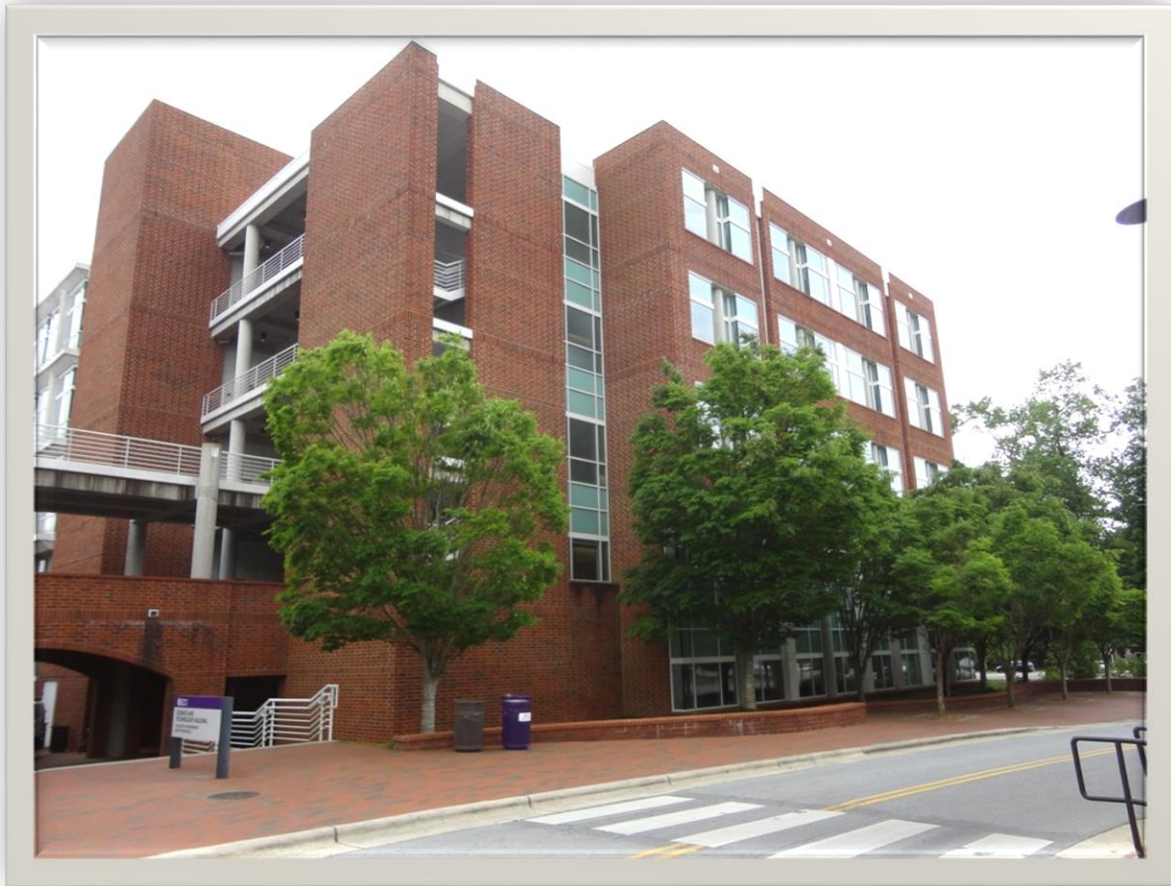


# EAST CAROLINA UNIVERSITY

Facility Condition Assessment

Science and Technology  
Asset SCIT

Inspected May 10, 2021





# TABLE OF CONTENTS

## SECTION 1 ASSET OVERVIEW

Asset Executive Summary.....	1.1.1
Asset Summary .....	1.2.1
Inspection Team Data.....	1.3.1
Definitions .....	1.4.1
Overview .....	1.4.1
Recurring Costs .....	1.4.2
Nonrecurring Costs .....	1.4.3
Drawings.....	1.4.6
Photographs.....	1.4.6
Sustainability/Energy Analysis.....	1.4.6

## SECTION 2 COST SUMMARIES AND TOTALS

Renewal Needs Matrix.....	2.1.1
Renewal Needs by System .....	2.2.1
Facilities Renewal Plan – Recurring Component Replacement Costs.....	2.3.1
Facilities Renewal Plan – Nonrecurring Project Costs.....	2.4.1

## SECTION 3 NONRECURRING PROJECT DETAILS..... 3.1.1

## SECTION 4 LIFECYCLE COMPONENT INVENTORY

Renewable Component Inventory .....	4.1.1
Recurring Costs by Year .....	4.2.1
Recurring Component Expenditure Projections.....	4.3.1

## SECTION 5 DRAWINGS

## SECTION 6 PHOTOGRAPHS ..... 6.1.1

## SECTION 7 PRELIMINARY ENERGY ASSESSMENT..... 7.1.1



# FACILITY CONDITION ASSESSMENT

## SECTION 1

### ASSET OVERVIEW



## ASSET EXECUTIVE SUMMARY

All costs shown as Present Value

<b>ASSET CODE</b>	SCIT	<b>CURRENT REPLACEMENT VALUE</b>	\$152,719,000
<b>ASSET NAME</b>	SCIENCE AND TECHNOLOGY	<b>FACILITY CONDITION NEEDS INDEX</b>	0.10
<b>ASSET USE</b>	Laboratory	<b>FACILITY CONDITION INDEX</b>	0.04
<b>YEAR BUILT</b>	2001	<b>10-YEAR \$/SF</b>	57.63
<b>GSF</b>	270,000		
<b>INSPECTION DATE</b>	05/10/2021		

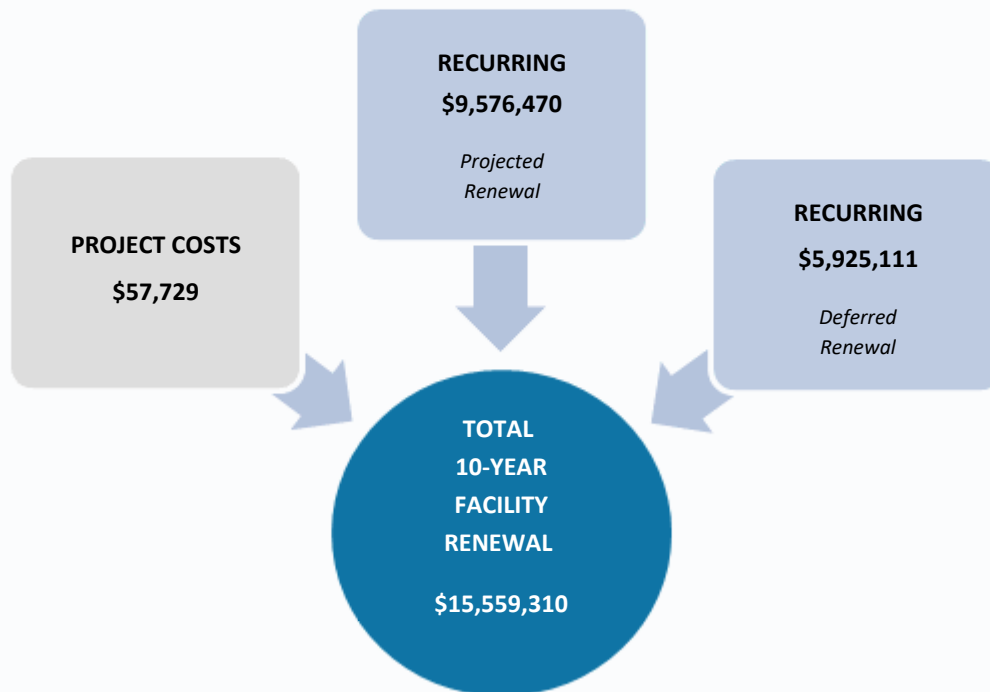
### FCNI Scale

The FCNI for this asset is **0.10**

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



### Total Facility Renewal Costs



## Project Costs

### *Project Cost by Priority*

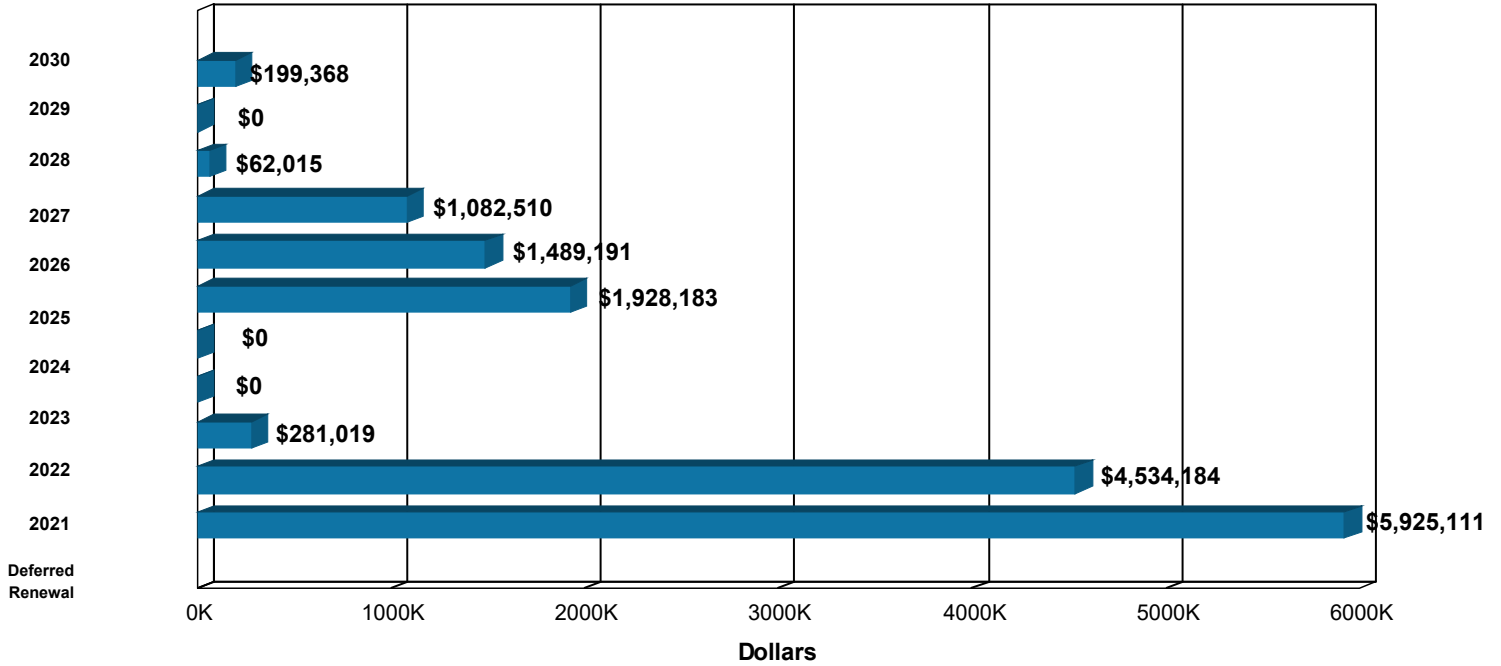
PLANT ADAPTION	
Priority 1	\$0
Priority 2	\$57,729
Priority 3	\$0
Priority 4	\$0
Priority 5	\$0

CORRECTIVE ACTION	
Priority 1	\$0
Priority 2	\$0
Priority 3	\$0
Priority 4	\$0
Priority 5	\$0

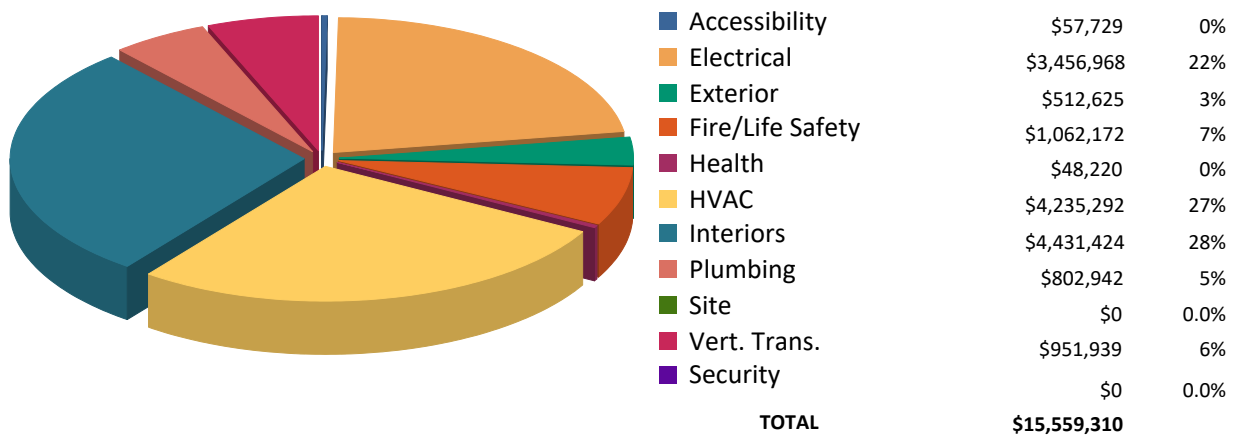


## Recurring Costs

Component Replacement Cost by Year



## Facilities Renewal Cost by System





---

## ASSET SUMMARY

The Science and Technology Building on the East Carolina University campus is a 2001 five-story lab and office building. The building is divided into two major wings, the south wing has offices and lab space and the north wing has lecture rooms and a central plant. The exterior facades are brick with large glass curtainwall on the north and south faces of the south wing. Additional glazing is located on the west side of the building in the office suites. There is a newer single-ply membrane on the south wing and an older badly weathered membrane roof on the north wing. The Science and Technology Building totals 270,000 gross square feet.

The information in this report was gathered during a site visit that concluded on May 10, 2021.

### Site

The site is relatively flat and landscaping around the building consists of planting beds, ornamental shrubs and trees. The planting is adequate and no upgrades are warranted. The walkways around the building are largely brick pavers that are in adequate condition. Adjoining parking areas are not directly associated with the building and considered part of campus infrastructure.

### Exterior Structure

The brick facades have some signs of staining but no brick repointing should be required at this time. The upper penthouse prefinished metal panel facades are in good condition but have some staining and the caulk joints are weathered and due for renewal. The multi-level, single-ply membrane roof on the south wing was recently upgraded and is in good condition. However, the multi-level, single-ply membrane roof on the north wing is much older and heavily weathered with signs of water infiltration damage in some of the interior areas. It should be replaced as soon as possible and has been overcoated to help reduce roof leaks until it is replaced.

The metal-framed glazing for the western offices is in good condition and no upgrades are warranted. The glass curtainwall on the north and south elevations of the south wing also have a good appearance and are functional. They should be serviceable for the near future. The primary and secondary glass entry/egress doors and balcony access doors are adequate at this time and no upgrades are recommended for the near term. The secondary hollow-metal service doors are in adequate working order and should be serviceable for the next ten years. The glass sectional overhead doors in the first floor north wing high bay area and the coil overhead door in the same area receive lower use and are in good working condition. No issues were reported and these overhead doors should be serviceable for the next ten years.

## Interior Finishes/Systems

The interior finishes are in average to good condition. Carpeting in the offices and meeting rooms varies in age and most of the broadloom carpeting is showing signs of wear and staining. Some areas have been upgraded with carpet tile and future carpet replacement should follow this same trend. Due to a short lifecycle, all of the existing broadloom carpeting and carpet tile will need to be replaced in the next one to ten years. Most of the vinyl composite tile flooring is older and should also be replaced in kind in the next seven to ten years. Ceramic floor and wall tile finishes in the upgraded restrooms are in good condition and no finish upgrades are needed at this time. The penthouse and high bay concrete floors should be resealed in the near future.

Walls are painted and overall have a good appearance. Repaint the interior walls in phases as ongoing research allows. Acoustical wall treatments in the four lecture rooms have some staining which should be addressed as part of routine maintenance. The acoustical ceiling systems vary in age and condition and most are still in good condition and should be serviceable for the near future. Painted ceilings in lecture rooms and support areas should be repainted once the new roofing system is installed.

The interior corridor and standard doors are flush wood in good working order and no upgrades, other than hardware, are warranted. The casework in the various office break areas is original and showing some age. This cabinetry should be considered for replacement within the next ten years. Lab cabinetry is still in average to good condition and no upgrades are recommended for the near term.

The upholstered fixed seating in the four north wing lecture rooms is in good condition. These rooms were being upgraded with new sound systems and assistive listening capability at the time of the inspection. Some additional accessibility features are still needed and addressed in the Accessibility section.

## Accessibility

The building has on-grade building entry points and there are accessible passenger elevators. The exterior egress stair towers have accessible railing designs and the corridor and standard doors all have lever hardware and accessible wall-mounted room signage with Braille. Restrooms throughout the building are fully accessible and there are ample dual-level water fountains on all floors. The four lecture rooms have designated wheelchair viewing areas and assistive listening systems were being installed at the time of the inspection. However, the side aisles in all four lecture rooms lack wall-mounted handrails and this railing design should be added.

## Health

No issues were observed or reported with the emergency shower and eyewash stations in the laboratory spaces. These systems are expected to remain viable for the next ten years.

The structures and mechanical systems for the three walk-in coolers are original. The structures are in good condition and should remain viable for the next ten years. The refrigeration mechanical systems, however, should be evaluated for replacement due to lifecycle depletion.

## Fire/Life Safety

This facility has a Notifier point addressable fire alarm and detection system. This system contains a main fire alarm panel, manual pull stations, smoke detectors, and horn and strobe alarm systems. The panel and devices are original and should be considered for replacement due to technical obsolescence.

This facility is fully protected via an automatic fire suppression system with manual support via standpipes and strategically located handheld dry-type fire extinguishers. A 60-hp main fire pump provides additional pressure for the system with an associated 1.5-hp jockey pump maintaining a constant pressure. No issues were observed or reported and this system should remain viable for the next ten years.

## HVAC

The main HVAC system provides heating and cooling via twelve belt-driven air handling units and four-pipe fan coil units. Building exhaust is handled by centrifugal and inline exhaust fans. Air handling units AHU-1 through AHU-7 are in good condition as their exterior casings or coils have little to no visual signs of corrosion. Air handling units AHU-8 through AHU-12 have corrosion on the exterior casings and should be evaluated for replacement and/or rebuild within the next ten years. The fan coil units appear to be in good condition and should remain viable for the next ten years. The exhaust fans should be evaluated for replacement within the next ten due to statistical lifecycle depletion.

Supplemental cooling for the server room is handled by a computer AC unit utilizing chilled water. The computer unit was replaced within the last ten years and should be evaluated for replacement within the next decade due to lifecycle depletion. A variable refrigerant volume (VRV) system serves select spaces and consists of various fan coil units and two 10-ton condensing units. The VRV system was installed within the last five years and should remain viable for the next ten.

Laboratory fume hoods and snorkels were observed during the inspection. The fume hoods appear to be in good condition and should remain viable for the next ten years. The snorkels and desktop systems were reported to have some issues with their removal being considered. Therefore, when they are removed, they may be removed from future budgeting. Thirteen short-stack, mixed flow exhaust fans on the roof serve the various fume hoods. The majority of the exhaust fans were replaced in 2016 and should remain viable for the next ten years. Fan F-5 is original and should be evaluated for replacement due to lifecycle depletion.

Chilled water is supplied by the energy plant in the basement within this building. A 1.5-hp chilled water booster pump provides additional pressure for a select air handling unit. Heating hot water is generated through three shell-and-tube heat exchangers utilizing steam generated at the central steam plant. High pressure steam is reduced to low pressure steam through various pressure reducing valves. Heating hot

water is circulated throughout via two 15-hp inline and two 3-hp base-mounted heating hot water pumps. Condensate generated from the heat exchangers and the air handling units is collected and transferred back to the central plant via three condensate receivers. No issues were observed with the heat exchangers and they are expected to remain viable for the next ten years. The heating hot water pumps, pressure reducing valves, and condensate receivers should be evaluated for replacement and/or rebuild within the next ten years due to lifecycle depletion.

The original HVAC distribution network is a VAV design. The distribution network consists of insulated metallic conduit, insulated mechanical piping, VAV terminal boxes with reheat, valves, diffusers, and similar elements. No issues were observed with the network and it should remain viable for the next ten years. The HVAC controls are a direct digital (DDC) system. It is recommended that the controls be upgraded as they have exceeded their statistical lifecycle. Modern controls can provide additional energy savings.

## Electrical

Main electrical service is fed to this facility to a 3,000-kVA oil-filled transformer where power is reduced to 277/480 volts and routed to a main 4,000-amp switchboard. A second electrical service is fed to a 1,000-kVA dry-type transformer where power is reduced to 277/480 volts and routed to a 1,200-amp switchboard. Power is further reduced to 120/208 volts through secondary step-down transformers located throughout the facility. Power is distributed at 120/208 and 277/480 volts via individual conductors in metallic conduit to secondary panelboards for use in local devices. The distribution system consists of downline electrical system components beyond the main electrical service elements including the distribution feeders, conduits, local panelboards, load centers, safety switches, fused disconnects, receptacles, switches, and similar terminal elements. No issues were observed or reported and these systems are expected to remain viable for the next ten years.

The emergency power network consists of a 900-kW diesel-fired generator which provides 277/480-volt power. A 260-amp and an 800-amp automatic transfer switches distribute emergency power to select emergency panelboards. The emergency power network is believed to be in good condition and should remain viable for the next ten years.

Variable frequency drives (VFDs) are associated with the air handling units and thermal media pumps. The majority of the VFDs are original and should be considered for replacement due to technical obsolescence. The VFDs for air handling units AHU-8 through AHU-12 were reported to have been replaced within the last five years and are expected to remain viable for the next ten.

The majority of the interior lighting is original with occupancy sensors and timing controls. The interior lighting consists of various T8 fixtures and recessed can fixtures. Although the original lighting system appears to be in usable condition, it has fulfilled its financially viable life expectancy. Lighting technology is rapidly advancing and expectations for lamp durability, quality, intensity control, and efficiency are increasing with the advancement of LED lighting options. The lighting fixtures should be considered for upgrade to LED technology.

The exterior lighting consists of LED wallpacks, soffit LED fixtures, and LED sconces. These fixtures were installed within the last three years and are expected to remain viable for the next decade.

## Plumbing

Potable water supply, sanitary sewer, and stormwater handling systems serve this facility. The supply piping is copper with soldered connections. The drain piping is cast-iron with hubless connections. The majority of the supply and drain piping is original and expected to remain viable for the next ten years. It was reported that the plastic piping utilized by the laboratory spaces for treated water was beginning to fail as constant leaks have to be repaired. It is recommended that the laboratory treated water supply piping be replaced. Several backflow preventers serve the makeup water for the heating hot water system, domestic cold water, and the fire suppression. The backflow preventers appear to be original and should be considered for replacement prior to failure.

No issues were reported with the original duplex domestic water booster pump system. However, it is recommended that it be evaluated for replacement due to lifecycle depletion.

Domestic hot water is generated through a heat exchanger utilizing steam generated at the central plant with an associated fractional horsepower circulation pump. The water heater and pump were reported to be in good condition and are expected to remain viable for the next ten years.

Four laboratory air compressors and one vacuum pump system serve the various laboratory spaces. The compressors and vacuum pump systems are original and should be evaluated for replacement within the next ten years due to lifecycle depletion. A water softener and reverse osmosis (RO) system provide laboratory-grade water for the facility. The water softener and RO system were replaced within the last year and should remain viable for the next ten years.

The plumbing fixtures are newer counter wall-hung lavatories, urinals, and tankless water closets and should outlast the scope of this report. The shower in the central plant bathroom has low usage and is in good condition. The two stainless-steel trough sinks in the north high bay are still in good working order. The kitchen sinks in the various break areas are in average condition for their age and should be replaced in kind as part of recommended break area casework upgrades. Mop sinks in the janitor's closets could not be inspected and are assumed to be adequate.

## Vertical Transportation

Two traction-controlled and one hydraulic-controlled passenger elevators serve this facility. The five-stop traction elevators have a rated capacity of 3,500 pounds each and the six-stop hydraulic elevator has a rated capacity of 4,500 pounds. No issues were observed or reported during the inspection and the elevators have passed recent testing. However, they should be evaluated for modernization within the next ten years due to lifecycle depletion. No detailed elevator testing was conducting during this assessment.

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



## INSPECTION TEAM DATA

### Report Development

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

### Project Manager

Doug Fredendall  
770.674.3112  
dougf@isescorp.com

### Date of Inspection

May 10, 2021

### Inspection Team Personnel

NAME	POSITION	SPECIALTY
Andrew Derrick	Project Engineer	Mechanical, Electrical, Plumbing, Energy, Fire/Life Safety, Health
Carl Turner, AIA	Senior Project Architect	Interior Finishes, Exterior Structure, ADA Compliance, Site, Fire/Life Safety, Health

### Client Contact

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

## DEFINITIONS

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

### Overview

#### Recurring and Nonrecurring Facility Renewal Costs

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

#### Facility Condition Needs Index (FCNI)

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

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

#### 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	
<b>EL</b>	System Description
<b>5</b>	Component Description
<b>A</b>	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	
<b>0001</b>	Asset Number
<b>006</b>	Photo Sequence
<b>e</b>	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	57,729	0	0	0	0	0	0	0	0	0	0	0	0	\$57,729
EXTERIOR	0	0	0	190,167	34,916	0	0	0	0	287,542	0	0	0	0	\$512,625
INTERIOR	0	0	0	1,038,730	119,073	281,019	0	0	1,889,591	0	970,709	62,015	0	70,285	\$4,431,424
PLUMBING	0	0	0	210,112	568,978	0	0	0	23,852	0	0	0	0	0	\$802,942
HVAC	0	0	0	3,119,218	674,997	0	0	0	0	409,505	31,572	0	0	0	\$4,235,292
FIRE/LIFE SAFETY	0	0	0	1,062,172	0	0	0	0	0	0	0	0	0	0	\$1,062,172
ELECTRICAL	0	0	0	96,697	3,136,220	0	0	0	14,740	0	80,228	0	0	129,082	\$3,456,968
SITE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0
VERT. TRANS.	0	0	0	159,795	0	0	0	0	0	792,144	0	0	0	0	\$951,939
HEALTH/EQUIP.	0	0	0	48,220	0	0	0	0	0	0	0	0	0	0	\$48,220
<b>SUBTOTAL</b>	<b>\$0</b>	<b>\$57,729</b>	<b>\$0</b>	<b>\$5,925,111</b>	<b>\$4,534,184</b>	<b>\$281,019</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,928,183</b>	<b>\$1,489,191</b>	<b>\$1,082,510</b>	<b>\$62,015</b>	<b>\$0</b>	<b>\$199,368</b>	<b>\$15,559,310</b>
<b>TOTAL NONRECURRING PROJECT NEEDS</b>			<b>\$57,729</b>	<b>TOTAL RECURRING COMPONENT REPLACEMENT NEEDS</b>										<b>\$15,501,582</b>	

<b>CURRENT REPLACEMENT VALUE</b>	<b>\$152,719,000</b>
<b>FACILITY CONDITION NEEDS INDEX</b>	<b>0.10</b>
<b>FACILITY CONDITION INDEX</b>	<b>0.04</b>

<b>GSF</b>	<b>TOTAL 10-YEAR FACILITY RENEWAL NEEDS</b>	<b>10-YEAR NEEDS/SF</b>
<b>270,000</b>	<b>\$15,559,310</b>	<b>\$57.63</b>

## 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	\$57,729	\$0	\$57,729
EXTERIOR	\$0	\$512,625	\$512,625
INTERIOR	\$0	\$4,431,424	\$4,431,424
PLUMBING	\$0	\$802,942	\$802,942
HVAC	\$0	\$4,235,292	\$4,235,292
FIRE/LIFE SAFETY	\$0	\$1,062,172	\$1,062,172
ELECTRICAL	\$0	\$3,456,968	\$3,456,968
SITE	\$0	\$0	\$0
VERT. TRANS	\$0	\$951,939	\$951,939
HEALTH	\$0	\$48,220	\$48,220
<b>TOTALS</b>	<b>\$57,729</b>	<b>\$15,501,582</b>	<b>\$15,559,310</b>

**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
SCIT RR03	ROOF - 1-PLY, ADHERED (EPDM, PIB, CSPE, PVC)	NORTH LOWER ROOFS			B3010	Deferred Renewal	190,167
SCIT DR27	DOOR LOCK, SECURITY	SECONDARY		N WING	C1020	Deferred Renewal	2,879
SCIT DR27	DOOR LOCK, SECURITY	SECONDARY		S WING	C1020	Deferred Renewal	10,078
SCIT DR27	DOOR LOCK, SECURITY	BALCONY EGRESS		S WING	C1020	Deferred Renewal	11,517
SCIT DR27	DOOR LOCK, SECURITY	EGRESS		S WING	C1020	Deferred Renewal	23,034
SCIT DR27	DOOR LOCK, SECURITY	EGRESS		N WING	C1020	Deferred Renewal	30,233
SCIT DR27	DOOR LOCK, SECURITY			CORRIDORS	C1020	Deferred Renewal	503,878
SCIT IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	BROADLOOM			C3020	Deferred Renewal	351,305
SCIT IF15	FLOORING - FLUID APPLIED, PAINT OR CLEAR SEAL	SEALED CONC FLRS			C3020	Deferred Renewal	105,806
SCIT VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV A		ELEV A	D1010	Deferred Renewal	53,265
SCIT VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV B		ELEV B	D1010	Deferred Renewal	53,265
SCIT VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV C		ELEV B	D1010	Deferred Renewal	53,265
SCIT BF02	BACKFLOW PREVENTER (1-2 INCHES)	BFP-MU-1		P01	D2020	Deferred Renewal	2,339
SCIT BF03	BACKFLOW PREVENTER (2-3 INCHES)	BFP-WM-1		C101	D2020	Deferred Renewal	7,713
SCIT BF03	BACKFLOW PREVENTER (2-3 INCHES)	BFP-WM-2		C101	D2020	Deferred Renewal	7,713
SCIT BF04	BACKFLOW PREVENTER (3-4 INCHES)	BFP-WM-3		C101	D2020	Deferred Renewal	8,763
SCIT BF04	BACKFLOW PREVENTER (3-4 INCHES)	BFP-WM-4		C101	D2020	Deferred Renewal	8,763

## 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
SCIT BF05	BACKFLOW PREVENTER (4-6 INCHES)	BFP-FIRE		C101	D2020	Deferred Renewal	12,764
SCIT PS09	SUPPLY PIPING SYSTEM - LABORATORY, WET	PLASTIC, LAB WATER		THROUGHOUT	D2020	Deferred Renewal	162,057
SCIT BA109	HVAC CONTROLS SYSTEM - LABORATORY, WET	DDC		THROUGHOUT	D3060	Deferred Renewal	3,119,218
SCIT FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER	PA, NOTIFIER		C103	D4030	Deferred Renewal	37,851
SCIT FA02	FIRE ALARM SYSTEM - DEVICES	HS, MP, SD		THROUGHOUT	D4030	Deferred Renewal	1,024,322
SCIT VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD HWP-3		C101	D5010	Deferred Renewal	2,102
SCIT VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD HWP-4		C101	D5010	Deferred Renewal	2,102
SCIT VF04	VARIABLE FREQUENCY DRIVE (10-15 HP)	VFD HWP-1		P01	D5010	Deferred Renewal	6,133
SCIT VF04	VARIABLE FREQUENCY DRIVE (10-15 HP)	VFD HWP-2		P01	D5010	Deferred Renewal	6,133
SCIT VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-4A		P01	D5010	Deferred Renewal	13,371
SCIT VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-3B		P01	D5010	Deferred Renewal	13,371
SCIT VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-3A		P01	D5010	Deferred Renewal	13,371
SCIT VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-1C		P01	D5010	Deferred Renewal	13,371
SCIT VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-1B		P01	D5010	Deferred Renewal	13,371
SCIT VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-1A		P01	D5010	Deferred Renewal	13,371
SCIT CR03	REFRIGERATION SYSTEM - WALK-IN, 3 EVAP FANS, 10000 BTUH, CONDENSER	CR-535A		535A	E1020	Deferred Renewal	13,715
SCIT CR03	REFRIGERATION SYSTEM - WALK-IN, 3 EVAP FANS, 10000 BTUH, CONDENSER	CR-334		334	E1020	Deferred Renewal	13,715

**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
SCIT CR04	REFRIGERATION SYSTEM - WALK-IN, 4 EVAP FANS, 26500 BTUH, CONDENSER	CR-446		446	E1020	Deferred Renewal	20,790
SCIT DR28	DOOR OPERATOR, POWER-ASSIST	EGRESS		S WING	B2030	2021	34,916
SCIT DR24	DOOR LOCK, COMMERCIAL-GRADE	SERVICE		S WING	C1020	2021	4,468
SCIT DR24	DOOR LOCK, COMMERCIAL-GRADE	SERVICE		N WING	C1020	2021	11,170
SCIT DR24	DOOR LOCK, COMMERCIAL-GRADE	BALCONY		S WING	C1020	2021	17,871
SCIT DR24	DOOR LOCK, COMMERCIAL-GRADE	STANDARD DOORS			C1020	2021	81,910
SCIT DR26	DOOR PANIC HARDWARE	EXT STAIR		S WING	C1020	2021	3,655
SCIT BF02	BACKFLOW PREVENTER (1-2 INCHES)	BFP-MU-2		P01	D2020	2021	2,339
SCIT PP01	DOMESTIC WATER BOOSTER SYSTEM	BP-1		C101	D2020	2021	386,810
SCIT PG02	AIR COMPRESSOR - MEDICAL/LABORATORY PCKG (15-20 HP), WITH DRYER	AC-2		P01	D2090	2021	30,155
SCIT PG03	AIR COMPRESSOR - MEDICAL/LABORATORY PCKG (20-40 HP), WITH DRYER	AC-1		P01	D2090	2021	39,410
SCIT PG03	AIR COMPRESSOR - MEDICAL/LABORATORY PCKG (20-40 HP), WITH DRYER	AC-4		165	D2090	2021	52,546
SCIT PG08	VACUUM PUMP - OIL RING SEAL (10-15 HP), WITH TRAP	VP-1		P01	D2090	2021	57,717
SCIT FN07	FAN - AXIAL, RETURN, 1.5" SP (>20 HP) 38,500 CFM	AE-1		ROOF	D3040	2021	82,891
SCIT FN40	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (<=30 HP)	F-5		ROOF	D3040	2021	89,333
SCIT HD01	HOOD, FUME	FH-SNORKEL		LABS	D3040	2021	331,972

**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
SCIT HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	PRV-3		P01	D3040	2021	4,466
SCIT HX10	PRESSURE REDUCING VALVE, STEAM SYSTEM (2.5")	PRV-1		P01	D3040	2021	5,525
SCIT HX12	PRESSURE REDUCING VALVE, STEAM SYSTEM (4")	PRV-2		P01	D3040	2021	9,824
SCIT PH13	CONDENSATE RECEIVER, ELECTRIC, 1 PUMP	CU-3		P01	D3040	2021	31,998
SCIT PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	CU-2		C101	D3040	2021	7,437
SCIT PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	CU-1		128	D3040	2021	111,551
SCIT VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-5		P01	D5010	2021	32,271
SCIT VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-4		P01	D5010	2021	32,271
SCIT LI09	LIGHTING SYSTEM, INTERIOR - LABORATORY, WET	T8, CFL		THROUGHOUT	D5020	2021	3,071,679
SCIT IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	BROADLOOM			C3020	2022	281,019
SCIT IW01	WALL FINISH - PAINT, STANDARD	PT WALLS			C3010	2025	1,830,666
SCIT IC04	CEILING FINISH - PAINTED OR STAINED, STANDARD	PT CEILINGS			C3030	2025	58,925
SCIT PG01	AIR COMPRESSOR - MEDICAL/LABORATORY PCKG (=10 HP), WITH DRYER	AC-3		P01	D2090	2025	23,852
SCIT VF10	VARIABLE FREQUENCY DRIVE (50-75 HP)	VFD AHU-7		P05	D5010	2025	14,740
SCIT EW12	WALL, EXTERIOR, PANEL JOINT RESTORATION	METAL SIDING		PENTHOUSE	B2010	2026	287,542
SCIT VT01	ELEVATOR MODERNIZATION - TRACTION - LOW RISE	ELEV A		128	D1010	2026	245,040
SCIT VT01	ELEVATOR MODERNIZATION - TRACTION - LOW RISE	ELEV B		128	D1010	2026	245,040



**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
SCIT VT03	ELEVATOR MODERNIZATION - HYDRAULIC	ELEV C		156	D1010	2026	302,064
SCIT AH06	AIR HANDLING UNIT - INDOOR (6-9 HP)	AHU-11		C308A	D3040	2026	55,834
SCIT AH06	AIR HANDLING UNIT - INDOOR (6-9 HP)	AHU-8		C208A	D3040	2026	67,001
SCIT AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	AHU-10		C308A	D3040	2026	81,604
SCIT AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	AHU-9		C208A	D3040	2026	81,604
SCIT FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-1		ROOF	D3040	2026	7,951
SCIT FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-2		ROOF	D3040	2026	7,951
SCIT FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-3		ROOF	D3040	2026	7,951
SCIT FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-4		ROOF	D3040	2026	7,951
SCIT FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-5		ROOF	D3040	2026	7,951
SCIT FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-6		ROOF	D3040	2026	7,951
SCIT FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-7		ROOF	D3040	2026	7,951
SCIT FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-8		ROOF	D3040	2026	7,951
SCIT FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-11		C101	D3040	2026	1,402
SCIT FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-10		C101	D3040	2026	1,402

## 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
SCIT FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-13		C101	D3040	2026	1,402
SCIT FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-8		C101	D3040	2026	1,402
SCIT FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-9		C102	D3040	2026	1,402
SCIT PH01	PUMP - ELECTRIC (<=10 HP)	HWP-3		C101	D3040	2026	4,936
SCIT PH01	PUMP - ELECTRIC (<=10 HP)	HWP-4		C101	D3040	2026	4,936
SCIT PH02	PUMP - ELECTRIC (10 - 15 HP)	HWP-1		P01	D3040	2026	21,487
SCIT PH02	PUMP - ELECTRIC (10 - 15 HP)	HWP-2		P01	D3040	2026	21,487
SCIT IF03	FLOORING - VINYL COMPOSITION TILE, STANDARD	VCT			C3020	2027	970,709
SCIT AH39	COMPUTER ROOM AC UNIT - CHILLED WATER (<=5 TON)	CRAC-1		SERV ROOM	D3050	2027	31,572
SCIT VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-4C		P01	D5010	2027	13,371
SCIT VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-4B		P01	D5010	2027	13,371
SCIT VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-3C		P01	D5010	2027	13,371
SCIT VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-2C		P01	D5010	2027	13,371
SCIT VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-2B		P01	D5010	2027	13,371
SCIT VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-2A		P01	D5010	2027	13,371
SCIT CW01	CASEWORK - WOOD BASE AND WALL, TOP, STANDARD			BREAK AREAS	C1030	2028	62,015
SCIT IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	CARPET TILE			C3020	2030	70,285

**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
SCIT	VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-6		P01	D5010	2030	32,271
SCIT	VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-3		P01	D5010	2030	32,271
SCIT	VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-2		P01	D5010	2030	32,271
SCIT	VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-1		P01	D5010	2030	32,271
<b>TOTAL</b>								<b>\$15,501,582</b>

**FACILITIES RENEWAL PLAN**  
NONRECURRING PROJECT COSTS

*All costs shown as Present Value*

PROJECT NUMBER	PROJECT TITLE	UNI-FORMAT	PRIORITY CLASS	PROJECT CLASSIFICATION	PROJECT COST
SCITAC01	RAILING UPGRADES FOR NORTH LECTURE ROOMS	C1010	2	Plant Adaption	57,729
<b>TOTAL</b>					<b>\$57,729</b>

FACILITY CONDITION ASSESSMENT

**SECTION 3**

**NONRECURRING  
PROJECT DETAILS**

All costs shown as Present Value

RAILING UPGRADES FOR NORTH LECTURE ROOMS			
<b>Project Number:</b>	SCITAC01	<b>Category Code:</b>	
<b>Priority Sequence:</b>	1	AC3B	
<b>Priority Class:</b>	Critical	<b>System:</b>	ACCESSIBILITY
<b>Project Class:</b>	Plant Adaption	<b>Component:</b>	INTERIOR PATH OF TRAVEL
<b>Date Basis:</b>	6/16/2021	<b>Element:</b>	STAIRS AND RAILINGS

**Code Application:**

ADAAG 505

**Subclass/Savings:**

DOJ2 - Access to Goods & Services

**Project Location:**

Room Only: Floor(s) 2,3

**Description**

The four fixed seating lecture rooms in the north classroom wing lack wall-mounted handrails on the side aisles. Install accessible railings at each of these locations to help improve user safety.

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
Wall-mounted handrail system, painted	LF	400	\$68.81	\$27,524	\$48.23	\$19,292	\$46,816
<b>Base Material/Labor Costs</b>				<b>\$27,524</b>		<b>\$19,292</b>	
<b>Indexed Material/Labor Costs</b>				<b>\$27,717</b>		<b>\$13,755</b>	<b>\$41,472</b>
<b>Construction Mark Up at 20.0%</b>							<b>\$8,294</b>
<b>Original Construction Cost</b>							<b>\$49,766</b>
<b>Date of Original Estimate:</b>	6/16/2021					<b>Inflation</b>	<b>\$0</b>
<b>Current Year Construction Cost</b>							<b>\$49,766</b>
<b>Professional Fees at 16.0%</b>							<b>\$7,963</b>
<b>TOTAL PROJECT COST</b>							<b>\$57,729</b>





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	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
EW01	WALL, EXTERIOR, MASONRY POINTING	BRICK VENEER			53,420	SF	1.27	\$521,097	2001	30		2031
EW12	WALL, EXTERIOR, PANEL JOINT RESTORATION	METAL SIDING		PENTHOUSE	11,750	SF	1.27	\$287,542	2001	25		2026
WN01	GLASS, WINDOW, ALUMINUM OR WOOD, STANDARD	W OFFICE WING GLAZING			3,320	SF	1.27	\$645,402	2001	40		2041
WN03	GLASS, CURTAIN WALL, STANDARD	S WING N AND S CURTAIN WALL			44,060	SF	1.27	\$9,618,451	2001	60		2061
DR05	DOOR AND FRAME, EXTERIOR, SWINGING, ALUMINUM AND GLASS	EGRESS		S WING	16	LEAF	1.00	\$46,163	2001	25	8	2034
DR05	DOOR AND FRAME, EXTERIOR, SWINGING, ALUMINUM AND GLASS	SECONDARY		S WING	7	LEAF	1.00	\$20,196	2001	25	8	2034
DR05	DOOR AND FRAME, EXTERIOR, SWINGING, ALUMINUM AND GLASS	BALCONY		S WING	24	LEAF	1.00	\$69,244	2001	25	8	2034
DR05	DOOR AND FRAME, EXTERIOR, SWINGING, ALUMINUM AND GLASS	BALCONY EGRESS		S WING	8	LEAF	1.00	\$23,081	2001	25	8	2034
DR05	DOOR AND FRAME, EXTERIOR, SWINGING, ALUMINUM AND GLASS	EGRESS		N WING	21	LEAF	1.00	\$60,589	2001	25	8	2034
DR05	DOOR AND FRAME, EXTERIOR, SWINGING, ALUMINUM AND GLASS	SECONDARY		N WING	2	LEAF	1.00	\$5,770	2001	25	8	2034
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	SERVICE		S WING	6	LEAF	1.00	\$12,185	2001	40		2041
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	EXT STAIR		S WING	3	LEAF	1.00	\$6,093	2001	40		2041
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	SERVICE		N WING	15	LEAF	1.00	\$30,463	2001	40		2041
DR19	DOOR, EXTERIOR, OVERHEAD ROLLING METAL, LOCK	GLASS SECTIONAL			300	SF	1.00	\$29,442	2001	30		2031
DR19	DOOR, EXTERIOR, OVERHEAD ROLLING METAL, LOCK	COIL OVERHEAD			150	SF	1.00	\$14,721	2001	30		2031

### 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
DR28	DOOR OPERATOR, POWER-ASSIST	EGRESS		S WING	4	EA	1.00	\$34,916	2001	20		2021
DR30	DOOR OPERATOR, OVERHEAD DOOR, COMMERCIAL, PADS	GLASS SECTIONAL			2	EA	2.25	\$9,562	2001	15	18	2034
DR30	DOOR OPERATOR, OVERHEAD DOOR, COMMERCIAL, PADS	COIL OVERHEAD			1	EA	1.00	\$2,125	2001	15	18	2034
RR03	ROOF - 1-PLY, ADHERED (EPDM, PIB, CSPE, PVC)	SOUTH UPPER ROOFS			45,550	SF	1.50	\$460,750	2018	20		2038
RR03	ROOF - 1-PLY, ADHERED (EPDM, PIB, CSPE, PVC)	NORTH LOWER ROOFS			18,800	SF	1.50	\$190,167	2001	20	-2	DR
DR01	DOOR AND FRAME, INTERIOR, NON-RATED	STANDARD DOORS			110	LEAF	1.00	\$238,108	2001	40		2041
DR02	DOOR AND FRAME, INTERIOR, FIRE-RATED			CORRIDORS	350	LEAF	1.00	\$1,308,525	2001	40		2041
DR03	DOOR - OVERHEAD, INTERIOR	COIL OVERHEAD DRS			240	SF	1.00	\$23,554	2001	30		2031
DR24	DOOR LOCK, COMMERCIAL-GRADE	SERVICE		S WING	6	EA	1.00	\$4,468	2001	20		2021
DR24	DOOR LOCK, COMMERCIAL-GRADE	BALCONY		S WING	24	EA	1.00	\$17,871	2001	20		2021
DR24	DOOR LOCK, COMMERCIAL-GRADE	SERVICE		N WING	15	EA	1.00	\$11,170	2001	20		2021
DR24	DOOR LOCK, COMMERCIAL-GRADE	STANDARD DOORS			110	EA	1.00	\$81,910	2001	20		2021
DR26	DOOR PANIC HARDWARE	EXT STAIR		S WING	3	EA	1.00	\$3,655	2001	20		2021
DR27	DOOR LOCK, SECURITY	EGRESS		S WING	16	EA	1.00	\$23,034	2001	15	4	DR
DR27	DOOR LOCK, SECURITY	SECONDARY		S WING	7	EA	1.00	\$10,078	2001	15	4	DR

### 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
DR27	DOOR LOCK, SECURITY	BALCONY EGRESS		S WING	8	EA	1.00	\$11,517	2001	15	4	DR
DR27	DOOR LOCK, SECURITY	EGRESS		N WING	21	EA	1.00	\$30,233	2001	15	4	DR
DR27	DOOR LOCK, SECURITY	SECONDARY		N WING	2	EA	1.00	\$2,879	2001	15	4	DR
DR27	DOOR LOCK, SECURITY			CORRIDORS	350	EA	1.00	\$503,878	2001	15	4	DR
CW01	CASEWORK - WOOD BASE AND WALL, TOP, STANDARD			BREAK AREAS	115	LF	1.00	\$62,015	2001	20	7	2028
CW04	CASEWORK - LABORATORY, INCLUDES REAGENT SHELF AND TOP	WOOD		LAB	121,500	SF	0.65	\$11,848,956	2001	40		2041
IW01	WALL FINISH - PAINT, STANDARD	PT WALLS			818,010	SF	1.00	\$1,830,666	2010	12	3	2025
IW03	WALL FINISH - TILE, CERAMIC / STONE, STANDARD	CER TILE WET WALLS			2,500	SF	1.00	\$95,938	2001	30	10	2041
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	BROADLOOM			28,690	SF	1.00	\$351,305	2001	12	7	DR
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	BROADLOOM			22,950	SF	1.00	\$281,019	2010	12		2022
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	CARPET TILE			5,740	SF	1.00	\$70,285	2018	12		2030
IF03	FLOORING - VINYL COMPOSITION TILE, STANDARD	VCT			151,470	SF	1.00	\$970,709	2001	20	6	2027
IF06	FLOORING - TILE, CERAMIC / STONE / QUARRY STANDARD	CER FLR TILE			9,180	SF	1.00	\$291,919	2001	30	10	2041
IF15	FLOORING - FLUID APPLIED, PAINT OR CLEAR SEAL	SEALED CONC FLRS			34,430	SF	1.00	\$105,806	2001	10	9	DR
IC01	CEILING FINISH - SUSPENDED ACOUSTICAL TILE, STANDARD	ACOUS CEILING			126,800	SF	1.00	\$1,279,609	2001	30		2031

### 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
IC01	CEILING FINISH - SUSPENDED ACOUSTICAL TILE, STANDARD	ACOUS CEILING			22,380	SF	1.00	\$225,849	2010	30		2040
IC04	CEILING FINISH - PAINTED OR STAINED, STANDARD	PT CEILINGS			26,330	SF	1.00	\$58,925	2010	24	-9	2025
VT01	ELEVATOR MODERNIZATION - TRACTION - LOW RISE	ELEV B		128	1	EA	1.00	\$245,040	2001	25		2026
VT01	ELEVATOR MODERNIZATION - TRACTION - LOW RISE	ELEV A		128	1	EA	1.00	\$245,040	2001	25		2026
VT03	ELEVATOR MODERNIZATION - HYDRAULIC	ELEV C		156	1	EA	1.00	\$302,064	2001	25		2026
VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV C		ELEV B	1	EA	1.00	\$53,265	2001	12	7	DR
VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV B		ELEV B	1	EA	1.00	\$53,265	2001	12	7	DR
VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV A		ELEV A	1	EA	1.00	\$53,265	2001	12	7	DR
FX01	PLUMBING FIXTURE - LAVATORY, COUNTER	PC		RRS	30	EA	1.00	\$39,539	2001	35		2036
FX02	PLUMBING FIXTURE - LAVATORY, WALL HUNG	PC		RRS	16	EA	1.00	\$21,283	2001	35		2036
FX03	PLUMBING FIXTURE - LAVATORY, GANG	SST WALL MOUNT		N HIGH BAY	2	EA	1.00	\$16,643	2001	35		2036
FX04	PLUMBING FIXTURE - SINK, KITCHEN	SST		BREAK AREAS	5	EA	1.00	\$10,798	2001	35		2036
FX06	PLUMBING FIXTURE - SINK, SERVICE/LAUNDRY/UTILITY	FLR MOUNT		JAN CLOS	7	EA	1.00	\$12,548	2001	35		2036
FX08	PLUMBING FIXTURE - SHOWER VALVE AND HEAD	CHROME		CENTRAL PLT BATH	1	EA	1.00	\$1,725	2001	35		2036
FX10	PLUMBING FIXTURE - URINAL	PC		RRS	42	EA	1.00	\$88,952	2001	35		2036

### 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
FX12	PLUMBING FIXTURE - WATER CLOSET, TANKLESS	PC		RRS	54	EA	1.00	\$105,218	2001	35		2036
FX15	PLUMBING FIXTURE - EMERGENCY EYEWASH	EM EYEWASH		LABS	120	EA	1.00	\$562,250	2001	35		2036
FX16	PLUMBING FIXTURE - EMERGENCY COMBINATION SHOWER/EYEWASH	EM COMBO SHOWER, EYEWASH		LABS	32	EA	1.00	\$257,742	2001	35		2036
BF02	BACKFLOW PREVENTER (1-2 INCHES)	BFP-MU-1		P01	1	EA	1.00	\$2,339	2001	10	9	DR
BF02	BACKFLOW PREVENTER (1-2 INCHES)	BFP-MU-2		P01	1	EA	1.00	\$2,339	2011	10		2021
BF03	BACKFLOW PREVENTER (2-3 INCHES)	BFP-WM-1		C101	1	EA	1.00	\$7,713	2001	10	9	DR
BF03	BACKFLOW PREVENTER (2-3 INCHES)	BFP-WM-2		C101	1	EA	1.00	\$7,713	2001	10	9	DR
BF04	BACKFLOW PREVENTER (3-4 INCHES)	BFP-WM-3		C101	1	EA	1.00	\$8,763	2001	10	9	DR
BF04	BACKFLOW PREVENTER (3-4 INCHES)	BFP-WM-4		C101	1	EA	1.00	\$8,763	2001	10	9	DR
BF05	BACKFLOW PREVENTER (4-6 INCHES)	BFP-FIRE		C101	1	EA	1.00	\$12,764	2001	10	9	DR
PP01	DOMESTIC WATER BOOSTER SYSTEM	BP-1		C101	30	HP	1.00	\$386,810	2001	20		2021
PS09	SUPPLY PIPING SYSTEM - LABORATORY, WET	COPPER		THROUGHOUT	260,000	SF	0.93	\$3,320,790	2001	35		2036
PS09	SUPPLY PIPING SYSTEM - LABORATORY, WET	PLASTIC, LAB WATER		THROUGHOUT	10,000	SF	1.18	\$162,057	2001	35	-16	DR
WH27	WATER HEATER - SHELL & TUBE (45-93 GPM)	DHX-1		P01	48	GPM	1.00	\$56,593	2001	30	1	2032
WT01	WATER SOFTENER (41 - 70 GPM)	WS-1		P01	7.50	GPM	1.00	\$1,548	2020	18		2038

### 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
WT07	REVERSE OSMOSIS SYSTEM (>10,000 GPD)	RO-1		P01	10,800	GPD	1.00	\$32,054	2020	20		2040
PD09	DRAIN PIPING SYSTEM - LABORATORY, WET	CAST IRON, HUBLESS		THROUGHOUT	270,000	SF	0.93	\$5,203,240	2001	40		2041
PG01	AIR COMPRESSOR - MEDICAL/LABORATORY PCKG (≈10 HP), WITH DRYER	AC-3		P01	10	HP	1.00	\$23,852	2005	20		2025
PG02	AIR COMPRESSOR - MEDICAL/LABORATORY PCKG (15-20 HP), WITH DRYER	AC-2		P01	15	HP	1.00	\$30,155	2001	20		2021
PG03	AIR COMPRESSOR - MEDICAL/LABORATORY PCKG (20-40 HP), WITH DRYER	AC-1		P01	30	HP	1.00	\$39,410	2001	20		2021
PG03	AIR COMPRESSOR - MEDICAL/LABORATORY PCKG (20-40 HP), WITH DRYER	AC-4		165	40	HP	1.00	\$52,546	2001	20		2021
PG08	VACUUM PUMP - OIL RING SEAL (10-15 HP), WITH TRAP	VP-1		P01	15	HP	1.00	\$57,717	2001	20		2021
HU20	DUCTLESS DX SPLIT SYSTEM (2 @ .75 TON)	HP1-1		ROOF	10	TON	1.00	\$32,609	2015	15	2	2032
HU20	DUCTLESS DX SPLIT SYSTEM (2 @ .75 TON)	HP2-2		ROOF	10	TON	1.00	\$32,609	2015	15	2	2032
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-1		C301	1	HP	1.00	\$9,008	2001	25	6	2032
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-2		C103	1	HP	1.00	\$9,008	2001	25	6	2032
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-3		C102	1	HP	1.00	\$9,008	2001	25	6	2032
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-4		UNKN	1	HP	1.00	\$9,008	2001	25	6	2032
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-5		UNKN	1	HP	1.00	\$9,008	2001	25	6	2032
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-6		UNKN	1	HP	1.00	\$9,008	2001	25	6	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
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-7		UNKN	1	HP	1.00	\$9,008	2001	25	6	2032
AH01	AIR HANDLING UNIT - INDOOR (.5-1.25 HP)	FCU-8		C305	1	HP	1.00	\$9,008	2001	25	6	2032
AH06	AIR HANDLING UNIT - INDOOR (6-9 HP)	AHU-8		C208A	9	HP	1.00	\$67,001	2001	25		2026
AH06	AIR HANDLING UNIT - INDOOR (6-9 HP)	AHU-11		C308A	7.50	HP	1.00	\$55,834	2001	25		2026
AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	AHU-9		C208A	10	HP	1.00	\$81,604	2001	25		2026
AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	AHU-10		C308A	10	HP	1.00	\$81,604	2001	25		2026
AH08	AIR HANDLING UNIT - INDOOR (12-17 HP)	AHU-12		C101	15	HP	1.00	\$103,428	2001	25	6	2032
AH13	AIR HANDLING UNIT - INDOOR (45-63 HP)	AHU-7		P05	60	HP	1.00	\$287,133	2001	25	6	2032
AH15	AIR HANDLING UNIT - INDOOR (>88 HP)	AHU-6		P01	125	HP	1.00	\$590,567	2001	25	6	2032
AH15	AIR HANDLING UNIT - INDOOR (>88 HP)	AHU-5		P01	125	HP	1.00	\$590,567	2001	25	6	2032
AH15	AIR HANDLING UNIT - INDOOR (>88 HP)	AHU-4		P01	125	HP	1.00	\$590,567	2001	25	6	2032
AH15	AIR HANDLING UNIT - INDOOR (>88 HP)	AHU-3		P01	125	HP	1.00	\$590,567	2001	25	6	2032
AH15	AIR HANDLING UNIT - INDOOR (>88 HP)	AHU-2		P01	125	HP	1.00	\$590,567	2001	25	6	2032
AH15	AIR HANDLING UNIT - INDOOR (>88 HP)	AHU-1		P01	125	HP	1.00	\$590,567	2001	25	6	2032
FN07	FAN - AXIAL, RETURN, 1.5" SP (>20 HP) 38,500 CFM	AE-1		ROOF	50	HP	1.00	\$82,891	2001	20		2021

### 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
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-1		ROOF	1	EA	1.00	\$7,951	2001	20	5	2026
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-2		ROOF	1	EA	1.00	\$7,951	2001	20	5	2026
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-3		ROOF	1	EA	1.00	\$7,951	2001	20	5	2026
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-4		ROOF	1	EA	1.00	\$7,951	2001	20	5	2026
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-5		ROOF	1	EA	1.00	\$7,951	2001	20	5	2026
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-6		ROOF	1	EA	1.00	\$7,951	2001	20	5	2026
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-7		ROOF	1	EA	1.00	\$7,951	2001	20	5	2026
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-8		ROOF	1	EA	1.00	\$7,951	2001	20	5	2026
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-11		C101	1	HP	1.00	\$1,402	2001	20	5	2026
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-10		C101	1	HP	1.00	\$1,402	2001	20	5	2026
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-13		C101	1	HP	1.00	\$1,402	2001	20	5	2026
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-8		C101	1	HP	1.00	\$1,402	2001	20	5	2026
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-9		C102	1	HP	1.00	\$1,402	2001	20	5	2026
FN40	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (<=30 HP)	F-5		ROOF	20	HP	1.00	\$89,333	2001	20		2021
FN42	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (40-50 HP)	F-3A		ROOF	50	HP	1.00	\$206,343	2016	20		2036

### 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
FN42	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (40-50 HP)	F-3B		ROOF	50	HP	1.00	\$206,343	2016	20		2036
FN42	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (40-50 HP)	F-3C		ROOF	50	HP	1.00	\$206,343	2016	20		2036
FN42	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (40-50 HP)	F-4A		ROOF	50	HP	1.00	\$206,343	2016	20		2036
FN42	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (40-50 HP)	F-4B		ROOF	50	HP	1.00	\$206,343	2016	20		2036
FN42	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (40-50 HP)	F-4C		ROOF	50	HP	1.00	\$206,343	2016	20		2036
FN42	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (40-50 HP)	F-2C		ROOF	50	HP	1.00	\$206,343	2016	20		2036
FN42	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (40-50 HP)	F-2B		ROOF	50	HP	1.00	\$206,343	2016	20		2036
FN42	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (40-50 HP)	F-2A		ROOF	50	HP	1.00	\$206,343	2016	20		2036
FN42	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (40-50 HP)	F-1A		ROOF	50	HP	1.00	\$206,343	2016	20		2036
FN42	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (40-50 HP)	F-1B		ROOF	50	HP	1.00	\$206,343	2016	20		2036
FN42	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (40-50 HP)	F-1C		ROOF	50	HP	1.00	\$206,343	2016	20		2036
HD01	HOOD, FUME	FH		LABS	535	LF	1.00	\$1,268,608	2001	20	11	2032
HD01	HOOD, FUME	FH-SNORKEL		LABS	140	LF	1.00	\$331,972	2001	20		2021
HV09	HVAC DISTRIBUTION NETWORKS - LABORATORY, WET	VAV		THROUGHOUT	270,000	SF	0.93	\$19,331,441	2001	40		2041
HX05	HEAT EXCHANGER - SHELL & TUBE STEAM TO WATER (>85 GPM)	CV-1		P01	100	GPM	1.00	\$14,704	2001	35		2036

### 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
HX05	HEAT EXCHANGER - SHELL & TUBE STEAM TO WATER (>85 GPM)	CV-2		P01	100	GPM	1.00	\$14,704	2001	35		2036
HX05	HEAT EXCHANGER - SHELL & TUBE STEAM TO WATER (>85 GPM)	CV-3		C101	280	GPM	1.00	\$41,171	2001	35		2036
HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	PRV-3		P01	1	EA	1.00	\$4,466	2001	20		2021
HX10	PRESSURE REDUCING VALVE, STEAM SYSTEM (2.5")	PRV-1		P01	1	EA	1.00	\$5,525	2001	20		2021
HX12	PRESSURE REDUCING VALVE, STEAM SYSTEM (4")	PRV-2		P01	1	EA	1.00	\$9,824	2001	20		2021
PH01	PUMP - ELECTRIC (<=10 HP)	DHWP-1		P01	1	HP	1.00	\$1,645	2001	25	6	2032
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-3		C101	3	HP	1.00	\$4,936	2001	25		2026
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-4		C101	3	HP	1.00	\$4,936	2001	25		2026
PH01	PUMP - ELECTRIC (<=10 HP)	CHWP-1		128	1.50	HP	1.00	\$2,468	2018	25		2043
PH02	PUMP - ELECTRIC (10 - 15 HP)	HWP-1		P01	15	HP	1.00	\$21,487	2001	25		2026
PH02	PUMP - ELECTRIC (10 - 15 HP)	HWP-2		P01	15	HP	1.00	\$21,487	2001	25		2026
PH13	CONDENSATE RECEIVER, ELECTRIC, 1 PUMP	CU-3		P01	2	HP	1.00	\$31,998	2001	20		2021
PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	CU-2		C101	1	HP	1.00	\$7,437	2001	20		2021
PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	CU-1		128	15	HP	1.00	\$111,551	2001	20		2021
AH39	COMPUTER ROOM AC UNIT - CHILLED WATER (<=5 TON)	CRAC-1		SERV ROOM	5	TON	1.00	\$31,572	2012	15		2027

### 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
BA109	HVAC CONTROLS SYSTEM - LABORATORY, WET	DDC		THROUGHOUT	270,000	SF	0.93	\$3,119,218	2001	18	1	DR
FP09	FIRE PUMP - ELECTRIC, 250 GPM, 2" ID (<=15 HP)	JOCKEY PUMP		C101	2	HP	1.00	\$5,331	2001	25	6	2032
FP10	FIRE PUMP - ELECTRIC, 500 GPM, 3" ID (15-65 HP)	FIRE PUMP		C101	60	HP	1.00	\$49,554	2001	25	6	2032
FS01	FIRE SPRINKLER SYSTEM	WET PIPE		THROUGHOUT	270,000	SF	0.93	\$3,152,300	2001	80		2081
FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER	PA, NOTIFIER		C103	1	EA	1.00	\$37,851	2001	15	4	DR
FA02	FIRE ALARM SYSTEM - DEVICES	HS, MP, SD		THROUGHOUT	270,000	SF	0.93	\$1,024,322	2001	18	1	DR
SE09	ELECTRICAL DISTRIBUTION NETWORK - LABORATORY, WET	277/480		THROUGHOUT	270,000	SF	0.93	\$6,216,922	2001	40		2041
SG04	MAIN SWITCHBOARD W/BREAKERS (800-1200 AMP)	MSBA		P01	1,200	AMP	1.00	\$88,490	2001	20	11	2032
SG07	MAIN SWITCHBOARD W/BREAKERS (>2500 AMP)	MSB		C102	4,000	AMP	1.00	\$340,154	2001	20	11	2032
TX08	TRANSFORMER - DRY-TYPE, 3PH, 5-15KV PRIMARY (750-1000 KVA)	TX-1		C102	1,000	KVA	1.00	\$104,675	2001	35		2036
TX22	TRANSFORMER - OIL-FILLED, 3PH, 5-15KV PRIMARY (>2000 KVA)	TX-2		EXT	3,000	KVA	1.00	\$186,267	2001	40		2041
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD HWP-3		C101	3	HP	1.00	\$2,102	2001	12	7	DR
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD HWP-4		C101	3	HP	1.00	\$2,102	2001	12	7	DR
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	VFD AHU-11		C308A	7.50	HP	1.00	\$4,764	2018	12	2	2032
VF02	VARIABLE FREQUENCY DRIVE (5-7.5 HP)	VFD AHU-9		C208A	7.50	HP	1.00	\$4,764	2018	12	2	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
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	VFD AHU-8		C208A	10	HP	1.00	\$5,298	2018	12	2	2032
VF03	VARIABLE FREQUENCY DRIVE (7.5-10 HP)	VFD AHU-10		C308A	10	HP	1.00	\$5,298	2018	12	2	2032
VF04	VARIABLE FREQUENCY DRIVE (10-15 HP)	VFD AHU-12		C101	15	HP	1.00	\$6,133	2018	12	2	2032
VF04	VARIABLE FREQUENCY DRIVE (10-15 HP)	VFD HWP-1		P01	15	HP	1.00	\$6,133	2001	12	7	DR
VF04	VARIABLE FREQUENCY DRIVE (10-15 HP)	VFD HWP-2		P01	15	HP	1.00	\$6,133	2001	12	7	DR
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-4C		P01	50	HP	1.00	\$13,371	2011	16		2027
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-4B		P01	50	HP	1.00	\$13,371	2011	16		2027
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-4A		P01	50	HP	1.00	\$13,371	2001	16	3	DR
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-3C		P01	50	HP	1.00	\$13,371	2011	16		2027
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-3B		P01	50	HP	1.00	\$13,371	2001	16	3	DR
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-3A		P01	50	HP	1.00	\$13,371	2001	16	3	DR
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-2C		P01	50	HP	1.00	\$13,371	2011	16		2027
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-2B		P01	50	HP	1.00	\$13,371	2011	16		2027
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-2A		P01	50	HP	1.00	\$13,371	2011	16		2027
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-1C		P01	50	HP	1.00	\$13,371	2001	16	3	DR

### 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)	VFD F-1B		P01	50	HP	1.00	\$13,371	2001	16	3	DR
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-1A		P01	50	HP	1.00	\$13,371	2001	16	3	DR
VF10	VARIABLE FREQUENCY DRIVE (50-75 HP)	VFD AHU-7		P05	60	HP	1.00	\$14,740	2009	16		2025
VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-6		P01	125	HP	1.00	\$32,271	2011	20	-1	2030
VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-5		P01	125	HP	1.00	\$32,271	2001	20		2021
VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-4		P01	125	HP	1.00	\$32,271	2001	20		2021
VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-3		P01	125	HP	1.00	\$32,271	2011	20	-1	2030
VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-2		P01	125	HP	1.00	\$32,271	2011	20	-1	2030
VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-1		P01	125	HP	1.00	\$32,271	2011	20	-1	2030
LE07	LIGHTING - EXTERIOR, WALL FLOOD (SV, MH, ID, LED)	LED WALLPACK		EXT	4	EA	1.00	\$3,954	2018	15		2033
LE07	LIGHTING - EXTERIOR, WALL FLOOD (SV, MH, ID, LED)	LED CEIL SCONCE		EXT	106	EA	1.00	\$104,772	2018	15		2033
LE07	LIGHTING - EXTERIOR, WALL FLOOD (SV, MH, ID, LED)	LED SCONCE		EXT	16	EA	1.00	\$15,815	2018	15		2033
LE08	LIGHTING - EXTERIOR, WALL LANTERN or FLOOD (INC, CFL, LED)	LED REC WALL MOUNT		EXT	27	EA	1.00	\$11,206	2018	15		2033
LI09	LIGHTING SYSTEM, INTERIOR - LABORATORY, WET	T8, CFL		THROUGHOUT	270,000	SF	1.07	\$3,071,679	2001	20		2021
GN05	GENERATOR - DIESEL (>500 KW)	EGEN		EXT	900	KW	1.00	\$542,979	2001	25	6	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
GN15	SWITCH - AUTO TRANSFER, 480 V (100-400 AMP)	ATS-LS		C102A	260	AMP	1.00	\$10,690	2001	25	6	2032
GN16	SWITCH - AUTO TRANSFER, 480 V (>400 AMP)	ATS-EQ		C102A	800	AMP	1.00	\$23,183	2001	25	6	2032
CR01	WALK-IN REFRIGERATOR OR FREEZER STRUCTURE	CR-535A		535A	120	SF	1.18	\$48,577	2001	35		2036
CR01	WALK-IN REFRIGERATOR OR FREEZER STRUCTURE	CR-446		446	180	SF	1.18	\$72,865	2001	35		2036
CR01	WALK-IN REFRIGERATOR OR FREEZER STRUCTURE	CR-334		334	90	SF	1.18	\$36,433	2001	35		2036
CR03	REFRIGERATION SYSTEM - WALK-IN, 3 EVAP FANS, 10000 BTUH, CONDENSER	CR-535A		535A	1	EA	1.00	\$13,715	2001	10	9	DR
CR03	REFRIGERATION SYSTEM - WALK-IN, 3 EVAP FANS, 10000 BTUH, CONDENSER	CR-334		334	1	EA	1.00	\$13,715	2001	10	9	DR
CR04	REFRIGERATION SYSTEM - WALK-IN, 4 EVAP FANS, 26500 BTUH, CONDENSER	CR-446		446	1	EA	1.00	\$20,790	2001	10	9	DR
SF02	SEATING, FIXED, FOLDING, PREMIUM	FIXED SEATING		LECTURE HALLS	750	EA	1.00	\$633,200	2001	60		2061
<b>Grand Total:</b>								<b>\$91,016,021</b>				



## RECURRING NEEDS BY YEAR

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

DEFERRED RENEWAL									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
RR03	ROOF - 1-PLY, ADHERED (EPDM, PIB, CSPE, PVC)	NORTH LOWER ROOFS			B3010	18,800	SF	\$190,167	DR
DR27	DOOR LOCK, SECURITY	EGRESS		S WING	C1020	16	EA	\$23,034	DR
DR27	DOOR LOCK, SECURITY	SECONDARY		S WING	C1020	7	EA	\$10,078	DR
DR27	DOOR LOCK, SECURITY	BALCONY EGRESS		S WING	C1020	8	EA	\$11,517	DR
DR27	DOOR LOCK, SECURITY	EGRESS		N WING	C1020	21	EA	\$30,233	DR
DR27	DOOR LOCK, SECURITY	SECONDARY		N WING	C1020	2	EA	\$2,879	DR
DR27	DOOR LOCK, SECURITY			CORRIDORS	C1020	350	EA	\$503,878	DR
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	BROADLOOM			C3020	28,690	SF	\$351,305	DR
IF15	FLOORING - FLUID APPLIED, PAINT OR CLEAR SEAL	SEALED CONC FLRS			C3020	34,430	SF	\$105,806	DR
VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV A		ELEV A	D1010	1	EA	\$53,265	DR
VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV B		ELEV B	D1010	1	EA	\$53,265	DR
VT04	ELEVATOR CAB RENOVATION - PASSENGER	ELEV C		ELEV B	D1010	1	EA	\$53,265	DR

### RECURRING NEEDS BY YEAR

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

PS09	SUPPLY PIPING SYSTEM - LABORATORY, WET	PLASTIC, LAB WATER		THROUGHOUT	D2020	10,000	SF	\$162,057	DR
BF02	BACKFLOW PREVENTER (1-2 INCHES)	BFP-MU-1		P01	D2020	1	EA	\$2,339	DR
BF03	BACKFLOW PREVENTER (2-3 INCHES)	BFP-WM-1		C101	D2020	1	EA	\$7,713	DR
BF03	BACKFLOW PREVENTER (2-3 INCHES)	BFP-WM-2		C101	D2020	1	EA	\$7,713	DR
BF04	BACKFLOW PREVENTER (3-4 INCHES)	BFP-WM-3		C101	D2020	1	EA	\$8,763	DR
BF04	BACKFLOW PREVENTER (3-4 INCHES)	BFP-WM-4		C101	D2020	1	EA	\$8,763	DR
BF05	BACKFLOW PREVENTER (4-6 INCHES)	BFP-FIRE		C101	D2020	1	EA	\$12,764	DR
BA109	HVAC CONTROLS SYSTEM - LABORATORY, WET	DDC		THROUGHOUT	D3060	270,000	SF	\$3,119,218	DR
FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER	PA, NOTIFIER		C103	D4030	1	EA	\$37,851	DR
FA02	FIRE ALARM SYSTEM - DEVICES	HS, MP, SD		THROUGHOUT	D4030	270,000	SF	\$1,024,322	DR
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-4A		P01	D5010	50	HP	\$13,371	DR
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-3B		P01	D5010	50	HP	\$13,371	DR
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-3A		P01	D5010	50	HP	\$13,371	DR
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-1C		P01	D5010	50	HP	\$13,371	DR
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-1B		P01	D5010	50	HP	\$13,371	DR

### RECURRING NEEDS BY YEAR

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

VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-1A		P01	D5010	50	HP	\$13,371	DR
VF04	VARIABLE FREQUENCY DRIVE (10-15 HP)	VFD HWP-1		P01	D5010	15	HP	\$6,133	DR
VF04	VARIABLE FREQUENCY DRIVE (10-15 HP)	VFD HWP-2		P01	D5010	15	HP	\$6,133	DR
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD HWP-3		C101	D5010	3	HP	\$2,102	DR
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD HWP-4		C101	D5010	3	HP	\$2,102	DR
CR03	REFRIGERATION SYSTEM - WALK-IN, 3 EVAP FANS, 10000 BTUH, CONDENSER	CR-535A		535A	E1020	1	EA	\$13,715	DR
CR04	REFRIGERATION SYSTEM - WALK-IN, 4 EVAP FANS, 26500 BTUH, CONDENSER	CR-446		446	E1020	1	EA	\$20,790	DR
CR03	REFRIGERATION SYSTEM - WALK-IN, 3 EVAP FANS, 10000 BTUH, CONDENSER	CR-334		334	E1020	1	EA	\$13,715	DR
<b>TOTAL DEFERRED RENEWAL COST</b>								<b>\$5,925,111.45</b>	

2021									
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*

DR28	DOOR OPERATOR, POWER-ASSIST	EGRESS		S WING	B2030	4	EA	\$34,916	2021
DR24	DOOR LOCK, COMMERCIAL-GRADE	SERVICE		S WING	C1020	6	EA	\$4,468	2021
DR24	DOOR LOCK, COMMERCIAL-GRADE	BALCONY		S WING	C1020	24	EA	\$17,871	2021
DR24	DOOR LOCK, COMMERCIAL-GRADE	SERVICE		N WING	C1020	15	EA	\$11,170	2021
DR26	DOOR PANIC HARDWARE	EXT STAIR		S WING	C1020	3	EA	\$3,655	2021
DR24	DOOR LOCK, COMMERCIAL-GRADE	STANDARD DOORS			C1020	110	EA	\$81,910	2021
PP01	DOMESTIC WATER BOOSTER SYSTEM	BP-1		C101	D2020	30	HP	\$386,810	2021
BF02	BACKFLOW PREVENTER (1-2 INCHES)	BFP-MU-2		P01	D2020	1	EA	\$2,339	2021
PG02	AIR COMPRESSOR - MEDICAL/LABORATORY PCKG (15-20 HP), WITH DRYER	AC-2		P01	D2090	15	HP	\$30,155	2021
PG03	AIR COMPRESSOR - MEDICAL/LABORATORY PCKG (20-40 HP), WITH DRYER	AC-1		P01	D2090	30	HP	\$39,410	2021
PG03	AIR COMPRESSOR - MEDICAL/LABORATORY PCKG (20-40 HP), WITH DRYER	AC-4		165	D2090	40	HP	\$52,546	2021
PG08	VACUUM PUMP - OIL RING SEAL (10-15 HP), WITH TRAP	VP-1		P01	D2090	15	HP	\$57,717	2021
HX10	PRESSURE REDUCING VALVE, STEAM SYSTEM (2.5")	PRV-1		P01	D3040	1	EA	\$5,525	2021
HX12	PRESSURE REDUCING VALVE, STEAM SYSTEM (4")	PRV-2		P01	D3040	1	EA	\$9,824	2021

### RECURRING NEEDS BY YEAR

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

HX09	PRESSURE REDUCING VALVE, STEAM SYSTEM (2")	PRV-3		P01	D3040	1	EA	\$4,466	2021
PH13	CONDENSATE RECEIVER, ELECTRIC, 1 PUMP	CU-3		P01	D3040	2	HP	\$31,998	2021
PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	CU-2		C101	D3040	1	HP	\$7,437	2021
PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	CU-1		128	D3040	15	HP	\$111,551	2021
FN07	FAN - AXIAL, RETURN, 1.5" SP (>20 HP) 38,500 CFM	AE-1		ROOF	D3040	50	HP	\$82,891	2021
FN40	FAN - MIXED-FLOW, SHORT STACK, EXHAUST (<=30 HP)	F-5		ROOF	D3040	20	HP	\$89,333	2021
HD01	HOOD, FUME	FH-SNORKEL		LABS	D3040	140	LF	\$331,972	2021
VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-5		P01	D5010	125	HP	\$32,271	2021
VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-4		P01	D5010	125	HP	\$32,271	2021
LI09	LIGHTING SYSTEM, INTERIOR - LABORATORY, WET	T8, CFL		THROUGHOUT	D5020	270,000	SF	\$3,071,679	2021
<b>2021 PROJECTED COMPONENT REPLACEMENT COST</b>								<b>\$4,534,183.90</b>	

## RECURRING NEEDS BY YEAR

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

2022									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	BROADLOOM			C3020	22,950	SF	\$289,450	2022
<b>2022 PROJECTED COMPONENT REPLACEMENT COST</b>								<b>\$289,449.89</b>	

*No Projected Component Replacement Cost for Asset No. SCIT for 2023*

*No Projected Component Replacement Cost for Asset No. SCIT for 2024*

## RECURRING NEEDS BY YEAR

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

2025									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
IW01	WALL FINISH - PAINT, STANDARD	PT WALLS			C3010	818,010	SF	\$2,060,431	2025
IC04	CEILING FINISH - PAINTED OR STAINED, STANDARD	PT CEILINGS			C3030	26,330	SF	\$66,321	2025
PG01	AIR COMPRESSOR - MEDICAL/LABORATORY PCKG (=10 HP), WITH DRYER	AC-3		P01	D2090	10	HP	\$26,845	2025
VF10	VARIABLE FREQUENCY DRIVE (50-75 HP)	VFD AHU-7		P05	D5010	60	HP	\$16,590	2025
<b>2025 PROJECTED COMPONENT REPLACEMENT COST</b>								<b>\$2,170,186.98</b>	

2026									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
EW12	WALL, EXTERIOR, PANEL JOINT RESTORATION	METAL SIDING		PENTHOUSE	B2010	11,750	SF	\$333,340	2026
VT01	ELEVATOR MODERNIZATION - TRACTION - LOW RISE	ELEV A		128	D1010	1	EA	\$284,068	2026
VT01	ELEVATOR MODERNIZATION - TRACTION - LOW RISE	ELEV B		128	D1010	1	EA	\$284,068	2026

## RECURRING NEEDS BY YEAR

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

VT03	ELEVATOR MODERNIZATION - HYDRAULIC	ELEV C		156	D1010	1	EA	\$350,175	2026
PH02	PUMP - ELECTRIC (10 - 15 HP)	HWP-1		P01	D3040	15	HP	\$24,910	2026
PH02	PUMP - ELECTRIC (10 - 15 HP)	HWP-2		P01	D3040	15	HP	\$24,910	2026
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-3		C101	D3040	3	HP	\$5,722	2026
PH01	PUMP - ELECTRIC (<=10 HP)	HWP-4		C101	D3040	3	HP	\$5,722	2026
AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	AHU-10		C308A	D3040	10	HP	\$94,601	2026
AH06	AIR HANDLING UNIT - INDOOR (6-9 HP)	AHU-11		C308A	D3040	7.50	HP	\$64,727	2026
AH07	AIR HANDLING UNIT - INDOOR (9-12 HP)	AHU-9		C208A	D3040	10	HP	\$94,601	2026
AH06	AIR HANDLING UNIT - INDOOR (6-9 HP)	AHU-8		C208A	D3040	9	HP	\$77,672	2026
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-1		ROOF	D3040	1	EA	\$9,217	2026
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-2		ROOF	D3040	1	EA	\$9,217	2026
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-3		ROOF	D3040	1	EA	\$9,217	2026
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-4		ROOF	D3040	1	EA	\$9,217	2026
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-5		ROOF	D3040	1	EA	\$9,217	2026



### RECURRING NEEDS BY YEAR

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

FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-6		ROOF	D3040	1	EA	\$9,217	2026
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-7		ROOF	D3040	1	EA	\$9,217	2026
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-8		ROOF	D3040	1	EA	\$9,217	2026
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-11		C101	D3040	1	HP	\$1,626	2026
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-10		C101	D3040	1	HP	\$1,626	2026
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-13		C101	D3040	1	HP	\$1,626	2026
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-8		C101	D3040	1	HP	\$1,626	2026
FN21	FAN - INLINE CENTRIFUGAL AIRFOIL, SUPPLY, 2.5" SP (<=30 HP)	EF-9		C102	D3040	1	HP	\$1,626	2026
<b>2026 PROJECTED COMPONENT REPLACEMENT COST</b>								<b>\$1,726,381.09</b>	

### 2027

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
IF03	FLOORING - VINYL COMPOSITION TILE, STANDARD	VCT			C3020	151,470	SF	\$1,159,078	2027

### RECURRING NEEDS BY YEAR

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

AH39	COMPUTER ROOM AC UNIT - CHILLED WATER (<=5 TON)	CRAC-1		SERV ROOM	D3050	5	TON	\$37,699	2027
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-4C		P01	D5010	50	HP	\$15,966	2027
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-4B		P01	D5010	50	HP	\$15,966	2027
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-3C		P01	D5010	50	HP	\$15,966	2027
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-2C		P01	D5010	50	HP	\$15,966	2027
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-2B		P01	D5010	50	HP	\$15,966	2027
VF09	VARIABLE FREQUENCY DRIVE (40-50 HP)	VFD F-2A		P01	D5010	50	HP	\$15,966	2027
<b>2027 PROJECTED COMPONENT REPLACEMENT COST</b>								<b>\$1,292,573.17</b>	

2028									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
CW01	CASEWORK - WOOD BASE AND WALL, TOP, STANDARD			BREAK AREAS	C1030	115	LF	\$76,271	2028
<b>2028 PROJECTED COMPONENT REPLACEMENT COST</b>								<b>\$76,270.57</b>	

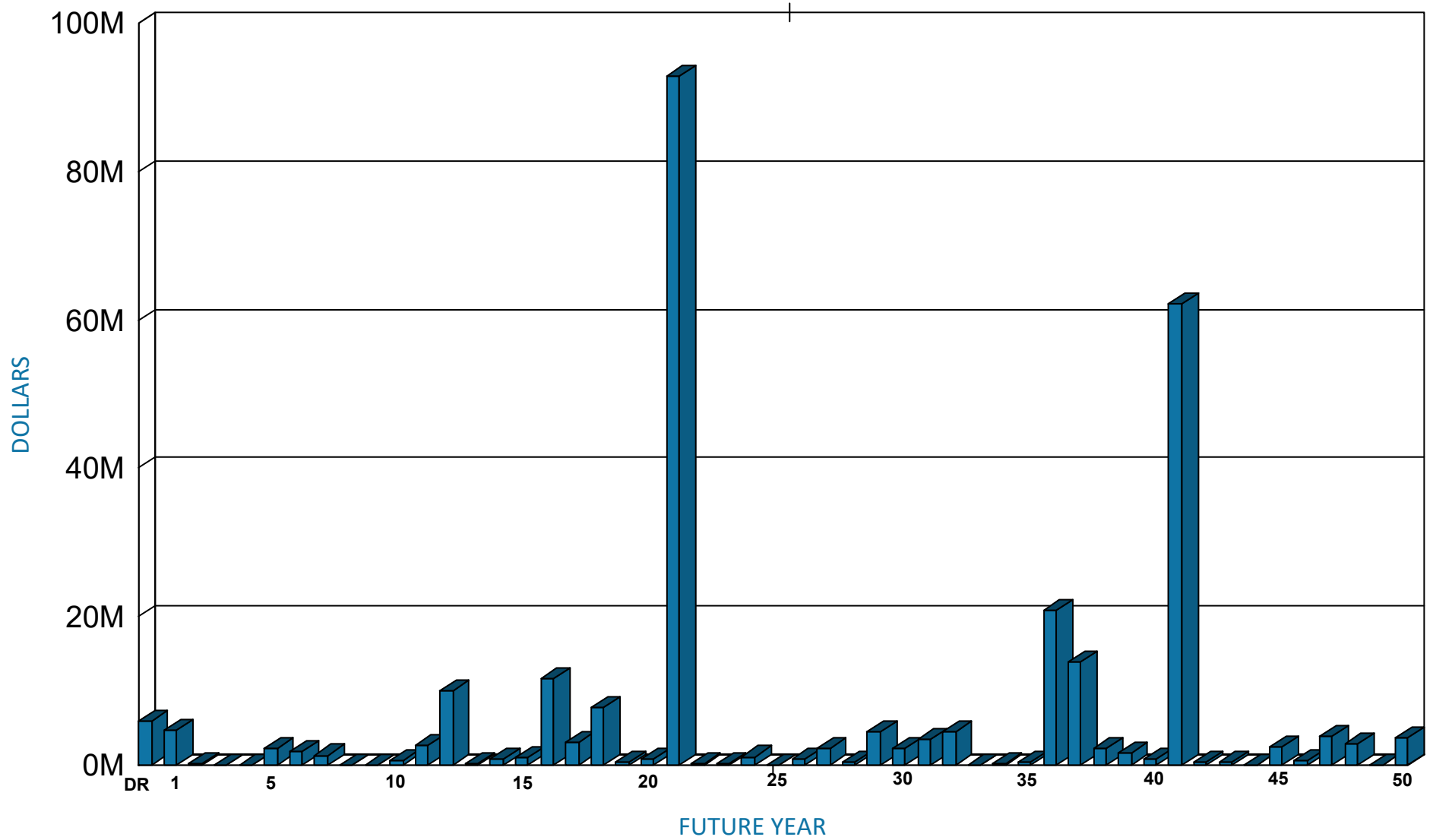
## RECURRING NEEDS BY YEAR

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

**No Projected Component Replacement Cost for Asset No. SCIT for 2029**

2030									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	CARPET TILE			C3020	5,740	SF	\$91,707	2030
VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-6		P01	D5010	125	HP	\$42,106	2030
VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-3		P01	D5010	125	HP	\$42,106	2030
VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-2		P01	D5010	125	HP	\$42,106	2030
VF12	VARIABLE FREQUENCY DRIVE (100-150 HP)	VFD AHU-1		P01	D5010	125	HP	\$42,106	2030
<b>2030 PROJECTED COMPONENT REPLACEMENT COST</b>								<b>\$260,129.81</b>	

### RECURRING COMPONENT EXPENDITURE PROJECTIONS



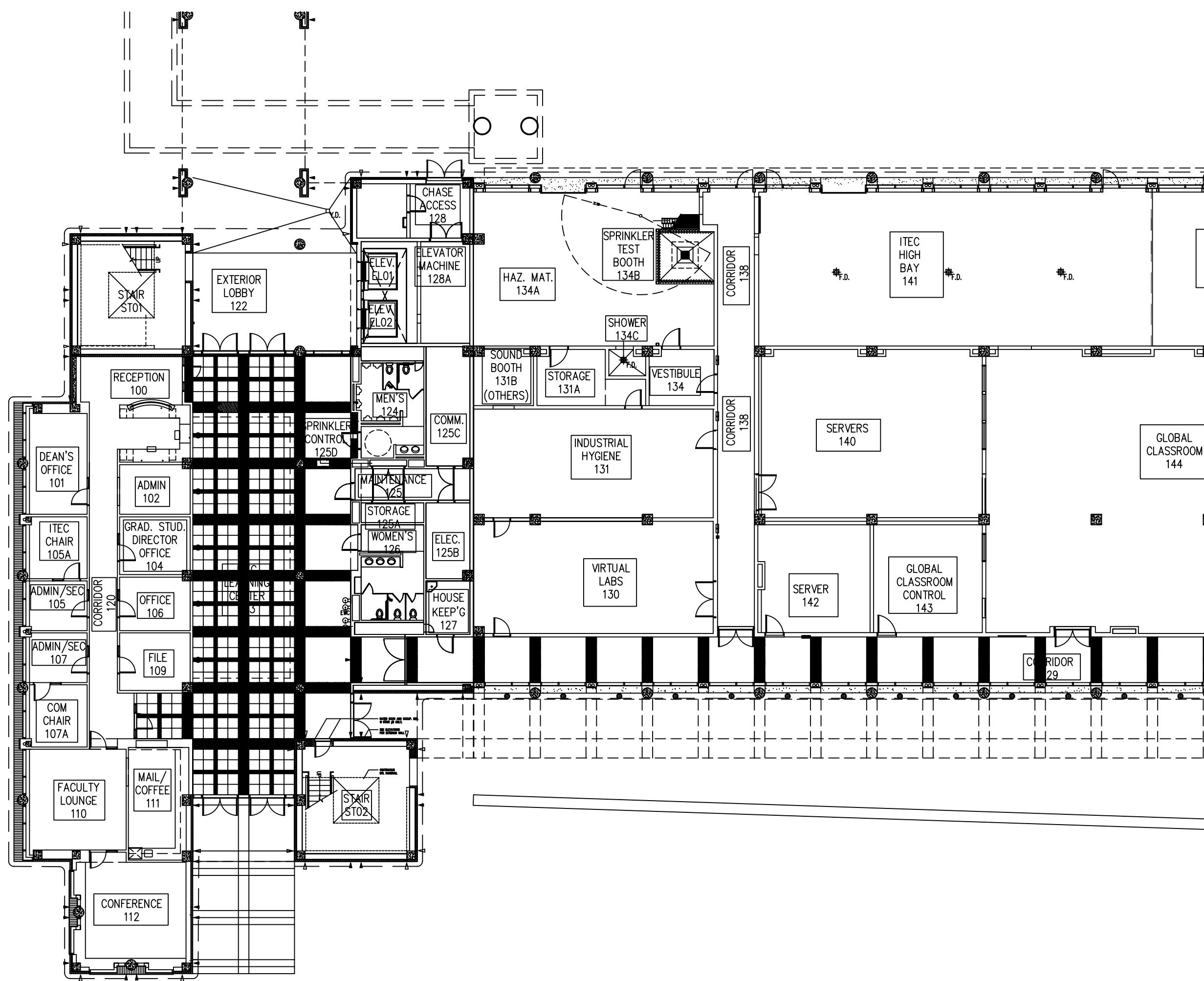
Average Annual Renewal Cost per SF \$9.75

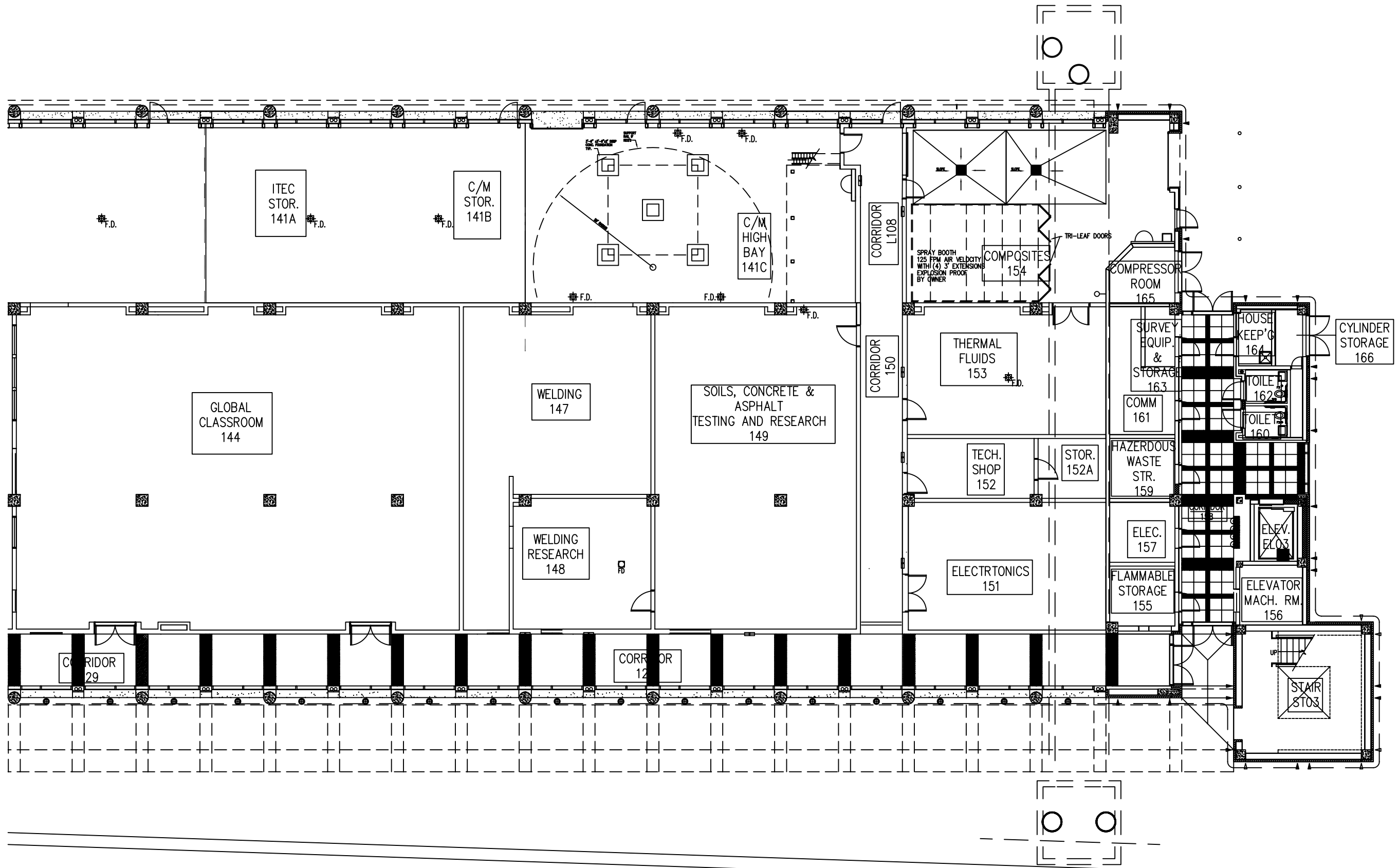
FACILITY CONDITION ASSESSMENT

**SECTION 5**

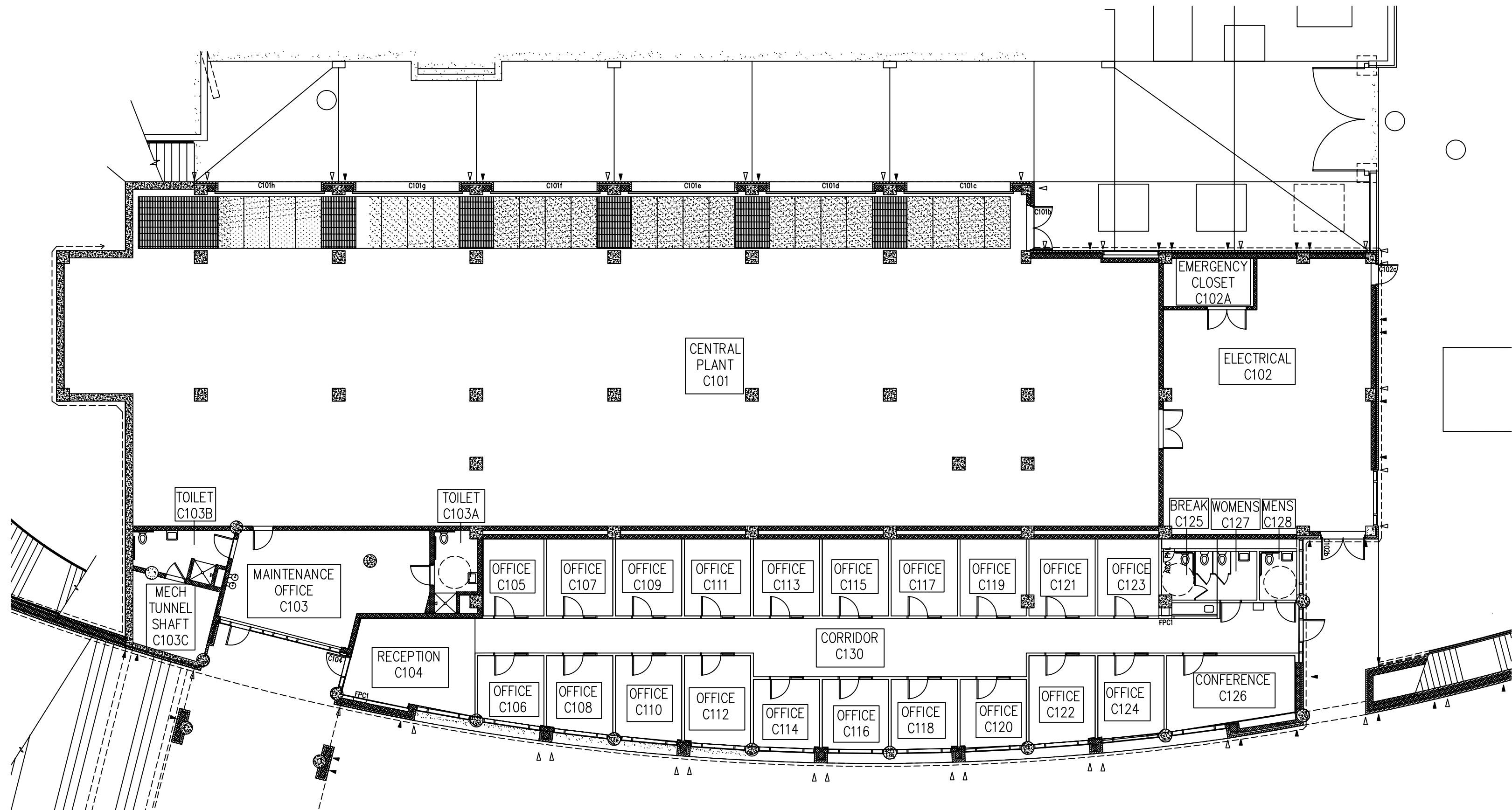
DRAWINGS

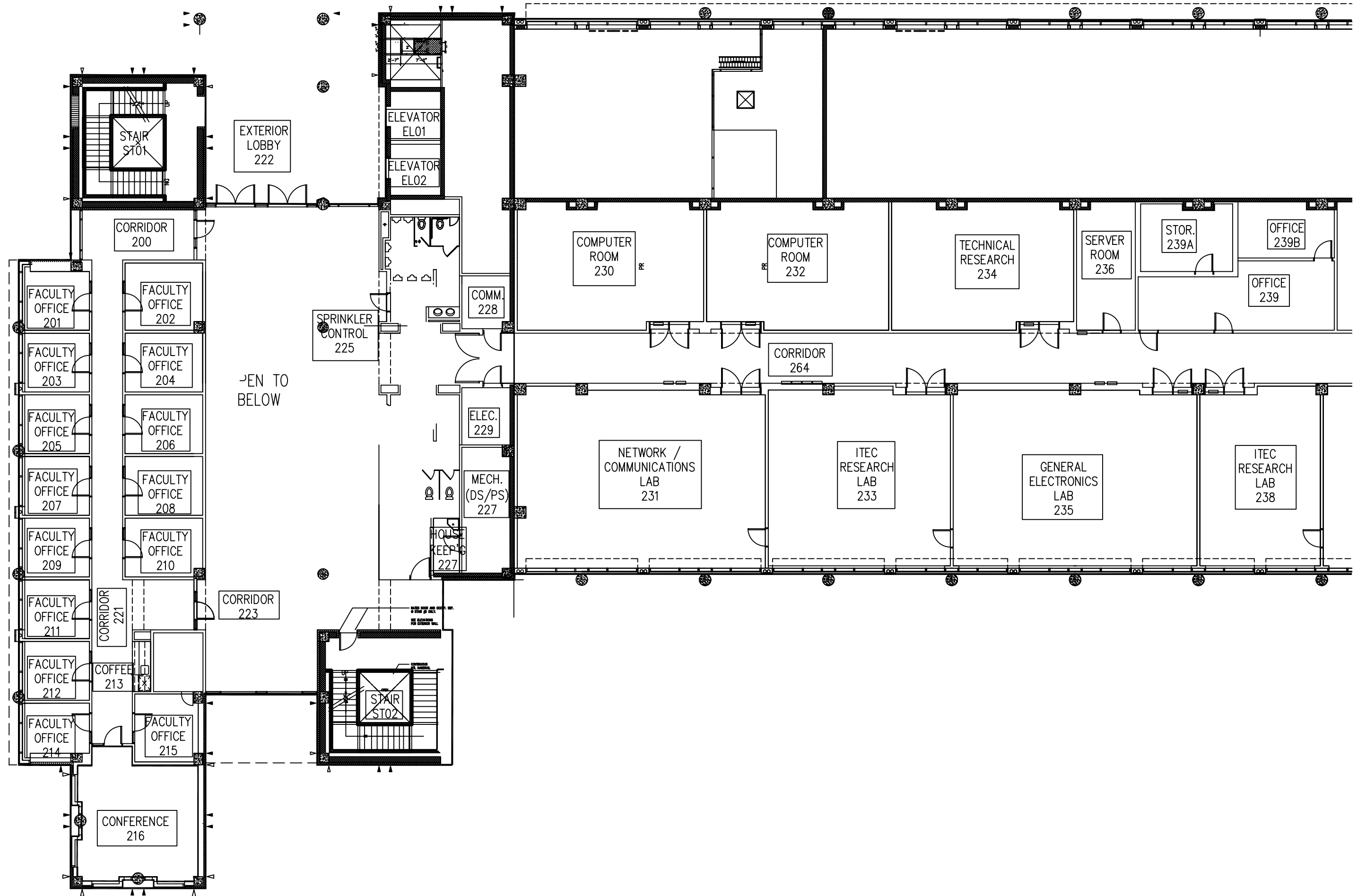


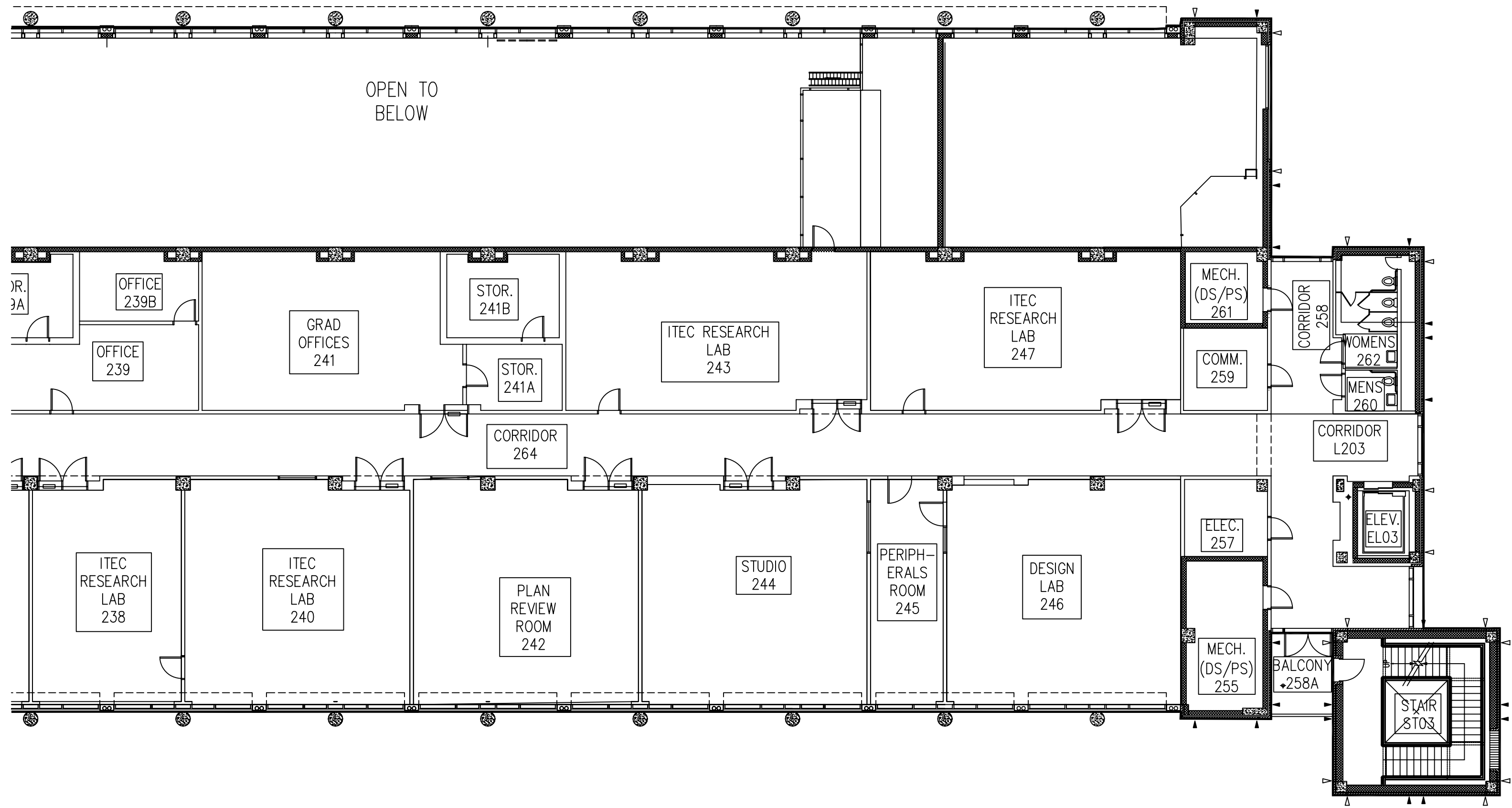












OPEN TO  
BELOW

OFFICE  
239B

OFFICE  
239

GRAD  
OFFICES  
241

STOR.  
241B

STOR.  
241A

ITEC RESEARCH  
LAB  
243

ITEC  
RESEARCH  
LAB  
247

MECH.  
(DS/PS)  
261

COMM.  
259

CORRIDOR  
258

WOMENS  
262

MENS  
260

CORRIDOR  
264

CORRIDOR  
L203

ITEC  
RESEARCH  
LAB  
238

ITEC  
RESEARCH  
LAB  
240

PLAN  
REVIEW  
ROOM  
242

STUDIO  
244

PERIPH-  
ERALS  
ROOM  
245

DESIGN  
LAB  
246

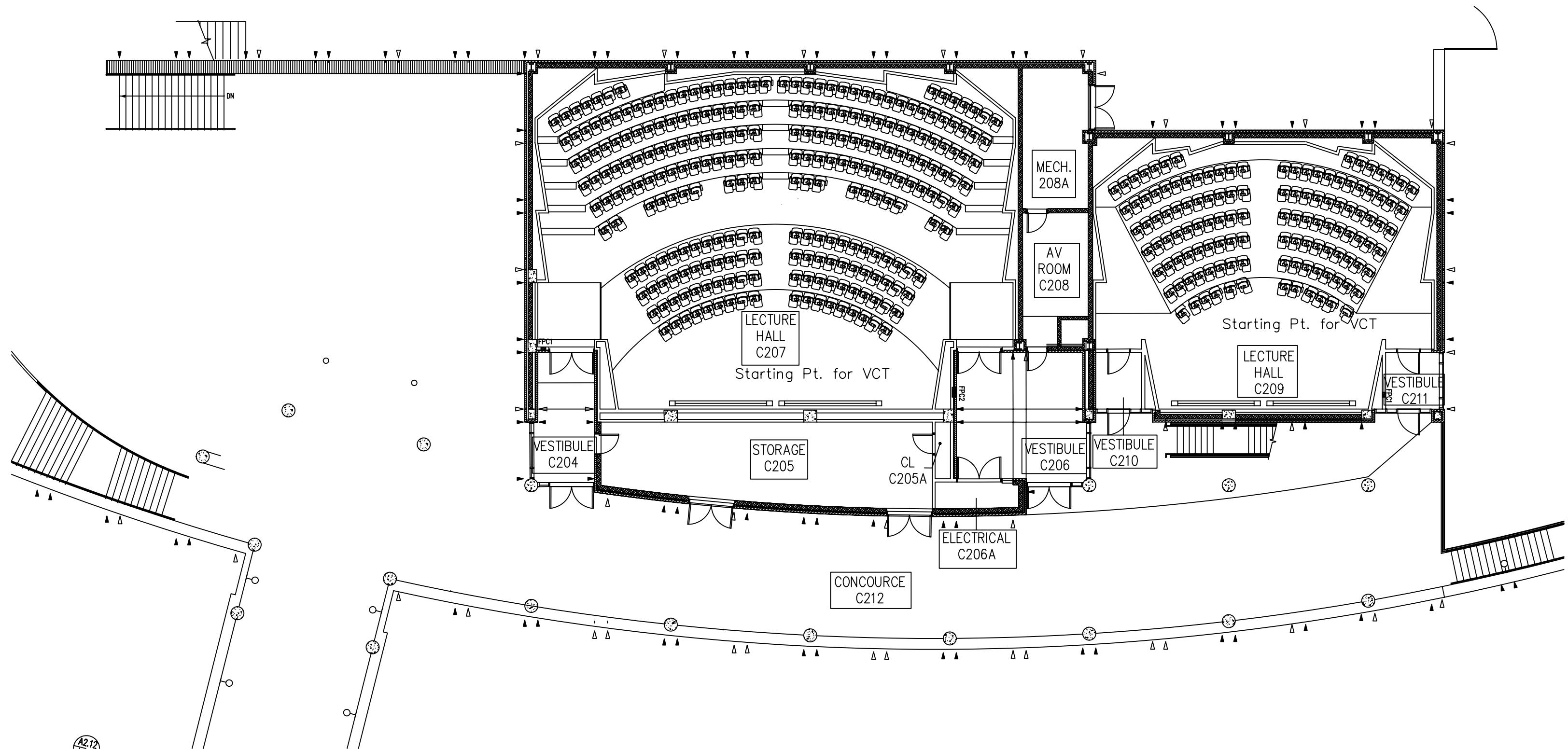
ELEC.  
257

ELEV.  
EL03

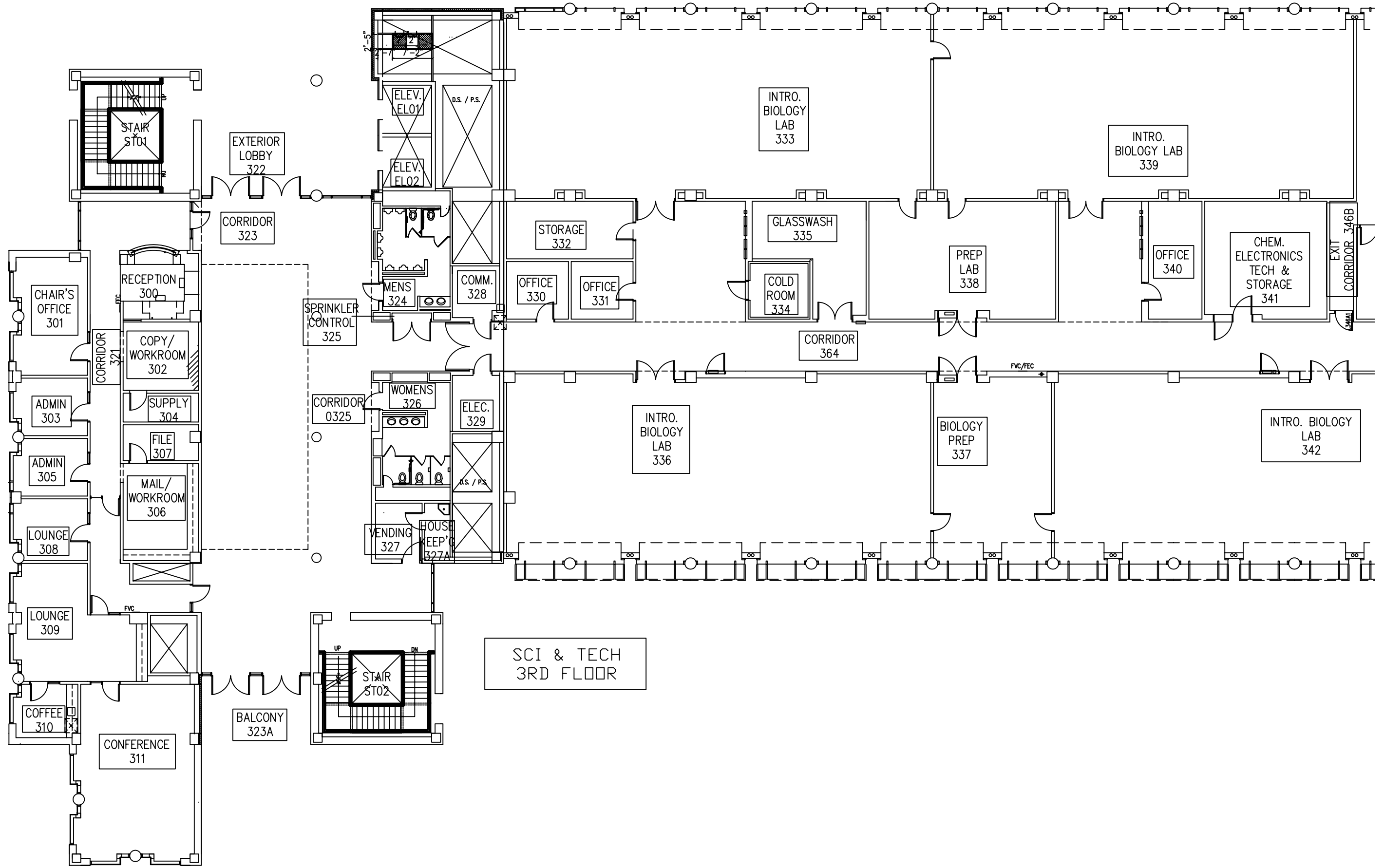
MECH.  
(DS/PS)  
255

BALCONY  
258A

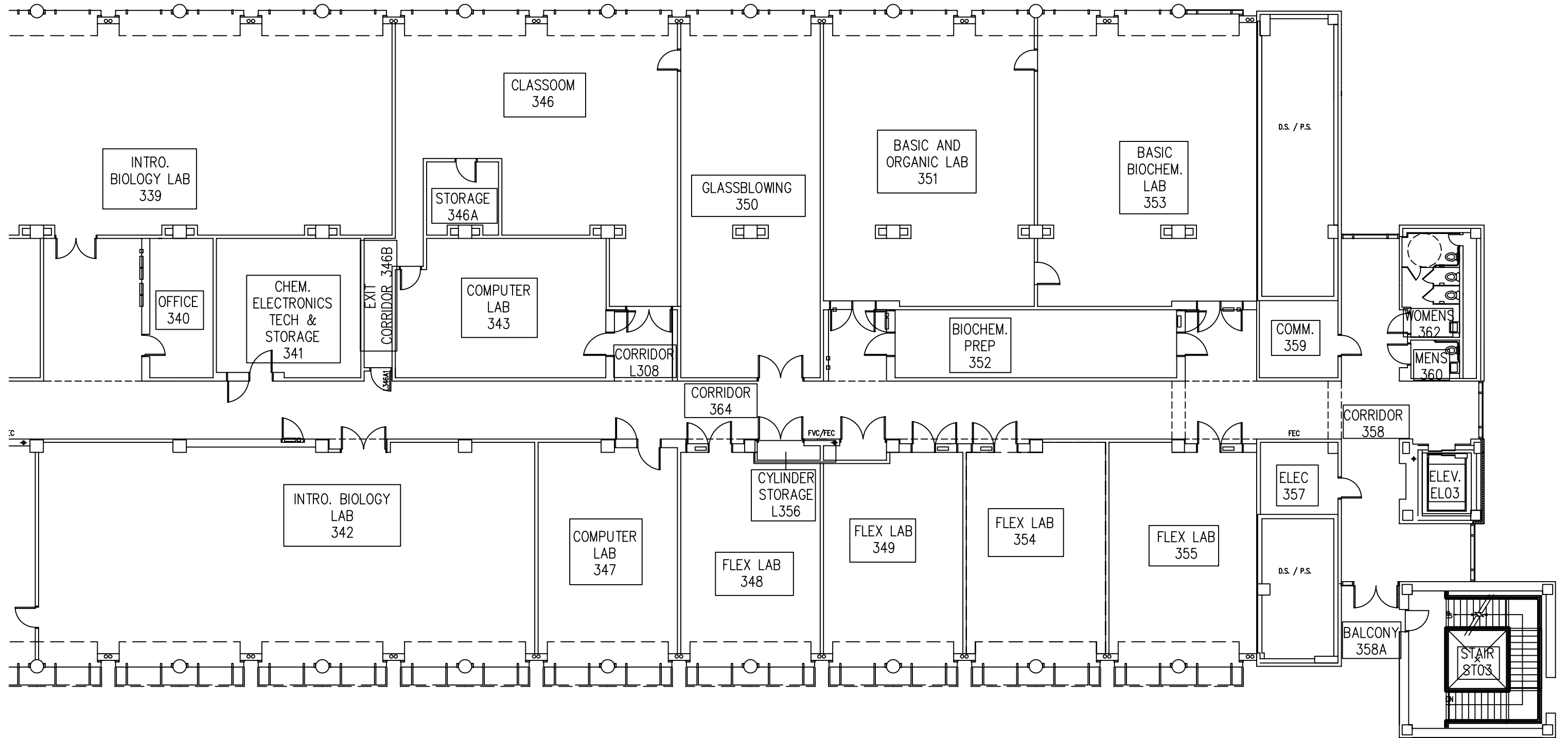
STAIR  
8T03

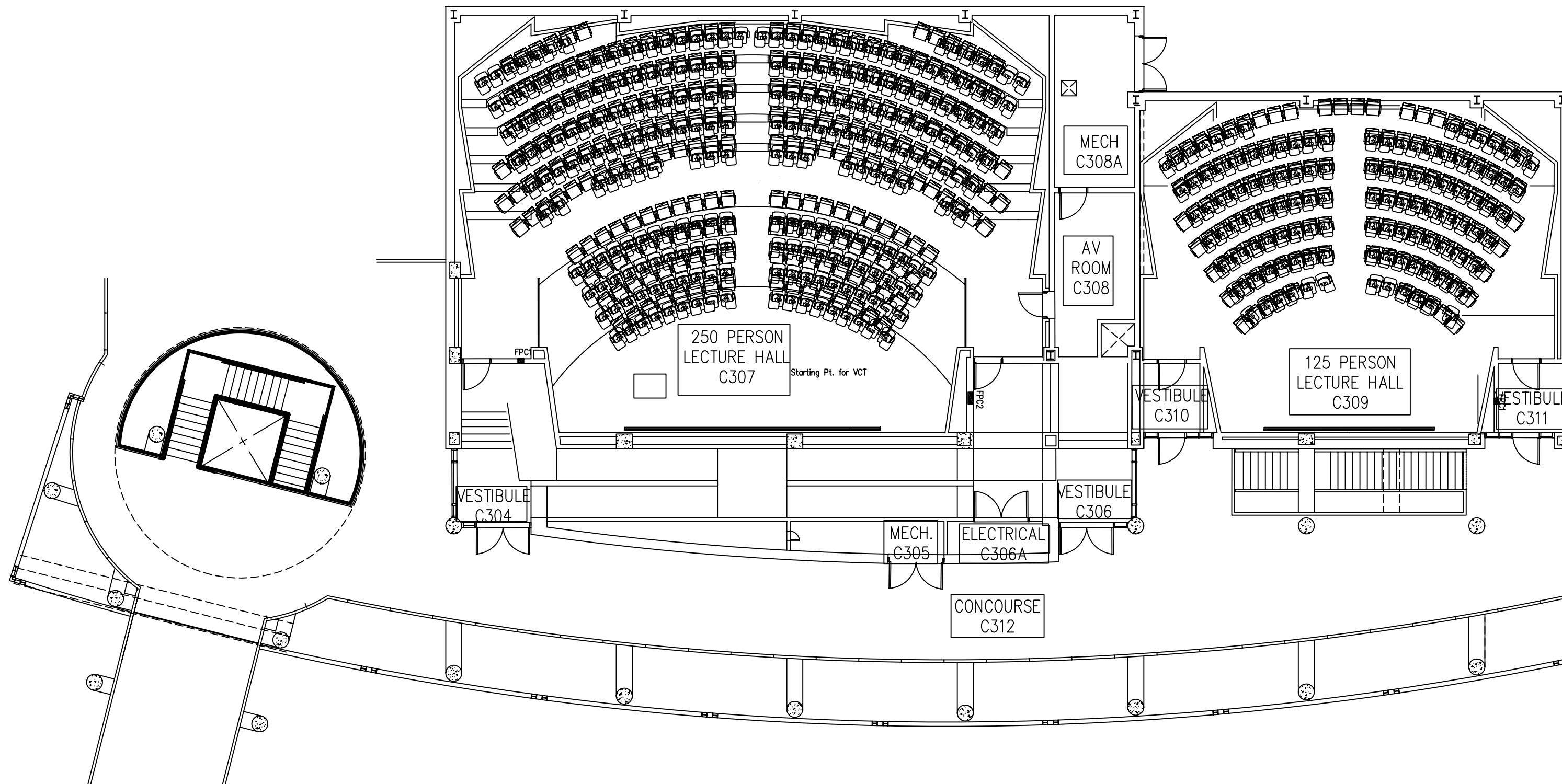


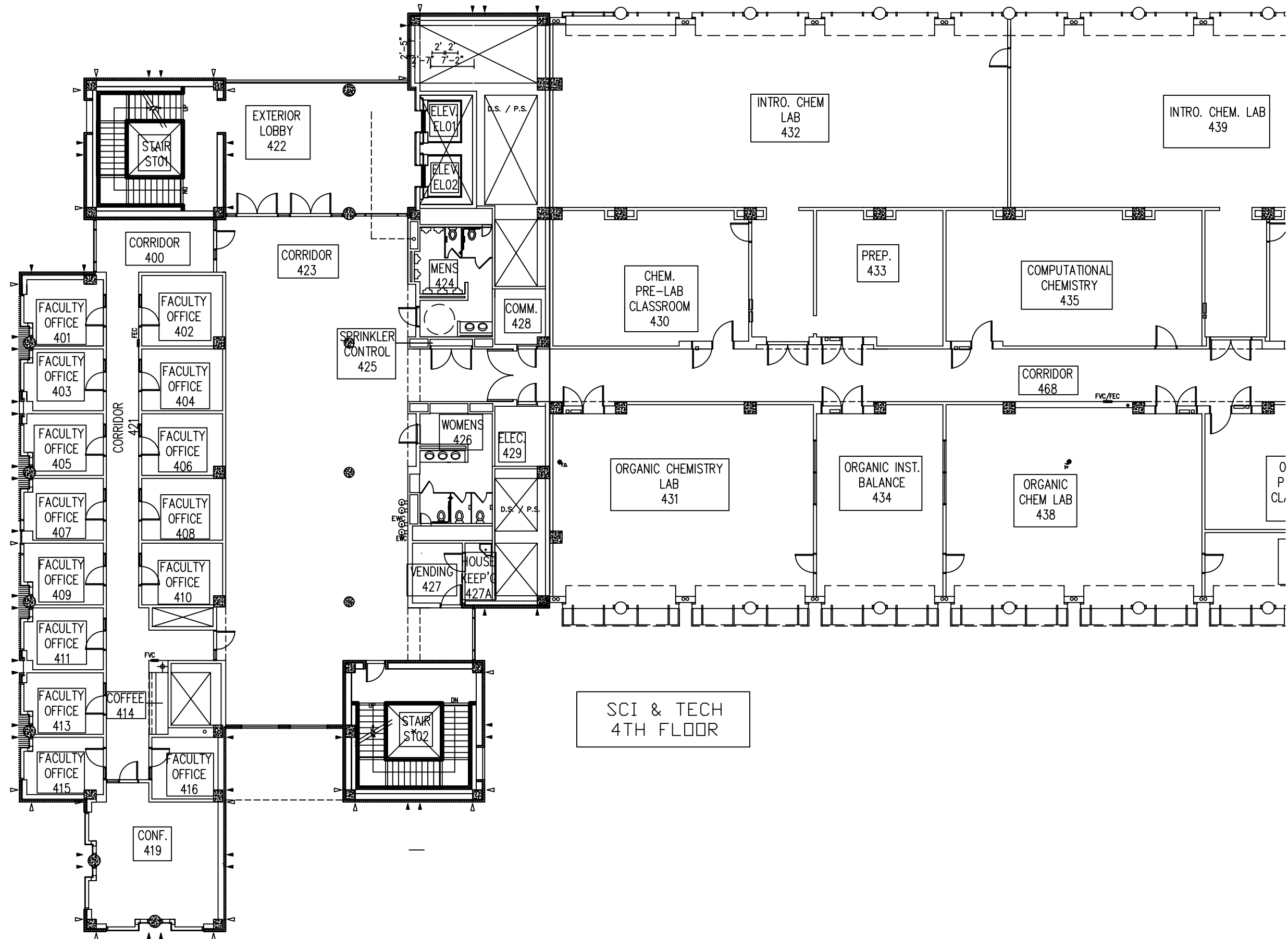
A2-12



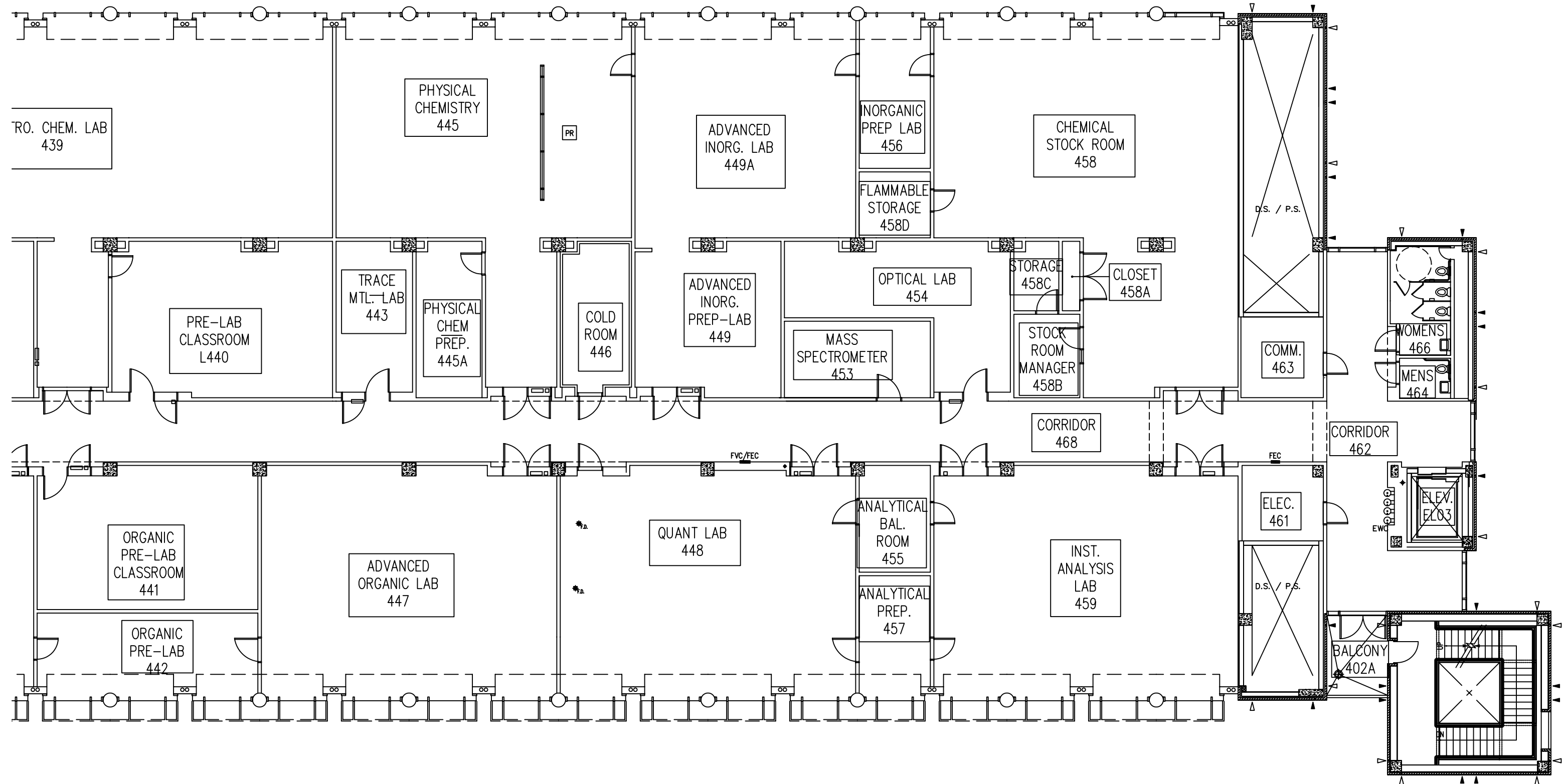
SCI & TECH  
3RD FLOOR

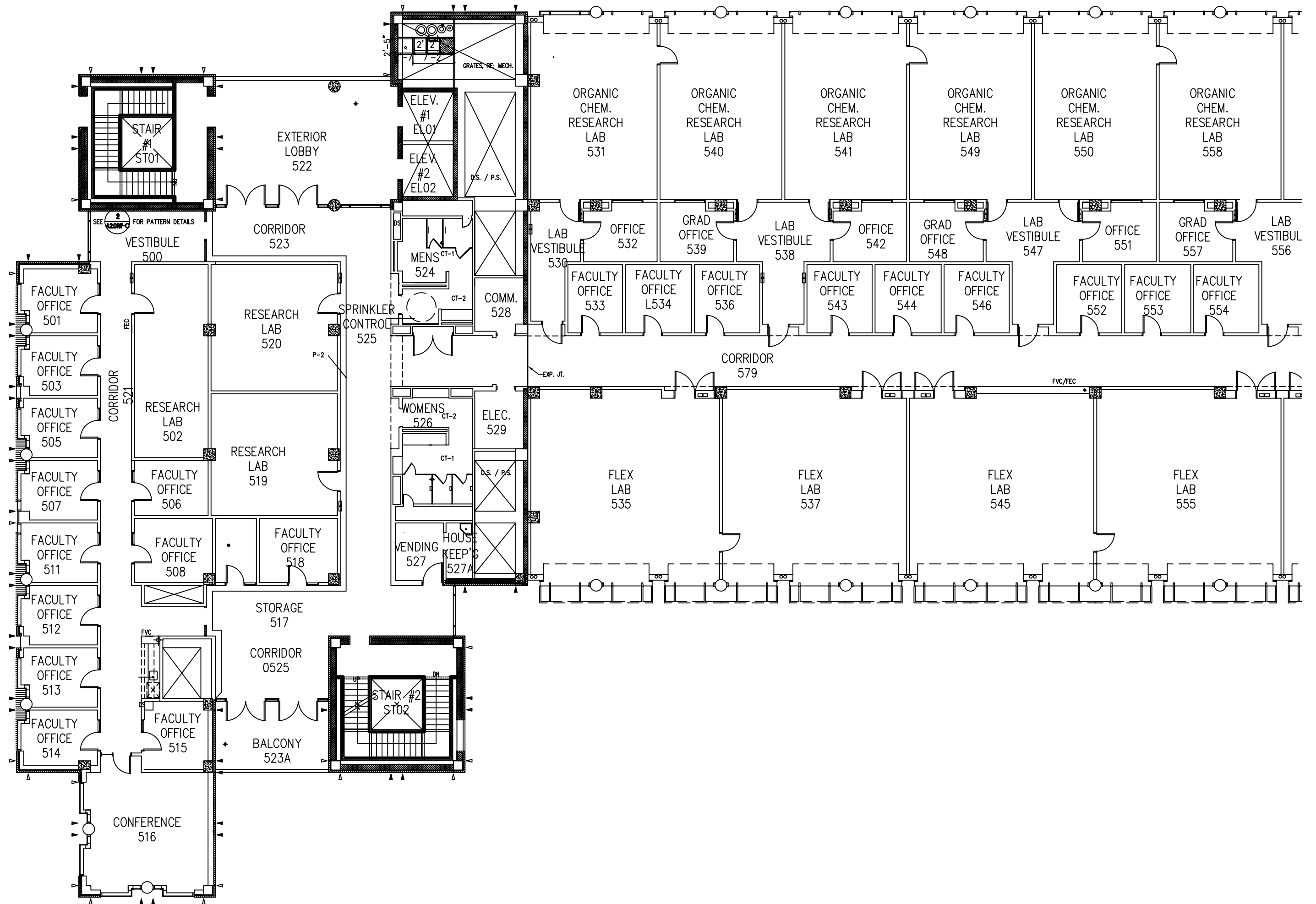


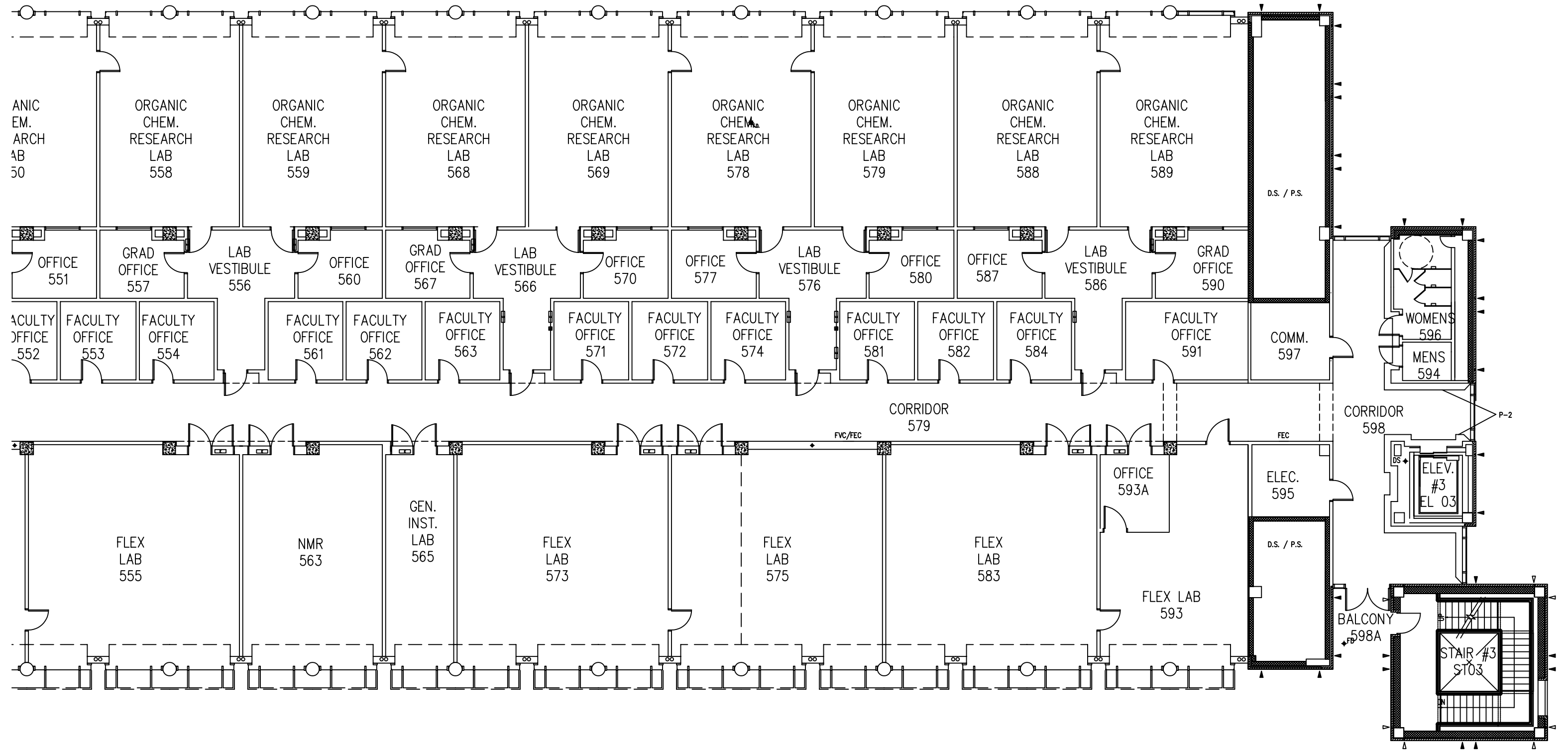












ANIC  
EM.  
ARCH  
4B  
50

ORGANIC  
CHEM.  
RESEARCH  
LAB  
558

ORGANIC  
CHEM.  
RESEARCH  
LAB  
559

ORGANIC  
CHEM.  
RESEARCH  
LAB  
568

ORGANIC  
CHEM.  
RESEARCH  
LAB  
569

ORGANIC  
CHEM.  
RESEARCH  
LAB  
578

ORGANIC  
CHEM.  
RESEARCH  
LAB  
579

ORGANIC  
CHEM.  
RESEARCH  
LAB  
588

ORGANIC  
CHEM.  
RESEARCH  
LAB  
589

D.S. / P.S.

OFFICE  
551

GRAD  
OFFICE  
557

LAB  
VESTIBULE  
556

OFFICE  
560

GRAD  
OFFICE  
567

LAB  
VESTIBULE  
566

OFFICE  
570

OFFICE  
577

LAB  
VESTIBULE  
576

OFFICE  
580

OFFICE  
587

LAB  
VESTIBULE  
586

GRAD  
OFFICE  
590

FACULTY  
OFFICE  
552

FACULTY  
OFFICE  
553

FACULTY  
OFFICE  
554

FACULTY  
OFFICE  
561

FACULTY  
OFFICE  
562

FACULTY  
OFFICE  
563

FACULTY  
OFFICE  
571

FACULTY  
OFFICE  
572

FACULTY  
OFFICE  
574

FACULTY  
OFFICE  
581

FACULTY  
OFFICE  
582

FACULTY  
OFFICE  
584

FACULTY  
OFFICE  
591

COMM.  
597

WOMEN'S  
596

MENS  
594

CORRIDOR  
579

FVC/FEC

CORRIDOR  
598

FEC

ELEC.  
595

D.S. / P.S.

FLEX  
LAB  
555

NMR  
563

GEN.  
INST.  
LAB  
565

FLEX  
LAB  
573

FLEX  
LAB  
575

FLEX  
LAB  
583

OFFICE  
593A

FLEX LAB  
593

BALCONY  
598A

ELEV.  
#3  
EL 03

STAIR #3  
ST03

P-2



# FACILITY CONDITION ASSESSMENT

## **SECTION 6**

### PHOTOGRAPHS





SCIT001a 5/10/2021  
Accessible elevator control panel  
Passenger elevator cab



SCIT001e 5/10/2021  
Short stack, mixed flow exhaust fans  
Roof



SCIT002a 5/10/2021  
Newer upper membrane roof  
Penthouse roof



SCIT002e 5/10/2021  
Short stack, mixed flow exhaust fans  
Roof



SCIT003a 5/10/2021  
Low parapet cap  
Penthouse roof



SCIT003e 5/10/2021  
Short stack, mixed flow exhaust fans  
Roof



SCIT004a 5/10/2021  
Weathered caulking on metal cap  
Penthouse roof



SCIT004e 5/10/2021  
Short stack, mixed flow exhaust fans  
Roof



SCIT005a 5/10/2021  
Lower membrane roof  
Lower roof



SCIT005e 5/10/2021  
Centrifugal rooftop exhaust fan  
Roof



SCIT006a 5/10/2021  
Weathered caulk joint  
Upper roof parapet



SCIT006e 5/10/2021  
Centrifugal rooftop exhaust fan  
Roof





SCIT007a 5/10/2021  
Prefinished metal panel facade  
Upper penthouse exterior



SCIT007e 5/10/2021  
Laboratory air compressor  
Roof



SCIT008a 5/10/2021  
Brick veneer  
Upper stair tower exterior



SCIT008e 5/10/2021  
Condenser for walk-in cooler  
Room P01



SCIT009a 5/10/2021  
Hollow-metal service doors  
Upper penthouse



SCIT009e 5/10/2021  
Laboratory vacuum pump  
Room P01



SCIT010a 5/10/2021  
Concrete floor needs to be resealed  
Upper penthouse interior



SCIT010e 5/10/2021  
Laboratory air compressor  
Room P01



SCIT011a 5/10/2021  
Signs of water ponding on outer metal solar screen  
Upper exterior facade



SCIT011e 5/10/2021  
Laboratory air compressor  
Room P01



SCIT012a 5/10/2021  
Mixture of penthouse finishes  
Upper penthouse



SCIT012e 5/10/2021  
VFDs for short stack, mixed flow exhaust fans  
Room P01



SCIT013a 5/10/2021  
Some staining on prefinished metal siding  
Upper penthouse



SCIT013e 5/10/2021  
VFD for AHU-6  
Room P01



SCIT014a 5/10/2021  
Signs of water ponding on outer metal solar screen  
Upper exterior facade



SCIT014e 5/10/2021  
Air handling unit AHU-6  
Room P01



SCIT015a 5/10/2021  
Vinyl floor tile, painted walls, and acoustical ceiling  
Fifth floor, commons



SCIT015e 5/10/2021  
Air handling unit AHU-5  
Room P01



SCIT016a 5/10/2021  
Two sets of dual-level water fountains  
Fifth floor, commons



SCIT016e 5/10/2021  
VFD for AHU-5  
Room P01



SCIT017a 5/10/2021  
Lever hardware, smart card lock, and ADA room signage  
Fifth floor, commons



SCIT017e 5/10/2021  
VFD for AHU-4  
Room P01



SCIT018a 5/10/2021  
Counter lavatories  
Fifth floor, west women's restroom



SCIT018e 5/10/2021  
Air handling unit AHU-4  
Room P01



SCIT019a 5/10/2021  
Accessible toilet stall  
Fifth floor, west women's restroom



SCIT019e 5/10/2021  
VFD for AHU-3  
Room P01



SCIT020a 5/10/2021  
Unrepaired ceiling damage  
Fifth floor, west women's restroom



SCIT020e 5/10/2021  
Air handling unit AHU-3  
Room P01



SCIT021a 5/10/2021  
Counter lavatories  
Fifth floor, west men's restroom



SCIT021e 5/10/2021  
Air handling unit AHU-2  
Room P01



SCIT022a 5/10/2021  
Wall-hung urinals  
Fifth floor, west men's restroom



SCIT022e 5/10/2021  
VFD for AHU-2  
Room P01



SCIT023a 5/10/2021  
Accessible toilet stall  
Fifth floor, west men's restroom



SCIT023e 5/10/2021  
Air handling unit AHU-1  
Room P01



SCIT024a 5/10/2021  
Vinyl floor tile, painted walls, and acoustical ceiling  
Fifth floor corridor



SCIT024e 5/10/2021  
VFD for AHU-1  
Room P01



SCIT025a 5/10/2021  
Typical corridor wood door with lever hardware  
Fifth floor corridor



SCIT025e 5/10/2021  
Insulated mechanical piping  
Room P01



SCIT026a 5/10/2021  
Firestopping in electrical closet  
Fifth floor



SCIT026e 5/10/2021  
Condensate receiver  
Room P01



SCIT027a 5/10/2021  
Smart card locks for lab entry doors  
Fifth floor corridor



SCIT027e 5/10/2021  
VFDs for short stack, mixed flow exhaust fans  
Room P01



SCIT028a 5/10/2021  
Vinyl flooring, acoustical ceiling, and wood lab cabinetry  
Fifth floor, lab



SCIT028e 5/10/2021  
Heating hot water shell-and-tube heat exchanger  
Room P01



SCIT029a 5/10/2021  
Vinyl flooring, acoustical ceiling, and wood lab cabinetry  
Fifth floor, lab



SCIT029e 5/10/2021  
Heating hot water pumps  
Room P01



SCIT030a 5/10/2021  
Original broadloom carpeting and acoustical ceiling  
Fifth floor, west office area



SCIT030e 5/10/2021  
Backflow preventer  
Room P01





SCIT031a 5/10/2021  
Carpeting and acoustical ceiling  
Fifth floor, west office corridor



SCIT031e 5/10/2021  
Pressure reducing valves  
Room P01



SCIT032a 5/10/2021  
Typical break area casework  
Fifth floor, west break area



SCIT032e 5/10/2021  
Smoke exhaust fan  
Roof



SCIT033a 5/10/2021  
Broadloom carpeting and acoustical ceiling  
Fifth floor, west conference room



SCIT033e 5/10/2021  
VRF condensing units  
Roof



SCIT034a 5/10/2021  
Exterior glass door off balcony area  
Fifth floor, southwest balcony



SCIT034e 5/10/2021  
VFD for RF-1  
Room P05



SCIT035a 5/10/2021  
Glass egress doors to exterior stair tower  
Fifth floor, southeast stair tower



SCIT035e 5/10/2021  
Air handling unit AHU-7  
Room P05



SCIT036a 5/10/2021  
Vinyl floor tile, painted walls, and acoustical ceiling  
Fourth floor corridor



SCIT036e 5/10/2021  
Manual pull fire alarm device  
Fifth floor corridor



SCIT037a 5/10/2021  
Accessible two-fixture restroom  
Fourth floor, east all-gender restroom



SCIT037e 5/10/2021  
Horn with strobe fire alarm device  
Fifth floor corridor



SCIT038a 5/10/2021  
Accessible wall-hung lavatory  
Fourth floor, east women's restroom



SCIT038e 5/10/2021  
Suspended T8 lighting fixtures  
Room 519



SCIT039a 5/10/2021  
One accessible and two standard stalls  
Fourth floor, east women's restroom



SCIT039e 5/10/2021  
Fire suppression sprinkling device  
Room 519



SCIT040a 5/10/2021  
Typical finishes  
Fourth floor, chemistry stock room



SCIT040e 5/10/2021  
Secondary step-down transformer  
Room 529



SCIT041a 5/10/2021  
Typical wood casework  
Fourth floor, teaching lab



SCIT041e 5/10/2021  
Typical emergency shower  
Room 530



SCIT042a 5/10/2021  
Typical finishes  
Fourth floor, west office atrium



SCIT042e 5/10/2021  
Typical emergency eyewash  
Room 530



SCIT043a 5/10/2021  
Power door assist and smart card lock  
Fourth floor, west office wing entry



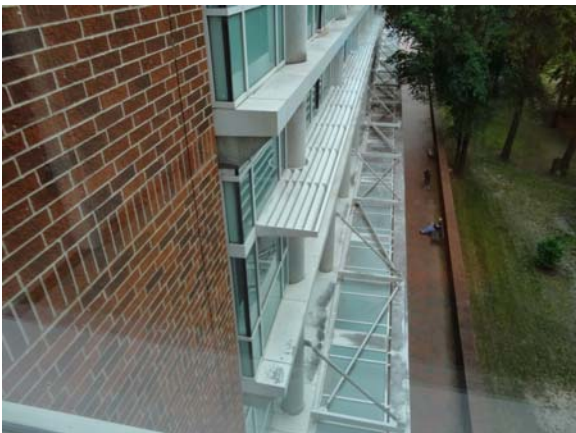
SCIT043e 5/10/2021  
Typical laboratory fume hood  
Room 531



SCIT044a 5/10/2021  
Accessible handrails  
Fourth floor, exterior stair tower



SCIT044e 5/10/2021  
Typical sink-mounted emergency eyewash station  
Room 531



SCIT045a 5/10/2021  
Lower glass canopy  
Exterior facade



SCIT045e 5/10/2021  
Elevator C interior  
Elevator C



SCIT046a 5/10/2021  
Typical casework  
Fourth floor, west break area



SCIT046e 5/10/2021  
Interior of walk-in cooler  
Cold room 446



SCIT047a 5/10/2021  
Typical casework  
Third floor, teaching lab



SCIT047e 5/10/2021  
Typical walk-in cooler fan coil  
Cold room 446



SCIT048a 5/10/2021  
Access to newer clean room  
Third floor, clean room 354B



SCIT048e 5/10/2021  
Elevator A interior  
Elevator A



SCIT049a 5/10/2021  
Vinyl floor tile, painted walls, and acoustical ceiling  
Second floor corridor



SCIT049e 5/10/2021  
Upward diffusing T8 lighting fixtures  
Third floor corridor



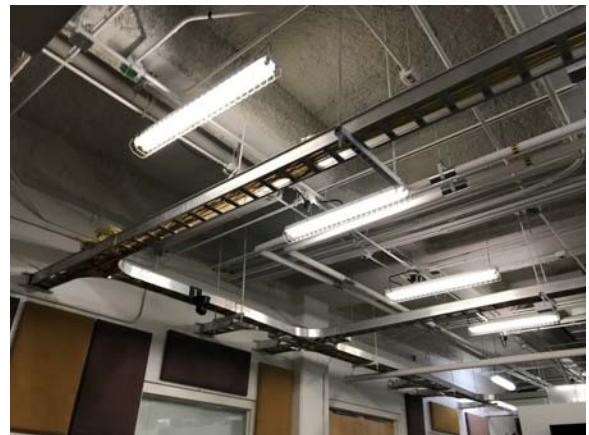
SCIT050a 5/10/2021  
Typical casework  
Second floor, west break area



SCIT050e 5/10/2021  
Main fire alarm panel  
First floor, lobby



SCIT051a 5/10/2021  
Casework  
First floor, west break/work room



SCIT051e 5/10/2021  
Suspended T8 lighting fixtures  
Room 144A



SCIT052a 5/10/2021  
Vinyl flooring and no formal ceiling in corridor  
First floor, south perimeter corridor



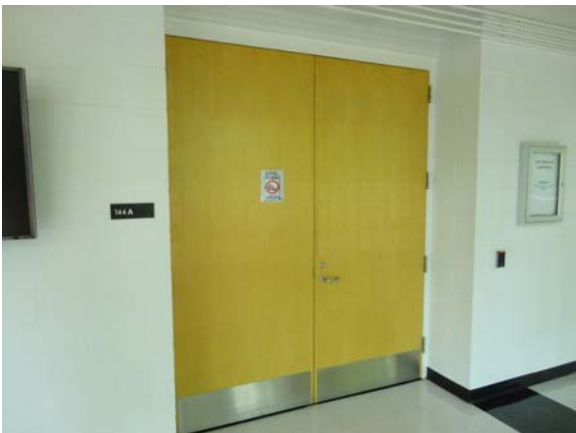
SCIT052e 5/10/2021  
Snorkel style exhaust hoods  
Room 144A



SCIT053a 5/10/2021  
Thermal-pane storefront  
First floor, south perimeter corridor



SCIT053e 5/10/2021  
Combination emergency shower and eyewash station  
Room 144A



SCIT054a 5/10/2021  
Oversized flush wood corridor doors  
First floor, south perimeter corridor



SCIT054e 5/10/2021  
Ceiling-mounted HID lighting fixture  
Exterior soffit

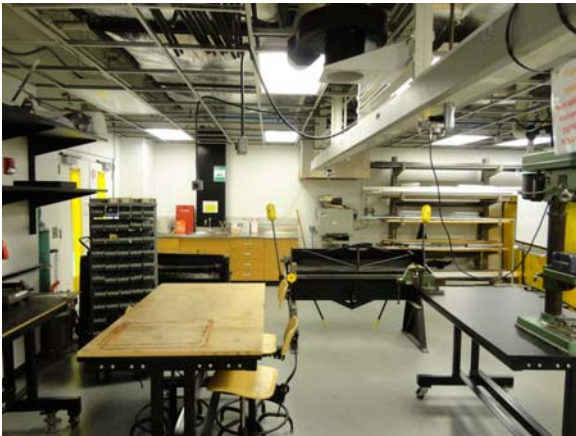




SCIT055a 5/10/2021  
Carpet tile and no formal ceiling  
First floor, global classroom



SCIT055e 5/10/2021  
Typical fan coil unit  
Room C305



SCIT056a 5/10/2021  
Utilitarian finishes  
First floor, shop



SCIT056e 5/10/2021  
Air handling units AHU-10 and AHU-11  
Room C308



SCIT057a 5/10/2021  
Utilitarian finishes in high bay  
First floor, ITEC high bay



SCIT057e 5/10/2021  
Recessed can CFL lighting fixtures  
Room C309



SCIT058a 5/10/2021  
Concrete floor in high bay  
First floor, ITEC high bay



SCIT058e 5/10/2021  
Domestic cold water booster pump system  
Room C101



SCIT059a 5/10/2021  
Sectional overhead door  
First floor, ITEC high bay



SCIT059e 5/10/2021  
Backflow preventers  
Room C101



SCIT060a 5/10/2021  
Oversized glass entry/egress door  
First floor, ITEC high bay



SCIT060e 5/10/2021  
Backflow preventers  
Room C101



SCIT061a 5/10/2021  
Stainless-steel trough sink  
First floor, ITEC high bay



SCIT061e 5/10/2021  
Backflow preventer for fire suppression  
Room C101



SCIT062a 5/10/2021  
Coil overhead interior door  
First floor, former paint booth area



SCIT062e 5/10/2021  
Main fire pump  
Room C101



SCIT063a 5/10/2021  
Coil overhead exterior door  
First floor, former paint booth area



SCIT063e 5/10/2021  
Jockey pump  
Room C101



SCIT064a 5/10/2021  
Heavily weathered membrane roof  
Breezeway link to classroom building



SCIT064e 5/10/2021  
Air handling unit AHU-12  
Room C101



SCIT065a 5/10/2021  
Membrane getting coated to prolong its life span  
Breezeway link to classroom building



SCIT065e 5/10/2021  
Inline exhaust fan  
Room C101



SCIT066a 5/10/2021  
Coated membrane roof on breezeway  
Breezeway link to classroom building



SCIT066e 5/10/2021  
Heating hot water pumps  
Room C101



SCIT067a 5/10/2021  
Failing parapet membrane  
Breezeway link to classroom building



SCIT067e 5/10/2021  
Condensate receiver  
Room C101



SCIT068a 5/10/2021  
Weathered membrane roof on classroom building  
North classroom membrane roof



SCIT068e 5/10/2021  
Heating hot water shell-and-tube heat exchanger  
Room C101



SCIT069a 5/10/2021  
Staining on ornamental steel work  
North breezeway



SCIT069e 5/10/2021  
Main dry-type transformer  
Room C102



SCIT070a 5/10/2021  
Accessible wall-hung lavatory  
North classroom wing men's restroom



SCIT070e 5/10/2021  
Load interrupter  
Room C102



SCIT071a 5/10/2021  
Counter lavatories  
North classroom wing men's restroom



SCIT071e 5/10/2021  
Main switchboard  
Room C102



SCIT072a 5/10/2021  
Standard toilet stall  
North classroom wing men's restroom



SCIT072e 5/10/2021  
Automatic transfer switch  
Room C102



SCIT073a 5/10/2021  
Counter lavatories  
North classroom wing women's restroom



SCIT073e 5/10/2021  
Automatic transfer switch  
Room C102



SCIT074a 5/10/2021  
Accessible wall-hung lavatory  
North classroom wing women's restroom



SCIT074e 5/10/2021  
LED sconce lighting fixtures  
Exterior



SCIT075a 5/10/2021  
Unrepaired ceiling damage  
Third floor, north classroom wing commons



SCIT075e 5/10/2021  
Elevator traction gear  
Room 128A



SCIT076a 5/10/2021

Accessible ramp  
Third floor, north lecture hall



SCIT076e 5/10/2021

Elevator traction gear  
Room 128A



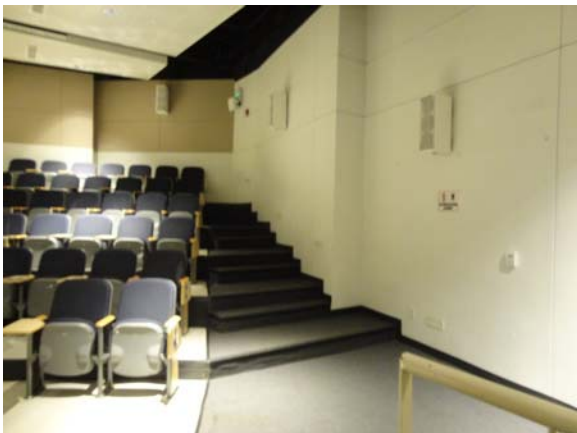
SCIT077a 5/10/2021

Upholstered fixed seating in lecture hall  
Third floor, north lecture hall



SCIT077e 5/10/2021

Condensate receiver  
Room 128A



SCIT078a 5/10/2021

No side aisle handrails  
Third floor, north lecture hall



SCIT078e 5/10/2021

Chilled water booster pump  
Room 128A





SCIT079a 5/10/2021  
Seat damage in lecture hall  
Third floor, north lecture hall



SCIT079e 5/10/2021  
Hydraulic elevator controls  
Room 156



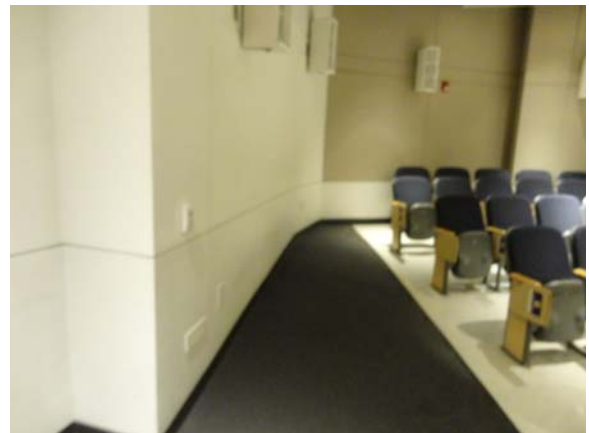
SCIT080a 5/10/2021  
Painted ceiling  
Third floor, north lecture hall



SCIT080e 5/10/2021  
Ceiling-mounted lighting fixtures  
Exterior soffit



SCIT081a 5/10/2021  
Upholstered fixed seating in lecture hall  
Third floor, north lecture hall



SCIT082a 5/10/2021  
No side aisle handrails  
Third floor, north lecture hall



SCIT083a 5/10/2021  
Cosmetic staining of rear acoustical wall panels  
Third floor, north lecture hall



SCIT084a 5/10/2021  
Upholstered fixed seating  
Second floor, north lecture hall



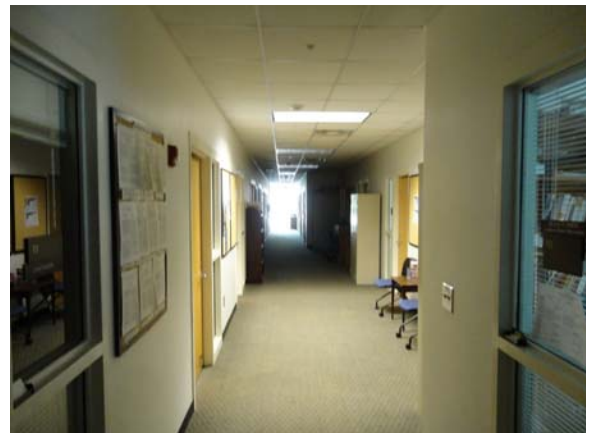
SCIT085a 5/10/2021  
Lecture hall under partial renovation  
Second floor, north lecture hall



SCIT086a 5/10/2021  
Cane guard at breezeway stair  
Breezeway link to classroom building



SCIT087a 5/10/2021  
Building site signage  
Site



SCIT088a 5/10/2021  
Broadloom carpeting and acoustical ceiling  
First floor, north office wing



SCIT089a 5/10/2021  
Typical casework  
First floor, north office break area



SCIT090a 5/10/2021  
Roll-in shower area  
First floor, central plant bath



SCIT091a 5/10/2021  
Accessible wall-hung lavatory and tankless water closet  
First floor, central plant bath



SCIT092a 5/10/2021  
Utilitarian finishes  
First floor, central plant



SCIT093a 5/10/2021  
Metal service gates  
First floor, northeast service yard



SCIT094a 5/10/2021  
Exterior brick facade  
North elevation of north wing



SCIT095a 5/10/2021  
Exterior brick facade  
East elevation of north wing



SCIT096a 5/10/2021  
Localized heavy masonry staining  
East elevation of north wing



SCIT097a 5/10/2021  
Curved exterior masonry facade  
South elevation of north wing



SCIT098a 5/10/2021  
Exterior brick facade and glazing  
West elevation of north wing



SCIT099a 5/10/2021  
Exterior brick facade and glazing  
West elevation of south wing



SCIT100a 5/10/2021  
Exterior brick facade and glazing  
Southwest corner elevation of south wing



SCIT101a 5/10/2021  
Exterior brick facade and glazing  
Southwest corner elevation of south wing



SCIT102a 5/10/2021  
Brick facade and glazing  
South elevation of south wing



SCIT103a 5/10/2021  
Exterior glass entry/egress doors  
First floor, south wing



SCIT104a 5/10/2021  
Brick paved walkway  
South end of site



SCIT105a 5/10/2021  
Staining on lower exterior facade  
South elevation of south wing



SCIT106a 5/10/2021  
Glazing  
Partial north elevation of south wing



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	SCIT
Asset Name	Science and Technology
Year Built or Last Energy Renovation	2001

## 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)

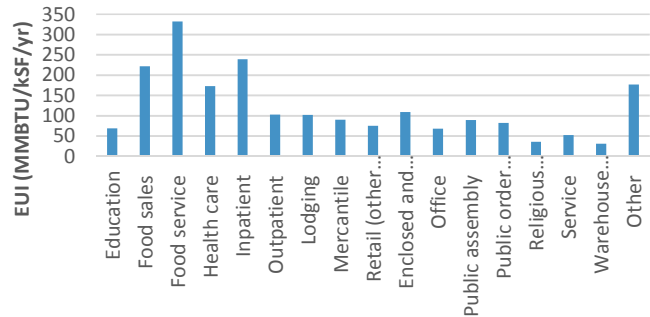
EUI is a measure of energy consumption per square foot of building space per year. The units of measurement are million British thermal units per thousand square foot per year (MMBTU/kSF/yr). The US-DOE EUI can be compared to the actual EUI of the client building to determine how efficient the building 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	Laboratory
Range of Years Constructed/Last Major Energy Renovation	1990 to present
Benchmark EUI (MMBTU/kSF/yr) =	176.7
<b>Building EUI to be Calculated by Client (MMBTU/kSF/yr) =</b>	

TABLE 3. EUI COMPARISON	
<b>Very Energy Efficient</b> (consumes more than 30% less energy)	EUI < 123.7
<b>Energy Efficient</b> (consumes 10% to 30% less energy)	123.7 <= EUI <= 159
<b>Similar</b> (consumes within 10% less or 10% more energy)	159 < EUI < 194.4
<b>Energy Inefficient</b> (consumes 10% to 30% more energy)	194.4 <= EUI <= 229.7
<b>Very Energy Inefficient</b> (consumes more than 30% more energy)	EUI > 229.7

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

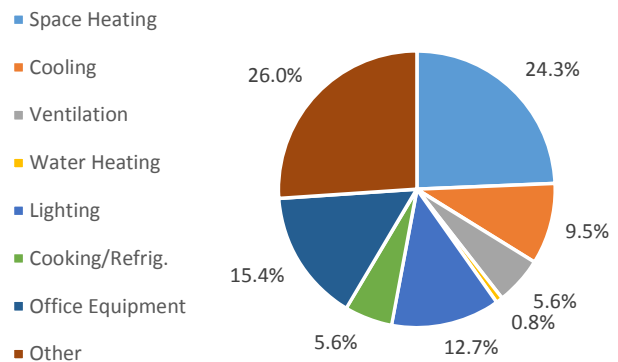


### Metric #2: Energy End Use

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

TABLE 4. ENERGY END USE PROFILE: LABORATORY	
Space Heating	24.3%
Cooling	9.5%
Ventilation	5.6%
Water Heating	0.8%
Lighting	12.7%
Cooking/Refrig.	5.6%
Office Equipment	15.4%
Other	26.0%
Total	100.0%

Figure 2. Energy End Use Profile: Laboratory



References:

1. U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. "Technologies and Products by Category." Efficient Technologies and Products for Federal Facilities. DOE. <http://energy.gov/eere/femp/efficient-technologies-and-products-federal-facilities>. Accessed: June 2016.
2. U.S. Energy Information Administration [EIA]. "2012 CBECS Survey Data." Commercial Building Energy Consumption Survey. EIA. <http://www.eia.gov/consumption/commercial/data/2012/index.cfm?view=consumption#c1-c12>, Accessed: June 2016.

## ENERGY CONSERVATION OPPORTUNITIES

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

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

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

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

ECM CATEGORY	ECM RECOMMENDED FOR FURTHER CONSIDERATION	COST CATEGORY
Lighting - Exterior	INSTALL EFFICIENT LIGHTING FIXTURES. While incandescent lamp fixtures have a low initial cost, the lamps are energy inefficient and have a short useful life. Consider CFL and LED lighting instead. HID lamps are necessary in some applications; however, alternatives such as high intensity T5 or LED fixtures should be considered. T12 lamps are an outdated lighting technology that should be replaced with newer technologies such as high intensity fluorescent or LED lamp fixtures.	N/A, Varies
Lighting - Exterior, Controls	INSTALL LIGHTING CONTROLS. Consider using photocell sensors or timeclocks to shut off building/parking lot fixtures during daylight hours.	N/A, Varies
HVAC - BAS	INSTALL A BAS. Consider installing a BAS so that there is autonomous control of the building HVAC systems.	CAP
HVAC - EMCS	CONNECT BAS TO EMCS. Consider connecting the BAS to a central EMCS so that the system can be monitored and controlled at a central location.	CAP
HVAC - Exhaust Ventilation	INSTALL ENERGY RECOVERY SYSTEM. Energy Recovery Ventilation (ERV) systems exchange heat between outgoing exhaust air and the incoming outdoor air. Investigate the feasibility of installing an ERV system to pre-heat/cool ventilation air.	LC/NC; CAP

