

EAST CAROLINA UNIVERSITY

Facility Condition Assessment

Whichard Building (031)

Asset WHIC

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

ASSET CODE WHIC	CURRENT REPLACEMENT VALUE \$11,163,000
ASSET NAME WHICHARD BUILDING (031)	FACILITY CONDITION NEEDS INDEX 0.34
ASSET USE Office / Administrative	FACILITY CONDITION INDEX 0.18
YEAR BUILT 1923	10-YEAR \$/SF 162.28
GSF 23,470	
INSPECTION DATE 05/10/2021	

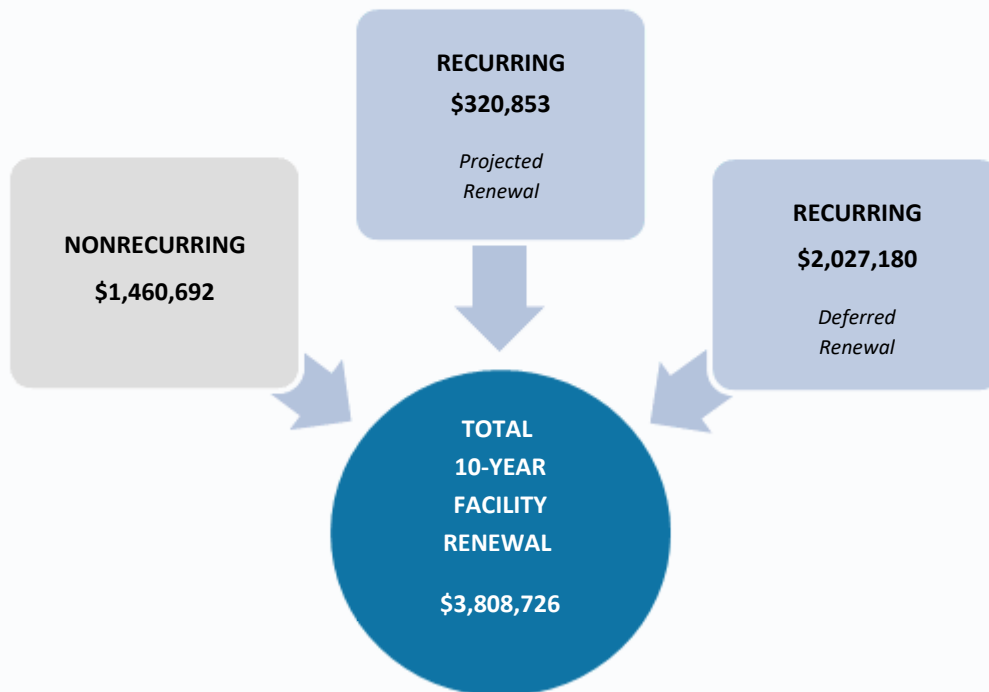
FCNI Scale

The FCNI for this asset is **0.34**

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



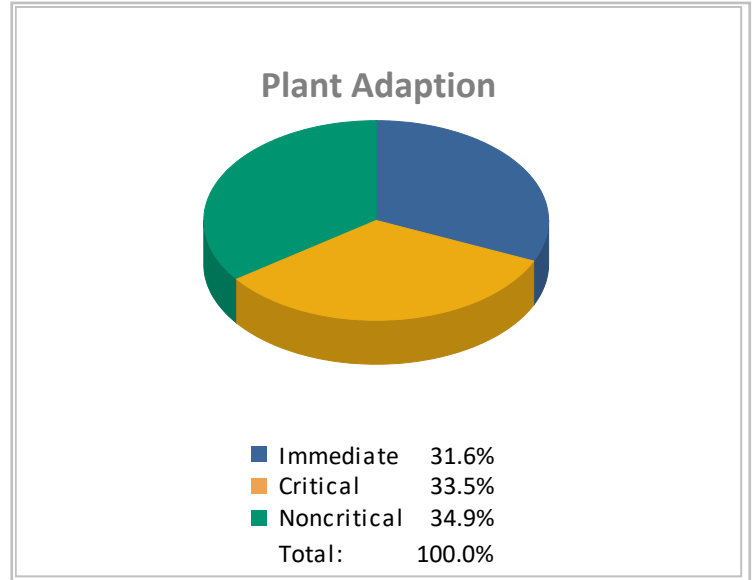
Total Facility Renewal Costs



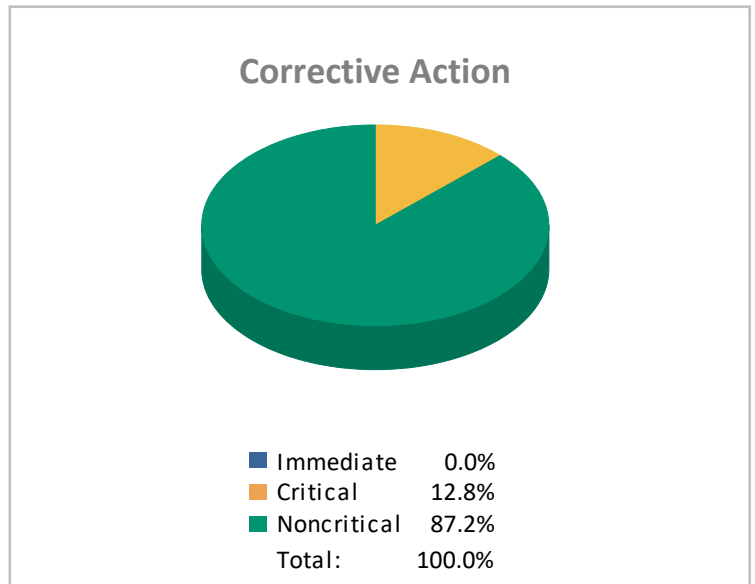
Nonrecurring Costs

Project Cost by Priority

PLANT ADAPTION	
1 - Immediate	\$444,950
2 - Critical	\$472,110
3 - Noncritical	\$491,654

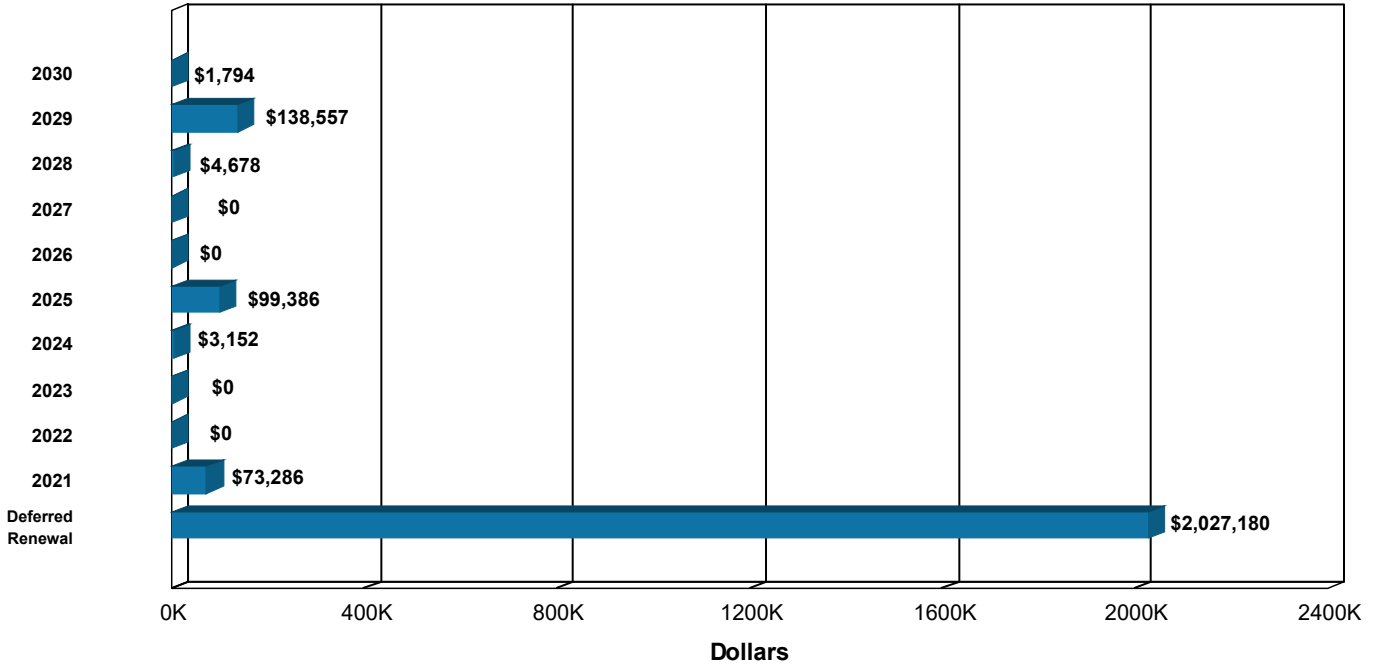


CORRECTIVE ACTION	
1 - Immediate	\$0
2 - Critical	\$6,648
3 - Noncritical	\$45,330

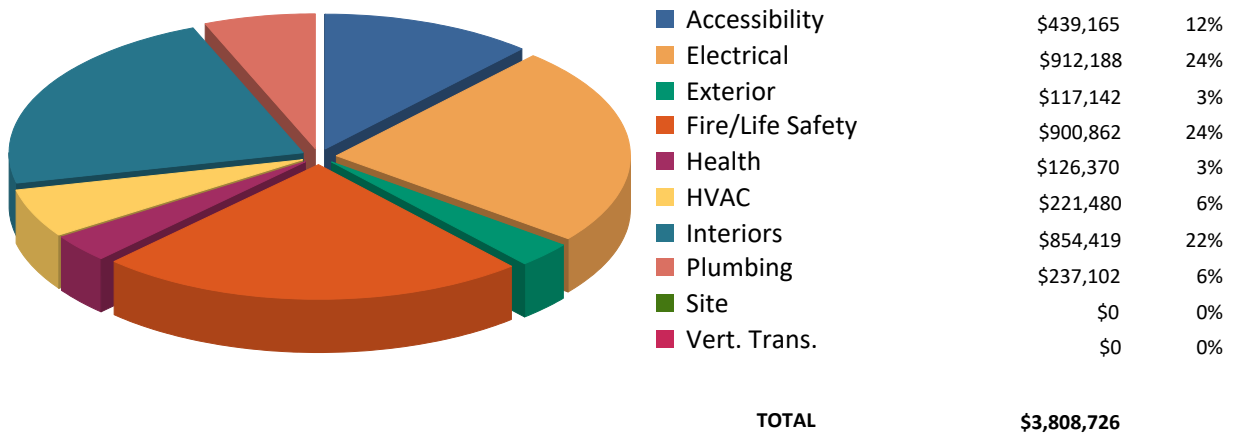


Recurring Costs

Component Replacement Cost by Year



Facilities Renewal Cost by System



ASSET SUMMARY

Constructed in 1923, the Whichard Building is a two-story, office building on the campus of East Carolina University. Two wings were added to the main building in the late 1950s. The north wing, known as the Annex, is a two-story, rectangular section located at a forty-five degree angle to the main building and the east wing is a small addition that originally housed music practice rooms. The building was converted to its present office layout around 1968. The main building has a brick veneer with a pronounced painted wood cornice and a pitched clay tile roof with flanking flat built-up roofing sections. The two additions have brick facades with flat, built-up roofs. The glazing was upgraded around 2001 and the exterior doors are a mixture of hollow-metal assemblies. The Whichard Building totals approximately 23,470 gross square feet.

Information for this report was gathered during a site inspection that concluded on May 10, 2021.

Site

The site is relatively flat and landscaping consists mostly of turf grass with ornamental trees and shrubs around portions of the perimeter. Overall planting is adequate and no upgrades are recommended at this time. The concrete sidewalks are adequate and no parking areas are directly associated with this facility.

Exterior Structure

The brick is in overall good condition, but there are some localized signs of water infiltration in the form of efflorescence along the front arcade and several areas of plaster damage on the interior perimeter walls. The brick should be repointed in these areas. The painted wood cornice, dental work, and exterior trim have weathered paint and should be repainted in the near future.

The metal doors around the building vary in age but most are functional and should remain serviceable for the near future given routine maintenance and repainting. The second floor breezeway exterior door is aging and should be replaced in the near future. The windows on both the original building and the two additions were upgraded around 2001 and appear to be in good condition.

The flat, single-ply membrane roofing system on the Annex and east wing were replaced with new built-up roofs around 2015. These roofs still appear to be in good condition. However, the roof hatch for the annex roof is deteriorated and lacks any safety guards for the access ladder. Upgrade this roof access for service personnel. The pitched, clay tile roofing system on the main building appears to be adequate and no roofing upgrades appear to be needed for the next ten years. The three smaller copper clad door canopies on the secondary and service doors have some weathering but should be adequate for the near future.

Interior Finishes/Systems

The main building has a two-story, central atrium that was once the main library space for the campus. It now acts as the main reception area. The upper floor corridor that rings the central atrium has wire glass panels between the corridor and the atrium. This glazing is in good condition. The main building and the two wings contain offices, conference rooms, and support areas. The interior walls are painted and showing some age. Repaint all of the interior walls on both floors in the near future.

Carpeting throughout the building is older and showing wear. Install new carpet tile building wide. It is assumed that the present carpeting is installed over older nine-inch vinyl flooring and this older flooring is addressed in the Health section, as is the older nine-inch vinyl flooring in the interior stair towers. New rubber stair treads are recommended once the stairs are prepped. Ceramic floor tile and wainscot in the four restrooms are older and timeworn. It is recommended that new tile finishes be installed in each of these restrooms as part of recommended renovations.

The ceiling finishes on both floors are a mixture of acoustical lay-in tile and older textured ceilings. The textured ceilings are assumed to contain asbestos and should be sampled and tested. Also, it is believed that there are textured ceilings above the lay-in acoustical ceilings. The textured ceilings are addressed in the Health section. The acoustical ceilings are showing some age and should be considered for replacement within the next ten years or in conjunction with ceiling finish abatement. The painted smooth ceiling in the central atrium has a good appearance and should be repainted within the next five years.

The interior doors on both floors are showing some age and are not fire rated. Install new fire-rated, flush wood doors on both floors. The new doors should include new lever hardware sets.

Accessibility

The main entry to the building is located at the breezeway between the main building and north annex wing. However, the slope of this ramp appears to exceed allowable limits and the ramp should be replaced with a new compliant permanent ramp.

The entry doors at the breezeway are adequate but the building lacks access to the second floor. Install a two-stop accessible passenger elevator to make this office building more accessible. Also, install wheelchair lifts for the three interior corridor steps on both the first and second floors.

The north and south interior stair towers lack accessible inner and outer railing designs and each stair run should be fitted with new flanking railings and new compliant guardrails. Stair treads should also be fitted with new rubber stair treads once the existing nine-inch vinyl floor tile has been removed. The exterior breezeway stair tower also is not accessible and is recommended for replacement in the Fire/Life Safety section. The new stair should have accessible railing designs and paneled risers.

While the interior doors are recommended for replacement, if they are not upgraded in the near future, then they will need to be fitted with accessible lever hardware. The existing room signage has been updated and is accessible with Braille.

The restrooms have aging fixtures and finishes and only the first floor restrooms are even partially accessible. Expanding the restroom layouts to the new larger circulation clearances would likely reduce the fixture counts and expanding the footprint of the restrooms would be difficult where they are located. It is recommended that new, accessible, all-gender, three-fixture restrooms be installed on each floor to meet accessibility standards. Also, the water fountains are aging and not fully accessible. Replace the fountains on both floors with fully accessible, dual-level units set in wheelchair accessible corridor alcoves.

Health

Asbestos-containing materials (ACMs) are suspected to exist in the nine-inch vinyl floor tile and mastics, in the older adhesive wall tile acoustical panels in select offices, and in the textured ceiling finishes. It is also assumed that nine-inch vinyl flooring is present under the carpeting and that textured ceilings are present above the acoustical lay-in ceilings. These areas should be sampled and tested. Assuming a positive test result, these areas should be abated prior to upgrading interior finishes in these areas.

Asbestos insulation was observed on mechanical piping during the inspection. Prior to any future renovation efforts, it is recommended that it be properly removed and disposed of according to local, state, and federal regulations.

Fire/Life Safety

While the building appears to have adequate egress pathways, the corridor doors are not fire rated and should be upgraded in all areas on all floors. Also, the breezeway metal stair is weathered and has open risers. It is recommended that this aging stair be replaced with a new secondary egress stair at the same location. The new stair should have accessible handrails and metal panel risers.

This facility contains a Simplex point addressable fire alarm and detection system with a main fire alarm panel, manual pull stations, smoke detectors, and horn and strobe alarm systems. The panel and devices were installed in the 1990s with many neon strobes were observed throughout the corridors. Due to technical obsolescence and service life depletion, it is recommended that the fire alarm and detection system be replaced with a modern system.

This facility is not protected via an automatic fire suppression system. Fire suppression is handled manually via strategically placed dry-type handheld fire extinguishers. As a part of future renovation efforts, it is recommended that an automatic wet-pipe fire suppression system be installed.

HVAC

The main HVAC system provides heating and cooling via six constant air volume (CAV) air handling units with zoned decks. Exhaust for the mechanical room is handled by a centrifugal exhaust fan. The air handling units and exhaust fan have exceeded their respective statistical service lives and should be

considered for removal and replacement with modern systems. Variable air volume (VAV) capable air handling units are recommended.

Chilled water is generated through a 100-ton air-cooled packaged chiller and circulated throughout via a 7.5-hp base-mounted centrifugal pump. Heating hot water is generated through a shell-and-tube heat exchanger utilizing steam generated at the central steam plant and circulated throughout via a 3-hp inline centrifugal pump. Condensate from the heat exchanger is collected and transferred back to the central plant via a duplex condensate receiver. The heat exchanger, chilled water pump, and the condensate receiver should be considered for replacement as they have exceeded their respective service lives. The air-cooled chiller and heating hot water pump were installed within the last ten years and appear to be in good condition.

The HVAC distribution network is a zoned CAV design and was renovated in the 1950s. The distribution network consists of insulated metallic conduit, insulated mechanical piping, valves, diffusers, and similar elements. The HVAC controls are a direct digital and pneumatic hybrid and were reported to have been updated in the 1980s. It is recommended that the HVAC distribution network and controls be removed and replaced with and a modern, energy-efficient VAV system with full DDC. The air compressor for the pneumatic controls is due for replacement and can be removed from future budgeting when DDC is installed.

Electrical

Main electrical service is fed to this facility from nearby transformer where power is reduced 277/480 volts and routed to a main 800-amp distribution panelboard. No main switchboard exists. Power is further reduced to 120/208 volts through secondary step-down transformers. 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. The panelboard and distribution network were reportedly replaced in the 1950s during renovations. It is recommended that the electrical distribution network be replaced utilizing modern electrical service.

As a part of future renovation efforts, it is recommended that this facility be furnished with a central emergency power system. This includes the installation of an appropriately-sized emergency generator, associated automatic transfer switches (ATS), and an emergency distribution network. The emergency power network should support Life Safety and important user/process loads which would impact the operation and/or safety of the facility, should power be interrupted for an extended period.

Variable frequency drives (VFDs) are associated with the air handling units. The drives are currently used as soft starts for the motors and not able to provide throttling due to the current HVAC controls. It is recommended that they be replaced during any future HVAC renovations.

The majority of the interior lighting was replaced in the 1980s and retrofitted for T8 and CFL fluorescent fixtures. Some updated lighting fixtures were likely installed in the mid-2000s. Although the majority of the 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.

Automated on/off timer lighting controls and occupancy sensing on/off lighting controls are recommended to be added throughout to save energy and reduce operational costs through extended lamp life. Timers should be controlled by building automation systems or be otherwise digitally programmable. The occupancy sensors should be preset for preferred inactivity periods for activation. A cost adjustment has been added to the vintage lighting for this upgrade.

The exterior lighting consists of HID sconces, CFL fixtures, and recessed LED fixtures. While currently functional, the exterior lighting is less efficient and requires more frequent maintenance than modern LED-based outdoor lighting. It is recommended that the exterior lighting be replaced with LED fixtures. The recessed cans 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 copper with soldered connections and some threaded galvanized piping. The drain piping is cast-iron, malleable iron, and some galvanized. The majority of the supply and drain piping vary in age from the original construction date to renovations in the 1950s and 1960s. It is recommended that they be replaced as aged piping can cause costly repairs due to unwanted leaks.

Three backflow preventers are associated with the water main and the heating hot water makeup. The backflow for the makeup was installed within the last three years and is expected to remain viable for the next decade. The backflow preventers for the water main were installed around 2010 and should be evaluated for replacement within the next ten years due to lifecycle depletion.

Domestic hot water is generated through two 199-MBH gas-fired tankless water heaters, each with an associated fractional horsepower circulation pump. The water heaters and pumps were installed within the last year. No issues were observed or reported and they should remain viable for the next ten years.

The four restrooms have aging wall-hung and counter lavatories and older tankless water closets. All of these fixtures are due for in-kind replacement. The addition of all-gender restrooms are addressed in the Accessibility section and do not affect the narrow layouts of the existing restrooms. The two older wall-mounted service sinks in the janitor's closets are recommended for replacement.

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	
EL	System Description
5	Component Description
A	Element Description

Priority Sequence

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

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

Drawings

Floor plans for this facility are provided as a reference.

Photographs

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

<i>Example:</i>	
Photo Number: 0001006e	
0001	Asset Number
006	Photo Sequence
e	Engineering Photo

Sustainability/Energy Analysis

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

FACILITY CONDITION ASSESSMENT

SECTION 2

**COST SUMMARIES
AND TOTALS**

RENEWAL NEEDS MATRIX

All dollars shown as Present Value

CATEGORY	NONRECURRING PROJECT NEEDS			RECURRING COMPONENT REPLACEMENT NEEDS											
	Immediate	Critical	Noncritical	Deferred Renewal	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	TOTAL
ACCESSIBILITY	0	420,038	19,127	0	0	0	0	0	0	0	0	0	0	0	\$439,165
EXTERIOR	0	6,648	45,330	4,062	61,103	0	0	0	0	0	0	0	0	0	\$117,142
INTERIOR	0	0	0	697,469	12,183	0	0	0	6,210	0	0	0	138,557	0	\$854,419
PLUMBING	0	0	0	206,049	0	0	0	0	26,374	0	0	4,678	0	0	\$237,102
HVAC	0	0	0	219,686	0	0	0	0	0	0	0	0	0	1,794	\$221,480
FIRE/LIFE SAFETY	444,950	35,901	288,332	131,678	0	0	0	0	0	0	0	0	0	0	\$900,862
ELECTRICAL	0	0	73,996	768,238	0	0	0	3,152	66,801	0	0	0	0	0	\$912,188
SITE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0
VERT. TRANS.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0
HEALTH/EQUIP.	0	16,171	110,199	0	0	0	0	0	0	0	0	0	0	0	\$126,370
SUBTOTAL	\$444,950	\$478,758	\$536,984	\$2,027,180	\$73,286	\$0	\$0	\$3,152	\$99,386	\$0	\$0	\$4,678	\$138,557	\$1,794	\$3,808,726
TOTAL NONRECURRING PROJECT NEEDS			\$1,460,692	TOTAL RECURRING COMPONENT REPLACEMENT NEEDS										\$2,348,034	

CURRENT REPLACEMENT VALUE	\$11,163,000
FACILITY CONDITION NEEDS INDEX	0.34
FACILITY CONDITION INDEX	0.18

GSF	TOTAL 10-YEAR FACILITY RENEWAL NEEDS	10-YEAR NEEDS/SF
23,470	\$3,808,726	\$162.28

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	\$439,165	\$0	\$439,165
EXTERIOR	\$51,977	\$65,165	\$117,142
INTERIOR	\$0	\$854,419	\$854,419
PLUMBING	\$0	\$237,102	\$237,102
HVAC	\$0	\$221,480	\$221,480
FIRE/LIFE SAFETY	\$769,184	\$131,678	\$900,862
ELECTRICAL	\$73,996	\$838,191	\$912,188
SITE	\$0	\$0	\$0
VERT. TRANS	\$0	\$0	\$0
HEALTH	\$126,370	\$0	\$126,370
TOTALS	\$1,460,692	\$2,348,034	\$3,808,726

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
WHIC DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL			FLR 2 ANNEX BREEZEWAY	B2030	Deferred Renewal	4,062
WHIC DR24	DOOR LOCK, COMMERCIAL-GRADE	SERVICE		E WING	C1020	Deferred Renewal	1,489
WHIC DR26	DOOR PANIC HARDWARE			FLR 2 ANNEX BREEZEWAY	C1020	Deferred Renewal	2,437
WHIC IW01	WALL FINISH - PAINT, STANDARD	PAINTED WALLS			C3010	Deferred Renewal	136,403
WHIC IW03	WALL FINISH - TILE, CERAMIC / STONE, STANDARD	CERAMIC WAINSCOT			C3010	Deferred Renewal	47,585
WHIC IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	BROADLOOM CARPET			C3020	Deferred Renewal	250,897
WHIC IF03	FLOORING - VINYL COMPOSITION TILE, STANDARD	9X9 VINYL FLR TILE UNDER CARPET			C3020	Deferred Renewal	131,312
WHIC IF06	FLOORING - TILE, CERAMIC / STONE / QUARRY STANDARD	CERAMIC FLOOR TILE			C3020	Deferred Renewal	10,176
WHIC IF06	FLOORING - TILE, CERAMIC / STONE / QUARRY STANDARD	CERAMIC FLOOR TILE			C3020	Deferred Renewal	10,176
WHIC IC03	CEILING FINISH - ATTACHED ACOUSTICAL TILE	ADH TILE WALL PANELS			C3030	Deferred Renewal	36,668
WHIC IC05	CEILING FINISH - PAINTED OR STAINED, TEXTURED	PAINTED OR STAINED			C3030	Deferred Renewal	70,325
WHIC FX06	PLUMBING FIXTURE - SINK, SERVICE/LAUNDRY/UTILITY	FLR MOUNT		JAN CLOS	D2010	Deferred Renewal	3,585
WHIC PS14	SUPPLY PIPING SYSTEM - OFFICE	COPPER, GALV			D2020	Deferred Renewal	80,841
WHIC PD14	DRAIN PIPING SYSTEM - OFFICE	CAST IRON, GALV			D2030	Deferred Renewal	121,623
WHIC AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-004, ASSET 11019			D3040	Deferred Renewal	11,059

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
WHIC AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-005, ASSET 11022			D3040	Deferred Renewal	11,059
WHIC AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-003, ASSET 11021			D3040	Deferred Renewal	11,059
WHIC AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-006, ASSET 11022			D3040	Deferred Renewal	11,059
WHIC AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-002, ASSET 11017			D3040	Deferred Renewal	11,059
WHIC AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-001, ASSET 11020			D3040	Deferred Renewal	11,059
WHIC FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-1			D3040	Deferred Renewal	7,951
WHIC HX05	HEAT EXCHANGER - SHELL & TUBE STEAM TO WATER (>85 GPM)	HX-1			D3040	Deferred Renewal	17,645
WHIC PH01	PUMP - ELECTRIC (<=10 HP)	031-CHWP			D3040	Deferred Renewal	12,339
WHIC PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	CP-1			D3040	Deferred Renewal	22,310
WHIC BA14	HVAC CONTROLS SYSTEM - OFFICE	HYBRID-DDC, PNEUM			D3060	Deferred Renewal	93,085
WHIC FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER	PA, SIMPLEX, ASSET 11024			D4030	Deferred Renewal	37,851
WHIC FA02	FIRE ALARM SYSTEM - DEVICES	HS, MP, SD			D4030	Deferred Renewal	93,827
WHIC SE14	ELECTRICAL DISTRIBUTION NETWORK - OFFICE	1954 RENO			D5010	Deferred Renewal	451,505
WHIC SG03	MAIN SWITCHBOARD W/BREAKERS (600-800 AMP)	MDP			D5010	Deferred Renewal	34,465
WHIC VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-004			D5010	Deferred Renewal	1,051

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
WHIC VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-005			D5010	Deferred Renewal	1,051
WHIC VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-003			D5010	Deferred Renewal	1,051
WHIC LE07	LIGHTING - EXTERIOR, WALL FLOOD (SV, MH, ID, LED)	HID SCONCE			D5020	Deferred Renewal	5,930
WHIC LE08	LIGHTING - EXTERIOR, WALL LANTERN or FLOOD (INC, CFL, LED)	CFL FIX			D5020	Deferred Renewal	1,245
WHIC LI14	LIGHTING SYSTEM, INTERIOR - OFFICE	RETRO T8 TROFF			D5020	Deferred Renewal	271,940
WHIC DR28	DOOR OPERATOR, POWER-ASSIST	MAIN ENTRY		SOUTH ELEV	B2030	2021	17,458
WHIC DR28	DOOR OPERATOR, POWER-ASSIST	ENTRY		E WING	B2030	2021	17,458
WHIC DR28	DOOR OPERATOR, POWER-ASSIST	ENTRY		BREEZEWAY	B2030	2021	26,187
WHIC DR26	DOOR PANIC HARDWARE	MAIN ENTRY		SOUTH ELEV	C1020	2021	2,437
WHIC DR26	DOOR PANIC HARDWARE	ENTRY		E WING	C1020	2021	2,437
WHIC DR26	DOOR PANIC HARDWARE			FLR 2 MAIN BLDG BREEZEWAY	C1020	2021	2,437
WHIC DR26	DOOR PANIC HARDWARE	ENTRY		BREEZEWAY	C1020	2021	3,655
WHIC DR26	DOOR PANIC HARDWARE	EGRESS		ANNEX	C1020	2021	1,218
WHIC VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-002			D5010	2024	1,051
WHIC VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-001			D5010	2024	1,051
WHIC VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-006			D5010	2024	1,051

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
WHIC IC04	CEILING FINISH - PAINTED OR STAINED, STANDARD	PAINTED OR STAINED			C3030	2025	6,210
WHIC FX01	PLUMBING FIXTURE - LAVATORY, COUNTER	PC		RRS	D2010	2025	2,636
WHIC FX02	PLUMBING FIXTURE - LAVATORY, WALL HUNG	PC		RRS	D2010	2025	7,981
WHIC FX10	PLUMBING FIXTURE - URINAL	PC		RRS	D2010	2025	2,118
WHIC FX12	PLUMBING FIXTURE - WATER CLOSET, TANKLESS	PC		RRS	D2010	2025	13,639
WHIC LI14	LIGHTING SYSTEM, INTERIOR - OFFICE	2005 UPG			D5020	2025	66,801
WHIC BF02	BACKFLOW PREVENTER (1-2 INCHES)	BFP-WM-1			D2020	2028	2,339
WHIC BF02	BACKFLOW PREVENTER (1-2 INCHES)	BFP-WM-2			D2020	2028	2,339
WHIC IC01	CEILING FINISH - SUSPENDED ACOUSTICAL TILE, STANDARD	ACOUS LAY IN CEILINGS			C3030	2029	138,557
WHIC AC01	AIR COMPRESSOR SYSTEM - HVAC CONTROLS (<=6 TOTAL HP)	CAC-1			D3060	2030	1,794
TOTAL							\$2,348,034

FACILITIES RENEWAL PLAN
NONRECURRING PROJECT COSTS

All costs shown as Present Value

PROJECT NUMBER	PROJECT TITLE	UNI-FORMAT	PRIORITY CLASS	PROJECT CLASSIFICATION	PROJECT COST
WHICFS02	RATED CORRIDOR DOOR UPGRADES	C1020	1	Plant Adaption	444,950
WHICAC01	BREEZEWAY ENTRY RAMP UPGRADE	B2030	2	Plant Adaption	27,977
WHICES03	ANNEX ROOF HATCH REPLACEMENT	B3010	2	Corrective Action	6,648
WHICAC02	CORRIDOR TRANSITION WHEELCHAIR LIFTS	C1010	2	Plant Adaption	48,985
WHICAC04	INTERIOR DOOR HARDWARE	C1010	2	Plant Adaption	88,622
WHICFS03	BREEZEWAY STAIR REPLACEMENT	C2010	2	Plant Adaption	35,901
WHICAC07	INTERIOR STAIR TOWER RAILING UPGRADES	C2020	2	Plant Adaption	18,431
WHICAC06	ELEVATOR INSTALLATION	D1010	2	Plant Adaption	192,510
WHICAC05	UNISEX RESTROOM INSTALLATIONS	D2010	2	Plant Adaption	43,513
WHICHE01	ASBESTOS ABATEMENT - MECHANICAL SYSTEMS	F2020	2	Plant Adaption	16,171
WHICES01	EXTERIOR MASONRY WALL RENEWAL	B2010	3	Corrective Action	12,920
WHICES02	EXTERIOR WOOD CORNICE AND TRIM REFINISHING	B2010	3	Corrective Action	32,410
WHICAC03	DUAL LEVEL FOUNTAIN UPGRADES	C1010	3	Plant Adaption	19,127
WHICFS01	FIRE SPRINKLER SYSTEM INSTALLATION	D4010	3	Plant Adaption	288,332
WHICEL01	INSTALL EMERGENCY GENERATOR AND POWER NETWORK	D5090	3	Plant Adaption	73,996
WHICHE02	ASBESTOS ABATEMENT - INTERIOR FINISH SYSTEMS	F2020	3	Plant Adaption	110,199
TOTAL					\$1,460,692

FACILITY CONDITION ASSESSMENT

SECTION 3

**NONRECURRING
PROJECT DETAILS**

All costs shown as Present Value

RATED CORRIDOR DOOR UPGRADES			
Project Number:	WHICFS02	Category Code:	
Priority Sequence:	1	FS5F	
Priority Class:	Immediate	System:	FIRE/LIFE SAFETY
Project Class:	Plant Adaption	Component:	EGRESS PATH
Date Basis:	6/10/2021	Element:	FIRE DOORS/HARDWARE

Code Application:

IBC 713

Subclass/Savings:

Not Applicable

Project Location:

Floor-wide: Floor(s) 1,2

Description

This facility does not have rated doors and frames in corridors as required by modern building code. Complete demolition of the existing door systems and replacement according to a code-compliant plan to properly protect egress passages are recommended.

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
Rated door and rated metal frame installation	LEAF	119	\$2,278	\$271,037	\$551	\$65,518	\$336,555
Base Material/Labor Costs				\$271,037		\$65,518	
Indexed Material/Labor Costs				\$272,934		\$46,714	\$319,648
Construction Mark Up at 20.0%							\$63,930
Original Construction Cost							\$383,578
Date of Original Estimate:	6/10/2021					Inflation	\$0
Current Year Construction Cost							\$383,578
Professional Fees at 16.0%							\$61,372
TOTAL PROJECT COST							\$444,950

All costs shown as Present Value

BREEZEWAY STAIR REPLACEMENT			
Project Number:	WHICFS03	Category Code:	
Priority Sequence:	2	FS5E	
Priority Class:	Critical	System:	FIRE/LIFE SAFETY
Project Class:	Plant Adaption	Component:	EGRESS PATH
Date Basis:	6/10/2021	Element:	STAIRS AND RAILING

Code Application:		Subclass/Savings:	Project Location:
IBC	1003.3	Not Applicable	Undefined: Floor(s) 1

Description

Replace the aging metal exterior egress stair with a new metal stair assembly that includes accessible railing designs and metal riser panels.

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
Cement fill, metal pan egress stair with hand rail, guard rail and landings	FLR	1	\$20,288	\$20,288	\$7,519	\$7,519	\$27,807
Base Material/Labor Costs				\$20,288		\$7,519	
Indexed Material/Labor Costs				\$20,430		\$5,361	\$25,791
Construction Mark Up at 20.0%							\$5,158
Original Construction Cost							\$30,950
Date of Original Estimate:	6/10/2021					Inflation	\$0
Current Year Construction Cost							\$30,950
Professional Fees at 16.0%							\$4,952
TOTAL PROJECT COST							\$35,901

All costs shown as Present Value

ASBESTOS ABATEMENT - MECHANICAL SYSTEMS			
Project Number:	WHICHE01	Category Code:	
Priority Sequence:	3	HE6B	
Priority Class:	Critical	System:	HEALTH
Project Class:	Plant Adaption	Component:	HAZARDOUS MATERIAL
Date Basis:	5/23/2021	Element:	MECHANICAL ASBESTOS

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

Description

There is asbestos existent on utility piping. Prior to future renovation of these systems, this asbestos will have to be properly removed from the utility networks.

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
HVAC system - abate asbestos from utility piping	SF	23,470	\$0.09	\$2,112	\$0.22	\$5,163	\$7,276
Plumbing system - abate asbestos from supply piping network	SF	23,470	\$0.09	\$2,112	\$0.22	\$5,163	\$7,276
Base Material/Labor Costs				\$4,225		\$10,327	
Indexed Material/Labor Costs				\$4,254		\$7,363	\$11,617
Construction Mark Up at 20.0%							\$2,323
Original Construction Cost							\$13,941
Date of Original Estimate:	5/23/2021				Inflation		\$0
Current Year Construction Cost							\$13,941
Professional Fees at 16.0%							\$2,230
TOTAL PROJECT COST							\$16,171

All costs shown as Present Value

BREEZEWAY ENTRY RAMP UPGRADE			
Project Number:	WHICAC01	Category Code:	
Priority Sequence:	4	AC2A	
Priority Class:	Critical	System:	ACCESSIBILITY
Project Class:	Plant Adaption	Component:	BUILDING ENTRY
Date Basis:	6/10/2021	Element:	GENERAL

Code Application:

Subclass/Savings:

Project Location:

ADAAG

403.6, 405, 505

DOJ1 - Approach & Entrance

Undefined: Floor(s) 1

Description

The existing breezeway entry ramp has been identified as too steep to meet current accessibility standards and this ramp will need to be replaced with a permanent, ADA-compliant ramp assembly at the same location.

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
Wheelchair ramp construction, including handrails	VFT	4	\$2,724	\$10,896	\$3,200	\$12,800	\$23,696
Base Material/Labor Costs				\$10,896		\$12,800	
Indexed Material/Labor Costs				\$10,972		\$9,126	\$20,099
Construction Mark Up at 20.0%							\$4,020
Original Construction Cost							\$24,118
Date of Original Estimate:	6/10/2021					Inflation	\$0
Current Year Construction Cost							\$24,118
Professional Fees at 16.0%							\$3,859
TOTAL PROJECT COST							\$27,977

All costs shown as Present Value

CORRIDOR TRANSITION WHEELCHAIR LIFTS			
Project Number:	WHICAC02	Category Code:	
Priority Sequence:	5	AC3A	
Priority Class:	Critical	System:	ACCESSIBILITY
Project Class:	Plant Adaption	Component:	INTERIOR PATH OF TRAVEL
Date Basis:	6/10/2021	Element:	LIFTS/RAMPS/ELEVATORS

Code Application:

Subclass/Savings:

Project Location:

ADAAG

410, 405, 505

DOJ2 - Access to Goods & Services

Undefined: Floor(s) 1,2

Description

Corridor transition steps at the second floor of the main building north entry, the first floor of the annex north corridor, and in the interior link to the first floor east wing all pose a wheelchair access barrier. These steps should be fitted with wheelchair lifts and the remaining stair width should be fitted with accessible handrails.

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
Wheelchair lift/stair climber, conduit, wiring, tools, and supplies	EA	3	\$8,883	\$26,648	\$2,950	\$8,850	\$35,498
Interior corridor stair accessible railing design installation allowance	EA	3	\$500	\$1,500	\$250	\$750	\$2,250
Base Material/Labor Costs				\$28,148		\$9,600	
Indexed Material/Labor Costs				\$28,345		\$6,845	\$35,190
Construction Mark Up at 20.0%							\$7,038
Original Construction Cost							\$42,228
Date of Original Estimate:	6/10/2021		Inflation			\$0	
Current Year Construction Cost							\$42,228
Professional Fees at 16.0%							\$6,756
TOTAL PROJECT COST							\$48,985

All costs shown as Present Value

UNISEX RESTROOM INSTALLATIONS			
Project Number:	WHICAC05	Category Code:	
Priority Sequence:	6	AC3E	
Priority Class:	Critical	System:	ACCESSIBILITY
Project Class:	Plant Adaption	Component:	INTERIOR PATH OF TRAVEL
Date Basis:	6/10/2021	Element:	RESTROOMS/BATHROOMS

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

Description

The restrooms have aging fixtures and finishes and only the first floor restrooms are even partially accessible. Expanding the restroom layouts to the new larger circulation clearances would likely reduce the fixture counts and expanding the footprint of the restrooms would be difficult where they are located. It is recommended that new all-gender, accessible, three-fixture restrooms be installed on each floor to meet accessibility standards.

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
Installation of an accessible unisex restroom installation including toilet, lavatory, urinal, piping, and rough-in (60 square feet in area)	EA	2	\$8,200	\$16,400	\$10,340	\$20,680	\$37,080
Base Material/Labor Costs				\$16,400		\$20,680	
Indexed Material/Labor Costs				\$16,515		\$14,745	\$31,260
Construction Mark Up at 20.0%							\$6,252
Original Construction Cost							\$37,512
Date of Original Estimate:	6/10/2021		Inflation				\$0
Current Year Construction Cost							\$37,512
Professional Fees at 16.0%							\$6,002
TOTAL PROJECT COST							\$43,513

All costs shown as Present Value

ELEVATOR INSTALLATION			
Project Number:	WHICAC06	Category Code:	
Priority Sequence:	7	AC3A	
Priority Class:	Critical	System:	ACCESSIBILITY
Project Class:	Plant Adaption	Component:	INTERIOR PATH OF TRAVEL
Date Basis:	6/10/2021	Element:	LIFTS/RAMPS/ELEVATORS

Code Application:

Subclass/Savings:

Project Location:

ASME A17.1
ADAAG 407

DOJ2 - Access to Goods & Services

Undefined: Floor(s) 1

Description

Install a two-stop fully accessible passenger elevator in the building to provide wheelchair access to the upper floor.

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
Elevator installation, hydraulic	SYS	1	\$98,461	\$98,461	\$54,905	\$54,905	\$153,366
Base Material/Labor Costs				\$98,461		\$54,905	
Indexed Material/Labor Costs				\$99,150		\$39,147	\$138,297
Construction Mark Up at 20.0%							\$27,659
Original Construction Cost							\$165,957
Date of Original Estimate:	6/10/2021					Inflation	\$0
Current Year Construction Cost							\$165,957
Professional Fees at 16.0%							\$26,553
TOTAL PROJECT COST							\$192,510

All costs shown as Present Value

INTERIOR DOOR HARDWARE			
Project Number:	WHICAC04	Category Code:	
Priority Sequence:	8	AC3C	
Priority Class:	Critical	System:	ACCESSIBILITY
Project Class:	Plant Adaption	Component:	INTERIOR PATH OF TRAVEL
Date Basis:	6/10/2021	Element:	DOORS AND HARDWARE

Code Application:

Subclass/Savings:

Project Location:

ADAAG

309.4

DOJ2 - Access to Goods & Services

Floor-wide: Floor(s) 1,2

Description

While the interior doors are recommended for upgrade, if they are not replaced in the near future then they should be fitted with new accessible lever hardware on both levels.

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
Lever actuated door hardware	EA	119	\$414	\$49,253	\$166	\$19,730	\$68,983
Base Material/Labor Costs				\$49,253		\$19,730	
Indexed Material/Labor Costs				\$49,598		\$14,068	\$63,665
Construction Mark Up at 20.0%							\$12,733
Original Construction Cost							\$76,398
Date of Original Estimate:	6/10/2021					Inflation	\$0
Current Year Construction Cost							\$76,398
Professional Fees at 16.0%							\$12,224
TOTAL PROJECT COST							\$88,622

All costs shown as Present Value

INTERIOR STAIR TOWER RAILING UPGRADES			
Project Number:	WHICAC07	Category Code:	
Priority Sequence:	9	AC3B	
Priority Class:	Critical	System:	ACCESSIBILITY
Project Class:	Plant Adaption	Component:	INTERIOR PATH OF TRAVEL
Date Basis:	6/10/2021	Element:	STAIRS AND RAILINGS

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

Description

The north and south interior stair towers lack accessible inner and outer railing designs and each stair run should be fitted with new flanking railings and new compliant guardrails. Stair treads should also be fitted with new rubber stair treads once the existing nine-inch vinyl floor tile has been removed.

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 per floor	FLR	2	\$780	\$1,561	\$709	\$1,419	\$2,979
Switchback handrail/guardrail system per floor	FLR	2	\$1,768	\$3,536	\$1,135	\$2,270	\$5,805
Stair tread and landing finish upgrades per floor	FLR	2	\$1,975	\$3,950	\$1,053	\$2,105	\$6,055
Base Material/Labor Costs				\$9,046		\$5,794	
Indexed Material/Labor Costs				\$9,109		\$4,131	\$13,240
Construction Mark Up at 20.0%							\$2,648
Original Construction Cost							\$15,888
Date of Original Estimate:	6/10/2021					Inflation	\$0
Current Year Construction Cost							\$15,888
Professional Fees at 16.0%							\$2,542
TOTAL PROJECT COST							\$18,431

All costs shown as Present Value

ANNEX ROOF HATCH REPLACEMENT			
Project Number:	WHICES03	Category Code:	
Priority Sequence:	10	ES4B	
Priority Class:	Critical	System:	EXTERIOR
Project Class:	Corrective Action	Component:	ROOF
Date Basis:	6/10/2021	Element:	REPLACEMENT

Code Application:		Subclass/Savings:	Project Location:
OSHA	1910.27	Not Applicable	Undefined: Floor(s) R

Description

The roof hatch for the annex flat roof is deteriorated and lacks any safety guards for the access ladder. Upgrade this roof access for service personnel.

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
Replace roof access hatch, aluminum with curb, flashing, lock, and cover	EA	1	\$1,948	\$1,948	\$2,025	\$2,025	\$3,973
Vertical safety ladder with fall guard	LF	14	\$54.00	\$756	\$61.00	\$854	\$1,610
Base Material/Labor Costs				\$2,704		\$2,879	
Indexed Material/Labor Costs				\$2,723		\$2,053	\$4,776
Construction Mark Up at 20.0%							\$955
Original Construction Cost							\$5,731
Date of Original Estimate:	6/10/2021		Inflation			\$0	
Current Year Construction Cost							\$5,731
Professional Fees at 16.0%							\$917
TOTAL PROJECT COST							\$6,648

All costs shown as Present Value

FIRE SPRINKLER SYSTEM INSTALLATION			
Project Number:	WHICFS01	Category Code:	
Priority Sequence:	11	FS3A	
Priority Class:	Noncritical	System:	FIRE/LIFE SAFETY
Project Class:	Plant Adaption	Component:	SUPPRESSION
Date Basis:	5/23/2021	Element:	SPRINKLERS

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

Description

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

All costs shown as Present Value

Project Cost Estimate

Task Description	Unit	Qty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Install a wet-pipe sprinkler system, including valves, piping, sprinkler heads, piping supports, etc.	SF	23,470	\$4.70	\$110,309	\$5.74	\$134,718	\$245,027
Base Material/Labor Costs				\$110,309		\$134,718	
Indexed Material/Labor Costs				\$111,081		\$96,054	\$207,135
Construction Mark Up at 20.0%							\$41,427
Original Construction Cost							\$248,562
Date of Original Estimate:	5/23/2021					Inflation	\$0
Current Year Construction Cost							\$248,562
Professional Fees at 16.0%							\$39,770
TOTAL PROJECT COST							\$288,332

All costs shown as Present Value

ASBESTOS ABATEMENT - INTERIOR FINISH SYSTEMS			
Project Number:	WHICHE02	Category Code:	
Priority Sequence:	12	HE6F	
Priority Class:	Noncritical	System:	HEALTH
Project Class:	Plant Adaption	Component:	HAZARDOUS MATERIAL
Date Basis:	6/10/2021	Element:	OTHER

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

Description

Asbestos-containing materials (ACM) are suspected to exist in the nine-inch vinyl floor tile and mastics, in the older adhesive wall tile acoustical panels, and in the textured ceiling finishes. It is also assumed that nine-inch vinyl flooring is present under the carpeting and that textured ceilings are present above the acoustical lay-in ceilings. These areas should be sampled and tested. Assuming a positive test result, these areas should be abated prior to upgrading interior finishes in these areas.

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
Typical asbestos abatement of floor tile and mastic	SF	20,490	\$0.31	\$6,352	\$2.18	\$44,668	\$51,020
Typical asbestos abatement of attached upper wall tile finishes	SF	5,280	\$0.09	\$475	\$1.26	\$6,653	\$7,128
Typical asbestos abatement of textured ceiling finishes for standard height ceilings	SF	18,910	\$0.14	\$2,647	\$2.45	\$46,330	\$48,977
Base Material/Labor Costs				\$9,475		\$97,651	
Indexed Material/Labor Costs				\$9,541		\$69,625	\$79,166
Construction Mark Up at 20.0%							\$15,833
Original Construction Cost							\$94,999
Date of Original Estimate:	6/10/2021					Inflation	\$0
Current Year Construction Cost							\$94,999
Professional Fees at 16.0%							\$15,200
TOTAL PROJECT COST							\$110,199

All costs shown as Present Value

DUAL LEVEL FOUNTAIN UPGRADES			
Project Number:	WHICAC03	Category Code:	
Priority Sequence:	13	AC3F	
Priority Class:	Noncritical	System:	ACCESSIBILITY
Project Class:	Plant Adaption	Component:	INTERIOR PATH OF TRAVEL
Date Basis:	6/10/2021	Element:	DRINKING FOUNTAINS

Code Application:

Subclass/Savings:

Project Location:

ADAAG

211, 602

DOJ2 - Access to Goods & Services

Undefined: Floor(s) 1,2

Description

The water fountains are aging and not fully accessible. Replace the fountains on both floors with fully accessible dual-level units set in wheelchair accessible corridor alcoves.

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
Dual-level drinking fountain	EA	2	\$1,657	\$3,314	\$509	\$1,019	\$4,333
Alcove construction for drinking fountain	EA	2	\$1,195	\$2,389	\$5,099	\$10,198	\$12,587
Base Material/Labor Costs				\$5,703		\$11,217	
Indexed Material/Labor Costs				\$5,743		\$7,997	\$13,741
Construction Mark Up at 20.0%							\$2,748
Original Construction Cost							\$16,489
Date of Original Estimate:	6/10/2021		Inflation			\$0	
Current Year Construction Cost							\$16,489
Professional Fees at 16.0%							\$2,638
TOTAL PROJECT COST							\$19,127

All costs shown as Present Value

EXTERIOR MASONRY WALL RENEWAL			
Project Number:	WHICES01	Category Code:	
Priority Sequence:	14	ES2B	
Priority Class:	Noncritical	System:	EXTERIOR
Project Class:	Corrective Action	Component:	COLUMNS/BEAMS/WALLS
Date Basis:	6/10/2021	Element:	FINISH

Code Application:

Not Applicable

Subclass/Savings:

Not Applicable

Project Location:

Undefined: Floor(s) 1

Description

Localized efflorescence is visible on the south arcade brick and several sections of the perimeter walls have signs of water infiltration damage. Selectively clean and repoint these areas to help maintain a weather-tight building envelope.

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
Restore exterior masonry wall to include cleaning and approximately two percent pointing	SF	4,000	\$0.35	\$1,400	\$2.76	\$11,040	\$12,440
Base Material/Labor Costs				\$1,400		\$11,040	
Indexed Material/Labor Costs				\$1,410		\$7,872	\$9,281
Construction Mark Up at 20.0%							\$1,856
Original Construction Cost							\$11,138
Date of Original Estimate:	6/10/2021					Inflation	\$0
Current Year Construction Cost							\$11,138
Professional Fees at 16.0%							\$1,782
TOTAL PROJECT COST							\$12,920

All costs shown as Present Value

EXTERIOR WOOD CORNICE AND TRIM REFINISHING			
Project Number:	WHICES02	Category Code:	
Priority Sequence:	15	ES2B	
Priority Class:	Noncritical	System:	EXTERIOR
Project Class:	Corrective Action	Component:	COLUMNS/BEAMS/WALLS
Date Basis:	6/10/2021	Element:	FINISH

Code Application:

Not Applicable

Subclass/Savings:

Not Applicable

Project Location:

Building-wide: Floor(s) 1

Description

The upper wood cornice, dental mould and other wood trim is weathered and should be prepped, primed, and repainted to help reduce accelerated weathering and improve exterior aesthetics.

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
Exterior painting or staining to include surface preparation, priming, and two coats	SF	4,700	\$1.45	\$6,815	\$4.90	\$23,030	\$29,845
Base Material/Labor Costs				\$6,815		\$23,030	
Indexed Material/Labor Costs				\$6,863		\$16,420	\$23,283
Construction Mark Up at 20.0%							\$4,657
Original Construction Cost							\$27,940
Date of Original Estimate:	6/10/2021					Inflation	\$0
Current Year Construction Cost							\$27,940
Professional Fees at 16.0%							\$4,470
TOTAL PROJECT COST							\$32,410

All costs shown as Present Value

INSTALL EMERGENCY GENERATOR AND POWER NETWORK			
Project Number:	WHICEL01	Category Code:	
Priority Sequence:	16	EL5A	
Priority Class:	Noncritical	System:	ELECTRICAL
Project Class:	Plant Adaption	Component:	EMERGENCY POWER SYSTEM
Date Basis:	5/23/2021	Element:	GENERATION/DISTRIBUTION

Code Application:

Not Applicable

Subclass/Savings:

Not Applicable

Project Location:

Floor-wide: Floor(s) 1,2

Description

As a part of future renovation efforts, it is recommended that this facility be furnished with a central emergency power system. This includes the installation of an appropriately sized emergency generator, associated automatic transfer switches (ATS), and an emergency distribution network. The emergency power network should support life safety and specific nonessential loads. Loads considered as life safety include egress lighting, exit signs, elevators, and fire alarm systems. Nonessential loads include HVAC equipment, refrigeration equipment, computer equipment, etc.

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
Generator set, including fuel tank, battery, charger, exhaust, and connections	KW	30	\$1,061	\$31,827	\$144	\$4,325	\$36,151
Emergency power network to include power panels, conduit, all connections, and terminations	SF	23,470	\$0.30	\$7,041	\$0.41	\$9,623	\$16,664
Automatic transfer switch (480 V) and connections	AMP	100	\$35.22	\$3,522	\$7.40	\$740	\$4,262
Base Material/Labor Costs				\$42,390		\$14,687	
Indexed Material/Labor Costs				\$42,686		\$10,472	\$53,158
Construction Mark Up at 20.0%							\$10,632
Original Construction Cost							\$63,790
Date of Original Estimate:	5/23/2021					Inflation	\$0
Current Year Construction Cost							\$63,790
Professional Fees at 16.0%							\$10,206
TOTAL PROJECT COST							\$73,996

FACILITY CONDITION ASSESSMENT

SECTION 4

LIFECYCLE COMPONENT
INVENTORY

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	INSTL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
EW01	WALL, EXTERIOR, MASONRY POINTING	BRICK FACADES			10,980	SF	1.12	\$94,456	2001	30		2031
EW07	WALL, EXTERIOR, SIDING, WOOD BOARD, PREMIUM	CORNICE AND WOOD TRIM			4,700	SF	1.12	\$76,147	1990	40	1	2031
WN01	GLASS, WINDOW, ALUMINUM OR WOOD, STANDARD			ANNEX	1,180	SF	1.12	\$202,297	2001	40		2041
WN02	GLASS, WINDOW, ALUMINUM OR WOOD, CUSTOM			MAIN BLDG	2,740	SF	1.12	\$645,985	2001	40		2041
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	ENTRY		BREEZEWAY	3	LEAF	1.00	\$6,093	2001	40		2041
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	MAIN ENTRY		SOUTH ELEV	2	LEAF	1.00	\$4,062	2001	40		2041
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	EGRESS		ANNEX	1	LEAF	1.00	\$2,031	2001	40		2041
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	ENTRY		E WING	2	LEAF	1.00	\$4,062	2001	40		2041
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL	SERVICE		E WING	2	LEAF	1.00	\$4,062	1990	40	2	2032
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL			FLR 2 ANNEX BREEZEWAY	2	LEAF	1.00	\$4,062	1960	40	20	DR
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL			FLR 2 MAIN BLDG BREEZEWAY	2	LEAF	1.00	\$4,062	2001	40		2041
DR28	DOOR OPERATOR, POWER-ASSIST	ENTRY		BREEZEWAY	3	EA	1.00	\$26,187	2001	20		2021
DR28	DOOR OPERATOR, POWER-ASSIST	MAIN ENTRY		SOUTH ELEV	2	EA	1.00	\$17,458	2001	20		2021
DR28	DOOR OPERATOR, POWER-ASSIST	ENTRY		E WING	2	EA	1.00	\$17,458	2001	20		2021
RR06	ROOF - BITUMINOUS, 2-PLY, SBS MODIFIED BITUMEN, MOP	MULTI LEVEL FLAT ROOFS			10,000	SF	1.00	\$67,627	2015	20		2035

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
RR09	ROOF - PANEL, COPPER, STANDING/WELD SEAM (TERNE-COAT)	CANOPIES			300	SF	1.00	\$14,911	1923	70	40	2033
RR18	ROOF - TILE, CLAY, FLAT	PITCHED ROOF			4,550	SF	1.00	\$197,357	1923	70	42	2035
DR24	DOOR LOCK, COMMERCIAL-GRADE	SERVICE		E WING	2	EA	1.00	\$1,489	1990	20	10	DR
DR26	DOOR PANIC HARDWARE	ENTRY		BREEZEWAY	3	EA	1.00	\$3,655	2001	20		2021
DR26	DOOR PANIC HARDWARE	MAIN ENTRY		SOUTH ELEV	2	EA	1.00	\$2,437	2001	20		2021
DR26	DOOR PANIC HARDWARE	EGRESS		ANNEX	1	EA	1.00	\$1,218	2001	20		2021
DR26	DOOR PANIC HARDWARE	ENTRY		E WING	2	EA	1.00	\$2,437	2001	20		2021
DR26	DOOR PANIC HARDWARE			FLR 2 ANNEX BREEZEWAY	2	EA	1.00	\$2,437	1960	20	40	DR
DR26	DOOR PANIC HARDWARE			FLR 2 MAIN BLDG BREEZEWAY	2	EA	1.00	\$2,437	2001	20		2021
IW01	WALL FINISH - PAINT, STANDARD	PAINTED WALLS			60,950	SF	1.00	\$136,403	2001	12	7	DR
IW03	WALL FINISH - TILE, CERAMIC / STONE, STANDARD	CERAMIC WAINSCOT			1,240	SF	1.00	\$47,585	1950	30	40	DR
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	BROADLOOM CARPET			20,490	SF	1.00	\$250,897	2001	12	7	DR
IF03	FLOORING - VINYL COMPOSITION TILE, STANDARD	9X9 VINYL FLR TILE UNDER CARPET			20,490	SF	1.00	\$131,312	1950	20	50	DR
IF06	FLOORING - TILE, CERAMIC / STONE / QUARRY STANDARD	CERAMIC FLOOR TILE			320	SF	1.00	\$10,176	1950	30	40	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
IF06	FLOORING - TILE, CERAMIC / STONE / QUARRY STANDARD	CERAMIC FLOOR TILE			320	SF	1.00	\$10,176	1990	30		DR
IC01	CEILING FINISH - SUSPENDED ACOUSTICAL TILE, STANDARD	ACOUS LAY IN CEILINGS			13,730	SF	1.00	\$138,557	2001	30	-2	2029
IC03	CEILING FINISH - ATTACHED ACOUSTICAL TILE	ADH TILE WALL PANELS			5,280	SF	1.00	\$36,668	1950	30	40	DR
IC04	CEILING FINISH - PAINTED OR STAINED, STANDARD	PAINTED OR STAINED			2,220	SF	1.25	\$6,210	2001	24		2025
IC05	CEILING FINISH - PAINTED OR STAINED, TEXTURED	PAINTED OR STAINED			18,910	SF	1.00	\$70,325	1950	24	46	DR
FX01	PLUMBING FIXTURE - LAVATORY, COUNTER	PC		RRS	2	EA	1.00	\$2,636	1990	35		2025
FX02	PLUMBING FIXTURE - LAVATORY, WALL HUNG	PC		RRS	6	EA	1.00	\$7,981	1990	35		2025
FX06	PLUMBING FIXTURE - SINK, SERVICE/LAUNDRY/UTILITY	FLR MOUNT		JAN CLOS	2	EA	1.00	\$3,585	1950	35		DR
FX10	PLUMBING FIXTURE - URINAL	PC		RRS	1	EA	1.00	\$2,118	1990	35		2025
FX10	PLUMBING FIXTURE - URINAL	PC		RRS	3	EA	1.00	\$6,354	2001	35		2036
FX12	PLUMBING FIXTURE - WATER CLOSET, TANKLESS	PC		RRS	7	EA	1.00	\$13,639	1990	35		2025
BF01	BACKFLOW PREVENTER (<=1 INCH)	BFP-HHW		117D	1	EA	1.00	\$1,049	2018	10	5	2033
BF02	BACKFLOW PREVENTER (1-2 INCHES)	BFP-WM-1		EXT	1	EA	1.00	\$2,339	2010	10	8	2028
BF02	BACKFLOW PREVENTER (1-2 INCHES)	BFP-WM-2		EXT	1	EA	1.00	\$2,339	2010	10	8	2028
PS14	SUPPLY PIPING SYSTEM - OFFICE	COPPER, GALV		THROUGHOUT	23,470	SF	0.98	\$80,841	1954	35	31	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
WH10	WATER HEATER - RESIDENTIAL, GAS (>55 GAL)	WH-1, TANKLESS 199 MBH		117D	80	GAL	1.00	\$3,030	2020	20		2040
WH10	WATER HEATER - RESIDENTIAL, GAS (>55 GAL)	WH-2, TANKLESS 199 MBH		117D	80	GAL	1.00	\$3,030	2020	20		2040
PD14	DRAIN PIPING SYSTEM - OFFICE	CAST IRON, GALV		THROUGHOUT	23,470	SF	0.98	\$121,623	1954	40	26	DR
CH09	CHILLER - AIR COOLED PACKAGE (75-150 TONS)	031-CH-1		EXT	100	TON	1.00	\$130,187	2014	30		2044
AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-002, ASSET 11017		227	1.50	HP	1.00	\$11,059	1968	25	27	DR
AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-004, ASSET 11019		214D	1.50	HP	1.00	\$11,059	1954	25	41	DR
AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-005, ASSET 11022		214D	1.50	HP	1.00	\$11,059	1954	25	41	DR
AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-003, ASSET 11021		118	1.50	HP	1.00	\$11,059	1954	25	41	DR
AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-001, ASSET 11020		119A	1.50	HP	1.00	\$11,059	1968	25	27	DR
AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-006, ASSET 11022		117D	1.50	HP	1.00	\$11,059	1954	25	41	DR
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-1		EF-1	1	EA	1.00	\$7,951	1954	20	46	DR
HV14	HVAC DISTRIBUTION NETWORKS - OFFICE	CAV, ZONED		THROUGHOUT	23,470	SF	0.98	\$596,767	2002	40		2042
HX05	HEAT EXCHANGER - SHELL & TUBE STEAM TO WATER (>85 GPM)	HX-1		117D	120	GPM	1.00	\$17,645	1954	35	31	DR
PH01	PUMP - ELECTRIC (<=10 HP)	031-HWP-1		117D	3	HP	1.00	\$4,936	2012	25		2037
PH01	PUMP - ELECTRIC (<=10 HP)	031-DHWP-1		117D	1	HP	1.00	\$1,645	2020	25		2045

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
PH01	PUMP - ELECTRIC (<=10 HP)	031-CHWP		117D	7.50	HP	1.00	\$12,339	1990	25	5	DR
PH01	PUMP - ELECTRIC (<=10 HP)	031-DHWP-2		117D	1	HP	1.00	\$1,645	2020	25		2045
PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	CP-1		117D	3	HP	1.00	\$22,310	2000	20		DR
AC01	AIR COMPRESSOR SYSTEM - HVAC CONTROLS (<=6 TOTAL HP)	CAC-1		117D	1	HP	1.00	\$1,794	2010	20		2030
BA114	HVAC CONTROLS SYSTEM - OFFICE	HYBRID-DDC, PNEUM		THROUGHOUT	23,470	SF	0.98	\$93,085	1985	18	17	DR
FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER	PA, SIMPLEX, ASSET 11024		1ST FL CORR	1	EA	1.00	\$37,851	1998	15	7	DR
FA02	FIRE ALARM SYSTEM - DEVICES	HS, MP, SD		THROUGHOUT	23,470	SF	0.98	\$93,827	1998	18	4	DR
SE14	ELECTRICAL DISTRIBUTION NETWORK - OFFICE	1954 RENO		THROUGHOUT	23,470	SF	0.98	\$451,505	1954	40	26	DR
SG03	MAIN SWITCHBOARD W/BREAKERS (600-800 AMP)	MDP		119	800	AMP	0.60	\$34,465	1954	20	46	DR
TX16	TRANSFORMER - OIL-FILLED, 3PH, 5-15KV PRIMARY (225-300 KVA)	ERMCO		SE SITE	300	KVA	1.00	\$41,889	2005	30		2035
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-002		227	1.50	HP	1.00	\$1,051	2012	12		2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-004		214D	1.50	HP	1.00	\$1,051	2008	12		DR
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-005		214D	1.50	HP	1.00	\$1,051	2008	12		DR
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-003		118	1.50	HP	1.00	\$1,051	2008	12		DR
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-001		119A	1.50	HP	1.00	\$1,051	2012	12		2024

RENEWABLE COMPONENT INVENTORY

COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	QTY	UNITS	CPLX FACTR	TOTAL COST	IN STL DATE	USEFUL LIFE	USEFUL LIFE ADJ	REPL YEAR
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-006		117D	1.50	HP	1.00	\$1,051	2012	12		2024
LE03	LIGHTING - EXTERIOR, RECESSED (INC, CFL, LED)	REC LED		EXT	1	EA	1.00	\$235	2018	15		2033
LE07	LIGHTING - EXTERIOR, WALL FLOOD (SV, MH, ID, LED)	HID SCONCE		EXT	6	EA	1.00	\$5,930	1990	15	15	DR
LE08	LIGHTING - EXTERIOR, WALL LANTERN or FLOOD (INC, CFL, LED)	CFL FIX		EXT	3	EA	1.00	\$1,245	1990	15	15	DR
LI14	LIGHTING SYSTEM, INTERIOR - OFFICE	RETRO T8 TROFF		THROUGHOUT	23,470	SF	0.98	\$271,940	1980	20	20	DR
LI14	LIGHTING SYSTEM, INTERIOR - OFFICE	2005 UPG		SELECT SPACES	5,000	SF	1.13	\$66,801	2005	20		2025
Grand Total:								\$4,461,950				

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
DR08	DOOR AND FRAME, EXTERIOR, SWINGING, HOLLOW METAL			FLR 2 ANNEX BREEZEWAY	B2030	2	LEAF	\$4,062	DR
DR24	DOOR LOCK, COMMERCIAL-GRADE	SERVICE		E WING	C1020	2	EA	\$1,489	DR
DR26	DOOR PANIC HARDWARE			FLR 2 ANNEX BREEZEWAY	C1020	2	EA	\$2,437	DR
IW01	WALL FINISH - PAINT, STANDARD	PAINTED WALLS			C3010	60,950	SF	\$136,403	DR
IW03	WALL FINISH - TILE, CERAMIC / STONE, STANDARD	CERAMIC WAINSCOT			C3010	1,240	SF	\$47,585	DR
IF01	FLOORING - CARPET, TILE OR ROLL, STANDARD	BROADLOOM CARPET			C3020	20,490	SF	\$250,897	DR
IF03	FLOORING - VINYL COMPOSITION TILE, STANDARD	9X9 VINYL FLR TILE UNDER CARPET			C3020	20,490	SF	\$131,312	DR
IF06	FLOORING - TILE, CERAMIC / STONE / QUARRY STANDARD	CERAMIC FLOOR TILE			C3020	320	SF	\$10,176	DR
IF06	FLOORING - TILE, CERAMIC / STONE / QUARRY STANDARD	CERAMIC FLOOR TILE			C3020	320	SF	\$10,176	DR
IC03	CEILING FINISH - ATTACHED ACOUSTICAL TILE	ADH TILE WALL PANELS			C3030	5,280	SF	\$36,668	DR
IC05	CEILING FINISH - PAINTED OR STAINED, TEXTURED	PAINTED OR STAINED			C3030	18,910	SF	\$70,325	DR
FX06	PLUMBING FIXTURE - SINK, SERVICE/LAUNDRY/UTILITY	FLR MOUNT		JAN CLOS	D2010	2	EA	\$3,585	DR

RECURRING NEEDS BY YEAR

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

PS14	SUPPLY PIPING SYSTEM - OFFICE	COPPER, GALV			D2020	23,470	SF	\$80,841	DR
PD14	DRAIN PIPING SYSTEM - OFFICE	CAST IRON, GALV			D2030	23,470	SF	\$121,623	DR
FN20	FAN - CENTRIFUGAL ROOF EXHAUST, 1/4" SP (25"-30" DIAMETER)	EF-1			D3040	1	EA	\$7,951	DR
HX05	HEAT EXCHANGER - SHELL & TUBE STEAM TO WATER (>85 GPM)	HX-1			D3040	120	GPM	\$17,645	DR
PH01	PUMP - ELECTRIC (<=10 HP)	031-CHWP			D3040	7.50	HP	\$12,339	DR
PH14	CONDENSATE RECEIVER, ELECTRIC, 2 PUMPS	CP-1			D3040	3	HP	\$22,310	DR
AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-002, ASSET 11017			D3040	1.50	HP	\$11,059	DR
AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-004, ASSET 11019			D3040	1.50	HP	\$11,059	DR
AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-005, ASSET 11022			D3040	1.50	HP	\$11,059	DR
AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-003, ASSET 11021			D3040	1.50	HP	\$11,059	DR
AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-001, ASSET 11020			D3040	1.50	HP	\$11,059	DR
AH02	AIR HANDLING UNIT - INDOOR (1.25-1.75 HP)	031-AHU-006, ASSET 11022			D3040	1.50	HP	\$11,059	DR
BA14	HVAC CONTROLS SYSTEM - OFFICE	HYBRID-DDC, PNEUM			D3060	23,470	SF	\$93,085	DR
FA01	FIRE ALARM PANEL, DIALER, BATTERY, & CHARGER	PA, SIMPLEX, ASSET 11024			D4030	1	EA	\$37,851	DR

RECURRING NEEDS BY YEAR

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

FA02	FIRE ALARM SYSTEM - DEVICES	HS, MP, SD			D4030	23,470	SF	\$93,827	DR
SE14	ELECTRICAL DISTRIBUTION NETWORK - OFFICE	1954 RENO			D5010	23,470	SF	\$451,505	DR
SG03	MAIN SWITCHBOARD W/BREAKERS (600-800 AMP)	MDP			D5010	800	AMP	\$34,465	DR
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-004			D5010	1.50	HP	\$1,051	DR
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-005			D5010	1.50	HP	\$1,051	DR
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-003			D5010	1.50	HP	\$1,051	DR
LE07	LIGHTING - EXTERIOR, WALL FLOOD (SV, MH, ID, LED)	HID SCONCE			D5020	6	EA	\$5,930	DR
LE08	LIGHTING - EXTERIOR, WALL LANTERN or FLOOD (INC, CFL, LED)	CFL FIX			D5020	3	EA	\$1,245	DR
LI14	LIGHTING SYSTEM, INTERIOR - OFFICE	RETRO T8 TROFF			D5020	23,470	SF	\$271,940	DR
TOTAL DEFERRED RENEWAL COST								\$2,027,180.48	

RECURRING NEEDS BY YEAR

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

2021									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
DR28	DOOR OPERATOR, POWER-ASSIST	ENTRY		BREEZEWAY	B2030	3	EA	\$26,187	2021
DR28	DOOR OPERATOR, POWER-ASSIST	MAIN ENTRY		SOUTH ELEV	B2030	2	EA	\$17,458	2021
DR28	DOOR OPERATOR, POWER-ASSIST	ENTRY		E WING	B2030	2	EA	\$17,458	2021
DR26	DOOR PANIC HARDWARE	ENTRY		BREEZEWAY	C1020	3	EA	\$3,655	2021
DR26	DOOR PANIC HARDWARE	MAIN ENTRY		SOUTH ELEV	C1020	2	EA	\$2,437	2021
DR26	DOOR PANIC HARDWARE	EGRESS		ANNEX	C1020	1	EA	\$1,218	2021
DR26	DOOR PANIC HARDWARE	ENTRY		E WING	C1020	2	EA	\$2,437	2021
DR26	DOOR PANIC HARDWARE			FLR 2 MAIN BLDG BREEZEWAY	C1020	2	EA	\$2,437	2021
2021 PROJECTED COMPONENT REPLACEMENT COST								\$73,285.56	

No Projected Component Replacement Cost for Asset No. WHIC for 2022

RECURRING NEEDS BY YEAR

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

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

2024									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-002			D5010	1.50	HP	\$1,148	2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-001			D5010	1.50	HP	\$1,148	2024
VF01	VARIABLE FREQUENCY DRIVE (<=5 HP)	VFD 031-AHU-006			D5010	1.50	HP	\$1,148	2024
2024 PROJECTED COMPONENT REPLACEMENT COST								\$3,444.71	

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
IC04	CEILING FINISH - PAINTED OR STAINED, STANDARD	PAINTED OR STAINED			C3030	2,220	SF	\$6,990	2025
FX01	PLUMBING FIXTURE - LAVATORY, COUNTER	PC		RRS	D2010	2	EA	\$2,967	2025
FX02	PLUMBING FIXTURE - LAVATORY, WALL HUNG	PC		RRS	D2010	6	EA	\$8,983	2025
FX10	PLUMBING FIXTURE - URINAL	PC		RRS	D2010	1	EA	\$2,384	2025
FX12	PLUMBING FIXTURE - WATER CLOSET, TANKLESS	PC		RRS	D2010	7	EA	\$15,351	2025
LI14	LIGHTING SYSTEM, INTERIOR - OFFICE	2005 UPG			D5020	5,000	SF	\$75,185	2025
2025 PROJECTED COMPONENT REPLACEMENT COST								\$111,859.45	

No Projected Component Replacement Cost for Asset No. WHIC for 2026

RECURRING NEEDS BY YEAR

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

No Projected Component Replacement Cost for Asset No. WHIC for 2027

2028									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
BF02	BACKFLOW PREVENTER (1-2 INCHES)	BFP-WM-1			D2020	1	EA	\$2,877	2028
BF02	BACKFLOW PREVENTER (1-2 INCHES)	BFP-WM-2			D2020	1	EA	\$2,877	2028
2028 PROJECTED COMPONENT REPLACEMENT COST								\$5,753.77	

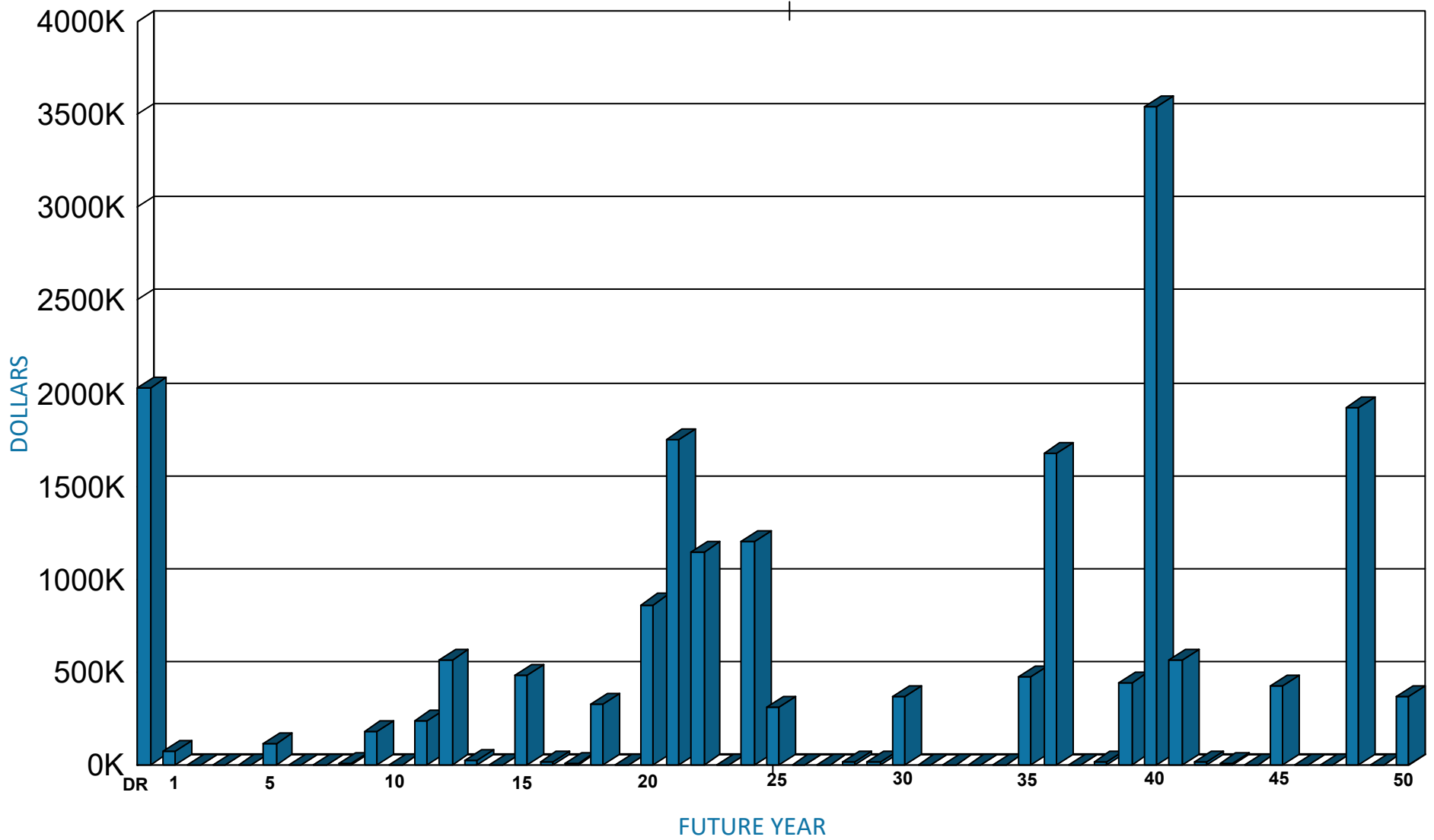
2029									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
IC01	CEILING FINISH - SUSPENDED ACOUSTICAL TILE, STANDARD	ACOUS LAY IN CEILINGS			C3030	13,730	SF	\$175,520	2029
2029 PROJECTED COMPONENT REPLACEMENT COST								\$175,519.95	

RECURRING NEEDS BY YEAR

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

2030									
COMP CODE	COMPONENT DESCRIPTION	IDENTIFIER	CUSTOMER ID	LOCATION	UNI-FORMAT	QTY	UNITS	REPLACEMENT COST	YEAR
AC01	AIR COMPRESSOR SYSTEM - HVAC CONTROLS (≤6 TOTAL HP)	CAC-1			D3060	1	HP	\$2,341	2030
2030 PROJECTED COMPONENT REPLACEMENT COST								\$2,340.96	

RECURRING COMPONENT EXPENDITURE PROJECTIONS

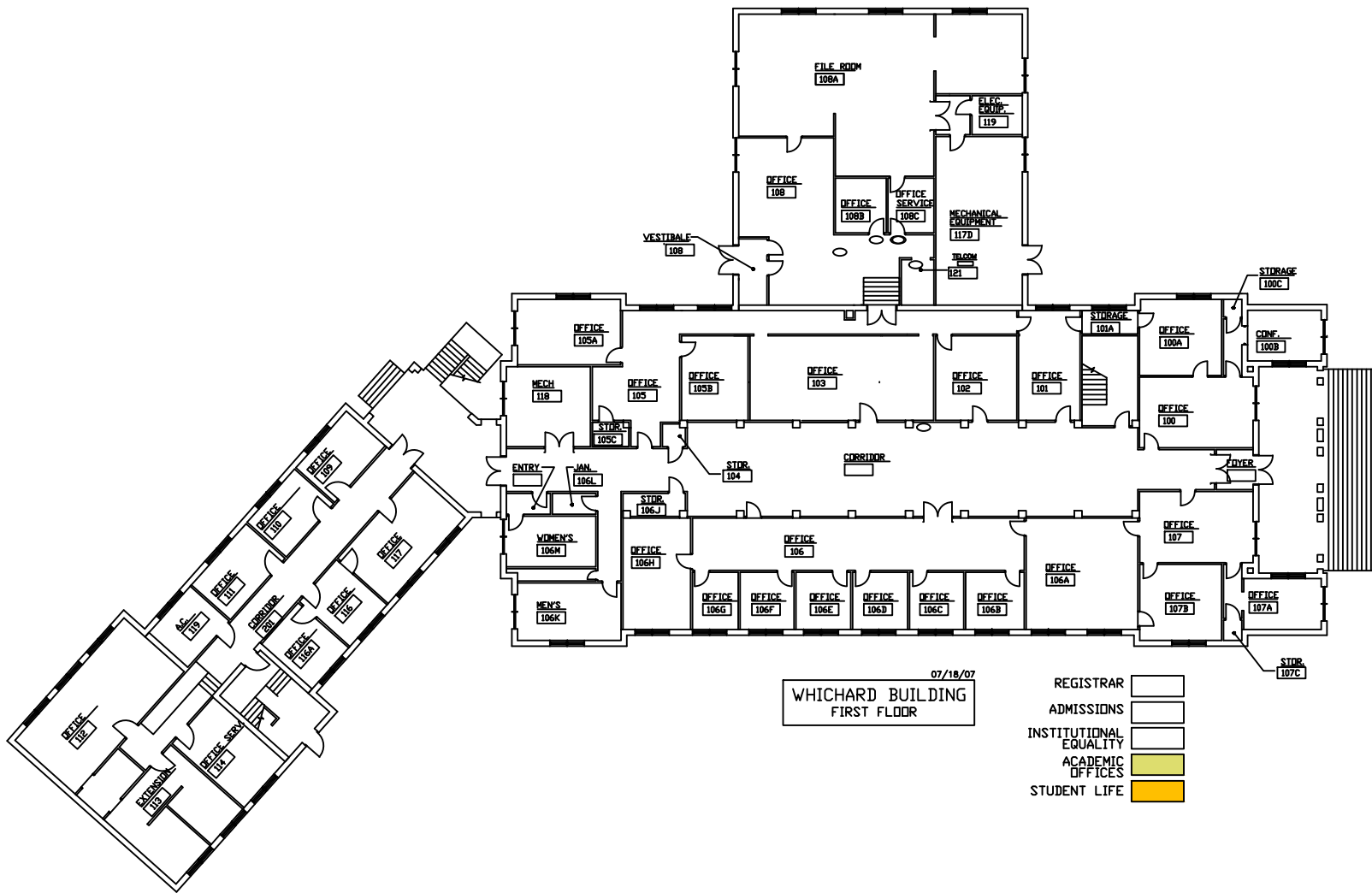


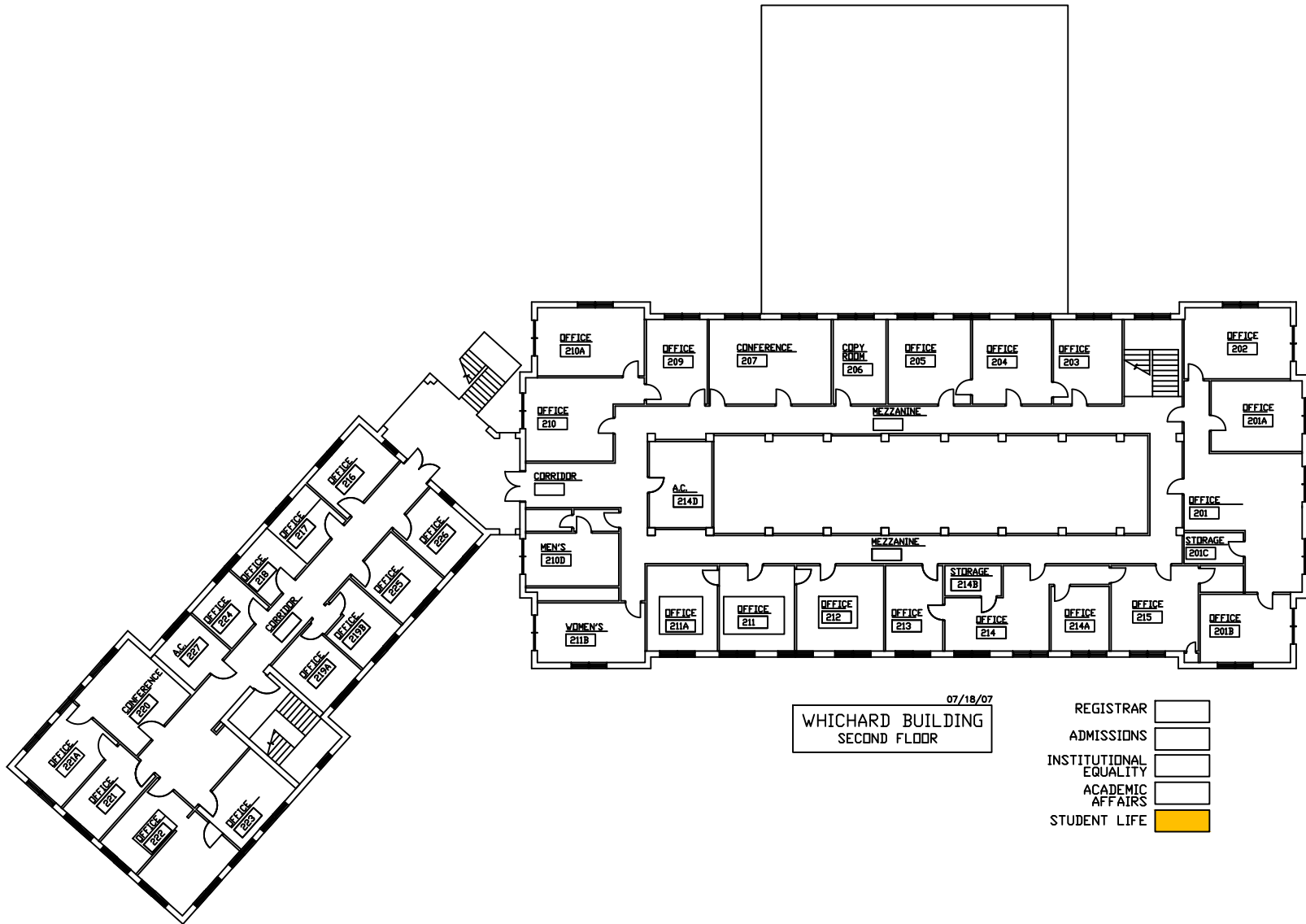
Average Annual Renewal Cost per SF \$7.67

FACILITY CONDITION ASSESSMENT

SECTION 5

DRAWINGS





FACILITY CONDITION ASSESSMENT

SECTION 6

PHOTOGRAPHS



WHIC001a 5/10/2021
Newer built-up roof and cap sheet
Annex roof



WHIC001e 5/10/2021
Air handling unit AHU-002
Room 227



WHIC002a 5/10/2021
Deteriorated roof hatch
Annex roof



WHIC002e 5/10/2021
Zoned deck for AHU-002
Room 227



WHIC003a 5/10/2021
Older pitched clay tile roof and newer flat side roof
Main roof



WHIC003e 5/10/2021
VFD for AHU-002
Room 227



WHIC004a 5/10/2021
Metal cap flashing detail on low parapet wall
Annex roof perimeter



WHIC004e 5/10/2021
Retrofitted T8 troffer lighting fixture
Stairwell



WHIC005a 5/10/2021
Upper wood cornice work and wood trim have peeling
paint
Upper exterior of main building



WHIC005e 5/10/2021
Horn with neon strobe
Second floor corridor



WHIC006a 5/10/2021
9x9 vinyl floor tile and nonaccessible handrails
Second floor, annex stair tower



WHIC006e 5/10/2021
Manual pull fire alarm device
Second floor corridor



WHIC007a 5/10/2021
Low guardrail and inadequate switchback rail
Second floor, annex stair tower



WHIC007e 5/10/2021
Vintage local panelboard
Second floor corridor



WHIC008a 5/10/2021
No fall protection for ladder at top of stair tower
Second floor, annex stair tower



WHIC008e 5/10/2021
Ceiling-mounted HID lighting fixture
Second floor, breezeway



WHIC009a 5/10/2021
Poorly located, nonaccessible, aging water fountain
Second floor, stair tower



WHIC009e 5/10/2021
Air handling unit AHU-004
Room 214D



WHIC010a 5/10/2021
Older carpeting and acoustical ceiling
Second floor, annex corridor



WHIC010e 5/10/2021
Vintage local panelboard
Room 214D



WHIC011a 5/10/2021
Nonrated corridor door with knob hardware
Second floor, annex corridor



WHIC011e 5/10/2021
VFD for AHU-004
Room 214D



WHIC012a 5/10/2021
No positive latching hardware on stair tower door
Second floor, stair tower



WHIC012e 5/10/2021
Air handling unit AHU-005
Room 214D



WHIC013a 5/10/2021
Signs of possible localized water infiltration
Second floor, perimeter wall



WHIC013e 5/10/2021
VFD for AHU-005
Room 214D



WHIC014a 5/10/2021
Upgraded accessible room signage
Second floor corridor



WHIC014e 5/10/2021
Pneumatic HVAC controls
Room 214D



WHIC015a 5/10/2021
Updated exterior glazing
Second floor, annex



WHIC015e 5/10/2021
Retrofitted recessed T8 lighting fixtures
First floor corridor



WHIC016a 5/10/2021
Textured ceilings
Second floor, annex office



WHIC016e 5/10/2021
Air handling unit AHU-003
Room 118



WHIC017a 5/10/2021
Older entry doors with security swipe
Second floor, annex south elevation



WHIC017e 5/10/2021
VFD for AHU-003
Room 118



WHIC018a 5/10/2021
Newer exterior doors
Second floor, original building north exit



WHIC018e 5/10/2021
Retrofitted T8 troffer lighting fixture
Room 106K



WHIC019a 5/10/2021
Newer wall-hung urinals
Second floor, men's restroom



WHIC019e 5/10/2021
Local pneumatic thermostat
First floor corridor



WHIC020a 5/10/2021
Older standard tankless water closet
Second floor, men's restroom



WHIC020e 5/10/2021
Main fire alarm panel
First floor corridor



WHIC021a 5/10/2021
Older wall-hung lavatories
Second floor, men's restroom



WHIC021e 5/10/2021
Fire extinguisher
First floor corridor



WHIC022a 5/10/2021
Tile wainscot and acoustical ceiling
Second floor, men's restroom



WHIC022e 5/10/2021
Air handling unit AHU-001
Room 108



WHIC023a 5/10/2021
Older counter lavatories
Second floor, women's restroom



WHIC023e 5/10/2021
VFD for AHU-001
Room 119A



WHIC024a 5/10/2021
Older standard tankless water closet
Second floor, women's restroom



WHIC024e 5/10/2021
Ceiling-mounted HID lighting fixture
Exterior soffit



WHIC025a 5/10/2021
Narrow door clearances and restroom entry door
Second floor, women's restroom



WHIC025e 5/10/2021
Heating hot water pump
Room 117D



WHIC026a 5/10/2021
Aging, single-level water fountain
Second floor, original building corridor



WHIC026e 5/10/2021
Potential asbestos piping
Room 117D



WHIC027a 5/10/2021
Wire glass glazing in central atrium
Second floor, original building



WHIC027e 5/10/2021
Backflow preventer for heating hot water makeup
Room 117D



WHIC028a 5/10/2021
Nonaccessible railing detail on stair tower
Second floor, original stair tower



WHIC028e 5/10/2021
Controls air compressor
Room 117D



WHIC029a 5/10/2021
9x9 vinyl flooring on stair treads
Second floor, original stair tower



WHIC029e 5/10/2021
Heating hot water shell-and-tube heat exchanger
Room 117D



WHIC030a 5/10/2021
Carpeting and acoustical ceiling in vestibule
First floor, original building



WHIC030e 5/10/2021
Duplex condensate receiver
Room 117D



WHIC031a 5/10/2021
Typical carpeting and acoustical ceiling
First floor, original building office suite



WHIC031e 5/10/2021
Tankless gas-fired water heater with circulation pump
Room 117D



WHIC032a 5/10/2021
Typical carpeting and acoustical ceiling
First floor, original building office



WHIC032e 5/10/2021
Tankless gas-fired water heater with circulation pump
Room 117D



WHIC033a 5/10/2021
Carpeting and acoustical ceiling
First floor, east wing addition



WHIC033e 5/10/2021
DDC HVAC controls
Room 117D



WHIC034a 5/10/2021
More localized signs of water infiltration
First floor, east wing addition



WHIC034e 5/10/2021
VFD for AHU-006
Room 117D



WHIC035a 5/10/2021
Upper adhesive wall tiles
First floor, east wing addition



WHIC035e 5/10/2021
Air handling unit AHU-006
Room 117D



WHIC036a 5/10/2021
One old and one newer wall-hung urinal
First floor, men's restroom



WHIC036e 5/10/2021
Chilled water pump
Room 117D



WHIC037a 5/10/2021
Partially accessible toilet stall
First floor, men's restroom



WHIC037e 5/10/2021
Stepdown dry-type transformer
Room 119



WHIC038a 5/10/2021
Wall-hung lavatories
First floor, men's restroom



WHIC038e 5/10/2021
Main distribution panelboard
Room 119



WHIC039a 5/10/2021
Ceramic floor tile and wainscoting
First floor, men's restroom



WHIC039e 5/10/2021
Centrifugal exhaust fan
Entry



WHIC040a 5/10/2021
Older wall-mounted service sink
First floor, janitors closet



WHIC040e 5/10/2021
Recessed LED lighting fixture
Exterior soffit



WHIC041a 5/10/2021
Wall-hung lavatories
First floor, women's restroom



WHIC041e 5/10/2021
Air-cooled packaged chiller
Courtyard



WHIC042a 5/10/2021
Standard tankless water closet
First floor, women's restroom



WHIC042e 5/10/2021
Backflow preventers for water main
Site



WHIC043a 5/10/2021
Partially accessible toilet stall
First floor, women's restroom



WHIC044a 5/10/2021
Two older water fountains set at same height
First floor, original building corridor



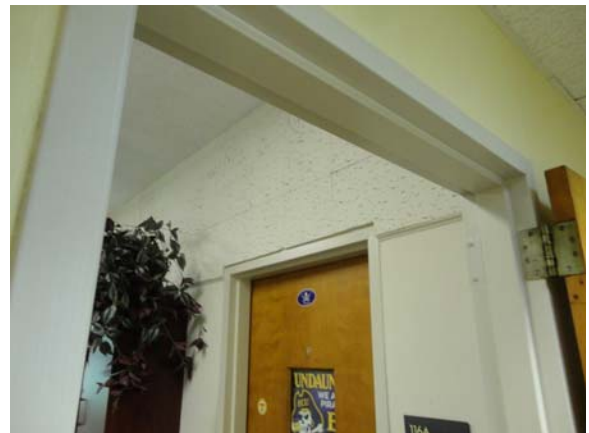
WHIC045a 5/10/2021
Carpeting and painted ceiling
Original building, central atrium



WHIC046a 5/10/2021
Badly deteriorated wood flooring
First floor, mechanical room



WHIC047a 5/10/2021
Carpeting and acoustical ceiling
First floor, annex corridor



WHIC048a 5/10/2021
Adhesive upper wall tiles
First floor, annex office



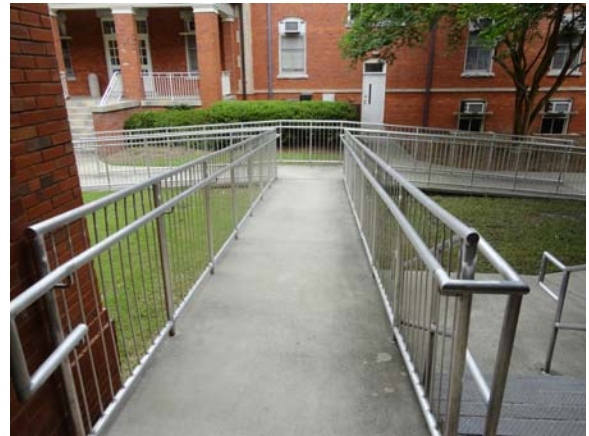
WHIC049a 5/10/2021
Inadequate handrails on corridor steps
First floor, north annex corridor



WHIC050a 5/10/2021
Textured ceilings
First floor, north annex



WHIC051a 5/10/2021
Wheelchair directional signs for annex
First floor, annex breezeway



WHIC052a 5/10/2021
Permanent accessible ramp
East elevation of annex



WHIC053a 5/10/2021
Brick facade and glazing
East elevation of annex



WHIC054a 5/10/2021
Brick facade and glazing
Northeast corner of annex



WHIC055a 5/10/2021
Metal egress door at stair tower
West elevation of annex



WHIC056a 5/10/2021
Brick facade and glazing
West elevation of original building



WHIC057a 5/10/2021
Weathered upper wood cornice
Upper west elevation of original building



WHIC058a 5/10/2021
Peeling paint under windows
Lower west elevation of original building



WHIC059a 5/10/2021
Brick facade and glazing
South elevation of original building



WHIC060a 5/10/2021
Weathering on upper cornice
Upper south elevation of original building



WHIC061a 5/10/2021
Signs of efflorescence on entry steps
South elevation of original building



WHIC062a 5/10/2021
Older hollow-metal service doors
South elevation of east wing addition



WHIC063a 5/10/2021
Brick facade
East elevation of east wing



WHIC064a 5/10/2021
Entry doors and copper clad canopy
North elevation of east wing



WHIC065a 5/10/2021
Aging exterior metal egress stair with open risers
Northeast breezeway



WHIC066a 5/10/2021
Newer hollow-metal doors
South entry to first floor annex



WHIC067a 5/10/2021
Newer hollow-metal door with sidelights and power assist
First floor, north entry to original building



WHIC068a 5/10/2021
Accessible handrails on main south entry steps
South elevation of original building



WHIC069a 5/10/2021
Localized dry rot on soffit
South elevation



WHIC070a 5/10/2021
One of three copper clad entry canopies
South elevation of east wing addition

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	WHIT
Asset Name	Whichard Building (031)
Year Built or Last Energy Renovation	1954

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.

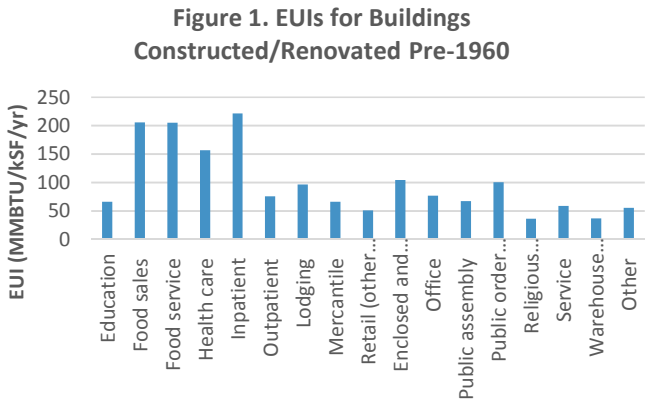
Metric #1: Energy Use Intensity (EUI)

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	Office
Range of Years Constructed/Last Major Energy Renovation	Pre-1960
Benchmark EUI (MMBTU/kSF/yr) =	76.9
Building EUI to be Calculated by Client (MMBTU/kSF/yr) =	

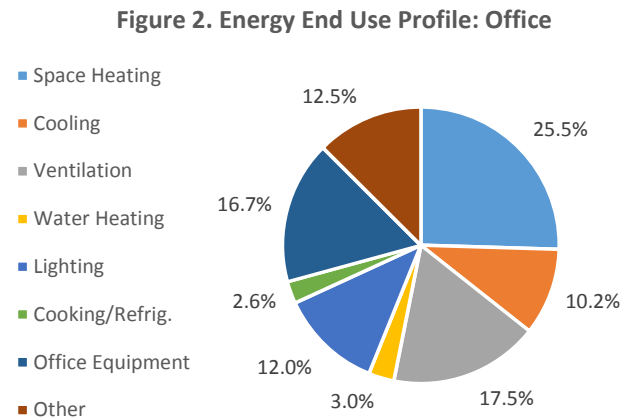
TABLE 3. EUI COMPARISON	
Very Energy Efficient (consumes more than 30% less energy)	EUI < 53.8
Energy Efficient (consumes 10% to 30% less energy)	53.8 <= EUI <= 69.2
Similar (consumes within 10% less or 10% more energy)	69.2 < EUI < 84.6
Energy Inefficient (consumes 10% to 30% more energy)	84.6 <= EUI <= 100
Very Energy Inefficient (consumes more than 30% more energy)	EUI > 100



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: OFFICE	
Space Heating	25.5%
Cooling	10.2%
Ventilation	17.5%
Water Heating	3.0%
Lighting	12.0%
Cooking/Refrig.	2.6%
Office Equipment	16.7%
Other	12.5%
Total	100.0%



References:

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

ENERGY CONSERVATION OPPORTUNITIES

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

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

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

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

ECM CATEGORY	ECM RECOMMENDED FOR FURTHER CONSIDERATION	COST CATEGORY
Lighting - Interior	INSTALL EFFICIENT LIGHTING FIXTURES. While incandescent lamp fixtures have a low initial cost, the lamps are energy inefficient and have a short useful life. Consider CFL and LED lighting instead. HID lamps are necessary in some applications; however, alternatives such as high bay, T5 lighting fixtures or LED fixtures should be considered as an alternate. T12 lamps are an outdated lighting technology that should be replaced with newer technologies such as T8, T5, or LED lamp fixtures.	N/A, Varies
Lighting - Interior, Controls	INSTALL LIGHTING CONTROLS. Oftentimes, lighting fixtures on switches do not get turned off when a space is unoccupied. Occupancy sensors, photocell sensors, and lighting control systems can help reduce lighting energy consumption. For example, consider installing occupancy sensors in offices, common areas, and other areas that have variable occupancy. In areas where there is natural lighting, consider using photocell sensors to dim or shut off fixtures that aren't needed. Alternatively, install a comprehensive light control system that uses time clock schedules, occupancy sensors, photocell sensors, etc., to monitor and control lighting throughout an entire building.	N/A, Varies
Lighting - Exterior	INSTALL EFFICIENT LIGHTING FIXTURES. While incandescent lamp fixtures have a low initial cost, the lamps are energy inefficient and have a short useful life. Consider CFL and LED lighting instead. HID lamps are necessary in some applications; however, alternatives such as high intensity T5 or LED fixtures should be considered. T12 lamps are an outdated lighting technology that should be replaced with newer technologies such as high intensity fluorescent or LED lamp fixtures.	N/A, Varies
Lighting - Exterior, Controls	INSTALL LIGHTING CONTROLS. Consider using photocell sensors or timeclocks to shut off building/parking lot fixtures during daylight hours.	N/A, Varies
HVAC - Central Heating	INSTALL AN ENERGY-EFFICIENT BOILER. Energy-efficient boilers and condensing boilers achieve higher efficiencies than conventional boilers. Research FEMP designated commercial boilers to find the most energy-efficient options.	CAP

ECM CATEGORY	ECM RECOMMENDED FOR FURTHER CONSIDERATION	COST CATEGORY
HVAC - Hydronic Dist. Network Insulation	INSULATE THE HVAC PIPING. Insulating HVAC piping reduces heat loss and decreases energy consumption.	CAP
HVAC - Air Dist. Network Insulation	INSULATE DUCTWORK. Insulating HVAC ductwork reduces heat loss and decreases energy consumption.	CAP
HVAC - Air Dist. Network, VAV	INSTALL VARIABLE AIR VOLUME (VAV) SYSTEM. In constant air volume (CAV) systems, more energy is required to heat, cool, and distribute air than in VAV systems. Consider a VAV system to reduce energy consumption, mainly fan energy consumption.	CAP
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
HVAC - Unitary Equipment	INSTALL EFFICIENT UNITARY EQUIPMENT. Consider replacing the existing equipment with FEMP recommended/ENERGY STAR qualified unitary equipment.	LC/NC; CAP
HVAC - Unitary Equipment Controls	UPGRADE CONTROLS. Install controls that allow the unitary equipment to be programmed for on/off and/or thermostat setpoints so that the systems operate at appropriate temperatures and do not run when the building/space is unoccupied.	LC/NC; CAP
HVAC - Building Comfort/Tuning	CONDUCT RETROCOMMISSIONING (RCX). RCx the building to identify and address operating deficiencies, optimize HVAC operations, reduce energy bills, and improve occupant comfort.	CAP
Electrical - VFDs	INSTALL VARIABLE FREQUENCY DRIVES. Install VFDs on motors greater than 5 hp to reduce energy consumption by varying motor speed based on system demand.	O&M; LC/NC; CAP
Plumbing - DHW Piping Insulation	INSULATE THE DOMESTIC HOT WATER PIPES. Insulating piping reduces heat loss, thereby reducing the amount of energy consumption.	LC/NC; CAP