

**Assessment of
Civil, Architectural, Mechanical, Electrical, Plumbing and Fire Protection Systems**

**Belk and Graham-Hewlett Residence Halls
University of North Carolina Wilmington**

October 1, 2012
(DRAFT)



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Limitations

This study is based on observations made during site visits to the facility, and from written and oral information provided by the University staff. No attempts were made to verify the accuracy of this information. The recommendations are of a conceptual nature. The intent of the report is to provide information for planning and budgeting purposes. The cost estimates are preliminary opinions and are intended for general guidance and recommendations. The information and concepts presented will require more detailed investigation and development prior to finalization and design.

TABLE OF CONTENTS

Executive Summary	1
Chapter 1 - Introduction	7
Chapter 2 - Civil Site Systems	14
Chapter 3 - Architectural Systems	17
Chapter 4 - Heating, Ventilating & Air-Conditioning Systems	25
Chapter 5 - Electrical Systems (Power, Lighting, Data/Phone/Security)	32
Chapter 6 - Plumbing Systems	43
Chapter 7 - Life Safety Systems (Fire Alarm/Sprinkler)	46
Chapter 8 - Conclusions and Recommendations	47
Appendices	53

Executive Summary

Background

This is an assessment of the engineering/architectural systems in Belk and Graham- Hewlett residence halls. It identifies needed improvements, provides preliminary costs, and suggests prioritized packaging of the improvements.

These residence halls, with nearly identical bedroom areas, were constructed during the period 1977 and 1978. In 1999, there was an addition (Connector) to connect Graham and Hewlett which provides a single main entry and spaces common to each of the two residence halls. The three residence halls have four story bedroom areas of 8,350 square feet per floor and single floor administrative and service area at the front main entry. The total floor area of Belk Hall including the single story common area is 36,000 SF. The total floor area of Graham-Hewlett including the front areas and the Connector addition is 77,000. The bedrooms are arranged in four bedroom suites, with six suites on each floor. Belk Hall provides beds for 192 students and Graham-Hewlett provides beds for 384 students.

Sud Associates is the lead designer of the Architect-Engineer (A/E) design team retained by UNCW to execute this assessment. The assessment team included Mullins-Sherman Architects and SEPI Engineering Civil Engineers.

The objective is to assist the University in developing a program to manage the upgrade of Graham-Hewlett and Belk residence halls. The assessment identifies civil, architectural and building systems deficiencies, reviews major upgrades that are of interest to the University, develops line item budgets for the identified upgrades, and suggests prioritized packages for implementation.

The intent of the report is to provide information for planning and budgeting purposes. The upgrades are discussed at a conceptual level. The cost estimates are preliminary and are intended for general guidance and recommendations. The information and concepts presented will require more detailed investigation and development prior to finalization and design.

Report Format and Organization

In addition to the Executive Summary, this report is organized into a total of 8 chapters and Appendices. Chapter 1 provides an introduction and overview. Chapters 2 through 7 contain discussions on individual systems separated by discipline as follows:

Chapter 2: Civil Site Systems.

Chapter 3: Architectural Systems.

Chapter 4: Heating, Ventilating and Air-Conditioning (HVAC) Systems.

Chapter 5: Lighting and Electrical Power and Building Systems (Data/Phone/Security)

Chapter 6: Plumbing Systems.

Chapter 7: Life Safety Systems (Fire Alarm/Sprinkler).

Chapter 8 summarizes the conclusion and recommendations of this assessment. This includes the “Priority Programming Spreadsheet” - Listing of modifications with corresponding cost estimates. The Appendices contain details and supporting data.

Assessment Considerations

A list of feasible modifications to address the deficiencies and the University’s priorities has been developed. The modifications have been prioritized as follows:

<u>Description</u>	<u>Priority</u>
Imminent Maintenance Items	1
Necessary, Mandated, or Legally Required Upgrades	2
Desirable Upgrades	3
Other Packages Proposed or Requested by the University	4

This Assessment is formatted with regard to disciplines; civil, architectural, mechanical, electrical, plumbing, and life safety (sprinkler and fire alarm systems). Preliminary budget costs for the identified modifications are separated by discipline and provided in a spreadsheet format. Chapter 8 provides a summary of the prioritized recommendations. The full spreadsheet with individual costing items is included in Appendix A.

“Imminent Maintenance Items” represent the minimum that would need to be addressed for continued operation of the facility. “Necessary Upgrades” are those items of which there is a longer term need to replace, a code issue, or a requirement to support code work from another discipline. Upgrades which pertain to compliance with existing building codes may be subcategorized as “Mandated or Legally Required Upgrades.” Such upgrades would be required with major renovations to make conformance to the present building codes or construction requirements of the building code officials (State Construction Office).

Desirable Upgrades offer building enhancements which would not be demanded by the present Building Code or the Jurisdictional Authority. Examples would be replacement of inefficient equipment or systems, aesthetic improvements, or improvements to space function.

“Other packages requested by the University” present renovations in which the University has indicated an interest. These Packages include canopies above the doors exiting Graham and Hewlett into the courtyard and a Card Key System for all three dormitories. Another package could be further investigation into the central chiller plant discussed in the “Preliminary Assessment of HVAC System Options.” The chiller plant would also impact Galloway Hall. Further investigation of the central chiller plant is a major study in its own right and is beyond the scope of this study.

The University has a goal to comply with all laws and regulations with regarding to the American Disability Act (ADA) of 1990 and any other applicable rules and regulations. The University has fully accessible dorms spatially distributed across campus.

Belk, Graham, and Hewlett Residence Halls were constructed prior to the ADA, and accessibility provisions were not included in the original design. For State owned buildings, the code is administered and enforced by the State Construction Office (SCO). The SCO does not mandate major renovations to existing buildings solely for the purpose of complying with the ADA; however, if upgrades or renovations are initiated, systems or components that are renovated or upgraded have to be made compliant with the ADA. In the specific instance of these buildings, any attempts to renovate or upgrade the bathrooms will trigger requirements that they comply with the ADA. This will require expansion of the bathrooms and significant modifications to the floor plan of the buildings. If the University decides or is required (by law through the SCO) to make these dormitories accessible and comply with the accessibility code, major modifications will be required. Because of the scope of such modifications, they have been evaluated under a separate category. Under this category, the Assessment explores and presents a possible revision to the building layout that would make these buildings similar to some of the newer dormitories (e.g. International and Cornerstone Halls) on the campus.

Recommendations

Chapter 8 summarizes the conclusion and recommendations of this assessment. This includes the “Priority Programming Spreadsheet” - Listing of modifications with corresponding cost estimates which are repeated here as Tables ES.1, ES.2 and ES.3.

To facilitate the presentation of the results, Tables ES.2 and ES.3 have two parts. The first part presents renovation of existing building with comparable architectural and engineering systems. The entire building will not be made compliant with ADA. The systems or components that are renovated or upgraded will be made compliant. The second part presents major renovations to make the entire dormitory compliant with ADA.

TABLE ES.1
University of North Carolina Wilmington
Site Upgrades Evaluation

Summary of Estimated Construction Costs by Priority

October, 2012

Site Work	Priorities			
	Imminent Maintenance (1)	Scheduled Maintenance (2)	Desirable Upgrades (3)	Packaged Options (4)
Site Upgrades in Vicinity of Belk Hall	\$46,000	\$3,000	\$4,000	\$0
Site Upgrades in Vicinity of Graham-Hewlett Hall	\$22,500	\$2,500	\$1,000	\$9,000
General Site Upgrades				\$60,000
Totals	\$68,500	\$5,500	\$5,000	\$69,000

TABLE ES.2
University of North Carolina Wilmington
Belk Hall Upgrades Evaluation

Summary of Estimated Construction Costs by Priority

October, 2012

Belk Hall	Priorities								
	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 2.	Total for Complete Renovation of Existing Building with Comparable Architectural and Engineering Systems	Imminent Maintenance, ADA (1)	Necessary, Mandated, ADA (2) Note 1.	Desirable Upgrades ADA (3) Note 2.	Additions Specific to ADA Note 3.	Summation of ADA and Other Work Scope for Complete Renovation of Building Note 4.
Architectural	\$1,005,504	\$129,333	\$434,690	\$1,569,526	\$973,800	\$78,873	\$357,740	\$1,777,716	\$3,188,129
Mechanical	\$664,750	\$0	\$306,000	\$970,750	\$0	\$0	\$50,000	\$963,250	\$1,013,250
Electrical	\$1,433,750	\$133,750	\$112,500	\$1,680,000	\$0	\$0	\$0	\$1,956,250	\$1,956,250
Plumbing	\$288,500	\$8,000	\$46,875	\$343,375	\$33,500	\$0	\$46,875	\$444,875	\$525,250
Fire Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$278,750	\$278,750
Totals	\$3,392,504	\$271,083	\$900,065	\$4,563,651	\$1,007,300	\$78,873	\$454,615	\$5,420,841	\$6,961,629

Notes:

1. Necessary, Mandated Upgrades are in Addition To and Do Not Include Imminent Maintenance Items.
2. Desirable upgrades are in Addition To and Do Not Include Imminent Maintenance or Necessary and Mandated Upgrades.
3. Work scope is specific to ADA and does not include imminent maintenance, other necessary or mandated, or desirable renovations.
4. ADA Package plus imminent maintenance, necessary/mandated and desirable upgrades.

TABLE ES.3
University of North Carolina Wilmington
Graham-Hewlett Hall Upgrades Evaluation

Summary of Estimated Construction Costs by Priority

October, 2012

Graham-Hewlett	Priorities					Summation of ADA and Other Work Scope for Complete Renovation of Building Note 4.			
	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 2.	Total to Renovate Existing Building with Comparable Architectural and Engineering Systems	Imminent Maintenance, ADA (1)		Necessary, Mandated, ADA (2) Note 1.	Desirable Upgrades ADA (3) Note 2.	Additions Specific to ADA Note 3.
Architectural	\$1,969,394	\$381,525	\$1,885,569	\$4,236,488	\$1,937,690	\$171,825	\$1,648,035	\$3,337,275	\$7,094,825
Mechanical	\$1,371,500	\$0	\$792,000	\$2,163,500	\$0	\$0	\$85,000	\$1,926,500	\$2,011,500
Electrical	\$2,867,500	\$267,500	\$225,000	\$3,360,000	\$0	\$0	\$0	\$3,912,500	\$3,912,500
Plumbing	\$577,750	\$16,000	\$61,250	\$655,000	\$67,750	\$0	\$61,250	\$889,750	\$1,018,750
Fire Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$557,500	\$557,500
Totals	\$6,786,144	\$665,025	\$2,963,819	\$10,414,988	\$2,005,440	\$171,825	\$1,794,285	\$10,623,525	\$14,595,075

Graham	Priorities					Summation of ADA and Other Work Scope for Complete Renovation of Building Note 4.			
	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 2.	Total to Renovate Existing Building with Comparable Architectural and Engineering Systems	Imminent Maintenance, ADA (1)		Necessary, Mandated, ADA (2) Note 1.	Desirable Upgrades ADA (3) Note 2.	Additions Specific to ADA Note 3.
Architectural	\$1,000,549	\$189,183	\$505,694	\$1,695,425	\$968,845	\$84,333	\$376,814	\$1,694,603	\$3,124,594
Mechanical	\$730,750	\$0	\$363,500	\$1,094,250	\$0	\$0	\$55,000	\$963,250	\$1,018,250
Electrical	\$1,433,750	\$133,750	\$112,500	\$1,680,000	\$0	\$0	\$0	\$1,956,250	\$1,956,250
Plumbing	\$288,500	\$8,000	\$46,875	\$343,375	\$33,500	\$0	\$46,875	\$444,875	\$525,250
Fire Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$278,750	\$278,750
Totals	\$3,453,549	\$330,933	\$1,028,569	\$4,813,050	\$1,002,345	\$84,333	\$478,689	\$5,337,728	\$6,903,094

Hewlett	Priorities					Summation of ADA and Other Work Scope for Complete Renovation of Building Note 4.			
	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 2.	Total to Renovate Existing Building with Comparable Architectural and Engineering Systems	Imminent Maintenance, ADA (1)		Necessary, Mandated, ADA (2) Note 1.	Desirable Upgrades ADA (3) Note 2.	Additions Specific to ADA Note 3.
Architectural	\$968,845	\$189,183	\$539,023	\$1,697,050	\$968,845	\$84,333	\$430,369	\$1,642,673	\$3,126,219
Mechanical	\$640,750	\$0	\$428,500	\$1,069,250	\$0	\$0	\$30,000	\$963,250	\$993,250
Electrical	\$1,433,750	\$133,750	\$112,500	\$1,680,000	\$0	\$0	\$0	\$1,956,250	\$1,956,250
Plumbing	\$288,500	\$8,000	\$14,375	\$310,875	\$33,500	\$0	\$14,375	\$444,875	\$492,750
Fire Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$278,750	\$278,750
Totals	\$3,331,845	\$330,933	\$1,094,398	\$4,757,175	\$1,002,345	\$84,333	\$474,744	\$5,285,798	\$6,847,219

Connector	Priorities					Summation of ADA and Other Work Scope for Complete Renovation of Building Note 4.			
	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 2.	Total to Renovate Existing Building with Comparable Architectural and Engineering Systems	Imminent Maintenance, ADA (1)		Necessary, Mandated, ADA (2) Note 1.	Desirable Upgrades ADA (3) Note 2.	Additions Specific to ADA Note 3.
Architectural	\$0	\$3,160	\$840,853	\$844,013	\$0	\$3,160	\$840,853	\$0	\$844,013
Mechanical (Note 5)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Electrical (Note 5)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Plumbing	\$750	\$0	\$0	\$750	\$750	\$0	\$0	\$0	\$750
Fire Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Totals	\$750	\$3,160	\$840,853	\$844,763	\$750	\$3,160	\$840,853	\$0	\$844,763

Notes:

1. Necessary, Mandated Upgrades are in Addition To and Do Not Include Imminent Maintenance Items.
2. Desirable upgrades are in Addition To and Do Not Include Imminent Maintenance or Necessary and Mandated Upgrades.
3. Work scope is specific to ADA and does not include imminent maintenance, other necessary or mandated, or desirable renovations.
4. ADA Package plus imminent maintenance, necessary/mandated upgrades, and desirable upgrades.
5. Mechanical and Electrical work scope for the Connector are included in the scope for Graham & Hewlett.

Chapter 1

Introduction

Background

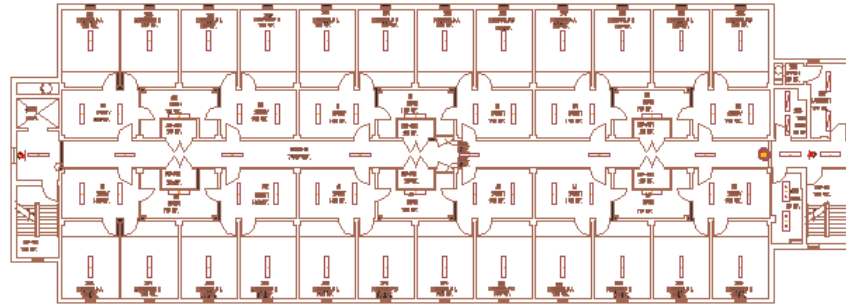
This is an assessment of the engineering/architectural systems in Belk and Graham- Hewlett residence halls. It identifies needed improvements, provides preliminary costs, and suggests prioritized packaging of the improvements.

Belk and Graham- Hewlett residence halls are located on the campus of University of North Carolina at Wilmington (UNCW). They were constructed during 1977 and 1978. Originally, Belk, Graham and Hewlett were constructed as three separate buildings, with Belk Hall being the last of the three buildings to be constructed. All buildings have a four story bedroom area and a single floor administrative and service area at the front main entry. The bedroom areas of the buildings are nearly identical, with minor differences in their design. In 1999, an addition was constructed to connect Graham and Hewlett residence halls. The addition (Connector) provided a single main entry and spaces which are common to each of the two residence halls.

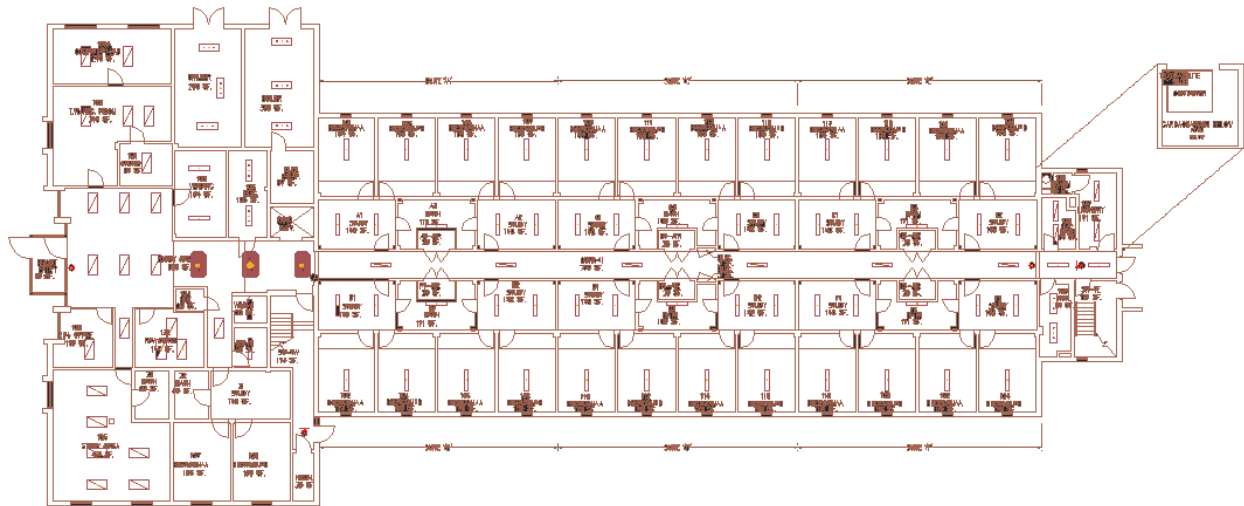
The total floor area of Belk Hall including the single story common area is 36,000 SF. The total floor area of Graham-Hewlett including the front areas and the Connector addition is 77,000. The floor area of the four story bedroom portion of all the three residence halls is 33,400 SF (8350 square feet for each floor). Belk Hall provides beds for 192 students and Graham-Hewlett provides beds for 384 students.

The front area at Belk Hall includes spaces for an entry vestibule and lobby, residence manager apartment, study area, electrical and fire alarm panel room, kitchen, vending, laundry, and assembly areas. There is a Mechanical/Fire Pump and Boiler Room on the North side of the front area and a small mechanical room on the South side of the front area. Figure 1.1 shows the floor plan of the building.

The Connector at Graham and Hewlett added a main entry with vestibule and lobby, a large reading room, computer room, conference room, restrooms, and a corridor to each building. Excepting for some changes in room function and minor changes in floor plan, the front areas of Graham and Hewlett remained the same with the addition of the Connector. Two small mechanical rooms contain air handlers to serve the Connector addition. Figure 1.2 shows the floor plan of the building.

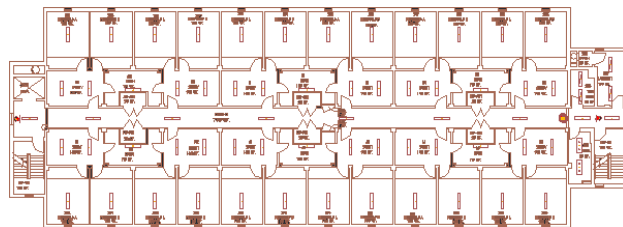


Second through Fourth Floors



First Floor

Fig. 1.1: Belk Hall Floor Plan



Second through Fourth Floors

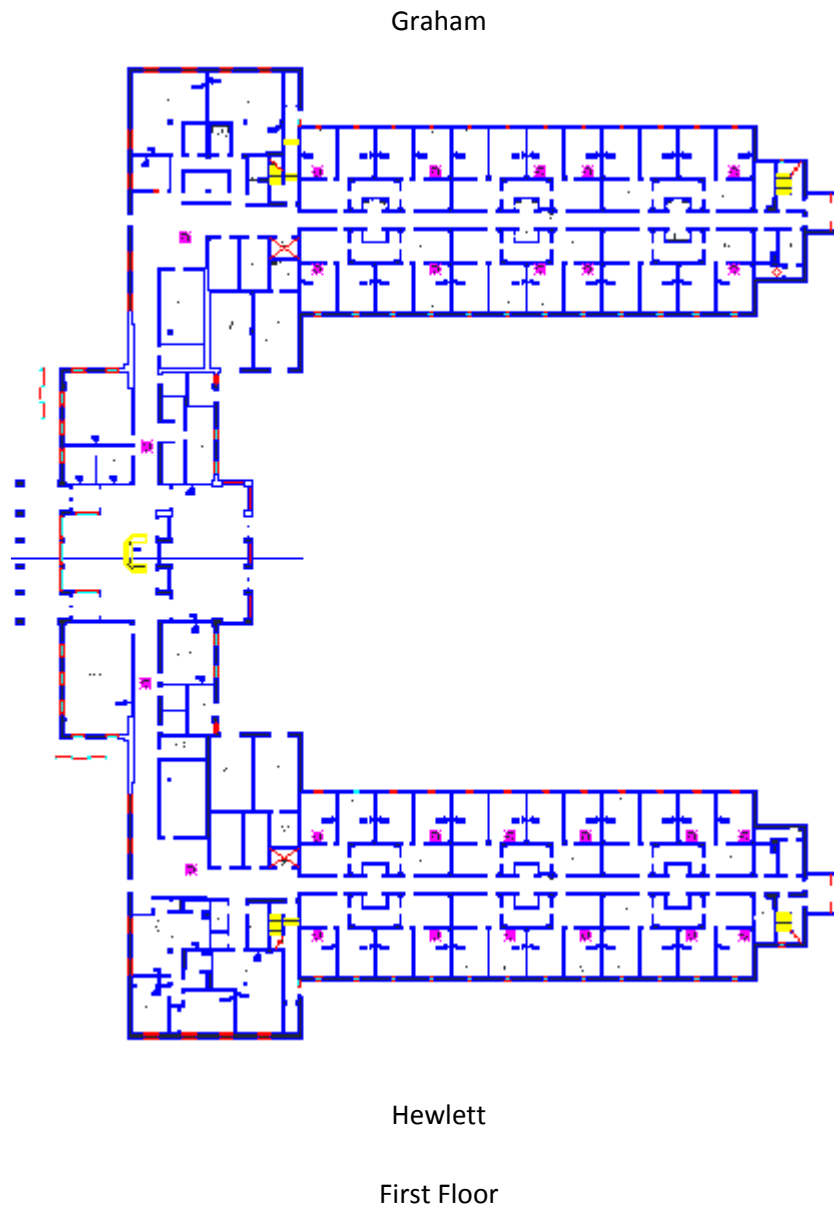


Fig. 1.2: Graham Hewlett Floor Plan

The buildings are now outdated and have several deficiencies. The University Housing and Facilities staff has recognized the need for extensive renovation. As the first step towards the development of a strategic plan to manage the dormitories, the University has initiated this assessment to determine, budget and prioritize the needed upgrades.

Scope:

Sud Associates, P.A. is the lead for the Engineer- Architect (E/A) team that conducted this assessment. The objective is to assist the University in developing a program to manage the upgrade of Graham-Hewlett and Belk residence halls. An evaluation of the existing engineering and architectural systems was made for these buildings. The assessment identifies civil, architectural and building systems deficiencies, reviews major upgrades that are of interest to the University, develops line item budgets for the identified upgrades, and suggests prioritized packages for implementation.

The intent of the report is to provide information for planning and budgeting purposes. The upgrades are discussed at a conceptual level. The cost estimates are preliminary and are intended for general guidance and recommendations. The information and concepts presented will require more detailed investigation and development prior to finalization and design.

Data provided by UNCW Facilities and Housing Staff or gathered during this study

Site visits to the buildings were conducted by the E/A team, accompanied by UNCW Facilities and Housing staffs on May 17 and June 21 of 2012. A subsequent site visit was conducted on July 12, 2012 to video piping, ducting and inaccessible areas. At the meetings, the study team met with University housing and facilities engineering staff to discuss priorities and review available information and obtain paper/electronic copies of information that could be helpful for the study. The study team also interviewed facilities and housing maintenance staffs to obtain input from the people who use and maintain the buildings.

The UNCW individuals who provided input and guidance include:

Mark D. Morgan, PE, - Director of Architectural Construction Services
Steven Sharpe, PE, - Facility Mechanical Engineer
Michael Wolfe – Facility Construction Engineer
Nicholas Troutman –Assistant Director of Housing
Eddie Kelly – Physical Plant Plumbing Supervisor
Alton Batts – Physical Plant HVAC Supervisor
Tommy Guinn – Physical Plant Electrical Supervisor

The following documents were made available to the study team:

- Electronic copies of the original construction drawings.

- Electronic copies of building renovations including renovation at Graham and Hewlett to add the connector between these two buildings.
- FCAP reports.
- Report on Investigation of Masonry Anchorage.
- Work Order History: A two year work order history for the buildings was provided. The work order history was evaluated to achieve a better understanding of the maintenance requirements for the building systems. It was also helpful in identifying system deficiencies and serviceability issues.
- Any deficiency reports by the Fire Marshal.
- Historical utility usage.
- List of remaining T-12 lamps.
- Any available shop drawings.
- Information on roof warranties.

Report Format and Organization

This report is organized into a total of 8 chapters and Appendices. Chapter 1 provides introduction and overview. Chapters 2 through 7 contain discussions on individual systems separated by disciplines as follows:

Chapter 2: Civil Site Systems.

Chapter 3: Architectural Systems.

Chapter 4: Heating, Ventilating and Air-Conditioning (HVAC) Systems.

Chapter 5: Lighting and Electrical Power and Building Systems (Data/Phone/Security)

Chapter 6: Plumbing Systems.

Chapter 7: Life Safety Systems (Fire Alarm/Sprinkler).

Chapter 8 summarizes the conclusion and recommendations of this assessment. This includes the “Priority Programming Spreadsheet” - Listing of modifications with corresponding cost estimates. The Appendices contain details and supporting data.

Assessment Considerations

This information, interviews with the staff, site inspections, meetings, provided information and basis for the study. Design solutions allow for the range of needs and priorities of the University with emphasis on meeting the needs of the students and low maintenance/utility costs. A list of feasible modifications to address the deficiencies and the University’s priorities has been developed. The modifications have been prioritized as follows:

<u>Description</u>	<u>Priority</u>
Imminent Maintenance Items	1
Necessary, Mandated, or Legally Required Upgrades	2
Desirable Upgrades	3
Other Packages Proposed or Requested by the University	4

This Assessment is formatted with regard to discipline; civil, architectural, mechanical, electrical, plumbing, and life safety (sprinkler and fire alarm systems). Preliminary budget costs for the identified modifications are separated by discipline and provided in a spreadsheet format. As much as was practical, the outline of the study narrative conforms to the format of the spreadsheet. This allows the reader to find the background information regarding a specific spreadsheet line item (proposed modification). This report and spreadsheet aim to act as a roadmap for costs, strategies, and options for renovations to the Belk and Hewlett-Graham residence halls. Chapter 8 provides a summary of the prioritized recommendations. The full spreadsheet with individual costing items is included in Appendix A.

Items which require replacement of existing equipment or system component items of which there is a near time concern or life safety issue are categorized as “Imminent Maintenance Items.” These items have experienced material decay through time; and represent an immediate concern. They represent the minimum that would need to be addressed for continued operation of the facility. “Necessary Upgrades” are those items of which there is a longer term need to replace, a code issue, or a requirement to support code work from another discipline. Upgrades which pertain to compliance with existing building codes may be subcategorized as “Mandated or Legally Required Upgrades.” Such upgrades would be required with major renovations to make conformance to the present building codes or construction requirements of the building code officials (State Construction Office). Included in these are upgrades to meet the NC Energy Conversation Code in which compliance would positively impact the cost of building operation.

Desirable Upgrades offer building enhancements which would not be demanded by the present Building Code or the Jurisdictional Authority. Examples would be replacement of inefficient equipment or systems, aesthetic improvements, or improvements to space function.

HVAC system options for Belk, Graham-Hewlett, and Galloway Dormitory were presented in Sud Associates “Preliminary Assessment of HVAC System Options.” There were several options presented in this document. Some options would involve replacement of the building chilled water plants with a central chilled water plant. Specific to the scope of this document, an

advantage of a central chiller plant is that the exterior space between Graham and Hewlett, which presently serves as a mechanical area, could be freed to function as a common area, or courtyard. Other mechanical HVAC systems also can provide for better use of this space.

“Other packages requested by the University” present renovations in which the University has indicated an interest. A renovation package which would allow recreational use of the area between Graham and Hewlett Halls is a possible example. Other Packages include canopies above the doors exiting Graham and Hewlett into the courtyard and a Card Key System for all three dormitories. Another package could be further investigation into the central chiller plant discussed in the “Preliminary Assessment of HVAC System Options.” The chiller plant would also impact Galloway Hall. Further investigation of the central chiller plant is a major study in its own right and is beyond the scope of this study.

The University has a goal to comply with all laws and regulations with regarding to the American Disability Act (ADA) of 1990 and any other applicable rules and regulations. The University has fully accessible dorms spatially distributed across campus.

Belk, Graham, and Hewlett Residence Halls were constructed prior to the ADA, and accessibility provisions were not included in the original design. For State owned buildings, the code is administered and enforced by the State Construction Office (SCO). The SCO does not mandate major renovations to existing buildings solely for the purpose of complying with the ADA; however, if upgrades or renovations are initiated, systems or components that are renovated or upgraded have to be made compliant with the ADA. In the specific instance of these buildings, any attempts to renovate or upgrade the bathrooms will trigger requirements that they comply with the ADA. This will require expansion of the bathrooms and significant modifications to the floor plan of the buildings. If the University decides or is required (by law through the SCO) to make these dormitories accessible and comply with the accessibility code, major modifications will be required. Because of the scope of such modifications, they have been evaluated under a separate category. Under this category, the Assessment explores and presents a possible revision to the building layout that would make these buildings similar to some of the newer dormitories (e.g. International and Cornerstone Halls) on the campus.

Chapter 2

Civil Site Systems

Background

The Storm water, site grading, gravity sewer, and water site systems are evaluated in this study. The site areas adjacent to Belk and Graham-Hewlett halls are evaluated separately. A cost and priority is assigned in the Programming Spreadsheet for the problems and shortcomings identified in this chapter. Locations of the problem areas are provided by maps in the Appendix.

Belk Hall – Site Civil Review (Grading, Drainage, Roadways and Sewer)

General Review:

The building grounds, sidewalks, and roadways have been maintained well and show no indications of substantial repairs or modifications from the campus master plan. The vegetative ground cover around the building and asphalt road surfaces is well established and appears to be healthy. The following is a discussion of the existing conditions of the grading, drainage, roadways and sewer serving Belk Hall.



Drainage

The ditches and swales north side of the rear access road requires maintenance. Sedimentation deposits from years of service have elevated the invert of the ditch above the invert of the pipes serving the ditch. The pipes at each end of the ditch require a flared end section to be installed to maintain stability of the ditch cross section. The east end of the ditch has eroded and has undermined and exposed a portion of the pipe at that end of the ditch. A flared end section would have reduced the likelihood that this condition could have developed.



Discharge from parking area to ditch

The surrounding grade of the storm water drop inlet located at the east end of Belk Hall is holding water in the adjacent parking area. An attempt has been made with hand tools to limit this issue however a more permanent solution is required.

The building downspouts which are connected to the storm water system have been broken and are no longer functional.



Inlet pipe at ditch

A drain has been installed at the rear of the building to serve the area behind the dumpster. This drain has been filled with sediment and is no longer functional. This drain line and the storm water piping system as a whole should be cleaned and all sediment removed.

Recommendations

- Reestablish the ditch profile to create positive drainage. Permanent vegetative ground cover should be established within 14 days of any work.
- Install flared end sections at the pipes serving the ditch.
- Grade the surrounding area around the drop inlet to provide positive drainage from the parking area to the inlet.
- Clean storm water piping.



Drain at dumpster

Site Grading:

The access door at the east end of the building is located at the top of a steep incline. The grade is stable however early erosion appears to have covered the water valve that is located at the base of the incline.

Recommendation:

- Locate water valve and install a concrete color to protect the valve and mark its location.
- Consider installing a hand rail for pedestrians entering the building at this location.



East End of Belk Hall

Asphalt Pavement:

The asphalt pavement has signs of deterioration along the edges where vehicle traffic is present. The rear access road along the north side of the building has significant rutting and erosion due to vehicles turning in this area.

Vehicle activity along the south side of building has created pavement settling around sewer manhole. Pavement is thin and cracked in this area.



Rear Access Road

Recommendation:

- Construct a cul-de-sac at the rear of Belk Hall to accommodate vehicle traffic in that area.
- Remove the damaged asphalt and replace the asphalt area around the sewer manhole.

Gravity Sewer:

The manhole in the access road along the south side of Belk Hall appears to be in good condition. The manhole provides access to an eight (8) inch ductile iron pipe (DIP) gravity sewer main. Debris and other material were observed in the manhole indicating low flow conditions. The DIP shows signs of deterioration. The sewer flow in this system likely experiences periods of high and low flow directly related to the occupancy of the resident facilities on campus. As a result of non-continuous flow, the sewer in the system can generate high levels of sulfuric acid and damage piping and manholes.

Recommendations:

- The sewer system as a whole should be cleaned and inspected with cameras to determine the overall condition of the system .



Cracking around Manhole



Sewer Manhole at Belk Hall

Graham Hewlett Hall – Site Civil Review (Grading, Drainage, Roadways and Sewer)

General Review:

The building grounds, sidewalks, and roadways have been maintained well and show no indications of substantial repairs or modifications from the campus master plan. The vegetative ground cover around the building and asphalt road surfaces is well established and appears to be healthy. Some landscape areas near the front of the building are thick with tall plantings that have limited ground cover. Ground cover at the rear of the building in the center courtyard area has areas of limited ground cover due to vehicle traffic and soil conditions.

The following is a discussion of the existing conditions of the grading, drainage, roadways and sewer serving Belk Hall.



Overgrowth of vegetation in drainage ditch

Drainage

The ditches at the east side of the building, north of the parking lot, requires maintenance. The ditch is overgrown which is limiting flow and capacity and cannot be maintained. The pipes at each end of the ditch require a flared end section to be installed to maintain stability of the ditch cross section. The areas immediately in front of the discharge piping to the ditch is severely overgrown.



Overgrowth at discharge to ditch

The Stormwater Manhole at the north end of the building is cracked and should be repaired.



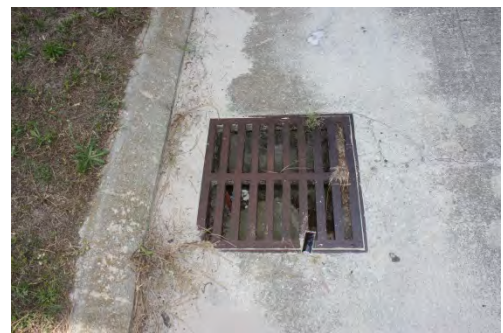
Cracking inside stormwater manhole

The building downspouts which are connected to the storm water system could not be located.

Drop Inlets around the building show evidence of sediment and debris buildup in the system. This will reduce the system's ability to convey storm water a reduce capacity. Drop inlets located in natural areas lacked appropriate vegetative aprons.



Drop inlets in Natural Areas



Debris in drop inlets

Drop Inlets with concrete aprons have cracking in the concrete.

Recommendations

- Reestablish the ditch profile to create positive drainage. Permanent vegetative ground cover should be established within 14 days of any work.
- Install flared end sections at the pipes serving the ditch.
- Re-establish vegetative apron around drop inlets in natural areas.
- Clean stormwater piping.

Site Grading:

In general, site grading is in good condition. There are areas which are bare and grass will help prevent sediment from entering the system. The grading in the center courtyard is flat. Due to the soil conditions, this does not appear to be a problem however there is likely localized ponding and this could contribute to the lack of vegetation.

Recommendation:

- Establish ground cover in bare areas to prevent erosion.
- Establish appropriate gravel drive surface for rear entrance area in rear center courtyard.

Gravity Sewer:

All but two of the gravity sewer service cleanouts were covered. One of the two cleanouts found had no cap and was open. The manhole at the front of the building was not accessible for inspection.



Recommendation:

- Find all sewer cleanouts and confirm they are sealed and in good condition.
- Perform a system wide sewer cleaning and video inspection of sewer system to confirm system integrity.

Potable Water:

Water Valve at North end of building could not be found. Valves along the front of the building appear to be in good condition. All valves should be located and protected with concrete collar

Recommendations:

- Water valves should be located and concrete collars should be installed to provide protection.



Chapter 3

Architectural Systems

Background

Since these buildings are nearly identical, the proposed Architectural Modifications are the same for Belk and Graham-Hewett. Where the upgrade affects only one or two of the three buildings, this is indicated in the narrative for this chapter. Short term maintenance items required at all three buildings are first presented under “Imminent Maintenance Items.” “Necessary Upgrades”, which include “Mandated or Code Required Upgrades” as a subcategory, are presented next. Since there has been a recent reroofing at all of these buildings, reroofing to new code requirements has been placed under the “Desirable Upgrades” category. Items initiated from discussions with university facility or housing are provided under “Upgrades Requested by the University.” Considerable work scope is required to upgrade the building for accessibility, ADA requirements, and these work items are presented under a separate category.

Imminent Maintenance Items

1. Total window replacement, excluding the front windows beneath the Portico of Graham-Hewlett. Security screens on ground level of all dormitory bedroom windows. 1” insulated glass, low-e, screens, blinds (Reference FCAP Report).
2. Masonry Repairs (Reference FCAP Report)
 - a. A ‘Veneer Structural Condition Survey’ was completed 7/30/01 and identified various problems on all three residence halls. Repair work was performed on Belk



Figure 3.1: Hewlett Hall Exterior Face Brick

- b. Residence Hall which is now showing areas of additional masonry problems. The cost estimate includes replacement of the brick veneer on all three residence halls which includes wall insulation, weep holes and flashing, control joints, shelf angles, veneer anchors, etc.
- b. Steam clean all pre-cast concrete panels and stone copings and re-caulk.
- c. Replace fourth floor window projections with cement fiber board over metal framing and scrape and paint lintels.
- d. Scrape and paint all lintels.
- e. Re-caulk exterior door frames.

3. Upgrade Bath Showers & Lavatory Counters (Reference FCAP Report).
 - a. Tile Over Tile Method

- b. Membrane Waterproofing
 - c. New ceramic tile floor & base
 - d. New floor drain flush with new work
 - e. New lavatory counters
4. Magnetic Hold Open devices will be added to stair doors in all three residence halls (Reference FCAP Report).
 5. Graham Residence Hall will have proper signage at Fire Pump and AHU Room No.1 door openings (Reference FCAP Report).
 6. Maintenance items at the Graham-Hewlett Connector:
 - a. Repair rubber base in Lobby LB1/W
 - b. Men MR1E/G: Repair drywall, secure lavatory, adjust door hardware.
 - c. Repair drywall in Men MR1W/H
 7. Provide dumpster protection at Graham & Hewlett.

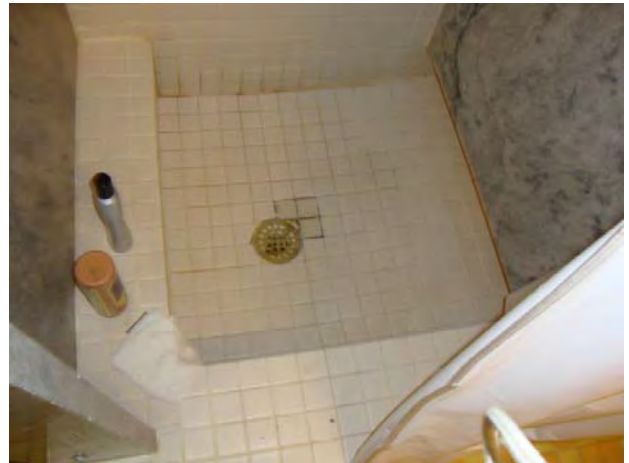


Figure 3.2: Shower to be upgraded.

Necessary, Mandated, or Legally Required Upgrades

1. New floor finishes and interior painting are included for all three residence halls. Carpet tiles in Bed Rooms, ceramic tile in Dormitory Corridors, Baths, Recycle and Laundry with vinyl composition tile elsewhere. Exterior painting will include fascia band at Graham-Hewlett, lintels and steel at dumpsters. All exterior joints will be caulked.
2. Elevator cab interiors will be upgraded (leathergrain stainless steel wall panels, aluminum frame ceiling with three white opal twin wall lenses, new flooring). All three cars have had a modernization within the last five years. Therefore, no equipment upgrades have been included in the cost estimate.
3. Ceilings: Replace and add new acoustical ceilings as required to fireproof first floor corridor walls. This is required in Graham and Hewlett and not in Belk Hall.
4. The 2x6 wood between the top of the masonry walls and deck above will be encased in drywall in Graham and Hewlett. At Belk this work has been completed except at the Rubbish Rooms and perhaps some of the Mechanical/Electrical rooms that were not visited. *Reference NCBC Section 709.*

Desirable Upgrades

1. Roofing - Belk and Graham-Hewlett Halls and their original one story portions: The roofs have a first class roofing system which is presently under warranty. This study recommends an inspection and a coating of fibrated aluminum paint, and delay

replacement after the present system fails, which at that time they can be brought up to the then current NC Energy Code. Presently these roofs have an R-15 rating.

2. Roofing - Graham-Hewlett Connector (center section and portion that connected the original buildings): Based upon the drawings, we assume this portion of the roof has an R-value of R-12. It was installed in 2002 which leaves 10 years remaining on a 20 year warranty. Since it has a low R-value we have included a tear-off and replacement with an R-25 insulated light weight cellular concrete, 2-ply modified bitumen and mineral surface cap sheet with fibrated aluminum paint.
3. Ceilings: Replace and add new acoustical ceilings as required for new P,M,E Work.
4. New floor finishes, paint, blinds, typical all three residence halls.
5. Steam clean pre-cast panels and re-caulk, typical all three residence halls.
6. Add R-12.5 to exterior walls of Graham-Hewlett Connector.
7. Aluminum storefronts and doors will be replaced at stair exits and rear vestibules on each of the residence halls. Code compliant glazing and thresholds will be incorporated. (Reference FCAP Report).
8. Improvements at the Graham-Hewlett Connector:
 - a. Rubber base in Housekeeping HK-15.
 - b. Install automatic door operators on four entrance doors (Reference FCAP Report).

University Requested Items

The University requested that the following items be included in the Study. The costing in the Priority Programming spreadsheet is included in the desirable upgrades.

1. Canopies will be added over the front corridor egress doors from Graham and Hewlett. All doors on the front elevation will have the wood frames wrapped in white pre-



Figure 3.3: Proposed Addition of Canopy

finished aluminum.

2. Elevators are in reasonable working order; the University might anticipate total replacement in 15 years. New interior finishes are called for in this study.

3. Provide card key system at all residence bedrooms.

Accessibility Items (Reference FCAP Report)

1. The 2009 NCBC requires each dormitory to have five accessible bath rooms, one of which will have a roll-in shower. All other rooms shall have access to baths complying with Type 'B' Sleeping Rooms. The study design team visited recently constructed UNCW dormitories (International and Cornerstone Halls) to visualize currently constructed and understand floor plans desired by the University.



Figure 3.4: Typical Nonconforming Bathroom Hall

The study architect prepared and reviewed alternative floor plans to comply with the present building code. After considerable effort, a proposed layout was developed to comply with the code requirements. The layout removes the Study Rooms and Baths and substitutes the Men's and Women's gang bath rooms in the center of the remaining space. Reference NCBC Section 1107.6.2.2. Proposed layout is provided as figure 3.5.

The study architect prepared and reviewed alternative floor plans to comply with the present building code. After considerable effort, a proposed layout was developed to comply with the code requirements. The layout removes the Study Rooms and Baths and substitutes the Men's and Women's gang bath rooms in the center of the remaining space. Reference NCBC Section 1107.6.2.2. Proposed layout is provided as figure 3.5.

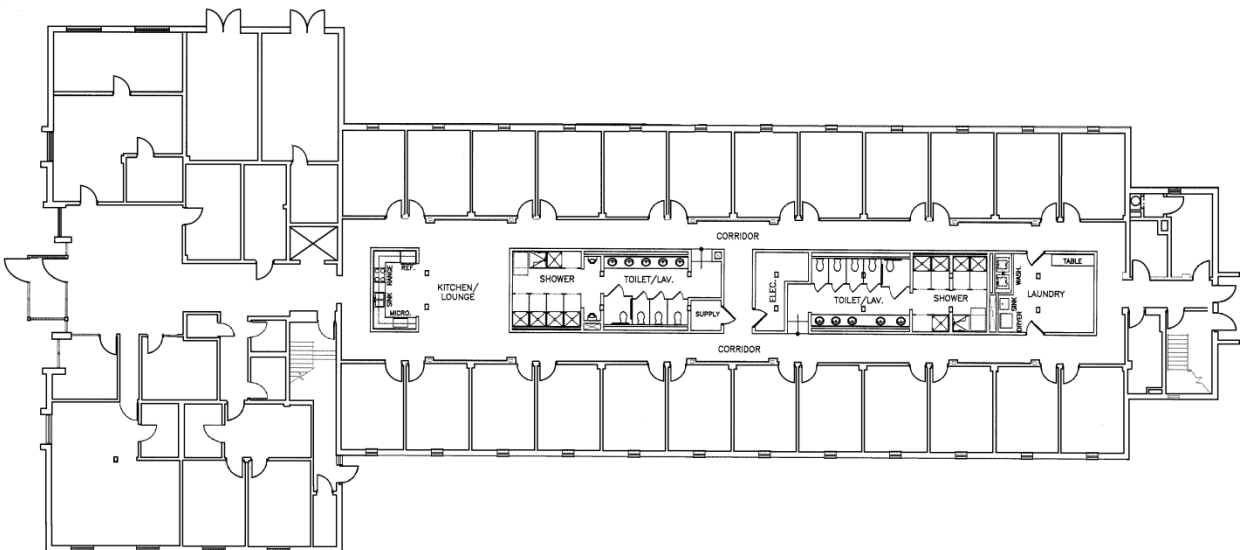


Figure 3.5: Proposed layout for Compliance with ADA.

2. The code requirements for accessible entry to all bed rooms can be met by installing clear throw hinges on the doors. Our estimate of costs includes replacing the doors also. The study does not include replacing the non-rated door frame; however; since the code will only require a 30-minute rated tenant separation, the code officials will most likely not require replacement of door frames. *Reference NCBC Section 1107.*
3. The cost estimate has assumed hard tile in the re-configured corridors, and it appears the entrance to the Bath's can be ramped up such that mud-set tile and waterproofing can be provided, if the University is acceptable to bath's without entrance doors.
4. Included is new signage in the dormitory wings compatible with signage in the Graham-Hewlett connector. Floor identification will be provided at each stair landing. *Reference NCBC Sections 1022.8 & 1110.*
5. The original railings remain in use at the three dormitories. All Stairwells include new code compliant railings, contrasting color of risers, level identification, soffit repairs, and

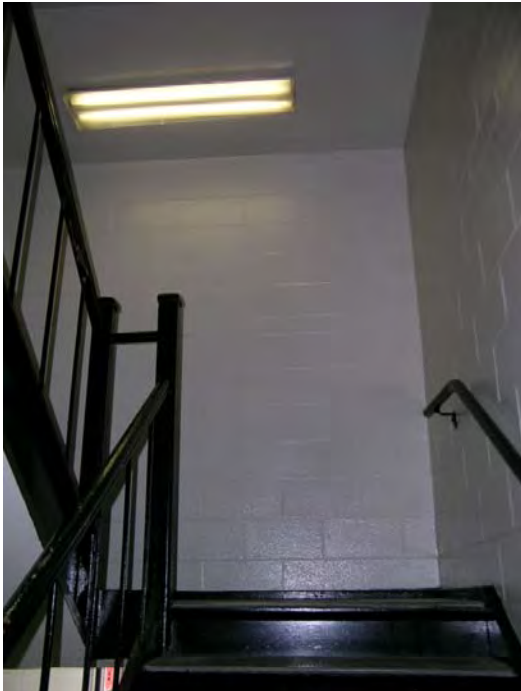


Figure 3.6: Railings in Stairwells.

replacement of doors and frames with magnetic hold open devices. *Reference NCBC, Handrails Sections 1009.12, 1012, 1607.7; Guardrails Sections 1013.1, 1013.2, 1607.7. Railings shall be replaced with the following elements:*

- a. Handrails – 34" to 38" above tread nosing; 1¼" to 1½" diameter; 1½" wall clearance; extend 12" horizontally beyond top riser & continue to slope the depth of one tread beyond bottom visor.
- b. Guiderails – located along open-sided walking surfaces more than 30" above the floor; 42" ht.; openings less than 4" and a bottom rail or curls that rejects the passage of a 2" diameter sphere.

6. Recycling Rooms: The study includes removal of the tile floors which have elevation 1.5" or more above the corridor floor, installation of a new tile floors, and replacement of the doors and door frames. The location of the mop sink will have to be addressed in order to make the opening ADA Compliant. *Reference NCBC Section 1107.*
7. Rubbish Rooms: Floor will have to be lowered to become at the same level as the re-worked Recycle Room floor. New Chute doors and masonry repairs, and a new door and frame. The openings in Hewlett Hall will have to be enlarged from 2860 to 3070 and rated 60 minutes. *Reference NCBC Section 1107.*

8. Belk and Graham and Hewlett each have one ramp that will receive handrails. In the Graham-Hewlett Connector there are two interior ramps that will receive handrails.
Reference NCBC Sections 1108.2 through 1108.2.4 & 1108.2.6
9. All drinking fountains will be made code compliant. *Reference NCBC Section 1109.5.1 & 1109.5.2.*
10. Vertical pre-finished aluminum chases will be provided (six locations on each dormitory) from finished grade to top of exterior wall to conceal mechanical piping. Note: If a new brick veneer is included in the scope of work, the mechanical piping can be concealed in the masonry cavity.
11. Modify exterior ramp railing to comply with accessible code at the rear of Graham Hall.
Reference NCBC Section 1010.

Chapter 4

Mechanical HVAC Systems

Background

This chapter provides an assessment of the building's mechanical HVAC equipment and systems. Since the buildings are nearly identical, recommendations apply to all buildings, except where specifically indicated otherwise. ASHRAE Handbook Applications Chapter 36, Table 3 provides an estimate of expected equipment life. Due to UNCW's coastal environment, the experience of the UNCW facilities' staff may serve as a better indicator of a particular piece of equipment's service life. The expected impact the coastal environment and discussions regarding UNCW facility experience are included.

Items which require replacement of existing equipment or system component items of which there is a near time concern are categorized as "Imminent Maintenance Items." These items have experienced material decay through time; and represent an immediate concern. They represent the minimum that would need to be addressed for continued operation of the facility.

Where code issues, life safety issues, or requirements of the jurisdictional authority are pertinent to the replacement of mechanical equipment, proposed modifications are indicated under the category "Necessary, Mandated, or Legally Required Upgrades." These modifications are limited to existing installation which did not conform to the building code at the time of construction, to revisions to the building code after construction, or to present requirements of the State Construction Office. Any new equipment or systems will meet the current codes, including the Energy Code and current requirements of the State Construction Office.

Desirable upgrades for mechanical equipment or systems are those that would allow for reduced cost of operation or maintenance, or improved comfort or convenience. Access to maintain mechanical equipment is an important consideration. The University has requested that the study include an order of magnitude estimate of energy savings with modifications that will have significant energy savings.

Mechanical HVAC upgrades identified as "Option Packages Proposed or Requested by the University" provides priced alternatives to bring the building to current and future expectations of the students. One of the options presented in Sud Associates document "Preliminary Assessment of HVAC System Options" involves replacement of the building's localized chilled water plants with a remote centralized cooling plant. With this option, underground distribution piping is required from the central plant to each of the affected

buildings. The advantages of a central system are stated in this reference document. Additionally, this upgrade and other upgrades may be implemented to free the mechanical yard between Graham and Hewlett to allow function as a common area or courtyard. The chiller plant would also impact Galloway Hall. Further investigation of the central chiller plant is a major study in its own right and is beyond the scope of this study.

There would be considerable changes to the building(s) to upgrade for ADA requirements. With such changes, there is the opportunity to consider alternate, smaller, and more flexible HVAC systems. Alternate HVAC systems, such as variable refrigerant flow (VRF) systems are the system of choice if the buildings are modified to comply with the ADA requirements.

Existing Conditions:

1. The cooling plant at Graham consists of a 60 ton water cooled dual compressor McQuay Chiller and a 2007 BAC Model FXT-087 cooling tower. The original 1985 chiller underwent a major rebuild with parts, heat exchanger and compressors in 1997. HVAC facilities representative, Alton Batts stated that parts were no longer available for this chiller. A sudden failure will require costly emergency action to avoid a long cooling outage. The chiller has served beyond the AHRAE estimated service life of 20 years for packaged water cooled reciprocating chillers.

The cooling plant at Hewlett consists of a 60 ton water cooled Carrier Chiller manufactured in 1997, and a BAC Model FXT-087 cooling tower. Mr. Batts, stated that this chiller has had repeated failures on its compressors and inspection confirmed this to be the case. This chiller is not recommended for immediate replacement because it can be maintained with new and available parts.

The BAC model FXT-087 cooling towers at Graham and Hewlett are of galvanized construction with trademark BAC "Baltibond" corrosion resistance package. These were replaced in 2007 and are expected to have several

years of remaining service life. On both units the wetted surfaces of the tower packing was covered with algae; so, it is recommended to check on the chemical feed system. The ASHARE estimated service life for cooling towers constructed of



Figure 4.1: Cooling Tower with Algae Formation.

galvanized metal is 20 years. However, this does not include the effect of a coastal environment (See figure 4.1).

The cooling plant at Belk Hall consists of a York air cooled chiller manufactured in 1995. There were no indications of repair or replacement work indicated in the inspection or by maintenance records on this equipment. The estimated service life by ASHRAE is 20 years. The air cooled condenser is subject to the salt sea water atmospheric conditions; so, unless special coatings were provided for in the original design and selection, the actual life could be adversely affected.

2. The heating plants at Graham and Belk consist of a 30 Boiler Horse Power (1,040,250 BTU/H) and a 80 Boiler Horsepower (2,678,000 BTU/H) Kewanee cast iron boiler, respectively. Both boilers are fitted with heat exchangers to heat domestic water. Cast iron boilers have very long service life (30-35 years) and specific maintenance problems are not indicated. The heating plant at Hewlett was upgraded in 2001 with a Lochinvar Power Fin, a high efficiency copper fin boiler.
3. Chilled and heating hot water is distributed to building air handlers via central distribution pumps. These have been maintained and replaced over time by the University. The pumps are without variable speed drives.
4. Air handlers to condition student bedroom suites are supplied by a four pipe heating hot water and chilled water system. There are 24 air handling units (AHUs) per building, six on each of the four floors. The units are located in relatively tight mechanical closets. Figure 4.2 shows a typical unit in Belk Hall. These units were installed at time of original construction of the buildings, and have served beyond the published value of expected life for water coils (20 years). The unit's condensate drain pans are corroded and there have been several work orders to address leaking drain pans. The units are fitted with pneumatic 3-way valve control packages. The chilled water control valves and piping was



Figure 4.2: Belk Hall – Air Handler for Suites, in Mechanical Closets

found un-insulated which is indicative of repetitive repair and replacement at the unit controls. At Graham and Hewlett there are no space thermostats. The hot and chilled water distribution piping (risers) is steel and galvanized steel at the connections at the units. Mr. Batts stated that these risers have been subject to rust and through wall failure and need to be replaced. Replacement of the first floor HHW and CHW mains is not as an immediate concern and could be held until coordinated with other work. Failures in these mains would be indicated by frequency of water damage on the ceiling tile.

At all three buildings, the supply and return ducting for the suites units is located above the bath and toilet area plaster ceiling and within the soffit at the inside wall of the bedrooms. The ducting is lined and is expected to be of original construction. The lining in return ducts in the two study rooms in each suite is very dirty (see Figure 4.3) and the ducts should be replaced with the units. At Belk Hall, the returns and outdoor air supply stub into the mechanical closet, with this closet serving as a plenum. Ducted outdoor air and returns provide greater assurance that smoke would not be transported from the mechanical room to living areas (NCSBC Mechanical 602.2.1) and ducting is



Figure 4.3: Return duct with liner, recommended to be replaced

required by the State Construction Office. The returns and outdoor air are ducted to the unit at Graham and Hewlett Halls. The lining within the supply duct above the bathroom and in the soffits is in reasonable condition (see Figure 4.4). Duct from the original construction is beyond the 30 year service life estimated by ASHRAE.



Figure 4.4: Supply duct with liner, Can be Cleaned and Encapsulated

5. The single story common areas for Graham and Hewlett consist of the front areas as provided in the original construction and a connector between the front areas of these two buildings constructed in year 2000 . The original construction of the front areas of both

buildings are heated and cooled by a small air handler located in depressed area behind the stair access to the upper level floors of the dormitory. The connector is cooled by two Trane air handlers with DX cooling coils manufactured in 1999. The associated condenser units are located adjacent to the brick enclosures for the cooling towers. The condenser unit for Hewlett Hall is oversized for the air handler. Heating is provided to the connector by hot water coils in the VAV boxes. If desired, the DX coils can be replaced with chilled water coils.

6. The elevator machine rooms at all three dormitories and the Fire Pump room for Graham-Hewlett are cooled by late model minisplit systems. The Telecom Rooms located on the first floor at the back of all three dormitories are also cooled by new minisplit systems. Unless these rooms are subject to major renovation, these systems can remain.
7. A third of the roof mounted toilet exhaust fans were found in some stage of repair. The outdoor air supply fans were in satisfactory condition and appeared to be replaced recently. They were not in operation. Mr Batts indicated that the outdoor air fans were shutdown because their operation was causing unwarranted fire alarms. The roof mounted equipment and outdoor air ducting is subject to coastal environment.

Imminent Maintenance:

Recommendations for imminent maintenance are as follows:

1. Replace the 60 ton water cooled chiller at Graham Hall. Provide refrigerant relief and monitor. Replace chilled and condenser water pumps. Provide variable speed drive on chilled water pump.
2. Replace (24) Suite Air Handlers. Include variable speed drives, 2-way valve control packages with remote room mounted thermostats. Provide connection from unit controls to campus building automation system to monitor unit operation and space temperature.
3. Replace the outdoor air riser and return air duct and connect to air handlers. At Belk Hall this will require the rerouting domestic water piping that interferes with ducting. Except for the short sections of supply duct at the unit, the supply duct lining can be cleaned and encapsulated.
4. Replace the exhaust duct risers to connections at the bathroom vents.

5. Replace the six 4-pipe CHW & HHW risers which supply and return from the suite air handling units.

Mandated Upgrades:

There are no mandated upgrades for these buildings.

Desirable Upgrades

1. The University should replace the water cooled chiller at Hewlett Hall. Provide refrigerant relief piping and monitor. The condition of this Carrier Chiller is very similar to that of the McQuay at Graham. Since the Carrier chiller can still be maintained with available parts, this replacement was not indicated as imminent. Replace chilled and condenser water pumps. Provide variable speed drive on chilled water pump.
2. Energy savings can be achieved by replacing the boilers at Graham and Belk, which have cast iron boilers that also provide domestic hot water (DHW) heating. These can be replaced with more efficient boilers and a separate source should be provided for heating DHW. With current operation, when there are no space heating loads, boilers have to be operated at very low part load conditions to provide DHW. See Chapter under Plumbing for further discussion. Condensing boilers with stainless steel heat exchangers provide significantly improved efficiency with lower return water temperatures and less stack loss. The efficiency gains can be significant; particularly, in the moderate winter climate in Wilmington (see representative calculations in the appendix). Replace hot water pumps in all three buildings. Provide variable speed drives on the new pumps.
3. Replace the eight roof exhaust fans.
4. Replace aged air handlers within the Fire Pump room at Belk and the Stair Corridor Mechanical Room at Graham.

University Requested items

Several options are presented in Sud Associates document "Preliminary Assessment of HVAC System Options" one which involves replacement of the building's localized chilled water plants with a remote centralized cooling plant. Underground distribution piping will be required from the central plant to each of the buildings. The advantages of a central system are stated in this

reference document. Additionally, this upgrade and other upgrades may be implemented to free the mechanical yard between Graham and Hewlett to allow it to be used as a common area or courtyard for the students. The chiller plant would also impact Galloway Hall. Further investigation of the central chiller plant is a major study in its own right and is beyond the scope of this study.

Alternatively, changes such as combining the two building's adjacent chillers, changing out the coils on the two air handlers serving the Connector, and moving the cooling towers also could bring this area up to the requirements for a courtyard. Again, further investigation of this issue is beyond the scope of this report.

ADA Accessibility Items

There would be considerable changes to the building(s) to upgrade for accessibility, ADA requirements. With such changes, it is necessary to consider alternate, smaller, and more flexible HVAC systems. Variable refrigerant flow (VRF) systems are the system of choice if the buildings are modified to comply with the ADA requirements, and are used for the cost estimates.

Chapter 5

Electrical Power, Lighting, and Building (Data/Phone/Security) Systems

Background

An evaluation of the existing electrical systems was conducted for Belk and Graham-Hewlett residence Hall buildings. The electrical systems described in this chapter include the lighting, power distribution and all other building systems except for the fire alarm system, which is covered in Chapter 7.

This chapter responds to the condition of the electrical systems but also answers to the requirements of the Architectural and Mechanical Assessment Considerations that the electrical systems serve.

The proposed layout for compliance with ADA as shown in figure 3.5 maintains the locations of the electrical risers and closet at the center of the buildings. The presented cost estimate assumes that the existing line and low voltage risers and branch raceways will be reused. Alternate layouts insensitive to the existing infrastructure will negatively affect the associated cost estimates with their need to recreate the required pathways.

Existing Conditions

General and Task Lighting

In the Graham-Hewlett Dorms the majority of linear fluorescent light fixtures have original surface mounted linear wrap-around prismatic lens type fixtures with T12 lamps and inefficient magnetic ballasts. The first floor corridor fixtures; however, were retrofitted with new T8 luminaires during the renovation of the fire protection system in 2009.



Figure 5.1 Graham-Hewlett Typical Fixture with T12 Lamp system

The task lighting built into the studies' furniture is based on linear under cabinet fixtures with T12/30W lamps and magnetic ballasts.

As of July 1, 2010, Federal energy legislation such as EPCA (The Energy Policy Act) requires that the magnetic ballasts used in many T12 fixtures will no longer be produced for commercial and industrial applications. Also, many T12 lamps were phased out of production beginning in July 2012.

The Graham-Hewlett Connector was built with T8 linear fluorescent prismatic troffers and linear cove lights supplemented with less efficient CFL downlights in the Main Lobby. The lack of glazing in public spaces does not offer opportunities for daylight harvesting.

Most light fixtures in Belk Hall were replaced with T8 lamps and electronic ballasts in 2009. Some lenses and retainer clips of the surface mounted wrap-around prismatic lens type fixtures however seem to be failing prematurely.

The following is an evaluation of how the NC Energy Conservation Code and the NC Accessibility Code affect the dorms' light fixtures and lighting distribution



Figure 5.2 Belk Hall Fixture with T8 Lamp System

The current layout exceeds the stringent NC Energy Conservation Code's light power density LPD allowance of 0.58 W/ft² if evaluated by the 'building area' method. This is largely due to the unusually large study areas with twice the LPD of bedrooms. The 'space by space' method is more restrictive as it doesn't allow the trade of LPD points among spaces. It is however the most viable path to meet the requirements with the existing space layout. The restroom LPD is not met and will require redesigning under this approach.

The reconfiguration of the space per Figure 3.5 meets the NC Accessibility code, reduces the amount of lighting intensive study areas and has the potential to meet NC Energy Code per the advantageous 'building area' method.

Emergency Lighting and Signage

The emergency lighting consists of night-light circuits with linear fluorescent troffers in the first floor corridors and wrap-around prismatic lens fluorescent fixtures on the upper floors and stairwells. The luminaires and lamping are obsolete as discussed previously. The fixture spacing and underlying lighting power distribution system, however, is adequate. In the dorms' lobby areas and in the Graham-Hewlett connector the emergency power luminaires alternate with normal power luminaires. All luminaires in the dorms' corridors are on emergency power.

Not all exits are covered by exit signs and additional signs are needed for compliance with the building code. The signs use adequate LED technology and are powered by the emergency generator.

Most of the locations of the existing emergency light fixtures, powered signage locations and associated emergency power distribution can be reused in the current space layout.

A reconfiguration of the space per Figure 3.5 would require the replacement of the emergency lighting system to meet Accessibility code.



Figure 5.3 Hewlett Corridor Emergency Lighting

Lighting Controls



Figure 5.4 Light Switch

All lights except for the corridors and stairs are controlled via toggle switches. The switches are past their useful life of 20 years and are failing. The switches are not the non-teasable type and pose a fire hazard. The NC Energy Conservation code requirements for light reduction controls are not met for the study rooms and for some of the utility spaces that have more than 1 luminaire.

The luminaires serving the corridors and stairs are all on night light circuits. There are currently no energy saving strategies implemented.

Changes in the space layout, i.e. per paragraph Accessibility Items in Chapter 3 will require alterations in the switch locations.

Normal Power

Equipment: The electrical normal power panels date back to the original construction and are past their useful life of 30 years. The electrical panels in Graham Hall are obsolete Federal Pacific/ Reliant panels, which makes it difficult and costly to procure replacement parts. Original field modifications of the MDP at Belk Hall were aimed to accommodate the main breaker. The modifications nullify the panel's UL listing and also pose a hazard due to the lack of clearances at the main breaker lugs.

The original riser configuration was driven by cost and has the draw-back that panel replacements or work on the feeder requires a power outage on all floors of the dorm.



Figure 5.5 Graham Hall Main Service Panel and Meter



Figure 5.6 Typical Feeder Termination

Wiring: The original feeder wiring has thermoplastic THW type insulation in fair condition. Since the original feeders approach their useful life of 40 years the general recommendation is to replace the wiring. A case-by-case evaluation may allow for the feeders to remain in service. I.e. if they show no signs of arcing, corrosion and/or brittle insulation.

Capacity: For today's standards and student expectations the capacity of the receptacle circuits in the bedrooms and studies fall short. Typically two bedrooms or a bedroom and a study share one 20A/1P circuit. Tripping circuit breakers are a nuisance to the students and the staff.

The original circuit breakers serving the bedrooms and studies are not the arc-fault type as required by the State's Electrical Guidelines.

The insulation material of some branch circuit conductors are reported to deteriorate.

The original dry-type step-down transformers and their replacement models are low efficiency 112.5 kVA and 45kVA transformers with 150°C temperature rise. The considerable amount of rejected heat is indicative of the losses. The ambient temperature appears to be high in the Hewlett and Graham electrical rooms, which would negatively affect the electronic equipment such as transfer switches and fire alarm panels.



Figure 5.7 Typical 112.5 kVA Step-Down Transformer

During the heating season the ambient temperatures may rise above the design threshold of 87°F for the electrical distribution system requiring de-rating of circuits and the oversizing of wiring.

Workspace and dedicated electrical space requirements are violated in several instances in the dorms and will have to be corrected with a comprehensive renovation. I.e. Belk Hall panel 2EM.

There are janitor closets and mop sinks in the electrical spaces, which is no longer acceptable to the State Construction Office. Relocation or division of those spaces should be considered during design.

The electrical distribution systems and power riser locations are similar among all buildings reviewed. However, it should be noted that the panels in the electrical closets located in the middle of the buildings serve different loads in Belk Hall and in Graham/Hewlett. Graham and Hewlett Hall panels '2S' are stacked in the center of the building electrical closets and serve 120V loads such as the bathroom receptacles and mechanical closet light sockets and AHUs. The general lighting and receptacle loads are fed from the stacked panels 'C4' and 'R2' located in the Janitor's closet near the back stair towers. In Belk Hall there are two panels across from the hall in the center of the building. The stacked 480Y/277V panels '4A-D' serve the air handlers via individual step-down transformers located in the mechanical closets and all lights on a given floor. Across the halls are the 208Y/120V subpanels '2A1-2D1', which serve all the receptacles in the studies and bedrooms. They are being fed horizontally from the panels '2A-2D' on the same floor in the janitor's closets at the back stair well.

There is a concern that the receptacle branch wiring in Hewlett and Graham Hall was not oversized to accommodate the voltage drop expected with the long runs of over 210 feet i.e. in the bedrooms located close to the front stair wells. This would be a violation of the NEC and a potential hazard to the occupants with the delayed action of the associated circuit breakers during a fault.

It was noted that the Belk Hall record drawing's power riser E-604 is incorrect in configuration and labeling. Significant effort was required to assess the as-build conditions.

Emergency Power

Belk Hall and Graham-Hewlett Hall emergency power distribution systems were brought up to code with the introduction of the fire protection system and associated fire pumps. The dorms are fed by permanently installed diesel generator sets. The emergency power transfer switches are located in the Electrical rooms adjacent to the elevator shaft on the first floor. The generator and transfer switch serving Graham and Hewlett Halls are located at Graham Hall.

Belk Hall has separate emergency and standby distribution systems to separately serve life safety and other standby loads. The standby transfer switch is located in the Belk Hall Mechanical Room adjacent to the Main panel. There are no standby or legally required loads and distribution systems in the Graham-Hewlett dorms. The generators serve life safety type emergency loads via a dedicated distribution system, which meets the national electrical code.

Systems

Telephone

The original design combined the telecommunications and mechanical systems into the same spaces. The environmental conditions of the mechanical and boiler rooms are not suitable for active or passive telecom equipment or terminations. The original telephone services were replaced with new underground trunclines to the mechanical spaces in the early 2000s. The protector and punch-down blocks are mounted on a sheet of plywood in the mechanical/boiler rooms. The plywood appears to have no fire resistance markings and the access to the telecom boards are restricted by mechanical equipment and piping. The telephone drops are fed from the Mechanical Room via original in-slab conduits to 12x12 pull boxes in the dorm's ceilings, from which individual ½" conduits serve the individual telephone outlets in the bedrooms. The telephone wiring in the buildings appears to be original cat3 cables. The telephone system is reported to be functional without any major drawbacks. The usage of these landlines in the dorms has declined over the years. However, the front desks, the vending machines and fire alarm systems depend on this system.



Figure 5.8 Graham-Hewlett Transfer Switch

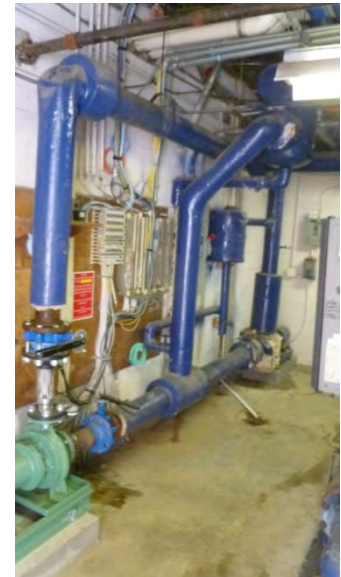


Figure 5.9 Telephone Backboard behind Mechanical Equipment

Data



Figure 5.10 Telephone and Data Equipment in Mechanical Space



Figure 5.11 Typical horizontal cabling at MDF

The original building had no provisions for a data infrastructure. One of the early data system upgrades for the dorms was done in the early 2000s. It included an underground fiber optic cable to the mechanical spaces. The environmental conditions of the mechanical and boiler rooms are not suitable for active or passive data equipment or terminations. Graham and Hewlett Halls have a few switches and other active equipment mounted to a plywood data backboard and on plywood shelves in the mechanical spaces.

New data outlets, switches and wireless access points were added in the study areas of each suite. The original data equipment was housed in the unconditioned mechanical spaces. This situation was remedied in 2009 by using the 2nd floor Housekeeping Closet as the main distribution frame MDF. This strategic location eliminated the need for any IDFs on the adjacent floors to meet the required maximum cable segment length of 100 meters for the horizontal copper cable plant. The fiber optic service line was extended from the 1st floor Mechanical spaces to the MDF and dedicated cooling was added to the housekeeping closet. The new cable plant utilizes the new soffits in the bedrooms as horizontal pathways.

At Graham and Hewlett pathways were also extended from the Tele/Data chases in the Studies to the

Bedrooms. At Belk Hall the soffits were replaced and extended for the fire protection system in 2009 and sleeves and access doors were installed for the maintenance of the cable plant.

The data systems are adequate with one gigabit/s fiber-optic connections to the buildings and 100 megabyte/s upload and download capacity for each drop. The data system is reported to be functional without any major drawbacks. The wireless coverage in the building is adequate but the University expressed the wish to extend the coverage to the exterior of the building.



Figure 5.12 Typical MDF



Figure 5.13 Typical Bedroom drop from Study at Graham-Hewlett

CaTV



Figure 5.14 Typical CaTV Splice

Each of the dorms is served by Time Warner Cable for cable services. Each bedroom has two CaTV drops and each study has one CaTV drop served from the ½" coaxial trunk riser line via coax cable splitters located in the 2nd floor housekeeping closet. The horizontal pathways are shared with the data lines.

Security

The Security system consists of card reader systems at the main entrances and propped door alarms at the secondary egress locations.

Security camera systems were added in the public spaces including the elevator cabs. The security cameras are IP based, terminate in the 2nd floor MDF room and use the building's data backbone for what appears to be an off-site digital video recorder DVR system.

The University wants to replace the keyed access system with an access control system including card readers at the studies and bedrooms.

Approaches and Recommendations:

The recommendations are prioritized per the Assessment Considerations paragraph in Chapter 1.

Description	Priority
Imminent Maintenance Items	1
Necessary, Mandated, or Legally Required Upgrades	2
Desirable Upgrades	3
Other Packages Proposed or Requested by the University	4

The priorities are referenced in the Summary of Estimated Construction Cost schedule. Since the buildings are very similar, any differences between the dorms and connector are mentioned within the paragraphs.

This report distinguishes two scenarios for the renovation of the dorms: The less invasive ‘Non-ADA’ renovation, which largely maintains the existing space layout and includes the replacement of the mechanical units, duct work, panels and feeders in place. The more comprehensive renovation includes the ‘Full ADA’ compliance, which requires a new ADA space layout. The full ADA renovation offers opportunities for a more comprehensive improvement of the electrical infrastructure as well.

The comprehensive renovation of the dorms to meet the NC Accessibility Code may require a radically different layout of the building. However, careful considerations should be given to maintain the existing electrical and systems riser locations and pathways to reduce cost and impact. For the ADA package this study is based on the proposed layout for compliance with ADA as shown in figure 3.5. That layout maintains the locations of the electrical risers and closet at the center of the buildings. The presented cost estimate assumes that the existing line and low voltage risers and a majority of the raceways serving branch circuits will be reused. Alternate layouts aiming to replace the existing infrastructure will negatively affect the associated cost estimates.

General Lighting

The dorms with their current layout exceed the NC Energy Conservation Code lighting power density (LPD) allowance of 0.58 W/ft² if evaluated by the ‘building area’ method. This is mainly due to the generously sized study areas with their higher LPD.

Existing Space Layout

1) Imminent

Effective July 14, 2012, the production of most T12 florescent lamps are being phased out as mandated by the 2009 Department of Energy General Service Lamp legislation.

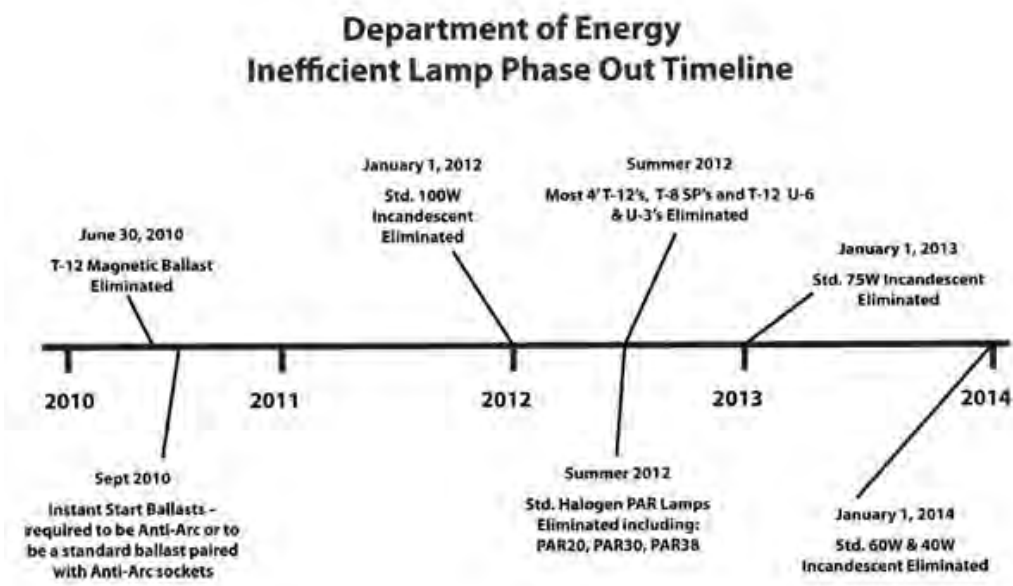


Figure 5.15 Insufficient Lamp Phase Out Timeline

Replace all general and task light fixtures based on T12 lamp/ballast systems with fixtures based on efficient T8 or T5 lamp/ballast systems.

2) Mandated

The NC Energy Conservation Code has to be adhered to with alterations affecting 50% or more of the luminaires in the space. An exception is granted for retrofitting the existing fixtures with new lamps and ballasts. Due to the yellowing of the prismatic lenses and other depreciation factors affecting light output and efficiency we recommend replacing the existing light fixtures with similar prismatic fixtures based on extended performance T8 lamps and high performance ballasts for a minimum 88 mean lumens per watt efficiency to achieve the required lumen power density.

With the existing space layout the dorms can be largely brought into compliance with the NC Energy Conservation Code per the 'space-by-space' method while keeping the majority of the fixture locations and underlying power distribution. An area of concern are the bathrooms, which will require a careful lighting design to accommodate the low ceilings, low surface reflectances and the many recesses for stalls and sinks.

2) Desirables Upgrades

Replacement of failing retainer clips and lenses in Belk Hall.

New ADA Space Layout

The building LPD would be reduced with the new proposed ADA layout per figure 3.5 due to its increased corridor areas and reduced energy intensive study areas, allowing the advantageous 'building area' method to be approached with the lighting design. The luminaire locations and underlying distribution system in the bedrooms and utility spaces may remain.

A new normal power layout and associated raceway system would be required if the center corridor was replaced with the gang bathrooms as described in the Accessibility Items in Architectural Chapter 3 per Figure 3.5.

Emergency Lighting

1) Imminent

Replace all light fixtures based on a T12 lamp/ballast system with fixtures based on efficient T8 or T5 lamp/ballast systems as described for the General Lighting above.

Add emergency lighting and signage for full emergency egress coverage per the Life Safety Code NFPA 101.

Lighting Controls

1) Imminent

Replace the original light switches with specification grade type in the bedrooms.

2) Mandated

Add occupancy sensor switches in the studies and utility spaces to meet the energy code requirements. Set the function to "Manual On / Automatic Off" for vacancy sensing.

3) Desirable

Add Solartubes and daylight controls for the top floor corridors and studies with future roof replacements.

Add multi-level lighting control system to reduce base lighting in common spaces from emergency lighting levels to stumble/security lights during times of reduced activity.

4) New ADA Space Layout

Full compliance with ADA requirements will require a significant redesign of the building. The redesign will address the above shortcoming and code violations.

Normal Power

1) Imminent

Replacement of the service and distribution equipment including the dry type transformers. The transformer efficiency should be selected based on their Annual Load Factor.

Maintain existing riser locations and configurations.

Maintain concealed raceways for re-use.

Add receptacle circuits in bedrooms and studies. Add feeders and panels as required to support the additional receptacles. A minimum of one receptacle circuit per double occupancy room is recommended to accommodate the student's needs. Evaluate need for additional transformer capacities. Preferred location for the receptacle panels is in the center electrical closets to limit voltage drop and required wire gauge.

Replace deteriorated branch and feeder conductors where required.

Maintain the exhaust system in the electrical rooms and increase ventilation rate as required to avoid overheating the electrical spaces.

Investigate wire gauge and voltage drop at the end of the long branch circuits in Graham and Hewlett Halls. Replace with larger gauge wiring.

2) Mandated

Provide arc-fault circuit breakers in the dorm except for the bathroom and kitchen areas.

With a renovation or unscheduled replacement of transformers the transformer efficiency needs to be selected based on their Annual Load Factor as mandated by the NC State Construction Office.

Relocate existing equipment as required to meet the workspace and dedicated electrical clearance requirements.

Separate janitorial and electrical use of the current Janitor's closet.

3) New ADA Space Layout

Upgrade the riser layout to feed panels individually.

Emergency Power

New ADA Space Layout

A new emergency power distribution system would be required if the center corridor was replaced with the gang bathrooms as described in the Accessibility Items in Architectural Chapter 3 per Figure 3.5.

The designated ADA bedrooms may require emergency power for bed-shakers and other notification devices.

Systems

Telephone, Data, IT

Existing Space Layout

2) Mandated

Replace non-fire-rated plywood with fire-rated type.

3) Desirable

Relocate or protect telecom terminations, protector blocks, data and fiber optic terminations, switches and other active IT equipment from possible spray, oil mist and other detritus common to mechanical rooms.

Extend the wireless (WiFi) coverage beyond the confines of the buildings into the areas of general exterior circulation

4) New ADA Space Layout

The recent renovation of the telecommunications infrastructure in the dorms is expected to generally integrate well with the ADA renovations. At Graham-Hewlett Hall there may be drops currently routed through the telecom chase in the studies that will be required to be re-routed to accommodate the new ADA layout. The majority of the tele/data drops are routed through the soffits in the bedrooms, which would remain largely intact.

Security

3) Desirable

Replace the keyed system with an electronic access control system including card readers at the suites and bedrooms.

Chapter 6

Plumbing Systems

Background

This chapter provides an assessment on all building plumbing systems; domestic water, drain waste, and vent, and storm drainage. Plumbing fixtures and trim for all buildings are recommended to be replaced as “Imminent Maintenance Items.” Any new equipment or systems will meet the current codes, including the Energy Code and current requirements of the State Construction Office.

Desirable upgrades for plumbing equipment are those that would allow for improved appearance or convenience, or reduced cost of operation or maintenance. Modifications are proposed to replace systems or equipment with that which will have higher efficiency and reliability.

The bathrooms did not have provisions for the handicapped students in the original design. In the specific instance of these buildings, any attempts to renovate or upgrade the bathrooms will trigger requirements that they comply with the ADA. This will require expansion of the bathrooms and significant modifications to the floor plan of the buildings. If the University decides or is required (by law through the SCO) to make the dormitories accessible, major modifications are required. Because of the scope of such modifications, they have been evaluated under a separate category. Under this category, the assessment explores and presents a possible revision to the building layout that would make these buildings similar to some of the newer dormitories on the campus (e.g. International and Cornerstone Halls).

Imminent Maintenance and Desirable Upgrades

1. At Graham and Belk, DHW is heated from heat exchangers within the space heating boilers connected with a 600 gallon storage tank. This requires year round operation at low part loads of large inefficient heating boilers. This operation is recommended to be discontinued to reduce energy costs.

At Hewlett, a Lockinvar Power Fin (copper fin tube) water heater was installed in 2001 to heat the domestic water storage tank. The service life of a copper fin tube boiler is estimated to be 15-20 years (data not provided in ASHRAE).

Domestic water heating may be provided with or without storage (instantaneous in the case of heating without storage). Domestic water heating with storage may have the tank integral with or separate from the tank (as done at Hewlett). When stored, the water temperature needs to be 140F for health concerns. A mixing valve is necessary to reduce the temperature prior to safe use by the building occupants. Due to the high cost of instantaneous water heaters, the cost estimates are for a new condensing tank type water heater(s) to supply the existing storage tank and new water temperature mixing valve. A mixing valve is required at Hewlett where the water heater and storage tank is to remain.

2. The plumbing piping systems are similar at all three buildings. The domestic water systems and the plumbing drain, waste, and vent systems for all three buildings are constructed with copper. The plans indicate the drain, waste, and vent systems to be "Sovent" systems. Despite the long life of the existing copper plumbing systems, there does not appear to be a need for piping replacement. The original building construction with copper water and waste piping has lasted and continues to last over the long building life. This is as concluded by discussions with Mr. Eddie Kelly, the UNCW Facilities Plumbing Supervisor, and as verified by video piping inspections at all three dormitories.
3. Mr. Kelly indicated that the plumbing valves were leaking through and he recommended that all of these are to be replaced. Also, the UNCW Facilities Engineering staff requested that isolation valves be provided at each floor to allow for maintenance. Replacement of and additional valves are priced in the Priorities Programming Spreadsheet.
4. There are repeated failures of the shower pans (5-6 per year) as documented in maintenance reports. Often these failures occur at the joint between the shower drain and the drain pan. Particular attention and detail is required for the design at this joint. The same applies to floor drains within bathrooms (or wet) floors.



Figure 6.2: Typical Water Closet in Suite Bathrooms

The architectural upgrades include the replacement of the shower pans. Plumbing work will consist of new shower drain and connection to existing waste system. The floor drain in each bathroom also needs to be replaced.

5. All plumbing fixtures and trim, faucets, mixing valves, flush valves, supplies, shower heads need

to be replaced. Drains and tailpieces and supplies should be fitted with insulation. Fixtures should be replaced or modified to make cross connection impossible.

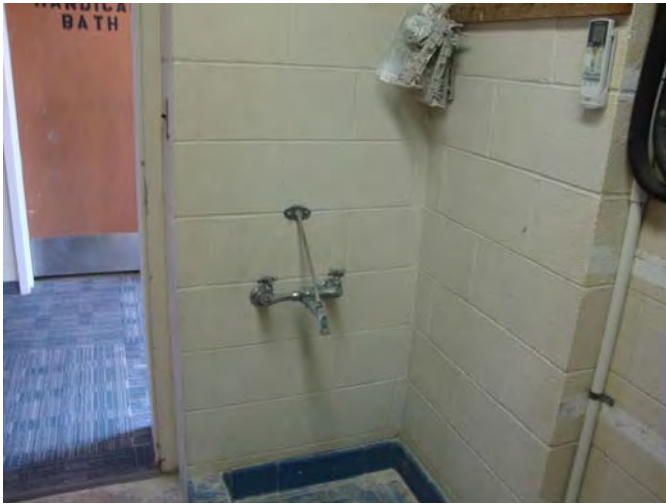


Figure 6.3: Mop Sink can siphon from contaminated source.

6. The roof drain system consists of roof leaders which offset to drop through the exterior walls at each of the buildings. A portion of these roof leaders were inspected by camera, accessed from roof drain openings at roof. Video inspections indicated that the ductile iron leaders have been broken at ground level. This is consistent with the report in

the civil site investigation. Only at one location, did the study team find the ductile iron leader replaced with PVC. Failure of the drain leader within the wall is not a common occurrence for these building; but, failures as such require major repair effort.

Accessibility (ADA)

1. The floor plan will have to be revised to make these dormitories accessible (see Figure 3.1 in the Architectural Systems). One possible layout would relocate the suite bathrooms to a gang arrangement centered in the building between two corridors. The existing domestic water and plumbing drain waste and vent piping (DWV) systems would be demolished and new systems installed to connect new locations of the bath, lavatory and toilet fixtures. Connections would be made to the present locations of the building drains for the DWV piping and the domestic water supply for water piping. New plumbing fixtures and trim is priced under "Imminent Maintenance", and would not constitute an additional cost burden for the renovation for ADA compliance. Cost estimates are provided in the Priorities Programming spreadsheet.

Chapter 7

Life Safety Systems (Fire Alarm/Sprinkler)

Background

1. All three buildings have been fitted with new sprinkler and fire alarm systems. These systems should stand as is, unless the existing floor plans are to be revised (in the case of upgrade to ADA). In this case, fire alarm devices, fire alarm wiring, sprinklers, and sprinkler branch lines would be affected.
2. The sprinkler mains are located in the bedroom soffits; and, as the bedrooms are not shown to be demolished in scheme for ADA upgrade, these may remain. The sprinklers would be relocated and branch lines from the mains to connect to the sprinklers rerouted.
3. The fire alarm systems for Graham Hewlett Halls and Belk Hall were renovated in 2008 and 2009 respectively, passed the state inspection and are reported to function without any major problems. The Graham Hewlett fire alarm control panel FACP is a Simplex Grinnell Model 4100U Fire Control Center. The Belk Hall FACP is a Notifier Panel.

A major revision of the building i.e. to bring the layout into full compliance with the NC Accessibility Code will require a redesign of the fire alarm systems.

Chapter 8

Conclusions

General:

This study performed an assessment and makes recommendations for the site and building architectural and engineering systems at the Belk and Graham-Hewlett Residence Halls. It includes the following systems:

Civil Site Systems

Architectural Systems

Heating, Ventilating and Air Conditioning Systems (HVAC)

Lighting, Electrical power and Building Systems (Data/Phone/Security)

Plumbing Systems

Life Safety Systems (Fire Alarm/Sprinkler)

The systems are discussed in their respective chapters. The chapters include discussions on specific shortcomings and recommendations.

The list of feasible modifications to address the deficiencies identified during the assessment and the University's priorities has been developed. The modifications have been prioritized as follows:

<u>Description</u>	<u>Priority</u>
Imminent Maintenance Items	1
Necessary, Mandated, or Legally Required Upgrades	2
Desirable Upgrades	3
Other Packages Proposed or Requested by the University	4

Preliminary budget costs for the identified modifications are separated by discipline and provided in a spreadsheet format. This report and spreadsheet aim to act as a roadmap for costs, strategies, and options for renovations to the Belk and Hewlett-Graham residence halls.

The summary sheets from the spreadsheet (Priority Programming Spreadsheet) are presented in Tables 8.1, 8.2 and 8.3. Table 8.1 provides the results for the site. Tables 8.2 and 8.3 present the results for Belk Hall and Graham-Hewlett Halls, respectively. Cost estimates are provided for priorities; imminent maintenance, necessary/mandated, and desirable upgrades. Cost estimates under these categories are not cumulative; pricing for

necessary/mandated or preferred will not include or overlap with pricing for imminent maintenance. A complete listing of cost items can be found in the Appendices.

Items which require replacement of existing equipment or system component items of which there is a near time concern or life safety issue are categorized as “Imminent Maintenance Items.” These items have experienced material decay through time; and represent an immediate concern. They represent the minimum that would need to be addressed for continued operation of the facility. “Necessary Upgrades” are those items of which there is a longer term need to replace, a code issue, or a requirement to support code work from another discipline. Upgrades which pertain to compliance with existing building codes may be subcategorized as “Mandated or Legally Required Upgrades.” Such upgrades would be required with major renovations to make conformance to the present building codes or construction requirements of the building code officials (State Construction Office). Included in these are upgrades to meet the NC Energy Conversation Code in which compliance would positively impact the cost of building operation.

Desirable Upgrades offer building enhancements which would not be demanded by the present Building Code or the Jurisdictional Authority. Examples would be replacement of inefficient equipment or systems, aesthetic improvements, or improvements to space function.

“Other packages requested by the University” present renovations which the University has indicated an interest. These include canopies above the doors exiting Graham and Hewlett into the courtyard and a Card Key System for all three dormitories.

As discussed earlier, Belk, Graham, and Hewlett Residence Halls were constructed prior to the ADA, and accessibility provisions were not included in the original design. For State owned buildings, the code is administered and enforced by the State Construction Office (SCO). The SCO does not mandate major renovations to existing buildings solely for the purpose of complying with the ADA; however, if upgrades or renovations are initiated, systems or components that are renovated or upgraded have to be made compliant with the ADA. In the specific instance of these buildings, any attempts to renovate or upgrade the bathrooms will trigger requirements that they comply with the ADA. This will require expansion of the bathrooms and significant modifications to the floor plan of the buildings. If the University decides or is required (by law through the SCO) to make these dormitories accessible and comply with the accessibility code, major modifications will be required. Because of the scope of such modifications, they have been evaluated under a separate category. Under this category, the Assessment explores and presents a possible revision to the building layout that would make these buildings similar to some of the newer dormitories (e.g. International and Cornerstone Halls) on the campus.

To facilitate the presentation of the results, Tables 8.2 and 8.3 have two parts. The first part presents renovation of existing building with comparable architectural and engineering systems. The entire building will not be made compliant with ADA. The systems or components that are renovated or upgraded will be made compliant. The second part presents major renovations to make the entire dormitory compliant with ADA.

TABLE 8.1
University of North Carolina Wilmington
Site Upgrades Evaluation

Summary of Estimated Construction Costs by Priority

October, 2012

Site Work	Priorities			
	Imminent Maintenance (1)	Scheduled Maintenance (2)	Desirable Upgrades (3)	Packaged Options (4)
Site Upgrades in Vicinity of Belk Hall	\$46,000	\$3,000	\$4,000	\$0
Site Upgrades in Vicinity of Graham-Hewlett Hall	\$22,500	\$2,500	\$1,000	\$9,000
General Site Upgrades				\$60,000
Totals	\$68,500	\$5,500	\$5,000	\$69,000

TABLE 8.2
University of North Carolina Wilmington
Belk Hall Upgrades Evaluation

Summary of Estimated Construction Costs by Priority

October, 2012

Belk Hall	Priorities								
	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 2.	Total for Complete Renovation of Existing Building with Comparable Architectural and Engineering Systems	Imminent Maintenance, ADA (1)	Necessary, Mandated, ADA (2) Note 1.	Desirable Upgrades ADA (3) Note 2.	Additions Specific to ADA Note 3.	Summation of ADA and Other Work Scope for Complete Renovation of Building Note 4.
Architectural	\$1,005,504	\$129,333	\$434,690	\$1,569,526	\$973,800	\$78,873	\$357,740	\$1,777,716	\$3,188,129
Mechanical	\$664,750	\$0	\$306,000	\$970,750	\$0	\$0	\$50,000	\$963,250	\$1,013,250
Electrical	\$1,433,750	\$133,750	\$112,500	\$1,680,000	\$0	\$0	\$0	\$1,956,250	\$1,956,250
Plumbing	\$288,500	\$8,000	\$46,875	\$343,375	\$33,500	\$0	\$46,875	\$444,875	\$525,250
Fire Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$278,750	\$278,750
Totals	\$3,392,504	\$271,083	\$900,065	\$4,563,651	\$1,007,300	\$78,873	\$454,615	\$5,420,841	\$6,961,629

Notes:

1. Necessary, Mandated Upgrades are in Addition To and Do Not Include Imminent Maintenance Items.
2. Desirable upgrades are in Addition To and Do Not Include Imminent Maintenance or Necessary and Mandated Upgrades.
3. Work scope is specific to ADA and does not include imminent maintenance, other necessary or mandated, or desirable renovations.
4. ADA Package plus imminent maintenance, necessary/mandated and desirable upgrades.

TABLE 8.3
University of North Carolina Wilmington
Graham-Hewlett Hall Upgrades Evaluation

Summary of Estimated Construction Costs by Priority

October, 2012

Graham-Hewlett	Priorities					Summation of ADA and Other Work Scope for Complete Renovation of Building Note 4.			
	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 2.	Total to Renovate Existing Building with Comparable Architectural and Engineering Systems	Imminent Maintenance, ADA (1)		Necessary, Mandated, ADA (2) Note 1.	Desirable Upgrades ADA (3) Note 2.	Additions Specific to ADA Note 3.
Architectural	\$1,969,394	\$381,525	\$1,885,569	\$4,236,488	\$1,937,690	\$171,825	\$1,648,035	\$3,337,275	\$7,094,825
Mechanical	\$1,371,500	\$0	\$792,000	\$2,163,500	\$0	\$0	\$85,000	\$1,926,500	\$2,011,500
Electrical	\$2,867,500	\$267,500	\$225,000	\$3,360,000	\$0	\$0	\$0	\$3,912,500	\$3,912,500
Plumbing	\$577,750	\$16,000	\$61,250	\$655,000	\$67,750	\$0	\$61,250	\$889,750	\$1,018,750
Fire Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$557,500	\$557,500
Totals	\$6,786,144	\$665,025	\$2,963,819	\$10,414,988	\$2,005,440	\$171,825	\$1,794,285	\$10,623,525	\$14,595,075

Graham	Priorities					Summation of ADA and Other Work Scope for Complete Renovation of Building Note 4.			
	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 2.	Total to Renovate Existing Building with Comparable Architectural and Engineering Systems	Imminent Maintenance, ADA (1)		Necessary, Mandated, ADA (2) Note 1.	Desirable Upgrades ADA (3) Note 2.	Additions Specific to ADA Note 3.
Architectural	\$1,000,549	\$189,183	\$505,694	\$1,695,425	\$968,845	\$84,333	\$376,814	\$1,694,603	\$3,124,594
Mechanical	\$730,750	\$0	\$363,500	\$1,094,250	\$0	\$0	\$55,000	\$963,250	\$1,018,250
Electrical	\$1,433,750	\$133,750	\$112,500	\$1,680,000	\$0	\$0	\$0	\$1,956,250	\$1,956,250
Plumbing	\$288,500	\$8,000	\$46,875	\$343,375	\$33,500	\$0	\$46,875	\$444,875	\$525,250
Fire Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$278,750	\$278,750
Totals	\$3,453,549	\$330,933	\$1,028,569	\$4,813,050	\$1,002,345	\$84,333	\$478,689	\$5,337,728	\$6,903,094

Hewlett	Priorities					Summation of ADA and Other Work Scope for Complete Renovation of Building Note 4.			
	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 2.	Total to Renovate Existing Building with Comparable Architectural and Engineering Systems	Imminent Maintenance, ADA (1)		Necessary, Mandated, ADA (2) Note 1.	Desirable Upgrades ADA (3) Note 2.	Additions Specific to ADA Note 3.
Architectural	\$968,845	\$189,183	\$539,023	\$1,697,050	\$968,845	\$84,333	\$430,369	\$1,642,673	\$3,126,219
Mechanical	\$640,750	\$0	\$428,500	\$1,069,250	\$0	\$0	\$30,000	\$963,250	\$993,250
Electrical	\$1,433,750	\$133,750	\$112,500	\$1,680,000	\$0	\$0	\$0	\$1,956,250	\$1,956,250
Plumbing	\$288,500	\$8,000	\$14,375	\$310,875	\$33,500	\$0	\$14,375	\$444,875	\$492,750
Fire Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$278,750	\$278,750
Totals	\$3,331,845	\$330,933	\$1,094,398	\$4,757,175	\$1,002,345	\$84,333	\$474,744	\$5,285,798	\$6,847,219

Connector	Priorities					Summation of ADA and Other Work Scope for Complete Renovation of Building Note 4.			
	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 2.	Total to Renovate Existing Building with Comparable Architectural and Engineering Systems	Imminent Maintenance, ADA (1)		Necessary, Mandated, ADA (2) Note 1.	Desirable Upgrades ADA (3) Note 2.	Additions Specific to ADA Note 3.
Architectural	\$0	\$3,160	\$840,853	\$844,013	\$0	\$3,160	\$840,853	\$0	\$844,013
Mechanical (Note 5)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Electrical (Note 5)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Plumbing	\$750	\$0	\$0	\$750	\$750	\$0	\$0	\$0	\$750
Fire Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Totals	\$750	\$3,160	\$840,853	\$844,763	\$750	\$3,160	\$840,853	\$0	\$844,763

Notes:

1. Necessary, Mandated Upgrades are in Addition To and Do Not Include Imminent Maintenance Items.
2. Desirable upgrades are in Addition To and Do Not Include Imminent Maintenance or Necessary and Mandated Upgrades.
3. Work scope is specific to ADA and does not include imminent maintenance, other necessary or mandated, or desirable renovations.
4. ADA Package plus imminent maintenance, necessary/mandated upgrades, and desirable upgrades.
5. Mechanical and Electrical work scope for the Connector are included in the scope for Graham & Hewlett.

APPENDICES

- A. Priorities Programming Spreadsheet**
- B. Annotated Site Plan Referencing Deficiencies at Belk Hall**
- C. Annotated Site Plan Referencing Deficiencies at Graham-Hewlett**
- D. Summary of Historic Utility Usage**
- E. Annual Fire and Safety Inspections**
- F. FCAP Reports on Belk and Graham-Hewlett**

TABLE 8.1
University of North Carolina Wilmington
Site Upgrades Evaluation

Summary of Estimated Construction Costs by Priority

October, 2012

Site Work	Priorities			
	Imminent Maintenance (1)	Scheduled Maintenance (2)	Desirable Upgrades (3)	Packaged Options (4)
Site Upgrades in Vicinity of Belk Hall	\$46,000	\$3,000	\$4,000	\$0
Site Upgrades in Vicinity of Graham-Hewlett Hall	\$22,500	\$2,500	\$1,000	\$9,000
General Site Upgrades				\$60,000
Totals	\$68,500	\$5,500	\$5,000	\$69,000

TABLE 8.2
University of North Carolina Wilmington
Belk Hall Upgrades Evaluation

Summary of Estimated Construction Costs by Priority

October, 2012

Belk Hall	Priorities								
	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 2.	Total for Complete Renovation of Existing Building with Comparable Architectural and Engineering Systems	Imminent Maintenance, ADA (1)	Necessary, Mandated, ADA (2) Note 1.	Desirable Upgrades ADA (3) Note 2.	Additions Specific to ADA Note 3.	Summation of ADA and Other Work Scope for Complete Renovation of Building Note 4.
Architectural	\$1,005,504	\$129,333	\$434,690	\$1,569,526	\$973,800	\$78,873	\$357,740	\$1,777,716	\$3,188,129
Mechanical	\$664,750	\$0	\$306,000	\$970,750	\$0	\$0	\$50,000	\$963,250	\$1,013,250
Electrical	\$1,433,750	\$133,750	\$112,500	\$1,680,000	\$0	\$0	\$0	\$1,956,250	\$1,956,250
Plumbing	\$288,500	\$8,000	\$46,875	\$343,375	\$33,500	\$0	\$46,875	\$444,875	\$525,250
Fire Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$278,750	\$278,750
Totals	\$3,392,504	\$271,083	\$900,065	\$4,563,651	\$1,007,300	\$78,873	\$454,615	\$5,420,841	\$6,961,629

Notes:

1. Necessary, Mandated Upgrades are in Addition To and Do Not Include Imminent Maintenance Items.
2. Desirable upgrades are in Addition To and Do Not Include Imminent Maintenance or Necessary and Mandated Upgrades.
3. Work scope is specific to ADA and does not include imminent maintenance, other necessary or mandated, or desirable renovations.
4. ADA Package plus imminent maintenance, necessary/mandated and desirable upgrades.

TABLE 8.3
University of North Carolina Wilmington
Graham-Hewlett Hall Upgrades Evaluation

Summary of Estimated Construction Costs by Priority

October, 2012

Graham-Hewlett					Priorities				
	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 2.	Total to Renovate Existing Building with Comparable Architectural and Engineering Systems	Imminent Maintenance, ADA (1)	Necessary, Mandated, ADA (2) Note 1.	Desirable Upgrades ADA (3) Note 2.	Additions Specific to ADA Note 3.	Summation of ADA and Other Work Scope for Complete Renovation of Building Note 4.
Architectural	\$1,969,394	\$381,525	\$1,885,569	\$4,236,488	\$1,937,690	\$171,825	\$1,648,035	\$3,337,275	\$7,094,825
Mechanical	\$1,371,500	\$0	\$792,000	\$2,163,500	\$0	\$0	\$85,000	\$1,926,500	\$2,011,500
Electrical	\$2,867,500	\$267,500	\$225,000	\$3,360,000	\$0	\$0	\$0	\$3,912,500	\$3,912,500
Plumbing	\$577,750	\$16,000	\$61,250	\$655,000	\$67,750	\$0	\$61,250	\$889,750	\$1,018,750
Fire Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$557,500	\$557,500
Totals	\$6,786,144	\$665,025	\$2,963,819	\$10,414,988	\$2,005,440	\$171,825	\$1,794,285	\$10,623,525	\$14,595,075

Graham					Priorities				
	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 2.	Total to Renovate Existing Building with Comparable Architectural and Engineering Systems	Imminent Maintenance, ADA (1)	Necessary, Mandated, ADA (2) Note 1.	Desirable Upgrades ADA (3) Note 2.	Additions Specific to ADA Note 3.	Summation of ADA and Other Work Scope for Complete Renovation of Building Note 4.
Architectural	\$1,000,549	\$189,183	\$505,694	\$1,695,425	\$968,845	\$84,333	\$376,814	\$1,694,603	\$3,124,594
Mechanical	\$730,750	\$0	\$363,500	\$1,094,250	\$0	\$0	\$55,000	\$963,250	\$1,018,250
Electrical	\$1,433,750	\$133,750	\$112,500	\$1,680,000	\$0	\$0	\$0	\$1,956,250	\$1,956,250
Plumbing	\$288,500	\$8,000	\$46,875	\$343,375	\$33,500	\$0	\$46,875	\$444,875	\$525,250
Fire Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$278,750	\$278,750
Totals	\$3,453,549	\$330,933	\$1,028,569	\$4,813,050	\$1,002,345	\$84,333	\$478,689	\$5,337,728	\$6,903,094

Hewlett					Priorities				
	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 2.	Total to Renovate Existing Building with Comparable Architectural and Engineering Systems	Imminent Maintenance, ADA (1)	Necessary, Mandated, ADA (2) Note 1.	Desirable Upgrades ADA (3) Note 2.	Additions Specific to ADA Note 3.	Summation of ADA and Other Work Scope for Complete Renovation of Building Note 4.
Architectural	\$968,845	\$189,183	\$539,023	\$1,697,050	\$968,845	\$84,333	\$430,369	\$1,642,673	\$3,126,219
Mechanical	\$640,750	\$0	\$428,500	\$1,069,250	\$0	\$0	\$30,000	\$963,250	\$993,250
Electrical	\$1,433,750	\$133,750	\$112,500	\$1,680,000	\$0	\$0	\$0	\$1,956,250	\$1,956,250
Plumbing	\$288,500	\$8,000	\$14,375	\$310,875	\$33,500	\$0	\$14,375	\$444,875	\$492,750
Fire Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$278,750	\$278,750
Totals	\$3,331,845	\$330,933	\$1,094,398	\$4,757,175	\$1,002,345	\$84,333	\$474,744	\$5,285,798	\$6,847,219

Connector					Priorities				
	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 2.	Total to Renovate Existing Building with Comparable Architectural and Engineering Systems	Imminent Maintenance, ADA (1)	Necessary, Mandated, ADA (2) Note 1.	Desirable Upgrades ADA (3) Note 2.	Additions Specific to ADA Note 3.	Summation of ADA and Other Work Scope for Complete Renovation of Building Note 4.
Architectural	\$0	\$3,160	\$840,853	\$844,013	\$0	\$3,160	\$840,853	\$0	\$844,013
Mechanical (Note 5)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Electrical (Note 5)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Plumbing	\$750	\$0	\$0	\$750	\$750	\$0	\$0	\$0	\$750
Fire Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Totals	\$750	\$3,160	\$840,853	\$844,763	\$750	\$3,160	\$840,853	\$0	\$844,763

Notes:

- Necessary, Mandated Upgrades are in Addition To and Do Not Include Imminent Maintenance Items.
- Desirable upgrades are in Addition To and Do Not Include Imminent Maintenance or Necessary and Mandated Upgrades.
- Work scope is specific to ADA and does not include imminent maintenance, other necessary or mandated, or desirable renovations.
- ADA Package plus imminent maintenance, necessary/mandated upgrades, and desirable upgrades.
- Mechanical and Electrical work scope for the Connector are included in the scope for Graham & Hewlett.

Cost Estimates

Civil Site

ID	Priority	Site Upgrades in Vicinity of Belk Hall	Costs	Imminent Maintenance (1)	Scheduled Maintenance (2)	Desirable Upgrades (3)	Packaged Options (4)
1	1	Stormwater: Ditches & Swales: Ditch along west side of rear access road requires rework. Ditch invert is above invert of piping at each end of ditch.	\$3,000	\$3,000			
2	1	Stormwater Piping: No Flared end sections at drain pipes at each end of ditch.	\$2,000	\$2,000			
3	1	Stormwater: Pipe at North end of ditch has significant erosion around pipe with unstable soil conditions.	\$1,000	\$1,000			
4	1	Stormwater: Manholes: No stormwater manholes in this location	\$3,000	\$3,000			
5	1	Stormwater: Building Drainage: Drainage downspouts are broken and are discharging to grade.	\$8,000	\$8,000			
6	1	Stormwater: Drop inlet at dumpster is full of debris and drain pipe leaving drop inlet discharges to unknown location.	\$2,000	\$2,000			
7	3	Stormwater: Catch Basins: yard drop inlet at North end of building - surrounding grade should be graded to establish positive flow to inlet.	\$2,000			\$2,000	
8	1	Stormwater: General System Cleaning	\$9,000	\$9,000			
9	3	Site Grading at Building: Door access at North end of building is located at the top of a steep incline. Consider railing to access walks.	\$2,000			\$2,000	
10	2	Asphalt Pavement: General Note-Pavement has signs of deterioration along the edges where vehicle traffic is present.	\$3,000		\$3,000		
11	1	Asphalt Pavement: The rear access road to along the west side of the building has significant rutting and erosion due to vehicles turning in this area.	\$6,000	\$6,000			
12	1	Asphalt Pavement: Vehicle activity along the East side of building has created pavement settling around sewer manhole. Pavement is thin and cracked in this area.	\$5,000	\$5,000			
13	1	Gravity Sewer: Sewer Cleanouts: All but one of the sewer cleanouts are covered and not visible. These should be found and protected with concrete collar.	\$6,000	\$6,000			
13	1	Potable Water: Valves: Water Valve at North end of building could not be found. Valve appears to have been covered, possibly by early site erosion. Valve shall be located and protected	\$1,000	\$1,000			
Totals for Vicinity of Belk Hall				\$46,000	\$3,000	\$4,000	\$0

ID	Priority	Site Upgrades in Vicinity of Graham Hewlett Hall	Costs	Imminent Maintenance (1)	Scheduled Maintenance (2)	Desirable Upgrades (3)	Packaged Options (4)
1	1	Stormwater: Ditches & Swales: Ditch along west side of (north) parking lot requires rework.	\$3,000	\$3,000			
2	1	Stormwater: Piping: No Flared end sections at drain pipe at end of ditch.	\$2,000	\$2,000			
3	3	Stormwater: Manholes: Stormwater manholes in this location are in good shape. The manhole located to the rear of Hewlett Hall has a cracked masonry wall but this does not appear to be a significant issue.	\$500			\$500	
4	1	Stormwater: Building Drainage: Drainage downspouts could not be located.	\$8,000	\$8,000			
5	1	Stormwater: Catch Basins: yard drop inlet around the building require maintenance. Sediment and debris from surface flow have been introduced into the system.	\$6,000	\$6,000			
6	1	Stormwater: Drop inlets located in concrete areas have some cracking in the surrounding concrete.	\$3,000	\$3,000			
2	2	Site Grading at Building: In general, site grading is in good condition. There are areas which require vegetation for erosion control. Where areas are bare, grass will help prevent sediment from entering system.	\$2,000		\$2,000		
2	2	The grading in the center courtyard is flat. Due to the soil conditions, this does not appear to be a problem; however, there is likely localized ponding and this could contribute to the lack of vegetation.	\$500		\$500		
4	4	Stormwater: General System Cleaning	\$9,000				\$9,000
7	1	Gravity Sewer					
7	1	Sewer Cleanouts: All but two of the sewer cleanouts are covered and not visible. The two cleanouts found had no cap and are capable of accepting stormwater and debris.	\$500	\$500			
8	3	Potable Water					
8	3	Valves: Water Valve at North end of building could not be found. Valves along the front of building appear to be in good condition. All valves should be located and protected with concrete collar.	\$500			\$500	
Hydrants: Hydrants around building appear to be in good condition.							
Totals for Vicinity of Graham-Hewlett Hall				\$22,500	\$2,500	\$1,000	\$9,000

ID	Priority	Gravity Sewer	Costs	Imminent Maintenance (1)	Scheduled Maintenance (2)	Desirable Upgrades (3)	Packaged Options (4)
4	4	Manholes: Manholes could not be accessed. Based on other observations, a system wide cleaning and TV camera inspection should be conducted.	\$60,000				\$60,000
Totals for General Recommendations							\$60,000

Cost Estimates
Belk

contingency & design factor
1.25

ID	Priority	Priority ADA	Architectural	Construction Costs	Costs including Contingency & Design	Imminent Maintenance (1)	Necessary, Mandated (2)	Desirable Upgrades (3)	Total for Complete Renovation	
1	1	1	Replacement windows	\$121,152	\$151,440	\$151,440			\$151,440	
2	1	1	Security screens	\$22,785	\$28,481	\$28,481			\$28,481	
3	3	3	Replace storefronts & doors at rear of building	\$17,978	\$22,473	\$22,473		\$22,473	\$22,473	
4	2	2	Provide handrails at ramp	\$764	\$330	\$330			\$330	
5	ADA	ADA	H/C baths (4 levels) - remove C.T. floor to make room level w/ corridor, re-designate usage. Replace suite baths & study's w/ corridor "gang" baths, providing "accessible" & "type B" (4 levels)	\$6,653	\$8,316	\$0	\$330		\$8,316	
6	ADA	ADA	Recycle (4 levels) - replace C.T. floor w/ thin-set C.T. floor, replace HMF & wood door	\$1,151,181	\$1,438,976	\$0			\$1,438,976	
7	ADA	ADA	Rubbish (4 levels) - lower floor flush w/ recycle, replace, chute door & repair masonry, new HMF & door	\$4,836	\$6,045	\$0			\$6,045	
8	ADA	ADA	Card key system	\$1,980	\$2,475	\$0			\$2,475	
9	3	3	Stairs - repair soffits, replace railings, paint risers contrasting color, floor identification, bollards beneath landing & 1st floor base under landing, replace HMF & D & provide magnetic hold open	\$27,060.00	\$33,825	\$33,825		\$33,825	\$33,825	
10	2	2	Drinking fountains (4 levels) - replace w/ accessible type	\$45,250	\$56,563	\$56,563			\$56,563	
11	2	ADA	Elevator - interior finishes	\$16,368	\$20,460	\$20,460			\$20,460	
12	3	3	Signage	\$14,995	\$18,744	\$18,744		\$18,744	\$18,744	
13	2	2	Firestopping & sealants	\$1,584	\$1,980	\$1,980			\$1,980	
14	2	2	Correct 4th floor window overhangs	\$4,000	\$5,000	\$5,000			\$5,000	
15	1	1	Paint	\$31,660	\$39,600	\$39,600			\$39,600	
16	3	3	Replace brick veneer & add R-10 insul. to 4-story portion	\$41,544	\$51,930	\$51,930			\$51,930	
17	3	3	Paint	\$602,323	\$752,904	\$752,904			\$752,904	
18	3	3	Steam clean precast panels & re-caulk	\$29,566	\$36,960	\$36,960			\$36,960	
19	3	3	Repair hole in roof above kitchen area	\$5,366	\$6,733	\$6,733			\$6,733	
20	1	1	Paint steel at dumpster location	\$500	\$1,000	\$1,000			\$1,000	
21	1	1	Fire rate top of masonry walls having wood top plates (4 levels)	\$300	\$375	\$375			\$375	
22	2	2	Replace kitchen cabinets w/ accessible compliant cabinets	\$24,000	\$30,000	\$30,000			\$30,000	
23	2	2	Men and women public toilets - replace C.T. floor w/ thin set C.T., new HMF & wood doors	\$4,000	\$5,000	\$5,000			\$5,000	
24	2	2	Laundry (4 levels) - replace C.T. floor w/ thin-set C.T., new HMF & wood door - re-designate use	\$8,000	\$10,000	\$10,000			\$10,000	
25	ADA	ADA	Soffit steel	\$6,653	\$8,316	\$0			\$8,316	
26	3	3	Steam clean precast panels & re-caulk	\$66,718	\$83,398	\$0			\$83,398	
27	3	3	Blinds	\$5,366	\$6,733	\$6,733		\$6,733	\$6,733	
28	3	3	Demolition	\$64,554	\$80,693	\$0			\$80,693	
29	3	3	New floor finishes	\$10,879	\$13,599	\$13,599			\$13,599	
30	3	3	Coat roof w/ filtered aluminum paint	\$111,569	\$139,461	\$139,461			\$139,461	
31	3	3	Automatic door operator on entrance doors (2)	\$7,835	\$9,794	\$9,794			\$9,794	
32	3	3	Dry chemical fire suppression system in elevator machine room. NOT USED.	\$13,992	\$17,490	\$17,490			\$17,490	
33	ADA	ADA	Acoustical Ceilings for PME	\$10,577	\$13,221	\$0			\$13,221	
34	3	3	Acoustical Ceilings for PME	\$103,230	\$129,038	\$129,038			\$129,038	
35	3	3	Replaces Lavatory Counters & Upgrade shower basins	\$61,560	\$76,950	\$76,950			\$76,950	
36	1	1	TOTALS	\$25,363	\$31,704	\$31,704	\$1,006,504	\$129,333	\$434,690	\$1,569,626

Architectural Notes:

1 Costs tabulated is specific to ADA and does not include imminent maintenance, other necessary or mandated, or desirable renovations.

\$973,800 \$78,873 \$357,740 \$1,777,716 \$3,186,129

Cost Estimates

ID	Priority Note 1	Priority Note 1	Construction Costs	Costs Including Contingency & Design	Imminent Maintenance (1)	Necessary, Mandated (2)	Desirable Upgrades (3)	Total for Complete Renovation Note 3
Mechanical								
3	ADA	Demolish heating HW boiler & salvage.	\$1,000	\$1,250			\$1,250	\$1,250
3	ADA	Remove heating HW distribution equipment	\$1,000	\$1,250			\$1,250	\$1,250
3	ADA	New Boiler w/Condensing Stainless Steel Tubing	\$32,000	\$40,000			\$40,000	\$40,000
3	ADA	New Boiler Plant Distribution Pumps, ASD's, Accessories, Connecting Piping	\$28,000	\$35,000			\$35,000	\$35,000
3	ADA	Replace Heating Plant Controls	\$4,000	\$5,000			\$5,000	\$5,000
VRF	ADA	Remove air cooled or water cooled chiller	\$2,000	\$2,500			\$2,500	\$2,500
3	ADA	Remove cooling tower (Graham or Hewlett)	\$2,000	\$2,500			\$2,500	\$2,500
3	ADA	Remove condenser water distribution equipment (Graham or Hewlett)	\$1,000	\$1,250			\$1,250	\$1,250
3	ADA	Remove chilled water distribution equipment	\$1,000	\$1,250			\$1,250	\$1,250
3	ADA	Replace condenser water piping (Graham or Hewlett)	\$22,000	\$27,500			\$27,500	\$27,500
3	ADA	New 60 ton water cooled chiller (Graham or Hewlett)	\$72,000	\$90,000			\$90,000	\$90,000
3	ADA	New Cooling Tower with induced draft - low sound.(PLACE HOLDER NOT USED)	\$32,000	\$40,000			\$40,000	\$40,000
3	ADA	New Condenser Water Pumps, Accessories, Connecting Piping (Graham & Hewlett)	\$20,000	\$25,000			\$25,000	\$25,000
3	ADA	New Chilled Water Pumps, ASD's, Accessories, Connecting Piping	\$32,000	\$40,000			\$40,000	\$40,000
3	ADA	Replace Cooling Plant Controls	\$4,000	\$5,000			\$5,000	\$5,000
1	ADA	Replace Chiller & Cfg Tower w/Air Cooled Chiller (Graham or Hewlett)	\$68,000	\$85,000			\$85,000	\$85,000
1	ADA	Provide/Replace Undergrnd CHW piping from Air Cooled Chiller to Mech Room (NOT USED)	\$12,000	\$15,000			\$15,000	\$15,000
1	ADA	Demolish 1200 CFM Suite Air Handlers & Controls (QTY=24)	\$4,800	\$6,000	\$6,000		\$6,000	\$6,000
1	ADA	New Suite Air Handlers & Controls (QTY=24)	\$240,000	\$300,000	\$300,000		\$300,000	\$300,000
1	ADA	Demolish ducting for Suite Air Handlers	\$9,600	\$12,000	\$12,000		\$12,000	\$12,000
1	ADA	Clean, encapsulate, or replace ducting for Suite Air Handlers (QTY=24)	\$72,000	\$90,000	\$90,000		\$90,000	\$90,000
1	ADA	Reroute plumbing piping to allow space for ducting (QTY=24) (Balk)	\$19,200	\$24,000	\$24,000		\$24,000	\$24,000
1	ADA	Demolish 4-pipe riser piping from 1st floor headers to Suite Mech Closets	\$12,000	\$15,000	\$15,000		\$15,000	\$15,000
1	ADA	Construct new 4-pipe riser piping from 1st floor headers to Suite Mech Closets	\$104,000	\$130,000	\$130,000		\$130,000	\$130,000
3	ADA	Demolish 1st floor 4 pipe header back to Chiller or Boiler.	\$6,000	\$7,500			\$7,500	\$7,500
3	ADA	Construct new 1st floor 4 pipe header back to Chiller or Boiler.	\$91,000	\$113,750			\$113,750	\$113,750
1	ADA	Demolish Outdoor Air Duct Risers (QTY=6)	\$9,000	\$11,250	\$11,250		\$11,250	\$11,250
1	ADA	New Outdoor Air Duct Risers (QTY=6)	\$24,000	\$30,000	\$30,000		\$30,000	\$30,000
VRF	ADA	Connect outdoor riser duct to AHU intake (QTY=24)	\$19,200	\$24,000	\$24,000		\$24,000	\$24,000
VRF	ADA	Connect outdoor riser to supply bedrooms (QTY=96)	\$39,400	\$48,000			\$48,000	\$48,000
VRF	ADA	New Roof Mounted Outdoor Air Makeup Units, & Roof Ducting (QTY=3)	\$96,000	\$120,000			\$120,000	\$120,000
3	ADA	Replace Exhaust Ducting from Toilet Rooms & Include Risers	\$18,000	\$22,500	\$22,500		\$22,500	\$22,500
3	ADA	Replace Roof Exhaust Fans	\$4,800	\$6,000			\$6,000	\$6,000
3	3	Demolish and Replace Air Handler in Fire Pump Room (North Side Belk Hall)	\$16,000	\$18,750			\$18,750	\$18,750
3	3	Replace controls on this Air Handler	\$5,000	\$6,250			\$6,250	\$6,250
3	3	Replace piping to this Air Handler	\$12,000	\$15,000			\$15,000	\$15,000
3	3	Replace/Rework Ductwork, FD's for this Air Handler	\$9,000	\$10,000			\$10,000	\$10,000
3	3	Demolish and Replace Air Handler in Stair Corridor MR	\$5,000	\$6,250			\$6,250	\$6,250
		Replace controls on this Air Handler	\$12,000	\$15,000			\$15,000	\$15,000
		Replace piping to this Air Handler	\$8,000	\$10,000			\$10,000	\$10,000
		Replace/Rework Ductwork, FD's for this Air Handler		\$0			\$0	\$0
		Rework DX Coils for Connector AHU to Change to CHW, (Graham-Hewlett)		\$0			\$0	\$0
		Underground CHW Piping from Air Cooled Chiller to Connector AHU (Graham-Hewlett)		\$0			\$0	\$0
		Underground CHW Piping from Water Cooled Chiller to Conn AHU (Graham-Hewlett)		\$0			\$0	\$0
VRF	ADA	New VRF Heat Pump System, 6 Outdoor Units, 18 Indoor Units/Outdoor Unit	\$540,000	\$675,000	\$684,750	\$0	\$305,000	\$970,750
TOTALS								
					\$0	\$0	\$50,000	\$675,000
					\$0	\$0	\$684,750	\$1,013,250

Mechanical Notes:

- 1 Priority items, blank - not considered, VRF - applies to VRF option package.
- 2 Costs tabulated on this line are in addition to and do not include Imminent Maintenance or Mandated Items.
- 3 Costs tabulated on this line is for new HVAC system, similar to existing, thus, the sum of the Imminent Maintenance, Mandated, and Desirable Upgrades.
- 4 Costs tabulated is specific to ADA and does not include imminent maintenance, other necessary or mandated, or desirable renovations.

Cost Estimates
B&I

contingency & design factor 1.25

ID	Priority Note 1.	Priority Note 1.	Electrical	Construction Costs	Costs Including Contingency & Design	Imminent Maintenance (1)	Necessary, Mandated (2)	Desirable Upgrades (3) Note 2.	Total for Complete Renovation Note 3.	Imminent Maintenance ADA (1)	Necessary, Mandated ADA (2)	Desirable Upgrades ADA (3) Note 2.	VRF System for ADA Note 4.	Total for ADA
			A. Lighting											
1			1. Replace T12 Task Light Fixtures & Plug Cord (4) Desks per Study	\$25,000	\$31,250	\$31,250			\$31,250					\$0
1			2. Replace T12 General Light Fixtures on upper floors + 1st Floor Bedrooms	\$50,000	\$62,500	\$62,500			\$62,500					\$0
1			3. Add Egress Signage	\$2,000	\$2,500	\$2,500			\$2,500					\$0
1	ADA		4. Replace Toggle Switches in Bedrooms in Kind	\$35,000	\$43,750	\$43,750			\$43,750				\$43,750	\$43,750
2			5. Replace Toggle Switches w/ Vac. Sensors Switches in Studies and Utility Spaces	\$14,000	\$17,500	\$17,500			\$17,500					\$0
3	ADA		6. Bathroom Lighting Controls in Common Areas w/ Tandem Ballasts & Emergency Lighting	\$72,000	\$90,000	\$90,000			\$90,000					\$12,500
3	ADA		7. Solatubes and daylight harvesting controls, less roofing.	\$10,000	\$12,500	\$12,500			\$12,500					\$12,500
			8. ADA 9. Replace T12 General Light Fixtures in Bedrooms	\$18,000	\$22,500	\$22,500			\$22,500					\$22,500
			ADA 10. Remove Study & Corridor Light Fixtures and provide new ADA layout	\$70,000	\$87,500	\$87,500			\$87,500					\$87,500
			ADA 11. Replace Toggle Switches w/ Vac. Sensor Switches in Utility Spaces	\$13,000	\$16,250	\$16,250			\$16,250					\$16,250
			B. Electrical Power Distribution											
1	ADA		1. Replace Power Distribution Equipment, Disc. Sw. & Feeders, incl. Mech. Disc. Sw.	\$550,000	\$687,500	\$687,500			\$687,500					\$687,500
1	ADA		2. Replace Feeder Raceways	\$240,000	\$300,000	\$300,000			\$300,000					\$300,000
1	ADA		3. Replace Receptacles and Branch Circuits in ex. Raceway in Bedrooms & Util.	\$110,000	\$137,500	\$137,500			\$137,500					\$137,500
1	ADA		4. Replace Receptacles and Branch Ckts in ex. Raceway in Studies, Bathrooms & Mech.	\$75,000	\$93,750	\$93,750			\$93,750					\$0
1	ADA		5. Additional Receptacles in bedrooms w/ AFCI ckt's & panels	\$300,000	\$375,000	\$375,000			\$375,000					\$375,000
2	ADA		6. New Branch wiring for new ADA floor layout w/ raceway	\$65,000	\$106,250	\$106,250			\$106,250					\$106,250
2	ADA		7. Relocate (4) Panels to meet clearance requirements	\$5,000	\$6,250	\$6,250			\$6,250					\$0
2	ADA		8. Add Emergency Panel at Riser	\$15,000	\$18,750	\$18,750			\$18,750					\$0
1	ADA		C. Miscellaneous Electrical Systems	\$23,000	\$28,750	\$28,750			\$28,750					\$28,750
2	ADA		1. Replace Telephone Backboard with Fire Rated Plywood	\$1,000	\$1,250	\$1,250			\$1,250					\$1,250
3	ADA		2. Relocate Tele/Data terminations from mechanical spaces to conditioned area.	\$50,000	\$62,500	\$62,500			\$62,500					\$62,500
3	ADA		3. Reroute data wiring as required for new ADA floor plan	\$30,000	\$37,500	\$37,500			\$37,500					\$37,500
3	ADA		4. Extend WiFi beyond Building perimeter	\$20,000	\$25,000	\$25,000			\$25,000					\$25,000
			D. Fire Alarm System											
			1. Provided under Fire Protection											
TOTALS						\$1,433,750	\$1,337,750	\$112,500	\$1,680,000	\$0	\$0	\$0	\$1,956,250	\$1,956,250

Electrical Notes:

1. Priority items; blank - not considered, VRF - applies to VRF option package.
2. Costs tabulated on this line are in addition to and do not include Imminent Maintenance or Mandated Items.
3. Costs tabulated on this line is for new HVAC system, similar to existing, thus, the sum of the Imminent Maintenance, Mandated, and Desirable Upgrades.
4. Costs tabulated is specific to ADA and does not include imminent maintenance, other necessary or mandated, or desirable renovations.

Cost Estimates
Bulk

contingency & design factor
1.25

ID	Priority Note 1.	Plumbing	Construction Costs	Costs Including Contingency & Design	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 1.	Option Replace Plumbing System w/Similar Note 3.	Imminent Maintenance ADA (1)	Necessary, Mandated ADA (2)	Desirable Upgrades ADA (3) Note 2.	Additions for ADA Note 4.	Total for ADA
1	3	Replace domestic water backflow prevention device.	\$6,000	\$7,500			\$7,500				\$7,500		\$7,500
2		Demolish storage tank and piping to existing heating boiler (PLACE HOLDER NOT USED)	\$1,000	\$1,250				\$0					\$0
3	3	Installation of condensing tank type water heater, QTY=2	\$26,000	\$32,500			\$32,500	\$32,500			\$32,500		\$32,500
4	1	Installation of temperature mixing valve, Hi and Low flow	\$7,000	\$8,750	\$8,750			\$8,750	\$8,750				\$8,750
5	1	Replace central plumbing system valves	\$8,000	\$10,000	\$10,000			\$10,000	\$10,000				\$10,000
6	3	Replace HW recirculation pump, piping, valves, and controls	\$4,800	\$6,000				\$6,000			\$6,000		\$6,000
7				\$0				\$0					\$0
8	1	Replace Water Closets (QTY = 48)	\$57,600	\$72,000	\$72,000			\$72,000					\$72,000
9	1	Replace Water Closets (QTY = 40) ADA	\$72,000	\$90,000				\$90,000			\$90,000		\$90,000
10	1	Replace Floor Drains Suite Shower Fairs (QTY=48)	\$28,800	\$36,000	\$36,000			\$36,000					\$36,000
11	1	Replace Suite Shower Mixing Valves and Heads (QTY=48)	\$28,800	\$36,000	\$36,000			\$36,000					\$36,000
12	1	ADA Gang Shower, Group of 5, ADA, Drain, Mixing Valve, & Head, (QTY=8)	\$55,200	\$69,000				\$69,000			\$69,000		\$69,000
13	1	ADA Replace floor drains in Suite Bathrooms (QTY=24)	\$19,200	\$24,000	\$24,000			\$24,000	\$24,000				\$24,000
14	1	ADA Replace Lavatories, faucets, and trim (QTY=48)	\$57,600	\$72,000	\$72,000			\$72,000	\$72,000				\$72,000
15	1	ADA Replace water cooler on each floor with two level water cooler (QTY=4)	\$6,400	\$8,000	\$8,000			\$8,000	\$8,000				\$8,000
16	1	ADA Provide or replace 3/4" isolation ball valves for each bathroom suite (QTY=24 sets)	\$7,200	\$9,000	\$9,000			\$9,000	\$9,000				\$9,000
17	1	Replace RA Room Lavatory, Shower, & Water Closet	\$2,800	\$3,500	\$3,500			\$3,500	\$3,500				\$3,500
18	1	Replace Common area bathrooms water closet and lavatory (QTY=2)	\$1,800	\$2,250	\$2,250			\$2,250	\$2,250				\$2,250
19	3	Replace Kitchen Sink in Common Area	\$700	\$875				\$875			\$875		\$875
20				\$0				\$0					\$0
21	1	Reconnect Roof Drain Leaders not connected to Storm Sewer (QTY = 12)	\$4,800	\$6,000	\$6,000			\$6,000	\$6,000				\$6,000
22	1	Replace Roof Drain Leaders found to be leaking at walls (QTY=1)	\$2,400	\$3,000	\$3,000			\$3,000	\$3,000				\$3,000
23				\$0				\$0					\$0
24		Remodel for ADA compliance.		\$0				\$0					\$0
25	ADA	Demolish Plumbing Domestic Water Piping.	\$2,500	\$3,125				\$3,125			\$3,125		\$3,125
26	ADA	Demolish plumbing drain waste and vent piping.	\$4,500	\$5,625				\$5,625			\$5,625		\$5,625
27	ADA	Salvage value of copper.	\$7,500	\$9,375				\$9,375			\$9,375		\$9,375
28	ADA	New domestic water piping for ADA configuration.	\$71,000	\$88,750				\$88,750			\$88,750		\$88,750
29	ADA	New drain waste and vent piping for ADA configuration.	\$63,000	\$78,750				\$78,750			\$78,750		\$78,750
		TOTALS		\$288,500	\$8,000	\$46,875	\$343,375		\$33,500	\$0	\$46,875	\$444,875	\$525,250

Plumbing Notes:

- 1 Priority items; blank - not considered. ADA - item for option for ADA renovation
- 2 Costs tabulated on this line are in addition to and do not include Imminent Maintenance or Mandated Items.
- 3 Costs tabulated on this line is for new HVAC system, similar to existing; thus, the sum of the Imminent Maintenance, Mandated, and Desirable Upgrades.
- 4 Costs tabulated is specific to ADA and does not include imminent maintenance, other necessary or mandated, or desirable renovations.

Cost Estimates
Bulk

contingency & design factor
1.25

ID	Priority Note 1.	FIRE PROTECTION	Construction Costs	Costs Including Contingency & Design	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 1.	Packaged Option ADA Compliance (4)	Imminent Maintenance ADA (1)	Necessary, Mandated ADA (2)	Desirable Upgrades ADA (3) Note 2.	Additions for ADA Note 4.	Total for ADA
1	ADA	Re-Design fire alarm system for common areas	\$160,000	\$200,000									\$200,000
2	ADA	Re-Design fire alarm system for common areas	\$63,000	\$78,750					\$0	\$0	\$0	\$278,750	\$278,750
		TOTALS		\$78,750	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$200,000	\$278,750

Fire Protection Notes:

- 1 Priority items; blank - not considered. ADA - item for option for ADA renovation
- 2 Costs tabulated on this line are in addition to and do not include Imminent Maintenance or Mandated Items.
- 3 Costs tabulated on this line is for new HVAC system, similar to existing; thus, the sum of the Imminent Maintenance, Mandated, and Desirable Upgrades.
- 4 Costs tabulated is specific to ADA and does not include imminent maintenance, other necessary or mandated, or desirable renovations.

Cost Estimates
Graham

contingency & design factor

1.25

ID	Priority	Priority	Architectural	Construction Costs	Costs Including Contingency & Design	Imminent Maintenance (1)	Necessary, Mandated (2)	Desirable Upgrades (3)	Total for Complete Renovation	Imminent Maintenance ADA (1)	Necessary, Mandated ADA (2)	Desirable Upgrades ADA (3)	Additions for ADA Note 1.	Total ADA
1	1	1	Replacement windows	\$116,288	\$147,860	\$147,860			\$147,860	\$147,860				\$147,860
2	1	1	Security screens	\$22,785	\$28,481	\$28,481			\$28,481	\$28,481				\$28,481
3	3	3	Replace storefronts & doors at rear of building	\$17,978	\$22,473	\$22,473			\$22,473			\$22,473		\$22,473
4	2	2	Provide handrails at ramp	\$264	\$330		\$330		\$330		\$330			\$330
5	ADA	ADA	New soffit steel PMF enclosures in residents rooms	\$66,718	\$83,398				\$83,398				\$83,398	\$83,398
6	ADA	ADA	H/C baths (4 levels) - remove C.T. floor to make room level w/ corridor, redesignate usage	\$6,653	\$8,316				\$8,316				\$8,316	\$8,316
7	ADA	ADA	Replace suite baths & study's w/ corridor "ging" baths, providing "accessible" & "type B" (4 levels)	\$1,092,890	\$1,366,113				\$1,366,113				\$1,366,113	\$1,366,113
8	ADA	ADA	Recycle (4 levels) - replace C.T. floor w/ thin-set C.T. floor, replace HMF & wood door	\$4,836	\$6,045				\$6,045				\$6,045	\$6,045
9	ADA	ADA	Rubish (4 levels) - lower floor flush w/ recycle, replace chute door & repair masonry	\$1,980	\$2,475				\$2,475				\$2,475	\$2,475
10	2	2	Stairs - repair soffits, replace railings, paint risers contrasting color, floor identification, bollards beneath 1st floor landing, replace HMF & D & provide magnetic hold open	\$45,250	\$56,563		\$56,563		\$56,563		\$56,563			\$56,563
11	3	3	Card key system	\$27,060.00	\$33,825			\$33,825	\$33,825					\$33,825
12	3	3	Vestibule VSI - new rubber base	\$132	\$165			\$165	\$165					\$165
13	2	2	Drinking fountains (4 levels) - replace w/ accessible type	\$16,388	\$20,460		\$20,460		\$20,460		\$20,460			\$20,460
14	3	3	Elevator - interior finishes	\$14,995	\$18,744			\$18,744	\$18,744					\$18,744
15	2	2	Signage to match "connector" signage	\$1,980	\$1,980		\$1,980		\$1,980		\$1,980			\$1,980
16	2	2	Firestopping & sealants	\$4,000	\$5,000		\$5,000		\$5,000		\$5,000			\$5,000
17	1	1	Correct 4th floor window overhangs	\$31,680	\$39,600	\$39,600			\$39,600	\$39,600				\$39,600
18	3	ADA	Paint	\$41,544	\$51,930			\$51,930	\$51,930				\$51,930	\$51,930
19	1	1	Replace brick veneer & add R-10 insul. to 4-story portion	\$602,323	\$752,904	\$752,904			\$752,904	\$752,904				\$752,904
20	3	3	Bring roof deck to R-25 min.	\$107,123	\$133,904			\$133,904	\$133,904					\$133,904
21	3	3	Paint linets	\$29,568	\$36,960			\$36,960	\$36,960					\$36,960
22	3	3	Steam clean precast panels & re-caulk	\$5,366	\$6,733			\$6,733	\$6,733					\$6,733
23	3	3	At dumpster add protection similar to Belk & repair damaged masonry	\$1,800	\$2,250			\$2,250	\$2,250					\$2,250
24	2	2	Fire rate top of masonry having wood top plate (4 levels)	\$83,880	\$104,850		\$104,850		\$104,850					\$104,850
25	ADA	ADA	Demolition	\$84,554	\$80,693				\$0				\$80,693	\$80,693
26	3	3	Blinds	\$10,870	\$13,589				\$13,589					\$13,589
27	3	3	New floor finishes	\$81,474	\$101,843			\$101,843	\$101,843					\$101,843
28	3	3	Coat room with fluted aluminum paint	\$5,056	\$6,320				\$6,320					\$6,320
29	ADA	ADA	Dry chemical fire suppression system in elevator machine room	\$10,577	\$13,221				\$13,221					\$13,221
30	ADA	ADA	Acoustical Ceilings	\$76,507	\$95,634				\$95,634					\$95,634
31	3	3	Acoustical Ceilings	\$61,580	\$76,950				\$76,950					\$76,950
32	1	1	Replace Lavatory Counters & Upgrade shower basins	\$25,363	\$31,704	\$31,704			\$31,704	\$31,704				\$31,704
TOTALS						\$1,000,549	\$189,183	\$505,694	\$1,695,425	\$969,845	\$64,333	\$376,814	\$1,694,603	\$3,124,594

Architectural Notes:

1 Costs tabulated on this line are in addition to and do not include Imminent Maintenance or Mandated Items.

Cost Estimates
Graham

Mechanical

ID	Priority Note 1	Description	Costs Including Contingency & Design	Imminent Maintenance (1)	Necessary, Mandated (2)	Desirable Upgrades (3)	Option Replace HVAC System w/Similar (4)	Imminent Maintenance ADA (1)	Necessary, Mandated ADA (2)	Desirable Upgrades ADA (3)	Additions Req'd for ADA VRF System Note 4	Total ADA
3	ADA	Demolish heating HW boiler & salvage.	\$1,000			\$1,250					\$1,250	\$1,250
3	ADA	Remove heating HW distribution equipment	\$1,000			\$1,250					\$1,250	\$1,250
3	ADA	New Boiler w/Condensing Stainless Steel Tubing	\$32,000			\$40,000						\$0
3	ADA	New Boiler Plant Distribution Pumps, ASD's, Accessories, Connecting Piping	\$28,000			\$35,000						\$0
3	ADA	Replace Heating Plant Controls	\$4,000			\$5,000						\$0
VRF	ADA	Remove air cooled or water cooled chiller	\$2,000			\$2,500					\$2,500	\$2,500
3	ADA	Remove condenser water distribution equipment (Graham or Hewlett)	\$1,000			\$1,250					\$1,250	\$1,250
3	ADA	Remove chiller water distribution equipment.	\$1,000			\$1,250					\$1,250	\$1,250
3	ADA	Replace condenser water piping (Graham or Hewlett)	\$12,000			\$15,000					\$15,000	\$15,000
1		New 60 ton water cooled chiller	\$90,000	\$90,000		\$90,000						\$0
3		New Cooling Tower with induced draft - low sound.	\$32,000			\$40,000						\$0
3		New Condenser Water Pumps, ASD's, Accessories, Connecting Piping	\$32,000			\$40,000						\$0
3		Replace Cooling Plant Controls	\$4,000			\$5,000						\$0
3		Replace Chiller & Ctg Tower w/Air Cooled Chiller (Graham or Hewlett)	\$68,000			\$85,000						\$0
1	ADA	Provide/Replace Underground CHW piping from Air Cooled Chiller to Mechanical Room	\$12,000			\$15,000						\$0
1	ADA	Demolish 1200 CFM Suite Air Handlers & Controls (QTY=24)	\$4,800	\$6,000		\$6,000					\$6,000	\$6,000
1	ADA	New Suite Air Handlers & Controls (QTY=24)	\$300,000	\$300,000		\$300,000						\$0
1	ADA	Demolish ducting for Suite Air Handlers	\$9,600	\$12,000		\$12,000					\$12,000	\$12,000
1	ADA	Clean, encapsulate, or replace ducting for Suite Air Handlers (QTY=24)	\$72,000	\$90,000		\$90,000						\$0
1	ADA	Reroute plumbing piping to allow space for ducting (QTY=24) (Balk)	\$19,200	\$24,000		\$24,000						\$0
1	ADA	Demolish 4-pipe riser piping from 1st floor headers to Suite Mech Closets	\$12,000	\$15,000		\$15,000					\$15,000	\$15,000
3	ADA	Construct new 4-pipe riser piping from 1st floor headers to Suite Mech Closets (QTY=6 Risers)	\$104,000	\$130,000		\$130,000						\$0
3	ADA	Demolish 1st floor 4 pipe header back to Chiller or Boiler.	\$6,000	\$7,500		\$7,500					\$7,500	\$7,500
1	ADA	Construct new 1st floor 4 pipe header back to Chiller or Boiler.	\$91,000	\$113,750		\$113,750						\$0
1	ADA	Demolish Outdoor Air Duct Risers (QTY=6)	\$9,000	\$11,250		\$11,250					\$11,250	\$11,250
1	ADA	New Outdoor Air Duct Risers (QTY=6)	\$24,000	\$30,000		\$30,000					\$30,000	\$30,000
VRF	ADA	Connect outdoor riser duct to AHU intake (QTY=24)	\$19,200	\$24,000		\$24,000						\$0
VRF	ADA	Connect outdoor riser to supply bedrooms (QTY=98)	\$38,400	\$48,000		\$48,000					\$48,000	\$48,000
VRF	ADA	New/Roof Mounted Outdoor Air Makeup Units, & Roof Ducting (QTY=3)	\$68,000	\$85,000		\$85,000					\$85,000	\$85,000
1	ADA	Replace Exhaust Ducting from Toilet Rooms & Include Risers	\$18,000	\$22,500		\$22,500					\$22,500	\$22,500
3	ADA	Replace Roof Exhaust Fans	\$4,800	\$6,000		\$6,000					\$6,000	\$6,000
		Demolish and Replace Air Handler in File Pump Room (Balk Hall)	\$15,000	\$18,750		\$18,750						\$0
		Replace controls on this Air Handler (Balk Hall)	\$5,000	\$6,250		\$6,250						\$0
		Replace piping to this Air Handler (Balk Hall)	\$12,000	\$15,000		\$15,000					\$15,000	\$15,000
3		Demolish and Replace Air Handler in Stair Corridor MR	\$15,000	\$18,750		\$18,750					\$18,750	\$18,750
3		Replace controls on this Air Handler	\$5,000	\$6,250		\$6,250					\$6,250	\$6,250
3		Replace piping to this Air Handler	\$12,000	\$15,000		\$15,000					\$15,000	\$15,000
		Replace/Rework Ductwork, FD's for this Air Handler (Balk Hall)	\$0	\$0		\$0					\$0	\$0
		Rework DX Coils for Connector AHU to Change to CHW, New Controls (Graham-Hewlett)	\$0	\$0		\$0					\$0	\$0
		Underground CHW Piping from Air Cooled Chiller to Connector AHU (Graham-Hewlett)	\$0	\$0		\$0					\$0	\$0
		Underground CHW Piping from Water Cooled Chiller to Conn AHU (Graham-Hewlett)	\$0	\$0		\$0					\$0	\$0
VRF	ADA	New VRF Heat Pump System; 6 Outdoor Units, 18 Indoor Units/Outdoor Unit	\$540,000	\$675,000		\$675,000					\$675,000	\$675,000
TOTALS			\$1,094,250	\$730,750	\$0	\$963,500				\$55,000	\$863,250	\$1,018,250

Mechanical Notes:

- Priority items: blank - not considered, VRF - applies to VRF option package.
- Costs tabulated on this line are in addition to and do not include Imminent Maintenance or Mandated Items.
- Costs tabulated on this line is for new HVAC system, similar to existing; thus, the sum of the Imminent Maintenance, Mandated, and Desirable Upgrades.
- Costs tabulated on this line includes all demolition, installation for new VRF system.

Cost Estimates
Graham

ID	Priority	Electrical	Costs Including Contingency & Design	Imminent Maintenance (1)	Necessary, Mandated (2)	Desirable Upgrades (3) Note 2.	Option Replace HVAC System w/ Splitter Note 3.	Imminent Maintenance ADA (1)	Necessary, Mandated ADA (2)	Desirable Upgrades ADA (3) Note 2.	Additions Revid for ADA VRF System Note 4.	Total ADA
A. Lighting												
1		1. Replace T12 Task Light Fixtures & Plug Cord (4) Desks per Study	\$25,000	\$31,250			\$31,250					\$0
1		2. Replace T12 General Light Fixtures on upper floors + 1st Floor Bedrooms	\$50,000	\$62,500			\$62,500					\$0
1		3. Add Egress Signage	\$2,000	\$2,500			\$2,500					\$0
2	ADA	4. Replace Toggle Switches in Bedrooms in Kind	\$35,000	\$43,750			\$43,750				\$43,750	\$43,750
2		5. Replace Toggle Switches w/ Vac. Sensors Switches in Studies and Utility Spaces	\$14,000	\$17,500			\$17,500					\$0
2		6. Bathroom Lighting Redesign, w/ task lights in stalls, at sinks & Vac. Sensors	\$72,000	\$90,000			\$90,000					\$12,500
3	ADA	7. Multilevel Lighting Controls in Common Areas w/ Tandem Ballasts & Emergency Lighting	\$10,000	\$12,500			\$12,500					\$12,500
3	ADA	8. Sola tubes and daylight harvesting controls; less roofing.	\$18,000	\$22,500			\$22,500					\$22,500
ADA		9. Replace T12 General Light Fixtures in Bedrooms	\$70,000	\$87,500			\$87,500					\$87,500
ADA		10. Remove Study & Corridor Light Fixtures and provide new ADA layout	\$13,000	\$16,250			\$16,250					\$16,250
ADA		11. Replace Toggle Switches w/ Vac. Sensor Switches in Utility Spaces					\$0					\$0
B. Electrical Power Distribution												
1	ADA	1. Replace Power Distribution Equipment, Disc. Sw. & Feeders, incl. Mech. Disc. Sw.	\$550,000	\$687,500			\$687,500					\$687,500
ADA		2. Replace Feeder Raceways	\$240,000	\$300,000			\$300,000					\$300,000
1	ADA	3. Replace Receptacles and Branch Circuits in ex. Raceway in Bedrooms & Util.	\$110,000	\$137,500			\$137,500					\$137,500
1	ADA	4. Replace Receptacles and Branch Ckts in ex. Raceway in Studies, Bathrooms & Mech.	\$75,000	\$93,750			\$93,750					\$93,750
1	ADA	5. Additional Receptacles in bedrooms w/ AFCI ckt's & panels	\$300,000	\$375,000			\$375,000					\$375,000
2	ADA	6. Relocate (4) Panels to meet clearance requirements	\$85,000	\$106,250			\$106,250					\$106,250
2	ADA	7. Relocate (8) Panels & (4) Transformers to separate Housekeeping and Electrical.	\$15,000	\$18,750			\$18,750					\$18,750
ADA		8. Add Emergency Panel at Riser	\$23,000	\$28,750			\$28,750					\$28,750
C. Miscellaneous Electrical Systems												
1	ADA	1. Replace Telephone Backboard with Fire Rated Plywood	\$1,000	\$1,250			\$1,250					\$1,250
2	ADA	2. Relocate Tele/Data terminations from mechanical spaces to conditioned area.	\$50,000	\$62,500			\$62,500					\$62,500
3	ADA	3. Reroute data wiring as required for new ADA floor plan	\$30,000	\$37,500			\$37,500					\$37,500
3	ADA	3. Extend WiFi beyond Building perimeter	\$20,000	\$25,000			\$25,000					\$25,000
D. Fire Alarm System												
		1. Provided under Fire Protection		\$0			\$0					\$0
TOTALS				\$0			\$0	\$1,433,750	\$133,750	\$12,500	\$1,956,250	\$1,956,250

Electrical Notes:

- Priority items; blank - not considered, VRF - applies to VRF option package.
- Costs tabulated on this line are in addition to and do not include Imminent Maintenance or Mandated Items.
- Costs tabulated on this line is for new HVAC system, similar to existing; thus, the sum of the Imminent Maintenance, Mandated, and Desirable Upgrades.
- Costs tabulated on this line includes all demolition, installation for new VRF system.

Cost Estimates
Graham

contingency & design factor 1.25

ID	Priority Note 1.	Plumbing	Costs Including Contingency & Design	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 1.	Option Replace Plumbing System W/Similar Note 3.	Imminent Maintenance ADA (1)	Necessary, Mandated ADA (2)	Desirable Upgrades ADA (3) Note 2.	Option: VRF System Req'd for ADA Note 4.	Total ADA
1	3	Replace domestic water backflow prevention device.	\$6,000			\$7,500	\$7,500			\$7,500		\$7,500
2	3	Demolish storage tank, piping to existing heating boiler (PLACE HOLDER NOT USED)	\$1,000			\$1,250	\$0			\$0		\$0
3	3	Installation of condensing tank type water heater, QTY=2.	\$26,000			\$32,500	\$32,500			\$32,500		\$32,500
4	1	Installation of temperature mixing valve, HI and Low flow.	\$7,000	\$8,750		\$8,750	\$5,750					\$8,750
5	1	Replace central plumbing system valves.	\$8,000	\$10,000		\$10,000	\$10,000					\$10,000
6	3	Replace HW recirculation pump, piping, valves, and controls	\$4,800			\$6,000	\$6,000			\$6,000		\$6,000
7			\$0			\$0	\$0					\$0
8	1	Replace Water Closets (QTY = 48)	\$57,600	\$72,000		\$72,000	\$72,000					\$72,000
9	ADA	Replace Water Closets (QTY = 40) ADA	\$72,000	\$90,000		\$90,000	\$90,000			\$90,000		\$90,000
10	1	Replace Floor Drains Suite Shower Pans (QTY=48)	\$28,800	\$36,000		\$36,000	\$36,000					\$36,000
11	ADA	Replace Suite Shower Mixing Valves and Heads (QTY=48)	\$28,800	\$36,000		\$36,000	\$36,000					\$36,000
12	ADA	Gang Shower, Group of 5, ADA, Drain, Mixing Valve, & Head, (QTY=8)	\$55,200	\$69,000		\$69,000	\$69,000			\$69,000		\$69,000
13	ADA	Replace floor drains in Suite Bathrooms (QTY=24)	\$19,200	\$24,000		\$24,000	\$24,000			\$24,000		\$24,000
14	ADA	Replace Lavatories, faucets, and trim (QTY=48)	\$57,600	\$72,000		\$72,000	\$72,000			\$72,000		\$72,000
15	ADA	Replace water cooler on each floor with two level water cooler (QTY=4)	\$6,400	\$8,000		\$8,000	\$8,000			\$8,000		\$8,000
16	ADA	Provide or replace 3/4" isolation ball valves for each bathroom suite (QTY=24 seats)	\$7,200	\$9,000		\$9,000	\$9,000			\$9,000		\$9,000
17	1	Replace RA Room Lavatory, Shower, & Water Closet	\$2,800	\$3,500		\$3,500	\$3,500			\$3,500		\$3,500
18	1	Replace Common area bathrooms water closet and lavatory (QTY=2)	\$1,800	\$2,250		\$2,250	\$2,250			\$2,250		\$2,250
19	3	Replace Kitchen Sink in Common Area	\$700	\$875		\$875	\$875			\$875		\$875
20			\$0			\$0	\$0					\$0
21	1	Reconnect Roof Drain Leaders not connected to Storm Sewer (QTY = 12)	\$4,800	\$6,000		\$6,000	\$6,000			\$6,000		\$6,000
22	1	Replace Roof Drain Leaders found to be leaking at walls (QTY=1)	\$2,400	\$3,000		\$3,000	\$3,000			\$3,000		\$3,000
23			\$0			\$0	\$0					\$0
24	ADA	Remedial for ADA compliance	\$0	\$0		\$0	\$0					\$0
25	ADA	Demolish Plumbing Domestic Water Piping.	\$2,500	\$3,125		\$3,125	\$3,125			\$3,125		\$3,125
26	ADA	Demolish plumbing drain waste and vent piping.	\$4,500	\$5,625		\$5,625	\$5,625			\$5,625		\$5,625
27	ADA	Salvage value of copper.	-\$7,500	-\$9,375		-\$9,375	-\$9,375			-\$9,375		-\$9,375
28	ADA	New domestic water piping for ADA configuration.	\$71,000	\$88,750		\$88,750	\$88,750			\$88,750		\$88,750
29	ADA	New drain waste and vent piping for ADA configuration	\$63,000	\$78,750		\$78,750	\$78,750			\$78,750		\$78,750
TOTALS			\$63,000	\$78,750	\$288,500	\$343,375	\$343,375	\$0	\$8,000	\$46,875	\$444,875	\$625,250

Plumbing Notes:

- 1 Priority items; blank - not considered. ADA - item for option for ADA renovation
- 2 Costs tabulated on this line are in addition to and do not include Imminent Maintenance or Mandated Items.
- 3 Costs tabulated on this line is for new HVAC system, similar to existing; thus, the sum of the Imminent Maintenance, Mandated, and Desirable Upgrades.
- 4 Costs tabulated on this line includes all demolition, installation for new VRF system.

Cost Estimates
Graham

contingency & design factor 1.25

ID	Priority Note 1.	FIRE PROTECTION	Costs Including Contingency & Design	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 1.	Option ADA Compliance	Imminent Maintenance ADA (1)	Necessary, Mandated ADA (2)	Desirable Upgrades ADA (3) Note 2.	Option: VRF System Req'd for ADA Note 4.	Total ADA
1	ADA	Revise Sprinkler Piping for ADA configuration (4 floors)	\$160,000			\$200,000						\$200,000
2	ADA	1. Re-Design fire alarm system for common areas	\$63,000	\$78,750	\$0	\$78,750	\$0			\$0		\$78,750
TOTALS			\$63,000	\$78,750	\$0	\$78,750	\$0	\$0	\$0	\$0	\$278,750	\$278,750

Plumbing Notes:

- 1 Priority items; blank - not considered. ADA - item for option for ADA renovation
- 2 Costs tabulated on this line are in addition to and do not include Imminent Maintenance or Mandated Items.
- 3 Costs tabulated on this line is for new HVAC system, similar to existing; thus, the sum of the Imminent Maintenance, Mandated, and Desirable Upgrades.
- 4 Costs tabulated on this line includes all demolition, installation for new VRF system.

Cost Estimates
Hewlett

contingency & design factor 1.25

ID	Priority	Priority	Architectural	Costs	Costs Including Contingency & Design	Imminent Maintenance (1)	Necessary, Mandated (2)	Desirable Upgrades (3)	Total for Complete Renovation	Imminent Maintenance ADA (1)	Necessary, Mandated ADA (2)	Desirable Upgrades ADA (3)	Additions for ADA Note 1.	Total ADA	
1	1	1	Replacement windows	\$118,288	\$147,860	\$147,860			\$147,860	\$147,860				\$147,860	
2	1	1	Security screens	\$22,765	\$28,481	\$28,481			\$28,481	\$28,481				\$28,481	
3	3	3	Replace storefronts & doors at rear of building	\$17,978	\$22,473			\$22,473	\$22,473					\$22,473	
4	2	2	Provide handrails at ramp	\$330	\$330		\$330		\$330		\$330			\$330	
5	2	2	New soffit steel PME enclosures in residents rooms	\$66,718	\$83,398				\$83,398					\$83,398	
6	ADA	ADA	H/C baths (4 levels) - remove C. T. floor to make room level w/ corridor, redesignate usage (4 levels)	\$6,653	\$8,316				\$8,316					\$8,316	
7	ADA	ADA	Replace suite baths & study's w/ corridor "gang" baths, providing "accessible" & "Type B" (4 levels)	\$1,092,890	\$1,366,113				\$1,366,113					\$1,366,113	
8	ADA	ADA	Recycle (4 levels) - replace C. T. floor w/ thin-set C. T. floor, replace HMF & wood door	\$4,836	\$6,045				\$6,045					\$6,045	
9	ADA	ADA	Rubish (4 levels) - lower floor flush w/ recycle, replace, chute door & repair masonry, entrance door opening from 20610 to 3070	\$1,980	\$2,475				\$2,475					\$2,475	
10	3	3	Card key system	\$27,060.00	\$33,825			\$33,825	\$33,825					\$33,825	
11	2	2	Stairs - repair soffits, replace railings, paint risers contrasting color, floor identification, bollards beneath landing & 1st floor base under landing, replace HMF & D & provide magnetic hold open	\$46,250	\$56,663		\$56,663		\$56,663						\$56,663
12	3	3	Vestibule VSI - new rubber base	\$132	\$165			\$165	\$165					\$165	
13	2	2	Drinking fountains (4 levels) - replace w/ accessible type	\$10,368	\$20,460		\$20,460		\$20,460					\$20,460	
14	3	3	Elevator - interior finishes	\$19,965	\$18,744			\$18,744	\$18,744					\$18,744	
15	2	2	Signage to match "connector" signage	\$1,584	\$1,980		\$1,980		\$1,980					\$1,980	
16	2	2	Firestopping & sealants	\$5,000	\$5,000		\$5,000		\$5,000					\$5,000	
17	1	1	Correct 4th floor window overhangs	\$31,580	\$39,600	\$39,600			\$39,600	\$39,600				\$39,600	
18	3	3	Paint	\$41,544	\$51,930	\$51,930			\$51,930	\$51,930				\$51,930	
19	1	1	Replace brick veneer & add R-10 insul. to 4-story portion	\$602,323	\$752,904	\$752,904			\$752,904	\$752,904				\$752,904	
20	3	3	Bring roof deck to R-26 min. when re-roofing	\$107,123	\$133,904				\$133,904					\$133,904	
21	3	3	Vestibule VSI - repair ceiling & paint	\$250	\$313			\$313	\$313					\$313	
22	3	3	Vestibule VSI - paint exterior overhang	\$250	\$313			\$313	\$313					\$313	
23	3	3	Mechanical 009H - replace ACT ceiling	\$400	\$500			\$500	\$500					\$500	
24	3	3	3rd floor corridor - repair masonry at floor line along building front	\$400	\$500			\$500	\$500					\$500	
25	3	3	Paint linels	\$29,960	\$36,960	\$36,960			\$36,960	\$36,960				\$36,960	
26	3	3	Steam clean precast panels & re-caulk	\$5,386	\$6,733	\$6,733			\$6,733	\$6,733				\$6,733	
27	3	3	At dumpster aid protection similar to bulk & repair damaged masonry	\$1,800	\$2,250	\$2,250			\$2,250	\$2,250				\$2,250	
28	2	2	Fire rate top walks having wood top plate (4 levels)	\$83,880	\$104,850	\$104,850			\$104,850	\$104,850				\$104,850	
29	ADA	ADA	Demolition	\$64,554	\$80,693	\$80,693			\$80,693	\$80,693				\$80,693	
30	3	3	Blinds	\$10,979	\$13,599	\$13,599			\$13,599	\$13,599				\$13,599	
31	3	3	New floor finishes	\$61,474	\$101,843	\$101,843			\$101,843	\$101,843				\$101,843	
32	3	3	Coat roof w/ fibrated aluminum paint	\$5,056	\$6,320	\$6,320			\$6,320	\$6,320				\$6,320	
33	ADA	ADA	Dry chemical fire suppression system in elevator machine room	\$10,577	\$13,221	\$13,221			\$13,221	\$13,221				\$13,221	
34	ADA	ADA	Acoustical Ceilings	\$76,507	\$95,634	\$95,634			\$95,634	\$95,634				\$95,634	
35	3	3	Acoustical Ceilings	\$61,560	\$76,950	\$76,950			\$76,950	\$76,950				\$76,950	
36	3	3	Replace Lavatory Counters & Upgrade shower basins	\$25,363	\$31,704	\$31,704			\$31,704	\$31,704				\$31,704	
TOTALS					\$968,845	\$968,845	\$189,183	\$539,023	\$1,697,050	\$968,845	\$84,333	\$430,369	\$1,642,673	\$3,126,219	

Architectural Notes:
1 - Costs tabulated on this line are in addition to and do not include Imminent Maintenance or Mandated Items.

Cost Estimates
Hewlett

ID	Priority Note 1.	Priority Note 1.	Costs Including Contingency & Design	Imminent Maintenance (1)	Necessary, Mandated (2)	Desirable Upgrades (3)	Option Replace HVAC System w/Similar Note 3.	Imminent Maintenance ADA (1)	Necessary, Mandated ADA (2)	Desirable Upgrades ADA (3)	Option: VRF System Req'd for ADA Note 4.	Total ADA		
Electrical														
A. Lighting														
1			\$25,000	\$31,250			\$31,250					\$0		
1			\$50,000	\$62,500			\$62,500					\$0		
1	ADA		\$2,500	\$2,500			\$2,500					\$0		
2	ADA		\$35,000	\$43,750			\$43,750					\$43,750		
2	ADA		\$14,000	\$17,500			\$17,500					\$0		
3	ADA		\$72,000	\$90,000			\$90,000					\$0		
3	ADA		\$10,000	\$12,500			\$12,500					\$12,500		
3	ADA		\$18,000	\$22,500			\$22,500					\$22,500		
ADA			\$70,000	\$87,500			\$87,500					\$87,500		
ADA			\$13,000	\$16,250			\$16,250					\$16,250		
B. Electrical Power Distribution														
1	ADA		\$550,000	\$687,500			\$687,500					\$687,500		
ADA			\$240,000	\$300,000			\$300,000					\$300,000		
1	ADA		\$110,000	\$137,500			\$137,500					\$137,500		
1	ADA		\$75,000	\$93,750			\$93,750					\$93,750		
1	ADA		\$300,000	\$375,000			\$375,000					\$375,000		
2	ADA		\$85,000	\$106,250			\$106,250					\$106,250		
2	ADA		\$5,000	\$6,250			\$6,250					\$0		
2	ADA		\$15,000	\$18,750			\$18,750					\$0		
2	ADA		\$23,000	\$28,750			\$28,750					\$28,750		
C. Miscellaneous Electrical Systems														
1	ADA		\$1,000	\$1,250			\$1,250					\$1,250		
2	ADA		\$50,000	\$62,500			\$62,500					\$62,500		
3	ADA		\$30,000	\$37,500			\$37,500					\$37,500		
3	ADA		\$20,000	\$25,000			\$25,000					\$25,000		
D. Fire Alarm System														
			\$0	\$0			\$0					\$0		
			\$0	\$0			\$0					\$0		
TOTALS											\$0	\$0	\$0	\$1,966,250

Electrical Notes:

- Priority items - blank - not considered, VRF - applies to VRF option package.
- Costs tabulated on this line are in addition to and do not include Imminent Maintenance or Mandated Items.
- Costs tabulated on this line is for new HVAC system, similar to existing; thus, the sum of the Imminent Maintenance, Mandated, and Desirable Upgrades.
- Costs tabulated on this line includes all demolition, installation for new VRF system.

Cost Estimates
Hewlett

contingency & design factor 1.25

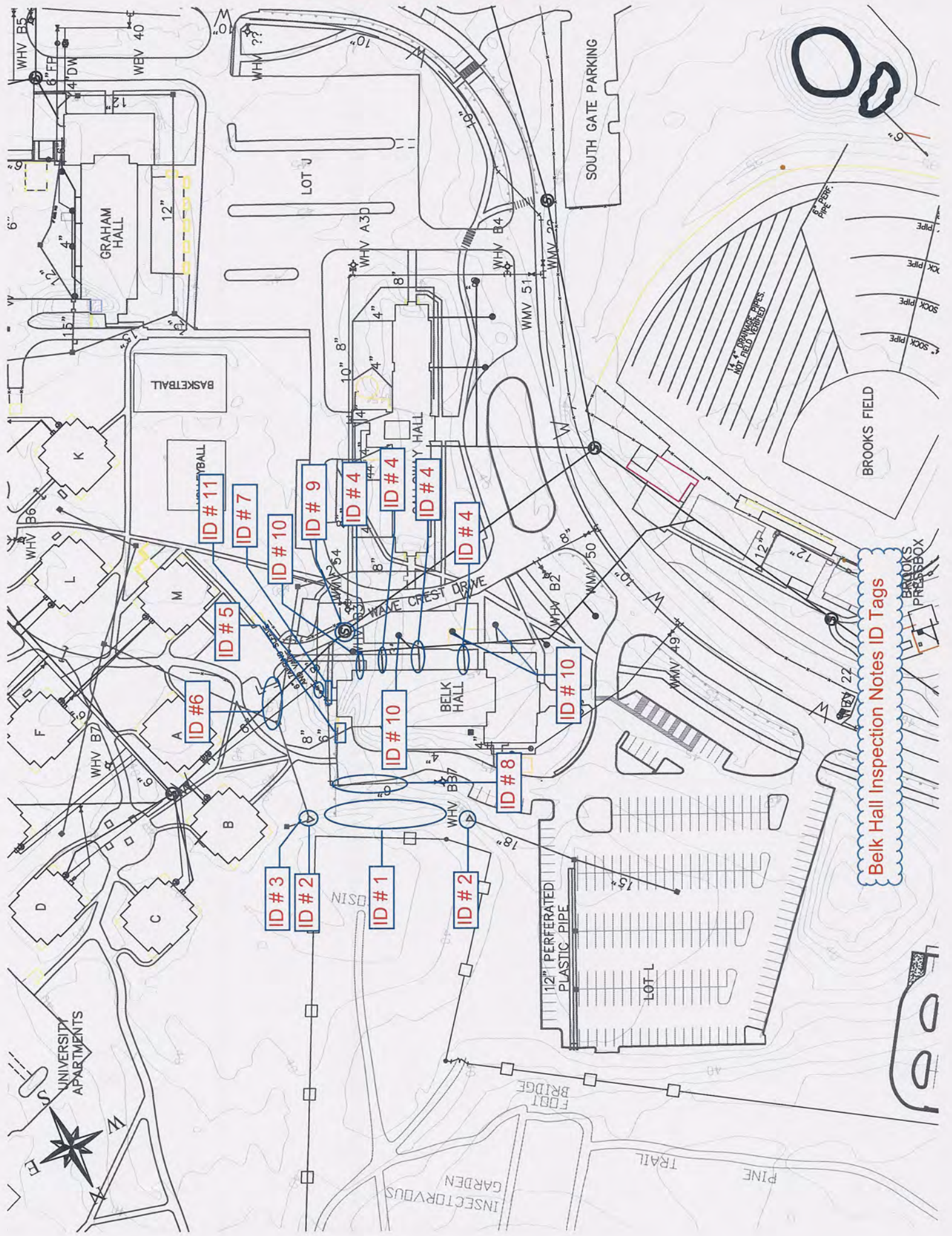
ID	Priority	Priority		Costs Including Contingency & Design	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 1.	Option Replace Plumbing System w/Similar Note 3.	Option: VRF System Req'd for ADA Note 4. (4)	Total ADA
1	3	3	Replace domestic water backflow prevention device.	\$6,000			\$7,500	\$7,500		\$7,500
2			Demolish storage tank, piping to existing heating boiler.	\$1,000			\$0	\$0		\$0
3			Installation of condensing tank type water heaters, QTY = 2	\$26,000			\$0	\$0		\$0
4	1	1	Installation of temperature mixing valve, HI and Low Flow.	\$7,000	\$8,750		\$8,750	\$8,750		\$8,750
5	1	1	Replace central plumbing system valves	\$5,000	\$10,000		\$10,000	\$10,000		\$10,000
6	3	3	Replace HW recirculation pump, piping, valves, and controls	\$4,800	\$6,000		\$6,000	\$6,000		\$6,000
7				\$0			\$0	\$0		\$0
8	1	1	Replace Water Closets (QTY = 48)	\$57,600	\$72,000		\$72,000	\$72,000		\$72,000
9	1	ADA	Replace Water Closets (QTY = 40)	\$72,000	\$90,000		\$90,000	\$90,000		\$90,000
10	1	1	Replace Floor Drains Shower Pans (QTY=48)	\$28,800	\$36,000		\$36,000	\$36,000		\$36,000
11	1	ADA	Gang Shower, Group of 5, ADA, Drain, Mixing Valve, & Head, (QTY=8)	\$55,200	\$69,000		\$69,000	\$69,000		\$69,000
12	1	ADA	Replace floor drains in Suite Bathrooms (QTY=24)	\$19,200	\$24,000		\$24,000	\$24,000		\$24,000
13	2	ADA	Replace Lavatories, faucets, and trim (QTY=48)	\$57,600	\$72,000		\$72,000	\$72,000		\$72,000
14	1	ADA	Replace water cooler on each floor with two level water cooler (QTY=4)	\$6,400	\$8,000		\$8,000	\$8,000		\$8,000
15	1	ADA	Provide or replace 3/4" isolation ball valves for each bathroom suite (QTY=24 sets)	\$4,800	\$6,000		\$6,000	\$6,000		\$6,000
16				\$7,200	\$9,000		\$9,000	\$9,000		\$9,000
17	1	1	Replace RA Room Lavatory, Shower, & Water Closet	\$2,800	\$3,500		\$3,500	\$3,500		\$3,500
18	1	1	Replace Common area bathrooms water closet and lavatory (QTY=2)	\$1,800	\$2,250		\$2,250	\$2,250		\$2,250
19	3	3	Replace Kitchen Sink in Common Area	\$700	\$875		\$875	\$875		\$875
20				\$0	\$0		\$0	\$0		\$0
21	1	1	Reconnect Roof Drain Leaders not connected to Storm Sewer (QTY = 12)	\$4,800	\$6,000		\$6,000	\$6,000		\$6,000
22	1	1	Replace Roof Drain Leaders found to be leaking at walls (QTY=1)	\$2,400	\$3,000		\$3,000	\$3,000		\$3,000
23				\$0	\$0		\$0	\$0		\$0
24			Remodel for ADA compliance.	\$0	\$0		\$0	\$0		\$0
25	ADA	ADA	Demolish Plumbing Domestic Water Piping.	\$2,500	\$3,125		\$3,125	\$3,125		\$3,125
26	ADA	ADA	Demolish plumbing drain waste and vent piping.	\$4,500	\$5,625		\$5,625	\$5,625		\$5,625
27	ADA	ADA	Salvage value of copper.	-\$7,500	-\$9,375		-\$9,375	-\$9,375		-\$9,375
28	ADA	ADA	New domestic water piping for ADA configuration.	\$71,000	\$88,750		\$88,750	\$88,750		\$88,750
29	ADA	ADA	New drain waste and vent piping for ADA configuration	\$83,000	\$78,750		\$78,750	\$78,750		\$78,750
TOTALS				\$289,500	\$8,000	\$0	\$14,375	\$310,875	\$444,875	\$492,750

Cost Estimates
Hewlett

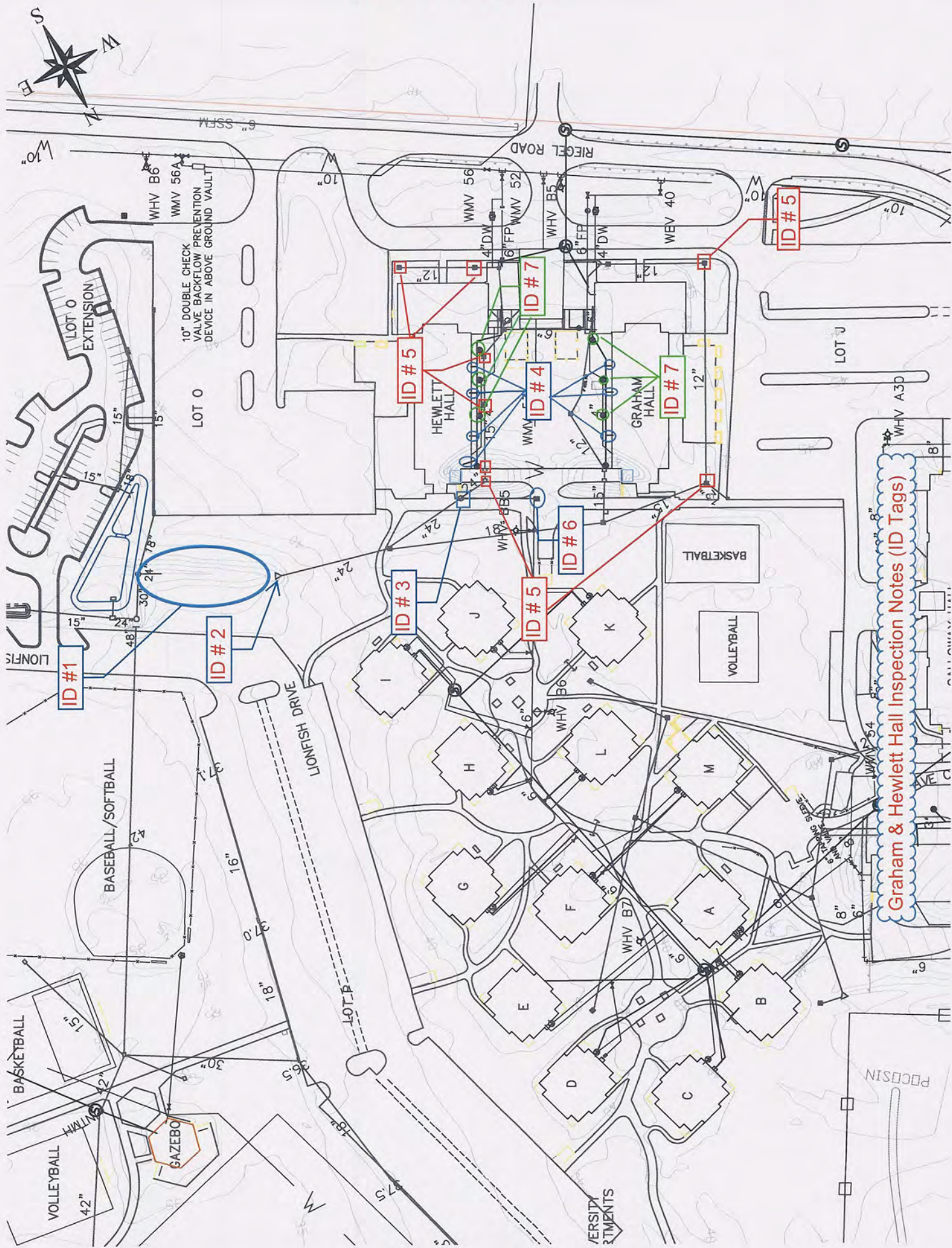
contingency & design factor 1.25

ID	Priority	Priority		Costs Including Contingency & Design	Imminent Maintenance (1)	Necessary, Mandated (2) Note 1.	Desirable Upgrades (3) Note 1.	Option Replace Plumbing System w/Similar Note 3.	Option: VRF System Req'd for ADA Note 4. (4)	Total ADA
1	ADA	ADA	Revised Sprinkler Piping for ADA configuration (4 floors)	\$160,000						\$200,000
2	ADA	ADA	Re-Design fire alarm system for common areas	\$63,000	\$0	\$0	\$0	\$0	\$78,750	\$78,750
TOTALS				\$223,000	\$0	\$0	\$0	\$0	\$78,750	\$278,750

APPENDIX B



APPENDIX C



Graham & Hewlett Hall Inspection Notes (ID Tags)

APPENDIX D

UNIVERSITY OF NORTH CAROLINA WILMINGTON

*TABULATED POWER CONSUMPTION AT BELK, GRAHAM, & HEWLETT HALLS FOR PERIOD JULY, 2010 TO JUNE, 2012

	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	TOTAL YTD
BELK HALL													
ELECTRIC													
METER READING	47373	47425	47475	47533	47582	47612	47634	47662	47707	47758	47821	47870	
PREVIOUS READING	47369	47373	47425	47475	47533	47582	47634	47662	47707	47758	47821	47870	
CHANGE	4	52	50	58	49	30	22	28	45	51	63	49	
KWH (CHANGE X 100)	640	8320	8000	9280	7840	4800	3520	4480	7200	8160	10080	7840	80,160
COST/KWH	0.0780	0.0837	0.0789	0.0760	0.0753	0.0741	0.0741	0.0749	0.0704	0.0729	0.0753	0.0777	0.0761
COST	48.92	696.39	638.40	705.28	590.35	355.68	260.93	335.55	506.88	594.56	759.02	609.17	6,102.32

	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	TOTAL YTD
BELK HALL													
ELECTRIC													
METER READING	47947	48011	48074	48111	48160	48193	48225	48266	48318	48390	48445	48512	
PREVIOUS READING	47970	47997	48011	48074	48111	48160	48193	48225	48266	48318	48390	48445	
CHANGE	64	10240	10980	5920	7840	5280	5120	6560	8920	9520	10400	10720	103,720
KWH (CHANGE X 100)	13220	10240	10980	5920	7840	5280	5120	6560	8920	9520	10400	10720	103,720
COST/KWH	0.0815	0.0820	0.0732	0.0763	0.0793	0.0712	0.0702	0.0725	0.0687	0.0730	0.0747	0.0756	0.0756
COST	1,003.91	839.37	788.70	451.40	621.81	373.69	359.42	473.60	611.58	724.18	755.04	800.78	7,767.15

	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	TOTAL YTD
GRAHAM HALL													
ELECTRIC													
METER READING	15341	15401	15461	15026	16076	16096	16105	16117	16138	16180	16220	16281	
PREVIOUS READING	15341	15401	15401	15972	16028	16076	16086	16105	16117	16138	16180	16220	
CHANGE	0	60	60	54	50	10	19	12	21	42	40	41	41
KWH (CHANGE X 640)	0	38400	38400	34560	32000	6400	12160	7680	13440	26880	25600	26240	261,760
COST/KWH	0.0780	0.0837	0.0789	0.0760	0.0753	0.0741	0.0741	0.0749	0.0704	0.0729	0.0753	0.0777	0.0769
COST	0.00	3,214.08	3,084.32	2,628.56	2,409.60	474.24	901.08	575.23	946.18	1,959.55	1,927.88	2,039.85	20,137.35

	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	TOTAL YTD
GRAHAM HALL													
ELECTRIC													
METER READING	16333	16408	16487	16540	16589	16588	16600	16622	16680	16708	16743	16780	
PREVIOUS READING	16261	16333	16408	16487	16540	16588	16600	16622	16680	16708	16743	16780	
CHANGE	72	75	79	53	49	1	22	42	80	30	35	35	332,180
KWH (CHANGE X 640)	46080	48000	50640	33920	31360	4480	7680	14080	24320	30720	22400	22630	268,800
COST/KWH	0.0815	0.0820	0.0732	0.0763	0.0793	0.0712	0.0702	0.0725	0.0687	0.0730	0.0747	0.0756	0.0756
COST	3,754.89	3,934.53	3,684.50	2,598.40	2,081.15	318.76	539.14	1,023.80	1,670.78	2,242.56	1,628.24	1,788.90	25,488.65

	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	TOTAL YTD
HEWLETT HALL													
ELECTRIC													
METER READING	148970	148904	150729	151388	152035	152481	152922	153455	154042	154780	155500	156138	
PREVIOUS READING	147999	148970	148904	150729	151388	152035	152481	152922	153455	154042	154780	155500	
CHANGE	871	934	925	659	647	448	441	533	587	718	740	638	130,2240
KWH (CHANGE X 100)	138,360	148,440	148,000	105,440	103,520	71,380	70,560	85,280	93,920	114,800	118,400	102,080	130,2240
COST/KWH	0.0815	0.0820	0.0732	0.0763	0.0793	0.0712	0.0702	0.0725	0.0687	0.0730	0.0747	0.0756	0.0756
COST	11,355.84	12,248.50	11,575.68	8,039.81	8,210.38	5,077.40	4,953.31	6,182.80	6,452.30	8,386.24	8,565.84	7,625.38	98,704.58

	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	TOTAL YTD
HEWLETT HALL													
ELECTRIC													
METER READING	148870	148804	150729	151388	152035	152481	152922	153455	154042	154780	155500	156138	
PREVIOUS READING	147999	148870	148804	150729	151388	152035	152481	152922	153455	154042	154780	155500	
CHANGE	871	934	925	659	647	448	441	533	587	718	740	638	130,2240
KWH (CHANGE X 100)	138,360	148,440	148,000	105,440	103,520	71,380	70,560	85,280	93,920	114,800	118,400	102,080	130,2240
COST/KWH	0.0815	0.0820	0.0732	0.0763	0.0793	0.0712	0.0702	0.0725	0.0687	0.0730	0.0747	0.0756	0.0756
COST	11,355.84	12,248.50	11,575.68	8,039.81	8,210.38	5,077.40	4,953.31	6,182.80	6,452.30	8,386.24	8,565.84	7,625.38	98,704.58

APPENDIX D.2

APPENDIX D UNIVERSITY OF NORTH CAROLINA WILMINGTON TABULATED NATURAL GAS CONSUMPTION AT BELK, GRAHAM, & HEWLETT HALLS FOR PERIOD JULY, 2010 TO JUNE, 2012

	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	TOTAL YTD
BELK HALL													
GAS													
METER READING	73	123	202	325	325	676	1027	1367	1704	2048	2326	2523	2624
PREVIOUS READING	16	73	123	202	325	325	676	1027	1367	1704	2048	2326	2523
MCF CHANGE	57	50	79	123	351	351	340	337	337	344	278	197	101
COST/MCF	6.54	6.52	5.32	5.42	5.14	5.99	5.96	6.71	6.13	6.27	6.45	6.45	6.04
COST	372.76	326.00	420.28	686.66	1,804.14	2,102.49	2,026.40	2,261.27	2,108.72	1,745.06	1,270.95	651.45	15,753.90
Net Sft: 35461 Gross Sft: 40387 New gas meter													

	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	TOTAL YTD
GRAHAM HALL													
GAS													
METER READING	2742	2817	3021	3263	3545	3825	4087	4402	4641	4851	5034	5158	5034
PREVIOUS READING	2624	2742	2817	3021	3263	3545	3825	4087	4402	4641	4851	5034	5158
MCF CHANGE	118	75	204	242	282	290	262	315	240	210	183	124	2,534
COST/MCF	6.56	6.57	5.96	5.74	5.87	5.70	5.35	5.47	4.89	4.26	4.24	4.24	5.37
COST	774.06	492.75	1,215.94	1,389.08	1,655.34	1,596.00	1,401.70	1,723.05	1,168.71	894.60	775.92	525.76	13,612.83
Net Sft: 40387 Gross Sft: 45313 New gas meter													

	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	TOTAL YTD
HEWLETT HALL													
GAS													
METER READING	37026	37076	37259	37464	37670	37860	38062	38330	38565	38789	38971	39060	39060
PREVIOUS READING	36981	37026	37076	37259	37464	37670	37860	38062	38330	38565	38789	38971	38971
MCF CHANGE	45	50	183	205	206	190	183	277	236	224	182	89	2,079
COST/MCF	6.36	6.57	5.96	5.74	5.97	5.70	5.35	5.47	4.89	4.26	4.24	4.24	5.29
COST	285.20	328.50	1,090.08	1,176.70	1,209.22	1,134.30	1,032.55	1,515.19	1,105.14	854.24	771.68	377.36	10,990.76
Net Sft: 40392 Gross Sft: 45322 New gas meter													

	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	TOTAL YTD
BELK HALL													
GAS													
METER READING	7917	7988	8097	8211	8323	8424	8535	8684	8830	8980	9097	9172	9172
PREVIOUS READING	7840	7917	7988	8097	8211	8323	8424	8535	8684	8830	8980	9097	9172
MCF CHANGE	77	71	109	114	112	101	111	149	146	150	117	75	1,332
COST/MCF	6.56	6.57	5.96	5.74	5.87	5.70	5.35	5.47	4.89	4.26	4.24	4.24	5.32
COST	505.12	466.47	648.64	654.36	657.44	575.70	593.85	815.03	713.94	639.00	496.06	318.00	7,084.63
Net Sft: 35473 Gross Sft: 40403 New gas meter													

*TABLE OF GAS CONSUMPTION VALUES PROVIDED BY UNCW MIKE WOLFE AND TERRY BLAKE. TABLE CONTENTS WERE FORMATTED TO FIT A SINGLE PAGE.

APPENDIX E

June 22, 2011

Mr. Charlie Maimone
Vice Chancellor for Business Affairs
University of North Carolina
601 South College Road
Wilmington, North Carolina 28403-3297

SUBJECT:	ANNUAL FIRE AND SAFETY INSPECTION	
	MAIN CAMPUS	Complex 1-65-06
	CHANCELLOR RESIDENCE	Complex 1-65-29
	MYRTLE GROVE AREA	Complex 1-65-30
	SALINE PLANT FACILITY	Complex 1-65-32
	NEW HANOVER COUNTY	

Dear Mr. Maimone:

NC General Statute 58-31-40 requires us to inspect each State-owned building at least annually to identify any conditions which may be detrimental to the safety of the building or its occupants. These inspections are based on the NC Building Code and NFPA Fire Codes, as well as other standards and insurance criteria. Your agency is responsible for correcting the reported deficiencies in a timely manner, to improve life safety and to prevent property losses.

On May 17-June 1, 2011, a fire and safety inspection was made at your facility identified above. This report summarizes the results of the inspection. Some of the listed items cover needed maintenance or administrative actions and should be addressed promptly. Those involving existing protective equipment such as fire alarm systems, extinguishers, fire doors, emergency lighting, etc., need immediate attention. Some items may require capital expense and, depending on the hazard, might be deferred until planned future renovations.

Each item is numbered for convenient reference. The first four digits indicate the year and month that it was first identified, followed by a unique number. Items recurring from previous annual inspections should be given special attention. You need to let us know when, and how, each of the following will be addressed:

Mr. Charlie Maimone
Vice Chancellor for Business Affairs
UNC - Wilmington
June 22, 2011

MAIN CAMPUS

Complex 165006

Belk Hall #122 - (Asset 21)

- 11-6-9 Replace the light fixture cover in the 1st floor side stairwell.
- 11-6-10 Label the sprinkler riser room door on the 4th floor.
- 11-6-11 The operating instructions for the fire alarm panel are missing.
- 11-6-12 The overhead heat detector located in the Boiler Room is loose from its mount point.
- 11-6-13 Stairwell fire doors were found chocked open. In the event of fire, fire and smoke damage would be much greater throughout the building because of the chocked doors. All of these doors must be kept closed and latched, unless held open by electro-magnets and released upon alarm from smoke detectors (where permitted by the NC Code and this Dept.).
- 11-6-14 All telecommunication wiring must be properly installed and supported. This wiring cannot be attached to any type of plumbing pipes or electrical conduits. During this inspection I noticed this situation in several of your campus buildings.

Graham Dorm - (Asset 35).

- 10-7-8 All storage must be removed from the Boiler Room.
- 10-7-9 The Fire Pump Room and AHU Room # 1 is required to be properly labeled.
- 11-6-31 The trash chute door has been missing for several years now. If this system is not being used any more, we request that all chute doors on each floor be sealed so that they cannot be used for any purpose. This comment also applies to the other dorms with trash chutes.

11-6-32 A fire extinguisher is needed in the Fire Pump Room. All Trash Chute doors must fully close and latch to protect fire rating of shaft. Ref. NCFRC, Sections 703.2.3 and 704 (2006)

Hewlett Dorm

10-7-10 All trash and storage must be removed from the Boiler Room.

11-6-49 In the Chiller Room; replace the junction box cover adjacent to the electrical disconnect # 0132.

11-6-50 The light fixtures in the Chiller Room are incorrectly wired and could be a shock hazard.

11-6-51 While inspecting this building I found more telecommunication wiring in the chiller room that is incorrectly installed and is supported by conduits, duct systems and plumbing drain and water lines.

11-6-52 All Trash Chute doors must fully close and latch to protect fire rating of shaft. Ref. NCFRC, Sections 703.2.3 and 704 (2006)

APPENDIX F

**FACILITY CONDITION ASSESSMENT PROGRAM (FCAP)
ASSESSMENT OF FACILITIES AT UNC-W
LOCATION: WILMINGTON (COMPLEX NO. 165006)**

(ASSESSED IN 2002 AND 2008)

Following FCAP reports were assessed in 2002. Since that time the University has addressed items as indicated in the Report.

(02) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-E004**

Inspector: **GAR**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNC - W GRAHAM HALL**

Complex: **165006** Asset: **00000035-0** Compass: **16500600000035-0**

Deficiency Type: **1**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **2**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **REPLACE BATHROOM LIGHTS**

Component: **1.092**

Description of Deficiency:

THE EXISTING BATHROOM LIGHTS ARE NOT VAPOR PROOF.

Correction Required:

INSTALL NEW VAPOR PROOF LIGHTS IN THE BATHROOMS , AS PER THE BUILDING CODE.

Estimated cost of correction: **3500**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **1**

General Fund = 1

Revenue Receipts = 2

(17) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **98-E029**

Inspector: **JBS**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNC - W BELK RESIDENCE HALL**

Complex: **165006** Asset: **00000021-0** Compass: **16500600000021-0**

Deficiency Type: **3**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **1**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **REPLACE BATHROOM LIGHTING**

Component: **1.092**

Description of Deficiency:

THE LIGHTING IN THE SHOWER AREAS DOES NOT APPEAR TO BE VAPOR TIGHT.

Correction Required:

RECOMMEND REPLACING WITH VAPOR TIGHT LIGHTING.

Estimated cost of correction: **7500**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(02) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **98-E028**

Inspector: **JBS**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNC - W BELK RESIDENCE HALL**

Complex: **165006** Asset: **00000021-0** Compass: **16500600000021-0**

Deficiency Type: **1**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **0**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **REPLACE FIRE ALARM SYSTEM**

Component: **1.102**

Description of Deficiency:

THE EXISTING FIRE ALARM SYSTEM IS OLD, OBSOLETE, AND REPLACEMENT PARTS ARE DIFFICULT TO OBTAIN. DEPARTMENT OF INSURANCE'S JUNE 1997 ANNUAL FIRE AND SAFETY REPORT INDICATES THIS SYSTEM LACKS MANY FEATURES REQUIRED BY PRESENT CODES. A NEW SYSTEM IS NEEDED TO ADEQUATELY PROTECT LIVES AND PROPERTY

Correction Required:

RECOMMEND REPLACING THE EXISTING FIRE ALARM SYSTEM. THE NEW ALARM SYSTEM SHOULD BE EQUIPPED WITH A DIGITAL ALARM COMMUNICATOR FOR AUTOMATIC TRANSMISSION OF ITS ALARM TO A NFPA APPROVED 24-HOUR ANSWERING SERVICE. INSTALLATION MUST MEET N.C. BUILDING CODE AND DEPARTMENT OF INSURANCE STANDARDS.

Estimated cost of correction: **70000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(17) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **98-E031**

Inspector: **JBS**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNC - W HEWLETT DORM**

Complex: **165006** Asset: **00000022-0** Compass: **16500600000022-0**

Deficiency Type: **3**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **1**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **REPLACE BATHROOM LIGHTING**

Component: **1.092**

Description of Deficiency:

THE LIGHTING IN THE SHOWER AREAS DOES NOT APPEAR TO BE VAPOR TIGHT.

Correction Required:

RECOMMEND REPLACING WITH VAPOR TIGHT LIGHTING.

Estimated cost of correction: **7500**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(13) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-G033**

Inspector: **RCW**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - BELK HALL**

Complex: **165006** Asset: **00000021-0** Compass: **16500600000021-0**

Deficiency Type: **1**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **1**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **REPAIR EXTERIOR WALLS**

Component: **1.041**

Description of Deficiency:

THE EXTERIOR BRICK VENEER WALLS EXHIBIT MANY PROBLEMS AS OUTLINED IN CONSULTANT'S STUDY BY ANDREW AND KUSKE CONSULTING ENGINEERS, INC. IN JULY 2001, MOSTLY ORIGINATING FROM THERMAL AND MOISTURE EXPANSION AND CONTRACTION OF THE BRICK VENEER. NOTE: SOME WORK HAS BEEN COMPLETED.

Correction Required:

AS OUTLINED IN CONSULTANT'S STUDY BY ANDREW AND KUSKE CONSULTING ENGINEERS, INC. AS NOTED IN JULY 2001, COMPLETE REPAIRS AND RENOVATIONS AS NOTED. NOTE: THERE IS A SEPARATE DEFICIENCY TO REMOVE AND REPLACE EXISTING WINDOWS.

Estimated cost of correction: **710000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(14) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-G034**

Inspector: **RCW**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - BELK HALL**

Complex: **165006** Asset: **00000021-0** Compass: **16500600000021-0**

Deficiency Type: **3**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **1**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **REPLACE WINDOWS**

Component: **1.042**

Description of Deficiency:

THE EXISTING METAL FRAMED SINGLE PANE WINDOWS NO LONGER OPERATE PROPERLY AND ARE DIFFICULT TO MAINTAIN. THE EXTENSIVE AMOUNT OF SINGLE GLAZING FOR THESE WINDOWS MAKE THEM ENERGY INEFFICIENT.

Correction Required:

REPLACE THE EXISTING WINDOWS WITH NEW THERMAL RATED LOW - E INSULATED WINDOWS. COORDINATE WITH MASONRY REPAIR.

Estimated cost of correction: **75000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(17) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-G035**

Inspector: **RCW**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - BELK HALL**

Complex: **165006** Asset: **00000021-0** Compass: **16500600000021-0**

Deficiency Type: **3**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **1**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **MISCL. RENOVATION**

Component: **9.5**

Description of Deficiency:

DUMPSTER STORAGE AREA APPEARS TO HAVE BEEN DAMAGED BY VECHICULAR TRAFFIC ENTERING AND EXITING STORAGE AREA.

Correction Required:

CHIP OUT AND REPLACE DAMAGED MASONRY.

Estimated cost of correction: **3000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(14) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-G036**

Inspector: **RCW**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - BELK HALL**

Complex: **165006** Asset: **00000021-0** Compass: **16500600000021-0**

Deficiency Type: **3**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **1**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **REPLACE DOORS**

Component: **1.043**

Description of Deficiency:

SOME OF THE EXTERIOR DOORS, DOOR FRAMES AND HARDWARE ARE DETERIORATED, DAMAGED AND NEAR END OF MAINTAINABLE LIFE.

Correction Required:

REMOVE AND REPLACE DETERIORATED AND DAMAGED DOORS, FRAMES AND HARDWARE. INSTALL CLOSERS AND PANIC HARDWARE AS NECESSARY.

Estimated cost of correction: **6000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(12) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-G037**

Inspector: **RCW**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - HEWLETT HALL**

Complex: **165006** Asset: **00000022-0** Compass: **16500600000022-0**

Deficiency Type: **1**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **0**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **LSC CORRECTIONS**

Component: **8.1**

Description of Deficiency:

AS PER DOI INSPECTION IT WAS REQUESTED THAT ELEVATOR CAPTURE BE INSTALLED IN THIS BUILDING.

Correction Required:

INSTALL ELEVATOR CAPTURE PER DOI'S RECOMMENDATIONS.

Estimated cost of correction: **45000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(14) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-G038**

Inspector: **RCW**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - HEWLETT HALL**

Complex: **165006** Asset: **0000022-0** Compass: **1650060000022-0**

Deficiency Type: **3**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **1**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **REPLACE DOORS**

Component: **1.042**

Description of Deficiency:

SOME STAIRWAY DOORS, FRAMES AND HARDWARE ARE DAMAGED AND NEAR END OF MAINTAINABLE LIFE.

Correction Required:

REMOVE AND REPLACE DETERIORATED AND DAMAGED STAIRWAY DOORS, FRAMES AND HARDWARE. INSTALL CLOSERS AND PANIC HARDWARE AS NECESSARY.

Estimated cost of correction: **10000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(13) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-G039**

Inspector: **RCW**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - HEWLETT HALL**

Complex: **165006** Asset: **00000022-0** Compass: **16500600000022-0**

Deficiency Type: **1**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **1**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **REPAIR EXTERIOR WALLS**

Component: **1.041**

Description of Deficiency:

THE EXTERIOR BRICK VENEER WALLS EXHIBIT MANY PROBLEMS AS OUTLINED IN CONSULTANT'S STUDY BY ANDREW AND KUSKE CONSULTING ENGINEERS, INC. IN JULY 2001, MOSTLY ORIGINATING FROM THERMAL AND MOISTURE EXPANSION AND CONTRACTION OF THE BRICK VENEER. IN ADDITION, THE ASBENCE OF THE BIA RECOMMENDED HORIZONTAL AND VERTICAL EXPANSION JOINTS IS ALSO CONTRIBUTING TO THESE PROBLEMS.

Correction Required:

AS OUTLINED IN CONSULTANT'S STUDY BY ANDREW AND KUSKE CONSULTING ENGINEERS, INC. AS NOTED IN JULY 2001, NEW HORIZONTAL SHELF ANGLE FLASHING PER BIA SPECIFICATIONS SHOULD BE INSTALLED. VERTICAL EXPANSION JOINTS (3/4" WIDE) SHOULD ALSO BE INSTALLED. IN ADDITION, REMOVE BRICK EYEBROWS, CLEAN, REPAIR, AND COAT STEEL, AND REINSTALL PROPERLY ATTACHED BRICK, AND COVER WITH CAP. CUT OUT AND RE-CAULK PERIMETER OF WINDOWS AND STONE VENEER PANELS. NOTE: THERE IS SEPARATE DEFICIENCY TO REMOVE AND REPLACE EXISTING WINDOWS.

Estimated cost of correction: **500000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(03) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-G040**

Inspector: **RCW**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - HEWLETT HALL**

Complex: **165006** Asset: **00000022-0** Compass: **16500600000022-0**

Deficiency Type: **3**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **2**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **ROOF REPLACEMENT-BUILT-UP ROOF**

Component: **1.05**

Description of Deficiency:

THE EXISTING BUILT-UP ROOF WITH BALLAST IS IN POOR CONDITION AND IS NEARING END OF USEFUL LIFE.

Correction Required:

REMOVE ALL ROOF MATERIALS TO EXPOSE THE STRUCTURAL DECK AND REPAIR AS REQUIRED. INSTALL NEW FLASHING, EXPANSION JOINTS AND DRAINS AS NEEDED. INSTALL MEMBRANE OVER NEW INSULATION (MINIMUM R-20). COST ESTIMATE ASSUMES HIGH QUALITY BUILT-UP, SINGLE PLY (AT BACK PORTION OF BUILDING) OR OTHER SYSTEM WITH A LIGHT REFLECTIVE SURFACE.

Estimated cost of correction: **160000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(14) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-G041**

Inspector: **RCW**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - HEWLETT HALL**

Complex: **165006** Asset: **00000022-0** Compass: **16500600000022-0**

Deficiency Type: **3**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **1**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **REPLACE WINDOWS**

Component: **1.042**

Description of Deficiency:

THE EXISTING METAL FRAMED SINGLE PANE WINDOWS NO LONGER OPERATE PROPERLY AND ARE DIFFICULT TO MAINTAIN. THE EXTENSIVE AMOUNT OF SINGLE GLAZING FOR THESE WINDOWS MAKE THEM ENERGY INEFFICIENT.

Correction Required:

REPLACE THE EXISTING WINDOWS WITH NEW THERMAL RATED LOW-E INSULATED WINDOWS.

Estimated cost of correction: **98000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(13) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-G044**

Inspector: **RCW**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - GRAHAM HALL**

Complex: **165006** Asset: **00000035-0** Compass: **16500600000035-0**

Deficiency Type: **1**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **1**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **REPAIR EXTERIOR WALLS**

Component: **1.041**

Description of Deficiency:

THE EXTERIOR BRICK VENEER WALLS EXHIBIT MANY PROBLEMS AS OUTLINED IN CONSULTANT'S STUDY BY ANDREW AND KUSKE CONSULTING ENGINEERS, INC. IN JULY 2001, MOSTLY ORIGINATING FROM THERMAL AND MOISTURE EXPANSION AND CONTRACTION OF THE BRICK VENEER. IN ADDITION, THE ASBENCE OF THE BIA RECOMMENDED HORIZONTAL AND VERTICAL EXPANSION JOINTS IS ALSO CONTRIBUTING TO THESE PROBLEMS.

Correction Required:

AS OUTLINED IN CONSULTANT'S STUDY BY ANDREW AND KUSKE CONSULTING ENGINEERS, INC. AS NOTED IN JULY 2001, NEW HORIZONTAL SHELF ANGLE FLASHING PER BIA SPECIFICATIONS SHOULD BE INSTALLED. VERTICAL EXPANSION JOINTS (3/4" WIDE) SHOULD ALSO BE INSTALLED. IN ADDITION, REMOVE BRICK EYEBROWS, CLEAN, REPAIR, AND COAT STEEL, AND REINSTALL PROPERLY ATTACHED BRICK, AND COVER WITH CAP. CUT OUT AND RE-CAULK PERIMETER OF WINDOWS AND STONE VENEER PANELS. NOTE: THERE IS SEPARATE DEFICIENCY TO REMOVE AND REPLACE EXISTING WINDOWS.

Estimated cost of correction: **500000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(03) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-G045**

Inspector: **RCW**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - GRAHAM HALL**

Complex: **165006** Asset: **00000035-0** Compass: **16500600000035-0**

Deficiency Type: **3**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **2**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **ROOF REPLACEMENT-BUILT-UP ROOF**

Component: **1.05**

Description of Deficiency:

THE EXISTING BUILT-UP ROOF WITH BALLAST IS IN POOR CONDITION AND IS NEARING END OF USEFUL LIFE.

Correction Required:

REMOVE ALL ROOF MATERIALS TO EXPOSE THE STRUCTURAL DECK AND REPAIR AS REQUIRED. INSTALL NEW FLASHING, EXPANSION JOINTS AND DRAINS AS NEEDED. INSTALL MEMBRANE OVER NEW INSULATION (MINIMUM R-20). COST ESTIMATE ASSUMES HIGH QUALITY BUILT-UP, SINGLE PLY OR OTHER SYSTEM WITH A LIGHT REFLECTIVE SURFACE.

Estimated cost of correction: **160000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(14) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-G046**

Inspector: **RCW**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - GRAHAM HALL**

Complex: **165006** Asset: **00000035-0** Compass: **16500600000035-0**

Deficiency Type: **3**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **1**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **REPLACE WINDOWS**

Component: **1.042**

Description of Deficiency:

THE EXISTING METAL FRAMED SINGLE PANE WINDOWS NO LONGER OPERATE PROPERLY AND ARE DIFFICULT TO MAINTAIN. THE EXTENSIVE AMOUNT OF SINGLE GLAZING FOR THESE WINDOWS MAKE THEM ENERGY INEFFICIENT.

Correction Required:

REPLACE THE EXISTING WINDOWS WITH NEW THERMAL RATED LOW-E INSULATED WINDOWS.

Estimated cost of correction: **98000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(14) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-G047**

Inspector: **RCW**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - GRAHAM HALL**

Complex: **165006** Asset: **00000035-0** Compass: **16500600000035-0**

Deficiency Type: **3**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **1**

0 = Immediate	1 = 1 year	2 = 2 years	3 = 3 years
4 = 4 years	5 = 5 years	6 = 6 years	

Deficiency Title: **REPLACE DOORS**

Component: **1.042**

Description of Deficiency:

SOME STAIRWAY DOORS, FRAMES AND HARDWARE ARE DAMAGED AND NEAR END OF MAINTAINABLE LIFE.

Correction Required:

REMOVE AND REPLACE DETERIORATED AND DAMAGED STAIRWAY DOORS, FRAMES AND HARDWARE. INSTALL CLOSERS AND PANIC HARDWARE AS NECESSARY.

Estimated cost of correction: **10000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1
Revenue Receipts = 2

(02) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-M022**

Inspector: **MH**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - BELK RESIDENCE HALL**

Complex: **165006** Asset: **00000021-0** Compass: **16500600000021-0**

Deficiency Type: **1**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **1**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **PROVIDE FIRE SPRINKLER SYSTEM**

Component: **1.083**

Description of Deficiency:

**AS NOTED BY THE DEPARTMENT OF INSURANCE AND INDUSTRIAL RISK INSURERS,
THE BUILDING HAS NO SPRINKLER SYSTEM FOR FIRE PROTECTION.**

Correction Required:

PROVIDE A NEW FIRE PROTECTION SPRINKLER SYSTEM.

Estimated cost of correction: **240000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(09) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-M023**

Inspector: **MH**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - HEWLETT DORM**

Complex: **165006** Asset: **00000022-0** Compass: **16500600000022-0**

Deficiency Type: **3**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **5**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **REPLACE CHILLER**

Component: **1.082**

Description of Deficiency:

THE EXISTING CHILLER HAS DETERIORATED WITH AGE, REQUIRES HIGH MAINTENANCE, AND HAS EXCEEDED ITS LIFE EXPECTANCY.

Correction Required:

REPLACE THE CHILLER.

Estimated cost of correction: **65000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(05) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-M024**

Inspector: **MH**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - HEWLETT DORM**

Complex: **165006** Asset: **00000022-0** Compass: **16500600000022-0**

Deficiency Type: **1**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **1**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **REPAIR SHOWER FLOORS**

Component: **1.081**

Description of Deficiency:

MANY OF THE SHOWER DRAIN PANS ARE DEFECTIVE, RESULTING IN WATER LEAKAGE AND DAMAGE TO THE INTERIOR STRUCTURE OF THE BUILDING.

Correction Required:

REPLACE THE SHOWER DRAIN PANS WITH NEW PANS, INCLUDING NEW MEMBRANE AND FLOORING. MONITOR INSTALLATION TO ENSURE WATERTIGHT CONSTRUCTION.

Estimated cost of correction: **85000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1
Revenue Receipts = 2

(07) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-M025**

Inspector: **MH**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - HEWLETT DORM**

Complex: **165006** Asset: **00000022-0** Compass: **16500600000022-0**

Deficiency Type: **3**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **5**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **UPGRADE AIR DISTRIBUTION**

Component: **1.082**

Description of Deficiency:

THE AIR HANDLING UNITS HAVE DETERIORATED WITH AGE. THE UNITS HAVE BECOME CORRODED, PARTICULARLY AT THE PIPE CONNECTIONS AND CONDENSATE DRAIN PANS. THE INTERIOR SURFACES OF THE DUCTWORK HAVE BECOME COATED WITH PARTICLES OF DUST AND LOOSE INSULATION. THESE PARTICLES OFTEN BECOME DISLODGED AND BLOW OUT INTO THE SPACES.

Correction Required:

REPLACE THE AIR HANDLING UNITS. CLEAN THE DUCTWORK TO ELIMINATE LOOSE PARTICLES OF DUST AND INSULATION.

Estimated cost of correction: **240000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(02) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-M026**

Inspector: **MH**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - HEWLETT DORM**

Complex: **165006** Asset: **00000022-0** Compass: **16500600000022-0**

Deficiency Type: **1**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **1**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **PROVIDE FIRE SPRINKLER SYSTEM**

Component: **1.083**

Description of Deficiency:

**AS NOTED BY THE DEPARTMENT OF INSURANCE AND INDUSTRIAL RISK INSURERS,
THE BUILDING HAS NO SPRINKLER SYSTEM FOR FIRE PROTECTION.**

Correction Required:

PROVIDE A NEW FIRE PROTECTION SPRINKLER SYSTEM.

Estimated cost of correction: **240000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(05) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-M030**

Inspector: **MH**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - GRAHAM HALL**

Complex: **165006** Asset: **00000035-0** Compass: **16500600000035-0**

Deficiency Type: **1**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **1**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **PROVIDE FIRE SPRINKLER SYSTEM**

Component: **1.081**

Description of Deficiency:

**AS NOTED BY THE DEPARTMENT OF INSURANCE AND INDUSTRIAL RISK INSURERS,
THE BUILDING HAS NO SPRINKLER SYSTEM FOR FIRE PROTECTION.**

Correction Required:

PROVIDE A NEW FIRE PROTECTION SPRINKLER SYSTEM.

Estimated cost of correction: **240000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(07) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-M031**

Inspector: **MH**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - GRAHAM HALL**

Complex: **165006** Asset: **00000035-0** Compass: **16500600000035-0**

Deficiency Type: **3**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **5**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **UPGRADE AIR DISTRIBUTION**

Component: **1.082**

Description of Deficiency:

THE AIR HANDLING UNITS HAVE DETERIORATED WITH AGE. THE UNITS HAVE BECOME CORRODED, PARTICULARLY AT THE PIPE CONNECTIONS AND CONDENSATE DRAIN PANS. THE INTERIOR SURFACES OF THE DUCTWORK HAVE BECOME COATED WITH PARTICLES OF DUST AND LOOSE INSULATION. THESE PARTICLES OFTEN BECOME DISLODGED AND BLOW OUT INTO THE SPACES.

Correction Required:

REPLACE THE AIR HANDLING UNITS. CLEAN THE DUCTWORK TO ELIMINATE LOOSE PARTICLES OF DUST AND INSULATION.

Estimated cost of correction: **240000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(09) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-M032**

Inspector: **MH**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - GRAHAM HALL**

Complex: **165006** Asset: **00000035-0** Compass: **16500600000035-0**

Deficiency Type: **3**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **5**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **REPLACE CHILLER**

Component: **1.082**

Description of Deficiency:

THE EXISTING CHILLER HAS DETERIORATED WITH AGE, REQUIRES HIGH MAINTENANCE, AND HAS EXCEEDED ITS LIFE EXPECTANCY.

Correction Required:

REPLACE THE CHILLER.

Estimated cost of correction: **65000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

(05) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-M033**

Inspector: **MH**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - GRAHAM HALL**

Complex: **165006** Asset: **00000035-0** Compass: **16500600000035-0**

Deficiency Type: **1**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **1**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **REPAIR SHOWER FLOORS**

Component: **1.083**

Description of Deficiency:

MANY OF THE SHOWER DRAIN PANS ARE DEFECTIVE, RESULTING IN WATER LEAKAGE AND DAMAGE TO THE INTERIOR STRUCTURE OF THE BUILDING.

Correction Required:

REPLACE THE SHOWER DRAIN PANS WITH NEW PANS, INCLUDING NEW MEMBRANE AND FLOORING. MONITOR INSTALLATION TO ENSURE WATERTIGHT CONSTRUCTION.

Estimated cost of correction: **85000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **2**

General Fund = 1

Revenue Receipts = 2

5) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-M057**

Inspector: **MH**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - INFRASTRUCTURE**

Complex: **165006** Asset: **31000000-0** Compass: **16500631000000-0**

Deficiency Type: **3**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **0**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **UPGRADE WATER AND SEWER**

Component: **3.1**

Description of Deficiency:

THE UNDERGROUND SANITARY SEWER PIPING AT SEVERAL LOCATIONS HAS BEEN DAMAGED. THE WALTON DR. LIFT STATION IS OPERATING AT ABOVE RATED CAPACITY. SECONDARY WATER SUPPLY SERVICE IS NEEDED, INCLUDING VALVES, BACKFLOW PREVENTERS AND ADDITIONAL FIRE HYDRANTS.

Correction Required:

REPAIR OR REPLACE THE SECTIONS OF DAMAGED SANITARY SEWER PIPING. UPGRADE THE LIFT STATION AS NEEDED TO MEET CAMPUS DEMAND. PROVIDE ADDITIONAL WATER SUPPLY SYSTEMS.

Estimated cost of correction: **490000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **1**

General Fund = 1

Revenue Receipts = 2

(12) Category

State of North Carolina Facility Condition Assessment Program

Deficiency Information

Deficiency No.: **02-G119**

Inspector: **RCW**

Agency No.: **6000**

Agency Name: **UNIV**

Institution & Building Name: **UNCW - CAMPUS WIDE**

Complex: **165006** Asset: **71000000-0** Compass: **16500671000000-0**

Deficiency Type: **1**

Initial Deficiency = 1 ; Maintenance Deficiency = 2 ; Normal Degradation = 3

Correction Priority: **0**

0 = Immediate

1 = 1 year

2 = 2 years

3 = 3 years

4 = 4 years

5 = 5 years

6 = 6 years

Deficiency Title: **ADA STUDY**

Component: **7.1**

Description of Deficiency:

MOST OF THE BUILDINGS SURVEYED IN THIS COMPLEX WERE DESIGNED AND CONSTRUCTED PRIOR TO THE ADOPTION OF THE AMERICANS WITH DISABILITIES ACT.

Correction Required:

A STUDY TO EVALUATE EACH BUILDING SURVEYED AND THE SURROUNDING SITE AS A WHOLE, FOR ADA COMPLIANCE. A PROFESSIONAL ARCHITECT SHOULD PREPARE A REPORT STATING WHETHER OR NOT EACH BUILDING AND/OR SITE FEATURE IS IN COMPLIANCE WITH THE ADA, AND GIVING THE CORRECTIVE MEASURES REQUIRED (PREPARE PLANS AND SPECIFICATIONS AS NECESSARY) ALONG WITH A PRELIMINARY COST ESTIMATE, FOR EACH DEFICIENCY NOTED.

Estimated cost of correction: **50000**
(plus design fees and contingencies)

Cost estimate status: **1**
Preliminary = 1
Final = 2

BLDG. FUNDED BY: **1**

General Fund = 1

Revenue Receipts = 2

**FACILITY CONDITION ASSESSMENT PROGRAM (FCAP)
ASSESSMENT OF FACILITIES AT UNC-W
LOCATION: WILMINGTON (COMPLEX NO. 165006)**

(ASSESSED IN 2002 AND 2008)

Following FCAP reports were assessed in 2008. Since that time the University has addressed some of these items.

**State of North Carolina
State Construction Office
Facility Condition Assessment Program**

Deficiency Information

Institution & Building Name: **BELK RESIDENCE HALL #122**

Asset: **0000021-0**

Deficiency Title: **COMPLETE BUILDING RENOVATION**

Deficiency No.: **08-G027**

Deficiency Type: **3**

1 = Initial Deficiency
2 = Maintenance Deficiency
3 = Normal Degradation

Description of Deficiency:

MOST ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL SYSTEMS AT THIS 33 YEAR OLD RESIDENCE HALL ARE NEAR/AT THE END OF THEIR EXPECTED USEFUL LIFE. ORIGINAL, METAL, SINGLE GLAZED WINDOWS AND MOST EXTERIOR DOORS, STOREFRONT SYSTEMS AND HARDWARE ARE IN POOR CONDITION. BUILDING DOES NOT FULLY COMPLY WITH CURRENT LIFE SAFETY CODES OR ADA GUIDELINES BUT DOES HAVE ELEVATOR (ORIGINAL TO BUILDING, AND LIKELY REQUIRING RENOVATION). HEATING AND VENTILATION SYSTEMS DO NOT COMPLY WITH CURRENT STANDARDS FOR COMFORT AND HEALTH.

Correction Required:

REMOVE ALL EXISTING INTERIOR SYSTEMS, AND REVISE INTERIOR PLANS AS REQUIRED BY FUNCTIONS AND CODES. REMOVE (ABATE) ANY HAZARDOUS MATERIALS ASSOCIATED WITH RENOVATION. CONSTRUCT NEW INTERIOR SPACES INCLUDING ALL ARCHITECTURAL SYSTEMS AND FINISHES. INSTALL NEW LIGHTING, FIRE ALARMS, ELECTRICAL AND MECHANICAL SERVICE SYSTEMS AS REQUIRED BY CURRENT STANDARDS AND BUILDING CODES. SEAL BUILDING ENVELOPE. INSTALL NEW OPERABLE WINDOWS WITH THERMAL BREAK FRAMES AND INSULATED GLASS WITH LOW E COATING. REPLACE STOREFRONT SYSTEMS, EXTERIOR DOORS, FRAMES AND HARDWARE.

Estimated cost of correction: **7900000**

Correction Priority: **2**

0 = Immediate

4 = 4 years

1 = 1 year

5 = 5 years

2 = 2 years

6 = 6 years

3 = 3 years

**State of North Carolina
State Construction Office**

Facility Condition Assessment Program

Deficiency Information

Institution & Building Name: **BELK RESIDENCE HALL #122**
Asset: **00000021-0**

Deficiency Title: **MISC. RENOVATION**

Deficiency No.: **08-G028**

Deficiency Type: **3**

1 = Initial Deficiency

2 = Maintenance Deficiency

3 = Normal Degradation

Description of Deficiency:

DUMPSTER STORAGE AREA APPEARS TO HAVE BEEN DAMAGED BY VEHICULAR TRAFFIC ENTERING AND EXITING STORAGE AREA.

Correction Required:

CHIP OUT AND REPLACE DAMAGED MASONRY.

Estimated cost of correction: **5000**

Correction Priority: **1**

0 = Immediate

4 = 4 years

1 = 1 year

5 = 5 years

2 = 2 years

6 = 6 years

3 = 3 years

**State of North Carolina
State Construction Office
Facility Condition Assessment Program**

Deficiency Information

Institution & Building Name: **HEWLETT DORM**
Asset: **0000022-0**

Deficiency Title: **COMPLETE BUILDING RENOVATION**

Deficiency No.: **08-G029**

Deficiency Type: **3**
1 = Initial Deficiency
2 = Maintenance Deficiency
3 = Normal Degradation

Description of Deficiency:

MOST ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL SYSTEMS AT THIS 31 YEAR OLD RESIDENCE HALL ARE NEAR/AT THE END OF THEIR EXPECTED USEFUL LIFE. ORIGINAL, METAL, SINGLE GLAZED WINDOWS AND MOST EXTERIOR DOORS, STOREFRONT SYSTEMS AND HARDWARE ARE IN POOR CONDITION. BUILDING DOES NOT FULLY COMPLY WITH CURRENT LIFE SAFETY CODES OR ADA GUIDELINES BUT DOES HAVE ELEVATOR (ORIGINAL TO BUILDING, AND LIKELY REQUIRING RENOVATION). HEATING AND VENTILATION SYSTEMS DO NOT COMPLY WITH CURRENT STANDARDS FOR COMFORT AND HEALTH.

Correction Required:

REMOVE ALL EXISTING INTERIOR SYSTEMS, AND REVISE INTERIOR PLANS AS REQUIRED BY FUNCTIONS AND CODES. REMOVE (ABATE) ANY HAZARDOUS MATERIALS ASSOCIATED WITH RENOVATION. CONSTRUCT NEW INTERIOR SPACES INCLUDING ALL ARCHITECTURAL SYSTEMS AND FINISHES. INSTALL NEW LIGHTING, FIRE ALARMS, ELECTRICAL AND MECHANICAL SERVICE SYSTEMS AS REQUIRED BY CURRENT STANDARDS AND BUILDING CODES. SEAL BUILDING ENVELOPE. INSTALL NEW OPERABLE WINDOWS WITH THERMAL BREAK FRAMES AND INSULATED GLASS WITH LOW E COATING. REPLACE STOREFRONT SYSTEMS, EXTERIOR DOORS, FRAMES AND HARDWARE. NOTE: THERE IS A SEPARATE DEFICIENCY TO ADDRESS STRUCTURAL CONCERNS AT UPPER EXTERIOR WALLS.

Estimated cost of correction: **7900000**

Correction Priority: **1**

0 = Immediate
4 = 4 years

1 = 1 year
5 = 5 years

2 = 2 years
6 = 6 years

3 = 3 years

**State of North Carolina
State Construction Office
Facility Condition Assessment Program**

Deficiency Information

Institution & Building Name: **HEWLETT DORM**
Asset: **0000022-0**

Deficiency Title: **REPAIR EXTERIOR WALLS**

Deficiency No.: **08-G031**

Deficiency Type: **1**

1 = Initial Deficiency
2 = Maintenance Deficiency
3 = Normal Degradation

Description of Deficiency:

THE EXTERIOR BRICK VENEER WALLS EXHIBIT MANY PROBLEMS AS OUTLINED IN CONSULTANT'S STUDY BY ANDREW AND KUSKE CONSULTING ENGINEERS, INC. IN JULY 2001, MOSTLY ORIGINATING FROM THERMAL AND MOISTURE EXPANSION AND CONTRACTION OF THE BRICK VENEER. IN ADDITION, THE ABSENCE OF THE BIA RECOMMENDED HORIZONTAL AND VERTICAL EXPANSION JOINTS IS ALSO CONTRIBUTING TO THESE PROBLEMS.

Correction Required:

AS OUTLINED IN CONSULTANT'S STUDY BY ANDREW AND KUSKE CONSULTING ENGINEERS, INC. AS NOTED IN JULY 2001, NEW HORIZONTAL SHELF ANGLE FLASHING PER BIA SPECIFICATIONS SHOULD BE INSTALLED. VERTICAL EXPANSION JOINTS (3/4" WIDE) SHOULD ALSO BE INSTALLED. IN ADDITION, REMOVE BRICK EYEBROWS, CLEAN, REPAIR, AND COAT STEEL, AND REINSTALL PROPERLY ATTACHED BRICK, AND COVER WITH CAP. CUT OUT AND RE-CAULK PERIMETER OF WINDOWS AND STONE VENEER PANELS.

Estimated cost of correction: **649000**

Correction Priority: **0**

0 = Immediate
4 = 4 years

1 = 1 year
5 = 5 years

2 = 2 years
6 = 6 years

3 = 3 years

**State of North Carolina
State Construction Office
Facility Condition Assessment Program**

Deficiency Information

Institution & Building Name: **HEWLETT DORM**

Asset: **0000022-0**

Deficiency Title: **ROOF REPLACEMENT-BUILT-UP ROOF**

Deficiency No.: **08-G030**

Deficiency Type: **3**

1 = Initial Deficiency

2 = Maintenance Deficiency

3 = Normal Degradation

Description of Deficiency:

THE EXISTING BUILT-UP ROOF WITH BALLAST IS IN POOR CONDITION AND AT END OF MAINTAINABLE LIFE. MANY LEAKS AND REPAIRS TO ROOF.

Correction Required:

REMOVE ALL ROOF MATERIALS TO EXPOSE THE STRUCTURAL DECK AND REPAIR AS REQUIRED. INSTALL NEW FLASHING, EXPANSION JOINTS AND DRAINS AS NEEDED. INSTALL MEMBRANE OVER NEW INSULATION (MINIMUM R-20). COST ESTIMATE ASSUMES HIGH QUALITY BUILT-UP, SINGLE PLY OR OTHER SYSTEM WITH A LIGHT REFLECTIVE SURFACE.

Estimated cost of correction: **212000**

Correction Priority: **0**

0 = Immediate

4 = 4 years

1 = 1 year

5 = 5 years

2 = 2 years

6 = 6 years

3 = 3 years

**State of North Carolina
State Construction Office
Facility Condition Assessment Program**

Deficiency Information

Institution & Building Name: **GRAHAM HALL**
Asset: **00000035-0**

Deficiency Title: **REPAIR EXTERIOR WALLS**

Deficiency No.: **08-G033**

Deficiency Type: **1**

1 = Initial Deficiency
2 = Maintenance Deficiency
3 = Normal Degradation

Description of Deficiency:

THE EXTERIOR BRICK VENEER WALLS EXHIBIT MANY PROBLEMS AS OUTLINED IN CONSULTANT'S STUDY BY ANDREW AND KUSKE CONSULTING ENGINEERS, INC. IN JULY 2001, MOSTLY ORIGINATING FROM THERMAL AND MOISTURE EXPANSION AND CONTRACTION OF THE BRICK VENEER. IN ADDITION, THE ABSENCE OF THE BIA RECOMMENDED HORIZONTAL AND VERTICAL EXPANSION JOINTS IS ALSO CONTRIBUTING TO THESE PROBLEMS. ALSO NOTED IN THE 2005 INSPECTION - ARCHITECTURAL BRICK DETAIL ABOVE WINDOWS PRESENTS A SAFETY HAZARD. BRICK LEDGES (7 COURSES) RESTING ON STEEL ARE COMING LOOSE AND SOME HAVE FALLEN TO THE GROUND. TEMPORARY STEEL BANDS HAVE BEEN INSTALLED TO PREVENT FURTHER DISLODGING OF BRICKS.

Correction Required:

AS OUTLINED IN CONSULTANT'S STUDY BY ANDREW AND KUSKE CONSULTING ENGINEERS, INC. AS NOTED IN JULY 2001, NEW HORIZONTAL SHELF ANGLE FLASHING PER BIA SPECIFICATIONS SHOULD BE INSTALLED. VERTICAL EXPANSION JOINTS (3/4" WIDE) SHOULD ALSO BE INSTALLED. IN ADDITION, REMOVE BRICK EYEBROWS, CLEAN, REPAIR, AND COAT STEEL, AND REINSTALL PROPERLY ATTACHED BRICK, AND COVER WITH CAP. CUT OUT AND RE-CAULK PERIMETER OF WINDOWS AND STONE VENEER PANELS.

Estimated cost of correction: **650000**

Correction Priority: **0**

0 = Immediate
4 = 4 years

1 = 1 year
5 = 5 years

2 = 2 years
6 = 6 years

3 = 3 years

**State of North Carolina
State Construction Office
Facility Condition Assessment Program**

Deficiency Information

Institution & Building Name: **GRAHAM HALL**
Asset: **00000035-0**

Deficiency Title: **COMPLETE BUILDING RENOVATION**

Deficiency No.: **08-G034**

Deficiency Type: **3**

1 = Initial Deficiency
2 = Maintenance Deficiency
3 = Normal Degradation

Description of Deficiency:

MOST ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL SYSTEMS AT THIS 30 YEAR OLD RESIDENCE HALL ARE NEAR/AT THE END OF THEIR EXPECTED USEFUL LIFE. IN RECENT DOI ANNUAL SURVEY IT WAS NOTED THAT FIREPROOFING ABOVE THE CEILING GRID SYSTEM IS NON-EXISTENT. ORIGINAL, METAL, SINGLE GLAZED WINDOWS AND MOST EXTERIOR DOORS, STOREFRONT SYSTEMS AND HARDWARE ARE IN POOR CONDITION. BUILDING DOES NOT FULLY COMPLY WITH CURRENT LIFE SAFETY CODES OR ADA GUIDELINES BUT DOES HAVE ELEVATOR (ORIGINAL TO BUILDING, AND LIKELY REQUIRING RENOVATION). HEATING AND VENTILATION SYSTEMS DO NOT COMPLY WITH CURRENT STANDARDS FOR COMFORT AND HEALTH.

Correction Required:

REMOVE ALL EXISTING INTERIOR SYSTEMS, AND REVISE INTERIOR PLANS AS REQUIRED BY FUNCTIONS AND CODES. REMOVE (ABATE) ANY HAZARDOUS MATERIALS ASSOCIATED WITH RENOVATION. CONSTRUCT NEW INTERIOR SPACES INCLUDING ALL ARCHITECTURAL SYSTEMS AND FINISHES. INSTALL NEW LIGHTING, FIRE ALARMS, ELECTRICAL AND MECHANICAL SERVICE SYSTEMS AS REQUIRED BY CURRENT STANDARDS AND BUILDING CODES. SEAL BUILDING ENVELOPE. INSTALL NEW OPERABLE WINDOWS WITH THERMAL BREAK FRAMES AND INSULATED GLASS WITH LOW E COATING. REPLACE STOREFRONT SYSTEMS, EXTERIOR DOORS, FRAMES AND HARDWARE. NOTE: THERE IS A SEPARATE DEFICIENCY TO ADDRESS STRUCTURAL CONCERNS AT UPPER EXTERIOR WALLS.

Estimated cost of correction: **7900000**

Correction Priority: **1**

0 = Immediate
4 = 4 years

1 = 1 year
5 = 5 years

2 = 2 years
6 = 6 years

3 = 3 years

**State of North Carolina
State Construction Office
Facility Condition Assessment Program**

Deficiency Information

Institution & Building Name: **GRAHAM HALL**
Asset: **00000035-0**

Deficiency Title: **ROOF REPLACEMENT-BUILT-UP ROOF**

Deficiency No.: **08-G035**

Deficiency Type: **3**

1 = Initial Deficiency
2 = Maintenance Deficiency
3 = Normal Degradation

Description of Deficiency:

THE EXISTING BUILT-UP ROOF WITH BALLAST IS IN POOR CONDITION AND IS AT END OF USEFUL LIFE. THERE ARE NUMEROUS LEAKS AND ROOF REQUIRES FREQUENT REPAIR

Correction Required:

REMOVE ALL ROOF MATERIALS TO EXPOSE THE STRUCTURAL DECK AND REPAIR AS REQUIRED. INSTALL NEW FLASHING, EXPANSION JOINTS AND DRAINS AS NEEDED. INSTALL MEMBRANE OVER NEW INSULATION (MINIMUM R-20). COST ESTIMATE ASSUMES HIGH QUALITY BUILT-UP, SINGLE PLY OR OTHER SYSTEM WITH A LIGHT REFLECTIVE SURFACE.

Estimated cost of correction: **212000**

Correction Priority: **0**

0 = Immediate
4 = 4 years

1 = 1 year
5 = 5 years

2 = 2 years
6 = 6 years

3 = 3 years

**State of North Carolina
State Construction Office
Facility Condition Assessment Program**

Deficiency Information

Institution & Building Name: **CAMPUS WIDE ADA STUDY**
Asset: **71000000-0**

Deficiency Title: **ADA STUDY**

Deficiency No.: **08-G136**

Deficiency Type: **1**
1 = Initial Deficiency
2 = Maintenance Deficiency
3 = Normal Degradation

Description of Deficiency:
MOST OF THE BUILDINGS SURVEYED IN THIS COMPLEX WERE DESIGNED AND CONSTRUCTED PRIOR TO THE ADOPTION OF THE AMERICANS WITH DISABILITIES ACT.

Correction Required:
A STUDY TO EVALUATE EACH BUILDING SURVEYED AND THE SURROUNDING SITE AS A WHOLE, FOR ADA COMPLIANCE. A PROFESSIONAL ARCHITECT SHOULD PREPARE A REPORT STATING WHETHER OR NOT EACH BUILDING AND/OR SITE FEATURE IS IN COMPLIANCE WITH THE ADA, AND GIVING THE CORRECTIVE MEASURES REQUIRED (PREPARE PLANS AND SPECIFICATIONS AS NECESSARY) ALONG WITH A PRELIMINARY COST ESTIMATE, FOR EACH DEFICIENCY NOTED.

Estimated cost of correction: **65000**

Correction Priority: **0**

0 = Immediate	1 = 1 year	2 = 2 years	3 = 3 years
4 = 4 years	5 = 5 years	6 = 6 years	