry, and Life Sciences, and other precinct stakeholders to test scenarios with various facility implications. This model is not meant to take the place of a facility program for architectural design - that is a level of detail beyond this planning model.

The first part of the model (see Appendix) lists the data assembled from the university's database of faculty, staff, and students. This is followed by a summary spreadsheet shown here in *Table One*, while the remaining portions are focused on each of the departments and schools within the planning district.

The power of the model is the ability to test scenarios by modifying variables to reflect various planning assumptions they might wish to explore. For instance, the University might like to see the spatial implications of increasing the number of faculty doing research in the Department of Biological Sciences. A simple adjustment in the number of faculty will ripple through the Biological Sciences portion of the model and impact office, insturctional labs, and research labs and support.

The *Table One Summary* shows the total existing space for the seven departments and school that were modeled - 382,936 net assignable square feet (NASF), not including university classrooms, non-modeled departments or vacant space. Classrooms are treated as a University resource because they are not owned by academic departments. Therefore, they are removed from department totals but included in the total for the entire precinct.

TABLE ONE
Summary

Division	Department	Existing NASF	Existing Target Range: Right-Sized (Low) NASF	Existing Target Range: Right-Sized (High) NASF	Growth Target Range: Modeled (Low) NASF	Growth Target Range: Modeled (High) NASF	NASF Needed (based on high model)
CAFLS	Animal and Veterinary Sciences	26,312	24,800	27,400	26,757	31,082	4,770
CAFLS	Biological Sciences	92,015	117,000	124,900	123,370	137,054	45,039
CAFLS	Food, Nutrition & Package Science	45,467	41,300	46,300	48,310	53,680	8,213
CAFLS	Genetics and Biochemistry	59,520	41,400	48,500	54,012	61,287	1,767
CAFLS	School of Ag For Env Sciences	125,579	122,800	138,700	132,616	148,736	23,157
COES	School of Computing	23,957	44,600	44,600	53,415	57,479	33,522
HEHD	Parks Recreation and Tourism Mgmt	10,086	18,700	19,600	21,374	23,414	13,328
Subtotal		382,936	410,600	450,000	459,854	512,733	129,797
Scheduled and Department Classrooms- Existing		22,727	22,727	22,727	22,727	22,727	
Departments Not modeled- Existing		149,638	149,638	149,638	149,638	149,638	
Vacant to be reassigned		33,000					(33,000)
Total		**588,301**	**582,965**	**622,365**	**632,219**	**685,098**	**97,797**
	NASF Space Needs		(5,336)	34,064	43,918	96,797	
	Demo Newman				38,800	38,800	
	New Programmed Space in Poole				35,000	35,000	
	Total NASF Space Needed				**117,718**	**170,597**	

The summary also shows the amount of space required if the departments and schools were right-sized - 410,600 NASF to 450,000 NASF and the amount of space required in the future - 459,854 NASF to 512,733 NASF. The bottom section of the table shows the area of the existing classrooms, existing space not modeled, and vacant space to be reassigned as well as the space implications of the plan recommendations. *Table One* represents all existing NASF and the right-sized and modeled subtotals.

The existing space for most of the units is in between the low end and high end of the amount of space required if the departments were right-sized. However, the following have significantly less space than right-sizing suggests.

- Biological Sciences
- School of Computing
- PRTM

For future modeled growth, all of the departments and schools will require additional space. Two will require a doubling of space:

- School of Computing
- PRTM

Two will require major space increases:

- Biological Sciences
- SAFES

The other three units require minor increases in space. The amount of space required is one issue - the quality and appropriateness of space is another.

TABLE TWO-A
Departments, Programs, and Units not Modeled That Could Stay in the Precinct

Budget Ctr	Department	Existing NASF
PSAG	PSA & Econ Dev Business Svcs	2,548
PSAG	PSA Media Relations	1,074
PSAG	CU Restoration Inst. (CURI)	120
PSAG	Grant Support Services	1,413
PSAG	Agricultural Research	1,090
PSAG	Dir Regulatory & Pub Serv Prog	140
CAFLS	CAFLS Dean's Office	43,069
CAFLS	CAFLS Assoc Dean for Aca Affair	254
CAFLS	CAFLS Assoc Dean for Research	195
CAFLS	CAFLS Business Office	2,516
CAFLS	DNA Learning Center	3,403
CAFLS	CU Genomics Institute	1,129
CAFLS	Animal Co Prod Res/Ed Ctr-ACREC	3,430
PSAG	Clemson Forest - Teach/Res/Mgt	664
COES	Bioengineering	3,182
COES	Chemistry	5,626
COES	Physics and Astronomy	4,158
CCIT	CIO Office	2,241
CCIT	Customer Suppt & Personal Comp	4,888
CCIT	Computer Systems and Operation	71
CCIT	Information Security & Privacy	429
CCIT	Network Services & Telecomm	9,980
CCIT	Learning Technologies	3,209
CCIT	Chief Technology Office	309
CCIT	Cyber Institute	1,333
PSAG	Office Land Management	54
RES	Office Research Compliance	1,545
COES	Digital Arts Production	3,668
FAC	Univ Fac:Custodial-Recycle Svs	225
FAC	Univ Fac:Maintenance Services	2,088
MISC	ARAMARK Food Services	3,600
		107,651

Total of non-modeled units not identified to move out of precinct

Total of non-modeled units **149,638**

TWO-B
Departments, Programs, and Units not Modeled That Could Move Out of the Precinct

Budget Ctr	Department	Existing NASF
PSAG	VP Econ Dev & PSA	1,666
PSAG	Economic Development	191
PSAG	4-H Youth Development	451
PSAG	Cooperative Extension Services	1,200
PSAG	Extension Staff Development	213
PSAG	Video Production Services	8,606
PSAG	PSA Publishing	4,254
HEHD	Inst on Fmly & Nhd Life (IFNL)	1,278
HEHD	Inst on Fmly & Nhd Life (IFNL)	60
PSAG	Youth Learning Institute	1,035
CES	Field Operations	207
PSAG	CU Regulatory Services	443
HEHD	Office of Summer Programs	400
HEHD	Family Outreach	677
COES	Environmental Engr & Earth Sci	12,537
COES	Auto. Safety Researc Inst.	1,030
COES	Mathematical Sciences	3,160
CCIT	CCIT Planning & Resource Mgmt	2,507
PROV	Dean of Graduate School	70
MISC	US Forest Service	2,002
		41,987

The list in Table Two-A on the left indicates the 51 departments, programs, and units that were not modeled, and these total 149,638 NASF. Table Two-B indicates the departments, programs, and units that are possible candidates for relocation out of the precinct or off-campus, totalling 41,987 NASF. An assumption is that over time these 20 units will be relocated.

Table Two-C below provides a summary of projects that will address and provide for the long-term space needs of the precinct stakeholders.

TABLE TWO-C
Construction Summary

	Existing NASF	Future		Comments
		Renovated	New Construction	
Computing	26,668		63,900	New Construction: School of Computing[1]
FNPS	47,057		33,700	New Construction: Food and Nutrition
			21,555	Packaging Science to Harris Smith
AVS	27,995		36,195	New Construction: Animal & Veterinary
				Science (5,125 Abattior off campus)
BioSciences	95,253	85,964	54,300	New and Renovated space
PRTM	13,797	27,125		PRTM relocated to renovated McAdams
Gen/BioChem	59,520	61,287		Renovated Space: Genetics and Biochem
SAFES	135,383	158,530		Renovated Space: SAFES
Non-Modeled	149,638	107,651		41,987 relocates out of precinct- vacated space reassigned to various department growth
Vacant	33,000			Vacant and available for reassignment- vacated space reassigned to various department growth
		35,000		Added program space to Poole
	588.311	475,557	209,650	
			685,207	**Total NASF Space Needs**

[1] Includes the modeled target plus an allocation for university classrooms.

GENERAL OPINION OF EXISTING FACILITIES AND SPACES

The primary focus of the master plan included the following facilities: McAdams, Barre, Lehotsky, Newman, Poole, Biosystems Research Complex, Life Sciences Building, McGinty Mall. The following buildings were evaluated, but were not the focus of structural or design consideration: Long, Jordan, Godley-Snell Research Center, Greenhouses. Long and Jordan were included in the space analysis and will be important to meeting short- and long-term space needs.

With the exception of the new Life Sciences Building (2012), there has been no new construction in the precinct since the addition to McAdams (2003) and the construction of the BRC (1999). Long Hall (1935) is the oldest building in the study, but is outside of the precinct. Godley-Snell was constructed in 1993; Barre and Lehotsky in 1972. Before 1972, there was no new construction since Newman and Poole (1954) and the original McAdams (1949).

The construction of the new Life Sciences Building (LSB) interjects much needed and desired freshness, modernity and innovation into the precinct. As a result, the older buildings look older and the contrasts in aesthetics, quality of space and functionality are stark.

Numerous upgrades have been made to the buildings in order to accommodate changes in technologies, teaching and research methodologies, increases in student and faculty populations, and dated and inefficient systems. However, some buildings, such Newman and Poole, are reaching a point-of-no-return on capital improvements investments. The building systems are dated and do not support new labs efficiently. A lack of integration of new technologies and spaces that support a more collaborative approach to teaching and learning diminishes the precinct's competitive edge. ADA accessibility is poor. Finishes are dated. There is very little space for students to meet, study or gather with friends. In short, the buildings - particularly, Poole, Newman, and Lehotsky - need considerable work in order to remain efficient and useful buildings for teaching and research.

The BRC and the Head House are candidates for interior renovations to maximize space utilization. Godley-Snell is in good condition and continues to function effectively for its research purposes. Barre has recently been renovated.

Poole serves as the iconic building for CAFLS and should be renovated in order to preserve the history of the precinct and to make the building ready for another 50 years of academic and research service. Newman, on the other hand, is not a candidate for renovation. The purposes of the building - abattoir, cheese and ice cream production, and packaging testing - are no longer necessary in the center of this precinct. The building sits on extremely valuable real estate for the long-term academic mission of Clemson. Therefore, Newman is a candidate for demolition in order to free land for higher density construction and to move its programs to facilities that are more efficiently and sustainably designed.

The structural analysis and life safety evaluations are located in the appendices.

McGinty Mall is home to numerous grand trees and is the center of the Southeast Precinct. However, McGinty Mall is not a place that encourages one to stop and linger, sit a while or to meet friends. Instead, most students and faculty rush through the space on their way from one class to another. The beautiful trees provide wonderful shade, but also deter the growth of grass or other plants. The mall is characterized by a carpet of fallen leaves, acorns and a network of sidewalks and provide no sense of place and is difficult to navigate (ADA). McGinty Mall is a pass-through, not a place. It should be one of the most beautiful and active places on campus. The master plan recommends a complete reconstruction of McGinty Mall that will increase accessibility, create a park and formal entry into the precinct, provide a more human scale public place for large gatherings or for sitting alone to study and a strong sense of place to this key central open space.

MASTER PLAN RECOMMENDATIONS

Guiding Principles
Master Plan Elements
Facility Recommendations
Master Plan Image Models

GUIDING PRINCIPLES

The Southeast Campus Precinct Plan presents a vision for guiding development within the precinct. The plan supports the directions of the *Clemson 2020 Roadmap,* the Campus Master Plan, the university goals, and the strategic planning efforts of precinct stakeholders while meeting facilities needs. This is accomplished through short- and long-term recommendations for targeted renovation, new development and divestment. In addition, this plan supports and advances the Vision and the Mission of the College of Agriculture, Forestry and Life Sciences.

In order to provide a sustainable process for moving this plan forward, the following Guiding Principles are proposed to guide the implementation (short- and long-term strategies) of the Southeast Campus Precinct facilities and grounds for the next 10-15 years. These principles will allow the precinct plan to be flexible and adaptable in order to accommodate and provide for a changing world. Decisions made regarding the implementation should be judged by how a project or a program or an investment or divestment lives up to the purpose of these principles.

Most importantly, these principles marry the vision of Clemson and the vision of CAFLS into a common roadmap for becoming an even more competitive seminary of higher learning.

Clemson University 2020 Road Map

Core Components of the Roadmap

Vision

Clemson will be one of the nation's top-20 public universities.

Goals

Fulfill Clemson's responsibility to students and the state of South Carolina

- to provide talent for the new economy by recruiting and retaining outstanding students and faculty and providing an exceptional educational experience grounded in engagement;
- to drive innovation, through research and service, that stimulates economic growth and solves problems;
- to serve the public good by focusing on emphasis areas that address some of the great challenges of the 21st century — national priorities such as health, energy, transportation and sustainable environment.

Objectives

Invest in four strategic priorities:

- Enhance student quality and performance
- Provide engagement and leadership opportunities for all students
- Attract, retain and reward top people
- Build to compete — facilities, infrastructure and technology

Guiding Principles for the Southeast Precinct MasterPlan

Preamble

The Southeast Campus Precinct facilities and landscapes will support and advance the core teaching and research missions of Clemson University and the College of Agriculture, Forestry and Life Sciences and inspire the highest levels of scholarship, productivity and efficiency through innovative design and programming and a culture of exemplary stewardship.

- *build to complete*

Principles

- **The Southeast Campus will build to compete for and retain the best students, faculty and staff through high quality facilities, landscapes, and infrastructure.**
  - *attract, retain and reward top people*
- **The Southeast Campus will foster exceptional scholarly performance through facilities and landscapes that engage students, faculty and staff while serving as a collaboration crossroads for interdisciplinary teaching and research the University.**
  - *engagement and leadership*
- **The Southeast Campus Precinct will inspire distinctive intellectual and social experiences for precinct stakeholders and the entire Clemson Community.**
  - *student quality and performance*
- **The Southeast Campus, as the symbolic home to Clemson's land grant heritage, will advance and demonstrate innovative and sustainable practices in order to perpetually improve the prosperity and health of our state, our nation and our world.**
  - *heritage and sustainable future*

College of Agriculture, Forestry and Life Sciences

Mission

The mission of the College of Agriculture, Forestry and Life Sciences, consistent with our land grant university role, is to provide teaching, research and service in agriculture, forestry and life sciences that will benefit the citizens of South Carolina and the nation. The College of Agriculture, Forestry and Life Sciences serves more than 2,700 graduate and undergraduate students.

Vision

The vision of our college is to be the preeminent educational and research institution dedicated to enhancing the quality of life of the citizens of South Carolina. The restructuring of the disciplines of agriculture, forestry and life sciences gives us a strategic advantage to accomplish this goal. This includes expanding interdisciplinary teams to enhance and improve our educational, research and public service activities, fostering team-based problem solving approaches with our constituents in the state, and optimizing the use of resources. By capitalizing on these challenging opportunities we will be able to meet our responsibilities to provide the highest quality education for our students and the highest quality public service to the state.

MASTER PLAN ELEMENTS

The following elements were incorporated into all parts of the master plan. Whether new construction, renovation or outdoor places, each part of the precinct should address and exemplify these elements.

PLACE MAKING AND COLLABORATION

The Southeast Precinct Master Plan calls for the precinct to become a place, not a pass-through. Through each focus group and interview, there was a strong, resounding call for places for students and faculty to gather, places to study, meet friends, enjoy a cup of coffee - just general hanging out space within the precinct. Currently, there are very few places where students can sit, and the quality of the existing places is lacking in character, comfort, accessibility and power connectivity. Faculty and students alike were unanimous in their desire for places that welcomed and encouraged people to linger a while. This will contribute to the sense of community within the College and will encourage more cross-discipline collaborations.

Outdoor spaces are as important as space within the buildings. McGinty Mall is a well-shaded area, but lacks in welcoming and appealing places to sit, lay on the grass or to host events for the College. McGinty has the potential to become a vibrant park with diverse areas for seating, places where one person can study or a class can meet outdoors.

This plan places a significant value on creating a variety of indoor and outdoor gathering places - *Third Places*. Third Places are important as educational space for they encourage collaboration, engage the students more intimately with their academic departments and organizations, create a sense of pride in and connection to the precinct, create a positive image of the precinct stakeholders and the university, and they encourage positive experiences and memories for the Clemson community.

As defined by Ray Oldenburg in his seminal book, *The Great Good Place* (1989), "***Third places*** are important for civil society, democracy, civic engagement, and establishing feelings of a sense of place."

Oldenburg calls one's "first place" the home and those with whom one lives. The "second place" is the workplace — where people may actually spend most of their time. Third places, then, are "anchors" of community life and facilitate and foster broader, more creative interaction. In modern times, people intentionally seek out these informal meeting places.

Third Places are critical components of this master plan.

STUDENT-FOCUSED SPACE

Inherent in each new building or renovation in the precinct is significant space dedicated to students. This space includes Third Places such as food service and coffee shops as well as spaces to support and enhance academic activities. These include spaces for Creative Inquiry, study areas (individual and group), meeting and storage for student organizations, student services (academic and career counseling, tutoring), exhibits, and lounges and lobbies. These spaces will have ample power outlets and flexible furnishings to accommodate individuals or groups.

Dedicated student space will create a more vibrant and engaged student body within CAFLS and opportunities for collaboration between student, faculty and other disciplines across campus.

BUILD TO COMPETE

As stated in the *Clemson 2020 Roadmap*, one of the four strategic priorities for investment is ***Build to Compete - facilities, infrastructure and technology.*** Most of the existing buildings within the precinct are dated, requiring a high degree of maintenance and upgrades in systems in order to function with ever-evolving technologies and teaching and research methods. Two buildings, Poole and Newman, are no longer sufficient in their current conditions and will require continued investments in upgrades in order to function with minimally adequacy.

Faculty very clearly stated that the condition and age of the facilities is beginning to impact the quality of the learning experience. The administration and students acknowledged that the facilities are impacting the recruitment of top students. In short, the condition of the buildings, particularly Poole and Newman, are negatively impacting Clemson's ability to compete. The new Life Sciences Building has breathed new life into the precinct and is an excellent example of the quality of facilities necessary for the College to remain competitive.

SPACE STANDARDS AND ADJACENCIES

To provide exemplary experiences, faculty and staff deserve space that supports teaching and research and is conducive to collaboration, departmental efficiencies and instilling a sense of community within each department. The space analysis determined that the precinct stakeholders are currently operating with a space surplus of 5,300 NASF (low end of the standard) or a deficit of 34,000 NASF (high end of the standard), based on standards adopted by the SC Commission on Higher Education. Standards assure that people are working in space that is humane and supportive. Applying and meeting this standard would "right-size" the space for existing faculty and uses.

Faculty and the administration called for more logical and efficient adjacencies within departments and between faculty offices, labs and classrooms. A significant amount of the current space allocation is detrimental to desired levels of productivity - requiring some duplication of administrative staff and resources and additional time to deal with distances. In addition, many departments are spread throughout several buildings, createing confusion and a perceived lack of accessibility by students.

This master plan seeks to rationalize space assignments and to encourage appropriate adjacencies and adherence to adopted space standards.

HERITAGE AND INNOVATION WITHIN AGRICULTURE, FORESTRY & LIFE SCIENCES

The College of Agriculture, Forestry & Life Sciences is a foundation of Clemson University's core mission as a land grant institution. Along with Public Service Activities, they symbolize the heritage and traditions of the State of South Carolina as well as the hopes for innovation in agriculture, forestry and life sciences.

The state of agriculture, forestry and life sciences is evolving. Food production, packaging and distribution are changing. The roles of the farmer, the botanist, the forester, and the rancher are changing. Mechanics is technology. Planting, harvesting and mechanics are inseperable from technology and international business and finance. Sustainability requires more creativity and innovation and challenges one to understand that waste is not waste, but an ingredient for another product.

Yet, the facilities and landscapes reflect the past rather than illuminate the future. Clemson's history should never be lost. The buildings are an integral part of this history and the connection alumni have with their disciplines and the University. This master plan seeks to respect this history while interjecting facilities, places and landscapes that convey the innovation, creativity and intellectual excellence required for sustained future prosperity of the agricultural, forestry and life sciences professions.

ACCESSIBILITY

Accessibility addresses how ones enters and moves about a place, how one is informed about a place and how one place is connected to another. The Southeast Precinct facilities and landscapes are significantly deficient on accessibility. Signage to direct, welcome and notify is poor. The integration of ADA requirements is lacking, particularly when navigating from one end of the precinct to the other (McGinty Mall to the Life Sciences Building) or from the Lehotsky parking lot to the first or second floor of Lehotsky or another building within the precinct.

Making the precinct buildings and landscapes accessible is critical.

FACILITY RECOMMENDATIONS

What combination of new and renovated construction projects will be best for the precinct and for the University? The following recommendations will meet the long-term space needs for the precinct. The guiding principles (detailed on page 20) provide the vision and compelling story for improving and expanding the Southeast Precinct Campus... *build to compete.* As a whole, the recommended projects improve the quality of space for the precinct stakeholders and support more inviting and usable outdoor spaces.

DEMOLITION

Newman Hall

Newman Hall is beyond its feasible utilization as a classroom, office and laboratory building. The abattoir remains a valuable part of teaching and research; however, this activity is best suited off-campus. The packaing testing facilities can be relocated near or with the Sonoco Institute for Packaging Design and Graphics, which is located in the Harris A. Smith building in the High Ground precinct. Ice cream and blue cheese production and other food science labs can be located in a new buidling. The Newman site should be optimized as an exemplary undergraduate teaching and research building that demonstrates the stature and competitiveness of Clemson.

Existing Chilled Water Plant

The existing chilled water located south of Lehotsky Hall should be relocated due to noise and visual impacts in this academic precinct. Relocation will open the site to more desirable uses such as outdoor classrooms/spaces, landscaping, ADA access from McGinty Park to the Life Sciences Building entrance, and possible new construction. The plant can be expanded when relocated to meet anticipated increases in demand.

NEW CONSTRUCTION

School of Computing

The projected growth in Computing warrants a new building. The School is currently in Barre and McAdams. The combined existing square feet is 30,400 NASF, and the model estimates a future need for 63,900 NASF (the modeled growth target plus an allocation for university classrooms) and a gross of 103,000 GSF. This school has the potential to attract major donors and can be located out of the precinct. This will make space available in McAdams for precinct statkeholders.

Laboratory Building on Newman Site

The laboratory facilities in Long, Poole, Lehotsky and Newman Halls are inadequate and will require extensive, expensive and constant upgrades in order to meet the systems needs of labs. This new building will house labs, classrooms, offices and student space, primarily for the Biological Sciences and Animal Veterinary Sciences departments, including their main offices. Moving major biology teaching labs into the precinct will help to activate McGinty Mall and anagage a broader population of students in the precinct. Shifting the Biological Sciences department more fully into the precinct can improve collaborative relationships between students and faculty in the life sciences.

Food and Nutrition Science Building

This department has tremendous opportunity to attract major industry investments to support a facility dedicated to teaching, research and experience-based learning. Currently, the Food, Nurtrition and Packaging Science (FNPS) department is spread throughout Poole, Newman, and the Life Sciences Building. This new building will consolidate the department offices with its food and nutrition science labs into one facility, thereby improving efficiencies and the quality of teaching and learning. Packaging will most likely be located adjacent to the Harris Smith building in order to engage more with engineering and graphics. This new building will provide the opportunity for cheese and ice cream production and ideal adjacencies to food service outlets within the precinct. This new building will provide the opportunity for blue cheese and ice cream production and ideal adjacencies to food service outlets within the precinct.

Packaging Science Facilities

The Packaging Science portion of the FNPS department will most likely be located adjacent to the Harris A. Smith building in order to engage more with the Sonoco Institute of Packaging Design and Graphics, engineering disciplines, and Graphic Communications.

Abattoir

The abattoir, located in Newman, can function more efficiently if located off campus.

Parking Deck

Clemson should consider the construction of a parking deck to meet existing and future parking needs, particularly since academic buildings continue to be constructed on former parking lots. While this will require a major investment, the parking deck can generate revenue and also can house multiple functions and offices such as expanded chilled water capacity, new offices for University Facilities, locker rooms and storage for students working/learning on the farms and forests, as well as bicycle commuters, and fleet parking and maintenance. This will free valuable core campus real estate.

New Chilled Water Plant

Additional capacity will be needed to meet the needs of new construction. A sound location for a new plant is the new parking deck. Capacity can be expanded as new buildings come on line and when the existing plant is demolished. In addition, the equipment in the existing plant may be relocated to the new plant, which could result in savings.

RENOVATION

Lehotsky Hall

A renovation of Lehotsky Hall is planned soon. This renovation will improve the mechanical systems and provide an opportunity to improve building programming. As buildings within the precinct are demolished and built, Lehotsky will continue to evolve into the home for the main offices of the School of Agriculture, Forestry and Environmental Sciences (SAFES) and the teaching

and research base for the forestry and natural resources disciplines. Accessibility needs to be addressed and the long-term plan should include an expanded student space. The entry courtyard will be expanded and redesigned as a plaza that can serve as seating, gathering space and a place to host events.

McAdams

A minor renovation to McAdams is planned soon. When the School of Computing moves into a new facility, the space can be renovated for the Department of Parks, Recreation and Tourism Management (PRTM). The department is located in Lehotsky and Newman and projections are to nearly double in size from 13,800 NASF to 24,000 NASF. Due to cross-discipline relationships between SAFES and PRTM, keeping PRTM within the precinct is desirable. Accessibility and student space needs to be improved and incorporated into the renovation. The physical relationship and connection from McAdams to McGinty Mall can be improved by creating a more visible and welcoming entrance way (door, landscaping, seating and signage) from McGinty Mall.

Poole Agricultural Center (P&A)

Poole is the signature building for the CAFLS and focal point of McGinty Mall. However, the building is reaching the end of its efficient and productive life without major investment. The exterior cladding is dated and is supported by structural window frames. The mechanical systems are not adequate for new and future lab requirements. Accessibility and the general aesthetics of the building are poor. Classrooms and teaching labs will be a major part of the building; however, traditional research labs should be shifted to purpose-built facilities. Poole requires a major renovation to make it a building that will compete and continue to serve as the heritage-filled anchor of McGinty Mall.

As one of the last phases of master plan implementation, Poole should be gutted to its structural system, reclad with generous windows and have new infrastructure cores constructed. The central part of the building should be opened as an atrium or two. This will improve the quality of interior spaces throughout the building, including the basement. By removing the interior block wall and the exterior cladding, the building will have less weight (structural implications) and improvements can be made to address seismic safety and other building core needs.

A renovated Poole Agricultural Center will become the heart of the precinct with the CAFLS Dean's suite and administrative offices, PSA administrative offices, student lounges, informal and small group collaboration space, and a café. Poole can maintain its character while becoming a state-of-the art building and home to the CAFLS administration.

McGinty Mall

The reconstruction of McGinty Mall will improve ADA accessibility and create an iconic entry and focal point into the precinct, numerous third places, a diversity of teaching gardens and landscapes that represent the State of South Carolina (mountains to the sea), places for large gatherings (commencement programs, concerts, alumni parties), frisbee and football, enjoying the sun, and places to study, relax and meet friends, and opportunities to incorporate art.

Biosystems Research Complex

The majority of the Biosystems Research Complex (BRC) is used as a research facility, with offices and laboratories located in close proximity. It can continue meeting those needs for years to come. The large attached greenhouse complex is a special asset that should be considered when allocating space and planning renovations. Research and instruction taking advantage of the greenhouses should be given special consideration. Recent changes in the relationship of Public Service Activities to the BRC have created an opportunity to repurpose portions of the building, particularly on the ground floor and in the headhouse. Reconfiguring these spaces can provide classrooms and student space, especially for activities that would take advantage of the greenhouses.

TRANSITIONS

Long Hall

Over time, Long Hall is likely to transition into a different role on Campus. As a historic building, laboratory uses are less appropriate, so the building will predominately be an office and classroom facility. This plan proposes that the biology teaching laboratories currently in Long will be moved into the new building on the site of Newman Hall. Long Hall's proximity to Sikes and Martin Halls but distance from the precinct means that some of the office space is likely to be utilized by departments in those buildings, resulting in a reduction of space available for SE campus stakeholders. The most vital long-term use of Long Hall from the perspective of the SE campus stakeholders is to serve the office needs of the researchers working in neighboring Jordan Hall.

Jordan Hall

This plan proposes to continue to use Jordan Hall primarily as a research facility. Recent and ongoing relocations of teaching labs to the precinct from Jordan have expanded research lab capacity. Jordan Hall does not sufficient office space to support its researchers (as do the Biosystems Research Complex and Life Sciences Building). It should be allocated and managed in conjunction with portions of Long Hall to jointly fulfill the office and lab needs of Clemson's researchers.

STAY THE COURSE

Life Sciences Building

The new Life Science Building (LSB) is a model for the precinct of the types and quality of space planned. It is also notable that the facility is not assigned to a specific department, but rather is built to fill a niche that cuts across many academic departments. Over the next few years, the building will be brought into full utilization. As the precinct develops and evolves around the LSB, the informal meeting spaces around the central atrium will become an important student asset. Future research space assignment decisions should consider proximity to the Light Imaging Facility and microbiology teaching labs in the building.

MASTER PLAN IMPLEMENTATION TIMELINE

The following timeline suggests the order of master plan implementation. Implementation will be dependent on financial resources; however, this timeline recognizes the numerous moves necessary for each subsequent move.

BEGIN

- **Construct new School of Computing Building**
  - out of precinct
  - vacates McAdams
- **Renovate the BRC**
  - maximize space utilization
  - renovate the Head House and ground floor for instruction space
- **Construct New Infrastructure**
  - parking deck
  - chilled water/steam
  - Campus Facilities offices
  - fleet parking
  - lockers and showers

Rationale:
- meet current/future parking demand
- frees space in the precinct and core campus, allowing construction to begin on major projects
- meet future energy loads

- **Construct new building for Food & Nutrition in precinct**
- **Construct new building for packaing in High Ground precinct adjacent to Harris Smith**
- **Redesign McGinty Mall**
  - focus on phased construction in concert with new buildings in the precinct

- **Renovate McAdams**
  - create new entrance from McGinty Mall
  - create expanded student space
- **Demolish Newman**
- **Renovate Lehotsky and construct Lehotsky/Barre Plaza**
  - install elevator from Lehotsky parking lot to Plaza/McGinty Park
- **Demolish existing chilled water and relocate capacity to the parking deck**
- **Construct new outdoor areas and ADA ramp and stairs (chilled water site) connecting McGinty Mall to the west entrance of LSB.**

- **Construct new building on Newman site for biology teaching and research**
- **Remaining Poole tenants are relocated to swing space within and out of precinct**
- **Construct north side of McGinty Mall**
  - create new entrance from McGinty Mall
  - create expanded student space

- **Renovate Poole**
  - complete renovation of interior, building systems and exterior cladding
  - CAFLS and PSA Administration home
  - food service, expanded student space and student services, exhibition space
- **Complete construction of McGinty Mall**

NEW CONSTRUCTION: LABORATORY BUILDING ON NEWMAN SITE

The primary goals of this proposed building (approximately 150,000 GSF) are three-fold:

1. More efficient utilization of central campus space

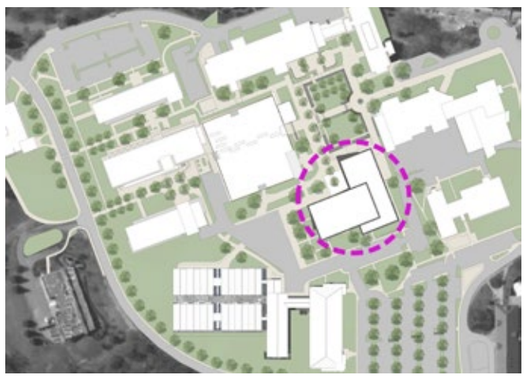
In addition to being obsolete, at one story, Newman Hall is not an efficient use of valuable central campus land. A new building with approximately four floors provides more academic space. In addition, by pushing the building footprint into McGinty Mall, the open space can be better defined and programed.

2. Biological Sciences adjacency to other SE Campus Stakeholders

Many of the foundational teaching laboratories for SE Campus stakeholders are not currently in the precinct. Additionally, the Biological Sciences department offices are in Long Hall. The plan proposes to move the administrative and teaching center of the Biological Sciences department into the core of the precinct, creating state of the art instructional laboratories with an opportunity for expansion.

3. Facilitate major Poole renovation

Construction of additional space, especially modern research laboratory space, is necessary to make the changes in Poole Hall proposed in this plan.

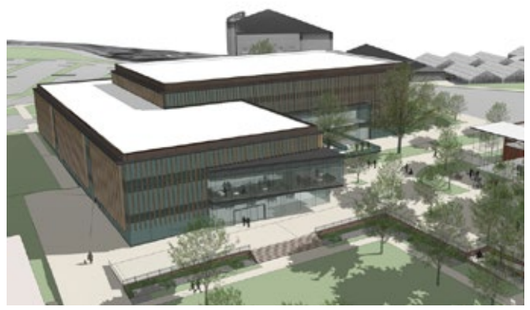


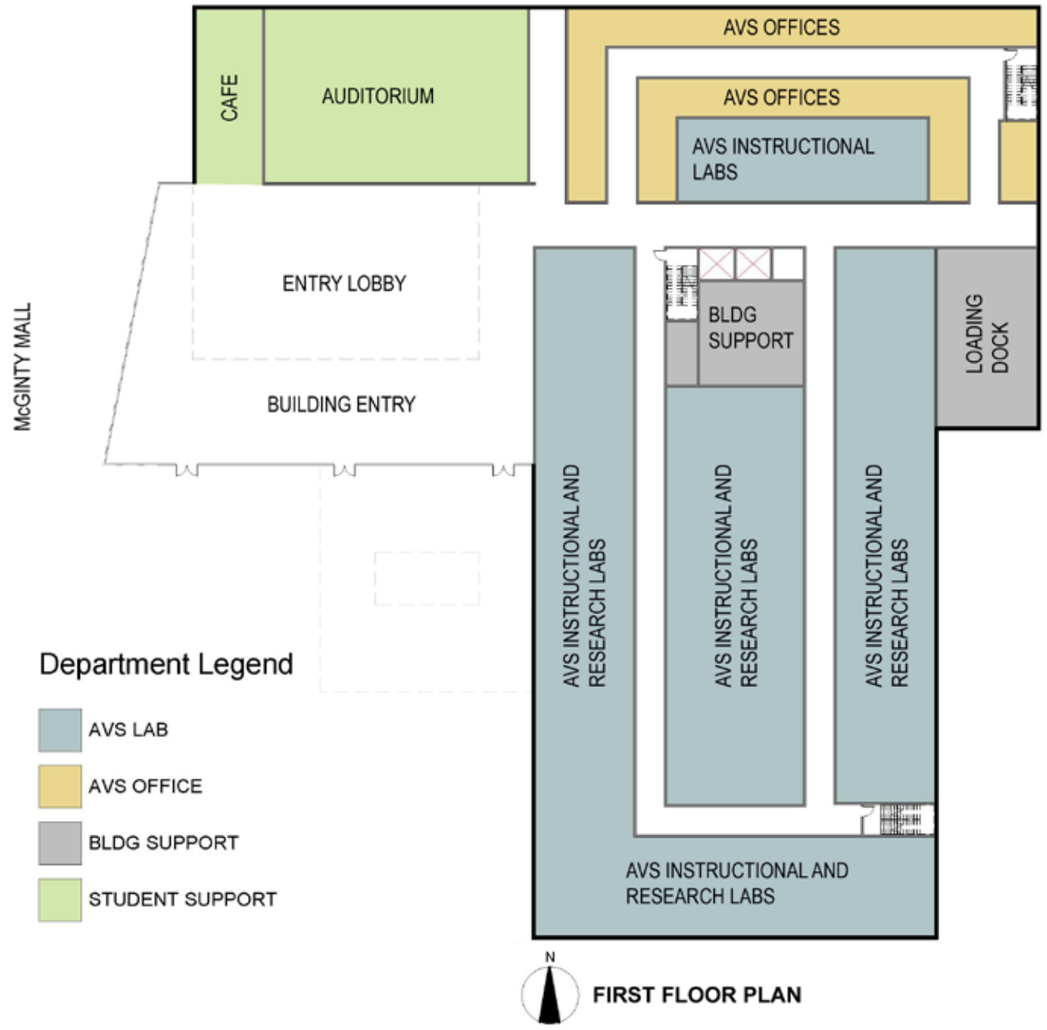
THE DEPARTMENT OF ANIMAL AND VETERINARY SCIENCE IN CONJUNCTION WITH THE ANIMAL CO-PRODUCTION RESEARCH AND EDUCATION CENTER.

The department and center have a combined area of 31,100 NASF and are currently located in three buildings: Endocrine Lab, Newman, and Poole. If it were all constructed new, then they would need 36,200 NASF and 58,000 GSF assuming a 60% net to gross ratio. If the abattoir were constructed off-campus, then the new construction would be 31,100 NASF and 51,800 GSF.

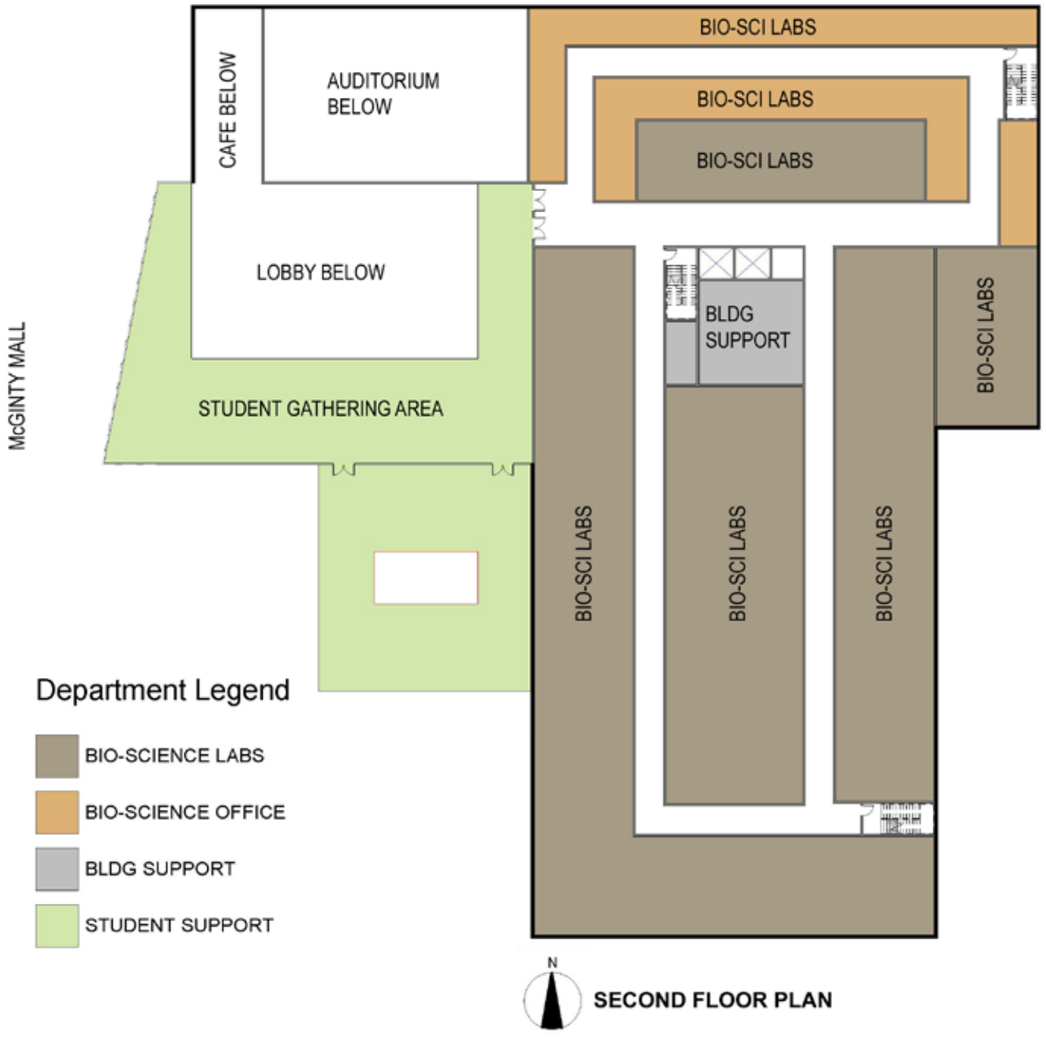
THE DEPARTMENT OF BIOLOGICAL SCIENCES.

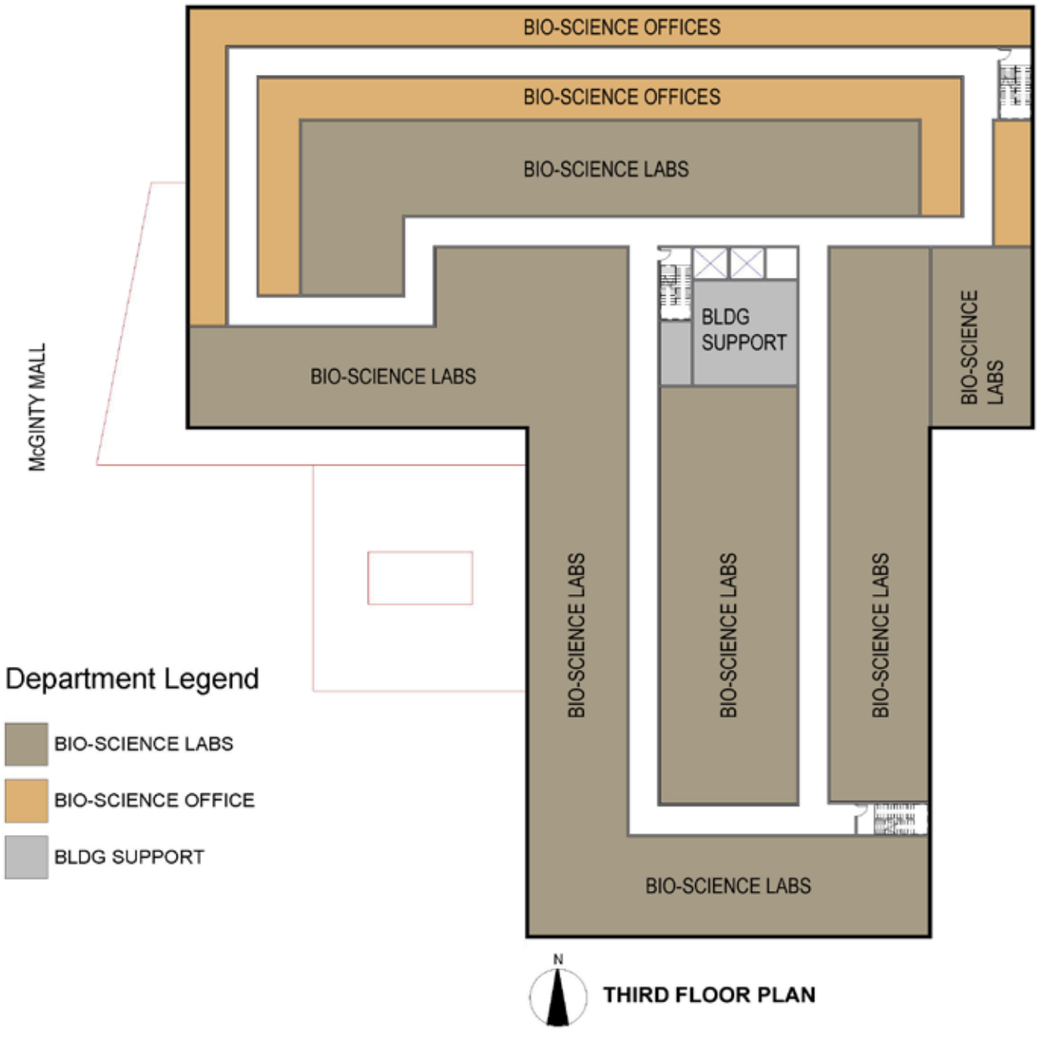
The department is currently located in five buildings with a total of 95,300 NASF: BRC, Jordan, Life Sciences, Long, and Poole. The future need is for 140,300 NASF. A new facility in the precinct can meet the growth needs of the department, while improving research and teaching collaboration through physical proximity.



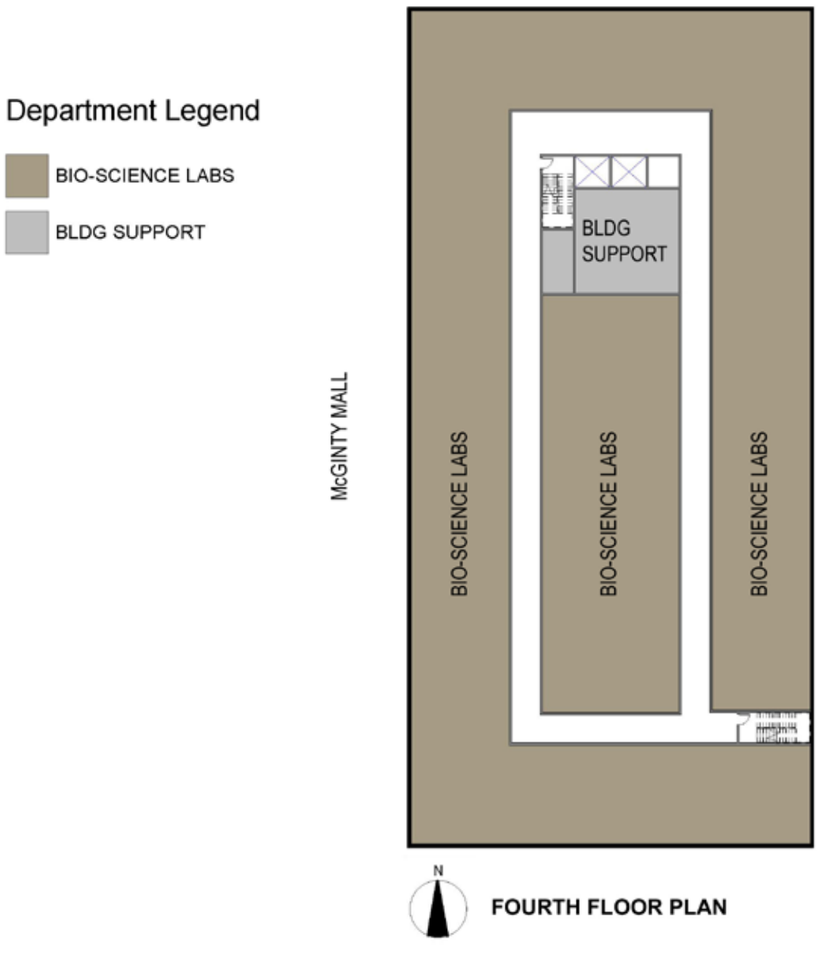


NEW CONSTRUCTION: LABORATORY BUILDING ON NEWMAN SITE





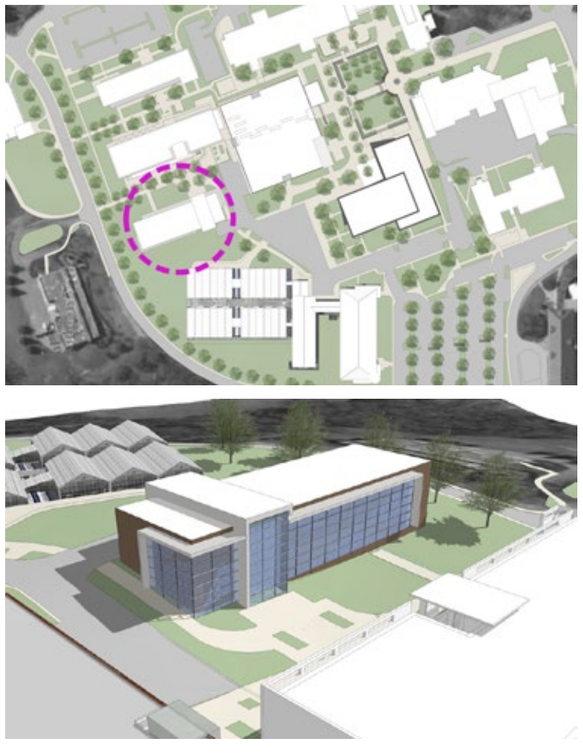
NEW CONSTRUCTION: LABORATORY BUILDING ON NEWMAN SITE

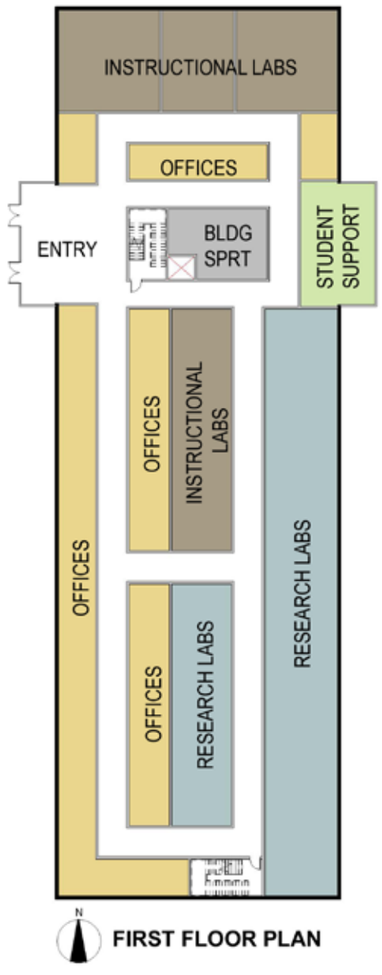


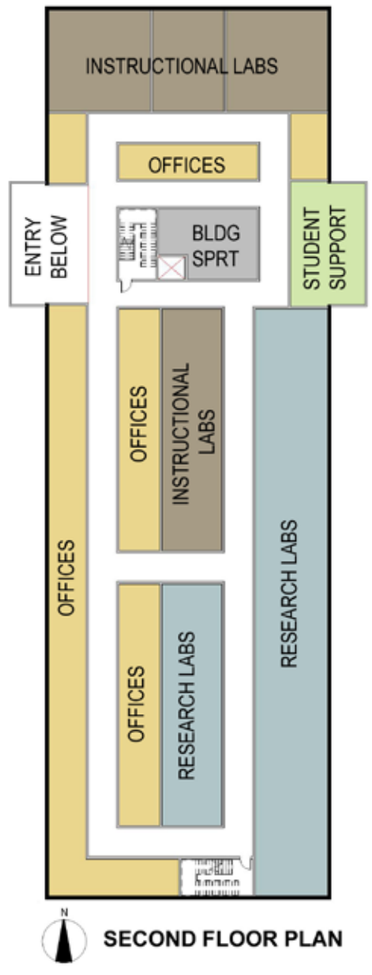
NEW CONSTRUCTION: FOOD & NUTRITION BUILDING

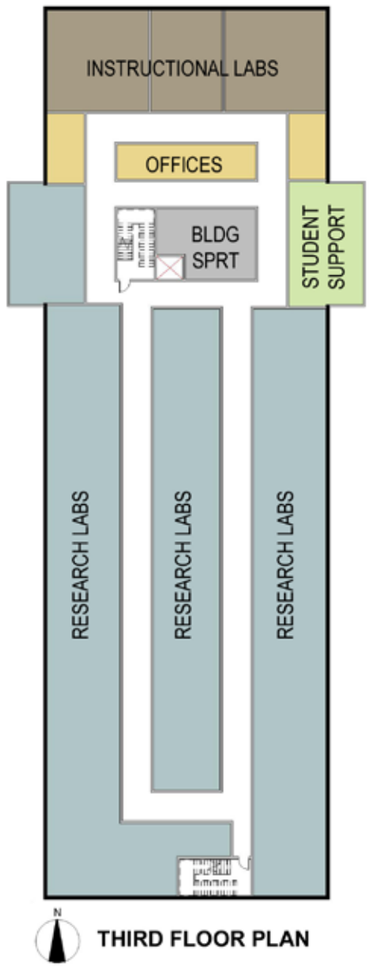
The Food, Nutrition & Packaging Sciences department is currently located in four buildings: the BRC, Life Sciences, Newman, and Poole. The Packaging Science component of the Department is better located with similar programs in the Harris A. Smith building, which is dedicated to packaging design and graphics.

The GSF for Food & Nutrition is approximately 54,000, which accommodates the modeled growth (approximately 33,700 NASF) and a grossing factor of 60%.



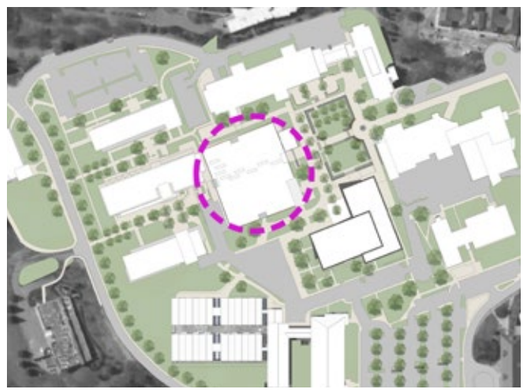


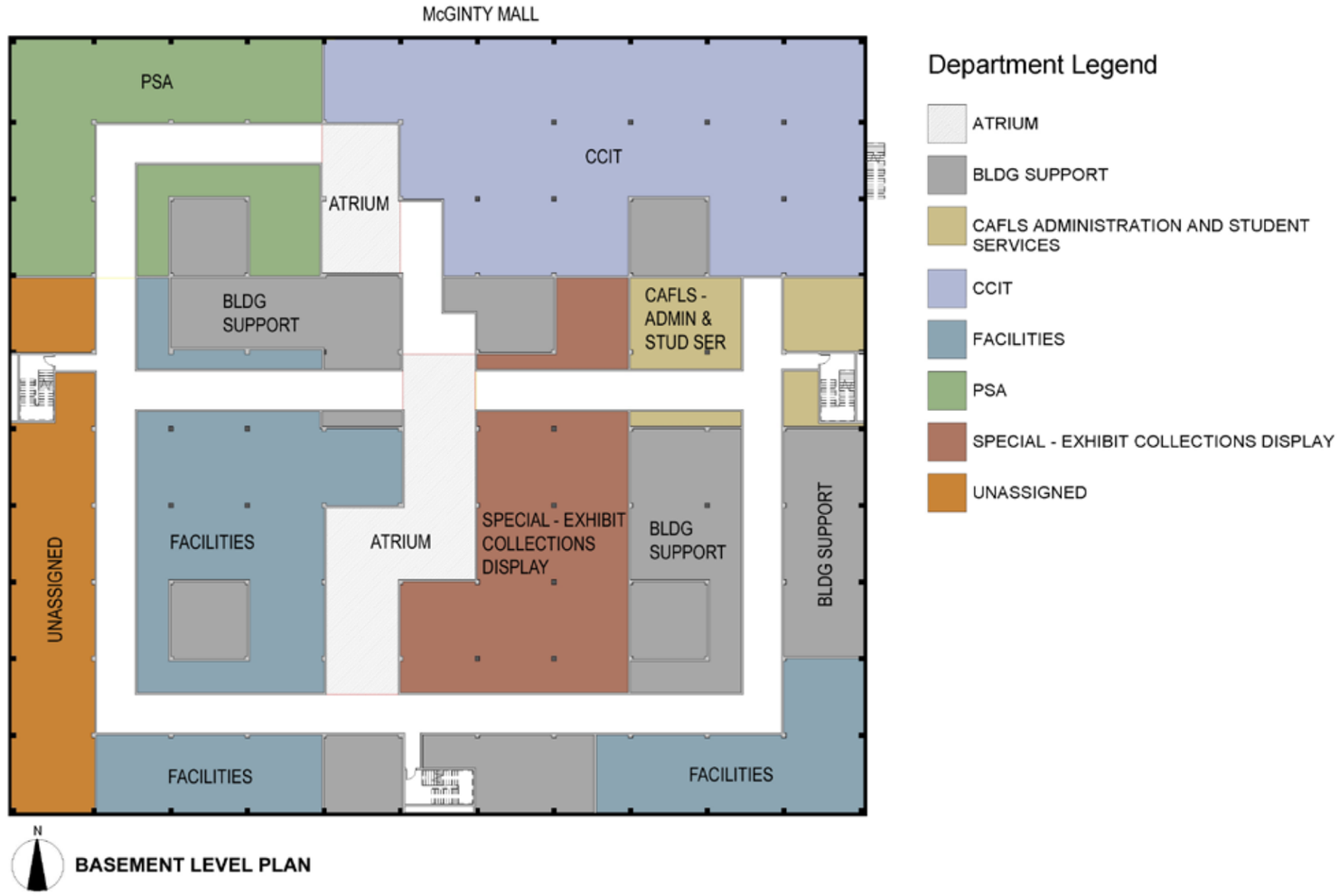




RENOVATION: POOLE AGRICULTURAL CENTER

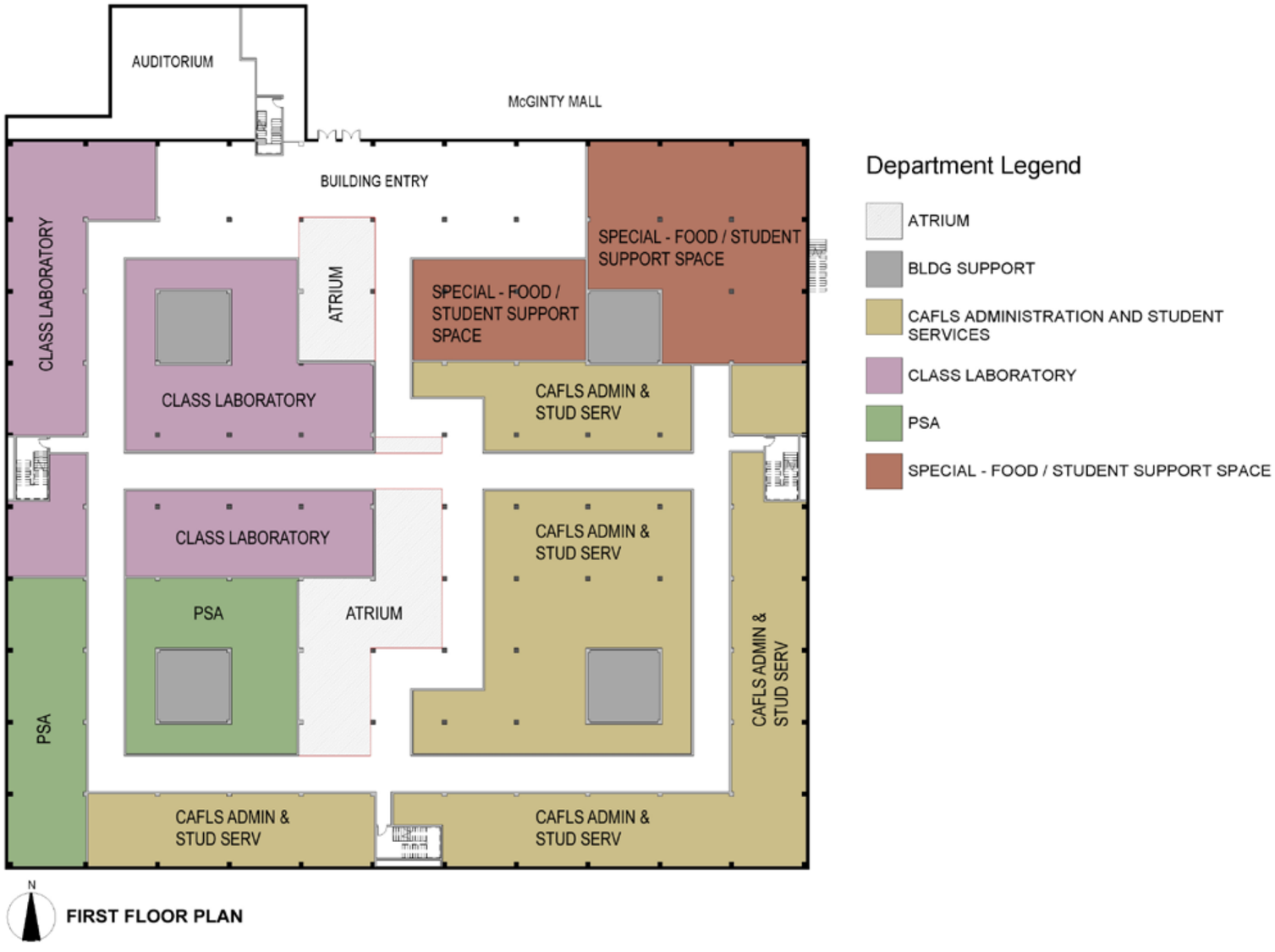
Poole will become the heart of the south east precinct and CAFLS with the Dean's suite and College administrative offices, along with student lounges, informal small group collaboration space, and a café. Poole should be completely renovated in order to make the building a more productive academic building. New building and mechanical systems will allow the building to serve as an efficient and innovative teaching lab facility along with classrooms and much needed support spaces for faculty and students. Recommendations include: demolition of all interior walls; construction of new service cores and support spaces; construction of atrium spaces and skylights in order to create more usable and humane spaces throughout the building; recladding the exterior to provide more transparency and natural light; The renovations to Poole will make the building more sustainable and a new iconic presence for precinct.





BASEMENT LEVEL PLAN

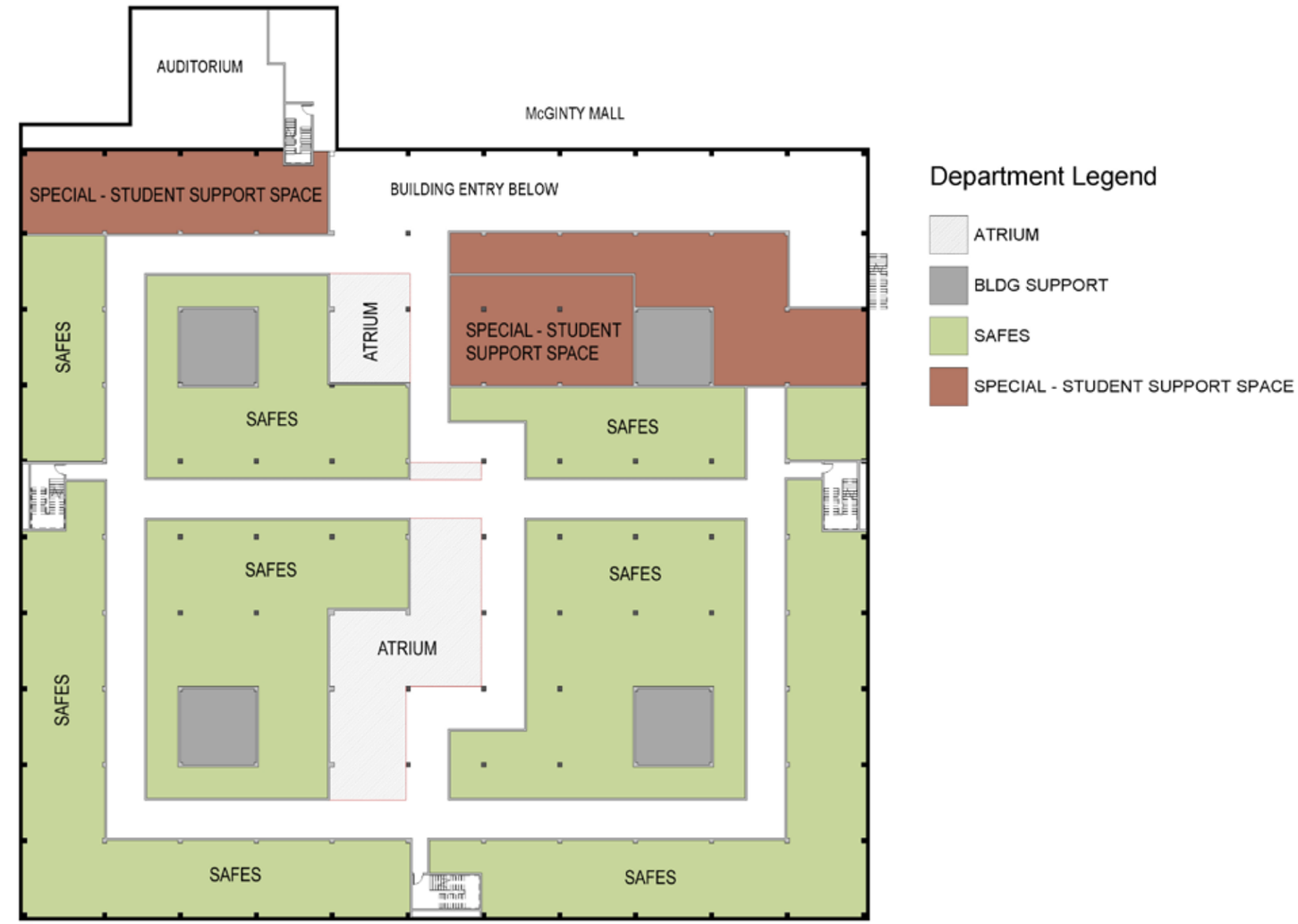
RENOVATION: POOLE AGRICULTURAL CENTER



Department Legend

- ATRIUM
- BLDG SUPPORT
- CAFLS ADMINISTRATION AND STUDENT SERVICES
- CLASS LABORATORY
- PSA
- SPECIAL - FOOD / STUDENT SUPPORT SPACE

RENOVATION: POOLE AGRICULTURAL CENTER



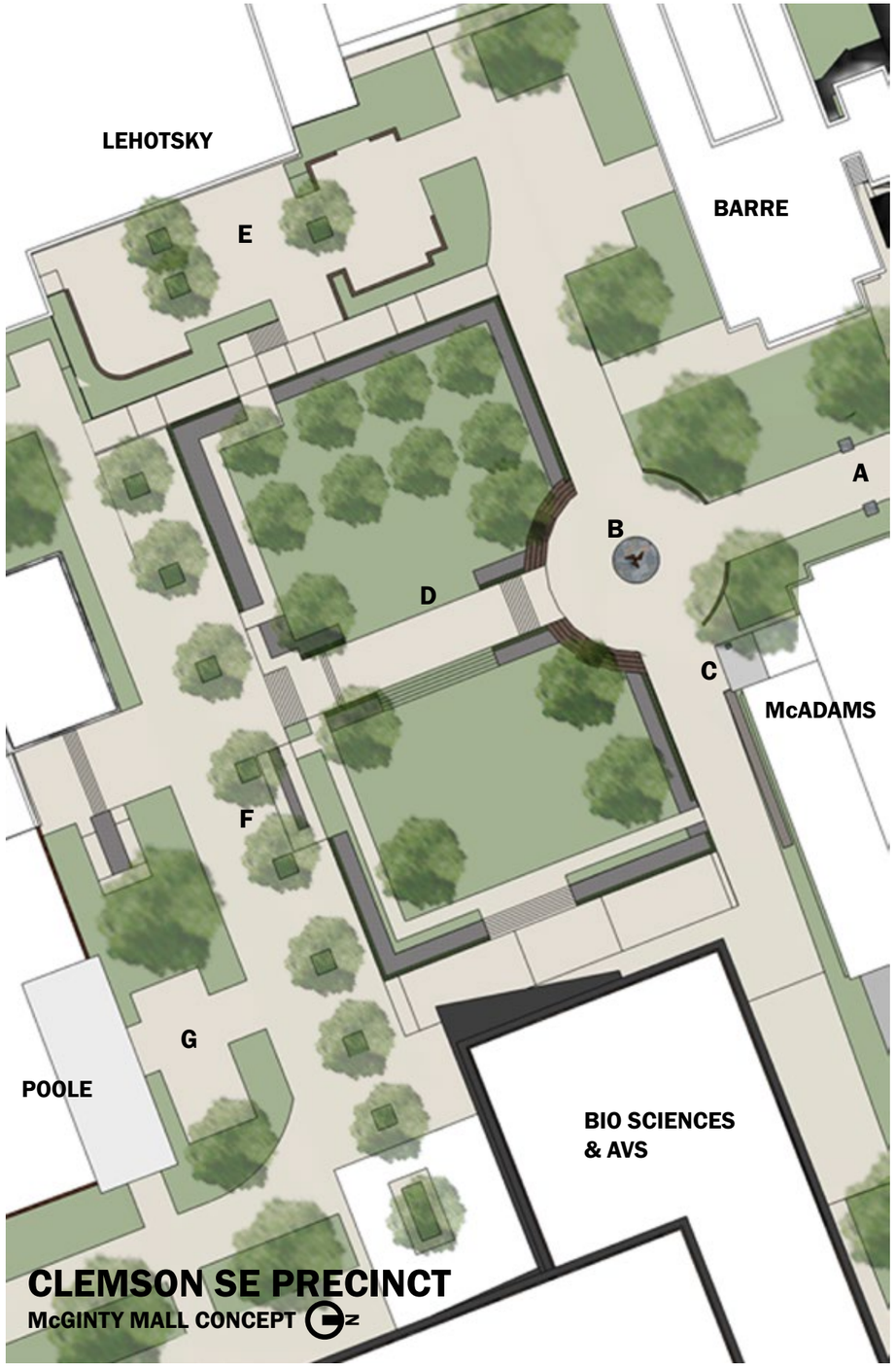
SECOND FLOOR PLAN

NEW CONSTRUCTION: MCGINTY MALL

McGinty Mall will become a vibrant park for Clemson and for the Southeast Precinct. The redesign of McGinty Mall improves accessibility throughout the precinct and provides purposeful connections between the buildings and a variety of green spaces and seating areas for people to enjoy. McGinty Mall becomes a major organizing feature and creates a cohesive place on campus that welcomes and directs. McGinty Mall also provides numerous opportunities for creating third places and teaching gardens and landscapes, which will demonstrate the mission and principles of the university and CAFLS. The tree canopy is very important; however, this plan recommends that the central space is open and defined by trees, rather than being filled with trees.

The following areas are key features to McGinty Mall.

A. Entrance to McGinty Mall
B. McGinty Mall Circle
C. A new entrance to McAdams
D. McGinty Mall Central Lawn
E. Lehotsky Courtyard
F. Poole Plaza
G. Poole Patio



MCGINTY MALL

Formal entrance and threshold into the Southeast Precinct and McGinty Mall - Tall pillars can define the entrance, providing opportunities for lighting and donor recognition. The pillars also mark the pedestrian avenue and axis to Poole.

MCGINTY MALL

Entrance into McGinty Mall with axial view of Poole

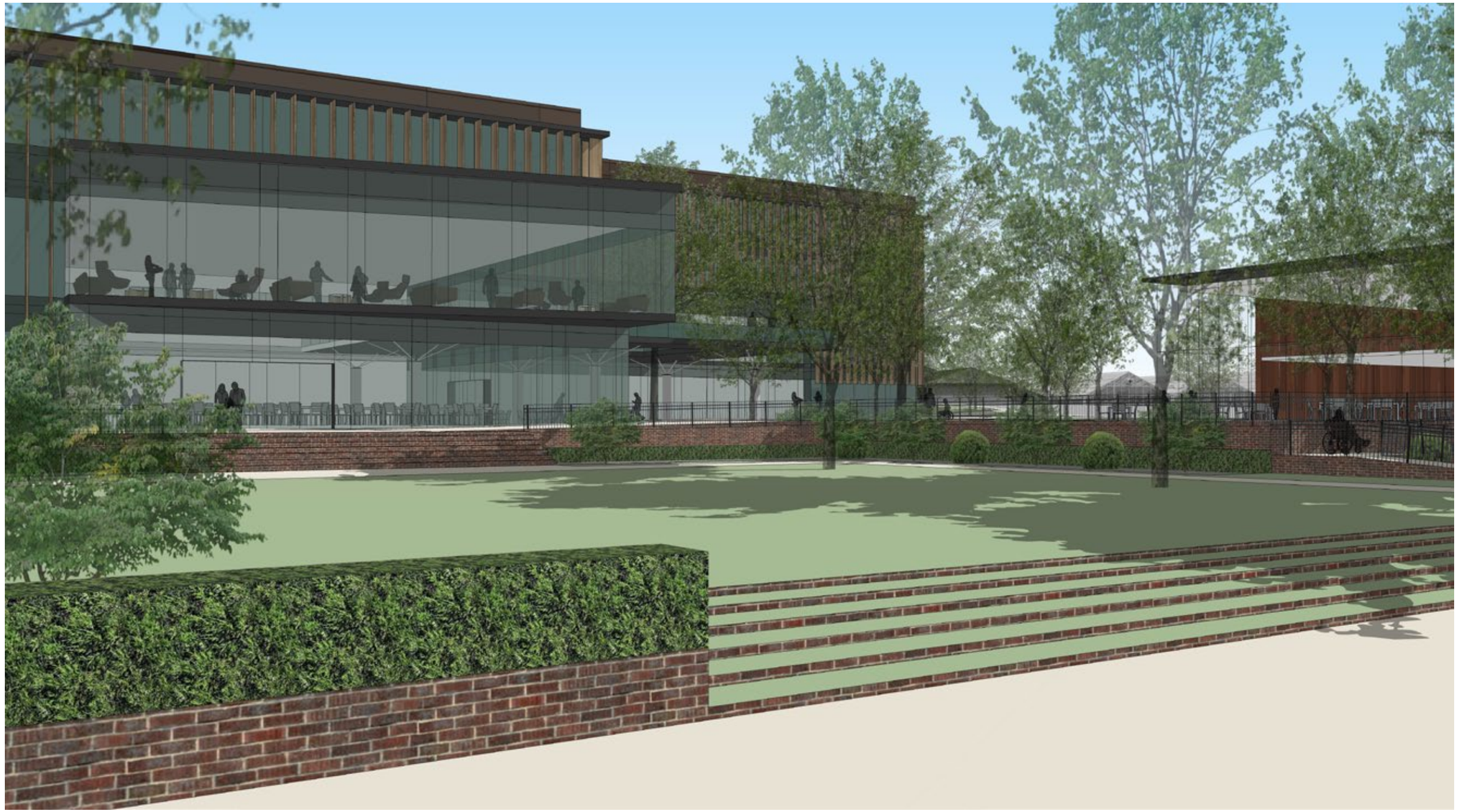
MCGINTY MALL

McGinty Mall Circle - This circle will be the crossroads of the precinct where people can gather, sit on the steps, hold classes, meet for tours. The circle is an ideal location for public art such as sculpture or a water feature. The circle is defined by low seat walls on the north end and steps on the south end.

MCGINTY MALL

From the circle, the new biology laboratory building and renovated Poole provide a defined backdrop to the central lawn. Pathways direct people through McGinty Mall and to the building entrances and a variety of outdoor spaces.

MCGINTY MALL



View of new biology laboratory building from the central lawn

MCGINTY MALL

View from Lehotsky Courtyard to the new biology laboratory building on the Newman site. A new entrance (left of image) to McAdams reaches out into the Mall. This will make the entrance more prominent and more of a front door onto McGinty Mall.

NEW CONSTRUCTION: NEWMAN SITE

View of new biology laboratory building, Poole plaza and the Poole patio - The Poole patio will be an outdoor seating area, adjacent to the food service facility that will be constructed inside Poole.

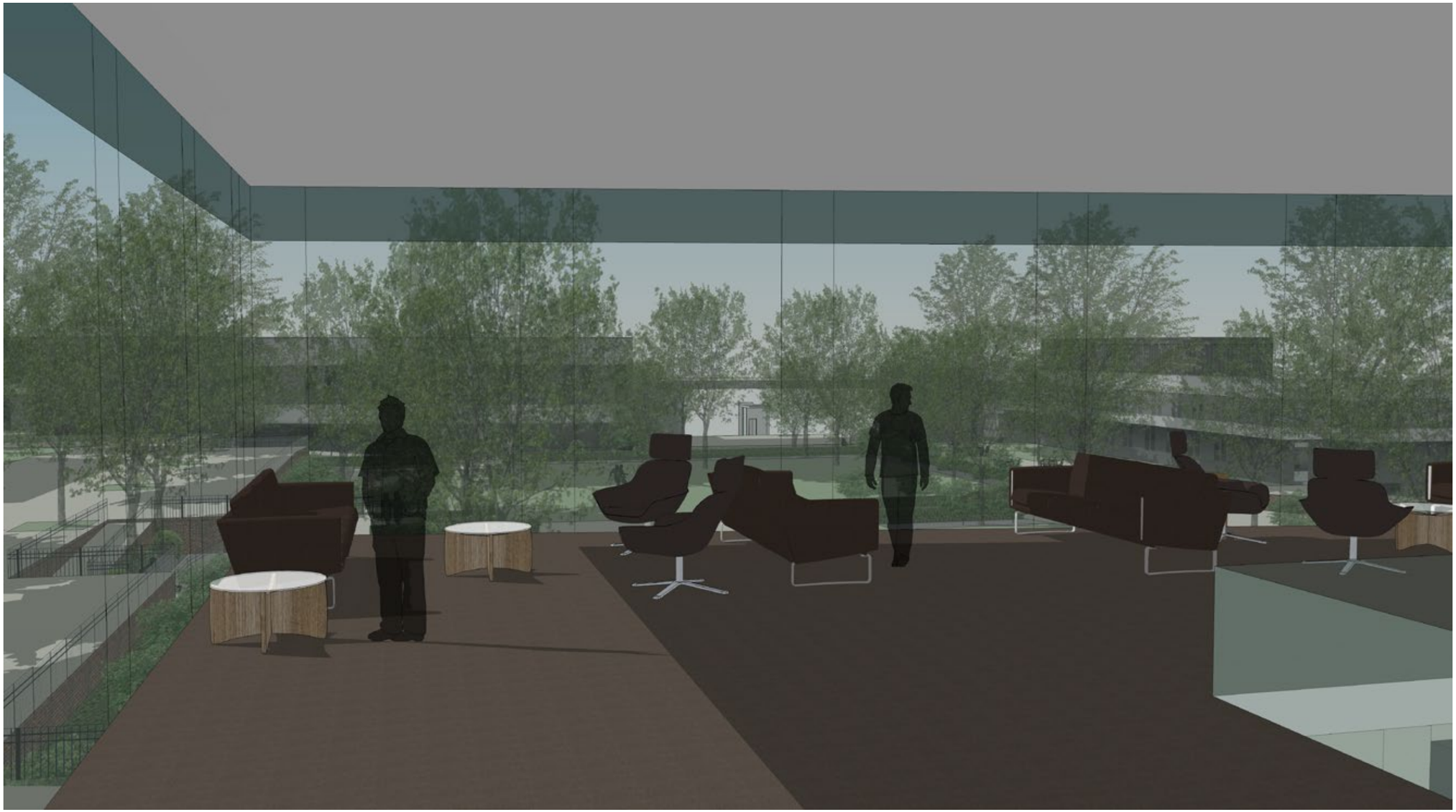
NEW CONSTRUCTION: NEWMAN SITE

View from the seond floor of Poole onto the plaza

NEW CONSTRUCTION: NEWMAN SITE

Elevated garden in the new biology laboratory building overlooking McGinty Mall

NEW CONSTRUCTION: NEWMAN SITE



Lounge (*Third Place*) on the second floor of the new biology laboratory building

NEW CONSTRUCTION: NEWMAN SITE

Poole Plaza - This plaza will become a promenade for the upper, southern level of McGinty Mall, serving as a visual and physical connection between Poole, the new science building and Lehotsky. With an alee of trees and numerous places for shaded seating, this will become a very active area.

NEW CONSTRUCTION: LEHOTSKY COURTYARD

Lehotsky Courtyard - This courtyard will provide a more prominent and beautiful entry into Lehotsky that can be used for classes, social functions, teaching gardens and areas for studying and for meeting friends. By pushing into the existing lawn with a new ramp, the courtyard can be expanded and planted with trees and plants that demonstrate the academic and research purposes of SAFES.

NEW CONSTRUCTION: LEHOTSKY COURTYARD

View of Lehotsky Courtyard from Barre

AERIAL VIEW

Aerial view from the south of the precinct

AERIAL VIEW

Aerial view from the southwest

AERIAL VIEW

Aerial view from the north, over the Cooper Library

AERIAL VIEW

McGinty Mall Central Lawn - This lawn will become the key central green space to the precinct, bordered by the new biology laboratory building on the east, the Poole plaza to the south, a ramp and Lehotsky courtyard to the west and McGinty Mall circle to the north. This lawn is a more intimate central space than the existing Mall and is divided into two smaller lawns, all of which are bordered by gardens and landscaping.

AERIAL VIEW

McGinty Mall Aerial illustrates the purpose of the central lawn as a unifying and centering place for the precinct.

APPENDICES

Faculty and Space Data Models
Life Safety Evaluations
Structural Evaluations

APPENDIX
FACULTY AND SPACE DATA MODELS

How the Model Works

The space allocation model is department specific and uses data and space multipliers that are appropriate for the discipline. Using the Department of Biological Sciences as an example (as excerpted from the model on page 58), *Table Three* begins with the existing department space of 95,253 NASF, next is the amount of classroom space assigned to the Department, followed with the amount of space with classrooms subtracted - 92,015 NASF. Classrooms are excluded because it is assumed that classrooms are a University resource and are not owned by any department. This table shows the existing square footage of the Biological Sciences department (without classrooms) in comparison to the model-generated range of 123,370 NASF to 137,054 NASF.

TABLE THREE
Summary of the Department of Biological Sciences

	Existing	Classroom	Existing Minus Classrooms	
Existing Net Assignable Square Footage	95,253	3,238	92,015	
Model Range			**123,370**	**137,054**

Table Four lists the number of faculty (FTE faculty, research faculty, and FTE non-tenure track faculty), staff (administrative and clerical), students (MS/PhD students, graduate research assistants [GRAs], graduate teaching assistants [GTAs], Post Docs), and visitors. This information (general assumptions) is used to generate the amount of office and related space as well as a portion of the research space.

Table Five uses the data in *Table Four (General Assumptions)* to generate the amount of office and office-related space required for the department. Office spaces are allocated on a per-person basis with different assumptions about square foot allocations. Essentially, faculty are allocated 140 NASF. Post Docs are allocated an office area of 100 NASF, GRAs are allocated 40 NASF while GTAs are allocated 60 NASF - a slightly larger allocation to account for the need to meet with students.

In addition to the office space generated by the number of people, support space (conference rooms, work rooms, storage, etc) is assumed to be 30 percent of the total amount of office space. Thirty percent is a typical proportion, but this multiplier can be reduced or increased depending on the assumptions that the University, College, or department chooses to test.

Table Five shows the total of office and office-related space required is 24,311 NASF, in comparison to the existing 21,984 NASF.

TABLE FOUR
Number of Faculty, Staff and Students

General Assumptions	# of people
FTE Faculty	52.32
FTE Research Faculty	8.80
FTE Non-T/TT Faculty	0.00
MS/PhD Student	82.50
Graduate Research Assistant	11.00
Graduate Teaching Assistant	71.50
Post Doc: Faculty Ration at 10% of Faculty	5.81
Visitors at 10% of Faculty	5.81
Administrative and Clerical Staff	35.20

TABLE FIVE
Office Space

Offices, Faculty, Et Al	NASF Per Person	NASF
Faculty	140	8,586
MS/PhD Students		
Graduate Research Assistant	40	440
Graduate Teaching Assistant	60	4,290
Post Doc	100	581
Visitors	100	581
Administrative Staff	120	4,224
		18,701
Office Support- conf, workrm, storage	30%	5,610
Total Instructional Lab NASF		**24,311**

The sources for the data used in the model are Clemson Univsersity Human Resources, Institutional Research, Registrar, and Facilities Management.

The next section of the model, *Table Six-Instructional Laboratories*, is generated from data provided by the Registrar's course file, specifically, the number of laboratory hours that were scheduled for lower division, upper division, and graduate courses in the fall of 2012. *Table Six* shows lower division labs were scheduled 223 hours during a typical week while upper division and graduate labs were scheduled 171 hours. Based on normative standards, lower division labs will be scheduled for 22 hours per week while upper division labs will be scheduled for 16 hours. Dividing the lower 223 lab hours by 22 yields 11 labs and dividing the upper and graduate 171 lab hours by 16 also yields 11 labs for a combined total of 22 instructional labs.

It is also assumed that the typical lower division lab will have an average room capacity of 75% while an upper division lab will have a room capacity of 55%. The actual average section size in the fall of 2012 for Biological Sciences lower division was 21 students and the upper division was 16 students. This means a lab, with 21 students at 75% capacity, should be sized for 28 students and at 50 NASF per student will be 1,400 NASF per lab. A lab with 16 students at 55% capacity should be sized for 29 students and at 60 NASF per student will be 1,740 NASF per lab. The total for the 22 labs is 34,600 NASF.

Lab support space - prep rooms, instrumentation, equipment, storage - typically represents one third of the total lab space. This ratio has remained constant over the past decade for most lab based buildings. In this case 34,600 NASF represents two thirds of the total, and 17,050 NASF represents one third—bringing the total of instructional lab space to 51,650 NASF, compared to an existing total of 20,707 NASF. The one-third ratio of total lab and support space is different than multiplying 34,600 by 33 percent, which will only yield 11,400. This is not one third of the total 46,000, but only 25 percent.

Research space is generated in two ways and the larger of the two is used in the total. The first generates space by the number of researchers involved - faculty, grad students, and post docs. The second is based on the 3-year average of research expenditures. For the Department of Biological Sciences, the scenario reflecting the number of researchers generated more space.

Table Seven-Research Laboratories by Researcher uses the number of researchers to generate the required amount of research space. The table summarizes the number of faculty, GRAs, Post Docs and related students involved in research. Within the Department, the total is 81.1 researchers. This number is multiplied by a lab module of 275 NASF and 350 NASF for a range of 22,312 NASF to 28,397 NASF.

In addition, a factor representing 33% of the total research space is allocated for support space, instrumentation, and specialized environments. With the same requirement as the instructional labs, the calculation is 67% research space and 33% support space - for 100% of the research lab space. The total space required ranges from 33,302 NASF to 42,387 NASF compared to the existing 34,937 NASF.

TABLE SIX
Instructional Laboratories

		Lower		Upper & Grad
			NASF		NASF
NASF Per Station			50		60
WSLH	223.3			171.6	
Hours/Lab	22			16	
# of Labs	11			11	
Average Section Size	21			16	
Percent Station Occupancy	75%			55%	
			15,400		19,200
Lab Support- as % of total lab	33%		7,560	33%	9,460
Instructional Laboratory Net Assignable Sq Ft			*22,900*		*28,660*
Total Instructional Lab NASF					**28,188**

TABLE SEVEN
Research Laboratories by Researcher

Research Laboratories			
Faculty	61.3		
GRA, Post Docs	16.8		
# of Grad Students in addition to the GRAs	3.0		
	81.1		
Lab Module Net Assignable Sq		275	350
Lab Support- as a % of total lab	33%	22,312	28,397
		10,990	13,990
Total Research Lab NASF by Research Expenditure		**33,302**	**42,387**

The second method of defining the amount of research space generated is based on a 3-year average of research expenditures, as shown in *Table Eigh*t.

There are four research-intensity categories listed by discipline: Highly Intensive, Intensive, Moderately Intensive, and Non-Intensive. Highly Intensive could include Biohazard Type III or IV while Non-Intensive might include research in the field or office. Each category has a multiplier of NASF per 1 million dollars. In this case, the amount of space generated by research expenditures is less than that generated by the number of researchers and so was not used in the total amount of space required.

The Department also has space that is not modeled such as imaging, animal facilities, and greenhouses, totaling 13,607 NASF. This number has been added to the modeled total.

Spaces for informal student collaboration areas—lounges, break rooms, and study space—were also allocated: 5,099 NASF compared to the existing 780 NASF.
780 NASF.

TABLE EIGHT
Research Laboratories by Research Expenditure

	3-Year Average Research Expenditure $	
	On-Campus	**Off-Campus**
Highly intensive		
Intensive	$2,132,000	
Moderately Intensive		
Non-Intensive		

	100%	**NASF**		
	Inflation Adjusted NASF/$1M	**On-campus factor 100%**	**On-campus factor 25%**	**Total NASF**
11,000	11,000	0	0	0
9,000	9,000	28,188	0	28,188
6,000	6,000	0	0	0
4,000	4,000	0		0
Total Research Lab NASF by Research Expenditure				**28,188**

Clemson University Southeast Precinct
A Draft Model to Estimate Space Requirements

MODEL DRIVERS

Existing and University Suggested Future Faculty

Department	Existing FTE Faculty and FTE Research Faculty	Projected FTE Faculty and FTE Research Faculty
Animal & Veterinary Sciences	14.0	17.0
Biological Sciences	52.8	61.3
Food, Nutrition & Package Sci	24.0	27.0
Genetics and Biochemistry	21.8	22.8
School of Ag,For,Env Sciences	60.5	62.5
School of Computing	36.2	41.6
Parks Recreation & Tourism Mgt	25.5	28.9
	234.7	261.1

MS/PhD, GRA, GTA, Visitors, Administrative Staff and Clerical

Department	MS/PhD Student	Graduate Research Assistant	Graduate Teaching Assistant	Post Doc:Faculty Ratio at 10% of Faculty	Visitors at 10% of Faculty	Administrative and Clerical Staff
Animal & Veterinary Sciences	10.0	4.0	4.0	1.0	1.0	11.0
Biological Sciences	75.0	10.0	65.0	5.0	5.0	32.0
Food, Nutrition & Package Sci	53.0	16.0	14.0	2.0	2.0	15.0
Genetics and Biochemistry	19.0	21.0	10.0	2.0	2.0	14.0
School of Ag,For,Env Sciences	53.0	73.0	21.0	6.0	6.0	53.0
School of Computing	202.0	61.0	31.0	4.0	4.0	13.0
Parks Recreation & Tourism Mgt	68.0	1.0	36.0	3.0	2.0	8.0
	480.0	186.0	181.0	23.0	22.0	146.0

Registrar's Data on Scheduled Lab Hours

Department	Lab Hours
Animal & Veterinary Sciences	6.0
Biological Sciences	395.0
Food, Nutrition & Package Sci	26.0
Genetics and Biochemistry	23.0
School of Ag,For,Env Sciences	38.0
School of Computing	50.0
Parks Recreation & Tourism Mgt	31.0
	569.0

3-Year Average Research Expenditures

Department	3-year Average Research Expenditure
Animal & Veterinary Sciences	$1,100,000
Biological Sciences	$3,132,000
Food, Nutrition & Package Sci	$900,000
Genetics and Biochemistry	$1,700,000
School of Ag,For,Env Sciences	$2,268,200
School of Computing	$2,292,200
Parks Recreation & Tourism Mgt	$420,200
	$ 11,812,600

This table shows key data that is used to drive the facility model. The data is distributed by department and school and includes the following.

- the existing and projected FTE instructional and research faculty
- the number of MS and PhD students
- the number of graduate teaching and research associates
- the number of visiting faculty, administrative and clerical staff
- the Registrar's data on scheduled lab hours for each department and school

The model utilizes two methods for generating the amount of research space: 1) the number of researchers, and 2) the amount of research expenditures averaged over a 3-year period, which is approximately $12,000,000 for these programs.

APPENDIX
FACULTY AND SPACE DATA MODELS

Clemson University Southeast Precinct

ANIMAL AND VETERINARY SCIENCES

Existing minus Classrooms	27,995	1,683	26,312	
Model Range			**26,757**	**31,082**

A Draft Model to Estimate Space Requirements

x — Any number in a blue box is an assumption that may be changed based on discussions

GENERAL ASSUMPTIONS	Number of People	Comments
FTE Future Faculty	14.00	
FTE Research Faculty	3.00	
FTE Non-T/TT Faculty		
MS/PhD Student	10.0	Use the larger number MS/PhD, or GRA+GTA in generating office space
Graduate Research Assistant	4.0	
Graduate Teaching Assistant	4.0	
Post Doc:Faculty Ratio at 10% of Faculty	1.4	
Visitors at 10% of Faculty	1.4	
Administrative and Clerical Staff	11.0	

OFFICES, FACULTY, ET AL.	NASF per Person	NASF	Comments
Faculty	140	2,380	Net Assignable Square Feet (NASF)
MS/PhD Students	60	600	Use the larger number MS/PhD, or GRA+GTA
Graduate Research Assistant	-	-	
Graduate Teaching Assistant	-	-	Square foot mulitpliers are SC standards
Post Doc	100	140	
Visitors	100	140	
Administrative Staff	120	1,320	
		4,580	
Office Support - conf, workrm, storage	30%	1,370	
Total Office Net Assignable Sq Ft		**5,950**	6,100 Existing

INSTRUCTIONAL LABORATORIES		NASF		NASF	Comments
NASF per Station		60		90	
	Lower		Upper & Grad		
WSLH	4		2		Most of AVS lab courses actually meet in "smart classrooms" not "labs" All scheduling data comes from the Registrar
Hours/Lab	22		16		Weekly Lab Hours
Number of Labs	1		1		
Average Section Size	25		18		
Percent Station Occupancy	75%		55%		
		2,000		2,945	
Lab Support - as a % of total lab	33%	990	33%	1,460	
Instructional Laboratory Net Assignable Sq Ft		2,990		4,405	
Total Instructional Lab NASF				**7,395**	6,700 Existing

RESEARCH LABORATORIES		
Faculty	17.0	
GRA, Post Docs	5.4	
Number of Grad Students in addition to the GRAs	3.0	
	25.4	
Lab Module Net Assignable Sq	250	375
	6,350	9,525
Lab Support - as a % of total lab	33%	3,130	4,700
Total Research Laboratory Net Assignable Sq Ft		9,480	14,225

RESEARCH LABS BY RESEARCH EXPENDITURE

Inflation since 2012: 0%

	3-year Average Research Expenditure $		NASF				
	On-campus	Off-campus	NASF / $1M	Inflation-Adjusted NASF / $1M	On-campus Factor 100%	Off-campus Factor 25%	Total NASF
Highly Intensive			11,000	11,000	0	0	0
Intensive	$1,100,000		9,000	9,000	9,900	0	9,900
Moderately Intensive			6,000	6,000	0	0	0
Non-Intensive			4,000	4,000	0	0	0
						Total Research NASF by Res $	9,900

Research Space Total - the larger combination	9,900	**14,225**	11,113	Existing
Space not Modeled				
Central Storage HEGIS category 730	1,737			
	1,737		1,737	Existing

STUDENT COLLABORATION SPACE, LOUNGE, STUDY SPACE		NASF	Total NASF	
Small Group Informal Collaboration Areas	4	125	500	
Lounges, Breakrooms, etc	17	75	1,275	
		1,775		0 Existing

Clemson University Southeast Precinct

BIOLOGICAL SCIENCE

		Existing	Classroom	Minus Clrms	
Existing Net Assignable Square F		95,253	3,238	92,015	
	Model Range			**123,370**	**137,054**

A Draft Model to Estimate Space Requirements

x — Any number in a blue box is an assumption that may be changed based on discussions

GENERAL ASSUMPTIONS	Number of People	10% Projected Growth	Comments
FTE Faculty	52.53	47.75	
FTE Research Faculty	8.80	8	
FTE Non-T/TT Faculty	0.00	0	
MS/PhD Student	82.50	75	Use the larger number MS/PhD, or GRA+GTA in generating office space
Graduate Research Assistant	11.00	10	
Graduate Teaching Assistant	71.50	65	
Post Doc:Faculty Ratio at 10% of Faculty	5.81	5	
Visitors at 10% of Faculty	5.81	5	
Administrative and Clerical Staff	35.20	32	

OFFICES, FACULTY, ET AL.	NASF per Person	NASF	Comments
Faculty	140	8,586	Net Assignable Square Feet (NASF)
MS/PhD Students	-	-	
Graduate Research Assistant	40	440	
Graduate Teaching Assistant	60	4,290	Square foot mulitpliers are SC standards
Post Doc	100	581	
Visitors	100	581	
Administrative Staff	120	4,224	
		18,701	
Office Support - conf, workrm, storage	30%	5,610	
Total Office Net Assignable Sq Ft		**24,311**	21,984 Existing

INSTRUCTIONAL LABORATORIES		NASF		NASF	Comments
NASF per Station		50		60	All scheduling data comes from the Registrar
	Lower		Upper & Grad		
WSLH	223.3		171.6		Weekly Lab Hours
Hours/Lab	22		16		
Number of Labs	11		11		
Average Section Size	21		16		
Percent Station Occupancy	75%		55%		
		15,400		19,200	
Lab Support - as a % of total lab	33%	7,590	33%	9,460	
Instructional Laboratory Net Assignable Sq Ft		22,990		28,660	
Total Instructional Lab NASF				**51,650**	20,707 Existing

RESEARCH LABORATORIES			
Faculty	61.3		
GRA, Post Docs	16.8		
Number of Grad Students in addition to the GRAs	3.0		
	81.1		
Lab Module Net Assignable Sq		275	350
		22,312	28,397
Lab Support - as a % of total lab	33%	10,990	13,990
Total Research Laboratory Net Assignable Sq Ft		33,302	42,387

RESEARCH LABS BY RESEARCH EXPENDITURE

Inflation since 2012: 0%

	3-year Average Research Expenditure $		NASF				
	On-campus	Off-campus	NASF / $1M	Inflation-Adjusted NASF / $1M	On-campus Factor 100%	Off-campus Factor 25%	Total NASF
Highly Intensive			11,000	11,000	0	0	0
Intensive	$3,132,000		9,000	9,000	28,188	0	28,188
Moderately Intensive			6,000	6,000	0	0	0
Non-Intensive			4,000	4,000	0	0	0
						Total Research Lab NASF by ResS:	28,188

Research Space Total - the larger combination	33,302	**42,387**	34,937	Existing
Space not Modeled				
Imaging Facility	2,938			
Open Computer Labs	1,408			
Animal Quarters	2,409			
Central Storage HEGIS category 730 - 760 & 715	848			
Greenhouse	4,218			
Exhibition	884			
Shop	192			
Team Meeting	710			
	13,607		13,607	Existing

STUDENT COLLABORATION SPACE, LOUNGE, STUDY SPACE		NASF	Total NASF	
Small Group Informal Collaboration Areas	4	125	500	
Lounges, Breakrooms, etc	61	75	4,599	
		5,099		780 Existing

Clemson University Southeast Precinct

A Draft Model to Estimate Space Requirements

FOOD, NUTRICIAN, AND PACKAGE SCIENCE

Existing minus Classrooms	47,057	1,590	45,467	
Model Range			**48,310**	**53,680**

x Any number in a blue box is an assumption that may be changed based on discussions

GENERAL ASSUMPTIONS	Number of People	Comments
FTE Future Faculty	25.0	
FTE Research Faculty	2.0	
FTE Non-T/TT Faculty	0.0	
MS/PhD Student	53	Use the larger number MS/PhD, or GRA+GTA in generating office space
Graduate Research Assistant	16	
Graduate Teaching Assistant	14	
Post Doc:Faculty Ratio at 10% of Faculty	2	
Visitors at 10% of Faculty	2	
Administrative and Clerical Staff	15	

OFFICES, FACULTY, ET AL.	NASF per Person	NASF	
Faculty	140	3,780	Net Assignable Square Feet (NASF)
MS/PhD Students	60	3,180	Use the larger number MS/PhD, or GRA+GTA
Graduate Research Assistant	-	-	
Graduate Teaching Assistant	-	-	Square foot mulitpliers are SC standards
Post Doc	100	200	
Visitors	100	200	
Administrative Staff	120	1,800	
		9,160	
Office Support - conf, workrm, storage	30%	2,750	
Total Office Net Assignable Sq Ft		**11,910**	12,858 Existing

INSTRUCTIONAL LABORATORIES		NASF		NASF	
NASF per Station		60		90	
	Lower		Upper & Grad		
WSLH	2		24		
Hours/Lab	22		16		
Number of Labs	1		2		
Average Section Size	12		18		
Percent Station Occupancy	75%		55%		
		960		5,891	
Lab Support - as a % of total lab	33%	480	33%	2,910	
Instructional Laboratory Net Assignable Sq Ft		1,440		8,801	
				10,241	14,227 Existing

RESEARCH LABORATORIES			
Faculty	27.0		
GRA, Post Docs	18.0		
Number of Grad Students in addition to the GRAs	3.0		
	48.0		
Lab Module Net Assignable Sq	275	350	
	13,200	16,800	
Lab Support - as a % of total lab	33% 6,510	8,280	
Total Research Laboratory Net Assignable Sq Ft	19,710	25,080	

RESEARCH LABS BY RESEARCH EXPENDITURE

Inflation since 2012: 0%

	3-year Average Research Expenditure $ On-campus	Off-campus	NASF / $1M	Inflation-Adjusted NASF / $1M	NASF On-campus Factor 100%	NASF Off-campus Factor 25%	Total NASF
Highly Intensive			11,000	11,000	0	0	0
Intensive	$900,000		9,000	9,000	8,100	0	8,100
Moderately Intensive			6,000	6,000	0	0	0
Non-Intensive			4,000	4,000	0		0
					Total Research Lab NASF by Res$:		8,100

Research Space Total - the larger combination	19,710	**25,080**	14,458 Existing
Space not Modeled			
Library/Study	124		
Greenhouse	362		
Shop	272		
Merchandising, Ice Cream	373		
Open Labs	1,009		
Central Storage HEGIS Category 730	1,784		
	3,924		3,924 Existing

STUDENT COLLABORATION SPACE, LOUNGE, STUDY SPACE		NASF	Total NASF	
Small Group Informal Collaboration Areas	4	125	500	
Lounges, Breakrooms, etc	27	75	2,025	
			2,525	0 Existing

Clemson University Southeast Precinct

A Draft Model to Estimate Space Requirements

GENETICS AND BIOCHEMISTRY

Existing minus Classrooms	59,520	0	59,520	
Model Range			**54,012**	**61,287**

x Any number in a blue box is an assumption that may be changed based on discussions

GENERAL ASSUMPTIONS	Number of People	Comments
FTE Future Faculty	16.00	
FTE Research Faculty	6.75	
FTE Non-T/TT Faculty		
MS/PhD Student	19	Use the larger number MS/PhD, or GRA+GTA in generating office space
Graduate Research Assistant	21	
Graduate Teaching Assistant	10	
Post Doc:Faculty Ratio at 10% of Faculty	2	
Visitors at 10% of Faculty	2	
Administrative and Clerical Staff	14	

OFFICES, FACULTY, ET AL.	NASF per Person	NASF	
Faculty	140	3,185	Net Assignable Square Feet (NASF)
MS/PhD Students	-	-	
Graduate Research Assistant	40	840	
Graduate Teaching Assistant	60	600	Square foot mulitpliers are SC standards
Post Doc	100	200	
Visitors	100	200	
Administrative Staff	120	1,680	
		6,705	
Office Support - conf, workrm, storage	30%	2,010	
Total Office Net Assignable Sq Ft		**8,715**	9,670 Existing

INSTRUCTIONAL LABORATORIES		NASF		NASF	
NASF per Station		60		90	
	Lower		Upper & Grad		
WSLH	0		23		
Hours/Lab	22		16		
Number of Labs	0		2		
Average Section Size	18		9		
Percent Station Occupancy	75%		55%		
		-		2,945	
Lab Support - as a % of total lab	33%	-	33%	1,460	
Instructional Laboratory Net Assignable Sq Ft		-		4,405	
Total Instructional Lab NASF				**4,405**	1,429 Existing

RESEARCH LABORATORIES			
Faculty	22.8		
GRA, Post Docs	23.0		
Number of Grad Students in addition to the GRAs	3.0		
	48.8		
Lab Module Net Assignable Sq	275	375	
	13,406	18,281	
Lab Support - as a % of total lab	33% 6,610	9,010	
Total Research Laboratory Net Assignable Sq Ft	20,016	27,291	

RESEARCH LABS BY RESEARCH EXPENDITURE

Inflation since 2012: 0%

	3-year Average Research Expenditure $ On-campus	Off-campus	NASF / $1M	Inflation-Adjusted NASF / $1M	NASF On-campus Factor 100%	NASF Off-campus Factor 25%	Total NASF
Highly Intensive			11,000	11,000	0	0	0
Intensive	$1,700,000		9,000	9,000	15,300	0	15,300
Moderately Intensive			6,000	6,000	0	0	0
Non-Intensive			4,000	4,000	0		0
					Total Research Lab NASF by Res$:		15,300

Research Space Total - the larger combination	20,016	**27,291**	29,593 Existing
Space not Modeled			
Greenhouse	6,005		
CUGI	11,933		
Team Meeting Rooms	731		
	18,669		18,669 Existing

STUDENT COLLABORATION SPACE, LOUNGE, STUDY SPACE		NASF	Total NASF	
Small Group Informal Collaboration Areas	4	125	500	
Lounges, Breakrooms, etc	23	75	1,706	
			2,206	159 Existing

APPENDIX
FACULTY AND SPACE DATA MODELS

Clemson University Southeast Precinct

A Draft Model to Estimate Space Requirements

SCHOOL OF AGRICULTURE, FORESTRY, AND ENVIR SCI

Existing minus Classrooms 135,373 9,794 125,579

Model Range 132,616 148,736

x Any number in a blue box is an assumption that may be changed based on discussions

GENERAL ASSUMPTIONS	Number of People	Comments
FTE Future Faculty	57	
FTE Research Faculty	5	
FTE Non-T/TT Faculty	0	
MS/PhD Student	53	Use the larger number MS/PhD, or GRA+GTA in generating office space
Graduate Research Assistant	73	
Graduate Teaching Assistant	21	
Post Doc:Faculty Ratio at 10% of Faculty	6	
Visitors at 10% of Faculty	6	
Administrative and Clerical Staff	53	

OFFICES, FACULTY, ET AL.	NASF per Person	NASF	
Faculty	140	8,680	Net Assignable Square Feet (NASF)
MS/PhD Students	-	-	
Graduate Research Assistant	40	2,920	
Graduate Teaching Assistant	60	1,260	Square foot mulitpliers are SC standards
Post Doc	100	600	
Visitors	100	600	
Administrative Staff	120	6,360	
		20,420	
Office Support - conf, workrm, storage	30%	6,130	
Total Office Net Assignable Sq Ft		**26,550**	38,368 Existing includes 94 faculty offices and 10 conf rms

INSTRUCTIONAL LABORATORIES		NASF		NASF	
NASF per Station		60		80	
	Lower		Upper & Grad		
WSLH	11		27		
Hours/Lab	22		16		
Number of Labs	1		2		
Average Section Size	16		17		
Percent Station Occupancy	75%		55%		
		1,280		4,945	
Lab Support - as a % of total lab	33%	640	33%	2,440	
Instructional Laboratory Net Assignable Sq Ft		1,920		7,385	
Total Instructional Lab NASF				**9,305**	14,526 Existing

RESEARCH LABORATORIES	
Faculty	62.0
GRA, Post Docs	79.0
Number of Grad Students in addition to the GRAs	3.0
	144.0

Lab Module Net Assignable Sq	275	350	
	39,600	50,400	
Lab Support - as a % of total lab	33% 19,510	24,830	
Total Research Laboratory Net Assignable Sq Ft	59,110	75,230	

RESEARCH LABS BY RESEARCH EXPENDITURE

Inflation since 2012: 0%

	3-year Average Research Expenditure $		NASF				
	On-campus	Off-campus	NASF / $1M	Inflation-Adjusted NASF / $1M	On-campus Factor 100%	Off-campus Factor 25%	Total NASF
Highly Intensive			11,000	11,000	0	0	0
Intensive	$2,268,200		9,000	9,000	20,414	0	20,414
Moderately Intensive			6,000	6,000	0	0	0
Non-Intensive			4,000	4,000	0		0
					Total Research Lab NASF by Res$:		20,414

Research Space Total - the larger combination	59,110	**75,230**	38,879	Existing

Space not Modeled

Animal Quarters	710		
	5,293		
Exhibition	1,045		
Greenhouse	17,771		
Library	138		
Open Labs	2,538		
Recreation Service??	497		
Shop	4,509		
	32,501	32,501	Existing

STUDENT COLLABORATION SPACE, LOUNGE, STUDY SPACE

		NASF	Total NASF		
Small Group Informal Collaboration Areas	4	125	500		
Lounges, Breakrooms, etc	62	75	4,650		
			5,150	1,305	Existing

Clemson University Southeast Precinct

A Draft Model to Estimate Space Requirements

SCHOOL OF COMPUTING

Existing minus Classrooms 26,668 2,711 23,957

Model Range 53,415 57,479

x Any number in a blue box is an assumption that may be changed based on discussions

GENERAL ASSUMPTIONS	Number of People	15% Projected Growth	Comments
FTE Current Faculty	41.63	36.2	
FTE Research Faculty	0.00	0	
FTE Non-T/TT Faculty	0.00	0	
MS/PhD Student	232	202	Use the larger number MS/PhD, or GRA+GTA
Graduate Research Assistant	70	61	in generating office space
Graduate Teaching Assistant	36	31	
Post Doc:Faculty Ratio at 10% of Faculty	5	4	
Visitors at 10% of Faculty	5	4	
Administrative and Clerical Staff	15	13	

OFFICES, FACULTY, ET AL.	NASF per Person	NASF	
Faculty	140	5,828	Net Assignable Square Feet (NASF)
MS/PhD Students	60	13,938	Use the larger number MS/PhD, or GRA+GTA
Graduate Research Assistant	-	-	
Graduate Teaching Assistant	-	-	Square foot mulitpliers are SC standards
Post Doc	100	460	
Visitors	100	460	
Administrative Staff	120	1,794	
		22,480	
Office Support - conf, workrm, storage	30%	6,740	
Total Office Net Assignable Sq Ft		**29,220**	11,073 Existing

INSTRUCTIONAL LABORATORIES		NASF		NASF	
NASF per Station		40		80	
	Lower		Upper & Grad		
WSLH	49.45				
Hours/Lab	22		16		
Number of Labs	3		0		
Average Section Size	18				
Percent Station Occupancy	75%		55%		
		2,880		-	
Lab Support - as a % of total lab	33%	1,420	33%	-	
Instructional Laboratory Net Assignable Sq Ft		4,300		-	
Total Instructional Lab NASF				**4,300**	1,959 Existing

RESEARCH LABORATORIES	
Faculty	41.6
GRA, Post Docs	74.8
Number of Grad Students in addition to the GRAs	3.0
	119.4

Lab Module Net Assignable Sq	50	100	
	5,969	11,938	
Lab Support - as a % of total lab	33% 2,940	5,880	
Total Research Laboratory Net Assignable Sq Ft	8,909	17,818	

RESEARCH LABS BY RESEARCH EXPENDITURE

Inflation since 2012: 0%

	3-year Average Research Expenditure $		NASF				
	On-campus	Off-campus	NASF / $1M	Inflation-Adjusted NASF / $1M	On-campus Factor 100%	Off-campus Factor 25%	Total NASF
Highly Intensive			11,000	11,000	0	0	0
Intensive			9,000	9,000	0	0	0
Moderately Intensive	$2,292,200		6,000	6,000	13,753	0	13,753
Non-Intensive			4,000	4,000	0		0
					Total Research Lab NASF by Res$:		13,753

Research Space Total - the larger combination	13,753	**17,818**	7,767	Existing

Space not Modeled

Meeting Room	156		
Open Computer Lab	1,295		
Servers, HEGIS Categories 710 and 731	1,068		
	2,519	2,519	Existing

STUDENT COLLABORATION SPACE, LOUNGE, STUDY SPACE

		NASF	Total NASF		
Small Group Informal Collaboration Areas	4	125	500		
Lounges, Breakrooms, etc	42	75	3,122		
			3,622	639	Existing

PARKS, RECREATION, & TOURISM

	Existing minus Classrooms	13,797	3,711	10,086
A Draft Model to Estimate Space Requirements			**Model Range**	**21,374**	**23,414**

x Any number in a blue box is an assumption that may be changed based on discussions

GENERAL ASSUMPTIONS	Number of People	5% Projected Growth	Comments
FTE Current Faculty	26.78	25.5	
FTE Research Faculty	0.00	0	
FTE Non-T/TT Faculty	2.10	2	
MS/PhD Student	71.40	68	Use the larger number MS/PhD, or GRA+GTA
Graduate Research Assistant	1.05	1	in generating office space
Graduate Teaching Assistant	37.80	36	
Post Doc:Faculty Ratio at 10% of Faculty	3.15	3	
Visitors at 10% of Faculty	2.10	2	
Administrative and Clerical Staff	8.40	8	

OFFICES, FACULTY, ET AL.	NASF per Person	NASF	Comments
Faculty	140	4,043	Net Assignable Square Feet (NASF)
MS/PhD Students	60	4,284	Use the larger number MS/PhD, or GRA+GTA
Graduate Research Assistant	-	-	
Graduate Teaching Assistant	-	-	Square foot mulitpliers are SC standards
Post Doc	100	315	
Visitors	100	210	
Administrative Staff	120	1,008	
		9,860	
Office Support - conf, workrm, storage	30%	2,960	
Total Office Net Assignable Sq Ft		**12,820**	6,202 Existing

INSTRUCTIONAL LABORATORIES		NASF		NASF
NASF per Station		40		60
	Lower		Upper & Grad	
WSLH	30.45			
Hours/Lab	22		16	
Number of Labs	2		0	
Average Section Size	21			
Percent Station Occupancy	75%		55%	
		2,240		-
Lab Support - as a % of total lab	33%	1,110	33%	-
Instructional Laboratory Net Assignable Sq Ft		3,350		-
Total Instructional Lab NASF				**3,350** 2,932 Existing

RESEARCH LABORATORIES			
Faculty	26.8		
GRA, Post Docs	4.2		
Number of Grad Students in addition to the GRAs	3.0		
	34.0		
Lab Module Net Assignable Sq		50	75
		1,699	2,548
Lab Support - as a % of total lab	33%	840	1,260
Total Research Laboratory Net Assignable Sq Ft		2,539	3,808

RESEARCH LABS BY RESEARCH EXPENDITURE

Inflation since 2012: 0%

	3-year Average Research Expenditure $					NASF			
	On-campus	Off-campus	NASF / $1M	Inflation-Adjusted NASF / $1M	On-campus Factor	Off-campus Factor	Total NASF		
					100%	25%			
Highly Intensive			11,000	11,000	0	0	0		
Intensive			9,000	9,000	0	0	0		
Moderately Intensive			6,000	6,000	0	0	0		
Non-Intensive	$420,200		4,000	4,000	1,681		1,681		
								1,681	
Research Space Total - the larger combination		2,539		**3,808**			0	Existing	

Space not Modeled

Open Computer Lab	493	
Central Storage HEGIS 731	278	
	771	771 Existing

STUDENT COLLABORATION SPACE, LOUNGE, STUDY SPACE				
		NASF	Total NASF	
Small Group Informal Collaboration Areas	4	125	500	
Lounges, Breakrooms, etc	29	75	2,166	
			2,666	181 Existing

Clemson University SE Precinct
Life Safety Evaluations 01.17.13

The Boudreaux Group

Introduction

This project, located in the southeast corner of campus at Clemson University, Clemson, SC, looks at the existing life safety of several buildings in this area: Poole, Lehotsky, Barre, and McAdams. This study did not focus on above ceiling areas, which may or may not be up to code for fire safety ratings or labeled as such. In many instances of buildings of this age, construction has taken place over time and codes have changed such that a corridor that is required to be fire rated no longer provides a continuous rating due to pipe, HVAC, conduit, and other miscellaneous penetrations. A thorough investigation of the fire walls and code requirements is recommended prior to major building renovations in the buildings listed. Unless otherwise noted, the buildings are not sprinklered. If sprinklers were added to the buildings, it would greatly improve the life safety performance and remove the fire rating requirements in the corridors. In addition, buildings with elevators were not evaluated for elevator emergency operations in accordance with the code. Throughout all of the buildings evaluated, directional signage for accessible entrances and facilities is poor.

Poole

Entrances

1. The main entrance to the building is not handicapped accessible due to stairs. The signage on the main door at the top of the stairs directing a disabled person to the handicapped entrance is too small and ambiguous for a visitor to see easily.
2. The grates at the main entry are a tripping hazard, with the mesh size being too large.
3. In the majority of exits, egress lighting is not present at the entry doors. In the few areas where lighting is present, it should be examined to see if the lighting provided is on emergency backup to provide safe access out of the building in case of a power failure.
4. At the handicapped accessible entrance, there is an uneven grade at the right side of the entry door, providing difficulties for someone in a wheelchair to activate the panel button to automatically open the door.

Stairs

1. The interior lobby stair is not code compliant, with 34" tall railings provided. Code requires 36" handrails with 42" tall guardrails to protect occupants from falling.
2. The remainder of the stairs have railings that also are not code compliant (32-1/2" in height) and do not provide guard rails on the stairs or at landings (required to be at 42" above the floor to prevent falls). The existing railings also are not code compliant with spacing, allowing a 4" sphere to easily pass between the rails.
3. The fire rated egress stairs do not contain an area of refuge for someone in a wheelchair to remain safe in case of fire at the second floor or in the basement. In addition, there is no signage or two way communication provided in these areas as required by code for areas of refuge.
4. At the basement level, there is no wall installed to prevent a sight impaired person from bumping into the bottom of the stairs.

Restrooms

1. Women's restroom 181 does not have ADA compliant signage panel at door (current signage: typing paper taped to door). The centerline of the toilet to the wall is 15-1/2" (needs to be 16-18"). Water pipes below the sinks are not insulated, which is required to prevent wheelchair persons from burning their legs on pipes. Handrails are present in the large compartment, but current codes require a 3rd handrail attached in a vertical position. There are (7) stalls in the restroom, but no ambulatory stall is provided, which is also required by code (code requires an ambulatory stall as well as an ADA stall when there are 6 or more stalls provided).
2. In the remainder of the building, restrooms are not ADA compliant (fixture heights and locations, partition clear widths, no ADA levers on faucets, clearances required for 90 degree turns are less than 5', door swinging into clear floor areas, etc.). Doors to these restrooms measure 29" clear width for entry (32" minimum is required). In addition, the restrooms have a floor raised approximately 1" above the corridor floor, which is also not in compliance for an ADA entry.
3. In the basement, one of the women's restrooms has been converted into a laundry room. A plumbing count should be performed on the floor to make sure there are minimum facilities required per code.

Water Fountains

1. Throughout the building, single water fountains are installed at heights non-compliant with ADA requirements. Code requires two fixtures at standing and wheelchair heights to be ADA compliant, one such fixture located on each level and along an accessible path. In the lobby, furniture is placed in front of the access to the water fountain as well, blocking a person from a wheelchair using the fountain.

Egress Routes

1. Throughout the building, furniture, trash cans, and recycling bins are placed within the egress path, and can impede the safe travel through the building in event of an emergency. Trash bins should be stored in alcoves or within rooms, and furniture should be placed to keep travel routes at their maximum continuous width.

2. In a corridor on the first floor, a TV is mounted protruding 8" from the wall at standing height. Protrusions are limited to 4" maximum within standing height area to avoid accidents for visually impaired individuals.
3. In the basement, there is not a safe ADA exit from the level of discharge. A wheelchair bound individual can get outside at the loading dock, but no ramp is provided down to grade level, requiring anyone in a wheelchair on this level in a state of emergency to wait under the building overhang for rescue. This is a dangerous situation if the building is compromised by fire.
4. In the basement, double doors are not installed as double egress doors, limiting the path of travel to one direction, creating dead end corridor scenarios.
5. There does not appear to be enough egress out of the basement level for the occupied square footage present, nor are exit paths clearly labeled - two ways out must be provided from each level of occupied space at the present square footage. All of the exits from this level require the use of stairs. In addition, many storage areas are located along egress routes with only mesh fencing separating the storage area from the egress corridor, posing a fire hazard in event of emergency evacuation. Two of the three exit stairs are accessed in locked areas, preventing anyone from exiting in that direction in event of fire.

Doors

1. At the second floor elevator lobby, the vending machines impede the doors fully opening, thus impacting the widths of egress. Also within this elevator lobby is a steel column that is not protected. There is no fire rating indicated for the elevator lobby, and the closers provided on the doors do not automatically close.
2. At the entrance to Auditorium 174 on the second floor, doors provide 29" clear due to a central mullion installed. Doors are required to have 32" clear. The auditorium also does not provide for multiple seating location choices for someone in a wheelchair (only ADA accessible at the back of the room due to the slope of the floor and stairs). The door at the front of the room (second exit required out of the space) is accessed via stairs on the exterior. An wheelchair-bound instructor would not be able to use this room, as the two exits into the instructor space require the use of stairs.
3. In the basement, the mailroom is not one hour fire rated, and the doors are not provided with closers (rooms with storage over 100 square feet are required to be 1 hour fire rated).

Fire Safety Devices

1. A thorough count of fire extinguisher cabinets was not performed in the building, but it appears that there are not enough fire extinguisher devices as required by code. A more thorough study is recommended to determine these locations and provide new fire extinguishers as required by code.
2. A thorough count of the fire warning devices (horn and strobe devices) was not performed, but it appears that the building is not sufficiently covered in corridors or in restrooms, among other public spaces. It is recommended that the current building have the fire alarm system brought up to current code, which will require replacement of the existing system.

Lehotsky

Entrances

1. There is no signage to clearly direct a handicapped person to accessible entrances. Maps of floor plans should be clearly posted at interior entrances. At accessible entrances, there is no automatic door opening with panel for a person in a wheelchair to push. The south end entrance is an accessible connection to Poole, but there is no signage indicating this entrance as accessible.
2. In the majority of exits, egress lighting is not present at the entry doors. In the few areas where lighting is present, it should be examined to see if the lighting provided is on emergency backup to provide safe access out of the building in case of a power failure.
3. Inside the main entrance to the building at the first floor sunken lobby, there are no handrails or transition warning materials installed on one side of the sunken lobby, thereby creating a place where visually impaired individuals can easily fall. There is no ADA accessible lounge area.
4. At the front entry, there is no signage directing visitors to elevators or which entrances to use to access elevators. There are two elevators located in the building, but neither elevator accesses all three levels of the building; therefore, a person in a wheelchair has to travel great distances to get from the top level to the bottom level of the building. Not all exits from the building are ADA accessible, so it is a difficult building for a person to navigate in a wheelchair or with any physical impairment.

Stairs

1. The stairways are required to have 48" clear between handrails. The building does not comply with this throughout. No guardrails are present on the railings as required by code, and the handrails provided are not code compliant with spacing or height.
2. The fire rated egress stairs do not contain an area of refuge for someone in a wheelchair to remain safe in case of fire at the second floor or in the basement. In addition, there is no signage or two way communication provided in this areas as required by code for areas of refuge.

Restrooms

1. Throughout the building, restrooms are not ADA compliant (fixture heights and locations, partition clear widths, no ADA levers on faucets, no insulation on exposed pipes at sinks, vanity panel not ADA height, etc.).

Water Fountains

1. Throughout the building, single water fountains are installed at heights non-compliant with ADA requirements. Code requires two fixtures at standing and wheelchair heights to be ADA compliant, one such fixture located on each level and along an accessible path.

Egress Routes

1. Throughout the building, furniture, trophy cases, trash cans, and recycling bins are placed within the egress path, and can impede the safe travel through the building in event of an emergency. Trash bins should be stored in alcoves or within rooms, and furniture should be placed to keep travel routes at their maximum continuous width.
2. At the ADA labeled entrance, there is no curb cut to the parking lot visible from the entrance. In order to get to the parking lot level, a handicapped person would have to travel around several corners of the building to get to the grade level, and no signage is present to direct the person to this area.

Doors

1. All of the door frames on the first floor are currently wood. The original construction drawings show for all corridor walls to be 1 hour fire rated, which also would require rated and labeled doors. Doors and frames are not currently rated.

Fire Safety Devices

1. A thorough count of fire extinguisher cabinets was not performed in the building, but it appears that there are not enough fire extinguisher devices as required by code. A more thorough study is recommended to determine these locations and provide new fire extinguishers as required by code.
2. A thorough count of the fire warning devices (horn and strobe devices) was not performed, but it appears that the building is not sufficiently covered in corridors or in restrooms, among other public spaces. It is recommended that the current building have the fire alarm system brought up to current code, which will require replacement of the existing system.

Barre (basement level of Barre is sprinklered and fire devices on this level are updated)

Entrances

1. There is no signage to clearly direct a handicapped person to accessible entrances. At accessible entrances, there is no automatic door opening with panel for a person in a wheelchair to push.
2. In the majority of exits, egress lighting is not present at the entry doors. In the few areas where lighting is present, it should be examined to see if the lighting provided is on emergency backup to provide safe access out of the building in case of a power failure.
3. In the basement, there is a lack of signage directing a visitor to the ADA door.
4. At the front entry, there is no signage directing visitors to the elevator or which entrances to use to access the elevator.

Stairs

1. The stairways are required to have 48" clear between handrails, and the building does not comply with this throughout. No guardrails are present on the railings as required by code, and the handrails provided are not code compliant with spacing or height.
2. The fire rated egress stairs do not contain an area of refuge for someone in a wheelchair to remain safe in case of fire at the second floor or in the basement. In addition, there is no signage or two way communication provided in this areas as required by code for areas of refuge.
3. The fire rated egress stairwells are locked on the basement level, not allowing a person to travel back inside the stairs from that level.

Restrooms

1. Throughout the building (with the exception of the basement level), restrooms are not ADA compliant (fixture heights and locations, partition clear widths, no ADA levers on faucets, no insulation on exposed pipes at sinks, vanity panel not ADA height, etc.).

Water Fountains

1. Throughout the building, single water fountains are installed at heights non-compliant with ADA requirements. Code requires two fixtures at standing and wheelchair heights to be ADA compliant, one such fixture located on each level and along an accessible path.

Egress Routes

1. At the ADA labeled entrance, there is no curb cut to the parking lot visible from the entrance. In order to get to the parking lot level, a handicapped person would have to travel around several corners of the building to get to the grade level, and no signage is present to direct the person to this area.

Fire Safety Devices

1. A thorough count of fire extinguisher cabinets was not performed in the building, but it appears that there are not enough fire extinguisher devices as required by code (with the exception of the basement level). A more thorough study is recommended to determine these locations and provide new fire extinguishers as required by code.
2. A thorough count of the fire warning devices (horn and strobe devices) was not performed, but it appears that the building is not sufficiently covered in corridors or in restrooms, among other public spaces (with the exception of the basement level). It is recommended that the current building have the fire alarm system brought up to current code, which will require replacement of the existing system.

McAdams (new addition is sprinklered and fire devices in this area are new)

Entrances

1. There is no signage to clearly direct a handicapped person to accessible entrances. At accessible entrances, there is no automatic door opening with panel for a person in a wheelchair to push. The majority of entrances to the building are not ADA accessible, including the new addition. The main entrance at the new addition is listed as ADA compliant, however curb cuts are not coordinated with the proper travel path, and the ramp access to the door appears to be too steep per code (without a handrail, maximum slope is 1" of vertical height per every 20' of horizontal travel).
2. In the majority of exits, egress lighting is not present at the entry doors. In the few areas where lighting is present, it should be examined to see if the lighting provided is on emergency backup to provide safe access out of the building in case of a power failure.
3. At the front entry at both the old building and new addition, there is no signage directing visitors to the elevator or which entrances to use to access the elevator. Inside the main front entrance, the space is full of recycling bins, which impede egress and accessibility.

Stairs

1. The exit stairs in the older portion of the building are not code compliant in the following ways: the grip on the handrail is not equal to a 1-1/2" diameter sphere; handrails are only 30" above floor, not 36"; no guardrails are provided to prevent falls; no area of refuge with required two-way communication and signage is provided; width of the stairs is 41.5", not the 48" clear required; handrails are not continuous; extensions are not provided at the bottom of stairs; furniture and storage should not be kept in the stairwells, in particular in areas that can be considered an area of refuge.
2. In the new addition, the rubber treads on the stairs are not adhered properly, allowing a potential tripping hazard.

Restrooms

1. In the older portion of the building, restrooms are not ADA compliant (fixture heights and locations, partition clear widths, no ADA levers on faucets, no handrails, clearances required for 90 degree turns are less than 5', door swinging into clear floor areas, etc.). In the new portion of the building on the first floor, restrooms appear to be in compliance, with the exception of a lack of ADA levers on the sinks in the men's restroom.
2. On the second floor in the older portion, there is a pair of restrooms labeled as ADA compliant with signage, but they are deficient in most of the ways mentioned above as well and are clearly not ADA accessible.

Water Fountains

1. Throughout the older portion of the building, single water fountains are installed at heights non-compliant with ADA requirements. Code requires two fixtures at standing and wheelchair heights to be ADA compliant, one such fixture located on each level and along an accessible path.

Egress Routes

1. Throughout the building, furniture, trophy cases, trash cans, and recycling bins are placed within the egress paths, which can impede the safe travel through the building in event of an emergency. Trash bins should be stored in alcoves or within rooms, and furniture should be placed to keep travel routes at their maximum continuous width (in particular in the main lobby/student lounge).
2. The elevator is located quite a distance away from the ADA entrance, with no signage to clearly indicate its location to a visitor in the building.
3. At the entrance to the outdoor seating area on the second floor, there is a 4" grade difference, creating a tripping hazard and a non-compliant area of the building for a person in a wheelchair.
4. At auditorium 119, there is only one accessible entrance into the space (stairs are provided at the second exit).

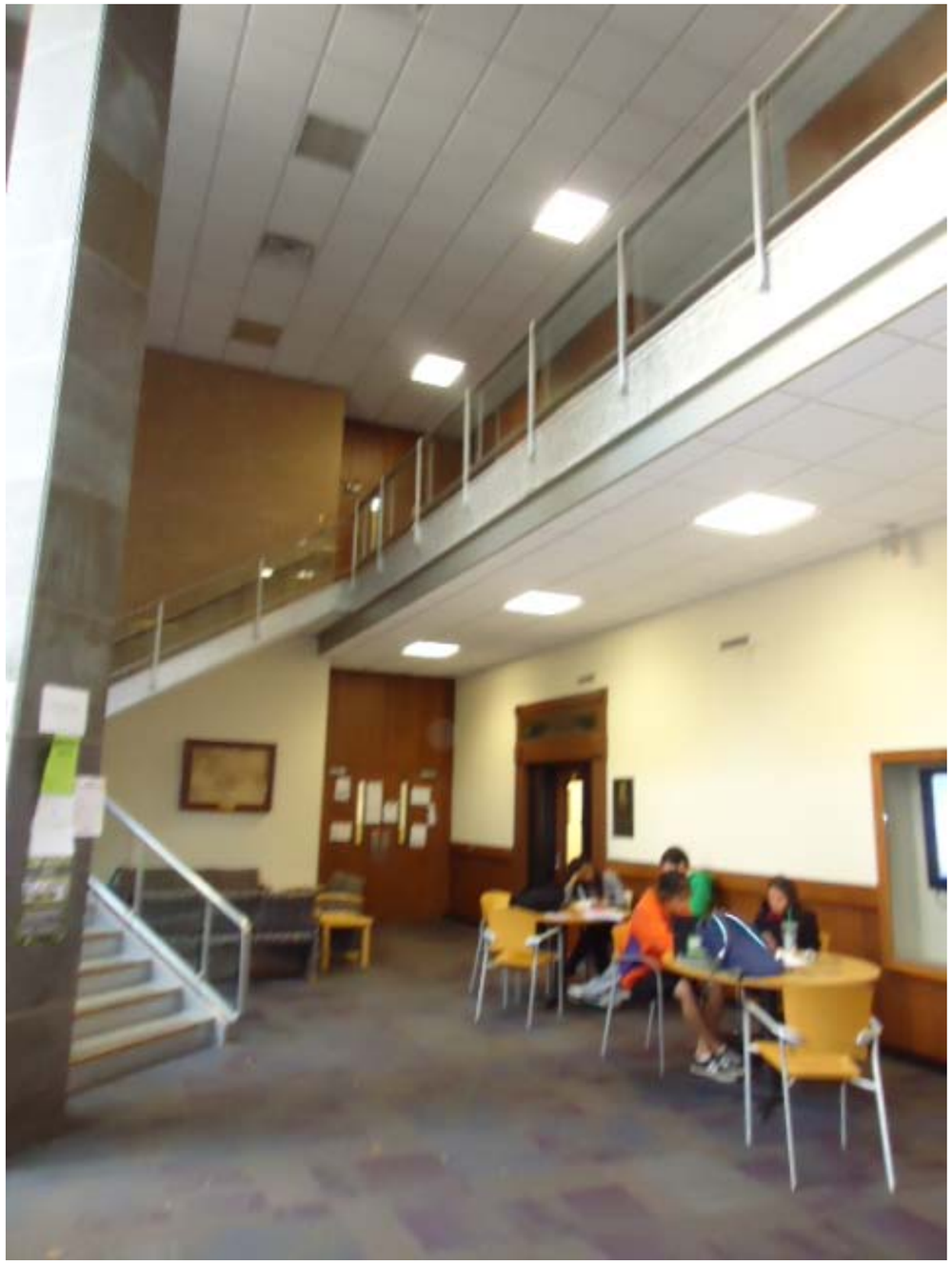
Fire Safety Devices

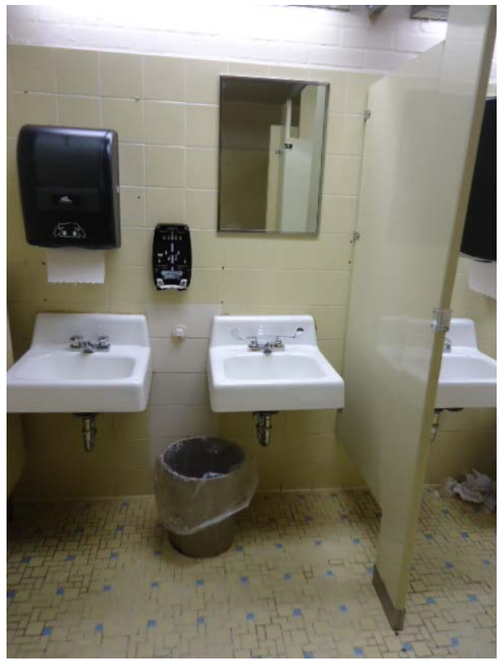
1. A thorough count of the fire warning devices (horn and strobe devices) was not performed, but it appears that in the older portion of the building, devices are not sufficiently placed to provide coverage in corridors or in restrooms, among other public spaces. It is recommended that the current building have the fire alarm system brought up to current code, which will require replacement of the existing system. In the newer portion of the building on the first floor, devices appear to be compliant.

2. A thorough count of fire extinguisher cabinets was not performed in the building, but it appears that there are enough fire extinguisher devices as required by code in this building.

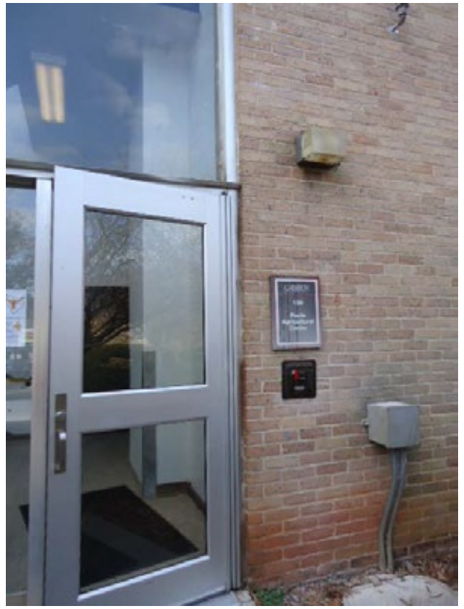
Photos - Poole

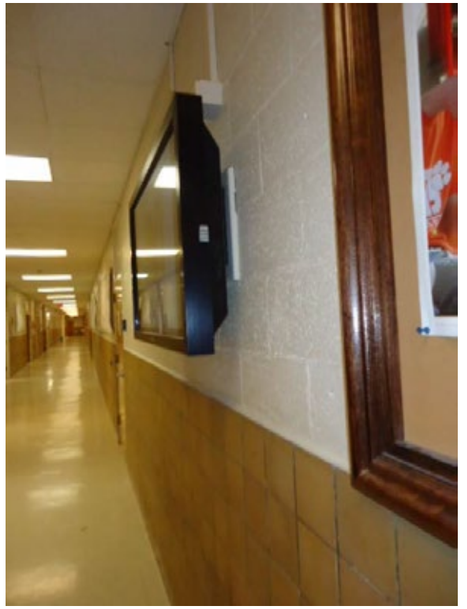

NO SMOKING ALLOWED
CLEMSON
130
Poole Agricultural Center

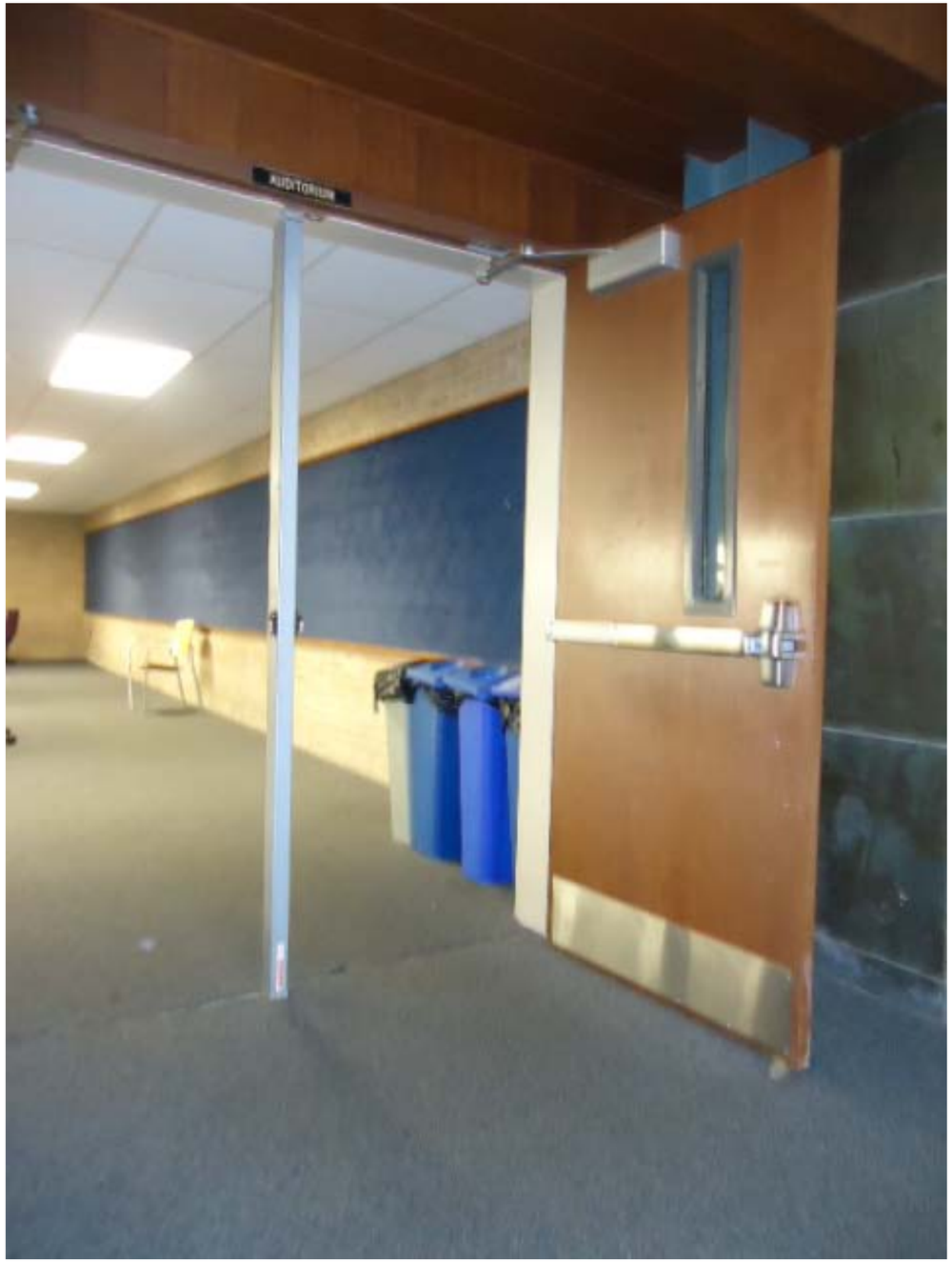


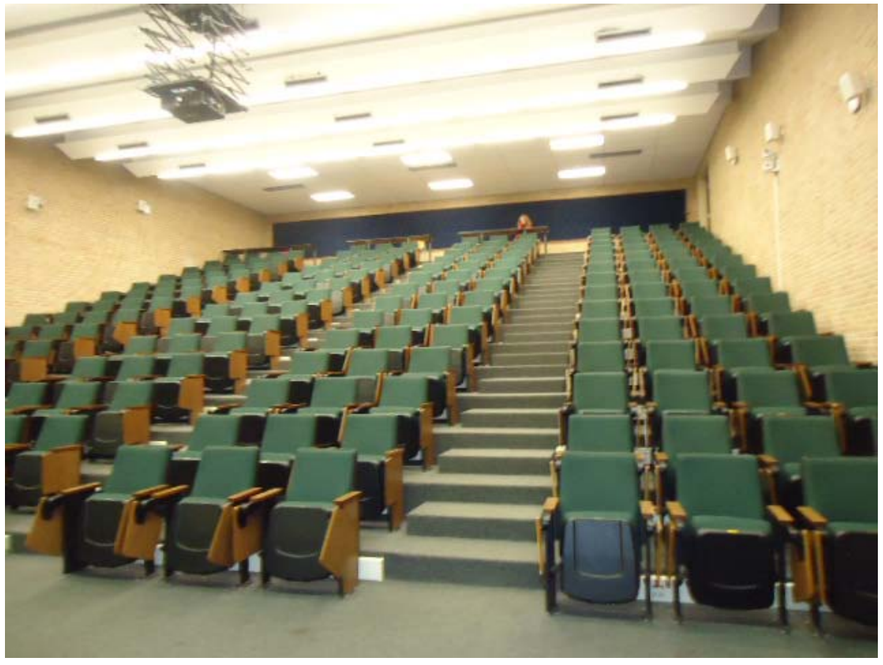



LADIES
RESTROOM

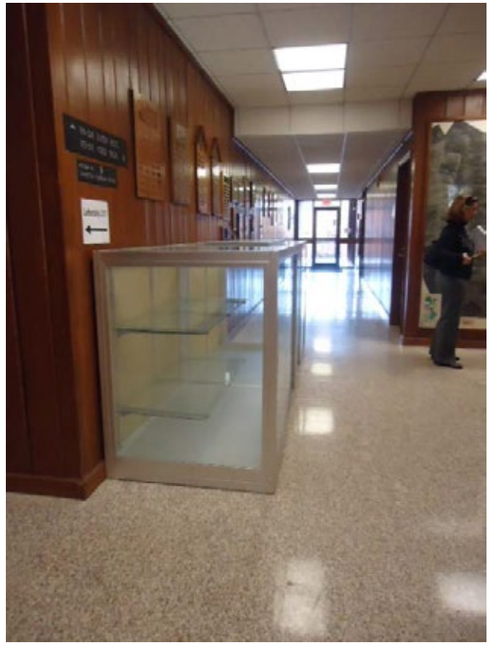




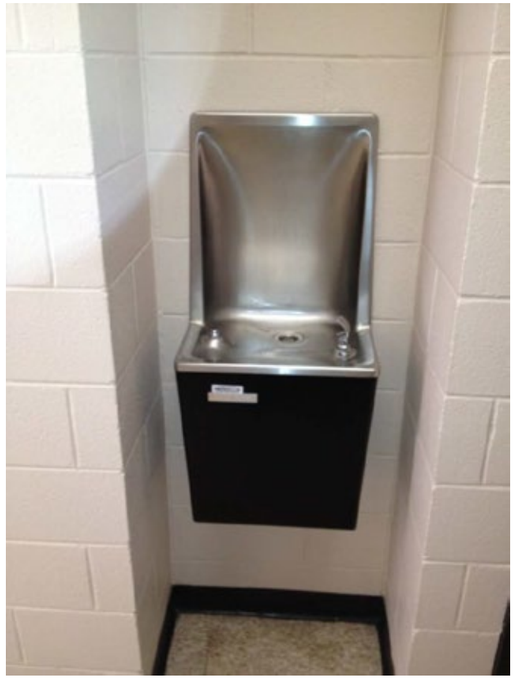

AUDITORIUM



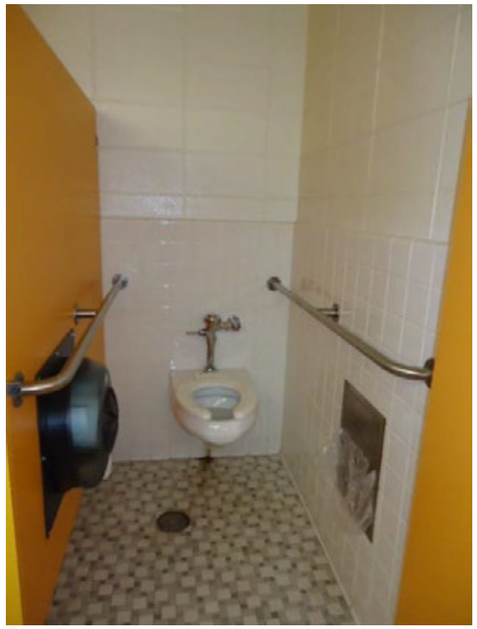
Photos - Lehotsky



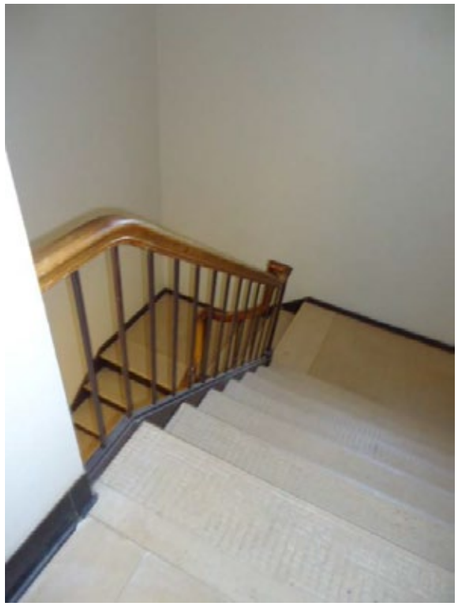
Photos - Barre



Photos - McAdams




WOMEN
WOMEN



above the floor to prevent falls). The existing railings also are not code compliant with spacing, allowing a 4" sphere to easily pass between the rails.

3. The fire rated egress stairs do not contain an area of refuge for someone in a wheelchair to remain safe in case of fire at the second floor or in the basement. In addition, there is no signage or two way communication provided in these areas as required by code for areas of refuge.
4. At the basement level, there is no wall installed to prevent a sight impaired person from bumping into the bottom of the stairs.

Restrooms

1. Women's restroom 181 does not have ADA compliant signage panel at door (current signage: typing paper taped to door). The centerline of the toilet to the wall is 15-1/2" (needs to be 16-18"). Water pipes below the sinks are not insulated, which is required to prevent wheelchair persons from burning their legs on pipes. Handrails are present in the large compartment, but current codes require a 3rd handrail attached in a vertical position. There are (7) stalls in the restroom, but no ambulatory stall is provided, which is also required by code (code requires an ambulatory stall as well as an ADA stall when there are 6 or more stalls provided).
2. In the remainder of the building, restrooms are not ADA compliant (fixture heights and locations, partition clear widths, no ADA levers on faucets, clearances required for 90 degree turns are less than 5', door swinging into clear floor areas, etc.). Doors to these restrooms measure 29" clear width for entry (32" minimum is required). In addition, the restrooms have a floor raised approximately 1" above the corridor floor, which is also not in compliance for an ADA entry.
3. In the basement, one of the women's restrooms has been converted into a laundry room. A plumbing count should be performed on the floor to make sure there are minimum facilities required per code.

Water Fountains

1. Throughout the building, single water fountains are installed at heights non-compliant with ADA requirements. Code requires two fixtures at standing and wheelchair heights to be ADA compliant, one such fixture located on each level and along an accessible path. In the lobby, furniture is placed in front of the access to the water fountain as well, blocking a person from a wheelchair using the fountain.

Egress Routes

1. Throughout the building, furniture, trash cans, and recycling bins are placed within the egress path, and can impede the safe travel through the building in event of an emergency. Trash bins should be stored in alcoves or within rooms, and furniture should be placed to keep travel routes at their maximum continuous width.

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January 22, 2013

Ms. Irene Tyson, AIA
The Boudreaux Group
PO Box 5695
Columbia, SC 29250

Re: Clemson SE Precinct Plan Study
Structural Evaluations

Dear Irene:

On August 29, 2012, I made a site visit along with you to review eight existing buildings in the Clemson SE Precinct. The purpose of my visit was to do an evaluation of the structural condition of the existing buildings. Observations were limited to structural elements that were exposed to view and which could be seen without removal of building finishes. This report is based on observations made during the site visit and a review of the drawings for the original buildings where available. No testing or structural calculations were done. Although some general observations regarding the seismic characteristics of the buildings are included, the scope of this evaluation did not include Tier 1 seismic evaluations in accordance with ASCE 31, Seismic Evaluation of Existing Buildings, which is referenced in the State Engineer's Manual.

The eight facilities which are included in the attached report are:

- Barre Hall and Lehotsky Hall
- Biosystems Research Complex
- Godley-Spell Research Center
- Long Hall
- McAdams Hall
- Newman Hall
- Poole Agricultural Center

Sincerely,

Richard A. Burch

Richard A. Burch, PE

Attachment

Barre Hall and Lehotsky Hall

These buildings were designed by Lucas & Stubbs Architects around 1972. There have been no additions to the original buildings.

Structural System

The two buildings have identical structural systems. The main wing of each building is a steel structure with a complete frame of steel beams and columns. The second floor cantilevers out beyond the footprint of the first story below (Photo 1). The floor and roof structures consist of concrete slabs on composite steel beams. The exterior walls are primarily brick veneer with steel stud backup. The buildings are three stories tall, including a basement, and they each have a mechanical penthouse (Photo 2). Interior partitions are gypsum board on steel studs (Photo 3). As confirmed in the recent interior renovation of Barre, the partitions are demountable with vertical joints every four feet, and are intended to allow for changes in configuration.

Each main building wing has multiple attached service towers (Photo 4) which contain restrooms and stairs (Photo 5). These service towers are constructed with floor and roof slabs on steel bar joists which bear on the exterior non-reinforced masonry walls.

Building columns are supported on spread footings and the exterior walls are supported on continuous wall footings. The buildings have cast-in-place concrete basement walls.

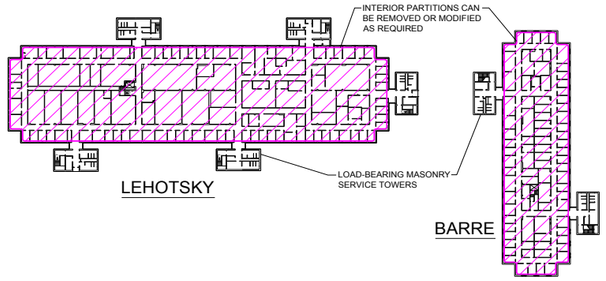
These buildings were designed before seismic design was required by the building code. Resistance to wind and seismic lateral loads on the main building wings is provided by semi-rigid moment connections between the steel beams and columns, consisting of steel angles connecting the top and bottom flanges of the beams to the columns. Resistance to wind and seismic lateral loads on the service towers is provided the unreinforced masonry walls acting as shear walls.

Structural Condition

The buildings are in good structural condition. No cracking was observed in the masonry walls.

Conclusions and Recommendations

Since the interior gypsum board partitions in these buildings are non-structural, they could be removed as required for renovations. The entire interior of the buildings as shown in the cross-hatched areas on the diagram of the typical floor plan below are flexible for renovation. The buildings could also be expanded horizontally with any new additions separated from the existing buildings with expansion joints. The structural steel framing and conventionally reinforced floor slabs in these buildings are relatively easy to reinforce, cut and modify as required for renovations.



Since these buildings were designed before seismic design was required by the building code, they do not meet current seismic standards. Since the main wings of the buildings have steel moment frame structural systems, they have some ductility and are therefore much better than typical buildings of the same age constructed of cast-in-place concrete or unreinforced masonry. However, the service towers which contain the exit stairs are constructed with load-bearing walls of unreinforced masonry. Buildings with unreinforced load-bearing masonry walls behave very poorly in seismic events. Since the walls have no reinforcing, they are very brittle and are not able to deform in a ductile manner during an earthquake. Instead, the brittle walls are subject to collapse and, since the walls are load-bearing, the floors and roof also collapse.

It should be noted, however, that the International Existing Building Code does not require existing buildings to be upgraded seismically unless the occupancy is being changed or structural modifications are made which significantly increase the seismic load or decrease the seismic capacity of the building.

Barre Hall and Lehotsky Hall

Photo 1 Cantilevered Second Floor

Photo 2 Mechanical Penthouse

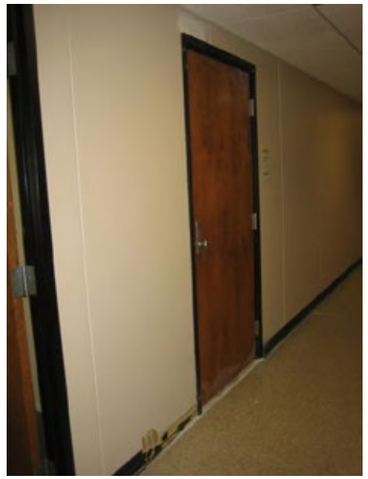


Photo 3 Demountable Partitions

Photo 4 Service Tower

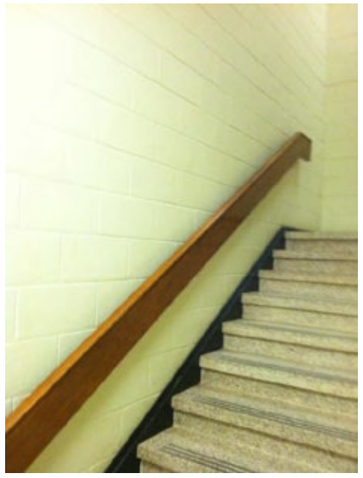


Photo 5 Stair in Service Tower

Biosystems Research Complex

This complex was designed by HOK Architects around 1999. The complex consists of a lab building, greenhouses, and a headhouse building which connects the lab building to the greenhouses. The greenhouses were not included in the scope of this study. There have been no additions to the original building.

Structural System

The lab building is a cast-in-place concrete structure with three full stories, a partial basement and a penthouse roof area. The headhouse building is a cast-in-place concrete structure with one full story and a partial basement. The floors of both buildings are framed with one-way concrete slabs supported on concrete beams, however the floors of the lab building have post-tensioned floor slabs. Each building has a complete structural frame of concrete beams and columns. The exterior walls are brick veneer (Photos 1, 2) with reinforced concrete block backup walls. The penthouse roof of the lab building and the roof of the headhouse building are framed with sloped steel joists (Photo 3).

Building columns are supported on spread footings and the exterior walls are supported on continuous wall footings. Interior concrete block walls are supported on continuous wall footings or thickened slabs. The buildings have cast-in-place concrete basement walls.

Resistance to wind and seismic lateral loads on the building is provided by concrete moment frames consisting of the concrete columns and beams.

Structural Condition

The building is in good structural condition. No cracking was observed in the concrete structure or in the masonry walls. Even though this building was designed before the International Building Code was adopted, according to the general notes on the structural drawings it was designed for seismic loads under the Standard Building Code in effect at the time of design. It therefore has concrete block walls which are reinforced and laterally braced.

Conclusions and Recommendations

The building is relatively new and is well designed so it should function for many years to come. Since the interior concrete block walls are non-structural, they could be removed as required for renovations. The building could be expanded horizontally with any new additions separated from the existing building with expansion joints. The lab building has post-tensioned floor slabs, so the potential for new floor openings is limited and would need to be carefully investigated to locate the existing slab tendons and determine if reinforcing is required if post-tensioning tendons had to be cut.

Biosystems Research Complex

Photo 1 Building Exterior

Photo 2 Building Exterior

Photo 3 Lab Building Penthouse

Godley Spell Research Center

This building was designed by LS3P Architects around 1993. There have been no additions to the original building.

Structural System

The main building is a one-story cast-in-place concrete structure with a partial basement and a rear covered loading dock area. The first floor over the basement and the roof are framed with one-way concrete slabs supported on concrete beams. The roof has a main level and a higher roof over a monitor running the long direction of the building. The building has a complete structural frame of concrete beams and columns. The exterior walls are brick veneer (Photo 1) with reinforced concrete block backup walls and interior partitions are reinforced concrete block.

Building columns are supported on spread footings and the exterior walls are supported on continuous wall footings. Interior concrete block walls are supported on continuous wall footings or thickened slabs. The building has cast-in-place concrete basement walls and a major cast-in-place retaining wall outside the building due to change in grade.

Resistance to wind and seismic lateral loads on the building is provided by the concrete block walls acting as shear walls infilled within the concrete frame (Photo 2).

Structural Condition

The building is in good structural condition. No cracking was observed in the concrete structure or in the concrete block walls. Some bubbles were observed in the roofing (Photo 3). Even though this building was designed before the International Building Code was adopted, it was designed for seismic loads under the Standard Building Code in effect at the time of design. It therefore has concrete block walls which are reinforced and laterally braced, and has fairly closely spaced ties in the concrete beams and columns, typical of buildings designed for seismic loads.

Conclusions and Recommendations

The building is relatively new and is well designed so it should function for many years to come. The building is conventionally reinforced concrete, and has no post-tensioning, so limited openings could be cut through the floor and roof if necessary for renovations.

Godley Spell Research Center

Photo 1 Building Exterior

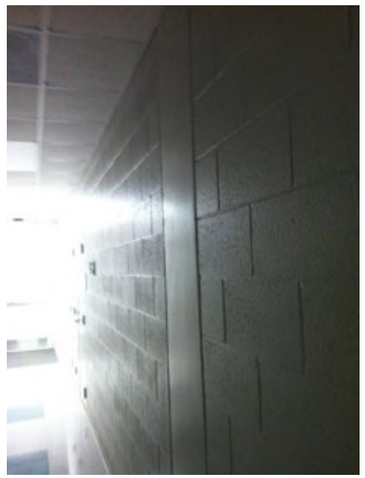


Photo 2 Concrete Block Infill Walls

Photo 3 Bubble in Roof

Long Hall

This building was designed by Rudolph E. Lee, Architect, in conjunction with J.E. Sirrine & Co. Engineers, around 1935. A more recent stair and elevator tower was added at the southwest end of the building, and a connector to Jordan Hall was added on the southeast end, although drawings were not available for these additions.

Structural System

The only original drawings available for this building were floor plans, so information on the structural system is based solely on observations made in the field. The building is U-shaped in plan, and has three stories plus a basement. The building has brick exterior walls (Photo 1).

The building roof has clay tile panels supported on precast concrete planks supported on steel beam purlins on steel trusses (Photo 2). A portion of the attic floor over the third floor has a concrete slab (Photo 3), but the purpose of this slab is not known. The building appears to have a complete concrete structural system consisting of concrete joist floors supported on concrete beams and columns (Photo 4).

Resistance to wind and seismic lateral loads is provided by the exterior and interior unreinforced masonry infill walls. However, buildings of this era were not designed for seismic loads, so the unreinforced masonry walls actually provide limited seismic resistance.

Structural Condition

No cracks in the masonry or concrete structure in the original building were observed. Evidence of water intrusion was noted in the basement (Photo 5). Some cracks and evidence of settlement was noted where the newer stair and elevator tower was added on to the original building (Photo 6).

Conclusions and Recommendations

Older concrete buildings with masonry walls such as this one tend to perform poorly during seismic events. This building is very heavy, which results in large seismic loads. In addition, older concrete structures do not have the reinforcing necessary to provide a ductile frame capable of resisting earthquake motions. It should be noted, however, that the International Existing Building Code does not require existing buildings to be upgraded seismically unless the occupancy is being changed or structural modifications are made which significantly increase the seismic load or decrease the seismic capacity of the building.

The cracks and settlement at the stair tower addition are not a significant issue at this time, but should be monitored. The separation between the two structures is not unusual for two buildings constructed at different times without an expansion joint between them.

Since the original building appears to have a complete concrete frame structure, interior partitions could possibly be removed in limited areas if necessary for renovations. However, since these walls are infilled within the concrete frames, they help provide seismic resistance, so the effect on the

seismic resistance of the building if walls were removed would need to be evaluated. The moisture intrusion into the basement should be addressed if this floor level is to be occupied.

Long Hall

Photo 1 Building Exterior

Photo 2 Roof Structure

Photo 3 Attic Slab

Photo 4 Concrete Structure

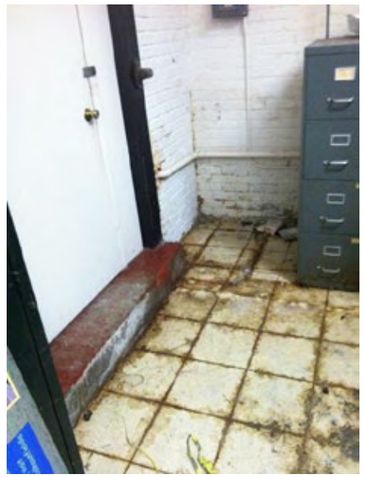


Photo 5 Basement

Photo 6 Stair Tower Addition

McAdams Hall

The original building was designed by Oliver & Dickson Architects around 1949. Major additions were designed by J.E. Sirrine around 1974 and Davis & Floyd around 2003.

Structural System – Original 1949 Building

The original building is partly one story and partly two stories. Most of the first floor has a slab on grade, but a portion has an elevated slab over crawl space. Floor construction over the crawl space is a 2" concrete slab on steel bar joists. The exterior walls are solid brick veneer with cast-in-place concrete columns embedded in the walls in some locations. Roof construction consists of a gypsum concrete deck on form board and steel bulb tees supported on steel bar joists or steel trusses. The bar joists for the floors and roofs are mostly supported on load-bearing brick exterior and interior walls. The first floor bar joists over the crawl space are supported on interior beams bearing on brick piers and on the exterior brick walls.

Building columns and piers are supported on spread footings and walls are supported on continuous wall footings.

Resistance to wind and seismic lateral loads is provided by the exterior and interior unreinforced brick walls. However, buildings of this era were not designed for seismic loads, so the unreinforced masonry walls actually provide limited seismic resistance.

Structural Condition – Original Building

No structural problems were observed in this building.

Conclusions and Recommendations – Original Building

Buildings with non-reinforced load-bearing masonry walls such as this one behave very poorly in seismic events. Since the walls have no reinforcing, they are very brittle and are not able to deform in a ductile manner during an earthquake. Instead, the brittle walls are subject to collapse and, since the walls are load-bearing, the floors and roof also collapse. It should be noted, however, that the International Existing Building Code does not require existing buildings to be upgraded seismically unless the occupancy is being changed or structural modifications are made which significantly increase the seismic load or decrease the seismic capacity of the building.

The existing interior unreinforced masonry walls currently provide some lateral resistance to seismic loads, and the walls are load-bearing, so the amount of walls that could be removed during a renovation is limited and would need to be investigated to verify that the seismic capacity of the building is not significantly reduced.

Structural System - 1974 Addition

The 1974 addition is a steel framed structure, partially one story and partially two stories. The one story portion has a first floor slab on grade. The two story portion has a first floor constructed over a

crawl space. The first floor structure consists of a concrete slab on steel joists and the second floor structure consists of a concrete slab on steel beams. Roof construction in both the one and two story areas consists of cement fiber deck on either steel joists or steel beams. Lateral loads in the one-story portion are resisted by exterior and interior masonry walls. Lateral loads on the two-story portion are resisted by a combination of exterior masonry walls and steel angle bracing. Exterior walls have brick veneer with concrete block backup, and precast bands at the second floor and roof (Photos 1, 2). Building columns are supported on spread footings and exterior walls are supported on continuous wall footings. In the 1974 construction, the exterior facade of the original building was replaced so that it matches the new construction.

Some evidence of settlement cracking was observed in floors (Photo 3), concrete block walls in the stairwells (Photo 4) and interior brick walls (Photo 5). Such settlement cracks are not unusual in buildings of this age which have unreinforced masonry walls, and in this case the cracks are not excessively large.

Conclusions and Recommendations – 1974 Addition

This building is in normal condition for a building of its age. The cracks in masonry walls do not indicate a structural problem and could be patched if desired. The building has a complete steel frame structure, so interior and exterior walls are not load-bearing. The exterior masonry walls and some of the interior masonry walls do help resist lateral loads, so the amount of walls that could be removed is somewhat limited. Most of the interior partitions in the second story and some of the first story partitions are gypsum board and could be removed or modified as required. The interior first story masonry walls which are not on column lines do not help resist lateral loads and could be removed or modified. Limited amounts of the other interior masonry walls and the exterior walls could also be removed if necessary for horizontal additions, although the effect on the lateral resistance would need to be evaluated. Small openings in exterior walls for new door openings to pass through to a new addition should not be a problem.

Structural System – 2003 Addition

This addition is a steel-framed structure consisting of three stories and a partial basement. Floor construction is concrete slab on composite steel deck supported on composite steel beams. Roof construction is metal deck on steel bar joists supported on steel beams.

Building columns and piers are supported on spread footings and concrete basement walls are supported on continuous wall footings. Exterior brick veneer walls are supported on continuous toe footings. Exterior brick veneer walls (Photo 6) have steel stud backup.

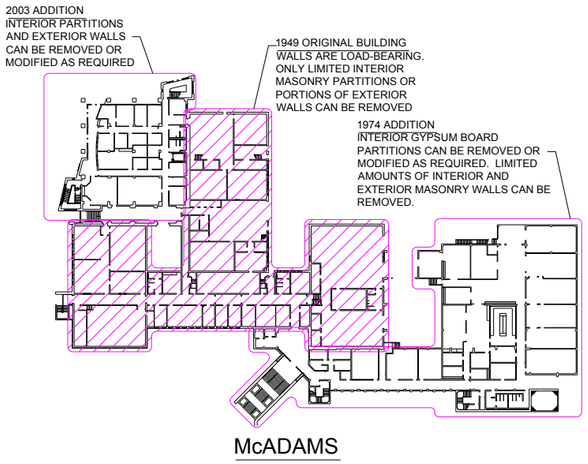
Resistance to wind and seismic lateral loads is provided by steel moment frames. This building was designed in accordance with the 2000 International Building Code. Since the interior gypsum board partitions in this addition are non-structural this building does not rely on them or the exterior walls for lateral resistance. Interior partitions and exterior walls could be removed or modified as required for renovations.

Structural Condition – 2003 Addition

This building is in very good condition.

Conclusions and Recommendations – 2003 Addition

This is a modern building which should function for many years to come.



McAdams Hall


Photo 1 1974 Addition New Entry


Photo 2 1974 Addition Rear Service Area

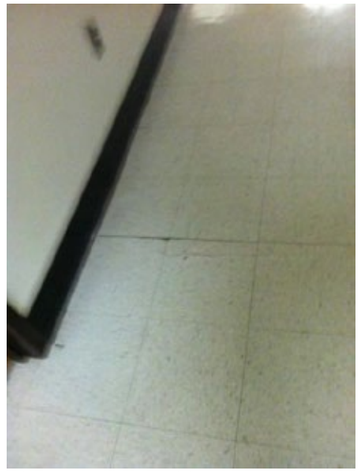


Photo 3 1974 Addition Floor Crack


Photo 4 1974 Addition Stair Wall Crack

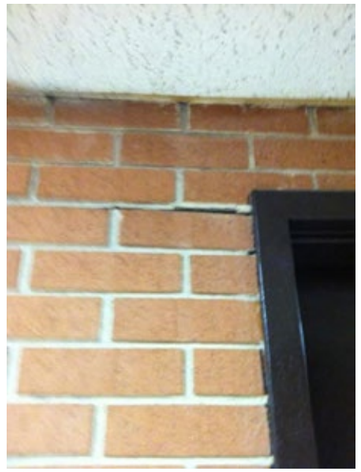


Photo 5 1974 Addition Interior Wall Crack

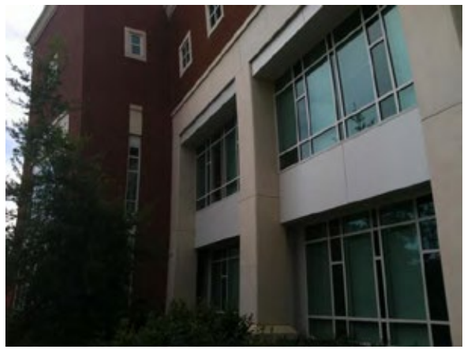


Photo 6 2003 Addition Building Exterior

Newman Hall

This building was designed by Hopkins Baker and Gill Architects around 1954. There have been no additions to the original building.

Structural System

This building is primarily a one-story structure, although there are limited areas which have a second floor. There is a very small partial basement area. The exterior walls in some areas are brick veneer (Photo 1) with unreinforced concrete block backup walls, although the building has a variety of exterior conditions (Photos 2, 3). The roof construction consists of a gypsum concrete deck on form board and steel bulb tees supported on steel bar joists. The bar joists are supported on load-bearing concrete block exterior and interior walls (Photo 4). In most areas, the architectural drawings show that the building originally had a suspended asbestos panel ceiling. In areas which did not have a ceiling, the original architectural drawings show that the form board for the gypsum roof deck is asbestos (Photo 5). The second floor framing consists of a concrete slab on steel bar joists supported on load-bearing concrete block walls. The first floor slab over the basement area is a cast-in-place concrete slab on concrete beams. The first floor slab in most other areas is a slab on grade however there are some areas which have a cast-in-place concrete slab supported on concrete beams and columns over a crawl space.

Building columns are supported on spread footings and the exterior walls are supported on continuous wall footings. Interior concrete block walls are supported on continuous wall footings. The basement has cast-in-place concrete exterior walls.

Resistance to wind and seismic lateral loads is provided by the exterior and interior unreinforced masonry infill walls. However, buildings of this era were not designed for seismic loads, so the unreinforced masonry walls actually provide limited seismic resistance.

Structural Condition

No cracks in concrete block walls were observed and no deterioration of structural members was observed. Water was observed to be ponding on the roof (Photo 6).

Conclusions and Recommendations

Buildings with non-reinforced load-bearing masonry walls such as this one behave very poorly in seismic events. Since the walls have no reinforcing, they are very brittle and are not able to deform in a ductile manner during an earthquake. Instead, the brittle walls are subject to collapse and, since the walls are load-bearing, the floors and roof also collapse. It should be noted, however, that the International Existing Building Code does not require existing buildings to be upgraded seismically unless the occupancy is being changed or structural modifications are made which significantly increase the seismic load or decrease the seismic capacity of the building.

It was also noted that the roof form deck in some areas is asbestos and that water tends to pond on the roof.

Newman Hall

Photo 1 Building Exterior

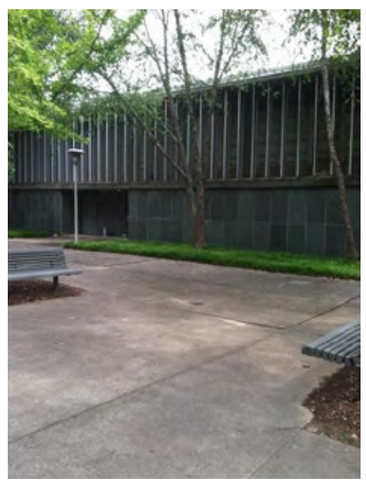


Photo 2 Building Exterior

Photo 3 Building Exterior

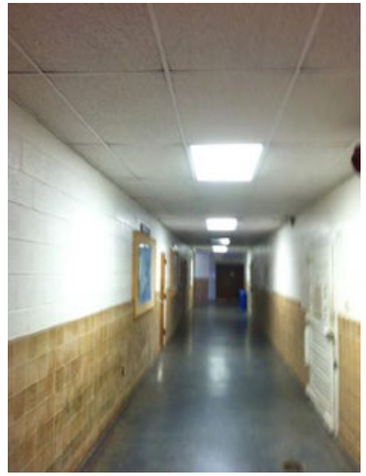


Photo 4 Interior Bearing Walls

Photo 5 Asbestos Roof Form Deck

Photo 6 Water Ponding on Roof

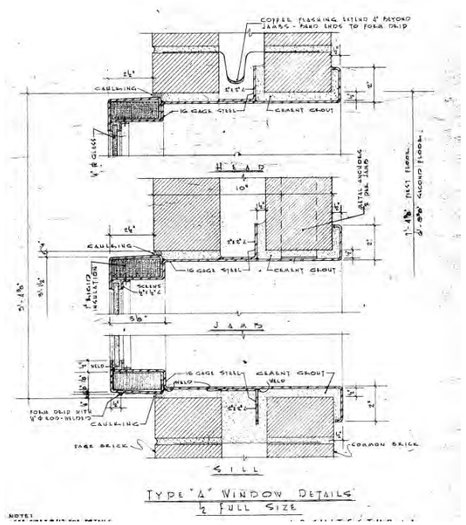
Poole Agricultural Center

This building was designed by Lyles, Bissett, Carlisle & Wolfe Architects around 1954. There have been no additions to the original building, although the new Life Sciences Building has a connection to Poole. The buildings are separated by an expansion joint, so they are two completely separate structures.

Structural System

The building was constructed using a lift-slab system. In this system, the concrete floors are cast in place at the ground level, stacked on top of each other with openings left in the slabs where steel columns are erected. After curing, the slabs are then jacked up into place and concrete is placed to fill the voids around each column. In the final condition, the floors are supported on steel collars bolted to steel columns (Photo 1). At Poole, the floors and roof are constructed using a waffle slab, or two-way joist system (Photo 2), which is a very strong floor system. This building has three stories, one of which is a basement. The exterior walls mostly consist of two wythes of brick veneer (Photo 3), although some areas have slate veneer (Photo 4). The basement walls are cast-in-place concrete. The building has numerous 4” concrete block interior partition walls (Photo 5). Building columns are supported on spread footings and the exterior masonry walls and exterior cast-in-place concrete basement walls are supported on continuous wall footings.

Rather than having lintels, the exterior windows in Photo 3 have structural window frames which support the brick above as shown in the detail below from the original drawings. This makes window replacement difficult since some brick above the windows must be removed and replaced, so that new flashing and galvanized brick lintels can be added before the new windows are installed. Fortunately, the existing windows are only about 3’-2” wide, so the brick should arch over the windows without the need for shoring.



Poole Window Detail

Resistance to wind and seismic lateral loads is primarily provided by the exterior unreinforced masonry infill walls. However, buildings of this era were not designed for seismic loads, so the unreinforced masonry walls actually provide limited seismic resistance.

Structural Condition

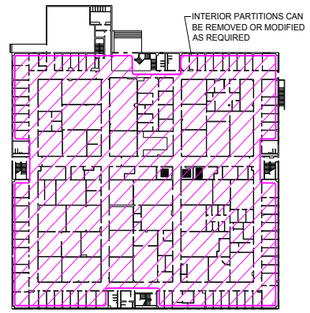
No cracks in masonry walls were observed and no deterioration of structural members was observed.

Conclusions and Recommendations

Buildings such as this one in which non-reinforced masonry walls provide the lateral resistance to seismic loads behave very poorly in seismic events. Since the walls have no reinforcing, they are very brittle and are not able to deform in a ductile manner during an earthquake. Instead, the brittle walls are subject to collapse during strong earthquake motions. In addition to having little seismic resistance, this building has very heavy floor slabs and heavy masonry partition walls which result in large seismic loads during an earthquake. It should be noted, however, that the International Existing Building Code does not require existing buildings to be upgraded seismically unless the occupancy is being changed or structural modifications are made which significantly increase the seismic load or decrease the seismic capacity of the building.

This building could be expanded horizontally, with any new addition separated from the existing building by expansion joints. In addition, any of the interior concrete block walls partitions within the cross-hatched areas on the diagram of the typical floor plan below could be removed as required for renovations since they are non-structural. In fact, removing these walls would greatly help the

building seismically since the walls are typically offset from the columns and therefore do not act as infill walls to help brace the building. Any of these walls which were removed would reduce the building mass, and therefore the seismic load, on the building. If this building were ever to be upgraded seismically, steel bracing could possibly be added between the steel columns in certain areas in order to provide an improved seismic force resisting system.



POOLE

Since the exterior walls currently provide the lateral bracing for the building, the amount of exterior wall that could be removed in a renovation is limited. If the lateral seismic resistance of any element in a building is reduced by 10%, the International Building Code, and the State Engineer, may require the building to be seismically retrofitted.

Poole Agricultural Center

Photo 1 Column Support for Lift Slab

Photo 2 Waffle Slab Construction

Photo 3 Building Exterior

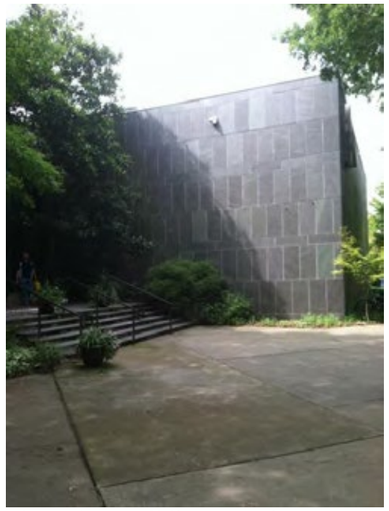


Photo 4 Building Exterior

Photo 5 Interior Partition Walls

Barre Hall and Lehotsky Hall

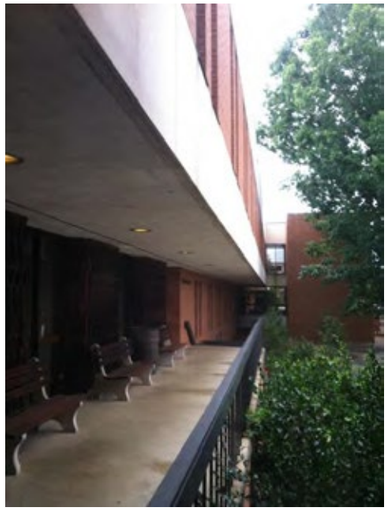


Photo 1 Cantilevered Second Floor

Photo 2 Mechanical Penthouse

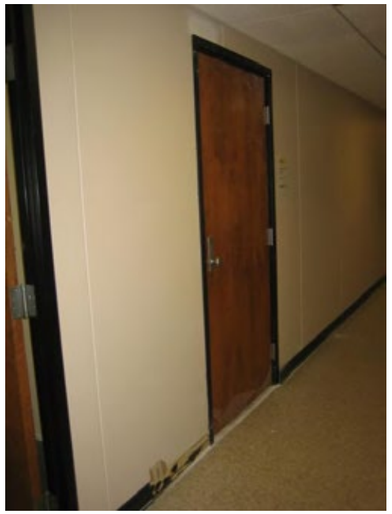


Photo 3 Demountable Partitions

Photo 4 Service Tower