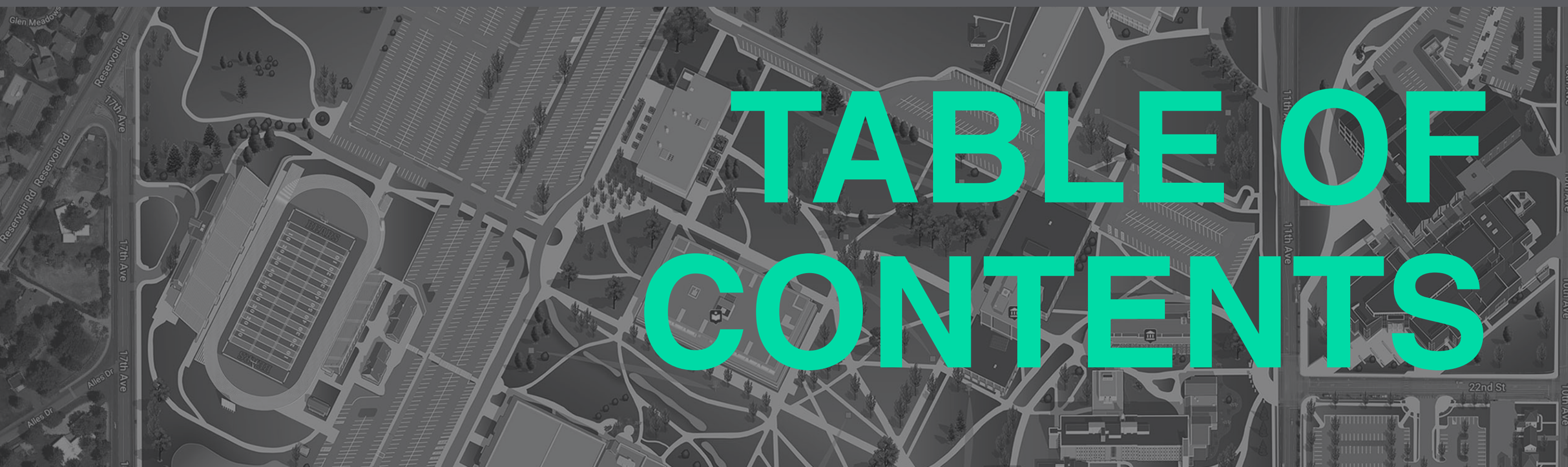
MCKEE HALL

University of Northern Colorado

GREELEY, CO | PROGRAM PLAN | APRIL 2023



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OVERVIEW

UNIVERSITY BACKGROUND

Founded in 1889, the University of Northern Colorado is a public university in Greeley, CO. Initially an institution focused on teacher education, the University has expanded its offerings to span five colleges with more than 100 undergraduate programs and 113 graduate programs. As an emerging Hispanic Serving Institution, the campus currently serves a diverse population of 10,000 students, 41% of which are first generation college students.

UNC's mission is established in Colorado State Law, and notes that UNC is:

- A comprehensive baccalaureate and specialized graduate research university with selective admission standards
- Is the state's primary institution for degree programs that prepare educators
- Offers masters and doctoral programs primarily in the field of education
- Have the responsibility to offer graduate programs to educators statewide
- Fulfill their graduate research university mission in part with the education innovation institute

The mission of the institution is broader and more descriptive than the statutory mission, stating that

"the university strives to be a leading student centered university that promotes effective teaching, lifelong learning, the advancement of knowledge, research and a commitment to service. Graduates are educated in the Liberal Arts and professionally prepared to live and contribute effectively in a rapidly changing, technologically advanced society."

UNC STRATEGIC PLAN

In 2019, UNC created a 10-year strategic plan titled "Rowing not Drifting 2030". This plan consists of a vision statement, five vision elements and 2030 outcomes which serve as the foundation in support of and in service to UNC students, faculty, staff, alumni and community.

The five vision elements describe an institutional priority: students first, empower inclusivity, enhance & invest, innovate & create and connect & celebrate.

These elements form the foundation for the university's vision: for *"students to experience a personalized education grounded in liberal arts and Infused with critical and creative inquiry; establish relationships with faculty and staff that nurture individual development; gain the skills and knowledge that provide upward mobility among alumni; and share a commitment to the values of inclusion equity and diversity"*.

FIGURE 1. UNC CAMPUS IMAGE TAKEN FROM WEBSITE

RELATIONSHIP TO CAMPUS VISION

MCKEE HALL PROGRAM PLAN

The overall vision for McKee Hall intends to follow UNC's strategic plan by investing in this building not only to improve its function and serviceability but also to improve the student experience by providing inclusive spaces that allow students to connect with one another and with faculty as they acquire and develop skills that will support their personal development and journey into the workplace.

The west district of UNC's campus is a mix of academic spaces supporting the arts and sciences and education colleges, student services, residential and athletic functions. McKee Hall provides 129,846 sf of space including a 9,000 sf lecture hall, with 32 classrooms dedicated to the arts and sciences.

Completed in 1968, McKee Hall has had very limited renovations in its 60 year life. While there have been some upgrades to mechanical equipment, many of its spaces and systems are due for updates for improved energy efficiency, increased occupant comfort and to enhance the overall student experience.

Recognizing this need, UNC commissioned the programming and design team led by OZ Architecture to evaluate the deferred maintenance list for this facility, to review the existing conditions and identify possible upgrades to the building and its systems, and to work with campus representatives to prioritize those upgrades and document them in this program plan.

The program plan process occurred in Winter 2022/23, and involved a number of site evaluations, as well as regular meetings with representatives from the campus facilities management to discuss goals, evaluate solutions and prioritize interventions.

The resulting program plan contains a mix of recommendations from systems upgrades, deferred maintenance, site enhancements, and updates to the interior environment, all of which work towards the strategic goals and vision for the campus. The suggested upgrades are intended as not only a solution to the University's current needs, but a holistic approach to maintaining and re-invigorating an important part of the campus for decades to come.

PROJECT VISION

Through the described process, the project leadership team developed a vision for the project, which states that the project should:

1. **Promote** student inclusion, equity, and diversity through the re-imagined space.
2. **Create** a flexible environment that supports multiple learning modes.
3. **Give** students a greater sense of student agency by providing choices of different spaces, seating types and postures.
4. **Provide** a variety of spaces to support different needs throughout the day – collaboration, areas of respite and calm or focus.
5. **Form** space that inspires students who are proud of the UNC campus and community, and feel they belong and are valued.

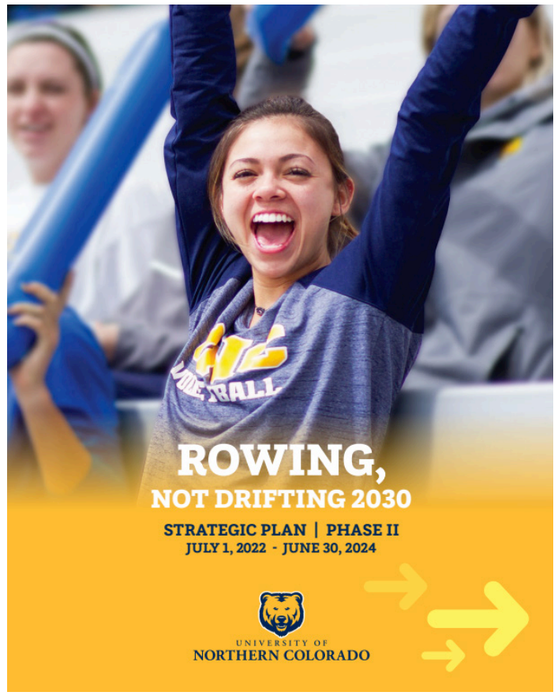

FIGURE 2: UNC STRATEGIC PLAN COVER IMAGE

VISION + GOALS

FIGURE 3: UNC STUDENTS IMAGE TAKEN FROM WEBSITE

PROJECT GOALS

While the program plan for McKee Hall is primarily focused on deferred maintenance and finish upgrades, there are several design opportunities to enhance the existing spaces to better serve students, faculty and staff.

While this program plan defines a number of deferred maintenance items as basic scope, the programming team and campus leadership identified a set of goals that will define an extended scope of renovations to the building:

1. **Improve** energy efficiency.
2. **Address** deferred maintenance issues.
3. **Create** student collaboration and engagement spaces.
4. **Improve** classrooms for better function and accessibility.
5. **Increase** daylighting within spaces.
6. **Improve** signage and wayfinding.
7. **Create** unique space for faculty and staff.
8. **Upgrade** finishes to enhance spaces.
9. **Improve** landscape quality while creating engaging spaces.
10. **Introduce** each architectural solution as a means to increase the building's resiliency and adaptability over time.

RELATIONSHIP TO FACILITIES MASTERPLAN

The campus is currently engaged in the process of updating its masterplan, as the last version was produced in 2003. Throughout the decades, Candelaria Hall, Michener Library, and McKee Hall have remained the academic core of the west campus, and frame an important campus quad which sits along a primary circulation pathway connecting back to the east campus.

McKee Hall is the primary home for the College of Education, and Candelaria Hall provides a significant portion of space needed by the College of Humanities and Social Sciences. Given these two buildings house the majority of academic space on this portion of the campus, many students flow in and out of these spaces, requiring durability, and for added benefit, common gathering space.

The new masterplan will also need to consider a demand that has appeared in a post-covid era: flexibility and versatility of space. Many universities are now favoring adaptable classrooms, remote learning, and a reinvigorated focus on student population retention and growth. UNC's population has remained consistent the past twenty years, which implies space is not the primary demand, but the reinvention of it.

McKee Hall is a functional building with a facilities condition index score of 79.24 (2019), and could easily serve UNC's future campus needs as well as help realize its current goals regarding the student experience in the UNC 2030 Vision.

PARTICIPANTS + PROCESS

PARTICIPANTS

This program plan for McKee Hall was developed by the design team in close collaboration with the campus facilities management group:

Campus Facilities Management

Univeristy of Northern Colorado

Kirk Leichliter | Chief Facilities Officer and Assistant Vice President, Facilities Management

Alejandro Garcia | Project Manager in Planning and Construction

Nate Reinhard | Utility Systems Manager, Facilities Management

Sarah Boyd | Manager of Landscaping and Grounds

Programming + Design

OZ Architecture

David Schafer | Principal in Charge

Nathan Miesan | Project Manager

Tracy Boyer | Programming

Ashley Roller | Interior Designer

Greg Hale | Project Designer

Christine Doherty | Project Designer

Leah Mathers | Project Architect

Consultants

JVA | Structural Engineering

Vermeulens | Cost Estimating

BCER | MEP Engineering

Wenk Associates | Landscape Architecture

Shen Milsom Wilke | Technology

PROCESS

The project followed three phases of work: Discovery, synthesis and documentation.

The discovery phase included a site visit and careful review of existing documentation to identify trouble areas and inventory the facility needs. This also included a review of current, in progress masterplanning information to better understand topics such as classroom utilization. The design team conducted code analyses and ADA compliance reviews to identify scope areas related to compliance with current regulations.

In the synthesis phase of work, our team explored possible solutions to topics identified in the discovery phase. These solutions ranged from site and building design studies to classroom and corridor layout concept development, and conceptual strategies to make revisions to restrooms, and other buildings systems.

These concepts were reviewed with the campus representatives and adjusted based on their feedback. Upon the completion of the synthesis phase, the team developed a list of possible scope items and worked with a cost estimator to identify the price of each scope item.

In the documentation phase, our team refined the solutions and documented them along with accompanying information in a manner that is easily referenced as a basis for a future deferred maintenance/capital improvement project.

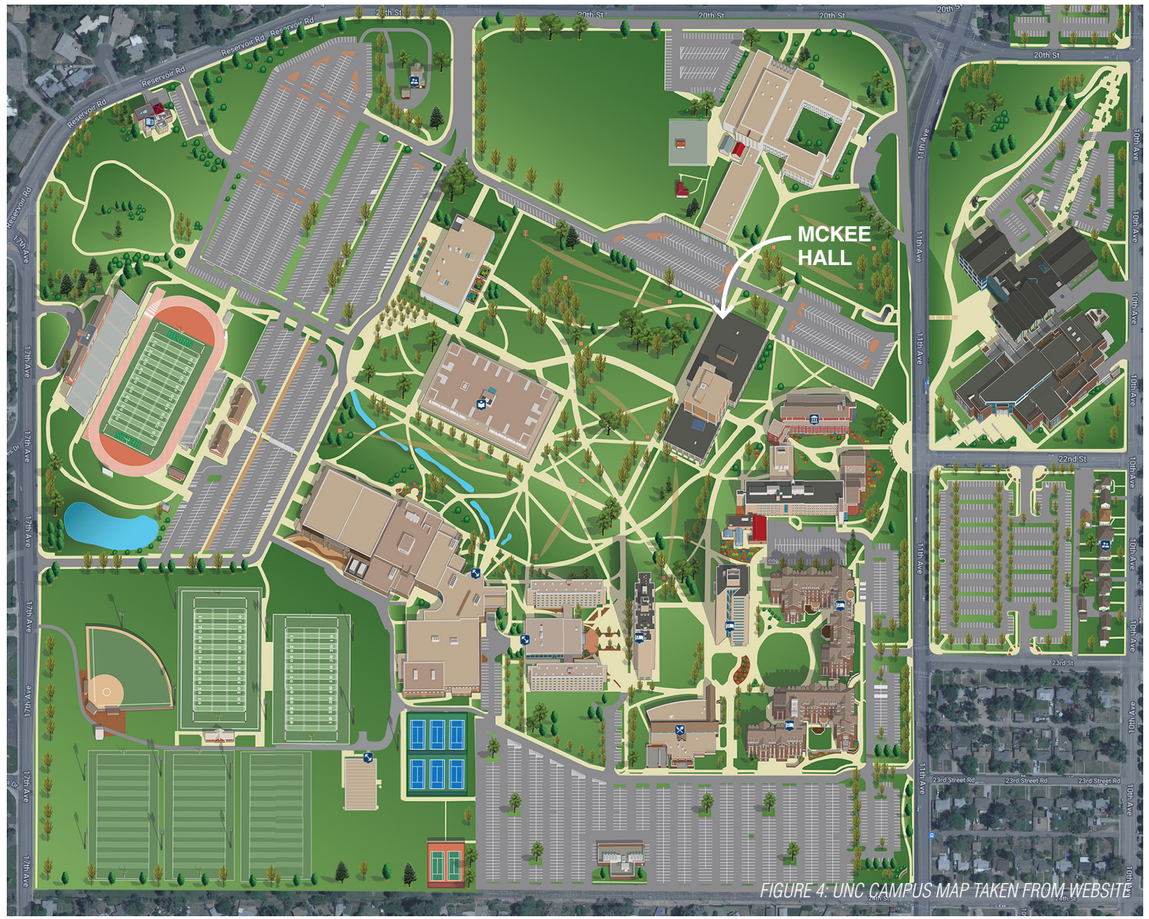

FIGURE 4: UNC CAMPUS MAP TAKEN FROM WEBSITE

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JUSTIFICATION

Existing Conditions
Building Organization
Code Review Summary
Changes and Projections
Investigation of Alternative Options

EXISTING CONDITIONS

BACKGROUND

Completed in 1968, McKee Hall was originally designed by the firm of Brelsford, Childress and Paulin. The building is a modern aesthetic, with features that relate it to the adjacent Candelaria Hall and Michener Library. Unlike many of the other UNC buildings, these three modern buildings on the west campus quad have no brick masonry on their exterior. While this building is not considered historic, it is representative of the Brutalist style common in the mid twentieth century.

McKee Hall has had very limited renovations in its 60 year life. The building is a total of 129,846 sf, and is composed of a 1-2 story base with a garden level below the north wing, and a three story tower that extends above this base, and spans between them to cover an open air breezeway.

The main building entry is off of this breezeway, although there are other entries at the corners of the low masses, and a set of stairs that form an amphitheater off of the garden level on the north side of the building.

The two story mass on the north side contains a mix of faculty offices and classrooms, organized around a corridor that rings the floor. The tower follows a similar organizational strategy with a corridor that rings the floor. The one story mass on the south side contains a steeply stepped lecture hall that is subdivided into three separate classrooms.

There is a tunnel below the breezeway that connects the north and south wings, contains mechanical equipment, and provides a second means of egress from the lowest level of the lecture hall.

FIGURE 5. MCKEE HALL PHOTO FROM SITE VISIT

EXTERIOR

The exterior of McKee Hall consists of a cast in place concrete structure painted white with tan exposed aggregate precast infill panels. The exterior finishes are durable and as such are generally in good condition.

However, the concrete envelope is generally low performing from an energy standpoint. Exterior walls are concrete exterior with interior metal studs and batt insulation and drywall on the inside face. Because of the thermal bridging at the studs, the effective R value of the exterior wall assembly is likely approximately R7.4. Windows are generally single pane, likely in the R-1 to R-2 range for thermal performance. In addition, the building entries do not incorporate a vestibule.

The north end of the building has an exterior amphitheater which steps down to an entrance at the lower level, although lacking a vestibule as well.

CIRCULATION

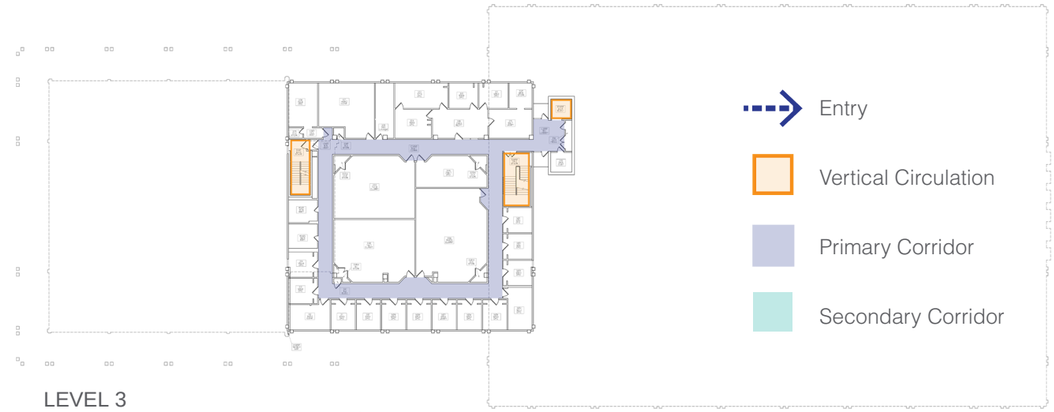
McKee Hall has both a private and public component, given the school offers clinical treatment to the community on its second level. Therefore, circulation is set up with a primary corridor wrapping the entire floor and secondary corridors breaking off to access offices and the clinic.

The perimeter of the floor on the north wing and tower are lined with offices, with classrooms located inside the corridor loop. The three floors in the tower above have one corridor loop, and hold primarily offices.

Vertical circulation is provided by one main semi-open stair on the south side of the north wing which extends the full height of the tower above, a second stair serving the south side of the tower and two stairs on the north side of the base. There is also one hydraulic elevator.

The diagram on the following page describes the building's circulation patterns:

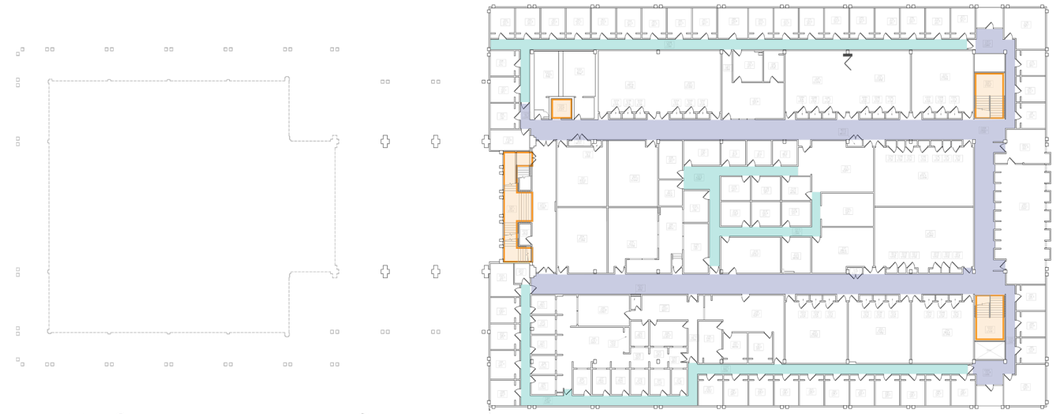
FIGURES 6,7,8: MCKEE HALL PHOTO FROM SITE VISIT



LEVEL 3

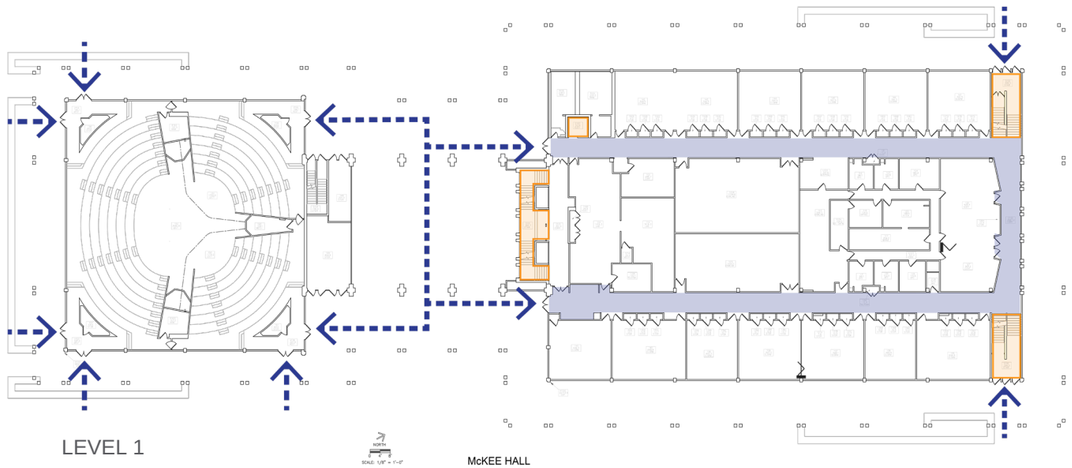
[LEVELS 4-5 SIMILAR]

McKEE HALL
THIRD FLOOR



LEVEL 2

McKEE HALL
SECOND FLOOR



LEVEL 1

McKEE HALL
FIRST FLOOR

BUILDING ORGANIZATION

PROGRAM

McKee Hall houses the College of Education and Behavioral Sciences over six floors and thirteen departments. Levels 0, 1, and 2 hold the majority of the building's classrooms, with offices and labs spread throughout. The tower, or levels 3, 4, and 5, are primarily offices.

As was common in the era in which this building was designed, windows were limited, and therefore daylight and views from offices and classrooms are scarce. The result is an environment that does not support a quality indoor experience.

DEPARTMENT ORGANIZATION

The lower level is sub grade, with access to the Lecture Hall and exterior amphitheater. This level holds the Departments of Early Childhood Education, Gifted and Talented Education Center, School of Psychological Sciences, and School of Special Education.

Level 1 is primarily classroom and lab space.

Level 2 has the public clinic which is access via the main stair, as well as the Departments of Applied Psychology and Counselor Education, and the School of Psychology.

Level 3 has the Department of Political Science and International Affairs, and the Department of Philosophy.

Level 4 has the Departments of Leadership, Policy & Development, Educational Leadership and Policy Studies, and Higher Education and Student Affairs Leadership.

Level 5 has the Departments of Applied Statistical and Research Methods, and American Sign Language and Interpreting Studies.

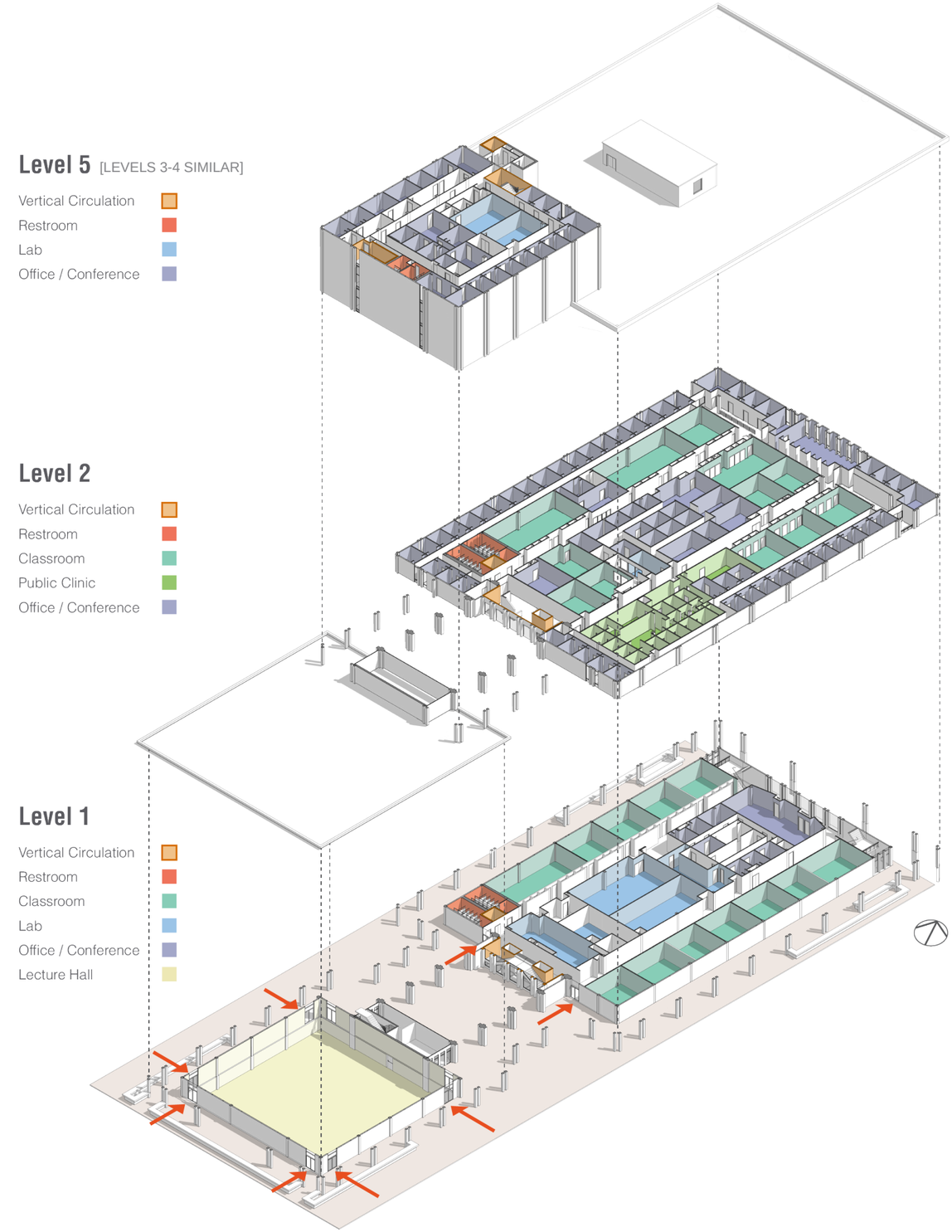
129 846
SQUARE FEET

6
FLOORS

13
DEPARTMENTS

32
CLASSROOMS

0
CLASSROOMS W/ DIRECT DAYLIGHTING



CLASSROOM SPACE

McKee Hall provides a total of 32 classrooms that range in size from 15-48 seats, and one subdividable lecture hall that can seat up to 500, or be divided into two 127 seat spaces and one 254 seat space. The Lecture Hall is a two-story height space with tiered seating, and about 9,000 sf of space.

The classrooms in this building are set up in a variety of ways, including lecture format with tablet arm chairs, small group tables, linear tables and chairs, and 2 top tables.

As indicated in a recent classroom utilization study conducted by the campus masterplanning team, classrooms in this building are generally underutilized. Currently McKee's highest capacity demand is for 36 to 48 seat classrooms, and there are seven 16 to 30 seat classrooms have a seat fill rate equal to or greater than 100%.

78%

OF CLASSROOMS ARE **NOT** UTILIZED EFFECTIVELY

73%

OF CLASSROOMS HAVE **LESS** THAN IDEAL SEAT FILL RATES

CLASSROOM UTILIZATION RATIO:

IDEAL = CLASSROOMS SCHEDULED 25 OF 40 HOURS PER WEEK

- **22%** OF CLASSROOMS ARE SCHEDULED BETWEEN 20 AND 25 HOURS PER WEEK.
- **31%** OF CLASSROOMS ARE SCHEDULED OVER 25 HOURS PER WEEK.
- **47%** OF CLASSROOMS ARE SCHEDULED UNDER 20 HOURS PER WEEK.

SEAT FILL RATE:

IDEAL = BETWEEN 60% - 75%

- **17%** OF CLASSROOMS HAVE A SEAT FILL RATE BETWEEN 60% AND 75%.
- **18%** OF CLASSROOMS HAVE A SEAT FILL RATE OVER 75%.
- **65%** OF CLASSROOMS HAVE A SEAT FILL RATE UNDER 60%.

OTHER DEFICIENCIES

ACCESSIBILITY

In addition to classroom concerns, there were other issues identified that require attention in this building. Many classrooms have recessed entries that do not comply with the ADA required clearances at doors. Stairs do not have code compliant handrails or guardrails, signage, elevators and restrooms are not in compliance with current ADA standards. The plumbing fixture count is below the quantities prescribed by the current code, and all multi-stall restroom facilities are gender assigned, with a couple all-gender restrooms.

While these are existing conditions, these issues should be remedied to provide an equitable, inclusive experience for all students regardless of physical ability or identity.

FINISHES

Interior finishes throughout McKee Hall are also dated and require replacement. Wall, floor and ceiling finishes as well as doors are showing signs of excessive wear, warranting replacement.

As indicated in a separate report provided by the University, asbestos can be found in trace quantities in wall texturing and joint compounds, some flooring and adhesives. While it is not in the scope of this report to quantify or determine how to appropriately address this material, it will be important that it be mitigated if and when construction activities commence.

MECHANICAL SYSTEMS

While there have been some upgrades to mechanical equipment, many of the system components are due for updates for improved energy efficiency, increased occupant comfort and to enhance the overall student experience. Systems upgrades have been identified in a deferred maintenance list and expanded upon in our consultant review narratives to follow.

ANECDOTAL FEEDBACK

During our site visits, faculty and students offered unsolicited feedback citing the following issues:

- Lack of common gathering space for students + faculty
- Wayfinding and signage is suboptimal
- Restrooms need updating
- Lack of electrical outlets throughout
- Seating is unaccommodating to different body types
- Need for a mother's / wellness room
- Need for updated, quality student common spaces

FIGURE 9: MCKEE HALL PHOTO FROM SITE VISIT

CODE REVIEW SUMMARY

PLUMBING COUNTS

As McKee Hall is a 60 year old building, its current layout does not meet current code standards in a few regards. After a study of fixture counts, it was determined McKee Hall does not need additional fixtures to be in line with current code standards, but should provide additional restrooms for accessibility code requirements and gender inclusivity:

EXISTING:

REQUIRED TOTAL MENS:	**37 WC + 23 LAVS**
REQUIRED TOTAL WOMENS:	**37 WC + 23 LAVS**
PROVIDED TOTAL MENS:	**50 WC + 19 LAVS**
PROVIDED TOTAL WOMENS:	**50 WC + 19 LAVS**

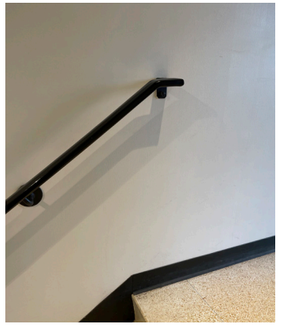
RECOMMENDATION:

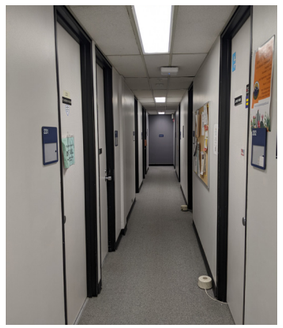
While the current fixture counts are satisfied per code, ADA and accessibility compliance updates may alter the need for additional restrooms on each floor. McKee Hall should consider adding gender inclusive, ADA accessible restrooms on each floor. Possible locations are represented on pages 40 and 41.

ACCESSIBILITY

Other code-related issues McKee Hall faces are related to ADA accessibility needs. The deficiencies found are as follows:

- Handrail Extensions
- Guardrail Heights
- Signage (ADA)
- Room Entrances (ADA)
- Elevator Upgrades (ADA)
- Bathroom Clearances (ADA)
- ADA in Communal Space





FIGURES 10, 11, 12: MCKEE HALL PHOTO FROM SITE VISIT

CHANGES + PROJECTIONS

A NEED FOR RESILIENCE

Since the building was brought online in 1968, expectations of students and faculty have changed dramatically. Accessibility laws and energy codes have changed, current pedagogy focuses on active, project based learning rather than lecture based learning.

Students have come to expect common collaboration areas for small group gathering and collaboration outside the classroom environment. Access to natural light has also been proven to dramatically increase student success and faculty satisfaction. The existing classroom furniture is now considered not inclusive for its small seats and wrap-around desk. Students need a variety of seating styles for comfort.

Over the last 5 years, enrollment at UNC has decreased by approximately 25% to the current level, which puts less pressure on the classroom quantity, and could enable some consolidation of spaces to create larger classrooms that are outfitted to support a more modern teaching mode.

One impact of the recent pandemic was the resignation or retirement of a higher than normal number of classroom teachers, leading to a statewide shortage of educators. UNC's College of Education, housed in McKee Hall is uniquely positioned to help the state rebuild our education workforce.

"UNC will continue to better understand how students engage inside and outside of the classroom – and implement strategies focused on enhancing our student's experience and their success."

- Rowing, Not Drifting 2030

FIGURE 13: UNC CAMPUS IMAGE TAKEN FROM WEBSITE

INVESTIGATION OF ALTERNATIVE OPTIONS

While this program plan recommends an ideal set of improvements to this building, there are alternatives that could be pursued:

OPTION 1:

DO NOTHING

Continue to occupy McKee Hall in its current state. While this is the least expensive option, this scenario would not address any of the accessibility or energy efficiency needs outlined in this program. The quality of the student experience would not be improved, and classrooms would not be updated to current pedagogical standards.

Systems would not be upgraded, and would continue to operate at a lower efficiency level. These systems would also continue to deteriorate, requiring an increased level of maintenance going forward. Exterior building elements such as the concrete sunshades would continue to deteriorate as well, and will eventually require removal.

OPTION 2:

ADDRESS DEFERRED MAINTENANCE + CODE ISSUES ONLY

Under this scenario, systems would be upgraded, thereby improving their energy efficiency and reducing ongoing maintenance costs. Widow replacement would also lend to improved energy performance and occupant comfort. Interior finishes would be upgraded, which would improve the student perception of the building.

Stairs, restrooms and signage would be addressed to be in compliance with current accessibility and code standards, to create a more inclusive environment in the building. New spaces for technology infrastructure and pathways would be incorporated.

OPTION 3:

IMPROVE STUDENT EXPERIENCE

Improve classroom and student gathering spaces for better student collaboration. Create gender inclusive restrooms for better inclusivity. Create entry vestibules to reduce energy use and create more comfortable interior spaces. Incorporate all of the maintenance and code interventions recommended in Option 2.

RECOMMENDED OPTION:

COMPREHENSIVE RENOVATION

Under this scenario, the deferred maintenance and building infrastructure needs are all addressed, the code and accessibility issues are resolved, classrooms and student gathering spaces improved, and the building exterior and surrounding site area is improved, including the addition of windows in the existing exterior walls to admit daylight and views and promote occupant wellbeing.

3

FACILITIES RESPONSE

Sustainable Solutions
Base Scope v. Extended Scope
Site Improvements
Building Exterior Improvements
Deferred Maintenance Scope
Code and Accessibility Upgrades
Interior Space Improvements
Extended Scope Layout
Structural Systems Improvements
MEP Systems Improvements
IT / Technology Improvements

SUSTAINABLE SOLUTIONS

DESIGNING FOR ADAPTABILITY

McKee Hall has a rich history and a well-maintained building structure, meaning it has the capacity to not only last for the decades to come, but to offer brilliant , dynamic spaces for students, faculty, and staff. With the building's envelope in good condition, minor architectural and interior adjustments can improve its quality and efficiency to modern standards, all the while becoming integrated into its context and serving as a learning hub on the UNC campus.

The following strategies outlined in this Program Plan take into account the immediate need for a deferred maintenance scope, while identifying additional design opportunities which can benefit the building. Each solution is crafted to serve all means of accessibility (beyond code requirements), and considers the impact these design decisions have on the environment.

BENCHMARKING

While sustainability-based certifications can provide base goals for the building's renovation, the Program Plan intends to establish benchmarking goals based on utility usage of the following:

- Reduction in electricity consumption
- Reduction in gas consumption
- Reduction in water consumption

HPCP + LEED

The state of Colorado requires that all renovation projects that meet the following criteria conform to the State High Performance Certification Program policy adopted by the state architect.

- The project receives 25% or more of state funds, and
- The new facility, addition, or renovation project contains 5,000 or more building square feet
- The building includes an HVAC system
- In the case of a renovation project, the cost of the renovation exceeds 25% of the current value of the property.

This project likely meets this criteria, and as such, will likely be required to be LEED Gold certified. This would require that a minimum of 60 points be achieved under this program.

As a renovation project, there are few opportunities to collect points in the location and site categories, but site improvements such as permeable pavers or rain gardens will improve rainwater management. Water use can be improved through the use of efficient indoor fixtures and the selection of landscape plantings that limit water demand.

Energy use will be improved through the replacement of windows and other exterior skin enhancements. Light fixture replacement will also yield significant energy savings. This should be measured and compared to a baseline through the design process so it can be quantified. Renewable energy could be considered for these projects as well. There are options to procure these at no or limited cost to the institution through a third party power purchase agreement.

Commissioning should be included for this project to be sure the building function s as designed and any expected energy savings are realized.

LEED SCORECARD

LEED points can be earned through the reuse of this building, as an alternative to removal and replacement. Environmental product declarations should be considered in the selection of new materials, so the team can prioritize selection of materials that have been sourced responsibly and have a limited lifecycle impact. Construction waste should be carefully managed, and diverted from landfill wherever possible.

Consideration to the use of low emitting materials and improvements to interior lighting will be important to optimize the indoor environmental quality, as well as applying several LEED innovation credits which suit the building's function.

The strategies above should be carefully considered in the context of the LEED scorecard, with the goal of achieving 60+ points for a threshold above required certification. The design team should conduct their own LEED study to ensure Gold Certification. The scorecard listed below displays intention for sustainable strategies:

LEED v4 for BD+C: New Construction and Major Renovation
Project Checklist

Y	?	N			
1			Credit	Integrative Process	1

8	6	17	**Location and Transportation**		16
		16	Credit	LEED for Neighborhood Development Location	16
1			Credit	Sensitive Land Protection	1
	1		Credit	High Priority Site	2
5			Credit	Surrounding Density and Diverse Uses	5
	5		Credit	Access to Quality Transit	5
1			Credit	Bicycle Facilities	1
		1	Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1

4	6	0	**Sustainable Sites**		10
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
2			Credit	Site Development - Protect or Restore Habitat	2
1			Credit	Open Space	1
	3		Credit	Rainwater Management	3
	2		Credit	Heat Island Reduction	2
	1		Credit	Light Pollution Reduction	1

5	2	4	**Water Efficiency**		11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
1	1		Credit	Outdoor Water Use Reduction	2
3	1	2	Credit	Indoor Water Use Reduction	6
		2	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

9	19	5	**Energy and Atmosphere**		33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
4	2		Credit	Enhanced Commissioning	6
4	9	5	Credit	Optimize Energy Performance	18
	1		Credit	Advanced Energy Metering	1
	2		Credit	Demand Response	2
	3		Credit	Renewable Energy Production	3
1			Credit	Enhanced Refrigerant Management	1
	2		Credit	Green Power and Carbon Offsets	2

4	9	0	**Materials and Resources**		13
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
	5		Credit	Building Life-Cycle Impact Reduction	5
1	1		Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
	2		Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
1	1		Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

10	6	0	**Indoor Environmental Quality**		16
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
1	1		Credit	Enhanced Indoor Air Quality Strategies	2
3			Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
	2		Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
2			Credit	Interior Lighting	2
2	1		Credit	Daylight	3
	1		Credit	Quality Views	1
	1		Credit	Acoustic Performance	1

4	2	0	**Innovation**		6
3	2		Credit	Innovation	5
1			Credit	LEED Accredited Professional	1

4	0	0	**Regional Priority**		4
1			Credit	Regional Priority: Specific Credit	1
1			Credit	Regional Priority: Specific Credit	1
1			Credit	Regional Priority: Specific Credit	1
1			Credit	Regional Priority: Specific Credit	1

49	50	26	**TOTALS**	Possible Points:	110

Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

BASE SCOPE V. EXTENDED SCOPE

DEFINING OPPORTUNITIES

McKee Hall has a multitude of opportunities to improve its spaces for students, faculty, and staff. By applying the project goals previously stated in the document, the building can not only improve its efficiency, but also create dynamic spaces for collaborative learning and exploration.

Architectural interventions need not be extravagant given the building is in overall good condition. However, slight maneuvers in new elements can drastically change the building's function and use. Switching to a double pane glass and introducing entry vestibules will aid the building's heating and cooling, and introducing new glazing creates healthier spaces.

Replacing the tan exterior precast panels with an infill panel that combines brick, metal, and glass provides a higher insulation value and improves the occupant experience by providing more views and daylight while also improving the building's energy performance.

Throughout the building, introducing new furniture and finishes can redefine spaces for students and faculty, and improve the building's health and efficiency. Flooring in particular requires regular maintenance, so selecting a durable and easily maintainable option can greatly reduce the life cycle cost and has a less negative impact on the environment.

Updating the secondary corridors, re-purposing existing classroom storage space into student space, and refreshing conference rooms and offices will have an immeasurable positive impact on the building and the users.

The following opportunities listed below are defined per scope:

ARCHITECTURAL

NEW VESTIBULE

Improves energy efficiency

Establishes directionality and wayfinding on campus

NEW WINDOWS

Increases energy efficiency

Increases daylighting and improves overall health of the building

Provides and opportunity to create new student space

CORRIDOR STUDY BOOTHS

Provide a dynamic space for students and faculty

Promotes student collaboration and engagement

Introduces sustainable materials to the building

FURNITURE + FINISHES

SINGLE + DOUBLE CLASSROOM RENOVATION

Enhances spaces for students by creating versatile learning environments

Provides up-to-date A/V and technology needs

Promotes student learning, collaboration and engagement

STUDENT SPACE [Gathering | Mother's / Wellness Room | Kitchen]

Improves existing spaces for better function and collaboration

Promotes student collaboration and engagement

Responds to diverse needs of student population

FACULTY SPACE

Provides a dynamic and supportive space for faculty

Promotes collaboration and engagement

FINISHES

PRIVATE OFFICE + CONFERENCE FINISH UPDATES

Enhances quality of space for faculty and staff

Improves use of space through updated finish and A/V upgrades

SECONDARY CORRIDORS

Improves energy efficiency

Improves signage and wayfinding

Replaces outdated finishes with sustainable and durable materials throughout circulation spaces

SITE IMPROVEMENTS

DEFERRED MAINTENANCE

While the existing site is in reasonable condition for its age, several maintenance items have been identified to bring the site into code compliance and up to current day standards. These include the replacement of existing pavement/concrete, improving adjacent hardscape drainage, adding irrigation in planter areas, bringing site elements within code compliance (ie: handrails, stairs, ramps) and replacement of old, degraded, or otherwise unused site furnishings including site lighting.

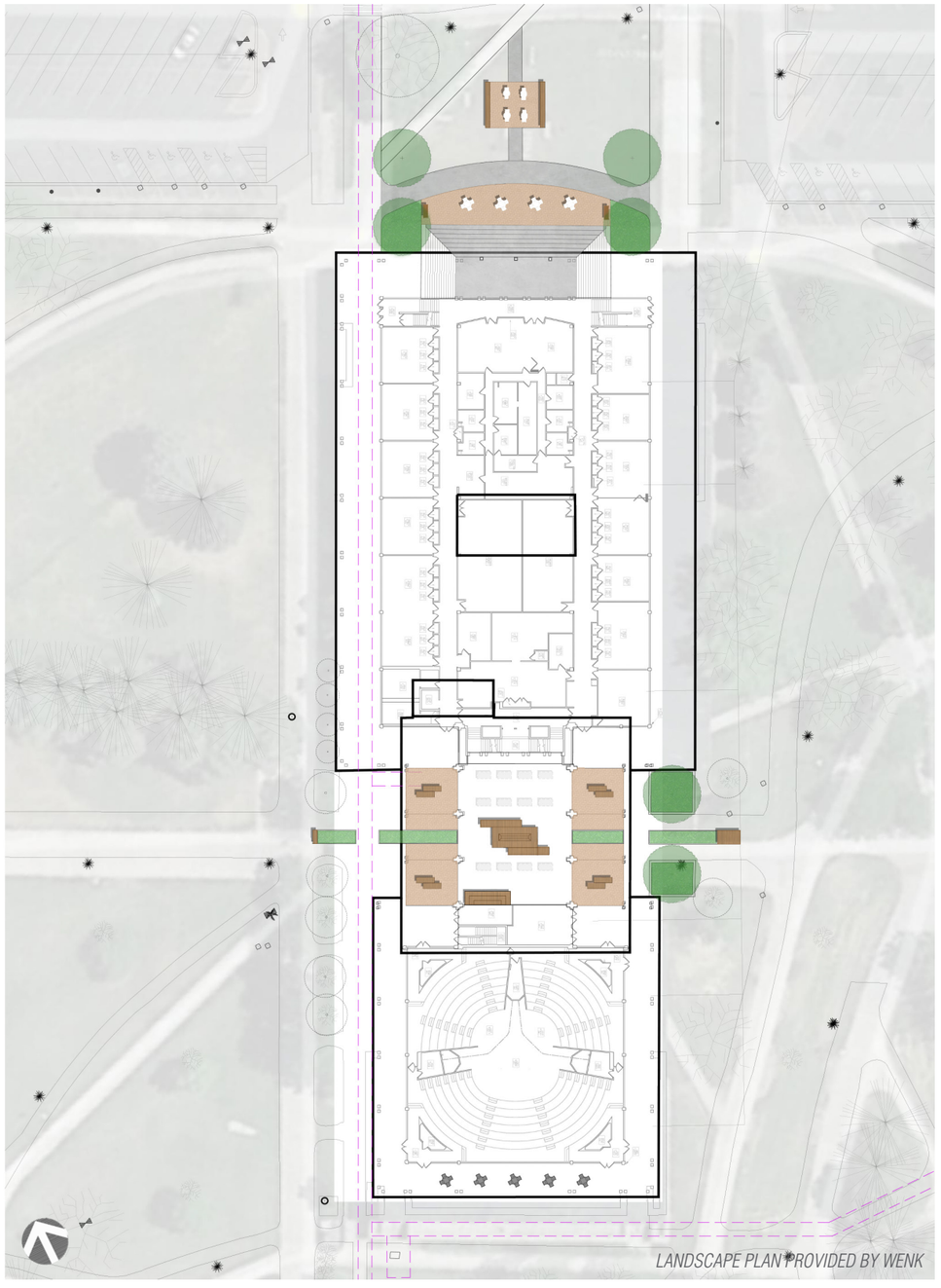
The primary areas needing maintenance intervention are the breezeway and the north end amphitheater and seating.

SITE ENHANCEMENTS

There are several items that could be added to enhance the exterior spaces and increase usability by students and faculty. Update the breezeway to create useable space, and upgrade the amphitheater to provide comfortable seating areas to study and gather.

Planters, seatwalls, additional material types, and varied seating options will improve circulation and create a high quality space.

REFERENCE IMAGES PROVIDED BY WENK



LANDSCAPE PLAN PROVIDED BY WENK

SITE IMPROVEMENTS

BREEZEWAY

Modifications begin with improvements to the site. The sidewalk alignment on the north would be adjusted for a better relationship to the amphitheater, and the amphitheater itself would be modified for better terraced seating in some areas. A permeable paving surface would be added to the lowest level of the amphitheater for improved drainage, and a gathering area could be incorporated into the lawn to the north.

Breezeway improvements would be carefully considered to provide transparency, encourage student gathering, block wind, and exclude vehicular traffic. The large concrete planter boxes would be replaced with large furnishings to encourage student gathering. Damaged concrete at the east and west ends of the breezeway would be replaced with unit pavers.

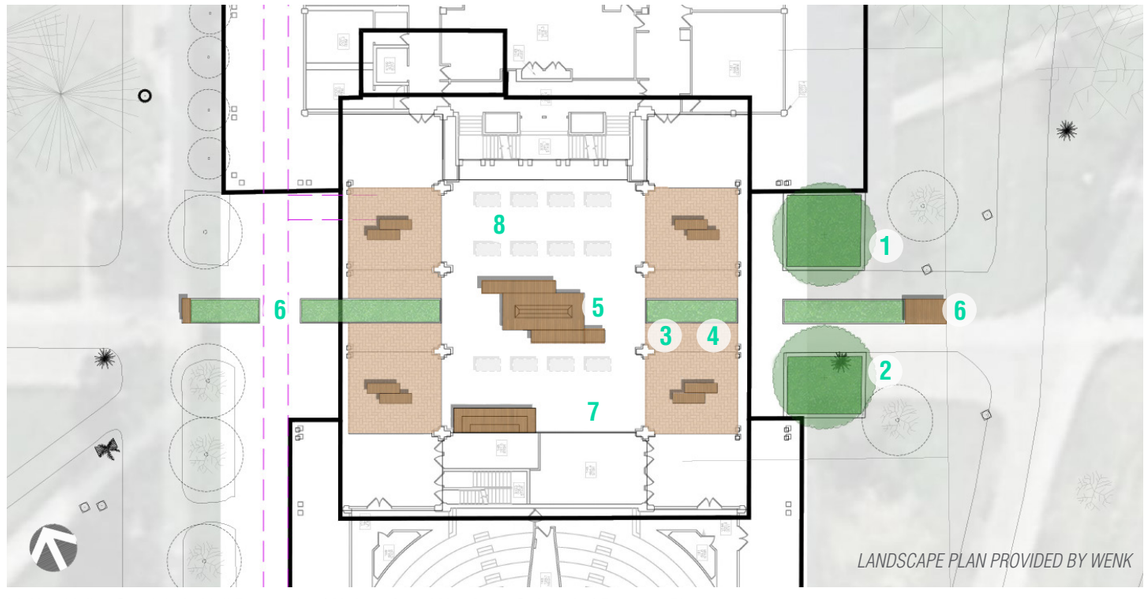
Formal, raised planting beds and furnishings would be located to exclude vehicle access to the breezeway, and avoid excessive loading of the tunnel below. Trees would be added to the east side of the breezeway, and the student activity board on the south side of the breezeway would be maintained. Additional site furnishings would be added to the loggia outside the lecture hall space on the south wing.

ENTRANCE TO THE BREEZEWAY

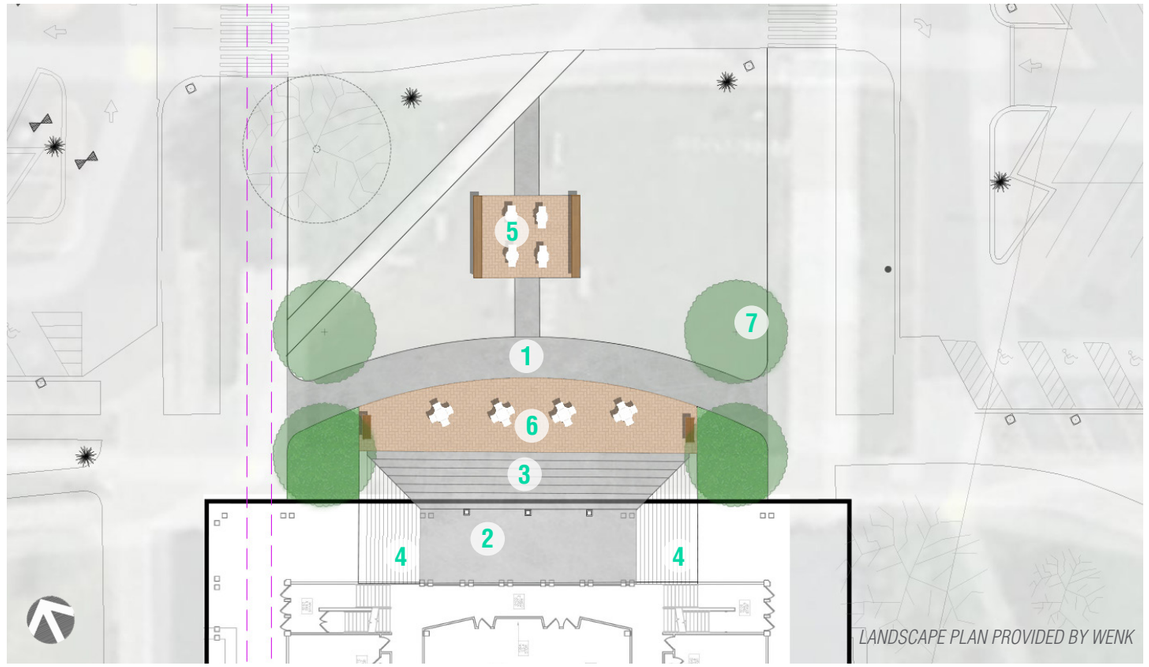
1. Add (2) tree plantings to the east side to help soften the edge and reduce wind through the breezeway.
2. Create formal, raised planting beds at the tree base to help frame the entrance.

BREEZEWAY

3. Remove the concrete planter boxes with seats attached.
4. Remove concrete paving at the locations of the existing planter and replace with concrete unit pavers to help break up the ground plane.
5. Add large furnishings into the space for student gathering and interaction. These could be a variety of sizes and configurations but would still keep spaces open for events or student group set up.
6. Use the furnishings and raised planters as barriers for vehicles.
7. Maintain open wall for student chalk board.
8. Temporary student table set up space (6'x3' tables).



LANDSCAPE PLAN PROVIDED BY WENK



LANDSCAPE PLAN PROVIDED BY WENK

AMPHITHEATER

1. Expand the area at the top of the amphitheater and reroute the sidewalk to provide a greater separation between pedestrians and the amphitheater. Add seating for student use.
2. Replace the concrete at the bottom of the amphitheater to create a seamless ADA ramp into the building and improve drainage by replacing inlets.
3. Replace a portion of the amphitheater with terrace seating, 12" height x 24" wide.
4. Maintain stair access along the edges of the building and include code compliant handrails.

LAWN GATHERING AREA

5. Create a larger gathering space within the lawn with seating around the edges and a clear path to it from the building and amphitheater.
6. Provide a separation from the edge of the amphitheater and create a plaza edge.
7. Add (4) trees and understory planting.


REFERENCE IMAGES PROVIDED BY WENK

BUILDING EXTERIOR IMPROVEMENTS

GOALS

While the site improvements intend to tie the building into its context and provide dynamic spaces for students, faculty, and staff, the deferred maintenance items for the building have the opportunity to revitalize its exterior and function as well.

The deferred maintenance for the project does not require exterior improvements. However, by incorporating well-crafted architectural elements, the building can achieve an entirely new dynamic to the university's campus. As such, the goals for modifications to the building's exterior are:

1. Provide improved access to daylight and views for building occupants.
2. Improve the building scale and articulation.

The team explored a variety of strategies with the input of UNC to achieve this in a way that is compatible with the existing architecture on campus. The design recommendations include a few specific interventions:

NEW FACADE SYSTEM:

Structurally, the precast infill panels can be removed in part or in their entirety. These could be replaced with higher performing insulated panels with windows. While this would vastly improve the experience for building occupants, it would also allow more articulation to the exterior façade, creating a more inviting aesthetic.

While this is a significant design intervention, due to an improved level of insulation, this would also yield significant energy use reductions depending on the level of interventions around the building. New glazing should be a double-pane system to improve thermal efficiency.

ENTRANCES:

Add vestibules to main entrances of classroom building. This will improve the thermal efficiency and comfort, and act as wayfinding elements as the building is used by the public and currently has no signage or directionality.

DEFERRED MAINTENANCE

SCOPE DESCRIPTION

The Program Plan in its strictest sense is intended to define a deferred maintenance scope for the building, revolving mainly around its building systems and finishes. For the exterior of the building, all glazing has been determined to be replaced. The ADA upgrades reference the handrails, accessibility compliance in the restrooms, replacing all doors, and addressing lacking plumbing counts. Only the main corridors have been defined as needing updates.

The air handling units are in need of replacement, as well as the electrical system. The elevator will need modifications, and the building's technology system will need to be updated.

The diagrams on the following page describe the locations of the aforementioned deferred maintenance needs:

INTERIOR FINISH STANDARDS

Existing interior finishes and flooring in McKee could be improved with the consideration of more durable, sustainable, and cost effective materials. Improvements to these standards include the use of a high-quality and sustainable luxury vinyl tile in lieu of VCT, and alternative manufacturers for carpet flooring that provide zero or negative carbon carpet tiles.

A primary difference between VCT and LVT is the required regular maintenance--VCT requires polishing every 6-12 months, and occasional stripping and resealing. LVT's maintenance only requires sweeping and a damp mop.

The following comparisons are taken from industry standards for overall product value:

	VCT	LVT
Initial Cost + 5 Years Maintenance	$14.15 /ft^2	$4.00 - $6.00 /ft^2
Durability	8%-12% vinyl wear layer	>32% vinyl wear layer
Life Expectancy	5 - 7 years	8 - 20 years

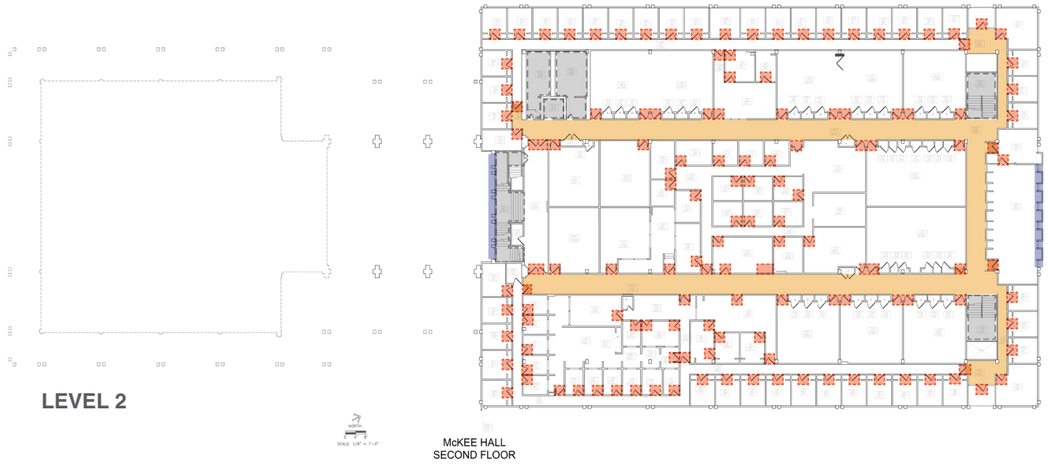
ARCHITECTURAL: Replace Windows

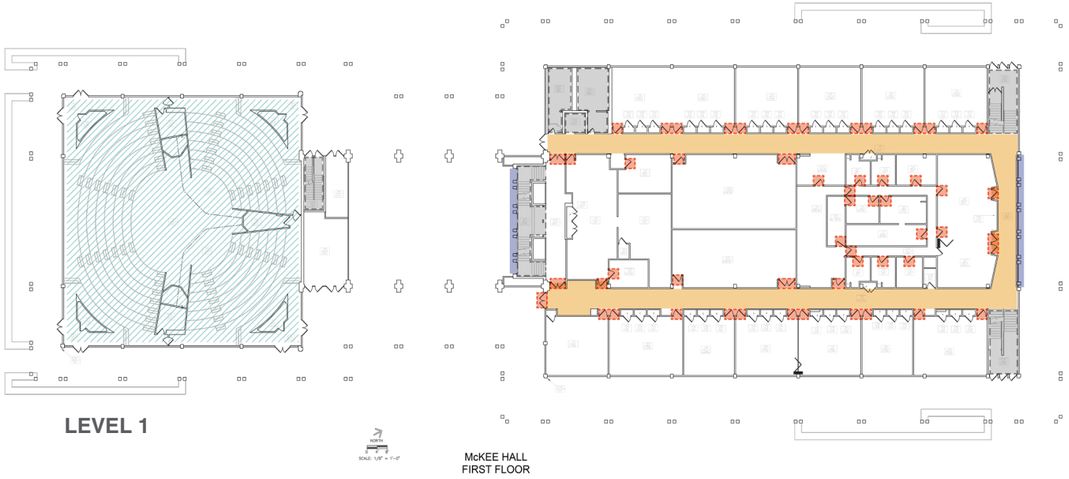
FINISHES: Replace Ceiling
Replace Flooring with LVT
Replace Lighting
Replace Elevator Finishes

ADA UPGRADES: Accessible Restroom Stalls
Elevator Modifications
Replace Doors + Door Hardware
Guardrails + Handrails

ELECTRICAL: Remove / Replace Primary Transformer
Remove / Replace Main Switch Gear
Remove / Replace Motor Control Center w/ new Panel

DATA: Provide Purpose Built Dedicated MDF and IDF Closets and Cabling Pathways





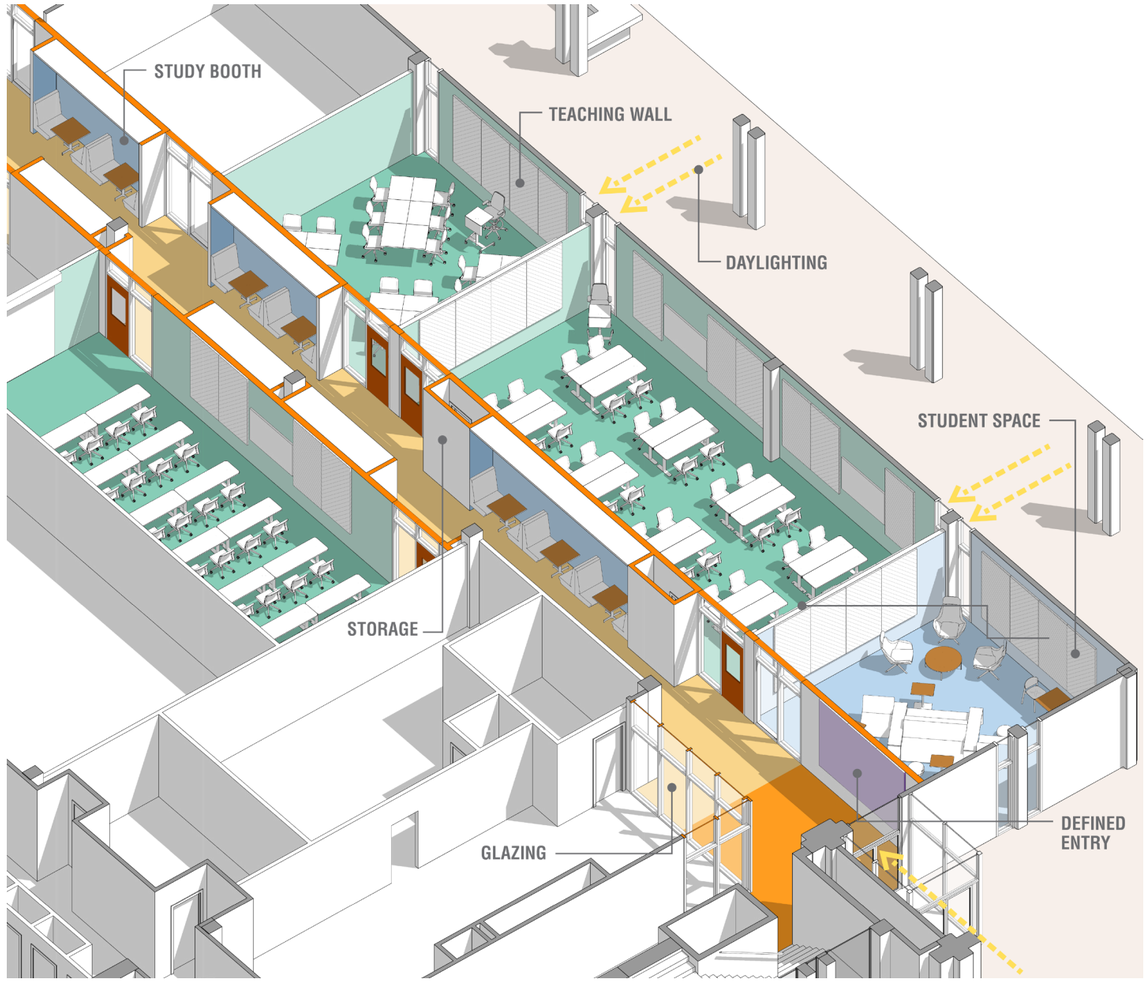
CODE + ACCESSIBILITY UPDATES

SCOPE DESCRIPTION

For improved accessibility, all doors that are located in an alcove would be modified to increase the alcove width in compliance with current ADA requirements. This also gives the opportunity to bring more daylighting into the classrooms and other internal spaces, and take advantage of the display inserts which can be converted into study booths.

At building stairs, guardrails would be replaced with new systems that meet current code requirements, and handrails would be modified to provide the code required extensions.

Restrooms would be reconfigured to meet current code required clearances, and additional space would be allocated for new gender inclusive restrooms that are fully accessible, and increase the fixture count for compliance with the current codes.



INTERIOR SPACE IMPROVEMENTS

LECTURE HALL

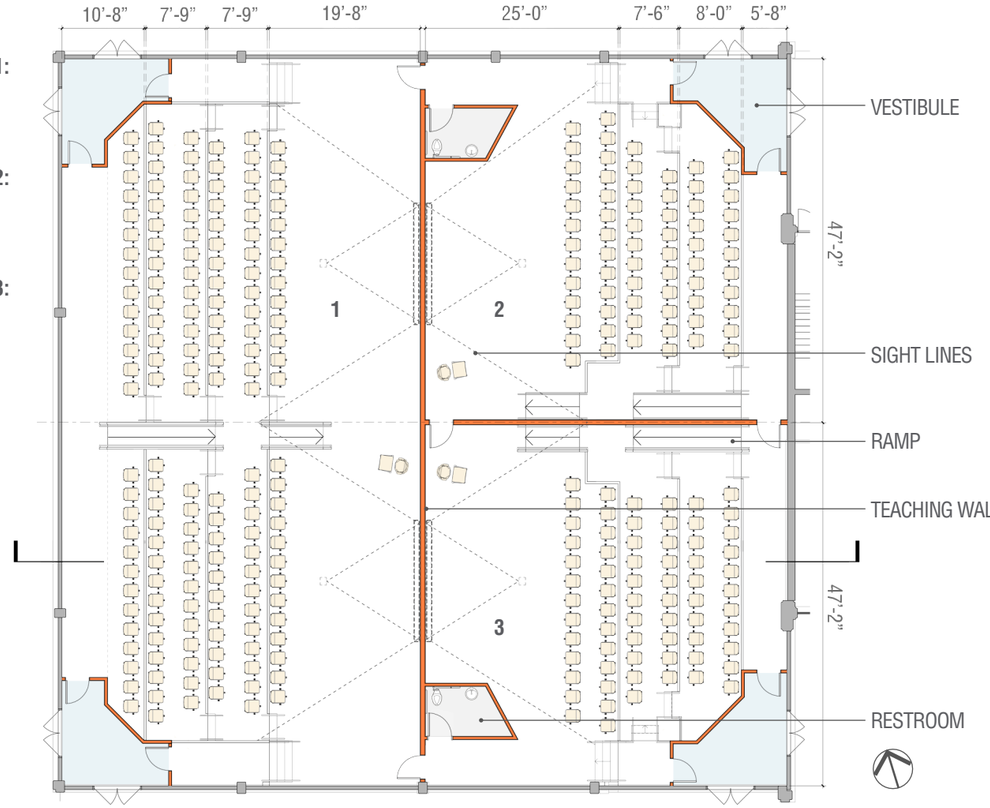
Accessibility would be achieved at the lecture hall though the incorporation of a false floor that dramatically reduces the rake, and allows ramped access to all areas of the classroom. With this scenario, these classrooms would no longer be divisible, but would be separated by permanently constructed walls.

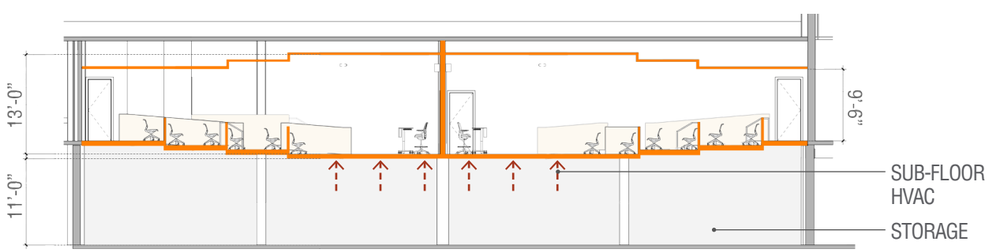
LECTURE HALL 1:
158 SEATS

LECTURE HALL 2:
68 SEATS

LECTURE HALL 3:
68 SEATS

TOTAL:
294 SEATS



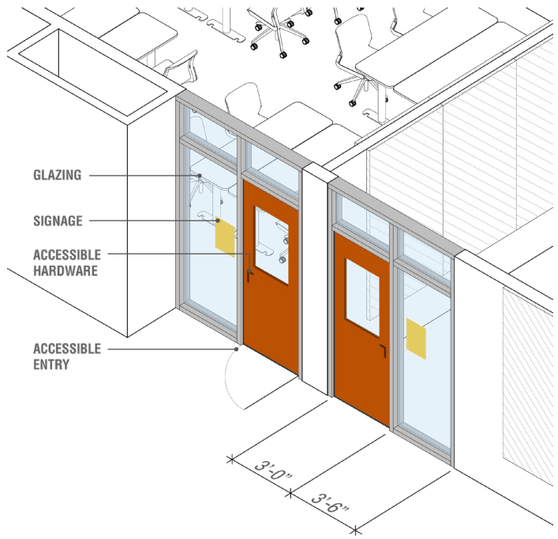


INTERIOR SPACE IMPROVEMENTS

CLASSROOMS + GATHERING SPACES

Classrooms at McKee Hall can be reconfigured to increase square footage and enable furniture upgrades to systems that support flexible learning environments. AV systems would be upgraded to the current campus standard, and teaching walls would be flipped so they are not adjacent to the classroom entry. Classroom entries are reconfigured to be accessible and add a sidelight window for more visibility to the corridor. A typical entry is diagrammed to the right:

The diagrams on the following page describe potential layouts for a variety of classroom organization based on curriculum and learning type.



ACCESSIBLE / ACCOMMODATING CLASSROOM FURNITURE

VIEW DOWN LEVEL 1 CORRIDOR

LEVEL 1 ENLARGED CLASSROOM PLAN

Updated Classroom:
- New Carpet Tile
- New Paint
- New Acoustical Ceiling Tile
- New Indirect Lighting
- New Classroom Entry Door / Hardware
- A/V and Technology Upgrades

Updated Student Space:
- New Carpet Tile / VCT
- New Paint
- New Acoustical Ceiling Tile
- New Indirect Lighting
- New Entry Door / Hardware
- A/V and Technology Upgrades

ADA Entrance
- Sidelight
- New ADA Hardware
- Accessible Signage

Modified Storage:
- Adjustable Shelving

White Board

Corridor Study Booths

Teaching Wall

EXPANDED SCOPE

RESILIENT STRATEGIES

While each classroom has been identified as in need of an update, both classrooms and existing lounge spaces can be updated incrementally as the need arises. Two classrooms can be modified into one collaborative learning environment and upon its success, the others can follow suit.

The secondary corridor updates can merge with reception area updates by curating sustainable materials and furniture for these spaces.

The building has several examples for potential student gathering spaces, whether part of a corridor or an enclosed space for privacy or studying.

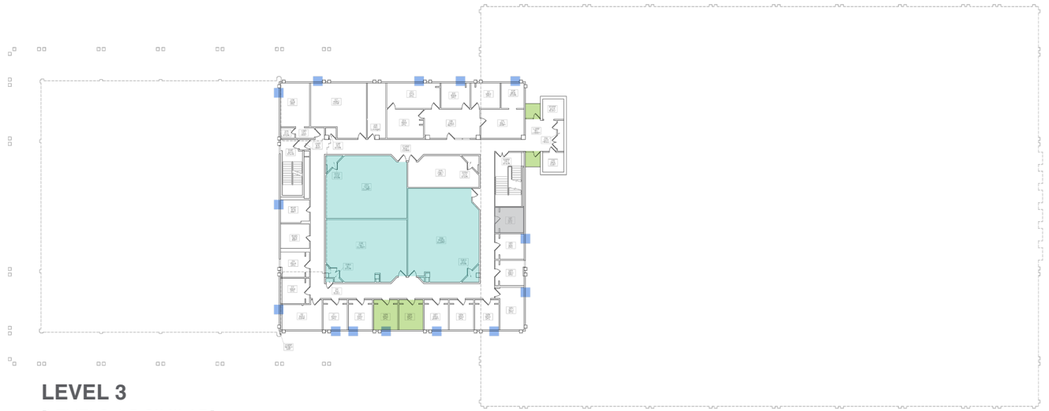
McKee Hall meets current code requirements for the number of plumbing fixtures needed, but these restrooms do not meet accessibility requirements. This can be resolved by adding a gender-inclusive restroom on each floor.

Each of these strategies are meant to improve the quality of the student and faculty experience, improve the quality of the student and faculty experience, and create a more resilient building on the UNC campus.

The diagram on the following page describes intended locations of updates:

LEGEND

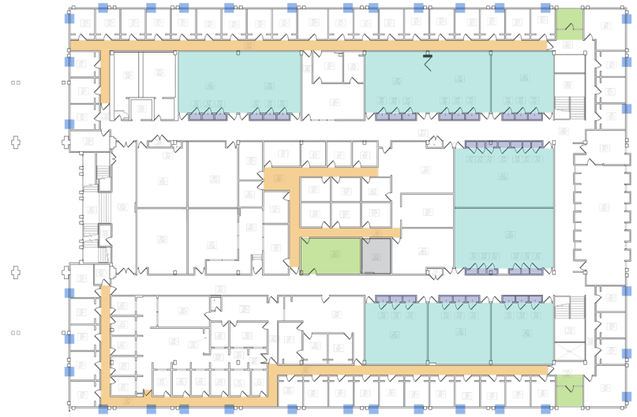
- New Entrance Vestibule
- Upgrade Secondary Corridor Finishes
  - New VCT
  - New Paint
  - New Acoustical Ceiling Tile
  - New Indirect Lighting
- Student Common Space
  (see page 39)
- Upgraded Classrooms
  (see page 39)
- Modified Lecture Hall
  (see page 39)
- Corridor Study Booths
  - New Partitions
  - New Seating
  - Power + Data
- Gender-Inclusive Restroom
- New Glazing



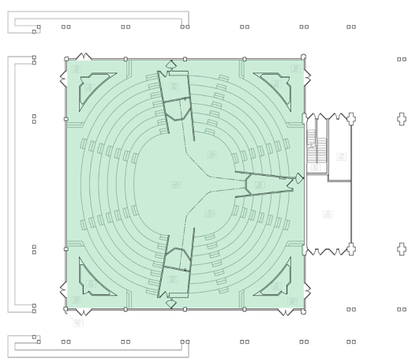
LEVEL 3
[LEVELS 4-5 SIMILAR]

McKEE HALL
THIRD FLOOR

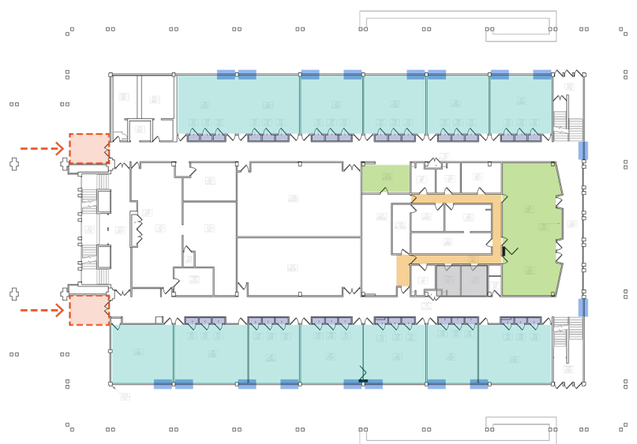
LEVEL 2



McKEE HALL
SECOND FLOOR



LEVEL 1



McKEE HALL
FIRST FLOOR

STRUCTURAL SYSTEMS IMPROVEMENTS

NARRATIVE SUMMARY

No maintainence issues were identified for McKee Hall. There is ample opportunity to create new window openings in the exterior precast skin. The precast panels are full height from floor to floor and of various widths, with vertical rustication joints at a regular rhythm that conceal the true caulked vertical joints between panels. These narrow panels bear at the base of the panels on the concrete beams that comprise the primary structure. In addition, the panels attach back to the concrete and steel structure with embed angles and slotted angle connections on each side of the panel.

The steeply sloped auditorium seating in the paired lecture halls at the south end of McKee Hall offers challenges. Structural modifications to this seating may be feasible pending an understanding of the existing construction. The drawings indicate the slope seating is constructed as a concrete slab on grade, and removal of the slab and modifications to the interior grade may create an imbalance of earth forces that can't be overlooked.

MEP SYSTEMS IMPROVEMENTS

MECHANICAL SUMMARY

McKee Hall's mechanical HVAC systems are a mixture of the original, 1960's vintage and 2009 installation. The building's air handlers and the majority of the dual-deck terminal boxes were replaced in 2009. The deferred maintenance scope of work recommendations are as follows:

- Replace the remaining pneumatically controlled devices with new DDC.
- Replace the level 2 terminal pneumatic boxes with new DDC units.
- Inspect, repair, reseal and clean the existing ductwork as necessary.
- Replace unitary heating equipment.
- Install transfer fans or DX minisplits to cool unconditioned electrical room closets.

ELECTRICAL SUMMARY

McKee Hall's electrical systems are primarily from the original installation and some of the system is due to be replaced to improve reliability and operational functionality as was as providing equipment that will have readily available replacement parts/supplies in the event future updates or maintenance is required or needed. Deferred maintenance scope of work recommendations are as follows:

- Replace original main switchboard and newer 1600 amp GE Spectra Series switchboard due to its custom attachments to the original main switchboard.
- Replace approximately 20 original branch circuit panels that are fed from or directly mounted to a vertical 2-wire bus duct with external braided ground conductor. Existing panels are located throughout the building.
- Replace existing motor control center on lower level with panelboard and provide local controls for existing equipment served.
- Provide labeling to panel located in electrical room 101A, and provide ventilation to electrical room.
- Provide egress and exit lighting in classrooms for occupant safety and egress lighting in restrooms for occupant safety.
- Replace exiting lighting controls serving corridors with lighting controls that meet requirements of new codes and that can be monitored and controlled remotely via a network type system.
- Replace 15A receptacles with 20A commercial grade, tamper resistant, heavy-duty type receptacles that comply with latest code.
- Replace existing receptacles within 6 feet of water sources with Ground fault GFCI type receptacles.

MEP SYSTEMS IMPROVEMENTS

PLUMBING SUMMARY

McKee Hall's plumbing piping is primarily from the original installation and is recommended to be replaced due to the age of the piping. Some of the original plumbing fixtures and the hot water heater are still from the original installation. Deferred maintenance scope of work recommendations are as follows:

- Add a storm water overflow system.
- Replace older plumbing fixtures with new.
- Provide backflow protection for the janitor closet chemical dispensers.
- Provide a new electric tank type water heater and demolish existing high temperature hot water heat exchanger.

IT / TECHNOLOGY IMPROVEMENTS

TECHNOLOGY SUMMARY

McKee and Candelaria Halls are aging buildings that were not designed to support information technology. As technology has become integral to learning, the halls have been retrofitted, forcing technology infrastructure to be placed where it fits rather than the optimal locations. The program plan should:

- Create dedicated technology spaces. McKee has an appropriately sized telecom entry MDF room but is lacking in intermediate distribution IDF spaces. Candelaria has an undersized MDF room and inappropriate IDF spaces.
- Plan for technology infrastructure pathways that support anticipated uses. Where finishes are renovated in hallways, conduit and cable tray should be added to support technology as required.
- Data outlets have been added on an ad-hoc basis and do not always support current uses. Include re-cabling of the buildings with CAT6 cable per UNC's latest standards.
- Include teaching space infrastructure that supports modern learning.
- Be coordinated with the most up-to-date information available regarding UNC's technology standards.

4

IMPLEMENTATION INFORMATION

Budget + Cost
Schedule + Phasing

BUDGET + COST

MENU FORMAT

Because of the many variables, construction pricing has been assembled in a menu format, for UNC to select the scope that meets the available funding and desired outcomes. Below is a menu of costs and includes an escalation rate of 19.75%. This rate is based on June 2026 which this program plan assumes is the midpoint of construction.

To provide comparison, the cost analysis includes an alternate to demolish fully and rebuild the building for **$3,302,325.** The range to rebuild is between **$75,953,475** and **$82,558,125.**

DEFERRED MAINTENANCE	$7,076,000
ACCESSIBILITY UPGRADES	$4,494,000
EXTENDED SCOPE	$13,681,000
TOTAL	**$25,251,000**

The following breakdown of categories assumes the extent of work totaling $25.3 million, includes deferred maintenance items, accessibility upgrades, and all extended scope items. A line item list for each category is expanded in the appendix of this program plan:

LECTURE HALL	$3,935,000
CORRIDOR FINISHES	$3,856,000
VERTICAL CIRCULATION	$370,000
ENVELOPE	$8,554,000
LAYOUT CHANGES	$4,266,000
SITE IMPROVEMENTS	$1,757,000
MEP SYSTEMS	$2,235,000
OTHER	$278,000
TOTAL	**$25,251,000**

All items described in expanded categories include the following indirect costs:

GENERAL REQUIREMENTS, GENERAL CONDITIONS, BONDING, INSURANCE, ETC.	11.5%
FEE	5.0%
DESIGN CONTINGENCY	15.0%
ESCALATION - JUNE 2026	19.75%
BIDDING CONTINGENCY - PER STATE REQUIREMENTS	2.5%
CONSTRUCTION CONTINGENCY - PER STATE REQUIREMENTS	3.0%
PHASING PREMIUM	5.0%
TOTAL	**61.75%**

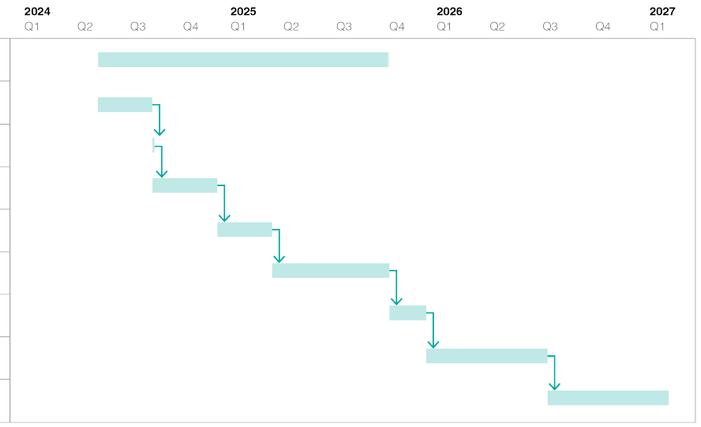
SCHEDULE / PHASING

Because this is an active classroom building, timing of construction would need to be calibrated to the academic calendar. Two years should be allocated for the overall design and construction process. The design phase for the full scope outlined above would require approximately 9 months, and construction could take up to 14 months. Assuming a design-bid-build process, design should begin in May, to allow a 9 month design process, a 1.5 month bid/negotiation period and a 14 month construction duration that would result in a completed project in July, just over two years after project commencement.

During this process, temporary accommodations will be required to replace the office and classroom space that will come offline for this process.

The schedule below suggests all constructioto be completed by the Spring 2027 semester:

TASK NAME	DURATION	START	FINISH
DESIGN	111 DAYS	06/03/24	09/22/25
PROCURE DESIGN TEAM	41 DAYS	06/03/24	07/26/24
KICKOFF	1 DAY	07/29/24	07/29/24
SCHEMATIC DESIGN	60 DAYS	07/30/24	10/21/24
DESIGN DEVELOPMENT	100 DAYS	10/22/24	03/10/25
CONSTRUCTION DOCUMENTS	140 DAYS	03/11/25	09/22/25
BID NEGOTIATION	40 DAYS	09/23/25	11/17/25
CONSTRUCTION TO MIDPOINT	155 DAYS	11/18/25	06/22/26
CONSTRUCTION	155 DAYS	06/23/26	01/25/27



5

APPENDIX

Consultant Narratives
- Structural - JVA
- MEP - BCER
- Landscape - Wenk
- Technology - SMW

Full Cost Estimate

Program Plan Survey Responses

JVA, Incorporated
1319 Spruce Street
Boulder, CO 80302
303.444.1951
info@jvajva.com

www.jvajva.com

FINDINGS

State the existing conditions of each building along with analysis of efficiency.

McKee Hall:

The cast-in-place concrete structure is performing well. There were no signs of significant damage to exposed concrete beams or columns, or indications of foundation movement.

The building skin consists of solid precast concrete vertical wall panels with an exposed aggregate finish. The precast panels are full height from floor to floor, with vertical rustication joints at a regular rhythm that conceal the true caulked vertical joints between panels. The panels bear on the concrete frame and have steel angle connections to secure them in place.

Because the precast panels are non-structural, there is much flexibility in changing the exterior cladding. Full-height sections (either partial or entire precast panels) can be removed and replaced with new windows or light gauge stud framing and exterior skin. Brick veneer can be installed to bear on the existing concrete frame, while supported laterally by stud framing.

Changing from precast panels to brick veneer will likely result in reduced building mass, and therefore a reduced seismic force. In general, this should benefit building performance but the interaction between overturning lateral forces and resisting gravity forces will need to be investigated.

The auditorium seating in the lecture halls at the south end of McKee Hall is steeply stepped. Raising the center of the floor to lessen the angle can be accomplished in multiple ways. With no need for public access to the space below, an efficient system consists of light gauge steel bearing walls supporting a metal deck and concrete slab. The walls can be built directly on the existing stepped concrete slab on grade, with top of wall stepped and/or sloped to match the new floor surface.

DEFERRED MAINTENANCE SCOPE

State the extent of defined scope per building based on the defined deferred maintenance agenda.

McKee Hall:

None

ADDITIONAL RECOMMENDATIONS

State any additional recommendations relevant to your scope which would enhance the building's efficiency, resiliency, and quality.

BCER
ENGINEERING | TECHNOLOGY | LIFE SAFETY

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UNC: MCKEE HALL RENOVATION – 100% DRAFT NARRATIVE

PROJECT DESCRIPTION

McKee Hall is a six-story, 129,846 square feet building built in 1968 and currently houses offices, classrooms, and a lecture hall. The departments of Sign Language and Interpreting, Applied Psychology and Counselor Education, Applied Statistics and Research Methods, Educational Technology, Leadership Policy and Development for Higher Education, and Teacher Education are the current programs in the building.

FINDINGS

Mechanical:

The UNC McKee Hall heating system is supplied from the campus high-temperature heating water system which heats the building's heating water loop with a shell and tube heat exchanger and is distributed throughout the building with a pair of constant-volume heating pumps.

The cooling systems consists of a chilled water loop served by an air-cooled chiller manufactured by Carrier located on the roof.

The chilled water system is circulated variable-volume chilled water pumps located in the basement mechanical room, M049. There is an abandoned absorption chiller and an abandoned condenser water tank located in the basement mechanical room, M049.

The building is served by seven VAV, hot deck/cold deck, blow-through indoor air handling units. The basement mechanical rooms house AHU-1, AHU-2, and AHU-3. AHU-4 and AHU-5 are located within the lower level penthouse, while AHU-6 and AHU-7 are housed in the upper roof mechanical penthouses. All seven of the AHU's were rebuilt in 2006 and 2008 and appear to be in good working condition. The heating water coils are controlled with 3-way valves and have circulating pumps The units have CO2 detectors for demand-controlled-ventilation and VFDs for the supply fans. The chilled water cooling coils utilize 2-way valves in conjunction with the variable-flow chilled water pumps to control flow through the coils.

The majority of the dual-duct terminal boxes throughout have been replaced in a previous renovation. Their replacement date is unknown.

Several sections of duct throughout the building are very dirty. It is recommended that the duct system be cleaned by a specialized duct cleaning contractor. Much of the ductwork is from the original installation and is past the ASHRAE-defined life expectancy of 30 years.

The majority of the building's equipment has been upgraded since the original construction and have new digital controls and electronic damper actuators. The exception is the 2nd floor which still has the original, pneumatically controlled terminal boxes.

The return air grilles typically located above the classroom doors were installed so that the air communicated directly to the hallway plenum space from the typical classroom without any ductwork. Several of these spaces were observed to either have loud equipment noises transmitted into the classrooms.

The electrical closet 101A contains a large electrical transformer as was warm. The space was operating without any mechanical cooling or transfer air.

Unitary heating equipment is located throughout the building. Hot water heating cabinet heaters serving the stairway S101 appear to be undersized or are not functioning correctly.

Electrical:

The average life of equipment shown in this report is attributed to the experiences of the writers and others at BCER Engineering throughout years of design and being associated with higher education electrical systems. The average life of electrical equipment is an estimate and depends a great deal on the type of maintenance that has been provided.

The UNC McKee electrical system is supplied from the campus utility system.

The existing main switchboard is located on the first level. It is General Electric 1600-amp, 480Y/277V, 3-phase, 4-wire. It is the original gear of the building and was installed by Howard Electric. The main service disconnect for the switchboard is a Square D type 1600-amp main fused disconnect. The switchboard has two other service disconnects tapped ahead of the main 1600-amp fused disconnect described above. The first disconnect is a 100-amp fused disconnect serving the external TVSS or surge protective device (SPD). The second disconnect is a 30-amp fused disconnect which is currently labeled as a spare. The switchboard also serves multiple panels throughout the building, an 800-amp bus duct with external braided ground, the building elevator, and has a newer 1600-amp GE Spectra Series switchboard attached to the end of the line-up. The newer GE Spectra Series switchboard was installed about 2 years ago for a recent chiller and generator project. It contains a 200-amp circuit breaker for panel EM, an 800-amp circuit breaker for the chiller CH-1 and the rooftop harmonic filter, a 600-amp circuit breaker for panel HMDP, and a 100-amp circuit breaker for the tap box located on the side of the switchboard.

Due to the age of the original switchboard, it has reached the end of its useful life and is recommended to be replaced. Because of its age, it will be very difficult and expensive to find replacement parts should they be needed. Facilities has also expressed an interest in the replacement of the newer GE Spectra Series switchboard since it had custom elements to attach to the existing main switchboard.

The second level also contains an 85KW/106.2KVA Cummins natural gas generator. This generator was installed about 2 years ago as part of the recent chiller and generator project.

The following branch panels are original to the building when it was built. These original panels have also reached the end of their useful life and are recommended to be replaced. It is questionable if new UL labeled devices or circuit breakers are still available for these existing panel types. There are approximately 20 panels recommended to be replaced. The panels identified to be replaced at the initial

site visit are as follows: Panel A, Panel C, Panel J, Panel P, Panel S, The emergency panels adjacent to panel S, Panel T, Panel T1, Emergency panel adjacent to Panel T1, Panel K, Panel U, Panel V, Panel in closet adjacent to IT cabling, Panel L, Panel adjacent to Panel L, along with a handful of other panels.

Many of these branch panelboards are existing and are fed from (or directly mounted to) a vertical 2- wire bus duct with an external braided ground conductor support to the bus duct. The client also indicated that the main 800-amp fused pringle switch is not being used out of concern if it is even functioning properly. It was indicated that when there is a requirement to shut off power to the building, that the building is de-energized at the external "Primary" Feeder Switch.

The motor control center (MCC) on the lower level was replaced in the 90's after a catastrophic failure, UNC has expressed that they desire to have it removed and that local controls be provided for the equipment served.

Electrical room 101A located on the first level was observed to be very warm. It contains a 75KVA transformer and a panel that are not labeled. The panel appears to serve a recently completed computer lab. It is recommended to provide labeling and some sort of ventilation to cool the space and lengthen the lifespan of the equipment inside.

Approximately 70% of the original light fixtures and ballasts have been replaced with LED type bulbs over the past seven years. Many of the remaining original fixtures contain fluorescent, compact fluorescent, incandescent, or metal halide lamps which may contain "PCB" type ballasts. These fixtures / ballasts should be removed and properly disposed of per local regulatory requirements.

Emergency egress and exit lighting that was observed appears to be mostly generator backed up. However, there are a few emergency lighting units that appear to have battery backup. Classrooms do not appear to have any egress or exit lighting which will be required by the current codes. Restrooms do not appear to have any egress lighting which is recommended for occupant safety in the event of a power outage. The upgrade project will provide battery backup "Frog Eye" fixtures in each location.

Lighting controls are existing in classrooms, etc., with the exception of select spaces where lighting has been replaced and Lutron controls added (Primarily in Computer Labs). Corridor lighting controls are unknown. It is recommended that controls also be replaced to alleviate the manual switching and to meet the requirements of the 2021 IECC. Facilities has inquired if the revised building common area lighting can be monitored and controlled remotely via a network type system.

Existing receptacle devices throughout the building are rated at 15A and not tamper resistant per 2020 NEC 406.12(4) requirements for educational facilities. It is recommended to replace these receptacles with 20A, commercial grade, tamper resistant, heavy-duty type receptacles.

Receptacles within 6 feet of water sources and in other various locations are required to be GFCI type per current 2020 NEC section 210.8(B). Many of the existing receptacles within these spaces are not currently GFCI type including receptacles within 6 feet of sinks or water sources These receptacles are also required to be tamper resistant per 2020 NEC 406.12(4). It is recommended to replace these receptacles with 20A commercial grade, tamper resistant, heavy-duty, GFCI type receptacles.

Plumbing:

The high temperature hot water (HTHW) domestic water tube and shell heat exchanger is original to the building and based upon the age of the heat exchanger, and unknown condition, replacement is recommended with an electric tank type water heater.

Some of the toilet rooms have been upgraded to provide ADA accessible. Some of the lavatories are older units with a variety of single handle and single lever operation with some having the chrome peeling off the faucets. The gallon per minute flow rate of these faucets are unknown. The water closets and urinals appear to be newer. The urinals have battery operated flush valves while the water closets have manual lever operated flush valves. The gallon per flush flow rate of these fixtures is unknown. Some of the water coolers are older and others have been replaced. It is recommended to replace the older fixtures.

The janitor closets are equipped with chemical dispensers and do not have backflow protection to these units. It is recommended to hard piped the dispensers and provide an ASSE 1024 dual check valve on the water supply. Verification of each individual dispenser will need to occur to determine if there is a built-in BFP that meets the ASSE number; if not they will need to be replaced.

DEFERRED MAINTENANCE SCOPE

Mechanical:

Pneumatic control systems are outdated. It is recommended that the pneumatic-controlled terminal boxes on level 2 along with any remaining dampers, control valves, or unitary equipment be replaced with new, and be added to the existing DDC building automation system.

It is recommended that the original duct system be inspected, repaired, and resealed as necessary.

Transfer fans or DX mini-splits are recommended to be added to cool the unconditioned electrical equipment closets to lengthen the lifespan of the equipment inside.

Convert the heating hot water (HHW) constant volume system to a Variable-Flow HHW system with VFD's on the pumps, and replace the majority of the 3-way valves with 2-way valves for better control. Replace existing HHW pumps with new inverter-duty capable pumps, and integrate all new equipment into the existing BAS.

Plumbing:

The storm system is original to the building and should be scoped to determine the condition of the piping and if there are any slope issues below grade. This building does not have a storm overflow system and it is recommended that it be added.

Electrical:

Most electrical upgrades are outlined above, however the deferred maintenance shall include the replacement of the primary transformer, main switch gear and the motor control panel. These items shall require more in-depth engineering to provide placement, size and utility connections to the building.

ADDITIONAL RECOMMENDATIONS

Mechanical:

Any new IDF closets are recommended to be installed with new transfer fans and any new MDF Closets are recommended to be installed with a new mini-split fan coil unit.

University of Northern Colorado: Candelaria + McKee Hall Renovation

CONSULTANT NARRATIVE

The consultant narrative section of the program plan is to elaborate on various systems functionality and their potential need for upgrade, repairs, and/or replacement.

PROJECT DESCRIPTION

The intent of the project is to review the building systems, interior finishes, and accessibility compliance to resolve the identified deferred maintenance issues. A change to the use of programs in the space is not expected to change significantly.

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CONSULTANT NAME

Wenk Associates

FINDINGS

State the existing conditions of each building along with analysis of efficiency.

McKee Hall:

DEFERRED MAINTENANCE SCOPE

State the extent of defined scope per building based on the defined deferred maintenance agenda.

McKee Hall:

- Existing concrete at the north amphitheater should be replaced where it is cracking and failing.
    - An ADA ramp or sloped concrete connection should be added between the building and the bottom of the amphitheater, replacing the temporary wood ramp that has been installed.
- The existing inlets should be replaced with larger openings or increased in frequency to increase drainage (consult civil engineer).
- Irrigation shall be provided to all planting beds in the form drip or spray.
- Remove the concrete planters from the breezeway.
    - Remove the damaged concrete under the existing planters.
- Existing handrails should be replaced with ADA compliant railings.

ADDITIONAL RECOMMENDATIONS

State any additional recommendations relevant to your scope which would enhance the building's efficiency, resiliency, and quality.

McKee Hall:

On the North

- Expand the area at the top of amphitheater and reroute the sidewalk to provide greater separation between pedestrians and the amphitheater.
- The paving on the new plaza could be concrete unit pavers to create a softer edge to the mass of concrete.
- Add benches and café style seating to plaza.
- Replace a portion of the amphitheater with concrete terrace seating, 12" height x 24" wide.
- Provide a seating area to the north of the amphitheater that would have concrete unit pavers, seatwalls, and café style seating
- Add (4) new trees and (2) new understory planting beds

In the Breezeway

- Add (2) tree plantings to the east side to help soften the edge and reduce wind through the breezeway.
- Create formal, raised planting beds at the tree bases to help frame the entrance.
- Replace the damaged concrete with concrete unit pavers (rather than concrete)
- Add large furnishings into the space for student gathering and interaction. These could be a variety of sizes and configurations but would still keep spaces open for events or student group set up.
- Use the furnishings and raised planters as barriers for vehicles.
- Add café style seating at the south end of the building.

COMMUNICATION DIAGRAM

In sketch form, please provide a diagram/drawing of defined scope and additional recommendations for the project team to translate into a formal graphic for the program plan.

McKee Hall:

University of Northern Colorado: McKee Hall Renovation

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SHEN MILSOM & WILKE – INFORMATION TECHNOLOGY INFRASTRUCTURE

FINDINGS

Shen Milsom & Wilke visited McKee Hall in December 2022 and met with UNC IT staff in January 2023 to observe existing conditions and gain information on current information technology operations. The following was noted during our visit and meetings:

1. We observed the McKee Hall MTR/Service Entry room. This space meets modern telecom standards for MTR rooms and does not require renovation.

2. In our meeting with UNC IT staff, it was noted that building TR rooms are in small closets. None of the TR rooms were designed as a TR room or have sufficient working space. We observed a TR closet on the 4th floor where a telecom rack had been added to a small electrical room. There was insufficient space for the UPSs which were set on the floor. Cable path

3. We observed a typical teaching space in McKee Hall. We observed in-room PCs, phones, and audiovisual technology. In a further meeting with UNC staff, it was stated that (3) data outlets are standard for classrooms and (1) data outlet is standard for offices.

4. We observed WiFi Access Points in McKee Hall. In a further meeting with UNC staff, it was noted that UNC standards use a single cable to WAPs. Information provided by UNC indicates that there are currently 245 WAPs in use in McKee Hall.

5. UNC provided a copy of UNC's technology cabling standards. CAT6 horizontal cabling is required by the standards document. UNC requires specific cable manufacturers and warranties. This information should be carefully adhered to during design.

DEFERRED MAINTENANCE SCOPE

Introduction

This report describes the components and systems that make up the proposed technology infrastructure renovations to serve University of Northern Colorado's McKee Hall.

The purpose of this report is to provide information to OZ Architecture. It is designed to provide valuable information to the architects, engineers, technical and non-technical readers for the ongoing coordination efforts required for a successful project.

As such, it defines the standards, criteria, and assumptions Shen Milsom & Wilke intends to use for the design, documentation, and specification of a technology infrastructure to support the project. This report, after review and revision, will form the basis of the design for the project.

The overall technology philosophy proposed for the McKee and Candelaria Halls demands that the infrastructure have the technical flexibility to allow the facility the capability to deliver the highest quality technology today and in the future.

Note that this report is not designed as a specification or design, but rather as an outline to provide information on the technology infrastructure system requirements.

OZ Architecture has retained the services of Shen Milsom & Wilke, Inc. to describe the telecommunications infrastructure to support the various voice, data and media systems to be deployed within the new facility.

These guidelines address pathways, spaces and cabling designs necessary to sustain various information transport systems, including a telephone system for voice and voice grade services, local area network (LAN) and wide area network (WAN) systems, wireless systems, storage area networks (SAN), video distribution, audio distribution and the like.

Specific areas covered by these guidelines are:

- Definition of the required technology spaces and pathways to house the technology systems and their associated cabling infrastructure.
- Definition of backbone cables between the Main Telecommunications Room (MTR) and the Telecommunication Rooms (TRs) located on each floor and their distribution and termination methods.
- Definition of horizontal cables and their distribution and termination methods.
- Definition of patching philosophies and methodologies.
- Definition of a unified signal grounding (Earthing) system.

Codes and Standards

Applicable portions of the following codes, standards, regulations and recommendations shall be observed in the design of the telecommunications cabling system, technologies and supporting facilities:

- Telecommunications Industry Association (TIA)
- ANSI/TIA-568-C.0 - Commercial Building Telecommunications Cabling Standard - Part 0: Generic Telecommunications Cabling for Customer Premises

- UIC ACCC/ Telecom Building Standards
- ANSI/TIA-568-C.1 - Commercial Building Telecommunications Cabling Standard - Part 1: General Requirements
- ANSI/TIA-568-C.2 - Commercial Building Telecommunications Cabling Standard – Part 2: Balanced Twisted-Pair Cabling Components
- ANSI/TIA-568-C.3 - Commercial Building Telecommunications Cabling Standard - Part 3: Optical Fiber Cabling Components
- TIA-568-C.4 – Broadband Coaxial Cabling Components Standard
- ANSI/TIA-569-C - Telecommunications Pathways and Spaces
- ANSI/TIA-570-B - Residential Telecommunications Infrastructure Standard
- ANSI/TIA-606-B - Administration Standard for Telecommunications Infrastructure
- TIA-607-B – Generic Telecommunications Grounding (Earthing) and Bonding for Customer Premises,
- ANSI/TIA-758-A - Customer-owned Outside Plant Telecommunications Infrastructure Standard
- ANSI/TIA-942 - Telecommunications Infrastructure Standard for Data Centers
- International Telecommunications Union – Telecommunications (ITU-T)
- International Organization for Standardization (ISO)
- Building Industry Consulting Service International (BICSI)
- Local/National Electrical codes
- Local/National Health & Safety codes
- University of Northern Colorado Information Technology standards

Infrastructure

The physical infrastructure is comprised of three elements:

- Technology spaces (telecommunications rooms and equipment room, with appropriate environmental HVAC, UPS power, Generator Power, etc.).
- Pathways for the cable to be distributed (cable tray, in-floor conduit, horizontal and vertical conduit and raceways, etc.)
- Cable that interconnects devices

Infrastructure is often the easiest of the variables to predict and implement, because there are industry standard methods and generally accepted principles upon which to base the design process. Simply stated, the goal of an infrastructure is to provide a structured, applications independent scheme that is tailored not to a particular technology, but to supporting a wide range of current and future technologies.

Structured Cabling System

The concept of a telecommunications infrastructure as an applications-dependent design customized for telephone, data and video networking is no longer valid. Today's technology environment is increasingly IP (Internet Protocol)-based. IP is the dominant communications protocol for data networking and is increasingly dominating the worlds of voice and video transmission. Convergence of data, voice and video into the IP realm is rapidly proceeding.

Standards, Criteria and Assumptions

This section defines the standards, criteria and assumptions that will be used for the design, specification and documentation of Candelaria and McKee Halls telecommunications infrastructure. This infrastructure addresses pathways, spaces and cable media designs which support various service-provider information transport

systems, including but not limited to telephone equipment to support voice and voice-grade services, wireless LAN connectivity and local area network (LAN) systems.

Specific areas covered herein include:

- Definition of the intra-building pathway and space systems which will house the telecommunications cabling infrastructure and associated transport electronic equipment
- Definition of horizontal and backbone cable distribution and termination methods, which will define a "ubiquitous" cabling system, capable of supporting the majority of information transport requirements over the life cycle of the facility

Telecommunications Spaces

Main Telecommunication Rooms

The Main Telecommunications Room serves as the point of demarcation for incoming telecommunications services from service providers and will stand as the transition point between outside plant (OSP) cabling and the premise cable plant.

MTR in Candelaria Hall was described by UNC IT staff as small with minimal working clearances. The following narrative is included to describe room needs if the MTR in Candelaria Hall is relocated:

It is intended that there will be (1) MTR for routed services and carrier equipment to serve the facility. The MTR will be connected via a conduit pathway so that services from service entrance path can be routed through multiple diverse paths within the facility.

The MTR provides space for carrier equipment and termination of carrier circuits such as trunk terminals, multiplexers and fiber optic terminals. The purpose of this space is to facilitate the termination, splicing, rearrangement and distribution of incoming telecommunications (copper or fiber) cables which ultimately service the facility.

Additionally, the MTR may serve as a pass-thru for some carrier services that are delivered directly to any of the other Technology Rooms. Copper and fiber optic cable will be provided for the extension of circuits from the MTR to the other TRs.

The MTR should be arranged so that it is not susceptible to flooding from sources inside or outside the building. The area should not be traversed by wet pipes, neither run overhead or along the walls.

All incoming copper and optical fiber termination, cross connection and voltage surge protection equipment within the MDF should be furnished, installed and maintained by the service provider with the exception of cabling ties to the other MDFs provided by the owner. The connections from other buildings should be redundant. Pathways from both sides of the buildings should be provided into the MDF. Currently SM&W is recommending a minimum of (4) four inch conduits with a qty of (3) 4" 3-cell fabric innerduct in each conduit for the primary route to one building. And a minimum of (4) four inch conduits with a qty of (3) 4" 3-cell fabric innerduct in each conduit for the secondary route to a separate building on the opposite side of the primary route.

Telecommunications Rooms (TR)

The Telecommunications Rooms (TRs) are defined as the interface between the backbone cabling system and the horizontal cabling system. The TRs floor shall provide space for backbone and horizontal cable terminations, patching and cross-connect equipment, LAN/WLAN electronics and interfaces between the cabling backbone, transport electronics and end user devices. Ideally, the TRs on each floor should be stacked all the way up the building to maintain a 2-hour fire rated pathway.

Criteria established under the TIA 568C standard set forth distance limitations on high performance cabling systems, which will be discussed in the Cabling Systems section below, but has a direct effect on the placement of these distribution rooms. The TRs must be located so that installed and terminated horizontal cable lengths do not exceed 295 ft. (90 m).

SM&W would also recommend that where possible, the entrance doors open outwards to increase the available usable space within the TRs.

The TRs will be arranged to accommodate the following systems and equipment:

- Termination and patching facilities for horizontal cabling
- Termination and patching facilities for voice, data and video backbone cabling
- Hardware and racking for LAN cabling switches, PBX switches, video cabling hubs, converters, and other device sharing equipment
- Wireless LAN networking equipment
- Building Management Systems
- Security Systems
- CATV equipment
- Vertical riser pathways

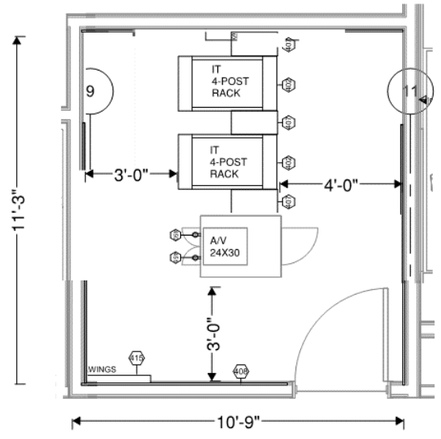
Power outlets for any transmission and terminal equipment located within the TRs should be fed from the generator and the electrical panel dedicated to these loads, ideally located within each TR. SM&W recommends a centralized UPS to support the TR's and the AV racks in the telecom rooms.

Environmental provisions for the TR's should be as defined below

Dedicated cooling, electrical and fire suppression provisions are recommended for the TRs, to allow the network and associated electronics to operate efficiently and reliably over the life cycle of the building. The installation shall be in accordance with TIA 569A.

A generic example of a TR is shown below. The size of IT rooms and the quantity of equipment racks should be detailed during the design phase.

UNC Candelaria + McKee Hall: CONSULTANT NARRATIVE



The following are recommended guidelines for the TR Rooms

FUNCTION	• Houses local distribution cabling terminations and technology equipment.
LOCATION	• Located so that horizontal cable runs are less than 295 ft (90 m). • Located directly off of a service corridor or hallway to provide access to maintenance and operational personnel. • Two per floor • Stacked
SIZE	• Minimum 10' X 10'
ADJACENCIES	• Cable distance from the room to the furthest serving point is 295 ft (90 m).
FLOOR	• Floor shall have VCT tiles of a type that does not promote static or static dissipative tile. • Structural floor should support a minimum of 50 lb/sq. ft.
CEILING	• Ceiling shall be treated with a spray on sealant to prevent flaking of spray on fire proofing of the slab above. There shall be no drop ceiling in this space.
WALLS	• Walls shall be from slab to slab and shall have a minimum 2-hour fire rating unless higher rating is dictated by code. • All penetrations of fire rated walls will be fire-stopped in an approved manner to prevent the passage of flames, smoke, and fumes. • Wall should be painted a light color to enhance room lighting. • All walls will be covered with grade A-C fire-rated plywood. • Plywood shall be painted with white fire-retardant paint, two coats both sides and all edges.
DOOR	• 36" x 84" door is required. • Door should open out of the room, if possible.

WATER INFILTRATION	• Precautions shall be taken to minimize the risk of water infiltration. • There shall be no roof drain, stand-pipe or water riser penetrations in the ceiling slab over the room.
HVAC	• Dedicated HVAC is required to serve the room. • Environmental variables for the room shall be monitored by the BMS. • Temperature must be maintained between 20C (68F) and 25C (77F). Changes in temperature shall be kept to a minimum.
ELECTRICAL	• Ladder rack is required above equipment racks. • Power for each room should be via a panel dedicated to telecommunications loads only. • Lighting fixtures, motors, air conditioning, etc. should not be powered from the same electrical distribution panel as the telecommunications equipment in the room. • Power distributed to equipment will primarily be 120v & 208v, 20A-30A dedicated circuits to equipment racks terminated in locking type receptacles for connection to plug strips within the racks or directly to equipment. Additional receptacles will be provided on the walls to support wall mounted equipment. • Lighting shall be via 4' (1.2 m) L, dual bulb, fluorescent light fixtures • Mounted height and position shall be coordinated to minimize shadows from cable support structures, e.g. ladder rack, and provide equal lighting on both sides of the equipment rack(s) • Lighting level shall be 500 Lux at 3 ft. (1 m) A.F.F., minimum. • A Dedicated ground bar is required within each room.
FIRE PROTECTION	• Sensors connected to the fire alarm systems shall be provided in each room for detection. • Sprinkler heads shall have protective baskets and not mounted above the equipment. Wall mounted heads that spray into the room are preferred.
SECURITY	• TR's do not require access control or CCTV cameras per UNC standards.

Building Pathway Systems

Conduits, cable tray and other fixed containment that support data/telecommunications cabling within the facility are a key component in the telecommunications infrastructure. Proper sizing, placement, routing and integration with other routed services will ensure connectivity and flexibility, which becomes a benchmark in the determination of a truly successful infrastructure. Design parameters established herein follow standards established in the TIA standards and related documents. These standards have been established in reference to the dynamic, changing nature of telecommunications cabling systems and provide guidelines to enable maximum cabling flexibility to accommodate change over time.

Backbone Cabling Pathways, Vertical Risers

The pathways shall be three (3) 4" conduits from the MTR to each first floor TR, and three (3) 4" EMT conduit sleeves between each stack of TRs. Conduits will be required between the highest floor TR and the roof.

Horizontal Cabling Pathways

UNC Candelaria + McKee Hall: CONSULTANT NARRATIVE

The Structured Communications System (SCS) cable distribution from the TR's to each outlet position will require a flexible pathway of appropriate dimension to accommodate day one and future cabling installations to the SCS outlets. Also, ease of installation and cable maintenance are important in the selection of the appropriate pathway.

The horizontal pathway will be provided within accessible ceiling areas wherever possible. The provision of a properly sized cable tray will provide flexibility in installing, modifying, adding or deleting any portion of the cable plant.

All pathway routes shall be coordinated with other building services (electrical, mechanical, etc.) to assure proper clearance and access, as well as to avoid impact from heat, electro-magnetic interference or leakage from other building services.

The pathway system should be coordinated with the electrical distribution system in order to maintain a minimum 12 in (300 mm) separation between parallel runs of telecommunications and electrical cabling. Where 12 in (300 mm) separation is not possible, the telecommunications cabling should be separated from electrical cables by a ferrous material to minimize interference. Where electrical and telecommunications cabling cross, it should be at right angles only.

SCS Cable Types

The SCS cabling infrastructure has been defined above as the cabling system that interconnects all technology spaces in the facility, from the MTR to each on-floor TR, and ultimately out to the user outlets and subsequently to network-connected devices.

In order to attain this definition, proper design and engineering must be done to ensure that the SCS provides an "applications independent" cabling system, allowing any technology to be utilized over the cabling infrastructure. Design parameters established herein and in the future follow standards established in the TIA 568-C Commercial Building Standard for Generic Cabling Requirements document. These standards have been established by a decision team, which includes cabling and telecommunications equipment manufacturers from the largest and best-known companies in the industry. This inherently gives endorsement to the design parameters set forth herein.

To follow is a description of how the telecommunications cabling should be designed for the facility.

In conformance with the above referenced standard, the telecommunications cabling system should be designed in a hierarchical star topology, in the following manner:

- Horizontal cabling shall be home run from each telecommunications outlet to its respective TR. Runs should not exceed 200 ft.
- No intermediate termination or patching facilities will be allowed.
- Inter-floor backbone optical fiber cabling should be home-run from the MTR to each respective TR.
- Inter-floor backbone copper cabling should be home-run from the MTR to each respective TR.
- All cable is to be of PVC, LSZH or Plenum construction depending on local codes and standards. The fiber shall be armored fiber.
- Cable length limitations should be as follows: Horizontal Cabling – 200 ft. from the workstation outlet to the termination point located within the TRs.

The cabling system should be designed to support digital and analogue voice grade services, basic and primary rate integrated service digital network (ISDN) services, LAN, Wireless LAN, WAN, synchronous communications, information display terminals, simplex and multiplex video distribution.

UNC standards require a Commscope Netconnect structured cabling system. The contractor shall provide the manufacturers minimum of 25 year channel warranty.

Fiber/Copper Backbone Cabling

The fiber backbone cables, consisting of multiple-strand, single-mode (OS2) optical fiber cables should be provided from the MTR to the TRs.

SM&W recommends, for the primary backbone infrastructures, a minimum 48-strand, single-mode (OS2) armored fiber.

The individual strands of the fiber optic cables should be terminated with the relevant LC connectors or pigtails and housed in rack mounted fiber patch panels in the 2-post rack located within the MTR and TRs.

Internal copper backbone cables, consisting of a minimum of 50 pair Cat 5 riser cables, should be provided from the TR to the MTR. This will provide copper-based analogue and digital voice grade services to each of the floors.

The copper backbone cables should be terminated onto rack mounted “resource” patch panels in the TRs.

Patching and cross connects between cable terminations and transport electronics must be accommodated with the least amount of termination and cross connect hardware that is practical. When feasible, connections between horizontal cable terminations and transport electronics will be made directly, through the use of an appropriate patch cord.

UNC Standards require a Tyco Electronics or Corning fiber backbone system. The contractor shall provide the manufacturers minimum of 25 year channel warranty.

Horizontal Cabling

The horizontal cables connecting the user device to the network at a minimum should consist of the following Category 6 compliant 4-pair unshielded twisted pair (UTP) cables.

To create an applications independent cabling system, SM&W recommends the following:

All 4-pair UTP cables should be terminated at the outlet utilizing Category 6, 8-pin modular connectors with the 568A wiring configuration.

All 4-pair UTP cables are to be terminated within the MDF and TR’s cabinets and racks on rack mounted 24 or 48 port angled patch panels utilizing the 568A wiring configuration. The termination method should be identical for voice, data or video connections.

Telecommunications Grounding (Earthing) System
(System will be designed and installed by the EC)

The SCS cabling system must be provided with a reference signal grounding system, provided in accordance with the ANSI/TIA Joint Standard 607A, EN 50310 Bonding and Earthing standard at a minimum. This system is an important component of the telecommunications infrastructure, maintaining ground continuity over the entire analogue and digital transmission network throughout the building. The following guidelines are provided for the design of the system:

- A telecommunication main grounding busbar (TMGB) should be located in the MTR. The TMGB should be bonded to the master grounding busbar (MGB) at the electrical service entrance facility.
- A telecommunications grounding busbar (TGB) should be located in each TR and MTR this bar shall have two hole predrilled taps.
- A telecommunications bonding backbone (TBB) cable should be run from the TMGB through the telecommunications backbone risers, connecting the TGB in each TR to the grounding backbone.
- A grounding equalizer (GE) conductor should be installed from each TMGB and / or TGB, linking all technology rooms on the lowest floor, the highest and a minimum of every 3rd floor.
- A copper grounding cable should connect each grounding busbar (TGB) to the electrical distribution board serving the respective TR.
- A copper grounding cable should connect each TGB to the nearest point of building steel (if available).
- TBBs should be installed in continuous lengths.
- The TMGB and TGBs should be solid copper or electro-tin plated, and insulated from their supports.

Pathway, Space and Media Identification

Due to the all-encompassing nature of the SCS, an identification system should be developed to uniquely identify each pathway segment, main communications room, telecommunications room, cabinet, rack, termination panel, grounding component and cable installed within the facility.

All horizontal and backbone cables should be assigned a unique alphanumeric designation for identification purposes.

Appropriately marked labels should be provided at both ends of each cable.

Labels having the appropriate cable designation should be provided in the following locations for each cable: On the outlet face plate in the work area and On the termination patch panels in the MTR and TR.

Cable designations should be designed for easy identification of point-of-origin and point-of-termination location. It is recommended that this information form the basis for the development of a telecommunications administration system database.

Distributed Antenna System

SM&W recommends that the Distributed Antenna System be supported by a neutral host system. This system will expand the wireless network footprint by adding coverage and capacity in hard to reach areas, resulting in increased quality.

The client neutral host system shall support the following carriers/spectrums and be able to add /remove carriers with limited modifications of antennas:

- AT&T – GSM/UMTS – 850/1900MHz
- Verizon – CDMA/EVDO – 850/1900MHz
- Sprint/Nextel – iDEN/CDMA – 800/900/1900MHz

- Future Provider
- First Responder Radio/ Public Safety

Singlemode fiber optic cabling shall be used to distribute the neutral host system from the headend to fiber remotes installed in each of the telecom rooms. From that point the fiber remote will convert the signal to an analog signal and distribute the cellular service over coaxial cable to antennas throughout the facility. This should provide a minimum of 95% coverage in all public spaces.

FULL COST ESTIMATE

22416 UNC Candelaria McKee Halls | Program V09 | Estimate

Estimate Date: 2023-03-03

VERMEULENS

		MCKEE LEGEND			VERMEULENS	STATUS	VERMEULENS		
VE #	D/E	DESCRIPTION	AREA	$/SF	VALUE	(P, A, R)	PENDING	ACCEPTED	REJECTED
		MCKEE HALL							
	D	**Deferred Maintenance**			**$7,076,000**				
	A	**Accessibility Improvements**			**$4,494,000**				
	E	**Extended Scope**			**$13,681,000**				
					$25,251,000				
		Full Demo Cost	132093 SF	25	$3,302,325				
		Full Rebuild Cost - Low	132093 SF	575	$75,953,475				
		Full Rebuild Cost - Hight	132093 SF	625	$82,558,125				
		Lecture Hall							
1	D	Upgrade Finishes	7,800 SF	15	$114,000	r	$0	$0	$114,000
25	A	Modify Configuration	8,750 SF	437	$3,821,000	a	$0	$3,821,000	$0
		Corridor/finishes							
3	D	Upgrade finishes in main corridors (flooring/walls ceilings, lights)	15,200 SF	58	$881,000	a	$0	$881,000	$0
21	E	Upgrade finishes in secondary corridors (flooring/walls ceilings, lights)	4,400 SF	63	$278,000	a	$0	$278,000	$0
6	D	Replace doors in primary corridors	237 NO	5,435	$1,288,000	a	$0	$1,288,000	$0
6A	D	Replace doors not in primary corridors	216 NO	4,718	$1,019,000	a	$0	$1,019,000	$0
22	E	Private office finish upgrades	3,200 SF	86	$276,000	a	$0	$276,000	$0
17	E	New signage	456 no	250	$114,000	a	$0	$114,000	$0
		Vertical Circulation							
7	D	Elevator Upgrades	132,093 SF	3	$355,000	a	$0	$355,000	$0
19a	A	Stair Railing Improvements	19 no	789	$15,000	a	$0	$15,000	$0
		Envelope							
5	D	Replace all existing windows	3,345 SF	271	$906,000	a	$0	$906,000	$0
5A	E	Exterior cladding strategy - level 1, ~~one bay only~~	12,128 SF	92	$1,118,000	p	$1,118,000	$0	$0
5B	E	Exterior cladding strategy - level 2, ~~one bay only~~	12,521 SF	213	$2,663,000	p	$2,663,000	$0	$0
5C	E	Exterior cladding strategy - level 3-5, ~~one bay only~~	16,000 SF	213	$3,412,000	p	$3,412,000	$0	$0
15	E	Replace all infill panels with higher insulative value and new windows	376 SF	271	$102,000	p	$102,000	$0	$0
16	E	Add vestibules	354 SF	997	$353,000	a	$0	$353,000	$0
		Layout Changes							

22416 UNC Candelaria McKee Halls | Program V09 | Estimate

Estimate Date: 2023-03-03

VERMEULENS

		MCKEE LEGEND			VERMEULENS	STATUS	VERMEULENS		
VE #	D/E	DESCRIPTION	AREA	$/SF	VALUE	(P, A, R)	PENDING	ACCEPTED	REJECTED
18	E	Create new MDF rooms	350 SF	1,446	$506,000	a	$0	$506,000	$0
2, 19	A	Add new ADA restrooms/improve accessibility in existing	2100 SF	233	$572,000	a	$0	$572,000	$0
24	E	Classroom improvements	16,500 SF	113	$1,859,000	a	$0	$1,859,000	$0
23	E	Hallway study booths	1,000 SF	799	$799,000	a	$0	$799,000	$0
20	E	Student/faculty spaces	4,550 SF	116	$530,000	a	$0	$530,000	$0
		Site Improvements							
13	E	North side improvements	20,400 SF	45	$926,000	a	$0	$926,000	$0
13A	A	North side improvements - accessibility improvements	13,400 SF	6	$86,000	a	$0	$86,000	$0
14	E	Breezeway	13,400 SF	56	$745,000	a	$0	$745,000	$0
		Electrical Systems							
10	D	Replace primary transformer	132,093 SF	2	$271,000	a	$0	$271,000	$0
11	D	Replace min switch gear	132,093 SF	7	$923,000	a	$0	$923,000	$0
12	D	Replace motor control center and panel	132,093 SF	1	$161,000	a	$0	$161,000	$0
		MEP Systems							
12a	D	upgrade pneumatic controls	160 SF	1,613	$258,000	a	$0	$258,000	$0
12b	D	Inspect, repair, reseal and clean the existing ductwork as necessary	132,093 SF	1	$106,000	a	$0	$106,000	$0
12c	D	Replace unitary heating equipment	132,093 SF	1	$113,000	a	$0	$113,000	$0
12d	D	Install transfer fans or DX mini splits to cool unconditioned electrical room closets	132,093 SF	1	$161,000	a	$0	$161,000	$0
12e	D	Provide new electric tank type water heater and demolish existing high temp hot water heat exchanger	132,093 SF	2	$242,000	a	$0	$242,000	$0
		Others							
4	D	Pest control issues - address wall openings	132,093 SF	2	$278,000	a	$0	$278,000	$0
		TOTAL			$25,251,000		$7,295,000	$17,842,000	$114,000
		Direct Construction Costs			$15,611,128	61.82%	$4,510,046	$11,030,603	$70,479
		All Items Above include the following:							
		GR, GC, Bonding, Insurance, etc			$1,795,280	11.5%	$518,655	$1,268,519	$8,105
		Fee			$780,556	5.0%	$225,502	$551,530	$3,524
		Design Contingency			$2,341,669	15.0%	$676,507	$1,654,590	$10,572
		Escalation - June 2026			$3,083,198	19.75%	$890,734	$2,178,544	$13,920
		Bidding Contingency - per state requirements			$390,278	2.5%	$112,751	$275,765	$1,762

22416 UNC Candelaria McKee Halls | Program V09 | Estimate

Estimate Date: 2023-03-03

VERMEULENS

		MCKEE LEGEND			VERMEULENS		STATUS	VERMEULENS		
VE #	D/E	DESCRIPTION	AREA	$/SF	VALUE		(P, A, R)	PENDING	ACCEPTED	REJECTED
		Construction Contingency - per state requirements			$468,334	3.0%		$135,301	$330,918	$2,114
		Phasing Premium			$780,556	5.0%		$225,502	$551,530	$3,524
		Indirects Total			$9,639,872	38.18%		$2,784,954	$6,811,397	$43,521

22416 UNC Candelaria McKee Halls | Program V09 | Estimate 2023-03-03

VERMEULENS

VE #		ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
1	MCKEE	REPLACE LECTURE HALL CARPET				
		remove existing carpet	7,800	sf	0.50	3,900
		add new carpet	7,800	sf	7.50	58,500
		add new rubber base	2,000	lf	4.25	8,500
		Markups	70,900	%	0.61	43,426
		TOTAL	7,800	SF	14.62	114,000
2	MCKEE	REMOVE/REPLACE RESTROOM FLOORING				
		demo flooring	2,100	sf	2.50	5,250
		add tile flooring	2,100	sf	20.00	42,000
		move fixtures and toilet partitions for new flooring	2,100	sf	2.00	4,200
		Markups	51,450	%	0.61	31,513
		TOTAL	2,100	SF	39.52	83,000
3	MCKEE	REMOVE/REPLACE PRIMARY CORRIDOR FINISHES				
		demo flooring, ceiling	15,200	sf	1.50	22,800
		demo lights	15,200	sf	1.00	15,200
		add new carpet flooring	15,200	sf	6.00	91,200
		add new rubber base	4,771	lf	4.25	20,277
		add new act ceiling	15,200	sf	6.50	98,800
		add paint walls	47,710	sf	1.15	54,867
		hvac - minor work (new diffusers, maintain majority of ducts)	15,200	sf	2.00	30,400
		replace lighting with new LED fixtures in same location, wiring and switches and controls to remain	15,200	sf	10.00	152,000
		demo lighting, may contain PCB ballasts	15,200	sf	4.00	60,800
		Markups	546,343	%	0.61	334,635
		TOTAL	15,200	SF	57.96	881,000
4	MCKEE	PEST CONTROL ISSUES - ADDRESS WALL OPENINGS				
		patch wall openings - 10% building perimeter - allowance	30,000	sf	5.75	172,500
		Markups	172,500	%	0.61	105,656
		TOTAL	132,093	SF	2.10	278,000

VE #		ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
5	MCKEE	REMOVE/REPLACE EXISTING EXTERIOR WINDOWS				
		window removal	3,345	sf	18.00	60,210
		window replacement - thermally broken frame, low e glass	3,345	sf	140.00	468,300
		add window treatments - roller shades, manual	3,345	sf	10.00	33,450
		Markups	561,960	%	0.61	344,201
		TOTAL	3,345	SF	270.85	906,000
5A	MCKEE	EXTERIOR CLADDING STRATEGY - ~~ONE BAY ONLY~~				
		rigid insulation 2"	294	sf	4.60	1,352
		metal furring	294	sf	6.55	1,926
		brick veneer	294	sf	40.00	11,760
		scaffolding	294	sf	6.00	1,764
		cost per sf over entire level 1	12,128	sf	57.15	693,115
		Markups	693,115	%	0.61	424,533
		TOTAL	12,128	SF	92.18	1,118,000
5B	MCKEE	EXTERIOR CLADDING STRATEGY - LEVEL 2, ~~ONE BAY ONLY~~				
		demo precast panels	294	sf	25.00	7,350
		brick veneer 5.3x13.5' (pre-fab modular)	72	sf	40.00	2,880
		windows punched 5.3x13.5'	143	sf	90.00	12,870
		acm metal panel 2.8x13.5' (pre-fab modular)	79	sf	65.00	5,135
		extended window fins	27	lf	90.00	2,430
		backup system	151	sf	42.00	6,342
		scaffolding	294	sf	6.00	1,764
		cost per sf over entire level 2	12,521	sf	131.87	1,651,196
		Markups	1,651,196	%	0.61	1,011,358
		TOTAL	12,521	SF	212.68	2,663,000
5C	MCKEE	EXTERIOR CLADDING STRATEGY - LEVEL 3-5, ~~ONE BAY ONLY~~				
		demo precast panels	226	sf	25.00	5,650
		brick veneer 5.3x13.5' (pre-fab modular)	73	sf	40.00	2,920

VE #		ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
		windows punched 5.3x13.5' and 3x13.5', 2 no	112	sf	90.00	10,080
		acm metal panel (pre-fab modular)	41	sf	65.00	2,665
		extended window fins	27	lf	90.00	2,430
		backup system	114	sf	42.00	4,788
		scaffolding	226	sf	6.00	1,356
		cost per sf over entire level 3-5	16,000	sf	132.25	2,116,035
		Markups	2,116,035	%	0.61	1,296,072
		TOTAL	16,000	SF	213.25	3,412,000
6	MCKEE	REPLACE DOORS IN PRIMARY CORRIDORS				
		remove existing doors and frames	237	no	150.00	35,550
		add new door and frames (including finishing)	237	no	2,750.00	651,750
		add auto openers exterior doors	8	no	4,200.00	33,600
		access control (exterior and classroom doors)	32	no	2,250.00	72,000
		patch walls and paint	237	no	25.00	5,925
		Markups	798,825	%	0.61	489,280
		TOTAL	237	NO	5,434.60	1,288,000
6A	MCKEE	REPLACE DOORS NOT IN PRIMARY CORRIDORS				
		remove existing doors and frames	216	no	150.00	32,400
		add new door and frames (including finishing)	216	no	2,750.00	594,000
		patch walls and paint	216	no	25.00	5,400
		Markups	631,800	%	0.61	386,978
		TOTAL	216	NO	4,717.59	1,019,000
7	MCKEE	ELEVATOR MODIFICATIONS				
		new elevator equipment and controls	1	ls	175,000.00	175,000
		cab finishes	1	no	20,000.00	20,000
		motor wiring	1	no	15,000.00	15,000
		add HVAC to existing rooms	1	ls	10,000.00	10,000
		Markups	220,000	%	0.61	134,750
		TOTAL	132,093	SF	2.69	355,000

VE #		ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
10	MCKEE	REMOVE/REPLACE PRIMARY TRANSFORMER				
		new primary transformer, 1000 kVA	1	no	70,000.00	70,000
		remove exisitng primary transformer	1	no	5,000.00	5,000
		refeed existing switchboard - 1600A, allow	150	lf	620.00	93,000
		Markups	168,000	%	0.61	102,900
		TOTAL	132,093	SF	2.05	271,000
11	MCKEE	REMOVE/REPLACE MAIN SWITCH GEAR				
		main switchgear	1,600	A	100.00	160,000
		remove existing main switchgear	1	no	10,000.00	10,000
		assume off hours shutdown is required	1,600	A	25.00	40,000
		replace existing panelboards	20	no	8,100.00	162,000
		remove existing panelboards	20	no	500.00	10,000
		feeder - 200A ave	1,500	lf	47.00	70,500
		assume off hours work	20	no	2,000.00	40,000
		provide cooling to room 101A, incl piping	1	no	14,000.00	14,000
		device upgrades to code	132,093	sf	0.50	66,047
		Markups	572,547	%	0.61	350,685
		TOTAL	132,093	SF	6.99	923,000
12	MCKEE	REMOVE/REPLACE MOTOR CONTROL CENTER				
		replace 1600A MCC	1	no	35,000.00	35,000
		remove existing MCC	1	no	5,000.00	5,000
		assume off hours work	1	no	10,000.00	10,000
		emergency power upgrade	1	no	50,000.00	50,000
		Markups	100,000	%	0.61	61,250
		TOTAL	132,093	SF	1.22	161,000
12a	MCKEE	upgrade pneumatic controls				
		upgrade existing pneumatic controls to DDC	160	pts	1,000.00	160,000
		Markups	160,000	%	0.61	98,000
		TOTAL	160	SF	1,612.50	258,000

VE #		ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
12b	MCKEE	INSPECT, REPAIR, RESEAL AND CLEAN THE EXISITNG DUCTWORK				
		duct cleaning	132,093	sf	0.50	66,047
		Markups	66,047	%	0.61	40,453
		TOTAL	132,093	SF	0.80	106,000
12c	MCKEE	REPLACE UNITARY HEATING EQUIPMENT				
		assume 50% replacement at level 2	20	no	3,500.00	70,000
		Markups	70,000	%	0.61	42,875
		TOTAL	132,093	SF	0.86	113,000
12d	MCKEE	INSTALL TRANSFER FANS OR DX MINISPLITS TO COOL UNCONDITIONED ELECTRICAL ROOM CLOSETS				
		mini split units	10	no	10,000.00	100,000
		Markups	100,000	%	0.61	61,250
		TOTAL	132,093	SF	1.22	161,000
12e	MCKEE	PROVIDE A NEW ELECTRIC TANK TYPE WATER HEATER AND DEMOLISH EXISTING HIGH TEMP HOT WATER HEAT EXCHANGER				
		PROVIDE A NEW ELECTRIC TANK TYPE WATER HEATER AND DEMOLISH EXISTING HIGH TEMP HOT WATER HEAT EXCHANGER	1	no	150,000.00	150,000
		Markups	150,000	%	0.61	91,875
		TOTAL	132,093	SF	1.83	242,000
13	MCKEE	NORTH SIDE ADJUSTMENTS				
		site prep	19,800	sf	3.00	59,400
		concrete steps	550	lf	130.00	71,500
		concrete seating area steps	670	lf	150.00	100,500
		concrete pavers	3,700	sf	20.00	74,000
		concrete sidewalk	3,300	sf	8.00	26,400
		table with 2 chairs	4	no	1,200.00	4,800
		table with 4 chairs	4	no	2,000.00	8,000
		improvements misc	25,000	ls	1.00	25,000

VE #		ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
		planting bed replanting with groundcovers and mulch	12,800	sf	10.00	128,000
		trees	4	no	1,200.00	4,800
		replace inlets, assume same location	3	no	3,585.00	10,755
		site lighting, allow	20,400	sf	3.00	61,200
		Markups	574,355	%	0.61	351,792
		TOTAL	20,400	SF	45.39	926,000
13A	MCKEE	NORTH SIDE ADJUSTMENTS - ACCESSIBILITY IMPROVEMENTS				
		site prep	600	sf	3.00	1,800
		ada ramp	600	sf	10.00	6,000
		handrail replacement	130	lf	350.00	45,500
		Markups	53,300	%	0.61	32,646
		TOTAL	13,400	SF	6.42	86,000
14	MCKEE	BREEZEWAY IMPROVEMENTS				
		site prep	13,400	sf	3.00	40,200
		planting beds	1,400	sf	10.00	14,000
		trees	2	no	1,200.00	2,400
		small benches	8	no	5,000.00	40,000
		large benches	3	no	20,000.00	60,000
		concrete pavers to student table setup space	12,000	sf	20.00	240,000
		improvements misc	25,000	ls	1.00	25,000
		site lighting, allow	13,400	sf	3.00	40,200
		Markups	461,800	%	0.61	282,853
		TOTAL	13,400	SF	55.60	745,000
15	MCKEE	Replace all infill panels with higher insulative value and new windows				
		new windows	376	sf	140.00	52,640
		demo wall	376	sf	18.00	6,768
		add window treatments - roller shades, manual	376	sf	10.00	3,760
		Markups	63,168	%	0.61	38,690
		TOTAL	376	SF	271.28	102,000

VE #		ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
16	MCKEE	ADD NEW VESTIBULES				
		selective demo	354	sf	5.00	1,770
		new slab on grade (assume no foundation)	354	sf	10.00	3,540
		new vestibule glazing	774	sf	150.00	116,100
		glazed entrances	4	no	5,500.00	22,000
		auto openers	4	no	4,200.00	16,800
		add grille walk off	354	sf	90.00	31,860
		add base	109	lf	4.25	463
		add ceiling	354	sf	10.65	3,770
		paint	1,090	sf	1.15	1,254
		cabinet unit heaters, including piping and wiring	2	no	5,600.00	11,200
		lighting and lighting controls	354	sf	20.00	7,080
		controls	2,800	ls	1.00	2,800
		Markups	218,637	%	0.61	133,915
		TOTAL	354	SF	997.18	353,000
17	MCKEE	NEW SIGNAGE				
		new room signage	432	no	150.00	64,800
		new wayfinding signage	24	no	250.00	6,000
		Markups	70,800	%	0.61	43,365
		TOTAL	456	no	250.00	114,000
18	MCKEE	NEW/EXPANDED MDF IDF SPACES AND PATHWAYS				
		selective demo	350	sf	5.00	1,750
		add partitions, doors, finishes	350	sf	15.00	5,250
		hvac modifications to suit new configuration	350	sf	15.00	5,250
		controls	350	sf	2.25	788
		lighting	350	sf	15.00	5,250
		devices	350	sf	5.00	1,750
		fire alarm, tele/data - full system, av conduit, misc elec - modify to suit new	350	sf	18.00	6,300
		4" conduit MDF to IDF	300	lf	50.00	15,000

VE #		ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
		4" conduit IDF to IDF, not stacked	1,700	lf	50.00	85,000
		cable tray	2,165	lf	40.00	86,600
		pull new cable	132,093	sf	0.75	99,070
		mep demo	350	sf	3.00	1,050
		premium for PCB lighting demo	350	sf	2.50	875
		Markups	313,932	%	0.61	192,284
		TOTAL	350	SF	1,445.71	506,000
19	MCKEE	NEW ADA RESTROOMS				
		selective demo	2,100	sf	5.00	10,500
		add wall tile - 8' hi all walls	5,880	sf	20.00	117,600
		vanities	2,100	sf	12.00	25,200
		misc fittings - toilet partitions, updated fittings	2,100	sf	25.00	52,500
		replace existing fixture with ADA compliant, assume minor piping relocations	18	no	3,000.00	54,000
		relocate fixtures to accommodate ADA compliant fixtures	18	no	2,000.00	36,000
		remove existing fixtures	18	no	400.00	7,200
		assume no other mep work required	0	ls	1.00	0
		Markups	303,000	%	0.61	185,588
		TOTAL	2,100	SF	232.86	489,000
19a	CANDE	STAIR RAILINGS EXTENSIONS				
		stair railings extension	19	no	500.00	9,500
		Markups	9,500	%	0.61	5,819
		TOTAL	19	no	789.47	15,000
20	MCKEE	CREATION OF STUDENT/FACULTY SPACES				
		demo floors and ceilings	4,550	sf	1.50	6,825
		add vinyl tile luxury	2,300	sf	6.00	13,800
		add carpet tile	2,250	sf	6.00	13,500
		add rubber base	1,325	sf	4.25	5,631
		add act ceiling - 50%	2,275	sf	6.50	14,788
		add gyp ceiling - 50%	2,275	sf	10.65	24,229

VE #		ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
		add gyp bulkheads	750	lf	40.00	30,000
		add paint	13,250	sf	1.15	15,238
		add casework	48	lf	800.00	38,400
		plumbing - minor changes	4,550	sf	6.00	27,300
		hvac - minor work (new diffusers, maintain majority of ducts)	4,550	sf	2.00	9,100
		lighting	4,550	sf	18.00	81,900
		devices	4,550	sf	3.00	13,650
		mep demo	4,550	sf	5.00	22,750
		premium for PCB lighting demo	4,550	sf	2.50	11,375
		Markups	328,485	%	0.61	201,197
		TOTAL	4,550	SF	116.48	530,000
21	MCKEE	SECONDARY CORRIDOR FINISH UPDATES				
		demo flooring, ceilings	4,400	sf	1.50	6,600
		add new carpet flooring	4,400	sf	6.00	26,400
		add new rubber base	2,550	lf	4.25	10,838
		add new act ceiling	4,400	sf	6.50	28,600
		add paint	25,500	sf	1.15	29,325
		hvac - minor work (new diffusers, maintain majority of ducts)	4,400	sf	2.00	8,800
		replace lighting with new LED fixtures in same location, wiring and switches and controls to remain	4,400	sf	10.00	44,000
		demo lighting, may contain PCB ballasts	4,400	sf	4.00	17,600
		Markups	172,163	%	0.61	105,450
		TOTAL	4,400	SF	63.18	278,000
22	MCKEE	PRIVATE OFFICE/CONFERENCE FINISH UPDATES				
		demo floors and ceilings	3,200	sf	1.50	4,800
		add carpet tile	3,200	sf	6.00	19,200
		add new rubber base	780	lf	4.25	3,315
		add act ceiling - 50%	1,600	sf	6.50	10,400
		add gyp ceiling - 50%	1,600	sf	10.65	17,040
		add gyp bulkheads	400	lf	40.00	16,000
		add paint	7,800	sf	1.15	8,970

VE #		ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
		hvac - minor work (new diffusers, maintain majority of ducts)	3,200	sf	2.00	6,400
		lighting	3,200	sf	18.00	57,600
		devices	3,200	sf	3.00	9,600
		mep demo	3,200	sf	3.00	9,600
		premium for PCB lighting demo	3,200	sf	2.50	8,000
		Markups	170,925	%	0.61	104,692
		TOTAL	3,200	SF	86.25	276,000
23	MCKEE	STUDY BOOTHS IN HALLWAYS				
		selective demo	1,000	sf	5.00	5,000
		add partitions make good	4,500	sf	1.00	4,500
		add new partitions	1,500	sf	16.50	24,750
		add patch make good flooring	1,000	sf	1.00	1,000
		add wood slat ceilings	1,000	sf	40.00	40,000
		add wood slat walls	4,500	sf	40.00	180,000
		add banquette seating	300	lf	500.00	150,000
		add fixed tables	150	lf	400.00	60,000
		lighting/power, allow	1,500	sf	20.00	30,000
		Markups	495,250	%	0.61	303,341
		TOTAL	1,000	SF	799.00	799,000
24	MCKEE	SINGLE AND DOUBLE CLASSROOM RENOVATION				
		demo floors and ceilings	16,500	sf	1.50	24,750
		add carpet tile	16,500	sf	6.00	99,000
		add rubber base	2,575	lf	4.25	10,944
		add act ceiling - 80%	13,200	sf	6.50	85,800
		add gyp ceiling - 20%	3,300	sf	10.65	35,145
		add gyp bulkheads	1,500	lf	40.00	60,000
		add paint	25,750	sf	1.15	29,613
		add acoustical panels - allow 25% of wall surfaces	6,438	sf	30.00	193,125
		add markerboards	960	sf	25.00	24,000
		add projector mounts	24	no	5,000.00	120,000

VE #		ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
		hvac - minor work (new diffusers, maintain majority of ducts)	16,500	sf	2.00	33,000
		lighting	16,500	sf	18.00	297,000
		devices	16,500	sf	3.00	49,500
		mep demo	16,500	sf	3.00	49,500
		premium for PCB lighting demo	16,500	sf	2.50	41,250
		Markups	1,152,626	%	0.61	705,984
		TOTAL	16,500	SF	112.67	1,859,000
25	MCKEE	INFILL AUDITORIUM, NEW CLASSROOMS				
		metal light gauge	5,198	sf	14.00	72,765
		steel bracing and details 1 psf	5,198	sf	2.15	11,175
		blocking	5,198	sf	1.50	7,796
		metal deck 1"	9,300	sf	5.00	46,500
		concrete topping 4"	9,300	sf	7.00	65,100
		add partitions	4,700	sf	16.50	77,550
		add movable partitions	1,560	sf	150.00	234,000
		add doors	12	no	2,750.00	33,000
		add railings	60	lf	100.00	6,000
		add carpet tile	8,250	sf	6.00	49,500
		add tile	500	sf	20.00	10,000
		add tile base	200	sf	20.00	4,000
		add rubber base	570	sf	4.25	2,423
		add act	4,375	sf	6.50	28,438
		add gyp	4,375	sf	10.65	46,594
		add gyp detailing	380	lf	40.00	15,200
		add tile	1,500	sf	25.00	37,500
		add paint	6,000	sf	1.15	6,900
		add panels fabric wrapped - 50% of walls	3,000	sf	30.00	90,000
		add vanities	12	lf	400.00	4,800
		add washroom accessories	2	no	7,500.00	15,000
		add markerboards	80	sf	25.00	2,000
		add projection screens	2	no	5,000.00	10,000

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VERMEULENS

VE #	ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
	hvac modifications to suit new configuration	19,984	sf	30.00	599,520
	controls	19,984	sf	4.50	89,928
	lighting	19,984	sf	18.00	359,712
	devices	19,984	sf	3.00	59,952
	fire alarm, tele/data - full system, av conduit, misc elec	19,984	sf	13.00	259,792
	assisstive listening system (PA system, hearing loop system, driver)	19,984	sf	2.50	49,960
	mep demo	8,750	sf	6.00	52,500
	premium for PCB lighting demo	8,750	sf	2.50	21,875
	Markups	2,369,479	%	0.61	1,451,306
	TOTAL	8,750	SF	436.69	3,821,000

PROGRAM PLAN SURVEY RESPONSES

WHAT IMPROVEMENTS COULD BE MADE TO INCREASE RETENTION AND ENROLLMENT?

Improved classrooms and social spaces

More locations to meet and enjoy meals

Eliminate fly infestation on 5th floor

Repair leak into 2nd floor ceiling and refresh ceiling tiles throughout

Improve accessibility for wheelchairs in restrooms and back hallways

Renovate Lecture Hall to be more flexible and accessible

Create a student / faculty lounge on each floor

Incorporate windows where possible

Ask faculty / staff / students what they need

ARE THE CURRENT AMENITIES, BREAK ROOMS, LOUNGES, AND FOCUS AREAS SUFFICIENT?

No, McKee Hall could use more

BEYOND ACCESS TO RESTROOMS, ARE THERE OTHER ACCESSIBILITY NEEDS?

There needs to be better seating options

The stairwells - during passing periods they are congested

Seating is an issue, most chairs do not accommodate larger individuals and can cause embarrassment for the student. Generally there is not seating accommodations in the classrooms. If we need, we have to contact facilities to bring the needed seating, either for wheelchair, size, etc. which usually takes a minimum of 24 hours to be delivered. The tab chairs do not accommodate students with laptops or electronic devices.

ARE THERE SAFETY OR SECURITY CONCERNS WITHIN OR AROUND THE BUILDING?

Not that I have encountered

Not known at this time

During the winter, the handicap access points from the parking lot to the building are usually icy, and have banked snow from the road plowing. The offices are small which limit how much furniture can be laid out in the office. This can result in the office personnel having their backs to the door, or having to go around the desk to access the door, which is a concern should there be an emergency in the building.

WHAT ARE THE FUTURE PROJECTIONS FOR CLASSROOM NEEDS (IDEAL SIZE/QUANTITY AND TEACHING STYLE)?

Mobile chairs, pods of desks with a monitor for each pod. A way to project the voice of the instructors. When the projectors are running, students cannot hear the instructors.

The layout of the rooms is not welcoming

IN THE FUTURE, WILL FACULTY CONTINUE TO WORK ON CAMPUS, OR ARE THEY EXPLORING HYBRID OPTIONS?

N/A for my current role

The directive from the President's office is moving toward courses being offered on campus versus online. We do have several options however, I don't see that changing the faculty office usage. Currently the departments have front offices, with the implementation of the ASC model, these spaces do not serve the purpose they did prior to the ASC, as there are no administrative assistants in these spaces. These spaces could be reconfigured for better use.

THANK YOU