Technical Appendix

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Space Use Analysis

Mississippi State University
Master Plan Update

Work Session 2

March 11, 2021

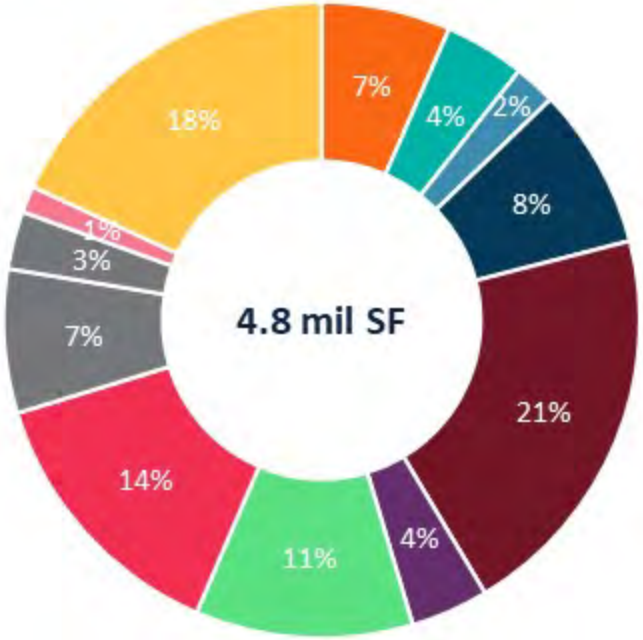
02

Space Use

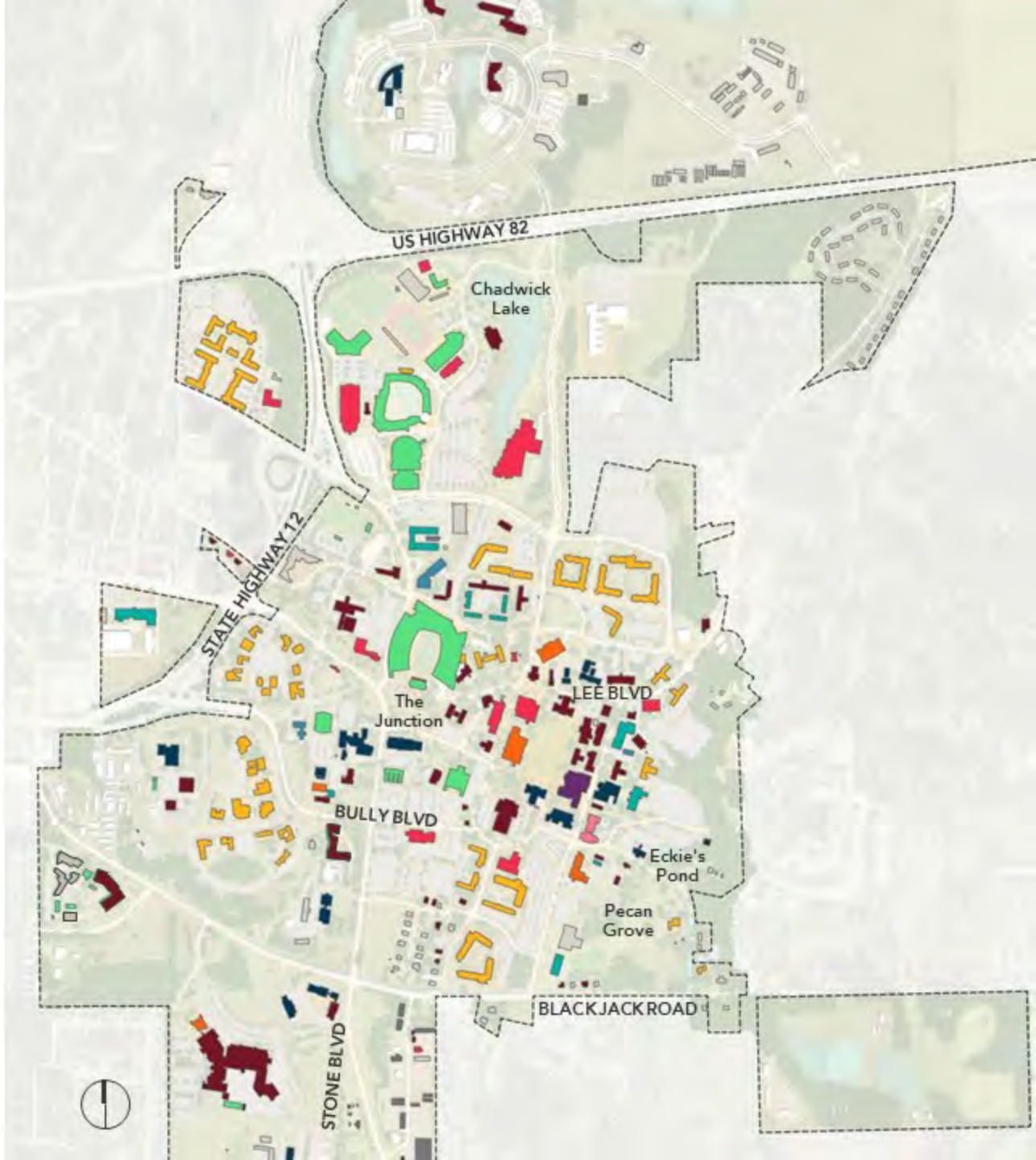
Classrooms
Labs
Offices

Predominant Use

SF by Space Use



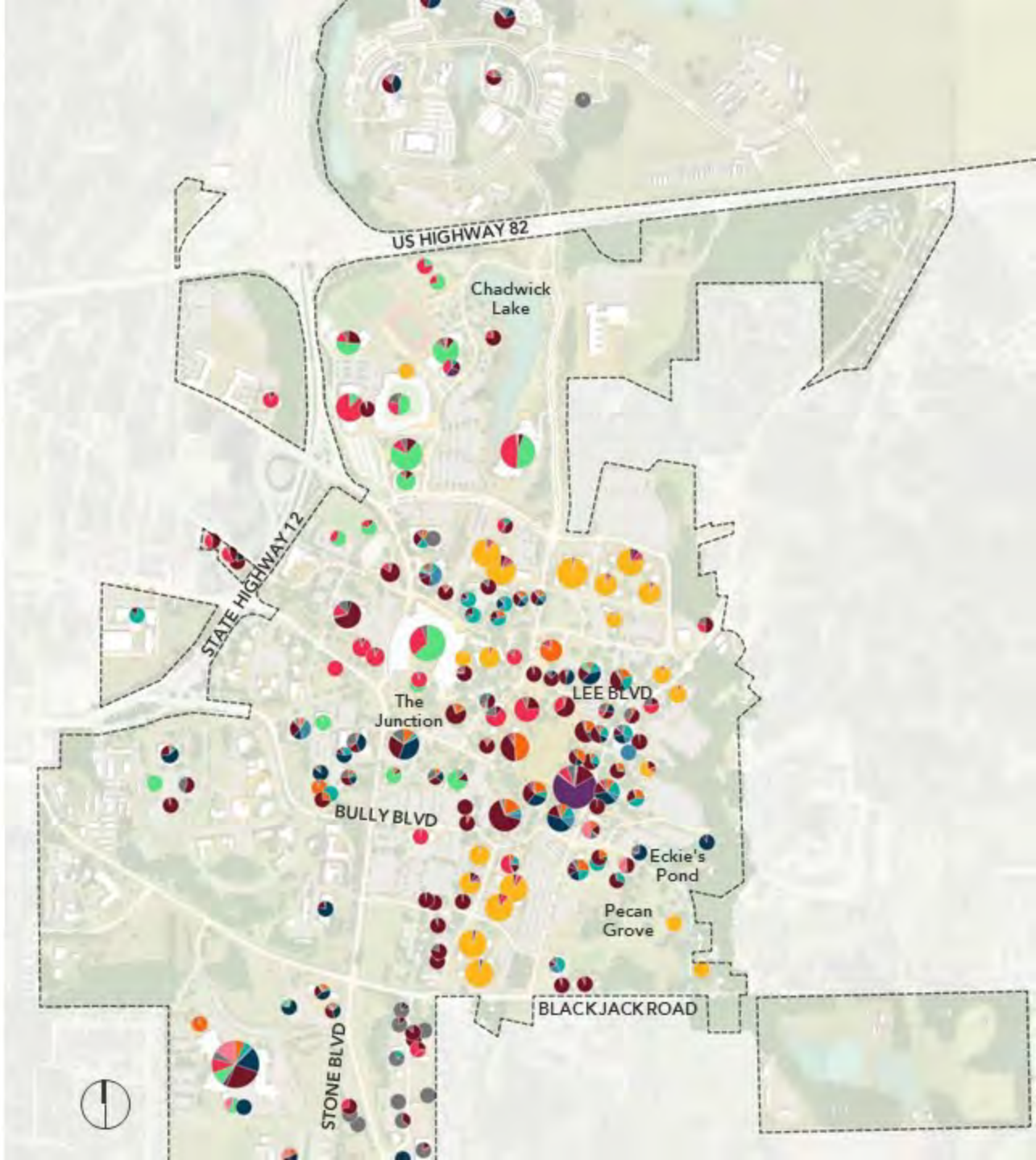
- Classroom
- Class Lab
- Open Lab
- Research Lab
- Office
- Study
- Special Use (primarily Athletics)
- General Use (Assembly, Food Service, Lounges, Merchandizing)
- Support / Parking
- Health Care
- Residential



Predominant Use

Observations:

- Office Use is part of many buildings in the core
- Often a small Classroom area in Lab buildings
- Classroom areas are clustered in core
- Residential and Office uses south of core have significant parking



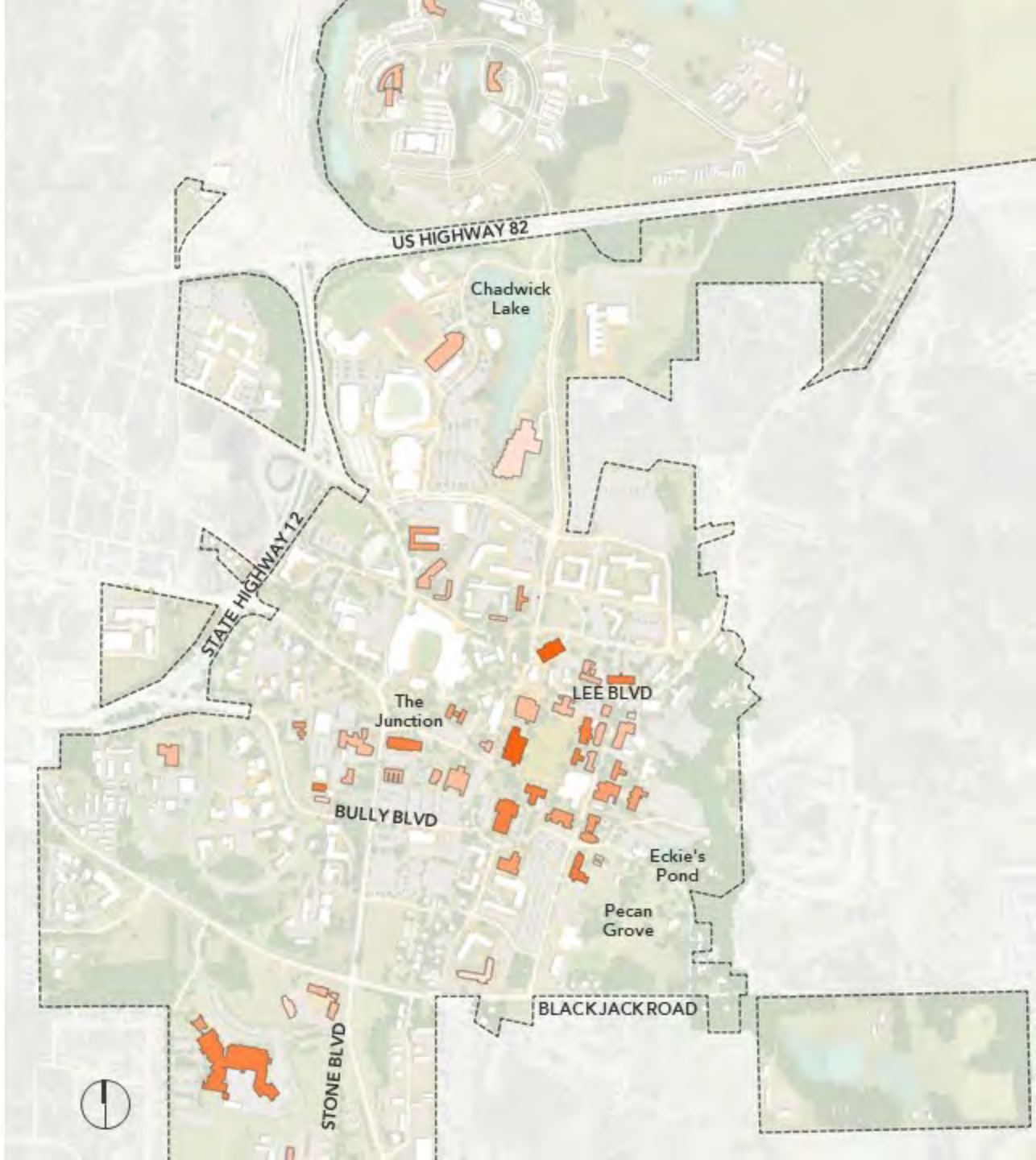
- Classroom
- Class Lab
- Open Lab
- Research Lab
- Office
- Study
- Special Use
- General Use
- Support
- Health Care
- Residential

Classrooms

Classroom Distribution

Classrooms:

- Colleges generally teach in multiple buildings
- College of Arts and Sciences schedules across many buildings and delivers the most courses



RANGE

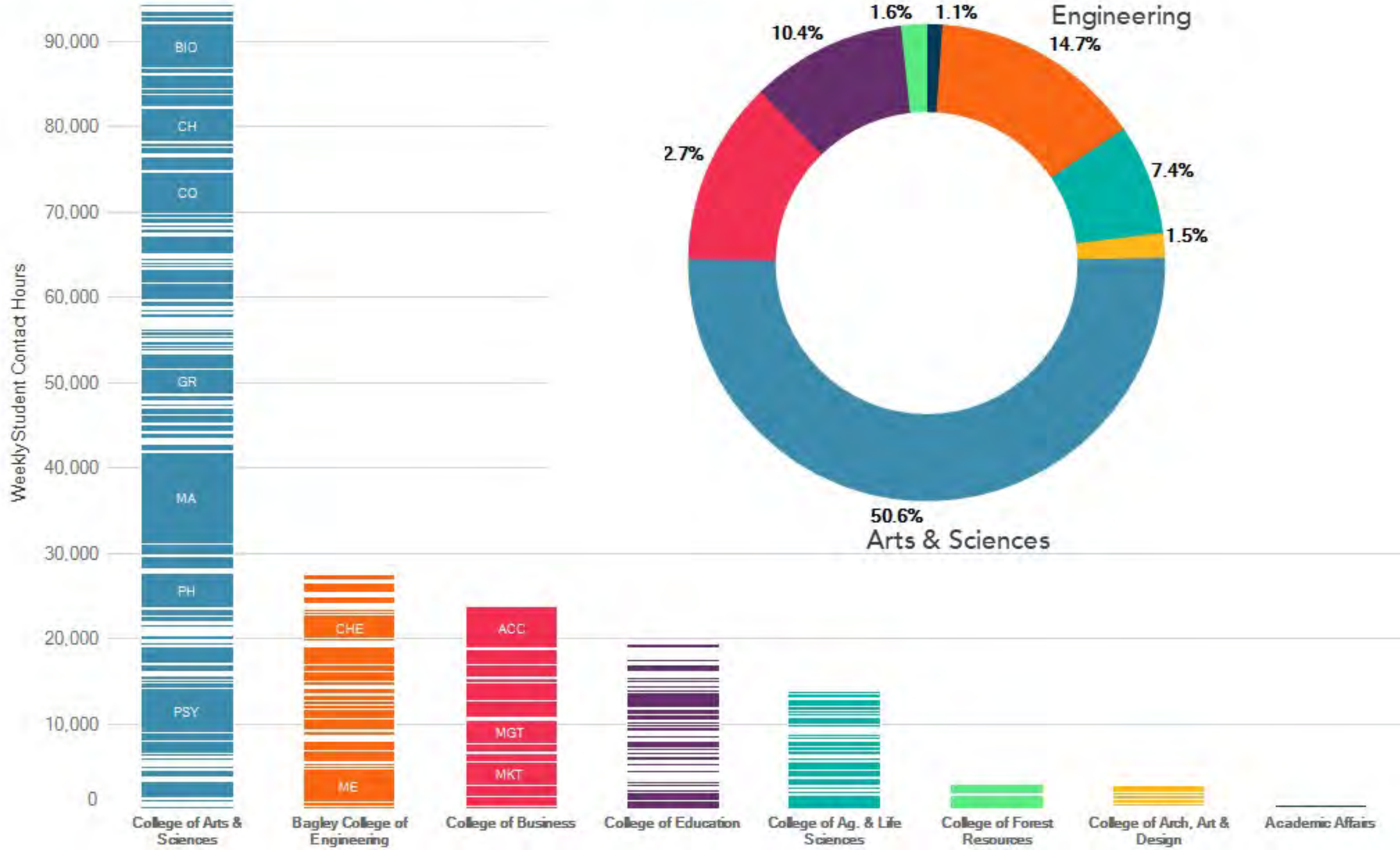
150 asf

40,500 asf

Weekly Student Contact Hours by College

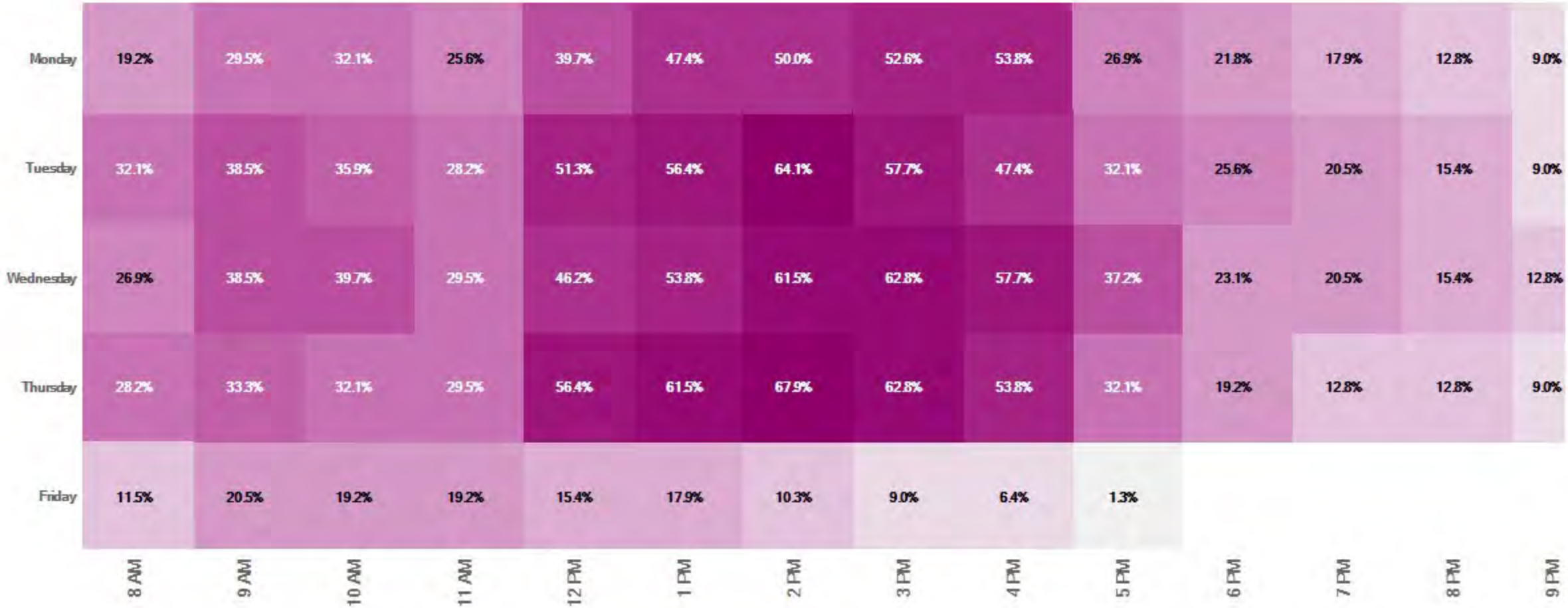
By College:

- College of Arts and Sciences makes up most of the scheduling

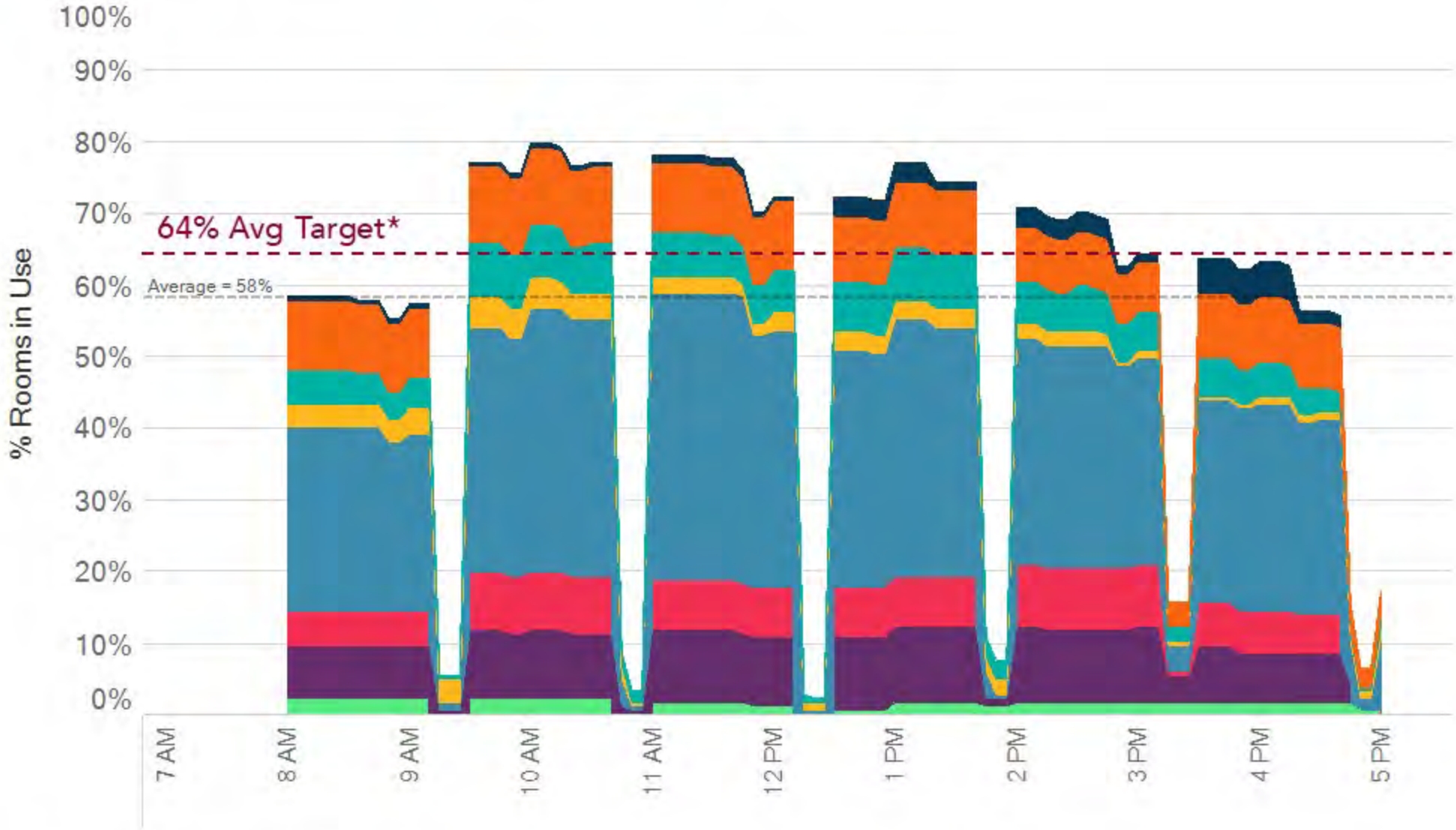


Classroom Use by time of day

Monday through Thursday are steady most of the day
Monday and Wednesday start a bit later
Friday starts to taper at noon



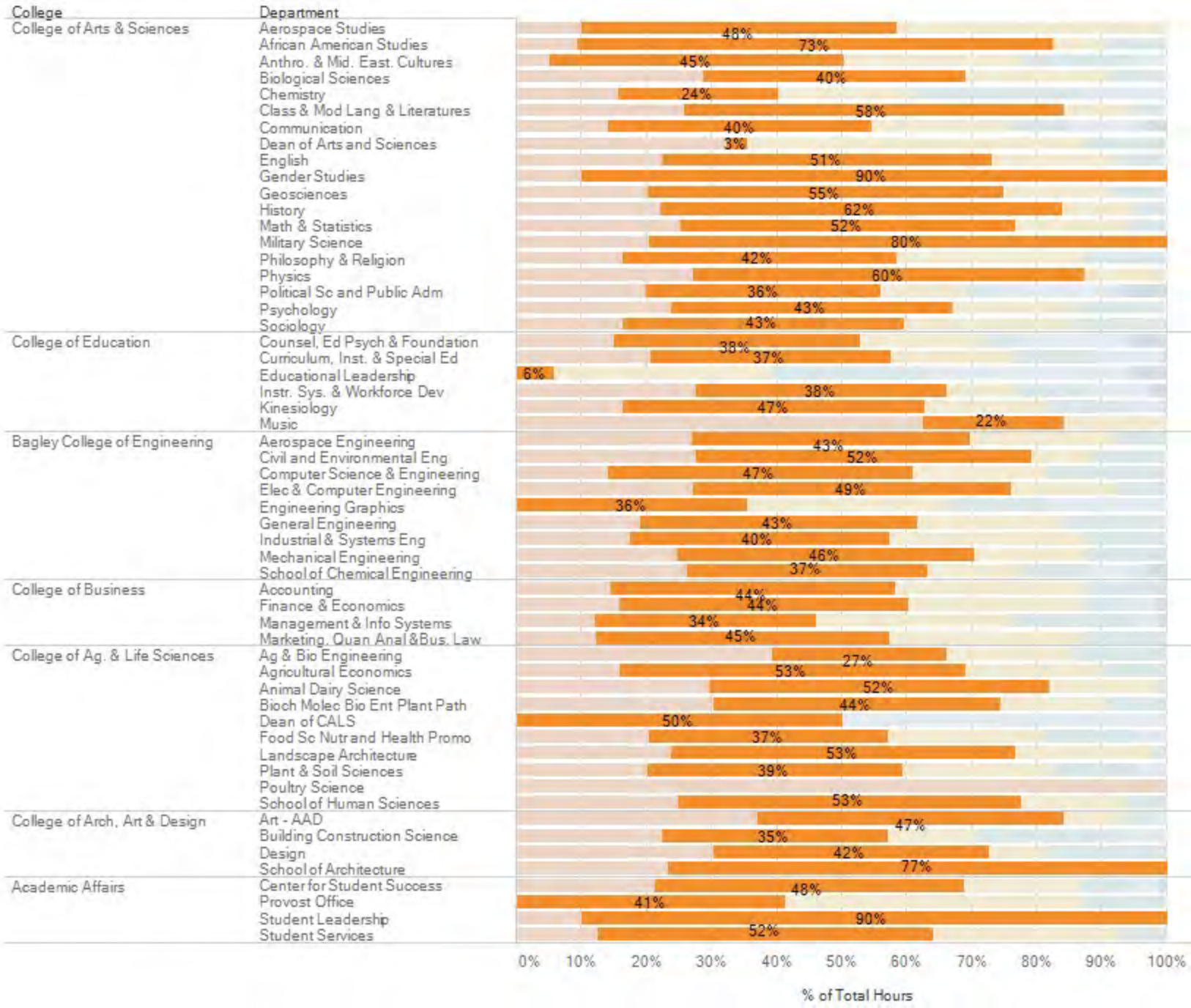
Classroom histograms – Tue / Thu



- Ag & Life Sciences
- Arch, Arts & Design
- Arts & Sciences
- Business and Industry
- Education
- Engineering
- Forest Resources
- Veterinary Medicine (not included in registrar's course data)

Peak Classroom Scheduling

- Some departments schedule more than 50% of their classes between 10 AM and 2 PM.
- This concentrates classroom use to a narrow window, limits course accessibility and puts demands on parking

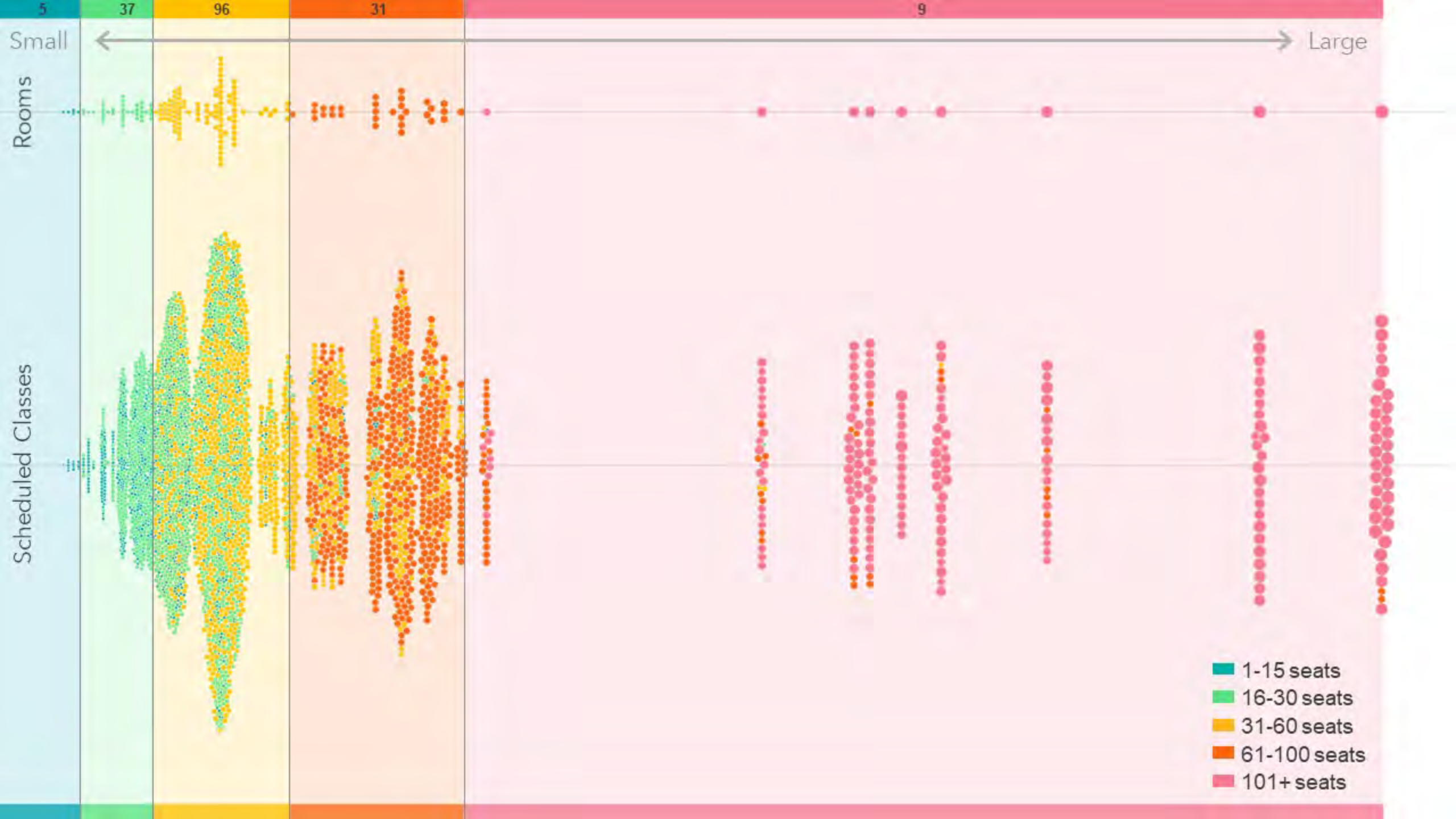


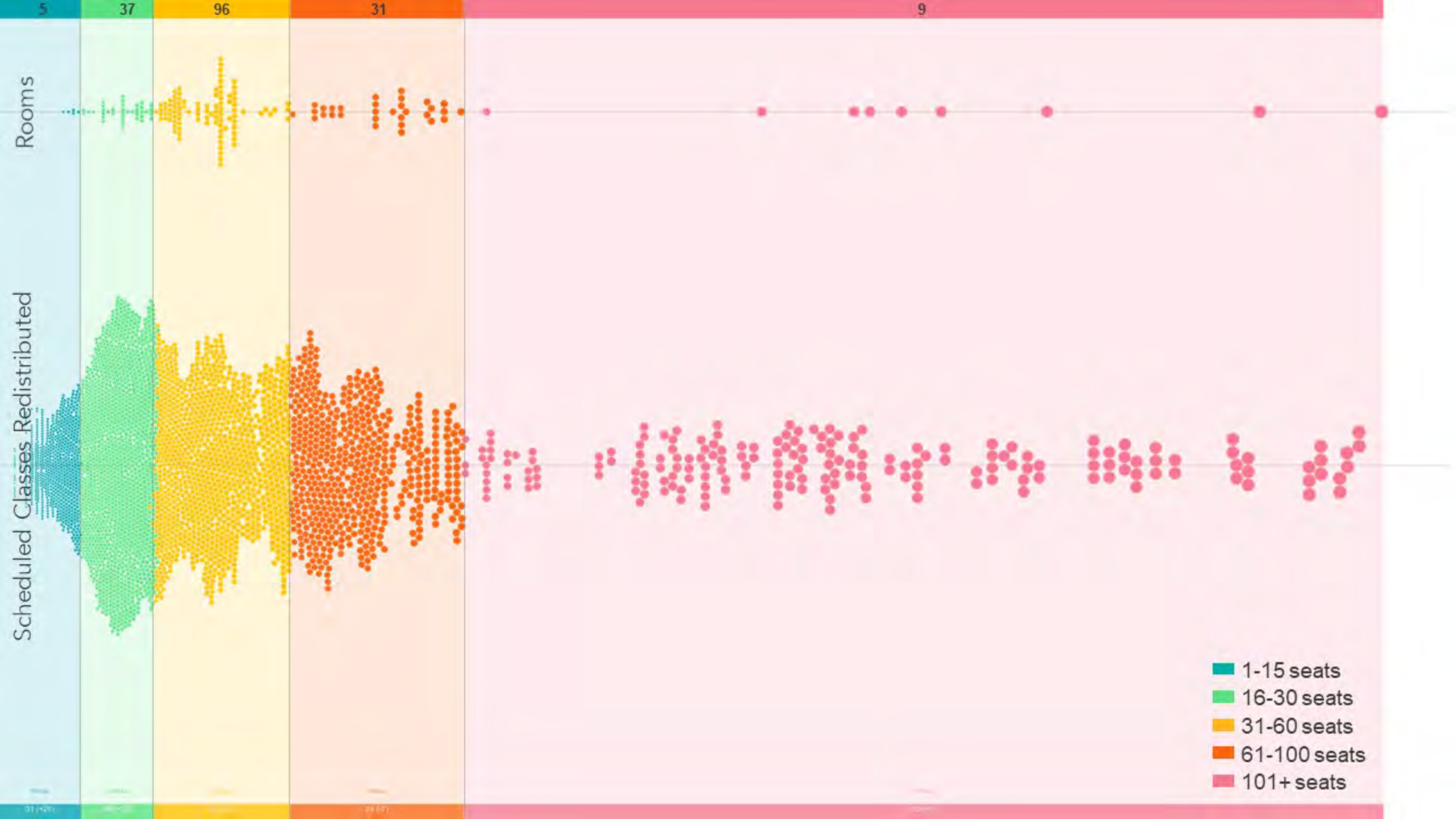
Range

- 8-10 AM
- 10 AM-2 PM
- 2 PM-4 PM
- 4 PM-6 PM
- 6 PM-8 PM
- 8 PM-10 PM

Classroom ASF Per Station

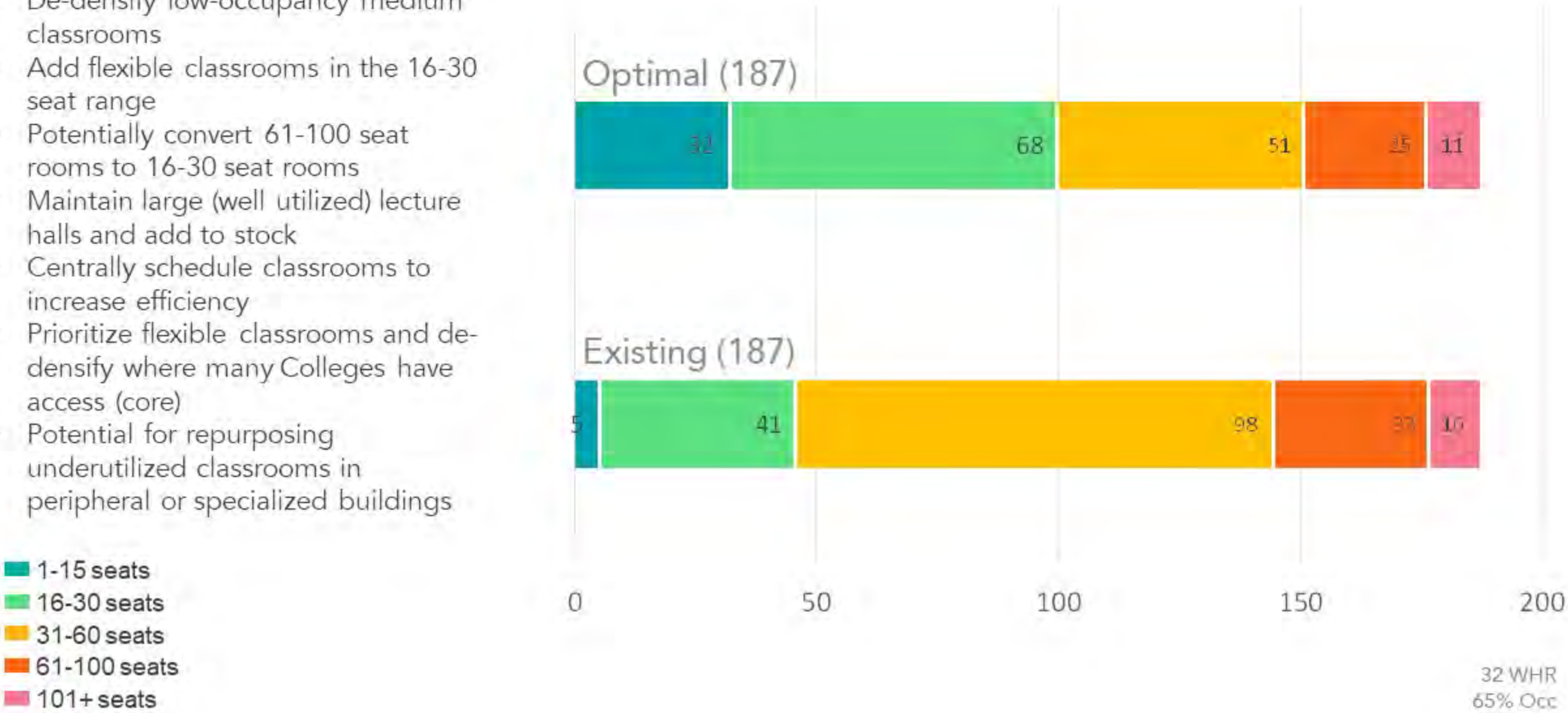
- Average square feet per station of mid-size classrooms is generally below the target range
- Average of the smaller classrooms land in the target range of 25-30 sf/station


5
37
96
31
9
Small
Large
Rooms
Scheduled Classes
1-15 seats
16-30 seats
31-60 seats
61-100 seats
101+ seats


5
37
96
31
9
Rooms
Scheduled Classes Redistributed
1-15 seats
16-30 seats
31-60 seats
61-100 seats
101+ seats

Classroom Optimization

- De-densify low-occupancy medium classrooms
- Add flexible classrooms in the 16-30 seat range
- Potentially convert 61-100 seat rooms to 16-30 seat rooms
- Maintain large (well utilized) lecture halls and add to stock
- Centrally schedule classrooms to increase efficiency
- Prioritize flexible classrooms and de-densify where many Colleges have access (core)
- Potential for repurposing underutilized classrooms in peripheral or specialized buildings

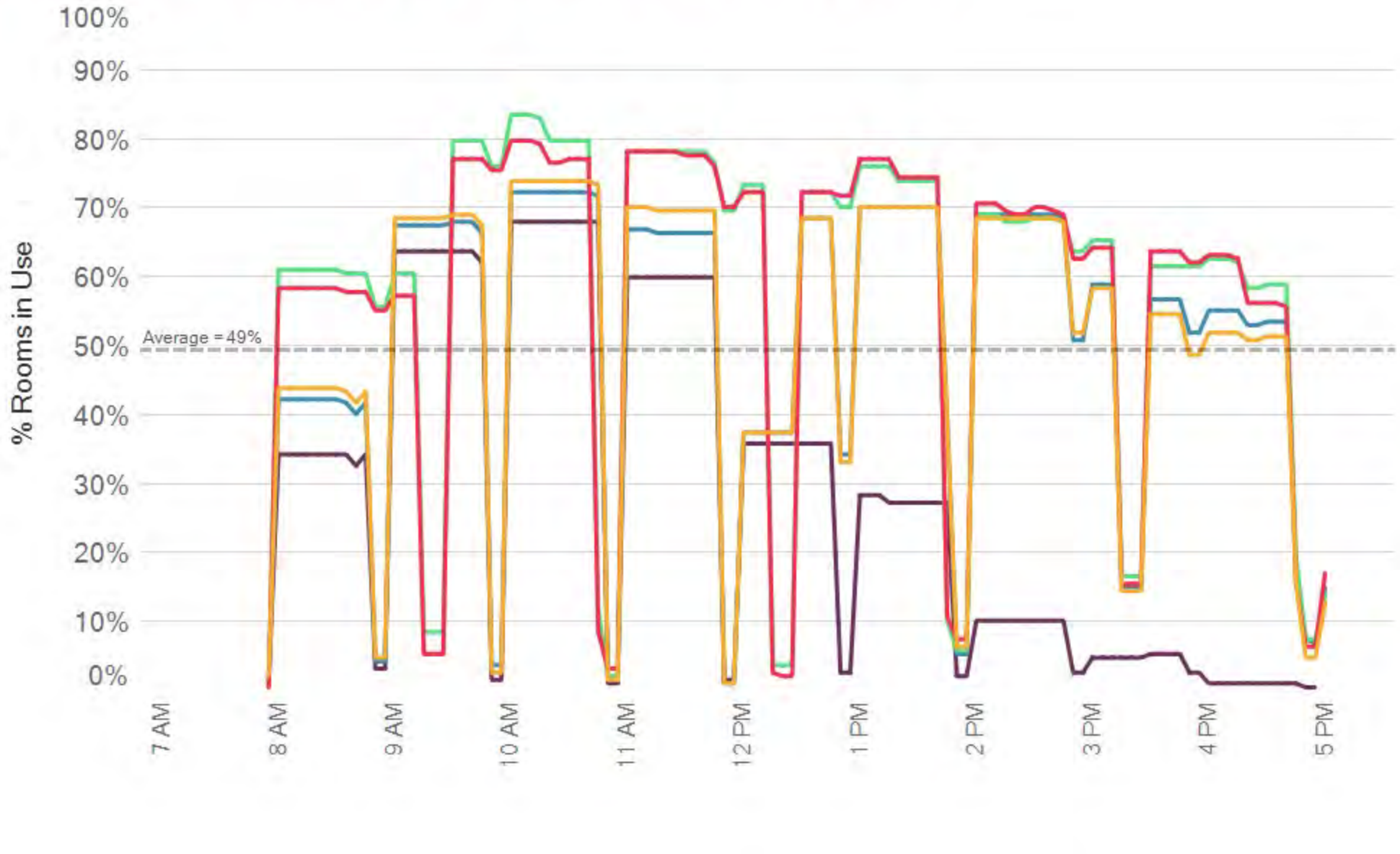


32 WHR
65% Occ

Classroom histograms / 8-5 use patterns

Monday-Friday:

- Monday through Thursday are steady most of the day
- Monday and Wednesday start a bit later
- Friday starts to taper at noon



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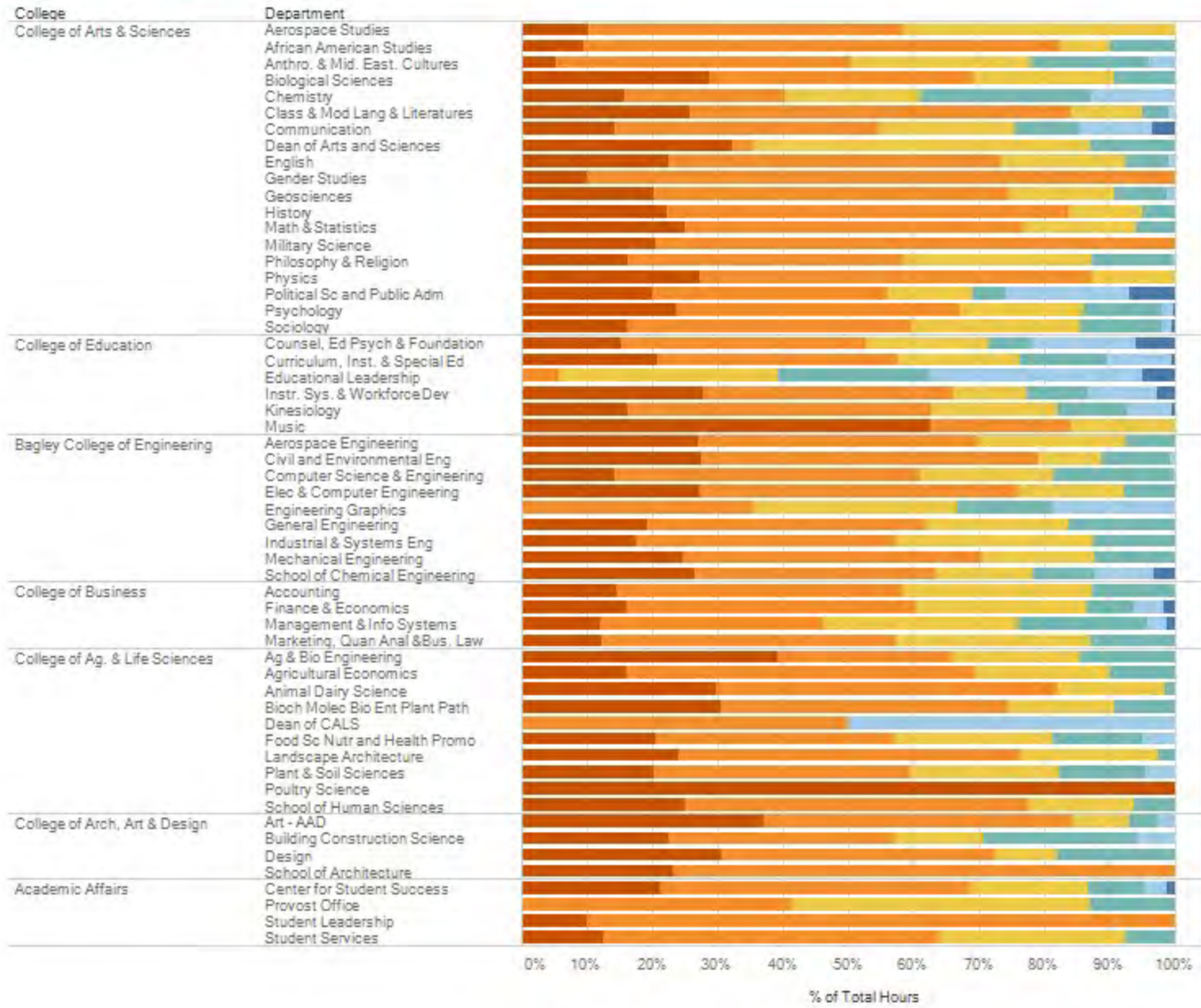
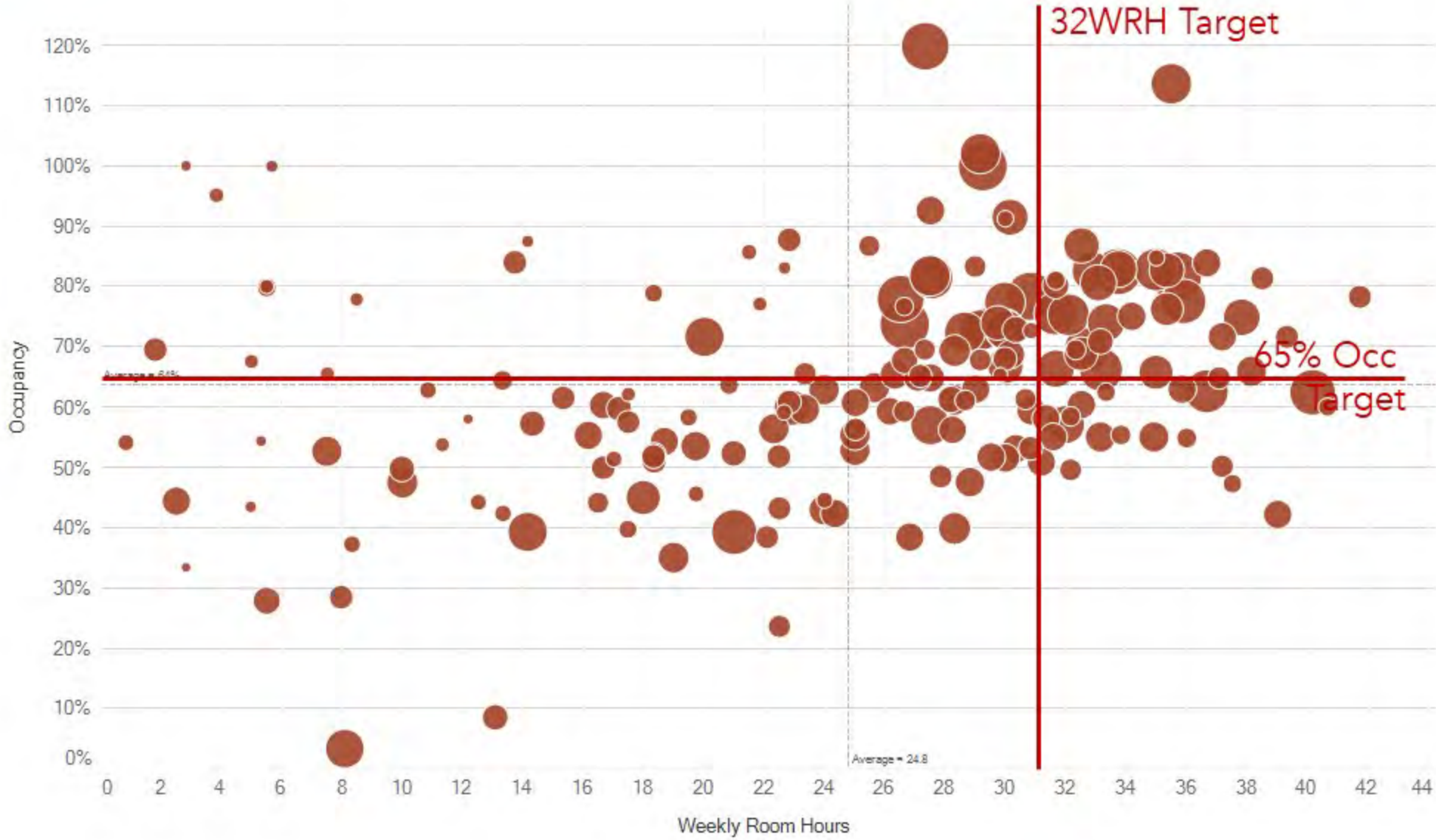


Range

- 8-10 AM
- 10 AM-2 PM
- 2 PM-4 PM
- 4 PM-6 PM
- 6 PM-8 PM
- 8 PM-10 PM

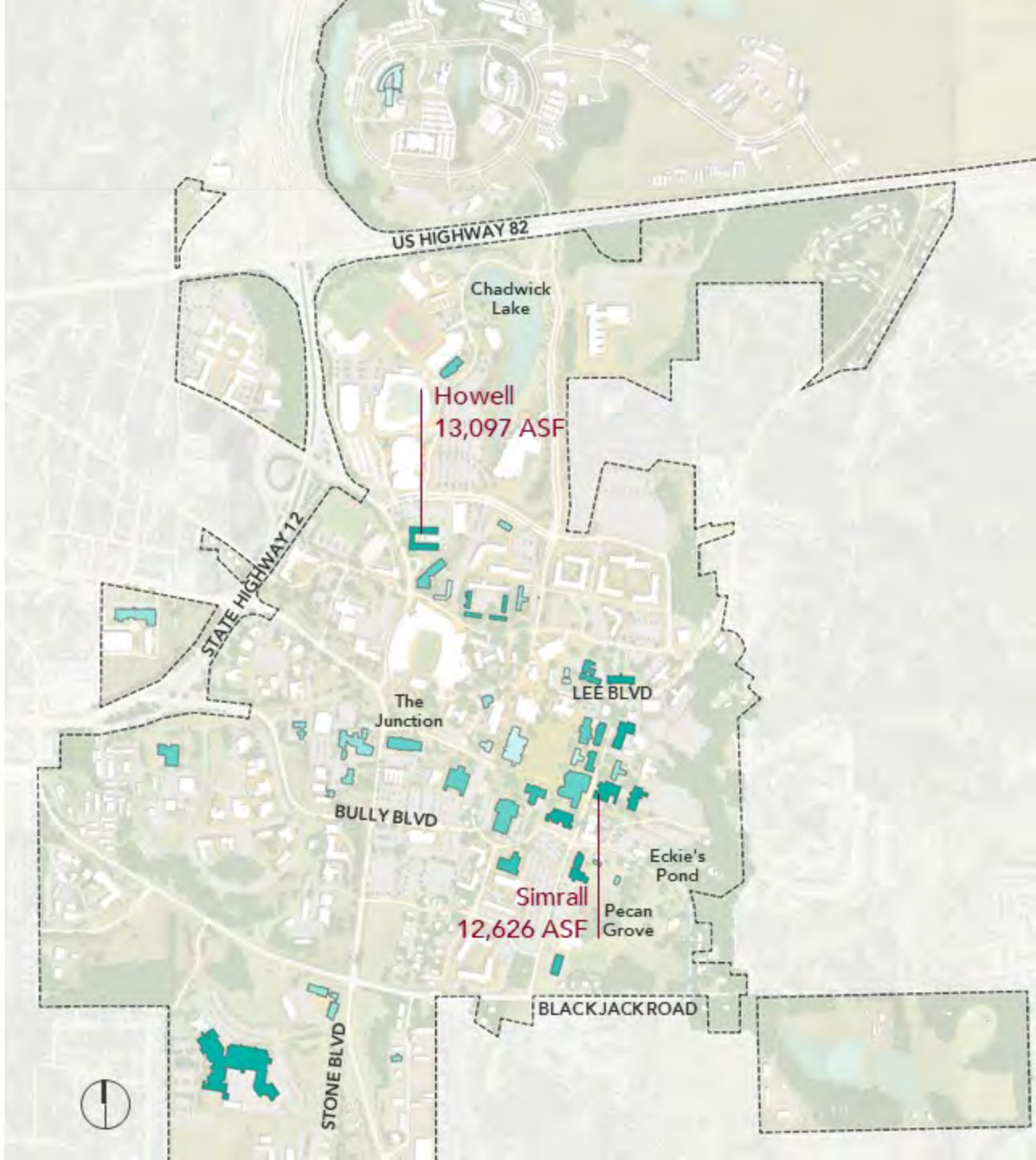
Classroom use – by building

Classroom use



Labs

Class Lab Distribution

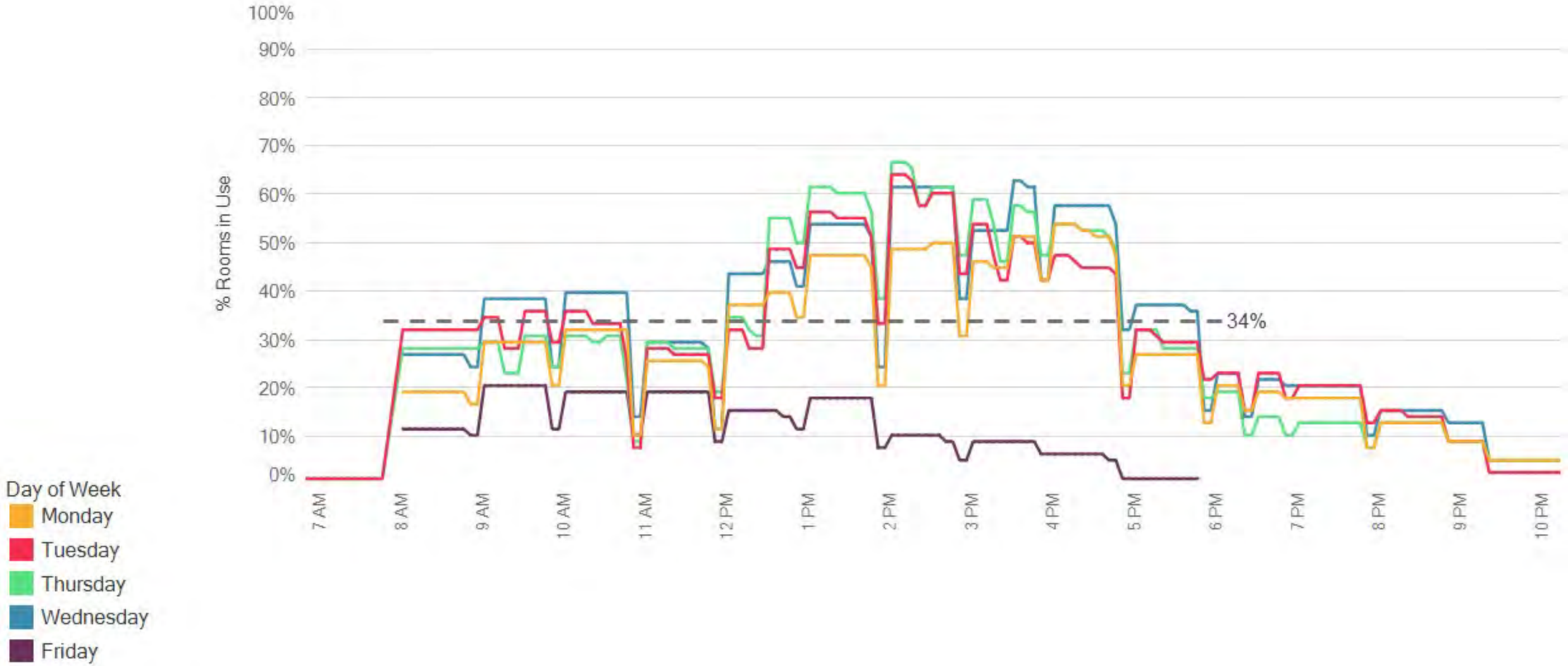


RANGE

62 asf

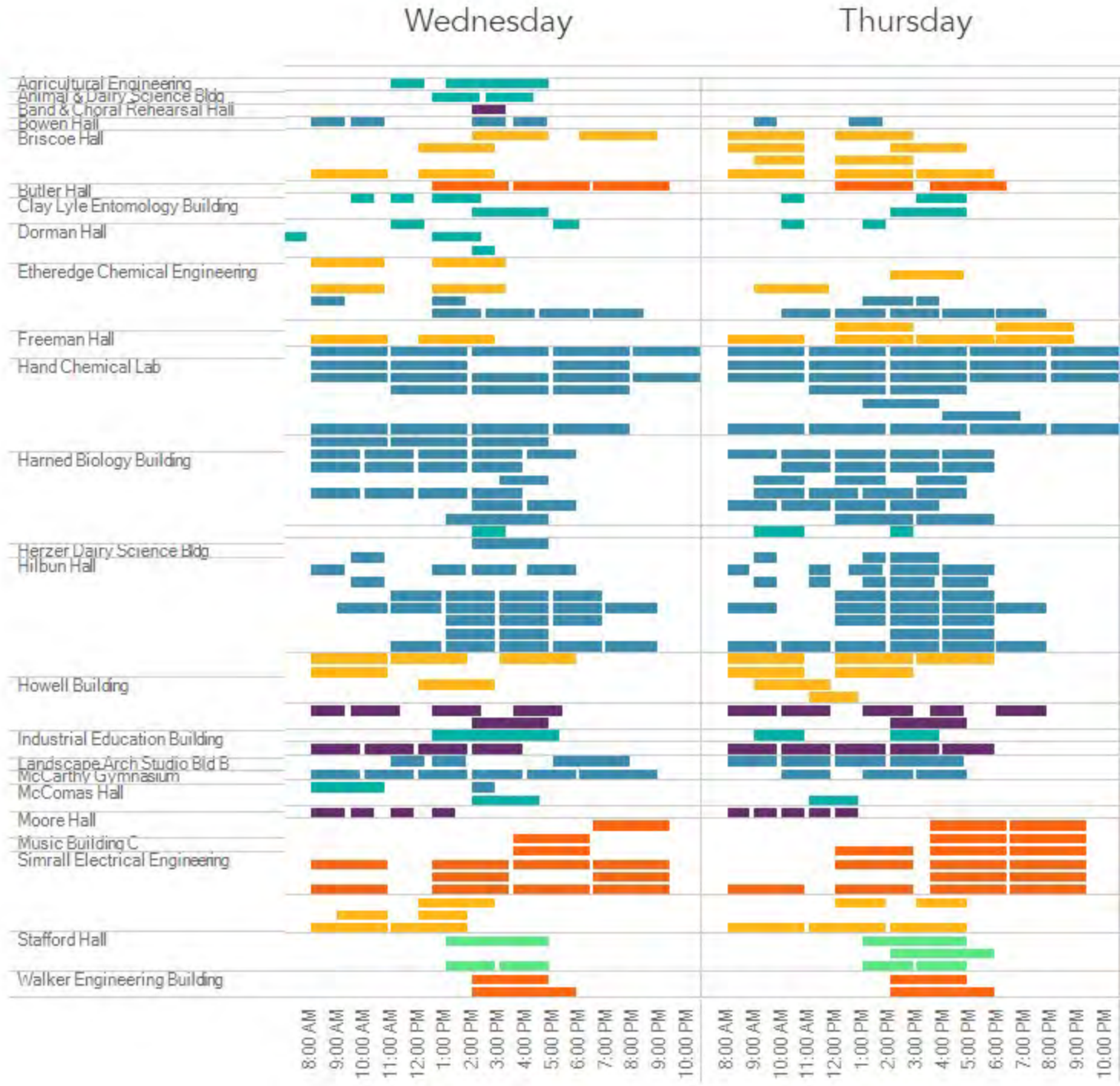
13,097 asf

Class Lab histograms / use patterns



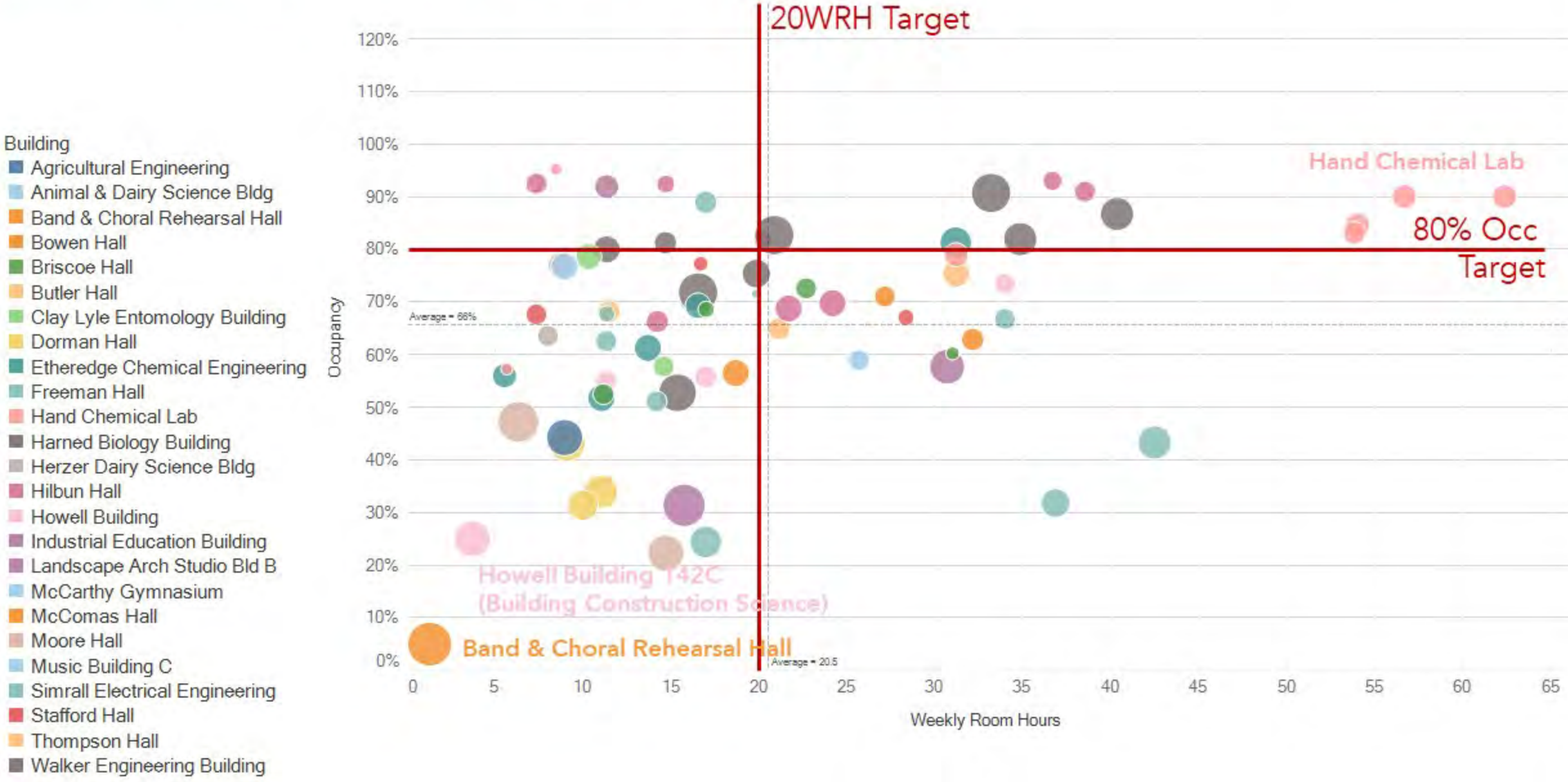
Class Lab use patterns

- Class Lab use is silo-ed by building



College
- College of Agriculture
- College of Architecture
- College of Arts and Sciences
- College of Education
- College of Engineering
- College of Forest Resources

Class Lab use – by building

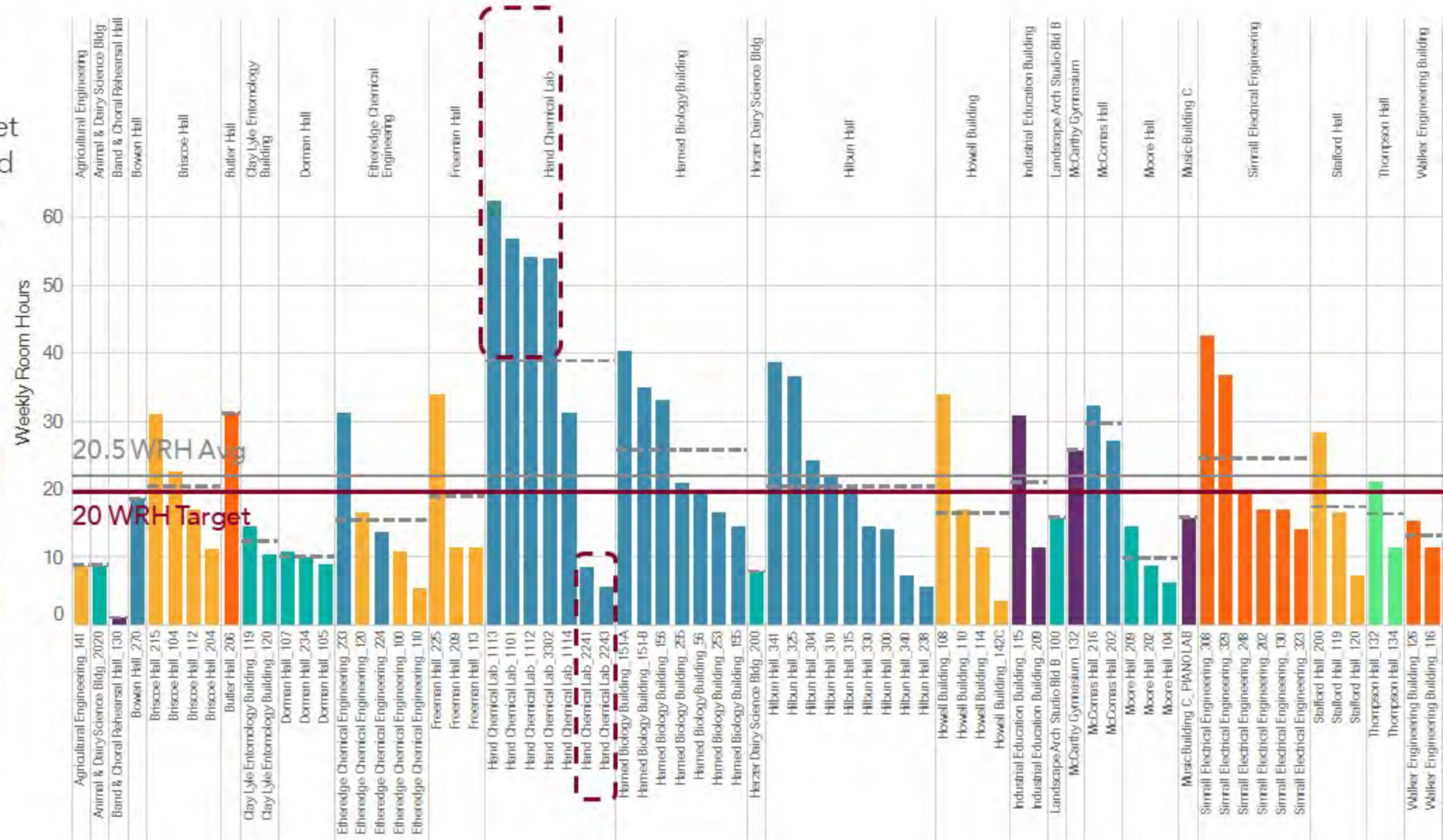


Class Lab use by building

- 20.8 Average WRH meets 20 WRH target
- Arts and Science and Engineering class labs are imbalanced in usage

Hand Chemical

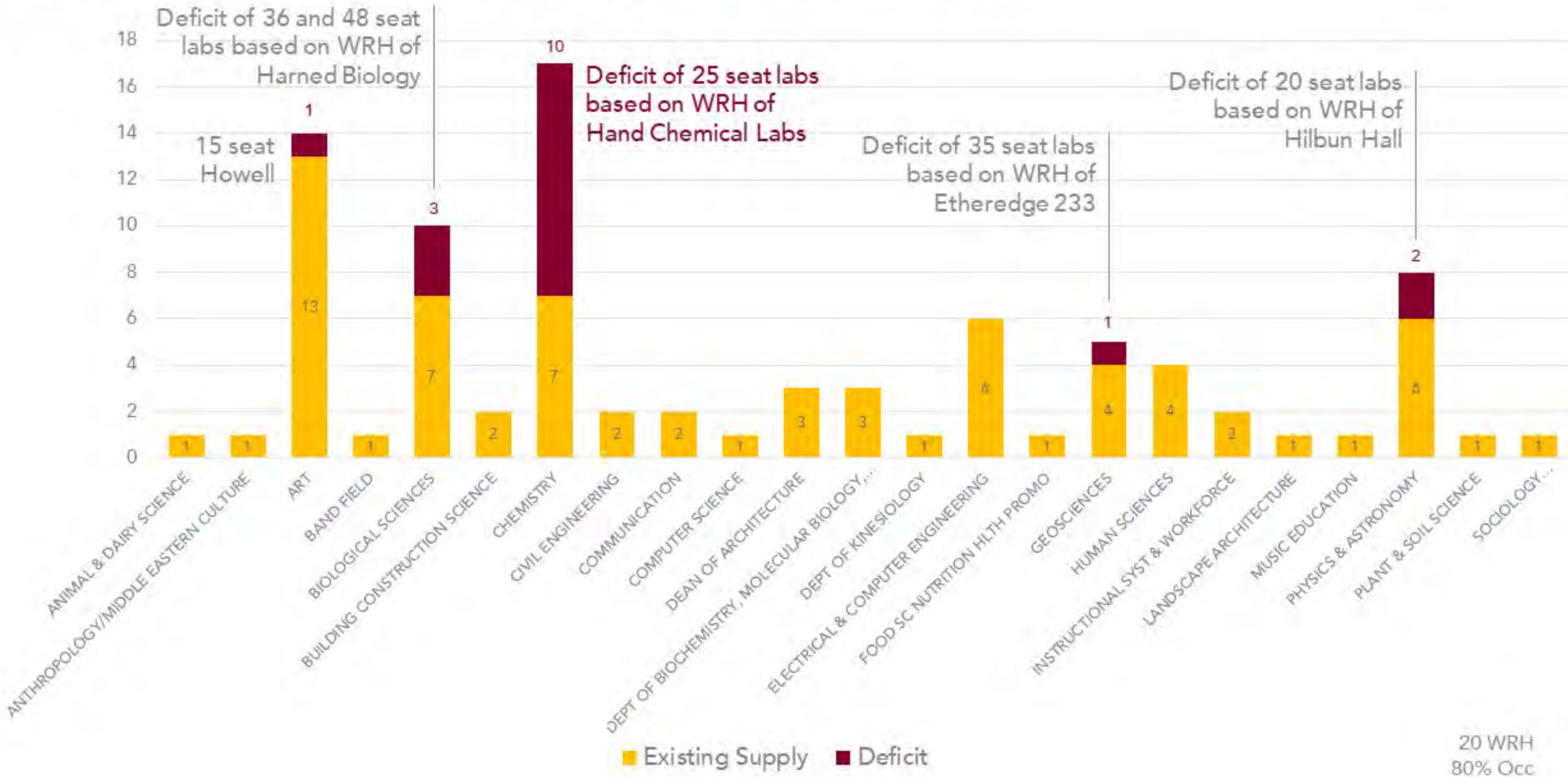
Rm	Cap	WRH	WSCH	Occ
2241	14	9	113	95%
2243	14	6	45	57%
3302	24	54	1,074	83%
1101	25	57	1,275	90%
1112	25	54	1,143	85%
1113	25	62	1,403	90%
1114	25	31	615	79%



College
- College of Agriculture
- College of Architecture
- College of Arts and Sciences
- College of Education
- College of Engineering
- College of Forest Resources

Class Lab Optimized by Department

02 Space Use



20 WRH
80% Occ

Class Lab

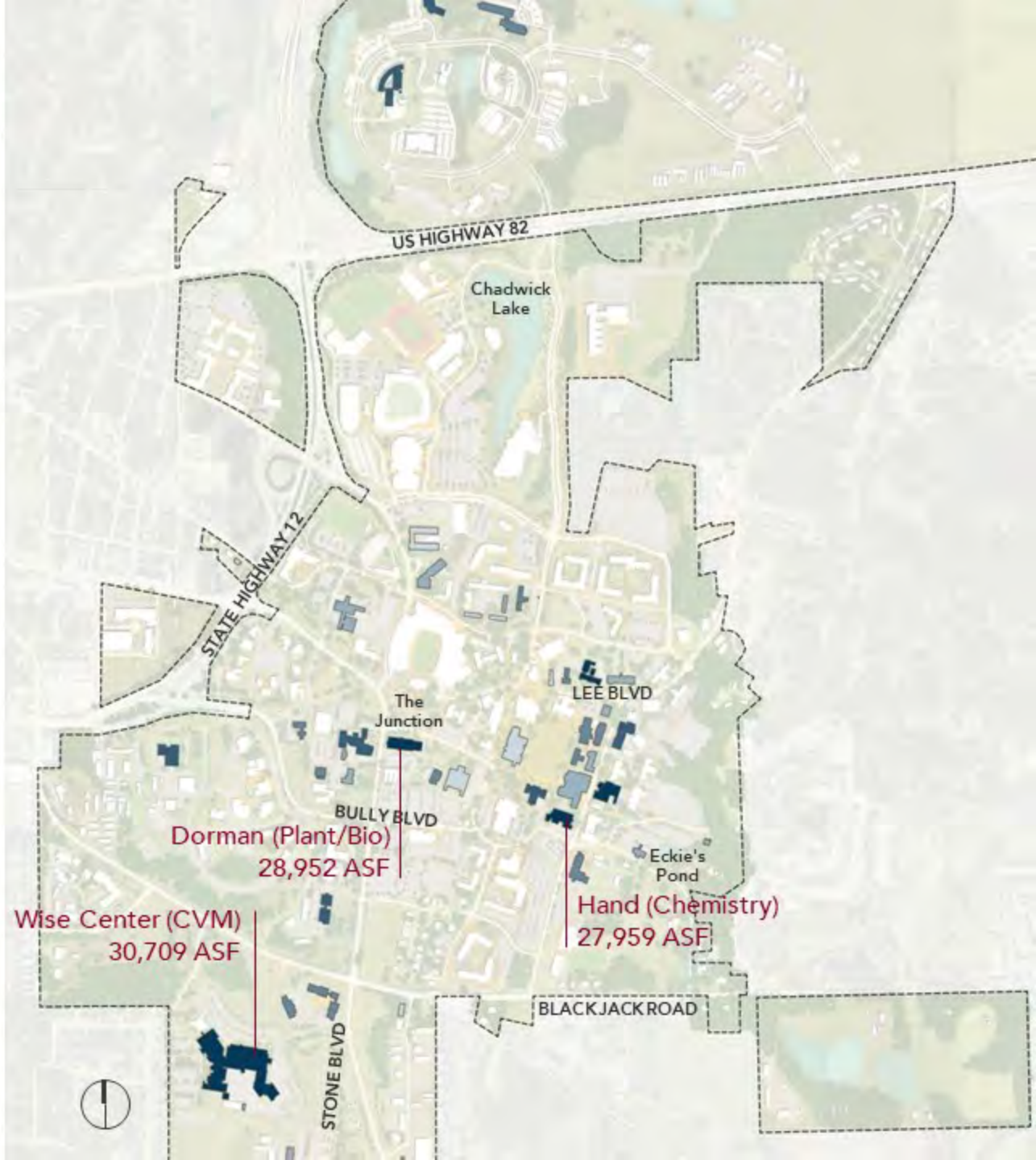
Observations

- The average WRH is on target, however some labs are utilized well over the target of 20 hrs per week (particularly Chemistry), others have much lower use.
- Opportunity for scheduling in the early mornings or later in the day.
- Lower occupancy labs (<25 occ) are not highly utilized
- Colleges typically schedule within their "home" building
- Buildings with most lab space do not consistently have the highest utilization

Considerations

- Repurpose or share use of small class labs (<25 occ)
- Consider consolidation or sharing of class lab space where underutilized

Research Lab Distribution



RANGE

150 asf

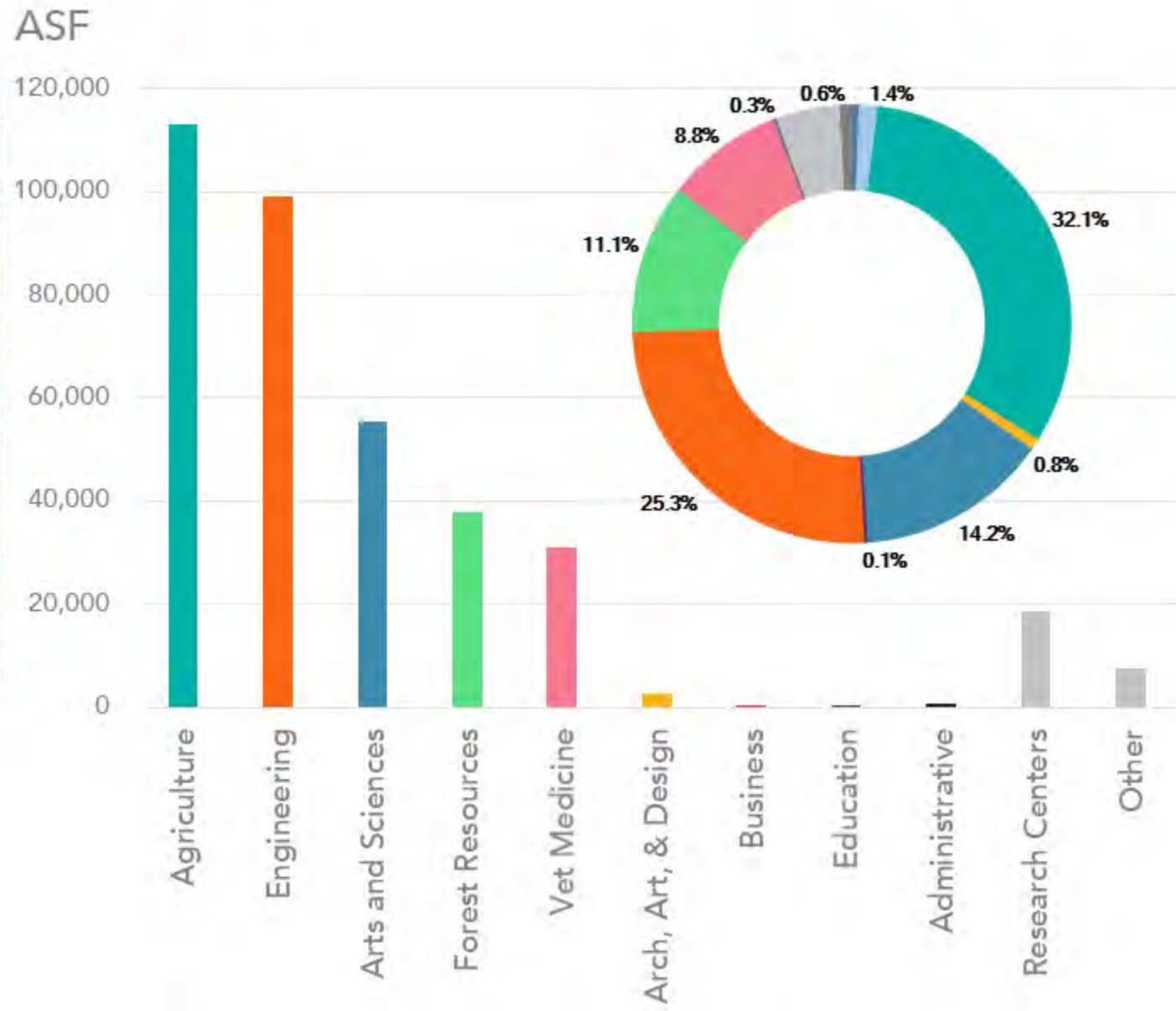
30,709 asf

Research lab space by college

Primary Spaces by College

College of Agriculture	ASF
DORMAN HALL	28,952
LYLE ENTOMOLOGY CENTER	15,689
PACE SEED TECHNOLOGY	14,016
HERZER DAIRY SCIENCE	12,056
College of Engineering	**ASF**
SIMRALL ELECTRICAL ENGINEERING	20,430
SWALM CHEMICAL ENGINEERING BLDG	16,517
ICET INSTITUTE FOR CLEAN ENERGY TECHNOLO	13,015
CENTER FOR ADVANCED VEHICULAR SYSTEMS	11,410
College of Arts and Sciences	**ASF**
HAND CHEMICAL LAB	20,262
HARNED HALL	19,844
College of Forest Resources	**ASF**
THOMPSON HALL, CLAPP, FRANKLN LABS, WOOD	+/-8,000
College of Veterinary Medicine	**ASF**
WISE CENTER	23,934

- Ag & Life Sciences
- Arch, Arts & Design
- Arts & Sciences
- Business
- Education
- Engineering
- Forest Resources
- Veterinary Medicine
- Research Centers / Other



Research Lab

Observations

- The College of Agriculture and Life Sciences and the College of Engineering utilize the most space
- Several Engineering and Arts & Sciences Research units have high ratios of research funding dollars to assigned research lab space

Other methods considered

- Create space model based on PI and associated FTE (dependent on additional data collection by MSU)
- Increase space proportionately with funding growth (dependent on creation of baseline for Research Units)

Considerations

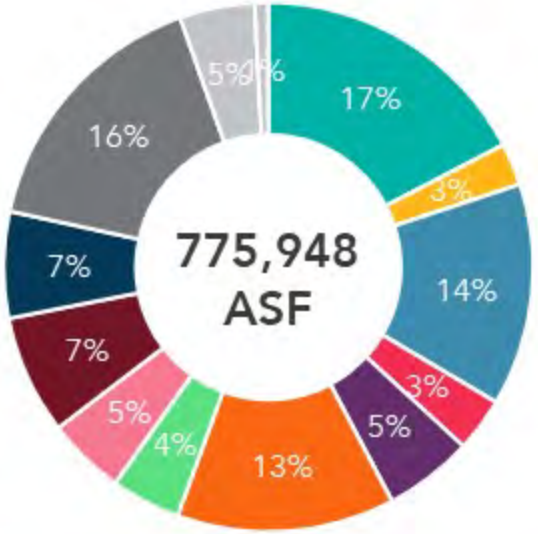
- Continue pairing research lab space with predominate College
- Consider conversion or backfill of class lab space depending on class lab demand by building/department

Offices

Office Distribution

AVG SF/Office: 197sf

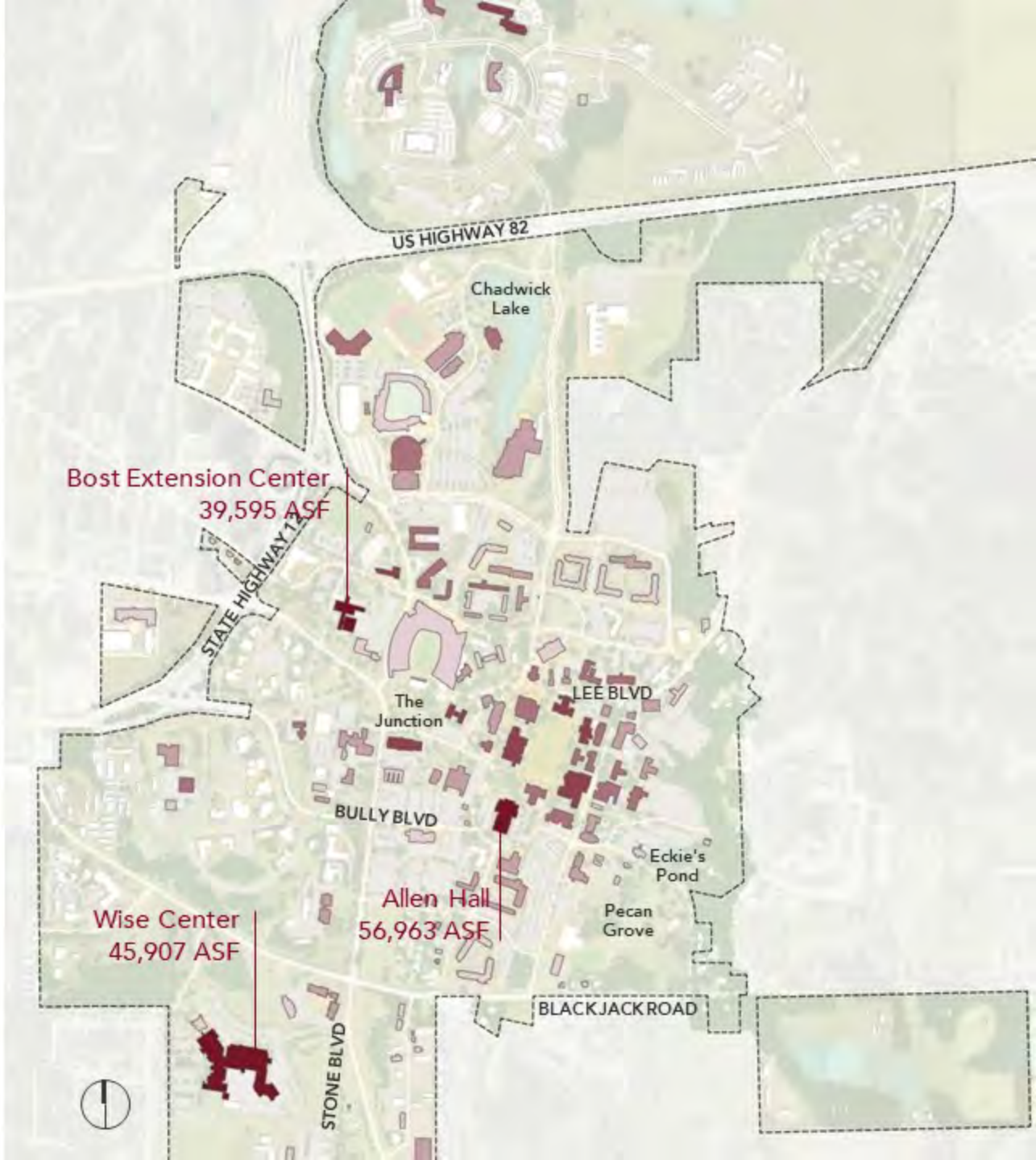
- Ag & Life Sciences
- Arch, Arts & Design
- Arts & Sciences
- Business
- Education
- Engineering
- Forest Resources
- Veterinary Medicine
- Athletics
- Administration
- Student Life / Campus Services
- Research Centers / Housing



RANGE

65 asf

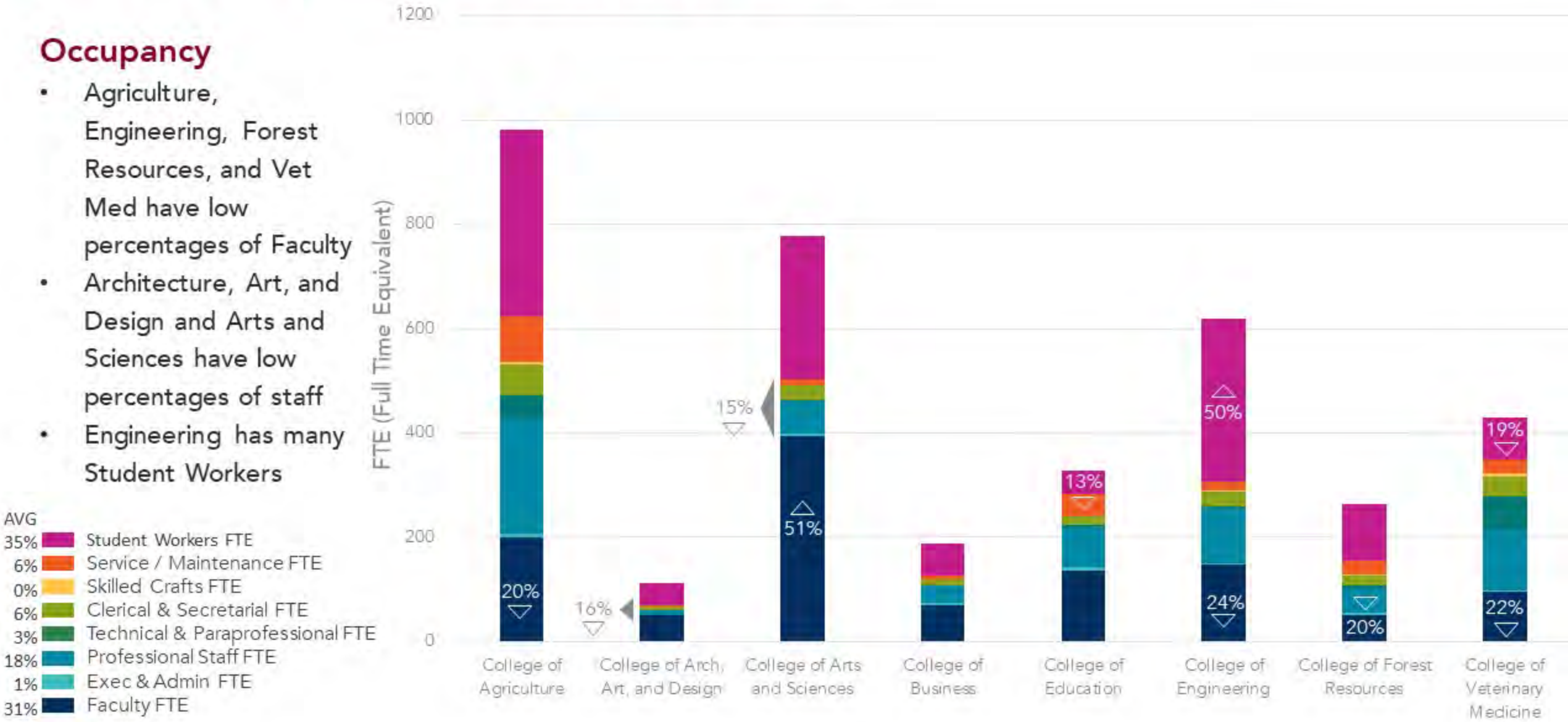
56,963 asf



Employee Designation (FTE)

Occupancy

- Agriculture, Engineering, Forest Resources, and Vet Med have low percentages of Faculty
- Architecture, Art, and Design and Arts and Sciences have low percentages of staff
- Engineering has many Student Workers



Office Use by College (# offices & FTE)

Observations

- Office space utilizes a significant percentage of ASF on campus
- College office space is generally silo-ed by building in contrast to the sharing of classroom space across buildings by many colleges
- Arts and Sciences demand from Faculty (high %)
- Engineering demand from Student Workers (high %)
- Veterinary Medicine and Agriculture and Life Sciences demand from employees other than faculty (high %)

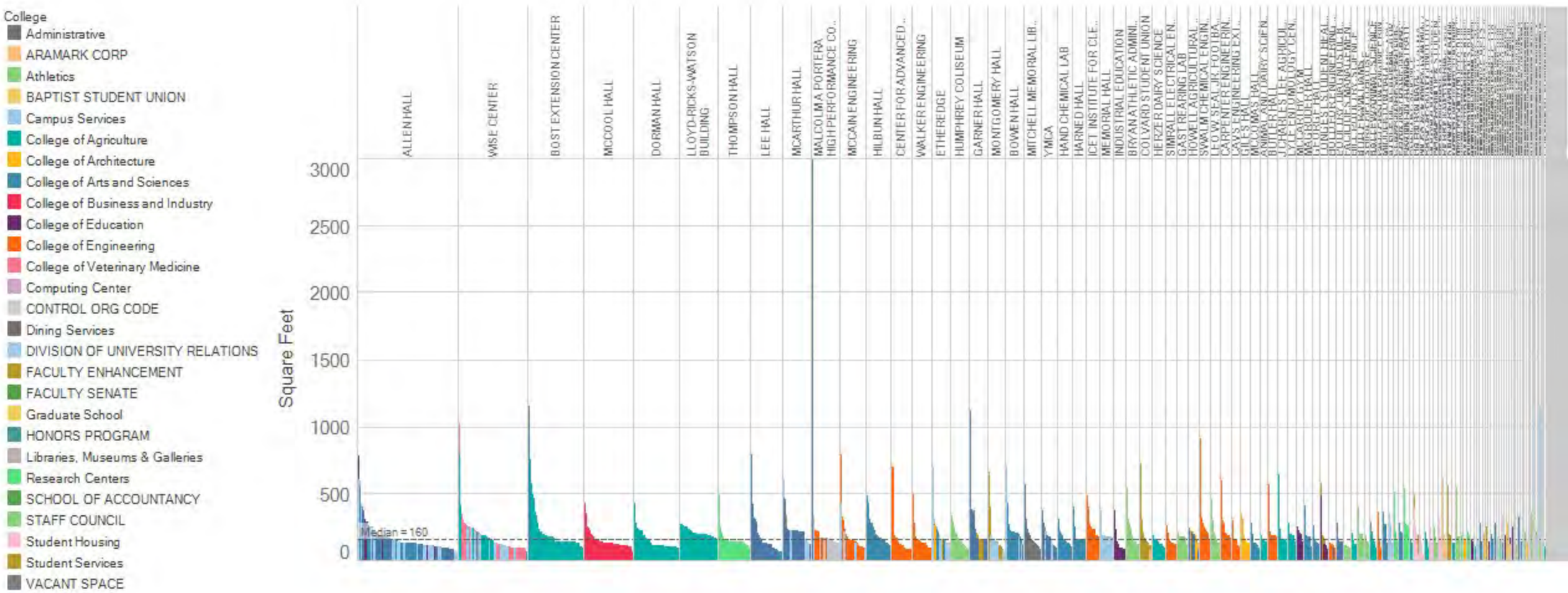
Considerations

- Continue cross College groupings to pair similar space uses
- Provide collaboration spaces where multiple types of office users come together (reassess based on remote working policies)

Ag & Life Sciences
Arch, Arts & Design
Arts & Sciences
Business
Education
Engineering
Forest Resources
Veterinary Medicine

Office median by building and college

*Includes all departments and colleges



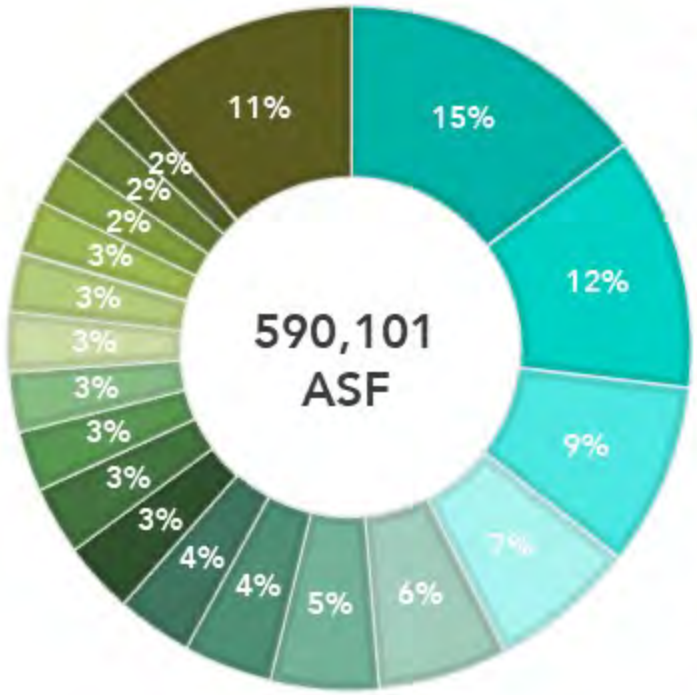
03

Needs Summary

Colleges
Campus Life

Colleges

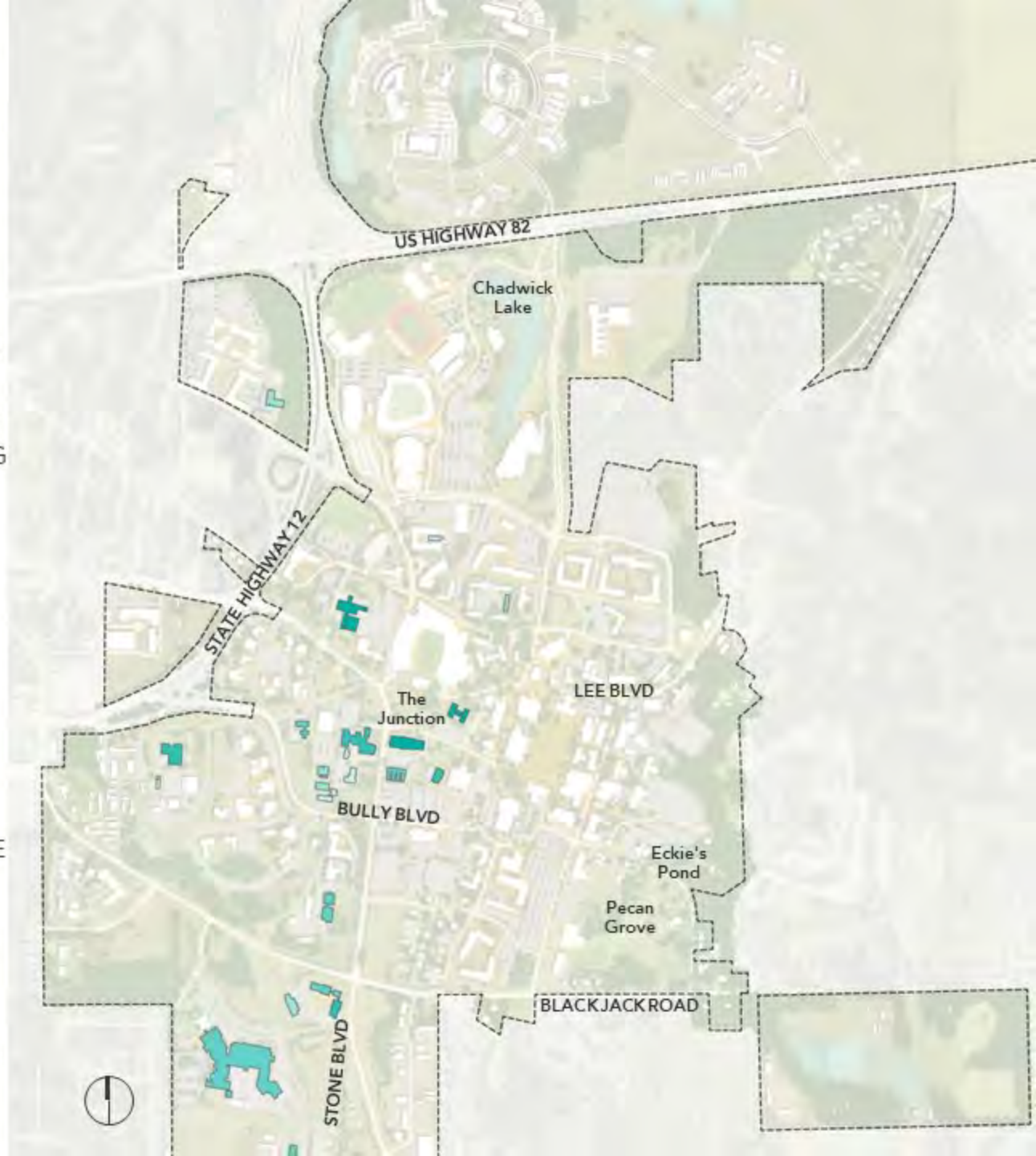
College of Agriculture



- DORMAN HALL
- BOST EXTENSION CENTER
- MISS HORSE PARK / FAIR
- LLOYD-RICKS-WATSON BLDG
- HERZER DAIRY SCIENCE
- LYLE ENTOMOLOGY CENTER
- J CHARLES LEE AG & BIO-ENG
- COVERED HORSE ARENA
- ANIMAL & DAIRY SCIENCE
- PACE SEED TECHNOLOGY
- AGRICENTER BARN 2
- AGRICENTER BARN 3
- AGRICENTER BARN 1
- POULTRY SCIENCE
- HILL POULTRY SCIENCE
- PLANT & SOIL SCI GREEN
- WISE CENTER
- SCALES VETERINARY SCIENCE
- Other

* Other spaces include any building with less than 10,000 gsf assigned. These are:

- Moore Hall
- Landscape Arch Seminar/Studio
- Meat Science Lab
- Ammerman-Hearnsberger Food Processing
- Child Development & Family Studies Center
- Extension Storage At Poorhouse
- Agricultural Engineering Process Lab
- Bedenbaugh Animal Laboratory
- Landscape Arch Administration
- Lyle Greenhouse Lab
- Ballew Animal Science
- Small Ruminant Research Facility
- Landscape Arch Freehand Studio
- Moth Building
- Hand Chemical Lab



College of Agriculture

What We Heard:

1. Lack of **quality lab space**, particularly for Plant Biotechnology
2. Circulation of faculty and students to/from core of campus causes delays and parking conflicts
3. Anticipating classroom size constraints as enrollment and course sizes grow, particularly Bio-Chemistry (also Animal and Dairy Science and Human Sciences)
4. Need a new **Plant Science Building** (#5 on State bond list), location is secondary to need and placement and storm water should be considered
5. Hail State Blvd creates a divide between departments and programs on South Farm.

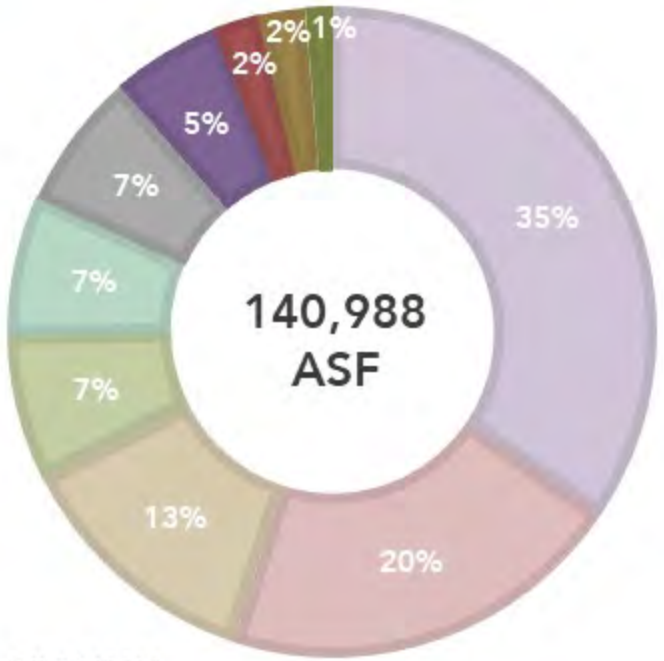
Building opportunities: Ballew (under design), New Engineering Building, Moore Hall, Bedenbaugh, Florist

Building needs: Dorman (Plant Science)

Observations / considerations:

1. Significant projected enrollment growth, particularly in agricultural and biological engineering
2. Important to protect/preserve North and South Farm research areas
3. Facilities and faculty cross-over with cooperative agencies, Extension, and Center and Institute spaces and personnel

College of Architecture, Art and Design



- GILES HALL
- HOWELL AGRICULTURAL ENGINEERING
- 509 EAST CAPITOL STREET
- FREEMAN HALL
- BRISCOE HALL
- STAFFORD HALL
- ETHEREDGE
- UNIVERSITY DRIVE APTS 43-49
- UNIVERSITY DRIVE APTS 35-41

College of Architecture, Art and Design

What We Heard:

1. Lack of **instructional space** to meet needs of growing programs
2. Lack of **specialty studio spaces** to complement shared general-purpose academic spaces.
3. **Goal to build on the cross-disciplinary nature of the design** community to shape a strong identity for Architecture, Art and Design.

Building opportunities: Hunter Henry, Howell Hall renovation

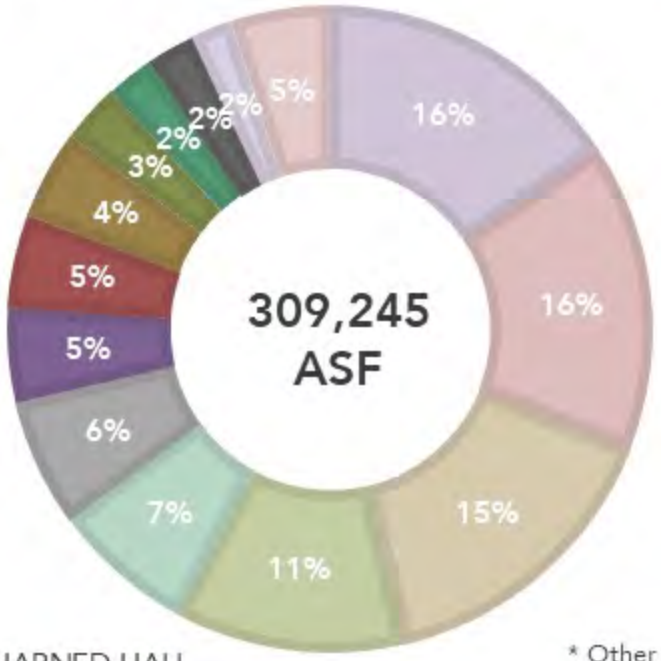
Building needs: Space for Interior Design / Building Science

Observations / considerations:

1. Enrollment growth, particularly in Interior Design and Building Construction Science that will drive studio space needs
2. Would like to add collaborative and communal space with upcoming space moves, but studio space is the priority
3. Art Galleries and associated display spaces are important and part of the long term vision

College of Arts and Science

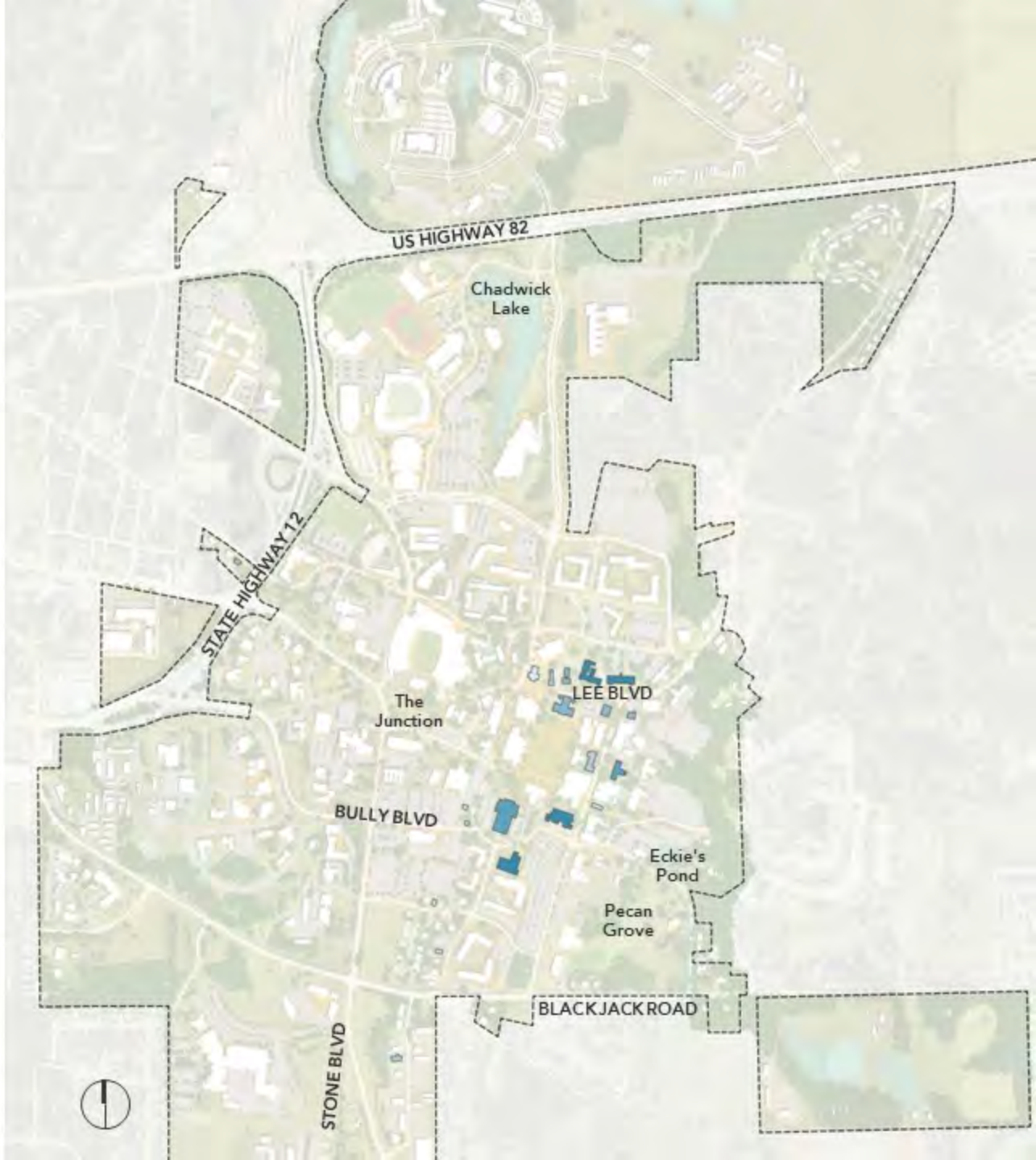
Space Distribution



- HARNED HALL
- HAND CHEMICAL LAB
- HILBUN HALL
- MCCOMAS HALL
- ALLEN HALL
- BOWEN HALL
- LEE HALL
- COBB INSTITUTE OF ARCHAEOLOGY
- MAGRUDER HALL
- MIDDLETON HALL
- COBB INSTITUTE CURATION FACILITY
- ETHEREDGE
- GEORGE HALL

* Other spaces include any building with less than 6,000 gsf assigned. There are:

- University Drive Apts 25-31
- Ymca
- President's Circle 118
- President's Circle 94
- Stennis Institute - Depot
- Magruder 226 - Eh&s
- Morgan 70
- Observatory
- Howell Agricultural Engineering



College of Arts and Sciences

What We Heard:

1. Lack of **Departmental office and research space**.
2. Lack of **teaching labs** for the sciences.
3. Lack of **quality teaching labs** with adjacency to learning center and tutors.
4. Potential to rethink positioning of **museum spaces** to support K-12 partnerships and community connections.

Building opportunities: Geoscience/Physics

Building needs: Psychology (clinic in house), Geoscience (funding available)

Observations / considerations:

1. When others grow, CAS grows; teach about 48% of the credit hours / 37% of upper division courses
2. Teaching faculty growth is tied to growth of the University.
3. Faculty are comfortable traveling between buildings to teach.
4. Not interested in finding dedicated space for specific departments, except at graduate level.
5. Reported sharing of office spaces, particularly with the Honors College

College of Business & Industry

Space Distribution

College of Business

What We Heard:

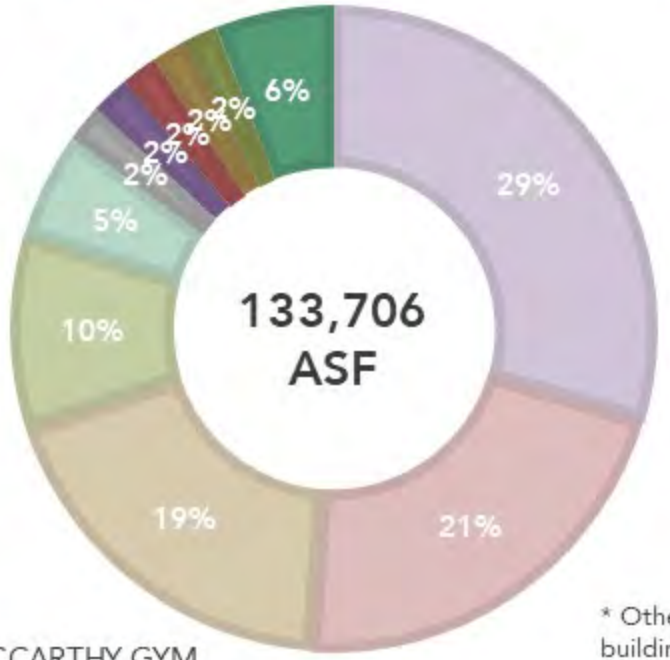
1. The **E-Center** has grown rapidly and is out of space in McCool Hall. The current location is central and on the visiting student tour route.
2. Lack of **retail lab space**. Other research is generally conducted in faculty office space.
3. Need for **additional office space** to support enrollment and faculty growth.
4. Need for student study / collaboration space.

Observations / considerations:

1. Significant projected faculty growth to match enrollment growth. Preference for faculty to be located in the same building, McCool.
2. Potential reorganization of departments with proposed new Supply Chain Logistics major would require additional office space.
3. Types of spaces needed are similar across departments.
4. Makerspace on Main Street creates connection to Starkville and community
5. Will expansion occur outside of McCool?

College of Education

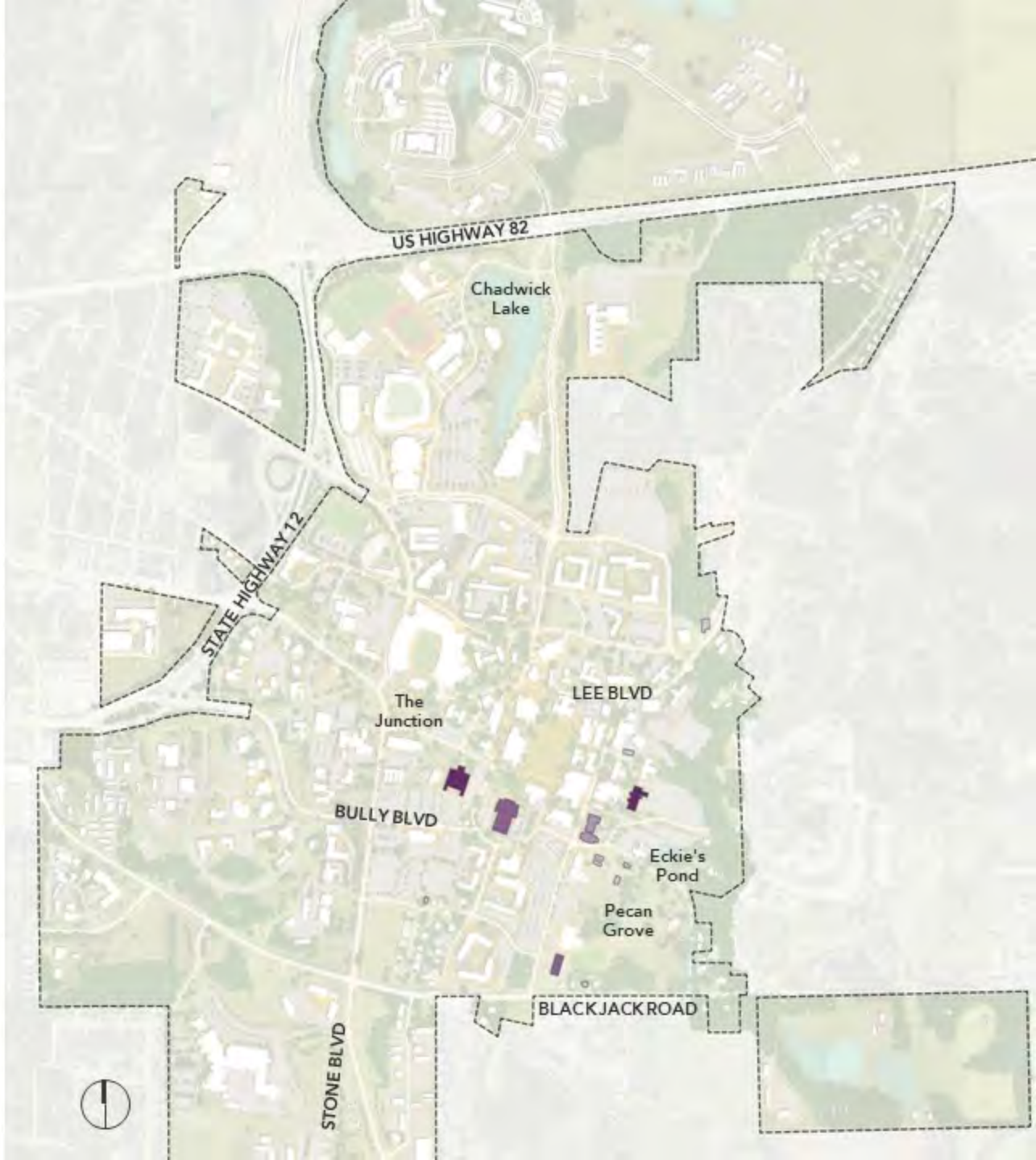
Space Distribution



- MCCARTHY GYM
- INDUSTRIAL EDUCATION
- ALLEN HALL
- BAND & CHORAL REHEARSAL HALL
- LONGEST STUDENT HEALTH CENTER
- 283 EAST LEE BUILDING (PREVIOUSLY BAPTIST STUDENT CENTER)
- ACADEMIC COMPUTING LAB
- MORGAN 75
- BOX BUILDING
- CHORAL BUILDING MUSIC BUILDING C
- Other

* Other spaces include any building with less than 2,200 gsf assigned. There are:

- Blackjack 1223
- Music Building A
- Music Building B
- Blackjack 1219



College of Education

What We Heard:

1. Adaptations for remote and hybrid teaching will continue to influence space; specifically, **facilities for distance teaching and learning.**
2. Consolidation of education departments and programs would be beneficial and should factor into the planning and implementation of new facilities, particularly for music and kinesiology.

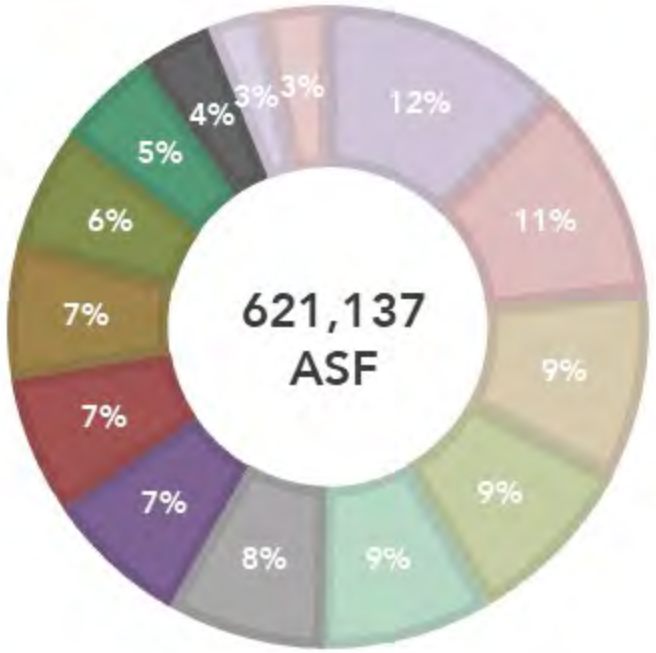
Building opportunities:

Building needs: Allen Hall, New Music Building (additional space), Kinesiology

Observations / considerations:

1. College of Education has had the largest growth over the spring, almost 18%
2. Consistent theme has been this growth in both undergraduate and graduate enrollment
3. New program in Counseling and Psychology Foundations will add to enrollment growth
4. Goal to reduce teaching load by adding faculty, particularly in Kinesiology
5. Additional online learning would require additional faculty

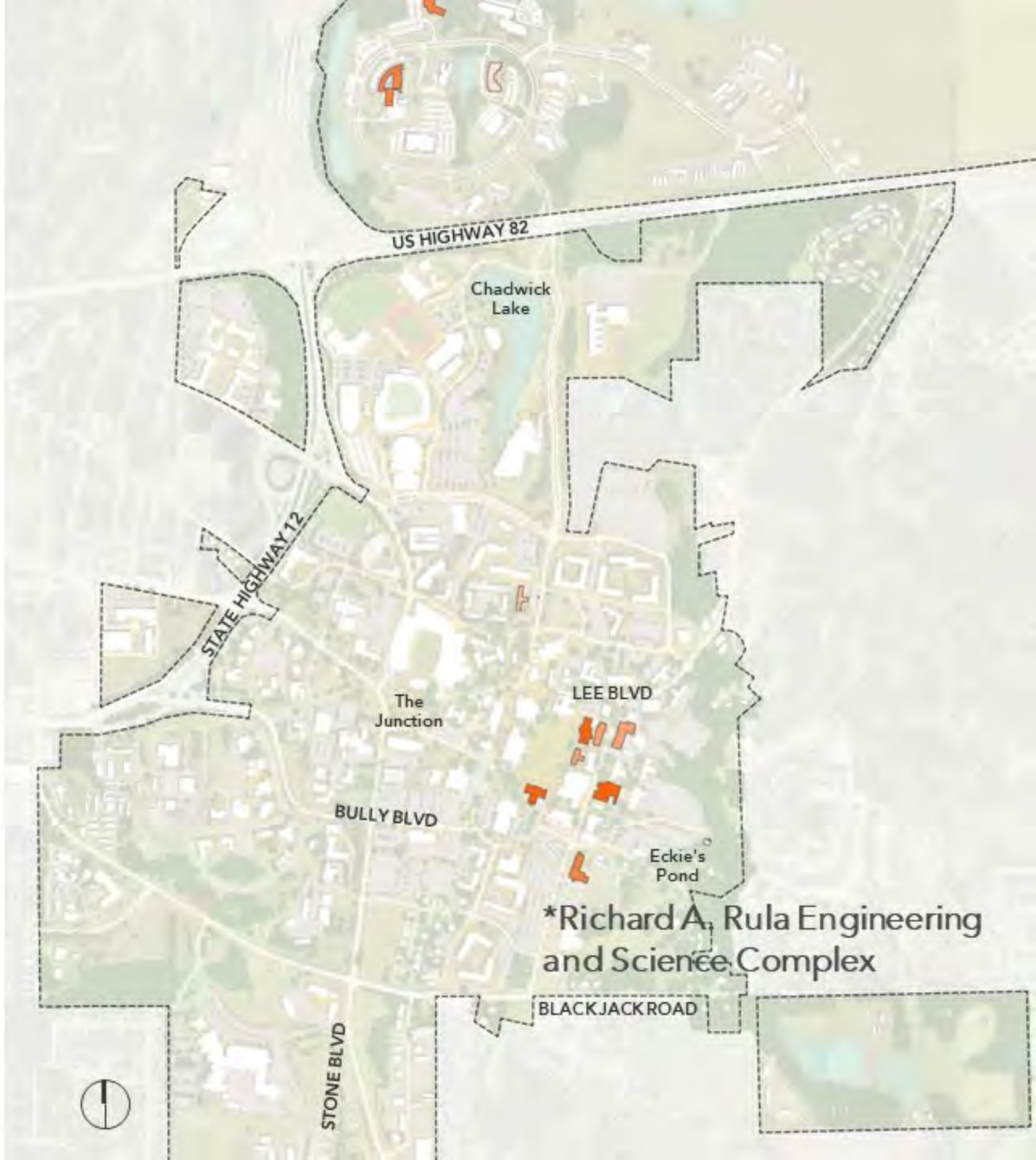
College of Engineering



- SIMRALL ELECTRICAL ENGINEERING
- SWALM CHEMICAL ENGINEERING BLDG
- RASPET FLIGHT RESEARCH LAB BLDG II
- MCCAIN ENGINEERING
- HOLD FOR ENGINEERING SCIENCE FA
- CENTER FOR ADVANCED VEHICULAR SYSTEMS
- RASPET FLIGHT RESEARCH LAB BUILDING I
- PATTERSON ENGINEERING
- ICET INSTITUTE FOR CLEAN ENERGY TECH
- WALKER ENGINEERING
- CARPENTER ENGINEERING
- BUTLER HALL
- CAVS ENGINEERING EXTENSION

* Other spaces include any building with less than 13,000 gsf assigned. There are:

- Raspet Flight Hanger #4
- Cavs Dynamometer Lab
- Materials Testing Lab
- Edwards Reactor Lab
- Malcolm A Portera High Performance Computing Building HPCC
- Electrical Engineering Storage
- Raspet Generator Equipment Building



College of Engineering

What We Heard:

1. **Work space needed for student teams** to support senior design opportunities. Engineering Design Center planned between McCain and Walker
2. Lack of quality **STEM space for "hands on" labs**
3. Lack of **collaboration space for faculty and staff**
4. Need additional **undergraduate and graduate lab space** to match enrollment growth
5. Engineering Design Center

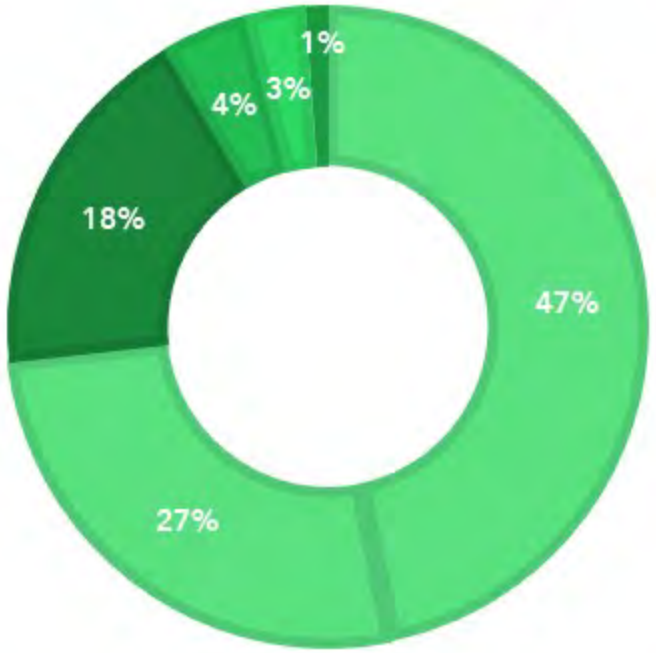
Building opportunities: Swalm, Walker (civil relocation)

Building needs: Patterson, J Charles Lee, Simrall, McCain

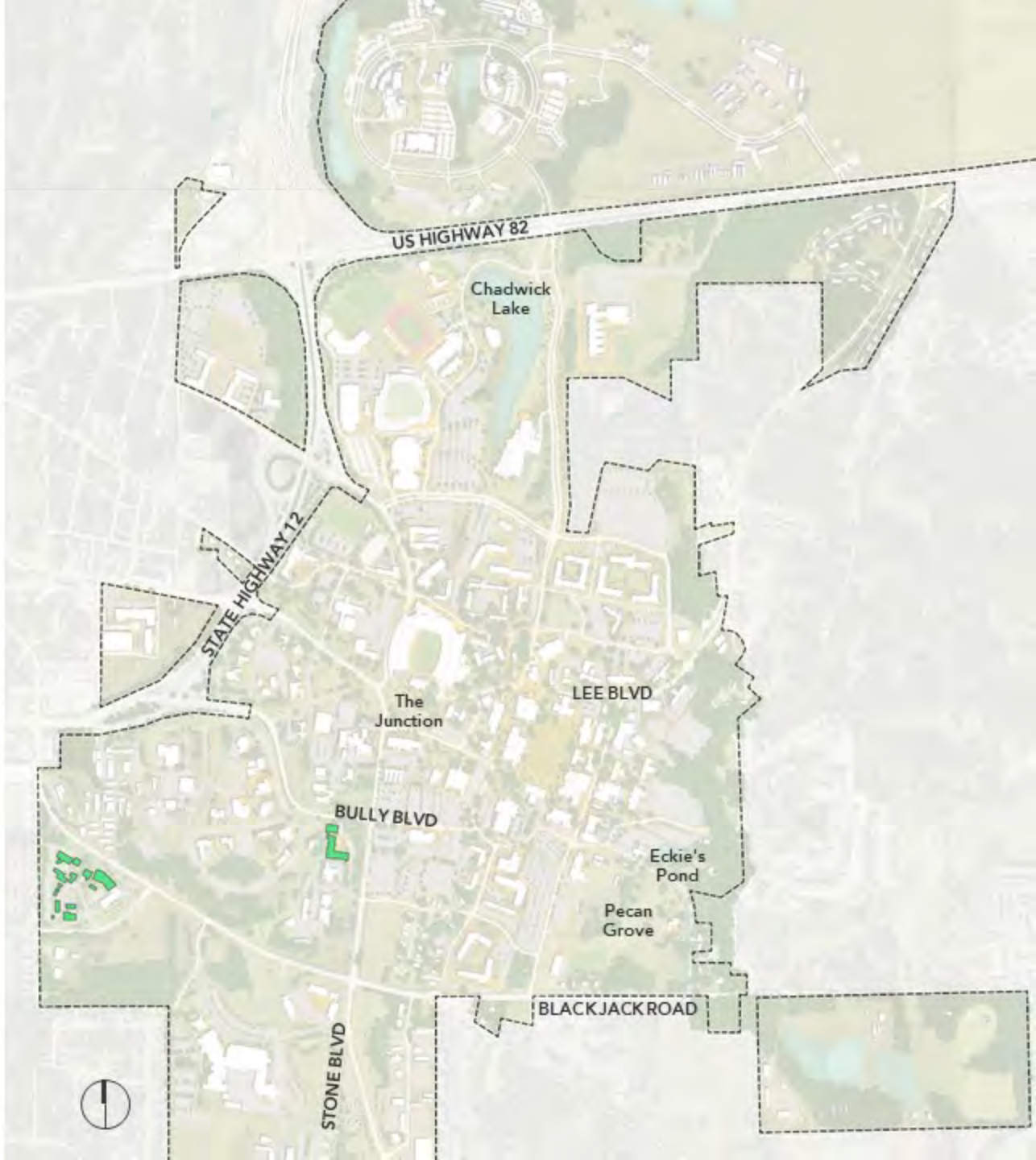
Observations / considerations:

1. Faculty growth has lagged behind enrollment growth.
2. Increase in section size, adjunct faculty, and teaching focused faculty has limited ability to grow research
3. Graduate student enrollment increase
4. Goal is to increase research portfolio by 50%. Particular focus on applied research and industry partnerships.

College of Forest Resources



- Thompson Hall
- Forest Products Buildings
- Franklin
- SF Aquaculture
- ARC W&F STORAGE (at SF)
- Blackjack Log Cabin
- Acorn Bldg



College of Forest Resources

What We Heard:

1. Buildings in **Franklin Center** are nearing end of useful lifespan
2. Need for adequate research space
3. Goal to **consolidate and coordinate spaces** in Forest Products Laboratory and Franklin Center
4. Need for graduate student space and offices associated with research

Building opportunities:
Building needs: Thompson Hall (at capacity)

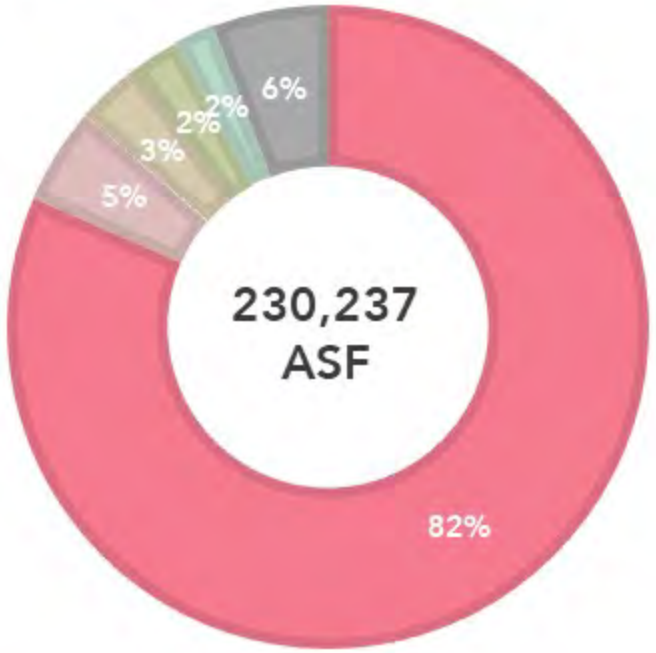
Observations / considerations:

1. Research facility planned west along Blackjack Road to include greenhouse and wildlife aviary research.

2. Frequent transitions from field to lab to collaboration space
3. Potential for access to proprietary software to reduce computer lab space need

College of Veterinary Medicine

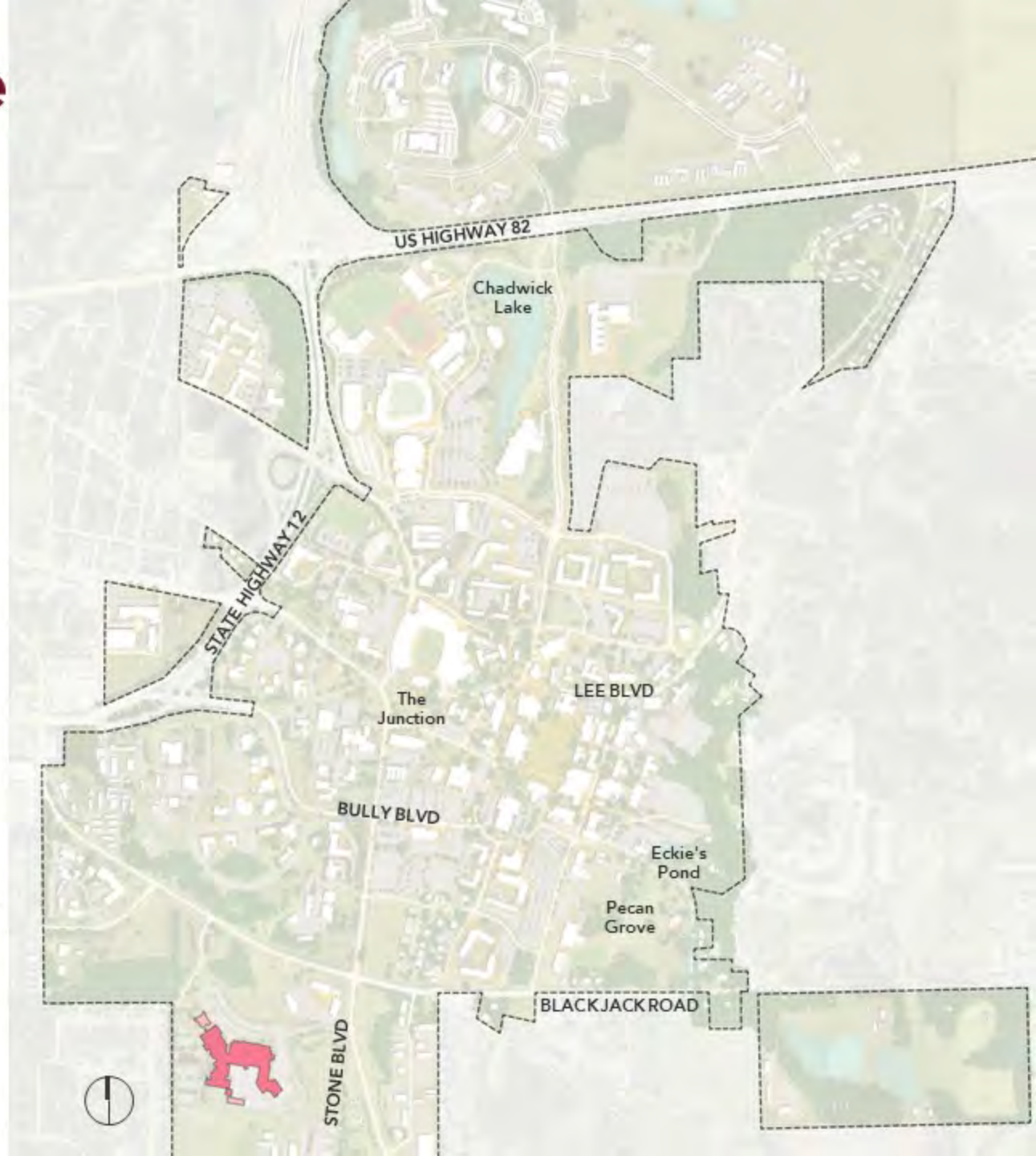
Space Distribution



- WISE CENTER
- CVM LARGE ANIMAL CLINIC
- COMPARATIVE BIOMEDICAL RESEARCH FACILITY
- WISE CENTER CLASSROOM ADDITION
- CVM AQUATIC HATCHERY
- Other

* Other spaces include any building with less than 4,000 gsf assigned. There are:

- Cvm Feed Storage
- Companion Animal Nutrition Res Facility
- Mvrdl Dorm
- Cvm Modular Research Building
- Cattle Working Facility
- Cvm Pig Barn



College of Veterinary Sciences

What We Heard:

1. Need for **clinical spaces that reflect the specialization** of the field and support professional school without relying on leased space.
2. Lack of **flexible animal research building** to support flexible lab use and provide modern research space.
3. Classroom sizes are adequate for current class sizes. If future increases bring class size above the 120 seats, will need to expand

Observations / considerations:

1. Significant, 10% projected growth following approval by accrediting body; 4 classes of 112
2. Research has doubled since 2007
3. New clinic facility planned;17,000sqft
4. House Officer Program is limited by number of board certified faculty

Space Use Key Takeaways

Space Use

- Majority of Classroom and Office space is clustered at the campus core surrounded by Lab, Residential and Specialized classrooms and research buildings
- Most space types are on target based on current enrollment; space usage varies by college

Classrooms

- Colleges teach in multiple buildings
- Classroom occupancy and weekly room hours are on target
- Oversupply of 30-60 seat rooms and undersupply of 25-30 seat rooms based on Registrar's Fall 2019 course scheduling data of centrally scheduled rooms
- Undersupply of large (100+) seat flexible rooms

Class Labs

- Teaching lab usage is generally on target
- Chemistry labs are heavily utilized (weekly room hours)
- Lower occupancy labs (<25 occ) are not highly utilized
- Colleges typically schedule within their "home" building

Research Labs

- The Agriculture and Life Sciences and Engineering have the most research lab space
- Several Engineering and Arts & Sciences Research units have high ratios of research funding dollars to assigned research lab space

Offices

- Office space takes up a significant percentage of ASF
- College office space is generally silo-ed by building in contrast to the sharing of classroom space across buildings by many colleges

Considerations & Opportunities

Space Use

- Optimize core space by creating standards and tools for prioritizing renovations
- Consider impact of remote learning on space updates, training, and access
- Provide direct access to amenities and collaboration spaces (flexible for collaboration and with defined themes & cultural significance)

Classrooms

- Maintain universal use and prioritize access to key hubs
- Repurpose and consolidate portions of under utilized classrooms into office spaces or community nodes (ex: specialized space for remote learning/teaching/training)
- Enable shift to remote-hybrid (flexible classrooms and conversion/multi-use large spaces)

Class Labs

- Repurpose or share use of small class labs, if possible
- Consider consolidation or sharing of class lab space where underutilized
- Develop typology including transition to virtual

Research Labs

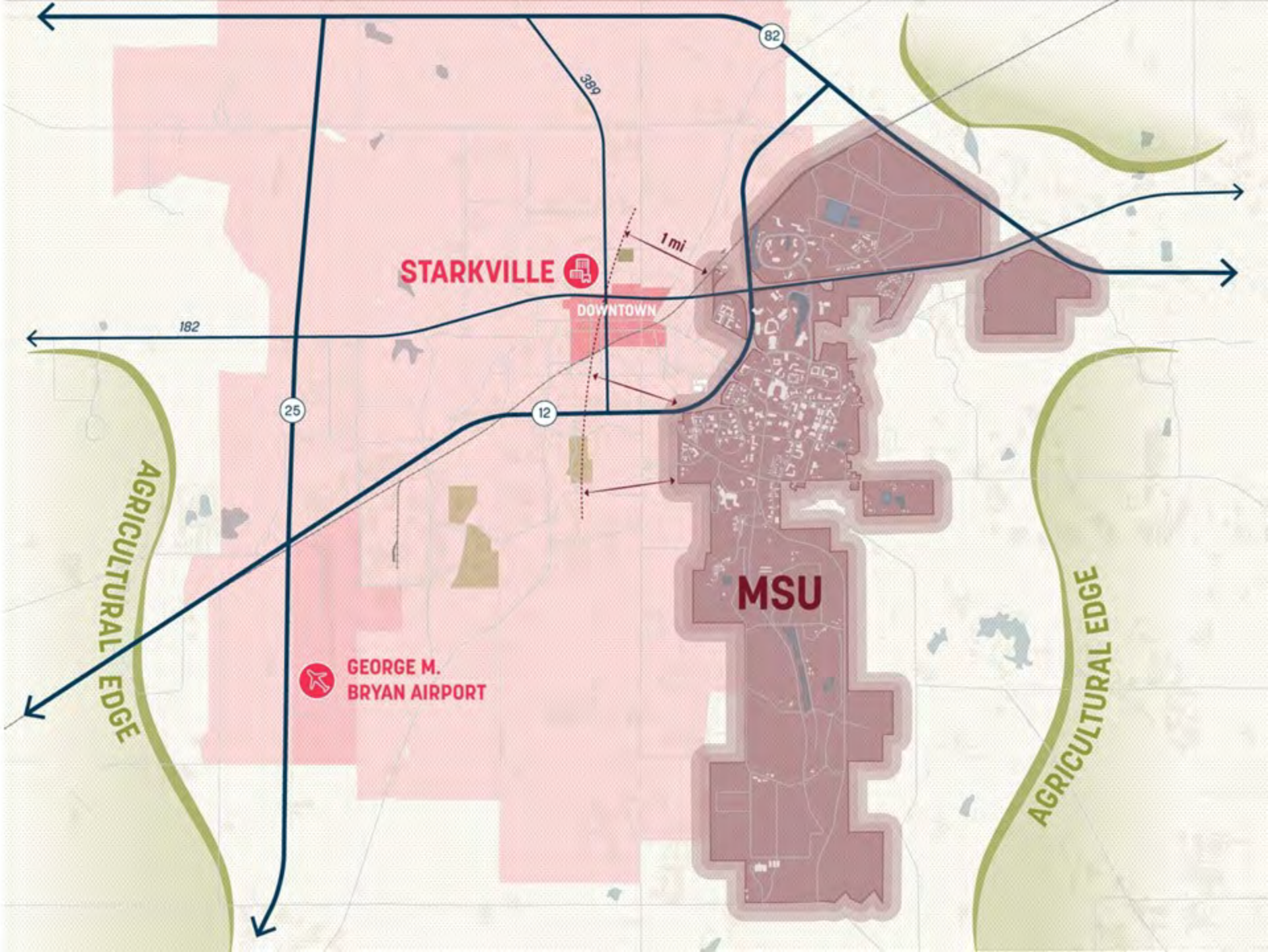
- Continue pairing research lab space with College spaces
- Consider conversion or backfill of class lab space depending on class lab demand by building/department
- Provide collaboration and topical nodes across campus

Offices

- Continue cross-College groupings and create/share similar space uses and FTE mixes
- Provide collaboration spaces where multiple types of office users come together
- Maximize flexibility and shared amenities (light/air)

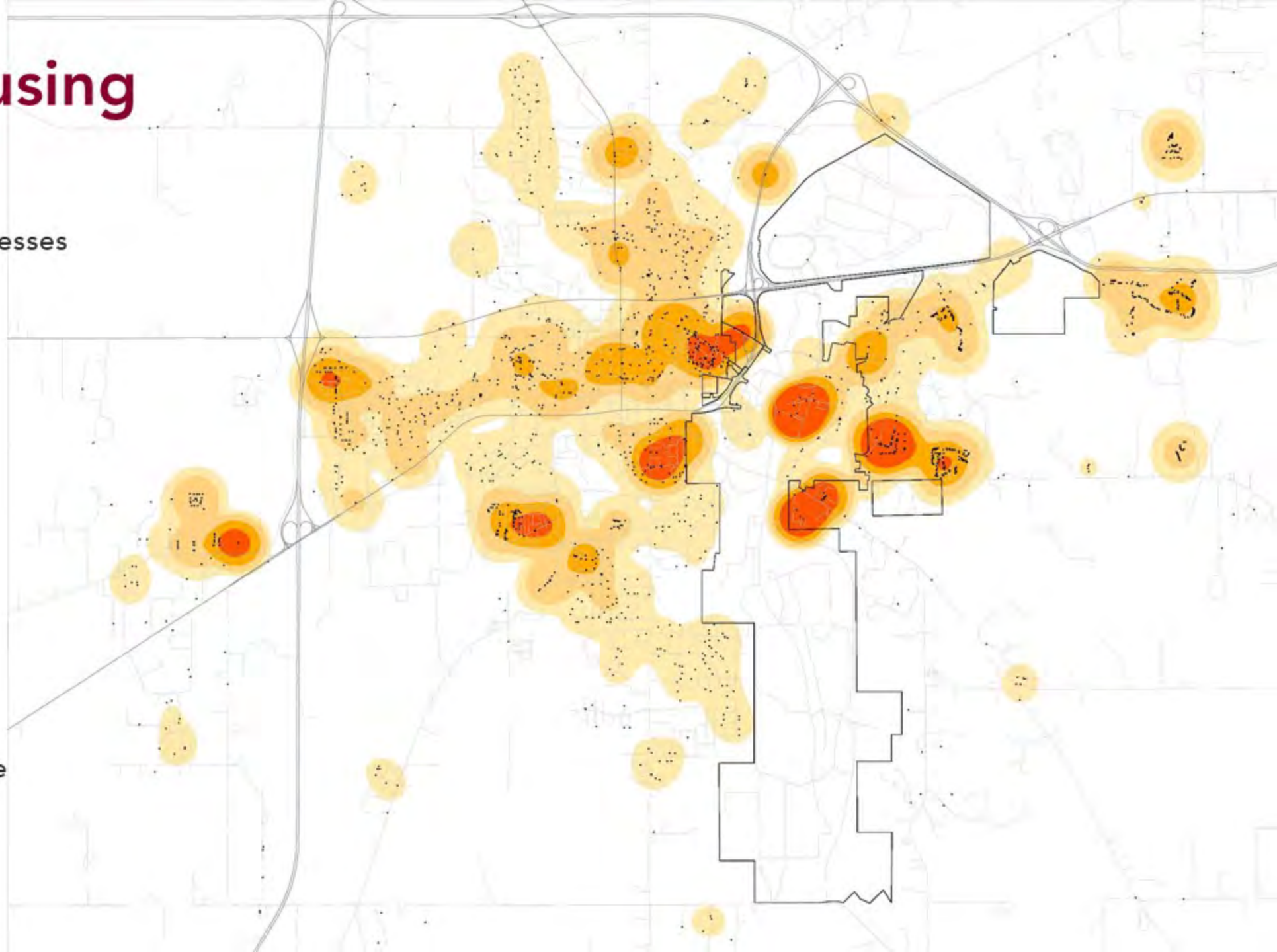
Campus Life

Regional Network



Student Housing Heat Map

Showing 5,462 student addresses
out of 26,846 located



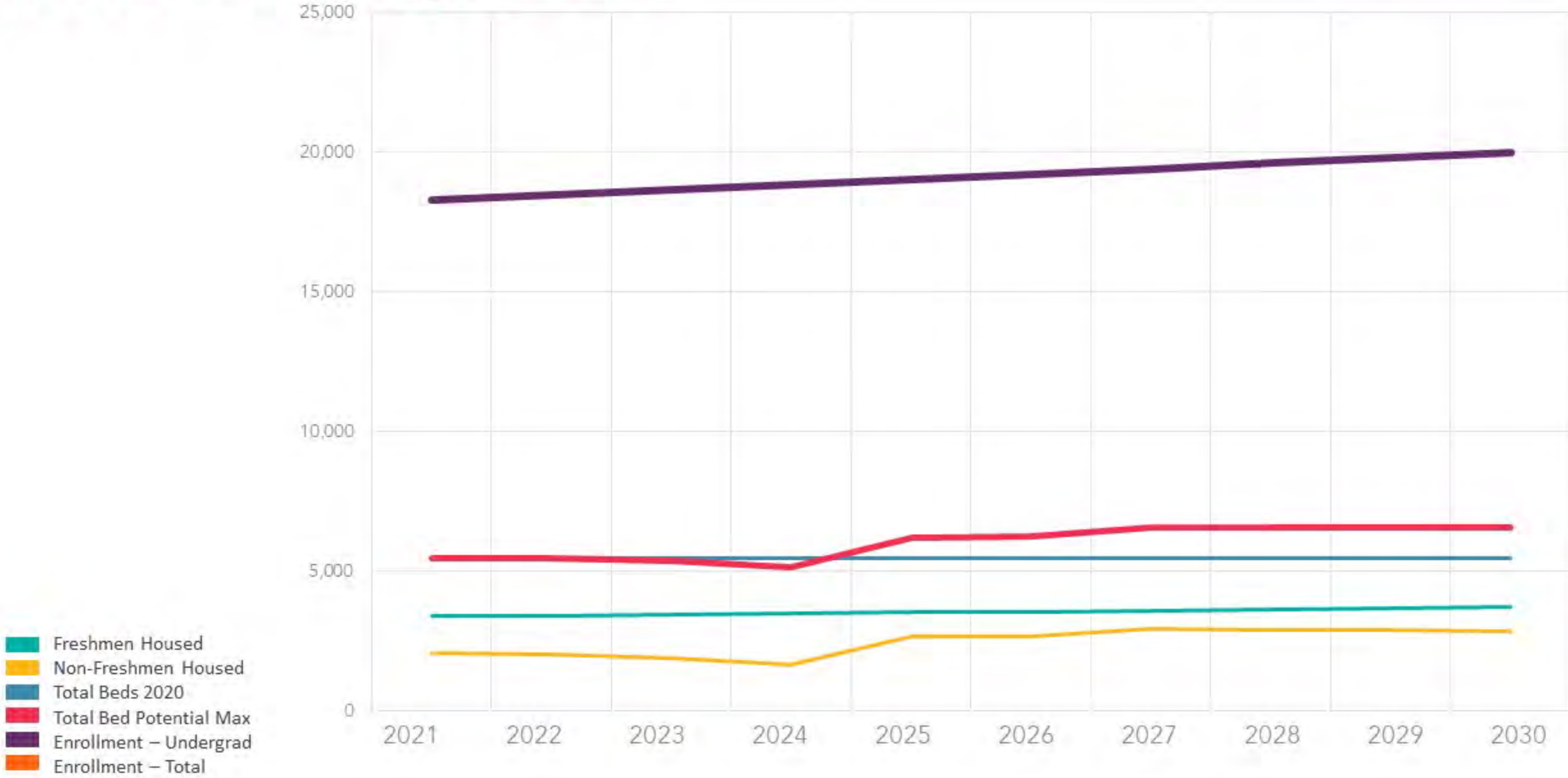
Residential Beds

School/Fiscal Year	2021 Beds
College View Apartments (Phase I)	656
Cresswell (renov 2002)	311
Critz (renov 2001)	208
Deavenport Hall (2016)	376
Dogwood Hall (2016)	376
Griffis Hall (opened Fall 2006)	312
Hathorn (renov 2003)	274
Herbert	90
Hull	295
Hurst Hall (opened Fall 2006)	252
Magnolia Hall	400
McKee (renov 2000)	248
Moseley Hall	360
Nunnelee Hall (opened Fall 2007)	252
Oak Hall	400
Ruby Hall (opened Fall 2005)	410
Sessums (renov 1999)	246
Total Beds 2020	**5,466**

Potential Maximum Development Plan

- Herbert Renovation
- Demolish Critz & Critz New Construction
- Demolish Sessums & Sessums New Construction
- Demolish McKee & McKee New Construction
- College View - Phase 2 & 3

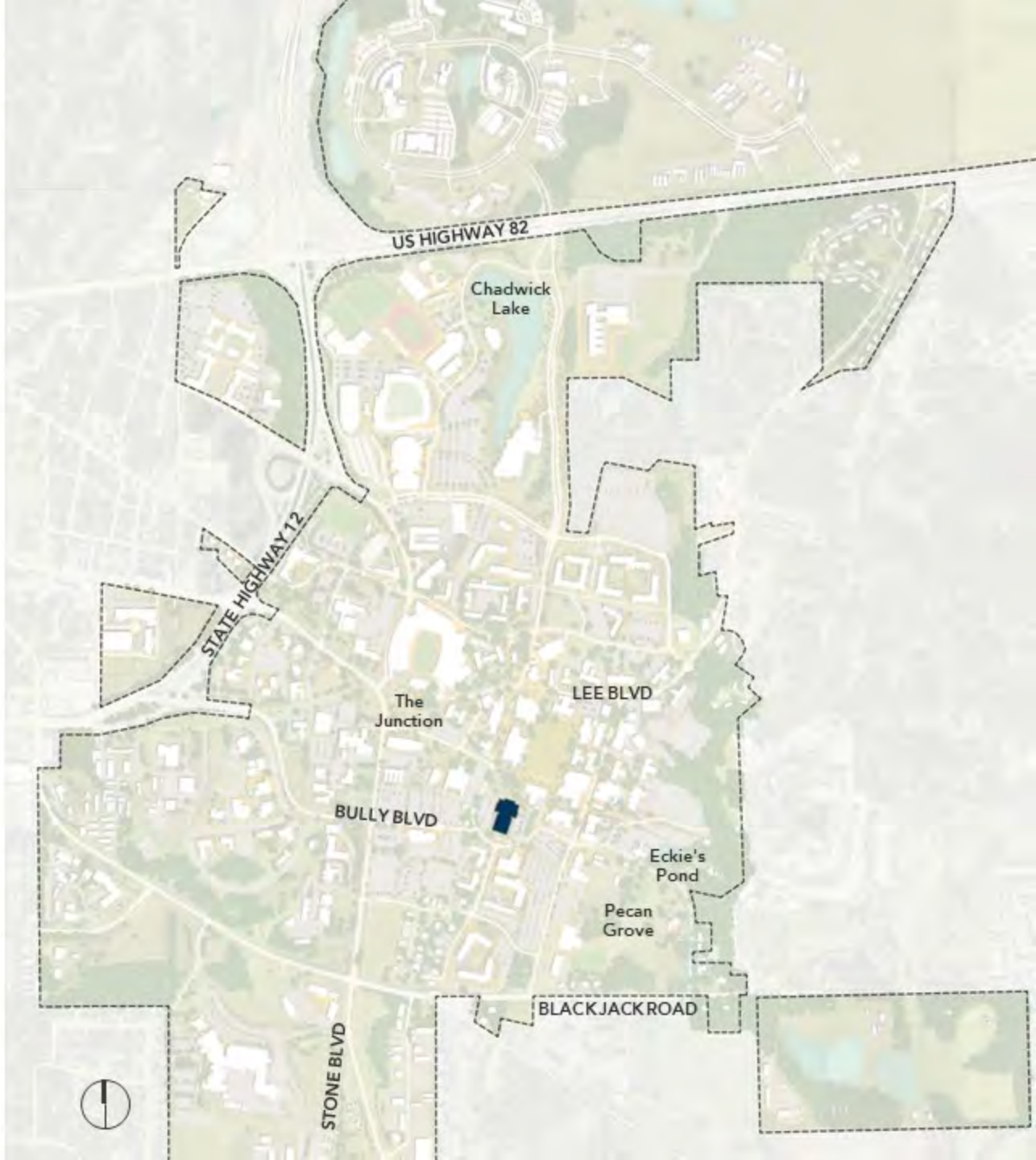
Residential Projections



Graduate School

Space Distribution

■ ALLEN HALL



Graduate School

What We Heard:

1. Lack of **adequate office and support space** to support admissions growth.
2. Lack an easily accessible and **visible home** for the Graduate School to promote graduate education.
3. Lack of adequate **social environments** and places to meet for the graduate student association and faculty.

Building opportunities: Walker (if additional space available)

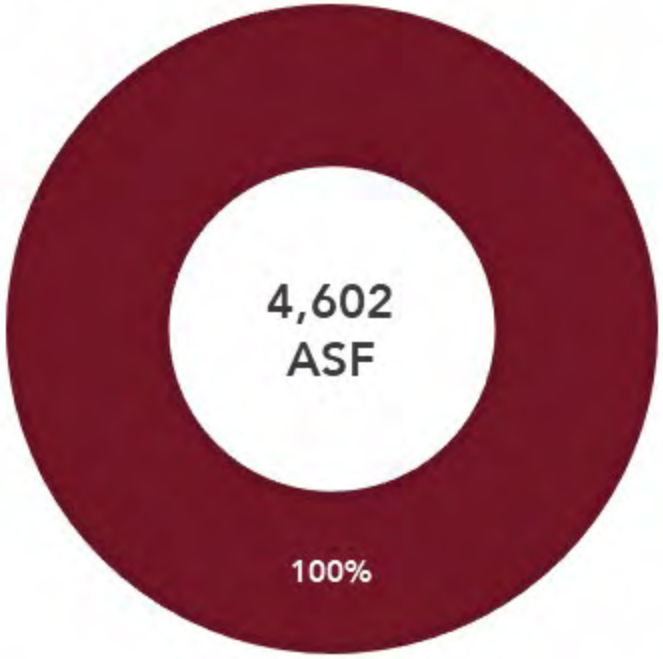
Building needs: Central / Visible location

Observations / considerations:

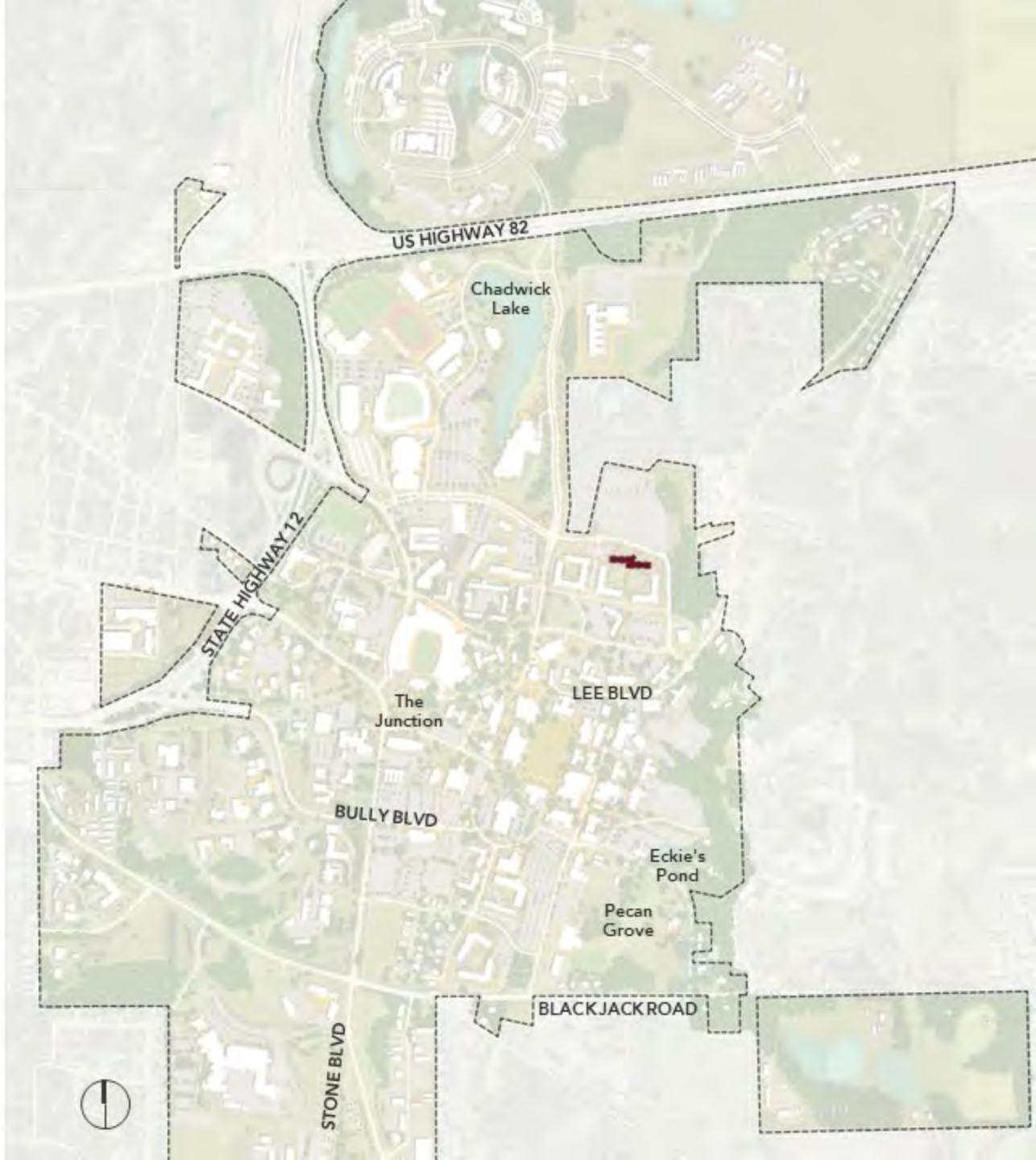
1. Goal to support the wellbeing of graduate students and faculty.
2. Growth is projected to exceed undergraduate enrollment growth percentage if targets are met.
3. Facility access and visibility are higher priorities than building condition or age.
4. Very high research activity designation in Carnegie classification.
5. International Institute is a key partner
6. Graduate School Vision and Set of Goals is under development

Honors Program

Space Distribution



■ GRIFFIS HALL



Honors College

What We Heard:

1. Lack of **instructional space** to support core-text and seminar teaching style
2. Lack of **community space** including art galleries for student art
3. Desire to develop a cloistered **living/learning environment** to support the core-text curriculum
4. Approximately 60 sections are offered each semester

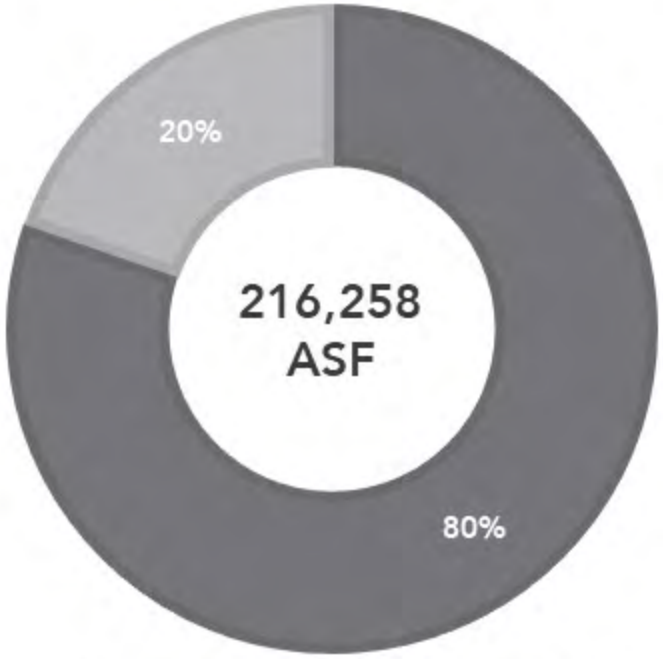
Building opportunities: Ruby Hall

Observations / considerations:

1. National model for residential honors colleges; exceeds national recommendations for enrollment percentage.
2. Proximity to the residential community and programmable outdoor areas.
3. Associated with Offices of Undergraduate Research and Office of Prestigious External Scholarships.
4. Faculty have joint appointments with other Colleges.

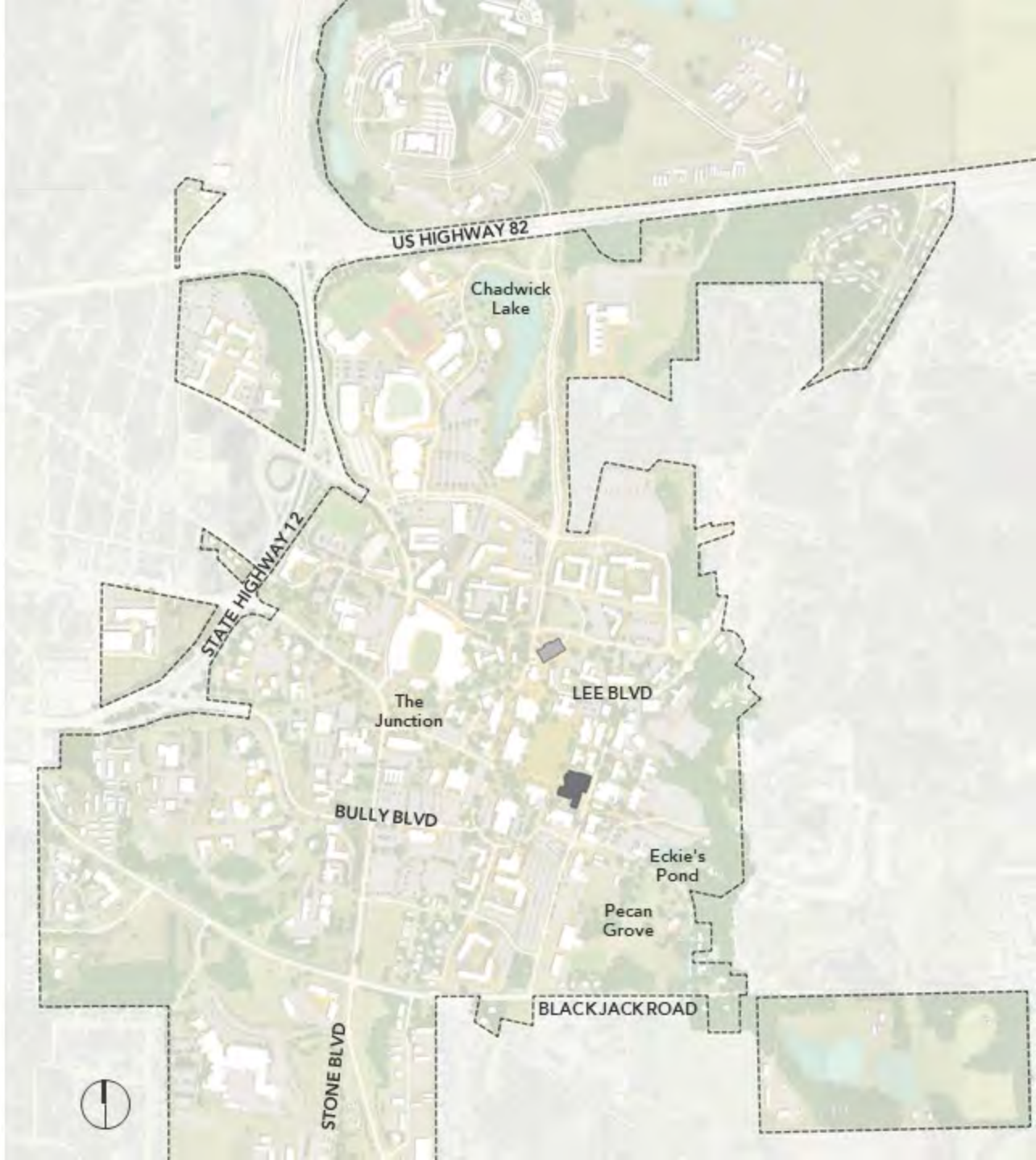
Mitchell Library

Space Distribution



■ Mitchell Library **173,631 ASF**

■ Old Main Academic



Mitchell Library

What We Heard:

1. Lack of **collaborative learning and exhibition spaces** for students, other colleges, and the community.
2. Need to provide a centrally **accessible academic research and learning experience** across all platforms without utilizing off-campus storage space.
3. **Growth in special collections**; more museum & exhibit space needed.
4. Potential to move **special collections** to less central location potentially in partnership with graduate studies.
5. Student success task force looking at expansion for **Center for Teaching and Learning.**
6. Mitchell Library is a **central entry point into research and scholarship**
7. Planning for **technology** is important

Observations / considerations:

1. Provide/rethink space for students. Heavy usage of the Mitchell Library and Old Main Academic.
2. Centrality and visible support structure is important.
3. Desire to demonstrate an outward facing commitment to the faculty and the State; access and parking are important.
4. Looking for ways to partner with Colleges and Units at MSU.
5. Given the success of the Partnership Middle School, may find a fruitful partnership with the Starkville Public Library.

Campus Life - What We Heard

Colvard Union

- Lack of formal meeting space for student organizations
- Lack of space for Holmes Cultural Diversity Center
- Lack of informal gathering space
- Students like outdoor spaces (between Colvard and McCool)
- Lack of space for dining
- Lack of countering space (multi-cultural center)

Residential

- Opportunity to rethink Herbert Hall
- College View phase 2 & 3 planned
- Lack of space for Honors College
- Opportunity for area between Zacharias Village and campus core (McKee Hall, Sessum Hall, Critz Hall)
- Prefer a hybrid residential model
- Butler Guest House limits Athletic expansion

Dining

- Fresh Food added to center of campus
- Perry in need of major renovation
- Lack of Faculty Club space

Recreation

- Lack of recreation space (NIRSA recommendation of 210,000sf compared to at 150,000sf existing)
- Lack of sufficient space in Sanderson and parking
- Lack of dedicated Faculty and Staff space
- Poor field drainage and lack of lighting hamper ability to use outdoor fields

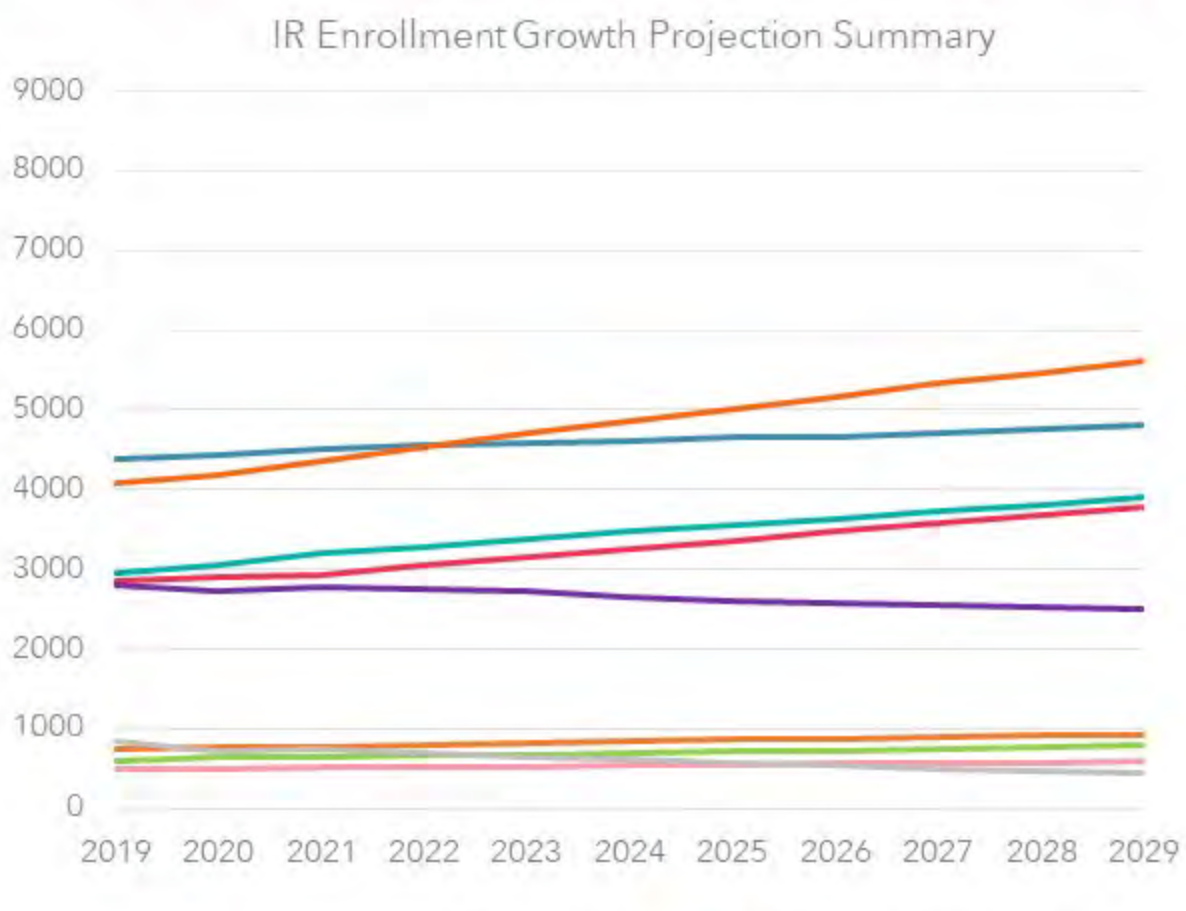
Other

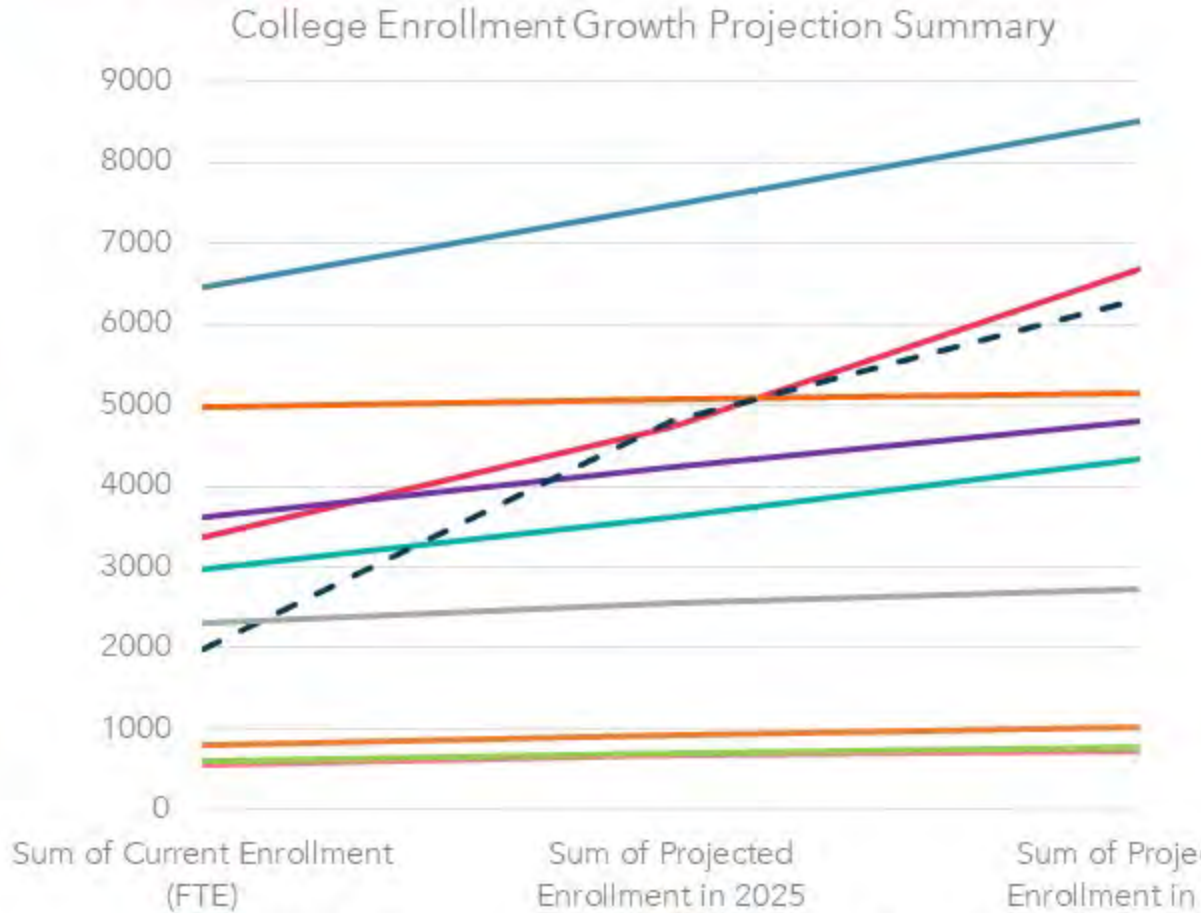
- Lack of central and accessible counseling space
- Lack of study space in the library
- Lack of faculty scholarship & affinity space
- Lack of auditorium for 2,500-3,500 people

04

Overall Needs

Enrollment Comparison by College





Considerations and Opportunities

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Thank you

SASAKI

Memorandum

Date	03/08/2021
To	Saunders Ramsey
Cc	Greg Havens
From	Ben Zunkeler (Sasaki)
Project Name	Mississippi State University Master Plan Update
Project No.	08137.00U

Re: Space Question

We are considering renovating some space in Allen Hall and trying to decide who is the priority. Give 6 new classrooms, who would you divide them among considering only the two below:

- *Arts & Sciences*
- *College of Education.*

Example: 4 to A&S, 2 to COE

Same question….given 8 new classrooms, how would you divide them among these two groups?

Saunders,

Our analysis indicates that there is no campus-wide need for additional classrooms based on the Registrar's Fall 2019 data; however, there is a need to offer more classrooms with 1-15 seats and 25-30 seats. Please see below for a summary of our optimization analysis as presented in the meeting today with the President and Vice President's. Please note that the analysis focuses on the overall quantity of classroom space and does not address the qualitative or technological issues.

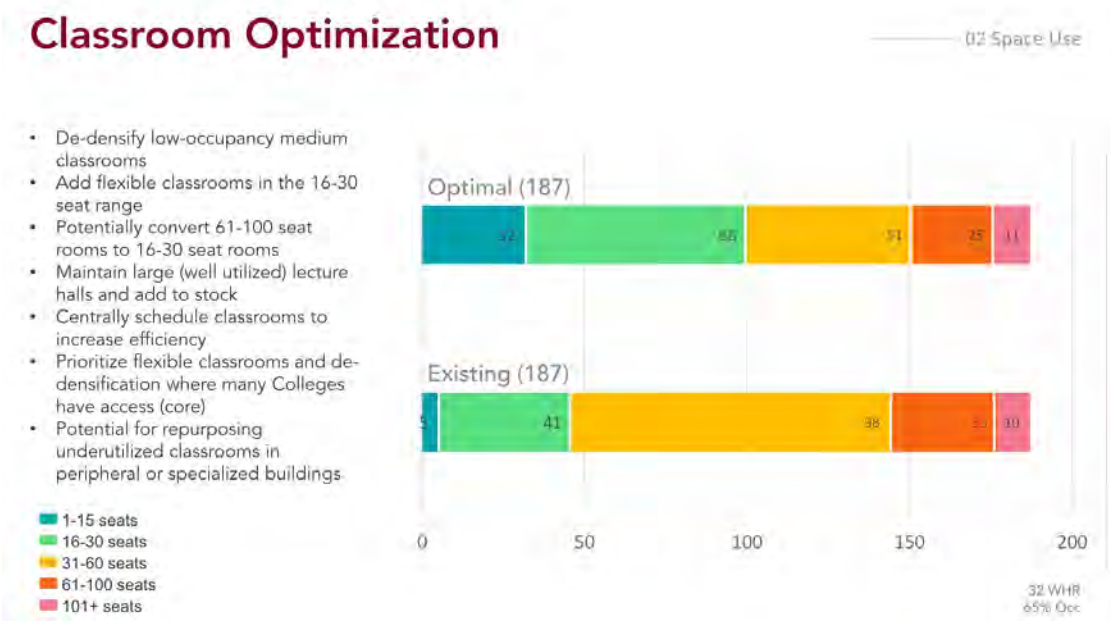
The data indicate that there is a deficit of one large lecture hall and that many courses currently are scheduled in rooms larger than the course size demands. Our big-picture recommendation, at this stage, is to de-densify (remove seats from) centrally located 30-60 seat rooms that are suitable for upgrades with the latest technological capabilities and furnishings. An alternative approach is to convert existing 30-60 seat rooms to other uses and create new, centrally located and scheduled 1-15 seat or 25-30 seat classrooms with the latest technology and furnishings. Classrooms generally should be sized to provide 25-30asf per seat.

This recommendation is based on the Registrar's goal to **centrally schedule** courses rather than assigning classrooms to specific colleges or departments. Our understanding is based on discussions with the Registrar and the scheduling data.

We understand that there may be good reason to provide additional / renovated classrooms in Allen in response to qualitative concerns and the specific pedagogical needs of the colleges. As you consider renovations in Allen Hall, we would suggest that you consider:

- What spaces are being removed to accommodate these classrooms?
- Will the classrooms be clustered or distributed throughout the building?
- Does this present the best opportunity to create centrally located 1-15 seat or 25-30 seat classrooms with the latest technology and flexible furnishings?
- How does this fit into the context of deprioritizing Allen over the long-term?
- What is the cost to renovate space within Allen versus other core classroom facilities?

Please let us know if you have any questions or would like to discuss our observations / findings.



SASAKI

Memorandum

Date	03/19/2021
To	Saunders Ramsey
Cc	
From	Sasaki Associates, Inc.
Project Name	Mississippi State University Master Plan Update
Project No.	08137.00U

Re: MSU Kinesiology and Autism Services

Saunders,

As noted in the Space Analysis Memo 1, sent 03/08/2021, our analysis indicates that there is no campus-wide need for additional classrooms based on the Registrar's Fall 2019 data; however, there is a need to offer more classrooms with 1-15 seats and 25-30 seats. Our recommendation, at this stage, is to de-densify (remove seats from) centrally located 30-60 seat rooms that are suitable for upgrades with the latest technological capabilities and furnishings. An alternative approach is to convert existing 30-60 seat rooms to other uses and create new, centrally located and scheduled 1-15 seat or 25-30 seat classrooms with the latest technology and furnishings. Classrooms generally should be sized to provide 25-30 asf per seat. This recommendation is based on the Registrar's goal to **centrally schedule** courses rather than assigning classrooms to specific colleges or departments. Our understanding is based on discussions with the Registrar and the scheduling data.

Additionally, we recommend assessing non-centrally scheduled space such as conference rooms for use as flexible classroom space, particularly those that fit the above noted parameters.

The schematic design phase plans and program received for the Mississippi State University Kinesiology and Center for Student Support and Autism Services indicate that among other program elements;

- 6,100SF are assigned to four (4) 60 seat and one (1) 30 seat classrooms for the Kinesiology Program;
- 820SF are assigned to one (1) 40 seat classroom for the Autism Program;
- 1,240SF are assigned to two (2) computer labs for the Autism Program; and
- 2,400SF are assigned to four (4) conference rooms for the Autism Program.

Analysis of McCarthy Gym existing classroom and class lab space and Fall 2019 Registrar Scheduling data indicates that the Kinesiology Program utilizes:

- one (48) seat centrally-scheduled classroom, with 33 Weekly Room Hours (WRH), 874SF, and 54.9% occupancy percentage;
- one non-scheduled classroom of 760SF;
- one (20) seat centrally-scheduled class lab with 26 WRH, 1475SF, 59% occupancy percentage; and
- one non-scheduled lab of 807ASF.

The existing weekly room hours and occupancy percentages of the scheduled spaces in McCarthy Gym indicate that while the classroom space is well utilized, meeting the target of 32WRH, the scheduled courses may be better accommodated in the standard 25-30 seat classroom described above.

An assessment of the Registrar's Fall 2019 scheduling data and the proposed Autism and Kinesiology Program indicate that centrally located and scheduled classrooms may more efficiently serve the programmatic needs of MSU, opposed to remote classrooms scheduled by individual programs. Additionally conference and computer lab spaces may be used for instructional spaces on a case-by-case basis. Multi-purpose spaces suitable for instructional and conference activities would contribute to space and cost efficiency goals for the Kinesiology and Autism Services Building as well as for the campus.

Please let us know if you have any questions or would like to discuss our observations / findings.

SASAKI

Memorandum

Date	6/18/2021
To	Jeremiah Dumas
From	Sasaki Associates, Inc.
Project Name	Mississippi State University Master Plan Update
Project No.	08137.00U

Re: Low Weekly Room Hours (WRH) and Unscheduled Spaces

Jeremiah,

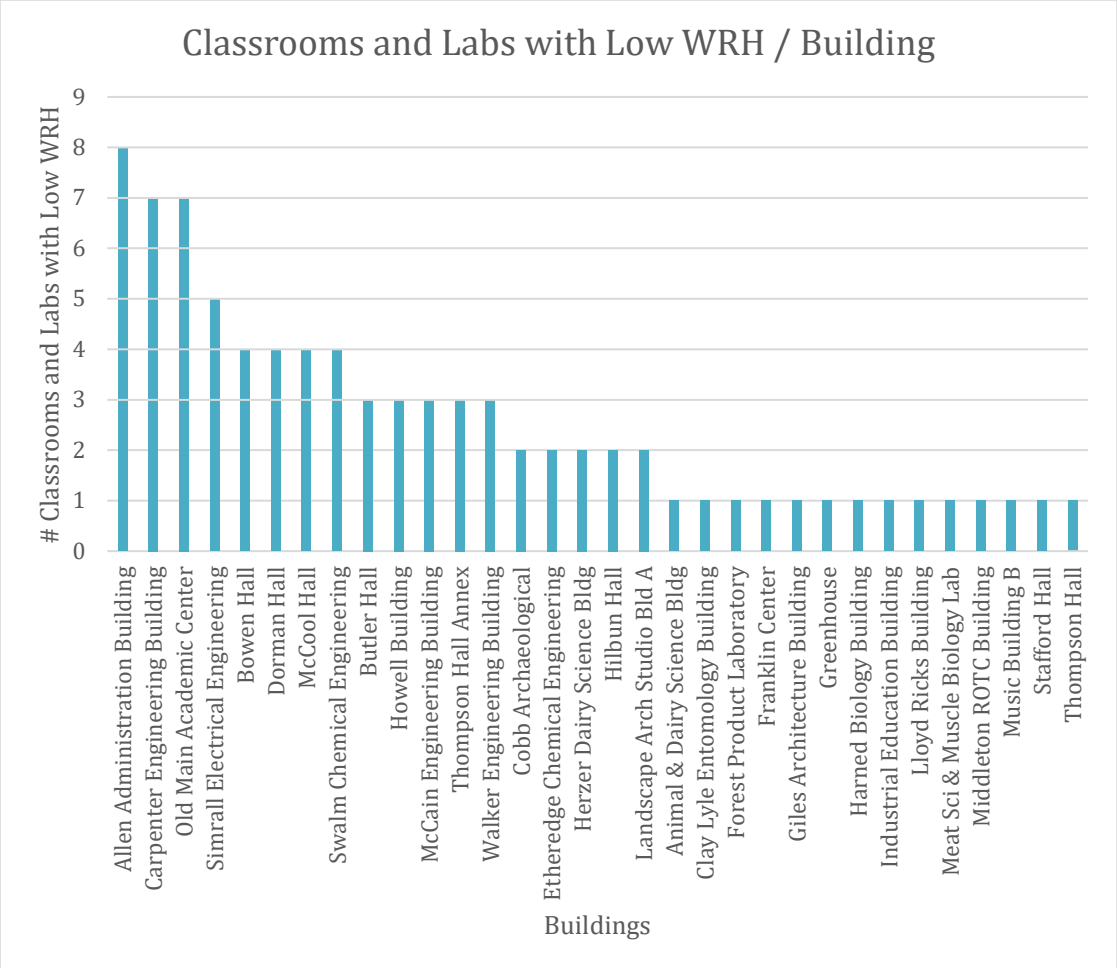
Per your request, we have analyzed the classrooms (FICM 110) and class labs (FICM 210) that:

- have low weekly room hours (WRH) or
- do not appear in the scheduling data provided by the Registrar but are indicated in the campus space inventory (Unscheduled Spaces).

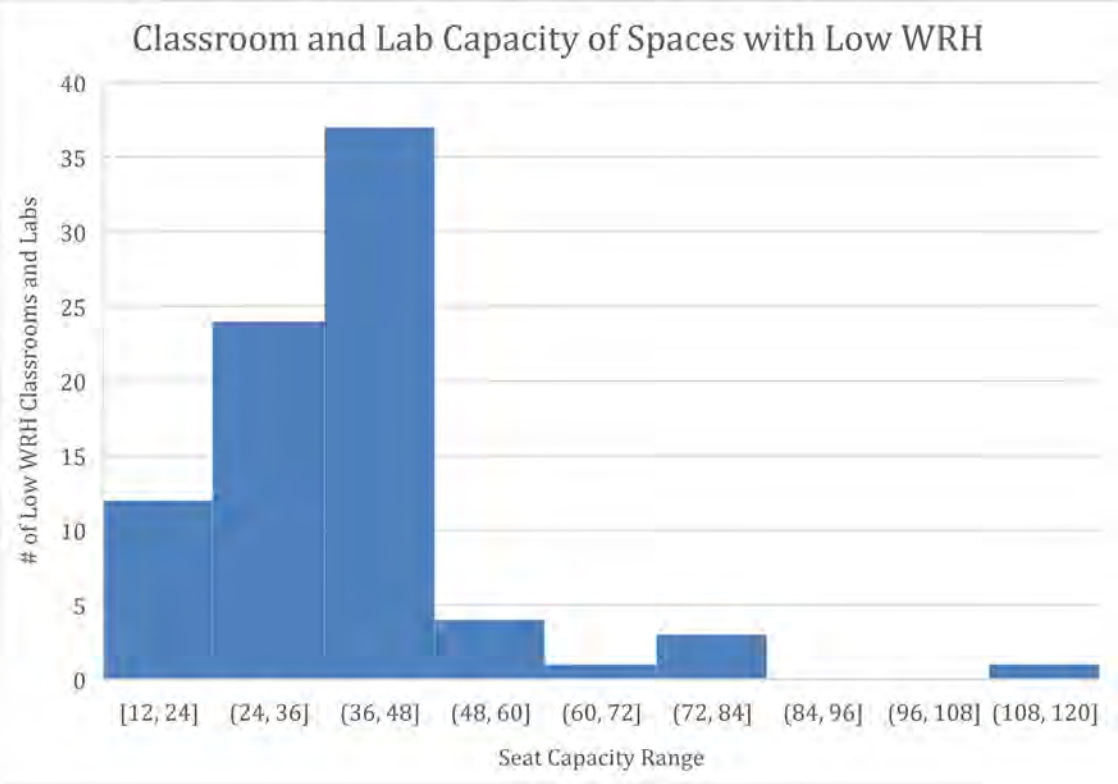
Low WRH classrooms are classified as less than 32 WRH. Low WRH class labs were not investigated for this memorandum. WRH are unknown for unscheduled classrooms and unscheduled class labs as they are not included in the scheduling data provided by the Registrar. Themes and takeaways follow each analysis section.

TRENDS OF LOW WRH SPACES

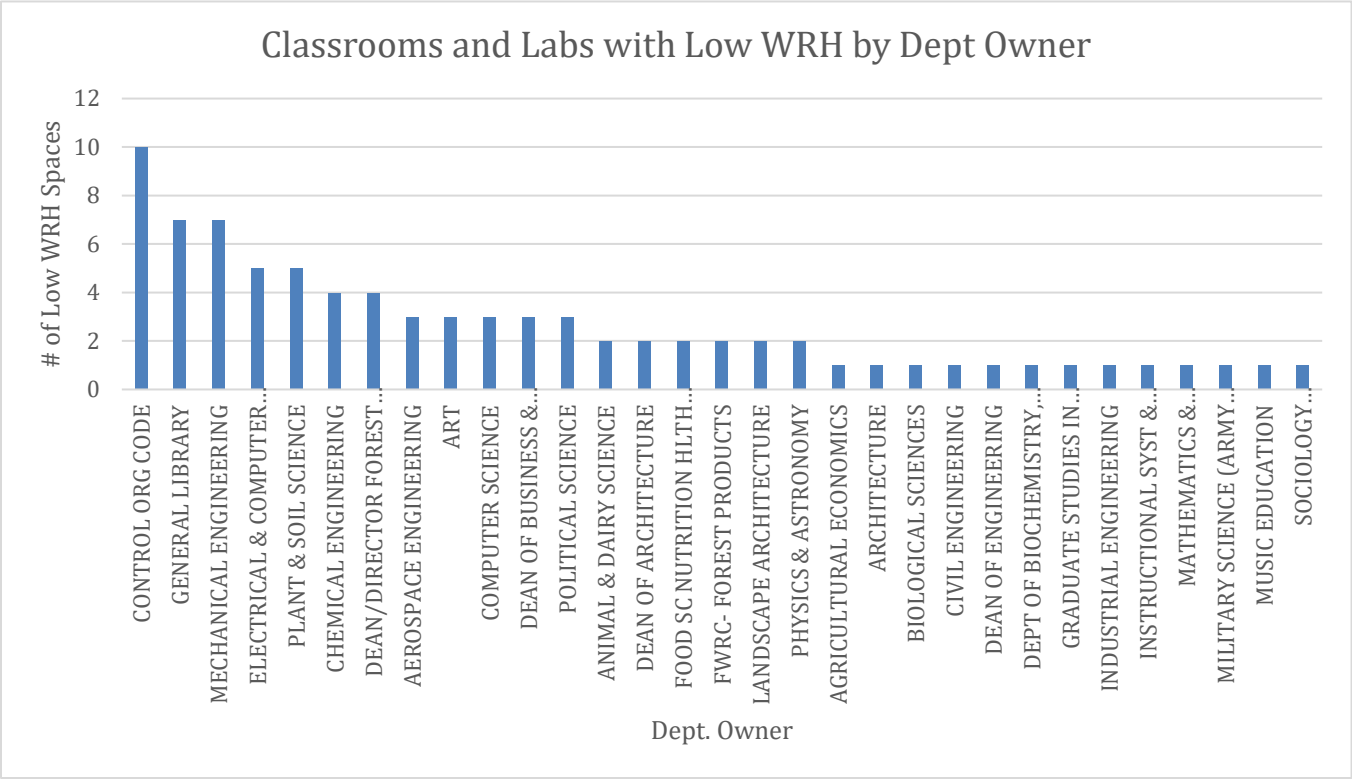
- Buildings with the most classrooms with low WRH include :
  - Allen Admin Building (8 rooms – 15,16,17,19,24,25,31,411)
  - Carpenter Engineering Building (7 Rooms – 101,103,104,111,307,308,309)
  - Old Main Academic (7 Rooms – 2030, 2050, 2090, 2110, 2130, 3030, 3070)



- Majority of classrooms with low WRH have between 30 and 50 seats.
    - 57 rooms with low WRH between 30 and 50 seats



- Most frequent users of the low WRH rooms include :
    - English (14 rooms – Bowen 108+160; Butler 102; Carpenter 101,111,307,308,309; OMA 2030,2050,2090,2130; Swalm 200+210)
    - Classical and Modern Languages and Literature (6 rooms – Allen Admin 19, Howell 105, OMA 2110 + 3070, Simrall 203 + 250)
    - Curriculum Inst. and Special Ed (4 rooms – Allen Admin 15, Carpenter 103 +104, Dorman 120)
- Main department owners of rooms with low WRH:
    - Control Org Code (10 rooms – Cobb 201+203; Howell 102; Allen 15,16,17,19,24,25 and 31)
    - General Library (7 rooms – Old Main 2030, 2050, 2090, 2110, 2130, 3030, 3070)
    - Mechanical Engineering (7 rooms – Carpenter 101,103, 104, 111, 307,308, 309)
    - Electrical and Computer Engineering (5 rooms – Simrall 102, 106,129, 203 and 250)
    - Plant and Soil Science (5 rooms – Greenhouse 104; Dorman 120, 134, 152,156)



- Patterns of rooms with WRH under 20 hours per week:
    - 10 Classrooms with less than 10 hours scheduled per week (Stafford 100B, Giles 122, Cobb 203, Landscape Arch 209 + 210, Butler 102, Etheredge 223A, Dorman 120, Forest 5202, Middleton 112)
    - Departments with the most classrooms scheduled under 20 WRH: Mechanical Engineering (5 classrooms), Art (3 classrooms), Control Org Code (3 classrooms), and Forest & W Research (3 classrooms)
    - Sizes of rooms scheduled under 20 WRH: 4 rooms under 20 seat capacity, 11 rooms between 20 - 30 seat capacity, 10 rooms between 30 - 40 seat capacity, 10 rooms between 40 - 50 seat capacity, and 5 rooms between 50 - 80 seat capacities.
    - Max users of classrooms with less than 20 WRH: English is the max user for the most rooms, with 8 rooms.

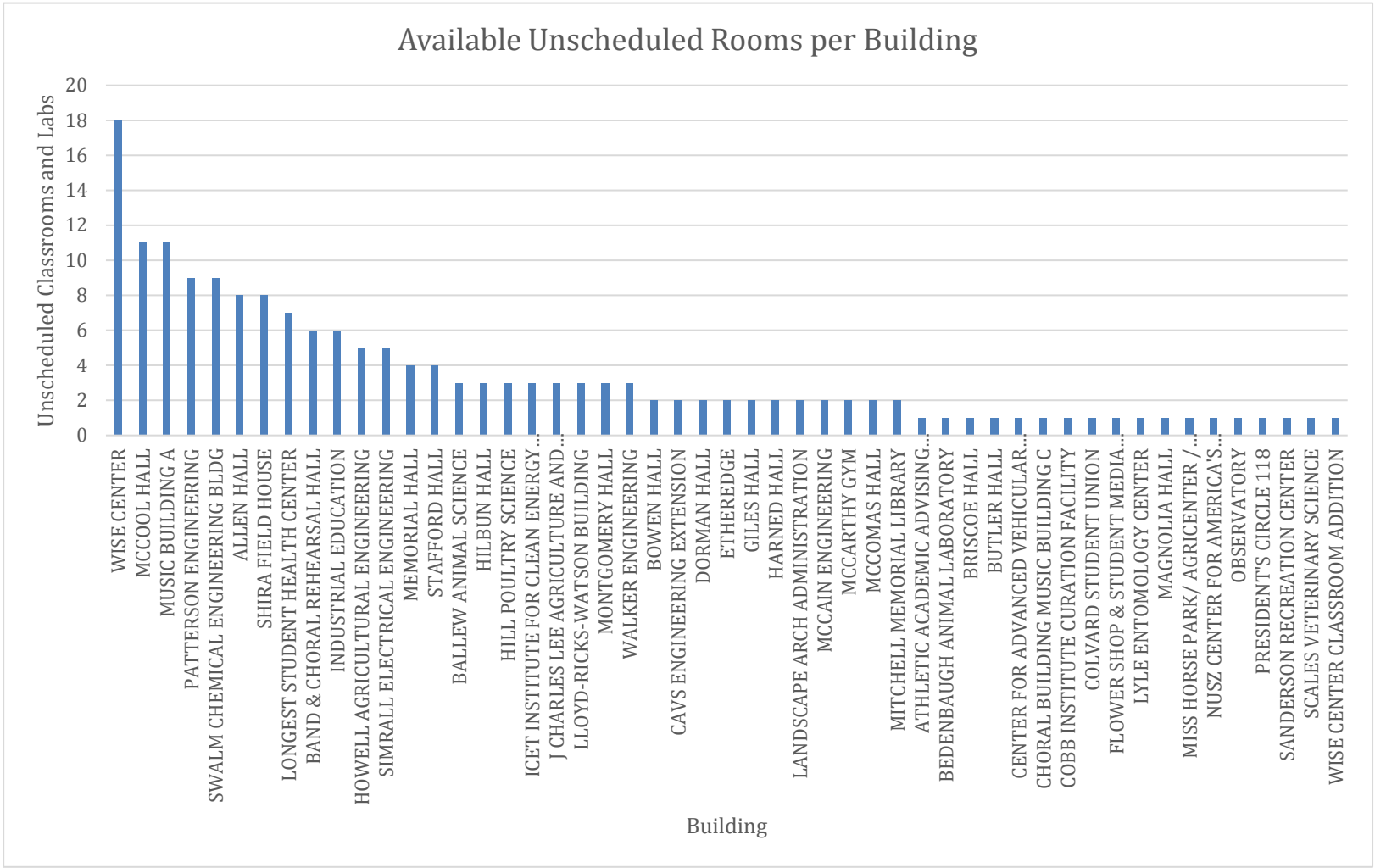
Takeaways for Low WRH Space Analysis

1. Mechanical Engineering is indicated as the departmental owner of may spaces with low utilization rates, and many that are being used mostly by other departments (i.e. English)
2. Many of the underutilized rooms are larger rooms with seat capacities of 30 or more. This aligns with our recommendation to prioritize smaller, centrally scheduled and flexible rooms addressed in Space Analysis Memorandum #1.
3. Humanities are the main users of the larger underutilized rooms. There may be opportunity to encourage other departments and programs to utilize these rooms if the layout and furnishings support their teaching style. Otherwise, please refer to Takeaway #2.

TRENDS OF UNSCHEDULED SPACES

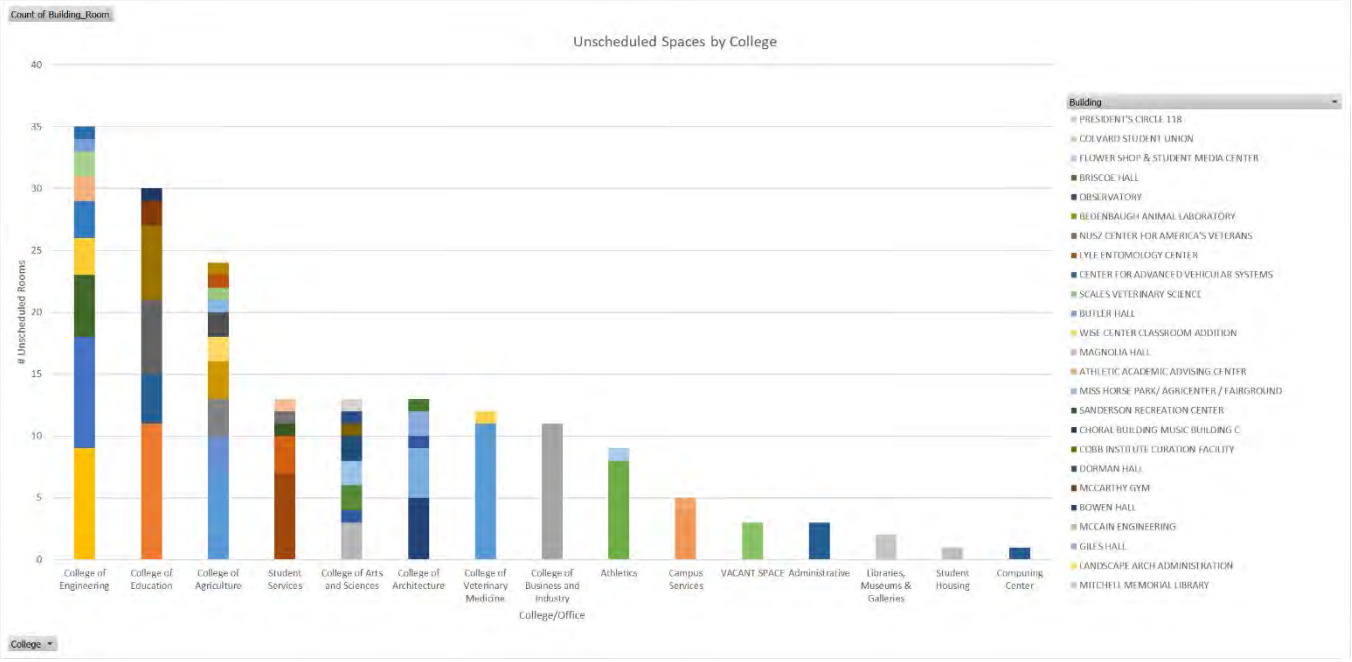
- Buildings with the most unscheduled classrooms:
    - Wise (18 rooms – 112, A1446A, A1744, A2239, L2022, L2503, L2506, L2508, L3003, L3016, L3108, L4036, L4043, L4044, L4045, L4046, L4058, L4060)
    - McCool Hall (11 rooms – 100A, 102, 104, 208B, 214, 216, 218, 220, 223, 224, 233)
    - Music (11 rooms – 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11)
    - Patterson Engineering (9 rooms – 100C, 102, 108, 109, 201E, 201H, 203, 205B, 219)
    - Swalm Chem (9 rooms – 60,70,71,72,73,75,77,90,150)

- Allen Hall (8 rooms – 249, 251, 253, 255, 256, 265, 266, 268)
- Shira Fields (8 rooms – 232A, 233, 234, 236, 239, 240, 241, 242)



- Colleges with the most unscheduled rooms include:
  - College of Engineering (35 classrooms and labs)
    - Patterson 100c, 102, 108, 109, 201E, 201H, 205 B, 203, 219
      Cavs Engineering Extension 109, 110
      Swalm Chemical 60, 70, 71, 72, 73, 75, 77, 90, 150
      Walker Engineering 115, 123, 227B
      Butler Hall 200
      Center for Advanced Vehicular Systems 2200
      ICET Institute 200, 202, 250
      Simrall 302, 311, 327, 420, 427
      McCain 135, 375

- College of Education (30 classrooms and labs)
    - Band and Choral Rehearsal Hall 118, 124,126, 127, 128, 129
      Allen Hall 249, 251, 253, 256
      McCarthy Gym 101, 117
      Industrial Education 115A, 118, 119, 152, 201, 254
      Choral Music Building 119
      Music Building 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
- College of Agriculture (24 classrooms and labs)
    - Ag and Bio Engineering 100, 131, 141
      Miss Horse Park 104
      Lloyd-Ricks-Watson 1, 103, 110
      Scales Veterinary 103
      Wise Center L4036, L4043, L4044, L4045, L4046, L4058, L4060
      Lyle Center 121
      Bedenbaugh 104
      Landscape Arch C104, C109
      Dorman 348
      Hill Poultry Science 116, 117, 130



Takeaways for Unscheduled Spaces

1. Unscheduled Spaces mainly consist of rooms with specialized uses (e.g. chemistry teaching labs) that are far from the core of campus (as defined by proximity to the drill field).

2. It is recommended that the usage of these spaces be tracked both for consistency of policy making and for evaluating if these spaces are being used for the highest and best use or if there is potential for conversion to other uses (e.g. research labs).

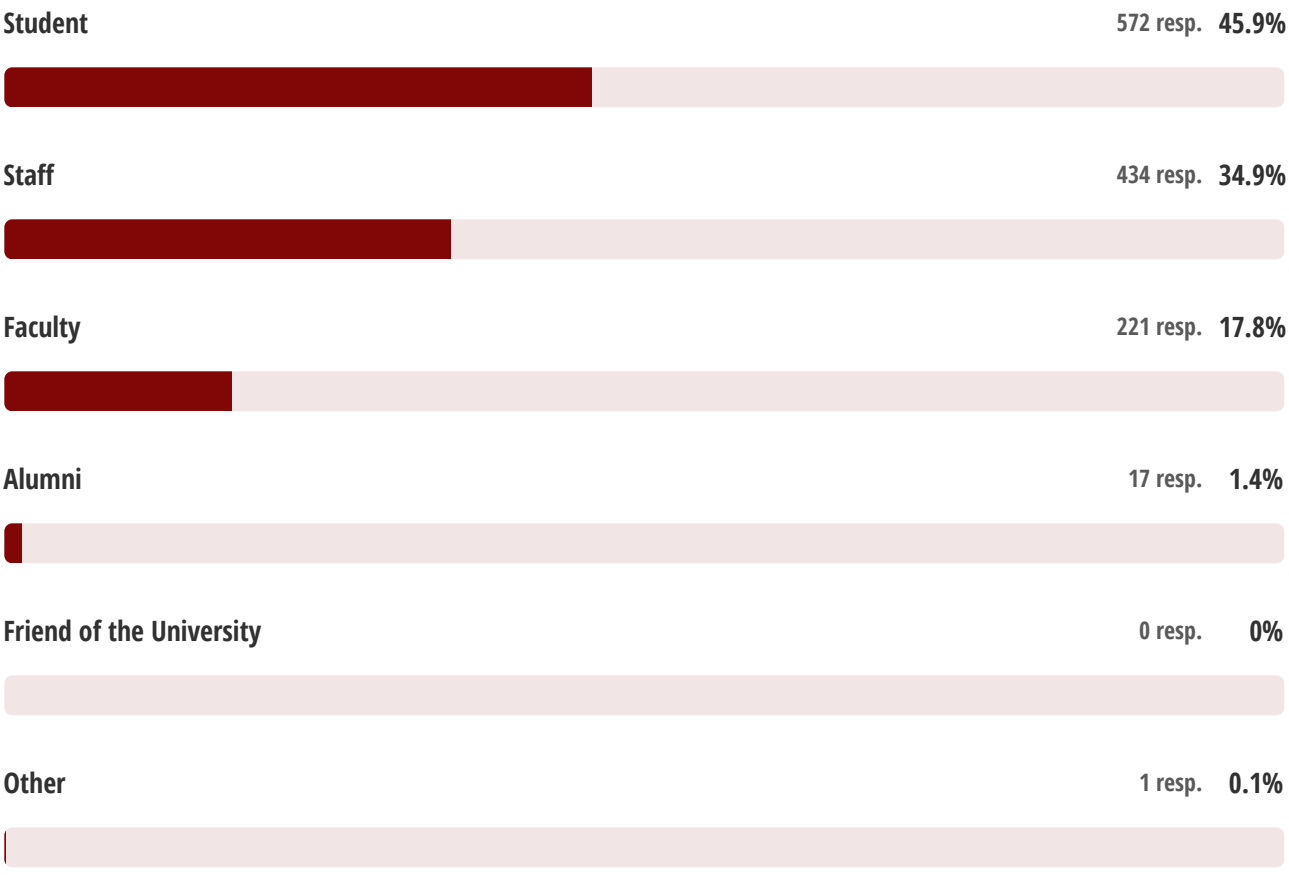
Engagement Analysis

MSU Plan Update

1,256 responses

What is your primary connection to MSU?

1245 out of 1256 answered



Which overall themes are most important to you?

1201 out of 1256 answered

Optimize space use and accommodate space needs

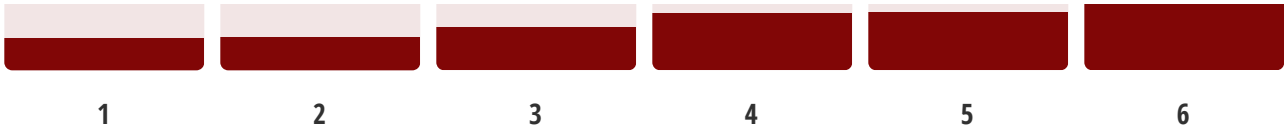
1	2	3	4	5	6
29.1%	26%	18.8%	12.2%	8.8%	5%
350	312	226	147	106	60

Support on campus research

1	2	3	4	5	6
15.7%	15.2%	17.2%	17.8%	18.9%	15.2%
188	183	206	214	227	183

Enable hybrid learning opportunities

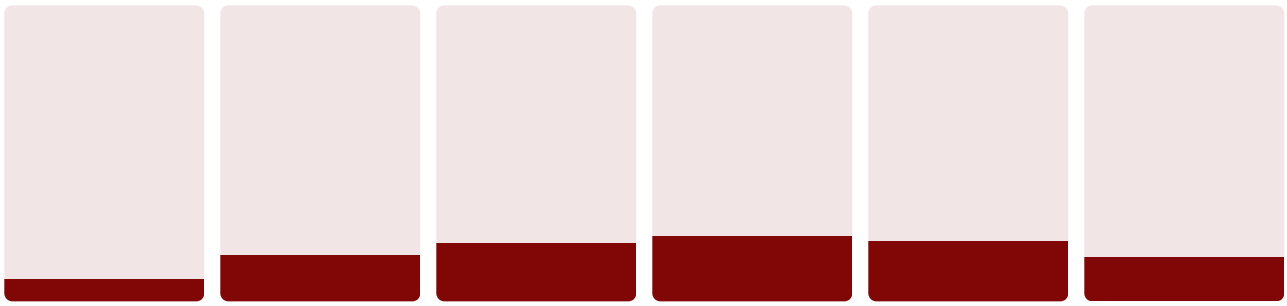
1	2	3	4	5	6
11%	11.2%	14.5%	19.2%	19.5%	24.6%
132	134	174	231	234	296



1 2 3 4 5 6

Create spaces for collaboration across campus

1	2	3	4	5	6
7.5%	15.6%	19.7%	22%	20.4%	14.8%
90	187	237	264	245	178



1 2 3 4 5 6

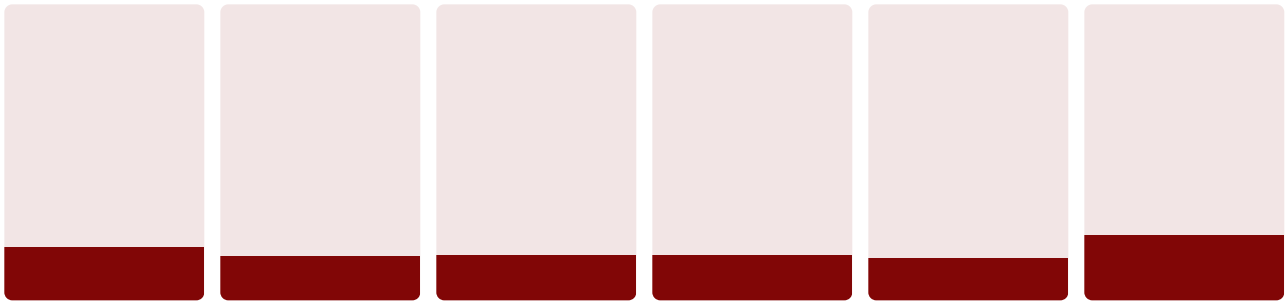
Expand student life and student support networks on campus

1	2	3	4	5	6
18.7%	17.1%	14.5%	13.5%	18%	18.2%
225	205	174	162	216	219

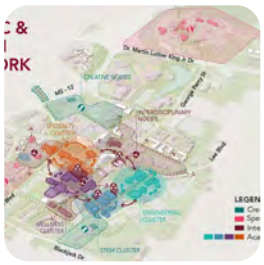
1 2 3 4 5 6

Prioritize health and sustainable space and growth

1	2	3	4	5	6
18%	15%	15.3%	15.2%	14.4%	22.1%
216	180	184	183	173	265



1 2 3 4 5 6



Which academic and research themes are most important to you?

1171 out of 1256 answered

Creative nodes

1	2	3	4
17.8%	29.7%	27.9%	24.5%
209	348	327	287

Specialty Nodes

1	2	3	4
16.6%	22.7%	33.2%	27.5%
194	266	389	322

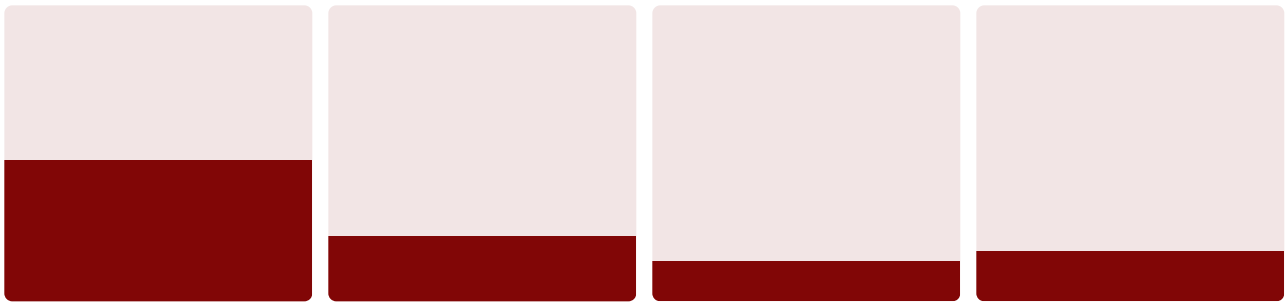
Interdisciplinary Nodes

1	2	3	4
17.8%	25.5%	25.4%	31.2%
209	299	298	365

1 2 3 4

Academic Clusters

1	2	3	4
47.7%	22%	13.4%	16.8%
559	258	157	197



1 2 3 4

Which campus life themes are most important to you?

1182 out of 1256 answered

Social gathering axis

1	2	3	4	5	6
27%	26.5%	19.2%	12.9%	7.6%	6.9%
319	313	227	152	90	81

Outreach corridor

1	2	3	4	5	6
20.1%	21.2%	21.3%	17.6%	12.5%	7.2%
238	251	252	208	148	85

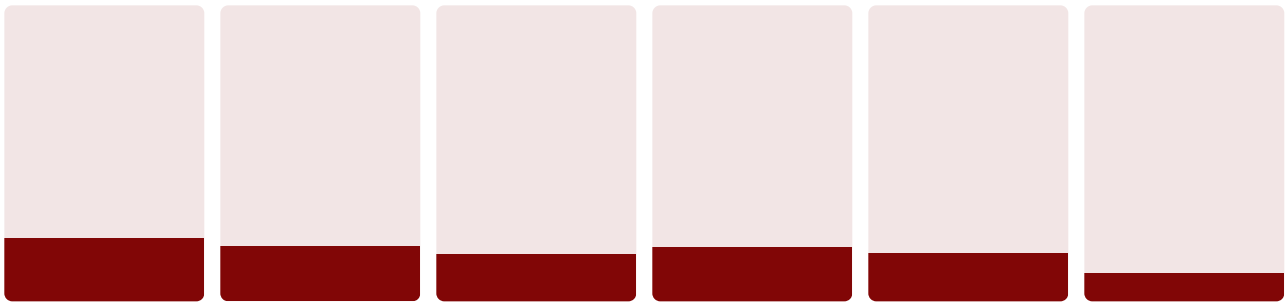
Stewardship

1	2	3	4	5	6
9.1%	10.1%	16.8%	23.1%	23.8%	17.2%
107	119	199	273	281	203

1 2 3 4 5 6

Wellness link

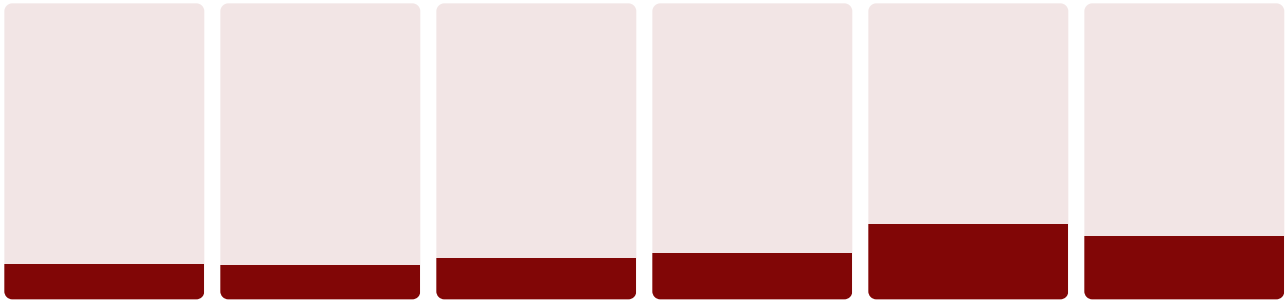
1	2	3	4	5	6
21.4%	18.5%	15.9%	18.3%	16.3%	9.6%
253	219	188	216	193	113



1 2 3 4 5 6

Embedded support

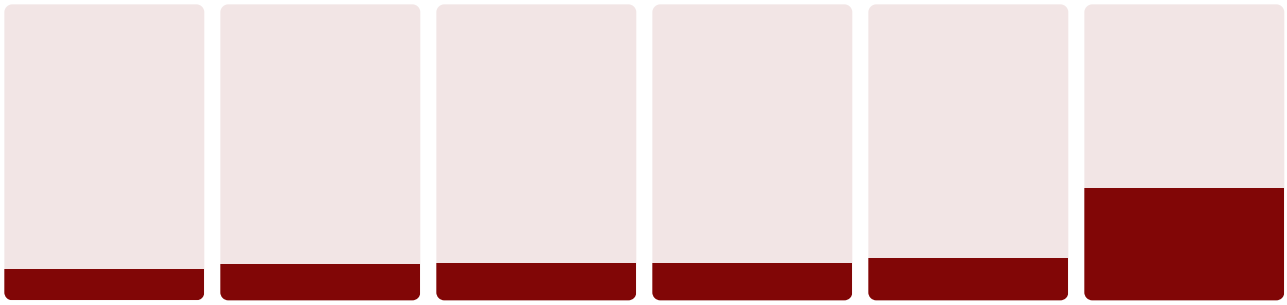
1	2	3	4	5	6
12%	11.5%	14%	15.6%	25.5%	21.3%
142	136	166	184	302	252



1 2 3 4 5 6

Residential surroundings

1	2	3	4	5	6
10.4%	12.2%	12.7%	12.6%	14.2%	37.9%
123	144	150	149	168	448



1 2 3 4 5 6

Which landscape themes are most important to you?

1142 out of 1256 answered

Outdoor space network

1	2	3
17.4%	40%	42.6%
199	457	486

Outdoor gathering spaces

1	2	3
35.8%	32.1%	32%
409	367	366

Pedestrian network

46.8%	27.8%	25.4%
534	318	290

1 2 3

Which mobility themes are most important to you?

1175 out of 1256 answered

Vehicular network

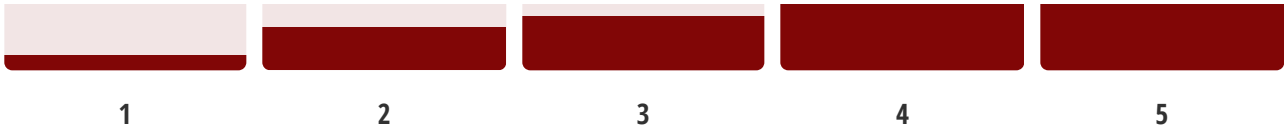
1	2	3	4	5
46.9%	21.7%	11.7%	10.1%	9.5%
551	255	138	119	112

Transit network

1	2	3	4	5
9.4%	23.7%	32.2%	23.4%	11.3%
111	278	378	275	133

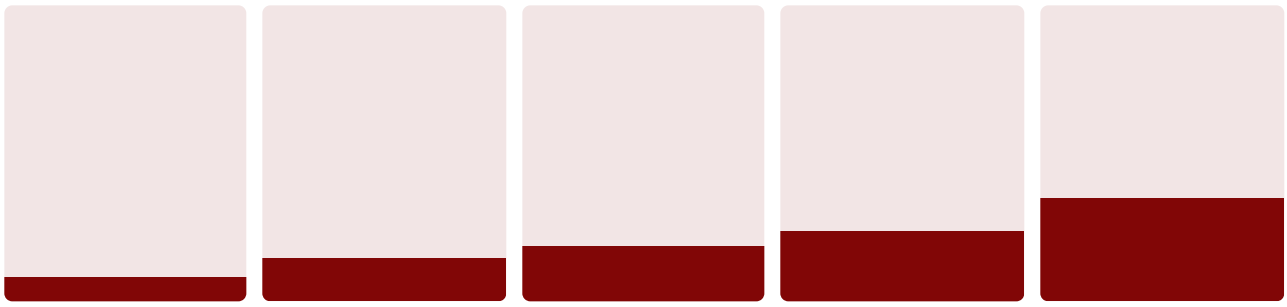
Bike network

1	2	3	4	5
5.2%	14.5%	18.5%	29.6%	32.3%
61	170	217	348	379



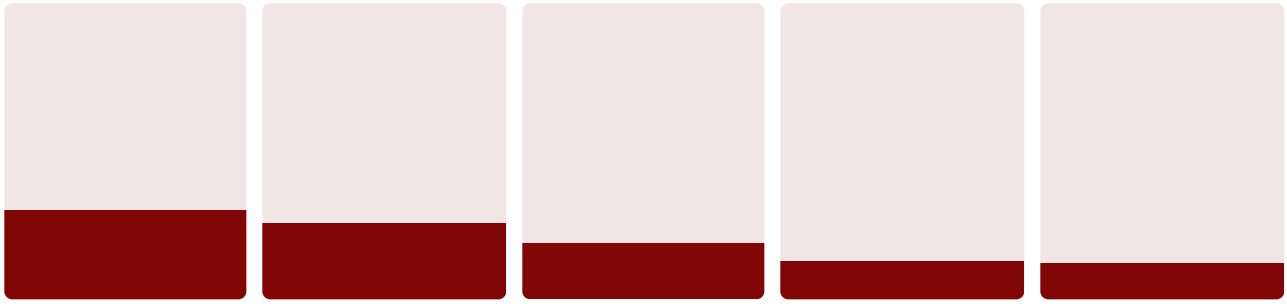
Campus gateways

1	2	3	4	5
8.3%	14.5%	18.7%	23.8%	34.7%
97	170	220	280	408



Pedestrian network

1	2	3	4	5
30.2%	25.7%	18.9%	13%	12.2%
355	302	222	153	143



Which sustainability themes are most important to you?

948 out of 1256 answered

Shade strategy

1	2	3
53.6%	39.8%	6.6%
508	377	63

Optimal building orientation

1	2	3
37.4%	30.8%	31.8%
355	292	301

Urban heat island

1	2	3
9%	29.4%	61.6%
85	279	584

1 2 3

Mobility, Water, and Landscape Master Plan Update

MISSISSIPPI STATE UNIVERSITY

MISSISSIPPI STATE UNIVERSITY MASTER PLAN UPDATE

January 2022

Prepared By:

NEEL-SCHAFFER
Solutions you can build upon

Formal Cover Page (if needed)

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Section 1:

Parking Review

Parking Review

1.0 PURPOSE

This section summarizes the trends and assessment of parking on the Mississippi State University campus.

2.0 PREVIOUS PARKING STUDIES

Two previous parking related reports were found. Both reports were submitted by Timothy Haahs & Associates with the first report being a parking study performed in the fall of 2015. This report summarizes the parking inventory, demand, and occupancy at that time. The report stated that occupancy above 85 to 90 percent is generally considered full by industry standards. It then determined that the Northeast, Greek, Southeast, and South parking zones of campus, as shown in ***Figure 1-1***, were at or above this occupancy threshold during peak hours. The overall campus wide occupancy during the peak hour was determined to be 81%. The study then went on to state that the Greek and South zones experienced a parking shortage during the peak hours. The student residential permit holders were also determined to experience peak hour parking shortages. The report then determined future parking adequacy predicting that without additional parking, the overall campus would experience a parking inadequacy as early as 2021.

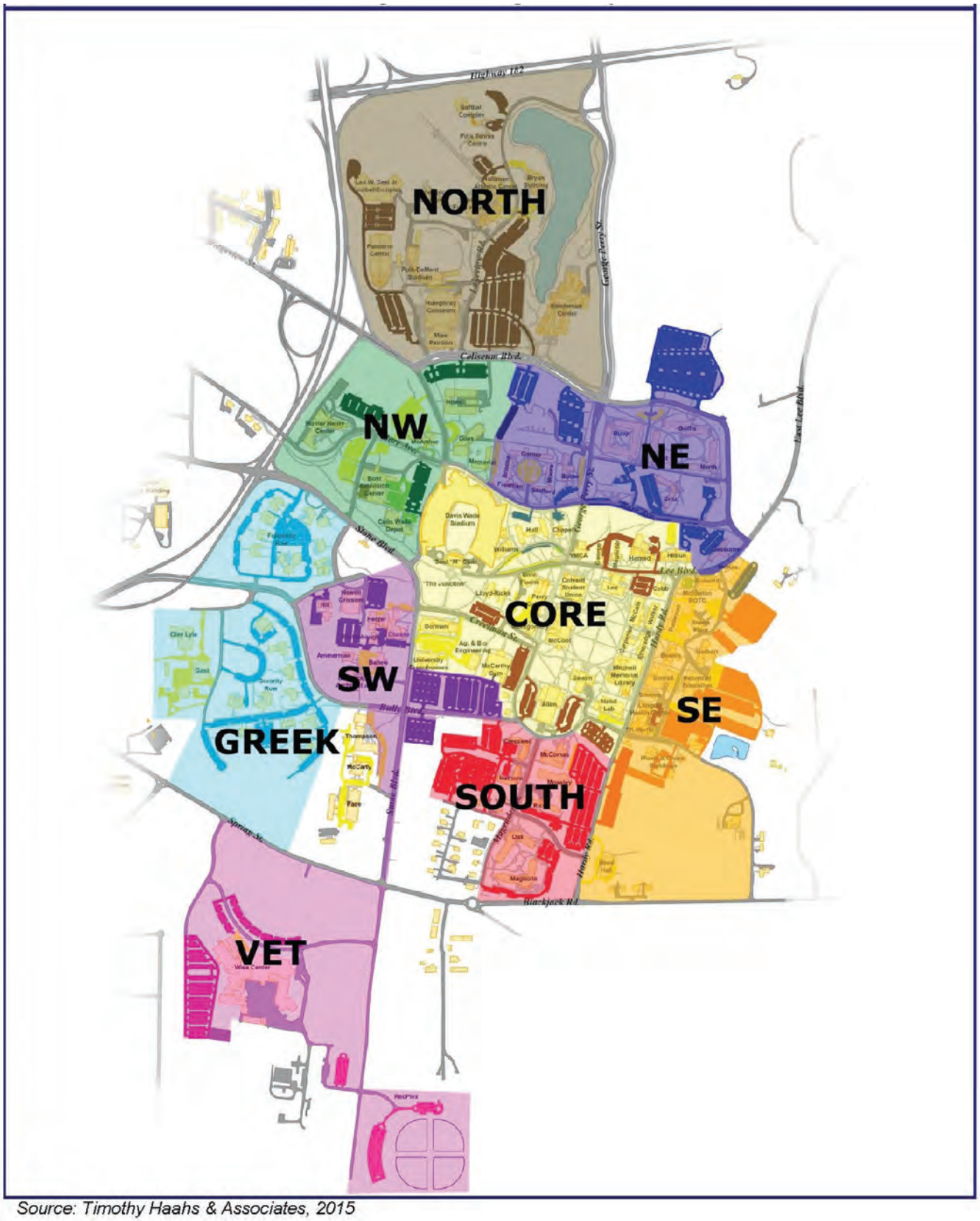
The second report focused more on best practices and was completed in 2017. Most of this report focuses on operational improvements such as digital permitting, pay by phone, visitor information areas, and enhanced signage; however, it does also recommend removing multi-zone permits to discourage movement from one area to another and to remove shared user group parking lots to eliminate confusion and traveling between multiple lots looking for more desirable parking.

2.1 PARKING DATA

Employment and enrollment data was obtained from Mississippi State University to determine growth rates of the campus headcount as shown in ***Table 1-1***. This 1.5% historic growth rate closely matches the University's 10-year projections which from the data provided uses an approximate growth rate of 1.7%.

Table 1-1 Employment and Enrollment Growth Rate

	2015 Fall	2016 Fall	2017 Fall	2018 Fall	2019 Fall	2020 Fall	Annual Growth Rate
Students	20429	21127	21353	21328	21601	22272	1.7%
Faculty	1300	1324	1346	1364	1388	1413	1.7%
Staff	3621	3597	3428	3462	3581	3691	0.4%
Total	25350	26048	26127	26154	26570	27376	1.5%



Source: Timothy Haahs & Associates, 2015

Figure 1-1 Timothy Haahs & Associates Parking Zones from 2015 Parking Study

The current parking inventory was also requested and is shown in *Table 2* along with the expected inventory once all current projects are completed as projected based on available plan sets including 2021 striping projects, Bulldog Way, the West Connector, and the new music building. A map of existing parking locations provided by parking services is shown in *Figure 1-2*.

Table 1-2 Parking Inventory

	COMMUTER	RESIDENCE	GREEK	STAFF	SERVICE	ADA	ANY VALID PERMIT	MOTORCYCLE	TIMED	RESERVED	VISITOR	Total
2020 Current Inventory	4200	3247	1331	2678	167	491	2444	113	290	154	22	15137
Projected Inventory	4191	3303	1335	2691	167	499	2444	113	290	154	29	15216

In addition to the parking inventory information, MSU parking services provided historic permit sales data for 2015 to 2020 as shown in *Table 1-3*.

Table 1-3 Parking Permit Sales 2015-2020

Fiscal Year	2015	2016	2017	2018	2019	2020
Staff	3564	3494	3563	3584	3702	3632
Gated Staff	717	823	906	837	862	832
Resident North	1914	1865	2480	2517	2499	2508
Resident South	2171	2173	2123	2172	2226	1770
Greek North	710	733	777	1563	585	542
Greek South	--	--	--	--	1070	1080
Commuter North	2444	4008	4193	4136	4072	2874
Commuter South	435	461	502	570	591	581
Commuter East	3388	2500	2500	2399	2500	2750
Commuter West	2913	2199	2188	2200	2200	2230
Any Valid Permit	115	238	211	185	--	825
Graduate Assistants	1013	1035	1060	1110	1075	970
Total	19384	19529	20503	21273	21382	20594

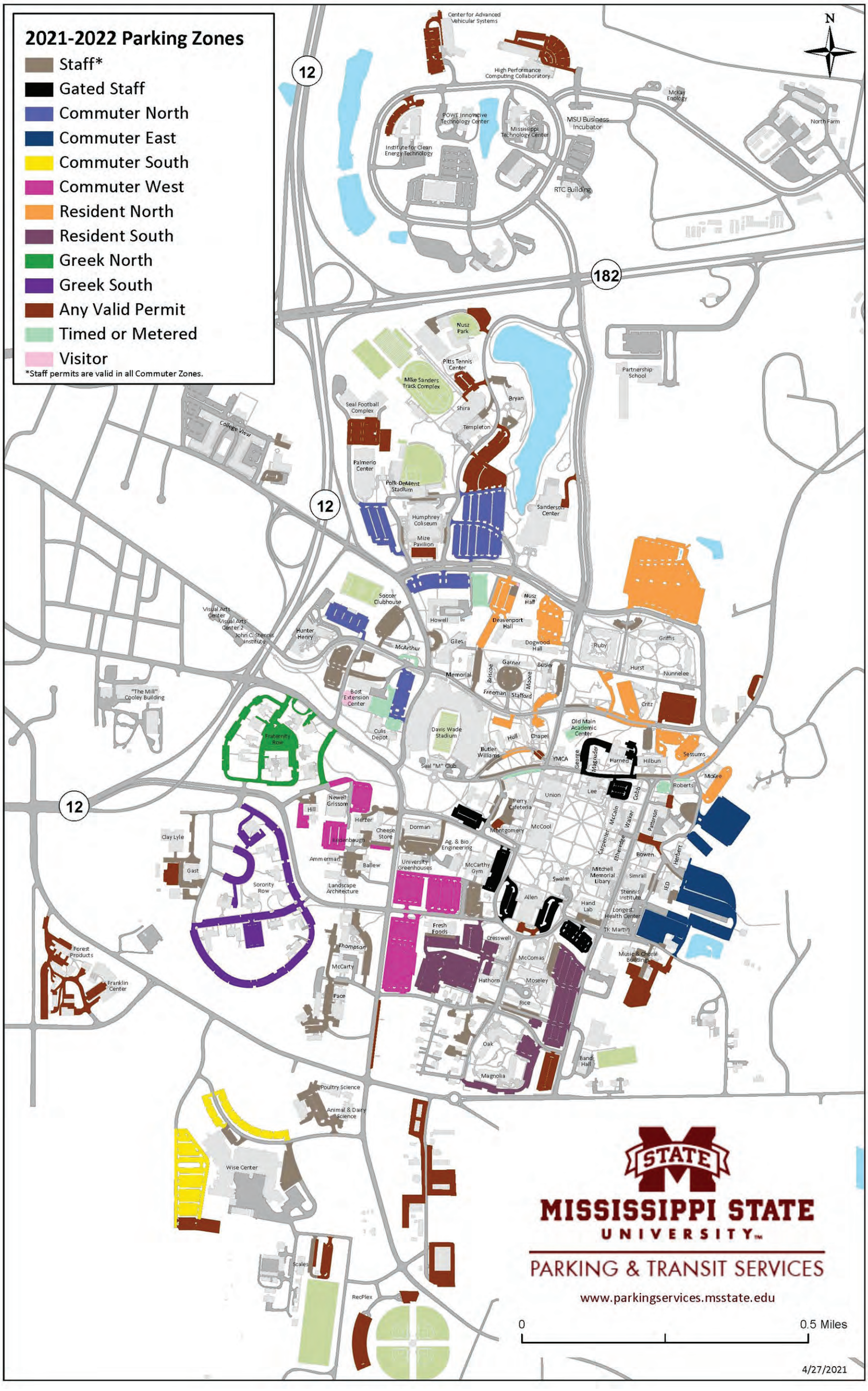


Figure 1-2 2021 Mississippi State University Parking Zones

In addition, Mississippi State University Student Affairs provided housing projections through the year 2030 as shown in *Table 1-4*. These counts do not appear to include Greek housing.

Table 1-4 Housing Bed Count Projections

Fiscal Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total Bed Count	5,466	5,466	5,376	5,168	6,224	6,276	6,576	6,576	6,576	6,576
Enrollment Total	22,226	22,671	23,124	23,586	24,058	24,539	25,030	25,531	26,041	26,562
Undergraduates	18,298	18,481	18,666	18,852	19,041	19,231	19,424	19,618	19,814	20,012
% Housed	30%	30%	29%	27%	33%	33%	34%	34%	33%	33%

3.0 PARKING TRENDS COMPARED TO 2015 REPORT

The data provided in the previous section was utilized to compare existing parking conditions to those described in the 2015 parking study performed by Timothy Haahs & Associates. To estimate the 2020 demand, it is assumed that the demand grows at the same rate as the headcount; therefore, the annual growth rate of 1.5% as shown in Table 1-1 was applied to the 2015 demand from the 2015 parking study to estimate a 2020 demand as shown in *Table 1-5* and *Table 1-6*.

Table 1-5 2015 Parking Study Zone 2020 Peak Hour Demand and Occupancy Estimate

Zone	2015 Inventory+	2015 Demand+	2015 Occupancy+	2020 Inventory	2020 Demand Estimate	2020 Occupancy Estimate
North	1571	1058	67%	1664	1140	68%
Northwest	1047	863	82%	867	930	**107%**
Northeast	1660	1410	**85%**	2303	1519	66%
Greek	1384	1271	**92%**	1586	1369	**86%**
Core	1899	1545	81%	1934	1664	**86%**
Southwest	594	365	61%	1018	393	39%
Southeast	2293	1951	**85%**	1771	2102	**119%**
South	1393	1304	**94%**	1727	1405	81%
Veterinary	1166	713	61%	1249	768	61%
Total	13007	10480	81%	14119	11290	80%

+ Provided in 2015 Timothy Haahs & Associates Parking Study Report

Table 1-6 User Group 2020 Peak Hour Demand and Occupancy Estimate

User Group	2015 Inventory+	2015 Demand+	2015 Occupancy+	2020 Inventory	2020 Demand Estimate	2020 Occupancy Estimate
Faculty/ Staff	1475	1274	**86%**	1657	1372	83%
Student Residential	4249	3906	**92%**	4638	4208	**91%**
Student Commuter	4610	3644	79%	3663	3926	**107%**
Wise Center	725	612	84%	990	659	67%
Gated	717	508	71%	665	547	82%
Visitor	202	166	82%	315	179	57%
Any Permit	365	90	25%	1521	97	6%
Other Restricted	664	280	42%	749	302	40%
Total	13007	10480	81%	14198	11290	80%

+ Provided in 2015 Timothy Haahs & Associates Parking Study Report

This analysis shows that University parking as a whole is keeping up with the parking demand growth; however, there are some areas and user groups on campus that are most likely experiencing some parking inadequacies.

The northwest zone has lost approximately 120 parking space since 2015 and is estimated to have an occupancy rate over 100% meaning the area does not have enough parking spots to satisfy the peak hour demand. This area's issues will be further exacerbated with the start of the planned Bost Extension which will remove at least temporarily a large portion of the McArthur parking lot. The new 500 space North Garage will improve the overall parking in this area; however, these will all be timed spaces and will not directly replace or improve permitted parking.

The Greek zone has improved its occupancy rate from 2015 but is still right on the threshold of being completely full during the peak hour. Additional construction or generators in this area would most likely require additional parking to accommodate the increased demand.

The campus core is also sitting right on the threshold of being completely full during the peak hour; however, this portion of campus is planned to be moved closer and closer to a pedestrian and transit only with vehicular restrictions planned as early as this year with the closure of President's Circle. Parking in this area is mostly staff or gated staff.

The southeast zone has lost over 500 spaces due to construction projects recently making its current inventory less than the peak demand from 2015. The 2020 demand is expected to be over 300 higher than the actual inventory. While around 100 spaces are expected to be added

back post construction, the area is still expected to be over capacity. This area is highly desired commuter parking especially for engineering students as it is the closest commuter access to the majority of engineering buildings along Hardy Road.

In addition to the zones, the student resident and commuter user groups also appear to experience parking inadequacies.

The student resident user group is primarily served within the northeast and south zones. The south zone has improved vastly from 2015 to no longer be above the 85% occupancy threshold. This is mostly due to the addition of a new parking lot on the corner of Blackjack Road and Hardy Road; however, this lot is an any valid permit lot. The northeast zone also has improved through the addition of parking spaces due to the expansion of some parking areas; however, similarly the new Hightower parking lot is an any valid permit lot. In addition, the large resident parking areas in this zone are a significant distance from the newer residence halls, Deavenport and Dogwood, and the smaller parking areas near them have been reduced to allow room for the new north garage which will most likely be of limited benefit to resident parking. In addition, the number of student residents is expected to grow as the University is expected to add over 100 new beds as shown in *Table 1-4*. The student commuter group has lost almost 700 spaces from the 2015 count due to the construction in the southeast zone and the conversion of a large number of commuter spaces in the north zone to any permit spaces.

4.0 EXISTING SUMMARY

Student parking occupancy rate appears to have declined with resident parking being in a similar position as in 2015 and commuter parking being significantly worse due to the closures of parking areas as part of multiple construction projects especially in the commuter east permit zones. This area has lost over 500 parking spots and is only expected to reopen around 100 of these when construction is complete. Some rezoning of parking lots may improve the residential parking, but the lost commuter parking will be forced to the outer areas of campus where many zones have been converted to any valid permit. While overall this forced movement to the outer edge of campus may be desired, the remaining parking in the affected zones is expected to reach capacity and may increase movements through campus as people will want to check these closer parking spots first before accepting a spot further out.

With the addition of the Old Main Garage and the new North Garage, visitor parking is expected to improve greatly. This new North Garage is also expected to be heavily utilized for event parking as it is centrally located between the major sporting venues.

Faculty and staff parking has improved its occupancy rate; however, the rate is still just below what is considered completely full with the largest occupancy and demand being for parking in the core of campus.

Overall, the number of parking spaces on campus is keeping up with growth and overall occupancy is very similar to that shown in the 2015 Timothy Haahs and Associates parking study. That said, as growth is expected to continue additional parking will need to be considered especially for student residents.

4.1 10-YEAR MASTER PLAN PARKING IMPACTS

The proposed 10-year Master Plan shows new buildings replacing several existing parking lots that will require new parking areas to be established. The impacts are broken down by zone below:

The Greek, Vet, Southwest, and Southeast zones had minor impacts from the proposed building locations. While some new buildings are proposed, their locations did not vastly reduce parking. Parking in these areas will need to adjust based on the additional demand created by these planned buildings.

The North zone is expected to reduce available parking by approximately ten percent due to the relocation of Lakeview Road. This reduction would yield an occupancy estimate of 76% for 2020 demand estimates and 106% for 2030 demand estimates using the same 1.5% growth rate. In addition, this area is the primary overflow parking zone, with over 40% of the 1664 existing spaces being any valid permit spots. Therefore, as the rest of campus parking occupancy reaches capacity the demand for parking in this area is expected to increase which may exceed the projected 1.5% growth rate. The new north garage will add additional capacity to this area; however, if commuters are not utilizing the timed parking, then the capacity improvement may not be realized.

The Northwest zone is expected to have two impacts to parking areas. The first is the extension of Bost Extension Drive to College View Drive which from the path shown on the Master Plan appears to minimally impact long term parking and will only create a temporary parking reduction. The second is a building and green space shown built over the existing Howell Commuter lot. This lot currently parks 162 vehicles of which the majority are student commuters. The new north garage will add additional capacity to this area; however, if commuters are not utilizing the timed parking, then the capacity improvement may not be realized.

The Northeast zone has multiple new buildings, possibly dormitories, planned between Hurst Lane and Barr Avenue. This area currently is estimated at only 66% occupancy. With the completed construction of all planned buildings, 380 parking spaces would be removed. This reduction would yield an occupancy estimate of 78% for 2020 demand estimates and 92% for 2030 demand estimates using the same 1.5% growth rate. That said, depending on the number of these buildings designed as dormitories, this new development could cause demand to increase at a higher rate. In addition, most of the parking in this area is in the Zacharias Village parking lot and thought will need to be given to provide at least temporary parking areas for students at dormitories for loading/unloading.

The Core zone has three major parking impacts. The McCarthy gated parking lot, McCarthy staff parking lot, and the Hand gated parking lot are all scheduled to be removed for new construction. These lot removals total 335 total spaces. Of these 89 are faculty/staff and 231 are gated, 35% of total gated parking. Both parking types are projected to have an existing occupancy rate that is considered near full; therefore, these spaces will need to be relocated. Due to the nature of the user, the desire will be to maintain these spaces as close to the core of campus as possible.

The South zone is expected to experience the most impact in terms of parking from the proposed Master Plan. New construction will replace the Fresh Food lot, Cresswell lots, Hathorn lots, and a portion of the Moseley lot totaling 45% to 50% of the zone's parking (an estimated 800 parking spaces most of which are student residential spaces). A new estimated 250 space parking lot is shown south of Famous Maroon Band Street to the east of Stone Boulevard on the Master Plan; however, even with this new lot the estimated 2020 demand still would have a projected occupancy of 120% showing the area would still need additional capacity added.

A summary of the total impact on parking expected by a complete buildout of the proposed ten-year Master Plan is shown in *Table 1-7*.

Table 1-7 Total Parking Impact of Proposed Master Plan

Parking Zone	North	Northwest	Northeast	Greek	Core	South	Southwest	Southeast	Vet	Total
2020 Parking	1664	867	2303	1586	1934	1727	1018	1771	1249	14119
Full Build Master Plan	1498	705	1923	1586	1599	1177	1018	1771	1249	12526
Change	**-166**	**-162**	**-380**	0	**-335**	**-550**	0	0	0	**-1593**

4.2 10-YEAR PARKING RECOMMENDATIONS

Considering both existing capacity and the proposed Master Plan, there are three zones of campus with major parking capacity concerns (Southeast, South, and Core) and one with moderate concerns (Northeast).

4.2.1 SOUTHEAST ZONE

This zone is currently the most overcapacity area of campus while simultaneously having the largest parking demand. A parking garage could increase capacity and help satisfy the area demand. Placing this garage to the east of the IED building would provide access via the planned West Connector Road to both Bulldog Way and Hardy Road. One issue may be in the targeted user as with the north garage, timed parking may not be desirable for student commuters and a garage permit may be cost prohibitive.

4.2.2 SOUTH ZONE

The proposed Master Plan reduces existing residential parking in this zone by approximately 800 spaces and provides a new estimated 250 space lot approximately a quarter mile from the closest dormitory. No other locations are available for a parking lot to be built in the vicinity of the dormitories. The existing 134 space any-valid permit lot in the northeast quadrant of the intersection of Hardy Road and Blackjack Road could be converted to residential to mitigate some of the loss. A parking garage on this AVP lot or on the lot due north across Famous Maroon Band Street would replace the lost capacity; however, timed parking would not be applicable for student

residents and permitted resident garage parking may not be feasible for students. Another option would be to provide parking at a remote location and force students to use transit; however, some temporary parking would be required near each dorm to allow loading/unloading.

4.2.3 CORE ZONE

The proposed Master Plan reduces faculty/staff and gated parking in this area. Both of these user groups and the zone are currently near parking capacity. Therefore, the reduced spaces will need to be regained and will need to remain as close to the campus core as possible due to the nature of the user group. To achieve this, the Ag and Bio lot and the greenhouse lot in the southwest zone could be converted from commuter to faculty/staff, gated, or a combination of both. These two lots total 467 spaces and would increase parking capacity for the core zone users. The southwest zone would then have an estimated occupancy of 71% for 2020 demand estimates and 83% for 2030 demand estimates using the same 1.5% growth rate. These commuter spaces could then be added back either as park and ride through additional lots on the edges of campus, in higher demand zones such as the South zone with the above-mentioned garage or the north zone by converting some of the any valid permit to commuter.

4.2.4 NORTHEAST ZONE

The existing capacity and occupancy estimate of the Northeast zone does not show an immediate need for additional parking; however, the area is expected to lose 380 spaces in the full build of the Master Plan. The wooded area across Bailey Howell Drive east of Nunnelee Hall and north of the Baptist Student Union could be developed as a parking lot which would mitigate the 380-space loss. This location is on a current transit route and could be utilized as a park and ride commuter lot on the north side of campus. If the access to East Lee Boulevard is maintained to the east, it would allow commuters to park without actually entering campus as well as keeping traffic through the core of campus to a minimum.

4.2.5 OTHER POTENTIAL PARKING AREAS

The following areas are not currently needed due to area parking demand but may provide some additional park and ride areas helping remove the parking demand from the core of campus or as an alternative to the recommendations above.

- Southeast quadrant of the Stone Boulevard/Hail State Boulevard intersection with Blackjack Road.
  - » Could be accessed from Hail State Boulevard or Buckner Lane
  - » Would increase pedestrian activity across Blackjack Road potentially increasing the congested issues at this signal.
  - » Park and Ride Option

- Southwest quadrant of the Hail State Boulevard intersection with the Wise Center driveway
  - » Could be accessed from Wise Center driveway
  - » Would increase pedestrian activity across Blackjack Road potentially increasing the congested issues at this signal.
  - » Park and Ride Option

- Northwest quadrant of the Hail State Boulevard intersection with Buckner Lane
  - » Could be accessed from either existing roadway
  - » Park and Ride Option
- Northwest quadrant of the George Perry Street intersection with Bailey Howell Drive
  - » Could be accessed from either existing roadway
  - » Potential to be additional residential parking
- West of proposed Hardy Road extension
  - » Potential to be additional residential parking
  - » Would increase pedestrian activity across Blackjack Road
  - » Park and Ride Option

Section 2:

Vehicular Circulation

Vehicular Circulation

1.0 OVERVIEW

This report summarizes the findings of a traffic analysis performed by Neel-Schaffer, Inc. for proposed circulation improvements/modifications to the internal street network of Mississippi State University. The core campus area was evaluated to identify changes that the University wishes to make in access modifications to restrict vehicles through specific high pedestrian traffic areas of the campus. The core campus area bordered by MS Hwy 182 to the north, MS Hwy 12 to the west, Blackjack Road to the south, Campus Trails and Lee Boulevard to the east, includes approximately 700 acres of property.

The impacts of the COVID 19 pandemic have reduced local traffic volumes, through fewer sports/clubs/public events, as well as school attendance and increased work-from-home activity. ***While this was considered as part of this study, it did not drive decision making as traffic in the area is anticipated to return to pre-pandemic trends and volumes.***

1.1 PURPOSE

The purpose of this analysis is to evaluate the existing traffic circulation and the impacts that roadway alignment modifications would have on circulating traffic. To analyze the related impact to the surrounding area, existing roadway capacity and non-site traffic levels-of-service were evaluated. In addition, a field review was conducted to observe existing peak periods and congestion levels within the study area of the project site and the existing geometrics of the surrounding roadways.

2.0 EXISTING CONDITIONS

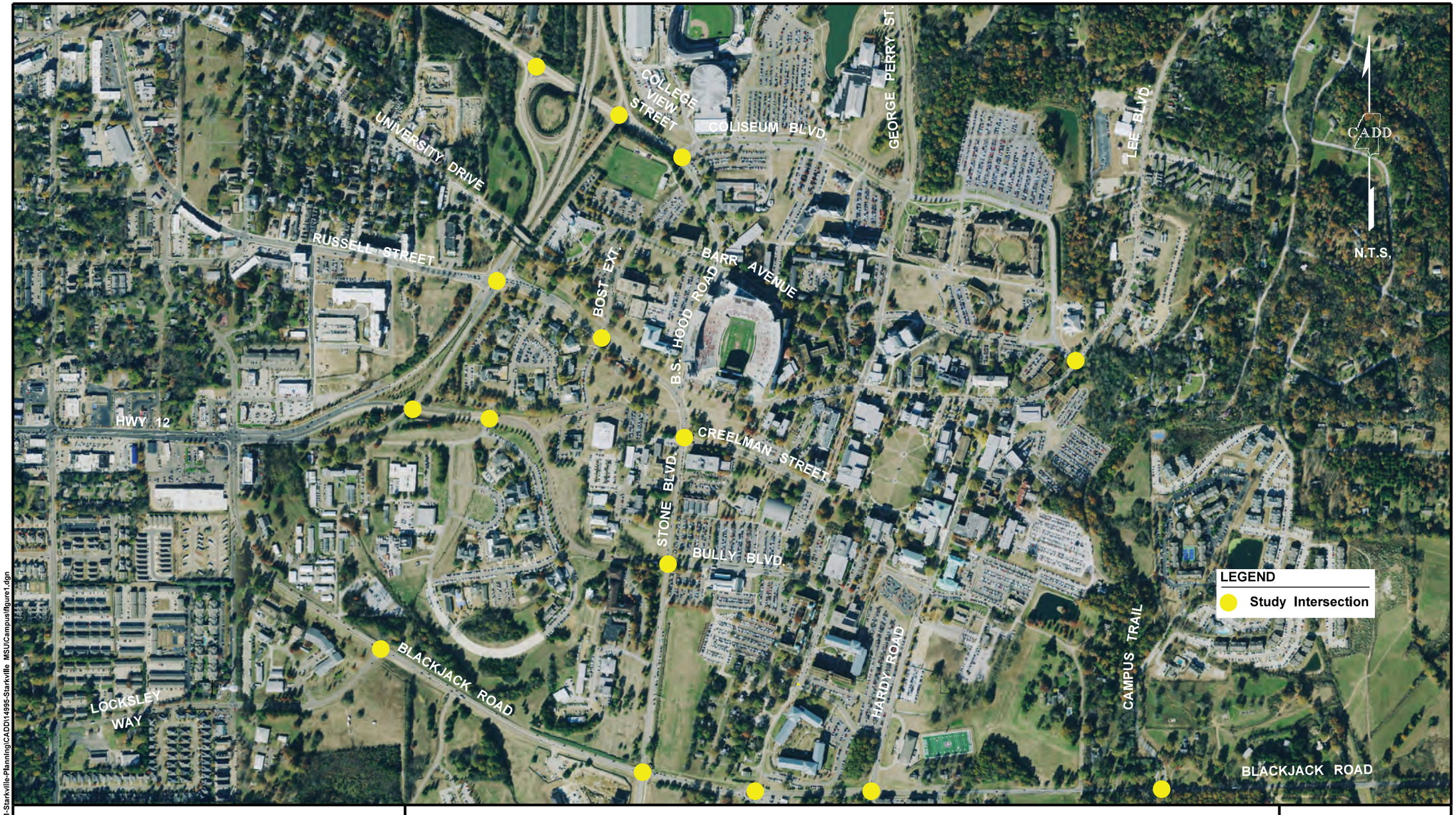
2.1 STUDY AREA

The primary roadways providing access to the core campus include MS Hwy 182, MS Highway 12, College View Drive, University Drive/Barr Avenue, Russell Street/Stone Boulevard, Bully Boulevard, Hardy Road, Lee Boulevard, and George Perry Street. Construction is underway along Blackjack Road east of Oktoc Road to Bardwell Road, widening from a 2-lane to a 3-lane roadway. A roadway project is also underway along the east campus to connect Campus Trail Drive with Barr Avenue at Lee Boulevard. The study intersections (as shown in *Figure 2-1*) were determined to include:

Blackjack Road	- Locksley Way, Stone Boulevard, Hardy Road & Campus Trails
Stone Boulevard	- Bully Boulevard, Creelman Street, Bost Drive/Bost Ext
SR 12	- Bully Boulevard, Russell Street, College View Drive
Bully Boulevard	- Fraternity Row/Sorority Row
Barr Avenue	- Lee Boulevard

2.2 LAND USE

The Mississippi State University central campus is approximately 700 acres bordered by MS Hwy 182 to the north, SR 12 to the west, Blackjack Road to the south, and Campus Trails/Montgomery Hill Road to the east. The site has continued to develop/redevelop and restrict vehicular traffic to the outer limits of the campus while the interior of the campus is more walkable, yet also supported by transit service. It is worth noting that these restricted/gated routes are planned to be reopened to all traffic at night (6:00 PM to 7:00 AM) and on the weekends during normal operations.



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Study Area

Figure 2-1

2.3 ROADWAY AND INTERSECTIONS

The primary roadways serving the MSU campus include MS Hwy 182, MS Hwy 12, E. Lee Boulevard, Hardy Road, Stone Boulevard, Bully Boulevard, University Drive, College View Drive and George Perry Boulevard. The majority of these campus access points are signal controlled, while two intersections have grade separated interchanges/traffic movements. Campus Trails at Blackjack Road will provide campus access with the new extension north to Lee Boulevard at Barr Avenue that is currently in construction and is being named "Bulldog Way". The intersections of Campus Trails at Blackjack Road and Lee Boulevard are not currently signalized.

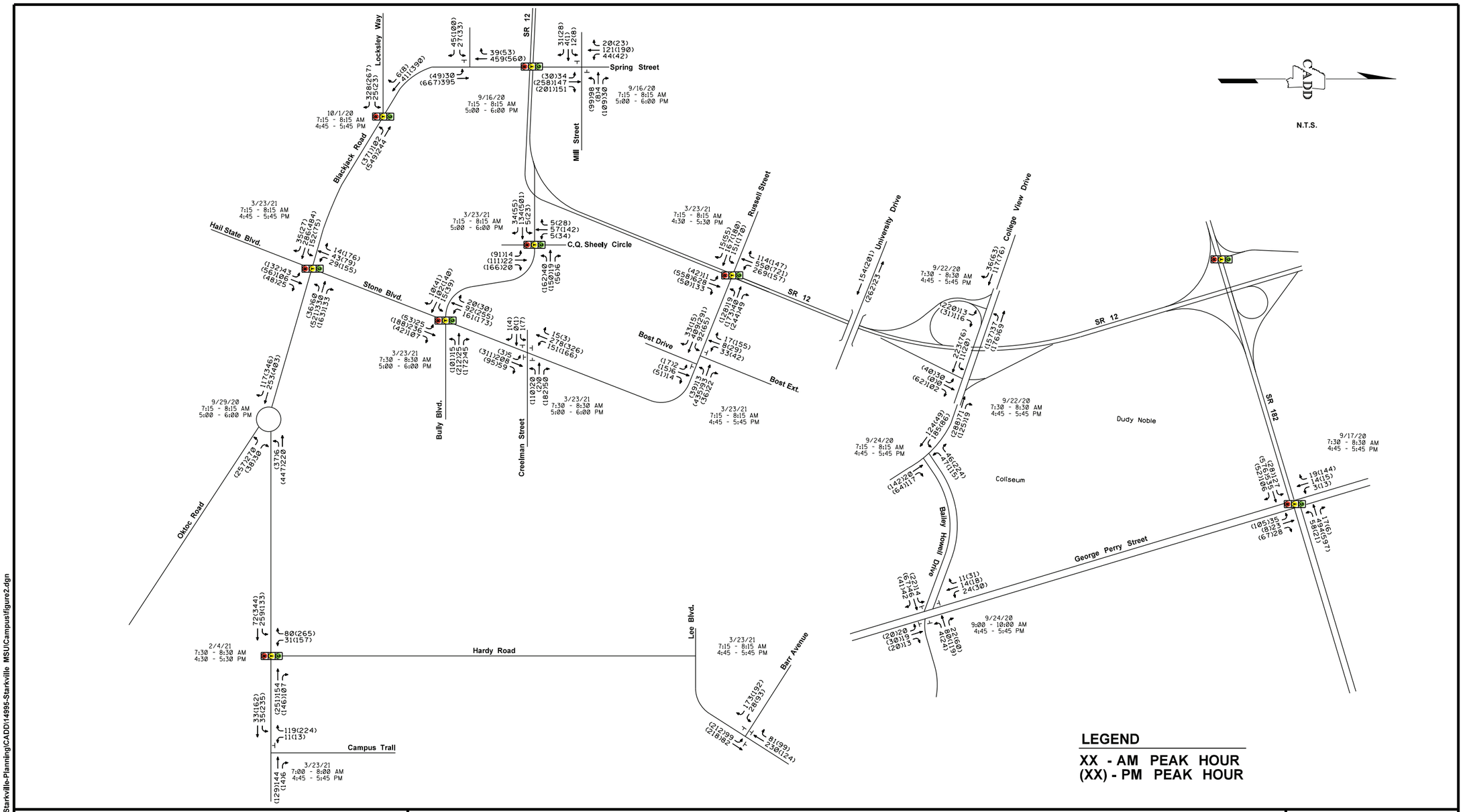
2.4 TRAFFIC VOLUMES

The existing traffic volumes were collected at the study intersections at/adjacent to the MSU campus. Traffic volumes were collected by MDOT/Michael Baker on 9/17/20-10/1/20, and by Neel-Schaffer on 2/4/21 and 3/23/21 to document the existing traffic demands. The existing peak hour volumes are shown graphically in *Figure 2-2*.

The peak hour volumes were totaled at the gateway intersections to campus to identify a peak hour entering/exiting volume from the campus for each roadway. While traffic counts were not conducted on the same day, the totals provide insight into the percentage/volume of traffic entering/exiting the campus from each roadway. The intersection totals and percentages for each roadway are summarized in *Table 2-1*.

Table 2-1 Total Vehicular Traffic In/Out of MSU Main Campus

Peak	Hwy 12/ Russell St	Bully-Frat Row	Stone/ Black-jack	Hardy/ Black-jack	Lee Blvd/ Barr Ave	Hwy 182/ George Perry	College View/ Bailey Howell	University Dr/ Col. Muldrow	Hour Total
Ingress									
AM Pk*	569	173	391	388	311	173	309	154	2,468
PM Pk	386	142	294	283	223	88	135	201	1,752
AM Pk	23%	7%	16%	16%	13%	7%	13%	6%	
PM Pk	22%	8%	17%	16%	13%	5%	8%	11%	
Egress									
AM Pk	118	53	128	134	101	91	95	43	763
PM Pk	557	266	410	424	311	180	366	262	2,776
AM Pk	15%	7%	17%	18%	13%	12%	12%	6%	
PM Pk	20%	10%	15%	15%	11%	6%	13%	9%	
In+Out									
AM Pk	677	211	477	485	421	246	375	177	3,069
PM Pk	943	408	704	707	534	268	501	463	4,528
AM Pk	22%	7%	16%	16%	14%	8%	12%	6%	
PM Pk	21%	9%	16%	16%	12%	6%	11%	10%	
Peaks	7:15-8:15 AM, 4:45-5:45 PM								



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Existing Peak Hour Volumes

Figure 2-2

The counts revealed a total of 3,069 vehicles in the AM Peak and 4,528 in the PM Peak hour traveling in/out of the core MSU campus. Blackjack Road accounts for 32% of the in/out traffic for the entire campus at Stone Boulevard and Hardy Road. Russell Street is the second busiest access at 22%. Traffic to/from the north at George Perry and Lee Boulevard total 22% AM/18% PM combined. Bully Boulevard (7%/9%), University Drive (6%/10%) and College View (12%/11%). The Hwy 12/Russell Street intersection had the highest volumes of traffic entering the campus in both the AM and PM peak hours.

2.5 EXISTING TRAFFIC - LEVEL OF SERVICE ANALYSIS

The capacity and level-of-service (LOS) of an intersection is evaluated based on the average vehicular delay during the peak hour periods. The vehicular delays are directly related to the turning movement volumes, traffic composition and roadway geometrics at the study intersections. The methodology used in this analysis is based on the Highway Capacity Manual (HCM). The level-of-service, as outlined in the HCM, is reported as a letter designation of LOS A through LOS F (A is least delay and F is most delay). The traffic volumes at the study intersections were evaluated to determine the existing traffic levels-of-service based on the information provided in the HCM. The results of this analysis are shown in *Table 2-2* and *Table 2-3*.

Table 2-2 Existing Traffic Level-of-Service

Signalized	Time	Approach LOS				Intersection
Intersections	**Period**	**EB**	**WB**	**NB**	**SB**	**LOS**
Hardy Road @ Blackjack Road	AM Peak	B	C	-	B	B
	PM Peak	B	C	-	C	B
Stone Boulevard @ Blackjack Road	AM Peak	A	B	C	C	B
	PM Peak	C	C	C	D	C
Locksley Way @ Blackjack Road	AM Peak	A	A	D	-	A
	PM Peak	A	A	D	-	A
C.Q. Sheely Circle @ Bully Boulevard	AM Peak	C	B	A	C	C
	PM Peak	D	C	C	D	C
Stone Boulevard @ Bully Boulevard	AM Peak	C	C	A	A	B
	PM Peak	C	C	B	B	C
Stone Boulevard @ Highway 12	AM Peak	B	C	B	A	B
	PM Peak	B	C	B	B	B
George Perry Street @ Highway 182	AM Peak	B	C	B	C	B
	PM Peak	C	C	B	C	C
Roundabout	**Time**	**Approach LOS**				**Intersection**
Intersections	**Period**	**EB**	**WB**	**NB**	**SB**	**LOS**
Oktoc Road @ Blackjack Road	AM Peak	A	A	A	-	A
	PM Peak	A	A	A	-	A

Source: Neel-Schaffer, 2021, HCM 6th Edition.

Table 2-3 Existing Traffic Level-of-Service (cont'd)

Unsignalized Intersections	Time Period	Critical Movement Level of Service											
		Eastbound			Westbound			Northbound			Southbound		
		Lt	Th	Rt	Lt	Th	Rt	Lt	Th	Rt	Lt	Th	Rt
Campus Trails/ Black-jack Road	AM Peak	A	A	-	-	-	-	-	-	-	B	-	A
	PM Peak	A	A	-	-	-	-	-	-	-	C	-	B
University Crossing @ Blackjack Road	AM Peak	B	-	B	-	-	-	A	-	-	-	-	-
	PM Peak	C	-	B	-	-	-	A	-	-	-	-	-
Mill Street @ Spring Street	AM Peak	B	B	B	C	C	C	A	A	-	A	A	-
	PM Peak	B	B	B	C	C	C	A	A	-	A	A	-
Creelman Street @ Stone Boulevard	AM Peak	A	A	A	A	A	A	A	B	B	B	B	B
	PM Peak	B	B	B	B	B	B	A	D	D	B	C	C
Bost Drive @ Stone Boulevard	AM Peak	A	-	-	A	-	-	B	B	B	C	C	A
	PM Peak	A	-	-	A	-	-	D	D	D	E	E	B
Lee Boulevard @ Bailey Howell Drive	AM Peak	A	A	-	-	B	A	-	-	-	A	-	A
	PM Peak	B	B	-	-	B	A	-	-	-	B	-	B
George Perry Street @ Bailey Howell Drive	AM Peak	A	A	A	A	A	A	A	A	A	A	A	A
	PM Peak	A	A	A	A	A	A	A	A	A	A	A	A
College View Drive @ Bailey Howell Drive	AM Peak	-	-	-	B	-	A	-	-	-	A	A	-
	PM Peak	-	-	-	B	-	B	-	-	-	A	A	-
College View Drive @ Highway 12 NB Ramps	AM Peak	A	A	-	-	-	-	B	B	B	-	-	-
	PM Peak	A	A	-	-	-	-	B	B	B	-	-	-
College View Drive @ Highway 12 SB Ramps	AM Peak	-	-	-	A	A	-	A	A	A	-	-	-
	PM Peak	-	-	-	A	A	-	D	D	D	-	-	-

Source: Neel-Schaffer, 2021, HCM 6th Edition.

The capacity analysis show that the study intersections are operating at acceptable levels with existing traffic (2020) with the southbound movement at Bost Extension/Stone Boulevard operating at LOS E in the PM peak hour. However, the visual observations identify that there is a metering effect of the signals with congestion in both the AM and PM peak hours on Blackjack Road. The volumes during the peaks are not necessarily reflecting the "Demand" volume, but rather the saturation flow. If more capacity was provided, then more vehicles would go through the intersection, as there is a queue on Blackjack Road extending through Oktoc back to Hardy Road during a portion of the PM Peak hour. The capacity analysis sheets are provided in the report *Appendix A*.

3.0 IMPROVED NETWORK TRAFFIC

3.1 INTERNAL STREET NETWORK CHANGES

The internal street network for the MSU campus has transitioned over the years to continue to push parking/vehicular traffic toward the outer limits of the main campus, while promoting pedestrian activity in the central campus. Transit service to these outer parking lots helps commuters travel from these parking lots to the internal campus. Discussions with MSU staff identified potential changes to the street network to include construction of some new roadways and closure of existing roads. A summary of the roadways with potential alignment or access changes includes:

Campus Trail Extension	BS Hood Road (stadium)/College View Drive
Hardy Road – Limited Access	Bully Boulevard – at Hwy 12-Mill Street Access (Mercantile Ext.)
President Circle-Restricted Access	Bully Boulevard - east of Sorority Row (Locksley Extension)
Bailey Howell Drive Road Diet	Hwy 12 – entry/exit ramps at Bully Boulevard & College View Street
Bost Drive Extension	George Perry Street/Bailey Howell Drive Roundabout

Campus Trail is currently under construction to the north, to extend to the intersection with Lee Boulevard at Barr Avenue. This new route will allow an east connection for the campus, providing some relief to Blackjack Road. A direct connection will also be made to the satellite parking areas east of Hardy Road.

Hardy Road is proposed to be restricted to transit access only, north of Morrill Road. Similarly, Morrill Road west of Hardy and President Circle will have limited access areas (transit traffic). BS Hood Road from Stone Boulevard to Barr Avenue and College View Drive from Barr Avenue to Coliseum Drive are proposed to be closed to vehicular traffic and reconfigured as a pedestrian/bicycle corridor. This vehicular corridor is to planned to be replaced by Bost Extension which is an extension from Barr Avenue to the north intersecting with College View Street at Coliseum Boulevard.

The section of Bully Boulevard east of Sorority Row is proposed to be removed for future campus development. A new east/west roadway, parallel to Blackjack Road, is proposed to extend from the end of Locksley Way to Stone Boulevard and then to Hardy Road by means of the newly completed Famous Maroon Band Street.

SR 12 is proposed to be reconstructed at Bully Boulevard to remove the grade separated ramps and have an at-grade intersection that is signal controlled, with an access to Mill Street to the north. Two alignments are proposed for the southern approach. The first ties the southern approach to the existing Bully Boulevard which is preferred under existing conditions. With the expected closure of Bully Boulevard east of Sorority Row and the proposed Locksley Way connection, Robert Louis Jones Circle is expected to transition to the primary roadway in the area. Thus, the second alignment that ties the south approach directly into Robert Louis Jones Circle would be preferred for future conditions considering these expected geometric changes.

Similarly, the ramps at SR 12/College View Street are proposed to be removed to provide an at-grade signal-controlled intersection for the campus. Ingress access to eastbound Highway 12 is proposed between Blackjack Road and Bully Boulevard, and between Bully Boulevard and Russell Street.

The proposed circulation concepts are shown in ***Figure 2-3***. The base year site traffic was reassigned to the proposed roadway network, considering the proposed access modifications listed. The conceptual AM/PM peak hour volumes on the improved roadway network are shown in *Figure 2-4*.

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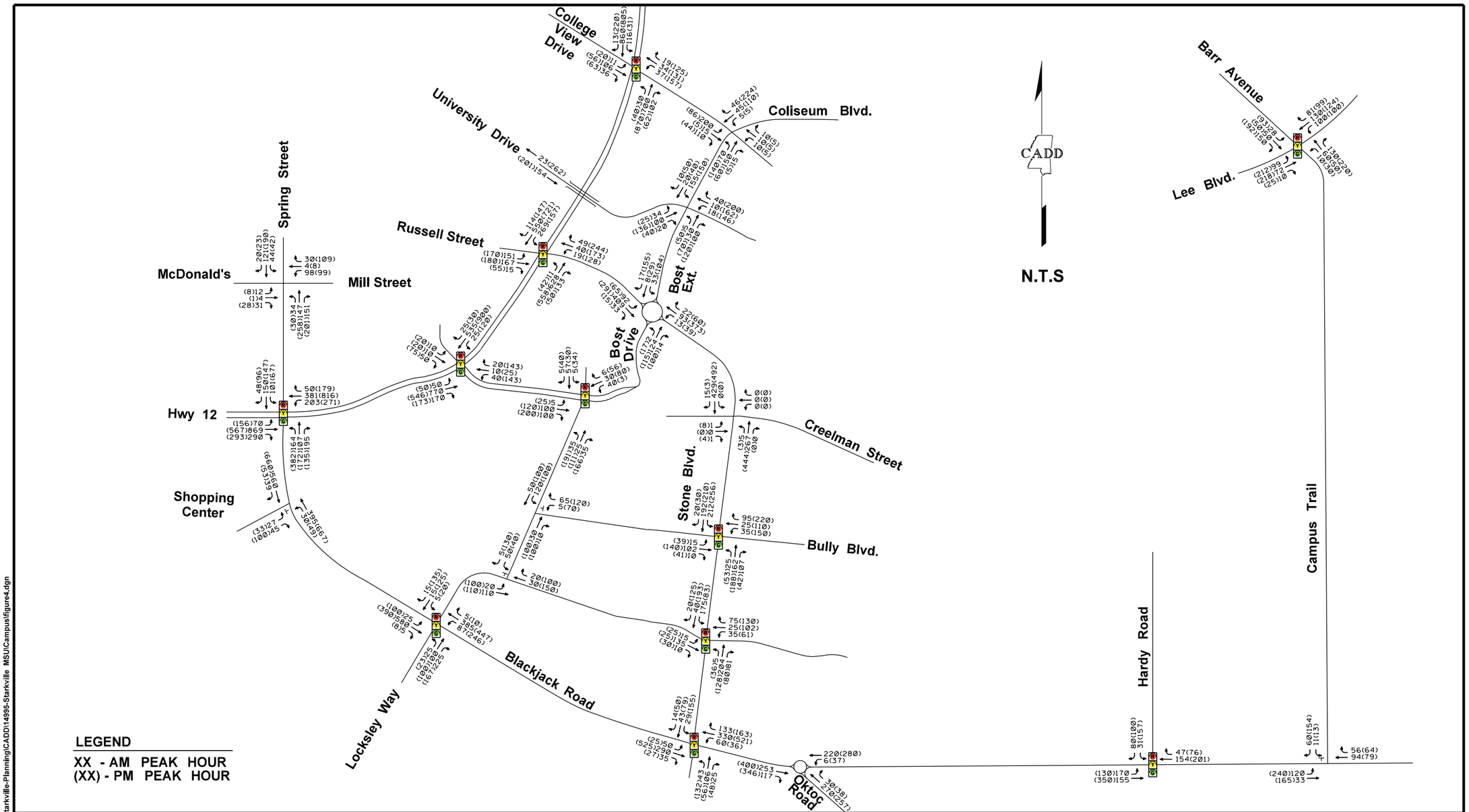
Campus Circulation Concepts

Figure 2-3



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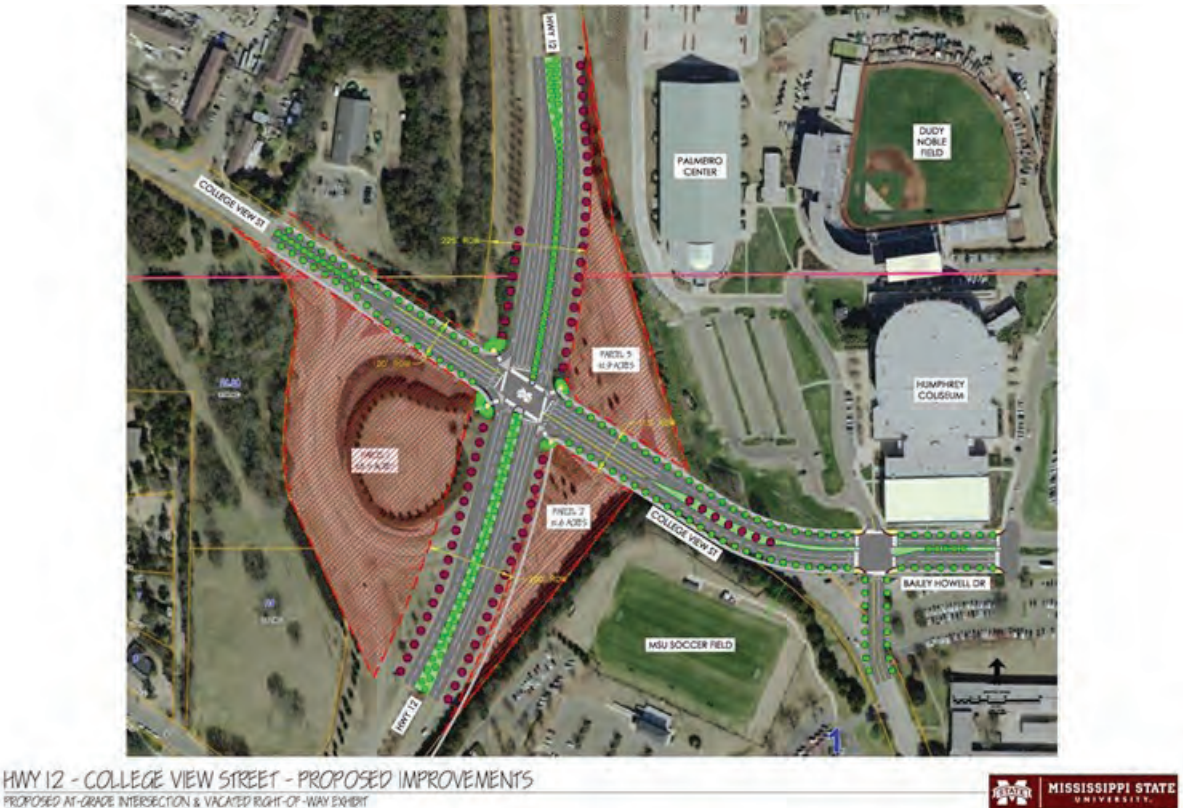
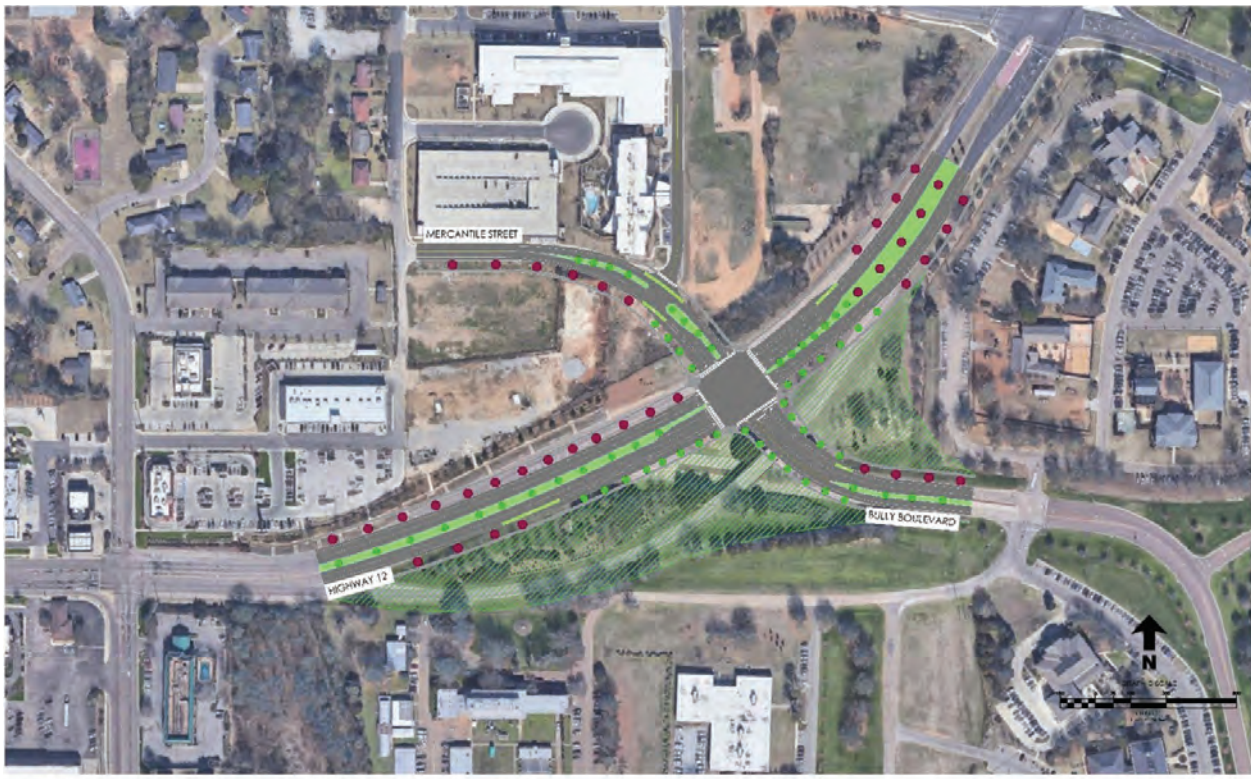
Reassigned Traffic Volumes

Figure 2-4



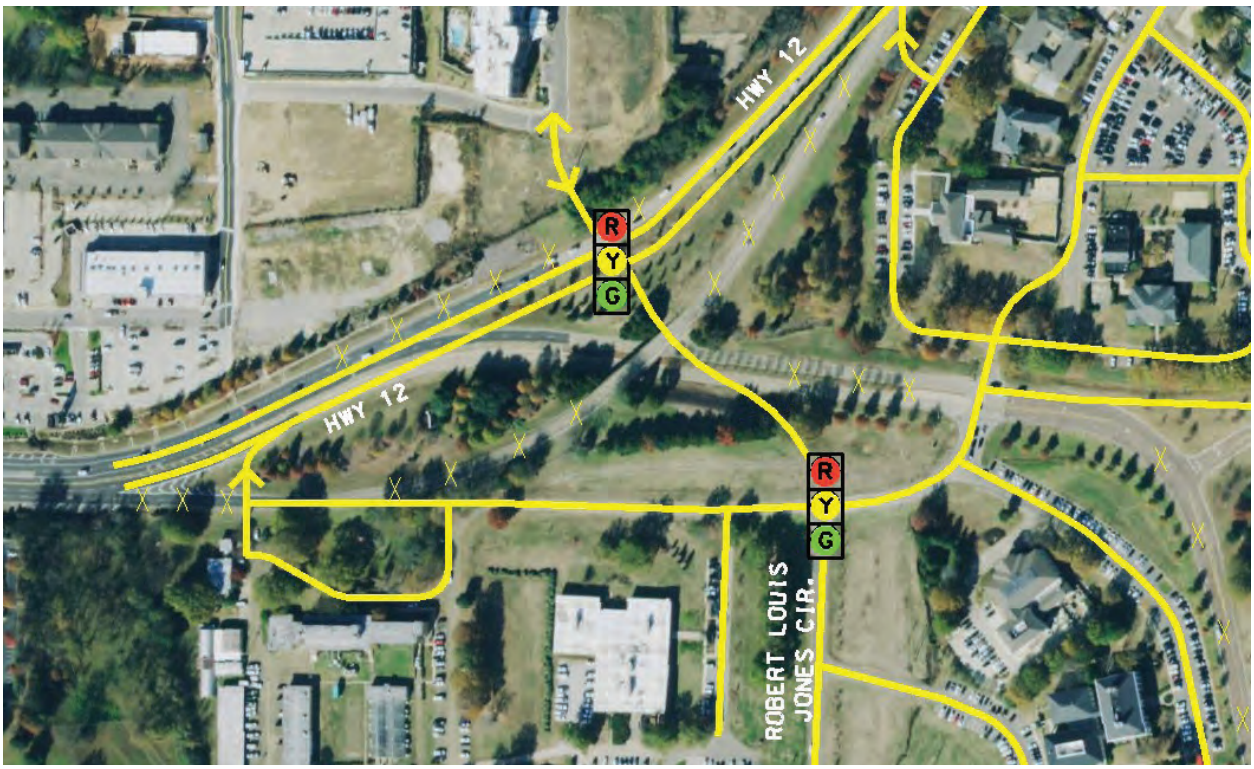
Above: At-grade intersection concept at College View Street/MS Hwy 12.

Right: Mini-Roundabout concept along Stone Boulevard, replacing signals.



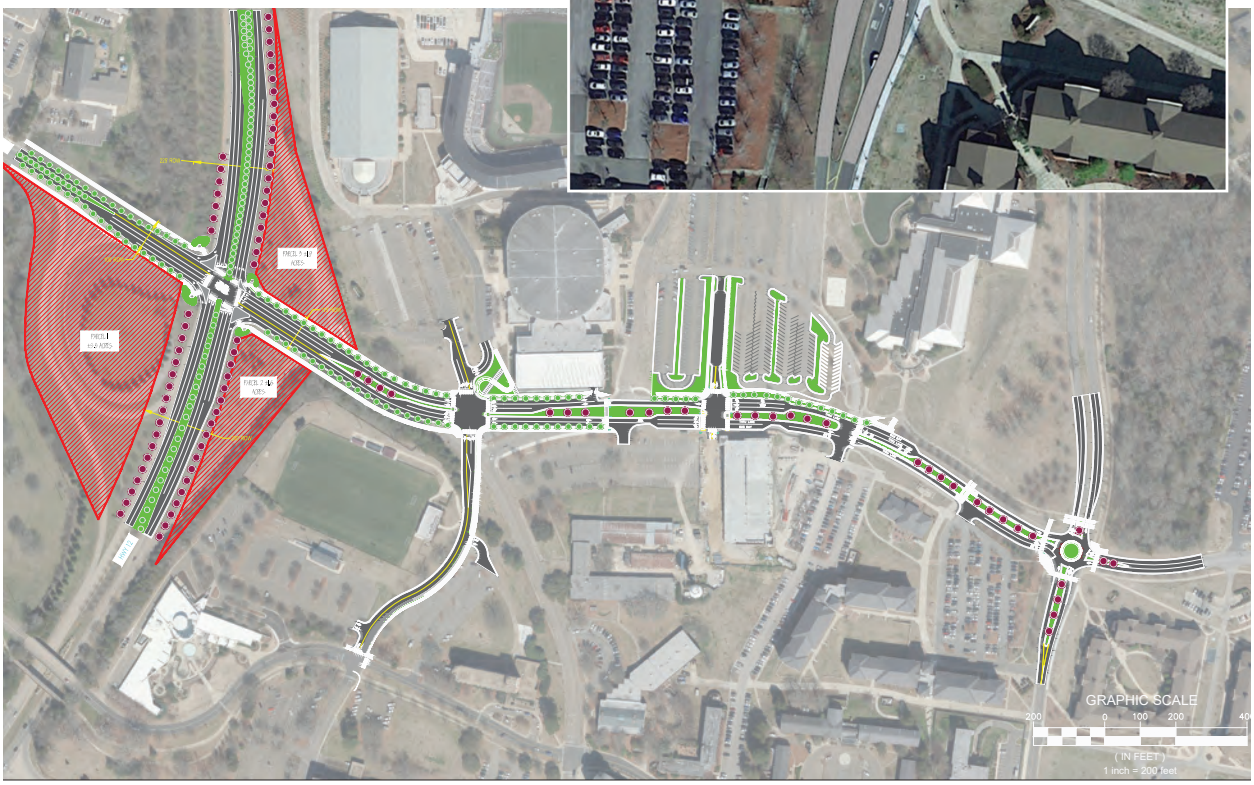
HIGHWAY 12 & BULLY BOULEVARD CONCEPT
REALIGNMENT EXHIBIT

Above: At-grade intersection concept 1 at Bully Boulevard/MS Hwy 12 (Mercantile Extension).
Below: At-grade intersection concept 2 at Bully Boulevard/MS Hwy 12 (Mercantile Extension).



Right: George Perry St/Bailley Howell Drive Roundabout Concept

Below: Bailey Howell Drive Concept



COLLEGE VIEW DRIVE - BAILEY HOWELL DRIVE CONCEPT

A roundabout is proposed at the intersection of George Perry St and Bailey Howell Drive. Converting this intersection to a roundabout provides the opportunity to improve both vehicular and pedestrian safety. In addition, the center island of the roundabout could provide additional landscaping opportunity.

The four-lane section of Bailey Howell Drive is also proposed to undergo a road diet, reducing down to two through lanes, one in each direction of travel providing shorter pedestrian crossings and allowing space for additional turn lanes at select intersections.

3.2 MODIFIED NETWORK/LEVELS-OF-SERVICE

The reassigned traffic volumes were analyzed for the base year traffic. The results of the traffic volume analysis are provided in *Table 2-4* and *Table 2-5*.

Table 2-4 Reassigned Traffic Levels-of-Service

Signalized	Time	Approach LOS				Intersection
Intersections	Period	EB	WB	NB	SB	LOS
Hardy Road @ Blackjack Road	AM Peak	B	C	--	B	B
	PM Peak	B	C	--	B	B
Stone Boulevard @ Blackjack Road	AM Peak	A	A	C	C	B
	PM Peak	B	B	C	C	C
Locksley Way @ Blackjack Road	AM Peak	C	B	C	C	C
	PM Peak	C	B	C	C	C
Bost Dr @ Bully Boulevard	AM Peak	C	B	B	C	C
	PM Peak	C	C	B	D	C
Stone Boulevard @ Bully Boulevard	AM Peak	C	C	B	A	B
	PM Peak	C	C	B	B	C
Stone Boulevard @ Highway 12	AM Peak	B	C	B	A	B
	PM Peak	B	C	B	B	B
College View @ Highway 12	AM Peak	C	C	A	A	B
	PM Peak	C	C	B	B	B
Bully Boulevard @ Highway 12	AM Peak	B	B	B	B	B
	PM Peak	B	C	B	C	C
Lee Boulevard @ Bailey Howell Drive	AM Peak	B	B	B	B	B
	PM Peak	B	B	B	B	B
Stone Boulevard @ East-West Connection	AM Peak	B	B	B	A	B
	PM Peak	B	B	B	B	B
Roundabout	**Time**	**Approach LOS**				**Intersection**
Intersections	**Period**	**EB**	**WB**	**NB**	**SB**	**LOS**
Oktoc Road @ Blackjack Road	AM Peak	A	A	A	-	A
	PM Peak	A	A	A	-	A
Bost Drive @ Stone Boulevard	AM Peak	A	A	A	A	A
	PM Peak	A	A	A	A	A

Source: Neel-Schaffer, 2021, HCM 6th Edition.

Table 2-5 Reassigned Traffic Level-of-Service (cont'd)

Unsignalized Intersections	Time Period	Critical Movement Level of Service											
		Eastbound			Westbound			Northbound			Southbound		
		Lt	Th	Rt	Lt	Th	Rt	Lt	Th	Rt	Lt	Th	Rt
Campus Trails@ Blackjack Road	AM Peak	A	A	-	-	-	-	-	-	-	B	-	A
	PM Peak	A	A	-	-	-	-	-	-	-	B	-	A
University Crossing @ Blackjack Road	AM Peak	C	-	B	-	-	-	A	-	-	-	-	-
	PM Peak	C	-	B	-	-	-	A	-	-	-	-	-
Mill Street @ Spring Street	AM Peak	B	B	B	C	C	C	A	A	-	A	A	-
	PM Peak	B	B	B	C	C	C	A	A	-	A	A	-
Creelman Street @ Stone Boulevard	AM Peak	B	B	B	A	A	A	A	-	-	A	-	-
	PM Peak	C	C	C	A	A	A	A	-	-	A	-	-
Bost Drive @ University Drive	AM Peak	B	B	A	A	A	A	A	A	A	B	B	B
	PM Peak	C	C	B	**F**	**F**	**F**	C	C	C	C	C	C
Bully Boulevard @ Robert Louis Jones Dr	AM Peak	-	-	-	B	-	A	-	-	-	A	-	-
	PM Peak	-	-	-	B	-	A	-	-	-	A	-	-
East-West Connection @ Robert Louis Jones Dr	AM Peak	A	-	-	-	-	-	-	-	-	B	-	A
	PM Peak	A	-	-	-	-	-	-	-	-	B	-	A
College View Drive @ Bailey Howell Drive	AM Peak	C	A	A	B	B	B	A	-	-	A	A	-
	PM Peak	C	A	A	B	B	B	A	-	-	A	A	-

The reassigned traffic volumes are forecast to operate with less delays based on the widening of Blackjack Road and the extension of Campus Trails-Bulldog Way to Lee Boulevard. The intersection of Campus Trails-Bulldog Way at Blackjack Road is anticipated to warrant signalization as development increases, along with construction of a westbound right turn lane. The capacity analysis does show a failing level of service at the intersection of Bost Extension Drive and University Drive which may warrant future turn lanes or alternative traffic control. While the capacity analysis shows acceptable levels for all other locations, the demand volume is anticipated to be higher with more delays than the software calculates. However, the opportunity for east campus traffic to access Bulldog Way to go north/east, will likely divert traffic to the new route. The capacity analysis sheets are provided in the report *Appendix A.*

4.0 REGIONAL TRAFFIC IMPROVEMENT

4.1 EAST CAMPUS ACCESS

The current roadway project to connect the east campus to Blackjack Road via Campus Trails-Bulldog Way will provide some relief to the apartment complexes and residents that have been forced to navigate Blackjack Road west to Hardy/Stone/Locksley/Hwy 12. However, there continues to be interest in developing this area to the east that has indirect/limited access via Bardwell Road. The condition of Bardwell Road does not meet current design standards. The roadway appears to be an old gravel road that was paved, so the horizontal and vertical curves do not meet standards, and the pavement condition is poor.

Bardwell's northern terminus is an all-way stop at Old Mayhew Road. Reconstructing Bardwell to current design standards, along with realignment to be a more direct route to MS Hwy 182 along the MSU property to the east is recommended to attract more traffic to this eastern bypass of the internal campus roadway network. This reconstruction/realignment of Bardwell is anticipated to alleviate some of the congestion that currently occurs on Hardy Road and allow the residents of the apartment units and east Blackjack Road to have a more efficient/direct connection to MS Hwy 182.

4.2 US HIGHWAY 82 ACCESS

The current roadway project to connect the east campus to Blackjack Road via Campus Trails-Bulldog Way will provide some relief to the apartment complexes and residents that had exclusive access to Blackjack Road. However, the area east of Campus Trails has significant potential for development. The construction of a new interchange with US Highway 82 between MS Highway 182 and Hickory Grove Road would meet minimum interchange spacing requirements. This connection could provide an alternate entry to the campus from the east. The connection from Blackjack Road to the new interchange would require crossing Sand Creek and tributaries to Sand Creek. Much of the property between Blackjack Road and US Highway 82 is within the 100-year flood zone (Zone AE). The combined volume of traffic coming to/from campus from both Bardwell Road and Blackjack Road east of Bardwell Road was recorded as 115 vph in the AM Peak hour and 153 vph in PM peak hour.

4.3 ARTESIA ROAD

The current alignment of Artesia Road terminates at Oktoc Road on the west end. Artesia Road is a rural 2-lane roadway and is classified as a Major Collector route. With the recent construction of Hail State Boulevard from Blackjack Road south to Poor House Road, the extension of Artesia Road west 0.5 miles to Hail State Boulevard would help to divert some of the commuting/school traffic from Oktoc Road.

4.4 OKTOC ROAD

Oktoc Road is a rural two-lane roadway that is classified as a Major Collector in the Functional Class system. Oktoc extends southeast of Blackjack Road at a Roundabout. The current alignment is at approximately a 45-degree intersection with Blackjack Road. The introduction of northbound Oktoc Road traffic from the southeast approach affects/delays the westbound movement of campus traffic from Hardy Road. The introduction of the 21 Apartments has also significantly increased pedestrian traffic across the intersection's east approach and through the gas station parking lot. Realignment of Oktoc Road to intersect Blackjack at the Hardy Road signal is recommended. This realignment will improve the circulation at Oktoc/Blackjack, as the Oktoc Road traffic will not have a priority over westbound Blackjack Road traffic.

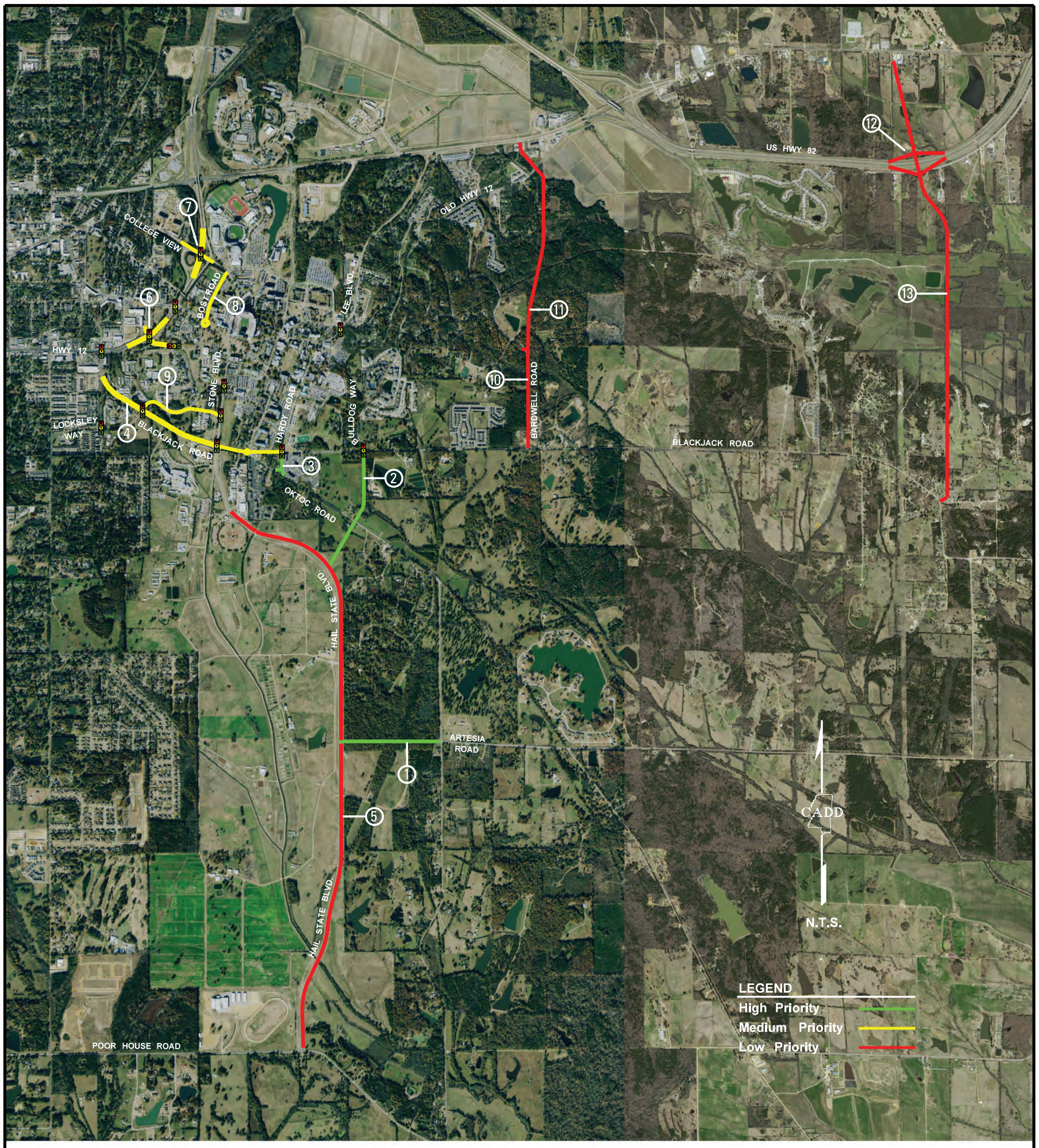
4.5 CAMPUS TRAIL - BULLDOG WAY

A connection between Hail State Boulevard to the south and the new Bulldog Way connection at Campus Trail can help to divert some of the east/west traffic movements along Blackjack Road. As more residential units/multi-family dwellings are constructed along the undeveloped south campus property, the more demand will be placed on Blackjack Road. Providing a connection to Hail State Boulevard will provide a southern bypass of the campus and help to relieve some of the traffic on Blackjack Road.

4.6 HAIL STATE BOULEVARD - MULTI-USE PATH

A multi-use path was constructed along the section of Hail State Boulevard from Blackjack Road south, approximately 1,800 LF. The multi-use path is recommended to be extended south to Poor House Road, a distance of approximately 3 miles.

The access and circulation concepts are shown graphically in *Figure 2-5*.



S:\Projects\14995.001-Starkville-Planning\CADD\14995-Starkville MSU\Campus\figure5.dgn

① Connect Artesia Road to Hail State Blvd. - 2,600 L.F. - 2 Lanes
② Connect Hail State Blvd. with Blackjack Road / Oktoc Road - 3,250 L.F. - 3 Lanes
③ Realign Oktoc Road to intersect Blackjack Road at Hardy Road - 700 L.F. - 3 Lanes
④ Widen Blackjack Road to 5 lanes from Hardy Road to Lincoln Green - 5,280 L.F. - 5 Lanes
⑤ Hail State Boulevard Sidewalk Extension - 16,000 L.F.
⑥ Bullyvard interchange reconstruction to an at-grade signalized intersection.
⑦ Collegeview interchange reconstruction to an at-grade signalized intersection.
⑧ Bost Road extension.
⑨ Locksley Way extension and connector.
⑩ Reconstruct / realign Bardwell Road with 2 lanes - 2,500 L.F. - 2 Lanes
⑪ Construct new connection from Hwy 182 to Bardwell Road - 6,000 L.F. - 2 Lanes
⑫ Construct new interchange with US Hwy 82 - Interchange
⑬ Connect Blackjack Road with US Hwy 82 - 8,000 L.F. - 2 Lanes

NEEL-SCHAFFER
Solutions you can build upon

Access/Circulation Concepts

FIGURE 2-5

5.0 ADDITIONAL POTENTIAL CAMPUS NETWORK IMPROVEMENTS

In addition to the network improvements already mentioned in this report, others were discussed in its development that for one reason, or another, were removed from the analysis. These improvements are preliminary ideas that will need further study to determine their true impact and viability.

To help alleviate congestion along Blackjack Rd and increase the utilization of Hail State Boulevard, an east-west connection from South Montgomery St to Hail State Boulevard was discussed. This connection was removed at this time, its impact on South Farm operations was deemed unacceptable. In the future, if this changes, or if a route is determined that would minimally impact South Farm operations, this connection could be of significant benefit to both the University and the city as it could help to alleviate major areas of congestion for both entities.

To further facilitate the restricted operations along Hardy Rd, north of Morrill Rd, and President's Circle, a redesign of the new east-west connection to Bulldog Way from Morrill Rd was discussed. The existing design will send all traffic into the existing intersection of Morrill Rd/Hardy Rd. The geometry of this intersection makes restricting vehicular access to Hardy St and President's Circle difficult while maintaining the ability for transit vehicles to navigate into the restricted areas. This will also create significant pedestrian conflicts with pedestrians attempting to access the new classroom spaces being built on the southeast corner of this intersection. The redesign would instead create a new connection south of this new classroom space removing the pedestrian conflict and creating an easier means of restricting access. This redesign was removed as the project is a part of a TIGER grant that is currently under construction.

6.0 RECOMMENDATIONS AND CONCLUSIONS

The campus street network has many proposed changes, along with planned improvements to the major routes serving the campus from the west and south. Blackjack Road is currently being widened to provide 2 westbound travel lanes from Stone Boulevard to Hardy Road, and a center turn lane from Hardy Road east to Bardwell Road. Extension of the 5-lane section from Lincoln Green to Hardy Road (1.1 miles) would help to alleviate the entry/exit traffic delays on this southern access to campus.

The removal of the section of Bully Boulevard east of Sorority Row would open this area of the campus up for more development. A new east/west roadway could extend from Locksley Way at Blackjack Road and connect with Hardy Road. The Campus Trail extension to Lee Boulevard will attract a significant amount of traffic to the east campus. Signal warrants are recommended to be evaluated at the Lee Boulevard/Barr Avenue-Campus Trail intersection and at Blackjack Road/ Campus Trail intersection. The Blackjack Road/Campus Trail intersection is also recommended to be evaluated to see if a westbound right turn lane is warranted. Street signs and striping are recommended to be upgraded to meet MUTCD standards.

The SR 12 intersections at College View Street and Bully Boulevard are recommended to be reconstructed to eliminate the grade separation/ramps, and provide at-grade signals, allowing for direct access to Mill Street north of SR 12 at Bully Boulevard.

Mini roundabouts are recommended along Stone Boulevard at Creelman Street, Bully Boulevard and the new east/west route parallel to Blackjack Road. The mini roundabouts are more pedestrian friendly than traffic signals, will slow through traffic more than a series of coordinated traffic signals, and yet have less delays than an all-way stop controlled intersection. A roundabout is also recommended at the intersection of George Perry St and Bailey Howell Dr.

East Campus traffic congestion could get some additional relief with the reconstruction/ realignment of Bardwell Road, along with a future connection to US Highway 82 via a new interchange/connection to Blackjack Road across Sand Creek.

The realignment of Oktoc Road to intersect Blackjack Road at Hardy Road is anticipated to improve the east/west flows of Blackjack Road traffic between Hardy and Stone. The extension of Artesia Road from Oktoc Road west to Hail State Boulevard, may provide some diversion of Oktoc Road traffic from Blackjack Road. The connection of Hail State Boulevard to Bulldog Way-Campus Trails, may also divert some of the east/west traffic from Blackjack Road.

Section 3:

Multimodal Transportation

Multimodal Transportation

1.0 MASTER PLAN UPDATE

1.1 PEDESTRIAN NETWORK

An objective of the Master Plan is to pedestrianize the academic core of the campus. Emphasis is placed on creating a safe pedestrian environment taking into account the need for shade and shelter during inclement weather. Beyond the campus core, connections to the Green Corridor, the Cultural Corridor, a proposed Rail Trail, and developed areas at the edge of campus extend the campus pedestrian network between campus districts and beyond the campus to the surrounding community.

1.2 BICYCLE NETWORK

The campus bicycle network is enhanced by providing more low-stress, protected bicycle facilities in addition to existing off-street bikeways and on-street sharrow markings. The expanded network provides more comprehensive access to on-campus destinations for bicyclists and is also seamlessly integrated with the existing and proposed off-campus bicycle network. Bicycle facilities span the Green Corridor and the Cultural Corridor. There are also proposed shared use path connections to a proposed Rail Trail and to Poor House Road where the County proposes to provide bicycle facilities to the Noxubee National Wildlife Refuge in the future.

1.2 TRANSIT NETWORK

To broaden mobility options, transit services are coordinated with the circulation networks and land use patterns of the campus. Potential transit routes are identified to accommodate a greater focus on transit services in the future. To facilitate access to the pedestrianized academic core, a perimeter transit loop defined by East Lee Boulevard and Bailey Howell Drive on the north, Bost Drive Extension and Russell Street on the west, Atlas Street on the south and Hardy Road on the east. The main transit hubs at the Old Main Academic Center and Montgomery Halll are coordinated with activity nodes and major destinations. All transit stops are envisioned as amenity locations for transit users and would be coordinated with other facilities where space and services can be provided.

Beyond the proposed transit loop, routes radiate outward along existing roads to provide access to other campus districts and beyond to the local community.

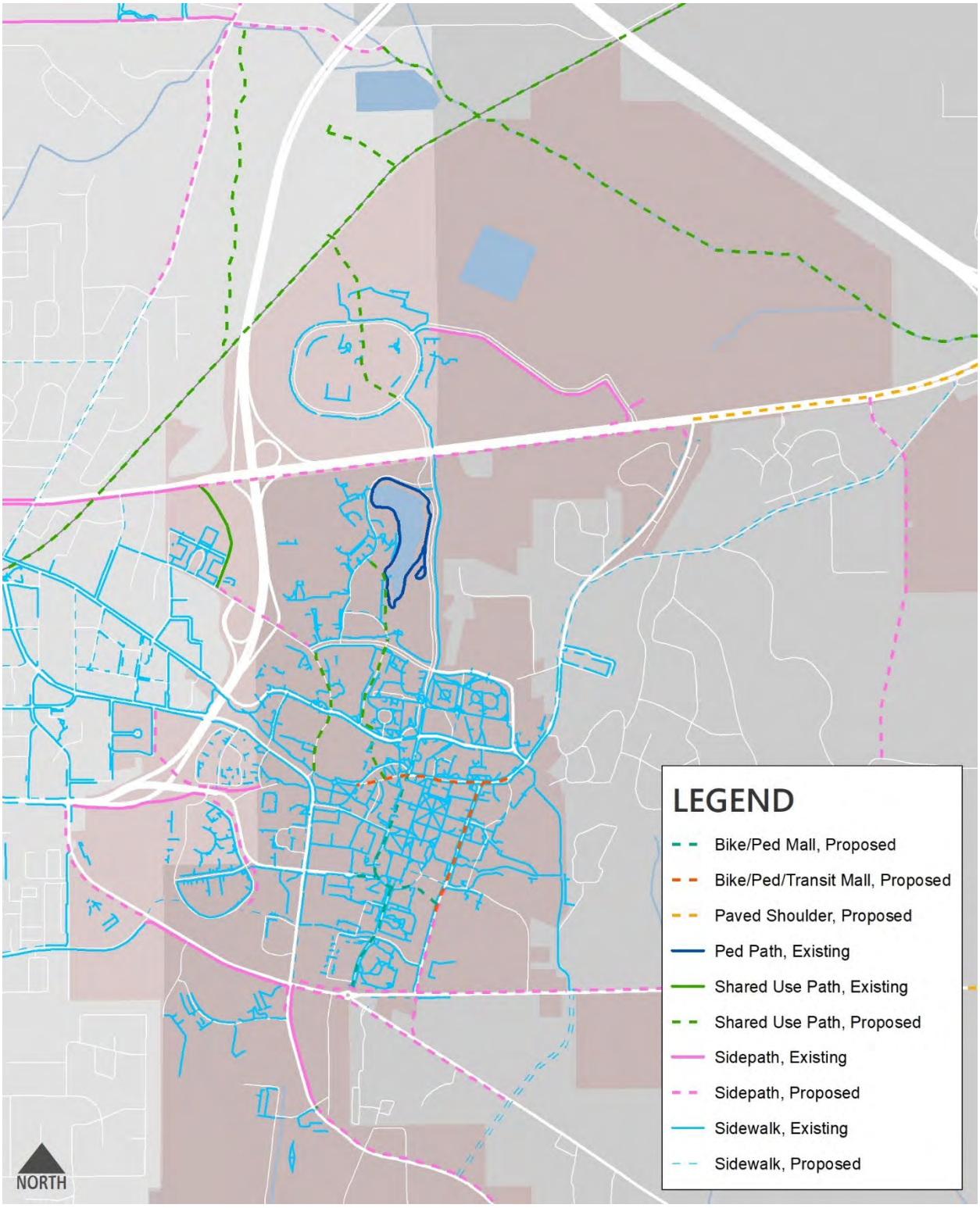


Figure 3-1 Pedestrian Network Diagram

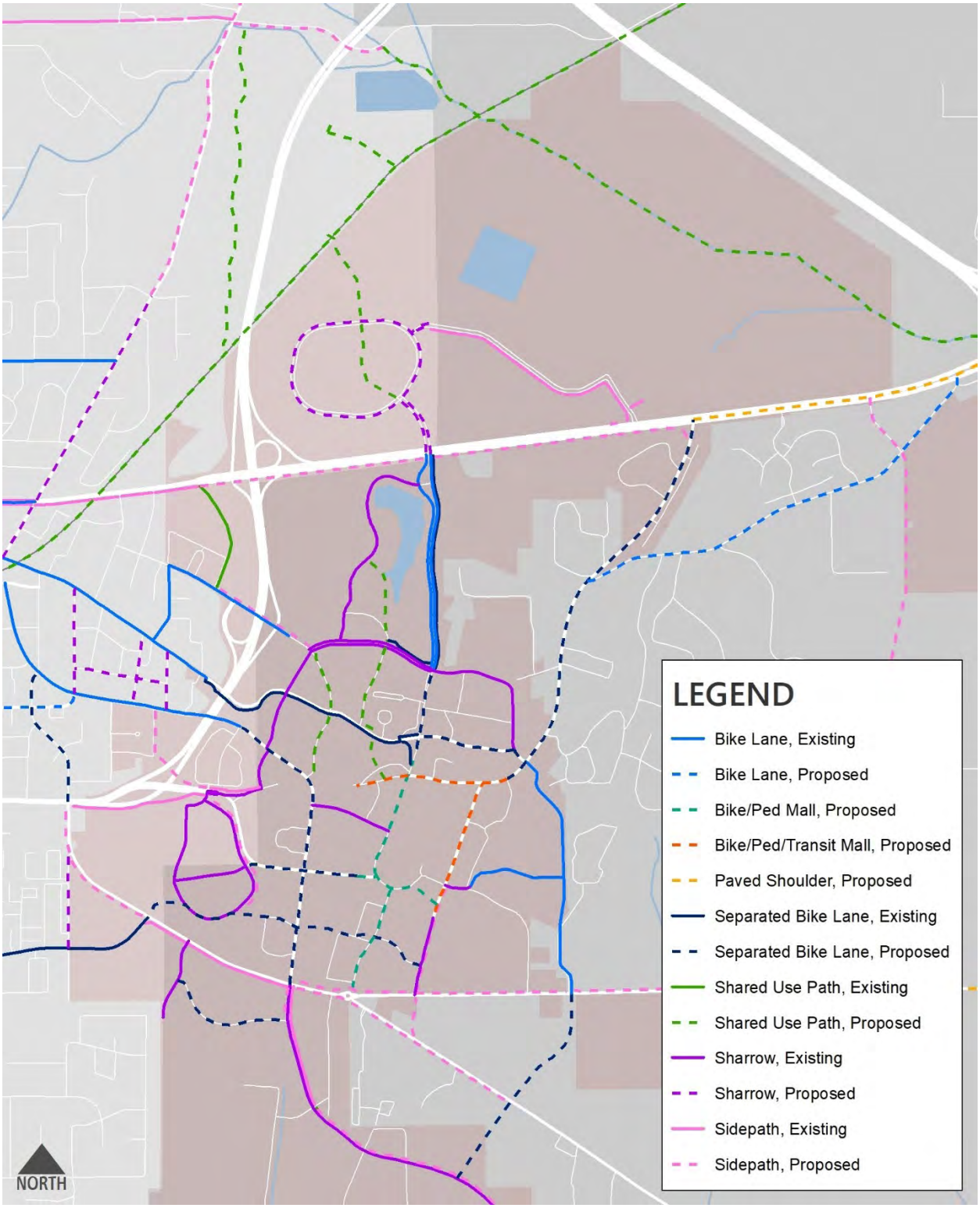


Figure 3-2 Bicycle Network Diagram

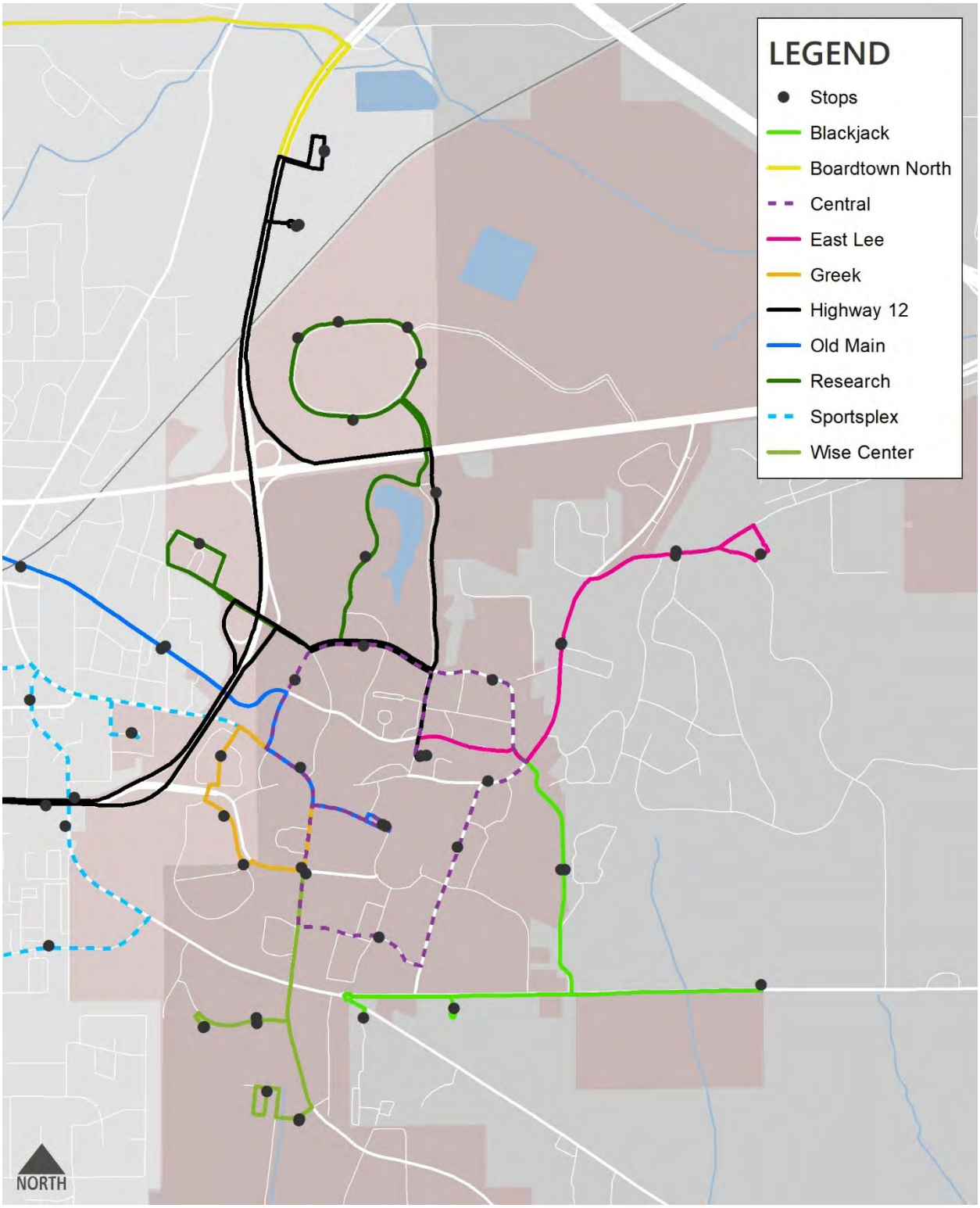


Figure 3-3 Transit Network Diagram

Section 4:

Water and Sewer Infrastructure Review

Water and Sewer Infrastructure Review

1.0 OVERVIEW

Mississippi State University owns, operates, and maintains both potable water and sanitary sewer systems which service the entirety of its main campus. Large scale mapping of the Mississippi State University (MSU) water and sewer infrastructure was performed using available information including maps and record drawings provided by University staff. These maps are included by attachment as *Appendix A-1* and *A-2*.

1.1 EXISTING CONDITIONS

The existing water system consists of four deep groundwater wells (two active, two standby), two elevated storage tanks totaling 1.2 million gallons, and distribution mains ranging in various sizes and types. This system provides potable water service throughout the entire campus and significant irrigation demand during the growing season months. Mississippi State University also has fire hydrants in place for fire connections throughout the main part of campus to support existing building connections. Currently, University personnel are not able to identify any known capacity issues during normal conditions. According to the latest Mississippi State Department of Health (MSDH) inspection report and capacity assessment, attached as *Appendix A-3*, the University water system demand is estimated to be at 65% of its design capacity. Projected growth of the University population will continue to increase demand on the water system, thus increasing the system's risk for adverse impacts due to a harmful event, such as a well failure or main line breaks. The system's aging infrastructure magnifies that risk. Many of the critical assets, including the two standby wells and older distribution mains, are nearing, or have even surpassed their expected useful life.

Sewer is collected throughout campus by a gravity collection system of mains varying in size and type. The existing topography of campus is sloped generally in north and south directions from a line crossing campus from Davis Wade Stadium to the Drill Field and on to the parking just east of Herbert Drive behind the Industrial Education Building. The northern drainage basin is collected at a pumping station on the North Farm and pumped via a 20" force main along the west side of campus at Hwy. 12 to the southern drainage basin at a point near Bully Boulevard and the north side of Robert Louis Jones Circle. Final collection of sanitary sewer for the entire campus ends up at a pumping station on South Farm. From there, all sewage is then pumped off campus and into the City of Starkville's sanitary sewer system, where it is further conveyed to the Starkville Waste Water Treatment Facility for treatment prior to final discharge. MSU also collects part of the City of Starkville's sewer at the North Farm which is combined with MSU's before pumping to the south side of the system. During dry weather, the system operates well within its capabilities and experiences no known capacity issues. However, significant inflow and infiltration (I&I) occurs in the system during heavy or prolonged rainfall events. Sewer overflows and increased pump runtimes have been observed by MSU personnel corresponding with rainfall events. Flows have doubled at times of intense rainfall with short durations. Problematic areas pointed out by MSU staff include locations at the Vet School and just northwest of there and west of the Campus

Power Plant. The source(s) of the I&I have not been physically identified but appear common to those experienced with other systems across this state and on a national level. Some minor I&I studies have occurred near known problematic areas and are ongoing. Major improvements to the system in the last 10 years include new flow meter installations in manholes and pumping stations, replacement of failing sections of 20-inch force mains, and pump replacements at both pumping stations to accommodate increased flows associated with wet weather events.

1.2 RECOMMENDATIONS

Overall, MSU's potable water system appears to be well maintained and capable of continuing to provide adequate and reliable service to its campus. However, there are a number of considerations to be made when planning for the next 10 years. To ensure future demands can be met sufficiently, the system's hydraulic model should be updated and calibrated to reflect real world conditions for potable water supply and fire protection, and a comprehensive capacity analysis should be performed on the supply, storage, and distribution portions of the system. The capacity analysis will identify necessary upgrades needed to support future growth and development. Due to the ever-increasing age of the water system infrastructure, MSU should have an asset management study performed to identify low to high risk areas and prioritize asset maintenance, replacement, and upgrades.

MSU's sanitary sewer system appears to have adequate capacity during dry weather conditions based on observed system performance. However, the true hydraulic capacity and the potential effect of future campus growth is largely unknown. A comprehensive analysis of the hydraulic capacity of the collection system and pump stations should be performed to better understand the system's needs to support future growth and increased dry weather flows. Significant I&I during rainfall can cause both operational challenges and negative public health impacts throughout the system. These excessive flows also have a negative economic effect on MSU by increasing operational costs and fees paid to Starkville for treatment costs. MSU should complete a full sewer system evaluation and study (SSES) to assess conditions of the sewer system, locate sources of I&I and develop a plan to eliminate I&I sources and restore the aging system to as near new conditions as possible.

Section 5:

Stormwater Management Review

Stormwater Management Review

1.0 OVERVIEW

Stormwater management on the Mississippi State University campus is critical to protecting the college's assets and preserving the quality of life for students and staff. A general review of the campus stormwater management was performed, and mapping of the overall campus drainage basins completed with existing and potential storage identified. The maps are attached to this memo as *Appendix B*.

1.1 EXISTING CONDITIONS

The MSU campus is divided between two major drainage basins, the Sand Creek basin to the north and the Catalpa Creek basin to the south. Stormwater is collected throughout the campus by a system of storm inlets, pipes, and open ditches, and is carried downstream to each respective waterway. According to MSU personnel, the majority of the core campus area does not experience any significant flooding issues. However, there are some frequent flooding issues near the Vet School at the southern edge of campus during heavy rainfall events. There are numerous factors that can contribute to flooding potential, and it is difficult to speculate as to the specific cause of the issues being observed at the Vet School. By analyzing historical aerial photography of MSU's campus, it is estimated that the percentage of impervious area has increased from 36% in 1996 to 52% in 2021. Any future buildout of current green spaces will continue to increase that percentage and the magnitude of storm runoff. Currently, there are very limited opportunities for detention or retention of stormwater runoff throughout campus. Only about 16 acres of storage facilities exist across the approximately 810 acres of the core campus area. Inadequate storage facilities could contribute to intensified flooding effects as further development of campus is realized.

1.2 RECOMMENDATIONS

In order to better understand its condition and hydraulic capacity, MSU should have a comprehensive drainage study of the campus stormwater system completed. The study would provide detailed information to analyze current flooding risk, develop specific mitigation strategies, and determine any necessary upgrades to drainage facilities. In general, MSU should consider stormwater management strategies in conjunction with planning for growth and development over the next 10 years. Available green space should be considered for potential storage areas where feasible. The attached maps identify recommended areas for storage facilities to be considered totaling approximately 18 acres. MSU should also consider the use of underground stormwater detention facilities in conjunction with any future parking lot construction.

Section 6:

Landscape Architecture

Landscape Architecture

1.0 INTRODUCTION AND SUMMARY

The Landscape Architecture Recommendations to the University's Master Plan Update provide general direction for new goals, objectives, and focus areas to strategically preserve and enhance the campus landscape. With its rich history and background as a Land Grant Institution, the physical campus of Mississippi State University has a vivid story of architecture and landscape architecture. The goals, objectives, and focus areas described in this section build upon the Landscape Guidance included in the 2016 Campus Master Plan and provide direction and methodology to guide the University toward implementation and realization of the updated landscape vision for the campus.

2.0 REGIONAL CONTEXT AND LOCATION

The Mississippi State University campus is part of the Black Belt geological formation that was formerly covered by shallow seas during the Cretaceous period. Parts of the Black Belt consist of dark fertile soils and parts consist of large alkaline chalk formations. The campus is part of the United States Department of Agriculture (USDA) Plant Hardiness Zone 8A which recommends plant material with cold tolerance to 10-15 degrees Fahrenheit. The area has a long growing season (approximately 205 days) and an average annual rainfall amount of 54.9 inches.

3.0 SUMMARY OF PRIOR LANDSCAPE GOALS AND OBJECTIVES

The following overarching Landscape Guidance goals and objectives were included in the 2016 Master Plan and were intended to reinforce and support the social and environmental goals identified by the Plan.

- Strengthen the campus landscape experience. Introduce a strong direction and purpose to the campus landscape, providing stronger connections to MSU's history, culture, outdoor activities, education, stormwater management and microclimates.
- Provide a consistent landscape structure to reinforce both the well-defined and undeveloped open spaces of the campus including streets, pedestrian connections, and inherent water bodies.
- Improve the campus landscape to support the daily life of the University and enrich the interface between the campus and community.
- Initiate a "native/adaptive hardy" tree species planting program to renew and develop the overall campus landscape and reinforce the relationship of the campus to the surrounding regional landscape.
- Reinforce and strengthen pedestrian/bike connections with a clear and visible structure of landscape materials and plantings that provide shade and promote ecological diversity.

- Landscape systems to support the numerous bicycle and pedestrian investments were not specifically included in the previous Master Plan but implemented during the last 5 years.

4.0 EXISTING LANDSCAPE ISSUES

The Mississippi State University Campus is a wonderful palette for learning and various quality events. It's a physical space that is a complex network of infrastructure such as buildings, streets, parking, utilities, pathways, and landscape. To improve requires constant evaluation. The following landscape issues have been identified and should be considered with Master Plan implementation.

Landscape spaces need priority – The saying goes "if everything is a priority, then nothing is a priority". Campus Landscape's resources (staff, equipment, materials, etc.) are finite and should be committed to a prioritized system of landscape spaces, each with its own unique maintenance plan.

Reduce Maintenance – Campus is predominately open lawn space that is attractive but offers very little function. These large lawn spaces require resources that should be focused on higher priority areas. Other landscape types should be considered to reduce the harmful ecological effects of manicured lawns (mowing, fertilizers, herbicides, pesticides, etc.).

Find the correct balance between plant palette consistency and diversity – Campus is a learning environment for many University programs and students who benefit from ecological diversity. Campus is the physical part of the Mississippi State University brand that requires iconic views and memorable spaces. Uniqueness can add value to these spaces, but priority should also be given to consistency in landscape spaces to assist with maintenance and quality.

5.0 GOALS AND OBJECTIVES

The goals of the Campus Master Plan Update are to provide resilient, consistent, organized, and attractive campus systems of streets, paths, buildings, and open spaces. Organized landscapes are the seams that connect these systems and extend the learning experience beyond the classroom. Landscape systems foster human interaction and engage students, faculty, staff, and alumni/visitors within both the built and natural campus environments.

The following goals have been identified to improve campus landscape systems:

5.1 IMPROVE CAMPUS IDENTITY

The identity of a place or organization is rooted in its sense of place. A location's sense of place is a collection of perceptions including visual, cultural, social, and environmental, that provide meaning. Sense of place is what helps make a physical space worth caring about, often creating a lasting connection. Campus landscape systems are the foundation for a university's sense of place and are a critical part of the campus experience, beginning with a first impression and extending to the often-mundane aspects of daily operation.

5.2 GROW PEDESTRIAN SCALE

Pedestrian scale is of vital importance as the University implements "pedestrianization" projects within the campus core and constructs pedestrian and bike corridors from the perimeter. Humans process their surroundings in a multitude of ways, relying on all available senses to experience their current location. Signage, trees, plant material, lighting assemblies, fencing, paving materials, benches, planters, sculpture, seating, art, and other elements of the landscape add to the overall campus experience and help to prioritize the experiential impact of large-scale campus elements such as parking, roadways, and large buildings. These human scale landscape elements allow pedestrians and cyclists to feel comfortable, develop a positive perception, and feel a part of the University community.

5.3 CREATE A SUSTAINABLE BALANCE

Sustainable balance is a vital part of the University community. A University community with a deep portfolio of sustainability initiatives is more likely to have members exposed to healthier food, community service opportunities, and a creative approach to lifestyle behaviors. Although still broad, a sustainable landscape system is based on creating spaces that address and support environmental, economic, technological, socio-cultural and University policies. The University will continue to include climate, topography, water quality, safety, and best management practices when considering new development within the campus landscape.

The objectives section includes specific action steps to implement the goals listed above. The following objectives have been identified to improve the campus landscape systems:

- **IMPROVE CAMPUS PERIMETER, GATEWAYS, AND ENTRANCE ROADS**

  Campus Perimeter: Maintain a canopy of native trees and other indigenous materials. Support and enhance native forest habitat and minimize manicured lawn areas, replacing with native forest habitat or fallow areas consisting of native grasses and perennial wildflowers.

  Campus Entrances: Create signature planting designs and other signage and landscape features for all campus entrances, edges, and corners. These shall be developed to reflect the character of the University and compatible existing gateway features. Carefully consider the scale of each gateway planting feature depending on each site's open space, viewshed termini, and other factors specific to each gateway location. Consider fallow areas to provide a secondary landscape feature and minimize maintenance requirements.

  Entrance Corridors: Create or improve entrance roads with medians to include appropriately sized shade trees, low profile shrubs, and ground covers.

  Visual Corridors: Create or improve visual corridors from campus entrances and within entrance and pedestrian/bike corridors to accommodate and highlight key land uses or architectural features that improve the user experience and emphasize the University's brand.

- **PEDESTRIAN AND BIKE CONNECTIONS**

  Pedestrian use is often a function of necessity but also a function of accessibility and landscape preference. The landscape system that supports and provides experiences for a pedestrian is important in the perception of distance and comfort. Enhance pedestrian corridors with defining tree plantings, understory and ground cover plantings at strategic

locations, manicured lawns in use areas, and fallow areas of native grasses and wildflowers in areas adjacent to wetland, riparian and native forest habitat. Connect to the developed elements of the pedestrian core, but also create context sensitive respites and learning environments within corridors.

- **PEDESTRIAN CORE**

  The pedestrian core of campus greatly contributes to campus aesthetics and character and helps to create the desired collegial environment. This move also helps with congestion, improves pedestrian flow, and reduces pedestrian-vehicle conflict points. The pedestrian core landscape systems should be the most densely developed, offering planting strategies that frame views, control pedestrian movements, provide experiences, and create shade and windbreaks. They should create or make connections to existing shaded quads, plazas, and common areas for student interaction and places for gathering and recreation. These are the highest priority landscape spaces, and stormwater quality should still be addressed through the implementation of green infrastructure such as rain gardens and bioswales.

- **OVERALL CAMPUS ECOLOGY**

  The objective of an improved campus ecology is to create a healthier campus by removing all invasive plant species, promoting safety and security, enhancing the natural environment, providing shade for pedestrians and large paved areas, and minimizing maintenance requirements through the selection and location of trees, shrubs, groundcover, turfgrass and native grasses/wildflowers.

  There is a need to diversify landscape types – shrub and groundcover beds, mulch/straw beds, manicured lawns, native grass/wildflower/fallow areas, wetland/retention/riparian zones, and native forest habitat – based on site-specific hierarchy of function, scale, current use, future use, and learning potential.

  Shrub and groundcover beds: Use low-maintenance, strong-performing plant species in various combinations to create visually interesting and biologically diverse landscapes in high traffic and high priority areas such as gateway features, foreground of view corridors, building foundation planting, and social/academic outdoor spaces within the campus core.

  Mulch/straw beds: Place and maintain shredded hardwood or bark mulch, pine straw or gravel/rock mulch in high traffic and low-medium priority areas such as parking lots and street islands/medians and high foot traffic areas such as transit stops.

  Manicured lawns: Select turf species based on biological factors such as soil conditions, light availability, water availability, and intended use (i.e., high/low foot traffic). Use best management practices to establish and maintain turf areas using minimal amounts of potable water, herbicide, insecticide, and commercial fertilizers and soil amendments.

  Native grass, wildflowers and fallow areas: Plant native or highly adapted grasses and/or wildflower species to create fallow areas that provide attractive contrast to adjacent landscape types and help transition to wetland/riparian or existing forest habitats. These fallow areas are low traffic and low priority areas that are not appropriate for reforestation.

The priority of these areas could increase if used for learning landscapes. Fallow areas are transition landscape spaces between manicured lawn and existing forest habitat, areas for future planned development that are currently manicured lawn, areas for pedestrian control, and elements of key viewsheds. Size and scale of each transition area is dependent on each site, but pedestrians should feel most connected to pathway and adjacent manicured lawn and bed areas and view fallow areas from an appropriate distance. Fallow areas would consist of native grass species primarily consisting of little bluestem, broomsedge, and sideoats grama, along with other secondary species and wildflowers. Temporary irrigation may be required during establishment. After establishment (approximately 3 growing seasons), annual maintenance consists of annual controlled burning. If annual controlled burning is a challenge, mow or bush hog annually and burn on an annual rotation. Use herbides as needed to control weeds and tree growth. NativeKlean and Panoramic 2SL are two options to consider. Insecticides or soil amendments to manage pH should not be required.

Wetland, retention, and riparian zones: Use landscape systems to improve stormwater runoff leaving campus and entering the Sand Creek and Catalpa Creek watershed basins. Create natural systems of plant species and pervious materials that complement wetlands and riparian zones and treat water before entering detention and retention ponds. Wetlands and landscape treated riparian zones help turn traditional infrastructure systems into green infrastructure that treat stormwater, stabilize soils to prevent erosion, and reduce pollution and suspended particles such as silt, trash, toxic metals, and dissolved chemicals.

Native forest habitat: Existing native forest habitat shall be preserved in undeveloped parts of campus and along riparian corridors to provide space for native wildlife and preserve biodiversity. These areas shall be reinforced with species that are indigenous to the natural plant communities of East Central Mississippi, recreating a semblance of the original Black Belt ecosystem historically found in the region. Native forest habitats are also important for screening, wind breaks, framing viewsheds and erosion control.

Water and Sewer Appendix A-1:

Main Campus Overall Water Map

N

600 0 600

SCALE IN FEET

LEGEND

Default

WATER LINES

- 20" WATER
- 16" WATER
- 12" WATER
- 10" WATER
- 8" WATER
- 6" WATER
- 4" WATER

Map Base

KEY MAP

G:\Projects\16000\16200.000 (Sasaki-MSU MP Update)\drawings\WATER map.DWG

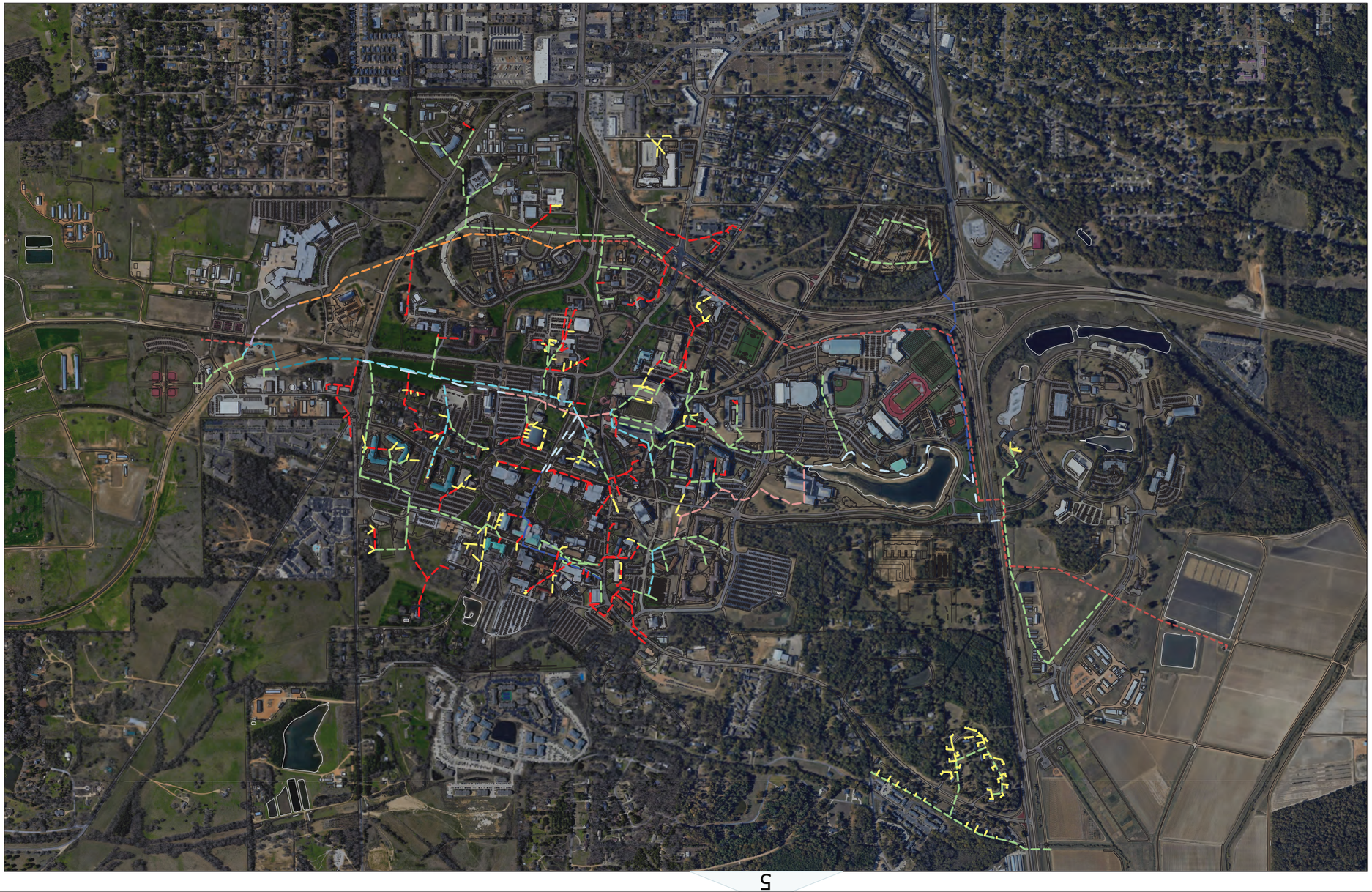
NEEL-SCHAFFER
Solutions you can build upon

MISSISSIPPI STATE UNIVERSITY UTILITY MAPS

OVERALL WATER

Water and Sewer Appendix A-2:

Main Campus
Overall Sewer Map



N

600 0 600

SCALE IN FEET

LEGEND

Default

SEWER LINES

- 20" FORCE MAIN
- 30" SEWER
- 24" SEWER
- 20" SEWER
- 18" SEWER
- 15" SEWER
- 12" SEWER
- 10" SEWER
- 8" SEWER
- 6' SEWER
- 4" SEWER

Map Base

2

5

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Solutions you can build upon

MISSISSIPPI STATE UNIVERSITY UTILITY MAPS

OVERALL SEWER

Water and Sewer Appendix A-3:

MSDH Inspection Report and Capacity Assessment

Generated February 3, 2021, 1:38 PM CST.

MISSISSIPPI STATE DEPARTMENT OF HEALTH

REPORT OF INSPECTION OF DRINKING WATER SUPPLY

PWS: 0530012 **Class:** D

An inspection of the MS STATE UNIVERSITY water supply in OKTIBBEHA county was made on 06/12/2019. Present at the time of inspection was JAMES K VICKERS, OPERATOR; WRITER . Official DON BUFFUM Address PO BOX 5307 MISSISSIPPI STATE MS 39762 W.W. Operator JAMES K VICKERS Address 5862 MORGANTOWN ROAD STURIS MS 39769 No. Connections 285 No. Meters ___ Population Served 15000 Field Chemical Analysis: pH ___ Cl2(free) 1.0 Cl2(total) 1.3 H2S N/A Iron ___ Fluoride ___ Point of Sampling DISTRIBUTION Water Rates ___ This inspection included a sanitary survey for compliance with the Ground Water Rule.

COMMENTS

Technical: 5 Managerial: 5 Financial: 5

OVERALL CAPACITY RATING: 5.0 / 5.0

1. This inspection included the Sanitary Survey for compliance of the Ground Water Rule. No significant deficiencies were identified during this inspection.

2. According to our records this supply has a Customer Design Capacity of 8746. This supply is now at 65.4% of its original design capacity. (See the attached design calculation).

3. The chlorinators were properly maintained and chlorine residuals were adequate. The chlorine residuals are being routinely recorded as well as the phosphate residuals.

4. The Cross Connection Program was discussed at the time of the inspection. All installed devices are tested yearly and results filed accordingly.

5. This supply has back-up generators on wells #4 and #5 to be used in the event of power failure. Both are wired and ready to be used in the event of an emergency.

6. The elevated tanks on this supply are current on inspections. All inspection records are being maintained.

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1-866-HLTHY4U • www.HealthyMS.com

Page: 2 - MS STATE UNIVERSITY - Inspection Report

7. Mr. Vickers stated that system pressures were adequate.

8. This supply serves Morrill Road W/A and East Lee Blvd. W/A. In talking with the purchasing supplies all stated that they were pleased with the water being provided from this facility and chlorine residuals appeared to be fine at all times.

9. Security around all the wells and elevated tanks was adequate and all doors properly locked.

10. System officials should insure that up-to-date hydraulic studies are maintained on this supply. Keep in mind that well run time is limited to 12 hours per day per each well. In addition, given the age of two of the existing wells Officials should consider the effect on Design Capacity should either fail. This could prove to be a disaster given the time it could take to have a new well installed should the worse happen.

11. At the time of the inspection VFDs were being installed on well #4 and #5. This will prove to be a considerable cost savings and should pay for itself within a couple of years.

12. The Security Vulnerability Self-Assessments and Emergency Response Plans must be updated annually. Annual updates/changes to these two important security documents must be documented. This will be considered a Significant Deficiency under the Groundwater Rule if it is not carried out.

13. Pump tests are now required at least every two years on all wells that are greater than three (3) years old, and every year on wells at systems whose design capacity exceeds 80%.
The purpose of this change is to ensure that water production and capacity, master meter accuracy, and other information pertaining to the proper functioning of your wells are gathered regularly. Pumping tests were being performed during the inspection. The results will be forwarded as soon as the tests are complete.

14. Mr. Vickers and his staff do a very good job of maintaining this water supply. Please feel free to give me a call if I may be of any assistance.

Completed by Scooter Lockhart on 06/26/2019.

Reviewed by Ralph Hayes, P.E. on 06/27/2019.

If you have any questions, please call (601)573-4368.

pc:

DON BUFFUM, OFFICIAL
JAMES K VICKERS, OPERATOR

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STANDARD FORM

Mississippi Department of Health
Bureau of Public Water Supply

FY 2019 Public Water System Capacity Assessment Form

NOTE: This form must be completed whenever a routine sanitary survey of a public water system is conducted by a regional engineer of the Bureau of Public Water Supply

PWS ID#: 0530012 Class: D Survey Date: 06-12-2019 County: OKTIBBEHA
Public Water System: MS STATE UNIVERSITY Conn: 285
Certified Waterworks Operator: JAMES K VICKERS Pop: 15000

CAPACITY RATING DETERMINATION

Technical (T) Capacity Rating: [5] Managerial (M) Capacity Rating [5] Financial (F) Capacity Rating [5]

Capacity Rating = $\frac{T + M + F}{3} = \frac{15}{3} = 5$

Overall Capacity Rating = 5.0

Completed by Scooter Lockhart on 06/26/2019
Reviewed by Ralph Hayes, P.E. on 06/27/2019

Comments:

Technical Capacity Assessment	Point Scale	Point Award
[T1] Does the water system have any significant deficiencies? [Y (N)]	N - 1pt. Y - 0pt.	1
[T2] 1) Was the water treatment process functioning properly? [(Y) N] (i.e. Is pH, iron, chlorine, fluoride, etc. within acceptable range?) **2)** Was needed water system equipment in place and functioning properly at the time of survey? [(Y) N] (**NOTE:** Equipment deficiencies must be identified in survey report.) **3)** Were records available to the regional engineer clearly showing that all water storage tanks have been inspected and cleaned or painted (if needed) within the past 5 years? [(Y) N NA] (**NOTE:** All YESs required to receive point)	All Y - 1 pt. Else - 0 pt.	1
[T3] 1) Was the certified waterworks operator or his/her authorized representative present for the survey? [(Y) N] **2)** Was log book up to date and properly maintained? [(Y) N] (Are minimum days being met based on system classification) **3)** Was the water system properly maintained at the time of survey? [(Y) N] **4)** Did operator/system personnel satisfactorily demonstrate to the regional engineer that he/she could fully perform all water quality tests required to properly operate this water system? [(Y) N] (**NOTE:** All YESs required to receive point)	All Y - 1 pt. Else - 0 pt.	1
[T4] 1) Does water system routinely track water loss and were acceptable record available for review? [(Y) N] **2)** Is water system overloaded? (i.e. serving customers in excess of MSDH approved design capacity)? [Y (N)] **3)** Was there any indication that the water system is/has been experiencing pressure problems in any part(s) of the distribution system? [Y (N)] (based on operator information, customer complaints, MSDH records, other information) **4)** Are well pumping tests performed routinely? [(Y) N NA] (**NOTE:** YES FOR #1 & YES OR N/A FOR #4 AND NOs FOR #2 & #3 required to receive point)	1)Y - pt. 2)N - pt. 3)N - pt. 4)Y - pt.	1
[T5] 1) Does the water system have the ability to provide water during power outages? (i.e. generator, emergency tie-ins, etc.) [(Y) N] **2)** Does the water system have a usable backup source of water? [(Y) N] (**NOTE:** Must be documented on survey report)	All Y - 1 pt. Else - 0 pt.	1
TECHNICAL CAPACITY RATING = [5] (Total Points)		

Revision Date: 07/09/2018

Public Water System: MS STATE UNIVERSITY PWS ID #: 0530012
FY 2019 Public Water System Capacity Assessment Form Survey Date: 06-12-2019

Managerial Capacity Assessment	Point Scale	Point Award
[M1] Were all SDWA required records maintained in a logical and orderly manner and available for review by the regional engineer during the survey? [(Y) N]	Y - 1pt. N - 0pt.	1
[M2] 1) Have acceptable written policies and procedures for operating this water system been formally adopted and were these policies available for review during the survey? [(Y) N] **2)** Have all board members (in office more than 12 months) completed Board Member Training? [(Y) N NA] **3)** Does the Board of Directors meet monthly and were minutes of Board meetings available for review during the survey? (**NOTE:** Quarterly meetings allowed if system has an officially designated full time manager) [(Y) N NA] (**NOTE:** ALL YESs or NAs required to receive point. NA - Not Applicable)	All Y - 1 pt. Else - 0 pt.	1
[M3] Has the water system had any SDWA violations since the last Capacity Assessment? [Y (N)]	N - 1pt. Y - 0pt.	1
[M4] Has the water system developed a long range improvements plan and was this plan available for review during the survey? [(Y) N]	Y - 1pt. N - 0pt.	1
[M5] 1) Does the water system have an effective cross connection control program in compliance with MSDH regulations? [(Y) N] **2)** Was a copy of the MSDH approved bacti site plan and lead/copper site plan available for review during the survey and do the bacti results clearly show that this approved plan is being followed? [(Y) N] (**NOTE:** All YESs required to receive point)	All Y - 1 pt. Else - 0 pt.	1
MANAGERIAL CAPACITY RATING = [5] (Total Points)		

Financial Capacity Assessment	Point Scale	Point Award
[F1] Has the water system raised water rates in the past 5 years? [(Y) N] (**NOTE:** Point may be awarded if the water system provides acceptable financial documentation clearly showing that a rate increase is not needed, i.e. revenue has consistently exceeded expenditures by at least 10%, etc.)	Y - 1pt. N - 0pt.	1
[F2] Does the water system have an officially adopted policy requiring that water rates be routinely reviewed and adjusted as appropriate and was this policy available for review during the survey? [(Y) N]	Y - 1pt. N - 0pt.	1
[F3] Does the water system have an officially adopted cut-off policy for customers who do not pay their water bills, was a copy of this policy available for review by the regional engineer, and do system records (cut-off lists, etc.) clearly show that the water system effectively implements this cut-off policy? [(Y) N]	Y - 1pt. N - 0pt.	1
[F4] Was a copy of the water system's officially adopted annual budget available for review by the regional engineer and does the water system's financial accounting system clearly and accurately track the expenditure and receipt of funds? [(Y) N]	Y - 1pt. N - 0pt.	1
[F5 - Municipal Systems] 1) Was a copy of the latest audit report available for review at the time of the survey? [(Y) N] **2)** Does this audit report clearly show that water and sewer fund account(s) are maintained separately from all other municipal accounts? [(Y) N] (**NOTE:** Yes answer to all questions required to receive point.)	All Y - 1 pt. Else - 0 pt.	1
[F5 - Rural Systems] 1) Was the latest financial report / audit report available for review? [Y N] **2)** Does the latest financial report show that receipts exceeded expenditures? [Y N] (**NOTE:** Yes answer to both questions required to receive point)	All Y - 1 pt. Else - 0 pt.	
FINANCIAL CAPACITY RATING = [5] (Total Points)		

Revision Date: 07/09/2018

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MISSISSIPPI DEPARTMENT OF HEALTH
BUREAU OF PUBLIC WATER SUPPLY
DESIGN CAPACITY SHEET

System: **MS STATE UNIVERSITY**
ID: **0530012** Class: **D** County: **OKTIBBEHA**

Date Completed: **06/26/2019**
Connections - Actual: **285** Equivalent: **5721**
Design Capacity: **8746** Percent Design Capacity: **5721/8746 = 65.4%**

This supply consists of five wells and two elevated tanks.

Well 01 - plugged & abandoned
Well 02 - 1000 gpm
Well 03 - 931 gpm
Well 04 - 1200 gpm
Well 05 - 1242 gpm

Elevated Tank(1) - 200,000 gallons
Elevated Tank(2) - 1,000,000 gallons

CDC = 4373 + 1.2M/200

CDC = 4373 + 6000 = 10,373

Twice the well capacity = 8746

This supply consists of app. 15,000 students and faculty.

Assuming there is no where close to 15,000 on campus at one time and our design criteria call for 75-100 gpd per student. Also considering sprinkling systems on campus and nonmetered connections multiply by a factor of 1.5.

15,000 X 100 gpd =1.5M

1.5M/400 to convert to Equivalent Customer Connections yields 3750

3750 X 1.5 = 5625 (Number of Equivalent Connections on this supply)

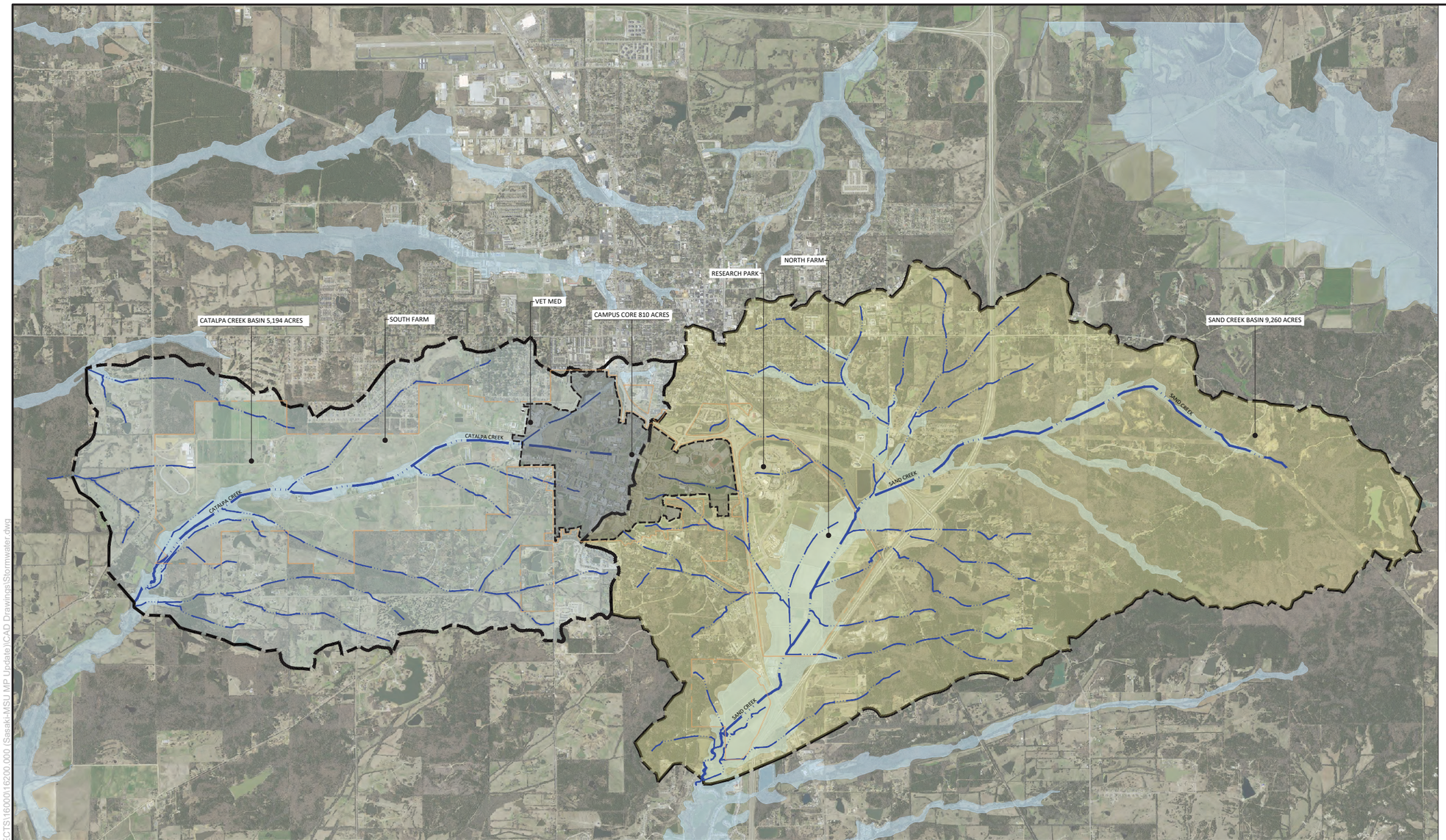
This supply also serves East Lee Blvd W/A(81 customers) and Morrill Road W/A(15 Customers)

Equivalent Connections = 5625 + 81 + 15 = 5721

Stormwater Management

Appendix B:

Main Campus Stormwater Set



N

0 2000 4000 8000 Feet
1"=2000'

LEGEND

LEGEND

- MSU PROPERTY BOUNDARY
- OVERALL CAMPUS WATERSHED BOUNDARY
- URBAN CAMPUS CORE BOUNDARY
- PRIMARY STREAM CATALPA/SAND CREEK
- UN-NAMED TRIBUTARY
- SAND CREEK BASIN
- CATALPA CREEK BASIN
- CAMPUS CORE
- FLOODPLAIN

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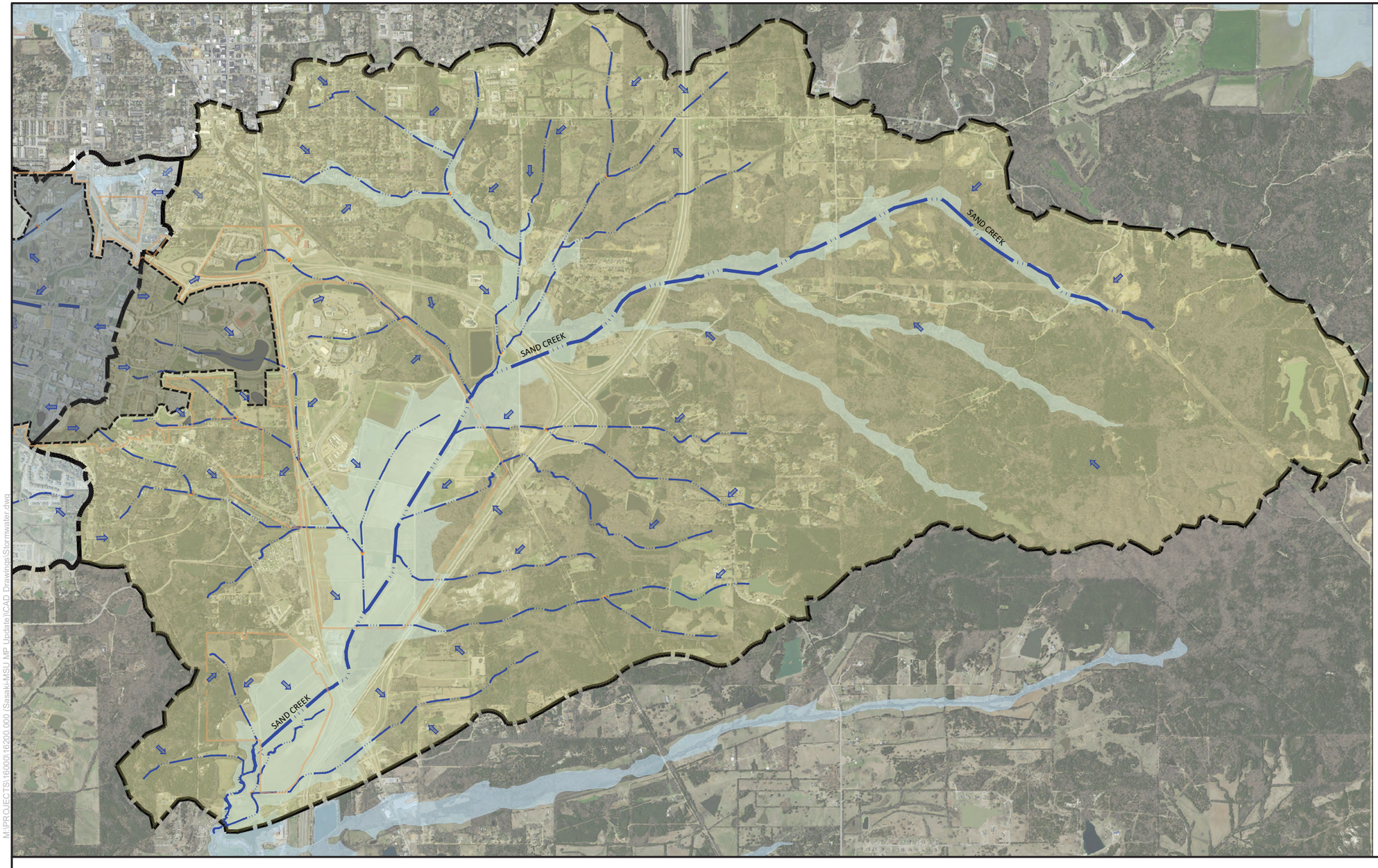
NEEL-SCHAFFER
Solutions you can build upon

MSU MASTER PLAN - STORMWATER - DRAINAGE BASINS

OVERALL



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0 600 1200 2400 Feet
1"=1200'

LEGEND

LEGEND
MSU PROPERTY BNDY
OVERALL CAMPUS WATERSHED BNDY
URBAN CAMPUS CORE BNDY
PRIMARY STREAM CATALPA/SAND CREEK
UN-NAMED TRIBUTARY
BASIN RIDGE LINE
BASIN FLOW DIRECTION
SAND CREEK BASIN
CATALPA CREEK BASIN
CAMPUS CORE
FLOODPLAIN

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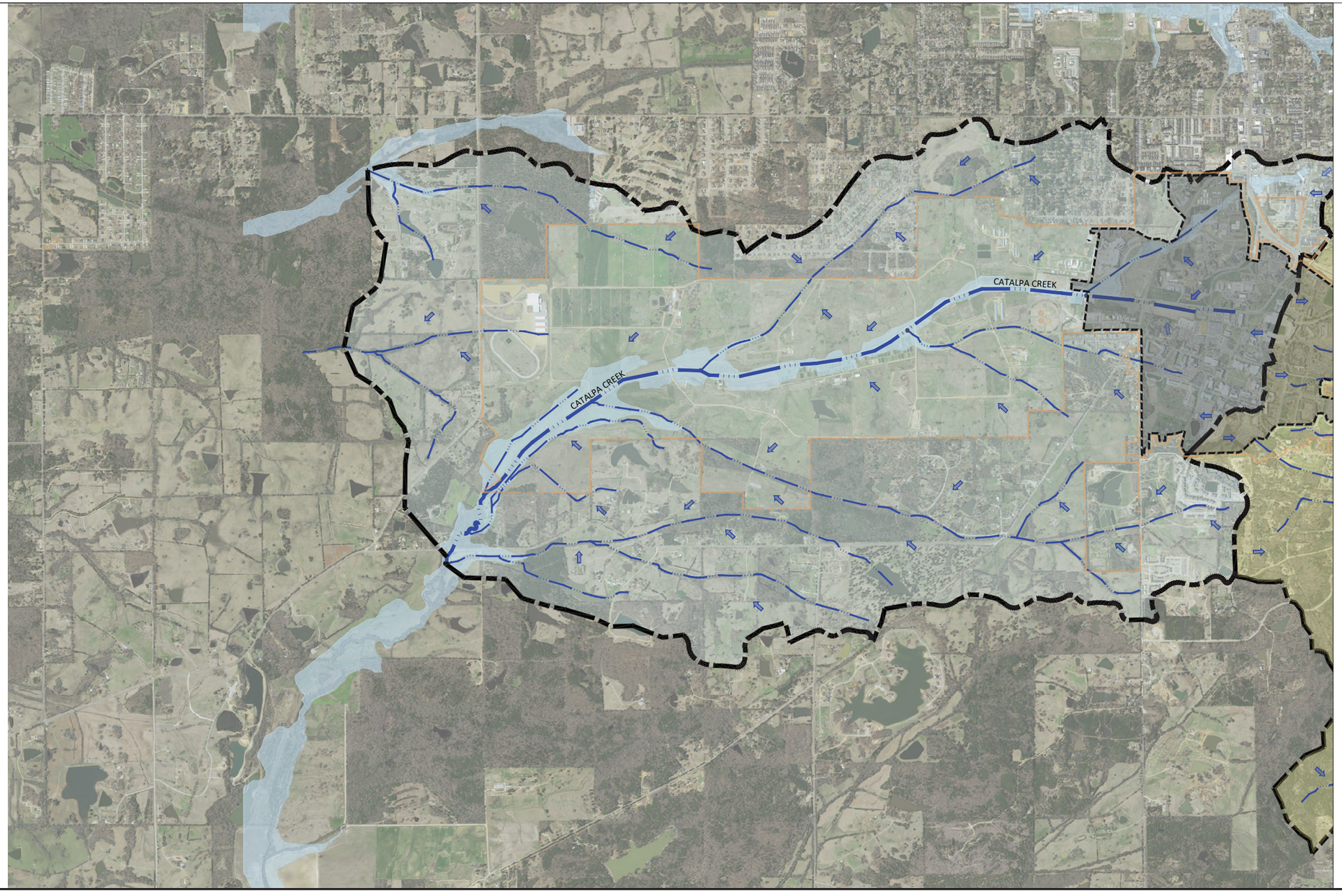
NEEL-SCHAFFER
Solutions you can build upon

MSU MASTER PLAN - STORMWATER - DRAINAGE BASINS

NORTH CAMPUS (SAND CREEK)



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1"=1200'

LEGEND

LEGEND
MSU PROPERTY BNDY
OVERALL CAMPUS WATERSHED BNDY
URBAN CAMPUS CORE BNDY
PRIMARY STREAM CATALPA/SAND CREEK
UN-NAMED TRIBUTARY
BASIN RIDGE LINE
BASIN FLOW DIRECTION
SAND CREEK BASIN
CATALPA CREEK BASIN
CAMPUS CORE
FLOODPLAIN

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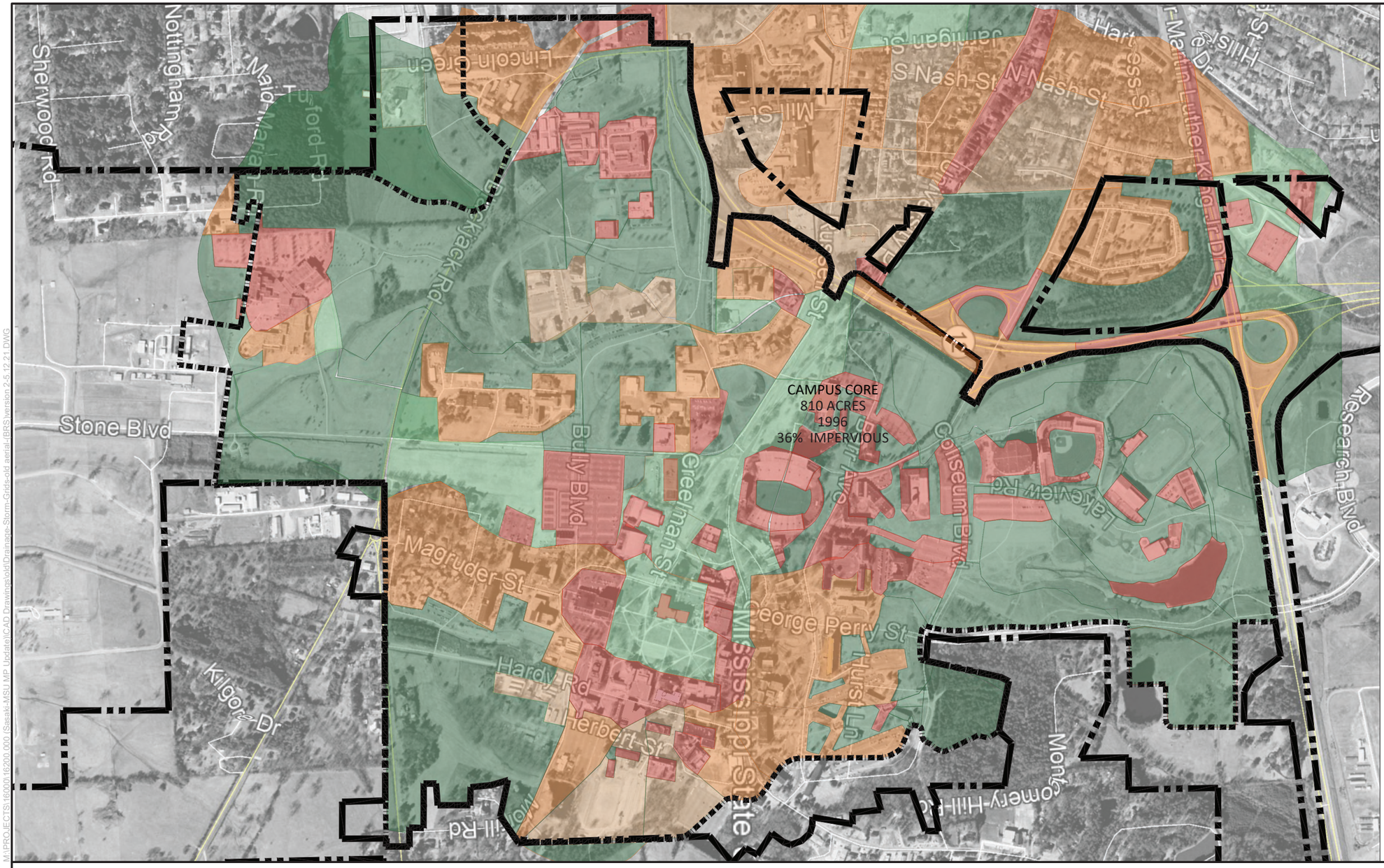
NEEL-SCHAFFER
Solutions you can build upon

MSU MASTER PLAN - STORMWATER -DRAINAGE BASINS

SOUTH CAMPUS
(CATALPA CREEK)



LEGEND

LEGEND	
MSU PROPERTY BNDY	
OVERALL CAMPUS WATERSHED BNDY	
CAMPUS CORE BOUNDARY	
PRIMARY STREAM CATALPA/SAND CREEK	
UN-NAMED TRIBUTARY	
90% IMPERVIOUS	16%
70% IMPERVIOUS	17%
50% IMPERVIOUS	4%
30% IMPERVIOUS	12%
10 % IMPERVIOUS	51%

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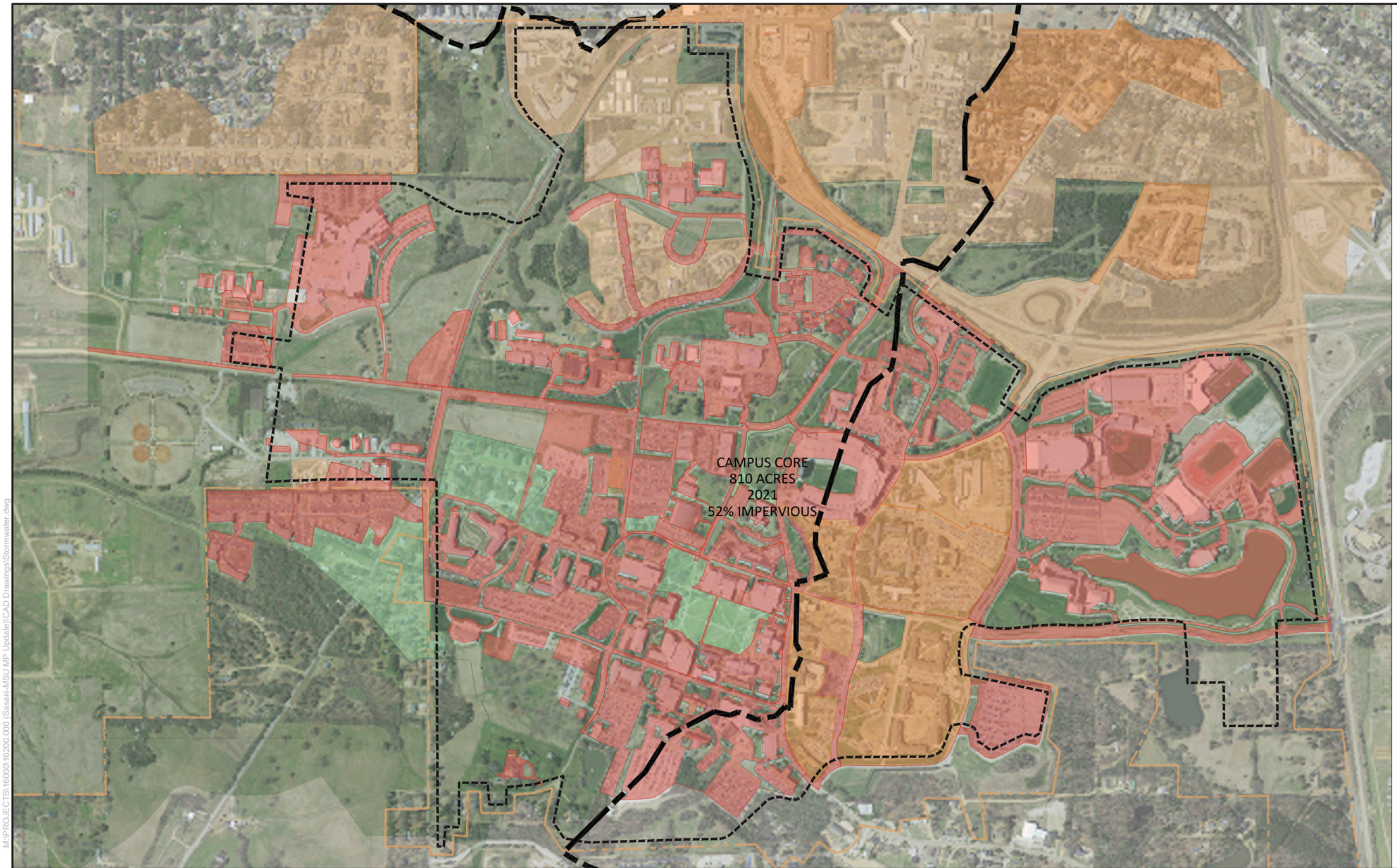
NEEL-SCHAFFER
Solutions you can build upon

MSU MASTER PLAN - STORMWATER - LAND USE

CAMPUS CORE-LAND USE-1996



N

0 200 400 800 Feet
1"=400'

LEGEND

LEGEND	
MSU PROPERTY BNDY	
OVERALL CAMPUS WATERSHED BNDY	
CAMPUS CORE BOUNDARY	
PRIMARY STREAM CATALPA/SAND CREEK	
UN-NAMED TRIBUTARY	
90% IMPERVIOUS	43%
70% IMPERVIOUS	10%
50% IMPERVIOUS	7%
30% IMPERVIOUS	3%
10 % IMPERVIOUS	38%

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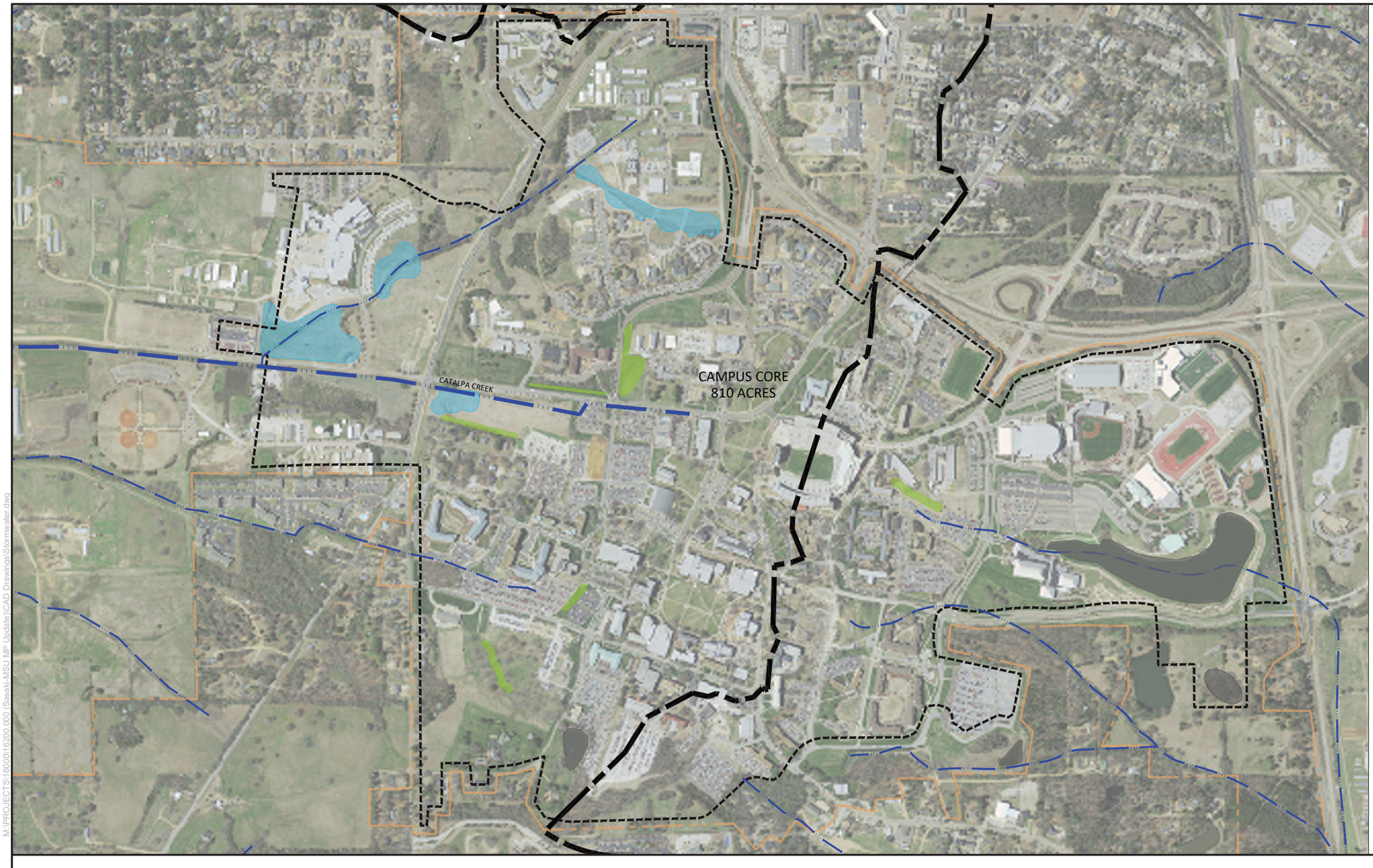
Solutions you can build upon

MSU MASTER PLAN - STORMWATER - LAND USE

URBAN CAMPUS CORE-LAND USE-2020



N

0 200 400 800 Feet
1"=400'

LEGEND

LEGEND	
MSU PROPERTY BNDY	
OVERALL CAMPUS WATERSHED BNDY	
URBAN CAMPUS CORE BNDY	
PRIMARY STREAM CATALPA/SAND CREEK	
UN-NAMED TRIBUTARY	
POTENTIAL STORAGE - DETENTION/RETENTION	14 ACRES
POTENTIAL STORAGE - BIOSWALE	4 ACRES
EXISTING STORAGE DETENTION/RETENTION	16 ACRES

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NEEL-SCHAFFER
Solutions you can build upon

MSU MASTER PLAN - STORMWATER - STORAGE

CAMPUS CORE

Outdoor Environments Guidelines

Mississippi State University

Outdoor Environments

Furnishing Selection Package

SASAKI

Goals for Healthy Campus Outdoor Spaces

- **Promote Personal Well-being:** Initiate a sense of belonging or personal mindfulness by stimulating the senses and encouraging a connection to the environment

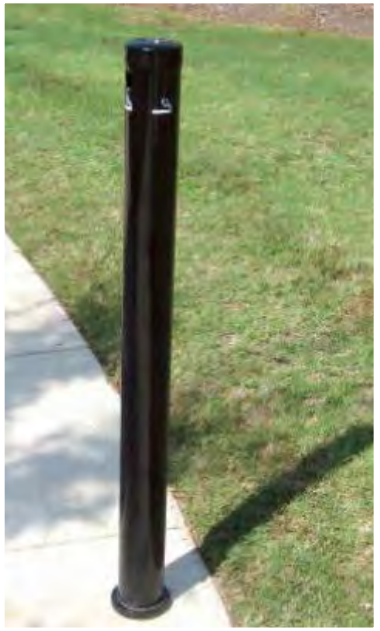
- **Enhance Identity:** Create a character-defining, safe, and immersive experience

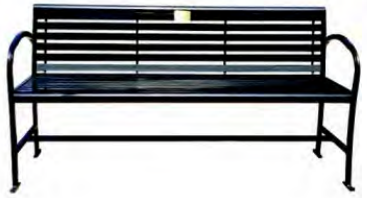
- **Encourage Presence:** Create an environment that encourages interaction – with nature, others, oneself – to stimulate physical, cognitive, & emotional revitalization

Strategies for Healthy Campus Outdoor Spaces

1. **Distinguish Character Zones:** Activate outdoor environments to enrich the experiences of the users in an appropriate and effective manner
2. **Develop Furnishings Collections:** Prepare a range of furnishing collections that will create a unique identity for each character zone. Prepare a matrix of criteria to aid the decision-making process
3. **Integrate Collections with Campus Sites:** Prepare site-specific design solutions that illustrate conceptual furnishing layouts & proposed landscape improvements

Existing Campus Furnishings





Campus Furnishings Guidelines: Selection Criteria

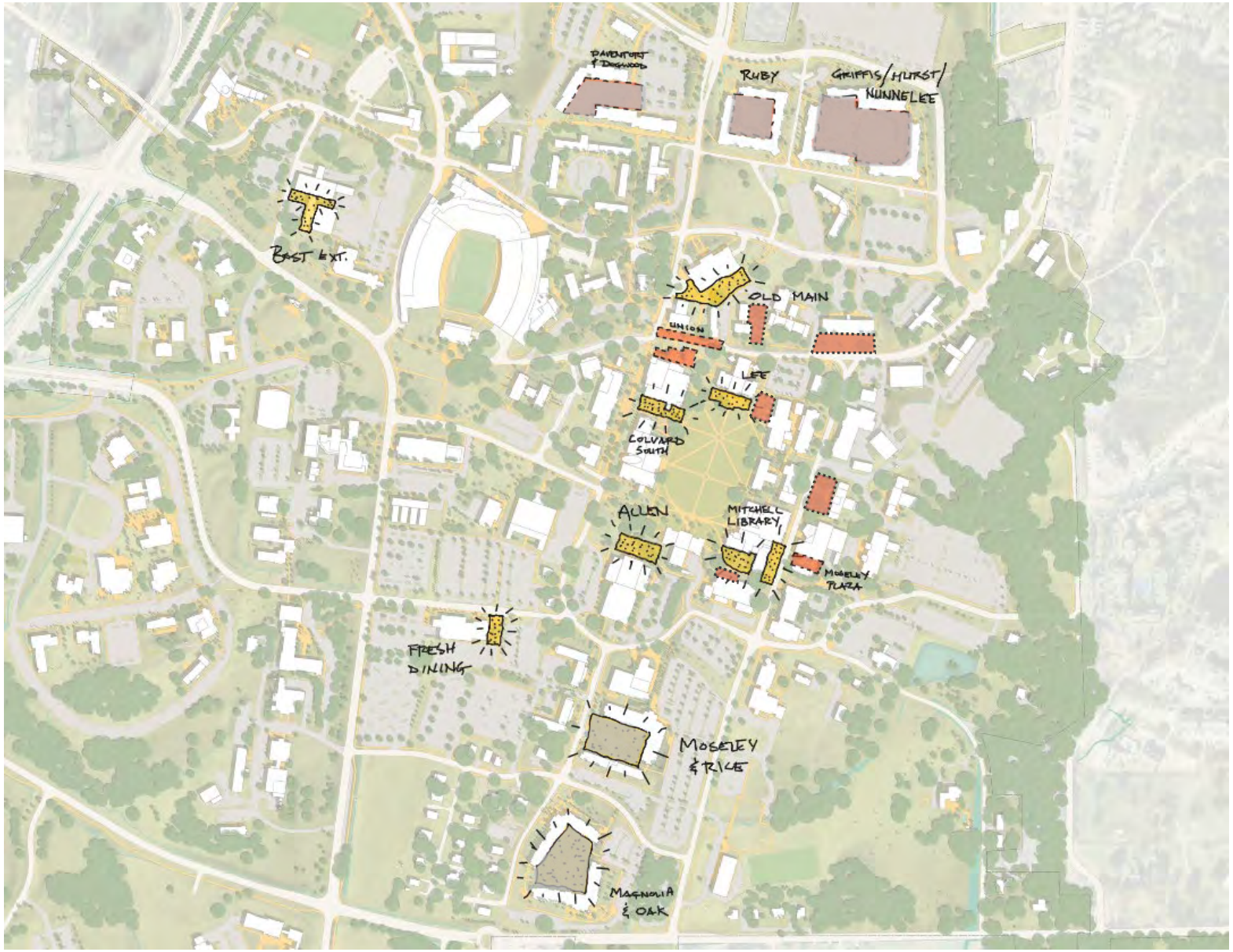
- Aesthetics
- Function
- Current level of investment in an element
- Initial Cost
- Life-cycle cost
- Recycled content
- Manufacturer location

Assessment of Existing Campus Furnishings

Element	Style	Materials	Durability	Sustainability	Lead Time	Custom Colors	Cost
Benches Dumor Site Furnishings	Traditional Backed/Backless 6,' 8' Lengths	Steel (Powdercoat) *Assembly Required*	****	- 59-62% R.C. - 100% Recyclable - MFG > 500 mi. (PA)	6-8 Weeks	Available for upcharge	Back - 6' Length: $1,295 Back - 8' Length: $1,439 Bckls - 6' Length: $1,090 Bckls - 8' Length: $1,163
Benches 'Bulldog Bench' MPIC	Traditional Backed	Steel (Powdercoat)	****	- N/A R.C. - 100% Recyclable - MFG < 500 mi. (MS)	N/A	N/A	$660
Litter Receptacles MPIC	Traditional 36 Gal. capacity	Steel (Powdercoat)	****	- N/A R.C. - 100% Recyclable - MFG < 500 mi. (MS)	N/A	N/A	$570
Bike Rack Highland Products Group	Traditional 5,7,9 Bike	Steel (Powdercoat)	****	- N/A R.C. - 100% Recyclable - MFG > 500 mi. (FL)	6-8 Weeks	N/A	5 Bike: $287 7 Bike: $438 9 Bike: $569
Patio Bistro Set Patio Choice	Eclectic/Traditional	Steel (Powdercoat)	**	N/A - MFG > 500 mi.	6 Weeks Assumed	Other colors available	1 table, 2 chairs: $110
Hexagon Picnic Table MPIC	Traditional	Streel (Powdercoat)	****	- N/A R.C. - 100% Recyclable - MFG < 500 mi. (MS)	N/A	N/A	$940

Updated Study Areas

- Colvard Union (south side)
- Mitchell Library (Hardy entrance)
- Mitchell Library (south side)
- + Hand Lab (north side)
- + Bowen Hall (Hardy entrance)
- Allen Hall (north entrance)
- Lee Hall (south side)
- + Lee Hall (east side)
- Bost Extension Breezeway
- Old Main Plaza (Academic Center)
- + Magruder Hall
- + Hilbun Hall
- Fresh Food (east side)
- - Residential Quads (Zacharias, Moseley, Oak, Magnolia)

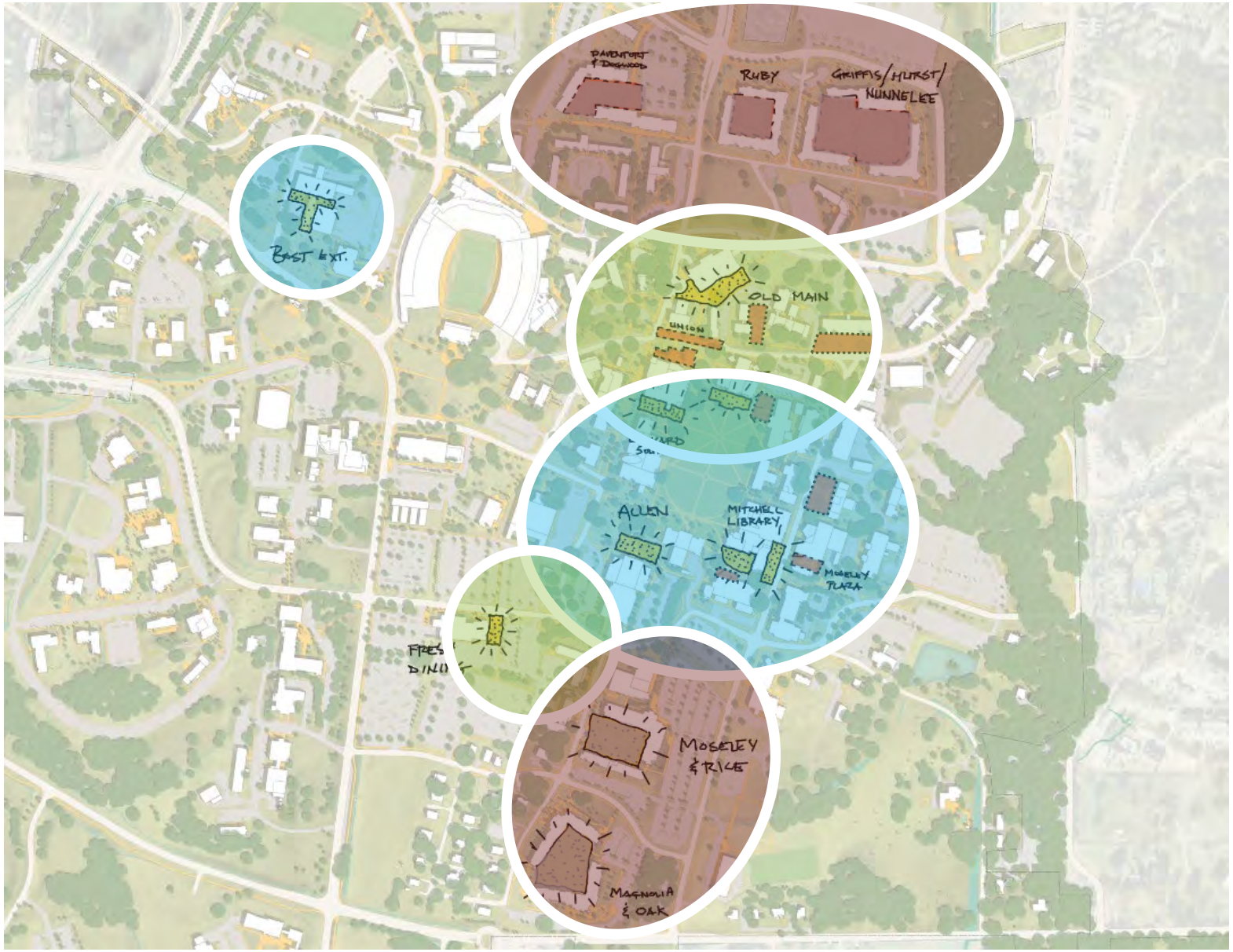


Campus Character Zones

Learn
Academic

Socialize
Dining

Live
Residential



What We Heard

- MSU has invested heavily in many “core elements:” benches, trash receptacles, safety bollards, etc. These elements will remain standards for the foreseeable future, putting more emphasis on the “supplemental elements” for this study.
- Consider additional academic/social zones
- Outdoor Environments Concept to be approached in three phases

1. Keep campus standard furnishings for core elements, select supplemental elements that work with the existing palette to be purchased with Covid funds before end of year
2. Describe the paving and landscape interventions that will build on these areas as part of the concurrent Master Plan project.
3. Refine "core elements" to key investments for the long-term campus vision.

- Priority elements include:
  - Light bollards
  - Table & Chair sets
  - Community tables
  - Casual furnishings, such as Adirondack chairs
  - Shade elements

Furnishing Collections

Campus Standard Core Elements

- Benches
- Trash & recycling receptacles
- Bike racks
- Safety/Security Bollards

Supplemental Elements

Campus Standard Lighting

Core Elements

Outdoor workspace structures

de Elements

Light & Utility Bollards

Hammocks / Lounge Elements

Casual Furnishings

Café table & Chair Sets

Community tables

Supplemental Furnishing Collections: Recommended Environments

Learn
Academic

Community tables

Power Bollards

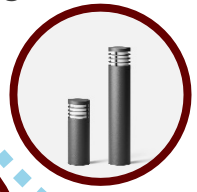
Bistro Sets

Socialize
Dining

Community tables

Movable Tables

Light Bollards



Shade

Loungers

Shade

Fixed tables

Live
Residential

Loungers

Occasional Study / Shade

Hammocks / Lounge Elements

Supplemental Elements

Table & Chair Sets (Moveable)

Recommended Environments:

- Learn
  Academic
- Socialize
  Dining

Element	Landscape Forms Cantena Table w/ umbrella hole and Verona Chair
Materials	Aluminum and Steel - Powdercoat
Contact Information	Nadene Worth Senior Business Development Representative Landscape Forms, Inc. Office: 800-430-6206 x 1325 nadenew@landscapeforms.com www.landscapeforms.com
Customization	Yes
Approximate Cost/Lead Times	$1160/table & $330/chair (6-8 week lead time)

Supplemental Elements

Table & Chair Sets (Fixed)

Recommended Environments:

- Socialize
- Dining

Element	Forms + Surfaces Tangent Table Ensemble w/umbrella hole – 4 seats backless slated seats.
Materials	Aluminum and Steel – Powdercoat – Optional Wood Slats
Contact Information	**Dan Delongchamp** Territory Manager, Outdoor Products Forms+Surfaces | www.forms-surfaces.com T 800.451.0410 | M 617.780.4134 | F 412.385.4715 daniel.delongchamp@forms-surfaces.com
Customization	Yes/ Wood or metal slat options
Approximate Cost/Lead Times	$3,625/set (6-8 week lead time)

Supplemental Elements

Table & Chair Sets (Bistro Style)

Recommended Environments:

- Learn
  Academic
- Live
  Residential

Element	Landscape Forms Bravo Bistro Set
Materials	Powdercoated Metal
Contact Information	Nadene Worth Senior Business Development Representative Landscape Forms, Inc. Office: 800-430-6206 x 1325 nadenew@landscapeforms.com www.landscapeforms.com
Customization	Limited to two colors
Approximate Cost/Lead Times	$470/table + two chairs (6-8 week lead time)

Supplemental Elements

Community Tables

Recommended Environments:

- Learn
  Academic
- Socialize
  Dining

Element	Landscape Forms Harvest Table and Benches
Materials	Recycled HDPE Plastic
Contact Information	Nadene Worth Senior Business Development Representative Landscape Forms, Inc. Office: 800-430-6206 x 1325 nadenew@landscapeforms.com www.landscapeforms.com
Customization	Yes
Approximate Cost/Lead Times	$2,540/table and $1480/bench (6-8 week lead times)

Supplemental Elements

Casual Furnishings Type A

Location: Drill Field

Recommended Environments:

- Learn
  Academic
- Live
  Residential

Element	Landscape Forms Americana Lounge Chair
Materials	Recycled HDPE Plastic
Contact Information	Nadene Worth Senior Business Development Representative Landscape Forms, Inc. Office: 800-430-6206 x 1325 nadenew@landscapeforms.com www.landscapeforms.com
Customization	No
Approximate Cost/Lead Times	$1,390 (6-8 week lead time)

Supplemental Elements

Casual Furnishings Type B

Location: Natural Setting

Recommended Environments:

- Live
  Residential

Element	Mmcite Rivage Lounger
Materials	Powdercoated Galvanized Steel with wood slats or stainless steel rounds
Contact Information	Ira Rothman Apex Lighting Director of Specification Sales-Boston irothman@apexltg.com | o: 877.632.8766 |c: 617.777/2641 www.apexlightingsolutions.com
Customization	No
Approximate Cost/Lead Times	$1,550/wood slats (16-18 week lead time)

Supplemental Elements

Casual Furnishings Type C

Location: Residential

Recommended Environments:

- Live
  Residential

Element	Loll Lollygagger Chaise
Materials	Recycled HDPE
Contact Information	Nadene Worth Senior Business Development Representative Landscape Forms, Inc. Office: 800-430-6206 x 1325 nadenew@landscapeforms.com www.landscapeforms.com
Customization	No
Approximate Cost/Lead Times	$1,200 (6-8 week lead time)

Supplemental Elements

Hammocks Inspiration

UMD "Hammock Haven" – Photo Anna Artazova/For The Diamondback

UC Davis – Photo Kate Snowdon / Aggie

Recommended Environments:

- Live
  Residential

Supplemental Elements

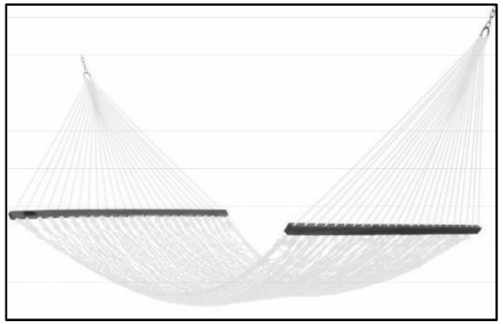
Hammocks Inspiration

ENO Single Nest Hammock
Approxiamate Cost: $49
https://eaglesnestoutfittersinc.com/

Recommended Environments:

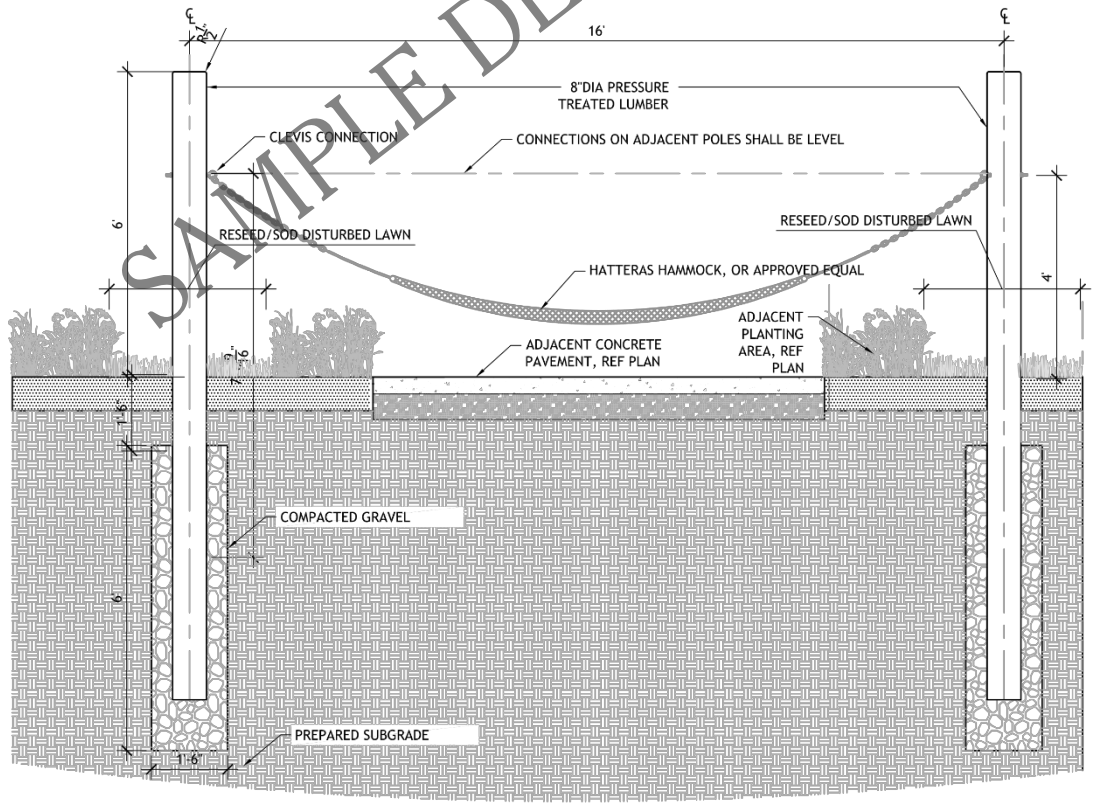
- Live
  Residential

NOTES:
1. BELOW PRODUCT OR APPROVED EQUAL
2. MANUFACTURER: HATTERAS
3. PRODUCT NAME: EXECUTIVE POLYESTER ROPE HAMMOCK
4. STANDARD PRODUCT, DIMENSION AND INSTALLATION INFORMATION PER MANUFACTURER'S RECOMMENDATIONS



NOTES:
1. HAMMOCK POST SHALL BE PLUMB VERTICAL.
2. CLEVIS CONNECTIONS ON ADJACENT POLES SHALL BE LEVEL.

Sample of Custom Post Design by Sasaki



Supplemental Elements

Utility Bollards

Recommended Environments:

- Learn
  Academic
- Socialize
  Dining
- Live
  Residential

Element	Landscape Forms Charging Station Area Light
Materials	Aluminum
Contact Information	Nadene Worth Senior Business Development Representative Landscape Forms, Inc. Office: 800-430-6206 x 1325 nadenew@landscapeforms.com www.landscapeforms.com
Customization	Yes
Approximate Cost/Lead Times	$1960 (6-8 week lead time)

Supplemental Elements

Light Bollards

Recommended Environments:

- Learn
  Academic
- Socialize
  Dining
- Live
  Residential

Element	Landscape Forms Annapolis Light Bollard
Materials	Powdercoated Metal
Contact Information	Nadene Worth Senior Business Development Representative Landscape Forms, Inc. Office: 800-430-6206 x 1325 nadenew@landscapeforms.com www.landscapeforms.com
Customization	No
Approximate Cost/Lead Times	$1,020 surface mount 6” diameter

Supplemental Elements

Fixed in Tables - Shade Elements

Recommended Environments:

- Socialize
  Dining

Element	Landscape Forms TUUCI Ocean Master Classic Umbrella
Materials	Aluminum, Steel, Sunbrella Fabrics
Contact Information	Nadene Worth Senior Business Development Representative Landscape Forms, Inc. Office: 800-430-6206 x 1325 nadenew@landscapeforms.com www.landscapeforms.com
Customization	No
Approximate Cost/Lead Times	7.5’ $1120 / 10’ $1320

Supplemental Elements

Freestanding Shade Elements

Recommended Environments:

- Learn
  Academic
- Socialize
  Dining

Element	Landscape Forms TUUCI Bay Master MAX Classic Umbrella
Materials	Aluminum, Steel, Sunbrella Fabrics
Contact Information	Nadene Worth Senior Business Development Representative Landscape Forms, Inc. Office: 800-430-6206 x 1325 nadenew@landscapeforms.com www.landscapeforms.com
Customization	No
Approximate Cost/Lead Times	10’ $2870 / base $2670

Supplemental Elements

Shade Structure Inspiration

Recommended Environments:

- Learn
  Academic
- Socialize
  Dining
- Live
  Residential

Use of warm and durable materials works well in tandem with landscape and planting elements.

Shade provided varies seasonally due to the growth and maintenance of plantings. Alternative, year-round coverings are possible.

St. Edward's University in Austin, TX – landscape master plan by Sasaki

Supplemental Elements

Shade Structure Inspiration

The steel and glass combination provides protection rain and sun is a good complement to indoor spaces including roof decks or patios where durability and low maintenance is required.

Light finish color works with existing and new construction and frames exterior views.

Salisbury University Patricia R. Guerrieri Academic Commons – Sasaki

Recommended Environments:

- Learn
  Academic
- Socialize
  Dining
- Live
  Residential

Supplemental Elements

Outdoor Work Stations

Type A

Recommended Environments:

- Learn
  Academic
- Live
  Residential

Element	Streetlife Rough and Ready Shade Structure
Materials	Wood and Galvanized Steel
Contact Information	Jeronimo Mejia Sales Advisor USA T: +31 484 496 8280 (until 11am EST) M: +31 61 458 0320 W: www.streetlife.com
Customization	Yes
Approximate Cost/Lead Times	$35,000

Supplemental Elements
Outdoor Work Stations Type B

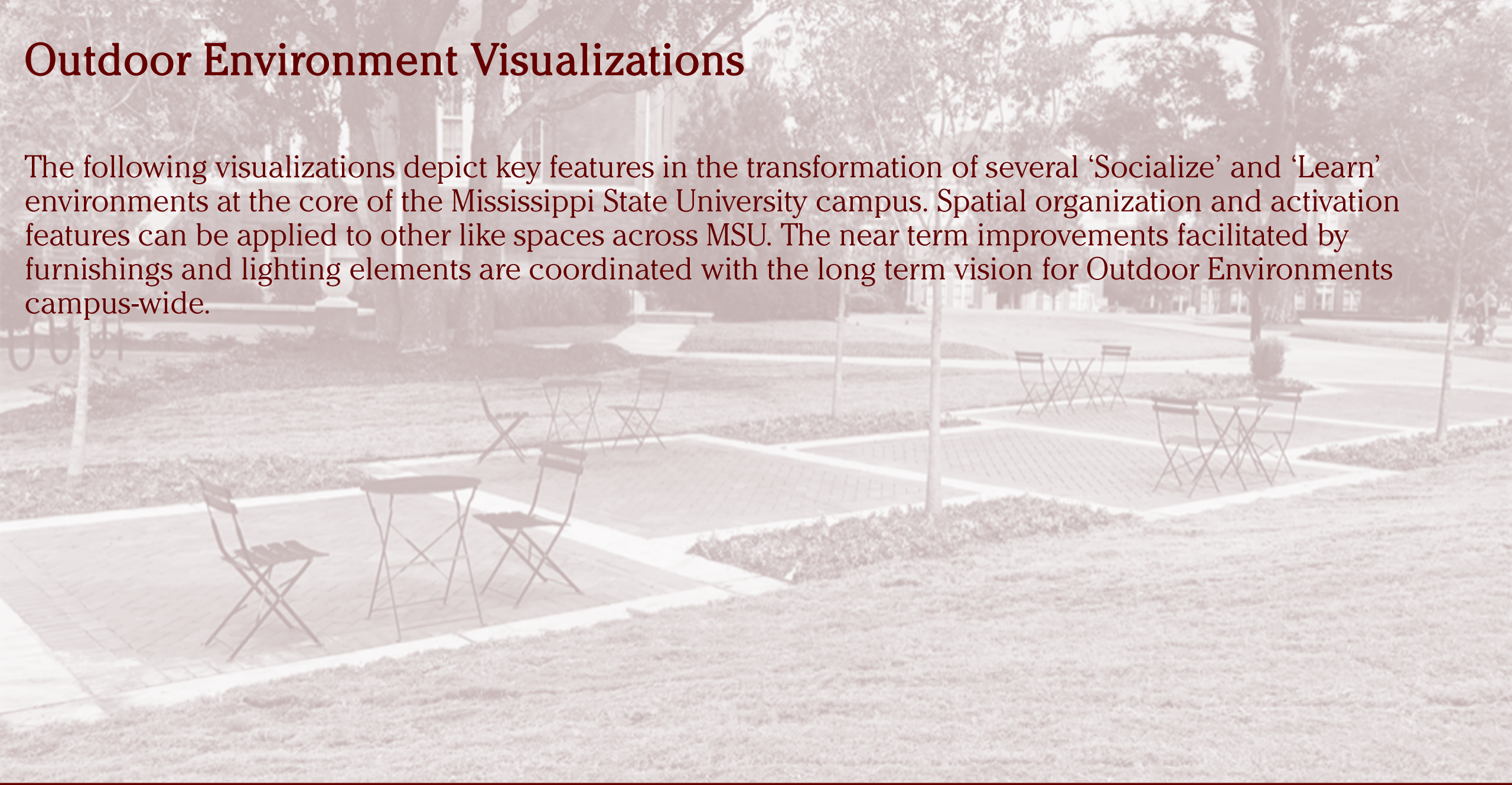
Recommended Environments:

- Learn
  Academic
- Live
  Residential

Element	Landscape Forms Uplift
Materials	Mixed
Contact Information	Nadene Worth Senior Business Development Representative Landscape Forms, Inc. Office: 800-430-6206 x 1325 nadenew@landscapeforms.com www.landscapeforms.com
Customization	Yes
Approximate Cost/Lead Times	Range $55,000-$72,000

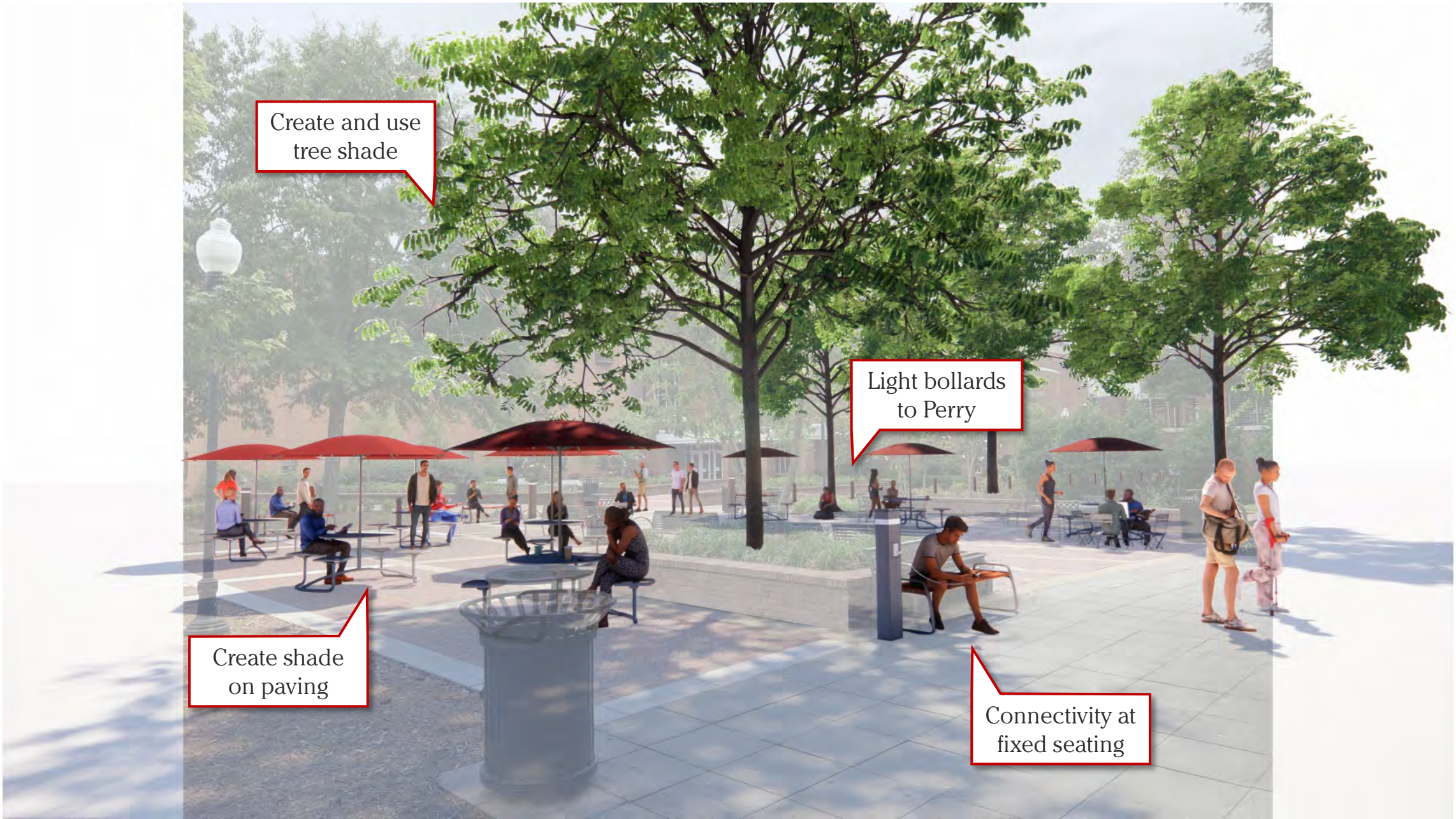
Outdoor Environment Visualizations

The following visualizations depict key features in the transformation of several ‘Socialize’ and ‘Learn’ environments at the core of the Mississippi State University campus. Spatial organization and activation features can be applied to other like spaces across MSU. The near term improvements facilitated by furnishings and lighting elements are coordinated with the long term vision for Outdoor Environments campus-wide.



Socialize: McCool Plaza - Existing

Socialize: McCool Plaza - Proposed



Socialize: McCool Plaza - Proposed

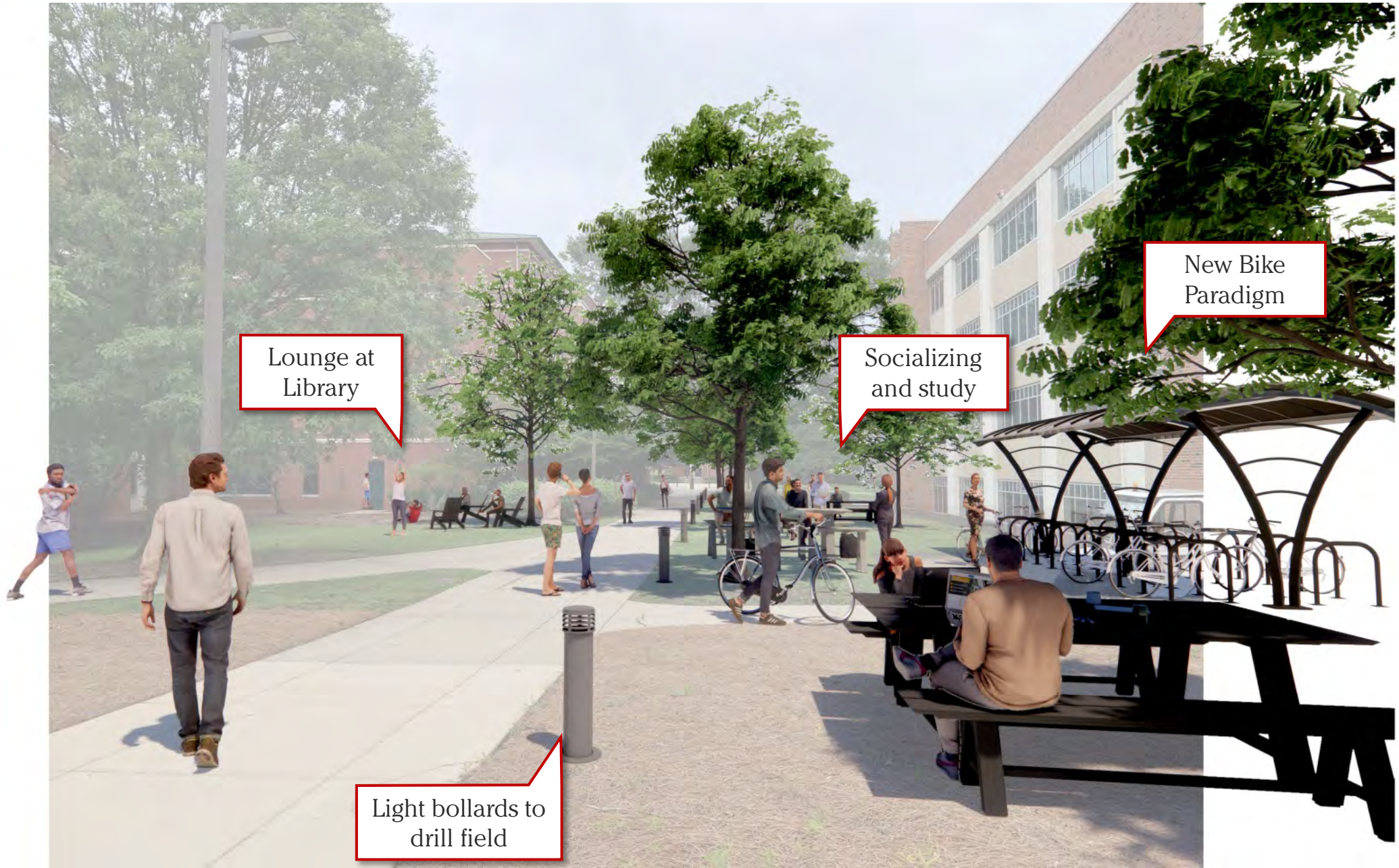
Learn: Bowen Hall - Existing

Learn: Bowen Hall - Proposed

Learn: Bowen Hall - Proposed

Learn & Live: Library Lawn & Hand Lab - Existing

Learn & Live: Library Lawn & Hand Lab - Proposed



Learn & Live: Library Lawn & Hand Lab - Proposed

Proposed Outdoor Environments

Socialize:
McCool Plaza

- Colvard Union (south side)
- Mitchell Library (Hardy entrance)
- Old Main Plaza (Academic Center)
- Magruder Hall
- Hilbun Hall
- Fresh Food (east side)

Learn:
Bowen Hall

- Hand Lab (north side)
- Bowen Hall (at Hardy entrance)
- Allen Hall (north entrance)
- Lee Hall (south side)
- Lee Hall (east side)
- Bost Extension Breezeway

Learn & Socialize: Magruder Hall, Hilbun Hall

Learn & Live:
Library & Hand Lab

Mitchell Library (south side)

Live & Learn: Residential Quads
- Zacharias Village
- Moseley & Rice
- Oak & Magnolia

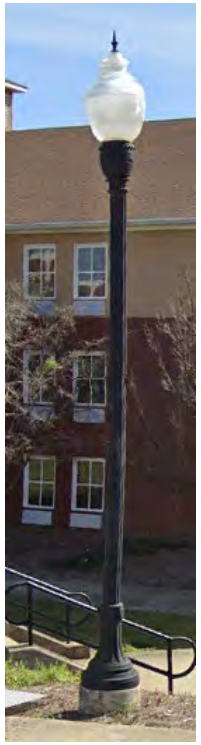
Appendix

- Core Elements

Assessment of Existing Campus Furnishings - Lighting

Path/Street Lighting
Manufacturer/Make:
(1)AEL/Autobahn Series
(2) Lithonia DSX or RSX
Price: $1,000.00-$1,500.00 ea.

Exterior Bollard Light
Manufacturer: Holophane LED Bollards
Collection: Columbia (CLBOLED) 45.3” (H) x 13.0” (W)
Price: $500-$1,000 ea.



Exterior Tall Post –Top Light
Manufacturer: Holophane
Collection: Washington
Price: $2,000.00 ea.

Landscape Lighting
Manufacturer: FXLuminaire
Price: $250-$500 per fixture installed
*Pricing can vary depending on design

Existing Campus Furnishings

Vignette

Furnishing Collections

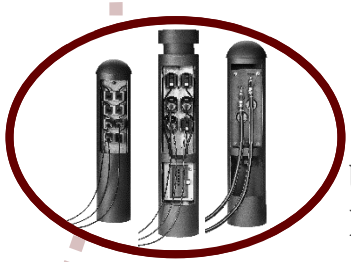
Core Elements

- Benches
- Trash & recycling receptacles
- Bike racks
- Site Lighting (when applicable)

Supplemental Elements

Outdoor workspace structures

de
nents



Utility Bollards

Hammocks / Lounge Elements

Casual Furnishings

Community tables

Café table & Chair Sets

Core Elements Families

Concord Collection

Manufacturer: Landscape Forms

Style: Modern Traditional

Backless Bench (73”)

Bike Rack

Litter Receptacle

Bench (76”)

Bollard Light

Core Elements Families

Concord Collection Vignette

Core Elements Families

Landscape Forms Concord Collection

(Direct Purchase Agreement +/-15%)

Element	Style	Materials	Durability	Sustainability	Lead Time	Custom Colors	Cost
Melville Benches	Modern Traditional Backed/Backless	Cast Aluminum Frame (Powdercoat only) Seat: Wood slats or Aluminum Extrusion	****	- 10-13% R.C. - 100% Recyclable - MFG > 500 mi. (MI) - Certified Wood Option	6-8 Weeks	Available for upcharge	Backless: $1,570 - $1,700 Backed: $2,210 - $2,350
Poe Litter Receptacles	Modern Traditional 34 Gal. capacity	Cast Aluminum Frame (Powdercoat Only)	****	- 56% R.C. - 100% Recyclable - MFG > 500 mi. (MI) - Certified Wood Option	6-8 Weeks	Available for upcharge	$1,960 - $2,140
Emerson Bike Rack	Modern Traditional	Cast Aluminum Frame (Powdercoat Only)	****	- 37% R.C. - 100% Recyclable - MFG > 500 mi. (MI)	6-8 Weeks	Available for upcharge	$450
Hawthorne Bollard Light	Modern Traditional LED	Cast Aluminum (Powdercoat)	****	- 43% R.C. - 100% Recyclable	6-8 Weeks	Available for upcharge	N/A
Alcott Area Light	Modern Traditional LED 12', 14', 16' Heights	Cast Aluminum (Powdercoat)	****	- 25% R.C. - 100% Recyclable	6-8 Weeks	Available for upcharge	N/A

Core Elements Families

Cordia Collection

Manufacturer: Forms+Surfaces

Style: Modern Traditional

Bollard Light

Pedestrian Light

Litter Receptacle

Backed Bench

Bike Rack

Avivo Table & Chair Sets

Backless Bench

Core Elements Families

Cordia Collection Vignette

Core Elements Families

Forms+Surfaces Cordia Collection

(Direct Purchase Agreement +/-15%)





Element	Style	Materials	Durability	Sustainability	Lead Time	Custom Colors	Cost
Benches	Mod. Traditional Backed/Backless 6’ Lengths	Cast Aluminum (Powdercoat Only) Seat: Jatoba Wood slats	****	- 33-41% R.C. - MFG > 500 mi. (PA) - FSC Certified Wood	6-8 Weeks	Available for upcharge	6’ Backed: $2,639 6’ Backless: $2,061
Avivo Table & Chair Sets	Mod. Traditional 6’ Length	Cast Aluminum (Powdercoat only) Inlay: Ipe Wood slats	****	- 32-34% R.C. - MFG > 500 mi. (PA) - FSC Certified Wood	6-8 Weeks	Available for upcharge	40” Length: $2,235 90” Length: $4,489 180” Length: 9,064 Chair: $510
Litter Receptacle	Mod. Traditional 36 Gal. capacity	Aluminum (Powdercoat) Panels: Jatoba Wood slats	****	- 36-46% R.C. - MFG > 500 mi. (PA) - FSC Certified Wood	6-8 Weeks	Available for upcharge	Single-stream: $1,815 Split-stream: $1,927
Bike Rack	Mod. Traditional	Cast Aluminum (Powdercoat)	****	- 83% R.C. - MFG > 500 mi. (PA)	6-8 Weeks	Available for upcharge	$515
Bollard Light	Mod. Traditional LED 3’ Ht.	Cast Aluminum (Powdercoat)	****	- 63% R.C.	6-8 Weeks	Available for upcharge	$1,797
Area Light	Mod. Traditional LED 12’ Ht.	Cast Aluminum (Powdercoat)	****	- N/A R.C.	6-8 Weeks	Available for upcharge	$3,023

Core Elements Families

FGP Collection

Manufacturer: Landscape Forms

Style: Contemporary

Path Light / Bollard

Long Bench (120”)

Short Bench (70”)

Bike Rack

Litter Receptacle

Backless Bench (70”)

Core Elements Families

FGP Collection Vignette

Core Elements Families

Landscape Forms FGP Collection

(Direct Purchase Agreement +/-15%)

Element	Style	Materials	Durability	Sustainability	Lead Time	Custom Colors	Cost
Benches	Contemporary Backed/Backless Long 120”/short 70”	Cast Aluminum Frame (Anodized/Powdercoat) Seat: Wood slats	*****	- 8-9% R.C. - 100% Recyclable - MFG > 500 mi. (MI) - Certified Wood Option			
Litter Receptacles	Contemporary 17 Gal. capacity	Cast Aluminum Frame (Anodized/Powdercoat) Side Panels: Wood slats	*****		6-8 Weeks	Available for upcharge	$710 - $850
Bike Rack	Contemporary Backed/Backless Long 120”/short 70”	Cast Aluminum Frame (Anodized/Powdercoat) Seat: Wood slats	*****		6-8 Weeks	Available for upcharge	$440

Core Elements Families

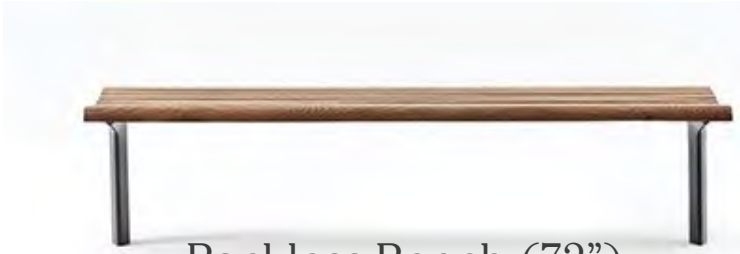
Generation 50 Collection

Manufacturer: Landscape Forms

Style: Contemporary

Litter Receptacle

Bike Rack



Backless Bench (72”)

Backless Cantilever Bench (72”)

Backless Wall-mount Bench (72”)

4-leg Bench (72”)

2-leg Bench (72”)

Cantilever Bench (72”)

Wall-mount Bench (72”)

Core Elements Families

Generation 50 Collection Vignette

Core Elements Families

Landscape Forms Gen50 Collection

(Direct Purchase Agreement +/-15%)

Element	Style	Materials	Durability	Sustainability	Lead Time	Custom Colors	Cost
	Contemporary Backed/Backless/Wall-mount/Cantilever			- 18-36% R.C. - 100% Recyclable - MFG > 500 mi. (MI) - Certified Wood Option		Available for upcharge	Backed: $1,700 - $1,970 Backless: $1,360 - $1,560 Wall-mnt: $1,770-$1,970 Cantilever: $2,020-$2,030
Litter Receptacles	Contemporary 30Gal. capacity		*****	- 65% R.C. - 100% Recyclable - MFG > 500 mi. (MI) - Certified Wood Option		Available for upcharge	$920 - $1,130

Core Elements Families

Trio Collection

Manufacturer: Forms+Surfaces

Style: Contemporary

Bollard Light

Pedestrian Light

Tonyo Litter Receptacle

Backed Bench (Ipe wood seat)

Bike Rack

Table Ensemble (benches included)

Backless Bench (Aluminum seat)

Core Elements Families

Trio Collection Vignette

Core Elements Families

Forms+Surfaces Trio Collection

(Direct Purchase Agreement +/-15%)





Element	Style	Materials	Durability	Sustainability	Lead Time	Custom Colors	Cost
Benches	Contemporary Backed/Backless 6’ Lengths	Cast Aluminum (Powdercoat Only) Seat: Ipe Wood slats	****	- 42% R.C. - MFG > 500 mi. (PA) - FSC Certified Wood	6-8 Weeks	Available for upcharge	6’ Backed: $2,502 6’ Backless: $1,988
Table Ensemble (benches included)	Contemporary 6’ Length	Cast Aluminum (Powdercoat only) Inlay: Ipe Wood slats	****	- 32-34% R.C. - MFG > 500 mi. (PA) - FSC Certified Wood	6-8 Weeks	Available for upcharge	Regular: $4,675 ADA: $4,568
Tonyo Litter Receptacle	Contemporary 36 Gal. capacity	Steel (Powdercoat) Panels: Cumaru Wood slats	****	- MFG > 500 mi. (PA) - FSC Certified Wood	6-8 Weeks	Available for upcharge	Single-stream: $2,237 Split-stream: $2,357
Bike Rack	Contemporary	Cast Aluminum (Powdercoat)	****	- 83% R.C. - MFG > 500 mi. (PA)	6-8 Weeks	Available for upcharge	$489
Bollard Light	Contemporary LED 3.5’ Ht.	Aluminum Extrusion (Powdercoat)	****	- 73% R.C.	6-8 Weeks	Available for upcharge	$1,261
Area Light	Contemporary LED 11’ Ht.	Aluminum Extrusion (Powdercoat)	****	- 58% R.C.	6-8 Weeks	Available for upcharge	$3,008

Core Elements Families

Stella of Sunne Collection

Manufacturer: Victor Stanley

Style: Minimalist

Ella Table w/ Ella Backless Benches

Ella Backless Bench

Stell Bench

Stell Backless Bench

Ren Litter Receptacle

Stell Bike Rack

Stell Bench

Core Elements Families

Victor Stanley Stella of Sunne Collection

(Direct Purchase Agreement, 7% Buyboard Discount)

Element	Style	Materials	Durability	Sustainability	Lead Time	Custom Colors	Cost
Benches	Minimalist Backed/Backless 4', 6', 8' Lengths	Steel (Powdercoat) Seat: Ipe Wood slats	****	- 65-85% R.C. - 100% Recyclable - MFG > 500 mi. (MD) - NO Cert. Wood Opt.	6-8 Weeks	Available for upcharge	8' Stell Backed: $2,098 8' Ella Backless: $1,785 8' Stell Backless: $1,835
Ella Table (benches separate)	Minimalist 4', 6', 8' Lengths	Steel (Powdercoat) Inlay: Ipe Wood slats	****	- 65-85% R.C. - 100% Recyclable - MFG > 500 mi. (MD) - NO Cert. Wood Opt.	6-8 Weeks	Available for upcharge	4' Length: $2,186 6' Length: $2,350 8' Length: $3,009
Ren Litter Receptacle	Minimalist Top Deposit 36Gal. capacity	Steel (Powdercoat) Panels: Ipe Wood slats	****	- 65-85% R.C. - 100% Recyclable - MFG > 500 mi. (MD) - NO Cert. Wood Opt.	6-8 Weeks	Available for upcharge	$1,363
Bike Rack	Minimalist	Steel (Powdercoat)	****	- 65-85% R.C. - 100% Recyclable - MFG > 500 mi. (MD)	6-8 Weeks	Available for upcharge	$365

Core Elements Families

Landscape Forms Concord Collection

Forms+Surfaces Trio Collection

Forms+Surfaces Cordia Collection

Landscape Forms Gen50 Collection

Landscape Forms FGP Collection

Victor Stanley Stella of Sunne Collection

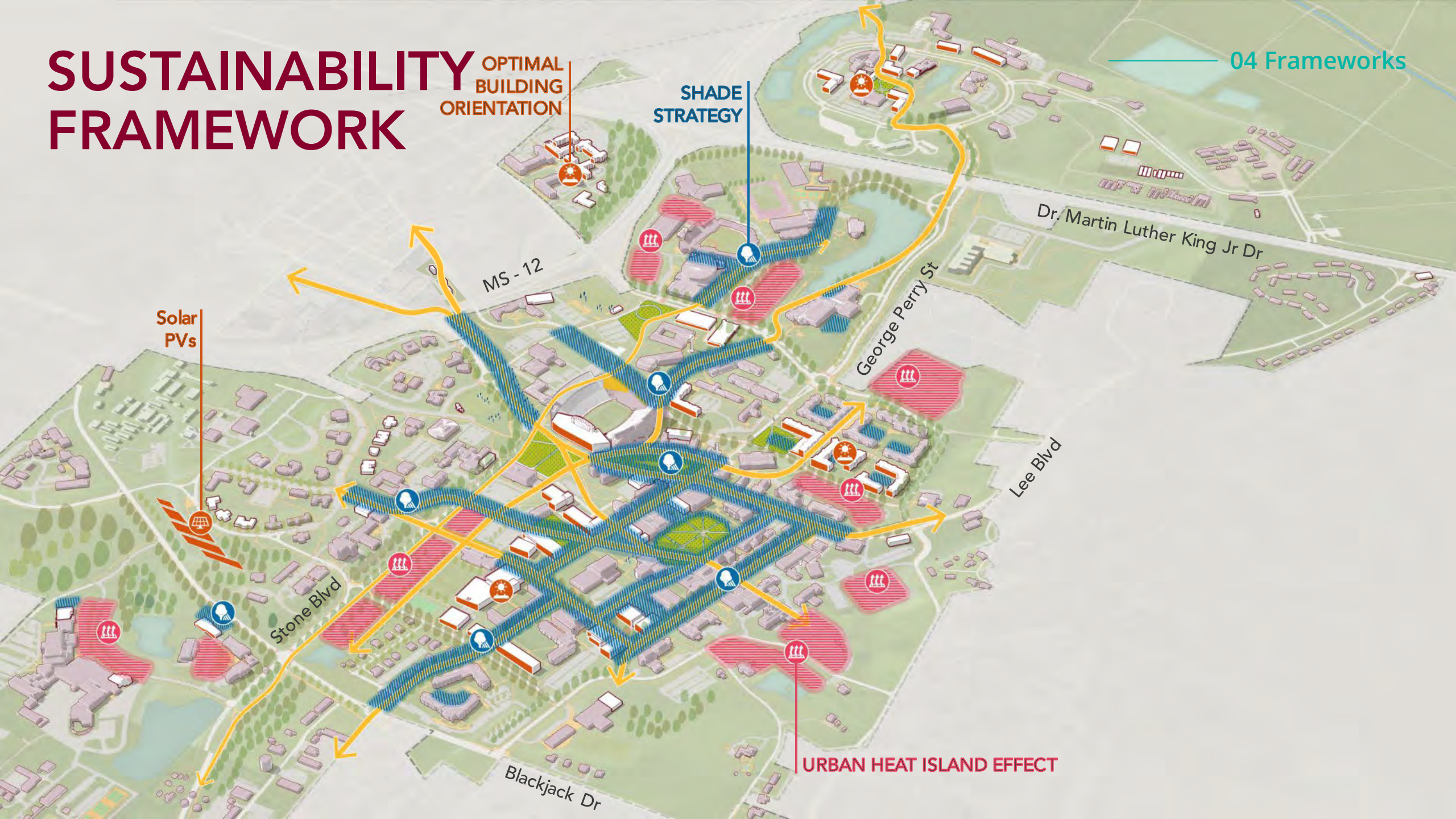
Outdoor Environments

SASAKI

Sustainability and Infrastructure Recommendations

Sustainability Framework

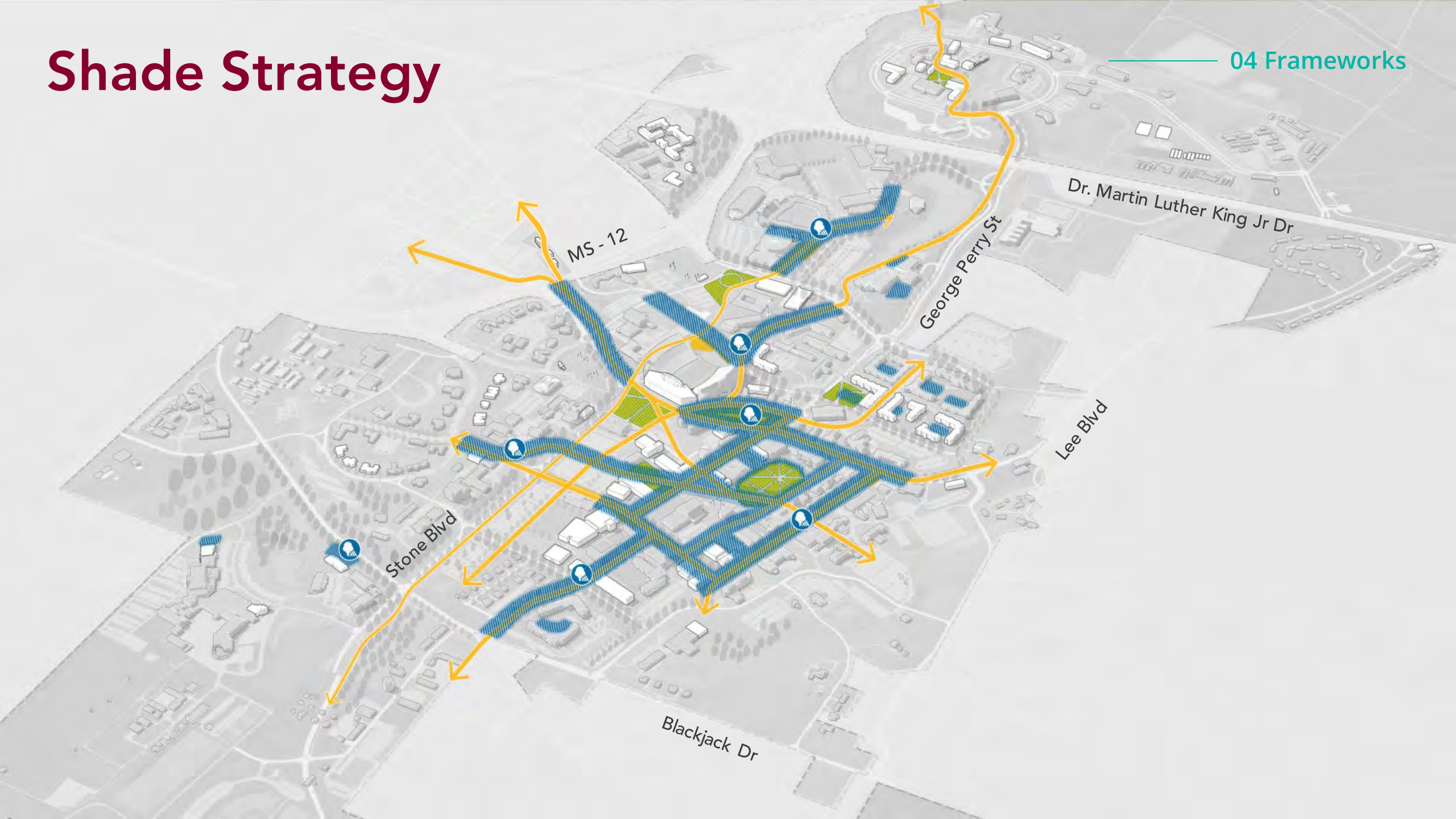
SUSTAINABILITY FRAMEWORK



Building Orientation

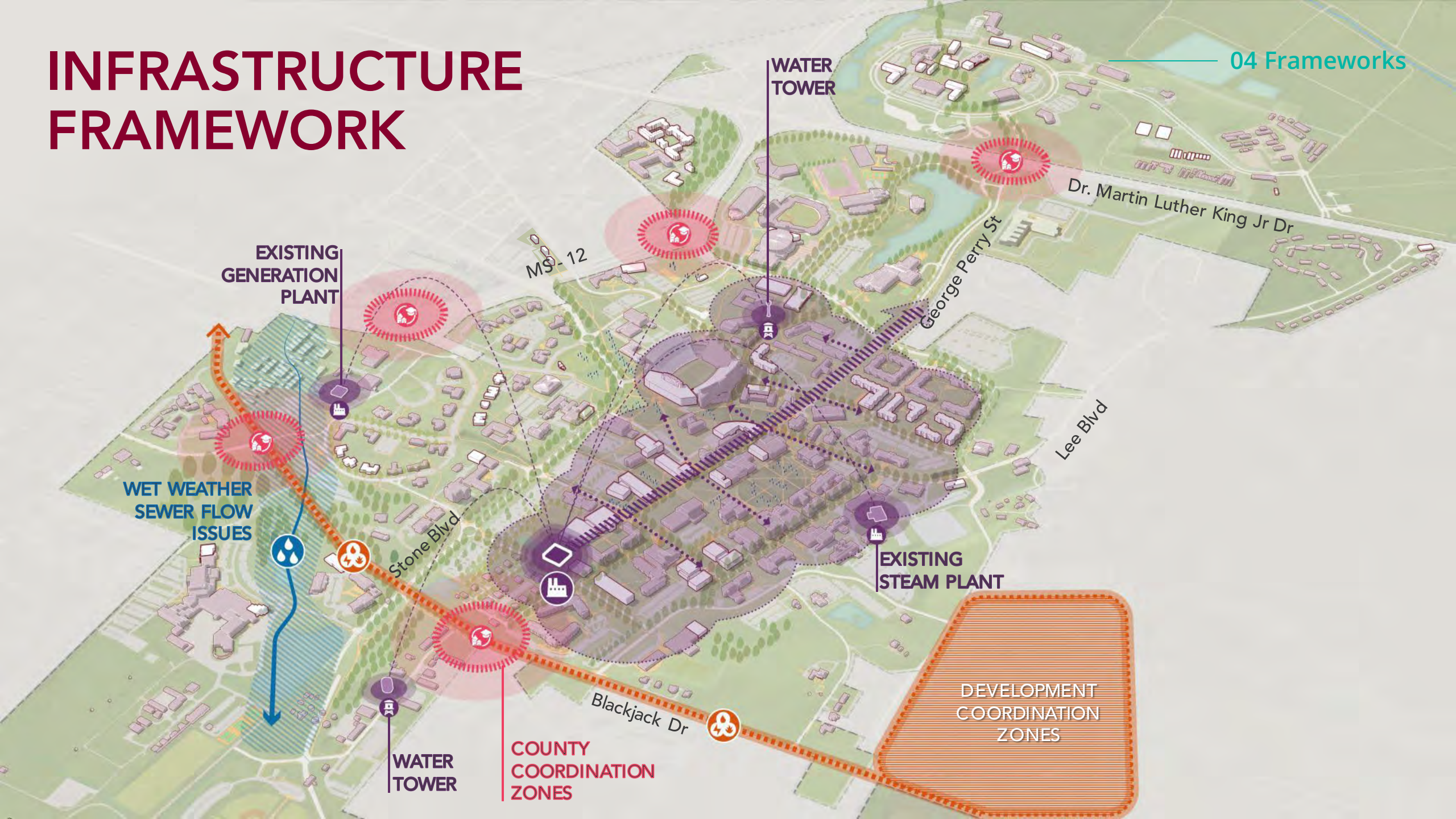
Urban Heat Islands

Shade Strategy



Infrastructure Framework

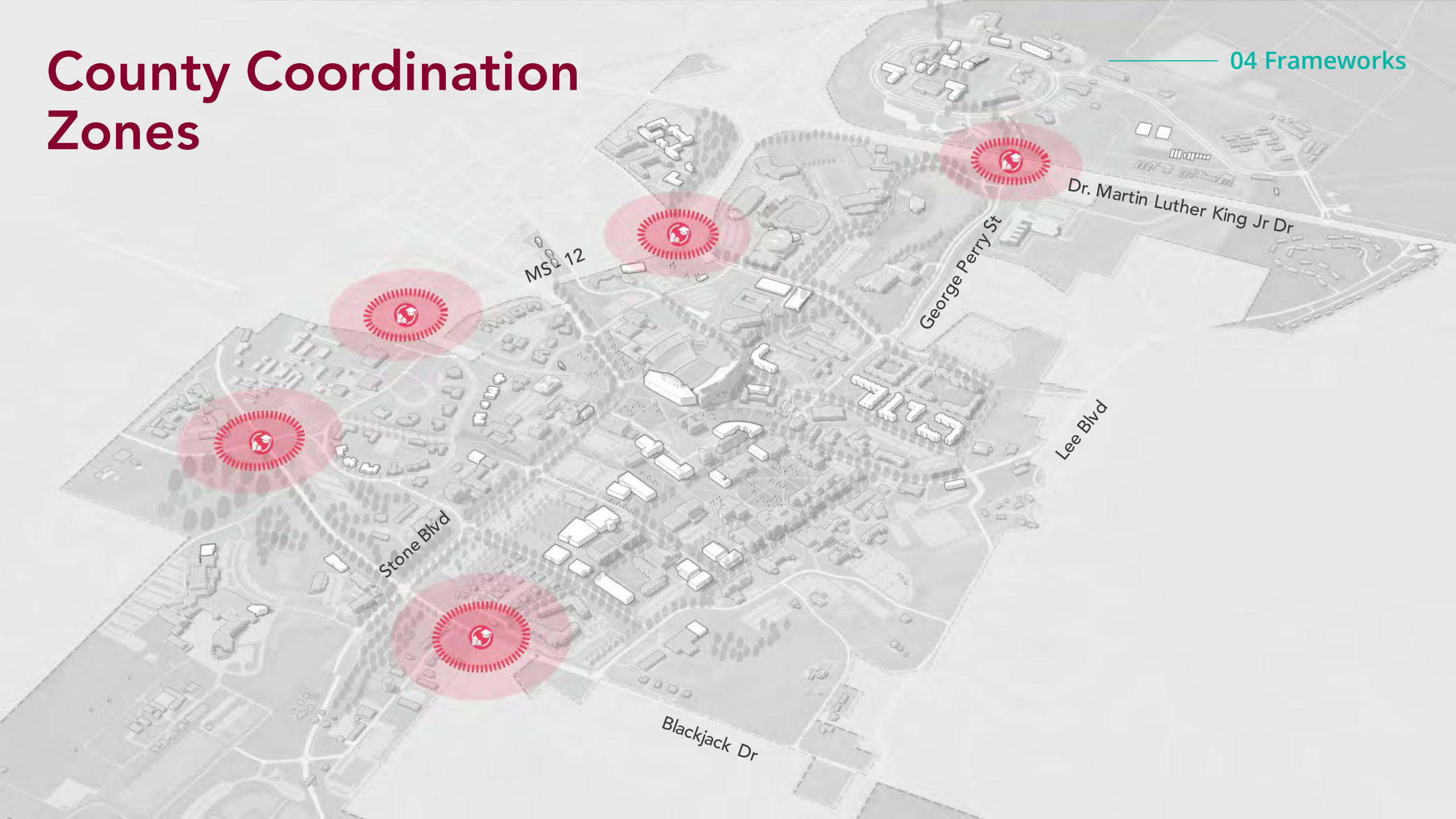
INFRASTRUCTURE FRAMEWORK



Campus Utilities

Eastern Development Coordination

County Coordination Zones



Wet Weather Coordination

SASAKI