PENNSTATE

Office of Physical Plant

The Pennsylvania State University
Physical Plant Building
University Park, PA 16802-1118

DATE: April 20, 2012

SUBJECT: Burrowes Building Renovation,
University Park

TO: Short Listed Firms

BLTa
Kling Stubbins
Voith &Mactavish Architects LLP

I am pleased to inform you that the above listed firms have been chosen to be interviewed by the Screening Committee in anticipation of selecting a team for appointment by the Board of Trustees.

Interviews will be conducted at The Penn Stater Conference Center, University Park on Monday, April 30, 2012. The interview schedule is as follows:

BLTa	9:30 A.M. – 10:30 A.M.	Room 105
Kling Stubbins	10:40 A.M. – 11:40 A.M.	Room 104
Voith &Mactavish Architects LLP	12:30 P.M. – 1:30 P.M.	Room 104

Each firm will be limited to no more than 40 minutes for their presentation allowing us 20 minutes for follow-up questions. I urge you to use the time wisely and refrain from simply repeating the material already submitted in your proposal. We are most interested in your approach to our specific project, your understanding of the key issues that will shape it and any initial broad ideas or concepts that you may have developed during this process. To help you assemble your presentation, enclosed you will find the building's latest conditions report and utilities scoping documents. It is most important to us that the key team members assigned to this project and any major consultants be present for the interview; however, please limit the number of team attendees to five. A projection screen will be provided for your use.

In the event that your firm is selected, we will show the Board of Trustees examples representative of your work; with this in mind, we require that you submit to us photographs in digital format no later than 12:00 noon on Monday April 30, 2012. Requirements for the photographs are described in the attached sheet. It is important that the photographs be representative of the type of project and function that we are addressing. In addition, I have also included a diagram of the interview room.

The result of the interviews will be announced at the Board of Trustees meeting on Friday May 4, 2012 and posted to our website.

Please do not hesitate to call me if we can be of further assistance.

Sincerely,

David Zehngut
University Architect
(814) 863-3158, fax (814) 863-7757,
E-mail dxz3@psu.edu

Enclosures

PENNSYLVANIA STATE UNIVERSITY
Facility Condition Analysis

BURROWES BUILDING

BUILDING NUMBER: 0601-000
2009 UPDATE

FACILITY CONDITION ANALYSIS

JULY 22, 2009

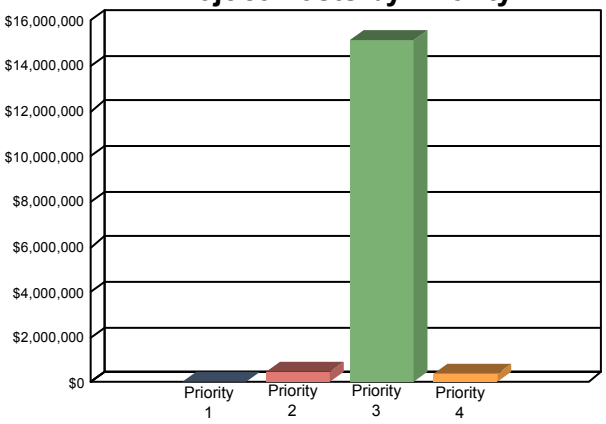
PENNSYLVANIA STATE UNIVERSITY
Facility Condition Analysis

TABLE OF CONTENTS

A. EXECUTIVE SUMMARY - BURROWES BUILDING

Building Code: 0601-000
Building Name: BURROWES BUILDING
Year Built: 1940
Building Use: Admin / Classroom
Square Feet: 111,597

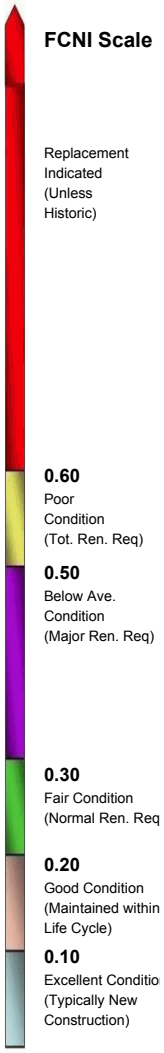
Project Costs by Priority



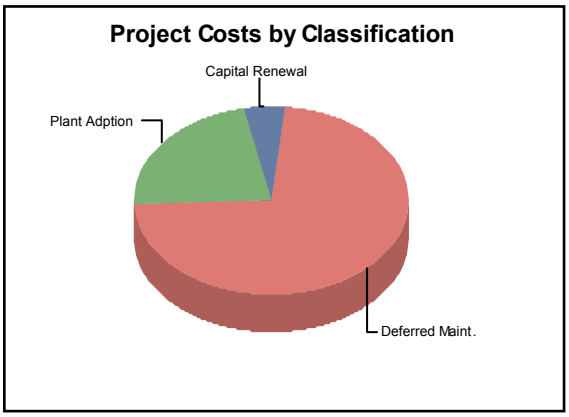
Project Costs by Priority

Priority 1:	$0
Priority 2:	$487,815
Priority 3:	$15,106,478
Priority 4:	$387,590
Total Project Costs:	**$15,981,883**
Facility Replacement Cost:	**$39,449,157**

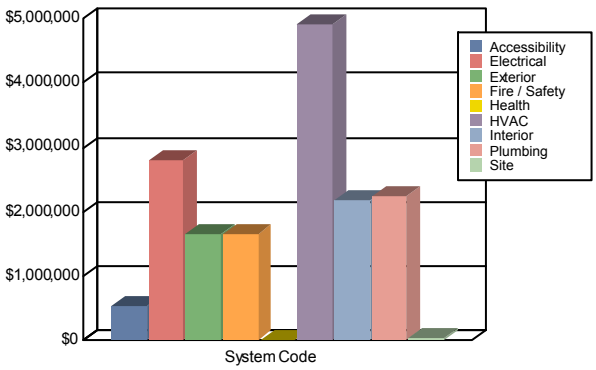
Facility Condition Needs Index (FCNI): **0.41**
(Project Costs / Replacement Cost)



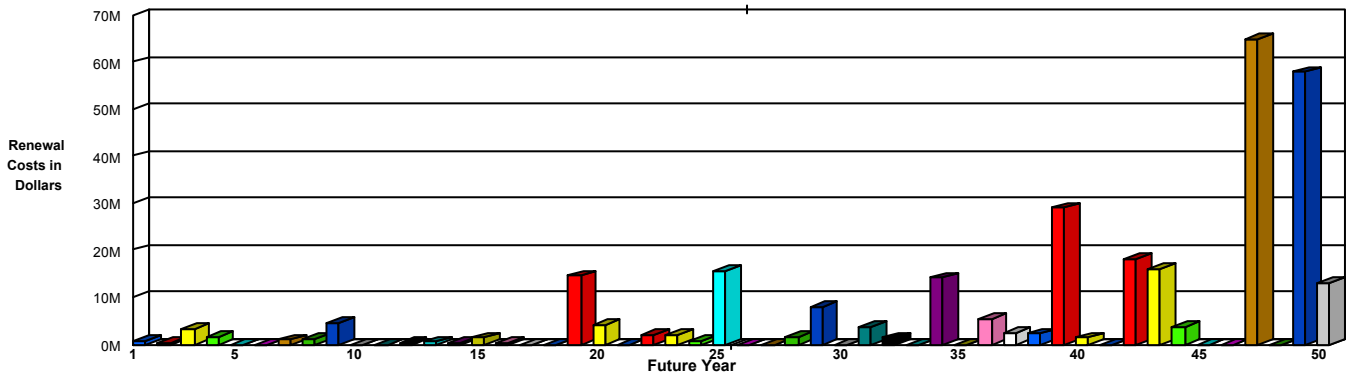
Project Costs by Classification



Project Costs by System Code



Life Cycle Model Expenditure Projections



Average Annual Renewal Cost per SqFt **$5.82**

PENNSYLVANIA STATE UNIVERSITY
Facility Condition Analysis
Section One

ADMINISTRATIVE OVERVIEW

This analysis is intended to update the initial Facility Condition Analysis prepared for Burrowes Building. The facility was reinspected by ISES Corporation personnel to determine the number of previously recommended projects which had been completed and to ascertain the extent of new damage to the facility since the original inspection. The building was also surveyed for compliance with the Americans with Disabilities Act (ADA). This document is a reproduction of the original report information updated for subsequent damage, inflation, and new legislative requirements. Previously estimated project costs have been inflated based upon construction cost information published in Engineering News Record. Deficiencies which have been corrected since the original inspection have been eliminated from this report. New deficiencies observed during the reinspection have been incorporated into this report by either editing existing projects or adding new ones. Edited projects are identified by the addition of "(REV 3/09)" to the project title. New projects are indicated by the addition of "(3/09)" at the end of the title.

B. ASSET SUMMARY

The Burrowes Building is a five-story liberal arts building on the campus of Pennsylvania State University in State College, Pennsylvania. The original section, constructed in 1940, consists of the central portion of the building covered by the hipped roof. The north and south T-shaped wings were added in 1967. These wing additions have a different floor-to-floor height than the original section, resulting in ramped or stepped corridors on each floor. The two later wing additions have five floor levels. The center section of the building has higher floor-to-floor heights and does not have a fourth floor level, but it does contain a mechanical basement. The fourth floor, located only in the two wings, has double-loaded corridors with office space. Each wing has a passenger elevator and two stair towers. The third floor, which includes the original section and the two wings, is also organized around double-loaded corridors. This floor is all office and conference space. The second and first floors have similar layouts to the third floor. The first floor also features a central entry lobby identified on the exterior by four very prominent ionic columns. The ground floor is a mixture of office space, graduate student areas, and research laboratories. The basement level is only a mechanical space with no occupied areas. The Burrowes Building has an H-shaped footprint and features large areaways on the west elevation to allow for large windows on the ground floor. This building totals 111,597 gross square feet.

SITE

The site is adequately planted. The landscaping consists of planting beds around portions of the building perimeter, but is largely made up of grass lawns and mature trees. However, the site is in keeping with the rest of the campus, and no additional landscaping is recommended at this time.

The pedestrian paving systems are in overall fair to poor condition and represent a liability to the owner. New concrete paving systems, including excavation, grading, base compaction, and paving, are recommended. The western slate entry terrace is beginning to weather and should also be refurbished. Reset and regrout the slate pavers to avoid the potential for tripping hazards and damaging water infiltration.

EXTERIOR STRUCTURE

Brick masonry with stone panels, cornices, and accents comprise the primary exterior finish. While the brick masonry and stone panels are generally fundamentally sound with some exceptions, exposure to the elements has caused some deterioration of the mortar joints and expansion joints. Cleaning, surface preparation, selective repairs, tuck pointing and applied finish or penetrating sealant upgrades are recommended to restore the aesthetics and integrity of the building envelope.

The exterior glazing on the two wings, and especially on the original section of the building, are at or past their normal life cycle. These aged and weathered steel-framed casement windows are recommended for replacement. Upgrade the entire building with new thermal-pane, operable, metal-framed window units. Failure to replace the windows can result in higher energy costs and damage to the interior. The new windows should retain the architectural aesthetic of the building and incorporate modern energy-efficient features such as thermal panes. Replacement of windowsills and trim may also necessary as part of the overall effort. The new glazing system should noticeably improve the energy efficiency of the exterior walls, especially in the original section of the building.

The low slope modified bituminous built-up roofing system that was installed in 2001 on the central building wing west wing will exceed its effective life cycle within the timeframe of this review period, and its replacement is warranted. Areas of the east and west wing built-up roofing systems with gravel topping have standing water, and some deterioration is beginning to become evident in the form of patched and open seams and failing flashings. Some areas of the roof drainage system are blocked and have caused parapet spill-thru, discoloring the exterior facade. Remove all of the existing roofing at these locations, install new built-up roofs, and include all new flashing.

It is recommended that the aged and inefficient exterior door systems be replaced. This recommendation includes all primary and secondary entrance, service, and overhead roll-up doors. The replacement units should maintain the architectural design aspects of this facility. They should be modern, energy-efficient applications that will protect the interior of the building from the elements. Consideration should be give to increasing the leaf width to better accommodate ADA access.

INTERIOR FINISHES / SYSTEMS

The interior floor finish applications vary in age, type, and condition. Floor finish upgrades should be considered as part of any future cosmetic improvements or major comprehensive renovation efforts. This building contains older vinyl flooring tiles that are suspected to be asbestos containing material (ACM), and further evaluation, testing and remediation is recommended. The carpeted offices and conference rooms are in average condition, but with the short standard life cycle of carpeting, new commercial-grade, roll carpeting will likely be needed within the next five years.

The ceiling finish applications also vary in age, type, and condition. The proposed building systems upgrade work, such as HVAC modernization, will require the removal of most of these ceiling systems, requiring ceiling replacements. Ceiling finish upgrades should be considered as part of any future cosmetic improvements or major comprehensive renovation efforts. The wall finishes are also recommended for renewal within the scope of this report.

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 existing door systems and replacement according to a code-compliant plan to properly protect egress passages is recommended.

ACCESSIBILITY

The building has a number of accessible features, such as grade level access with power assist door operators. The building also has some lever action hardware, some ADA room signage, several corridor ramps, and a few partially accessible and one fully accessible restroom. Also, the passenger elevators have accessible controls and hall calls. However, some additional ADA upgrades are still needed to make the building fully accessible.

The existing single-level, wall-mounted water fountains are typically located beside the various restrooms on each occupied floor level. Except for the ground floor dual-level fountain upgrade, these fountains are older and not fully accessible. Install new single-level fountains in the 1967 wings, and create wheelchair accessible corridor alcoves in the original section of the building to install ADA-compliant, dual-level, wall-mounted fountains. These fountain upgrades should be in place within the next six to ten years.

Some of the existing room signage in this building does meet current ADA standards, and additional accessible signage is needed to make this building fully accessible. Install additional wall-mounted room signs with high color contrast, raised lettering, and Braille, as needed, in both the original section and the later wing additions.

Present legislation regarding building accessibility by the handicapped 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, guards must prevent the passage of a 4 inch diameter sphere (6 inches in the triangle formed by the lower rail and tread / riser angle). Although the stairs are grandfathered under the code enforced at the time of construction until a major renovation occurs, they are deficient in either handrail design, guard design, or both. Future renovation efforts should include comprehensive stair railing and finish upgrades.

The restrooms in this building, with the exception of the ground floor women's restrooms, are at best only partially accessible. The overall level of restroom accessibility is good, but short of full compliance with modern accessibility legislation. While the clearances and clear floor spaces are adequate, compliant mirrors, signage, grab bars, and door operators are recommended. The proposed extensive plumbing upgrade work will require the gutting of all of these restrooms. The new restrooms should have a modified layout to meet ADA standards, and although only a percentage of these restrooms are required to be made accessible, this report recommends that all restrooms in the building be fitted with ADA fixturing and circulation clearances to provide accessible men's and women's restrooms on all occupied floors.

HEALTH

Other than the ACM in the floor tile, no health related issues were observed or reported by facility personnel at the time of the on-site review for this building. Asbestos abatement is included in the recommended flooring upgrade. No Health category recommendations or assessment comments are included in this report.

FIRE / LIFE SAFETY

The building appears to have adequate egress passages. However, the stair tower access doors are non-rated and lack positive latching hardware. The existing stair tower access doors in the original section of the building are older wire glass French doors that lack positive latching capability. Replace all of these interior doors with new fire-rated, hollow metal doors with vision panels, panic hardware, and approved rated wall construction. Also replace the older double stair access doors in the two 1967 wings. The stair doors in these two wings also do not have positive latching hardware and are too narrow to provide ADA-compliant access. Upgrade these stair access points with single leaf fire rated, hollow metal door assemblies.

The existing stairs located in the north and south corridors link to the transition in the 1967 wings between the differing floor levels of the original 1940 sections and the two 1967 wings. These corridor stairs also allow travel between floors. Some of these stair have been modified with corridor ramps, but the stairs still do not have any access doors to maintain floor-to-floor or area separation between the three building wing components. Create rated wall and stair access doors at each end of these corridor stairs to effectively create additional stair towers. This upgrade should be completed as soon as possible to create adequate separation between each floor level.

Structural fire separations are not maintained according to code requirements for new construction in many areas of this facility. Little or no regard has been given to the passive and active firestopping systems in this building. Moderate structural separation repairs and intumescent passive firestopping should be accomplished promptly.

The fire alarm system is outdated and does not comply with ADA standards for visual alarm and pull station locations. Remove the existing system, and install a modern zone-type fire alarm system. Specify a point addressable, multizone, four-wire, Class A, supervised fire alarm panel with an annunciator. This work includes pull stations, audible / visual and visual devices, smoke detectors, duct smoke detectors, and heat detectors. Install all devices in accordance with current NFPA and ADA requirements. The system should report activation or trouble to an applicable receiving station, such as campus security and / or the local fire department.

The only form of fire suppression that was noted on the day of the inspection was dry chemical fire extinguishers located in the corridors. It is recommended by the NFPA that facilities be sprinkled throughout and that sprinkling systems be fully supervised by a fire alarm system. Install fire suppression throughout the facility, including piping, sprinkler heads as required by code, pipe bracing, and supervising and alarm devices as needed. To help reduce overall costs and the duplication of work efforts, this work should be coordinated with other plumbing, major HVAC/R, and interior ceiling and wall finish upgrades recommended elsewhere in this report.

While many of the exit signs have been retrofitted with LED illumination, the overall condition of the exit signs is poor. Modern LED exit signs are recommended as part of an overall building renovation effort. Connect the new exit signs to the emergency circuit. Emergency lighting for the facility is provided by fixtures connected to the emergency circuit. Recommendations pertaining to the emergency generator are located in the Electrical section of this report.

HVAC

This building is on the university's high pressure steam loop. Air conditioning is accomplished with a combination of district chilled water, window-mounted air conditioning units, and split DX air conditioning systems. Some partial HVAC system upgrades were performed in 1992, and select areas have undergone upgrades since then. Although some upgrades have been performed, a complete HVAC redesign and replacement is still needed throughout the building. The existing systems are inefficient, outdated, and well past the end of their service lives. The systems suffer from IAQ issues, and there are frequent component failures. Demolish and dispose of all outdated equipment, and install a new modern HVAC system with variable air volume (VAV) and constant volume air distribution as needed. This includes new air handlers, ductwork, terminal units, heat exchangers, pumps, piping, controls, and electrical connections. Specify direct digital controls (DDCs) for the new equipment, and incorporate variable frequency drives (VFDs) into the new HVAC design as applicable. Properly remove and dispose of all ACM and any other hazardous material during the demolition phase.

The installation of a chilled water plant is recommended as part of this HVAC system upgrade. Install a new water-cooled chiller and cooling tower, including new wiring, motor starters, and related controls and programming. Interface the new electronic controls into the campus BSAC as applicable. Refrigeration safety equipment and systems should be in accordance with the ASHRAE Safety Code for mechanical refrigeration. This will include refrigerant leak detection equipment and an emergency exhaust system.

ELECTRICAL

Electrical power is supplied to the Burrowes Building at 12,470 volts through a 600 amp high voltage disconnect. A 300 kVA, dry-type transformer supplies 208Y120 volt power to three distribution sections that serve the individual wings. Primary electrical upgrades are recommended to augment proposed HVAC, lighting, and secondary electrical system upgrades. Remove the existing primary equipment, and install new transformers and switchgear that include 480 volt power for lighting and mechanical equipment and 208 volt power for other circuits.

The secondary electrical system includes a mixture of outdated Westinghouse breaker panels in the original section and Federal Pacific panels in the wings. The increased use of electrical equipment, as well as proposed HVAC upgrades, serves to overburden a system that was designed without consideration of these loads. There are reports of overloaded circuits and inadequate power. Electrical devices, including switches and receptacles, are uniformly worn. It is recommended that the secondary electrical system be replaced in its entirety to ensure safe and reliable power to building occupants.

The lighting throughout the facility is mainly fluorescent, but there are incandescent lights in mechanical rooms and other utility areas. While many areas have modern T8 fluorescent light fixtures, other areas have outdated, inefficient T12 fixtures. Partial upgrades without consideration of the overall needs of the facility often result in the duplication of work efforts. Approximately 50 percent of the interior light fixtures need to be upgraded to T8. Coordinate the design and implementation of this upgrade with all other related mechanical and architectural recommendations.

The exterior lighting consists of a combination of HID and lantern-style fixtures. While the lantern-style fixtures are architecturally appropriate, it is recommended that they be relamped with compact fluorescent bulbs. The HID lights are likely to fail within the time period specified by this report, so replacement in-kind is recommended.

Emergency power for this building consists of a 15 kilowatt, Onan brand, natural gas-fired emergency power generator. The available power is inadequate for a modern facility of this size. It is recommended that an appropriately-sized emergency generator and power network be installed. The emergency network should supply power to select light fixtures to maintain code-required illumination levels along egress paths. Emergency power should also be provided for the exit signs, fire alarm system, elevators, and other critical mechanical equipment. If deemed more cost-effective, the university may opt to increase the emergency feeder size and transfer switch in lieu of the generator installation.

PLUMBING

The water main enters the building in room 017. There is no backflow preventer at the water main to protect against cross-contamination of the building's water system with the domestic water supply. Install a backflow preventer at the water main to protect the potable water supply.

The soldered copper domestic cold water supply piping was found to be in average condition where it could be observed. While the supply piping may outlast the scope of this report, the proposed restroom modifications and other mechanical system upgrades warrant its replacement as part of an overall building renovation effort.

The drain piping throughout the facility is threaded galvanized and cast-iron pipe for normal wastes. While some repairs have been made as a result of piping failures, most of the drain piping is original. Failure to replace the drain piping within the scope of this report will result in frequent leaks and increasing maintenance costs. In coordination with other proposed plumbing upgrades, replacement of the drain piping is recommended.

The plumbing fixtures in the facility have reached their life cycle. A recommendation for the restroom renovation is detailed in the Accessibility section of this report. Domestic hot water is provided by a domestic water heat exchanger. The heat exchanger should last the scope of this report.

VERTICAL TRANSPORTATION

This building is served by vertical transportation equipment. The equipment is detailed in a separate Elevator Condition Analysis (ECA). Therefore, no upgrades are recommended within this report.

WORK COMPLETED SINCE LAST INSPECTION

- The university changed the scope of the emergency power upgrade and put on an emergency cable instead.
- The university changed the priority of the exit sign upgrade.

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.

Backlog Retirement Summary
Completed and Partially Completed Projects
0601-000 : BURROWES BUILDING

Project Number	Project Title	Pri Cls	Date	Project Notes	Total Cost	Actual Cost To Date	Remaining Cost	Percen Complete
0601-000EL01	EMERGENCY POWER SYSTEM UPGRADE	2	6/12/2007	RSH CCD - CHANGED SCOPE	$134,632	1	$134,631	
				Subtotal for Priority Class 2	**$134,632**	**$1**	**$134,631**	
0601-000FS04	REPLACE EXIT SIGNS	4	6/8/2007	Ed Conklin changed priority	$15,710	1	$15,709	
				Subtotal for Priority Class 4	**$15,710**	**$1**	**$15,709**	
				Grand Totals	**$150,342**	**$2**	**$150,340**	

Backlog Retirement Summary
Completed Projects

0601-000 : BURROWES BUILDING

Project Number	Project Title	Pri Cls	Date	Project Notes	Total Cost	Actual Cost To Date	Variance
				Subtotal for Priority Class	**$0**	**$0**	**$0**
				Grand Totals	**$0**	**$0**	**$0**

D. INSPECTION TEAM DATA

DATE OF INSPECTION: March 11, 2009

INSPECTION TEAM PERSONNEL:

NAME	POSITION	SPECIALTY
Rob Gasaway	Facility Analyst	Interior Finishes / Exterior / ADA-Handicapped Accessibility / Site / Fire Safety / Life Safety / Health
Matthew Gregory	Project Engineer	Mechanical / Electrical / Plumbing / Energy / Fire Safety / Life Safety / Health
John Holder	Project Engineer	Mechanical / Electrical / Plumbing / Energy / Fire Safety / Life Safety / Health
Thomas Ferguson, AIA	Project Architect	Interior Finishes / Exterior / ADA-Handicapped Accessibility / Site / Fire Safety / Life Safety / Health
Kyle Thompson	Project Engineer	Mechanical / Electrical / Plumbing / Energy / Fire Safety / Life Safety / Health

FACILITY CONTACTS:

NAME	POSITION
Kathy Bamat	Manager, Work Control Center

REPORT DEVELOPMENT:

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

Contact: Michael Jordan, Project Manager
770-879-7376

E. FACILITY CONDITION ANALYSIS - DEFINITIONS

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

1. **REPORT DESCRIPTION**

Section 1: Asset Executive Summary, Asset Summary, Backlog Retirement 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 - <$25,000]
D. Detailed Projects by Cost within range [≥ $25,000 - < $1,000,000]
E. Detailed Projects by Cost within range [≥ $1,000,000]
F. Detailed Projects by Project Classification
G. Detailed Projects by Project Rating Type - Energy Conservation
H. Detailed Projects by Category / System Code
I. Detailed Projects by Score

FCNI = Facility Condition Needs Index, Total Cost vs. Replacement Cost. The FCNI provides a life cycle cost comparison. Facility replacement cost 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 Building Component Summary

Section 6: Photographic Log

Note: For Sections 2 and 3, at the end of the reports and project detail, an *Inflation Adjustment Factor* will be designed and built into the program for update purposes. Updates will not be reflected in the original report.

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 effect 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	0401-000HV04	01
PL1D	0401-000PL02	02

PRIORITY CLASS 2

CODE	PROJECT NO.	PRIORITY SEQUENCE
IS1E	0401-000IS06	03
EL4C	0401-000EL03	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 1, 2, and 3).

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

Cost factors are based on the State College City Index and are adjusted for material and labor cost factors (2008). Refer to the project related labor report found later in this section.

Global Markup Percentages		R.S. MEANS
Local Labor Index:	90.6 %	of National Average
Local Materials Index:	95.6 %	of National average
General Contractor Markup:	20.0 %	Contractor profit and overhead, bonds and insurance
Professional Fees:	15.0 %	Arch. / Eng. Firm design fees and in-house design cost

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

Example:

Project Number = 0401-000-EL-04 (unique for each independent project)

0401-000 - 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 or engineer.

Example: 0401-000006e

Building Number	Photo Sequence	Arch / Eng
0401-000	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 / FINISH 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.
HE6A	HAZARDOUS MATERIAL	STRUCTURAL ASBESTOS	Testing, abatement and disposal of structural and building finish materials containing asbestos.

CATEGORY CODE REPORT			
CODE	**COMPONENT DESCRIPTION**	**ELEMENT DESCRIPTION**	**DEFINITION**
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 UPGRADE	Replacement of HVAC control systems.

CATEGORY CODE REPORT			
CODE	**COMPONENT DESCRIPTION**	**ELEMENT DESCRIPTION**	**DEFINITION**
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 / FINISH 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			
PL1A	DOMESTIC WATER	PIPING NETWORK	Repair or replacement of domestic water supply piping network, insulation, hangers, etc.

CATEGORY CODE REPORT			
CODE	**COMPONENT DESCRIPTION**	**ELEMENT DESCRIPTION**	**DEFINITION**
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.
SS2A	SITE	FENCING	Perimeter campus fencing, individual building fencing, includes both pedestrian and vehicular control fences.

CATEGORY CODE REPORT			
CODE	**COMPONENT DESCRIPTION**	**ELEMENT DESCRIPTION**	**DEFINITION**
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
0601-000 : BURROWES BUILDING

System Code	System Description	Priority Classes 1	2	3	4	Subtotal
AC	ACCESSIBILITY	0	0	421,899	98,917	520,816
EL	ELECTRICAL	0	134,631	2,641,706	10,716	2,787,052
ES	EXTERIOR	0	0	1,375,944	262,248	1,638,193
FS	FIRE/LIFE SAFETY	0	345,535	1,296,054	15,709	1,657,298
HV	HVAC	0	0	4,896,011	0	4,896,011
IS	INTERIOR/FINISH SYS.	0	0	2,190,647	0	2,190,647
PL	PLUMBING	0	7,650	2,232,046	0	2,239,696
SI	SITE	0	0	52,171	0	52,171
	TOTALS	$0	$487,815	$15,106,478	$387,590	$15,981,883

Facility Replacement Cost	$39,449,157
Facility Condition Needs Index	0.41

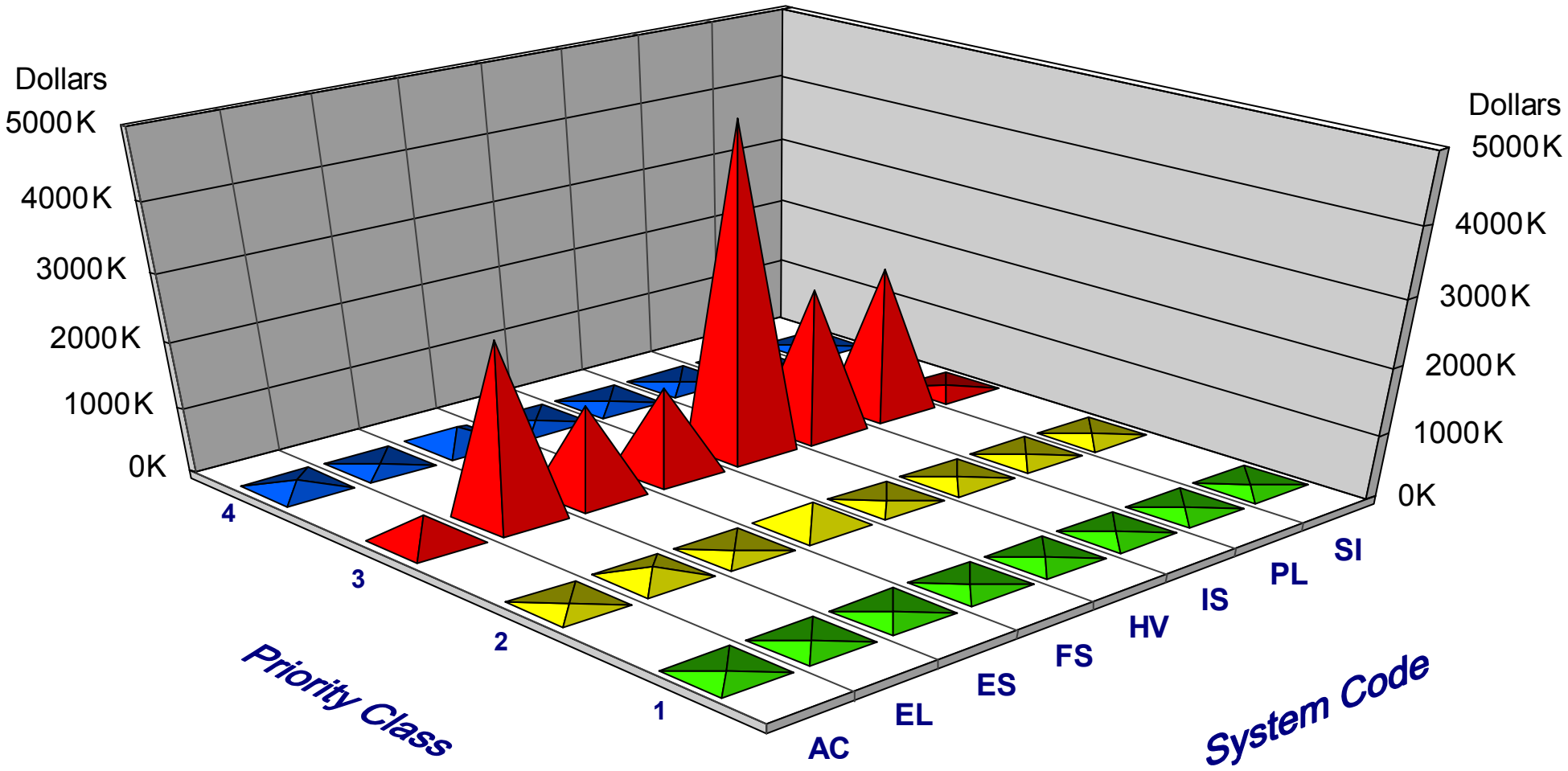
Gross Square Feet	111,597

Total Cost Per Square Foot	$143.21

FACILITY CONDITION ANALYSIS

System Code by Priority Class

0601-000 : BURROWES BUILDING



Detailed Project Totals
Facility Condition Analysis
System Code by Project Class
0601-000 : BURROWES BUILDING

System Code	System Description	Project Classes			
		Capital Renewal	Deferred Maintenance	Plant Adaption	Subtotal
AC	ACCESSIBILITY	0	0	520,816	520,816
EL	ELECTRICAL	10,716	2,392,734	383,602	2,787,052
ES	EXTERIOR	262,248	1,375,944	0	1,638,193
FS	FIRE/LIFE SAFETY	15,709	0	1,641,588	1,657,298
HV	HVAC	0	4,338,372	557,639	4,896,011
IS	INTERIOR/FINISH SYS.	456,077	1,240,948	493,623	2,190,647
PL	PLUMBING	0	2,232,046	7,650	2,239,696
SI	SITE	52,171	0	0	52,171
	TOTALS	$796,920	$11,580,044	$3,604,919	$15,981,883

Facility Replacement Cost	$39,449,157
Facility Condition Needs Index	0.41

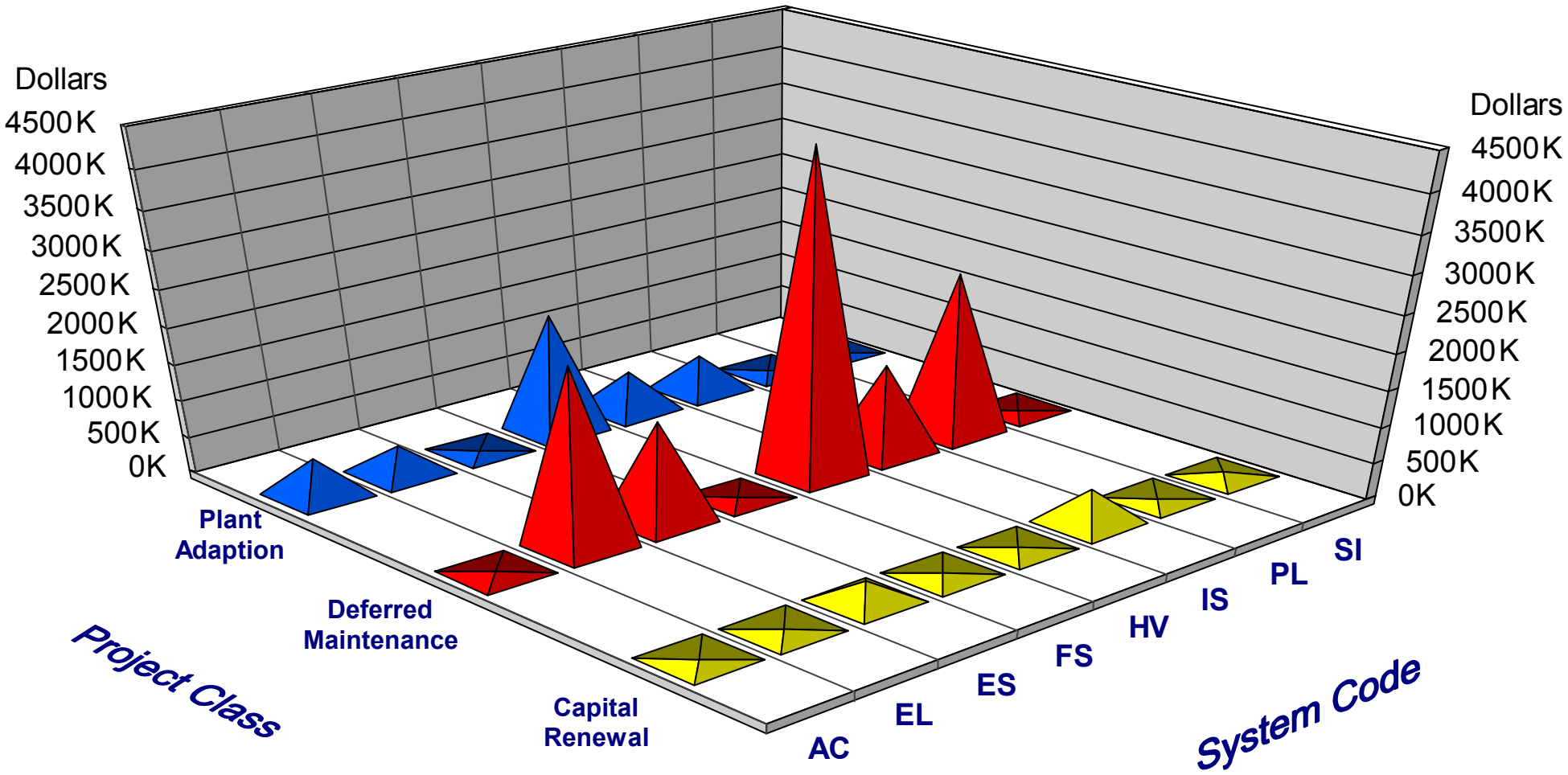
Gross Square Feet	111,597

Total Cost Per Square Foot	$143.21

FACILITY CONDITION ANALYSIS

System Code by Project Class

0601-000 : BURROWES BUILDING



Detailed Project Summary
Facility Condition Analysis
Project Class by Priority Class
0601-000 : BURROWES BUILDING

Project Class	Priority Classes 1	2	3	4	Subtotal
Capital Renewal	0	0	508,248	288,673	796,920
Deferred Maintenance	0	0	11,580,044	0	11,580,044
Plant Adaption	0	487,815	3,018,186	98,917	3,604,919
TOTALS	$0	$487,815	$15,106,478	$387,590	$15,981,883

Facility Replacement Cost	$39,449,157
Facility Condition Needs Index	0.41

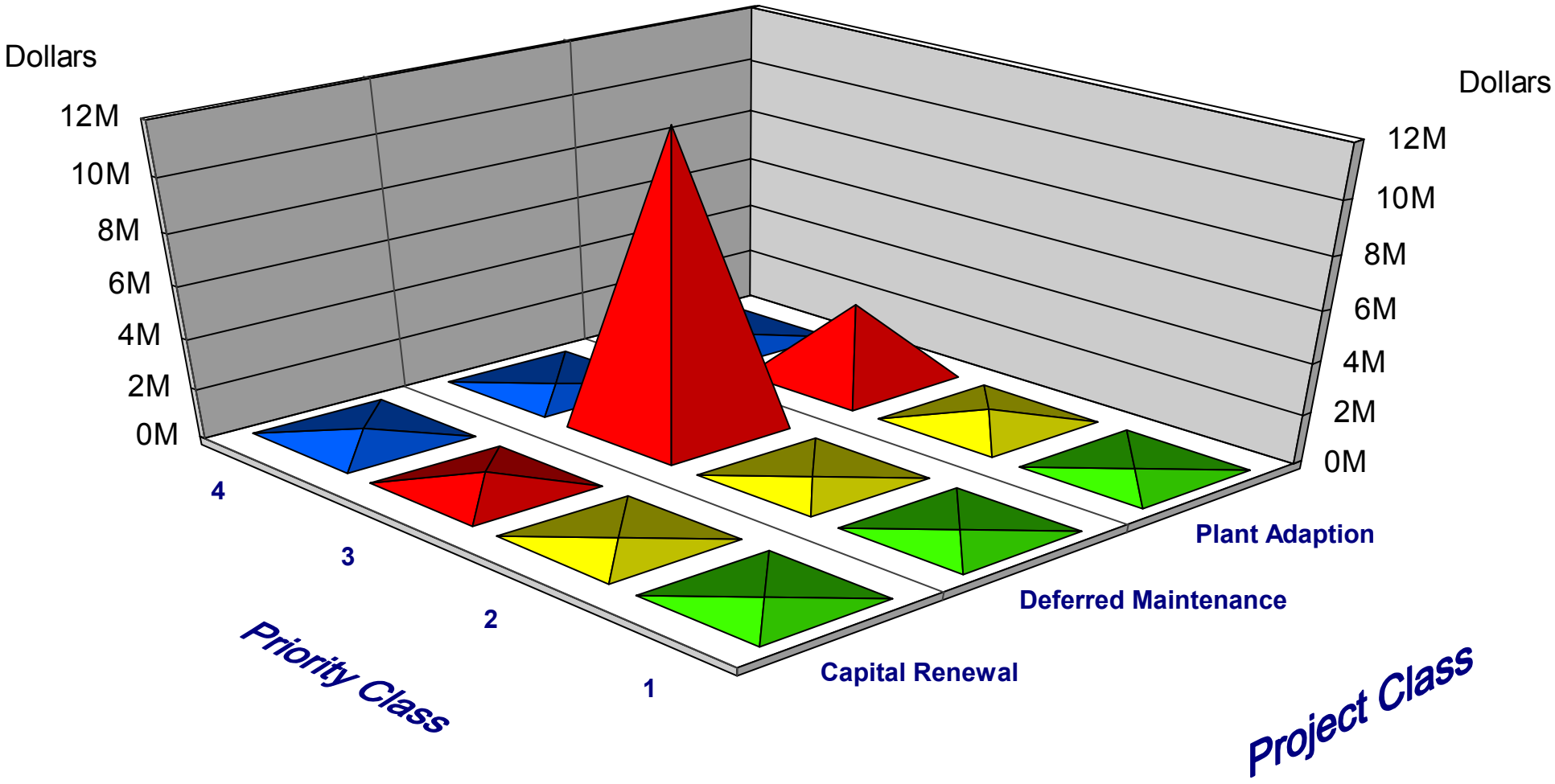
Gross Square Feet	111,597

Total Cost Per Square Foot	$143.21

FACILITY CONDITION ANALYSIS

Project Class by Priority Class

0601-000 : BURROWES BUILDING



Detailed Project Summary

Facility Condition Analysis

Section Two

Priority Class - Priority Sequence

0601-000 : BURROWES BUILDING

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Actual Cost to Date	Remaining Cost
FS6A	0601-000FS01	2	1	ELIMINATE FIRE RATING COMPROMISES	9,341	1,401	0	10,743
FS2A	0601-000FS05	2	2	REPLACE THE FIRE ALARM SYSTEM	291,124	43,669	0	334,792
EL5A	0601-000EL01	2	3	EMERGENCY POWER SYSTEM UPGRADE	117,071	17,561	1	134,631
PL1I	0601-000PL01	2	4	INSTALL BACKFLOW PREVENTER ON WATER MAIN	6,652	998	0	7,650
				Totals for Priority Class 2	**424,188**	**63,628**	**1**	**487,815**
FS5F	0601-000FS06	3	5	BUILDING AREA SEPARATION DOORS AT LEVEL CHANGE STAIRS	237,489	35,623	0	273,112
FS5F	0601-000FS02	3	6	EGRESS STAIR ACCESS DOOR UPGRADES	45,273	6,791	0	52,064
FS3A	0601-000FS03	3	7	INSTALL FIRE SPRINKLING SYSTEM	844,241	126,636	0	970,877
AC3B	0601-000AC03	3	8	EGRESS STAIR AND RAILING UPGRADES	236,623	35,493	0	272,116
AC3E	0601-000AC04	3	9	RESTROOM RENOVATIONS (3/09)	130,246	19,537	0	149,783
ES5B	0601-000ES01	3	10	WINDOW REPLACEMENT	843,138	126,471	0	969,609
ES5A	0601-000ES02	3	11	EXTERIOR DOOR REPLACEMENT	67,951	10,193	0	78,144
ES2B	0601-000ES03	3	12	RESTORE BRICK AND STONE BUILDING FACADE (3/09)	285,384	42,808	0	328,191
HV3A	0601-000HV01	3	13	HVAC SYSTEM CAPITAL REPLACEMENT	3,772,497	565,875	0	4,338,372
HV2A	0601-000HV02	3	14	INSTALL A CHILLED WATER PLANT	484,904	72,736	0	557,639
EL2A	0601-000EL03	3	15	UPGRADE PRIMARY ELECTRICAL EQUIPMENT	216,497	32,475	0	248,972
EL3B	0601-000EL02	3	16	UPGRADE SECONDARY ELECTRICAL SYSTEM	1,695,183	254,278	0	1,949,461
EL4B	0601-000EL05	3	17	UPGRADE INTERIOR LIGHTING	385,455	57,818	0	443,273
IS4A	0601-000IS03	3	18	REPLACE INTERIOR DOORS	396,589	59,488	0	456,077
IS3B	0601-000IS02	3	19	REFINISH CEILING SYSTEMS	429,237	64,386	0	493,623
IS1A	0601-000IS01	3	20	REFINSH FLOORING	715,594	107,339	0	822,933
IS2B	0601-000IS04	3	21	REFINISH WALLS (3/09)	363,491	54,524	0	418,014
PL2A	0601-000PL03	3	22	REPLACE DRAIN PIPING NETWORK	1,164,489	174,673	0	1,339,162
PL1A	0601-000PL02	3	23	REPLACE WATER SUPPLY PIPING	776,421	116,463	0	892,884

Detailed Project Summary

Facility Condition Analysis

Section Two

Priority Class - Priority Sequence

0601-000 : BURROWES BUILDING

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Actual Cost to Date	Remaining Cost
SI1A	0601-000SI01	3	24	SITE PEDESTRIAN PAVEMENT UPGRADES	8,535	1,280	0	9,816
SI3A	0601-000SI02	3	25	EXTERIOR TERRACE REPAIRS	36,831	5,525	0	42,355
				Totals for Priority Class 3	**13,136,067**	**1,970,410**	**0**	**15,106,478**
FS1A	0601-000FS04	4	26	REPLACE EXIT SIGNS	13,661	2,049	1	15,709
AC3D	0601-000AC02	4	27	BUILDING SIGNAGE UPGRADES	15,441	2,316	0	17,758
AC3F	0601-000AC01	4	28	DUAL-LEVEL DRINKING FOUNTAIN INSTALLATIONS	70,574	10,586	0	81,160
ES4B	0601-000ES04	4	29	ROOFING SYSTEM REPLACEMENT (3/09)	228,042	34,206	0	262,248
EL4A	0601-000EL04	4	30	REPLACE EXTERIOR LIGHTS	9,318	1,398	0	10,716
				Totals for Priority Class 4	**337,036**	**50,555**	**1**	**387,590**
				Grand Total:	**13,897,291**	**2,084,594**	**2**	**15,981,883**

Detailed Project Summary

Facility Condition Analysis

Section Two

Priority Class - Priority Sequence - Projects < 25,000

0601-000 : BURROWES BUILDING

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Actual Cost to Date	Remaining Cost
FS6A	0601-000FS01	2	1	ELIMINATE FIRE RATING COMPROMISES	9,341	1,401	0	10,743
PL1I	0601-000PL01	2	4	INSTALL BACKFLOW PREVENTER ON WATER MAIN	6,652	998	0	7,650
				Totals for Priority Class 2	**15,993**	**2,399**	**0**	**18,393**
SI1A	0601-000SI01	3	24	SITE PEDESTRIAN PAVEMENT UPGRADES	8,535	1,280	0	9,816
				Totals for Priority Class 3	**8,535**	**1,280**	**0**	**9,816**
FS1A	0601-000FS04	4	26	REPLACE EXIT SIGNS	13,661	2,049	1	15,709
AC3D	0601-000AC02	4	27	BUILDING SIGNAGE UPGRADES	15,441	2,316	0	17,758
EL4A	0601-000EL04	4	30	REPLACE EXTERIOR LIGHTS	9,318	1,398	0	10,716
				Totals for Priority Class 4	**38,420**	**5,763**	**1**	**44,182**
				Grand Totals For Projects < 25,000	**62,949**	**9,442**	**1**	**72,391**

Detailed Project Summary

Facility Condition Analysis

Section Two

Priority Class - Priority Sequence - Projects >= 25,000 and < 1,000,000

0601-000 : BURROWES BUILDING

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Actual Cost to Date	Remaining Cost
FS2A	0601-000FS05	2	2	REPLACE THE FIRE ALARM SYSTEM	291,124	43,669	0	334,792
EL5A	0601-000EL01	2	3	EMERGENCY POWER SYSTEM UPGRADE	117,071	17,561	1	134,631
				Totals for Priority Class 2	**408,195**	**61,229**	**1**	**469,423**
FS5F	0601-000FS06	3	5	BUILDING AREA SEPARATION DOORS AT LEVEL CHANGE STAIRS	237,489	35,623	0	273,112
FS5F	0601-000FS02	3	6	EGRESS STAIR ACCESS DOOR UPGRADES	45,273	6,791	0	52,064
FS3A	0601-000FS03	3	7	INSTALL FIRE SPRINKLING SYSTEM	844,241	126,636	0	970,877
AC3B	0601-000AC03	3	8	EGRESS STAIR AND RAILING UPGRADES	236,623	35,493	0	272,116
AC3E	0601-000AC04	3	9	RESTROOM RENOVATIONS (3/09)	130,246	19,537	0	149,783
ES5B	0601-000ES01	3	10	WINDOW REPLACEMENT	843,138	126,471	0	969,609
ES5A	0601-000ES02	3	11	EXTERIOR DOOR REPLACEMENT	67,951	10,193	0	78,144
ES2B	0601-000ES03	3	12	RESTORE BRICK AND STONE BUILDING FACADE (3/09)	285,384	42,808	0	328,191
HV2A	0601-000HV02	3	14	INSTALL A CHILLED WATER PLANT	484,904	72,736	0	557,639
EL2A	0601-000EL03	3	15	UPGRADE PRIMARY ELECTRICAL EQUIPMENT	216,497	32,475	0	248,972
EL4B	0601-000EL05	3	17	UPGRADE INTERIOR LIGHTING	385,455	57,818	0	443,273
IS4A	0601-000IS03	3	18	REPLACE INTERIOR DOORS	396,589	59,488	0	456,077
IS3B	0601-000IS02	3	19	REFINISH CEILING SYSTEMS	429,237	64,386	0	493,623
IS1A	0601-000IS01	3	20	REFINSH FLOORING	715,594	107,339	0	822,933
IS2B	0601-000IS04	3	21	REFINISH WALLS (3/09)	363,491	54,524	0	418,014
PL1A	0601-000PL02	3	23	REPLACE WATER SUPPLY PIPING	776,421	116,463	0	892,884
SI3A	0601-000SI02	3	25	EXTERIOR TERRACE REPAIRS	36,831	5,525	0	42,355
				Totals for Priority Class 3	**6,495,363**	**974,304**	**0**	**7,469,667**
AC3F	0601-000AC01	4	28	DUAL-LEVEL DRINKING FOUNTAIN INSTALLATIONS	70,574	10,586	0	81,160
ES4B	0601-000ES04	4	29	ROOFING SYSTEM REPLACEMENT (3/09)	228,042	34,206	0	262,248

Detailed Project Summary

Facility Condition Analysis

Section Two

Priority Class - Priority Sequence - Projects >= 25,000 and < 1,000,000

0601-000 : BURROWES BUILDING

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Actual Cost to Date	Remaining Cost
				Totals for Priority Class 4	**298,615**	**44,792**	**0**	**343,408**
				Grand Totals For Projects >= 25,000 and < 1,000,000	**7,202,173**	**1,080,326**	**1**	**8,282,497**

Detailed Project Summary

Facility Condition Analysis

Section Two

Priority Class - Priority Sequence - Projects >= 1,000,000

0601-000 : BURROWES BUILDING

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fee	Actual Cost to Date	Remaining Cost
HV3A	0601-000HV01	3	13	HVAC SYSTEM CAPITAL REPLACEMENT	3,772,497	565,875	0	4,338,372
EL3B	0601-000EL02	3	16	UPGRADE SECONDARY ELECTRICAL SYSTEM	1,695,183	254,278	0	1,949,461
PL2A	0601-000PL03	3	22	REPLACE DRAIN PIPING NETWORK	1,164,489	174,673	0	1,339,162
				Totals for Priority Class 3	**6,632,170**	**994,825**	**0**	**7,626,995**
				Grand Totals For Projects >= 1,000,000	**6,632,170**	**994,825**	**0**	**7,626,995**
				Grand Total for All Projects:	**13,897,291**	**2,084,594**	**2**	**15,981,883**

Detailed Project Summary

Facility Condition Analysis

Section Two

Project Classification

0601-000 : BURROWES BUILDING

Cat. Code	Project Number	Pri Seq	Project Classification	Pri Cls	Project Title	Construction Cost	Prof Fees	Actual Cost to Date	Remaining Cost
IS4A	0601-000IS03	18	Capital Renewal	3	REPLACE INTERIOR DOORS	396,589	59,488	0	456,077
SI1A	0601-000SI01	24	Capital Renewal	3	SITE PEDESTRIAN PAVEMENT UPGRADES	8,535	1,280	0	9,816
SI3A	0601-000SI02	25	Capital Renewal	3	EXTERIOR TERRACE REPAIRS	36,831	5,525	0	42,355
FS1A	0601-000FS04	26	Capital Renewal	4	REPLACE EXIT SIGNS	13,661	2,049	1	15,709
ES4B	0601-000ES04	29	Capital Renewal	4	ROOFING SYSTEM REPLACEMENT (3/09)	228,042	34,206	0	262,248
EL4A	0601-000EL04	30	Capital Renewal	4	REPLACE EXTERIOR LIGHTS	9,318	1,398	0	10,716
			Totals for Capital Renewal			**692,975**	**103,946**	**1**	**796,920**
ES5B	0601-000ES01	10	Deferred Maintenance	3	WINDOW REPLACEMENT	843,138	126,471	0	969,609
ES5A	0601-000ES02	11	Deferred Maintenance	3	EXTERIOR DOOR REPLACEMENT	67,951	10,193	0	78,144
ES2B	0601-000ES03	12	Deferred Maintenance	3	RESTORE BRICK AND STONE BUILDING FACADE (3/09)	285,384	42,808	0	328,191
HV3A	0601-000HV01	13	Deferred Maintenance	3	HVAC SYSTEM CAPITAL REPLACEMENT	3,772,497	565,875	0	4,338,372
EL3B	0601-000EL02	16	Deferred Maintenance	3	UPGRADE SECONDARY ELECTRICAL SYSTEM	1,695,183	254,278	0	1,949,461
EL4B	0601-000EL05	17	Deferred Maintenance	3	UPGRADE INTERIOR LIGHTING	385,455	57,818	0	443,273
IS1A	0601-000IS01	20	Deferred Maintenance	3	REFINSH FLOORING	715,594	107,339	0	822,933
IS2B	0601-000IS04	21	Deferred Maintenance	3	REFINISH WALLS (3/09)	363,491	54,524	0	418,014
PL2A	0601-000PL03	22	Deferred Maintenance	3	REPLACE DRAIN PIPING NETWORK	1,164,489	174,673	0	1,339,162
PL1A	0601-000PL02	23	Deferred Maintenance	3	REPLACE WATER SUPPLY PIPING	776,421	116,463	0	892,884
			Totals for Deferred Maintenance			**10,069,603**	**1,510,440**	**0**	**11,580,044**
FS6A	0601-000FS01	1	Plant Adaption	2	ELIMINATE FIRE RATING COMPROMISES	9,341	1,401	0	10,743
FS2A	0601-000FS05	2	Plant Adaption	2	REPLACE THE FIRE ALARM SYSTEM	291,124	43,669	0	334,792

Detailed Project Summary

Facility Condition Analysis

Section Two

Project Classification

0601-000 : BURROWES BUILDING

Cat. Code	Project Number	Pri Seq	Project Classification	Pri Cls	Project Title	Construction Cost	Prof Fees	Actual Cost to Date	Remaining Cost
EL5A	0601-000EL01	3	Plant Adaption	2	EMERGENCY POWER SYSTEM UPGRADE	117,071	17,561	1	134,631
PL1I	0601-000PL01	4	Plant Adaption	2	INSTALL BACKFLOW PREVENTER ON WATER MAIN	6,652	998	0	7,650
FS5F	0601-000FS06	5	Plant Adaption	3	BUILDING AREA SEPARATION DOORS AT LEVEL CHANGE STAIRS	237,489	35,623	0	273,112
FS5F	0601-000FS02	6	Plant Adaption	3	EGRESS STAIR ACCESS DOOR UPGRADES	45,273	6,791	0	52,064
FS3A	0601-000FS03	7	Plant Adaption	3	INSTALL FIRE SPRINKLING SYSTEM	844,241	126,636	0	970,877
AC3B	0601-000AC03	8	Plant Adaption	3	EGRESS STAIR AND RAILING UPGRADES	236,623	35,493	0	272,116
AC3E	0601-000AC04	9	Plant Adaption	3	RESTROOM RENOVATIONS (3/09)	130,246	19,537	0	149,783
HV2A	0601-000HV02	14	Plant Adaption	3	INSTALL A CHILLED WATER PLANT	484,904	72,736	0	557,639
EL2A	0601-000EL03	15	Plant Adaption	3	UPGRADE PRIMARY ELECTRICAL EQUIPMENT	216,497	32,475	0	248,972
IS3B	0601-000IS02	19	Plant Adaption	3	REFINISH CEILING SYSTEMS	429,237	64,386	0	493,623
AC3D	0601-000AC02	27	Plant Adaption	4	BUILDING SIGNAGE UPGRADES	15,441	2,316	0	17,758
AC3F	0601-000AC01	28	Plant Adaption	4	DUAL-LEVEL DRINKING FOUNTAIN INSTALLATIONS	70,574	10,586	0	81,160
			Totals for Plant Adaption			**3,134,713**	**470,207**	**1**	**3,604,919**
				Grand Total:		**13,897,291**	**2,084,594**	**2**	**15,981,883**

Detailed Project Summary

Facility Condition Analysis

Section Two

Energy Conservation

0601-000 : BURROWES BUILDING

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Total Cost	Annual Savings	Simple Payback
ES5B	0601-000ES01	3	10	WINDOW REPLACEMENT	969,609	2,850	340.21
HV3A	0601-000HV01	3	13	HVAC SYSTEM CAPITAL REPLACEMENT	4,338,372	18,104	239.64
EL4B	0601-000EL05	3	17	UPGRADE INTERIOR LIGHTING	443,273	2,986	148.45
				Totals for Priority Class 3	**5,751,254**	**23,940**	240.24
				Grand Total:	**5,751,254**	**23,940**	240.24

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fees	Actual Cost to Date	Remaining Cost
AC3B	0601-000AC03	3	8	EGRESS STAIR AND RAILING UPGRADES	236,623	35,493	0	272,116
AC3E	0601-000AC04	3	9	RESTROOM RENOVATIONS (3/09)	130,246	19,537	0	149,783
AC3D	0601-000AC02	4	27	BUILDING SIGNAGE UPGRADES	15,441	2,316	0	17,758
AC3F	0601-000AC01	4	28	DUAL-LEVEL DRINKING FOUNTAIN INSTALLATIONS	70,574	10,586	0	81,160
	Totals for System Code:			**ACCESSIBILITY**	**452,884**	**67,933**	**0**	**520,816**
EL5A	0601-000EL01	2	3	EMERGENCY POWER SYSTEM UPGRADE	117,071	17,561	1	134,631
EL2A	0601-000EL03	3	15	UPGRADE PRIMARY ELECTRICAL EQUIPMENT	216,497	32,475	0	248,972
EL3B	0601-000EL02	3	16	UPGRADE SECONDARY ELECTRICAL SYSTEM	1,695,183	254,278	0	1,949,461
EL4B	0601-000EL05	3	17	UPGRADE INTERIOR LIGHTING	385,455	57,818	0	443,273
EL4A	0601-000EL04	4	30	REPLACE EXTERIOR LIGHTS	9,318	1,398	0	10,716
	Totals for System Code:			**ELECTRICAL**	**2,423,524**	**363,529**	**1**	**2,787,052**
ES5B	0601-000ES01	3	10	WINDOW REPLACEMENT	843,138	126,471	0	969,609
ES5A	0601-000ES02	3	11	EXTERIOR DOOR REPLACEMENT	67,951	10,193	0	78,144
ES2B	0601-000ES03	3	12	RESTORE BRICK AND STONE BUILDING FACADE (3/09)	285,384	42,808	0	328,191
ES4B	0601-000ES04	4	29	ROOFING SYSTEM REPLACEMENT (3/09)	228,042	34,206	0	262,248
	Totals for System Code:			**EXTERIOR**	**1,424,515**	**213,677**	**0**	**1,638,193**
FS6A	0601-000FS01	2	1	ELIMINATE FIRE RATING COMPROMISES	9,341	1,401	0	10,743
FS2A	0601-000FS05	2	2	REPLACE THE FIRE ALARM SYSTEM	291,124	43,669	0	334,792
FS5F	0601-000FS06	3	5	BUILDING AREA SEPARATION DOORS AT LEVEL CHANGE STAIRS	237,489	35,623	0	273,112
FS5F	0601-000FS02	3	6	EGRESS STAIR ACCESS DOOR UPGRADES	45,273	6,791	0	52,064
FS3A	0601-000FS03	3	7	INSTALL FIRE SPRINKLING SYSTEM	844,241	126,636	0	970,877
FS1A	0601-000FS04	4	26	REPLACE EXIT SIGNS	13,661	2,049	1	15,709

Detailed Project Summary

Facility Condition Analysis

Section Two

Category/System Code Update Report

0601-000 : BURROWES BUILDING

Cat. Code	Project Number	Pri Cls	Pri Seq	Project Title	Construction Cost	Professional Fees	Actual Cost to Date	Remaining Cost
	Totals for System Code:			**FIRE/LIFE SAFETY**	**1,441,129**	**216,169**	**1**	**1,657,298**
HV3A	0601-000HV01	3	13	HVAC SYSTEM CAPITAL REPLACEMENT	3,772,497	565,875	0	4,338,372
HV2A	0601-000HV02	3	14	INSTALL A CHILLED WATER PLANT	484,904	72,736	0	557,639
	Totals for System Code:			**HVAC**	**4,257,401**	**638,610**	**0**	**4,896,011**
IS4A	0601-000IS03	3	18	REPLACE INTERIOR DOORS	396,589	59,488	0	456,077
IS3B	0601-000IS02	3	19	REFINISH CEILING SYSTEMS	429,237	64,386	0	493,623
IS1A	0601-000IS01	3	20	REFINSH FLOORING	715,594	107,339	0	822,933
IS2B	0601-000IS04	3	21	REFINISH WALLS (3/09)	363,491	54,524	0	418,014
	Totals for System Code:			**INTERIOR/FINISH SYS.**	**1,904,910**	**285,737**	**0**	**2,190,647**
PL1I	0601-000PL01	2	4	INSTALL BACKFLOW PREVENTER ON WATER MAIN	6,652	998	0	7,650
PL2A	0601-000PL03	3	22	REPLACE DRAIN PIPING NETWORK	1,164,489	174,673	0	1,339,162
PL1A	0601-000PL02	3	23	REPLACE WATER SUPPLY PIPING	776,421	116,463	0	892,884
	Totals for System Code:			**PLUMBING**	**1,947,561**	**292,134**	**0**	**2,239,696**
SI1A	0601-000SI01	3	24	SITE PEDESTRIAN PAVEMENT UPGRADES	8,535	1,280	0	9,816
SI3A	0601-000SI02	3	25	EXTERIOR TERRACE REPAIRS	36,831	5,525	0	42,355
	Totals for System Code:			**SITE**	**45,366**	**6,805**	**0**	**52,171**
				Grand Total:	**13,897,291**	**2,084,594**	**2**	**15,981,883**

FACILITY CONDITION ANALYSIS

SECTION 3

SPECIFIC PROJECT DETAILS ILLUSTRATING DESCRIPTION / COST

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000FS01	**Title:**	ELIMINATE FIRE RATING COMPROMISES
Priority Sequence:	1		
Priority Class:	2		
Category Code:	FS6A	**System:**	FIRE/LIFE SAFETY
		Component:	GENERAL
		Element:	OTHER
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	IBC 711.3		
Project Class:	Plant Adaption	**Score:**	14.63
Project Date:	03/11/2009		
Project Location:	Undefined: Floor(s) 1, 2, 3, 4, G		

Project Description

Structural fire separations are not maintained according to code requirements for new construction in many areas of this facility. Little or no regard has been given to the passive and active firestopping systems in this building. Moderate structural separation repairs and intumescent passive firestopping should be accomplished promptly.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000FS01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Moderate passive firestopping and structural separation repairs	SF	36,827	$0.06	$2,210	$0.17	$6,261	$8,470
	Project Totals:			**$2,210**		**$6,261**	**$8,470**

Material/Labor Cost		$8,470
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$7,784
General Contractor Mark Up at 20.0%	+	$1,557
Inflation	+	$0
Construction Cost		$9,341
Professional Fees at 15.0%	+	$1,401
Total Project Cost		**$10,743**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000FS05	**Title:**	REPLACE THE FIRE ALARM SYSTEM
Priority Sequence:	2		
Priority Class:	2		
Category Code:	FS2A	**System:**	FIRE/LIFE SAFETY
		Component:	DETECTION ALARM
		Element:	GENERAL
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	NFPA 1 and 101 ADAAG 702.1		
Project Class:	Plant Adaption	**Score:**	14.63
Project Date:	03/11/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, G		

Project Description

The fire alarm system is outdated and does not comply with ADA standards for visual alarm and pull station locations. Remove the existing system, and install a modern zone-type fire alarm system. Specify a point addressable, multizone, four-wire, Class A, supervised fire alarm panel with an annunciator. This work includes pull stations, audible / visual and visual devices, smoke detectors, duct smoke detectors, and heat detectors. Install all devices in accordance with current NFPA and ADA requirements. The system should report activation or trouble to an applicable receiving station, such as campus security and / or the local fire department.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000FS05

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, and cut and patching materials	SF	111,597	$1.44	$160,700	$0.88	$98,205	$258,905
	Project Totals:			**$160,700**		**$98,205**	**$258,905**

Material/Labor Cost		$258,905
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$242,603
General Contractor Mark Up at 20.0%	+	$48,521
Inflation	+	$0
Construction Cost		$291,124
Professional Fees at 15.0%	+	$43,669
Total Project Cost		**$334,792**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000EL01	**Title:**	EMERGENCY POWER SYSTEM UPGRADE
Priority Sequence:	3		
Priority Class:	2		
Category Code:	EL5A	**System:**	ELECTRICAL
		Component:	EMERGENCY POWER SYSTEM
		Element:	GENERATION/DISTRIBUTION
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	NEC Article 700		

Project Class:	Plant Adaption	**Score:**	11.63
Project Date:	03/11/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, G		

Project Description

RSH CCD - PUT ON EMERGENCY CABLE INSTEAD - Emergency power for the building consists of an Onan brand, natural gas fired emergency power generator. The available power is inadequate for a modern facility of this size. It is recommended that an appropriately sized emergency generator and power network be installed. The emergency network should supply power to select light fixtures to maintain code required illumination levels along egress paths. Emergency power should also be provided for the exit signs, fire alarm system, elevators, and other critical mechanical equipment. If deemed more cost-effective, the University may opt to increase the emergency feeder size and transfer switch in lieu of the generator installation.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000EL01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Generator set, including battery charger, muffler and transfer switch, and diesel engine with fuel tank	KW	100	$416	$41,600	$44.00	$4,400	$46,000
Emergency power network, including breaker panels, raceways, conductors, and miscellaneous connection materials	SF	111,597	$0.22	$24,551	$0.30	$33,479	$58,030
	Project Totals:			**$66,151**		**$37,879**	**$104,030**

Material/Labor Cost		$104,030
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$97,559
General Contractor Mark Up at 20.0%	+	$19,512
Inflation	+	$0
Construction Cost		$117,071
Professional Fees at 15.0%	+	$17,561
Total Project Cost		**$134,632**
Less Backlog Reduction	-	$1
Remaining Cost		**$134,631**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000PL01	**Title:**	INSTALL BACKFLOW PREVENTER ON WATER MAIN
Priority Sequence:	4		
Priority Class:	2		
Category Code:	PL1I	**System:**	PLUMBING
		Component:	DOMESTIC WATER
		Element:	BACKFLOW PREVENTION
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	IPC 608		

Project Class:	Plant Adaption	**Score:**	10.63
Project Date:	03/11/2009		
Project Location:	Room Only: Floor(s) G Room(s) 017		

Project Description

The water main enters the building in room 017. There is no backflow preventer at the water main to protect against cross-contamination of the building`s water system with the domestic water supply. Install a backflow preventer at the water main to protect the potable water supply.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000PL01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Backflow preventer, isolation valves, piping, etc.	EA	1	$4,087	$4,087	$1,806	$1,806	$5,893
	Project Totals:			**$4,087**		**$1,806**	**$5,893**

Material/Labor Cost		$5,893
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$5,543
General Contractor Mark Up at 20.0%	+	$1,109
Inflation	+	$0
Construction Cost		$6,652
Professional Fees at 15.0%	+	$998
Total Project Cost		**$7,650**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000FS06	**Title:**	BUILDING AREA SEPARATION DOORS AT LEVEL CHANGE STAIRS
Priority Sequence:	5		
Priority Class:	3		
Category Code:	FS5F	**System:**	FIRE/LIFE SAFETY
		Component:	EGRESS PATH
		Element:	FIRE DOORS/HARDWARE
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	NFPA 5.2		

Project Class:	Plant Adaption	**Score:**	14.63
Project Date:	03/11/2009		
Project Location:	Item Only: Floor(s) 1, 2, 3, 4, G		

Project Description

The existing stairs located in the north and south corridors link to the transition in the 1967 wings between the differing floor levels of the original 1940 sections and the two 1967 wings. These corridor stairs also allow travel between floors. Some of these stairs have been modified with corridor ramps, but the stairs still do not have any access doors to maintain floor-to-floor or area separation between the three building wing components. Create rated wall and stair access doors at each end of these corridor stairs to effectively create additional stair towers. This upgrade should be completed as soon as possible to create adequate separation between each floor level.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000FS06

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Fire-rated area separation partitions and door assemblies	SYS	10	$8,500	$85,000	$12,875	$128,750	$213,750
	Project Totals:			**$85,000**		**$128,750**	**$213,750**

Material/Labor Cost		$213,750
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$197,908
General Contractor Mark Up at 20.0%	+	$39,582
Inflation	+	$0
Construction Cost		$237,489
Professional Fees at 15.0%	+	$35,623
Total Project Cost		**$273,112**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000FS02	**Title:**	EGRESS STAIR ACCESS DOOR UPGRADES
Priority Sequence:	6		
Priority Class:	3		
Category Code:	FS5F	**System:**	FIRE/LIFE SAFETY
		Component:	EGRESS PATH
		Element:	FIRE DOORS/HARDWARE
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	NFPA 5.2 IBC 713		
Project Class:	Plant Adaption	**Score:**	14.63
Project Date:	03/11/2009		
Project Location:	Item Only: Floor(s) 1, 2, 3, 4, G		

Project Description

Existing stair tower access doors in the original section of the building are older wire glass french doors that lack positive latching capability. Replace all of these interior doors with new fire-rated hollow metal doors with vision panels and panic hardware and approved rated wall construction. Also replace the older double stair access doors in the two 1967 wings. Stair doors in these two wings also do not have positive latching hardware and are too narrow to provide ADA-compliant access. Upgrade these stair access points with single-leaf, fire-rated, hollow metal door assemblies.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000FS02

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Approved metal stud and fire-rated wall construction allowance	EA	8	$720	$5,760	$1,430	$11,440	$17,200
Rated door and rated metal frame, including all hardware	LEAF	16	$666	$10,656	$805	$12,880	$23,536
	Project Totals:			**$16,416**		**$24,320**	**$40,736**

Material/Labor Cost		$40,736
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$37,728
General Contractor Mark Up at 20.0%	+	$7,546
Inflation	+	$0
Construction Cost		$45,273
Professional Fees at 15.0%	+	$6,791
Total Project Cost		**$52,064**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000FS03	**Title:**	INSTALL FIRE SPRINKLING SYSTEM
Priority Sequence:	7		
Priority Class:	3		
Category Code:	FS3A	**System:**	FIRE/LIFE SAFETY
		Component:	SUPPRESSION
		Element:	SPRINKLERS
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	NFPA 1, 13, 13R, and 101		
Project Class:	Plant Adaption	**Score:**	10.63
Project Date:	03/11/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, G		

Project Description

The only form of fire suppression that was noted on the day of the inspection was dry chemical fire extinguishers located in the corridors. It is recommended by the NFPA that facilities be sprinkled throughout and that sprinkling systems be fully supervised by a fire alarm system. Install fire suppression throughout the facility, including piping, sprinkler heads as required by code, pipe bracing, and supervising and alarm devices as needed. To help reduce overall costs and the duplication of work efforts, this work should be coordinated with other plumbing, major HVAC/R, and interior ceiling and wall finish upgrades recommended elsewhere in this report.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000FS03

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, schedule 40 black pipe, sprinkler heads, and associated materials	SF	111,597	$3.05	$340,371	$3.74	$417,373	$757,744
	Project Totals:			**$340,371**		**$417,373**	**$757,744**

Material/Labor Cost		$757,744
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$703,534
General Contractor Mark Up at 20.0%	+	$140,707
Inflation	+	$0
Construction Cost		$844,241
Professional Fees at 15.0%	+	$126,636
Total Project Cost		**$970,877**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000AC03	**Title:**	EGRESS STAIR AND RAILING UPGRADES
Priority Sequence:	8		
Priority Class:	3		
Category Code:	AC3B	**System:**	ACCESSIBILITY
		Component:	INTERIOR PATH OF TRAVEL
		Element:	STAIRS AND RAILINGS
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	ADAAG 505		

Project Class:	Plant Adaption	**Score:**	14.63
Project Date:	03/11/2009		
Project Location:	Item Only: Floor(s) 1, 2, 3, 4, G		

Project Description

Present legislation regarding building accessibility by the handicapped 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, guards must prevent the passage of a 4 inch diameter sphere (6 inches in the triangle formed by the lower rail and tread / riser angle). Although the stairs are grandfathered under the code enforced at the time of construction until a major renovation occurs, they are deficient in either handrail design, guard design, or both. Future renovation efforts should include comprehensive stair railing and finish upgrades.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000AC03

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	39	$568	$22,152	$516	$20,124	$42,276
Switchback handrail / guardrail system per floor	FLR	39	$1,286	$50,154	$826	$32,214	$82,368
Stair tread and landing finish upgrades per floor	FLR	39	$1,437	$56,043	$766	$29,874	$85,917
	Project Totals:			**$128,349**		**$82,212**	**$210,561**

Material/Labor Cost		$210,561
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$197,186
General Contractor Mark Up at 20.0%	+	$39,437
Inflation	+	$0
Construction Cost		$236,623
Professional Fees at 15.0%	+	$35,493
Total Project Cost		**$272,116**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000AC04	**Title:**	RESTROOM RENOVATIONS (3/09)
Priority Sequence:	9		
Priority Class:	3		
Category Code:	AC3E	**System:**	ACCESSIBILITY
		Component:	INTERIOR PATH OF TRAVEL
		Element:	RESTROOMS/BATHROOMS
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	ADAAG 604.1, 604.8, 605.1, 606.1, 607.1, 608.1		

Project Class:	Plant Adaption	**Score:**	9.06
Project Date:	03/11/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, G		

Project Description

The overall level of restroom accessibility is good, but short of full compliance with modern accessibility legislation. While the clearances and clear floor spaces are adequate, compliant mirrors, signage, grab bars, and door operators are recommended.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000AC04

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	32	$1,952	$62,464	$1,684	$53,888	$116,352
	Project Totals:			**$62,464**		**$53,888**	**$116,352**

Material/Labor Cost		$116,352
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$108,538
General Contractor Mark Up at 20.0%	+	$21,708
Inflation	+	$0
Construction Cost		$130,246
Professional Fees at 15.0%	+	$19,537
Total Project Cost		**$149,783**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000ES01	**Title:**	WINDOW REPLACEMENT
Priority Sequence:	10		
Priority Class:	3		
Category Code:	ES5B	**System:**	EXTERIOR
		Component:	FENESTRATIONS
		Element:	WINDOWS
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Energy Conservation	$2,850.00	
Code Application:	Not Applicable		

Project Class:	Deferred Maintenance	**Score:**	12.63
Project Date:	03/11/2009		
Project Location:	Building-wide: Floor(s) 1, 2, 3, 4, G		

Project Description

The aged and weathered, steel-framed casement windows are recommended for replacement. Failure to replace the windows can result in higher energy costs and damage to the interior. The new windows should retain the architectural aesthetic of the building and incorporate modern energy-efficient features such as thermal panes. Replacement of windowsills and trim may also necessary as part of the overall effort.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000ES01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Custom and historical glazing applications	SF	6,040	$82.56	$498,662	$41.28	$249,331	$747,994
	Project Totals:			**$498,662**		**$249,331**	**$747,994**

Material/Labor Cost		$747,994
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$702,615
General Contractor Mark Up at 20.0%	+	$140,523
Inflation	+	$0
Construction Cost		$843,138
Professional Fees at 15.0%	+	$126,471
Total Project Cost		**$969,609**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000ES02	**Title:**	EXTERIOR DOOR REPLACEMENT
Priority Sequence:	11		
Priority Class:	3		
Category Code:	ES5A	**System:**	EXTERIOR
		Component:	FENESTRATIONS
		Element:	DOORS
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	ADAAG 309.4		
Project Class:	Deferred Maintenance	**Score:**	10.63
Project Date:	03/11/2009		
Project Location:	Item Only: Floor(s) 1, G		

Project Description

It is recommended that aged and inefficient exterior door systems be replaced. This project includes all primary and secondary entrance, service, and overhead roll-up doors. The replacement units should maintain the architectural design aspects of this facility. They should be modern, energy-efficient applications that will protect the interior of the building from the elements. Consideration should be give to increasing the leaf width to better accommodate ADA access.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000ES02

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	12	$1,961	$23,532	$1,981	$23,772	$47,304
Low traffic door system	LEAF	6	$1,022	$6,132	$1,238	$7,428	$13,560
	Project Totals:			**$29,664**		**$31,200**	**$60,864**

Material/Labor Cost		$60,864
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$56,626
General Contractor Mark Up at 20.0%	+	$11,325
Inflation	+	$0
Construction Cost		$67,951
Professional Fees at 15.0%	+	$10,193
Total Project Cost		**$78,144**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000ES03	**Title:**	RESTORE BRICK AND STONE BUILDING FACADE (3/09)
Priority Sequence:	12		
Priority Class:	3		
Category Code:	ES2B	**System:**	EXTERIOR
		Component:	COLUMNS/BEAMS/WALLS
		Element:	FINISH
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	Not Applicable		

Project Class:	Deferred Maintenance	**Score:**	6.75
Project Date:	03/11/2009		
Project Location:	Building-wide: Floor(s) 1		

Project Description

Brick masonry with stone panels, cornices, and accents comprise the primary exterior finish. While the brick masonry and stone panels are generally fundamentally sound with some exceptions, exposure to the elements has caused some deterioration of the mortar joints and expansion joints. Cleaning, surface preparation, selective repairs, tuck pointing 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

Project Cost

Project Number: 0601-000ES03

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Corrective repairs and stone panel repairs and resets	LOT	1	$28,500	$28,500	$62,000	$62,000	$90,500
Cleaning and surface preparation	SF	45,000	$0.11	$4,950	$0.22	$9,900	$14,850
Selective mortar and / or sealant repairs (assumes 10 linear feet for every 100 square feet of envelope)	LF	10,000	$0.43	$4,300	$0.94	$9,400	$13,700
Applied finish or sealant	SF	38,000	$0.22	$8,360	$0.82	$31,160	$39,520
Miscellaneous repairs to deteriorating facade ornamentation	LOT	1	$25,000	$25,000	$75,000	$75,000	$100,000
	Project Totals:			**$71,110**		**$187,460**	**$258,570**

Material/Labor Cost		$258,570
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$237,820
General Contractor Mark Up at 20.0%	+	$47,564
Inflation	+	$0
Construction Cost		$285,384
Professional Fees at 15.0%	+	$42,808
Total Project Cost		**$328,191**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000HV01	**Title:**	HVAC SYSTEM CAPITAL REPLACEMENT
Priority Sequence:	13		
Priority Class:	3		
Category Code:	HV3A	**System:**	HVAC
		Component:	HEATING/COOLING
		Element:	SYSTEM RETROFIT/REPLACE
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Energy Conservation $18,104.00		
Code Application:	ASHRAE 62-1999		
	EPA 40 CFR 61.M, 763		
	OSHA 29 CFR 1910.1001, 1926.1101		
Project Class:	Deferred Maintenance	**Score:**	10.63
Project Date:	03/11/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, G		

Project Description

This building is on the university's high pressure steam loop. Air conditioning is accomplished with a combination of chilled water and window-mounted air conditioning units. Some partial HVAC system upgrades were performed in 1992, and select areas have undergone upgrades since then. While some upgrades have been performed, a complete HVAC redesign and replacement is still needed throughout the building. The existing systems are inefficient, outdated, and well past the end of their service lives. The systems suffer from IAQ issues, and there are frequent component failures. Demolish and dispose of all outdated equipment, and install a new modern HVAC system with VAV and constant volume air distribution as needed. This includes new air handlers, ductwork, terminal units, heat exchangers, pumps, piping, controls, and electrical connections. Specify DDCs for the new equipment, and incorporate VFDs into the new HVAC design as applicable. Properly remove and dispose of all ACM and any other hazardous material during the demolition phase.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000HV01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Air handlers, ductwork, VAVs, VFDs, DDCs, pumps, piping, electrical connections, demolition of existing equipment, and hazardous materials abatement	SF	111,597	$13.65	$1,523,299	$16.69	$1,862,554	$3,385,853
	Project Totals:			**$1,523,299**		**$1,862,554**	**$3,385,853**

Material/Labor Cost		$3,385,853
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$3,143,748
General Contractor Mark Up at 20.0%	+	$628,750
Inflation	+	$0
Construction Cost		$3,772,497
Professional Fees at 15.0%	+	$565,875
Total Project Cost		**$4,338,372**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000HV02	**Title:**	INSTALL A CHILLED WATER PLANT
Priority Sequence:	14		
Priority Class:	3		
Category Code:	HV2A	**System:**	HVAC
		Component:	COOLING
		Element:	CHILLERS/CONTROLS
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	ASHRAE 15-1994		
Project Class:	Plant Adaption	**Score:**	11.63
Project Date:	03/11/2009		
Project Location:	Undefined: Floor(s) G		

Project Description

The installation of a chilled water plant is recommended as part of an HVAC system upgrade. Install a new water-cooled chiller and cooling tower, including new wiring, motor starters, and related controls and programming. Interface the new electronic controls into the campus BSAC as applicable. Refrigeration safety equipment and systems should be in accordance with the ASHRAE Safety Code for mechanical refrigeration. This will include refrigerant leak detection equipment and an emergency exhaust system.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000HV02

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Cooling tower, all connections	TON	400	$103	$41,164	$60.60	$24,240	$65,404
Centrifugal chiller, piping, electrical equipment, refrigeration safety systems, and demolition costs	TON	400	$572	$228,600	$343	$137,120	$365,720
	Project Totals:			**$269,764**		**$161,360**	**$431,124**

Material/Labor Cost		$431,124
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$404,087
General Contractor Mark Up at 20.0%	+	$80,817
Inflation	+	$0
Construction Cost		$484,904
Professional Fees at 15.0%	+	$72,736
Total Project Cost		**$557,639**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000EL03	**Title:**	UPGRADE PRIMARY ELECTRICAL EQUIPMENT
Priority Sequence:	15		
Priority Class:	3		
Category Code:	EL2A	**System:**	ELECTRICAL
		Component:	MAIN DISTRIBUTION PANELS
		Element:	CONDITION UPGRADE
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	NEC Chapter 2		

Project Class:	Plant Adaption	**Score:**	11.63
Project Date:	03/11/2009		
Project Location:	Room Only: Floor(s) G		

Project Description

Electrical power is supplied to the Burrowes Building at 12,470 volts through a 600 amp high voltage disconnect. A 300 kVA, dry-type transformer supplies 208Y120 volt power to three distribution sections that serve the individual wings. Primary electrical upgrades are recommended to augment proposed HVAC, lighting, and secondary electrical system upgrades. Remove the existing primary equipment, and install new transformers and switchgear that include 480 volt power for lighting and mechanical equipment and 208 volt power for other circuits.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000EL03

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
480 volt service transformer, switchgear, and all connections and terminations	AMP	1,600	$50.00	$80,000	$29.00	$46,400	$126,400
120/208 volt step-down transformer, main distribution, and all connections and terminations	AMP	1,200	$35.00	$42,000	$20.00	$24,000	$66,000
	Project Totals:			**$122,000**		**$70,400**	**$192,400**

Material/Labor Cost		$192,400
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$180,414
General Contractor Mark Up at 20.0%	+	$36,083
Inflation	+	$0
Construction Cost		$216,497
Professional Fees at 15.0%	+	$32,475
Total Project Cost		**$248,972**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000EL02	**Title:**	UPGRADE SECONDARY ELECTRICAL SYSTEM
Priority Sequence:	16		
Priority Class:	3		
Category Code:	EL3B	**System:**	ELECTRICAL
		Component:	SECONDARY DISTRIBUTION
		Element:	DISTRIBUTION NETWORK
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	NEC Chapters 2 and 3		

Project Class:	Deferred Maintenance	**Score:**	7.63
Project Date:	03/11/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, G		

Project Description

While some panels on the fourth floor have been upgraded, the majority of the secondary electrical system includes a mixture of outdated Westinghouse breaker panels in the original section and Federal Pacific panels in the wings. The increased use of electrical equipment, as well as proposed HVAC upgrades, serves to overburden a system that was designed without consideration of these loads. There are reports of overloaded circuits and inadequate power. Electrical devices, including switches and receptacles, are uniformly worn. It is recommended that the secondary electrical system be replaced in its entirety to ensure safe and reliable power to building occupants.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000EL02

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Breaker panels, conductors, devices, demolition, and disposal costs	SF	111,597	$5.47	$610,436	$8.20	$915,095	$1,525,531
	Project Totals:			**$610,436**		**$915,095**	**$1,525,531**

Material/Labor Cost		$1,525,531
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$1,412,653
General Contractor Mark Up at 20.0%	+	$282,531
Inflation	+	$0
Construction Cost		$1,695,183
Professional Fees at 15.0%	+	$254,278
Total Project Cost		**$1,949,461**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000EL05	**Title:**	UPGRADE INTERIOR LIGHTING
Priority Sequence:	17		
Priority Class:	3		
Category Code:	EL4B	**System:**	ELECTRICAL
		Component:	DEVICES AND FIXTURES
		Element:	INTERIOR LIGHTING
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Energy Conservation $2,986.00		
Code Application:	NEC Chapter 4, Article 410		
Project Class:	Deferred Maintenance	**Score:**	7.63
Project Date:	03/11/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, G		

Project Description

Lighting throughout the facility is mainly fluorescent, but there are incandescent lights in mechanical rooms and other utility areas. While many areas have modern T8 fluorescent light fixtures, other areas have outdated, inefficient T12 fixtures. Approximately 50 percent of the interior light fixtures need to be upgraded to T8. Coordinate the design and implementation of this project with all other related mechanical and architectural upgrades.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000EL05

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
High efficiency fluorescent lighting, including all connections	SF	55,798	$2.79	$155,676	$3.41	$190,271	$345,948
	Project Totals:			**$155,676**		**$190,271**	**$345,948**

Material/Labor Cost		$345,948
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$321,212
General Contractor Mark Up at 20.0%	+	$64,242
Inflation	+	$0
Construction Cost		$385,455
Professional Fees at 15.0%	+	$57,818
Total Project Cost		**$443,273**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000IS03	**Title:**	REPLACE INTERIOR DOORS
Priority Sequence:	18		
Priority Class:	3		
Category Code:	IS4A	**System:**	INTERIOR/FINISH SYS.
		Component:	DOORS
		Element:	GENERAL
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	ADAAG 309.4, 404		
Project Class:	Capital Renewal	**Score:**	14.63
Project Date:	03/11/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, G		

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 existing door systems and replacement according to a code compliant plan to properly protect egress passages is recommended.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000IS03

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Interior door and frame installation with all hardware	EA	120	$366	$43,920	$392	$47,040	$90,960
Rated door and rated metal frame, including all hardware	EA	180	$666	$119,880	$805	$144,900	$264,780
	Project Totals:			**$163,800**		**$191,940**	**$355,740**

Material/Labor Cost		$355,740
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$330,490
General Contractor Mark Up at 20.0%	+	$66,098
Inflation	+	$0
Construction Cost		$396,589
Professional Fees at 15.0%	+	$59,488
Total Project Cost		**$456,077**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000IS02	**Title:**	REFINISH CEILING SYSTEMS
Priority Sequence:	19		
Priority Class:	3		
Category Code:	IS3B	**System:**	INTERIOR/FINISH SYS.
		Component:	CEILINGS
		Element:	REPLACEMENT
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	Not Applicable		

Project Class:	Plant Adaption	**Score:**	11.63
Project Date:	03/11/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, G		

Project Description

Ceiling finish applications vary in age, type, and condition. Ceiling finish upgrades should be considered as part of any future cosmetic improvements or major comprehensive renovation efforts. The proposed building systems upgrade work, such as HVAC modernization, will require the removal of most of these ceiling systems, requiring ceiling replacements.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000IS02

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Acoustical tile ceiling systems	SF	74,000	$2.11	$156,140	$2.95	$218,300	$374,440
Painted ceiling finish application	SF	12,000	$0.17	$2,040	$0.80	$9,600	$11,640
	Project Totals:			**$158,180**		**$227,900**	**$386,080**

Material/Labor Cost		$386,080
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$357,697
General Contractor Mark Up at 20.0%	+	$71,540
Inflation	+	$0
Construction Cost		$429,237
Professional Fees at 15.0%	+	$64,386
Total Project Cost		**$493,623**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000IS01	**Title:**	REFINSH FLOORING
Priority Sequence:	20		
Priority Class:	3		
Category Code:	IS1A	**System:**	INTERIOR/FINISH SYS.
		Component:	FLOOR
		Element:	FINISHES-DRY
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	Not Applicable		
	EPA 40 CFR 61.M, 763		
	OSHA 29 CFR 1910.1001, 1926.1101		
Project Class:	Deferred Maintenance	**Score:**	9.63
Project Date:	03/11/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, G		

Project Description

Interior floor finish applications vary in age, type, and condition. Floor finish upgrades should be considered as part of any future cosmetic improvements or major comprehensive renovation efforts. This building contains older vinyl flooring tiles that are suspected to be ACM, further evaluation, testing, and remediation is recommended.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000IS01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Carpet	SF	67,860	$5.31	$360,337	$1.98	$134,363	$494,699
Vinyl floor tile	SF	21,000	$3.50	$73,500	$2.48	$52,080	$125,580
Allowance for abatement of suspected ACM	SF	12,600	$0.35	$4,410	$0.74	$9,324	$13,734
	Project Totals:			**$438,247**		**$195,767**	**$634,013**

Material/Labor Cost		$634,013
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$596,328
General Contractor Mark Up at 20.0%	+	$119,266
Inflation	+	$0
Construction Cost		$715,594
Professional Fees at 15.0%	+	$107,339
Total Project Cost		**$822,933**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000IS04	**Title:**	REFINISH WALLS (3/09)
Priority Sequence:	21		
Priority Class:	3		
Category Code:	IS2B	**System:**	INTERIOR/FINISH SYS.
		Component:	PARTITIONS
		Element:	FINISHES
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	Not Applicable		

Project Class:	Deferred Maintenance
Project Date:	03/11/2009
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, G

Project Description

Interior wall finish applications vary in age, type, and condition. 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

Project Cost

Project Number: 0601-000IS04

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	341,375	$0.17	$58,034	$0.80	$273,100	$331,134
	Project Totals:			**$58,034**		**$273,100**	**$331,134**

Material/Labor Cost		$331,134
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$302,909
General Contractor Mark Up at 20.0%	+	$60,582
Inflation	+	$0
Construction Cost		$363,491
Professional Fees at 15.0%	+	$54,524
Total Project Cost		**$418,014**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000PL03	**Title:**	REPLACE DRAIN PIPING NETWORK
Priority Sequence:	22		
Priority Class:	3		
Category Code:	PL2A	**System:**	PLUMBING
		Component:	WASTEWATER
		Element:	PIPING NETWORK
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	IPC Chapter 6		
Project Class:	Deferred Maintenance	**Score:**	7.63
Project Date:	03/11/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, G		

Project Description

Drain piping throughout the facility is threaded galvanized and cast-iron pipe for normal wastes. While some repairs have been made as a result of piping failures, most of the drain piping is original. Failure to replace the drain piping within the scope of this report will result in frequent leaks and increasing maintenance costs. In coordination with other proposed plumbing upgrades, replacement of the drain piping is recommended.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000PL03

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Cast-iron drain piping and fittings, floor / roof drains, traps, hangers, demolition, etc.	SF	111,597	$2.86	$319,167	$6.58	$734,308	$1,053,476
Project Totals:				**$319,167**		**$734,308**	**$1,053,476**

Material/Labor Cost		$1,053,476
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$970,407
General Contractor Mark Up at 20.0%	+	$194,081
Inflation	+	$0
Construction Cost		$1,164,489
Professional Fees at 15.0%	+	$174,673
Total Project Cost		**$1,339,162**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000PL02	**Title:**	REPLACE WATER SUPPLY PIPING
Priority Sequence:	23		
Priority Class:	3		
Category Code:	PL1A	**System:**	PLUMBING
		Component:	DOMESTIC WATER
		Element:	PIPING NETWORK
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	IPC Chapter 6		
Project Class:	Deferred Maintenance	**Score:**	7.63
Project Date:	03/11/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, G		

Project Description

The soldered copper domestic cold water supply piping was found to be in average condition where it could be observed. While the supply piping may outlast the scope of this report, the proposed restroom modifications and other mechanical system upgrades warrant its replacement as part of an overall building renovation effort.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000PL02

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Pipe and fittings, valves, insulation, hangers, demolition, etc.	SF	111,597	$1.80	$200,875	$4.50	$502,187	$703,061
	Project Totals:			**$200,875**		**$502,187**	**$703,061**

Material/Labor Cost		$703,061
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$647,017
General Contractor Mark Up at 20.0%	+	$129,403
Inflation	+	$0
Construction Cost		$776,421
Professional Fees at 15.0%	+	$116,463
Total Project Cost		**$892,884**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000SI01	**Title:**	SITE PEDESTRIAN PAVEMENT UPGRADES
Priority Sequence:	24		
Priority Class:	3		
Category Code:	SI1A	**System:**	SITE
		Component:	ACCESS
		Element:	PEDESTRIAN
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	ADAAG 502		

Project Class:	Capital Renewal	**Score:**	7.63
Project Date:	03/11/2009		
Project Location:	Undefined: Floor(s) 1		

Project Description

Pedestrian paving systems are in overall fair to poor condition and represent a liability to the owner. New concrete paving systems, including excavation, grading, base compaction, and paving, are recommended.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000SI01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Concrete sidewalk installation	SF	1,200	$2.94	$3,528	$3.44	$4,128	$7,656
	Project Totals:			**$3,528**		**$4,128**	**$7,656**

Material/Labor Cost		$7,656
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$7,113
General Contractor Mark Up at 20.0%	+	$1,423
Inflation	+	$0
Construction Cost		$8,535
Professional Fees at 15.0%	+	$1,280
Total Project Cost		**$9,816**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000SI02	**Title:**	EXTERIOR TERRACE REPAIRS
Priority Sequence:	25		
Priority Class:	3		
Category Code:	SI3A	**System:**	SITE
		Component:	HARDSCAPE
		Element:	STRUCTURE
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	Not Applicable		
Project Class:	Capital Renewal	**Score:**	7.63
Project Date:	03/11/2009		
Project Location:	Item Only: Floor(s) 1		

Project Description

The western slate entry terrace is beginning to weather and should be refurbished. Reset and regrout the slate pavers to avoid the potential for tripping hazards and damaging water infiltration.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000SI02

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Slate paver mortar and grout repairs and miscellaneous materials	SF	1,600	$5.85	$9,360	$15.00	$24,000	$33,360
	Project Totals:			**$9,360**		**$24,000**	**$33,360**

Material/Labor Cost		$33,360
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$30,692
General Contractor Mark Up at 20.0%	+	$6,138
Inflation	+	$0
Construction Cost		$36,831
Professional Fees at 15.0%	+	$5,525
Total Project Cost		**$42,355**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000FS04	**Title:**	REPLACE EXIT SIGNS
Priority Sequence:	26		
Priority Class:	4		
Category Code:	FS1A	**System:**	FIRE/LIFE SAFETY
		Component:	LIGHTING
		Element:	EGRESS LTG./EXIT SIGNAGE
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	NFPA 101-47		
Project Class:	Capital Renewal	**Score:**	10.63
Project Date:	03/11/2009		
Project Location:	Floor-wide: Floor(s) 1, 2, 3, 4, G		

Project Description

While many of the exit signs have been retrofit with LED illumination, the overall condition of the exit signs is poor. Modern LED exit signs are recommended as part of an overall building renovation effort. Connect the new exit signs to the emergency circuit.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000FS04

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Replacement of existing exit signs with LED units	EA	45	$131	$5,895	$141	$6,345	$12,240
	Project Totals:			**$5,895**		**$6,345**	**$12,240**

Material/Labor Cost		$12,240
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$11,384
General Contractor Mark Up at 20.0%	+	$2,277
Inflation	+	$0
Construction Cost		$13,661
Professional Fees at 15.0%	+	$2,049
Total Project Cost		**$15,710**
Less Backlog Reduction	-	$1
Remaining Cost		**$15,709**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000AC02	**Title:**	BUILDING SIGNAGE UPGRADES
Priority Sequence:	27		
Priority Class:	4		
Category Code:	AC3D	**System:**	ACCESSIBILITY
		Component:	INTERIOR PATH OF TRAVEL
		Element:	SIGNAGE
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	ADAAG 703.1		
Project Class:	Plant Adaption	**Score:**	8.63
Project Date:	03/11/2009		
Project Location:	Undefined: Floor(s) 1, 2, 3, 4, G		

Project Description

Some of the existing room signage in this building does meet current ADA standards, and additional accessible signage is needed to make this building fully accessible. Install additional wall-mounted room signs with high color contrast, raised lettering, and Braille, as needed, in both the original section and the later wing additions.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000AC02

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Accessible signage	EA	200	$52.63	$10,526	$15.48	$3,096	$13,622
	Project Totals:			**$10,526**		**$3,096**	**$13,622**

Material/Labor Cost		$13,622
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$12,868
General Contractor Mark Up at 20.0%	+	$2,574
Inflation	+	$0
Construction Cost		$15,441
Professional Fees at 15.0%	+	$2,316
Total Project Cost		**$17,758**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000AC01	**Title:**	DUAL-LEVEL DRINKING FOUNTAIN INSTALLATIONS
Priority Sequence:	28		
Priority Class:	4		
Category Code:	AC3F	**System:**	ACCESSIBILITY
		Component:	INTERIOR PATH OF TRAVEL
		Element:	DRINKING FOUNTAINS
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	ADAAG 211, 602		

Project Class:	Plant Adaption	**Score:**	7.63
Project Date:	03/11/2009		
Project Location:	Item Only: Floor(s) 1, 2, 3, 4, G		

Project Description

The existing single-level, wall-mounted water fountains are typically located beside the various restrooms on each occupied floor level. Except for the ground floor dual-level fountain upgrade, these fountains are older and not fully accessible. Install new single-level fountains in the 1967 wings, and create wheelchair accessible corridor alcoves in the original section of the building to install ADA-compliant, dual-level, wall-mounted fountains. These fountain upgrades should be in place within the next six to ten years.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000AC01

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Dual-level drinking fountain	EA	17	$1,205	$20,485	$370	$6,290	$26,775
Alcove construction	EA	8	$869	$6,952	$3,709	$29,672	$36,624
	Project Totals:			**$27,437**		**$35,962**	**$63,399**

Material/Labor Cost		$63,399
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$58,811
General Contractor Mark Up at 20.0%	+	$11,762
Inflation	+	$0
Construction Cost		$70,574
Professional Fees at 15.0%	+	$10,586
Total Project Cost		**$81,160**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000ES04	**Title:**	ROOFING SYSTEM REPLACEMENT (3/09)
Priority Sequence:	29		
Priority Class:	4		
Category Code:	ES4B	**System:**	EXTERIOR
		Component:	ROOF
		Element:	REPLACEMENT
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable	$3,425.00	
Code Application:	Not Applicable		

Project Class:	Capital Renewal	**Score:**	12.21
Project Date:	03/11/2009		
Project Location:	Floor-wide: Floor(s) R		

Project Description

The low slope modified bituminous built-up roofing system that was installed in 2001 on the central building wing west wing will exceed its effective life cycle within the timeframe of this review period, and its replacement is warranted. Areas of the east and west wing built-up roofing systems with gravel topping have standing water, and some deterioration is beginning to become evident in the form of patched and open seams and failing flashings. Some areas of the roof drainage system are blocked and have caused parapet spill-thru, discoloring the exterior facade. Remove all of the existing roofing at these locations, install new built-up roofs, and include all new flashing.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000ES04

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
Built-up roofing system	SF	20,900	$4.05	$84,645	$4.74	$99,066	$183,711
Interim repairs and selective upgrades	LOT	1	$8,500	$8,500	$12,400	$12,400	$20,900
	Project Totals:			**$93,145**		**$111,466**	**$204,611**

Material/Labor Cost		$204,611
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$190,035
General Contractor Mark Up at 20.0%	+	$38,007
Inflation	+	$0
Construction Cost		$228,042
Professional Fees at 15.0%	+	$34,206
Total Project Cost		**$262,248**

Specific Project Details

Facility Condition Analysis

Section Three

Project Description

Project Number:	0601-000EL04	**Title:**	REPLACE EXTERIOR LIGHTS
Priority Sequence:	30		
Priority Class:	4		
Category Code:	EL4A	**System:**	ELECTRICAL
		Component:	DEVICES AND FIXTURES
		Element:	EXTERIOR LIGHTING
Building Code:	0601-000		
Building Name:	BURROWES BUILDING		
Subclass/Savings:	Not Applicable		
Code Application:	NEC 410		

Project Class:	Capital Renewal	**Score:**	7.63
Project Date:	03/11/2009		
Project Location:	Floor-wide: Floor(s) G		

Project Description

Exterior lighting consists of a combination of HID and lantern style fixtures. While the lantern-style fixtures are architecturally appropriate, it is recommended that they be relamped with compact fluorescent bulbs. The HID lights are likely to fail within the time period specified by this report. Replacement in-kind is recommended.

Specific Project Details

Facility Condition Analysis

Section Three

Project Cost

Project Number: 0601-000EL04

Task Cost Estimate

Task Description	Unit	Qnty	Material Unit Cost	Total Material Cost	Labor Unit Cost	Total Labor Cost	Total Cost
HID wall-mounted fixture and demolition of existing fixture	EA	14	$402	$5,628	$188	$2,632	$8,260
	Project Totals:			**$5,628**		**$2,632**	**$8,260**

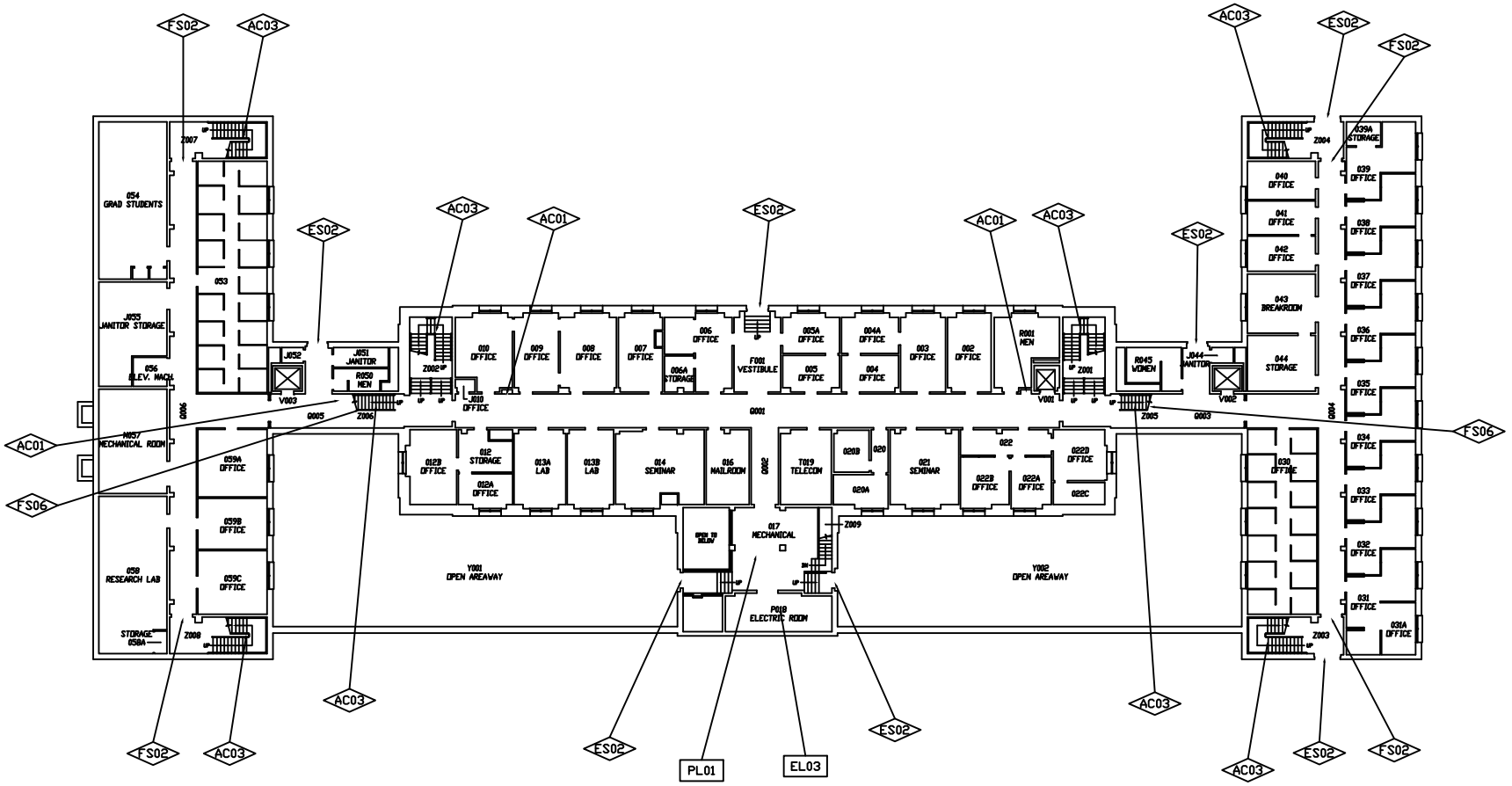
Material/Labor Cost		$8,260
Material Index		95.6%
Labor Index		90.6%
Material/Labor Indexed Cost		$7,765
General Contractor Mark Up at 20.0%	+	$1,553
Inflation	+	$0
Construction Cost		$9,318
Professional Fees at 15.0%	+	$1,398
Total Project Cost		**$10,716**

FACILITY CONDITION ANALYSIS

SECTION 4

DRAWINGS AND PROJECT LOCATIONS

PENN STATE UNIVERSITY



BURROWES BUILDING

BLDG NO. 0601-000

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

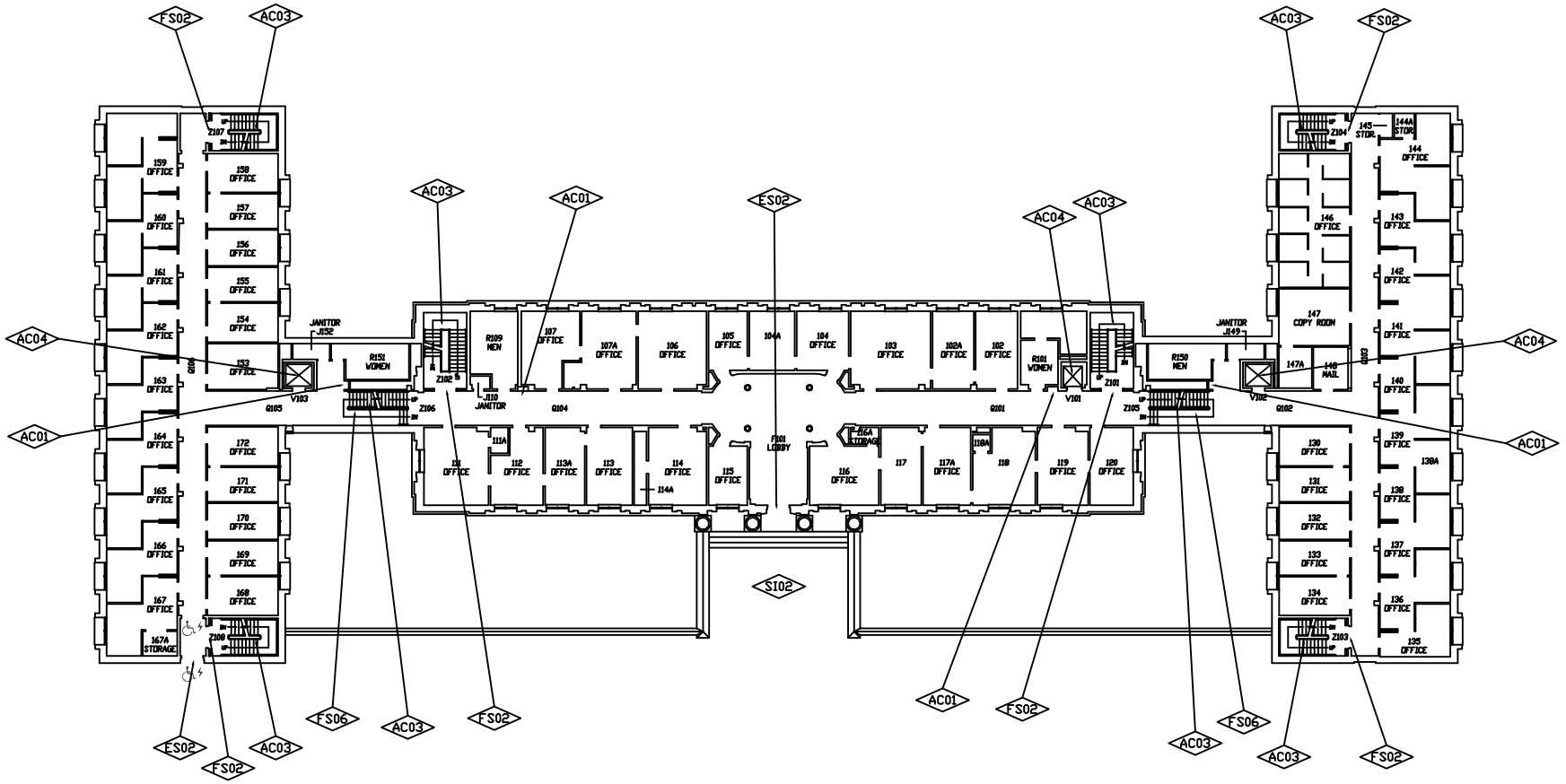
PRIORITY LAYERS				
SI1	SI2	SI3	SI4	SI5
ES1	ES2	ES3	ES4	ES5
IS1	IS2	IS3	IS4	IS5
AC1	AC2	AC3	AC4	AC5
HE1	HE2	HE3	HE4	HE5
FS1	FS2	FS3	FS4	FS5
HV1	HV2	HV3	HV4	HV5
PL1	PL2	PL3	PL4	PL5
EL1	EL2	EL3	EL4	EL5
VT1	VT2	VT3	VT4	VT5
SS1	SS2	SS3	SS4	SS5

Date: 06/29/09
Drawn: J.T.V.
Project No. 09-061
Drawing: PE0601-000F0G

GROUND FLOOR PLAN

Sheet No.
1 of 5

PENN STATE UNIVERSITY



AC02 FS01 SI01 ES01 ES03

AC04 EL01 EL02 EL05 FS03 FS04

FS05 HV01 IS01 IS02 IS03 IS04

PL02 PL03

N

BURROWES BUILDING

BLDG NO. 0601-000

ISES CORPORATION

FACILITY CONDITION ANALYSIS

2165 West Park Court Suite N
Stone Mountain, GA 30087
(770) 879-7376

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PROJECT NUMBER APPLIES TO AREA AS NOTED

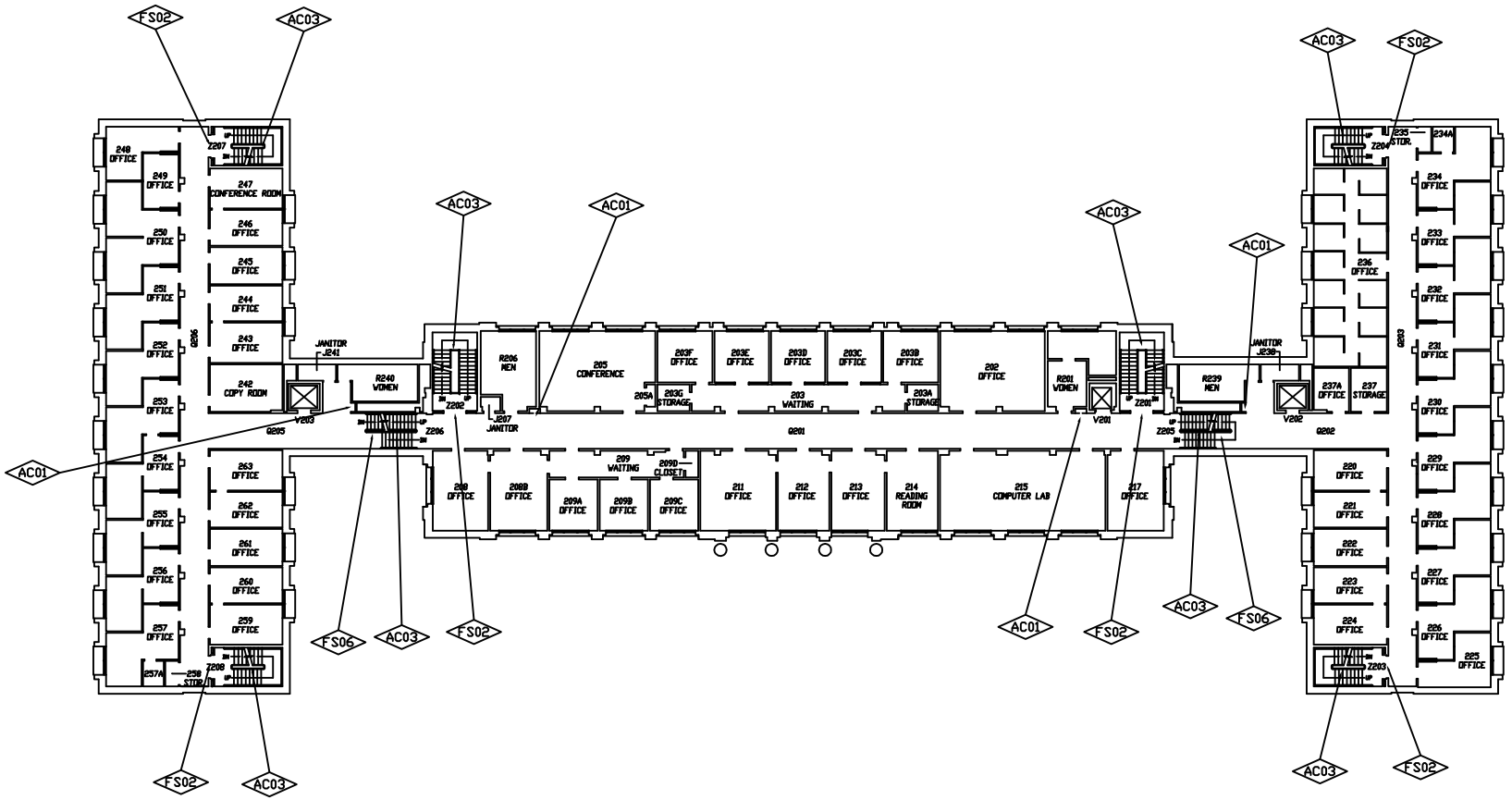
PRIORITY LAYERS				
SI1	SI2	SI3	SI4	SI5
ES1	ES2	ES3	ES4	ES5
IS1	IS2	IS3	IS4	IS5
AC1	AC2	AC3	AC4	AC5
HE1	HE2	HE3	HE4	HE5
FS1	FS2	FS3	FS4	FS5
HV1	HV2	HV3	HV4	HV5
PL1	PL2	PL3	PL4	PL5
EL1	EL2	EL3	EL4	EL5
VT1	VT2	VT3	VT4	VT5
SS1	SS2	SS3	SS4	SS5

Date: 06/29/09
Drawn: J.T.V.
Project No. 09-061
Drawing: PE0601-000F01

FIRST FLOOR PLAN

Sheet No.
2 of 5

PENN STATE UNIVERSITY



BURROWES BUILDING

BLDG NO. 0601-000

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

PRIORITY LAYERS

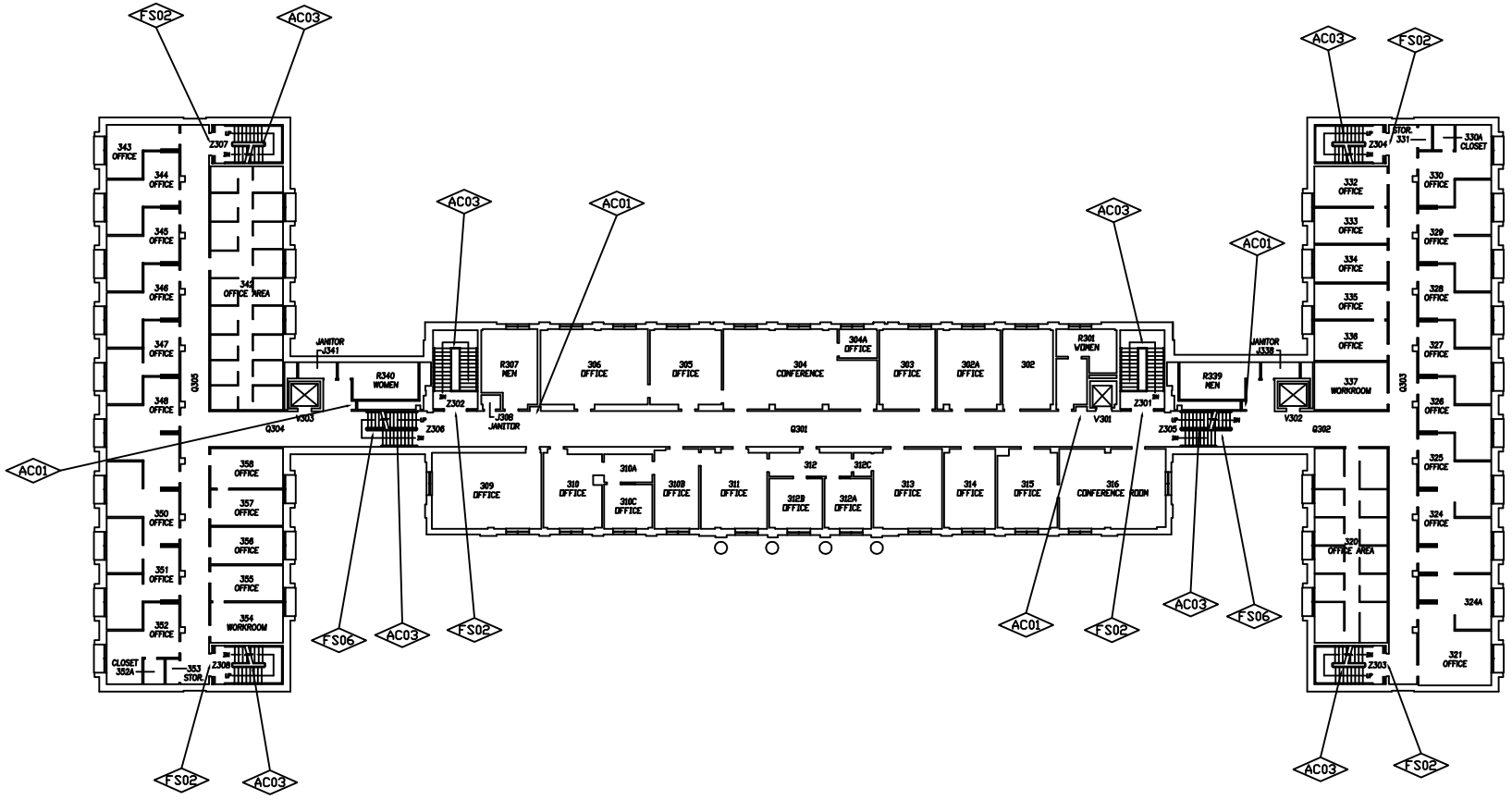
SI1	SI2	SI3	SI4	SI5
ES1	ES2	ES3	ES4	ES5
IS1	IS2	IS3	IS4	IS5
AC1	AC2	AC3	AC4	AC5
HE1	HE2	HE3	HE4	HE5
FS1	FS2	FS3	FS4	FS5
HV1	HV2	HV3	HV4	HV5
PL1	PL2	PL3	PL4	PL5
EL1	EL2	EL3	EL4	EL5
VT1	VT2	VT3	VT4	VT5
SS1	SS2	SS3	SS4	SS5

Date: 06/29/09
Drawn: J.T.V.
Project No. 09-061
Drawing: PE0601-000F02

SECOND FLOOR PLAN

Sheet No.
3 of 5

PENN STATE UNIVERSITY



AC02 FS01

AC04 EL01 EL02 EL05 FS03 FS04

FS05 HV01 IS01 IS02 IS03 IS04

PL02 PL03

N

BURROWES BUILDING

BLDG NO. 0601-000

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

PRIORITY LAYERS				
SI1	SI2	SI3	SI4	SI5
ES1	ES2	ES3	ES4	ES5
IS1	IS2	IS3	IS4	IS5
AC1	AC2	AC3	AC4	AC5
HE1	HE2	HE3	HE4	HE5
FS1	FS2	FS3	FS4	FS5
HV1	HV2	HV3	HV4	HV5
PL1	PL2	PL3	PL4	PL5
EL1	EL2	EL3	EL4	EL5
VT1	VT2	VT3	VT4	VT5
SS1	SS2	SS3	SS4	SS5

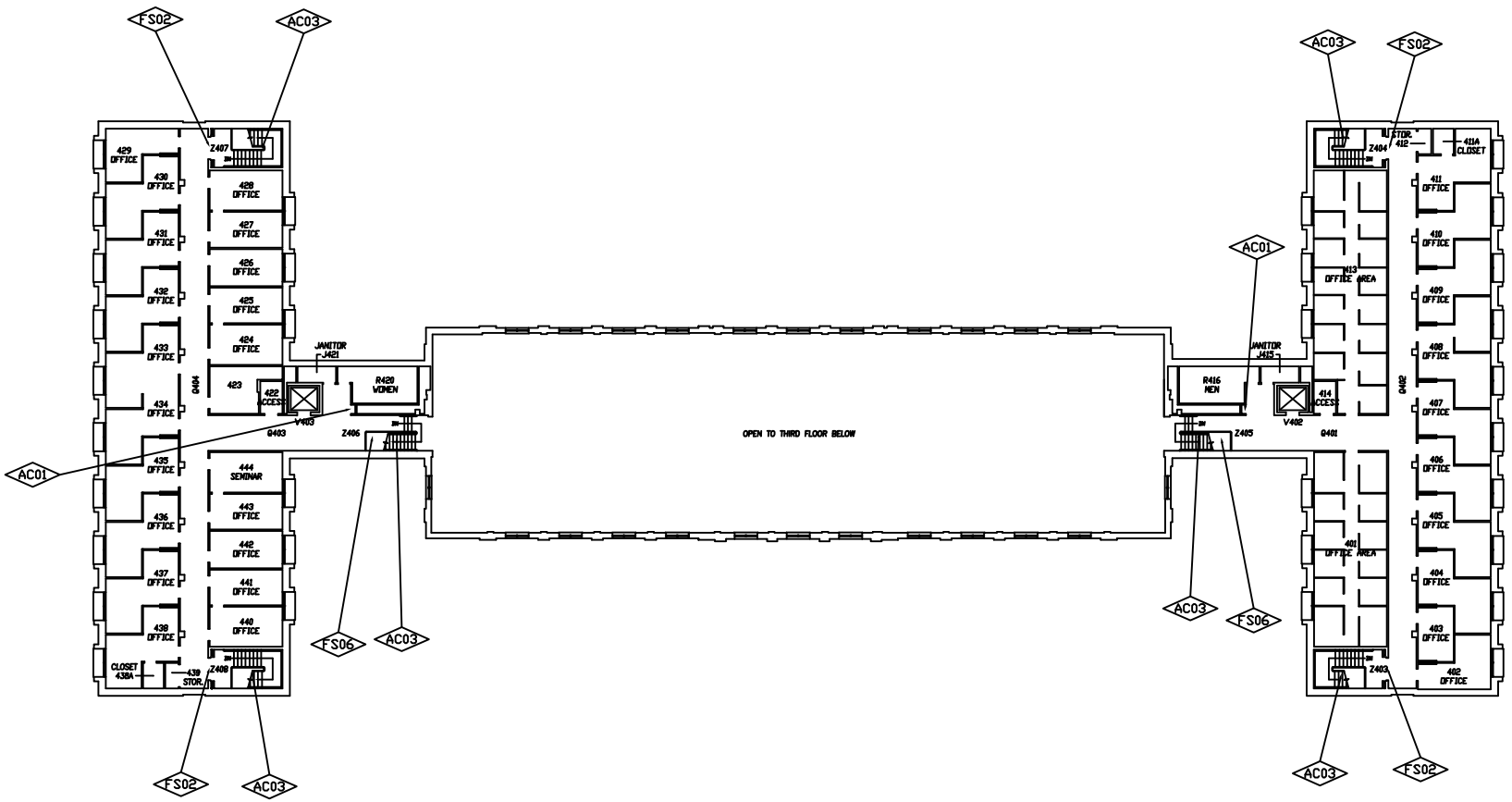
Date: 06/29/09
Drawn: J.T.V.
Project No. 09-061
Drawing: PE0601-000F03

THIRD FLOOR PLAN

Sheet No.
4 of 5

PENN STATE UNIVERSITY

ROOF
ES04



AC02 FS01

AC04 EL01 EL02 EL05 FS03 FS04

FS05 HV01 IS01 IS02 IS03 IS04

PL02 PL03

N

BURROWES BUILDING

BLDG NO. 0601-000

ISES CORPORATION

FACILITY CONDITION ANALYSIS

2165 West Park Court Suite N
Stone Mountain, GA 30087
(770) 879-7376

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PROJECT NUMBER APPLIES TO ONE ITEM ONLY

PROJECT NUMBER APPLIES TO ENTIRE BUILDING

PROJECT NUMBER APPLIES TO ENTIRE FLOOR

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PROJECT NUMBER APPLIES TO AREA AS NOTED

PRIORITY LAYERS				
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ES1	ES2	ES3	ES4	ES5
IS1	IS2	IS3	IS4	IS5
AC1	AC2	AC3	AC4	AC5
HE1	HE2	HE3	HE4	HE5
FS1	FS2	FS3	FS4	FS5
HV1	HV2	HV3	HV4	HV5
PL1	PL2	PL3	PL4	PL5
EL1	EL2	EL3	EL4	EL5
VT1	VT2	VT3	VT4	VT5
SS1	SS2	SS3	SS4	SS5

Date: 06/29/09
Drawn: J.T.V.
Project No. 09-061
Drawing: PE0601-000F04

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

0601-000 : BURROWES BUILDING

Uniformat Code	Component Description	Qty	Units	Unit Cost	Cmplx Adj	Total Cost	Install Date	Life Exp
B2010	CAULK EXTERIOR CONSTRUCTION JOINTS	45,560	LF	$5.58		$254,225	1967	15
B2020	CUSTOM WOOD DOORS	2	EA	$18,286.42	0.75	$27,430	1967	50
B2020	WINDOW REPLACEMENT (OPERABLE)	2,250	SF	$98.14		$220,815	1940	70
B2020	WINDOW REPLACEMENT (OPERABLE)	3,750	SF	$98.14		$368,025	1967	70
B2030	HI - USE EXT. DOOR LOCKSET REPLACEMENT	16	EA	$525.79		$8,413	1967	5
B2030	EXTERIOR DOORS (METAL)	14	EA	$3,484.46		$48,782	1967	30
B3010	FLAT ROOFING SYSTEM (BUR) BAD WINTERS	28,300	SF	$6.02		$170,366	2001	15
B3020	VINYL FLOOR TILE UPGRADES (NO ACM)	21,000	SF	$8.62		$181,020	1967	20
C1020	HI - USE INT. DOOR LOCKSET REPLACEMENT	300	EA	$525.79		$157,737	1967	5
C1020	INTERIOR DOOR REPLACEMENTS (LESS HARDWARE)	300	EA	$1,834.86		$550,458	1967	30
C3010	INTERIOR PAINTING (DRYWALL PLASTER REPAIR INCLD)	136,900	SF	$1.54		$210,826	1967	6
C3020	TERRAZZO FLOORING (CAST-IN-PLACE)	600	SF	$19.28		$11,568	1940	75
C3020	HI - USE CARPET REPLACEMENT	7,540	SY	$59.46		$448,328	1967	7
C3020	CERAMIC FLOOR TILE	5,400	SF	$17.75		$95,850	1967	50
C3030	LAY-IN CEILING GRID REPLACEMENT	74,000	SF	$3.40		$251,600	1967	60
C3030	NON-SEISMIC LAYIN ACOUSTICAL CEILING TILE REPLACEMENT	74,000	SF	$4.61		$341,140	1967	15
D1010	UNDER 3000 LBS CAP. ELEVATOR MACHINE - ROPED	1	EA	$53,705.97		$53,706	1940	25
D1010	ELEVATOR HATCH AND LANDING RENOVATION	10	EA	$14,156.12		$141,561	1967	12
D1010	ELEVATOR HATCH AND LANDING RENOVATION	4	EA	$14,156.12		$56,624	1940	12
D1010	UNDER 4000 LBS CAP. ELEVATOR MACHINE - HYDRAULIC	2	EA	$31,571.69		$63,143	1967	25
D1010	ELEVATOR JACK REPLACEMENT - HYDRAULIC	2	EA	$40,838.64		$81,677	1967	25
D1010	ELEVATOR CAB RENOVATION - PASSENGER	2	EA	$36,590.17		$73,180	1967	12
D1010	ELEVATOR CAB RENOVATION - PASSENGER	1	EA	$36,590.17		$36,590	1940	12
D2010	DUAL-LEVEL DRINKING FOUNTAIN	18	EA	$3,760.14		$67,683	1967	10
D2010	PLUMBING FIXTURE COMPONENTS	31,968	SF	$0.62		$19,820	1940	8
D2010	PLUMBING FIXTURE COMPONENTS	79,629	SF	$0.62		$49,370	1967	8
D2010	PLUMBING FIXTURES	79,629	SF	$2.62		$208,628	1967	32
D2010	PLUMBING FIXTURES	31,968	SF	$2.62		$83,756	1940	32
D2020	WATER SUPPLY PIPING	79,629	SF	$2.13		$169,610	1967	25
D2020	WATER SUPPLY PIPING	31,968	SF	$2.13		$68,092	1940	25
D2020	WATER HEATER SHELL AND TUBE HEAT EXCHANGER	110	GPM	$423.02		$46,532	1940	24

Life Cycle Model

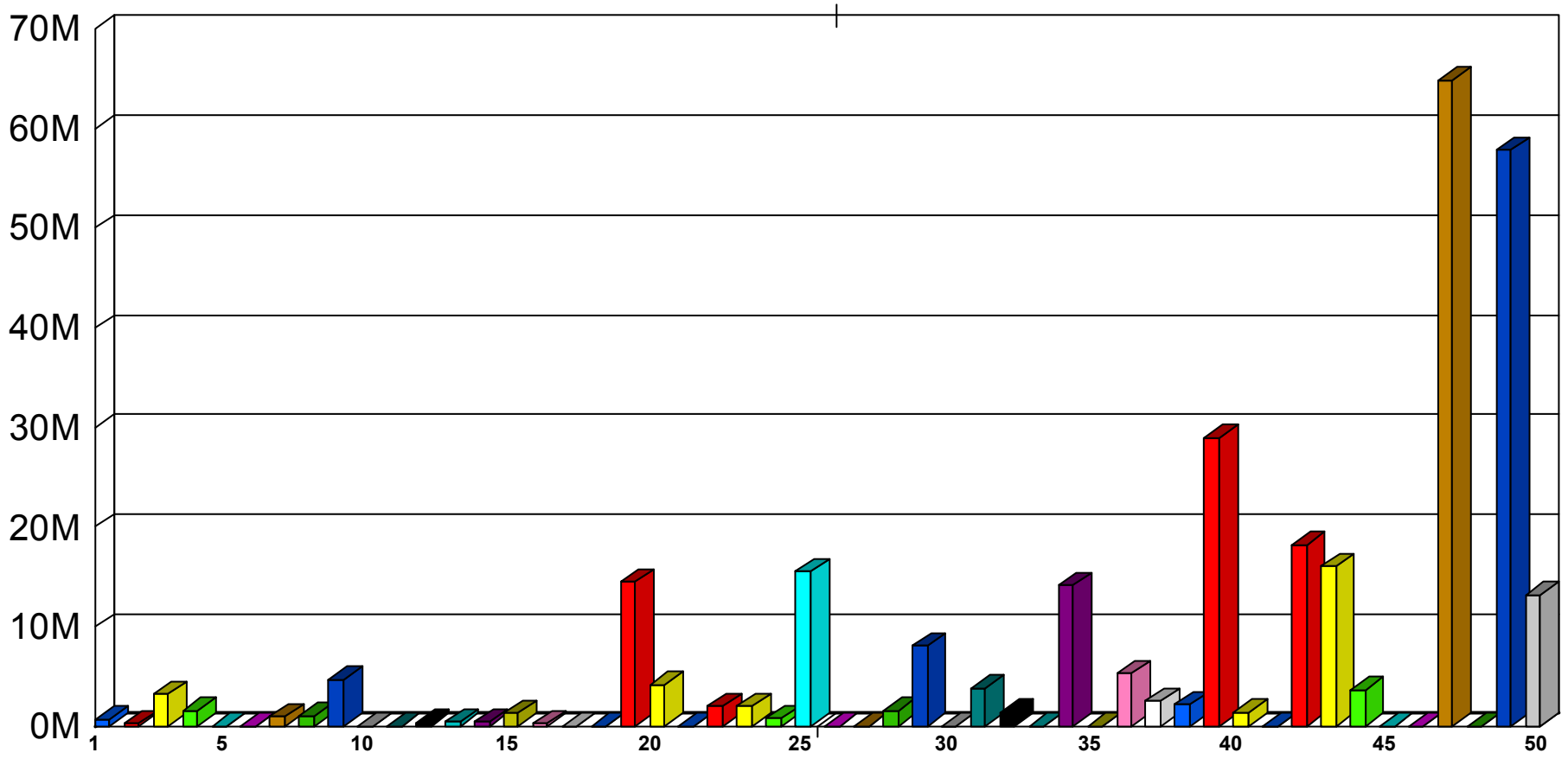
Building Component Summary

0601-000 : BURROWES BUILDING

Uniformat Code	Component Description	Qty	Units	Unit Cost	Cmplx Adj	Total Cost	Install Date	Life Exp
D2030	DRAIN PIPING SYSTEMS	79,629	SF	$3.20		$254,813	1967	40
D2030	DRAIN PIPING SYSTEMS	31,968	SF	$3.20		$102,298	1940	40
D2050	AIR COMPRESSOR PACKAGE (MEDIUM SIZE)	1	SYS	$6,735.76		$6,736	1967	25
D3040	CONDENSATE RECEIVER	1	SYS	$9,521.95		$9,522	1967	15
D3040	HVAC SYSTEM	79,629	SF	$33.25		$2,647,664	1967	22
D3040	HVAC SYSTEM	31,968	SF	$33.25		$1,062,936	1940	22
D5010	SECONDARY ELECTRICAL SYSTEM	111,597	SF	$15.96		$1,781,088	1967	50
D5010	ELECTRICAL SWITCHGEAR 1200A 208V	1	EA	$55,845.84		$55,846	1967	20
D5010	TRANSFORMER DRY 15KV UP TO 500 KVA	300	KVA	$205.49		$61,647	1967	30
D5020	EXIT SIGNS (CENTRAL POWER)	45	EA	$204.07		$9,183	1967	20
D5020	EXTERIOR LIGHT (HID)	6	EA	$762.84		$4,577	1967	20
D5020	INTERIOR LIGHTING	111,597	SF	$10.18		$1,136,057	1967	20
D5020	SWITCHES AND RECEPTACLES	111,597	SF	$0.73		$81,466	1967	10
D5030	FIRE ALARM SYSTEM NON-ADDRESSABLE	111,597	SF	$2.76		$308,008	1967	15
D5040	EMERGENCY GENERATOR 30 KW	15	KW	$1,171.11		$17,567	1967	25
F1050	2-5 STOP ELEVATOR CONTROLLER - ROPED	1	EA	$37,749.66		$37,750	1940	20
F1050	ELEVATOR CONTROLLER - HYDRAULIC	2	EA	$25,223.26		$50,447	1967	20
G2030	REPLACE ASPHALT SIDEWALK WITH CONCRETE	700	SF	$7.14		$4,998	1967	40
G2030	CONCRETE SIDEWALK REPLACEMENT	600	SF	$11.18		$6,708	1967	20
						$12,205,866		

Life Cycle Model Expenditure Projections

0601-000 : BURROWES BUILDING



Average Annual Renewal Cost per SqFt **$5.82**

FACILITY CONDITION ANALYSIS

SECTION 6

PHOTOGRAPHIC LOG

Photo ID No.	Description	Location	Date
0601-000001a	Accessible elevator without two-way communication system	Passenger elevator cab	08/18/2003
0601-000001e	Air-cooled condensing units and centrifugal exhaust fans	Roof	08/18/2003
0601-000002a	Built-up roof	South, built-up roof	08/18/2003
0601-000002e	Air-cooled condensing units	Roof	08/18/2003
0601-000003a	Integral gutter system	Central roof	08/18/2003
0601-000003e	Typical exhaust fan and threaded galvanized vent piping	Attic	08/18/2003
0601-000004a	View of flat roof	West, built-up roof	08/18/2003
0601-000004e	Timeworn exhaust fan	Attic	08/18/2003
0601-000005a	Tremco roof application	Hipped central roof	08/18/2003
0601-000005e	Suspected asbestos insulation	Attic	08/18/2003
0601-000006a	Typical corridor door assembly with knob hardware	Fourth floor, corridor	08/18/2003
0601-000006e	Typical convection heater	Office 408	08/18/2003
0601-000007a	Non-accessible stair handrails	Fourth floor, stair tower	08/18/2003
0601-000007e	Outdated fire alarm components	Fourth floor, corridor	08/18/2003
0601-000008a	Non-latching door hardware	Stair access doors	08/18/2003
0601-000008e	Typical lavatories	Fourth floor, men's restroom	08/18/2003
0601-000009a	Partially accessible toilet stall	Fourth floor, men's restroom	08/18/2003
0601-000009e	Wall-hung water closet	Fourth floor, men's restroom	08/18/2003
0601-000010a	Non-accessible restroom layout	Fourth floor, men's restroom	08/18/2003
0601-000010e	Threaded galvanized drain piping and soldered copper supply piping	Fourth floor, plumbing chase	08/18/2003
0601-000011a	Older single level water fountain	Fourth floor, corridor	08/18/2003
0601-000011e	Void	Void	08/18/2003
0601-000012a	Original non-accessible handrails	Original central stair tower	08/18/2003
0601-000012e	Typical service sink	Fourth floor, custodial closet	08/18/2003
0601-000013a	Wire glass stair access doors	Third floor	08/18/2003
0601-000013e	Cast-iron radiator	Third floor, women's restroom	08/18/2003
0601-000014a	Newer flush-mounted water fountain	Third floor, corridor	08/18/2003
0601-000014e	Original and upgraded lavatories	Third floor, women's restroom	08/18/2003
0601-000015a	Partially accessible toilet stall	Third floor, women's restroom	08/18/2003
0601-000015e	Original water closet	Third floor, women's restroom	08/18/2003

Photo ID No.	Description	Location	Date
0601-000016a	Deteriorated single pane metal casement window	Third floor, central area window	08/18/2003
0601-000016e	Fire alarm junction box	Third floor, women's restroom	08/18/2003
0601-000017a	Typical level of finish in corridor	Third floor, corridor	08/18/2003
0601-000017e	Typical fluorescent light fixtures	Office 302	08/18/2003
0601-000018a	Non-rated corridor door and knob hardware	Third floor	08/18/2003
0601-000018e	Outdated secondary electrical distribution panel and cloth insulated wire	Third floor, corridor	08/18/2003
0601-000019a	Floor-to-floor fire rating compromise	Telecom closet N353	08/18/2003
0601-000019e	Original service sink	Third floor, custodial closet	08/18/2003
0601-000020a	Original paneled metal exterior entry doors	First floor, entry lobby	08/18/2003
0601-000020e	Cracked water closet	Fourth floor, women's restroom	08/18/2003
0601-000021a	Damaged stair tread nosing	North stair tread	08/18/2003
0601-000021e	Typical secondary electrical distribution panel	Second floor, corridor	08/18/2003
0601-000022a	Typical level of finish in corridor	Ground floor, corridor	08/18/2003
0601-000022e	Fused electrical distribution panel	Custodial closet S149	08/18/2003
0601-000023a	Aging paneled wood areaway door	Ground floor, areaway	08/18/2003
0601-000023e	Rudimentary air conditioning	Office 102	08/18/2003
0601-000024a	Exterior	East elevation, south end	08/18/2003
0601-000024e	Lantern style incandescent light fixture	Exterior	08/18/2003
0601-000025a	Exterior	South elevation	08/18/2003
0601-000025e	Window-mounted air conditioning units and air-cooled condensing unit	Exterior	08/18/2003
0601-000026a	Asphalt sidewalk	South end of site	08/18/2003
0601-000026e	Original service sink that lacks a vacuum breaker	First floor, custodial closet	08/18/2003
0601-000027a	Exterior	West elevation	08/18/2003
0601-000027e	Duplex condensate return unit	Ground floor, mechanical room	08/18/2003
0601-000028a	Spalling grout on terrace slate pavers	Western entry plaza	08/18/2003
0601-000028e	Heating water circulating pumps	Ground floor, mechanical room	08/18/2003
0601-000029a	Exterior	West elevation, north end	08/18/2003
0601-000029e	Plate-type heat exchangers	Ground floor, mechanical room	08/18/2003
0601-000030a	Exterior	Partial north elevation	08/18/2003
0601-000030e	Compact fluorescent emergency light	Ground floor, mechanical room	08/18/2003
0601-000031a	Built-up roofing system	Main flat roof, west wing	03/11/2009

Photo ID No.	Description	Location	Date
0601-000031e	Primary electrical switchgear and dry-type transformers	Electrical room 018	08/18/2003
0601-000032a	Deterioration at built-up roofing system	Main flat roof, west wing	03/11/2009
0601-000032e	Steam-type domestic water heater	Ground floor, mechanical room	08/18/2003
0601-000033a	Roof hatchway access	Main roof	03/11/2009
0601-000033e	Domestic hot water storage tank	Ground floor, mechanical room	08/18/2003
0601-000034a	Discolored and stained stone cornices	Upper building facade	03/11/2009
0601-000034e	Domestic cold water supply	Ground floor, mechanical room	08/18/2003
0601-000035a	Discolored and stained stone cornices	Upper building facade	03/11/2009
0601-000035e	15 kilowatt, natural gas fired emergency power generator	Ground floor, mechanical room	08/18/2003
0601-000036a	Standing ponded water on roofing system	Main roof	03/11/2009
0601-000036e	Fire alarm control panel and emergency lighting panel	Ground floor, mechanical room	08/18/2003
0601-000037a	Deteriorating metal and stone ornamentation	Upper main roof	03/11/2009
0601-000037e	Timeworn supply fan	Sub-basement	08/18/2003
0601-000038a	Modified bituminous roofing system	Sloped upper main roof	03/11/2009
0601-000038e	Void	Void	08/18/2003
0601-000039a	Discolored and stained stone cornices	Upper main roof	03/11/2009
0601-000039e	Rudimentary supply register	Sub-basement	08/18/2003
0601-000040a	Leaking single-pane window system	Exterior wall window	03/11/2009
0601-000040e	Void	Void	08/18/2003
0601-000041a	Building facade	North elevation	03/11/2009
0601-000041e	Heating water circulating pump	Storage room 044	08/18/2003
0601-000042a	Built-up roofing system	Main flat roof, east wing	03/11/2009
0601-000042e	Air-cooled condensing unit	Exterior	08/18/2003
0601-000043a	Deteriorating metal and stone ornamentation	Upper main roof	03/11/2009
0601-000043e	Window-mounted air conditioning units	Exterior	08/18/2003
0601-000044a	Deteriorating membrane guttering system	Upper main roof	03/11/2009
0601-000044e	Fire alarm bell, exit sign, and manual pull station	Fourth floor	03/11/2009
0601-000045a	Building facade	South elevation	03/11/2009
0601-000045e	Electrical panel	Outside room 405	03/11/2009
0601-000046a	Damaged fascia	Building facade, at roof	03/11/2009
0601-000046e	Condensing units	Roof	03/11/2009
0601-000047a	Damaged fascia	Building facade, at roof	03/11/2009

Photo ID No.	Description	Location	Date
0601-000047e	Condensing units	Roof	03/11/2009
0601-000048a	Building facade	South elevation	03/11/2009
0601-000048e	Heat exchanger and heating water pumps	Room M43	03/11/2009
0601-000049a	Narrow exterior doors	East wing	03/11/2009
0601-000049e	Main switchgear	Room P1	03/11/2009
0601-000050a	Building facade	East elevation	03/11/2009
0601-000050e	Emergency generator	Room M1	03/11/2009
0601-000051a	Freeze-thaw spalling at stone cladding	Building facade	03/11/2009
0601-000052a	Discolored and stained stone cornices	Lower building facade	03/11/2009
0601-000053a	Cracked panels and failing mortar joints on stone cladding	South facade	03/11/2009
0601-000054a	Discolored and stained stone with failing sealant joints on stone cladding	South entry	03/11/2009
0601-000055a	Tripping hazards at entry stoop	South elevation	03/11/2009
0601-000056a	Discolored and stained stone with failing sealant and mortar joints	South elevation	03/11/2009
0601-000057a	Discolored and stained stone with failing sealant and mortar joints	South elevation, date stone	03/11/2009
0601-000058a	Discolored and stained stone with failing sealant and mortar joints	South elevation	03/11/2009
0601-000059a	Discolored and stained stone with failing sealant and mortar joints	West elevation	03/11/2009
0601-000060a	Narrow exterior doors	West wing, entry	03/11/2009
0601-000061a	Narrow exterior doors	East wing, entry	03/11/2009
0601-000062a	Deteriorating steel sash windows	Building facade, central	03/11/2009
0601-000063a	Deteriorating steel sash windows	Building facade, west wing	03/11/2009
0601-000064a	Deteriorating steel sash windows	Building facade, central	03/11/2009
0601-000065a	Failed wood exterior door	Building facade, south	03/11/2009
0601-000066a	Narrow monumental entrance doors	South elevation	03/11/2009
0601-000067a	Stone and mortar joint deterioration	Building facade	03/11/2009
0601-000068a	Stained and deteriorating ceiling tiles	Building interior	03/11/2009
0601-000069a	Typical interior corridor	Second floor	03/11/2009
0601-000070a	Basement access stairway, with missing handrailing	Ground floor	03/11/2009

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Facility Condition Analysis - Photo Log

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PENNSTATE

Office of Physical Plant
Energy and Engineering Division
Engineering Services

The Pennsylvania State University
Physical Plant Building
University Park, PA 16802-1118

SCOPING DOCUMENT

BURROWES BUILDING – RENOVATION
PSU BLDG. # 0601-00

BUILDING SYSTEMS AND UTILITIES

DATE: April 5, 2012

FROM: Scott Rhoads

TO: Chad Spackman

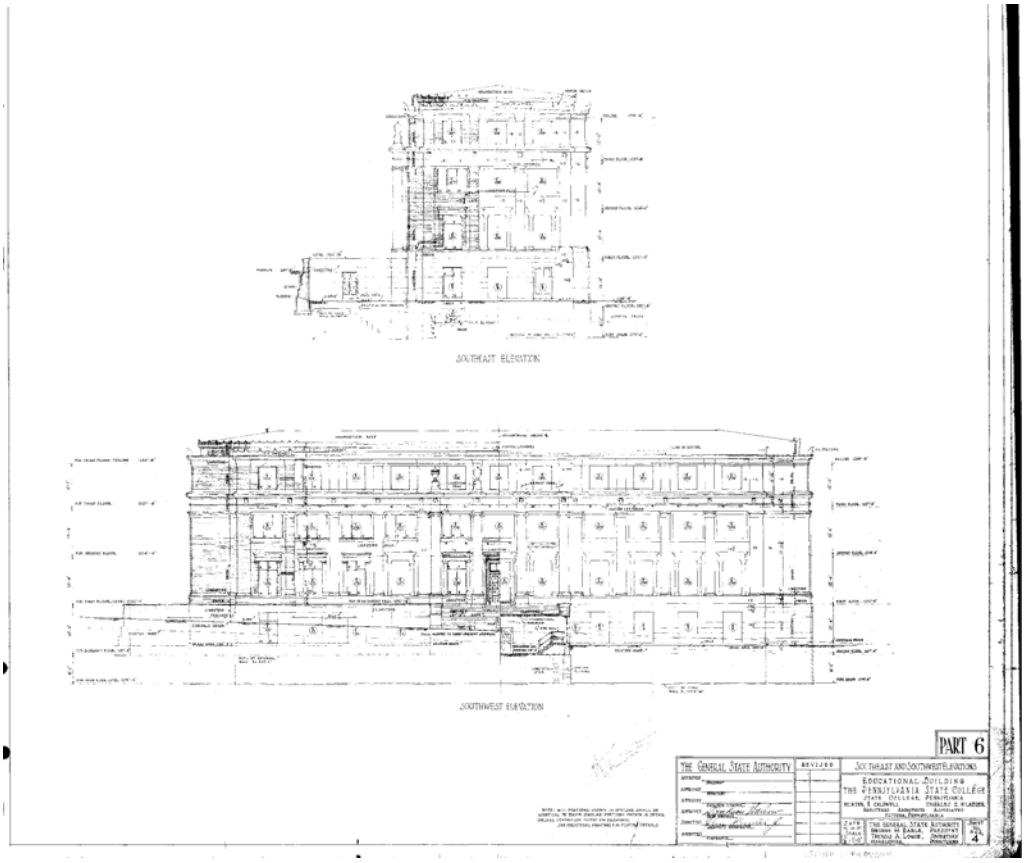
This memo describes building systems and utility requirements for the complete renovation/renewal of the Burrowes building at the University Park Campus. A summary of the project goals are as follows:

- Achieve a renewed, high-performance facility
- Replace/upgrade the MEP building systems
- Connect to campus chilled water system
- Replace windows and doors and evaluate envelope for potential cost-effective improvements
- Attain at a minimum LEED Certified Level
- Architectural renovations as defined separately

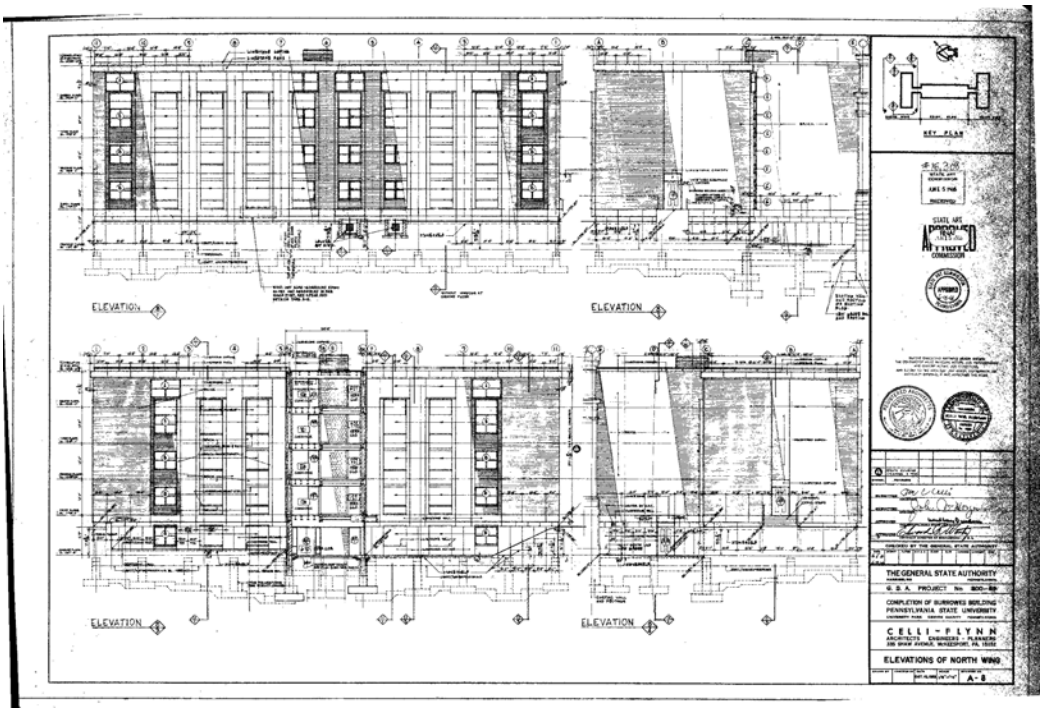
The general plan is to phase the work of this project. The intended first phase is to address the original 1940 central part of the building of approximately 49,600 GSF. Subsequent phases are intended to address the North and South wings that were added in the 1960's, each approximately 31,500 GSF. The Design Professionals shall evaluate the intended scope and constructability issues and advise as early as possible if that general plan should be modified to adapt best to the work.

GENERAL DESCRIPTION (from the ISES Facility Condition Analysis Report – July 22, 2009)

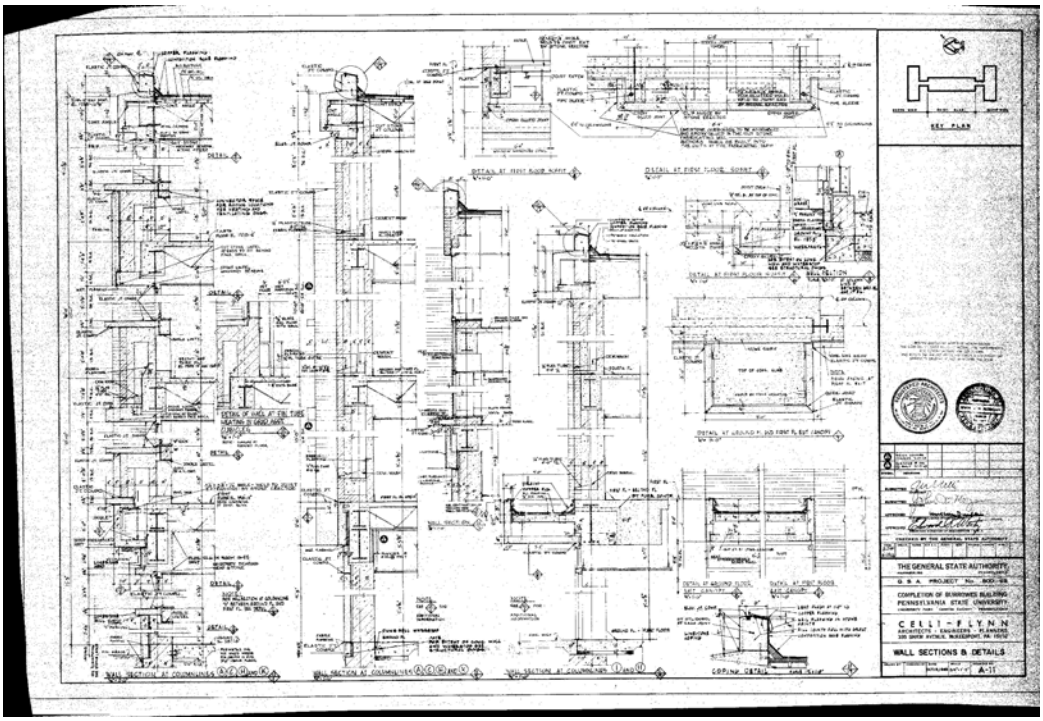
The Burrowes Building is a five-story liberal arts building on the campus of Pennsylvania State University in State College, Pennsylvania. The original section, constructed in 1940, consists of the central portion of the building covered by the hipped roof. The north and south T-shaped wings were added in 1967. These wing additions have a different floor-to-floor height than the original section, resulting in ramped or stepped corridors on each floor. The two later wing additions have five floor levels. The center section of the building has higher floor-to-floor heights and does not have a fourth floor level, but it does contain a mechanical basement. The fourth floor, located only in the two wings, has double-loaded corridors with office space. Each wing has a passenger elevator and two stair towers. The third floor, which includes the original section and the two wings, is also organized around double-loaded corridors. This floor is all office and conference space. The second and first floors have similar layouts to the third floor. The first floor also features a central entry lobby identified on the exterior by four very prominent ionic columns. The ground floor is a mixture of office space, graduate student areas, and research laboratories. The basement level is only a mechanical space with no occupied areas. The Burrowes Building has an H-shaped footprint and features large areaways on the west elevation to allow for large windows on the ground floor.



Elevations of original central portion – 1937 Drawings



Elevations of End Additions – 1965 Drawings



Wall Sections of End Additions – 1965 Drawings

Other Existing Building Information Resources:

OPP Plan Room 113 and Facilities Information System

ISES Facility Condition Analysis Report: July 22, 2009

GENERAL PROJECT REQUIREMENTS

Design and Construction Standards:

All aspects of the design must conform to the University's Design Standards, which can be found on the OPP website (http://www.opp.psu.edu/planning-construction/design_and_construction_standards/standards-and-forms).

The Design Professional team shall coordinate efforts in an iterative process to apply holistic, sustainable design principles to the renovated spaces. The design shall meet the architectural functional and aesthetic objectives, help achieve comfortable and pleasing indoor environmental conditions with effective combined use of passive elements, and be purposefully integrated with the HVAC and lighting systems so that all work effectively together to minimize dependence on non-renewable energy use and associated ownership and operating costs for the life of the building.

Other General Design Resources:

Whole Building Design Guide
http://www.wbdg.org/design/design_disciplines.php

The following OPP Engineering Services resources page lists useful links and references for additional generally recognized, industry-wide design guidance: http://www.opp.psu.edu/about-opp/divisions/ee/engineering/eng-resources/bldg-mech

Design for Completeness:

All projects are expected to be complete at their conclusion, meaning that the project generates no need for additional efforts beyond the planned scope. Above all, the campus maintenance staff is not available to complete projects or provide remedies to problems caused by the project.

Energy Conservation:

The University's overall energy performance objective is that all facilities shall achieve a minimum of at least 30% energy savings over the latest version of the ASHRAE 90.1 standard as defined in 01 81 13 Sustainable Design Requirements. The Design Professional shall strive to obtain that result by combining innovative design along with latest version of ASHRAE Standard 189.1 Standard for the Design of High-Performance Green Buildings. This standard contains advanced, high-performance building prescriptive compliance methods recognized and accepted within the industry. For a partial renovation of a facility, the Professional shall submit a report with quantitative analysis including simplified energy simulation calculations to document how the proposed design contributes toward meeting that goal.

ENVELOPE

Part of the objective of the renewal is to improve occupant comfort and minimize dependence on non-renewable energy use and associated owning and operating costs for the life of the building. Therefore the intent is to upgrade the thermal envelope wherever practical and cost effective. The identified scope at this point is to replace exterior doors and windows with new high-performance units. Given the historic nature of the building and past experience, it is anticipated that extensive building envelope work is not likely to be economically viable and therefore has not been included in the scope at this time.

Any new additions or renovations that involve exterior envelope work, including new doors and fenestration, shall at a minimum comply with the prescriptive values listed in latest version of ASHRAE Standard 189.1 Standard for the Design of High-Performance Green Buildings. See excerpt of Table A-5 at the end of this section.

The U-factors for windows shall be measured over the entire window assembly, not just the center of glass. Window rating shall be certified and labeled by the National Fenestration Rating Council (NFRC). Insulated assemblies shall include thermally broken insulated spacers between the panes and window frames shall also be thermally broken. Also, provide superior installation details of the new doors and windows to avoid air infiltration and water incursion.

The consultant shall evaluate the existing thermal envelope and provide a Building Envelope Compliance Report that summarizes the areas and thermal performance values of the envelope components for the existing and the proposed improvements. The analysis shall include preliminary, simplified "shoebox model" heating and cooling energy calculations of just the Building Envelope to show quantified energy reduction for that component relative to achieving the high-performance building goals in our Performance Requirements in the Standards. Although the addition of thermal insulation to opaque surfaces is not initially foreseen in the scope, if there are innovative and cost effective methods to improve the thermal envelope and/or install an effective vapor barrier, and reduce infiltration, they should be included in the analysis report and reviewed by the team. Also, the analysis shall seek to identify and recommend cost-effective ways to correct localized problematic conditions of major sources of infiltration or thermal bridging that can lead to either discomfort or long-term moisture migration, condensation, mold, and related deterioration to building assemblies.

If the program needs of the project demand winter humidification, then any existing building envelope needs to be carefully evaluated and probably improved. That may involve adding adequate insulation, correcting thermal bridging, and installation of a vapor barrier on the warm side as necessary to prevent long-term problems with moisture migration and condensation within old, poorly insulated structures. Failure to do so can lead to serious problems with mold, mildew, corrosion, or possible damage to masonry construction due to condensation and freeze/thaw cycles and spalling of their surfaces.

ASHRAE Standard 189.1 Standard for the Design of High-Performance Green Buildings
TABLE A-5 (Supersedes Table 5.5-5 in ANSI/ASHRAE/IESNA Standard 90.1) Building Envelope Requirements for Climate Zone 5 (A, B, C) (I-P)

		Nonresidential		Semiheated	
		Assembly	Insulation	Assembly	Insulation
	Opaque Elements	**Max.**	**Min. R-Value**	**Max.**	**Min.R-Value**
Roofs					
	Insulation Entirely above Deck	U-0.039	R-25.0 ci	U-0.093	R-10.0 ci
	Metal Building	U-0.035	R-19.0 + R-11.0 Ls	U-0.068	R-13.0 +R- 19.0
	Attic and Other	U-0.021	R-49.0	U-0.034	R-30.0
Walls, Above Grade					
	Mass	U-0.080	R-13.3 ci	U-0.123	R-7.6 ci
	Metal Building	U-0.052	R-13.0 + R-13.0 ci	U-0.079	R-13.0 + R-6.5 ci
	Steel Framed	U-0.055	R-13.0 + R-10.0 ci	U-0.084	R-13.0 + R-3.8 ci
	Wood Framed and Other	U-0.051	R-13.0 + R-7.5 ci	U-0.064	R-13.0 + R-3.8 ci
Wall, Below Grade					
	Below Grade Wall	C-0.092	R-10.0 ci	C-0.119	R-7.5 ci
Floors					
	Mass	U-0.064	R-12.5 ci	U-0.107	R-6.3 ci
	Steel Joist	U-0.032	R-38.0	U-0.038	R-30.0
	Wood Framed and Other	U-0.026	R-30.0 + R-7.5 ci	U-0.033	R-30.0
Slab-On-Grade Floors					
	Unheated	F-0.540	R-10 for 24 in.	F-0.540	R-10 for 24 in.
	Heated	F-0.440	R-15.0 for 36 in. + R-5 ci below	F-0.900	R-10 for 24 in.

Opaque Doors				
Swinging	U-0.400		U-0.600	
Non-Swinging	U-0.400		U-0.500	
	Assembly	**Assembly**	**Assembly**	**Assembly**
Fenestration	**Max. U**	**Max. SHGC**	**Max. U**	**Max. SHGC**
Vertical Fenestration,0%–40% of Wall				
Nonmetal framing: all[b] Metal fr: curtainwall/storefront[c] Metal framing: entrance door[c] Metal framing: all other[c]	U-0.25 U-0.35 U-0.70 U-0.45	SHGC-0.35 all	U-0.55 U-0.60 U-0.80 U-0.65	SHGC-NR all
Skylight with Curb, Glass,% of Roof				
0%–2.0%	U_{all}-0.67	$SHGC_{all}$-0.36	U_{all}-1.98	$SHGC_{all}$-NR
2.1%–5.0%	U_{all}-0.67	$SHGC_{all}$-0.36	U_{all}-1.98	$SHGC_{all}$-NR
Skylight with Curb, Plastic,% of Roof				
0-2%–0%	U_{all}-0.69	$SHGC_{all}$-0.34	U_{all}-1.90	$SHGC_{all}$-NR
2.1%–5.0%	U_{all}-0.69	$SHGC_{all}$-0.34	U_{all}-1.90	$SHGC_{all}$-NR
Skylight without Curb, All,% of Roof				
0%–2.0%	U_{all}-0.45	$SHGC_{all}$-0.36	U_{all}-1.36	$SHGC_{all}$-NR
2.1%–5.0%	U_{all}-0.45	$SHGC_{all}$-0.36	U_{all}-1.36	$SHGC_{all}$-NR

21 00 00 FIRE SUPPRESSION

A combined automatic fire sprinkler and standpipe system should be installed throughout Burrowes Building for the protection of the building and its occupants as part of this major renovation. The Burrowes Building site location limits fire department access for fire ground operations during an emergency. Properly installed and maintained sprinkler systems are proven life safety systems and would greatly reduce the fire loss potential for Burrowes Building. The systems shall be designed and installed in accordance with FM Global Design Standards and the appropriate National Fire Protection Association (NFPA) Standard. The standpipe hose connections shall be 2 ½" hose valves with threaded 2 ½" to 1 ½" reducers. All hose connections shall be provided with National Standard Hose Thread. A new backflow preventer shall be provided for the new sprinkler system on the combined water service.

22 00 00 PLUMBING

In general, plumbing systems, materials, and fixtures shall comply with the University design standards and ASHRAE 189.1, Chapter 6: Water Use Efficiency.

The building's existing hot and cold domestic water piping has deteriorated to the point that it should be replaced in its entirety. The building's below grade stormwater and sanitary piping within the building footprint should be replaced in its entirety. The condition of all other service piping within the building that is being considered for re-use must be determined by the consultant, with findings presented in writing to the PSU Project Manager. Piping that is determined to be deficient should be removed.

A report that Nalco did for the University, which is available from Engineering Services upon request, identified four cross connected floor drains that will need to be re-plumbed to the sanitary system.

Plumbing fixtures shall be low consumption type. Urinals shall be pint flush. Women's water closets shall be dual flush type.

The building is equipped with a new packaged domestic water booster pump that is suitable for re-use if needed as part of the renovation.

23 00 00 HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

GENERAL REQUIREMENTS

The existing systems are inefficient, outdated, and well past the end of their service lives. The systems suffer from IAQ issues, and there are frequent component failures. They will not be adaptable for re-use. Therefore, under this building renovation, the existing convectors, blower coil units, exhaust fans, steam/condensate piping system, etc. are to be demolished.

The new HVAC system and envelope improvements shall be integrated and designed to comply with the thermal comfort criteria in ANSI/ASHRAE Standard 55 - Thermal Environmental Conditions for Human Occupancy.

The new HVAC systems shall at a minimum comply with the associated mandatory and prescriptive requirements in ASHRAE 189.1 for Energy Efficiency and Indoor Environmental Quality.

New HVAC systems shall be quiet, economical and easy to operate and maintain. Variable flow fans and pumps systems shall be used. Main ducts, piping mains, VAV terminals and other HVAC equipment requiring periodic maintenance shall be located to minimize disruption to normally occupied spaces. In addition, care shall be taken to prevent VAV terminals from being located above or near spaces where noise is of particular concern.

To the greatest extent possible, mechanical equipment shall be located indoors to maximize useful service life and for safety and ease of maintenance staff, particularly during adverse weather conditions. Indoor mechanical space will be needed to accommodate new air handlers, pumps, heat exchangers, and other equipment. Mechanical space must be incorporated into the building programming during the schematic design phase of the project. Adequate service space shall be provided around and within air handlers to allow for proper maintenance of the equipment.

The simplest and most effective method of energy conservation is to turn things off when not in use. To this end, spaces with similar occupancy schedules should be grouped together, to the extent possible, on the same HVAC system, to accommodate unoccupied shutdown.

Define and keep separate special use zones with continuous process cooling loads such as main TNS and College Server rooms or audio-visual closets with high load densities that require independent cooling systems to accommodate unoccupied shutdown of central systems.

Any domestic makeup water connections to HVAC systems shall be individually sub-metered, configured to communicate water consumption data to a meter data management system. At a minimum, meters shall provide daily data and shall record hourly consumption of water. The meter data management system shall be capable of electronically storing water meter, monitoring systems, and submeter data and creating user reports showing calculated hourly, daily, monthly, and annual water consumption for each measurement device and submeter and provide alarming notification capabilities as needed. This is primarily for the purposes of monitoring flow into closed loops to provide quick detection of abnormal conditions and to support the requirements of the Water Use Efficiency Plan for Operation in ASHRAE 189.1.

HEATING

Heating hot water shall be distributed to the renovated building provided via steam to hot water heat exchangers served from campus low pressure steam. Refer to Utilities section - Campus Steam for more details. Converters shall be shell and tube type complying with specific requirements in the OPP Design Standards. Two converters, and multiple pump systems should be provided to allow for back-up and the operation of different water temperatures, different systems, and different building areas as appropriate. The new hot water system shall serve new heating coils in air handling equipment, reheat coils on VAV boxes, new perimeter radiation, and new terminal heating devices. Heating control valves shall be 2-way, proportional. Heating pumps shall be provided with variable frequency drives (VFD's) to accomplish flow variation in the system. Heating coils utilizing steam directly shall not be used.

CHILLED WATER COOLING

The building will be cooled using campus chilled water generated at the central chiller plants. New chilled water piping shall be routed from the central chilled water mains into the mechanical room of the building, which shall contain secondary chilled water pumps. Secondary chilled water piping shall be distributed from the mechanical room throughout the building. Chilled water control valves shall be 2-way, proportional. Secondary chilled water pumps shall be provided with variable frequency drives (VFD's) to reduce pumping energy during periods of low cooling loads. A winter cooling pump and full size bypass line and meter shall be installed per the University's standard connection detail. Refer to the 'Utility Metering' section below. The piping connection to the campus chilled water system shall follow the University's connection detail, available from the Office of Physical Plant, Engineering Services.

In general, equipment that requires chilled water for cooling in the winter shall not be used, unless approved by the Office of Physical Plant, Engineering Services.

If any spaces in the building are critical enough to require redundant cooling sources, the back-up cooling system shall be closely coordinated with the University and approved by the Office of Physical Plant, Engineering Services during the building design.

Equipment and processes must not utilize domestic water in a 'once-through' cooling manner. Mechanical process cooling systems must be provided to serve any process load. For more information related to chilled water, refer to the utility section of this document.

VENTILATION AND AIR CONDITIONING

All occupied areas shall be provided with mechanical ventilation to meet the current building code and ASHRAE Standard 62, including those spaces with operable windows. Design mechanical ventilation quantities shall not be reduced by the presence of operable windows. Demand based ventilation control strategies shall be used to vary outside air quantity to maintain allowable CO2 or VOC levels.

The total allowable fan power limitation for each system shall be 10% less than the limits set by ASHRAE 90.1 or the current International Energy Conservation Code (whichever is more stringent), or as otherwise modified by most current edition of ASHRAE Standard 189.1.

Central variable air volume (VAV) air handling systems are strongly preferred for new heating, ventilating, and air conditioning and are to be used wherever possible. Economizer operation shall be provided to allow the use of outside air for cooling. Air handlers shall have mixing and blending devices/sections and adequate length to prevent air stratification and nuisance tripping of freezestats. Supply VAV terminals shall be provided with hot water heating coils for winter heating and summer reheat control. A dedicated VAV terminal and thermostat shall be provided for each space. Spaces shall not be "ganged together" on a single VAV terminal without prior approval from the Office of Physical Plant, Engineering Services. Hot water baseboard perimeter radiant heat shall be provided throughout the renovated building, and shall be zoned to match VAV box zoning. Each perimeter heat zone shall contain a dedicated control valve. Each VAV reheat coil shall contain a dedicated control valve.

However, it is recognized that installing new large duct systems in existing facilities is often a challenge and sometimes even not feasible. Based on available original construction drawings, the center 1937 section is typically 13'-4" floor to floor; and the 1965 end additions are 10'-0" floor to floor. See the sample elevation and wall section drawings in the General Description section above.

Due to limited extremely limited floor to floor heights in the 1965 additions, the use of 4-pipe fan coil unit systems will likely be required in those sections of the building. Traditional fan coil unit applications typically are poor at maintaining acceptable indoor humidity levels in spaces with latent loads, especially from unconditioned minimum ventilation air. Therefore, the minimum ventilation for areas served by fan coil units shall be provided by Dedicated Outdoor Air Systems that include air to air heat recovery, tempering heating coils, and mechanical dehumidification cooling coils. For a predominately office type application, the fresh air ventilation flows and associated ductwork for a dedicated outdoor air system serving fan coils that handle the space heating and cooling will likely be in the range of 10-20% of the size typically needed for central VAV. Fan coil units shall include high efficiency fan motors (ECM type) with variable speeds that can be automatically controlled to match load requirements in order to minimize fan noise, maximize fan energy and maximize potential for dehumidification during part load cooling operation.

Passive radiant cooling panels typically very large surface areas to meet cooling loads and thus often become impractical to apply. Both passive and active chilled beam systems also require very reliable means of adequate dehumidification of the ventilation system and more complex control and failsafe features to avoid condensation. Furthermore, to get effective total cooling, active chilled beam systems typically require more preconditioned/dehumidified airflow than the absolute minimum required to satisfy ventilation requirements. Therefore the supply air system size typically will be in the range of 30-40% of a comparable central VAV system. Due to those reasons and other reliability, operations, and maintenance concerns, the recommendation would be to not apply them on this project.

For applications requiring cooling/dehumidification of high latent loads and reheat within the air handling unit such as Dedicated Outdoor Air Systems or high occupant assembly spaces, use technologies to avoid or minimize

use of mechanical cooling and simultaneous addition of heating and cooling energy. Options include wrap-around dehumidification heat pipe cooling coil assemblies, cross flow heat exchangers, or energy wheels.

Acceptable indoor humidity is a factor for indoor environmental quality. ASHRAE 189.1 requires complying with ASHRAE 55. And according to ASHRAE 2010 Fundamentals Handbook, ASHRAE Standard 55 recommends that the dew-point temperature of occupied spaces not be less than 36°F. However, this is not a Building Code requirements and winter humidification is costly to install, operate and maintain. It can also lead to unintended negative consequences if not integrated with respect to the building envelope with proper vapor barriers and insulation. So the decision to apply it must be carefully considered. Historically winter humidification typically has not been provided in normal comfort applications. This should be carefully reviewed for the project specific requirements. If after carefully considering all the factors the consensus is that it is required to meet the program requirements, regardless of owning and operating costs and potential required envelope improvements, then the recommendation is to implement methods with the best balance of low energy requirements, ease of maintenance and low life cycle costs. One such option is ultrasonic - which typically requires a small fraction of the energy to operate and minimizes scaling and related maintenance if supplied with clean, demineralized water. However, additional demineralization water treatment equipment is generally required. At a minimum, allowing adequate space and other provisions to add humidification equipment sometime in the future shall be included.

25 00 00 INTEGRATED AUTOMATION (BUILDING AUTOMATION SYSTEM – BAS)

The existing building automation system (BAS) is Automated Logic. All new BAS work shall be direct digital control (DDC) and shall communicate at the building level using BACnet protocol. Automated Logic Corporation (ALC) is the only automation control systems acceptable for use at the building level. The new BAS shall be integrated into the existing University's Central Control System 'front-end' graphic user interface software. The University's standard BAS guide specification shall be used and edited as appropriate; no other BAS specification is acceptable. All third party equipment that is supplied with an on board controller, such as VFDs, etc., shall be specified to have a BACnet interface supplied by the equipment manufacturer. All aspects of the BAS shall be closely coordinated with the University and approved by the Office of Physical Plant, Engineering Services during the building design.

Provide upgrades to controls to comply with the most current control sequence guidelines 25 90 00 GUIDE SEQUENCES OF OPERATION. Coordinate to obtain most current version with Office of Physical Plant. Systems shall utilize the following strategies at a minimum to reduce energy consumption:

- Optimized Start/Stop - Enabling systems based on zone level requests to run
- Temperature setpoints reset from occ/unocc schedule and occ override button on thermostat.
- Pump VFD speed control with automatic optimized DP reset and supply water temperature reset.
- VAV AHU's: Economizer, Fan static pressure setpoint reset, Supply air temperature set point reset, minimum OA measuring
- Reset of VAV terminal minimum airflow settings based on outdoor air quantities
- Scheduled occupancy based control of ventilation air (off during unoccupied periods)
- Demand based control of ventilation air during occupied periods
- Continuous monitoring of key functions with alarms to indicate when poor operating conditions are occurring regularly.

EUMS and Coordination with UTILITY METERING

The BAS shall provide interval trend data to the campus Enterprise Utility Management System (EUMS) via Bacnet communication; refer to the 'Utility Metering' section below.

The Emergency and Demand Response control strategies in the EUMS shall be extended to any new or reused HVAC equipment that is part of this renovation project. Refer to the Enterprise Utility Management System (EUMS) Equipment Control Strategies

All building utility services serving the Burrowes building shall be metered. The meters are furnished by others. The BAS vendor shall be responsible to ensure all utility meters are connected to building BAS and ensure that they are programmed and communicating properly to campus utility monitoring system. The BAS system shall monitor, trend, and archive all data associated with each of the utility meters; generate user definable alarms for measured consumption and demand; and shall transmit data to the campus Enterprise Utility Management System. The exception is the electrical metering – refer to details in UTILITY METERING section.

26 00 00 ELECTRICAL

SERVICE ENTRANCE EQUIPMENT
A separate project has recently been designed but not constructed to replace the service entrance transformer and electrical service entrance equipment. The new equipment shall include a lineup of drawout type switchgear and distribution panels. Also, the existing emergency automatic transfer switch and associated distribution panel board shall be replaced.

Metering shall be installed as part of the Service Entrance Equipment replacement. Consult the University's Electrical Utilities Engineer for metering requirements. The meters shall be provided with the necessary Ethernet option card for connection of the meter directly to the BAS IP Network to transmit data to the campus Square D Server.

The University intends to now include the already completed design scope of the service entrance upgrade into the overall renewal project. The Design Professional for the overall renewal project shall coordinate with OPP's Project Manager to obtain the design information from the separate project and incorporate it into the scope of this project.

DISTRIBUTION EQUIPMENT
All existing feeders, distribution panels (other than those in the main electric room), panelboards, and branch circuit wiring shall be replaced. Most of the existing wiring is beyond its intended service life and is at risk for failure. Provide new electrical devices, switches and receptacles. Any new mechanical equipment and lighting should be fed at the higher voltage as much as feasible.

LIGHTING
Luminaries shall be linear fluorescent or LED. Fluorescent should be the 48" T8 lamp,4100K, confirm with Engineering Services whether to utilize the 32 watt "high lumen" or 28 watt "energy saving extra-long life" version. Ballasts shall be NEMA "premium" efficiency, parallel operation, program-rapid start (except for unswitched normal/emergency lighting which shall be instant-start, parallel operation).

Daylight harvesting of offices, classrooms, and similar spaces shall be accomplished with 0-10V controlled dimming ballasts, 5%-100% output. Daylight harvesting of lobbies, corridors, etc. shall use simple on/off control (possibly built into the local occupancy sensors). Consultant shall investigate the use of exterior shading devices (to minimize direct glare and solar heat gain), interior light shelves, and skylights or (preferably) north-facity clerestories.

LED source shall be used for decorative, downlight, and wallpack luminaires. Interior luminaire color temperature shall be 4100K, with a CRI of 80+, and a minimum efficiency of 60 lumens/watt. Exterior color temperature shall be 4100K, with a CRI of 70+, and a minimum efficiency of 60 lumens/watt. Minimum L_{70} fixture life shall be 50,000 hours.

Provide stand-alone occupancy sensing for all spaces. Sensors to have daylight function and HVAC output relay. Stairway luminaires shall utilize fixture-mount sensors with step-dim ballasts.

Exterior decorative luminaires shall be refurbished and re-installed. Lamp source shall be LED, discuss with Engineering Services whether to use medium-base or permanently installed lamps. Replace exterior "wallpack" luminaires with LED.

Refer to Design and Construction Standards for further requirements.

27 00 00 COMMUNICATIONS

Refer to the Telecommunications Scope Narrative document prepared by PSU TNS (Office of Telecommunications and Network Services).

28 00 00 ELECTRONIC SAFETY AND SECURITY

Penn State requires security access control on all new and renovated buildings. Refer to Penn State's Policy SY 33 ELECTRONIC SECURITY AND ACCESS SYSTEMS and SECURITY ACCESS CONTROL SPECIFICATIONS. Contact Ed Gannon at ejg3@psu.edu for guidance on applying these to the project. OPP's Access Controls and Electronic Security group needs to be involved with the Design Project Development Team throughout the design process.

Access Controls:
Electronic Access Controls will be required in order for project to be Policy AD-65 compliant. Access controls will include, but not be limited to, all perimeter doors & telecom doors. A Security Assessment will be performed in order to determine if additional access control measures are required.

Surveillance:
Surveillance cameras will be required in order for project to be Policy AD-65 compliant. Surveillance cameras will be required on all perimeter doors equipped for card access or electronic access control. Cameras will cover both ingress and egress. A Security Assessment will be performed in order to determine if additional electronic surveillance is required.

Other Electronic Security:
A Security Assessment will determine if there is a requirement for other electronic security such as; intrusion alarm, duress alarm, device tamper alarms, etc.

28 31 00 FIRE DETECTION AND ALARM

A Siemens MXL fire alarm panel will need to be provided with Leased Line tie to OPP. Provide partial detection for building, (assuming there will be full sprinkler coverage). Confirm specific areas to be detected with ACES, but include the following:

a) Corridors.
b) Mechanical and Electrical rooms. Mechanical rooms may require heat detection rather than smoke, due to the cleanliness of the environment
c) Telecommunications rooms
d) Storage rooms
e) Kitchens
f) Janitor Closets
g) Stairwells

University Park systems shall be compatible with, and able to report to and be controlled by, the Siemens Pyrotronics CXL Fire Command Center used by University Police Services.

For fire alarm related inquiries please contact PSU Electronics Engineer, Scotty Eble at (814) 865-1627.

33 00 00 UTILITIES

All new construction or renovation projects which necessitate modification of or an addition to existing utility systems must be coordinated with and approved by Engineering Services in the Utilities Division of OPP.

Any expansion or renovation of conditioned space must include an assessment of the adequacy of the utilities infrastructure.

The Utility Demand and Consumption form (See 00 51 00 Miscellaneous Forms) shall be completed by the Professional for every project. The information will be used to evaluate the impact on the existing distribution systems, and to request operating funds for the facility. The consumption data should be estimated as accurately as possible, and provided with the final design submission.

DOMESTIC WATER AND FIRE SERVICE

The current potable water service (Valve No. 1166) to the Burrowes Building is an old 4-inch cast iron line approximately 182 feet in length to the edge of the building. This service line should be replaced with ductile iron pipe. The new service line should be a single combined domestic and fire protection service supply. The water line lateral, which the service connection is tapped to, is an old 6-inch cast iron line. This water lateral has been repaired several times, and should be replaced at least from Fraser Road to Valve 1138 (east of Carnegie Building), which is approximately 740 feet. Ideally, the lateral should be extended to Pollock Road's 12-inch water main, which is an additional 130 feet. The replacement lateral pipe should be a minimum of 8-inch in diameter, and be constructed of ductile iron.

The combined domestic and fire protection service supply should split in the mechanical room (Room 017) to the domestic water service and fire protection water service.

The new fire protection water service inside of the building should include a properly sized double check backflow preventer.

On June 28, 2010, the water pressure recorded on the inlet to the existing backflow preventer was 58 psig. The Design Professional will need to evaluate if booster pumps are need for the domestic and fire protection service.

SANITARY SEWER

The building is tied to the University sanitary system by two 6" terra cotta pipe connections (north/south) that proceed from the building east towards the Pond Building. Piping was videoscoped both from the downstream manhole near the Pond Building up-stream to the Borrows building. A broken drop connection was found on the northern line at the downstream manhole near the Pond building (SAMH 318). The break is on the clean-out portion towards the Burrowes building of the drop connection approximately 7 feet deep in a parking area. It should be repaired to provide clean-out capability. A PVC sleeve from just outside the building wall into the building prevented us from inspecting the lateral on the building interior. The remainder of the exterior piping is in good condition.

STORM DRAINAGE

If the new work does not include any "outside beautification or improvements" then the exterior work will be limited to camera existing storm conveyance lines and replacing what's bad or likely to be bad very soon. If any work is proposed outside the building, the old lines will need to be replaced around the building because new construction activity will break them.

If the project adds new any new impervious areas, this will impact the project significantly.

NATURAL GAS

The renovation is not expected to have any requirement for natural gas.

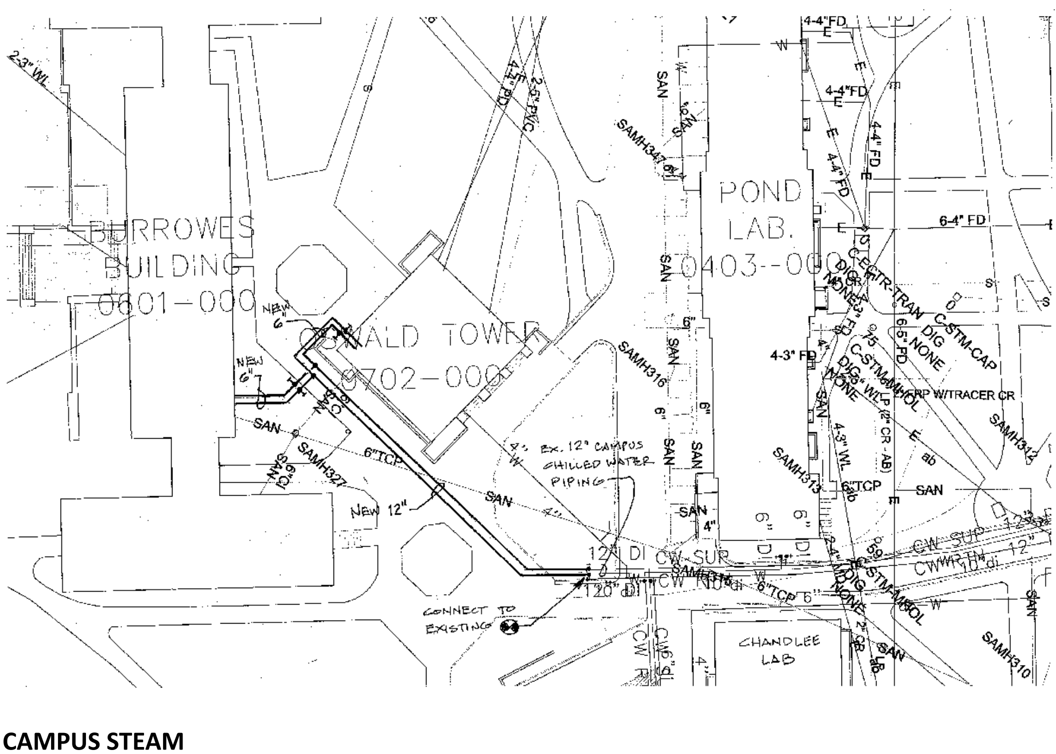
CAMPUS CHILLED WATER COOLING

It is recommended that the Burrowes Building be connected to the campus chilled water system for comfort cooling. Underground campus chilled water piping is presently located in the service drive east of Burrowes building, between Chandlee and Pond buildings. The existing underground piping is 12", and terminates with butterfly isolation valves. New underground chilled water piping should be extended into both Burrowes Building and Oswald Tower at the same time to minimize disruption to the area outside these buildings.

The proposed location for campus chilled water to enter Burrowes Building is the east side, as indicated on the attached sketch. New 8" chilled water piping should be routed into both the Burrowes Building and Oswald Tower. Isolation valves should be provided in the new 8" underground piping before it enters the building. The final location of the valves will be determined by PSU during design. Piping can be reduced to the size required for the building load after it enters the building (presumably 6").

The campus chilled water piping layout inside the Burrowes Building must comply with the University's standard arrangement as shown in the University's 'Chilled Water Service - Building Entrance Piping Diagram'. It is not anticipated that a plate and frame heat exchanger will be required to separate the building chilled water system from the campus chilled water system. However, if new air handling units are located outside the building (i.e. on the roof), a heat exchanger will be required, and the building chilled water system will be required to contain a glycol solution.

The campus chilled water piping that enters Oswald Tower should terminate in the standard valve arrangement as shown in the University's 'Building Wall Penetration Detail'. No additional piping will be required in Oswald Tower at this time. The final location of the campus chilled water service entrance in Oswald Tower will be determined by PSU during design.



CAMPUS STEAM

The building is currently supplied with low pressure steam from the campus distribution system at two locations. A 6" LPS direct buried line enters the original central section near the west main entrance. An 8" LPS line in a conduit enters near the north wing addition near the middle of the north side long side. Minimum low pressure

steam at the connections to the building is 5 psi. All steam condensate shall be returned to the campus steam plant. Condensate return pumps shall be air pressure powered, using compressed air from the campus system. Preliminary, it is assumed that the design steam load will not be significantly increased. However, the Design Professional shall perform analysis of existing utilities and submit summary of any required upgrades to support new work. Also, there is a preference to try to consolidate and serve the entire facility solely from the larger service at the North Wing.

The project shall ensure that the incoming steam service(s) are equipped with steam meter(s) to report flow, pressure, temperature, and total usage; refer to the 'Utility Metering' section below.

ELECTRICAL UTILITIES

Refer to Service Entrance Equipment in Division 26 - Electrical.

UTILITY METERING

All building utility services serving the Burrowes building shall be metered. Where utilities are added or modified under this project, metering shall be provided as described below. The design consultant shall contact the Office of Physical Plant, Engineering Services, for specific meter requirements. Each metering system shall be fully functional and performing as intended through the BAS and campus EUMS prior to using the associated utility.

Include Domestic water metering for flow and consumption. A separate pressure sensor shall be provided to sense building service pressure. The domestic water service inside of the building shall typically include a properly sized Neptune Compound Water Meter with corresponding strainer, meter/strainer full port isolation valves, a meter bypass line with a full port valve, and properly sized reduced pressure principal backflow preventer(s) with corresponding y-strainer(s). The Water Services' Records shows the domestic water is currently serviced with 3-inch Neptune Compound Water Meter that was installed in 2010 and a 3-inch Apollo/Conbraco Model 4SG-100 double check backflow preventer. They are intended to be reused. The ISES report mentions "research laboratories". If those include the use of chemical or biological agents, then review with the Water Utility Engineer in Engineering Services to possibly have to upgrade to reduced pressure principal backflow preventer and booster pump. Currently, T-Clarity Radio Readers are used on the water meter, and would require two readers. However, as part of this project the radio readers shall be replaced with transmitters to communicate real time data into the building automation system.

Include Chilled water metering for monitoring flow and tonnage of chilled water into the building. Chilled water meters shall be Rosemount model 8705PSA, and shall be furnished by the University and installed by the Contractor. Temperature sensors shall be matched RTD's , and shall be provided by the BAS Contractor. The BAS system shall monitor, trend, and archive all data associated with chilled water metering, and shall transmit data to the campus Enterprise Utility Management System.

Steam meters shall be selected and sized by Engineering Services. The professional shall provide building steam load to Engineering Services for steam meter sizing. Steam meters shall be provided and installed by Utility Services. Contractor shall install orifice flanges supplied by Utility Services. Location of orifice flanges shall be specified by Engineering Services. The Professional shall provide for and indicate an adequate straight run of pipe on drawings for an orifice meter installation. Utility Services shall install the meter transmitter. Contractor shall provide and connect power to the transmitter from the building BAS system.

Electrical metering for monitoring building power conditions and consumption is to be included in the Service Entrance Equipment as described in Div 26 – Electrical.

cc: File

Telecommunications Scope Narrative
Penn State University – University Park Campus
Burrowes Building Renewal

Telecommunications Scope Narrative

Date: 26 September 2011
By: Dave McCobin dbm15@psu.edu ITS/TNS
Rev: 0

General

This document is provided by Telecommunications and Network Services (TNS) and describes telecommunications utilities and facilities requirements related to the proposed renewal of Burrowes Building.

Currently, the primary Telecommunications Room (TR), T003, is located in the basement and at maximum capacity in terms of rack space, wiring access and pathways, and cooling. The current telecommunications wiring system is Category 5. To improve network performance and the ability to upgrade in the future, TNS wants to take advantage of this renovation project to relocate the Telecommunications Room to a more central location, preferably on the 2nd floor, and upgrade the telecommunications wiring systems in the building to current, Cat 6, standards.

The telecommunications infrastructure shall be designed to support data, voice, and video applications within each space of the building. Typical applications currently deployed include:

- Penn State backbone network – (1000 baseT typical)
- Wireless access points
- VoIP and/or Centrex phones
- CATV
- OPP Access and Security controls

Physical pathways and infrastructure must be efficient and cost effective and designed to easily accommodate future additions or upgrades.

TNS will provide or support the design and construction phase services for a complete telecommunications infrastructure system. This includes extension of the campus backbone systems, service entrance(s), telecommunications rooms and spaces, building backbone systems, horizontal cabling systems and connecting hardware.

Per University policy, all inside and outside telecom plant shall be funded by the project, including design, construction, installation, and any indirect costs.

Location of new or re-routing of existing telecommunications ductbanks may be needed and will be dependent on the final design layout.

Inside plant/horizontal cabling shall be included as part of the project and be provided either by the general building contractor through qualified telecommunications subcontractors or bid as a separate contract. In either case, TNS strongly recommends

that the telecommunications scope of this project be bid and contracted as a separate package and not part of the electrical work package.

The TNS telecommunications engineer assigned to the project is Mr. William Sesson, PE (wes117). The engineer will be available for consulting to the professional and will review all design submissions and shop drawings.

TNS Design Phase Services

Outside Plant (OSP) cabling systems, (inter- or between buildings) – TNS design responsibility includes extension of campus fiber cabling(minimum of 12 strands single mode) to support data and cable TV services, and 25 pair copper cable to support specialty circuits. Fiber and copper extensions include all installation and splicing for a complete and operational system. Non-telecommunications cabling for building automation, security, fire alarms, etc are to be "provided by others" and are not part of the TNS scope for this project.

Inside Plant (ISP) cabling systems, (Intra- or within the building) – TNS will work with the contracted design professional and other project team members and building users to size, locate, and design telecommunications room(s) or cabinet(s), cable pathways, and outlet locations for data, voice, CATV, and wireless access points (AP). Particular consideration needs to be paid to location of pathways and outlet locations for anticipated and future wireless access points.

Removal of Existing Telecom Utilities – If required, the telecommunications design shall include appropriate removal of existing services and utilities.

Design shall include complete construction drawings, including appropriate details, specifications, and coordination with other services.

All design shall be in accordance with the Penn State University Minimum Standards for Telecommunications Facilities. This document is included by reference and may be accessed at http://www.tns.its.psu.edu/pdf/MinTelecomStandards.pdf Any deviations from the minimum standards must be approved in writing by TNS.

A base specification (CSI format), to be appropriately edited by the professional, in Microsoft Word, will be provided to the professional by Telecommunications Network Services (TNS).

Telecommunications Room (TR)

A dedicated Telecommunications Room shall be provided in accordance with the Penn State University Minimum Standards for Telecommunications Facilities, Section 5.1. http://www.tns.its.psu.edu/pdf/MinTelecomStandards.pdf . The size and location of the TR, and related telecommunications pathways and spaces are critical, and shall be reviewed and approved by the TNS engineer.

All grounding and service entrance protection shall be provided per NEC requirements and TNS standards.

Per standard, air conditioning is required 24 hours/day, 365 days per year. Nominal setpoint is 75F. Total heat load is typically 2 – 3 tons per TR. For cost and energy efficiency, primary cooling using facility chilled water is desired, with DX unit(s) as backup. Location of A/C air supply and return registers and grills shall be coordinated with the TNS engineer, and located to create hot/cold aisle cooling circulation.

Maximum permitted temperature is 85 deg F, non-condensing. Monitoring equipment shall be provided to detect high temperature condition. Consolidated monitoring by OPP CCS is desired by TNS. Appropriate status and alarms shall be routed to and monitored by the TNS NOC.

120 vac, 20 amp quad electrical power outlets shall be provided. Wall outlets shall be provided around the perimeter of the room on 6 foot centers. A quad outlet receptacle shall be provided above each rack. A minimum of 2 dedicated circuits shall be provided for the wall receptacles. A minimum of 2 dedicated circuits shall be provided for the rack receptacles. If available, one Normal/ Emergency circuit shall be provided, terminated at a quad outlet mounted on the cable ladder above the rack or on the wall immediately adjacent.

The Telecommunications Room shall contain termination equipment for all horizontal telephone, data, and video wiring, per TNS standards. Voice terminations shall be Category 6, 110 type and will be wall mounted. Standard 7' x 20" equipment racks will be provided for Category 6 patch panels, fiber patch panels, network electronics and backbone connection equipment.

Central university services equipment such as security system panels, Utility LAN panels and similar equipment may also be co-located in the TR. All specific locations are to be coordinated and approved by TNS.

TNS Construction Phase Services

Construction phase services shall include response to bid phase RFI's, preparation of required addenda, bid review, shop drawing review, periodic construction phase inspections, response to construction phase RFI's, preparation of required change bulletins, final inspections, review of test reports and final O&M Manuals, and preparation of accurate "As Built" documents.

New Utility / Extensions

All new ductbank construction shall meet TNS Minimum Standards.

All grounding and service entrance protection shall be provided per NEC requirements and TNS standards.

Telecommunications Scope Narrative
Penn State University – University Park Campus
Burrowes Building Renewal

Telecommunications Cabling System

Accessible vertical and horizontal cabling pathways shall be installed throughout the building. These pathways should be appropriately sized for future growth and post construction access to these pathways shall be unimpeded by other mechanical systems.

Outlets for telecommunications services shall be provided throughout the facility as required. Each outlet shall contain jacks as required for voice, data and/or video services, mounted within a common faceplate. Video jacks shall be "F" connectors. Exact locations for each outlet shall be determined during the design process.

Horizontal wiring from the Telecommunications Room(s) to each telecommunications outlet shall be provided. Voice and data wiring shall be an individual plenum rated Category 6 cable for each jack. A Universal wiring model shall be applied, in that jacks may be used for either voice or data applications. All outlet locations shall be capable of a minimum of 4 jacks. Wiring for video services shall be RG-6.

Additional technical detail can be found in the “Penn State Telecommunications & Networking Services Minimum Standards for Telecommunications Facilities”, http://www.tns.its.psu.edu/pdf/MinTelecomStandards.pdf.

The main horizontal pathways from the Telecommunications Room or Cabinet to the outlets shall be via above-ceiling wire cable tray, conduit, and J-hooks.

Telecommunications Firestopping

Appropriate firestopping of all telecommunications cabling and/or facilities penetrating or passing through any fire-rated walls, floors, ceilings, etc shall be part of the building design. Firestopping shall use standard PSU OPP and TNS, UL approved systems and materials.

Firestop solutions may include, but are not limited to pillows, collars, caulking, putty, and approved re-enterable systems. All systems shall be selected based on cabling needs and consideration of initial and future cable pulling operations. The least preferred systems use non-re-enterable calking and/or putty. All products and systems must be UL Certified.

All penetrations requiring firestopping involving 6 or more cables in a single penetration, or into or out of Telecommunications Rooms or Closets shall use re-enterable systems wherever practical, and to the greatest extent possible. Penetrations involving 5 or fewer cables may be firestopped using non-re-enterable systems.

All design, installation, and materials shall be in accordance with applicable BICSI, EIA, and TIA standards.

Telecommunications Scope Narrative
Penn State University – University Park Campus
Burrowes Building Renewal

Dorm Room / Office Cabling and Outlets

Each office or room shall have a minimum of two outlets per 100 square feet, with a minimum of two outlets located on opposite walls. Each telecommunication outlet shall contain at a minimum at least two universal use jacks.

Conference, Workrooms, and Meeting Spaces

Each space will contain a minimum of two outlets. Each outlet shall contain, at the minimum, one voice and one data jack. If the room is also intended to function as a classroom, or if requested, a video jack may also be provided. Additional outlets may be provided depending upon the room use and application.

Special Systems

In addition to building user data and phone systems, data ports and telephones may be required to support Fire Alarm, Electric Metering, Card Access and Utility LAN interconnections to campus systems, and are to be coordinated with TNS.

Wireless LAN System(s)

Wireless LAN coverage will likely be required in areas both inside and outside of the building. TNS recommends the construction documents include a contingency for Cat 6 wiring from the Telecommunications Room/Cabinet to a minimum of # TBD APs inside/outside the building to be located at a later date.

Cost Estimate

A cost estimate is not available at this stage of design.

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Facility Condition Analysis - Photo Log


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PENNSTATE

Office of Physical Plant

The Pennsylvania State University
Physical Plant Building
University Park, PA 16802-1118

REQUIREMENTS FOR COLOR PHOTOGRAPHS OF BUILT PROJECTS

Examples of the Architect's / Engineers's built projects are required for presentation to the Board of Trustees as part of the approval process. Images will be used for a Powerpoint presentation and will be presented via widescreen LED monitors.

Approximately (6) high quality exterior and (12) high quality interior photos should be submitted along with a very brief description of each photo. Photos must be of BUILT projects and should be relevant to the proposed project. Hand drawn renderings, computer drawn renderings and models, and photos of study models will NOT be accepted. It is highly recommended that interior shots include people using the space. Please send digital photographs that meet the following minimum standards.

Minimum photo dimensions:
6.5 x 10 inches (975 x 1500 pixels)
Minimum resolution: 150 pixels/inch

(Photos will be inserted into Powerpoint with a 16:9 aspect ratio at a maximum resolution of 220pixels/inch)

Preferred photo formats: .tif, .jpg, .gif for use in a PC environment

File transfer methods:
-email is preferred with a maximum attachment file size of about 5mb/email.
-Files may be zipped (compressed) using WinZip and/or emailed individually.
-photos on CD-rom are acceptable.

Photos should NOT contain any text. A descriptive reference document should be included that provides a project name and location for each photo. Please send to:

Madeline Cantú, RLA
Design Resources Coordinator
Campus Planning & Design
203 Physical Plant Building
University Park, PA 16802
mac56@psu.edu
(814) 863-4242

Please don't hesitate to call or email with any questions or concerns.

Board of Trustees Architect / Engineering Interview Room Layout