PennState
Physical Plant

Office of Physical Plant
Physical Plant Building
University Park, PA 16802-1118

DATE: April 18, 2025

SUBJECT: Request for Proposals – Design-Build Team Selection
Boucke Building Capital Renewal – University Park Campus
University Park, PA

TO: Alexander – Quinn Evans
Barton Malow Builders – HGA
Massaro Construction Group – LGA Partners
PJ Dick – Kimmel Bogrette Architecture
Rycon Construction – AE Works
Wohlsen Construction – Gensler

REQUEST FOR PROPOSALS - PART 1
PROJECT INFORMATION and OWNER REQUIREMENTS

The Pennsylvania State University (PSU) wants to thank the 9 D-B teams that submitted Letters of Interest for this vital project. In addition, after careful review of the received Letters of Interest, PSU would like to congratulate the above **six teams** who were selected to continue to the next step in the process- the invitation to respond to this Request for Proposal (RFP).

The D-B Selection process is as follows.

- Proposals from the long-listed teams are due at Noon, Eastern Standard Time (EST), **May 16, 2025.**
- The Screening Committee will choose up to three firms from the RFP respondents. The short-list results and interview notice will be posted on the OPP website by the end-of-day, **June 6, 2025.**
- On **June 17, 2025**, in-person interviews will occur at the Eric J. Barron Innovation Hub in State College, PA. This date will not change, so please plan accordingly. Also, Non-Binding Fees for the entire D-B Team are due just before the in-person interviews.
- The D-B Team selection process results will be posted on the OPP website in **June 2025.** We plan to start immediately after contract negotiation to align with the project schedule.

Participation in this D-B Team selection process is voluntary and at no cost or obligation to PSU. PSU reserves the right to waive any informality in any submissions and reject any submission or portion thereof. PSU reserves the right to modify dates as it deems necessary.

CONFIDENTIALITY AND NON-DISCLOSURE
D-B Teams may not make news releases about this project without prior approval from PSU and then only in coordination with PSU. In addition, all information, documents, and correspondence shared within the D-B selection process are to remain confidential and, as such, are not made public in any manner. Please contact me (information below) or the Facilities Project Manager Tyler Payne (tjp5136@psu.edu or 814-308-2783) with any questions.

A. PROJECT OVERVIEW

This renovation is a building system and program renewal project intended to reduce backlog and update aging infrastructure at Boucke Building. Boucke Building, built in 1955, was a multi-story facility containing classroom and office space. It was named in honor of Professor of Economics Oswald F. Boucke. Located at core campus, the facility resides along Pollock Road adjacent to the HUB-Robeson Center, on one of the most traveled pedestrian corridors on the University Park Campus. The 95,000 square foot facility (56,000 square feet assignable) contains office space for multiple departments/campus groups along with general purpose classrooms. The facility occupants include Student Affairs, Undergraduate Education, Global Programs, Educational Equity, Disability Services, General Purpose Classrooms.

The project will address deferred maintenance issues that have accumulated over time, ensuring the Boucke Building is in good repair and reducing future maintenance costs. The project will also address critical infrastructure needs, improving the building's functionality. The renovation involves a complex sequence of work on a core campus building, including mechanical and plumbing upgrades, window replacement, life safety system upgrades, and accessibility improvements, all while maintaining operations.

B. PROJECT OBJECTIVES

The total scope of work depends on the economic climate at bidding and construction commensurate with the design that optimizes the established budget and PSU/facility needs. While the project primary objectives are updating building systems and windows, the University is also looking to enhance facility accessibility and provide an architectural refresh of the facility corridors.

The D-B Team will bridge the proposed project scope with the realities of the current budget, existing building uses, and project requirements. The project aims to reduce the Boucke Building backlog by:

- Updating existing facility mechanical systems
- Window replacement
- Updating existing facility life safety systems

An independent accessibility study, separate from the Boucke Building Capital Renewal project, is currently assessing existing conditions and developing recommendations to address facility deficiencies. The study deliverable will be provided to the awarded D-B Team at the onset of the renewal project design phase.

The facility does contain asbestos containing materials (ACM). Abatement of these materials will be addressed where necessary to accomplish the project scope outlined herein.

C. PROJECT SCOPE OF WORK:

The preliminary project scope is pulled from the current facility maintenance backlog. A summary of the existing facility assets associated with the current maintenance backlog is included in the following attachment:

ISES Corporation Facility Condition Assessment – Boucke Building Asset 0013-000, dated January 30, 2025

The information included in the provided facility condition assessment document are provided as a reference only. The selected D-B Team is responsible for on-site verification and confirmation of projects costs following notice of award.

The anticipated project mechanical scope includes, but is not limited to, replacement and updating of both main and terminal equipment as necessary to address facility comfort cooling needs that are in compliance with the University's design and construction standards. Updates to existing infrastructure to support this systems upgrade (new plumbing connections, electrical connections/upgrades, etc.) to be included with this scope as well. New

building mechanical systems to be outfitted with Automated Logic Corporation controls. The building automation systems design and sequencing to comply with Office of Physical Plant (OPP) Design Standards and be coordinated with OPP's Facilities Automation Services group.

The intent of the window replacement is to provide more modern systems that will enhance facility energy efficiency and occupant comfort, in conjunction with the mechanical systems scope. New window replacement to comply with current energy and building codes. The exterior aesthetic component of this scope will be coordinated with the University Architect(s) and other personnel within OPP's Planning Design and Properties group.

Additional desired scope the University is looking to incorporate as part of the project, should the project budget permit:

- Fire Alarm and Fire Suppression System upgrades and install
  - Current fire alarm panel and devices have exceeded anticipated life expectancy
  - No automated fire suppression system present
- Accessibility improvements throughout facility
  - Door hardware, restrooms, and other input from the independent accessibility study
  - Facility main entrance along Pollock Road
- Aesthetic Improvements
  - Refresh of existing building corridors

Associated project abatement efforts to be coordinated with the University's Environmental Health and Safety department.

Incidental finish restoration related to the project scope above is intended to match existing conditions, with some exceptions. This will be coordinated between the D-B Team and PSU during the project design phase.

The selected DB Team will be responsible for quantifying project energy savings during the design phase to validate potential funding contributions from OPP's Energy Savings Program.

Proposed scope of work to be finalized during the design phase once there is sufficient information to validate the project budget and schedule.

D. PROJECT BUDGET

The preliminary Total Project Budget for the project is as follows:

Construction*	$ 14.1M
Indirect / Soft Costs / Contingency	$ 4.3M
TOTAL	$ 18.4M

* Includes cost of any required abatement, demolition, temporary occupant relocation, D-B team management fees, insurance, general requirements, general conditions and construction contingency.

A firm grasp on the cost from the outset of design and forward will be a crucial skill of the D-B Team.

E. PROJECT SCHEDULE

PSU will execute the Design-Build contract shortly after the D-B Team selection. The project scope validation and design will begin immediately following. Project target dates include:

Design Kick-Off / Scope Validation ..... July 2025
Pre-Construction / Design ..... July 2025 – April 2026
Establish GMP ..... May 2026
Construction Start ..... August 2026
Substantial Completion ..... February 2028

The successful D-B Team will work in conjunction with the University project team and stakeholders to confirm and maintain the project schedule throughout the design and construction phases.

F. SPECIFIC BUILDING AND SITE INFORMATION

Boucke Building is situated along Pollock Road between Osmond Laboratory and Ritenour Building. High pedestrian and vehicle traffic are experienced at the building perimeter due to its proximity to the HUB-Robeson Center, Pollock Road, and other significant facilities at core campus. Below grade utilities are present throughout the building perimeter, with the highest concentration being along the south elevation, adjacent to Pollock Road. The utilities at this location include a steam tunnel parallel to Pollock Road. The campus steam connection has been in place since original facility construction while the campus chilled water system was connected in 2011.

The building interior spaces are conditioned by a combination of mechanical units within the existing mechanical tower, rooftop systems, and the building hot water loop. Terminal equipment includes a combination of fin tub radiators, fan coil units, and VAVs. Existing terminal equipment throughout the building varies due to isolated renovations completed since original facility construction. Multiple exhaust fans are present at the facility roof, including one at the basement mechanical room.

The mechanical tower was added to the facility during a 2011 mechanical upgrade project.

The single pane windows are original to the facility and are operable. Ribbon windows are present at the existing east, north, and west building elevations where brick façade is present. The south building elevation includes window units adjacent to limestone and alberene finishes.

The steel building structure is supported by a combination of concrete caissons and shallow foundations. Concrete slabs support the floors above grade.

The adjacent Physics Building project is currently scheduled for substantial completion during summer 2026.

G. PROJECT ATTRIBUTES

The PSU project team and stakeholders will work with the selected to refine the scope of work and construction phasing. PSU has identified the following attributes that are vital to the success of this project:

- Existing Infrastructure Age, System Deficiencies, and Regulatory Compliance.
- Precise Budget Allocation and Funding Assessment Between Systems and Program.
- Implementation of Best Practices to Achieve Efficiency/Energy Goals
- Achieving Design Consensus and Managing Scope Creep.
- Academic Calendar, Occupant Needs during Construction, and Construction Phasing Alignment.
- Minimizing Disruptions to Normal Operations During Construction.

Attributes common to most building projects on campus that deserve mention here are as follows:

- Create a great place for Penn State students and faculty that helps to expand their skills and enhances their experience at the University. Centralize and inspire closer connections between and within the subject building and the larger University. We seek an D-B team who can maximize the scope and intent to ensure the project captures the spirit and supports this aim.
- Provide flexible, state-of-the-art instructional space that supports emerging pedagogies. Develop shared collaboration and instructional spaces to inspire desired connections.
- The building will be a welcoming place accessible to all and a place where all people are comfortable and not intimidated. In the design, consider strategic use of exterior/interior transparency to showcase unique aspects of the building and/or to entice people into the facility.
- Provide a facility to strengthen the University's educational programs and efficiently address spatial deficiencies, both in quality and quantity of space. PSU is seeking a D-B Team that can drive our formation of optimal grossing factors and teams that innovate efficiencies.
- Given the prominent core campus and campus edge site location, the building should positively contribute to the campus and broader master plan, both short-term and long-term – especially in light of the future master planning objectives for the Hammond Building replacement.
- In keeping with PSU's commitment to environmental sustainability, this facility will be a high-performance building in accordance with OPP Design and Construction Standards 018000 Performance Requirements. The project shall include a building energy simulation model. The project will follow the PSU LEED Policy Document as a guide and may consider additional sustainability or high-performance innovations.

H. PROJECT DELIVERY

This project is funded by PSU and will be delivered under a Design-Build Guaranteed Maximum Price Contract (DB-GMP). The D-B Team will responsible for developing project cost estimates which, which will be reconciled following each deliverable milestone. Project budget confirmation is required before PSU will allow the D-B Team to proceed with each subsequent design phase.

The Owner's "DB-GMP Contract" will be used for this project. The prime firm (contract holder) of the awarded D-B Team will sign the DB-GMP Contract. By submitting a proposal, firms pledge to agree to the Contract's terms and conditions without exception or modification. A sample DB-GMP contract will be provided to long-listed Teams by the end of Friday, April 25, 2025.

Penn State University and the OPP require a high level of collaboration and LEAN principles to ensure project success. **The final selected D-B Team must establish a process for the project's design, documentation, and execution.**

The selected D-B Team will begin this project by validating the project scope indicated herein to address the facility backlog indicated in the ISES Facility Condition Assessment report, dated January 30, 2025. PSU will work with the selected D-B Team to confirm the project scope and budget throughout the project design and construction phases.

During the project design phase, PSU typically follows industry-standard design phases (Schematic Design, Design Development, and Construction Documents. As mentioned, the project budget and cost estimate(s) must align before advancing to each subsequent phase of the project. PSU will work with the selected D-B Team to confirm a design phase deliverable schedule for this project.

Please describe the D-B Team's approach to developing design options in Proposal Section 3. PSU will require multiple explorations to "get it right" and will want the ability to compare various ideas. Each option should be within the budget.

I. RFP SUPPORTING INFORMATION AND LINKS

- **ISES Corporation Facility Condition Assessment – Boucke Building Asset 0013-000**, dated January 30, 2025 (Attached)

- **Boucke Building Block Plans** (Attached)

- **DB-GMP Contract.** Sample DB-GMP Contract to be provided to long listed Teams by end of Friday, April 25, 2025

  Please review this sample contract to ensure that your firm accepts all terms and conditions as written. In submitting a proposal for this project, you acknowledge that you concur, without exception, with all terms, conditions, and provisions of the DB-GMP Contract.

- **Design Phase Deliverables.** Reference this document under the heading *00 51 00 MISCELLANEOUS FORMS* at the following link: Attachments - 01 01 00 PROJECT DOCUMENT FORMAT - OPP Design and Construction Standards - Confluence

- **Office of the Physical Plan (OPP) Standards.** This website provide information regarding specific design submission requirements and standards of the University. Please review to ensure that your team is able to deliver a compliant building. https://oppwiki.atlassian.net/wiki/spaces/OPPDCS/overview

- **OPP High Performance Standards.** The University has a commitment to environmental stewardship with a focus on university and campus-wide carbon reduction and total-cost-of- ownership. Our projects require maximum consideration of potential sustainable and energy- efficient designs and specifications for architectural, site, utility, structural, mechanical, electrical, and plumbing disciplines. Refer to the following link for the University's high-performance standards that exceed building code minimum requirements:

  https://oppwiki.atlassian.net/wiki/spaces/OPPDCS/pages/5409436/01+80+00+PERFORMANCE+REQUIREMENTS

  A part of this is PSU's High-Performance Building Design Standards: Building projects shall comply with ASHRAE Standard 90.1 Energy Standard for Buildings 2010 version AND as superseded by more stringent requirements of ASHRAE Standard 189.1 Standard for the Design of High-Performance Green Buildings, 2011 version. The project will consider additional sustainability or high-performance measures and innovations.

- **Building Information Modeling.** The University is committed to utilizing BIM technologies and processes to execute the design, construction, and operations of its new High Performances buildings and the updating of all existing structures and infrastructure. Refer to the following link for the University's BIM Execution Planning: https://oppwiki.atlassian.net/wiki/spaces/OPPDCS/pages/5409490/00+50+00+CONTRACTING+FORMS+ AND+SUPPLEMENTS .

SITE TOURS AND PRE-PROPOSAL SUBMISSION CONTACT

PSU encourages the teams to visit the site during this selection process. However, guided site and building tours will not be given at this time but may be scheduled later with the short-listed teams. All firms are welcome on their own to spend as much time as needed on campus. Contact Julie Hedgeland, Senior Architect, for any questions related to this request for proposal or general questions on the D-B Team selection process. **The deadline for questions is noon, May 2, 2025.**

REQUEST FOR PROPOSALS - PART 2
PROPOSAL REQUIREMENTS

Deliver (e-mail) electronic copies (PDFs) of the Proposal to:

Shipping Address (Note PDFs only – no hardcopies):

Julie Hedgeland, RA - jvh6712@psu.edu

and

Tyler Payne, PE – tjp5136@psu.edu

Electronic submissions of the D-B Team's Proposals are due by Noon Eastern Standard Time on May 16, 2025. Proposals received after this date and time may be automatically rejected. Proposals shall be provided in an 8.5"x 11" format. Limit submission to fifty (50) single-sided pages maximum (25 double-sided), plus a two-page maximum cover letter. Double-sided printing is encouraged—10-point font type minimum.

A cover letter shall be provided from the proposed leader of the Prime (contract holding) D-B Team. The cover letter should be two-page maximum. The cover letter should include at least the following:

A. Legal name of the Prime D-B Team. If separate, legal name of the Architect and/or Engineer of Record (stamping)
B. Primary office location(s) of Prime D-B Team, Architect of Record, and Engineer of Record
C. Contact information for the D-B team's primary point of contact (name, address, phone, and email)
D. A concise summary as to why the Team is best suited for this project
E. Statement of certification that all information provided in the submittal is accurate

Collate and bind proposals according to the following Proposal Sections:
Proposals shall follow the below format, in the order stated to ensure that all pertinent information necessary for evaluation is included and easily comparable by the Selection Committee. The cover letter, table of contents, and divider pages will not count towards the RFP page limitation. **We encourage teams to be as brief as possible without sacrificing accuracy and completeness.**

*** Note 1:**
As applicable throughout the Proposal, provide professional credit to project partners (including contractor, sub-contractors, design architect, architect of record, engineer of record, other team partners) for all projects discussed within the Proposal and for all project images shown.

PROPOSAL SECTION 1 – TEAM STRUCTURE

A. Identify the entire proposed D-B design team, including Prime (Contract Holding) firm, Lead Design firm (if different), architectural partners (as applicable), building system engineering firms, and proposed specialty consultant firms. **Identify the roles and split/sharing of project responsibilities for all firms involved, where applicable.** A Pennsylvania registered architect and engineer must stamp the final construction and bidding documents.

Provide insights into the firm's unique qualifications/ characteristics, firm personality, design ethos/ philosophy, client notations of previous project success, etc.

For each firm, identify the firm differentiators, size, qualifications, and experience on similar projects, and identify each firm's role in this project. Identify past collaboration between prime firm/contract holder and key design partners (architects/engineers/consultants), including the number/ value of projects and the key partners' added benefit to the Team. It is encouraged to create D-B Teams that demonstrate previous successful collaboration and execution of projects like this one. While we appreciate teams with experience at PSU we do not have a preferred vendor list and encourage the selection of high-quality design partners and specialty consultants. If proposed project teams do not have PSU experience, convey how the Team has previously incorporated the Owner's design standards similar to the Penn State Design and Construction Standards.

B. **Provide team organizational chart.** Include all firms and consultants and provide the name and role of key team members. Clearly identify which team members are designated for leadership positions on the Team. Please highlight Diverse Business Enterprise Program (DBE) representation on the Team. Refer to RFP Section 2.F., below.

C. **Provide role descriptions and resumes of key team members identified in the Organizational Chart**. Include registrations/ certifications, educational background, years of experience, and relevant project experience. Relevant project experience should include project size/cost, program type, project overview, year completed or scheduled completion date, and define each team member's role on each project listed on their resume. Emphasize each team member's most relevant experience and ideally highlight that the team member has had comparable roles on similar projects. Include at least two client references for each key team member. If possible, please avoid using Penn State employees as references. **Include resumes for at least the following key team members. If individuals serve multiple roles, identify multiple roles on Organization Chart and resumes.**

1. Principal in Charge (Project Team Lead)
2. Lead Design Architect/Engineer (Lead Designer).
3. Project Manager (PSU's day-to-day point of contact)
4. Project Architect (Architectural Technical Lead)
5. Project Engineer (Engineer Design Lead)
6. Construction Administration Leader (Construction oversight leader)
7. Sustainability Leader and/or energy modeler
8. Lead Mechanical, Electrical, Plumbing/FP, Structural, Civil, design engineers
9. Cost Estimator

PROPOSAL SECTION 2 – TEAM QUALIFICATIONS

A. Provide a summary of qualifications and expertise of the D-B Team with specific emphasis on:

1. Design Excellence, including national recognition.
2. Distinguishing factors of team differentiation.

3. Experience delivering projects of similar scope, scale, and complexity. **(See Note 1 above)**
4. Expertise in planning, designing, and delivering state-of-the-art academic, research, and workplace facilities. Highlight team experience and/or insights for projects with similar scope. **(See Note 1 above)**

B. **Identify a maximum of <u>five (5) example projects</u> within approximately the last ten (10) years, that BEST exemplify the qualifications and expertise listed above for the proposed Team.** Include a brief description of each project, project gross square feet, project budget, final project cost, project completion date, and client reference(s). Indicate year of completion and project cost for the example projects. Highlight key strategies and approaches from these projects. **Show illustrative representation of the example projects, particularly those highlighting the work of the Team's proposed Lead Design Architect and Design Engineer. Highlight projects that incorporated building system renewals and/or projects that similarly explored multiple design directions. Captions of photos encouraged. (See Note 1 above)**

(Optional) If necessary, discuss any of the example project(s) that are highly relevant to our project in more detail. Include insights into what made these project(s) successful, including how those design intentions were translated into a meaningful and synthesized/successful solution.

C. **Project Relevancy Matrix.** Develop a matrix that illustrates the similarities between the example projects and this project. Please be as specific to our project as possible.

D. **People-Projects Matrix.** Develop a matrix to show the participation of key individuals on the proposed Team from the example projects. List individual's role on example projects.

E. **Diverse Business Enterprise.** The Pennsylvania State University is committed to and accountable for advancing diversity, equity, and inclusion in all its forms. Therefore, we encourage the participation of Minority Business Enterprises, Women Business Enterprises, Veteran Business Enterprises, Service-Disabled Veteran Business Enterprises, and LGBT Business Enterprises (collectively referred to as Diverse Business Enterprise (DBE) for Design Professionals.

D-B Teams are encouraged to include at least one (1) certified DBE design professional firm as part of their Team. In addition, if the proposing firm itself is a current Diverse Business Enterprise, the firm should state that fact in its Proposal. Below is a partial list of acceptable certifying agencies:

1. * Department of General Services Bureau of Small Business Opportunities (DGS BSBO)
2. Federal Department of Transportation
3. National Minority Development Council (NMSDC) or its affiliates
4. Southern PA Transportation Authority (SEPTA)
5. Women Business Enterprise National Council (WBENC)
6. Pennsylvania Unified Certification Program (PA UCP)
7. National Women Business Owners Corporation (NWBOC)
8. Minority Business Enterprise Council (MBEC)
9. National Gay and Lesbian Chamber of Commerce (NGLLC)
10. U. S. Department of Veteran Affairs (VOB/SDVOB)

* Or comparable state agencies or regulating bodies in other states or local jurisdictions.

F. List the Errors & Omissions insurance coverage limits of the lead/ prime entity of the D-B team. In addition, provide information on errors and omissions claims in the last (7) seven years.

G. Provide a historical breakdown of project performance for Prime Firm and Architect/Engineer of Record (as applicable). Include a list of projects, delivery method, history of project budgets compared

to completed construction cost, history of change orders, average response time to RFIs, and any other key metrics the Team deems most relevant to this project.

H. Acknowledge the review and acceptance of the sample DB-GMP contract, ensuring that the D-B Team accepts all terms and conditions as written. In submitting a proposal for this project, the D-B Team concurs, without exception, with all terms, conditions, and provisions of this Contract.

PROPOSAL SECTION 3 – PROJECT APPROACH AND SCHEDULE

A. **Describe the D-B Team's proposed approach for this project.** Be as specific to our project as possible. Discuss, at the least, the D-B Team's approach to the following:

1. Project visioning and project mission/goal setting. And the Team's approach to establishing a design process that works to achieve the project objectives and proposed scope
2. Scope validation and knowledge of the project brief. Additionally, describe any planning tools, benchmarking tools, and/or other team-specific methodologies to assist in the execution of our project.
3. How the initial project phase leads into the Concept Design and/or Schematic Design Phase of the project.
4. Developing building planning options and/or overall building design schemes.
5. Working with PSU to analyze, compare/contrast different design options.
6. Accommodating facility occupants during the project construction phase.
7. Integration of BIM, "predictive modeling," analytical/ digital tools, and the utilization of PSU' immersive construction lab, the ICon Lab.

B. **Approach to project delivery.** At least, describe the D-B Team's overall approach to:
1. Achieving the project schedule.
2. Identifying key risks to the project schedule and strategy for mitigating such risks.
3. Planning, managing, and executing the project.
4. Building consensus and guiding stakeholders through decision-making processes.
5. Creating a collaborative environment between the D-B team and PSU/OPP stakeholders.
6. Working as a D-B Team throughout the design and construction phases. Describe previous success delivering design-build projects. Identify potential innovative strategies to implement during the design, procurement, and construction of the project, while maintaining quality and uncompromised project goals.

C. **Approach to Cost Control.** Delivering our project on budget is critical. So, provide the D-B Team's approach to managing costs through all design and construction phases, especially considering escalating construction costs. Additionally, provide the following:
1. Highlight the Team's cost estimating process, scope/budget alignment, and cost/quality control through the design and construction phases.
2. Define critical factors concerning the project budget.
3. Provide the Team's impression of the project budget.
4. Identify key risks to the project budget and strategy for mitigating such risks.

D. **Approach to MEP and building system design.** A narrative approach to MEP planning/ design/ delivery of facility that contains space types as noted herein. Be specific with the Team's experience and highlight its project type expertise. Identify approach(es) to phasing facility wide MEP system upgrades that will minimize occupant impact through the project construction phase.

E. **Approach to Sustainability.** After reviewing PSU's High-Performance Standards, describe the Team's approach to driving toward PSU's sustainability goals on the project, including exceeding our standards. Highlight experience meeting similar high-performance standards and represent overall team commitment to sustainable design (including the number of completed LEED projects). Among other applicable topics, discuss the Team's approach and experience applying advanced sustainability measures, applying best practices in sustainable design, applying creative innovations to obtain the optimum performance for projects, and experience using energy models to drive design thinking and verification of project energy savings.

F. **Approach to Penn State reviews, PSU design reviews**, and jurisdictional reviews. Anticipated jurisdictional reviews will include State of PA Labor & Industry. Local municipal reviews/ permits may be required, and the professional shall be responsible for securing these permits with the assistance of the University. Any fees associated with permits shall be paid for by the Professional and will be reimbursed by the University.

G. **Approach to Prevention through Design (PtD).** Safety is essential to the University during the facility's construction and post-occupancy maintenance/operation. Therefore, the University is stressing the implementation of Prevention through Design in this project. Share thoughts, experiences, and approaches to PtD. The LEED v4 Pilot credit for PtD will be mandatory for this project.

H. **Project Staffing/Workload.** Verify the entire D-B Team's availability to successfully staff the project immediately, given our project schedule and other team members' workloads.

I. **Graphic Schedule.** Create a graphic project schedule showing phase durations, owner engagement, review periods, and identify critical path items, milestones, and schedule drivers. This can be formatted on an 11x17 (fold-out) and will only count as a single page.

PROPOSAL SECTION 4 – PROJECT-SPECIFIC KEY DRIVERS AND IDEAS

A. **Project Understanding and Drivers.** Demonstrate the Team's understanding of the project. For example, provide observations of the project scope, goals, or other information.

Describe key project drivers, critical design elements, and potential constructability considerations the Team has identified as a priority for this project. Discuss how the Team addressed similar issues on other projects.

B. **Project Insights.** Provide thoughts specific to the design of facilities as described in this RFP. Provide the Team's vision of what, beyond purely functional issues, constitutes the essence of the project. Discuss potential key issues in the Boucke Building Renewal scope.

C. **Program and Programmatic Goals.** Delivering a facility that successfully accommodates the various Departments and programs within state-of-the-art facilities is of the utmost importance. Describe the Team's planning, benchmarking tools, and methodologies that the Team will use to test and ultimately achieve the stated project goals.

Provide team-specific core values, design principles, construction best practices, etc., regarding key space types, including the following. Feel free to reference precedent project examples. **(See Note 1 above)**

1. Building systems renewal
2. General Purpose Classrooms (GPCs)

3. Informal Learning spaces (student working and study space)
4. University workplace environments
5. Student support groups and programs
6. Other student and faculty facing spaces within the facility

D. **Provide initial design ideas, thoughts, or considerations regarding our specific project.** We are not seeking design solutions. We would rather see the Team convey its "design thinking" or unique insights regarding our project. Considerations may include thoughts/opinions related to:

1. Code Compliance and Safety.
2. Mechanical, Electrical, Plumbing and Fire Protection Systems
3. Window Replacements
4. Accessibility Improvements
5. Energy Efficiency
6. Any other design considerations and/or inspirations

(OPTIONAL) PROPOSAL SECTION 5 – ADDITIONAL PROJECT IMAGERY

A. **(Optional) Additional Project Imagery.** Please feel free to include additional project images if pages remain within the Proposal. Photo captions are strongly encouraged.

Thank you for participating in this exciting project's D-B Team Selection process. We understand the commitment that each Team puts into their submissions. The Screening Committee reciprocates this effort in our detailed review and analysis of each Proposal.

We look forward to learning more about the Long-Listed D-B Teams and their project-specific approaches to determine which three (3) Short-Listed teams continue to the In-Person Interviews.

Please contact me or the OPP Facilities Project Manager Tyler Payne (tjp5136@psu.edu or 814-308-2783) with any questions.

Kindest Regards,

Julie Hedgeland, RA, NCARB

Julie Hedgeland

The Pennsylvania State University (Note: shipping address for Proposals listed above)

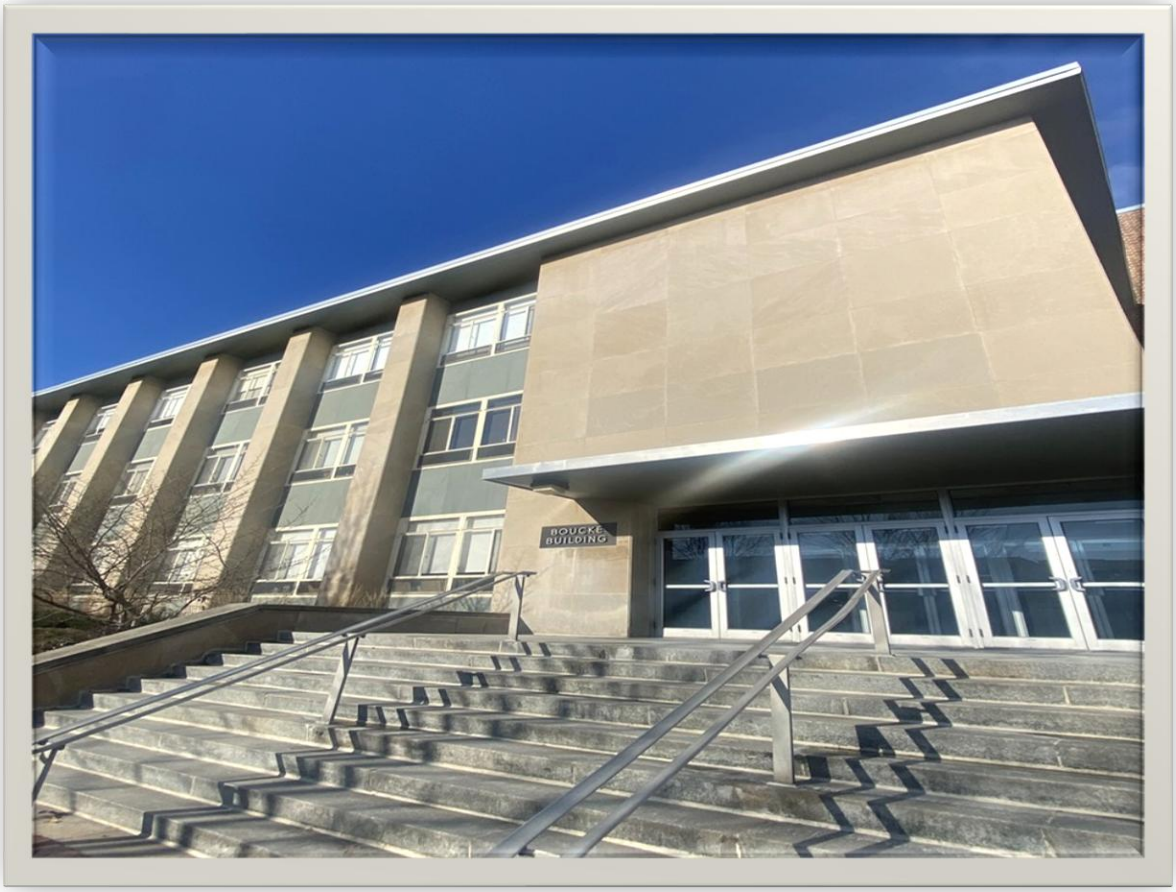
CC: Screening Committee

PENNSYLVANIA STATE UNIVERSITY

Facility Condition Assessment

Boucke Building
Asset 0013-000

Inspected January 30, 2025



ISES CORPORATION

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FACILITY CONDITION ASSESSMENT

SECTION 1

ASSET OVERVIEW

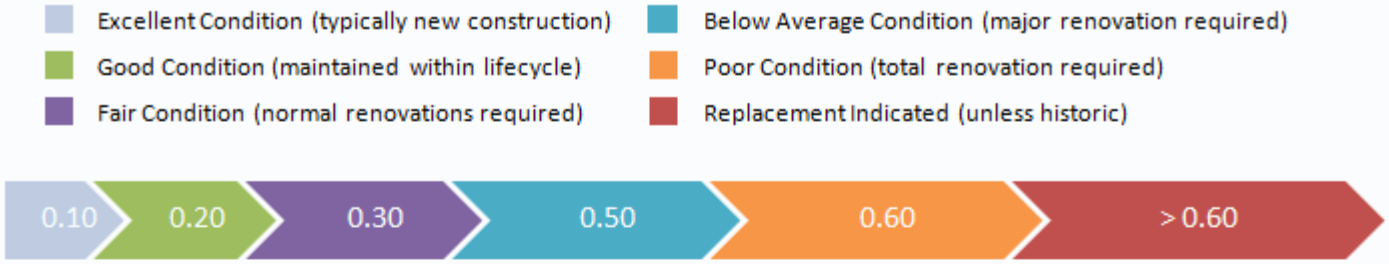
ASSET EXECUTIVE SUMMARY

All costs shown as Present Value

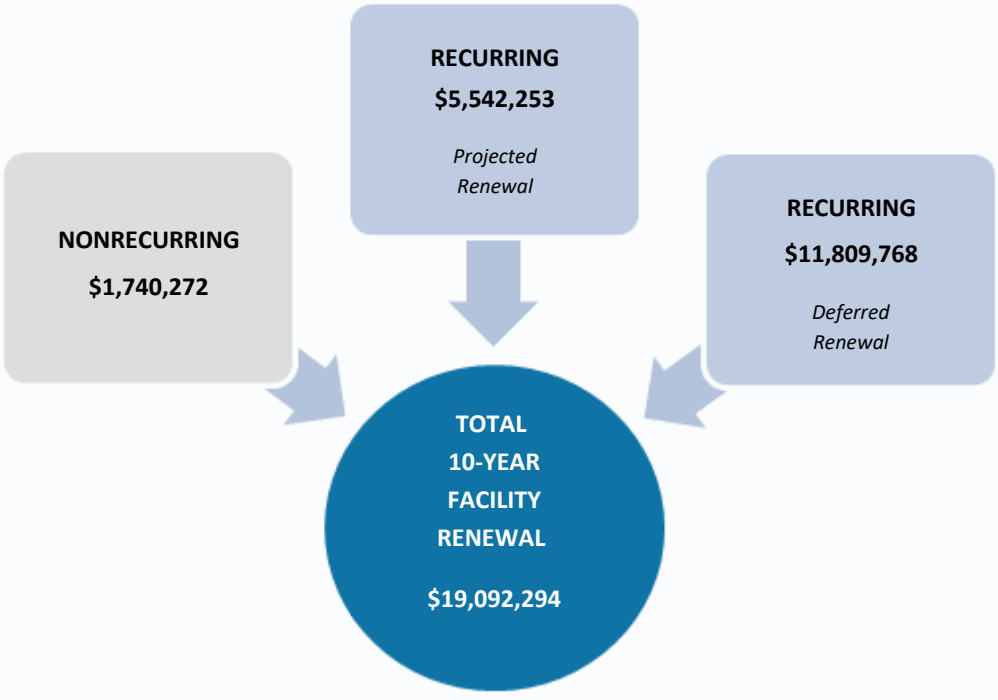
ASSET CODE	0013-000	**CURRENT REPLACEMENT VALUE**	$54,208,000
ASSET NAME	BOUCKE BUILDING	**FACILITY CONDITION NEEDS INDEX**	0.35
ASSET USE	Classroom	**FACILITY CONDITION INDEX**	0.22
YEAR BUILT	1956	**10-YEAR $/SF**	198.21
GSF	96,323		
INSPECTION DATE	01/30/2025		

FCNI Scale

The FCNI for this asset is **0.35**



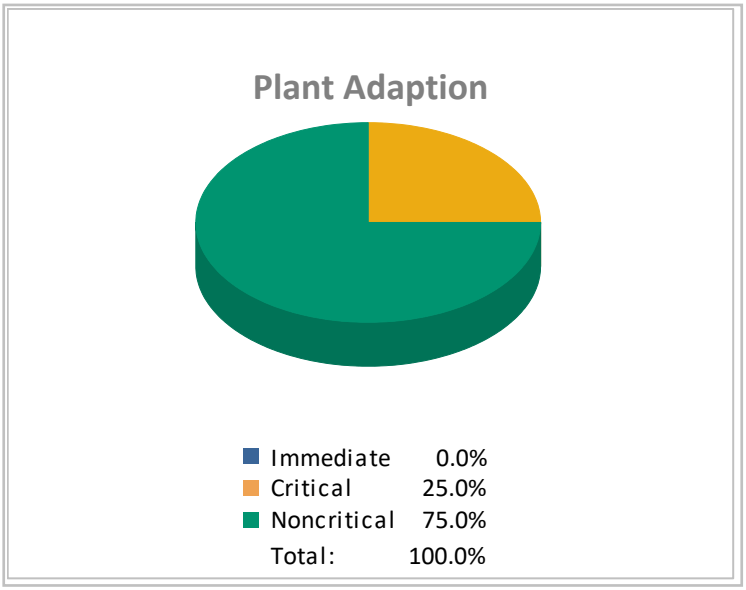
Total Facility Renewal Costs



Nonrecurring Costs

Project Cost by Priority

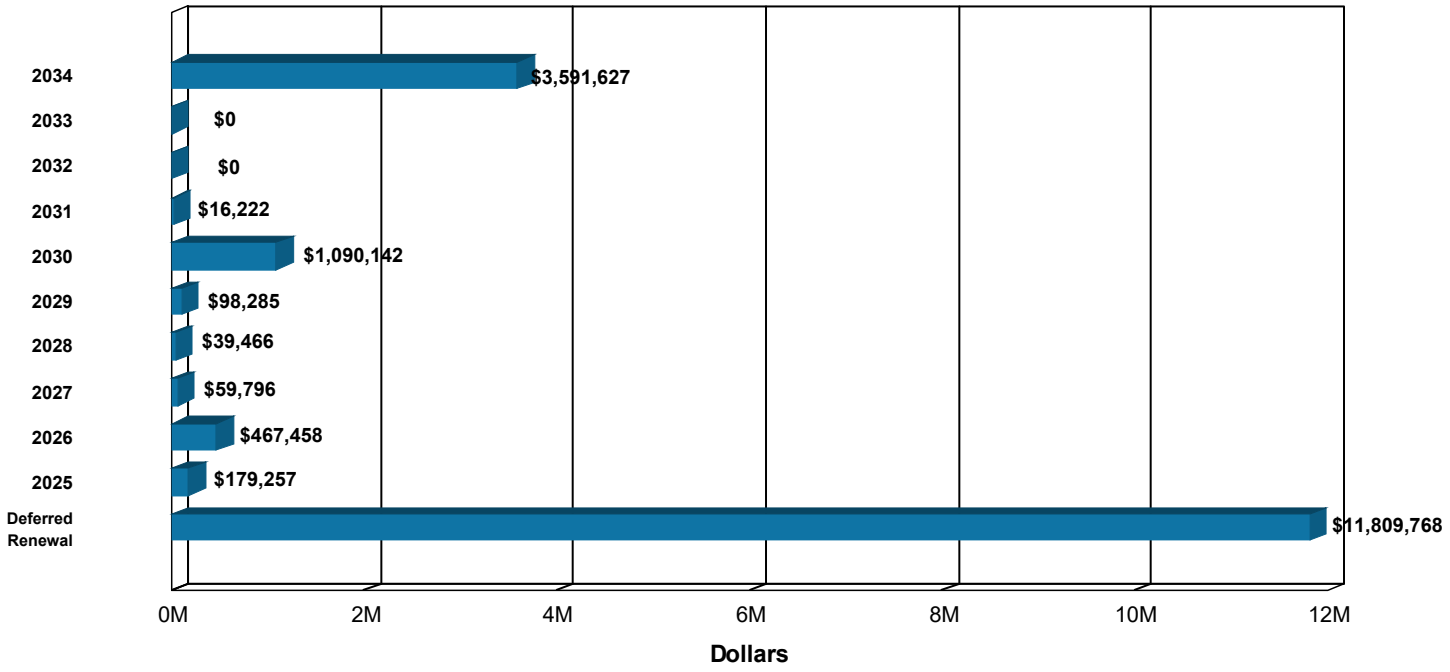
PLANT ADAPTION	
1 - Immediate	**$0**
2 - Critical	**$434,761**
3 - Noncritical	**$1,305,511**



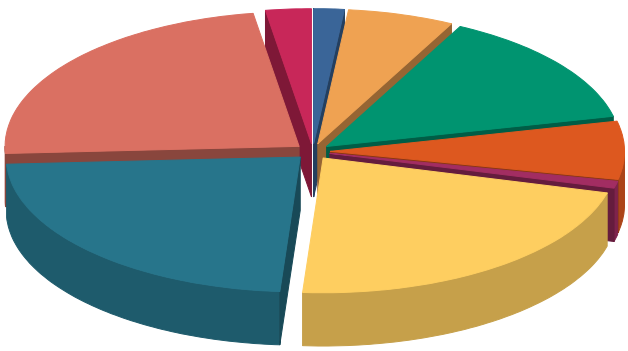
CORRECTIVE ACTION	
1 - Immediate	**$0**
2 - Critical	**$0**
3 - Noncritical	**$0**

Recurring Costs

Component Replacement Cost by Year



Facilities Renewal Cost by System



Accessibility	$328,307	2%
Electrical	$1,123,815	6%
Exterior	$2,606,888	14%
Fire/Life Safety	$1,354,845	7%
Health	$136,468	1%
HVAC	$4,187,015	22%
Interiors	$4,419,126	23%
Plumbing	$4,477,391	23%
Site	$0	0%
Vert. Trans.	$458,439	2%
TOTAL	**$19,092,294**	

ASSET SUMMARY

Constructed in 1956, the Boucke Building is a four-story classroom and office facility on the main Penn State campus, totaling 96,323 gross square feet. Each floor is dedicated to classroom and office space. The building also includes a partial basement which is mostly unexcavated except for mechanical rooms in the southeast corner. The exterior facade is distinguished by a blend of brick veneer, cut limestone, and granite panels. The glazing is aging, original metal-framed, single-pane windows, while the primary entrances are glass, and the secondary and service doors are hollow metal. Notably, the main building features two distinct roofing applications: an older built-up roofing on the lower south roof and a newer built-up roof on the main upper section.

Information for this report was gathered during an onsite review conducted on January 30, 2025.

Site

The site features a relatively flat terrain with turf grass, planting beds, and ornamental trees. The landscaping is well maintained and not expected to require additional work over the next ten years. Concrete sidewalks surrounding the building are currently in good condition. The campus streets and shared service drives along the north facade are considered part of the campus infrastructure and not included in this report.

Exterior Structure

The upper main roof is a newer built-up system with a cap sheet and is expected to remain in good condition well beyond the scope of this report. In contrast, the lower south roof is an aging built-up system with light aggregate that has surpassed its normal lifecycle and needs to be replaced. Similarly, the small unballasted membrane roof has exceeded its serviceable life and should be replaced in the near future.

The original single-pane, metal-framed glazing is now in poor condition due to age. It is advisable to install new, energy-efficient, dual-pane glazing with metal frames on all elevations. The exterior features a mix of brick veneer, cut limestone panels, and granite window accent panels. While the brick and cut stone provide an appealing look, the granite accents beneath the individual windows will require repointing and recaulking. This should be coordinated with the recommended window replacement.

The primary glass entry doors are aging and should be replaced accordingly. Additionally, the older secondary glass egress doors and hollow-metal service and secondary doors also need to be replaced, while the newer rooftop service door and the doors on the third-floor south roof are in adequate condition. Repainting the hollow-metal doors is recommended.

Interior Finishes/Systems

Floor finishes vary by area. Classrooms and offices are carpeted, while the corridors, stairwells, and select offices feature vinyl floor tile. Terrazzo is used in the restrooms as well as the first-floor corridor and lobby. Although the carpet tile varies in age, it shows signs of wear and should be replaced soon. Similarly, the vinyl composition tile (VCT), including the interior stair treads and landings, is worn and needs to be replaced in the near future. In contrast, the terrazzo flooring is in average condition and should last beyond the scope of this report.

Ceilings throughout the building consist of acoustical tiles, adhered tile, and painted surfaces. While most of the acoustical ceilings are in good condition, some of the older systems should be upgraded. In some areas, older adhered tile ceilings are located above the acoustical tiles and abatement will be needed prior to replacement. This is addressed in the Health section. The painted ceilings, currently in good condition, should be repainted soon and placed on a cyclical maintenance schedule.

The painted walls in offices, classrooms, conference rooms, and support areas will require repainting in the near future to maintain an interior aesthetic and should be incorporated into a regular maintenance program. Meanwhile, the glazed block walls in the restrooms and main corridors remain adequate with no recommendations at this time.

The interior doors, consisting of older flush wood assemblies, are at or beyond their expected lifecycle. It is recommended that new rated door assemblies be installed in the corridors and new standard door assemblies installed in the office suites. Additionally, new rated doors with panic hardware should be installed in the stair towers. The break rooms feature standard casework that shows signs of aging and should be considered for replacement.

Accessibility

Access to the building is provided via an at-grade entrance on the northeast elevation, which features power-assisted door operators. While the passenger elevator includes an accessible control panel, the stair towers lack compliant inner and outer handrails. These should be retrofitted with accessible railing designs on each stair flight.

Individual interior doors currently use a mix of knob and lever hardware and most should be updated with accessible lever sets unless a comprehensive door assembly upgrade is implemented in the near future. The interior room signage, mounted on the walls and featuring Braille, is in average condition.

Restrooms on each floor are generally accessible. However, the aging accessible fixtures are recommended for upgrade in the Plumbing section. New fixtures should fully comply with current accessibility and wheelchair circulation standards. Additionally, only the first floor is equipped with a dual-level accessible water fountain. The single-level water fountains on the upper floors are not accessible and should be replaced with fully accessible dual-level models.

Building amenities are required to be accessible to all persons. The current configuration of the all-in-one kitchenette unit in room 328 is a barrier to accessibility. Replace the unit with normal cabinetry that accommodates compliant frontal wheelchair access and includes similar appliances.

Health

Asbestos containing materials (ACMs) are suspected to exist in interior floor and ceiling finishes. Prior to replacing these systems, the ACMs should be properly investigated and abated.

Fire/Life Safety

Egress pathways throughout the building are generally well-marked by illuminated emergency exit signs.

Fall protection is required for roofing installations to protect the welfare of workers on roofing systems located over six feet above grade. The installation of hard looped tie-off points is recommended at intervals throughout the roof to support workers associated life-lines and harness personal protective equipment.

The building includes an automated fire detection and alarm system. Manual pull stations and automatic detection devices are installed for system activation, and horn and strobe signalers provide notification to occupants in the event of an alarm. The devices are monitored and controlled by a central Siemens panel in room P001. The panel and devices have been in service beyond their statistically useful lives.

The building lacks an automated fire suppression system although manual extinguishers are mounted throughout. It is recommended that future renovation efforts include the installation of a wet-pipe automated sprinkler system.

HVAC

The campus distribution systems provide steam which passes through two shell-and-tube heat exchangers to produce high temperature water. One of these provides the heating medium for Boucke Building, while the other supplies the nearby Telecom Building. Spent steam is collected by a duplex condensate receiver before being returned to the campus systems. Four heating water pumps deliver the high temperature water through a closed loop system that includes an expansion tank. Two other pumps deliver hot water to Telecom. The campus systems also provide chilled water which is used as the cooling medium. Three chilled water pumps deliver the cold water throughout the building. The condensate receiver, the Telecom pumps and heat exchanger, and one of the building heating water pumps are overdue for replacement. The expansion tank has less than a year of statistically serviceable life remaining. The other components are expected to continue operating reliably beyond the coming decade.

The heating and cooling media are employed by six indoor air handlers and numerous fan coil units to provide much of the climate control throughout the building. Four air handlers include associated return

air fans. Five roof-mounted package air conditioning units supplement the air handlers. Conditioned air is delivered to the applicable spaces through a metal ductwork system. Older segments of this system include some hydronic heating elements. The newer portions have variable air volume boxes. Direct digital controls regulate the various components to ensure proper climate conditions are maintained. The rooftop units and two of the air handlers have been in service beyond their serviceable lives. The older portions of the distribution system and many of the control system components will reach lifecycle depletion within the report scope. The return fans, fan coil units, and the remaining air handlers, control system components, and distribution system segments have substantial remaining service life.

Building ventilation is enforced by four centrifugal curb-mounted exhausters on the roof and a louvered propeller style exhaust fan in a basement mechanical room. Four ductless split systems provide additional dedicated cooling to select spaces, and two hydronic unit heaters provide heating for mechanical spaces. The unit heaters and two of the ductless split systems have over ten years of remaining service life. One of the curb-mounted exhausters will be due for replacement within the next few years. The other fans, exhausters, and split systems are in a deferred maintenance status.

Electrical

Electrical power is delivered from the campus power grid and received by a primary step-down transformer. The transformer supplies a main distribution switchboard in room P001, which in turn feeds the building loads. Electrical distribution is a dual voltage system operating at 480/277 and 120/208 volts and includes several load panels with 400 amp or higher ratings. The electrical supply and distribution systems are expected to require no more than routine maintenance over the next ten years.

In the event of a loss of main power, emergency power is supplied from an outside source. The emergency power passes through a primary load interrupter and an automatic transfer switch stands by to connect the emergency power to the building loads. The load interrupter and transfer switch have fewer than five years of useful life remaining.

Ten variable frequency drives are installed throughout the building to support some of the air handler supply and return fans and the HVAC pumps. All of the drives will achieve technical obsolescence within the scope of this assessment and should be budgeted for replacement at the indicated times. Other motored components that do not currently have VFDs but that warrant them based on size and usage include replacement value adjustments to allow for the addition of drives when the respective component is replaced in the future.

Interior lighting for much of the building consists of lay-in fixtures with T8 or T12 fluorescent lamps. Other areas have been renovated to include LED lighting and an occupancy sensing control system. The LED fixtures have service lives that extend beyond the coming decade. The fluorescent lighting and occupancy sensing control system are outdated and should be budgeted for renewal. Additionally, it is recommended that the control system be expanded to provide complete building coverage.

Exterior lighting includes incandescent can fixtures near the entrances. General area illumination around the perimeter and on the roof is provided by LED and HID wall packs. The LED fixtures are a modern

design with over a decade of remaining viability. The other fixtures are obsolete and should be likewise updated to more modern lighting solutions.

This facility would benefit from the addition of lightning protection. Install an appropriately designed system that protects the structure and rooftop structure and equipment.

Plumbing

Domestic water is supplied by the local infrastructure distribution. Potable water piping throughout the building is rigid copper. Sanitary waste and stormwater piping is cast-iron construction. No indications of degradation were observed or reported. However, the supply and drain piping have been in service beyond their industry standard service life and should be replaced in order to prevent potential damage that could result from an age-induced failure.

A backflow preventer is installed on water supply lines to the building. Potable hot water needs are met by a domestic water heat exchanger supported by a storage tank, expansion tank, and pump. The potable water system includes a duplex booster pump skid. A greywater lift station aids in maintaining proper building drainage. The sump and domestic hot water pump have over ten years of service life remaining. The expansion tank will reach lifecycle depletion within the next few years. The booster pump skid, backflow preventer, heat exchanger, and storage tank are in a deferred maintenance status.

Plumbing fixtures in the restrooms include varying ages of wall-hung lavatories, tankless water closets, and wall-hung and floor-mounted urinals. The restroom fixtures appear to be older and should be scheduled for replacement within the near future. Janitorial closets on each floor have older service sinks, and break rooms have stainless-steel kitchen sinks. The service and kitchen sinks will also need to be replaced. Older single-level water fountains are recommended for upgrade in the Accessibility section, while the newer dual-level fountain on the first floor should be adequate.

Vertical Transportation

A single traction elevator with a 2,000-pound capacity provides access to all levels of the building except the basement. A detailed elevator assessment was not performed. However, based on renovation dates and statistical lifecycle models, the elevator should be scheduled for a modernization overhaul in the near future.

Note: The renewal needs outlined in this report were identified from the visual inspection and staff interviews. Our professional architectural and engineering inspectors examined the accessible equipment and various building components to determine what repairs or modifications may be necessary to restore the systems and asset to an acceptable condition, or to a level defined by the Client. The estimated costs represent correction of existing deficiencies and anticipated lifecycle failures within a ten-year period. These recommendations are to bring the facility to modern standards without any anticipation of change to facility space layout or function. The total costs include variable project delivery costs as determined by the Owner. The costs developed do not represent the cost of a complete facility renovation. Soft costs not represented in this report include telecommunications, security, furniture, window treatment, space change, program issues, relocation, swing space, contingency, or costs that could not be identified or determined from the visual inspection and available building information.

INSPECTION TEAM DATA

Report Development

ISES Corporation
3100 Breckinridge Boulevard, Suite 400
Duluth, GA 30096

Project Manager

Rob Gasaway
770.674.3102
RobG@isescorp.com

Date of Inspection

January 30, 2025

Inspection Team Personnel

NAME	POSITION	SPECIALTY
Keith Lewis	Engineering Assessor	Mechanical, Electrical, Plumbing, Energy, Fire/Life Safety, Health
Michelle Thompson	Architectural Assessor	Interior Finishes, Exterior Structure, ADA Compliance, Site, Fire/Life Safety, Health

Client Contact

NAME	POSITION
Ian M. Salada, P.E.	Director, Work Control Division

DEFINITIONS

The following information is a clarification of the Facility Condition Assessment report using example definitions.

Overview

Recurring and Nonrecurring Facility Renewal Costs

Facility renewal costs are divided into two main categories – recurring and nonrecurring. Recurring costs are cyclical and consist primarily of major repairs to or replacement/rebuilding of facility systems and components (e.g., roof or HVAC system replacement at or past the end of its normal useful life). The tool for projecting the recurring renewal costs is the Renewable Component Inventory, which is explained in detail below. Nonrecurring costs typically consist of modifications or repairs necessary to comply with fire/life safety or accessibility code requirements or to address isolated, nonrecurring deficiencies that could negatively affect the structure of the facility or the systems and components within. For these nonrecurring costs, projects have been developed and include estimated material and labor costs.

Facility Condition Needs Index (FCNI)

The FCNI provides a lifecycle cost comparison. It is a ratio of the sum of the recurring and nonrecurring renewal costs over ten years to the current replacement value of the asset. The current replacement value is based on replacement with current construction standards for the facility use type, and not original design parameters. This index gives the university a comparison within all buildings for identifying worst case/best case building conditions.

$$\text{FCNI} = \frac{\text{Nonrecurring Projects + 10-Year Recurring Component Renewal}}{\text{Current Replacement Value}}$$

Facility Condition Index (FCI)

The FCI is a ratio of the Deferred Renewal costs to the current replacement value.

$$\text{FCI} = \frac{\text{Deferred Renewal}}{\text{Current Replacement Value}}$$

Material and Labor Cost Factors and Additional Markups

The project costs are adjusted from the national averages to reflect conditions in State College, Pennsylvania using the R. S. Means City Cost Index for material and labor cost factors. The percentage adjustment of the national average is shown in the table below. Also included in the renewal costs are the construction markup (general contractor profit and overhead, construction management, permitting, accounting, site security, insurance, bonds, sales tax, institutional fees, site utilities, refuse fees, and insurance) and professional fees (architect or engineer design fees and in-house design costs).

GLOBAL MARKUP	%
Local Labor Index	90.6
Local Materials Index	95.6
Construction Markup	20.0
Professional Fees	15.0

Recurring Costs

Renewable Component Inventory and Cost Projections

The Renewable Component Inventory (starting on page 4.1.1) is based on industry standard lifecycle expectancies applied to an inventory of major systems and components within a facility. Each indicated component has the following associated information:

CATEGORY	DESCRIPTION
Component Code	A four-digit code assigned by AMS to the component
Component Description	Description of the individual component
Identifier	Identifying information can be entered as necessary.
Customer ID	Customer-provide equipment ID number
Location	The location of each component can be entered if applicable.
Quantity	The quantity of the listed component
Units	The unit of measure associated with the quantity
Complexity Factor	Adjusts the component replacement costs when it is anticipated that the actual cost will deviate from the average for that component
Total Cost	The unit cost multiplied by quantity, in today's dollars (note that this is a one-time renewal/replacement cost)
Install Date	This is the year that the component was or is estimated to have been installed. When this data is not available, the default is the year the asset was constructed.
Useful Life	Average life expectancy of the component
Useful Life Adjustment	An optional adjustment that lengthens or reduces the first lifecycle of the component
Replacement Year	Expresses when the next replacement should occur and is the sum of the install date, useful life, and any useful life adjustment

The component listing forms the basis of the Recurring Costs by Year report, which provides a year-by-year list of projected recurring renewal costs (in future year dollars) over the next ten years. Each individual component is assigned a replacement year based on lifecycles. For items already past the end of their lifecycle, the replacement year is shown as Deferred Renewal.

For a longer term perspective, the Recurring Component Expenditure Projections Graph presents recurring renewal cost projections over a 50-year period (starting from the date the report is run) based on each individual item's renewal cost and life span. Some components might require renewal several times within the 50-year model, while others might not occur at all. The vertical bars on the graph represent the accumulated total costs for each individual year. The average annual cost per gross square foot ($/GSF) is shown at the bottom of the graph. In this calculation, costs are not escalated. This figure can be utilized to assess the adequacy of existing capital renewal and repair budgets.

Recurring Cost Classifications

- Deferred Renewal
  Recurring repairs, generated by the Renewable Component Inventory, that are past due for completion and have not yet been accomplished as part of normal maintenance or capital repair efforts. Further deferral could impair the proper functioning of the facility. Deferred Renewal upgrades should include compliance with applicable codes, even if such compliance requires expenditures beyond those essential to effect the needed repairs.

- Projected Renewal
  Recurring renewal efforts, generated by the Renewable Component Inventory, that will be due within the scope of the assessment. These are regular or normal facility maintenance, repair, or renovation efforts that should be planned in the near future.

Nonrecurring Costs

As previously mentioned, modifications or repairs necessary to comply with fire/life safety or accessibility code requirements and those that address isolated, nonrecurring deficiencies that could negatively affect the structure of the facility or the systems and components within are not included in the Renewable Component Inventory. For each such deficiency identified during the facility inspection, a project with an estimated cost to rectify said deficiency is recommended. These projects each have a unique identifier and are categorized by system type, priority, and classification, which are defined below. The costs in these projects are also indexed to local conditions and markups applied as the situation dictates.

Project Number

Each project has a unique number consisting of three elements, the asset identification number, system code, and a sequential number assigned by the FCA software. For example, the third fire/life safety project identified for asset 0001 would have a project number of 0001FS03 (0001 for the asset number, FS for fire/life safety, and 03 being the next sequential number for a fire/life safety project).

Project Classifications

- Plant Adaption
  Nonrecurring expenditures, stored in the Projects module, required to adapt the physical plant to the evolving needs of the institution and to changing codes or standards. These are expenditures beyond normal maintenance. Examples include compliance with changing codes (e.g., accessibility), facility alterations required by changing teaching or research methods, and improvements occasioned by the adoption of modern technology (e.g., the use of personal computer networks).

- Corrective Action
  Nonrecurring expenditures, stored in the Projects module, for repairs needed to correct random and unpredictable deficiencies. Such projects are not related to aligning a building with codes or standards. Deficiencies classified as Corrective Action could have an effect on building aesthetics, safety, or usability.

Priority Classes

Recurring renewal needs do not receive individual prioritization, as the entire data set of needs in this category is year-based. Each separate component has a distinct need year, rendering further prioritization unnecessary. Each nonrecurring renewal project, however, has a priority assigned to indicate the criticality of the recommended work. The prioritization utilized for this subset of the data is as follows.

- Priority 1 – High

  Items in this category include:

  a. correcting a cited safety hazard
  b. stopping accelerated deterioration
  c. returning a facility to normal operation

- Priority 2 – Medium

  Items in this category include:

  a. repairs to prevent further deterioration
  b. improvements to facility approach/entry and access to goods and services (DOJ ADA title III, priorities 1 and 2)
  c. correction of potential safety hazards

- Priority 3 – Low

  Items in this category include:

  a. improving access to restrooms and other amenities (DOJ ADA title III, priorities 3 and 4)

  b. bringing a facility into compliance with current building codes as grandfather clauses expire

  c. increasing usability following an occupancy or use change

  d. actions that are recommended but not required by code

Project Subclass

Subclass ratings are assigned to accessibility upgrade activities based on the four Department of Justice priority rankings recommended by the Title III regulations for planning readily achievable barrier removal projects. These ratings are:

- DOJ1 Accessible approach and entrance
- DOJ2 Access to goods and services
- DOJ3 Access to restrooms
- DOJ4 Any other necessary measures

Category Codes

CATEGORY CODE*	SYSTEM DESCRIPTION
AC1A – AC4B	ACCESSIBILITY
EL1A – EL8A	ELECTRICAL
ES1A – ES6E	EXTERIOR STRUCTURE
FS1A – FS6A	FIRE/LIFE SAFETY
HE1A – HE7A	HEALTH
HV1A – HV8B	HVAC
IS1A – IS6D	INTERIOR FINISHES/SYSTEMS
PL1A – PL5A	PLUMBING
SI1A – SI4A	SITE
VT1A – VT7A	VERTICAL TRANSPORTATION

Example: **Category Code = EL5A**	
EL	System Description
5	Component Description
A	Element Description

Priority Sequence

A Priority Sequence number is automatically assigned to each project to rank the projects in order of relative criticality and show the recommended execution order. This number is calculated based on the Priority Class and identified system of each project.

Example			
Priority Class	**Category Code**	**Project Number**	**Priority Sequence**
1	HV2C	0001HV04	01
1	PL1D	0001PL02	02
2	IS1E	0001IS06	03
2	EL4C	0001EL03	04

Drawings/Project Locations

Floor plans for this facility are provided as a reference.

Photographs

A code shown on the Photo Log identifies the asset number, photo sequence, and a letter designation for architect (a) or engineer (e).

Example: **Photo Number: 0001006e**	
0001	Asset Number
006	Photo Sequence
e	Engineering Photo

Sustainability/Energy Analysis

Energy/resource conservation measures (ECMs) are recommendations that will reduce resource consumption or the rate of growth in consumption. Examples include improving the efficiency of an HVAC system (e.g., digital motor speed controls, exhaust energy recovery, retrocommissioning) or directly reducing the consumption of a resource (e.g., low flow plumbing fixtures, high-efficiency lighting, or structural insulation improvement). Where significant conservation opportunities are evident for this facility, ECMs are identified and tabulated in Section 7 as a basis for further viability investigation.

FACILITY CONDITION ASSESSMENT

SECTION 2

COST SUMMARIES AND TOTALS

RENEWAL NEEDS MATRIX

All dollars shown as Present Value

CATEGORY	NONRECURRING PROJECT NEEDS			RECURRING COMPONENT REPLACEMENT NEEDS											
	Immediate	Critical	Noncritical	Deferred Renewal	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	TOTAL
ACCESSIBILITY	0	282,449	45,858	0	0	0	0	0	0	0	0	0	0	0	$328,307
EXTERIOR	0	0	21,178	2,538,720	0	0	0	7,623	30,726	8,641	0	0	0	0	$2,606,888
INTERIOR	0	0	0	3,327,970	0	0	23,661	0	0	1,067,495	0	0	0	0	$4,419,126
PLUMBING	0	0	0	4,465,432	0	0	0	11,959	0	0	0	0	0	0	$4,477,391
HVAC	0	0	0	403,820	179,257	0	0	12,311	0	0	0	0	0	3,591,627	$4,187,015
FIRE/LIFE SAFETY	0	102,977	1,017,238	234,631	0	0	0	0	0	0	0	0	0	0	$1,354,845
ELECTRICAL	0	49,336	84,769	839,195	0	9,020	36,135	7,573	67,560	14,006	16,222	0	0	0	$1,123,815
SITE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$0
VERT. TRANS.	0	0	0	0	0	458,439	0	0	0	0	0	0	0	0	$458,439
HEALTH/EQUIP.	0	0	136,468	0	0	0	0	0	0	0	0	0	0	0	$136,468
SUBTOTAL	$0	$434,761	$1,305,511	$11,809,768	$179,257	$467,458	$59,796	$39,466	$98,285	$1,090,142	$16,222	$0	$0	$3,591,627	$19,092,294
TOTAL NONRECURRING PROJECT NEEDS			$1,740,272	TOTAL RECURRING COMPONENT REPLACEMENT NEEDS										$17,352,021	

CURRENT REPLACEMENT VALUE	$54,208,000
FACILITY CONDITION NEEDS INDEX	0.35
FACILITY CONDITION INDEX	0.22

GSF	TOTAL 10-YEAR FACILITY RENEWAL NEEDS	10-YEAR NEEDS/SF
96,323	$19,092,294	$198.21

RENEWAL NEEDS BY SYSTEM

All costs shown as Present Value

CATEGORY	NONRECURRING PROJECT COSTS	RECURRING COMPONENT REPLACEMENT COSTS	TOTAL 10-YEAR FACILITY RENEWAL COSTS
ACCESSIBILITY	$328,307	$0	$328,307
EXTERIOR	$21,178	$2,585,710	$2,606,888
INTERIOR	$0	$4,419,126	$4,419,126
PLUMBING	$0	$4,477,391	$4,477,391
HVAC	$0	$4,187,015	$4,187,015
FIRE/LIFE SAFETY	$1,120,215	$234,631	$1,354,845
ELECTRICAL	$134,105	$989,711	$1,123,815
SITE	$0	$0	$0
VERT. TRANS	$0	$458,439	$458,439
HEALTH	$136,468	$0	$136,468
TOTALS	**$1,740,272**	**$17,352,021**	**$19,092,294**

FACILITIES RENEWAL PLAN

RECURRING COMPONENT REPLACEMENT COSTS

All costs shown as Present Value

ASSET CODE COMP CODE	COMPONENT	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	REPLACEMENT YEAR	REPLACEMENT COST
0013-000EF04	EXTERIOR DOOR OR WINDOW APPLIED FINISH			HM DOORS	B2010	Deferred Renewal	10,759
0013-000WN01	GLASS, WINDOW, ALUMINUM OR WOOD, STANDARD	SINGLE PANE		EXTERIOR	B2020	Deferred Renewal	2,086,214
0013-000DR05	DOOR AND FRAME, EXTERIOR, SWINGING, ALUMINUM AND GLASS	METAL AND GLASS		MAIN ENTRY	B2030	Deferred Renewal	45,738
0013-000DR05	DOOR AND FRAME, EXTERIOR, SWINGING, ALUMINUM AND GLASS	METAL AND GLASS		ANCILLARY	B2030	Deferred Renewal	7,623
0013-000DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	PT ON HM		PENTHOUSE	B2030	Deferred Renewal	2,560
0013-000DR28	DOOR OPERATOR, POWER-ASSIST	PNUEMATIC		RESTROOMS	B2030	Deferred Renewal	86,411
0013-000DR34	DOOR LOCK, COMMERCIAL-GRADE, EXTERIOR	BEST		PENTHOUSE	B2030	Deferred Renewal	1,207
0013-000DR34	DOOR LOCK, COMMERCIAL-GRADE, EXTERIOR	BEST		ROOF	B2030	Deferred Renewal	4,827
0013-000DR36	DOOR PANIC HARDWARE, EXTERIOR	PUSHBAR		ANCILLARY	B2030	Deferred Renewal	3,038
0013-000DR36	DOOR PANIC HARDWARE, EXTERIOR	PUSHBAR		ANCILLARY	B2030	Deferred Renewal	3,038
0013-000DR36	DOOR PANIC HARDWARE, EXTERIOR	PUSHBAR		MAIN ENTRY	B2030	Deferred Renewal	18,230
0013-000DR36	DOOR PANIC HARDWARE, EXTERIOR	PUSHBAR		NORTH ENTRIES	B2030	Deferred Renewal	18,230
0013-000RR03	ROOF - 1-PLY, UNBALLASTED	FLAT		MECH RM	B3010	Deferred Renewal	10,130
0013-000RR08	ROOF - BITUMINOUS, 4-PLY, COAL TAR PITCH - R30	FLAT		LOWER	B3010	Deferred Renewal	240,715
0013-000DR24	DOOR LOCK, COMMERCIAL-GRADE, INTERIOR	BEST		OFFICES	C1020	Deferred Renewal	62,155
0013-000DR26	DOOR PANIC HARDWARE, INTERIOR	PUSHBAR		STAIRWELLS	C1020	Deferred Renewal	63,798
0013-000CW01	CASEWORK - WOOD BASE AND WALL, TOP, STANDARD	LAMINATE		BRK RMS	C1030	Deferred Renewal	38,959

FACILITIES RENEWAL PLAN

RECURRING COMPONENT REPLACEMENT COSTS

All costs shown as Present Value

ASSET CODE COMP CODE	COMPONENT	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	REPLACEMENT YEAR	REPLACEMENT COST
0013-000IW01	WALL FINISH - APPLIED, STANDARD	PT ON DRYWALL		FLRS 2-4	C3010	Deferred Renewal	801,673
0013-000IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	CARPET TILE		OFFICES	C3020	Deferred Renewal	158,605
0013-000IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	BROADLOOM		OFFICES	C3020	Deferred Renewal	634,571
0013-000IF03	FLOORING - VINYL COMPOSITION TILE, STANDARD	ACM VCT		SUPPORT SPACE	C3020	Deferred Renewal	33,686
0013-000IF03	FLOORING - VINYL COMPOSITION TILE, STANDARD	VCT		CORRIDORS, BRK RM	C3020	Deferred Renewal	190,976
0013-000IF26	INTERIOR STAIR TREAD AND LANDING FINISH	Z101		SE	C3020	Deferred Renewal	19,912
0013-000IF26	INTERIOR STAIR TREAD AND LANDING FINISH	Z102		NE	C3020	Deferred Renewal	19,912
0013-000IF26	INTERIOR STAIR TREAD AND LANDING FINISH	Z103		CENTRAL	C3020	Deferred Renewal	19,912
0013-000IF26	INTERIOR STAIR TREAD AND LANDING FINISH	Z104		NW	C3020	Deferred Renewal	19,912
0013-000IC01	CEILING FINISH - SUSPENDED ACOUSTICAL TILE, STANDARD	2X2 GRID		CORRIDORS	C3030	Deferred Renewal	720,496
0013-000IC03	CEILING FINISH - ATTACHED ACOUSTICAL TILE	ACM ACT		OFF, CLSS	C3030	Deferred Renewal	543,406
0013-000FX02	PLUMBING FIXTURE - LAVATORY, WALL HUNG	PC		RESTROOM	D2010	Deferred Renewal	17,145
0013-000FX02	PLUMBING FIXTURE - LAVATORY, WALL HUNG	PC		RESTROOM	D2010	Deferred Renewal	29,146
0013-000FX04	PLUMBING FIXTURE - SINK, KITCHEN	SST		BRK RM	D2010	Deferred Renewal	2,916
0013-000FX06	PLUMBING FIXTURE - SINK, SERVICE/LAUNDRY/UTILITY	WALLMOUNT		CUSTODIAL	D2010	Deferred Renewal	16,892
0013-000FX10	PLUMBING FIXTURE - URINAL	PC FLOOR MT		RESTROOM	D2010	Deferred Renewal	5,359
0013-000FX10	PLUMBING FIXTURE - URINAL	PC FLOOR MT		RESTROOM	D2010	Deferred Renewal	8,039

FACILITIES RENEWAL PLAN

RECURRING COMPONENT REPLACEMENT COSTS

All costs shown as Present Value

ASSET CODE COMP CODE	COMPONENT	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	REPLACEMENT YEAR	REPLACEMENT COST
0013-000FX12	PLUMBING FIXTURE - WATER CLOSET, TANKLESS	PC LOW PRESSURE		RESTROOM	D2010	Deferred Renewal	15,203
0013-000FX12	PLUMBING FIXTURE - WATER CLOSET, TANKLESS	PC LOW PRESSURE		RESTROOM	D2010	Deferred Renewal	43,437
0013-000BF03	BACKFLOW PREVENTER (2.1-3 INCHES)	BFP, CONBRACO		M001	D2020	Deferred Renewal	9,430
0013-000PP01	DOMESTIC WATER BOOSTER SYSTEM	BP-1, ARMSTRONG, DUPLEX		M001	D2020	Deferred Renewal	64,787
0013-000PS02	SUPPLY PIPING SYSTEM - CLASSROOM	RGD CU		ALL AREAS	D2020	Deferred Renewal	2,358,635
0013-000TK04	WATER TANK (275-1,649 GAL)	DHW-TANK	126803	M001	D2020	Deferred Renewal	33,830
0013-000WH27	WATER HEATER - SHELL & TUBE (46-93 GPM)	DMHX	022072	M001	D2020	Deferred Renewal	68,982
0013-000PD02	DRAIN PIPING SYSTEM - CLASSROOM	CIHS		ALL AREAS	D2030	Deferred Renewal	1,791,632
0013-000HU19	DUCTLESS DX SPLIT SYSTEM (>2 TON)	CU-3, MITSUBISHI, R22	001245	EXTERIOR	D3030	Deferred Renewal	3,755
0013-000HU19	DUCTLESS DX SPLIT SYSTEM (>2 TON)	CU-1, MITSUBISHI, R22	001098	ROOF	D3030	Deferred Renewal	4,355
0013-000AH06	AIR HANDLING UNIT - INDOOR (7-9 HP)	ACF-003	001200	214	D3040	Deferred Renewal	82,860
0013-000AH06	AIR HANDLING UNIT - INDOOR (7-9 HP)	ACF-002	001201	111	D3040	Deferred Renewal	82,860
0013-000FN20	FAN - CENTRIFUGAL ROOF EXHAUST (25"-30" DIAMETER)	EFN-007	001095	ROOF	D3040	Deferred Renewal	12,311
0013-000FN20	FAN - CENTRIFUGAL ROOF EXHAUST (25"-30" DIAMETER)	EFN-002	001103	LOWER ROOF	D3040	Deferred Renewal	12,311
0013-000FN20	FAN - CENTRIFUGAL ROOF EXHAUST (25"-30" DIAMETER)	EFN		ROOF	D3040	Deferred Renewal	12,311
0013-000FN25	FAN - PROPELLER WITH LOUVER (<=0.5 HP)	EF-1	001235	M001	D3040	Deferred Renewal	4,707

FACILITIES RENEWAL PLAN

RECURRING COMPONENT REPLACEMENT COSTS

All costs shown as Present Value

ASSET CODE COMP CODE	COMPONENT	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	REPLACEMENT YEAR	REPLACEMENT COST
0013-000HX04	HEAT EXCHANGER - SHELL & TUBE STEAM TO WATER (20-85 GPM)	HTX-1 (TELECOM)	126801	M001	D3040	Deferred Renewal	16,054
0013-000PH01	PUMP - ELECTRIC (<=10 HP)	HWP-006 (TELECOM)	001237	M001	D3040	Deferred Renewal	2,142
0013-000PH01	PUMP - ELECTRIC (<=10 HP)	HWP-003 (TELECOM)	001238	M001	D3040	Deferred Renewal	2,142
0013-000PH01	PUMP - ELECTRIC (<=10 HP)	HWP-004	001242	M001	D3040	Deferred Renewal	2,142
0013-000PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	CP-1, DUPLEX, BELL & GOSSETT	001240,001241	M001	D3040	Deferred Renewal	18,231
0013-000HU30	PACKAGE HVAC UNIT, DX, GAS OR ELECTRIC HEAT, SINGLE-ZONE (<= 5 TON)	RTU-5, TRANE, R22	022790	ROOF	D3050	Deferred Renewal	31,394
0013-000HU31	PACKAGE HVAC UNIT, DX, GAS OR ELECTRIC HEAT, SINGLE-ZONE (6-9 TON)	RTU-1, TRANE, R22	022789	ROOF	D3050	Deferred Renewal	29,061
0013-000HU31	PACKAGE HVAC UNIT, DX, GAS OR ELECTRIC HEAT, SINGLE-ZONE (6-9 TON)	RTU-4, TRANE, R22	022788	ROOF	D3050	Deferred Renewal	29,061
0013-000HU31	PACKAGE HVAC UNIT, DX, GAS OR ELECTRIC HEAT, SINGLE-ZONE (6-9 TON)	RTU-3, TRANE, R22	022792	ROOF	D3050	Deferred Renewal	29,061
0013-000HU31	PACKAGE HVAC UNIT, DX, GAS OR ELECTRIC HEAT, SINGLE-ZONE (6-9 TON)	RTU-2, TRANE, R22	022791	ROOF	D3050	Deferred Renewal	29,061
0013-000FA01	FIRE ALARM SYSTEM - DEVICES	H/S, SMOKE, PULLS		ALL AREAS	D4030	Deferred Renewal	216,993
0013-000FA03	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER UP TO 200 POINTS	SIEMENS		P001	D4030	Deferred Renewal	17,638
0013-000LE01	RES EXTERIOR BLDG MT DECO OR FLOOD LIGHTING	INCND CAN		ENTRANCES	D5020	Deferred Renewal	1,034
0013-000LE03	COM EXTERIOR BLDG MT HI FLOOD LIGHTING (WALLPACK, WALLWASH)	HID WLPK		EXT WALLS	D5020	Deferred Renewal	2,957
0013-000LI02	LIGHTING SYSTEM, INTERIOR - CLASSROOM	T8 FL		ALL AREAS	D5020	Deferred Renewal	546,293

FACILITIES RENEWAL PLAN

RECURRING COMPONENT REPLACEMENT COSTS

All costs shown as Present Value

ASSET CODE COMP CODE	COMPONENT	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	REPLACEMENT YEAR	REPLACEMENT COST
0013-000LI02	LIGHTING SYSTEM, INTERIOR - CLASSROOM	T8 FL, T12 FL		1ST FLR	D5020	Deferred Renewal	161,718
0013-000LI24	OCCUPANCY SENSING AND TIMER LIGHTING CONTROL	WL SW, CEILIN GPUCK		SELECT SPACES	D5020	Deferred Renewal	127,194
0013-000TK29	EXPANSION TANK, DIAPHRAGM (25-44 GAL)	ET-HHW-1, BELL & GOSSETT		M001	D3040	2025	6,408
0013-000BA25	HVAC CONTROLS - FIELD PANELS/OPS SOFTWARE - CLASSROOM	DDC, AUTOMATED LOGIC		ALL AREAS	D3060	2025	114,172
0013-000BA48	HVAC CONTROLS - MAJOR INSTRUMENTATION - CLASSROOM	DDC, AUTOMATED LOGIC		ALL AREAS	D3060	2025	58,676
0013-000VT01	ELEVATOR MODERNIZATION - TRACTION - LOW RISE 2-8 FLOORS	ELEV-070, PSNGR	ELEV070	M501	D1010	2026	458,439
0013-000VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD HWP-6, ABB		M002	D5010	2026	2,754
0013-000VF02	VARIABLE FREQUENCY DRIVE (6-7.5 HP)	VFD CHWP-3, ABB		M002	D5010	2026	6,265
0013-000IC04	CEILING FINISH - APPLIED PAINT OR STAIN, STANDARD	PT ON DRYWALL		RRS, STAIRS	C3030	2027	23,661
0013-000VF04	VARIABLE FREQUENCY DRIVE (11-15 HP)	VFD HWP-4, ABB		M002	D5010	2027	8,111
0013-000VF04	VARIABLE FREQUENCY DRIVE (11-15 HP)	VFD HWP-5, ABB		M002	D5010	2027	8,111
0013-000VF05	VARIABLE FREQUENCY DRIVE (16-20 HP)	VFD CHWP-1, ABB		M002	D5010	2027	9,956
0013-000VF05	VARIABLE FREQUENCY DRIVE (16-20 HP)	VFD CHWP-2, ABB		M002	D5010	2027	9,956
0013-000DR05	DOOR AND FRAME, EXTERIOR, SWINGING, ALUMINUM AND GLASS	METAL AND GLASS		ANCILLARY	B2030	2028	7,623
0013-000TK18	EXPANSION TANK, DIAPHRAGM (100-249 GAL)	ET-1, DCW		M001	D2020	2028	11,959

FACILITIES RENEWAL PLAN

RECURRING COMPONENT REPLACEMENT COSTS

All costs shown as Present Value

ASSET CODE COMP CODE	COMPONENT	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	REPLACEMENT YEAR	REPLACEMENT COST
0013-000FN20	FAN - CENTRIFUGAL ROOF EXHAUST (25"-30" DIAMETER)	EFN-005	001099	ROOF	D3040	2028	12,311
0013-000GN10	SWITCH - AUTO TRANSFER, 208 OR 240 V (31-100 AMP)	ETS-014	ETS014	P001	D5090	2028	7,573
0013-000DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	PT ON HM		NORTH ENTRIES	B2030	2029	30,726
0013-000SW01	LOAD INTERRUPTER ALLOCATION (5-15 kV, UP TO 600 AMP)	LI, EM		P001	D5010	2029	67,560
0013-000DR28	DOOR OPERATOR, POWER-ASSIST	PNUEMATIC		NE ENTRY	B2030	2030	8,641
0013-000DR01	DOOR AND FRAME, INTERIOR, NON-RATED	WOOD		OFFICES	C1020	2030	378,380
0013-000DR02	DOOR AND FRAME, INTERIOR, FIRE-RATED	WOOD		STAIRWELLS	C1020	2030	196,890
0013-000DR02	DOOR AND FRAME, INTERIOR, FIRE-RATED	WOOD		OFFICES	C1020	2030	492,225
0013-000VF03	VARIABLE FREQUENCY DRIVE (7.6-10 HP)	VFD RF-3, ABB		M325	D5010	2030	7,003
0013-000VF03	VARIABLE FREQUENCY DRIVE (7.6-10 HP)	VFD RF-1, ABB		M140	D5010	2030	7,003
0013-000VF04	VARIABLE FREQUENCY DRIVE (11-15 HP)	VFD AHU-3, ABB		M325	D5010	2031	8,111
0013-000VF04	VARIABLE FREQUENCY DRIVE (11-15 HP)	VFD AHU-1, ABB		M140	D5010	2031	8,111
0013-000HV02	HVAC DISTRIBUTION NETWORKS - CLASSROOM	MTL DUCT, HYD		ALL AREAS	D3040	2034	3,591,627
						TOTAL	**$17,352,021**

FACILITIES RENEWAL PLAN

NONRECURRING PROJECT COSTS

All costs shown as Present Value

PROJECT NUMBER	PROJECT TITLE	UNI-FORMAT	PRIORITY CLASS	PROJECT CLASSIFICATION	PROJECT COST
0013-000AC02	REPLACE INTERIOR DOOR HARDWARE	C1020	2	Plant Adaption	167,343
0013-000AC03	UPGRADE INTERIOR STAIR	C2020	2	Plant Adaption	115,106
0013-000EL02	ADD LIGHTNING PROTECTION SYSTEM	D5090	2	Plant Adaption	49,336
0013-000FS02	ADD ROPE DAVITS TO SUPPORT WORKER FALL PROTECTION	B3010	2	Plant Adaption	102,977
0013-000AC01	REPLACE DRINKING FOUNTAINS	D2010	3	Plant Adaption	32,676
0013-000AC04	UPGRADE ALL-IN-ONE KITCHENETTE UNIT	B2010	3	Plant Adaption	13,182
0013-000EL01	INSTALL OCCUPANCY SENSOR LIGHTING CONTROLS	D5020	3	Plant Adaption	84,769
0013-000ES01	RESTORE EXTERIOR MASONRY	B2010	3	Plant Adaption	21,178
0013-000FS01	FIRE SPRINKLER SYSTEM INSTALLATION	D4010	3	Plant Adaption	1,017,238
0013-000HE01	ASBESTOS ABATEMENT - INTERIOR FINISH SYSTEMS	F2020	3	Plant Adaption	136,468
				TOTAL	**$1,740,272**

FACILITY CONDITION ASSESSMENT

SECTION 3

NONRECURRING PROJECT DETAILS

All costs shown as Present Value

ADD ROPE DAVITS TO SUPPORT WORKER FALL PROTECTION

Project Number:	0013-000FS02	**Category Code:** FS6A	
Priority Sequence:	1		
Priority Class:	Critical	**System:**	FIRE/LIFE SAFETY
Project Class:	Plant Adaption	**Component:**	GENERAL
Date Basis:	3/28/2025	**Element:**	OTHER

Code Application:		Subclass/Savings:	Project Location:
OSHA	29 CFR 1926.500	Not Applicable	Floor-wide: Floor(s) R

Description

Fall protection is required for roofing installations to protect the welfare of workers on roofing systems located over six feet above grade. The installation of hard looped tie-off points is recommended at intervals throughout the roof to support workers associated lifelines and harness personal protective equipment.

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Allocation to install metal rope davits to support PPE equipment on roof	EA	75	$413	$30,959	$663	$49,696	$80,654
Base Material/Labor Costs				**$30,959**		**$49,696**	
Indexed Material/Labor Costs				**$29,596**		**$45,024**	**$74,621**
Construction Mark Up at 20.0%							**$14,924**
Original Construction Cost							**$89,545**
Date of Original Estimate: 3/28/2025						**Inflation**	**$0**
Current Year Construction Cost							**$89,545**
Professional Fees at 15.0%							**$13,432**
TOTAL PROJECT COST							**$102,977**

All costs shown as Present Value

REPLACE INTERIOR DOOR HARDWARE

Project Number:	0013-000AC02
Priority Sequence:	2
Priority Class:	Critical
Project Class:	Plant Adaption
Date Basis:	3/28/2025

Category Code: AC3C

System:	ACCESSIBILITY
Component:	INTERIOR PATH OF TRAVEL
Element:	DOORS AND HARDWARE

Code Application:		Subclass/Savings:	Project Location:
ADAAG	309.4	DOJ2 - Access to Goods & Services	Floor-wide: Floor(s) 1,2,3,4,B

Description

Accessibility legislation requires that door hardware be designed for people with little or no ability to grasp objects with their hands. To comply with the intent of this legislation, it is recommended that lever handle hardware be installed on all doors that still have knobs.

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
ADA-compliant commercial-grade door hardware	EA	175	$525	$91,940	$210	$36,831	$128,770
Base Material/Labor Costs				**$91,940**		**$36,831**	
Indexed Material/Labor Costs				**$87,894**		**$33,368**	**$121,263**
Construction Mark Up at 20.0%							**$24,253**
Original Construction Cost							**$145,515**
Date of Original Estimate: 3/28/2025						**Inflation**	**$0**
Current Year Construction Cost							**$145,515**
Professional Fees at 15.0%							**$21,827**
TOTAL PROJECT COST							**$167,343**

All costs shown as Present Value

UPGRADE INTERIOR STAIR

Project Number:	0013-000AC03	**Category Code:** AC3B	
Priority Sequence:	3		
Priority Class:	Critical	**System:**	ACCESSIBILITY
Project Class:	Plant Adaption	**Component:**	INTERIOR PATH OF TRAVEL
Date Basis:	3/28/2025	**Element:**	STAIRS AND RAILINGS

Code Application:		Subclass/Savings:	Project Location:
IBC	1011, 1014	DOJ2 - Access to Goods & Services	Floor-wide: Floor(s) 1,2,3,4,B
ADAAG	505		

Description

Accessibility legislation requires that stairs have graspable handrails on both sides, that the rails have a specific end geometry, and that the handrails continue horizontally at the landings. In addition, guardrails must prevent the passage of a four-inch diameter sphere. Although the stairs are compliant with the code enforced at the time of construction until a major renovation occurs, they are deficient in handrail and guardrail design relative to current standards. Future renovation efforts should include comprehensive stair railing upgrades.

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Wall-mounted handrail system per floor	FLR	16	$990	$15,848	$900	$14,407	$30,255
Switchback handrail/guardrail system per floor	FLR	16	$2,244	$35,902	$1,441	$23,051	$58,954
			Base Material/Labor Costs	**$51,750**		**$37,458**	
			Indexed Material/Labor Costs	**$49,473**		**$33,937**	**$83,410**
					Construction Mark Up at 20.0%		**$16,682**
					Original Construction Cost		**$100,092**
Date of Original Estimate:	3/28/2025				**Inflation**		**$0**
					Current Year Construction Cost		**$100,092**
					Professional Fees at 15.0%		**$15,014**
					TOTAL PROJECT COST		**$115,106**

All costs shown as Present Value

ADD LIGHTNING PROTECTION SYSTEM

Project Number:	0013-000EL02
Priority Sequence:	4
Priority Class:	Critical
Project Class:	Plant Adaption
Date Basis:	3/28/2025

Category Code: EL4E

System:	ELECTRICAL
Component:	DEVICES AND FIXTURES
Element:	LIGHTNING PROTECTION

Code Application:		Subclass/Savings:	Project Location:
NFPA	70, 780	Not Applicable	Floor-wide: Floor(s) R

Description

This facility would benefit from the addition of lightning protection. Install an appropriately designed system that protects the structure and rooftop structure and equipment.

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Cable, connectors, air terminals, grounding rods, specialty fasteners, etc.	SF	24,000	$0.80	$19,200	$0.80	$19,200	$38,400
			Base Material/Labor Costs	**$19,200**		**$19,200**	
			Indexed Material/Labor Costs	**$18,355**		**$17,395**	**$35,750**
						Construction Mark Up at 20.0%	**$7,150**
						Original Construction Cost	**$42,900**
Date of Original Estimate: 3/28/2025						**Inflation**	**$0**
						Current Year Construction Cost	**$42,900**
						Professional Fees at 15.0%	**$6,435**
						TOTAL PROJECT COST	**$49,336**

All costs shown as Present Value

FIRE SPRINKLER SYSTEM INSTALLATION

Project Number:	0013-000FS01
Priority Sequence:	5
Priority Class:	Noncritical
Project Class:	Plant Adaption
Date Basis:	2/18/2025

Category Code: FS3A

System:	FIRE/LIFE SAFETY
Component:	SUPPRESSION
Element:	SPRINKLERS

Code Application:		Subclass/Savings:	Project Location:
NFPA	1, 13, 13R, 101	Not Applicable	Floor-wide: Floor(s) 1,2,3,4,B

Description

As a part of future renovation efforts, it is recommended that this building be fully protected by an automatic, wet-pipe sprinkler system.

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Install a wet-pipe sprinkler system, including valves, piping, sprinkler heads, piping supports, etc.	SF	96,323	$3.02	$290,895	$5.26	$506,659	$797,554
			Base Material/Labor Costs	**$290,895**		**$506,659**	
			Indexed Material/Labor Costs	**$278,096**		**$459,033**	**$737,129**
					Construction Mark Up at 20.0%		**$147,426**
					Original Construction Cost		**$884,555**
Date of Original Estimate:	2/18/2025				**Inflation**		**$0**
					Current Year Construction Cost		**$884,555**
					Professional Fees at 15.0%		**$132,683**
					TOTAL PROJECT COST		**$1,017,238**

All costs shown as Present Value

ASBESTOS ABATEMENT - INTERIOR FINISH SYSTEMS

Project Number:	0013-000HE01
Priority Sequence:	6
Priority Class:	Noncritical
Project Class:	Plant Adaption
Date Basis:	3/28/2025

Category Code: HE6F

System:	HEALTH
Component:	HAZARDOUS MATERIAL
Element:	OTHER

Code Application:		Subclass/Savings:	Project Location:
EPA	40 CFR 61.M, 763	Not Applicable	Area Wide: Floor(s) 1,2,3,4
OSHA	29 CFR 1910.1001, 1926.1101		

Description

Asbestos-containing materials (ACMs) are suspected to exist in interior floor and ceiling finishes. Prior to replacing these systems, the ACMs should be properly investigated and abated. This project provides a budget for the abatement of ACMs prior to the renewal of the affected finishes.

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Typical asbestos abatement of floor tile and mastic	SF	3,900	$0.40	$1,560	$2.77	$10,803	$12,363
Typical asbestos abatement of attached ceiling finishes	SF	56,350	$0.11	$6,199	$1.60	$90,160	$96,359
			Base Material/Labor Costs	**$7,759**		**$100,963**	
			Indexed Material/Labor Costs	**$7,417**		**$91,472**	**$98,890**
					Construction Mark Up at 20.0%		**$19,778**
					Original Construction Cost		**$118,668**
Date of Original Estimate: 3/28/2025					**Inflation**		**$0**
					Current Year Construction Cost		**$118,668**
					Professional Fees at 15.0%		**$17,800**
					TOTAL PROJECT COST		**$136,468**

All costs shown as Present Value

UPGRADE ALL-IN-ONE KITCHENETTE UNIT

Project Number:	0013-000AC04	**Category Code:** AC4A	
Priority Sequence:	7		
Priority Class:	Noncritical	**System:**	ACCESSIBILITY
Project Class:	Plant Adaption	**Component:**	GENERAL
Date Basis:	4/1/2025	**Element:**	FUNCTIONAL SPACE MOD.

Code Application:		Subclass/Savings:	Project Location:
ADAAG	305, 306, 606, 606.2	DOJ2 - Access to Goods & Services	Item Only: Floor(s) 3

Description

Building amenities are required to be accessible to all persons. The current configuration of the all-in-one kitchenette unit in room 328 is a barrier to accessibility. Replace the unit with normal cabinetry that accommodates compliant frontal wheelchair access and include similar appliances.

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Replacement casework, countertop, cooking elements, refrigeration elements, and sink.	EA	1	$6,501	$6,501	$3,683	$3,683	$10,184
			Base Material/Labor Costs	**$6,501**		**$3,683**	
			Indexed Material/Labor Costs	**$6,215**		**$3,337**	**$9,552**
						Construction Mark Up at 20.0%	**$1,910**
						Original Construction Cost	**$11,463**
Date of Original Estimate:	4/1/2025					**Inflation**	**$0**
						Current Year Construction Cost	**$11,463**
						Professional Fees at 15.0%	**$1,719**
						TOTAL PROJECT COST	**$13,182**

All costs shown as Present Value

REPLACE DRINKING FOUNTAINS

Project Number:	0013-000AC01	**Category Code:** AC3F	
Priority Sequence:	8		
Priority Class:	Noncritical	**System:**	ACCESSIBILITY
Project Class:	Plant Adaption	**Component:**	INTERIOR PATH OF TRAVEL
Date Basis:	3/28/2025	**Element:**	DRINKING FOUNTAINS

Code Application:		Subclass/Savings:	Project Location:
ADAAG	602	DOJ4 - Other	Item Only: Floor(s) 1,2,3

Description

The single-level drinking fountains are a barrier to accessibility. They should be replaced with dual-level units and placed in recessed alcoves.

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Dual-level drinking fountain	EA	3	$2,103	$6,310	$647	$1,940	$8,250
Construct recessed alcove, including all finishes and MEP updates	EA	3	$1,266	$3,798	$4,510	$13,530	$17,328
			Base Material/Labor Costs	**$10,108**		**$15,469**	
			Indexed Material/Labor Costs	**$9,663**		**$14,015**	**$23,679**
					Construction Mark Up at 20.0%		**$4,736**
					Original Construction Cost		**$28,414**
Date of Original Estimate: 3/28/2025					**Inflation**		**$0**
					Current Year Construction Cost		**$28,414**
					Professional Fees at 15.0%		**$4,262**
					TOTAL PROJECT COST		**$32,676**

All costs shown as Present Value

RESTORE EXTERIOR MASONRY

Project Number:	0013-000ES01	**Category Code:**	ES2B
Priority Sequence:	9		
Priority Class:	Noncritical	**System:**	EXTERIOR
Project Class:	Plant Adaption	**Component:**	COLUMNS/BEAMS/WALLS
Date Basis:	4/1/2025	**Element:**	FINISH

Code Application:	Subclass/Savings:	Project Location:
Not Applicable	Not Applicable	Building-wide: Floor(s) 1

Description

The granite accents beneath the windows will require repointing and recaulking. It is recommended that these joints be repointed to preserve the integrity of the exterior wall finish.

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Repoint joints in exterior masonry walls	SF	1,400	$1.07	$1,498	$10.97	$15,358	$16,856
			Base Material/Labor Costs	**$1,498**		**$15,358**	
			Indexed Material/Labor Costs	**$1,432**		**$13,914**	**$15,346**
						Construction Mark Up at 20.0%	**$3,069**
						Original Construction Cost	**$18,416**
Date of Original Estimate: 4/1/2025						**Inflation**	**$0**
						Current Year Construction Cost	**$18,416**
						Professional Fees at 15.0%	**$2,762**
						TOTAL PROJECT COST	**$21,178**

All costs shown as Present Value

INSTALL OCCUPANCY SENSOR LIGHTING CONTROLS

Project Number:	0013-000EL01	**Category Code:** EL4C	
Priority Sequence:	10		
Priority Class:	Noncritical	**System:**	ELECTRICAL
Project Class:	Plant Adaption	**Component:**	DEVICES AND FIXTURES
Date Basis:	2/18/2025	**Element:**	LIGHTING CONTROLLERS

Code Application:	Subclass/Savings:	Project Location:
Not Applicable	Not Applicable	Floor-wide: Floor(s) 1,2,3,4,B

Description

Automated on/off timer lighting controls and occupancy sensing on/off lighting controls are recommended to be added in order to save energy and reduce operational costs through extend lamp life. Timers should be controlled by building automation systems or be otherwise digitally programmable. The occupancy sensors should be preset for preferred inactivity periods for activation.

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Programmable timer, interface wiring, wall mounted occupancy switches, ceiling mounted sensor/switches, and related materials	SF	38,530	$0.90	$34,677	$0.81	$31,209	$65,886
Base Material/Labor Costs				**$34,677**		**$31,209**	
Indexed Material/Labor Costs				**$33,151**		**$28,276**	**$61,427**
Construction Mark Up at 20.0%							**$12,285**
Original Construction Cost							**$73,712**
Date of Original Estimate: 2/18/2025						**Inflation**	**$0**
Current Year Construction Cost							**$73,712**
Professional Fees at 15.0%							**$11,057**
TOTAL PROJECT COST							**$84,769**

FACILITY CONDITION ASSESSMENT

SECTION 4

LIFECYCLE COMPONENT INVENTORY

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	INSTL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
EF04	EXTERIOR DOOR OR WINDOW APPLIED FINISH			HM DOORS	17	EA	1.00	$10,759	1989	11	24	DR
WN01	GLASS, WINDOW, ALUMINUM OR WOOD, STANDARD	SINGLE PANE		EXTERIOR	11,990	SF	1.27	$2,086,214	1956	40	28	DR
DR05	DOOR AND FRAME, EXTERIOR, SWINGING, ALUMINUM AND GLASS	METAL AND GLASS		ANCILLARY	2	LEAF	1.00	$7,623	1989	25	10	DR
DR05	DOOR AND FRAME, EXTERIOR, SWINGING, ALUMINUM AND GLASS	METAL AND GLASS		ANCILLARY	2	LEAF	1.00	$7,623	2003	25		2028
DR05	DOOR AND FRAME, EXTERIOR, SWINGING, ALUMINUM AND GLASS	METAL AND GLASS		MAIN ENTRY	12	LEAF	1.00	$45,738	1989	25	10	DR
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	PT ON HM		PENTHOUSE	1	LEAF	1.00	$2,560	1956	40	28	DR
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	PT ON HM		ROOF	4	LEAF	1.00	$10,242	2010	40		2050
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	PT ON HM		NORTH ENTRIES	12	LEAF	1.00	$30,726	1989	40		2029
DR28	DOOR OPERATOR, POWER-ASSIST	PNUEMATIC		RESTROOMS	10	EA	1.00	$86,411	2003	20	1	DR
DR28	DOOR OPERATOR, POWER-ASSIST	PNUEMATIC		NE ENTRY	1	EA	1.00	$8,641	2010	20		2030
DR34	DOOR LOCK, COMMERCIAL-GRADE, EXTERIOR	BEST		PENTHOUSE	1	EA	1.00	$1,207	1956	12	48	DR
DR34	DOOR LOCK, COMMERCIAL-GRADE, EXTERIOR	BEST		ROOF	4	EA	1.00	$4,827	2010	12		DR
DR36	DOOR PANIC HARDWARE, EXTERIOR	PUSHBAR		MAIN ENTRY	12	EA	1.00	$18,230	1989	12	15	DR
DR36	DOOR PANIC HARDWARE, EXTERIOR	PUSHBAR		NORTH ENTRIES	12	EA	1.00	$18,230	1989	12	15	DR
DR36	DOOR PANIC HARDWARE, EXTERIOR	PUSHBAR		ANCILLARY	2	EA	1.00	$3,038	1989	12	15	DR

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	INSTL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
DR36	DOOR PANIC HARDWARE, EXTERIOR	PUSHBAR		ANCILLARY	2	EA	1.00	$3,038	2003	12	1	DR
RR03	ROOF - 1-PLY, UNBALLASTED	FLAT		MECH RM	492	SF	1.37	$10,130	2003	20	1	DR
RR06	ROOF - BITUMINOUS, 3-PLY, SBS MODIFIED BITUMEN, MOP	FLAT		MAIN	17,456	SF	1.37	$530,095	2011	20	5	2036
RR08	ROOF - BITUMINOUS, 4-PLY, COAL TAR PITCH - R30	FLAT		LOWER	6,638	SF	1.37	$240,715	1989	30	5	DR
DR01	DOOR AND FRAME, INTERIOR, NON-RATED	WOOD		OFFICES	135	LEAF	1.00	$378,380	1970	60		2030
DR02	DOOR AND FRAME, INTERIOR, FIRE-RATED	WOOD		OFFICES	105	LEAF	1.00	$492,225	1970	60		2030
DR02	DOOR AND FRAME, INTERIOR, FIRE-RATED	WOOD		STAIRWELLS	42	LEAF	1.00	$196,890	1970	60		2030
DR24	DOOR LOCK, COMMERCIAL-GRADE, INTERIOR	BEST		OFFICES	65	EA	1.00	$62,155	1956	35	33	DR
DR26	DOOR PANIC HARDWARE, INTERIOR	PUSHBAR		STAIRWELLS	42	EA	1.00	$63,798	1970	30	24	DR
CW01	CASEWORK - WOOD BASE AND WALL, TOP, STANDARD	LAMINATE		BRK RMS	55	LF	1.00	$38,959	1989	30	5	DR
IW01	WALL FINISH - APPLIED, STANDARD	PT ON DRYWALL		FLRS 2-4	235,140	SF	1.00	$801,673	2003	12	9	DR
IW01	WALL FINISH - APPLIED, STANDARD	PT ON DRYWALL		FLR 1	4,800	SF	1.00	$16,365	2024	12		2036
IW03	WALL FINISH - TILE, CERAMIC / STONE, STANDARD	GLAZED BLOCK		RESTROOM	15,320	SF	1.00	$781,373	1956	60	20	2036
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	BROADLOOM		OFFICES	41,610	SF	1.00	$634,571	2003	12	9	DR
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	CARPET TILE		OFFICES	10,400	SF	1.00	$158,605	2010	12	2	DR

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	INSTL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
IF03	FLOORING - VINYL COMPOSITION TILE, STANDARD	VCT		CORRIDORS, BRK RM	22,110	SF	1.00	$190,976	1980	20	24	DR
IF03	FLOORING - VINYL COMPOSITION TILE, STANDARD	ACM VCT		SUPPORT SPACE	3,900	SF	1.00	$33,686	1956	20	48	DR
IF09	FLOORING - TERRAZZO RESURFACE	MULTICOLORED		RR, LOBBY	8,670	SF	1.00	$139,081	1956	50	30	2036
IF26	INTERIOR STAIR TREAD AND LANDING FINISH	Z101		SE	4	FLR	1.00	$19,912	1956	15	53	DR
IF26	INTERIOR STAIR TREAD AND LANDING FINISH	Z102		NE	4	FLR	1.00	$19,912	1956	15	53	DR
IF26	INTERIOR STAIR TREAD AND LANDING FINISH	Z103		CENTRAL	4	FLR	1.00	$19,912	1956	15	53	DR
IF26	INTERIOR STAIR TREAD AND LANDING FINISH	Z104		NW	4	FLR	1.00	$19,912	1956	15	53	DR
IC01	CEILING FINISH - SUSPENDED ACOUSTICAL TILE, STANDARD	2X2 GRID		CORRIDORS	51,840	SF	1.00	$720,496	1956	45	23	DR
IC01	CEILING FINISH - SUSPENDED ACOUSTICAL TILE, STANDARD	2X2 GRID		CORRIDORS	15,950	SF	1.00	$221,680	2010	45		2055
IC01	CEILING FINISH - SUSPENDED ACOUSTICAL TILE, STANDARD	2X4 GRID		OFF, CLSS	11,960	SF	1.00	$166,226	1990	45		2035
IC03	CEILING FINISH - ATTACHED ACOUSTICAL TILE	ACM ACT		OFF, CLSS	56,350	SF	1.00	$543,406	1956	45	23	DR
IC04	CEILING FINISH - APPLIED PAINT OR STAIN, STANDARD	PT ON DRYWALL		RRS, STAIRS	6,940	SF	1.00	$23,661	2003	24		2027
VT01	ELEVATOR MODERNIZATION - TRACTION - LOW RISE 2-8 FLOORS	ELEV-070, PSNGR	ELEV070	M501	1	EA	1.00	$458,439	2001	25		2026
DF01	DRINKING FOUNTAIN, DUAL-LEVEL	DUAL LEVEL		FLR 1 CORR	2	EA	1.00	$6,925	2018	25		2043
FX02	PLUMBING FIXTURE - LAVATORY, WALL HUNG	PC		RESTROOM	17	EA	1.00	$29,146	1956	35	33	DR

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	INSTL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
FX02	PLUMBING FIXTURE - LAVATORY, WALL HUNG	PC		RESTROOM	10	EA	1.00	$17,145	1989	35		DR
FX04	PLUMBING FIXTURE - SINK, KITCHEN	SST		BRK RM	3	EA	1.00	$2,916	1989	20	15	DR
FX06	PLUMBING FIXTURE - SINK, SERVICE/LAUNDRY/UTILITY	WALLMOUNT		CUSTODIAL	8	EA	1.00	$16,892	1956	50	18	DR
FX10	PLUMBING FIXTURE - URINAL	PC FLOOR MT		RESTROOM	6	EA	1.00	$8,039	1956	35	33	DR
FX10	PLUMBING FIXTURE - URINAL	PC FLOOR MT		RESTROOM	4	EA	1.00	$5,359	1989	35		DR
FX12	PLUMBING FIXTURE - WATER CLOSET, TANKLESS	PC LOW PRESSURE		RESTROOM	7	EA	1.00	$15,203	1956	35	33	DR
FX12	PLUMBING FIXTURE - WATER CLOSET, TANKLESS	PC LOW PRESSURE		RESTROOM	20	EA	1.00	$43,437	1989	35		DR
BF03	BACKFLOW PREVENTER (2.1-3 INCHES)	BFP, CONBRACO		M001	1	EA	1.00	$9,430	2003	20	1	DR
PP01	DOMESTIC WATER BOOSTER SYSTEM	BP-1, ARMSTRONG, DUPLEX		M001	4	HP	1.00	$64,787	2003	20	1	DR
PP05	PUMP - ELECTRIC (<=10 HP)	HWP-4	162142	M001	0.50	HP	1.00	$1,071	2010	30		2040
PS02	SUPPLY PIPING SYSTEM - CLASSROOM	RGD CU		ALL AREAS	96,323	SF	1.00	$2,358,635	1956	50	18	DR
TK04	WATER TANK (275-1,649 GAL)	DHW-TANK	126803	M001	500	GAL	1.00	$33,830	1989	30	5	DR
TK18	EXPANSION TANK, DIAPHRAGM (100-249 GAL)	ET-1, DCW		M001	120	GAL	1.00	$11,959	2003	25		2028
WH27	WATER HEATER - SHELL & TUBE (46-93 GPM)	DMHX	022072	M001	48	GPM	1.00	$68,982	1989	30	5	DR
PD02	DRAIN PIPING SYSTEM - CLASSROOM	CIHS		ALL AREAS	96,323	SF	1.00	$1,791,632	1956	60	8	DR

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	INSTL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
PP02	GREYWATER LIFT STATION	SUMP	029458	M002	1	HP	1.00	$3,325	2011	25		2036
HU53	UNIT HEATER, STEAM/HYDRONIC STD (TO 250 MBH)	UH-1, AIREDALE	029459	M002	1	EA	1.00	$1,454	2011	35		2046
HU53	UNIT HEATER, STEAM/HYDRONIC STD (TO 250 MBH)	UH-2, AIREDALE		M140	1	EA	1.00	$1,454	2011	35		2046
HU19	DUCTLESS DX SPLIT SYSTEM (>2 TON)	CU-5	164228	EXTERIOR	1	TON	1.00	$1,877	2020	15		2035
HU19	DUCTLESS DX SPLIT SYSTEM (>2 TON)	CU-4	164227	EXTERIOR	1	TON	1.00	$1,877	2020	15		2035
HU19	DUCTLESS DX SPLIT SYSTEM (>2 TON)	CU-1, MITSUBISHI, R22	001098	ROOF	2	TON	1.16	$4,355	2003	15	6	DR
HU19	DUCTLESS DX SPLIT SYSTEM (>2 TON)	CU-3, MITSUBISHI, R22	001245	EXTERIOR	2	TON	1.00	$3,755	2003	15	6	DR
AH06	AIR HANDLING UNIT - INDOOR (7-9 HP)	ACF-003	001200	214	7.50	HP	1.22	$82,860	1989	35		DR
AH06	AIR HANDLING UNIT - INDOOR (7-9 HP)	ACF-002	001201	111	7.50	HP	1.22	$82,860	1989	35		DR
AH08	AIR HANDLING UNIT - INDOOR (13-17 HP)	AHU-430, MCQUAY		M430	15	HP	1.16	$145,866	2021	35		2056
AH08	AIR HANDLING UNIT - INDOOR (13-17 HP)	AHU-M222, MCQUAY		M222	15	HP	1.16	$145,866	2021	35		2056
AH08	AIR HANDLING UNIT - INDOOR (13-17 HP)	AHU-3, MCQUAY	030900	M325	15	HP	1.00	$125,747	2015	35		2050
AH08	AIR HANDLING UNIT - INDOOR (13-17 HP)	AHU-1, MCQUAY	027290	M140	15	HP	1.00	$125,747	2015	35		2050
AH10	AIR HANDLING UNIT - INDOOR (24-27 HP)	FCU-CAB		SELECT SPACES	24	HP	1.00	$168,124	2003	35		2038
FN04	FAN - AXIAL, RETURN (7.6-10 HP) 19,500 CFM	RF-430, GREENHECK		M430	10	HP	1.00	$23,492	2021	35		2056

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	INSTL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
FN04	FAN - AXIAL, RETURN (7.6-10 HP) 19,500 CFM	RF-3, GREENHECK	030899	M325	10	HP	1.00	$23,492	2015	35		2050
FN04	FAN - AXIAL, RETURN (7.6-10 HP) 19,500 CFM	RF-M222, GREENHECK		M222	10	HP	1.00	$23,492	2021	35		2056
FN04	FAN - AXIAL, RETURN (7.6-10 HP) 19,500 CFM	RF-1, GREENHECK	027289	M140	10	HP	1.00	$23,492	2015	35		2050
FN20	FAN - CENTRIFUGAL ROOF EXHAUST (25"-30" DIAMETER)	EFN-005	001099	ROOF	1	EA	1.16	$12,311	2003	25		2028
FN20	FAN - CENTRIFUGAL ROOF EXHAUST (25"-30" DIAMETER)	EFN-007	001095	ROOF	1	EA	1.16	$12,311	1989	25	10	DR
FN20	FAN - CENTRIFUGAL ROOF EXHAUST (25"-30" DIAMETER)	EFN-002	001103	LOWER ROOF	1	EA	1.16	$12,311	1989	25	10	DR
FN20	FAN - CENTRIFUGAL ROOF EXHAUST (25"-30" DIAMETER)	EFN		ROOF	1	EA	1.16	$12,311	1989	25	10	DR
FN25	FAN - PROPELLER WITH LOUVER (<=0.5 HP)	EF-1	001235	M001	0.50	HP	1.00	$4,707	1956	20	48	DR
HV02	HVAC DISTRIBUTION NETWORKS - CLASSROOM	MTL DUCT, HYD		ALL AREAS	68,928	SF	1.00	$3,591,627	1989	45		2034
HV02	HVAC DISTRIBUTION NETWORKS - CLASSROOM	MTL DUCT, VAV		4TH FLR	27,395	SF	1.00	$1,427,470	2003	45		2048
HX04	HEAT EXCHANGER - SHELL & TUBE STEAM TO WATER (20-85 GPM)	HTX-2, ARMSTRONG	126802	M001	77	GPM	1.00	$16,054	2011	30		2041
HX04	HEAT EXCHANGER - SHELL & TUBE STEAM TO WATER (20-85 GPM)	HTX-1 (TELECOM)	126801	M001	77	GPM	1.00	$16,054	1989	30	5	DR
PH01	PUMP - ELECTRIC (<=10 HP)	CHWP-3	029463	M002	7.50	HP	1.00	$16,067	2011	30		2041
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-6	029456	M002	3	HP	1.00	$6,427	2011	30		2041
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-006 (TELECOM)	001237	M001	1	HP	1.00	$2,142	1989	30	5	DR

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	INSTL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-003 (TELECOM)	001238	M001	1	HP	1.00	$2,142	1989	30	5	DR
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-004	001242	M001	1	HP	1.00	$2,142	1989	30	5	DR
PH02	PUMP - ELECTRIC (11-15 HP)	HWP-5	029457	M002	15	HP	1.00	$28,282	2011	35		2046
PH02	PUMP - ELECTRIC (11-15 HP)	HWP-4	029458	M002	15	HP	1.00	$28,282	2011	35		2046
PH03	PUMP - ELECTRIC (16-20 HP)	CHWP-1	029462	M002	20	HP	1.00	$28,055	2011	35		2046
PH03	PUMP - ELECTRIC (16-20 HP)	CHWP-2	029461	M002	20	HP	1.00	$28,055	2011	35		2046
PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	CP-1, DUPLEX, BELL & GOSSETT	001240,001241	M001	2	HP	1.00	$18,231	1989	25	10	DR
TK29	EXPANSION TANK, DIAPHRAGM (25-44 GAL)	ET-HHW-1, BELL & GOSSETT		M001	25	GAL	1.00	$6,408	2010	15		2025
HU30	PACKAGE HVAC UNIT, DX, GAS OR ELECTRIC HEAT, SINGLE-ZONE (<= 5 TON)	RTU-5, TRANE, R22	022790	ROOF	5	TON	1.16	$31,394	2003	15	6	DR
HU31	PACKAGE HVAC UNIT, DX, GAS OR ELECTRIC HEAT, SINGLE-ZONE (6-9 TON)	RTU-1, TRANE, R22	022789	ROOF	7.50	TON	1.16	$29,061	2003	15	6	DR
HU31	PACKAGE HVAC UNIT, DX, GAS OR ELECTRIC HEAT, SINGLE-ZONE (6-9 TON)	RTU-4, TRANE, R22	022788	ROOF	7.50	TON	1.16	$29,061	2003	15	6	DR
HU31	PACKAGE HVAC UNIT, DX, GAS OR ELECTRIC HEAT, SINGLE-ZONE (6-9 TON)	RTU-3, TRANE, R22	022792	ROOF	7.50	TON	1.16	$29,061	2003	15	6	DR
HU31	PACKAGE HVAC UNIT, DX, GAS OR ELECTRIC HEAT, SINGLE-ZONE (6-9 TON)	RTU-2, TRANE, R22	022791	ROOF	7.50	TON	1.16	$29,061	2003	15	6	DR
BA02	HVAC CONTROLS - TERMINAL ASSEMBLIES - CLASSROOM	DDC, AUTOMATED LOGIC		ALL AREAS	96,323	SF	1.00	$408,004	2015	20		2035

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	INSTL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
BA25	HVAC CONTROLS - FIELD PANELS/OPS SOFTWARE - CLASSROOM	DDC, AUTOMATED LOGIC		ALL AREAS	96,323	SF	1.00	$114,172	2015	10		2025
BA48	HVAC CONTROLS - MAJOR INSTRUMENTATION - CLASSROOM	DDC, AUTOMATED LOGIC		ALL AREAS	96,323	SF	1.00	$58,676	2015	10		2025
FA01	FIRE ALARM SYSTEM - DEVICES	H/S, SMOKE, PULLS		ALL AREAS	96,323	SF	0.42	$216,993	2003	18	3	DR
FA03	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER UP TO 200 POINTS	SIEMENS		P001	1	EA	1.00	$17,638	2003	18	3	DR
PB10	PANELBOARD, 3 PH, 480/277V (701-900 AMP), INCL. BRK.	DPO		P001	800	AMP	1.00	$31,706	2003	50		2053
PB15	PANELBOARD, 3 PH, 208/120V (301-500 AMP), INCL. BRK.	PANEL, GE, 120V		ROOF	400	AMP	1.00	$17,896	2010	50		2060
PB15	PANELBOARD, 3 PH, 208/120V (301-500 AMP), INCL. BRK.	PP1, SQUARE D, 120V		P115	400	AMP	1.00	$17,896	2003	50		2053
PB15	PANELBOARD, 3 PH, 208/120V (301-500 AMP), INCL. BRK.	PP4, SQUARE D, 120V		P115	400	AMP	1.00	$17,896	2003	50		2053
PB15	PANELBOARD, 3 PH, 208/120V (301-500 AMP), INCL. BRK.	PANEL LM1, SQUARE D, 120V		M140	400	AMP	1.00	$17,896	2003	50		2053
PB16	PANELBOARD, 3 PH, 208/120V (501-700 AMP), INCL. BRK.	PP3, SQUARE D, 120V		418	600	AMP	1.00	$25,121	2003	50		2053
SE02	ELECTRICAL DISTRIBUTION NETWORK - CLASSROOM	120V, 480V		ALL AREAS	48,162	SF	1.00	$1,301,134	1989	50		2039
SE02	ELECTRICAL DISTRIBUTION NETWORK - CLASSROOM	120V, 480V		ALL AREAS	48,161	SF	1.00	$1,301,107	2003	50		2053
SG05	MAIN SWITCHBOARD W/BREAKERS (1,201-1,600 AMP)	SWG00236	SWG00236	P001	1,600	AMP	1.00	$164,735	2003	40		2043
SW01	LOAD INTERRUPTER ALLOCATION (5-15 kV, UP TO 600 AMP)	LI, EM		P001	1	EA	1.00	$67,560	1989	40		2029

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	INSTL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
TX06	TRANSFORMER - DRY-TYPE, 3PH, 5-15KV PRIMARY (301-500 KVA)	TX		EXTERIOR	500	KVA	1.00	$89,692	2009	40		2049
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD HWP-6, ABB		M002	3	HP	1.00	$2,754	2011	15		2026
VF02	VARIABLE FREQUENCY DRIVE (6-7.5 HP)	VFD CHWP-3, ABB		M002	7.50	HP	1.00	$6,265	2011	15		2026
VF03	VARIABLE FREQUENCY DRIVE (7.6-10 HP)	VFD RF-3, ABB		M325	10	HP	1.00	$7,003	2015	15		2030
VF03	VARIABLE FREQUENCY DRIVE (7.6-10 HP)	VFD RF-1, ABB		M140	10	HP	1.00	$7,003	2015	15		2030
VF04	VARIABLE FREQUENCY DRIVE (11-15 HP)	VFD AHU-3, ABB		M325	15	HP	1.00	$8,111	2015	16		2031
VF04	VARIABLE FREQUENCY DRIVE (11-15 HP)	VFD AHU-1, ABB		M140	15	HP	1.00	$8,111	2015	16		2031
VF04	VARIABLE FREQUENCY DRIVE (11-15 HP)	VFD HWP-4, ABB		M002	15	HP	1.00	$8,111	2011	16		2027
VF04	VARIABLE FREQUENCY DRIVE (11-15 HP)	VFD HWP-5, ABB		M002	15	HP	1.00	$8,111	2011	16		2027
VF05	VARIABLE FREQUENCY DRIVE (16-20 HP)	VFD CHWP-1, ABB		M002	20	HP	1.00	$9,956	2011	16		2027
VF05	VARIABLE FREQUENCY DRIVE (16-20 HP)	VFD CHWP-2, ABB		M002	20	HP	1.00	$9,956	2011	16		2027
LE01	RES EXTERIOR BLDG MT DECO OR FLOOD LIGHTING	INCND CAN		ENTRANCES	4	EA	1.00	$1,034	1989	15	20	DR
LE03	COM EXTERIOR BLDG MT HI FLOOD LIGHTING (WALLPACK, WALLWASH)	LED WLPK		EXT WALLS	7	EA	1.00	$6,899	2018	20		2038
LE03	COM EXTERIOR BLDG MT HI FLOOD LIGHTING (WALLPACK, WALLWASH)	HID WLPK		EXT WALLS	3	EA	1.00	$2,957	2003	20	1	DR
LI02	LIGHTING SYSTEM, INTERIOR - CLASSROOM	T8 FL, T12 FL		1ST FLR	14,257	SF	1.00	$161,718	1989	20	15	DR

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	INSTL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
LI02	LIGHTING SYSTEM, INTERIOR - CLASSROOM	T8 FL		ALL AREAS	48,161	SF	1.00	$546,293	2003	20	1	DR
LI02	LIGHTING SYSTEM, INTERIOR - CLASSROOM	LED		SELECT CLASSROOMS	31,305	SF	1.00	$355,094	2018	20		2038
LI02	LIGHTING SYSTEM, INTERIOR - CLASSROOM	LED		1ST FLR	2,600	SF	1.00	$29,492	2024	20		2044
LI02	LIGHTING SYSTEM, INTERIOR - CLASSROOM	LED		1ST FLR	1,600	SF	1.00	$18,149	2025	20		2045
LI24	OCCUPANCY SENSING AND TIMER LIGHTING CONTROL	WL SW, CEILIN GPUCK		SELECT SPACES	57,793	SF	1.00	$127,194	2003	20	1	DR
GN10	SWITCH - AUTO TRANSFER, 208 OR 240 V (31-100 AMP)	ETS-014	ETS014	P001	100	AMP	1.00	$7,573	2003	25		2028
							Grand Total:	$25,421,790				

RECURRING NEEDS BY YEAR

All costs shown as Future Value using a 3% average inflation rate

DEFERRED RENEWAL									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
EF04	EXTERIOR DOOR OR WINDOW APPLIED FINISH			HM DOORS	B2010	17	EA	$10,759	DR
WN01	GLASS, WINDOW, ALUMINUM OR WOOD, STANDARD	SINGLE PANE		EXTERIOR	B2020	11,990	SF	$2,086,214	DR
DR28	DOOR OPERATOR, POWER-ASSIST	PNUEMATIC		RESTROOMS	B2030	10	EA	$86,411	DR
DR05	DOOR AND FRAME, EXTERIOR, SWINGING, ALUMINUM AND GLASS	METAL AND GLASS		ANCILLARY	B2030	2	LEAF	$7,623	DR
DR05	DOOR AND FRAME, EXTERIOR, SWINGING, ALUMINUM AND GLASS	METAL AND GLASS		MAIN ENTRY	B2030	12	LEAF	$45,738	DR
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	PT ON HM		PENTHOUSE	B2030	1	LEAF	$2,560	DR
DR34	DOOR LOCK, COMMERCIAL-GRADE, EXTERIOR	BEST		PENTHOUSE	B2030	1	EA	$1,207	DR
DR34	DOOR LOCK, COMMERCIAL-GRADE, EXTERIOR	BEST		ROOF	B2030	4	EA	$4,827	DR
DR36	DOOR PANIC HARDWARE, EXTERIOR	PUSHBAR		MAIN ENTRY	B2030	12	EA	$18,230	DR
DR36	DOOR PANIC HARDWARE, EXTERIOR	PUSHBAR		NORTH ENTRIES	B2030	12	EA	$18,230	DR
DR36	DOOR PANIC HARDWARE, EXTERIOR	PUSHBAR		ANCILLARY	B2030	2	EA	$3,038	DR
DR36	DOOR PANIC HARDWARE, EXTERIOR	PUSHBAR		ANCILLARY	B2030	2	EA	$3,038	DR

RECURRING NEEDS BY YEAR

All costs shown as Future Value using a 3% average inflation rate

RR08	ROOF - BITUMINOUS, 4-PLY, COAL TAR PITCH - R30	FLAT		LOWER	B3010	6,638	SF	$240,715	DR
RR03	ROOF - 1-PLY, UNBALLASTED	FLAT		MECH RM	B3010	492	SF	$10,130	DR
DR24	DOOR LOCK, COMMERCIAL-GRADE, INTERIOR	BEST		OFFICES	C1020	65	EA	$62,155	DR
DR26	DOOR PANIC HARDWARE, INTERIOR	PUSHBAR		STAIRWELLS	C1020	42	EA	$63,798	DR
CW01	CASEWORK - WOOD BASE AND WALL, TOP, STANDARD	LAMINATE		BRK RMS	C1030	55	LF	$38,959	DR
IW01	WALL FINISH - APPLIED, STANDARD	PT ON DRYWALL		FLRS 2-4	C3010	235,140	SF	$801,673	DR
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	BROADLOOM		OFFICES	C3020	41,610	SF	$634,571	DR
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	CARPET TILE		OFFICES	C3020	10,400	SF	$158,605	DR
IF03	FLOORING - VINYL COMPOSITION TILE, STANDARD	VCT		CORRIDORS, BRK RM	C3020	22,110	SF	$190,976	DR
IF03	FLOORING - VINYL COMPOSITION TILE, STANDARD	ACM VCT		SUPPORT SPACE	C3020	3,900	SF	$33,686	DR
IF26	INTERIOR STAIR TREAD AND LANDING FINISH	Z101		SE	C3020	4	FLR	$19,912	DR
IF26	INTERIOR STAIR TREAD AND LANDING FINISH	Z102		NE	C3020	4	FLR	$19,912	DR
IF26	INTERIOR STAIR TREAD AND LANDING FINISH	Z103		CENTRAL	C3020	4	FLR	$19,912	DR
IF26	INTERIOR STAIR TREAD AND LANDING FINISH	Z104		NW	C3020	4	FLR	$19,912	DR

RECURRING NEEDS BY YEAR

All costs shown as Future Value using a 3% average inflation rate

IC01	CEILING FINISH - SUSPENDED ACOUSTICAL TILE, STANDARD	2X2 GRID		CORRIDORS	C3030	51,840	SF	$720,496	DR
IC03	CEILING FINISH - ATTACHED ACOUSTICAL TILE	ACM ACT		OFF, CLSS	C3030	56,350	SF	$543,406	DR
FX02	PLUMBING FIXTURE - LAVATORY, WALL HUNG	PC		RESTROOM	D2010	17	EA	$29,146	DR
FX02	PLUMBING FIXTURE - LAVATORY, WALL HUNG	PC		RESTROOM	D2010	10	EA	$17,145	DR
FX04	PLUMBING FIXTURE - SINK, KITCHEN	SST		BRK RM	D2010	3	EA	$2,916	DR
FX06	PLUMBING FIXTURE - SINK, SERVICE/LAUNDRY/UTILITY	WALLMOUNT		CUSTODIAL	D2010	8	EA	$16,892	DR
FX10	PLUMBING FIXTURE - URINAL	PC FLOOR MT		RESTROOM	D2010	6	EA	$8,039	DR
FX10	PLUMBING FIXTURE - URINAL	PC FLOOR MT		RESTROOM	D2010	4	EA	$5,359	DR
FX12	PLUMBING FIXTURE - WATER CLOSET, TANKLESS	PC LOW PRESSURE		RESTROOM	D2010	7	EA	$15,203	DR
FX12	PLUMBING FIXTURE - WATER CLOSET, TANKLESS	PC LOW PRESSURE		RESTROOM	D2010	20	EA	$43,437	DR
PS02	SUPPLY PIPING SYSTEM - CLASSROOM	RGD CU		ALL AREAS	D2020	96,323	SF	$2,358,635	DR
PP01	DOMESTIC WATER BOOSTER SYSTEM	BP-1, ARMSTRONG, DUPLEX		M001	D2020	4	HP	$64,787	DR
BF03	BACKFLOW PREVENTER (2.1-3 INCHES)	BFP, CONBRACO		M001	D2020	1	EA	$9,430	DR
WH27	WATER HEATER - SHELL & TUBE (46-93 GPM)	DMHX	022072	M001	D2020	48	GPM	$68,982	DR

RECURRING NEEDS BY YEAR

All costs shown as Future Value using a 3% average inflation rate

TK04	WATER TANK (275-1,649 GAL)	DHW-TANK	126803	M001	D2020	500	GAL	$33,830	DR
PD02	DRAIN PIPING SYSTEM - CLASSROOM	CIHS		ALL AREAS	D2030	96,323	SF	$1,791,632	DR
HU19	DUCTLESS DX SPLIT SYSTEM (>2 TON)	CU-1, MITSUBISHI, R22	001098	ROOF	D3030	2	TON	$4,355	DR
HU19	DUCTLESS DX SPLIT SYSTEM (>2 TON)	CU-3, MITSUBISHI, R22	001245	EXTERIOR	D3030	2	TON	$3,755	DR
FN20	FAN - CENTRIFUGAL ROOF EXHAUST (25"-30" DIAMETER)	EFN-007	001095	ROOF	D3040	1	EA	$12,311	DR
FN20	FAN - CENTRIFUGAL ROOF EXHAUST (25"-30" DIAMETER)	EFN-002	001103	LOWER ROOF	D3040	1	EA	$12,311	DR
FN20	FAN - CENTRIFUGAL ROOF EXHAUST (25"-30" DIAMETER)	EFN		ROOF	D3040	1	EA	$12,311	DR
FN25	FAN - PROPELLER WITH LOUVER (<=0.5 HP)	EF-1	001235	M001	D3040	0.50	HP	$4,707	DR
HX04	HEAT EXCHANGER - SHELL & TUBE STEAM TO WATER (20-85 GPM)	HTX-1 (TELECOM)	126801	M001	D3040	77	GPM	$16,054	DR
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-006 (TELECOM)	001237	M001	D3040	1	HP	$2,142	DR
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-003 (TELECOM)	001238	M001	D3040	1	HP	$2,142	DR
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-004	001242	M001	D3040	1	HP	$2,142	DR
PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	CP-1, DUPLEX, BELL & GOSSETT	001240,001241	M001	D3040	2	HP	$18,231	DR
AH06	AIR HANDLING UNIT - INDOOR (7-9 HP)	ACF-003	001200	214	D3040	7.50	HP	$82,860	DR

RECURRING NEEDS BY YEAR

All costs shown as Future Value using a 3% average inflation rate

AH06	AIR HANDLING UNIT - INDOOR (7-9 HP)	ACF-002	001201	111	D3040	7.50	HP	$82,860	DR
HU30	PACKAGE HVAC UNIT, DX, GAS OR ELECTRIC HEAT, SINGLE-ZONE (<= 5 TON)	RTU-5, TRANE, R22	022790	ROOF	D3050	5	TON	$31,394	DR
HU31	PACKAGE HVAC UNIT, DX, GAS OR ELECTRIC HEAT, SINGLE-ZONE (6-9 TON)	RTU-1, TRANE, R22	022789	ROOF	D3050	7.50	TON	$29,061	DR
HU31	PACKAGE HVAC UNIT, DX, GAS OR ELECTRIC HEAT, SINGLE-ZONE (6-9 TON)	RTU-4, TRANE, R22	022788	ROOF	D3050	7.50	TON	$29,061	DR
HU31	PACKAGE HVAC UNIT, DX, GAS OR ELECTRIC HEAT, SINGLE-ZONE (6-9 TON)	RTU-3, TRANE, R22	022792	ROOF	D3050	7.50	TON	$29,061	DR
HU31	PACKAGE HVAC UNIT, DX, GAS OR ELECTRIC HEAT, SINGLE-ZONE (6-9 TON)	RTU-2, TRANE, R22	022791	ROOF	D3050	7.50	TON	$29,061	DR
FA03	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER UP TO 200 POINTS	SIEMENS		P001	D4030	1	EA	$17,638	DR
FA01	FIRE ALARM SYSTEM - DEVICES	H/S, SMOKE, PULLS		ALL AREAS	D4030	96,323	SF	$216,993	DR
LE03	COM EXTERIOR BLDG MT HI FLOOD LIGHTING (WALLPACK, WALLWASH)	HID WLPK		EXT WALLS	D5020	3	EA	$2,957	DR
LE01	RES EXTERIOR BLDG MT DECO OR FLOOD LIGHTING	INCND CAN		ENTRANCES	D5020	4	EA	$1,034	DR
LI02	LIGHTING SYSTEM, INTERIOR - CLASSROOM	T8 FL, T12 FL		1ST FLR	D5020	14,257	SF	$161,718	DR
LI02	LIGHTING SYSTEM, INTERIOR - CLASSROOM	T8 FL		ALL AREAS	D5020	48,161	SF	$546,293	DR
LI24	OCCUPANCY SENSING AND TIMER LIGHTING CONTROL	WL SW, CEILIN GPUCK		SELECT SPACES	D5020	57,793	SF	$127,194	DR
						TOTAL DEFERRED RENEWAL COST		**$11,809,768**	

RECURRING NEEDS BY YEAR

All costs shown as Future Value using a 3% average inflation rate

2025									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
TK29	EXPANSION TANK, DIAPHRAGM (25-44 GAL)	ET-HHW-1, BELL & GOSSETT		M001	D3040	25	GAL	$6,408	2025
BA25	HVAC CONTROLS - FIELD PANELS/OPS SOFTWARE - CLASSROOM	DDC, AUTOMATED LOGIC		ALL AREAS	D3060	96,323	SF	$114,172	2025
BA48	HVAC CONTROLS - MAJOR INSTRUMENTATION - CLASSROOM	DDC, AUTOMATED LOGIC		ALL AREAS	D3060	96,323	SF	$58,676	2025
					2025 PROJECTED COMPONENT REPLACEMENT COST			$179,257	

2026									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
VT01	ELEVATOR MODERNIZATION - TRACTION - LOW RISE 2-8 FLOORS	ELEV-070, PSNGR	ELEV070	M501	D1010	1	EA	$472,192	2026
VF02	VARIABLE FREQUENCY DRIVE (6-7.5 HP)	VFD CHWP-3, ABB		M002	D5010	7.50	HP	$6,453	2026

RECURRING NEEDS BY YEAR

All costs shown as Future Value using a 3% average inflation rate

VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD HWP-6, ABB		M002	D5010	3	HP	$2,837	2026
2026 PROJECTED COMPONENT REPLACEMENT COST								**$481,482**	

2027

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
IC04	CEILING FINISH - APPLIED PAINT OR STAIN, STANDARD	PT ON DRYWALL		RRS, STAIRS	C3030	6,940	SF	$25,102	2027
VF05	VARIABLE FREQUENCY DRIVE (16-20 HP)	VFD CHWP-1, ABB		M002	D5010	20	HP	$10,563	2027
VF05	VARIABLE FREQUENCY DRIVE (16-20 HP)	VFD CHWP-2, ABB		M002	D5010	20	HP	$10,563	2027
VF04	VARIABLE FREQUENCY DRIVE (11-15 HP)	VFD HWP-4, ABB		M002	D5010	15	HP	$8,605	2027
VF04	VARIABLE FREQUENCY DRIVE (11-15 HP)	VFD HWP-5, ABB		M002	D5010	15	HP	$8,605	2027
2027 PROJECTED COMPONENT REPLACEMENT COST								**$63,437**	

RECURRING NEEDS BY YEAR

All costs shown as Future Value using a 3% average inflation rate

2028									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
DR05	DOOR AND FRAME, EXTERIOR, SWINGING, ALUMINUM AND GLASS	METAL AND GLASS		ANCILLARY	B2030	2	LEAF	$8,330	2028
TK18	EXPANSION TANK, DIAPHRAGM (100-249 GAL)	ET-1, DCW		M001	D2020	120	GAL	$13,068	2028
FN20	FAN - CENTRIFUGAL ROOF EXHAUST (25"-30" DIAMETER)	EFN-005	001099	ROOF	D3040	1	EA	$13,452	2028
GN10	SWITCH - AUTO TRANSFER, 208 OR 240 V (31-100 AMP)	ETS-014	ETS014	P001	D5090	100	AMP	$8,275	2028
						2028 PROJECTED COMPONENT REPLACEMENT COST		$43,125	

2029									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	PT ON HM		NORTH ENTRIES	B2030	12	LEAF	$34,582	2029
SW01	LOAD INTERRUPTER ALLOCATION (5-15 kV, UP TO 600 AMP)	LI, EM		P001	D5010	1	EA	$76,039	2029
						2029 PROJECTED COMPONENT REPLACEMENT COST		$110,621	

RECURRING NEEDS BY YEAR

All costs shown as Future Value using a 3% average inflation rate

2030									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
DR28	DOOR OPERATOR, POWER-ASSIST	PNUEMATIC		NE ENTRY	B2030	1	EA	$10,017	2030
DR01	DOOR AND FRAME, INTERIOR, NON-RATED	WOOD		OFFICES	C1020	135	LEAF	$438,646	2030
DR02	DOOR AND FRAME, INTERIOR, FIRE-RATED	WOOD		OFFICES	C1020	105	LEAF	$570,624	2030
DR02	DOOR AND FRAME, INTERIOR, FIRE-RATED	WOOD		STAIRWELLS	C1020	42	LEAF	$228,249	2030
VF03	VARIABLE FREQUENCY DRIVE (7.6-10 HP)	VFD RF-3, ABB		M325	D5010	10	HP	$8,118	2030
VF03	VARIABLE FREQUENCY DRIVE (7.6-10 HP)	VFD RF-1, ABB		M140	D5010	10	HP	$8,118	2030
					2030 PROJECTED COMPONENT REPLACEMENT COST			$1,263,773	

RECURRING NEEDS BY YEAR

All costs shown as Future Value using a 3% average inflation rate

2031									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
VF04	VARIABLE FREQUENCY DRIVE (11-15 HP)	VFD AHU-3, ABB		M325	D5010	15	HP	$9,685	2031
VF04	VARIABLE FREQUENCY DRIVE (11-15 HP)	VFD AHU-1, ABB		M140	D5010	15	HP	$9,685	2031
						2031 PROJECTED COMPONENT REPLACEMENT COST		$19,370	

No Projected Component Replacement Cost for Asset No. 0013-000 for 2032

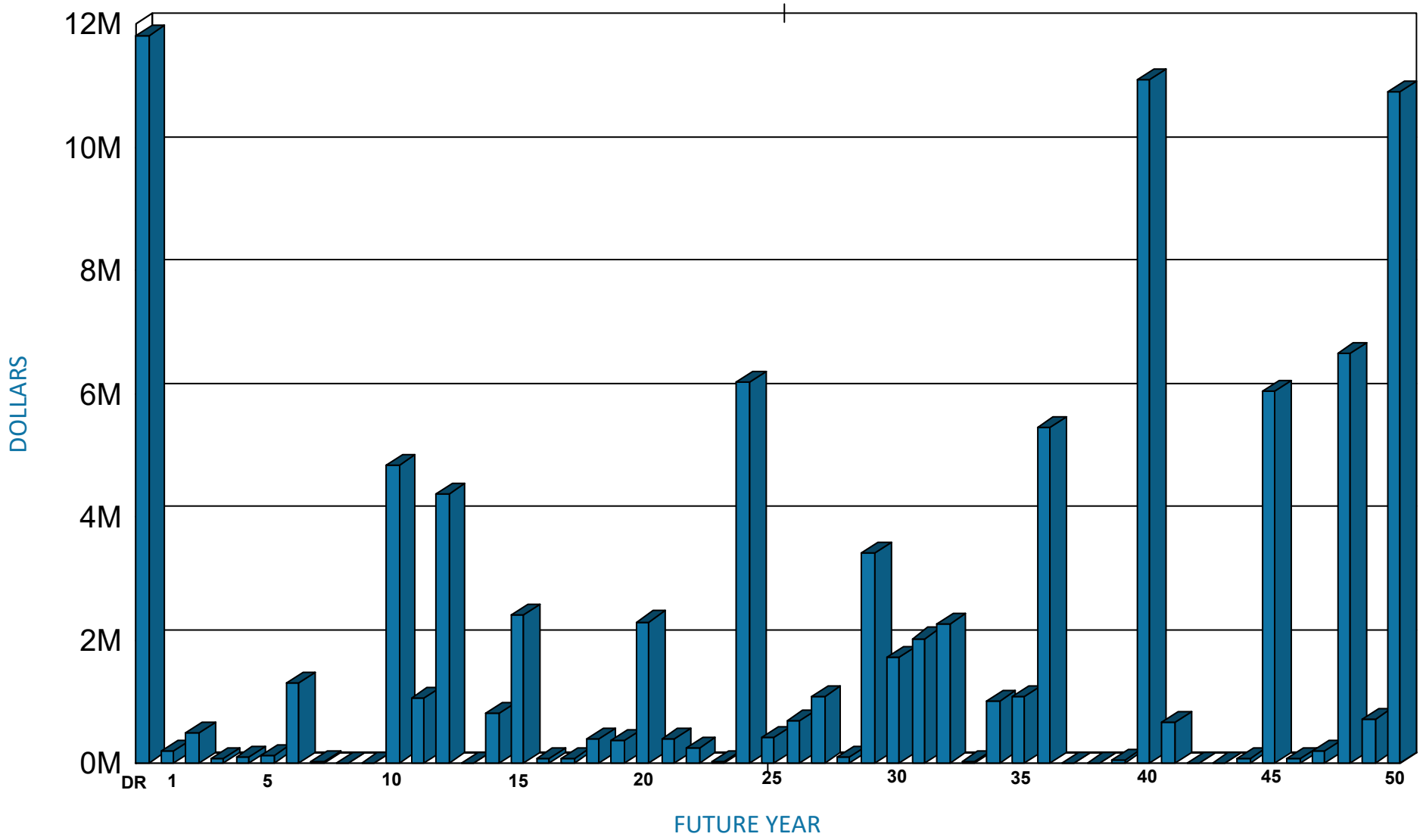
No Projected Component Replacement Cost for Asset No. 0013-000 for 2033

RECURRING NEEDS BY YEAR

All costs shown as Future Value using a 3% average inflation rate

2034									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
HV02	HVAC DISTRIBUTION NETWORKS - CLASSROOM	MTL DUCT, HYD		ALL AREAS	D3040	68,928	SF	$4,686,259	2034
						2034 PROJECTED COMPONENT REPLACEMENT COST		$4,686,259	

RECURRING COMPONENT EXPENDITURE PROJECTIONS

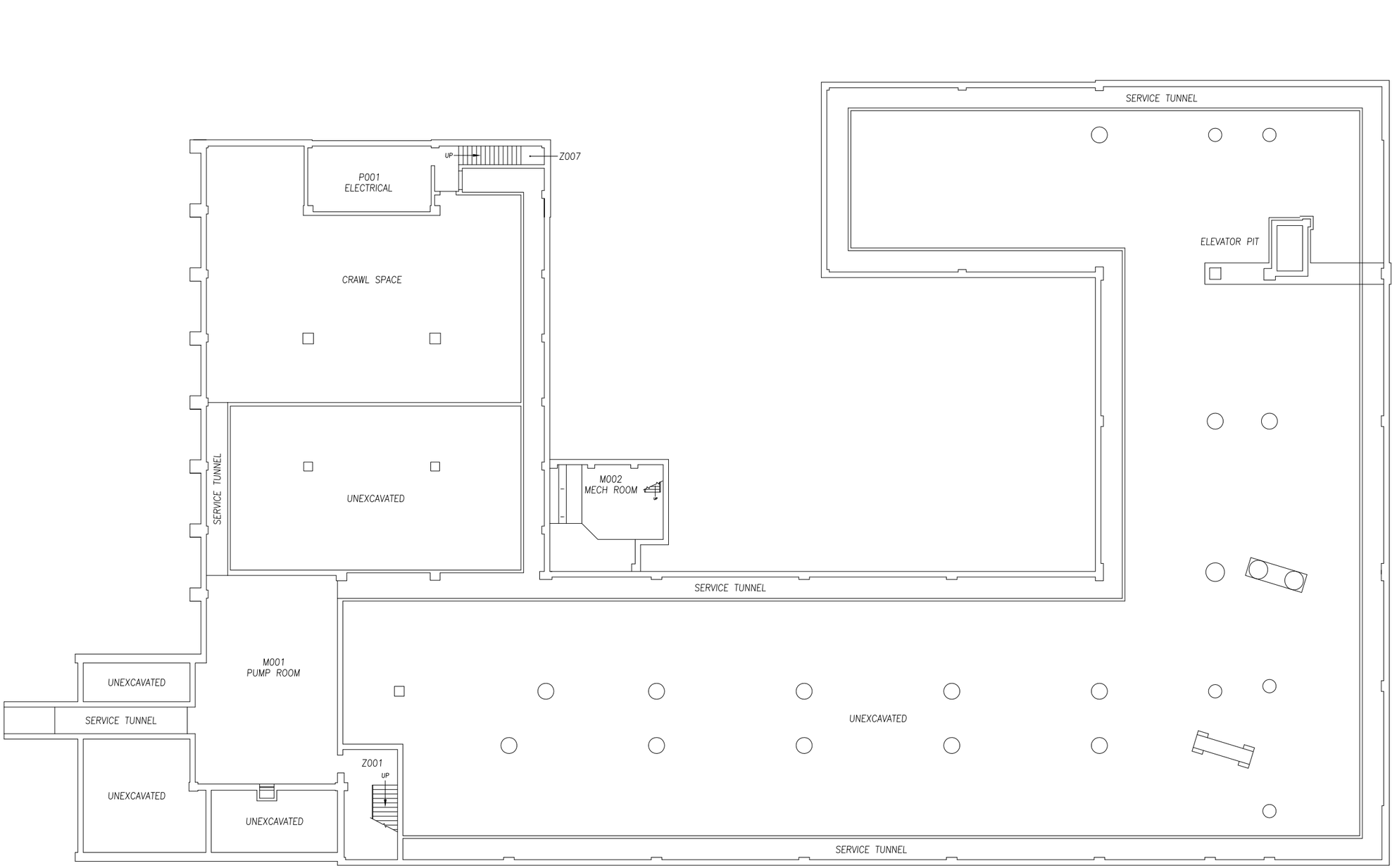


Average Annual Renewal Cost per SF $9.28

FACILITY CONDITION ASSESSMENT

SECTION 5

DRAWINGS



BOUCKE BUILDING
PSU BUILDING NAME

BASEMENT FLOOR PLAN
BUILDING FLOOR LEVEL

UNIVERSITY PARK CAMPUS, UNIVERSITY PARK, PA
PSU CAMPUS LOCATION

PENNSTATE
FACILITIES RESOURCES AND PLANNING
THE PENNSYLVANIA STATE UNIVERSITY
BENEDICT HOUSE
UNIVERSITY PARK, PA 16802
OFFICE: 814.865.1595 FAX: 814.865.1610 www.facilities.psu.edu

SCALE 0 5' 10' 15' 20' 40'

4/1/95
CREATION DATE

6/23/11
REVISED DATE

Campus block plans are for referential use only. Drawings are not to be used for architectural engineering purposes.

0013-000
BUILDING NUMBER

1 OF 6
SHEET NUMBER

B
FLOOR LEVEL

BOUCKE BUILDING

PSU BUILDING NAME

FIRST FLOOR PLAN

BUILDING FLOOR LEVEL

UNIVERSITY PARK CAMPUS, UNIVERSITY PARK, PA

PSU CAMPUS LOCATION

PennState
Physical Plant

PLANNING | DESIGN | PROPERTIES

SCALE 0 5' 10' 15' 20' 40'

04/01/95
CREATION DATE

09/23/24
REVISED DATE

Campus block plans are for referential use only. Drawings are not to be used for architectural engineering purposes.

0013-000
BUILDING NUMBER

2 OF 6
SHEET NUMBER

1
FLOOR LEVEL

BOUCKE BUILDING
PSU BUILDING NAME

SECOND FLOOR PLAN
BUILDING FLOOR LEVEL

UNIVERSITY PARK CAMPUS, UNIVERSITY PARK, PA
PSU CAMPUS LOCATION

PennState
Physical Plant
PLANNING | DESIGN | PROPERTIES

SCALE 0 5' 10' 15' 20' 40'

04/01/95
CREATION DATE

09/23/24
REVISED DATE

Campus block plans are for referential use only. Drawings are not to be used for architectural engineering purposes.

0013-000
BUILDING NUMBER

3 OF 6
SHEET NUMBER

2
FLOOR LEVEL

BOUCKE BUILDING

PSU BUILDING NAME

THIRD FLOOR PLAN

BUILDING FLOOR LEVEL

UNIVERSITY PARK CAMPUS, UNIVERSITY PARK, PA

PSU CAMPUS LOCATION

PennState Physical Plant

PLANNING | DESIGN | PROPERTIES

SCALE 0 10' 20' 40' / 5' 15'

04/01/95
CREATION DATE

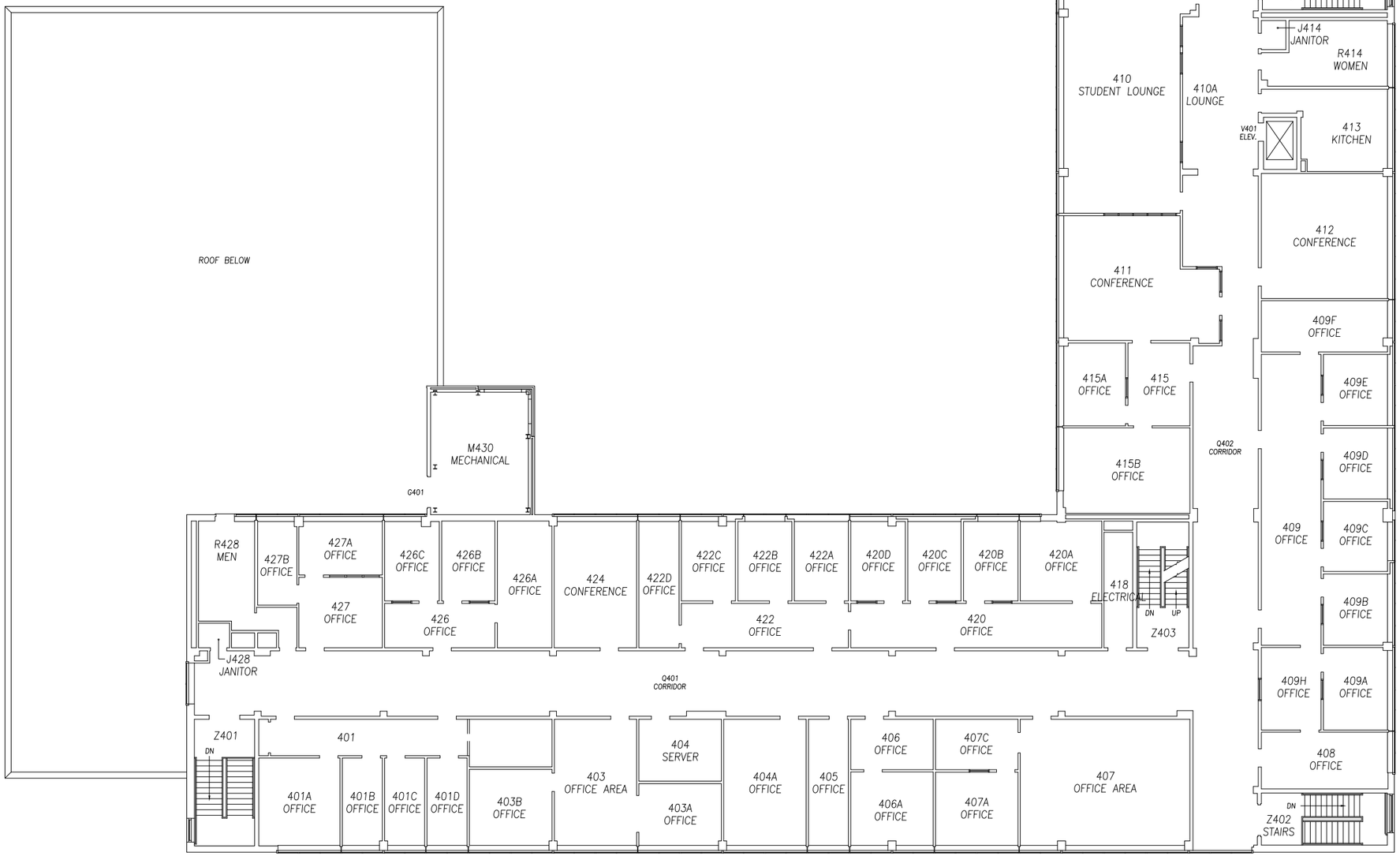
12/06/22
REVISED DATE

Campus block plans are for referential use only. Drawings are not to be used for architectural engineering purposes.

0013-000
BUILDING NUMBER

4 OF 6
SHEET NUMBER

3
FLOOR LEVEL



BOUCKE BUILDING
PSU BUILDING NAME

FOURTH FLOOR PLAN
BUILDING FLOOR LEVEL

UNIVERSITY PARK CAMPUS, UNIVERSITY PARK, PA
PSU CAMPUS LOCATION

PENNSTATE

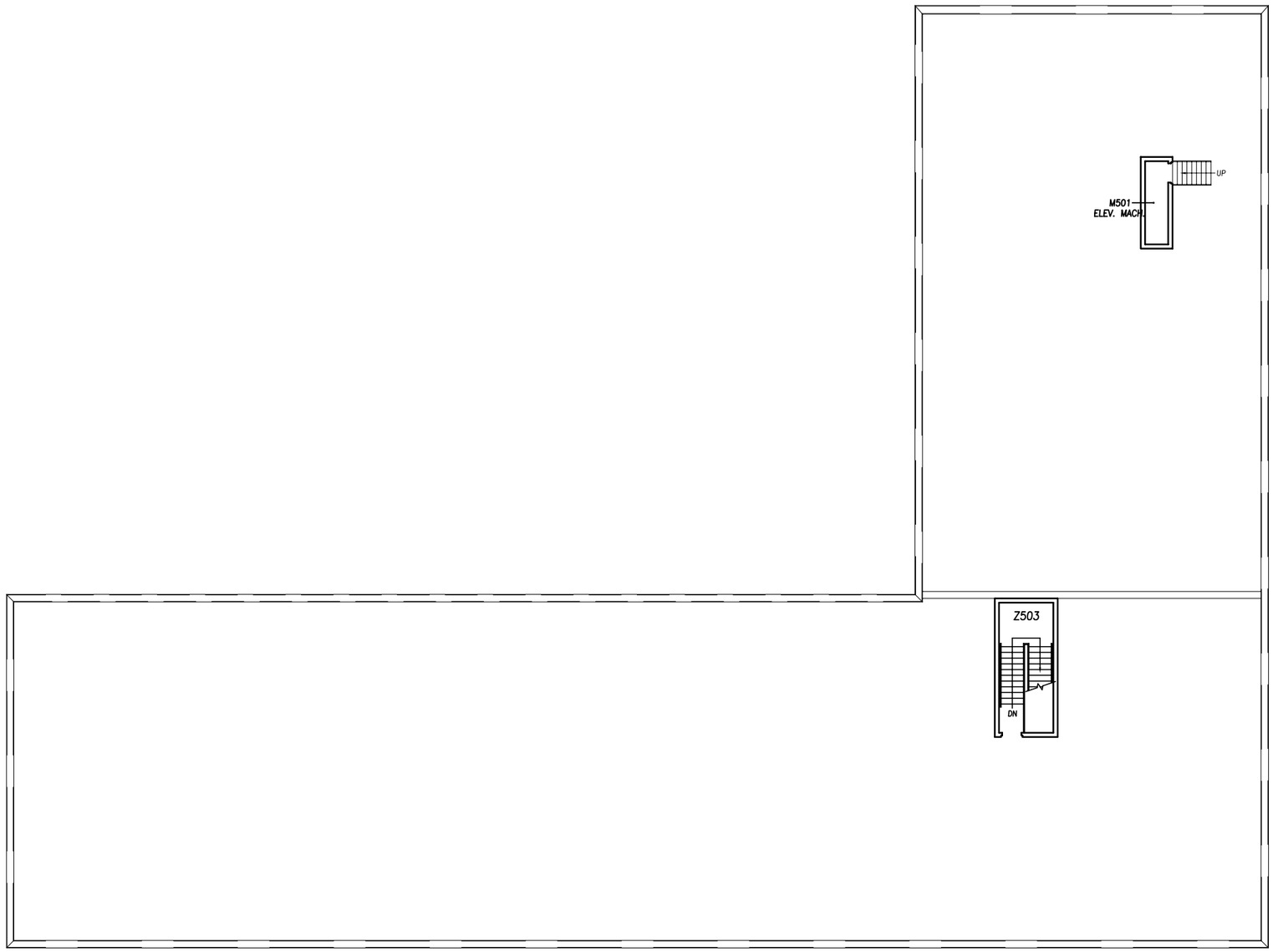
FACILITIES RESOURCES AND PLANNING
THE PENNSYLVANIA STATE UNIVERSITY
BENEDICT HOUSE
UNIVERSITY PARK, PA 16802
OFFICE: 814.865.1595 FAX: 814.865.1610 www.facilities.psu.edu

SCALE 0 10' 20' 40'
5' 15'

04/01/95
CREATION DATE
04/04/12
REVISED DATE

Campus block plans are for referential use only. Drawings are not to be used for architectural engineering purposes.

0013-000
BUILDING NUMBER
5 OF 6
SHEET NUMBER
4
FLOOR LEVEL



BOUCKE BUILDING
PSU BUILDING NAME

ROOF PLAN
BUILDING FLOOR LEVEL

UNIVERSITY PARK CAMPUS, UNIVERSITY PARK, PA
PSU CAMPUS LOCATION

PENNSTATE
FACILITIES RESOURCES AND PLANNING
THE PENNSYLVANIA STATE UNIVERSITY
BENEDICT HOUSE
UNIVERSITY PARK, PA 16802
OFFICE: 814.865.1595 FAX: 814.865.1610 www.facilities.psu.edu

SCALE 0 5' 10' 15' 20' 40'

04/01/95
CREATION DATE

11/0411
REVISED DATE

0013-000
BUILDING NUMBER

6 OF 6
SHEET NUMBER

RF
FLOOR LEVEL

SECTION 6

PHOTOGRAPHS

0013-000001a 1/30/2025

Elevator panel

Elevator

0013-000001e 1/30/2025

Centrifugal curb-mounted exhauster EFN-007

Roof

0013-000002a 1/30/2025

Custodial sink

Janitorial closet

0013-000002e 1/30/2025

Package air conditioning unit RTU-5

Roof

0013-000003a 1/30/2025

Single-level drinking fountain

Corridor

0013-000003e 1/30/2025

Package air conditioning unit RTU-1

Roof

0013-000004a 1/30/2025
Modified bitumen roof
Roof

0013-000004e 1/30/2025
Package air conditioning unit RTU-4
Roof

0013-000005a 1/30/2025
Modified bitumen roof
Roof

0013-000005e 1/30/2025
Air-cooled condenser for ductless split system CU-1
Roof

0013-000006a 1/30/2025
Modified bitumen roof
Roof

0013-000006e 1/30/2025
Package air conditioning unit RTU-3
Roof

0013-000007a 1/30/2025

Modified bitumen roof

Roof

0013-000007e 1/30/2025

Package air conditioning unit RTU-2

Roof

0013-000008a 1/30/2025

Built-up ballasted roof

Lower roof

0013-000008e 1/30/2025

Electrical distribution panel

Roof

0013-000009a 1/30/2025

CMU, concrete treads and landings, and metal railing

Stairwell

0013-000009e 1/30/2025

Centrifugal curb-mounted exhauster EFN-005

Roof

0013-000010a 1/30/2025

CMU, concrete treads, and metal railing

Stairwell

0013-000010e 1/30/2025

Traction mechanism for passenger elevator 070

Room M501

0013-000011a 1/30/2025

Power-assisted door operator

Restroom

0013-000011e 1/30/2025

Solid state control panel for passenger elevator 070

Room M501

0013-000012a 1/30/2025

Glazed brick, terrazzo, and accessible water closet

Restroom

0013-000012e 1/30/2025

LED wall pack

Roof

0013-000013a 1/30/2025
Glazed brick, terrazzo, and tankless water closet
Restroom

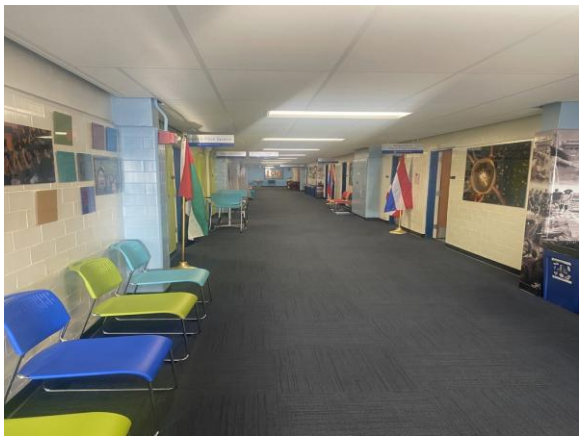
0013-000013e 1/30/2025
Lay-in fixture with T8 fluorescent lamps and acrylic prismatic lens
Corridor Q401

0013-000014a 1/30/2025
Glazed brick, terrazzo, and wall-hung lavatories
Restroom

0013-000014e 1/30/2025
Fire alarm manual pull station
Corridor Q401

0013-000015a 1/30/2025
Glazed brick, terrazzo, and floor and wall-hung urinals
Restroom

0013-000015e 1/30/2025
Fire alarm horn and strobe signaler
Corridor Q401

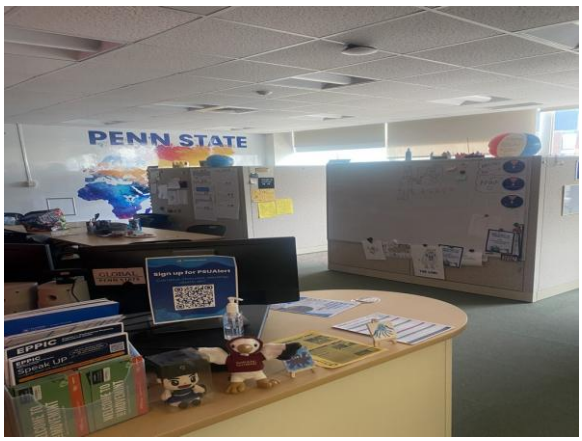


0013-000016a 1/30/2025
2x4 acoustical ceiling tile, carpet, and painted CMU
Corridor

0013-000016e 1/30/2025
Centrifugal curb-mounted exhauster EFN-002
Lower roof

0013-000017a 1/30/2025
2x2 acoustical ceiling tile, carpet, and finished walls
Office

0013-000017e 1/30/2025
Indoor air handler AHU-430
Room M430



0013-000018a 1/30/2025
2x2 acoustical ceiling tile, carpet, and finished walls
Work space

0013-000018e 1/30/2025
Axial flow return air fan RF-430
Room M430

0013-000019a 1/30/2025
2x2 acoustical ceiling tile, carpet, and finished walls
Meeting Room

0013-000019e 1/30/2025
Lay-in LED fixture
Room 422

0013-000020a 1/30/2025
2x2 acoustical ceiling tile, carpet, and finished walls
Classroom

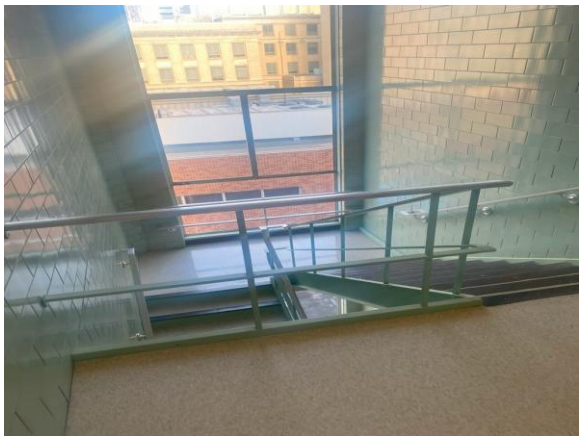
0013-000020e 1/30/2025
Electrical distribution panel PP3
Room 418

0013-000021a 1/30/2025
Single-pane windows
Classroom

0013-000021e 1/30/2025
Indoor air handler AHU-3
Room M325

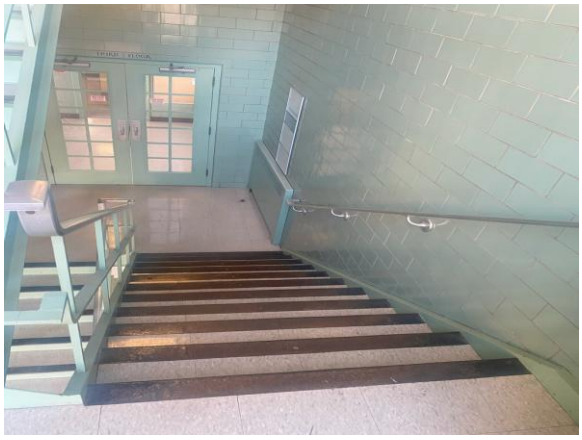
0013-000022a 1/30/2025
Acoustical ceiling tile, vinyl composite tile, and casework with a sink
Break Area

0013-000022e 1/30/2025
Variable frequency drive VFD AHU-3
Room M325



0013-000023a 1/30/2025
Glazed brick, vinyl composite tile, and metal railings
Stairwell

0013-000023e 1/30/2025
Axial flow return air fan RF-3
Room M325



0013-000024a 1/30/2025
Glazed brick, vinyl composite tile, and metal railings
Stairwell

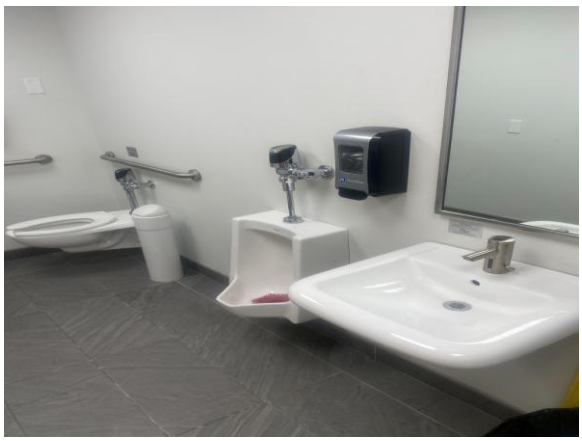
0013-000024e 1/30/2025
Variable frequency drive VFD RF-3
Room M325

0013-000025a 1/30/2025
2x2 acoustical ceiling tile, carpet, and finished walls
Classroom

0013-000025e 1/30/2025
Indoor air handler AHU-M222
Room M222

0013-000026a 1/30/2025
Tile walls and floor
Foot bath

0013-000026e 1/30/2025
Axial flow return air fan RF-M222
Room M222



0013-000027a 1/30/2025
Finished walls, tile flooring, accessible water closet, urinal, and lavatory
Restroom

0013-000027e 1/30/2025
Overhead fan coil unit
Room 220A

0013-000028a 1/30/2025

2x4 acoustical ceiling tile, carpet, finished walls, and casework

Work room

0013-000028e 1/30/2025

Cabinet fan coil unit

Room 220A

0013-000029a 1/30/2025

All-in-one kitchen unit

Break Area

0013-000029e 1/30/2025

Electrical distribution panel PP1

Room P115

0013-000030a 1/30/2025

Dual-level drinking fountain

Corridor

0013-000030e 1/30/2025

Indoor air handler AHU-1

Room M140

0013-000031a 1/30/2025
Acoustical ceiling tile, vinyl tile, and glazed brick
Corridor

0013-000031e 1/30/2025
Variable frequency drive VFD AHU-1
Room M140

0013-000032a 1/30/2025
Metal and glass interior entry doors
Entrance

0013-000032e 1/30/2025
Axial flow return air fan RF-1
Room M140

0013-000033a 1/30/2025
Metal and glass exterior entry doors
Entrance

0013-000033e 1/30/2025
Variable frequency drive VFD RF-1
Room M140

0013-000034a 1/30/2025

Concrete panels and attached columns, glazing, entry doors, and steps

Exterior

0013-000034e 1/30/2025

Hydronic unit heater UH-2

Room M140

0013-000035a 1/30/2025

Granite panels, attached columns, and glazing

Exterior

0013-000035e 1/30/2025

Electrical distribution panel LM1

Room M140

0013-000036a 1/30/2025

Concrete and granite panels and glazing

Exterior

0013-000036e 1/30/2025

Shell-and-tube heat exchanger HTX-2

Room M001

0013-000037a 1/30/2025

Concrete panels, brick facade, and glazing

Exterior

0013-000037e 1/30/2025

Heating water expansion tank ET-HHW-1

Room M001

0013-000038a 1/30/2025

Brick facade and glazing

Exterior

0013-000038e 1/30/2025

Duplex domestic water booster pump skid BP-1

Room M001

0013-000039a 1/30/2025

Brick facade and glazing

Exterior

0013-000039e 1/30/2025

Domestic water expansion tank ET-1, DCW

Room M001

0013-000040a 1/30/2025
Brick facade, glazing, and hollow-metal entry doors
Exterior

0013-000040e 1/30/2025
Backflow preventer
Room M001

0013-000041a 1/30/2025
Brick facade, glazing, and hollow-metal entry doors
Exterior

0013-000041e 1/30/2025
Duplex condensate receiver CP-1
Room M001

0013-000042a 1/30/2025
Brick facade, glazing, and metal and glass entry doors
Exterior

0013-000042e 1/30/2025
Domestic hot water pump HWP-4
Room M001

0013-000043e 1/30/2025

Shell-and-tube heat exchanger serving Telecom Building (HTX-1)

Room M001

0013-000044e 1/30/2025

Heating water pump serving Telecom Building (HWP-006)

Room M001

0013-000045e 1/30/2025

Heating water pump serving Telecom Building (HWP-003)

Room M001

0013-000046e 1/30/2025

Louvered propeller style exhaust fan EF-1

Room M001

0013-000047e 1/30/2025

Surface-mounted HID fixture

East elevation

0013-000048e 1/30/2025

Can light with incandescent lamp

East elevation

0013-000049e 1/30/2025
Air-cooled condenser for ductless split system CU-3
Courtyard

0013-000050e 1/30/2025
Chilled water pumps CHWP-1 and CHWP-2
Room M002

0013-000051e 1/30/2025
Chilled water pump CHWP-3
Room M002

0013-000052e 1/30/2025
Heating water pump HWP-6
Room M002

0013-000053e 1/30/2025
Heating water pump HWP-5
Room M002

0013-000054e 1/30/2025
Heating water pump HWP-4
Room M002

0013-000055e 1/30/2025

Variable frequency drives for CHWP-1, CHWP-2, CHWP-3, HWP-4, HWP-5, and HWP-6

Room M002

FACILITY CONDITION ASSESSMENT

SECTION 7

PRELIMINARY ENERGY ASSESSMENT

INTRODUCTION

A Preliminary Energy Assessment (PEA) was conducted to identify energy conservation opportunities. The PEA is intended to be a preliminary energy screening only. The goal is to identify potential energy savings opportunities in a building. It is not equivalent to an American Society of Heating, Refrigeration, or Air Conditioning Engineers (ASHRAE) Level 1, 2, or 3 audit. The PEA has two sections: 1) Benchmarking Data and 2) Energy Conservation Opportunities. Basic building information is provided in **Table 1**.

TABLE 1. BUILDING INFORMATION	
Client	Pennsylvania State University
Asset Number	0013-000
Asset Name	Boucke Building
Year Built or Last Energy Renovation	2015

BENCHMARKING DATA

The purpose of benchmarking building performance is to determine how well a building performs in comparison to other similar buildings. For this analysis, buildings were assessed based on their primary use (e.g., education, food sales, food service, etc.) and year constructed. Two metrics -- energy use intensity and energy end use -- are presented for the building manager to use to assess how efficiently the building performs compared to similar buildings.

Metric #1: Energy Use Intensity (EUI)

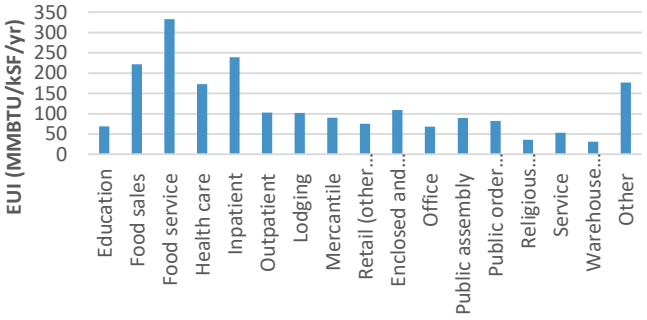
EUI is a measure of energy consumption per square foot of building space per year. The units of measurement are million British thermal units per thousand square foot per year (MMBTU/kSF/yr). The US-DOE EUI can be compared to the actual EUI of the client building to determine how efficient the building is compared to other similar buildings. A building manager can calculate EUI by summing total energy consumption per year (in MMBTU/yr) and dividing it by the building area (in kSF). Benchmarking data from the U.S. Energy Information Administration (EIA) Commercial Building Energy Consumption Survey (CBECS) database was used for this analysis.

Basic information about the building use and the time of the most recent major HVAC or lighting upgrade is provided in **Table 2**. That information is used to determine the Benchmark EUI. The building manager can calculate the Building EUI and compare it to the Benchmark EUI to determine how building efficiency compares to similar buildings (see **Table 3**). In addition, **Figure 1** shows the EUIs of various building types for further comparison.

TABLE 2. BUILDING DETAILS	
FCA Building Type	Classroom
Energy Information Administration Equivalent Building Type	Education
Range of Years Constructed/Last Major Energy Renovation	1990 to present
Benchmark EUI (MMBTU/kSF/yr) =	**69**
Building EUI to be Calculated by Client (MMBTU/kSF/yr) =	

TABLE 3. EUI COMPARISON	
Very Energy Efficient (consumes more than 30% less energy)	EUI < 48.3
Energy Efficient (consumes 10% to 30% less energy)	48.3 <= EUI <= 62.1
Similar (consumes within 10% less or 10% more energy)	62.1 < EUI < 75.9
Energy Inefficient (consumes 10% to 30% more energy)	75.9 <= EUI <= 89.7
Very Energy Inefficient (consumes more than 30% more energy)	EUI > 89.7

Figure 1. EUIs for Buildings Constructed/Renovated 1990 to present

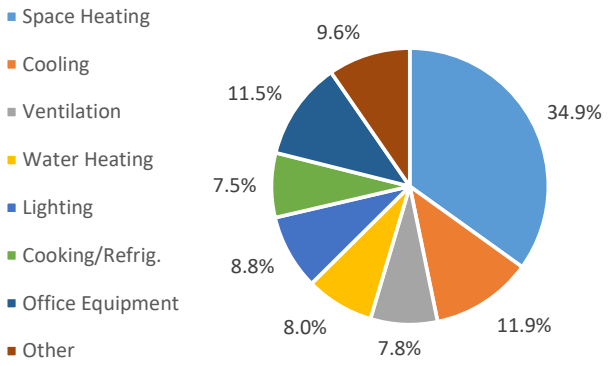


Metric #2: Energy End Use

Energy end use data characterizes how energy is used by profiling energy consumption into end use categories such as space heating, cooling, ventilation, lighting, etc. When energy end use data is presented in a pie chart, high energy-consuming activities are readily identified. A building manager can determine the energy end use profile for a building by analyzing trend data from a Building Automation System and/or Energy Management Control System.

TABLE 4. ENERGY END USE PROFILE: CLASSROOM	
Space Heating	34.9%
Cooling	11.9%
Ventilation	7.8%
Water Heating	8.0%
Lighting	8.8%
Cooking/Refrig.	7.5%
Office Equipment	11.5%
Other	9.6%
Total	100.0%

Figure 2. Energy End Use Profile: Classroom



References:
1. U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. "Technologies and Products by Category." Efficient Technologies and Products for Federal Facilities. DOE. http://energy.gov/eere/femp/efficient-technologies-and-products-federal-facilities. Accessed: June 2016.

2. U.S. Energy Information Administration [EIA]. "2012 CBECS Survey Data." Commercial Building Energy Consumption Survey. EIA. http://www.eia.gov/consumption/commercial/data/2012/index.cfm?view=consumption#c1-c12, Accessed: June 2016.

ENERGY CONSERVATION OPPORTUNITIES

This section presents energy conservation measures (ECMs) recommended for further investigation. Recommended ECMs are categorized into one or more cost categories to indicate an approximate level of resources required to implement the ECM. These cost categories are:

Operation and Maintenance Measures (O&M): O&M actions usually (a) can be completed by in-house maintenance personnel and (b) result in an immediate return on investment.

Low-Cost/No-Cost Measures (LC/NC): LC/NC measures typically (a) can be done by in-house personnel, (b) require little to no investment cost, and (c) result in significant energy savings. In other words, LC/NC measures typically have a quick payback period (less than one year).

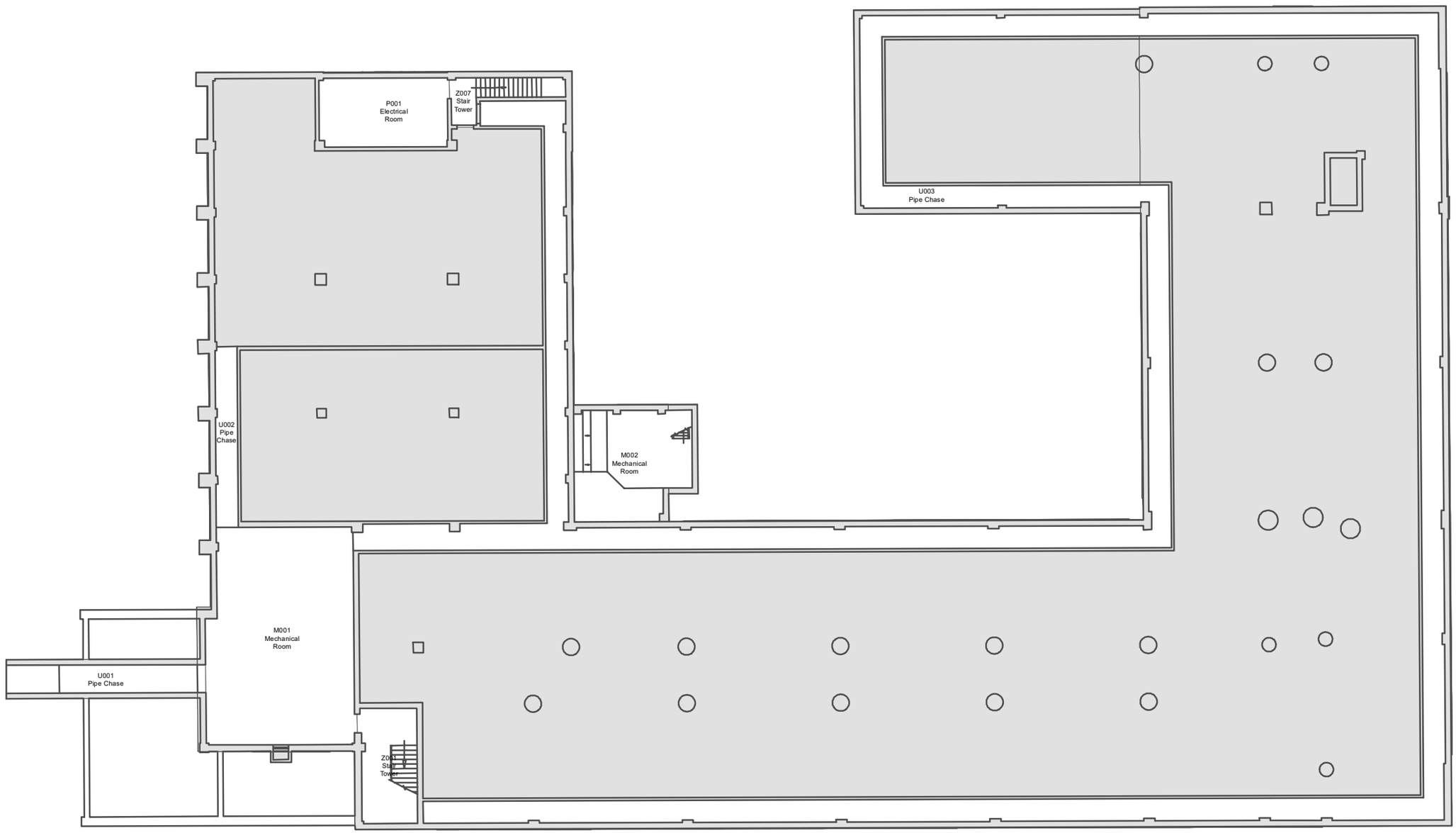
Capital Improvement Measures (CAP): CAP measures are major capital investments that usually require significant time (i.e., approximately six months to three years) for planning, design, and implementation. Oftentimes, a request for proposal, design/bid/build (D/B/B), and/or design/build (D/B) package is required. The return on investment for CAP projects ranges significantly, varying from a payback period from one to twenty plus years.

ECM CATEGORY	ECM RECOMMENDED FOR FURTHER CONSIDERATION	COST CATEGORY
Building Envelope - Window/Door Heat Gain/Loss	INCREASE THE R-VALUE OF THE WINDOWS/DOORS. ENERGY STAR qualified fenestration products such as windows and doors can minimize HVAC energy consumption by reducing solar heat gain/loss.	CAP
Lighting - Interior	INSTALL EFFICIENT LIGHTING FIXTURES. While incandescent lamp fixtures have a low initial cost, the lamps are energy inefficient and have a short useful life. Consider LED lighting instead. HID lamps are necessary in some applications; however, alternatives such as high bay, T5 lighting fixtures or LED fixtures should be considered as an alternate. T12 lamps are an outdated lighting technology that should be replaced with newer technologies such as T8, T5, or LED lamp fixtures.	N/A, Varies
Lighting - Interior, Controls	INSTALL LIGHTING CONTROLS. Oftentimes, lighting fixtures on switches do not get turned off when a space is unoccupied. Occupancy sensors, photocell sensors, and lighting control systems can help reduce lighting energy consumption. For example, consider installing occupancy sensors in offices, common areas, and other areas that have variable occupancy. In areas where there is natural lighting, consider using photocell sensors to dim or shut off fixtures that aren't needed. Alternatively, install a comprehensive light control system that uses time clock schedules, occupancy sensors, photocell sensors, etc., to monitor and control lighting throughout an entire building.	N/A, Varies
Lighting - Exterior	INSTALL EFFICIENT LIGHTING FIXTURES. While incandescent lamp fixtures have a low initial cost, the lamps are energy inefficient and have a short useful life. Consider LED lighting instead. HID lamps are necessary in some applications; however, alternatives such as high intensity T5 or LED fixtures should be considered. T12 lamps are an outdated lighting technology that should be replaced with newer technologies such as high intensity fluorescent or LED lamp fixtures.	N/A, Varies
Lighting - Exterior, Controls	INSTALL LIGHTING CONTROLS. Consider using photocell sensors or timeclocks to shut off building/parking lot fixtures during daylight hours.	N/A, Varies

ECM CATEGORY	ECM RECOMMENDED FOR FURTHER CONSIDERATION	COST CATEGORY
HVAC - BAS	INSTALL A BAS. Consider installing a BAS so that there is autonomous control of the building HVAC systems.	CAP
HVAC - EMCS	CONNECT BAS TO EMCS. Consider connecting the BAS to a central EMCS so that the system can by monitored and controlled at a central location.	CAP
HVAC - Exhaust Ventilation	INSTALL ENERGY RECOVERY SYSTEM. Energy Recovery Ventilation (ERV) systems exchange heat between outgoing exhaust air and the incoming outdoor air. Investigate the feasibility of installing an ERV system to pre-heat/cool ventilation air.	LC/NC; CAP
Electrical - VFDs	INSTALL VARIABLE FREQUENCY DRIVES. Install VFDs on motors greater than 5 hp to reduce energy consumption by varying motor speed based on system demand.	O&M; LC/NC; CAP
Plumbing - DHW Heater Efficiency	INSTALL A HIGH-EFFICIENCY WATER HEATER. High efficiency/ENERGY STAR water heaters consume less energy. Consider condensing water heaters that capture the latent heat from water vapor contained in the flue gases.	LC/NC; CAP

InVision Block Plan

Building Number: 0013000
Building Name: Boucke Bldg
Floor: B



Print Date: 10/6/2024

0 25 50 100 Feet

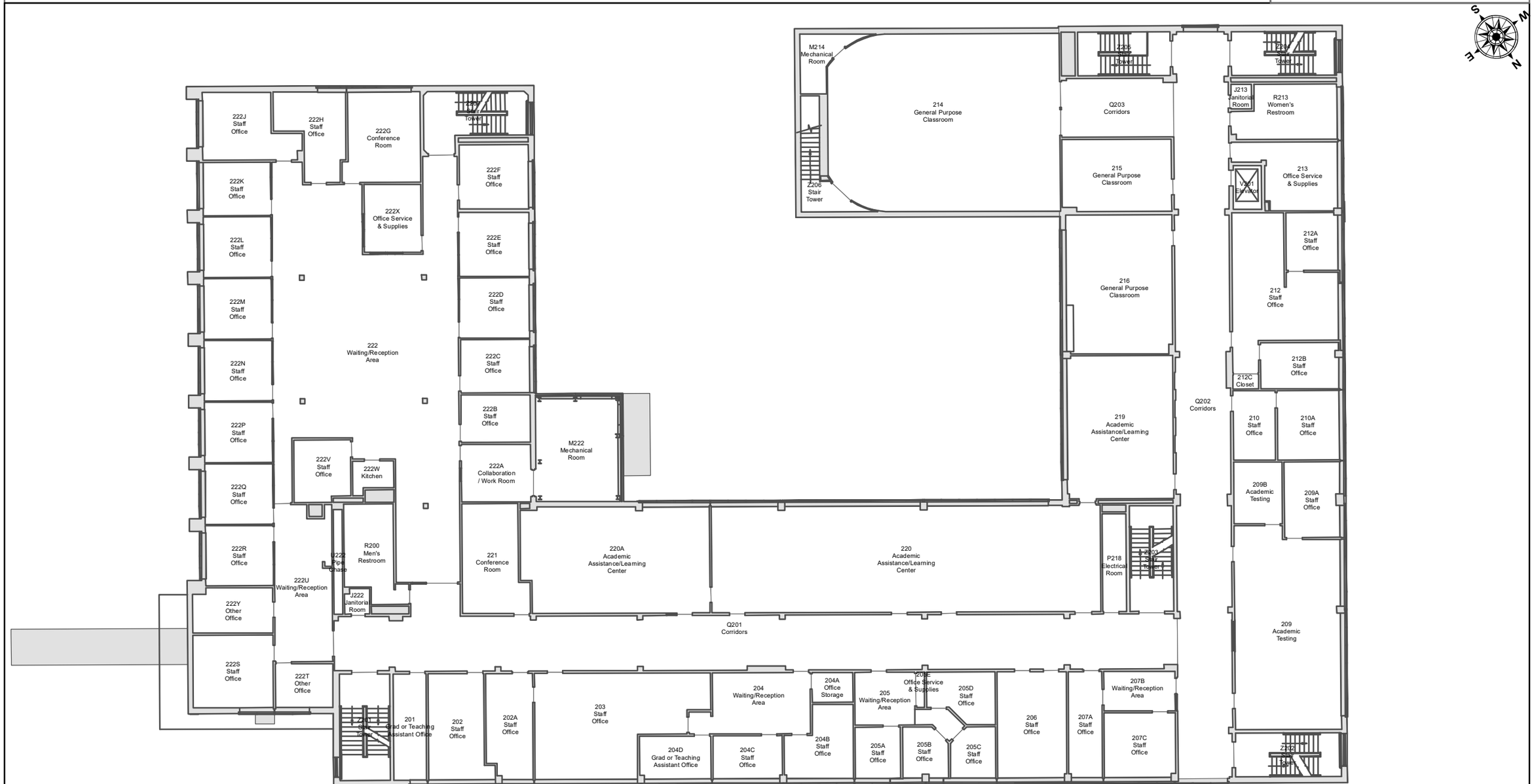
InVision Block Plan

Building Number: 0013000
Building Name: Boucke Bldg
Floor: 1

Print Date: 10/6/2024

InVision Block Plan

Building Number: 0013000
Building Name: Boucke Bldg
Floor: 2



Print Date: 10/6/2024

0 25 50 100 Feet

InVision Block Plan

Building Number: 0013000
Building Name: Boucke Bldg
Floor: 3

Print Date: 10/6/2024

0 25 50 100 Feet

InVision Block Plan

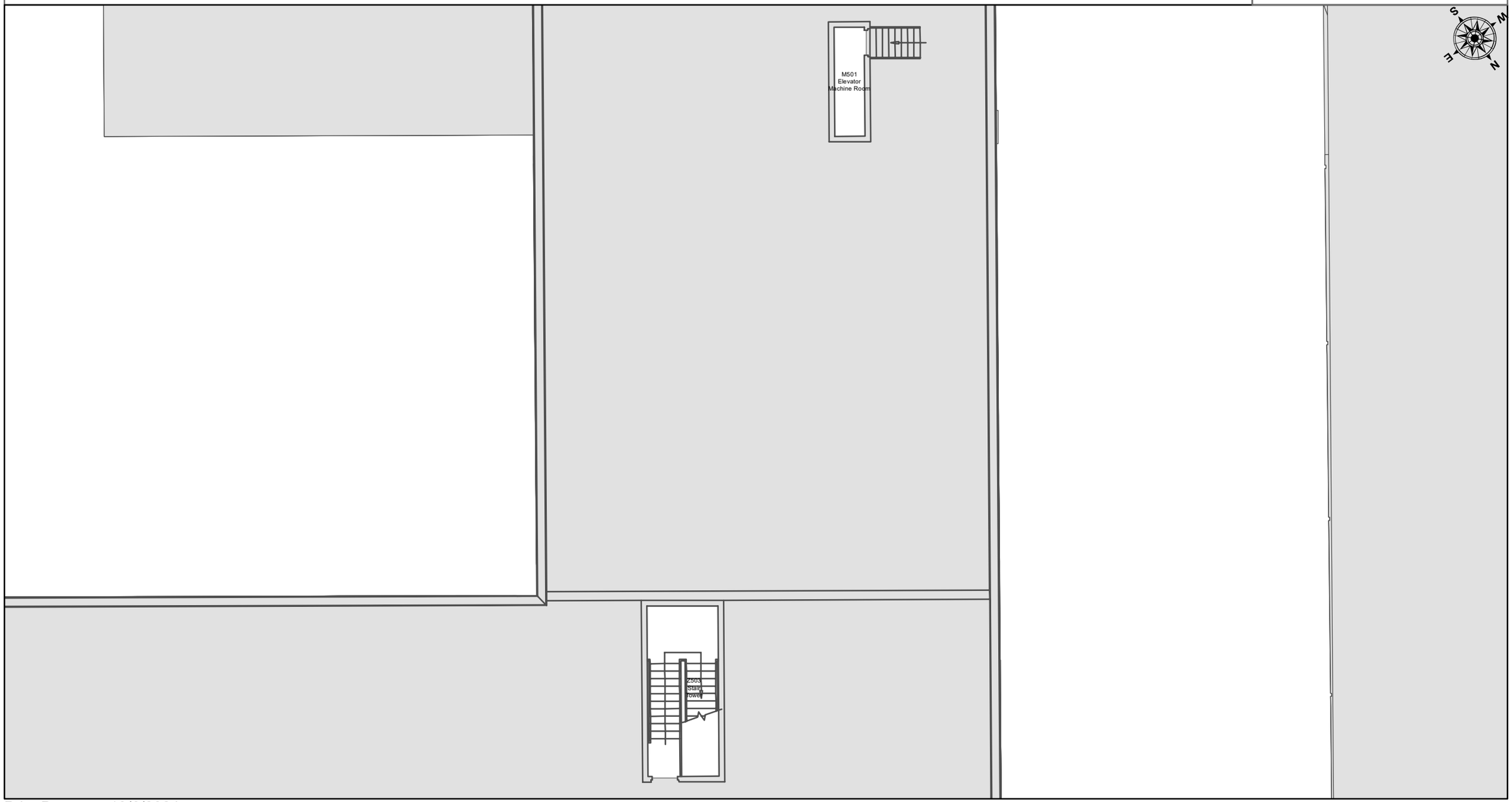
Building Number: 0013000
Building Name: Boucke Bldg
Floor: 4

Print Date: 10/6/2024

0 25 50 100 Feet

InVision Block Plan

Building Number: 0013000
Building Name: Boucke Bldg
Floor: R



Print Date: 10/6/2024

0 15 30 60 Feet