



“North Central Michigan College provides exceptional, accessible, and relevant higher education of and for the community.”

NORTH CENTRAL MICHIGAN COLLEGE **2019 MASTER PLAN**

2019 -2023

October 29, 2019

Where is North Central?

From Upper Peninsula:

Take I-75 south to the US 31 exit. Take US-31 to Petoskey. In Petoskey, take the downtown business district exit (left turn at the blinking yellow light). Turn right at the stop sign. At the next stop sign turn left onto Howard Street. Follow Howard Street south. Campus will be at the end of Howard.

From Southeastern Michigan:

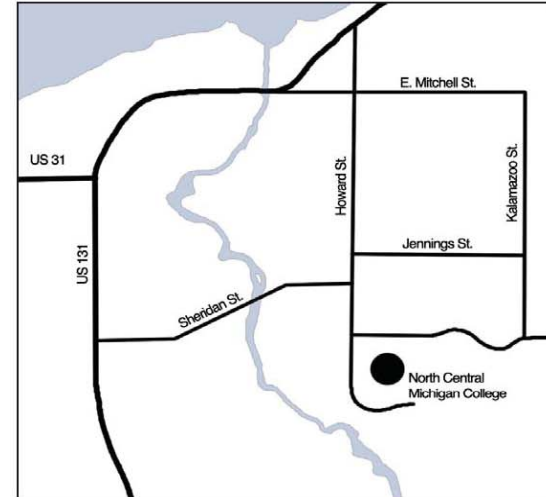
Take I-75 North to the M-32 West exit at Gaylord. Follow M-32 West to US-131 North. Turn right onto US-131 and continue into Petoskey. Turn right at Sheridan Street, the third stoplight as you come into Petoskey. At the end of Sheridan Street, turn right onto Howard Street. Follow Howard Street south. Campus will be at the end of Howard.

From Southwest Michigan:

Take US-31 to Petoskey. At the first stoplight as you come into Petoskey, turn right onto Spring Street (US-131). Turn left at the next stoplight onto Sheridan Street. At the end of Sheridan Street, turn right onto Howard Street. Follow Howard Street south. Campus will be at the end of Howard.

From Southern Michigan:

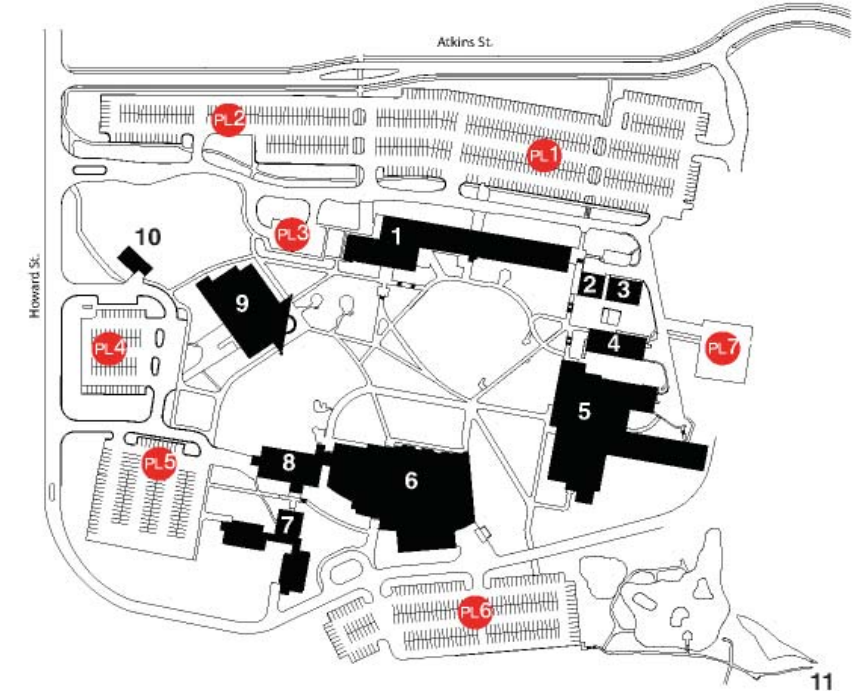
Take US-131 North to Petoskey. At the third stoplight, turn right onto Sheridan Street. At the end of Sheridan Street, turn right onto Howard Street. Follow Howard Street south. Campus will be at the end of Howard.



Campus Map

1. Administration/Classroom Building (AD/CL - Rooms 100-160 and 19-70)
 - University Center (UC - Lower Level)
2. Heating Plant
3. Maintenance Building
4. Technology Building
 - TECH - Rooms 218-230
5. Jack and Dorothy Harris Health Education and Science Center (HESC)
 - CHEM - Rooms 303-312
 - BIO - Rooms 320-340
 - Nursing/AH - Rooms 346-368
 - Greenhouse
6. Student and Community Resource Center (SCRC)
 - Bookstore (Room 530)
 - Learning Support Services (LSS - Room 533)
 - Recreation Facilities
7. Residence Hall
8. Student Center Cafeteria (Iron Horse Café)/Conference Center 3&4
 - Student Services (Rooms 503-512)
 - Corporate and Community Education (CCE - Room 536)
9. Library/Conference Center 1&2
10. Early Childhood Education Building (ECE)
11. Natural Area

PL Parking Lots





A Message from Dr. David Roland Finley, President



North Central Michigan College Stakeholders,

It is with excitement that I present North Central's newly-created Campus Master Plan. Commissioned in March 2019, the plan was developed by Cornerstone Architects with input from many constituencies, including students, faculty, staff, business leaders, governmental officials, and community members. As North Central looks toward the alignment of all our planning efforts, master planning is a key element in aligning our strategic agenda with our programs and facilities. Thus, the goal of this Master Plan is to provide North Central Michigan College with a more comprehensive road map for meeting facilities needs over the next 10 years and beyond.

North Central Michigan College in Petoskey is currently comprised of 10 buildings and several additional properties. The facilities total more than 275,000 SF, with a total replacement value estimated at more than \$69 million. Educational centers are also operated in Cheboygan and Gaylord.

Just as change has created the need for this facilities master plan, future changes will also require a dynamic planning process. While this report makes recommendations to retain and enhance an attractive, serviceable physical environment that is responsive to the changing needs of North Central, it is not rigid or static. To be an effective consensus-building and decision-making tool, this facilities master plan should be seen as a "living" document, meant to be periodically evaluated and revised as new ideas and opportunities emerge. It will be reviewed annually with the authors to identify modifications and/or adjustments that arise.

Following your review of this document, feel free to share your thoughts and ideas with me or other members of the College leadership team. Working together, we can build an even better, more impactful North Central Michigan College in years to come.

Sincerely,

David Roland Finley, Ph.D.
President

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INTRODUCTION



Master Plan Description

OUR GOAL IS TO ESTABLISH A PLAN THAT EMBRACES AND ADVANCES NCMC, but also so much more...

This document will address a five-year Master Plan for North Central Michigan College, and identify needs and directions for the college. The information will serve as a basis for the Michigan Capital Outlay Program and identify specific projects of priority for the College, the Region and the State of Michigan.

The Master Plan will further provide insight and ideas for beyond the typical five-year period. With new and increasing pressures at all levels of education, it is relevant to look beyond the five-year period and provide a flexible road map focusing on educating people of all ages. Emerging industries, innovation, technology, business structures, health-related professions and regional specific needs will demand this.

North Central Michigan College has charged the Cornerstone Team with providing this glimpse into the future, but credit should be given to the many staff, administrators, students, visitors, regional residents, businesses, governmental agencies, politicians and others who have provided their input in this process. Their collective experience, insight and desires for the success of our students is invaluable.

Many see this as an investment in the current and future success of the college, the region and the State.

MASTER PLAN TEAM MEMBERS

Cornerstone Architects/Planners-Traverse City, Michigan
Architecture and Planning

VIRIDIS Design Group-Grand Rapids, Michigan
Site Design and Planning

Gosling Czubak-Traverse City, Michigan
Civil/Site Design

Peter Basso Associates-Troy, Michigan
Mechanical/Electrical/Plumbing Design

Spence Brothers-Traverse City, Michigan
Costing/Construction Feasibility

North Central Michigan College-Petoskey, Michigan



North Central Michigan College Master Plan 2019

NCMC Guiding Principles

VISION

To be a dynamic organization committed to student learning, student success and community enrichment.

MISSION

To provide educational, economic and cultural opportunities for student learning, personal growth and community improvement.

CORE VALUES

Student Learning and Student Success-

North Central creates an environment where people can learn and be successful. The college provides opportunities for people to acquire knowledge and new skills.

Integrity-

North Central operates in ways that are honest, fair, respectful and responsible.

Community and Educational Access-

North Central has a positive impact on students, their families and our communities by providing an affordable, open-door pathway to education and opportunity. North Central builds relationships among diverse people and organizations.

Excellence-

North Central strives for the highest quality in its curricular and co-curricular offerings. The college utilizes ongoing assessment and evaluation methods to measure its progress and reach for continuous improvement.

Stewardship-

North Central effectively manages its facilities and systems while maintaining a balanced budget.

Community Engagement and Service-

North Central demonstrates a commitment to helping others on and off the campus and provides leadership in community development.

STRATEGIC PRIORITIES

Based upon the College's, Vision, Mission and Core Values, the following strategic goals and priorities have been developed.

Strategic Priority #1-

Learning Effectiveness and Student Success

Strategic Goal One: Academic Quality- Ensure quality instruction, academic support and student success.

Strategic Goal Two: Student Centered Services-

Enhance student-centered services and processes.

Strategic Priority #2-

Organizational Development and Stewardship

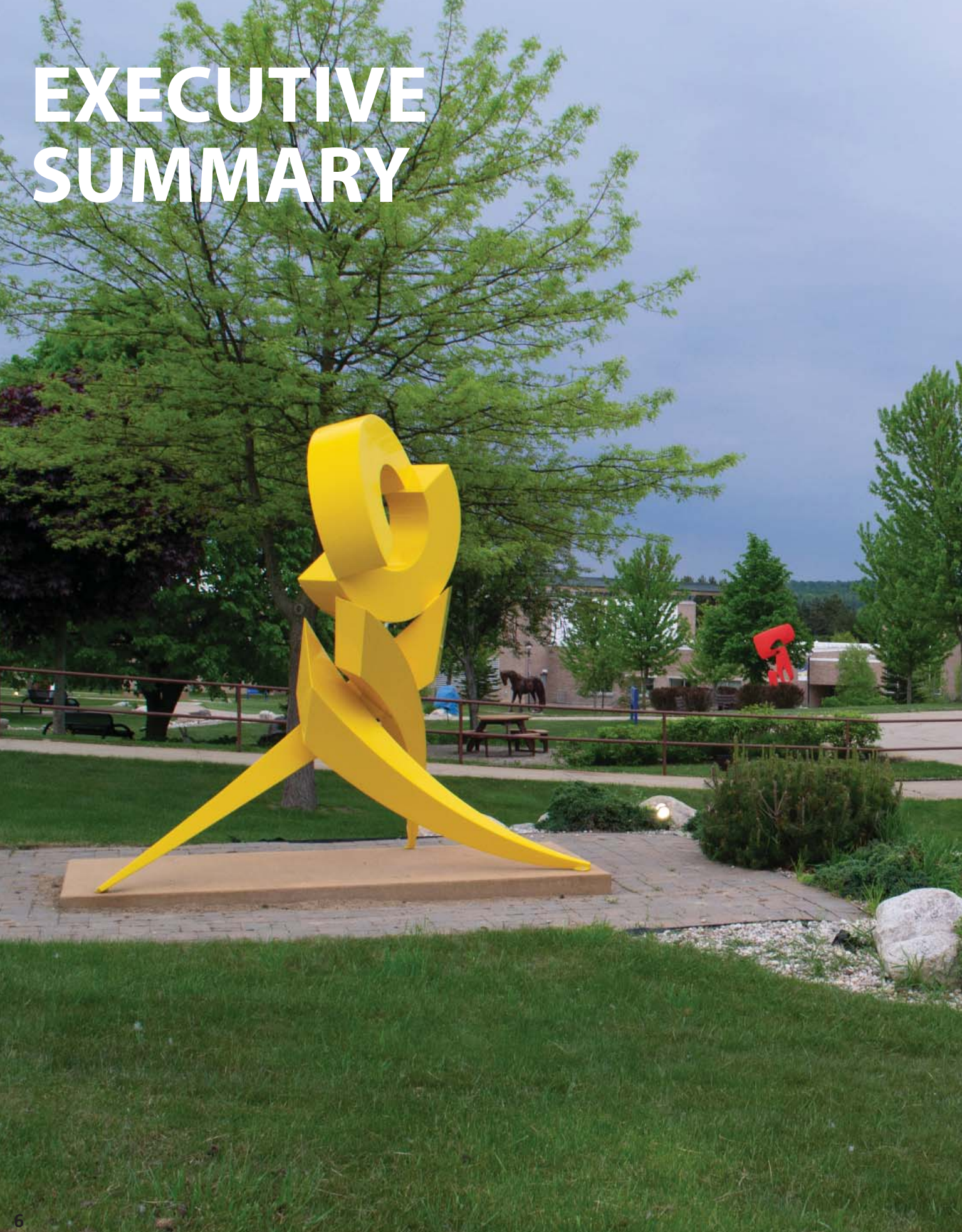
Strategic Goal Three: Ensures financial, physical, human, technological and educational resources are sustainably managed.

Strategic Priority #3-

Community Engagement and Service

Strategic Goal Four: Community Partnerships- Optimize community partnerships and outreach.

EXECUTIVE SUMMARY



Executive Summary

BACKGROUND / PURPOSE OF MASTER PLAN

State agencies, universities, and community colleges are required by 1999 PA 8 to annually submit a rolling, five-year capital outlay master plan to the Department of Technology, Management and Budget and the Joint Capital Outlay Subcommittee for review. Each plan must include prioritized, state-funded project requests and special maintenance needs, and an inventory of current facilities with a professional assessment of their respective conditions.

In accordance with identifying current assessment and future needs and goals of the College, a master plan is required to outline an implementable plan for North Central Michigan College. It is a necessary document. This document will provide information for the State of Michigan, the College and the region, and will include current conditions, current and projected enrollment, current and new educational programs, facility conditions, future needs and community involvement.

Requests to the State of Michigan for financial assistance will be supported by this Master Plan. This assistance is to be focused on facilities upgrades that directly benefit the student population and provide a supportive environment for advancing their education.

PLANNING GOALS & AREAS OF FOCUS

Five Year Plan:

Existing Facilities Assessment

Prioritization of Needs

Justification of the needs as directly related to benefitting the students of North Central Michigan College (and subsequently benefitting the region, the State and beyond).

Ten Year Plan:

Establishing insight into emerging and growing careers, trends and demographic needs, and other factors impacting the need for a relevant and applicable education.

Prioritization of Needs:

- Renovation of Facilities
- New Facilities
- Site-related upgrades
- Sustainable upgrades
- Universal Accessibility
- Diversity

Justification of the needs will be directly related to benefitting the students of North Central Michigan College, justification of improving operational costs through facility improvements, and justification of the benefit to the region, the State, and beyond.

Fifteen Year+ Plan:

- State support for growth
- Community interaction, support and continued collaboration
- Adjustments to new trends in education
- Designed flexibility for facilities and campuses to assure relevancy in the educational world

STRATEGIC CONTEXT

“North Central Michigan College provides exceptional, accessible, and relevant higher education of and for the community.”

The context and suggested directives of the Master Plan are intended to align with the College’s Strategic Plan.

Both documents and initiatives seek to support: **E.A.R.**

- **Exceptional** Educational Opportunities
- **Accessible** Education Opportunities
- **Relevant** Higher Educational Opportunities

The basis of this context is emphasizing that North Central Michigan College is LISTENING to the stakeholders.

The students, the high schools, the regional businesses, the community residents and visitors, the government officials, the staff, and others.

The Master Plan will aid in addressing and supporting several strategic issues affecting higher education in the State of Michigan, and particularly North Central:

1. How do we respond to demographic projections of decreasing enrollment?
2. How do we develop “cutting-edge” academic and applied programs?
3. How do we maintain an attractive, sustainable environment for our Campus and our Community?
4. Is the organizational structure best suited to fit the needs of delivering education?
5. How do we create a greater sense of pride among NCMC’s students, employees, visitors and alumni?
6. Does North Central Michigan College have the resources to stay as we are, or do we need to prepare and adapt for the future?

PLANNING PROCESS

The Master Planning process performed by our team was quite in-depth. This was in an effort to fully identify the highest priorities and areas of need, but also to fully understand the perspectives of the many people who attend, work, visit and play at North Central Michigan College.

Several key procedures were employed by our team:

Campus visits, surveys, and observations of existing facilities and conditions.

Interviews of several user groups:

- Administration
- Staff
- Housing
- Students
- Facilities
- Area Stakeholders
 - Businesses
 - Residents
 - Visitors
- Environmental Organizations
- Government Officials

Documentation review:

- Historical Documents
- High School Enrollments
- Existing Facilities Documents
- Infrastructure Review

It should be noted that the Planning Team has committed to three visits (one per each of the next three years) to the campus for review and suggested adjustments as needed to the planning and implementation process.

RECOMMENDATIONS

Identify and define solutions for observed areas of needed maintenance.

- Recommended repairs and schedules/estimated costs for repairs.

Identify and suggest solutions for necessary infrastructure upgrades:

- Power
- Lighting
- Heating, Cooling, Ventilation needs
- Energy Sustainability

- Recommendations to reduce operating costs, increase comfort, and improve both the built and natural environment. Schedules, costs and cost benefits of improvements.

Documenting current educational programs and enrollment to those programs.

- Recommendations for utilization of or alterations to spaces to accommodate sizes of classes. Estimated costs of any alterations.

Identify growing educational programs that require additional space.

- Recommendations of renovations of existing space to accommodate or new additions. Identify schedules/estimated costs for repairs.

Identifying emerging educational programs that require space.

- Recommendations of renovations to existing space or new additions. Identify schedules/estimated costs for repairs.

Identifying any real or perceived limitations of the facilities and suggested corrective measures to support the educational goals of the students.

- Recommendations of renovations of existing space to accommodate or new additions. Identify schedules/estimated costs for repairs.

Identifying barriers that limit accessibility to facilities due to topography and older limiting constructed environments.

- Recommendations of renovations of existing space to accommodate or new additions. Identify schedules/estimated costs for repairs.

TIME SCHEDULES

Five-Year Schedule: Priorities

Ten-Year Schedule: Priorities

Fifteen-Year Schedule: Priorities

HISTORY

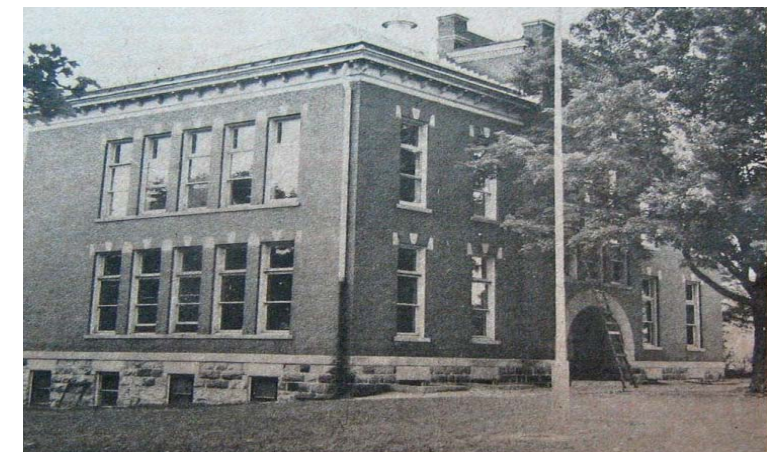


North Central Michigan College

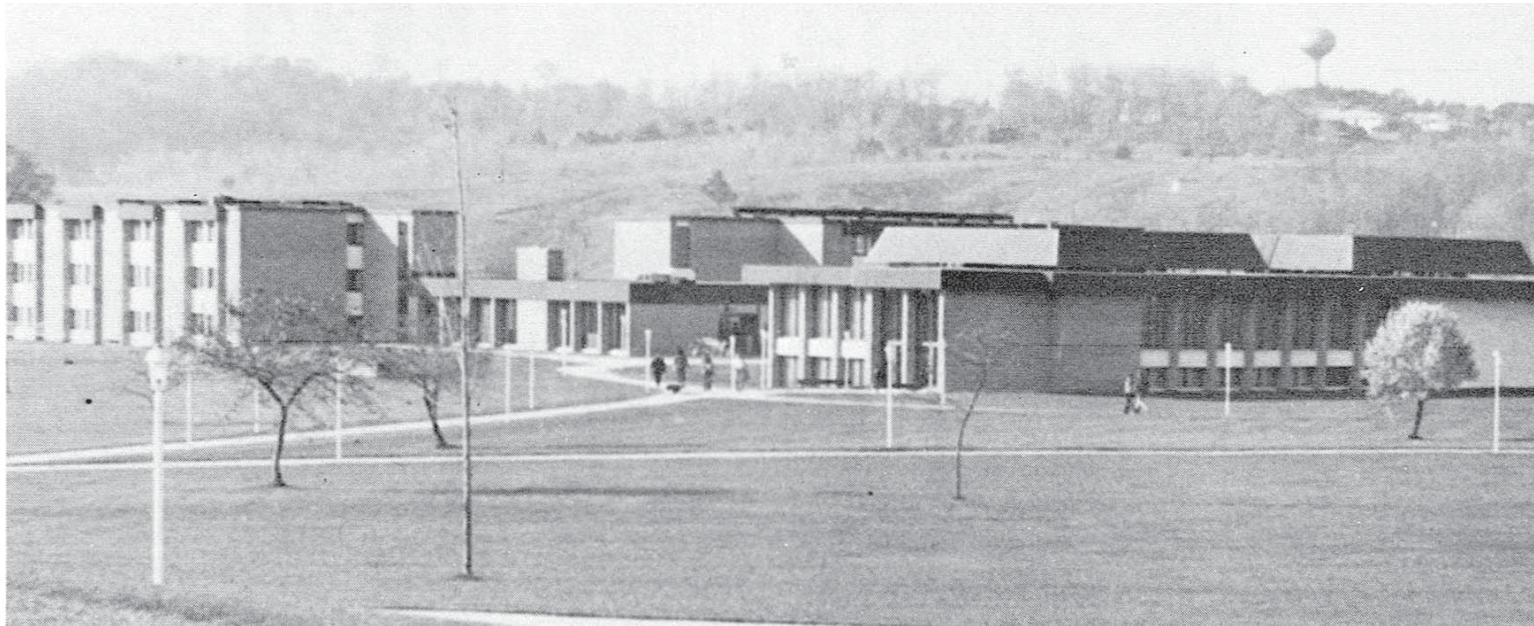
HISTORY

North Central Michigan College was established in 1958 in Petoskey, Michigan, and was the twelfth public community college in the State. The first classes were held in the former Petoskey School’s Administration Building.

The current campus, located on Howard Street, was constructed in 1962 on an original site of approximately 10 acres. The first constructed facilities were completed in 1963 and included the initial Facilities Plant Building, an early library building and a chemistry building. An additional 120 acres of land was purchased to support the construction of the Administration/Classroom Building (1966), Residence Halls/Commons (1967), initial work on the Health and Science Building (1965), and the Iron Horse Cafe Building (1967). The original Student Center was built in 1967 with a major update and addition completed in 2001 at which point it became Student Services. The current Health Education and Science Center was created in 2012 with an addition to the existing science and chemistry buildings, which were also renovated. The current Library and Conference Center was completed in 1984 and renovated within the last five years. Current projects include an addition and renovation of the Administrative Building to accommodate Student Services, added classrooms and student study areas. The campus includes several acres of protected wetlands formerly known as the “Russian Swamp.” This area is used for sustainable design studies and includes nature trails.



North Central Michigan College Master Plan 2019



USER (Stakeholder) GROUPS

Stakeholder Group Feedback

WORKING WITH USERS TO SHAPE THE FUTURE OF NORTH CENTRAL

The Team met with representation from thirteen different stakeholder groups inclusive of:

- Administration
- Staff
- Instructors
- Food Services
- Facilities
- Students
- Housing
- Recreational
- Area Business Leaders
- Government Officials (local and regional)
- University Center Representatives
- Area Residents
- Area Visitors

The intent was to fully engage as many people familiar with the campus, the operation, the facilities and other aspects of North Central Michigan College as possible. The input received was very beneficial, honest, and stated in the best interest of the College and the success of the student population.

Key noted items are as follows.



KEY ITEMS

CLASSROOMS & LEARNING SPACES:

1. Standardized and easy-to-use technology upgrades could benefit learning environments.
2. Classroom updates could help create positive learning environments. Positive feedback on the new addition to the Health Education and Science Center. (Note-the addition and renovations proposed for the Administration Building may address some of the areas of concern).
3. Additional study enclaves and group study areas would encourage students to continue learning on Campus. Create comfortable study areas conducive to current study methods in Library. The new Health & Science addition has included a comfortable, flexible study space.
4. An innovation/creative/maker space was desirable to students. This requires flexible spaces that can accommodate growth and a number of differing learning sub-environments.

HOUSING & FOOD SERVICE:

1. More attractive and modern housing is needed for students who select on campus housing. Suggestions for improvement include increasing natural light and ventilation, providing softer finishes, renovating bathrooms, and adding power outlets.
2. Student commons areas on each floor are suggested to include some limited kitchen facilities and seating/tables.
3. Student study areas are desired as a place to get away from the bedroom, and as a social area.
4. More housing options are desired, including apartment style.
5. Desire for more varied, healthy and professional quality food options.
6. Late night/off-hour options for food are needed. Local restaurants are only accessible by car, which many do not have. Many local options are also cost prohibitive for students.
7. Coffee shop options, with ready-to-eat/heat food are desired.

RECREATION:

1. Review campus gym facility fees to encourage more student use and be more competitive to other local options.
2. Consider how to accommodate use of athletic facilities by varied patrons including students and older community visitors.
3. Club sports offerings are desired: Tennis, Soccer, Skiing, Pickleball, Hockey, Swimming.
4. More options for outdoor activities are desired: Sand Volleyball, Basketball, Soccer, Frisbee.
5. Improve access to the former High School Football Field for additional recreational opportunities.
6. More scheduled events and participation are desired.
7. Transportation and incentives to community recreational amenities are desired, such as Ski Resorts, Sailing Classes, Climbing Wall.
8. For students who live on campus and do not have personal automobiles, transportation to off-campus locations is difficult.

CURRICULUM:

1. Successful programs at North Central Michigan College include Nursing, EMT, and Allied Health.
2. Strengthen Early Childhood Education program. Increase collaboration with local schools.
3. Attendance has been lower for multiple reasons, including the thriving economy and competition with online universities.
4. Faculty, adjuncts, and university representatives identified the following programs and spaces that could be enhanced: improved science curriculum, maker space, business incubator, Corporate and Community Education Program, half credit 2-day classes, spaces for varying departments to come together.
5. Dual enrollment program with high school students is a success.
6. Desire for increased services in tutoring and student success advising.
7. Winter weather can impact attendance of students and professors.
8. A stronger link to 4-year colleges and universities is desired (University Centers).

COMMUNITY:

Due to the location of the campus remote from the downtown core, part of the community (primarily the summer residents) are not aware of North Central’s presence. Those who are aware of North Central find it to be a positive asset to the community. The school has sustained the community’s support, as millage requests pass regularly. The Economic Impact Survey developed by the W.E. Upjohn Institute assisted in illustrating the benefit of NCMC to Petoskey. The community is deeply engaged with the College for the campus recreational opportunities including fitness areas, pickleball and indoor running/walking tracks for the winter months.

The Sculpture Garden on campus is underutilized by the community and the college would like to increase utilization through providing more event-based space. The goal would be to engage the community by making visiting more attractive and by providing more opportunities for interaction with campus: Art Festivals, Food Festivals, Winter

Carnivals, Community vs. Students in pickleball tournaments.

The College would like to further strengthen community and area business ties to the College. This could include supporting and collaborating to hold seminars, lunch and learns, internships at area businesses (learn and earn) inclusive of the hospitality and resort industries, health care facilities, environmental agencies, the skilled trades/construction, agriculture, and others.

The community acknowledges the benefits of having several major institutions that bridge seasonal divides inclusive of the Hospital and the College.

With an aging population, health care and adult learners are growing population segments, but the quality of life and environmental offerings of the area should also target younger student demographics and “boomerangs” (those who leave the area to larger cities but come back to raise families).



North Central Michigan College Master Plan 2019



EXISTING FACILITY ANALYSIS



Description of Existing Facilities

EXISTING FACILITIES SERVE AS A BASE FOR THE FUTURE

The existing facility analysis assists in identifying both the successes and failures of the built environment. In order to elevate North Central in its best capacity, a deep understanding of where the school stands today has to be achieved. Once all site and building information is collected, it is considered and cross-checked against user group feedback and North Central's mission statement. The information distilled from these exercises establishes the base and guiding principles for the master plan.

This analysis distills information about the site and buildings on North Central's Main Campus and Satellite Campuses. Site information encompasses campus parking, natural areas, sports fields, wayfinding, infrastructure, and topography. All buildings on campus are considered and analyzed through both a practical and aesthetic lens. Building usage, condition, location, access and performance are all considered for each structure.

Through this analysis, critical information about the built environment is gathered which, in turn, informs what suggestions can be made to best achieve the goals of North Central Michigan College.

SITE: CAMPUS PARKING

On-site parking is dispersed into seven numbered parking areas that surround the campus buildings. The largest parking lot is located on the northern edge of the site and runs east to west along Atkins Road. This expansive parking lot is sub-divided into two lots. The eastern section is labeled Parking Lot #1 and the western section is labeled Lot #2. Both parking lots can be accessed through the Campus Main Entrance off Howard Street. In addition, Parking Lot #1 can be accessed from the existing section of the ring road that branches off of Atkins.

Parking Lot #1 is used by administration, faculty and students but is reportedly never full. The eastern section of Parking Lot #1 is used as parking for ball games and tournaments at Bates Park during the spring and summer. The western section of Lot #2 is rarely utilized for parking; instead, its primary use is for Commercial Driver’s License training.

Parking Lot #3 is small and is located just east of the Administration/Classroom Building. The parking spots are double loaded along a driving loop that stems from the main campus road. The parking lot features drop-off/ pick-up and accessible parking for both the Admin/ Classroom building and Library.

Parking Lot #4 is located off Howard Street, west of the Library/Conference Building. This parking lot is primarily used for access to the Library and Conference Center. This results in students and guests approaching the building from its service side. Just to the south of Parking lot 4 is Parking Lot #5. The Primary users are the students who live at the Residence Hall. The parking lot features a single access point from Howard.

Parking Lot #6 is a large lot that spans east to west along the south side of campus. The western section is used by the patrons of the SCRC and the eastern section is used by both nursing students (HESC) and the natural area users. The Trailhead for the natural area is located in the Southeast corner of this parking lot.

Parking Lot #7 is located on the east side of campus and is adjacent to both the Technology Building and Health Education and Science Center. This parking lot is private and only used by faculty and staff.

SITE: NATURAL AREAS

North Central Michigan College dedicates 195 acres of its land to Natural Areas. The expansive natural area is located east and south-east of the Main Campus. The Bear River serves as the border to the south, farmland to the east, and woodland to the west. By and large, the land remains wild. The area offers three different looped

trails that extend for miles and are integrated into the North Country Trail. The trailhead is located near the Student and Community Resource Center and is accessed from the south-east corner of Parking Lot #6. Features of the Natural Area include a pond, the Bear River, and a grassy meadow. North Central has dedicated this land to help students learn about the local ecosystem as well as provide space for wildlife and the community. This area is frequently used for bird watching, snowshoeing and hiking.

In addition to the large natural area, a storm water wetland is reserved to assist in filtering campus runoff before it enters the Bear River. The stormwater from the site is funneled into a series of reservoirs at the southwest corner of the Student and Community Resource Center. The sediment forebay cleans the water before discharging into the main wetland pond. The water is filtered once again by a natural wetland before it enters the Bear River.

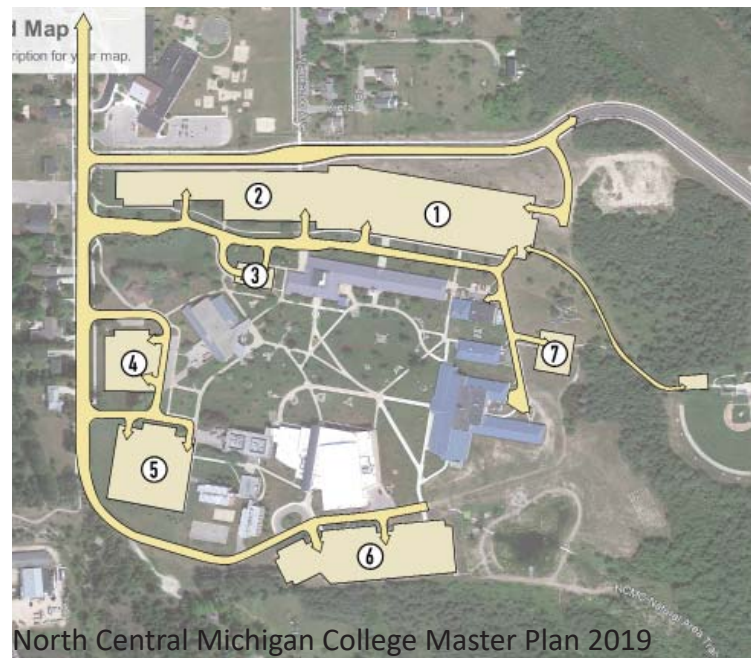
SITE: SPORTS FIELDS

North Central owns Bates Park, a sports field that is set into a wooded area east of the Main Campus. The college leases the park to the City of Petoskey. The park includes two baseball fields and a softball field. The fields are used for Little League baseball and youth and adult league softball games, tournaments and practice.

Occasionally, the fields are used for physical education classes at North Central. The park amenities include a concession stand, score booth, restrooms, drinking fountain, storage garage, and a fenced-in batting cage. Bates Park has limited vehicular access and has a total of eight parking spots, three of which are accessible. Bates Park can be accessed from the East side of Lot #1 or from Atkins Road. The main parking for the Park occurs on the East side of Parking Lot #1. The path from Parking Lot #1 is paved and is shared by vehicles accessing the parking spots near the field. Access from Atkins Road is paved and limited to pedestrians only.

SITE: WAYFINDING

The wayfinding system for NCMC consists of a combination of maps and acronyms. The buildings are named for their function and are labeled by their acronym. There is a large map at the entry of the college with a space to pull off to the side and gather information. The buildings and parking lots are labeled with signage. Inside the buildings, labeled floorplans are provided near common entries and signage is used to demarcate rooms.



SITE: INFRASTRUCTURE

Stormwater: North Central has implemented a Stormwater Wetland that is west of Lot #6. The site stormwater is directed through a series of filtering reservoirs before landing in the Bear River. Not only does this protect our freshwater resources from contaminants, but it also helps to prevent flooding by slowing the flow of water before arriving at the Bear River.

Sanitary: The Residence Hall has installed a small-scale waste-water treatment unit from Sludgehammer. The system pre-cleans sewage on-site which assists in reducing the load on the municipal water treatment facility.

Please refer to Appendix A for mechanical and electrical Facilities Condition Assessments for additional detail on existing and proposed improvements.

SITE: TOPOGRAPHY

North Central’s Main Campus is located on the back slope of a large hill that slopes from NE to SW. The site experiences a 47’ slope from Atkins Road to the Natural Area to the south. The elevation is 765’ at the north side of site where campus meets Atkins Road. At the south end of the site in the Natural Area, the elevation gets as low as 718’. South-west of the main campus, a ridge drops over 60 feet to the Bear River.

Within the campus is a relatively consistent slope from the Library and Admin/Classroom Buildings down to the Student and Community Resource Center. This results in a great view looking from the space in between the Library and the Admin/Classroom Building down over Harris Gardens.

The site topography poses accessibility issues throughout the campus. The many elevation changes from one building to the next are often only accommodated by stairs. This makes navigating campus difficult for people with limited mobility. Nearby parking lots with accessible parking are often the only way to access buildings without navigating stairs. While posing many issues for circulation, this also renders the Harris Gardens inaccessible for a segment of the population.





Administration / Classroom Building ADCL



BUILDING SUMMARY

The Administration/Classroom Building was built in 1966. It is 60,000 square feet and contains classrooms, laboratories and office spaces. The building is located on the north side of campus and is east of the Library and west of the Heating Plant.

According to R.A. Schettler's November 2017 report, the condition of the building is listed as "good" and has a replacement value of \$13,977,800 (\$233/SF). Adjacent parking is available just north of the building at Parking Lot 1.

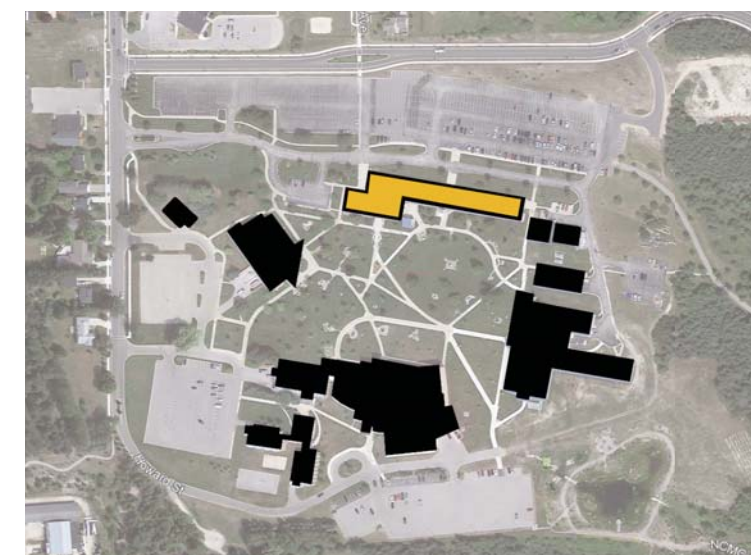
The Administration/Classroom Building is currently undergoing a renovation that is planned to include a state-of-the-art computer lab, four new classrooms, and address maintenance throughout. The goal is to create a "one-stop-shop" for students by providing all student services in one location.

DESCRIPTION

Use: Classrooms & Offices
Constructed: 1966
Building Area: 60,000 s.f.

BUILDING USAGE

Classrooms:	14,685 sf
Laboratories:	5,917 sf
Office Areas:	10,896 sf
Special Use Facilities:	199 sf
General Use Facilities:	920 sf
Support Services Facilities:	327 sf
Unclassified Facilities:	357 sf
Total Net Area:	33,301 sf
Gross Area:	60,000 sf
Net to Gross Ratio:	1.80



Heating Plant



BUILDING SUMMARY

The Heating Plant was built in 1962. The building is a total of 2,458 square feet and consists of a small office space and service support space. The building is on the North side of campus and is located east of the Administration/Classroom Building and west of the Maintenance Building.

The 2017 R.A. Schettler report lists the condition of the building as “good” and has a replacement value of \$1,459,000 (\$594/SF). Nearby parking can be found to the north of the building in Parking Lot #1.

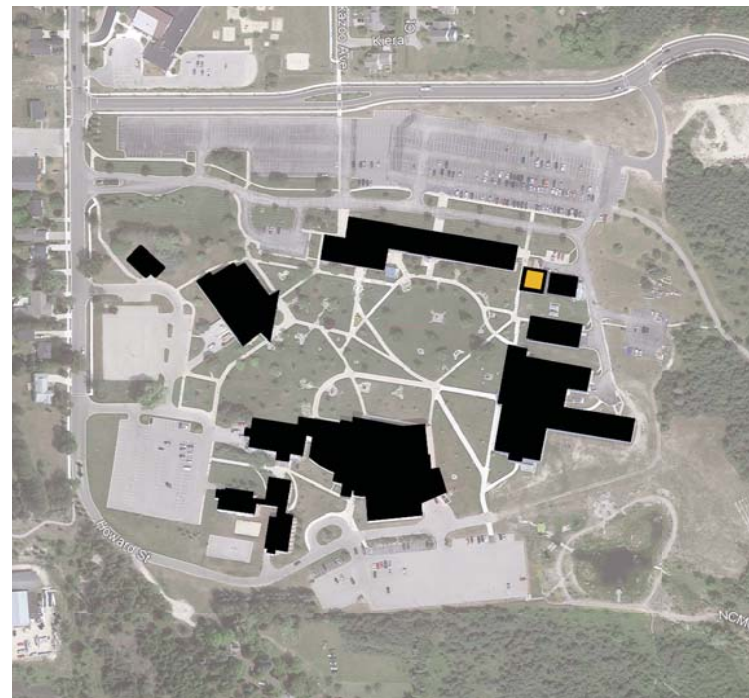
The heating plant is connected to tunnels that distribute mechanical services to multiple buildings. Monitoring of Heating Plant sustainability and efficiency is recommended. Many of the systems within the building are outdated and need updating.

DESCRIPTION

Primary Use: Mechanical
Constructed: 1962
Building Area: 2,458 sf

BUILDING USAGE

Office Areas: 340 sf
Support Services: 560 sf
Total Net Area: 900 sf
Gross Area: 2,458 sf
Net to Gross Ratio: 2.73



Maintenance Building



BUILDING SUMMARY

The Maintenance Building was constructed in 1973. The building is a total of 3,500 square feet and contains three garage stalls that are used for maintenance vehicles and tasks. In addition to the garage, the building contains two restrooms and a small storage space. The building is on the north side of campus and is east of the Heating Plant.

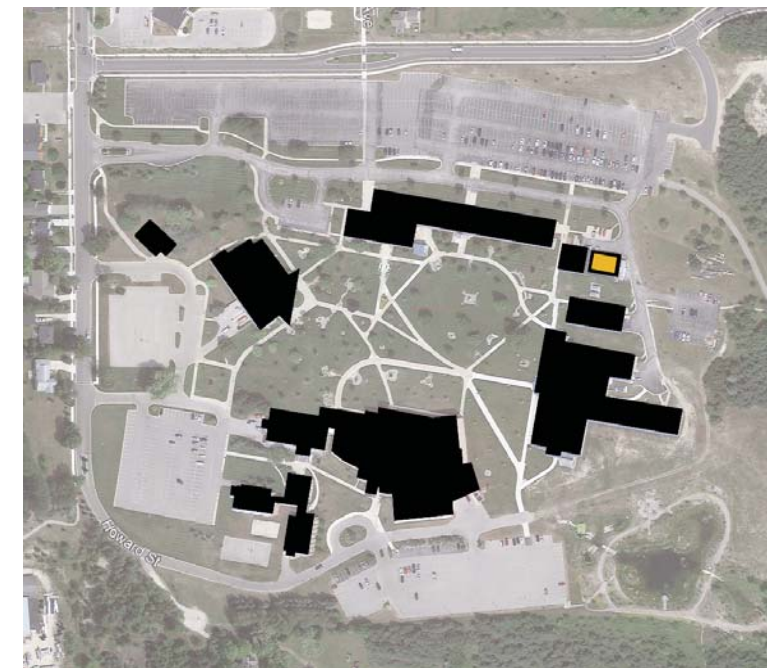
The 2017 R.A. Schettler report lists the building as “good” and has a replacement value of \$575,800 (\$165/SF).

DESCRIPTION

Primary Use: Maintenance
Constructed: 1973
Building Area: 3,500 sf

BUILDING USAGE

Office Areas: 288 sf
General Use Facilities: 331 sf
Support Services Facilities: 2,699 sf
Total Net Area: 3,318 sf
Gross Area: 3,500 sf
Net to Gross Ratio: 1.05





Technology Building



BUILDING SUMMARY

The Technology Building was built in 1962 and renovated in 2002. The building is a total of 6,022 square feet and contains classrooms, laboratories, and support spaces. The building is on the east side of campus and is located south of the Maintenance Building and north of the Health Education and Science Center.

According to R.A. Schettler's November 2017 report, the condition of the building is listed as "good" and has a replacement value of \$1,519,700 (\$252/SF). Parking can be found to the east in Lot #7 or to the north in Lot #1.

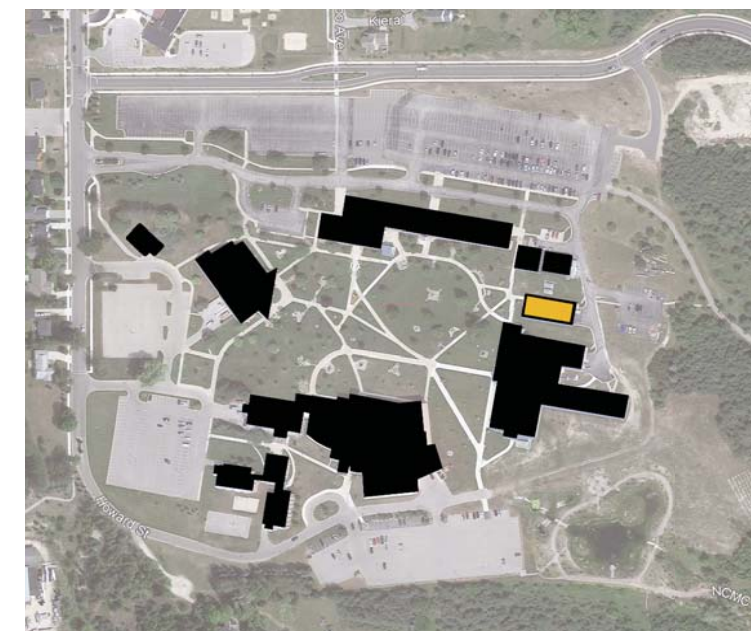
The Technology Building is in service to drafting technologies and the manufacturing programs. The spaces are divided into computer labs and classrooms. The building is outdated and is in need of renovation. The ceilings are low, bathrooms are small and cold, classrooms are small, and there is very little space for collaboration. The programs here have outgrown the building and now have a mobile classroom in addition to the building. When the mobile classroom is on campus, it is parked near the Maintenance Building and temporarily connected to utilities.

DESCRIPTION

Primary Use: Classrooms
Constructed: 1962, 2002
Building Area: 6,022 sf

BUILDING USAGE

Classrooms:	2,148 sf
Laboratories:	1,120 sf
Office Areas:	380 sf
Unclassified Facilities:	668 sf
Total Net Area:	4,316 sf
Gross Area:	6,022 sf
Net to Gross Ratio:	1.40





Jack and Dorothy Harris Health Education and Science Center HESC



BUILDING SUMMARY

The Health Education and Science Center (HESC) was created in 2012. At that time, the existing chemistry and science buildings, both built in 1962, were renovated and incorporated together, along with an addition, to create the new HESC building. The building is a total of 43,331 square feet and consists of classrooms, laboratories, faculty offices, an attached greenhouse, general space and support spaces. The building is on the East side of campus and is south of the Technology building and east of the Student and Community Resource Center (SCRC).

The 2017 R.A. Schettler report lists the building as “good” and has a replacement value of \$11,537,100 (\$266/SF). Parking can be found to the northeast in Lot #7, north in Lot #1, or to the south-west in Lot #6.

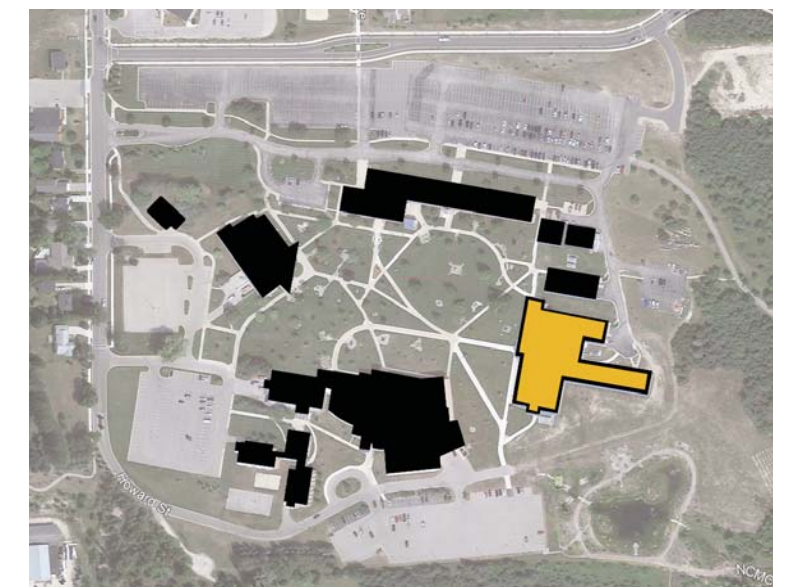
The building supports programs in biology, chemistry, science, physics, astronomy, nursing, and allied health. The building functions well.

DESCRIPTION

Use: Labs & Classrooms
Constructed: 1962, 1965, 2012
Building Area: 43,331 sf

BUILDING USAGE

Classrooms:	4,550 sf
Laboratories:	16,437 sf
Office Areas:	3,746 sf
Special Use Facilities:	762 sf
General Use Facilities:	1,557 sf
Total Net Area:	27,052 sf
Gross Area:	43,331 sf
Net to Gross Ratio:	1.48



North Central Michigan College Master Plan 2019



Student and Community Resource Center SCRC



BUILDING SUMMARY

The Student and Community Resource Center was built in 2001 and is connected to the original 1967 Student Center (current Student Services space and Cafeteria). The building is 74,000 square feet and consists of a gymnasium, walking track, multipurpose space, classrooms, offices, support services and the bookstore. The building is sited on the south side of campus and is west of the Health Education and Science Center. The Student and Community Resource Center is connected to the Student Center Cafeteria building on the west.

The 2017 R.A. Schettler report lists the building condition as “excellent” and has a replacement value of \$23,419,600 (\$316/SF). Nearby parking is found in Lot #6.

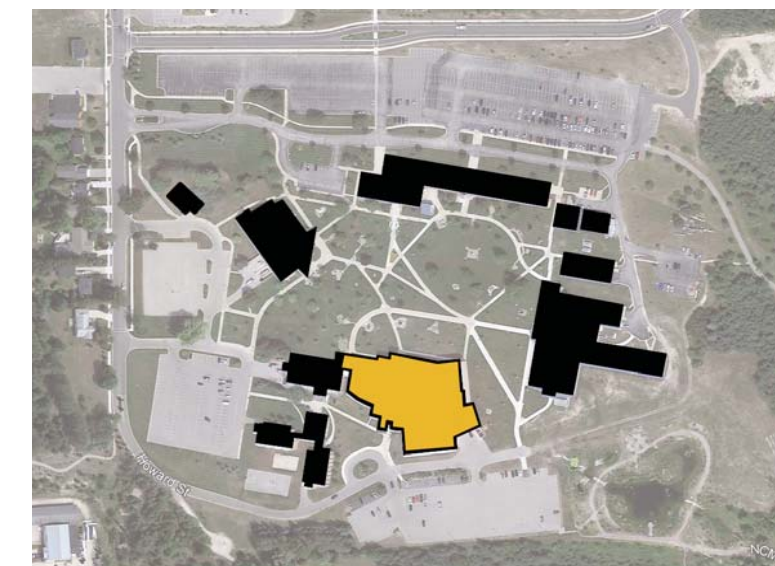
The Student and Community Resource Center currently acts as the primary hub for students and the community. The building has some design features that result in underutilized space. The space is primarily used by the community with plans to increase student use. The usage has outgrown the space available.

DESCRIPTION

Primary Use: Multipurpose
Constructed: 2001
Building Area: 74,000 sf

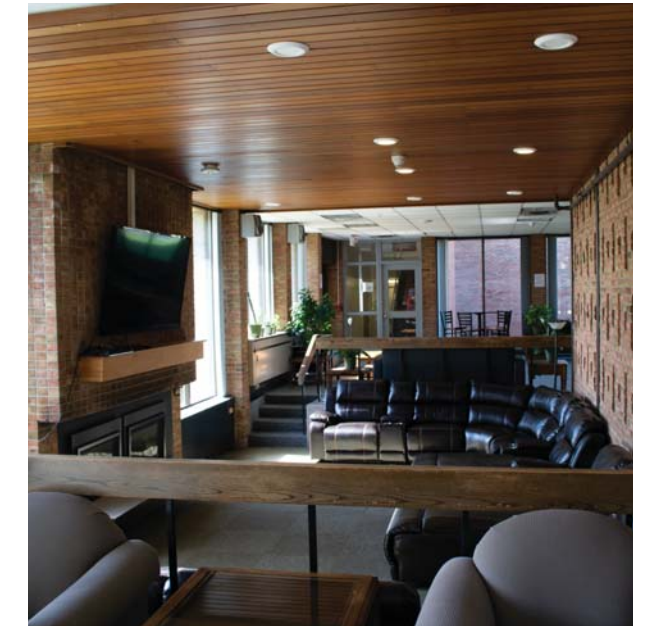
BUILDING USAGE

Classrooms:	2,970 sf
Office Areas:	3,140 sf
Special Use Facilities:	3,113 sf
General Use Facilities:	33,929 sf
Support Services Facilities:	2,226 sf
Total Net Area:	45,378 sf
Gross Area:	74,000 sf
Net to Gross Ratio:	1.63





Student Housing- Residence Hall



BUILDING SUMMARY

The Residence Hall was built in 1967. The building is 43,818 square feet and consists of residential facilities, offices, study facilities and general use facilities. The Residence Hall is located on the south of campus and is south-west of the Student and Community Resource Center.

The 2017 R.A. Schettler report lists the building as “good” and has a replacement value of \$8,030,900 (\$183/SF). Parking for the Residence Hall is located at the adjacent Lot #5.

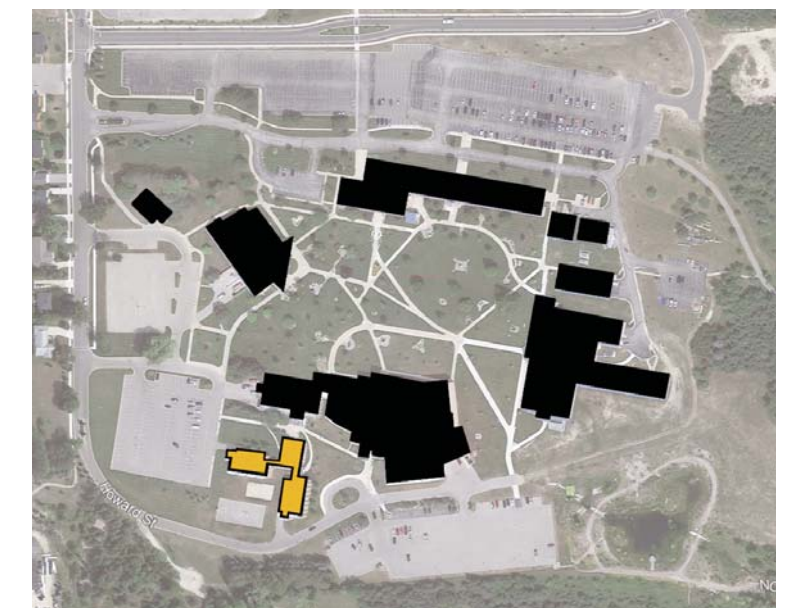
The Residence Hall can house 148 students. The Residence Hall is connected to the Student Center Cafeteria. Ping pong tables and pool tables are available for the residents. In Spring 2018, approximately 80 students lived in the dorms. The building needs general updates as well as HVAC updates so that it can be more thermally comfortable for occupants (operable windows and air conditioning). Despite the high cost of off-campus living, most students commute to campus instead of living in the dorms.

DESCRIPTION

Primary Use: Student Housing
Constructed: 1967
Building Area: 43,818 sf

BUILDING USAGE

Office Areas:	1,266 sf
Study Facilities:	1,067 sf
General Use Facilities:	681 sf
Residential Facilities:	25,332 sf
Total Net Area:	28,346 sf
Gross Area:	43,818 sf
Net to Gross Ratio:	1.55





Student Center Cafeteria (Commons) IRON HORSE CAFE



BUILDING SUMMARY

The Student Center Cafeteria was constructed in 1967. The building is 20,000 square feet consisting of general use facilities and office areas. The building is sited on the south side of campus and is connected on to the Student and Community Resource Center on the east. Nearby parking is found in Lot #5.

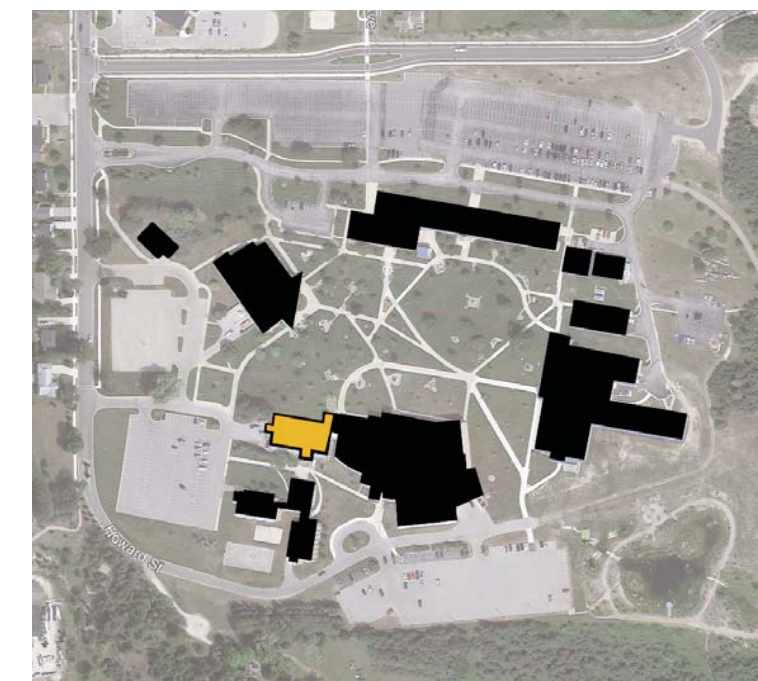
The Cafeteria is located on the second floor and student services are located below. Food is available for students, faculty, staff and guests throughout the school year. Admissions, financial aid, registration, counseling and student records are all housed on the first level. In the building's current state, the ventilation is poor and odors transmit from the second-floor kitchen. In addition, the loading dock is located near the air intake, leading to exhaust fumes entering the building.

DESCRIPTION

Primary Use: Food Service
Constructed: 1967
Building Area: 20,000 sf

BUILDING USAGE

Office Areas: 4,081 sf
General Use Facilities: 8,487 sf
Total Net Area: 12,568 sf
Gross Area: 20,000 sf
Net to Gross Ratio: 1.59





Library / Conference Center



BUILDING SUMMARY

The Library and Conference Center was constructed in 1984. The building is 21,875 square feet and consists of student facilities, general use facilities, special use facilities and office areas. The building envelope, HVAC and infrastructure were recently updated. The Library & Conference Center is located on the north-west side of campus and is north-west of the Student and Community Resource Center.

The 2017 R.A. Schettler report lists the building as “good” and has a replacement value of \$5,963,700 (\$272/SF). Parking for the Library and Conference Center is located in the adjacent Lot #4.

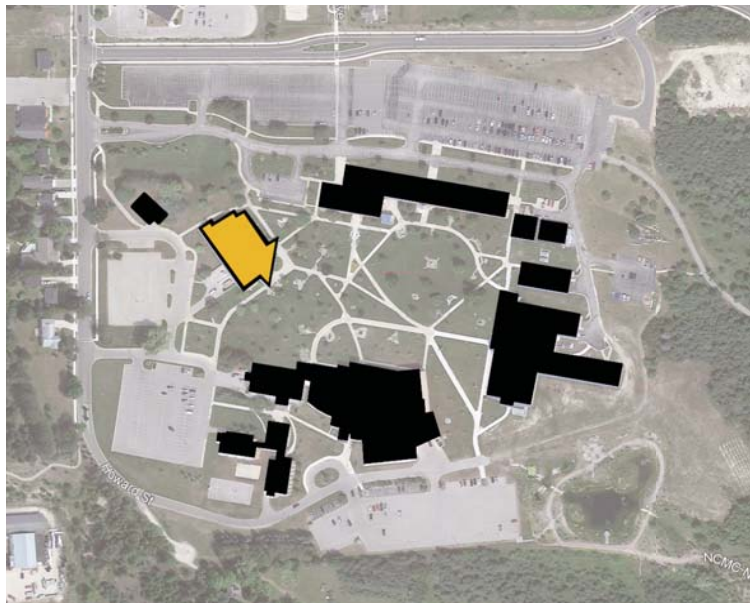
The Library provides many services for the student body and community. It contains traditional and progressive resources for reference, including books, magazines, US government documents, electronic journals, and online databases. Meeting rooms are also provided for student use. The Library could increase usage and student study opportunities by updating furniture, providing varied and comfortable study spaces and by providing more collaborative spaces. User group feedback included comments that students would like to be allowed to create an acceptable level of noise while engaging in group study and be able to consume food in the building while studying. The rear entrance to the building is located off the parking lot and could be made more inviting as it serves as the main entrance to the building.

DESCRIPTION

Primary Use: Library
Constructed: 1984
Building Area: 21,875 sf

BUILDING USAGE

Office Areas:	436 sf
Study Facilities:	11,906 sf
Special Use Facilities:	805 sf
General Use Facilities:	4,913 sf
Total Net Area:	18,060 sf
Gross Area:	21,875 sf
Net to Gross Ratio:	1.21



North Central Michigan College Master Plan 2019

Early Childhood Education Building



BUILDING SUMMARY

The Early Childhood Education Building was constructed in the 1940s as a residence. The building is 3,800 square feet and consists of support service facilities, laboratories and office area. The Early Childhood Education Building is located on the north-west side of campus and is north-west of the Library and Conference Center.

The 2017 R.A. Schettler report lists the building as “good” and has a replacement value of \$537,000 (\$141/SF). Parking for the Early Child Education Building is located either in the driveway or Lot #4.

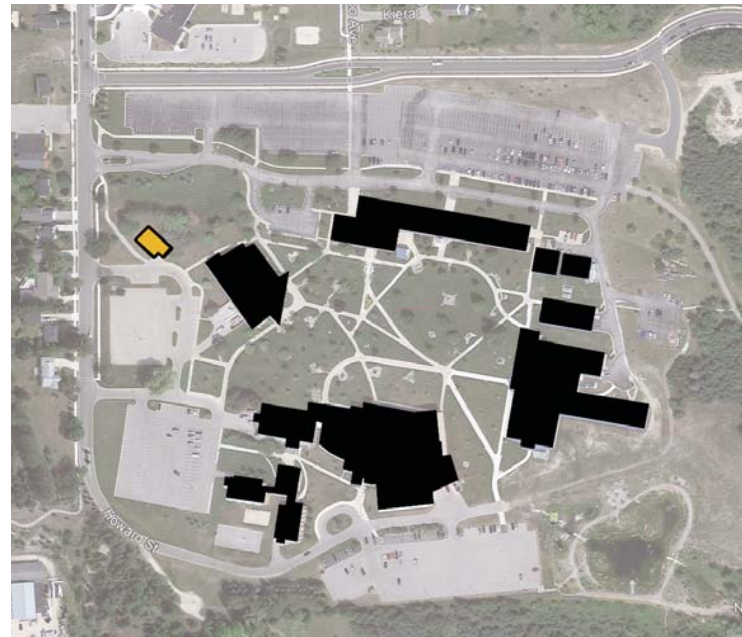
The Early Childhood Education building is a converted residence that consists of one classroom that had been used exclusively for the Early Child Education Program. The basement and garage are used for storage.

DESCRIPTION

Use: Classroom & Storage
Constructed: 1940's
Building Area: 3,800 sf

BUILDING USAGE

Laboratories: 1,036 sf
Office Areas: 77 sf
Support Services Facilities: 1,230 sf
Total Net Area: 2,343 sf
Gross Area: 3,800 sf
Net to Gross Ratio: 1.62



Satellite Campus Facilities GAYLORD AND CHEBOYGAN



GAYLORD

The North Central Michigan College Center in Gaylord is located adjacent to the South Maple Elementary School (620 E 5th Street). Associate of Arts and the Certificate of Medical Billing and Coding are both available at the Gaylord location. The building contains five classrooms including a science lab and a student lounge.



CHEBOYGAN

North Central offers classes in downtown Cheboygan at The Straights Area Education Center (504 Division St.). Both Associate of Arts and Associate of Applied Science Business Management are offered at this location. In addition, classes in criminal justice, computers and pre-nursing are also offered. The building features seven classrooms including a science lab, computer lab, and a student lounge.



Routine Maintenance

Buildings and their systems require regular inspection and maintenance to operate at peak performance. Routine maintenance contributes to the aesthetics, longevity, and safety of the campus. Protecting the buildings from the elements, especially water, will help prolong their useful life.

A calendar of routine inspection dates should be established at least annually to thoroughly inspect buildings for signs of wear, damage, and water infiltration. Review Operations and Maintenance manuals for additional inspection and maintenance requirements, as some systems may require more frequent attention to maintain warranties.

Particular consideration should be paid to roofs, windows, foundations, masonry joints, and other points of potential water infiltration. Review egress paths for code compliance and proper functioning of components. Operate mechanical /electrical / plumbing and vertical conveyance systems that may not be used regularly to test for proper operation.



SITE

Parking Lots/Asphalt Paving

Remove vegetation growing through cracks in the asphalt and re-surface as needed. Monitor for signs of ponding water and regrade as necessary.

Concrete Sidewalks/Stairs

Route and seal cracks that remain in plane. Where slabs have shifted or heaved, removed damaged sections to the nearest control joint and recast. Monitor for signs of ponding water and regrade as necessary. Consider creating new walk-ways where grass is worn, indicating locations of frequent travel. Replace damaged or missing sealant at joints between sidewalks and buildings.

Athletic Fields/Courts

Maintain surfaces in sound condition, removing vegetation from non-grass surfaces. Recoat as necessary (see asphalt and concrete sections). Review fixed equipment (posts, nets, goals, bases, etc.) and repair or replace components as needed.

Masonry and Concrete Retaining and Screen Walls

Remove loose mortar and repoint loose or open joints with mortar to match adjacent in composition, color,

texture, and profile. Selectively remove and replace missing, spalled, or cracked masonry units with new to match existing. Maintain copings and flashing in sound condition - replacing damaged components with new to match existing. Seal skyward facing joints in copings. Patch or replace spalling concrete. Route and seal cracks. Reconstruct walls that are collapsing or out of plumb, providing foundations and reinforcing as designed by a structural engineer.

Dumpster Enclosures

Maintain gates in working order. Replace damaged screening elements as needed.

Landscaping

Provide regular professional landscape care (weeding, watering, pruning, removal and replanting of failing plant material). Provide proper diversion of storm water to avoid erosion. Consider installing gravel maintenance strips below eaves that do not have gutters.

Lighting

Replace inoperable bulbs/fixtures, and repair or replace damaged posts.





Routine Maintenance



Metal - (Lintels, soffits, metal siding, louvers, handrails, bollards)
 Maintain coating on metal, touch up areas that are scratched or peeling. Where corrosion has occurred, remove rust, prime with rust inhibitive primer and repaint. Components that have lost significant amount of material due to corrosion should be replaced.

Roofs
 Patch holes and replace damaged or missing components. Monitor areas of ponding. Review installation dates and create a schedule for roof replacement based on life expectancy of each roofing type. Consider applying restoration coatings to membrane roofs as appropriate to lengthen life span between replacements.

Gutters/Downspouts
 Regularly inspect and remove debris to ensure water is being promptly drained and directed away from building walls and foundations. Repair damaged components. Clean staining from masonry resulting from prolonged exposure to water run-off. During or after heavy rain events, monitor overflow drain scuppers for drainage indicating blockage at roof drains.

Doors and Windows
 Replace damaged or missing sealant at perimeters. Replace windows that have failed insulating glass units. Repaint or replace corroded metal doors and frames (see section on metal above). Maintain thresholds, weatherstripping gaskets, door hoods and sweeps in good condition, replacing components as needed.

Wood
 Maintain coating/finish on wood, touch up areas that are failing. Replace deteriorated components in-kind and re-finish to match adjacent. Where a significant loss of finish has occurred, re-finish entire surface to nearest interior corner.

Interior Finishes
 Replace damaged components in-kind. Create a schedule for regular replacement of finishes as they reach the end of their life cycle.



BUILDINGS

General
 Keep vegetation near buildings trimmed, and prevent vines from climbing walls. Deter pests (birds, rodents, insects) from accessing buildings and nesting.

Masonry
 Remove loose mortar and repoint loose or open joints with mortar to match adjacent in composition, color, texture, and profile. Selectively remove and replace missing, spalled, or cracked masonry units with new to match existing. Replace missing or damaged sealant in control joints with new to match adjacent. Clean areas of staining from water run-off or at penetrations.

Plaster Veneer Systems - (Parging, Stucco, EIFS)
 Maintain coating in sound condition. Where delaminated from substrate, remove loose material, and patch coating to match adjacent and repaint. Promptly remove snow and minimize use of salts or harsh chemicals for snow melt adjacent to walls, and maintain copings, flashings, and gutters/downspouts to divert water away from coated surfaces. Replace damaged trim components with a composite material.



1



3



5



7



9



2



4



6



8



10

Maintenance

Building Inventory

1. Administration/Classroom Building
2. Heating Plant
3. Maintenance Building
4. Technology Building
5. Health Education and Science Center
6. Student and Community Resource Center
7. Student Housing- Residence Hall
8. Student Center Cafeteria (Commons)
9. Library/Conference Center
10. Early Childhood Education Building

BUILDINGS

ADMINISTRATION/CLASSROOM BUILDING:

This structure is currently planned for renovation and an addition. Maintenance review may be premature based on planned work. We suggest the Planning team re-visit this facility in 2022, or when construction is complete.

HEATING PLANT:

The Heating Plant building has been maintained and is in good condition. Routine maintenance and observation, specifically at roof penetrations, should be done on a regular basis.

Specific Needs: Door/frame repair-replacement, touch up painting at steel rails and trim, and some brick tuck-pointing.

MAINTENANCE BUILDING:

The Maintenance building has been maintained and is in good condition. Routine maintenance and observation, specifically at overhead doors and flat roofing areas, should be done to maintain weather resistance.

Specific Needs: HM Door/frame repair-replacement, touch up painting at metal and trim, and some brick tuck-pointing. Observation of any flat roof areas should be done on a quarterly basis.

TECHNOLOGY BUILDING:

The Technology building has been maintained and is in good condition. Routine maintenance and observation should be done to maintain its condition. Watch roof transitions; valleys, etc. Renovation of existing restrooms is a high priority.

Specific Needs: HM Door/frame repair-replacement,

touch up painting at metal and trim, and some brick tuck-pointing.

HEALTH EDUCATION AND SCIENCE CENTER:

As a newer structure, this building is in excellent condition. General observations for any water infiltration and general wear and tear should be done to keep the condition in top shape. This building is exposed to wind, so any related damage should be corrected, if it occurs.

STUDENT AND COMMUNITY RESOURCE CENTER:

At the time of observation, this building needed several areas of specific attention.

Roof storm water management: clean gutters and downspouts to prevent water from running down the block and brick. Sanding and sealing of exterior wood elements at the main canopy spine is needed.

Roof leaks appear to be staining ceilings in the office area. The interior spiral duct work has paint peeling and needs to be completely refinished or left with a raw finish.

STUDENT HOUSING-RESIDENCE HALL:

The exterior requires some brick tuck pointing, repair/replacement of exterior stucco-type finishes at windows, and window replacement. Exterior caulking/sealing should be done. Interiors could use cosmetic upgrades through-out. Particular observation of flat roof areas should be done on a quarterly basis.

STUDENT CENTER CAFETERIA (COMMONS):

Similar to the Residence Hall, with tuck pointing specifically needed at the fireplace area.

LIBRARY/CONFERENCE CENTER:

This building was renovated within the last 5 years and is in good over-all condition. Routine maintenance and observation, specifically at roof penetrations, should be done on a regular basis.

EARLY CHILDHOOD EDUCATION BUILDING:

As a former residence, and one of the older buildings on campus, this structure may not offer the best opportunities for the intended program. Collaboration with the Public Schools of Petoskey may be an option. The proposed master plan calls for this building to be removed.



DEMOGRAPHICS ENROLLMENT PROJECTIONS

Demographics / Enrollment / Projections

ESTABLISHING NORTH CENTRAL'S INFLUENCE AND DETERMINING A PLAN FOR GROWTH

With projections for enrollment in K-12 schools showing a decline for the next ten years, it is of utmost importance for NCMC to make all area graduating high school seniors aware of the educational opportunities available to them.

The need to promote educational relevancy to the student is of high priority. Offer courses that allow for likely employment after a two year program, or offer course credits towards a four (or more) year degree at another institution.

The adult learner and returning student are areas where growth may be possible and should be explored. With many professions requiring continuing education credits, this may be an attractive offering for NCMC. Developing facilities that can accommodate continuing education and lifetime learning classes will be important to the future of NCMC.

Certifications:

Most certificate programs require 30 credit hours and can be completed with two semesters of full-time study. Many certificates follow a prescribed sequence that starts in the fall semester and is completed at the end of the winter semester. It is very important that students work with an advisor, due to requirements of each individual course of study. A certificate is not the same as a licensing exam or certification awarded by a national or regional accrediting association, although some programs prepare students to take licensing exams or participate in certification processes.

NCMC Promise:

The creation of a free or subsidized tuition available to all graduating seniors in the five county area should be investigated. Along with this, making all aware (advertising) of this program to potential students may also play a role in strengthening enrollment.

ENROLLMENT

Enrollment has stabilized to around 40,000 credit hours per year after peaking at 56,340 in 2010. In the Fall 2018 semester, 2,329 students were enrolled for 17,647 credit hours (Average of 7.6 credit hours/student). Enrollment has decreased slightly from 2017.

More changes in enrollment can be found when looking at program enrollments. When considering all students (dual enrolled and non-dual enrolled), we find the majority of the enrollment (43% of total enrollment) is within the Associate of General Studies program.

When looking at non-dual enrolled students, we find enrollments in programs including Associate of Applied Science, Associate of General Studies and Personal Interest and Physical Education have increased since 2014, while enrollment in Associate of Arts, Associate of Science, Certificates of Development and Occupational

Certificates have declined slightly. When combined, the Associate of Applied Science, Associate of General Studies and Personal Interest & Physical Education account for 73% of all enrollment.

Dual enrollment has been on the rise since 2014. Around 450 students were enrolled in 2,000 credit hours, and in 2018, just over 700 were enrolled in 4,500 credits. This has resulted in a large jump in Associate of General Studies enrollment.

When looking at the 2016 College-going percentages in the area, including Petoskey and the greater Charlevoix/Emmet area, we find that around 25% of high school graduates are choosing North Central. For Petoskey High School graduates, 66% went on to college and 37% of graduates chose North Central. In the greater Charlevoix/Emmet area, 73% of students went on to college and 25% of graduates chose North Central.

DEMOGRAPHICS

As of 2016, the primary source of students was coming from the combined primary counties. The combined primary counties of Emmet, Charlevoix, Cheboygan and Otsego accounted for 82% of all students. Emmet County accounted for 36% of students alone.

In 2016 the male-to-female ratio was around 2:3. At that time, 37% of the student body were male and 63% were female. It is believed to be that the success of the Nursing program plays a large role in the male/female demographic.

When looking at incoming student trends (not including high school students), we find the average age of students is decreasing. In 2016 the average age was about 21 - 22 years old, with almost 80% of the population 19 years old or younger. In addition to age, there is also an increase in full-time students, from around 57% in 2014 to 73% in 2016.

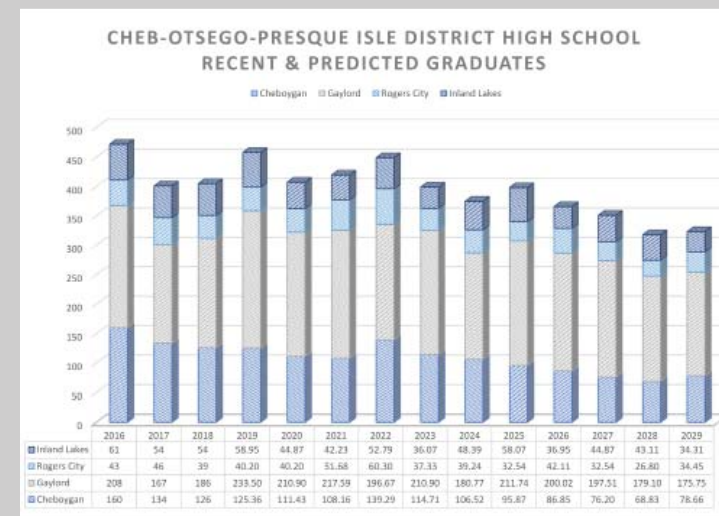
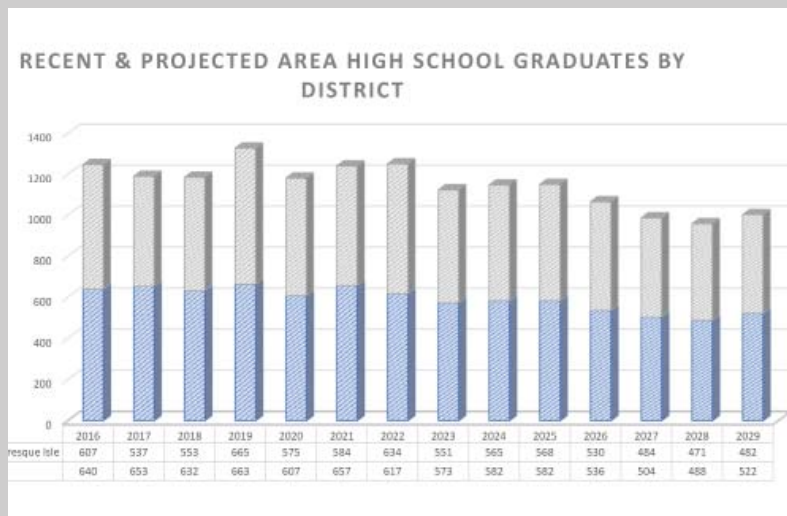
About 75% of incoming students are enrolled in Liberal Arts programs and are typically looking to a 4 year college/university. About 25% of incoming students are enrolled in Applied Arts programs and are typically seeking a "job-ready" education.

PROJECTIONS

Enrollment decreased about 10% in Fall 2018 and again about 9.5% in Winter 2019. With fewer high school seniors projected in Northern Michigan through 2030, it is expected that enrollment will decline slightly for the next 5 years. Although enrollment is projected to decline slightly, the staffing needs are expected to stay the same.

Around 490 courses are offered in the Fall and Winter Semesters and 72 sections in the summer. Of these, 85% are traditional classes and 15% are online. The average class size in 2017-2018 for Fall and Winter Semesters was 14.3 students.

For online and hybrid classes, the average class size was 17.9 students. The projected average class size for both 2018 and 2019 is 14.0 students.



CLASS SIZE SPACE UTILIZATION



Class Size / Space Utilization



CLASS SIZE

In the 2017-2018 school year, North Central class sizes averaged 14.3 students for traditional class types and 17.9 students for online and hybrid classes. These class sizes are projected to remain stable, averaging around 14 students per class through 2019.

Instructor/Student ratios were calculated from the “Instructional and Administrative Ratios for Academic Programs (2017-2018 unduplicated)” table found in the “2018 Five-Year Capital Outlay Plan.” The Instructor/Student ratio for Nursing and Allied Health is approximately 1:9. The ratio for Business, Manufacturing and Technology is approximately 1:14. For Liberal Arts, the ratio is approximately 1:16. The ratio for Corporate & Community Education/Personal Interest/Physical Education is 1:361.

SPACE UTILIZATION

Classroom Utilization was measured for the 2017-2018 school year (Fall and Winter Semesters only). This data set was gathered from the 37 classrooms on the Petokey campus. Fall Semester was a 15-week period and Winter was a 16-week period. In addition, the weekends were considered with one 1-credit class each semester.

In the 2017 Fall semester, overall classroom utilization was a rate of 32%. During the peak period (Weekdays 10:00am to 3:00pm), the utilization was measured at a rate of 38%. Combined off peak periods (8:00am - 10:00am and 3:00pm - 9:00pm) for fall were found to have a 26% utilization rate. The weekend utilization rate was less than 1%.

For the 2018 Winter semester, the overall utilization rate was measured at 26%. The peak periods were measured at 34% and the combined off-peak was 21%. Weekend utilization was less than 1%.

The combined Fall and Winter semester overall utilization rate was 29%. During the peak period the average was a 36% utilization rate. The combined off peak utilization rate was 26%. Weekend utilization was less than 1%.

MASTER PLAN



5 Year, 10 Year, & 15 Year Plans

A GUIDING PATH FOR DEVELOPMENT AND GROWTH AT NORTH CENTRAL

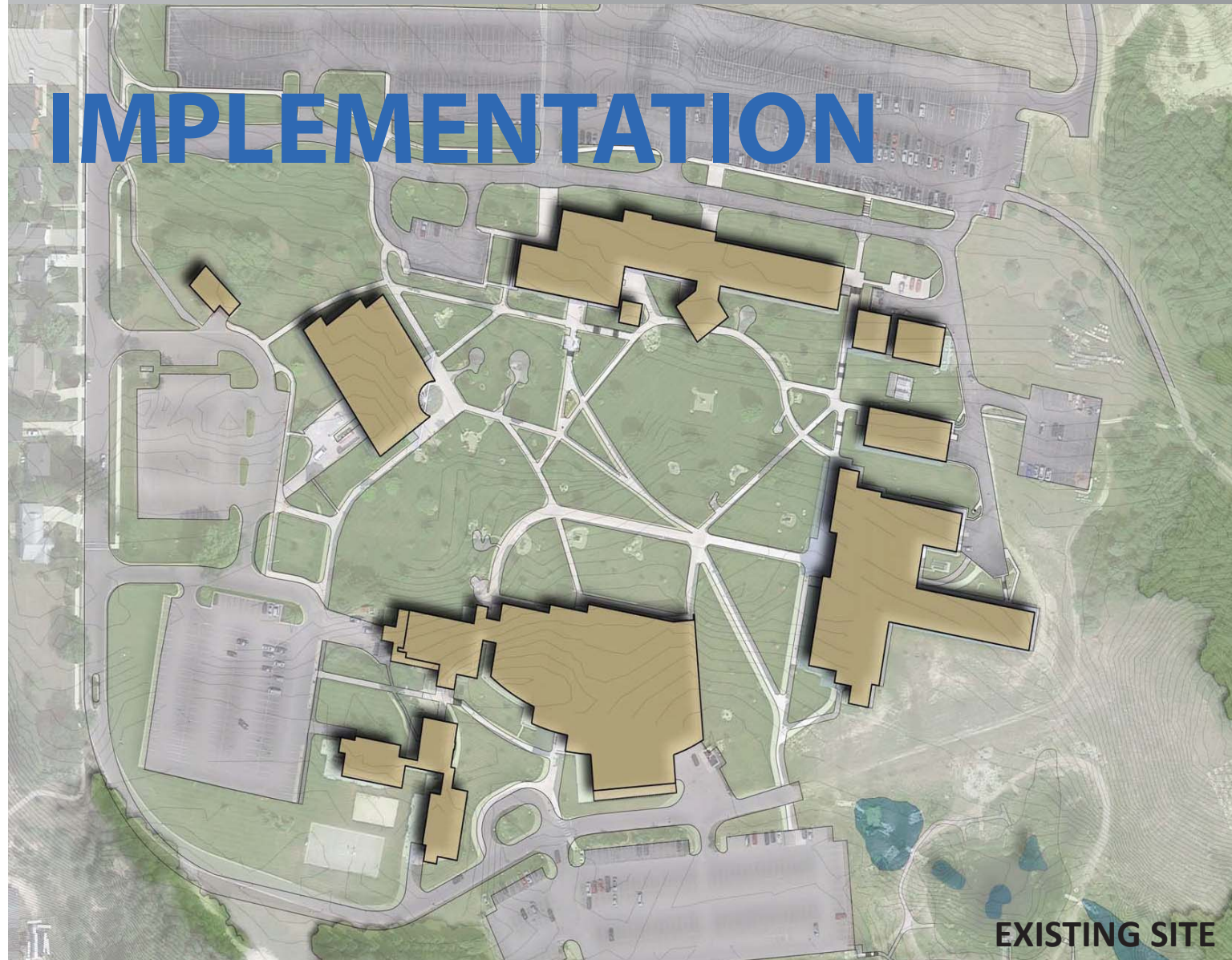
This section will identify priority items that have culminated from the stakeholder meetings, along with several campus wide tours.

Primarily related to facilities and infrastructure, this list will require prioritization and preliminary costing to verify the schedule and feasibility.

Since facilities and educational programming exist together, we have identified several corresponding needs for program development and nurturing.

The items listed will identify the benefits to the students, sustainability of North Central Michigan College, and provide a return on invested efforts.

IMPLEMENTATION



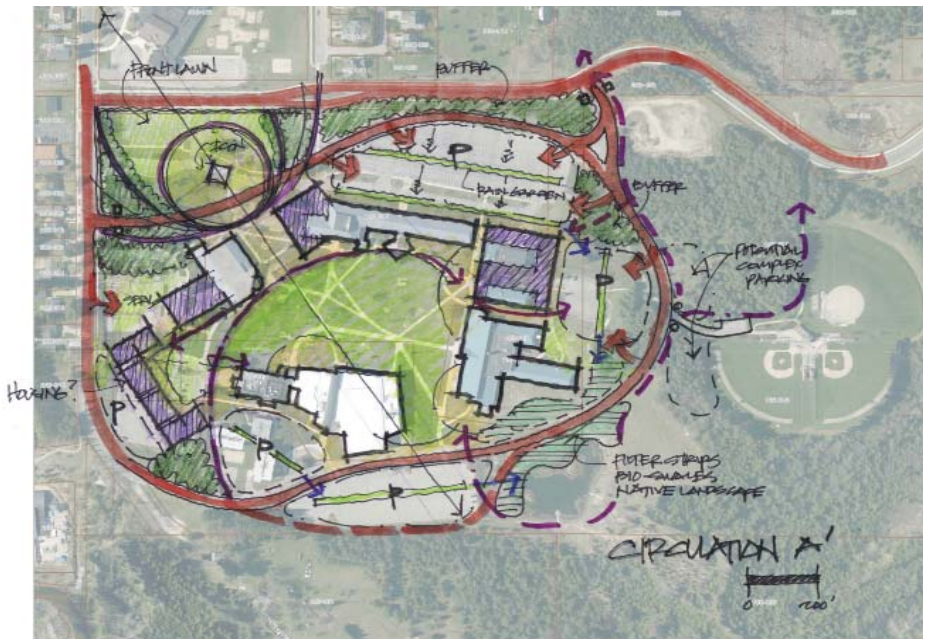
Analysis

Goals From The Previous Master Plan:

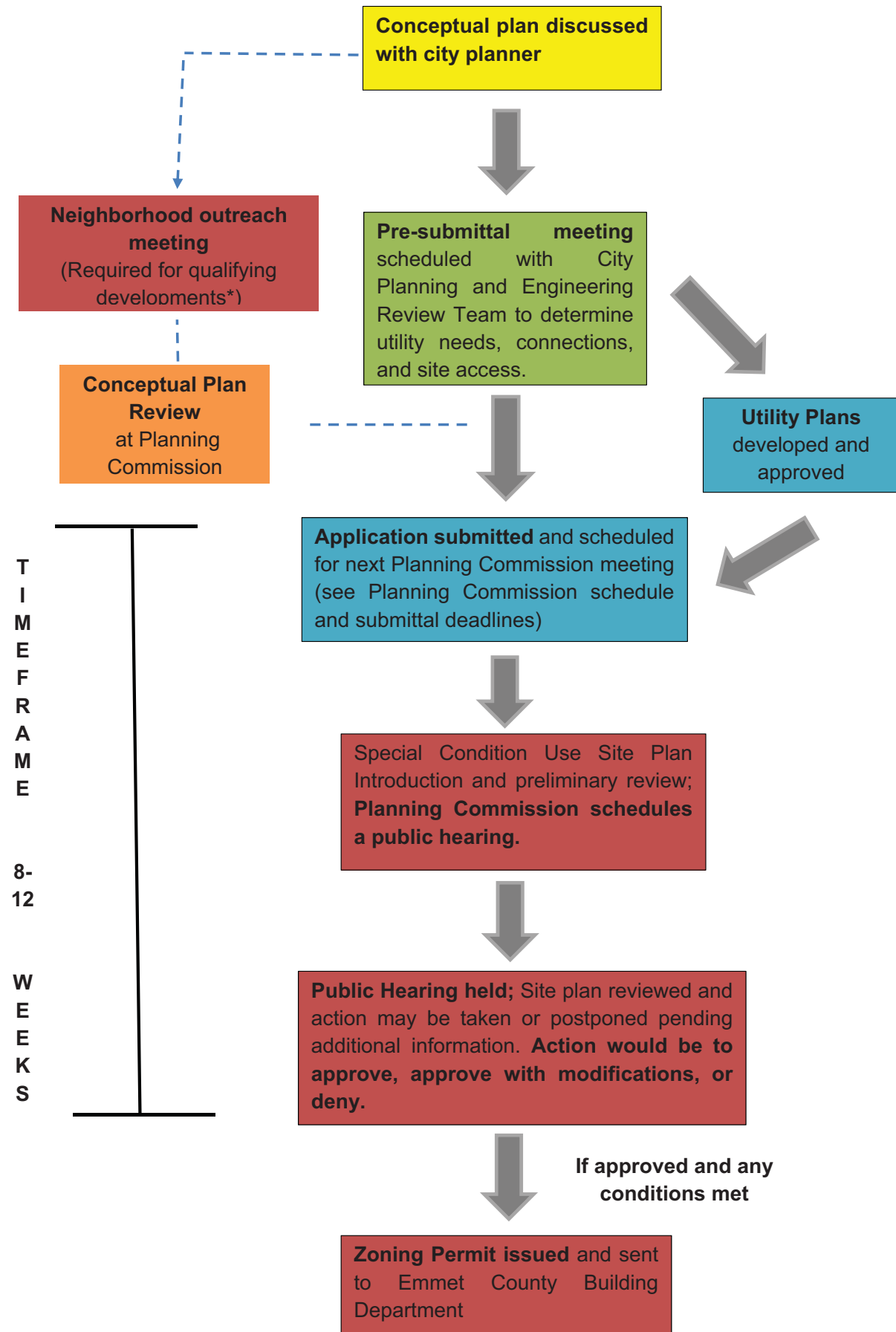
1. ADCL Renovation/Expansion- underway
2. Student Center Renovation- underway
3. Ring Road and Atkins Parking lot- pending
4. Campus Wayfinding/Signage- status?
5. Cafeteria/Dining Renovations- pending
6. Parking lot #5 reconstruction- pending
7. New Facilities/Maintenance Buildings- pending
8. Campus perimeter Identification- pending
9. Library Renovations- pending
10. Utility infrastructure upgrades- pending
11. Student Housing study spaces- pending.
12. SCRC Learning Center repurpose- pending.
13. Pedestrian Walkway Improvements- status?
14. Non Phased Projects.

Goals From The Current Master Plan:

1. Create an identifiable main entry (entries) that address safety with the adjacent elementary school congestion.
2. Provide a new addition to the School of Nursing to meet the current industry demand and projected enrollment.
3. Re-purpose the under-utilized Library to become a multi-use Student Innovation Center with Food Service.
4. Renovate the current Iron Horse Space into a collaborative Student Library/Media Center
5. Provide additional landscape islands and added trees to alleviate parking lot "heat island effect", help storm water infiltration and improve sustainability.
6. Renovate and provide a flexible addition to the current Technology Building. This would accommodate skilled trades instruction, and emerging technologies.
7. Create barrier free access with universal design on a campus with topographical challenges.

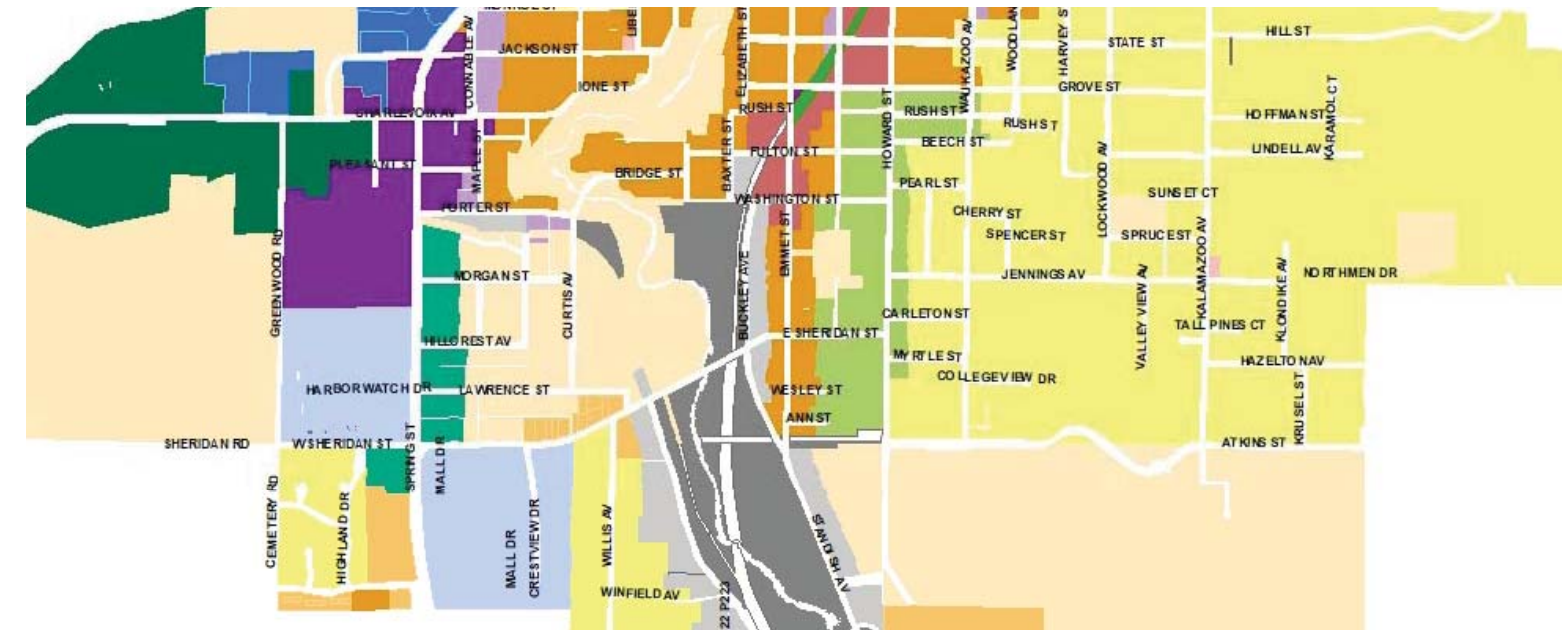


Special Condition Use Review Process



TIME FRAME
 8-12
 WEEKS

Standards Review



Zoning Review- City of Petoskey

1. Review proposed projects with current Zoning Code.
2. Determine applicability of Special Conditions and required review process. Review "By right" and Non-conforming/Variance procedures.
3. Meet and collaborate with the City of Petoskey and surrounding property owners early in the process.
4. Review new access points to the campus with traffic safety for mitigation of combined congestion with the neighboring elementary school and NCMC commuting students. Vehicular and pedestrian.
5. Review sign standards and collaborate with the City and neighbors to provide attractive, appropriate, and functional signage for the campus and the area.
6. Work with the City and community to find win-win solutions and promote future support for the evolution of the NCMC Campus.

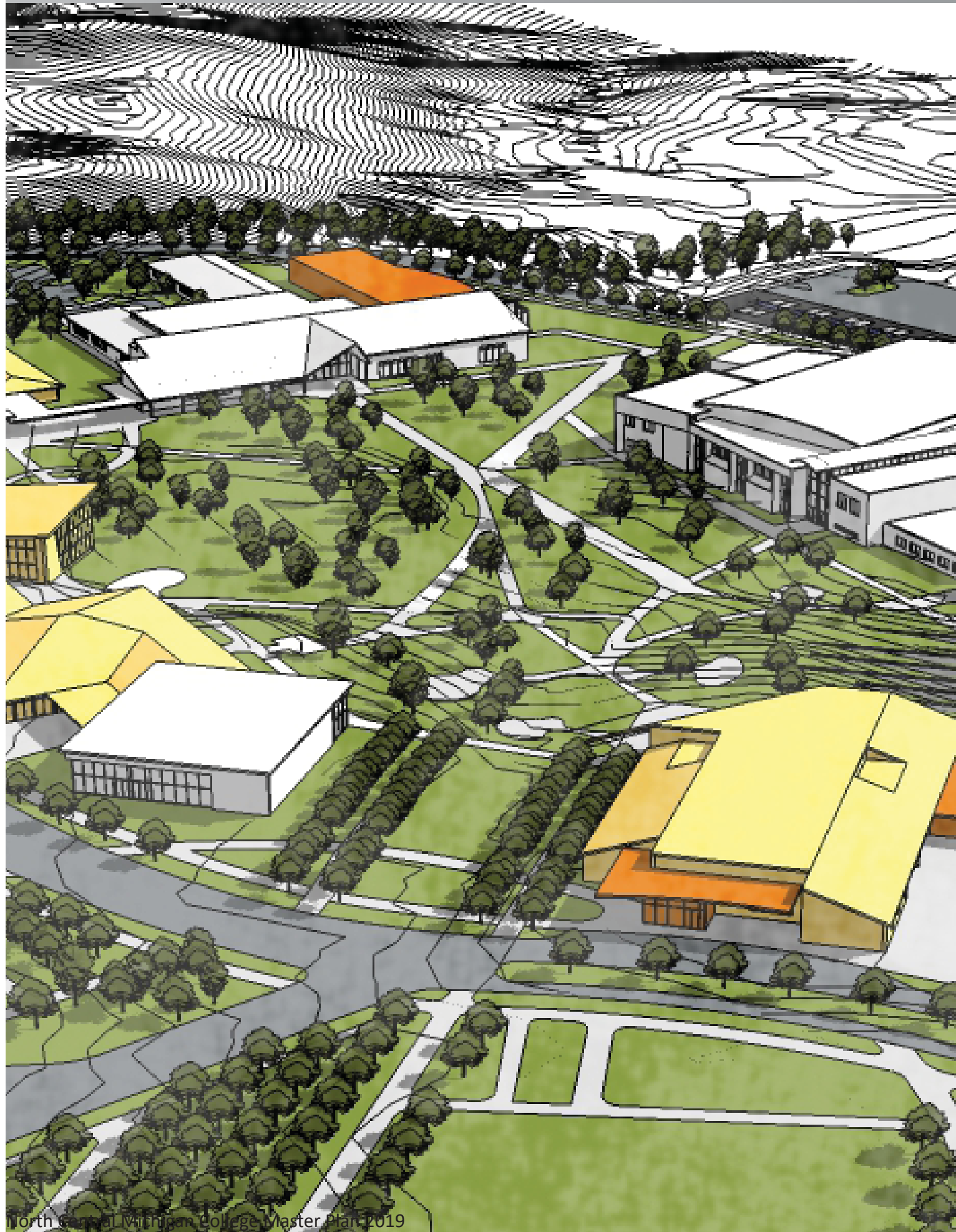
Design Standards Review- NCMC

1. Review current Design Standards for applicability to current college goals and aesthetic sensibilities.
2. Review proposed projects with current Design Standards.
3. Create cohesive, transitional designs that utilize quality materials for future maintenance and aesthetic reasons. Limit scale to three stories or less (coordinate with Zoning).
4. Promote appropriate landscaping, filtration islands and the installation of more trees and shrubs. Ecological benefits include reduction in heat island effects of large surface parking, filtration of stormwater before reaching sensitive areas, and campus beautification. Promote sustainability.
5. Establish design standards for potential copartnership companies that want a campus presence.



- 1-5 YEAR FACILITIES PRIORITIES**
1. Develop Iconic Identity Signage at Atkins & Howard
 2. Provide a new addition for the Nursing program
 - 3a. Renovate the Library into a multi-use, multi-functioning Student Innovation Center building
 - 3b. Renovate the former Iron Horse Cafe and vacated Student Services areas into a new Multi-Media Resource Center.
 4. Create new identifiable Campus entry/exit points off of Howard & Atkins. Combine with a drop-off lane at the Library/Multi-Use Building. Demolish former Early Childhood Education structure.
 5. Complete chilled water loop to the Residence Halls.
 6. Renovate the existing Administration/Classroom Building for better student study area and faculty interaction.
 7. Landscape improvements at Parking Area #2.
 8. Expand and renovate for the growing needs of the Technology Center, inclusive of skilled trades areas, and robotics/autonomous innovation space.
 9. Add on to Maintenance Building to house Campus Motor pool vehicles and Mobile Teaching Labs.
 10. Create outdoor, convertible Pickle Ball courts at Parking area #6
 11. Add trees to central courtyard to frame sculpture areas.
 12. Construct informational pavilion at Natural Area Trailhead
 13. Update technology at Cheboygan and Gaylord Satellite Centers to aid in distance learning and live stream interactions
 14. Complete previously planned ring road around campus and to the Baseball fields.





Master Plan Phasing Priorities- 5 Years



1-5 Year Priorities- Facilities

1. Develop Iconic Identity Signage at Atkins & Howard
2. Provide a new addition for the Nursing program.
- 3a. Renovate the Library into a multi-use, multi-functioning Student Innovation Center building.
- 3b. Renovate the former Iron Horse Cafe and vacated Student Services areas into a new Multi-Media Resource Center.
4. Create new identifiable Campus entry/exit points off of Howard and Atkins. Combine with a drop off lane at the Library/Multi-Use Building. Demolish former Early Childhood Education structure.
5. Complete chilled water loop to the Residence Halls
6. Renovate the existing Administration/Classroom Building for better student study areas and faculty interaction.
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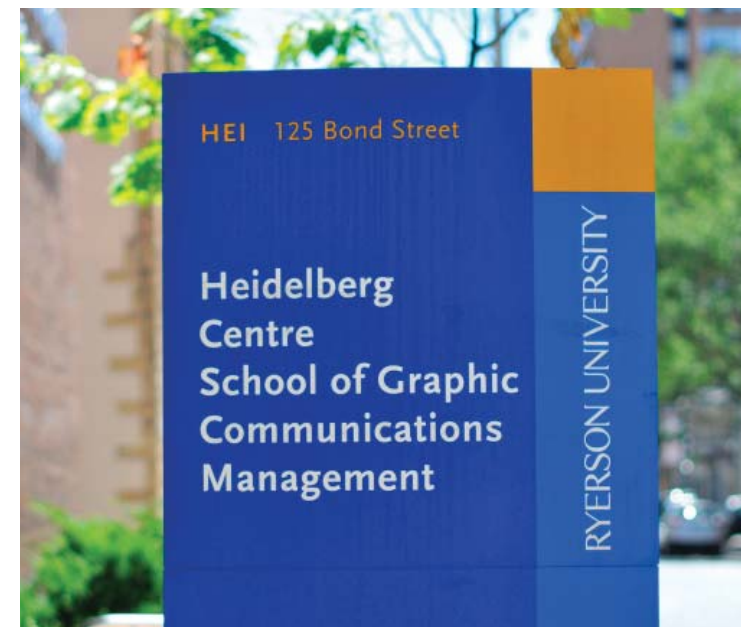
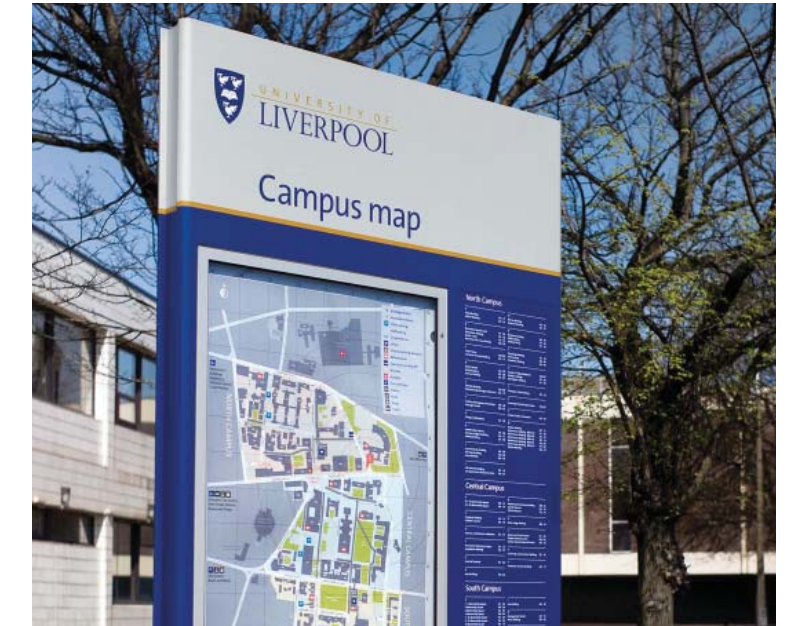
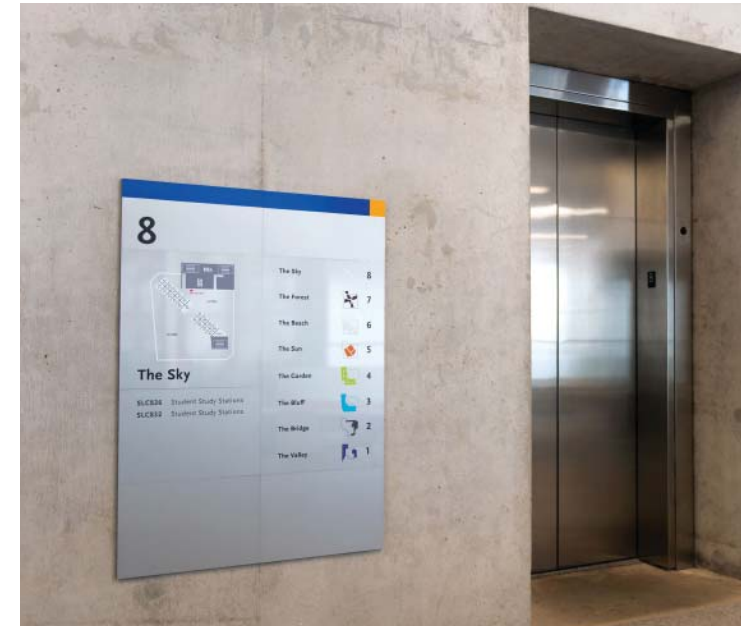
1-5 Year Priorities- Programming

1. Establish Club Athletics + Intercollegiate Athletics.
2. Establish transportation link to downtown and other key stops in the area (grocery stores, etc.).
3. Investigate subsidized tuition programs- Michigan Promise/Tip of the Mitt Promise.
4. Foster relationships with other Colleges.
5. Investigate a core downtown Petoskey presence.
6. Plan/prepare for Capital Outlay projects.
7. Continue community relationship building.
8. Continue business relationship building.
9. Investigate co-partnerships evolving on campus with new companies that align with educational goals and facilities to accommodate their needs.
10. Build and cultivate Tribal Relationships.

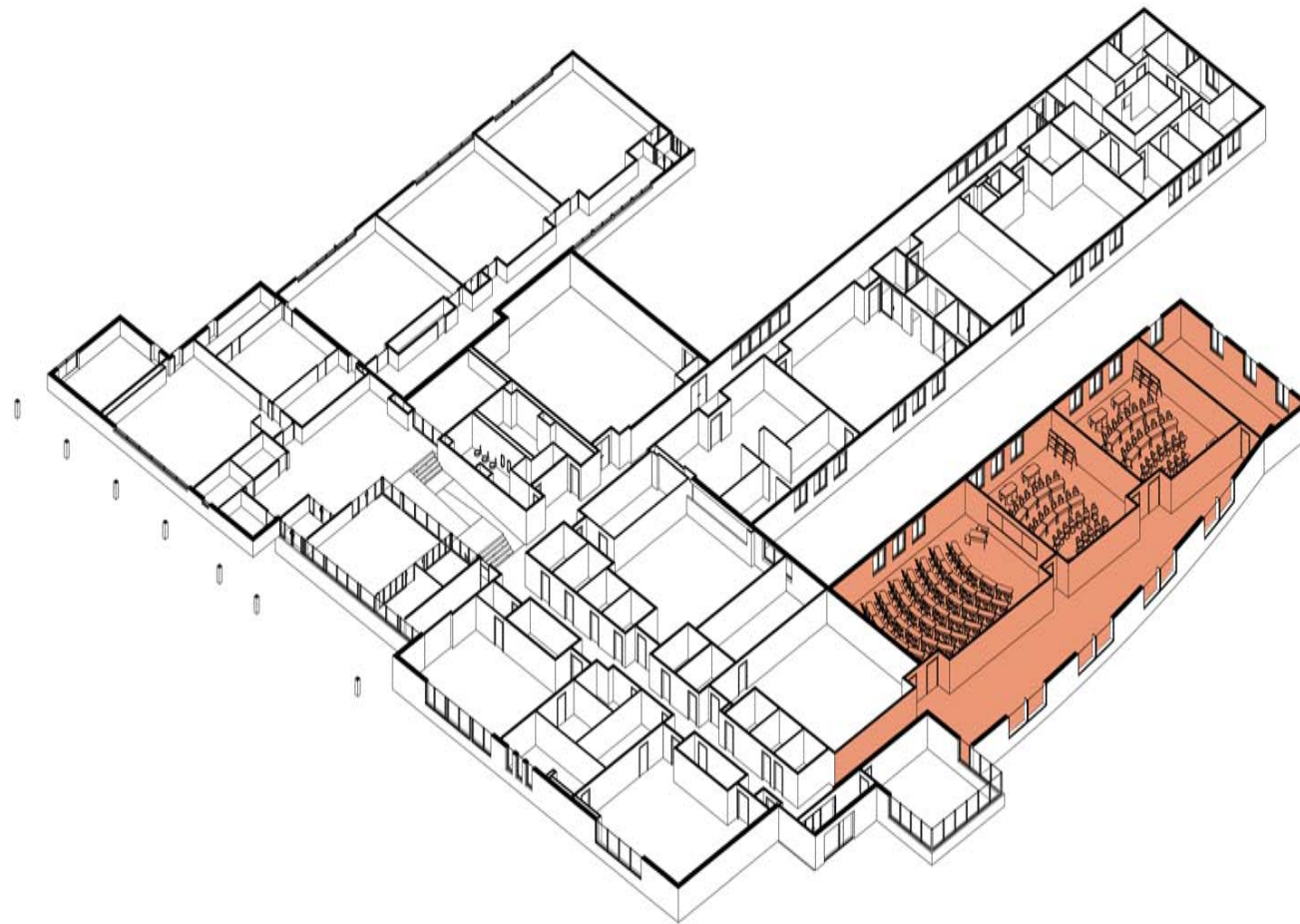
1-5 Year Priorities- Maintenance

1. Window assessment-Repair/replace as needed.
2. Exterior Maintenance:
 - Tuck point all brick
 - Repair/Replace EIFS with composite
 - Roof assessment-repair/replace as needed.
3. Mechanical,electrical, plumbing repairs as needed.
4. Sidewalk assessment and repair of cracks and unevenness.
5. Sustainable implementation and innovation.
6. Campus accessibility plan and implementation.
7. Campus Security assessment and upgrades.

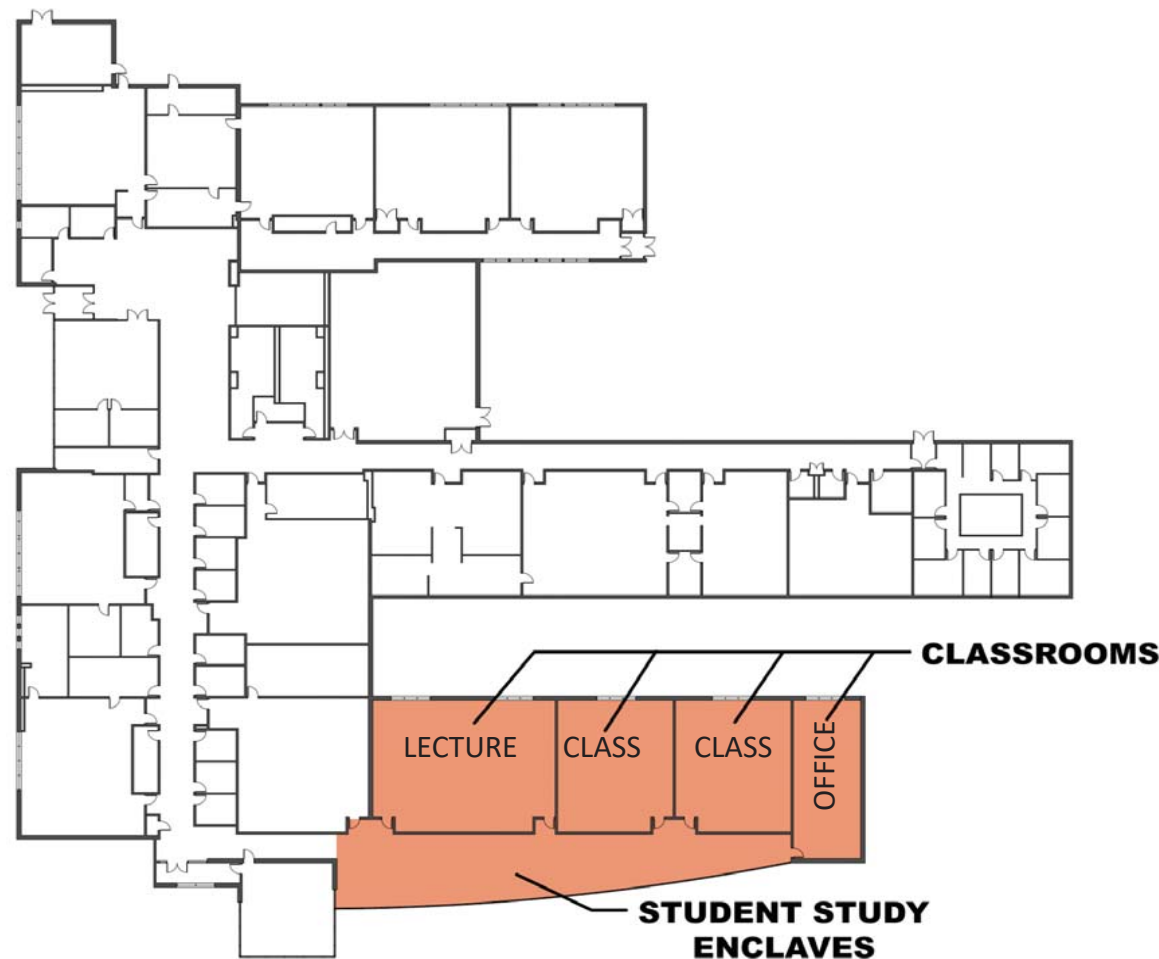
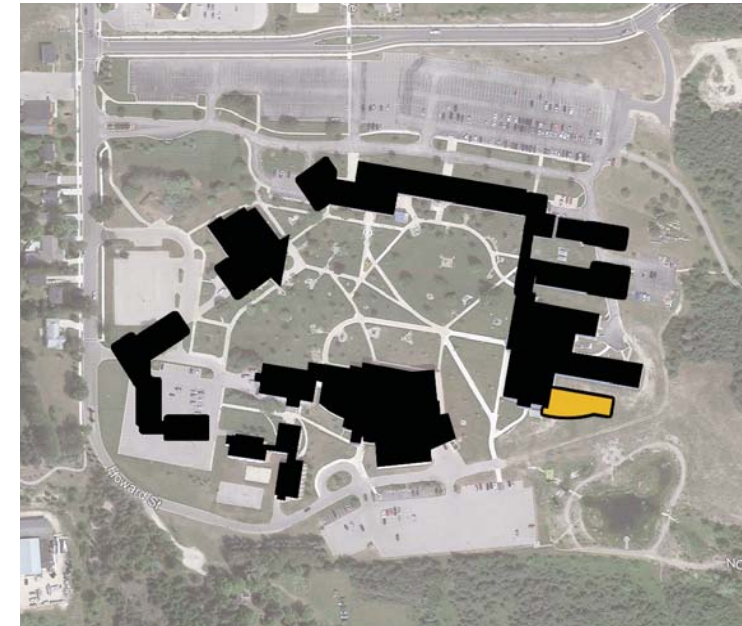
Signage and Wayfinding



1. Provide Iconic Howard and Atkins Corner sign.
2. Provide kiosk type signs at each entry
3. Provide wayfinding map signs throughout campus at intersections, parking areas, and along walkways.
4. Create a kiosk sign for the Harris Sculpture Garden.
5. Create banners for light posts around a route internal to campus.
6. Provide interactive monitors in buildings that indicate locations, room numbers, class and event schedules.
7. Provide technology applications that reflect information on the monitors.
8. Provide for consistent, interchangeable and attractive room signage.
9. Provide consistent building signage, with less emphasis on acronyms.
10. Encourage on-campus ambassadors to assist new students, faculty, and visitors to find their way.
11. Provide easy to read, appropriately lit, attractive, but not overly abundant wayfinding.



Nursing Wing Expansion to the Health Education and Science Center



The success of the nursing and health care program at NCMC has maximized the use of existing space. The growth and continuing needs of community health care facilities including McLaren, Munson, and Mid-Michigan Health attract students from NCMC on a continuous basis. The College has acknowledged the need for more instructional space to educate current and future health care professionals. The proposed expansion to the Health Education and Science Center would include teaching labs, classroom space, additional simulation areas, and associated accessory space such as offices and storage.

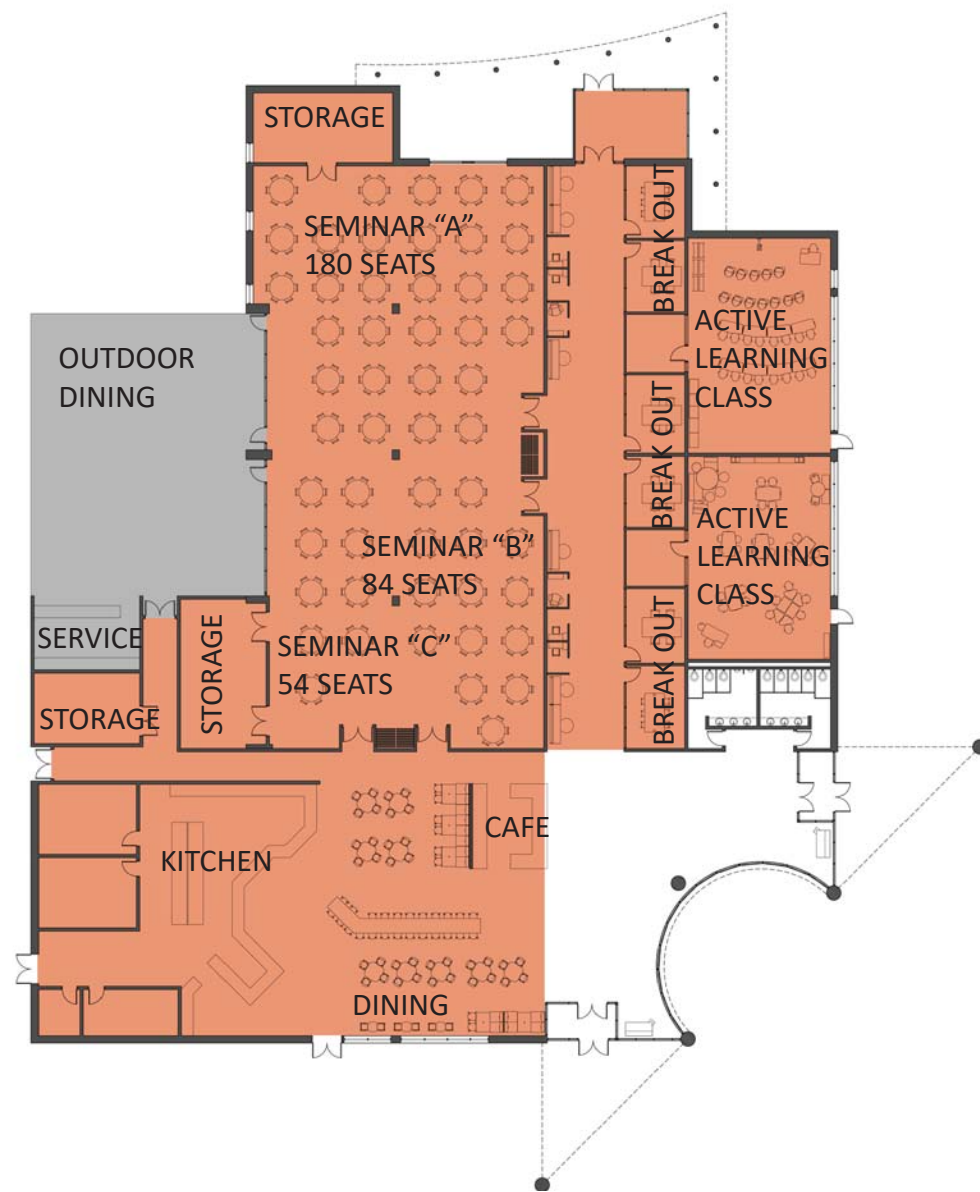
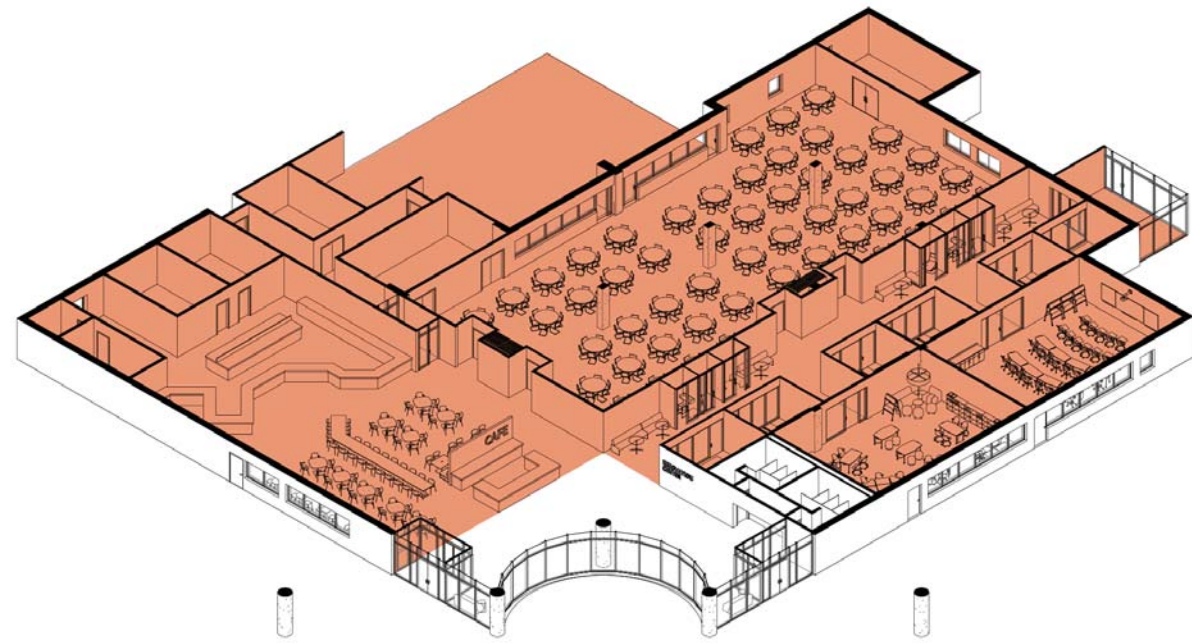
This renovation, like all areas of suggested improvements, will address:

1. Barrier Free Accessibility-Universal Design
2. Use of sustainable design practices and materials:
 - Water Management
 - Recycled material content
 - Energy efficient Mechanical Systems
 - LED Lighting with lighting controls
 - Daylight harvesting

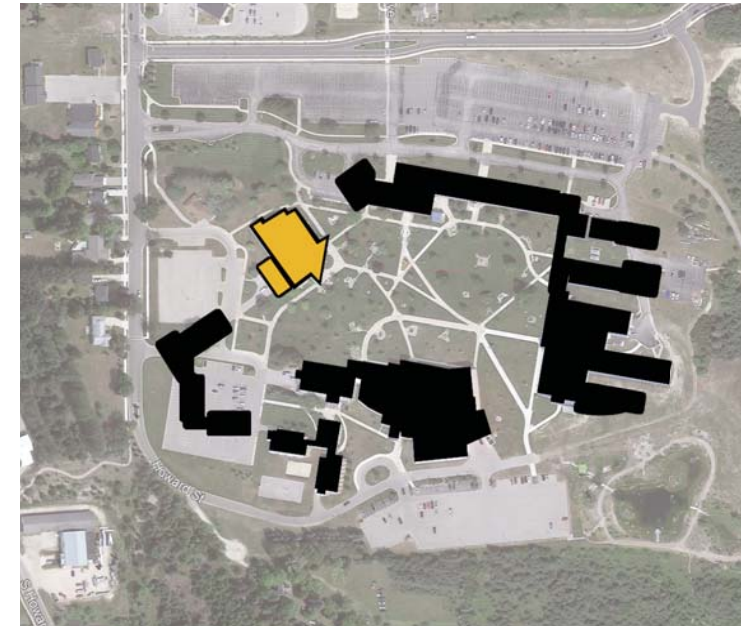
This addition is preliminarily sized at approximately 10,240 s.f.

The addition can be done in phases.





Student Innovation Center RENOVATION OF FORMER LIBRARY/CONFERENCE CENTER



The changing and evolving use of traditional libraries has raised the need to re-purpose this existing building for a more complete utilization. The size and design of the structure allows for adaptability to a multi-use, multi-function Student Innovation Center. Preliminary designs show that multiple functions and teaching opportunities could occur at over-lapping time schedules. Interactive classrooms, study enclaves, hang out space, small, medium and large group learning, and food services could be implemented into the existing structure with minor needs for additions.

Attracting outside lecturers, adult learners, continuing education gatherings, and community functions could be a welcomed result of the transformation. Large areas that are robust with technology can allow for innovative group interaction between instructors and students.

As a flexibly designed space, the building could be used in the summer months for revenue generating purposes to offset operational costs.

Addition: 4,320sf

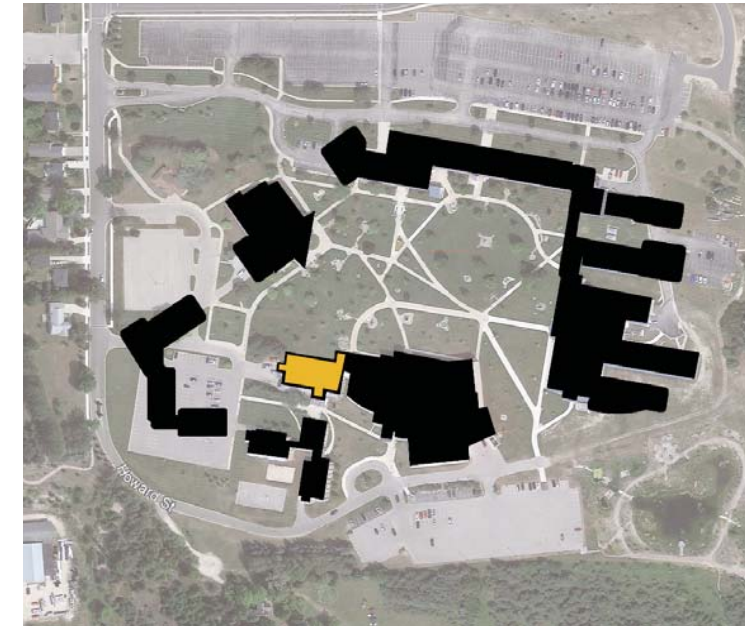
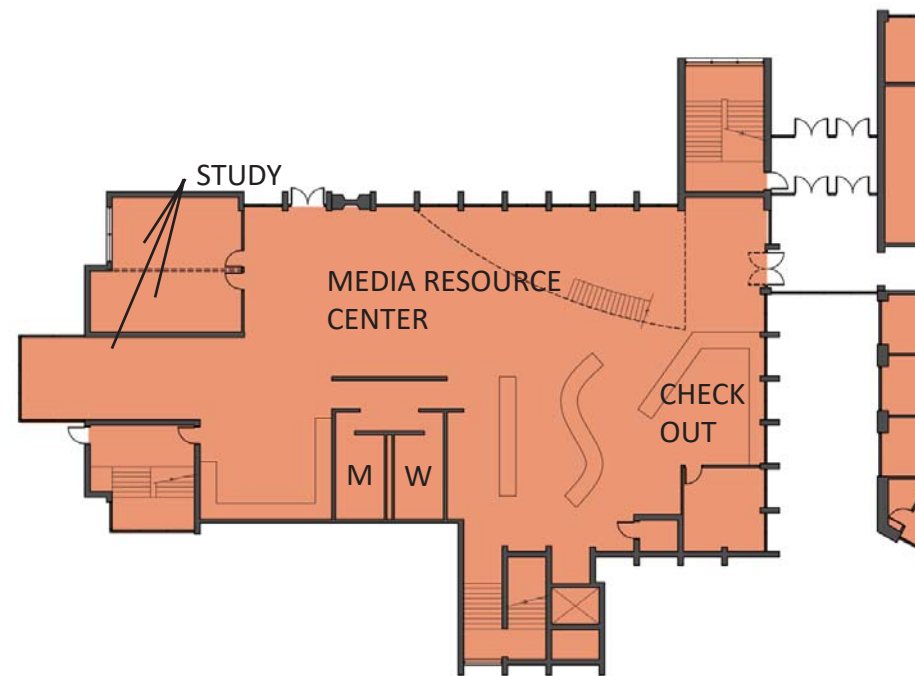
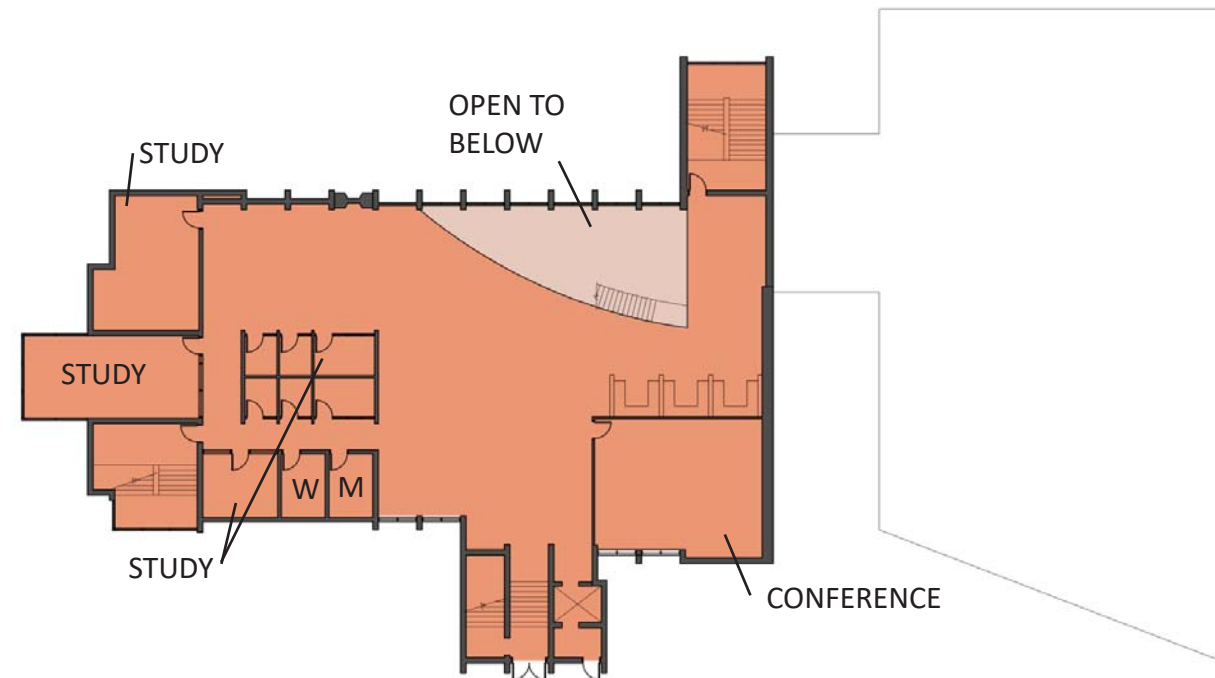
This renovation, like all areas of suggested improvements, will address:

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 - Water Management
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 - LED Lighting with lighting controls
 - Daylight harvesting



North Central Michigan College Master Plan 2019

Multi-Media Resource Center RENOVATION OF FORMER STUDENT CENTER CAFETERIA



With the renovation and addition to the Student Innovation Center (the former library) inclusive of food service and dining, the renovation of the former Iron Horse Cafe and vacated Student Services areas would be planned for a new Multi-Media Resource Center. To maximize use of space, natural light, and create an inviting atmosphere, a two-level space would be created to accommodate this new use. Existing elevators and stairs would be reused, and access from the space to the future exterior amphitheater and courtyard would expand student study spaces to the outside in favorable weather.

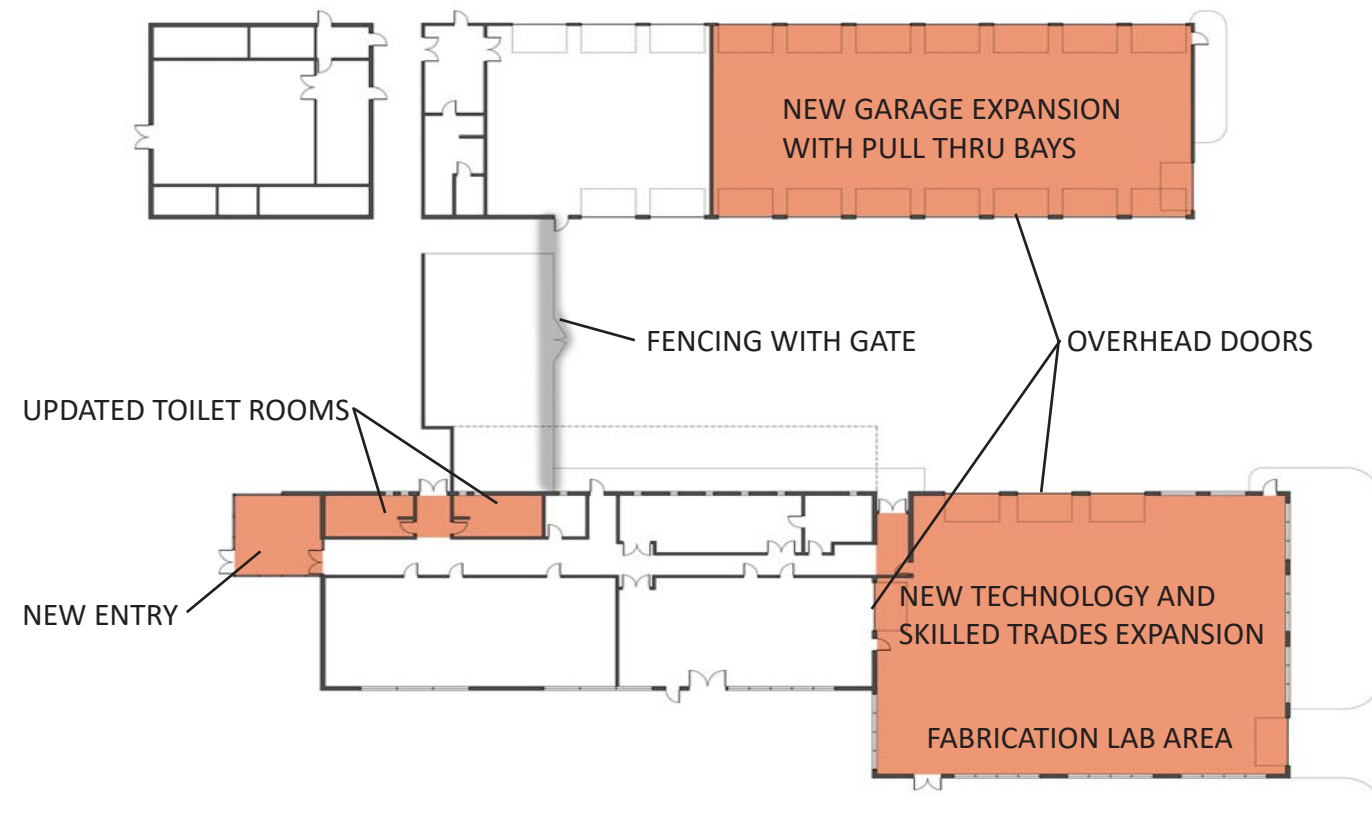
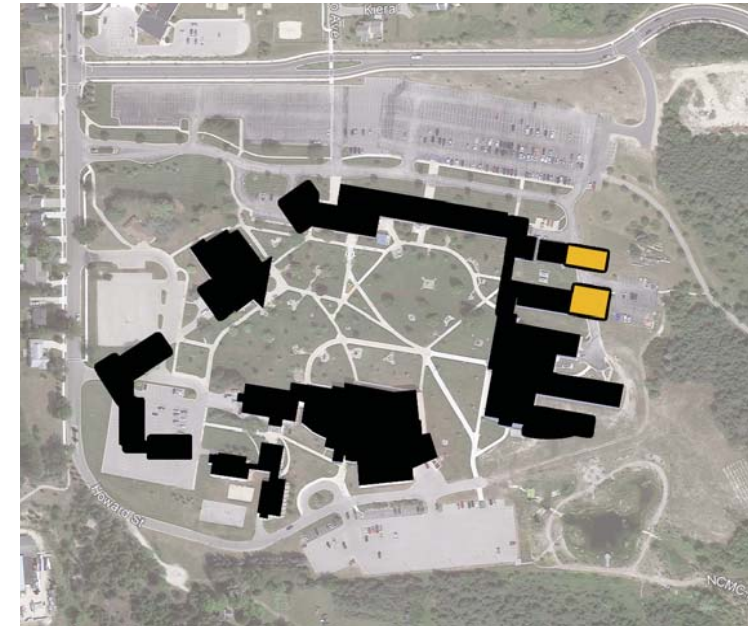
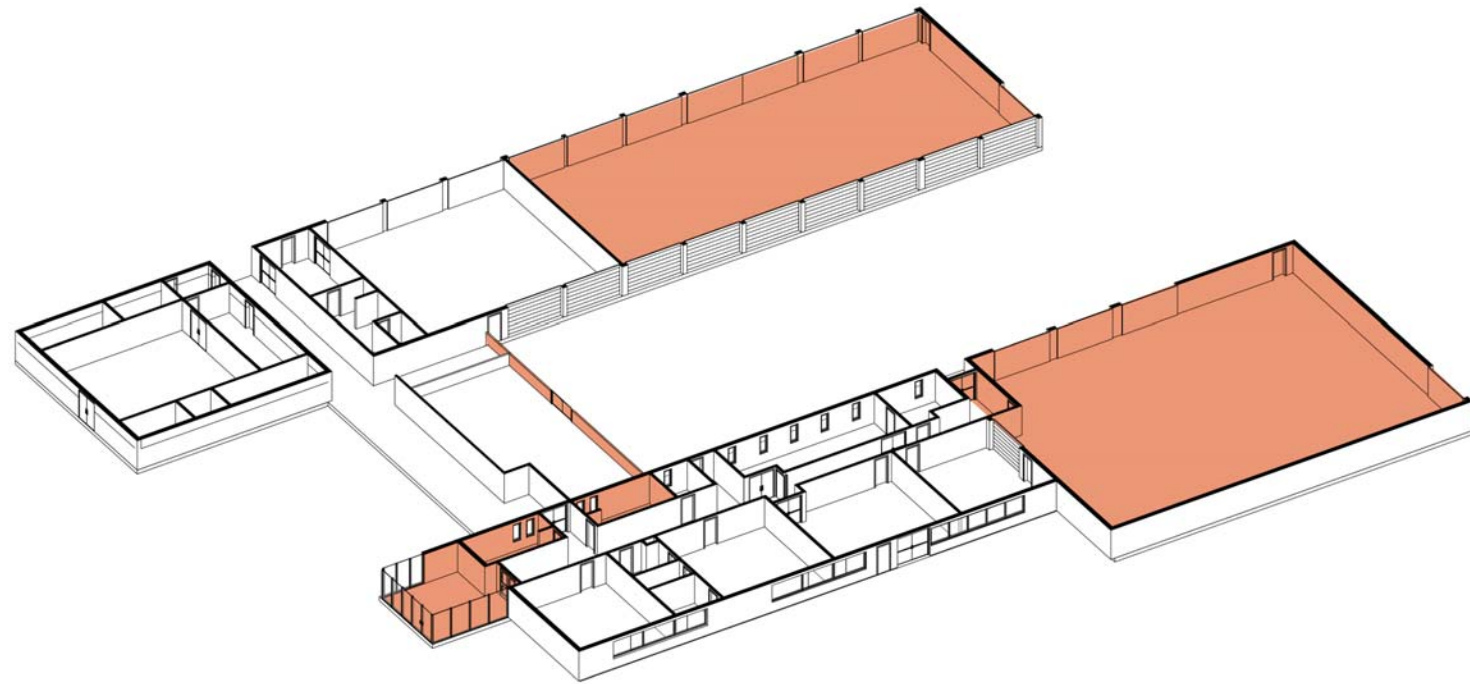
This transformation would include access to educational resources, existing and emerging technologies, and student study areas of various sizes and degrees of flexibility.

Ready-to-eat prepared food (health oriented), would be available for purchase. The design would be similar to airport type vendors.

This renovation, like all areas of suggested improvements, will address:

1. Barrier Free Accessibility-Universal Design
2. Use of sustainable design practices and materials:
 - Water Management
 - Recycled material content
 - Energy efficient Mechanical Systems
 - LED Lighting with lighting controls
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Maintenance and Technology Building Additions

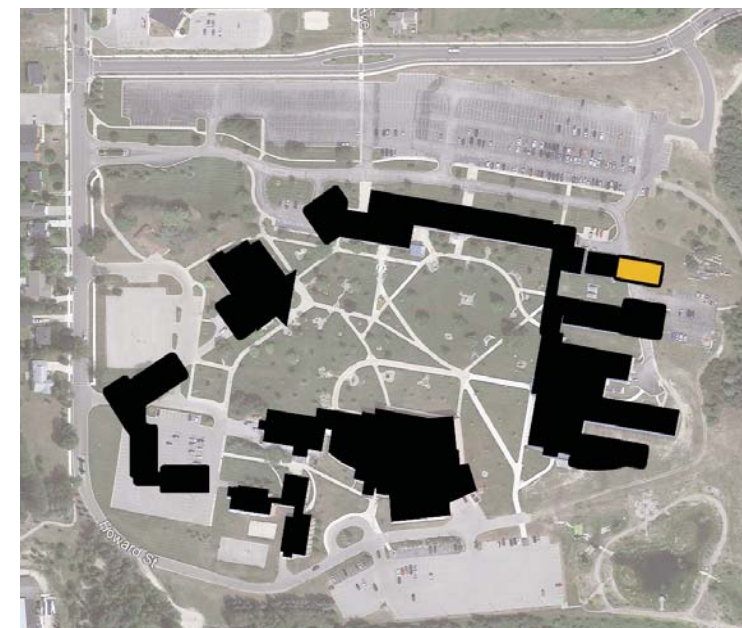


Renovation and expansion to the existing Technology Building would include access upgrades, toilet room upgrades, student gathering areas, updated finishes, lighting and HVAC systems (heating, ventilation and air-conditioning), and a proposed 7,600 sf open space for flexible training and instruction for skilled trades, maker spaces, emerging technology testing and fabrication, and other uses. The spaces could be divided with racking systems that are movable to adjust to needed sizes of teaching areas. Overhead doors would allow for delivery and testing of any produced/built materials or systems. This space could incorporate natural light, advanced ventilation, and expandable power and data needs. A new parking area would be expanded for access to this building as well as the Health Education and Science Center.

This renovation, like all areas of suggested improvements, will address:

1. Barrier Free Accessibility-Universal Design
2. Use of sustainable design practices and materials:
 - Water Management
 - Recycled material content
 - Energy efficient Mechanical Systems
 - LED Lighting with lighting controls
 - Daylight harvesting

Maintenance Building Addition



The renovation and expansion of the Maintenance Building would provide needed additional pull-thru service bays to support campus maintenance, as well as provide indoor teaching space for courses based around the use of vehicles such as ambulances and fire trucks. Space would also be available for storage and on-site use of the mobile Fabrication Lab classroom.

It is recommended that the design be attractive and functional, since the placement is somewhat prominent to the east entry of Atkins Road. The expansion would include areas for vehicle wash bays, and incorporate a pull through design with overhead doors on two sides. This would reduce damage to the vehicles and allow for a double stacking of vehicles within the structure.

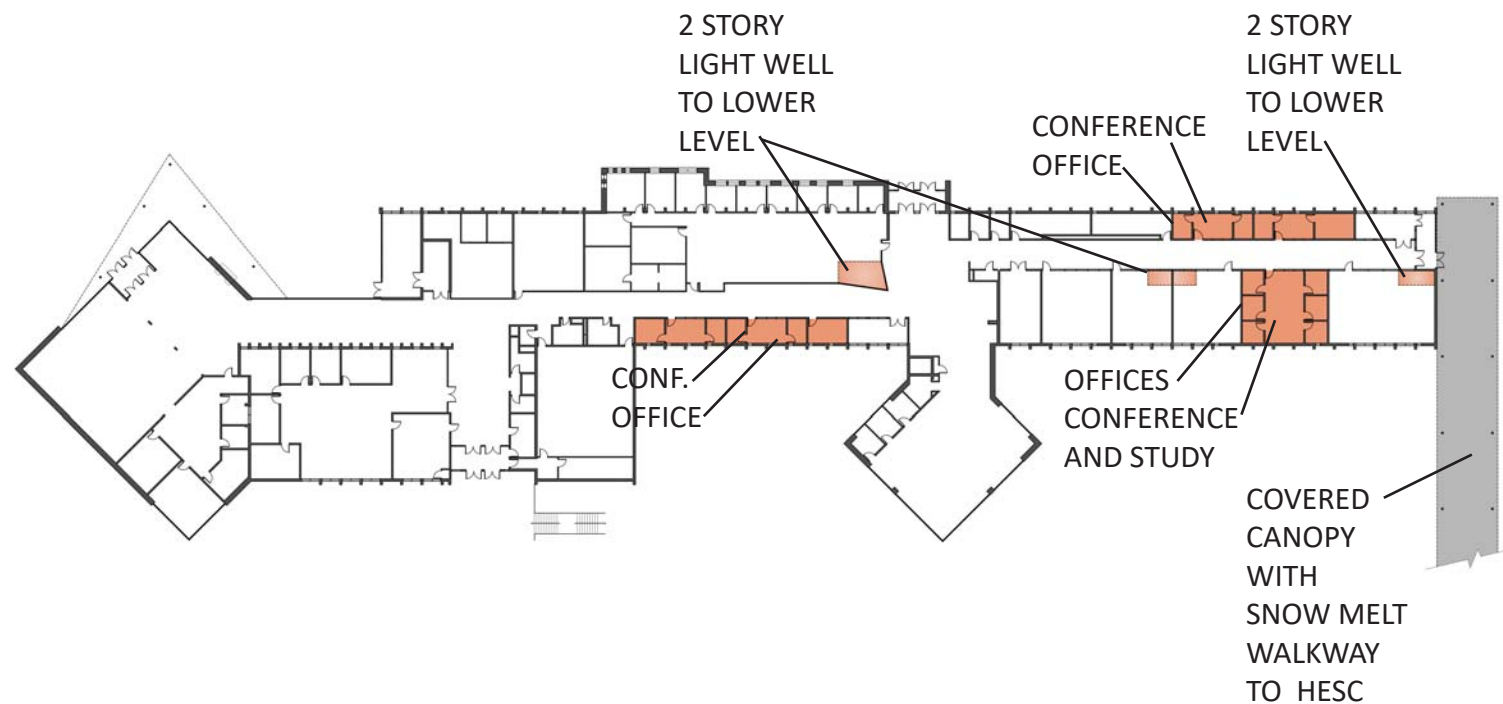
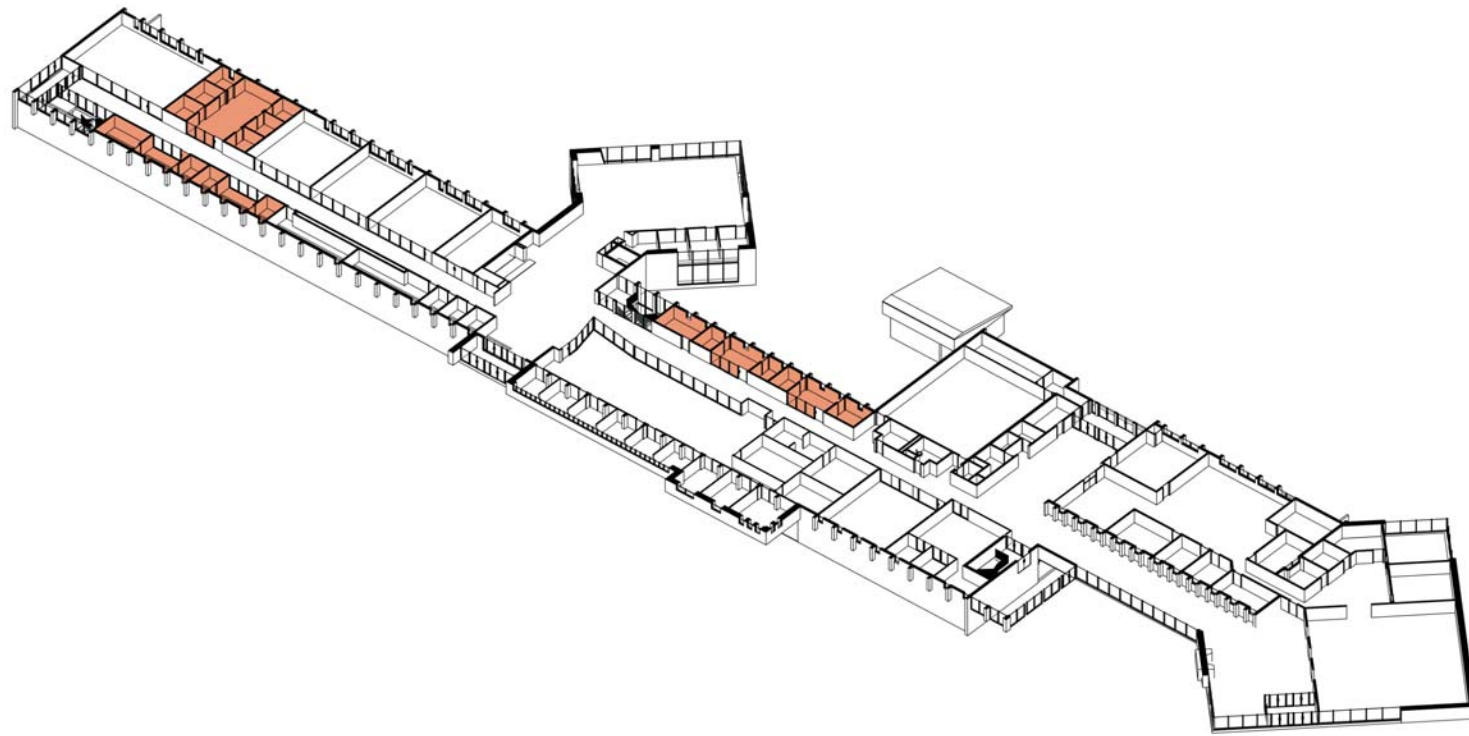
This project could include an educational opportunity for vehicle maintenance and service for an automotive technology program.

DESIGN FEATURES:

- Due to the visible location, an attractive renovation and addition is suggested.
- Use of consistent and complimentary campus materials
- Attractive apparatus bay doors
- Enhanced landscaping at the immediate site
- Sustainable systems implementation and innovation
- Campus accessibility plan and implementation.
- Campus security assessment and upgrades.



Administration/Classroom Building OFFICE + CONFERENCE AREA RENOVATION



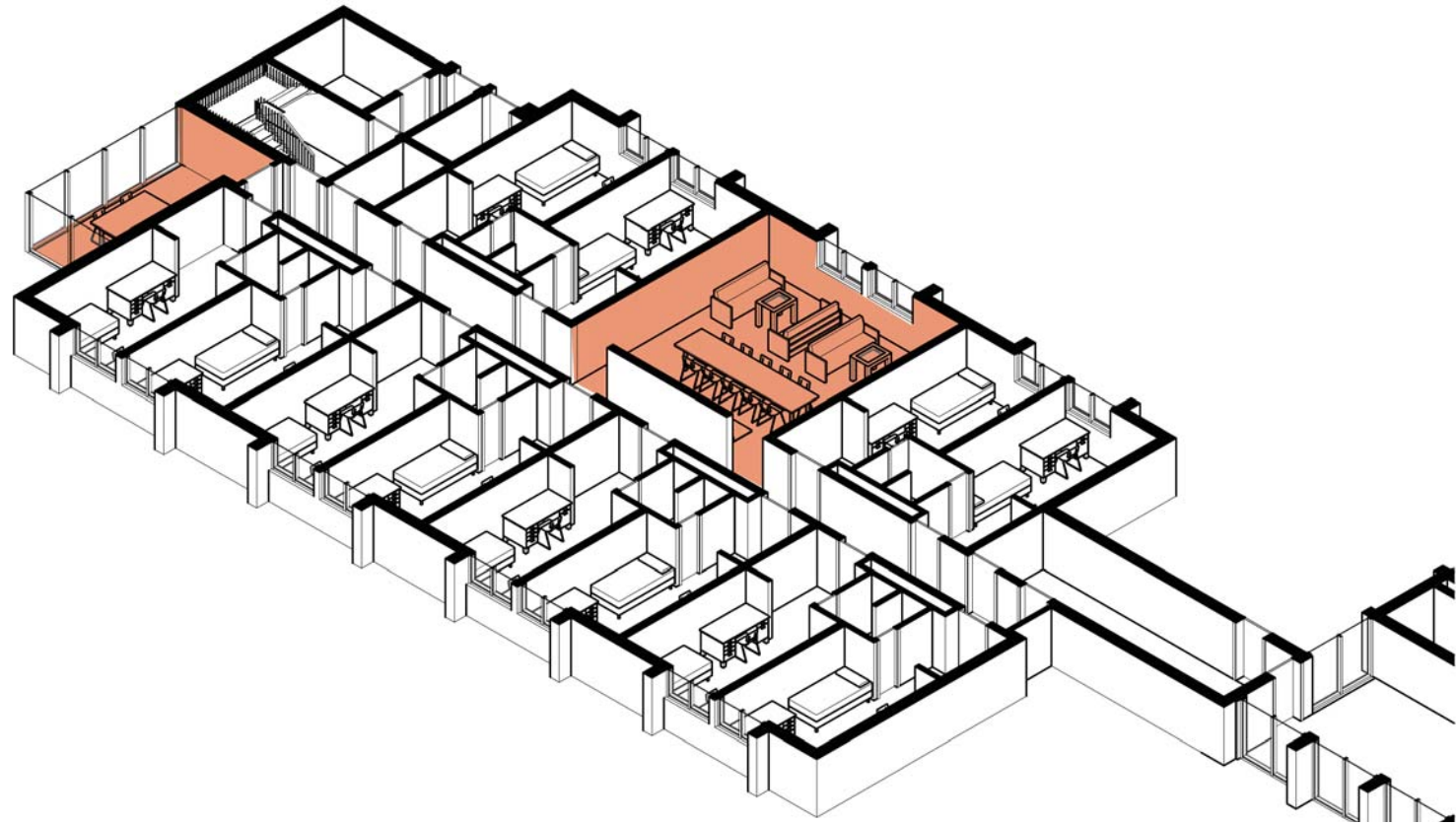
The proposed office and conference room renovations would enlarge and aesthetically enhance the various instructor offices. The concept proposed would enlarge offices and place a study/conference room between the offices for shared use. This would accommodate student-instructor meetings, tutoring, and collaboration. This concept could occur on both levels as further defined by NCMC and staff.

It is suggested that this concept also be utilized for University Centers, and that more natural light be introduced with light wells from upper to lower levels and more glass along corridors.

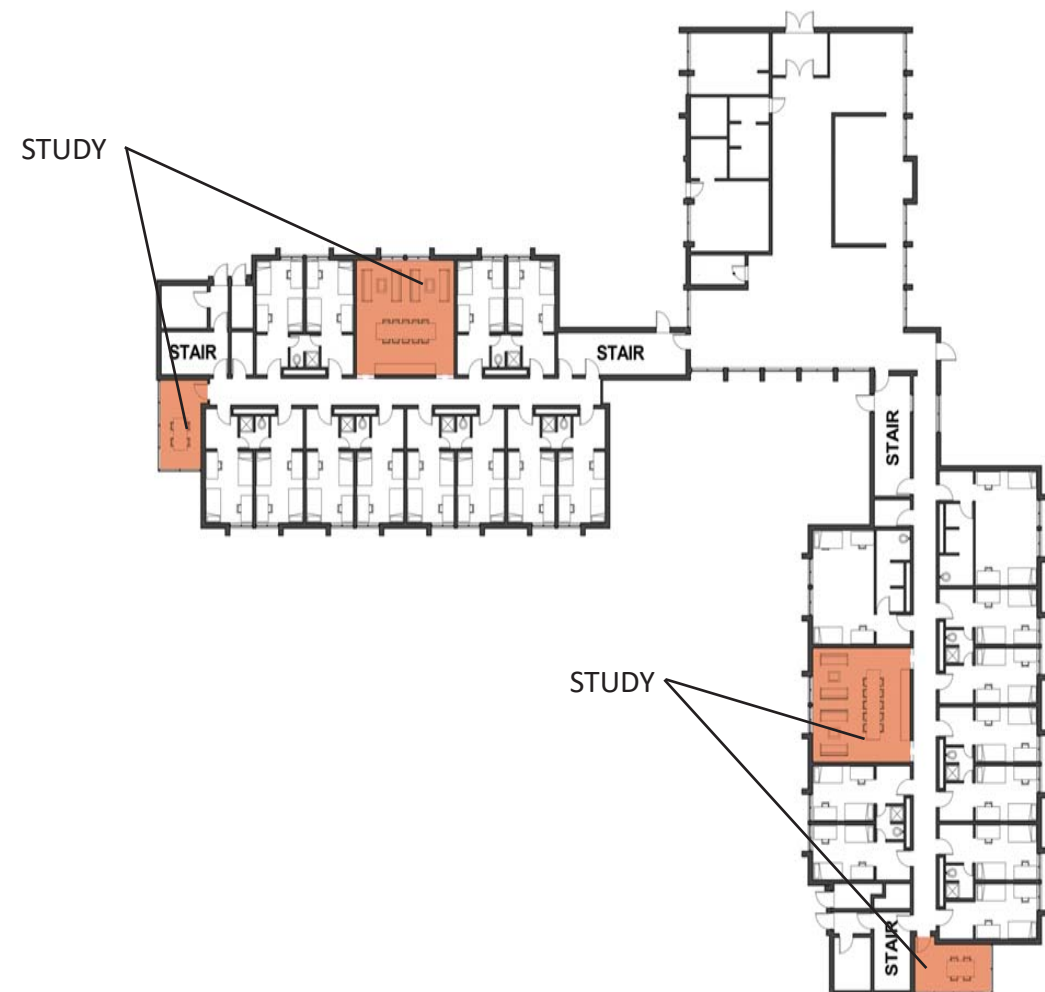
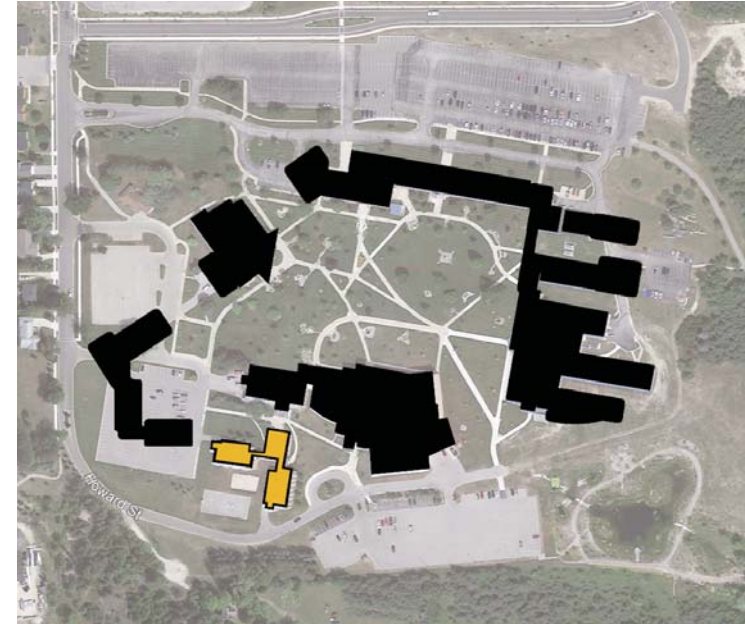
Note 1: Refer to the 10 year plus planning concepts for the proposed bookstore, student enclaves, and office addition.

This renovation, like all areas of suggested improvements, will address:

1. Barrier Free Accessibility-Universal Design
2. Use of sustainable design practices and materials:
 - Water Management
 - Recycled material content
 - Energy efficient Mechanical Systems
 - LED Lighting with lighting controls
 - Daylight harvesting



Residence Hall Renovation



The existing Residence Hall received many comments and suggestions for improvement from the students and staff. It is recommended that aesthetic and functional renovations be introduced to attract more students who want or need to live on campus (local, regional and international student exchanges). The renovation would include interior cosmetic upgrades with durable flooring, bathroom remodeling with new fixtures, new lighting, added power, larger operable windows, air conditioning (chilled water loop extended to the housing units) and enhanced ventilation. New energy efficient lighting would replace existing.

Two existing rooms per floor would be combined and renovated as attractive gathering/study spaces that may incorporate small kitchen areas. Added study rooms would be placed at the ends of the buildings to take advantage of views and natural light.

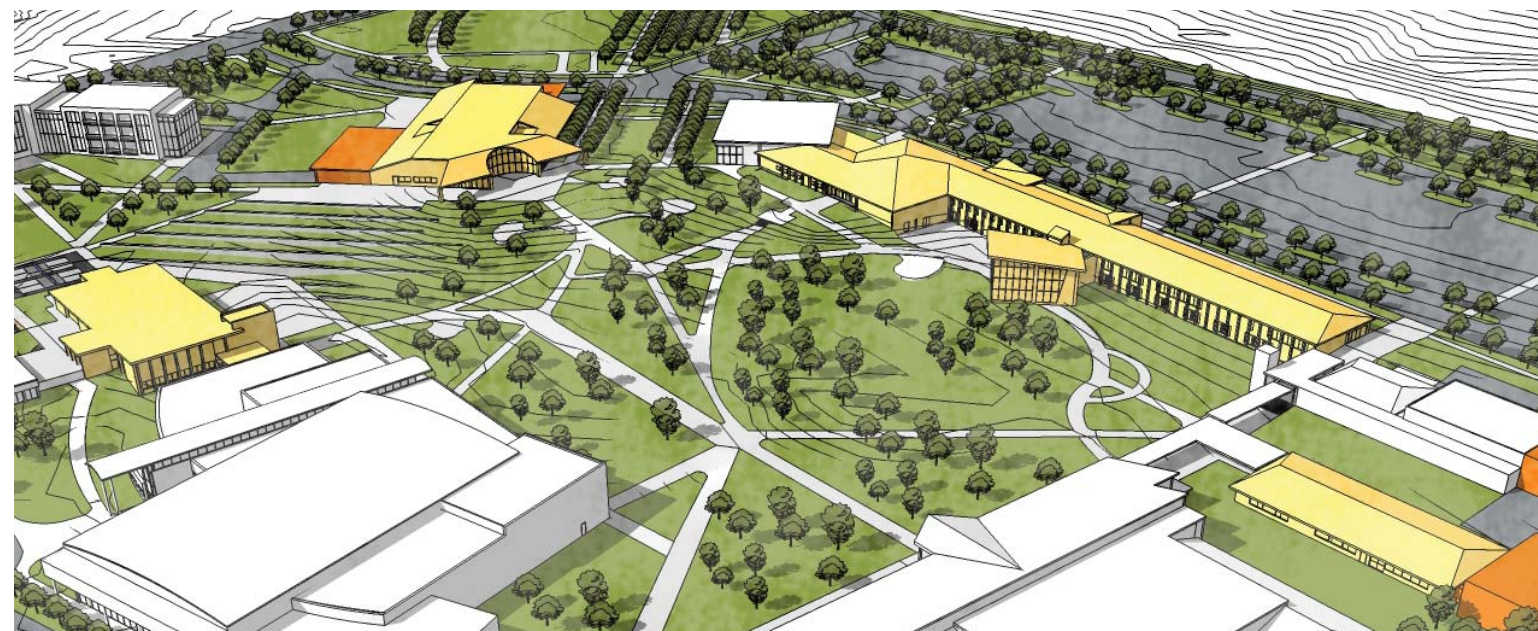
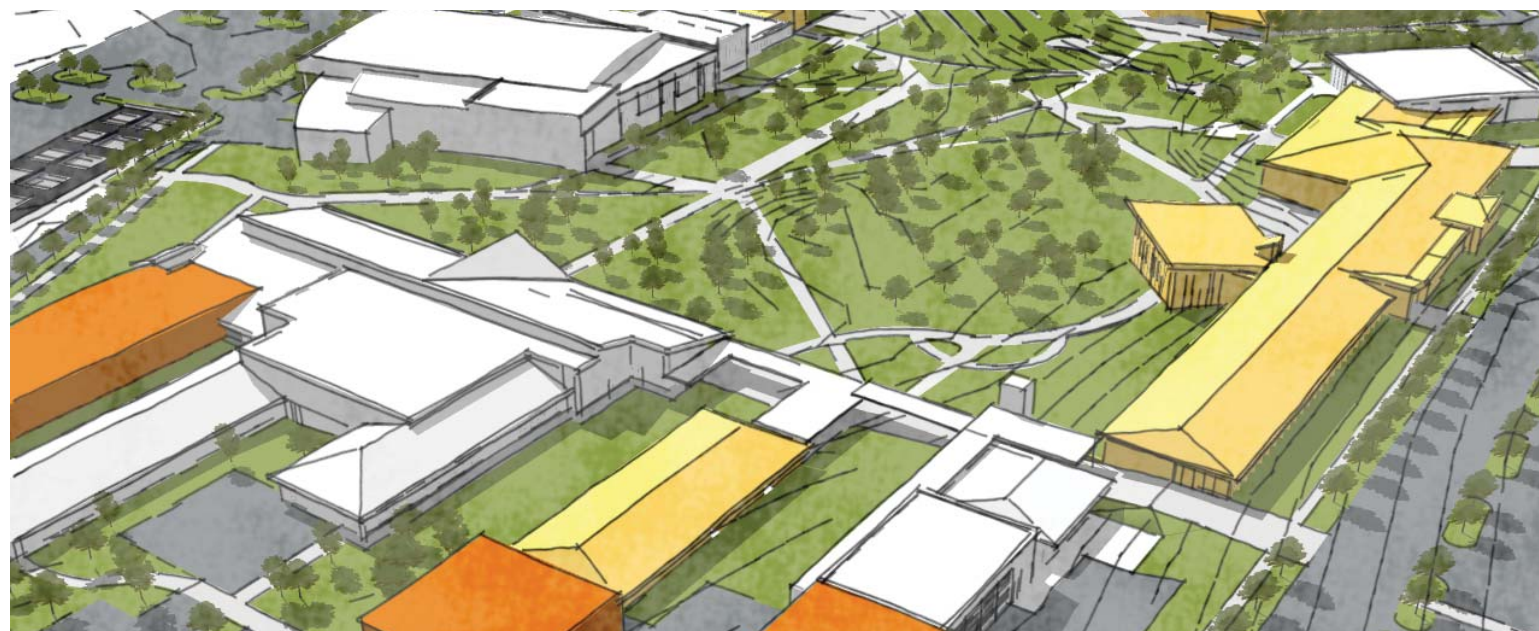
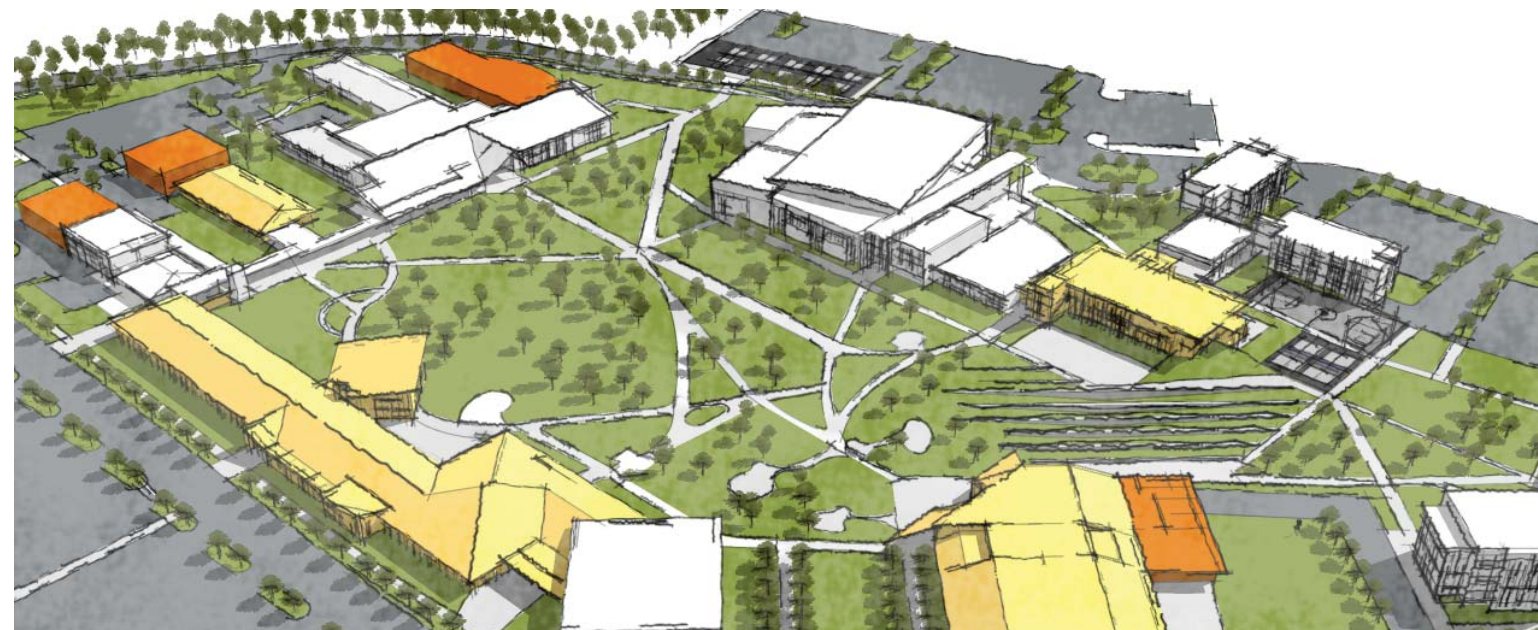
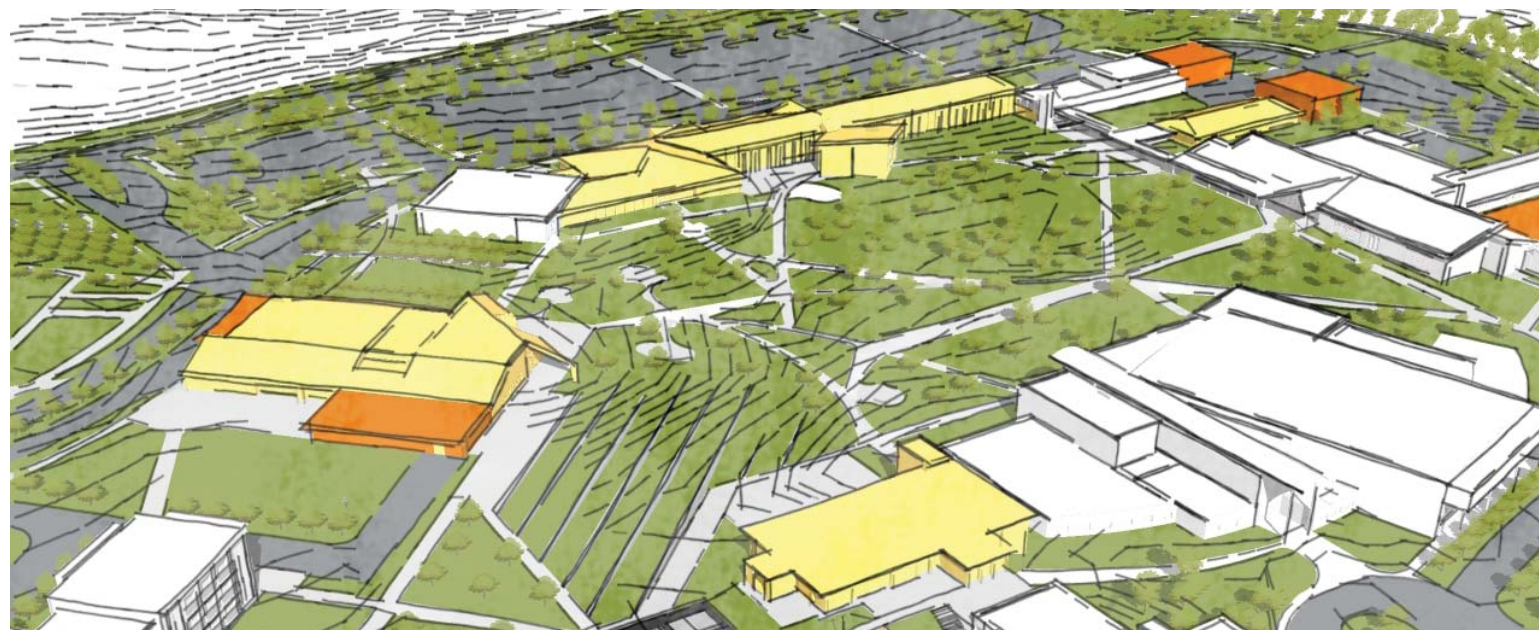
The exterior would be lightly renovated to improve exterior appearances.

Outdoor activity spaces adjacent to the buildings would be encouraged.

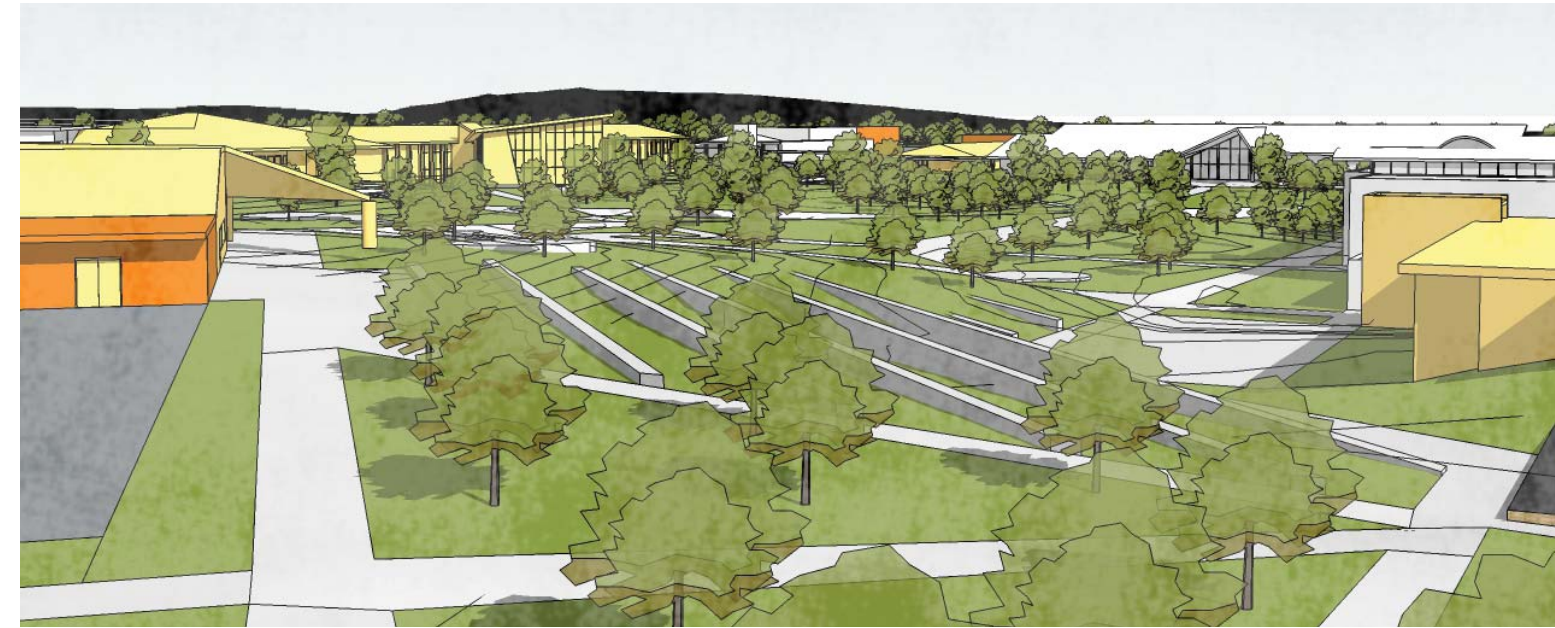
This renovation, like all areas of suggested improvements, will address:

1. Barrier Free Accessibility-Universal Design
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Master Plan Phasing- 5 Years



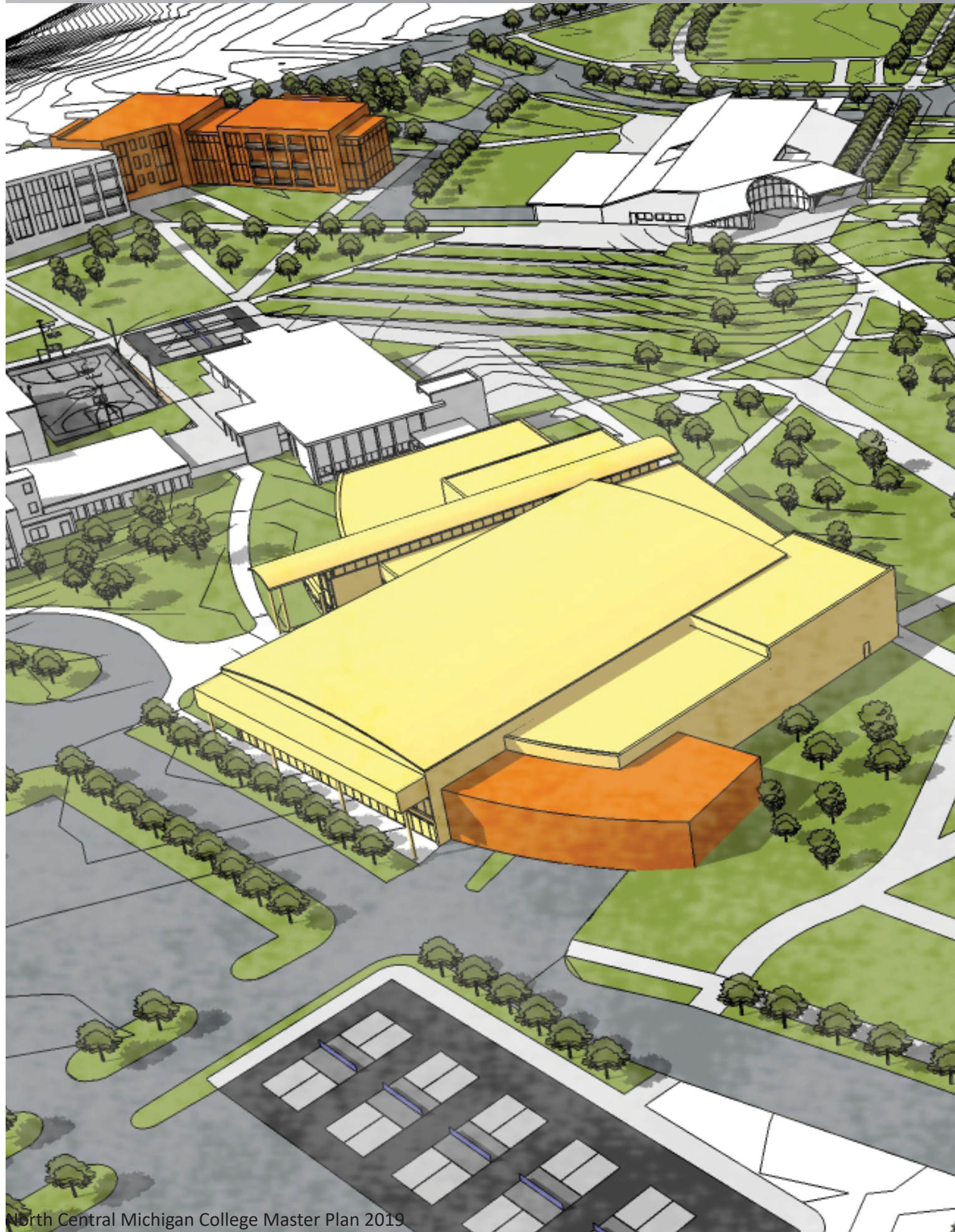
Master Plan Phasing- 5 Years



5-10 YEAR FACILITIES PRIORITIES

1. Develop and construct Phase One of Residence Hall 1.
2. Develop and construct Student Commons attached to Residence Hall 1.
3. Campus wide landscape improvements at parking areas.
4. Sculpt grading to accommodate a barrier free amphitheater and gathering pavilion adjacent to the former Library (Student Innovation Center).
5. Add trees to central courtyard to frame sculpture areas.
6. Provide construction for a covered canopy and barrier free lift at the east campus entry. Possible snow melt systems installed at this walk way.
7. Construct addition to the Student and Community Resource Center (SCRC) for community welcoming, and renovate selected areas for student physical education classrooms.





Master Plan Phasing Priorities- 10 Years



6-10 Year Priorities- Facilities

1. Develop and construct Phase One of Residence Hall 1.
2. Develop and construct Student Commons attached to Residence Hall 1.
3. Campus wide Landscape improvements at parking areas. Attention to Lots 1 & 6.
4. Sculpt grading to accommodate a barrier free amphitheater and gathering pavilion adjacent to the former Library (Student Innovation Center).
5. Add trees to central courtyard to frame sculpture areas.
6. Provide construction for a covered canopy and barrier free lift at the east Campus entry. Possible snow melt systems installed at this walk way.
7. Construct addition to the Student and Community Resource Center (SCRC) for community welcoming, and renovate selected areas for student physical education classrooms.

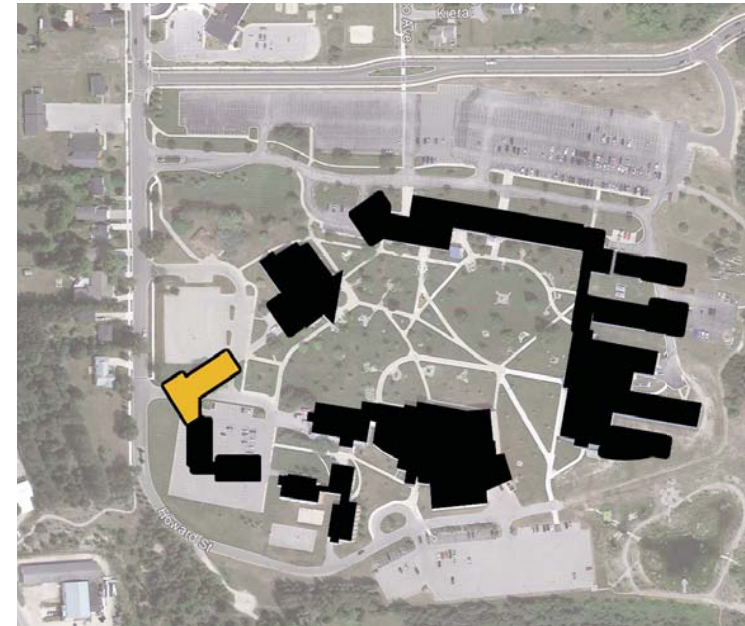
6-10 Year Priorities- Programming

1. Renew Campus Master Plan and Strategic Plan
2. Plan/prepare for Capital Outlay projects.
3. Continue community relationship building.
4. Continue business relationship building.
5. Assess current and future trends and their application to students at NCMC
6. Identify and market "on campus" events and event planning.
7. Continue and cultivate Tribal Relationships

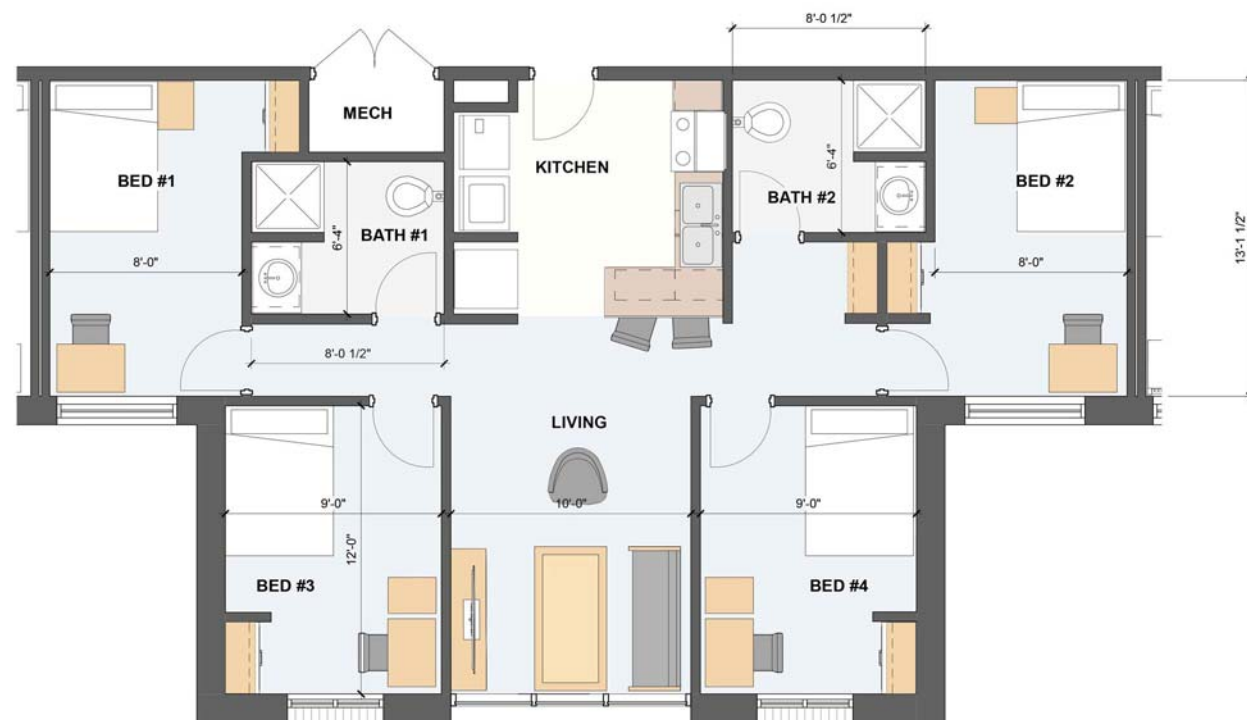
6-10 Year Priorities- Maintenance

1. Window assessment-repair/replace as needed.
2. Exterior Maintenance:
Tuck point all brick
Repair/Replace EIFS with composite
Roof assessment-repair/replace as needed.
3. Mechanical, electrical, plumbing repairs as needed.
4. Sidewalk assessment and repair of cracks and unevenness.
5. Sustainable implementation and innovation
6. Campus accessibility plan and implementation.
7. Campus security assessment and upgrades.

New Residence Hall - Phase 1



UNIT AREA: 924 SF

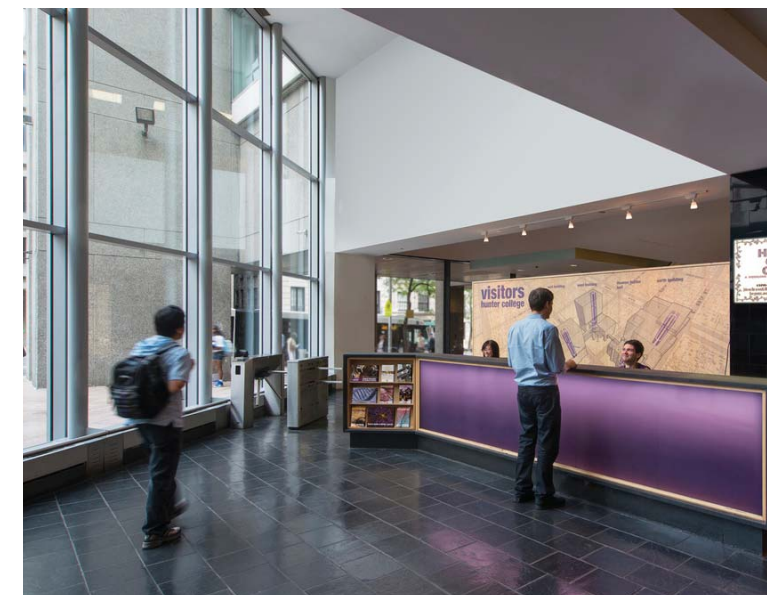


Proposed expansion of housing offerings may include apartment type units of a size and scale to complement the surrounding residential areas on the west side of the campus. A maximum of three stories would be suggested. These units would be connected to the new proposed dining/cafe in the Student Innovation Center (the former Library), and would incorporate a drive through drop off at the main entrance and a service access at another location. Phase one would also include a large student activity lobby area with study space, leisure areas, fireplace, multimedia technologies, security/information desk, mail room, RA office/rooms and other applicable spaces.

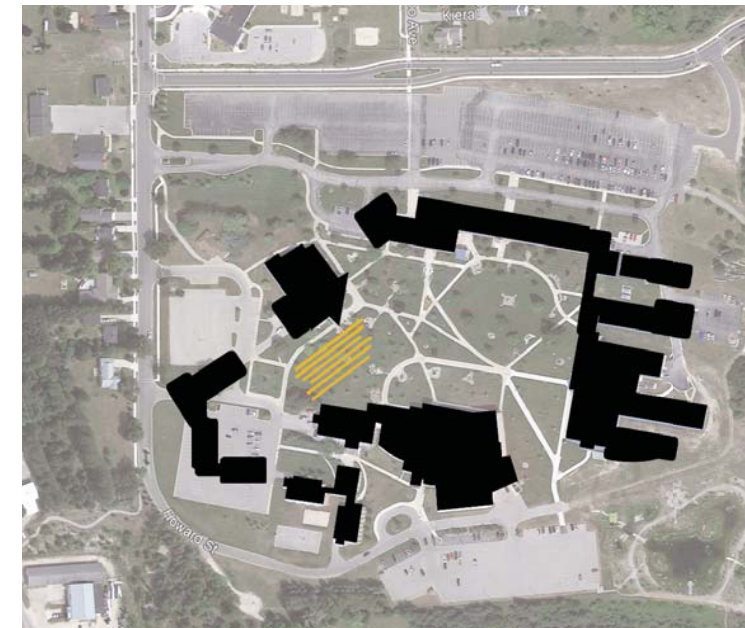
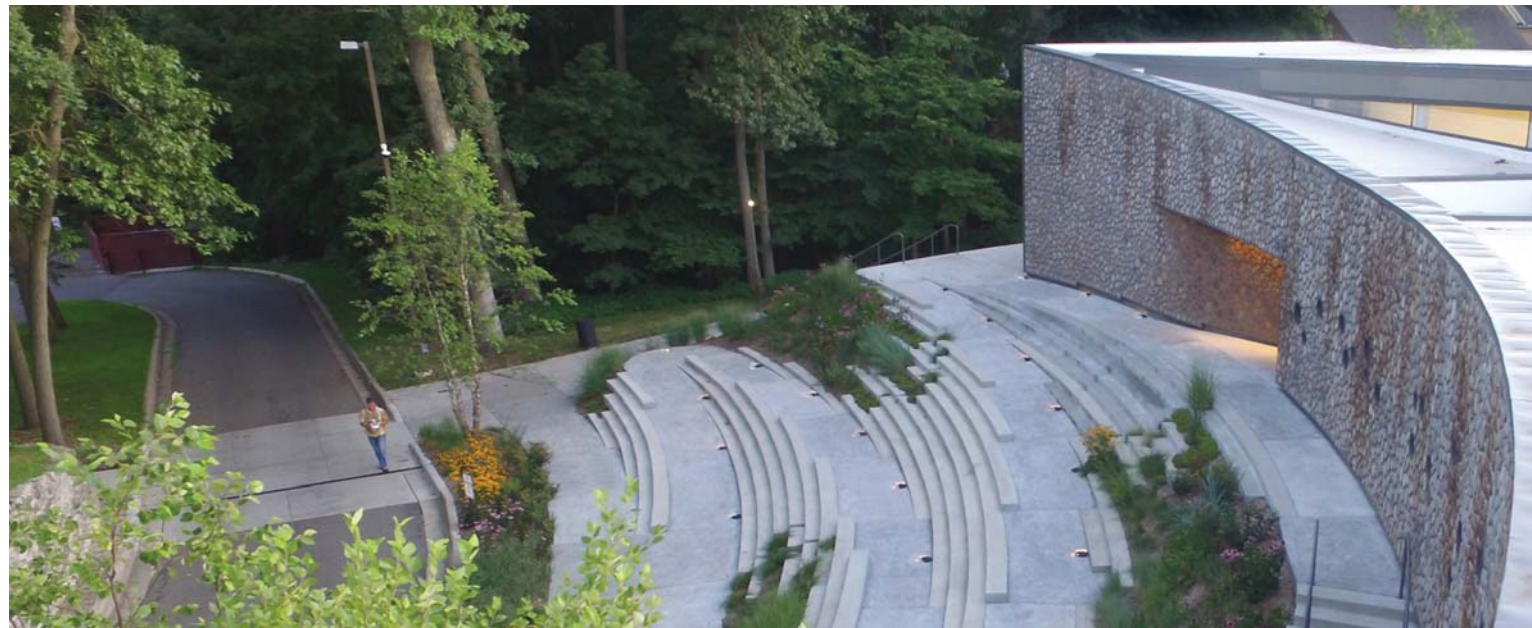
The design would enable future additions in later phases should demand warrant.

This housing could also provide a resource in the summer months for groups attending camps or conferences, area hospitality workers, young families, or others.

DESIGN FEATURES:
 Sustainable systems implementation and innovation
 Campus accessibility plan and implementation.
 Campus security assessment and upgrades.
 Exterior recreational space



Amphitheater



With the degree of grade changes and topographical levels, there is an opportunity to sculpt a tiered amphitheater into the hill just south of the Student Innovation Center (former Library). This multi level seating area would be designed to also serve as a barrier free ramping design that enables physically challenged individuals to get from the upper level of the Student Innovation Center to the existing Residence Hall and new Multi-Media Center (former Student Center Cafeteria). It would provide outdoor performance space, study space and courtyard space proximate to heavily accessed student spaces.

This placement would have limited effect on the existing sculptures placed in the central gardens, and is proximate to summer parking areas for outdoor campus events.

Restroom facilities in the new Multi-Media Center and new Student Innovation Center could serve the needs of events.

For winter months, a snow melt system is recommended to provide for all-season use and access.

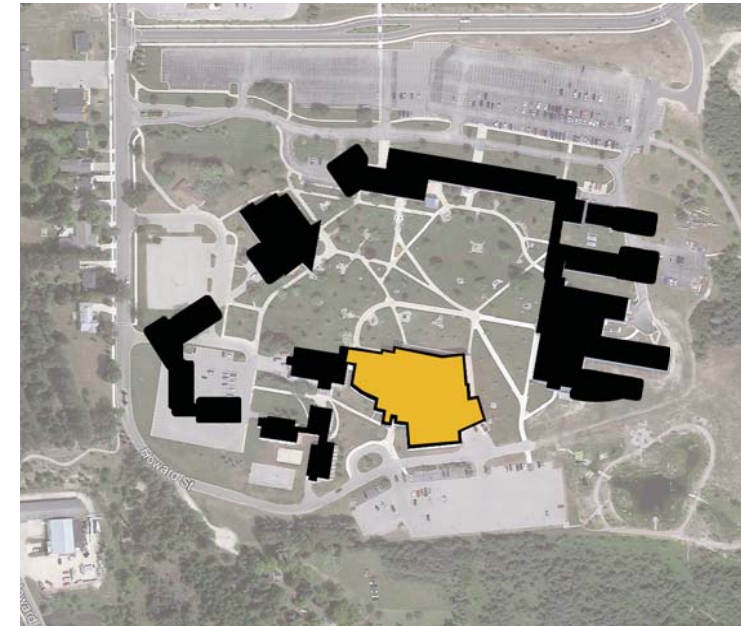
Enhanced landscaping is recommended.

DESIGN FEATURES:

- Universal accessible design.
- Stage area for presentations, readings, concerts, and other activities.
- Enhanced landscaping at the immediate site and surrounding area.
- Sustainable systems implementation and innovation
- Campus accessibility plan and implementation.



SCRC Renovation and Addition



Proposed renovations for the Student and Community Resource Center (SCRC) include cosmetic upgrades, better utilization of space, a designated Community entrance on the east and a designated Student entrance on the west side of the facility. The community entry would require an addition to the building.

Added physical education classrooms would be identified in areas adjacent to the main concourse on the main level (food service area) and on the upper level. Upper level catwalk space would be increased to provide added study enclaves adjacent to window areas.

Control counters/Service counters would be introduced at both the student and community south main entries. The upper level exercise rooms would be combined for a more open feel.

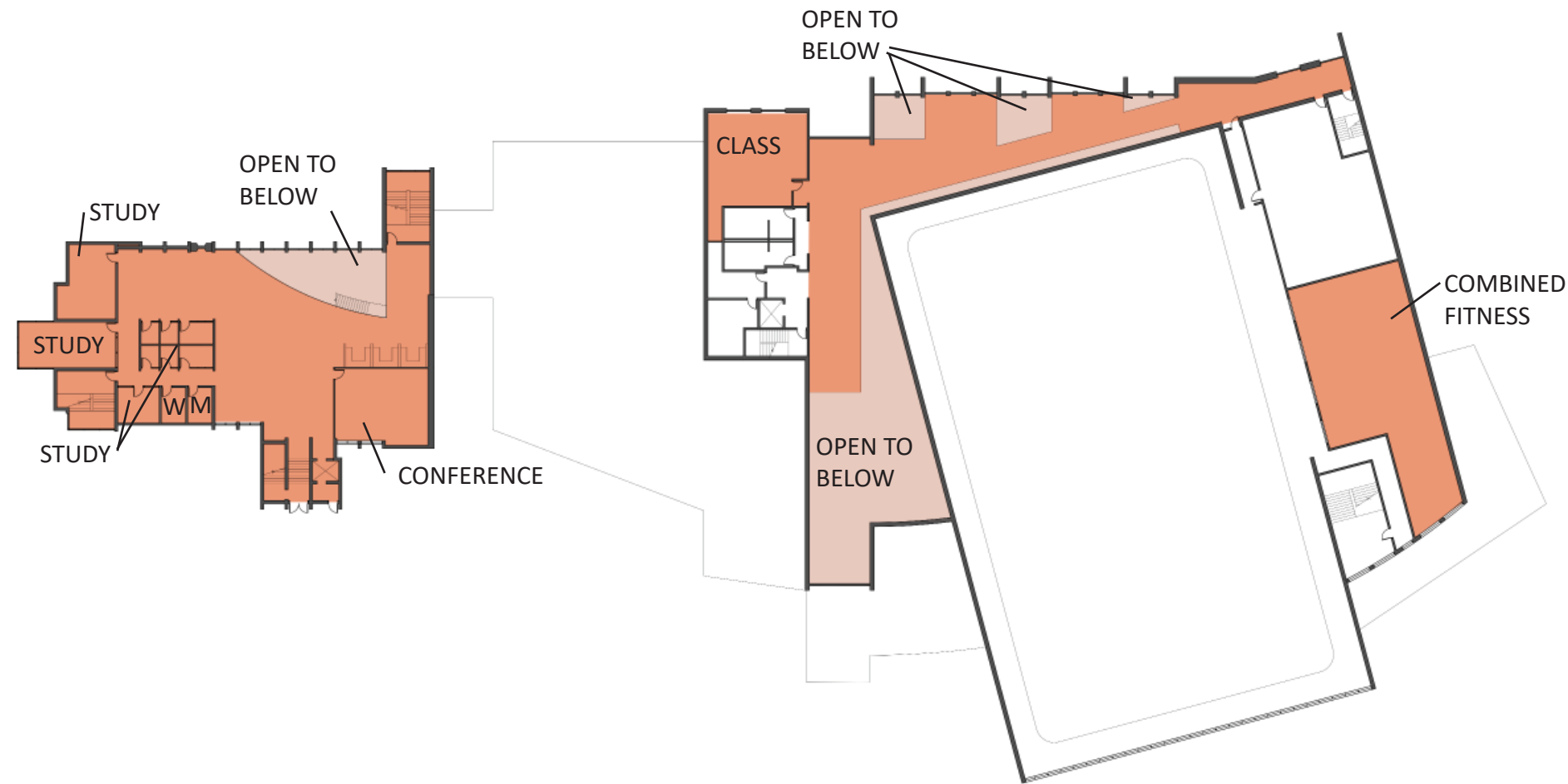
Vending/Ready-to-eat healthy choice food and beverage kiosks would be available near counter areas.

Exterior improvements may incorporate both permanent and temporary pickleball courts to address seasonal demand. Temporary summer courts could be placed on special surface areas in the south Parking Lot #6, along with portable nets, stanchions, and temporary barricades (movable planters) to separate the courts from traffic and parking areas.

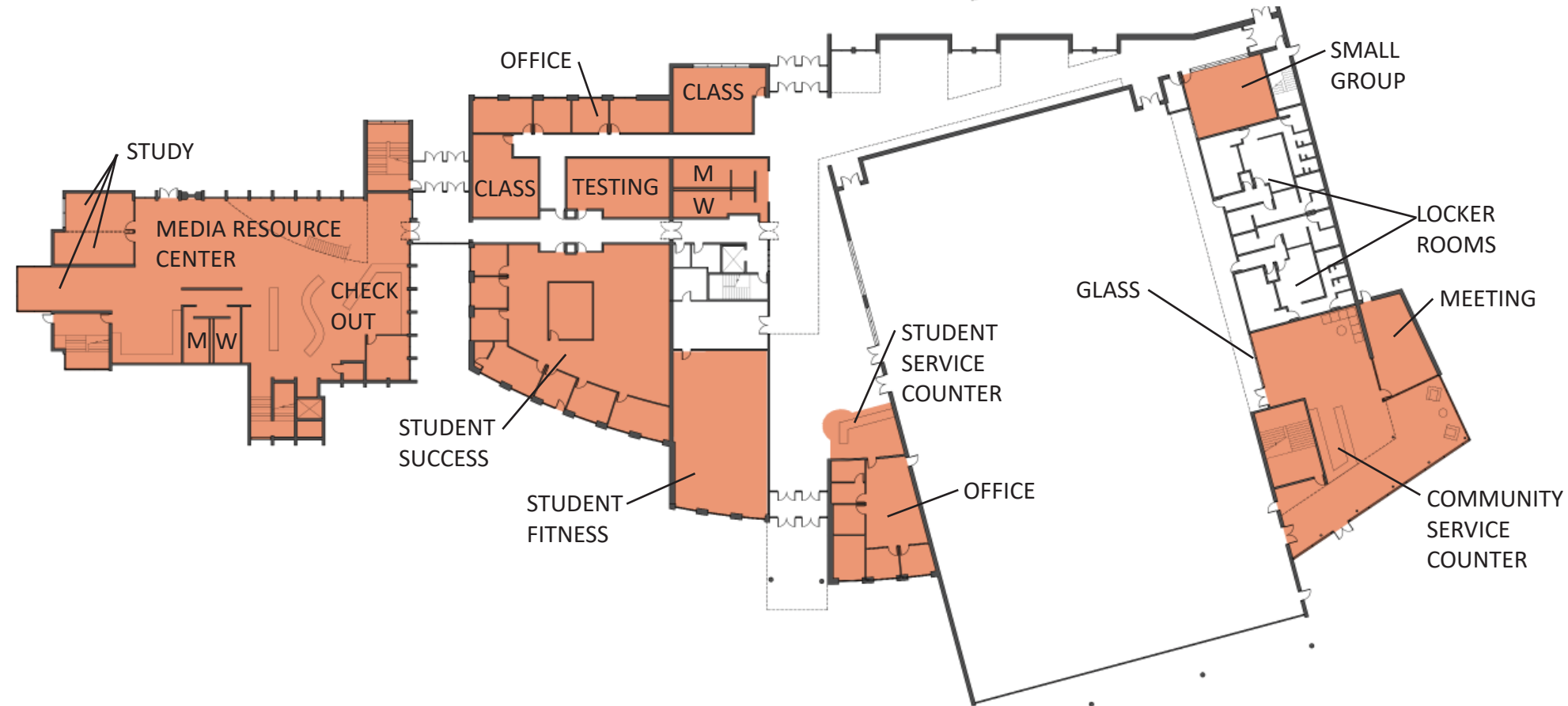
MAINTENANCE ITEMS:

1. Window assessment-Repair/replace as needed.
2. Exterior Maintenance:
 - Tuck point all brick/block
 - Storm Water management-gutters
 - Roof assessment-repair/replace as needed.
 - Stain/seal wood canopy
3. Mechanical,electrical, plumbing repairs as needed.
4. Sustainable implementation and innovation
5. Campus security assessment and upgrades.

SCRC Renovation and Addition

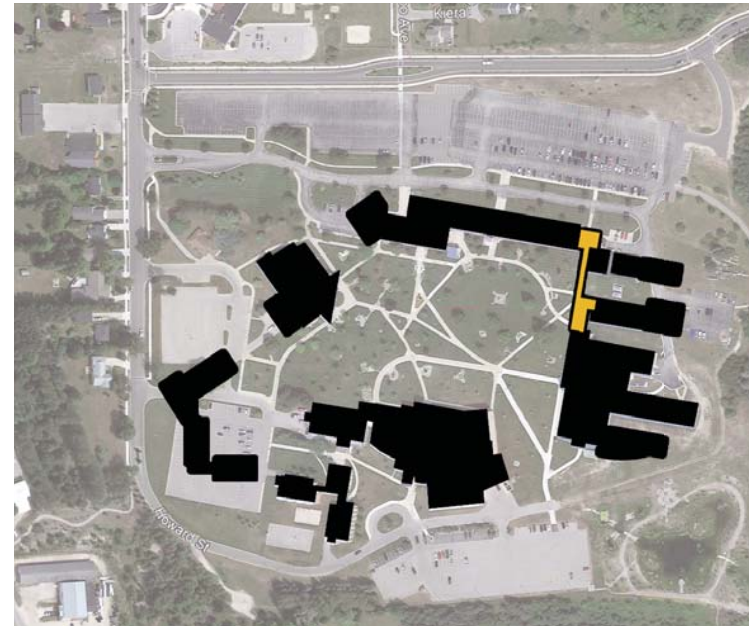


SECOND FLOOR



FIRST FLOOR

Northeast Covered Connector



The northeast entry point to the campus is heavily used by students who park in the north lots and attend classes in the Technology Building, Health Education and Science Center, and Administration/Classroom Building. This area is exposed to north winds and snow which make this access dangerous during the winter season.

Four educational buildings use this circulation route for access. The grade slopes significantly from Parking Lot 1 to the north entrance of the HESC, with a drop in elevation of about 14' over the length.

To make the buildings more accessible to wheelchairs and other devices, we suggest a combination of glass air-lock vestibules, covered canopies and heated sidewalks to accommodate safe use. The placement of an enclosed glass limited access lift (elevator) would help to accommodate the grade differences between the buildings and over all site. This improved route would access the environmentally sensitive areas and walkways to the natural acreage.

Extending the canopy to the north access road visually denotes the entrance to campus and creates the opportunity for a designated bus stop and covered drop off area for students awaiting rides.

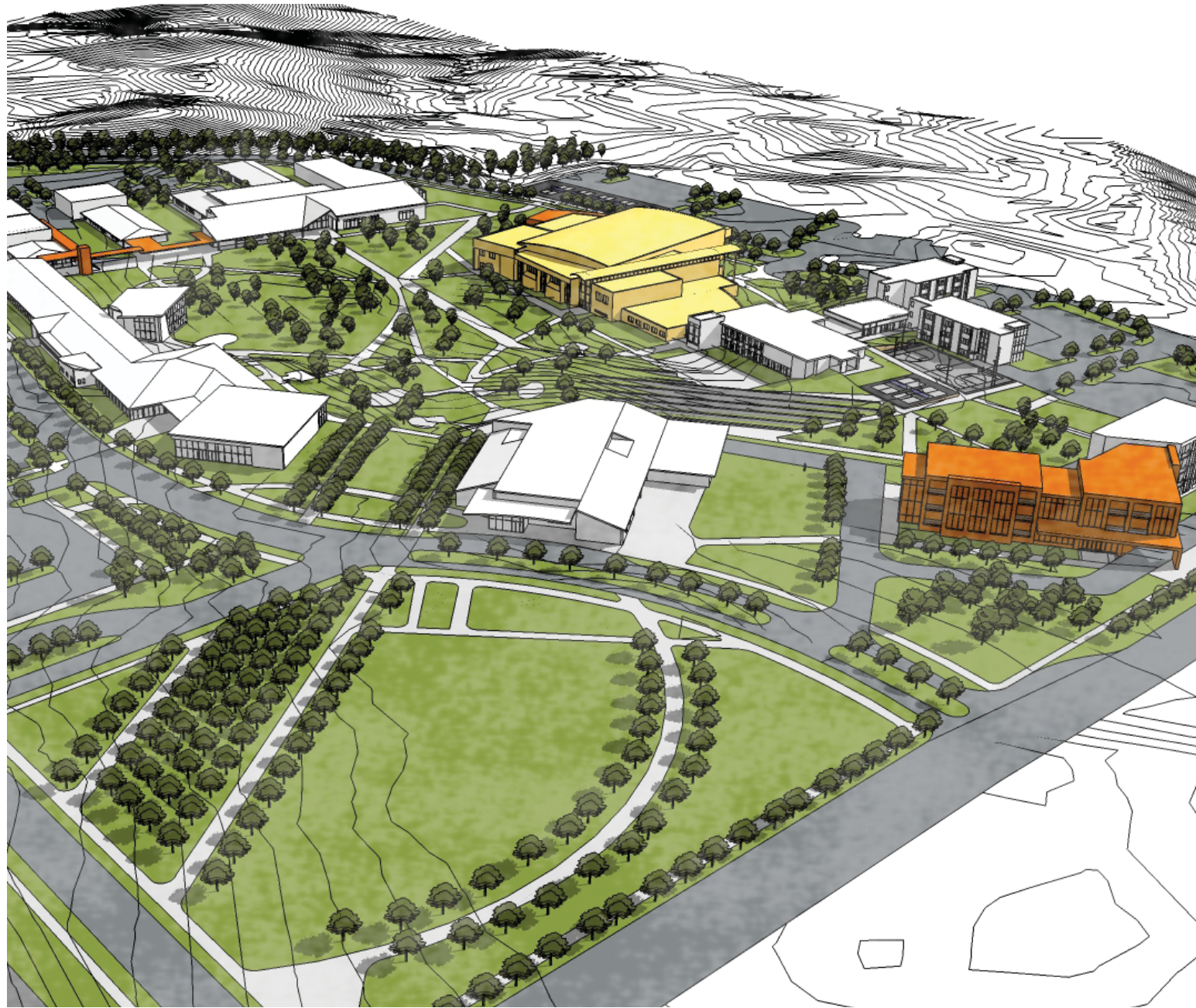
Addition: 5,200 SF

DESIGN FEATURES:

- Universal accessible design.
- Covered Walk for all season use.
- Possible Snow Melt.
- Enhanced landscaping at the immediate site and surrounding area.
- Sustainable systems implementation and innovation
- Campus accessibility plan and implementation.
- Campus security assessment and upgrades.



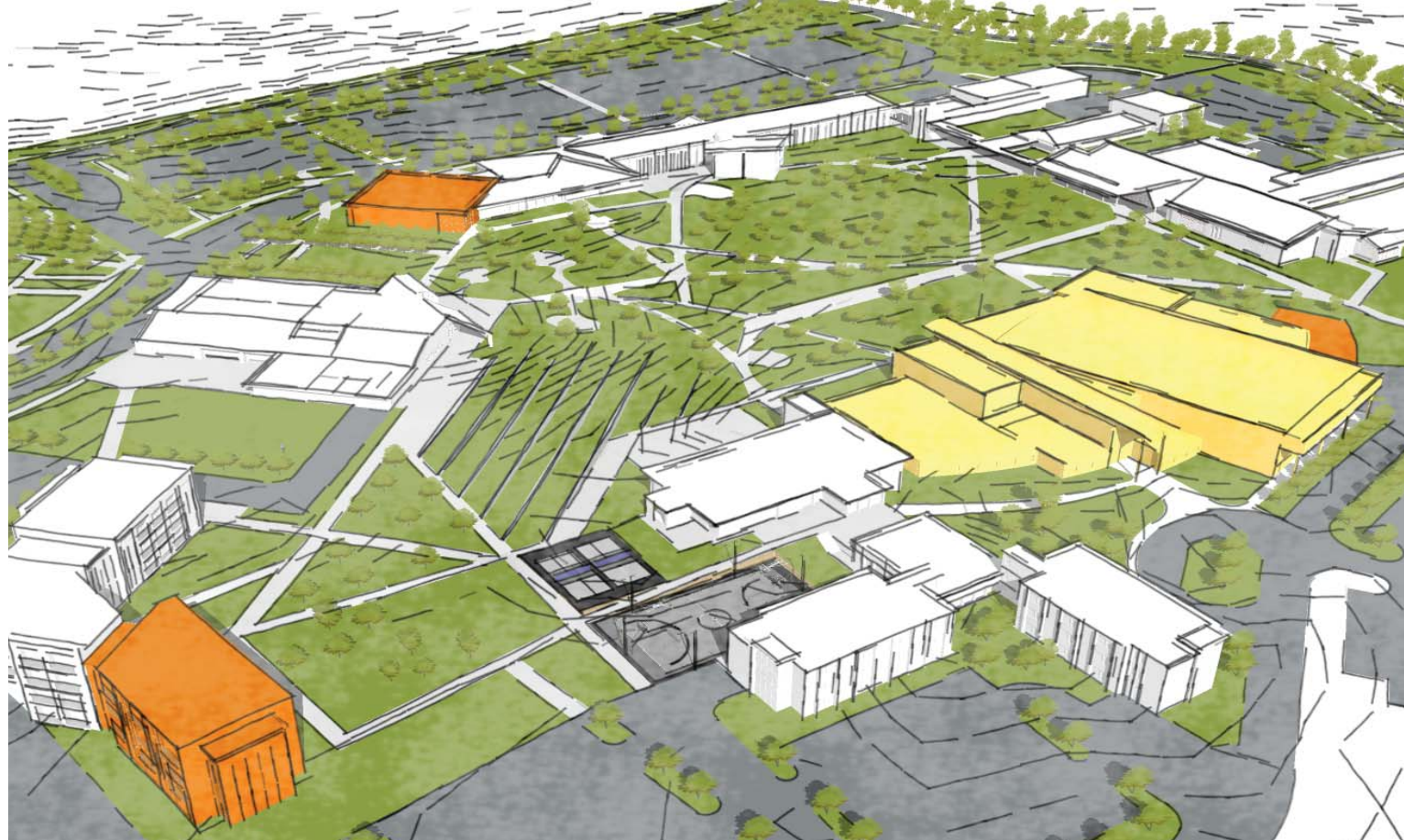
Master Plan Phasing- 10 Years





10-15 YEAR FACILITIES PRIORITIES

1. Renovate current bookstore into a student fitness area and relocate the bookstore into a new addition to the Administration Building.
2. Plan and construct an addition to the west end of the Administration Building to accommodate the Campus Bookstore, student study areas, and additional office space. This addition would provide for an impressive west entry, and initial impression as people enter off Howard Street.
3. Add Phase Two/Three to the Residence Housing (if appropriate) along with associated parking, service access, and landscaping.
4. Expand landscaping standards to all areas.
5. Investigate co-partnerships evolving on campus with new companies that align with educational goals and facilities to accommodate their needs.
6. Investigate a core downtown Petoskey presence for NCMC.
7. Continue to enhance natural areas.



Master Plan Phasing Priorities- 15+ Years



11 -15 + Year Priorities- Facilities

1. Renovate current bookstore into a student fitness area and relocate the bookstore into a new addition to the Administration Building.
2. Plan and construct an addition to the west end of the Administration Building to accommodate the Campus Bookstore, student study areas, and additional office space. This addition would provide for an impressive west entry, and initial impression as people enter campus from Howard Street.
3. Add Phase Two/Three to the Residence Housing (if appropriate) along with associated parking, service access, and landscaping.
4. Expand landscaping standards to all areas.
5. Investigate co-partnerships evolving on campus with new companies that align with educational goals and facilities to accommodate their needs.
6. Investigate a core downtown Petoskey presence for NCMC.
7. Continue to enhance natural areas.

11-15+ Year Priorities- Programming

1. Renew Campus Master Plan and Strategic Plan.
2. Plan/prepare for Capital Outlay projects.
3. Continue community relationship building.
4. Continue business relationship building.
5. Enhance/adjust Club Athletics + Intercollegiate Athletics as needed.
6. Assess current and future trends and their application to students at NCMC.
7. Continue and cultivate Tribal Relationships.

11-15+ Year Priorities- Maintenance

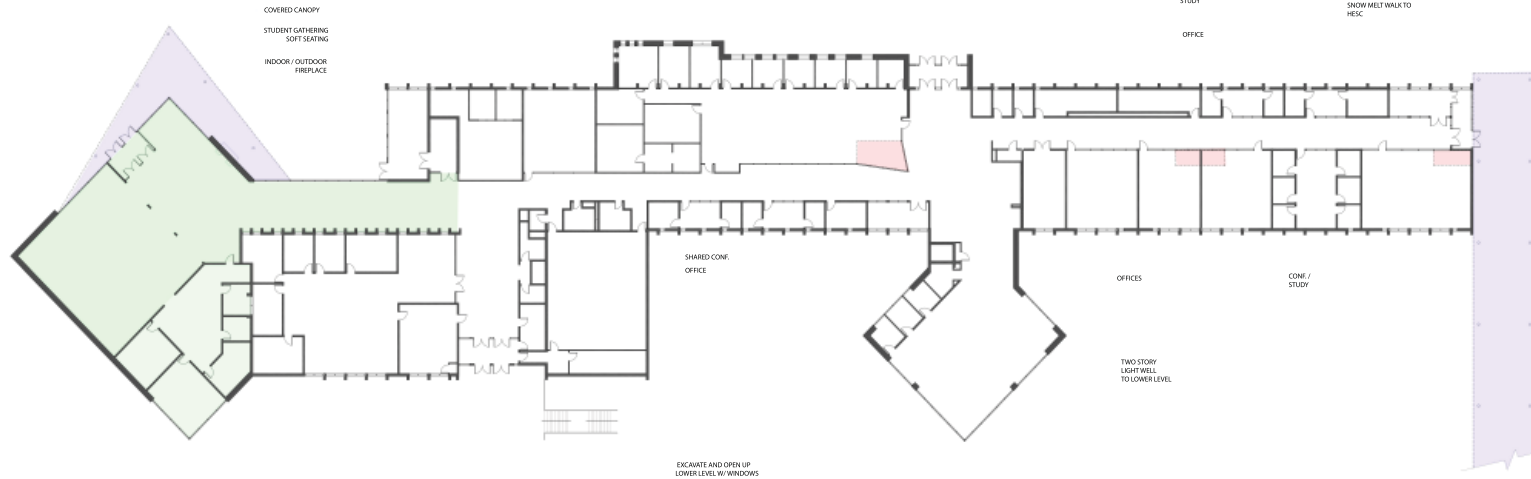
1. Window assessment-Repair/replace as needed.
2. Exterior Maintenance:
 - Tuck point all brick
 - Repair/Replace EIFS with composite
 - Roof assessment-repair/replace as needed.
3. Mechanical,electrical, plumbing repairs as needed.
4. Sidewalk assessment and repair of cracks and unevenness.
5. Sustainable implementation and innovation.
6. Campus accessibility plan and implementation.
7. Campus Security assessment and upgrades.

Site Green Infrastructure Plan

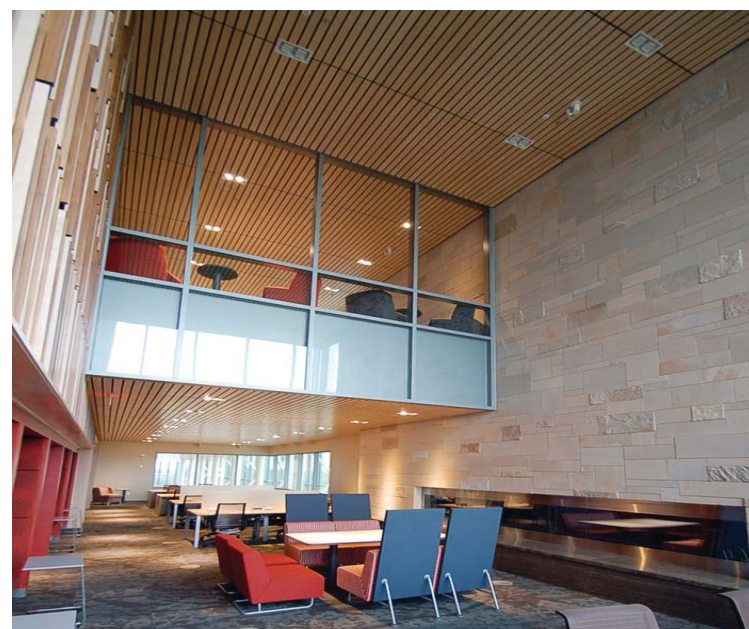
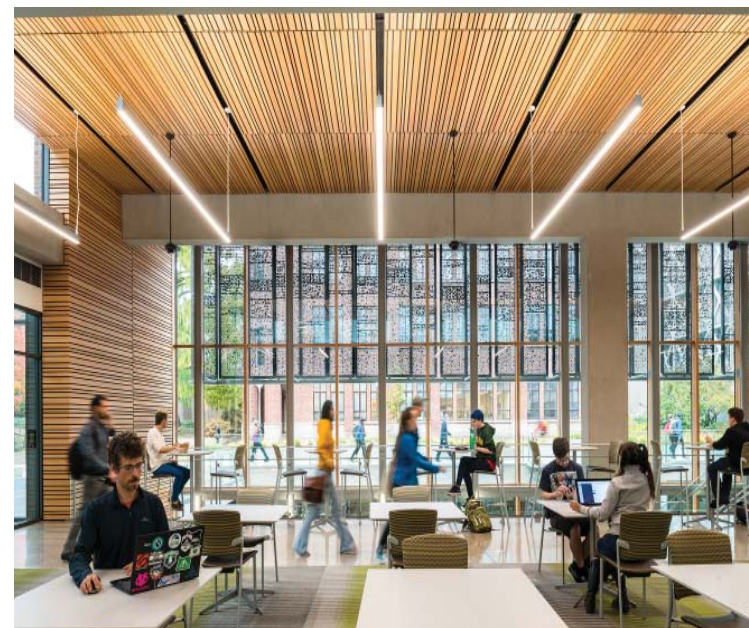
- LEGEND**
- BIO-INFILTRATION (BIOSWALES AND RAIN GARDENS)
 - UPLAND NATIVE PRAIRIE (NO-MOW AREA)
 - MAJOR STORMWATER DRAINAGE DIRECTION



Master Plan Phasing- 15+ Years



Master Plan Phasing- 15+ Years



Scope of Work, Costs & Inflationary Costs

5 Year Scope

1. Develop iconic identity signage at Atkins & Howard.
2. Provide a new addition to the HESC for the Nursing program.
3. Renovate the Library into a multi-use, multi functioning Student Innovation Center building. Renovate the former Iron Horse Cafe and vacated Student Services areas into a new Multi-Media Resource Center.
4. Create new identifiable Campus entry/exit points off of Howard and Atkins. Combine with a drop off lane at the Library/Conference Center Building. Demolish former early child care structure.
5. Complete chilled water loop to the Residence Halls.
6. Renovate the existing Administration/Classroom Building for better student study areas and faculty interaction.
7. Landscape improvements at Parking Area #2.
8. Expand and renovate to accommodate the growing needs of the Technology Center, inclusive of skilled trades areas, and robotics/autonomous innovation space.
9. Add on to Maintenance Building to house Campus Motor pool vehicles and Mobile Teaching Labs.
10. Create outdoor, convertible Pickleball courts at Parking Area #6.
11. Add trees to central courtyard to frame sculpture areas.
12. Construct informational pavilion at Natural Area Trailhead.
13. Update technology at Cheboygan and Gaylord satellite centers to aid in distance learning and live stream interactions.
14. Complete previously planned ring road around campus and to the baseball fields.

1-5 Year Total Estimated Cost*

\$20,998,000

10 Year Scope

1. Develop and construct Phase One of Residence Hall 1.
2. Develop and construction Student Commons attached to Residence Hall 1.
3. Campus wide landscape improvements at parking areas.
4. Sculpt grading to accommodate a barrier free amphitheater and gathering pavilion adjacent to the former Library (Student Innovation Center).
5. Add trees to central courtyard to frame sculpture areas.
6. Provide the construction for a covered canopy and barrier free lift at the east Campus entry. Possible snow melt systems installed at this walk way.
7. Construct addition to the Student and Community Resource Center (SCRC) for community welcoming, and renovate selected areas for student physical education classrooms.

6-10 Year Total Estimated Cost*

\$11,700,000

15+ Year Scope

1. Renovate current bookstore into a student fitness area and relocate the bookstore into a new addition to the Administration Building.
2. Plan and construct an addition to the west end of the Administration Building to accommodate the Campus Bookstore, student study areas, and additional office space. This addition would provide for an impressive west entry, and initial impression as people enter campus from Howard Street.
3. Add Phase Two/Three to the Residence Housing (if appropriate) along with associated parking, service access, and landscaping.
4. Expand landscaping standards to all areas.
5. Investigate co-partnerships evolving on campus with new companies that align with educational goals and facilities to accommodate their needs.
6. Investigate a core downtown Petoskey presence for NCMC.
7. Continue to enhance natural areas.

11-15 Year Total Estimated Cost*

\$11,300,000

* All costs will need to add 4% inflation per year for every year after 2020 that they are implemented. This should be factored in for any Capital Outlay Request

* See Appendix B for cost breakdown

5 YEAR PRIORITIZED GOALS:

Capital Outlay Priorities



ROAD MAP FOR NORTH CENTRAL'S FUTURE FACILITIES

While any master plan is focused on facilities, the understanding of what is important to NCMC from an instructional view, a communal view, and an operational view is critical.

The priorities, mission, and focus of the College dictate the immediate needs and features of facility improvements. This not only includes maintenance related work and infrastructure upgrades, but new facilities that are designed with a degree of flexibility for an ever-changing world. Low maintenance design using quality materials have a life cycle value to consider.

Energy efficient equipment, lighting, plumbing fixtures, use of recycled materials, and storm water management all assist in keeping operational costs lower, and displaying good stewardship of available dollars.

Colleges typically face challenges with the amount of funding available versus the cost of needs and priorities on campus. The selection of high priority projects will have the greatest impact on the College and provide the greatest return on investment for the students who attend NCMC.

Our plan identifies fourteen important projects that align with immediate needs (1-5 years) for the campus.

Projected future needs for the campus (6-10 years) identify another seven important projects.

Finally, looking at 11-15 years of needs identifies another six projects for consideration.

The following pages represent what we feel is a realistic, implementable plan if the College gained support from the State of Michigan Capital Outlay Program.

2019 Cost Estimates are anticipated to be in the \$10-\$14 million range, with inflationary rates of 4% for every year after 2020.

Existing maintenance needs could add another \$2.5 to \$4 million to this cost (2019 dollars).

State of Michigan Capital Outlay Plans & Collaboration



INNOVATION

To renovate the existing Library/Conference Center Building into a multi-purpose Student Innovation Center.

Currently underutilized, the existing structure would provide for dynamic space for multiple uses, inclusive of multi-media innovation, maker space, TED talks and other conferencing. The flexibility of the space would facilitate a number of open and contained areas for collaboration or focused discussion and development. Problem solving, creative thinking, and experimentation are adaptable to an existing structure that has abundant space, high ceilings, access to conference spaces, and accessibility.

The flexibility of the space will allow for emerging trends and technologies to be seamlessly adapted to an existing building.

Meeting and collaborating with State Capital Outlay officials and Department of Technology, Management and Budget personnel would be encouraged to promote this project for NCMC.

Estimated Cost: \$7.5 Million (2019 dollars)

The benefits of creating a Student Innovation Center on campus are numerous for students of all ages.

Employers are all seeking the same attributes in candidates for technology, health care, skilled trades, business and other paths.

Soft skills such as:

1. Being on time
2. Work Ethic/Effort
3. Body Language
4. Energy
5. Attitude
6. Passion
7. Teach-able
8. Going the extra mile
9. Preparation
10. Empathy

Training to be PROBLEM SOLVERS AND INNOVATORS was one of the most sought after skills for employers...NO MATTER WHAT THE BUSINESS WAS.

SKILLED TRADES

To renovate the existing Technology Building and provide an addition that is flexible and accommodating for instruction on the skilled trades.

The renovation of the current Technology building will provide for more efficient space, better power distribution, flexibility with equipment, and a better atmosphere to provide instruction to students who will be in high demand and employable in the region, and beyond.

A proposed 6,000+ sf high bay space with power, technology, lighting and flexible spaces. Moveable racking systems would be used to reconfigure the space to provide multiple smaller spaces or a single large space for training, instruction, fabrication, systems testing, and other uses. The size would allow for the construction of system mock-ups and testing. Affiliation with siding manufactures, plumbing fixture and electrical suppliers, window manufacturers and others would provide materials, systems and proper installation methods. Meeting and collaborating with State Capital Outlay officials and Department of Technology, Management and Budget personnel would be encouraged to promote this project for NCMC.

Estimated Cost: \$5.5 Million (2019 dollars)

A two-year, hands-on trades program with an applicable business oriented class offering would position students to be immediately employable, in an industry that has a high demand.

Systems fabrication of building components prepared for field installation would help to alleviate the downward construction cycles in some areas.

Combined with a potential automotive technologies program, the employment opportunities for two year graduates would be available at any automotive dealership or repair shop in the region and beyond.

Advancing technologies in electric powered cars and trucks along with autonomous driving vehicles would put students in the heart of the present and the future.

State of Michigan Capital Outlay Plans & Collaboration



Educational Benefits of Priority Projects



NURSING

To expand the existing Health Education and Science Center to support the further growth and success of the nursing and health care programs.

Expansion of the Nursing Program with a suggested 10,240 square foot addition will address an immediate need for the College and the community.

The aging demographics of the region and the country supports a growing and diverse medical profession. Along with local support from McLaren Northern Michigan, and regional exposure with Mid Michigan Medical Center (Alpena), and Munson Medical (Traverse City), the success of the nursing program at NCMC has identified this immediate need for expansion. This expansion would accommodate flexible classroom space, lab space, demonstration areas, storage, and allow for interaction with other related health care programming including emergency medical technicians (EMT), and public safety.

The addition would also allow for student collaboration with areas overlooking the adjacent sensitive ecological acreage.

The benefits of the suggested addition include providing flexible space for an existing program that is experiencing an enrollment surge.

The program provides both immediate employment opportunities to graduates at medical facilities, but also provides for a solid basis for continuation of studies to achieve a higher level of training in the medical field and related fields. We see a possible component of this as providing continuing education for professional development for returning professionals

Expansion of the facilities to assist EMTs and training of other safety personnel will provide a well rounded and collaborative experience for all.

The support of this proposed expansion is relevant to current regional needs, but also future needs, as the aging population requires more medically related assistance.

The identified priority projects will provide a benefit for the College, the Community, and the student population that is interested in relevant, immediate employment, and/or as a basis for continuing education in the field or at another higher education facility.

These projects will strengthen the educational role of NCMC in the community, but also contribute to the region, state, and global markets. We propose that a strong NCMC will attract support from regional employers, but also from the community in terms of time, collaboration and revenue.

The projects identified are ideal for the State of Michigan Capital Outlay Program, as they address many of the criteria:

1. Investment in existing facilities and infrastructure.
2. Life and safety deficiencies.
3. Occupancy and utilization of existing facilities.
4. Integration of sustainable design to enhance the efficiency and operations of the facility.
5. Estimated cost.
6. Institutional support.
7. Estimated operating costs.
8. Impact on tuition, if any.
9. Impact on job creation in this state.
10. History of prior appropriations received by the institution through the capital outlay process.

“Capital Outlay” means a project or facility financed either in whole or in part with state funds, including lease purchase agreements, to demolish, construct, renovate, or equip a building or facility for which total project costs exceed \$1,000,000.00. These projects may be on state owned property, property owned by an institution of higher education, property owned by a community college, or property under the control of the state building authority.

- MCL 18.1113

State of Michigan Capital Outlay Project Identification and Cost Estimates- 5 Year Prioritized Goals

Project Identification:

<p>1. Create Identifiable main entries along Howard Street and Atkins that better address congestion from the adjacent Elementary School. SAFETY. 2020 Cost Estimate: \$450,000</p> <p>2. Construct a new addition to the School of Nursing to alleviate current overcrowding and increasing enrollment in that program. NEED. 2020 Cost Estimate: \$3,921,900</p> <p>3. Renovate surplus space in the Library Building for a multi-functioning Student Innovation and Seminar Center with food service. IMMEDIATE NEED. 2020 Cost Estimate: \$2,100,000</p> <p>4. Renovate existing Iron Horse location into a new Library/Media Center/Student Study Center. MORE EFFICIENT EXISTING SPACE UTILIZATION. 2020 Cost Estimate: \$1,800,000</p> <p>5. Provide drop-off drive to new Student Innovation Center to assist with ADA/barrier free access. Add appropriate signage, landscaping and remove former President’s House. ACCESSIBILITY/UNIVERSAL DESIGN. 2020 Cost Estimate: \$1,090,000</p> <p>6. Complete chilled water loop for summer comfort at Residence Halls. HEALTH/MORE EFFICIENT SPACE USE IN SUMMER MONTHS 2020 Cost Estimate: See MEP Upgrades</p> <p>7. Renovate offices and study rooms in the current Administration/Classroom Building. NEED. 2020 Cost Estimate: \$160,000</p> <p>8. Landscaping/trees at parking area to reduce heat island effect. SUSTAINABILITY. 2020 Cost Estimate: \$60,000</p> <p>9. Renovate and expand the current Technology Building to accommodate skilled trades and emerging technologies programs. IMMEDIATE NEED. 2020 Cost Estimate: \$1,800,000</p> <p>10. Create outdoor sport court areas for student and community use. IMMEDIATE NEED. 2020 Cost Estimate: \$150,000</p> <p>11. Construction of an Informational Pavilion at the Trailhead of the Campus’ environmentally sensitive acreage. This would provide educational information on storm water filtration and management, invasive species control, wildlife viewing, and positive ecological impacts to Northern Michigan. SUSTAINABILITY. 2020 Cost Estimate: \$45,000</p>	<p>12. Update technology at Cheboygan and Gaylord Satellite Campus Centers to aid in distance learning, live stream interactions, and distant career interviewing. CAREER ADVANCEMENT. 2020 Cost Estimate: \$40,000</p> <p>13. Construct a new six bay vehicle maintenance addition to the existing Maintenance Facility. 2020 Cost Estimate: \$310,000</p> <p>14. Existing Residence Halls: repairs, window replacement, finishes replacement, door hardware. SECURITY. 2020 Cost Estimate: \$110,000</p> <p>15. Complete previously planned ring road. SAFETY and SECURITY. 2020 Cost Estimate: \$1,780,000</p> <p>16. Investigate co-partnerships with area companies that align with educational goals and facilities that may evolve on campus property. POSSIBLE REVENUE + INTERNSHIP LEARNING. 2020 Cost Estimate: Minor Costs</p> <p>17. Investigate a downtown Petoskey presence for NCMC. 2020 Cost Estimate: Rent, Free Donation?</p> <p>18. Mechanical, electrical, plumbing upgrades. MAINTENANCE ITEMS. 2020 Cost Estimate: \$3,992,370</p> <p>19. General Building Maintenance: Door/Frame/Hardware replacement- SECURITY Refinish existing exterior materials- MAINTENANCE Replace failed window systems- ENERGY EFFICIENCY Roof repairs- MAINTENANCE 2020 Cost Estimate: \$1,280,000</p>	<p>SUB-TOTALS: \$19,089,270</p> <p>CONTINGENCY (10%): \$1,908,930</p> <hr/> <p>TOTAL (2020): \$20,998,200</p> <p>INFLATIONARY ADJUSTMENTS (4% per year) Estimates:</p> <table border="0"> <tr> <td>Year 2021:</td> <td style="text-align: right;">\$21,838,128</td> </tr> <tr> <td>Year 2022:</td> <td style="text-align: right;">\$22,711,653</td> </tr> <tr> <td>Year 2023:</td> <td style="text-align: right;">\$23,620,119</td> </tr> <tr> <td>Year 2024:</td> <td style="text-align: right;">\$24,564,924</td> </tr> </table>	Year 2021:	\$21,838,128	Year 2022:	\$22,711,653	Year 2023:	\$23,620,119	Year 2024:	\$24,564,924
Year 2021:	\$21,838,128									
Year 2022:	\$22,711,653									
Year 2023:	\$23,620,119									
Year 2024:	\$24,564,924									

Local, Regional, and State Support



SUPPORT

The importance of local community support is key. This includes but is not limited to area residents, visitors, school systems, businesses, hospitals, Rotary, Economic Development organizations, Tribal communities and others. Interaction should continue on a regular basis with as many stakeholders as possible.

The Emmet County community is fortunate to have a major health care presence, a strong K-12 School system, a Community College for higher education, and a beautiful natural environment.

NCMC should consider:

- Collaboration with the community is a priority
- Being an innovator-regionally, globally.
- Providing educational programs that are relevant to the present but also the future needs.
- Collaboration with the Area County School Districts (Emmet, Mackinac, Cheboygan, Otsego, Charlevoix)
- Collaboration with Environmental organizations and sustainable design organizations to protect and enhance the quality of life offered by the area.

INTERACTION

Interaction and a collaborative presence in downtown Petoskey should be investigated.

The area residents and seasonal visitors should be aware of NCMC and the Community offerings they provide. When the population swells during the summer months and during winter sports months, deliberate efforts should celebrate the Petoskey area and NCMC.

Recreational opportunities for all ages and demographics are a strong draw to NCMC. The addition of outdoor, temporary pickleball courts at unused parking areas is recommended.

Enhancements at Bates Park for softball and little league hardball will be positive for both the community and the college.

A donor supplied (rent free) storefront presence in downtown may provide information to all that live, visit and work in the area and reach a larger population than what the campus may draw.

OPPORTUNITIES

A direct connection with Lansing and governmental leaders that represent the Emmet County Area is crucial for support from the State. Communicating on what the leaders see as current and FUTURE educational needs will allow NCMC to become proactive in providing relevant and immediately applicable skills to students.

Preparation for Capital Outlay projects that align with the needs of the State, students, the Master Plan and align with the College's Strategic Plan should be prepared, preliminarily reviewed with State officials, and submitted to keep NCMC at the forefront of providing relevant, employable skills with facilities that enable flexibility, innovation, and inspiration.

Building and providing educational opportunities by and for Tribal students should be implemented and supported for growth.

Creation of a scholarship or paid two year tuition for graduating seniors from the five county area to attend NCMC should be pursued. A "Michigan Promise" type of program may assist in relieving the barrier of cost to potential students.

ENGAGEMENT

Collaboration with area K-12 Schools and area districts should continue and be part of ongoing efforts to establish NCMC as a respected, affordable and relevant educational option.

Dual enrollment with high schools shows success and should be cultivated and allow for growth.

Collaboration with four year institutions should be reinforced with on campus representation from various Colleges and Universities (University Centers), continuing education needs, Internet/distance learning shared seminars and classes.

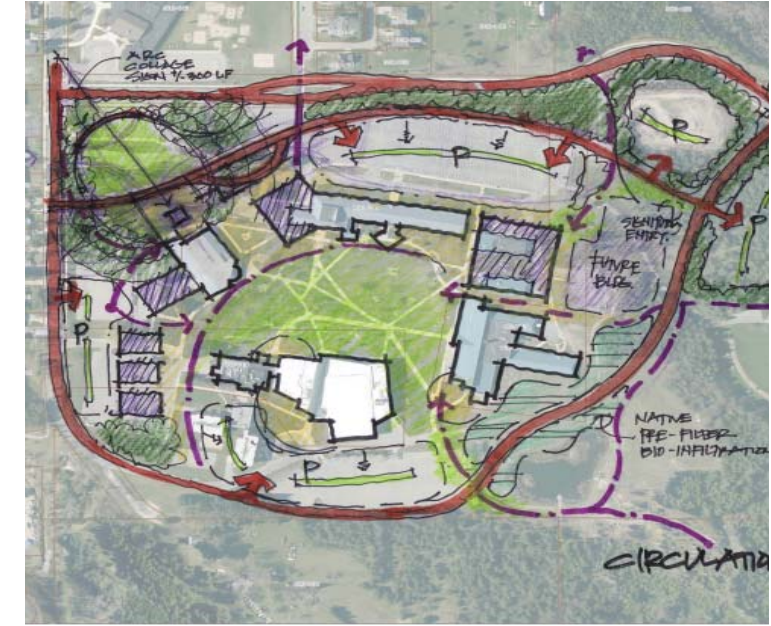
Choices for "on campus" housing options should be promoted for the area student seeking a comfortable transition into higher education without living at home. On campus options should also be promoted for international students looking for the scale and offerings of NCMC, and appreciation of the area. Food service support for on campus life should address the needs of the on campus and commuter students.

Design Team Reviews

As previously mentioned, any Master Plan is a fluid and flexible document that requires adjustment or change in direction in the first few years. Unforeseeable conditions that arise require review and adjustments in an efficient manner to meet changing needs and provide relevant educational adjustments for students.

The Planning Team has committed to review the Master Plan and adjust any needed revisions once a year for years 2020, 2021 and 2022.

It is our intent to support NCMC, its continued success, and representation of one of the finest higher education options in Northern Michigan.



2020 REVIEW

The Design Team will meet with the NCMC Executive Committee to review the Master Plan and identify any areas that should be revised to fit current conditions.

This will most likely occur in the fourth quarter of the year to allow for adequate time to test and begin implementing planning goals.

The NCMC Strategic Plan will be reviewed for alignment with the Master Plan projects.

An addendum will be added to this Master Plan and reissued to the College.

2021 REVIEW

The Design Team will meet with the NCMC Executive Committee to review the Master Plan and identify any areas that should be revised to fit current conditions.

This will most likely occur in the fourth quarter of the year to allow for adequate time to test and begin implementing planning goals.

The NCMC Strategic Plan will be reviewed for alignment with the Master Plan projects.

An addendum will be added to this Master Plan and reissued to the College.

2022 REVIEW

The Design Team will meet with the NCMC Executive Committee to review the Master Plan and identify any areas that should be revised to fit current conditions.

This will most likely occur in the fourth quarter of the year to allow for adequate time to test and begin implementing planning goals.

The NCMC Strategic Plan will be reviewed for alignment with the Master Plan projects.

An addendum will be added to this Master Plan and reissued to the College.



APPENDIX A: MECHANICAL & ELECTRICAL FACILITIES CONDITION ASSESSMENT

Summary and Recommendations

CONTENTS

CAMPUS MASTER PLAN SUMMARY

CAMPUS OVERVIEW

ADMINISTRATION / CLASSROOM

BUILDING

HEATING PLANT

MAINTENANCE BUILDING

RESIDENCE HALL

STUDENT AND COMMUNITY

RESOURCE CENTER

STUDENT CAFETERIA/

CONFERENCE CENTER

TECHNOLOGY BUILDING

CAMPUS MASTER PLAN SUMMARY

Facility Infrastructure, System Improvements and Energy Conservation

Building	Year Built	Renovations	Equipment Age	Building Square footage	Description	Five year plan Priority	Reason for Work	Opinion Of Probable Cost
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NCMC Campus Wide

NCMC Campus Wide	Varies	N/A	N/A	N/A	Replace hot water heating piping insulation piping located in Tunnels.	2	Area of system insulation is missing and existing is worn. In addition several area are insulated with asbestos.	\$73,500
					Convert campus chilled water system to campus de-centralized chilled water system and extend cooling to existing Dorm Building.	1	Provided redundancy for campus cooling and substantial energy savings.	\$1,600,000
					Connect to existing campus dewater system (located in Student Center) to irrigate campus landscaping.	5	Provide low cost campus irrigation.	\$75,000
					Complete lighting upgrades to a minimum of fluorescent T8 style long life lamps.	2	Energy savings.	See individual building description
					Identify water infiltration through electrical conduits and repair.	1	Allowance	\$10,000
					Add electrical sub-metering to buildings.	5	Campus costs and analysis.	\$191,280
					Separate access control from life safety battery systems, and utilize generator(s) when possible.	1	Allowance	\$31,880
					Add generators for support of emergency lighting and other business critical systems.	2	Improve life safety and protect property.	\$1,083,921
					Completion of campus primary loop system.	5	Alternate power path and flexibility to isolate a building.	\$573,841
					Upgrade campus fire alarm system to allow for mass notification.	1	Safety and security.	Review requirements with existing system
Campus Wide Totals								\$3,639,422

Administration and Classroom Building

Administration and Classroom Building	1962	2004 and Proposed major renovation in 2019 (note vestibules and restroom maybe pulled out of project due to budget)	See Facilities Report	52,000	Replace existing HVAC Equipment that are reaching or have past there life expectancy. Does not include building wide HVAC piping.	1	Systems have past there useful life.	\$377,391
					Provide additional heating, cooling ventilation and air conditioning zone control to areas that have been modified from original.	3	Areas have ben modified architecturally but not mechanically which is causing temperature issues In the space.	\$157,346
					Replace existing original electrical distribution equipment.	1	Systems have past there useful life.	\$71,156
					Upgrade Lighting and provide automatic lighting controls in all applicable areas. Some of the facility is done, and some has been done and later removed. Remove occupancy sensor in electrical room to meet code.	1	Energy savings and to meet current energy codes.	Work in process, cost needs to be updated
Administration and Classroom Building Totals								\$605,893

CAMPUS MASTER PLAN SUMMARY
 Facility Infrastructure, System Improvements and Energy Conservation

Building	Year Built	Renovations	Equipment Age	Building Square footage	Description	Five year plan Priority	Reason for Work	Opinion Of Probable Cost
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Heating Plant

Heating Plant	1962	2010	See Facilities Report	2,300	Replace existing HVAC Equipment that are reaching or have past there life expectancy. Does not include building wide HVAC piping.	2	Systems have past there useful life.	\$13,818
					Provide ventilation to boiler room.	1	Current boiler room does not have adequate ventilation to cool building which put electrical and control component in risk of failure.	\$22,954
					Provide heating and ventilation in control room office.	1	Occupied area is required to be ventilated and heated.	\$10,839
					Replace existing original electrical distribution equipment.	2	Systems have past there useful life.	\$3,826
					Upgrade lighting in all applicable areas.	3	Energy savings and to meet current energy codes.	\$12,752
Heating Plant Totals								\$64,189

Health Education and Science Center

Health Education & Science Center	2010	N/A	N/A	0	Optimize the number of air changes in building to save energy	2	Many room of the building have large air change rates during occupied and unoccupied times. The reduction of air change rates will substually reduce operating costs and save energy.	\$36,400
					Demand Ventilation - install CO2 sensors to large occupant spaces.	1	Reduce energy and utility costs	In progress
Health Education & Science Center Totals								\$36,400

Library Building

Library Building	1984	Complete renovation in 2016	See Facilities Report	19,550	All mechanical and electrical systems have been replaced in 2016	0	N/A	\$0
Library Building Totals								\$0

CAMPUS MASTER PLAN SUMMARY

Facility Infrastructure, System Improvements and Energy Conservation

Building	Year Built	Renovations	Equipment Age	Building Square footage	Description	Five year plan Priority	Reason for Work	Opinion Of Probable Cost
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Maintenance Building

Maintenance Building	1973	-----	See Facilities Report	3,400	Replace existing HVAC Equipment that are reaching or have past there life expectancy. Does not include building wide HVAC piping.	2	Systems have past there useful life 30 years old.	\$188,517
					Repair/Modify existing Hot water heating piping. Current hot water piping system not functioning properly.	1	Incorrect piping arrangement/piping failure.	\$34,619
					Replace existing plumbing fixtures that are reaching or have past there life expectancy. Does not include the building wide plumbing	5	Systems have past there useful life.	\$15,835
					Replace existing original electrical distribution equipment.	2	Systems have past there useful life.	\$23,846
Maintenance Building Totals								\$262,817

Residence Hall

Residence Hall	1968	2010	See Facilities Report	35,000	Extend chilled water to existing Dorm Building room fan coil Units	1	The Dorm Building is not currently cooled	Refer to campus wide scope
					Replace existing plumbing fixtures that are reaching or have past there life expectancy. Does not include the building wide plumbing piping replacement.	5	Plumbing Systems have past there useful life .	\$40,183
					Remove storage items in front of electrical equipment.	1	Clearance issue.	Procedure & Housekeeping
					Upgrade lighting in public areas including new basement lighting.	3	Building improvement.	\$159,400
					Verify proper fire alarm notification and detection systems coverages.	1	Life safety.	See campus fire alarm item
					Replace existing original electrical distribution equipment.	2	Systems have past there useful life.	Update Costs
					Provide emergency egress lighting.	1	Life safety.	See campus generator item
Residence Hall Totals								\$199,583

Student Center Cafeteria/Conference Center

Student Center Cafeteria/Conference Center	1968	2000	See Facilities Report	18,500	Replace existing Cafeteria and Kitchen HVAC Equipment.	2	Systems have past there useful life 30 years old.	\$336,482
					Demand Ventilation - install CO2 sensors to large occupant spaces.	1	Reduce energy and utility costs	In progress
					Replace existing plumbing fixtures that are reaching or have past there life expectancy. Does not include the building wide plumbing piping replacement.	5	Systems have past there useful life.	\$29,347
					Provide automatic lighting controls in all applicable areas.	3	Energy savings and to meet current energy codes.	\$35,387
					Provide photocell lighting control.	4	Energy savings.	\$6,376
					Replace existing original electrical distribution equipment.	2	Systems have past there useful life.	\$35,259
					Upgrade lighting in all applicable areas.	3	Energy savings and to meet current energy codes.	\$306,686
Student Center Cafeteria/Conference Center Totals								\$749,537

CAMPUS MASTER PLAN SUMMARY
 Facility Infrastructure, System Improvements and Energy Conservation

Building	Year Built	Renovations	Equipment Age	Building Square footage	Description	Five year plan Priority	Reason for Work	Opinion Of Probable Cost
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Student and Community Resource Center

Student and Community Resource Center	2000	---	See Facilities Report	85,000	Replace existing ductwork located in gymnasium with fabric ductwork.	3	Ductwork was not properly treated for paint application and paint is peeling of ductwork.	\$150,000
					Replace existing HVAC Equipment that are reaching or have past there life expectancy. Does not include building wide HVAC piping.	2	Systems have past there useful life.	\$714,328
					Replace dialectic unions on hot water heating piping that are currently failing and leaking.	1	System failure, unions leak.	\$22,510
					Demand Ventilation - install CO2 sensors to large occupant spaces.	1	Reduce energy and utility costs	In progress
					Provide photocell lighting control.	4	Energy savings.	\$22,954
					Provide automatic lighting controls in all applicable areas.	3	Energy savings and to meet current energy codes.	\$51,008
					Gender neutral locker & restrooms (per Ernst)			\$0
					Audio Visual platform over running track (Per Ernst)			\$0
					Classroom Bulldout (per Ernst)			\$0
					Move Bookstore and make aerobics area (per Ernst)			\$0
Student and Community Resource Center Totals								\$909,792

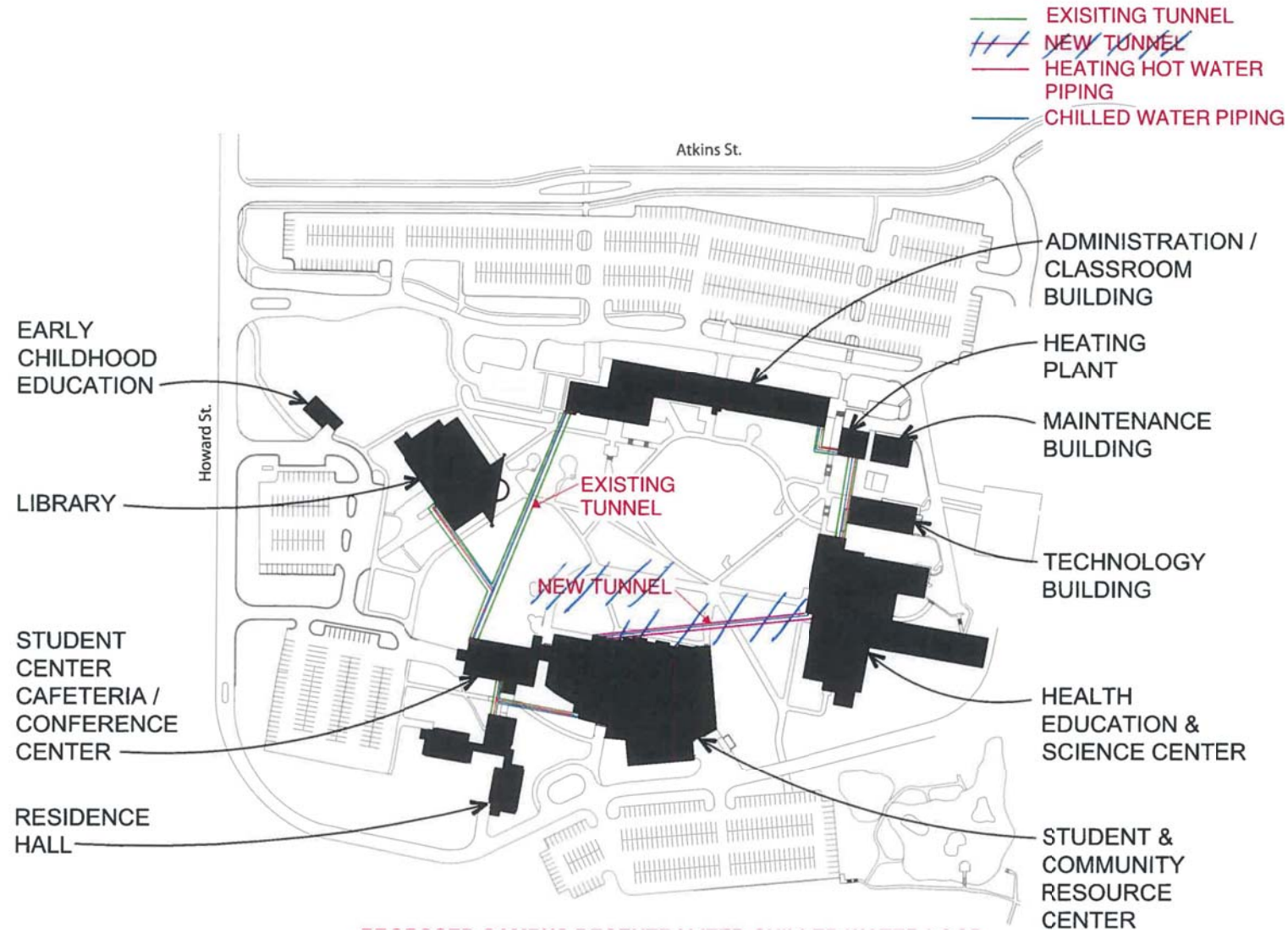
Technology Building

Technology Building	1973	2001	See Facilities Report	5,660	Replace existing HVAC Equipment that are reaching or have past there life expectancy. Does not include building wide HVAC piping.	2	Systems have past there useful life.	\$124,358
					Replace existing plumbing fixtures that are reaching or have past there life expectancy. Does not include the building wide plumbing piping replacement.	5	Systems have past there useful life.	\$21,592
					Replace existing original electrical distribution equipment.	2	Systems have past there useful life.	\$30,796
					Provide automatic lighting controls in all applicable areas.	3	Energy savings and to meet current energy codes.	\$9,564
					Upgrade lighting in all applicable areas.	3	Energy savings and to meet current energy codes.	\$70,136
					Renovate Restroom (per Ernst)			\$0
					Addition to Building (per Ernst)			\$0
Technology Building Totals								\$186,310

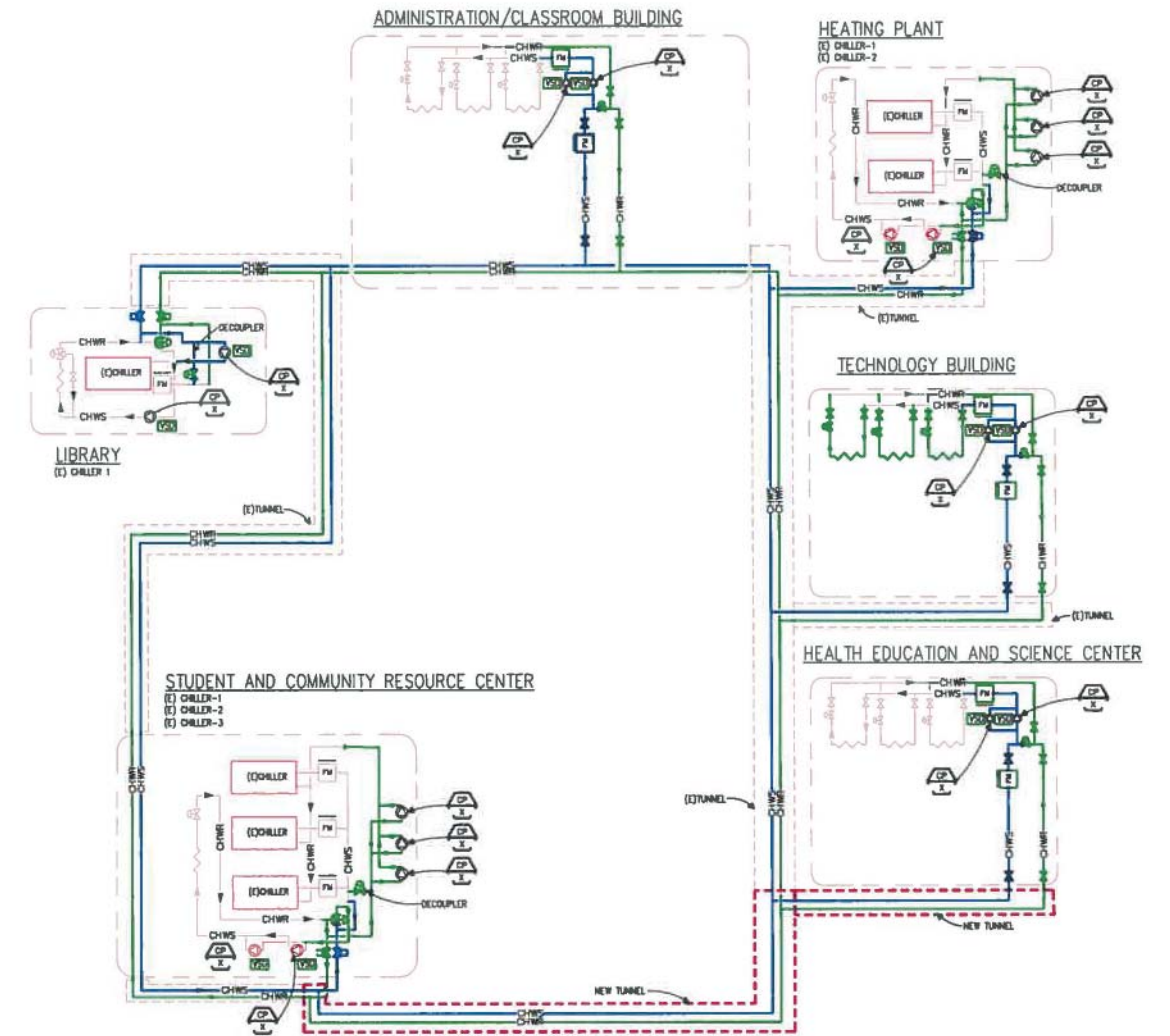
Total Opinion of Probable Costs: \$6,653,943

Campus Mechanical Equipment Descriptions cont...

PROPOSED CAMPUS DECENTRALIZED CHILLED WATER LOOP



PROPOSED CAMPUS DECENTRALIZED CHILLED WATER LOOP SCHEMATIC DIAGRAM



Campus Electrical Equipment Descriptions

GENERAL CAMPUS DESCRIPTION

North Central Michigan College's Petoskey Campus was established in 1962 with construction of the Heating Plant and Chemistry Building. NCMC Petoskey Campus has undergone many renovations and additions from 1962 to present including mechanical and electrical systems, infrastructure upgrades, building renovations, and additions.

CAMPUS

Power:

The existing 12,470V primary distribution system was upgraded in 2006. The system currently consists of a long radial arm with taps to feed the major buildings. Some of the smaller buildings are fed from systems in the larger buildings.

Completion of the tunnel system will close the loop around campus. When this is achieved, the primary system should be reworked to create a primary loop. This will provide flexibility in how each building is fed, and will allow buildings to be isolated from the rest of the campus while still keeping rest of campus powered.

There is a mixture of voltages in the buildings. Some buildings contain both 480/277V and 208/120V systems, while other buildings are entirely 208/120V.

Emergency Power:

Currently there only two generators on Campus and these units are primarily dedicated to backing up telecommunication systems. The emergency egress lighting in all of the buildings consist of emergency fixtures with dedicated battery units. This type of system requires monthly testing of batteries, and ongoing maintenance to insure that all of the units are operating properly. Adding generation capabilities could all many of these fixtures to be removed and could utilize existing fixtures for emergency egress functions. This would replace battery testing, maintenance, and replacement, with generator maintenance and testing. Additional benefits often include better egress lighting coverage, and the ability to provide backup power to selected loads like sump pumps to prevent flooding or boilers to prevent freezing.

Site:

Existing exterior site lighting has been converted to LED fixtures.

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Administration / Classroom Building Mechanical Equipment Descriptions

GENERAL BUILDING DESCRIPTION

The Administration and Classroom Building is located between the Library and Heating Plant. The Administration and Classroom Building was constructed in 1965 and underwent a major renovation of HVAC equipment and alterations to room layout in 2004. Additions to the building have been designed and are pending bids in 2019.

Building mechanical equipment is currently served by campus heating hot water system. The building is a two story building that consists of approximately 52,000 square feet. Classrooms and administrative offices are located in the Administration and Classroom Building.

Building Cooling System -Two Air cooled chillers that are located in the basement of the building serving AHU-10, AHU-11, AHU-14, AHU-17, AHU-18, AHU-19, and Unit Ventilators which were upgraded in 2004 and serve the cooling requirements for the Administration and Classroom Building. Chilled Water piping is piped to each of the units located in the plenum space on each of the floors of the building and serves the AHU's located in the penthouse.

Air Handler Unit AHU-10, located in Mechanical Room 59 of the Administration and Classroom Building is a constant volume, mixed air system installed in 2004. The system consists of outside air dampers, relief louver with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection and chilled water cooling coil. The AHU-10 serves the East portion of the building spaces on the Lower Level of the Administration and Classroom Building and supplies air to the spaces thru individual tempering coils and diffusers.

Air Handler Unit AHU-11, located in Mechanical Room 56 of the Administration and Classroom Building is a constant volume, mixed air system installed in 2004. The system consists of an outside air damper, relief louver with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection and chilled water cooling coil.

The AHU-11 serves the West portion of the building spaces on the Lower Level of the Administration and Classroom Building and supplies air to the spaces after passing through individual tempering coils and diffusers.

Air Handler Unit AHU-14, located in Mechanical Room of the Administration and Classroom Building, is a constant volume, mixed air system installed in 2004. The system consists of an outside air damper, relief louver with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection, chilled water cooling coil. The AHU-14 serves the Art/ Ceramics Classrooms on the Lower Level of the Administration and Classroom Building and supplies air to the spaces through individual tempering coils and diffusers.

Air Handler Unit AHU-17, located in the penthouse, is a constant volume, mixed air system installed in 2004. The system consists of an outside air damper, relief louver with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection, chilled water cooling coil. The AHU-17 serves the Nursing 27 on the Lower Level of the Administration and Classroom Building and supplies air to the space with diffusers.

Air Handler Unit AHU-18, located in the penthouse, is a constant volume, mixed air system installed in 2004. The system consists of an outside air damper, relief louver with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection, chilled water cooling coil. The AHU-18 serves the East portion of the building spaces on the Main Level of the Administration and Classroom Building and supplies air to the spaces after passing through individual terminal units and to the space with diffusers.

Air Handler Unit AHU-19, located in the penthouse, is a constant volume, mixed air system installed in 2004. The system consists of an outside air damper, relief louver with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection, chilled water cooling coil.

The AHU-19 serves Lecture 122 of the building space on the Main Level of the Administration and Classroom Building and supplies air to the space with diffusers.

Unit Ventilators located in each of the classrooms are constant air volume, mixed air systems installed in 2004. Each system consists of a multi speed air volume integral outside air, hot water heating coil, chilled water coil and a multi speed air volume supply air fan. The vertical unit ventilators serve the classrooms through its diffuser integral with the cabinet. Unit ventilators are controlled by the original campus DOC control system.

Exhaust Fan EF-100 is a constant volume exhaust systems with motorized backdraft dampers. EF-100, located in the tunnel and installed in 1965, serves tunnel.

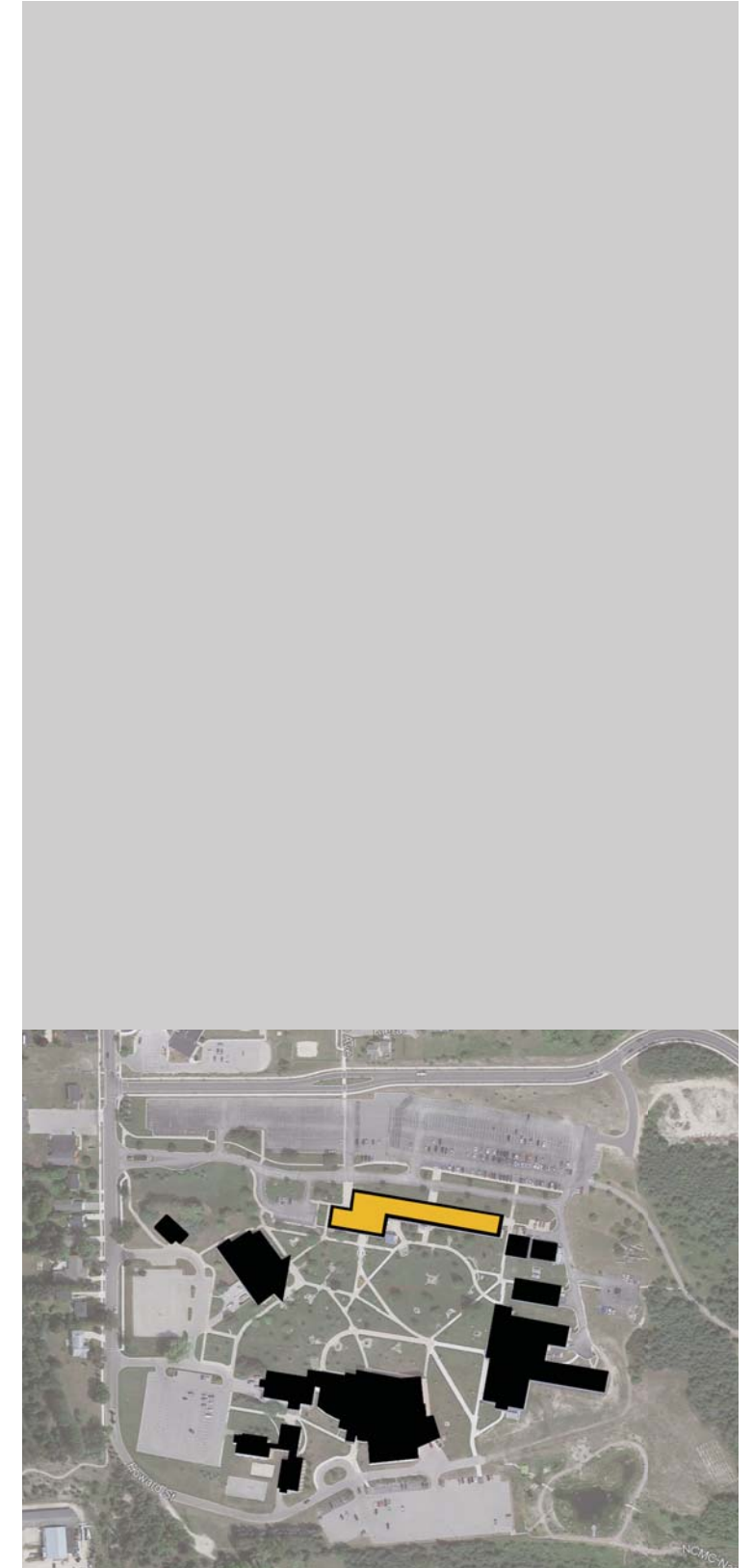
Exhaust Fan EF-101 is a constant volume exhaust systems with motorized backdraft dampers. EF-101, located in the electrical room and installed in 1965, serves electrical room.

Exhaust Fan EF-120 is a constant volume exhaust systems with motorized backdraft dampers. EF-120, located in the tunnel and installed in 1965, serves men's and women's toilet.

Exhaust Fan EF-267 is a constant volume exhaust systems with motorized backdraft dampers. EF-267, located in the penthouse and installed in 1965, serves men's and women's toilet.

Exhaust Fan (Penthouse Exhaust Fan) is a constant volume exhaust systems with motorized backdraft dampers. Penthouse exhaust fan, located in the penthouse and installed in 1965, serves penthouse.

Plumbing Fixtures are located in the art spaces, bathrooms and janitors closet in the building. The fixtures in the building consist of Lav's, Double bowl sink, Multi-person sink, Service Sink, Drinking fountains, Water closets, and Urinals. These fixtures were installed in 1965 and have served the building since.



North Central Michigan College Master Plan 2019

Administration / Classroom Building Electrical Equipment Descriptions

GENERAL BUILDING DESCRIPTION

The Administration/ Classroom Building is located on the North side of campus near the Atkins Street parking lot. The Administration/ Classroom Building was constructed in 1965 and is a two story building that consists of approximately 52,000 square feet of space. Administration/ Classroom Building consists of classrooms, offices, and specialty classrooms (example: art rooms).

Power:

The primary power enters the building from the tunnel system. The primary equipment is located in the main electrical room located on the west end of the lower level of the building. This room contains primary distribution equipment, including a primary switches and primary transformer (T 4). Most of this equipment appears to be newer and in good condition.

The building electrical distribution system consists mainly of branch circuit panelboard scattered around the building. This equipment is 208/120V. There is a mixture of new and older equipment. Most of the branch circuit distribution equipment appears to be the original building equipment. Many of these panelboards were manufactured by Federal Pacific. Federal Pacific went out of business many years ago, so replacement breakers and parts are difficult or impossible to obtain. If these panels are indeed from the original construction, they are surpassed their expected life expectancy and should be scheduled for replacement.

There appeared to be electric heat in the Stairwells. Alternate heating systems could be explored for these areas.

Lighting:

Our understanding is that approximately 90% of the linear fluorescent lamps and their associated ballasts on campus have been changed from T12 to TB. It appears that most of the fixtures have been converted. Most of the lighting in the building is fluorescent with some type

of prismatic acrylic lens. Many of these fixtures appear to be quite old and probably from the original construction.

Most of the light fixtures are surface mounted on the existing lay in ceilings. New fixtures and/or lenses could provide additional light and better color in many spaces. New fixtures could also provide energy savings.

It appears that a large portion of the lighting control consists of manual switch control. Current energy codes call for some sort of automatic lighting control. There are opportunities in this building to add lighting controls for energy code compliance. This could come in the form of occupancy sensors and would also result in energy savings and potential utility rebates. PBA was told that in some areas occupancy sensors were installed but later removed due to complaints about how they operated. A properly designed system using newer technology occupancy should be able to be installed and operate properly.

There are a few opportunities in this building to provide controls for daylight harvesting. These should be explored for potential energy savings.

There is an occupancy sensor for lighting control in the main electrical room. This should be replaced with a standard toggle switch. Code does not allow automatic lighting controls in these types of rooms.

Emergency Systems:

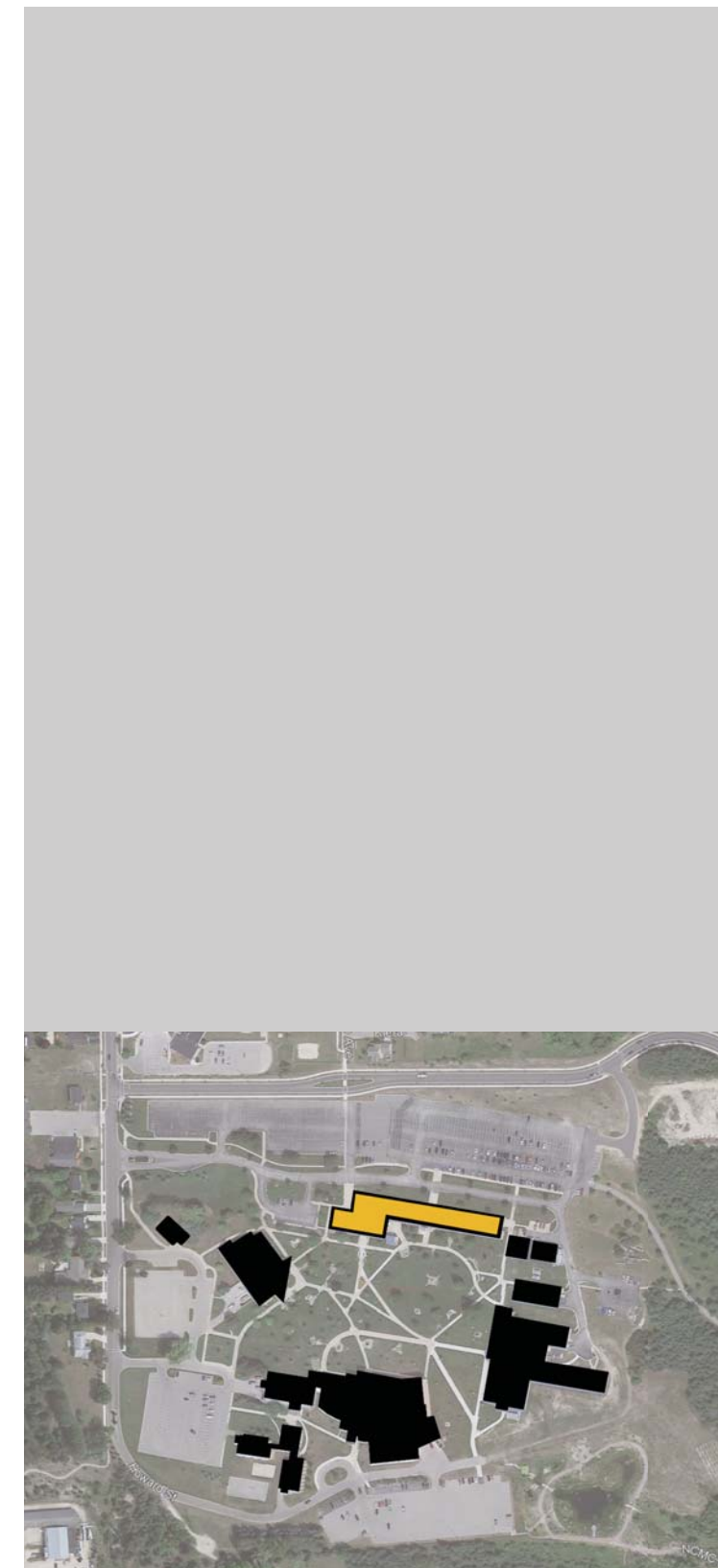
There is no generator for power to support emergency egress lighting in this building. Some battery EXIT signs and were observed. Proper emergency light levels along paths should be verified. Monthly testing of all local battery lighting units should be documented and reviewed.

Auxiliary Systems:

The existing fire alarm system consists of horn and strobe notification devices. These devices are mounted throughout the building. Many of these are ceiling mounted. Some smoke detection devices were noted during the tour of the building, however they were not observed throughout the entire building.

With a horn based fire alarm system, there is currently no means of making announcements or mass notification of building tenants. Per NCMC: An Alertus Emergency Notification System (ENS) was installed in 2016 and allows for mass notification (audio and visual delivery of message) across campus.

The existing voice and data systems are located in closets. The cabling appears to be properly installed and protected. There are existing ceiling mounted WAP devices for wireless connectivity located throughout the building. There is a telecom rack located in a caged area in the penthouse. This should be reviewed to insure that this space meets the temperature requirements and provides a proper environment for this equipment.



Administration / Classroom Building: Building Component Life Expectancy: Mechanical

Building Square Footage = 52,000 square feet
Building Built in 1965, Renovated in 2004

LEGEND

	Equipment or system is in good condition, operates efficiently and as designed, little wear
	Equipment or system is in fair condition, should be regularly monitored due to age, and maintenance should be performed as required
	Equipment or system is nearing, or at the end of its useful life based on condition and/or industry standards
	Facility Improvement or Energy Saving Modification

Note: Replacement costing -period based on 5 year look out.

		Inflation Factor at 3% /YR Beginning in 2019					1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	1.344	1.384	1.426	1.469	1.513	1.558	1.605	1.653	1.702	1.754	1.806
		Base Line Cost (2019)	Projected Cost for Year Indicated	Useful Life in Years	Expected End of Useful Life	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	
Mechanical Systems																											
1	Air Handling Unit AHU-10 (2004)	-----	-----	2029	25	2029																					
2	Air Handling Unit AHU-11 (2004)	-----	-----	2029	25	2029																					
3	Air Handling Unit AHU-14 (2004)	-----	-----	2029	25	2029																					
4	Air Handling Unit AHU-17 (2004)	-----	-----	2029	25	2029																					
5	Air Handling Unit AHU-18 (2004)	-----	-----	2029	25	2029																					
6	Air Handling Unit AHU-19 (2004)	-----	-----	2029	25	2029																					
7	Inline Pump CP-10 (2004)	7,145	7,145	2019	10	2014																					
8	Inline Pump CP-11 (2004)	7,145	7,145	2019	10	2014																					
9	Inline Pump CP-14 (2004)	7,145	7,145	2019	10	2014																					
10	Inline Pump CP-17 (2004)	7,145	7,145	2019	10	2014																					
11	Inline Pump CP-18 (2004)	7,145	7,145	2019	10	2014																					
12	Inline Pump CP-19 (2004)	7,145	7,145	2019	10	2014																					
13	Inline Pump CP-100 / 100A (2004)	7,145	7,145	2019	10	2014																					
14	Cabinet Unit Heaters (10) (1965)	100,905	100,905	2019	30	1995																					
15	Exhaust Fans (4) (1965)	20,043	20,043	2019	20	1975																					
16	Exhaust Fan Penthouse (1965)	5,011	5,011	2019	25	1990																					
17	Tempering Coils (5) 1965	33,325	33,325	2019	25	1990																					
18	Convectors (17) (1965)	46,359	46,359	2019	25	1990																					
19	Unit Heaters (5) (1965)	13,571	13,571	2019	20	1985																					
20	Terminal Units (9) (1965)	63,468	63,468	2019	20	1985																					
21	New required Terminal Units with ductwork to meet new space conditions (18)	157,346	157,346	2019	N/A	N/A																					
22	Finned Tube (250 Feet) (1965)	38,319	38,319	2019	30	1995																					
23	Unit Ventilator (22) (2004)	-----	-----	2019	15	2019																					
24	Chiller ACCH-1 & 2 (2004)	-----	-----	2024	20	2024																					
25	Pumps 31, 32, 33, 34 (2004)	-----	-----	2024	20	2024																					
26	Split Systems A.C. (2) (2004)	-----	-----	2019	15	2019																					
27	Compressor (1965)	6,376	6,376	2019	20	1985																					
28	Lav's (Qty. 17)	18,142	18,142	2019	30	1995																					
29	Multi-person sinks (Qty. 4)	31,116	31,116	2019	30	1995																					
30	Service Sink (Qty. 4)	5,702	5,702	2019	30	1995																					
31	Water closet (Qty. 27)	31,021	31,021	2019	30	1995																					
32	Urinals (Qty. 11)	25,640	25,640	2019	30	1995																					
33	Drinking Fountains "Single" (Qty. 5)	10,221	10,221	2019	30	1995																					
34	Double Sink (Qty. 4)	10,176	10,176	2019	30	1995																					
Future Cash Flow:		666,756																									
Yearly Totals:		666,756	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yearly Totals With Inflation Factor:		666,756	686,758	707,361	728,582	750,439	772,952	796,141	820,025	844,626	869,965	896,064	922,946	950,634	979,153	1,008,528	1,038,783	1,069,947	1,102,045	1,135,107	1,169,160	1,204,235					
Total Projected Cost:		666,756																									

Administration / Classroom Building: Building Component Life Expectancy: Electrical

Building Square Footage = 52,000 square feet
 Building Built in 1965, Renovated in 2004

LEGEND

	Equipment or system is in good condition, operates efficiently and as designed, little wear
	Equipment or system is in fair condition, should be regularly monitored due to age, and maintenance should be performed as required
	Equipment or system is nearing, or at the end of its useful life based on condition and/or industry standards
	Facility Improvement or Energy Saving Modification

Note: Study-period based on 5 years.

											Inflation Factor at 3% /YR Beginning in 2019																						
											1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	1.344	1.384	1.426	1.469	1.513	1.558	1.605	1.653	1.702	1.754	1.806		
	Type	Size	Poles	Manufacturer	Notes	Base Line Cost (2019)	Projected Cost for Year Indicated	Useful Life in Years	Expected End of Useful Life	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039			
Electrical Systems																																	
1	T-"B" (1965)	Transformer	15 KVA	(SQD) Newer (2006?)		3,481	4,964	2031	25	2031																							
2	T-"4"	Transformer	500 KVA	(SQD) Newer (2006?)	(Primary) 12470V-208/120V	69,498	99,088	2031	25	2031																							
3	DP-PB	Dist. Panelboard		(SQD) Newer (2006?)		12,114	17,272	2031	25	2031																							
4	Panel-X	Load Center		(SQD) Old	MLO	4,559	4,559	2019	25	1990																							
5	RP-1A	Panelboard	42	(SQD) Newer (2006?)	MLO	5,420	7,727	2031	25	2031																							
6	RP-1B	Panelboard	42	(SQD) Newer (2006?)	MLO	5,420	7,727	2031	25	2031																							
7	LP-D (2)	Panelboard	225A	60 (FPE)	MLO, 2 tubs	7,842	7,842	2019	25	1990																							
8	LP-C	Panelboard	225A	42 (FPE)	MLO	5,420	5,420	2019	25	1990																							
9	LP-B	Panelboard	225A	42 (FPE)	Storage in front of equipment	5,420	5,420	2019	25	1990																							
10	DP-PA	Dist. Panelboard		DP (FPE)		12,114	12,114	2019	25	1990																							
11	LP-A	Panelboard	225A	42 (FPE)	MLO	5,420	5,420	2019	25	1990																							
12	Panel-J	Panelboard		42 (FPE)	MLO	5,420	5,420	2019	25	1990																							
13	Panel-H	Panelboard		42 (FPE)	MLO, Signs of damage, very poor	5,420	5,420	2019	25	1990																							
14	Panel-G	Panelboard		42 (FPE)	MLO	5,420	5,420	2019	25	1990																							
15	Panel-F	Panelboard		60 (FPE)	MLO, 2 tubs	7,842	7,842	2019	25	1990																							
16	Panel-E	Panelboard		42 (FPE)	MLO	5,420	5,420	2019	25	1990																							
17	Panel-K	Panelboard		42 (FPE)	MLO, Penthouse	5,420	5,420	2019	25	1990																							
18	Original lighting in most of bldg	Lighting		Varies	52Ksqft x \$8.93/sqft	464,173	464,173	2019	N/A	N/A																							
19	Complete lighting controls for balance of bldg	Controls			40K sqft x \$1.91/sqft	76,512	76,512	2019	N/A	N/A																							
						Future Cash Flow:	712,334	Yearly Totals:		616,401	0	0	0	0	0	0	0	0	0	0	0	136,778	0	0	0	0	0	0	0	0	0		
						Yearly Totals With Inflation Factor:		616,401	634,893	653,939	673,557	693,764	714,577	736,014	758,095	780,838	804,263	828,391	853,242	1,015,618	1,046,086	1,077,469	1,109,793	1,143,087	1,177,379	1,212,701	1,249,082	1,286,555					
						Total Projected Cost:		753,179	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039				

Heating Plant Mechanical Equipment Descriptions

GENERAL BUILDING DESCRIPTION

The Heating Plant is located between the Administration and Classroom Building and Maintenance Building. The Heating Plant was constructed in 1965 and underwent a major renovation of mechanical equipment in 2010. The building is a single story building that consists of approximately 2,300 square feet. Boiler Room and Electrical room are located in the Heating Plant.

Building Cooling System -Two Air cooled condenser units that are located on the outside of the building serving the split system in the energy management office and the blower coil unit serving the electrical room which were upgraded in 2004 and serve the cooling requirements for these rooms. Refrigerant piping is piped to each of the units located in the plenum space of on each of the rooms of the building.

Blower Coil Unit BCU-1, located in Electrical Room of the Heating Plant, is a constant volume system installed in 2004. The system consists of outside air dampers, relief louver with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection, Ox cooling coil, and a constant volume supply fan with discharge damper for supply air volume control. The BCU-1 serves the Electrical room of the building space of the Heating Plant and supplies air to the space. BCU-1 is controlled by a combination of temperature controls and the campus DOC control system.

Split system Air conditioner Unit, located in Energy management office of the Heating Plant, is an Air conditioner system installed in 2004 originally from the administration and classroom building. The system consists of a Ox cooling coil, and a constant volume supply fan with discharge damper for supply air volume control. The split system serves the Energy management office of the building space of the Heating Plant and provides cooling to the space. Split system is controlled by a combination of temperature controls and the campus DOC control system.

Heating Plant Electrical Equipment Descriptions

GENERAL BUILDING DESCRIPTION

The Heating Plant is located on the Northeast corner of campus next to the Maintenance Building. The Heating Plant was constructed in 1973 and is a single story building that consists primarily of mechanical equipment. There is a small room on the side of the building that contains some primary electrical equipment and some primary and secondary distribution equipment.

Power:

The main power enters the building from the adjacent primary electrical room. This building is fed from the primary transformer T1 and then through the 300kVA low voltage transformer T2, located in the primary electrical room. The equipment is all newer and in good condition.

The building electrical distribution system consists of branch circuit panelboards. The entire system in this building is 208/120V.

There is storage in front of much of the equipment that needs to be cleared. The code required existing for the main electrical room should be reviewed.

It appears that there is not sufficient clearance in front of the primary equipment. This needs to be reviewed and addressed.

Lighting:

Our understanding is that approximately 90% of the linear fluorescent lamps and their associated ballasts on campus have been changed from T12 to T8. It appears that most of the fixtures have been converted. Most of the lighting is in satisfactory condition. However, the light coverage could be improved and also made more efficient.

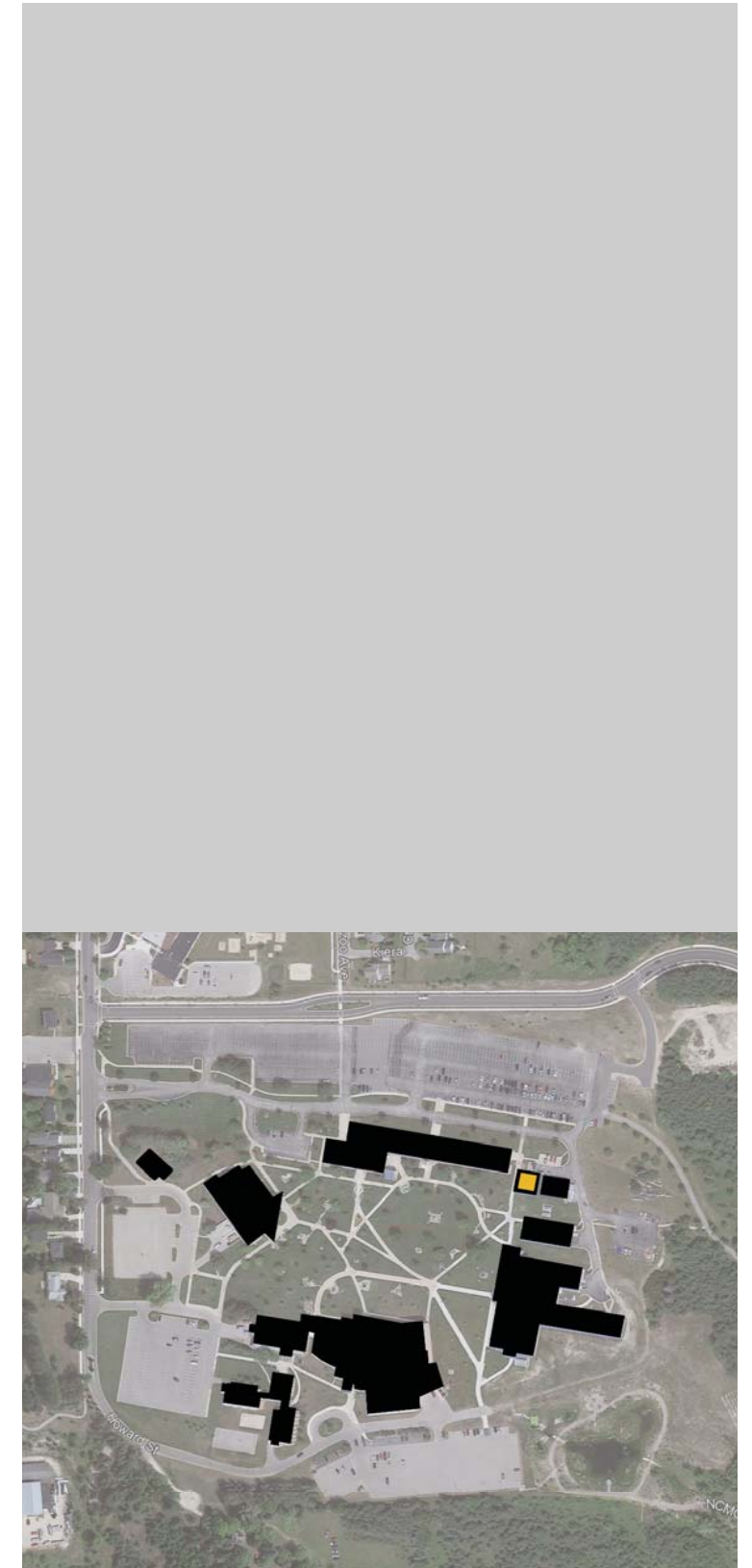
Emergency Systems:

There is no generator set up to supply emergency power to support emergency egress lighting in this building. Some battery EXIT signs and both ceiling and wall mounted Emergency Battery Units (EBUs or “Bug Eyes”) were noted throughout the facility. Proper emergency light levels along paths should be verified. Monthly testing of all local battery lighting units should be documented and reviewed.

Auxiliary Systems:

The fire alarm system consists of horn and strobe notification devices. These devices are mounted throughout the building. Many of these are ceiling mounted.

With a horn based fire alarm system, there is currently no means of making announcements or mass notification of building tenants. Per NCMC: An Alertus Emergency Notification System (ENS) was installed in 2016 and allows for mass notification (audio and visual delivery of message) across campus.



North Central Michigan College Master Plan 2019

Heating Plant: Building Component Life Expectancy: Mechanical

Building Square Footage = 2,300 square feet
 Building Built in 1965, Renovated in 2010

LEGEND

	Equipment or system is in good condition, operates efficiently and as designed, little wear
	Equipment or system is in fair condition, should be regularly monitored due to age, and maintenance should be performed as required
	Equipment or system is nearing, or at the end of its useful life based on condition and/or industry standards
	Facility Improvement or Energy Saving Modification

Note: Study-period based on 5 years.

		Inflation Factor at 3% /YR Beginning in 2019				1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	1.344	1.384	1.426	1.469	1.513	1.558	1.605	1.653	1.702	1.754	1.806	
		Base Line Cost (2019)	Projected Cost for Year Indicated	Useful Life in Years	Expected End of Useful Life	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	
Mechanical Systems																											
1	Boilers (8) 2009	-----	-----	2029	30	2029																					
2	Domestic water heater (2004)	-----	-----	2019	15	2019																					
3	Unit Heaters (2)(1965)	5,428	5,428	2019	20	1985																					
4	Circulation Pumps (8) 2010	-----	-----	2020	10	2020																					
5	Basemounted Pumps (3) (2013)	-----	-----	2033	20	2033																					
6	Split system AC (1998)	8,390	8,390	2019	15	2013																					
7	Blower coil unit (2004)	-----	-----	2029	25	2029																					
8	Provide ventilation to boiler room	22,954	22,954	2019	N/A	N/A																					
9	Provide heating and ventilation to control room office	10,839	10,839	2019	N/A	N/A																					
10	Retro Commission mechanical & electrical systems	10,839	10,839	2019	N/A	N/A																					
Future Cash Flow:		58,450					58,450	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Yearly Totals:							58,450	60,204	62,010	63,870	65,786	67,760	69,792	71,886	74,043	76,264	78,552	80,909	83,336	85,836	88,411	91,063	93,795	96,609	99,507	102,493	105,567
Yearly Totals With Inflation Factor:							58,450	60,204	62,010	63,870	65,786	67,760	69,792	71,886	74,043	76,264	78,552	80,909	83,336	85,836	88,411	91,063	93,795	96,609	99,507	102,493	105,567
Total Projected Cost:		58,450					2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039

Heating Plant: Building Component Life Expectancy: Electrical

Building Square Footage = 2,300 square feet
 Building Built in 1965, Renovated in 2010

LEGEND

	Equipment or system is in good condition, operates efficiently and as designed, little wear
	Equipment or system is in fair condition, should be regularly monitored due to age, and maintenance should be performed as required
	Equipment or system is nearing, or at the end of its useful life based on condition and/or industry standards
	Facility Improvement or Energy Saving Modification

Note: Study-period based on 5 years.

		Inflation Factor at 3% /YR Beginning in 2019				1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	1.344	1.384	1.426	1.469	1.513	1.558	1.605	1.653	1.702	1.754	1.806					
		Type	Size	Poles	Manufacturer	Notes	Base Line Cost (2019)	Projected Cost for Year Indicated	Useful Life in Years	Expected End of Useful Life	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Electrical Systems																															
1	3 Primary switches	15kV switch	600A	3	(SQD)	Improper clearance	74,599	106,361	2031	25	2031																				
2	MCC-BH	MCC	600A, 4 section		(SQD)		25,504	36,363	2031	25	2031																				
3	Starters in MCC	Starter	17 of various sizes		(SQD)		47,182	67,271	2031	25	2031																				
4	Panel-B	Panelboard		42	(SQD)	Good	5,420	7,727	2031	25	2031																				
5	Panel-PP	Panelboard		42	(SQD)	Good	5,420	7,727	2031	25	2031																				
6	T-1	Transformer	500 KVA		(SQD)	Dry Primary	69,498	99,088	2031	25	2031																				
7	T-2	Transformer	300 KVA			Dry, 480V-to-208V	15,047	21,454	2031	25	2031																				
8	DP-PB2	Dist. Panelboard	1000A/208V				48,458	69,089	2031	25	2031																				
9	DP-CH	Dist. Panelboard	1200A/480/277V 12ckts				53,558	76,362	2031	25	2031																				
10	Panel-EMERG	Panelboard	60A				3,826	3,826	2019	25	1990																				
11	Upgrade lighting	Lighting				Improve light and save energy	12,752	12,752	2019	N/A	N/A																				
Future Cash Flow:							361,265					16,578	0	0	0	0	0	0	0	0	0	0	0	0	0	491,441	0	0	0	0	
Yearly Totals:											16,578	17,075	17,587	18,115	18,658	19,218	19,795	20,388	21,000	21,630	22,279	22,947	515,077	530,529	546,445	562,838	579,724	597,115	615,029	633,480	652,484
Yearly Totals With Inflation Factor:											16,578	17,075	17,587	18,115	18,658	19,218	19,795	20,388	21,000	21,630	22,279	22,947	515,077	530,529	546,445	562,838	579,724	597,115	615,029	633,480	652,484
Total Projected Cost:							508,019				2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039

Maintenance Building Mechanical Equipment Descriptions

GENERAL BUILDING DESCRIPTION

The Maintenance Building is located near the Heating Plant and Technology Building. The Maintenance Building was constructed in 1973. The building is a single story building that consists of approximately 3,400 square feet and is served hot water heating by the campus heating plant. Equipment Storage and Maintenance and Women's | Men's Toilets are located in the Maintenance Building.

Air Handler Unit AHU-1, located in the plenum space of the Technology Building, is a constant volume, mixed air system installed in 1973. The system consists of an outside air damper, gravity relief hood with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection. The AHU-1 serves the Toilet rooms and the south portion of the Maintenance Area space with diffusers.

Air Handler Unit AHU-2, located in the plenum space of the Technology Building, is a constant volume, mixed air system installed in 1973. The system consists of an outside air damper, gravity relief hood with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection. The AHU-2 serves the Maintenance Area space with diffusers.

Exhaust Fan EF-1 is a constant volume exhaust systems with motorized backdraft dampers. EF-1, located on the roof and installed in 1973, serves Men's and Women's toilet rooms.

Exhaust Fans EF-2 is a constant volume exhaust systems with motorized backdraft dampers. EF-2 is located in line of the duct work that serves the hood in the maintenance area.

Unit Heaters are in place for heating the Maintenance area and Storage room.

Convectors are located in each of the Toilet areas to heat each of the spaces

Plumbing Fixtures are located in the bathrooms and janitor's closet in the building. The fixtures in the building consist of Lavs, Service Sink, Drinking fountains, Water closets, and Urinals. These fixtures were installed in 1973 and have served the building since.

Maintenance Building Electrical Equipment Descriptions

GENERAL BUILDING DESCRIPTION

The Maintenance Building is located on the Northeast corner of campus next to the Heating Plant. The Maintenance Building was constructed in 1973 and is a single story building with a small mezzanine that consists primarily of a garage and a shop.

Power:

The main power enters the building from the nearby primary electrical room. This building is fed with a 400A feeder from the switchboard in the adjacent Heating Plant.

The building electrical distribution system consists of branch circuit panelboards. The entire system in this building is 208/120V.

Lighting:

Our understanding is that approximately 90% of the linear fluorescent lamps and their associated ballasts on campus have been changed from T12 to T8. It appears that most of the fixtures have been converted.

Most of the lighting is in satisfactory condition.

Emergency Systems:

There is no generator set up to supply emergency power to support emergency egress lighting in this building. Some battery EXIT signs and both ceiling and wall mounted Emergency Battery Units (EBUs or "Bug Eyes") were noted throughout the facility. Proper emergency light levels along paths should be verified. Monthly testing of all local battery lighting units should be documented and reviewed.

Auxiliary Systems:

The fire alarm system consists of horn and strobe notification devices. These devices are mounted throughout the building. Many of these are ceiling mounted. With a horn based fire alarm system, there is currently no means of making announcements or mass notification of building tenants. Per NCMC: An Alertus Emergency Notification System (ENS) was installed in 2016 and allows for mass notification (audio and visual delivery of message) across campus.



Maintenance Building: Building Component Life Expectancy: Mechanical

Building Square Footage = 3,400 square feet
Building Built in 1973

LEGEND

	Equipment or system is in good condition, operates efficiently and as designed, little wear
	Equipment or system is in fair condition, should be regularly monitored due to age, and maintenance should be performed as required
	Equipment or system is nearing, or at the end of its useful life based on condition and/or industry standards
	Facility Improvement or Energy Saving Modification

Note: Study-period based on 5 years.

		Inflation Factor at 3% /YR Beginning in 2019				1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	1.344	1.384	1.426	1.469	1.513	1.558	1.605	1.653	1.702	1.754	1.806																				
		Base Line Cost (2019)	Projected Cost for Year Indicated	Useful Life in Years	Expected End of Useful Life	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039																				
Mechanical Systems																																														
1	Air Handler Unit AHU-1 (1973)	52,484	52,484	2019	25	1998																																								
2	Air Handler Unit AHU-2 (1973) (Not Functioning)	52,484	52,484	2019	25	1998																																								
3	Unit heaters (4) (1973)	10,857	10,857	2019	20	1993																																								
4	Convactor (3) (1973)	8,181	8,181	2019	20	1993																																								
5	Exhasut Fan (1) (1973)	5,011	5,011	2019	15	1988																																								
8	Exhaust Fan w / hood (1973)	6,954	6,954	2019	15	1988																																								
6	Air Compressor (1973)	6,376	6,376	2019	20	1993																																								
7	Inline Pump (1973)	7,145	7,145	2019	15	1988																																								
8	Inline Pump (1973)	7,145	7,145	2019	15	1988																																								
9	Temperature Controls	31,880	31,880	2019	20	1993																																								
10	Current Piping system is causing operational issues and needs to be modified.	34,619	34,619	2019	N/A	N/A																																								
11	Lav's (Qty. 3)	3,202	3,202	2019	30	2003																																								
12	Service Sink (Qty. 1)	1,426	1,426	2019	30	2003																																								
14	Water closet (Qty. 2)	2,298	2,298	2019	30	2003																																								
15	Urinals (Qty. 2)	4,662	4,662	2019	30	2003																																								
16	Drinking Fountains "Single" (Qty. 1)	2,044	2,044	2019	30	2003																																								
17	Shower (Qty. 1)	2,204	2,204	2019	30	2003																																								
Future Cash Flow:		238,971	Yearly Totals:																							238,971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Yearly Totals With Inflation Factor:																							238,971	246,140	253,524	261,130	268,964	277,033	285,344	293,904	302,721	311,803	321,157	330,791	340,715	350,937	361,465	372,309	383,478	394,982	406,832	419,037	431,608	
Total Projected Cost:		238,971	Yearly Totals:																							238,971	246,140	253,524	261,130	268,964	277,033	285,344	293,904	302,721	311,803	321,157	330,791	340,715	350,937	361,465	372,309	383,478	394,982	406,832	419,037	431,608

Maintenance Building: Building Component Life Expectancy: Electrical

Building Square Footage = 3,400 square feet
Building Built in 1973

LEGEND

	Equipment or system is in good condition, operates efficiently and as designed, little wear
	Equipment or system is in fair condition, should be regularly monitored due to age, and maintenance should be performed as required
	Equipment or system is nearing, or at the end of its useful life based on condition and/or industry standards
	Facility Improvement or Energy Saving Modification

Note: Study-period based on 5 years.

		Inflation Factor at 3% /YR Beginning in 2019				1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	1.344	1.384	1.426	1.469	1.513	1.558	1.605	1.653	1.702	1.754	1.806																								
		Type	Size	Poles	Manufacturer	Notes	Base Line Cost (2019)	Projected Cost for Year Indicated	Useful Life in Years	Expected End of Useful Life	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039																			
Electrical Systems																																																		
1	Main Panel	Dist. Panelboard	800A	3	G.E.		12,114	12,114	2019	25	1998																																							
2	LP-A	Panelboard	100A MLO	30	G.E.		4,081	4,081	2019	25	1998																																							
3	LP-B	Panelboard	100A MLO	30	G.E.		4,081	4,081	2019	25	1998																																							
4	Panel EM	Panelboard		10	G.E.		3,571	3,571	2019	25	1998																																							
Future Cash Flow:		Yearly Totals:																							23,846	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Yearly Totals With Inflation Factor:																							23,846	24,562	25,299	26,057	26,839	27,644	28,474	29,328	30,208	31,114	32,047	33,009	33,999	35,019	36,070	37,152	38,266	39,414	40,597	41,815	43,069					
Total Projected Cost:		Yearly Totals:																							23,846	24,562	25,299	26,057	26,839	27,644	28,474	29,328	30,208	31,114	32,047	33,009	33,999	35,019	36,070	37,152	38,266	39,414	40,597	41,815	43,069					

Residence Hall Mechanical Equipment Descriptions

GENERAL BUILDING DESCRIPTION

The Residence Hall is located on the Southwest side of campus just south of the Student Center Cafeteria. The Residence Hall was constructed in 1973 and is a four story building that consists of approximately 35,000 square feet. The Residence Hall consists of student dorms.

AHU-29, located in Mechanical Room 607 of the Residence Hall, is a constant volume, mixed air system installed in 1973. The system consists of outside air dampers, relief louver with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection. The AHU-29 serves the West portion of the building spaces on the Basement Level of the Residence Hall Building and supplies air to the spaces thru individual tempering coils and diffusers.

Air Handler Unit AHU-32, located in Mechanical Room of the Residence Hall, is a constant volume, mixed air system installed in 1973. The system consists of outside air dampers, relief louver with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection. The AHU-32 serves the South portion of the building spaces on the Basement Level of the Residence Hall Building and supplies air to the spaces thru individual tempering coils and diffusers.

Roof Top Unit RTU-xx, located on the roof of the student Lounge area of the building of the Residence Hall, is a constant volume, mixed air system installed in 1973. The system consists of outside air dampers, relief louver with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection. The RTU-xx serves the North portion of the building spaces on the First Floor Level of the Residence Hall Building and supplies air to the spaces thru individual tempering coils and diffusers.

Exhaust Fan EF-xx is a constant volume exhaust systems with motorized backdraft dampers.

Plumbing Fixtures are located in the kitchen spaces, bathrooms and janitors closet in the building. The fixtures in the building consist of Lav's, Single bowl sink, Double bowl sink, Service Sink, Drinking fountains, Water closets, Showers, and Urinals. These fixtures were installed in 1973 and have served the building since.



Residence Hall Electrical Equipment Descriptions

GENERAL BUILDING DESCRIPTION

The Residence Hall is located on the Southwest side of campus just south of the Student Center Cafeteria. The Residence Hall was constructed in 1973 and is a four story building that consists of approximately 35,000 square feet. The Residence Hall consists of student dorms.

Power:

The main power enters the building through the tunnel system. The main equipment is located in the basement of the building. This building is fed from the primary equipment located in the adjacent SCRC building. The power for this building originates from a 150kVA 480V-208/120V transformer located in the basement Main Electrical Room. The main electrical equipment appears to be newer and in good condition.

The building electrical distribution system consists mainly of branch circuit panelboards scattered throughout the building. Many of the panelboards have been replaced with newer Square D panel boards, but the balance of the electrical distribution system consists of older equipment, possibly from the original construction. Any equipment from the original construction has surpassed its anticipated life expectancy and should be scheduled for replacement.

There is storage in front of electrical equipment in several locations in the building. These areas need to be kept clear.

Lighting:

Our understanding is that approximately 90% of the linear fluorescent lamps and their associated ballasts on campus have been changed from T12 to TB. It appears that most of the fixtures have been converted to TB or have been retrofit with newer technology lamps like LED. The light levels and distribution should be improved. New, more efficient light fixtures should be explored.

Many of the light fixtures are showing signs of age. Newer lighting could provide aesthetic and quality improvements as well as save energy.

Most of the observed lighting control consists of toggle switches. Current energy codes call for some sort of automatic lighting control. There are several areas in this building where daylight harvesting opportunities are present.

The lighting in the basement should be all be replaced to save energy and to provide better quality and quantity of lighting.

Emergency Systems:

There is no generator set up to supply emergency power to support emergency egress lighting in this building. Some battery EXIT signs and both ceiling and wall mounted Emergency Battery Units (EBUs or "Bug Eyes") were noted throughout the facility. Proper emergency light levels along paths should be verified. Monthly testing of all local battery lighting units should be documented and reviewed.

Auxiliary Systems:

This building contains a main telecommunication hub in the basement. The service provider fiber optic systems enter the campus through this room. This room is backed up by generator power.

The fire alarm system consists of horn and strobe notification devices. These devices are mounted throughout the building. Many of these are ceiling mounted. The building contains a sprinkler system.

With a horn based fire alarm system, there is currently no means of making announcements or mass notification of building tenants. Per NCMC: An Alertus Emergency Notification System (ENS) was installed in 2016 and allows for mass notification (audio and visual delivery of message) across campus.

The existing voice and data systems are located in closets. The cabling appears to be properly installed and protected. It appears that there are existing wall and ceiling mounted WAP devices for wireless connectivity located throughout the building.

Residence Hall: Building Component Life Expectancy: Mechanical

Building Square Footage = 35,000 square feet
Building Built in 1973,
Unit ventilators renovated in 2011

LEGEND

	Equipment or system is in good condition, operates efficiently and as designed, little wear
	Equipment or system is in fair condition, should be regularly monitored due to age, and maintenance should be performed as required
	Equipment or system is nearing, or at the end of its useful life based on condition and/or industry standards
	Facility Improvement or Energy Saving Modification

Note: Study-period based on 5 years.

Inflation Factor at 3% /YR Beginning in 2019		1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	1.344	1.384	1.426	1.469	1.513	1.558	1.605	1.653	1.702	1.754	1.806				
	Base Line Cost (2019)	Projected Cost for Year Indicated	Useful Life in Years	Expected End of Useful Life	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	
Mechanical Systems																										
1	Air Handling Unit AHU-29 (1973)	57,341	57,341	2019	25	1998																				
2	Air Handling Unit AHU-32 (1973)	57,341	57,341	2019	25	1998																				
3	Air Handling Unit - Directors apt (1973)	11,123	11,123	2019	25	1998																				
4	Roof Top Unit RTU-xx (2000)	-----	-----	2020	20	2020																				
5	Inline Pump CP-xx (1973)	7,145	7,145	2019	20	1993																				
6	Inline Pump CP-xx(1973)	7,145	7,145	2019	20	1993																				
7	Inline Pump CP-xx (1973)	7,145	7,145	2019	20	1993																				
8	Cabinet Unit Heaters (10) (1973)	68,416	68,416	2019	30	2003																				
9	Exhaust Fans (4) (2009) serves suite wings	-----	-----	2034	25	2034																				
10	Exhaust Fans (2) (1973) Serves Corridors	10,021	10,021	2019	25	1998																				
11	Unit Heaters (5) (1973)	34,208	34,208	2019	20	1993																				
12	Finned Tube (250 Feet) (1973)	39,342	39,342	2019	30	2003																				
13	Split system for IT closet (2009)	-----	-----	2019	10	2019																				
14	Unit Ventilator (84) (2011) located in suites	-----	-----	2036	25	2036																				
15	Unit Ventilator (3) (1973) located in lounge	50,782	50,782	2019	15	1988																				
16	Compressor (1973) (if mech renov will not be needed)	-----	-----	2019	20	1993																				
17	Temperature Controls (Included in equipment replacement)	-----	-----	2019	20	N/A																				
18	Lav's (qty. 88) (2009)	93,914	169,619	2039	30	2039																				
19	Single sink (qty. 3)	5,739	5,739	2019	30	2003																				
20	Double Sink (qty. 1)	2,544	2,544	2019	30	2003																				
21	Service Sink (qty. 8)	11,404	11,404	2019	30	2003																				
22	Drinking Fountain (qty. 3)	10,937	10,937	2019	30	2003																				
23	Water Closet (qty. 48) (2009)	55,149	99,605	2039	30	2039																				
24	Urinals (qty. 2)	4,662	4,662	2019	30	2003																				
25	Tub (qty. 1)	4,897	4,897	2019	30	2003																				
26	Showers (qty. 42)	92,578	167,205	2039	30	2039																				
Future Cash Flow:		631,831																								
Yearly Totals:					390,191	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	436,429	
Yearly Totals With Inflation Factor:					390,191	401,897	413,954	426,372	439,163	452,338	465,908	479,886	494,282	509,111	524,384	540,116	556,319	573,009	590,199	607,905	626,142	644,926	664,274	684,202	1,141,157	
Total Projected Cost:					826,620																					

Residence Hall: Building Component Life Expectancy: Electrical

Building Square Footage = 35,000 square feet
Building Built in 1973,
Unit ventilators renovated in 2011

LEGEND

	Equipment or system is in good condition, operates efficiently and as designed, little wear
	Equipment or system is in fair condition, should be regularly monitored due to age, and maintenance should be performed as required
	Equipment or system is nearing, or at the end of its useful life based on condition and/or industry standards
	Facility Improvement or Energy Saving Modification

Note: Study period based on 5 years.

		Inflation Factor at 3%		YR Beginning In 2019		1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	1.344	1.384	1.426	1.469	1.513	1.558	1.605	1.653	1.702	1.754	1.806				
	Type	Size	Poles	Manufacturer	Notes	Base Line Cost (2019)	Projected Cost for Year (Indicated)	Useful Life in Years	Expected End of Useful Life	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Electrical Systems																														
1	Unit Substation Section B (2009)	Switchboard	600A MLO	DP	SQD	Inside cover plate is missing	33,155	51,655	2034	25	2034																			
2	Transformer (2009)	Transformer	150 KVA		SQD		8,161	12,715	2034	25	2034																			
3	Transformer (2009)	Transformer	45 KVA		SQD		4,081	6,358	2034	25	2034																			
4	Panel-EM2 (2009)	Panelboard		30	SQD		4,081	6,358	2034	25	2034																			
5	Panel-A (2009)	Panelboard		42	SQD		5,420	8,444	2034	25	2034																			
6	Panel-B (2009)	Panelboard	125A	30	SQD	New	4,081	6,358	2034	25	2034																			
7	Panel-B1 (2009)	Panelboard		30	SQD	New	4,081	6,358	2034	25	2034																			
8	Panel-C (2009)	Panelboard	125A	30	SQD	New	4,081	6,358	2034	25	2034																			
9	Panel-C1 (2009)	Panelboard		30	SQD	New	4,081	6,358	2034	25	2034																			
10	Panel-D (2009)	Panelboard	100A	30	SQD		4,081	6,358	2034	25	2034																			
11	Panel-E (2009)	Panelboard	150A	42	SQD	New	5,420	8,444	2034	25	2034																			
12	Panel-F (2009)	Panelboard	150A	42	SQD		5,420	8,444	2034	25	2034																			
13	Panel-F-2	Panelboard		16			4,081	4,081	2019	25	1998																			
14	Panel-G (2009)	Panelboard	150A	42	SQD		5,420	8,444	2034	25	2034																			
15	Panel-H (2009)	Panelboard	150A	42	SQD		5,420	8,444	2034	25	2034																			
16	Panel-J (2009)	Panelboard	150A	42	SQD		5,420	8,444	2034	25	2034																			
17	Panel-K (2009)	Panelboard	150A	42	SQD		5,420	8,444	2034	25	2034																			
18	Load Center in Kitchenette	Load Center			SQD		3,826	3,826	2019	25	1998																			
19	Upgrade lighting and controls in common areas.					10,000sqft x \$15.95/sqft	159,400	159,400	2019	N/A	N/A																			
						Future Cash Flow:	275,125			Yearly Totals:	167,306	0	0	0	0	0	0	0	0	0	0	0	0	0	167,977	0	0	0	0	
								Yearly Totals With Inflation Factor:		167,306	172,326	177,495	182,820	188,305	193,954	199,773	205,766	211,939	218,297	224,846	231,591	238,539	245,695	253,066	428,635	441,494	454,739	468,381	482,433	496,900
						Total Projected Cost:	335,284			2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039

Student and Community Resource Center Mechanical Equipment Descriptions

GENERAL BUILDING DESCRIPTION

The Student and Community Resource Center is located between the Student Center and Health Education & Science Center. The SCRC was constructed in 2000 and is a two story building that consists of approximately 85,200 square feet. The SCRC consists of conference rooms, offices, a large open multipurpose space, and a bookstore.

Building Cooling System -Two Air cooled chillers that are located in the basement of the building and in the second floor mechanical room serving AHU-1, AHU-2, AHU-3, AHU-4, which were upgraded in 2000 and serve the cooling requirements for the SCRC. Chilled Water piping is piped to each of the units located in the Mechanical space of the building.

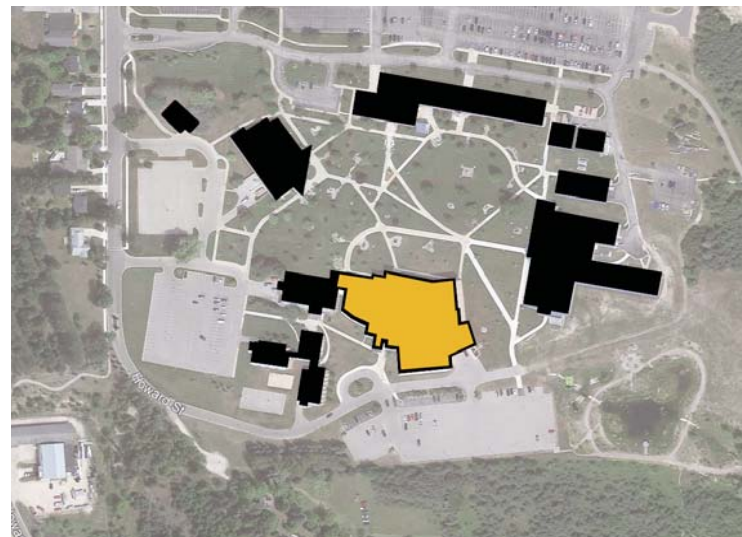
Air Handler Unit AHU-1, located in Mechanical Room 216 of the Student and Community Resource Center is a constant volume, mixed air system installed in 2000. The system consists of outside air dampers, relief louver with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection, chilled water cooling coil. The AHU-1 serves the multipurpose portion of the building spaces of the Student and Community Resource Center and supplies air to the spaces after passing through individual tempering coil and diffusers.

Air Handler Unit AHU-2, located in Mechanical Room 216 of the Student and Community Resource Center, is a constant volume, mixed air system installed in 2000. The system consists of an outside air damper, relief louver with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection, chilled water cooling coil. The AHU-2 serves the Weight training and Aerobics room and first floor locker rooms the of the building spaces on the upper & lower level of the Student and Community Resource Center and supplies air to the spaces after passing through individual tempering coil and diffusers.

Air Handler Unit AHU-3, located in Mechanical Room 3 in the basement of the Student and Community Resource Center, is a constant volume, mixed air system installed in 2000. The system consists of an outside air damper, relief louver with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection, chilled water cooling coil. The AHU-3 serves the tutor center and office space on the lower level of the Student and Community Resource Center and supplies air to the spaces after passing through individual tempering coil and diffusers.

Air Handler Unit AHU-4, located in the Mechanical Room 3, is a constant volume, mixed air system installed in 2000. The system consists of an outside air damper, relief louver with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection, chilled water cooling coil. The AHU-4 serves the college store and office space of the building spaces on the lower Level of the Student and Community Resource Center and supplies air to the spaces after passing through zone specific terminal units and to the space with diffusers.

Plumbing Fixtures are located in the Locker rooms, bathrooms and janitors closet in the building. The fixtures in the building consist of Lav's, showers, Service Sink, Drinking fountains, Water closets, and Urinals. These fixtures were installed in 2000 and have served the building since.



Student and Community Resource Center Electrical Equipment Descriptions

GENERAL BUILDING DESCRIPTION

The Student and Community Resource Center (SCRC) is located on the South side of campus adjacent to the Cafeteria and next to the Health Education and Science Center. The SCRC was constructed in 2000 and is a two story building that consists of approximately 85,200 square feet. The SCRC consists of conference rooms, offices, a large open multipurpose space, and a bookstore.

Power:

The primary power enters the building from the tunnel system. The primary equipment is located in main electrical room in the basement of the building. This room contains primary distribution equipment, including a primary switches and unit substation containing a primary transformer (T9). There are other large portions of the electrical distribution system located in the tunnels and in various Mechanical/Electrical Rooms throughout the facility. This equipment appears to be a mixture of newer equipment and older equipment.

The building electrical distribution system consists mainly of branch circuit panelboards scattered throughout the building. There is a mixture of both 480/277V and 208/120V branch circuit distribution equipment. There is a mixture of new and older equipment, including some panelboards manufactured by Federal Pacific, which has been out of business for many years. There are also some newer panelboards that were manufactured by Square D.

Lighting:

Our understanding is that approximately 90% of the linear fluorescent lamps and their associated ballasts on campus have been changed from T12 to TB. It appears that most of the fixtures have been converted or are newer energy efficient fixtures.

Because of the varied usage of the different spaces in this building, there is a mixture of various types of light fixtures. The light fixtures appear to be in satisfactory condition and are likely providing light based on their original design intentions.

The lighting control systems varied throughout the facility. Current energy codes call for some sort of automatic lighting control.

There are several opportunities for daylight harvesting in this facility. This would save energy and eliminate artificial lighting trying to compete with natural light.

There is existing automatic occupancy sensor lighting control in the main electrical room. Code does not allow for automatic lighting control in this type of space. This should be replaced with a manual control system.

Emergency Systems:

There is no generator set up to supply emergency power to support emergency egress lighting in this building. Some battery EXIT signs and both ceiling and wall mounted Emergency Battery Units (EBUs or "Bug Eyes") were noted throughout the facility. Proper emergency light levels along paths should be verified. Monthly testing of all local battery lighting units should be documented and reviewed.

Auxiliary Systems:

The fire alarm system consists of horn and strobe notification devices. These devices are mounted throughout the building. Many of these are ceiling mounted. Some smoke detection devices were noted during the tour of the building, however they were not observed throughout the entire building.

With a horn based fire alarm system, there is currently no means of making announcements or mass notification of building tenants. Per NCMC: An Alertus Emergency Notification System (ENS) was installed in 2016 and allows for mass notification (audio and visual delivery of message) across campus.

The existing voice and data systems are located in closets. The cabling appears to be properly installed and protected. There are existing ceiling mounted WAP devices for wireless connectivity located throughout the building.

Student and Community Resource Center: Building Component Life Expectancy: Mechanical

Building Square Footage = 85,200 square feet
Building Built in 2000

LEGEND

	Equipment or system is in good condition, operates efficiently and as designed, little wear
	Equipment or system is in fair condition, should be regularly monitored due to age, and maintenance should be performed as required
	Equipment or system is nearing, or at the end of its useful life based on condition and/or industry standards
	Facility Improvement or Energy Saving Modification

Note: Study-period based on 5 years.

Inflation Factor at 3% /YR Beginning in 2019							1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	1.344	1.384	1.426	1.469	1.513	1.558	1.605	1.653	1.702	1.754	1.806
	Base Line Cost (2019)	Projected Cost for Year Indicated	Useful Life in Years	Expected End of Useful Life	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039		
Mechanical Systems																											
1	Sump Pump's (2) (2000)	32,425	32,425	2019	15	2015																					
2	Domestic Water Heater (2000)	38,974	38,974	2019	15	2015																					
3	Circulation Pump CP-15 (2000)	7,145	7,145	2019	15	2015																					
4	Modular Water cooled Chiller CH-1,2 (2000)	436,350	436,350	2019	15	2015																					
5	Cooling Tower (2)	199,433	199,433	2019	15	2015																					
6	Air Handler Unit AHU-1 (2000)	-----	-----	2025	25	2025																					
7	Air Handler Unit AHU-2 (2000)	-----	-----	2025	25	2025																					
8	Air Handler Unit AHU-3 (2000)	-----	-----	2025	25	2025																					
9	Air Handler Unit AHU-4 (2000)	-----	-----	2025	25	2025																					
10	Base Mounted Pumps (6) (2000)	-----	-----	2020	20	2020																					
11	Inline Pump (4) (2000)	-----	-----	2020	20	2020																					
12	Finned Tube (511 Feet) (2000)	-----	-----	2030	30	2030																					
13	Cabinet Unit Heat (6) (2000)	-----	-----	2030	30	2030																					
14	Air Compressor (Pneumatic controls)	-----	-----	2020	20	2020																					
15	Radiant Ceiling Panel (90 ft)(2000)	-----	-----	2030	30	2030																					
16	Terminal Units (29)	-----	-----	2020	20	2020																					
17	Tempering Coils (16)	-----	-----	2020	20	2020																					
18	Unit Heaters (4)	-----	-----	2020	20	2020																					
19	Temperature Controls (Included in equipment replacement)	-----	-----	2020	20	2020																					
20	Replace leaking Dielectric fitting on existing terminal Units (60 Units)	22,510	22,510	2019	N/A	N/A																					
21	Lav's (qty. 31)	33,083	45,795	2030	30	2030																					
22	Water Closets (qty. 22)	25,276	34,989	2030	30	2030																					
23	Urinals (qty. 9)	20,978	29,039	2030	30	2030																					
24	Service Sink (qty. 2)	2,851	3,946	2030	30	2030																					
25	Showers (qty. 5)	11,021	15,256	2030	30	2030																					
26	Drinking Fountains (qty. 6)	12,265	16,977	2030	30	2030																					
Future Cash Flow:		842,313			Yearly Totals:		736,838	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
					Yearly Totals With Inflation Factor:		736,838	758,943	781,711	805,162	829,317	854,197	879,823	906,217	933,404	961,406	990,248	1,165,958	1,200,936	1,236,964	1,274,073	1,312,296	1,351,664	1,392,214	1,433,981	1,477,000	1,521,310
Total Projected Cost:		882,840			2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039		

Student and Community Resource Center: Building Component Life Expectancy: Electrical

Building Square Footage = 85,200 square feet
 Building Built in 2000

LEGEND

	Equipment or system is in good condition, operates efficiently and as designed, little wear
	Equipment or system is in fair condition, should be regularly monitored due to age, and maintenance should be performed as required
	Equipment or system is nearing, or at the end of its useful life based on condition and/or industry standards
	Facility Improvement or Energy Saving Modification

Note: Study-period based on 5 years.

		Inflation Factor at 3% /YR Beginning in 2019				1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	1.344	1.384	1.426	1.469	1.513	1.558	1.605	1.653	1.702	1.754	1.806		
		Base Line Cost (2019)	Projected Cost for Year Indicated	Useful Life in Years	Expected End of Useful Life	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039		
Type	Size	Poles	Manufacturer	Notes																								
Electrical Systems																												
1	Primary Switchgear, 2 switches	Switchgear	600A	SQD	Primary	49,733	59,384	2025	25	2025																		
2	Substation MPF	Substation	3200A/480/277V	3P		102,016	121,813	2025	25	2025																		
3	Transformer in Substation	Transformer	2000 KVA			128,158	153,027	2025	25	2025																		
4	T-BA	Transformer	45KVA	(SQD)	basement	4,081	4,873	2025	25	2025																		
5	LP-BA	Panelboard	100A MLO	30 (SQD)		4,081	4,873	2025	25	2025																		
6	RP-BA	Panelboard	150A MCB	42 (SQD)	with main breaker	8,289	9,897	2025	25	2025																		
7	DP-BA	Panelboard	800A	DP (SQD)		38,256	45,680	2025	25	2025																		
8	MCC-BA	MCC	400A	(SQD)	3 section	22,954	27,408	2025	25	2025																		
9	T-1A	Transformer	75 KVA	(SQD)	basement	5,738	6,852	2025	25	2025																		
10	ATS	ATS	100A	Cummins		6,376	7,613	2025	25	2025																		
11	Transformer next to DP-2B	Transformer	112 5KVA	SQD	AHU room	6,631	7,918	2025	25	2025																		
12	RP-1B	Panelboard	100A	56		10,839	12,943	2025	25	2025																		
13	RP-1A	Panelboard	100A	42 (SQD)		5,420	6,471	2025	25	2025																		
14	LP-1A	Panelboard	100A	(SQD)	New Door will not open	5,420	6,471	2025	25	2025																		
15	T-2C	Transformer	45KVA	(SQD)	in storage 551	4,081	4,873	2025	25	2025																		
16	RP-2C	Panelboard	150A	30 (SQD)		4,081	4,873	2025	25	2025																		
17	T-2A	Transformer	75KVA	(SQD)	AHU room	5,738	6,852	2025	25	2025																		
18	RP-2A	Panelboard	100A	42 (SQD)		5,420	6,471	2025	25	2025																		
19	RP-2B	Panelboard	100A	42 (SQD)		5,420	6,471	2025	25	2025																		
20	LP-2A	Panelboard	100A MLO	24 (SQD)		4,081	4,873	2025	25	2025																		
21	DP-2A	Dist. Panelboard	1200A	DP (SQD)		53,558	63,952	2025	25	2025																		
22	MCC-2A	MCC	400A	(SQD)	2 section	15,302	18,272	2025	25	2025																		
23	MCC-2B	MCC		(SQD)	3 section	21,678	25,885	2025	25	2025																		
24	MCC-2C	MCC		(SQD)	2 section	15,302	18,272	2025	25	2025																		
25	DP-2B	Dist. Panelboard	400A	DP (SQD)	with main breaker	19,128	22,840	2025	25	2025																		
26	NC265	Panelboard		18 (SQD)		4,081	4,873	2025	25	2025																		
27	Transformer near panel NC265	Transformer	75kVA	(SQD)	rear of basement	5,738	6,852	2025	25	2025																		
28	E-1	Panelboard	200A	DP (SQD)		10,202	12,181	2025	25	2025																		
29	RP-2C (duplicate tag in Storage 551)	Panelboard	200A	42 SQD	with main breaker	8,289	9,897	2025	25	2025																		
30	Provide automatic lighting controls				for balance of building (allowance)	51,008	51,008	2019	N/A	N/A																		
31	Provide daylight harvesting				allowance	22,954	22,954	2019	N/A	N/A																		
Future Cash Flow:						654,051	Yearly Totals:					73,962	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Yearly Totals With Inflation Factor:						73,962	76,181	78,466	80,820	83,245	85,742	780,971	804,400	828,532	853,388	878,990	905,359	932,520	960,496	989,311	1,018,990	1,049,560	1,081,046	1,113,478	1,146,882	1,181,289		
Total Projected Cost:						766,618	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	

Student Cafeteria / Conference Center Building Mechanical Equipment Descriptions

GENERAL BUILDING DESCRIPTION

The Student Cafeteria / Conference Building is located between the Maintenance Building and Health Education and Science Center. The Student Center Building was constructed in 1968 and underwent a major renovation of HVAC equipment and alterations to room layout in 2000. The building is a two story building that consists of approximately 18,500 square feet. Offices, conferences, and Cafeteria are located in the Student Center Building.

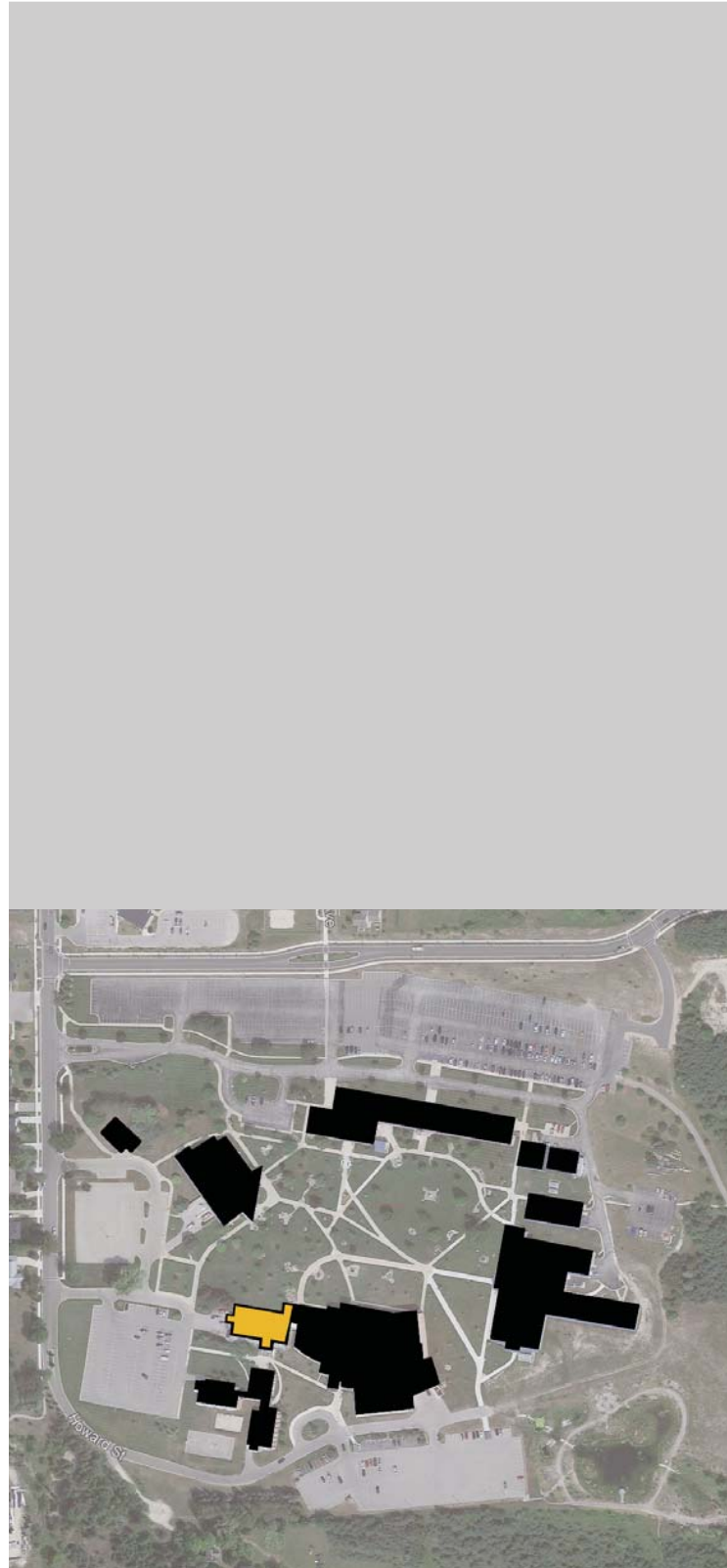
Building Cooling System -Air cooled chiller that is located in the first floor mechanical room of the building serving AHU-5 which was upgraded in 2000 and serves the cooling requirements for the Student Center Building. Chilled Water piping is piped to the unit located in the mechanical space on the first floor of the building.

Air Handler Unit AHU-1, located in the Mechanical space of the Student Center Building, is a constant volume, mixed air system installed in 2000. The system consists of an outside air damper, gravity relief hood with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection, and Chilled water cooling coil. The AHU-1 serves the building spaces of the Student Center Building and supplies air to the spaces after passing through room specific terminal unit and diffusers.

Roof Top Unit RTU-1 thru 4, located on the roof of the Student Center Building, is a constant volume, mixed air system installed in 1992. The system consists of an outside air damper, gravity relief hood with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection, Ox cooling coil. The RTU-1 through 4 serves the cafeteria and kitchen of the Student Center Building to the space with diffusers.

Exhaust Fans EF-1 09 is a constant volume exhaust systems with motorized backdraft dampers. EF-1 located in the mechanical space on first floor, serves Mechanical Space.

Plumbing Fixtures are located in the Kitchen, bathrooms and janitors closet in the building. The fixtures in the building consist of Lav's, Double Sinks, showers, Service Sink, Water closets, and Urinals. These fixtures were installed in 1968 and have served the building since.



Student Cafeteria / Conference Center Building Electrical Equipment Descriptions

GENERAL BUILDING DESCRIPTION

The Student Cafeteria / Conference Center are located on the South side of campus adjacent to the SCRC and just north of Residence Hall. The SCC was constructed in 1968 and is a two story building that consists of approximately 18,500 square feet. The SCC consists of cafeteria, kitchen, dining area, meeting rooms, and offices.

Power:

The main power enters the building from the tunnel system. The main equipment is located in the basement of the building in a space that is part of the tunnel system. This building is fed from the primary equipment located in the adjacent SCRC building. Most of the power for this building originates from a 300kVA 480V-208/120V transformer located in the tunnel space. There are other large portions of the electrical distribution system located in the tunnels and in various Mechanical/Electrical Rooms throughout the facility. This equipment appears to be a mixture of newer equipment and older equipment.

The building electrical distribution system consists mainly of branch circuit panelboards scattered throughout the building. Some of the panelboards are located in the tunnel system. There is a mixture of new and older equipment, including some panelboards manufactured by Federal Pacific, which has been out of business for many years. There are also some newer panelboards that were manufactured by Square D.

Lighting:

Our understanding is that approximately 90% of the linear fluorescent lamps and their associated ballasts on campus have been changed from T12 to T8. It appears that most of the fixtures have been converted.

Because of the varied usage of the different spaces in this building, there is a mixture of various types of light fixtures. Some of the light fixtures are showing signs of age.

Most of the observed lighting control consists of toggle switches. In the dining area, these switches are grouped together in a large bank of 12 switches. Current energy codes call for some sort of automatic lighting control. With the large existing window openings, there are several areas in this building where daylight harvesting opportunities are present.

Emergency Systems:

There is no generator set up to supply emergency power to support emergency egress lighting in this building. Some battery EXIT signs and both ceiling and wall mounted Emergency Battery Units (EBUs or "Bug Eyes") were noted throughout the facility. Proper emergency light levels along paths should be verified. Monthly testing of all local battery lighting units should be documented and reviewed.

Auxiliary Systems:

The fire alarm system consists of horn and strobe notification devices. These devices are mounted throughout the building. Many of these are ceiling mounted. Some smoke detection devices were noted during the tour of the building, however they were not observed throughout the entire building.

With a horn based fire alarm system, there is currently no means of making announcements or mass notification of building tenants. Per NCMC: An Alertus Emergency Notification System (ENS) was installed in 2016 and allows for mass notification (audio and visual delivery of message) across campus.

The existing voice and data systems are located in closets. The cabling appears to be properly installed and protected. It appears that there are existing wall and ceiling mounted WAP devices for wireless connectivity located throughout the building.

Student Cafeteria / Conference Center Building: Building Component Life Expectancy: Mechanical

Building Square Footage = 18,500 square feet
Building Built in 1968, Renovated in 2000

LEGEND

	Equipment or system is in good condition, operates efficiently and as designed, little wear
	Equipment or system is in fair condition, should be regularly monitored due to age, and maintenance should be performed as required
	Equipment or system is nearing, or at the end of its useful life based on condition and/or industry standards
	Facility Improvement or Energy Saving Modification

Note: Study-period based on 5 years.

Inflation Factor at 3%		/YR Beginning In 2019					1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	1.344	1.384	1.426	1.469	1.513	1.558	1.605	1.653	1.702	1.754	1.806
	Base Line Cost (2019)	Projected Cost for Year Indicated	Useful Life in Years	Expected End of Useful Life	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039		
Mechanical Systems																											
1	Kitchen Hood and Exhaust systems (2) (1992)	124,304	124,304	2019	20	2012																					
2	Kitchen Exhaust air make up (1992)	72,784	72,784	2019	20	2012																					
3	Cafeteria roof top units (4) (1992)	103,593	103,593	2019	20	2012																					
4	Dishwasher exhaust fan (1992)	7,524	7,524	2019	20	2012																					
5	Circulation Pump #102 (13 GPM), #106 (21 GPM)	7,145	7,145	2019	10	1978																					
6	Cabinet Unit Heat (1) (1968) serves entry	6,842	6,842	2019	30	1998																					
7	Cabinet Unit Heat (1) (2000)	-----	-----	2030	30	2030																					
8	Terminal Units (11) 2000	-----	-----	2025	25	2025																					
9	Finned Tube (120 Feet) (2000)	-----	-----	2030	30	2030																					
10	Air Handler Unit AHU-5 (2000)	-----	-----	2025	25	2025																					
11	Water Cooled Chiller (2000)	-----	-----	2020	20	2020																					
12	Cooling Tower (2000)	-----	-----	2020	20	2020																					
13	Base Mounted Pumps 11 & 12 (2000)	-----	-----	2020	20	2020																					
14	Inline Pumps (2) (2000)	14,290	14,290	2019	10	2010																					
15	Domestic Water Heaters (3) Being replaced	-----	-----	2019	24																						
16	Temperature Controls (included in equipment replacement)	-----	-----	2019	N/A	N/A																					
17	Lav's (qty. 6)	6,403	6,403	2019	30	1998																					
18	Water Closets (qty. 6)	6,894	6,894	2019	30	1998																					
19	Urinal's (qty. 3)	6,993	6,993	2019	30	1998																					
20	Service Sink (qty.1)	1,426	1,426	2019	30	1998																					
21	Double Sinks (qty. 3)	7,632	7,632	2019	30	1998																					
Future Cash Flow:		365,829	Yearly Totals:			365,829	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Yearly Totals With Inflation Factor:			365,829	376,804	388,108	399,752	411,744	424,096	436,819	449,924	463,422	477,324	491,644	506,393	521,585	537,233	553,350	569,950	587,049	604,660	622,800	641,484	660,728	
Total Projected Cost:		365,829				2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	

Student Cafeteria / Conference Center Building: Building Component Life Expectancy: Electrical

Building Square Footage = 18,500 square feet
 Building Built in 1968, Renovated in 2000

LEGEND

	Equipment or system is in good condition, operates efficiently and as designed, little wear
	Equipment or system is in fair condition, should be regularly monitored due to age, and maintenance should be performed as required
	Equipment or system is nearing, or at the end of its useful life based on condition and/or industry standards
	Facility Improvement or Energy Saving Modification

Note: Study-period based on 5 years.

		Inflation Factor at 3%		/YR Beginning in 2019		1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	1.344	1.384	1.426	1.469	1.513	1.558	1.605	1.653	1.702	1.754	1.806							
	Type	Size	Poles	Manufacturer	Notes	Base Line Cost (2019)	Projected Cost for Year Indicated	Useful Life in Years	Expected End of Useful Life	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039			
Electrical Systems																																	
1	Sub A	Distribution panel	1,000A	DP	(SQD)	New. Equipment on plan/not oneline	48,458	69,089	2031	25	2031																						
2	Transformer	Transformer	300 KVA/480V			Equipment on plan/not oneline	56,109	79,998	2031	25	2031																						
3	Panel-M	Panelboard		30	(FPE)	Old. Equipment on plan/not oneline	4,081	4,081	2019	25	1993																						
4	Panel-MM	Panelboard		42	(FPE)	Old. Equipment on plan/not oneline	5,420	5,420	2019	25	1993																						
5	Panel-EM1	Panelboard	120/208V	12	(FPE)	Old. Equipment on plan/not oneline	4,081	4,081	2019	25	1993																						
6	DP-1A	Dist. Panelboard	800A	11	(SQD)	New with tuss	16,578	23,636	2031	25	2031																						
7	LP-1B	Panelboard	100A MLO	30	(SQD)		4,081	5,818	2031	25	2031																						
8	RP-1C	Panelboard		42	(SQD)	New	5,420	7,727	2031	25	2031																						
9	T-1C (T 7)	Transformer	75KVA				5,738	8,182	2031	25	2031																						
10	MCC-1A	MCC	225A		(SQD)	2 section	15,302	21,818	2031	25	2031																						
11	Panel-XR	Panelboard		42	(FPE)	Equipment on plan/not oneline	5,420	5,420	2019	25	1993																						
12	Panel-XL	Panelboard		42	(FPE)	Equipment on plan/not oneline	5,420	5,420	2019	25	1993																						
13	Panel-P	Panelboard		42	(FPE)	Equipment on plan/not oneline	5,420	5,420	2019	25	1993																						
14	Panel-N	Panelboard		30	(FPE)	Equipment on plan/not oneline	5,420	5,420	2019	25	1993																						
15	IG	Panelboard			(SQD)	with TVSS	10,839	15,454	2031	25	2031																						
16	Upgrade lighting					18,500 sqft x \$16.59/sqft	306,686	306,686	2019	N/A	N/A																						
17	Provide lighting control					18,500 sqft x \$1.91/sqft	35,387	35,387	2019	N/A	N/A																						
18	Daylight harvesting					allowance	6,376	6,376	2019	N/A	N/A																						
Future Cash Flow:						546,233																											
Yearly Totals:						383,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231,721	0	0	0	0	0	0	0	0	0	
Yearly Totals With Inflation Factor:						383,708	395,219	407,076	419,288	431,867	444,823	458,168	471,913	486,070	500,652	515,672	531,142	547,797	564,611	581,696	599,061	616,716	634,671	652,926	671,491	690,366	709,551	729,056	748,881	769,026	789,491	810,276	
Total Projected Cost:						615,429																											

Technology Building Mechanical Equipment Descriptions

GENERAL BUILDING DESCRIPTION

The Technology Building is located between the Maintenance Building and Health Education and Science Center. The Technology Building was constructed in 1973 and underwent a major renovation of HVAC equipment and alterations to room layout in 2001. The building is a single story building that consists of approximately 5,660 square feet. Technology classrooms and I.T. repair Lab are located in the Technology Building.

Building Heating System-The campus heating hot water system located in the Heating Plant was upgraded in 2010 and serves the heating requirements for all the contiguous Petoskey Campus Buildings with the exception of the Early Childhood education Building. Heating hot water for the system is generated by eight gas fired heating hot water boilers. Heating hot water distribution system is piped in a primary loop arrangement. Two variable flow primary pumps (one operates continuously while the other is stand-by) circulate heating hot water through the primary loop between the boilers and the building(s) heating equipment. Building heating equipment utilize 2-way control valves controlled to maintain space temperatures. Heating hot water system is controlled by the original campus DOC control system.

Building Cooling System -Two Air cooled condenser units are located outside the building serving BCU-1 and BCU-2, which was upgraded in 2001 and serves the cooling requirements for the Technology Building. Refrigerant piping is piped to each of the Blower coil units located in the plenum space of the building.

Blower Coil Unit BCU-1, located in the plenum space of the Technology Building, is a constant volume, mixed air system installed in 2001. The system consists of an outside air damper, gravity relief hood with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection, Dx cooling coil, and a constant volume supply fan with discharge damper for supply air volume control.

The BCU-1 serves the west portion of the building spaces of the Technology Building and supplies air to the spaces after passing through the room specific tempering coil and to the space with diffusers, which provide space temperature control. BCU-1 is controlled by a combination of temperature controls and the campus DOC control system.

Blower Coil Unit BCU-2, located in the plenum space of the Technology Building, is a constant volume, mixed air system installed in 2001. The system consists of an outside air damper, gravity relief hood with relief air dampers, filters, hot water heating coil with circulating pump for freeze protection, Ox cooling coil, and a constant volume supply fan with discharge damper for supply air volume control. The BCU-2 serves the East portion of the building spaces of the Technology Building and supplies air to the spaces after passing through the room specific tempering coil and to the space with diffusers, which provide space temperature control. BCU-2 is controlled by a combination of temperature controls and the campus DOC control system.

Unit Ventilators located in each of the classrooms are constant air volume, mixed air systems installed in 1973. Each system consists of a multi speed air volume integral outside air, hot water heating coil and a multi speed air volume supply air fan. The vertical unit ventilators serve the classrooms through its diffuser integral with the cabinet. Unit ventilators are controlled by the original campus DOC control system.

Exhaust Fans EF-1 is a constant volume exhaust systems with motorized backdraft dampers. EF-1 located on the roof, installed in 2001 serves Men's and Women's toilet rooms.

Plumbing Fixtures are located in the art spaces, bathrooms and janitors closet in the building. The fixtures in the building consist of Lav's, Service Sink, Water closets, and Urinals. These fixtures were installed in 1973 and have served the building since.

Technology Building Electrical Equipment Descriptions

GENERAL BUILDING DESCRIPTION

The Technology Building is located on the East side of campus between the Maintenance Building and the Health Education and Science Center. The Technology Building was constructed in 1973 and is an approximately 5,000 sqft single story building that consists of classrooms and labs.

Power:

The main power enters the building through the tunnel system below the building. The main equipment is located in the tunnel below the building. This building is fed from the primary equipment (Transformer T5) located in the nearby Health Education and Science Center building.

The building electrical distribution system consists of branch circuit panelboards located in the main corridor and in some of the rooms. The entire system in this building is 208/120V. There is mixture of vintages of equipment. There is some Federal Pacific equipment that is likely from the original construction. There is ITE equipment as well. Any equipment from the original construction has surpassed its anticipated life expectancy and should be scheduled for replacement.

Lighting:

Our understanding is that approximately 90% of the linear fluorescent lamps and their associated ballasts on campus have been changed from T12 to TB. It appears that most of the fixtures have been converted.

Most of the lighting is in satisfactory condition.

Most of the observed lighting control consists of toggle switches. Current energy codes call for some sort of automatic lighting control.

Emergency Systems:

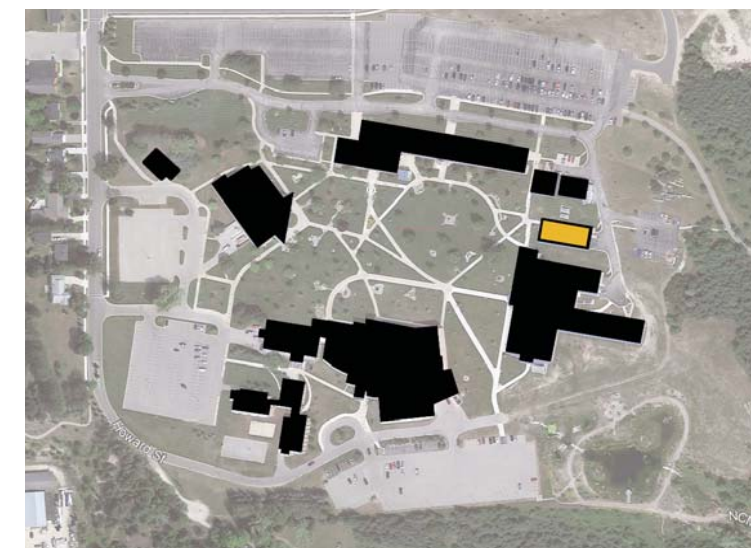
There is no generator set up to supply emergency power to support emergency egress lighting in this building. Some battery EXIT signs and both ceiling and wall mounted Emergency Battery Units (EBUs or "Bug Eyes") were noted throughout the facility. Proper emergency light levels along paths should be verified. Monthly testing of all local battery lighting units should be documented and reviewed.

Auxiliary Systems:

The fire alarm system consists of horn and strobe notification devices. These devices are mounted throughout the building. Many of these are ceiling mounted. The building contains a sprinkler system.

With a horn based fire alarm system, there is currently no means of making announcements or mass notification of building tenants. Per NCMC: An Alertus Emergency Notification System (ENS) was installed in 2016 and allows for mass notification (audio and visual delivery of message) across campus.

The existing voice and data cabling appears to be properly installed and protected. It appears that there are existing wall and ceiling mounted WAP devices for wireless connectivity located throughout the building.



Technology Building: Building Component Life Expectancy: Mechanical

Building Square Footage = -,--- square feet
 Building Built in 1973, Renovated in 2001

LEGEND

	Equipment or system is in good condition, operates efficiently and as designed, little wear
	Equipment or system is in fair condition, should be regularly monitored due to age, and maintenance should be performed as required
	Equipment or system is nearing, or at the end of its useful life based on condition and/or industry standards
	Facility Improvement or Energy Saving Modification

Note: Study-period based on 5 years.

Inflation Factor at 3% /YR Beginning in 2019		1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	1.344	1.384	1.426	1.469	1.513	1.558	1.605	1.653	1.702	1.754	1.806			
	Base Line Cost (2019)	Projected Cost for Year Indicated	Useful Life in Years	Expected End of Useful Life	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Mechanical Systems																									
1	Air Cooled Condensing Unit ACU-1 (2001)	-----	-----	2021	20	2021																			
2	Air Cooled Condensing Unit ACU-2 (2001)	-----	-----	2021	20	2021																			
3	Blower Coil Units BCU-1 (2001)	-----	-----	2021	20	2021																			
4	Blower Coil Units BCU-2 (2001)	-----	-----	2021	20	2021																			
5	Tempering Coils TC-1 thru TC-7 (2001)	-----	-----	2026	25	2026																			
6	Exhaust Fan EF-1 (2001)	-----	-----	2026	25	2026																			
7	Inline Pump CP-1 (2001)	6,124	6,124	2019	10	2011																			
8	Inline Pump CP-2(2001)	6,124	6,124	2019	10	2011																			
9	Inline Pump CP-3(2001)	6,124	6,124	2019	10	2011																			
10	Finned Tube (190 Feet) (1973)	29,327	29,327	2019	30	2003																			
11	Unit Ventilator (5) (1973) (Off Line)	51,031	51,031	2019	20	1993																			
12	Cabinet Unit Heat (2) (1973)	20,412	20,412	2019	30	2003																			
13	AC Unit (1973)	5,217	5,217	2019	15	1988																			
14	Lav's (Qty. 4)	4,269	4,269	2019	30	2003																			
15	Service Sink (Qty. 1)	1,426	1,426	2019	30	2003																			
16	Water closet (Qty. 8)	9,191	9,191	2019	30	2003																			
17	Urinals (Qty. 2)	4,662	4,662	2019	30	2003																			
18	Drinking Fountains "Single" (Qty. 1)	2,044	2,044	2019	30	2003																			
Future Cash Flow:		145,950	Yearly Totals:		145,950	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Yearly Totals With Inflation Factor:		145,950	150,328	154,838	159,483	164,268	169,196	174,271	179,500	184,885	190,431	196,144	202,028	208,089	214,332	220,762	227,385	234,206	241,232	248,469	255,923	263,601
Total Projected Cost:		145,950			2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039

Technology Building: Building Component Life Expectancy: Electrical

Building Square Footage = -,--- square feet
 Building Built in 1973, Renovated in 2001

LEGEND

	Equipment or system is in good condition, operates efficiently and as designed, little wear
	Equipment or system is in fair condition, should be regularly monitored due to age, and maintenance should be performed as required
	Equipment or system is nearing, or at the end of its useful life based on condition and/or industry standards
	Facility Improvement or Energy Saving Modification

Note: Study-period based on 5 years.

Inflation Factor at 3% /YR Beginning in 2019										1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	1.344	1.384	1.426	1.469	1.513	1.558	1.605	1.653	1.702	1.754	1.806						
	Type	Size	Poles	Manufacturer	Base Line Cost (2019)	Projected Cost for Year Indicated	Useful Life in Years	Expected End of Useful Life		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039						
Electrical Systems																																				
1	RP-CAD (1973)	Panelboard	100A		4,081	4,081	2019	25	1998																											
2	RDP-DE (1987)	Panelboard	225A	30 ITE with Main Breaker	6,631	6,631	2019	25	2012																											
3	RP-C (1973) (2)	Panelboard	60	FPE, 2 tubs	7,842	7,842	2019	25	1998																											
4	RP-MP (1973)	Panelboard	100A		4,081	4,081	2019	25	1998																											
5	RP-CNC (1987)	Panelboard	100A 42 CKT	34 ITE	4,081	4,081	2019	25	2012																											
6	RP-HP (1973) surface	Panelboard	100A 42CKT	34 ITE	4,081	4,081	2019	25	1998																											
7	Upgrade lighting			5K sqft x \$14.03/sqft	70,136	70,136	2019	25	N/A																											
8	Upgrade lighting control			5K sqft x \$1.91/sqft	9,564	9,564	2019	25	N/A																											
Future Cash Flow:					110,496																															
Yearly Totals:										110,496	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yearly Totals With Inflation Factor:										110,496	113,811	117,225	120,742	124,364	128,095	131,938	135,896	139,973	144,172	148,498	152,953	157,541	162,267	167,135	172,149	177,314	182,633	188,112	193,756	199,568						
Total Projected Cost:					110,496																															
										2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039						

APPENDIX B: COST BREAKDOWN

State of Michigan Capital Outlay
Project Identification and Cost
Estimates

CONTENTS

5 YEAR PRIORITIZED GOALS

(REPEAT FROM MASTER PLAN)

10 YEAR GOALS

15+ YEAR GOALS

State of Michigan Capital Outlay Project Identification and Cost Estimates- 5 Year Prioritized Goals

Project Identification:

<p>1. Create Identifiable main entries along Howard Street and Atkins that better address congestion from the adjacent Elementary School. SAFETY. 2020 Cost Estimate: \$450,000</p> <p>2. Construct a new addition to the School of Nursing to alleviate current overcrowding and increasing enrollment in that program. NEED. 2020 Cost Estimate: \$3,921,900</p> <p>3. Renovate surplus space in the Library Building for a multi-functioning Student Innovation and Seminar Center with food service. IMMEDIATE NEED. 2020 Cost Estimate: \$2,100,000</p> <p>4. Renovate existing Iron Horse location into a new Library/Media Center/Student Study Center. MORE EFFICIENT EXISTING SPACE UTILIZATION. 2020 Cost Estimate: \$1,800,000</p> <p>5. Provide drop-off drive to new Student Innovation Center to assist with ADA/barrier free access. Add appropriate signage, landscaping and remove former President’s House. ACCESSIBILITY/UNIVERSAL DESIGN. 2020 Cost Estimate: \$1,090,000</p> <p>6. Complete chilled water loop for summer comfort at Residence Halls. HEALTH/MORE EFFICIENT SPACE USE IN SUMMER MONTHS 2020 Cost Estimate: See MEP Upgrades</p> <p>7. Renovate offices and study rooms in the current Administration/Classroom Building. 2020 Cost Estimate: \$160,000</p> <p>8. Landscaping/trees at parking area to reduce heat island effect. SUSTAINABILITY. 2020 Cost Estimate: \$60,000</p> <p>9. Renovate and expand the current Technology Building to accommodate skilled trades and emerging technologies programs. IMMEDIATE NEED. 2020 Cost Estimate: \$1,800,000</p> <p>10. Create outdoor sport court areas for student and community use. IMMEDIATE NEED. 2020 Cost Estimate: \$150,000</p> <p>11. Construction of an Informational Pavilion at the Trailhead of the Campus’ environmentally sensitive acreage. This would provide educational information on storm water filtration and management, invasive species control, wildlife viewing, and positive ecological impacts to Northern Michigan. SUSTAINABILITY. 2020 Cost Estimate: \$45,000</p>	<p>12. Update technology at Cheboygan and Gaylord Satellite Campus Centers to aid in distance learning, live stream interactions, and distant career interviewing. CAREER ADVANCEMENT. 2020 Cost Estimate: \$40,000</p> <p>13. Construct a new six bay vehicle maintenance addition to the existing Maintenance Facility. 2020 Cost Estimate: \$310,000</p> <p>14. Existing Residence Halls: repairs, window replacement, finishes replacement, door hardware. SECURITY. 2020 Cost Estimate: \$110,000</p> <p>15. Complete previously planned ring road. SAFETY and SECURITY. 2020 Cost Estimate: \$1,780,000</p> <p>16. Investigate co-partnerships with area companies that align with educational goals and facilities that may evolve on campus property. POSSIBLE REVENUE + INTERNSHIP LEARNING. 2020 Cost Estimate: Minor Costs</p> <p>17. Investigate a downtown Petoskey presence for NCMC. 2020 Cost Estimate: Rent, Free Donation?</p> <p>18. Mechanical, electrical, plumbing upgrades. MAINTENANCE ITEMS. 2020 Cost Estimate: \$3,992,370</p> <p>19. General Building Maintenance: Door/Frame/Hardware replacement- SECURITY Refinish existing exterior materials- MAINTENANCE Replace failed window systems- ENERGY EFFICIENCY Roof repairs- MAINTENANCE 2020 Cost Estimate: \$1,280,000</p>	<p>SUB-TOTALS: \$19,089,270</p> <p>CONTINGENCY (10%): \$ 1,908,930</p> <hr/> <p>TOTAL (2020): \$20,998,200</p> <p>INFLATIONARY ADJUSTMENTS (4% per year) Estimates:</p> <table border="0"> <tr> <td>Year 2021:</td> <td style="text-align: right;">\$21,838,128</td> </tr> <tr> <td>Year 2022:</td> <td style="text-align: right;">\$22,711,653</td> </tr> <tr> <td>Year 2023:</td> <td style="text-align: right;">\$23,620,119</td> </tr> <tr> <td>Year 2024:</td> <td style="text-align: right;">\$24,564,924</td> </tr> </table>	Year 2021:	\$21,838,128	Year 2022:	\$22,711,653	Year 2023:	\$23,620,119	Year 2024:	\$24,564,924
Year 2021:	\$21,838,128									
Year 2022:	\$22,711,653									
Year 2023:	\$23,620,119									
Year 2024:	\$24,564,924									

State of Michigan Capital Outlay Project Identification and Cost Estimates- 10 Year Goals

Project Identification:

1.	Develop and construct Phase One of Apartment Style Residence Hall. NEED. 2020 Cost Estimate: \$5,250,000
2.	Develop and construct a new Student Commons area adjacent to the new Residence Hall. NEED. 2020 Cost Estimate: \$720,000
3.	Enhance landscaping/trees to further reduce heat island effect. SUSTAINABILITY. 2020 Cost Estimate: \$80,000
4.	Provide universally designed outdoor amphitheater for performing arts but also to serve as a barrier free access at the western edge of campus. This will assist students/others to access several buildings along the topographical grade changes. ACCESS/LEARNING. 2020 Cost Estimate: \$950,000
5.	Provide universally designed enclosed canopy and barrier free lift(s) along the eastern access of campus to serve as barrier free access to the Technology Building, Science Building and Nursing. This will assist students/others to access several buildings along the topographical grade changes. ACCESS/LEARNING. 2020 Cost Estimate: \$230,000
6.	Construct an addition to the Student and Community Service Center for a new secure student designated entry, with information area. Renovate existing areas for physical education classes, and student study alcoves. 2020 Cost Estimate: \$670,000
7.	Mechanical, electrical, plumbing upgrades. MAINTENANCE ITEMS. 2020 Cost Estimate: \$1,330,800
8.	General Building Maintenance: Door/Frame/Hardware replacement- SECURITY Refinish existing exterior materials- MAINTENANCE Replace failed window systems- ENERGY EFFICIENCY Roof repairs- MAINTENANCE 2020 Cost Estimate: \$1,400,000
	SUB-TOTALS: \$10,630,800
	CONTINGENCY (10%): \$1,063,080
	TOTAL (2020): \$11,693,880

INFLATIONARY ADJUSTMENTS (4% per year) Estimates:

Year 2021:	\$12,161,635
Year 2022:	\$12,648,100
Year 2023:	\$13,154,025
Year 2024:	\$13,680,185

State of Michigan Capital Outlay Project Identification and Cost Estimates- 15+ Year Goals

Project Identification:

1.	Renovate current bookstore in SCRC into a Student Fitness area. Relocate bookstore to a new addition to the Administration Building near the main entry. NEED. 2020 Cost Estimate: \$120,000
2.	Develop and construct a new student study area, bookstore and faculty office addition to the current Administration/Classroom Building. NEED. 2020 Cost Estimate: \$1,850,000
3.	Add Phase Two to the Residence Housing. NEED. 2020 Cost Estimate: \$5,250,000
4.	Enhance landscaping/trees to further reduce heat island effect. SUSTAINABILITY. 2020 Cost Estimate: \$150,000
5.	Continue and investigate additional co-partnerships with area companies that align with educational goals and facilities that may evolve on campus property. POSSIBLE REVENUE + INTERNSHIP LEARNING. 2020 Cost Estimate: Minor Costs
6.	Continue or reevaluate downtown Petoskey presence for NCMC. 2020 Cost Estimate: Rent, Free Donation?
7.	Mechanical, electrical, plumbing upgrades. MAINTENANCE ITEMS. 2020 Cost Estimate: \$1,400,000
8.	General Building Maintenance: Door/Frame/Hardware replacement- SECURITY Refinish existing exterior materials- MAINTENANCE Replace failed window systems- ENERGY EFFICIENCY Roof repairs- MAINTENANCE 2020 Cost Estimate: \$1,500,000
	SUB-TOTALS: \$10,270,000
	CONTINGENCY (10%): \$1,027,000
	TOTAL (2020): \$11,297,000

INFLATIONARY ADJUSTMENTS (4% per year) Estimates:

Year 2021:	\$11,748,880
Year 2022:	\$12,218,835
Year 2023:	\$12,707,589
Year 2024:	\$13,215,892

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APPENDIX C: REFERENCES

CONTENTS

REFERENCES

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