EAST CAROLINA UNIVERSITY

HOWELL SCIENCE

ASSET CODE: HOWE

FACILITY CONDITION ANALYSIS

AUGUST 25, 2010

ISES CORPORATION

TABLE OF CONTENTS

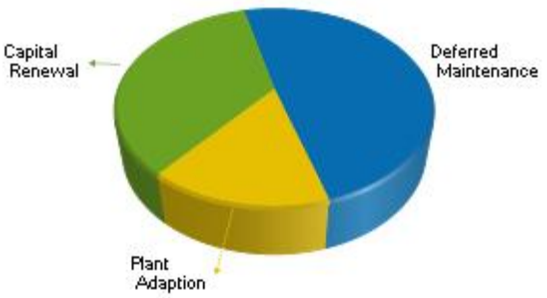
FACILITY CONDITION ANALYSIS

SECTION 1

GENERAL ASSET INFORMATION

EXECUTIVE SUMMARY - HOWELL SCIENCE

PROJECT COSTS BY CLASSIFICATION



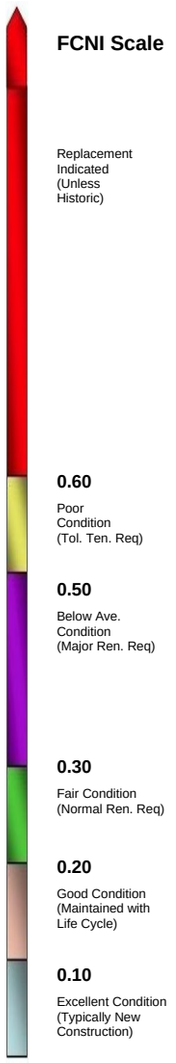
Building Code:	HOWE
Building Name:	HOWELL SCIENCE
Year Built:	1969
Building Use:	Laboratory
Square Feet:	107,569

Project Costs by Priority

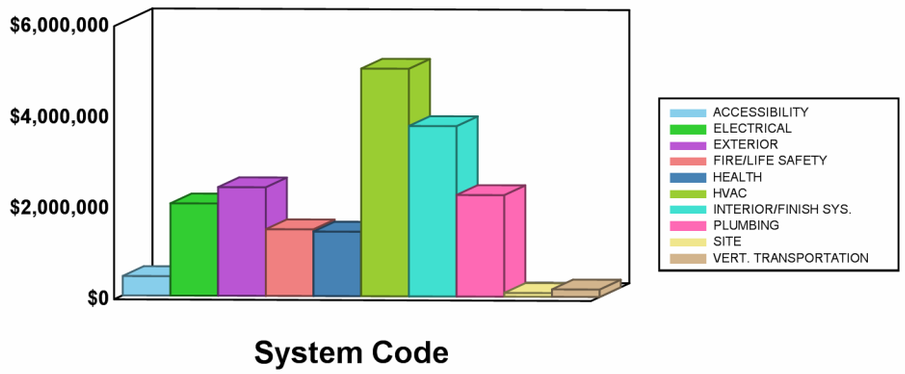
Priority 1:	$0	
Priority 2:	$957,556	
Priority 3:	$13,288,515	
Priority 4:	$4,695,780	
Total Project Costs:		**$18,941,850**
Facility Replacement Cost:		**$45,372,044**

Facility Condition Needs Index (FCNI): **0.42**

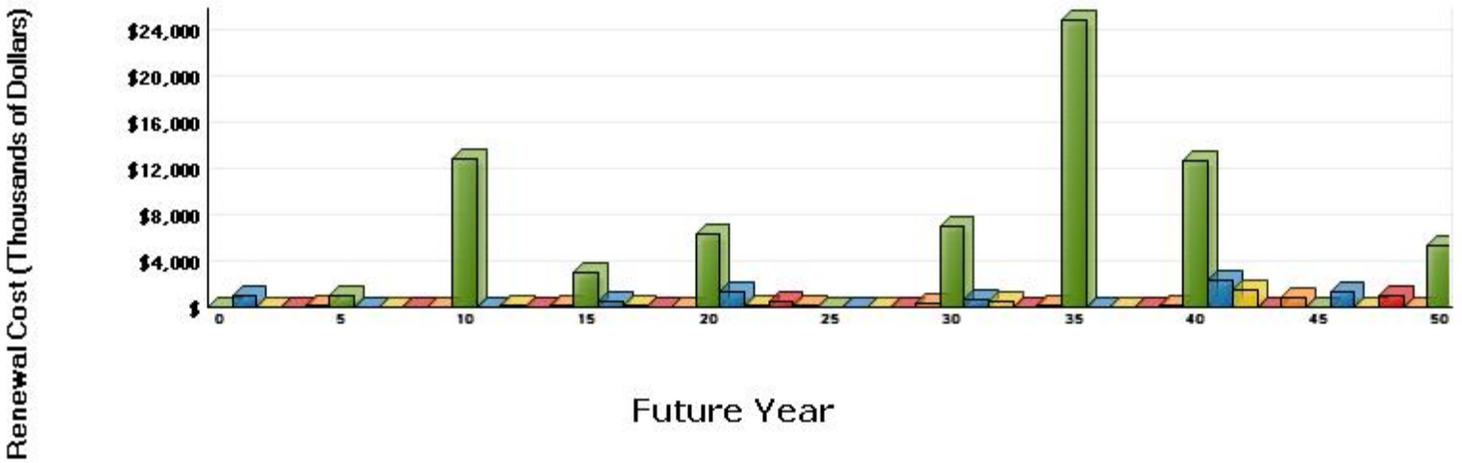
(Project Costs / Replacement Cost)



PROJECT COSTS BY SYSTEM CODE



LIFE CYCLE MODEL EXPENDITURE PROJECTIONS



Average Annual Renewal Cost Per SqFt $7.19

B. ASSET SUMMARY

Built in 1969, Howell Science is a four-story lab science complex with a partial basement. The complex is comprised of three wings, the east, north, and south wings, connected by a central wing. Each wing houses offices and labs for separate science disciplines. The first floor central corridor houses a mid-sized smart classroom. The south wing has a small addition containing a greenhouse on the upper floor and a research area on the basement level. The building has a concrete structure on a slab-on-grade foundation, with a concrete vault for the partial basement. The exterior finishes are brick with concrete trim and modified bitumen and single-ply roof systems. Howell Science totals 107,569 square feet and is located at the main campus of East Carolina University in Greenville, North Carolina.

The information in this report was gathered during a site visit that concluded on September 9, 2009.

SITE

Landscaping around the building consists of grassy lawns, ornamental shrubs, and some mature trees. It is in average condition, but should outlast the ten-year scope of this report with routine maintenance. The pedestrian paving systems are in overall average condition, but will need replacement in the next ten years. New systems, including excavation, grading, base compaction, and paving, are recommended. Vehicular paving systems are in fair condition and will also need moderate upgrades.

EXTERIOR STRUCTURE

Brick veneer is the primary exterior finish, with some concrete trim. While the brick and concrete are fundamentally sound, exposure to the elements has caused some deterioration of the mortar joints and expansion joints. Cleaning, surface preparation, selective repairs, and applied finish or penetrating sealant upgrades are recommended to restore the aesthetics and integrity of the building envelope.

The built-up roofing system over the east wing is not expected to outlast the scope of this analysis. Future budget modeling should include a provision for the replacement of all failing roofing systems. Replace this roof with a similar application.

It is recommended that the single-ply membrane roofing systems over the north, south, and central wings be replaced. The existing stress conditions around the seams and at the perimeter flashing will lead to failure if left unattended. Replace the stressed roof and flashing with a similar application.

It is recommended that aged and inefficient primary and secondary entrance and service doors be replaced. The replacement units should maintain the architectural design aspects of this facility and be modern, energy-efficient applications.

It is recommended that the single-pane, metal windows be upgraded to thermal-pane systems, which will reduce the energy required to operate the building. Repair or replacement of the windowsills and trim may also be necessary.

INTERIOR FINISHES / SYSTEMS

Interior floor finishes are vinyl tile, carpet, and ceramic tile. The wall finishes are painted plaster or concrete. Ceiling finishes include lay-in, acoustical tile and painted ceilings. The interior finish applications vary in age and condition from area to area. Upgrades should be considered as part of any future cosmetic improvements or major comprehensive renovation efforts.

The condition of the interior door systems is such that door system replacements are recommended as part of a comprehensive renovation effort. Complete demolition of the door systems and replacement according to a code compliant plan to properly protect egress passages is recommended. Lever door hardware and Braille signage should be included in this effort. Also, the laboratory casework is in overall poor condition. Install new casework as part of a comprehensive laboratory renovation effort.

ACCESSIBILITY

Access to the building is provided by at-grade entrances near the central wing courtyard. Once inside, a passenger elevator in each wing provides wheelchair access to each floor. Doors in the building are equipped with a mix of lever hardware and knob hardware. Braille was found in many parts of the building. Because the doors are beginning to show significant signs of age, they are recommended to be replaced as part of an interior upgrade. Door hardware and newer signage will be included in that upgrade. Several additional accessibility upgrades are warranted to bring this classroom building up to full compliance with modern regulations.

Current accessibility legislation requires that building amenities be generally accessible to all persons. The configurations of break room kitchenette and drinking fountains are barriers to accessibility. The installation of wheelchair accessible kitchenette cabinetry and dual level, refrigerated drinking fountains is recommended where applicable.

The restroom fixtures and finishes are mostly original to the year of construction or latest major renovation. The fixtures are sound but dated and are spaced such that clearances are not ADA compliant. A comprehensive restroom renovation, including new fixtures, finishes, partitions, and accessories, is recommended. Restroom expansion may be necessary in order to meet modern minimum fixture counts and accessibility legislation.

Current accessibility legislation requires that stairs have graspable handrails on both sides, that the rails have a specific end geometry, and that the handrails continue horizontally at the landings. In addition, guardrails must prevent the passage of a 4 inch diameter sphere (6 inches in the triangle formed by the lower rail and tread / riser angle). The finishes on the stairs have deteriorated or are otherwise unsafe. Although the stairs are compliant with the code enforced at the time of construction until a major renovation occurs, they are deficient in handrail and guardrail design relative to current standards. Future renovation efforts should include comprehensive stair railing and finish upgrades.

HEALTH

Suspected asbestos-containing materials (ACM) are believed to be present in the facility, including the piping insulation, spray-on fireproofing, and multiple interior finish systems. Future renovation efforts will need to include provisions to test and abate any and all ACM.

The facility has cold rooms to support the lab areas. The equipment was manufactured by Jameson and was installed when the facility was constructed. The mechanical systems for the equipment are believed to have been replaced in the last few years, but the enclosures appear original and should be replaced.

FIRE / LIFE SAFETY

The paths of egress in this building are adequate with regard to fire rating. There are no compromises involving doors, partitions, elevators lobbies, or stairs. No fire / life safety issues related to architectural features were observed during the inspection of this facility. However, the recommended door upgrade should include properly rated units.

The facility is served by a fire alarm system that was manufactured by Notifier and believed to have been installed in the last fifteen years. The fire alarm system utilizes pull stations, smoke detectors, and duct smoke detectors for activation, while audible / visible strobes are present for notification. The fire alarm system does not provide adequate coverage, and some devices are aged. It is recommended that the existing system be replaced with a modern fire alarm system that includes a point addressable, Class A, supervised fire alarm panel with battery backup and an annunciator. It should also include pull stations, audible / visible devices, smoke detectors, and heat detectors. Include a dial-up device or transponder to notify an applicable receiving fire station of trouble or activation. Design and install the system in accordance with current NFPA and ADA requirements.

This facility has manual chemical-type fire extinguishers and standpipe cabinets for fire suppression. It is recommended by the NFPA that buildings contain fire sprinkler systems. Light hazard, wet-pipe fire suppression, including piping, sprinkler heads (as required by code), and pipe bracing, should be installed throughout the structure to reduce overall liability and risk of loss. Install flow switches and sensors that interface with the recommended fire alarm system upgrade.

Exit signs are LED illuminated and connected to the emergency power network. Emergency lighting is available through standard interior light fixtures with battery backup ballasts or individual twin beam fixtures with battery backup devices. Coverage appears to mark the path of egress adequately. No projects are recommended for the emergency lights or exit signs.

Emergency shower and eyewash stations are present in some laboratory areas. These fixtures do not occur in adequate frequency. Replace the existing aged emergency shower and eyewash stations. Install additional emergency showers and eyewash fountains in areas where related hazards exist. These new fixtures should be permanent and connected to the water supply and drain networks. They need to be clearly identifiable and located in unobstructed areas for easy access.

HVAC

The facility is connected to the campus steam and chilled water loops. Steam is supplied to heat exchangers in the main mechanical room, which produce heating hot water. The hot water and chilled water are then circulated throughout the building by pumps to the associated HVAC equipment to heat or cool the facility. The heat exchangers and pumps are a combination of new and aged equipment.

This facility is served by a forced-air HVAC system with multizone air handling units that have hot water heating coils and chilled water cooling coils. The air distribution network furnishes variable air volume to

the occupied spaces. Hot water reheat coils are mounted in the duct. The controls for this system are a hybrid configuration with pneumatic temperature controls and direct digital utility modulation and monitoring. The direct digital controls were manufactured by Scheider Electric.

The components of the HVAC system have aged beyond their statistical life cycles, and the system is inefficient compared to modern standards. During the inspection, the ductwork and water piping in the chases and tunnels were being replaced in an ongoing project. However, the constant flow terminal boxes and ducting in the hallways and common areas, labs, and classrooms are aged with ACM spray. It is recommended that the remaining equipment be replaced. The project includes the cost for replacement of all aged ducting, piping, terminal units, fume hoods, and controls.

Supplemental HVAC is provided by split systems and window air conditioning units that utilize DX cooling. In conjunction with the proposed HVAC system upgrade, it is recommended that these systems be removed and that the areas that they serve be included on the central HVAC system.

Cooling for to the greenhouse is provided by evaporative coolers. These systems were manufactured by Champion Cooler Corporation and installed in 2008. The evaporative coolers should continue to provide adequate service for the greenhouse over the next ten years.

The laboratory areas are served by fume hood exhaust systems. These hoods are mostly original, but the mechanical systems were replaced in 2009. It is recommended that the fume hoods be replaced as part of the recommended HVAC upgrade.

ELECTRICAL

Power is supplied to the facility from an oil-filled transformer located on-site. The unit was installed in 2001 and has a capacity of 1,000 kVA. Power is then fed to a switchgear device located in the main electrical room. The unit supplies a 2,000 amp electrical service at 480/277 volts. The equipment was manufactured by Cutler Hammer in 2001. The main incoming electrical equipment appears to be in good condition and should continue to provide adequate service over the scope of this report.

The secondary electrical system consists of a motor control center, transformers, and panelboards located throughout the facility. Power is fed at 480/277 volts directly to the motor control center or select panelboards for mechanical and lighting loads. Dry-type transformers step voltage down to 120/208 volts for distribution through panelboards for general purpose loads. The secondary electrical system is a combination of new and original equipment. The motor control center was installed in 2001 and some panelboards have been replaced, but the electrical system is mostly original. It is recommended that all original electrical system, in approximately 80 percent of the facility, be replaced within the scope of this analysis.

The interior spaces of this facility are illuminated primarily by fixtures that utilize compact and T8 fluorescent lamps. The fluorescent fixtures are predominantly surface-mounted applications with acrylic lenses. Occupancy sensors have been incorporated into the lighting systems, along with energy-efficient ballasts and lamps. There are still some T12 fluorescent and incandescent lamps in service. The lighting system is currently sufficient, but it will require replacement within the next ten years. Specify energy-efficient fixtures, and expand the usage of occupancy sensor controls.

The exterior lighting scheme consists of roof-mounted HID fixtures, eave-mounted lighting, and wall-mounted fixtures. Additional lighting is provided by pole-mounted fixtures located on-site. The fixtures appear to be in good condition but coverage does not appear to be complete, particularly at the exterior exits from smart classroom 103B. It is recommended that overhead lighting be installed as required.

Emergency power is produced by a diesel-fired generator located on-site. The unit was manufactured by Cummins in 2001. It provides 480/277 volt power and has a capacity of 150 kW. Overall, the unit appears to be in good condition and is properly enclosed. This generator should remain a reliable source of stand-by power throughout scope of this report.

PLUMBING

The main incoming domestic water enters through a backflow preventer on the south exterior. Copper piping is then utilized to distribute water throughout the facility. The system appears to be in average condition, with a combination of aged piping and some new piping where minor renovations have taken place. The University requested that the water shutoff valves be replaced throughout the building. Additionally, an upgrade is recommended to replace the original or aged domestic water piping on a low priority basis.

The drain piping network is cast-iron with bell-and-spigot connections. There is plastic piping in select areas. The piping network appears to be a combination of new and aged piping where repairs have taken place, indicating that the older piping is starting to fail. Remove the existing sanitary and storm drain piping. Install new corrosion resistant drain piping networks with copper run-outs to all fixtures. Also install new floor drains, roof drains, and traps as needed.

Natural gas is utilized in the laboratories. The University requested the installation of emergency solenoid-operated shutoff valves on all gas piping throughout the building. The valves should be key operated for reset functions. Additionally, they should be connected to the fire alarm and fire suppression system when installed.

The original plumbing fixtures are ceramic and utilize manual, non-ADA compliant controls. It is recommended that the plumbing fixtures be upgraded. This action is detailed in the Accessibility section of this report.

Domestic water is heated by a steam boiler manufactured by Lochinvar. This unit was installed in 2002 and is adequate and in good condition. Additional hot water storage is provided by two electric water heaters with a capacity of 80 gallons each. The units were manufactured by A. O. Smith in 2008 and appear to be in good condition. With proper maintenance, the domestic hot water equipment will outlast the scope of this report.

A duplex sump pump system facilitates the drainage of stormwater from this facility. This system is in good working order. With proper maintenance, it will outlast the purview of this report. Building program processes are supported by central vacuum systems. These systems are presently providing dependable service and should continue to with proper maintenance.

VERTICAL TRANSPORTATION

The University commissioned an outside contractor to perform an elevator condition study in 2009. The capital project recommendations from this study have been included as projects in the ISES database.

Note: The deficiencies outlined in this report were noted from a visual inspection. ISES engineers and architects developed projects with related costs that are needed over the next ten-year period to bring the facility to "like-new" condition. The costs developed do not represent the cost of a complete facility renovation. Soft costs not represented in this report include telecommunications, 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. However, existing fixed building components and systems were thoroughly inspected. The developed costs represent correcting existing deficiencies and anticipated life cycle failures (within a ten-year period) to bring the facility to modern standards without any anticipation of change to facility space layout or function. Please refer to Section Three of this report for recommended Specific Project Details.

C. INSPECTION TEAM DATA

DATE OF INSPECTION: September 9, 2009

INSPECTION TEAM PERSONNEL:

NAME	POSITION	SPECIALTY
Thomas Ferguson, AIA, LEED® AP	Project Architect	Interior Finishes / Exterior / ADA-Handicapped Accessibility / Site / Fire Safety / Life Safety / Health
Rob Gasaway, Q.E.I.	Facility Analyst	Interior Finishes / Exterior / ADA-Handicapped Accessibility / Site / Fire Safety / Life Safety / Health
John Holder, Q.E.I.	Project Engineer	Mechanical / Electrical / Plumbing / Energy / Fire Safety / Life Safety / Health
Imelda Jordan	Project Engineer	Mechanical / Electrical / Plumbing / Energy / Fire Safety / Life Safety / Health
James Lewis	Project Engineer	Mechanical / Electrical / Plumbing / Energy / Fire Safety / Life Safety / Health
Carl Mason, PE, BSCP	Project Engineer	Interior Finishes / Exterior / ADA-Handicapped Accessibility / Site / Fire Safety / Life Safety / Health
Paul Southwell	Project Engineer	Mechanical / Electrical / Plumbing / Energy / Fire Safety / Life Safety / Health
Norm Teahan, RA, AIA, NCARB	Project Architect	Interior Finishes / Exterior / ADA-Handicapped Accessibility / Site / Fire Safety / Life Safety / Health

FACILITY CONTACTS:

NAME	POSITION
William Bagwell	Associate Vice Chancellor, Campus Operations

REPORT DEVELOPMENT:

Report Development by:
ISES Corporation
2165 West Park Court
Suite N
Stone Mountain, GA 30087

Contact:
Kyle Thompson, Project Manager
770-879-7376

D. FACILITY CONDITION ANALYSIS - DEFINITIONS

The following information is a clarification of Asset Report Sections using example definitions.

1. REPORT DESCRIPTION

Section 1: Asset Executive Summary, Asset Summary, and General Report Information

Section 2: Detailed Project Summaries and Totals

A. Detailed Project Totals – Matrix with FCNI Data and Associated Charts
B. Detailed Projects by Priority Class / Priority Sequence
C. Detailed Projects by Cost within range [$0 - < $100,000]
D. Detailed Projects by Cost within range [≥ $100,000 - < $500,000]
E. Detailed Projects by Cost within range [≥ $500,000]
F. Detailed Projects by Project Classification
G. Detailed Projects by Project Rating Type - Energy Conservation
H. Detailed Projects by Category / System Code

FCNI = Facility Condition Needs Index, Total Cost vs. Replacement Cost. The FCNI provides a life cycle cost comparison. Facility replacement cost is based on replacement with current construction standards for 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.

$$FCNI = \frac{\text{Deferred Maintenance / Modernization + Capital Renewal + Plant Adaption}}{\text{Plant / Facility Replacement Cost}}$$

Section 3: Specific Project Details Illustrating Description / Cost

Section 4: Drawings with Iconography

The drawings for this facility are marked with ICONS (see legend), denoting the specific location(s) for each project. Within each ICON is the last four characters of the respective project number (e.g., 0001IS01 is marked on plan by IS01). There is one set of drawings marked with ICONS representing all priority classes (1, 2, 3, and 4).

Section 5: Life Cycle Model Summary and Projections

Section 6: Photographic Log

2. PROJECT CLASSIFICATION

A. Plant / Program Adaption: Expenditures 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 changed teaching or research methods, and improvements occasioned by the adoption of modern technology (e.g., the use of personal computer networks).

B. Deferred Maintenance: Refers to expenditures for repairs which were not accomplished as a part of normal maintenance or capital repair which have accumulated to the point that facility deterioration is evident and could impair the proper functioning of the facility. Costs estimated for deferred maintenance projects should include compliance with applicable codes, even if such compliance requires expenditures beyond those essential to affect the needed repairs. Deferred maintenance projects represent catch up expenses.

C. Capital Renewal: A subset of regular or normal facility maintenance which refers to major repairs or the replacement / rebuilding of major facility components (e.g., roof replacement at the end of its normal useful life is capital repair; roof replacement several years after its normal useful life is deferred maintenance).

3. PROJECT SUBCLASS TYPE

A. Energy Conservation: Projects with energy conservation opportunities, based on simple payback analysis.

4. PRIORITY SEQUENCE BY PRIORITY CLASS (Shown in Sections 2 and 3)

All projects are assigned both a Priority Sequence number and Priority Class number for categorizing and sorting projects based on criticality and recommended execution order.

Example:

PRIORITY CLASS 1

CODE	PROJECT NO.	PRIORITY SEQUENCE
HV2C	0001HV04	01
PL1D	0001PL02	02

PRIORITY CLASS 2

CODE	PROJECT NO.	PRIORITY SEQUENCE
IS1E	0001IS06	03
EL4C	0001EL03	04

5. PRIORITY CLASS (Shown in Sections 2 and 3)

PRIORITY 1 - Currently Critical (Immediate)

Projects in this category require immediate action to:
a. return a facility to normal operation
b. stop accelerated deterioration
c. correct a cited safety hazard

PRIORITY 2 - Potentially Critical (Year One)

Projects in this category, if not corrected expeditiously, will become critical within a year. Situations in this category include:
a. intermittent interruptions
b. rapid deterioration
c. potential safety hazards

PRIORITY 3 - Necessary - Not Yet Critical (Years Two to Five)

Projects in this category include conditions requiring appropriate attention to preclude predictable deterioration or potential downtime and the associated damage or higher costs if deferred further.

PRIORITY 4 - Recommended (Years Six to Ten)

Projects in this category include items that represent a sensible improvement to existing conditions. These items are not required for the most basic function of a facility; however, Priority 4 projects will either improve overall usability and / or reduce long-term maintenance.

6. COST SUMMARIES AND TOTALS

The cost summaries and totals are illustrated by Detailed Projects sorted in multiple formats (shown in Sections 2 and 3).

City Index material / labor cost factors: (shown in Sections 2 and 3)

Cost factors are based on the Greenville City Index and are adjusted for material and labor cost factors (2009). Refer to the project related labor report found later in this section.

Global Markup Percentages		R.S. MEANS
Local Labor Index:	51.3 %	of National Average
Local Materials Index:	100.7 %	of National average
General Contractor Markup:	20.0 %	Contractor profit & overhead, bonds & insurance
Professional Fees:	16.0 %	Arch. / Eng. Firm design fees and in-house design cost

7. PROJECT NUMBER (Shown in Sections 2 and 3)

Example:

Project Number = 0001-EL-04 (unique for each independent project)

0001	-	Building Identification Number
EL	-	System Code, EL represents Electrical
04	-	Sequential Assignment Project Number by Category / System

8. PHOTO NUMBER (Shown in Section 6)

A code shown on the Photographic Log identifies the building number, photo sequence, and architect, engineer, or vertical transportation.

Example: 0001006e

Building Number	Photo Sequence	Arch / Eng / VT
0001	006	e

9. LIFE CYCLE COST MODEL DESCRIPTION AND DEFINITIONS (Shown in Section 5)

Included in this report is a Life Cycle Cost Model. This model consists of two elements, one is the component listing (starting on page 5.1.1) and the other is the Life Cycle Cost Projections Graph (page 5.2.1). The component list is a summary of all major systems and components within the facility. Each indicated component has the following associated information:

Uniformat Code	This is the standard Uniformat Code that applies to the component
Component Description	This line item describes the individual component
Qty	The quantity of the listed component
Units	The unit of measure associated with the quantity
Unit Cost	The cost to replace each individual component unit (This cost is in today's dollars)
Total Cost	Unit cost multiplied by Quantity, also in today's dollars. Note that this is a one time renewal / replacement cost
Install Date	Year that the component was installed. Where this data is not available, it defaults to the year the asset was constructed
Life Exp	Average life expectancy for each individual component

The component listing forms the basis for the Life Cycle Cost Projections Graph shown on page 5.2.1. This graph represents a projection over a fifty-year period (starting from the date the report is run) of expected component renewals based on each individual item's renewal cost and life span. Some components might require renewal several times within the fifty-year model, while others might not occur at all. Each individual component is assigned a renewal year based on life cycles, and the costs for each item are inflated forward to the appropriate year. The vertical bars shown on the graph represent the accumulated (and inflated) total costs for each individual year. At the bottom of the graph, the average annual cost per gross square foot ($/GSF) is shown for the facility. In this calculation, all costs are not inflated. This figure can be utilized to assess the adequacy of existing capital renewal and repair budgets.

10. CATEGORY CODE (Shown in Sections 2 and 3)

Refer to the following Category Code Report.

Example: Category Code = EL5A

EL = System Description
5 = Component Description
A = Element Description

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
SS1A	-	SS7A	SECURITY SYSTEMS
VT1A	-	VT7A	VERTICAL TRANSPORTATION

CATEGORY CODE REPORT			
CODE	**COMPONENT DESCRIPTION**	**ELEMENT DESCRIPTION**	**DEFINITION**
SYSTEM DESCRIPTION: ACCESSIBILITY			
AC1A	SITE	STAIR AND RAILINGS	Includes exterior stairs and railings which are not part of the building entrance points.
AC1B	SITE	RAMPS AND WALKS	Includes sidewalks, grade change ramps (except for a building entrance), curb ramps, etc.
AC1C	SITE	PARKING	Designated parking spaces including striping, signage, access aisles and ramps, etc.
AC1D	SITE	TACTILE WARNINGS	Raised tactile warnings located at traffic crossing and elevation changes.
AC2A	BUILDING ENTRY	GENERAL	Covers all aspects of entry into the building itself including ramps, lifts, doors and hardware, power operators, etc.
AC3A	INTERIOR PATH OF TRAVEL	LIFTS/RAMPS/ ELEVATORS	Interior lifts, ramps and elevators designed to accommodate level changes inside a building. Includes both installation and retrofitting.
AC3B	INTERIOR PATH OF TRAVEL	STAIRS AND RAILINGS	Upgrades to interior stairs and handrails for accessibility reasons.
AC3C	INTERIOR PATH OF TRAVEL	DOORS AND HARDWARE	Accessibility upgrades to the interior doors including widening, replacing hardware power, assisted operators, etc.
AC3D	INTERIOR PATH OF TRAVEL	SIGNAGE	Interior building signage upgrades for compliance with ADA.
AC3E	INTERIOR PATH OF TRAVEL	RESTROOMS/ BATHROOMS	Modifications to and installation of accessible public restrooms and bathrooms. Bathrooms, which are an integral part of residential suites, are catalogued under HC4A.
AC3F	INTERIOR PATH OF TRAVEL	DRINKING FOUNTAINS	Upgrading/replacing drinking fountains for reasons of accessibility.
AC3G	INTERIOR PATH OF TRAVEL	PHONES	Replacement/modification of public access telephones.
AC4A	GENERAL	FUNCTIONAL SPACE MODIFICATIONS	This category covers all necessary interior modifications necessary to make the services and functions of a building accessible. It includes installation of assistive listening systems, modification of living quarters, modifications to laboratory workstations, etc. Bathrooms, which are integral to efficiency suites, are catalogued here.
AC4B	GENERAL	OTHER	All accessibility issues not catalogued elsewhere.
SYSTEM DESCRIPTION: ELECTRICAL			
EL1A	INCOMING SERVICE	TRANSFORMER	Main building service transformer.
EL1B	INCOMING SERVICE	DISCONNECTS	Main building disconnect and switchgear.
EL1C	INCOMING SERVICE	FEEDERS	Incoming service feeders. Complete incoming service upgrades, including transformers, feeders, and main distribution panels are catalogued here.
EL1D	INCOMING SERVICE	METERING	Installation of meters to record consumption and/or demand.
EL2A	MAIN DISTRIBUTION PANELS	CONDITION UPGRADE	Main distribution upgrade due to deficiencies in condition.
EL2B	MAIN DISTRIBUTION PANELS	CAPACITY UPGRADE	Main distribution upgrades due to inadequate capacity.
EL3A	SECONDARY DISTRIBUTION	STEP DOWN TRANSFORMERS	Secondary distribution stepdown and isolation transformers.
EL3B	SECONDARY DISTRIBUTION	DISTRIBUTION NETWORK	Includes conduit, conductors, sub-distribution panels, switches, outlets, etc. Complete interior rewiring of a facility is catalogued here.
EL3C	SECONDARY DISTRIBUTION	MOTOR CONTROLLERS	Mechanical equipment motor starters and control centers.
EL4A	DEVICES AND FIXTURES	EXTERIOR LIGHTING	Exterior building lighting fixtures including supply conductors and conduit.
EL4B	DEVICES AND FIXTURES	INTERIOR LIGHTING	Interior lighting fixtures (also system wide emergency lighting) including supply conductors and conduits.
EL4C	DEVICES AND FIXTURES	LIGHTING CONTROLLERS	Motion sensors, photocell controllers, lighting contactors, etc.

CATEGORY CODE REPORT			
CODE	**COMPONENT DESCRIPTION**	**ELEMENT DESCRIPTION**	**DEFINITION**
EL4D	DEVICES AND FIXTURES	GFCI PROTECTION	Ground fault protection including GFCI receptacles and breakers.
EL4E	DEVICES AND FIXTURES	LIGHTNING PROTECTION	Lightning arrestation systems including air terminals and grounding conductors.
EL5A	EMERGENCY POWER SYSTEM	GENERATION/ DISTRIBUTION	Includes generators, central battery banks, transfer switches, emergency power grid, etc.
EL6A	SYSTEMS	UPS/DC POWER SUPPLY	Uninterruptible power supply systems and DC motor-generator sets and distribution systems.
EL7A	INFRASTRUCTURE	ABOVE GROUND TRANSMISSION	Includes poles, towers, conductors, insulators, fuses, disconnects, etc.
EL7B	INFRASTRUCTURE	UNDERGROUND TRANSMISSION	Includes direct buried feeders, ductbanks, conduit, manholes, feeders, switches, disconnects, etc.
EL7C	INFRASTRUCTURE	SUBSTATIONS	Includes incoming feeders, breakers, buses, switchgear, meters, CTs, PTs, battery systems, capacitor banks, and all associated auxiliary equipment.
EL7D	INFRASTRUCTURE	DISTRIBUTION SWITCHGEAR	Stand-alone sectionalizing switches, distribution switchboards, etc.
EL7F	INFRASTRUCTURE	AREA AND STREET LIGHTING	Area and street lighting systems including stanchions, fixtures, feeders, etc.
EL8A	GENERAL	OTHER	Electrical system components not catalogued elsewhere.
SYSTEM DESCRIPTION: EXTERIOR			
ES1A	FOUNDATION/FOOTING	STRUCTURE	Structural foundation improvements involving structural work on foundation wall/footing, piers, caissons, piles including crack repairs, shoring & pointing
ES1B	FOUNDATION/FOOTING	DAMPPROOFING/ DEWATERING	Foundation/footing waterproofing work including, damp proofing, dewatering, insulation, etc.
ES2A	COLUMNS/BEAMS/ WALLS	STRUCTURE	Structural work to primary load-bearing structural components aside from floors including columns, beams, bearing walls, lintels, arches, etc.
ES2B	COLUMNS/BEAMS/ WALLS	FINISH	Work involving restoration of the appearance and weatherproof integrity of exterior wall/structural envelope components including masonry/pointing, expansion joints, efflorescence & stain removal, grouting, surfacing, chimney repairs, etc.
ES3A	FLOOR	STRUCTURE	Work concerning the structural integrity of the load supporting floors both exposed and unexposed including deformation, delamination, spalling, shoring, crack repair, etc.
ES4A	ROOF	REPAIR	Work on waterproof horizontal finish (roof) involving repair and/or limited replacement (<40% total) including membrane patching, flashing repair, coping caulk/resetting, PPT wall parging/coating, walkpad installation, skylight and roof hatch R&R, etc.
ES4B	ROOF	REPLACEMENT	Work involving total refurbishment of roofing system including related component rehab.
ES5A	FENESTRATIONS	DOORS	Work on exterior exit/access door including storefronts, airlocks, air curtains, vinyl slat doors, all power/manual operating hardware (except handicapped), etc.
ES5B	FENESTRATIONS	WINDOWS	Work on exterior fenestration closure & related components including glass/metal/wood curtain walls, fixed or operable window sashes, glazing, frames, sills, casings, stools, seats, coatings, treatments, screens, storm windows, etc.
ES6A	GENERAL	ATTACHED STRUCTURE	Work on attached exterior structure components not normally considered in above categories including porches, stoops, decks, monumental entrance stairs, cupolas, tower, etc.
ES6B	GENERAL	AREAWAYS	Work on attached grade level or below structural features including subterranean light wells, areaways, basement access stairs, etc.
ES6C	GENERAL	TRIM	Work on ornamental exterior (generally non-structural) elements including beltlines, quoins, porticos, soffits, cornices, moldings, trim, etc.
ES6D	GENERAL	SUPERSTRUCTURE	Finish and structural work on non-standard structures with exposed load-bearing elements such as stadiums, bag houses, bleachers, freestanding towers, etc.

CATEGORY CODE REPORT			
CODE	**COMPONENT DESCRIPTION**	**ELEMENT DESCRIPTION**	**DEFINITION**
ES6E	GENERAL	OTHER	Any exterior work not specifically categorized elsewhere including finish and structural work on freestanding boiler stacks.
SYSTEM DESCRIPTION: FIRE / LIFE SAFETY			
FS1A	LIGHTING	EGRESS LIGHTING/EXIT SIGNAGE	R & R work on exit signage and packaged AC/DC emergency lighting.
FS2A	DETECTION/ALARM	GENERAL	Repair or replacement of fire alarm/detection system/components including alarms, pull boxes, smoke/heat detectors, annunciator panels, central fire control stations, remote dialers, fire station communications, etc.
FS3A	SUPPRESSION	SPRINKLERS	Repair or installation of water sprinklers type automatic fire suppressions including wet pipe & dry pipe systems, heads, piping, deflectors, valves, monitors, associated fire pump, etc.
FS3B	SUPPRESSION	STANDPIPE/HOSE	Repair or installation of standpipe system or components including hardware, hoses, cabinets, nozzles, necessary fire pumping system, etc.
FS3C	SUPPRESSION	EXTINGUISHERS	Repairs or upgrades to F.E. cabinets/wall fastenings and handheld extinguisher testing/replacement.
FS3D	SUPPRESSION	OTHER	Other fire suppression items not specifically categorized elsewhere including fire blankets, carbon dioxide automatic systems, Halon systems, dry chemical systems, etc.
FS4A	HAZARDOUS MATERIALS	STORAGE ENVIRONMENT	Installation or repair of special storage environment for the safe holding of flammable or otherwise dangerous materials/supplies including vented flammables storage cabinets, holding pens/rooms, cages, fire safe chemical storage rooms, etc.
FS4B	HAZARDOUS MATERIALS	USER SAFETY	Improvements, repairs, installation, or testing of user safety equipment including emergency eyewashes, safety showers, emergency panic/shut-down system, etc.
FS5A	EGRESS PATH	DESIGNATION	Installation, relocation or repair of posted diagrammatic emergency evacuation routes.
FS5B	EGRESS PATH	DISTANCE/ GEOMETRY	Work involving remediation of egress routing problems including elimination of dead end corridors, excessive egress distance modifications and egress routing inadequacies.
FS5C	EGRESS PATH	SEPARATION RATING	Restoration of required fire protective barriers including wall rating compromises, fire rated construction, structural fire proofing, wind/safety glazing, transom retrofitting, etc.
FS5D	EGRESS PATH	OBSTRUCTION	Clearance of items restricting the required egress routes.
FS5E	EGRESS PATH	STAIRS RAILING	Retrofit of stair/landing configurations/structure, railing heights/geometries, etc.
FS5F	EGRESS PATH	FIRE DOORS/ HARDWARE	Installation/replacement/repair of fire doors and hardware including labeled fire doors, fire shutters, closers, magnetic holders, panic hardware, etc.
FS5G	EGRESS PATH	FINISH/FURNITURE RATINGS	Remediation of improper fire/smoke ratings of finishes and furniture along egress routes.
FS6A	GENERAL	OTHER	Life/fire safety items not specifically categorized elsewhere.
SYSTEM DESCRIPTION: HEALTH			
HE1A	ENVIRONMENTAL CONTROL	EQUIPMENT AND ENCLOSURES	Temperature control chambers (both hot and cold) for non-food storage. Includes both chamber and all associated mechanical equipment.
HE1B	ENVIRONMENTAL CONTROL	OTHER	General environmental control problems not catalogued elsewhere.
HE2A	PEST CONTROL	GENERAL	Includes all measures necessary to control and destroy insects, rodents and other pests.
HE3A	REFUSE	GENERAL	Issues related to the collection, handling and disposal of refuse.
HE4A	SANITATION EQUIPMENT	LABORATORY AND PROCESS	Includes autoclaves, cage washers, steam cleaners, etc.
HE5A	FOOD SERVICE	KITCHEN EQUIPMENT	Includes ranges, grilles, cookers, sculleries, etc.
HE5B	FOOD SERVICE	COLD STORAGE	Includes the cold storage room and all associated refrigeration equipment.

CATEGORY CODE REPORT			
CODE	**COMPONENT DESCRIPTION**	**ELEMENT DESCRIPTION**	**DEFINITION**
HE6A	HAZARDOUS MATERIAL	STRUCTURAL ASBESTOS	Testing, abatement and disposal of structural and building finish materials containing asbestos.
HE6B	HAZARDOUS MATERIAL	MECHANICAL ASBESTOS	Testing, abatement and disposal of mechanical insulation materials containing asbestos.
HE6C	HAZARDOUS MATERIAL	PCBs	Includes testing, demolition, disposal and cleanup of PCB contaminated substances.
HE6D	HAZARDOUS MATERIAL	FUEL STORAGE	Includes monitoring, removal and replacement of above and below ground fuel storage and distribution systems. Also includes testing and disposal of contaminated soils.
HE6E	HAZARDOUS MATERIAL	LEAD PAINT	Testing, removal and disposal of lead-based paint systems.
HE6F	HAZARDOUS MATERIAL	OTHER	Handling, storage, and disposal of other hazardous materials.
HE7A	GENERAL	OTHER	Health related issues not catalogued elsewhere.
SYSTEM DESCRIPTION: HVAC			
HV1A	HEATING	BOILERS/STACKS/ CONTROLS	Boilers for heating purposes including their related stacks, flues, and controls.
HV1B	HEATING	RADIATORS/ CONVECTORS	Including cast iron radiators, fin tube radiators, baseboard radiators, etc.
HV1C	HEATING	FURNACE	Furnaces and their related controls, flues, etc.
HV1D	HEATING	FUEL SUPPLY/STORAGE	Storage and/or distribution of fuel for heating purposes, including tanks and piping networks and related leak detection/monitoring.
HV2A	COOLING	CHILLERS/ CONTROLS	Chiller units for production of chilled water for cooling purposes, related controls (not including mods for CFC compliance).
HV2B	COOLING	HEAT REJECTION	Repair/replacement of cooling towers, dry coolers, air-cooling and heat rejection. (Includes connection of once-through system to cooling tower.)
HV3A	HEATING/COOLING	SYSTEM RETROFIT/ REPLACE	Replacement or major retrofit of HVAC systems.
HV3B	HEATING/COOLING	WATER TREATMENT	Treatment of hot water, chilled water, steam, condenser water, etc.
HV3C	HEATING/COOLING	PACKAGE/SELF-CONTAINED UNITS	Repair/replacement of self-contained/package type units including stand up units, rooftop units, window units, etc; both air conditioners and heat pumps.
HV3D	HEATING/COOLING	CONVENTIONAL SPLIT SYSTEMS	Repair, installation, or replacement of conventional split systems; both air conditioners and heat pumps including independent component replacements of compressors and condensers.
HV4A	AIR MOVING/ VENTILATION	AIR HANDLERS/ FAN UNITS	Includes air handlers & coils, fan coil units, unit ventilators, filtration upgrades, etc., not including package/self-contained units, split systems or other specifically categorized systems.
HV4B	AIR MOVING/ VENTILATION	EXHAUST FANS	Exhaust fan systems including fans, range and fume hoods, controls, and related ductwork.
HV4C	AIR MOVING/ VENTILATION	OTHER FANS	Supply, return, or any other fans not incorporated into a component categorized elsewhere.
HV4D	AIR MOVING/ VENTILATION	AIR DISTRIBUTION NETWORK	Repair, replacement, or cleaning of air distribution network including ductwork, terminal reheat/cool, VAV units, induction units, power induction units, insulation, dampers, linkages, etc.
HV5A	STEAM/HYDRONIC DISTRIBUTION	PIPING NETWORK	Repair/replacement of piping networks for heating and cooling systems including pipe, fittings, insulation, related components, etc.
HV5B	STEAM/HYDRONIC DISTRIBUTION	PUMPS	Repair or replacement of pumps used in heating and cooling systems, related control components, etc.
HV5C	STEAM/HYDRONIC DISTRIBUTION	HEAT EXCHANGERS	Including shell and tube heat exchangers and plate heat exchangers for heating and cooling.
HV6A	CONTROLS	COMPLETE SYSTEM	Replacement of HVAC control systems.

CATEGORY CODE REPORT			
CODE	**COMPONENT DESCRIPTION**	**ELEMENT DESCRIPTION**	**DEFINITION**
		UPGRADE	
HV6B	CONTROLS	MODIFICATIONS/ REPAIRS	Repair or modification of HVAC control system.
HV6C	CONTROLS	AIR COMPRESSORS/ DRYERS	Repair or modification of control air compressors and dryers.
HV7A	INFRASTRUCTURE	STEAM/HOT WATER GENERATION	Generation of central steam and/or hot water including boilers and related components.
HV7B	INFRASTRUCTURE	STEAM/HOT WATER DISTRIBUTION	Distribution system for central hot water and/or steam.
HV7C	INFRASTRUCTURE	CHILLED WATER GENERATION	Generation of central chilled water including chillers and related components.
HV7D	INFRASTRUCTURE	CHILLED WATER DISTRIBUTION	Distribution system for central chilled water.
HV7E	INFRASTRUCTURE	TUNNELS/ MANHOLES/ TRENCHES	Repairs, installation, replacement of utility system access chambers.
HV7F	INFRASTRUCTURE	OTHER	HVAC infrastructure issues not specifically categorized elsewhere.
HV8A	GENERAL	CFC COMPLIANCE	Chiller conversions/replacements for CFC regulatory compliance, monitoring, etc.
HV8B	GENERAL	OTHER	HVAC issues not catalogued elsewhere.
SYSTEM DESCRIPTION: INTERIOR FINISHES / SYSTEMS			
IS1A	FLOOR	FINISHES-DRY	R & R of carpet, hardwood strip flooring, concrete coating, vinyl linoleum & tile, marble, terrazzo, rubber flooring, underlayment in predominantly dry areas ("dry" includes non-commercial kitchens)
IS1B	FLOOR	FINISHES-WET	Flooring finish/underlayment work in predominantly "wet" areas including work with linoleum, rubber, terrazzo, concrete coating, quarry tile, ceramic tile, epoxy aggregate, etc.
IS2A	PARTITIONS	STRUCTURE	Structural work on full height permanent interior partitions including wood/metal stud & drywall systems, CMU systems, structural brick, tile, glass block, etc.
IS2B	PARTITIONS	FINISHES	Work on full height permanent interior partitions including R & R to gypsum board, plaster, lath, wood paneling, acoustical panels, wall coverings, column coverings, tile, paint, etc.
IS3A	CEILINGS	REPAIR	Repair of interior ceilings (<40% of total) including tiles, gypsum board, plaster, paint, etc.
IS3B	CEILINGS	REPLACEMENT	Major refurbishments (>40% of total) to interior ceiling systems including grid system replacements, structural framing, new suspended systems, paint, plastering, etc.
IS4A	DOORS	GENERAL	Any work on interior non-fire rated doors, roll-up counter doors, mechanical/plumbing access doors, and all door hardware (except for reasons of access improvement).
IS5A	STAIRS	FINISH	Any finish restorative work to stair tower walking surfaces including replacement of rubber treads, safety grips, nosings, etc. (except as required to accommodate disabled persons).
IS6A	GENERAL	MOLDING	R & R to interior trim/molding systems including rubber/vinyl/wood base, crown/chair/ornamental moldings, cased openings, etc.
IS6B	GENERAL	CABINETRY	R & R work to interior casework systems including cabinets, countertops, wardrobes, lockers, mail boxes, built-in bookcases, lab/work benches, reagent shelving, etc. (except as required for access by the disabled).
IS6C	GENERAL	SCREENING	Work on temporary or partial height partitioning systems including toilet partitions, urinal/vanity screens, etc.
IS6D	GENERAL	OTHER	Any work on interior elements not logically or specifically categorized elsewhere including light coves, phone booths, interior light wells, etc.
SYSTEM DESCRIPTION: PLUMBING			

CATEGORY CODE REPORT			
CODE	**COMPONENT DESCRIPTION**	**ELEMENT DESCRIPTION**	**DEFINITION**
PL1A	DOMESTIC WATER	PIPING NETWORK	Repair or replacement of domestic water supply piping network, insulation, hangers, etc.
PL1B	DOMESTIC WATER	PUMPS	Domestic water booster pumps, circulating pumps, related controls, etc.
PL1C	DOMESTIC WATER	STORAGE/ TREATMENT	Equipment or vessels for storage or treatment of domestic water.
PL1D	DOMESTIC WATER	METERING	Installation, repair, or replacement of water meters.
PL1E	DOMESTIC WATER	HEATING	Domestic water heaters including gas, oil, and electric water heaters, shell and tube heat exchangers, tank type and instantaneous.
PL1F	DOMESTIC WATER	COOLING	Central systems for cooling and distributing drinking water.
PL1G	DOMESTIC WATER	FIXTURES	Plumbing fixtures including sinks, drinking fountains, water closets, urinals, etc.
PL1H	DOMESTIC WATER	CONSERVATION	Alternations made to the water distribution system to conserve water.
PL1I	DOMESTIC WATER	BACKFLOW PROTECTION	Backflow protection devices including backflow preventers, vacuum breakers, etc.
PL2A	WASTEWATER	PIPING NETWORK	Repair or replacement of building wastewater piping network.
PL2B	WASTEWATER	PUMPS	Pump systems used to lift wastewater including sewage ejectors and other sump systems.
PL3A	SPECIAL SYSTEMS	PROCESS GAS/FLUIDS	Generation and/or distribution of process steam, compressed air, natural and LP gas, process water, vacuum, etc.
PL4A	INFRASTRUCTURE	POTABLE WATER STORAGE/ TREATMENT	Storage and treatment of potable water for distribution.
PL4B	INFRASTRUCTURE	INDUSTRIAL WATER DISTRIBUTION/ TREATMENT	Storage and treatment of industrial water for distribution.
PL4C	INFRASTRUCTURE	SANITARY WATER COLLECTION	Sanitary water collection systems, sanitary sewer systems; including combined systems.
PL4D	INFRASTRUCTURE	STORM WATER COLLECTION	Storm water collection systems, storm sewer systems; storm water only.
PL4E	INFRASTRUCTURE	POTABLE WATER DISTRIBUTION	Potable water distribution network.
PL4F	INFRASTRUCTURE	WASTEWATER TREATMENT	Wastewater treatment plants, associated equipment, etc.
PL5A	GENERAL	OTHER	Plumbing issues not categorized elsewhere.
SYSTEM DESCRIPTION: SITE			
SI1A	ACCESS	PEDESTRIAN	Paved pedestrian surfaces including walks, site stairs, step ramps, paths, pedestrian signage, sidewalk bridges/canopies, pedestrian plaza/mall areas, etc.
SI1B	ACCESS	VEHICULAR	Paved vehicular surfaces including roads, paths, curbs, guards, bollards, bridges, skyways, joints, shoulder work, culverts, ditches, vehicular signage, etc.
SI2A	LANDSCAPE	GRADE/FLORA	Landscape related work including new grass/turf refurbishment, grade improvements, catch basins, swales, berms, pruning, new ornamental flora, etc.
SI3A	HARDSCAPE	STRUCTURE	Permanent hard site features, predominantly ornamental, including terraces, fences, statues, freestanding signage, fountains, benches, etc.
SI4A	GENERAL	OTHER	Other site work not specifically categorized elsewhere.
SYSTEM DESCRIPTION: SECURITY SYSTEMS			
SS1A	LIGHTING	EXTERIOR	Fixtures, stanchions, foliage interference, cleanliness, locations, etc.

CATEGORY CODE REPORT			
CODE	**COMPONENT DESCRIPTION**	**ELEMENT DESCRIPTION**	**DEFINITION**
SS2A	SITE	FENCING	Perimeter campus fencing, individual building fencing, includes both pedestrian and vehicular control fences.
SS2B	SITE	GENERAL	Hidden areas due to foliage, fencing, parking, walls, etc.
SS3A	COMMUNICATIONS	EMERGENCY PHONES	Access, locations, visibility, function, reliability, etc.
SS4A	ACCESS CONTROL	DOORS	Access, locks, keys, two way speakers, reliability, redundancy, etc.
SS4B	ACCESS CONTROL	WINDOWS	Locks, screens, access, reliability, etc.
SS4C	ACCESS CONTROL	SYSTEMS	Card key, proximity devices, data control, data use, reliability, system design, etc.
SS5A	MONITORING	SYSTEMS	Cameras, audio communication, monitoring stations, locations, system design, etc.
SS6A	CIRCULATION	PEDESTRIAN	On campus as well as to and from off campus housing and class locations, etc.
SS6B	CIRCULATION	VEHICULAR	Guard gates, access, systems, data control and use, identification, etc.
SS7A	GENERAL	OTHER	General information/projects pertaining to security issues.
SYSTEM DESCRIPTION: VERTICAL TRANSPORTATION			
VT1A	MACHINE ROOM	GENERAL	Machine, worm gear, thrust bearing, brake, motors, sheaves, generator, controller, selector, governor, pump(s), valves, oil, access, lighting, ventilation, floor.
VT2A	CAR	GENERAL	Position indicator, lighting, floor, gate-doors, operation devices, safeties, safety shoe, light ray/detection, emergency light, fire fighter service, car top, door operator, stop switch, car frame, car guides, sheaves, phone, ventilation.
VT3A	HOISTWAY	GENERAL	Enclosure, fascia, interlock, doors, hangers, closers, sheaves, rails, hoistway switches, ropes, traveling cables, selector tape, weights, compensation.
VT4A	HALL FIXTURES	GENERAL	Operating panel, position indicator, hall buttons, lobby panel, hall lanterns, fire fighter service, audible signals, card/key access.
VT5A	PIT	GENERAL	Buffer(s), guards, sheaves, hydro packing, floor, lighting, safety controls.
VT6A	OPERATING CONDITIONS	GENERAL	Door open time, door close time, door thrust, acceleration, deceleration, leveling, dwell time, speed, OFR time, nudging.
VT7A	GENERAL	OTHER	General information/projects relating to vertical transportation system components.

FACILITY CONDITION ANALYSIS

SECTION 2

DETAILED PROJECT SUMMARIES AND TOTALS

Detailed Project Totals
Facility Condition Analysis
System Code by Priority Class
HOWE : HOWELL SCIENCE

System Code	System Description	Priority Classes 1	2	3	4	Subtotal
AC	ACCESSIBILITY	0	0	0	426,180	426,180
EL	ELECTRICAL	0	0	2,025,093	0	2,025,093
ES	EXTERIOR	0	0	390,061	1,995,340	2,385,402
FS	FIRE/LIFE SAFETY	0	916,940	547,943	0	1,464,883
HE	HEALTH	0	0	1,417,456	0	1,417,456
HV	HVAC	0	0	5,000,000	0	5,000,000
IS	INTERIOR/FINISH SYS.	0	0	3,742,954	0	3,742,954
PL	PLUMBING	0	40,616	0	2,190,725	2,231,341
SI	SITE	0	0	0	83,534	83,534
VT	VERT. TRANSPORTATION	0	0	165,008	0	165,008
	TOTALS	0	957,556	13,288,515	4,695,780	18,941,850

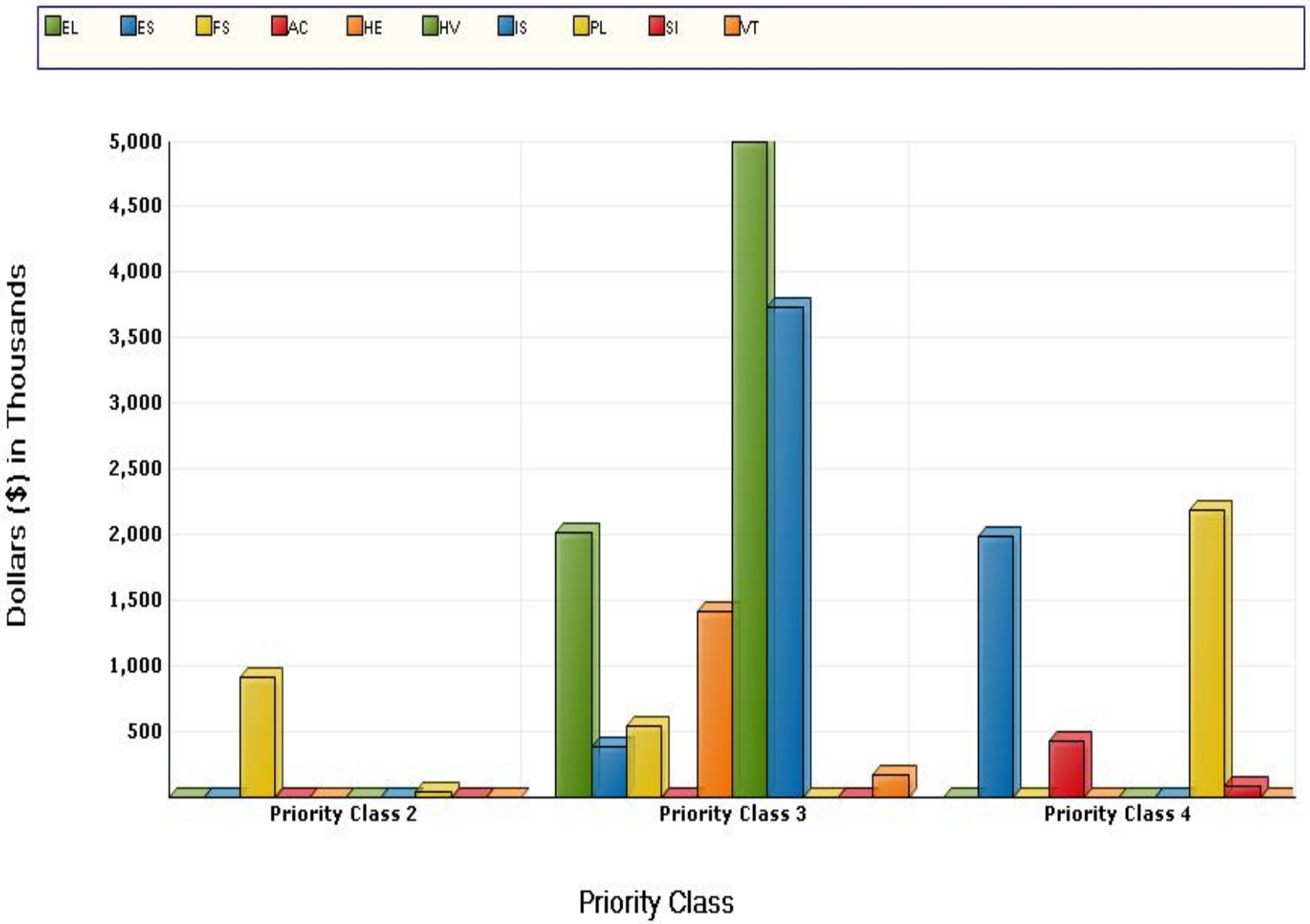
Facility Replacement Cost	$45,372,044
Facility Condition Needs Index	0.42

Gross Square Feet	107,569	**Total Cost Per Square Foot**	$176.09

FACILITY CONDITION ANALYSIS

System Code by Priority Class

HOWE : HOWELL SCIENCE



Detailed Project Totals
Facility Condition Analysis
System Code by Project Class
HOWE : HOWELL SCIENCE

System Code	System Description	Project Classes: Captial Renewal	Deferred Maintenance	Plant Adaption	Subtotal
AC	ACCESSIBILITY	0	0	426,180	426,180
EL	ELECTRICAL	2,025,093	0	0	2,025,093
ES	EXTERIOR	2,052,315	333,087	0	2,385,402
FS	FIRE/LIFE SAFETY	297,540	0	1,167,343	1,464,883
HE	HEALTH	0	46,875	1,370,580	1,417,456
HV	HVAC	0	5,000,000	0	5,000,000
IS	INTERIOR/FINISH SYS.	0	3,742,954	0	3,742,954
PL	PLUMBING	2,197,382	0	33,959	2,231,341
SI	SITE	83,534	0	0	83,534
VT	VERT. TRANSPORTATION	0	165,008	0	165,008
	TOTALS	6,655,863	9,287,924	2,998,063	18,941,850

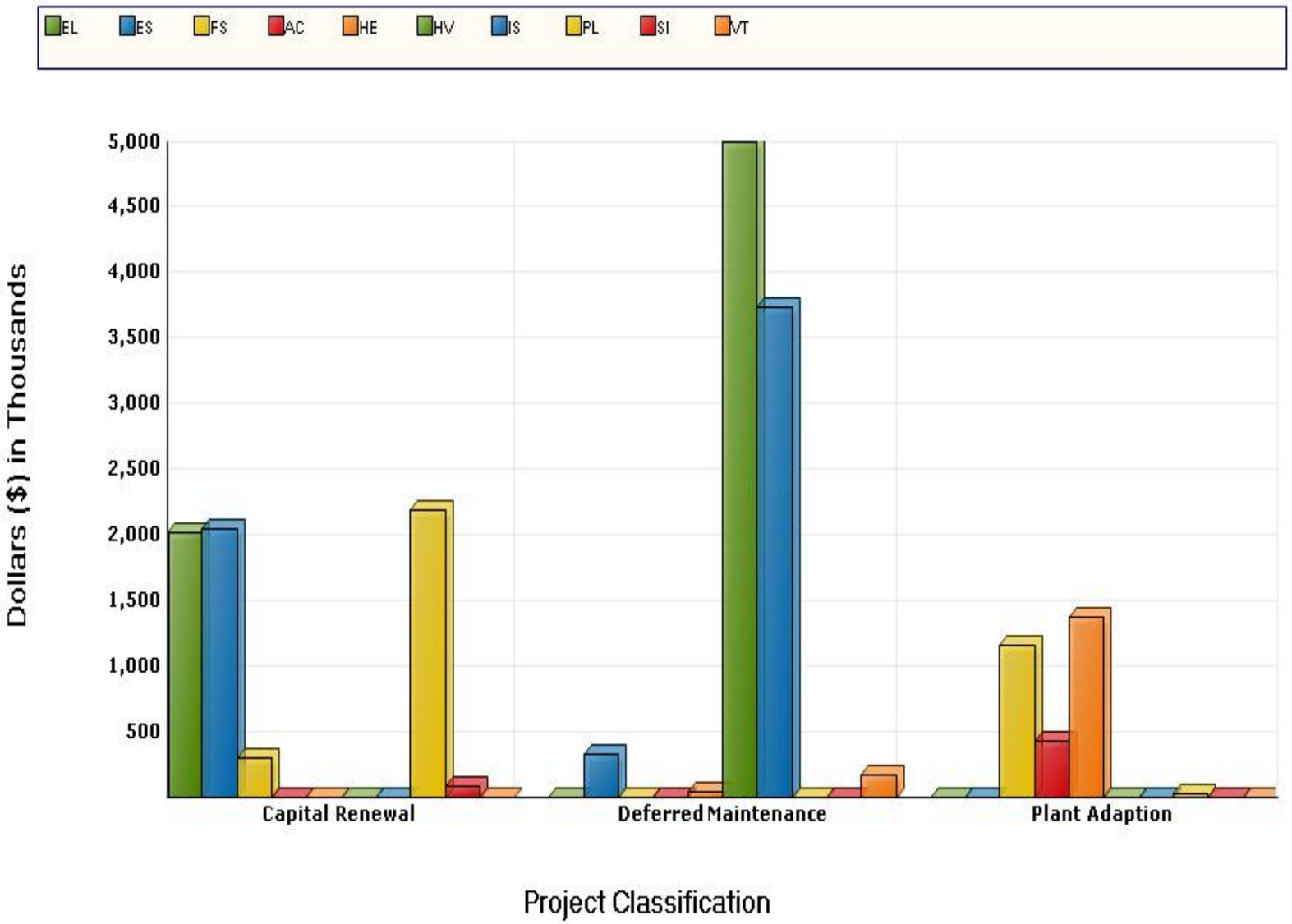
Facility Replacement Cost	$45,372,044
Facility Condition Needs Index	0.42

Gross Square Feet	107,569	**Total Cost Per Square Foot**	$176.09

FACILITY CONDITION ANALYSIS

System Code by Project Class

HOWE : HOWELL SCIENCE



Detailed Project Summary
Facility Condition Analysis
Project Class by Priority Class
HOWE : HOWELL SCIENCE

	Priority Classes				
Project Class	**1**	**2**	**3**	**4**	**Subtotal**
Capital Renewal	0	6,657	2,379,608	4,269,599	6,655,863
Deferred Maintenance	0	0	9,287,924	0	9,287,924
Plant Adaption	0	950,899	1,620,983	426,180	2,998,063
TOTALS	0	957,556	13,288,515	4,695,780	18,941,850

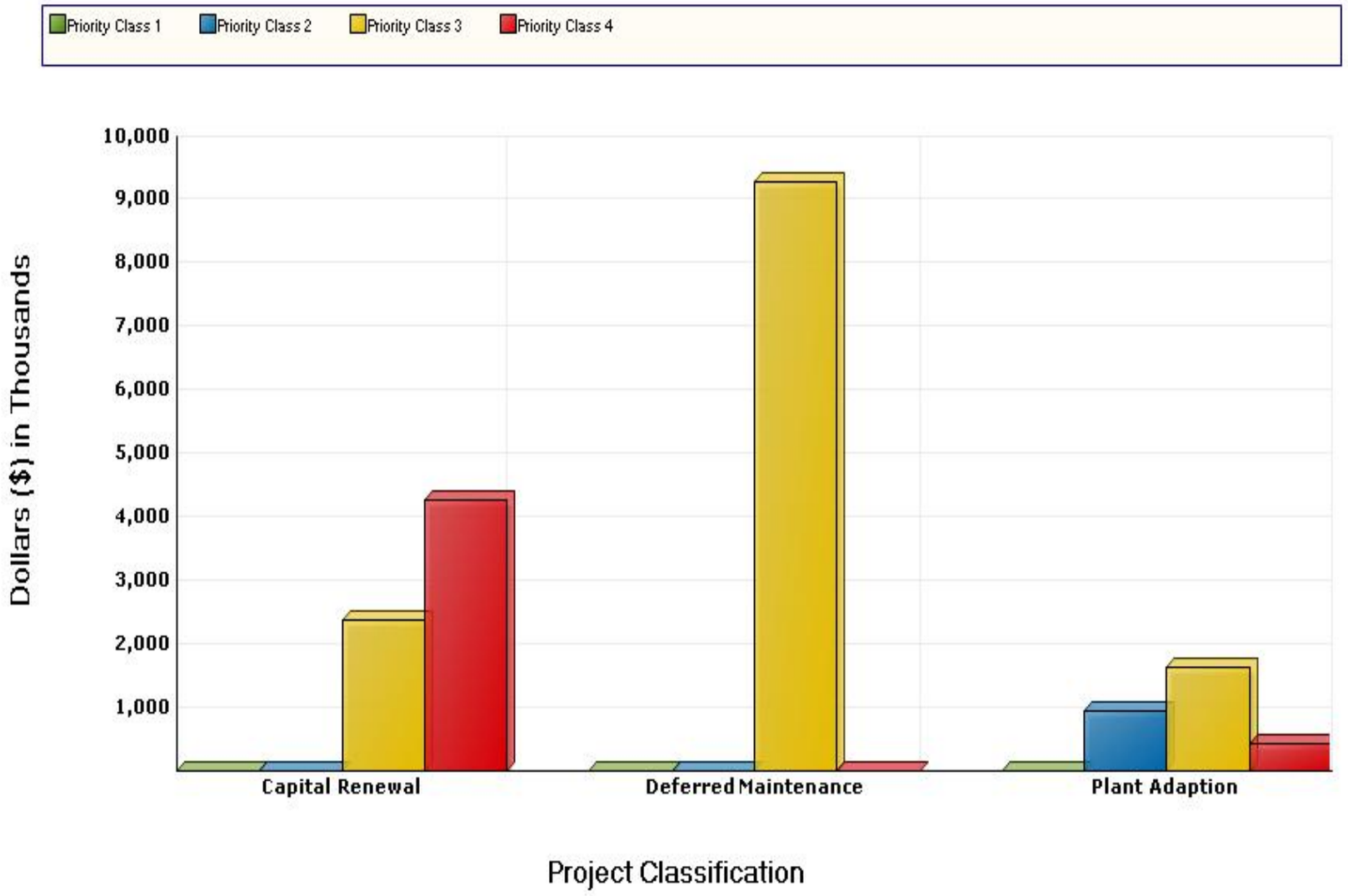
Facility Replacement Cost	$45,372,044
Facility Condition Needs Index	0.42

Gross Square Feet	107,569	**Total Cost Per Square Foot**	$176.09

FACILITY CONDITION ANALYSIS

Project Class by Priority Class

HOWE : HOWELL SCIENCE



Detailed Project Summary

Facility Condition Analysis

Priority Class - Priority Sequence

HOWE : HOWELL SCIENCE

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Total Cost
FS3A	HOWEFS02	2	1	FIRE SPRINKLER SYSTEM INSTALLATION	790,466	126,475	916,940
PL3A	HOWEPL03	2	2	INSTALL EMERGENCY GAS SHUTOFF VALVES	29,275	4,684	33,959
PL1A	HOWEPL04	2	3	REPLACE WATER DISTRIBUTION VALVES	5,738	918	6,657
				Totals for Priority Class 2	**825,479**	**132,077**	**957,556**
FS4B	HOWEFS03	3	4	EMERGENCY SHOWER AND EYEWASH REPLACEMENT	215,864	34,538	250,403
FS2A	HOWEFS01	3	5	FIRE ALARM SYSTEM REPLACEMENT	256,500	41,040	297,540
HE6F	HOWEHE02	3	6	INTERIOR ASBESTOS ABATEMENT	1,181,535	189,046	1,370,580
HE1A	HOWEHE01	3	7	LAB COLD BOX UPGRADES	40,410	6,466	46,875
ES4B	HOWEES05	3	8	MEMBRANE ROOF REPLACEMENT	109,561	17,530	127,090
ES5A	HOWEES02	3	9	EXTERIOR DOOR REPLACEMENT	85,110	13,618	98,728
ES2B	HOWEES01	3	10	RESTORE BRICK VENEER	92,473	14,796	107,268
ES4B	HOWEES04	3	11	BUILT-UP ROOF REPLACEMENT	49,116	7,859	56,975
HV3A	HOWEHV01	3	12	HVAC SYSTEM REPLACEMENT	5,000,000	0	5,000,000
EL3B	HOWEEL02	3	13	UPGRADE ELECTRICAL DISTRIBUTION NETWORK	1,127,597	180,415	1,308,012
EL4B	HOWEEL01	3	14	INTERIOR LIGHTING UPGRADE	615,666	98,507	714,173
EL4A	HOWEEL03	3	15	EXTERIOR LIGHTING INSTALLATION	2,506	401	2,907
IS1A	HOWEIS01	3	16	REFINISH FLOORING	654,709	104,753	759,462
IS2B	HOWEIS02	3	17	REFINISH WALLS	193,455	30,953	224,408
IS3B	HOWEIS03	3	18	REFINISH CEILINGS	170,835	27,334	198,169
IS4A	HOWEIS04	3	19	REPLACE INTERIOR DOORS	518,189	82,910	601,100
IS6B	HOWEIS05	3	20	LABORATORY CASEWORK UPGRADES	1,689,496	270,319	1,959,815
VT7A	HOWEVT01	3	21	UPGRADE ELEVATOR NO. 1 (SOUTH)	165,008	0	165,008
				Totals for Priority Class 3	**12,168,031**	**1,120,484**	**13,288,515**
AC4A	HOWEAC01	4	22	INTERIOR AMENITY ACCESSIBILITY UPGRADES	54,361	8,698	63,059
AC3E	HOWEAC02	4	23	RESTROOM RENOVATION	197,817	31,651	229,468
AC3B	HOWEAC03	4	24	STAIR SAFETY UPGRADES	115,218	18,435	133,653
ES5B	HOWEES03	4	25	WINDOW REPLACEMENT	1,720,121	275,219	1,995,340
PL1A	HOWEPL01	4	26	WATER SUPPLY PIPING REPLACEMENT	749,772	119,964	869,735
PL2A	HOWEPL02	4	27	DRAIN PIPING REPLACEMENT	1,138,784	182,205	1,320,990

Detailed Project Summary

Facility Condition Analysis

Priority Class - Priority Sequence

HOWE : HOWELL SCIENCE

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Total Cost
SI4A	HOWESI01	4	28	SITE PAVING UPGRADES	72,012	11,522	83,534
				Totals for Priority Class 4	**4,048,086**	**647,694**	**4,695,780**
				Grand Total:	**17,041,596**	**1,900,254**	**18,941,850**

Detailed Project Summary

Facility Condition Analysis

Project Cost Range

HOWE : HOWELL SCIENCE

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Total Cost
PL3A	HOWEPL03	2	2	INSTALL EMERGENCY GAS SHUTOFF VALVES	29,275	4,684	33,959
PL1A	HOWEPL04	2	3	REPLACE WATER DISTRIBUTION VALVES	5,738	918	6,657
				Totals for Priority Class 2	**35,014**	**5,602**	**40,616**
HE1A	HOWEHE01	3	7	LAB COLD BOX UPGRADES	40,410	6,466	46,875
EL4A	HOWEEL03	3	15	EXTERIOR LIGHTING INSTALLATION	2,506	401	2,907
ES5A	HOWEES02	3	9	EXTERIOR DOOR REPLACEMENT	85,110	13,618	98,728
ES4B	HOWEES04	3	11	BUILT-UP ROOF REPLACEMENT	49,116	7,859	56,975
				Totals for Priority Class 3	**177,142**	**28,343**	**205,485**
AC4A	HOWEAC01	4	22	INTERIOR AMENITY ACCESSIBILITY UPGRADES	54,361	8,698	63,059
SI4A	HOWESI01	4	28	SITE PAVING UPGRADES	72,012	11,522	83,534
				Totals for Priority Class 4	**126,373**	**20,220**	**146,593**
				Grand Totals for Projects < 100,000	**338,529**	**54,165**	**392,694**

Detailed Project Summary

Facility Condition Analysis

Project Cost Range

HOWE : HOWELL SCIENCE

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Total Cost
FS2A	HOWEFS01	3	5	FIRE ALARM SYSTEM REPLACEMENT	256,500	41,040	297,540
FS4B	HOWEFS03	3	4	EMERGENCY SHOWER AND EYEWASH REPLACEMENT	215,864	34,538	250,403
VT7A	HOWEVT01	3	21	UPGRADE ELEVATOR NO. 1 (SOUTH)	165,008	0	165,008
ES2B	HOWEES01	3	10	RESTORE BRICK VENEER	92,473	14,796	107,268
ES4B	HOWEES05	3	8	MEMBRANE ROOF REPLACEMENT	109,561	17,530	127,090
IS2B	HOWEIS02	3	17	REFINISH WALLS	193,455	30,953	224,408
IS3B	HOWEIS03	3	18	REFINISH CEILINGS	170,835	27,334	198,169
				Totals for Priority Class 3	**1,203,697**	**166,190**	**1,369,887**
AC3E	HOWEAC02	4	23	RESTROOM RENOVATION	197,817	31,651	229,468
AC3B	HOWEAC03	4	24	STAIR SAFETY UPGRADES	115,218	18,435	133,653
				Totals for Priority Class 4	**313,036**	**50,086**	**363,121**
				Grand Totals for Projects >= 100,000 and < 500,000	**1,516,732**	**216,276**	**1,733,008**

Detailed Project Summary

Facility Condition Analysis

Project Cost Range

HOWE : HOWELL SCIENCE

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Total Cost
FS3A	HOWEFS02	2	1	FIRE SPRINKLER SYSTEM INSTALLATION	790,466	126,475	916,940
				Totals for Priority Class 2	**790,466**	**126,475**	**916,940**
HV3A	HOWEHV01	3	12	HVAC SYSTEM REPLACEMENT	5,000,000	0	5,000,000
EL4B	HOWEEL01	3	14	INTERIOR LIGHTING UPGRADE	615,666	98,507	714,173
EL3B	HOWEEL02	3	13	UPGRADE ELECTRICAL DISTRIBUTION NETWORK	1,127,597	180,415	1,308,012
HE6F	HOWEHE02	3	6	INTERIOR ASBESTOS ABATEMENT	1,181,535	189,046	1,370,580
IS1A	HOWEIS01	3	16	REFINISH FLOORING	654,709	104,753	759,462
IS4A	HOWEIS04	3	19	REPLACE INTERIOR DOORS	518,189	82,910	601,100
IS6B	HOWEIS05	3	20	LABORATORY CASEWORK UPGRADES	1,689,496	270,319	1,959,815
				Totals for Priority Class 3	**10,787,192**	**925,951**	**11,713,142**
PL1A	HOWEPL01	4	26	WATER SUPPLY PIPING REPLACEMENT	749,772	119,964	869,735
PL2A	HOWEPL02	4	27	DRAIN PIPING REPLACEMENT	1,138,784	182,205	1,320,990
ES5B	HOWEES03	4	25	WINDOW REPLACEMENT	1,720,121	275,219	1,995,340
				Totals for Priority Class 4	**3,608,677**	**577,388**	**4,186,065**
				Grand Totals for Projects >= 500,000	**15,186,334**	**1,629,814**	**16,816,148**
				Grand Totals For All Projects:	**17,041,596**	**1,900,254**	**18,941,850**

Detailed Project Summary

Facility Condition Analysis

Project Classification

HOWE : HOWELL SCIENCE

Cat Code	Project Number	Pri. Seq.	Project Classification	Pri. Cls	Project Title	Total Cost
PL1A	HOWEPL04	3	Capital Renewal	2	REPLACE WATER DISTRIBUTION VALVES	6,657
FS2A	HOWEFS01	5	Capital Renewal	3	FIRE ALARM SYSTEM REPLACEMENT	297,540
ES4B	HOWEES04	11	Capital Renewal	3	BUILT-UP ROOF REPLACEMENT	56,975
EL3B	HOWEEL02	13	Capital Renewal	3	UPGRADE ELECTRICAL DISTRIBUTION NETWORK	1,308,012
EL4B	HOWEEL01	14	Capital Renewal	3	INTERIOR LIGHTING UPGRADE	714,173
EL4A	HOWEEL03	15	Capital Renewal	3	EXTERIOR LIGHTING INSTALLATION	2,907
ES5B	HOWEES03	25	Capital Renewal	4	WINDOW REPLACEMENT	1,995,340
PL1A	HOWEPL01	26	Capital Renewal	4	WATER SUPPLY PIPING REPLACEMENT	869,735
PL2A	HOWEPL02	27	Capital Renewal	4	DRAIN PIPING REPLACEMENT	1,320,990
SI4A	HOWESI01	28	Capital Renewal	4	SITE PAVING UPGRADES	83,534
					Totals for Capital Renewal	**6,655,863**
HE1A	HOWEHE01	7	Deferred Maintenance	3	LAB COLD BOX UPGRADES	46,875
ES4B	HOWEES05	8	Deferred Maintenance	3	MEMBRANE ROOF REPLACEMENT	127,090
ES5A	HOWEES02	9	Deferred Maintenance	3	EXTERIOR DOOR REPLACEMENT	98,728
ES2B	HOWEES01	10	Deferred Maintenance	3	RESTORE BRICK VENEER	107,268
HV3A	HOWEHV01	12	Deferred Maintenance	3	HVAC SYSTEM REPLACEMENT	5,000,000
IS1A	HOWEIS01	16	Deferred Maintenance	3	REFINISH FLOORING	759,462
IS2B	HOWEIS02	17	Deferred Maintenance	3	REFINISH WALLS	224,408
IS3B	HOWEIS03	18	Deferred Maintenance	3	REFINISH CEILINGS	198,169
IS4A	HOWEIS04	19	Deferred Maintenance	3	REPLACE INTERIOR DOORS	601,100
IS6B	HOWEIS05	20	Deferred Maintenance	3	LABORATORY CASEWORK UPGRADES	1,959,815
VT7A	HOWEVT01	21	Deferred Maintenance	3	UPGRADE ELEVATOR NO. 1 (SOUTH)	165,008
					Totals for Deferred Maintenance	**9,287,924**
FS3A	HOWEFS02	1	Plant Adaption	2	FIRE SPRINKLER SYSTEM INSTALLATION	916,940
PL3A	HOWEPL03	2	Plant Adaption	2	INSTALL EMERGENCY GAS SHUTOFF VALVES	33,959
FS4B	HOWEFS03	4	Plant Adaption	3	EMERGENCY SHOWER AND EYEWASH REPLACEMENT	250,403
HE6F	HOWEHE02	6	Plant Adaption	3	INTERIOR ASBESTOS ABATEMENT	1,370,580
AC4A	HOWEAC01	22	Plant Adaption	4	INTERIOR AMENITY ACCESSIBILITY UPGRADES	63,059
AC3E	HOWEAC02	23	Plant Adaption	4	RESTROOM RENOVATION	229,468

Detailed Project Summary

Facility Condition Analysis

Project Classification

HOWE : HOWELL SCIENCE

Cat Code	Project Number	Pri. Seq.	Project Classification	Pri. Cls	Project Title	Total Cost
AC3B	HOWEAC03	24	Plant Adaption	4	STAIR SAFETY UPGRADES	133,653
					Totals for Plant Adaption	**2,998,063**
					Grand Total:	**18,941,850**

Detailed Project Summary

Facility Condition Analysis

Energy Conservation

HOWE : HOWELL SCIENCE

Cat Code	Project Number	Pri Cls	Pri Seq	Project Title	Total Cost	Annual Savings	Simple Payback
ES4B	HOWEES05	3	8	MEMBRANE ROOF REPLACEMENT	127,090	1,600	79.43
ES4B	HOWEES04	3	11	BUILT-UP ROOF REPLACEMENT	56,975	700	81.39
HV3A	HOWEHV01	3	12	HVAC SYSTEM REPLACEMENT	5,000,000	68,670	72.81
EL4B	HOWEEL01	3	14	INTERIOR LIGHTING UPGRADE	714,173	32,920	21.69
EL4A	HOWEEL03	3	15	EXTERIOR LIGHTING INSTALLATION	2,907	260	11.18
				Totals for Priority Class 3	**5,901,146**	**104,150**	**56.66**
ES5B	HOWEES03	4	25	WINDOW REPLACEMENT	1,995,340	3,900	511.63
				Totals for Priority Class 4	**1,995,340**	**3,900**	**511.63**
				Grand Total:	**7,896,486**	**108,050**	**73.08**

Detailed Project Summary
Facility Condition Analysis
Category/System Code
HOWE : HOWELL SCIENCE

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Total Cost
AC4A	HOWEAC01	4	22	INTERIOR AMENITY ACCESSIBILITY UPGRADES	54,361	8,698	63,059
AC3E	HOWEAC02	4	23	RESTROOM RENOVATION	197,817	31,651	229,468
AC3B	HOWEAC03	4	24	STAIR SAFETY UPGRADES	115,218	18,435	133,653
				Totals for System Code: ACCESSIBILITY	**367,397**	**58,784**	**426,180**
EL3B	HOWEEL02	3	13	UPGRADE ELECTRICAL DISTRIBUTION NETWORK	1,127,597	180,415	1,308,012
EL4B	HOWEEL01	3	14	INTERIOR LIGHTING UPGRADE	615,666	98,507	714,173
EL4A	HOWEEL03	3	15	EXTERIOR LIGHTING INSTALLATION	2,506	401	2,907
				Totals for System Code: ELECTRICAL	**1,745,770**	**279,323**	**2,025,093**
ES4B	HOWEES05	3	8	MEMBRANE ROOF REPLACEMENT	109,561	17,530	127,090
ES5A	HOWEES02	3	9	EXTERIOR DOOR REPLACEMENT	85,110	13,618	98,728
ES2B	HOWEES01	3	10	RESTORE BRICK VENEER	92,473	14,796	107,268
ES4B	HOWEES04	3	11	BUILT-UP ROOF REPLACEMENT	49,116	7,859	56,975
ES5B	HOWEES03	4	25	WINDOW REPLACEMENT	1,720,121	275,219	1,995,340
				Totals for System Code: EXTERIOR	**2,056,381**	**329,021**	**2,385,402**
FS3A	HOWEFS02	2	1	FIRE SPRINKLER SYSTEM INSTALLATION	790,466	126,475	916,940
FS4B	HOWEFS03	3	4	EMERGENCY SHOWER AND EYEWASH REPLACEMENT	215,864	34,538	250,403
FS2A	HOWEFS01	3	5	FIRE ALARM SYSTEM REPLACEMENT	256,500	41,040	297,540
				Totals for System Code: FIRE/LIFE SAFETY	**1,262,830**	**202,053**	**1,464,883**
HE6F	HOWEHE02	3	6	INTERIOR ASBESTOS ABATEMENT	1,181,535	189,046	1,370,580
HE1A	HOWEHE01	3	7	LAB COLD BOX UPGRADES	40,410	6,466	46,875
				Totals for System Code: HEALTH	**1,221,944**	**195,511**	**1,417,456**
HV3A	HOWEHV01	3	12	HVAC SYSTEM REPLACEMENT	5,000,000	0	5,000,000
				Totals for System Code: HVAC	**5,000,000**		**5,000,000**
IS1A	HOWEIS01	3	16	REFINISH FLOORING	654,709	104,753	759,462
IS2B	HOWEIS02	3	17	REFINISH WALLS	193,455	30,953	224,408
IS3B	HOWEIS03	3	18	REFINISH CEILINGS	170,835	27,334	198,169
IS4A	HOWEIS04	3	19	REPLACE INTERIOR DOORS	518,189	82,910	601,100
IS6B	HOWEIS05	3	20	LABORATORY CASEWORK UPGRADES	1,689,496	270,319	1,959,815
				Totals for System Code: INTERIOR/FINISH SYS.	**3,226,684**	**516,270**	**3,742,954**
PL3A	HOWEPL03	2	2	INSTALL EMERGENCY GAS SHUTOFF VALVES	29,275	4,684	33,959
PL1A	HOWEPL04	2	3	REPLACE WATER DISTRIBUTION VALVES	5,738	918	6,657
PL1A	HOWEPL01	4	26	WATER SUPPLY PIPING REPLACEMENT	749,772	119,964	869,735

Detailed Project Summary

Facility Condition Analysis

Category/System Code

HOWE : HOWELL SCIENCE

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Total Cost
PL2A	HOWEPL02	4	27	DRAIN PIPING REPLACEMENT	1,138,784	182,205	1,320,990
				Totals for System Code: PLUMBING	**1,923,570**	**307,771**	**2,231,341**
SI4A	HOWESI01	4	28	SITE PAVING UPGRADES	72,012	11,522	83,534
				Totals for System Code: SITE	**72,012**	**11,522**	**83,534**
VT7A	HOWEVT01	3	21	UPGRADE ELEVATOR NO. 1 (SOUTH)	165,008	0	165,008
				Totals for System Code: VERT. TRANSPORTATION	**165,008**		**165,008**
				Grand Total:	**17,041,596**	**1,900,254**	**18,941,850**

FACILITY CONDITION ANALYSIS

SECTION 3

SPECIFIC PROJECT DETAILS ILLUSTRATING DESCRIPTION / COST

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEFS02	**Title:**	FIRE SPRINKLER SYSTEM INSTALLATION
Priority Sequence:	1		
Priority Class:	2		
Category Code:	FS3A	**System:**	FIRE/LIFE SAFETY
		Component:	SUPPRESSION
		Element:	SPRINKLERS
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		

Code Application: NFPA 1, 13, 13R, 101

Project Class: Plant Adaption

Project Date: 10/9/2009

Project Location: Floor-wide: Floor(s) 1, 2, 3, 4, B

Project Description

Install an automatic fire sprinkler system in unprotected areas throughout the facility. This includes piping, valves, sprinkler heads, and piping supports. Install flow switches and sensors to interface with the fire alarm system. Cost has been included in this project for the installation of a fire pump, if necessary.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEFS02

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Install a wet-pipe sprinkler system, including valves, piping, sprinkler heads, piping supports, etc.	SF	107,569	$3.08	$331,313	$3.77	$405,535	$736,848
Fire pump, controls, piping, valves, and connections	GPM	1,500	$62.34	$93,510	$3.76	$5,640	$99,150
Project Totals:				**$424,823**		**$411,175**	**$835,998**

Material/Labor Cost		$835,998
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$638,729
General Contractor Mark Up at 20.0%	+	$127,746
Inflation	+	$23,991
Construction Cost		$790,466
Professional Fees at 16.0%	+	$126,475
Total Project Cost		**$916,940**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEPL03	**Title:**	INSTALL EMERGENCY GAS SHUTOFF VALVES
Priority Sequence:	2		
Priority Class:	2		
Category Code:	PL3A	**System:**	PLUMBING
		Component:	SPECIAL SYSTEMS
		Element:	PROCESS GAS/FLUIDS
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		
Code Application:	Not Applicable		
Project Class:	Plant Adaption		
Project Date:	8/10/2010		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, B		

Project Description

Install emergency solenoid-operated shutoff valves on all gas piping throughout the building. The valves should be key operated for reset functions. Additionally, they should also be connected to the fire alarm and fire suppression system when installed.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEPL03

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Gas shutoff valves, key activated	EA	12	$1,000	$12,000	$2,000	$24,000	$36,000
Project Totals:				**$12,000**		**$24,000**	**$36,000**

Material/Labor Cost		$36,000
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$24,396
General Contractor Mark Up at 20.0%	+	$4,879
Construction Cost		$29,275
Professional Fees at 16.0%	+	$4,684
Total Project Cost		**$33,959**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEPL04	**Title:**	REPLACE WATER DISTRIBUTION VALVES
Priority Sequence:	3		
Priority Class:	2		
Category Code:	PL1A	**System:**	PLUMBING
		Component:	DOMESTIC WATER
		Element:	PIPING NETWORK
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		
Code Application:	Not Applicable		
Project Class:	Capital Renewal		
Project Date:	8/10/2010		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, B		

Project Description

The building contains a copper water supply piping network with water distribution shutoff valves in need of repalcement. Replace all aged units.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEPL04

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Water distribution valves	EA	15	$285	$4,275	$62.00	$930	$5,205
Project Totals:				**$4,275**		**$930**	**$5,205**

Material/Labor Cost		$5,205
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$4,782
General Contractor Mark Up at 20.0%	+	$956
Construction Cost		$5,738
Professional Fees at 16.0%	+	$918
Total Project Cost		**$6,657**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEFS03	**Title:**	EMERGENCY SHOWER AND EYEWASH REPLACEMENT
Priority Sequence:	4		
Priority Class:	3		
Category Code:	FS4B	**System:**	FIRE/LIFE SAFETY
		Component:	HAZARDOUS MATERIALS
		Element:	USER SAFETY
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		

Code Application:	ANSI	Z358.1
	OSHA	29 CFR 1910.151C

Project Class:	Plant Adaption
Project Date:	10/9/2009
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, B

Project Description

Replace the existing emergency shower and eyewash stations. Install additional emergency showers and eyewash fountains in areas where related hazards exist. These new fixtures should be permanent and connected to the water supply and drain networks. They need to be clearly identifiable and located in unobstructed areas for easy access. Install specifically designed point-of-use water heaters to maintain the supplied water temperature between 60 and 100 degrees Fahrenheit, as per ANSI Z358.1.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEFS03

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Eyewash fountain, drain, and rough-in	EA	52	$1,906	$99,112	$525	$27,300	$126,412
Emergency shower, drain, and rough-in	EA	18	$556	$10,008	$525	$9,450	$19,458
Point-of-use water heater installation	EA	70	$422	$29,540	$444	$31,080	$60,620
Project Totals:				**$138,660**		**$67,830**	**$206,490**

Material/Labor Cost		$206,490
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$174,427
General Contractor Mark Up at 20.0%	+	$34,885
Inflation	+	$6,551
Construction Cost		$215,864
Professional Fees at 16.0%	+	$34,538
Total Project Cost		**$250,403**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEFS01	**Title:**	FIRE ALARM SYSTEM REPLACEMENT
Priority Sequence:	5		
Priority Class:	3		
Category Code:	FS2A	**System:**	FIRE/LIFE SAFETY
		Component:	DETECTION ALARM
		Element:	GENERAL
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		

Code Application:	ADAAG	702.1
	NFPA	1, 101

Project Class:	Capital Renewal
Project Date:	10/9/2009
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, B

Project Description

Upgrade the existing fire alarm system with a modern application. Specify a point addressable supervised main fire alarm panel with an annunciator. This work includes pull stations, audible and visible alarms, smoke and heat detectors, and a wiring network. Install all devices in accordance with current NFPA and ADA requirements. The system should be monitored to report activation or trouble to an applicable receiving station.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEFS01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Fire alarm control panel(s), annunciator, smoke and heat detectors, manual pull stations, audible and visual alarms, wiring, raceways, cut and patching materials	SF	107,569	$1.46	$157,051	$0.89	$95,736	$252,787
Project Totals:				**$157,051**		**$95,736**	**$252,787**

Material/Labor Cost		$252,787
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$207,263
General Contractor Mark Up at 20.0%	+	$41,453
Inflation	+	$7,785
Construction Cost		$256,500
Professional Fees at 16.0%	+	$41,040
Total Project Cost		**$297,540**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEHE02	**Title:**	INTERIOR ASBESTOS ABATEMENT
Priority Sequence:	6		
Priority Class:	3		
Category Code:	HE6F	**System:**	HEALTH
		Component:	HAZARDOUS MATERIAL
		Element:	OTHER
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		

Code Application:	EPA	40 CFR 61.M, 763
	OSHA	29 CFR 1910.1001, 1926.1101

Project Class:	Plant Adaption
Project Date:	10/16/2009
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, B

Project Description

Suspected asbestos-containing materials (ACM) are believed to be present in the facility, including the piping insulation, spray-on fireproofing, and multiple interior finish systems. Future renovation efforts will need to include provisions to test and abate any and all ACM.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEHE02

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Extensive asbestos remediation, including above-ceiling fireproofing, floor and wall mastic, and utility insulation	SF	64,540	$8.75	$564,725	$11.66	$752,536	$1,317,261
Project Totals:				**$564,725**		**$752,536**	**$1,317,261**

Material/Labor Cost		$1,317,261
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$954,729
General Contractor Mark Up at 20.0%	+	$190,946
Inflation	+	$35,860
Construction Cost		$1,181,535
Professional Fees at 16.0%	+	$189,046
Total Project Cost		**$1,370,580**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEHE01	**Title:**	LAB COLD BOX UPGRADES
Priority Sequence:	7		
Priority Class:	3		
Category Code:	HE1A	**System:**	HEALTH
		Component:	ENVIRONMENTAL CONTROL
		Element:	EQUIPMENT AND ENCLOSURES
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		
Code Application:	ASHRAE 15-2004		
Project Class:	Deferred Maintenance		
Project Date:	10/9/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4		

Project Description

Upgrades to the laboratory cold room systems are recommended. This includes the associated insulated enclosures.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEHE01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Replace standard cooler / freezer, galvanized panels and insulation, 7 foot 6 inch ceiling, shelving, and vapor barrier	SF	320	$78.35	$25,072	$45.11	$14,435	$39,507
Project Totals:				**$25,072**		**$14,435**	**$39,507**

Material/Labor Cost		$39,507
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$32,653
General Contractor Mark Up at 20.0%	+	$6,531
Inflation	+	$1,226
Construction Cost		$40,410
Professional Fees at 16.0%	+	$6,466
Total Project Cost		**$46,875**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEES05	**Title:**	MEMBRANE ROOF REPLACEMENT
Priority Sequence:	8		
Priority Class:	3		
Category Code:	ES4B	**System:**	EXTERIOR
		Component:	ROOF
		Element:	REPLACEMENT
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Energy Conservation $1,600		
Code Application:	Not Applicable		
Project Class:	Deferred Maintenance		
Project Date:	10/16/2009		
Project Location:	Floor-wide: Floor(s) R		

Project Description

It is recommended that the single-ply membrane roofing systems over the north, south, and central wings be replaced. The existing stress conditions around the seams and at the perimeter flashing will lead to failure if left unattended. Replace the stressed roof and flashing with a similar application.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEES05

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Membrane roof	SF	18,820	$3.79	$71,328	$1.73	$32,559	$103,886
Project Totals:				**$71,328**		**$32,559**	**$103,886**

Material/Labor Cost		$103,866
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$88,530
General Contractor Mark Up at 20.0%	+	$17,706
Inflation	+	$3,325
Construction Cost		$109,561
Professional Fees at 16.0%	+	$17,530
Total Project Cost		**$127,090**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEES02	**Title:**	EXTERIOR DOOR REPLACEMENT
Priority Sequence:	9		
Priority Class:	3		
Category Code:	ES5A	**System:**	EXTERIOR
		Component:	FENESTRATIONS
		Element:	DOORS
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		
Code Application:	Not Applicable		
Project Class:	Deferred Maintenance		
Project Date:	10/16/2009		
Project Location:	Building-wide: Floor(s) 1		

Project Description

It is recommended that aged and inefficient primary and secondary entrance and service doors be replaced. The replacement units should maintain the architectural design aspects of this facility and be modern, energy-efficient applications.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEES02

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
High traffic door system	LEAF	15	$1,978	$29,670	$1,999	$29,985	$59,655
Low traffic door system	LEAF	14	$1,031	$14,434	$1,250	$17,500	$31,934
Project Totals:				**$44,104**		**$47,485**	**$91,589**

Material/Labor Cost		$91,589
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$68,773
General Contractor Mark Up at 20.0%	+	$13,755
Inflation	+	$2,583
Construction Cost		$85,110
Professional Fees at 16.0%	+	$13,618
Total Project Cost		**$98,728**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEES01	**Title:**	RESTORE BRICK VENEER
Priority Sequence:	10		
Priority Class:	3		
Category Code:	ES2B	**System:**	EXTERIOR
		Component:	COLUMNS/BEAMS/WALLS
		Element:	FINISH
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		
Code Application:	Not Applicable		
Project Class:	Deferred Maintenance		
Project Date:	10/16/2009		
Project Location:	Building-wide: Floor(s) 1		

Project Description

Brick veneer is the primary exterior finish, with some concrete trim. While the brick and concrete are fundamentally sound, exposure to the elements has caused some deterioration of the mortar joints and expansion joints. Cleaning, surface preparation, selective repairs, and applied finish or penetrating sealant upgrades are recommended to restore the aesthetics and integrity of the building envelope.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEES01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Cleaning and surface preparation	SF	54,600	$0.11	$6,006	$0.22	$12,012	$18,018
Selective mortar and / or sealant repairs (assumes 10 linear feet for every 100 square feet of envelope)	LF	5,460	$2.45	$13,377	$4.99	$27,245	$40,622
Applied finish or sealant	SF	54,600	$0.22	$12,012	$0.82	$44,772	$56,784
Project Totals:				**$31,395**		**$84,029**	**$115,424**

Material/Labor Cost		$115,424
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$74,722
General Contractor Mark Up at 20.0%	+	$14,944
Inflation	+	$2,807
Construction Cost		$92,473
Professional Fees at 16.0%	+	$14,796
Total Project Cost		**$107,268**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEES04	**Title:**	BUILT-UP ROOF REPLACEMENT
Priority Sequence:	11		
Priority Class:	3		
Category Code:	ES4B	**System:**	EXTERIOR
		Component:	ROOF
		Element:	REPLACEMENT
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Energy Conservation $700		
Code Application:	Not Applicable		
Project Class:	Capital Renewal		
Project Date:	10/16/2009		
Project Location:	Floor-wide: Floor(s) R		

Project Description

The built-up roofing system over the east wing is not expected to outlast the scope of this analysis. Future budget modeling should include a provision for the replacement of all failing roofing systems. Replace this roof with a similar application.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEES04

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Built-up roof	SF	8,070	$3.06	$24,694	$3.58	$28,891	$53,585
Project Totals:				**$24,694**		**$28,891**	**$53,585**

Material/Labor Cost		$53,585
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$39,688
General Contractor Mark Up at 20.0%	+	$7,938
Inflation	+	$1,491
Construction Cost		$49,116
Professional Fees at 16.0%	+	$7,859
Total Project Cost		**$56,975**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEHV01	**Title:**	HVAC SYSTEM REPLACEMENT
Priority Sequence:	12		
Priority Class:	3		
Category Code:	HV3A	**System:**	HVAC
		Component:	HEATING/COOLING
		Element:	SYSTEM RETROFIT/REPLACE
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Energy Conservation $68,670		
Code Application:	ASHRAE 62-2004		
Project Class:	Deferred Maintenance		
Project Date:	8/25/2010		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, B, R		

Project Description

The components of the HVAC system have aged beyond their statistical life cycles, and the system is inefficient compared to modern standards. During the inspection, the ductwork and water piping in the chases and tunnels were being replaced in an ongoing project. However, the constant flow terminal boxes and ducting in the hallways and common areas, labs, and classrooms are aged with ACM spray. It is recommended that the remaining equipment be replaced. The project includes the cost for replacement of all aged ducting, piping, terminal units, fume hoods and controls. Specify direct digital controls for the new equipment. Incorporate variable frequency drives into the new HVAC design as applicable.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEHV01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
HVAC ducting, piping, terminal units, fume hoods, and controls (client provided costs)	SF	1	$2,000,000	$2,000,000	$3,000,000	$3,000,000	$5,000,000
Project Totals:				**$2,000,000**		**$3,000,000**	**$5,000,000**

Material/Labor Cost	$5,000,000
Material Index	100.7%
Labor Index	51.3%
Material/Labor Indexed Cost	$5,000,000
No GCM Required	
Construction Cost	$5,000,000
No Professional Fees Required	
Total Project Cost	**$5,000,000**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEEL02	**Title:**	UPGRADE ELECTRICAL DISTRIBUTION NETWORK
Priority Sequence:	13		
Priority Class:	3		
Category Code:	EL3B	**System:**	ELECTRICAL
		Component:	SECONDARY DISTRIBUTION
		Element:	DISTRIBUTION NETWORK
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		

Code Application: NEC Articles 110, 210, 220, 230

Project Class: Capital Renewal

Project Date: 10/9/2009

Project Location: Floor-wide: Floor(s) 1, 2, 3, 4, B

Project Description

An upgrade of the original portion of the building electrical system is recommended. Aging components, such as the circuit breakers, could serve as fire hazards if they fail to open a circuit in an overload or short circuit condition. Remove existing aged electrical components and branch circuitry. Install new power panels, switches, raceways, conductors, and devices. Provide molded case thermal magnetic circuit breakers and HACR circuit breakers for HVAC equipment. Redistribute the electrical loads to the appropriate areas to ensure safe and reliable power to building occupants. Provide ground fault circuit interrupter (GFCI) protection where required, and clearly label all panels for circuit identification.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEEL02

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Power panels, conductors, raceways, devices, demolition, and cut and patching materials	SF	86,055	$5.96	$512,888	$8.94	$769,332	$1,282,220
Project Totals:				**$512,888**		**$769,332**	**$1,282,220**

Material/Labor Cost		$1,282,220
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$911,145
General Contractor Mark Up at 20.0%	+	$182,229
Inflation	+	$34,223
Construction Cost		$1,127,597
Professional Fees at 16.0%	+	$180,415
Total Project Cost		**$1,308,012**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEEL01	**Title:**	INTERIOR LIGHTING UPGRADE
Priority Sequence:	14		
Priority Class:	3		
Category Code:	EL4B	**System:**	ELECTRICAL
		Component:	DEVICES AND FIXTURES
		Element:	INTERIOR LIGHTING
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Energy Conservation $32,920		
Code Application:	NEC Articles 210, 410		
Project Class:	Capital Renewal		
Project Date:	10/9/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, B		

Project Description

An interior lighting upgrade is recommended. Replace existing aged and / or inefficient light fixtures with modern fixtures of the latest energy-efficient design. Select lamps with the same color temperature and rendering index for lighting uniformity. Install occupancy sensors in select areas for additional energy conservation.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEEL01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
High efficiency fluorescent fixtures, occupancy sensors, and demolition of existing lighting	SF	107,569	$2.83	$304,420	$3.46	$372,189	$676,609
Project Totals:				**$304,420**		**$372,189**	**$676,609**

Material/Labor Cost		$676,609
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$497,484
General Contractor Mark Up at 20.0%	+	$99,497
Inflation	+	$18,686
Construction Cost		$615,666
Professional Fees at 16.0%	+	$98,507
Total Project Cost		**$714,173**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEEL03	**Title:**	EXTERIOR LIGHTING INSTALLATION
Priority Sequence:	15		
Priority Class:	3		
Category Code:	EL4A	**System:**	ELECTRICAL
		Component:	DEVICES AND FIXTURES
		Element:	EXTERIOR LIGHTING
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Energy Conservation $260		
Code Application:	NEC 410		
Project Class:	Capital Renewal		
Project Date:	10/9/2009		
Project Location:	Building-wide: Floor(s) 1, 2, 3, 4, B, R		

Project Description

The exterior lighting scheme consists of roof-mounted HID fixtures, eave-mounted lighting, and wall-mounted fixtures. Additional lighting is provided by pole-mounted fixtures located on-site. The fixtures appear to be in good condition but coverage does not appear to be complete, particularly at the exterior exits from smart classroom 103B. It is recommended that overhead lighting be installed as required.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEEL03

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
HID wall-mount fixture and demolition of existing fixture	EA	4	$406	$1,624	$190	$760	$2,384
Project Totals:				**$1,624**		**$760**	**$2,384**

Material/Labor Cost		$2,384
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$2,025
General Contractor Mark Up at 20.0%	+	$405
Inflation	+	$76
Construction Cost		$2,506
Professional Fees at 16.0%	+	$401
Total Project Cost		**$2,907**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEIS01	**Title:**	REFINISH FLOORING
Priority Sequence:	16		
Priority Class:	3		
Category Code:	IS1A	**System:**	INTERIOR/FINISH SYS.
		Component:	FLOOR
		Element:	FINISHES-DRY
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		
Code Application:	Not Applicable		
Project Class:	Deferred Maintenance		
Project Date:	10/16/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, B		

Project Description

Interior floor finishes include vinyl tile, carpet, and ceramic tile. The applications vary in age and condition from area to area. Floor finish upgrades should be considered as part of any future cosmetic improvements or major comprehensive renovation efforts.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEIS01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Carpet	SF	9,140	$5.36	$48,990	$2.00	$18,280	$67,270
Vinyl floor tile	SF	73,150	$3.53	$258,220	$2.50	$182,875	$441,095
Ceramic tile	SF	9,140	$7.24	$66,174	$10.63	$97,158	$163,332
Project Totals:				**$373,384**		**$298,313**	**$671,697**

Material/Labor Cost		$671,697
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$529,032
General Contractor Mark Up at 20.0%	+	$105,806
Inflation	+	$19,870
Construction Cost		$654,709
Professional Fees at 16.0%	+	$104,753
Total Project Cost		**$759,462**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEIS02	**Title:**	REFINISH WALLS
Priority Sequence:	17		
Priority Class:	3		
Category Code:	IS2B	**System:**	INTERIOR/FINISH SYS.
		Component:	PARTITIONS
		Element:	FINISHES
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		
Code Application:	Not Applicable		
Project Class:	Deferred Maintenance		
Project Date:	10/16/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, B		

Project Description

Interior wall finishes are painted plaster or concrete. The applications vary in age and condition from area to area. Wall finish upgrades should be considered as part of any future cosmetic improvements or major comprehensive renovation efforts.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEIS02

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Standard wall finish (paint, wall covering, etc.)	SF	266,430	$0.17	$45,293	$0.81	$215,808	$261,101
Project Totals:				**$45,293**		**$215,808**	**$261,101**

Material/Labor Cost		$261,101
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$156,320
General Contractor Mark Up at 20.0%	+	$31,264
Inflation	+	$5,871
Construction Cost		$193,455
Professional Fees at 16.0%	+	$30,953
Total Project Cost		**$224,408**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEIS03	**Title:**	REFINISH CEILINGS
Priority Sequence:	18		
Priority Class:	3		
Category Code:	IS3B	**System:**	INTERIOR/FINISH SYS.
		Component:	CEILINGS
		Element:	REPLACEMENT
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		
Code Application:	Not Applicable		
Project Class:	Deferred Maintenance		
Project Date:	10/16/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, B		

Project Description

Ceiling finishes include lay-in, acoustical tile and painted ceilings. The applications vary in age and condition from area to area. Ceiling finish upgrades should be considered as part of any future cosmetic improvements or major comprehensive renovation efforts.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEIS03

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Acoustical tile ceiling system	SF	27,430	$2.12	$58,152	$2.98	$81,741	$139,893
Painted ceiling finish application	SF	64,000	$0.17	$10,880	$0.81	$51,840	$62,720
Project Totals:				**$69,032**		**$133,581**	**$202,613**

Material/Labor Cost		$202,613
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$138,042
General Contractor Mark Up at 20.0%	+	$27,608
Inflation	+	$5,185
Construction Cost		$170,835
Professional Fees at 16.0%	+	$27,334
Total Project Cost		**$198,169**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEIS04	**Title:**	REPLACE INTERIOR DOORS
Priority Sequence:	19		
Priority Class:	3		
Category Code:	IS4A	**System:**	INTERIOR/FINISH SYS.
		Component:	DOORS
		Element:	GENERAL
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		
Code Application:	Not Applicable		
Project Class:	Deferred Maintenance		
Project Date:	10/16/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, B		

Project Description

The condition of the interior door systems is such that door system replacements are recommended as part of a comprehensive renovation effort. Complete demolition of the door systems and replacement according to a code compliant plan to properly protect egress passages is recommended. Lever door hardware and Braille signage should be included in this effort.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEIS04

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Rated door and rated metal frame, including all hardware and accessible signage	EA	383	$672	$257,376	$812	$310,996	$568,372
Project Totals:				**$257,376**		**$310,996**	**$568,372**

Material/Labor Cost		$568,372
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$418,719
General Contractor Mark Up at 20.0%	+	$83,744
Inflation	+	$15,727
Construction Cost		$518,189
Professional Fees at 16.0%	+	$82,910
Total Project Cost		**$601,100**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEIS05	**Title:**	LABORATORY CASEWORK UPGRADES
Priority Sequence:	20		
Priority Class:	3		
Category Code:	IS6B	**System:**	INTERIOR/FINISH SYS.
		Component:	GENERAL
		Element:	CABINETRY
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		
Code Application:	Not Applicable		
Project Class:	Deferred Maintenance		
Project Date:	10/16/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, B		

Project Description

The laboratory casework is in overall poor condition. Install new casework as part of a comprehensive laboratory renovation effort.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEIS05

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Laboratory base cabinetry, wall cabinetry, and shelving per SF of lab space (assumes casework density of 20% of total lab area)	SF	64,540	$17.74	$1,144,940	$6.41	$413,701	$1,558,641
Project Totals:				**$1,144,940**		**$413,701**	**$1,558,641**

Material/Labor Cost		$1,558,641
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$1,365,183
General Contractor Mark Up at 20.0%	+	$273,037
Inflation	+	$51,276
Construction Cost		$1,689,496
Professional Fees at 16.0%	+	$270,319
Total Project Cost		**$1,959,815**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEVT01	**Title:**	UPGRADE ELEVATOR NO. 1 (SOUTH)
Priority Sequence:	21		
Priority Class:	3		
Category Code:	VT7A	**System:**	VERT. TRANSPORTATION
		Component:	GENERAL
		Element:	OTHER
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		
Code Application:	Not Applicable		
Project Class:	Deferred Maintenance		
Project Date:	10/12/2009		
Project Location:	Item Only: Floor(s) 1		

Project Description

Recommend to perform a complete modernization. Replace the motion / motor / operation controller, machine complete with motor / brake / gears, door operator, hoistway doors, hangers, tracks, rollers, including related hardware, car operating panel, signal fixtures, and refurbishing car interior.

Work by Others

1. HVAC in elevator machine room.
2. Main lines power feeders with “Green” ground.
3. Smoke detectors in elevator machine room and elevator lobbies.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEVT01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Client-reported cost to modernize elevator	EA	1	$160,000	$160,000	$0.00	$	$160,000
Project Totals:				**$160,000**		**$**	**$160,000**

Material/Labor Cost		$160,000
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$160,000
No GCM Required		
Inflation	+	$5,008
Construction Cost		$165,008
No Professional Fees Required		
Total Project Cost		**$165,008**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEAC01	**Title:**	INTERIOR AMENITY ACCESSIBILITY UPGRADES
Priority Sequence:	22		
Priority Class:	4		
Category Code:	AC4A	**System:**	ACCESSIBILITY
		Component:	GENERAL
		Element:	FUNCTIONAL SPACE MOD.
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		

Code Application:	ADAAG	211, 602, 804

Project Class:	Plant Adaption
Project Date:	10/16/2009
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, B

Project Description

Current accessibility legislation requires that building amenities be generally accessible to all persons. The configurations of break room kitchenette and drinking fountains are barriers to accessibility. The installation of wheelchair accessible kitchenette cabinetry and dual level, refrigerated drinking fountains is recommended where applicable.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEAC01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
ADA compliant kitchenette unit with base cabinetry, overhead cabinetry, and amenities	SYS	1	$4,894	$4,894	$1,999	$1,999	$6,893
Dual level drinking fountain	EA	9	$1,216	$10,944	$374	$3,366	$14,310
Alcove construction including finishes	EA	9	$877	$7,893	$3,742	$33,678	$41,571
Project Totals:				**$23,731**		**$39,043**	**$62,774**

Material/Labor Cost		$62,774
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$43,926
General Contractor Mark Up at 20.0%	+	$8,785
Inflation	+	$1,650
Construction Cost		$54,361
Professional Fees at 16.0%	+	$8,698
Total Project Cost		**$63,059**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEAC02	**Title:**	RESTROOM RENOVATION
Priority Sequence:	23		
Priority Class:	4		
Category Code:	AC3E	**System:**	ACCESSIBILITY
		Component:	INTERIOR PATH OF TRAVEL
		Element:	RESTROOMS/BATHROOMS
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		

Code Application:	ADAAG	604, 605, 606, 607, 608

Project Class:	Plant Adaption
Project Date:	10/16/2009
Project Location:	Floor-wide: Floor(s) B,1,2,3,4

Project Description

The restroom fixtures and finishes are mostly original to the year of construction or latest major renovation. The fixtures are sound but dated and are spaced such that clearances are not ADA compliant. A comprehensive restroom renovation, including new fixtures, finishes, partitions, and accessories is recommended. Restroom expansion may be necessary in order to meet modern minimum fixture counts and accessibility legislation.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEAC02

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Major restroom renovation, including fixtures, finishes, partitions, accessories, and expansion if necessary (assumes 55 square feet of restroom area per fixture)	FIXT	56	$1,969	$110,264	$1,699	$95,144	$205,408
Project Totals:				**$110,264**		**$95,144**	**$205,408**

Material/Labor Cost		$205,408
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$159,845
General Contractor Mark Up at 20.0%	+	$31,969
Inflation	+	$6,004
Construction Cost		$197,817
Professional Fees at 16.0%	+	$31,651
Total Project Cost		**$229,468**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEAC03	**Title:**	STAIR SAFETY UPGRADES
Priority Sequence:	24		
Priority Class:	4		
Category Code:	AC3B	**System:**	ACCESSIBILITY
		Component:	INTERIOR PATH OF TRAVEL
		Element:	STAIRS AND RAILINGS
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		

Code Application:	IBC	1003.3
	ADAAG	505

Project Class:	Plant Adaption
Project Date:	10/16/2009
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, B

Project Description

Current accessibility legislation requires that stairs have graspable handrails on both sides, that the rails have a specific end geometry, and that the handrails continue horizontally at the landings. In addition, guardrails must prevent the passage of a 4 inch diameter sphere (6 inches in the triangle formed by the lower rail and tread / riser angle). The finishes on the stairs have deteriorated or are otherwise unsafe. Although the stairs are compliant with the code enforced at the time of construction until a major renovation occurs, they are deficient in handrail and guardrail design relative to current standards. Future renovation efforts should include comprehensive stair railing and finish upgrades.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEAC03

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Wall-mounted handrail system per floor	FLR	21	$573	$12,033	$521	$10,941	$22,974
Center handrail / guardrail system per floor	FLR	21	$1,297	$27,237	$833	$17,493	$44,730
Stair tread and landing finish upgrades per floor	FLR	21	$1,449	$30,429	$773	$16,233	$46,662
Project Totals:				**$69,699**		**$44,667**	**$114,366**

Material/Labor Cost		$114,366
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$93,101
General Contractor Mark Up at 20.0%	+	$18,620
Inflation	+	$3,497
Construction Cost		$115,218
Professional Fees at 16.0%	+	$18,435
Total Project Cost		**$133,653**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEES03	**Title:**	WINDOW REPLACEMENT
Priority Sequence:	25		
Priority Class:	4		
Category Code:	ES5B	**System:**	EXTERIOR
		Component:	FENESTRATIONS
		Element:	WINDOWS
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Energy Conservation $3,900		
Code Application:	Not Applicable		
Project Class:	Capital Renewal		
Project Date:	10/16/2009		
Project Location:	Building-wide: Floor(s) 1		

Project Description

It is recommended that the single-pane, metal windows be upgraded to thermal-pane systems, which will reduce the energy required to operate the building. Repair or replacement of the windowsills and trim may also be necessary.

Project Cost

Project Number: HOWEES03

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Typical standard glazing applications	SF	18,200	$57.27	$1,042,314	$36.45	$663,390	$1,705,704
Project Totals:				**$1,042,314**		**$663,390**	**$1,705,704**

Material/Labor Cost		$1,705,704
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$1,389,929
General Contractor Mark Up at 20.0%	+	$277,986
Inflation	+	$52,206
Construction Cost		$1,720,121
Professional Fees at 16.0%	+	$275,219
Total Project Cost		**$1,995,340**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEPL01	**Title:**	WATER SUPPLY PIPING REPLACEMENT
Priority Sequence:	26		
Priority Class:	4		
Category Code:	PL1A	**System:**	PLUMBING
		Component:	DOMESTIC WATER
		Element:	PIPING NETWORK
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		
Code Application:	IPC Chapter 6		
Project Class:	Capital Renewal		
Project Date:	10/9/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, B		

Project Description

Replace water supply and process piping as needed throughout the facility. Remove the aging water supply and process piping. Install new copper water supply piping with fiberglass insulation. Provide isolation valves, pressure regulators, and shock absorbers in appropriate areas. Install new process piping as needed such as gas lines, vacuum lines, compressed air lines, purified water lines, process steam lines, etc., along with related isolation valves and gas cocks. Clearly label exposed piping for identification of the conveyed fluids and gases.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEPL01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Water and specialty pipe and fittings, valves, insulation, hangers, labels, demolition, and cut and patching materials	SF	107,569	$2.46	$264,620	$6.15	$661,549	$926,169
Project Totals:				**$264,620**		**$661,549**	**$926,169**

Material/Labor Cost		$926,169
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$605,847
General Contractor Mark Up at 20.0%	+	$121,169
Inflation	+	$22,756
Construction Cost		$749,772
Professional Fees at 16.0%	+	$119,964
Total Project Cost		**$869,735**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWEPL02	**Title:**	DRAIN PIPING REPLACEMENT
Priority Sequence:	27		
Priority Class:	4		
Category Code:	PL2A	**System:**	PLUMBING
		Component:	WASTEWATER
		Element:	PIPING NETWORK
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		

Code Application: IPC Chapters 7-12

Project Class: Capital Renewal

Project Date: 10/9/2009

Project Location: Floor-wide: Floor(s) 1, 2, 3, 4, B

Project Description

Replacement of the aging drain piping is recommended throughout the facility. Failure to replace the old drain piping systems will result in frequent leaks and escalating maintenance costs. Remove sanitary and storm drain piping as needed. Install new corrosion resistant piping networks with copper run-outs to the fixtures to convey normal wastes. Install corrosion resistant pipe and fittings for acid wastes. Install new floor drains, roof drains, and traps.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWEPL02

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Cast-iron, copper, and corrosion resistant pipe and fittings, hangers, floor / roof drains, traps, demolition, and cut and patching materials	SF	107,569	$3.91	$420,595	$9.00	$968,121	$1,388,716
Project Totals:				**$420,595**		**$968,121**	**$1,388,716**

Material/Labor Cost		$1,388,716
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$920,185
General Contractor Mark Up at 20.0%	+	$184,037
Inflation	+	$34,562
Construction Cost		$1,138,784
Professional Fees at 16.0%	+	$182,205
Total Project Cost		**$1,320,990**

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Description

Project Number:	HOWESI01	**Title:**	SITE PAVING UPGRADES
Priority Sequence:	28		
Priority Class:	4		
Category Code:	SI4A	**System:**	SITE
		Component:	GENERAL
		Element:	OTHER
Building Code:	HOWE		
Building Name:	HOWELL SCIENCE		
Subclass/Savings:	Not Applicable		
Code Application:	ADAAG 502		
Project Class:	Capital Renewal		
Project Date:	10/16/2009		
Project Location:	Undefined: Floor(s) 1		

Project Description

Pedestrian paving systems are in overall average condition, but will need replacement in the next ten years. New systems, including excavation, grading, base compaction, and paving, are recommended. Vehicular paving systems are in fair condition and will also need moderate upgrades.

Specific Project Details

Facility Condition Analysis
Section Three
HOWE : HOWELL SCIENCE

Project Cost

Project Number: HOWESI01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Concrete pedestrian paving	SF	8,000	$2.97	$23,760	$3.64	$29,120	$52,880
Vehicular paving wear course rehabilitation, sealcoat and striping allowance	SY	1,950	$7.91	$15,425	$3.79	$7,391	$22,815
Project Totals:				**$39,185**		**$36,511**	**$75,695**

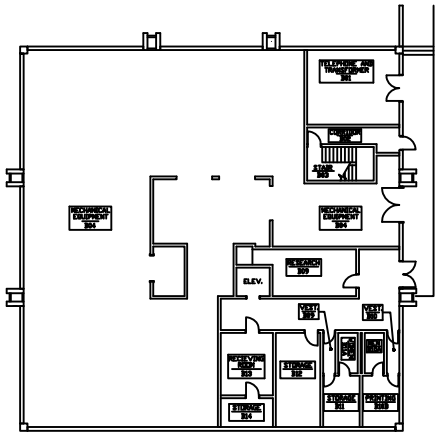
Material/Labor Cost		$75,695
Material Index		100.7%
Labor Index		51.3%
Material/Labor Indexed Cost		$58,189
General Contractor Mark Up at 20.0%	+	$11,638
Inflation	+	$2,186
Construction Cost		$72,012
Professional Fees at 16.0%	+	$11,522
Total Project Cost		**$83,534**

FACILITY CONDITION ANALYSIS

SECTION 4

DRAWINGS AND PROJECT LOCATIONS

EAST CAROLINA UNIVERSITY



AC01 AC02 AC03 EL01 EL02 FS01
FS02 FS03 HE02 HV01 IS01 IS02
IS03 IS04 IS05 PL01 PL02
PL03 PL04

HOWELL SCIENCE

BLDG NO. HOWE

ISES CORPORATION

FACILITY
CONDITION
ANALYSIS

2165 West Park Court
Suite N
Stone Mountain GA 30087
770.879.7376

PROJECT NUMBER APPLIES TO ONE ROOM ONLY

PROJECT NUMBER APPLIES TO ONE ITEM ONLY

PROJECT NUMBER APPLIES TO ENTIRE BUILDING

PROJECT NUMBER APPLIES TO ENTIRE FLOOR

PROJECT NUMBER APPLIES TO A SITUATION OF UNDEFINED EXTENTS

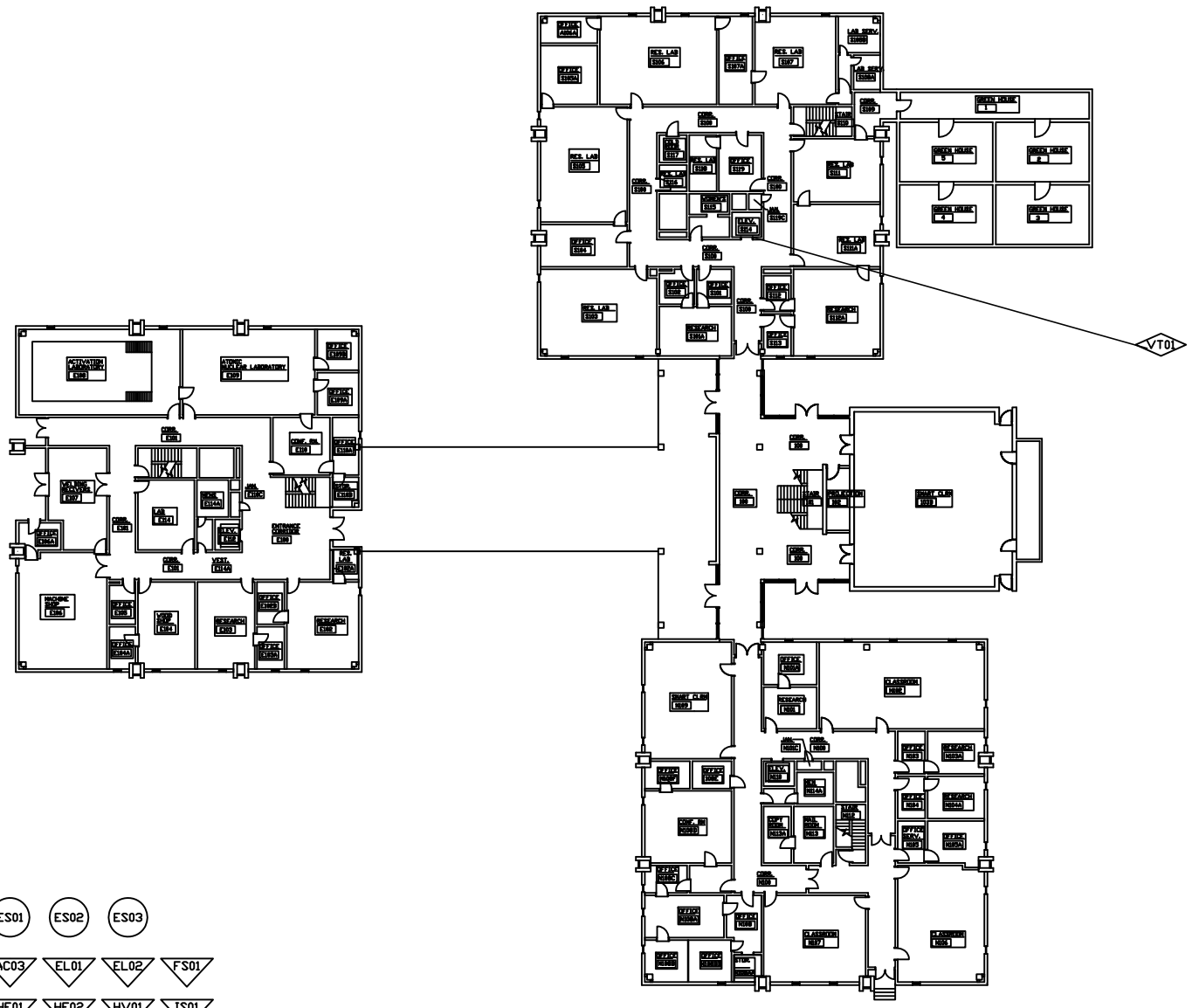
PROJECT NUMBER APPLIES TO AREA AS NOTED

Date: 11/09/09
Drawn by: J.T.V.
Project No. 09-041

BASEMENT FLOOR PLAN

Sheet No.
1 of 5

EAST CAROLINA UNIVERSITY



SI01 EL03 ES01 ES02 ES03

AC01 AC02 AC03 EL01 EL02 FS01

FS02 FS03 HE01 HE02 HV01 IS01

IS02 IS03 IS04 IS05 PL01 PL02

PL03 PL04

HOWELL SCIENCE

BLDG NO. HOWE

ISES CORPORATION

FACILITY CONDITION ANALYSIS

2165 West Park Court
Suite N
Stone Mountain GA 30087
770.879.7376

PROJECT NUMBER APPLIES TO ONE ROOM ONLY

PROJECT NUMBER APPLIES TO ONE ITEM ONLY

PROJECT NUMBER APPLIES TO ENTIRE BUILDING

PROJECT NUMBER APPLIES TO ENTIRE FLOOR

PROJECT NUMBER APPLIES TO A SITUATION OF UNDEFINED EXTENTS

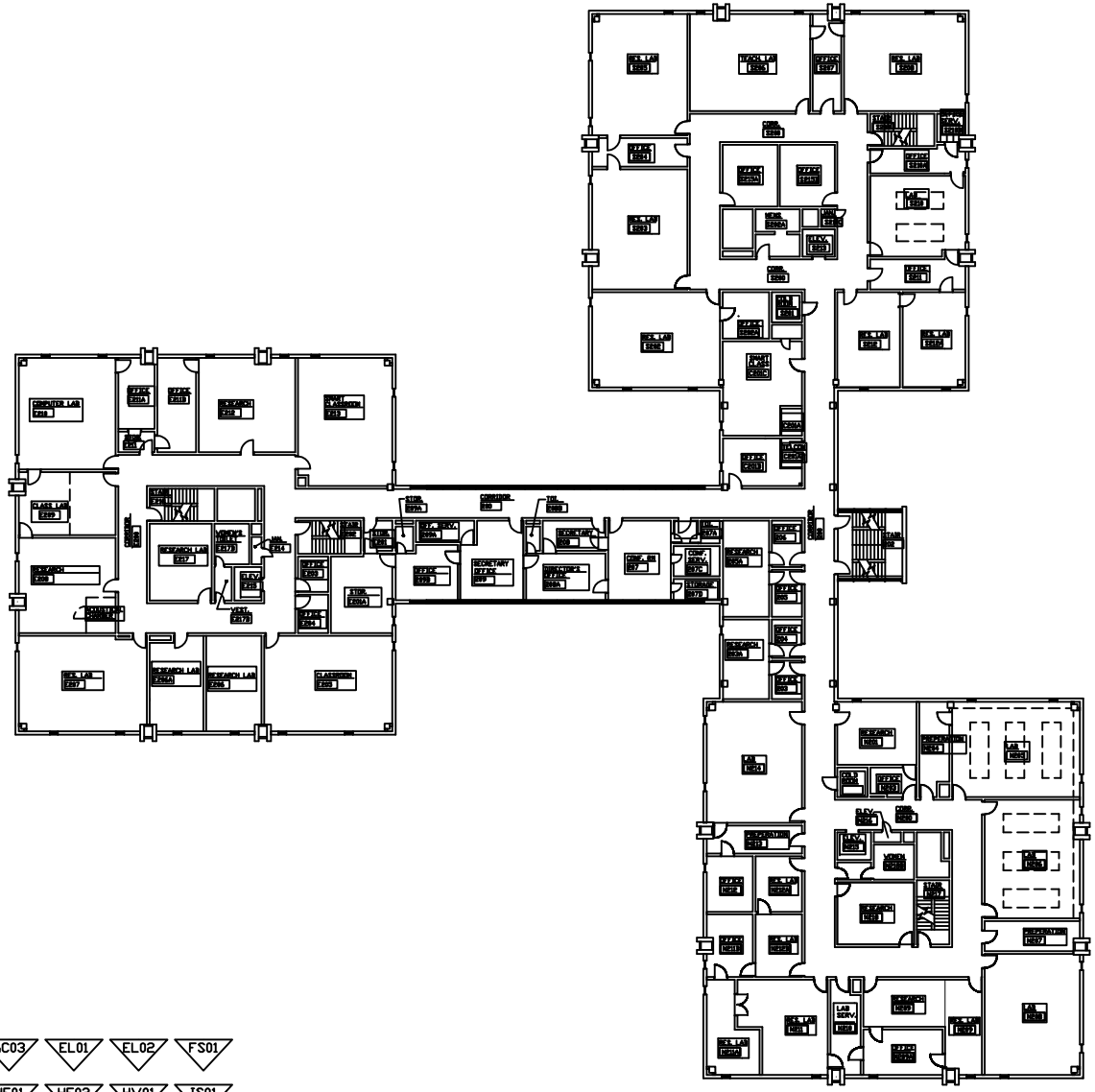
PROJECT NUMBER APPLIES TO AREA AS NOTED

Date: 11/09/09
Drawn by: J.T.V.
Project No. 09-041

FIRST FLOOR PLAN

Sheet No.
2 of 5

EAST CAROLINA UNIVERSITY



AC01 AC02 AC03 EL01 EL02 FS01
FS02 FS03 HE01 HE02 HV01 IS01
IS02 IS03 IS04 IS05 PL01 PL02
PL03 PL04

HOWELL SCIENCE

BLDG NO. HOWE

ISES CORPORATION

FACILITY
CONDITION
ANALYSIS

2165 West Park Court
Suite N
Stone Mountain GA 30087
770.879.7376

PROJECT NUMBER APPLIES TO ONE ROOM ONLY

PROJECT NUMBER APPLIES TO ONE ITEM ONLY

PROJECT NUMBER APPLIES TO ENTIRE BUILDING

PROJECT NUMBER APPLIES TO ENTIRE FLOOR

PROJECT NUMBER APPLIES TO A SITUATION OF UNDEFINED EXTENTS

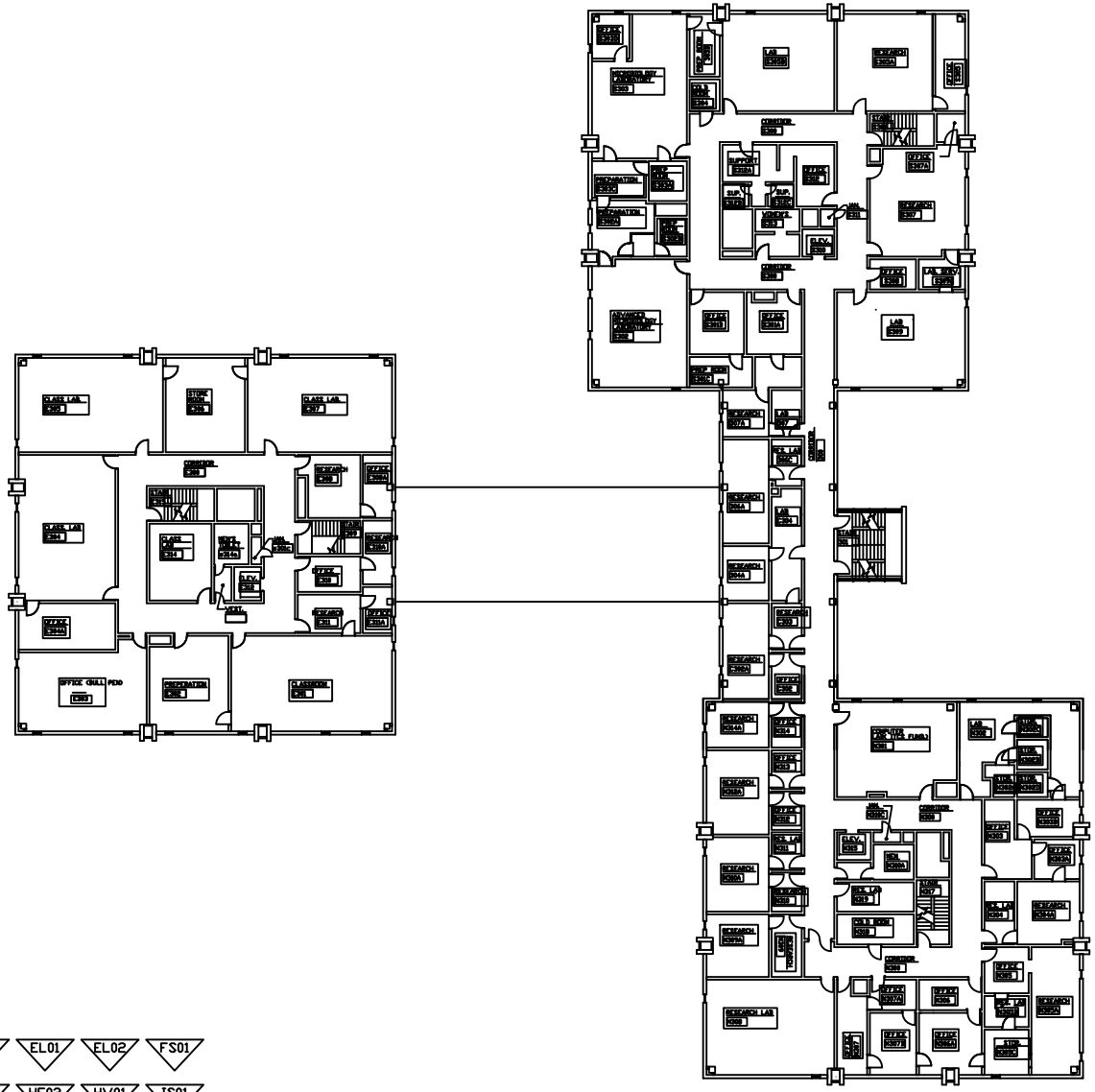
PROJECT NUMBER APPLIES TO AREA AS NOTED

Date: 11/09/09
Drawn by: J.T.V.
Project No. 09-041

SECOND FLOOR PLAN

Sheet No.
3 of 5

EAST CAROLINA UNIVERSITY



AC01 AC02 AC03 EL01 EL02 FS01
FS02 FS03 HE01 HE02 HV01 IS01
IS02 IS03 IS04 IS05 PL01 PL02
PL03 PL04

HOWELL SCIENCE

BLDG NO. HOWE

ISES CORPORATION

FACILITY
CONDITION
ANALYSIS

2165 West Park Court
Suite N
Stone Mountain GA 30087
770.879.7376

PROJECT NUMBER APPLIES TO ONE ROOM ONLY

PROJECT NUMBER APPLIES TO ONE ITEM ONLY

PROJECT NUMBER APPLIES TO ENTIRE BUILDING

PROJECT NUMBER APPLIES TO ENTIRE FLOOR

PROJECT NUMBER APPLIES TO A SITUATION OF UNDEFINED EXTENTS

PROJECT NUMBER APPLIES TO AREA AS NOTED

Date: 11/09/09
Drawn by: J.T.V.
Project No. 09-041

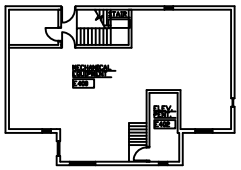
THIRD
FLOOR
PLAN

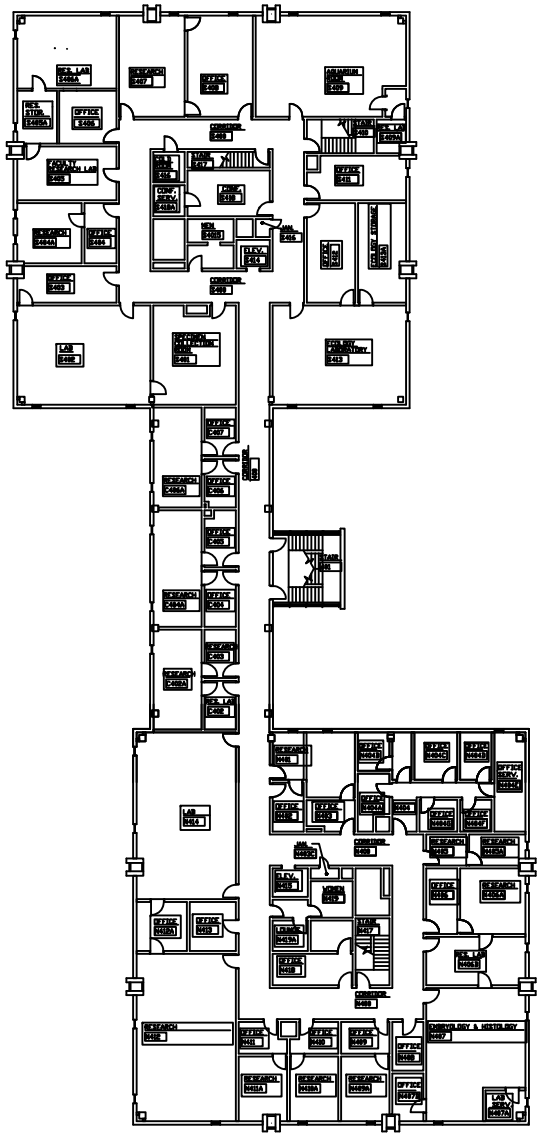
Sheet No.
4 of 5

EAST CAROLINA UNIVERSITY

ROOF

ES04 ES05 HV01





AC01 AC02 AC03 EL01 EL02 FS01

FS02 FS03 HE01 HE02 HV01 IS01

IS02 IS03 IS04 IS05 PL01 PL02

PL03 PL04

HOWELL SCIENCE

BLDG NO. HOWE

ISES CORPORATION

FACILITY
CONDITION
ANALYSIS

2165 West Park Court
Suite N
Stone Mountain GA 30087
770.879.7376

PROJECT NUMBER APPLIES TO ONE ROOM ONLY

PROJECT NUMBER APPLIES TO ONE ITEM ONLY

PROJECT NUMBER APPLIES TO ENTIRE BUILDING

PROJECT NUMBER APPLIES TO ENTIRE FLOOR

PROJECT NUMBER APPLIES TO A SITUATION OF UNDEFINED EXTENTS

PROJECT NUMBER APPLIES TO AREA AS NOTED

Date: 11/09/09
Drawn by: J.T.V.
Project No. 09-041

FOURTH FLOOR PLAN

Sheet No.
5 of 5

FACILITY CONDITION ANALYSIS

SECTION 5

LIFE CYCLE MODEL SUMMARY AND PROJECTIONS

Life Cycle Model
Building Component Summary
HOWE : HOWELL SCIENCE

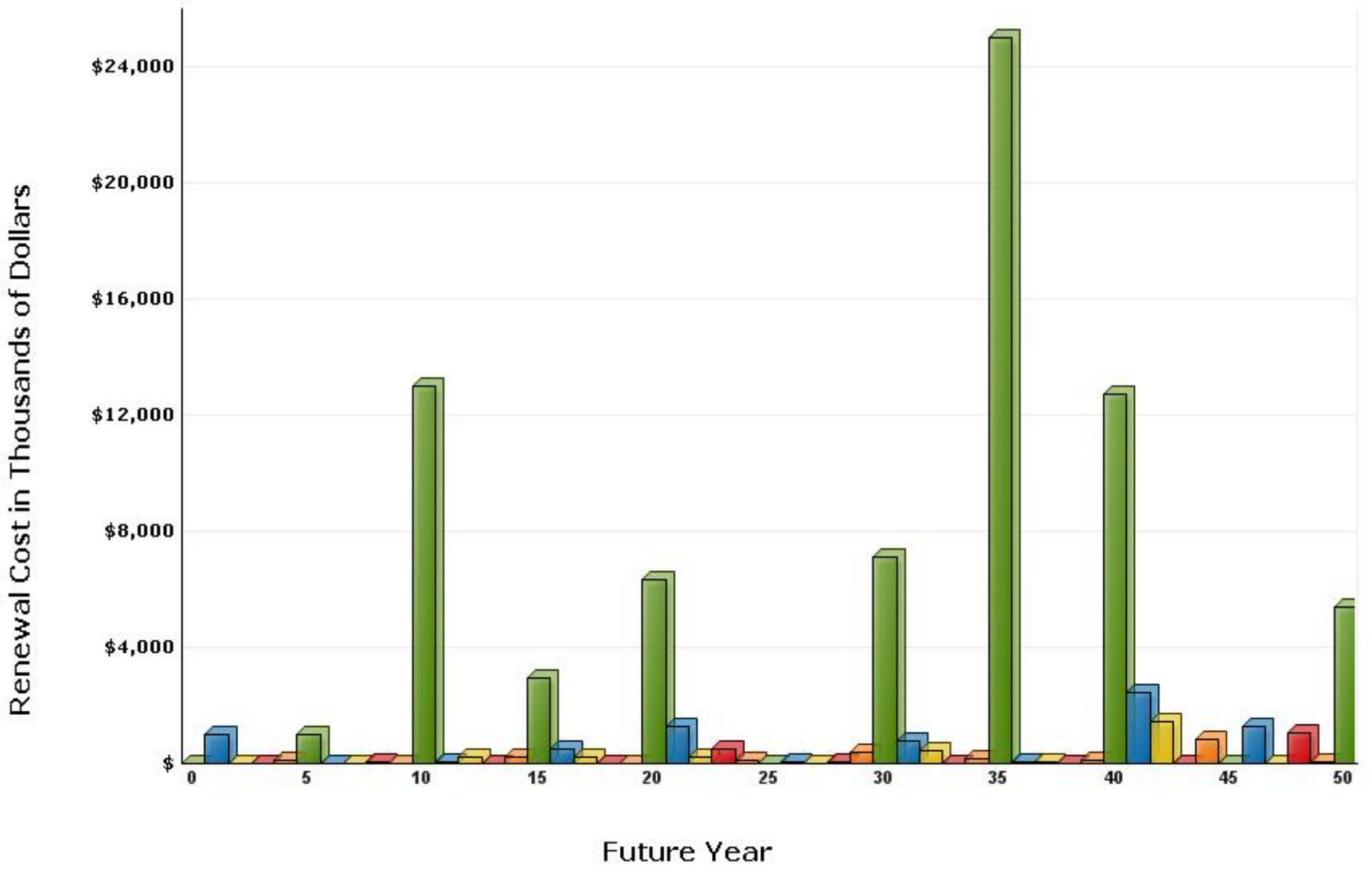
Uniformat Code	Component Description	Qty	Units	Unit Cost	Complx Adj	Total Cost	Install Date	Life Exp
B2010	EXTERIOR FINISH RENEWAL	54,600	SF	$1.30	.31	$22,065	1969	10
B2020	STANDARD GLAZING AND CURTAIN WALL	18,200	SF	$104.04		$1,893,466	1969	55
B2030	HIGH TRAFFIC EXTERIOR DOOR SYSTEM	15	LEAF	$4,311.24		$64,669	1969	20
B2030	LOW TRAFFIC EXTERIOR DOOR SYSTEM	14	LEAF	$2,863.29		$40,086	1969	40
B3010	BUILT-UP ROOF	8,070	SF	$6.70		$54,090	1993	20
B3010	MEMBRANE ROOF	18,820	SF	$6.41		$120,576	1993	15
C1020	RATED DOOR AND FRAME INCLUDING HARDWARE	383	LEAF	$1,489.06		$570,310	1969	35
C1020	INTERIOR DOOR HARDWARE	383	EA	$423.04		$162,025	1969	15
C3010	STANDARD WALL FINISH (PAINT, WALL COVERING, ETC.)	266,430	SF	$0.80		$213,421	1969	10
C3020	CARPET	9,140	SF	$8.75		$79,943	1969	10
C3020	VINYL FLOOR TILE	73,150	SF	$6.59		$481,903	1969	15
C3020	CERAMIC FLOOR TILE	9,140	SF	$17.36		$158,692	1969	20
C3030	ACOUSTICAL TILE CEILING SYSTEM	27,430	SF	$4.99		$136,958	1969	15
C3030	PAINTED CEILING FINISH APPLICATION	64,000	SF	$0.80		$51,267	1969	15
D1010	ELEVATOR MODERNIZATION - TRACTION - LOW RISE	2	EA	$127,577.89		$255,156	2007	25
D1010	ELEVATOR MODERNIZATION - TRACTION - LOW RISE	1	EA	$127,577.89		$127,578	1969	25
D1010	ELEVATOR CAB RENOVATION - PASSENGER	2	EA	$26,616.80		$53,234	2007	12
D1010	ELEVATOR CAB RENOVATION - PASSENGER	1	EA	$26,616.80		$26,617	1969	12
D2010	PLUMBING FIXTURES - LABORATORY	107,569	SF	$10.78		$1,159,107	1969	35
D2020	WATER / PROCESS PIPING - LABORATORY	107,569	SF	$7.67		$825,311	1969	35
D2020	WATER HEATER (RES., ELEC.)	160	GAL	$47.95		$7,672	2008	10
D2020	WATER HEATER, SHELL AND TUBE HEAT EXCHANGER	48	GPM	$355.69		$17,073	2002	24
D2030	DRAIN PIPING - LABORATORY	107,569	SF	$11.66		$1,254,450	1969	40
D2030	SUMP PUMP SYS (2 PUMPS, CONTROLS)	1	SYS	$8,276.49		$8,276	2001	20
D2050	AIR COMPRESSOR PACKAGE (AVERAGE SIZE)	1	SYS	$6,456.49		$6,456	1995	25
D2050	MED / LAB VACUUM PUMP SYSTEM	15	HP	$1,393.81		$20,907	1999	20
D3030	COLD BOX REFRIGERATION SYSTEM	4	SYS	$6,324.50		$25,298	2008	15
D3030	EVAPORATIVE COOLER (SWAMP COOLER)	4	EA	$1,318.33		$5,273	2008	8
D3040	CONDENSATE RECEIVER	1	SYS	$9,504.01		$9,504	1969	15
D3040	CONDENSATE RECEIVER	1	SYS	$9,504.01		$9,504	2001	15

Life Cycle Model
Building Component Summary
HOWE : HOWELL SCIENCE

Uniformat Code	Component Description	Qty	Units	Unit Cost	Complx Adj	Total Cost	Install Date	Life Exp
D3040	EXHAUST FAN - UTILITY SET OR SIMILAR	1	EA	$3,660.81		$3,661	2008	20
D3040	EXHAUST FAN - UTILITY SET OR SIMILAR	2	EA	$3,660.81		$7,322	1969	20
D3040	EXHAUST FAN - PROPELLER TYPE OR SIMILAR	3	EA	$1,357.34		$4,072	1969	20
D3040	EXHAUST FAN - PROPELLER TYPE OR SIMILAR	1	EA	$1,357.34		$1,357	2008	20
D3040	FUME HOOD INCLUDING MECH. SYS	4	SYS	$41,216.93		$164,868	2009	20
D3040	HVAC SYSTEM - LABORATORY	107,569	SF	$73.54		$7,910,632	1969	25
D3040	BASE MTD. PUMP - UP TO 15 HP	20	HP	$3,175.77		$63,515	2001	20
D3040	BASE MTD. PUMP - 50 HP TO 150 HP	40	HP	$782.99		$31,319	2001	25
D3050	SPLIT DX SYSTEM	6	TON	$2,143.89		$12,863	2000	15
D3050	SPLIT DX SYSTEM	5	TON	$2,143.89		$10,719	1988	15
D3050	SPLIT DX SYSTEM	8	TON	$2,143.89		$17,151	1990	15
D3050	SPLIT DX SYSTEM	2	TON	$2,143.89		$4,288	2008	15
D3050	THRU-WALL AC UNIT	4	TON	$1,528.27		$6,113	1980	10
D5010	ELECTRICAL SYSTEM - LABORATORY	86,055	SF	$14.42		$1,240,917	1969	50
D5010	ELECTRICAL SYSTEM - LABORATORY	21,514	SF	$14.42		$310,233	2001	50
D5010	ELECTRICAL SWITCHGEAR 277/480V	2,000	AMP	$39.56		$79,127	2001	20
D5010	TRANSFORMER, OIL, 5-15KV (500-1500 KVA)	1,000	KVA	$47.02		$47,020	2001	30
D5010	TRANSFORMER, DRY, 480-208V (30-150 KVA)	525	KVA	$96.00		$50,398	1969	30
D5010	VARIABLE FREQUENCY DRIVE (UP TO 10 HP)	20	HP	$1,020.08		$20,402	2001	12
D5010	VARIABLE FREQUENCY DRIVE (OVER 50 HP)	40	HP	$237.46		$9,498	2001	12
D5020	EXIT SIGNS (CENTRAL POWER)	50	EA	$163.78		$8,189	2000	20
D5020	EXTERIOR LIGHT (HID)	4	EA	$689.58		$2,758	1990	20
D5020	LIGHTING - LABORATORY	107,569	SF	$6.29		$676,951	1990	20
D5030	FIRE ALARM SYSTEM, POINT ADDRESSABLE	107,569	SF	$2.61		$281,249	1995	15
D5040	GENERATOR, DIESEL (100-200 KW)	150	KW	$493.93		$74,089	2001	25
E2010	KITCHENETTE UNIT WITH CABINETRY AND AMENITIES	1	LOT	$5,940.22		$5,940	1969	20
E2010	LABORATORY CASEWORK (20% CASEWORK DENSITY)	64,540	SF	$28.82		$1,860,224	1969	20
F1020	ENVIRONMENTAL CHAMBER	320	SF	$139.02		$44,485	1969	35
						$20,810,248		

Life Cycle Model Expenditure Projections

HOWE : HOWELL SCIENCE



Average Annual Renewal Cost Per SqFt $7.19

FACILITY CONDITION ANALYSIS

SECTION 6

PHOTOGRAPHIC LOG

Photo Log - Facility Condition Analysis

HOWE : HOWELL SCIENCE

Photo ID No	Description	Location	Date
HOWE001a	Roof detail	North wing roof	9/9/2009
HOWE001e	Exhaust fans	Roof	9/9/2009
HOWE002a	Roof detail	Central wing roof	9/9/2009
HOWE002e	Refrigeration equipment	Roof	9/9/2009
HOWE003a	Roof detail	East wing roof	9/9/2009
HOWE003e	Air handling equipment	Roof	9/9/2009
HOWE004a	Roof detail	South wing roof	9/9/2009
HOWE004e	Exhaust fan	Roof	9/9/2009
HOWE005a	Stairwell design	Fourth floor, north wing	9/9/2009
HOWE005e	Drain piping	Fourth floor, room N406	9/9/2009
HOWE006a	Corridor finishes	Fourth floor, north wing	9/9/2009
HOWE006e	Service sink	Fourth floor, room N403	9/9/2009
HOWE007a	Door hardware and signage	Fourth floor, north wing	9/9/2009
HOWE007e	Drain piping	Fourth floor, room N403	9/9/2009
HOWE008a	Office finishes	Fourth floor, north wing	9/9/2009
HOWE008e	Secondary electrical panels	Fourth floor, corridor	9/9/2009
HOWE009a	Single level drinking fountain	Fourth floor, north wing	9/9/2009
HOWE009e	Interior lighting	Fourth floor, room N414	9/9/2009
HOWE010a	Lab design and finishes	Fourth floor, north wing	9/9/2009
HOWE010e	Fume hood	Fourth floor, room N414	9/9/2009
HOWE011a	Window detail	Fourth floor, north wing	9/9/2009
HOWE011e	Lavatories and drain piping	Fourth floor, restroom	9/9/2009
HOWE012a	Stairwell design	Fourth floor, central wing	9/9/2009
HOWE012e	Water closet	Fourth floor, restroom	9/9/2009
HOWE013a	Stairwell design	Fourth floor, south wing	9/9/2009
HOWE013e	Exit signage and fire alarm devices	Fourth floor, corridor	9/9/2009
HOWE014a	Lab design and finishes	Fourth floor, south wing	9/9/2009
HOWE014e	Elevator machine	Roof, penthouse	9/9/2009
HOWE015a	Dual level drinking fountains	Third floor, south wing	9/9/2009
HOWE015e	Elevator controller	Roof, penthouse	9/9/2009
HOWE016a	Corridor finishes	Third floor, south wing	9/9/2009
HOWE016e	Unit heater	Roof, penthouse	9/9/2009
HOWE017a	Corridor finishes	Third floor, central wing	9/9/2009

Photo Log - Facility Condition Analysis

HOWE : HOWELL SCIENCE

Photo ID No	Description	Location	Date
HOWE017e	Air handling equipment	Roof, penthouse	9/9/2009
HOWE018a	Lab design and finishes	Second floor, north wing	9/9/2009
HOWE018e	Electrical receptacles	Fourth floor, corridor	9/9/2009
HOWE019a	Corridor finishes	Second floor, north wing	9/9/2009
HOWE019e	Cold room	Fourth floor, corridor	9/9/2009
HOWE020a	Lab design and finishes	Second floor, east wing	9/9/2009
HOWE020e	Urinals	Fourth floor, restroom	9/9/2009
HOWE021a	Roof detail	East wing roof	9/9/2009
HOWE021e	Lavatories	Fourth floor, restroom	9/9/2009
HOWE022a	Roof detail	East wing roof	9/9/2009
HOWE022e	Water closet	Fourth floor, restroom	9/9/2009
HOWE023a	Office finishes	Third floor, east wing	9/9/2009
HOWE023e	Interior lighting	Fourth floor, restroom	9/9/2009
HOWE024a	Break room sink	First floor, north wing	9/9/2009
HOWE024e	Emergency drench hose	Third floor, room N304	9/9/2009
HOWE025a	Corridor finishes	First floor, central wing	9/9/2009
HOWE025e	Emergency eyewash / shower station	Third floor, room N308	9/9/2009
HOWE026a	Corridor finishes	Basement, south wing	9/9/2009
HOWE026e	Fume hood	Third floor, room N308	9/9/2009
HOWE027a	Lab design and finishes	Basement, south wing	9/9/2009
HOWE027e	Refrigeration equipment	Third floor, cold room	9/9/2009
HOWE028a	South facade	Exterior elevation, south wing	9/9/2009
HOWE028e	Exit signage and fire alarm devices	Roof	9/9/2009
HOWE029a	South facade	Exterior elevation, south wing	9/9/2009
HOWE029e	Interior lighting	Basement, corridor	9/9/2009
HOWE030a	East facade	Exterior elevation, south wing	9/9/2009
HOWE030e	HVAC controls	Basement, mechanical room	9/9/2009
HOWE031a	South facade	Exterior elevation, east wing	9/9/2009
HOWE031e	Sump pump system	Basement, mechanical room	9/9/2009
HOWE032a	South facade of connector	Exterior elevation	9/9/2009
HOWE032e	Exhaust fan	Basement, mechanical room	9/9/2009
HOWE033a	East facade	Exterior elevation, east wing	9/9/2009
HOWE033e	Fire alarm panel and HVAC controls	Basement, mechanical room	9/9/2009

Photo Log - Facility Condition Analysis

HOWE : HOWELL SCIENCE

Photo ID No	Description	Location	Date
HOWE034a	North facade	Exterior elevation, east wing	9/9/2009
HOWE034e	Motor control center	Basement, mechanical room	9/9/2009
HOWE035a	East facade	Exterior elevation, north wing	9/9/2009
HOWE035e	Pump equipment	Basement, mechanical room	9/9/2009
HOWE036a	North facade of connector	Exterior elevation	9/9/2009
HOWE036e	Heat exchanger	Basement, mechanical room	9/9/2009
HOWE037a	West facade and entrance	Exterior elevation, east wing	9/9/2009
HOWE037e	Pump equipment	Basement, mechanical room	9/9/2009
HOWE038a	North facade	Exterior elevation, north wing	9/9/2009
HOWE038e	Compressor and dryer	Basement, mechanical room	9/9/2009
HOWE039a	West facade	Exterior elevation, north wing	9/9/2009
HOWE039e	Boiler	Basement, mechanical room	9/9/2009
HOWE040a	Ramp to central classroom	Exterior detail	9/9/2009
HOWE040e	Condensate return system	Basement, mechanical room	9/9/2009
HOWE041a	West facade	Exterior elevation, south wing	9/9/2009
HOWE041e	Air handling equipment	Basement, mechanical room	9/9/2009
HOWE042a	West facade	Exterior elevation, south wing	9/9/2009
HOWE042e	Main incoming electrical equipment	Basement, mechanical room	9/9/2009
HOWE043e	Exhaust fans and swamp coolers	Exterior	9/9/2009
HOWE044e	Condensing units	Exterior	9/9/2009
HOWE045e	Emergency generator	Site	9/9/2009
HOWE046e	Lack of exterior lighting	Exterior	9/9/2009
HOWE047e	Lack of exterior lighting	Exterior	9/9/2009
HOWE048e	Air handling equipment	Site	9/9/2009

HOWE001A.jpg

HOWE001E.jpg

HOWE002A.jpg

HOWE002E.jpg

HOWE003A.jpg

HOWE003E.jpg

HOWE004A.jpg

HOWE004E.jpg

HOWE005A.jpg

HOWE005E.jpg

HOWE006A.jpg

HOWE006E.jpg

HOWE007A.jpg

HOWE007E.jpg

HOWE008A.jpg

HOWE008E.jpg

HOWE009A.jpg

HOWE009E.jpg

HOWE010A.jpg

HOWE010E.jpg

HOWE011A.jpg

HOWE011E.jpg

HOWE012A.jpg

HOWE012E.jpg

HOWE013A.jpg

HOWE013E.jpg

HOWE014A.jpg

HOWE014E.jpg

HOWE015A.jpg

HOWE015E.jpg

HOWE016A.jpg

HOWE016E.jpg

HOWE017A.jpg

HOWE017E.jpg

HOWE018A.jpg

HOWE018E.jpg

HOWE019A.jpg

HOWE019E.jpg

HOWE020A.jpg

HOWE020E.jpg

HOWE021A.jpg

HOWE021E.jpg

HOWE022A.jpg

HOWE022E.jpg

HOWE023A.jpg

HOWE023E.jpg

HOWE024A.jpg

HOWE024E.jpg

HOWE025A.jpg

HOWE025E.jpg

HOWE026A.jpg

HOWE026E.jpg

HOWE027A.jpg

HOWE027E.jpg

HOWE028A.jpg

HOWE028E.jpg

HOWE029A.jpg

HOWE029E.jpg

HOWE030A.jpg

HOWE030E.jpg

HOWE031A.jpg

HOWE031E.jpg

HOWE032A.jpg

HOWE032E.jpg

HOWE033A.jpg

HOWE033E.jpg

HOWE034A.jpg

HOWE034E.jpg

HOWE035A.jpg

HOWE035E.jpg

HOWE036A.jpg

HOWE036E.jpg

HOWE037A.jpg

HOWE037E.jpg

HOWE038A.jpg

HOWE038E.jpg

HOWE039A.jpg

HOWE039E.jpg

HOWE040A.jpg

HOWE040E.jpg

HOWE041A.jpg

HOWE041E.jpg

HOWE042A.jpg

HOWE042E.jpg

HOWE043E.jpg

HOWE044E.jpg

HOWE045E.jpg

HOWE046E.jpg

HOWE047E.jpg

HOWE048E.jpg