

Bemidji State University

Academic Learning Center & Campus Renovation

PreDesign



September 30, 2014

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly licensed architect under the laws of the state of Minnesota.

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Project Title

Bemidji State University:
Academic Learning Center & Campus Renovation



View of University's Main Entrance

Project Scope

This project will entail the replacement of 82,000 GSF of severely outdated classroom and office space with a state-of-the-art (TBD GSF) classroom and learning center along with significant renovation of existing space on campus. The existing facility is one of the most highly used buildings with one of the highest FCI values on campus, and has never been significantly renovated since the initial construction over 40 years ago. All HVAC systems are beyond their expected lifespan; all finishes are dated and worn; there is extensive water infiltration in the lower level mechanical room; light levels are poor to adequate; daylighting is severely limited; there are limited student gathering spaces; and instructional spaces are limiting pedagogy. Additional scope to include the renovation of (TBD GSF) space in existing academic buildings on campus such as Bensen Hall, Bridgeman Hall and Bangsford Hall.

Major Impacts of Project

- Reduce campus size by 58,500 GSF.
- Increase space utilization of classrooms from approximately 47% to 75%.
- Demolition of Hagg Sauer (FCI .31) will eliminate over \$5.9 million from the backlog of required maintenance and asset preservation. Renovation of 54,500 GSF will eliminate another \$4 million from the backlog of required maintenance and asset preservation.
- Create “Learning Communities” for synergistic departments to increase student/faculty contact, establish strong program identity, encourage increased enrollment and retention, and develop stronger community and academic partnerships.
- Create full-spectrum learning facilities: Lecture, collaborative, seminar and active learning, as well as on-line courses.
- Increased utilization of existing facilities through space optimization of existing space on campus. This project renovates significant portions of four academic buildings.
- Continue implementation of the Master Facility Plan by reinforcing the academic core of the campus and connections to Lake Bemidji.
- Increased energy efficiency, reduction of greenhouse gases and compliance with 2009 revisions to MSBG (B3).
- Renewable Energy: Potential installation of photovoltaic panels and /or small wind turbines for demonstration purposes to support Bemidji State University and MnSCU’s commitment to environmental responsibility.

Project Location

Bemidji State University
1500 Birchmont Drive NE
Bemidji, MN 56601

2014 Appropriation

Planning and Design
Funding Provided:
\$1,000,000

2016 Appropriation

Construction Funding Request:
\$14,500 - \$16,900

Project Summary

New Construction: 24,00 GSF
Renovation: 54,500 GSF
Renewal: TBD
Demolition: 82,500 GSF
Construction Start: July 2016
Midpoint of Construction:
February 2017
Occupancy: December 2017

Affected Academic Programs

- | | | |
|---------------------|-----------------------|------------|
| • Geography | • Philosophy | • Math |
| • English | • Social Work | • Music |
| • History | • Sociology | • Language |
| • Political Science | • Mass Communications | • Library |
| • Psychology | • Computer Science | |

Affected Student and Administrative Services

Honors Program office; Gender Studies office; Faculty Senate; Faculty offices; Student Clubs; Student Scholarship; Films

Affected Community Programs

ACT Testing; High School Science Fair; Charter School graduations; High School Math Contest; Creativity Festival

Costruction Cost Breakdown by Construction Type

- New Construction: \$6,600,000 - \$7,200,000
- Site: \$450,000 - \$500,000
- Demolition: \$450,000
- Site Infrastructure: TBD
- Renovation: \$2,800,000 - \$3,520,000
- Renewal: TBD

Project Funding and Schedule

- This project is committed to the efficient use of University and State funding sources.
- It is anticipated that design and initial project management fees for the project will total approximately \$1,00,000. This funding was secured with the 2014 bonding cycle
- It is anticipated that construction administration, construction, FFE and additional project management fees for the project will total approximately \$14,500,000 - \$16,900,000. This funding will be secured with the 2016 bonding cycle.
- It is anticipated that the funding sequence will allow for construction to start in summer of 2016 with full occupancy in December of 2017 before the start of winter semester.

Consequences of Delayed Funding

- Hagg-Sauer Hall is a detriment to meeting current and future student expectations for multiple academic departments, and is not conducive to an increased need for delivering full-spectrum learning options including on-line courses.
- Space utilization will continue to remain low.
- Maintaining current enrollment and student success will become more difficult without having up-to-date learning facilities. The facilities scheduled for renovation have not been upgraded since their construction between 1966 and 1971.
- Delaying the project would also result in continued high backlog of maintenance for the BSU campus, and result in the poor use of limited university resources given the poor condition and code issues with the buildings.
- In addition, operating costs will continue to be higher than a smaller well-designed new facility.

Project Contacts

Bemidji State University (BSU)

Bill Maki	Vice President of Finance & Administration
Jeff Sande	Director of Facilities

BSU Steering Committee

Colleen Greer	Dean, College of Arts & Sciences
James Barta	Dean, College of Health Sciences & Human Ecology
Shawn Strong	Dean, College of Business, Technology, & Communication
Jeff Sande	Director of Facilities
Michelle Frenzel	Registrar
Patrick Guilfoile	Associate Vice President of Academic Affairs
Geri Olson	Information Technology Specialist 3
Bill Maki	VP for Finance & Administration

LHB

R. Bruce Cornwall, AIA	Director of Campus Planning
Stuart Shrimpton	Designer
Abby Meuser, Assoc. AIA	Designer

Obermiller-Nelson Engineering

Jeremiah Christenson, PE
Hank Cornelinssen

Estimating Plus.

Bill Warren	Cost Estimator
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Existing Campus

- | | | |
|-------------------------------|---------------------------|---|
| 1. Bangsberg H | 13. Bensen Hall | 24. Maintenance - Receiving |
| 2. Deputy Hall | 14. Chet Anderson Stadium | 25. Pump House |
| 3. Heating Plant and Garage | 15. Birch Hall | 26. Pump House |
| 4. Harold T. Peters Hall | 16. Decker Hall | 27. Athletic Field Sanitation Building |
| 5. Boat House | 17. Linden Hall | 28. John S. Glas Field House |
| 6. Sattgast Hall | 18. Tamarack Hall | 29. Gillett Fitness / Recreation Center |
| 7. Memorial Hall | 19. Cedar Hall | 30. Otter Tail Sub Station |
| 8. Sanford Hall (Demolished) | 20. Pine Hall | 31. Electrical Sub Station |
| 9. Hobson Memorial Union | 21. Walnut Food Service | 32. Alumni-Park House |
| 10. Hagg-Sauer Hall | 22. Oak Hall | 33. Baseball Stadium |
| 11. Bridgeman Hall | 23. Maple Hall | 34. American Indian Resource Center |
| 12. A.C. Clark Library | | |



Statutory Requirements

The following statutory requirements apply:

- Minnesota Statute 16B.32: Energy Use
- Minnesota Statute 16B.325; subdivision 2; section 2: Energy Conservation and Sustainable Building Guidelines
- Minnesota Statute 16B.326: Heating and Cooling Systems; State-Funded Buildings
- Minnesota Statute 16B.33; Subdivision 3: Designer Selection Board Requirement
- Minnesota Statute 16B.335: Review of Plans and Projects
- Minnesota Statute 16B.35: Art in State Buildings
- Minnesota Statute 16B.335; subdivision 3C: MinnCor Industry Products

Past Appropriations

Alignment with Master Facilities Plan

This project meets several of the goals of the Master Facilities Plan. The replacement of Hagg-Sauer is identified in the master plan as the number one priority for funding via general obligation bonds. This facility was built in 1969 and since its inception has never received significant renovation. Another goal of the Master Plan is to improve academic department identity by giving each program easily identifiable spaces and facilities. The current interior of Hagg-Sauer is outdated and does not reflect the “brand” or the desired “program culture” for any of the departments or programs located here. This project also sets the stage for re-connecting the university with the lake with improved access to the waterfront. Additionally, this project will eliminate a significant backlog of building repairs, and significantly improve energy efficiency-- both major goals of the master plan.



Regional Collaborations

Northwest Minnesota Women’s Fund Committee (Women’s Studies); Area High Schools (Math and English); ACT Testing; High School Science Fair; Charter School graduations; High School Math Contest; Creativity Festival

Academic Programs

Criminal Justice (2014 FYE: 213.74)

The Criminal Justice major provides students with knowledge about the nature and causes of crime and delinquency, law and the legal system for juveniles and adults in American society, and the decision-making processes of criminal justice agencies. The purpose of a Criminal Justice major within a liberal arts framework is to develop the knowledge, values, and ethical consciousness that are essential for becoming successful managers and leaders in criminal justice and related human service vocations.

Major(s) Offered: Bachelor of Science in Criminal Justice

Geography (2014 FYE: 99.8)

Geography is the study of phenomena and events on the earth’s surface, including the activities of human beings. Technical skills in

remote sensing, mapping, computer applications, GIS, survey research, and writing are the geographer's tools. All terrestrial activities are subject to geographic analysis. Students in the program learn specific geographic techniques and their application on regional, national, and global levels and participate in studies in the field.

Major(s) Offered: Geography, B.A.; Geography, B.S. in Geographic Information Systems Emphasis; Geography, B.S. in Regional, Park, Recreational, And Land Use Planning; Geography, B.S. in Traditional Emphasis; Social Studies, B.A. with Geography Emphasis; Wilderness Management And Outdoor Recreation Planning, B.A.S.

English (2014 FYE: 283.48)

The English Department at Bemidji State prides itself as still being the only university in Minnesota that offers an undergraduate degree in Professional and Creative Writing. Concentrators in any of the majors will hone and develop skills in understanding rhetoric, developing personal writing styles, effective teaching skills, and structuring arguments efficiently, just to name a few.

Major(s) Offered: Creative And Professional Writing, B.F.A.; English Education, B.S. (Teacher Licensure); English, B.A.; MA and MS in English

History (2014 FYE: 111.38)

History is the record of past events, including the stories of societies and individual people whose acts, whether noble, common, or foolish, altered the way people lived. Historians study and analyze history in order to appreciate and understand the past, to bring perspective to the present, and to plan for the future. The History curriculum includes historical foundation courses in World and American history, and addresses national and international topics and issues through specialized courses from the ancient and medieval world to the present. Course offerings include a variety of courses in social, intellectual, and political history.

Major(s) Offered: History, B.A.; History, B.S.; Social Studies, B.A. with History Emphasis

Political Science (2014 FYE: 115.85)

Political science is the study of political systems and how they function. It encompasses four major focus areas: International Politics, American Politics, Comparative Politics, and Political Theory. Students of political science gain an understanding of the political nature of the contemporary world, from simple acts such as choosing products as consumers to the complexity of global politics in the information age. As governments and the private sectors of society become more intermingled, political scientists become more valued for their understanding of how both systems work and for their reasoning and analytical skills.

Major(s) Offered: Political Science, B.A.; Social Studies, B.A.; Political Science Emphasis

Psychology (2014 FYE: 294.24)

Psychology is the science of behavior, cognition, and affect. All psychology is grounded in research that ultimately seeks to understand the actions, thoughts, and emotions of people. Applied psychology is designed to provide practical solutions to human problems. All students become directly involved in independent research activities and/or applied human service skills development.

Major(s) Offered: Psychology, B.A.; Psychology, B.S.; Social Studies, B.A. with Psychology Emphasis

Social Work (2014 FYE: 86.60)

The social work profession is dedicated to improving the quality of life for individuals, groups, and communities. It addresses a variety of human needs in the context of complex personal and social situations, and promotes the positive use of resources. The Social Work program emphasizes culturally responsive generalist social work practice and promotes an understanding of human interactions within the social environment. Content areas include social work values and ethics, diversity, promotion of social and economic justice, populations-at-risk, human behavior in the social environment, social welfare policy and services, social work practice, research, field placements, and an international perspective.

Major(s) Offered: Social Work, B.S.

Sociology (2014 FYE: 78.12)

Broadly speaking, sociologists study social life, social change, and the social causes and consequences of human behavior. Sociology majors acquire a broad knowledge of the social structural world (i.e., social inequality, patterns of behavior, forces of social change and resistance, and how social structures work). They also develop a range of research skills, including analyzing and interpreting information, collecting and organizing detailed research notes into a logical presentation, communicating findings both orally and in writing, and using a computer for data processing and analysis.

Major(s) Offered: Social Studies, B.A. with Sociology-Anthropology Emphasis; Sociology, B.A.

Music (2014 FYE: 102)

The primary mission of the Music Department at Bemidji State University is to prepare students for professional careers in music. The faculty recognizes the need for excellence within a broad liberal education, so the department places equal emphasis on music education, performance, and theoretical/historical study in its degree offerings. The department, an accredited institutional member of the National Association of Schools of Music, also maintains a cultural leadership and development role locally and regionally, while striving to achieve a national and international reputation.

Major(s) Offered: Music Education, B.S. (Teacher Licensure -

either Instrumental or Vocal); Music, B.A. (General, Emphasis on Instrumental, Vocal, or Piano Performance, and Jazz Studies Emphasis)

Mass Communication (2014 FYE: 86.1)

Mass communication is the primary means by which our society relays news, information, and entertainment to the public. Technological advances have promoted instantaneous, global, and persistent presentation of images and ideas, both positive and negative. Our curriculum aims to prepare all students to communicate meaningful messages successfully, utilizing print, still and moving images, audio and multimedia technologies.

Major(s) Offered: Mass Communication, B.S.; Marketing Communication, B.S.

Math (2014 FYE: 248.11)

Mathematics in its purest form is an art concerned with the exploration and expression of ideas. In its practical form, mathematics is a symbolic language and is concerned with the application of mathematical ideas and tools to the sciences and other areas of human endeavor. The study of mathematics is grounded in problem solving and includes the ability to think in a certain, organized way. It is basic to careers in the natural sciences, essential to the effective use of computer technology, and valuable in related fields such as the social sciences, business, and industrial technology.

Major(s) Offered: Mathematics Education, B.S. (Teacher Licensure); Mathematics, B.S. with Actuarial Emphasis, Applied Emphasis, or General Emphasis

Computer Science (2014 FYE: 46.02)

Using the language of mathematics, computers have changed our ability to create. Because of their flexibility, computers are integral to most research and are indispensable in most professional careers. Computer Science majors learn to look at complex situations, identify patterns, and develop processes that take advantage of those patterns in order to solve a problem or improve an approach to a problem. They transform their solutions into algorithms and implement programs for a broad range of software systems.

Major(s) Offered: Computer Information Systems, B.S.; Computer Science, B.S. with Integrated Emphasis or Professional Emphasis

Language (2014 FYE: 77.49)

Language is more than a mode of communication. It is the primary means of understanding a culture, a people, a way of life. Studying a second language gives us a perspective on our own language and culture, and prepares us to be knowledgeable and competent citizens of the world. In addition, those who undertake the study of languages experience the satisfaction and pleasure of learning what language is and how it works. In a world that is increasingly interconnected and interrelated, the development of a globally educated populace is crucial. Second language learning is a vital part of such an education.

Major(s) Offered: Certificate Of Ojibwe Language Instruction; Spanish

Education, B.S. (Teacher Licensure); Spanish, B.A.

Philosophy (2014 FYE: 75.32)

Philosophy is a systematic attempt to understand and to resolve some of the most profound, far-reaching, and fundamentally important problems of human experience. The study of philosophy also includes a careful and critical examination of the basic assumptions, the central concepts, the value assertions, and the conclusions of all other disciplines. In addition to broadening our perspectives and heightening our sensitivities, it helps us to discern relationships and organize inferences, to think with clarity and explicate with precision, to critically analyze and think independently, and to probe, question, and explore.

Major(s) Offered: None (Minor in Philosophy)

Planning Process

The Hagg-Sauer predesign began in the late summer of 2014 with meetings between LHB and Bemidji State University to define the preliminary goals of the predesign. Subsequently, a series of stakeholder meetings were held between August and October to gather additional information on individual departments and faculty concerns, including class sizes, specific department requirements, and potential program growth.

Existing statistical information was reviewed, including space utilization percentages and Facilities Condition Index (FCI) rankings. Changing pedagogical strategies, typical classroom sizes, logistics of temporary relocation of departments, and costs were also analyzed to determine the benefits of demolishing, renovation and/or new construction. After several project alternatives were discussed, along with thoughtful review of the Campus Master Plan, the recommendation was made that new construction would be required to provide the university with a high quality educational facility.

This project will be submitted to MnSCU in late fall of 2014 as a predesign for construction funding in 2016.

Project Alternatives

Many options were brought forth for study, and it was determined by the university leadership to carry forth three versions for additional review. The final recommendation was determined after a thorough analysis with additional input from stakeholders and the university's leadership.

Option A (2012 PreDesign)

Scope: This option recommends the complete gutting of the 82,000 GSF building down to the structural frame including all exterior walls. This would be followed by complete re-construction of all building systems and the addition of a penthouse for mechanical equipment.

Pros: The salvaged structure for Option A would have significant energy savings (embodied energy) and construction cost savings; Construction schedule may be less in duration; No need to purchase additional property; aligned with 2012 Master Plan; Continuity of utilities may be more manageable.

Cons: Cost savings in salvaging of structure may be balanced with need to reinforce structure to accommodate new rooftop penthouse for HVAC equipment; Existing basement would need to be waterproofed with an active drain tile and sump system to facilitate ever present groundwater infiltration; Deep floor plate is disadvantageous for accessing daylight; Orientation of building is not optimal for harvesting solar energy; Existing structural footprint would limit configuration of classrooms; Logistics of relocating classes and faculty offices during demolition and construction are challenging and costly; Difficult to reduce the size of the facility; Clearance for HVAC ductwork and equipment limited by existing floor-to-floor height.

Status: Not selected



Option B (2012 PreDesign)

Scope: This option recommends the demolition of the existing 82,000 facility followed by the construction of a new 79,000 GSF facility in essentially the same location.

Pros: Design for Option B could be optimally oriented for harvesting solar energy and accessing natural light; Basement would not be required as in Option A; Structural pattern (bay size) and building footprint will be designed for the program; No need to purchase additional property; aligned with 2012 Master Plan; Building shell and systems can be optimally designed for energy efficiency and program efficiency; Potential to reduce the size of the facility which can improve utilization and reduce operating costs; Enhance the university's connection to the lake

Cons: Logistics of relocating classes and faculty offices during demolition and construction are challenging and costly; Option B is more expensive than Option A; Adjacent parking not available in sufficient numbers

Status: Not selected



Option C (2012 PreDesign)

Scope: This option recommends the construction of a new 82,000 facility in an alternative location on campus followed by the complete demolition of the existing 79,000 GSF facility.

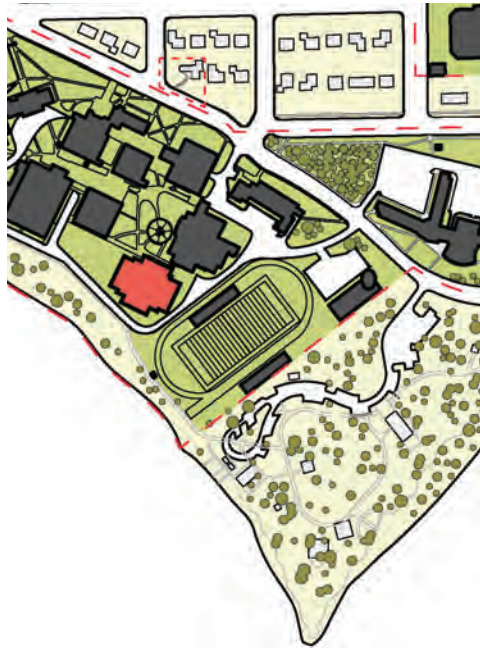
Pros: Design for Option C could be optimally oriented accessing natural light; Basement would not be required as in Option A; Structural pattern (bay size) and building footprint will be designed for the program; aligned with 2012 Master Plan; Building shell and systems can be optimally designed for energy efficiency and program efficiency; Potential to reduce the size of the facility which can improve utilization and reduce operating costs; The existing Hagg-Sauer facility can remain in operation during construction

Cons: Option C is more expensive than Option A; Additional property is required to be purchased; Project schedule will most likely be extended; Logistics of purchasing enough property in the adjacent neighborhood will most likely be challenging; North-south orientation is not ideal for harvesting solar energy; Option C is not located on Lake Bemidji; Adjacent parking in significant numbers not available without additional costs

Status: Not selected



Option D (2016 PreDesign)



Scope: This Option is similar to Option A with the scope to include the complete gutting of the existing building (82,000 GSF) down to the structural frame. The difference would be in the extent of the renovation. In this option it is proposed that the entire basement Mechanical Level would be filled in (while maintaining utility runs) and abandoned to avoid costly waterproofing repairs, and a significant portion of the existing third level renovated into a new mechanical room instead of building a new penthouse as described in Option A.

Pros: Significant energy savings through embodied energy in salvage structure; Significant savings in construction costs through reuse of primary structural framing; Alignment with 2014 Master Plan; Maintain continuity of existing utilities; Increased connection to Lake Bemidji; Minor increase in space utilization/optimization.

Cons: Deep structural floor plate not advantageous for daylight harvesting; Existing structural footprint not optimal for needed classroom configuration to meet program; Logistics of relocating faculty and classes on a short term basis during construction is challenging and costly; Campus footprint is not reduced; Low floor-to-floor heights limits clearances for ductwork, lighting, communication, and fire protection pathways; adjacent parking is not adequate.

Status: Not selected

Option E (2016 PreDesign)



Scope: This option is similar to Option B, but at a much smaller scale, in order to aggressively address budgetary and space utilization issues. The complete demolition of the 82,000 SF Hagg-Sauer would be followed by the construction of a small structure on the same site that would house both classrooms and offices for faculty, but at a much reduced scale from Option B. It is intended that the structure would be connected to Bridgeman by a skyway, and an alternative Option F.1 would be reviewed that considers the new structure to be designed as an addition to Bridgeman Hall. During the study of this Option alternative locations on campus will be briefly studied, but the university considered Option C's (previous PreDesign) proposed alternative location on the campus to be unacceptable.

Pros: Alignment with 2014 Master Plan; Maintain continuity of existing utilities; Increased connection to Lake Bemidji; Minor increase in space utilization/ optimization; Significant improvement in energy efficiency.

Cons: Logistics of relocating faculty and classes on a short term basis during construction is challenging and costly; adjacent parking is not adequate; Required program cannot be accomplished with available funding in all new construction; Does not align with MnSCU's directive to reduce campus square footage by as much as possible without compromising quality of instruction; Large majority of space would be used to accommodate faculty and support services, not improved learning environments.

Status: Not selected

Option F (2016 PreDesign)

Scope: This Option includes the complete demolition of Hagg-Sauer followed by the construction of a Classroom only facility (on the same site) with underutilized portions of additional buildings on campus renovated into faculty offices and some instructional spaces depending on program needs and budget.

Pros: Alignment with 2014 Master Plan; Maintain continuity of existing utilities; Increased connection to Lake Bemidji; Significant increase in space utilization/ optimization; Significant improvement in energy efficiency; significant reduction in campus square footage; significant reduction in backlog of asset preservation investment; Addresses programmatic needs progressively and creatively based upon student needs.

Cons: Logistics of relocating classes on a short term basis during construction is challenging and costly; adjacent parking is not adequate.

Status: Selected as preferred option



Option F.1 (2016 PreDesign)

Scope: This Option includes the complete demolition of Hagg-Sauer followed by the construction of a Classroom only facility (on the same site) with underutilized portions of additional buildings on campus renovated into faculty offices and some instructional spaces depending on program needs and budget.

Pros: Alignment with 2014 Master Plan; Ease of access to existing utilities; Increased connection to Lake Bemidji; Significant increase in space utilization/ optimization; Significant improvement in energy efficiency; significant reduction in campus square footage; significant reduction in backlog of asset preservation investment; Addresses programmatic needs progressively and creatively based upon student needs.

Cons: Not aligned with 2014 Master Plan; concern with vacating prime location on lake, thus creating a ‘missing tooth’ in the fabric of the academic quadrangle; Concern with distance of classrooms from center of academic quadrangle; vacated site on the lake subject to parking lot expansion pressures; concern that funding would not be adequate to address Bangsberg’s fundamental needs for revised entry to Theater and Recital Hall.

Status: Not selected



Option F.2 (2016 PreDesign)

Scope: This Option includes the complete demolition of Hagg-Sauer followed by the construction of a Classroom only facility (on the same site) with underutilized portions of additional buildings on campus renovated into faculty offices and some instructional spaces depending on program needs and budget.

Pros: Significant increase in space utilization/ optimization; Significant improvement in energy efficiency; significant reduction in campus square footage; significant reduction in backlog of asset preservation investment; Addresses programmatic needs progressively and creatively based upon student needs; Improved parking access for classrooms.

Cons: Not aligned with 2014 Master Plan; concern with vacating prime location on lake, thus creating a ‘missing tooth’ in the fabric of the academic quadrangle; Concern with distance of classrooms from center of academic quadrangle; vacated site on the lake subject to parking lot expansion pressures; concern that funding would not be adequate to address Bangsberg’s fundamental needs for revised entry to Theater and Recital Hall.

Status: Not selected



Option G (2016 PreDesign)

Scope: This Option includes the complete demolition of Hagg-Sauer followed by the renovation of underutilized portions of other buildings on campus into faculty offices and some instructional spaces depending on program needs and budget.

Pros: Very significant increase in space utilization/optimization; very significant reduction in campus square footage; very significant reduction in backlog of asset preservation investment,

Cons: Not aligned with 2014 Master Plan; concern with vacating prime location on lake, thus creating a ‘missing tooth’ in the fabric of the academic quadrangle; vacated site on the lake subject to parking lot expansion pressures; concern that existing available square footage available for renovation would not meet full programmatic needs without significant disruption to existing facilities required for high quality instruction; Concern that full scale campus disruption to the core academic buildings over a significant time period (in order to accommodate continual shifts of classrooms, programs and departments) to accommodate renovation activities would be untenable.

Status: Not selected



Preferred Option

LHB presented six primary options in addition to the three options explored in the 2012 predesign submittal. As before, general pros and cons were listed for each option. After further deliberation in subsequent meetings it was determined by the university leadership that Option F would best align with Bemidji State University's vision for the future.

Facilities Systems Summary

Hagg-Sauer has an FCI of 0.31 with a backlog of almost \$6 million dollars. In the next five years, this project would remove all of backlogged repairs and anticipated maintenance from the system for Hagg-Sauer Hall. Therefore, completion of this project would result in a reduction of the backlog by over 13% for the campus. It is important to note the significant size of this campus and the commitment of the University to improve the overall condition of the campus with this project.

Bangsberg Hall:

Benson Hall:

Sattgast Hall:

Space Utilization Analysis (02/26/2014)

Spring 2014 Campus Wide Figures

Campus Square Feet: 925, 844 GSF
GSF/ FYE: 219 SF/ FYE
Number of Classrooms and labs: 101
Percent Room Use: 53%
Percent Seat Use: 35%

Spring 2014 Hagg-Sauer figures

Building Square Feet: 82,478 GSF
Number of Classrooms:
Number of Labs:
Classroom Room Use: 79%
Classroom Seat Use: 38%

Spring 2014 Benson Hall figures

Building Square Feet: 53,342 GSF
Number of Classrooms:
Number of Labs:
Classroom Room Use: 53%
Classroom Seat Use: 28%

Spring 2014 Bangsberg Hall figures

Building Square Feet: 86,878 GSF
Number of Classrooms:
Number of Labs:
Classroom Room Use: 29%
Classroom Seat Use: 17%

Spring 2014 Sattgast figures

Building Square Feet: 107,598 GSF
Number of Classrooms:
Number of Labs:
Classroom Room Use: 72%
Classroom Seat Use: 50%

Spring 2014 AC Clark Library figures

Building Square Feet: ? GSF
Number of Classrooms:
Number of Labs:
Classroom Room Use: ?%
Classroom Seat Use: ?%

Spring 2014 Class Size

01-20 : 4 classes that met in small seminar rooms
20-25 : 19 classes
26-35 : 40 classes
40-45 : 34 classes
50-60 : 7 classes
74-100 : 25 classes
143-250 : 3 classes

Enrollment

As a note of interest, the 8% increase in FYE since 2003 has had a small impact on the room utilization rate, since it appears that much of the growth has come in the way of on-line learning. The University is aware of this trend and is considering the implications in planning for future growth.

	FY 2011	FY 2012	FY 2013	FY 2014 (projected)	FY 2015 (projected)	FY 2016 (projected)	FY 2017 (projected)
FYE	4,715	4,634	4,347	4,296	4,265	4,300	4,325

FYE is projected to remain at 4,600 through 2015.

Sustainable Design Impact Summary

Environmental stewardship is one of the three core values of Bemidji State University. Additionally, the president has signed the American College and University Presidents' Climate Commitment. It is a high-visibility effort to address global warming by garnering institutional commitments to neutralize greenhouse gas emissions, and to accelerate the research and educational efforts of higher education to equip society to re-stabilize the earth's climate.

The University's 2011 Climate Action Plan documents 2009 campus carbon emissions and sets a target date for carbon neutrality of 2050. Given the high percentage of carbon emissions related to providing heat and electricity for campus buildings, an energy-efficient Hagg-Sauer will be critical to heading down the path of carbon neutrality and setting a precedent for building projects to follow.

Additionally, the University has been tracking consumer waste at Hagg-Sauer since 2008, including garbage, paper, and containers. If waste-reduction strategies are implemented in the new building, (special recycling bins, etc.) continued tracking may provide an excellent case study in the impact of building design on waste.

University Goals

Several University goals will be achieved with completion of this project:

- Decrease the quantity of backlogged and anticipated future repairs and maintenance work needed on campus.
- Reduce campus square footage, demolishing outdated facilities and replacing with smaller and more efficient facilities.
- Improve the educational environment on campus by increasing the number of smart classrooms on campus and improving the ability to deliver on-line classes.
- Improve campus classroom utilization by reducing the number of classrooms on campus
- Support the Master Academic Plan by creating new facilities that allow the academic mission to be implemented more fully.
- Implement several key concepts of the Master Facility Plan including:
 - Provide improved program identity
 - Strengthen the academic core of campus
 - Improve the campus environmental quality
 - Increase connections to Lake Bemidji
- Provide facilities that enable full-spectrum teaching facilities.

Project Rationale Highlights

- The space program and diagram is intended to encourage students and faculty to engage on many levels, from the formal classroom environment to informal contact in the community niches created within corridors and dedicated “huddle” areas.
- A specific objective of the facility is to develop interdisciplinary relationships among the academic programs and to facilitate active learning.
- The space program will accommodate traditional lectures, collaborative learning, private study, community meetings, faculty offices, conferences and social gatherings, student gathering spaces, student study areas, and on-line interactive instruction.
- Reduce asset preservation backlog.
- Create “front doors” for various departments and disciplines to encourage department “brands.” This is intended to increase enrollment, retention and graduation.
- Create a variety of spaces for varying class sizes as differentiated between lower and upper level classes.
- Provide a 24 seat dedicated computer lab for software specific applications- particularly SPS software for Social Work, Sociology, Psychology, Political Science and Economics.
- Integrate faculty offices and classrooms.
- Open up the facility to the lake for views and access.
- Allow daylight to reach most classrooms and offices.
- Improve indoor-air quality and energy efficiency.
- Reduce campus size by 58,000 GSF

Support of MnSCU Strategic Framework

Minnesota State Colleges and Universities outlined three strategic directions that plan an essential role in Minnesota's economy and providing educational opportunity for all of its citizens. The project supports these as follows:

1. Ensure access to an extraordinary education for all Minnesotans:

Hagg-Sauer is the primary classroom for the College of Arts and Sciences. Almost all students at BSU will spend significant time in this building during their first two years fulfilling their liberal education requirements. The mission of Bemidji State University's Liberal Education curriculum is to create an environment where students of diverse backgrounds and abilities can acquire the knowledge, the skills, the values, and the confidence necessary for effective and responsible participation in our changing global society. Over three-fourths of the liberal education curriculum is housed in Hagg-Sauer Hall so this is the instructional home of the majority of university freshmen and sophomores.

The pedagogies used in higher education have evolved significantly since Hagg-Sauer was built. The current building limits the flexibility of faculty is working with their students. The building is generally set-up to only accommodate lecture-based instruction or at the other extreme, small seminar sessions. These configurations limit faculty from being able to utilize active and collaborative learning strategies such as project-based learning.

An open environment where faculty are easily accessible to students is also not present in Hagg-Sauer. All of the faculty are located in small, private offices on the top floor of the building. The layout of the building makes it difficult and potentially intimidating to locate the faculty. It is critical for retention to do everything feasible from a physical layout standpoint to make it as easy as possible to facilitate the interaction of a potentially-hesitant student and their professor. Since the building has no main inviting entrance and no clear open traffic pattern to the top floor, it clearly limits any informal faculty/student interaction. Creating an environment where there are limited barriers for students to get to know their faculty members is critical strategy towards improving first and second year student retention.

One of the more popular majors at the university is psychology. Psychology is in need of modern instructional and lab facilities. Since Hagg-Sauer Hall was designed and constructed in 1970 there have been a number of program changes in the Psychology Department. Direct access to experiment stations/labs from an open classroom is no longer required. There is a need for more computer and small group space with an observation area. The current room arrangements were designed for multiple animal research labs off a main classroom. Such animal research was popular in undergraduate education in the 1960s and 70s, but is now outdated. These labs have not been used since the early 1980s and their access off a heavily used classroom makes the space inaccessible for other uses. Current research and training in the field involves computer based experiments and digital recording and observations of behavior.

2. Be the partner of choice to meet Minnesota's workforce and community needs:

To facilitate relationships with the business and industry, it is critical that BSU students have access to current technologies. It is as critical that the BSU faculty have access to learning environments that are flexible and can be adapted easily as the most recent technologies evolve.

There are several degree-programs that work with the community. The students in these programs attain real-world experience that benefits them as they choose a career path. A sample of the programs that would directly benefit from an updated facility include:

- Computer Science majors learn to look at complex situations, identify patterns, and develop processes that take advantage of those patterns in order to solve a problem or improve an approach to a problem. They transform their solutions into algorithms and implement programs for a broad range of software systems.
- Geography majors study the phenomena and events on the earth's surface. Technical skills in remote sensing, mapping, computer applications, GIS, survey research, and writing are the geographer's tools. Students in the program learn specific geographic techniques and their application on regional, national, and global levels. Studies in the field, and in effective communication and higher level problem-solving, further prepare students for immediate employment in entry level jobs and for graduate study.

3. Deliver to students, employers, communities and taxpayers the highest value/most affordable option:

The replacement of Hagg-Sauer Hall provides university stakeholders with the highest value and most affordable option. Since the current Hagg-Sauer building is the main classroom building at the university, this project will impact just about every single student that attends BSU at some point in their academic career. Current and prospective students demand modern classroom facilities that provide a comfortable learning environment. The learning environment needs to be one that facilitates the interaction between the faculty and their students.

Besides the number of students and faculty that would be impacted by this project. This project also provides great value in the management and protection of state assets. Asset preservation backlog would be reduced by six million dollars. The impact this would have on the overall campus facilities is significant as this comprises 15% of the total backlog for the campus. The project would also reduce the energy consumption on campus as the HVAC systems in Hagg-Sauer are a significant component of the backlog.

This project would also be a visible and significant step in implementing the campus master facility plan and displaying the university's commitment to environmental stewardship. A new Hagg-Sauer Hall would be a central feature of the academic core of campus and connections to Lake Bemidji. The new facility would be constructed in such a way and repositioned so that natural light could radiate throughout the building. The current building's layout

does not provide much of the building with natural light. This has an unquantified impact on the learning environment and faculty and student morale. Natural light is important in an area that is subject to long winters.

BSU Mission Statement, Vision Statement, and Shared Fundamental Values

Mission Statement:

We create an innovative, interdisciplinary and highly accessible learning environment committed to student success and a sustainable future of our communities, state and planet. Through the transformative power of the liberal arts, education in the professions, and robust engagement of our students, we instill and promote service to others, preservation of the earth, and respect and appreciation for the diverse peoples of our region and world.

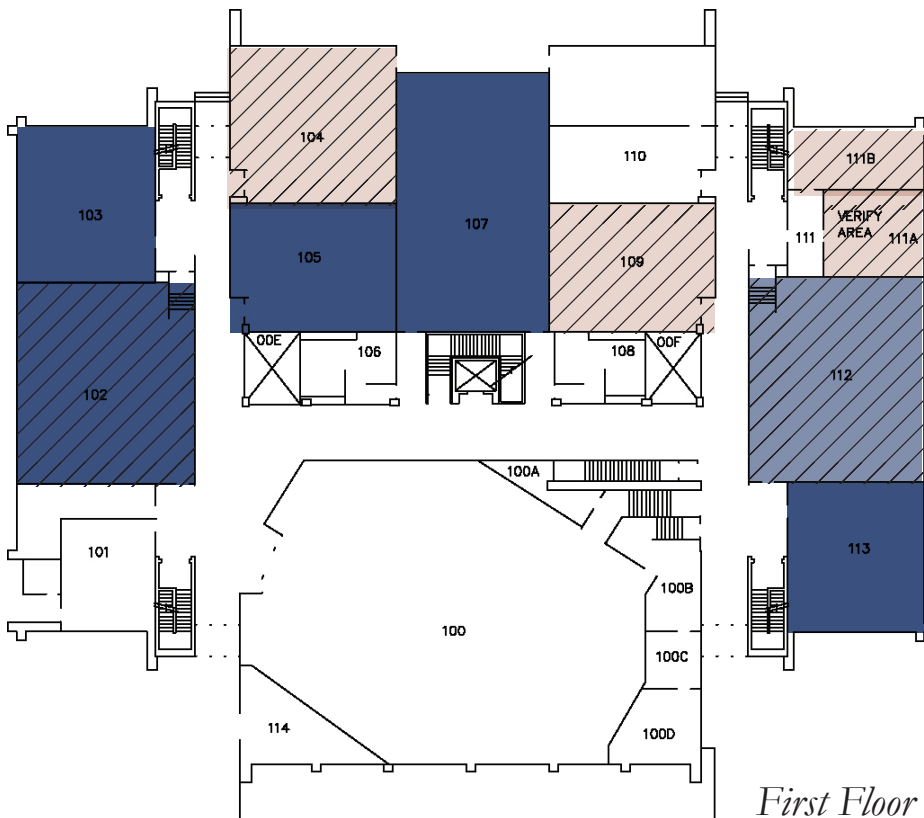
Vision Statement:

We educate people to lead inspired lives.

Shared Fundamental Values:

- Civic engagement and leadership
- International and multicultural understanding
- Belief in the power of the liberal arts
- Environmental stewardship

Space Utilization



Spring 2014

Campus Wide Figures

Campus Square Feet:
925, 844 GSF
GSF/ FYE: 219 SF/ FYE
Number of Classrooms and
labs: 101
Percent Room Use: 53%
Percent Seat Use: 35%

Spring 2014

Hagg-Sauer figures

Building Square Feet:
82,478 GSF
Number of Classrooms: 17
Number of Labs: 4
Classroom Room Use: 79%
Classroom Seat Use: 38%

**Spring 2014
Benson Hall figures**

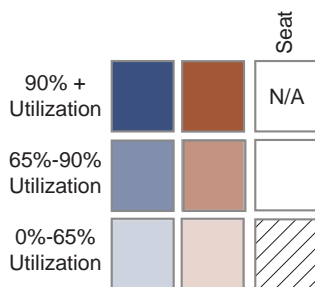
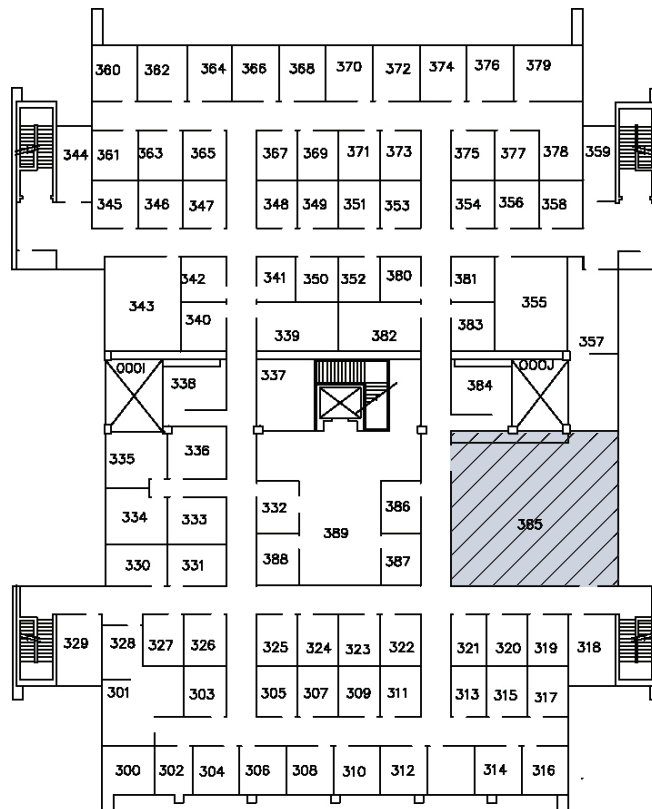
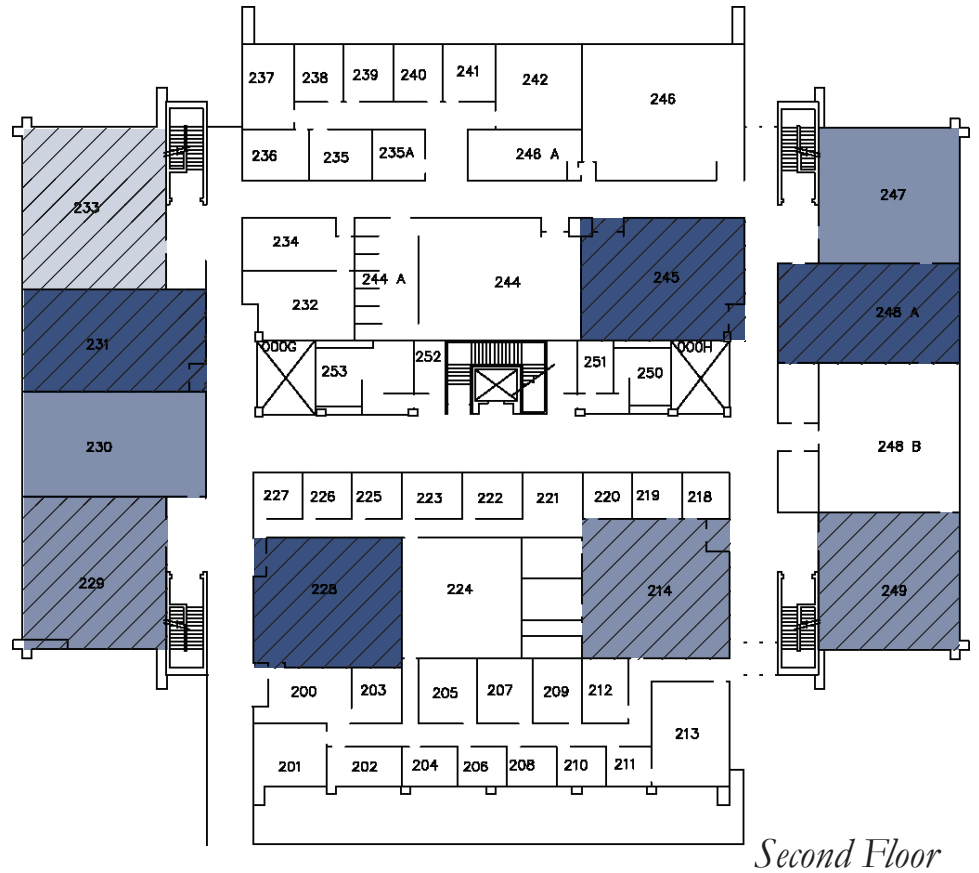
Building Square Feet:
53,342 GSF
Number of Classrooms:
Number of Labs:
Classroom Room Use: 53%
Classroom Seat Use: 28%

**Spring 2014
Bangsberg Hall figures**

Building Square Feet:
86,878 GSF
Number of Classrooms:
Number of Labs:
Classroom Room Use: 29%
Classroom Seat Use: 17%

**Spring 2014
Sattgast figures**

Building Square Feet:
107,598 GSF
Number of Classrooms: 7
Number of Labs:
Classroom Room Use: 72%
Classroom Seat Use: 50%



Note: percent based on a 32 hour week

Proposed Space Utilization

Bemidji State University has run multiple space utilization scenarios using the EMS scheduling software with a goal of increasing classroom utilization from the current 47% to a mid-range of 75%. Current models have the campus reducing the current count of classrooms (110) and teaching Labs (210) by 26 from a total of 98 to 72. This represents a decrease of almost 27% in number of instructional environments and a target increase of utilization by almost 60%. This will be accomplished through proper coding of rooms, right-sizing, elimination and better located to increase access and encourage use. The university is also exploring scheduling changes to the current culture of scheduling based upon space needs, increased focus on demand analysis, and matriculation requirements, not on convenience. Variables include unassigned classes and the effective scheduling of computer classrooms.

Existing Building Construction

Metrics

- Date of Construction: 1969
- Current gsf: 82,000
- Number of Floors: 3 plus basement
- Current Use: Classrooms, computer labs and faculty offices
- Current Replacement Value: \$22,157,000*
- Backlog of Repairs Value: \$5,933,000*
- Facility Condition Index (FCI): 0.31

* approximate based on data provided by BSU

Summary

Hagg-Sauer Hall is an existing academic building housing faculty offices, classrooms and administrative offices. It is approximately 82,500 square feet including the basement mechanical room. The building was constructed around 1969 and a major asbestos abatement project was undertaken in 1986.

The building's structural system is steel column and beam structural frame with composite floor slabs, concrete over metal deck. The beams have headed steel studs welded to their top flange so that they act compositely with the concrete slab above thereby increasing their capacity. Columns are steel wide flange shapes which bear on cast-in-place concrete piers. The concrete piers bear on shallow spread footings. The 1st floor construction is cast in place slab on grade except for the area over the partial basement with is a cast-in-place concrete slab.

The steel frame is fire protected with spray-on fire protection on the beams and concrete masonry blocks surrounding the columns. The spray-on fire protection was removed and replaced during the course of the asbestos abatement work.

The exterior walls are primarily brick veneer cavity walls with one inch insulation and concrete masonry block back-up. The concrete blocks are painted on the inside forming the finished wall surface. There

are projected soffits at the second floor and third roofs consisting of factory precast concrete panels with exposed aggregate. A new roof was installed in 2011.

Interior walls are primarily painted concrete masonry. Ceilings are suspended acoustical 2x4 panels and flooring is a combination of carpet, vinyl tile and ceramic tile in the bathrooms.

Program Needs

The following needs were identified through discussions and interviews with stakeholder groups, review of spaces currently located in Hagg-Sauer Hall, and analysis of the existing facility. For a detailed comparison between existing and proposed square footage, please refer to the chart found following this section.

For additional information on typical spaces, such as offices, general classrooms, and conference rooms, refer to the Minnesota State Colleges and Universities Space Planning Guidelines located at <http://www.finance.mnscu.edu/facilities/studies/index.html>.

Learning Experience Center

The entire facility should be programmed as a Learning Experience Center. This concept is an effort by Bemidji State University to apply entrepreneurial thinking to the education experience by creating a center of learning with multiple learning facets. It is the intention to expose students to a variety of leadership, collaborative, and hands-on learning opportunities that prepare them for successful experiences after graduation that better match real world working environments. This educational environment is very flexible and provides linked spaces for lecturing to various sized groups (flexible classrooms), collaborative/ team building exercises (“brainstorming zones”), hands-on learning spaces for individualized study (student study space), and social networking spaces all with direct access to mentors (faculty offices) and peers. This intentional focus on the complete learning experience, a multi-faceted environment, is unique to MnSCU and may provide a model for higher education that can be applied across the system.

Informal Gathering Spaces

Comfortable student lounge areas with a mix of seating options (tables/chairs, couches, comfortable chairs). Email computer kiosks, vending machines, and internet connections (wireless or data ports) are also required. Spaces should promote interaction of students but be balanced with need for more quiet study areas.

Focus Study Areas

Certain public areas should be designed to provide space for short-term quiet focused activity. Seating should be raised and comfortable.

Smart Classrooms

Capacity for 24-125 students, plus an instructor’s station and/or media cart. Two exit doors preferred, but not required by code. Typical features include carpeting, acoustical ceiling tiles, multi-switched

fluorescent lighting, window treatments (if applicable), and adequate electrical/HVAC to accommodate loads generated by 46 computers. In addition, two classrooms should be ITV-equipped to accommodate long-distance learning and on-line courses.

Computer Labs

Capacity for 12-32 students, plus an instructor's station and/or media cart. Typical features include carpeting, acoustical ceiling tiles, multi-switched fluorescent lighting, window treatments (if applicable), and adequate electrical/HVAC to accommodate loads generated by computers. Only one small computer lab with special SPSS software is required. But two large labs are required to accommodate Computer Science (one dedicated lab) and the other lab for Social Science and GIS instruction for Geography.

Faculty Office Suites/Learning Co-op

Office suites to accommodate 72 faculty offices. A work room and conference room (to accommodate 8-10 people) are also required.

Active Learning Lab

Classrooms should be designed to enable collaborative learning, which is accomplished through interactions between students as opposed to a traditional lecture format. The space needs to facilitate group discussions and work on team projects and be furnished with movable tables and chairs. The instructor may offer support and would need a place to observe and be available for assistance without hindering group independence. It is critical to have access to a variety of media and communication technology for research, group work, presentations, and online collaboration.

Program Center

Each faculty office suite will have a small Program Center that is intended to provide each department with a flexible space for establishing a unique program/ department identity. This space is to be used entirely for enhancing the student experience by providing a space that can be used for informal gathering of students, informal tutorials, career information, department clubs etc.

Tutoring Center

It is anticipated that all students at one time or another need special tutoring or assistance. This dedicated and scheduled space is designed as a small classroom, but with the amenities of a conference room, such as more comfortable chairs, higher levels of lighting and acoustical controls, an abundance of natural light and full access to media and communication technology.

Map Library

The Geography Department requires a dedicated space for the storage of maps. Special flat storage files are required despite the increased reliance on digital copies. Large scale plotters and scanners are also required, along with large flat tables.

Cartography Lab

The Geography Department requires a small dedicated space for the study and creation of maps.

Physical Geography Lab

The Geography Department requires a small dedicated lab for the study Physical Geography.

Practicum Suite

Four small rooms are required by the Psychology Department for interview rooms, and one larger room for the purpose of group therapy study.

Service Center

The New Hagg-Sauer facility requires a central location (Entry Level) for faculty and student support services including workstations for two full-time staff and two work study individuals. A small centralized work room and storage room are required along with a small testing area.

Special Programs Center

The liberal arts curriculum is supported by several small special programs in need of dedicated yet flexible space for the storage of program specific information, shared work stations and a small conference room. This Special Programs Center is administered by a single staff member shared by each special program facilitator. Current programs consist of Gender Studies; Honors Program; Center for Professional Development; Student Scholarships, Center for Liberal Studies, etc.

Lecture Hall

A large lecture hall is required to handle classes and special meetings on campus

Proposed Learning Community Area Summary

STEM: Math & Computer Science

<i>Space</i>	<i>ASF</i>	<i># Req'd</i>	<i>SF</i>	<i>New / Renovated</i>	<i># Occupants</i>
1. Offices					
Faculty		12	110	1,320	12
Hoteling		1	220	220	5
2. Workrooms		1	150	150	
3. Storage		1	110	110	
4. Conference	20	1	200	200	10-12
5. Program Centers				0	
6. Instructional Space				0	
Classroom - Type 1	22			0	
Classroom - Type 2	18			0	
Lecture Hall	12			0	
Active Learning Lab	30			0	
7. Tutoring Center	25			0	
8. Computer Labs	25			0	
9. Dedicated Spaces				0	
Language Lab				0	
Writing Center					
Planning Lab				0	
Cartography				0	
Map Library				0	
Physical Geography				0	
Math Library		1	200	200	10-12
Learning Co-op		1	250	250	NA
Learning Commons				0	
Practicum Suite				0	
10. Service Center				0	
11. Faculty Work Center				0	
12. Special Programs Center				0	
<i>Total ASF</i>				2,450	
Circulation +35%				858	
Facility Services +10%					
<i>Total SF</i>				3,308	

Social Sciences: Geology, Sociology, Political Science

<i>Space</i>	<i>ASF</i>	<i># Req'd</i>	<i>SF</i>	<i>New / Renovated</i>	<i># Occupants</i>
1. Offices					
Faculty		9	110	990	9
Hoteling		1	220	220	5
2. Workrooms		1	150	150	
3. Storage		2	110	220	
4. Conference	20	1	200	200	10-12
5. Program Centers				0	
6. Instructional Space				0	
Classroom - Type 1	22			0	
Classroom - Type 2	18			0	
Lecture Hall	12			0	
Active Learning Lab	30			0	
7. Tutoring Center	25			0	
8. Computer Labs	25			0	
9. Dedicated Spaces				0	
Language Lab				0	
Writing Center					
Planning Lab		1	200	200	8
Cartography		1	400	400	12
Map Library				0	
Physical Geography		1	400	400	12
Math Library				0	
Learning Co-op		1	500	500	NA
Learning Commons				0	
Practicum Suite				0	
10. Service Center				0	
11. Faculty Work Center				0	
12. Special Programs Center				0	
<i>Total ASF</i>				3,280	
Circulation +35%				1,148	
Facility Services +10%					
<i>Total SF</i>				4,428	

Humanities: English, History, Philosophy, Language

<i>Space</i>	<i>ASF</i>	<i># Req'd</i>	<i>SF</i>	<i>New / Renovated</i>	<i># Occupants</i>
1. Offices					
Faculty		27	110	2,970	27
Hoteling		3	110	330	9
2. Workrooms		3	150	450	
3. Storage		3	110	330	
4. Conference	20	3	200	600	10-12
5. Program Centers				0	
6. Instructional Space				0	
Classroom - Type 1	22			0	
Classroom - Type 2	18			0	
Lecture Hall	12			0	
Active Learning Lab	30			0	
7. Tutoring Center	25			0	
8. Computer Labs	25			0	
Small	32			0	
Large	32			0	
9. Dedicated Spaces				0	
Language Lab		1	800	800	
Writing Center				0	
Planning Lab				0	
Cartography				0	
Map Library				0	
Physical Geography				0	
Math Library				0	
Learning Co-op		1	1,000	1,000	NA
Learning Commons				0	
Practicum Suite				0	
10. Service Center		1	400	400	
11. Faculty Work Center				0	
12. Special Programs Center				0	
Total ASF				6,880	
Circulation +35%				2,408	
Facility Services +10%					
Total SF				9,288	

Notes: Mechanical Penthouse 2,000 SF +/-, Electrical/IT Service 300 SF +/-, (2) IT Closets 200 SF +/-

Human Services: Social Work, Psychology

<i>Space</i>	<i>ASF</i>	<i># Req'd</i>	<i>SF</i>	<i>New / Renovated</i>	<i># Occupants</i>
1. Offices					
Faculty		15	110	1,650	15
Hoteling		2	110	220	5
2. Workrooms		2	150	300	
3. Storage		2	110	220	
4. Conference	20	2	200	400	10-12 Each
5. Program Centers				0	
6. Instructional Space				0	
Classroom - Type 1	22			0	
Classroom - Type 2	18			0	
Lecture Hall	12			0	
Active Learning Lab	30			0	
7. Tutoring Center	25			0	
8. Computer Labs	25			0	
9. Dedicated Spaces				0	
Language Lab				0	
Writing Center					
Planning Lab				0	
Cartography				0	
Map Library				0	
Physical Geography				0	
Math Library				0	
Learning Co-op		1	500	500	
Learning Commons				0	
Practicum Suite		1	1,000	1,000	
10. Service Center				0	
11. Faculty Work Center				0	
12. Special Programs Center				0	
Total ASF				4,290	
Circulation +35%				1,502	
Facility Services +10%					
Total SF				5,792	

Notes: Mechanical Penthouse 2,000 SF +/-, Electrical/IT Service 300 SF +/-, (2) IT Closets 200 SF +/-

Learning Commons

<i>Space</i>	<i>ASF</i>	<i># Req'd</i>	<i>SF</i>	<i>New / Renovated</i>	<i># Occupants</i>
1. Offices					
Faculty					0
Hoteling					0
2. Workrooms					0
3. Storage					0
4. Conference	20				0
5. Program Centers					0
6. Instructional Space					0
Classroom - Type 1	22				0
Classroom - Type 2	18				0
Lecture Hall	12				0
Active Learning Lab	30				0
7. Tutoring Center	25				0
8. Computer Labs	25				0
9. Dedicated Spaces					0
Language Lab					0
Writing Center					
Planning Lab					0
Cartography					0
Map Library		1	800		800
Physical Geography					0
Math Library					0
Learning Co-op					0
Learning Commons		1	25,500		25,500
Practicum Suite					0
10. Service Center					0
11. Faculty Work Center					0
12. Special Programs Center		1	800		800
<i>Total ASF</i>					27,100
Circulation +30%					(Included)
Facility Services +10%					
<i>Total SF</i>					27,100

Academic Learning Center

<i>Space</i>	<i>ASF</i>	<i># Req'd</i>	<i>SF</i>	<i>Total SF</i>		<i># Occupants</i>
				<i>New</i>	<i>Renovated</i>	
1. Offices						
Faculty				0		
Hoteling				0		
2. Workrooms				0		
3. Storage				0		
4. Conference	20			0		
5. Program Centers				0		
6. Instructional Space				0		
Classroom - Type 1	22			0		
Classroom - Type 2	18	4	2,250	9,000		125
Lecture Hall	12	1	4,200	4,200		350
Active Learning Lab	30	2	1,500	3,000		48
7. Tutoring Center	25			0		
8. Computer Labs	25	1	800	800		32
9. Dedicated Spaces				0		
Language Lab				0		
Writing Center						
Planning Lab				0		
Cartography				0		
Map Library				0		
Physical Geography				0		
Math Library				0		
Learning Co-op				0		
Learning Commons				0		
Practicum Suite				0		
10. Service Center		1	400	400		
11. Faculty Work Center		1	800	800		
12. Special Programs Center				0		
Total ASF				18,200		
Circulation +35%					6,370	
Facility Services					2,500	
Total SF				27,070		

Notes: Mechanical Penthouse 2,000 SF +/-, Electrical/IT Service 300 SF +/-, (2) IT Closets 200 SF +/-

Music

<i>Space</i>	<i>ASF</i>	<i># Req'd</i>	<i>SF</i>	<i>New / Renovated</i>	<i># Occupants</i>
1. Offices					
Faculty					0
Hoteling					0
2. Workrooms					0
3. Storage					0
4. Conference	20				0
5. Program Centers					0
6. Instructional Space					0
Classroom - Type 1	22				0
Classroom - Type 2	18				0
Lecture Hall	12				0
Active Learning Lab	30				0
7. Tutoring Center	25				0
8. Computer Labs	25				0
9. Dedicated Spaces					0
Language Lab					0
Writing Center					
Planning Lab					0
Cartography					0
Map Library					0
Physical Geography					0
Math Library					0
Learning Co-op					0
Learning Commons					0
Practicum Suite					0
10. Service Center					0
11. Faculty Work Center					0
12. Special Programs Center					0
<i>Total ASF</i>					0
Circulation +35%					0
Facility Services +10%					0
<i>Total SF</i>					6,550

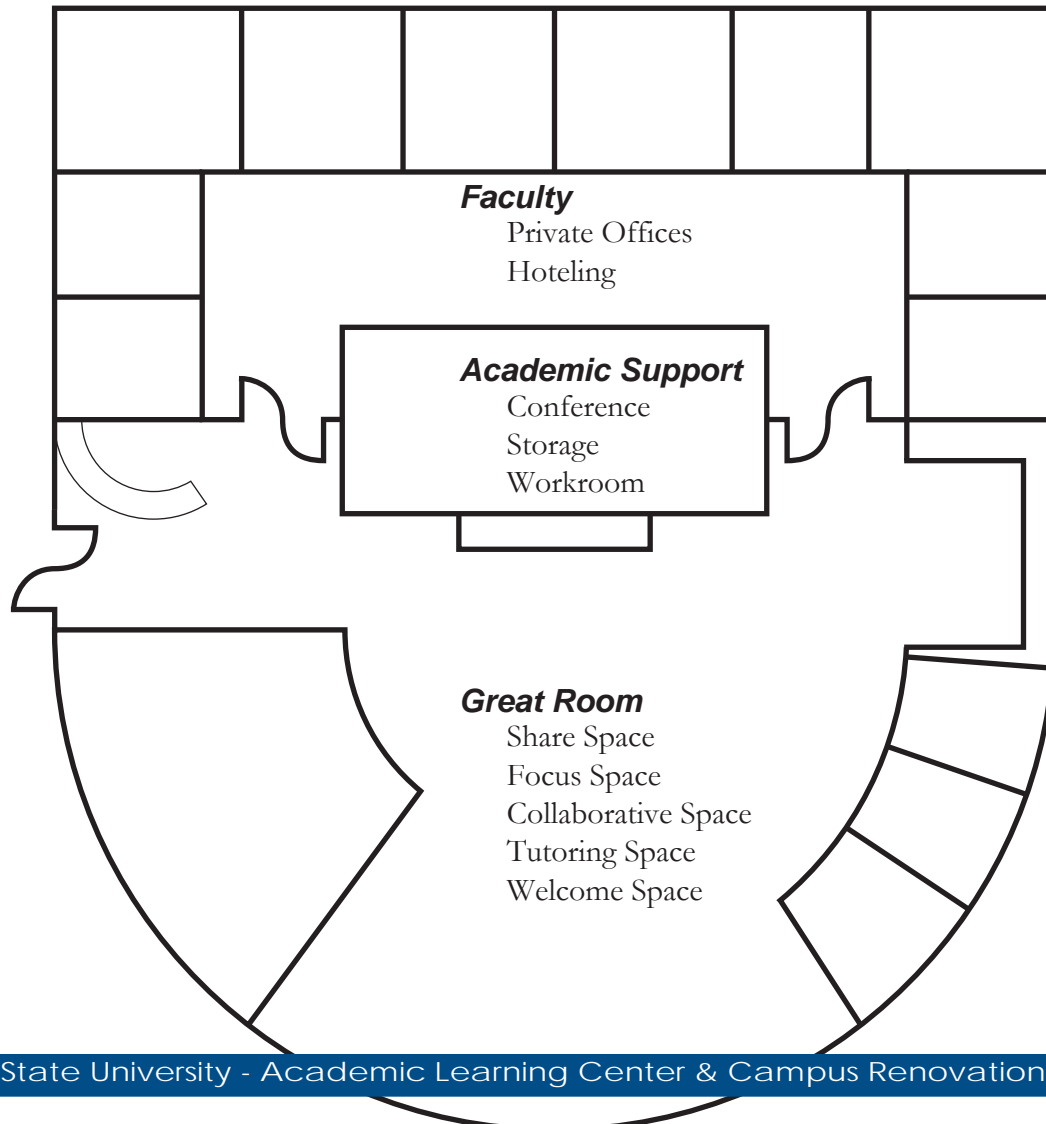
Notes: Mechanical Penthouse 2,000 SF +/-, Electrical/IT Service 300 SF +/-, (2) IT Closets 200 SF +/-

Program Location Matrix (Preliminary)

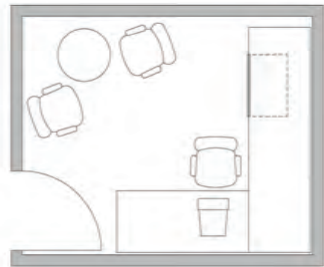
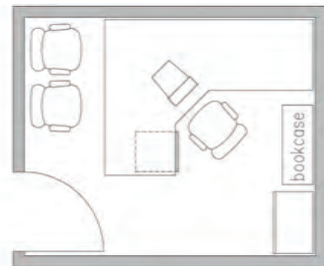
<i>Program</i>	<i>Current</i>	<i>Proposed</i>	<i>Other?</i>
Geography	Hagg-Sauer	?	Bridgeman/Library
English	Hagg-Sauer	Bangsberg	
History	Hagg-Sauer	Bangsberg	
Political Science	Hagg-Sauer	?	Bridgeman/Library
Psychology	Hagg-Sauer	Bensen	
Philosophy	Hagg-Sauer	Bangsberg	
Social Work	Hagg-Sauer	Bensen	
Sociology	Hagg-Sauer	?	Bridgeman/Library
Math	Hagg-Sauer	Sattgast	
Computer Science	Hagg-Sauer	Sattgast	
Language	Hagg-Sauer	Bangsberg	

Space Needs Inventory and Diagrams

Faculty Offices Suite/Learning Co-op



1. Offices: Faculty (110 SF)



Department: Various

Room Name: Faculty Office

Anticipated Number of

Room Type:

72 private, 6 shared

Anticipated Number of

Occupants: 1 single, 4 shared

Function: Provides faculty with private office space to meet with students, review student tests and assignments as well as prepare lesson plans.

Critical Adjacencies:

Near dedicated program areas, workrooms, storage, conference.

Furniture, Fixtures &

Equipment: Campus standards for desks, chairs, and filing cabinets, computer

Typical Finishes:

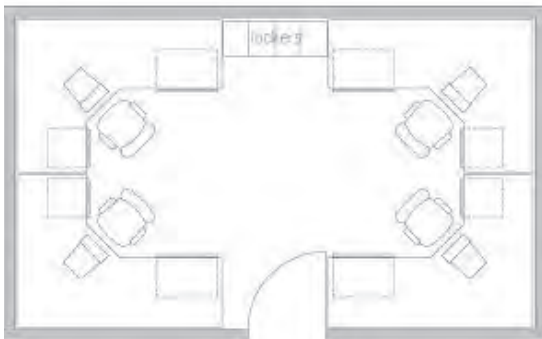
Floor: Carpet

Walls: Painted gypsum board with acoustical batts

Ceiling: Acoustical tiles

Lighting: LED & Fluorescent fixtures

1. Offices: Shared (220 SF)



Mechanical/HVAC/Piping Requirements:

Hot water heat via variable air volume will provide individual temperature control

Electrical Requirements:

Convenience Outlets

Technology Requirements:

Computer with internet access

Department: Various

2. Workrooms (120 SF)

Room Name: Workroom

Anticipated Number of Room Type: 6

Anticipated Number of Occupants: Varies

Function: Support area for offices including copying, mail room functions, faxing, and assembly of documents.

Critical Adjacencies: Faculty and Administration

Furniture, Fixtures & Equipment: Mail boxes, copier, built-in cabinets for storage.

Typical Finishes:

Floor: Carpet

Walls: Painted gypsum board

Ceiling: Acoustical Tiles

Lighting: LED/Fluoroscents with Motion Controls

Mechanical/HVAC/Piping Requirements:

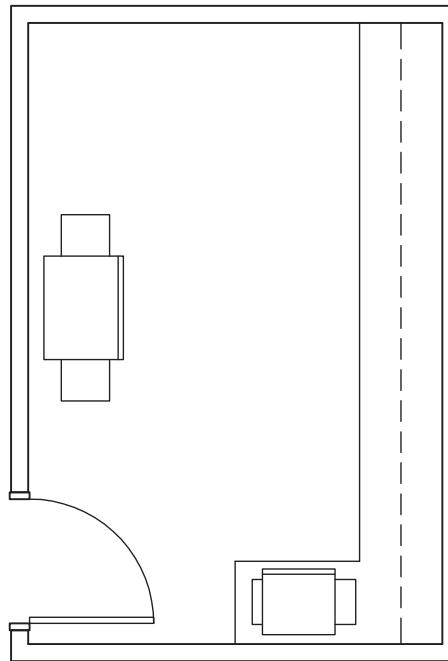
Hot water heat via variable air volume will provide individual temperature control

Electrical Requirements:

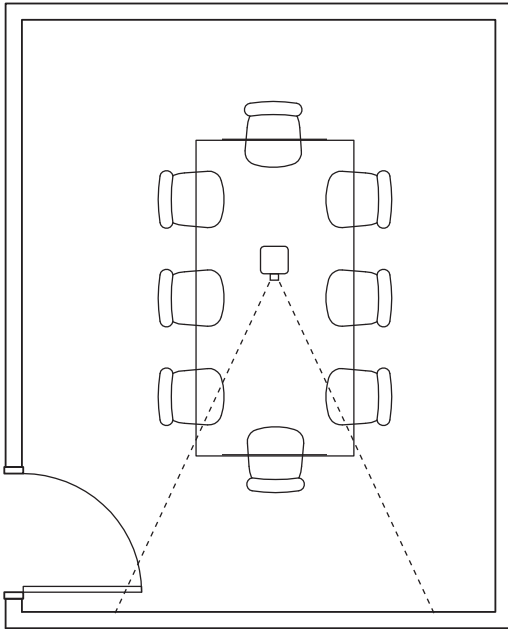
Convenience outlets plus capacity to support technology requirements.

Technology Requirements:

Copier, fax machine, printers; computer and media/internet access.



4. Conference (200 SF)



Department: Various

Room Name:
Conference Room

Anticipated Number of Room Type: 6

Anticipated Number of Occupants: 8-10

Function: Large conference room for faculty and staff meetings.

Critical Adjacencies:
Faculty Offices

Furniture, Fixtures & Equipment: Conference table and chairs, overhead projector and screens, storage cabinets, ITV system

Typical Finishes:
Floor: Carpet
Walls: Painted gypsum board
Ceiling: Acoustical Tiles

Lighting: Multi-switched LED/Fluoroscents with Motion Controls

Mechanical/HVAC/Piping Requirements:
Hot water heat via variable air volume will provide individual temperature control

Electrical Requirements:
Convenience outlets plus capacity to support technology requirements.

Technology Requirements:
Overhead projector, screen, media cabinet with recessed media, dimmable lighting system; wireless connections to media/internet.

Department:
None, General Use

6. Instructional Space: Seminar (600 SF, 16-24 occupants)

Room Name: Seminar Room

Anticipated Number of Room Type: 3

Anticipated Number of Occupants: Maximum of 24 students and 1 instructor.

Function: Provides learning environment suitable for small seminar classes and meeting.

Critical Adjacencies: None

Furniture, Fixtures & Equipment: Moveable tables and chairs, instructor's podium, white board with tack strip, VHS/DVD combination player, overhead projector and screen; built-in storage cabinets.

Typical Finishes:

Floor: Carpet
Walls: Painted gypsum board
Ceiling: acoustical tiles

Lighting: Multi-switched LED/Fluoroscents with Motion Controls

Mechanical/HVAC/Piping Requirements:

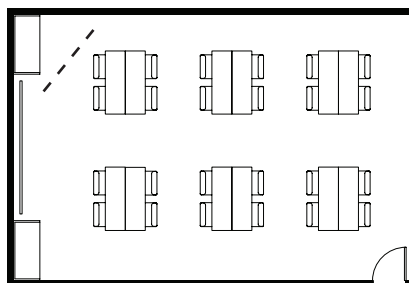
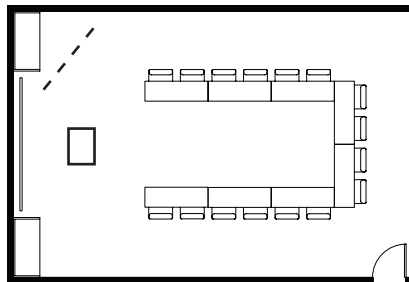
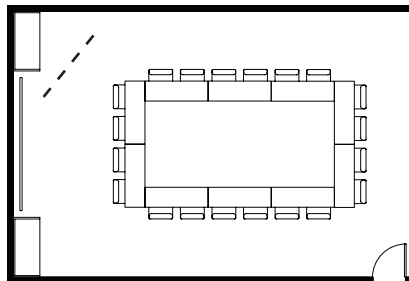
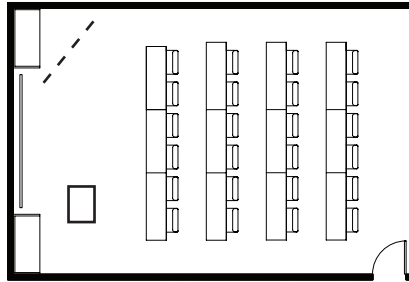
Hot water heat via variable air volume will provide individual temperature control

Electrical Requirements:

Convenience outlets plus capacity to support technology requirements.

Technology Requirements:

Overhead projector and screen, media cabinet with VHS/DVD combination player and dual and/or dimmable lighting system; wireless connection to media/internet.



6. Instructional Space: Classroom-Type 1 (1320 SF, 60 occupants)

Department:
None, General Use

Room Name:
Classroom-Type 1

Anticipated Number of Room Type: 6

Anticipated Number of Occupants: Maximum of 60 students and one instructor

Function: Typical classroom providing quality learning environment for students.

Critical Adjacencies: None

Furniture, Fixtures & Equipment: Moveable tables and chairs, white board with tack strip, lectern. See Technology Requirements.

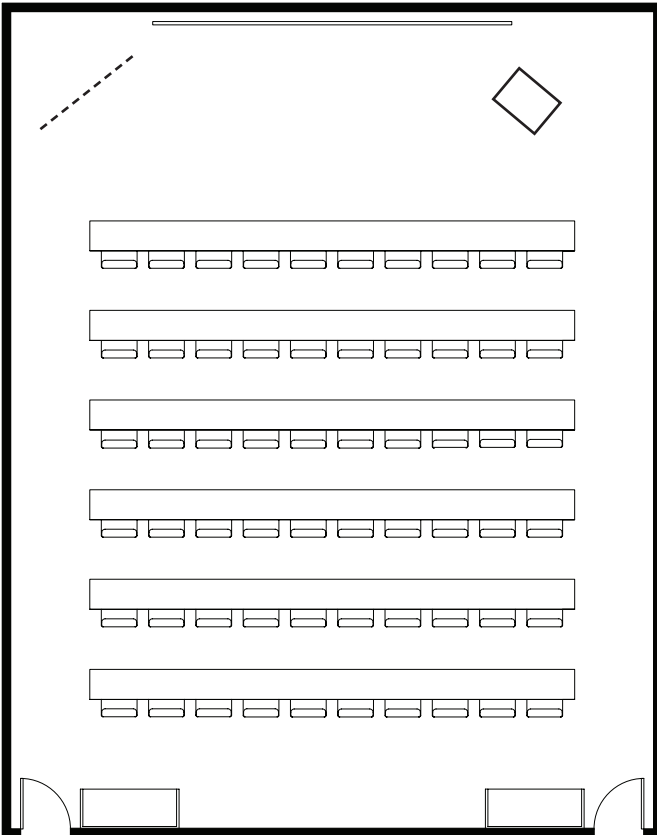
Typical Finishes:
Floor: Carpet
Walls: Painted gypsum board
Ceiling: Acoustical Tiles

Lighting: Multi-switched LED/Fluoroscents with Motion Controls

Mechanical/HVAC/Piping Requirements:
Hot water heat via variable air volume will provide individual temperature control. Exterior rooms will have perimeter hot water heat.

Electrical Requirements:
Convenience outlets plus capacity to support technology requirements.

Technology Requirements:
“Smart” classroom components as defined by the current Technology Plan.



Department: None

6. Instructional Space: Classroom-Type 2 (2500 SF)

Room Name:
Classroom-Type 2

Anticipated Number of Room Type: 4

Anticipated Number of Occupants: Maximum of 125 students and one instructor

Function: Typical classroom providing quality learning environment for students.

Critical Adjacencies: None

Furniture, Fixtures & Equipment: Fixed tables and movable chairs, white board with tack strip, lectern. See Technology Requirements.

Typical Finishes:

Floor: Carpet

Walls: Painted gypsum board

Ceiling: Acoustical Tiles

Lighting: Multi-switched LED/Fluoroscents with Motion Controls

Mechanical/HVAC/Piping Requirements:

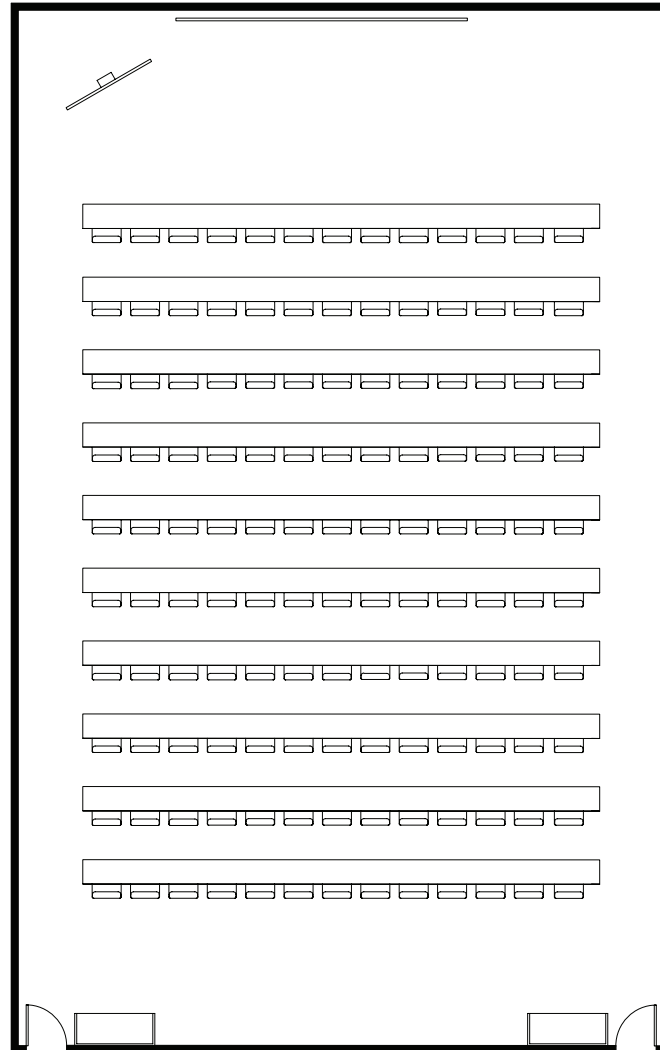
Hot water heat via variable air volume will provide individual temperature control. Exterior rooms will have perimeter hot water heat.

Electrical Requirements:

Convenience outlets plus capacity to support technology requirements.

Technology Requirements:

“Smart” classroom components as defined by the current Technology Plan.



6. Instructional Centers: Lecture (4000 SF, 250 occupants)

Department: None

Room Name: Lecture

Anticipated Number of Room Type: 1

Anticipated Number of Occupants: Maximum of 250 students and one instructor

Function: Capacity to hold large lectures and community gatherings.

Critical Adjacencies: None

Furniture, Fixtures & Equipment: Fixed auditorium seating, white board with tack strip, lectern. See Technology Requirements.

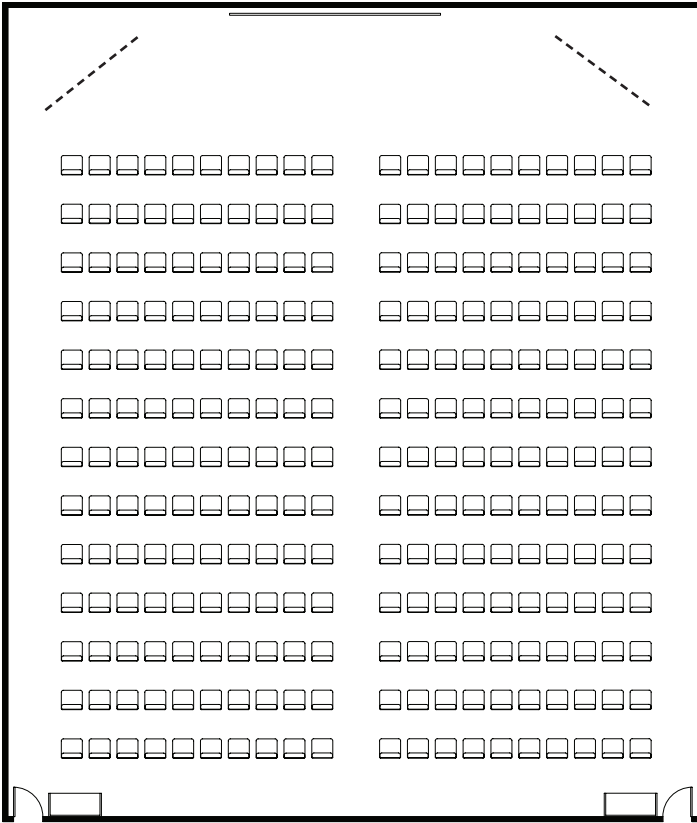
Typical Finishes:
Floor: Carpet
Walls: Painted gypsum board
Ceiling: Acoustical Tiles

Lighting: Multi-switched LED/Fluoroscents with Motion Controls

Mechanical/HVAC/Piping Requirements:
Hot water heat via variable air volume will provide individual temperature control. Exterior rooms will have perimeter hot water heat.

Electrical Requirements:
Convenience outlets plus capacity to support technology requirements.

Technology Requirements:
“Smart” classroom components as defined by the current Technology Plan.



Department: None

6. Instructional Centers: Active Learning (1600 SF, 54 occupants)

Room Name: Active Learning Classroom

Anticipated Number of Room Type: 1

Anticipated Number of Occupants: Maximum of 54 students and one instructor

Function: Classroom providing capability for group work and hands-on instruction.

Critical Adjacencies: None

Furniture, Fixtures & Equipment: Moveable tables and chairs, white board with tack strip, lectern. See Technology Requirements.

Typical Finishes:

Floor: Carpet

Walls: Painted gypsum board

Ceiling: Acoustical Tiles

Lighting: Multi-switched LED/Fluoroscents with Motion Controls

Mechanical/HVAC/Piping Requirements:

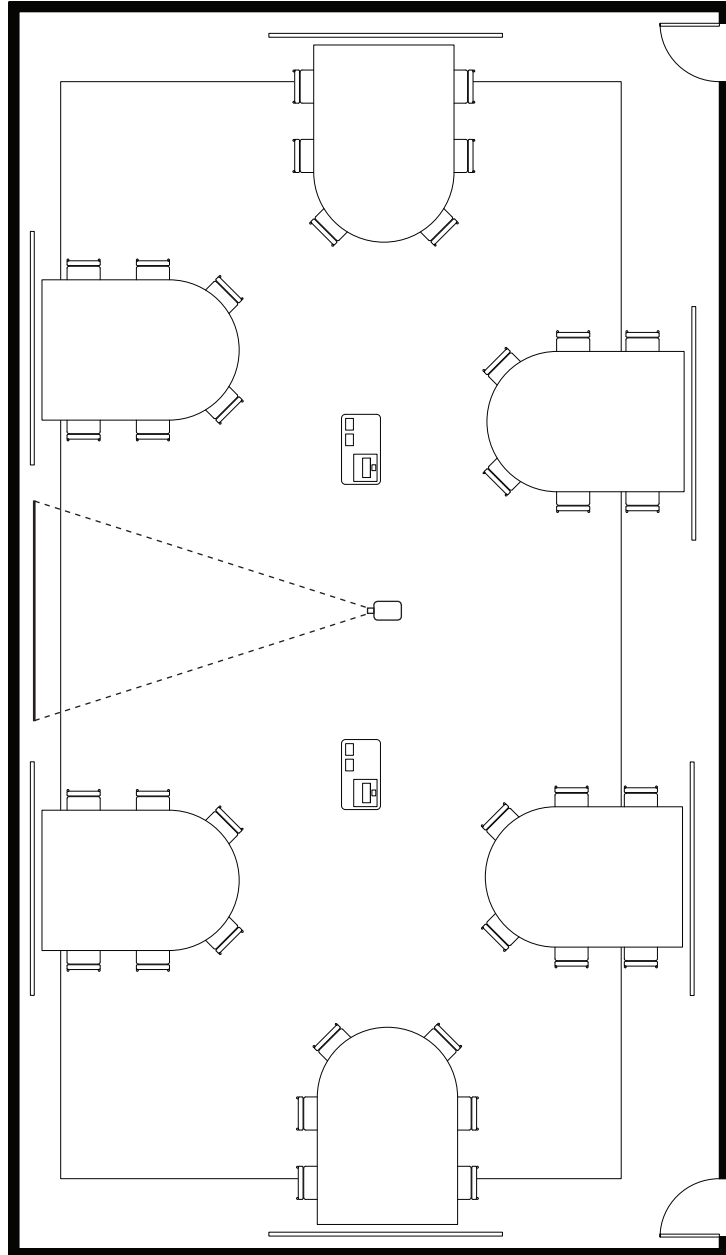
Hot water heat via variable air volume will provide individual temperature control. Exterior rooms will have perimeter hot water heat.

Electrical Requirements:

Convenience outlets plus capacity to support technology requirements.

Technology Requirements:

“Smart” classroom components as defined by the current Technology Plan.



9. Dedicated Spaces: Practicum Suite (760 SF)

Department:
None, General Use

Room Name:
Tutoring Center

Anticipated Number of Room Type: 1 suite

Anticipated Number of Occupants:

Group Therapy: 12

Interview: 2-3

Function: Interview rooms for Psychology and one larger group therapy room.

Critical Adjacencies: None

Furniture, Fixtures & Equipment: Moveable tables and chair. See Technology Requirements.

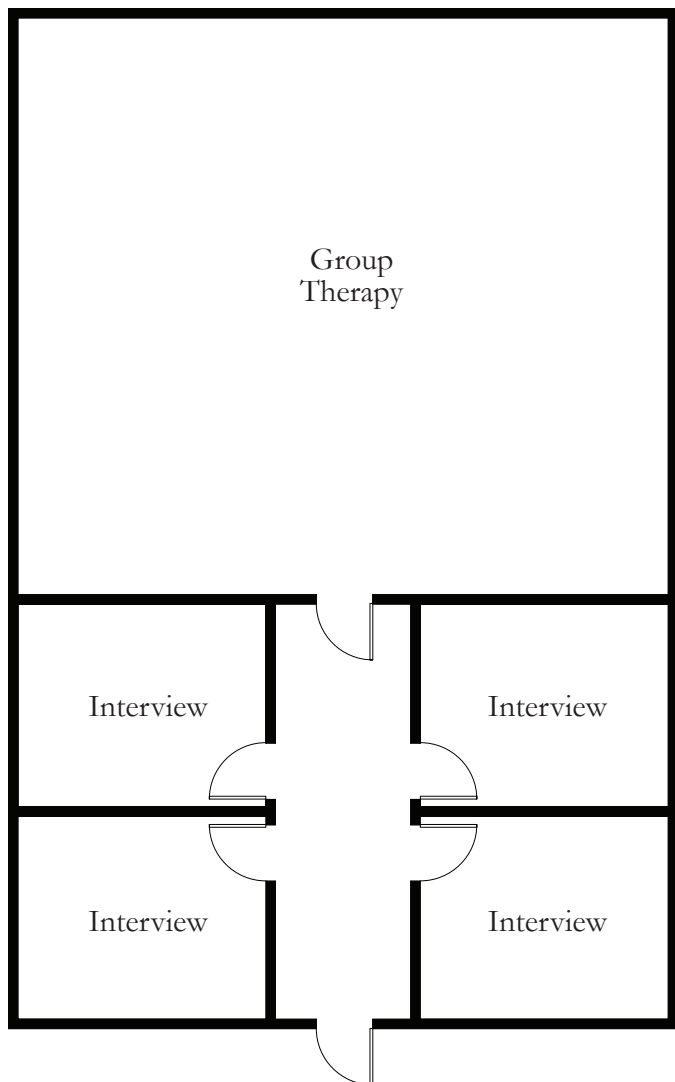
Typical Finishes:
Floor: Carpet
Walls: Painted gypsum board
Ceiling: Acoustical Tiles

Lighting: Multi-switched LED/Fluoroscents with Motion Controls

Mechanical/HVAC/Piping Requirements:
Hot water heat via variable air volume will provide individual temperature control.

Electrical Requirements:
Convenience outlets plus capacity to support technology requirements.

Technology Requirements:



Department: None

10. Service Center (800 SF)

Room Name:
Service Center

Anticipated Number of Room Type: 1

Anticipated Number of Occupants: 9-12

Function: Offices for faculty and student support staff, workroom, testing center

Critical Adjacencies: None

Furniture, Fixtures & Equipment: Tables and chairs, reception desks. See Technology Requirements.

Typical Finishes:
Floor: Carpet

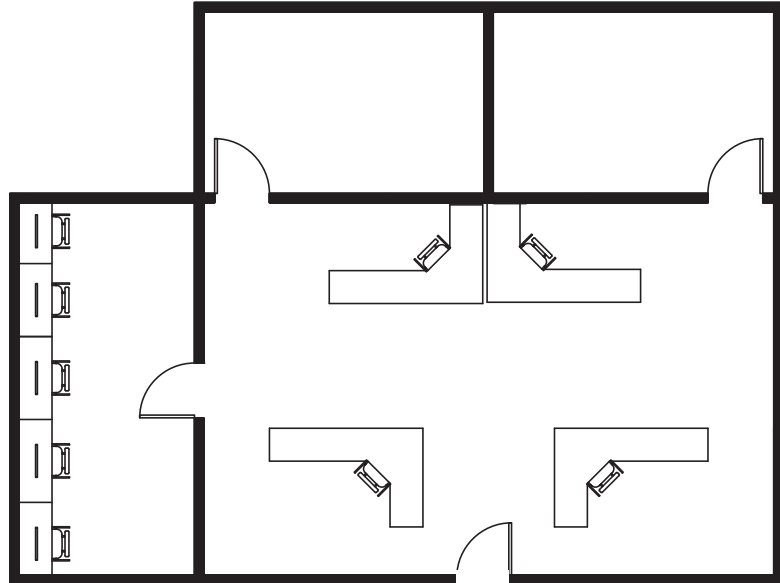
Walls: Painted gypsum board
Ceiling: Acoustical
Tiles

Lighting: Multi-switched LED/Fluoroscents with Motion Controls

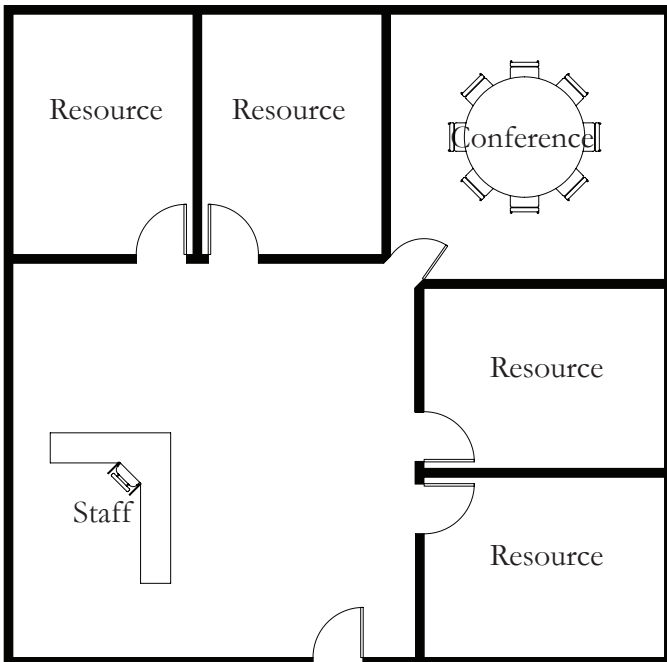
Mechanical/HVAC/Piping Requirements:
Hot water heat via variable air volume will provide individual temperature control.

Electrical Requirements:
Convenience outlets plus capacity to support technology requirements.

Technology Requirements:
Computers with internet access.



11. Special Programs Center (800 SF)



Department:
None, General Use

Room Name:
Special Programs Center

Anticipated Number of Room Type: 1

Anticipated Number of Occupants: 13-18

Function: Flexible yet dedicated space for support of programs

Critical Adjacencies: None

Furniture, Fixtures & Equipment: Moveable tables and chairs, built-in storage cabinets, reception desk. See Technology Requirements.

Typical Finishes:
Floor: Carpet
Walls: Painted gypsum board
Ceiling: Acoustical Tiles

Lighting: Multi-switched LED/Fluoroscents with Motion Controls

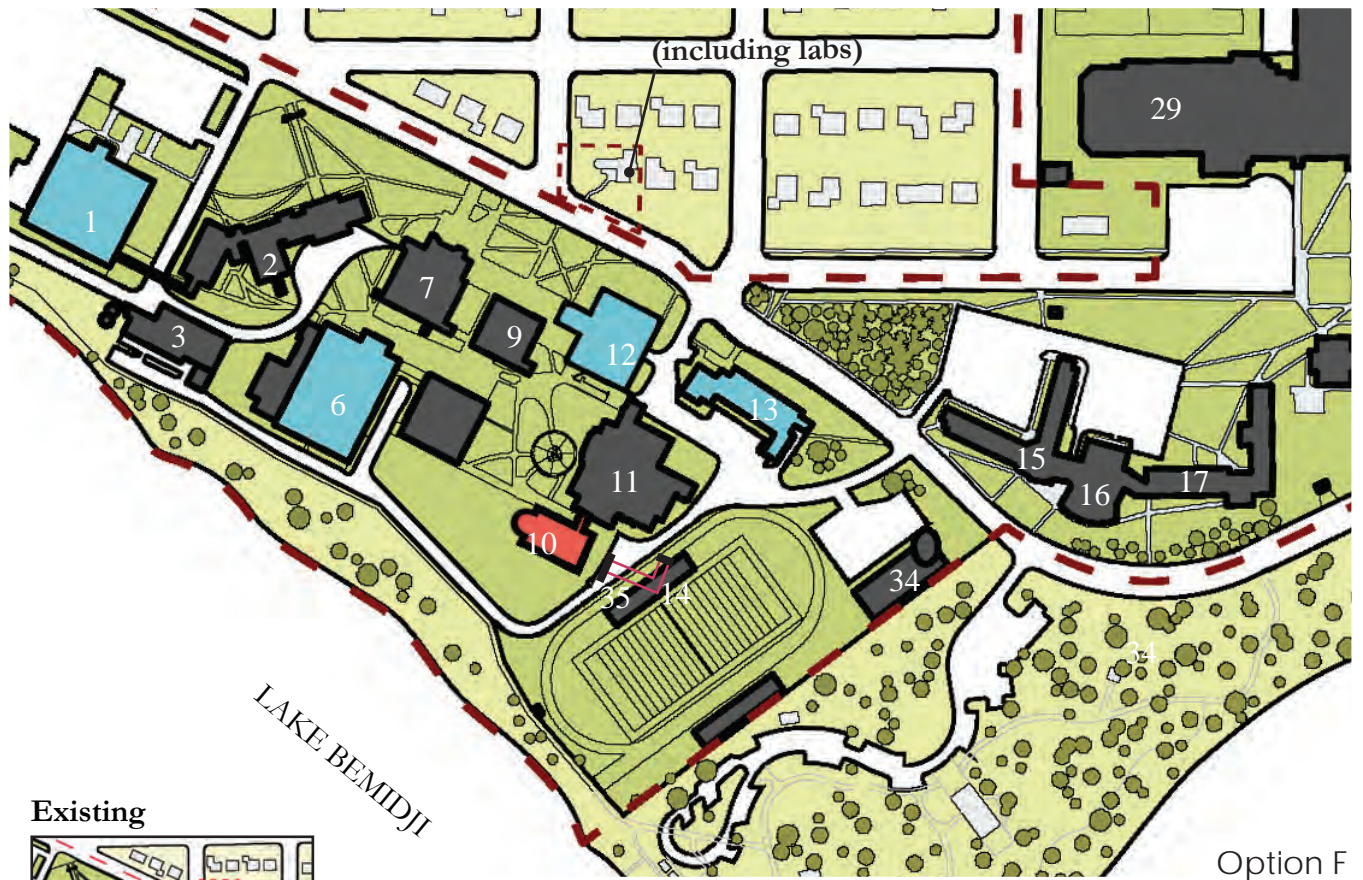
Mechanical/HVAC/Piping Requirements:
Hot water heat via variable air volume will provide individual temperature control.

Electrical Requirements:
Convenience outlets plus capacity to support technology requirements.

Technology Requirements:
Computer with internet access.

Proposed Site Design

- | | | |
|---------------------------------------|------------------------------|---|
| 1. Bangsberg Hall | 13. Education - Art Building | 25. Pump House |
| 2. Deputy Hall | 14. Chet Anderson Stadium | 26. Pump House |
| 3. Heating Plant and Garage | 15. Birch Hall | 27. Athletic Field Sanitation Building |
| 4. Harold T. Peters Hall | 16. Decker Hall | 28. John S. Glas Field House |
| 5. Boat House | 17. Linden Hall | 29. Gillett Fitness / Recreation Center |
| 6. Sattgast Hall | 18. Tamarack Hall | 30. Otter Tail Sub Station |
| 7. Memorial Hall | 19. Cedar Hall | 31. Electrical Sub Station |
| 8. Sanford Hall | 20. Pine Hall | 32. Alumni-Park House |
| 9. Hobson Memorial Union | 21. Walnut Food Service | 33. Baseball Stadium |
| 10. Learning Experience Center | 22. Oak Hall | 34. American Indian Resource Center |
| 11. Bridgeman Hall | 23. Maple Hall | 35. Utility Tunnel |
| 12. A.C. Clark Library | 24. Maintenance - Receiving | 36. Turn-Around |

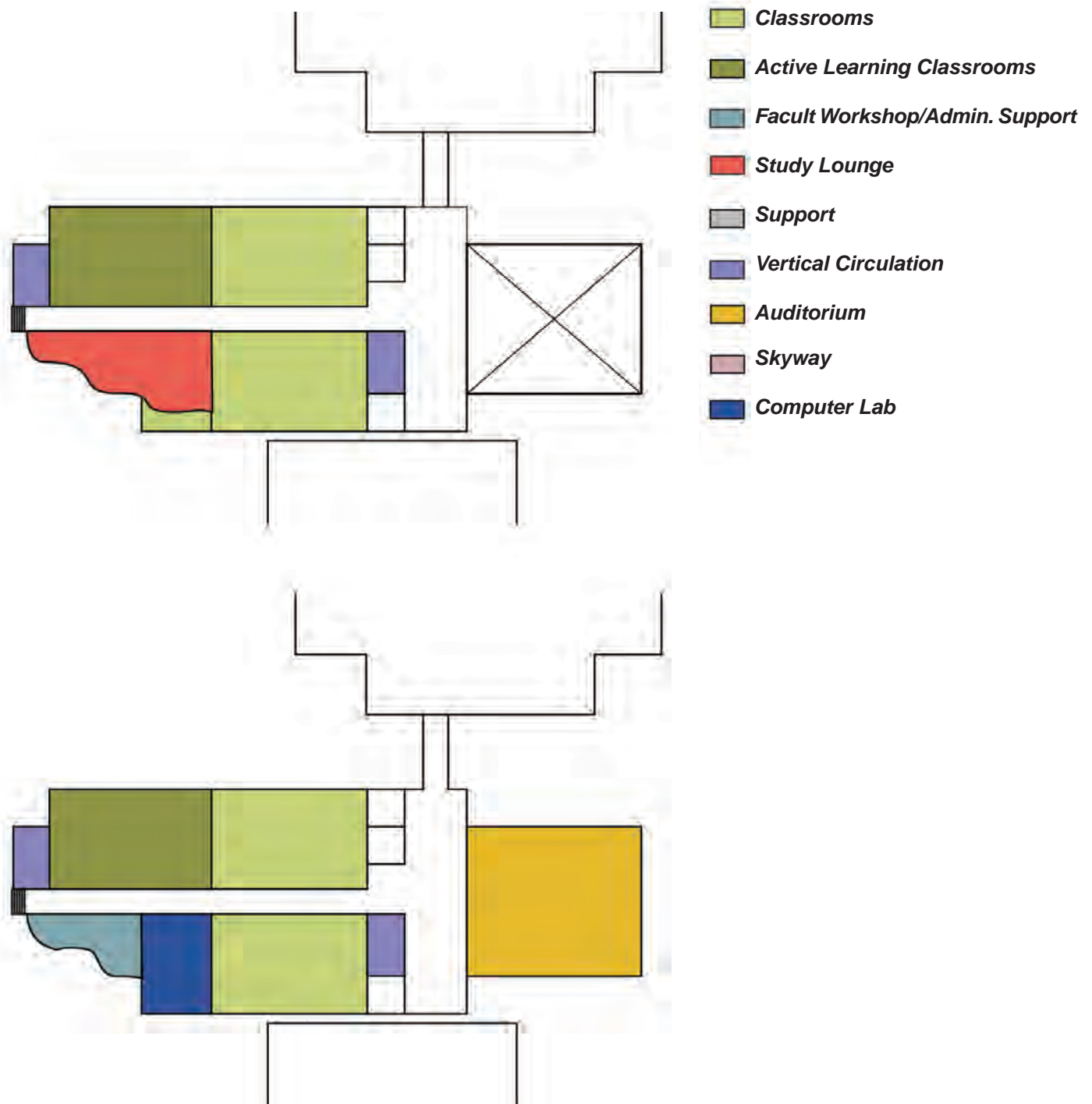


Existing



■ Selective Renovation
 ■ New Construction

Architectonic Program Diagram
Academic Learning Center



Architectonic Program Diagram Sattgast



Third Floor

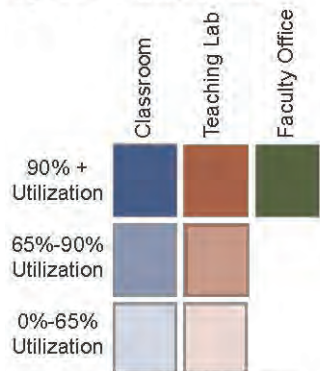


Second Floor

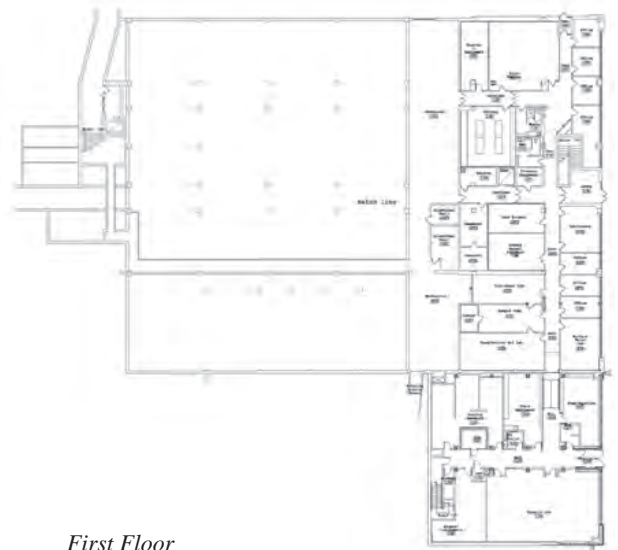
Second Floor

- 1 STEM Learning Community
Mathematics & Computers Science 2,950 SF
- 2 Active Learning Lab 1,850 SF

Space Utilization

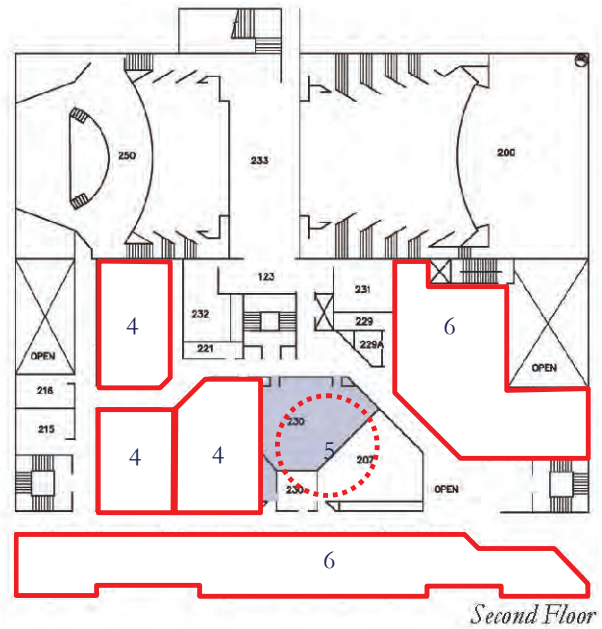
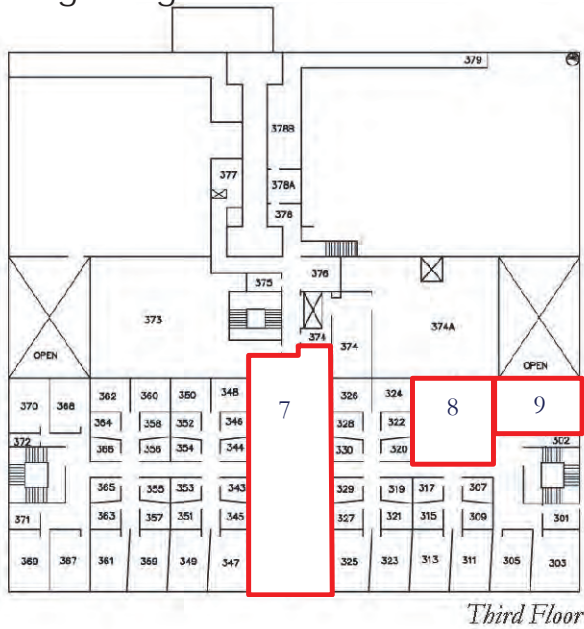


Note: percent based on a 32 hour week.



First Floor

Architectonic Program Diagram Bangsberg



First Floor

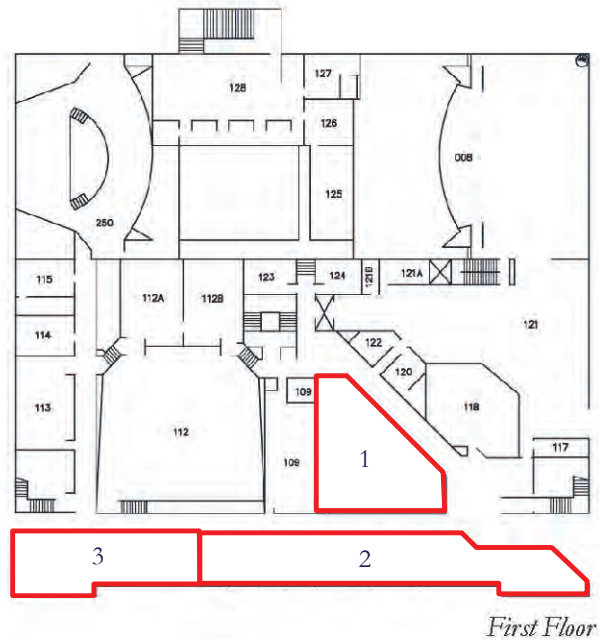
- 1 Music Education Classroom 1,500 SF
- 2 History/Philosophy Offices 2,250 SF
- 3 Music Listening Ensemble 1,300 SF

Second Floor

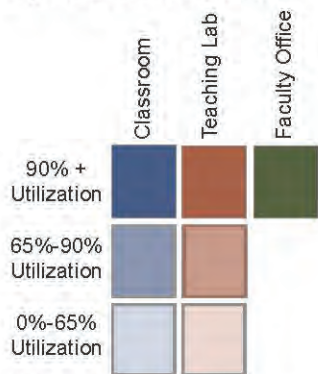
- 4 Classrooms 3,800 SF
- 5 Humanities Commons 2,050 SF
- 6 Humanities Offices 2,800 SF/3,800 SF

Third Floor

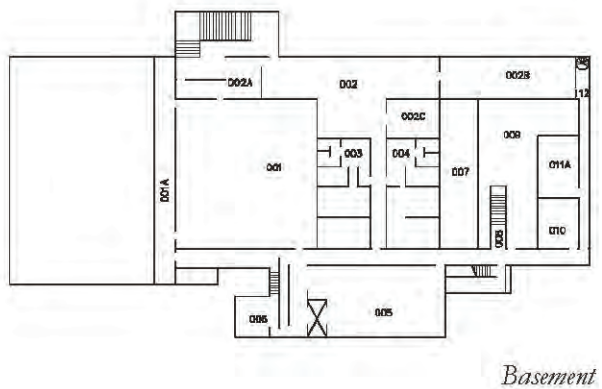
- 7 Music Dept. Office/Lounge 2,350 SF
- 8 Electronic Keyboard Lab 800 SF
- 9 Large Practice Rooms 600 SF



Space Utilization



Note: percent based on a 32 hour week



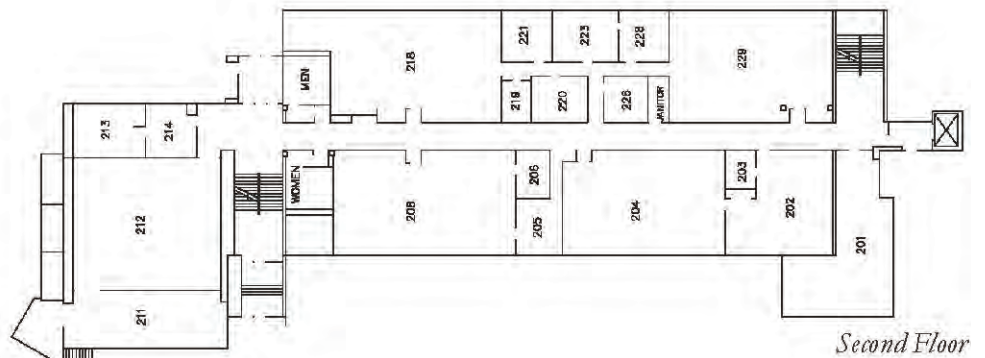
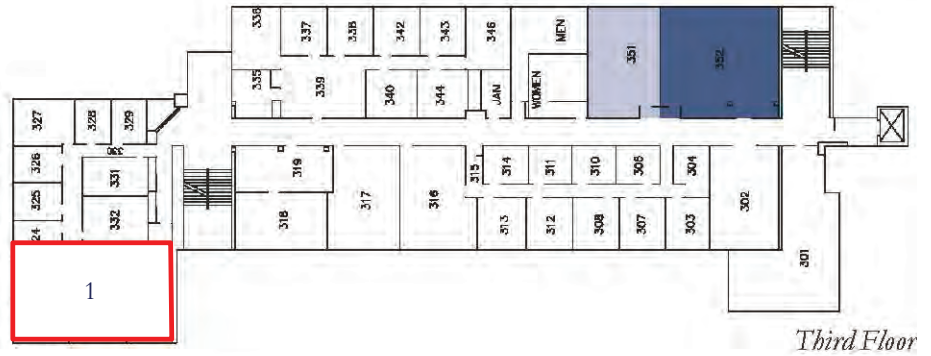
Architectonic Program Diagram Bensen

Third Floor

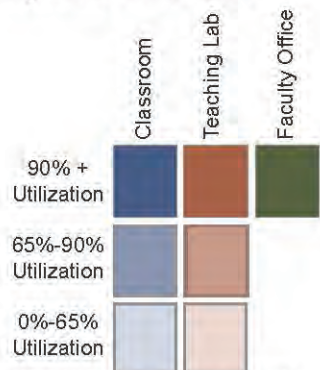
1 Computer Lab 1,000 SF

Fourth Floor

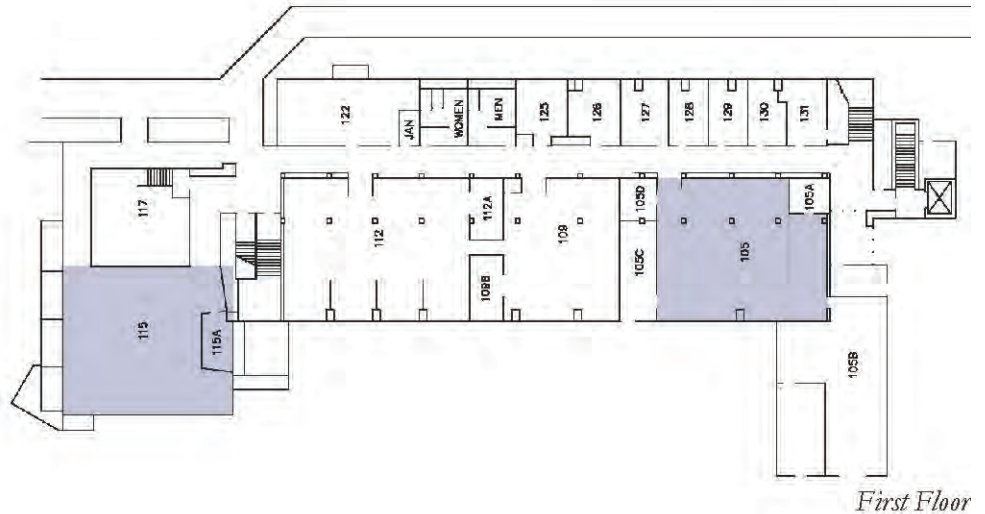
2 Psychology 3,270 SF
3 Social Work 1,650 SF



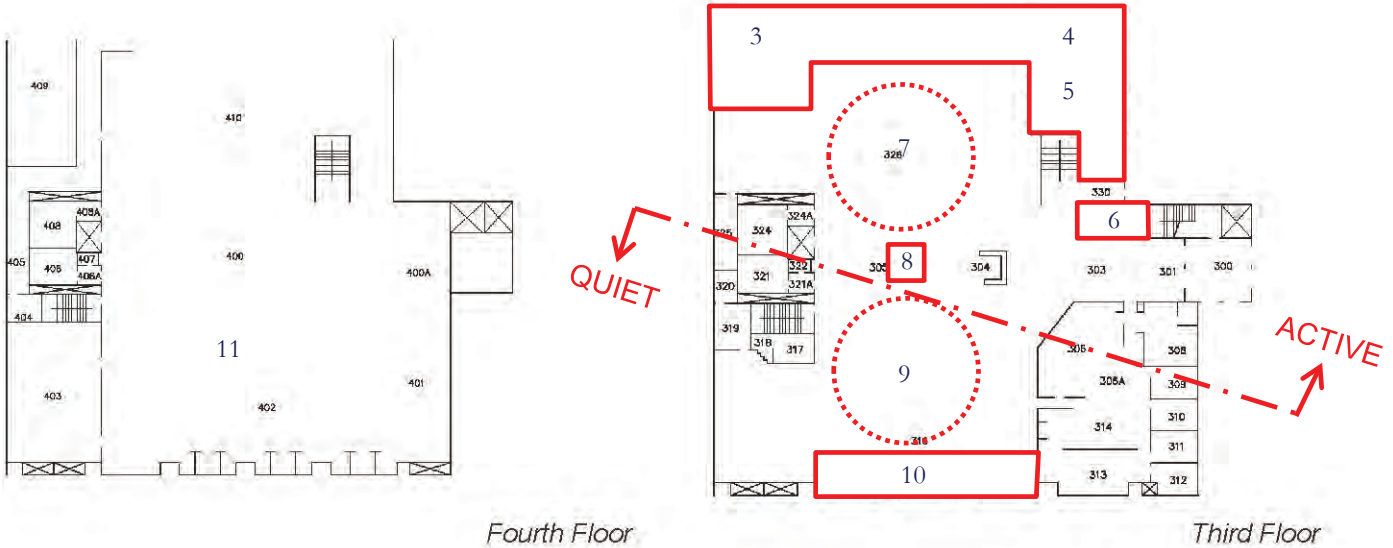
Space Utilization



Note: percent based on a 32 hour week



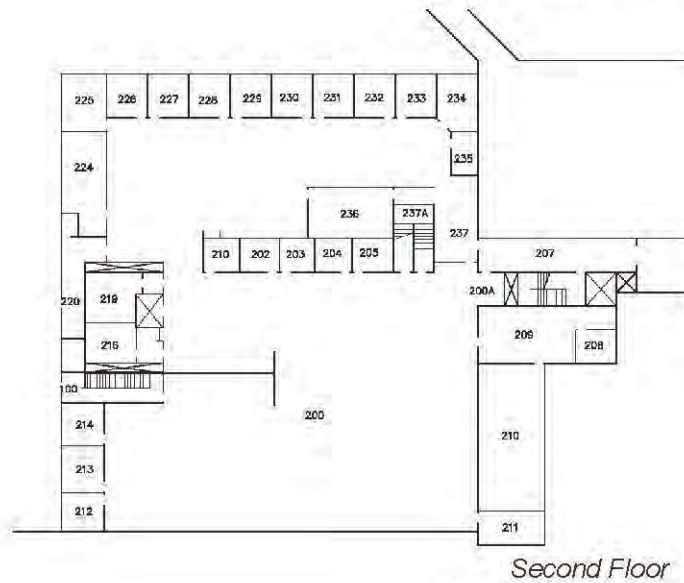
Architectonic Program Diagram A.C. Clark Library



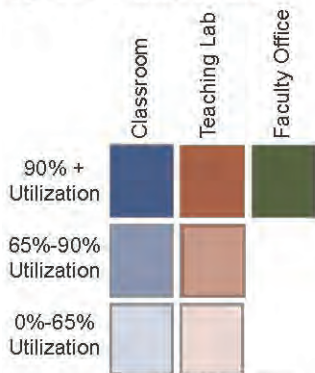
- First Floor*
- 1 Map Library 775 SF
 - 2 Library Classroom 900 SF

- Third Floor* 25,500 SF
- 3 Collaborative Rooms/Study Center
 - 4 Writing Center
 - 5 Tutoring/Assistive Technology
 - 6 Coffee Shop
 - 7 Periodicals?
 - 8 IT Support/Information
 - 9 Reference
 - 10 Librarians

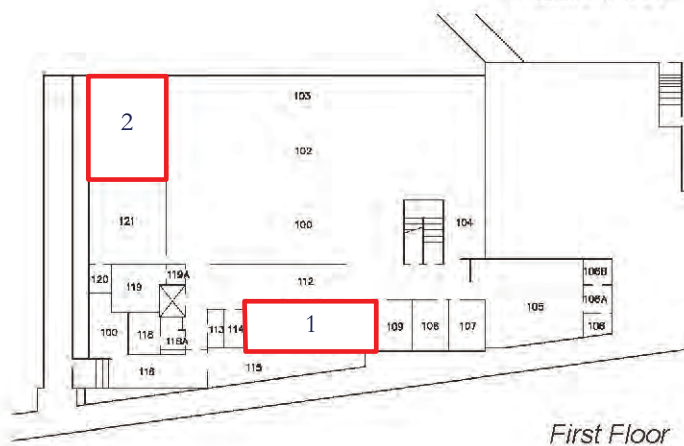
- Fourth Floor*
- 11 Social Sciences?
Geography
Sociology
Political Science



Space Utilization



Note: percent based on a 32 hour week



Site Development Requirements

While the project impacts a relatively small portion of the campus, the New Hagg-Sauer Hall project provides an opportunity to continue implementation of select goals set forth in the Master Facilities Plan.

This project will also allow development of the site in better alignment with access to the lake via landscaping, sitework and integration with the building's access and circulation. As noted in the master plan, the campus currently does not take full advantage of this important amenity.

A short-term parking area with amenities for special needs and deliveries will be provided in conjunction with a passenger drop-off and vehicle turn-around.

Note: Access to lower Hobson Hall by semi-trucks must be maintained.

Plantings installed as part of this project will reinforce the northwoods character of the region. Desired trees include pines, aspen, and birch. Naturalization of the campus should begin by the planting of native species that require low or no irrigation.

Stormwater management strategies will be incorporated into the landscape and streetscape design. Rain gardens, for instance, can not only help treat and reduce the rate of infiltration, but reinforce Bemidji State University's signature theme of environmental stewardship.

Zoning Requirements

Current zoning requirements can be found on the city's website at <http://www.ci.bemidji.mn.us>. A summary of applicable zoning requirements is listed below for reference, but other requirements for signage, landscaping, etc. can be found in the full zoning code. These should be verified at the start of schematic design to ensure all current zoning ordinances are followed.

Zoning District:

U - University. Part of campus resides in a Shoreland Buffer overlay district.

Required Setbacks for Primary Zoning District:

Front Yard..... 40 feet plus one foot for each two feet of building height over forty.
Side Yard, Principle Structure..... 40 feet
Rear Yard..... 40 feet

Setbacks as Governed by the Shoreland Overlay District for General Development Lakes (Lake Bemidji)

Structure setback from ordinary high water level (sewered)..... 50'
Structure setback from top of bluff..... 30'
Structure setback from side lot line 10'
Structure setback from unplatted cemetery..... 50'
Structure setback from federal, State, or County right-of-way..... 50'
Structure setback from right-of-way of other roads..... 20'

Height of Structures:

50 feet by primary zoning district and overlay district does not prescribe for non-residential districts.

Maximum Impervious Surface Coverage

30% for primary zoning district. However, Shoreland Overlay stipulates the maximum ground coverage percentage shall be 25% on all lots within the shoreland district (includes all structures, paving, cement, and all other impermeable surfaces).

Specialty Requirements

The following documents are available on the Construction Services website of the Department of Administration (formerly the State Architect's Office) website and should be referenced and followed throughout the project:

- Design Guidelines
- Space Guidelines
- B3 Minnesota Sustainable Building Guidelines (B3-MSBG).
- In 2008, the legislature expanded the scope of the sustainable building guidelines to include not only new construction, but also major renovations. Major renovations are defined as any renovation greater than or equal to 10,000 GSF or the complete replacement of the mechanical, ventilation, or cooling system of a building or a section of a building. This expanded applicability applies to all major renovations receiving funding from the bond proceeds fund after January 1, 2009.

The following documents are available from the facilities department at Minnesota State Colleges and Universities and should be referenced and followed throughout the project:

- Facilities Design Standards
- Project Management Manual for Design and Construction
- Space Planning Guidelines
- Signage Handbook

Applicable Codes and Standards:

The editions current at the time of design and construction should be used of the following codes and standards:

- International Building Code (IBC) and State of Minnesota Amendments
- Minnesota Accessibility Code
- International Mechanical Code and State of Minnesota Amendments
- National Electrical Code and State of Minnesota Amendments
- International Fire Code and State of Minnesota Amendments
- Minnesota Plumbing Code
- MnSCU Design & Construction Standards
- Applicable State of Minnesota Statutory Requirements
- Minnesota Energy Code

Building Code Summary

The following summary is based on the 2006 IBC and 2007 MNSBC.

Occupancy Group

B; higher education

Construction Type

II-B; Non-combustible and non-fire rated construction.

Allowable Height: 4 stories and 55 feet; the proposed building is 3 stories high plus a penthouse and less than 55 feet tall

Allowable Area:

- 23,000 SF/floor and 69,000 SF total
- 37,950 SF/floor and 113,850 SF total with 90% of perimeter open to 30 feet
- Proposed building area is approximately 79,000 SF with no single floor exceeding approximately 29,500 SF. Both are less than maximum allowed

Proposed Building Construction

- Proposed Finish Date of Construction: 2017
- Proposed gsf: TBD (approximately)
- Proposed Number of Floors: 3 plus penthouse
 - First Level: TBD
 - Second Level: TBD
 - Third Level: TBD
 - Penthouse: TBD
- Proposed Use: Classrooms, computer labs and faculty offices

A new classroom building will most likely consist of 3 stories of above-grade construction without a basement and with a roof top mechanical penthouse. Proposed construction types are as follows:

For footings and foundations: Based on the soil boring logs in the original building construction drawings it is likely that any new construction can be supported on traditional shallow spread footings. Footings for heated space should bear a minimum of 5'-0" below finished grade, and footings for unheated areas should bear a minimum of 6'-0" below finished grade. Actual soils conditions as well as allowable bearing pressures for foundation design will need to be confirmed by a geotechnical investigation prior to proceeding with design. Foundation walls and below grade basement walls would be cast-in-place (CIP) concrete.

Exterior Walls

Exterior walls above grade would be concrete masonry units (CMU), either 8" or 12" thick depending on overall height of the building and the loads that the walls need to support. The exterior walls would also serve as the primary lateral force resisting system (shear walls) for the building.

Floor Construction

Floors could be constructed with either ordinary reinforced CIP concrete flat slabs, or CIP pan and joist systems, precast concrete hollow core planks supported on precast concrete beams or steel beams, or steel beams with composite steel deck (concrete over metal deck, similar to the existing building). For a CIP floor system supporting columns would typically be CIP concrete. For the precast floor system interior columns would be precast concrete if precast beams are utilized, or steel wide flange (WF) or square tube (HSS) sections if steel beams are used. As an alternative in lieu of a beam and column system the building could be constructed with interior CMU bearing walls, however this allows much less flexibility for future modifications.

Roof Construction

The roof framing selected would depend somewhat on the floor framing selection. Typically for a CIP beam, column and floor system the roof construction would be similar to the floors below. For a precast or composite floor system the roof framing would be steel bar joists with metal deck. The floor area under the roof top mechanical penthouse would be either precast hollow core plank or composite deck.

Penthouse Construction

Exterior walls would be CMU which would support a roof constructed with steel bar joists and metal deck.

Elevator Shafts

The below grade portion of the shafts, elevator pits, would be CIP concrete. Typically these would be constructed on top of a mud slab to allow a water proofing membrane to extend under the base of the pit as well as up all four sides. Above the pit walls would be built with concrete masonry units.

Sitework

- Sitework to include stormwater management and extension/ protection of utilities as required.
- Low maintenance landscaping with selective irrigation shall be provided
- Landscaping palette shall be species appropriate to the north woods and the Bemidji environment.
- A landscaped drop off and vehicular turn-around will be provided
- Truck access to lower Hobson Hall must be maintained.

Architectural Aspirations

The university has expectations that this building reflect a thoroughly modern interpretation of a ‘northwoods’ facility, with fresh application of contextual materials, ample use of daylight, and clarity of plan.

The solution must consider the full range of personal interaction among students and their peers, their faculty, and their environment to establish a student-centered learning facility.

Sustainability

The university is interested in attaining LEED Gold Certification. The building and site must, at a minimum, reflect the university’s signature theme of “Environmental Stewardship,” and include significant evidence of sustainable design practice, materials, and systems.

Proposed Mechanical Systems

Sprinklers

SPRINKLER SERVICE

- A new 6" water line will be brought into the building to provide a fire protection service.
- The building sprinkler riser will be situated in the main mechanical room, and will probably have 2 sprinkler zones, depending on how the floor square footages lay out (max of 52,000 sf per zone, per floor). The service will have a double check valve to protect the potable water supply from the domestic water main.
- A fire department connection will be located along the front of the building, in a location coordinated with the local fire department.

SPRINKLER PIPING

- Fire sprinkler system piping shall be a minimum wall thickness of Schedule 40 as per MNSCU Standards.

SPRINKLER HEADS

- Sprinkler heads shall be upright in exposed spaces. The heads in ceiling spaces will be of the concealed type.

Plumbing Systems (DIVISION 22)

PLUMBING PIPING

- The water service piping from 5' outside the building to the final plumbing fixture is by this contractor. A new 6" water line will be brought into the building to provide a fire protection service. A 4" water line will be brought into the building for the domestic water service.
- Above ground piping - Tubing 1-1/2" size and smaller shall be Type L hard drawn copper. Tubing 2" size and larger shall be Type M hard drawn copper. Soft drawn copper tubing in small sizes may be used adjacent to fixtures and equipment.
- All water piping will be insulated with a minimum of 1" fiberglass insulation.

SANITARY AND STORM PIPING

- All sanitary and storm piping from a point 5' outside the building to the final plumbing fixture is by this contractor.
- The roof drainage will be done via internal roof drainage piping for both the primary and secondary roof drainage system.
- All underground piping will be schedule 40 PVC or no hub cast. All above grade piping will be no hub cast iron pipe. All above grade piping will be allowed to be schedule 40 PVC if the runs are not longer than 35' or in return air plenum spaces.

WATER TREATMENT

- A building wide water softener needs to be installed due to current water quality on the city water,.

DOMESTIC WATER HEATER

- The four gas fired domestic water heaters will be installed in the main Domestic hot water will be provided by a steam to water, instantaneous water heater, similar to an Aerco Water Wizard B+II. Solar domestic water preheat should be considered as an alternative option for the project. A complete building recirculation system will be installed to insure that all of the building plumbing fixtures have available hot water.

PLUMBING FIXTURES:

- All fixtures will piped to allow for individual and room isolation

- valves for servicing.
- Plumbing fixtures will be similar to the following
- Lavatory's – vitreous china with low flow faucets.
- Urinals – wall hung china with battery operated flush valves
- Water Closets – wall hung china with dual water level automatic flush valves
- Water coolers – dual height water cooler with a touch free water bottle fillers in common spaces.
- Sinks – stainless steel of various sizes with gooseneck spouts and wrist blade handles. Low flow faucets will be utilized where possible to minimize water consumption.
- Wall hydrants – regardless if lawn irrigation is installed, wall hydrants will be located at various locations around the perimeter of the building to allow for hose connections every 100-150 feet. Hydrants similar to Woodford B67.
- Hose Bibbs – all mechanical rooms will have hot and cold water hose bibs for maintenance
- Mop basins – 2x2 fiberglass basin with wall mounted mop sink faucets

HVAC Systems (DIVISION 23)

HEATING AND CHILLED WATER PIPING

- All piping for hot water system shall be run level or pitch up toward the end of the piping so that air in the system will move in the direction of water flow. Pitch of mains, where possible, shall be at least 1/4" in 25 feet. Pitch of lines shall be uniform and shall be installed so that entire system can be drained. Eccentric reducers shall be installed wherever pipe size is reduced in direction of flow. Reducers shall be installed with openings up, on top side of pipe to allow air to pass through. Radiation branches and mains fed by overhead mains shall be connected at the supply side through a plugged tee in place of an elbow to permit draining of radiation, branches or mains. Upfeed risers supplying radiators above the supply main shall come off main either from top or side. Downfeed risers supplying radiation below the supply main shall come off the bottom of the supply main.
- All piping for the hot water heating and chilled water cooling system shall be black mild steel pipe, ASA Schedule 40 thickness. Fittings shall be banded black cast iron 125-pound fittings. Grooved piping will be allowed.
- All piping may be Type L hard drawn copper tubing at Contractor's option. Fittings for copper tubing shall be cast bronze or wrought copper solder fittings. All connections shall be made using 95-5 solder. Press fit fittings will be allowed
- The piping will be run in several reverse return loops in the building to allow for partial isolation of the system to keep the rest of the building operational during maintenance of specific equipment or spaces.
- The entire hot water piping system will have 50% ethylene glycol installed in it for freeze protection.
- Currently the campus does not have glycol in the chilled water system. It is recommended to look into a plate and frame, water to water heat exchanger so that the coils in this building could have glycol installed in them. The chilled water piping system should have 35% ethylene glycol installed in it for freeze protection.

HEAT SOURCE

- The system will be connected to the main campus steam and condensate piping loop in the existing connecting tunnel from Bridgemann Hall.

HEAT DISTRIBUTION

- Heating for the building will be done with duplex (redundant) steam to hot water heat exchangers. The shell and tube style heat exchangers will be located in a mechanical room on the first floor. The hot water will then be piped throughout the building to distribute heat.
- Redundant, variable flow heating pumps will be provided for the heating loop in the building.

COOLING PLANT

- Cooling for the building will be connected to the campus chilled water loop located in the connecting tunnel from Bridgeman Hall. The chilled water will be piped up to the new penthouse to provide cooling to the new air handling units. A building chilled water loop pump will need to be provided to allow for adequate pressure and flow. The pump shall be installed with a variable frequency drive to maximize efficiency.

AIR HANDLING UNITS

- The building will be served with two large air handling units located in the new penthouse. The air handling units will be packaged, indoor units. They will consist of at least the following- return fan array, economizer section, MERV 8 filters, hot water heating coil, chilled water cooling coil, final filters, and supply fan array.
- All units will be variable speed drives (VFD's) installed for energy efficiency and variance in air flow based on building demand. This will maximize comfort and minimize operational costs.
- The air handling unit will have the outside air intake and relief air exhaust sized for 100% economizer.

PERIMETER HEAT

- All perimeter rooms will be provided with hot water radiation to supplement the HVAC ducted system for heat. The radiation shall be individually controlled by a DDC thermostat.

TERMINAL DEVICES – VAV BOXES

- The ductwork will have variable air volume (VAV) boxes with hot water heating coils installed throughout the building to provide individual temperature control. The boxes will maximize system efficiency and comfort.

HUMIDIFICATION

- Currently no humidification is planned for the building.

DUCTWORK & DISTRIBUTION

- Ductwork and fittings shall be constructed and supported in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, 1995 Edition with 1997 Addendum except as modified herein.
- Ductwork and fittings shall be fabricated from G60 galvanized steel sheets complying with ASTM A527.
- All exposed ductwork shall be painted.
- All supply ductwork in spaces with ceilings will be insulated with 2" fiberglass insulation.
- All ductwork shall be built to 4" pressure class prior to terminal coils, and 2" pressure class in all other instances.

DUCTWORK ZONING

- Zoning will be provided for each classroom area.
- Offices will be zoned with 4-5 offices per thermostat.
- All zoning will be based on exposure. Interior and exterior rooms, or high heat load vs large open rooms shall not be placed on the same thermostat.

TESTING AND BALANCING

- All water and air systems will be tested by a 3rd part Testing And Balancing (TAB) agency. The TAB contractor will be either NEBB or AABC certified for balancing commercial HVAC and Plumbing systems.

GEOHERMAL HEAT PUMPS

- The inclusion of a geothermal heat pump system in this existing building would be difficult and expensive. The existing heating and cooling plants on the campus have the capacity to handle the building and are efficient both to operate and maintain. A geothermal system would be an entirely different form of heating/cooling than what is currently installed. The installation of a new HVAC system on the campus would also not be economically prudent; there would not be a reasonable return on the investment.

Automatic Temperature Controls (DIVISION 25)

AUTOMATIC TEMPERATURE CONTROLS

- A central, computerized direct digital control (DDC) system will be installed on all HVAC equipment throughout the building. It will be tied into the campus wide controls system for proper energy management. The campus is currently undergoing a campus wide controls study, and this study shall be referred to for controls requirements for this project when it is complete.
- The DDC system will control all heating and air conditioning equipment to allow for automatic temperature control, seasonal adjustments, and maximize HVAC system efficiencies. In addition to controlling HVAC equipment, monitoring of critical air and water temperatures and system operations (fan/pump status), the system shall also alarm all equipment so maintenance personnel can maintain and troubleshoot all equipment.
- Equipment to be controlled and monitored includes:
 - Air Handling Units
 - All Pumps
 - Water Heater
 - Condensate meter on the condensate back to the plant
 - Condensate Pumps
 - Hot water and chilled water piping temperatures
 - Domestic Hot Water Temperatures
 - Sump Pumps
 - Fans
 - Terminal Heating Equipment
 - All thermostats
 - Meter monitoring of all building energy

Proposed Electrical Systems

Demolition

- Existing 5 KV 4160 feeders that are routed into main Electrical Room via tunnel to be disconnected and refeed in new construction.
- Existing 500 KVA transformer, 5 KV switches, and main Fire Alarm Panel to be removed and turned over to Owner.

New Electric Service

- New 5 KV, 4160 volt delta feeders to be extended to new switches via tunnel. (See drawing attached). New 4/0 conductors to be installed in rigid steel 4" conduits with new pull boxes, elbows, etc, as required by codes.
- The feeders are from switch in Stadium, Heating Plant and to Bridgeman.
- New 5 KV feeder conductors will be three 4/0 AWG copper conductors type EPR MV-90 with copper tape shield, 133% insulation, with one #4 AWG THWN copper ground, installed in existing conduits within the tunnel and Birch Hall basement level.
- New 5 KV switchgear will be located in a new main Electrical Room. A new 5 KV switch to serve Hagg-Sauer will be provided to replace the old existing 5 KV switch and sized to serve the new 500 KVA.
- New switchgear will be indoor air-break type with expulsion fuses and open visual gap contacts. Switchgear will contain loop-feed isolation switches. See attached site plan for distances and orientation. See attached switchgear elevation and one-line diagram for proposed equipment layout.
- A new 500 kva dry-type transformer will be provided in the main electrical room serving a new 1600 amp, 208/120 volt, 3 phase 4 wire switchboard with main circuit breaker, digital metering and breaker distribution sections all for 150% growth potential. Transient voltage surge protection will be provided external to the switchboard. Surge arresters will be provided on the primary side of the transformer.
- Panelboards will be modern 42 circuit, 200 amp 120/208 volt, 3 phase, 4 wire, fully-rated, copper bussing, main circuit breaker type panelboards containing 25% spare spaces for future growth, located in each floor electrical room to serve 120/208 volt residence room circuits and corridor circuits. New 200 amp feeders will be provided from the new switchboard. Panels to be located on each level and in lockable electrical closets.
- A 100 amp, 120/208 volt, 3 phase, 4 wire electronic grade panel board with copper bus, oversized neutral bus and integral TVSS (transient voltage surge suppression), fully-rated, main circuit breaker type, will be provided to serve the MDF equipment.
- Power to new HVAC, pumps and elevator equipment will be distribution sections.
- Power distribution equipment will be field-marked with a label containing the available incident energy or required level of Personal Protective Equipment for potential arc flash hazards per NFPA 70E.

Emergency Power Distribution

- Emergency power from the campus 1,250 KW, 4.16 KV diesel generator is routed through this building but does not serve any loads in the building.
- New 5 KV emergency feeder to be provided from existing junction box located in tunnel at ED Arts Building.
- Tap the existing 5 KV emergency feeder with a new 1/0 AWG, copper, 5 KV, MV-90, 133% insulated feeder with a #4 AWG 600 volt raged ground wire and extend new feeder to main electrical room in 4 inch rigid steel conduit. A new 5 KV, 3 pole, 200 amp rated air-break fused switch will be added to the main electrical room to serve a 75 KVA dry-type, 4160 volt step-down to 208 volts, 3 phase, 4 wire, wye center grounded transformer with copper windings, located in the main electrical room. This transformer will serve a new 200 amp, 208 volt, 3 phase, 4 wire, fully-rated, copper bussed auxiliary power distribution panelboard with a main circuit breaker to serve selected mechanical equipment to keep the residence hall heated in the Winter.
- The building will contain a 200 ampere, 3 pole, automatic transfer switch to distribute engine-generator source backup power to heating system hot water circulation pumps, condensate return pumps, and other auxiliary standby type loads. Connection to existing generator at heating plant to be included for start-up.
- The building will contain a 200 amp fully-rated, 208 volt, 3 phase, 4 wire, copper bussed panelboard with main circuit breaker for distributing auxiliary standby power to heating system loads within each wing, and to the IT closet voice and data switch equipment for powering security cameras and electronic door access controls via data cables.
- **The 75 KVA** step-down transformer noted above will also serve new 100 ampere, 208 volt, 3 phase, 4 wire, fully-rated, main circuit breaker, copper bussed emergency power panelboard fed from a new 100 ampere, 3 pole automatic transfer switch. Emergency power panelboard will serve emergency power loads such as egress and exit lighting within the building.
- Automatic transfer switches, transformers and panelboards associated with the emergency power distribution system will be sized for 25% future growth.

Branch Circuitry

New branch circuits will be copper conductors, with separate neutral per phase, installed in EMT. All branch circuits will contain a separate copper, insulated green grounding conductor. The steel raceway will not be used as the only ground conductor for equipment grounding purposes.

Duplex receptacles will be specification grade, 20 ampere rated, and GFI rated where located next to sinks, wet areas, and exterior areas. Stainless steel device plates to be used.

Lighting

Exterior Lighting

- New LED type post lights to be provided for new sidewalks. All wall and post top fixtures to have sharp cut-off type distribution.
- Lighting at entry canopies will be with modern recessed LED fixtures controlled by campus EMS.

Interior Lighting

- New energy-efficient lighting will be provided throughout. General lighting will be provided by volumetric style light fixtures utilizing 28W T8 lamps. Energy efficient program start ballasts will be provided. Lighting levels will be designed according to Illuminating Engineers Society (IES) guidelines and recommendations.
- New LED fixtures will be provided for use as general illumination and emergency egress lighting. All exit lights to be LED type.
- Selected interior fixtures will be connected to life-safety generator circuits to provide the code required emergency egress lighting.
- Occupancy sensors will be provided for the control of lighting in all classrooms, offices, utility, storage, and accessory spaces. Corridors will either be controlled on a time of day schedule or by occupancy sensors. Electrical and mechanical rooms will be provided with line voltage switches where automatic control of the lighting would present a danger to individuals working in the space. In addition to occupancy control, photosensors will be provided at strategic locations to turn off the lighting sources in rooms that receive adequate lighting from daylight.

Utilities

The campus has a single main electrical service from Ottertail Power. The campus has a large emergency generator that is capable of handling the campus load. Interruptible natural gas is purchased for use in the heating plant and firm natural gas is used for miscellaneous loads including kitchens.

Electronic Safety and Security

Fire Alarm

- A new Simplex 4100ES addressable main panel to be provided.
- Alarm and trouble contacts, including sprinkler flow and control valves, will interface with the 4100ES and annunciate to the campus central station for monitoring purposes via fire alarm network.
- Non-security corridor doors will be fitted with magnetic door holders connected to fire alarm system to close upon alarm.
- Duct smoke detectors will be provided for all AHU's and fire/smoke damper operations.
- Area type photo-electric smoke detectors will be provided in elevator lobby for signaling the elevator recall and for fire alarm.
- Visual and audio signal alarm indicating appliances will be provided throughout the building.
- All wiring will be installed in red conduit.

Door Security System

- Existing Conditions: The exterior doors are not electronically controlled with card reader.
- Main entry exterior doors, Electrical, MDF / IDF rooms and mechanical rooms will be electronically controlled with card reader hard wired in conduit via campus-wide access control system maintained by Simplex Grinnell. Exit exterior doors will be electronically monitored for position.

Video Surveillance Camera System

- Multiple CCTV cameras to be provided on the building to view the entries and parking lot activities. The system utilizes American Dynamic cameras connected via internet protocol to campus central security.

New Call Systems

- The “informer” mass notification system to be provided into the building with the addition of an antenna, receiver, Federal Signal encoder and supervised amplifier with backup power for receiving a wireless signal from the main security office in Walnut Hall and transmitting the notification throughout the building via hard-wired speakers located throughout the corridors, tunnels, mechanical rooms, and gathering spaces, all to match the emergency mass notification system being installed elsewhere on campus. Amber strobes shall be used to signal the difference between the fire alarm and notification systems. Strobes to have the word “alert” on lens.

Communications

- The building will be provided with a structural cable system (backbone) from the MDF communication closets (IDF) and station cables to voice/data outlets for present needs and future expansions and modifications. The voice and data station cables will be copper CAT 6 compatible with the campus standards, installed and terminated per the BSU Communications Wiring Standard, all by the contractor.
- Data outlets will be provided in all offices, conference rooms, assembly areas, and where necessary to meet space program requirements. Communications room infrastructure and associated hardware, cables and termination devices will be provided by the contractor. All conduit stub ups will run from room outlets to the cable tray and will be 1 inch minimum.
- Horizontal data cables will be extended to outlets throughout the building with four 24 AWG UTP CAT 6 cables per communication outlet routed via wire basket type cable tray in the hallways and then with 1 inch conduits to the respective outlets, all per the BSU Communications Wiring Standards.
- Digital Voice service will be provided via VOIP over the data cables extended to outlets throughout the building routed via conduit cable tray as described above. Analog voice service will be provided to about 12 locations including in elevator cabs, offices emergency phones, and fax outlets via 24 AWG UTP CAT 5E cables routed directly from the MFD/IDF rooms.
- Video and multimedia cables will be coaxial standard RG-6 type extended from MFD closets to IDF closets to communication outlets requiring video and/or multimedia services, all per the BSU Communications Wiring Standards.
- A wire basket type cable support system will be provided by the contractor on each floor with the corridors routed to the IDF closets for routing and support of data and voice cables, per the BSU Communications Wiring Standards.
- 1 inch steel raceway and steel outlet boxes will be provided from room communication outlets to the wire basket type cable support system by the contractor for all communications cables, per the BSU Communications Wiring Standards.
- All voice/data outlets will be as manufactured by Panduit per the BSU Communications Wiring Standards.
- At new MDF room contractor to provide four (4) 19" floor racks with wire management, 48 percent patch panels to be provided for termination of all cables. IDF rooms to have two (2) 19" floor racks.
- A new single mode 48 strand armored type Fiber Optic cable to be provided from MDF at Bridgman Hall to new MDF room. An Additional 50 pair copper distribution cable to be provided for analog voice lines.
- New Fiber Optic distribution cables and copper lines to be included for connection from MDF to IDF racks.

Recommended Sustainable Design Strategies

Environmental stewardship is a key priority of Bemidji State University, as evidenced by its inclusion as one of the three core institutional values. To this end, the President's signing of the American College and University Presidents' Climate Commitment led to the completion of an initial Greenhouse Gas Inventory and Climate Action Plan for the campus.

Reduction in campus size and replacement of selected facilities creates a great opportunity for energy conservation and sustainable design at Bemidji State University. Demolition or complete renovation of a 1969 building with a high FCI value will eliminate a number of issues, from outdated windows and HVAC systems, to poorly designed stormwater management strategies and ventilation systems. With new construction and significant remodeling, high efficiency heating, cooling, ventilation, and lighting systems should be used to reduce energy consumption and long-term costs while increasing comfort of students, faculty, and staff. Initiatives which will be taken to achieve this goal include:

Passive Strategies

Pursue passive strategies first and early in the design process:

- Site and mass of the building to maximize heat gain from the winter sun and minimize exposure to cold northwesterly wind.
- Maximize daylighting opportunities.
- Locate major entrances and openings to optimize exposure.
- Select exterior envelope materials and assemblies which offer the optimum balance of energy performance and life cycle material/operation/maintenance costs.
- Specify a minimum of R20 walls and R35 roof.
- Orient the building to provide views to the lake from as many spaces as possible.
- Install pervious paving in non-truck traffic areas.

Energy Efficiency

Choose efficient fixtures and appliances:

- Light fixtures, lamps and ballasts in conjunction with motion and daylight sensors where feasible and beneficial.
- Task lighting where applicable.
- Energy Star appliances where applicable.
- Laptop computers over desktop computers.

Choose the most energy efficient HVAC system, possibly including:

- Radiant Floor Heating.
- Heat recovery systems.
- Solar hot water system.

Research energy conservation incentives with utility providers (Ottetail).

Materials

Investigate the inclusion of recycled and/or low v.o.c. materials:

- Steel and other metals
- Paint
- Carpet tiles / floor mats
- Plastics
- Countertop surfacing materials

Recycle 95% of concrete, steel & masonry from demolition.

Energy Consumption

The Bemidji State University Climate Action Plan identified energy conservation as the number one strategy for reducing campus carbon emissions. New construction will be designed to use at least 40% less energy than Code. While a 60% reduction from the average 2005 building is currently mandated by the MN Sustainable Building Guidelines (B3), buildings designed after 2015 will need to reduce energy consumption by 70%.

The efficiency of a building as a whole is measured in Energy Use Intensity (EUI) with the units of kBtu/SF/year. The existing Hagg-Sauer building had a relatively low EUI in the past twelve month period of 59 kBtu/SF/year. However, this is much lower than the period from March 2008 through early 2010, in which the steam consumption was nearly double. The chart below, taken from the B3 Benchmarking site, illustrates steam consumption in gray below. The dotted line shows weather-normalized expectations for building consumption based on the 2009 benchmark year. Further exploration is needed to determine if there is some error in the data or if building operations have changed significantly.

Hagg-Sauer Hall - Consumption Report

8/10/2012

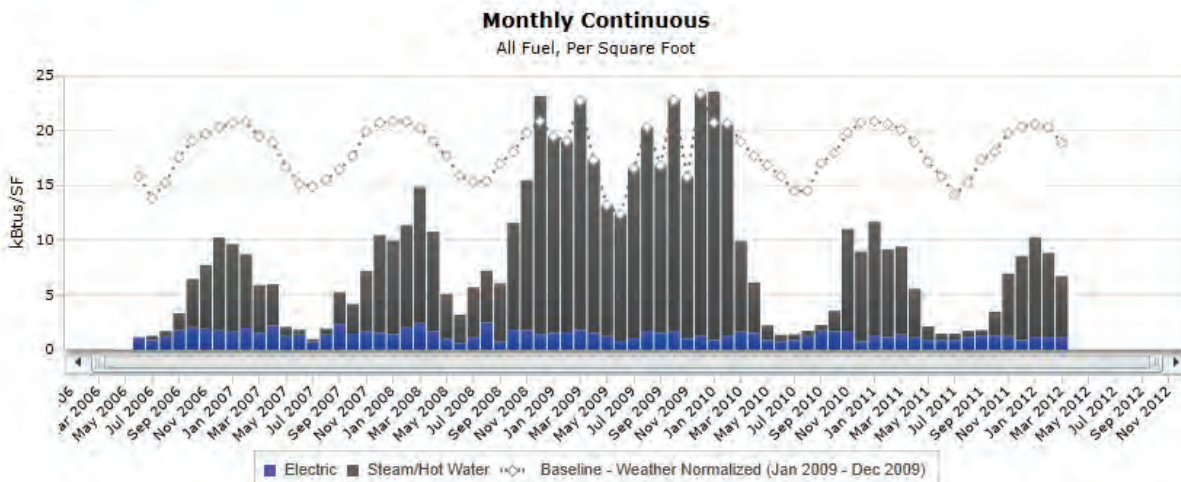
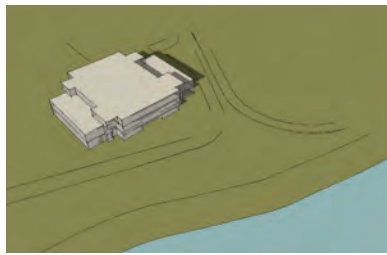


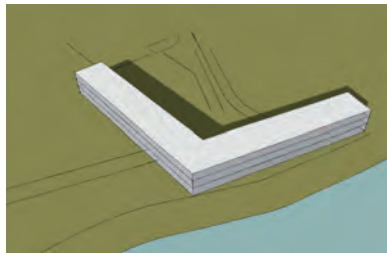
Chart from B3 Benchmarking Site

There is a possibility that the low energy consumption is due to an average percent of window coverage of 10%, much lower than the percentage necessary to allow plentiful daylight in to the building and enable occupants to look out towards views of nature. Daylight and views of nature, even as simple as a tree, are significant factors in health, productivity, and student success.

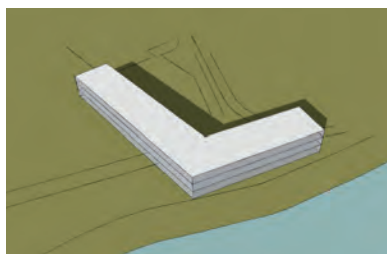
In the design of a new building, the initial siting and massing of the building is crucial to its ability to attain a 70% reduction. To this end, LHB performed an analysis of five potential massing and orientation options for a new building. The software used provides a rough overview of expected energy use based on building use and schedule, orientation, HVAC, and envelope characteristics. The results of six trials and their relationship to a modeled version of the existing building are shown on the following page.



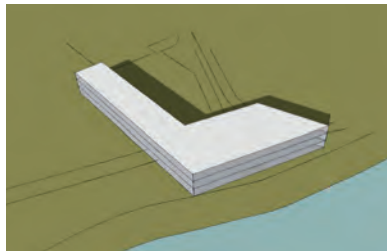
Option A



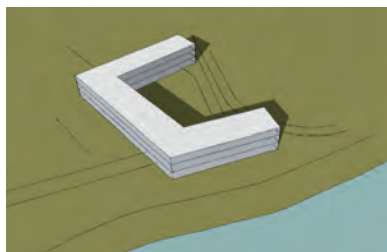
Option B1



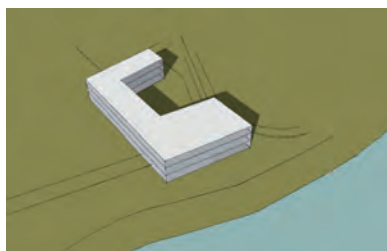
Option B2



Option B3



Option B4



Option B5

Existing	Option A	Option B1	Option B2	Option B3	Option B4	Option B5
	Re-skinning existing	50' Wide Bended Bar	60' Wide Bended Bar	50' Wide + 90' Wide Bended Bar	50' Wide U	60' + 90' Wide U
59 kBtu/SF/year	80%	86%	80%	80%	86%	81%

This analysis suggests that while a building 50' in width allows for plentiful daylighting and a reduction in energy used for light, it is not the most energy efficient for this area. The principal energy consumer in this Northern Minnesota climate is space heating. Therefore, building designers should focus on minimizing the area of the envelope, balanced with allowing enough glazing for appropriate daylighting and views to the lake.

In this case, Options B3 and B5 appear to be the best balance between energy efficiency and daylight/lake views. A modified version of B3 was chosen.

Embodied Energy

Operation energy, shown above, is a critical component of the overall carbon footprint of the building, but embodied energy also plays a role. Embodied energy is the energy that the building consumed to construct combines with the energy used to produce and ship the materials that make up that building. Using Athena software, LHB estimated that the existing building structure contains about 22 million kBtu of energy. Option A, reusing the existing structure, would conserve the energy embodied in the steel and concrete but lose the energy embodied in the envelope. Options B or C, demolishing the entire existing building, would lose all the embodied energy. However, this is offset by the reduction in operating energy over the lifespan of the renovated or new building. See chart below.

	Existing	Option A	Option B	Option C
Embodied Energy	22 million kBtu	22 million kBtu	22 million kBtu	22 million kBtu
Demolition Energy	N/A	TBD (less than B/C)	TBD (more than A)	TBD (more than A)
Energy Use Intensity	59 kBtu/SF/year	30-50 kBtu/SF/year	30-50 kBtu/SF/year	30-50 kBtu/SF/year
40 Year Energy Consumption	193 million kBtu	99-160 million kBtu	99-160 million kBtu	99-160 million kBtu

Renewable Energy

In order to reduce the impact on the environment, reduce the carbon footprint of the Campus, and meet the requirements of Minnesota State Statute 16B.32, the feasibility of using alternate energy sources should be considered. Additional information on the following systems and technologies can be found at the U.S. Department of Energy website for Energy Efficiency and Renewable Energy (<http://www.eere.energy.gov>).

Biomass Energy

The Bemidji State University Climate Action Plan analyzes several renewable energy options and recommends the use of biomass to produce thermal energy, electricity and chilled water. Please see the 2011 report for more details.

Geothermal Energy

A geothermal heat pump system is a heating and/or an air conditioning system that uses the Earth's ability to store heat in the ground and water thermal masses. These systems operate based on the stability of underground temperatures: the ground a few feet below surface has a very stable temperature throughout the year, depending upon location's annual climate. A geothermal heat pump uses that available heat in the winter and puts heat back into the ground in the summer. The two main types of systems include wells and horizontal loop systems. Wells are more compact, but tend to be less efficient and more costly than a loop system. Using nearby Lake Bemidji as a heat sink would be a possibility as well, although previous discussions with the DNR rejected that option. The proposed facility is currently connected to the centralized campus power plant distribution system and can easily accommodate the expanded energy demands created by this project. Therefore, geo-thermal is not economically viable.

Photovoltaic Panels

While the use of photovoltaic panels can help reinforce the institution's commitment to sustainability, the initial investment is cost prohibitive for wide scale application for this project. As the price of photovoltaic panels continues to fall and their efficiency continues to rise, the building should be made "PV-ready" to minimize costs of installation when the technology becomes feasible. Consideration should be given to using PV for demonstration purposes, since the required scale of an installation with significant power generation would be very large and impractical.

Wind Power

Capturing wind power involves installing tall turbines to take advantage of the wind speeds at elevated heights above the ground plane. In general, wind turbines are best suited for rural areas with consistent and unobstructed winds. Small scale building mounted systems could be installed, but would not provide significant power to greatly affect energy performance for the building. This technology may be a good demonstration project, but high initial costs may be prohibitive for a significant installation to reduce dependence on the traditional power grid.

Minnesota Sustainable Building Guidelines

Since 2004, all new Minnesota State Colleges and Universities projects funded with state bond money must follow The State of Minnesota Sustainable Building Guidelines and submit documentation both to MnSCU and the Center for Sustainable Building Research. The original legislation set forth the following goals:

- Exceed the energy code in effect in January 2004 by at least 30 percent
- Achieve lowest possible lifetime costs for new buildings
- Encourage continual energy conservation improvements in new buildings
- Ensure good indoor air quality
- Create and maintain a healthy environment
- Facilitate productivity improvements
- Specify ways to reduce material costs
- Consider the long-term operating costs of the building including the use of renewable energy sources and distributed electric energy generation that uses a renewable source of natural gas or a fuel that is as clean or cleaner than natural gas.

The B3 Guidelines are divided into the following sections: Performance Management, Site and Water, Energy and Atmosphere, Indoor Environmental Quality, and Materials and Waste. Each area lists Required Guidelines and some have Recommended Guidelines as well. Attempts have been made to relate the B3 Guidelines to other national standards, such as the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED®), while keeping sustainable goals regional in nature.

In 2008, the legislature expanded the scope of the sustainable building guidelines to include not only new construction, but also major renovations. Major renovations are defined as any renovation greater than or equal to 10,000 GSF or the complete replacement of the mechanical, ventilation, or cooling system of a building or a section of a building. This expanded applicability applies to all major renovations receiving funding from the bond proceeds fund after January 1, 2009. A complete list of the current Guidelines and the associated workbook can be found at www.msbg.umn.edu.

5

Financial Capital Expenditures

Appropriations (Preliminary)

	2014	Suggested 2016	Preliminary 2016 (LO)	Preliminary 2016 (HI)
Design Fees	\$750,000		\$375,000	\$425,000
Project Management	\$250,000	\$240,000	\$225,000	\$250,000
Construction				
Building		\$7,000,000.00	\$10,730,000	\$12,690,000
Site		\$500,000	\$450,000	\$500,000
Demolition		\$250,000	\$450,000	\$500,000
Contingency		\$750,000	\$800,000	\$900,000
Construction Management		\$480,000	\$700,000	\$800,000
Art		\$80,000	\$100,000	\$100,000
Occupancy		\$700,000	\$625,000	\$700,000
Total	\$1,000,000	\$17,000,000	\$14,455,000	\$16,865,000

* Budget costs for new university classroom facilities ~ approximately \$275 - \$300/SF

** Budget costs for renovated university classroom facilities ~ approximately \$100 - \$125/SF

Cost Plan - Option X

The following details the expected project costs for the New Hagg-Sauer Hall. Note funding for design was secured in 2014 while construction funding will be sought in 2016.

AGENCY CAPITAL BUDGET REQUEST
Fiscal Years 2014-2017
Dollars in Thousands (\$137,500=\$138 thousand)

TOTAL PROJECT COSTS	Project Cost All Prior Years	Project Cost FY 2014-15	Project Cost FY 2016-17	Project Cost FY 2018-19	Project Cost All years	Project Start	Project Finish
All Years and All Funding Sources						Start (mo/yr)	Finish (mo/yr)
1. Property Acquisition							
1a) Land, Land and Easements Options							
1b) Buildings and Land							
SUBTOTAL							
2. Pre Design (.5% of total project cost)							
SUBTOTAL							
3. Design Fees (7-10% of construction costs)							
3a) Schematics (20% of design fee)							
3b) Design Development (25% of design fee)							
3c) Contract Documents (30% of design fee)							
3d) Construction Administration (25% of design fee)							
SUBTOTAL							
4. Project Management (6-8% constr. costs)							
4a) State Staff Project Management (.8% total project cost)							
4b) Nonstate Construction Management (2-3% total project)							
4c) Commissioning (.5% of construction cost)							
4d) Testing/Quality Assurance (1% construction cost)							
SUBTOTAL							
5. Construction Costs							
5a) Site and Building Preparation							
5b) Demolition/Decommissioning							
5c) Construction (consistent with project construction total)							
5d) Infrastructure/Roads/Utilities							
5e) Hazardous Materials Abatement							
5f) Construction Contingency (6-10% of construction 5c)							
SUBTOTAL							
SUBTOTAL							
6. Art (1% of construction or a maximum of \$100 k)							
SUBTOTAL							
7. Occupancy (4-10% of construction 5c)							
7a) Furniture, Fixtures and Equipment (4-8% of construction)							
7b) Telecommunications - Voice & Data (1% of construction)							
7c) Security Equipment (1% of construction)							
SUBTOTAL							
8. Inflation							
8a) Mid Point of Construction (mo/yr)							
8b) Multiplier (Will be calculated by system office)							
8c) Inflation Cost (Will be calculated by system office)							
9. Other (explain)							
GRAND TOTAL (rounded up to next \$1000)							

Breakdown of Costs by GSF and Space Type

The following details expected construction costs by the type of space and type of construction (new, renovated, or renewed). Note that the costs are only for the building. Refer to previous chart for anticipated site work costs, furnishings, design fees, etc.

CONSTRUCTION TYPE OF SPACE List Major Type of Space (class, office, Lab, mech., etc.)	EXISTING			NEW CONSTRUCTION			RENOVATION			RENEWAL			TOTAL COST (in \$000)	
	Gross Sq. Feet	Gross Sq. Feet	Cost (in \$000)	Cost Per Sq. Foot (in \$)	Gross Sq. Feet	Cost (in \$000)	Cost Per Sq. Foot (in \$)	Gross Sq. Feet	Cost (in \$000)	Cost Per Sq. Foot (in \$)	Gross Sq. Feet	Cost (in \$000)		Cost Per Sq. Foot (in \$)
Classroom														
STEM														
Nursing and Allied Health Labs														
Industrial/Trades/Technology Labs														
Library/LRC/IT/Media & Support Services														
Performing Arts														
Administration and Support														
Student and Support Services														
Student Life and Support														
Faculty and Support														
Food Service and Dining														
Physical Plant														
Other														
Building Envelope														
Building Systems														
Demolition														
TOTAL														



Financial Operating Expenditures

Impact on State Operating Costs

The chart on the following page details the funding sources, debt service payments, and the impact on state operating costs. At this project's debt service peak, along with existing and other projected debt service, the total amount would be below the acceptable 3% limit of the university's operating budget.

Capital Budget Request Chart

AGENCY CAPITAL BUDGET REQUEST Fiscal Years 2012-2017 Dollars in Thousands (\$137,500=\$138 thousand)

CAPITAL FUNDING SOURCES	Prior Years	FY 2014-15	FY 2016-17	FY 2018-19	TOTAL
State Funds:					
G.O. Bonds/State Bldgs					
State Funds Subtotal					
Agency Operating Budget Funds					
Federal Funds					
Local Government Funds					
Private Funds					
Other					
TOTAL					

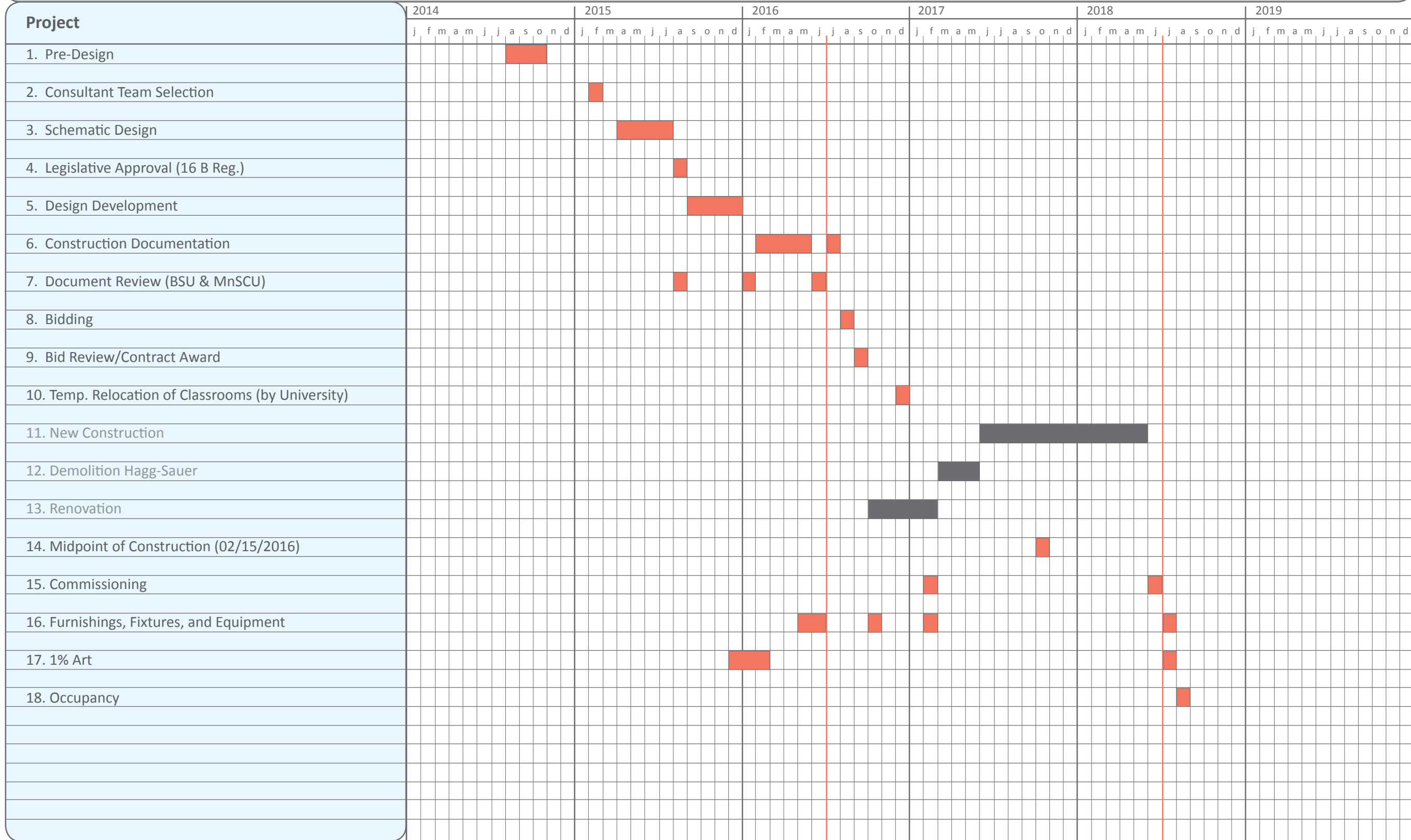
IMPACT ON STATE OPERATING COSTS	Projected Costs (Without Inflation)		
	FY 2012-13	FY 2014-15	FY 2016-17
Compensation - Program and Building Operation			
Other Program Related Expenses			
Building Operating Expenses			
Building Repair and Replacement Expenses (1%)			
State Owned Lease Expenses			
Non State Owned Lease Expenses/(Savings)			
Projected Debt Service Expenses			
Expenditure Subtotal			
Revenue Offsets; attach explanation			
TOTAL			
Change from Current FY 2012-13			
Change in F.T.E.; Personnel			

PREVIOUS STATE CAPITAL APPROPRIATIONS FOR THIS PROJECT (Legal Citations)	Amount
Laws of Minnesota (year), Chapter, Section, Subdivision	

SOURCE OF FUNDS FOR DEBT SERVICE PAYMENT	Amount	Percent of Total
General Fund		67%
User Financing		33%

STATUTORY AND OTHER REQUIREMENTS
Project applicants should be aware that the following requirements will apply to their projects after adoption of the bonding bill

BEMIDJI STATE UNIVERSITY | Academic Learning Center & Campus Renovation Project





Information Technology

Summary of Technology Plan

Bemidji State University recognizes the critical importance of effective technology planning in supporting and achieving the academic goals and mission of the University. BSU believes that an effective Technology Master Plan must:

- Be driven from the goals of the institution in order for technology to be seen as a vital strategic asset and not as a deployment commodity.
- Address the current and future needs of the students, faculty, staff, and community while incorporating instructional, operational and research initiatives.
- Delineate how technology can promote growth opportunities and innovative ideas rather than focusing solely on operational efficiency or expansion of current services.
- Be a collaborative, cross-institutional effort with top-level sponsorship and support.
- Involve more than aligning IT with institutional goals. It must support and achieve these goals using technology.
- Be a continuous cycle of planning, implementing, and reviewing.

The Technology Master Plan addresses three categories of technology initiatives: Enhancing Teaching and Learning Environment, Improving Administrative Functions, and Advancing the Technology Environment. For additional information about each of these areas, refer to the complete Technology Master Plan.

Classroom Information Technology

As part of this project, a number of new classrooms and labs will be created requiring various levels of technology. These include:

- General Classrooms
- Computer Classrooms
- Computer Labs

It is proposed that the above spaces include typical “smart” classroom technology including a digital projector, internet connectivity, dual and/or dimmable lighting system, sound system, DVD/VHS players, and projection screen. In addition, a select number of classrooms may include instructor presentation computers and electronic visual presenters, such as “Elmos”.

Option A – New Mechanical Penthouse on existing roof

We have done a preliminary limited structural evaluation to determine if the existing building is capable of supporting the added weight of a new roof top mechanical penthouse. We have based our calculations and analysis on a set of preliminary structural plans for the building which was constructed in 1969. The preliminary plans are not complete and as such we have had to make several assumptions regarding the construction of the floor slab, materials used for the original construction, and capacity of soils below the footings. The assumptions that were made are based on the most common materials and construction techniques that were in use in 1969.

If a final set of plans for the building can be located we can verify our assumptions and update our analysis and findings as needed. Additionally in order to determine probable loads associated with a new penthouse we have assumed the future penthouse construction. Assumptions are noted below.

Assumptions:

1. Material Properties:
 - a. Steel Yield Strength: $F_y = 36,000 \text{ PSI}$
 - b. Concrete:
 - i. Footings: $F_c' = 3000 \text{ PSI}$
 - ii. Framing Members: $F_c' = 4000 \text{ PSI}$
 - iii. Slabs: $F_c' = 4000 \text{ PSI}$
2. Normal Weight Concrete
3. Slab Construction: 5 1/4" total thickness (noted on plans) 3 1/4" concrete over 2" composite steel deck
4. Allowable Soil Bearing Pressure: 2000 PSF 1
5. Future penthouse construction: Steel frame with metal deck over bar joists for the roof framing, and metal wall panels for the exterior skin. Columns for the new penthouse to be located directly over existing building columns.
6. Beam to beam and beam to column connections: Beam connections are not shown in the original plans. Typically the connection design is done by the steel fabricator and not by the engineer of record. The original plans do indicate the loads that were to be used for connection design and we have assumed that the connections do not have excess capacity above those indicated loads.

Note 1 - The preliminary plans include the soil boring logs from the geotechnical investigation that was done when the building was constructed. The assumed allowable soil bearing pressure is based on our review of these logs along with calculations of the actual loads that they need to support. This will need to be verified by a geotechnical engineer. The existing structure is not capable of supporting the added loads of a roof top mechanical penthouse. The added loads include not just the weight of the penthouse structure and mechanical equipment, but added snow loads due to drift accumulation around the penthouse.

The roof deck, purlins and girders are capable, based on the above stated assumptions, of supporting the added weight (equipment and snow drifting) associated with a new penthouse. The existing beam to beam and beam to column connections, the columns that support the roof and the second floor, as well as the existing footings are not capable of supporting the added weight.

The existing structure could be modified to support the added weight. This would involve reinforcing the steel columns, increasing the capacity of the beam connections, and increasing the bearing capacity of the affected footings. Possible methods for reinforcing the structure are noted below.

1. Steel Columns: The existing steel columns are wide flanged (I) shaped sections. The most common method for increasing the capacity of wide flanged sections is to weld steel cover plates to both flanges of the columns. Plates would extend the entire length of the columns supporting the 2nd floor and roof.
2. Beam to beam and beam to column connections: Reinforcing methods will vary depending on the original connection design which will need to be verified in the field. Typical methods may involve adding welds between bolted connection plates to supplement the capacity of the bolts, or adding new beam seats to the columns to support the beams. Beam seats are usually either steel angles or steel Tee sections welded to the columns that support the beams.
3. Footings: The soil boring logs indicate that the in situ soils are sand with a thin surficial layer of clay or silt. The clay and silt were mostly likely stripped away prior to footing placement. Reported blow counts (standard penetration tests) varied, indicating that the sands range from loose to medium dense. We do not know if any soil corrections were made for the original construction. This sandy soil may lend itself to being reinforced or under pinned with chemical injection grouting. This is a process where chemicals, such as sodium silicate are injected into the soils under high pressure, the chemicals bond with the existing soil particles forming a dense mass, similar to sand stone, thereby increasing the bearing capacity of the soils below the footings. This is a minimally invasive procedure only requiring several small holes through the existing footings for the injection pipes. Underpinning methods and feasibility will need to be verified by a geotechnical engineer and a specialty underpinning contractor.

The existing beams and beam connections are currently covered with spray fire proofing, in order to evaluate the connections as well as make structural modifications the spray fire proofing will need to be removed. Once modifications are completed the fire proofing will need to be reinstalled. Fire rated wraps and coverings on the columns will also need to be removed and then reinstalled after structural modifications are completed.



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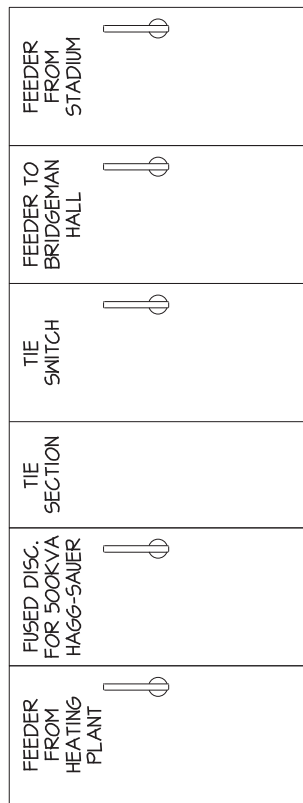
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Project Name:
**BSU Hagg-Sauer
Classroom
Building**

Project Location:
Bemidji, Minnesota

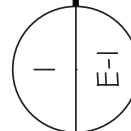
Project Information:
Project No. : 2012154
Drawn By : HC/ BML
Checked By : AAB
Date : 10/04/12
File Name: Risers.dwg

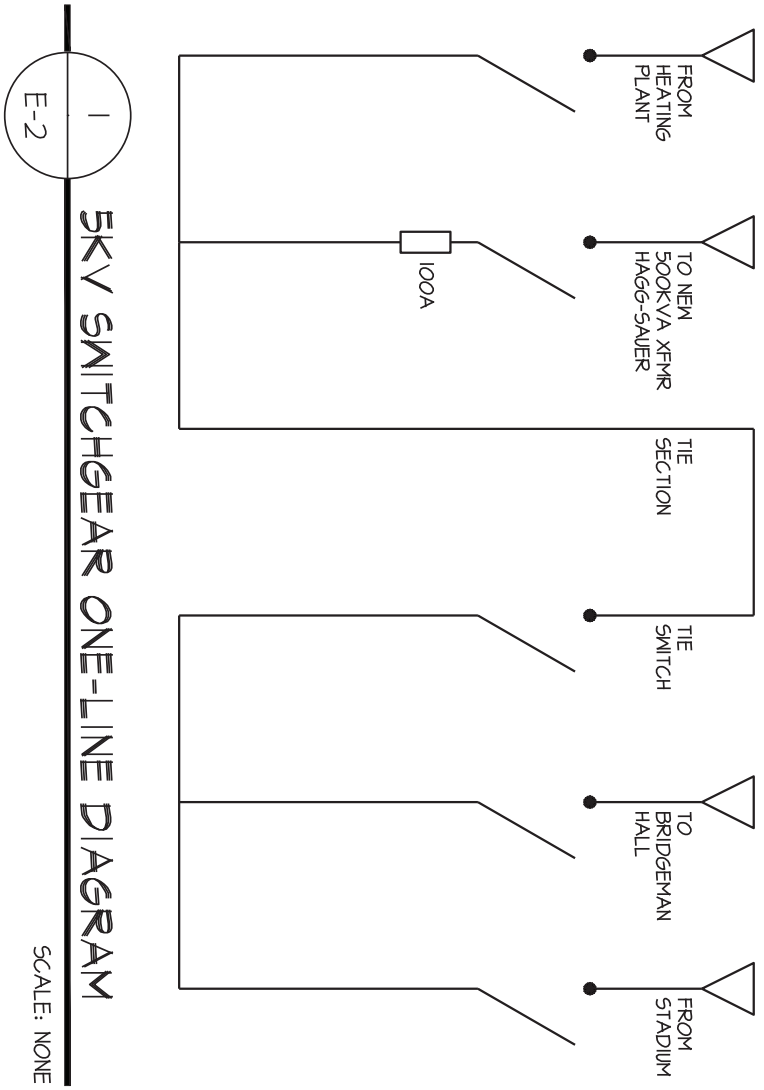
Sheet Number:
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PROPOSED 5KV SWITCHGEAR ELEVATION

SCALE: NONE





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Project Name:
**BSU Hagg-Sauer
Classroom
Building**

Project Location:
Benidji, Minnesota

Project Information:
Project No. : 2012154
Drawn By : HC/BML
Checked By : AAB
Date : 10/04/12
File Name: Risers.dwg

Sheet Number:

E-2



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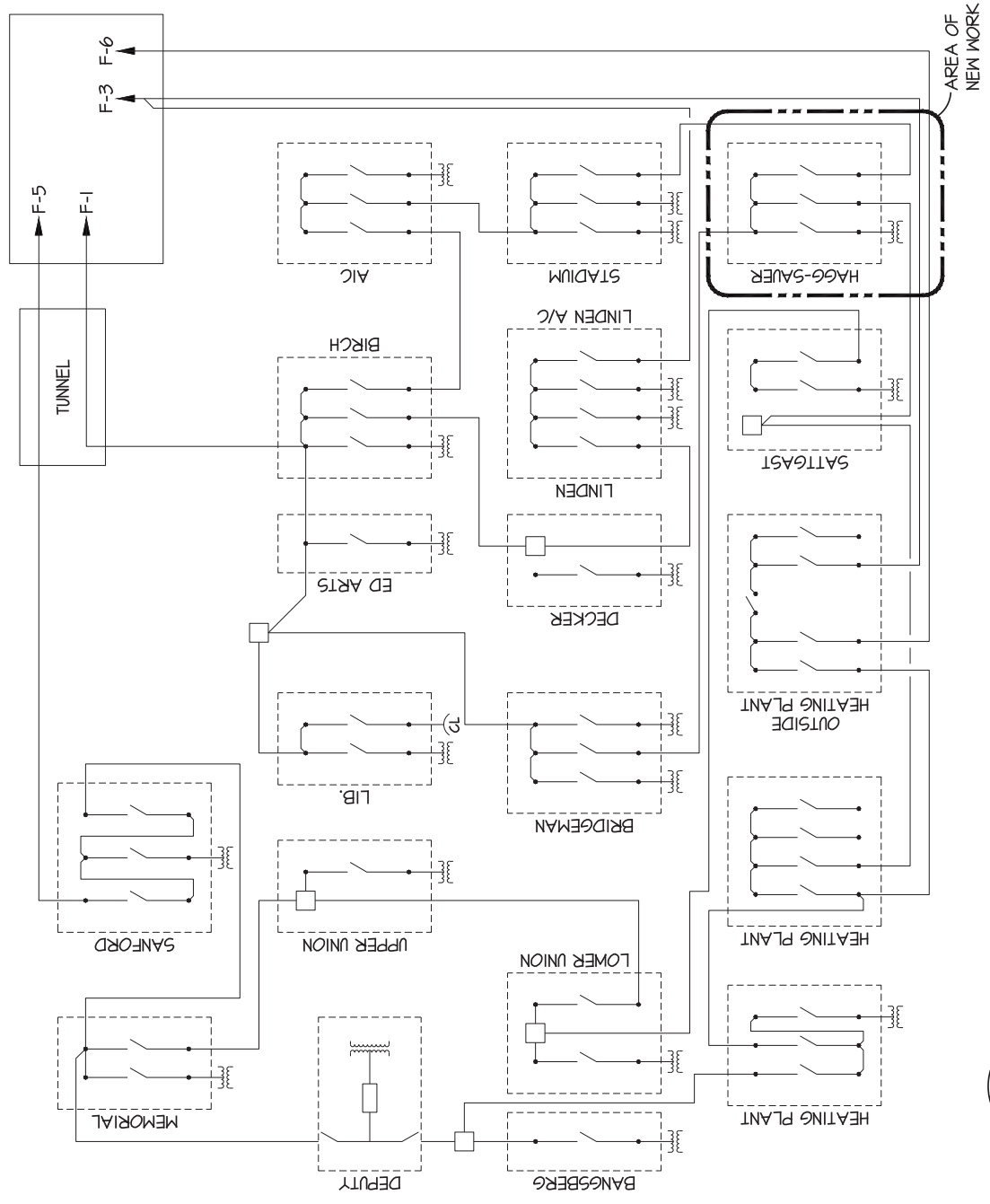
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Project Name:
BSU Hagg-Sauer Classroom Building

Project Location:
 Bemidji, Minnesota

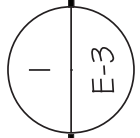
Project Information:
 Project No. : 2012154
 Drawn By : HC/ BML
 Checked By : AAB
 Date : 10/04/12
 File Name: Risers.dwg

Sheet Number:
E-3



EXISTING CAMPUS ELECTRICAL DISTRIBUTION RISER

SCALE: NONE





Campus Gateway



Southwest entrance



quad and sidewalk leading to Southwest entrance



quad between Hagg-Sauer and Bridgeman



looking East from South side of building



staining at soffits



rust and dirt stains on precast concrete



uneven gap between sash and frame



chipping on brick corner



cracks in exterior first floor soffits



tiered classroom seating



auditorium



sagging ceiling tile



non-ADA compliant door at restrooms



typical non-ADA compliant stall

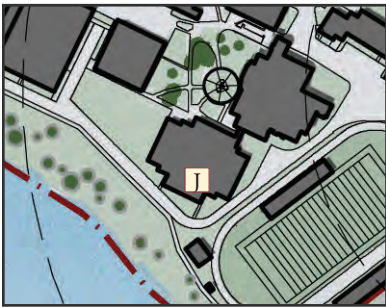


sump in basement constantly draining water

Hagg-Sauer Hall

Fast Facts:

Letter on Key Plan	J.
Building Number	070S1570
Building Use	Academic
Year Built	1970
Building Size	82,478
Number of Floors	3
Current Replacement Value	\$22,157,000
Backlog of Repairs Value	\$5,933,000
Current Facility Condition Index (FCI)	0.27
5 Year Renewal Forecast	
5 Year Facility Condition Index (FCI)	



Keyplan



Exterior View



Tiered Classroom



Typical Corridor



Study Table in Corridor



Faculty Lounge



Department Office

Hagg-Sauer Hall (cont.)

Space Utilization Summary:

- Seat Usage Percent: 53%
- Hours Usage Percent: 90%
- Building contains general use classrooms, a large tiered lecture hall, computer labs, faculty and department offices.

Condition Summary:

- Interior finishes are nondescript and dated.
- Elevator is undersized.

Structural System:

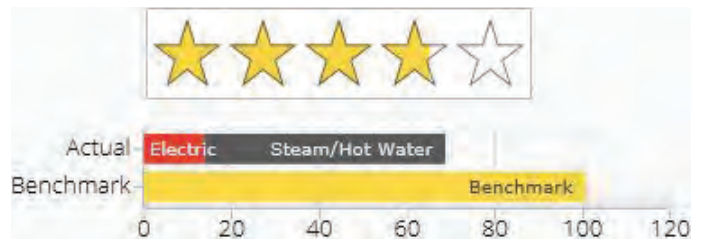
Technology Considerations:

Current HEAPR Requests:

Additional Comments:

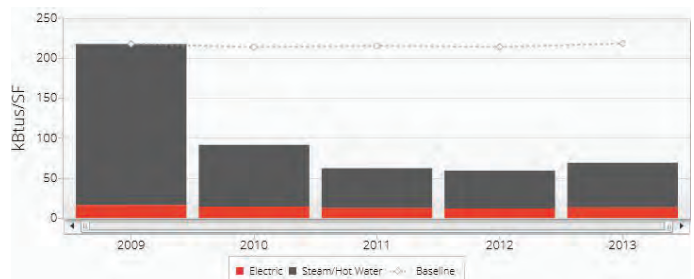
- Directional signage is lacking.
- There is a lack of student lounge and study space.

Energy Use Intensity (EUI) & B3 Benchmarking Benchmark



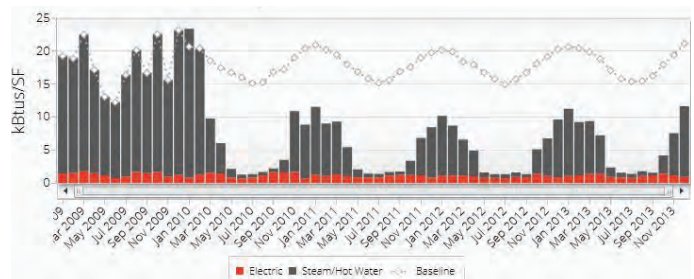
Annual EUI

Per square Foot, Weather Normalized



Monthly Continuous EUI

Per Square Foot, Weather Normalized



Exterior

- The brick masonry veneer is in good condition with no expansion/contraction cracks observed, which is surprising given the very few and widely spaced control joints. There is some brick chipping and concrete parging flaking at grade in a few locations, chipping at high traffic corners from grade up a couple of feet and some brick discoloration at the projected soffits. Some minor cracks were observed in the mortar joints. Brick lintels at windows were in good condition exhibiting little rust. Weeps were visible and/or mostly visible at lintels, window sills, below precast concrete sloped sills and at grade where the wall transitions to the concrete foundation walls.
- The precast concrete exposed aggregate projected soffits panels are in generally good condition. There is a good deal of staining on a couple of sides and a few rust spots.
- The soffits under the projected panels are in poor-to- good condition. There is significant staining. It is unclear if or how much is water staining versus removal of items, such as hornets nests. Joints between panels both vertical and horizontal have opened up that allow free passage of insects and wind-blown debris.
- Soffits at the first floor level and the skyway to the adjacent building have numerous cracks ranging from hairline radiating out from light fixtures to wider separation in other areas.
- Windows are original and were originally made to open judging by the size of the gap between the sash frame and window frame. The drawings appear to indicate a tilt-turn function. The windows may have been fastened shut over time so that they no longer operate. The gap between the sash and the frame is uneven. It is unclear whether this was a design feature, a function of fasteners or aging of the windows or whether the gaps results in infiltration at their widest point.
- Sealants are in need of replacement at the brick control joints and pre-cast concrete projected soffit panel joints because they have dried, shrunk and cracked.

Interior

- The basement is under only part of the building and houses the mechanical equipment. It is always wet and has been retro-fit with drainage trenches, sump and sump pump. It is not a suitable environment for the mechanical equipment.
- All the restrooms have been partially remodeled to provide some accessibility. However they do not meet current ADA or MNSBC guidelines. The restroom doors do not meet the requirements of an accessible route when exiting because the latch side clearance is inadequate. Without moving walls there is no way to make the door accessible
- There is one elevator. Its configuration and size do not meet current ADA or MNSBC guidelines.
- Most classrooms are generally in good condition with appropriate multi-media apparatus and teaching stations. Classrooms with changes in level do not meet current ADA or MNSBC guidelines.
- Offices are generally in good condition. Office size is varied and many are without windows.

-
- Floor finishes are in various stages of wear and tear depending upon when they were last replaced. Some floor tiles were 9"x9", which frequently means they date from a time when vinyl asbestos floor tile was still installed. Wall paint throughout is generally in good condition. Suspended acoustical ceiling panels are in fair to good conditions. Some rooms had visibly sagging tiles.
 - There is gypsum wall board covering portions of the top floor concrete masonry block walls. The covering was added after the 1986 asbestos abatement due to linger moisture issues from that work that damaged the painted block surfaces.
 - The building footprint is more or less square with a lot of program area at the center of the building where there are no exterior windows. The second floor, and more so the third floor, have many interior corridors and offices arranged in a cell-like format that can be disorienting and claustrophobic. The lighting is original, though the fixtures have been updated with new ballasts and more efficient florescent tubes. The fixture density is unchanged resulting in lower illumination levels than contemporary standards. This along with relatively few windows and the warren-like nature of the center of the upper two floors make the facility darker with a less vibrant environment.

Means of Egress

- Two stairs from each floor are required. Five are provided
- Two stairs from the basement are required. Two are provided.
- 50% of exits are required to discharge to the exterior. None of the stairs discharge directly to the exterior.
- Existing stair guard rails are not compliant

Accessibility

- There is no accessible route connecting all areas of the building because the elevator is too small and is missing other accessibility features.
- Interior doors do not have lever handles as required for doors on an accessible route.
- There need to be accessible restrooms on the accessible route. None of the restrooms are accessible because clearances at water closets are inadequate and the door leaving the restrooms do not meet the requirements of an accessible route.
- There needs to be an accessible drinking fountain on an accessible route. None of the drinking fountains are accessible.
- Primary lecture all is not accessible because the main aisle exceeds 1:12 maximum slope and the rise of the ramp exceeds the maximum allowed 30" before an intermediate landing. The instruction area is on a raised platform that is not on an accessible route.
- Those classrooms with a change in floor level and a raised instruction area do not meet accessibility requirements.

Existing Mechanical Systems

The following report breaks down each current system, and provides a rating. (0 is the lowest -immediate replacement necessary, and 5 is the highest – excellent condition)

Boilers/Heating Plant

The campus has a central heating plant, which provides high-pressure steam for building heating, domestic water heating, and end use such as the swimming pool and kitchen facilities. There are three boilers, which have the capability of burning natural gas and # 2 fuel oil. There are two 70,000 lb/hour boilers for high-pressure steam and one 20,000 lb/hour boiler for low-pressure summer use. The high-pressure steam and condensate return lines are contained in walk through tunnels throughout the campus. The plant runs year round.

Mechanical Systems - Cooling

The majority of the academic buildings are air conditioned from a central chiller water loop. One newer 500 ton centrifugal chiller is located in the central plant. Original building chillers located in the Student Union and Education-Arts Building are currently tied into the central chilled water loop with plans to replace them with another 500 ton central chiller. Chilled water distribution lines are located in the same utility tunnels along with the steam and condensate lines and some are buried.

Sprinkler – Rating - 0

The building is currently not sprinkled. The scope of the new project will require a sprinkler service and full wet sprinkler system to be installed in the building.

Plumbing: - Rating - 1

The current waste system is all pumped from the basement from a duplex ejector pump system. The system is at the end of its useful life and needs to be replaced. The current system is pumped from Hagg Sauer into Bridgemann Hall. The line all the way through the tunnel is also at the end of it's useful life and needs to be replaced. All of the venting system in the building is also original and needs to be replaced.

The current storm system exits the building through a line in the south end of the basement mechanical room. The line is currently a 6" line, which is too small for the building per current plumbing codes. All of the rain leaders in the building appear to be undersized, and original, and thus need to be replaced as part of the project.

The plumbing piping and most of the fixtures in the building are original. They are at the end of their useful life and need to be replaced.



HVAC – Rating - 1

The existing heating system is served from the campus steam distribution system. The steam system operates at 100 psi in the winter months, and 5-7 psi in the spring, summer and fall. The current pressure reducing station and heat exchanger in the basement are at the end of their useful life and need to be replaced. The line comes through the tunnel connected to Bridgemann Hall. The piping in the tunnel is all original and needs to be replaced.

From the heat exchanger, the building is heated with hot water. The piping is original to the building and at the end of its useful life. The heat is provided to the building through hot water radiation on the exterior walls and heating coils in the ductwork. All of the terminal heating equipment is original and at the end of its useful life.

Cooling from the building is handled off the campus chilled water loop. The piping is distributed into the basement mechanical room from the tunnel space from Bridgemann Hall. The piping is in good shape in the tunnel and can be reused. All of the piping in the mechanical room will be removed and reworked for the new building HVAC system.

The air distribution system in the building is provided by two large constant volume AHU's in the basement mechanical room. The ductwork is distributed throughout the building, and individual zone control for the spaces is done via hot water terminal coils in the duct run outs.

The existing tunnel connecting to Bridgemann has poor airflow and there is currently mold growing in the space on pipe insulation. This needs to be remedied as part of the current project.



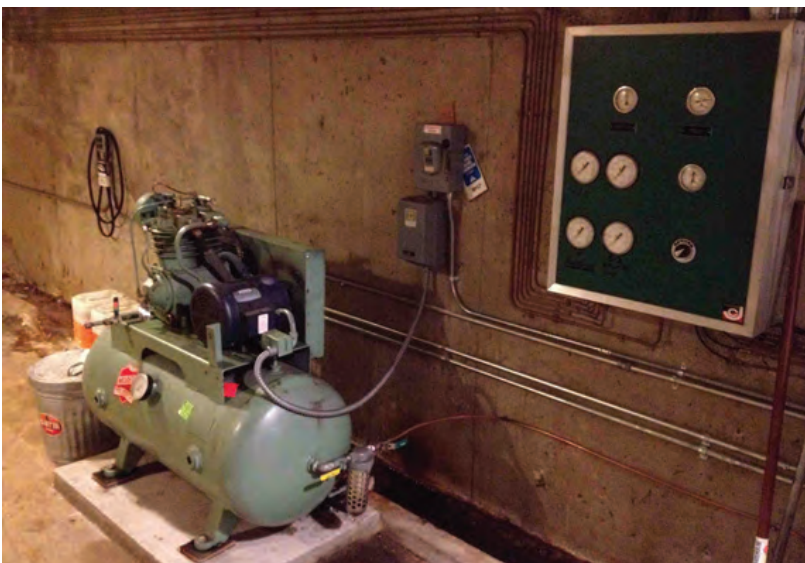
current sewage ejector pit



Mold in Tunnel Space

Temperature Controls – Rating - 1

The controls for the building are currently all pneumatic. This provides for poor energy management for the campus, and also requires routine maintenance. The air compressor and main control panel for this system are in the basement mechanical room. The pneumatics need to be removed in their entirety and replaced with DDC controls tied into the campus Honeywell or equivalent system.



Current HVAC Temp Controls

The campus is currently conducting a campus wide controls study to look at a full DDC system with open protocol for competitive bidding and maintenance. When new work is done in this building, the campus controls Masterplan and current vendor shall be referred to for new connection requirements.

Existing Electrical Systems

Electrical Service

The existing facility is a three story building with the electrical service being part of the campus 5 KV campus distribution system with 5 KV switches, transformers, low voltage distribution located on first level. Building houses lecture rooms, classrooms, facility offices and student study ares. Fluorescent lighting is used trough out building with a dimmed incandescent in lecture rooms. Emergency egress lighting is connected to campus stand-by power system. Power wiring is provided through out building with branch circuit panels located on each level. An Addressable fire alarm system is provided in building with connection to campus annunciation. Emergency notification is also included in building for campus announcements. Voice and data wiring is provided though out building with distribution rooms on second and third levels. Classroom technology wiring is provided in all classrooms and lecture rooms with power and signal wiring to projectors etc.

Low Voltage Power Distribution – Rating - 1

The Building is fed from a 5 KV campus distribution with three 5 KV switches located in main electrical room. Campus circuits into room are F1 and F3. Feeders are routed in tunnel via rigid conduits. The switches are at the end of their life and need to be replaced. The current service includes:

- 208/120 volts, 3-phase, 4-wire, wye, solidly grounded.
- Existing 500 KVA dry type Transformer and is manufactured by ABB.
- Existing 2000 amp main switch with switch and fuse type distribution sections. (spare space to add switches) Existing gear is manufacture by General Electric and is still available.



Current electrical gear and mechanical disconnects in basement



Electrical power is distributed throughout building with flush branch circuit (breaker type) located on all levels. Spare space is available in panels for added circuits. Panels are same manufacture as main switchboard. All equipment is original and needs to be replaced.

Grounding for the panels and branch circuits is via the metal raceways and not ground conductors. In many cases the conduits have separated from the connectors or couplings, which removes the ground path. This is a problem for all the new electronic devices now in use throughout facility.

Power wiring is provided to all receptacles, mechanical equipment, classroom equipment via raceways and from branch circuit panels. In some areas surface raceways have been added for added circuits and devices. No circuit information is noted on equipment disconnects such as location of branch circuit panel, etc. All wiring is original and needs to be replaced.

Emergency Power Distribution – Rating - 1

Emergency stand by power is from the campus 4160 volts system and the 208/120 circuit is from Bridgeman Hall emergency distribution panel.

Heating pumps and sumps pumps are on the emergency system along with exit and egress lighting.

All Emergency power will be updated with the remodeling project

General Lighting – Rating - 1

General lighting in all classrooms, office spaces, and corridors are with recessed fluorescent luminaries and have been upgraded with electronic ballasts and T-8 lamps. Light levels and number of fixtures is much higher then allowed by new energy codes.

Large Lecture room has recessed incandescent fixtures, and are dimmed for various levels required.

Lighting control is with local room switches and no automatic controls are in place at this time.

Exterior lighting consists of wall fixtures at exit door and flood light for security. Lights are control with photo eyes built into fixtures.

All lighting shall be replaced under the remodeling project.

Communication Systems – Rating - 1

Structured Cabling for Voice and Data Communications

- Facility has two main voice and data services, one with 200 pair copper cable for phone lines and a six strand fiber line and both are routed in tunnel. The fiber has only 4 useable strands and need to be replaced.
- The building has two IDF rooms (Intermediate distribution frames), one on second floor and one on third floor. Both closets and two small for equipment required and will need upgrades. IDF racks are being fed with both fiber and copper conductors.
- Data wiring is with Cat 5 conductors. (Not enhanced type)
- Cables installation has been routed above ceiling with no cable management being utilized. A lot of cables lay directly on top of lights, ducts, conduits, etc., and needs to be corrected.
- All structured cabling for IT should be replaced.

Structured Cabling for Television Distribution

- Existing television cabling is available in classrooms with cables being routed above ceiling to distribution amplifiers. All structured cabling should be replaced.

Campus Emergency Paging System

- Building is provided with visual and audible notification system via



Current Hallway lighting

signal
received
from
campus
Federal
Signal



Lecture Hall lighting

Informer
system.

- Building has surface speakers with strobe lights wire back to amplifier and radio receive
- Campus notification system should be upgraded/modified for the new project.

Fire Alarm System – Rating - 1

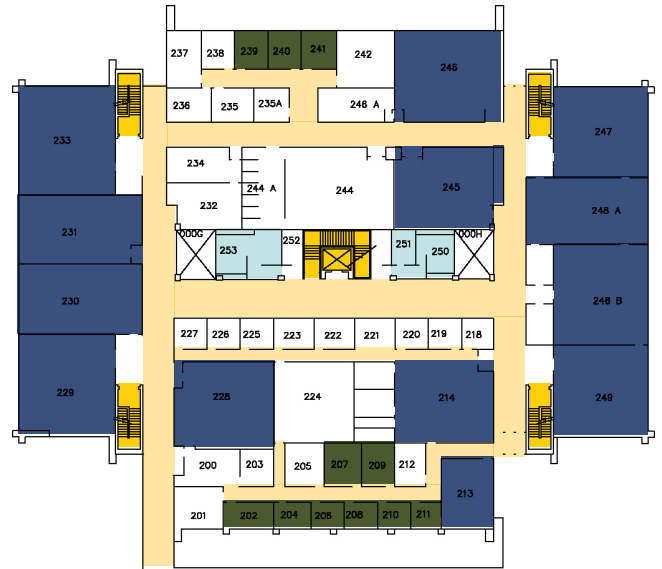
An existing addressable Simplex 4100U fire alarm panel is located in main electrical room and is connected to campus alarm system. Automatic detectors are provided in mechanical and electrical rooms, storage rooms, janitor rooms, and in corridors. Addressable relays are used for control of air handling equipment. Addressable relays are used for supervision of fire sprinkler valves and switches.

Manual fire alarm boxes are provided at all exit doors.
Notification appliances are located throughout but will require additional devices to meet new codes.
The fire alarm system shall be replaced under the new project

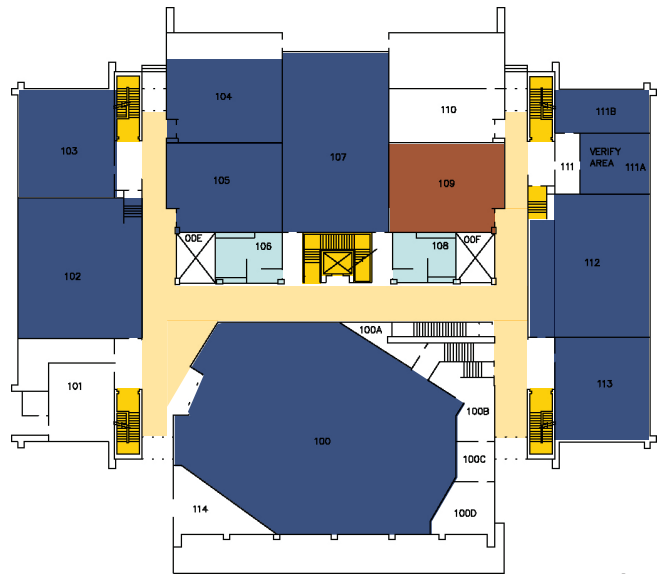
Hagg-Sauer Hall (cont.)



Third Floor

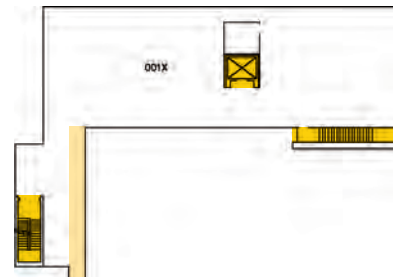
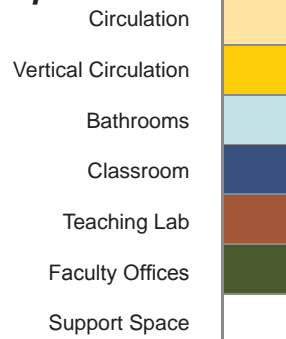


Second Floor



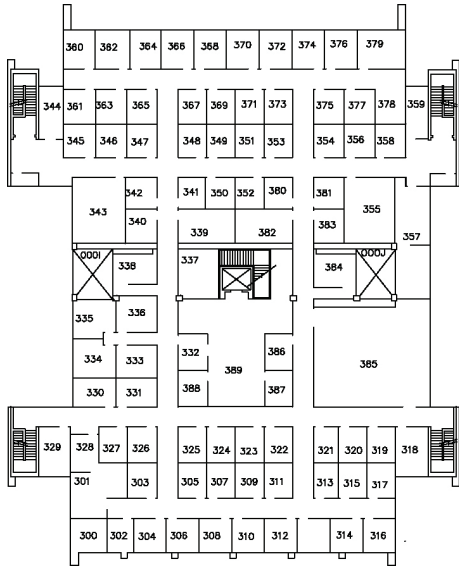
First Floor

Space Use

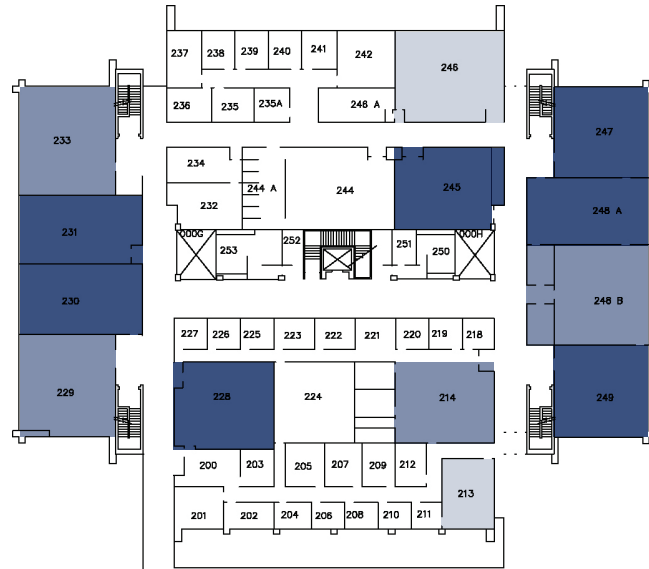


Basement Floor

Hagg-Sauer Hall (cont.)



Third Floor

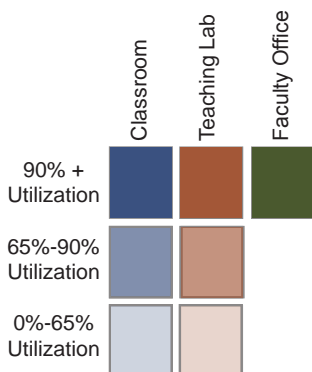


Second Floor

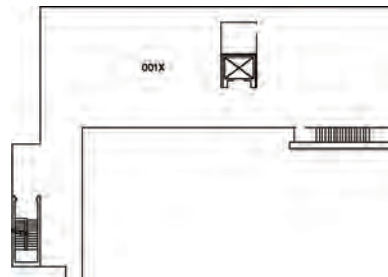


First Floor

Space Utilization



Note: percent based on a 32 hour week



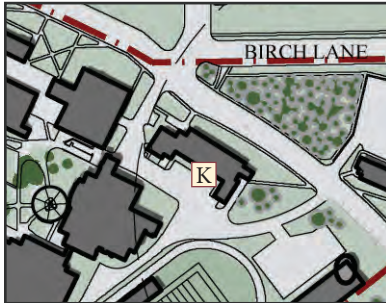
Basement Floor

Bensen - Education Art Building

see Renovation Plans in Sec. 5

Fast Facts:

Letter on Key Plan	K.
Building Number	070S0650
Building Use	Academic
Year Built	1950, 1986
Building Size	53,342
Number of Floors	4 + basement
Current Replacement Value	\$14,330,000
Backlog of Repairs Value	\$2,719,000
Current Facility Condition Index (FCI)	0.19
5 Year Renewal Forecast	
5 Year Facility Condition Index (FCI)	



Keyplan



Approach from West



Main Entrance



Art Gallery



Informal Seating Area



Art Studio



Typical Corridor

Bensen - Education Art Building (cont.)

Space Utilization Summary:

- Seat Usage Percent: 40%
- Hours Usage Percent: 74%
- Building contains general purpose classrooms, art studios, art gallery, faculty offices, and a large lecture hall.

Condition Summary:

- Interior finishes need updating.
- Additional ventilation is needed in the art studios.

Structural System:

Technology Considerations:

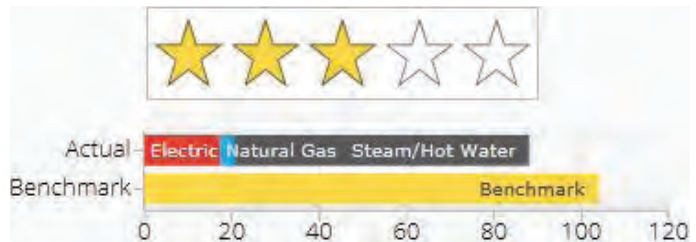
- Additional "smart" technology is needed in classrooms and studios.

Current HEAPR Requests:

Additional Comments:

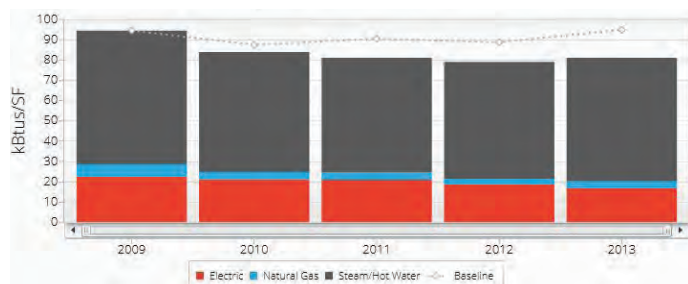
- Corridor lighting is a mixture of 2x4 and can fluorescent resulting in a dated look and uneven light.

Energy Use Intensity (EUI) & B3 Benchmarking Benchmark



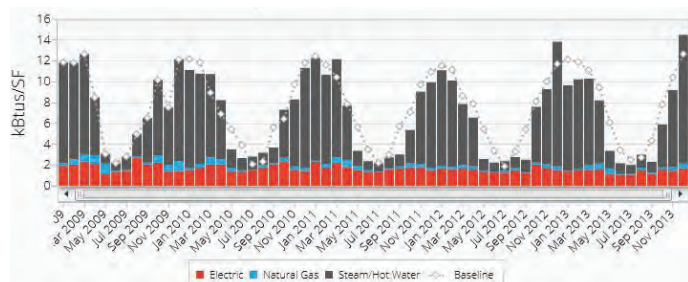
Annual EUI

Per square Foot, Weather Normalized

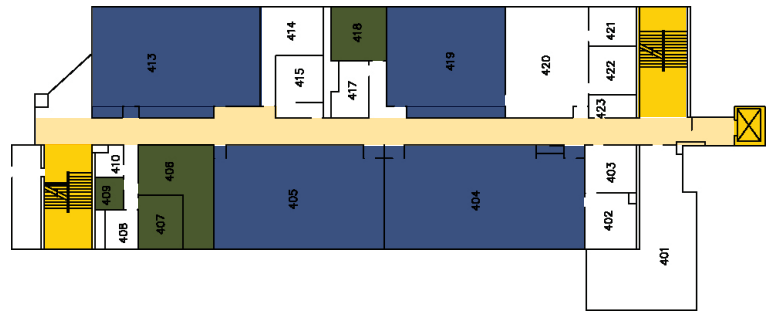


Monthly Continuous EUI

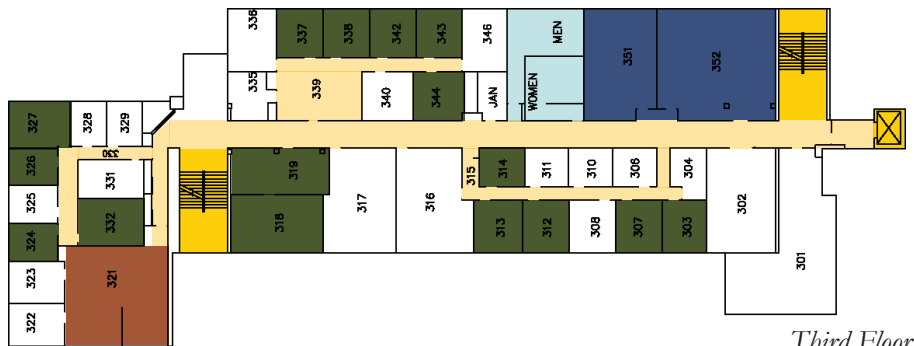
Per Square Foot, Weather Normalized



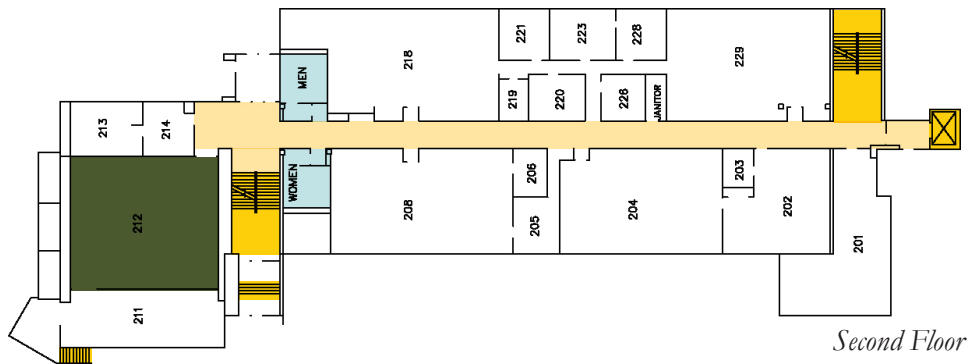
Bensen - Education Art Building (cont.)



Fourth Floor

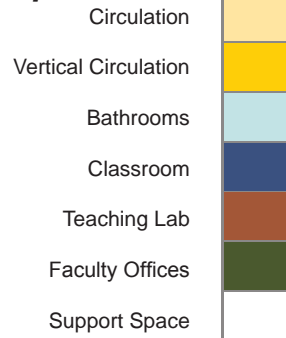


Third Floor



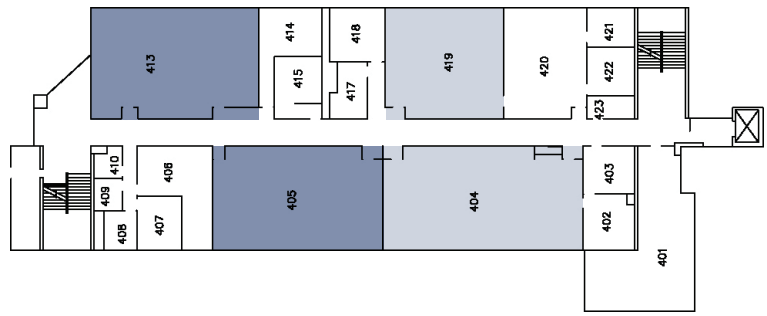
Second Floor

Space Use

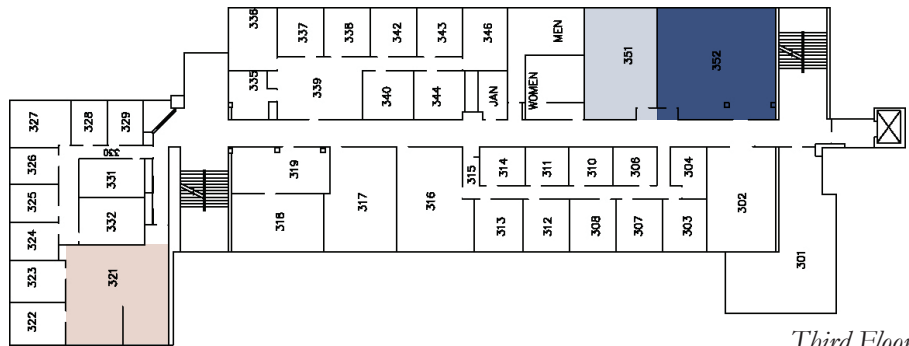


First Floor

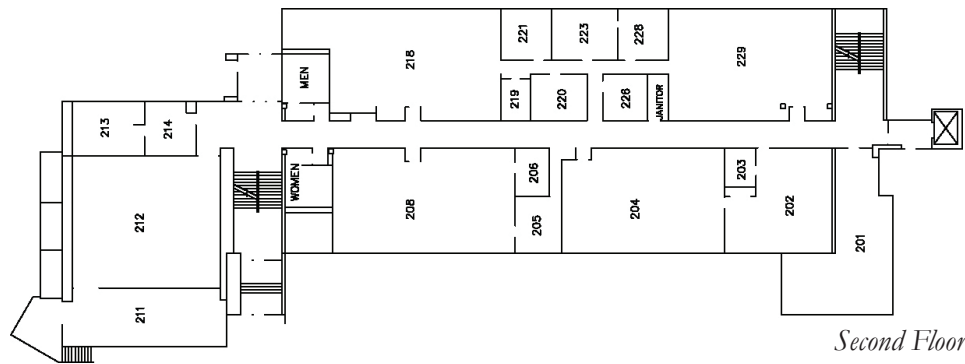
Bensen - Education Art Building (cont.)



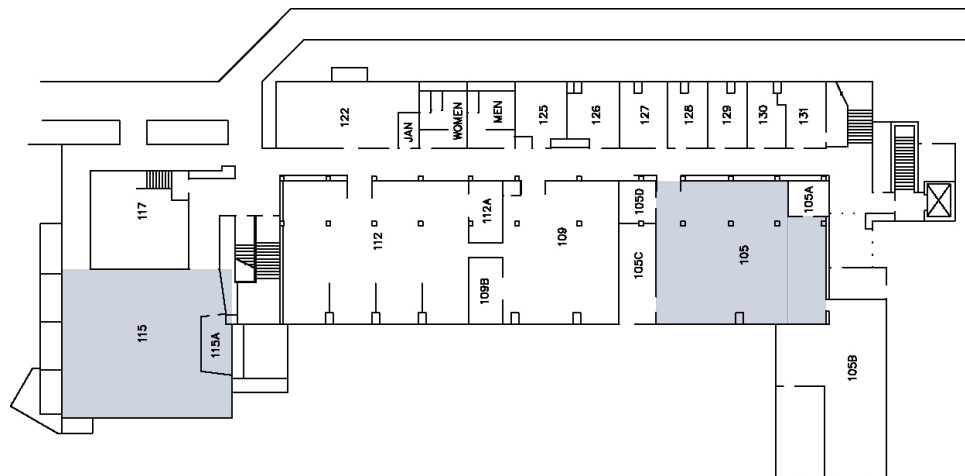
Fourth Floor



Third Floor

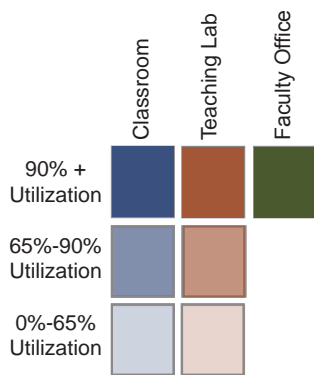


Second Floor



First Floor

Space Utilization

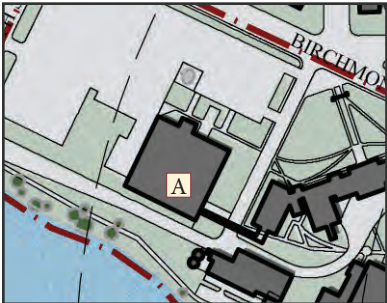


Note: percent based on a 32 hour week

Bangsberg Fine Arts Center

Fast Facts:

Letter on Key Plan	A.
Building Number	070S1671
Building Use	Academic
Year Built	1971
Building Size	86,878
Number of Floors	3 + basement
Current Replacement Value	\$23,900,000
Backlog of Repairs Value	\$4,490,000
Current Facility Condition Index (FCI)	0.19
5 Year Renewal Forecast	
5 Year Facility Condition Index (FCI)	



Keyplan



Exterior View



Main Entry Gallery Space



Hallway Near Performance Spaces



Typical Corridor



Student Lounge Space



Non-Standard Signage

Bangsberg Fine Arts Center (cont.)

Space Utilization Summary:

- Seat Usage Percent: 96%
- Hours Usage Percent: 84%
- Building houses a recital hall, main stage, general classrooms, practice areas for band/orchestra, individual practice rooms, faculty offices, and support spaces

Condition Summary:

•

Structural System:

- Concrete structure
- Metal deck, joists at roof

Technology Considerations:

- Building lacks "smart" classrooms and computer labs.
- Lounge spaces lack adequate power for use of laptops.

Current HEAPR Requests:

Additional Comments:

- Building lacks wayfinding signage and an overall identification system.
- Faculty offices enjoy lake views.
- Corridors seem dark and lack interest.

Energy Use Intensity (EUI) & B3 Benchmarking Benchmark



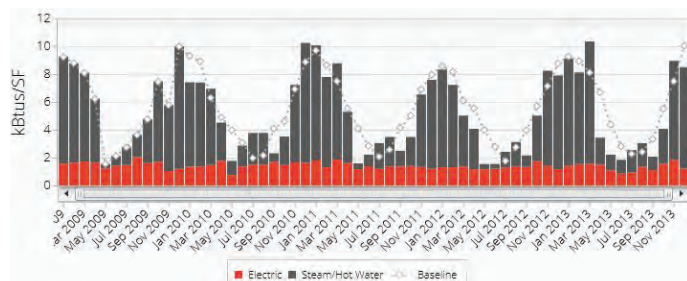
Annual EUI

Per square Foot, Weather Normalized



Monthly Continuous EUI

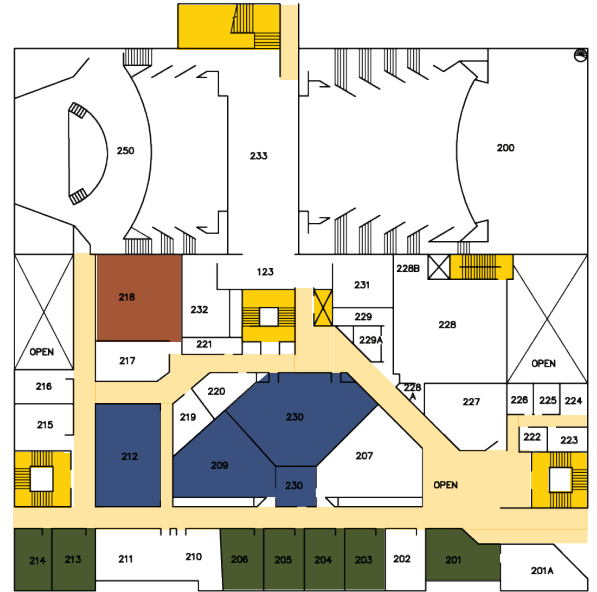
Per Square Foot, Weather Normalized



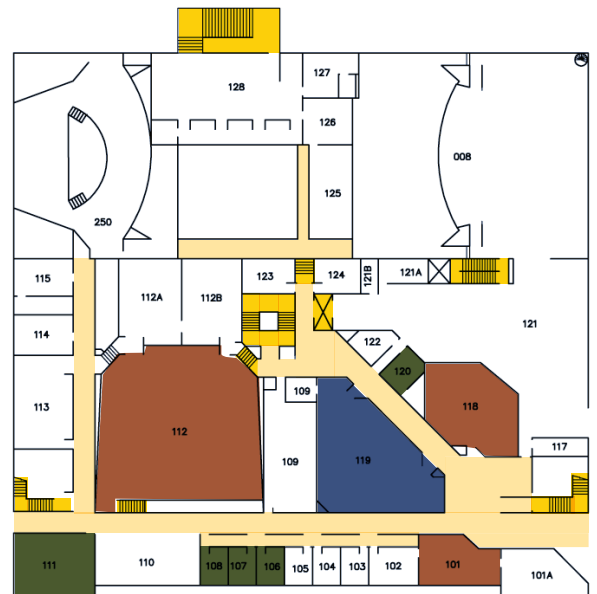
Bangsberg Fine Arts Center (cont.)



Third Floor

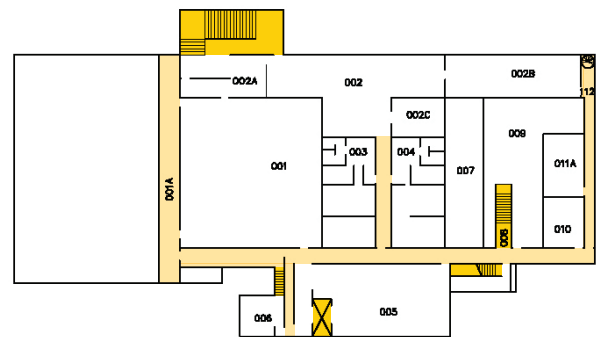
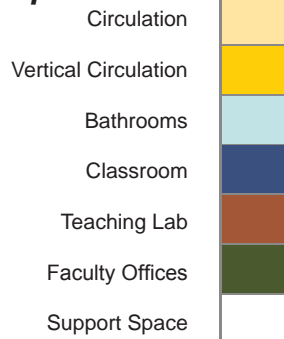


Second Floor



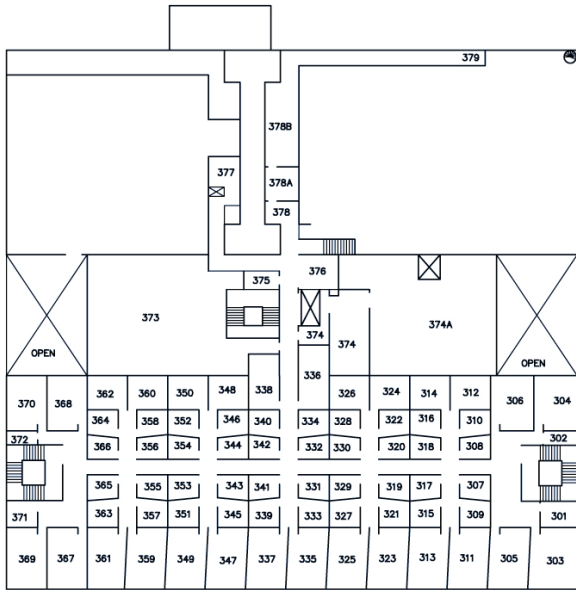
First Floor

Space Use

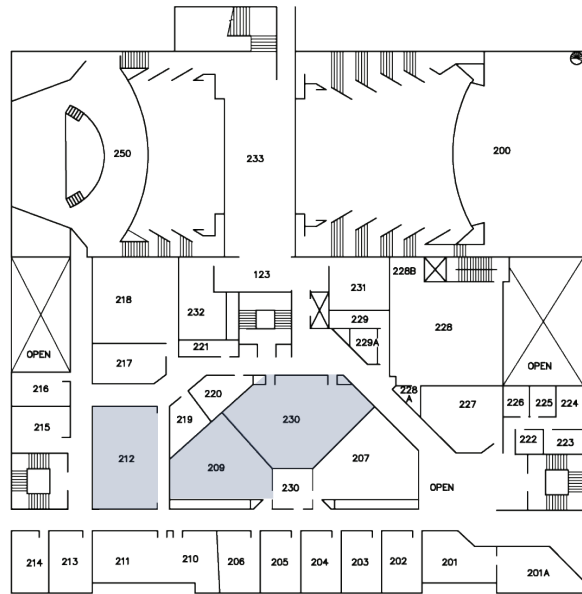


Basement

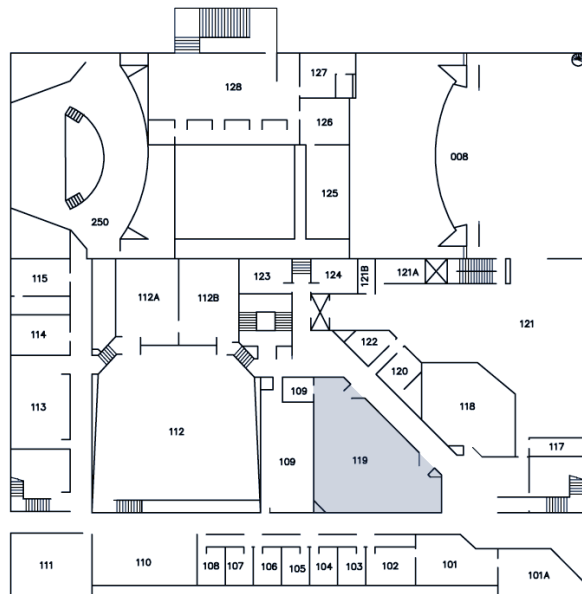
Bangsberg Fine Arts Center (cont.)



Third Floor

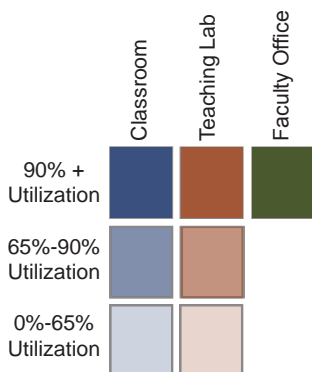


Second Floor

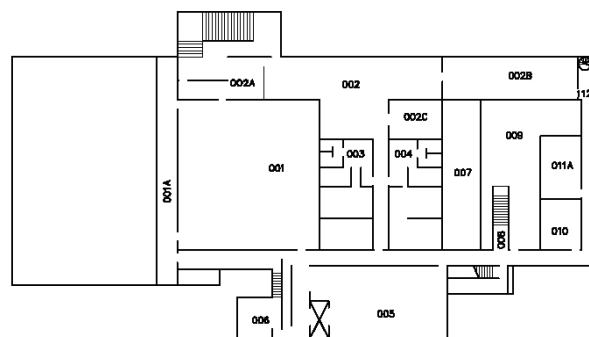


First Floor

Space Utilization



Note: percent based on a 32 hour week

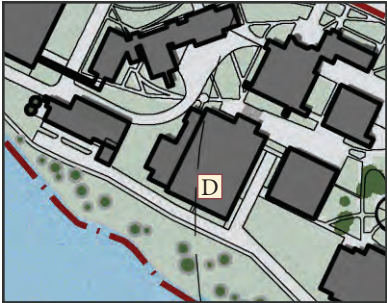


Basement

Sattgast Hall

Fast Facts:

Letter on Key Plan	D.
Building Number	070S1162
Building Use	Academic
Year Built	1962, 1989
Building Size	107,598
Number of Floors	3 + penthouse
Current Replacement Value	\$40,332,000
Backlog of Repairs Value	\$2,101,000
Current Facility Condition Index (FCI)	0.05
5 Year Renewal Forecast	
5 Year Facility Condition Index (FCI)	



Keyplan



Exterior View



Main Entrance Lobby



Lab Space



Typical Corridor



Outdated Electronics Lab



Seating Area with Lakeside View

Sattgast Hall (cont.)

Space Utilization Summary:

- Seat Usage Percent: 35%
- Hours Usage Percent: 53%
- Building contains general classrooms, science labs, faculty offices, department offices for numerous programs, centers, and Colleges.

Condition Summary:

- Portions of the building were remodeled with the recent addition
- Unremodeled areas appear dated and are in need of finish upgrades. Glazed masonry units are prevalent.

Structural System:

- Concrete structure, including roof and floors.

Technology Considerations:

Current HEAPR Requests:

Additional Comments:

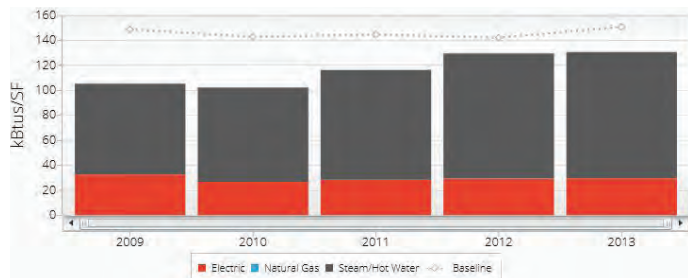
- Main building entry is on the third floor. Poor building signage makes wayfinding difficult.

Energy Use Intensity (EUI) & B3 Benchmarking Benchmark



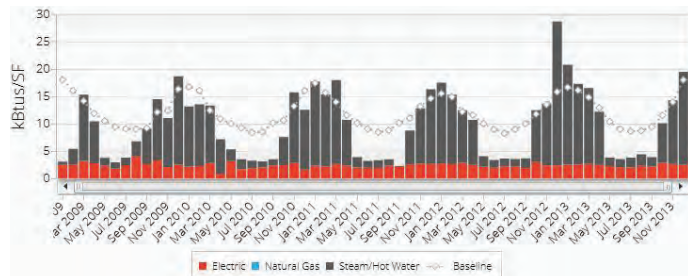
Annual EUI

Per square Foot, Weather Normalized

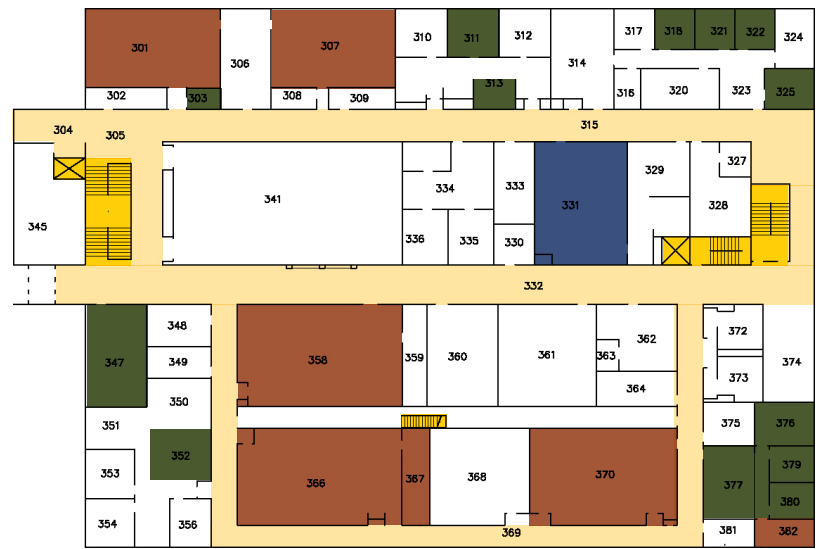


Monthly Continuous EUI

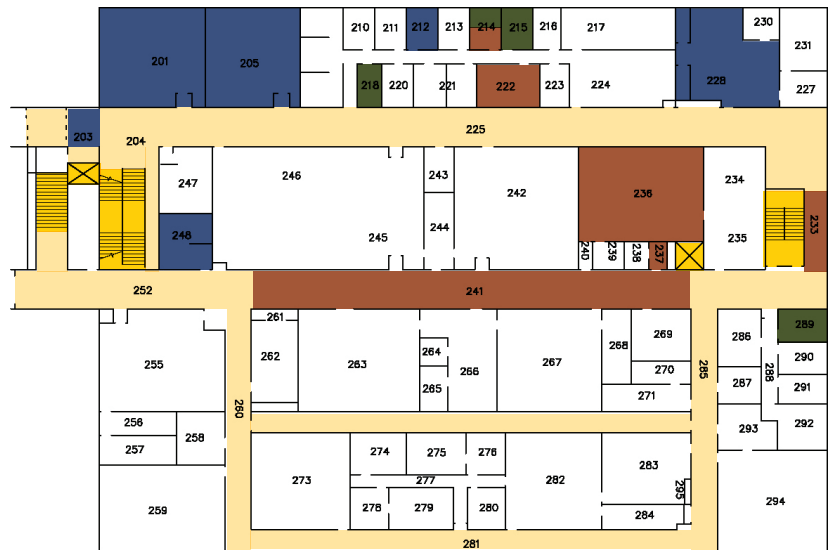
Per Square Foot, Weather Normalized



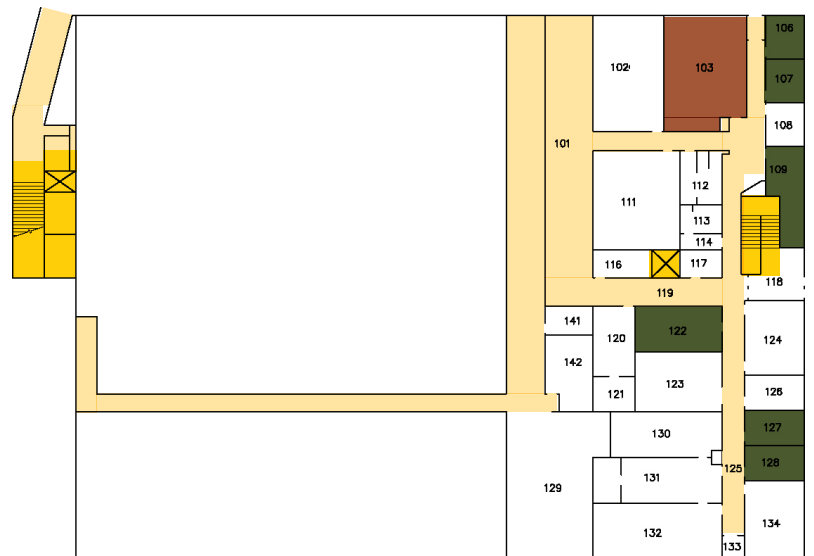
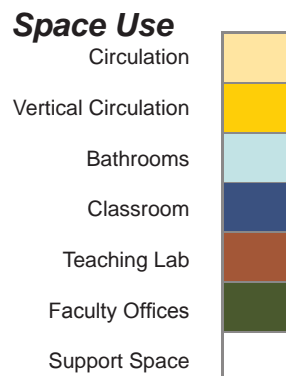
Sattgast Hall (cont.)



Third Floor

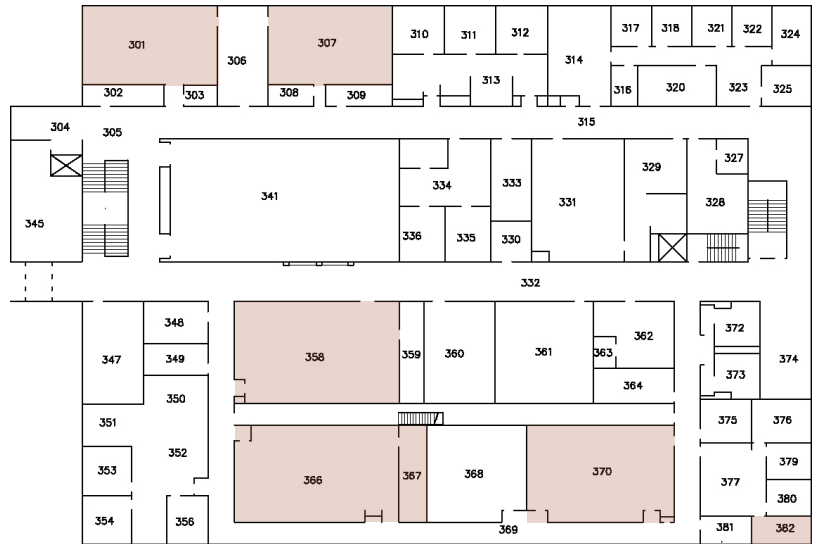


Second Floor

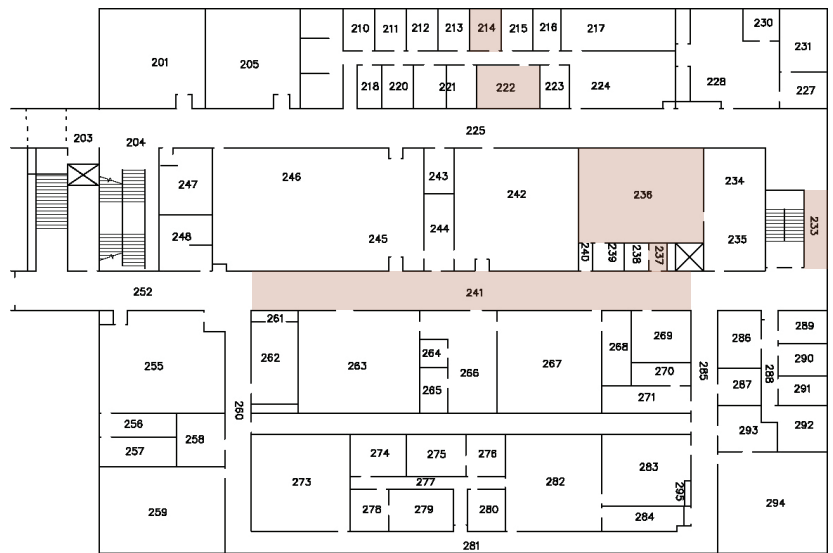


First Floor

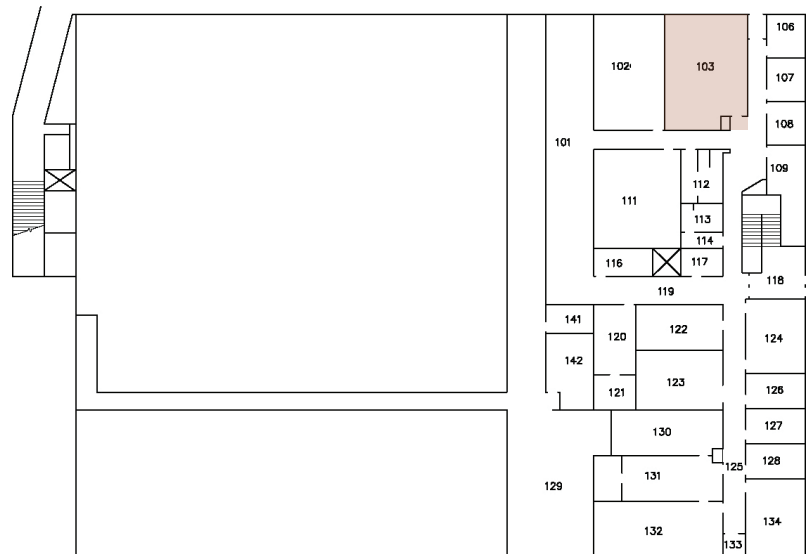
Sattgast Hall (cont.)



Third Floor

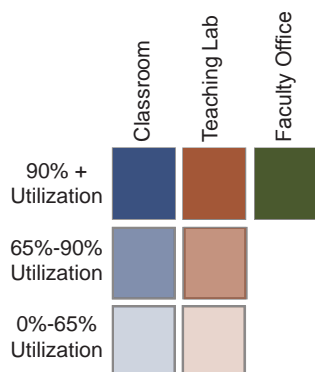


Second Floor



First Floor

Space Utilization



Note: percent based on a 32 hour week