

EAST CAROLINA UNIVERSITY

Facility Condition Assessment

Ross Hall
Asset 256

Inspected May 11, 2021



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FACILITY CONDITION ASSESSMENT

SECTION 1

ASSET OVERVIEW

ASSET EXECUTIVE SUMMARY

All costs shown as Present Value

ASSET CODE 256	CURRENT REPLACEMENT VALUE \$104,238,000
ASSET NAME ROSS HALL	FACILITY CONDITION NEEDS INDEX 0.06
ASSET USE Medical / Clinic	FACILITY CONDITION INDEX 0.00
YEAR BUILT 2012	10-YEAR \$/SF 32.10
GSF 188,337	
INSPECTION DATE 05/11/2021	

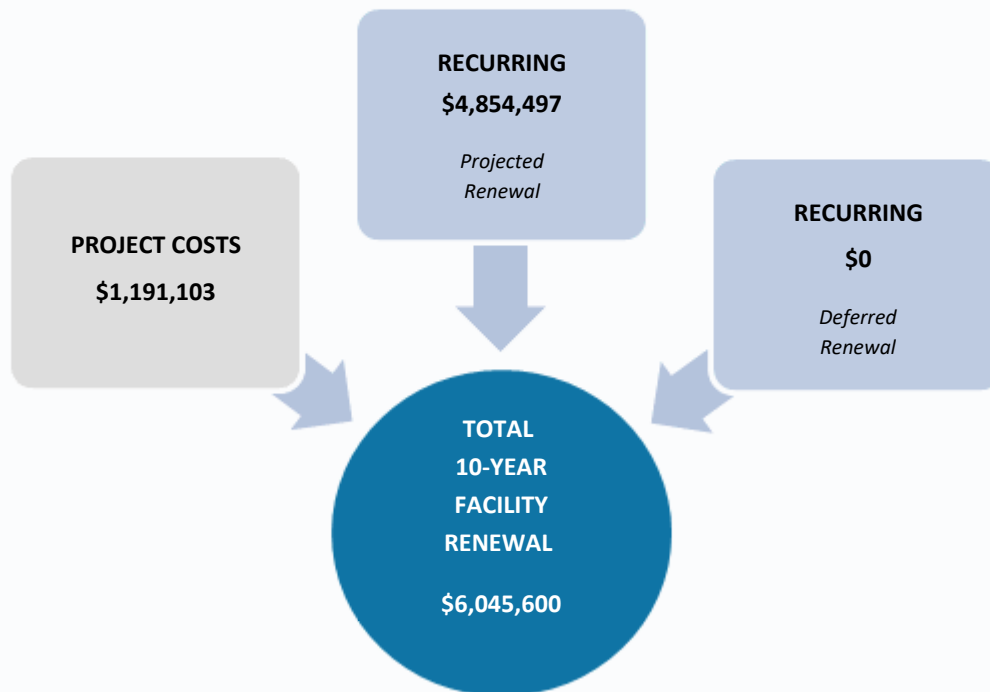
FCNI Scale

The FCNI for this asset is **0.06**

- Excellent Condition (typically new construction)
- Good Condition (maintained within lifecycle)
- Fair Condition (normal renovations required)
- Below Average Condition (major renovation required)
- Poor Condition (total renovation required)
- Replacement Indicated (unless historic)



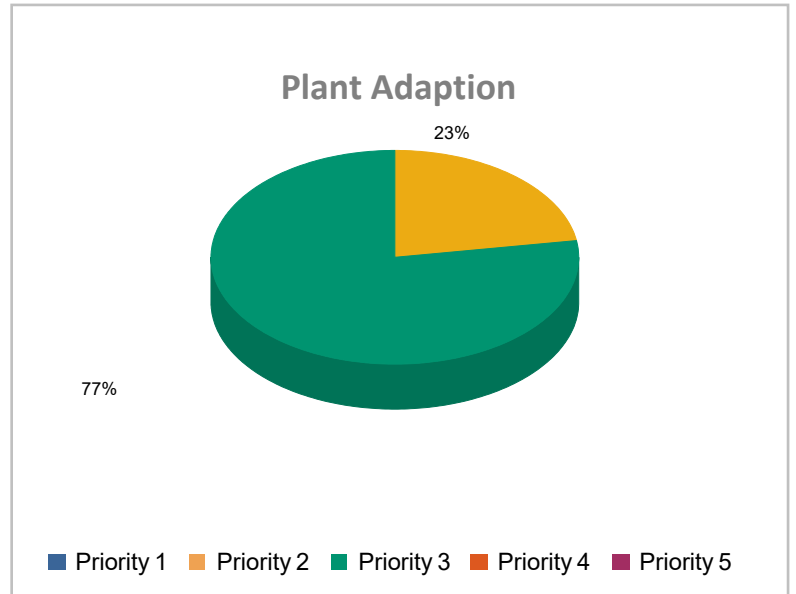
Total Facility Renewal Costs



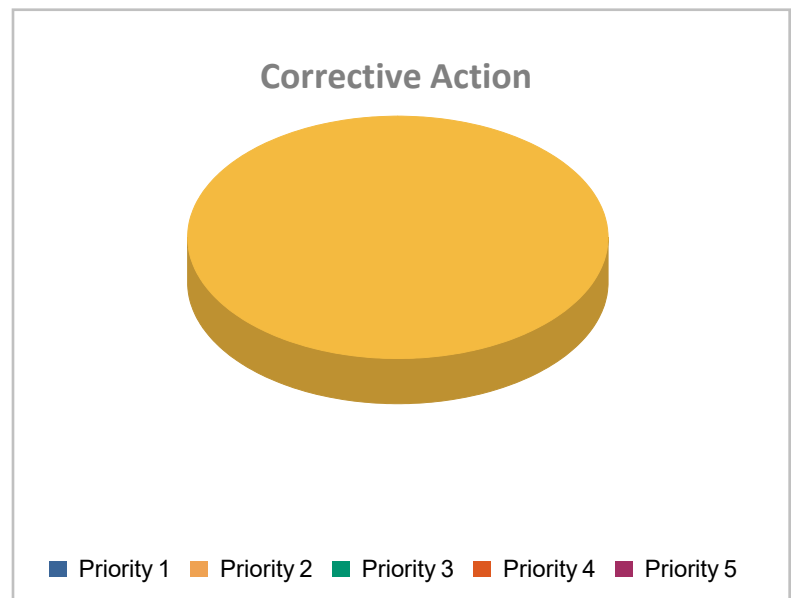
Project Costs

Project Cost by Priority

PLANT ADAPTION	
Priority 1	\$0
Priority 2	\$154,388
Priority 3	\$528,518
Priority 4	\$0
Priority 5	\$0

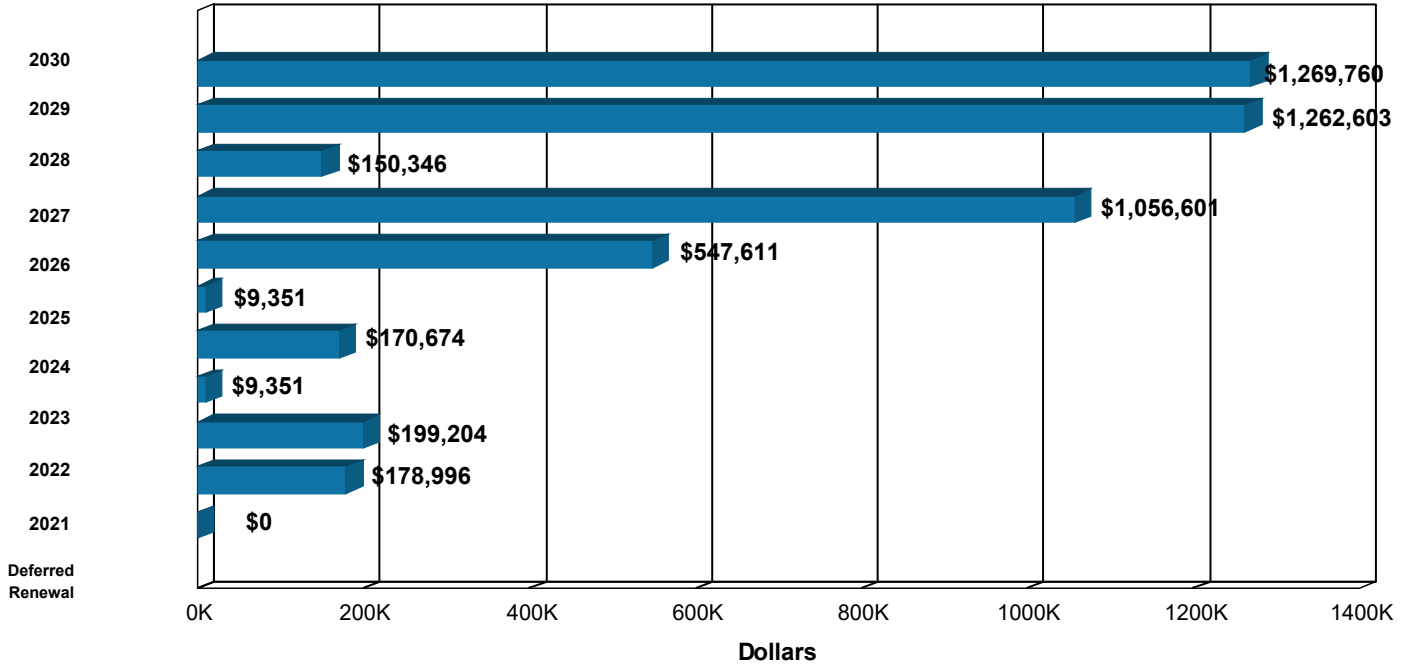


CORRECTIVE ACTION	
Priority 1	\$0
Priority 2	\$508,197
Priority 3	\$0
Priority 4	\$0
Priority 5	\$0

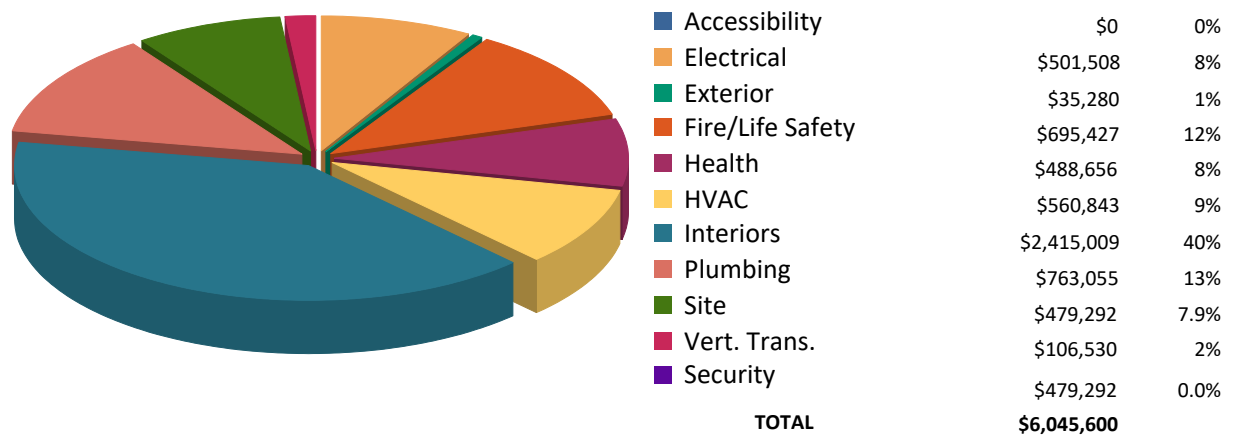


Recurring Costs

Component Replacement Cost by Year



Facilities Renewal Cost by System



ASSET SUMMARY

Ross Hall is in the northernmost section of the ECU Health Sciences Campus and is a rectangular, reinforced concrete and steel frame structure with a one-story southeast wing encompassing two large terraced lecture halls. This 188,337 gross square foot, four-story structure was built in 2012, and the fourth floor was recently renovated and built-out. The exterior has a brick masonry veneer and both flat asphalt built-up and pitched metal roofs. There is a partial subterranean level, as the basement and part of the first floor are underground. The east and south ground level entrances are on the second floor and the north and west ground level entrances on the first floor. This medical school facility contains numerous administration and departmental offices, two large lecture halls, teaching clinics, labs, exam rooms, and procedure areas. Typical support space includes conference rooms, staff and student lounges, break rooms/kitchens, accessible public restrooms and private single-user restrooms, large mechanical/electrical attic spaces, and a basement with critical support equipment. The building is considered fully handicapped accessible.

The information for this report was collected during a site visit concluded on May 12, 2021.

Site

The site is well maintained and visually appealing. Landscaping is appropriate, and the hardscape, which includes the concrete sidewalks and concrete curb and gutter, is in good condition. Since the parking areas serve multiple facilities, they were not included in this assessment.

Groundwater has been an issue in this facility from the beginning. The 8-foot deep foundation sump pump system barely keeps up with the normal groundwater entering the sump from around the foundation. There is a two-pump system—one operating full time and the other kicking on based on the float switch. Flooding in the basement would close the entire facility, and relying on this system appears risky at best. This operation is going through four pumps per year just to keep the sump from overflowing. A hydrogeological study of the site is recommended to ascertain valuable site specific hydrogeological information to properly design a solution that addresses the need to lower the water table and provide for redundancy and reliability at all times. Additional sumps, well points, and/or a permanent dewatering system for the foundation should all be explored. It should be noted that, through a review of the foundation drawings, it was determined that several exterior areas, such as the loading dock trench drain and north exterior basement secondary emergency egress area, are discharging stormwater into this same foundation sump. Removing these exterior areas from this sump would reduce the load on these pumps during stormwater events.

Water infiltration has been observed in the past in the vicinity of lab 1146 and the east end of corridor 1007. It is associated with an IT conduit bank that enters the building at this location from a higher location on the east side of the building. This conduit is allowing a gravity flow of any groundwater or surface water to infiltrate this conduit bank or its lid at the surface. The IT lines should be rerouted to enter the building at a new location to eliminate this water infiltration.

Exterior Structure

The brick veneer exterior walls and cast concrete accents are in good condition, though there is minimal staining on the concrete, and require no repairs at this time. The windows are large dual-pane systems that should outlast the scope of this report. The east main entrances enter on the second floor—one into the four-story section and another into the lecture hall wing. There is another main entrance on the first floor north side, a loading dock on the first floor west side, and secondary entrances on the second floor south side. Entrance doors are aluminum and glass, and service doors are hollow metal. There are also three overhead doors at the loading dock. No exterior door upgrades are recommended at this time.

Both the main four-story section and the lower southeast lecture hall wing have perimeter pitched standing seam metal grey roofing and a central flat built-up asphalt roof. No roofing upgrade needs are expected within the next ten years, though the built-up roof will likely require replacement shortly after the report scope. The central skylights over the atrium also appear to be in satisfactory condition and should outlast the scope of this report. The pitched metal roof has ice cleats to keep ice from falling and possibly injuring someone. These cleats are plastic, and many have already broken, limiting their overall effectiveness. Repair the ice cleats to reduce the possibility of injury and limit liability.

Interior Finishes/Systems

The interior finishes are typically original. With the recent build-out of the fourth floor and the lack of students in the last year, most finishes are in good condition. The office suites, conference rooms, and two large lecture halls are carpeted, and exam, clinic, lab, and procedure areas have 12-inch vinyl tile. There is terrazzo flooring on the main four floors adjacent to the two elevators and in the atrium. The newer fourth floor central conference room has durable wood laminate flooring. Main restrooms off the central corridor/lobby and the smaller single-user restrooms have ceramic floor tile and some ceramic wall tile. Most of the walls are painted sheetrock, and most ceilings are drop suspended grid acoustical tile. There are also some painted ceilings. The only interior finish upgrade needs expected within the next ten years are to replace the carpeting and repaint the walls.

Interior doors are properly rated and have ADA lever hardware. Interior glazing is properly fire and safety rated. Exam rooms and other support areas have wood cabinetry, and there are stainless steel lab sinks and cabinetry in select labs. All are in good condition and should outlast the report scope. There are also 133 dental chairs. These typically have a lifecycle of 20 years, thus most will outlast the scope of this report. However, 25% of the chairs are expected to need replacement within the next ten years.

Accessibility

The design of this 2012 facility included all required ADA features. It is considered handicapped accessible, and no additional upgrades are recommended at this time.

Health

There is a walk-in cold room on the south end of room 4200. While the structure should outlast the scope of this report, the refrigeration system is expected to require replacement within the next five years.

Fire/Life Safety

Structural fire separations are maintained according to code requirements for new construction in all areas of this facility, and there are no compromises involving doors, partitions, or stairs. The paths of egress are adequate with regard to fire rating.

The stair finishes are beginning to deteriorate and should be upgraded before they become unsafe. Install stair treads and color contrast nosings that will provide adequate traction during egress.

This facility is protected by a central fire alarm system. The Simplex point addressable fire alarm control panel is located in the corridor outside mechanical room 1259. The devices include manual fire pull stations, heat/smoke detectors, and audible/visible annunciators. The fire devices on the fourth floor are 2016 vintage. The fire alarm system is in good condition, but the control panel and devices in the original portion of the building should be scheduled for lifecycle replacement in the next ten years.

This facility is protected by an automatic, comprehensive, wet-pipe sprinkler system. The loading dock has a separate dry-pipe system. Tamper switches were observed on the fire standpipes, and control valves were in locked rooms. With proper testing and maintenance, these systems will outlast the scope of this report.

This facility is equipped with safety showers and eyewash stations located in the appropriate areas (where corrosive materials might be located). These safety fixtures are in very good condition and should outlast the scope of this report.

HVAC

High pressure steam and chilled water is provided from a central plant. The chilled water is distributed to air handling units (AHUs) and fan coil units (FCUs) by two 40 hp chilled water pumps. Two smaller (7.5 hp) pumps distribute water through the process chilled water loop to the computer room air conditioning (CRAC) units, FCUs, and heat pumps in the mechanical and data/telecom areas.

Pressure reducing valves (PRV) in room B0100 reduce the steam to medium pressure for the sterilization equipment on the first floor. There is an electric condensate receiver near the sterilizers in room 1258. A Spirax Sarco flash tank (on top of the condensate receiver) is located in the basement mechanical room near the PRVs. The condensate from the spent steam is collected and returned to the central plant.

Four natural gas-fired Harsco boilers produce heating hot water. Each has an input capacity of 2,500 MBH, and it is reported that they are oversized for this building. Six pumps (HWP-1 to 6) distribute hot

water to the air handlers, FCUs, unit heaters (loading dock), and reheat coils. Three additional pumps (HWP-7 to 9) circulate water for the northeast and southwest facade heating. These hot water pumps range from 1.5 to 10 hp.

Four air handlers (AHUs) manufactured by Buffalo Air Handling distribute conditioned air throughout this facility. AHU-A-1 and its return fan are located in room 3300 above the lecture halls, which it serves. The other three AHUs are located in the fifth floor mechanical penthouse. AHU-L-1 serves lab/teaching areas. AHU-CL-1 and AHU-CL-2 serve the clinic. The B side of AHU-L-1 is sufficient to serve the needs of the labs. The A side of AHU-L-1 has not been fully installed, so this side has not been included in this report. AHU-A-1 and AHU-L-1 are equipped with Thermotech Enterprises enthalpy wheels that capture/release energy in the exhaust fan airstreams. Overall, energy savings is realized by returning the captured/released energy back into the supply air. AHU-CL-1 and AHU-CL-2 do not have enthalpy wheels. Instead, they are each equipped with two return air fans. However, DOAS-CL-2 is a dedicated outside air system with an enthalpy wheel. DOAS-CL-2 works in conjunction with the AHU-CL-2 system.

Eight heat pumps and 13 fan coil units are located throughout the building, and there are four CRAC units are located in room 2308. The CRAC units and heat pumps provide cooling to the electrical and data/telecom rooms. The fan coil units provide both heating and cooling to select areas in the building, such as mechanical rooms and stairwells.

Ventilation is provided by means of centrifugal roof exhausters, fume hood exhaust fans, and building exhaust fans. Many of the fans are located inside the fifth floor penthouse. The fans range in size from fractional horsepower for the centrifugal roof exhausters to 7.5 hp for the elevator pressurization fans.

The fume hood exhaust fans serve the 11 fume hoods and single vented bio-safety cabinet located on the first through fourth floors. The fume hoods are in two groups—the seven original hoods on floors 1-3 and four new hoods installed during the fourth floor addition.

The HVAC distribution network includes steam, heating hot water, and chilled water piping, along with ductwork. HVAC controls were manufactured by Siemens. Both pneumatic and electric actuators were observed. A Quincy air compressor system with two 7.5 hp motors provides air for the pneumatic equipment. The HVAC controls are typically divided into three categories: terminal assemblies, field panels/OPS software, and major Instrumentation. However, the major Instrumentation is not included in this report.

The HVAC equipment described above, including the terminal assembly portion of the controls, appears to be in good condition and should provide reliable service beyond the next ten years. Only the CRAC units and the field panels/OPS software portion of the controls are expected to require replacement in the next ten years.

There are two shell spaces (rooms 4108 and 4147) on the fourth floor that have not yet been built out. These spaces are approximately 2,370 and 1,125 gross square feet (3,495 total). This area is not included in the HVAC controls and distribution network Recurring Needs. Instead, a project has been added to the Nonrecurring Needs.

Facility personnel report an issue with a vital building requirement. This building must be available for emergency clinical procedures, even during off-hours. This requires that HVAC and dental systems be operationally available at all times. Needed systems include heating, cooling, exhaust fans, medical gas, mouth vacuum, WAGD vacuum, and instrument compressed air. Currently, the systems are centralized and serve nearly the entire building. An engineering study is recommended to determine the costs and savings to install efficient dedicated systems for a small “emergency basis” section of the building.

Electrical

Power is fed to the building via a 2,000 kVA oil-filled transformer (TX-19) at the southeast exterior. It enters the transformer at 15 kV and exits at 277/480 V to the main electrical room (E1182), where it is distributed by the 3,200 amp (480 V) double-ended Eaton main switchgear. The switchgear is equipped with a tie-breaker, but the second 2,000 kVA transformer has not been installed yet. A project to install the second transformer is included in this report. A concrete pad and conduit have been installed, but power cables are required to run from the proposed transformer to the second end of the switchgear. The switchgear (including enclosure, metering systems, and breakers), tie-breaker, and existing transformer are in good condition and should provide reliable service beyond the next ten years.

The distribution network is a dual voltage configuration. The major equipment uses the 277/480 volt network. The 120/208 volt system is for receptacles and miscellaneous low voltage equipment. Electrical outlets in areas near water (restrooms, sinks) have GFCI protection. Secondary panels are Eaton in the original section and Square D in the 2016 addition. The distribution networks are in good condition and expected to outlast the scope of this report.

There are two shell spaces (rooms 4108 and 4147) on the fourth floor that have not yet been built out. These spaces are approximately 2,370 and 1,125 gross square feet (3,495 total). This area is not included in the electrical distribution and interior lighting system Recurring Needs. Instead, a project has been added to the Nonrecurring Needs.

A 750 kW diesel-fired generator provides emergency power to this facility. The generator is placed atop a 2,200 gallon diesel tank at the southwest exterior of this building. Two 1,000 amp Russelectric automatic transfer switches (LS and MEQ) and the 1,600 amp (480 V) Eaton generator switchboard are located in room E1180.

Interior spaces are illuminated by fluorescent, CFL, and LED light fixtures. A few metal halide fixtures were observed outside lecture hall entrances. Modern occupancy sensors were observed throughout this facility. The interior light fixtures are expected to provide reliable service beyond the next ten years. The special light fixtures attached to the dental chairs are included in the cost of the chair.

Exterior areas are illuminated mostly by original wall-mounted, recessed, jelly-jar, and stanchion light fixtures. Two modern LED wall-mounted fixtures were later added to the loading dock area. The LED lights should outlast the scope of this report, while the original fixtures should be scheduled for replacement in the next ten years. Install energy-efficient fixtures with photocell activation.

ABB variable frequency drives (VFD) improve efficiency and control of the AHU supply fans, return fans, larger exhaust fans, heating hot water pumps, and chilled water pumps. The recently installed VFDs are expected to outlast the scope of this report, while the original VFDs should be scheduled for replacement the next ten years as they reach the end of their expected service life.

Plumbing

Potable water is distributed via copper piping, and sanitary waste and stormwater piping is cast-iron and plastic. The plastic piping provides acid resistance for the lab sink drains and vents. No major piping leaks were reported. These original systems should provide reliable service beyond the next ten years.

There are two shell spaces (rooms 4108 and 4147) on the fourth floor that have not yet been built out. These spaces are approximately 2,370 and 1,125 gross square feet (3,495 total). This area is not included in the supply and drain piping system Recurring Needs. Instead, a project has been added to the Nonrecurring Needs.

Backflow preventers were observed on the water mains, sprinkler systems and several process water systems. They should be scheduled for replacement in the next couple years to help prevent cross-contamination between the building/process water systems and the potable water supply.

Hot water (domestic and non-domestic) is produced by four natural gas, commercial-grade water heaters located in the penthouse. The two original PVI units have a heating capacity of 565 MBH each. This amount of water heating is not necessary for this facility. One of the four original PVI units was replaced in 2019 with a 120 MBH A. O. Smith unit. Another PVI unit was scheduled for replacement shortly after this inspection. The new water heater is a State 120 MBH unit. Four nearby small pumps help distribute the water via mixing valves to the various areas of the building. All of the water heaters and pumps are expected to provide reliable beyond the next ten years.

An RO/DI water treatment system located on the southeast side of the penthouse provides treated water to the lab and clinic areas. The control panel was manufactured by Hydro, and the system has an estimated flow rate of 8,640 gallons per day. No upgrades are recommended at this time.

There is one medical vacuum system in the penthouse and a second vacuum for waste anesthetic gas disposal (WAGD) system in the basement. These medical vacuum systems are in good condition and should outlast the scope of this report. A third (much larger) Spencer Turbine system provides suction for removing mouth fluids. This system is equipped with three vacuum 60 hp pumps managed by a large control panel. Pump #2 is nonfunctional and needs immediate replacement. The two remaining pumps are used on alternating weeks. This is a higher use than originally designed. If another pump were to go down, the system would be operating without a backup. Even more of an issue is the inability to get a contractor (even from Spencer Turbine) to come to the facility for repairs. The replacement of all three pumps within the next ten years appears to be the only solution. An amalgam separator system works in conjunction with the Spencer Turbine dental vacuum and removes toxic metals before the waste water can safely go down the drain. This system needs to be replaced yearly.

There are medical gas control panels in several dental exam rooms on the first and second floors. Three gas manifolds are also located in the basement cylinder storage area (room B0101). There are also two master gas monitoring panels located in room 5000 and the basement main machine operations rooms which cover all gas distribution zones. These systems are in good condition and should outlast the scope of this report, as should the two 75 hp Kobelco air compressor systems in room B0100 that serve the lab and clinic areas

There are two water booster systems. The smaller system in the penthouse has two 1 hp pumps and serves the PP1 water pipes. The larger system in the basement has two 5 hp pumps and serves the NCWCP-1 water pipes. These systems are in good condition and should outlast the report scope. The water pipes connected to the NCWCP system have a hammering issue in the northeast corner of the basement. Pressure surges cause the piping to momentarily shake violently. This issue can and should be addressed as part of routine maintenance.

There is a graywater lift station at the east end of the basement. Two 1.5 hp pumps are located at the bottom of an 8 foot pit. This facility has a severe foundation infiltration problem that should be addressed. Until this groundwater infiltration can be stopped, it is expected that both pumps on this lift station will need replacement every 6-12 months. There is also a sewage lift station at the east end of the basement. Two 1.5 hp pumps are located in the sealed pit. This system is in good condition and should outlast the scope of this report, as should the sump pump located in each elevator pit.

Plumbing fixtures include exam room sinks, lab sinks, break room (kitchen) sinks, restroom fixtures, and various types of utility service sinks. The plumbing fixtures are in good condition and should provide reliable service well beyond the next ten years.

Vertical Transportation

There are two traction passenger elevators and one traction service elevator, all manufactured by Kone. The 3,500 pound capacity passenger elevators serve floors 1 through 4. The 4,000 pound capacity service elevator serves B through 4, plus the penthouse level (5A). Each elevator has a call button that is ADA compliant. The elevators are in good condition, and the mechanical systems should outlast the scope of this report. However, the passenger elevator cabs should be renovated in the next five years.

The loading dock is equipped with three original hydraulic dock levelers. These should outlast the scope of this report. However, when they are eventually replaced, the new dock levelers should be designed so that the bridge remains level with the floor when the hydraulics are turned off.

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

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Project Manager

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Date of Inspection

May 11, 2021

Inspection Team Personnel

NAME	POSITION	SPECIALTY
Richard Franck	Project Engineer	Mechanical, Electrical, Plumbing, Energy, Fire/Life Safety, Health
Carl Mason, PE, BSCP, M.ASCE	Senior Project Engineer	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.

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

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

<i>Example:</i> 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.

<i>Example</i>			
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).

<i>Example:</i>	
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	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	TOTAL
ACCESSIBILITY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0
EXTERIOR	0	28,905	0	0	0	0	0	0	0	0	6,375	0	0	0	\$35,280
INTERIOR	0	0	0	0	0	0	0	0	0	0	551,018	0	1,253,252	610,738	\$2,415,009
PLUMBING	0	0	98,452	0	178,996	71,510	9,351	9,351	9,351	9,351	348,641	9,351	9,351	9,351	\$763,055
HVAC	0	0	278,870	0	0	127,694	0	0	0	49,604	104,674	0	0	0	\$560,843
FIRE/LIFE SAFETY	0	0	45,757	0	0	0	0	0	0	0	0	0	0	649,670	\$695,427
ELECTRICAL	0	154,388	105,439	0	0	0	0	54,793	0	0	45,893	140,995	0	0	\$501,508
SITE	0	479,292	0	0	0	0	0	0	0	0	0	0	0	0	\$479,292
VERT. TRANS.	0	0	0	0	0	0	0	106,530	0	0	0	0	0	0	\$106,530
HEALTH/EQUIP.	0	0	0	0	0	0	0	0	0	488,656	0	0	0	0	\$488,656
SUBTOTAL	\$0	\$662,585	\$528,518	\$0	\$178,996	\$199,204	\$9,351	\$170,674	\$9,351	\$547,611	\$1,056,601	\$150,346	\$1,262,603	\$1,269,760	\$6,045,600
TOTAL NONRECURRING PROJECT NEEDS			\$1,191,103	TOTAL RECURRING COMPONENT REPLACEMENT NEEDS										\$4,854,497	

CURRENT REPLACEMENT VALUE	\$104,238,000
FACILITY CONDITION NEEDS INDEX	0.06
FACILITY CONDITION INDEX	0.00

GSF	TOTAL 10-YEAR FACILITY RENEWAL NEEDS	10-YEAR NEEDS/SF
188,337	\$6,045,600	\$32.10

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	\$0	\$0	\$0
EXTERIOR	\$28,905	\$6,375	\$35,280
INTERIOR	\$0	\$2,415,009	\$2,415,009
PLUMBING	\$98,452	\$664,604	\$763,055
HVAC	\$278,870	\$281,973	\$560,843
FIRE/LIFE SAFETY	\$45,757	\$649,670	\$695,427
ELECTRICAL	\$259,827	\$241,680	\$501,508
SITE	\$479,292	\$0	\$479,292
VERT. TRANS	\$0	\$106,530	\$106,530
HEALTH	\$0	\$488,656	\$488,656
TOTALS	\$1,191,103	\$4,854,497	\$6,045,600

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
256 AS01	AMALGAM SEPARATOR CLEANOUT SERVICE	WORKS W/ SPENCER TURB		B0100	D2030	2021	5,086
256 PP15	GREYWATER LIFT STATION - PUMPS ONLY - TWICE A YEAR	REPLACE 2 PUMPS PER YEAR		B0100	D2030	2021	4,265
256 PG13	VACUUM PUMP - OIL RING SEAL (>40 HP), WITH TRAP	SPENCER TURBINE 2	814425-K11	B0100	D2090	2021	169,645
256 BF01	BACKFLOW PREVENTER (<=1 INCH)	STERILIZER		1258	D2020	2022	1,049
256 BF01	BACKFLOW PREVENTER (<=1 INCH)	NCWCP-1		B0100	D2020	2022	1,049
256 BF02	BACKFLOW PREVENTER (1-2 INCHES)	BROWN		PENTHOUSE	D2020	2022	2,339
256 BF02	BACKFLOW PREVENTER (1-2 INCHES)	NPCW		B0100	D2020	2022	2,339
256 BF03	BACKFLOW PREVENTER (2-3 INCHES)	BLUE		PENTHOUSE	D2020	2022	7,713
256 BF05	BACKFLOW PREVENTER (4-6 INCHES)	DOM WATER 1		1259	D2020	2022	12,764
256 BF05	BACKFLOW PREVENTER (4-6 INCHES)	DOM WATER 2		1259	D2020	2022	12,764
256 BF06	BACKFLOW PREVENTER (6-8 INCHES)	FIRE STANDPIPE		1259	D2020	2022	22,142
256 AS01	AMALGAM SEPARATOR CLEANOUT SERVICE	WORKS W/ SPENCER TURB		B0100	D2030	2022	5,086
256 PP15	GREYWATER LIFT STATION - PUMPS ONLY - TWICE A YEAR	REPLACE 2 PUMPS PER YEAR		B0100	D2030	2022	4,265
256 BA34	HVAC CONTROLS - FIELD PANELS/OPS SOFTWARE - MEDICAL CLINIC			FLRS 1-3	D3060	2022	127,694
256 AS01	AMALGAM SEPARATOR CLEANOUT SERVICE	WORKS W/ SPENCER TURB		B0100	D2030	2023	5,086
256 PP15	GREYWATER LIFT STATION - PUMPS ONLY - TWICE A YEAR	REPLACE 2 PUMPS PER YEAR		B0100	D2030	2023	4,265

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
256 VT04	ELEVATOR CAB RENOVATION - PASSENGER	PASSENGER 3		CENTER	D1010	2024	53,265
256 VT04	ELEVATOR CAB RENOVATION - PASSENGER	PASSENGER 2		CENTER	D1010	2024	53,265
256 AS01	AMALGAM SEPARATOR CLEANOUT SERVICE	WORKS W/ SPENCER TURB		B0100	D2030	2024	5,086
256 PP15	GREYWATER LIFT STATION - PUMPS ONLY - TWICE A YEAR	REPLACE 2 PUMPS PER YEAR		B0100	D2030	2024	4,265
256 VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-3		5000	D5010	2024	1,401
256 VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-1		5000	D5010	2024	2,102
256 VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HWP-3		5000	D5010	2024	2,102
256 VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HWP-2		5000	D5010	2024	3,503
256 VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HW-AHU-A-1		3300	D5010	2024	701
256 VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HW-DOAS-CL-2		5000	D5010	2024	701
256 VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HWP-5		5000	D5010	2024	1,051
256 VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HWP-6		5000	D5010	2024	1,051
256 VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-2		5000	D5010	2024	1,401
256 VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	RF-A-1		3300	D5010	2024	4,764
256 VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	PCHP-1		B0100	D5010	2024	4,764
256 VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	PCHP-2		B0100	D5010	2024	4,764
256 VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	DOAS-CL-2 OA		5000	D5010	2024	5,298

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
256 VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	DOAS-CL-2 EF		5000	D5010	2024	5,298
256 VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	HWP-1		5000	D5010	2024	5,298
256 VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	HWP-4		5000	D5010	2024	5,298
256 VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	AHU-A-1		3300	D5010	2024	5,298
256 AS01	AMALGAM SEPARATOR CLEANOUT SERVICE	WORKS W/ SPENCER TURB		B0100	D2030	2025	5,086
256 PP15	GREYWATER LIFT STATION - PUMPS ONLY - TWICE A YEAR	REPLACE 2 PUMPS PER YEAR		B0100	D2030	2025	4,265
256 AS01	AMALGAM SEPARATOR CLEANOUT SERVICE	WORKS W/ SPENCER TURB		B0100	D2030	2026	5,086
256 PP15	GREYWATER LIFT STATION - PUMPS ONLY - TWICE A YEAR	REPLACE 2 PUMPS PER YEAR		B0100	D2030	2026	4,265
256 BA32	HVAC CONTROLS - FIELD PANELS/OPS SOFTWARE - LABORATORY			FLR 4	D3060	2026	49,604
256 CR02	REFRIGERATION SYSTEM - WALK-IN, 2 EVAP FANS, 6700 BTUH, CONDENSER			4200 & 5000	E1020	2026	9,704
256 FF01	DENTAL CHAIR	REPLACE EARLY		FLRS 1 & 2	E2010	2026	478,952
256 DR30	DOOR OPERATOR, OVERHEAD DOOR, COMMERCIAL, PADS			LOADING DOCK	B2030	2027	6,375
256 IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD			FLRS 1-3	C3020	2027	551,018
256 AS01	AMALGAM SEPARATOR CLEANOUT SERVICE	WORKS W/ SPENCER TURB		B0100	D2030	2027	5,086
256 PP15	GREYWATER LIFT STATION - PUMPS ONLY - TWICE A YEAR	REPLACE 2 PUMPS PER YEAR		B0100	D2030	2027	4,265

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
256 PG13	VACUUM PUMP - OIL RING SEAL (>40 HP), WITH TRAP	SPENCER TURBINE 1	814427-K11	B0100	D2090	2027	169,645
256 PG13	VACUUM PUMP - OIL RING SEAL (>40 HP), WITH TRAP	SPENCER TURBINE 3	814426-K11	B0100	D2090	2027	169,645
256 AH41	COMPUTER ROOM AC UNIT - CHILLED WATER (10 -20 TON)	CRAC 1		2308	D3050	2027	26,169
256 AH41	COMPUTER ROOM AC UNIT - CHILLED WATER (10 -20 TON)	CRAC 2		2308	D3050	2027	26,169
256 AH41	COMPUTER ROOM AC UNIT - CHILLED WATER (10 -20 TON)	CRAC 3		2308	D3050	2027	26,169
256 AH41	COMPUTER ROOM AC UNIT - CHILLED WATER (10 -20 TON)	CRAC 4		2308	D3050	2027	26,169
256 LE03	LIGHTING - EXTERIOR, RECESSED (INC, CFL, LED)	ROUND RECESSED CFL		EXTERIOR	D5020	2027	5,811
256 LE04	LIGHTING - EXTERIOR, STANCHION LUMINAIRE, 12-FOOT	15-FT STANCHION LED		EXTERIOR	D5020	2027	32,735
256 LE08	LIGHTING - EXTERIOR, WALL LANTERN or FLOOD (INC, CFL, LED)	ROOF JELLY JAR		ROOF	D5020	2027	490
256 LE08	LIGHTING - EXTERIOR, WALL LANTERN or FLOOD (INC, CFL, LED)	UPDATED WITH LED		NORTH EXT STAIRWELL	D5020	2027	980
256 LE08	LIGHTING - EXTERIOR, WALL LANTERN or FLOOD (INC, CFL, LED)	WALL CFL		EXTERIOR	D5020	2027	5,877
256 AS01	AMALGAM SEPARATOR CLEANOUT SERVICE	WORKS W/ SPENCER TURB		B0100	D2030	2028	5,086
256 PP15	GREYWATER LIFT STATION - PUMPS ONLY - TWICE A YEAR	REPLACE 2 PUMPS PER YEAR		B0100	D2030	2028	4,265
256 VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HW-AHU-L1A		5000	D5010	2028	701
256 VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HW-AHU-L1-B		5000	D5010	2028	701

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
256 VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-L-1A		5000	D5010	2028	2,102
256 VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-L-1B		5000	D5010	2028	2,102
256 VF06	VARIABLE FREQUENCY DRIVE (20-25 HP)	RF-CL-1A		5000	D5010	2028	8,870
256 VF06	VARIABLE FREQUENCY DRIVE (20-25 HP)	RF-CL-1B		5000	D5010	2028	8,870
256 VF06	VARIABLE FREQUENCY DRIVE (20-25 HP)	RF-CL-2A		5000	D5010	2028	8,870
256 VF06	VARIABLE FREQUENCY DRIVE (20-25 HP)	RF-CL-2B		5000	D5010	2028	8,870
256 VF08	VARIABLE FREQUENCY DRIVE (30-40 HP)	EAHU-L-1A		5000	D5010	2028	11,607
256 VF08	VARIABLE FREQUENCY DRIVE (30-40 HP)	EAHU-L-1B		5000	D5010	2028	11,607
256 VF08	VARIABLE FREQUENCY DRIVE (30-40 HP)	CHP-1		B0100	D5010	2028	11,607
256 VF08	VARIABLE FREQUENCY DRIVE (30-40 HP)	CHP-2		B0100	D5010	2028	11,607
256 VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	AHU-CL-1A		5000	D5010	2028	13,371
256 VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	AHU-CL-1B		5000	D5010	2028	13,371
256 VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	AHU-CL-2A		5000	D5010	2028	13,371
256 VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	AHU-CL-2B		5000	D5010	2028	13,371
256 IW01	WALL FINISH - PAINT, STANDARD			FLRS 1-3	C3010	2029	1,253,252
256 AS01	AMALGAM SEPARATOR CLEANOUT SERVICE	WORKS W/ SPENCER TURB		B0100	D2030	2029	5,086
256 PP15	GREYWATER LIFT STATION - PUMPS ONLY - TWICE A YEAR	REPLACE 2 PUMPS PER YEAR		B0100	D2030	2029	4,265

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
256 IW01	WALL FINISH - PAINT, STANDARD			FLR 4	C3010	2030	353,596
256 IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD			FLR 4	C3020	2030	257,142
256 AS01	AMALGAM SEPARATOR CLEANOUT SERVICE	WORKS W/ SPENCER TURB		B0100	D2030	2030	5,086
256 PP15	GREYWATER LIFT STATION - PUMPS ONLY - TWICE A YEAR	REPLACE 2 PUMPS PER YEAR		B0100	D2030	2030	4,265
256 FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER			1015	D4030	2030	37,851
256 FA02	FIRE ALARM SYSTEM - DEVICES			FLRS 1-3	D4030	2030	611,820
TOTAL							\$4,854,497

FACILITIES RENEWAL PLAN
NONRECURRING PROJECT COSTS

All costs shown as Present Value

PROJECT NUMBER	PROJECT TITLE	UNI-FORMAT	PRIORITY CLASS	PROJECT CLASSIFICATION	PROJECT COST
256ES01	REPAIR ICE CLEATS ON METAL ROOF	B3010	2	Corrective Action	28,905
256EL01	INSTALL 2,000 KVA TRANSFORMER	D5010	2	Plant Adaption	154,388
256SI02	REROUTE IT CONDUIT BANK INTO BLDG	D5030	2	Corrective Action	100,000
256SI01	GROUNDWATER MANAGEMENT INVESTIGATION & RESPONSE	G3030	2	Corrective Action	379,292
256FS01	STAIR FINISH SAFETY UPGRADES	C2020	3	Plant Adaption	45,757
256PL01	SUPPLY AND DRAIN PIPING SYSTEMS FOR SHELL SPACES	D2020	3	Plant Adaption	98,452
256HV01	OFF-HOURS SYSTEMS FOR EMERGENCY PROCEDURES	D3050	3	Plant Adaption	9,925
256HV02	HVAC CONTROLS AND DISTRIBUTION FOR SHELL SPACES	D3060	3	Plant Adaption	268,945
256EL02	ELECTRICAL AND LIGHTING FOR SHELL SPACES	D5010	3	Plant Adaption	105,439
TOTAL					\$1,191,103

FACILITY CONDITION ASSESSMENT

SECTION 3

**NONRECURRING
PROJECT DETAILS**

All costs shown as Present Value

REPAIR ICE CLEATS ON METAL ROOF			
Project Number:	256ES01	Category Code:	
Priority Sequence:	1	ES4A	
Priority Class:	Critical	System:	EXTERIOR
Project Class:	Corrective Action	Component:	ROOF
Date Basis:	5/25/2021	Element:	REPAIR

Code Application:

Not Applicable

Subclass/Savings:

Not Applicable

Project Location:

Area Wide: Floor(s) R

Description

The ice cleats on the pitched roof are plastic and breaking too frequently. It is recommended that they be repaired due to the possible liability from falling ice.

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Ice cleat replacement or repair	LOT	1	\$10,000	\$10,000	\$15,000	\$15,000	\$25,000
Base Material/Labor Costs				\$10,000		\$15,000	
Indexed Material/Labor Costs				\$10,070		\$10,695	\$20,765
Construction Mark Up at 20.0%							\$4,153
Original Construction Cost							\$24,918
Date of Original Estimate:	5/25/2021					Inflation	\$0
Current Year Construction Cost							\$24,918
Professional Fees at 16.0%							\$3,987
TOTAL PROJECT COST							\$28,905

All costs shown as Present Value

INSTALL 2,000 KVA TRANSFORMER			
Project Number:	256EL01	Category Code:	
Priority Sequence:	2	EL1A	
Priority Class:	Critical	System:	ELECTRICAL
Project Class:	Plant Adaption	Component:	INCOMING SERVICE
Date Basis:	5/27/2021	Element:	TRANSFORMER

Code Application:

Not Applicable

Subclass/Savings:

Not Applicable

Project Location:

Item Only: Floor(s) 1

Description

Install a 2,000 kVA oil-filled transformer at the southeast exterior to be a second source of power for this facility.

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Install 2,000 kVA oil-filled transformer, 3PH, 15KV primary	KVA	2,000	\$50.01	\$100,020	\$3.51	\$7,020	\$107,040
MC switchgear incoming power connections	EA	1	\$4,162	\$4,162	\$1,395	\$1,395	\$5,557
Base Material/Labor Costs				\$104,182		\$8,415	
Indexed Material/Labor Costs				\$104,911		\$6,000	\$110,911
Construction Mark Up at 20.0%							\$22,182
Original Construction Cost							\$133,093
Date of Original Estimate:	5/27/2021		Inflation			\$0	
Current Year Construction Cost							\$133,093
Professional Fees at 16.0%							\$21,295
TOTAL PROJECT COST							\$154,388

All costs shown as Present Value

REROUTE IT CONDUIT BANK INTO BLDG			
Project Number:	256SI02	Category Code:	
Priority Sequence:	3	SI4A	
Priority Class:	Critical	System:	SITE
Project Class:	Corrective Action	Component:	GENERAL
Date Basis:	5/26/2021	Element:	OTHER

Code Application:

Not Applicable

Subclass/Savings:

Not Applicable

Project Location:

Item Only: Floor(s) 1

Description

Water infiltration has been observed in the past in the vicinity of lab 1146 and the east end of corridor 1007. It is associated with an IT conduit bank that enters the building at this location from a higher location on the east side of the building. This conduit is allowing a gravity flow of any groundwater or surface water to infiltrate this conduit bank or its lid at the surface. The IT lines should be rerouted to enter the building at a new location to eliminate this water infiltration.

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Reroute IT into building	LOT	1	\$50,000	\$50,000	\$50,000	\$50,000	\$100,000
Base Material/Labor Costs				\$50,000		\$50,000	
Indexed Material/Labor Costs				\$50,000		\$50,000	\$100,000
No GCM Required							\$0
Original Construction Cost							\$100,000
Date of Original Estimate:	5/26/2021					Inflation	\$0
Current Year Construction Cost							\$100,000
No Professional Fees Required							\$0
TOTAL PROJECT COST							\$100,000

All costs shown as Present Value

GROUNDWATER MANAGEMENT INVESTIGATION & RESPONSE			
Project Number:	256SI01	Category Code:	
Priority Sequence:	4	SI4A	
Priority Class:	Critical	System:	SITE
Project Class:	Corrective Action	Component:	GENERAL
Date Basis:	5/25/2021	Element:	OTHER

Code Application:

Not Applicable

Subclass/Savings:

Not Applicable

Project Location:

Undefined: Floor(s) 1

Description

Groundwater has been an issue in this facility from the beginning. The 8-foot deep foundation sump pump system barely keeps up with the normal groundwater entering the sump from around the foundation. There is a two-pump system—one operating full time and the other kicking on based on the float switch. This operation is going through four pumps per year just to keep the sump from overflowing. A hydrogeological study of the site is recommended to ascertain valuable site specific information to properly design a solution that addresses the need to lower the water table and provide for redundancy and reliability at all times. Additional sumps, well points, and/or a permanent dewatering system for the foundation should all be explored.

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Perform hydrogeological study of Ross site	LOT	1	\$25,000	\$25,000	\$35,000	\$35,000	\$60,000
Initiate corrective action	LOT	1	\$150,000	\$150,000	\$100,000	\$100,000	\$250,000
Base Material/Labor Costs				\$175,000		\$135,000	
Indexed Material/Labor Costs				\$176,225		\$96,255	\$272,480
Construction Mark Up at 20.0%							\$54,496
Original Construction Cost							\$326,976
Date of Original Estimate:	5/25/2021		Inflation			\$0	
Current Year Construction Cost							\$326,976
Professional Fees at 16.0%							\$52,316
TOTAL PROJECT COST							\$379,292

All costs shown as Present Value

STAIR FINISH SAFETY UPGRADES			
Project Number:	256FS01	Category Code:	
Priority Sequence:	5	FS5E	
Priority Class:	Noncritical	System:	FIRE/LIFE SAFETY
Project Class:	Plant Adaption	Component:	EGRESS PATH
Date Basis:	5/25/2021	Element:	STAIRS AND RAILING

Code Application:

IBC 1003.3
Not Applicable

Subclass/Savings:

Not Applicable

Project Location:

Floor-wide: Floor(s) 1,2,3,4,5A,B

Description

The stair finishes are beginning to deteriorate and should be upgraded before they become unsafe. Install stair treads and color contrast nosings that will provide adequate traction during egress.

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Stair tread and landing finish upgrades per floor	FLR	12	\$1,975	\$23,699	\$1,053	\$12,632	\$36,331
Base Material/Labor Costs				\$23,699		\$12,632	
Indexed Material/Labor Costs				\$23,864		\$9,007	\$32,871
Construction Mark Up at 20.0%							\$6,574
Original Construction Cost							\$39,446
Date of Original Estimate:	5/25/2021					Inflation	\$0
Current Year Construction Cost							\$39,446
Professional Fees at 16.0%							\$6,311
TOTAL PROJECT COST							\$45,757

All costs shown as Present Value

OFF-HOURS SYSTEMS FOR EMERGENCY PROCEDURES			
Project Number:	256HV01	Category Code:	
Priority Sequence:	6	HV3C	
Priority Class:	Noncritical	System:	HVAC
Project Class:	Plant Adaption	Component:	HEATING/COOLING
Date Basis:	5/27/2021	Element:	PKG./SELF CONTAINED UNITS

Code Application:

Not Applicable

Subclass/Savings:

Not Applicable

Project Location:

Item Only: Floor(s) 1

Description

This building must be available for emergency clinical procedures, even during off-hours. This requires that HVAC and dental systems be operationally available at all times. Necessary systems include heating, cooling, exhaust fans, medical gas, mouth vacuum, WAGD vacuum, and instrument compressed air. Currently, the systems are centralized and serve nearly the entire building. Perform an engineering study to determine the costs and savings to install efficient dedicated systems for a small emergency basis section of the building.

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Engineering study	EA	1	\$0.00	\$0	\$10,000	\$10,000	\$10,000
Base Material/Labor Costs				\$0		\$10,000	
Indexed Material/Labor Costs				\$0		\$7,130	\$7,130
Construction Mark Up at 20.0%							\$1,426
Original Construction Cost							\$8,556
Date of Original Estimate:	5/27/2021					Inflation	\$0
Current Year Construction Cost							\$8,556
Professional Fees at 16.0%							\$1,369
TOTAL PROJECT COST							\$9,925

All costs shown as Present Value

HVAC CONTROLS AND DISTRIBUTION FOR SHELL SPACES			
Project Number:	256HV02	Category Code:	
Priority Sequence:	7	HV6A	
Priority Class:	Noncritical	System:	HVAC
Project Class:	Plant Adaption	Component:	CONTROLS
Date Basis:	5/11/2021	Element:	COMPLETE SYSTEM UPGRADE

Code Application:

Not Applicable

Subclass/Savings:

Not Applicable

Project Location:

Room Only: Floor(s) 4

Description

This project provides funding to build out the HVAC controls and distribution network in the shell spaces on the fourth floor (rooms 4108 and 4147). These spaces are approximately 2,370 and 1,125 gross square feet (3,495 total).

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Install HVAC controls - field panels/OPS software	SF	3,495	\$0.83	\$2,901	\$1.17	\$4,089	\$6,990
Install HVAC distribution network	SF	3,495	\$29.24	\$102,194	\$25.66	\$89,682	\$191,876
Install HVAC controls - terminal assemblies	SF	3,495	\$3.09	\$10,800	\$3.87	\$13,526	\$24,325
Base Material/Labor Costs				\$115,894		\$107,297	
Indexed Material/Labor Costs				\$116,705		\$76,502	\$193,208
Construction Mark Up at 20.0%							\$38,642
Original Construction Cost							\$231,849
Date of Original Estimate:	5/11/2021					Inflation	\$0
Current Year Construction Cost							\$231,849
Professional Fees at 16.0%							\$37,096
TOTAL PROJECT COST							\$268,945

All costs shown as Present Value

ELECTRICAL AND LIGHTING FOR SHELL SPACES			
Project Number:	256EL02	Category Code:	
Priority Sequence:	8	EL3B	
Priority Class:	Noncritical	System:	ELECTRICAL
Project Class:	Plant Adaption	Component:	SECONDARY DISTRIBUTION
Date Basis:	5/11/2021	Element:	DISTRIBUTION NETWORK

Code Application:

Not Applicable

Subclass/Savings:

Not Applicable

Project Location:

Room Only: Floor(s) 4

Description

This project provides funding to build out the electrical distribution network and interior lighting systems in the shell spaces on the fourth floor (rooms 4108 and 4147). These spaces are approximately 2,370 and 1,125 gross square feet (3,495 total).

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Install electrical distribution network	SF	3,495	\$8.50	\$29,708	\$9.16	\$32,014	\$61,722
Install interior lighting system	SF	3,495	\$4.03	\$14,085	\$3.54	\$12,372	\$26,457
Base Material/Labor Costs				\$43,792		\$44,387	
Indexed Material/Labor Costs				\$44,099		\$31,648	\$75,746
Construction Mark Up at 20.0%							\$15,149
Original Construction Cost							\$90,896
Date of Original Estimate:	5/11/2021		Inflation			\$0	
Current Year Construction Cost							\$90,896
Professional Fees at 16.0%							\$14,543
TOTAL PROJECT COST							\$105,439

All costs shown as Present Value

SUPPLY AND DRAIN PIPING SYSTEMS FOR SHELL SPACES			
Project Number:	256PL01	Category Code:	
Priority Sequence:	9	PL1A	
Priority Class:	Noncritical	System:	PLUMBING
Project Class:	Plant Adaption	Component:	DOMESTIC WATER
Date Basis:	5/11/2021	Element:	PIPING NETWORK

Code Application:

Not Applicable

Subclass/Savings:

Not Applicable

Project Location:

Room Only: Floor(s) 4

Description

This project provides funding to build out the supply and drain piping systems in the shell spaces on the fourth floor (rooms 4108 and 4147). These spaces are approximately 2,370 and 1,125 gross square feet (3,495 total).

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Install supply piping systems	SF	3,495	\$3.52	\$12,302	\$6.30	\$22,019	\$34,321
Install drain piping systems	SF	3,495	\$5.58	\$19,502	\$9.23	\$32,259	\$51,761
Base Material/Labor Costs				\$31,805		\$54,277	
Indexed Material/Labor Costs				\$32,027		\$38,700	\$70,727
Construction Mark Up at 20.0%							\$14,145
Original Construction Cost							\$84,872
Date of Original Estimate:	5/11/2021		Inflation			\$0	
Current Year Construction Cost							\$84,872
Professional Fees at 16.0%							\$13,580
TOTAL PROJECT COST							\$98,452

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
EW01	WALL, EXTERIOR, MASONRY POINTING			EXTERIOR	35,000	SF	1.12	\$301,090	2012	30		2042
EW02	WALL, EXTERIOR, STUCCO OR CONCRETE RESTORE	CAST CONCRETE		EXTERIOR	2,000	SF	1.12	\$21,624	2012	30		2042
WN01	GLASS, WINDOW, ALUMINUM OR WOOD, STANDARD	DUAL PANE		EXTERIOR	15,000	SF	1.12	\$2,571,568	2012	40		2052
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	SERVICE		LOW ROOF, GROUND FLR	7	LEAF	1.00	\$14,216	2012	40		2052
DR12	DOOR AND STOREFRONT, EXTERIOR, SWINGING, ALUMINUM AND GLASS	GLASS		ENTRIES	22	LEAF	1.00	\$82,495	2012	25		2037
DR19	DOOR, EXTERIOR, OVERHEAD ROLLING METAL, LOCK			LOADING DOCK	504	SF	1.00	\$49,463	2012	30		2042
DR28	DOOR OPERATOR, POWER-ASSIST			MAIN ENTRIES	8	EA	1.00	\$69,832	2012	20		2032
DR30	DOOR OPERATOR, OVERHEAD DOOR, COMMERCIAL, PADS			LOADING DOCK	3	EA	1.00	\$6,375	2012	15		2027
RR07	ROOF - BITUMINOUS, 2-PLY, APPLIED MODIFIED BITUMEN, TORCH	FLAT - WHITE		ROOF	30,000	SF	1.15	\$174,615	2012	20		2032
RR10	ROOF - PANEL, ALUMINUM OR GALVANIZED, STANDING SEAM	PITCHED - GREY		MANSARD ROOFS	32,000	SF	1.00	\$632,051	2012	40		2052
RR26	ROOF SKYLIGHT - GLASS WITH ALUMINUM FRAME	FLAT - WHITE		UPPER ROOF	2,000	SF	1.00	\$543,716	2012	35		2047
DR01	DOOR AND FRAME, INTERIOR, NON-RATED			FLRS 1-3	75	LEAF	1.00	\$162,346	2012	40		2052
DR01	DOOR AND FRAME, INTERIOR, NON-RATED			FLR 4	25	LEAF	1.00	\$54,115	2018	40		2058
DR02	DOOR AND FRAME, INTERIOR, FIRE-RATED			FLRS 1-3	234	LEAF	1.00	\$874,842	2012	40		2052
DR02	DOOR AND FRAME, INTERIOR, FIRE-RATED			FLR 4	66	LEAF	1.00	\$246,750	2018	40		2058

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
DR24	DOOR LOCK, COMMERCIAL-GRADE			FL 1-3	75	EA	1.00	\$55,848	2012	20		2032
DR24	DOOR LOCK, COMMERCIAL-GRADE			FLR 4	25	EA	1.00	\$18,616	2018	20		2038
DR24	DOOR LOCK, COMMERCIAL-GRADE			FLRS 1-3	234	EA	1.00	\$174,245	2012	20		2032
DR24	DOOR LOCK, COMMERCIAL-GRADE			FLR 4	66	EA	1.00	\$49,146	2018	20		2038
DR24	DOOR LOCK, COMMERCIAL-GRADE	SERVICE DRS		EXTERIOR	7	EA	1.00	\$5,212	2012	20		2032
DR24	DOOR LOCK, COMMERCIAL-GRADE	GLASS DRS		EXTERIOR	22	EA	1.00	\$16,382	2012	20		2032
CW01	CASEWORK - WOOD BASE AND WALL, TOP, STANDARD			FLRS 1-3	3,000	LF	1.00	\$1,617,781	2012	20		2032
CW01	CASEWORK - WOOD BASE AND WALL, TOP, STANDARD			FLR 4	1,000	LF	1.00	\$539,260	2018	20		2038
CW04	CASEWORK - LABORATORY, INCLUDES REAGENT SHELF AND TOP			FLRS 1-3	16,480	SF	1.00	\$2,472,565	2012	40		2052
CW04	CASEWORK - LABORATORY, INCLUDES REAGENT SHELF AND TOP			FLR 4	6,590	SF	1.00	\$988,726	2018	40		2058
IW01	WALL FINISH - PAINT, STANDARD			FLRS 1-3	560,000	SF	1.00	\$1,253,252	2012	12	5	2029
IW01	WALL FINISH - PAINT, STANDARD			FLR 4	158,000	SF	1.00	\$353,596	2018	12		2030
IW04	WALL FINISH - TILE, CERAMIC / STONE, PREMIUM			FLRS 1-3	30,000	SF	1.00	\$2,987,637	2012	40		2052
IW04	WALL FINISH - TILE, CERAMIC / STONE, PREMIUM			FLR 4	8,500	SF	1.00	\$846,497	2018	40		2058
IW07	WALL FINISH - WOOD PANEL, PREMIUM			FLR 3 STAIR ENTRY	500	SF	1.00	\$21,619	2012	70		2082

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD			FLRS 1-3	45,000	SF	1.00	\$551,018	2012	12	3	2027
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD			FLR 4	21,000	SF	1.00	\$257,142	2018	12		2030
IF03	FLOORING - VINYL COMPOSITION TILE, STANDARD			FLRS 1-3	60,000	SF	1.00	\$384,515	2012	20		2032
IF03	FLOORING - VINYL COMPOSITION TILE, STANDARD			FLR 4	11,000	SF	1.00	\$70,495	2018	20		2038
IF07	FLOORING - TILE, CERAMIC / STONE / QUARRY PREMIUM			FLRS 1-3	7,000	SF	1.00	\$485,953	2012	40		2052
IF07	FLOORING - TILE, CERAMIC / STONE / QUARRY PREMIUM			FLR 4	3,000	SF	1.00	\$208,266	2012	40		2052
IF09	FLOORING - TERRAZZO RESURFACE			ELEV LOBBIES	1,800	SF	1.00	\$18,318	2012	50		2062
IF13	FLOORING - LAMINATE PLANK, PREMIUM	WOOD		FLR 4 CONF RM	500	SF	1.00	\$5,575	2018	15		2033
IC01	CEILING FINISH - SUSPENDED ACOUSTICAL TILE, STANDARD			FLRS 1-3	119,000	SF	1.00	\$1,200,895	2012	30		2042
IC01	CEILING FINISH - SUSPENDED ACOUSTICAL TILE, STANDARD			FLR 4	34,000	SF	1.00	\$343,113	2018	30		2048
IC04	CEILING FINISH - PAINTED OR STAINED, STANDARD			FLRS 1-3	6,000	SF	1.00	\$13,428	2012	24		2036
IC04	CEILING FINISH - PAINTED OR STAINED, STANDARD			FLR 4	2,500	SF	1.00	\$5,595	2018	24		2042
VT01	ELEVATOR MODERNIZATION - TRACTION - LOW RISE	PASSENGER 3		CENTER	1	EA	1.00	\$245,040	2012	25		2037
VT01	ELEVATOR MODERNIZATION - TRACTION - LOW RISE	PASSENGER 2		CENTER	1	EA	1.00	\$245,040	2012	25		2037
VT01	ELEVATOR MODERNIZATION - TRACTION - LOW RISE	SERVICE 1		WEST	1	EA	1.00	\$245,040	2012	25		2037

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
VT04	ELEVATOR CAB RENOVATION - PASSENGER	PASSENGER 3		CENTER	1	EA	1.00	\$53,265	2012	12		2024
VT04	ELEVATOR CAB RENOVATION - PASSENGER	PASSENGER 2		CENTER	1	EA	1.00	\$53,265	2012	12		2024
FX01	PLUMBING FIXTURE - LAVATORY, COUNTER			PROCEDURE, EXAM RMS	93	EA	1.20	\$147,086	2012	35		2047
FX02	PLUMBING FIXTURE - LAVATORY, WALL HUNG			SINGLE-USER RR	19	EA	1.00	\$25,274	2012	35		2047
FX04	PLUMBING FIXTURE - SINK, KITCHEN			KITCHEN/BRE AKROOMS	6	EA	1.00	\$12,957	2012	35		2047
FX05	PLUMBING FIXTURE - SINK, LABORATORY-USE			FLR 4	31	EA	1.00	\$97,340	2016	35		2051
FX06	PLUMBING FIXTURE - SINK, SERVICE/LAUNDRY/UTILITY	FLOOR & WALL HUNG		JANITORIAL CLOSET	6	EA	1.00	\$10,755	2012	35		2047
FX08	PLUMBING FIXTURE - SHOWER VALVE AND HEAD			FLR 2, WEST END	2	EA	1.00	\$3,449	2012	35		2047
FX10	PLUMBING FIXTURE - URINAL			MENS RR	13	EA	1.00	\$27,533	2012	35		2047
FX12	PLUMBING FIXTURE - WATER CLOSET, TANKLESS			RESTRMS	42	EA	1.00	\$81,837	2012	35		2047
FX14	PLUMBING FIXTURE - EMERGENCY SHOWER			FLR 4	3	EA	1.00	\$4,527	2016	35		2051
FX15	PLUMBING FIXTURE - EMERGENCY EYEWASH			FLRS 1-3	17	EA	1.00	\$79,652	2012	35		2047
FX15	PLUMBING FIXTURE - EMERGENCY EYEWASH			FLR 4	10	EA	1.00	\$46,854	2016	35		2051
FX16	PLUMBING FIXTURE - EMERGENCY COMBINATION SHOWER/EYEWASH			FLRS 1-3	1	EA	1.00	\$8,054	2012	35		2047
FX16	PLUMBING FIXTURE - EMERGENCY COMBINATION SHOWER/EYEWASH			FLR 4	5	EA	1.00	\$40,272	2016	35		2051

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
BF01	BACKFLOW PREVENTER (<=1 INCH)	STERILIZER		1258	1	EA	1.00	\$1,049	2012	10		2022
BF01	BACKFLOW PREVENTER (<=1 INCH)	NCWCP-1		B0100	1	EA	1.00	\$1,049	2012	10		2022
BF02	BACKFLOW PREVENTER (1-2 INCHES)	BROWN		PENTHOUSE	1	EA	1.00	\$2,339	2012	10		2022
BF02	BACKFLOW PREVENTER (1-2 INCHES)	NPCW		B0100	1	EA	1.00	\$2,339	2012	10		2022
BF03	BACKFLOW PREVENTER (2-3 INCHES)	BLUE		PENTHOUSE	1	EA	1.00	\$7,713	2012	10		2022
BF05	BACKFLOW PREVENTER (4-6 INCHES)	DOM WATER 1		1259	1	EA	1.00	\$12,764	2012	10		2022
BF05	BACKFLOW PREVENTER (4-6 INCHES)	DOM WATER 2		1259	1	EA	1.00	\$12,764	2012	10		2022
BF06	BACKFLOW PREVENTER (6-8 INCHES)	FIRE STANDPIPE		1259	1	EA	1.00	\$22,142	2012	10		2022
PP01	DOMESTIC WATER BOOSTER SYSTEM	PP1		5000	2	HP	1.00	\$25,787	2016	20		2036
PP01	DOMESTIC WATER BOOSTER SYSTEM	NCWCP-1		B0100	10	HP	1.00	\$128,937	2012	20		2032
PS09	SUPPLY PIPING SYSTEM - LABORATORY, WET			4TH FLR	23,573	SF	0.95	\$307,556	2016	35		2051
PS11	SUPPLY PIPING SYSTEM - MEDICAL CLINIC			FLRS 1-3	161,269	SF	1.07	\$1,327,800	2012	35		2047
WH02	WATER HEATER - COMMERCIAL, GAS (<87-168 MBH INPUT)	WH1 - AO SMITH		5000	120	MBH	1.00	\$11,818	2019	25		2044
WH02	WATER HEATER - COMMERCIAL, GAS (<87-168 MBH INPUT)	WH2 - STATE		5000	120	MBH	1.00	\$11,818	2021	25		2046
WH05	WATER HEATER - COMMERCIAL, GAS (310-613 MBH INPUT)	WH3 - PVI		5000	565	MBH	1.00	\$34,478	2012	25		2037

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
WH05	WATER HEATER - COMMERCIAL, GAS (310-613 MBH INPUT)	WH4 - PVI		5000	565	MBH	1.00	\$34,478	2012	25		2037
WT06	REVERSE OSMOSIS SYSTEM (5,000-10,000 GPD)	HYDRO		PENTHOUSE	8,640	GPD	1.00	\$37,865	2016	20		2036
AS01	AMALGAM SEPARATOR CLEANOUT SERVICE	WORKS W/ SPENCER TURB		B0100	1	SYS	1.00	\$5,086	2020	1		2021
PD09	DRAIN PIPING SYSTEM - LABORATORY, WET			FLR 4	23,573	SF	0.95	\$464,051	2016	40		2056
PD11	DRAIN PIPING SYSTEM - MEDICAL CLINIC			FLRS 1-3	161,269	SF	0.93	\$1,744,744	2012	40		2052
PP02	GREYWATER LIFT STATION	FOUNDATION INFILTRATION		B0100	3	HP	1.00	\$7,615	2012	20		2032
PP03	SEWAGE LIFT STATION	SANITARY PUMPS		B0100	3	HP	1.00	\$8,328	2012	20		2032
PP04	GREYWATER SUMP PUMP -SUBMERSIBLE PUMP (<0.5HP)	PASSENGER ELEVATORS		ELEVATOR PIT	1	EA	1.00	\$680	2012	20		2032
PP04	GREYWATER SUMP PUMP -SUBMERSIBLE PUMP (<0.5HP)	SERVICE ELEVATOR		ELEVATOR PIT	1	EA	1.00	\$680	2012	20		2032
PP15	GREYWATER LIFT STATION - PUMPS ONLY - TWICE A YEAR	REPLACE 2 PUMPS PER YEAR		B0100	3	HP	1.00	\$4,265	2020	1		2021
PG04	AIR COMPRESSOR - MEDICAL/LABORATORY PCKG (>40 HP), WITH DRYER	KOBELCO 1		B0100	75	HP	1.00	\$84,113	2012	20		2032
PG04	AIR COMPRESSOR - MEDICAL/LABORATORY PCKG (>40 HP), WITH DRYER	KOBELCO 2		B0100	75	HP	1.00	\$84,113	2012	20		2032
PG07	VACUUM PUMP - OIL RING SEAL (5-10 HP), WITH TRAP	PENTHOUSE		PENTHOUSE	10	HP	1.00	\$72,784	2016	20		2036
PG11	VACUUM PUMP - OIL RING SEAL (25-30 HP), WITH TRAP	WAGD-1		B0100	30	HP	1.00	\$70,955	2012	20		2032
PG13	VACUUM PUMP - OIL RING SEAL (>40 HP), WITH TRAP	SPENCER TURBINE 1	814427-K11	B0100	60	HP	1.50	\$169,645	2012	20	-5	2027

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	INSL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
PG13	VACUUM PUMP - OIL RING SEAL (>40 HP), WITH TRAP	SPENCER TURBINE 2	814425-K11	B0100	60	HP	1.50	\$169,645	2012	20	-11	2021
PG13	VACUUM PUMP - OIL RING SEAL (>40 HP), WITH TRAP	SPENCER TURBINE 3	814426-K11	B0100	60	HP	1.50	\$169,645	2012	20	-5	2027
PG14	MEDICAL GAS CONTROL PANEL			DENTAL EXAM RMS	34	EA	1.00	\$44,074	2012	20		2032
PG14	MEDICAL GAS CONTROL PANEL	GAS CYLINDER MANIFOLDS		B0101	3	EA	1.00	\$3,889	2012	20		2032
PG14	MEDICAL GAS CONTROL PANEL	MASTER MONITOR AND ALARM		5000	1	EA	3.00	\$3,889	2012	20		2032
PG14	MEDICAL GAS CONTROL PANEL	MASTER GAS MONITOR AND ALARM		BSMT MR	1	EA	3.00	\$3,889	2012	20		2032
BL03	BOILER - GAS (>2,000 MBH)	B-1		5000	2,500	MBH	1.00	\$146,891	2012	35		2047
BL03	BOILER - GAS (>2,000 MBH)	B-2		5000	2,500	MBH	1.00	\$146,891	2012	35		2047
BL03	BOILER - GAS (>2,000 MBH)	B-3		5000	2,500	MBH	1.00	\$146,891	2012	35		2047
BL03	BOILER - GAS (>2,000 MBH)	B-4		5000	2,500	MBH	1.00	\$146,891	2012	35		2047
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-0A2		B0100	0.30	HP	1.00	\$2,702	2012	25		2037
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	UH-1 LOADING DOCK		LOADING DOCK	0.10	HP	1.00	\$901	2012	25		2037
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	UH-2 LOADING DOCK		LOADING DOCK	0.10	HP	1.00	\$901	2012	25		2037
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-3		CENTER STAIRWELL	0.30	HP	1.00	\$2,702	2012	25		2037

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-5A4		5000	0.30	HP	1.00	\$2,702	2012	25		2037
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-5B2		5000	0.30	HP	1.00	\$2,702	2012	25		2037
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-5B5		PENTHOUSE ATRIUM	0.67	HP	1.00	\$6,035	2012	25		2037
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-3C2		3300	0.50	HP	1.00	\$4,504	2012	25		2037
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-3C1		3300	0.50	HP	1.00	\$4,504	2012	25		2037
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-4282A		4282A	0.30	HP	1.00	\$2,702	2016	25		2041
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-5C1		5000	0.30	HP	1.00	\$2,702	2012	25		2037
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-5B1		5000	0.30	HP	1.00	\$2,702	2012	25		2037
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-5A2		5000	0.30	HP	1.00	\$2,702	2012	25		2037
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-5A3		5000	0.30	HP	1.00	\$2,702	2012	25		2037
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-5A1		TOP OF WEST STAIRWELL	0.33	HP	1.00	\$2,973	2012	25		2037
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-5B4		PENTHOUSE ATRIUM	0.67	HP	1.00	\$6,035	2012	25		2037
AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	DOAS-CL-2 OA		5000	10	HP	1.00	\$81,604	2012	25		2037
AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	DOAS-CL-2 EF		5000	10	HP	1.00	\$81,604	2012	25		2037
AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	AHU-A-1		3300	10	HP	1.00	\$81,604	2012	25		2037

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
AH12	AIR HANDLING UNIT - INDOOR (35-45 HP)	EAHU-L-1B		5000	40	HP	1.00	\$229,728	2012	25		2037
AH13	AIR HANDLING UNIT - INDOOR (45-63 HP)	AHU-CL-1		5000	100	HP	1.00	\$478,556	2012	25		2037
AH13	AIR HANDLING UNIT - INDOOR (45-63 HP)	AHU-L-1		5000	50	HP	1.00	\$239,278	2012	25		2037
AH13	AIR HANDLING UNIT - INDOOR (45-63 HP)	AHU-CL-2		5000	100	HP	1.00	\$478,556	2012	25		2037
AH32	ENTHALPY WHEEL, ENERGY RECOVERY, AIR TO AIR (20000-50000 CFM)	AHU-L-1B		5000	10,806	CFM	1.00	\$27,794	2012	25		2037
AH32	ENTHALPY WHEEL, ENERGY RECOVERY, AIR TO AIR (20000-50000 CFM)	DOAS-CL-2		5000	20,625	CFM	1.00	\$53,049	2012	25		2037
AH32	ENTHALPY WHEEL, ENERGY RECOVERY, AIR TO AIR (20000-50000 CFM)	AHU-A-1		3300	7,481	CFM	1.00	\$19,242	2012	25		2037
AH44	HEAT PUMP, WATER-SOURCE	HP-0A1		B0100	1.50	TON	1.00	\$5,832	2012	20		2032
AH44	HEAT PUMP, WATER-SOURCE	HP-1B3		FLR 1 CORRIDOR	3	TON	1.00	\$11,664	2012	20		2032
AH44	HEAT PUMP, WATER-SOURCE	HP-1B2		1107	3	TON	1.00	\$11,664	2012	20		2032
AH44	HEAT PUMP, WATER-SOURCE	HP-2B2		2120	3	TON	1.00	\$11,664	2012	20		2032
AH44	HEAT PUMP, WATER-SOURCE	HP-4B1		4103	3	TON	1.00	\$11,664	2012	20		2032
AH44	HEAT PUMP, WATER-SOURCE	HP-5B1		PENTHOUSE ATRIUM	1	TON	1.00	\$3,888	2012	20		2032
AH44	HEAT PUMP, WATER-SOURCE	HP-5B2		5000	1	TON	1.00	\$3,888	2021	20		2041
AH44	HEAT PUMP, WATER-SOURCE	HP-5B3		5000	1	TON	1.00	\$3,888	2021	20		2041

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
FN02	FAN - AXIAL, RETURN, 1.5" SP (3-5 HP) 13,200 CFM	RF-A-1		3300	5	HP	1.00	\$12,144	2012	20		2032
FN07	FAN - AXIAL, RETURN, 1.5" SP (>20 HP) 38,500 CFM	RF-CL-1A		5000	25	HP	1.00	\$41,446	2012	20		2032
FN07	FAN - AXIAL, RETURN, 1.5" SP (>20 HP) 38,500 CFM	RF-CL-1B		5000	25	HP	1.00	\$41,446	2012	20		2032
FN07	FAN - AXIAL, RETURN, 1.5" SP (>20 HP) 38,500 CFM	RF-CL-2A		5000	25	HP	1.00	\$41,446	2012	20		2032
FN07	FAN - AXIAL, RETURN, 1.5" SP (>20 HP) 38,500 CFM	RF-CL-2B		5000	25	HP	1.00	\$41,446	2012	20		2032
FN08	FAN - AXIAL, SUPPLY, 2.5" SP (<=3 HP) 3800 CFM	EX-L3		5000	1.50	HP	1.00	\$5,398	2012	20		2032
FN08	FAN - AXIAL, SUPPLY, 2.5" SP (<=3 HP) 3800 CFM	EX-L-1A		5000	3	HP	1.00	\$10,796	2020	20		2040
FN08	FAN - AXIAL, SUPPLY, 2.5" SP (<=3 HP) 3800 CFM	EX-L-1B		5000	3	HP	1.00	\$10,796	2019	20		2039
FN08	FAN - AXIAL, SUPPLY, 2.5" SP (<=3 HP) 3800 CFM	SF-2		5000	1	HP	1.00	\$3,599	2012	20		2032
FN08	FAN - AXIAL, SUPPLY, 2.5" SP (<=3 HP) 3800 CFM	EX-14		B0100	2	HP	1.00	\$7,197	2012	20		2032
FN08	FAN - AXIAL, SUPPLY, 2.5" SP (<=3 HP) 3800 CFM	SF-1		B0100	3	HP	1.00	\$10,796	2012	20		2032
FN08	FAN - AXIAL, SUPPLY, 2.5" SP (<=3 HP) 3800 CFM	SF-3		B0100	1	HP	1.00	\$3,599	2012	20		2032
FN08	FAN - AXIAL, SUPPLY, 2.5" SP (<=3 HP) 3800 CFM	SF-5		LECTURE HALL CRAWL SPACE	1	HP	1.00	\$3,599	2012	20		2032
FN09	FAN - AXIAL, SUPPLY, 2.5" SP (3-5 HP) 6400 CFM	EX-L-2A		5000	5	HP	1.00	\$12,144	2019	20		2039
FN09	FAN - AXIAL, SUPPLY, 2.5" SP (3-5 HP) 6400 CFM	EX-L-2B		5000	5	HP	1.00	\$12,144	2020	20		2040

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	INSTR DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
FN18	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (10"-18" DIAMETER)	EX-13		ROOF	1	EA	0.50	\$1,810	2012	20		2032
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EX-6		ROOF	1	EA	1.00	\$7,951	2012	20		2032
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	SF-E-1		ROOF	7.50	HP	1.00	\$10,517	2012	20		2032
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	SF-E-2		ROOF	7.50	HP	1.00	\$10,517	2012	20		2032
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EX-12		B0101	0.20	HP	1.00	\$280	2012	20		2032
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EX-19		LECTURE HALL CRAWL SPACE	0.75	HP	1.00	\$1,052	2012	20		2032
FN25	FAN - PROPELLER WITH LOUVER, 1/4" SP (<=0.5 HP)	SF-4		B0100	0.30	HP	0.70	\$1,573	2012	20		2032
FN27	FAN - PROPELLER WITH LOUVER, 1/4" SP (1-1.5 HP)	EX-11		3300	1.50	HP	0.70	\$2,151	2012	20		2032
FN27	FAN - PROPELLER WITH LOUVER, 1/4" SP (1-1.5 HP)	EX-10		3300	1.50	HP	0.70	\$2,151	2012	20		2032
FN31	FAN - UTILITY SET, 1/4" SP (<=0.5 HP)	EX-8		5000	0.50	HP	1.00	\$4,082	2012	20		2032
FN31	FAN - UTILITY SET, 1/4" SP (<=0.5 HP)	EX-5		5000	0.50	HP	1.00	\$4,082	2012	20		2032
FN32	FAN - UTILITY SET, 1/4" SP (.4-1.25 HP)	EX-16		5000	1	HP	1.00	\$5,595	2012	20		2032
FN32	FAN - UTILITY SET, 1/4" SP (.4-1.25 HP)	EX-4		5000	0.75	HP	1.00	\$4,196	2012	20		2032
FN32	FAN - UTILITY SET, 1/4" SP (.4-1.25 HP)	EX-7		5000	0.75	HP	1.00	\$4,196	2012	20		2032
FN33	FAN - UTILITY SET, 1/4" SP (1.25-4 HP)	EX-1		5000	3	HP	1.00	\$12,533	2012	20		2032

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
FN33	FAN - UTILITY SET, 1/4" SP (1.25-4 HP)	EX-2		5000	2	HP	1.00	\$8,355	2012	20		2032
FN33	FAN - UTILITY SET, 1/4" SP (1.25-4 HP)	EX-3		5000	2	HP	1.00	\$8,355	2012	20		2032
HD01	HOOD, FUME	VENTED BIO-SAFETY		4210C	4	LF	0.80	\$7,588	2016	20		2036
HD01	HOOD, FUME	GROUP OF 4 NEW HOODS		FLR 4 LAB AREAS	16	LF	1.00	\$37,940	2016	20		2036
HD01	HOOD, FUME	GROUP OF 7 ORIG HOODS		FLRS 1-3 LAB AREAS	28	LF	1.00	\$66,394	2012	20		2032
HV09	HVAC DISTRIBUTION NETWORKS - LABORATORY, WET			FLR 4	23,573	SF	0.95	\$1,724,074	2016	40		2056
HV11	HVAC DISTRIBUTION NETWORKS - MEDICAL CLINIC			FLRS 1-3	161,269	SF	0.93	\$4,126,606	2012	40		2052
HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	SPIRAX SARCO		B0100	1	EA	1.00	\$4,466	2012	20		2032
HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	SPIRAX SARCO 2		B0100	1	EA	1.00	\$4,466	2012	20		2032
PH01	PUMP - ELECTRIC (<=10 HP)	GROUP OF 4 FOR WATER PIPES		5000	0.80	HP	1.00	\$1,316	2012	25		2037
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-1		5000	10	HP	1.00	\$16,452	2012	25		2037
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-2		5000	5	HP	1.00	\$8,226	2012	25		2037
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-3		5000	3	HP	1.00	\$4,936	2012	25		2037
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-4		5000	10	HP	1.00	\$16,452	2012	25		2037
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-5		5000	1.50	HP	1.00	\$2,468	2012	25		2037

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-6		5000	1.50	HP	1.00	\$2,468	2012	25		2037
PH01	PUMP - ELECTRIC (<=10 HP)	PCHP-1		B0100	7.50	HP	1.00	\$12,339	2012	25		2037
PH01	PUMP - ELECTRIC (<=10 HP)	PCHP-2		B0100	7.50	HP	1.00	\$12,339	2012	25		2037
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-7			3	HP	1.00	\$4,936	2012	25		2037
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-8			3	HP	1.00	\$4,936	2012	25		2037
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-9			3	HP	1.00	\$4,936	2012	25		2037
PH06	PUMP - ELECTRIC (30 - 40 HP)	CHP-1		B0100	40	HP	1.00	\$39,482	2012	25		2037
PH06	PUMP - ELECTRIC (30 - 40 HP)	CHP-2		B0100	40	HP	1.00	\$39,482	2012	25		2037
PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	STERILIZER		1258	1.50	HP	1.00	\$11,155	2012	20		2032
PH16	CONDENSATE RECEIVER, PNEUMATIC (<=30 GPM)	SPIRAX SARCO FLASH TANK		B0100	10	GPM	1.00	\$19,372	2012	20		2032
AH41	COMPUTER ROOM AC UNIT - CHILLED WATER (10 -20 TON)	CRAC 1		2308	11	TON	1.00	\$26,169	2012	15		2027
AH41	COMPUTER ROOM AC UNIT - CHILLED WATER (10 -20 TON)	CRAC 2		2308	11	TON	1.00	\$26,169	2012	15		2027
AH41	COMPUTER ROOM AC UNIT - CHILLED WATER (10 -20 TON)	CRAC 3		2308	11	TON	1.00	\$26,169	2012	15		2027
AH41	COMPUTER ROOM AC UNIT - CHILLED WATER (10 -20 TON)	CRAC 4		2308	11	TON	1.00	\$26,169	2012	15		2027
AC03	AIR COMPRESSOR SYSTEM - HVAC CONTROLS (>10 TOTAL HP)	QUINCY		B0100	15	HP	1.00	\$28,267	2012	20		2032

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
BA09	HVAC CONTROLS - TERMINAL ASSEMBLIES - LABORATORY, WET			FLR 4	23,573	SF	0.95	\$176,289	2016	20		2036
BA11	HVAC CONTROLS - TERMINAL ASSEMBLIES - MEDICAL CLINIC			FLRS 1-3	161,269	SF	0.93	\$449,696	2012	20		2032
BA32	HVAC CONTROLS - FIELD PANELS/OPS SOFTWARE - LABORATORY			FLR 4	23,573	SF	0.95	\$49,604	2016	10		2026
BA34	HVAC CONTROLS - FIELD PANELS/OPS SOFTWARE - MEDICAL CLINIC			FLRS 1-3	161,269	SF	0.93	\$127,694	2012	10		2022
FS01	FIRE SPRINKLER SYSTEM			FLRS 1-3	160,261	SF	0.93	\$1,871,077	2012	80		2092
FS01	FIRE SPRINKLER SYSTEM			FLR 4	27,068	SF	0.95	\$322,820	2016	80		2096
FS01	FIRE SPRINKLER SYSTEM	DRY PIPE		LOADING DOCK	1,008	SF	1.18	\$14,932	2012	80		2092
FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER			1015	1	EA	1.00	\$37,851	2012	15	3	2030
FA02	FIRE ALARM SYSTEM - DEVICES			FLRS 1-3	161,269	SF	0.93	\$611,820	2012	18		2030
FA02	FIRE ALARM SYSTEM - DEVICES			FLR 4	27,068	SF	0.95	\$104,899	2016	18		2034
SE09	ELECTRICAL DISTRIBUTION NETWORK - LABORATORY, WET			FLR 4	23,573	SF	0.95	\$554,456	2016	40		2056
SE11	ELECTRICAL DISTRIBUTION NETWORK - MEDICAL CLINIC			FLRS 1-3	161,269	SF	0.93	\$3,019,783	2012	40		2052
SG05	MAIN SWITCHBOARD W/BREAKERS (1200-1600 AMP)	GENERATOR SWITCHGEAR		E1180	1,600	AMP	1.00	\$128,638	2012	20		2032
SG08	MC SWGR BREAKER - FME Adjustable (<200 AMP)			E1182	250	AMP	1.00	\$10,559	2012	25		2037
SG09	MC SWGR BREAKER - FME Adjustable (200-400 AMP)			E1182	400	AMP	1.00	\$10,308	2012	25		2037

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
SG10	MC SWGR BREAKER - FME Adjustable (400-600 AMP)			E1182	1,200	AMP	1.00	\$36,718	2012	25		2037
SG11	MC SWGR BREAKER - FME Adjustable (600-800 AMP)			E1182	5,000	AMP	1.00	\$131,752	2012	25		2037
SG14	MC SWGR BREAKER - FME Adjustable (2500-3200 AMP)			E1182	6,000	AMP	1.00	\$95,277	2012	25		2037
SG20	MC SWGR ENCLOSURE VERT STACK SECT (2500-3200 AMP)			E1182	7	EA	1.00	\$38,063	2012	50		2062
SG23	MC SWGR INCOMING PWR CONNECT (CABLE/CONDUIT)			E1182	1	EA	1.00	\$7,816	2012	50		2062
SG24	MC SWGR METERING AND INSTRUMENT SYSTEMS			E1182	2	EA	1.00	\$93,794	2012	50		2062
SG25	SWGR TIEBREAK SELECTOR, FME, MANUAL			E1182	1	EA	1.00	\$22,105	2012	35		2047
TX21	TRANSFORMER - OIL-FILLED, 3PH, 5-15KV PRIMARY (1500-2000 KVA)	TX-17		SOUTHEAST EXTERIOR	2,000	KVA	1.00	\$150,918	2012	40		2052
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-1		5000	3	HP	1.00	\$2,102	2012	12		2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-2		5000	2	HP	1.00	\$1,401	2012	12		2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-L3		5000	1.50	HP	1.00	\$1,051	2019	12		2031
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-3		5000	2	HP	1.00	\$1,401	2012	12		2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HWP-2		5000	5	HP	1.00	\$3,503	2012	12		2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-L-2A		5000	5	HP	1.00	\$3,503	2019	12		2031
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-L-1B		5000	3	HP	1.00	\$2,102	2016	12		2028

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HW-AHU-L1A		5000	1	HP	1.00	\$701	2016	12		2028
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HW-DOAS-CL-2		5000	1	HP	1.00	\$701	2012	12		2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HW-AHU-L1-B		5000	1	HP	1.00	\$701	2016	12		2028
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-L-2B		5000	5	HP	1.00	\$3,503	2020	12		2032
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HWP-3		5000	3	HP	1.00	\$2,102	2012	12		2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HWP-5		5000	1.50	HP	1.00	\$1,051	2012	12		2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HWP-6		5000	1.50	HP	1.00	\$1,051	2012	12		2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HW-AHU-A-1		3300	1	HP	1.00	\$701	2012	12		2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-L-1A		5000	3	HP	1.00	\$2,102	2016	12		2028
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	RF-A-1		3300	7.50	HP	1.00	\$4,764	2012	12		2024
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	PCHP-1		B0100	7.50	HP	1.00	\$4,764	2012	12		2024
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	PCHP-2		B0100	7.50	HP	1.00	\$4,764	2012	12		2024
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	DOAS-CL-2 OA		5000	10	HP	1.00	\$5,298	2012	12		2024
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	DOAS-CL-2 EF		5000	10	HP	1.00	\$5,298	2012	12		2024
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	HWP-1		5000	10	HP	1.00	\$5,298	2012	12		2024

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	HWP-4		5000	10	HP	1.00	\$5,298	2012	12		2024
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	AHU-A-1		3300	10	HP	1.00	\$5,298	2012	12		2024
VF06	VARIABLE FREQUENCY DRIVE (20-25 HP)	RF-CL-1A		5000	25	HP	1.00	\$8,870	2012	16		2028
VF06	VARIABLE FREQUENCY DRIVE (20-25 HP)	RF-CL-1B		5000	25	HP	1.00	\$8,870	2012	16		2028
VF06	VARIABLE FREQUENCY DRIVE (20-25 HP)	RF-CL-2A		5000	25	HP	1.00	\$8,870	2012	16		2028
VF06	VARIABLE FREQUENCY DRIVE (20-25 HP)	RF-CL-2B		5000	25	HP	1.00	\$8,870	2012	16		2028
VF08	VARIABLE FREQUENCY DRIVE (30-40 HP)	EAHU-L-1A		5000	40	HP	1.00	\$11,607	2012	16		2028
VF08	VARIABLE FREQUENCY DRIVE (30-40 HP)	EAHU-L-1B		5000	40	HP	1.00	\$11,607	2012	16		2028
VF08	VARIABLE FREQUENCY DRIVE (30-40 HP)	CHP-1		B0100	40	HP	1.00	\$11,607	2012	16		2028
VF08	VARIABLE FREQUENCY DRIVE (30-40 HP)	CHP-2		B0100	40	HP	1.00	\$11,607	2012	16		2028
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	AHU-CL-1A		5000	50	HP	1.00	\$13,371	2012	16		2028
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	AHU-CL-1B		5000	50	HP	1.00	\$13,371	2012	16		2028
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	AHU-L-1A		5000	50	HP	1.00	\$13,371	2020	16		2036
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	AHU-L-1B		5000	50	HP	1.00	\$13,371	2019	16		2035
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	AHU-CL-2A		5000	50	HP	1.00	\$13,371	2012	16		2028

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	AHU-CL-2B		5000	50	HP	1.00	\$13,371	2012	16		2028
LE03	LIGHTING - EXTERIOR, RECESSED (INC, CFL, LED)	ROUND RECESSED CFL		EXTERIOR	21	EA	1.18	\$5,811	2012	15		2027
LE04	LIGHTING - EXTERIOR, STANCHION LUMINAIRE, 12-FOOT	15-FT STANCHION LED		EXTERIOR	15	EA	1.00	\$32,735	2012	15		2027
LE08	LIGHTING - EXTERIOR, WALL LANTERN or FLOOD (INC, CFL, LED)	WALL CFL		EXTERIOR	12	EA	1.18	\$5,877	2012	15		2027
LE08	LIGHTING - EXTERIOR, WALL LANTERN or FLOOD (INC, CFL, LED)	WALL LED		EXTERIOR	2	EA	1.00	\$830	2016	15		2031
LE08	LIGHTING - EXTERIOR, WALL LANTERN or FLOOD (INC, CFL, LED)	ROOF JELLY JAR		ROOF	1	EA	1.18	\$490	2012	15		2027
LE08	LIGHTING - EXTERIOR, WALL LANTERN or FLOOD (INC, CFL, LED)	UPDATED WITH LED		NORTH EXT STAIRWELL	2	EA	1.18	\$980	2012	15		2027
LI09	LIGHTING SYSTEM, INTERIOR - LABORATORY, WET			FLR 4	23,573	SF	0.95	\$238,104	2016	20		2036
LI11	LIGHTING SYSTEM, INTERIOR - MEDICAL CLINIC			FLRS 1-3	161,269	SF	1.13	\$1,043,366	2012	20		2032
GN05	GENERATOR - DIESEL (>500 KW)	EMG-001		SOUTHWEST EXTERIOR	750	KW	1.00	\$452,483	2012	25		2037
GN16	SWITCH - AUTO TRANSFER, 480 V (>400 AMP)	ATS LS		E1180	1,000	AMP	1.00	\$28,978	2012	25		2037
GN16	SWITCH - AUTO TRANSFER, 480 V (>400 AMP)	ATS MEQ		E1180	1,000	AMP	1.00	\$28,978	2012	25		2037
CR01	WALK-IN REFRIGERATOR OR FREEZER STRUCTURE			4200	80	SF	1.18	\$32,385	2016	35		2051
CR02	REFRIGERATION SYSTEM - WALK-IN, 2 EVAP FANS, 6700 BTUH, CONDENSER			4200 & 5000	1	EA	1.00	\$9,704	2016	10		2026
DK01	DOCK LEVELER			LOADING DOCK	3	EA	1.00	\$30,399	2012	20		2032

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	INSL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
FF01	DENTAL CHAIR	REPLACE EARLY		FLRS 1 & 2	33	EA	1.00	\$478,952	2012	20	-6	2026
FF01	DENTAL CHAIR	NORMAL LIFECYCLE		FLRS 1 & 2	100	EA	1.00	\$1,451,369	2012	20		2032
Grand Total:								\$48,536,775				

RECURRING NEEDS BY YEAR

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

No Projected Component Replacement Cost for Asset No. 256 for DR

2021									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
PP15	GREYWATER LIFT STATION - PUMPS ONLY - TWICE A YEAR	REPLACE 2 PUMPS PER YEAR		B0100	D2030	3	HP	\$4,265	2021
AS01	AMALGAM SEPARATOR CLEANOUT SERVICE	WORKS W/ SPENCER TURB		B0100	D2030	1	SYS	\$5,086	2021
PG13	VACUUM PUMP - OIL RING SEAL (>40 HP), WITH TRAP	SPENCER TURBINE 2	814425-K11	B0100	D2090	60	HP	\$169,645	2021
2021 PROJECTED COMPONENT REPLACEMENT COST								\$178,995.89	

2022									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR

RECURRING NEEDS BY YEAR

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

BF01	BACKFLOW PREVENTER (<=1 INCH)	STERILIZER		1258	D2020	1	EA	\$1,080	2022
BF01	BACKFLOW PREVENTER (<=1 INCH)	NCWCP-1		B0100	D2020	1	EA	\$1,080	2022
BF02	BACKFLOW PREVENTER (1-2 INCHES)	BROWN		PENTHOUSE	D2020	1	EA	\$2,409	2022
BF02	BACKFLOW PREVENTER (1-2 INCHES)	NPCW		B0100	D2020	1	EA	\$2,409	2022
BF03	BACKFLOW PREVENTER (2-3 INCHES)	BLUE		PENTHOUSE	D2020	1	EA	\$7,944	2022
BF05	BACKFLOW PREVENTER (4-6 INCHES)	DOM WATER 1		1259	D2020	1	EA	\$13,147	2022
BF05	BACKFLOW PREVENTER (4-6 INCHES)	DOM WATER 2		1259	D2020	1	EA	\$13,147	2022
BF06	BACKFLOW PREVENTER (6-8 INCHES)	FIRE STANDPIPE		1259	D2020	1	EA	\$22,806	2022
BA34	HVAC CONTROLS - FIELD PANELS/OPS SOFTWARE - MEDICAL CLINIC			FLRS 1-3	D3060	161,269	SF	\$131,525	2022
2022 PROJECTED COMPONENT REPLACEMENT COST								\$195,549.09	

No Projected Component Replacement Cost for Asset No. 256 for 2023

RECURRING NEEDS BY YEAR

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

2024									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
VT04	ELEVATOR CAB RENOVATION - PASSENGER	PASSENGER 3		CENTER	D1010	1	EA	\$58,204	2024
VT04	ELEVATOR CAB RENOVATION - PASSENGER	PASSENGER 2		CENTER	D1010	1	EA	\$58,204	2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-1		5000	D5010	3	HP	\$2,296	2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-2		5000	D5010	2	HP	\$1,531	2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-3		5000	D5010	2	HP	\$1,531	2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HWP-2		5000	D5010	5	HP	\$3,827	2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HW-DOAS-CL-2		5000	D5010	1	HP	\$765	2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HWP-3		5000	D5010	3	HP	\$2,296	2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HWP-5		5000	D5010	1.50	HP	\$1,148	2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HWP-6		5000	D5010	1.50	HP	\$1,148	2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HW-AHU-A-1		3300	D5010	1	HP	\$765	2024

RECURRING NEEDS BY YEAR

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

VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	RF-A-1		3300	D5010	7.50	HP	\$5,206	2024
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	PCHP-1		B0100	D5010	7.50	HP	\$5,206	2024
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	PCHP-2		B0100	D5010	7.50	HP	\$5,206	2024
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	DOAS-CL-2 OA		5000	D5010	10	HP	\$5,789	2024
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	DOAS-CL-2 EF		5000	D5010	10	HP	\$5,789	2024
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	HWP-1		5000	D5010	10	HP	\$5,789	2024
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	HWP-4		5000	D5010	10	HP	\$5,789	2024
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	AHU-A-1		3300	D5010	10	HP	\$5,789	2024
2024 PROJECTED COMPONENT REPLACEMENT COST								\$176,281.70	

No Projected Component Replacement Cost for Asset No. 256 for 2025

RECURRING NEEDS BY YEAR

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

2026									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
BA32	HVAC CONTROLS - FIELD PANELS/OPS SOFTWARE - LABORATORY			FLR 4	D3060	23,573	SF	\$57,505	2026
CR02	REFRIGERATION SYSTEM - WALK-IN, 2 EVAP FANS, 6700 BTUH, CONDENSER			4200 & 5000	E1020	1	EA	\$11,250	2026
FF01	DENTAL CHAIR	REPLACE EARLY		FLRS 1 & 2	E2010	33	EA	\$555,236	2026
2026 PROJECTED COMPONENT REPLACEMENT COST								\$623,991.15	

2027									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
DR30	DOOR OPERATOR, OVERHEAD DOOR, COMMERCIAL, PADS			LOADING DOCK	B2030	3	EA	\$7,612	2027
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD			FLRS 1-3	C3020	45,000	SF	\$657,945	2027
PG13	VACUUM PUMP - OIL RING SEAL (>40 HP), WITH TRAP	SPENCER TURBINE 1	814427-K11	B0100	D2090	60	HP	\$202,565	2027
PG13	VACUUM PUMP - OIL RING SEAL (>40 HP), WITH TRAP	SPENCER TURBINE 3	814426-K11	B0100	D2090	60	HP	\$202,565	2027

RECURRING NEEDS BY YEAR

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

AH41	COMPUTER ROOM AC UNIT - CHILLED WATER (10 -20 TON)	CRAC 1		2308	D3050	11	TON	\$31,247	2027
AH41	COMPUTER ROOM AC UNIT - CHILLED WATER (10 -20 TON)	CRAC 2		2308	D3050	11	TON	\$31,247	2027
AH41	COMPUTER ROOM AC UNIT - CHILLED WATER (10 -20 TON)	CRAC 3		2308	D3050	11	TON	\$31,247	2027
AH41	COMPUTER ROOM AC UNIT - CHILLED WATER (10 -20 TON)	CRAC 4		2308	D3050	11	TON	\$31,247	2027
LE03	LIGHTING - EXTERIOR, RECESSED (INC, CFL, LED)	ROUND RECESSED CFL		EXTERIOR	D5020	21	EA	\$6,939	2027
LE04	LIGHTING - EXTERIOR, STANCHION LUMINAIRE, 12-FOOT	15-FT STANCHION LED		EXTERIOR	D5020	15	EA	\$39,088	2027
LE08	LIGHTING - EXTERIOR, WALL LANTERN or FLOOD (INC, CFL, LED)	WALL CFL		EXTERIOR	D5020	12	EA	\$7,017	2027
LE08	LIGHTING - EXTERIOR, WALL LANTERN or FLOOD (INC, CFL, LED)	ROOF JELLY JAR		ROOF	D5020	1	EA	\$585	2027
LE08	LIGHTING - EXTERIOR, WALL LANTERN or FLOOD (INC, CFL, LED)	UPDATED WITH LED		NORTH EXT STAIRWELL	D5020	2	EA	\$1,170	2027

2027 PROJECTED COMPONENT REPLACEMENT COST

\$1,250,471.33

2028

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
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RECURRING NEEDS BY YEAR

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

VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-L-1B		5000	D5010	3	HP	\$2,585	2028
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HW-AHU-L1A		5000	D5010	1	HP	\$862	2028
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	HW-AHU-L1-B		5000	D5010	1	HP	\$862	2028
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	EX-L-1A		5000	D5010	3	HP	\$2,585	2028
VF06	VARIABLE FREQUENCY DRIVE (20-25 HP)	RF-CL-1A		5000	D5010	25	HP	\$10,908	2028
VF06	VARIABLE FREQUENCY DRIVE (20-25 HP)	RF-CL-1B		5000	D5010	25	HP	\$10,908	2028
VF06	VARIABLE FREQUENCY DRIVE (20-25 HP)	RF-CL-2A		5000	D5010	25	HP	\$10,908	2028
VF06	VARIABLE FREQUENCY DRIVE (20-25 HP)	RF-CL-2B		5000	D5010	25	HP	\$10,908	2028
VF08	VARIABLE FREQUENCY DRIVE (30-40 HP)	EAHU-L-1A		5000	D5010	40	HP	\$14,275	2028
VF08	VARIABLE FREQUENCY DRIVE (30-40 HP)	EAHU-L-1B		5000	D5010	40	HP	\$14,275	2028
VF08	VARIABLE FREQUENCY DRIVE (30-40 HP)	CHP-1		B0100	D5010	40	HP	\$14,275	2028
VF08	VARIABLE FREQUENCY DRIVE (30-40 HP)	CHP-2		B0100	D5010	40	HP	\$14,275	2028
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	AHU-CL-1A		5000	D5010	50	HP	\$16,445	2028
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	AHU-CL-1B		5000	D5010	50	HP	\$16,445	2028
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	AHU-CL-2A		5000	D5010	50	HP	\$16,445	2028

RECURRING NEEDS BY YEAR

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

VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	AHU-CL-2B		5000	D5010	50	HP	\$16,445	2028
2028 PROJECTED COMPONENT REPLACEMENT COST								\$173,405.89	

2029									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
IW01	WALL FINISH - PAINT, STANDARD			FLRS 1-3	C3010	560,000	SF	\$1,587,583	2029
2029 PROJECTED COMPONENT REPLACEMENT COST								\$1,587,582.67	

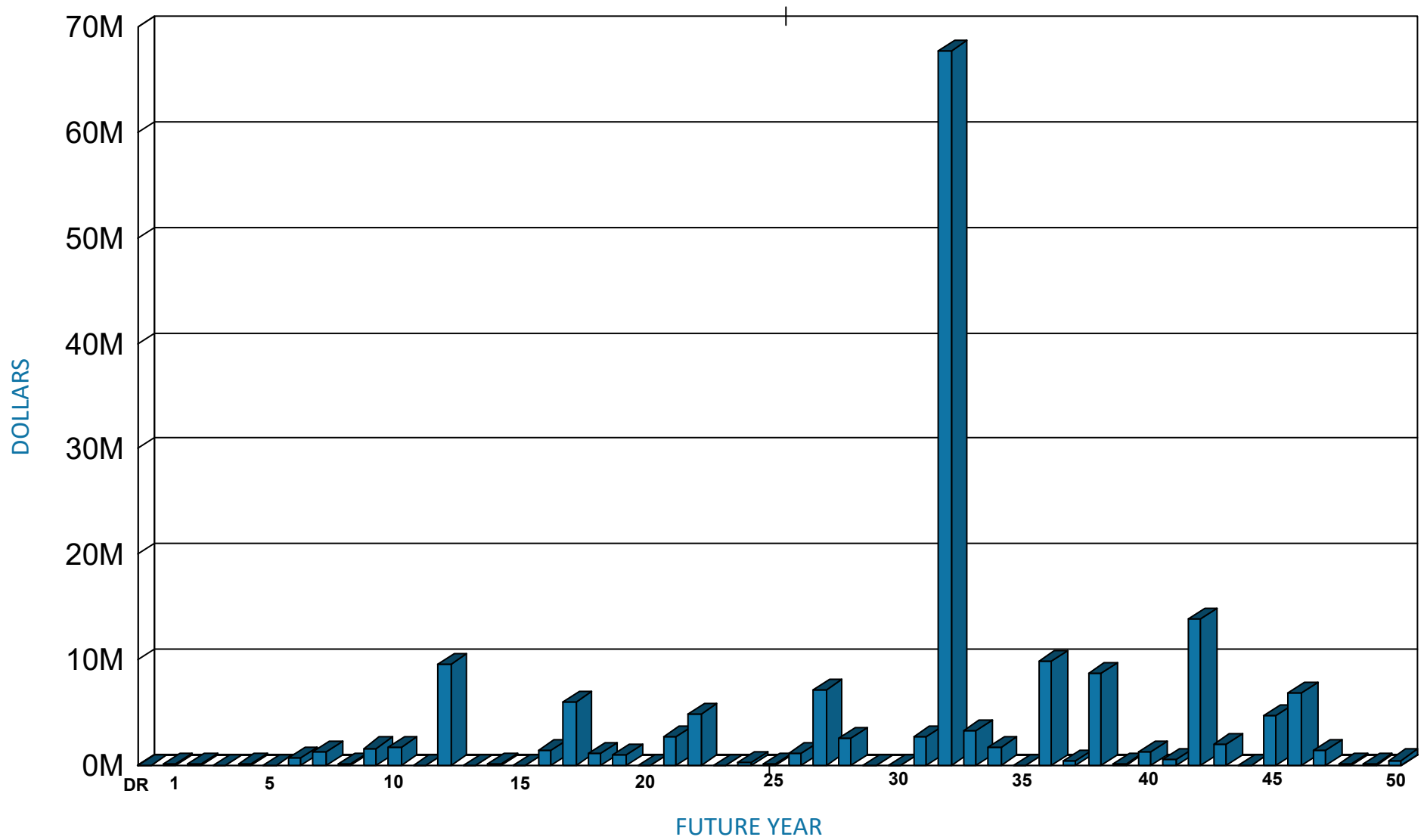
2030									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
IW01	WALL FINISH - PAINT, STANDARD			FLR 4	C3010	158,000	SF	\$461,363	2030
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD			FLR 4	C3020	21,000	SF	\$335,512	2030

RECURRING NEEDS BY YEAR

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

FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER			1015	D4030	1	EA	\$49,387	2030
FA02	FIRE ALARM SYSTEM - DEVICES			FLRS 1-3	D4030	161,269	SF	\$798,286	2030
2030 PROJECTED COMPONENT REPLACEMENT COST								\$1,644,547.25	

RECURRING COMPONENT EXPENDITURE PROJECTIONS

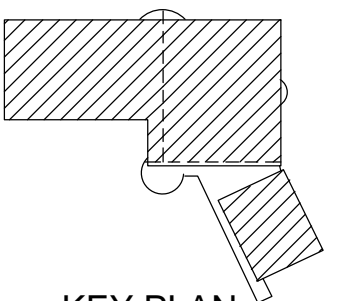


Average Annual Renewal Cost per SF \$7.42

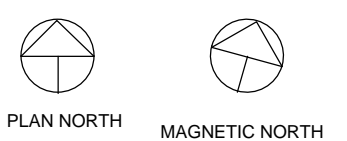
FACILITY CONDITION ASSESSMENT

SECTION 5

DRAWINGS



KEY PLAN



PLAN NORTH MAGNETIC NORTH

DATE 06.14.2019

SCALE 1/16" = 1'-0"

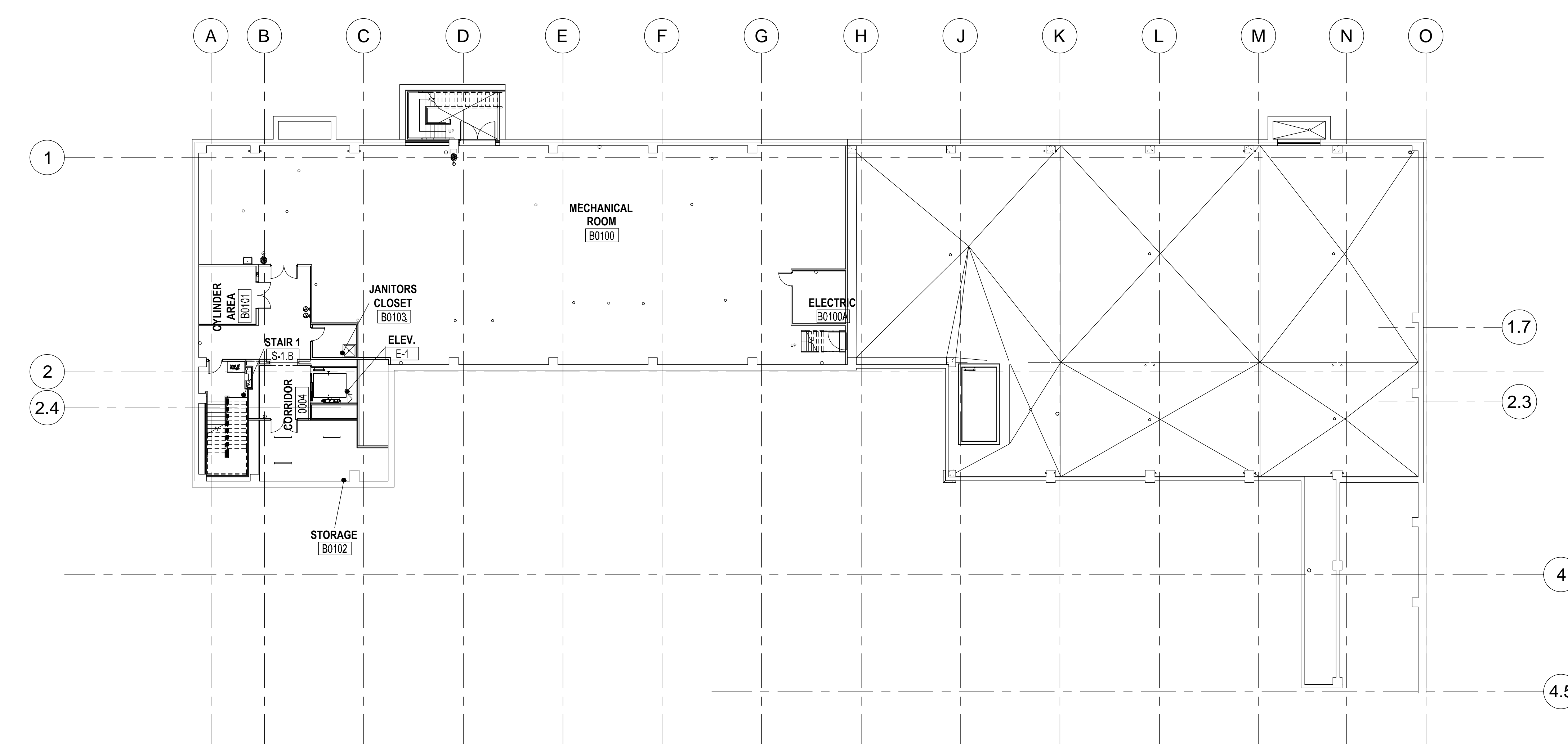
REVISIONS		
NO.	DATE	BY

TITLE

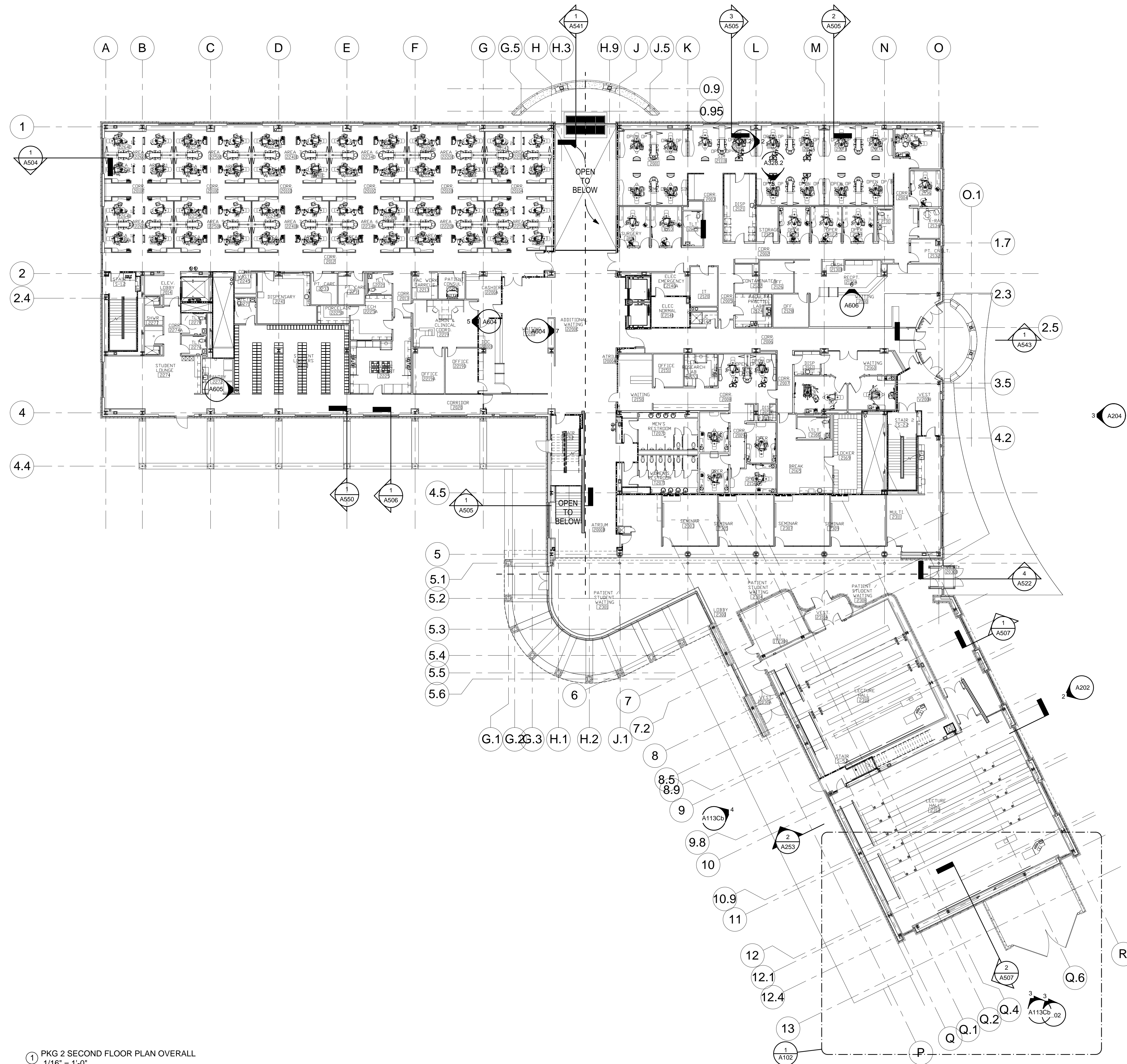
**BASEMENT FLOOR
PLAN OVERALL**

SHEET

A110



① PKG 2 BASEMENT FLOOR PLAN
OVERALL
1/16" = 1'-0"



① PKG 2 SECOND FLOOR PLAN OVERALL
1/16" = 1'-0"



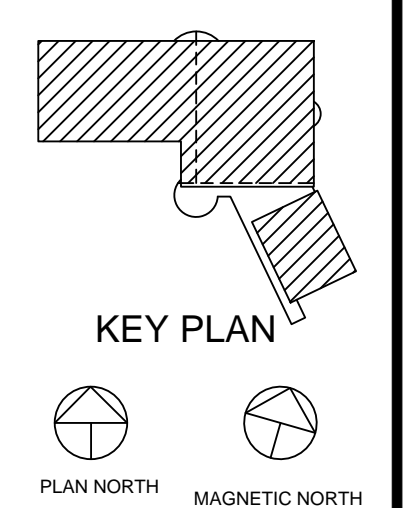
WD
WORKING DRAWINGS

WORKING DRAWINGS FOR:
ECU SCHOOL OF DENTISTRY
1851 MACGREGOR DOWNS RD GREENVILLE, NORTH CAROLINA 27834

FACILITIES MAINTENANCE
HEALTH SCIENCES CAMPUS
EAST CAROLINA UNIVERSITY
600 MOYE BOULEVARD
GREENVILLE, NC 27834

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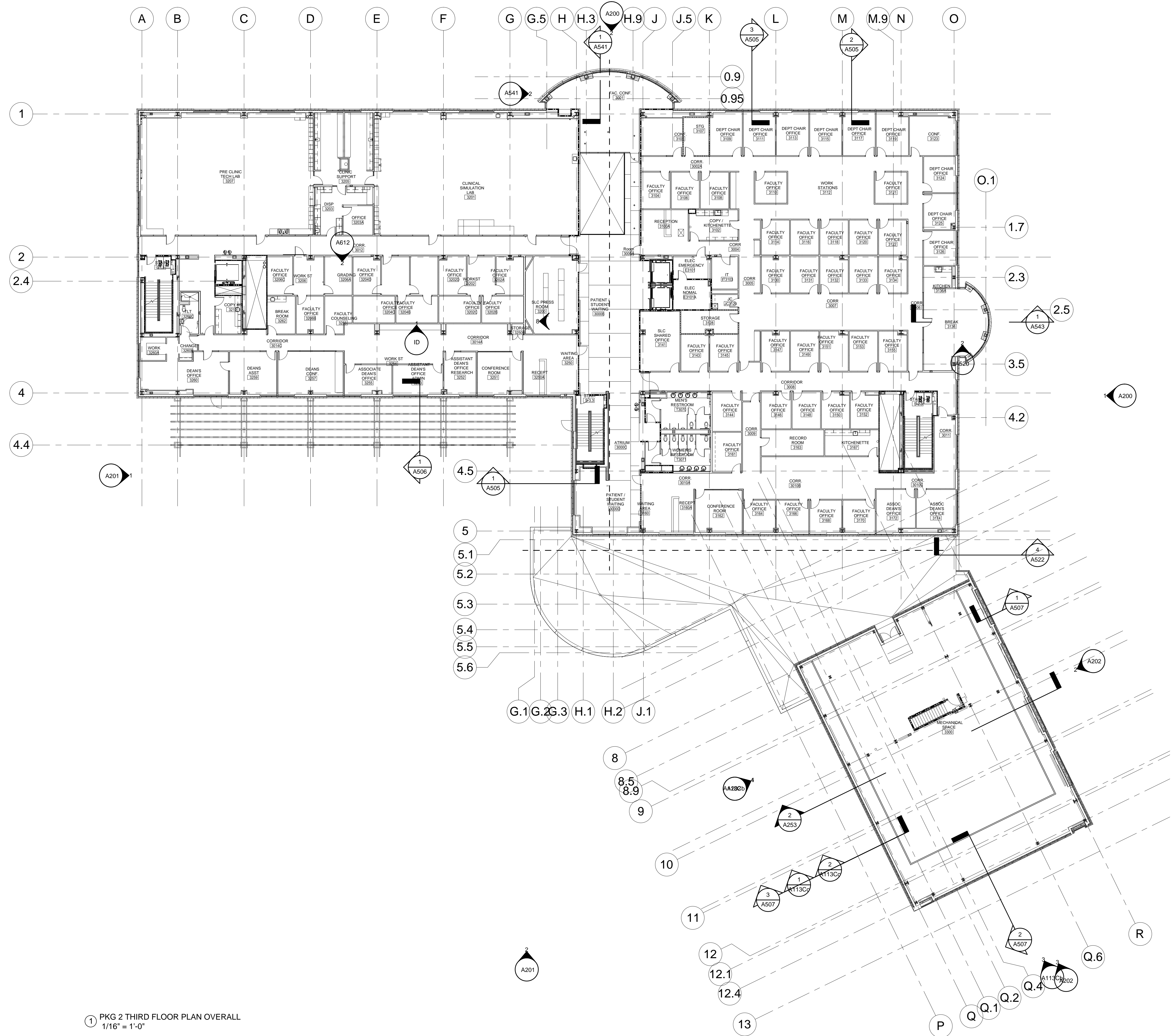
PLAN NORTH MAGNETIC NORTH

DATE 06.14.2019
SCALE 1/16" = 1'-0"

REVISIONS		
NO.	DATE	BY

TITLE
**SECOND FLOOR
PLAN OVERALL**

SHEET
A112
WORKING DRAWINGS



① PKG 2 THIRD FLOOR PLAN OVERALL
1/16" = 1'-0"



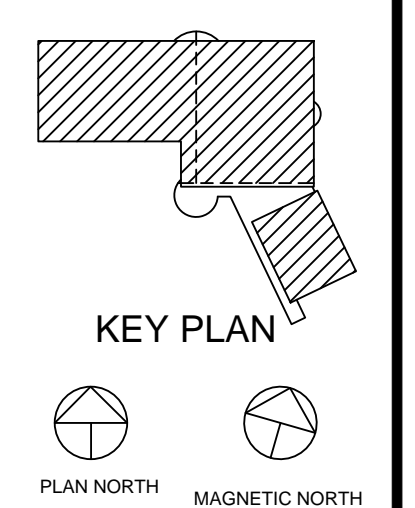
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WORKING DRAWINGS

WORKING DRAWINGS FOR:
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DATE 06.14.2019

SCALE 1/16" = 1'-0"

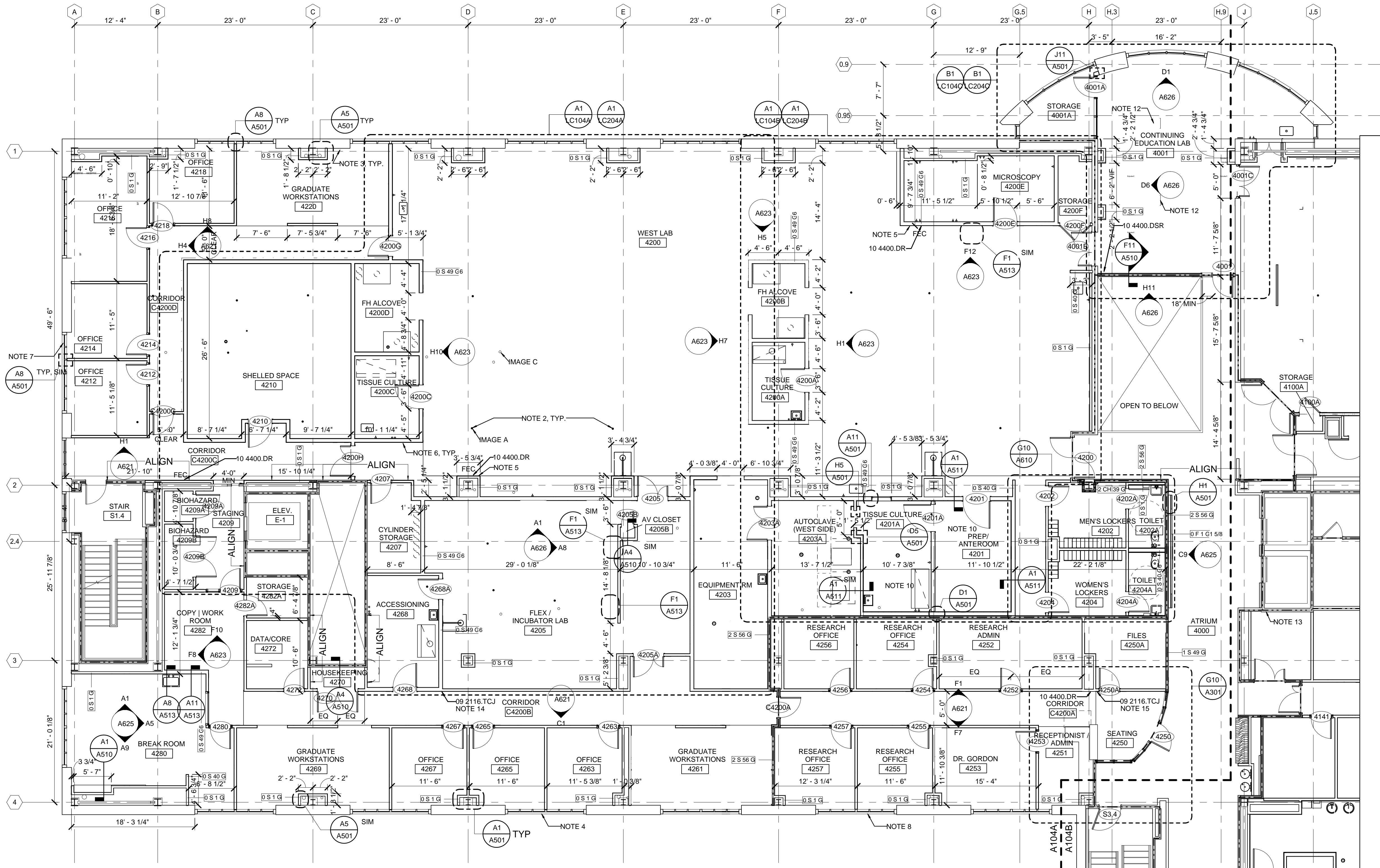
REVISIONS		
NO.	DATE	BY

TITLE

THIRD FLOOR PLAN OVERALL

SHEET

A113
WORKING DRAWINGS



- GENERAL NOTES**
- ALL WALLS ARE TYPE 0 S 49 G UNLESS NOTED OTHERWISE.
 - REPAIR CEILING TO EXISTING CONDITION OR BETTER WHERE ELEMENTS HAVE BEEN REMOVED OR WHERE CEILING HAS BEEN PARTIALLY DEMOLISHED.
 - KEEP CONSTRUCTION VENTILATION POINTS IN USE AS LONG AS POSSIBLE.
 - REFER TO FINISH PLAN, FINISH SCHEDULE, AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
 - REFER TO DETAILS ON A511 FOR INFILL AT DEMOLISHED SLAB PENETRATIONS.
 - AV DISPLAY SHOWN FOR COORDINATION ONLY.
 - CONTROL JOINTS ON SOFFITS CONTINUE UP FACE OF SOFFIT.
 - REFER TO H1/A404A FOR TYPICAL OFFICE RCP
- MATCH LINE
 - - - - - DISPLAY RAIL
 SEE NOTE 3

MATERIAL KEYNOTES

09 2116.TCJ	Control Joint
10 4400.DR	Multi-Purpose FE and Recessed Cabinet
10 4400.DSR	Multi-Purpose FE and Semi-recessed Cabinet

- SHEET SPECIFIC NOTES**
- NOT USED.
 - PATCH, FILL, AND REPAIR CONCRETE SLAB. SEE IMAGE A ON A104A. TOTAL FOR FOURTH FLOOR: 12'-4", 12'-3", AND 12'-2". REFER TO DETAILS A7 AND B7 ON SHEET A511.
 - COMPLETE GYPSUM BOARD FINISHING. JOINTS AND WALLBOARD HAVE BEEN FILLED WITH JOINT COMPOUND AND TAPE. NOT SANDED. SEE IMAGES A, B, C ON A104A.
 - REMOVE WINDOW FOR BUICK HOIST. REPAIR FLASHING AND REINSTALL AT END OF PROJECT.
 - VOICE OVER IP PHONE LOCATION. REFER TO ELECTRICAL.
 - ELECTRICAL PANEL. REFER TO ELECTRICAL.
 - EXISTING FLOOR BOX.
 - REINSTALL GLAZING, SEAL, CLEAN, AND FINISH PER ORIGINAL INSTRUCTIONS.
 - PROVIDE BLACKOUT SHADE AT SIDELIGHT/DOOR GLASS.
 - FOR WALLS THAT ENCLOSE THIS ROOM. REFER TO DETAILS CALLED OUT FOR ROOMS 4201 AND 4201A.
 - AV DISPLAY.
 - EXISTING FLOOR BOXES TO REMAIN.
 - REFER TO SPECIFICATION 06 2300, ALTERNATE 5 FOR BASE AND ALTERNATE SCOPE.
 - ALIGN WITH JOINT IN CEILING AND ACROSS CORRIDOR.
 - ALIGN WITH EDGE OF CEILING SOFFIT.

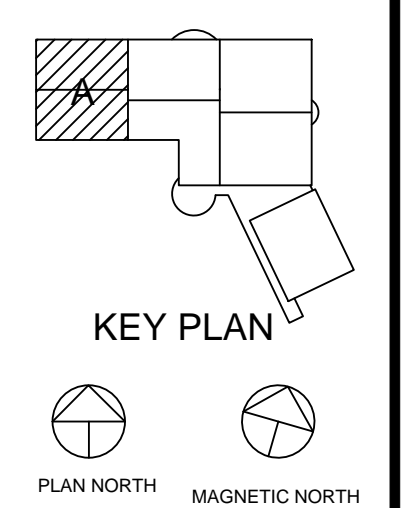


WORKING DRAWINGS FOR:
ECU SCHOOL OF DENTISTRY
 1851 MACGREGOR DOWNS RD GREENVILLE, NORTH CAROLINA 27854

FACILITIES MAINTENANCE
 HEALTH SCIENCES CAMPUS
 EAST CAROLINA UNIVERSITY
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DATE 06.14.2019

SCALE 1/8" = 1'-0"

REVISIONS		
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TITLE

FOURTH FLOOR PLAN AREA A

FOURTH FLOOR UPFIT

SHEET

A114A

WORKING DRAWINGS



IMAGE B:
 REPAIR EXISTING CLEANOUTS AND FLOOR DRAINS WHERE REQUIRED TO BE LEVEL WITH NEW FLOOR FINISH. SEE NOTE UNDER IMAGE C.

IMAGE A:
 TYPICAL EXISTING PIPE TO BE DEMOLISHED. SEE NOTE 2 THIS SHEET.

EXISTING FLOOR DRAIN
 EXISTING CLEANOUT

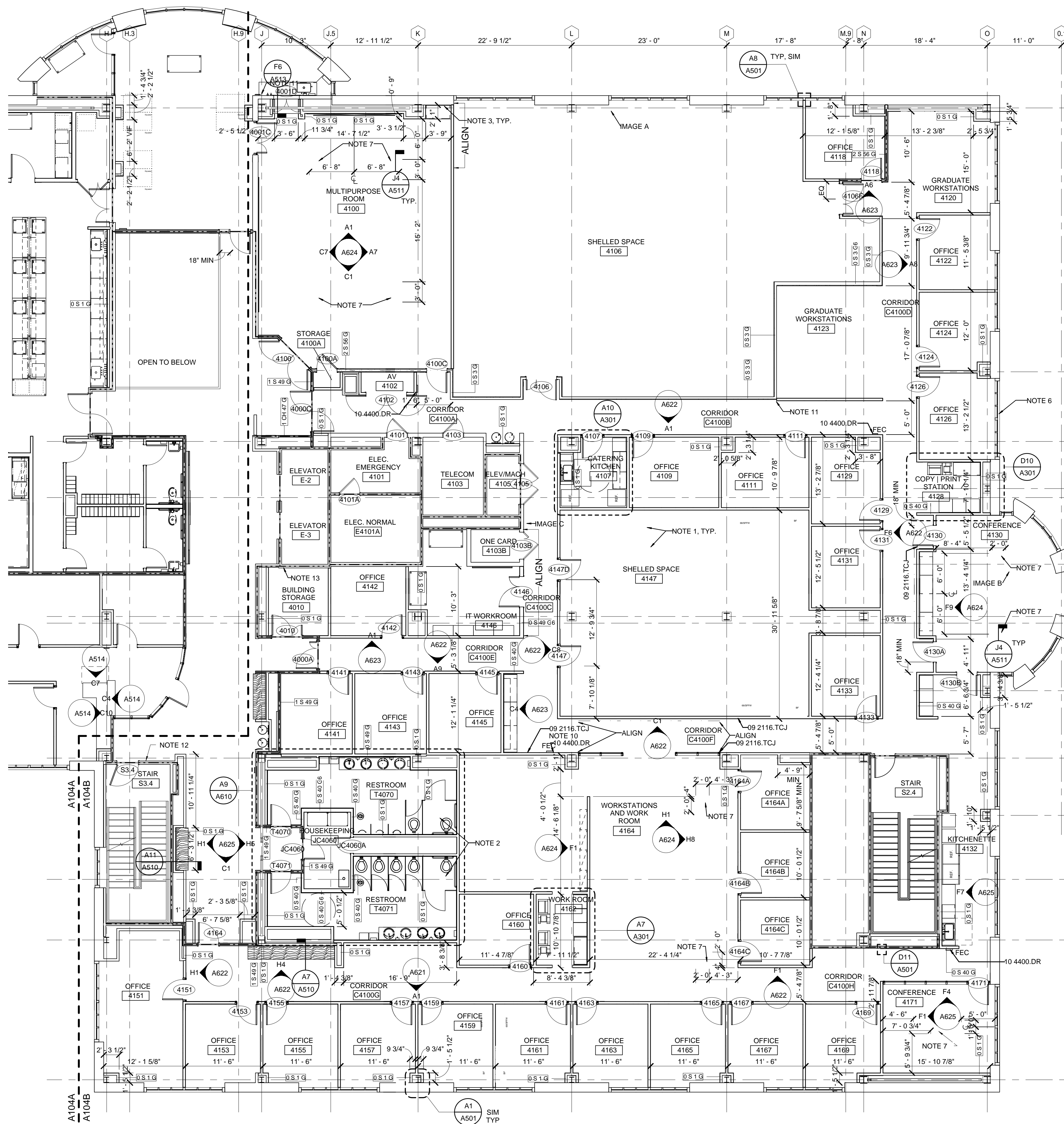


IMAGE C:
 EXISTING CLEANOUT. CUT WHERE REQUIRED TO BE LEVEL WITH NEW FLOOR FINISH. FLOAT / PATCH CONCRETE WERE REQUIRED. IN ORDER TO ENSURE NEW FLOOR FINISH CAN BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS. TOTAL ON FOURTH FLOOR: 29. SOME ARE ABOVE FLOOR. SOME ARE BELOW FLOOR. SOME ARE CROOKED.



RATED WALL LEGEND

---	SMOKE TIGHT
---	1 HOUR FIRE BARRIER
---	2 HOUR FIRE BARRIER



GENERAL NOTES

- A. ALL WALLS ARE TYPE 0 S 49 G UNLESS NOTED OTHERWISE.
- B. REPAIR CEILING TO EXISTING CONDITION OR BETTER WHERE ELEMENTS HAVE BEEN REMOVED OR WHERE CEILING HAS BEEN PARTIALLY DEMOLISHED.
- C. KEEP CONSTRUCTION VENTILATION POINTS IN USE AS LONG AS POSSIBLE.
- D. REFER TO FINISH PLAN, FINISH SCHEDULE, AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- E. REFER TO DETAILS ON A511 FOR INFILL AT DEMOLISHED SLAB PENETRATIONS.
- F. AV DISPLAY SHOWN FOR COORDINATION ONLY.
- G. CONTROL JOINTS ON SOFFITS CONTINUE UP FACE OF SOFFIT.
- H. REFER TO H1/A404A FOR TYPICAL OFFICE RCP

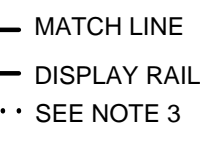


IMAGE A:
TYPICAL CONDITION AT EXISTING WINDOW RETURN.



IMAGE B:
EXISTING CEILING AND EXTERIOR WALL CONDITION IN CONFERENCE ROOM 4130.



IMAGE C:
EXISTING WALLS AT INTERIOR ONE CARD AND ELEV/MACH ROOM. INTERIOR WALL BETWEEN ATRIUM AND SHELL SPACE VISIBLE BEYOND.

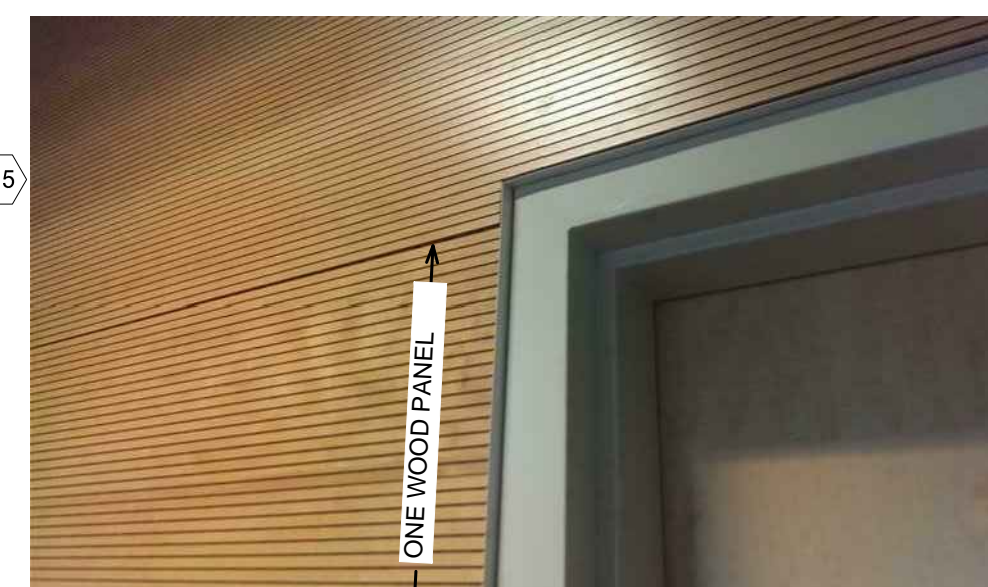


IMAGE D (LEFT):
ELEVATION OF EXISTING WOOD WALL AND CEILING AT STAIR DOOR.
IMAGE E (ABOVE):
VIEW OF TOP LEFT CORNER WHERE DOOR MEETS EXISTING WOOD PANEL WALL.

MATERIAL KEYNOTES

- 09 2116.TCJ Control Joint
- 10 4400.DR Multi-Purpose FE and Recessed Cabinet

SHEET SPECIFIC NOTES

1. PATCH, FILL, AND REPAIR CONCRETE SLAB. SEE IMAGE A ON A104A. TOTAL FOR FOURTH FLOOR: 12'-4", 12'-3", 2'-2". REFER TO DETAILS A7 AND B7 ON SHEET A511.
2. EXISTING PIPES IN THIS AREA ARE NOT TO BE DEMOLISHED.
3. COMPLETE GYPSUM BOARD FINISHING. JOINTS AND WALLBOARD HAVE BEEN FILLED WITH JOINT COMPOUND AND TAPE. NOT SANDED. SEE IMAGES A, B, C ON A104B.
4. VOICE OVER IP PHONE LOCATION. REFER TO ELECTRICAL.
5. ELECTRICAL PANEL. REFER TO ELECTRICAL.
6. REINSTALL GLAZING, SEAL, CLEAN, AND FINISH PER ORIGINAL INSTRUCTIONS.
7. FIRE CLASSIFIED FLOOR BOX. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO CUTTING. DASHED REGION INDICATES ACCEPTABLE LOCATION AREA. REFER TO SPECIFICATION 01 2300, ALTERNATE 2 FOR BASE BID AND ALTERNATE SCOPE.
8. REFER TO SPECIFICATION 01 2300, ALTERNATE 3 FOR BASE BID AND ALTERNATE SCOPE.
9. REFER TO SPECIFICATION 01 2300, ALTERNATE 3 FOR BASE BID AND ALTERNATE SCOPE.
10. ALIGN WITH EDGE OF CEILING SOFFIT.
11. ALIGN WITH SOUTH WALL OF 4106A.
12. HOLD HINGE LOCATION AND EXPAND OPENING TO EAST FOR NEW DOOR AND FRAME. MODIFY EXISTING WOOD PANELS ON WALL FOR NEW DOOR LOCATION. FINISH CONDITION TO MATCH EXISTING. SEE IMAGE D AND IMAGE E.
13. INSTALL 1 LAYER OF GYPSUM BOARD ENTIRE FACE OF WALL TO 6" ABOVE CEILING.

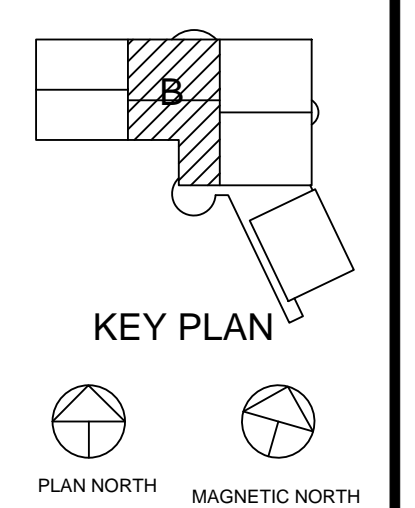


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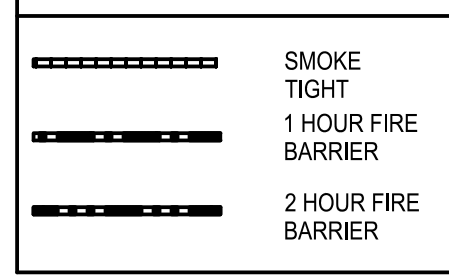
TITLE

FOURTH FLOOR PLAN AREA B

FOURTH FLOOR UPFIT

SHEET
A114B
 WORKING DRAWINGS

RATED WALL LEGEND



FACILITY CONDITION ASSESSMENT

SECTION 6

PHOTOGRAPHS



256001a 5/12/2021
Brick masonry exterior with cast concrete accents and
dual-pane windows
Second floor east entry



256001e 5/11/2021
LED light fixture on 15 foot stanchion
Northwest exterior



256002a 5/12/2021
Aluminum-framed glass entry doors with power openers
Second floor east entry



256002e 5/11/2021
Round recessed CFL light fixture
North exterior at second floor entrance



256003a 5/12/2021
Concrete sidewalk leading to stone entry
East sidewalk



256003e 5/11/2021
Wall-mounted CFL light fixture
West exterior



256004a 5/12/2021
Brick masonry exterior with cast concrete accents and
dual-pane windows
East exterior



256004e 5/11/2021
750 kW emergency generator
Southwest exterior



256005a 5/12/2021
Aluminum-framed glass entry doors with power openers
Southeast entry to lecture halls



256005e 5/11/2021
Three dock levelers
West loading docks



256006a 5/12/2021
Brick masonry exterior with cast concrete accents and
dual-pane windows
East exterior



256006e 5/11/2021
Wall-mounted LED light fixture
West exterior



256007a 5/12/2021
Example of adequately caulked window
East exterior



256007e 5/11/2021
Wall-mounted light fixture updated with LED bulb
North exterior (stairwell)



256008a 5/12/2021
Aluminum-framed glass entry doors
North first floor entry



256008e 5/11/2021
Control panel for freight elevator
Freight elevator interior



256009a 5/12/2021
Brick masonry exterior with cast concrete accents and
dual-pane windows
North exterior



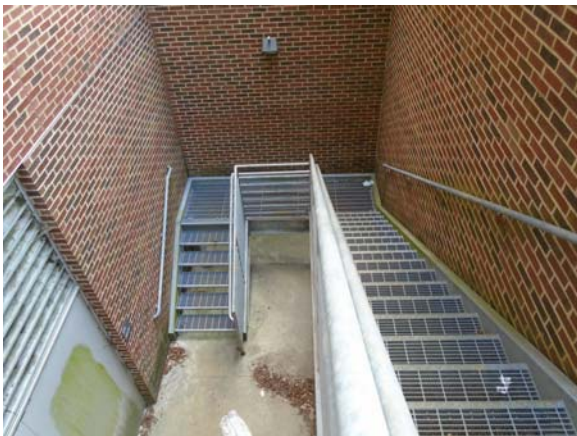
256009e 5/11/2021
1.5 hp exhaust fan (EX-6)
Roof



256010a 5/12/2021
Aluminum-framed dual-pane windows with stained cast
concrete sills
North exterior



256010e 5/11/2021
7.5 hp rectangular fan (SF-E-1) provides elevator
pressurization
West end of roof



256011a 5/12/2021
Metal emergency egress stairs from basement
mechanical room
North exterior



256011e 5/11/2021
CFL jelly-jar light fixture
West end of roof



256012a 5/12/2021
Hollow metal service doors and vents with staining
North exterior



256012e 5/11/2021
Multiple exhaust stacks coming through the roof
East end of roof



256013a 5/12/2021
Loading dock and receiving entrance
West first floor entry



256013e 5/11/2021
Second 7.5 hp rectangular smoke exhaust fan (SF-E-2)
Roof



256014a 5/12/2021
Three docks and stormwater trench drain
West exterior



256014e 5/11/2021
480/277 volt Eaton secondary electrical panel
Room 5103



256015a 5/12/2021
Compliant ramp and handrailing for stepped entry
West exterior



256015e 5/11/2021
Siemens thermostat for HVAC control
Room 5103



256016a 5/12/2021
Compliant ramp and handrailing for stepped entry
West exterior



256016e 5/11/2021
T5 fluorescent light fixtures illuminating the top of the
atrium
Top of atrium



256017a 5/12/2021
Aluminum-framed glass entry doors and storefront
glazing
Southwest exterior



256017e 5/11/2021
Two Johnson Controls fan coil units
Top of atrium



256018a 5/12/2021
Aluminum-framed dual-pane windows with stained cast
concrete sills
Southwest exterior



256018e 5/11/2021
FHP heat pump (HP-5B1)
Top of atrium



256019a 5/12/2021
Aluminum-framed dual-pane windows with stained cast
concrete sills
South exterior



256019e 5/11/2021
Pendant fluorescent light fixture in mechanical space
Top of atrium



256020a 5/12/2021
Aluminum-framed dual-pane windows with stained cast
concrete sills
Southeast exterior



256020e 5/11/2021
Siemens controls on two hot water reheat coils in
ductwork
Northwest corner of penthouse



256021a 5/12/2021
Aluminum-framed glass entry doors and storefront
glazing
South exterior



256021e 5/11/2021
Pneumatic actuator on outside air louvers
Northwest corner of penthouse



256022a 5/12/2021
Floor-to-ceiling glazing
South exterior



256022e 5/11/2021
Exit sign
Northwest corner of penthouse



256023a 5/12/2021
Floor-to-ceiling glazing
South exterior



256023e 5/11/2021
1 hp exhaust fan (EX-16)
Northwest corner of penthouse



256024a 5/12/2021
Aluminum-framed glass entry doors and storefront
glazing
Southeast exterior



256024e 5/11/2021
Variable frequency drives (VFD) for EX-2 and EX-1
Northwest corner of penthouse



256025a 5/12/2021
Brick masonry exterior with cast concrete accents and
dual-pane windows
East exterior



256025e 5/11/2021
Axial/mixed-flow fan (EX-L3)
Northwest corner of penthouse



256026a 5/12/2021
Brick masonry exterior with cast concrete accents and
dual-pane windows
East exterior



256026e 5/11/2021
Belimo electronic actuator on EX-L3
Northwest corner of penthouse



256027a 5/12/2021
Brick masonry exterior with cast concrete accents and
dual-pane windows
East exterior



256027e 5/11/2021
Controls for the freight (traction) elevator
Room 5104



256028a 5/12/2021
Broken plastic "ice cleats" attached to metal roofing
Pitched standing seam metal roof



256028e 5/11/2021
Fan coil unit (FCU-5A1) at top of stairwell
Top of stairwell S-1.5



256029a 5/12/2021
Built-up asphalt roofing system
Central flat roof



256029e 5/11/2021
Large air handling unit (AHU-CL-1) with chilled water and
heating hot water piping at far end
Penthouse



256030a 5/12/2021
Standing seam metal roof
Perimeter pitched roof



256030e 5/11/2021
Two VFDs for the supply fans (A and B) for AHU-CL-1
Penthouse



256031a 5/12/2021
Standing seam metal roof
Perimeter pitched roof



256031e 5/11/2021
One of two 25 hp return fans for AHU-CL-1
Penthouse



256032a 5/12/2021
Built-up asphalt roofing
Central flat roof



256032e 5/11/2021
Two original fans that were removed from AHU-L-1B
because they were oversized
Penthouse



256033a 5/12/2021
Lower roof over the lecture halls
Lower south roof



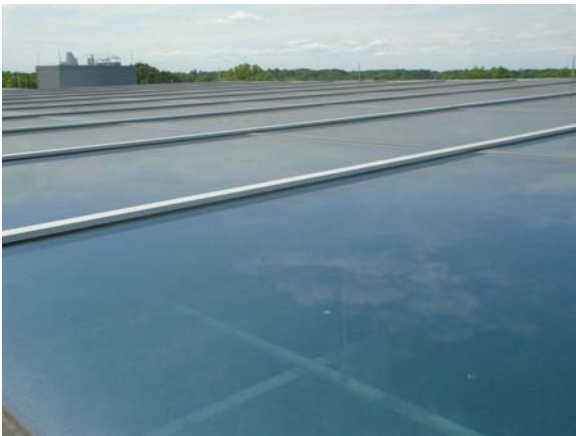
256033e 5/11/2021
Condensing unit for walk-in cold room
Penthouse



256034a 5/12/2021
Standing seam metal roof
Perimeter pitched roof



256034e 5/11/2021
Insulated piping running along the penthouse ceiling
Penthouse



256035a 5/12/2021
Glass skylight system
Central flat roof



256035e 5/11/2021
No-hub cast-iron drain (vent) piping
Penthouse



256036a 5/12/2021
Lower flat roof over the southern waiting area
Lower roof



256036e 5/11/2021
VFDs for both the supply and return fans (A and B side) of
AHU-CL-2
Penthouse



256037a 5/12/2021
Glass skylight system
Central flat roof



256037e 5/11/2021
25 hp return fan for the B side of AHU-CL-2
Penthouse



256038a 5/12/2021
Built-up asphalt roofing
Central flat roof



256038e 5/11/2021
A side of AHU-CL-2, with chilled water and heating hot
water piping at far end
Penthouse



256039a 5/12/2021
Unisex accessible restroom
Fifth floor mechanical attic restroom



256039e 5/11/2021
RO/DI water system supplying DI water to the labs
Southeast end of penthouse



256040a 5/12/2021
Suspended grid ceiling system
Fifth floor mechanical attic restroom



256040e 5/11/2021
Hydro control panel for RO/DI water system
Southeast end of penthouse



256041a 5/12/2021
Painted safety striping and adequate emergency exit
signage
Fifth floor mechanical attic



256041e 5/11/2021
One of four 2,500 MBH natural gas fired Harsco boilers
(back side)
East end of penthouse



256042a 5/12/2021
Unfinished utilitarian space
Fifth floor mechanical attic



256042e 5/11/2021
Front side of Harsco B-3 boiler
East end of penthouse



256043a 5/12/2021
Vinyl tile floor and wood base and overhead cabinetry
Workroom 4282



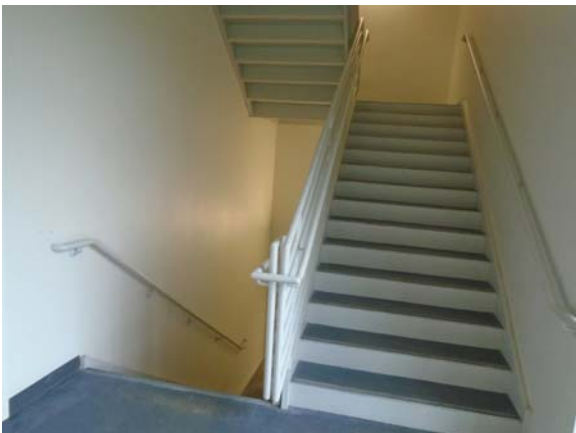
256043e 5/11/2021
Expansion tank (ET-1) for the heating hot water system
East end of penthouse



256044a 5/12/2021
Vinyl tile floor, painted walls, and suspended grid ceiling
Fourth floor corridor



256044e 5/11/2021
Recently installed A. O. Smith domestic water heater
East end of penthouse



256045a 5/12/2021
Compliant handrails
Stairwell 1



256045e 5/11/2021
Original 565 MBH PVI domestic water heater
East end of penthouse



256046a 5/12/2021
Compliant room signage with Braille
Fourth floor corridor



256046e 5/11/2021
Four fractional horsepower pumps for various water
piping
East end of penthouse



256047a 5/12/2021
Carpeting, painted walls, and suspended grid ceiling
Typical office



256047e 5/11/2021
3 inch backflow preventer on domestic water
East end of penthouse



256048a 5/12/2021
Vinyl floor tile, suspended grid ceiling, and metal lab
furniture
Lab 4200



256048e 5/11/2021
Corrosion occurring at drain of backflow preventer
East end of penthouse



256049a 5/12/2021
Accessible lab sink
Lab 4200



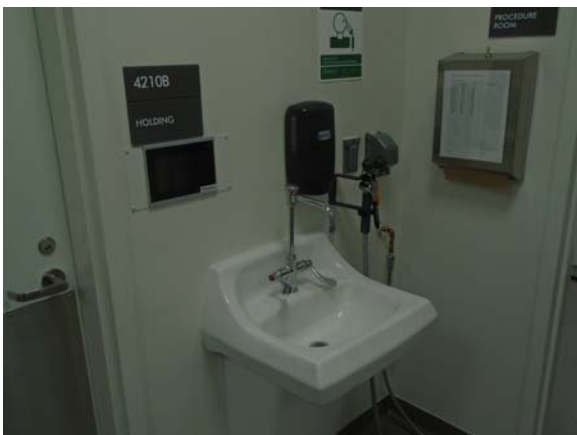
256049e 5/11/2021
Duplex vacuum system with two 5 hp motors
Penthouse



256050a 5/12/2021
Vinyl floor tile, suspended grid ceiling, and metal lab
furniture
Lab 4200



256050e 5/11/2021
Group of heating hot water pumps
Penthouse



256051a 5/12/2021
Small wall-hung lab sink
Suite 4210



256051e 5/11/2021
Close-up of 10 hp HWP-1
Penthouse



256052a 5/12/2021
Metal sink and countertop
Suite 4210



256052e 5/11/2021
Siemens control box for the pneumatic portion of HVAC
controls
Penthouse



256053a 5/12/2021
Suspended grid ceiling
Fourth floor lab



256053e 5/11/2021
Two 5 hp axial/mixed-air exhaust fans for fume hoods on
the fourth floor
Penthouse



256054a 5/12/2021
Small wall-hung lab sink
Fourth floor lab area



256054e 5/11/2021
Lab water booster pump system (PP1)
Penthouse



256055a 5/12/2021
Metal sink and countertop
Fourth floor lab area



256055e 5/11/2021
2,000 KVA oil-filled transformer
Southeast exterior



256056a 5/12/2021
Wood laminate flooring and suspended grid ceiling
Conference room 4001



256056e 5/11/2021
Lay-in fluorescent light fixtures
Fourth floor corridor



256057a 5/12/2021
Ceramic tile floor adjacent to a terrazzo floor
Fourth floor balcony area



256057e 5/11/2021
LED exit sign
Fourth floor corridor



256058a 5/12/2021
Terrazzo floor and painted walls
Fourth floor elevator lobby



256058e 5/11/2021
Audible/visible fire device
Fourth floor corridor



256059a 5/12/2021
Terrazzo floor and painted walls
Fourth floor corridor



256059e 5/11/2021
Emergency eyewash mounted adjacent to wall-mounted
lavatory
Room 4210



256060a 5/12/2021
Carpeting, painted walls, and suspended grid ceiling
Fourth floor office suite corridor



256060e 5/11/2021
Vented bio-safety cabinet
Room 4210C



256061a 5/12/2021
Dual-level water fountain
Fourth floor office suite corridor



256061e 5/11/2021
Emergency eyewash adjacent to stainless steel lab sink
Room 4210C



256062a 5/12/2021
Unfinished area
Fourth floor



256062e 5/11/2021
2x4 lay-in LED light fixtures in lab area
Room 4210C



256063a 5/12/2021
Newer wood cabinetry
Fourth floor



256063e 5/11/2021
Siemens thermostat for HVAC control
Room 4210C



256064a 5/12/2021
Accessible kitchen sink
Break room 4107



256064e 5/11/2021
Fume hood in lab area
Room 4200



256065a 5/12/2021
Carpeting, painted walls, and suspended grid ceiling
Typical office



256065e 5/11/2021
Occupancy sensor built into light switch
Alcove in room 4200



256066a 5/12/2021
Carpeting, painted walls, and suspended grid ceiling
Conference room 4130



256066e 5/11/2021
Pendant LED light fixture in large lab area
Room 4200



256067a 5/12/2021
Accessible kitchen sink and wood cabinetry
Kitchen 4132



256067e 5/11/2021
Plumbing, power, and data connections enter the lab
through the ceiling
Room 4200



256068a 5/12/2021
Ceramic tile finishes and accessible sinks
Men's restroom 4170



256068e 5/11/2021
Walk-in cold room
South end of room 4200



256069a 5/12/2021
Ceramic tile finishes and accessible urinals
Men's restroom 4170



256069e 5/11/2021
Safety shower in large lab area
Room 4200



256070a 5/12/2021
Ceramic tile finishes and regular toilet stall
Men's restroom 4170



256070e 5/11/2021
T5 fluorescent light fixtures in the elevator lobby
Fourth floor corridor



256071a 5/12/2021
Ceramic tile finishes and accessible toilet
Men's restroom 4170



256071e 5/11/2021
Creston lighting control panels
Room 4101



256072a 5/12/2021
Concrete molded floor sink
Janitorial closet 4060



256072e 5/11/2021
Eaton dry-type step-down transformer
Room 4101A



256073a 5/12/2021
Ceramic tile finishes and accessible sinks
Women's restroom 4171



256073e 5/11/2021
480 volt electrical bus duct
Room 4101A



256074a 5/12/2021
Ceramic tile finishes and regular toilet stalls
Women's restroom 4171



256074e 5/11/2021
Controls for the two passenger (traction) elevators
Room 4105



256075a 5/12/2021
Carpeting, painted walls, and suspended grid ceiling
Office suite 4250



256075e 5/11/2021
Electrical outlet adjacent to kitchen sink has GFCI protection
Fourth floor corridor (southeast end)



256076a 5/12/2021
Vinyl tile floor, accessible sink, and wood base and overhead cabinetry
Break room 4280



256076e 5/11/2021
Insulated supply piping and cast-iron drain piping
Pipe chase behind fourth floor restrooms



256077a 5/12/2021
Vinyl tile floor, painted walls, and suspended grid ceiling
Third floor lab corridor



256077e 5/11/2021
Hands-free lavatories
Fourth floor restroom



256078a 5/12/2021
Dual-level water fountain
Third floor lab corridor



256078e 5/11/2021
Urinals in men's restroom
Fourth floor restroom



256079a 5/12/2021
Vinyl tile floor, painted walls, and suspended grid ceiling
Third floor labs



256079e 5/11/2021
Wall-mounted fluorescent light fixtures
Third floor corridor



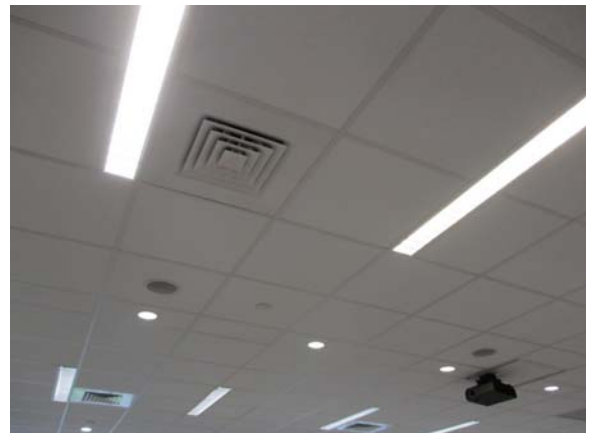
256080a 5/12/2021
Wood cabinetry with steel sink and countertop
Third floor labs



256080e 5/11/2021
Smoke/heat detector and recessed sprinkler head
Third floor corridor



256081a 5/12/2021
Wood cabinetry with steel sink and countertop
Third floor labs



256081e 5/11/2021
Round recessed CFL and 1x4 lay-in fluorescent light fixtures
Room 3207



256082a 5/12/2021
Stainless steel lab sink
Third floor labs



256082e 5/11/2021
Ceiling occupancy sensor
Room 3207



256083a 5/12/2021
Carpeting, painted walls, and suspended grid ceiling
Small office suite 3202



256083e 5/11/2021
Emergency eyewash adjacent to stainless steel lab sink
Room 3207



256084a 5/12/2021
Open to below with terrazzo balcony
Third floor



256084e 5/11/2021
Fume hood in lab area
Room 3205



256085a 5/12/2021
Metal panel wall
Atrium



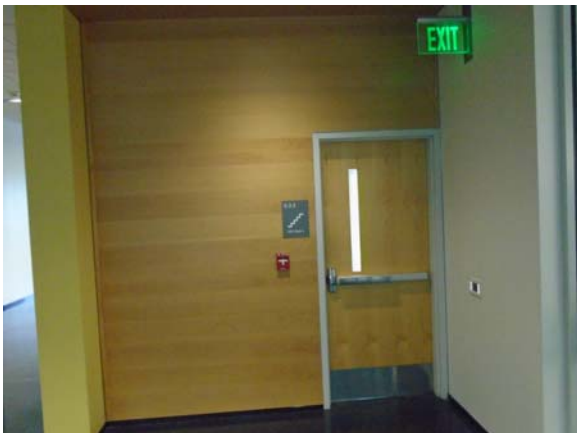
256085e 5/11/2021
Lay-in fluorescent light fixtures in office
Room 3170



256086a 5/12/2021
Terrazzo floor and painted walls
Third floor elevator lobby



256086e 5/11/2021
Fin-tube radiators at base of windows
Third floor corridor



256087a 5/12/2021
Wood wall finish
Third floor



256087e 5/11/2021
Close-up of fin-tube radiator
Third floor corridor



256088a 5/12/2021
Compliant handrails
Stairwell 2



256088e 5/11/2021
Pendant fluorescent light fixtures above cubical office
area
Third floor corridor



256089a 5/12/2021
Terrazzo floor and painted walls
Center atrium area



256089e 5/11/2021
Lavatories in original restroom
Third floor restroom



256090a 5/12/2021
Ceramic tile and accessible fixtures
Men's restroom 3070



256090e 5/11/2021
Water closet in original restroom
Third floor restroom



256091a 5/12/2021
Rubberized nosing and treads becoming worn
Stairwell 2



256091e 5/11/2021
Dental exam chair in large area
Room 2010



256092a 5/12/2021
Carpeting, painted walls, and suspended grid ceiling
Second floor outer corridor



256092e 5/11/2021
Lay-in fluorescent light fixtures in large dental chair area
Room 2010



256093a 5/12/2021
Stainless steel lab cabinetry and sinks
Lab suite 2225



256093e 5/11/2021
Dental exam chair in individual room
Room 2103



256094a 5/12/2021
Carpeting, painted walls, and suspended grid ceiling
Student locker room



256094e 5/11/2021
Medical gas control valves for dental exam room
Room 2103



256095a 5/12/2021
Ceramic tile floor and lower wall, painted wall above,
accessible fixtures
Unisex restroom



256095e 5/11/2021
Medical gas control panel for dental exam room
Room 2103



256096a 5/12/2021
Carpeting, painted walls, and suspended grid ceiling
Second floor student lounge



256096e 5/11/2021
Round recessed metal halide light fixtures outside lecture
hall
Lobby of lecture hall



256097a 5/12/2021
Accessible showers with ceramic tile finishes
Shower 2277



256097e 5/11/2021
1x4 T5 fluorescent light fixtures
Lecture hall 2312



256098a 5/12/2021
Vinyl tile floor, painted walls, and suspended grid ceiling
Second floor dental training area



256098e 5/11/2021
1,600 amp switchgear for emergency generator
Room E1180



256099a 5/12/2021
Dual-level water fountain
Second floor



256099e 5/11/2021
Two Russelectric 1,000 amp ATS (LS and MEQ)
Room E1180



256100a 5/12/2021
Small round shared lab/exam sinks
Second floor dental training area



256100e 5/11/2021
Double-ended 3,200 amp main switchgear with tie-breaker
Room E1182



256101a 5/12/2021
Typical exam room with small sink and wood cabinetry
Second floor



256101e 5/11/2021
Conduit has already been placed for the second 2,000 kVA
oil-filled transformer
Room E1182



256102a 5/12/2021
Aluminum-framed glass entry doors
Second floor



256102e 5/11/2021
One of two hot water unit heaters (UH-2)
Loading dock



256103a 5/12/2021
Small lab sink with wood base and overhead cabinetry
Second floor clinical research



256103e 5/11/2021
Hydraulic dock leveler controls
Loading dock



256104a 5/12/2021
Water fountain with bottle filler
Second floor



256104e 5/11/2021
Combination safety shower and eyewash station
Room 1258



256105a 5/12/2021
Hidden fire screen
Second floor by atrium



256105e 5/11/2021
Steam condensate receiver for sterilizers
Room 1258



256106a 5/12/2021
Aluminum-framed glass entry doors
Second floor



256106e 5/11/2021
8 inch backflow preventer for fire standpipe
Room 1259



256107a 5/12/2021
Terraced lecture hall with carpeting and suspended grid
ceiling
Lecture hall 2312



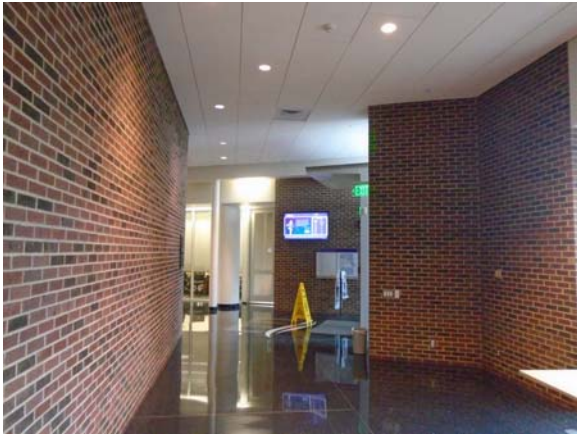
256107e 5/11/2021
Two 6 inch backflow preventers for domestic water
Room 1259



256108a 5/12/2021
Accessible ramp to front of class
Lecture hall 2312



256108e 5/11/2021
Small air compressor for dry-pipe fire standpipe
Room 1259



256109a 5/12/2021
Terrazzo floor and brick walls
Outside lecture halls



256109e 5/11/2021
Oxygen gas manifold
Room B0101



256110a 5/12/2021
Carpeting, painted walls, and suspended grid ceiling
First floor waiting area



256110e 5/11/2021
Hydraulic pumps for two of the three dock levelers
Room B0100



256111a 5/12/2021
Vinyl tile floor, painted walls, and suspended grid ceiling
First floor dental training area



256111e 5/11/2021
Amalgam separator system
Room B0100



256112a 5/12/2021
Small round shared lab/exam sinks
First floor dental training area



256112e 5/11/2021
Dental-mouth vacuum system with three 60 hp Spencer
Turbines
Room B0100



256113a 5/12/2021
Vinyl tile floor, painted walls, and suspended grid ceiling
First floor lab corridor



256113e 5/11/2021
Control panel for Spencer Turbines
Room B0100



256114a 5/12/2021
Stainless steel lab cabinetry and sinks
Lab 1146



256114e 5/11/2021
Patton's Medical vacuum system with two 15 hp motors
(WAGD)
Room B0100



256115a 5/12/2021
Large stainless steel utility sink
First floor lab area



256115e 5/11/2021
Hyfab modular variable speed pressure booster
Room B0100



256116a 5/12/2021
Small round shared lab/exam sinks
First floor dental training area



256116e 5/11/2021
Failed sump pumps, clogged with mud
Room B0100



256117a 5/12/2021
Multi-level sink and countertop
First floor lab area



256117e 5/11/2021
Pit with two sump pumps for problematic foundation
infiltration
Room B0100



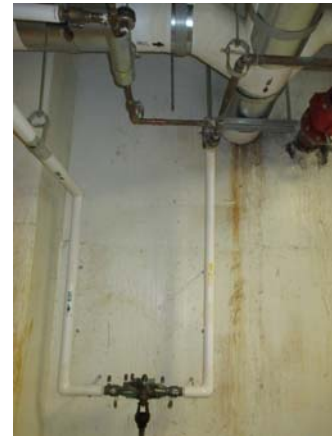
256118a 5/12/2021
Overhead garage doors
Loading dock and receiving



256118e 5/11/2021
Control panel for foundation sump pumps
Room B0100



256119a 5/12/2021
Stainless steel sinks for cleaning
1268



256119e 5/11/2021
1.25 inch backflow preventer on NPCW pipe with
hammering issue
Room B0100



256120a 5/12/2021
Sealed concrete floor
Basement



256120e 5/11/2021
Duplex sanitary lift station
Room B0100



256121a 5/12/2021
Molded floor sink
Basement janitorial closet



256121e 5/11/2021
7.5 hp PCHP-1 chilled water pump
Room B0100



256122a 5/12/2021
Dual-level water fountain
Basement



256122e 5/11/2021
40 hp CHP-1 chilled water pump
Room B0100



256123a 5/12/2021
Groundwater sump with two submerged pumps
Basement



256123e 5/11/2021
VFDs for the two 40 hp chilled water pumps
Room B0100



256124a 5/12/2021
Old groundwater pumps
Basement



256124e 5/11/2021
One of two 75 hp Kobelco air compressor systems for
dental and lab areas
Room B0100



256125a 5/12/2021
Groundwater sump with two submerged pumps
Basement



256125e 5/11/2021
Blue plastic lab waste drain piping
Room B0100



256126a 5/12/2021
Broken plastic "ice cleats" attached to metal roofing
Pitched standing seam metal roof



256126e 5/11/2021
Spirax Sarco pressure reducing valves
Room B0100



256127a 5/12/2021
Asphalt built-up roof over second floor
South lower roof



256127e 5/11/2021
Flash tank above condensate receiver
Room B0100



256128e 5/11/2021
Quincy air compressor with two 7.5 hp motors serving
the HVAC controls
Room B0100



256129e 5/11/2021
Buffalo air handling unit (AHU-A-1) serving the lecture
halls
Room 3300



256130e 5/11/2021
Control box for the AHU-A-1 Thermotech Enterprises
enthalpy wheel
Room 3300

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	256
Asset Name	ROSS HALL
Year Built or Last Energy Renovation	2012

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)

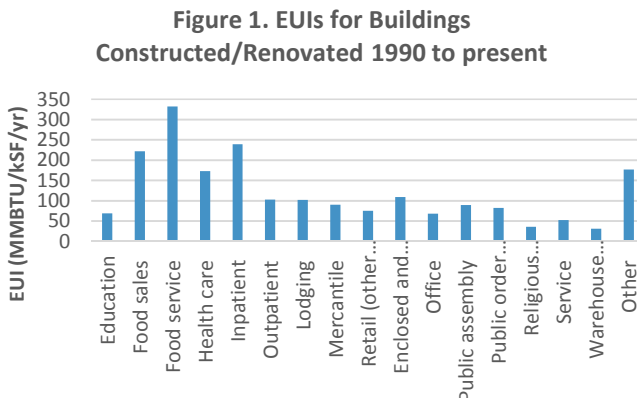
EUI is a measure of energy consumption per square foot of building space per year. The units of measurement are million British thermal units per thousand square foot per year (MMBTU/kSF/yr). The US-DOE EUI can be compared to the actual EUI of the client building to determine how efficient the building 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	Medical/Clinic
Range of Years Constructed/Last Major Energy Renovation	1990 to present
Benchmark EUI (MMBTU/kSF/yr) =	103
Building EUI to be Calculated by Client (MMBTU/kSF/yr) =	

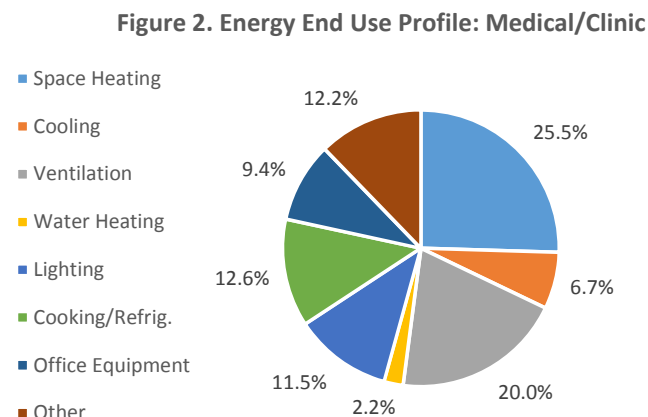
TABLE 3. EUI COMPARISON	
Very Energy Efficient (consumes more than 30% less energy)	EUI < 72.1
Energy Efficient (consumes 10% to 30% less energy)	72.1 <= EUI <= 92.7
Similar (consumes within 10% less or 10% more energy)	92.7 < EUI < 113.3
Energy Inefficient (consumes 10% to 30% more energy)	113.3 <= EUI <= 133.9
Very Energy Inefficient (consumes more than 30% more energy)	EUI > 133.9



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: MEDICAL/CLINIC	
Space Heating	25.5%
Cooling	6.7%
Ventilation	20.0%
Water Heating	2.2%
Lighting	11.5%
Cooking/Refrig.	12.6%
Office Equipment	9.4%
Other	12.2%
Total	100.0%



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
	There are no ECM recommendations	

