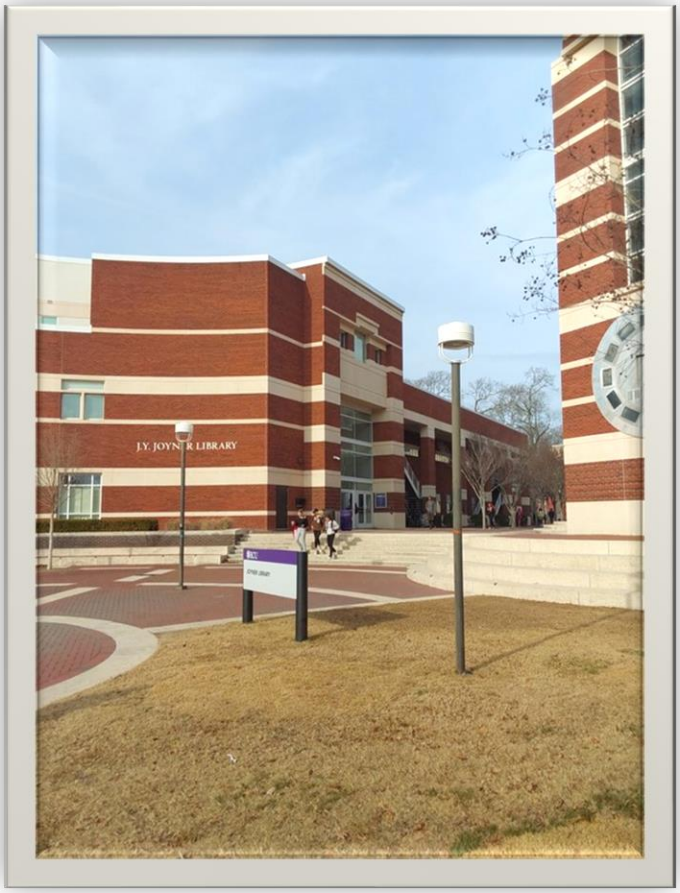
EAST CAROLINA UNIVERSITY

Facility Condition Assessment

Joyner Library
Asset 001

Inspected January 12, 2023



ISES CORPORATION

TABLE OF CONTENTS

FACILITY CONDITION ASSESSMENT

SECTION 1

ASSET OVERVIEW

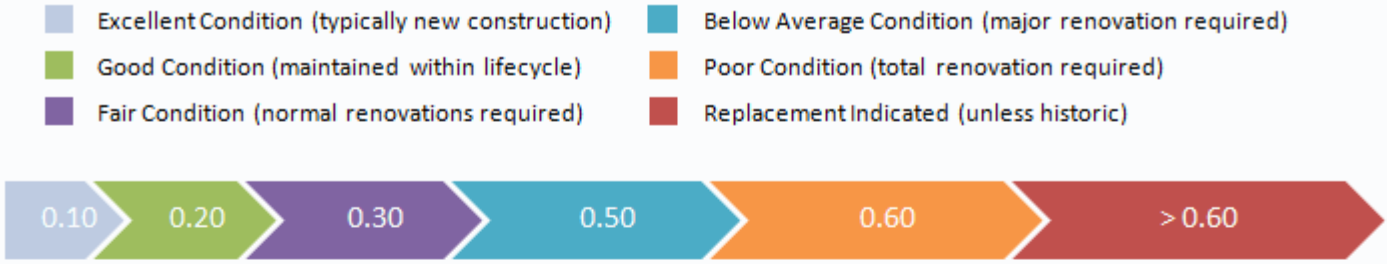
ASSET EXECUTIVE SUMMARY

All costs shown as Present Value

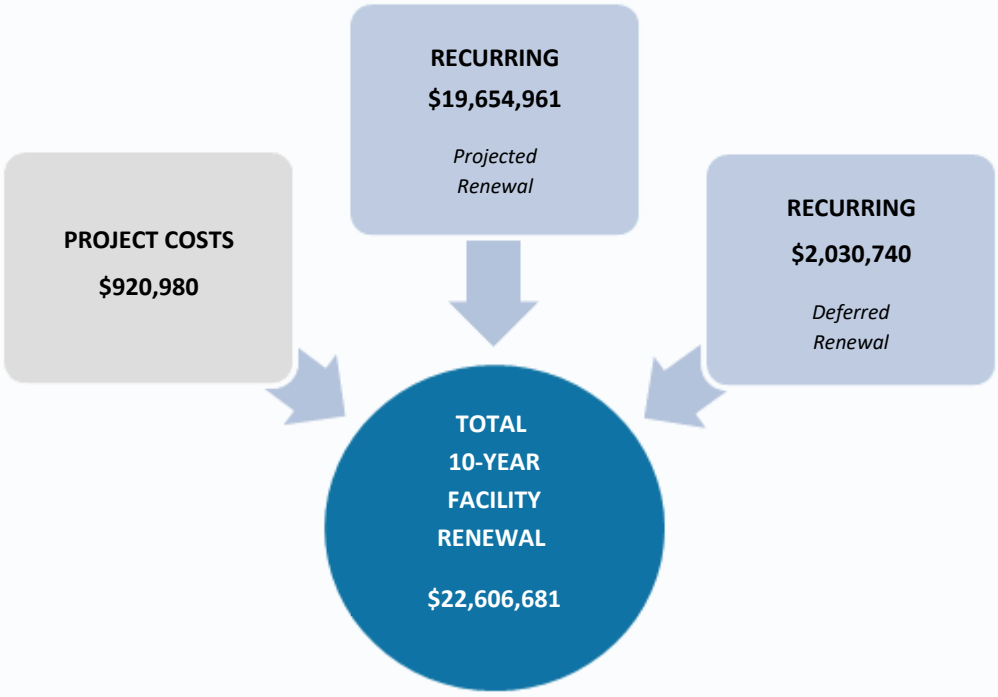
ASSET CODE	001	**CURRENT REPLACEMENT VALUE**	$156,795,000
ASSET NAME	JOYNER LIBRARY	**FACILITY CONDITION NEEDS INDEX**	0.14
ASSET USE	Library	**FACILITY CONDITION INDEX**	0.01
YEAR BUILT	1954	**10-YEAR $/SF**	80.57
GSF	280,575		
INSPECTION DATE	01/12/2023		

FCNI Scale

The FCNI for this asset is **0.14**



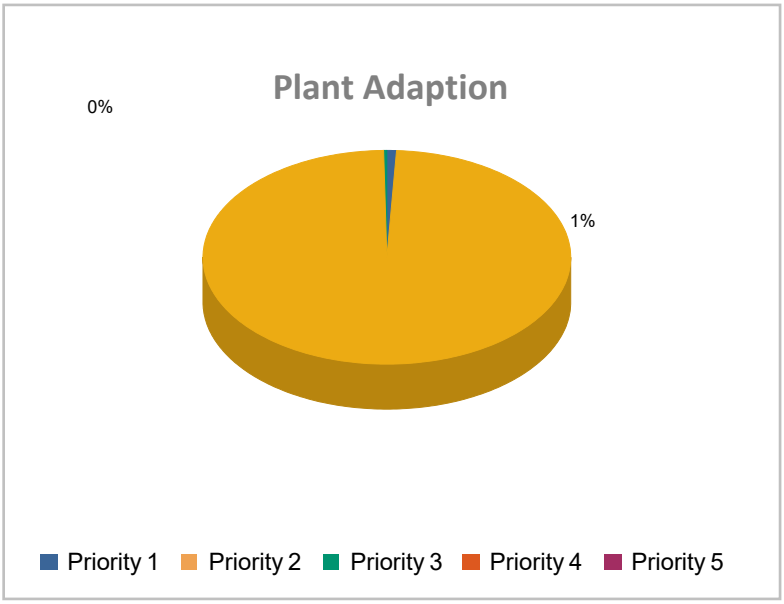
Total Facility Renewal Costs



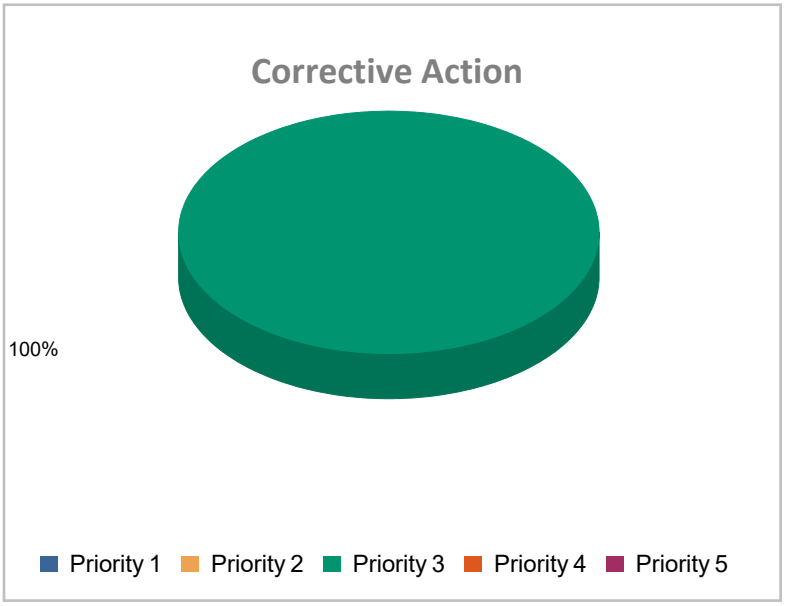
Project Costs

Project Cost by Priority

PLANT ADAPTION	
Priority 1	**$7,316**
Priority 2	**$819,254**
Priority 3	**$3,330**
Priority 4	**$0**
Priority 5	**$0**

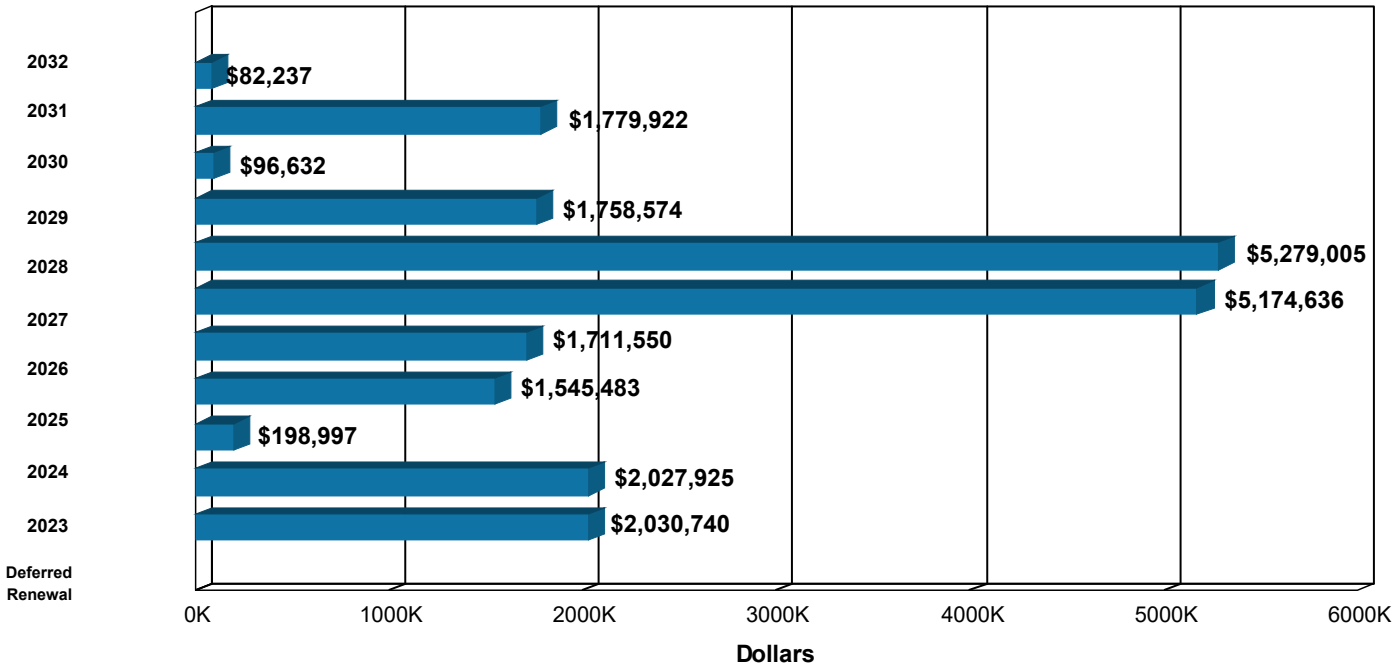


CORRECTIVE ACTION	
Priority 1	**$0**
Priority 2	**$0**
Priority 3	**$91,080**
Priority 4	**$0**
Priority 5	**$0**

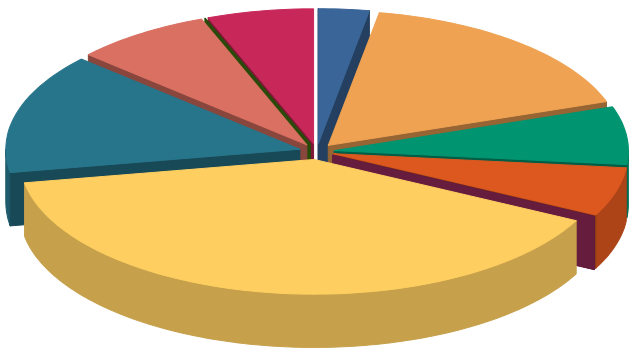


Recurring Costs

Component Replacement Cost by Year



Facilities Renewal Cost by System



Accessibility	$633,233	3%
Electrical	$3,847,086	17%
Exterior	$1,519,141	7%
Fire/Life Safety	$1,367,774	6%
Health	$1,351	0%
HVAC	$8,969,019	40%
Interiors	$3,286,175	15%
Plumbing	$1,644,694	7%
Site	$10,670	0.0%
Vert. Trans.	$1,327,538	6%
Security	$10,670	0.0%
TOTAL	**$22,606,681**	

ASSET SUMMARY

Joyner Library on the campus of East Carolina University was constructed in phases from the 1950s through the 1990s. This International Style facility includes four stories above grade and a full basement. The 1997 addition has a drum-shaped section. The building is constructed on a reinforced concrete basement foundation. Totaling 280,575 gross square feet, the facility is predominately utilized as a library and also includes study areas and offices.

Information for this report was gathered during a site visit conducted on January 12, 2023.

Site

The building sits on a flat parcel of land with landscaping consisting of ornamental planting beds, shrubbery, specimen trees, and areas of turf. Vehicular access is from the north via Cupola Court with as service drive along the south. The building has a shared parking garage south of the structure and a small parking lot along Cupola Court. The parking lot and drive will be due for seal coating and restriping within ten years along with the joint maintenance of the concrete loading dock lot. The northern portion of the sidewalk system is old and in need of maintenance and the concrete pavers will also require joint maintenance. There is also a brick paver system along the east elevation, at the north entrance, and in the courtyard that is in good condition and should outlast the scope of this report.

Exterior Structure

The flat roof is covered with a modified bitumen system. The upper portion of the roof in good condition while the lower portion is not expected to outlast the scope of this report and should be replaced with a similar application including the gutters and downspout system. The roof and smoke hatches, as well as the skylight system, are in good condition and should not require replacement within the scope of this report.

The exterior consists of brick with precast concrete window panels and cast-in-place concrete fascia. The brick and precast concrete are in good condition although the brick is in need of a light chemical treatment and power washing. The EIFS walls on the fourth floor are overdue for maintenance.

The aluminum-framed windows on the older portion of the building are outdated and should be replaced with newer, energy conserving windows. The newer stationary storefront and curtainwall glazing are in good condition. The main building entrance has metal-framed glazed doors, while the secondary entrances have hollow-metal service doors. The exterior doors are in overall good condition but the metal coiling doors are due for maintenance during the scope of this report.

Interior Finishes/Systems

The wall finishes are generally painted sheetrock in good condition and appear to have been repainted within the last four years. However, they will still require repainting within ten years. There is a small portion of the fourth floor rotunda that has wood paneling that appears to be in good condition and does not require replacement at this time. The ceiling systems are a combination of painted sheetrock and suspended or attached acoustical tile systems. They are in good condition with new tile systems installed in 2019 in most areas. However, some older ACT systems remain and are recommended for replacement within ten years. The attached acoustical 12x12 ceiling tile is also due for replacement.

Floor finishes are typically carpet, vinyl tile, vinyl sheet, or ceramic tile. The loom style carpet in the offices, classrooms, and other support areas will require replacement within ten years, but the premium carpeting in the stack areas will outlast the scope of this report. The 12x12 vinyl floor tile will also outlast the scope but the textured vinyl sheet flooring in the stair towers is due for replacement. The ceramic tile near the first-floor main entry, as well as the restroom floor and wall tile, is due for replacement within ten years. The economy tile in the janitor closets should also be replaced.

Many of the interior doors appear to be new and none will be due for replacement in the next ten years. However, some of the hardware may need to be replaced. A small portion of the gray laminate casework in room 1903 is damaged and should be replaced. The remainder of the casework was updated in 2019 and should outlast the scope of this report as will the toilet partitions in restrooms.

Accessibility

Compliant parking spaces in south lot connect to curb cuts and a sidewalk system serving all entrances. The south entrance is wheelchair accessible and leads to one of three ADA-compliant elevator systems serving all floors. The men's and women's restrooms on each floor are fully ADA compliant. There is also a dual-level drinking fountain on each floor, excluding the single-level fountains in the children's section. Interior doors are equipped with lever hardware and appropriate pictorial and Braille signage. However, several upgrades are recommended to enhance building accessibility.

Building entrances are required to be handicapped accessible. The exterior ramp systems do not meet current ADA requirements regarding handrails. To comply with the intent of this legislation, it is recommended that compliant painted metal handrails be installed at all entrances as required.

The restrooms do not have proper ADA clearance stalls. The existing fixture configuration for the west restrooms in the basement and on the first, second, and third floors does not allow for adequate stall modifications without the loss of fixtures. In order to maintain fixture count and provide the necessary accessible toilet, it is recommended that a fully accessible unisex restroom be installed in the adjacent areas. Additionally, modifications should be made to the stalls in the remainder of the restrooms to allow for proper clearances. Also, the door pulls may create a barrier to accessibility and power door operators should be installed on all accessible restroom doors.

Some older doors still have non-compliant knob hardware which should be replaced for lever actuated hardware.

There are eight stair towers in the building. In the 1997 addition, the two stair towers serving floors one through four have deficient freestanding railing systems. The metal handrails and guardrails at the various interior stairs do not comply with current handrail and guardrail design standards. Handrails are not the required profile, and newel posts interrupt the switchback stair gripping surfaces. The guardrails typically have openings within the fill area that do not comply with the -four-inch sphere test. Also, upper horizontal landing guardrails are not 42 inches high, and the stair walls do not all have rails. Retrofit new guardrails and handrails in each of the stair segments as appropriate to resolve the design discrepancies.

The ramp in the first floor south corridor 1092 is not easily traversed in a wheelchair. It is recommended that wall-mounted compliant painted metal railings be installed to serve this ramp. Also, the elevators are only partially compliant with current ADA legislation and it is recommended that an ADA-compliant, hands-free phone be installed in order meet the current standards.

The configuration of the pass thru service counter in room 1080 is a barrier to accessibility. A wheelchair-accessible section should be incorporated into each noncompliant service counter.

Health

The 9x9 vinyl tile flooring in custodial closet 3908 is suspected to contain asbestos. Testing and necessary abatement of the flooring tile prior to replacement is recommended.

There is an emergency eyewash/drench hose plumbing fixture in room 3405. This fixture will reach the end of its service life in the next ten years and should be considered for renewal.

Fire/Life Safety

Fire separations are not maintained according to code requirements for new construction in select areas of this facility including rooms 3906, 2906, and B907. Although only these instances were noted, other fire separation compromises may exist elsewhere in this building. It is recommended that the entire building be surveyed for similar problem areas, especially in conditions and spaces that are similar to those that were observed. Intumescent passive firestopping installation should be accomplished promptly.

Current OSHA standards dictate that skylights have fall protection on the periphery. Install an appropriately designed metal guardrail around the skylights. OSHA standards also dictate that roof hatches have fall protection on the periphery. Install an appropriately designed metal guardrail around the roof hatches. In addition, 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.

This facility is protected by a central fire alarm system that includes one main fire alarm control panel and two additional subordinate panels. The main, addressable fire alarm control panel (FACP) is in room

B902 and was installed in 1997. The subordinate panels, in rooms B901 and 3407, are associated with the preaction suppression systems and provide protection to the areas on the first, third, and fourth floors. All three panels will require renewal due to age.

The devices that serve the fire alarm systems include manual pull stations, audible/visible devices, and smoke detectors. The majority of the devices date to 1997 while some systematic renewal of select notifiers and smoke detectors occurred in 2015 and again in 2022. The devices that date to 1997 will reach the end of their reliable service life in the next few years and should be considered for renewal and/or replacement.

The majority of the facility is protected by a comprehensive fire suppression system that was installed in 1997. Select areas on the first, third, and fourth floors are supported by preaction fire suppression systems. The main system is supplied water by an electrical pump and associated jockey pump in room B909. Additionally, a dedicated fire water backflow preventer was observed to the exterior of the facility. Overall, the fire suppression systems provide adequate coverage but will require reinvestment as the backflow device is operating beyond its reliable service life and the fire pumps require renewal due to condition and age. The controller and transfer switch associated with the main fire pump should be renewed at the same time as the pump.

HVAC

This facility is on the campus steam loop. Hot water is generated via a steam-to-water heat exchanger (HEX) and hot water (HW) is circulated as the heating medium. Steam is provided to select air handlers to support humidification needs. The cooling medium is chilled water (CHW) that is supplied by water-cooled chillers and further supported by a glycol/ice thermal storage system and subsequent free cooling plate-and-frame HEX.

The incoming steam for the heating water system is delivered to pressure reducing stations that are equipped with multiple pressure reducing valves and a safety relief valve in mechanical rooms B901 and B909. This equipment is currently serviceable but will require renewal within the next ten years due to age. Multiple shell-and-tube HEXs were observed to serve this facility and that equipment was installed in 1976, 1995, and 2012. While currently serviceable, the HEX in room B909 has developed moderate surface corrosion, is equipped with damaged insulation, and is operating well beyond its reliable service life. The HEX that was installed in B909 is also operating beyond its reliable service life and both are recommended for renewal.

Two, water cooled, screw type centrifugal chillers generate chilled water for facility cooling needs. Condenser water for the chillers is generated by exterior cooling tower assemblies. All of this equipment was installed in 1997. The chillers have been subject to major repair but will reach the end of their reliable, efficient, service life in the next five years. The cooling towers have developed surface corrosion and are aged. The infill was observed to be damaged in areas and was covered in scale and biological growth greatly reducing the heat transfer capability. Based on the age and condition, it is recommended that this primary chilled water equipment be replaced. The water treatment equipment that serves this equipment is presumed to have been installed in 2018 and is in good condition.

Additional central cooling systems include fourteen ice thermal storage tanks, the associated glycol system equipment, and a free cooling heat exchanger. There were no visible deficiencies observed at the time of inspection and there are no recommendations developed for this equipment. A refrigerant monitoring system was observed in room B901. This system is in proper working condition with no recommendations.

This facility is equipped with 18 base-mounted, electric pumps that support the heating, chilled, condenser, and glycol water systems. Most of the pumps were installed in 1997 and 2007 and have been well maintained. Some observable corrosion was observed on select pump bases and impellers but the majority will operate reliably for the next ten years. The pumps that are recommended for renewal due to either age and or/ condition include: glycol pumps P2A, P2B, and P-9, chilled/condenser pumps P-4 and P-10, and the heating water pump B&G in room B909.

Equipment that supports the heating water, generated chilled water, free cooling, and glycol system includes various sized expansion tanks and dedicated air separators. Additionally, two duplex, electric, condensate return stations were observed in rooms B901 and B909. There are no recommendations for the expansion and storage tanks, however, the air separators that serve the heating, chilled, and glycol distribution systems and the condensate return units are likely to require renewal due to age and condition.

Approximately half of the facility is served by a forced air HVAC system with multizone McQuay air handlers equipped with heating and cooling coils that were installed in 1997. Steam generated humidifiers were observed and equipped to most of this equipment. The remaining approximately half of the facility is served forced air by multizone air handlers that date to the mid-1970s and were manufactured by Trane. In total, 20 air handlers were observed including one main air handler in room B901 that is supported by dedicated inline, supply, and return fans. A significant amount of reinvestment has been applied to the Trane Climate Changer air handlers to extend their reliable service life which includes, but is not limited to, drain pan renewal, new motor assemblies, and new impellers. While all the air handlers are currently in proper working condition, 18 will require some renewal and/or retrofit reinvestment within the next ten years due to age and condition. Additionally, the steam injection humidification equipment that serves the McQuay air handlers and the inline supply and return air fans that serve air handler B.U.A.S. are recommended for renewal due to age.

The HVAC distribution system includes metal ductwork, insulated steel piping systems, and some variable volume terminal assemblies. Like the main mechanical equipment, these systems were largely installed in 1976 and in 1997. The older systems equipment including pipe and duct will require reinvestment in the next ten years due to age and condition as moderate corrosion was observed on valves, fittings, pipe, and ductwork.

The controls for the entire HVAC system are a hybrid design that utilizes mostly direct digital control manufactured and designed by Trane as well as some limited pneumatic actuation. A comprehensive effort has been made to update the central and local control panel system and software. Additionally, more modern Belimo electronic damper and valve actuation was observed throughout the HVAC system. This update to the control system has greatly improved the efficiency of the system but reinvestment should be anticipated due to technological obsolescence within the next ten years.

Additionally, the reciprocating air compressor and associated refrigerated air dryer in mechanical room B901 will require renewal in the next five years due to age.

Additional components that serve the central HVAC systems include ceiling mounted fan coils and hydronic and electric unit heaters. This equipment is currently serviceable, but the majority will require renewal in the next ten years due to age. Supplemental HVAC is provided to some select areas of the building by a 2-ton, ductless split system manufactured by Mitsubishi and a 15-ton air-cooled condenser manufactured by Trane. No visible deficiencies were observed at the time of inspection and there are no recommendations.

This facility is equipped with two fume hoods. The stainless-steel hood in room 3405 is in good condition and should remain reliable beyond the scope of this report assessment. The mechanical fume hood in room 1300 is still in service but will reach the end of its service life in the next ten years and should be considered for renewal.

This facility is equipped with six centrifugal rooftop, four inline airfoil, one utility set-axial, and one mixed flow type electric fans. These fans provide for general facility, restroom, loading dock, fume hood, and smoke exhaust needs. While these fans are all currently serviceable, eight of the twelve fans will require renewal in the next ten years due to age.

Electrical

Multiple oil-filled transformers rated for 2,000, 1,500, and 75 kVA service step the primary incoming power down from 12,470 to 277/480 volts. These transformers and associated pad-mount selector switches have been assessed as part of a comprehensive, campus-wide high voltage electrical distribution report. The secondary electrical distribution network is a dual-voltage configuration. 277/480-volt power is distributed to branch transformers that step the power down to 120/208 volts. The lighting and major mechanical systems are supported by the 277/480-volt circuit.

Approximately half of the facility is furnished with electrical distribution equipment (branch wiring, outlets, switches) that dates to the mid-1970s and the remainder of the building is equipped with circa 1996/1997 equipment. Three main switchboard assemblies identified as MSB1 (2,000 amps), MSB2 (2,500 amps), and SSB (2,000 amps) are in rooms B902 and B909 and distribute the 277/480-volt power to circuits throughout the facility. These circuits are equipped with distribution panelboards and dry-type transformers of varying vintage and capacity. It should be anticipated that the distribution system equipment and panelboards that date to the 1970s will require major reinvestment due to age. The majority of the dry-type transformers will reach the end of their reliable service life within the purview of this report assessment and should also be considered for renewal.

A motor control center identified as MCC-1 was observed in room B901. This two-section controller is rated for 600 amps and was installed in 1997. This MCC will reach the end of its reliable service life in the next five years and is recommended for renewal.

Most of the mechanical equipment, such as pumps, air handlers, fans, etc., are served by variable frequency drives (VFDs). Thirty-nine VFDs of various sizes and age are in service. Most of this equipment

(32 total) will reach the end of its reliable service life in ten years primarily due to technological obsolescence and should be considered for renewal.

Power for the emergency circuits is provided by an exterior, diesel-fired emergency generator that is rated for 400 kW. An automatic transfer switch that is rated 600 amps and provides 480-volt service is in room B902. The equipment did not reveal any observable deficiencies and was reported to be operationally reliable and well maintained. There are no recommendations.

Interior lighting includes a combination of recessed, pendant, and surface mount type fixtures. Most of the lighting system was subject to an energy retrofit which included the installation of more modern, energy-efficient LED lamp packs. Occupancy sensors were observed in some select spaces but some less efficient fluorescent lighting with T12 lamps were observed in mechanical and storage spaces. The interior lighting is currently serviceable, but the majority will require renewal within the next ten years due to age.

The exterior is illuminated by recessed, wall, and pole-mounted light fixtures. LED and HID lamps were observed. The lighting is currently serviceable, but the majority will require renewal in the next ten years due to age and condition.

Due to the mechanical equipment present on the roof and the height of the building, the installation of lightning protection is recommended in order to prevent damage to the building.

Plumbing

Potable water is distributed throughout this facility via an insulated, copper piping network. Sanitary waste and stormwater piping is cast-iron construction in the original portion of the building and cast-iron that was installed in 1976 and 1997. No leaks or damage were observed but it should be anticipated that the piping dating to the 1970s should be considered for renewal due to age. Multiple backflow prevention devices were observed for the potable and make-up water systems. These devices are currently serviceable but all three inspected will reach the end of their statistical service life in the next ten years and are recommended for renewal.

Domestic water is heated by a shell-and-tube heat exchanger that utilizes steam and was installed in 1997. This water heater is currently in proper working condition but will reach the end of statistical life in the next five years. Renewal is recommended.

This facility is equipped with four submersible pumping systems used for the removal of stormwater, sewage water, and other wastewater. All four duplex systems are in proper working condition but the sewage ejection pump and Weil stormwater pump systems in B901 are recommended for renewal due to age.

The plumbing fixtures include counter lavatories, tankless water closets, and floor utility sinks. There are some wall-hung lavatories in the single-user restrooms and the basement restrooms, as well as tank water closets in two of the single-user restrooms. All of the fixtures are newer and compliant with

accessibility and water conserving standards. However, the older floor-mounted and wall-hung utility sinks will need to be replaced.

Vertical Transportation

This facility is provided vertical transportation by three hydraulic elevator systems that were installed in 1997. These elevator systems are currently serviceable but the hydraulic machines are operating beyond their statistical service life. The machines and passenger cars are recommended for reinvestment.

A two-stop dumbwaiter system serves the third and fourth floors. Installed in 1997, the system has reached the end of its service life. If continued use is necessary, it is recommended that this system be renewed.

The loading dock is equipped with two hydraulic dock leveling systems and the utility tunnel near the access to the clock tower is served by a hydraulic lift. All three systems are in good condition with no recommendations.

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

Doug Fredendall
770.674.3112
dougf@isescorp.com

Date of Inspection

January 12, 2023

Inspection Team Personnel

NAME	POSITION	SPECIALTY
Rob Camperlino	Facility Assessor	Mechanical, Electrical, Plumbing, Energy, Fire/Life Safety, Health
Noah Porter	Project Architect	Interior Finishes, Exterior Structure, ADA Compliance, Site, Fire/Life Safety, Health

Client Contact

NAME	POSITION
Griffin L. Avin, CEFP	Director of Facilities Services, Health Sciences Campus Chief Sustainability Officer

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 Greenville 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	71.3
Local Materials Index	100.7
Construction Markup	20.0
Professional Fees	16.0

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-provided 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

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	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	TOTAL
ACCESSIBILITY	0	631,254	1,979	0	0	0	0	0	0	0	0	0	0	0	$633,233
EXTERIOR	0	0	91,080	1,078,046	0	0	0	0	350,015	0	0	0	0	0	$1,519,141
INTERIOR	0	0	0	905,925	0	0	0	0	1,306,717	0	0	0	1,073,534	0	$3,286,175
PLUMBING	0	0	0	8,632	69,907	0	0	2,816	1,555,541	0	0	0	5,641	2,158	$1,644,694
HVAC	0	0	0	0	584,663	144,148	348,157	0	1,713,204	5,279,005	98,239	55,693	670,614	75,295	$8,969,019
FIRE/LIFE SAFETY	7,316	43,069	0	0	45,567	0	1,184,570	64,468	11,392	0	0	11,392	0	0	$1,367,774
ELECTRICAL	0	218	0	37,390	44,499	54,849	12,756	1,634,344	193,519	0	1,660,335	29,547	30,133	4,783	$3,702,374
SITE	0	0	0	748	0	0	0	9,922	0	0	0	0	0	0	$10,670
VERT. TRANS.	0	0	0	0	1,283,289	0	0	0	44,249	0	0	0	0	0	$1,327,538
HEALTH/EQUIP.	0	0	1,351	0	0	0	0	0	0	0	0	0	0	0	$1,351
SUBTOTAL	$7,316	$674,542	$94,410	$2,030,740	$2,027,925	$198,997	$1,545,483	$1,711,550	$5,174,636	$5,279,005	$1,758,574	$96,632	$1,779,922	$82,237	$22,461,969
TOTAL NONRECURRING PROJECT NEEDS			$776,268	TOTAL RECURRING COMPONENT REPLACEMENT NEEDS										$21,685,701	

CURRENT REPLACEMENT VALUE	$156,795,000
FACILITY CONDITION NEEDS INDEX	0.14
FACILITY CONDITION INDEX	0.01

GSF	TOTAL 10-YEAR FACILITY RENEWAL NEEDS	10-YEAR NEEDS/SF
280,575	$22,461,969	$80.06

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	$633,233	$0	$633,233
EXTERIOR	$91,080	$1,428,061	$1,519,141
INTERIOR	$0	$3,286,175	$3,286,175
PLUMBING	$0	$1,644,694	$1,644,694
HVAC	$0	$8,969,019	$8,969,019
FIRE/LIFE SAFETY	$50,386	$1,317,388	$1,367,774
ELECTRICAL	$218	$3,702,155	$3,702,374
SITE	$0	$10,670	$10,670
VERT. TRANS	$0	$1,327,538	$1,327,538
HEALTH	$1,351	$0	$1,351
TOTALS	**$776,268**	**$21,685,701**	**$22,461,969**

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
001	EW11	WALL, EXTERIOR, EIFS	4TH FLOOR ROTUNDA		SOUTHWEST ELEVATION	B2010	Deferred Renewal	115,300
001	WN01	GLASS, WINDOW, ALUMINUM OR WOOD, STANDARD	ALUM WINDOWS		NORTH, EAST, AND WEST ELEVATIONS	B2010	Deferred Renewal	957,629
001	DR30	DOOR OPERATOR, OVERHEAD DOOR, COMMERCIAL, PADS	SMALL COILING STEEL		SOUTH ELEVATION	B2030	Deferred Renewal	2,558
001	DR30	DOOR OPERATOR, OVERHEAD DOOR, COMMERCIAL, PADS	LARGE COILING STEEL		SOUTH ELEVATION	B2030	Deferred Renewal	2,558
001	DR24	DOOR LOCK, COMMERCIAL-GRADE	OLD KNOB DOORS		2902, 2118, 1200, B906	C1020	Deferred Renewal	4,482
001	DR24	DOOR LOCK, COMMERCIAL-GRADE	OLD CORRIDOR DOORS		3110, 2118, 3048	C1020	Deferred Renewal	213,350
001	CW01	CASEWORK - WOOD BASE AND WALL, TOP, STANDARD	OLD GRAY LAMINATE WOOD		1903	C1030	Deferred Renewal	12,984
001	IF03	FLOORING - VINYL COMPOSITION TILE, STANDARD	9X9 ACM		3908	C3020	Deferred Renewal	3,317
001	IF05	FLOORING - VINYL RESILIENT, TILE OR ROLL	TEXTURED STAIR FLOORING		STAIRS 1, 2, 4, 8, 9, 10, 11	C3020	Deferred Renewal	577,297
001	IF08	FLOORING - TILE, CERAMIC / STONE / QUARRY ECONOMY	1X TILE		B908, 1907, 2902, 3902	C3020	Deferred Renewal	5,371
001	IC03	CEILING FINISH - ATTACHED ACOUSTICAL TILE	12X12 ACOUSTIC TILE		4003, 4011, 1000, 1105, 1504,	C3030	Deferred Renewal	89,123
001	FX06	PLUMBING FIXTURE - SINK, SERVICE/LAUNDRY/UTILITY	IN GROUND SINK		B908, 1907, 2902, 3902	D2010	Deferred Renewal	8,632
001	SG02	MAIN SWITCHBOARD W/BREAKERS (400-600 AMP)	GE 400 AMP		B909	D5010	Deferred Renewal	37,390
001	SI01	CONCRETE PEDESTRIAN PAVING - JOINT MAINTENANCE	NORTH SIDEWALK		NORTH ELEVATION	G2030	Deferred Renewal	748

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
001	VT03	ELEVATOR MODERNIZATION - HYDRAULIC	ELEV 2	10050	1910	D1010	2023	363,640
001	VT03	ELEVATOR MODERNIZATION - HYDRAULIC	ELEV 1	10052	901A	D1010	2023	363,640
001	VT03	ELEVATOR MODERNIZATION - HYDRAULIC	ELEV 3 FREIGHT	10146	B910	D1010	2023	363,640
001	VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV 2	10050	ELEV 2	D1010	2023	64,123
001	VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV 1	10052	ELEV 1	D1010	2023	64,123
001	VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV 3 FREIGHT	10146	NW ELEVATOR	D1010	2023	64,123
001	BF03	BACKFLOW PREVENTER (2-3 INCHES)	2 INCH BACKFLOW	S#450753	EXTERIOR	D2020	2023	18,570
001	BF03	BACKFLOW PREVENTER (2-3 INCHES)	2 INCH BACKFLOW		EXTERIOR	D2020	2023	18,570
001	BF06	BACKFLOW PREVENTER (6-8 INCHES)	FIRE BF, 6 INCH		EXTERIOR	D2020	2023	26,655
001	PP02	GREYWATER LIFT STATION	DUPLEX WEIL PUMPS	P/N 12-020157-129	B901	D2030	2023	6,112
001	HU52	UNIT HEATER, ELECTRIC	INFRARED UH IRH-1		1211	D3020	2023	946
001	HU52	UNIT HEATER, ELECTRIC	INFRARED UH IRH-2		1211	D3020	2023	946
001	HU52	UNIT HEATER, ELECTRIC	INFRARED UH IRH-1		1405	D3020	2023	946
001	HU52	UNIT HEATER, ELECTRIC	HOT BOX EUH FOR BF		EXTERIOR	D3020	2023	197
001	CT06	COOLING TOWER (301-550 TONS)	CT-1	10143	EXTERIOR	D3030	2023	115,629
001	CT06	COOLING TOWER (301-550 TONS)	CT2A & 2B	10144	EXTERIOR	D3030	2023	214,128

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
001	AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	AHU-E5		2900	D3040	2023	98,239
001	AH45	HUMIDIFIER, STEAM INJECTION	H-5		4903	D3040	2023	6,925
001	AH45	HUMIDIFIER, STEAM INJECTION	H-6		3904	D3040	2023	6,925
001	AH45	HUMIDIFIER, STEAM INJECTION	H-11		3907	D3040	2023	6,925
001	AH45	HUMIDIFIER, STEAM INJECTION	H-10		2907	D3040	2023	6,925
001	AH45	HUMIDIFIER, STEAM INJECTION	H-8		2904	D3040	2023	6,925
001	AH45	HUMIDIFIER, STEAM INJECTION	H-7		1909	D3040	2023	6,925
001	AH45	HUMIDIFIER, STEAM INJECTION	H-9		1904	D3040	2023	6,925
001	AH45	HUMIDIFIER, STEAM INJECTION	H-1		B901	D3040	2023	10,002
001	FN06	FAN - AXIAL, RETURN, 1.5" SP (15-20 HP) 32,000 CFM	EF-1, LOREN COOK		ROOF	D3040	2023	43,307
001	FN18	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (10"-18" DIAMETER)	EF-5, LOREN COOK		LOWER ROOF	D3040	2023	4,357
001	FN18	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (10"-18" DIAMETER)	EF-4, LOREN COOK		LOWER ROOF	D3040	2023	4,357
001	FN19	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (20"-22" DIAMETER)	JOYN-EAF-008	10040	B909	D3040	2023	7,711
001	HX01	HEAT EXCHANGER - SHELL & TUBE WATER TO WATER (<=85 GPM)	HEX		B909	D3040	2023	19,296
001	HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	SPENCE 2 INCH PRV		B909	D3040	2023	5,376
001	HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	SPENCE PRV		B909	D3040	2023	5,376

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
001	HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	PRV		B909	D3040	2023	5,376
001	FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER	FACP	10028	B902	D4030	2023	45,567
001	VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	CT-1 VSD		B901	D5010	2023	9,030
001	VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	CT-2A VSD		B901	D5010	2023	9,030
001	VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	CT-2B VSD		B901	D5010	2023	9,030
001	VF08	VARIABLE FREQUENCY DRIVE (30-40 HP)	RA-1 VSD		B901	D5010	2023	10,480
001	GN14	SWITCH - AUTO TRANSFER, 480 V (60-100 AMP)	JOYN-TSW-FPC1, FIRE ATS	10112	B909	D5090	2023	6,929
001	TK33	EXPANSION TANK, DIAPHRAGM (250-550 GAL)	ICE / GLYCOL AIR SEPARATOR	10101	B901	D3030	2024	19,637
001	AH08	AIR HANDLING UNIT - INDOOR (12-17 HP)	AHU-7		3900	D3040	2024	124,512
001	VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-8 SF VSD		2904	D5010	2024	1,687
001	VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-1 SF VSD		B904	D5010	2024	1,687
001	VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-6 SF VSD		3904	D5010	2024	2,530
001	VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-11 SF VSD		3907	D5010	2024	2,530
001	VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-10 SF VSD		2907	D5010	2024	2,530
001	VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-7 SF VSD		1909	D5010	2024	2,530
001	VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-9 SF VSD		1904	D5010	2024	2,530
001	VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	AHU-3 VSD		2911	D5010	2024	3,824

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
001	VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	AHU-4 VSD		2911	D5010	2024	3,824
001	VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	AHU-5 SF VSD		4903	D5010	2024	3,824
001	VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	AHU-E6 VSD		2903	D5010	2024	6,378
001	VF04	VARIABLE FREQUENCY DRIVE (10-15 HP)	AHU-8 SF VSD		3903	D5010	2024	7,383
001	VF04	VARIABLE FREQUENCY DRIVE (10-15 HP)	AHU-7 SF VSD		3900	D5010	2024	7,383
001	LE03	LIGHTING - EXTERIOR, RECESSED (INC, CFL, LED)	RECESSED, WALK PATH		EXTERIOR	D5020	2024	2,258
001	LE03	LIGHTING - EXTERIOR, RECESSED (INC, CFL, LED)	RECESSED, OVERHANG		EXTERIOR	D5020	2024	3,952
001	AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FAN COIL FC-3		B901	D3040	2025	10,844
001	AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FAN COIL FC-1		B901	D3040	2025	10,844
001	AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FAN COIL FC-2		B902	D3040	2025	10,844
001	FN19	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (20"-22" DIAMETER)	F-1		ROOF	D3040	2025	7,711
001	FN19	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (20"-22" DIAMETER)	EF-2		ROOF	D3040	2025	7,711
001	FN22	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (30-40 HP)	JOYN-RAF-001, RA-1	10094	B901	D3040	2025	47,070
001	FN24	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (>50 HP)	JOYN-SAF-001, SA-1	10095	B901	D3040	2025	179,545
001	FN40	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (<=30 HP)	EF-1, GREENHECK	S#05A07558	ROOF	D3040	2025	5,377
001	PH01	PUMP - ELECTRIC (<=10 HP)	P-2A, GLYCOL		B901	D3040	2025	9,903

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
001	PH01	PUMP - ELECTRIC (<=10 HP)	P-2B, GLYCOL		B901	D3040	2025	9,903
001	PH07	PUMP - ELECTRIC (40 - 50 HP)	P-9, GLYCOL		B901	D3040	2025	48,403
001	FA02	FIRE ALARM SYSTEM - DEVICES	PREACTION SYSTEM DEVICES		MEDIA CENTER	D4030	2025	45,672
001	FA02	FIRE ALARM SYSTEM - DEVICES	DETECTORS, NOTIFIERS, PULL STATIONS		BUILDING WIDE	D4030	2025	1,138,899
001	VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	JOYN-AHU-002 VSD		B909	D5010	2025	6,378
001	VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	AHU-1E VSD		B906	D5010	2025	6,378
001	BF02	BACKFLOW PREVENTER (1-2 INCHES)	MAKE-UP WATER BF, 2 INCH, WATTS		B901	D2020	2026	2,816
001	FP09	FIRE PUMP - ELECTRIC, 250 GPM, 2" ID (<=15 HP)	JOCKEY PUMP		B909	D4010	2026	4,813
001	FP10	FIRE PUMP - ELECTRIC, 500 GPM, 3" ID (15-65 HP)	JOYN-PMP-FP1, FIRE PUMP	10088	B909	D4010	2026	59,655
001	MC02	MOTOR CONTROL CENTER VERTICAL SECTION, 600V (400-600A) W/STARTERS	MCC-1		B901	D5010	2026	92,732
001	SE10	ELECTRICAL DISTRIBUTION NETWORK - LIBRARY	120/208 & 277/480 VOLT SERVICES		BUILDING WIDE	D5010	2026	1,515,984
001	VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	AHU-E5 VSD		2900	D5010	2026	6,378
001	VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	AHU-E4 VSD		1908	D5010	2026	9,030
001	VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	AHU-3 VSD		1905	D5010	2026	9,030

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
001	LE07	LIGHTING - EXTERIOR, WALL FLOOD (SV, MH, ID, LED)	SURFACE HID		B909 ENTRANCE	D5020	2026	1,190
001	SI07	CONCRETE VEHICULAR PAVING - JOINT MAINTENANCE	LOADING DOCK LOT		SOUTH ELEVATION	G2010	2026	688
001	SI06	ASPHALT VEHICULAR PAVING - SEALCOAT AND STRIPE	NORTH PARKING LOT		NORTH ELEVATION	G2020	2026	2,627
001	SI06	ASPHALT VEHICULAR PAVING - SEALCOAT AND STRIPE	SOUTH SERVICE DRIVE		SOUTH ELEVATION	G2020	2026	4,215
001	SI01	CONCRETE PEDESTRIAN PAVING - JOINT MAINTENANCE	CONCRETE PAVERS		NORTH, EAST ELEVATIONS	G2030	2026	2,392
001	DR19	DOOR, EXTERIOR, OVERHEAD ROLLING METAL, LOCK	SMALL COILING STEEL		SOUTH ELEVATION	B2030	2027	9,452
001	DR19	DOOR, EXTERIOR, OVERHEAD ROLLING METAL, LOCK	LARGE COILING STEEL		SOUTH ELEVATION	B2030	2027	17,722
001	RR07	ROOF - BITUMINOUS, 2-PLY, APPLIED MODIFIED BITUMEN, TORCH	MOD BIT		LOWER ROOF	B3010	2027	322,432
001	RR20	ROOF GUTTER AND LEADER - ALUMINUM OR GALVANIZED, COATED			LOWER ROOF	B3010	2027	409
001	IW03	WALL FINISH - TILE, CERAMIC / STONE, STANDARD	9X9 GRAY TILE		ALL MULTIPLE USER RESTROOMS	C3010	2027	109,951
001	IF06	FLOORING - TILE, CERAMIC / STONE / QUARRY STANDARD	12X12 TILE		1105	C3020	2027	32,539
001	IF06	FLOORING - TILE, CERAMIC / STONE / QUARRY STANDARD	9X9 GRAY TILE		ALL RESTROOMS	C3020	2027	775,588
001	IC01	CEILING FINISH - SUSPENDED ACOUSTICAL TILE, STANDARD	6 INCH STRIP 2X4		3406, 4002, 2064, 2020, 1100, B008	C3030	2027	388,638
001	VT01	ELEVATOR MODERNIZATION - TRACTION - LOW RISE	JOYN-ELV-001, DUMBWAITER	10051	4002	D1010	2027	44,249

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
001	PS10	SUPPLY PIPING SYSTEM - LIBRARY	CAST IRON		BUILDING WIDE	D2020	2027	589,779
001	WH29	WATER HEATER - SHELL & TUBE (105-400 GPM)	DWH-1		B901	D2020	2027	71,953
001	PD10	DRAIN PIPING SYSTEM - LIBRARY	COPPER		BUILDING WIDE	D2030	2027	888,964
001	PP03	SEWAGE LIFT STATION	DUPLEX SEWAGE PUMPS		B901	D2030	2027	4,846
001	HU52	UNIT HEATER, ELECTRIC	EUH		4903	D3020	2027	591
001	HU52	UNIT HEATER, ELECTRIC	MARKEL CEILING UH		1080	D3020	2027	986
001	HU52	UNIT HEATER, ELECTRIC	MARKEL CEILING UH		1080	D3020	2027	986
001	CH02	CHILLER - WATER-COOLED CENTRIFUGAL OR SCREW (150-350 TONS)	JOYN-WCU-CH1, C-1	10030	B901	D3030	2027	387,616
001	CH03	CHILLER - WATER-COOLED CENTRIFUGAL OR SCREW (350-550 TONS)	JOYN-WCU-CH2, C-2	10031	B901	D3030	2027	752,175
001	TK33	EXPANSION TANK, DIAPHRAGM (250-550 GAL)	HHW AIR SEPARATOR		B909	D3030	2027	11,782
001	AH03	AIR HANDLING UNIT - INDOOR (1.75-2.75 HP)	AHU-1		B904	D3040	2027	24,136
001	AH04	AIR HANDLING UNIT - INDOOR (2.75-3.25 HP)	AHU-6		3904	D3040	2027	29,647
001	AH04	AIR HANDLING UNIT - INDOOR (2.75-3.25 HP)	AHU-11		3907	D3040	2027	29,647
001	AH04	AIR HANDLING UNIT - INDOOR (2.75-3.25 HP)	AHU-10		2907	D3040	2027	29,647
001	AH04	AIR HANDLING UNIT - INDOOR (2.75-3.25 HP)	AHU-7		1909	D3040	2027	29,647
001	AH04	AIR HANDLING UNIT - INDOOR (2.75-3.25 HP)	AHU-9		1904	D3040	2027	29,647

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
001	AH05	AIR HANDLING UNIT - INDOOR (3.25-6 HP)	AHU-5		4903	D3040	2027	53,468
001	AH05	AIR HANDLING UNIT - INDOOR (3.25-6 HP)	AHU-3		2911	D3040	2027	53,468
001	AH05	AIR HANDLING UNIT - INDOOR (3.25-6 HP)	AHU-4		2911	D3040	2027	53,468
001	AH08	AIR HANDLING UNIT - INDOOR (12-17 HP)	AHU-2		2911	D3040	2027	124,512
001	HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	SPENCE, 3/4 INCH PRV		B901	D3040	2027	4,032
001	HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	SPIRAX, 1 1/4 INCH PRV		B901	D3040	2027	4,570
001	HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	SPIRAX, 2 INCH PRV		B901	D3040	2027	5,376
001	PH03	PUMP - ELECTRIC (15 - 20 HP)	P-7, CHW		B901	D3040	2027	25,689
001	PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	P-13, DUPLEX		B901	D3040	2027	35,811
001	AC02	AIR COMPRESSOR SYSTEM - HVAC CONTROLS (6-10 TOTAL HP)	AIR COMP		B901	D3060	2027	24,095
001	AD02	AIR DRYER - REFRIGERATED - 11-25 CFM	AIR DRYER		B901	D3060	2027	2,209
001	FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER	PREACTION CONTROLLER		B901	D4030	2027	11,392
001	TX25	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (30-50 KVA)	JOYN-TRA-004	10108	B902	D5010	2027	7,075
001	TX26	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (50-75 KVA)	JOYN-TRA-005	10105	3905	D5010	2027	14,633
001	TX27	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (75-112.5 KVA)	TSTB TRANSF		B902	D5010	2027	13,145

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
001	TX27	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (75-112.5 KVA)	JOYN-TRA-007, DT22	10104	2911	D5010	2027	19,806
001	TX27	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (75-112.5 KVA)	JOYN-TRA-006, DT13	10103	1912	D5010	2027	19,806
001	TX28	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (112.5-150 KVA)	JOYN-TRA-003, DTTV	10107	B902	D5010	2027	19,806
001	TX30	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (225-300 KVA)	JOYN-TRA-002	10109	B909	D5010	2027	26,960
001	TX30	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (225-300 KVA)	JOYN-TRA-001, DTB4	10106	B902	D5010	2027	26,960
001	VF06	VARIABLE FREQUENCY DRIVE (20-25 HP)	P-10 VSD		B901	D5010	2027	10,678
001	VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	SA-1 VSD		B901	D5010	2027	31,079
001	LE07	LIGHTING - EXTERIOR, WALL FLOOD (SV, MH, ID, LED)	SURFACE HID		INNER COURTYARD	D5020	2027	3,570
001	TK33	EXPANSION TANK, DIAPHRAGM (250-550 GAL)	CHW AIR SEPARATOR		B901	D3030	2028	19,637
001	AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	AHU-E6		2903	D3040	2028	98,239
001	AH09	AIR HANDLING UNIT - INDOOR (17-23 HP)	AHU-3		1905	D3040	2028	156,817
001	HV10	HVAC DISTRIBUTION NETWORKS - LIBRARY	DUCT AND PIPE		BUILDING WIDE	D3040	2028	5,004,313
001	AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	JOYN-AHU-003, AHU-1E	10013	B906	D3040	2029	98,239
001	VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	P-7 VSD		B901	D5010	2029	9,030
001	LI10	LIGHTING SYSTEM, INTERIOR - LIBRARY	LED, T12		BUILDING WIDE	D5020	2029	1,651,305
001	FN19	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (20"-22" DIAMETER)	DAYTON	S#05B01871	ROOF	D3040	2030	7,711

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
001	HD01	HOOD, FUME	FUME HOOD	111231	1300	D3040	2030	17,128
001	HX02	HEAT EXCHANGER - SHELL & TUBE WATER TO WATER (85-255 GPM)	B&G HEX, SKID	S#94Z79875-01	B901	D3040	2030	26,893
001	PH01	PUMP - ELECTRIC (<=10 HP)	P-4, CHW		B901	D3040	2030	3,961
001	FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER	PREACTION CONTROLLER		3407	D4030	2030	11,392
001	LE04	LIGHTING - EXTERIOR, STANCHION LUMINAIRE, 12-FOOT	POLE, DECORATIVE		EXTERIOR	D5020	2030	10,509
001	LE07	LIGHTING - EXTERIOR, WALL FLOOD (SV, MH, ID, LED)	SURFACE LED		EXTERIOR	D5020	2030	19,038
001	IW01	WALL FINISH - PAINT, STANDARD	STD PAINT		MOST AREAS	C3010	2031	602,118
001	IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	CARPET TILE		2064, 2043, 2039, 2043, 1021, 1008, 1504	C3020	2031	188,537
001	IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	LOOM STANDARD		4002, 3052, 3085, 2600, 1200, 1426, 1903	C3020	2031	282,879
001	FX15	PLUMBING FIXTURE - EMERGENCY EYEWASH	EYEWASH, DRENCH		3405	D2010	2031	5,641
001	AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	JOYN-AHU-002	10012	B909	D3040	2031	98,239
001	AH08	AIR HANDLING UNIT - INDOOR (12-17 HP)	001-AHU-006 / AHU-E8		3903	D3040	2031	124,512
001	PH01	PUMP - ELECTRIC (<=10 HP)	BELL AND GOSSETT, HHW		B909	D3040	2031	14,854
001	BA33	HVAC CONTROLS - FIELD PANELS/OPS SOFTWARE - LIBRARY	PANELS AND SOFTWARE		BUILDING WIDE	D3060	2031	284,880

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
001	BA56	HVAC CONTROLS - MAJOR INSTRUMENTATION - LIBRARY	MAJOR EQUIPMENT		BUILDING WIDE	D3060	2031	148,129
001	VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	P-6 VSD		B901	D5010	2031	3,824
001	VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	P-2A VSD		B901	D5010	2031	3,059
001	VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	P-2B VSD		B901	D5010	2031	3,059
001	VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	P-8 VSD		B901	D5010	2031	6,378
001	VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	P-5 VSD		B901	D5010	2031	4,783
001	VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	P-1 VSD		B901	D5010	2031	9,030
001	FX06	PLUMBING FIXTURE - SINK, SERVICE/LAUNDRY/UTILITY	WALL HUNG STEEL		3908	D2010	2032	2,158
001	HU53	UNIT HEATER, STEAM/HYDRONIC STD (TO 250 MBH)	HUH		2911	D3020	2032	1,346
001	AH03	AIR HANDLING UNIT - INDOOR (1.75-2.75 HP)	AHU-8		2904	D3040	2032	24,136
001	PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	B&G DUPLEX CRU		B909	D3040	2032	26,858
001	RV01	SAFETY RELIEF VALVE	KUNKLE RELIEF VALVE		B901	D3040	2032	22,955
001	VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	VECTRUE CFW-11		B909	D5010	2032	4,783
							TOTAL	$21,685,701

FACILITIES RENEWAL PLAN

NONRECURRING PROJECT COSTS

All costs shown as Present Value

PROJECT NUMBER	PROJECT TITLE	UNI-FORMAT	PRIORITY CLASS	PROJECT CLASSIFICATION	PROJECT COST
001FS03	ELIMINATE FIRE RATING COMPROMISES	C1010	1	Plant Adaption	7,316
001AC01	BUILDING ENTRY ACCESSIBILITY UPGRADES	B2030	2	Plant Adaption	81,923
001AC02	ADD HANDRAILS TO CORRIDOR 1092 & UPGRADE ELEVATOR PHONES	C1010	2	Plant Adaption	23,997
001AC04	INTERIOR DOOR ACCESSIBILITY UPGRADES	C1010	2	Plant Adaption	13,445
001AC05	RESTROOM ACCESSIBILITY UPGRADES	D2010	2	Plant Adaption	326,735
001AC06	UNISEX RESTROOM INSTALLATION	D2010	2	Plant Adaption	95,940
001AC07	STAIR AND RAILING UPGRADES	C2020	2	Plant Adaption	89,214
001EL01	ADD LIGHTNING PROTECTION SYSTEM	D5090	2	Plant Adaption	74,958
001FS01	ADD FALL PROTECTION TO SKYLIGHTING	B3020	2	Plant Adaption	3,269
001FS02	ADD ROPE DAVITS TO SUPPORT WORKER FALL PROTECTION	B3010	2	Plant Adaption	37,511
001FS04	ADD GUARDRAILS AROUND ROOF HATCH	B3010	2	Plant Adaption	2,289
001AC03	UPGRADE SERVICE COUNTER AT ROOM 1080	C1010	3	Plant Adaption	1,979
001ES01	EXTERIOR WALL FINISH RENEWAL	B2010	3	Corrective Action	91,080
001HE01	ASBESTOS ABATEMENT - INTERIOR FINISH SYSTEMS	F2020	3	Plant Adaption	1,351
				TOTAL	**$851,008**

FACILITY CONDITION ASSESSMENT

SECTION 3

NONRECURRING PROJECT DETAILS

All costs shown as Present Value

ELIMINATE FIRE RATING COMPROMISES

Project Number:	001FS03	**Category Code:** FS5C	
Priority Sequence:	1		
Priority Class:	High	**System:**	FIRE/LIFE SAFETY
Project Class:	Plant Adaption	**Component:**	EGRESS PATH
Date Basis:	3/8/2023	**Element:**	SEPARATION RATING

Code Application:		Subclass/Savings:	Project Location:
IBC	711.3	Not Applicable	Building-wide: Floor(s) 1,2,3,4,B

Description

Fire separations are not maintained according to code requirements for new construction in select areas of this facility including rooms 3906, 2906, and B907. Although only these instances were noted, other fire separation compromises may exist elsewhere in this building. It is recommended that the entire building be surveyed for similar problem areas, especially in conditions and spaces that are similar to those that were observed. Intumescent passive firestopping installation should be accomplished promptly.

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
Minor passive firestopping efforts	SF	35,000	$0.05	$1,750	$0.14	$4,900	$6,650
Base Material/Labor Costs				**$1,750**		**$4,900**	
Indexed Material/Labor Costs				**$1,762**		**$3,494**	**$5,256**
Construction Mark Up at 20.0%							**$1,051**
Original Construction Cost							**$6,307**
Date of Original Estimate: 3/8/2023						**Inflation**	**$0**
Current Year Construction Cost							**$6,307**
Professional Fees at 16.0%							**$1,009**
TOTAL PROJECT COST							**$7,316**

All costs shown as Present Value

ADD FALL PROTECTION TO SKYLIGHTING

Project Number:	001FS01	**Category Code:** FS6A	
Priority Sequence:	2		
Priority Class:	Medium	**System:**	FIRE/LIFE SAFETY
Project Class:	Plant Adaption	**Component:**	GENERAL
Date Basis:	3/8/2023	**Element:**	OTHER

Code Application:		Subclass/Savings:	Project Location:
OSHA	29 CFR 1910.21(A)(4)	Not Applicable	Floor-wide: Floor(s) R
OSHA	29 CFR 1910.23(E)(8)		

Description

Current OSHA standards dictate that skylighting have fall protection on the periphery. Install an appropriately designed metal guardrail around the skylighting.

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
Metal pipe guardrail, average	LF	20	$98.97	$1,979	$24.93	$499	$2,478
Base Material/Labor Costs				**$1,979**		**$499**	
Indexed Material/Labor Costs				**$1,993**		**$356**	**$2,349**
Construction Mark Up at 20.0%							**$470**
Original Construction Cost							**$2,819**
Date of Original Estimate: 3/8/2023						**Inflation**	**$0**
Current Year Construction Cost							**$2,819**
Professional Fees at 16.0%							**$451**
TOTAL PROJECT COST							**$3,269**

All costs shown as Present Value

ADD ROPE DAVITS TO SUPPORT WORKER FALL PROTECTION

Project Number:	001FS02	**Category Code:**	FS6A
Priority Sequence:	3		
Priority Class:	Medium	**System:**	FIRE/LIFE SAFETY
Project Class:	Plant Adaption	**Component:**	GENERAL
Date Basis:	3/8/2023	**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	32	$391	$12,525	$628	$20,106	$32,630
Base Material/Labor Costs				**$12,525**		**$20,106**	
Indexed Material/Labor Costs				**$12,612**		**$14,335**	**$26,948**
Construction Mark Up at 20.0%							**$5,390**
Original Construction Cost							**$32,337**
Date of Original Estimate: 3/8/2023						**Inflation**	**$0**
Current Year Construction Cost							**$32,337**
Professional Fees at 16.0%							**$5,174**
TOTAL PROJECT COST							**$37,511**

All costs shown as Present Value

ADD GUARDRAILS AROUND ROOF HATCH

Project Number:	001FS04	**Category Code:** FS6A	
Priority Sequence:	4		
Priority Class:	Medium	**System:**	FIRE/LIFE SAFETY
Project Class:	Plant Adaption	**Component:**	GENERAL
Date Basis:	3/8/2023	**Element:**	OTHER

Code Application:		Subclass/Savings:	Project Location:
OSHA	29 CFR 1910.21(A)(4)	Not Applicable	Item Only: Floor(s) R
OSHA	29 CFR 1910.21(A)(8)		

Description

The roof hatch does not have proper fall protection. It is recommended that fall protection be added around the roof hatch to improve worker safety and limit liability.

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
Metal pipe guardrail, average	LF	14	$98.97	$1,386	$24.93	$349	$1,735
			Base Material/Labor Costs	**$1,386**		**$349**	
			Indexed Material/Labor Costs	**$1,395**		**$249**	**$1,644**
						Construction Mark Up at 20.0%	**$329**
						Original Construction Cost	**$1,973**
Date of Original Estimate: 3/8/2023						**Inflation**	**$0**
						Current Year Construction Cost	**$1,973**
						Professional Fees at 16.0%	**$316**
						TOTAL PROJECT COST	**$2,289**

All costs shown as Present Value

BUILDING ENTRY ACCESSIBILITY UPGRADES

Project Number:	001AC01	**Category Code:** AC2A	
Priority Sequence:	5		
Priority Class:	Medium	**System:**	ACCESSIBILITY
Project Class:	Plant Adaption	**Component:**	BUILDING ENTRY
Date Basis:	3/8/2023	**Element:**	GENERAL

Code Application:		Subclass/Savings:	Project Location:
ADAAG	403.6, 505	DOJ1 - Approach & Entrance	Building-wide: Floor(s) 1

Description

Current accessibility legislation requires that building entrances be wheelchair accessible. To comply with the intent of this legislation, it is recommended that compliant painted metal handrails be installed at all entrances as required.

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
Freestanding handrail system, painted	LF	150	$149	$22,413	$246	$36,885	$59,298
Wall-mounted handrail system, painted	LF	80	$82.83	$6,626	$58.05	$4,644	$11,270
			Base Material/Labor Costs	**$29,039**		**$41,529**	
			Indexed Material/Labor Costs	**$29,243**		**$29,610**	**$58,853**
					Construction Mark Up at 20.0%		**$11,771**
					Original Construction Cost		**$70,623**
Date of Original Estimate:	3/8/2023				**Inflation**		**$0**
					Current Year Construction Cost		**$70,623**
					Professional Fees at 16.0%		**$11,300**
					TOTAL PROJECT COST		**$81,923**

All costs shown as Present Value

ADD HANDRAILS TO CORRIDOR 1092 & UPGRADE ELEVATOR PHONES

Project Number:	001AC02	**Category Code:** AC3B	
Priority Sequence:	6		
Priority Class:	Medium	**System:**	ACCESSIBILITY
Project Class:	Plant Adaption	**Component:**	INTERIOR PATH OF TRAVEL
Date Basis:	3/8/2023	**Element:**	STAIRS AND RAILINGS

Code Application:		Subclass/Savings:	Project Location:
ADAAG	505, 407	DOJ2 - Access to Goods & Services	Item Only: Floor(s) 1

Description

Accessibility legislation requires that goods and services offered in buildings be generally accessible to all persons. The ramp in the first floor south corridor 1092 is not easily traversed in a wheelchair. It is recommended that wall-mounted compliant painted metal railings be installed to serve this ramp. Additionally, the elevators are only partially compliant with current ADA legislation and it is recommended that an ADA-compliant, hands-free phone be installed in order meet the current standards.

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, painted	LF	80	$82.83	$6,626	$58.05	$4,644	$11,270
ADA-compliant hands-free elevator emergency telephone	EA	3	$1,580	$4,739	$1,161	$3,484	$8,222
			Base Material/Labor Costs	**$11,365**		**$8,128**	
			Indexed Material/Labor Costs	**$11,445**		**$5,795**	**$17,240**
					Construction Mark Up at 20.0%		**$3,448**
					Original Construction Cost		**$20,687**
Date of Original Estimate: 3/8/2023					**Inflation**		**$0**
					Current Year Construction Cost		**$20,687**
					Professional Fees at 16.0%		**$3,310**
					TOTAL PROJECT COST		**$23,997**

All costs shown as Present Value

RESTROOM ACCESSIBILITY UPGRADES

Project Number:	001AC05	**Category Code:** AC3E	
Priority Sequence:	7		
Priority Class:	Medium	**System:**	ACCESSIBILITY
Project Class:	Plant Adaption	**Component:**	INTERIOR PATH OF TRAVEL
Date Basis:	3/8/2023	**Element:**	RESTROOMS/BATHROOMS

Code Application:		Subclass/Savings:	Project Location:
ADAAG	309, 604, 605, 606, 607, 608	DOJ3 - Restrooms	Building-wide: Floor(s) 1,2,3,4

Description

All of the multiple user restrooms do not have proper ADA clearance stalls. It is recommended that modifications be made to the existing stalls to allow for proper clearances. The door pull may also create a barrier to accessibility. It is recommended that power door operators be installed on all accessible restrooms doors.

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
Door operator, signage, and controls	EA	25	$6,021	$150,536	$2,083	$52,067	$202,603
High density polymer toilet partition modification	EA	12	$2,647	$31,762	$1,639	$19,672	$51,434
			Base Material/Labor Costs	**$182,297**		**$71,739**	
			Indexed Material/Labor Costs	**$183,574**		**$51,150**	**$234,723**
					Construction Mark Up at 20.0%		**$46,945**
					Original Construction Cost		**$281,668**
Date of Original Estimate: 3/8/2023					**Inflation**		**$0**
					Current Year Construction Cost		**$281,668**
					Professional Fees at 16.0%		**$45,067**
					TOTAL PROJECT COST		**$326,735**

All costs shown as Present Value

UNISEX RESTROOM INSTALLATION

Project Number:	001AC06	**Category Code:** AC3E	
Priority Sequence:	8		
Priority Class:	Medium	**System:**	ACCESSIBILITY
Project Class:	Plant Adaption	**Component:**	INTERIOR PATH OF TRAVEL
Date Basis:	3/8/2023	**Element:**	RESTROOMS/BATHROOMS

Code Application:		Subclass/Savings:	Project Location:
ADAAG	604, 605, 606	DOJ3 - Restrooms	Floor-wide: Floor(s) 1,2,3,B

Description

The west restrooms in the basement and on the first, second, and third floors do not have properly accessible stalls. The existing fixture configuration does not allow for adequate stall modifications without the loss of fixtures. In order to maintain fixture count and provide the necessary accessible toilet, it is recommended that a fully accessible unisex restroom be installed in the adjacent areas.

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
Installation of an accessible unisex restroom including toilet, lavatory, piping, and rough-in (60 square feet in area)	EA	4	$8,598	$34,391	$12,023	$48,093	$82,484
Base Material/Labor Costs				**$34,391**		**$48,093**	
Indexed Material/Labor Costs				**$34,632**		**$34,291**	**$68,922**
Construction Mark Up at 20.0%							**$13,784**
Original Construction Cost							**$82,707**
Date of Original Estimate: 3/8/2023						**Inflation**	**$0**
Current Year Construction Cost							**$82,707**
Professional Fees at 16.0%							**$13,233**
TOTAL PROJECT COST							**$95,940**

All costs shown as Present Value

INTERIOR DOOR ACCESSIBILITY UPGRADES

Project Number:	001AC04	**Category Code:** AC3C	
Priority Sequence:	9		
Priority Class:	Medium	**System:**	ACCESSIBILITY
Project Class:	Plant Adaption	**Component:**	INTERIOR PATH OF TRAVEL
Date Basis:	3/8/2023	**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

The knob actuated door hardware is a barrier to accessibility. Accessibility legislation requires that door hardware be designed for operation by 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 door hardware be installed on all doors that still have knobs. In addition, many of the corridor fire separation doors do not have proper panic hardware along egress routes. In order to comply with fire codes it is recommended that panic hardware be installed on all corridor separation doors.

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
Panic Hardware	EA	10	$498	$4,982	$200	$1,996	$6,977
Lever actuated door hardware	EA	5	$498	$2,491	$200	$998	$3,489
			Base Material/Labor Costs	**$7,472**		**$2,993**	
			Indexed Material/Labor Costs	**$7,525**		**$2,134**	**$9,659**
					Construction Mark Up at 20.0%		**$1,932**
					Original Construction Cost		**$11,591**
Date of Original Estimate: 3/8/2023					**Inflation**		**$0**
					Current Year Construction Cost		**$11,591**
					Professional Fees at 16.0%		**$1,855**
					TOTAL PROJECT COST		**$13,445**

All costs shown as Present Value

STAIR AND RAILING UPGRADES

Project Number:	001AC07	**Category Code:** AC3B	
Priority Sequence:	10		
Priority Class:	Medium	**System:**	ACCESSIBILITY
Project Class:	Plant Adaption	**Component:**	INTERIOR PATH OF TRAVEL
Date Basis:	3/8/2023	**Element:**	STAIRS AND RAILINGS

Code Application:		Subclass/Savings:	Project Location:
IBC	1003.3	DOJ2 - Access to Goods & Services	Floor-wide: Floor(s) 1,2,3,4,B
ADAAG	505		

Description

Current 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. 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
Switchback handrail/guardrail system per floor	FLR	20	$2,128	$42,554	$1,366	$27,322	$69,876
Railing system up to 42 inches high with pickets at 4 1/2 inches on center	LF	8	$176	$1,407	$59.76	$478	$1,885
			Base Material/Labor Costs	**$43,961**		**$27,800**	
			Indexed Material/Labor Costs	**$44,269**		**$19,821**	**$64,090**
					Construction Mark Up at 20.0%		**$12,818**
					Original Construction Cost		**$76,908**
Date of Original Estimate: 3/8/2023					**Inflation**		**$0**
					Current Year Construction Cost		**$76,908**
					Professional Fees at 16.0%		**$12,305**
					TOTAL PROJECT COST		**$89,214**

All costs shown as Present Value

ADD LIGHTNING PROTECTION SYSTEM

Project Number:	001EL01	**Category Code:**	EL4E
Priority Sequence:	11		
Priority Class:	Medium	**System:**	ELECTRICAL
Project Class:	Plant Adaption	**Component:**	DEVICES AND FIXTURES
Date Basis:	3/8/2023	**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 for the smoke hatches as well as the medium sized equipment.
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	120	$0.76	$91	$0.76	$91	$182
			Base Material/Labor Costs	**$91**		**$91**	
			Indexed Material/Labor Costs	**$92**		**$65**	**$157**
						Construction Mark Up at 20.0%	**$31**
						Original Construction Cost	**$188**
Date of Original Estimate: 3/8/2023						**Inflation**	**$0**
						Current Year Construction Cost	**$188**
						Professional Fees at 16.0%	**$30**
						TOTAL PROJECT COST	**$218**

All costs shown as Present Value

ASBESTOS ABATEMENT - INTERIOR FINISH SYSTEMS

Project Number:	001HE01	**Category Code:** HE6F	
Priority Sequence:	12		
Priority Class:	Low	**System:**	HEALTH
Project Class:	Plant Adaption	**Component:**	HAZARDOUS MATERIAL
Date Basis:	3/8/2023	**Element:**	OTHER

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

Description

Asbestos-containing materials (ACMs) are suspected to exist in the 9x9 tile flooring of room 3908. Prior to replacing these systems, the ACMs should be properly investigated and abated. This project provides a budget for the abatement of ACM 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	430	$0.38	$163	$2.63	$1,131	$1,294
Base Material/Labor Costs				**$163**		**$1,131**	
Indexed Material/Labor Costs				**$165**		**$806**	**$971**
Construction Mark Up at 20.0%							**$194**
Original Construction Cost							**$1,165**
Date of Original Estimate: 3/8/2023						**Inflation**	**$0**
Current Year Construction Cost							**$1,165**
Professional Fees at 16.0%							**$186**
TOTAL PROJECT COST							**$1,351**

All costs shown as Present Value

UPGRADE SERVICE COUNTER AT ROOM 1080

Project Number:	001AC03	**Category Code:** AC4A	
Priority Sequence:	13		
Priority Class:	Low	**System:**	ACCESSIBILITY
Project Class:	Plant Adaption	**Component:**	GENERAL
Date Basis:	3/8/2023	**Element:**	FUNCTIONAL SPACE MOD.

Code Application:		Subclass/Savings:	Project Location:
ADAAG	804	DOJ2 - Access to Goods & Services	Item Only: Floor(s) 1

Description

Current legislation requires that building amenities be generally accessible to all persons. The configuration of the pass thru service counter in room 1080 is a barrier to accessibility. A wheelchair-accessible section should be incorporated into each non-compliant service counter.

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 service counter	LF	4	$256	$1,025	$137	$546	$1,571
Base Material/Labor Costs				**$1,025**		**$546**	
Indexed Material/Labor Costs				**$1,032**		**$390**	**$1,421**
Construction Mark Up at 20.0%							**$284**
Original Construction Cost							**$1,706**
Date of Original Estimate: 3/8/2023						**Inflation**	**$0**
Current Year Construction Cost							**$1,706**
Professional Fees at 16.0%							**$273**
TOTAL PROJECT COST							**$1,979**

All costs shown as Present Value

EXTERIOR WALL FINISH RENEWAL

Project Number:	001ES01	**Category Code:**	ES2B
Priority Sequence:	14		
Priority Class:	Low	**System:**	EXTERIOR
Project Class:	Corrective Action	**Component:**	COLUMNS/BEAMS/WALLS
Date Basis:	3/8/2023	**Element:**	FINISH

Code Application:		Subclass/Savings:	Project Location:
OSHA	29 CFR 1910.21(A)(4)	Not Applicable	Building-wide: Floor(s)
OSHA	29 CFR 1910.23(E)(8)		

Description

There are multiple areas on the brick surface that have visible deposits. A light chemical treatment and power washing is recommended to restore the appearance of the exterior.

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
General exterior wall surface clean and pressure wash with light chemical	SF	36,800	$0.30	$11,040	$2.07	$76,176	$87,216
Base Material/Labor Costs				**$11,040**		**$76,176**	
Indexed Material/Labor Costs				**$11,117**		**$54,313**	**$65,431**
Construction Mark Up at 20.0%							**$13,086**
Original Construction Cost							**$78,517**
Date of Original Estimate: 3/8/2023						**Inflation**	**$0**
Current Year Construction Cost							**$78,517**
Professional Fees at 16.0%							**$12,563**
TOTAL PROJECT COST							**$91,080**

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
EW11	WALL, EXTERIOR, EIFS	4TH FLOOR ROTUNDA		SOUTHWEST ELEVATION	3,230	SF	1.12	$115,300	1997	20		DR
WN01	GLASS, WINDOW, ALUMINUM OR WOOD, STANDARD	STATIONARY STOREFRONT		ALL ELEVATIONS	10,840	SF	1.12	$2,237,220	1997	40		2037
WN01	GLASS, WINDOW, ALUMINUM OR WOOD, STANDARD	ALUM WINDOWS		NORTH, EAST, AND WEST ELEVATIONS	4,640	SF	1.12	$957,629	1954	40	28	DR
WN02	GLASS, WINDOW, ALUMINUM OR WOOD, CUSTOM	CUSTOM MULLION GLAZING		COURTYARD AND WEST ELEVATION	2,730	SF	1.12	$774,831	1997	40		2037
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	PAINTED HM		ALL ELEVATIONS	9	LEAF	1.00	$22,004	2019	40		2059
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	PAINTED HM PANIC		ALL ELEVATIONS	7	LEAF	1.00	$17,114	2019	40		2059
DR12	DOOR AND STOREFRONT, EXTERIOR, SWINGING, ALUMINUM AND GLASS	ANOD ALUM		EAST ELEVATION	6	LEAF	1.00	$27,085	2020	25		2045
DR12	DOOR AND STOREFRONT, EXTERIOR, SWINGING, ALUMINUM AND GLASS	ANOD ALUM OPERATOR		EAST ELEVATION	1	LEAF	1.00	$4,514	2020	25		2045
DR12	DOOR AND STOREFRONT, EXTERIOR, SWINGING, ALUMINUM AND GLASS	ANOD ALUM COURTYARD		COURTYARD	1	LEAF	1.00	$4,514	2020	25		2045
DR19	DOOR, EXTERIOR, OVERHEAD ROLLING METAL, LOCK	SMALL COILING STEEL		SOUTH ELEVATION	80	SF	1.00	$9,452	1997	30		2027
DR19	DOOR, EXTERIOR, OVERHEAD ROLLING METAL, LOCK	LARGE COILING STEEL		SOUTH ELEVATION	150	SF	1.00	$17,722	1997	30		2027
DR28	DOOR OPERATOR, POWER-ASSIST	ANOD ALUM PANIC		1104, 1107	2	EA	1.00	$21,017	2019	20		2039
DR28	DOOR OPERATOR, POWER-ASSIST	ANOD ALUM OPERATOR		EAST ELEVATION	1	EA	1.00	$10,508	2020	20		2040
DR28	DOOR OPERATOR, POWER-ASSIST	ANOD ALUM COURTYARD		COURTYARD	1	EA	1.00	$10,508	2020	20		2040

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
DR30	DOOR OPERATOR, OVERHEAD DOOR, COMMERCIAL, PADS	SMALL COILING STEEL		SOUTH ELEVATION	1	EA	1.00	$2,558	1997	15	10	DR
DR30	DOOR OPERATOR, OVERHEAD DOOR, COMMERCIAL, PADS	LARGE COILING STEEL		SOUTH ELEVATION	1	EA	1.00	$2,558	1997	15	10	DR
RR07	ROOF - BITUMINOUS, 2-PLY, APPLIED MODIFIED BITUMEN, TORCH	MOD BIT		LOWER ROOF	45,619	SF	1.16	$322,432	2007	20		2027
RR07	ROOF - BITUMINOUS, 2-PLY, APPLIED MODIFIED BITUMEN, TORCH	MOD BIT		UPPER ROOF	42,110	SF	1.16	$297,631	2017	20		2037
RR20	ROOF GUTTER AND LEADER - ALUMINUM OR GALVANIZED, COATED			LOWER ROOF	20	LF	1.00	$409	2007	20		2027
RR20	ROOF GUTTER AND LEADER - ALUMINUM OR GALVANIZED, COATED			UPPER ROOF	25	LF	1.00	$511	2017	20		2037
RR24	ROOF SKYLIGHT - FIBERGLASS ROOF SANDWICH PANEL			UPPER ROOF	20	SF	1.00	$1,451	2017	20		2037
RR29	ROOF HATCH - ACCESS			UPPER ROOF	1	EA	1.00	$5,706	2017	30		2047
RR30	ROOF HATCH - SMOKE	SMOKE HATCH		LOWER ROOF	32	SF	1.00	$19,540	2007	30		2037
IW14	TOILET PARTITION WITH ACCESSORIES	PLASTIC		1002, 1001, 1004, 1005, 1008, 1009, 1047	44	SYS	1.00	$137,971	2019	20		2039
DR01	DOOR AND FRAME, INTERIOR, NON-RATED	NON RATED INTERIOR DOORS		MOST AREAS	61	LEAF	1.00	$158,959	2019	40		2059
DR01	DOOR AND FRAME, INTERIOR, NON-RATED	ANOD ALUM NON PANIC		1104, 1107	7	LEAF	1.00	$18,241	2019	40		2059
DR01	DOOR AND FRAME, INTERIOR, NON-RATED	ANOD ALUM PANIC NO OP		1107	5	LEAF	1.00	$13,029	2019	40		2059
DR02	DOOR AND FRAME, INTERIOR, FIRE-RATED	OLD CORRIDOR DOORS		3110, 2118, 3048	238	LEAF	1.00	$1,071,183	1997	40		2037

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
DR02	DOOR AND FRAME, INTERIOR, FIRE-RATED	NEW CORRIDOR DOORS		2043, 1092	100	LEAF	1.00	$450,077	2019	40		2059
DR02	DOOR AND FRAME, INTERIOR, FIRE-RATED	OLD KNOB DOORS		2902, 2118, 1200, B906	5	LEAF	1.00	$22,504	1997	40		2037
DR02	DOOR AND FRAME, INTERIOR, FIRE-RATED	RATED PANIC DOORS		ALL STAIRS, 2043	50	LEAF	1.00	$225,038	2019	40		2059
DR02	DOOR AND FRAME, INTERIOR, FIRE-RATED	RATED NON PANIC DOORS		3048, 1080, 1200	10	LEAF	1.00	$45,008	2019	40		2059
DR24	DOOR LOCK, COMMERCIAL-GRADE	NON RATED INTERIOR DOORS		MOST AREAS	61	EA	1.00	$54,682	2019	20		2039
DR24	DOOR LOCK, COMMERCIAL-GRADE	ANOD ALUM PANIC		1104, 1107	2	EA	1.00	$1,793	2019	20		2039
DR24	DOOR LOCK, COMMERCIAL-GRADE	ANOD ALUM PANIC NO OP		1107	5	EA	1.00	$4,482	2019	20		2039
DR24	DOOR LOCK, COMMERCIAL-GRADE	OLD CORRIDOR DOORS		3110, 2118, 3048	238	EA	1.00	$213,350	1997	20	5	DR
DR24	DOOR LOCK, COMMERCIAL-GRADE	NEW CORRIDOR DOORS		2043, 1092	100	EA	1.00	$89,643	2019	20		2039
DR24	DOOR LOCK, COMMERCIAL-GRADE	OLD KNOB DOORS		2902, 2118, 1200, B906	5	EA	1.00	$4,482	1997	20	5	DR
DR24	DOOR LOCK, COMMERCIAL-GRADE	RATED NON PANIC DOORS		3048, 1080, 1200	10	EA	1.00	$8,964	2019	20		2039
DR24	DOOR LOCK, COMMERCIAL-GRADE	ANOD ALUM COURTYARD		COURTYARD	1	EA	1.00	$896	2020	20		2040
DR24	DOOR LOCK, COMMERCIAL-GRADE	PAINTED HM		ALL ELEVATIONS	9	EA	1.00	$8,068	2019	20		2039
DR26	DOOR PANIC HARDWARE	PAINTED HM PANIC		ALL ELEVATIONS	7	EA	1.00	$10,266	2019	20		2039
DR26	DOOR PANIC HARDWARE	ANOD ALUM		EAST ELEVATION	6	EA	1.00	$8,800	2020	20		2040

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
DR26	DOOR PANIC HARDWARE	ANOD ALUM OPERATOR		EAST ELEVATION	1	EA	1.00	$1,467	2020	20		2040
DR26	DOOR PANIC HARDWARE	RATED PANIC DOORS		ALL STAIRS, 2043	50	EA	1.00	$73,331	2019	20		2039
CW01	CASEWORK - WOOD BASE AND WALL, TOP, STANDARD	GRAY LAMINATE WOOD		3305, 3405, 2803, 2408, 1200	100	LF	1.00	$64,919	2019	20		2039
CW01	CASEWORK - WOOD BASE AND WALL, TOP, STANDARD	TAN LAM WOOD SOLID SURF		1021	100	LF	1.00	$64,919	2019	20		2039
CW01	CASEWORK - WOOD BASE AND WALL, TOP, STANDARD	TAN LAM WOOD		1008	30	LF	1.00	$19,476	2019	20		2039
CW01	CASEWORK - WOOD BASE AND WALL, TOP, STANDARD	OLD GRAY LAMINATE WOOD		1903	20	LF	1.00	$12,984	1997	20	5	DR
IW01	WALL FINISH - PAINT, STANDARD	STD PAINT		MOST AREAS	223,490	SF	1.00	$602,118	2019	12		2031
IW03	WALL FINISH - TILE, CERAMIC / STONE, STANDARD	9X9 GRAY TILE		ALL MULTIPLE USER RESTROOMS	2,380	SF	1.00	$109,951	1997	30		2027
IW07	WALL FINISH - WOOD PANEL, PREMIUM	ROTUNDA PANEL		4012	11,890	SF	1.00	$618,896	2019	70		2089
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	LOOM STANDARD		4002, 3052, 3085, 2600, 1200, 1426, 1903	19,190	SF	1.00	$282,879	2019	12		2031
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	CARPET TILE		2064, 2043, 2039, 2043, 1021, 1008, 1504	12,790	SF	1.00	$188,537	2019	12		2031
IF02	FLOORING - CARPET, TILE OR ROLL, PREMIUM (WOOL, CUSTOM)	LOOM PREMIUM		1100, 3048, 3023, 2064, 1014, 4003	95,960	SF	1.00	$4,202,710	2019	15		2034

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	12X12 WHITE TILE		3305, 2803, 2408, 1080, 1200, 1092, B300B	42,220	SF	1.00	$325,727	2019	20		2039
IF03	FLOORING - VINYL COMPOSITION TILE, STANDARD	9X9 ACM		3908	430	SF	1.00	$3,317	1954	20	48	DR
IF05	FLOORING - VINYL RESILIENT, TILE OR ROLL	TEXTURED STAIR FLOORING		STAIRS 1, 2, 4, 8, 9, 10, 11	21,320	SF	1.00	$577,297	1997	20	5	DR
IF06	FLOORING - TILE, CERAMIC / STONE / QUARRY STANDARD	12X12 TILE		1105	850	SF	1.00	$32,539	1997	30		2027
IF06	FLOORING - TILE, CERAMIC / STONE / QUARRY STANDARD	9X9 GRAY TILE		ALL RESTROOMS	20,260	SF	1.00	$775,588	1997	30		2027
IF08	FLOORING - TILE, CERAMIC / STONE / QUARRY ECONOMY	1X TILE		B908, 1907, 2902, 3902	210	SF	1.00	$5,371	1997	20	5	DR
IC01	CEILING FINISH - SUSPENDED ACOUSTICAL TILE, STANDARD	2X2 ACT		4013, 4002, 1080, 1092, 1021, 1008, B300B	42,650	SF	1.00	$518,143	2019	30		2049
IC01	CEILING FINISH - SUSPENDED ACOUSTICAL TILE, STANDARD	2X4 ACT		3305, 3405, 1415, 1021, 1200	31,990	SF	1.00	$388,638	2019	30		2049
IC01	CEILING FINISH - SUSPENDED ACOUSTICAL TILE, STANDARD	6 INCH STRIP 2X4		3406, 4002, 2064, 2020, 1100, B008	31,990	SF	1.00	$388,638	1997	30		2027
IC03	CEILING FINISH - ATTACHED ACOUSTICAL TILE	12X12 ACOUSTIC TILE		4003, 4011, 1000, 1105, 1504,	10,660	SF	1.00	$89,123	1954	30	38	DR
IC04	CEILING FINISH - PAINTED OR STAINED, STANDARD	STD PAINT		3052, 3048, 3023, 2064, 2043, 2020, 1008	95,960	SF	1.00	$258,531	2019	24		2043

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
VT01	ELEVATOR MODERNIZATION - TRACTION - LOW RISE	JOYN-ELV-001, DUMBWAITER	10051	4002	1	EA	0.15	$44,249	1997	25	5	2027
VT03	ELEVATOR MODERNIZATION - HYDRAULIC	ELEV 2	10050	1910	1	EA	1.00	$363,640	1997	25	1	2023
VT03	ELEVATOR MODERNIZATION - HYDRAULIC	ELEV 1	10052	901A	1	EA	1.00	$363,640	1997	25	1	2023
VT03	ELEVATOR MODERNIZATION - HYDRAULIC	ELEV 3 FREIGHT	10146	B910	1	EA	1.00	$363,640	1998	25		2023
VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV 3 FREIGHT	10146	NW ELEVATOR	1	EA	1.00	$64,123	1998	12	13	2023
VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV 1	10052	ELEV 1	1	EA	1.00	$64,123	1997	12	14	2023
VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV 2	10050	ELEV 2	1	EA	1.00	$64,123	1997	12	14	2023
FX01	PLUMBING FIXTURE - LAVATORY, COUNTER	LAMINATE WOOD		1002, 1001, 1004, 1005, 1008, 1009	52	EA	1.00	$82,505	2019	35		2054
FX02	PLUMBING FIXTURE - LAVATORY, WALL HUNG	PORCELAIN		1047, B001, B002, 2039, 2040	11	EA	1.00	$17,615	2019	35		2054
FX04	PLUMBING FIXTURE - SINK, KITCHEN	KITCHEN SINK		BREAK ROOMS	7	EA	1.00	$18,199	2019	35		2054
FX06	PLUMBING FIXTURE - SINK, SERVICE/LAUNDRY/UTILITY	WALL HUNG STEEL		3908	1	EA	1.00	$2,158	1997	35		2032
FX06	PLUMBING FIXTURE - SINK, SERVICE/LAUNDRY/UTILITY	IN GROUND SINK		B908, 1907, 2902, 3902	4	EA	1.00	$8,632	1954	35		DR
FX10	PLUMBING FIXTURE - URINAL	PORCELAIN		1001, 1005, 1008, 2001, 2004, 2005	29	EA	1.00	$73,939	2019	35		2054
FX11	PLUMBING FIXTURE - WATER CLOSET, TANK-TYPE	PORCELAIN TANK		2039, 2040	2	EA	1.00	$2,809	2019	35		2054

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
FX12	PLUMBING FIXTURE - WATER CLOSET, TANKLESS	PORCELAIN TANKLESS		1002, 1001, 1004, 1005, 1008, 1009, 1047	55	EA	1.00	$129,013	2019	35		2054
FX15	PLUMBING FIXTURE - EMERGENCY EYEWASH	EYEWASH, DRENCH		3405	1	EA	1.00	$5,641	1996	35		2031
BF02	BACKFLOW PREVENTER (1-2 INCHES)	MAKE-UP WATER BF, 2 INCH, WATTS		B901	1	EA	1.00	$2,816	2007	10	9	2026
BF03	BACKFLOW PREVENTER (2-3 INCHES)	2 INCH BACKFLOW	S#450753	EXTERIOR	2	EA	1.00	$18,570	1997	10	16	2023
BF03	BACKFLOW PREVENTER (2-3 INCHES)	2 INCH BACKFLOW		EXTERIOR	2	EA	1.00	$18,570	1997	10	16	2023
BF06	BACKFLOW PREVENTER (6-8 INCHES)	FIRE BF, 6 INCH		EXTERIOR	1	EA	1.00	$26,655	1997	10	16	2023
PS10	SUPPLY PIPING SYSTEM - LIBRARY	CAST IRON		BUILDING WIDE	150,612	SF	0.93	$683,485	1997	35	5	2037
PS10	SUPPLY PIPING SYSTEM - LIBRARY	CAST IRON		BUILDING WIDE	129,963	SF	0.93	$589,779	1976	35	16	2027
WH29	WATER HEATER - SHELL & TUBE (105-400 GPM)	DWH-1		B901	140	GPM	1.00	$71,953	1997	30		2027
PD10	DRAIN PIPING SYSTEM - LIBRARY	COPPER		BUILDING WIDE	150,612	SF	0.93	$1,030,205	1997	40		2037
PD10	DRAIN PIPING SYSTEM - LIBRARY	COPPER		BUILDING WIDE	129,963	SF	0.93	$888,964	1976	40	11	2027
PP02	GREYWATER LIFT STATION	DUPLEX WEIL PUMPS	P/N 12-020157-129	B901	2	HP	1.00	$6,112	1997	20	6	2023
PP02	GREYWATER LIFT STATION	SUB DUPLEX SUMP PUMP SYSTEM		B909	2	HP	1.00	$6,112	2018	20		2038

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	FEDERAL SUMP PUMP SYSTEM		B909	3	HP	1.00	$9,168	2018	20		2038
PP03	SEWAGE LIFT STATION	DUPLEX SEWAGE PUMPS		B901	1	HP	1.45	$4,846	2007	20		2027
HU52	UNIT HEATER, ELECTRIC	EUH		4903	3	KW	1.00	$591	2012	15		2027
HU52	UNIT HEATER, ELECTRIC	MARKEL CEILING UH		1080	5	KW	1.00	$986	2012	15		2027
HU52	UNIT HEATER, ELECTRIC	MARKEL CEILING UH		1080	5	KW	1.00	$986	2012	15		2027
HU52	UNIT HEATER, ELECTRIC	INFRARED UH IRH-1		1211	4.80	KW	1.00	$946	1997	15	11	2023
HU52	UNIT HEATER, ELECTRIC	INFRARED UH IRH-2		1211	4.80	KW	1.00	$946	1997	15	11	2023
HU52	UNIT HEATER, ELECTRIC	INFRARED UH IRH-1		1405	4.80	KW	1.00	$946	1997	15	11	2023
HU52	UNIT HEATER, ELECTRIC	HOT BOX EUH FOR BF		EXTERIOR	1	KW	1.00	$197	1997	15	11	2023
HU53	UNIT HEATER, STEAM/HYDRONIC STD (TO 250 MBH)	HUH		2911	1	EA	1.00	$1,346	1997	35		2032
TK03	EXPANSION TANK (21-40 GAL)	FREE COOLING EXP. TANK	S#54137	B901	35	GAL	1.00	$8,480	1997	25	12	2034
TK03	EXPANSION TANK (21-40 GAL)	HW AIR SEP., SKID		B901	30	GAL	1.35	$9,812	1995	25	13	2033
TK05	EXPANSION TANK (61-100 GAL)	HW EXP. TANK, SKID	S#5X962	B901	130	GAL	1.00	$25,507	1995	25	14	2034
TK05	EXPANSION TANK (61-100 GAL)	CHW EXP. TANK		B901	80	GAL	1.00	$15,696	1997	25	11	2033
TK05	EXPANSION TANK (61-100 GAL)	GLYCOL MIXING TANK	10098	B901	100	GAL	0.75	$14,715	1997	25	12	2034

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
TK05	EXPANSION TANK (61-100 GAL)	GLYCOL STORAGE TANK	10100	B901	100	GAL	0.75	$14,715	1997	25	12	2034
CH02	CHILLER - WATER-COOLED CENTRIFUGAL OR SCREW (150-350 TONS)	JOYN-WCU-CH1, C-1	10030	B901	215	TON	1.00	$387,616	1997	30		2027
CH03	CHILLER - WATER-COOLED CENTRIFUGAL OR SCREW (350-550 TONS)	JOYN-WCU-CH2, C-2	10031	B901	450	TON	1.00	$752,175	1997	30		2027
CT06	COOLING TOWER (301-550 TONS)	CT-1	10143	EXTERIOR	270	TON	1.00	$115,629	1997	23	3	2023
CT06	COOLING TOWER (301-550 TONS)	CT2A & 2B	10144	EXTERIOR	500	TON	1.00	$214,128	1997	23	3	2023
CT13	COOLING WATER TREATMENT SYSTEM	AQUATRAC, COOLING TREATMENT		B901	1	SYS	1.00	$10,708	2018	20		2038
HU02	CONDENSER - REFRIGERANT, AIR-COOLED (10-35 TON)	CU-1		EXTERIOR	15	TON	1.00	$20,359	2005	23	5	2033
HU18	DUCTLESS DX SPLIT SYSTEM (1-2 TON)	MITSUBISHI SPLIT SYSTEM		B909	2	TON	1.00	$5,649	2010	23		2033
TK33	EXPANSION TANK, DIAPHRAGM (250-550 GAL)	HHW AIR SEPARATOR		B909	150	GAL	1.00	$11,782	1997	25	5	2027
TK33	EXPANSION TANK, DIAPHRAGM (250-550 GAL)	CHW AIR SEPARATOR		B901	250	GAL	1.00	$19,637	1997	25	6	2028
TK33	EXPANSION TANK, DIAPHRAGM (250-550 GAL)	ICE / GLYCOL AIR SEPARATOR	10101	B901	250	GAL	1.00	$19,637	1997	25	2	2024
TK63	TANK - THERMAL STORAGE, ICE	ICE STORAGE TANK 1	10097	B901	162	LBS/HR	1.00	$50,057	1997	35	1	2033
TK63	TANK - THERMAL STORAGE, ICE	ICE STORAGE TANK 2	10097	B901	162	LBS/HR	1.00	$50,057	1997	35	1	2033
TK63	TANK - THERMAL STORAGE, ICE	ICE STORAGE TANK 3	10097	B901	162	LBS/HR	1.00	$50,057	1997	35	1	2033
TK63	TANK - THERMAL STORAGE, ICE	ICE STORAGE TANK 4	10097	B901	162	LBS/HR	1.00	$50,057	1997	35	1	2033

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
TK63	TANK - THERMAL STORAGE, ICE	ICE STORAGE TANK 5	10097	B901	162	LBS/HR	1.00	$50,057	1997	35	1	2033
TK63	TANK - THERMAL STORAGE, ICE	ICE STORAGE TANK 6	10097	B901	162	LBS/HR	1.00	$50,057	1997	35	1	2033
TK63	TANK - THERMAL STORAGE, ICE	ICE STORAGE TANK 7	10097	B901	162	LBS/HR	1.00	$50,057	1997	35	1	2033
TK63	TANK - THERMAL STORAGE, ICE	ICE STORAGE TANK 8	10097	B901	162	LBS/HR	1.00	$50,057	1997	35	1	2033
TK63	TANK - THERMAL STORAGE, ICE	ICE STORAGE TANK 9	10097	B901	162	LBS/HR	1.00	$50,057	1997	35	1	2033
TK63	TANK - THERMAL STORAGE, ICE	ICE STORAGE TANK 10	10097	B901	162	LBS/HR	1.00	$50,057	1997	35	1	2033
TK63	TANK - THERMAL STORAGE, ICE	ICE STORAGE TANK 11	10097	B901	162	LBS/HR	1.00	$50,057	1997	35	1	2033
TK63	TANK - THERMAL STORAGE, ICE	ICE STORAGE TANK 12	10097	B901	162	LBS/HR	1.00	$50,057	1997	35	1	2033
TK63	TANK - THERMAL STORAGE, ICE	ICE STORAGE TANK 13	10097	B901	162	LBS/HR	1.00	$50,057	1997	35	1	2033
TK63	TANK - THERMAL STORAGE, ICE	ICE STORAGE TANK 14	10097	B901	162	LBS/HR	1.00	$50,057	1997	35	1	2033
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FAN COIL FC-3		B901	1	HP	1.00	$10,844	1997	25	3	2025
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FAN COIL FC-1		B901	1	HP	1.00	$10,844	1997	25	3	2025
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	MCQUAY FAN COIL		1700S	0.25	HP	1.00	$2,711	2007	25	1	2033
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FAN COIL FC-2		B902	1	HP	1.00	$10,844	1997	25	3	2025
AH03	AIR HANDLING UNIT - INDOOR (1.75-2.75 HP)	AHU-1		B904	2	HP	1.00	$24,136	1997	25	5	2027

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
AH03	AIR HANDLING UNIT - INDOOR (1.75-2.75 HP)	AHU-8		2904	2	HP	1.00	$24,136	1997	25	10	2032
AH04	AIR HANDLING UNIT - INDOOR (2.75-3.25 HP)	AHU-7		1909	3	HP	1.00	$29,647	1997	25	5	2027
AH04	AIR HANDLING UNIT - INDOOR (2.75-3.25 HP)	AHU-6		3904	3	HP	1.00	$29,647	1997	25	5	2027
AH04	AIR HANDLING UNIT - INDOOR (2.75-3.25 HP)	AHU-11		3907	3	HP	1.00	$29,647	1997	25	5	2027
AH04	AIR HANDLING UNIT - INDOOR (2.75-3.25 HP)	AHU-10		2907	3	HP	1.00	$29,647	1997	25	5	2027
AH04	AIR HANDLING UNIT - INDOOR (2.75-3.25 HP)	AHU-9		1904	3	HP	1.00	$29,647	1997	25	5	2027
AH05	AIR HANDLING UNIT - INDOOR (3.25-6 HP)	AHU-5		4903	5	HP	1.00	$53,468	1997	25	5	2027
AH05	AIR HANDLING UNIT - INDOOR (3.25-6 HP)	AHU-3		2911	5	HP	1.00	$53,468	1997	25	5	2027
AH05	AIR HANDLING UNIT - INDOOR (3.25-6 HP)	AHU-4		2911	5	HP	1.00	$53,468	1997	25	5	2027
AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	AHU-E6		2903	10	HP	1.00	$98,239	1976	25	27	2028
AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	AHU-E5		2900	10	HP	1.00	$98,239	1976	25	22	2023
AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	JOYN-AHU-002	10012	B909	10	HP	1.00	$98,239	1976	25	30	2031
AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	JOYN-AHU-003, AHU-1E	10013	B906	10	HP	1.00	$98,239	1976	25	28	2029
AH08	AIR HANDLING UNIT - INDOOR (12-17 HP)	AHU-2		2911	15	HP	1.00	$124,512	1997	25	5	2027
AH08	AIR HANDLING UNIT - INDOOR (12-17 HP)	001-AHU-006 / AHU-E8		3903	15	HP	1.00	$124,512	1976	25	30	2031

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
AH08	AIR HANDLING UNIT - INDOOR (12-17 HP)	AHU-7		3900	15	HP	1.00	$124,512	1976	25	23	2024
AH09	AIR HANDLING UNIT - INDOOR (17-23 HP)	AHU-E4		1908	20	HP	1.00	$156,817	1976	25	32	2033
AH09	AIR HANDLING UNIT - INDOOR (17-23 HP)	AHU-3		1905	20	HP	1.00	$156,817	1976	25	27	2028
AH15	AIR HANDLING UNIT - INDOOR (>88 HP)	B.U.A.S.		B901	100	HP	0.35	$199,067	1997	25	12	2034
AH45	HUMIDIFIER, STEAM INJECTION	H-1		B901	1	EA	0.65	$10,002	1997	20	6	2023
AH45	HUMIDIFIER, STEAM INJECTION	H-9		1904	1	EA	0.45	$6,925	1997	20	6	2023
AH45	HUMIDIFIER, STEAM INJECTION	H-10		2907	1	EA	0.45	$6,925	1997	20	6	2023
AH45	HUMIDIFIER, STEAM INJECTION	H-11		3907	1	EA	0.45	$6,925	1997	20	6	2023
AH45	HUMIDIFIER, STEAM INJECTION	H-6		3904	1	EA	0.45	$6,925	1997	20	6	2023
AH45	HUMIDIFIER, STEAM INJECTION	H-5		4903	1	EA	0.45	$6,925	1997	20	6	2023
AH45	HUMIDIFIER, STEAM INJECTION	H-8		2904	1	EA	0.45	$6,925	1997	20	6	2023
AH45	HUMIDIFIER, STEAM INJECTION	H-7		1909	1	EA	0.45	$6,925	1997	20	6	2023
FN06	FAN - AXIAL, RETURN, 1.5" SP (15-20 HP) 32,000 CFM	EF-1, LOREN COOK		ROOF	20	HP	1.00	$43,307	1997	20	6	2023
FN18	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (10"-18" DIAMETER)	EF-5, LOREN COOK		LOWER ROOF	1	EA	1.00	$4,357	1997	20	6	2023
FN18	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (10"-18" DIAMETER)	EF-4, LOREN COOK		LOWER ROOF	1	EA	1.00	$4,357	1997	20	6	2023

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
FN19	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (20"-22" DIAMETER)	F-1		ROOF	1	EA	1.00	$7,711	1997	20	8	2025
FN19	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (20"-22" DIAMETER)	EF-2		ROOF	1	EA	1.00	$7,711	1999	20	6	2025
FN19	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (20"-22" DIAMETER)	DAYTON	S#05B01871	ROOF	1	EA	1.00	$7,711	2005	20	5	2030
FN19	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (20"-22" DIAMETER)	JOYN-EAF-008	10040	B909	1	EA	1.00	$7,711	1976	20	27	2023
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-1A		1211	1	HP	1.25	$2,110	2007	20	6	2033
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-1B		1211	1	HP	1.25	$2,110	2007	20	6	2033
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-6		1211	2	HP	1.25	$4,220	2007	20	6	2033
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-7		B023 / B903	0.50	HP	3.50	$2,954	2007	20	6	2033
FN22	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (30-40 HP)	JOYN-RAF-001, RA-1	10094	B901	30	HP	1.25	$47,070	1997	20	8	2025
FN24	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (>50 HP)	JOYN-SAF-001, SA-1	10095	B901	100	HP	1.00	$179,545	1997	20	8	2025
FN40	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (<=30 HP)	EF-1, GREENHECK	S#05A07558	ROOF	1	HP	1.00	$5,377	2005	20		2025
HD01	HOOD, FUME	FUME HOOD	111231	1300	6	LF	1.00	$17,128	1997	20	13	2030
HD01	HOOD, FUME	STAINLESS STEEL HOOD		3405	3	LF	0.20	$1,713	1997	20	18	2035
HV10	HVAC DISTRIBUTION NETWORKS - LIBRARY	DUCT AND PIPE		BUILDING WIDE	150,612	SF	0.93	$5,799,417	1997	40		2037
HV10	HVAC DISTRIBUTION NETWORKS - LIBRARY	DUCT AND PIPE		BUILDING WIDE	129,963	SF	0.93	$5,004,313	1976	40	12	2028

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
HX01	HEAT EXCHANGER - SHELL & TUBE WATER TO WATER (<=85 GPM)	HEX		B909	75	GPM	1.00	$19,296	1976	35	12	2023
HX02	HEAT EXCHANGER - SHELL & TUBE WATER TO WATER (85-255 GPM)	B&G HEX	S#158189-01	B909	150	GPM	1.00	$40,339	2012	35		2047
HX02	HEAT EXCHANGER - SHELL & TUBE WATER TO WATER (85-255 GPM)	B&G HEX, SKID	S#94Z79875-01	B901	100	GPM	1.00	$26,893	1995	35		2030
HX07	HEAT EXCHANGER - PLATE FRAME (200-600 GPM)	HE-1, FREE COOLING		B901	350	GPM	1.00	$55,108	1997	25	11	2033
HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	PRV		B909	1	EA	1.00	$5,376	1997	20	6	2023
HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	SPENCE 2 INCH PRV		B909	1	EA	1.00	$5,376	1997	20	6	2023
HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	SPENCE PRV		B909	1	EA	1.00	$5,376	1997	20	6	2023
HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	SPENCE, 3/4 INCH PRV		B901	1	EA	0.75	$4,032	2007	20		2027
HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	SPIRAX, 1 1/4 INCH PRV		B901	1	EA	0.85	$4,570	2007	20		2027
HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	SPIRAX, 2 INCH PRV		B901	1	EA	1.00	$5,376	2007	20		2027
PH01	PUMP - ELECTRIC (<=10 HP)	GLYCOL TREATMENT PUMP		B901	5	HP	1.00	$9,903	2012	25		2037
PH01	PUMP - ELECTRIC (<=10 HP)	P-6, CHW		B901	5	HP	1.00	$9,903	2007	25	1	2033
PH01	PUMP - ELECTRIC (<=10 HP)	P-3, CHW		B901	1.50	HP	1.00	$2,971	2007	25	1	2033
PH01	PUMP - ELECTRIC (<=10 HP)	BELL AND GOSSETT, HHW		B909	7.50	HP	1.00	$14,854	1997	25	9	2031
PH01	PUMP - ELECTRIC (<=10 HP)	P-5, CHW		B901	7.50	HP	1.00	$14,854	2007	25	1	2033

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)	P-13 HHW, SKID		B901	3	HP	1.00	$5,942	1997	25	11	2033
PH01	PUMP - ELECTRIC (<=10 HP)	P-14 HHW, SKID		B901	3	HP	1.00	$5,942	1997	25	11	2033
PH01	PUMP - ELECTRIC (<=10 HP)	P-2A, GLYCOL		B901	5	HP	1.00	$9,903	1997	25	3	2025
PH01	PUMP - ELECTRIC (<=10 HP)	P-2B, GLYCOL		B901	5	HP	1.00	$9,903	1997	25	3	2025
PH01	PUMP - ELECTRIC (<=10 HP)	P-4, CHW		B901	2	HP	1.00	$3,961	1997	25	8	2030
PH02	PUMP - ELECTRIC (10 - 15 HP)	P-11, CHW		B901	15	HP	1.00	$25,867	2007	25	1	2033
PH02	PUMP - ELECTRIC (10 - 15 HP)	P-12, CHW		B901	15	HP	1.00	$25,867	2007	25	1	2033
PH02	PUMP - ELECTRIC (10 - 15 HP)	P-8, CHW		B901	10	HP	1.00	$17,245	2007	25	1	2033
PH03	PUMP - ELECTRIC (15 - 20 HP)	P-1, CHW		B901	20	HP	1.00	$25,689	2007	25	1	2033
PH03	PUMP - ELECTRIC (15 - 20 HP)	P-7, CHW		B901	20	HP	1.00	$25,689	1997	25	5	2027
PH04	PUMP - ELECTRIC (20 - 25 HP)	P-10, CHW		B901	25	HP	1.00	$25,903	2007	25	1	2033
PH07	PUMP - ELECTRIC (40 - 50 HP)	P-9, GLYCOL		B901	50	HP	1.00	$48,403	1997	25	3	2025
PH07	PUMP - ELECTRIC (40 - 50 HP)	P-10, CHW		B901	50	HP	1.00	$48,403	2017	25		2042
PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	P-13, DUPLEX		B901	4	HP	1.00	$35,811	2007	20		2027
PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	B&G DUPLEX CRU		B909	3	HP	1.00	$26,858	2012	20		2032

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
RV01	SAFETY RELIEF VALVE	KUNKLE RELIEF VALVE		B901	1	EA	1.00	$22,955	2007	25		2032
AC02	AIR COMPRESSOR SYSTEM - HVAC CONTROLS (6-10 TOTAL HP)	AIR COMP		B901	10	HP	1.00	$24,095	1997	20	10	2027
AD02	AIR DRYER - REFRIGERATED - 11-25 CFM	AIR DRYER		B901	1	EA	1.00	$2,209	2012	15		2027
BA10	HVAC CONTROLS - TERMINAL ASSEMBLIES - LIBRARY	ASSEMBLIES		BUILDING WIDE	280,575	SF	0.93	$996,685	2017	20		2037
BA33	HVAC CONTROLS - FIELD PANELS/OPS SOFTWARE - LIBRARY	PANELS AND SOFTWARE		BUILDING WIDE	280,575	SF	0.93	$284,880	2017	10	4	2031
BA56	HVAC CONTROLS - MAJOR INSTRUMENTATION - LIBRARY	MAJOR EQUIPMENT		BUILDING WIDE	280,575	SF	0.93	$148,129	2017	10	4	2031
CH22	REFRIGERANT MONITORING SYSTEM	REF. MONITORING SYSTEM		B901	1	EA	1.00	$35,710	2020	15		2035
FP09	FIRE PUMP - ELECTRIC, 250 GPM, 2" ID (<=15 HP)	JOCKEY PUMP		B909	1.50	HP	1.00	$4,813	1997	25	4	2026
FP10	FIRE PUMP - ELECTRIC, 500 GPM, 3" ID (15-65 HP)	JOYN-PMP-FP1, FIRE PUMP	10088	B909	60	HP	1.00	$59,655	1997	25	4	2026
FS01	FIRE SPRINKLER SYSTEM	WET PIPE	10125	BUILDING WIDE	260,575	SF	0.93	$3,662,429	1997	80		2077
FS01	FIRE SPRINKLER SYSTEM	PREACTION SYSTEM DEVICES		3406 / 4002	10,000	SF	0.93	$140,552	1997	80		2077
FS01	FIRE SPRINKLER SYSTEM	PREACTION SYSTEM		MEDIA CENTER	10,000	SF	0.93	$140,552	1997	80		2077
FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER	FACP	10028	B902	1	EA	1.00	$45,567	1997	15	11	2023
FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER	PREACTION CONTROLLER		3407	1	EA	0.25	$11,392	2015	15		2030
FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER	PREACTION CONTROLLER		B901	1	EA	0.25	$11,392	1997	15	15	2027

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
FA02	FIRE ALARM SYSTEM - DEVICES	UPDATED NOTIFIERS & DETECTORS		BUILIDNG WIDE	260,575	SF	0.04	$51,186	2022	18		2040
FA02	FIRE ALARM SYSTEM - DEVICES	DETECTORS, NOTIFIERS, PULL STATIONS		BUILDING WIDE	260,575	SF	0.89	$1,138,899	1997	18	10	2025
FA02	FIRE ALARM SYSTEM - DEVICES	PREACTION SYSTEM DEVICES		3406 / 4002	10,000	SF	0.93	$45,672	2015	18		2033
FA02	FIRE ALARM SYSTEM - DEVICES	PREACTION SYSTEM DEVICES		MEDIA CENTER	10,000	SF	0.93	$45,672	1997	18	10	2025
MC02	MOTOR CONTROL CENTER VERTICAL SECTION, 600V (400-600A) W/STARTERS	MCC-1		B901	1	EA	1.00	$92,732	1997	25	4	2026
SE10	ELECTRICAL DISTRIBUTION NETWORK - LIBRARY	120/208 & 277/480 VOLT SERVICES		BUILDING WIDE	150,612	SF	0.93	$1,756,849	1997	40		2037
SE10	ELECTRICAL DISTRIBUTION NETWORK - LIBRARY	120/208 & 277/480 VOLT SERVICES		BUILDING WIDE	129,963	SF	0.93	$1,515,984	1976	40	10	2026
SG02	MAIN SWITCHBOARD W/BREAKERS (400-600 AMP)	GE 400 AMP		B902	400	AMP	1.00	$37,390	1997	20	16	2033
SG02	MAIN SWITCHBOARD W/BREAKERS (400-600 AMP)	PANEL EHPB4		B902	600	AMP	1.00	$56,085	1997	20	16	2033
SG02	MAIN SWITCHBOARD W/BREAKERS (400-600 AMP)	HQ		B901	600	AMP	1.00	$56,085	1997	20	16	2033
SG02	MAIN SWITCHBOARD W/BREAKERS (400-600 AMP)	GE 400 AMP		B909	400	AMP	1.00	$37,390	1976	20	26	DR
SG02	MAIN SWITCHBOARD W/BREAKERS (400-600 AMP)	HPB1		B909	600	AMP	1.00	$56,085	1997	20	16	2033
SG02	MAIN SWITCHBOARD W/BREAKERS (400-600 AMP)	HP22		2911	400	AMP	1.00	$37,390	1997	20	16	2033
SG02	MAIN SWITCHBOARD W/BREAKERS (400-600 AMP)	LP22		2911	400	AMP	1.00	$37,390	1997	20	16	2033

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
SG02	MAIN SWITCHBOARD W/BREAKERS (400-600 AMP)	HP13		1912	400	AMP	1.00	$37,390	1997	20	16	2033
SG02	MAIN SWITCHBOARD W/BREAKERS (400-600 AMP)	LTVC		1405	400	AMP	1.00	$37,390	1997	20	16	2033
SG02	MAIN SWITCHBOARD W/BREAKERS (400-600 AMP)	LP13		1912	400	AMP	1.00	$37,390	1997	20	16	2033
SG02	MAIN SWITCHBOARD W/BREAKERS (400-600 AMP)	HP33		3905	400	AMP	1.00	$37,390	1997	20	16	2033
SG03	MAIN SWITCHBOARD W/BREAKERS (600-800 AMP)	MOLDED CASE BREAKER, SQ D		B909	800	AMP	0.35	$24,203	1997	20	16	2033
SG03	MAIN SWITCHBOARD W/BREAKERS (600-800 AMP)	LPB1		B909	800	AMP	1.00	$69,152	2007	20	6	2033
SG03	MAIN SWITCHBOARD W/BREAKERS (600-800 AMP)	PANEL LPB2		B902	800	AMP	1.00	$69,152	1997	20	16	2033
SG06	MAIN SWITCHBOARD W/BREAKERS (1600-2500 AMP)	MSB2		B902	2,500	AMP	1.00	$249,913	1997	20	16	2033
SG06	MAIN SWITCHBOARD W/BREAKERS (1600-2500 AMP)	MSB1		B902	2,000	AMP	1.00	$199,931	1997	20	16	2033
SG06	MAIN SWITCHBOARD W/BREAKERS (1600-2500 AMP)	SSB		B909	2,000	AMP	1.00	$199,931	1997	20	16	2033
TX25	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (30-50 KVA)	JOYN-TRA-008	10102	1904	45	KVA	1.00	$10,613	2005	30		2035
TX25	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (30-50 KVA)	JOYN-TRA-004	10108	B902	30	KVA	1.00	$7,075	1997	30		2027
TX26	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (50-75 KVA)	JOYN-TRA-005	10105	3905	75	KVA	1.00	$14,633	1997	30		2027
TX27	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (75-112.5 KVA)	JOYN-TRA-006, DT13	10103	1912	113	KVA	1.00	$19,806	1997	30		2027
TX27	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (75-112.5 KVA)	JOYN-TRA-007, DT22	10104	2911	113	KVA	1.00	$19,806	1997	30		2027

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
TX27	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (75-112.5 KVA)	TSTB TRANSF		B902	75	KVA	1.00	$13,145	1997	30		2027
TX28	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (112.5-150 KVA)	JOYN-TRA-003, DTTV	10107	B902	113	KVA	1.00	$19,806	1997	30		2027
TX30	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (225-300 KVA)	JOYN-TRA-001, DTB4	10106	B902	225	KVA	1.00	$26,960	1997	30		2027
TX30	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (225-300 KVA)	JOYN-TRA-002	10109	B909	225	KVA	1.00	$26,960	1997	30		2027
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-9 SF VSD		1904	3	HP	1.00	$2,530	2012	12		2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-8 SF VSD		2904	2	HP	1.00	$1,687	2012	12		2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-7 SF VSD		1909	3	HP	1.00	$2,530	2012	12		2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-11 SF VSD		3907	3	HP	1.00	$2,530	2012	12		2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-6 SF VSD		3904	3	HP	1.00	$2,530	2012	12		2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-10 SF VSD		2907	3	HP	1.00	$2,530	2012	12		2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	P-13, VSD		B901	3	HP	1.00	$2,530	2019	12	2	2033
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	P-14, VSD		B901	3	HP	1.00	$2,530	2019	12	2	2033
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-1 SF VSD		B904	2	HP	1.00	$1,687	2012	12		2024
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	P-2A VSD		B901	4	HP	1.00	$3,059	2019	12		2031
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	P-2B VSD		B901	4	HP	1.00	$3,059	2019	12		2031

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
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	AHU-5 SF VSD		4903	5	HP	1.00	$3,824	2012	12		2024
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	AHU-4 VSD		2911	5	HP	1.00	$3,824	1997	12	15	2024
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	AHU-3 VSD		2911	5	HP	1.00	$3,824	1997	12	15	2024
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	P-6 VSD		B901	5	HP	1.00	$3,824	2019	12		2031
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	P-8 VSD		B901	10	HP	1.00	$6,378	2019	12		2031
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	AHU-1E VSD		B906	10	HP	1.00	$6,378	2013	12		2025
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	JOYN-AHU-002 VSD		B909	10	HP	1.00	$6,378	2013	12		2025
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	VECTRUE CFW-11		B909	7.50	HP	1.00	$4,783	2020	12		2032
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	AHU-E6 VSD		2903	10	HP	1.00	$6,378	2012	12		2024
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	AHU-E5 VSD		2900	10	HP	1.00	$6,378	2014	12		2026
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	P-5 VSD		B901	7.50	HP	1.00	$4,783	2019	12		2031
VF04	VARIABLE FREQUENCY DRIVE (10-15 HP)	P-11, VSD		B901	15	HP	1.00	$7,383	2019	12	2	2033
VF04	VARIABLE FREQUENCY DRIVE (10-15 HP)	P-12, VSD		B901	15	HP	1.00	$7,383	2017	12	4	2033
VF04	VARIABLE FREQUENCY DRIVE (10-15 HP)	AHU-2 VSD		2911	15	HP	1.00	$7,383	2022	12		2034
VF04	VARIABLE FREQUENCY DRIVE (10-15 HP)	AHU-7 SF VSD		3900	15	HP	1.00	$7,383	2012	12		2024

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
VF04	VARIABLE FREQUENCY DRIVE (10-15 HP)	AHU-8 SF VSD		3903	15	HP	1.00	$7,383	2012	12		2024
VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	AHU-E4 VSD		1908	20	HP	1.00	$9,030	2014	12		2026
VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	AHU-3 VSD		1905	20	HP	1.00	$9,030	2014	12		2026
VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	P-1 VSD		B901	20	HP	1.00	$9,030	2019	12		2031
VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	P-7 VSD		B901	20	HP	1.00	$9,030	2017	12		2029
VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	CT-1 VSD		B901	20	HP	1.00	$9,030	2005	12	6	2023
VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	CT-2A VSD		B901	20	HP	1.00	$9,030	2005	12	6	2023
VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	CT-2B VSD		B901	20	HP	1.00	$9,030	2005	12	6	2023
VF06	VARIABLE FREQUENCY DRIVE (20-25 HP)	P-10 VSD		B901	25	HP	1.00	$10,678	2011	16		2027
VF08	VARIABLE FREQUENCY DRIVE (30-40 HP)	RA-1 VSD		B901	30	HP	1.00	$10,480	2007	16		2023
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	P-9B VSD		B901	50	HP	1.00	$16,097	2017	16		2033
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	P-9A VSD		B901	50	HP	1.00	$16,097	2017	16		2033
VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	SA-1 VSD		B901	100	HP	1.00	$31,079	2007	20		2027
LE03	LIGHTING - EXTERIOR, RECESSED (INC, CFL, LED)	RECESSED, OVERHANG		EXTERIOR	14	EA	1.00	$3,952	1997	15	12	2024
LE03	LIGHTING - EXTERIOR, RECESSED (INC, CFL, LED)	RECESSED, WALK PATH		EXTERIOR	8	EA	1.00	$2,258	1997	15	12	2024

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
LE04	LIGHTING - EXTERIOR, STANCHION LUMINAIRE, 12-FOOT	POLE, DECORATIVE		EXTERIOR	4	EA	1.00	$10,509	2015	15		2030
LE04	LIGHTING - EXTERIOR, STANCHION LUMINAIRE, 12-FOOT	POLE, DECORATIVE		EXTERIOR	15	EA	1.00	$39,409	1997	15	21	2033
LE07	LIGHTING - EXTERIOR, WALL FLOOD (SV, MH, ID, LED)	SURFACE HID		INNER COURTYARD	3	EA	1.00	$3,570	1997	15	15	2027
LE07	LIGHTING - EXTERIOR, WALL FLOOD (SV, MH, ID, LED)	SURFACE HID		B909 ENTRANCE	1	EA	1.00	$1,190	2000	15	11	2026
LE07	LIGHTING - EXTERIOR, WALL FLOOD (SV, MH, ID, LED)	SURFACE LED		EXTERIOR	16	EA	1.00	$19,038	2015	15		2030
LI10	LIGHTING SYSTEM, INTERIOR - LIBRARY	LED, T12		BUILDING WIDE	275,575	SF	0.93	$1,651,305	1997	20	12	2029
LI10	LIGHTING SYSTEM, INTERIOR - LIBRARY	LED		STARBUCKS, FAC. EXCELLENCE, ETC.	5,000	SF	0.93	$29,961	2013	20		2033
GN04	GENERATOR - DIESEL (200-500 KW)	GENERATOR	10141	EXTERIOR	400	KW	1.00	$235,305	1997	25	12	2034
GN14	SWITCH - AUTO TRANSFER, 480 V (60-100 AMP)	JOYN-TSW-FPC1, FIRE ATS	10112	B909	70	AMP	1.45	$6,929	1997	25	1	2023
GN16	SWITCH - AUTO TRANSFER, 480 V (>400 AMP)	JOYN-TSW-ATS1	10113	B902	600	AMP	1.00	$20,931	2011	25		2036
DK01	DOCK LEVELER	6,000 LB LIFT	10049	UTILITY TUNNEL	1	EA	1.25	$15,248	2013	20		2033
DK01	DOCK LEVELER	JOYN-ELV-007, WEST	10047	1211	1	EA	1.00	$12,198	1997	20	17	2034
DK01	DOCK LEVELER	JOYN-ELV-006, EAST	10048	1211	1	EA	1.00	$12,198	1997	20	17	2034
SI07	CONCRETE VEHICULAR PAVING - JOINT MAINTENANCE	LOADING DOCK LOT		SOUTH ELEVATION	100	LF	1.00	$688	2019	7		2026

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
SI06	ASPHALT VEHICULAR PAVING - SEALCOAT AND STRIPE	NORTH PARKING LOT		NORTH ELEVATION	604	SY	1.00	$2,627	2019	7		2026
SI06	ASPHALT VEHICULAR PAVING - SEALCOAT AND STRIPE	SOUTH SERVICE DRIVE		SOUTH ELEVATION	969	SY	1.00	$4,215	2019	7		2026
SI01	CONCRETE PEDESTRIAN PAVING - JOINT MAINTENANCE	NORTH SIDEWALK		NORTH ELEVATION	125	LF	1.00	$748	1997	7	18	DR
SI01	CONCRETE PEDESTRIAN PAVING - JOINT MAINTENANCE	CONCRETE PAVERS		NORTH, EAST ELEVATIONS	400	LF	1.00	$2,392	2019	7		2026
SI03	BRICK PAVERS	BRICK PAVERS		NORTH, EAST ELEVATIONS	12,000	SF	1.00	$304,401	2019	25		2044
							Grand Total:	**$52,182,330**				

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
EW11	WALL, EXTERIOR, EIFS	4TH FLOOR ROTUNDA		SOUTHWEST ELEVATION	B2010	3,230	SF	$115,300	DR
WN01	GLASS, WINDOW, ALUMINUM OR WOOD, STANDARD	ALUM WINDOWS		NORTH, EAST, AND WEST ELEVATIONS	B2010	4,640	SF	$957,629	DR
DR30	DOOR OPERATOR, OVERHEAD DOOR, COMMERCIAL, PADS	SMALL COILING STEEL		SOUTH ELEVATION	B2030	1	EA	$2,558	DR
DR30	DOOR OPERATOR, OVERHEAD DOOR, COMMERCIAL, PADS	LARGE COILING STEEL		SOUTH ELEVATION	B2030	1	EA	$2,558	DR
DR24	DOOR LOCK, COMMERCIAL-GRADE	OLD CORRIDOR DOORS		3110, 2118, 3048	C1020	238	EA	$213,350	DR
DR24	DOOR LOCK, COMMERCIAL-GRADE	OLD KNOB DOORS		2902, 2118, 1200, B906	C1020	5	EA	$4,482	DR
CW01	CASEWORK - WOOD BASE AND WALL, TOP, STANDARD	OLD GRAY LAMINATE WOOD		1903	C1030	20	LF	$12,984	DR
IF03	FLOORING - VINYL COMPOSITION TILE, STANDARD	9X9 ACM		3908	C3020	430	SF	$3,317	DR
IF05	FLOORING - VINYL RESILIENT, TILE OR ROLL	TEXTURED STAIR FLOORING		STAIRS 1, 2, 4, 8, 9, 10, 11	C3020	21,320	SF	$577,297	DR
IF08	FLOORING - TILE, CERAMIC / STONE / QUARRY ECONOMY	1X TILE		B908, 1907, 2902, 3902	C3020	210	SF	$5,371	DR
IC03	CEILING FINISH - ATTACHED ACOUSTICAL TILE	12X12 ACOUSTIC TILE		4003, 4011, 1000, 1105, 1504,	C3030	10,660	SF	$89,123	DR

RECURRING NEEDS BY YEAR

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

FX06	PLUMBING FIXTURE - SINK, SERVICE/LAUNDRY/UTILITY	IN GROUND SINK		B908, 1907, 2902, 3902	D2010	4	EA	$8,632	DR
SG02	MAIN SWITCHBOARD W/BREAKERS (400-600 AMP)	GE 400 AMP		B909	D5010	400	AMP	$37,390	DR
SI01	CONCRETE PEDESTRIAN PAVING - JOINT MAINTENANCE	NORTH SIDEWALK		NORTH ELEVATION	G2030	125	LF	$748	DR
						TOTAL DEFERRED RENEWAL COST		**$2,030,740**	

2023									
COMP CODE	**COMPONENT DESCRIPTION**	**IDENTIFIER**	**CUSTOMER ID**	**LOCATION**	**UNI-FORMAT**	**QTY**	**UNITS**	**REPLACEMENT COST**	**YEAR**
VT03	ELEVATOR MODERNIZATION - HYDRAULIC	ELEV 2	10050	1910	D1010	1	EA	$363,640	2023
VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV 2	10050	ELEV 2	D1010	1	EA	$64,123	2023
VT03	ELEVATOR MODERNIZATION - HYDRAULIC	ELEV 1	10052	901A	D1010	1	EA	$363,640	2023
VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV 1	10052	ELEV 1	D1010	1	EA	$64,123	2023
VT03	ELEVATOR MODERNIZATION - HYDRAULIC	ELEV 3 FREIGHT	10146	B910	D1010	1	EA	$363,640	2023

RECURRING NEEDS BY YEAR

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

VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV 3 FREIGHT	10146	NW ELEVATOR	D1010	1	EA	$64,123	2023
BF06	BACKFLOW PREVENTER (6-8 INCHES)	FIRE BF, 6 INCH		EXTERIOR	D2020	1	EA	$26,655	2023
BF03	BACKFLOW PREVENTER (2-3 INCHES)	2 INCH BACKFLOW	S#450753	EXTERIOR	D2020	2	EA	$18,570	2023
BF03	BACKFLOW PREVENTER (2-3 INCHES)	2 INCH BACKFLOW		EXTERIOR	D2020	2	EA	$18,570	2023
PP02	GREYWATER LIFT STATION	DUPLEX WEIL PUMPS	P/N 12-020157-129	B901	D2030	2	HP	$6,112	2023
HU52	UNIT HEATER, ELECTRIC	INFRARED UH IRH-1		1211	D3020	4.80	KW	$946	2023
HU52	UNIT HEATER, ELECTRIC	INFRARED UH IRH-2		1211	D3020	4.80	KW	$946	2023
HU52	UNIT HEATER, ELECTRIC	INFRARED UH IRH-1		1405	D3020	4.80	KW	$946	2023
HU52	UNIT HEATER, ELECTRIC	HOT BOX EUH FOR BF		EXTERIOR	D3020	1	KW	$197	2023
CT06	COOLING TOWER (301-550 TONS)	CT-1	10143	EXTERIOR	D3030	270	TON	$115,629	2023
CT06	COOLING TOWER (301-550 TONS)	CT2A & 2B	10144	EXTERIOR	D3030	500	TON	$214,128	2023
FN19	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (20"-22" DIAMETER)	JOYN-EAF-008	10040	B909	D3040	1	EA	$7,711	2023
AH45	HUMIDIFIER, STEAM INJECTION	H-7		1909	D3040	1	EA	$6,925	2023
HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	SPENCE 2 INCH PRV		B909	D3040	1	EA	$5,376	2023
HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	SPENCE PRV		B909	D3040	1	EA	$5,376	2023

RECURRING NEEDS BY YEAR

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

HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	PRV		B909	D3040	1	EA	$5,376	2023
AH45	HUMIDIFIER, STEAM INJECTION	H-1		B901	D3040	1	EA	$10,002	2023
HX01	HEAT EXCHANGER - SHELL & TUBE WATER TO WATER (<=85 GPM)	HEX		B909	D3040	75	GPM	$19,296	2023
AH45	HUMIDIFIER, STEAM INJECTION	H-9		1904	D3040	1	EA	$6,925	2023
AH45	HUMIDIFIER, STEAM INJECTION	H-8		2904	D3040	1	EA	$6,925	2023
AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	AHU-E5		2900	D3040	10	HP	$98,239	2023
AH45	HUMIDIFIER, STEAM INJECTION	H-11		3907	D3040	1	EA	$6,925	2023
AH45	HUMIDIFIER, STEAM INJECTION	H-6		3904	D3040	1	EA	$6,925	2023
FN18	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (10"-18" DIAMETER)	EF-5, LOREN COOK		LOWER ROOF	D3040	1	EA	$4,357	2023
FN18	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (10"-18" DIAMETER)	EF-4, LOREN COOK		LOWER ROOF	D3040	1	EA	$4,357	2023
AH45	HUMIDIFIER, STEAM INJECTION	H-10		2907	D3040	1	EA	$6,925	2023
FN06	FAN - AXIAL, RETURN, 1.5" SP (15-20 HP) 32,000 CFM	EF-1, LOREN COOK		ROOF	D3040	20	HP	$43,307	2023
AH45	HUMIDIFIER, STEAM INJECTION	H-5		4903	D3040	1	EA	$6,925	2023
FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER	FACP	10028	B902	D4030	1	EA	$45,567	2023

RECURRING NEEDS BY YEAR

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

VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	CT-1 VSD		B901	D5010	20	HP	$9,030	2023
VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	CT-2A VSD		B901	D5010	20	HP	$9,030	2023
VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	CT-2B VSD		B901	D5010	20	HP	$9,030	2023
VF08	VARIABLE FREQUENCY DRIVE (30-40 HP)	RA-1 VSD		B901	D5010	30	HP	$10,480	2023
GN14	SWITCH - AUTO TRANSFER, 480 V (60-100 AMP)	JOYN-TSW-FPC1, FIRE ATS	10112	B909	D5090	70	AMP	$6,929	2023
2023 PROJECTED COMPONENT REPLACEMENT COST								**$2,027,925**	

2024									
COMP CODE	**COMPONENT DESCRIPTION**	**IDENTIFIER**	**CUSTOMER ID**	**LOCATION**	**UNI-FORMAT**	**QTY**	**UNITS**	**REPLACEMENT COST**	**YEAR**
TK33	EXPANSION TANK, DIAPHRAGM (250-550 GAL)	ICE / GLYCOL AIR SEPARATOR	10101	B901	D3030	250	GAL	$20,226	2024
AH08	AIR HANDLING UNIT - INDOOR (12-17 HP)	AHU-7		3900	D3040	15	HP	$128,247	2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-1 SF VSD		B904	D5010	2	HP	$1,737	2024
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	AHU-5 SF VSD		4903	D5010	5	HP	$3,938	2024

RECURRING NEEDS BY YEAR

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

VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-10 SF VSD		2907	D5010	3	HP	$2,606	2024
VF04	VARIABLE FREQUENCY DRIVE (10-15 HP)	AHU-7 SF VSD		3900	D5010	15	HP	$7,604	2024
VF04	VARIABLE FREQUENCY DRIVE (10-15 HP)	AHU-8 SF VSD		3903	D5010	15	HP	$7,604	2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-6 SF VSD		3904	D5010	3	HP	$2,606	2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-11 SF VSD		3907	D5010	3	HP	$2,606	2024
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	AHU-4 VSD		2911	D5010	5	HP	$3,938	2024
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	AHU-3 VSD		2911	D5010	5	HP	$3,938	2024
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	AHU-E6 VSD		2903	D5010	10	HP	$6,569	2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-8 SF VSD		2904	D5010	2	HP	$1,737	2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-9 SF VSD		1904	D5010	3	HP	$2,606	2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	AHU-7 SF VSD		1909	D5010	3	HP	$2,606	2024
LE03	LIGHTING - EXTERIOR, RECESSED (INC, CFL, LED)	RECESSED, OVERHANG		EXTERIOR	D5020	14	EA	$4,071	2024
LE03	LIGHTING - EXTERIOR, RECESSED (INC, CFL, LED)	RECESSED, WALK PATH		EXTERIOR	D5020	8	EA	$2,326	2024
					2024 PROJECTED COMPONENT REPLACEMENT COST			**$204,967**	

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
FN24	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (>50 HP)	JOYN-SAF-001, SA-1	10095	B901	D3040	100	HP	$190,479	2025
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FAN COIL FC-3		B901	D3040	1	HP	$11,505	2025
FN22	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (30-40 HP)	JOYN-RAF-001, RA-1	10094	B901	D3040	30	HP	$49,937	2025
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FAN COIL FC-1		B901	D3040	1	HP	$11,505	2025
FN19	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (20"-22" DIAMETER)	F-1		ROOF	D3040	1	EA	$8,181	2025
FN40	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (<=30 HP)	EF-1, GREENHECK	S#05A07558	ROOF	D3040	1	HP	$5,705	2025
FN19	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (20"-22" DIAMETER)	EF-2		ROOF	D3040	1	EA	$8,181	2025
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FAN COIL FC-2		B902	D3040	1	HP	$11,505	2025
PH07	PUMP - ELECTRIC (40 - 50 HP)	P-9, GLYCOL		B901	D3040	50	HP	$51,351	2025
PH01	PUMP - ELECTRIC (<=10 HP)	P-2A, GLYCOL		B901	D3040	5	HP	$10,506	2025
PH01	PUMP - ELECTRIC (<=10 HP)	P-2B, GLYCOL		B901	D3040	5	HP	$10,506	2025

RECURRING NEEDS BY YEAR

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

FA02	FIRE ALARM SYSTEM - DEVICES	DETECTORS, NOTIFIERS, PULL STATIONS		BUILDING WIDE	D4030	260,575	SF	$1,208,258	2025
FA02	FIRE ALARM SYSTEM - DEVICES	PREACTION SYSTEM DEVICES		MEDIA CENTER	D4030	10,000	SF	$48,453	2025
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	AHU-1E VSD		B906	D5010	10	HP	$6,766	2025
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	JOYN-AHU-002 VSD		B909	D5010	10	HP	$6,766	2025
				2025 PROJECTED COMPONENT REPLACEMENT COST				**$1,639,603**	

2026

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
BF02	BACKFLOW PREVENTER (1-2 INCHES)	MAKE-UP WATER BF, 2 INCH, WATTS		B901	D2020	1	EA	$3,077	2026
FP10	FIRE PUMP - ELECTRIC, 500 GPM, 3" ID (15-65 HP)	JOYN-PMP-FP1, FIRE PUMP	10088	B909	D4010	60	HP	$65,187	2026
FP09	FIRE PUMP - ELECTRIC, 250 GPM, 2" ID (<=15 HP)	JOCKEY PUMP		B909	D4010	1.50	HP	$5,259	2026
SE10	ELECTRICAL DISTRIBUTION NETWORK - LIBRARY	120/208 & 277/480 VOLT SERVICES		BUILDING WIDE	D5010	129,963	SF	$1,656,556	2026
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	AHU-E5 VSD		2900	D5010	10	HP	$6,969	2026

RECURRING NEEDS BY YEAR

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

MC02	MOTOR CONTROL CENTER VERTICAL SECTION, 600V (400-600A) W/STARTERS	MCC-1		B901	D5010	1	EA	$101,331	2026
VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	AHU-3 VSD		1905	D5010	20	HP	$9,868	2026
VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	AHU-E4 VSD		1908	D5010	20	HP	$9,868	2026
LE07	LIGHTING - EXTERIOR, WALL FLOOD (SV, MH, ID, LED)	SURFACE HID		B909 ENTRANCE	D5020	1	EA	$1,300	2026
SI07	CONCRETE VEHICULAR PAVING - JOINT MAINTENANCE	LOADING DOCK LOT		SOUTH ELEVATION	G2010	100	LF	$752	2026
SI06	ASPHALT VEHICULAR PAVING - SEALCOAT AND STRIPE	NORTH PARKING LOT		NORTH ELEVATION	G2020	604	SY	$2,871	2026
SI06	ASPHALT VEHICULAR PAVING - SEALCOAT AND STRIPE	SOUTH SERVICE DRIVE		SOUTH ELEVATION	G2020	969	SY	$4,606	2026
SI01	CONCRETE PEDESTRIAN PAVING - JOINT MAINTENANCE	CONCRETE PAVERS		NORTH, EAST ELEVATIONS	G2030	400	LF	$2,614	2026
					2026 PROJECTED COMPONENT REPLACEMENT COST			**$1,870,257**	

2027

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
DR19	DOOR, EXTERIOR, OVERHEAD ROLLING METAL, LOCK	SMALL COILING STEEL		SOUTH ELEVATION	B2030	80	SF	$10,638	2027

RECURRING NEEDS BY YEAR

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

DR19	DOOR, EXTERIOR, OVERHEAD ROLLING METAL, LOCK	LARGE COILING STEEL		SOUTH ELEVATION	B2030	150	SF	$19,946	2027
RR07	ROOF - BITUMINOUS, 2-PLY, APPLIED MODIFIED BITUMEN, TORCH	MOD BIT		LOWER ROOF	B3010	45,619	SF	$362,900	2027
RR20	ROOF GUTTER AND LEADER - ALUMINUM OR GALVANIZED, COATED			LOWER ROOF	B3010	20	LF	$460	2027
IW03	WALL FINISH - TILE, CERAMIC / STONE, STANDARD	9X9 GRAY TILE		ALL MULTIPLE USER RESTROOMS	C3010	2,380	SF	$123,751	2027
IF06	FLOORING - TILE, CERAMIC / STONE / QUARRY STANDARD	12X12 TILE		1105	C3020	850	SF	$36,623	2027
IF06	FLOORING - TILE, CERAMIC / STONE / QUARRY STANDARD	9X9 GRAY TILE		ALL RESTROOMS	C3020	20,260	SF	$872,931	2027
IC01	CEILING FINISH - SUSPENDED ACOUSTICAL TILE, STANDARD	6 INCH STRIP 2X4		3406, 4002, 2064, 2020, 1100, B008	C3030	31,990	SF	$437,415	2027
VT01	ELEVATOR MODERNIZATION - TRACTION - LOW RISE	JOYN-ELV-001, DUMBWAITER	10051	4002	D1010	1	EA	$49,802	2027
WH29	WATER HEATER - SHELL & TUBE (105-400 GPM)	DWH-1		B901	D2020	140	GPM	$80,984	2027
PS10	SUPPLY PIPING SYSTEM - LIBRARY	CAST IRON		BUILDING WIDE	D2020	129,963	SF	$663,801	2027
PD10	DRAIN PIPING SYSTEM - LIBRARY	COPPER		BUILDING WIDE	D2030	129,963	SF	$1,000,536	2027
PP03	SEWAGE LIFT STATION	DUPLEX SEWAGE PUMPS		B901	D2030	1	HP	$5,454	2027
HU52	UNIT HEATER, ELECTRIC	EUH		4903	D3020	3	KW	$666	2027

RECURRING NEEDS BY YEAR

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

HU52	UNIT HEATER, ELECTRIC	MARKEL CEILING UH		1080	D3020	5	KW	$1,110	2027
HU52	UNIT HEATER, ELECTRIC	MARKEL CEILING UH		1080	D3020	5	KW	$1,110	2027
CH02	CHILLER - WATER-COOLED CENTRIFUGAL OR SCREW (150-350 TONS)	JOYN-WCU-CH1, C-1	10030	B901	D3030	215	TON	$436,265	2027
CH03	CHILLER - WATER-COOLED CENTRIFUGAL OR SCREW (350-550 TONS)	JOYN-WCU-CH2, C-2	10031	B901	D3030	450	TON	$846,579	2027
TK33	EXPANSION TANK, DIAPHRAGM (250-550 GAL)	HHW AIR SEPARATOR		B909	D3030	150	GAL	$13,261	2027
AH04	AIR HANDLING UNIT - INDOOR (2.75-3.25 HP)	AHU-7		1909	D3040	3	HP	$33,368	2027
HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	SPENCE, 3/4 INCH PRV		B901	D3040	1	EA	$4,538	2027
HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	SPIRAX, 1 1/4 INCH PRV		B901	D3040	1	EA	$5,144	2027
HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	SPIRAX, 2 INCH PRV		B901	D3040	1	EA	$6,051	2027
PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	P-13, DUPLEX		B901	D3040	4	HP	$40,306	2027
AH04	AIR HANDLING UNIT - INDOOR (2.75-3.25 HP)	AHU-9		1904	D3040	3	HP	$33,368	2027
AH05	AIR HANDLING UNIT - INDOOR (3.25-6 HP)	AHU-3		2911	D3040	5	HP	$60,179	2027
AH05	AIR HANDLING UNIT - INDOOR (3.25-6 HP)	AHU-4		2911	D3040	5	HP	$60,179	2027
AH08	AIR HANDLING UNIT - INDOOR (12-17 HP)	AHU-2		2911	D3040	15	HP	$140,139	2027

RECURRING NEEDS BY YEAR

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

AH04	AIR HANDLING UNIT - INDOOR (2.75-3.25 HP)	AHU-11		3907	D3040	3	HP	$33,368	2027
AH04	AIR HANDLING UNIT - INDOOR (2.75-3.25 HP)	AHU-6		3904	D3040	3	HP	$33,368	2027
AH04	AIR HANDLING UNIT - INDOOR (2.75-3.25 HP)	AHU-10		2907	D3040	3	HP	$33,368	2027
AH05	AIR HANDLING UNIT - INDOOR (3.25-6 HP)	AHU-5		4903	D3040	5	HP	$60,179	2027
AH03	AIR HANDLING UNIT - INDOOR (1.75-2.75 HP)	AHU-1		B904	D3040	2	HP	$27,165	2027
PH03	PUMP - ELECTRIC (15 - 20 HP)	P-7, CHW		B901	D3040	20	HP	$28,913	2027
AC02	AIR COMPRESSOR SYSTEM - HVAC CONTROLS (6-10 TOTAL HP)	AIR COMP		B901	D3060	10	HP	$27,119	2027
AD02	AIR DRYER - REFRIGERATED - 11-25 CFM	AIR DRYER		B901	D3060	1	EA	$2,487	2027
FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER	PREACTION CONTROLLER		B901	D4030	1	EA	$12,821	2027
TX30	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (225-300 KVA)	JOYN-TRA-001, DTB4	10106	B902	D5010	225	KVA	$30,344	2027
TX28	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (112.5-150 KVA)	JOYN-TRA-003, DTTV	10107	B902	D5010	113	KVA	$22,292	2027
TX25	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (30-50 KVA)	JOYN-TRA-004	10108	B902	D5010	30	KVA	$7,963	2027
TX27	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (75-112.5 KVA)	TSTB TRANSF		B902	D5010	75	KVA	$14,795	2027
TX26	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (50-75 KVA)	JOYN-TRA-005	10105	3905	D5010	75	KVA	$16,469	2027

RECURRING NEEDS BY YEAR

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

TX27	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (75-112.5 KVA)	JOYN-TRA-007, DT22	10104	2911	D5010	113	KVA	$22,292	2027
TX27	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (75-112.5 KVA)	JOYN-TRA-006, DT13	10103	1912	D5010	113	KVA	$22,292	2027
VF06	VARIABLE FREQUENCY DRIVE (20-25 HP)	P-10 VSD		B901	D5010	25	HP	$12,018	2027
VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	SA-1 VSD		B901	D5010	100	HP	$34,980	2027
TX30	TRANSFORMER - DRY-TYPE, 3PH, 480V SECONDARY (225-300 KVA)	JOYN-TRA-002	10109	B909	D5010	225	KVA	$30,344	2027
LE07	LIGHTING - EXTERIOR, WALL FLOOD (SV, MH, ID, LED)	SURFACE HID		INNER COURTYARD	D5020	3	EA	$4,018	2027
					2027 PROJECTED COMPONENT REPLACEMENT COST			**$5,824,098**	

2028

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
TK33	EXPANSION TANK, DIAPHRAGM (250-550 GAL)	CHW AIR SEPARATOR		B901	D3030	250	GAL	$22,764	2028
AH09	AIR HANDLING UNIT - INDOOR (17-23 HP)	AHU-3		1905	D3040	20	HP	$181,794	2028
AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	AHU-E6		2903	D3040	10	HP	$113,886	2028

RECURRING NEEDS BY YEAR

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

HV10	HVAC DISTRIBUTION NETWORKS - LIBRARY	DUCT AND PIPE		BUILDING WIDE	D3040	129,963	SF	$5,801,370	2028
					2028 PROJECTED COMPONENT REPLACEMENT COST			**$6,119,814**	

2029

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	JOYN-AHU-003, AHU-1E	10013	B906	D3040	10	HP	$117,302	2029
VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	P-7 VSD		B901	D5010	20	HP	$10,783	2029
LI10	LIGHTING SYSTEM, INTERIOR - LIBRARY	LED, T12		BUILDING WIDE	D5020	275,575	SF	$1,971,744	2029
				2029 PROJECTED COMPONENT REPLACEMENT COST				**$2,099,829**	

2030

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
HD01	HOOD, FUME	FUME HOOD	111231	1300	D3040	6	LF	$21,065	2030

RECURRING NEEDS BY YEAR

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

FN19	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (20"-22" DIAMETER)	DAYTON	S#05B01871	ROOF	D3040	1	EA	$9,484	2030
HX02	HEAT EXCHANGER - SHELL & TUBE WATER TO WATER (85-255 GPM)	B&G HEX, SKID	S#94Z79875-01	B901	D3040	100	GPM	$33,075	2030
PH01	PUMP - ELECTRIC (<=10 HP)	P-4, CHW		B901	D3040	2	HP	$4,872	2030
FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER	PREACTION CONTROLLER		3407	D4030	1	EA	$14,010	2030
LE07	LIGHTING - EXTERIOR, WALL FLOOD (SV, MH, ID, LED)	SURFACE LED		EXTERIOR	D5020	16	EA	$23,415	2030
LE04	LIGHTING - EXTERIOR, STANCHION LUMINAIRE, 12-FOOT	POLE, DECORATIVE		EXTERIOR	D5020	4	EA	$12,925	2030
					2030 PROJECTED COMPONENT REPLACEMENT COST			**$118,845**	

2031									
COMP CODE	**COMPONENT DESCRIPTION**	**IDENTIFIER**	**CUSTOMER ID**	**LOCATION**	**UNI-FORMAT**	**QTY**	**UNITS**	**REPLACEMENT COST**	**YEAR**
IW01	WALL FINISH - PAINT, STANDARD	STD PAINT		MOST AREAS	C3010	223,490	SF	$762,744	2031
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	LOOM STANDARD		4002, 3052, 3085, 2600, 1200, 1426, 1903	C3020	19,190	SF	$358,343	2031

RECURRING NEEDS BY YEAR

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

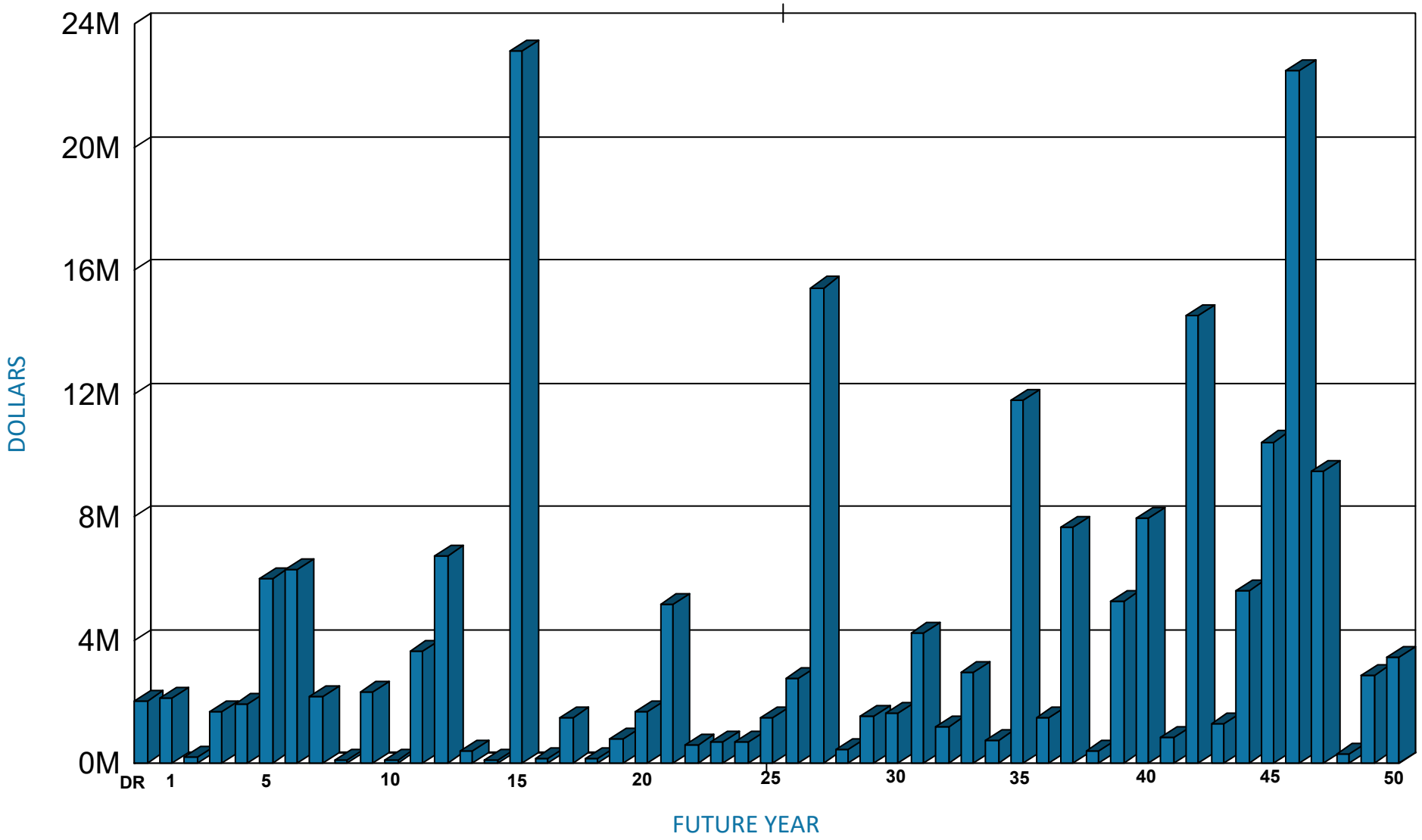
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	CARPET TILE		2064, 2043, 2039, 2043, 1021, 1008, 1504	C3020	12,790	SF	$238,833	2031
FX15	PLUMBING FIXTURE - EMERGENCY EYEWASH	EYEWASH, DRENCH		3405	D2010	1	EA	$7,145	2031
PH01	PUMP - ELECTRIC (<=10 HP)	BELL AND GOSSETT, HHW		B909	D3040	7.50	HP	$18,817	2031
AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	JOYN-AHU-002	10012	B909	D3040	10	HP	$124,446	2031
AH08	AIR HANDLING UNIT - INDOOR (12-17 HP)	001-AHU-006 / AHU-E8		3903	D3040	15	HP	$157,728	2031
BA33	HVAC CONTROLS - FIELD PANELS/OPS SOFTWARE - LIBRARY	PANELS AND SOFTWARE		BUILDING WIDE	D3060	280,575	SF	$360,878	2031
BA56	HVAC CONTROLS - MAJOR INSTRUMENTATION - LIBRARY	MAJOR EQUIPMENT		BUILDING WIDE	D3060	280,575	SF	$187,646	2031
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	P-6 VSD		B901	D5010	5	HP	$4,844	2031
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	P-2A VSD		B901	D5010	4	HP	$3,875	2031
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	P-2B VSD		B901	D5010	4	HP	$3,875	2031
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	P-5 VSD		B901	D5010	7.50	HP	$6,059	2031
VF05	VARIABLE FREQUENCY DRIVE (15-20 HP)	P-1 VSD		B901	D5010	20	HP	$11,439	2031
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	P-8 VSD		B901	D5010	10	HP	$8,079	2031
					2031 PROJECTED COMPONENT REPLACEMENT COST			**$2,254,751**	

RECURRING NEEDS BY YEAR

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

2032									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
FX06	PLUMBING FIXTURE - SINK, SERVICE/LAUNDRY/UTILITY	WALL HUNG STEEL		3908	D2010	1	EA	$2,816	2032
HU53	UNIT HEATER, STEAM/HYDRONIC STD (TO 250 MBH)	HUH		2911	D3020	1	EA	$1,756	2032
PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	B&G DUPLEX CRU		B909	D3040	3	HP	$35,044	2032
RV01	SAFETY RELIEF VALVE	KUNKLE RELIEF VALVE		B901	D3040	1	EA	$29,951	2032
AH03	AIR HANDLING UNIT - INDOOR (1.75-2.75 HP)	AHU-8		2904	D3040	2	HP	$31,492	2032
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	VECTRUE CFW-11		B909	D5010	7.50	HP	$6,241	2032
						2032 PROJECTED COMPONENT REPLACEMENT COST		$107,300	

RECURRING COMPONENT EXPENDITURE PROJECTIONS

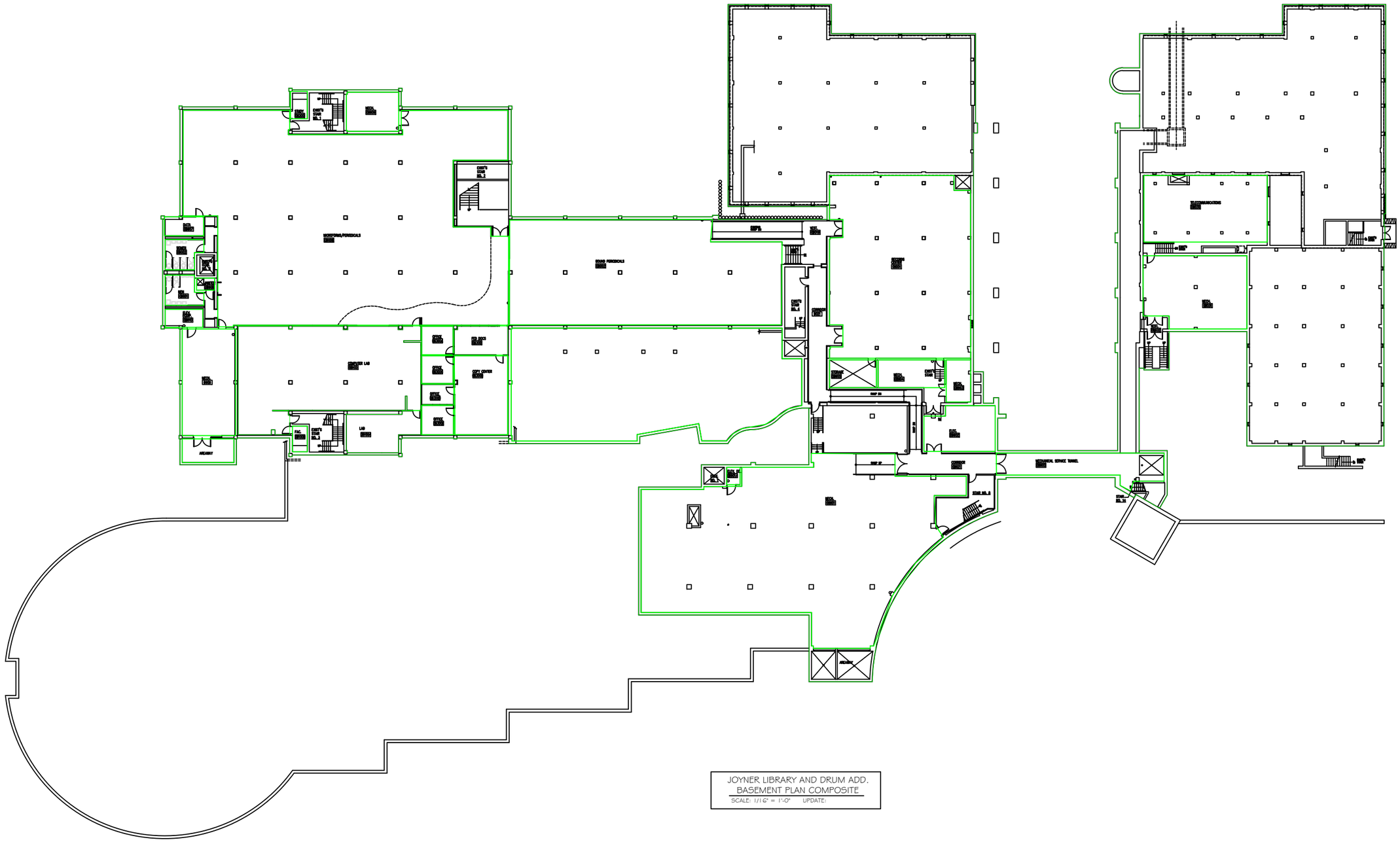


Average Annual Renewal Cost per SF $6.61

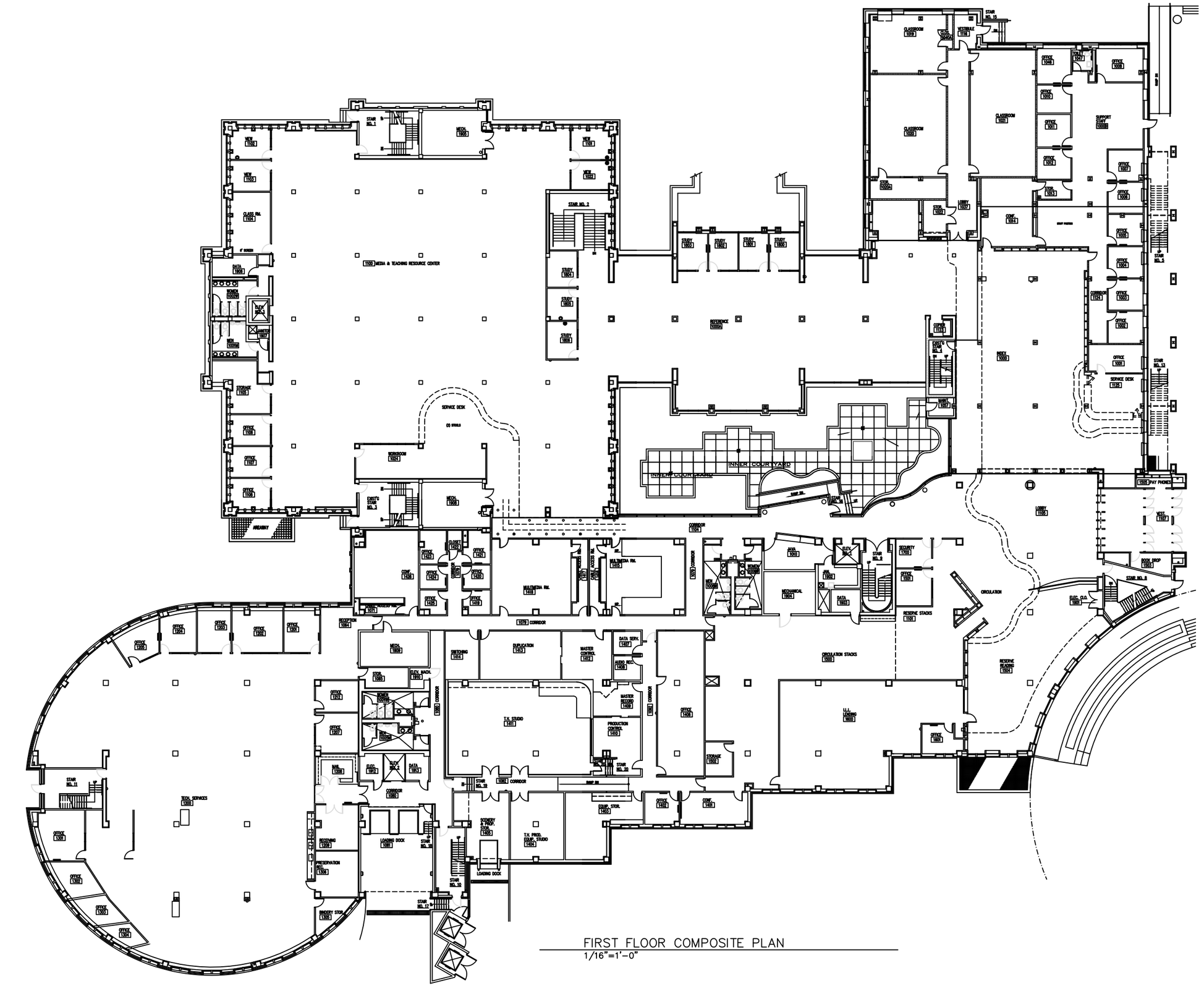
FACILITY CONDITION ASSESSMENT

SECTION 5

DRAWINGS

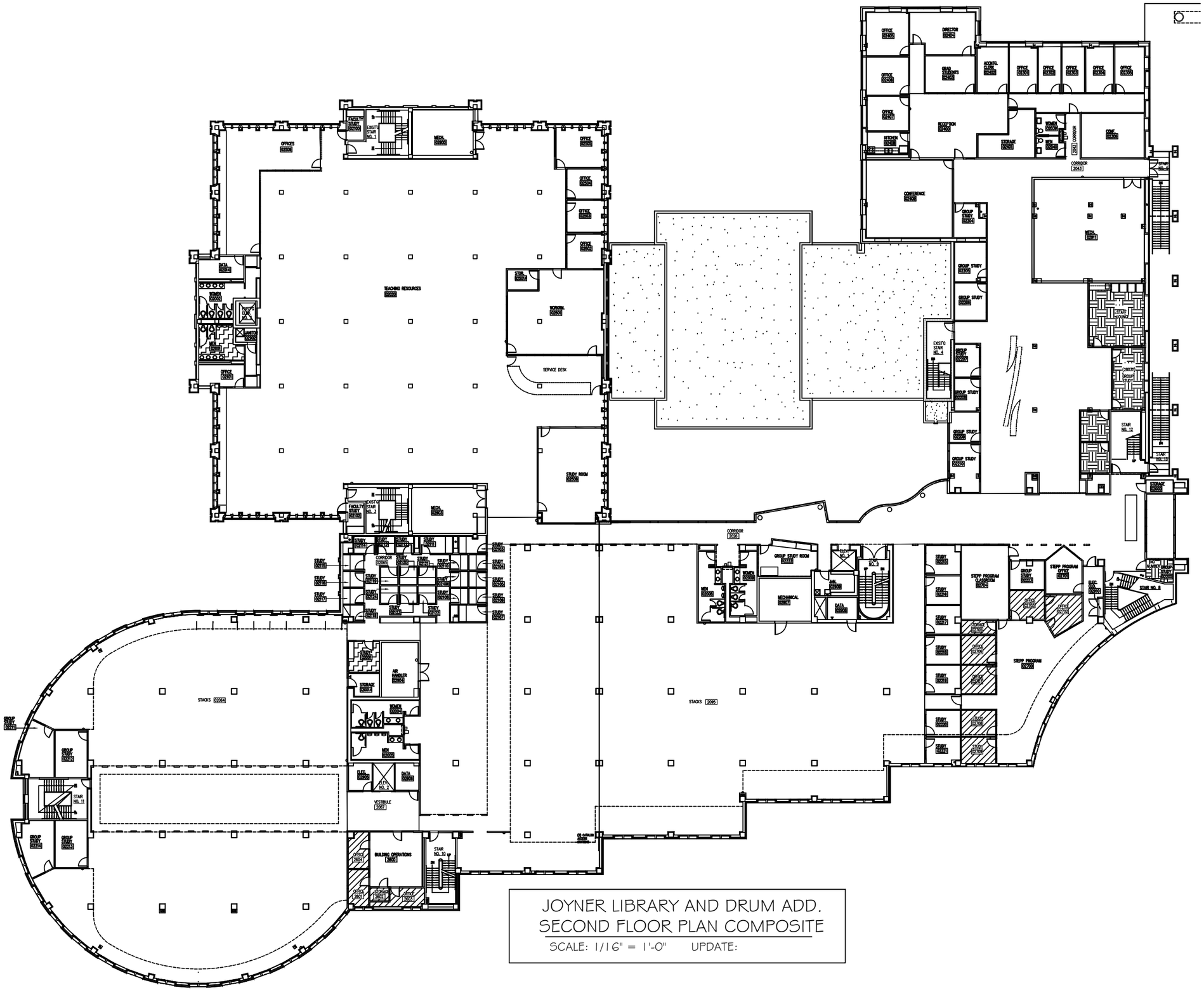


JOYNER LIBRARY AND DRUM ADD.
BASEMENT PLAN COMPOSITE
SCALE: 1/16" = 1'-0" UPDATE:



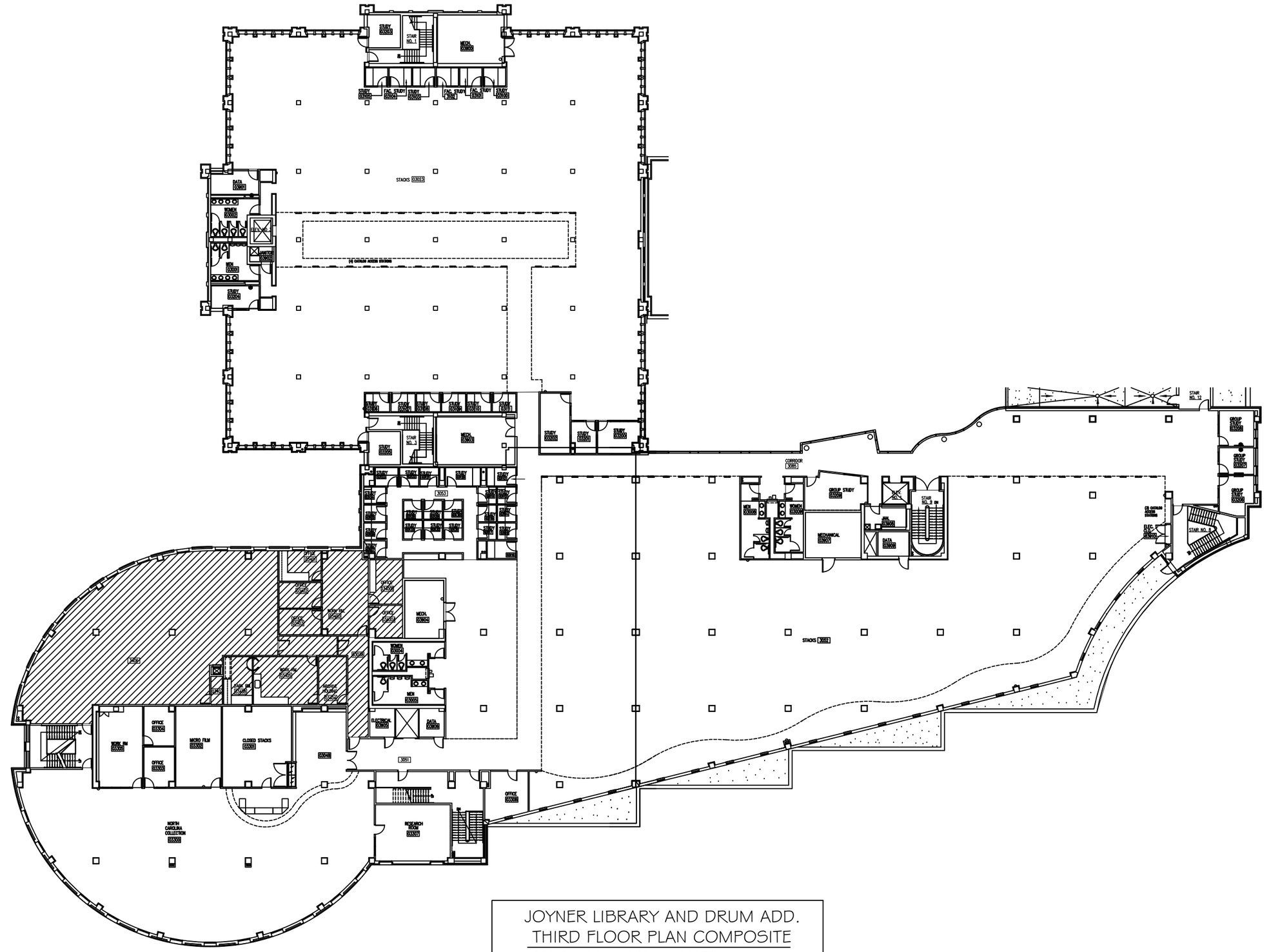
FIRST FLOOR COMPOSITE PLAN

1/16"=1'-0"



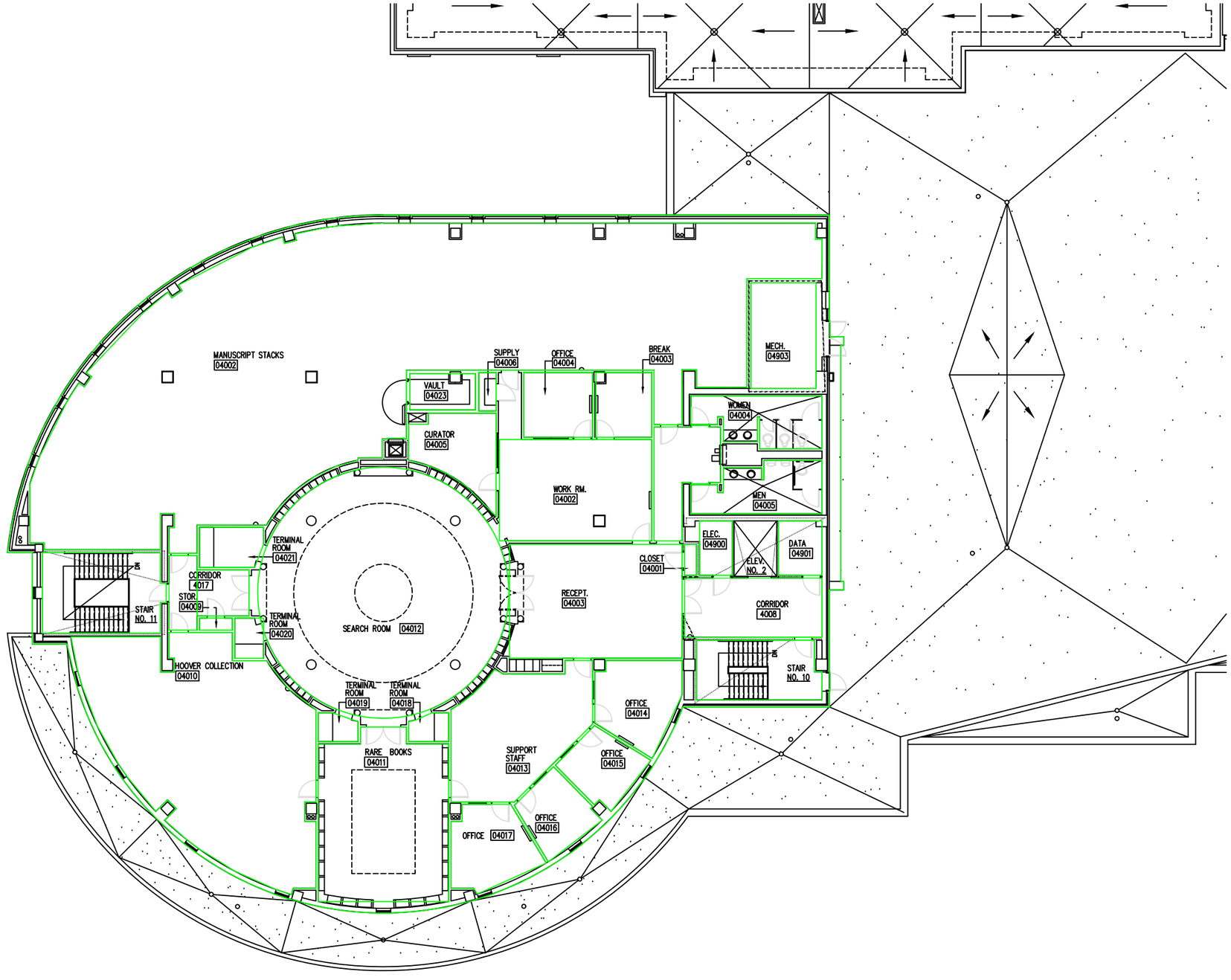
JOYNER LIBRARY AND DRUM ADD.
SECOND FLOOR PLAN COMPOSITE

SCALE: 1/16" = 1'-0" UPDATE:



JOYNER LIBRARY AND DRUM ADD.
THIRD FLOOR PLAN COMPOSITE

SCALE: 1/16" = 1'-0" UPDATE:



JOYNER LIBRARY AND DRUM ADD.
FOURTH FLOOR PLAN COMPOSITE

SCALE: 1/16" = 1'-0" UPDATE:

SECTION 6

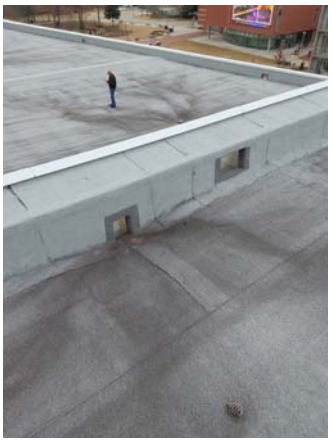
PHOTOGRAPHS

001001a 1/12/2023
Roof skylight with scupper and downspout detail
Rotunda roof

001001e 1/12/2023
Rooftop exhaust fan
Roof

001002a 1/12/2023
Glass skylight
Rotunda roof

001002e 1/12/2023
Utility set fan
Roof

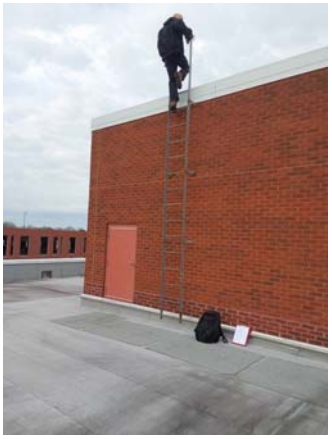


001003a 1/12/2023
Downspout and overflow scuppers
Rotunda roof

001003e 1/12/2023
Inline fan EF-1
Roof

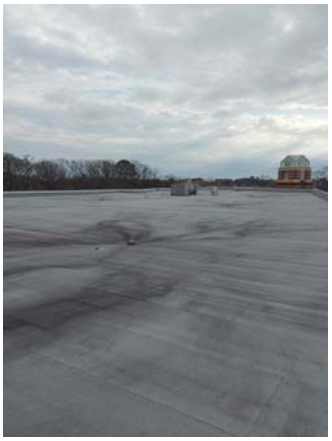
001004a 1/12/2023
Rotunda roof with missing fall protection
Rotunda roof

001004e 1/12/2023
Air handler AHU-5
Mechanical 4903



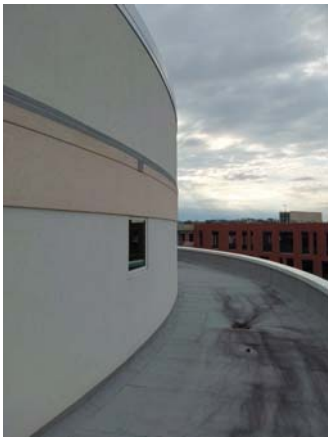
001005a 1/12/2023
Roof ladder with missing fall protection
Rotunda roof

001005e 1/12/2023
Steam injected humidification for AHU-5
Mechanical 4903



001006a 10/12/2023
Lower portion of south roof
Rotunda roof

001006e 1/12/2023
Modernized electronic zone controller and VSD for AHU-5
Mechanical 4903



001007a 1/12/2023
Rotunda EIFS wall
Rotunda roof

001007e 1/12/2023
Modernized HVAC system controllers and software
Mechanical 4903

001008a 1/12/2023
Roof hatch
Northwest roof

001008e 1/12/2023
Pendant style lighting for mechanical, electrical, data, etc.
Data 4901

001009a 1/12/2023
Roof showing parapet
Northwest roof

001009e 1/12/2023
Typical light switch
Data 4901

001010a 1/12/2023

Lower portion of roof

Middle roof

001010e 1/12/2023

Standard secondary electrical system outlet

Data 4901

001011a 1/12/2023

East roof overall

Northeast roof

001011e 1/12/2023

Circa 1997 electrical panelboard

Electrical 4900

001012a 1/12/2023

East roof smoke hatches

Northeast roof

001012e 1/12/2023

Circa 1997 lighting contactors

Electrical 4900

001013a 1/12/2023
Stair tower with noncompliant guardrail
Stair 10

001013e 1/12/2023
Recessed lighting and sprinkler head
Corridor 4008

001014a 1/12/2023
Door control boxes
Room 4900

001014e 1/12/2023
Fire alarm system notifier circa 1997
Corridor 4008

001015a 1/12/2023
Elevator control panel
Elevator 2

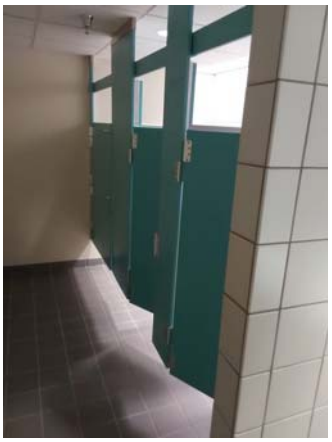
001015e 1/12/2023
Fire alarm pull station
Corridor 4008

001016a 1/12/2023
Men's restroom with fixtures and partition shown
Room 4005

001016e 1/12/2023
Fire hose connection point
Stair 1911S (10)

001017a 1/12/2023
Counter lavatories
Room 4005

001017e 1/12/2023
Fire sprinkler head
Recept. 4003

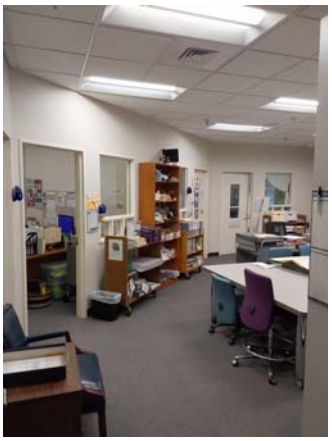


001018a 1/12/2023
Restroom partitions
Room 4004

001018e 1/12/2023
Typical 2x4 lighting for offices, work spaces, and stacks
Workroom 4002

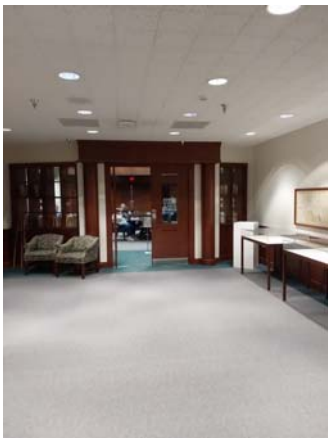
001019a 1/12/2023
Counter lavatories
Room 4004

001019e 1/12/2023
Two-stop dumbwaiter
Workroom 4002



001020a 1/12/2023
Reception offices with finishes shown
Room 4013

001020e 1/12/2023
Modernized HVAC system thermostat/controller
Workroom 4002

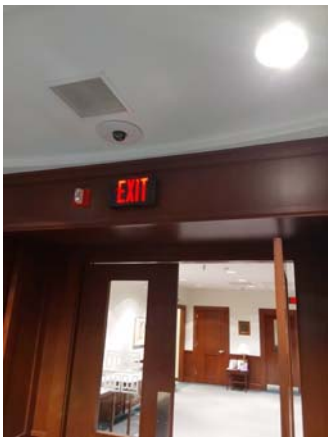


001021a 1/12/2023
Reception area with finishes shown
Room 4003

001021e 1/12/2023
Hydraulic elevator 2
Elevator 2

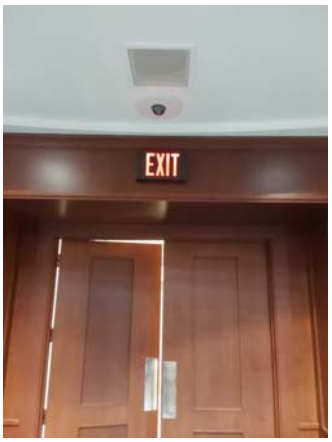
001022a 1/12/2023
Rotunda with finishes shown
Room 4012

001022e 1/12/2023
Hydraulic elevator 2 lighting
Elevator 2



001023a 1/12/2023
Rotunda exit signage at lobby
Room 4012

001023e 1/12/2023
Circa 1997 transformer and electrical panelboards
Electrical 3905



001024a 1/12/2023
Rotunda exit signage at stacks
Room 4012

001024e 1/12/2023
Overview of area systems
North Carolina Collection 3300

001025a 1/12/2023
Rare book collection room with finishes show
Room 4011

001025e 1/12/2023
Decorative, track type lighting
North Carolina Collection 3300

001026a 1/12/2023
Collection room with stacks shown
Room 4010

001026e 1/12/2023
Circa 1997 2x2 surface mounted lighting in offices
Office 3308

001027a 1/12/2023
Workroom with finishes shown
Room 4002

001027e 1/12/2023
Overview of stack systems
Stacks 3052

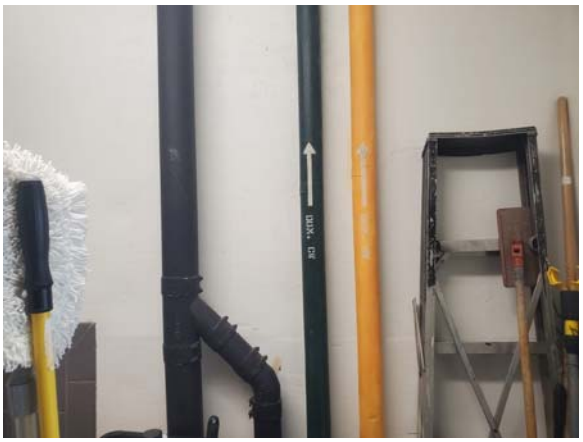
001028a 1/12/2023
Manuscript stacks with finishes shown
Room 4002

001028e 1/12/2023
Overview of corridor systems
Corridor 3085

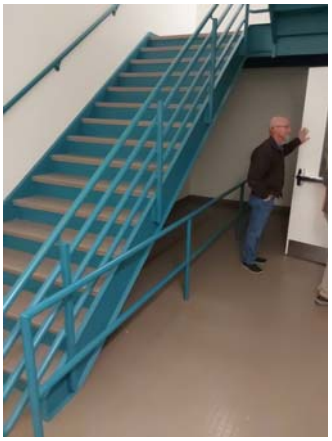
001029a 1/12/2023
Book lift
Room 4002

001029e 1/12/2023
Hydraulic elevator 1
Elevator 1

001030a 1/12/2023
Typical fire stair door
Room 4002



001030e 1/12/2023
Black steel waste pipe and insulated copper DW pipe
Custodial 3908



001031a 1/12/2023

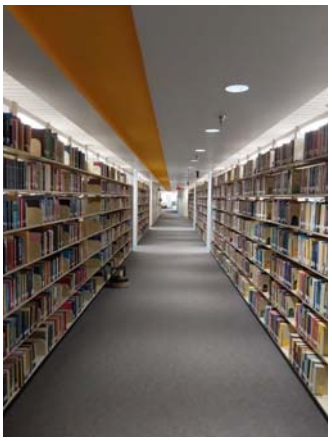
Cane rail

Stair 2

001031e 1/12/2023

Stainless-steel exhaust hood

Lab 3405



001032a 1/12/2023

Stacks with finishes shown

Room 3052

001032e 1/12/2023

Emergency eyewash/drench hose plumbing fixture

Lab 3405

001033a 1/12/2023

Fire protection access control box

Room 3907

001033e 1/12/2023

Preaction fire suppression system for stacks

Mechanical 3407

001034a 1/12/2023
Missing fire blocking
Room 3906

001034e 1/12/2023
Circa 1997 air handler AHU-6
Mechanical 3904

001035a 1/12/2023
Exit doors
Room 3048

001035e 1/12/2023
Low pressure steam pipe for humidification
Mechanical 3904

001036a 1/12/2023
Noncompliant circulation desk
Room 3048

001036e 1/12/2023
Chilled and heating water pipe
Mechanical 3904

001037a 1/12/2023
Stacks with finishes shown
Room 3048

001037e 1/12/2023
Zoned, metal ductwork
Mechanical 3904

001038a 1/12/2023
Laminate casework with sink
Room 3305

001038e 1/12/2023
Circa 1976 air handler AHU-8 that has been modernized
Mechanical 3903

001039a 1/12/2023
Conservation lab with finishes shown
Room 3405

001039e 1/12/2023
Updated controllers for AHU-8
Mechanical 3903

001040a 1/12/2023
Closed stacks with finishes shown
Room 3406

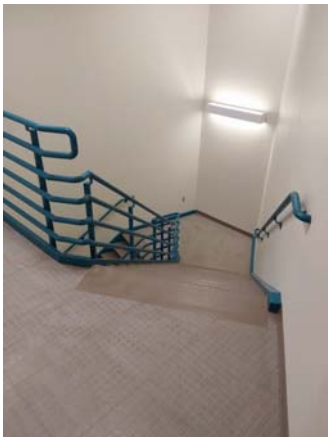
001040e 1/12/2023
Updated motor and shaft assembly on AHU-8
Mechanical 3903

001041a 1/12/2023
Book lift and finishes
Room 3406

001041e 1/12/2023
Updated controls for hydronic distribution
Mechanical 3903

001042a 1/12/2023
Study areas
Room 3207

001042e 1/12/2023
Circa 1976 secondary electric system panelboard
Mechanical 3903

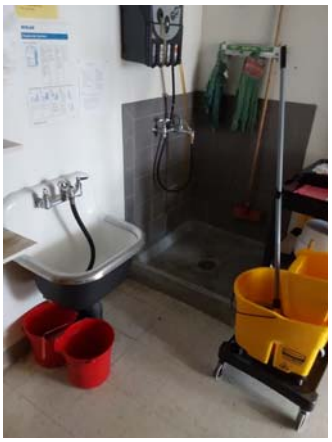


001043a 1/12/2023
Stair tower with noncompliant guardrail
Stair 8

001043e 1/12/2023
Overview of stack systems and lighting
Stacks 3023

001044a 1/12/2023
Magnetic hold open fire doors
Stair 9

001044e 1/12/2023
Overview of stack systems and lighting
Stacks 3023



001045a 1/12/2023
Two mop sinks and ACM vinyl tile
Room 3908

001045e 1/12/2023
Moderate corrosion on 1976 vintage air handler
Mechanical 3900

001046a 1/12/2023
Dual-height water fountain
Room 3008

001046e 1/12/2023
2x4 lighting and fire sprinkler head
Group Study 2213

001047a 1/12/2023
Urinals and toilet partitions
Room 3008

001047e 1/12/2023
Overview of mechanical room and equipment
Mechanical 2911

001048a 1/12/2023
Curtainwall
Room 3085

001048e 1/12/2023
Overview of mechanical room and equipment
Mechanical 2911

001049a 1/12/2023
Wall crack at structural joint
Room 3085

001049e 1/12/2023
Overview of mechanical room and equipment
Mechanical 2911

001050a 1/12/2023
Older, single-pane windows
Room 3023

001050e 1/12/2023
Variable speed drive for AHU-3
Mechanical 2911

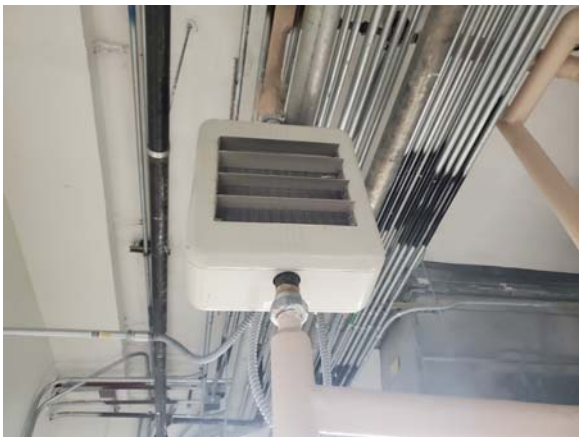
001051a 1/12/2023
Stacks with finishes shown
Room 3023

001051e 1/12/2023
Variable volume terminal unit with modernized controls
Mechanical 2911

001052a 1/12/2023
Urinals and toilet partitions
Room 3001

001052e 1/12/2023
208/120 volt, 400 amp panelboard LP22
Mechanical 2911

001053a 1/12/2023
Wall-hung lavatories and ceramic wall and floor tile
Room 3001



001053e 1/12/2023
Hydronic unit heater
Mechanical 2911

001054a 1/12/2023
Stair with handrail and standpipe
Stair 3

001054e 1/12/2023
AHU-5 with original motor and shaft
Mechanical 2900

001055a 1/12/2023
Typical study room door with double vision glass
Room 3110

001055e 1/12/2023
Aged secondary electric panelboard
Teaching resources 2020

001056a 1/12/2023
Rated stack room doors with safety glass
Room 3115

001056e 1/12/2023
Ceiling mounted electric unit heaters
Corridor 1060

001057a 1/12/2023
Single water fountain with bottle filler
Room 3005

001057e 1/12/2023
Recessed lighting and heat/smoke detector
Tech Services 1300

001058a 1/12/2023

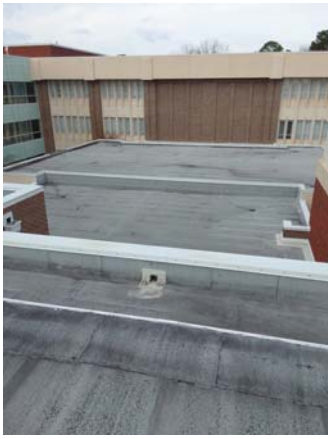
Modified bitumen with parapet wall

Northeast roof

001058e 1/12/2023

Fume hood

Tech Services 1300



001059a 1/12/2023

Modified bitumen roof

Lower middle roof

001059e 1/12/2023

Infrared unit heaters and inline exhaust fans

Loading Dock 1211

001060a 1/12/2023

Missing fire blocking

Room 2906

001060e 1/12/2023

Hydraulic dock levelers

Loading Dock 1211

001061a 1/12/2023
Door control box
Room 2905

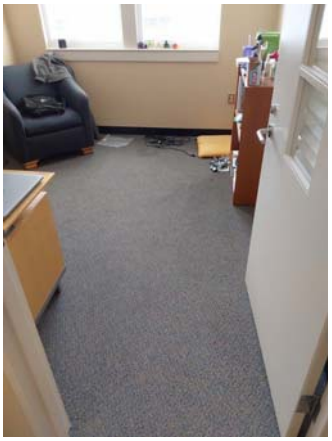
001061e 1/12/2023
Overview of corridor systems
Corridor 1092

001062a 1/12/2023
Stacks with finishes shown
Room 2064

001062e 1/12/2023
Hydraulic elevator machine
Elevator Machine 1910

001063a 1/12/2023
General stack finishes
Room 2064

001063e 1/12/2023
Original controls for elevator machine
Elevator Machine 1910

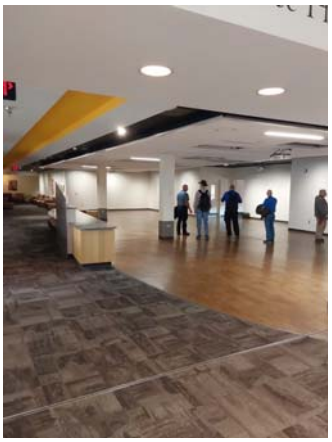


001064a 1/12/2023
Worn carpet and office areas
Room 2600

001064e 1/12/2023
Surface mounted HID lighting
Interior courtyard

001065a 1/12/2023
Door control box
Room 2908

001065e 1/12/2023
Fire alarm system annunciator
Lobby 1105



001066a 1/12/2023
Lobby area with finishes shown
Room 2043

001066e 1/12/2023
Aged and recessed lobby lighting
Lobby 1105

001067a 1/12/2023
Laminate cabinetry with sink
Room 2803

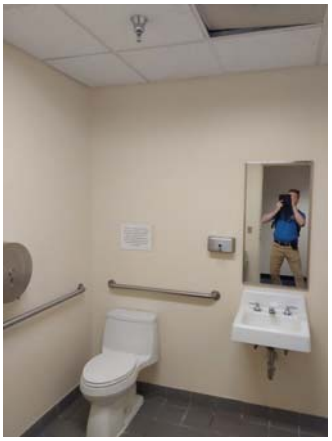
001067e 1/12/2023
Renovated space with updated lighting
Office suite 1001

001068a 1/12/2023
Break room casework with sink
Room 2408

001068e 1/12/2023
Decorative accent lighting
Suite 1015

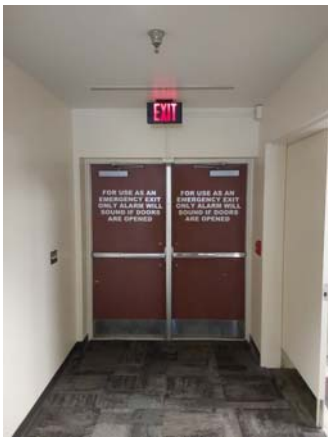
001069a 1/12/2023
Single height water fountain
Room 2039

001069e 1/12/2023
Perimeter hydronic heating element
Suite 1015



001070a 1/12/2023
Single-use restroom
Room 2039

001070e 1/12/2023
Ductless split system condenser unit
Mechanical B909

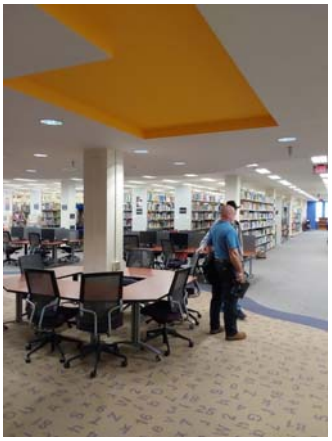


001071a 1/12/2023
Exit doors with panic hardware and exit signage
Room 2043

001071e 1/12/2023
Aged through wall exhaust fan
Mechanical B909

001072a 1/12/2023
Circulation desks with solid surface counter
Room 2020

001072e 1/12/2023
225-kVA dry-type transformer
Mechanical B909



001073a 1/12/2023
Stacks with finishes shown
Room 2020

001073e 1/12/2023
Electric fire pump
Mechanical B909

001074a 1/12/2023
Door with noncompliant knob hardware
Room 2902

001074e 1/12/2023
Corrosion on fire pump frame and impeller
Mechanical B909

001075a 1/12/2023
Mop sink
Room 2902

001075e 1/12/2023
Fire pump controller and transfer switch
Mechanical B909

001076a 1/12/2023
Corridor without exit signage
Room 2118

001076e 1/12/2023
Aged 2,000-amp switchboard SSB
Mechanical B909

001077a 1/12/2023
Overhead coiling door
Room 1080

001077e 1/12/2023
Steam pressure reducing valve
Mechanical B909

001078a 1/12/2023
Missing fire blocking
Room 1911

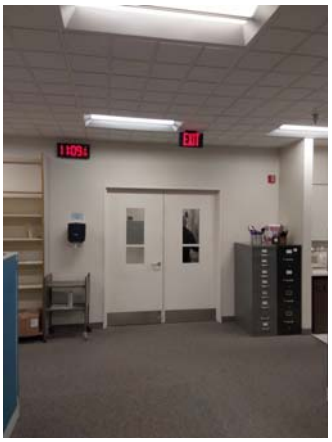
001078e 1/12/2023
Base-mounted hot water pump with new motor
Mechanical B909

001079a 1/12/2023
Fire doors with noncompliant hardware
Room 1080

001079e 1/12/2023
Circa 2012 steam-to-water heat exchanger
Mechanical B909

001080a 1/12/2023
Casework with three sinks
Room 1200

001080e 1/12/2023
Duplex condensate return unit
Mechanical B909



001081a 1/12/2023
Exit door with no panic hardware
Room 1200

001081e 1/12/2023
Hot water system air separator
Mechanical B909

001082a 1/12/2023

Pass through window

Room 1080

001082e 1/12/2023

Aged shell-and-tube heat exchanger

Mechanical B909

001083a 1/12/2023

Ramp without handrails

Room 1092

001083e 1/12/2023

Duplex sump pump system

Mechanical B909

001084a 1/12/2023

Corridor with full height doors

Room 1092

001084e 1/12/2023

Original cold water header station with damaged insulation

Mechanical B909

001085a 1/12/2023

TV studio

Room 1411

001085e 1/12/2023

Original steam and condensate pipe

Mechanical B909

001086a 1/12/2023

TV studio acoustic walls

Room 1411

001086e 1/12/2023

Preaction fire suppression system for Media Center

Mechanical B901

001087a 1/12/2023

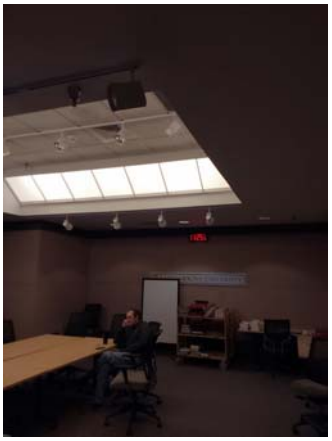
Single water fountain and bottle filler

Room 1060

001087e 1/12/2023

Fan coil FC-3

Mechanical B901

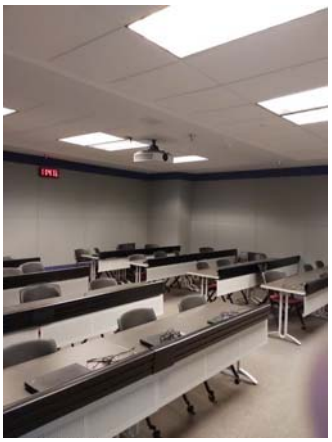


001088a 1/12/2023
Interactive TV room with finishes shown
Room 1426

001088e 1/12/2023
Glycol chilled water system piping
Mechanical B901

001089a 1/12/2023
Single height water fountain with bottle filler
Room 1104

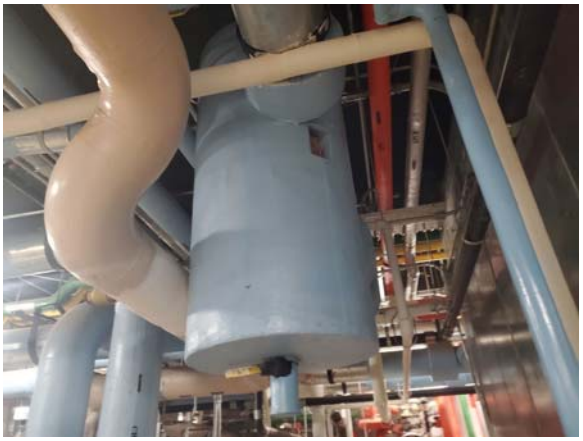
001089e 1/12/2023
Ice storage tanks
Mechanical B901



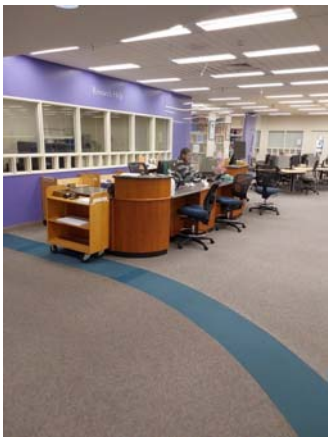
001090a 1/12/2023
Instruction room with AV setup
Room 1415

001090e 1/12/2023
Free cooling heat exchanger HE-1
Mechanical B901

001091a 1/12/2023
Media center with finishes show
Room 1100

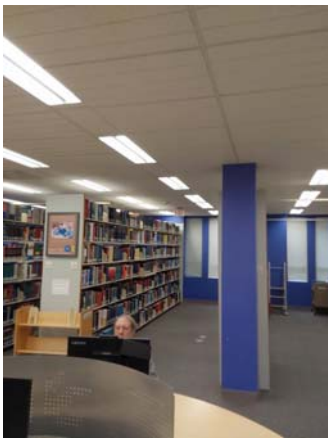


001091e 1/12/2023
Chilled water system air separator
Mechanical B901



001092a 1/12/2023
Circulation desk
Room 1100

001092e 1/12/2023
Main building air handler BUAS
Mechanical B901

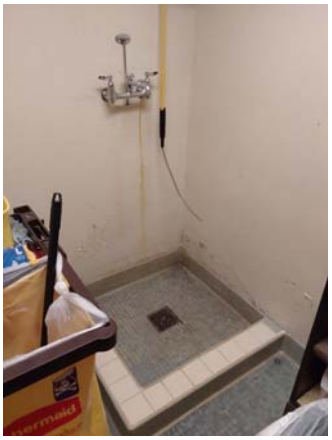


001093a 1/12/2023
Misplaced exit sign
Room 1100

001093e 1/12/2023
Supply air fan for BUAS
Mechanical B901

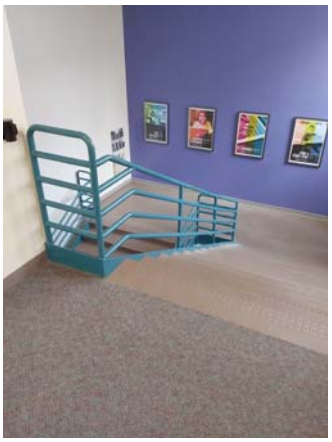
001094a 1/12/2023
Single height water fountain
Room 1001

001094e 1/12/2023
Return air fan for BUAS
Mechanical B901



001095a 1/12/2023
Mop sink
Room 1907

001095e 1/12/2023
Duplex sewage ejection station
Mechanical B901

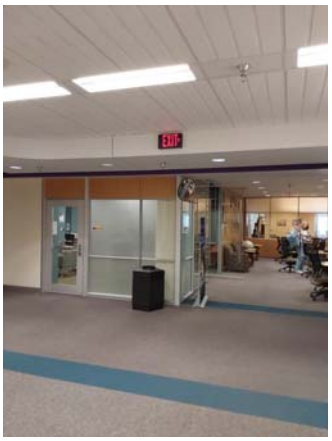


001096a 1/12/2023
Missing handrail extension
Stair 3

001096e 1/12/2023
Domestic hot water heat exchanger DWH-1
Mechanical B901

001097a 1/12/2023
Reference area with finishes shown
Room 1000A

001097e 1/12/2023
Central steam station
Mechanical B901



001098a 1/12/2023
Updated lounge with glass wall and glass door
Room 1014 and 1015

001098e 1/12/2023
Duplex condensate return system P-13
Mechanical B901

001099a 1/12/2023
Break area finishes and casework
Room 1021

001099e 1/12/2023
Various distribution system piping
Mechanical B901

001100a 1/12/2023

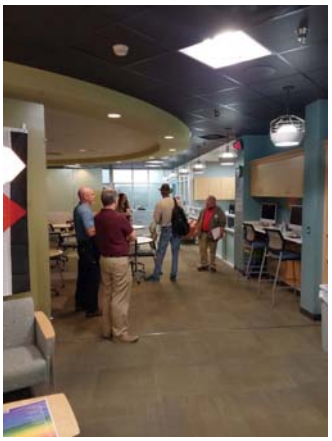
Laminate casework

Room 1021

001100e 1/12/2023

Updated controllers for chilled water pipe systems

Mechanical B901



001101a 1/12/2023

Overall office renovation with finishes shown

Room 1021

001101e 1/12/2023

Water treatment station

Mechanical B901

001102a 1/12/2023

Office corridor and storefront walls

Room 1000B

001102e 1/12/2023

Glycol mixing and storage equipment

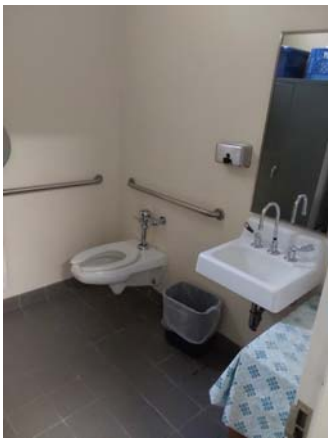
Mechanical B901

001103a 1/12/2023
Single-height water fountain
Room 1047

001103e 1/12/2023
Motor control center MCC-1
Mechanical B901

001104a 1/12/2023
Conference break room with laminate casework
Room 1008

001104e 1/12/2023
Chilled water system pumps
Mechanical B901



001105a 1/12/2023
Single-use restroom
Room 1047

001105e 1/12/2023
Chilled water system pumps
Mechanical B901

001106a 1/12/2023
Corridor laminate casework
Room 1008

001106e 1/12/2023
Chilled water pump variable speed drives
Mechanical B901

001107a 1/12/2023
Class and wood panel wall
Room 1000

001107e 1/12/2023
Heating hot water skid with HEX, tanks, and pumps
Mechanical B901

001108a 1/12/2023
Circulation desk
Room 1105

001108e 1/12/2023
Multi-stage HVAC control system air compressor
Mechanical B901

001109a 1/12/2023

Exit door with power door operator

Room 1104

001109e 1/12/2023

Glycol system pumps with minor corrosion

Mechanical B901

001110a 1/12/2023

Door control panels

Room 1902

001110e 1/12/2023

Water cooled chiller C-1

Mechanical B901

001111a 1/12/2023

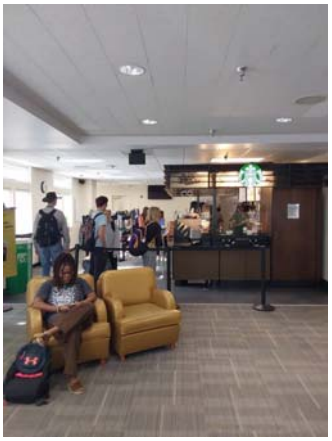
Main circulation desk

Room 1105

001111e 1/12/2023

Water cooled chiller C-2

Mechanical B901



001112a 1/12/2023
Starbucks with finishes shown
Room 1504

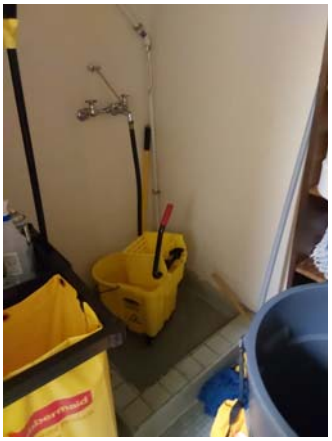
001112e 1/12/2023
2,500-amp main switchboard MSB2
Mechanical B901

001113a 1/12/2023
Laminate casework
Room 1903

001113e 1/12/2023
Addressable fire alarm control panel
Mechanical B901

001114a 1/12/2023
Dual-height water fountain with alcove
Room B908

001114e 1/12/2023
600-amp automatic transfer switch
Mechanical B901



001115a 1/12/2023

Mop sink

Room B909

001115e 1/12/2023

Various utility piping

Mechanical service tunnel

001116a 1/12/2023

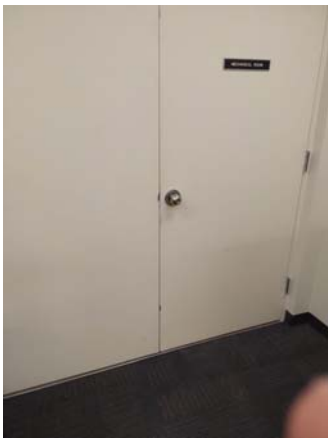
Microfilm room with finishes shown

Room B300B

001116e 1/12/2023

Hydraulic lift

Mechanical service tunnel



001117a 1/12/2023

Mechanical room knob hardware

Room B906

001117e 1/12/2023

400-kW diesel fire emergency generator

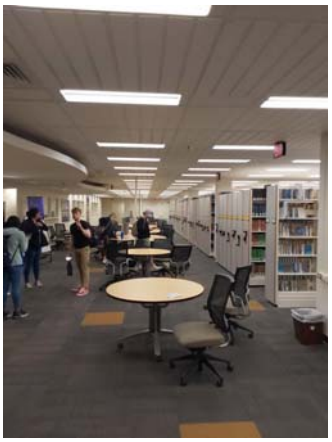
Site

001118a 1/12/2023
Data room missing fire blocking
Room B907

001118e 1/12/2023
Aged cooling tower CT1
Site

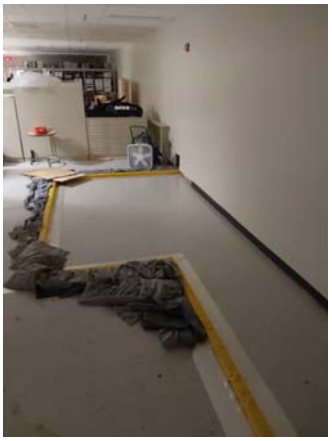
001119a 1/12/2023
Exit door without panic hardware
Room B100

001119e 1/12/2023
Corroded and damaged tower fill
Site



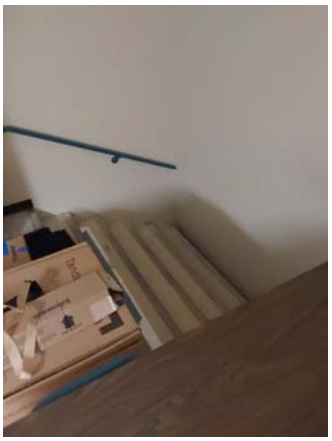
001120a 1/12/2023
Periodicals with finishes shown
Room B008

001120e 1/12/2023
Aged cooling tower CT2 cells A and B
Site



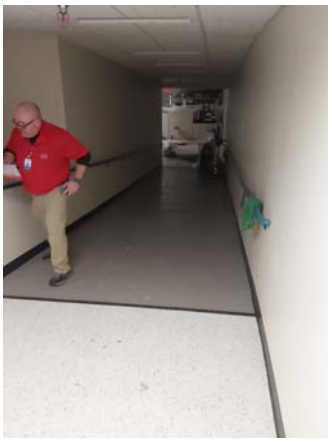
001121a 1/12/2023
Water infiltration prevention measures
Room B002

001121e 1/12/2023
Corrosion on tower structure and conduit
Site



001122a 1/12/2023
Stairway leads to wall
Room B003

001122e 1/12/2023
Surface mounted LED light fixture
Exterior



001123a 1/12/2023
Large service ramp with vinyl sheet
Room B004

001123e 1/12/2023
Air-cooled condenser CU-1
Site

001124a 1/12/2023
Mechanical room railing has been cut
Room B021

001124e 1/12/2023
Damaged, recessed light fixture
Exterior

001125a 1/12/2023
Freight lift
Room B900

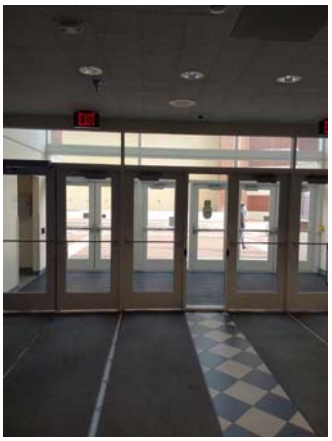
001125e 1/12/2023
Pole mounted exterior light fixture
Site

001126a 1/12/2023
Brick and stone exterior with glazing
South elevation

001126e 1/12/2023
Aged fire water backflow device
Exterior

001127a 1/12/2023
Basement record storage showing finishes
Room B001

001127e 1/12/2023
Aged backflow devices
Exterior



001128a 1/12/2023
East entry doors with two power operators
East elevation

001128e 1/12/2023
Corroded unit heater for backflows
Exterior

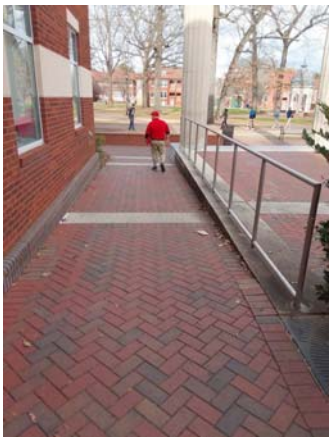
001129a 1/12/2023
Brick and stone exterior with glazing
East elevation

001129e 1/12/2023
Pole-mounted exterior light fixtures
Site

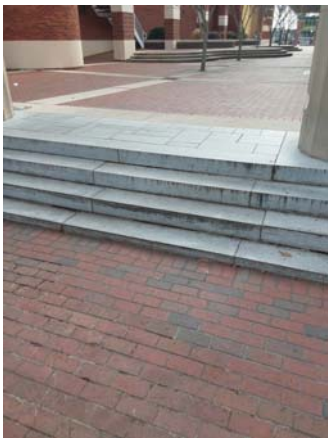
001130a 1/12/2023
South stair with missing handrail
East elevation

001130e 1/12/2023
Recessed exterior light fixture
Exterior

001131a 1/12/2023
North stair with missing handrail
East elevation



001132a 1/12/2023
Ramp with missing handrail
East elevation



001133a 1/12/2023
Front stairs have uneven riser heights
Northeast elevation

001134a 1/12/2023
Exterior hollow-metal door
North elevation

001135a 1/12/2023
North exterior with glazing
North elevation

001136a 1/12/2023
New exterior with glazing
North elevation

001137a 1/12/2023
Older exterior with glazing
North elevation

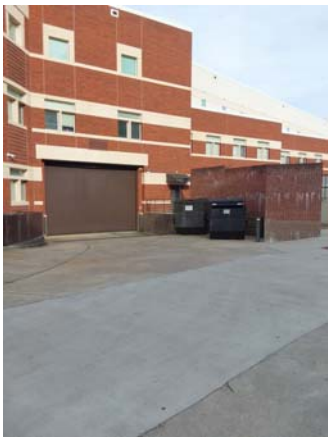
001138a 1/12/2023
Exterior hollow-metal door
North elevation

001139a 1/12/2023
Brick and stone exterior with glazing
North elevation

001140a 1/12/2023
Mechanical well with painted hollow-metal door
North elevation

001141a 1/12/2023
Exterior hollow-metal door
North elevation

001142a 1/12/2023
Exterior brick and glazing
Southwest elevation



001143a 1/12/2023
Overhead exterior roll-up door and brick
South elevation

001144a 1/12/2023
Brick efflorescence
South elevation

001145a 1/12/2023
Exterior overhead roll up door
South elevation

001146a 1/12/2023
South sawtooth exterior brick and glazing
South elevation

001147a 1/12/2023

Wheelchair ramp without handrail

Southeast elevation

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	East Carolina University
Asset Number	001
Asset Name	Joyner Library
Year Built or Last Energy Renovation	1997

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)

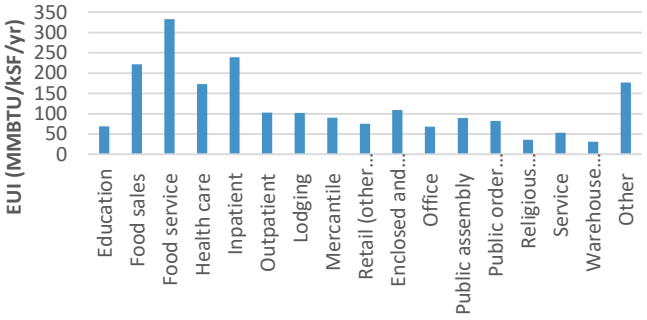
EUI is a measure of energy consumption per square foot of building space per year. The units of measurement are million British thermal units per thousand square foot per year (MMBTU/kSF/yr). The US-DOE EUI can be compared to the actual EUI of the client building to determine how efficient the building 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	Library
Energy Information Administration Equivalent Building Type	Public assembly
Range of Years Constructed/Last Major Energy Renovation	1990 to present
Benchmark EUI (MMBTU/kSF/yr) =	**89.1**
Building EUI to be Calculated by Client (MMBTU/kSF/yr) =	

TABLE 3. EUI COMPARISON	
Very Energy Efficient (consumes more than 30% less energy)	EUI < 62.4
Energy Efficient (consumes 10% to 30% less energy)	62.4 <= EUI <= 80.2
Similar (consumes within 10% less or 10% more energy)	80.2 < EUI < 98
Energy Inefficient (consumes 10% to 30% more energy)	98 <= EUI <= 115.8
Very Energy Inefficient (consumes more than 30% more energy)	EUI > 115.8

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

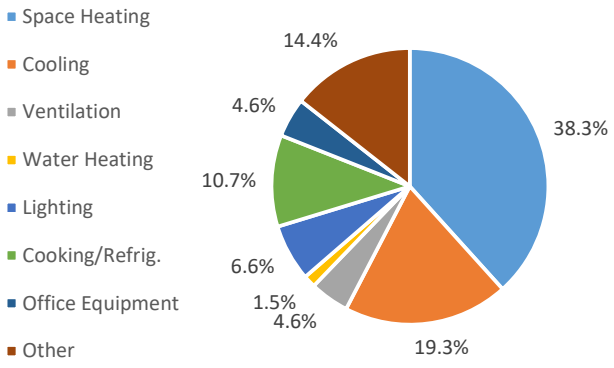


Metric #2: Energy End Use

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: LIBRARY	
Space Heating	38.3%
Cooling	19.3%
Ventilation	4.6%
Water Heating	1.5%
Lighting	6.6%
Cooking/Refrig.	10.7%
Office Equipment	4.6%
Other	14.4%
Total	100.0%

Figure 2. Energy End Use Profile: Library



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
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 CFL and 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 CFL and 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
HVAC - Central Heating	INSTALL AN ENERGY-EFFICIENT BOILER. Energy-efficient boilers and condensing boilers achieve higher efficiencies than conventional boilers. Research FEMP designated commercial boilers to find the most energy-efficient options.	CAP

ECM CATEGORY	ECM RECOMMENDED FOR FURTHER CONSIDERATION	COST CATEGORY
HVAC - Central Cooling	INSTALL AN ENERGY-EFFICIENT CHILLER. Energy-efficient chillers, including, but not limited to, magnetic bearing chillers, achieve higher efficiencies than conventional chillers. Research FEMP designated chillers to find the most energy-efficient options.	CAP