



CANDELARIA HALL

University of Northern Colorado

GREELEY, CO | PROGRAM PLAN | APRIL 2023



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EXECUTIVE SUMMARY

- Overview
- Relationship to Campus Vision
- Vision + Goals
- Participants + Process

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

CANDELARIA HALL PROGRAM PLAN

The overall vision for Candelaria 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. Candelaria Hall provides 89,904 sf of space, including 24 classrooms dedicated to the arts and sciences.

Completed in 1973, Candelaria Hall has had very limited renovations in its 50 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.

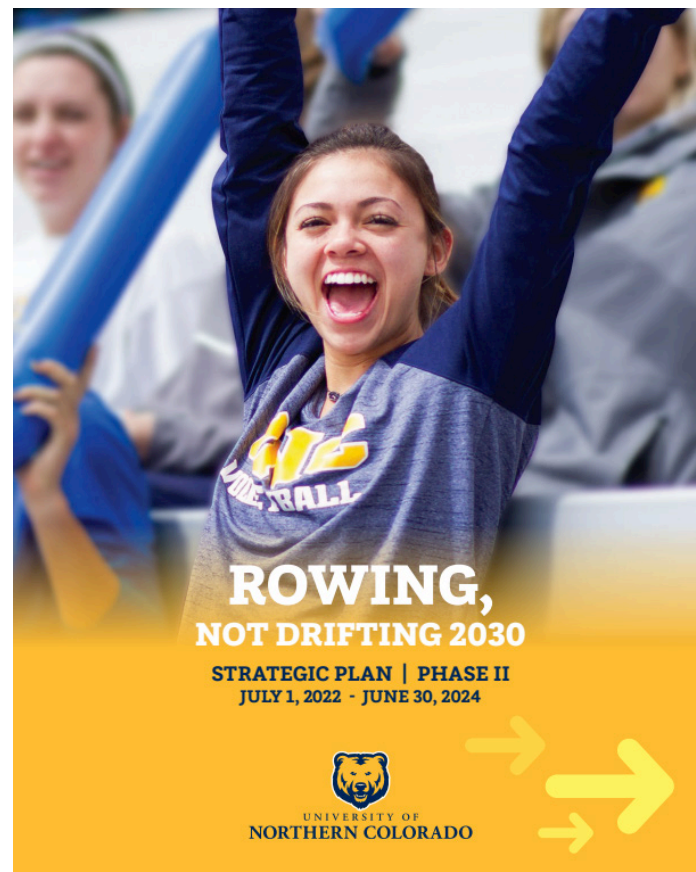


FIGURE 2: UNC STRATEGIC PLAN COVER IMAGE

VISION + GOALS



FIGURE 3: UNC STUDENTS IMAGE TAKEN FROM WEBSITE

PROJECT GOALS

While the program plan for Candelaria 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.

Candelaria Hall is functional building with a facilities condition index score of 74.19 (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 Candelaria Hall was developed by the design team in close collaboration with the campus facilities management group:

Campus Facilities Management

University of Northern Colorado

Kirk Leichter | 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 Holcomb | 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





JUSTIFICATION

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

EXISTING CONDITIONS

BACKGROUND

Completed in 1972, Candelaria Hall was originally designed by the firm of Brelsford, Childress and Paulin, a predecessor firm to Cab Childress, who went on to become the campus architect at the University of Denver. The building is a modern aesthetic, with features that relate it to the adjacent McKee 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.

Candelaria Hall has had very limited renovations in its 50 year life. The building is a total of 89,904 sf, three stories tall, with the lowest level being a garden level. The east entry directly accesses the second level.

This entry faces the west campus quad and McKee Hall, and as such, sees the most student use. The west entry faces the adjacent parking, and provides direct access to the lowest level. Both the east and west sides of the building have significant exterior plaza spaces. There is a loading dock on the north that provides access to the second level corridor system.

The primary pathway across the quad leads to the north-end entrance on the east facade, although it is slightly offset from the main entrance and terminates at one of the building's planters. Bike parking lines the east facing planters, which hold two trees each. The west entrance is on one floor lower than the east, with two sets of double doors on either end of a plaza defined by concrete seat walls and five square planters.



FIGURE 5: CANDELARIA HALL PHOTO FROM SITE VISIT



EXTERIOR

The exterior of Candelaria Hall consists of a cast in place concrete facade with deep recessed windows and concrete solar shades on the east and west sides. The exterior is generally in good shape, with the exception of the concrete solar shades, which show cracking and signs of deterioration.

While extremely durable, 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 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 plaza fronting the east entrance creates an opportunity for a dynamic threshold between the main corridor in the building and the exterior seating areas. Three large bays enclosed in low concrete seat walls and a planter with two trees each define the plazas, while an exterior corridor mirrors the one inside.



FIGURE 6: CANDELARIA HALL PHOTO FROM SITE VISIT



FIGURE 7: CANDELARIA HALL PHOTO FROM SITE VISIT



FIGURE 8: CANDELARIA HALL PHOTO FROM SITE VISIT

CIRCULATION

The building is generally laid out with a central loop corridor that connects all interior spaces. Classrooms are typically located in the center of this loop, with faculty offices around the perimeter. There is glazing and access to daylight on the east and west sides of the building, with solid masses and no daylight access on the north and south ends.

Vertical circulation is provided by two open stairs with skylights above, and one hydraulic elevator. There is also a service stair that connects level 1 & 2 on the north end of the building. The northern stair has a mural that depicts the life of the building's namesake, Dr. Martin Candelaria. This mural is an important campus asset and should be preserved.



FIGURES 9, 10: CANDELARIA HALL PHOTO FROM SITE VISIT



LEVEL 2



LEVEL 1



LEVEL 0



BUILDING ORGANIZATION

PROGRAM

Candelaria Hall houses the College of Humanities and Social Sciences, and includes programs for Journalism, Foreign Languages, and Economics. The three levels are primarily made up of offices, classrooms, and several labs. What is lacking is gathering space for students. Distinct architectural features in the building are two mirrored staircases, wrapped in board form concrete and that reach up to skylights above. Several classrooms and labs have exposed ceilings, highlighting the coffered concrete slab above.

Candelaria Hall's three stories hold primarily classroom and office space, with computer labs and conference rooms spread throughout. Student spaces face the east entrance, while offices and faculty space hold the west end of the building.

LEVEL 0

The lower level is partially sub-grade, with two entrances on the west facade through the concrete plaza decorated with five planters and low seat walls. Office space lines the east and west ends of the building, with classrooms in the middle.

LEVEL 1

Level 1 is the main level, with access to the quad facing the James A. Michener Library and McKee Hall. The entrance is fronted with a raised concrete plaza with three defined seating areas. The program on this level is a combination of offices, classroom, labs, and conference rooms.

LEVEL 2

Level 2 holds more classroom and office space, with additional labs and meeting rooms. The east ends of the corridor terminate at the glazing, creating two gathering spaces for students, albeit undefined.

89 904
SQUARE FEET

3
FLOORS

11
DEPARTMENTS

27
CLASSROOMS

0
CLASSROOMS W/
DIRECT DAYLIGHTING

Level 2

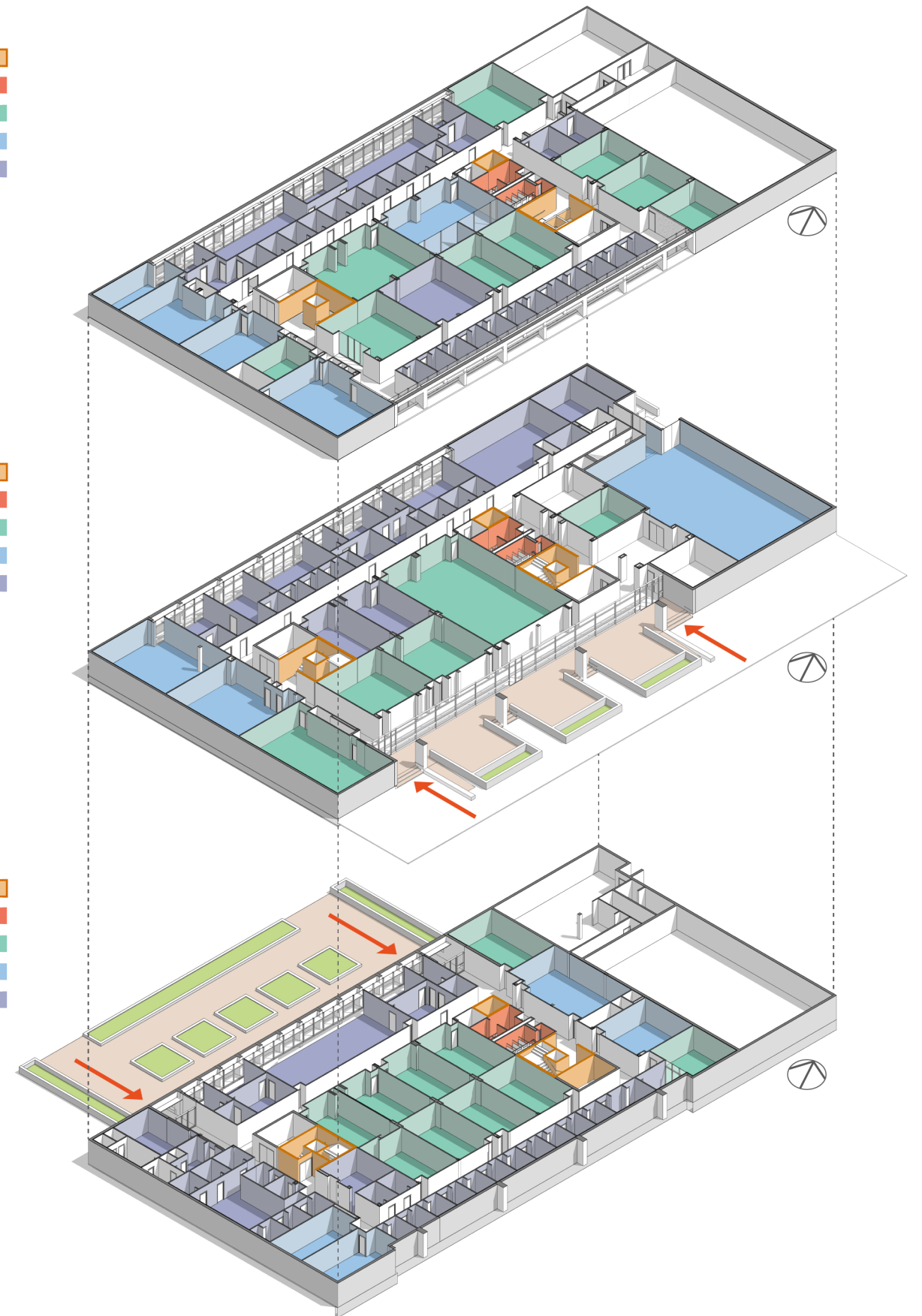
- Vertical Circulation ■
- Restroom ■
- Classroom ■
- Lab ■
- Office / Conference ■

Level 1

- Vertical Circulation ■
- Restroom ■
- Classroom ■
- Lab ■
- Office / Conference ■

Level 0

- Vertical Circulation ■
- Restroom ■
- Classroom ■
- Lab ■
- Office / Conference ■



CLASSROOM SPACE

Candelaria Hall houses the college of Humanities and Social Sciences, and provides a total of 27 classrooms that range in size from 30 seats to 80 seats. Many of the classrooms in this building are set up in lecture format with tablet arm chairs, and a projection screen at the teaching wall, but a limited number of classrooms in this building are set up as digital labs with multiple tables housing two computer stations each.

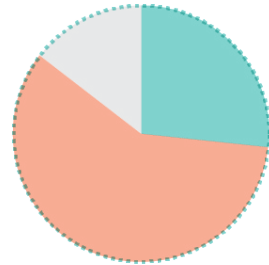
Students in these classrooms are densely packed, at approximately 15 sf per student on average. These classrooms lack the flexibility required to facilitate the active learning environment that many students and teachers in the current era have come to expect.

Currently Candelaria's highest capacity demand is for 40 seat classrooms, and 80 seat classrooms have the highest room utilization rate.

As indicated in a recent classroom utilization study conducted by the campus masterplanning team, classrooms in this building are generally underutilized:

CLASSROOM UTILIZATION RATIO:

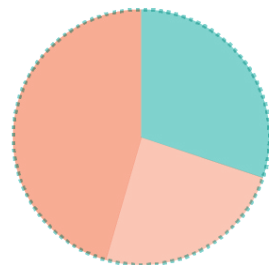
IDEAL = CLASSROOMS SCHEDULED 25 OF 40 HOURS PER WEEK



- **26%** OF CLASSROOMS ARE SCHEDULED BETWEEN 20 AND 25 HOURS PER WEEK.
- **15%** OF CLASSROOMS ARE SCHEDULED OVER 25 HOURS PER WEEK.
- **59%** OF CLASSROOMS ARE SCHEDULED UNDER 20 HOURS PER WEEK.

SEAT FILL RATE:

IDEAL = BETWEEN 60% - 75%



- **30%** OF CLASSROOMS MEET IDEAL RATIOS.
- **22%** OF CLASSROOMS HAVE A SEAT FILL RATE BETWEEN 50% AND 60%.
- **48%** OF CLASSROOMS HAVE A SEAT FILL RATE UNDER 50%.

74%

OF CLASSROOMS ARE **NOT** UTILIZED EFFECTIVELY

70%

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

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 restroom facilities are multi-stall and gender assigned, which is counter to current trends in higher education.

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 Candelaria 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. No allowance for removal of existing hazardous materials is in the estimate.

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



FIGURE 11: CANDELARIA HALL PHOTO FROM SITE VISIT



CODE REVIEW SUMMARY

PLUMBING COUNTS

As Candelaria Hall is a 50 year old building, its current layout does not meet current code standards in a few regards. The restrooms are both lacking the number of fixtures required and up-to-date code requirements for accessibility.

After a study of fixture counts, it was determined Candelaria Hall needs additional toilets to be in line with current code standards:

EXISTING:

REQUIRED TOTAL MENS: **19 WC + 12 LAVS**

REQUIRED TOTAL WOMENS: **19 WC + 12 LAVS**

PROVIDED TOTAL MENS: **21 WC + 9 LAVS** [-3 LAVS DEFICIENCY]

PROVIDED TOTAL WOMENS: **15 WC + 12 LAVS** [-4 WC DEFICIENCY]

RECOMMENDATION:

Candelaria needs to add 4 gender-neutral restrooms to meet current code. Each restroom would be approximately 48 square feet for a total of 192 square feet of space, which would provide the correct number of fixtures and provide an opportunity for an inclusive restroom. Possible locations are represented on pages 42 and 43.

ACCESSIBILITY

Other code-related issues Candelaria 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 12, 13, 14: CANDELARIA HALL
PHOTO FROM SITE VISIT

CHANGES + PROJECTIONS

A NEED FOR RESILIENCE

Since the building was brought online in 1972, 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 not inclusive due to the small seats and wrap-around desks. New furniture should support different body shapes, sizes, and pedagogies.

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.

“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 15: 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 Candelaria 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. Window 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

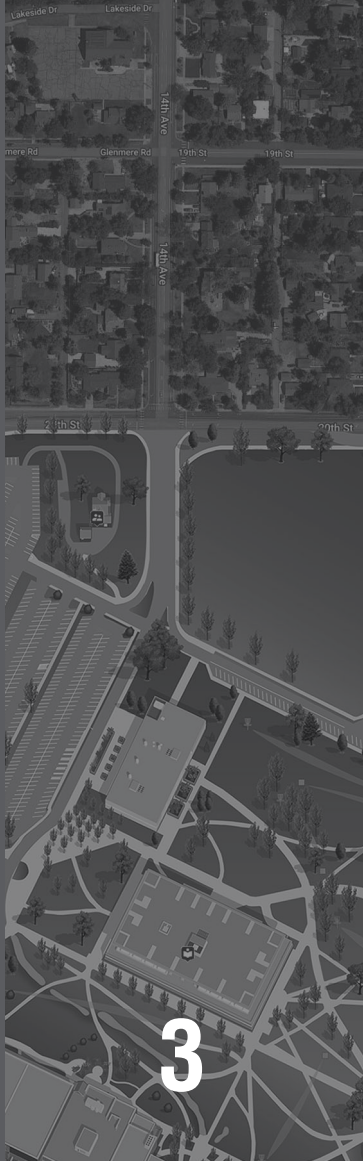
Improve classroom and student gathering spaces for better student learning, studying, and collaboration. Create gender inclusive restrooms for better inclusivity. Create entry vestibules to reduce energy use and create more comfortable interior spaces. Incorporate all of the maintenance and code interventions 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 an adjustment to the level 2 east facing storefront to capture additional interior space for student gathering.





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

Candelaria 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 functions 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
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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

Candelaria 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 pushing the east entrance glazing out a few feet creates an occupiable corridor. The facade becomes inviting, and students have a space to claim as their own.

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 an opportunity to create new student space

NEW SUNSHADES

Improves energy efficiency

Increases daylighting

Provides dynamic aesthetic to building envelope

PUSH OUT EAST STOREFRONT WALL

Improves health of building through sustainable design

Creates varied common student space along entrance

Provides dynamic aesthetic to building interior

FURNITURE + FINISHES

SINGLE + DOUBLE CLASSROOM RENOVATION

Enhances spaces for students by creating versatile learning environments

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

TECHNOLOGY

DEDICATED MDF + EXPANDED IDF ROOMS

Improves quality A/V and technology use in classrooms

NEW DATA CABLE AND INFRASTRUCTURE

Improves HVAC, access and security at each MDF and IDF rooms

Ensures long term functionality and flexibility of this mission critical infrastructure



SITE WORK

EAST ENTRANCE PLAZA ADJUSTMENTS

- Improves quality of common space for students and faculty
- Enhances quality and sustainability of landscape
- Creates an opportunity for responsible water usage through irrigation

SOUTH BOSQUE ADJUSTMENTS

- Improves quality of outdoor common space for students and faculty
- Enhances quality and sustainability of landscape

WEST ENTRANCE PLAZA ADJUSTMENTS

- Improves quality of common / learning space for students and faculty
- Enhances quality and sustainability of landscape
- Creates an opportunity for responsible water usage through irrigation

SITE IMPROVEMENTS

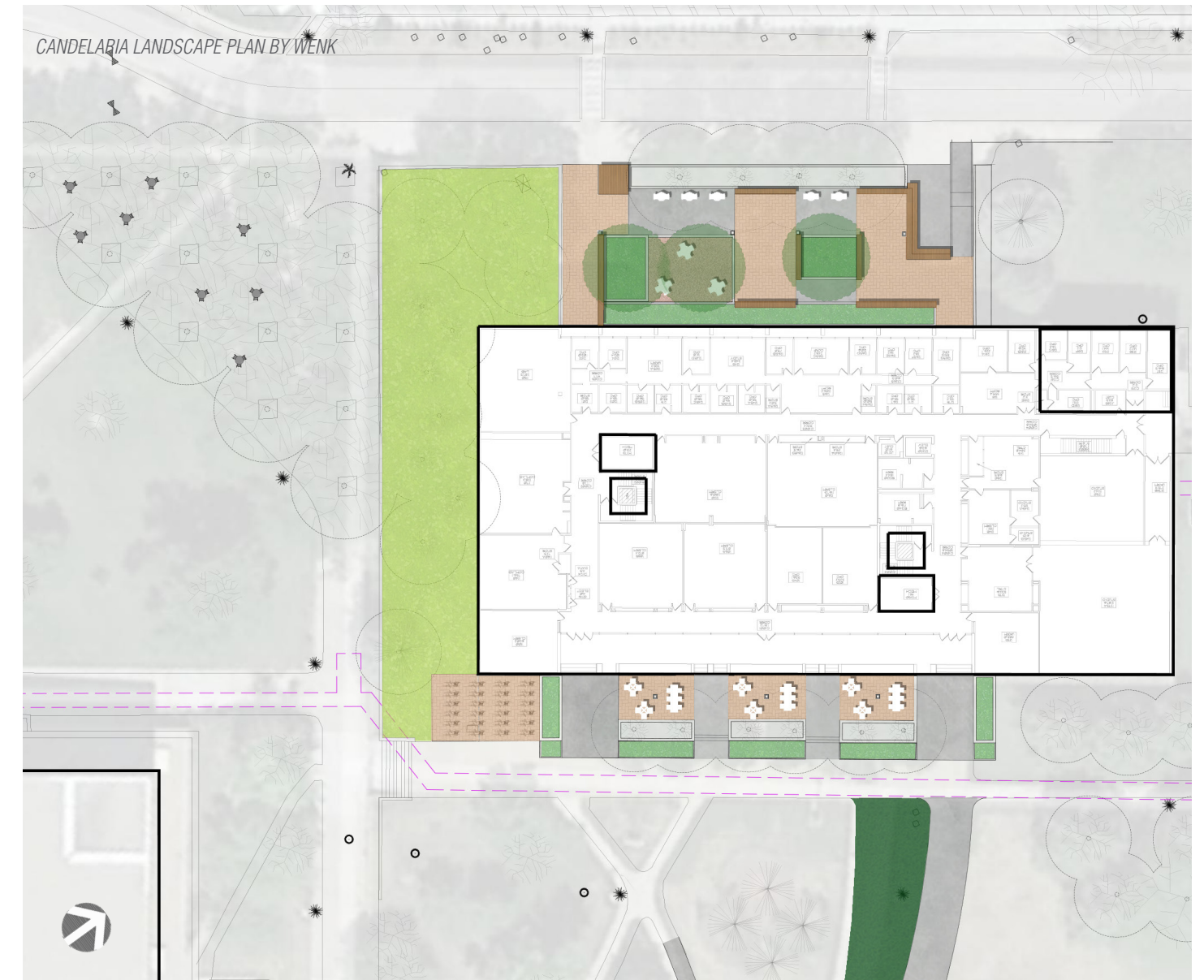
DEFERRED MAINTENANCE

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 eastern patios and sidewalks, the western courtyard and entrances, and the southern tree bosque plaza.

SITE ENHANCEMENTS

There are several items that could be added to enhance the exterior spaces and increase usability by students and faculty. This includes reconfiguration of the courtyard patios adjacent to the building to create comfortable areas to sit, study, or gather. Planters, seatwalls, additional material types, and varied seating options will improve circulation and create a high quality space.



SITE IMPROVEMENTS

EAST ENTRANCE

Modifications begin with the entry sequence to Candelaria from the east. The existing arced sidewalk currently terminates in the solid concrete wall on the northern end of the plaza. This sidewalk should be realigned to center on the north doors.

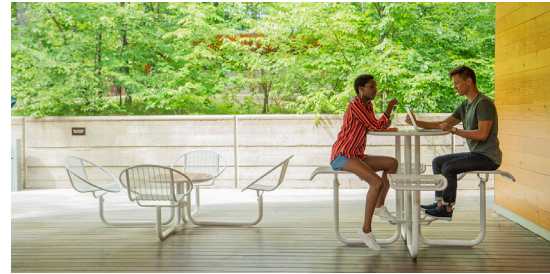
Care should be taken with this intervention, however, to avoid impact to the mature trees in this area.

For equal access, entrances to the building will be modified to incorporate a low slope ramp instead of stairs. The ramp will be framed with a planter on either end of the plaza to act as a seat wall which matches the existing.

The existing bays in the plaza will be conjoined by removing the site walls that demise them. Paving patterns will reinforce the prior division of this space, but the removal of site walls will unify this area into a more flexible and larger outdoor space.

Steps will be maintained between the existing walls to allow a porous access to the adjacent quad, but these walls will be softened by a planting bed between them and the north south sidewalk that passes by the building at this location.

Bicycle parking will be consolidated to the southern edge of this composition to ease snow removal and provide space for more planting, and existing light poles will be replaced.



OUTDOOR PATIO

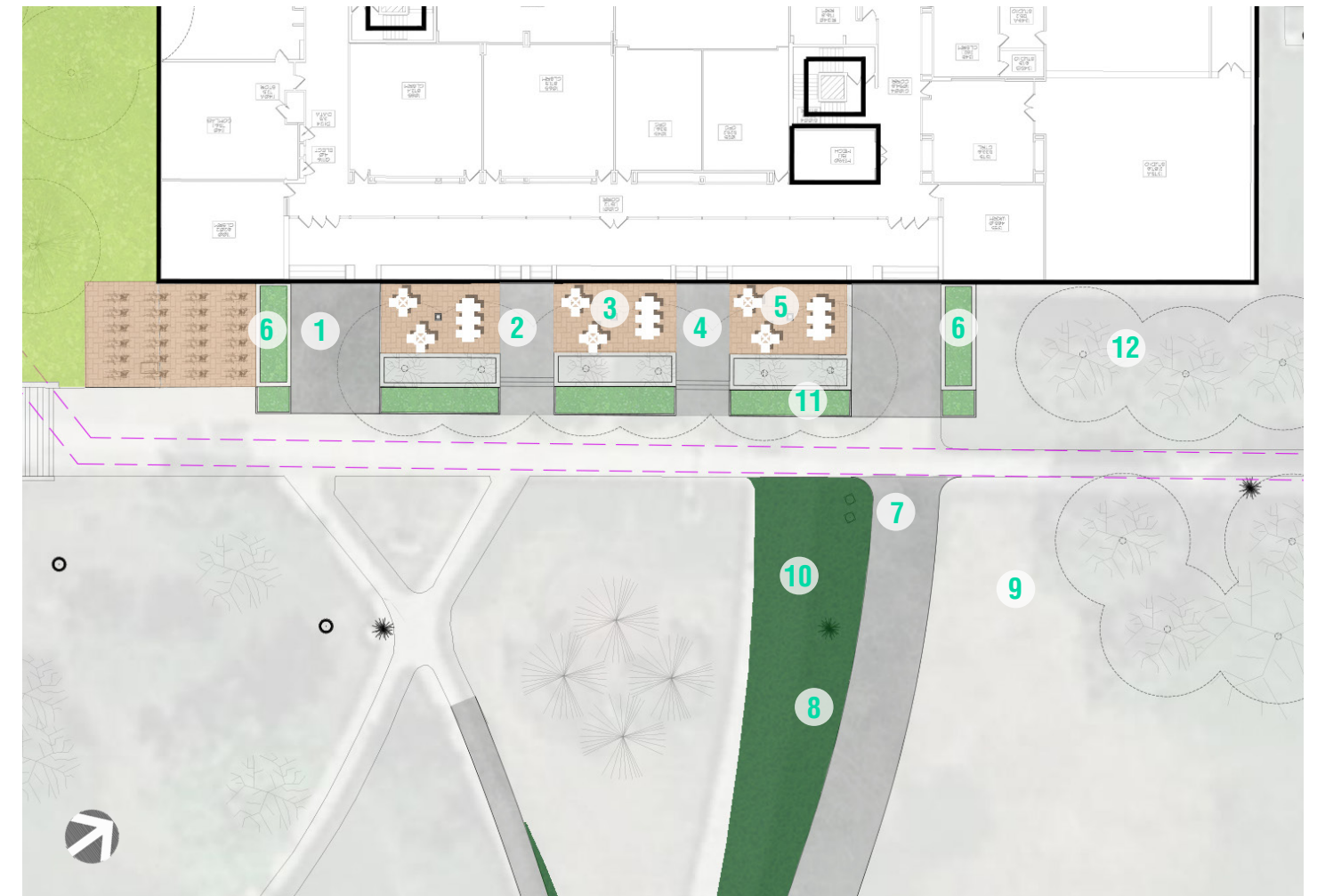
- 1 Replace entry steps with <math><5\%</math> ramp to make building more equitably accessible.
- 2 Combine the patios into one large space. Remove walls separating them and move steps.
- 3 Replace degrading concrete with new concrete or pavers.
- 4 Add inlets or upsize existing inlets for better drainage.
- 5 Replace concrete furnishings with softer materials and places for students and faculty to study and interact.
- 6 Add planters to either side of new entry ramp with seat walls to frame entrance.

ENTRY SIDEWALK

- 7 Realign to enter at building main entrance.
- 8 (2) lights to be moved and updated to the campus standard.
- 9 Avoid disturbing disc golf course.
- 10 Replace sod and adjust irrigation for new sidewalk location.

PLANTING

- 11 Add planting in front of existing concrete planter.
- 12 Provide irrigation to all areas of planting, existing and proposed.



SITE IMPROVEMENTS

SOUTH BOSQUE

On the south side of the building, the existing turfgrass should be replaced with low water use plantings. The wall lighting that is currently non functional should be removed and the existing wall patched. Pedestrian light poles would be introduced in this area to improve overall light levels at this important pathway between the adjacent parking and the west campus core.

Site furnishings in this area will also be included, but strategically located to maintain pedestrian circulation and not impede snow removal.

TURF TRANSITION

- 1 Replace high water use bluegrass turf with native seed mix or low water planting.

LIGHTING

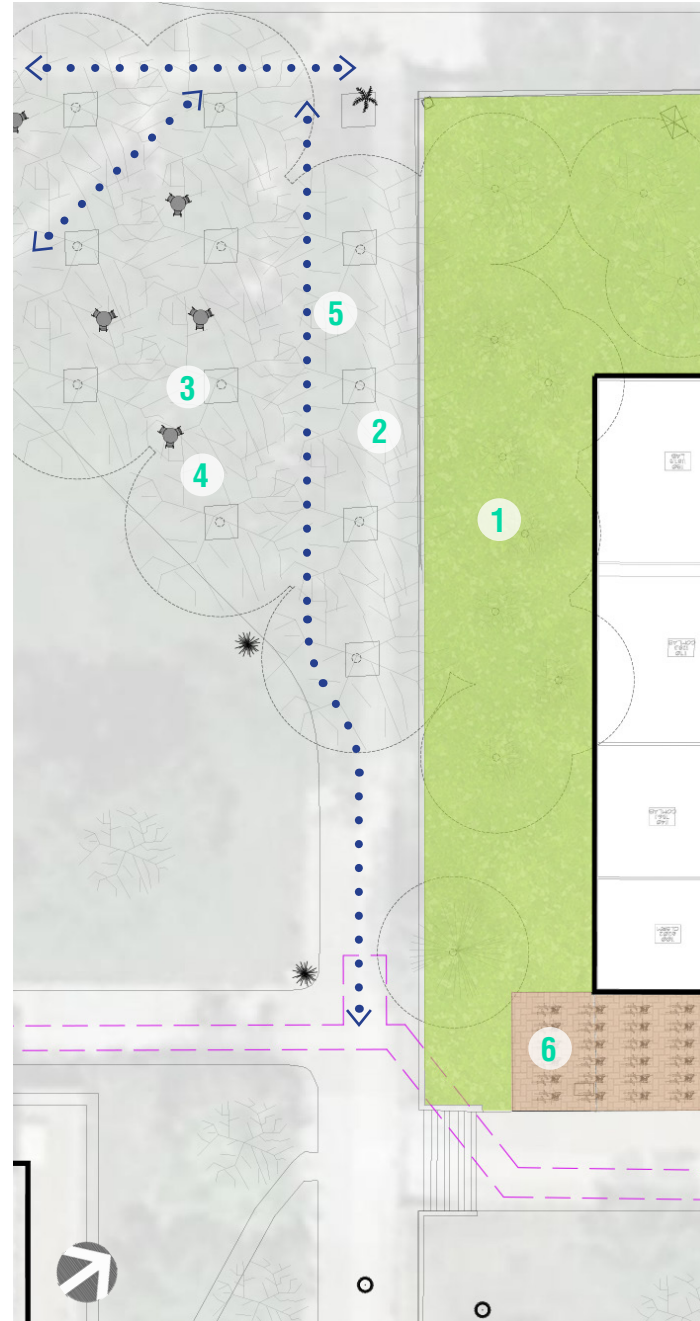
- 2 Remove wall lights and infill with masonry to match existing wall.
- 3 Add pedestrian light poles to increase lighting levels.
- 4 Approximately (6) light poles, connect to existing lights poles for power.

SITE FURNISHINGS

- 5 Maintain pedestrian circulation and snow plow routes (assumed to be the lines shown in dashed blue).

BICYCLE PARKING

- 6 Relocate to south east corner of building and pave this area in concrete unit pavers.



REFERENCE IMAGES PROVIDED BY WENK



WEST ENTRANCE

At the west plaza, a ramp will be introduced to provide equal access into this area. The concrete paving surface would be replaced with permeable pavers, and in this replacement, grading would be modified for improved drainage. The existing light poles will be replaced.

Terraces and planters would be modified to better support seating and informal class gatherings, while accommodating snow removal processes. The dated plantings up against the west elevation would be replaced with more current and low water use species.

RAMP

- 1 Remove concrete stairs and replace with ramp to improve circulation and snow removal.

TERRACE

- 2 Add two terraces for seating and informal classroom gathering.

DRAINAGE + PAVING

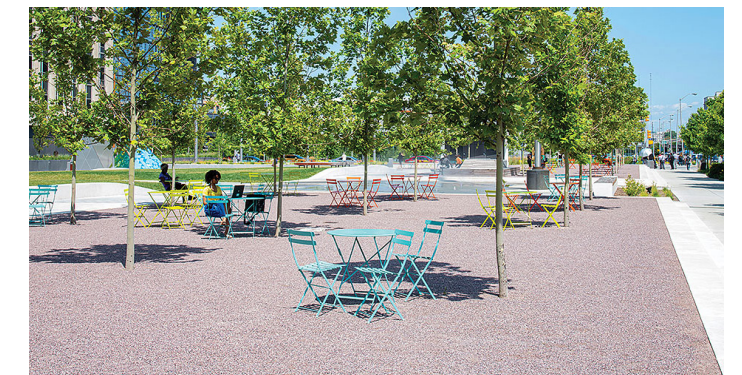
- 3 Replace concrete and regrade for improved drainage. Paving could include concrete unit pavers that could be permeable.
- 4 Replace (3) existing inlets and potentially add (1) inlet.

OUTDOOR PATIOS + PLANTING BEDS

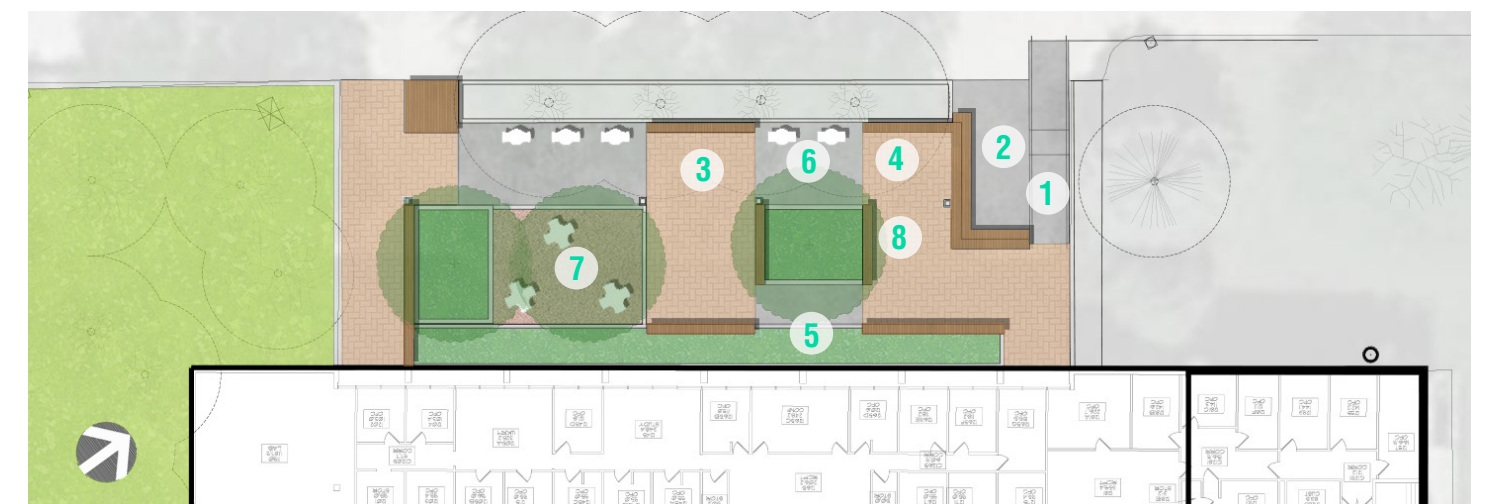
- 5 Remove unhealthy trees and planter beds from courtyard.
- 6 Add multiple seating options to activate the space.
- 7 Define space with crusher fines and pavers.

SEATING

- 8 Add benches and platforms to edge of the planter for students to sit and gather.



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 refresh Candelaria's exterior and function as well.

The deferred maintenance for the project references removing the existing concrete eyebrows and glazing replacement for 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. Remove and replace failing concrete solar control devices.
2. Incorporate masonry for better continuity to the rest of campus.
3. Improve the visibility of the main building entries.

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:

MASONRY:

Clad the north and south ends of the building in a masonry that is reflective of other masonry used on campus. These walls should include corbeling and coursing to break up their mass and connect with existing lines on the building. This masonry cladding would also include the columns along the east and west facades.

SUN SHADES:

Remove the existing concrete sun shades, and replace them with a light weight metal sun screen. These screens could be conceived as a form that spans two bays vertically to break down the overall scale of the elevation. The windows would also be replaced, which presents an opportunity to establish a relationship between these new sun shades and the window mullion pattern.

ENTRANCES:

Express the building entries through the incorporation of a horizontal cantilevered roof. This will provide an opportunity to add lighting at these areas, protect building users from the elements, and highlight the primary building entries. The bays that contain these entries could receive a higher level of treatment than other bays to further emphasize them to campus users.

GLAZING:

Replace mullions with SSG-style to diminish emphasis of horizontality in windows. A double-pane system improve thermal efficiency of the building and the facade will appear lighter as well without the tinted glass. SSG mullions create a lighter touch and will help bring the building into a modern feel.



EAST ENTRANCE VIEW



WEST ENTRANCE VIEW

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, and the concrete eyebrows are to be removed. The ADA upgrades reference the handrails, accessibility compliance in the restrooms, replacing all doors, and addressing lacking plumbing counts. Only the main corridor has been defined as needing updates.

The mechanical systems 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 following diagram describes the locations of the aforementioned deferred maintenance needs:

INTERIOR FINISH STANDARDS

Existing interior finishes and flooring in Candelaria 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: Remove / Replace Sunshades
Replace Windows

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

ADA UPGRADES: Accessible Restroom Stalls
Elevator Modifications + Relocation of Equipment Room
Replace Doors + Door Hardware
Guardrails + Handrails

STRUCTURAL: Structural Repair of Existing Crack in Exposed Concrete Structure

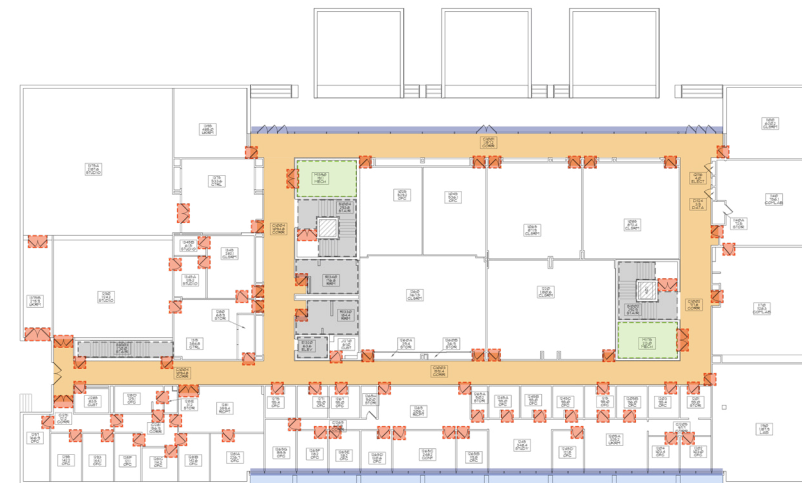
MECHANICAL: Remove / Replace Air Handlers and Outside Air Dampers
Remove / Replace Heat Exchanger
Convert Heating and Chilled Water Systems to Variable Flow

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

DATA: Provide Purpose Built Dedicated IT Closet and Cabling Pathways



LEVEL 2



LEVEL 1



LEVEL 0

LEGEND

- Code + Accessibility Updates
- Door Replacement
- Remove Window Shades
- Replace Windows
- Replace Mech. System
- Replace Flooring
Replace Ceiling
Replace Lighting
- Repair Structural Crack

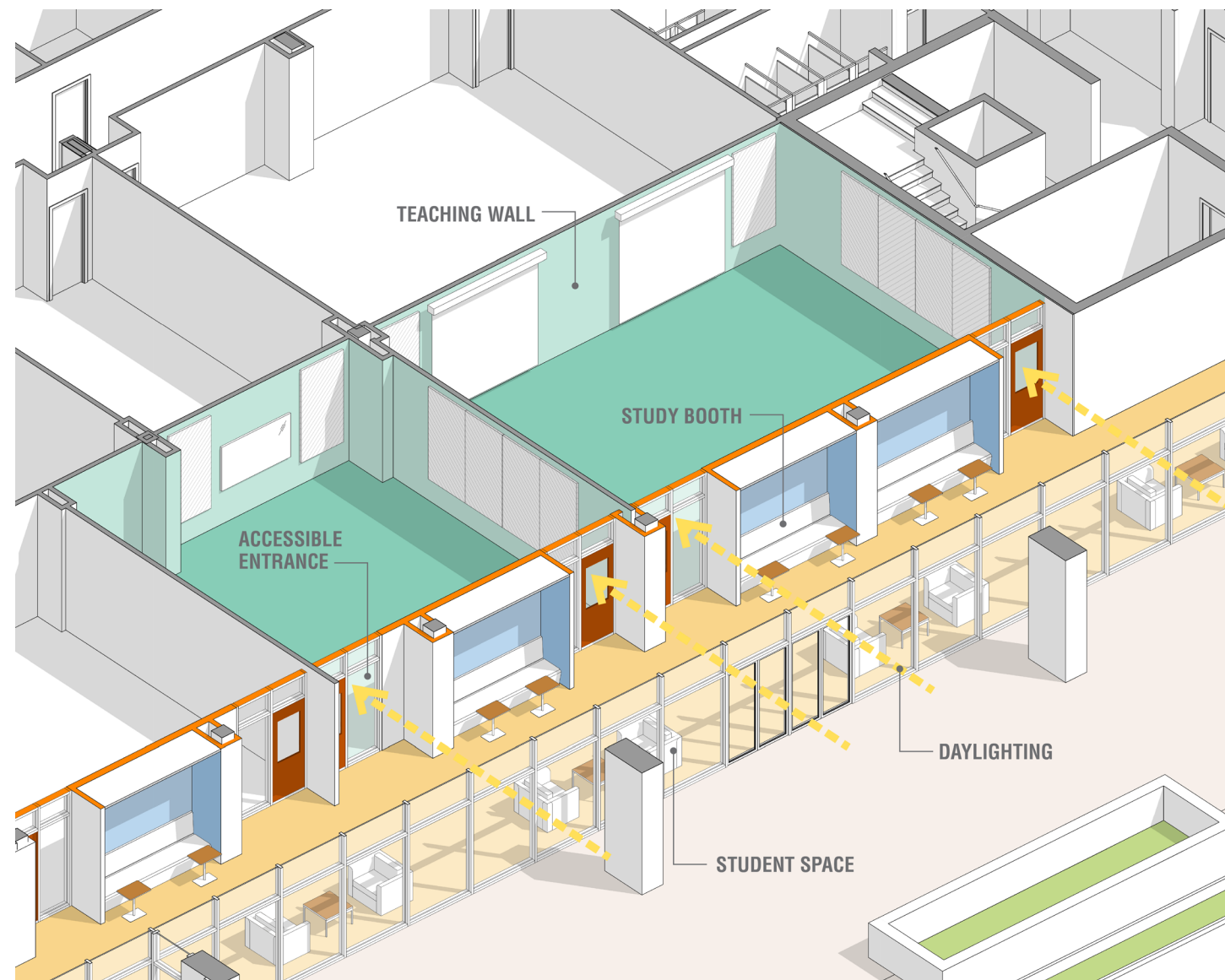
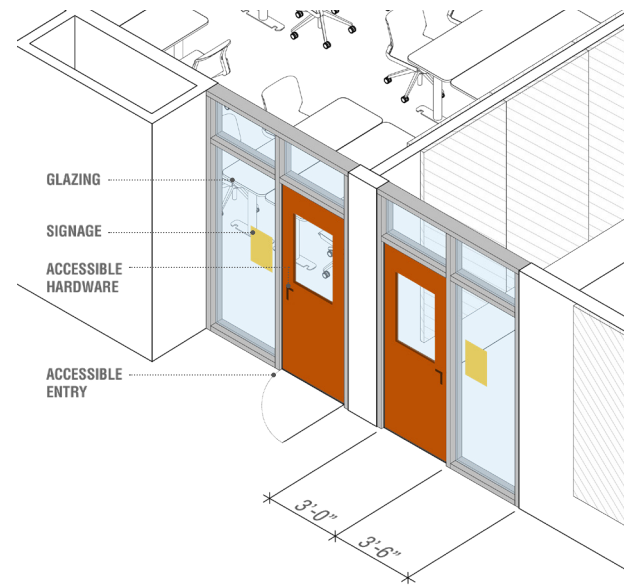


CODE + ACCESSIBILITY UPDATES

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, a take advantage of the display inserts which can be converted into study booths. A typical entry is diagrammed to the right:

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

GATHERING SPACES

While replacing the glazing at the east entrance would be an improvement to the building, pushing the storefront out 6' into the exterior plaza would capture an unused portion of the plaza to make the main corridor occupiable with furniture and study booths, creating a dynamic front to the building.

The existing student gathering spaces could be improved through new furnishings and finishes. The existing state of these spaces do not encourage activity or retreat given the lack of furniture. Improving these spaces could create a variety of meeting and study opportunities for students, Vestibules would also be added to each building entry.



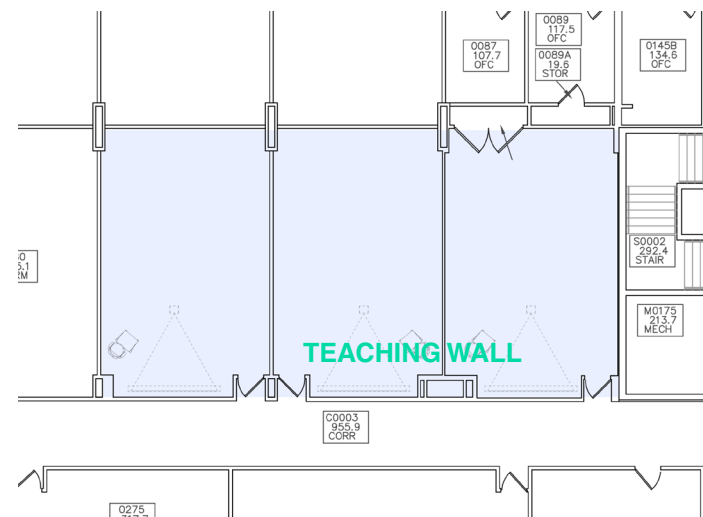
INTERIOR SPACE IMPROVEMENTS

CLASSROOMS

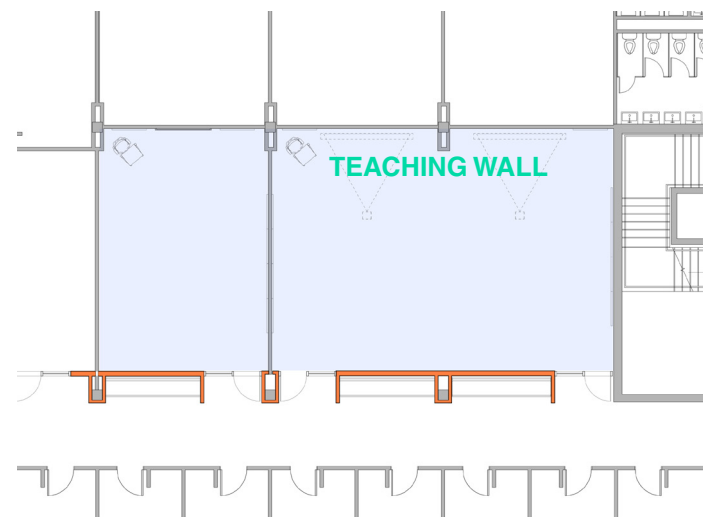
Candelaria's classrooms are currently oriented with the teaching wall on the same wall where you enter the classroom, and are lacking modern A/V and acoustical support. The proposed layouts show a variety of learning environments with different seating layouts, incorporating white boards and projection equipment, and relocating the teaching wall to be on the opposite side of the entry wall.

Combining classrooms can increase square footage and enable furniture upgrades to systems that support flexible learning environments. Furniture should support easy reconfiguration and different learning modes and sized to support different shapes and sizes of students. AV systems would be upgraded to the current campus standard.

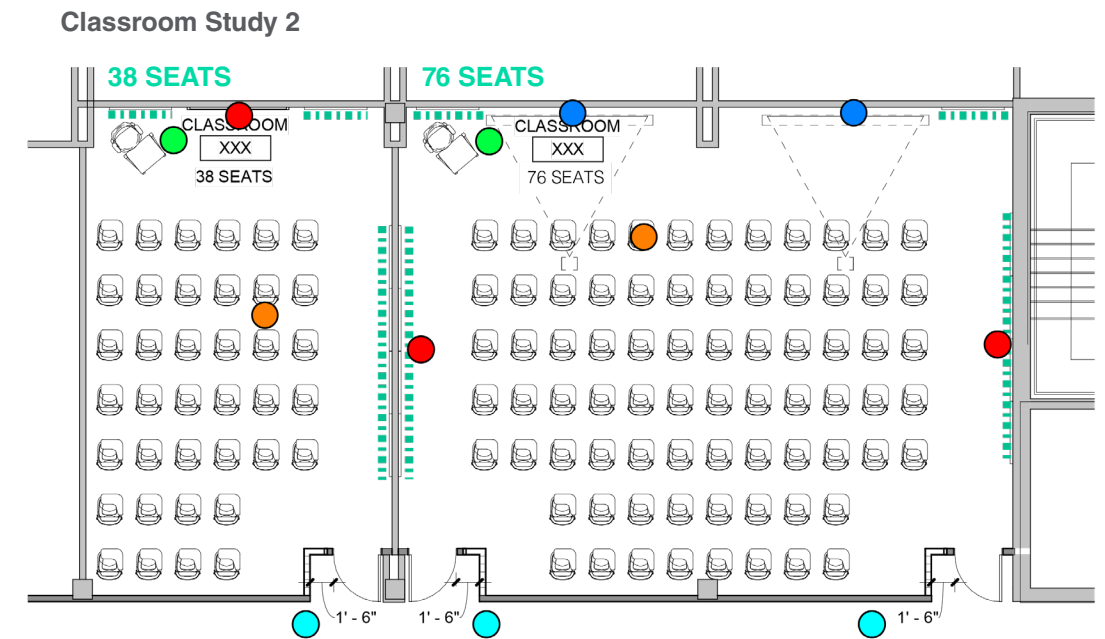
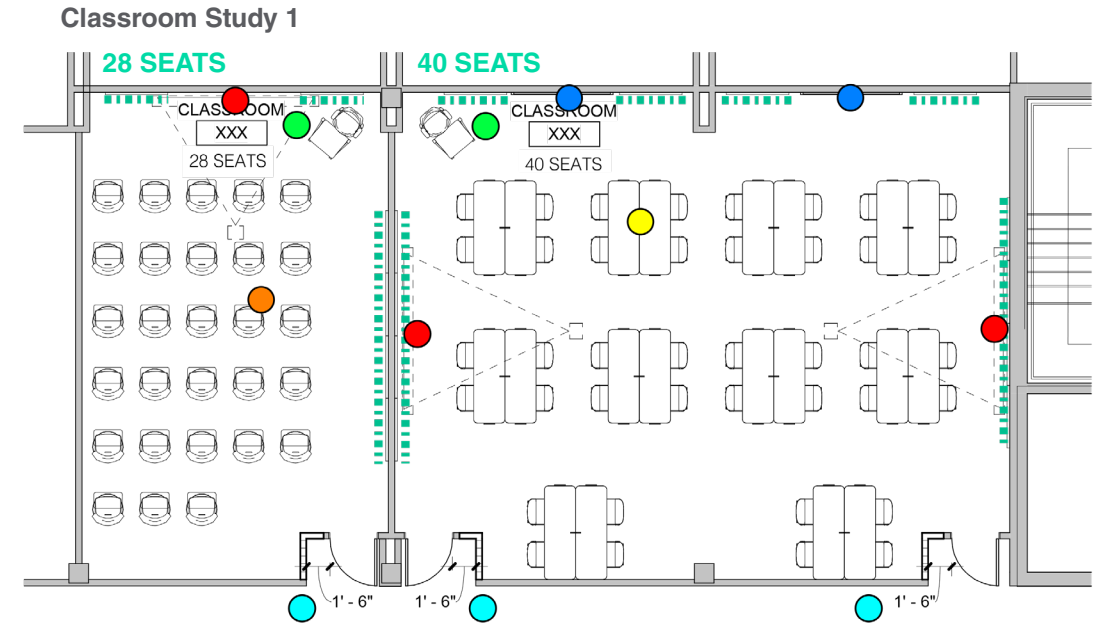
Additional upgrades include new flooring, new acoustical ceiling tiles, new paint, new indirect lighting, new classroom entry door and hardware, and A/V and technology upgrades.



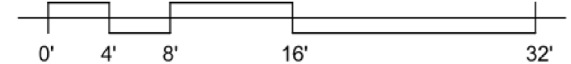
Existing Layout



Proposed Layout



- NEW AV/PROJECTION
- GROUPED SEATING
- TABLET SEATING
- NEW AV/LCD MONITOR
- RELOCATE TEACHING WALL
- ADA COMPLIANCE



EXPANDED SCOPE

RESILIENT STRATEGIES










While each classroom has been identified as in need of an update, both classrooms and common 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 for privacy or studying.

Candelaria is in need of additional water closets and lavatories, which 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, and create a more resilient building on the UNC campus.

LEGEND

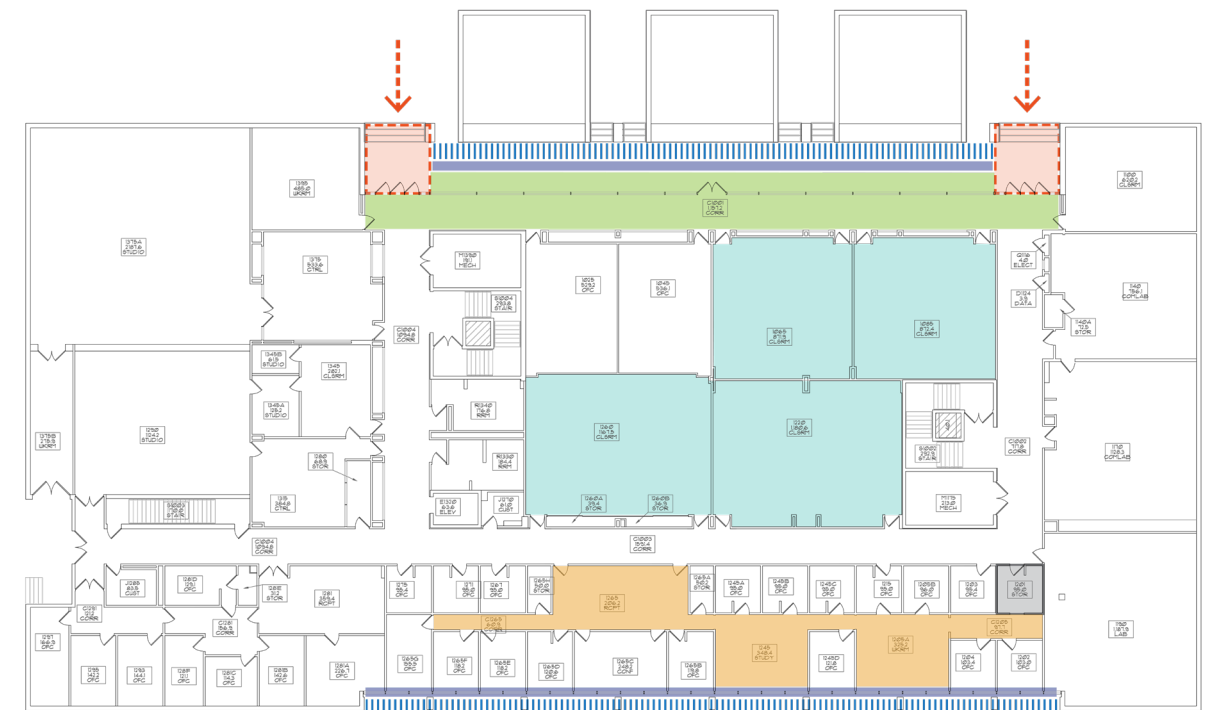
-  New Entrance Vestibule
-  Secondary Corridor Finishes
-  Student Common Space
-  Updated Classrooms
-  Gender-Inclusive Restroom
-  MDF
-  Expanded IDF
-  New Glazing
-  New Window Shades



LEVEL 0



LEVEL 2



LEVEL 1

Updated Classroom:

- New Carpet Tile
- New Paint
- New Acoustical Ceiling Tile
- New Indirect Lighting
- A/V and Technology Upgrades

Updated Student Space:

- New Carpet Tile / VCT
- New Paint
- New Acoustical Ceiling Tile
- New Indirect Lighting
- A/V and Technology Upgrades

ADA Entrance

- Sidelight
- New ADA Hardware
- Accessible Signage



STRUCTURAL SYSTEMS IMPROVEMENTS

NARRATIVE SUMMARY

Cracking above Classrooms 234-236 in the north-south concrete pan joists at the support girder occurs at the structural transition in the roof for approximately 95' in length. This vertical cracking was investigated in 2014 and appears to be stable. We don't believe it now poses a life safety concern but it would be prudent to repair the cracks using epoxy injection.

Candelaria has a unique sunshade detail where precast concrete sunshades exhibit noticeable sag and there is some minor spalling of concrete. If the sunshades are to remain in place for some time moving forward, it would be prudent to provide a temporary repair where the concrete is spalling.

MEP SYSTEMS IMPROVEMENTS

MECHANICAL SUMMARY

Candelaria Hall's mechanical HVAC systems are primarily from the original installation and much of the system is due to be replaced to improve energy efficiency and operational functionality. Deferred maintenance scope of work recommendations are as follows:

- Replace the seven (7) hot deck cold deck air handling units with new.
- Replace the chilled water pumps with new.
- Replace the heating water pumps with new inverter duty pumps and add VFDs for variable flow.
- Replace or thoroughly clean existing ductwork.
- Replace the existing pneumatically controlled devices and controllers with new DDC.
- Replace the outside air louvers on the roof.
- Review concealed heating water piping throughout the building and replace as necessary.
- Replace original piping insulation throughout the building.

ELECTRICAL SUMMARY

Candelaria Hall's electrical systems are primarily from the original installation and much of the system is due to be replaced to improve reliability and operational functionality as well 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 primary utility transformer and relocate on exterior pad
- Replace original main switchboard.
- Replace original emergency panels and reconfigure power to panels so that they are recognized per code as emergency panels.
- Replace original motor control center.
- Replace approximately 20 original branch circuit panels located throughout the building.
- Remove and replace all existing fluorescent, compact fluorescent, incandescent, and metal halide with LED type luminaires.
- Provide egress and exit lighting in classrooms for occupant safety.
- Provide 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

Candelaria Hall's plumbing piping is primarily from the original installation and is recommended to be replaced due to the age of the piping. Deferred maintenance scope of work recommendations are as follows:

- Add a storm water overflow system via scuppers or a new piped overflow system.
- Replace older plumbing fixtures with new.
- Provide backflow protection for the janitor closet chemical dispensers.

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.





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 **\$2,089,400**. The range to rebuild is between **\$48,056,200** and **\$52,235,000**.

DEFERRED MAINTENANCE	\$13,078,000
ACCESSIBILITY UPGRADES	\$746,000
EXTENDED SCOPE	\$5,831,000
TOTAL	\$19,655,000

The following breakdown of categories assume the extent of work totaling \$19.7 million, including 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:

CORRIDOR FINISHES	\$2,697,000
VERTICAL CIRCULATION	\$415,000
ENVELOPE	\$4,222,000
LAYOUT CHANGES	\$2,541,000
SITE IMPROVEMENTS	\$980,000
MEP / STRUCTURAL SYSTEMS	\$8,800,000
TOTAL	\$19,655,000

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

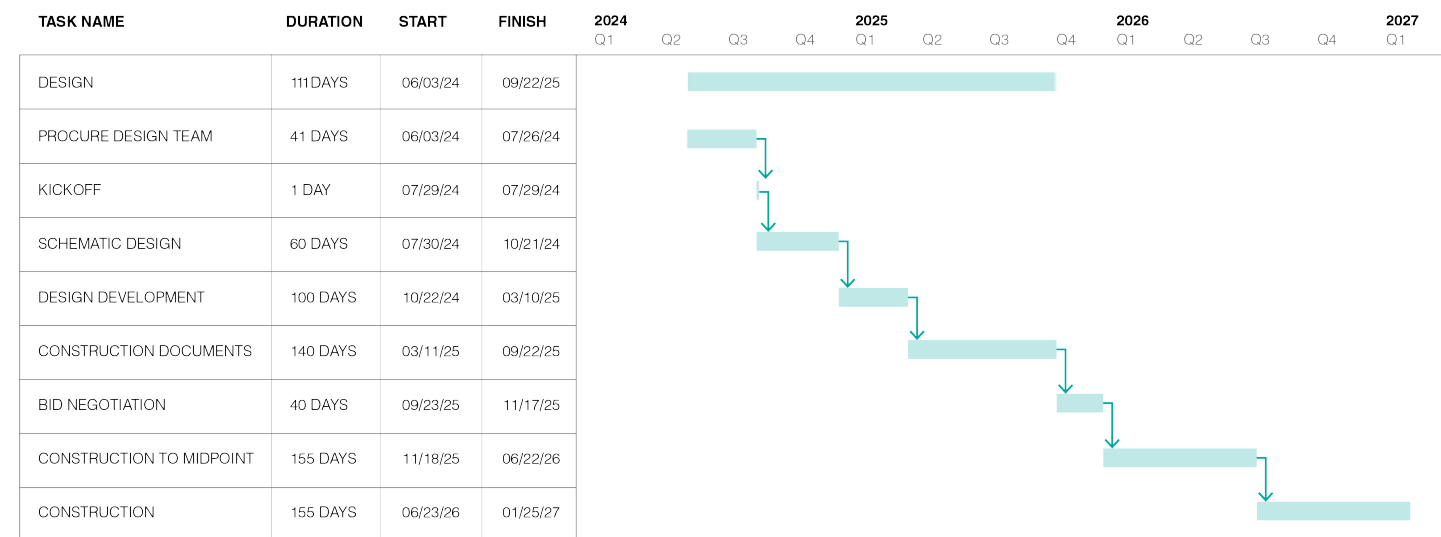
GENERAL REQUIREMENTS, GENERAL CONDITIONS, BONDING, INSURANCE, ETC.	11.5%
FEE	5.0%
DESIGN CONTINGENCY	15.0%
ESCALATION - JUNE 2026	19.75%
BIDDING CONTINGENCY - PER STATE REQUIREMENTS	2.5%
CONSTRUCTION CONTINGENCY - PER STATE REQUIREMENTS	3.0%
PHASING PREMIUM	5.0%
TOTAL	61.75%



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.





APPENDIX

- Consultant Narratives
 - Structural - JVA
 - MEP - BCER
 - Landscape - Wenk
 - Technology - SMW
- Full Cost Estimate
- Program Plan Survey Responses



University of Northern Colorado: Candelaria Hall Renovation

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.

Candelaria Hall:

The cast-in-place concrete structure is performing well. There were no signs of significant foundation movement.

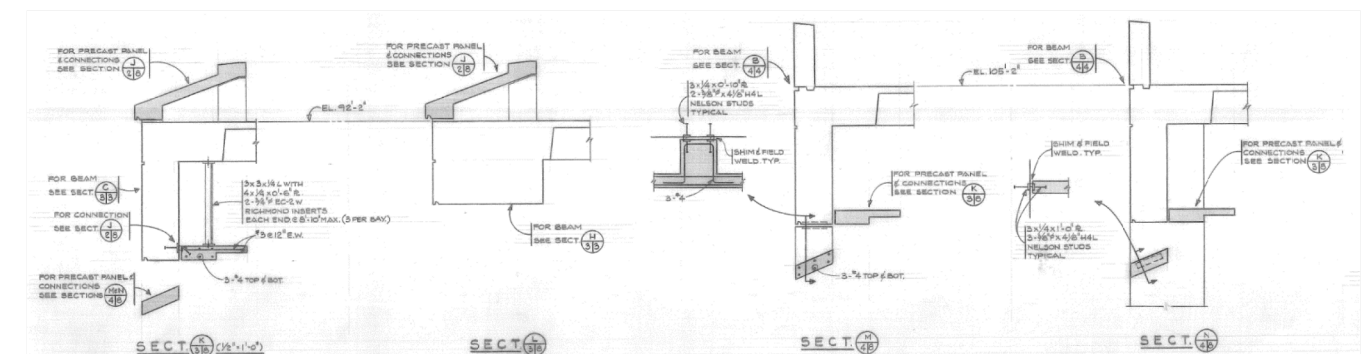
Extending the main floor entry vestibule to the east can be accomplished without new foundation work as the existing exterior terrace is constructed over the basement.

Partial recladding of the building with brick is feasible. The added weight for gravity loads will need to be examined and the additional mass will require assessment of the building's lateral system for seismic forces. Supports (galvanized steel relief angles or reinforced concrete haunches) will be required where the new brick does not bear directly on existing structure.

Precast concrete sunshades exhibit noticeable sag and in some instances deterioration at the end connections. Given their size, the sunshades greatly inhibit the view from inside. It would be relatively easy to remove the sunshades, but repair and/or concealment of the existing connections will be challenging visually.

Precast concrete sills at window locations show minor distress that warrants remediation. Epoxy pressure injection of cracks on the horizontal surface can be performed, although that typically involves routing out of cracks that leaves visible traces of the repair. Repair mortars on the surface won't match the existing exposed aggregate finish. The sills could be resurfaced with an epoxy coating, but every sill would need to be treated for uniform appearance.

The following sections taken from the original drawings indicate a series of embed plates that were cast into the primary concrete structure to support the precast elements. If the sunshades or sills are eliminated, exposed embeds will need to be addressed. Cutting out the embeds



BOULDER FORT COLLINS WINTER PARK GLENWOOD SPRINGS DENVER



UNC CANDELARIA RENOVATION – 100% DRAFT NARRATIVE

PROJECT DESCRIPTION

Candelaria Hall is a three-story, 89,904 square feet building built in 1972 and currently houses offices and classrooms for the departments and programs of the College of Humanities Social Sciences, Anthropology, Economics, Journalism, Criminology, Criminal Justice, Geography, and Political Science.

FINDINGS

Mechanical:

The UNC Candelaria heating water system is supplied from the campus high-temperature heating water system which heats the building's heating water system to a temperature of 180 degrees Fahrenheit with a shell and tube heat exchange. The heating water is circulated throughout the building with a pair of constant-volume 175 GPM, 60' head pumps, P-5 and P-6. These pumps have been replaced within the last 5 years and are within their ASHRAE-defined life expectancy of 20 years.

The cooling system consists of a chilled water loop served by an absorption chiller located in the basement mechanical room which utilizes the campus high temperature heating water system. The absorption chiller is slated to be replaced in a 2023 project with a new water-cooled electric screw chiller. There is a Baltimore Aircoil Company (BAC) cooling tower located on the roof and is slated to be reused for the new chiller. There is an abandoned condenser water buffer tank located below grade and protrudes into the mechanical room. EPO switches were not observed near the mechanical room egress points but will be provided with the new chiller in the 2023 renovation.

The constant-flow chilled water pumps, P-1, P-2, and P-7 are original and well past the ASHRAE median service life of 20 years. P-7 has a replacement motor which was installed in 2005. It is recommended that all pumps and their piping connections be replaced.

There are seven (7) build-up hot deck, cold deck air handling units. AHU-1 through AHU-7 are located in mechanical spaces distributed throughout the building and consist of 3-way hydronic heating water and chilled water coils with circulation pumps. Based on the ductwork size, the air handling units have full airside economizer functionality. The air handling unit components are past the ASHRAE-defined life expectancy. Relief fans located on the roof work in conjunction with the air handling units to control building pressure. The five relief fans, RF-5 through RF-9, located on the roof were replaced in 2000.

The variable volume dual-duct terminal boxes were replaced circa 2011 and appear to be operating properly. The life expectancy of these devices are 20 years and will likely need to be replaced within the next 10 years. According to their facilities manager, the building has not been experiencing temperature control issues. ASHRAE defines the median life expectancy of ductwork as 30 years.

The outside air louvers located on the roof are weathered and appear to be from the original installation.



Outside Air Louvers

The general building exhaust is served by four centrifugal fans EF-1, EF-3, EF-4, and EF-5 which are located on the roof. These fans were replaced in 2005 and are still within their expected life spans of 25 years as defined by ASHRAE. The sidewall propeller fans EF-2 and EF-6 provides exhaust for the mechanical room and switch gear room respectively.



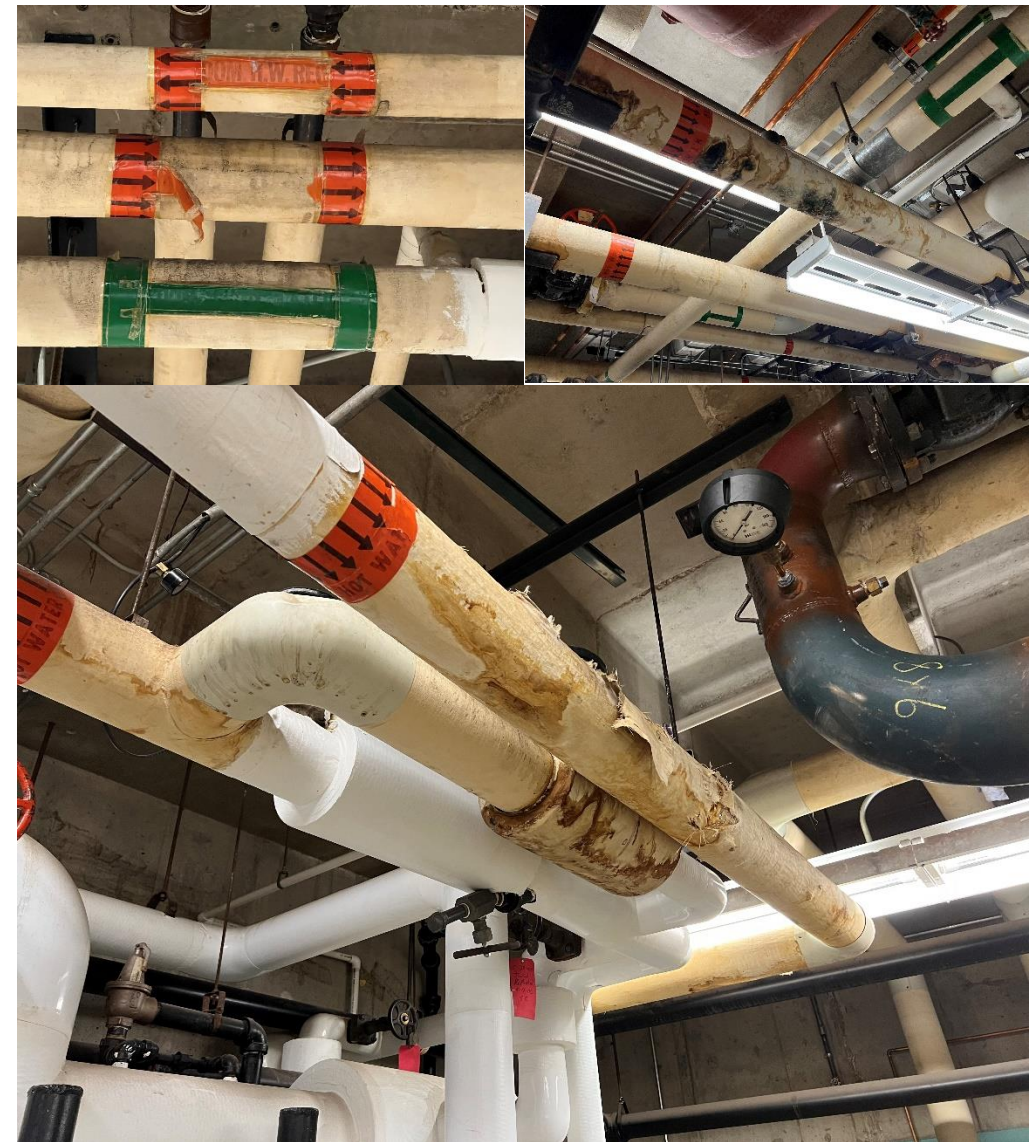
EF-1 Located On Roof



EF-2 Located Within The Mechanical Room

The building temperature control system is a mixture of DDC and Pneumatic controls. Most of the building equipment has been converted over to DDC but several zone dampers, control valves, and the original-vintage vestibule cabinet unit heaters remain on the pneumatic air system.

Much of the pipe insulation and pipe tags within the mechanical room are damaged and in need of replacement. Additionally, there are several lengths of pipe that do not have any insulation.



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 Candelaria electrical system is supplied from the campus utility system. Facilities has indicated that replacing the primary transformer is desired to be in the project scope as it was last replaced in 1991. It is also desired to relocate the utility transformer to the exterior of the building.

The existing main switchboard is GE-AV-Line 800-amp 480Y/277V, 3-phase, 4-wire and is the original gear from when the building was built. It has two switches tapped ahead of the main 800-amp disconnecting means. One switch serves an elevator, and the other switch serves panels designated as emergency panels. The panels designated as emergency panels appear to be serving stairwell, corridor, door holder,

and IT loads. Some of the corridors contained existing exit fixtures equipped with egress or "frog eyes" that appear to be battery backed. At the time the building was built, this method for emergency power (tapping ahead of the main) was acceptable per code, however, this is no longer permitted. It is recommended to provide some sort of emergency backup to these panels in order to provide 90-minutes of backup.

Due to the age of the main 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.

The motor control center (MCC) and many branch panels are the original gear that was installed when the building was built. These original devices have also reached the end of their useful life and are recommended to be replaced. Within the MCC several buckets have been retrofitted with breakers only and local controls have been installed at the equipment. It is also questionable if new UL labeled devices or circuit breakers are available for the MCC or branch circuit panels. Based on the existing one-line diagram there are approximately 20 branch circuit panels throughout the building that are recommended to be replaced.

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 provided via battery back-up as there is no emergency generator system. 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. Corridor lighting controls consist of a bank of switches in the electrical closets by area. The owner indicated that facility personnel are tasked with turning them on in the morning and off in the evening. It is recommended that controls also be replaced to alleviate the manual switching morning and evenings 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' 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 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.

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.

The janitor closets are equipped with chemical dispensers and do not have backflow protection to these units. It is recommended to hard pipe the dispensers and provide an ASSE 1024 dual check valve on the water supply

DEFERRED MAINTENANCE SCOPE

Mechanical:

Pneumatic controls are obsolete, and replacement of all remaining pneumatic controls is recommended, upgrading the existing LONWORKS to BACNET IP (Internet Protocol) DDC control system.

Based on the age of the chilled, heating, and condenser water piping systems, replacement is recommended (hydronic to remain as-is).

Due to the age of the air handling units, it is recommended that the air handling units be replaced with new built-in-place chilled and heating water air handling units with variable supply fans, demand controlled ventilation, and full economizer operation. As an alternative, there is the opportunity to refurbish the existing units by replacing the fans, motors, coils, controls, and duct connections. Further discussion is required.

In the case that the air handling units are replaced, the International Mechanical Code specifies that a 30"x30" level working space be provided in front of the control side of the unit. It is likely that the existing mechanical spaces for AHUs 1 through 6 are not sized large enough for replacement units and that the mechanical rooms will need to be enlarged.

Due to the age of the ductwork, it is recommended that all ductwork be cleaned in lieu of replaced.

Based upon the age and condition of the outside air intake louvers, replacement is recommended.

It is anticipated that the elevator machine room will be relocated. Depending on the new location and elevator equipment sizing, a new cooling system consisting of a transfer fan or DX minisplits will be required to cool the space.

Due to the condition of the piping insulation, it is recommended that the original insulation and pipe labels be replaced.

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.



Plumbing:

The UNC Candelaria domestic water system and sanitary system piping are the original piping of the building and based upon the age of the piping systems replacement is recommended.

It is recommended to replace the older fixtures, flush valves, and water coolers which are still original to the building.

Verification of each individual Janitor Closet chemical 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.

ADDITIONAL RECOMMENDATIONS

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 minisplit fan coil unit.

The elevator equipment and janitors closet on the lower level requires MEP alterations; which include the relocation of equipment out of the sub-grade pit; relocating the Janitors closet in it's entirety to a different location within the facility, and revising the electrical and elevator equipment within the room to provide a code compliant system. Additional items to facilitate the ability to enter into the sub-grade will be provided by others. The electrical panels within J0284 will need to be removed, as only electrical equipment serving the elevator can remain in place.



University of Northern Colorado: Candelaria 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.

Candelaria Hall is a three-story, 89,904 square feet building built in 1972 and currently houses offices and classrooms for the departments and programs of the College of Humanities Social Sciences, Anthropology, Economics, Journalism, Criminology, Criminal Justice, Geography, and Political Science.

CONSULTANT NAME

Wenk Associates

DEFERRED MAINTENANCE SCOPE

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

Candelaria Hall:

- Existing concrete at the outdoor patios on both the east side and west side of the building is old, cracking, and failing and needs to be replaced. The space should be regraded to improve drainage.
- 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.
- Replace the existing and aging juniper plants along the building edge.
- The existing wall lights in the stone retaining wall along the south edge no longer function. These shall be removed and the wall patched with stone to match the existing wall.
- 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.

Candelaria Hall:

On the West side of the building:

- Remove the north concrete stairs and replace with an ADA compliant ramp and handrail. Also replace the stairs with a (2) terraced seating edge.
- Replace portions of the existing concrete with concrete unit pavers (rather than new concrete).
- Add seatwalls and benches to the edges of the planting areas.
- Add moveable seating options (café tables) to the patio.
- Add a raised crusher fines seating area.
- Remove the existing (5) trees in the center courtyard and replant (3) healthier tree species.

On the East side of the building:

- Replace the entry sidewalk to align with the building doors. This will require replacing areas of turf and relocating and upgrading (2) existing light poles.
- Replace portions of the existing concrete with concrete unit pavers (rather than new concrete).
- Combine the patios into one larger patio. This would require removal of existing concrete site walls and stairs, and reconstruction of (2) sets of stairs further to the east.
- Add a planting area in front of the existing raised planters. These would have a small 4" wide x 6" height concrete curb around them to protect from snow plow operations.
- Add moveable seating options (café style tables) to the patio and well as solar powered furnishings for study areas.
- Move the bicycle parking to the south area of the building and add paving.
- Redo the entrance into the building on both the north and south:
 - Create one large sloped concrete area (below 5%) that would replace the stairs, ramps, and seatwalls at the entrance.
 - Frame the entrances with (2) small raised planters.

South side of Building

- The existing turf lawn could be transitioned to a low water use native seed or xeric planting.
- Pedestrian bollards could be added to the tree grove south of the building to light the main pathway.
- Café style seating could be added to the tree grove to provide additional seating for students.



University of Northern Colorado: Candelaria Hall Renovation

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SHEN MILSOM & WILKE – INFORMATION TECHNOLOGY INFRASTRUCTURE

FINDINGS

Shen Milsom & Wilke visited Candelaria 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. UNC IT staff indicated that the Candelaria Hall MTR (MDF) service entry is undersized and does not have sufficient working clearances.
2. We observed one TR (IDF) room in Candelaria Hall. IT equipment is enclosed in a cabinet in a mechanical room on the lower floor. The clearances are very tight and there are moving mechanical parts close to the telecom equipment. In our meeting with UNC IT staff, it was noted that there are additional TR rooms in a mechanical rooms, closets, and a lab classroom. None of the TR rooms are dedicated space or have sufficient working space.
3. In the mechanical room/TR we observed, there was cable tray below the ceiling but the tray is full. Two additional bundles of cables had been attached to the bottom of the tray. This will make adding any additional cabling difficult without increasing infrastructure.
4. We observed a typical teaching space in Candelaria Hall. We observed video surveillance, 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.
5. We observed WiFi Access Points in Candelaria 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 153 WAPs in use in Candelaria Hall.
6. We observed one admin space. Data outlets were not well located for current furniture layouts and users had run patch cables across the floor using cable ramps. UNC IT staff indicated that data outlets are



added on an ad-hoc basis when required by student employees. This has led to non-uniformity in some buildings on campus.

7. 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 Candelaria 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:

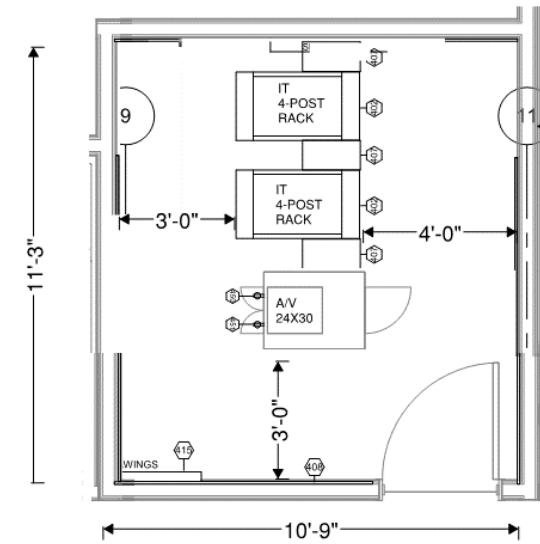
- Termination and patching facilities for horizontal cabling
- Termination and patching facilities for voice, data and video backbone cabling
- Hardware and racking for LAN cabling switches, PBX switches, video cabling hubs, converters, and other device sharing equipment
- Wireless LAN networking equipment
- 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.



The following are recommended guidelines for the TR Rooms

FUNCTION	<ul style="list-style-type: none"> • Houses local distribution cabling terminations and technology equipment.
LOCATION	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Minimum 10' X 10'
ADJACENCIES	<ul style="list-style-type: none"> • Cable distance from the room to the furthest serving point is 295 ft (90 m).
FLOOR	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 36" x 84" door is required. • Door should open out of the room, if possible.



WATER INFILTRATION	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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

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

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VE #	D/E	CANDELARIA LEGEND		VERMEULENS		STATUS		VERMEULENS	
		DESCRIPTION	AREA	\$/SF	VALUE	(P, A, R)	PENDING	ACCEPTED	REJECTED
CANDELARIA									
	D	Deferred Maintenance			\$13,078,000				
	A	Accessibility Improvements			\$746,000				
	E	Extended Scope			\$5,831,000				
					\$19,655,000				
		Full Demo Cost	83576 SF	25	\$2,089,400				
		Full Rebuild Cost - Low	83576 SF	575	\$48,056,200				
		Full Rebuild Cost - Hight	83576 SF	625	\$52,235,000				
Corridor/finishes									
45A	D	Upgrade finishes in main corridors (flooring/walls ceilings, lights)	12,257 SF	57	\$693,000	a	\$0	\$693,000	\$0
46	E	Upgrade finishes in secondary corridors (flooring/walls ceilings, lights)	1,450 SF	61	\$88,000	a	\$0	\$88,000	\$0
28	D	Replace doors in primary corridors	256 NO	4,000	\$1,024,000	a	\$0	\$1,024,000	\$0
28A	D	Replace doors in secondary corridors	121 NO	4,719	\$571,000	a	\$0	\$571,000	\$0
47	E	Private office finish upgrades	3,160 SF	86	\$272,000	a	\$0	\$272,000	\$0
49	E	Upgrade signage	193 NO	254	\$49,000	a	\$0	\$49,000	\$0
Vertical Circulation									
29	D	Elevator upgrades	83,576 SF	5	\$408,000	a	\$0	\$408,000	\$0
44a	A	Stair railing improvements	9 no	778	\$7,000	a	\$0	\$7,000	\$0
Envelope									
27	D	Replace all existing windows	4,600 SF	288	\$1,324,000	a	\$0	\$1,324,000	\$0
26, 40	D	Remove and replace exterior sun shades	83576 SF	3	\$282,000	a	\$0	\$282,000	\$0
42	A	Add vestibules	575 SF	715	\$411,000	a	\$0	\$411,000	\$0
39	E	Push out east storefront wall	1,150 SF	544	\$626,000	a	\$0	\$626,000	\$0
41	E	Add masonry to exterior envelope	17,800 SF	89	\$1,579,000	a	\$0	\$1,579,000	\$0
Layout changes									
43	E	Create new MDF rooms/pathways	450 SF	644	\$290,000	a	\$0	\$290,000	\$0
44	A	Add new ADA restrooms/improve accessibility in existing	1,100 SF	247	\$272,000	a	\$0	\$272,000	\$0
48	E	Classroom improvements	15,600 SF	112	\$1,753,000	a	\$0	\$1,753,000	\$0
45	E	Student/faculty spaces	860 SF	137	\$118,000	a	\$0	\$118,000	\$0
44b	D	New gender neutral restrooms	192 SF	563	\$108,000	a	\$0	\$108,000	\$0

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VE #	D/E	CANDELARIA LEGEND		VERMEULENS		STATUS		VERMEULENS	
		DESCRIPTION	AREA	\$/SF	VALUE	(P, A, R)	PENDING	ACCEPTED	REJECTED
Site improvements									
36	E	East patio improvements	10,900 SF	41	\$445,000	a	\$0	\$445,000	\$0
36a	A	East patio improvements - accessibility improvements	10,900 SF	5	\$56,000	a	\$0	\$56,000	\$0
38	E	South patio improvements	8,400 SF	21	\$178,000	a	\$0	\$178,000	\$0
37	E	West patio improvements	4,403 SF	68	\$301,000	a	\$0	\$301,000	\$0
Electrical Systems									
33	D	Remove/replace primary transformer	83,576 SF	2	\$202,000	a	\$0	\$202,000	\$0
34	D	Remove/replace main switch gear	83,576 SF	8	\$700,000	a	\$0	\$700,000	\$0
35	D	Remove/replace motor control center	83,576 SF	1	\$125,000	a	\$0	\$125,000	\$0
MEP systems									
30	D	Replace and replace outside air dampers	83,576 SF	0	\$34,000	a	\$0	\$34,000	\$0
31	D	Remove and replace heat exchanger	83,576 SF	2	\$141,000	a	\$0	\$141,000	\$0
32	D	Remove and replace (7) AHUs and controls	83,576 SF	89	\$7,466,000	a	\$0	\$7,466,000	\$0
Other									
50	E	Repair crack in roof structure	95 LF	642	\$61,000	a	\$0	\$61,000	\$0
51	E	Repair concrete sills	250 LF	284	\$71,000	a	\$0	\$71,000	\$0
TOTAL					\$19,655,000		\$0	\$19,655,000	\$0
Direct Construction Costs					\$12,151,468	61.82%	\$0	\$12,151,468	\$0
All Items Above include the following:									
GR, GC, Bonding, Insurance, etc					\$1,397,419	11.5%	\$0	\$1,397,419	\$0
Fee					\$607,573	5.0%	\$0	\$607,573	\$0
Design Contingency					\$1,822,720	15.0%	\$0	\$1,822,720	\$0
Escalation - June 2026					\$2,399,915	19.75%	\$0	\$2,399,915	\$0
Bidding Contingency - per state requirements					\$303,787	2.5%	\$0	\$303,787	\$0
Construction Contingency - per state requirements					\$364,544	3.0%	\$0	\$364,544	\$0
Phasing Premium					\$607,573	5.0%	\$0	\$607,573	\$0
Indirects Total					\$7,503,532	38.18%	\$0	\$7,503,532	\$0



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VE #	CANDE	ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
26	CANDE	REMOVE PRE-CAST SOLAR SHADES				
		demo precast solar shades	742	lf	25.00	18,550
		grou patching of existing embed plates	1	ls	5,000.00	5,000
		Markups	23,550	%	0.61	14,424
		TOTAL	83,576	SF	0.45	38,000
27	CANDE	REMOVE/REPLACE EXISTING EXTERIOR WINDOWS				
		remove windows	4,600	sf	18.00	82,800
		new windows	4,600	sf	140.00	644,000
		new window treatments	4,600	sf	10.00	46,000
		remove and relocate hydronic heaters	60	no	800.00	48,000
		Markups	820,800	%	0.61	502,740
		TOTAL	4,600	SF	287.83	1,324,000
28	CANDE	REPLACE DOORS IN PRIMARY CORRIDORS				
		remove doors	156	no	150.00	23,400
		add new doors and frames	156	no	2,750.00	429,000
		patch walls and paint	156	no	25.00	3,900
		add auto openers	20	no	4,200.00	84,000
		access control (exterior and classroom doors)	42	no	2,250.00	94,500
		Markups	634,800	%	0.61	388,815
		TOTAL	256	NO	4,000.00	1,024,000
28A	MCKEE	REPLACE DOORS IN SECONDARY CORRIDORS				
		remove doors	121	no	150.00	18,150
		add new doors and frames	121	no	2,750.00	332,750
		patch walls and paint	121	no	25.00	3,025
		Markups	353,925	%	0.61	216,779
		TOTAL	121	NO	4,719.01	571,000
29	CANDE	ELEVATOR MODIFICATION				
		reconfigure spare room to become machine room for elevator, include new elevator equipment	1	ls	200,000.00	200,000

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VE #	CANDE	ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
		elevator cab finish	1	no	20,000.00	20,000
		room finishing	1	ls	7,500.00	7,500
		relocate mop service basin, cut and cap existing piping	1	no	2,000.00	2,000
		water piping	100	lf	36.00	3,600
		waste and vent piping	100	lf	51.50	5,150
		motor wiring	1	no	15,000.00	15,000
		Markups	253,250	%	0.61	155,116
		TOTAL	83,576	SF	4.88	408,000
30	CANDE	REMOVE/REPLACE OUTSIDE AIR DAMPERS				
		replace outside air dampers	7	no	3,000.00	21,000
		Markups	21,000	%	0.61	12,863
		TOTAL	83,576	SF	0.41	34,000
31	CANDE	REMOVE/REPLACE HEAT EXCHANGER				
		heat exchanger replacement, 200 MBH	1	no	45,000.00	45,000
		replace associated piping	150	lf	125.00	18,750
		remove existing heat exchanger and piping	1	no	7,500.00	7,500
		controls	15,938	ls	1.00	15,938
		Markups	87,188	%	0.61	53,402
		TOTAL	83,576	SF	1.69	141,000
32	CANDE	REMOVE AND REPLACE (7) AHUS AND CONTROLS				
		expand size of mechanical room - 15% increase in room size for AHU's 1-6	300	sf	300.00	90,000
		remove existing AHU's	7	no	15,000.00	105,000
		AHU's 1-7	101,750	cfm	16.00	1,628,000
		premium for building in place	101,750	cfm	4.00	407,000
		replace all piping within mechanical rooms	4,000	lf	125.00	500,000
		replace all ductwork from mechanical room to air boxes, assume 0.5 lbs/sf	42,000	lbs	15.00	630,000
		replace all ductwork insulation from mechanical room to air boxes, assume 0.5 lbs/sf	23,100	sf	5.90	136,290
		replace P1, 2, 7 incl VFD's	3	no	15,000.00	45,000
		replace louvers, scope tbd	700	sf	150.00	105,000
		reseal existing concrete floors	700	sf	3.00	2,100



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VE #	ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
	upgrade existing pneumatic controls to DDC, scope tbd	83,576	sf	1.00	83,576
	controls	862,823	ls	1.00	862,823
	motor wiring	10	no	3,500.00	35,000
	Markups	4,629,789	%	0.61	2,835,745
	TOTAL	83,576	SF	89.33	7,466,000
33	CANDE REMOVE/REPLACE PRIMARY TRANSFORMER				
	new primary transformer, 560 kVA	1	no	45,000.00	45,000
	remove existing primary transformer	1	no	5,000.00	5,000
	refeed existing switchboard - 800A, allow	200	lf	302.00	60,400
	new pad and ductbank connections to building	15,000	ls	1.00	15,000
	Markups	125,400	%	0.61	76,808
	TOTAL	83,576	SF	2.42	202,000
34	CANDE REMOVE/REPLACE MAIN SWITCH GEAR				
	main switchgear	800	A	100.00	80,000
	remove existing main switchgear	1	no	10,000.00	10,000
	assume off hours shutdown is required	800	A	25.00	20,000
	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
	device upgrades to code	83,576	sf	0.50	41,788
	Markups	434,288	%	0.61	266,001
	TOTAL	83,576	SF	8.38	700,000
35	CANDE REMOVE/REPLACE MOTOR CONTROL CENTER				
	replace 800A? MCC	1	no	25,000.00	25,000
	remove existing MCC	1	no	5,000.00	5,000
	assume off hours work	1	no	7,500.00	7,500
	emergency power upgrade	1	no	40,000.00	40,000
	Markups	77,500	%	0.61	47,469
	TOTAL	83,576	SF	1.50	125,000

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VE #	ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
36	CANDE EAST SIDE ADJUSTMENTS				
	site prep	11,900	sf	3.00	35,700
	entry sidewalk to the main entrance	5,000	sf	8.00	40,000
	concrete pavers	1,600	sf	20.00	32,000
	ramp premium (additional fill, forming, etc)	1,000	sf	30.00	30,000
	sod	3,300	sf	1.00	3,300
	planting area	1,000	sf	10.00	10,000
	irrigation to new	4,300	sf	1.50	6,450
	irrigation to existing	600	sf	1.50	900
	table with 4 chairs	6	no	2,000.00	12,000
	table with 6 chairs	3	no	2,800.00	8,400
	bike racks	24	no	500.00	12,000
	bench	1	no	5,000.00	5,000
	improvements misc	25,000	ls	1.00	25,000
	inlets, including piping	3	no	10,000.00	30,000
	site lighting, move and update to campus standard	2	no	12,500.00	25,000
	Markups	275,750	%	0.61	168,897
	TOTAL	10,900	SF	40.83	445,000
36a	CANDE EAST SIDE ADJUSTMENTS - ACCESSIBILITY IMPROVEMENTS				
	handrails	100	lf	350.00	35,000
	Markups	35,000	%	0.61	21,438
	TOTAL	10,900	SF	5.14	56,000
37	CANDE WEST SIDE ADJUSTMENTS				
	site prep	5,479	sf	3.00	16,437
	plantings	1,073	sf	10.00	10,730
	trees	3	no	2,500.00	7,500
	irrigation	1,073	sf	1.50	1,610
	new ramp	70	sf	10.00	700
	terrace area	260	sf	8.00	2,080
	table with 4 chairs	3	no	2,000.00	6,000
	table with 2 chairs	5	no	1,200.00	6,000

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VE #	ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
	concrete unit pavers	3,000	sf	20.00	60,000
	improvements misc	25,000	ls	1.00	25,000
	inlets, including piping	1	no	10,000.00	10,000
	replace inlets, assume same location	3	no	3,585.00	10,755
	site lighting, allow	4,403	sf	3.00	13,209
	area drains	5,479	sf	3.00	16,437
	Markups	186,458	%	0.61	114,205
	TOTAL	4,403	SF	68.36	301,000
38	CANDE BOSQUE AREA ADJUSTMENTS				
	site prep	8,400	sf	3.00	25,200
	turf transition area	8,400	sf	2.00	16,800
	turf transition area irrigation	8,400	sf	1.50	12,600
	table with 3 chairs	8	no	1,600.00	12,800
	improvements misc	25,000	ls	1.00	25,000
	site lighting, bollards	6	no	3,000.00	18,000
	Markups	110,400	%	0.61	67,620
	TOTAL	8,400	SF	21.19	178,000
39	CANDE PUSH OUT EAST STOREFRONT WALL				
	demo existing wall	1,800	sf	18.00	32,400
	new storefront	1,800	sf	150.00	270,000
	add glazed partitions	20	sf	80.00	1,600
	add vinyl tile luxury	1,150	sf	6.00	6,900
	add base	125	lf	4.25	531
	add act ceiling	1,150	sf	6.50	7,475
	add paint	1,250	sf	1.15	1,438
	add misc	1,150	sf	10.00	11,500
	remove and relocate baseboard hydronic heat	6	no	800.00	4,800
	mechanical	1,150	sf	25.00	28,750
	electrical	1,150	sf	20.00	23,000
	Markups	388,394	%	0.61	237,891

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VE #	ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
	TOTAL	1,150	SF	544.35	626,000
40	CANDE FAÇADE TREATMENTS - SUNSHADES				
	new sunshades, ACM 3.5' wide	3,535	sf	40.00	141,400
	attach to existing beams and columns	1,010	lf	10.00	10,100
	Markups	151,500	%	0.61	92,794
	TOTAL	83,576	SF	2.92	244,000
41	CANDE ADD MASONRY TO EXTERIOR ENVELOPE				
	demo existing façade - not required	17,800	sf		0
	new brick at existing façade	17,800	sf	50.00	890,000
	add metal angles, misc	17,800	sf	5.00	89,000
	no backup work	17,800	sf	0.00	0
	Markups	979,000	%	0.61	599,638
	TOTAL	17,800	SF	88.71	1,579,000
42	CANDE ADD NEW VESTIBULE				
	slab on grade, no foundation	575	sf	10.00	5,750
	new vestibule glazing	360	sf	150.00	54,000
	glazed entrances	10	no	5,500.00	55,000
	auto openers	10	no	4,200.00	42,000
	bollards	5	no	2,000.00	10,000
	add grille walk off	575	sf	90.00	51,750
	add base	140	lf	4.25	595
	add gyp ceiling	575	sf	10.35	5,951
	add paint	1,400	sf	1.15	1,610
	cabinet unit heaters, including piping and wiring	2	no	5,600.00	11,200
	lighting and lighting controls	575	sf	20.00	11,500
	controls	2,800	ls	1.00	2,800
	selective demo	575	sf	5.00	2,875
	Markups	255,031	%	0.61	156,207



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VE #	ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
	TOTAL	575	SF	714.78	411,000
43	CANDE NEW/EXPANDED MDF IDF SPACES AND PATHWAYS				
	demo room	450	sf	5.00	2,250
	mdf idf area	450	sf	15.00	6,750
	hvac modifications to suit new configuration controls	450	sf	15.00	6,750
	lighting	450	sf	2.25	1,013
	devices	450	sf	15.00	6,750
	fire alarm, tele/data - full system, av conduit, misc elec - modify to suit new	450	sf	5.00	2,250
	4" conduit MDF to IDF	450	sf	18.00	8,100
	4" conduit MDF to IDF	390	lf	50.00	19,500
	cable tray	1,529	lf	40.00	61,160
	pull new cable	83,576	sf	0.75	62,682
	mep demo	450	sf	3.00	1,350
	premium for PCB lighting demo	450	sf	2.50	1,125
	Markups	179,680	%	0.61	110,054
	TOTAL	450	SF	644.44	290,000
44	CANDE NEW ADA RESTROOMS				
	selective demo	1,100	sf	5.00	5,500
	add tile flooring	1,100	sf	20.00	22,000
	add wall tile	3,225	sf	20.00	64,500
	vanities	1,100	sf	12.00	13,200
	misc fittings - toilet partitions, updated fittings	1,100	sf	28.50	31,350
	replace existing fixture with ADA compliant, assume minor piping relocations	6	no	3,000.00	18,000
	relocate fixtures to accommodate ADA compliant fixtures	6	no	2,000.00	12,000
	remove existing fixtures	6	no	400.00	2,400
	assume no other mep work required	0	ls	1.00	0
	Markups	168,950	%	0.61	103,482
	TOTAL	1,100	SF	247.27	272,000
44a	CANDE STAIR RAILINGS EXTENSIONS				
	stair railings extensions	9	no	500.00	4,500

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VE #	ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
	Markups	4,500	%	0.61	2,756
	TOTAL	9	no	777.78	7,000
44b	CANDE NEW GENDER NEUTRAL RESTROOMS				
	selective demo	192	sf	5.00	960
	add tile flooring	192	sf	20.00	3,840
	add wall tile	422	sf	20.00	8,448
	vanities	12	lf	400.00	4,800
	misc fittings - toilet partitions, updated fittings	8	sf	500.00	4,000
	plumbing - new piping, floor drain, fixtures	8	no	4,200.00	33,600
	sprinklers	192	sf	5.00	960
	hvac	192	sf	20.00	3,840
	lighting	192	sf	18.00	3,456
	devices - hand dryers, automatic flush valves, faucets	192	sf	12.00	2,304
	mep demo	192	sf	3.00	576
	premium for PCB lighting demo	192	sf	2.50	480
	Markups	67,264	%	0.61	41,199
	TOTAL	192	SF	562.50	108,000
45	CANDE CREATION OF STUDENT/FACULTY SPACES				
	demo floors and ceilings	860	sf	1.50	1,290
	add vinyl tile luxury	310	sf	6.00	1,860
	add carpet tile	550	sf	6.00	3,300
	add rubber base	300	sf	4.25	1,275
	add act ceiling - 50%	430	sf	6.50	2,795
	add gyp ceiling - 50%	430	sf	10.35	4,451
	add gyp bulkheads	150	lf	40.00	6,000
	add paint	3,000	sf	1.15	3,450
	add casework	24	lf	800.00	19,200
	plumbing - minor changes	860	sf	6.00	5,160
	hvac - minor work (new diffusers, maintain majority of ducts)	860	sf	2.00	1,720
	lighting	860	sf	18.00	15,480

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VE #	ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
	devices	860	sf	3.00	2,580
	mep demo	860	sf	3.00	2,580
	premium for PCB lighting demo	860	sf	2.50	2,150
	Markups	73,291	%	0.61	44,890
	TOTAL	860	SF	137.21	118,000

46 CANDE SECONDARY CORRIDOR FINISH UPDATES

	demo flooring, ceiling	1,450	sf	1.50	2,175
	add new carpet flooring	1,450	sf	6.00	8,700
	add new rubber base	700	lf	4.25	2,975
	add new act ceiling	1,450	sf	6.50	9,425
	add paint	7,000	sf	1.15	8,050
	hvac - minor work (new diffusers, maintain majority of ducts)	1,450	sf	2.00	2,900
	replace lighting with new LED fixtures in same location, wiring and switches and controls to remain	1,450	sf	10.00	14,500
	demo lighting, may contain PCB ballasts	1,450	sf	4.00	5,800
	Markups	54,525	%	0.61	33,397
	TOTAL	1,450	SF	60.69	88,000

46A CANDE PRIMARY CORRIDOR FINISH UPDATES

	demo flooring, ceiling	12,257	sf	1.50	18,386
	demo lights	12,257	sf	1.00	12,257
	add new carpet flooring	12,257	sf	6.00	73,542
	add new rubber base	3,174	lf	4.25	13,490
	add new act ceiling	12,257	sf	6.50	79,671
	add paint walls	31,740	sf	1.15	36,501
	hvac - minor work (new diffusers, maintain majority of ducts)	12,257	sf	2.00	24,514
	replace lighting with new LED fixtures in same location, wiring and switches and controls to remain	12,257	sf	10.00	122,570
	demo lighting, may contain PCB ballasts	12,257	sf	4.00	49,028
	Markups	429,958	%	0.61	263,349
	TOTAL	12,257	SF	56.54	693,000

47 CANDE PRIVATE OFFICE/CONFERENCE FINISH UPDATES

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VE #	ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
	demo floors and ceilings	3,160	sf	1.50	4,740
	add carpet tile	3,160	sf	6.00	18,960
	add new rubber base	750	lf	4.25	3,188
	add act ceiling - 50%	1,580	sf	6.50	10,270
	add gyp ceiling - 50%	1,580	sf	10.65	16,827
	add gyp bulkheads	400	lf	40.00	16,000
	add paint	7,500	sf	1.15	8,625

	hvac - minor work (new diffusers, maintain majority of ducts)	3,160	sf	2.00	6,320
	lighting	3,160	sf	18.00	56,880
	devices	3,160	sf	3.00	9,480
	mep demo	3,160	sf	3.00	9,480
	premium for PCB lighting demo	3,160	sf	2.50	7,900
	Markups	168,670	%	0.61	103,310
	TOTAL	3,160	SF	86.08	272,000

48 CANDE SINGLE AND DOUBLE CLASSROOM RENOVATION

	demo floors and ceilings	15,600	sf	1.50	23,400
	add carpet tile	15,600	sf	6.00	93,600
	add rubber base	2,425	lf	4.25	10,306
	add act ceiling - 80%	12,480	sf	6.50	81,120
	add gyp ceiling - 20%	3,120	sf	10.35	32,292
	add gyp bulkheads	1,500	lf	40.00	60,000
	add paint	24,250	sf	1.15	27,888
	add acoustical panels - allow 25% of wall surfaces	6,063	sf	30.00	181,875
	add markerboards	880	sf	25.00	22,000
	add projector mounts	22	no	5,000.00	110,000
	hvac - minor work (new diffusers, maintain majority of ducts)	15,600	sf	2.00	31,200
	lighting	15,600	sf	18.00	280,800
	devices	15,600	sf	3.00	46,800
	mep demo	15,600	sf	3.00	46,800
	premium for PCB lighting demo	15,600	sf	2.50	39,000
	Markups	1,087,081	%	0.61	665,837
	TOTAL	15,600	SF	112.37	1,753,000

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VE #	ESTIMATE DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
49	CANDE Add new signage				
	add room signage	181	no	150.00	27,150
	add wayfinding signage	12	no	250.00	3,000
	Markups	30,150	%	0.61	18,467
	TOTAL	193	NO	253.89	49,000
50	REPAIR CRACK IN ROOF STRUCTURE				
	add crack repair (classrooms 234-236)	95	lf	400.00	38,000
	Markups	38,000	%	0.61	23,275
	TOTAL	95	LF	642.11	61,000
51	CANDE REPAIR CONCRETE SILLS				
	epoxy injection at 25% of window sills	250	lf	175.00	43,750
	Markups	43,750	%	0.61	26,797
	TOTAL	250	LF	284.00	71,000

PROGRAM PLAN SURVEY RESPONSES

WHAT IMPROVEMENTS COULD BE MADE TO INCREASE RETENTION AND ENROLLMENT?

- Improved classrooms and social spaces
- The classrooms in our building are in need of updating: lighting that can be controlled from the podium, positioning of the screen in relation to the whiteboards, acoustical boards to cut down on the echoing in the classrooms, updated seating that does not have size limitations, orientation of the rooms, overall aesthetics of the classrooms, walls, flooring, etc. A more welcoming exterior and interior (looks like a bomb shelter)
- Currently there is no space for students to congregate, i.e. a student lounge area, and there is no space for faculty and staff to take breaks.

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

- No, these spaces are non-existent.

ARE THERE ACOUSTICAL CHALLENGES WITHIN CLASSROOMS, OFFICES, LAB SPACES?

- Yes, very much the case. It is impossible to have a private conversation, The sound travels via the dropped ceilings, the wall radiator system, and the uninsulated walls.
- Yes. For offices there is no such thing as having a private conversation. The offices adjacent to each other can hear everything being said. If someone has a more robust voice, their conversations can be heard 2 to 3 offices away. For classrooms, acoustics are terrible. We have received a lot of comments from our veterans that the reverberations in the classrooms cause stress. Most of the classrooms have concrete ceilings and some walls, acoustical boards would help the problem.

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
- Classroom sizes are relatively small: 5 rooms are under 25 seats, 16 are 25-35 seats, 12 are 36-45 seats, and 6 are 46+ seats. There are currently two capital projects submitted for the open computer labs, one that has to be changed to a collaborative classroom and the other to a more student lounge/study area, similar to what is done at UC. There are 3 classrooms with computers for each student. Most faculty prefer classroom desks that can be moved around for small group discussions. The ideal size would be rooms with seats for 35-40.

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.



