

# UMass Medical Center Master Plan

Massachusetts State Project UMW 0301 ST1  
Volume I

## Discovery & Analysis

- Existing Campus Plans
- Library Study
- Campus Revampus Plans
- CAMIS Inventory
- Site Utilities
- Space Allocation
- Traffic Report
- Peer Institutions
- Real Estate Holdings

Tsoi/Kobus & Associates  
TK&A #23024-000  
November 2005

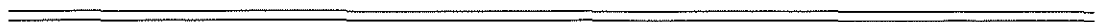
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ARCHITECTS**

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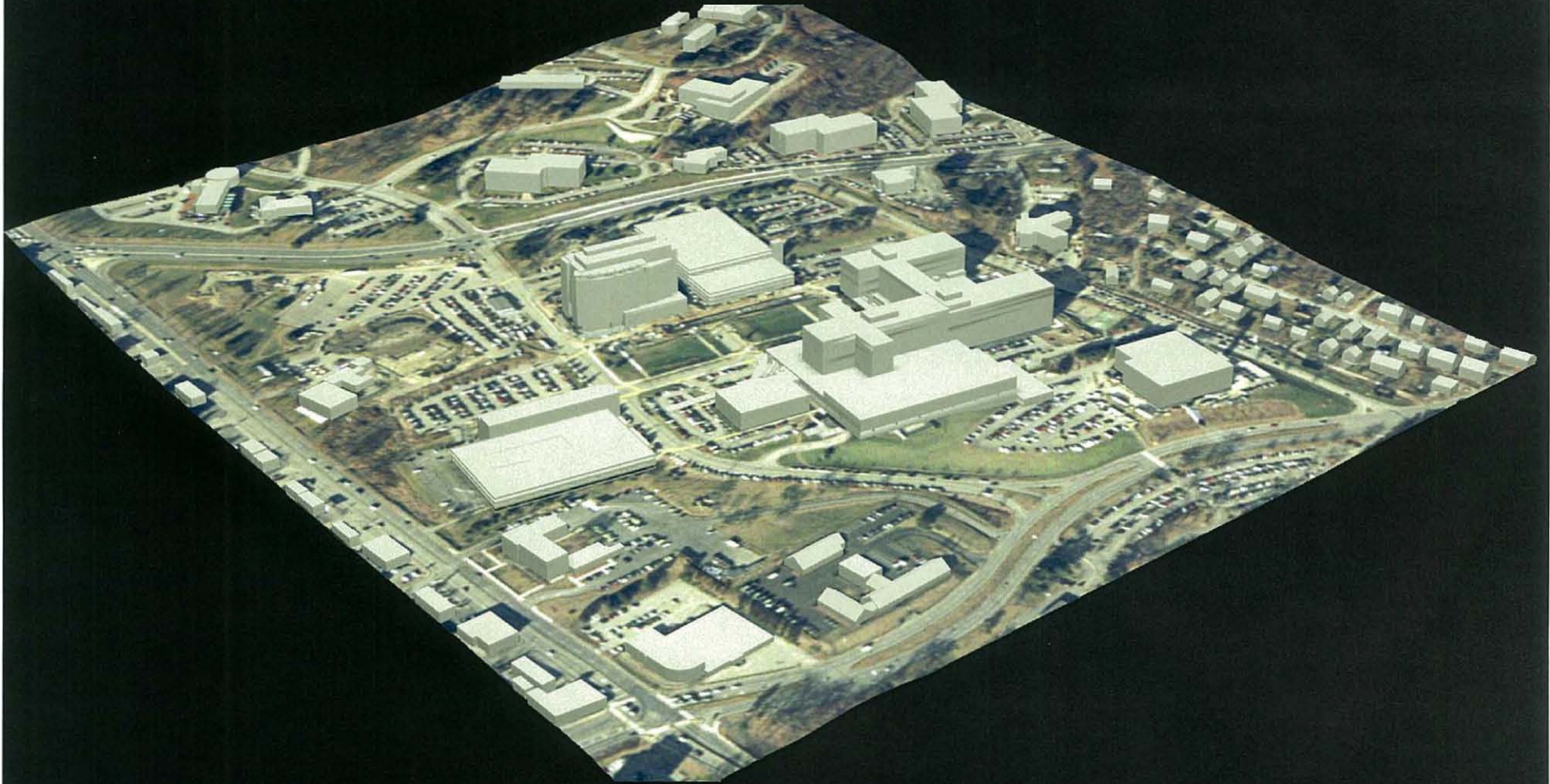
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- III. Library Study, January 2001**
- IV. CAMIS Inventory**
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- VII. Traffic Report, August 2003**
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- IX. Off-Campus Real Estate Holdings List**

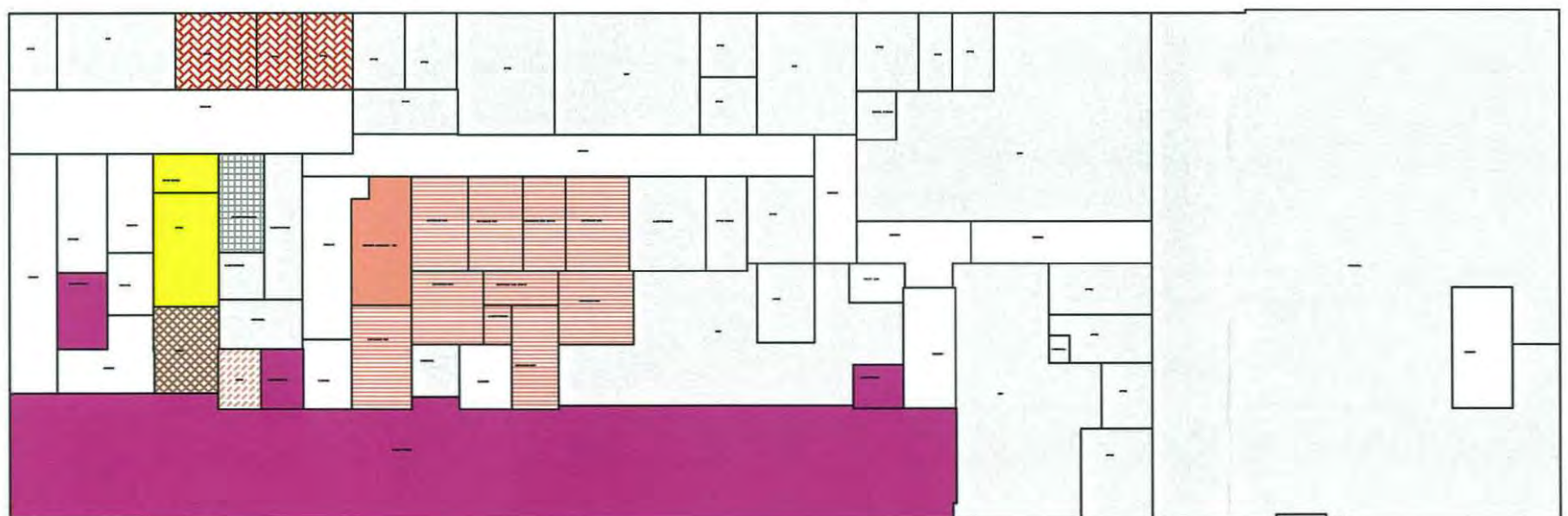
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University of Massachusetts Medical School  
Section I. Existing Campus Plans



# Campus Model





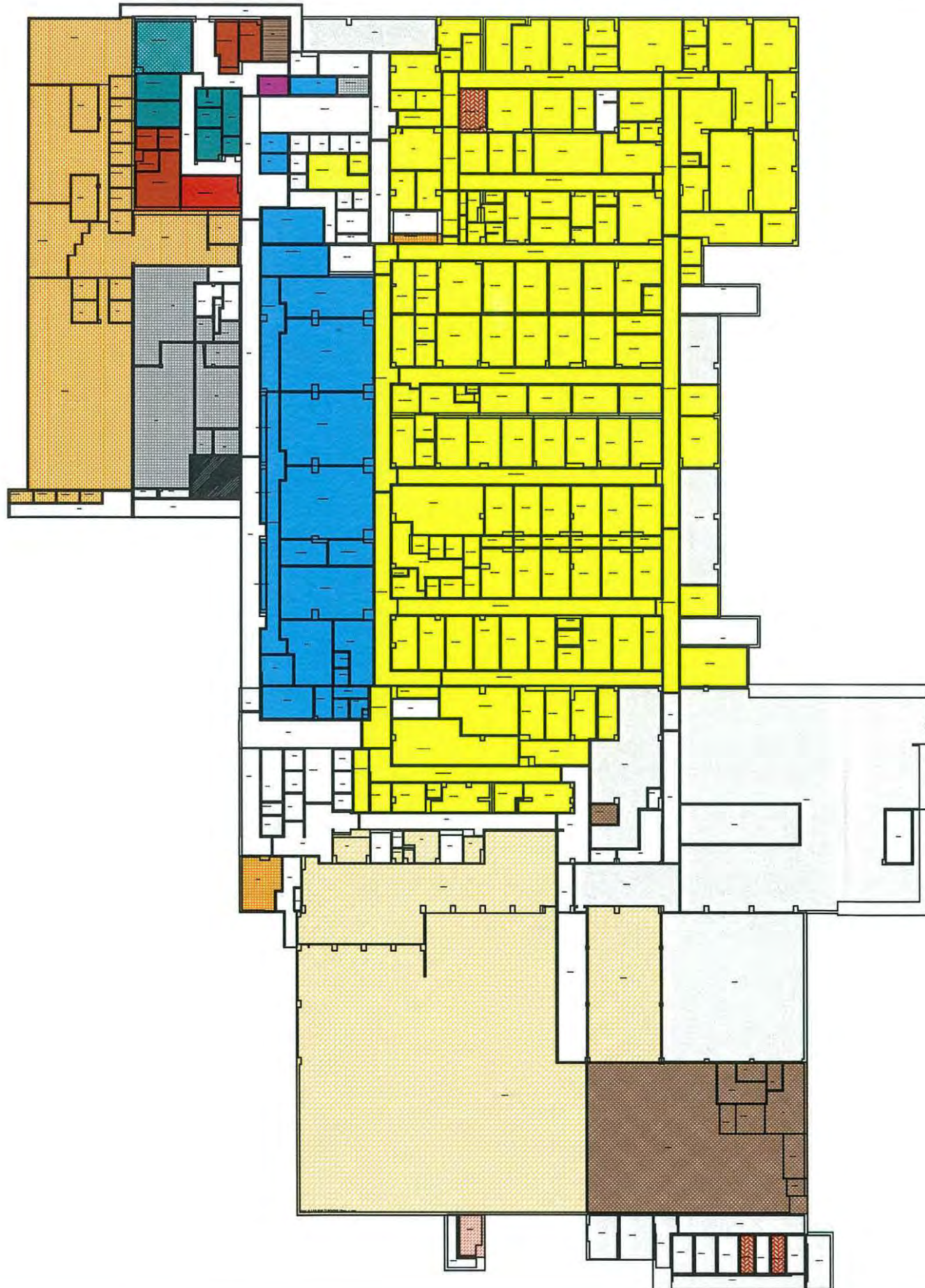
- BUILDING SRVCS INFRASTRUCTURE 4,994 SF
  - ▨ MEDICAL EDUCATION 1,865 SF
  - ▩ RADIATION SAFETY 541 SF
  - ▥ RADIOLOGY 295 SF
  - SURGERY 400 SF
  - ▩ FACILITIES 222 SF
  - FACILITIES MGT-MAINTENANCE 18,435 SF
  - ▨ PUBLIC SAFETY 103 SF
  - LAB SUPERMARKET 4,771 SF
  - ▩ IS-TELECOMMUNICATIONS 178 SF
- TOTAL SF: 31,804 SF**

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**S-B**



- BUILDING SRVCS INFRASTRUCTURE 18,170 SF
  - CELL BIOLOGY 11,456 SF
  - PHYSIOLOGY 1,199 SF
  - BIOCHEMISTRY & MOLECULAR PHARM 620 SF
  - OOR-MACHINE SHOP 124 SF
  - ANIMAL MEDICINE 52,517 SF
  - HEALTH & FITNESS CENTER 11,422 SF
  - AUDIO VISUAL 430 SF
  - RADIATION SAFETY 492 SF
  - NUCLEAR MEDICINE 1,138 SF
  - NEUROLOGY 243 SF
  - FACILITIES 6,747 SF
  - FACILITIES MGT-MAINTENANCE 24,308 SF
  - PUBLIC SAFETY 229 SF
  - RECEIVING 22,665 SF
  - ENVIRONMENTAL BUILDING SERVICE 552 SF
  - IS-TELECOMMUNICATIONS 4,109 SF
  - UNASSIGNED 427 SF
- TOTAL SF : 156,848 SF**

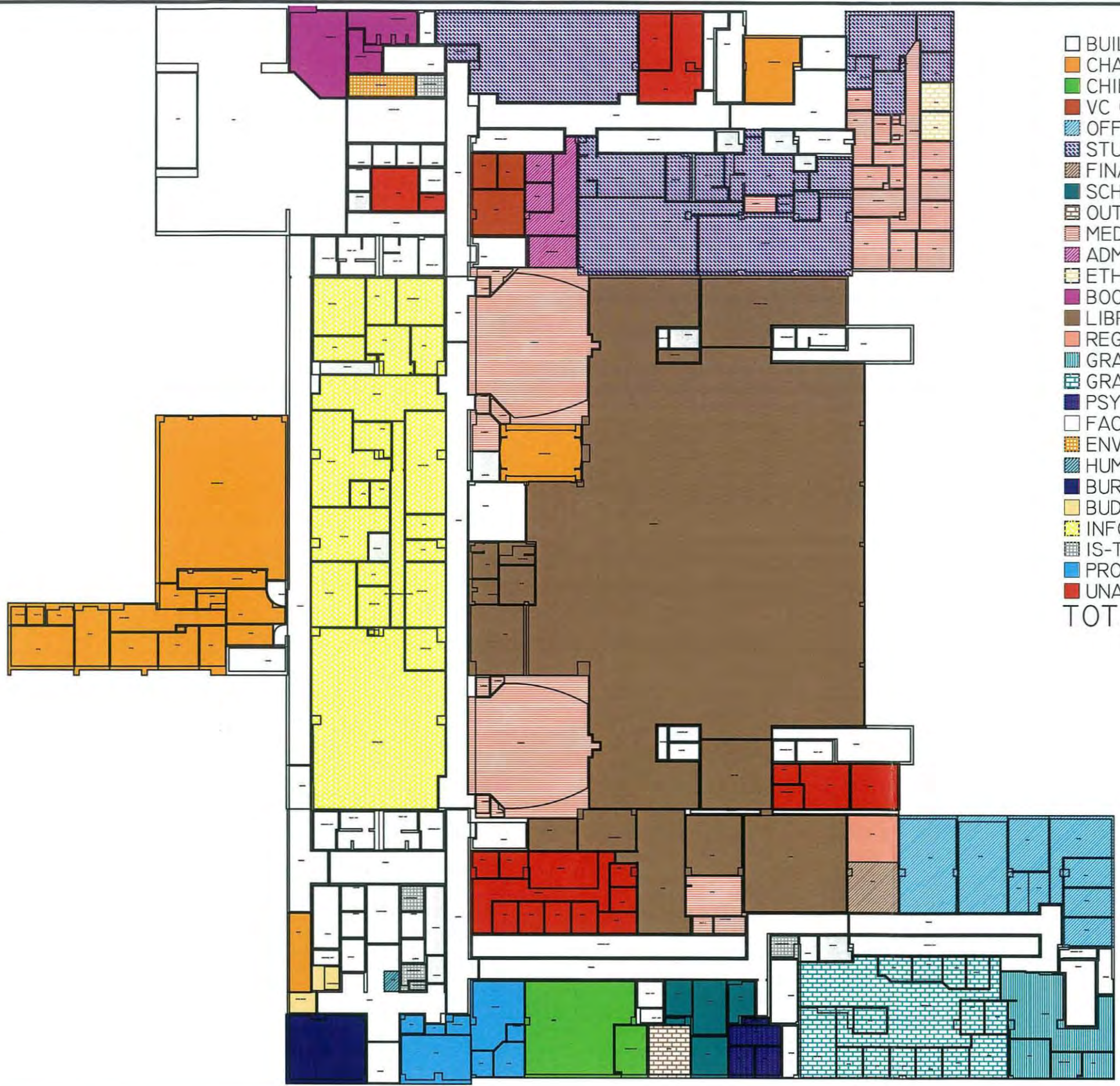
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- BUILDING SRVCS INFRASTRUCTURE 28,300 SF
  - CHANCELLOR 7,106 SF
  - CHIEF OPERATING OFFICER 1,586 SF
  - VC COMMONWEALTH MEDICINE 635 SF
  - OFFICE OF RESEARCH 3,113 SF
  - STUDENT AFFAIRS 8,028 SF
  - FINANCIAL AID 367 SF
  - SCHOOL SERVICES 822 SF
  - OUTREACH PROGRAM 317 SF
  - MEDICAL EDUCATION 7,881 SF
  - ADMISSIONS 860 SF
  - ETHICIST 274 SF
  - BOOKSTORE 1,154 SF
  - LIBRARY 24,341 SF
  - REGISTRAR 343 SF
  - GRAD SCHOOL BIOMEDICAL SCIENCE 1,293 SF
  - GRADUATE SCHOOL OF NURSING 3,464 SF
  - PSYCHIATRY 419 SF
  - FACILITIES MGT-MAINTENANCE 1,140 SF
  - ENVIRONMENTAL BUILDING SERVICE 223 SF
  - HUMAN RESOURCES 45 SF
  - BURSAR 747 SF
  - BUDGET & PLANNING 182 SF
  - INFORMATION SERVICES 9,594 SF
  - IS-TELECOMMUNICATIONS 377 SF
  - PROPERTY ADMINISTRATION 1,377 SF
  - UNASSIGNED 4,112 SF
- TOTAL SF: 108,100 SF**

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- BUILDING SRVCS INFRASTRUCTURE 25,403
- CHANCELLOR 3,044 SF
- UNIVERSITY RELATIONS 446 SF
- CHIEF OPERATING OFFICER 838 SF
- MEDICAL EDUCATION 4,314 SF
- GRADUATE MEDICAL EDUCATION 1,040 SF
- FACULTY ADMINISTRATION 668 SF
- LIBRARY 10,544 SF
- EMERGENCY MEDICINE 1,499 SF
- LAB MEDICINE 1,603 SF
- PATHOLOGY 23,521 SF
- RADIOLOGY 8,213 SF
- ANESTHESIOLOGY 7,702 SF
- SURGERY 237 SF
- SURGERY-NEUROSURGERY 1,567 SF
- CLINICAL ADMIN 152 SF
- OTOLARYNGOLOGY 1,576 SF
- FACILITIES MGT-MAINTENANCE 4,348 SF
- IS-TELECOMMUNICATIONS 322 SF
- UNASSIGNED 814 SF
- TOTAL SF : 97,851 SF**

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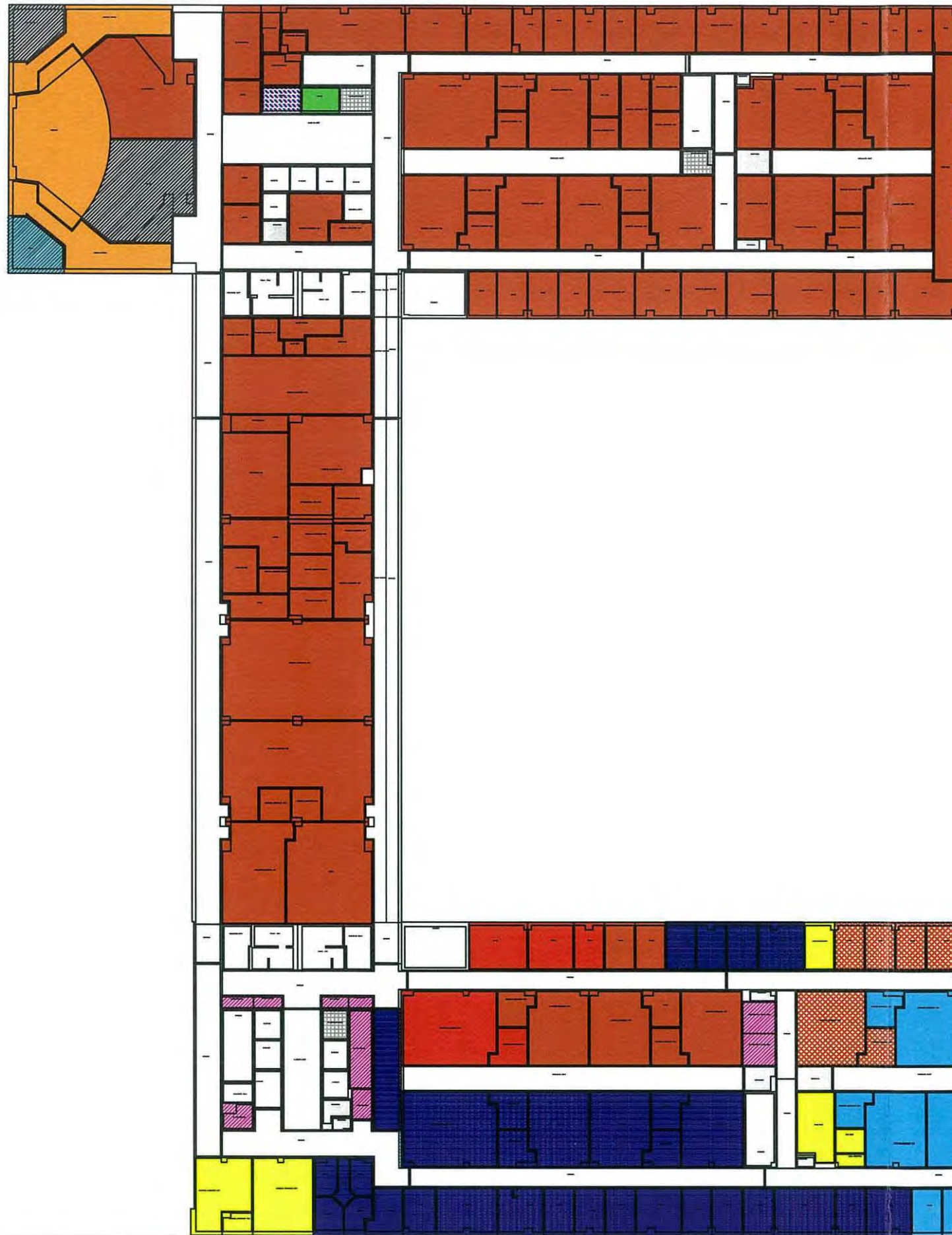


- BUILDING SRVCS INFRASTRUCTURE 24,977 SF
- ▨ EMERGENCY MED ADMIN 4,413 SF
- CHANCELLOR 2,245 SF
- CELL BIOLOGY 16,589 SF
- ▨ MEDICAL EDUCATION 113 SF
- LIBRARY 9,194 SF
- ▨ CARDIOVASCULAR MEDICINE 3,868 SF
- INFECTIOUS DISEASE III 322 SF
- PATHOLOGY 4,405 SF
- SURGERY 7,469 SF
- SURGERY-VASCULAR SURGERY 1,747 SF
- SURGERY-GENERAL 3,306 SF
- SURGERY-NEUROSURGERY 1,623 SF
- ▨ SURGERY-THORACIC 2,952 SF
- FACILITIES MGT-MAINTENANCE 2,131 SF
- ▨ IS-TELECOMMUNICATIONS 322 SF
- TOTAL SF: 85,465 SF**

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- BUILDING SRVCS INFRASTRUCTURE 23,353 SF
  - CHANCELLOR 2,529 SF
  - CHIEF OPERATING OFFICER III SF
  - PHYSIOLOGY 28,644 SF
  - ▨ STUDENT AFFAIRS 113 SF
  - ▨ AUDIO VISUAL 1,254 SF
  - SURGERY 2,160 SF
  - SURGERY-PLASTIC SURGERY 3,437 SF
  - SURGERY-UROLOGY 3,856 SF
  - ORTHOPEDICS 7,070 SF
  - OB/GYN 747 SF
  - FACILITIES MGT-MAINTENANCE 550 SF
  - ▨ HUMAN RESOURCES 281 SF
  - ▨ IS-TELECOMMUNICATIONS 325 SF
  - UNASSIGNED 1,582 SF
- TOTAL SF: 76,012 SF**

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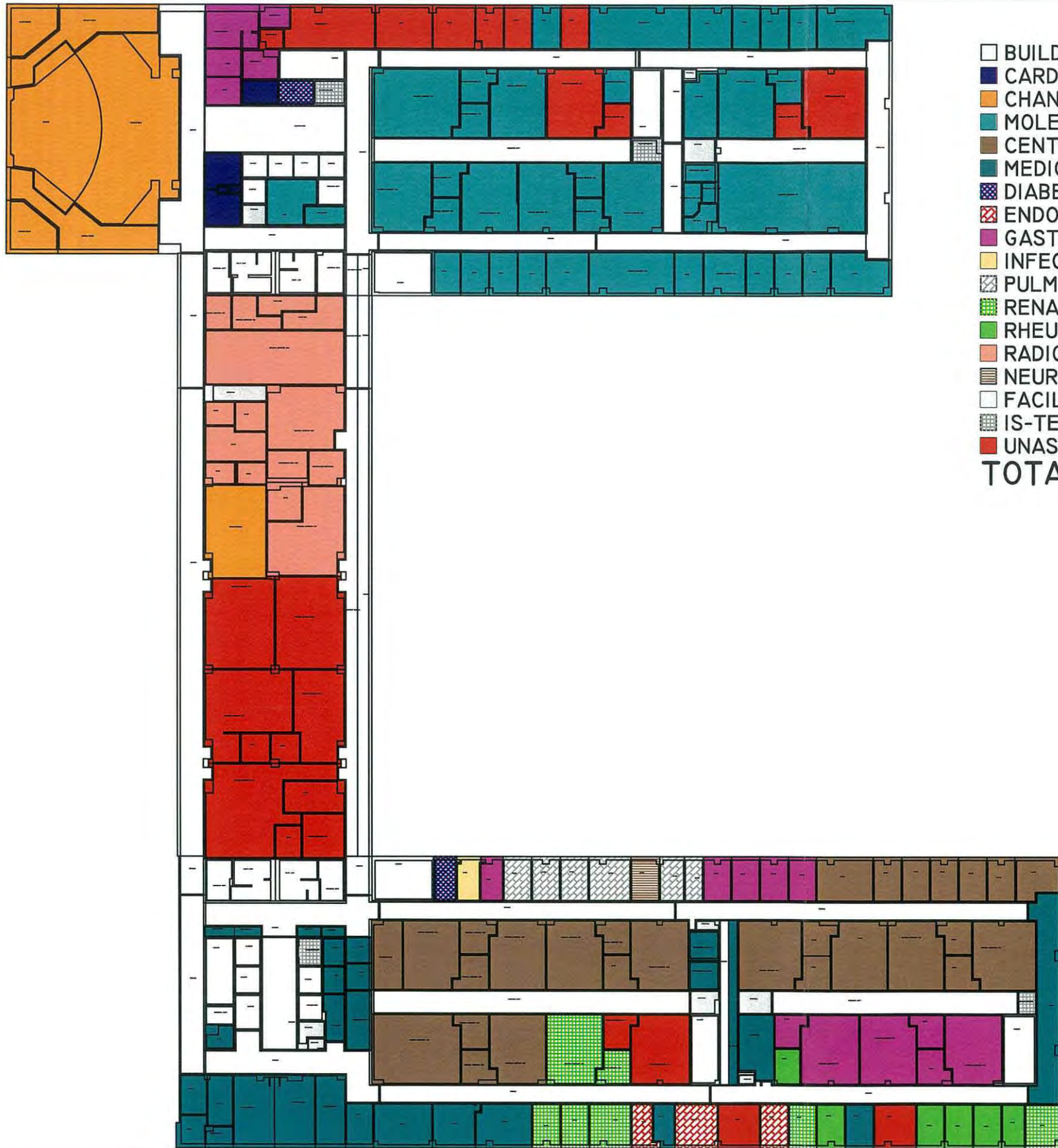


- BUILDING SRVCS INFRASTRUCTURE 23,344 SF
  - ▨ CYTOGENETICS LAB 476 SF
  - CHANCELLOR 1,671 SF
  - MOLECULAR GENETICS & MICROBIOL 22,206 SF
  - CENTER FOR ID & VAC RESEARCH 2,669 SF
  - ▨ AUDIO VISUAL 347 SF
  - PATHOLOGY 559 SF
  - ▨ NEUROLOGY 7,724 SF
  - PEDIATRICS 9,490 SF
  - FACILITIES MGT-MAINTENANCE 704 SF
  - ▨ IS-TELECOMMUNICATIONS 325 SF
  - UNASSIGNED 3,696 SF
- TOTAL SF: 73,211 SF**



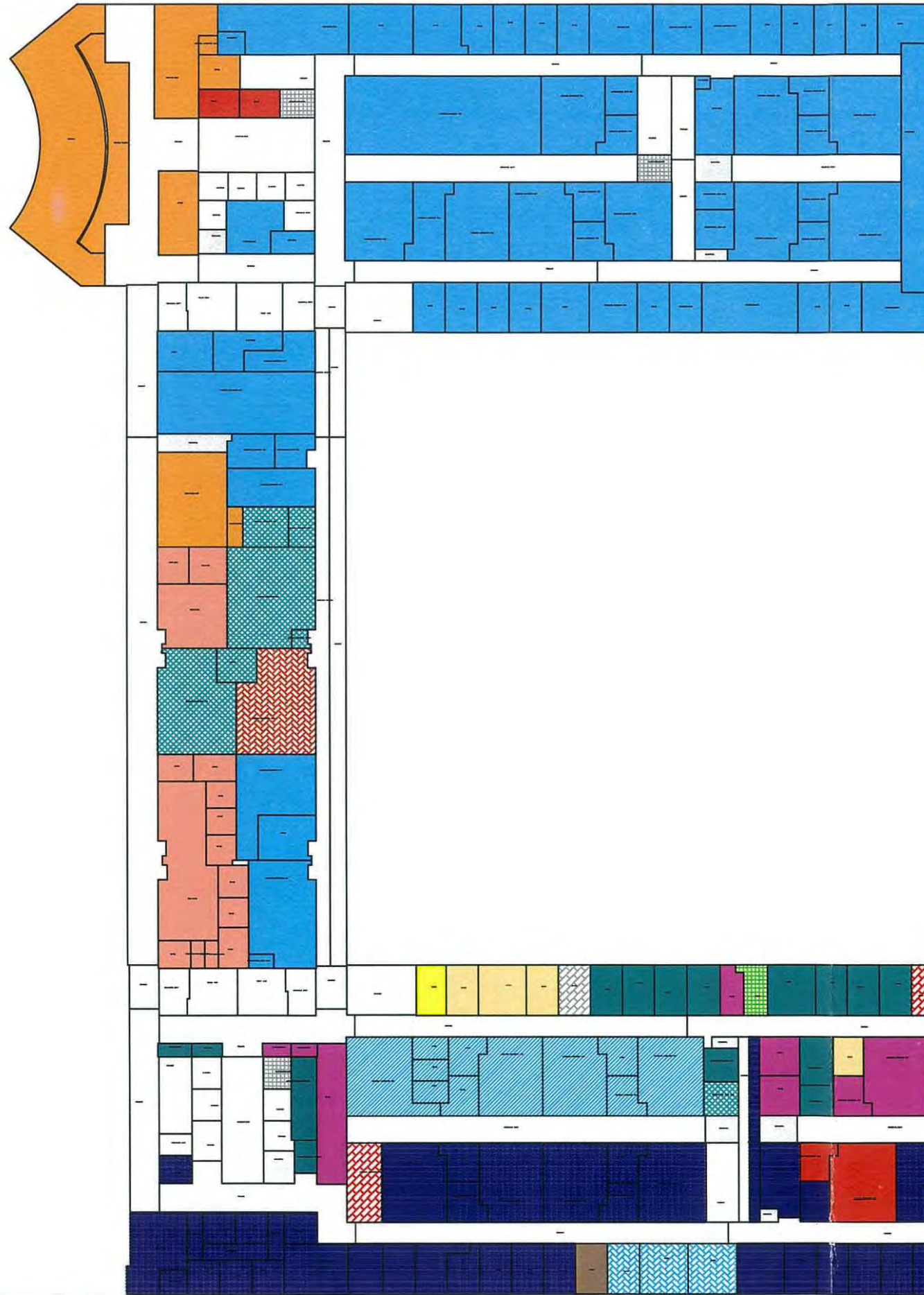
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- BUILDING SRVCS INFRASTRUCTURE 23,831 SF
  - CARDIOLOGY 450 SF
  - CHANCELLOR 5,746 SF
  - MOLECULAR GENETICS & MICROBIOL 11,236 SF
  - CENTER FOR ID & VAC RESEARCH 8,120 SF
  - MEDICINE 5,086 SF
  - DIABETES 239 SF
  - ENDOCRINOLOGY 517 SF
  - GASTROENTEROLOGY 1,536 SF
  - INFECTIOUS DISEASE 132 SF
  - PULMONARY MED 943 SF
  - RENAL MEDICINE 1,523 SF
  - RHEUMATOLOGY 874 SF
  - RADIOLOGY 4,015 SF
  - NEUROLOGY 157 SF
  - FACILITIES MGT-MAINTENANCE 642 SF
  - IS-TELECOMMUNICATIONS 325 SF
  - UNASSIGNED 10,631 SF
- TOTAL SF: 76,003 SF**

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- BUILDING SRVCS INFRASTRUCTURE 23,059 SF
  - CHANCELLOR 3,968 SF
  - CELL BIOLOGY 18,552 SF
  - BIOCHEMISTRY & MOLECULAR PHARM 2,123 SF
  - OFFICE OF RESEARCH 2,722 SF
  - CENTER FOR ID & VAC RESEARCH 763 SF
  - MEDICINE 2,070 SF
  - ENDOCRINOLOGY 425 SF
  - INFECTIOUS DISEASE 662 SF
  - HEMATOLOGY/ONCOLOGY 458 SF
  - PREV/BEHAV MED 3,102 SF
  - PULMONARY MED 157 SF
  - RENAL MEDICINE 125 SF
  - RADIATION SAFETY 739 SF
  - RADIOLOGY 2,397 SF
  - SURGERY-OPHTHALMOLOGY 629 SF
  - PSYCHIATRY 8,760 SF
  - FACILITIES MGT-MAINTENANCE 660 SF
  - IS-TELECOMMUNICATIONS 325 SF
  - UNASSIGNED 1,466 SF
- TOTAL SF : 73,162 SF**

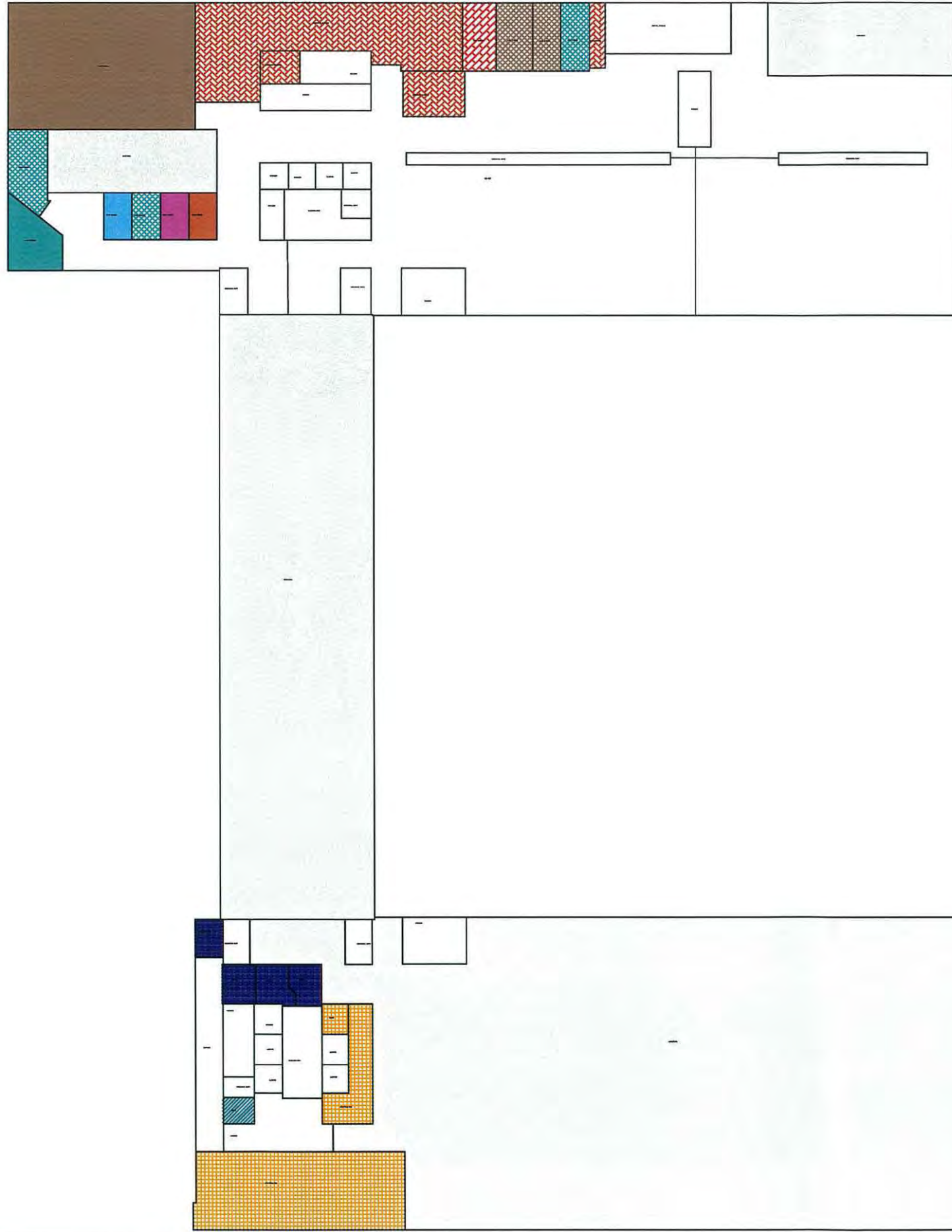
Facilities Planning, Engineering & Construction  
 University of Massachusetts Medical School  
 Power Plant - Second Floor  
 55 Lake Avenue North  
 Worcester, MA 01655  
 (508) 856-2204 (office) (508) 856-5216 (fax)



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- BUILDING SRVCS INFRASTRUCTURE 23,462 SF
- CELL BIOLOGY 141 SF
- MOLECULAR GENETICS & MICROBIOL 330 SF
- PHYSIOLOGY 141 SF
- BIOCHEMISTRY & MOLECULAR PHARM 676 SF
- LIBRARY 2,524 SF
- ENDOCRINOLOGY 247 SF
- RADIATION SAFETY 2,467 SF
- PATHOLOGY 142 SF
- PSYCHIATRY 545 SF
- FACILITIES 472 SF
- FACILITIES MGT-MAINTENANCE 38,604 SF
- ENVIRONMENTAL BUILDING SERVICE 2,250 SF
- HUMAN RESOURCES 88 SF
- TOTAL SF : 72,089 SF**

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BUILDING SRVCS INFRASTRUCTURE 906 SF  
 FACILITIES MGT-MAINTENANCE 1,195 SF  
**TOTAL SF : 2,101 SF**



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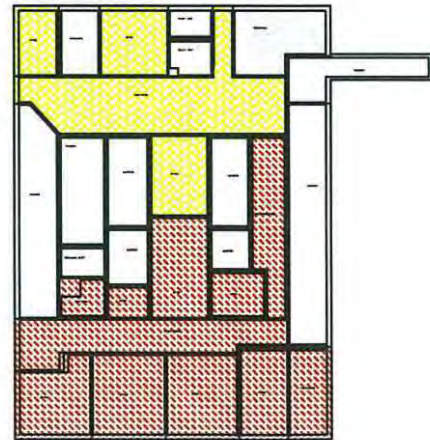


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- BUILDING SRVCS INFRASTRUCTURE 3,364 SF
  - ▨ ENVIRONMENTAL HLTH & SAFETY 2,552 SF
  - FACILITIES MGT-MAINTENANCE 1,641 SF
  - ▨ INFORMATION SERVICES 1,377 SF
- TOTAL SF: 8,934 SF



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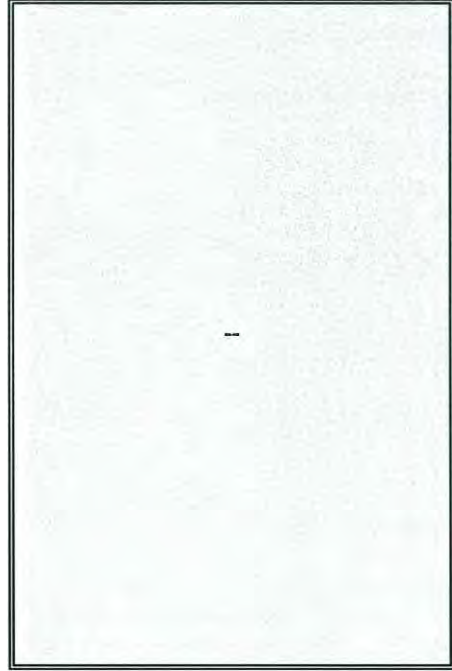
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FACILITIES MGT-MAINTENANCE 22,448 SF  
**TOTAL SF: 22,448 SF**



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 Worcester, MA 01655  
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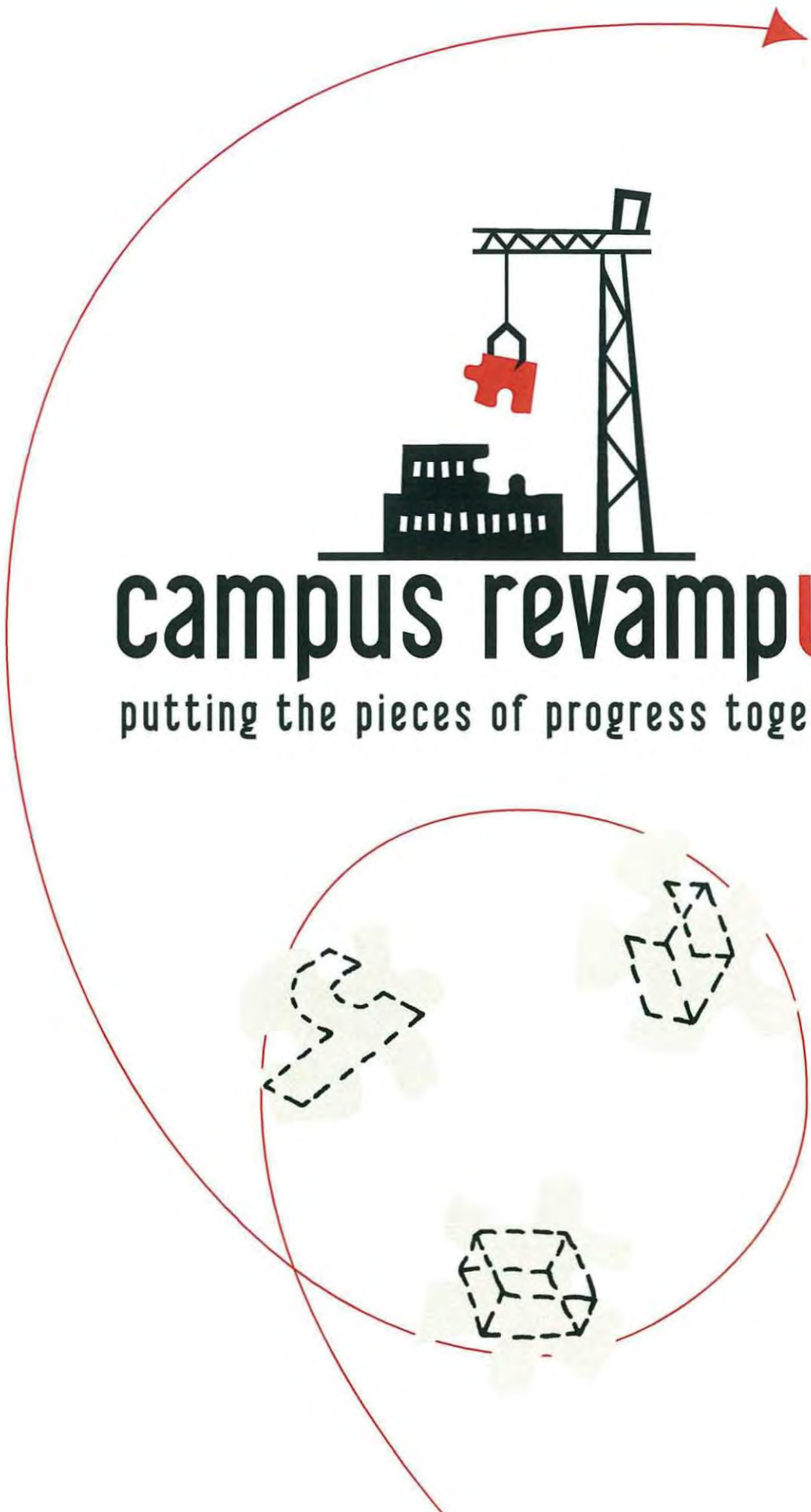
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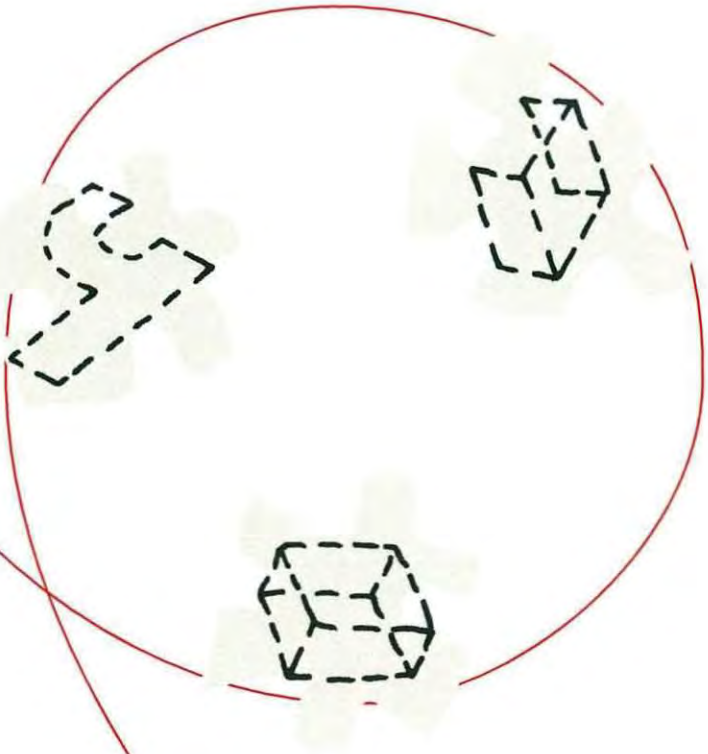
University of Massachusetts Medical School  
Section II. Campus Revampus Plans





# campus revampUS

putting the pieces of progress together



*The University of Massachusetts Medical School and UMass Memorial Health Care have long-term plans for growth and development on the University Campus, plans essential to our complementary missions of education, patient care, research and service. Currently, facilities that we've outgrown, changes in health care delivery and the challenges of working in a structure that has seen a generation of continuous use limit our ability to perform our missions as effectively and expansively as the region demands. To meet these current and future demands, we are in the joint planning stages of a complex array of projects that will change the face of the University Campus and our academic health center. This Campus Modernization Project represents critical capital investments by the University and by UMass Memorial Health Care, supported by the Commonwealth and the philanthropic generosity of the people of the region. Together, our partnership is the perfect foundation for the successful integration and coordination of these projects: coordination will minimize inconvenience to patients, visitors, faculty, physicians, students and staff, maximize the value of the capital investment and permit us to accomplish improvements neither institution could as effectively tackle alone. The outcome: a better return on the investment, and an academic health sciences campus of exceptional distinction, one in which we all can take pride and that the people of Central Massachusetts deserve.*

**Aaron Lazare, MD**

CHANCELLOR AND DEAN  
UNIVERSITY OF MASSACHUSETTS  
MEDICAL SCHOOL

**John G. O'Brien**

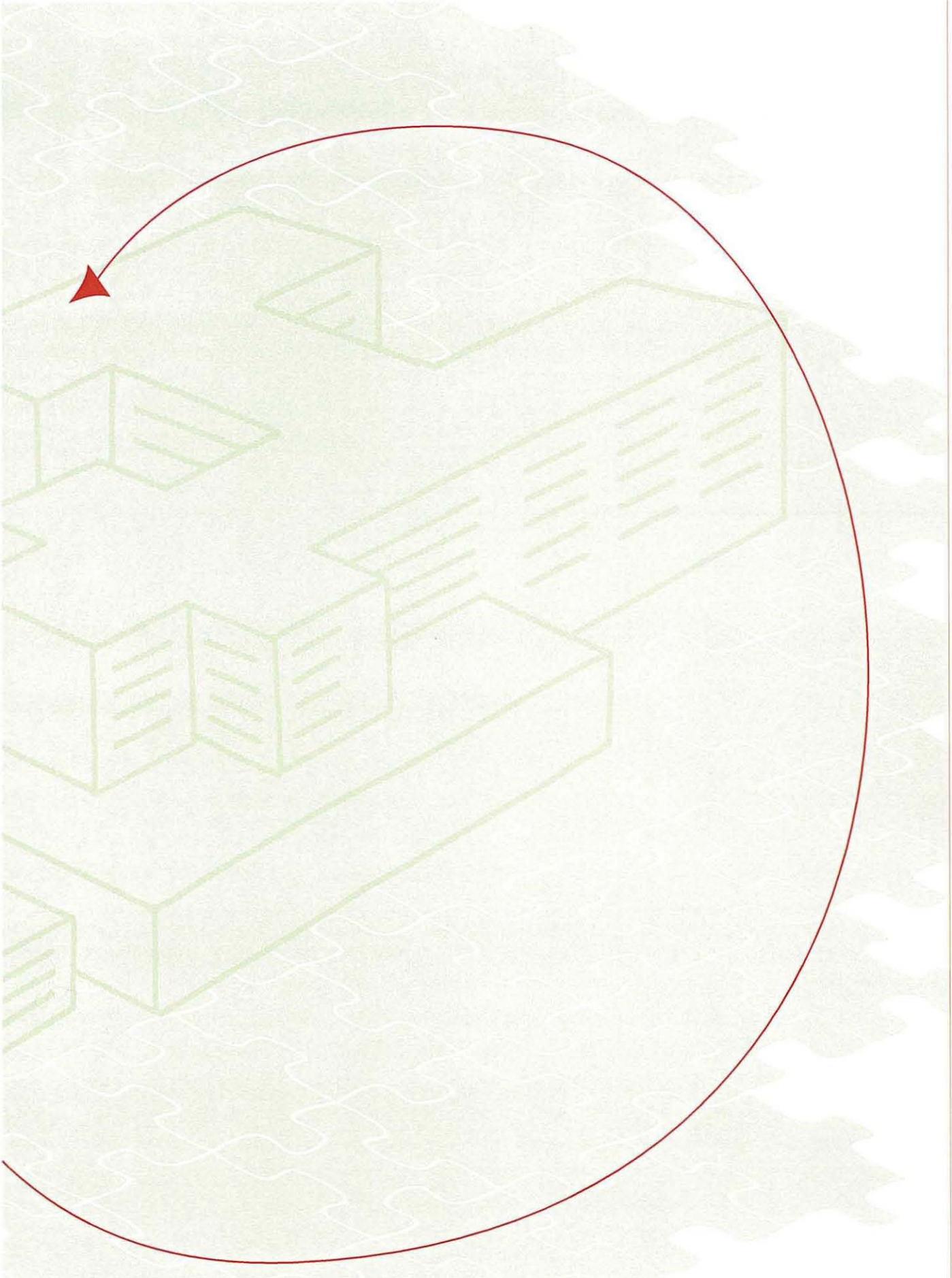
PRESIDENT AND CEO  
UMASS MEMORIAL HEALTH CARE

**Thomas D. Manning**

VICE CHANCELLOR, OPERATIONS  
UNIVERSITY OF MASSACHUSETTS  
MEDICAL SCHOOL

**Rita Battles**

PRESIDENT, UNIVERSITY CAMPUS  
UMASS MEMORIAL MEDICAL CENTER



***campus revampus:***

*The Campus Modernization Project is the comprehensive renovation and expansion initiative of UMass Medical School and UMass Memorial Health Care. [campus.mod@umassmed.edu](mailto:campus.mod@umassmed.edu)*

*This brief introduction of our Campus Modernization plan is intended to give you a "heads up" that big changes are coming. There will be inconvenience and clutter, in the winter, there will be some mud. But by calling upon the resourcefulness, patience and goodwill of thousands of UMass Medical School and UMass Memorial employees, we'll do everything we can to minimize the impact on those who depend on the campus for education, care, employment and scientific discovery. We've hired some of the best companies in the world to help us manage, design and implement these changes, and their commitment to us—and ours to you—is that the safety of our patients, students and employees must come first.*

### key elements of campus modernization

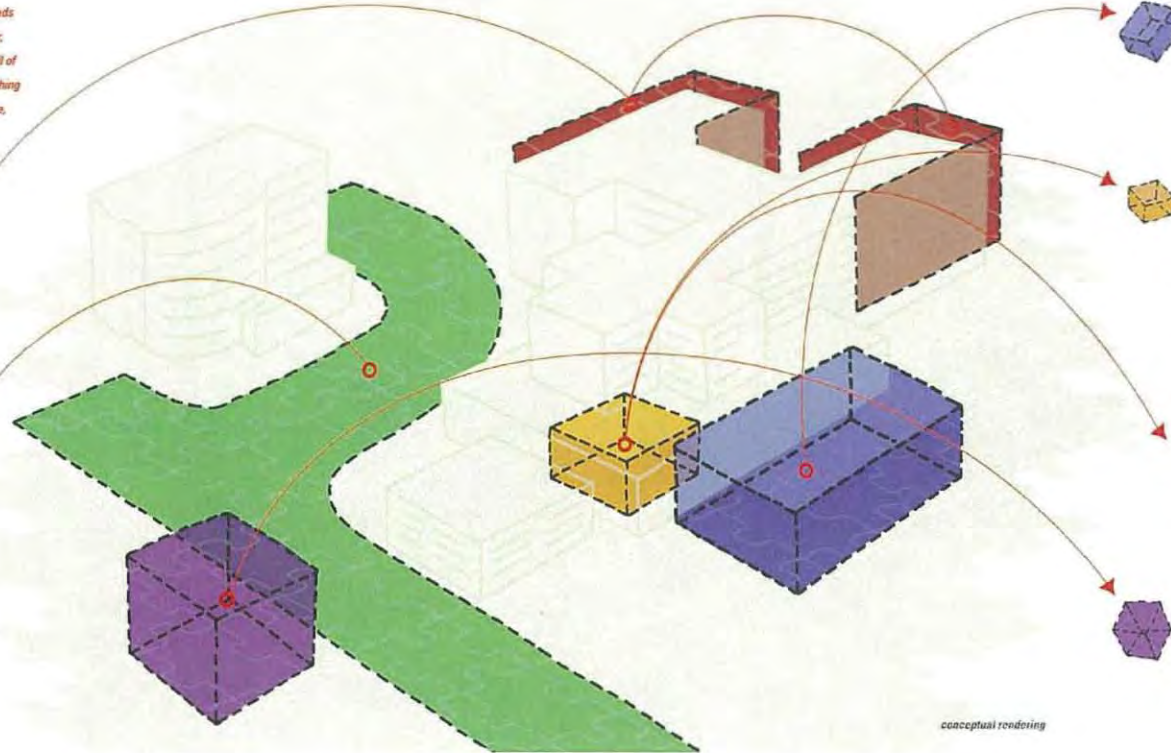
Through a carefully planned process, the assembly of a team of skilled construction and architectural/engineering experts and a committed leadership, the project's key elements, described conceptually below, will become reality between now and 2006.

#### replacement of the exterior granite façade and window system

This component of the project is not cosmetic or optional. The current façade and window system is worn out and must be replaced. A range of potential solutions has been evaluated, and the most cost-effective, safe and responsible plan is replacement with a weather-tight, energy-efficient and contemporary "building envelope" that uses current technology, materials and design.

#### redesign and improvement of campus building entrances, walkways and exterior signage

We are an integrated health sciences campus, educating future physicians, researchers and nurses, providing health care services to the people of central New England and employing thousands. This translates into literally hundreds of thousands of visits to this campus each year. Improved access, entrance redesign and new signage will ensure that everyone will find a building easier to identify and navigate.



conceptual rendering

#### expansion of the emergency department

More than 74,000 patients are seen each year in the University Campus Emergency Department, yet the department—built as a day surgery suite intended to accommodate a few thousand patients a year—has not been comprehensively renovated or expanded since its opening in the 1970s. The plan for expansion will more than triple the space dedicated to emergency services on the University Campus and support the latest technology and equipment, critical to the health and safety of everyone in the region.

#### expansion of cardiac catheterization labs, operating rooms and endoscopy suites

While UMass Memorial Medical Center is the region's leading provider of cardiac catheterization services, meeting the needs of over 3,500 patients each year, two of the three University Campus labs were built 25 years ago to accommodate 1,000 patients annually. University Campus operating rooms, built for the comparatively narrow range of surgical interventions in a different medical era, face immense capacity and technological issues. Endoscopy procedure rooms for cutting-edge, minimally invasive procedures are crucial to contemporary surgical care. When complete, this expansion will dramatically increase space devoted to these essential activities.

#### on-site magnetic resonance imaging (MRI) and renovation of space for diagnostic radiology

Few areas of medicine have changed as much in 30 years as diagnostic imaging. In the context of contemporary standards of patient care, an on-site MRI facility is an investment in technology we're pleased to be able to make. The facility renovation necessary to accommodate this technological advance will make areas for diagnostic radiology care far more patient- and staff-centered environments.

#### construction of an additional multi-level parking garage

Parking constraints have hampered campus traffic and pedestrian flow for some time. The new garage will provide additional and more convenient parking, especially for patients and visitors to the hospital and clinics, and will in turn improve parking circumstances for our employees.



### **What to Expect from Campus Modernization**

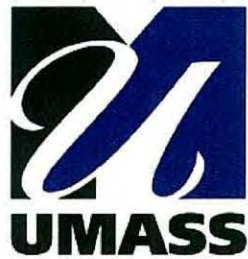
We've already begun an intensive period of analysis, planning and conceptual design. Beginning January 2003, we expect to begin making initial interior space and structural changes. In the spring, replacement of the façade and window system will begin in earnest, and architectural conceptions of the new University Campus will be presented.

***campus revampus*** is the comprehensive communications campaign we'll use to keep you informed: watch for our signs and visit our Web site at **[www.umassmed.edu/campusrevampus](http://www.umassmed.edu/campusrevampus)**; send an e-mail to [campus.mod@umassmed.edu](mailto:campus.mod@umassmed.edu) or write us at the Office of Public Affairs, University of Massachusetts Medical School, 55 Lake Avenue North, Worcester, MA 01655.

*The University of Massachusetts Medical School and UMass Memorial Health Care share a common campus and a common goal: to serve the people of the region through excellence in education, patient care, public service and biomedical research. As the only public medical school in Massachusetts, UMMS takes special pride in training physicians committed to primary care; to developing scientists devoted to alleviating suffering and improving public health; and to teaching nursing professionals who have a real-world impact on healing.*

*UMass Memorial Health Care strives to be the health care provider of choice, setting the standard for excellence in clinical care, service, teaching and research. Our vision is to provide world-class health care from the heart, and as Central Massachusetts' largest not-for-profit health care delivery system, we have a long-term commitment to establishing state-of-the-art facilities that meet the health care needs of the region. In conjunction with our academic partner, Campus Modernization is our latest capital improvement initiative, and serves to complement recent capital investments at our Hahnemann and Memorial campuses.*

# Campus Modernization



University of  
Massachusetts  
Medical School



*UMassMemorial*

# Campus Modernization

- ◆ The comprehensive renovation and expansion initiative of UMass Medical School and UMass Memorial Health Care.
- ◆ Bovis Lend Lease—construction management firm
- ◆ Payette Associates—architect/engineering firm
- ◆ campus revampus—communications program



# Key Elements of Campus Mod

- ◆ Removal and replacement of the granite façade and window system with limestone and a glass building “envelope”
- ◆ 200,000-square-foot Lakeside Expansion, with a new ED, operating rooms and intensive care beds, and increased radiology and operative services space
- ◆ Redesigned Medical School entrance and lobby, an expanded, more functional Faculty Conference Room, and additional educational office and conference space
- ◆ Construction of a 1,550-space parking garage

# Benefits

- ◆ Modern, weather-tight, energy-efficient façade and window system
- ◆ Expansion and updating of critically needed clinical space
- ◆ Improved campus access and traffic and pedestrian flow
- ◆ Additional and more convenient parking

# Why Modernize, Why Now?


- ◆ UMMS and UMass Memorial's long-term plans for growth and progress call for modern facilities that respond to today's demand for effective, efficient health care delivery
- ◆ Working together, the two institutions will minimize inconvenience to patients, visitors, faculty, physicians, students and staff, and maximize the value of the capital investment
- ◆ The outcome: an academic health sciences campus of exceptional distinction for the entire region

# Project Leadership

- ◆ Executive Team, headed by Tom Manning, Deputy Chancellor for Commonwealth Medicine & Strategic Facilities Planning
- ◆ Project Team, headed by Tim Fitzpatrick, Assoc. V-C for Master Space Planning
- ◆ School Team, headed by Mike Gregory, Mgr. of Facilities Administration
- ◆ Hospital Team, headed by Kevin MacDonald, Liaison for Clinical System

# Façade Removal & Replacement

- ◆ Existing granite panels, worn waterproofing and insulation are removed
- ◆ Current window system remains intact
- ◆ Two window systems (curtain walls) are installed: "direct attachment" and "double wall"



Direct attachment for shaded sides of school and hospital building

Double wall attachment for sunnier sides for warmth in winter and cooling in summer.

# Façade Removal & Replacement



- ◆ The granite panels will be replaced with limestone, an effective cladding material that resists the forces of weather and wear
- ◆ A Mock-Up on the west side of the Basic Science Wing illustrates the curtain wall systems and masonry materials

# Façade Removal & Replacement



- ◆ The area in green shows the main staging and enabling area for the façade project materials and construction trailers
- ◆ This fenced, paved and secure area will be returned to green space in 2006

# Façade Removal & Replacement

- ◆ Enabling sites (fencing, excavation, asphalt paving and construction equipment) are also established at:
  - The Medical School entrance
  - Near the Outpatient entrance
  - The East Parking Lot (near the loading dock)
  - The South Parking Lot (around construction site for the new parking garage)

# Façade Project

The activities illustrated at right were initiated during the less hectic summer months of 2003.

Façade removal and replacement above Med School entrance; internal lobby work adjacent to Faculty Conference Room

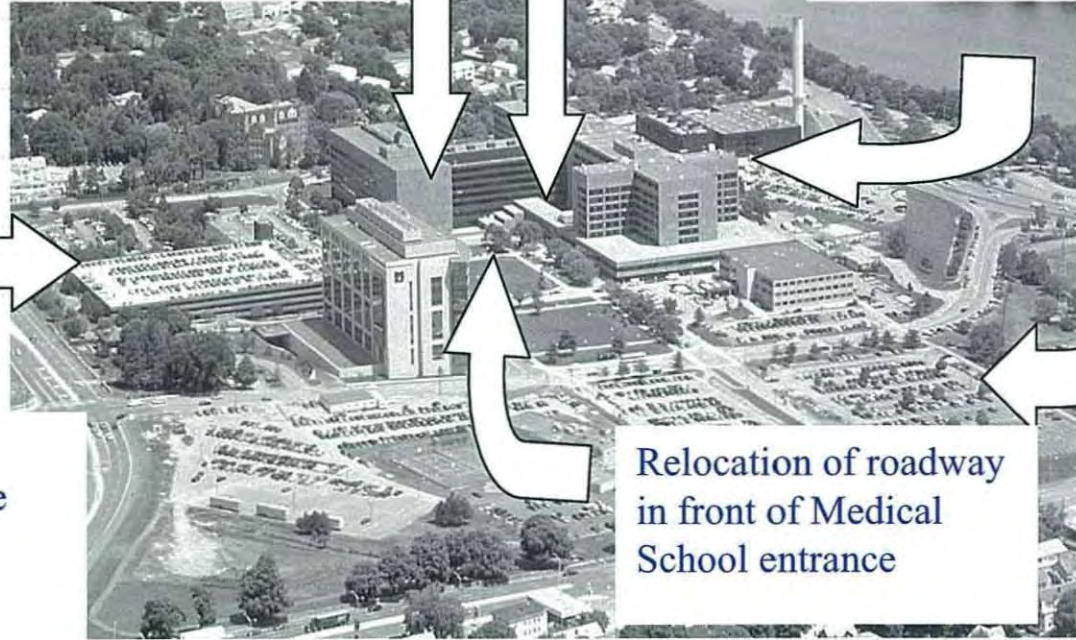
Façade removal in Chancellor's Courtyard

Electrical vault/waste management area excavation in East Lot; façade removal on east façade

Location of the new parking garage

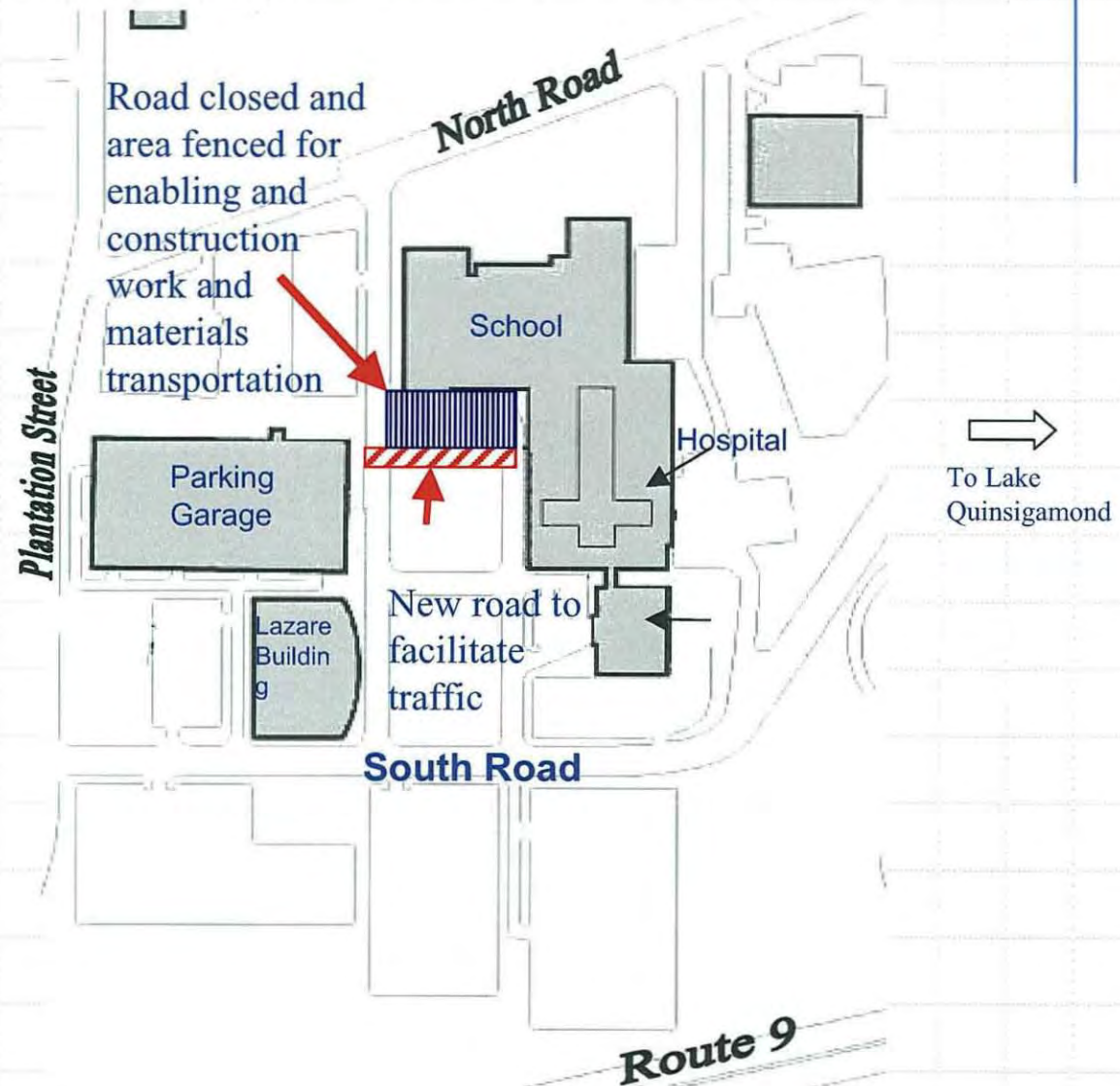
Relocation of roadway in front of Medical School entrance

Patient and visitor parking shifts to the existing garage

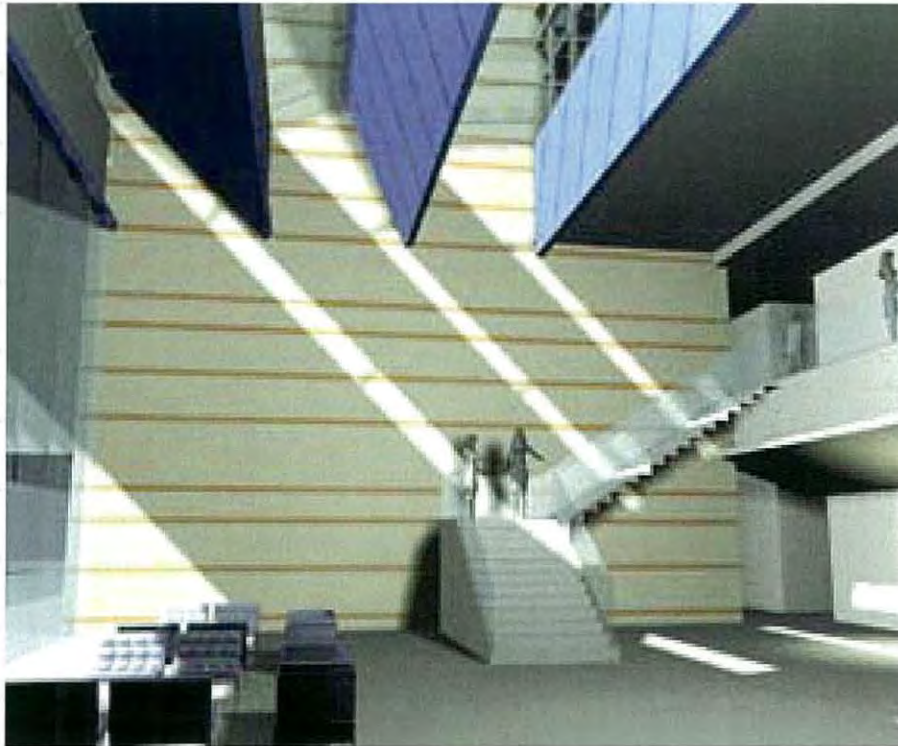


# Façade Project

- ◆ To facilitate façade work over the Medical School entrance, a new bypass road was constructed
- ◆ The space between the bypass road and entrance is fenced to form a staging area
- ◆ Drop off locations and temporary walkways are established for patients, visitors and staff



# Façade Project



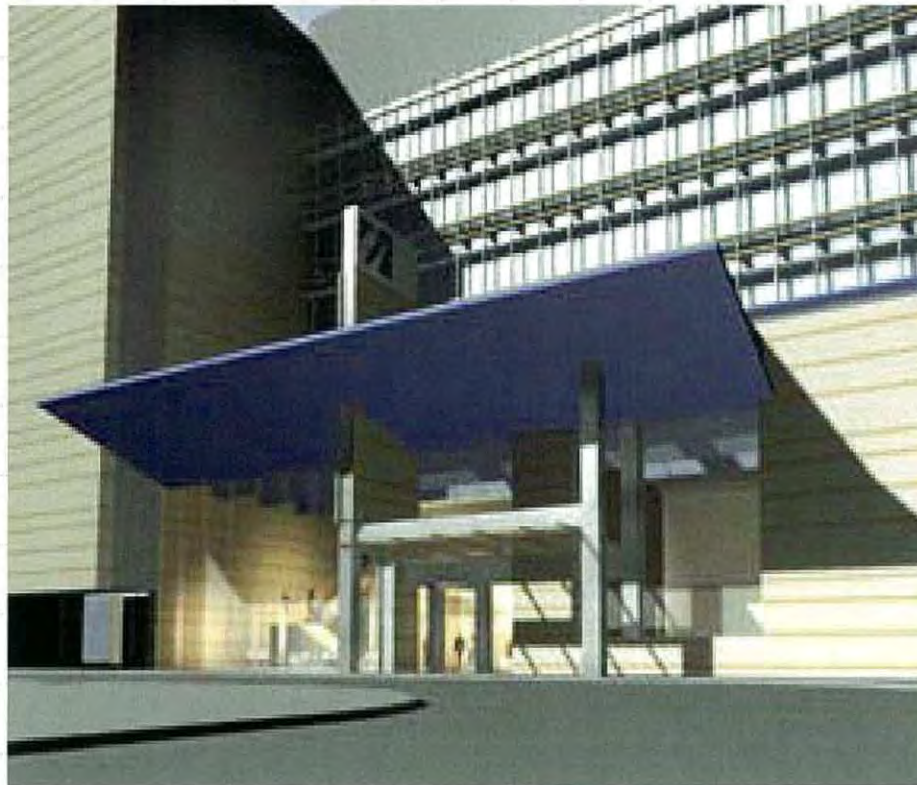
- ◆ Internal lobby work adjacent to Faculty Conference Room
  - A solution to maximize interior campus space and minimize temporary relocation costs with the "Clip-On" addition
  - 20,000 sq. ft. of office space and 6,000 sq. ft. of lobby space to accommodate the redesigned Medical School Entrance and Lobby

# Façade Project

- ◆ Façade removal in Chancellor's Courtyard (between Chancellor's suite of offices and the main Hospital corridor)
  - Another opportunity to maximize space, the enclosure of the Courtyard will result in significant cost savings
  - Granite has been removed here, the space will be enclosed and new flooring, walls and a louvered roof will be installed



# Redesign/Enhancement of Campus Entrances



- ◆ A clear differentiation between School and Hospital entrances will ensure that students, employees, patients and visitors easily find their way
- ◆ The image at left represents the concept for the proposed Medical School Entrance and Lobby, to be built in the existing courtyard outside the Faculty Conference Room

# Redesign/Enhancement of Campus Entrances

- ◆ Pictured at right, a representation of the proposed new Hospital Lobby at what is now the juncture between the existing south entrance and the Benedict Building entrance
- ◆ The new Lobby will create an easily accessible entrance to hospital facilities and provide convenient access to and from the future new parking garage



# New 1,550-space Parking Garage



- ◆ Construction begins in fall 2003 in the existing South Lot
- ◆ Patients and visitors park in the existing parking garage
- ◆ Employees, faculty, staff and students park in the existing garage, the Pine Tree Lot and off-campus at Shuttle Lots during construction, expected to be complete in October 2004

# UMass Memorial Lakeside Expansion



- ◆ Pouring of the Expansion's concrete foundation in March
- ◆ Commencement of steel placement in April

- ◆ Groundbreaking ceremonies took place in September 2003
- ◆ Demolition of the Emergency Department canopy in January 2004




# UMass Memorial Lakeside Expansion

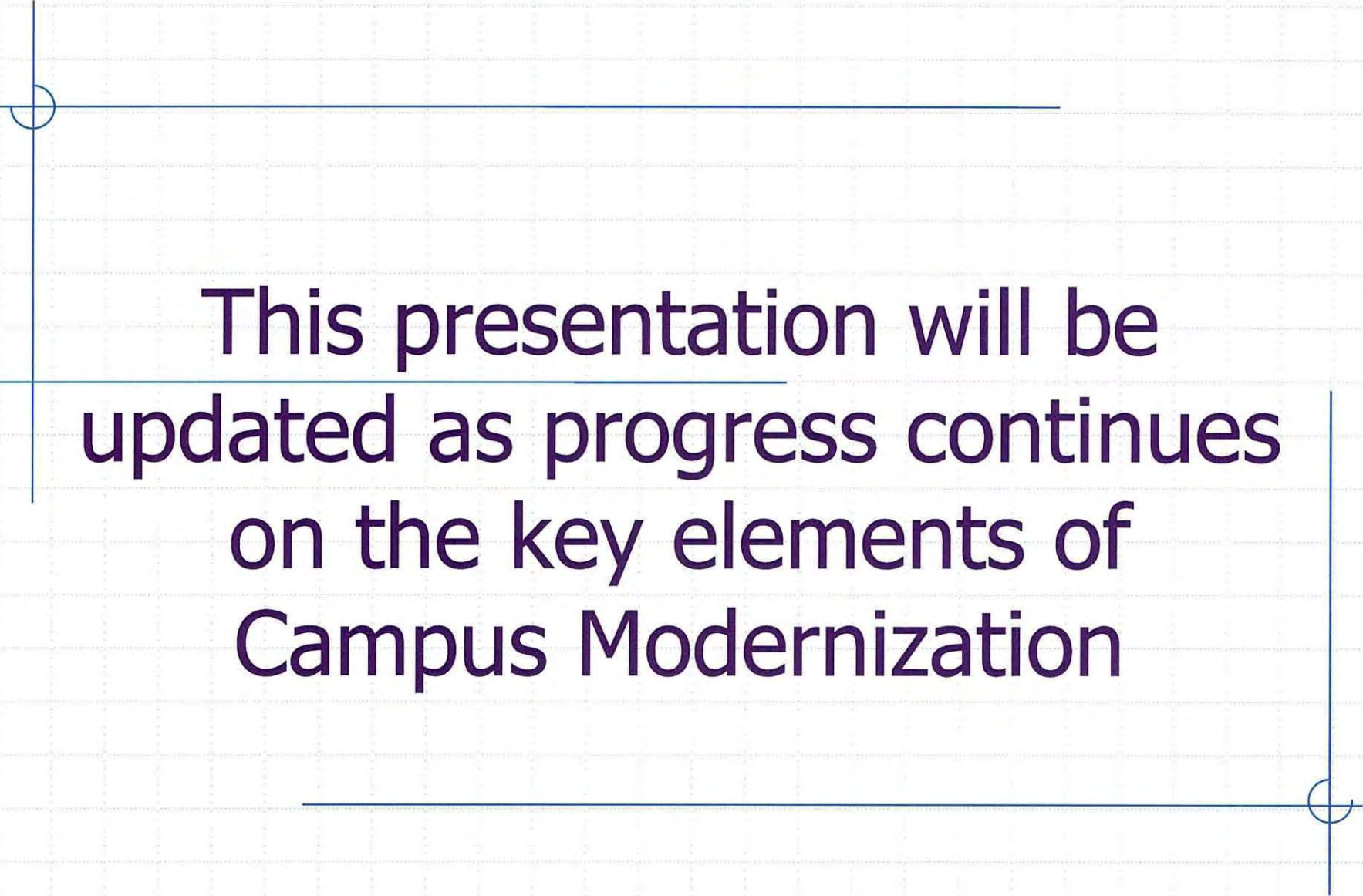


- ◆ Steel in place by July 2004
- ◆ Building closed in by November 2004
- ◆ Fit-out through fall 2005
- ◆ Occupancy fall 2005

**Timeline**

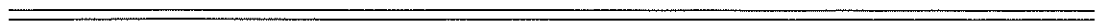


**This presentation will be updated as progress continues on the key elements of Campus Modernization**



TSOI / KOBUS & ASSOCIATES  
ARCHITECTS

University of Massachusetts Medical School  
Section III. Library Study, January 2001





## Medical Library Study

UMMS Medical Library Study  
Medical School Library

DCAM Project No. UW991ST1  
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Preface

Acknowledgments

Executive Summary / Recommendations

1.0 Existing Conditions

2.0 Program

3.0 Conceptual Design

4.0 Appendix

## Preface

This study was prepared for the Office of Programming, Division of Capital Asset Management (DCAM), Executive Office for Administration and Finance, Commonwealth of Massachusetts, as required by Massachusetts General Law Chapter 7.

This study is intended to investigate agency needs, evaluate alternatives and define a preferred solution to the building project before final design begins and before a legislative decision is made to appropriate funds for implementation. After appropriation, if any, this study must be certified and thereafter no substantial changes can be made to the study solutions during the implementation process. Such deviations are limited by statute to no more than 10% of the total gross square foot area of the project, although a redistribution of areas can occur within the total figures for this project.

The study culminates in a final program that defines the preferred solution in terms of its content, time and cost, so that it provides a clear and detailed frame of reference for the design and implementation process\*. A study schematic design has been included in the study for purposes of illustrating the preferred solution; demonstrating the practical operation of design criteria; codes and standards applicable to the project; and for developing accurate cost estimates. The form of the schematic design is not intended to constrain the final designer, but the functional program criteria, codes and standards must be followed in implementation.

The final designer should review the study and satisfy him/herself as to the accuracy of the contents before proceeding into design. However, it is expected that the study should save time and expense by avoiding unnecessary duplication of pre-design activities.

*\*Note:* The preferred option was not developed to the level of schematic design and a detailed cost estimate was not prepared. Prior options for renovations and expansion of the existing Library were developed through schematic design and a quantity based cost estimate was prepared.

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## Acknowledgements

**Executive Office for Administration and Finance  
Division of Capital Asset Management**

Commissioner David B. Perini  
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Timothy Fitzpatrick  
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Director of Project Services Robert C. Hicks  
Project Director, Associate Partner John J. Vinton, AIA  
Senior Designer, Associate Partner Bruce H. Creager, AIA

***Consultants* Library Building Consultant**

Structural Engineer Jay Lucker  
Mechanical, Electrical, Plumbing & Fire Protection Engineer Souza True and Partners, Inc.  
SAR Engineering, Inc.  
Information Technology CCR Pyramid, Inc.  
Cost Estimating Hanscomb Associates, Inc.

## Executive Summary / Recommendations

***Purpose of Study*** This Study was undertaken at the request of UMMS to:

- review the condition of the existing Library;
- develop a program and options for upgrading the Library; and
- respond to projected future needs and requirements.

- Study Issues***
- The key issue in the Study, which influenced the program, design options, and budget, is the need for space for collections and the relationship between collections and developing technologies both for library use and for digital replacement of bound volumes of journals and books.
  - The need for retrieval of a paper copy because of copyright laws, graphic quality of illustrations and lack of digitization of many books and journals requires that the collection be maintained at an expanding rate into at least the near future (ca. 5 –10 years).
  - The type of collection storage and access: on site vs. off-site, compact vs. standard shelving; assumptions about collection growth and the role of the library as a regional public resource for medical literature all influence how the existing Library and any new space is developed.
  - Differences in the ways students now use the Library for studying and other purposes require revisions in the reader spaces and convenient access to computer capabilities.
  - The condition, age and limitations of the electrical and mechanical systems supporting the Library are critical issues.
  - The role of the Library within the context of long-range campus-wide planning efforts and the appropriate location of the Library in the Medical School must be considered.

- Program***
- The space program to address the future needs of the Library was developed by the study team based on interviews, UMMS data and evaluation of comparable facilities.
  - The existing 49,000 gsf Library was judged to be deficient in collections space, and in several departmental areas. Other spaces were considered poor in quality, including reader and study spaces, and the rare book room. The program projected

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collection growth for 5-7 years with a limit of 300,000 volumes. Readers will remain at 400 and other spaces showed limited growth.

- The program includes a total of a 66,000 gsf with the addition of approximately 5,000 gsf in some conceptual options due to architectural opportunities.
- Off-site storage was not part of the building program but must be considered an immediate requirement. The current collection cannot be housed in the existing library, leaving no space for collection growth. The amount of off-site storage required over time will depend on the extent of digitization and the eventual reliance on national repositories for hard copies.

***Conceptual Options***

- Five conceptual options for renovation and expansion were developed. Expansion is required due to the inability of the existing Library structure to support compact shelving and the lack of space for standard shelving and collections in general. In every option, expansion is to the north, with collection and reading areas below grade in 4 of the 5 options, varying by the number of levels of stacks and by the treatment of the exterior glazing. These options were estimated to cost in the range of \$15m for construction depending on particular features.
- Because of the high construction cost and the expected additional costs and difficulties of renovation within an operating facility, options for new construction were investigated, based on the same program but anticipating possible association with future UMMS laboratory building projects in any location to the west of the UMMS facility.
- Two options for a new building were developed as to program size and organization, site concept and relationship to the existing Medical School. It was estimated that these options provide a program size reduction of approximately 5% but require more site work and development of linkages to the rest of the Medical School. The overall cost of new construction is higher than the renovation / addition option, but frees up much needed space within the Medical School building for the expansion and/or re-configuration of other programs. Re-planning the existing Library was not addressed as part of these options for a new building.

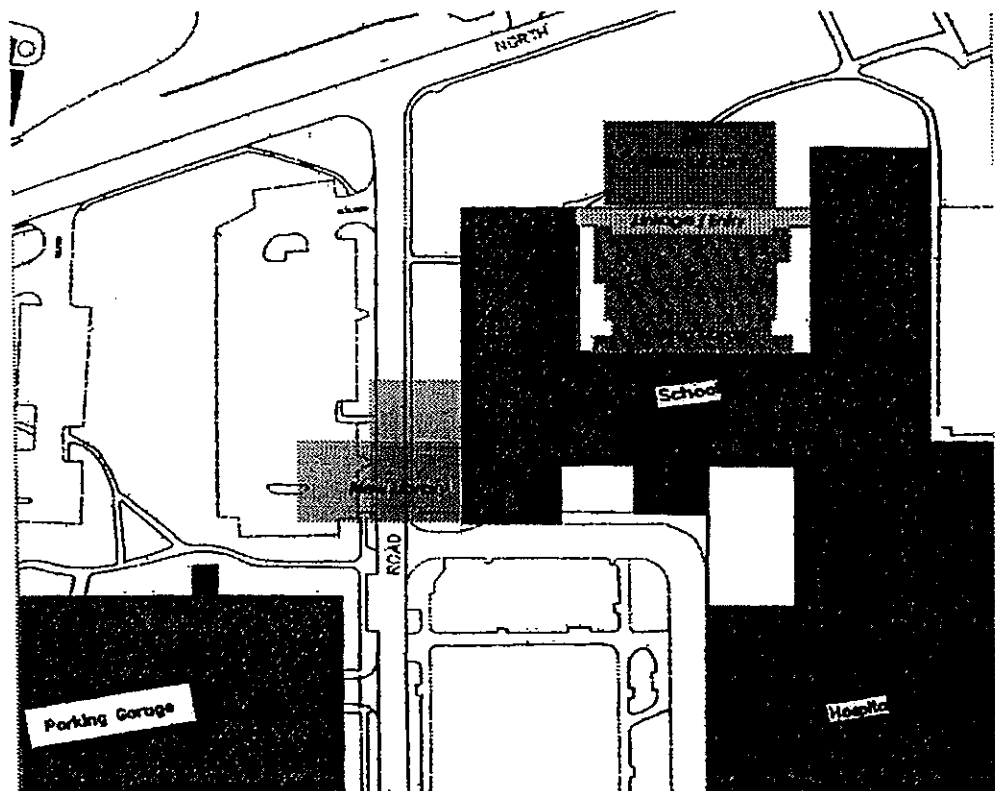
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## RECOMMENDATIONS

- Preferred Option** The Study concluded that new construction was recommended. The recommendation takes into consideration:
- potential added costs due to unanticipated conditions often encountered during a major renovation;
  - operational difficulties related to maintaining an active facility during renovation construction;
  - the cost of temporarily relocating the collection;
  - the overall cost of the required renovation;
  - the inability to expand the Library east or west within the Medical School;
  - the opportunities for a state-of-the-art Library efficiently programmed and built as part of a new construction project, and;
  - the campus planning advantages of siting a new facility.

Several potential sites and configurations exist west and north of the Medical School and are discussed within the study.



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*Summary Program - New Library*

	NSF
<i>Faculty Development Room</i>	250
<i>Multi-Media Collection</i>	400
<i>Rare Book Room</i>	600
<i>Online / Outreach Services</i>	300
<i>Readers</i>	
<i>Workstations</i>	875
<i>Carrels / Tables / Lounge Seats</i>	1,500
<i>Group Study</i>	1,600
<b>Total</b>	<b>9,565</b>

<i>Summary Totals</i>	NSF	<i>Efficiency Factor</i>	
<i>Level A</i>	14,060	65%	21,630
<i>Level 1</i>	15,069	65%	23,183
<i>Level 2</i>	9,565	65%	14,715
<b>Total</b>	<b>38,694</b>		<b>59,528</b>

***Next Steps*** To address conditions and needs in the existing Library, two actions should be started:

- 1) An improvement program to address immediate needs including lighting, carpeting, seating, and other areas.
- 2) Development of off-site storage capacity to meet the demands for the growth of the collection over the next five years. This can be done through leasing space, joining other institutions in existing facilities or through other means.

***New Library Development*** When funding sources are identified and a site and approximate schedule determined, the study should be updated by DCAM and/or UMMS staff, certified and "transitioned" to Final Design and Construction phases.

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- 1.3 Sitework / Landscaping
- 1.4 Building Envelope
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  - Glazing
  - Exterior Cladding
- 1.5 Building Structure
- 1.6 Interior Finishes - General
- 1.7 Mechanical, Electrical, Plumbing, Fire Protection Systems
- 1.8 Code Assessment
- 1.9 Architectural Access Board / ADA Compliance

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**1.1 Overview**

The Lamar Soutter Medical Library at the University of Massachusetts Medical School, Worcester campus serves approximately 400 medical students, the faculty, doctors and staff of the Medical School and UMass Memorial Medical Center as well as the Graduate Schools of Nursing and Biological Sciences and numerous Graduate Education programs. A significant number of users also come from the surrounding community, other educational and medical institutions and from other UMass campuses.

<b>Area</b>	Ground Floor =	26,130 gsf
	Level 2 =	12,558 gsf
	Level 3 =	<u>10,970 gsf</u>
	<b>Total</b>	49,775 gsf

**Readers** 459 seats in a combination of closed and open carrels, computer workstations, tables and informal seating areas

**Library Staff** 33 Library staff are divided into three major function areas, Circulation / Reference, Technical Services and Administration. They occupy a variety of workstations and enclosed offices on the ground floor and Level 2 of the Library.

**Collection** 200,000 (est.) volumes of journals, government documents and books on fixed shelves. 27,000 (est.) older journal volumes housed in unfinished space on the 8<sup>th</sup> floor of the Medical School with limited access and retrieval.



Main Entry

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A detailed breakdown of existing usage with associated gross square footage is included in the Program section.

Built in the early 1970's as part of the original Medical School construction, the Library is housed on three levels at the north end of the UMMS / Hospital complex. The ground floor contains the entry, Circulation and Reference desks, the main reading room and book collection, the Chancellor's conference room, the Rare Book collection, current periodicals collection, government documents collection, Consumer Health collection and reading area, the copy center, and Technical Services areas. The second and third levels include journal stack areas and individual enclosed carrels overlooking either the main reading area or along the perimeter wall. Administrative offices and the multi-media collection are also housed on the second level. The basement level below the Library houses animal quarters and mechanical areas with a separate HVAC system. Some of the Library's HVAC, electrical and plumbing service pass through the basement. The main HVAC mechanical room for the Library is on the second level, above the main entry. There are additional mechanical rooms on Level 3.

## 1.2 Modifications over Time

Two lightwell / courtyards originally flanked the Library entrance at the ground level. These were eliminated with the creation of the Goff Learning Center in 1997, which created several case study style lecture halls and seminar rooms. Also in 1997, the Chancellor's Conference Room was created to the left of the Library entrance. The copy center on the ground floor was built in 1998 and provides high speed copiers and scanners for both the patrons and staff.

The Library was designed and built before the advent of wide spread computer use. No provision was made in the original design for the use of personal computers, networks, and related equipment. These current needs have been addressed in a variety of ways.

Wireless network connections are available in selected portions of the Library. Systems furniture workstations have been added in the main reading room to provide for computer use and provide local network and Internet access for library patrons. The furniture is of a variety of styles and ages. Staff areas and workstations have also been wired for computer use. The electrical requirements of the computer workstations overtax elements of the electrical distribution system. Likewise the associated heat generated by the computers, printers and copiers places a significant unanticipated load on the HVAC system.

A programmatic breakdown of the existing Library is included in the Appendix.

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### 1.3 Sitework / Landscaping

A large open grassy knoll is the only sitework or landscape that might be associated with the Library. It is maintained by the University and is considered outside the scope of this report in terms of detailed analysis. This area is an open grassy area which extends north from the Library exterior wall between the two adjacent wings out to an open sloping area used for UMMS outdoor functions. Numerous utility lines cross this area and connect to the building within this area. Geotechnical work on prior projects nearby has indicated no ledge to the depth of utility connections at the level of the basement floor (+/-18'). This area remains the only potential area for Library expansion without requiring reconfiguration of existing occupied spaces. If any expansion is planned, detailed survey and geotechnical investigation must be undertaken prior to the Schematic Design phase of Final Design.



Exterior View – from north

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## 1.4 Building Envelope

The Library is a three story “wing” of the main Medical School building, with exterior exposure on only the north side of the structure.

**Exterior Wall** The exterior wall is a combination of a single glazed curtainwall system with gray tinted glass and dark gray stone spandrel panels, similar to the main building. It is all of original construction, and is well maintained.

**Curtainwall** – Dark gray anodized extruded aluminum window non-thermal break frames of rectangular section, single glazed with gray tinted glass.

**Masonry** – Dark gray granite spandrel panels (*Note: UMMS intends to replace the granite spandrel panels at some future date.*)

**Evaluation** – Although well maintained and in acceptable condition, the single glazed units do not meet current energy codes, and are an area of significant heat loss for the Library.

**Recommendation** – Replacement of all single glazed windows with double glazed, thermally broken frames



University of Massachusetts Medical School  
View from Lake Avenue

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**Roof** The Library “wing” has a single ply elastomeric membrane roof with rigid insulation and stone ballast. There are no apparent leaks and/or water damage.

*Evaluation* - UMMS records indicate that the original roof was replaced in 1994 ~ '95.

*Recommendation* – No upgrades are required

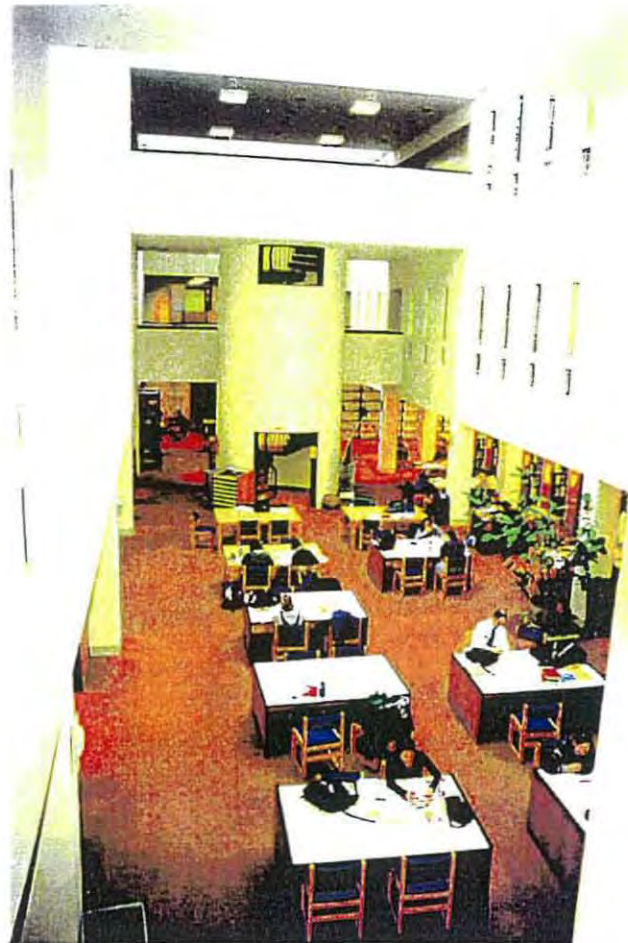
**Skylights** A series of large skylights are above the main Reading area. They are presumed to be single glazed units, and again there are no apparent leaks or water damage, although Library staff noted that there have been leaks in the past.

*Evaluation* – Although well maintained and in acceptable condition, the single glazed units do not meet current energy codes, and are an area of significant heat loss for the Library.

*Recommendation* – Replacement of all single glazed skylights with double glazed, thermally broken metal frames.

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Main Reading Room

## 1.5 Building Structure

The Library is a separate structure from the main Medical School building. Both buildings are cast in place concrete with rectilinear columns and flat slab. Floor to floor height is 12' - 7" between the first and second levels and between levels 2 and 3. The Library structure is designed to carry a design load of approximately 150 pounds per square inch. This is consistent with typical library design standards for fixed shelving units. Only fixed shelving units are used in the current Library. No modifications have been made to the original structure, and where observable, there is no apparent evidence of degradation in the capacity or structural integrity of the building. The floor to floor heights between Levels one and two and between Levels two and three do not match those of the adjacent Medical School building. In addition, the Library building has one level below grade. Any modifications to the Library structure must therefore take into consideration the potential impacts on the lower level and adjacent, even lower levels beneath the clinical wing of the Medical School.

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Less stringent Massachusetts Building Code mandated seismic design criteria were in effect at the time of the Library design and construction. Any significant modifications to the Library structure may trigger a complete seismic upgrade to the building to meet current Code requirements. If the structure is unchanged by any potential renovation and/or addition, it is unlikely that this structural upgrade will be required.

Please refer to the Structural Report prepared by Souza True and Partners, Inc. in the Appendix for more detailed structural information.

## 1.6 Interior Finishes - General

**Floors** The Library has its original glue down carpet throughout. It has exceeded its intended life span and requires replacement.

*Recommendation* – Replacement of all finish flooring is recommended.

**Walls** The Library partitions are painted gypsum drywall construction and in generally good repair.

*Recommendation* – Repainting of the entire Library is recommended as part of the planned renovation work.

**Ceilings** Gypsum drywall and/or plaster ceilings are typical throughout much of the Library. Although in good repair, they pose a significant obstacle to above ceiling maintenance work and/or re-wiring.

*Recommendation* – Replacement of selected areas of “hard” ceiling with lay-in acoustical tile is recommended as part of the planned renovation work. The extent of this work must be coordinated with modifications to the electrical service distribution, computer network cabling and lighting upgrades as well as recommendations of the acoustical consultant.

**Lighting** Ambient and limited task lighting within the Library is provided by an assortment of incandescent and fluorescent fixtures. Fixtures in the two circular stairs have been eliminated and/or not lamped some time in the past as part of a change to the lighting in this area. No supplemental or task lighting has been added as part of the addition of systems furniture computer workstations in the main Library. Some task lighting has been provided in the

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Technical Services areas.

*Evaluation* – Inadequate lighting, particularly at night, has been noted by a number of Library users. The majority of fixtures are part of the original construction, and likely not compliant with current energy codes. No desktop task lighting is provided for readers.

*Recommendation* – Redesign and replacement of the majority of the lighting through the main Library is recommended to improve both the quality of the lighting as well as the energy efficiency of the fixtures.



Reference Workstations

*Acoustics / Noise* The large open spaces and the predominant use of “hard” finishes throughout the Library creates the potential for acoustical problems. Installation of computer workstations in the main Reading Room has added to the ambient noise level of this area and the adjoining reading areas on the upper levels.

*Evaluation* – Library users have noted that portions of the Library are sometimes “noisy”. A detailed acoustical investigation and evaluation of the Library is, however, outside the scope of this Study.

*Recommendation* – Evaluation of the existing Library and recommendations as to appropriate acoustical treatment and finish materials should be included as part of the Final Design

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work.



Main Reading Room from Level 3

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1.7 Mechanical, Electrical, Plumbing and Fire Protection Systems

***HVAC*** Ducted multi-zone constant air volume system with supplementary hot water perimeter baseboard heat. The existing heating and cooling equipment has reached or exceeded it's anticipated useful life span and will require replacement. The majority of the ductwork will require replacement and/or modification to eliminate duct liners which have eroded over time. Changes in the indoor air quality and energy codes also dictate that this system be substantially replaced. The chilled water and steam piping systems have also reached their life expectancy and will need to be replaced. A new DDC Control system could be extended from the existing campus Metasys loop.

***Electrical*** The electrical system pre-dates the widespread use of computers by both the library staff and user population. New service will be required, with a substantial increase in the number of outlets. Upgrades to the fire and smoke detection system are also required at that time. Inadequate lighting has been noted by many users, and will be upgraded to enhance both efficacy and energy efficiency. The need for data / network outlets throughout the Library must also be addressed in any proposed renovation.

***Plumbing*** Changes to the Massachusetts Plumbing Code and Accessibility requirements dictate that the toilet rooms be upgraded and elements of the plumbing system be upgraded.

***Fire Protection*** The current Library has no fire suppression sprinklers. The smoke and fire detection system is rudimentary by today's standards. The Massachusetts Building Code will require that fire suppression sprinklers be part of any renovation to the Library.

Please refer to the SAR Existing Conditions Report in the Appendix for a more complete assessment of the MEP/FP systems.

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## 1.8 Code Assessment

- Use or Occupancy*** Building classified as a use group A-3 (303.4)
- Special Use and Occupancy*** Main Reading area is now considered to be an "atrium" and may require modifications to comply with smoke control and enclosure requirements (404.4; 404.5)
- General Building Limitation*** N/a
- Types of Construction*** Type 1B assumed (603.1)
- Fire Resistant Materials and Construction*** No areas of non-compliance noted
- Interior Finishes*** No areas of non-compliance noted
- Fire Protection System*** Building does not meet current code requirements. Full coverage fire suppression system will be required as part of any major renovation. (904.1)  
The Rare Book Room will require an appropriate fire suppression system to be installed.
- Means of Egress*** No areas of non-compliance noted for Assembly A-3 occupancy (1006.2.2)
- Length of travel to exit way is less than 200 feet, in compliance with maximum length of travel distances. (1006.5)
- Building complies with accessible means of egress. Exit stairways have clear width of 48 inches (1007.2)  
Design occupancy of 500 people is within allowable limits. (1008.1.1)  
Adequate egress capacity provided. (1009)  
Minimum number of exits for occupancy load is provided. (1010.2)  
Stairways are in compliance except as noted. (1014.1)
- Tread and riser dimensions may not comply with current code, but comply with code at time of construction. (1014.6)
  - Guardrails will require modification to meet current reduced clear opening limitations. (1021.3)

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***Elevators*** Elevator call button heights must be modified to comply with current code.  
Elevator car control locations must be modified to comply with current code.(28.8.2).

***Toilet Room*** Non-compliant, but compliance may be possible through reconfiguration of existing rooms without change in size.

***Telephones*** Non-compliant – mounting height and phone type

***Water Bubblers*** Non-compliant – mounting height

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- 2.4 Library Organization
- 2.5 Programmatic Determinants
- 2.6 New Program Elements
- 2.7 Physical Determinants
- 2.8 Program Summary
- 2.9 Detail Program Statement
  - 2.9.1 Room Data Sheets

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## 2.1 Overview

The Lamar Soutter Medical Library is a regional health care and life sciences information resource for students, faculty, practitioners and consumers in Massachusetts and surrounding states. The library maintains a collection of over 200,000 volumes of journals, books and periodicals as well as multimedia materials, microfilm, microfiche and web-based materials. With over 45,000 annual visits, it is a well used facility open throughout the calendar year. Annual collection growth is estimated at approximately 6,000 to 7,000 new books and/or journals.

The library has been described as the "*heart of the institution*", and serves as a common meeting area for students, faculty and staff of both the Medical School and the Hospital. With the majority of the students commuting daily to the school from outside the Worcester area, the Library also serves as a "home base" for many of the students, a place to study, to check email, to meet friends, work on group study projects, or just to sit quietly between classes. This aspect of the Library was mentioned by all of those involved in the programming effort. It was seen by all to be an important part of the role the library plays within the school and the broader medical center.

Over the years, the physical capability of the existing library to accommodate these functions was adversely affected by the growth of the collection, the need to add multiple computer workstations and added library staff, as well as a substantial increase in the volume of information requests and demands for other types of service. The program for the new library needs to provide for these functions with a large common reading area, adequate work and service areas for the current and anticipated library staff, new group study areas, space for faculty to develop technology based materials and expanded information systems, as well as additional stack areas for the growth of the collection.

## 2.2 Program Development

Development of the new library program was the result of literature review, comparisons to other facilities, and the work of the study team with a Library Programming Specialist, and a series of meetings with the Library Committee, the library staff and representatives of the various departments within the Medical School. Their various programmatic and spatial needs were combined and assessed within the context of the existing facilities and the potential need for additional space.

## 2.3 Information Technology

The revolution in digital information technology is rapidly changing how information will be stored and disseminated in the future. The widespread use of computers and the Internet gives

the individual access to an unprecedented breadth of information. It has the potential to change the very definition of what is a library. Digital "books" and on-line journals are being developed at a rapid rate. In distinct contrast to the trend towards all things digital, there is a continuing need to house and access existing volumes and the ever increasing number of new books and journals being published each year. The programming of any library must take into consideration these two contradictory trends. The distribution of information is also governed by copyright laws and publishing industry trends related to the limited dissemination of full text articles vs. citations of published material.

## 2.4 Library Organization

The Lamar Soutter Medical Library is organized around the services offered, the readers served and the physical requirements of its collection of books, journals and other documents. The Library is organized into several departments as can be seen in the organizational chart (Fig 1). The Library is also organized around the movement of both books and patrons. Services associated with physical access to the collection and most closely tied to readers tend to be clustered around the entrance and are located primarily on the entrance level. These include Circulation, Reference, Interlibrary loans, Document Delivery and Library Reserve. Services associated with the care of the collection are more flexibly located, but are more definitive in their programmatic and spatial requirements. These include Technical Services, Document Conservation, Administration, Library Instruction, Faculty Development, and Outreach / Online Services. The physical housing of the collection is dictated by the space required for the sequential shelving of volumes and the structural capacity of the building to support the 150 psf (standard) to 300 psf (compact) loads imposed by the shelving. Reader areas can be intermingled with the collection and aggregated along the main circulation paths within the library. Informal seating areas, open and closed study carrels, group study and reference areas need to be provided for readers. The majority of reader areas must be equipped with power and data jacks to allow access to the extensive on-line reference and collection information. Special areas for the Rare Book collection and Multimedia collection are also required, each with its specific shelving, security and/or environmental control requirements.

## 2.5 Programmatic Determinants

Several major decisions, made early in the programming phase, dictated much of the subsequent program development:

- *Collection size will be capped at 300,000 volumes.* The growth limit in the collection size allows for between 7 and 10 years of collection growth. Increasing the overall size and capacity of the Library as well as off-site storage options, or other collections management strategies such as net reductions or expanded reliance on digital sources must be investigated.
- *Compact shelving will be used for a high percentage of the collection.* The need for areas capable of carrying the 300 psf dead load imposed by the compact shelving requires all areas of compact shelving to be located in new construction. As noted elsewhere in this Report, the existing library structure is designed to carry only the 150 psf dead load imposed by standard shelving units. Compact shelving is recommended because it allows for the conservation of built area and thus reduces physical expansion and related costs.
- *Reader seats will be limited to 400.* Careful evaluation of the actual usage patterns of the library, coupled with the fixed size of each medical school class and the growing number of off campus classes and clinical rotations allows the new library program to limit the number of readers to 400.

## 2.6 New Program Elements

New program requirements have developed and been incorporated, where possible, into the Library over the life of the facility.

- Reference and individual computer workstations with associated network cabling and power requirements
- Housing and viewing video, slides, recorded lectures and other multi-media materials
- Group study rooms
- Increased interlibrary collaboration and loans
- High volume copying / xerography / scanning
- Information Systems librarian and associated staff
- Increased number of library staff to service a growing population of on and off campus users
- Consumer health information, books and separate seating area
- Library/Bibliographic Instruction

- Faculty Development facilities

## 2.7 Physical Determinants

A number of physical determinants have direct impact on the programming and subsequent conceptual design effort.

- The building structure must support compact shelving where required. The current structure will not accommodate 300 #/sf live loading.
- Group study areas are to be aggregated, proximate to library support personnel and require full computer and multimedia capabilities
- The cast in place concrete construction and hard plaster ceilings complicate retrofitting the existing building with the cabling and power necessary for computer networking and the widespread deployment of personal computers
- Infill construction requires structural retrofitting of the entire library building and therefore is not considered feasible.
- Horizontal expansion of the ground floor library functions into existing construction is limited on three sides of the library due to programmatic requirements of other Medical School functions with the exception of some shifting of spaces on the East Side (Clinical Wing) of the Library.
- The floor to floor elevations of the library and the adjacent medical school building do not match thereby eliminating potential horizontal expansion of the upper library floors.

## 2.8 Program Summary

A one page program summary is included on the following pages, as well as a detailed program statement which includes both preferred floor location as well as required adjacencies and the technical requirements of each space.

***Lobby / Entrance*** The lobby / entrance of the library serves as a security checkpoint, and point of introduction to the library and the facilities offered. It must include an informational kiosk, display cases and/or exhibit areas as well as the security gates / sensors.

Use of an Internet or intranet capable information kiosk was discussed in a number of the programming meetings. It is a point of public information, and the Library is often used as the place to go to ask for information about the school (facility) and where to find something. No detailed programmatic or technical requirements for the kiosk were developed as part of the Study.

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Exhibit areas must be lockable and sized to accommodate small posters, models and other display materials.

Security gates are required, with specific operational and manufacturer information to be provided by the Library Administration as part of the final design work.

***Circulation /  
Reserve / Document  
Delivery***

The Circulation desk is the center of all customer / user services. Requests for information, book check-out and return, and the processing of re-shelving of books and journals are elements of the circulation desk area. At the request of UMMS, the Interlibrary Loan and Document Delivery functions are combined spatially with Circulation and Reserve. Each function must be defined within the service area to allow patrons to find the specific item or service they seek.

The Reserve desk provides services and shelving for materials placed on reserve by faculty or others, as well as work areas for Reserve staff.

Interlibrary Loan and Document Delivery is a place to make a request, find the status of an order and pick up the book. The Interlibrary lending and borrowing are currently adjacent and share functions.

Interlibrary loans are a regular part of the library functions. Materials move between libraries based on requests from users both at UMMS and elsewhere. Library staff process these requests, either locating books from the UMMS collection to be sent elsewhere, or requesting, processing and providing short term shelving for incoming materials from other libraries.

Document Delivery functions as a resource to both library staff and users. Specially requested materials, in the form of articles, copied items, books, etc. are picked up from the Document Delivery area. Document Delivery staff need immediate access to a high capacity photocopier.

The Circulation counter requires a desk height work area and a minimum of three checkout stations. Shelving for materials on reserve, on hold, as well as materials that have been returned or are awaiting re-shelving must be provided.

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Offices and staff only work areas are also required. These include an office for the Circulation supervisor and staff workstations for Document Delivery, Interlibrary Loan, Circulation and Reserve personnel. Shelving as well as areas for book trucks, materials storage, a work table, high capacity photocopier and Ariel workstation are also required within the staff only area.

Circulation / Reserve / Document Delivery must be located adjacent to the entrance to the library on the ground floor.

**Reference** As the name implies, Reference librarians and staff assist library patrons in finding and at times researching materials. Spatially and programmatically, this function is separate from the Circulation / Reserve desk. Reference materials are housed separately from the general collection and often do not circulate. Reference staff also provide personal computer help and support at UMMS.

Reference work occurs at a variety of levels and ranges from assisting a patron in where to look for a particular volume within the collection to working with faculty, students or researchers on researching relevant articles, books and other materials as part of a course syllabus, research paper or other scholarly pursuit.

A private office is required for the head Reference Librarian. Workstations are required for Reference staff and a small conference room or alcove area is needed for small group meetings. Shelving for approximately 5,000 volumes is required as well as seating for approximately 24 readers within the Reference shelving area.

Reference is closely allied with Circulation and Reserve and therefore should be located on the ground level and adjacent to these functions, if possible.

**Consumer Health Library** As part of it's public outreach, UMMS maintains a Consumer Health Library within the overall library. It includes medical, research and healthcare materials authored for the general public, as well as semi-private reading and multi-media viewing areas.

The Consumer Health collection should be readily accessible to the general public and preferably on the ground floor.

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**Microforms** Microforms includes both microfilm and microfiche. Each type of media has it's own specialized storage cabinets and film readers. Although use of this document storage technology is diminishing, the library must provide access to the materials currently stored in this manner. Library patrons often require assistance in using the microforms readers and printers, therefore a location near Reference is preferred.

**Administration** The library Administration includes the Director, the Assistant to the Director, the Associate Director, the Financial Manager and a secretary. Storage for office supplies and files must also be provided. A 20 person conference room, staff lounge and general storage area is also included in the Administrative portion of the library.

Although all of the offices and administrative support areas are to be grouped together, there is no programmatic or functional reason for these areas to be on a particular floor of the library, or adjacent to a particular function.

**Technical Services** Technical Services include ordering / purchasing, receiving, payment, cataloging, collection development with approval planning, weeding, government documents, serials (current periodicals), maintenance of the "Periodical Reading Room", and the Library mailroom - incoming/outgoing (from a campus mailroom). Listed below are current operations and spatial needs, as well as requested additional items, where noted.

Receiving: Materials arrive on palettes (paper bound materials). Convenient access to a loading dock is necessary. Palettes arrive bi-weekly.

- Service elevator access is limited. Palettes could be broken up off-site and delivered as single boxes.
- Fifteen (15) boxes must be accommodated "at the back door" for materials going to the bindery.
- Books from Bindery - Unpacked catalogues put on book trucks and immediately shelved. Four (4) or five (5) book trucks every two (2) weeks.
- Books received are cataloged, invoices are checked and bar codes/security strips put on books.
- New books go to a "new book" shelf or to Reference or Periodicals.

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- New books are on the "new book" shelf for one (1) week.
- One (1) book case is all that is required. This could be within the Periodical Reading Room.
- Recycling of packing materials/trash must be accommodated. Trash "dumpsters" must also be able to be moved into Technical Services.

Proximity - Technical Services needs access to the Periodical Reading Room and the stacks, but can be almost anywhere within the Library. Access to a loading dock is required.

Workspace

- Adequate storage is "a must". (Nothing on the floor.)
- Everyone in Technical Services has an individual workstation. Network printing is acceptable, but selected workstations need individual printers (for labels). Two (2) "casual" workstations for student/part time help are also necessary.
- Functional uses do not need to be segregated. They all need to be adjacent/proximate.
  - Shared items: printers, shelving, supplies, copier and fax
- Technical Services also does "minor" book repair and needs a sink and adequate ventilation. A paper cutter is also required.
- Four (4) shared work tables (4'x8') are needed. A coat rack is requested.
- Reserving of work table/work areas must be possible.
- Technical Services is involved with maintaining the Rare Books collection.

**Photocopiers /  
Scanners** Two types of copier / scanner areas are required. A "copy center" located on the ground floor with multiple high capacity copiers, printers and scanners is required, and may be shared by library staff. Individual copiers and scanners must also be dispersed on the in the stack areas for small count copying. This eliminates the need to carry all items from the stacks to the copy center for reproduction or scanning.

**Library Instruction  
Room** Instruction in how to find and access materials within the library, how to better use the Reference department and other aspects of the library is an on-going regular function. A separate training / instructional room to seat up to 20 people is required. Desks or workstations with a PC are required, with a clear view of the instructor station at one end of the room. Full multi-media capabilities are required. Proximity to the Administrative areas is preferred, but not required.

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***Multi-media Collection*** The library has an extensive and growing collection of slides, video and audio tapes, CDs and other multi-media materials. Consolidation of these materials into a common area within the library is preferred, as well as provision for the storage of projectors, recorders and the like.

***Rare Book Room*** The library has a significant collection of rare and unique books and medical equipment. This collection requires special security provisions to limit access to the materials, as well as special air, humidity and temperature controls to provide the optimum environment for long-term storage. Display cases for special volumes and/or displays are required, as well as areas for the display of some relatively large pieces of historically significant medical equipment in the collection.

Various groups and individuals currently use the room meetings and occasional receptions. These functions are inappropriate due to potential damage to the collection, as well as the limits placed on reader access.

The specific security and HVAC requirements for this collection must be addressed as part of the final design.

There is no requirement for the Rare Book Room to be on the ground floor. Seating for those using the collection is required.

***Online / Outreach Services*** Online / Outreach services extend the capabilities of the library to serve a broader user population by providing web based content and access to portions of the collection. It also allows remote access to library materials by faculty, students and researchers.

In addition to an office for the Outreach Librarian, the following equipment must be accommodated within the Online / Outreach areas.

- A web server and CD rom tower are currently maintained by the Outreach Librarian. The Outreach Librarian provides library-wide IS support and maintains the Library web server.
- Equipment storage and set-up area (needs 2 workstations) is required with layout space for equipment setup and repair (monitors, keyboards, laptops, etc.). An adjacent office is preferred.

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**Reader Workstations** 50 Reader workstations are assumed as part of the Reference Department. These provide access to online and specialized collection information and databases, as well as serving as personal computer stations. Each workstation requires a networked personal computer and may be clustered together in groups and/or configured as a study carrel. Systems furniture may be used for the workstations.

The workstations are to be grouped near the Reference area and Circulation desk.

**Current Periodicals Reading Area** Periodicals and journals are used most during the first five years after publication. Current journals do not circulate. An informal reading area with shelving for 1,600 titles with the latest issue on display and the latest year behind or below is required. In addition, this reading area will include space for current newspapers and general readership magazines.

The current periodicals reading area is serviced by the Circulation Desk staff, with assistance from Technical Services and should be located on the ground floor.

**Group Study** Group study areas are in great demand at the Medical School, as more and more classes require collaborative work by students. Two sizes of rooms are envisioned, small group study rooms for 4 ~ 6 people and large group study rooms for 8 ~ 10 people.

Each room must have full multi-media capabilities and computer network access, a conference / seminar table and comfortable seating. Furniture selections should allow users to easily reconfigure the room. Clustering of the Group Study rooms is preferred to facilitate common storage of multimedia equipment, and ease of support by library personnel.

**Reader Seating** Seating for readers must occur throughout the library, in a variety of configurations. Study carrels (65%), tables for 4 ~ 6 people (25%) and lounge seating (10%) are required. Some reasonable percentage of the overall seating requirement should be located on the ground floor with reasonable proximity to the Circulation Desk and Reserve areas. Carrels should be clustered, and should occur on all levels of the library. Enclosed carrels, as currently exist, are not recommended and should not be used.

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***Faculty Development Room*** Medical School faculty and researchers often jointly develop class materials with library personnel. The advent of web-based course materials has expanded and increased this collaboration. The faculty development room must include full multi-media and computer network access capabilities as well as table and chairs for approximately 4 people. Proximity to the Reference area is preferred, as they are often involved.

***Efficiency Factors*** In evaluating the spatial requirements of an "all new" library design option, a 65% efficiency factor has been used. This is based on experience with other new library construction projects and reflects the ability to more efficient locate and configure the various program elements when not constrained by existing physical parameters. A 65% efficiency factor has been used for all renovation / addition options.

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## 2.9 Detailed Program Statement

**University of Massachusetts Medical School**  
**Medical Library Program**  
*Summary Program*

	<b>Net Square Feet (nsf)</b>	<b>Gross Square Feet (gsf)</b>	<b>% Change in Area</b>
<b>READER &amp; SERVICES</b>			
Lobby/Entrance	470	723	42%
Circulation/Reserve/Document Delivery	2,200	3,385	184%
Interlibrary Loan			
Reference	4,080	6,277	176%
Reference Collection			
Consumer Health Library	420	646	-17%
Microforms	260	400	
Administration	1,250	1,923	120%
Technical Services	1,990	3,062	106%
Photocopiers/Scanners	550	846	25%
Library Instruction Room	800	1,231	
Multi-Media Collection	400	615	-40%
Rare Book Room	600	923	-18%
Online / Outreach Services	300	462	-16%
Current Periodicals and Browsing	1,630	2,508	145%
Readers	8,775	13,500	-20%
Bulding Services			
Subtotal Net Square Feet	<b>23,725</b>		
Efficiency factor	65%		
Subtotal Gross Square Feet		<b>36,500</b>	<b>4%</b>
<b>COLLECTION</b>			
<b>Collection Growth</b>		<b>Maximum Collection Size</b>	<b>% Change</b>
Journals Library		253,600	
Government Documents		inc above	
Books		54,400	36%
<b>Required SF (Compact / Fixed Shelving)</b>			
Journals Compact		11,352	
Fixed		1,449	
Books Compact		833	
Fixed		2,035	
Total Net Square Feet	<b>15,669</b>		
Efficiency factor	65%		
Total Gross Square Feet		<b>24,106</b>	<b>65%</b>
<b>LIBRARY TOTALS</b>			
Readers + Services	23,725	36,500	4%
Collection - Compact/Fixed Shelving (inc. 8th floor)	15,669	24,106	65%
Total Net Square Feet	<b>39,394</b>		
Efficiency factor	65%		
Total Gross Square Feet		<b>60,606</b>	<b>22%</b>

**University of Massachusetts Medical School**

**Medical Library Program**

*Summary Program - New Library*

	Existing	<b>New Library</b>				
		Net Square Feet	Gross Square Feet	Level A	1	2
<b>READER &amp; SERVICES</b>	(gsf)	(nsf)	(gsf)			
Lobby/Entrance	510	470	723		470	
Circulation/Reserve/Document Delivery	1,190	2,200	3,385		2,200	
Interlibrary Loan	851					
Reference	2,271	4,080	6,277		4,080	
Reference Collection						
Consumer Health Library	774	420	646		420	
Microforms	<i>inc. elsewhere</i>	260	400		260	
Administration	876	1,250	1,923			1,250
Technical Services	1,485	1,990	3,062			1,990
Copy Center	678	450	692		450	
Photocopiers/Scanners		100	154	100		
Library Instruction Room	n/a	800	1,231			800
Faculty Development Room		250	385			250
Multi-Media Collection	1,023	400	615			400
Rare Book Room	1,130	600	923	"		600
Online / Outreach Services	548	300	462			300
Current Periodicals and Browsing Readers	1,023	1,630	2,508		1,630	
Workstations				875	875	875
Carrels / Tables / Lounge Seats				900	1,200	1,500
Group Study						1,600
<b>Bulding Services</b>	<b>6,007</b>					
<b>Subtotal Net Square Feet</b>		<b>23,025</b>		<b>1,875</b>	<b>11,585</b>	<b>9,565</b>
<b>Efficiency factor</b>		<b>65%</b>				
<b>Subtotal Gross Square Feet</b>	<b>35,165</b>		<b>35,423</b>	<b>2,885</b>	<b>17,823</b>	<b>14,715</b>

**University of Massachusetts Medical School**  
**Medical Library Program**  
**Summary Program - New Library**  
**COLLECTION**

<b>Collection Growth</b>		<b>Existing</b>	<b>Maximum Collection Size</b>		<b>Level</b>		
					<b>A</b>	<b>1</b>	<b>2</b>
<b>Journals</b>		120,000	253,600				
<b>Government Documents</b>		6,000	inc above				
<b>Books</b>		40,000	54,400				
<b>Required SF (Compact / Fixed Shelving)</b>				<b>DFS</b>			
<b>Journals Compact</b>		85.6%	10,334	1,033	10,334		
<b>Fixed</b>		14.4%	3,484	174		3,484	
<b>Books Compact</b>		100%	1,850	185	1,850		
<b>Fixed</b>		0%	-	-			
<b>Total Net Square Feet</b>		n/a	<b>15,669</b>		<b>12,185</b>	<b>3,484</b>	<b>-</b>
<b>Efficiency factor</b>			70%		70%	70%	
<b>Total Gross Square Feet</b>				<b>22,384</b>	<b>17,406</b>	<b>4,977</b>	

<b>LIBRARY TOTALS</b>	<b>Existing</b>	<b>Maximum Collection Size nsf</b>	<b>Maximum Collection Size gsf</b>			
<b>Readers + Services</b>		23,025	35,423	1,875	11,585	9,565
<b>Collection - Compact/Fixed Shelving</b>		15,669	24,105	12,185	3,484	-
<b>Total Net Square Feet</b>		<b>38,694</b>		<b>14,060</b>	<b>15,069</b>	<b>9,565</b>
<b>Efficiency factor</b>		65%		65%	65%	65%
<b>Total Gross Square Feet</b>			<b>59,528</b>	<b>21,630</b>	<b>23,183</b>	<b>14,715</b>

Program by Floor

**University of Massachusetts Medical School**  
**Medical Library Program**  
*Summary Program - New Library*

<b>Level A</b>		<b>NSF</b>
	<i>Photocopiers/Scanners</i>	100
	<i>Workstations</i>	875
	<i>Carrels / Tables / Lounge Seats</i>	900
	<i>Group Study</i>	-
	<b>Collection</b>	
	<b>Journals</b>	
	<i>Compact</i>	10,334
	<i>Fixed</i>	-
	<b>Books</b>	
	<i>Compact</i>	1,850
	<i>Fixed</i>	-
	<b>Total</b>	<b>14,060</b>

<b>Level 1</b>		
	<i>Lobby/Entrance</i>	470
	<i>Circulation/Reserve/Document Delivery</i>	2,200
	<i>Interlibrary Loan</i>	-
	<i>Reference</i>	4,080
	<i>Reference Collection</i>	-
	<i>Consumer Health Library</i>	420
	<i>Microforms</i>	260
	<i>Copy Center</i>	450
	<i>Current Periodicals and Browsing</i>	1,630
	<b>Readers</b>	
	<i>Workstations</i>	875
	<i>Carrels / Tables / Lounge Seats</i>	1,200
	<i>Group Study</i>	-
	<b>Collection</b>	
	<b>Journals</b>	
	<i>Compact</i>	-
	<i>Fixed</i>	3,484
	<b>Books</b>	
	<i>Compact</i>	-
	<i>Fixed</i>	-
	<b>Total</b>	<b>15,069</b>

Program by Floor

**University of Massachusetts Medical School**  
**Medical Library Program**  
*Summary Program - New Library*

**Level 2**

<i>Administration</i>	1,250
<i>Technical Services</i>	1,990
<i>Library Instruction Room</i>	800
<i>Faculty Development Room</i>	250
<i>Multi-Media Collection</i>	400
<i>Rare Book Room</i>	600
<i>Online / Outreach Services</i>	300
<i>Readers</i>	
<i>Workstations</i>	875
<i>Carrels / Tables / Lounge Seats</i>	1,500
<i>Group Study</i>	1,600
<b>Total</b>	<b>9,565</b>

<b>Summary Totals</b>	<b>NSF</b>	<b>Efficiency Factor</b>	
<b>Level A</b>	14,060	70%	20,085
<b>Level 1</b>	15,069	70%	21,527
<b>Level 2</b>	9,565	70%	13,664
<b>Total</b>	<b>38,694</b>		<b>55,276</b>

University of Massachusetts Medical School

Medical Library Program

Comparative Program - Existing, Renovation/Addition, New Library

	Existing	Renovation / Addition Net Square Feet	New Library Net Square Feet	Gross Square Feet
	(gsf)	(nsf)	(nsf)	(gsf)
<b>READER &amp; SERVICES</b>				
Lobby/Entrance	510	470	470	671
Circulation/Reserve/Document Delivery	1,190	2,200	2,200	3,143
Interlibrary Loan	851	inc. above	inc. above	
Reference	2,271	4,080	4,080	5,829
Reference Collection		inc. above	inc. above	
Consumer Health Library	774	420	420	600
Microforms	inc. elsewhere	260	260	371
Administration	876	1,250	1,250	1,786
Technical Services	1,485	1,990	1,990	2,843
Copy Center	678	450	450	643
Photocopiers/Scanners		100	100	143
Library Instruction Room	n/a	800	800	1,143
Faculty Development Room			250	357
Multi-Media Collection	1,023	400	400	571
Rare Book Room	1,130	600	600	857
Online / Outreach Services	548	300	300	429
Current Periodicals and Browsing	1,023	1,630	1,630	2,329
Readers	16,798	8,775	7,825	11,179
Workstations				
Carrels / Tables / Lounge Seats				
Group Study				
Bulding Services	6,007			
<b>Subtotal Net Square Feet</b>		<b>23,725</b>	<b>23,025</b>	<b>32,893</b>
Efficiency factor		65%	70%	
<b>Subtotal Gross Square Feet</b>	<b>35,165</b>	<b>36,500</b>	<b>32,893</b>	

**University of Massachusetts Medical School**

**Medical Library Program**

*Comparative Program - Existing, Renovation/Addition, New Library*

**COLLECTION**

	Existing	Max. Collection Size		
Journals	120,000	253,600	253,600	
Government Documents	6,000	inc. w/ Books	inc above	
Books	40,000	54,400	54,400	
<b>Required SF (Compact / Fixed Shelving)</b>				<b>DFS</b>
Journals Compact	85.6%	10,334	10,334	1,033
Fixed	14.4%	3,484	3,484	174
Books Compact	100%	1,850	1,850	185
Fixed	0%	-	-	-
<b>Total Net Square Feet</b>	n/a	<b>15,669</b>	<b>15,669</b>	
Efficiency factor		65%	70%	
<b>Total Gross Square Feet</b>		<b>24,105</b>	<b>22,384</b>	

**LIBRARY TOTALS**

	Renovation / Addition	New Library
Readers + Services	23,725	23,025
Collection - Compact/Fixed Shelving	15,669	15,669
<b>Total Net Square Feet</b>	<b>39,394</b>	<b>38,694</b>
Efficiency factor	65%	70%
<b>Total Gross Square Feet</b>	<b>60,605</b>	<b>55,276</b>

UMMS Medical Library Study  
Program

DCAM Project No. UW991ST1  
9912.000

## 2.9 Detailed Program Statement

University of Massachusetts Medical School  
 Medical Library Program  
 Detailed Program

	Quantity	Unit SF	NSF	Subtotals	Floor	Adjacencies
<b>Lobby/Entrance</b>				<b>470 nsf</b>	<b>1</b>	
Information kiosk	1	50	50			Circulation/Reserve
exhibit cases; security gates.	1	420	420			Circulation/Reserve
<b>Circulation/Reserve/Document Delivery</b>				<b>2,200 nsf</b>	<b>1</b>	<b>Clustered together at Entry</b>
Desk with three checkout stations	1	150	150			Entry
Service counter/window for ILL/Doc. Delive	1	60	60			
Shelving behind desk for reserves, holds, s	600	0.5	300			
Book trucks (10 max)	10	10	100			
<b>Offices and workroom:</b>						Behind / connected to Circulation/Reserve desk
Circulation supervisor	1	80	80			
<b>Staff workstations / work area</b>						
Document Delivery	2	80	160			Staff only area
Photocopy	1	80	80			Staff only area
Interlibrary Loan	2	80	160			Staff only area
Circulation and Reserve	7	80	560			Staff only area
Photocopiers	3	50	150			Staff only area
Ariel workstation	1	40	40			Staff only area
Book trucks	4	10	40			Staff only area / behind Circulation desk
Work Counter	1	100	100			Staff only area
Storage Cabinet	1	20	20			Staff only area
Work table (4' - 8')	1	120	120			Staff only area
Shelving - 6 SFS	6	10	60			Staff only area / behind Circulation desk
Fax	1	20	20			Staff only area

University of Massachusetts Medical School  
 Medical Library Program  
 Detailed Program

Reference	Quantity	Unit SF	NSF	Subtotals	Floor	Adjacencies
				<b>4,080 nsf</b>	<b>1</b>	<b>Near Entry &amp; Circulation Desk</b>
Reference Desk with two workstations	2	60	120			Public access
<b>Offices and workroom:</b>						
Department head office	1	100	100			
Staff workstations	10	80	800			Staff only area
Four person alcove w/ table & chairs	1	120	120			
Workstations (PCs)	(50) <i>growth w. N-G.</i>	35	1,750			Public access, clusters of 15 - 25 OK available to public & staff
Printers (networked)						
Stand-up workstations at/near main entrance with local printer	5	30	150			Entry / Reference
<b>Reference Collection:</b>					<b>1</b>	<b>Reference</b>
5,000 volumes (21 DFS)						
50% @ 6 high shelves	14	20	280			
50% @ 3 high shelves	8	20	160			
<b>Reference Seating:</b>					<b>1</b>	
24 readers at four person tables	6	100	600			
<b>Consumer Health Library</b>				<b>420 nsf</b>	<b>1</b>	<b>Circulation/Reserve, Entry</b>
1,000 volumes (DFS)	3	20	60			
Readers / Carrels	6	30	180			some "privacy" required
Workstations (PCs)	1	40	40			
Staff Workstation	1	80	80			
Media Carrels (w/ VCR)	2	30	60			visual privacy preferred

University of Massachusetts Medical School  
 Medical Library Program  
 Detailed Program

	Quantity	Unit SF	NSF	Subtotals	Floor	Adjacencies
<b>Microforms</b>				<b>260 nsf</b>	<b>1</b>	<b>Reference</b>
Cabinets	20	10	200			unattractive
Reader / Printer	2	30	60			unattractive
<b>Administration</b>				<b>1,250 nsf</b>	<b>2</b>	<b>Clustered w/ exterior exposure</b>
<b>Offices</b>						
Director	1	160	160			
Ass't to Director	1	120	120		2	Director
Associate Director	1	120	120		2	Director
Financial Manager	1	150	150		2	Director
Secretary / Reception	1	100	100		2	Director
Supplies & Files	1	100	100		2	Associate Director
<b>Support Areas:</b>						
Conference room for 20	1	350	350			Technical Services
Staff Lounge for 20	<i>needed</i>		-			
General Storage / Supplies	1	150	150		2	Associate Director
<b>Technical Services</b>				<b>1,990 nsf</b>	<b>n/a</b>	<b>Need service elevator access / proximity - clustered together</b>
Department head office	1	100	100			
Staff workstations	10 new 8	80	640			
4' x 8' work tables	2	120	240			Staff work area
Mail shelving, trash	1	120	120			Staff only area
1,200 LF Shelving (DFS)	30	20	600			Staff only area
Coat Rack	1	10	10			Staff only area
Conservation/preservation area	1	100	100			Staff workstations
Bindery storage (15 cartons = 2 SFS of 16")	1	30	30			proximity / access to service elevator
Staging for ship/receiving	1	150	150			proximity / access to service elevator
<b>Photocopiers/Scanners</b>				<b>550 nsf</b>	<b>1,2,3</b>	<b>Public copy center on 1, dispersed copiers on 2 &amp; 3</b>
Copiers w/ paper storage	8	50	400			
Scanners	4	12.5	50			
Remote Copiers	2	50	100			

University of Massachusetts Medical School  
 Medical Library Program  
 Detailed Program

	Quantity	Unit SF	NSF	Subtotals	Floor	Adjacencies
<b>Library Instruction Room</b>				<b>800 nsf</b>	n/a	<b>Proximity to Admin a plus, but not required</b>
Workstations (inc. Instructor)	21	30	630			
Additional chairs	10	15	150			
Printer (networked)	1	20	20			
<b>Multi-Media Collection</b>				<b>400 nsf</b>	n/a	
Shelving for videos and other media (SFS)	10	10	100			
Media Carrels	10	30	300		1,2,3	visual privacy / darkening
<b>Rare Book Room</b>				<b>600 nsf</b>	n/a	<b>current location on 1 preferred</b>
3,000 volumes in locked cases	30	10	300			
Object storage and display	4	50	200			Entry
Seating	4	25	100			
<b>Online / Outreach Services</b>				<b>300 nsf</b>	n/a	
Systems librarian office	1	100	100			Technical Services
Adjacent workroom w/ 2 workstations, storage and counter	1	200	200			Staff only area

*will growth w. Nursing*

University of Massachusetts Medical School  
 Medical Library Program  
 Detailed Program

	Quantity	Unit SF	NSF	Subtotals	Floor	Adjacencies
<b>Current Periodicals and Browsing</b>				<b>1,630 nsf</b>	<b>1</b>	<b>Circulation, Main Reading Room</b>
1,600 titles shelved with latest issue on display and latest year behind or below; 15 titles per SFS with three titles across and five down (SFS)	106	10	1,060			
Newspaper rack (10)	1	10	10			
New book shelves (SFS)	1	10	10			
Lounge / Table Seating (readers)	20	27.5	550			comfortable seating
<b>Readers</b>				<b>8,775 nsf</b>	<b>1,2,3</b>	
400 including computer workstations, group studies, carrels, tables, lounge seats. <i>Inc. elsewhere above</i>						
Reference Workstations	-50				1	
Reference Seating	-24				1	
Consumer Health	-6				1	
Multi-media	-10				n/a	
Rare Books	-4				1 ?	
Current Periodicals / Browsing	-20				1	
<b>-114 Total</b>						
Distributed Workstations (clusters of 6 - 20)	75	35	2,625		1,2,3	
Group Study						can be clustered or dispersed
4 ~ 6 people	8	150	1,200		1,2,3	
8 ~ 10 people	2	200	400		1,2,3	
Faculty Development Room (4 p)	1	250	250			
Seating	119	31	3,600		1,2,3	
Carrels (65%)	77					
Tables (25%)	30					
Lounge Seats (10%)	12					
			<b>Subtotal</b>	<b>23,725 nsf</b>		

University of Massachusetts Medical School  
 Medical Library Program  
 Detailed Program

<i>Collections</i>	Current	Net Annual Additions	Maximum Collection Size
Journals	147,000	4,600	253,600
Books	40,000	2,400	54,400
Reference	-5,000		-5,000
		<i>Total</i>	300,000

<i>Assumptions:</i>	Volumes	Vol/lin. ft	Total LF	DFS units
Journals	253,600	5	50,720	1,208
Books (working capacity = 85%)	54,400	7	7,771	185
7 Shelves / section				
20 sf / DFS fixed				SFS units
10 sf / DFS compact				2,415
42 lin. ft / DFS				370
21 lin. ft / SFS				

[DFS = Double-faced section of 14 shelves; SFS = single -faced section of 7 shelves.]

University of Massachusetts Medical School  
 Medical Library Program  
 Detailed Program

**Collection Shelving Options**

	Volumes	DFS	sf / DSF	Total SF	Total GSF
<b>1 All books and journal shelved on site in fixed stacks.</b>					
Journals	253,600	1,208	20	24,152	
Books	54,400	185	20	3,701	
Total Net Square Feet				<b>27,853</b>	
Efficiency Factor				75%	
Total Gross Square Feet					<b>37,137</b>

**2 All books and journals on site in fixed and compact stacks**

Journals in compact stacks	94%	238,384	1,135	10	11,352	
Books in compact stacks	45%	24,480	83	10	833	
<b>Subtotal - Compact</b>					<b>12,184</b>	16,246 = minimum
Journals in fixed stacks	6%	15,216	72	20	1,449	
Books in fixed stacks	55%	29,920	102	20	2,035	
<b>Subtotal - Fixed</b>					<b>3,485</b>	
Efficiency Factor					75%	
Total Gross Square Feet						<b>20,892</b>

Total Library Square Footages	Options	
	All Fixed	Fixed / Compact
Readers	8,775	8,775
Current Periodicals / Browsing	1,630	1,630
Services	12,490	12,490
Collection	27,853	15,669
NSF Subtotal	<b>50,748</b>	<b>38,564</b>
Efficiency Factor	65%	65%
<b>Total SF</b>	<b>78,074</b>	<b>59,329</b>

UMMS Medical Library Study  
Program

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Room Data Sheet

**Room Name** Library Main Reading Room  
**Department**  
**Occupant(s)** (see program)  
**Room Area** 15, 065 nsf (entire ground level of library)  
**Use Description** Library entrance, security checkpoint, Circulation, Reserve, Document Delivery, Interlibrary Loan, Reference and associated collection, Consumer Health Library, Microforms, Copy Center, current Periodicals, Browsing, Reference workstations, informal seating, table seating

**Special Requirements**  
**Ceiling Height**  
**Direct Public Access** Yes  
**Adjacencies** Main circulation of Medical School

**Aspect / Finishes**  
**Exterior Exposure** Yes  
**Fenestration** Views from reading areas, and offices  
**Lighting** Fluorescent ambient, with HID and/or incandescent task lighting  
**Acoustics**  
**Doors**  
**Floor** Carpet  
**Walls** Paint / wallcovering  
**Ceiling** Acoustical Ceiling Tile with limited hard plaster ceiling areas  
**Base** Vinyl / rubber

**Mechanical Systems**  
**Electrical** All reader seats must have easy access to a duplex outlet  
**HVAC** Standard air conditioning  
**Plumbing** N/a  
**Tel/Data** All reader seats must have easy access to a duplex data outlet

**Special Equipment**  
**Special Construction** Floor design load to be 300 psf

UMMS Medical Library Study  
Program

DCAM Project No. UW991ST1  
9912.000

Room Data Sheet

**Room Name** Technical Services  
**Department** Technical Services  
**Occupant(s)** 9 people, including manager  
**Room Area** 1,990 nsf  
**Use Description** Technical Services include ordering/purchasing, receiving, payment, cataloging, collection development with approval planning, weeding, government documents, serials (current periodicals), maintenance of the "Periodical Reading Room", and the Library mailroom - incoming/outgoing (from a campus mailroom).

**Special Requirements**

**Ceiling Height** 9'-0" minimum, preferred  
**Direct Public Access** No / limited  
**Adjacencies** Main Library areas, Reference Bindery & shipping / receiving areas to be proximate to service elevator / loading dock

**Aspect / Finishes**

**Exterior Exposure** If possible, not required  
**Fenestration**  
**Lighting** Fluorescent ambient, with incandescent task lighting  
**Acoustics** Acoustically separate from main library  
**Doors** Solid core  
**Floor** Carpet / vinyl  
**Walls** Paint / wallcovering  
**Ceiling** Acoustical ceiling tile  
**Base** Vinyl / rubber

**Mechanical Systems**

**Electrical** Provide 1- duplex and 1 - fourplex at each workstation  
**HVAC** Air conditioning  
**Plumbing** Sink for conservation area  
**Tel/Data** Duplex data outlets at each workstation, plus 1 duplex data outlet at each work area

**Special Equipment**

**Special Construction**

Flooring in the shipping / receiving area to accommodate loaded handcarts and dollies

UMMS Medical Library Study  
Program

DCAM Project No. UW991ST1  
9912.000

Room Data Sheet

**Room Name** Group Study  
**Department**  
**Occupant(s)** 6 ~ 8 / 8 ~ 12  
**Room Area** 150 nsf / 200 nsf  
**Use Description** Each Group Study / Seminar room must allow a range of occupants, and allow for multi-media presentations. At certain times, these rooms may also be used as offices.

- Seating for 6 ~ 8 and for 8 ~ 12 people (two room sizes)
- Full information systems and multi-media capabilities including speaker phone
- Local and remote printing
- White board and tackable wall surfaces
- Credenza with storage

**Special Requirements**

**Ceiling Height**  
**Direct Public Access** Yes  
**Adjacencies**

**Aspect / Finishes**

**Exterior Exposure** Acceptable but not required  
**Fenestration** Operable, if provided  
**Lighting** Fluorescent ambient, with incandescent task lighting  
**Acoustics** Acoustically separate from main library  
**Doors** Solid core, with vision panel  
**Floor** Carpet  
**Walls** Paint / wall covering  
**Ceiling** Acoustical ceiling tile  
**Base** Vinyl / rubber

**Mechanical Systems**

**Electrical** Wall mounted duplex outlets – outlets not required in table  
 Above ceiling mounted quad outlet for CCTV  
**HVAC** Air conditioning – each room a separate zone preferred  
**Plumbing** N/a  
**Tel/Data** Duplex data outlets on each wall, plus 1 above ceiling mounted quad outlet at CCTV electrical outlet

**Special Equipment**

**Special Construction**

Full multi-media capabilities – ceiling mounted video projector is not required

UMMS Medical Library Study  
Program

DCAM Project No. UW991ST1  
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Room Data Sheet

**Room Name** Rare Book Room  
**Department**  
**Occupant(s)** 4 readers  
**Room Area** 600 net square feet (nsf)  
**Use Description** Selective display and housing of 3,000 rare and/or historically significant volumes, in locked, humidity controlled bookcases. A conference table for layout and/or review of materials is required.

**Special Requirements**

**Ceiling Height** 9'-0" minimum, preferred  
**Direct Public Access** Limited  
**Adjacencies** Seating area outside the room

**Aspect / Finishes**

**Exterior Exposure** No  
**Fenestration** No  
**Lighting** Incandescent – both ambient and task lighting  
**Acoustics** Acoustically separate from adjacent library areas  
**Doors** Lockable  
**Floor** Carpet  
**Walls** Paint or wallcovering  
**Ceiling** Acoustical ceiling tile  
**Base** Vinyl or rubber

**Mechanical Systems**

**Electrical** Duplex outlets at conference table and seating  
**HVAC** Separate zone, with close tolerance temperature and humidity control  
**Plumbing** N/a  
**Fire Protection** Pre-action sprinklers  
**Tel/Data** Duplex data jacks at conference table and seating

**Special Equipment** Lockable, humidity controlled bookcases

**Special Construction**

Portions of the Rare Book Room may be funded from sources outside the University, which may dictate finish materials.

UMMS Medical Library Study  
Program

DCAM Project No. UW991ST1  
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Room Data Sheet

**Room Name** Compact Shelving  
**Department**  
**Occupant(s)**  
**Room Area** See program  
**Use Description** Compact shelving areas – assume 8 unit compact shelving modules (2 fixed, 6 moveable units), motorized with appropriate lock-out and safety bumpers

**Special Requirements**

**Ceiling Height** 8'-0" minimum, 9'-0" preferred  
**Direct Public Access** Yes  
**Adjacencies** Reader areas, main circulation

**Aspect / Finishes**

**Exterior Exposure** No  
**Fenestration** No  
**Lighting** Fluorescent, integral with shelving system  
**Acoustics**  
**Doors**  
**Floor** Carpet / vinyl  
**Walls** Paint / wallcovering  
**Ceiling** Acoustical Ceiling tile  
**Base** Vinyl / rubber

**Mechanical Systems**

**Electrical** Typical duplex outlets, as well as power for the shelving units  
**HVAC** Air conditioning  
**Plumbing** N/a

**Special Equipment** Motorized, compact shelving system

**Special Construction**

Floor design load = 300 psf

UMMS Medical Library Study  
Conceptual Design Options

DCAM Project No. UW991ST1  
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- 3.1 Overview / Assumptions
- 3.2 Design Options
  - Scheme 1 – Renovate Existing Library
  - Scheme 2 – One Level of Compact Shelving
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  - Scheme 4 with exterior amphitheater
  - Scheme 5 – New Construction
    - North Site
    - West Site
- 3.3 Design Option Plans
- 3.4 Design Option Discussion

UMMS Medical Library Study  
Conceptual Design Options

DCAM Project No. UW991ST1  
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### 3.1 Overview

A series of conceptual design options (schemes) were evaluated. Each scheme is based on the approved program and functional adjacencies requested by UMMS. A series of key common assumptions / determinants underlie each scheme.

- Assumptions:**
- All compact shelving must be in new construction. As pointed out in the Existing Conditions section of the Study, the existing building structurally cannot feasibly support the added load imposed by compact shelving.
  - All books, and journals older than 5 years will be housed in compact shelving.
  - Administrative areas are to be clustered, and adjacent to library training facilities.
  - The Rare Book Room may be relocated.
  - Technical Services require access to a loading dock for shipment and deliveries of bound journals.
  - Group Study rooms are to be clustered to facilitate support by library information technology personnel.
  - Horizontal expansion of the existing library into adjacent areas within the building is not permitted to any significant extent, and is further hindered by the vertical non-alignment of Levels 2 & 3 of the Library with the floor levels of the adjacent academic areas.
  - Vertical expansion above the existing library is not economically feasible due to structural constraints.
  - Infill construction within the existing library is not economically feasible due to structural constraints.
  - Expansion of the library is limited to the north side of the building, but must maintain views of the adjacent grassy knoll.
  - Expansion to the north must accommodate the new covered utility trench providing connections from the new Bio-medical research building and the central plant.
  - The exterior skin of the existing academic / library building will be replaced at some point in the next few years due degradation of the stone and tie-back system.
  - Construction must not impinge upon or interrupt the operation of the animal quarters on Level A, beneath the existing library.
  - Construction will be phased and must maintain library operations throughout the construction period.

UMMS Medical Library Study  
Conceptual Design Options

DCAM Project No. UW991ST1  
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### 3.2 Design Options

**Scheme 1 (renovate existing Library) - not shown**

- Replace / upgrade all finishes, lighting and MEP/FP systems
- Create new Group Study areas
- Increase shelving capacity through use of compact shelving (*existing structure cannot accommodate increased loads / structural enhancements not financially feasible*)
- Expand Library horizontally into adjacent areas (*adjacent areas cannot be vacated*)
- Expand Library vertically within existing footprint (*existing structure cannot accommodate increased loads / structural enhancements not financially feasible*)

**Scheme 2 (with Atrium Reading Room)**

- One level of below grade compact shelving with 50 associated reader seats.
- Atrium Reading Room
- Renovated and enlarged Circulation, Reference and Technical Services areas (Level 1)
- Rare Book room relocated to Level 2
- New Current Periodicals reading area on Level 1
- Group Study rooms on Levels A and 2
- Administrative offices, Library Training Room and 20 p Conference room on Level 3
- Total size is approximately 10,000 gsf larger than approved Program
- Estimated construction cost = \$12,968,136

**Scheme 4 (with Atrium Reading Room)**

- Two levels of below grade compact shelving with 50 associated reader seats.
- Atrium Reading Room
- Renovated and enlarged Circulation, Reference and Technical Services areas (Level 1)
- Rare Book room relocated to Level 2
- New Current Periodicals reading area on Level 1
- Group Study rooms on Levels A and 2
- Administrative offices, Library Training Room and 20 p Conference room on Level 3
- Total size is approximately 10,000 gsf larger than approved Program
- Estimated construction cost = \$12,885,887

**Scheme 5 - New Library - "North" / "West" Locations**

- All new construction, outside by adjacent to current library
- Anticipated size - 55, 276 gsf
- Renovation of existing library space for other Medical School uses
- Estimated construction cost = \$210 / gsf ~ \$14,000,000 (*excludes escalation and cost to renovate / reuse existing library space*)

UMMS Medical Library Study  
Conceptual Design Options

DCAM Project No. UW991ST1  
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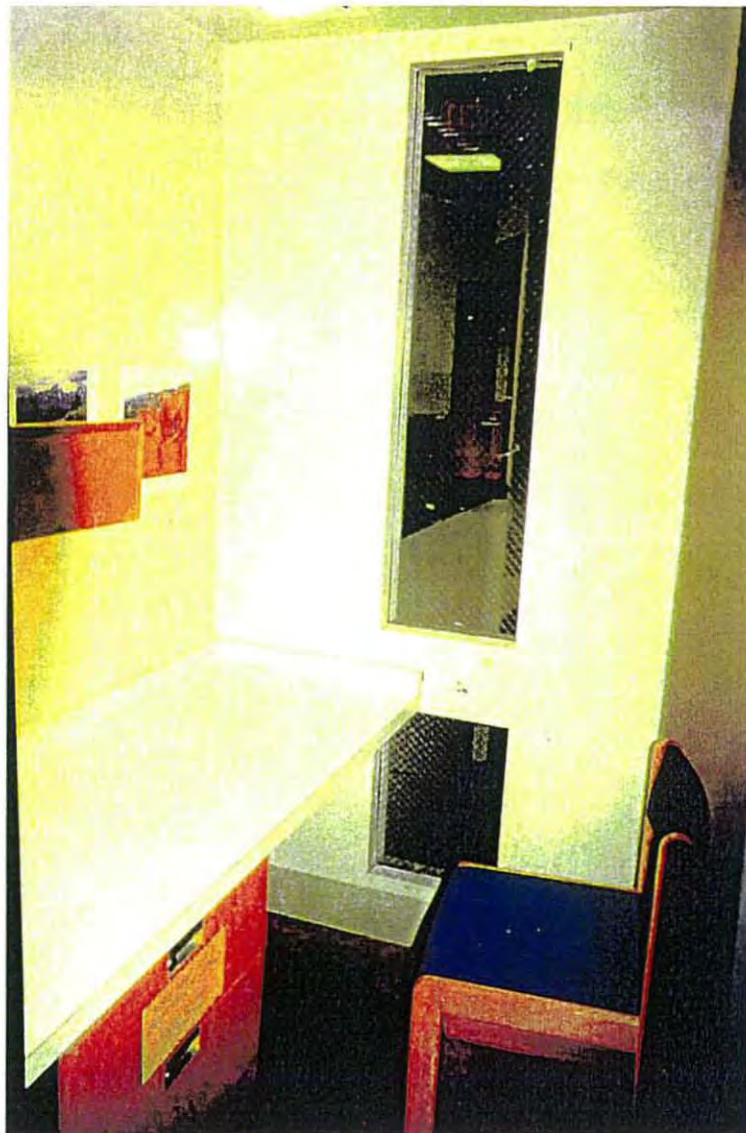
### 3.3 Design Option Plans

UMMS Medical Library Study  
Existing Conditions

DCAM Project No. UW991ST1  
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1.9 Architectural Access Board / ADA Compliance

**Fixed Carrels** Access to current fixed carrels does not comply with code.  
(12.2.2)

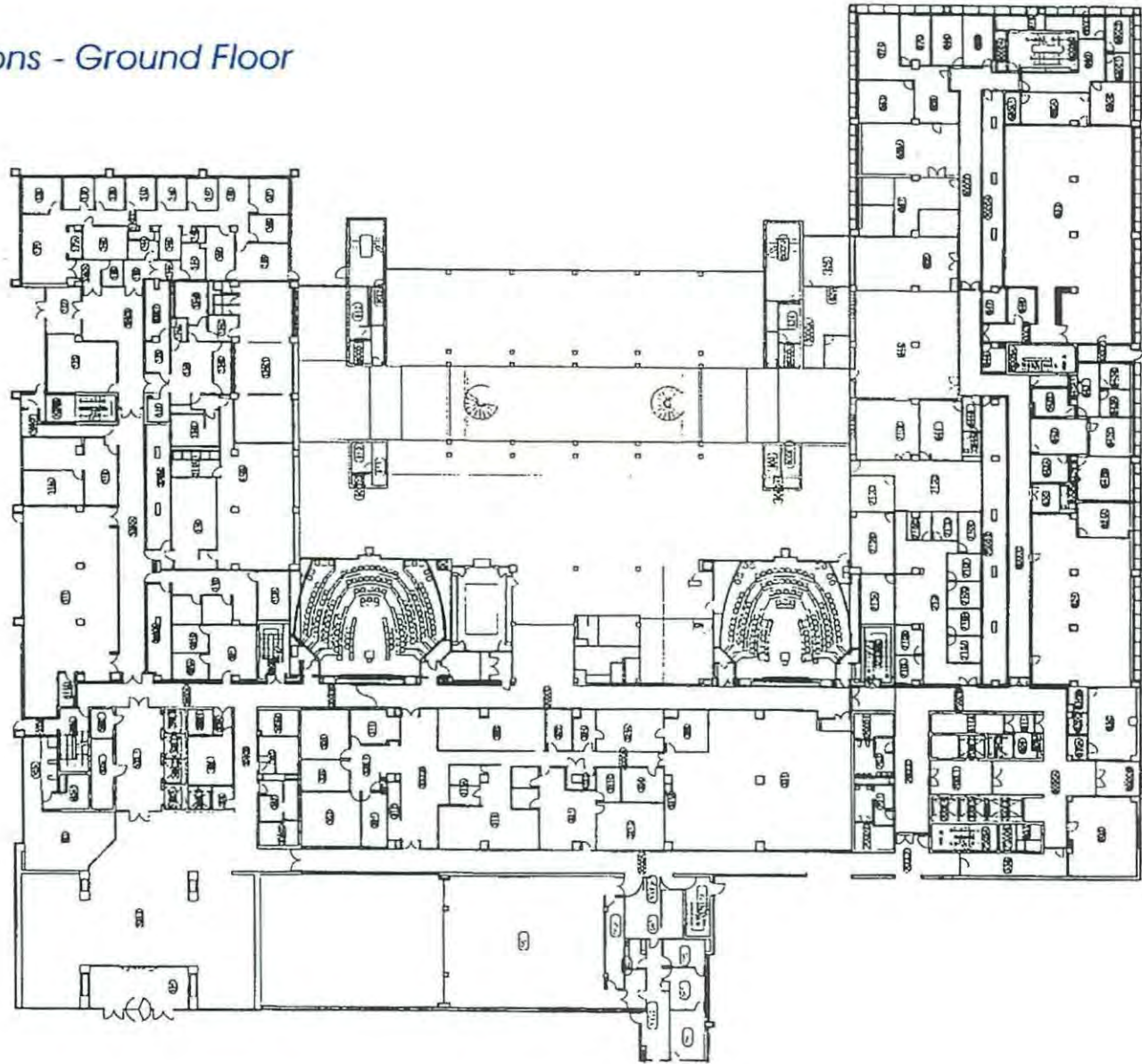


Fixed Carrel – Levels 2 & 3

**Counter Heights** Service counter heights do not comply. (too high) (12.2.3)

**Stacks** "Stacks: Aisle between stacks shall have a minimum clear width of 36 inches and preferably 42 inches where possible." (12.2.6)  
Stack aisles in almost all areas do not comply.

Existing Conditions - Ground Floor



## Medical Library Program

### Comparative Program - Existing, Renovation/Addition, New Library

	Existing	Renovation / Addition Net Square Feet	New Library Net Square Feet
	(gsf)	(nsf)	(nsf)
<b>READER &amp; SERVICES</b>			
Lobby/Entrance	510	470	470
Circulation/Reserve/Document Delivery	1,190	2,200	2,200
Interlibrary Loan	851	inc. above	inc. above
Reference	2,271	4,080	4,080
Reference Collection		inc. above	inc. above
Consumer Health Library	774	420	420
Microforms inc. elsewhere		260	260
Administration	876	1,250	1,250
Technical Services	1,485	1,990	1,990
Copy Center	678	450	450
Photocopiers/Scanners		100	100
Library Instruction Room	n/a	800	800
Faculty Development Room			250
Multi-Media Collection	1,023	400	400
Rare Book Room	1,130	600	600
Online / Outreach Services	548	300	300
Current Periodicals and Browsing	1,023	1,630	1,630
Readers	16,798	8,775	7,825
Workstations			
Carrels / Tables / Lounge Seats			
Group Study			
Building Services	6,007		
<b>Subtotal Net Square Feet</b>		<b>23,725</b>	<b>23,025</b>
Efficiency factor		65%	70%
<b>Subtotal Gross Square Feet</b>	<b>35,165</b>	<b>36,500</b>	<b>32,893</b>

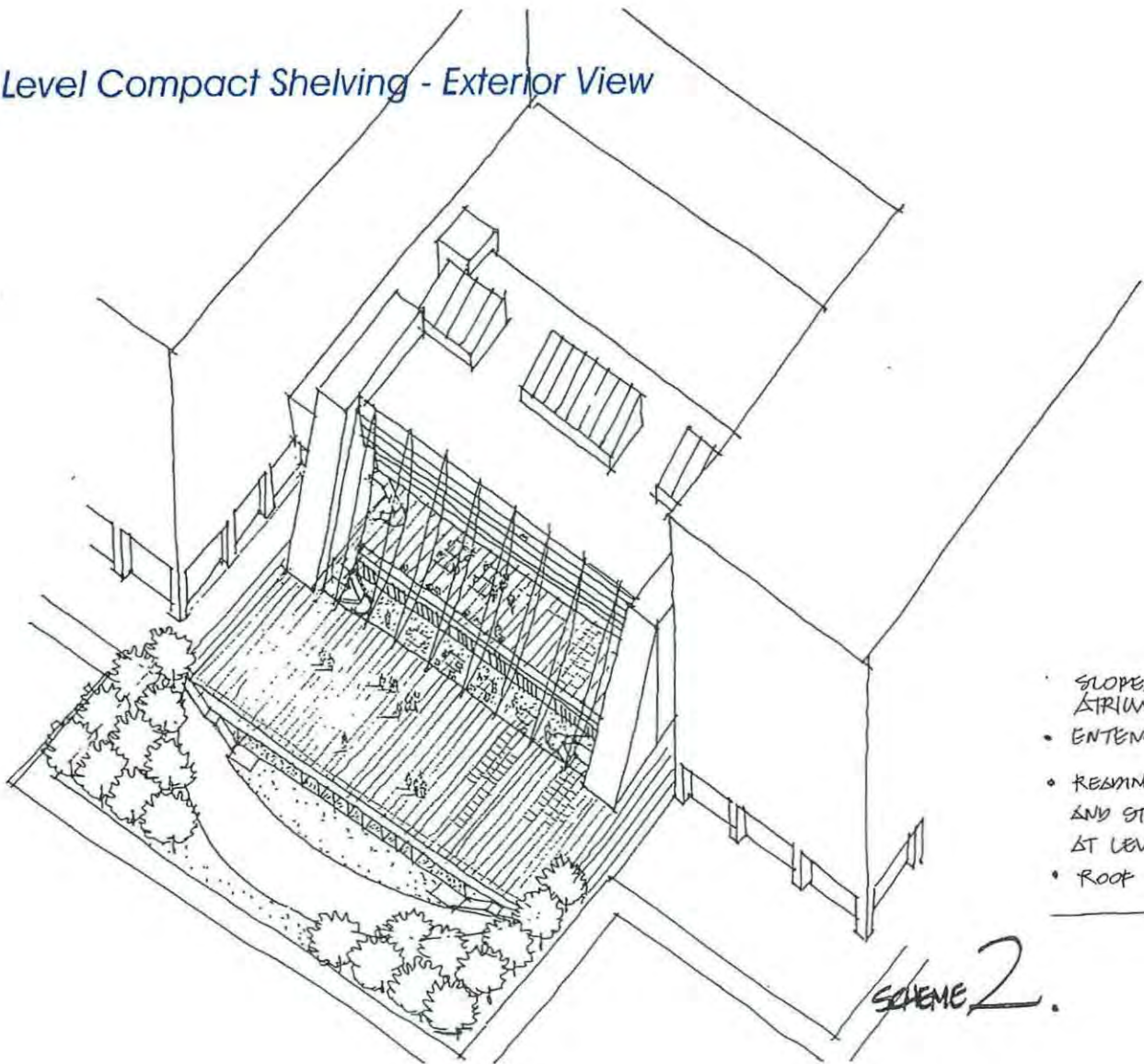
**Medical Library Program**  
**Comparative Program - Existing, Renovation/Addition, New Library**

**COLLECTION**

	Existing	Max. Collection Size	
Journals	120,000	253,600	253,600
Government Documents	6,000	inc. w/ Books	inc above
Books	40,000	54,400	54,400
<b>Required SF (Compact / Fixed Shelving)</b>			
Journals	act 85.6%	10,334	10,334
	Fixed 14.4%	3,484	3,484
Books	act 100%	1,850	1,850
	Fixed 0%	-	-
Total Net Square Feet	n/a	<b>15,669</b>	<b>15,669</b>
Efficiency factor		65%	70%
<b>Total Gross Square Feet</b>		<b>24,105</b>	<b>22,384</b>

<b>LIBRARY TOTALS</b>	<b>Renovation / Addition</b>	<b>New Library</b>
Readers + Services	23,725	23,025
Collection - Compact/Fixed Shelving	15,669	15,669
Total Net Square Feet	39,394	<b>38,694</b>
Efficiency factor	65%	70%
<b>Total Gross Square Feet</b>	<b>60,605</b>	<b>55,276</b>

Scheme 2 - One Level Compact Shelving - Exterior View

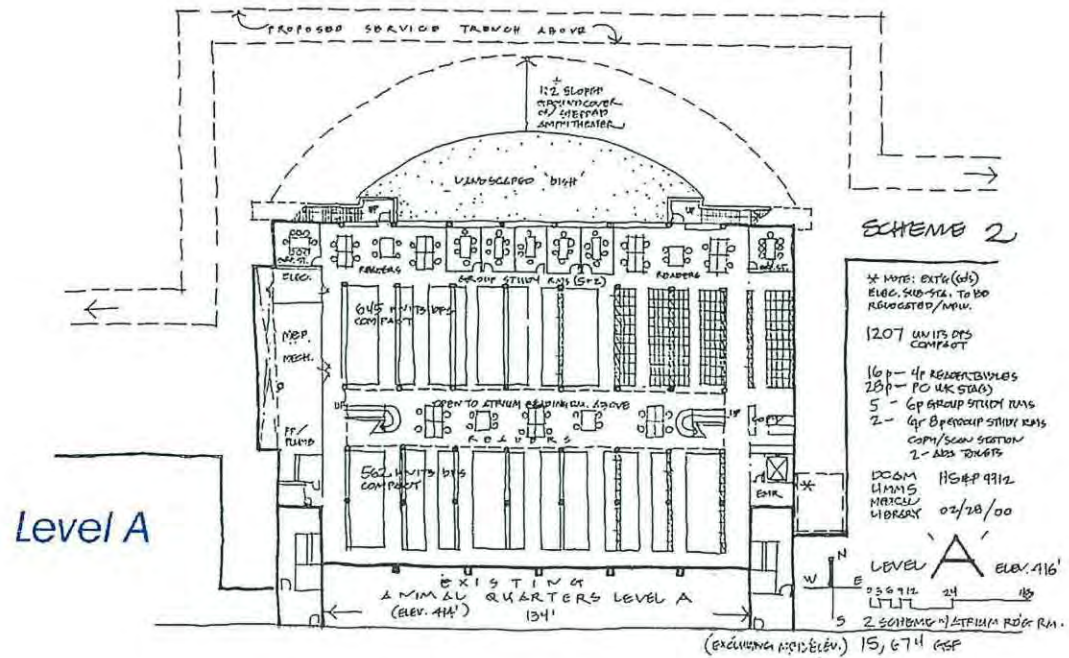


- SLOPED GLAZING  
STRIUM READING RM.
- EXTENSION OF LEVEL ONE.
- READING / GROUP STUDY  
AND STACKS (COMPACT)  
AT LEVEL A.
- ROOF TERRACES

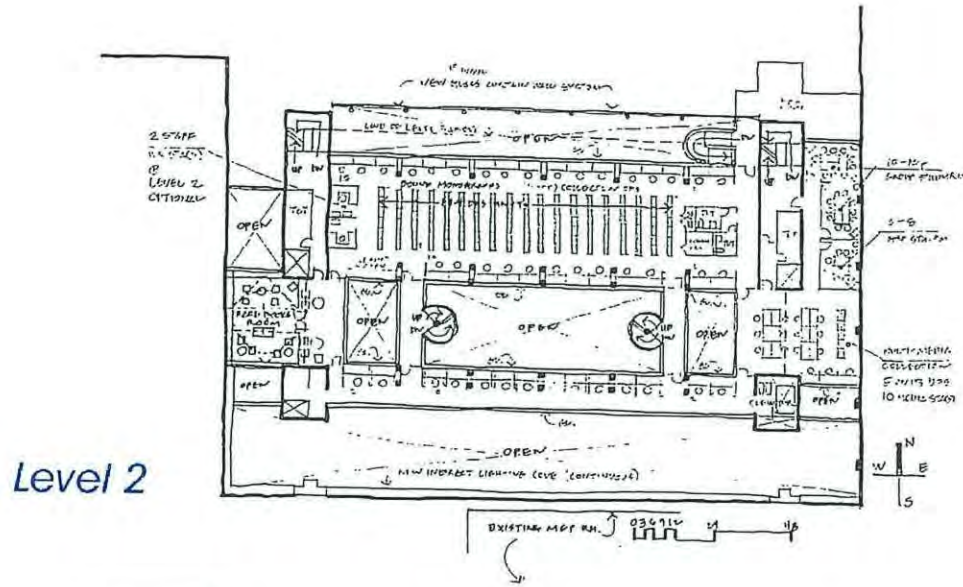
SCHEME 2.



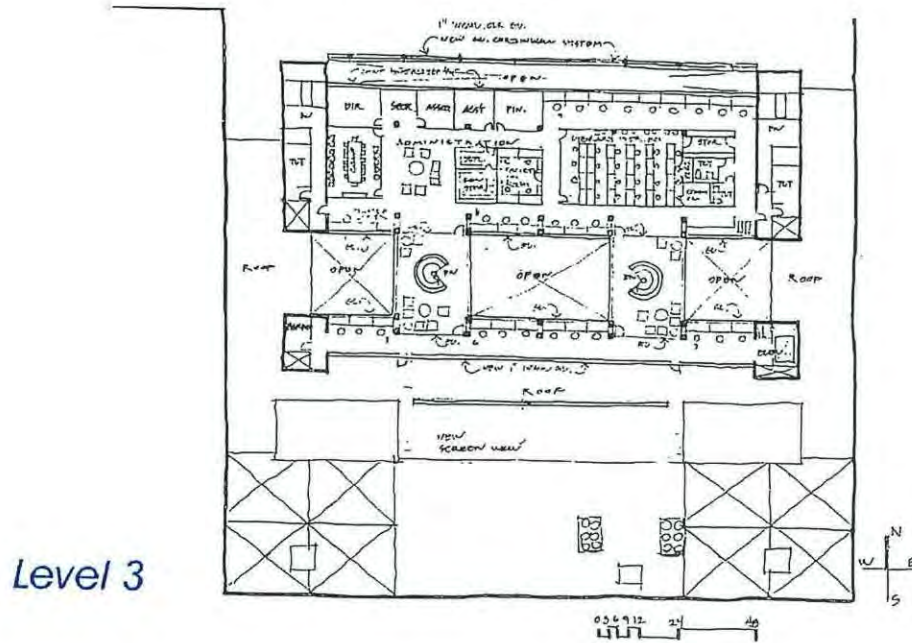
## Scheme 2- Lower Level



Scheme 2 & 4

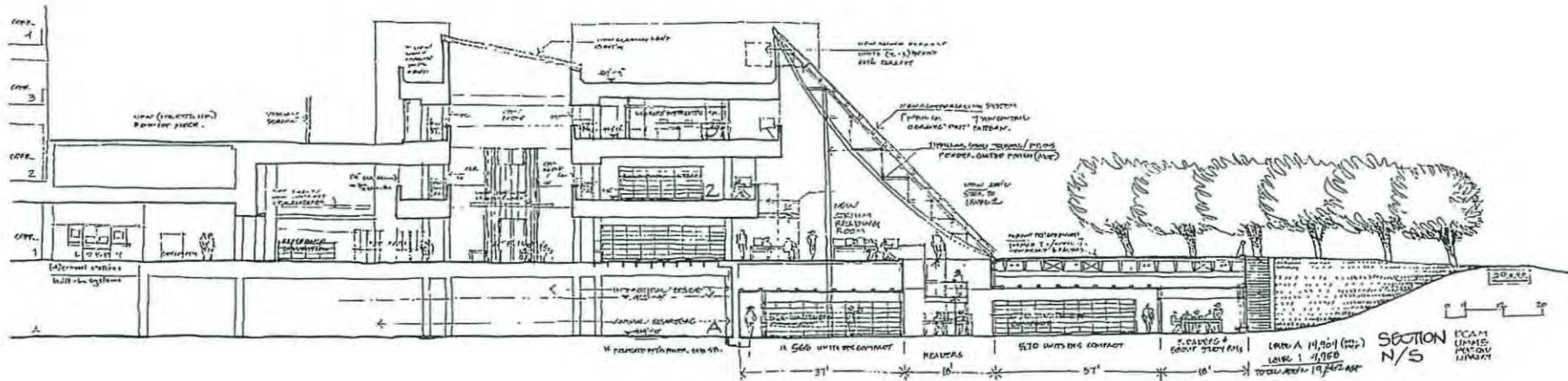


Level 2

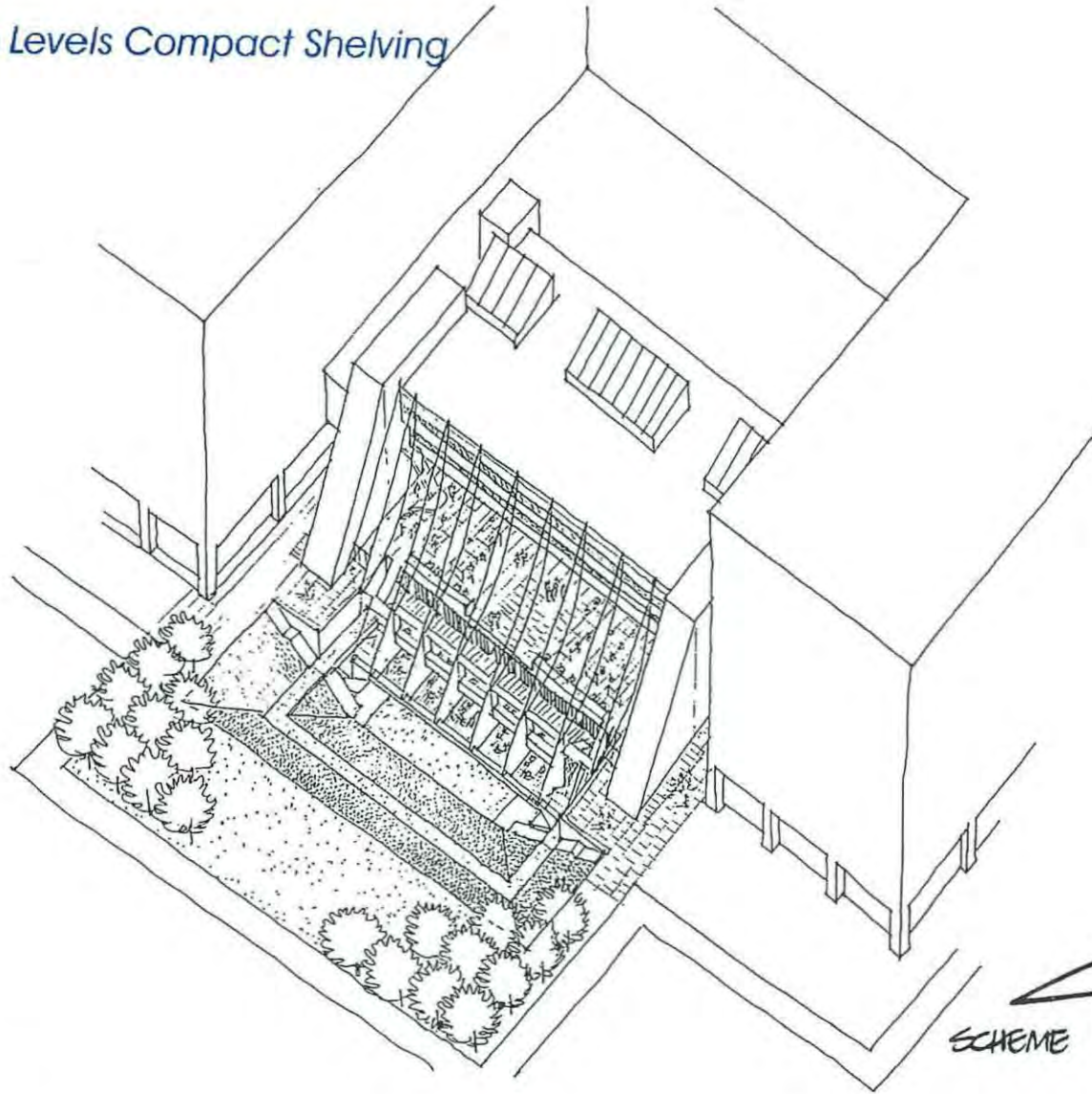


Level 3

Scheme 2 - One Level Compact Shelving



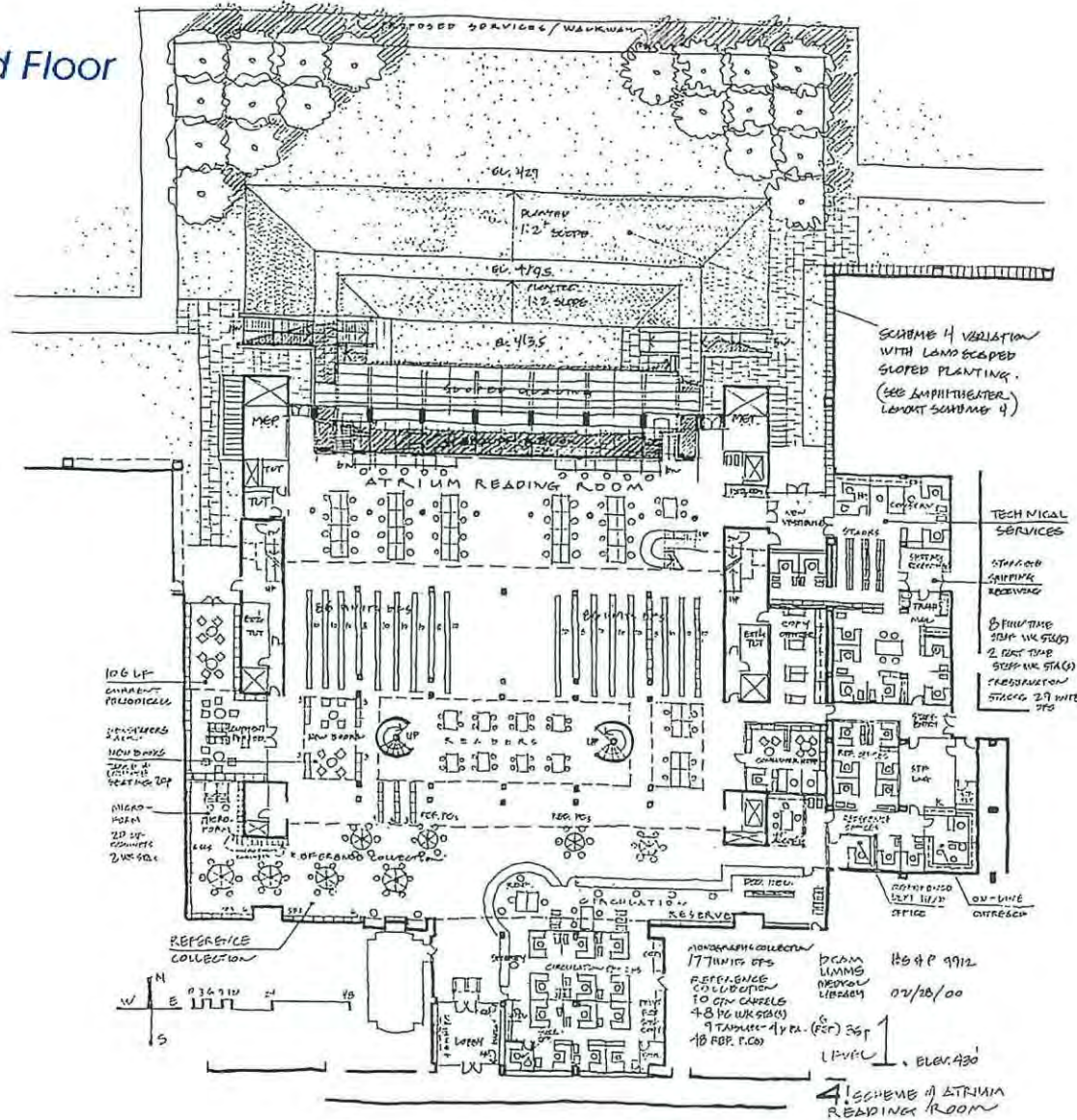
Scheme 4 - Two Levels Compact Shelving  
Exterior View



- ATRIUM READING ROOM AS EXTENSION OF LEVEL 1
- COMPACT SHELVING IN TWO LEVELS, L1 & L2, BELOW LEVEL 1
- GROUP STUDY RMs @ L1
- SLOPED LANDSCAPING FROM LEVEL L1 TO LEVEL 1 GRADE OR AMPHITHEATER.

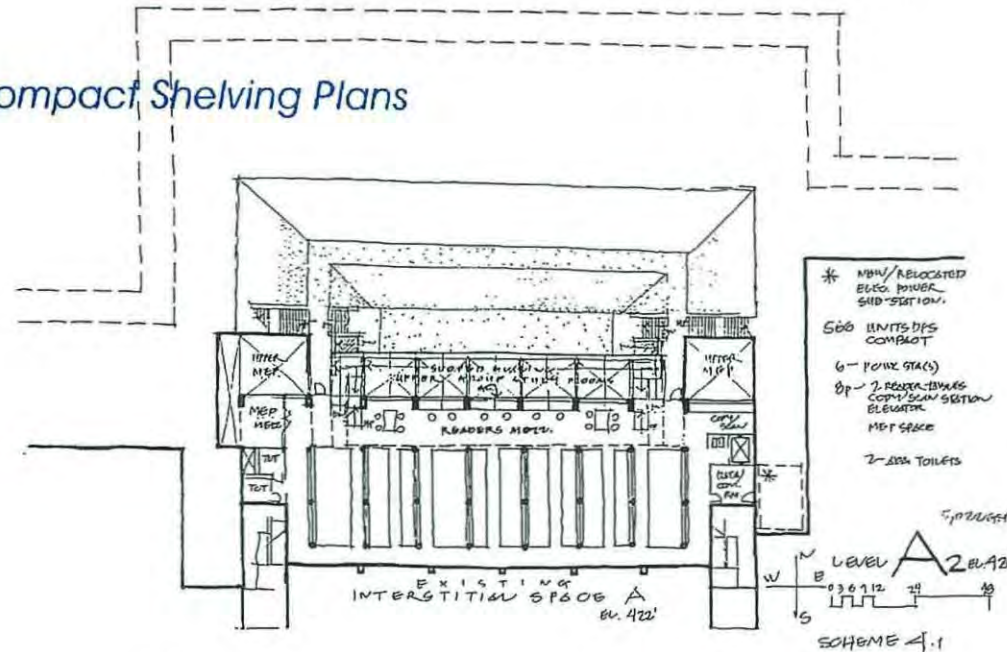
4.1  
 SCHEME 1  
 UMMS  
 MEDICAL  
 LIBRARY

Scheme 4 - Ground Floor

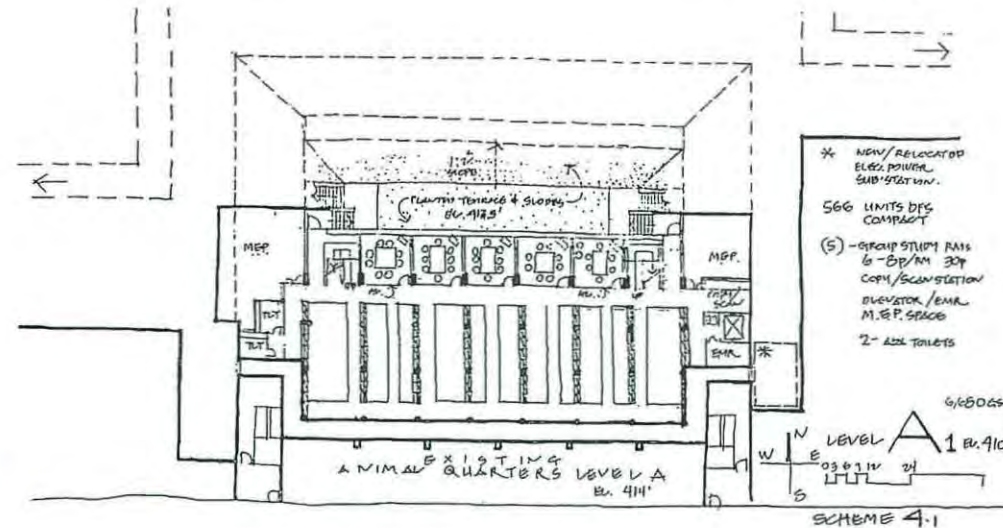


## Scheme 4 - Two Level Compact Shelving Plans

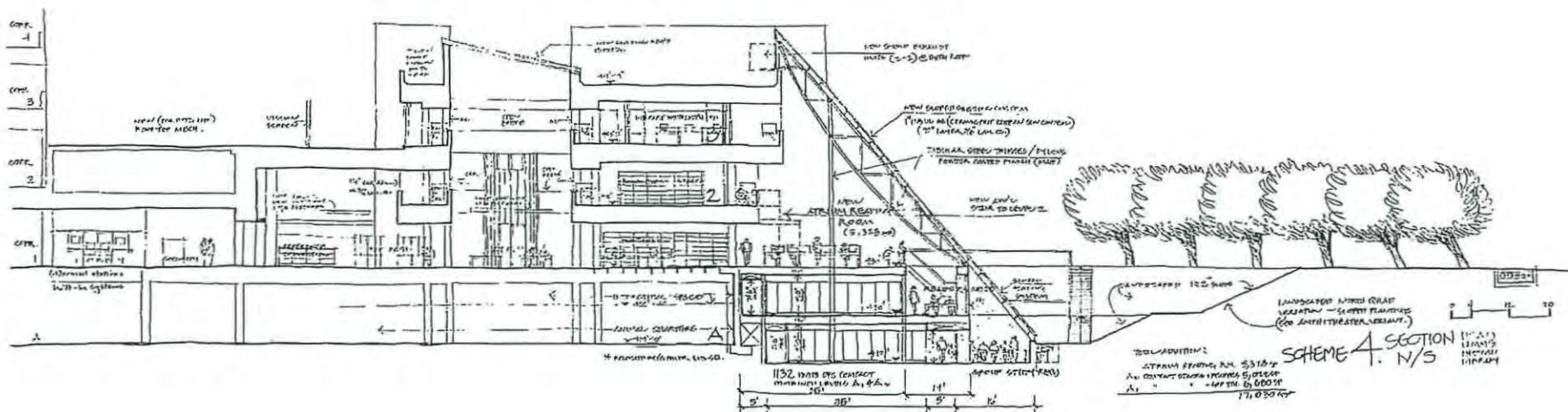
Level A2



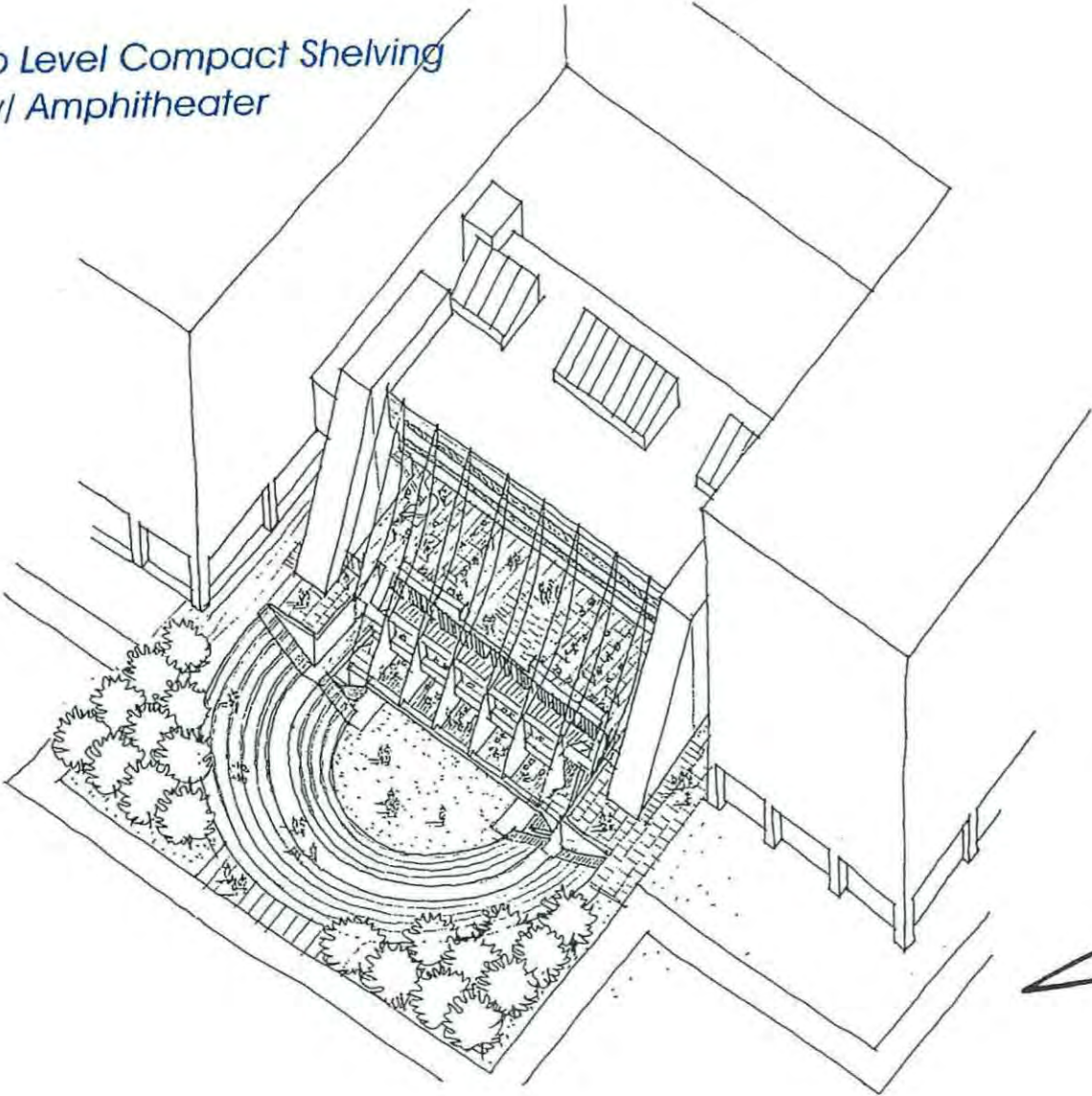
Level A1



# Scheme 4 - Two Level Compact Shelving



Scheme 4- Two Level Compact Shelving  
Exterior View w/ Amphitheater



- ATRIUM READING ROOM IS EXTENSION OF LEVEL 1
- COMPACT SHELVING IN TWO LEVELS, L1 & L2, BELOW LEVEL 1
- GROUP STUDY RM'S @ L1
- SLOPED LANDSCAPING FROM LEVEL L1 TO LEVEL 1 GRASS OR AMPHITHEATER.

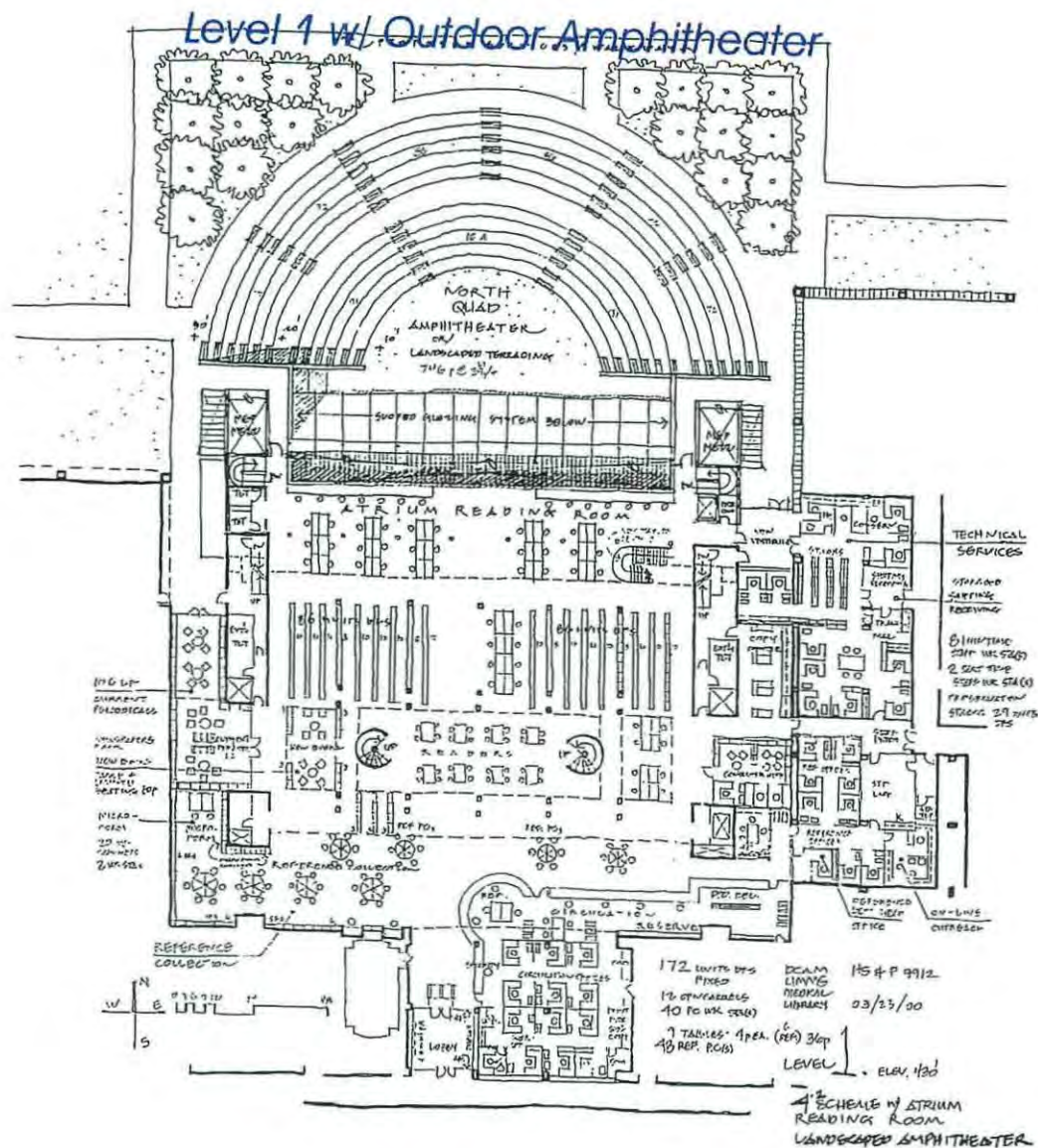
4.2 UMMS  
MEDICAL  
LIBRARY  
LANDSCAPED AMPHITHEATER



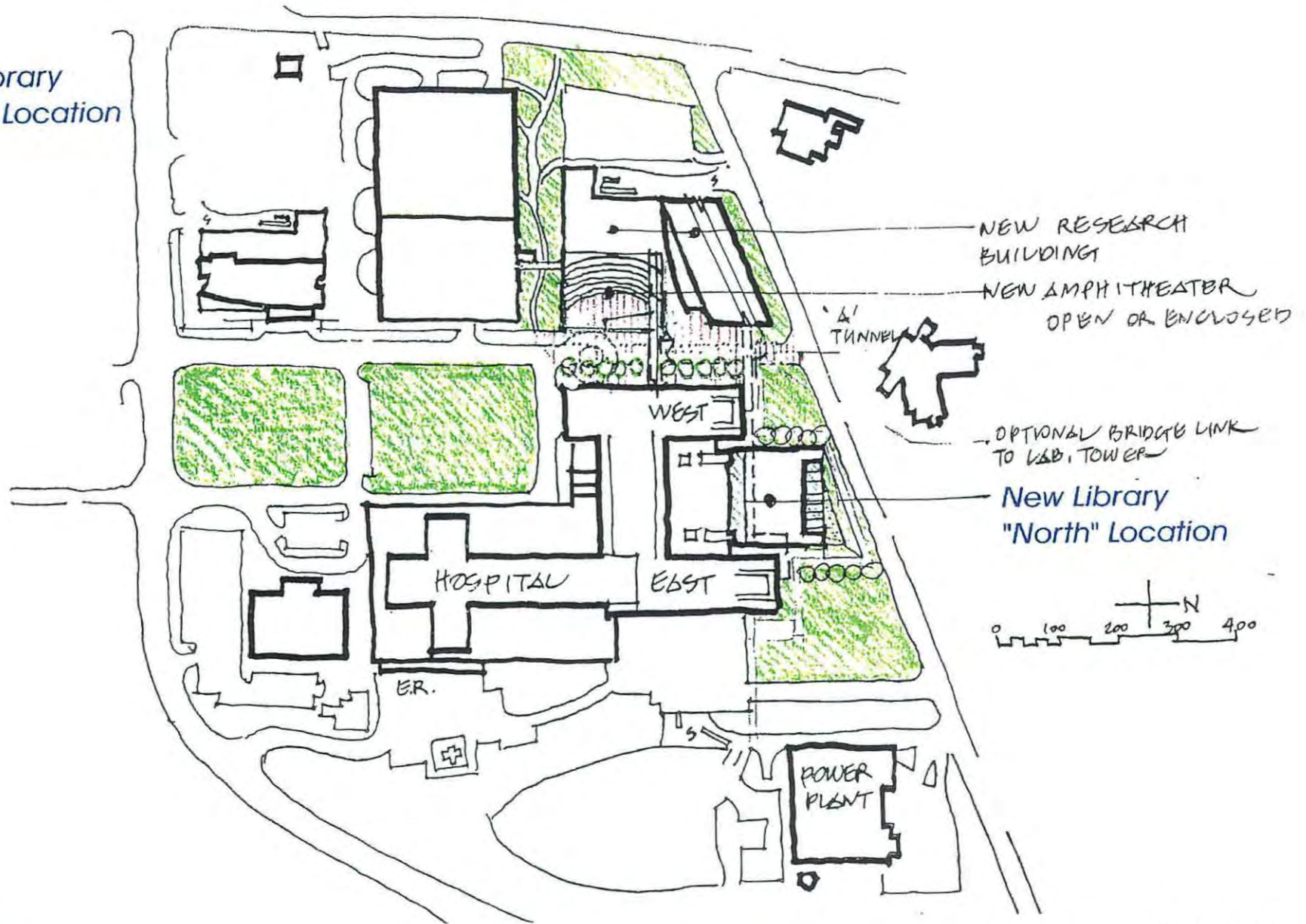
Medical Library Study

• HOSKINS  
• SCOTT  
& PARTNERS  
• INC.

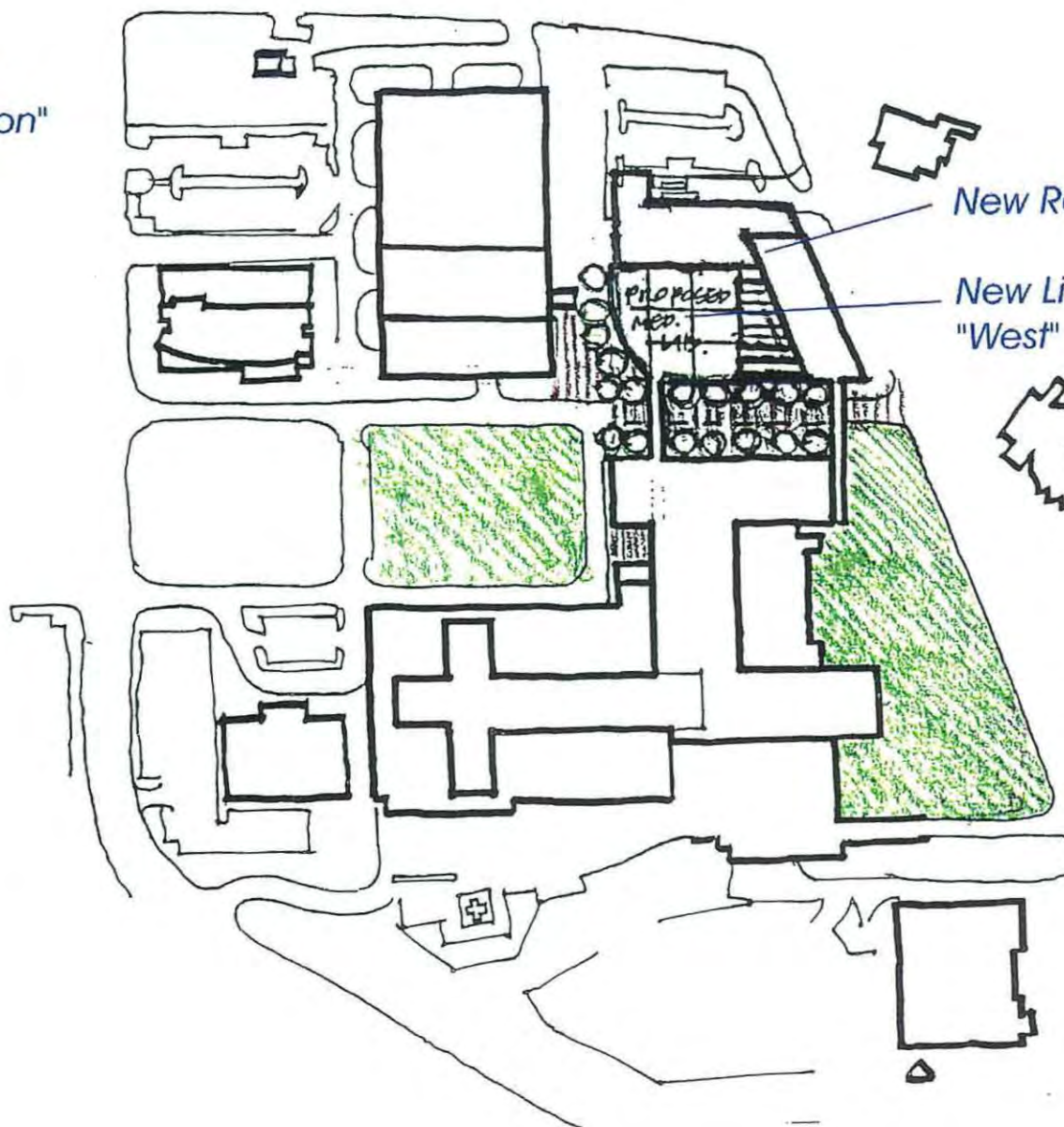
Scheme 4



New Library  
"North" Location



New Library  
"West Location"



New Research Building

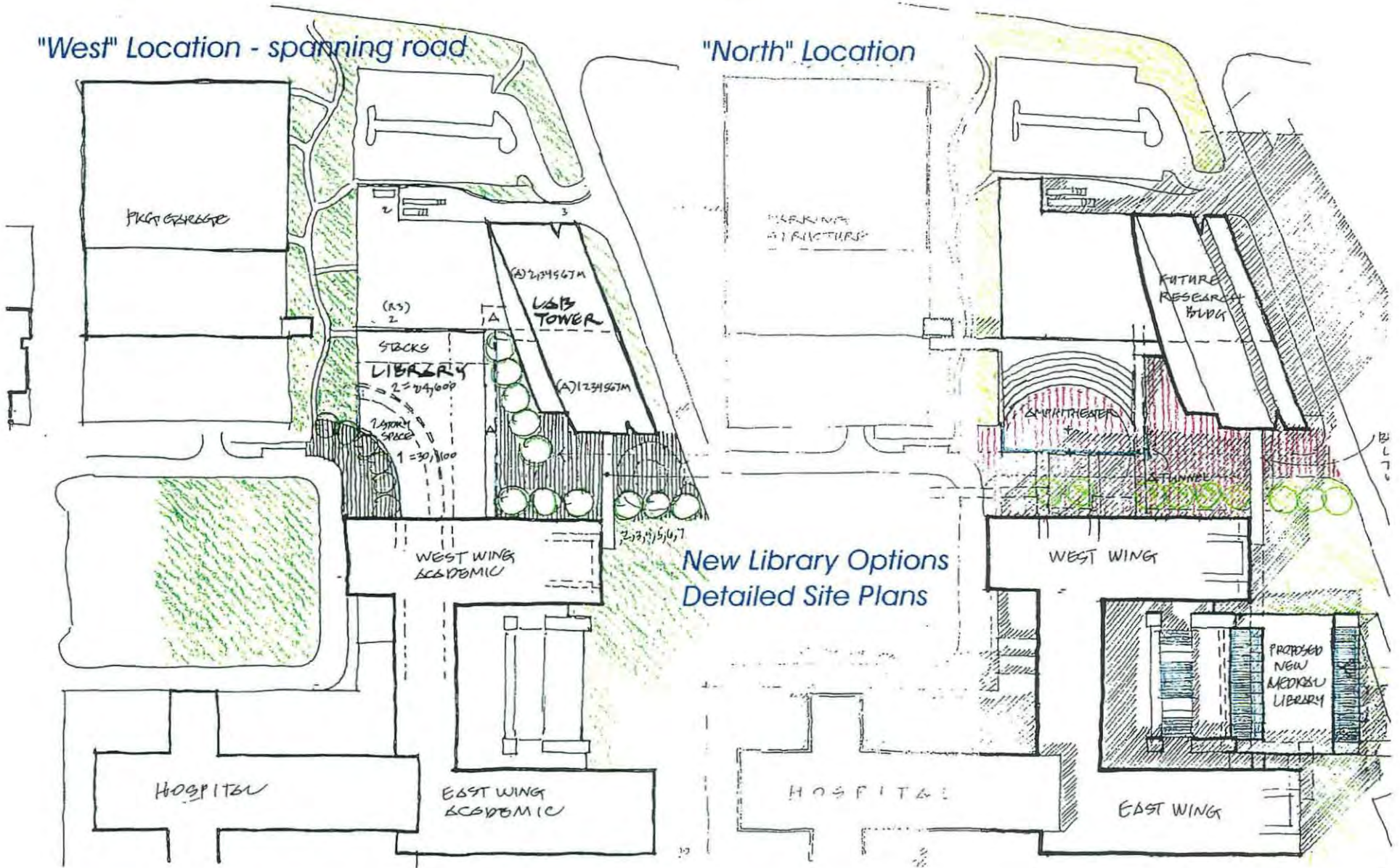
New Library  
"West" Location

BRIDGE LINK @  
2 LEVEL TO LIBRARY

BRIDGE LINK @  
2 & ABOVE TO  
LAB TOWER

"West" Location - spanning road

"North" Location



New Library Options  
Detailed Site Plans

### 3.4 Design Option Discussion

#### *Scheme 1 - Renovate Existing Library*

Prior to the Study, renovation of the existing library, without addition, was the alternative preferred by UMMS. It was felt that this was both more economical and "achievable".

Initial conceptual designs considered infilling portions of the double high spaces within the library, as well as reconfiguring and reconstructing the study carrels on the upper two levels.

The structural analysis of the existing building eliminated the feasibility of infill construction and bolstering the loading capacity of the existing structure to accommodate compact shelving.

#### **Off-Site Storage**

Without the ability to increase stack capacity through the use of compact shelving, off-site storage of less commonly used volumes was discussed with UMMS. Many institutions use off-site storage, and arrange for regular pick-up and delivery of requested materials. In some cases, the off-site facility is staffed, and photocopies and/or scans of requested materials are sent back to the main library. Approximately 27,000 current volumes are located on the 8<sup>th</sup> floor of the Medical School building, outside of the main library, at this time. Off-site accommodation for these volumes, as well as older or less used volumes displaced by new incoming materials would be required.

At this time, no location for off-site storage was identified by UMMS, and no funds are included in the operating budget for staffing a facility.

#### **Conclusion**

Renovation of the existing library without an addition cannot be recommended due to insufficient stack capacity without off-site storage.

UMMS Medical Library Study  
Conceptual Design Options

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***Scheme 2 – Existing Library Renovation and One Level, Below Grade, Addition***

On-site storage of both the current and projected collection (300,000 volumes) dictates adding to the library. To meet the approximate budget set by UMMS and DCAM, the size of any addition was to be as small as possible while still achieving the requirements of the program. Review of the program indicates that all proposed uses can be accommodated within the existing library footprint with the exception of a large percentage of the stack areas. The minimum size of an addition is therefore established by the number of volumes to be housed and the extent of compact shelving to be used. Scheme 2 and Scheme 4 assume that all books and all journals older than 6 years (current year plus previous five years) are in compact shelving. This ratio was set by UMMS and is consistent with historic usage patterns.

**Arrangement of Spaces**

***Level 1*** Circulation / Reserve / Document Delivery / Interlibrary Loans are grouped together adjacent to the main entrance to the library. Staff only areas behind the desk are expanded and renovated to meet the needs of the program.

Reference staff are located further into the library but remains adjacent to the Circulation desk. The Reference workstations are arrayed to either side of the main entry axis of the library and are clustered in groups of 6 “carousel” type workstations.

A Periodical reading room is located along the west side of the library with informal lounge type seating and low 3 high shelving.

The existing skylighted main reading room continues to be used in this way, with seating at tables. Stack areas for current journals are arrayed to either side of the central axis and are aligned perpendicular to the windows to allow light to penetrate into the main library space. Seating at tables is along the northern edge of the library, overlooking the new opening to the lower level addition and within the new sloped glass wall.

Technical Services continues to occupy the eastern edge of the existing library space, providing direct access to the service elevator and hence to the loading dock on a lower level of the Medical School building.

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Conceptual Design Options

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**Level A** The new lower level of the library is primarily occupied by compact shelving units. Seating at tables is arrayed along the center of the space, beneath the sloping glass wall above. Along the northern edge of the level, at the perimeter window, a series of group study areas are provided as well as additional reader areas. New mechanical, electrical, plumbing areas are incorporated along the western edge of the new construction. The floor structure of this new level is to be designed to 300 pounds per square foot to accommodate the compact shelving loads.

**Level 2** The Rare Book room is located along the western edge of Level 2, providing it with natural light, as well as some degree of separation from the general library area. A small pre-function area is included outside the Rare Book room and can be used for the display of larger pieces of medical equipment.

The majority of the floor is occupied with book stacks for journals. Study carrels overlook both the central double high reading room as well as the new "atrium" reading room beneath the sloping glass wall.

Group study rooms are clustered along the eastern edge of the floor immediately adjacent to the multimedia collection area.

**Level 3** Administrative functions occupy most of Level 3. Offices line a portion of the north sloped glass wall. The library training rooms, faculty development room and library conference room are in the center of the floor, with study carrels and informal reading seating along both the north and south edges.

***Scheme 4 – Existing Library Renovation and Two Level, Below Grade, Addition***

The primary difference between Scheme 2 and 4 is the arrangement of the compact shelving. Whereas Scheme 2 arranges all of the shelving on one level, Scheme 4 stacks the compact shelving on two lower levels. Due to the existing approximately 20' floor to floor height between the existing library and the animal quarters beneath it, a second lower level can be built without significant impact on the existing adjacent structure. By stacking the compact shelving, the resultant addition requires a smaller footprint. It was originally assumed that this might result in a reduction in construction cost, but this proved not to be the case, as is shown in the cost estimates included elsewhere in this section of the report.

**Arrangement of Spaces**

The arrangement of space in Scheme 4 is very similar to Scheme 2, with the exception of the lower level. Please refer to the plans included elsewhere in the report for both Level 1 and Level 2 and 3 layouts.

***Level A1*** A1 is the lowest level of Scheme 4 and includes compact shelving as well as group study rooms. New mechanical, electrical and plumbing areas are also included. The Group Study rooms look out onto a landscaped, sloping courtyard along the north side of level.

***Level A2*** A2 is the upper of the two new floors in the addition. It includes compact shelving as well as study carrels overlooking the lower level and the exterior courtyard. The reading areas are within the sloped glass wall of the new "atrium" created as part of the addition. New mechanical, electrical and plumbing areas are also included.

***Amphitheater / Courtyard*** Scheme 4 includes as an option the development of an exterior amphitheater / courtyard to be used by the Medical School. The sloped earth is shaped to provide spatial tiered areas from grade down to the lowest level of the new construction.

Potential uses of the amphitheater include outdoor concerts or lectures, and graduation ceremonies.

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Conceptual Design Options

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***Scheme 5 - New Library - "North" / "West" Locations***

As a continuation of the original scope of the Study, two alternate new library locations were investigated, 1) along the north edge of the existing library, and 2) across the access road to the west of the existing main entrance to the Medical School.

The original program assumptions were revisited as part of investigating these options. New construction offers improved efficiency in the layout of both support functions and stack areas. This improved efficiency is reflected in the change of the program efficiency factor from 65% to 70%, and results in a decrease in the overall size of the proposed library.

No programmatic assumptions were made as to the reuse of the existing library area, but a number of alternatives were suggested. Creation of a student center / student commons area on the ground floor was mentioned on a number of occasions, with offices and seminar rooms located on the upper floors.

No detailed floor plans were developed for the new library options, as the final size of the footprint of a new building will be affected by a number of factors outside the scope of the Study. The program developed for the new library however does indicate preferred floor locations for each of the required areas.

**"North" Location** Located immediately to the north of the existing library, this alternative maintains the centrality of the existing library within the Medical School. It also offers the possibility of connecting the eastern and western wings of the Medical School building through a connecting atrium link between the new and existing library.

As shown in the accompanying plans, there is adequate room on the site to provide a reasonable footprint for the new building. Programmatic information must be developed for the vacated library space to ensure the location of the new main entrance to the new library, as well as compatibility of areas on either side of the connecting atrium link.

Development of this site does eliminate future expansion of either of the clinical wings of the Medical School and concentrates new construction along the least visible side of the School.

**"West" Location** Located across the access road from the main Medical School building, the west site relates to both the existing School as well as the new Biomedical Research building now under construction. A second research building is under consideration by the Medical

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School, to be located in this general area. Conceptual plans developed for the west site account for this construction and include a footprint for a second research building based on the new construction.

Several development alternatives must be considered in the final design of a new library in this location. The relationship between the library and the research building must be clarified. It is possible for the library to be housed within the lower floors of the research building or to be developed as a completely separate structure and project.

The west site offers the opportunity to shift the locus of the Medical School campus toward the new Biomedical Research building and to "close" the gap in the end of the newly created campus quadrangle. The access road along side the western façade of the main building may be limited to emergency vehicles only and repaved as a pedestrian plaza connecting the new building with the existing structure.

**Conclusions**

The project program area required is larger than the space occupied by the existing Library.

Expansion into adjacent areas is not feasible.

Addition options approach new construction in cost and space

- Addition Options = \$12,9689,136 (Scheme 2) ~ \$12,885,887 (Scheme 4)
- New Construction options = \$210 / gsf ~ \$14,000,000

New Construction offers major benefits

- Space and function tailored for new library needs
- Opportunity for highly visible facility
- Convey vision for Library as "heart" of the campus
- Major synergy of campus development goals
- Phasing and construction more feasible for similar budget

New construction on the West site is recommended.

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Appendix

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Appendix

Mission Statement

- 1) Library Organization Chart

Existing Conditions

- 1) Existing Library – Plan, Ground Floor
- 2) Existing Space Usage – Program Areas
- 3) Existing Usage – Plans
- 4) SAR Engineering, Inc. – Existing Conditions Report
- 5) Souza True and Partners Inc. – Existing Conditions Letter

Cost Estimate

Program Adjustments – Regional Medical Library

Meeting Notes

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## Mission Statement

In support of the mission of the University of Massachusetts Medical School, The Lamar Soutter Library is committed to being a center of excellence, providing for the dissemination of, and access to, information resources needed to support the educational, research and patient care needs of the faculty, researchers, staff and students of the University of Massachusetts Medical School.

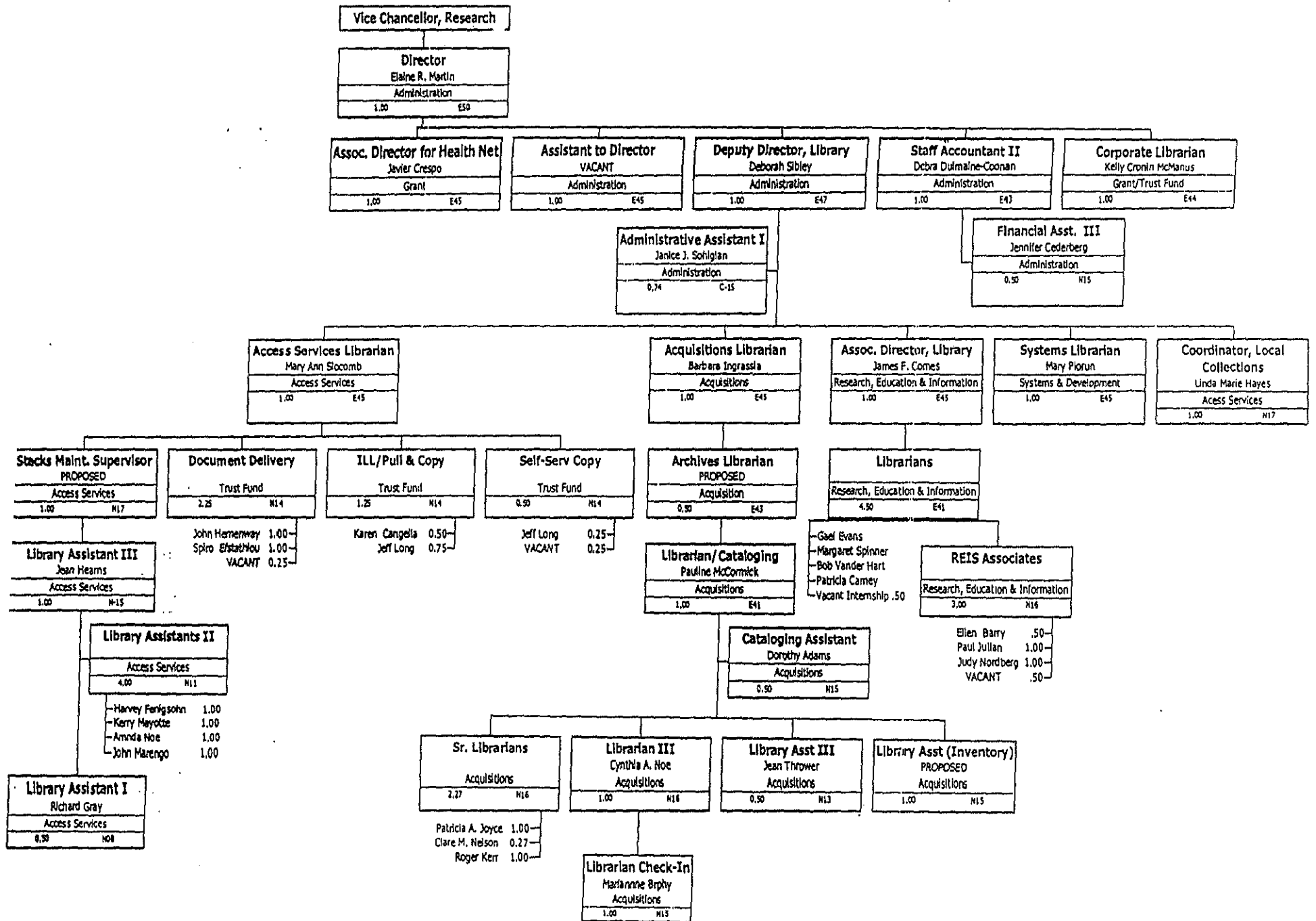
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Library Organization Chart

UMass Medical Center Shared Services  
Fiscal 2001 Budget (3/00)

Library

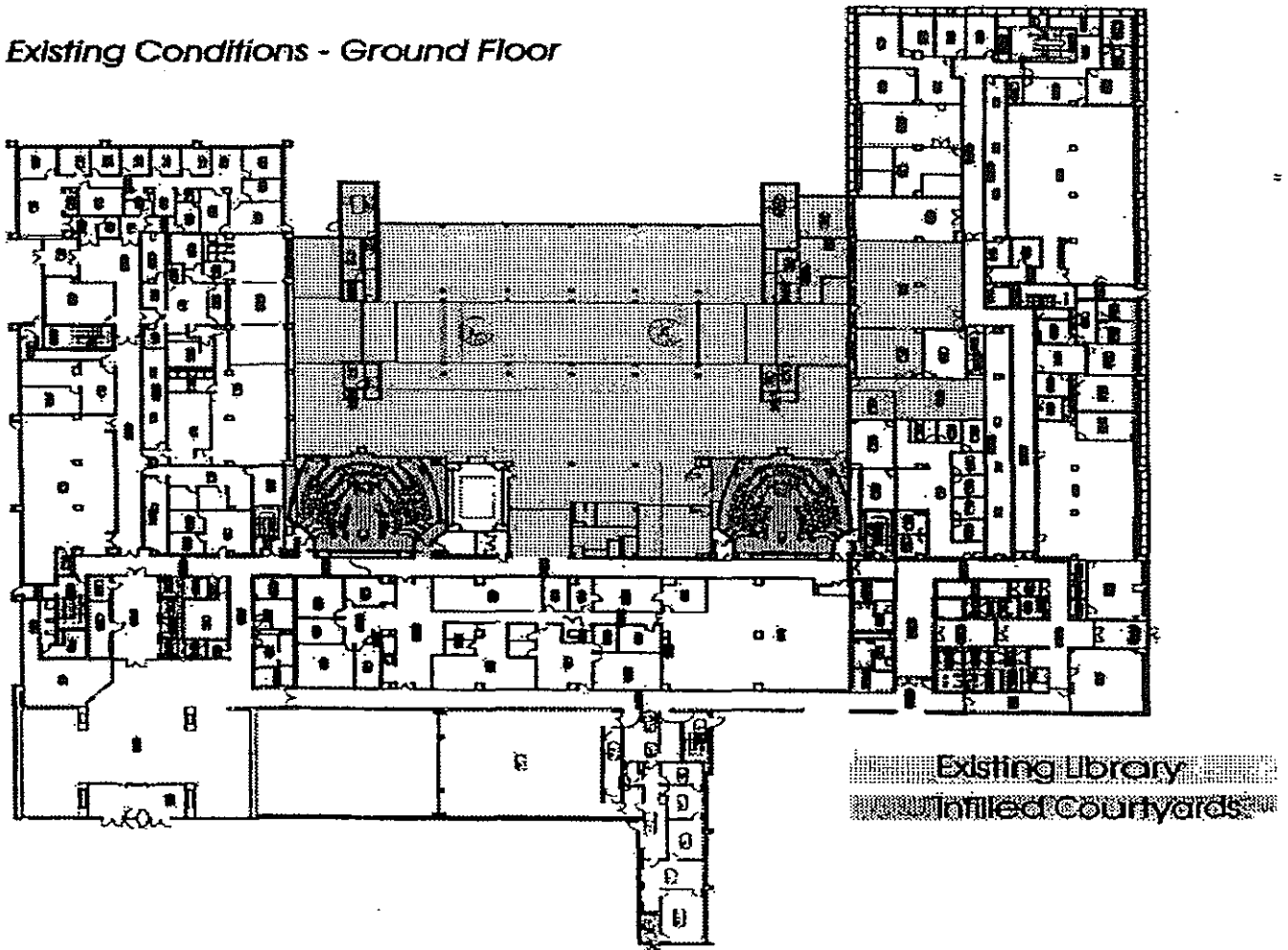


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Existing Library – Plan, Ground Floor

*Existing Conditions - Ground Floor*



University of Massachusetts Medical School  
 Medical Library Program  
 Existing Space Usage

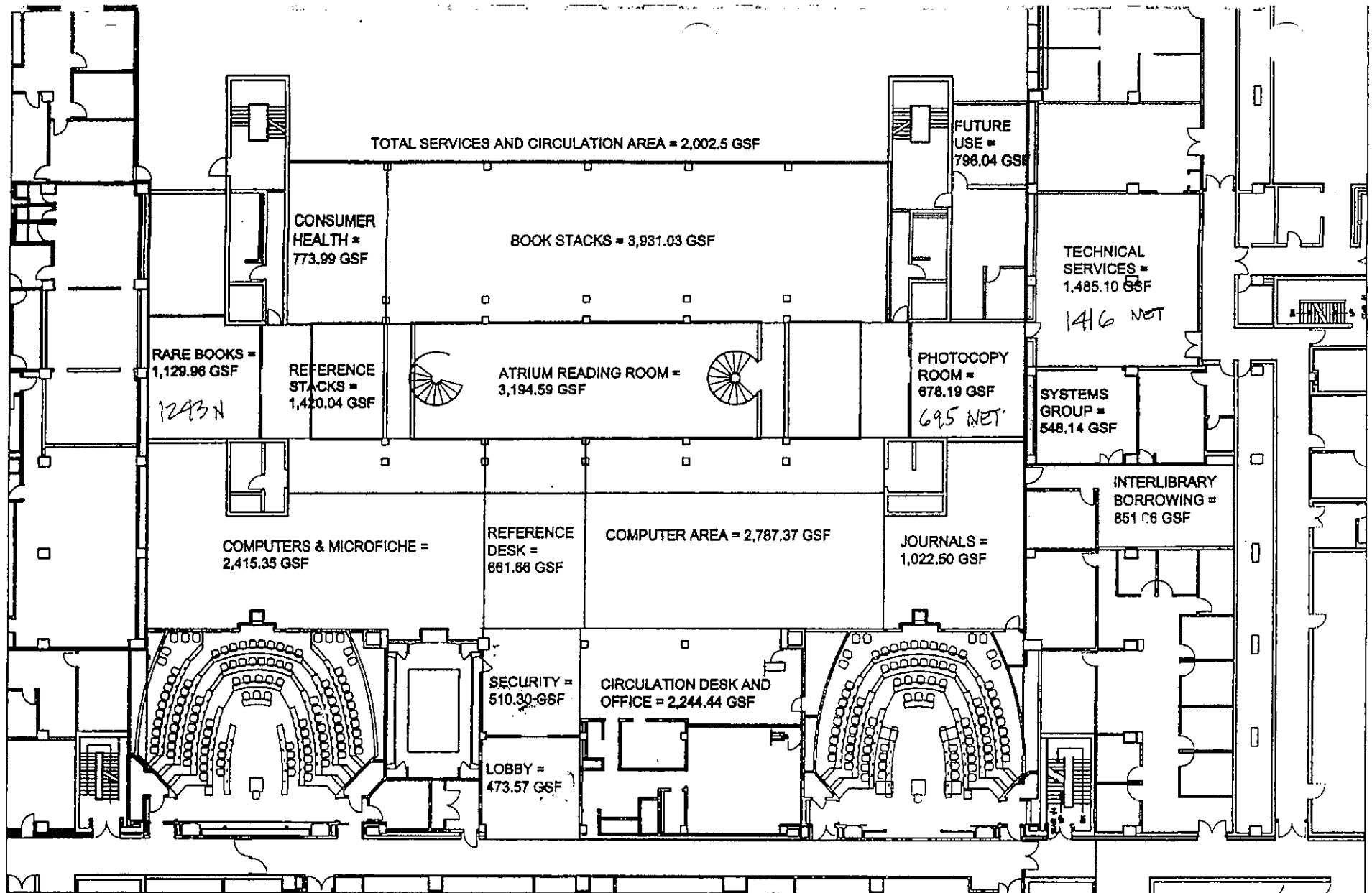
Level	Library Area	NSF	Readers Seats	Area	Collection Area
<b>Level 1</b>					
Lobby	474				
Security	510				
Circulation Desk & Office	2,244				
Reference Desk	662				
Reference Stacks	1,420		6		
PC workstations	5,203		75	5,203	
Journals	1,023		4		
Rare Books	1,130		24		
Atrium Reading Room	3,195		94	3,195	
Photocopy Room	678				
Interlibrary Borrowing	851				
Systems Group	548				
Technical Services	1,485				
Consumer Health	774		20		
Book Stacks	3,931	24,127	30		3,931
Building Services	2,003	573			
<b>Subtotal</b>	<b>26,130</b>	<b>24,700</b>	<b>253</b>	<b>8,397</b>	<b>3,931</b>
<b>Level 2</b>					
Multimedia Collection	1,023	842	32		
Office Areas	876	666			
Journals	4,773	5074			4,773
Study Carrels	3,880	2097	77	3,880	
Building Services	2,006	285			
<b>Subtotal</b>	<b>12,558</b>	<b>8964</b>	<b>109</b>	<b>3,880</b>	<b>4,773</b>
<b>Level 3</b>					
Lounge Area	1,344	1688	16	1,344	
Journals	4,459	4697			4,459
Study Carrels	3,177	2037	79	3,177	
Building Services	1,999	360			
<b>Subtotal</b>	<b>10,979</b>	<b>8692</b>	<b>95</b>	<b>4,521</b>	<b>4,459</b>
<b>All Levels</b>					
<b>Total</b>	<b>49,666</b>		<b>457</b>	<b>16,798</b>	<b>13,163</b> gsf
					9,872 nsf (65%)
				8th floor volumes (est) 27,000	2,571 nsf
					3,956 gsf
					<b>Total Collection Area</b>
					<b>17,119</b> gsf

Note\* Stack area does not include 27,000 volumes currently stored on the 8th floor

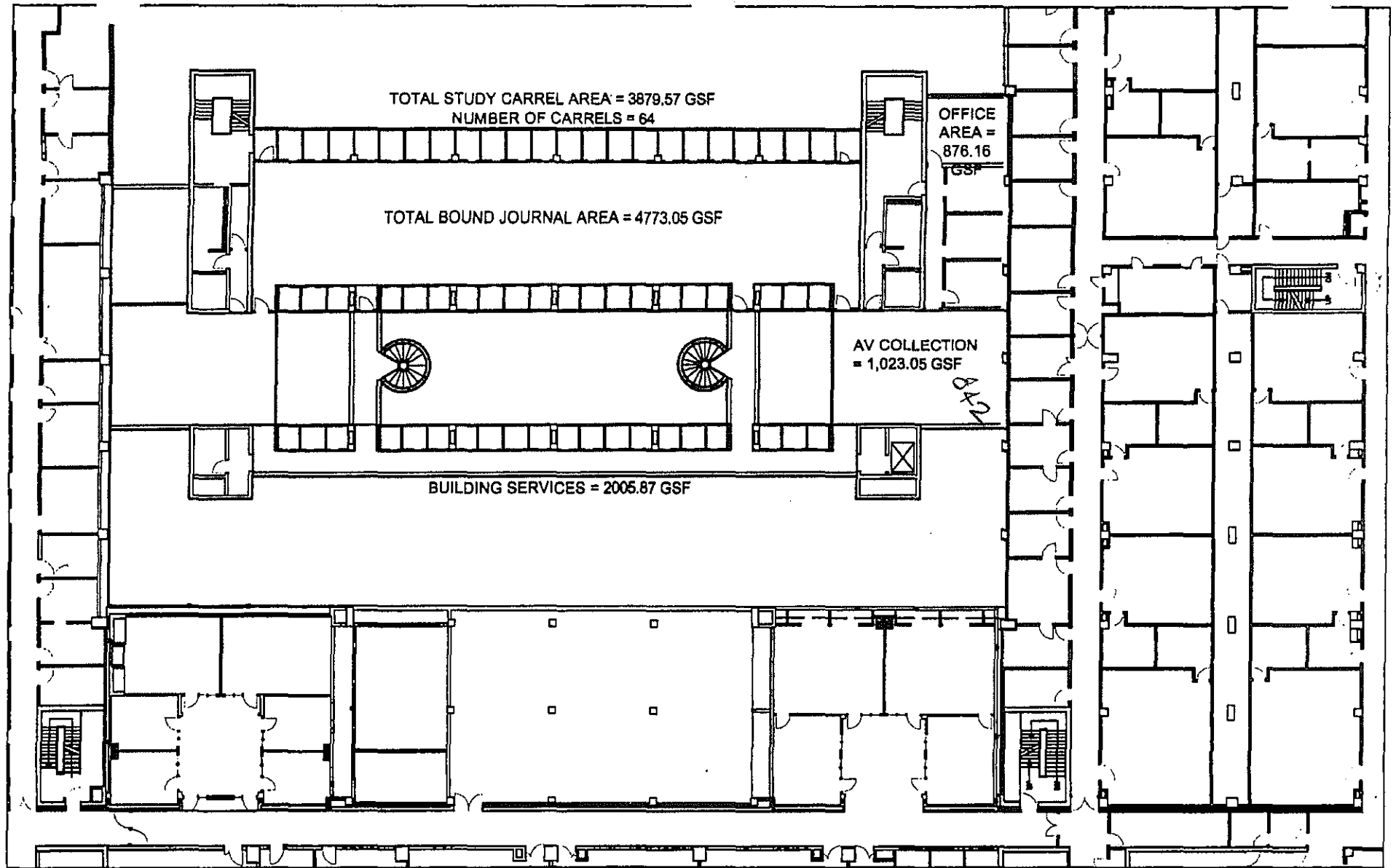
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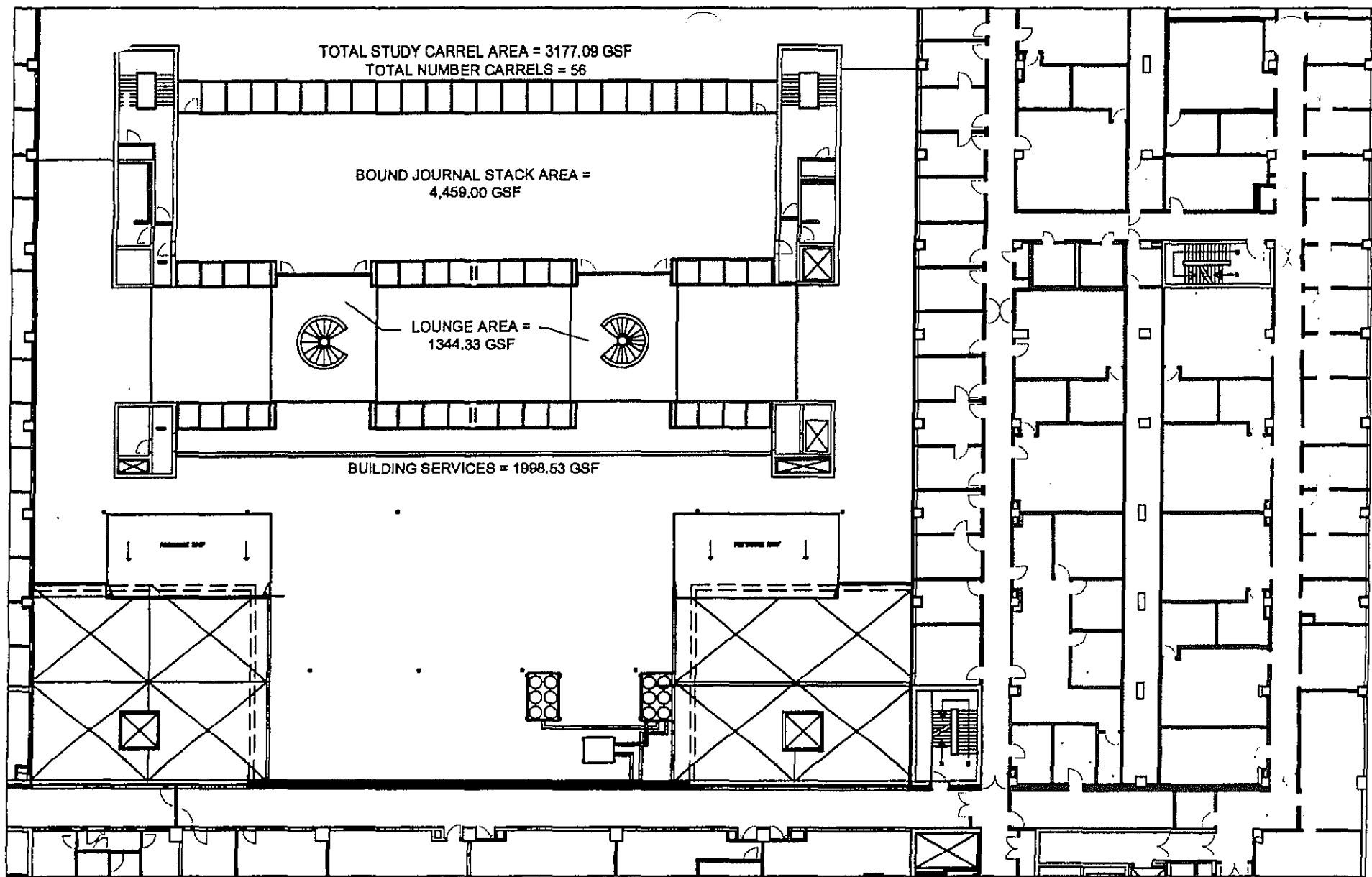
Existing Usage – Plans



<p>■ Architect</p> <p>■ HOSKINS • SCOTT &amp; PARTNERS ▲ INC.</p> <p>313 Congress Street Boston MA 02210 617-651-0080 1999 © Hoskins Scott &amp; Partners, Inc.</p>	<p>■ Project Title</p> <p>University of Massachusetts Medical School Medical Library Study</p> <p>■ Drawing Title</p> <p>LEVEL 1 DEPARTMENT AREA PLAN</p>	<p>■ Project Number: 9912</p> <p>■ Drawn: CED</p> <p>■ Scale: 1" = 30'</p> <p>■ Date: 12.1.99</p>	<p>■ Drawing Number</p> <p>A1.1</p>
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<p>■ Architect</p> <p>■ HOSKINS • SCOTT &amp; PARTNERS ▲ INC.</p> <p><small>213 Congress Street Boston MA 02110 617-551-0000 1998 © Hoskins Scott &amp; Partners, Inc.</small></p>	<p>■ Project Title</p> <p><b>University of Massachusetts Medical School Medical Library Study</b></p> <p>■ Drawing Title</p> <p><b>LEVEL 2 DEPARTMENT AREA PLAN</b></p>	<p>■ Project Number: 9912</p> <p>■ Drawn: CED</p> <p>■ Scale: 1" = 30'</p> <p>■ Date: 12.7.99</p>	<p>■ Drawing Number</p> <p><b>A2.1</b></p>
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<p>■ Architect</p> <p>■ HOSKINS          • SCOTT          &amp; PARTNERS          ▲ INC.</p> <p><small>213 Congress Street Boston MA 02210 617-864-0080          1990 © Hoskins Scott &amp; Partners Inc.</small></p>	<p>■ Project Title</p> <p><b>University of Massachusetts Medical School          Medical Library Study</b></p> <p>■ Drawing Title</p> <p><b>LEVEL 3 DEPARTMENT AREA PLAN</b></p>	<p>■ Project Number: 9912</p> <p>■ Drawn: CED</p> <p>■ Scale: 1" = 30'</p> <p>■ Date: 12.7.99</p>	<p>■ Drawing Number</p> <p><b>A3.1</b></p>
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UMMS Medical Library Study  
Appendix

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9912.000

SAR Engineering, Inc. – Existing Conditions Report

January 21, 2000

Mr. Robert C. Hicks  
Manager of Project Services  
Hoskins Scott and Partners Inc.  
313 Congress Street  
Boston, Massachusetts 02210

Reference: UMass Medical School - Library Study  
Existing Conditions and Recommendations Report

Dear Mr. Hicks:

The following is SAR Engineering's findings for the above-referenced subject. This survey included the review of existing drawings, previous reports, meetings with the UMass Department of Facilities Management engineers and field surveys by SAR engineers.

A. General

The library opened in 1973. Over the past years, very little has been accomplished to upgrade MEP/FP systems. This report will attempt to identify the existing systems.

B. Plumbing Systems

1. Existing Conditions

- a. There are existing men and women's toilet rooms and janitors closets located on each floor of the Library adjacent to stairwells 600SA and 600SB. The fixtures are approximately 30 years old, installed with the construction of the original building. These fixtures do not comply with 248 CMR, Uniform State Plumbing Code. In addition the existing toilet rooms and fixtures have not been upgraded to meet 521 CMR Architectural Access Board Standards for Public Toilets.

2. Recommendations

- a. We recommend that existing toilets described above be gutted and the space redesigned to accommodate the additional fixtures that will be required to comply with 248 CMR and 521 CMR in terms of height of fixtures and dimensions of space. New water conservation fixtures and related trim should also be provided to meet the current State code requirements.

2. Fire Protection Systems

1. Existing Conditions

1. The existing Library does not have a fire suppression system.
- b. The following is a description of the existing sprinkler and standpipe systems located in the adjacent Medical School building. These systems will be the supply source for the proposed Library renovations.

The existing fire suppression system includes stand pipes, a fire pump assembly, fire hose and valve cabinets and a double check backflow preventer. The Hospital and the Medical School ( with the exception of the Library ) have been recently renovated with complete new sprinkler systems.

The existing system originates in the animal quarters of level A where one of the 8" Fire services enter the building.

The standpipe systems is comprised of 6" main stand pipes and intermediate standpipes. The main standpipes originate in level B and terminate on the tenth floor. The intermediate 4" standpipes which are located within the Library stairwells originate in level A and terminate on level four.

A fire pump assembly provides the necessary pressure and flow requirements for the existing standpipe systems. The fire pump is 150 HP, electric, 1500 gallons per minute with a total dynamic head of 256 feet at 1800 RPM. The fire pump is fed by two 8 inch mains. The fire pump impeller has been modified so that the combined suction pressure and discharge pressure does not exceed 175 PSI.

2. Recommendations

- a. In view of the proposed Library renovation, it is recommended that at this time that the Library be brought up to current codes with the design and installation of a fire suppression system. The design, types of systems and design criteria shall comply with the following codes:

Fire Department requirements of the City of Worcester  
Mass. State Building Code. Sixth Edition

Massachusetts Fire Prevention Regulations, 527 CMR  
National Fire Protection Association

- b. **Systems;** A single interlock, pre-action sprinkler system is recommended when there is a concern to maintain maximum protection against accidental water damage. The integrated electric detection system must be activated in conjunction with the tripping of a sprinkler system before water is discharged. The operation of a detector alone will cause the system to fill the piping network with water and sound an alarm. The operation due to damage of a sprinkler head only will result in low air pressure but no water will be discharged.

The expense of the detection system and the specialized trim and accessories required for a pre-action system will result in a premium cost above a standard wet pipe sprinkler system. The end result of a pre-action system and a wet pipe system will be the same, water will be discharged on the fire.

There is sufficient pressure and volume in the existing 4 inch standpipe risers (located in the Library stairwells) to meet the requirements of the proposed sprinkler system. A combination standpipe /sprinkler system with packaged pre-action fully integrated cabinets could be strategically located in the vicinity of the Library standpipes to provide pre-action sprinkler coverage throughout the Library.

If the pre-action system is deleted, floor zone control assemblies connecting to the existing Library standpipes could be used to provide wet pipe sprinkler coverage throughout the Library.

- c. **Considerations:** The Facilities concern for accidental water damage has to be measured against availability of funds. If the Library does not constitute a high risk vandalism problem, many owners have opted to go with a standard wet pipe system.
- d. **Criteria, Density, flows and design areas** shall be as indicated in NFPA 13.
- e. Refer to attached part plans for standpipe locations and orientation of the Library and Medical School.

4. HVAC Systems

1. Existing Systems

a. Air Handlers

- 1) The present library space is served by four (4) multi-zone air handlers located in three (3) rooftop penthouses. The library area is also served from AHU# located in basement level of the Clinical Science Building. The size and capacity of the existing air handlers as indicated on the existing drawings are as follows:

Air Handler Tag #	Total Supply CFM	Total O.A. CFM	Total Cooling Cap MBH	Total Cooling GPM at 43°F/57°F	Total Heating Capacity MBH
AC #22	14,035	2,800	581.0	83.0	264.60
AC #23	11,185	2,240	469.0	67.0	211.90
AC #24	18,665	7,350	952.0	136.0	1,271.70
AC #25	17,845	5,530	840.0	120.0	1,765.10
AC # - Basement	3,550	710*	46.0*	9.2*	172.50*
<b>Total</b>	<b>65,280</b>	<b>18,630</b>	<b>2,888.0</b>	<b>415.2</b>	<b>3,685.80</b>
<b>Estimated</b>				<b>Tons 242*</b>	

- 2) Based on the existing equipment capacity and a total building square footage of approximately 43,000 ft<sup>2</sup> and an occupancy of 475 people the following is a break down of the existing loads:

Supply CFM/Ft <sup>2</sup>	O.A.	O.A.	Sq. Ft./Ton	Heating BTU/Ft <sup>2</sup>
65,280 CFM ÷43,000 Ft. <sup>2</sup>	18,630 CFM ÷43000 Ft. <sup>2</sup>	18,630 CFM ÷475 P	43,000 Ft. <sup>2</sup> ÷242 Tons	3,685.8 MBH ÷43,000 Ft. <sup>2</sup>

Supply CFM/Ft <sup>2</sup>	O.A.	O.A.	Sq. Ft./Ton	Heating BTU/Ft <sup>2</sup>
1.5 CFM/Ft. <sup>2</sup>	0.43 CFM/Ft. <sup>2</sup>	39.2 CFM/P	177 Ft. <sup>2</sup> /Ton	85.7 BTU/Ft. <sup>2</sup>

- 3) The existing multi-zone air handlers are equipped with a return air mixing box section, filter section with 65% bag filter, fan section, and combination blow through multi-zone heating/cooling section, cooling is provided by a chilled water coil and heating is supplied by a low pressure 15 lb., 2-pipe steam heating coil. Direct steam injection humidifiers are present but are non-operational and are abandoned in place. Each air handler is equipped with the following multi-zone capabilities.

Air Handler Tag	Number of Supply Zones
AC #22	11
AC #23	8
AC #24	8
AC #25	10

- 4) The air handlers are of the same age of the building and are approximately 30 years old. The units have reached their expected life expectancy for this type of air handler. The units are showing signs of their age. Corrosion to the cabinets and structural components are visually detectable. Valves, fittings and piping indicate signs of deterioration from past leaks.

General condition of the air handlers are fair to poor. Coils show signs of corrosion, pitting, and brazing where past leaks have been repaired.

- 5) The air handlers are installed in the roof mounted penthouses or mechanical rooms. AC #22 and AC #23 are located in mechanical room #1 where adequate space is available for servicing and maintenance.

AC #24 is located in penthouse #2 where little to no space is allowed for proper maintenance and servicing. Service access is through limited floor hatches and roof mounted access doors.

AC #25 is located in penthouse #3 where little to no space allowed for proper maintenance and servicing. Service access is through limited floor hatches and roof mounted access doors.

The lack of adequate service space provided for AC #24 and #25 to allow routine service and maintenance has lead to the present poor condition of the existing equipment. Servicing the units and various components is extremely difficult due to lack of service space.

- 6) Each air handler is equipped with a matching return air fan of the following capacities.

Air Handler Tag #	Return Air Fan	Style	CFM	HP
AC #22	EF #22	Inline Vane Axial	26,100 *	20.00
AC #23	EF #23	Inline Vane Axial	20,630 *	15.00
AC #24	EF #24	Inline Centrifugal Utility Set	11,320 *	7.50
AC #25	EF #25	Inline Centrifugal Utility Set	11,320 *	7.50

\*To be verified.

The four (4) return air fans are in good to fair condition. Limited signs of corrosion to the structural components were detected. The fans have exceeded their life expectancy and would be beneficial to the campus to install new equipment with new high efficiency motors that are available today.

- 7) present library has expanded into the Clinical Science Building and presently occupies  $\pm 2,825$  ft.<sup>2</sup>. Comfort heating and

cooling is distributed from the multi-duct systems presently located in the Clinical Science Building. The existing system in the Clinical Science Building are  $\pm$ 30 years old also.

b. Duct Systems

- 1) Supply, return, and exhaust air duct systems are constructed of galvanized steel and appear to be original to the building construction of approximately 30 years old.
- 2) All supply air ductwork is internally lined with fiberglass duct liner. Supply air ductwork in general is in fair to poor condition. Corrosion was detectable at numerous joints and take-offs. Air leakage was detectable at most joints and in some condition air leakage was excessive. Interior of supply air ductwork was observed through various access panels in the mechanical room. It was observed that the interior duct liner was in very poor condition and in some instances the liner had pulled off the duct completely.
- 3) Return air ductwork in general is in fair to poor condition. Return air ductwork is uninsulated. Corrosion was detectable at most joints and seams.

Return air ductwork is limit to mechanical rooms and concealed duct shafts. The majority of the buildings ceiling voids are used as a return air plenum.

- 4) Toilet exhaust rooms are ducted with galvanized, uninsulated ductwork to inline exhaust fan #39, 40, and 41 in the penthouse mechanical rooms.

The toilet exhaust fans and ductwork are in fair to poor condition. Excessive vibration was detectable at the fan assemblies and corrosion was observed on the ductwork at most seams and joints.

- 5) Mechanical penthouses no. 1, 2, and 3 are each equipped with a galvanized steel fresh air intake plenums in fair to poor condition. Intake air plenums are externally insulated with fiberglass. Insulation is in fair to good condition. Ductwork is

showing signs of corrosion at joints and seams.

- 6) Mechanical penthouse No. 1, 2 and 3 are each equipped with exterior wall mounted intake and relief louvers of aluminum construction in fair to good condition.

c. Controls

- 1) The existing control systems is a combination of DDC with pneumatic actuators in fair to poor conditions.
- 2) Cooling coils are equipped with 2 way modulating control valves in fair to poor conditions.
- 3) Steam heating coils are equipped with 2-way modulating control valves in fair to poor conditions.
- 4) Pneumatic air compressor and air dryer is located in the basement mechanical room of the Clinical Science Building.
- 5) Pneumatic tubing is a combination of copper and plastic tubing in fair to good condition

d. Piping Systems

- 1) Low pressure steam piping of approximately 15 lbs. is schedule 40 black iron steel with fiberglass insulation. Piping is in fair to poor condition.
- 2) Low pressure condensate return piping is schedule 40 black iron steel in fair to poor conditions.
- 3) CHWS and R piping is a combination of schedule 40 black iron steel and Type "L" copper. All CHWS and R piping is insulated with fiberglass. Piping is in fair to poor condition. Piping insulation and vapor barrier are either missing or damaged in numerous areas.
- 4) All condensate drain piping is copper. In fair to poor condition.

e. Building Services

- 1) Campus control system is a Johnson Metasys DDC based system with pneumatic actuators on valves and dampers.
- 2) Campus chilled water is supplied to the library building at a 43°F EWT and a recommended 57°F LWT (14°F ΔT).

Piping originates in the basement mechanical room in the Clinical Science wing.

- 3) Low pressure steam (15 lbs.) is supplied to the library building from the campus loop. Piping originates in the basement mechanical room in the Clinical Science wing.
- 4) Condensate return is by a combination of gravity and pumped systems to the campus loop with a series of duplex receivers.

f. Summary of Existing Conditions

- 1) The existing building services presently available are of adequate capacity to meet present and future air conditioning loads and heating loads.
- 2) Existing present outside air quantities of 18,630 cfm exceed today's ASHRAE 62-1989 IAQ requirement (475 people x 15 cfm/p = 7,175 cfm).
- 3) Existing Johnson Metasys DDC control loop is present and expandable for all future control needs.
- 4) Existing piping systems, duct systems, and air handling equipment have exceeded their life expectancy and need to be replaced.
- 5) Larger penthouse mechanical rooms are recommended and need to be constructed to adequately house all new equipment. Stairwells should be extended to all penthouses to allow for servicing of all new mechanical equipment.

- 6) All mechanical systems that are indicated as "existing to remain", shall be tested and verified as to their remaining life expectancy.

Examples	Description
Piping	Cut and remove section of existing steam, condensate, and chilled water piping. Test piping and report all findings.
Ductwork	Cut access door in supply, return, intake, and exhaust ductwork to allow visual inspection of existing conditions.

2. Recommendations

a. General Library Area

Computerized heating/cooling load calculation are enclosed for the existing building structure with the following inputs:

People: 475 peak occupancy

Lighting: 3.0 watts/ft.<sup>2</sup> Maximum

Equipment: 2.3 watts/ft.<sup>2</sup> Maximum (computers, copier, coffee station, etc.)

Wall:  $U = 0.248$

Roof:  $U = 0.057$

Glass:  $U = 1.091$  (single pane)  
 $SC = .686$  (gray tint)

Skylite:  $U = 0.767$   
 $SC = 0.793$

Estimated peak cooling load 171 tons (280 sq. ft./ton)

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 Hoskins Scott and Partners Inc.  
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Estimated peak heating load 818 MBH

Schematic floor plans are enclosed in this report indicating new proposed roof mounted mechanical penthouses and new proposed air handlers to serve the renovated library area. Please refer to sketches SKM-1 through SKM-4 for the location of all new proposed equipment.

The existing building is to remain occupied during the renovation. Phasing of new construction is critical and must be coordinated with the facility operating personnel. Temporary heating and cooling systems may be required to maintain services to all areas during the renovation.

Air Handling Unit Tag #	System Type	CFM	Location Served
AHU-1	VAV system with modulating boxes and hot water coils.	±4,000	Third floor conference rooms. Second floor conference rooms. First floor (Clinical Science wing)
AHU-2	Constant Volume	±14,000	Third floor North exposure
AHU-3a	Constant Volume	±5000	Third floor South exposure
AHU-3b	Constant Volume	±5000	Third floor North exposure
AHU-4	Constant Volume	±7000	Second floor North exposure
AHU-5	Constant Volume	±8000	First Floor North Exposure
AHU-6	Constant Volume	±10000	First Floor Open Area - East Second Floor South Side - East
AHU-7	Constant Volume	±10000	First Floor Open Area - East Second Floor South Side - West
AHU-8	Constant Volume	±1200	First Floor Admin. Area

Air Handling Unit Tag #	System Type	CFM	Location Served
AHU-9	Constant Volume	±1800	First Floor Entry/Lobby

Hot water baseboard radiation will be located at the floor level below all exterior glass to offset conduction loss. Low temperature hot water will be generated by a steam to hot water heat exchanger located in the new mechanical penthouse.

b Rare Book Room

To be conditioned with a chilled water computer room grade air conditioning system (Liebert) of +3 tons capacity, 1500 cfm with steam humidification and steam reheat coil for dehumidification control. Rare book room to be constructed with a vapor barrier in the walls and ceiling to maintain humidity levels. Ducted fresh air through sidewall or soffit vent, 95% filter assembly.

c. Mechanical Components

1) Ductwork

All new ductwork systems shall be constructed to conform to latest ASHRAE standards for low pressure. Duct systems shall be designed for a maximum velocity of:

2000 FPM for mains trunks  
1500 FPM for branch line  
600 FPM for diffuser run-outs

Interior fiberglass acoustical duct lining will not be allowed. When and where acoustical lining is recommended it shall be of the "closed cell foam" type equal to Armstrong or IMCOA. All supply air ductwork shall be insulated with 1 1/2" thick fiberglass batt insulation with vapor proof jacket. All exposed supply and intake air ductwork in mechanical rooms shall be insulated with 1" thick rigid board fiberglass insulation with vapor barrier, etc. Return air duct shall not be insulated.

2) Air Handlers

Double wall construction with no insulation exposed to the air stream. Air handlers to be of modular design with a minimum of the following components:

- a) Inlet mixing box with angular filter bank and 2" pleated 30% filters.
- b) Steam heating coil section with internal face and bypass section.
- c) 18" deep access section for mounting of control temperature sensors and freeze stats.
- d) Chilled water coil section with stainless steel drain pan.
- e) Fan section with internally isolated motor assembly.
- f) Final filter section on discharge side of fan assembly to be 12" deep bag cartridge type rated for 85% efficiency.
- g) Optional: Steam humidifier section with stainless steel drain pan, duct mounted high limit sensor, automatic drain cycle, and automatic make-up water control.
- h) Optional: Discharge steam reheat coil for dehumidification control.

3) Return Air Fans

Double wall construction with perforated inner liner of heavy gauge steel and 2" of sound absorbing material. Fans to be of the inline vane axial type selected at low fan RPM's to minimize noise transmission through the ductwork. Return air fans to be equipped with inlet sound attenuators.

4) Sound Attenuators

Supply air ductwork systems shall be equipped with duct mounted, inline sound attenuators of the hospital grade design

with mylar encapsulated acoustical fill and honeycomb stand-off. Selection shall be based on velocities not to exceed 1500 fpm and a maximum pressure drop of 0.25" w.c.

Return air fans to be equipped with a matching d-duct inlet diffuser/silencer as selected to match fan performances.

d. Piping Systems

1) Chilled Water Systems

Piping 2½" diameter and smaller shall be type "L" copper. Piping 3" diameter and larger schedule 40 black iron steel. Isolation and shut off valves 2½" and smaller to be full port ball valve design. Isolation and shut off valves 3" diameter and larger to be butterfly valves. Chilled water piping system to be sized for a maximum velocity of 6 FPS.

All chilled water piping to be insulated with fiberglass and an all service jacketed vapor barrier. Reverse return piping systems are recommended where applicable.

2) Steam Piping

Schedule 40 black iron steel. Isolation valves and shut off valves 2½" and smaller to be full port ball valve design. Isolation valves and shut off valves 3" and larger to be gate valve design.

All steam supply and condensate return piping to be insulated with fiberglass and all service jacketed vapor barrier.

Steam piping sized for 15 lbs. low pressure steam.

e. Control System

Extend and modify the existing Johnson Metasys DDC Campus Control System.

- Temperature, humidity, current and static pressure sensors.
- Direct digital field control panels.

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- Pressure reducing valves.
- Automatic control valves.
- Automatic control dampers.
- Control wiring.
- Transducers.
- Solenoids and all electrical components.
- Water temperature reset control.
- Mixed air temperature.
- Filter statics.
- Chilled water flow capacity.
- Outdoor air reset control.
- Economizer control capability.
- Return air CO<sup>2</sup> monitoring.
- O.A. flow tracking.

Control valves shall be bronze body with pneumatic actuators, 2 way or 3 way as required. Balancing valves shall be "T&A" globe style with memory stop. Control dampers shall be DDC based with pneumatic actuators.

f. Campus Services

The following services shall be extended from the existing campus loop.

- 1) Chilled water is available year round at a supply temperature of 43°F with a recommended 14°F temperature drop for a 57°F LWT.
- 2) A two (2) way modulating valve shall be used at point of tie in to campus loop to modulate flow of chilled water extracted from the campus loop. 2 way control valve shall modulate to ensure that return water temperature is at 57°F on higher, chilled water 56°F or lower shall be recirculated to the secondary load. Chilled water 56°F or lower shall not be returned to the campus loop.
- 3) Low pressure steam at 15 lbs. is available from the campus loop. Low pressure condensate shall be returned to the campus loop by gravity or by the use of a duplex condensate return pump.
- 4) Low pressure steam is considered clean and is recommended for

direct humidification. Steam injection humidifiers are preferred by the facility.

- 5) Johnson Metasys DDC Lan is installed as a campus network control system.
- 7) Campus control pneumatic air shall be extended from services provided in the basement roof of the Clinical Science Building.

g. Indoor Air Quality

- 1) Indoor air quality shall be designed to conform to ASHRAE 62-1989.
- 2) Intake air louvers shall be located a minimum of 25 feet from exhaust and plumbing vents. Intake louvers to be sized at an intake velocity below 400 fpm to minimize water and snow penetration.
- 3) Interior fiberglass duct lining is not allowed where acoustical lining is required or recommended, it shall be of the closed cell foam design equal to "Armstrong" or "IMCOA."
- 4) Toilet rooms and janitor's closets shall be exhausted at a rate of 75 cfm per fixture (water closet or urinal) but not less than 12 air changes per hour.
- 5) Copy center needs to be fully exhausted at 0.52 CFM/Sq.ft

h. Design Conditions (ASHRAE 1997 Handbook)

Main Library

Summer indoor	72°F db/50% RH ± 10%
Summer outdoor	85°F db/71% FWB

Winter indoor	70°F db/30% RH ± 10%
Winter outdoor	0°F db/1.6°F WB

Rare Book Room

Summer indoor	72°F db/50% RH ± 10%
Winter indoor	70°F db/40% RH ± 10%

E. Electrical Systems

1. Lighting System

- a. The systems are comprised of incandescent and fluorescent fixtures. The high bay area utilizes high output fluorescent lamps, and other areas utilize standard output fluorescent. Fluorescent fixtures were changed from T12 to energy efficient T8 lamps a few years back.
- b. The incandescent lamps are comprised of PAR and R type lamps recessed in ceilings with little exception.
- c. In general, most of the lighting system needs to be replaced and reconfigured to suit the areas being served.
- d. The high bay area lighting is an area that requires new lighting and new design approach to serve this space. The skylights provide sufficient light during the day time; but at night, light levels are greatly reduced. Some other reading areas use incandescent light fixtures which produce very low light levels.
- e. Emergency lighting is provided by the use of fluorescent and incandescent lighting fixtures and is controlled through a relay system.

2. Fire Alarm System

- a. Fire alarm system is the original installed Autocall system and should be replaced with today's state-of-the-art system.

3. Convenience Receptacles and Power Outlets

- a. Convenience receptacles are sparse throughout the library.
- b. Power outlets for specific equipment are also sparse throughout the library.

4. Master Clock System

- a. Master clock system is the original installed Standard Electric Time System which is no longer manufactured. System seems to be in good working order.
5. Door Intrusion Alarm System
    - a. Exterior doors incorporate a door intrusion alarm with a bypass key.
6. TV Surveillance and Security System
    - a. The library in some areas utilize TV surveillance cameras with monitor at control desk. System seems to be in good working order.
    - b. Pass-thru security indicating gate is installed at main entrance to library for book control and seems to be in good working order.
7. Power Distribution System
    - a. Power distribution system consists of an incoming 480/277V feeder from unit substation located at Level A to the second floor Main Mechanical/Electrical Room. The 208/120V distribution system is derived from a stepdown transformer and from several panelboards within this room and throughout the first floor of the library.
    - b. Motors are served from a 480V motor control center located at the second floor Main Mechanical/Electrical Room.
    3. Most of the power distribution equipment is the original equipment and should be replaced.
8. Conclusions
    - a. The library's various electrical systems equipment for the most part needs to be replaced, upgraded, or redesigned because of non-code compliance issues, maintenance deficiencies, current design, and future growth issues.
9. Recommendations
    - a. Replace the existing systems with new systems.

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- b. Power distribution and low tension systems derived from new service rooms located at the first floor.
- c. Existing lighting system redesigned to accommodate individual spaces in accordance with IES standards and to utilize energy efficient fixtures and lamps.

Should you have any questions concerning the above, please do not hesitate to call.

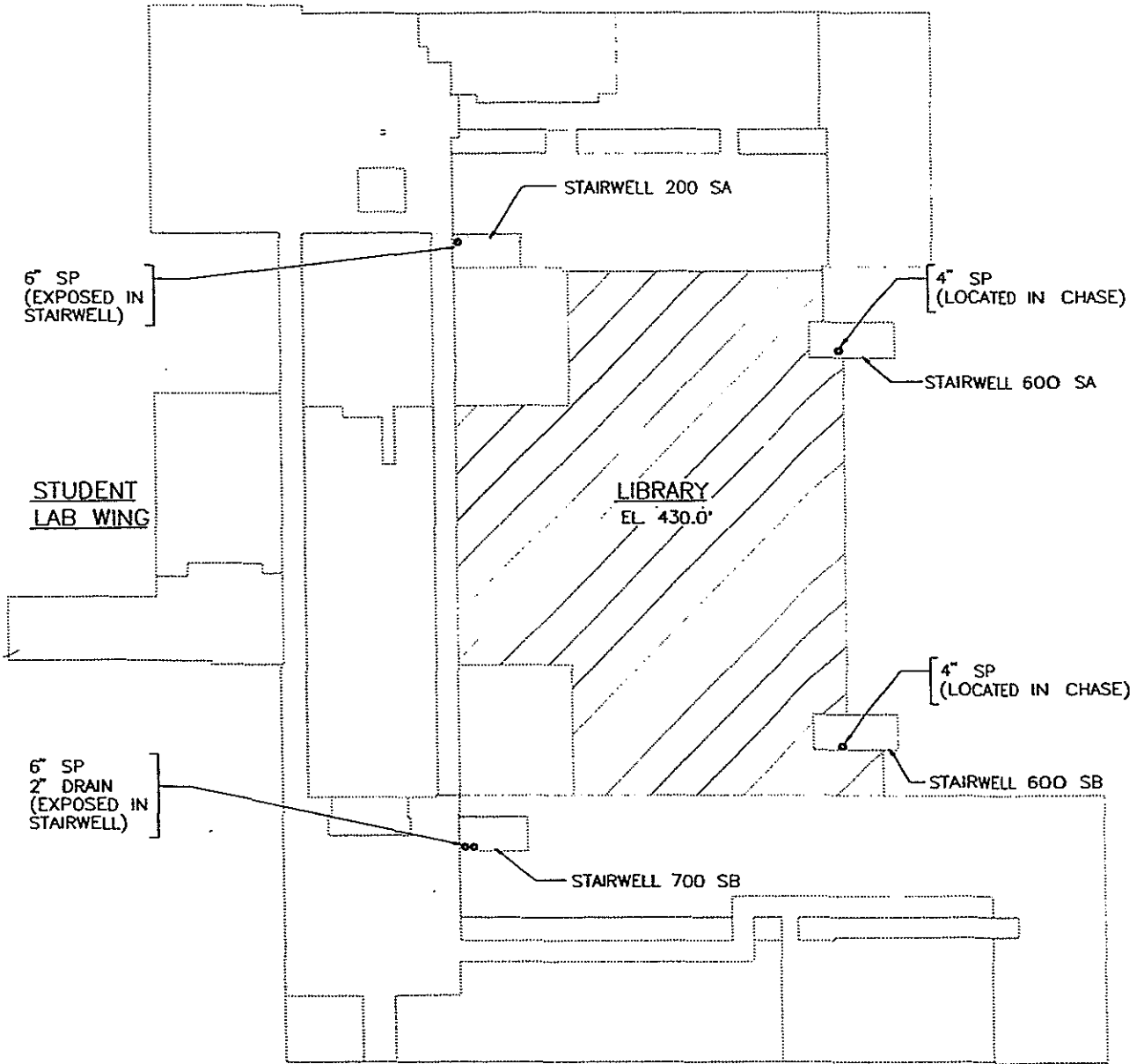
Very truly yours,

SAR ENGINEERING, INC.

David Walkenstein, P.E.  
Associate/Senior Project Manager  
DW:je  
99101000.113



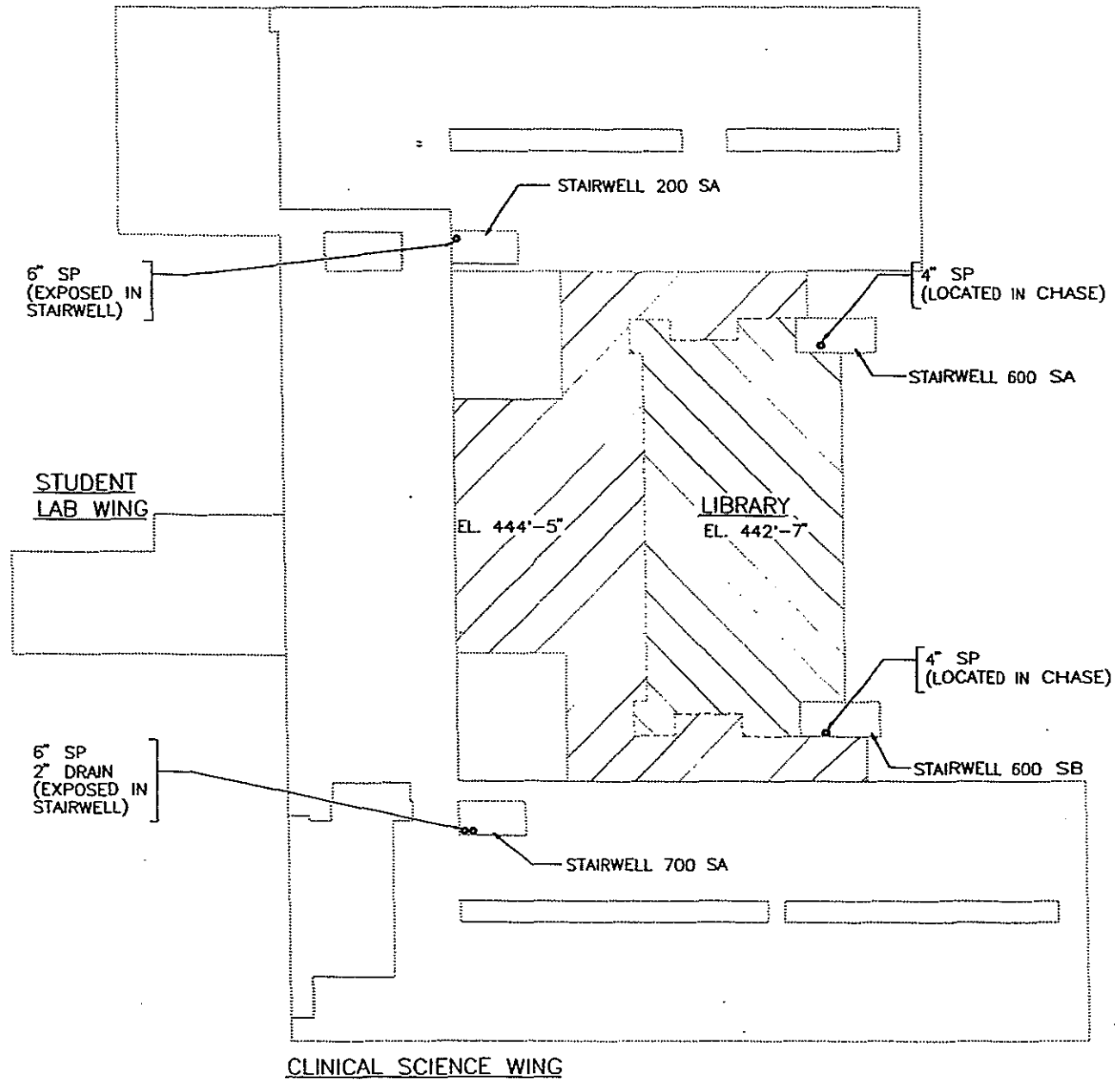
BASIC SCIENCE WING



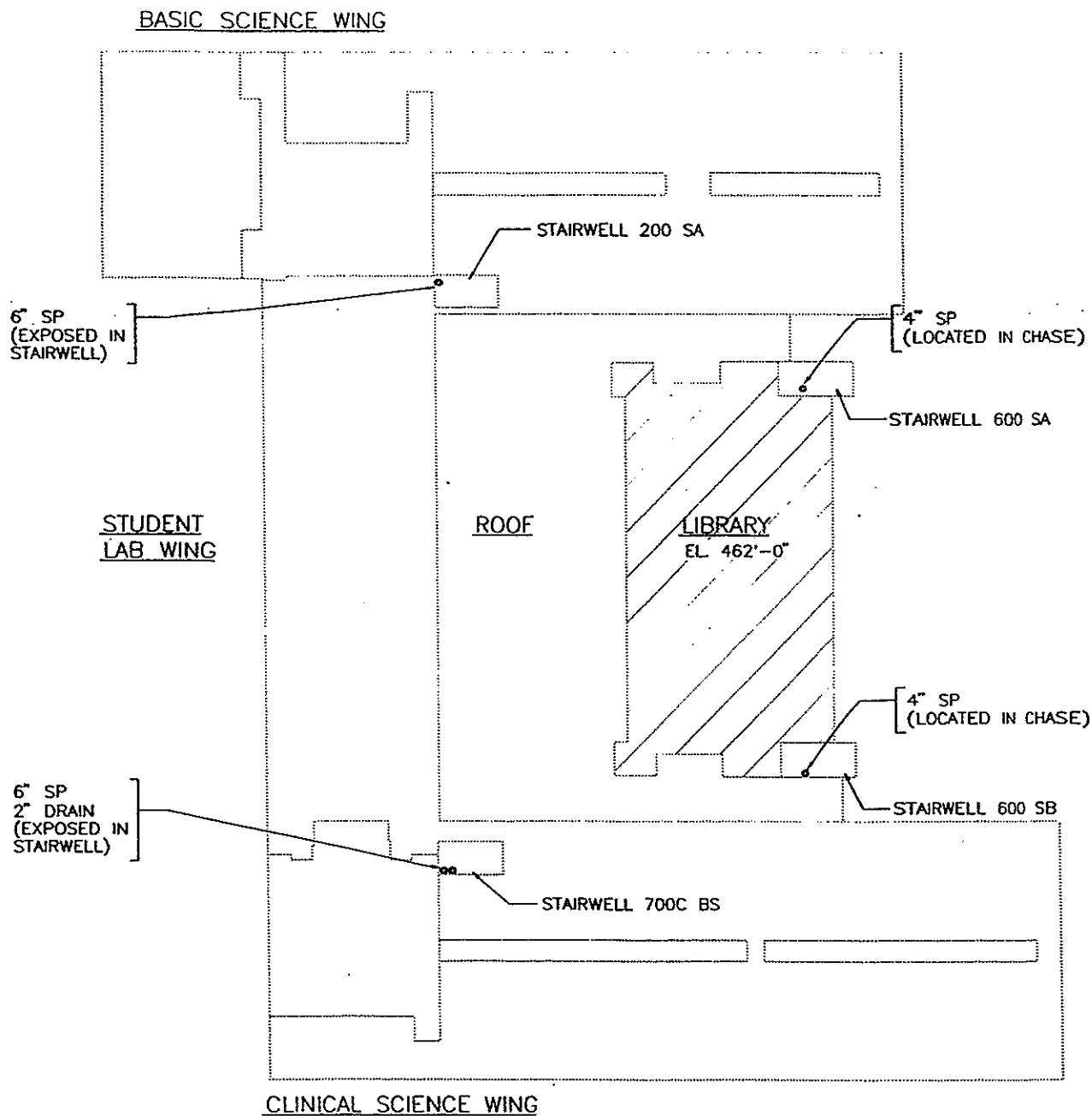
CLINICAL SCIENCE WING

LEVEL 1 PLAN

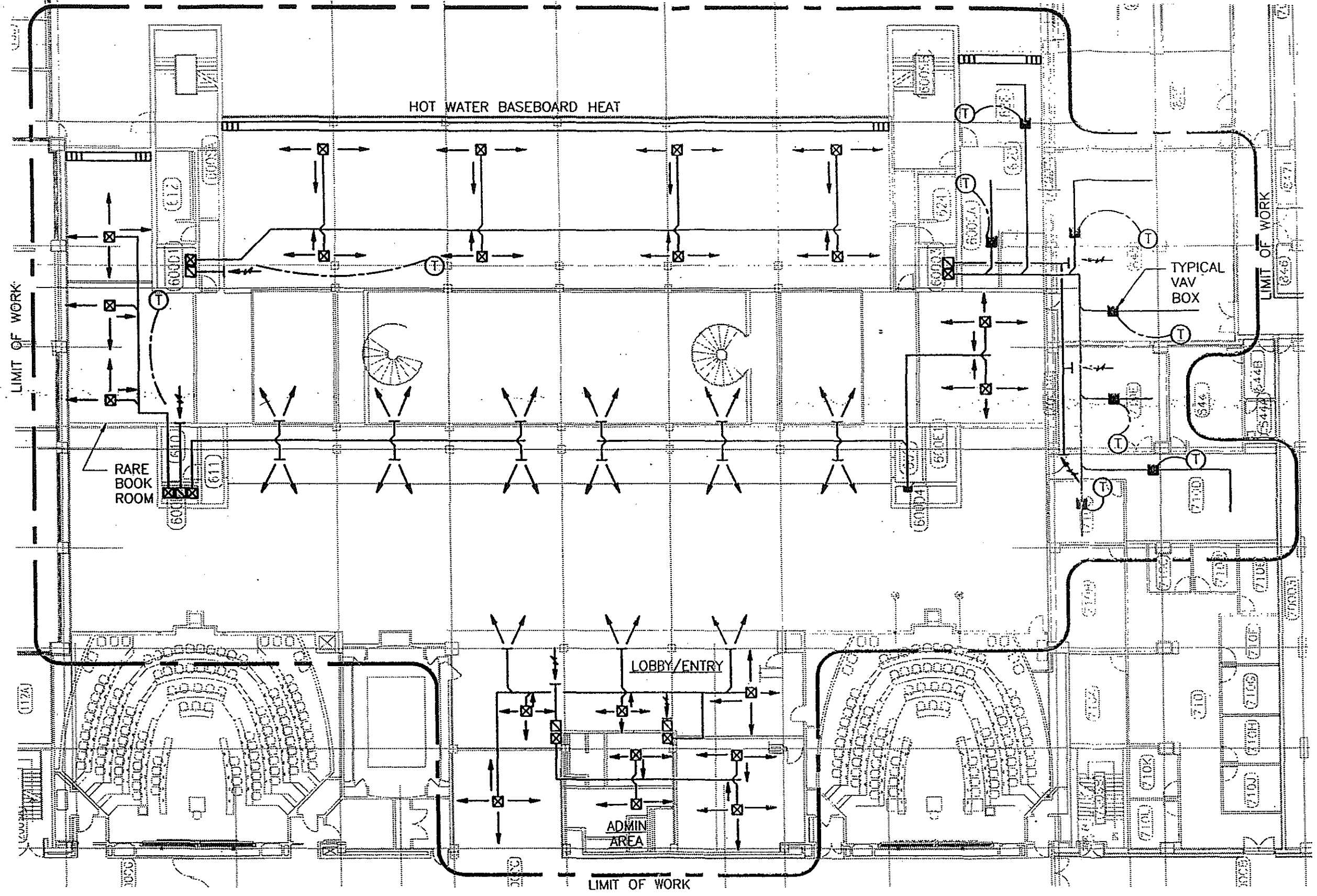
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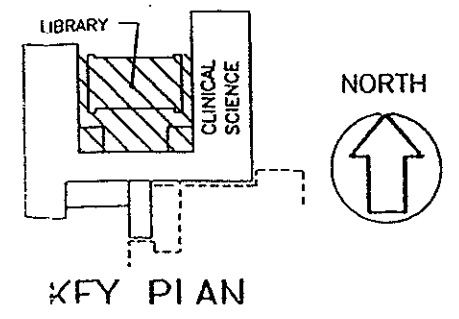
MEZZANINE LEVEL



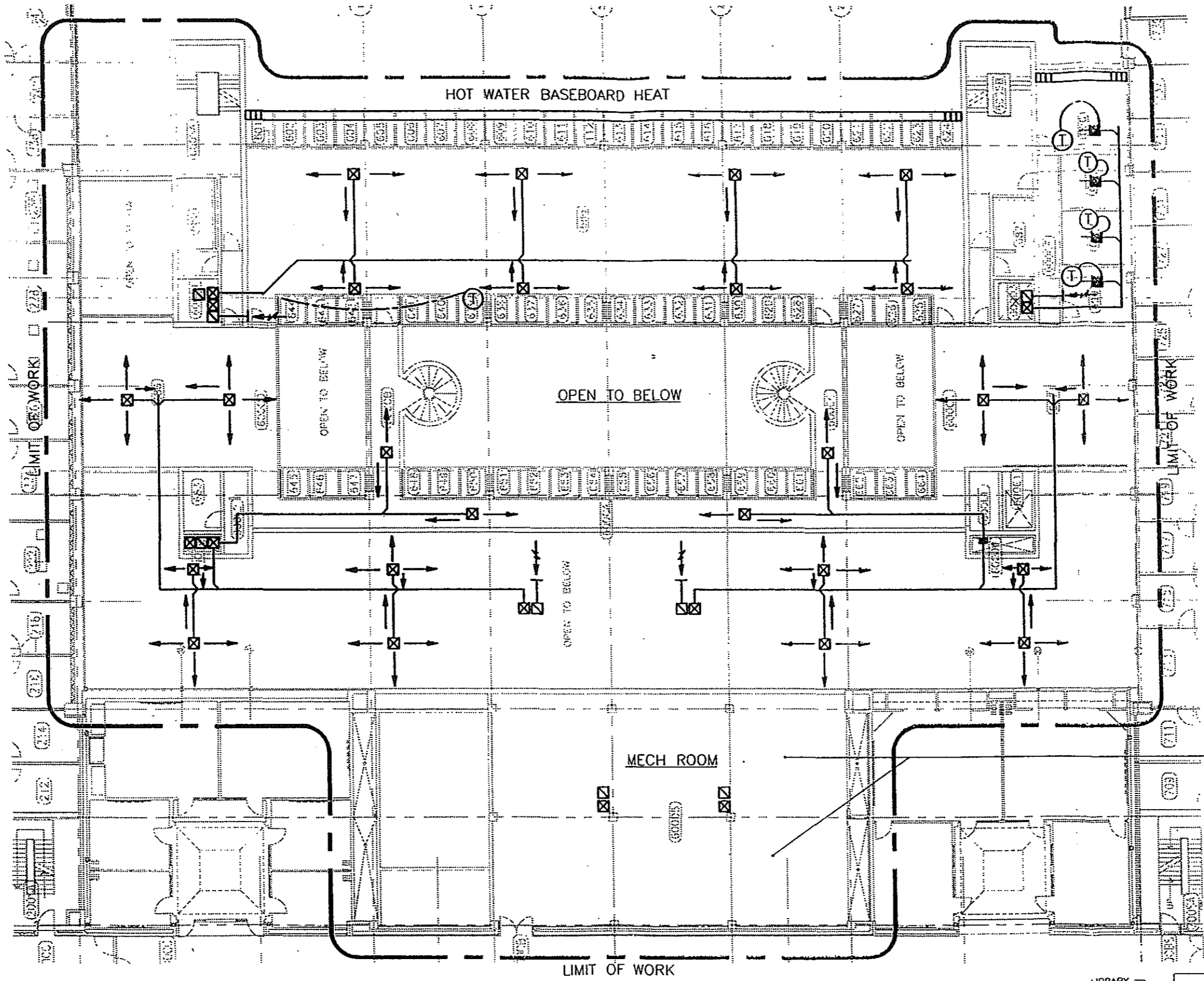
SECOND MEZZANINE FLOOR PLAN



**HVAC SCHEMATIC FIRST FLOOR PLAN**  
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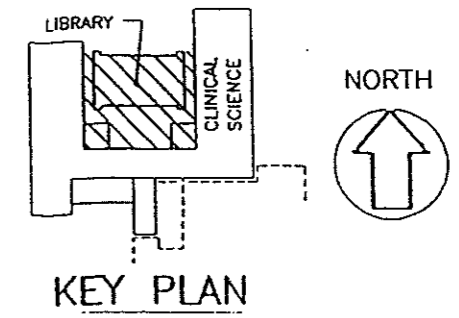


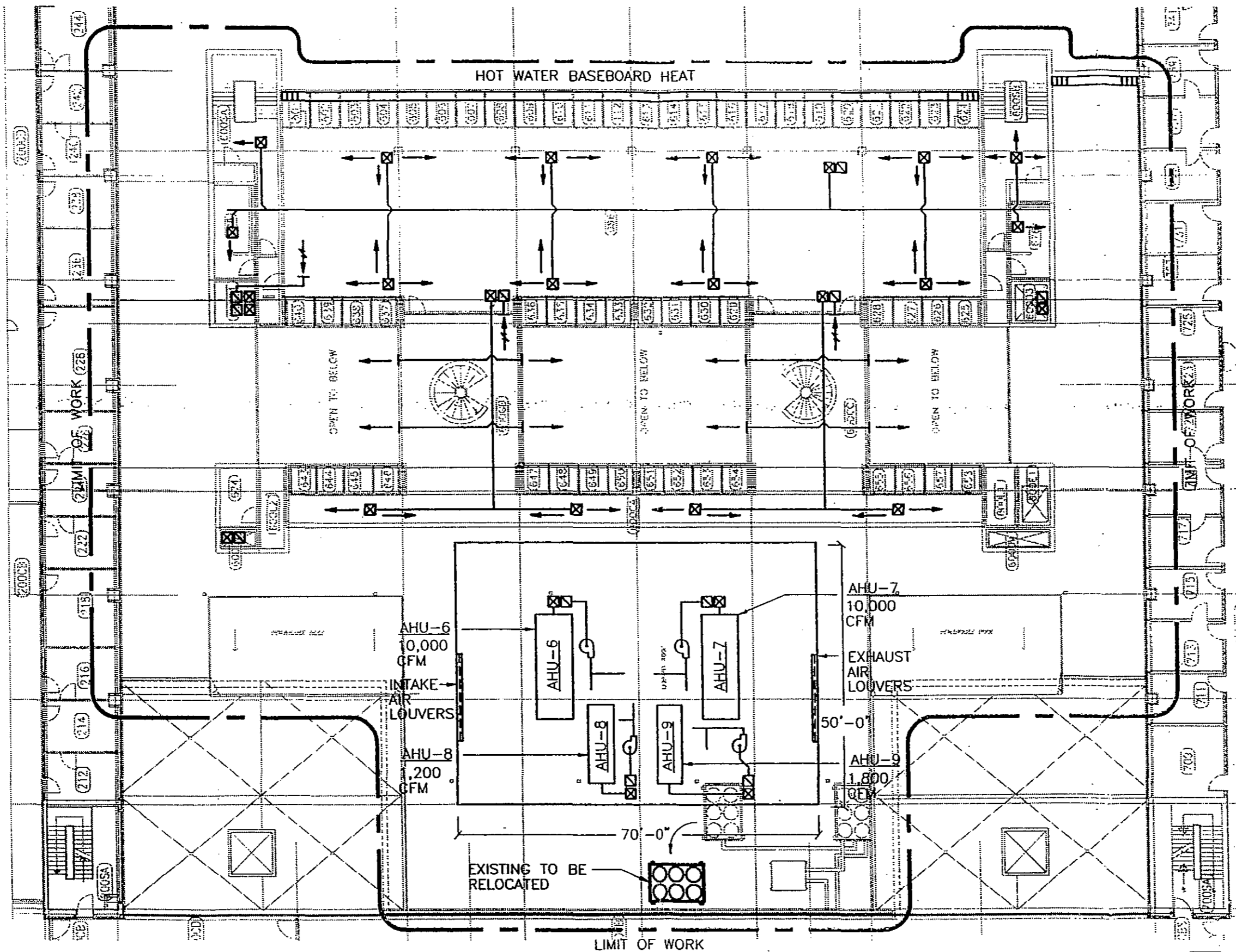
U-MASS MEDICAL LIBRARY RENOVATIONS  
 UNIVERSITY OF MASSACHUSETTS WORCESTER CAMPUS



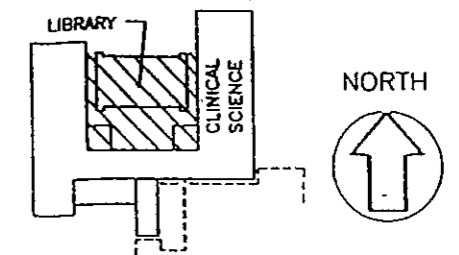
**HVAC SCHEMATIC SECOND FLOOR PLAN**  
 SCALE 1"=20'-0"

ALL EXISTING  
 EQUIPMENT  
 SHALL BE  
 REMOVED



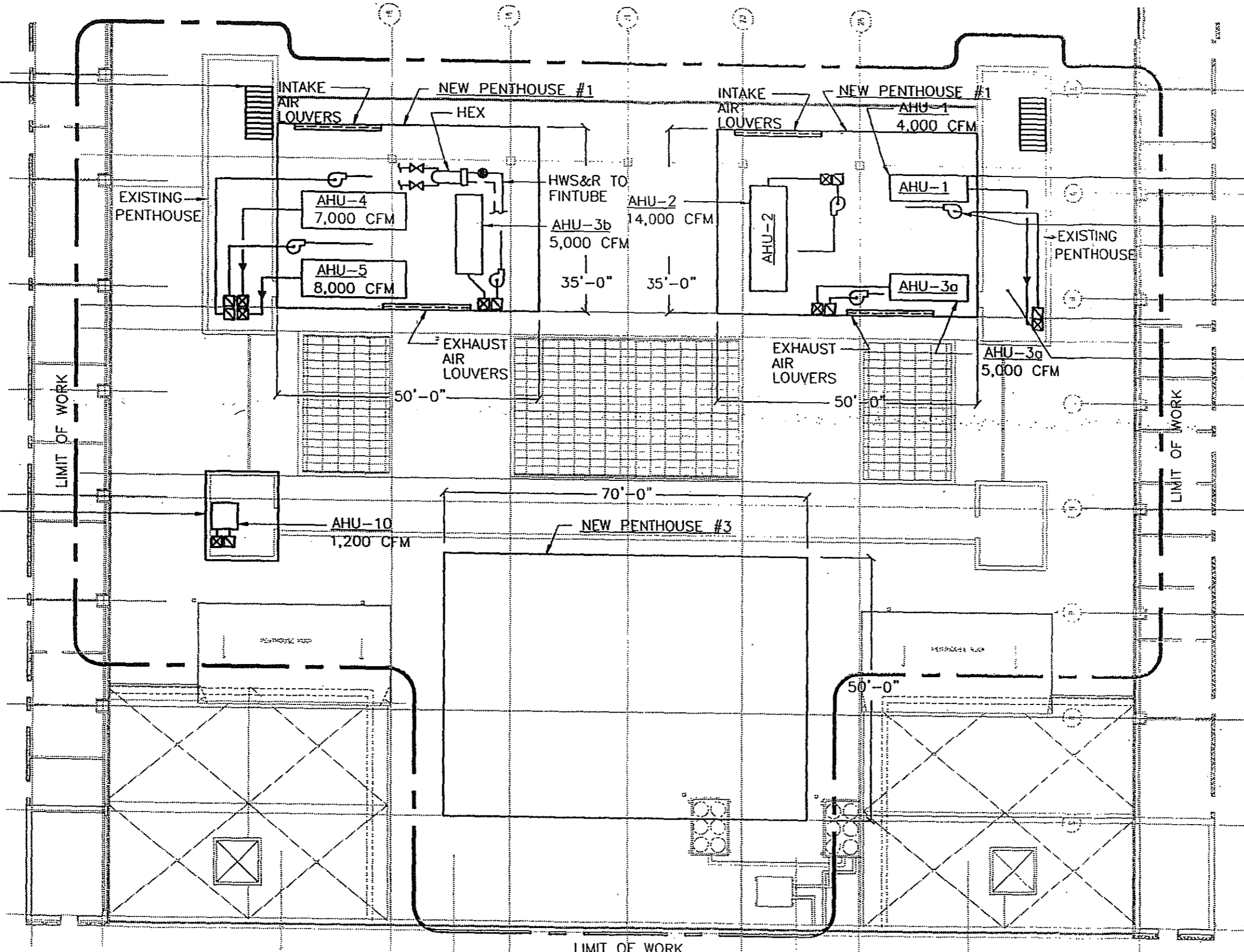


**HVAC SCHEMATIC THIRD FLOOR PLAN**  
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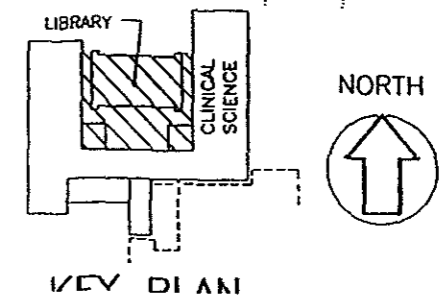
EXTEND EXISTING  
VAVS TO PENTHOUSE  
(TYPICAL)

EXISTING PENTHOUSE

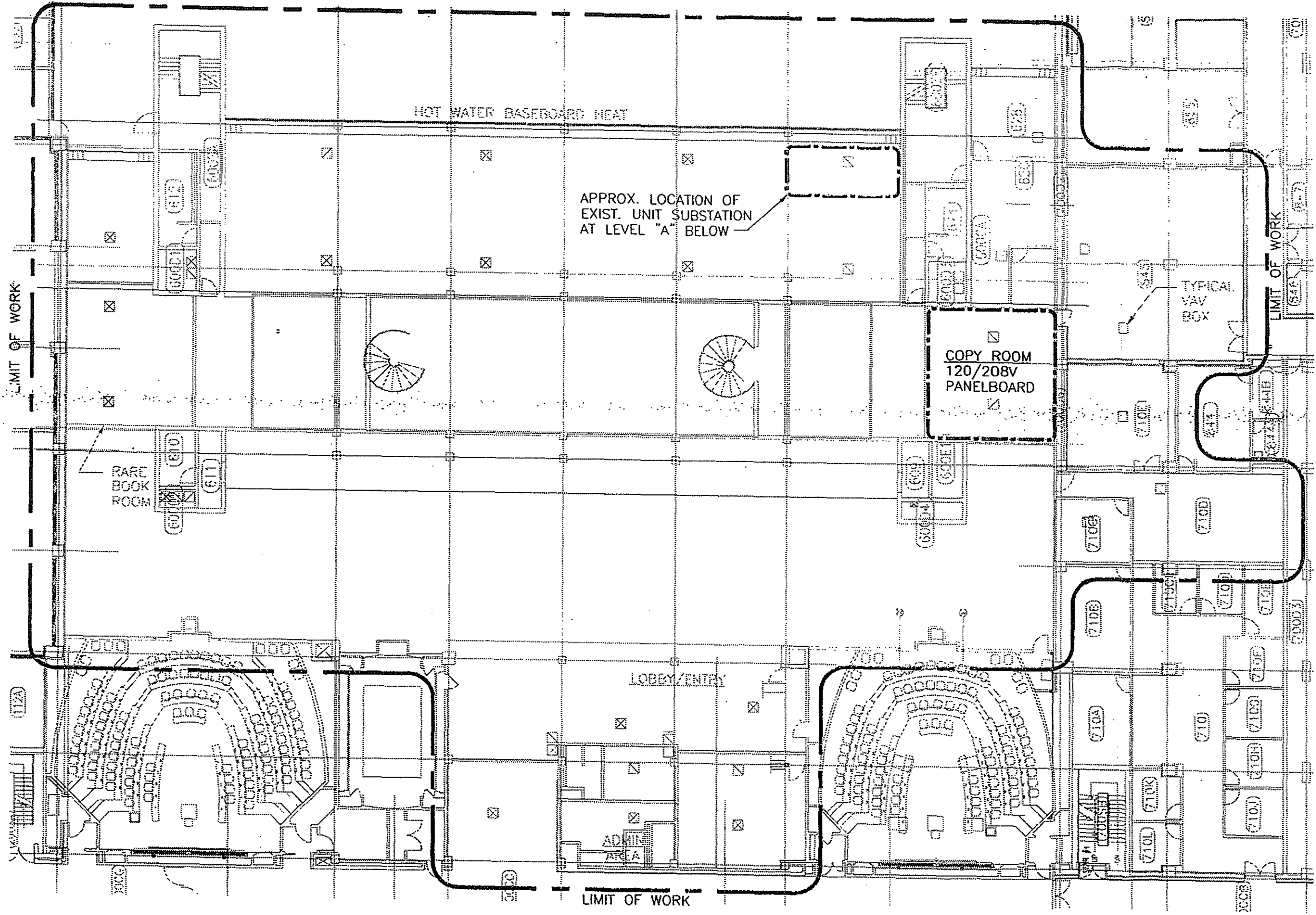


VAV AIR HANDLER  
TYPICAL RETURN AIR FAN  
ALL EXISTING EQUIPMENT TO BE REMOVED

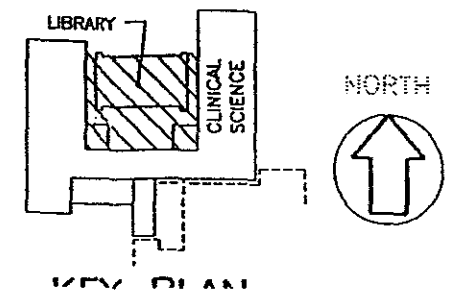
**HVAC SCHEMATIC ROOF PLAN**  
SCALE 1"=20'-0"



U-MASS MEDICAL LIBRARY RENOVATIONS  
UNIVERSITY OF MASSACHUSETTS WORCESTER CAMPUS



**ELECTRICAL SCHEMATIC FIRST FLOOR PLAN**  
 SCALE 1"=20'-0"



U-MASS MEDICAL LIBRARY RENOVATIONS

UNIVERSITY OF MASSACHUSETTS WORCESTER CAMPUS

DATE: 1-17-2000

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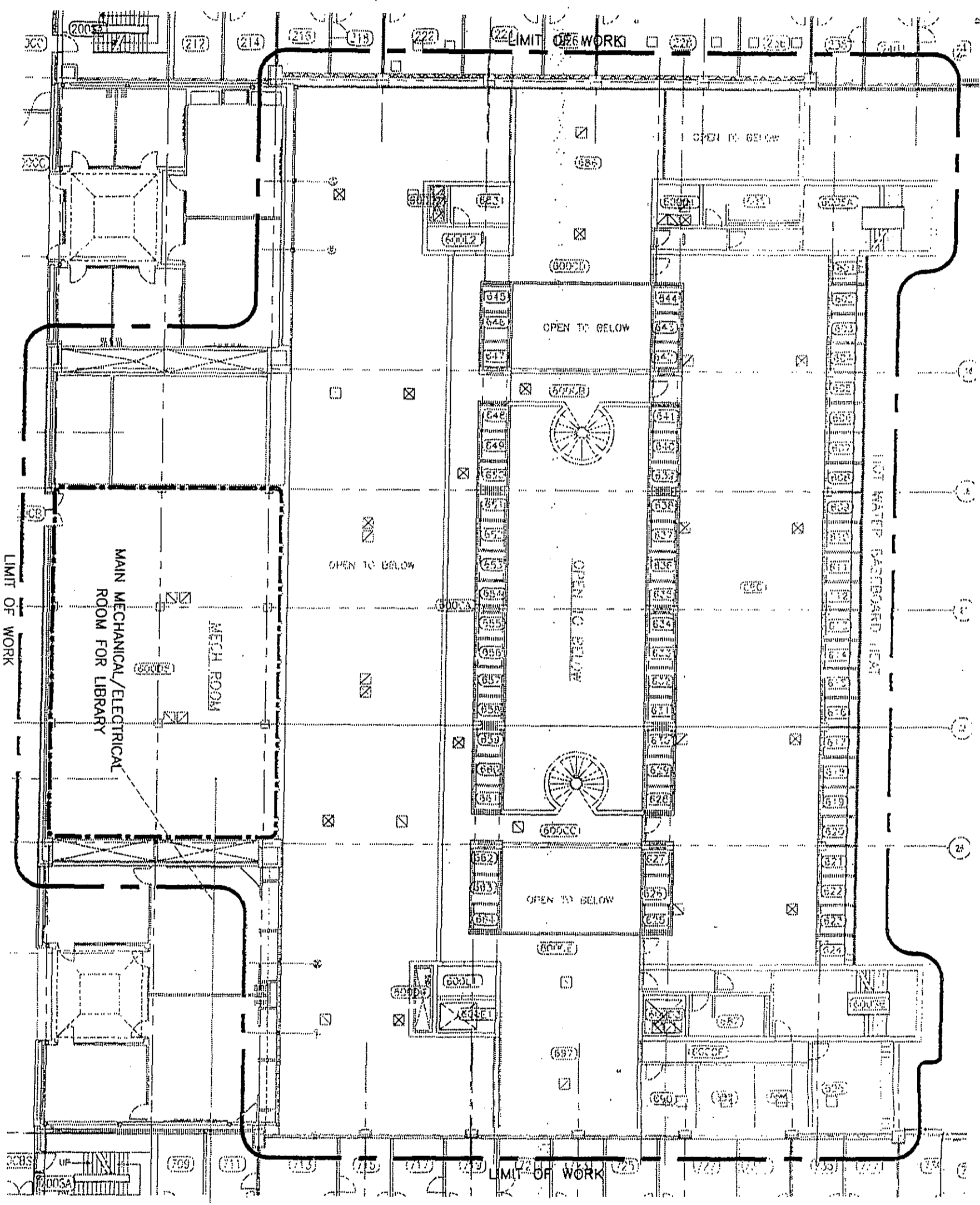
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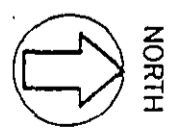
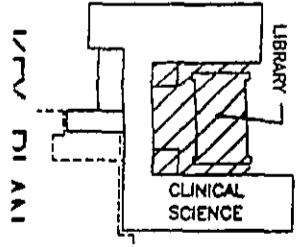
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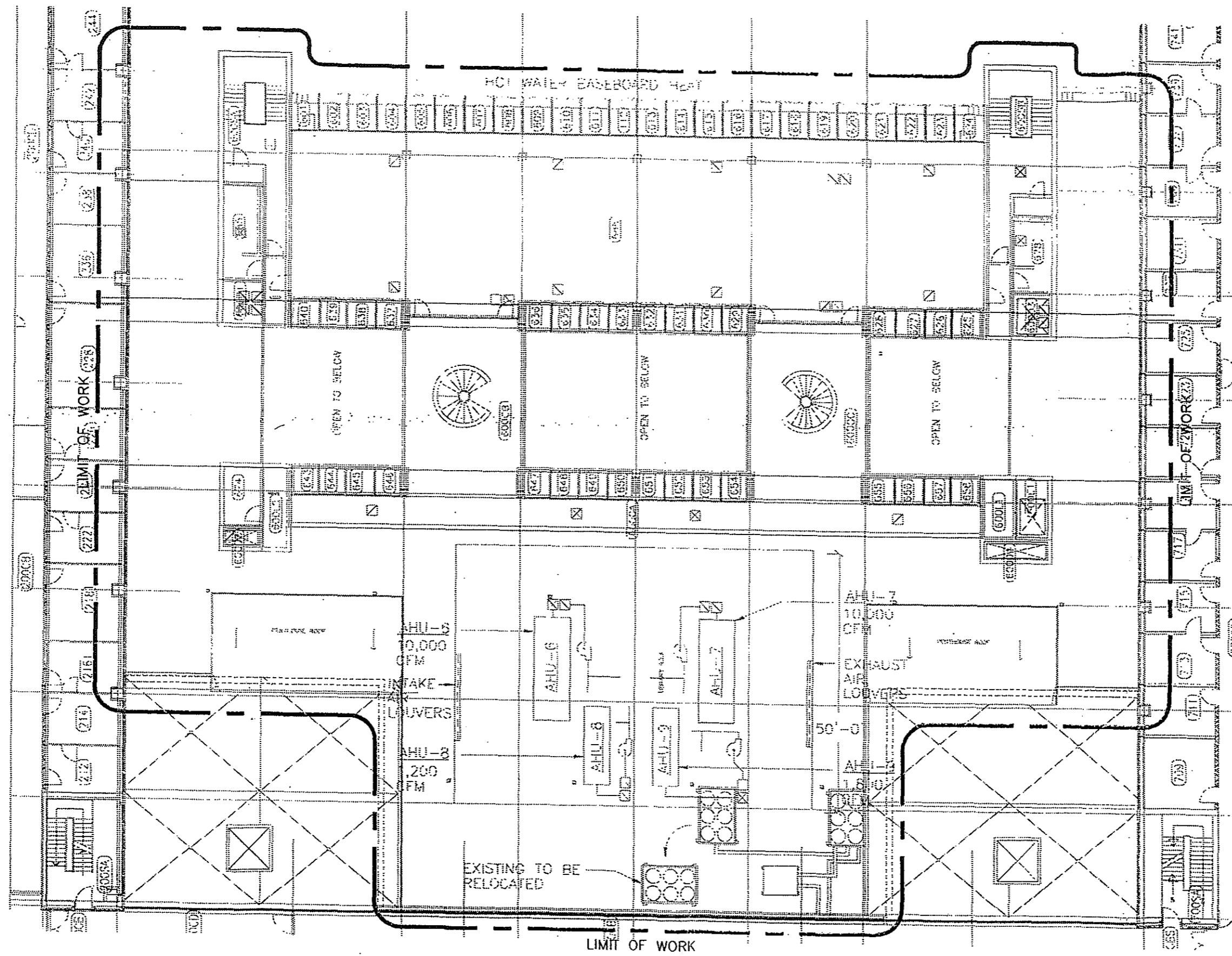
**ELECTRICAL SCHEMATIC SECOND FLOOR PLAN**

SCALE 1"=20'-0"

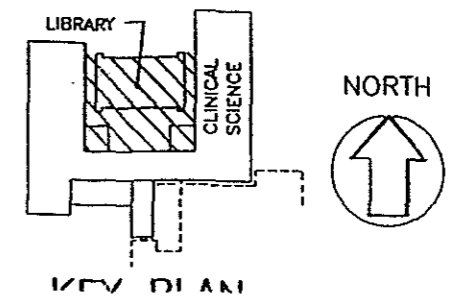


ALL EXISTING EQUIPMENT SHALL BE REMOVED





**ELECTRICAL SCHEMATIC THIRD FLOOR PLAN**  
SCALE 1"=20'-0"



U-MASS MEDICAL LIBRARY RENOVATIONS

UNIVERSITY OF MASSACHUSETTS WORCESTER CAMPUS

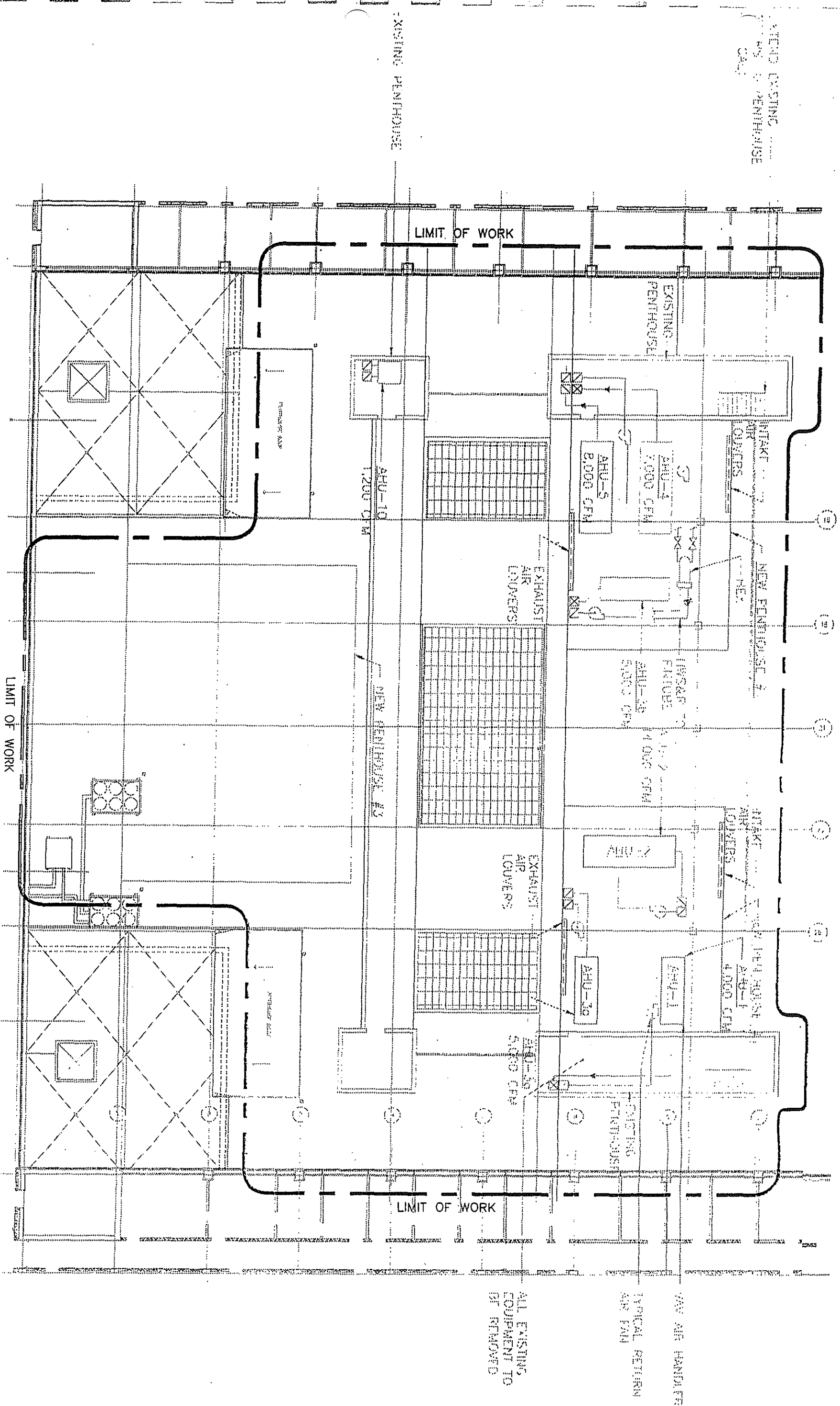
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JOB NO: 99101

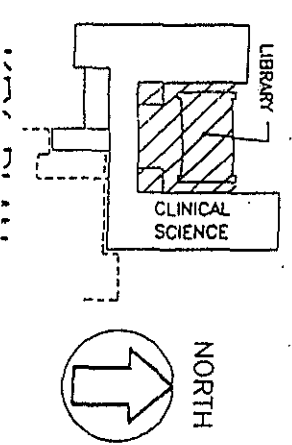
CHK BY: D.W.

DRAWN BY: E.W.



**ELECTRICAL SCHEMATIC ROOF PLAN**

SCALE 1"=20'-0"



U-MASS MEDICAL LIBRARY RENOVATIONS

UNIVERSITY OF MASSACHUSETTS WORCESTER CAMPUS

DATE: 1-17-2000

SCALE: 1"=20'-0"

JOB NO: 99101

CHK BY: D.W.

DRAWN BY: E.W.

UMMS Medical Library Study  
Appendix

DCAM Project No. UW991ST1  
9912.000

Souza True and Partners Inc. – Existing Conditions Letter



653 Mount Auburn Street  
Watertown, Massachusetts 02472

Telephone 617-926-6100 Telefax 617-924-4431 email: souzatrue@souzatrue.com

**SOUZA, TRUE**  
AND PARTNERS, INC.  
STRUCTURAL ENGINEERS

November 15, 1999

**Hoskins Scott & Partners, Inc.**  
313 Congress Street  
Boston, Massachusetts 02210

**Attention:** Mr. Robert Hicks

**Reference:** Library Study  
University of Massachusetts Medical School  
Worcester, Massachusetts

**Dear Mr. Hicks:**

As requested, we have conducted a structural study to determine the feasibility of introducing compact shelving to contain the book collection within the library building. This study was based on information gathered during the "walk-through" of the existing facility coupled with limited structural drawings (S16, S17, S18, S19, S20, S21, S50, S51) depicting the existing framing and foundations. From the information gathered, we have performed structural analyses on representative elements to determine their load carrying capabilities. Strategies to reinforce the structure were then considered.

**Analysis of Existing Elements:**

Based on our analysis of the framing at the current stack levels, the existing safe live load capacity of these levels is 160 psf. In addition, the existing footings can safely support stack loads of up to 155 psf without exceeding their flexural capacity nor 3 tons per square foot bearing capacity.

The existing structure has a relatively high mass and thus large seismic forces under current building Code requirements. Resistance to lateral forces is evidently provided by reinforced concrete walls around stairwells and other shafts. These walls do not provide adequate resistance to current Code seismic forces, particularly in east-west direction. If no use changes or significant structural changes are to be made, the Code would not require a seismic upgrade. However, if additional floor area is to be added, the mass of the building (including stack loads) is increased or the existing walls are altered, the building Code would require a seismic upgrade.

JDH	
JJS	

Hoskins Scott & Partners

NOV 16 1999

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TERRY A. LOUDERB...  
DAVID T. G...  
PRAVIN V. SH...  
JOLANDA KENYERES-PAVLI...  
JEROME A. YURKO...

CUMMIS	
9912	
NOV	X
JJS	X
J.IV	X
BAC	X
HANS	
LIB	
SAR	
STP	
UMMS	
DCAM	
DCG 99116.01	
FILE 020	

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**Structural Upgrade of Existing Structural Elements:**

In order to introduce compact shelving with a loading of 300 psf to the existing stack spaces, the floor joists, beams and columns would require reinforcement.

**Joists:**

The limiting factor governing the strength of the floor joists is flexure (or bending). The shear strength is adequate for a live load of 300 psf which is satisfactory for compact shelving. In order to increase the bending capacity of the joists, reinforcement should be added.

In regions of positive bending, i.e. between grid lines F and J, Carbon Fiber Reinforced Polymer (CFRP) strips could be adhered to the bottom of each joist over a length of approximately 20 feet along the span. In addition, CFRP strips would be required at the top surface of the stack floors directly over and parallel with ribs at cantilevers, i.e. of the F line. The strips would extend out into the cantilevered slab a dimension equal to at least 2/3 of the cantilever length. In addition, the strips would extend into the positive span a dimension also at least 2/3 of the cantilever length. 2 - 2" wide x 0.047 inch thick strips would be adhered to the bottom of each joist and 1 - 2" wide x 0.047 inch strip would be adhered to the floor over each cantilevered joist.

**Beams:**

Both shear and flexure govern the design for beams. In order to achieve a live load capacity of 300 psf for beams, it would be necessary to add structural steel shapes to the sides and/or bottoms of the beams. Alternatively, columns (and new footings) could be introduced to reduce the span of the beams. It should be noted that while CFRP strips could be added to enhance the flexural strength of the beams, they would not be effective as shear reinforcement.

The added steel shapes could take the form of pairs of channels bolted to the sides of dropped beams and shallow wide flange shapes positioned under flat beams with soffits in the plane of the bottoms of the joists. These added steel elements would have to span the full length of beams and, in turn, be bolted into the columns.

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### Columns:

The columns do not have adequate capacity for compact shelving of 300 psf live load unless new columns (and footings) are introduced. Thus, it would be necessary to increase the capacities of columns by jacketing in concrete (at least 4 inches thick all-around) or adding structural steel. Structural steel might take the form of angle shapes at each corner laced together with plates. These angles would be integrated with the beam reinforcement.

### Fire Resistance:

Steel elements as well as CFRP strips would require fireproofing consistent with the rating of the structure. This might be achieved by gypsum wall board, cementitious spray or special fire resistance (intumescent) paint.

### Foundations:

We find that the footings were apparently designed for a soil pressure of 3 tons per square foot. Allowing for the dead loads of the structure, the footings can sustain floor loads of just over 150 psf. Thus, while they are adequately designed for the existing design loads (stacks @ 150 psf), they will not accept compact shelving at 300 psf. Footings could be made to adequately support new loads by a) increasing their bearing area by increasing their lengths and widths by 2'-6" or b) by introducing new columns and new footings. Increasing the sizes of the existing footings would involve excavating, doweling in new reinforcement and adding perimeter concrete with a thickness to match the existing thickness.

### Improvement of Resistance to Seismic Forces:

Since the introduction of compact shelving would significantly increase the weight in the building, seismic design forces would increase. As designed in 1970, the structure does not have adequate capacity to resist current Code seismic forces even before adding compact shelving. It would therefore become necessary to reinforce the structure to enhance its capacity to resist seismic forces. It should be noted that the library building has expansion joints where it abuts surrounding buildings and thus it would only be necessary to reinforce the library building itself. According to the drawings, the north-south running and south expansion joints are 2 inches and 1 inch wide, respectively. This means that any new lateral resisting elements must be very stiff to limit movements to the dimensions of these joints. This would preclude the use of moment resisting frames which are quite flexible and mandate the use of braced frames (vertical truss elements) or shear walls to provide the necessary resistance. New braced frames and/or shear walls might be used in conjunction with the existing reinforced concrete shear walls.

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Unless the current columns are used as part of new shear walls or braced frames, it would be necessary to introduce new footings. Steel braced frames would require fireproofing while reinforced concrete or CMU shear walls would not.

#### Infill Floors:

The introduction of infill floors between the M and K lines at the stack mezzanine levels is a possibility to achieve new space for compact shelving. New framing and columns would be designed to accommodate a live load of 300 psf. However, existing columns and footings would require reinforcement as previously described, unless the infill structure would be designed with its own separate columns and footings.

Since new mass would be added, the structure would require seismic reinforcement as previously described. If the new infill structure could be structurally separated from the existing structure by adequate movement gaps, it would only be necessary to seismically brace the new infill structure provided no other modifications would be made to the remaining existing structure.

#### Costs:

Without developing a design, costs for structural reinforcement cannot be accurately estimated. However, we can provide some guidance regarding costs.

For a recent project, the cost of materials and installation for CFRP strips was approximately \$100/ft. For the previously described reinforcement of the joists, the cost of the CFRP reinforcement would be about \$60 per square foot. Reinforcement of beams and columns would add approximately \$15 per square foot. Augmentation of footings would be very labor intensive and would probably add at least \$10 per square foot to the cost. Finally, the cost of seismic bracing could be on the order of \$10 per square foot of the entire structure.

Thus a rough cost of the structural work is as follows:

10,000 square of reinforced stack area:

joists	10,000 ft <sup>2</sup> x \$60/ft <sup>2</sup>	=	\$ 600,000.00
beams and columns	10,000 ft <sup>2</sup> x \$15/ft <sup>2</sup>	=	\$ 150,000.00
footings	10,000 ft <sup>2</sup> x \$10/ft <sup>2</sup>	=	<u>\$ 100,000.00</u>
			\$ 850,000.00

seismic upgrade of building 42,000 ft<sup>2</sup> x \$10/ft<sup>2</sup> = \$ 420,000.00  
**\$1,270,000.00**

or \$127 per square foot of compact shelving area

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By comparison, a new infill structure separated from the existing structure would have a cost of approximately \$35 to \$40 per square foot of new structure, including seismic bracing for the new work. If the entire building were to be also braced, the cost of seismic bracing would again be about \$420,000.00. This assumes the existing footings are readily accessible.

**Conclusions:**

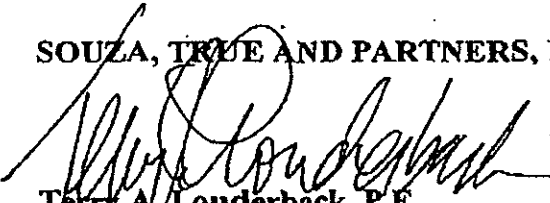
The existing structure cannot sustain loads imposed by compact shelving (@ 300 psf) without significant and invasive structural reinforcement both for gravity loads and seismic forces. An infill structure would require new foundations in an area with limited access and would also require seismic bracing. The costs of either option would be high for the structural work.

In view of these difficulties, consideration should be given to a new and independent structure north of the existing library. A new structure could be designed to readily accommodate a 300 psf live load by choosing appropriate spans and members. Foundations and seismic bracing could be more easily incorporated into the structure. The cost of structural work for a new building might be on the order of \$30.00 per square foot including framing, seismic bracing and foundations.

I trust that this report will be useful in your evaluation. If any questions remain, please let me know.

Very truly yours,

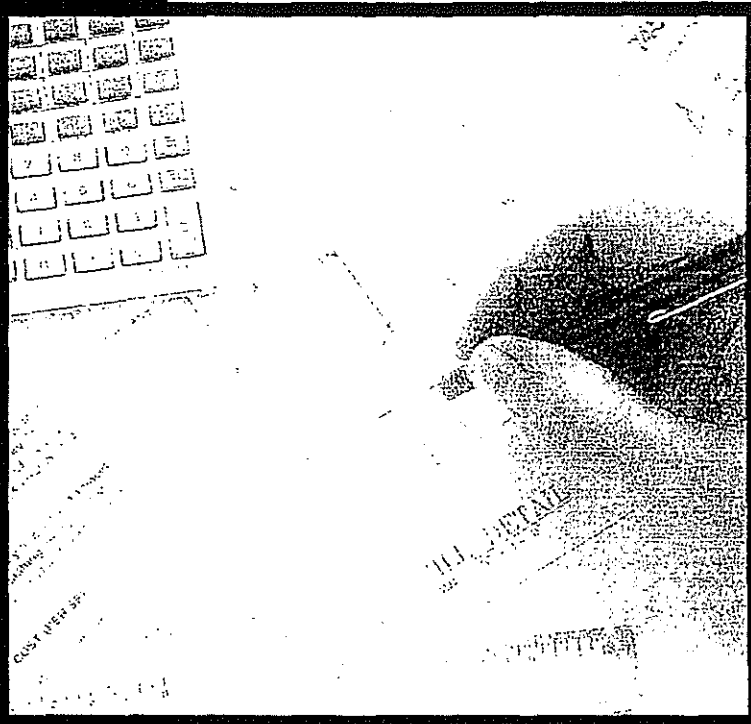
SOUZA, TRUE AND PARTNERS, INC.



Terry A. Louderback, P.E.  
President  
TAL/mfp

University of Massachusetts Medical School  
Medical Library Study  
Worcester, MA

Conceptual Design Cost Estimate



April 4, 2000

  
**HANSCOMB**  
2067 Massachusetts Avenue  
Cambridge, MA 02140

# INTRODUCTION

University of Massachusetts Medical School – Medical Library Study  
Worcester, MA  
April 4, 2000

## **INTRODUCTION**

This Conceptual Design Cost Estimate was produced from drawings received from Hoskins Scott & Partners, Inc. dated March 7, 2000. Any design and engineering changes and/or additions produced subsequent to these documents are not included.

This estimate is based upon the measurement of quantities where possible. For the remainder, parametric measurements were used in conjunction with references from similar projects recently estimated by Hanscomb Inc.

## **BASIS FOR PRICING**

Pricing shown reflects probable construction costs (prevailing wage rate) obtainable in the Worcester, MA area on the date of this statement of probable costs. This estimate is a determination of fair market value for the construction of this project. It is not a prediction of low bid. Pricing assumes competitive bidding for every portion of the construction work for all subcontractors, as well as general contractor; that is to mean 4 to 5 bids. If fewer bids are received, bid results can be expected to be higher.

## **MARKUPS**

Subcontractor's markups have been included in each line item unit price. These markups cover the cost of field overhead, home office overhead and profit. These markups can range from 5% to 15% of the cost for that particular item of work.

General Contractors overheads and profit has been added to the Summary sheet. It represents a compounded rate to cover job site conditions, home office overheads, profit and bond.

Escalation has been included for 1 year.

## **ITEMS EXCLUDED FROM THIS ESTIMATE**

Items that are not in this estimate include, but are not limited to:

- Land acquisition and real estate fees.
- Professional fees.
- Owner furnished items.
- Telephone equipment and cabling.
- Items marked on plans as N.I.C.
- Utility company back charges.
- Construction Contingency.

**University of Massachusetts Medical School – Medical Library Study**  
**Worcester, MA**  
April 4, 2000

### **ITEMS AFFECTING THE COST ESTIMATE**

Items which may change the estimated construction cost include, but are not limited to:

- Modifications to the scope of work included in this estimate.
- Unforeseen subsurface conditions.
- Special phasing requirements except as noted.
- Restrictive technical specifications, excessive contract or non-competitive bid conditions.
- Sole source specifications of materials or products.
- Bids delayed beyond the projected schedule.

### **STATEMENT OF PROBABLE COST**

Hanscomb Inc. has no control over the cost of labor and materials, the general contractor's or any subcontractor's method of determining prices, or competitive bidding and market conditions. This opinion of probable cost of construction is made on the basis of the experience, qualifications, and best judgment of the professional consultant familiar with the construction industry. Hanscomb cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from this or subsequent cost estimates.

Hanscomb's staff of professional cost consultants has prepared this estimate in accordance with generally accepted principles and practices. This staff is available to discuss its contents with any interested party.

# COMPARISON

CONCEPT DESIGN COST ESTIMATE

<b>COST COMPARISON</b>			
<b>TRADE DESCRIPTION</b>	<b>SCHEME 2</b>	<b>SCHEME 4</b>	
A10 FOUNDATIONS	\$226,817	\$343,138	
A20 BASEMENT CONSTRUCTION	\$282,089	\$495,878	
B10 SUPERSTRUCTURE	\$637,209	\$639,482	
B20 EXTERIOR CLOSURE	\$1,745,612	\$1,739,727	
B30 ROOFING	\$403,560	\$267,448	
C10 INTERIOR CONSTRUCTION	\$1,133,054	\$1,155,729	
C20 STAIRCASES	\$165,672	\$166,172	
C30 INTERIOR FINISHES	\$660,428	\$662,137	
D10 CONVEYING SYSTEMS	\$55,450	\$65,550	
D20 PLUMBING	\$66,000	\$54,000	
D30 HVAC	\$1,934,034	\$1,941,648	
D40 FIRE PROTECTION	\$220,718	\$221,453	
D50 ELECTRICAL	\$1,163,163	\$1,167,530	
E10 EQUIPMENT	\$0	\$0	
E20 FURNISHINGS	\$1,629,930	\$1,601,130	
F10 SPECIAL CONSTRUCTION	\$0	\$0	
F20 SELECTIVE BUILDING DEMOLITION	\$301,697	\$301,697	
G SITE PREP/DEVELOPMENT	\$478,067	\$264,143	
<b>TOTAL DIRECT COST (Trade Costs)</b>	<b>\$11,103,500</b>	<b>\$11,086,862</b>	
<b>MARK UP</b>			
General Conditions/Permit/Insurance	\$1,247,106	\$1,185,411	
Overhead/Fee/Profit	\$617,530	\$613,614	
<b>SUBTOTAL CONSTRUCTION</b>	<b>\$12,968,136</b>	<b>\$12,885,887</b>	
<b>CONTINGENCIES/ESCALATION</b>			
Design & Pricing Contingency	\$1,945,220	\$1,932,883	
Escalation	\$521,968	\$518,657	
Construction Contingency		Excl.	Excl.
<b>TOTAL CONSTRUCTION COST</b>	<b>\$15,435,324</b>	<b>\$15,337,427</b>	
	GSF	74,287	74,581
	\$/sf	\$207.78	\$205.85

# SCHEME 2- MAIN SYMMARY

ACCEPT DESIGN COST ESTIMATE

GFA 74,287

<b>COST SUMMARY</b>			
TRADE DESCRIPTION	ADDITION	RENOVATION	TOTAL
A10 FOUNDATIONS	\$216,817	\$10,000	\$226,817
A20 BASEMENT CONSTRUCTION	\$282,089	\$0	\$282,089
B10 SUPERSTRUCTURE	\$607,209	\$30,000	\$637,209
B20 EXTERIOR CLOSURE	\$1,516,247	\$229,365	\$1,745,612
B30 ROOFING	\$152,612	\$250,948	\$403,560
C10 INTERIOR CONSTRUCTION	\$192,251	\$940,803	\$1,133,054
C20 STAIRCASES	\$128,172	\$37,500	\$165,672
C30 INTERIOR FINISHES	\$272,861	\$387,567	\$660,428
D10 CONVEYING SYSTEMS	\$55,450	\$0	\$55,450
D20 PLUMBING	\$36,000	\$30,000	\$66,000
D30 HVAC	\$673,400	\$1,260,634	\$1,934,034
D40 FIRE PROTECTION	\$100,000	\$120,718	\$220,718
D50 ELECTRICAL	\$446,100	\$717,063	\$1,163,163
E10 EQUIPMENT	\$0	\$0	\$0
E20 FURNISHINGS	\$1,365,850	\$264,080	\$1,629,930
F10 SPECIAL CONSTRUCTION	\$0	\$0	\$0
F20 SELECTIVE BUILDING DEMOLITION	\$0	\$301,697	\$301,697
G SITE PREP/DEVELOPMENT	\$478,067	\$0	\$478,067
<b>TOTAL DIRECT COST (Trade Costs)</b>	<b>\$6,523,125</b>	<b>\$4,580,375</b>	<b>\$11,103,500</b>
<b>MARK UP</b>			
General Conditions/Permit/Insurance	\$767,678	\$479,428	\$1,247,106
Overhead/Fee/Profit	\$364,540	\$252,990	\$617,530
<b>SUBTOTAL CONSTRUCTION</b>	<b>\$7,655,343</b>	<b>\$5,312,793</b>	<b>\$12,968,136</b>
<b>CONTINGENCIES/ESCALATION</b>			
Design & Pricing Contingency	\$1,148,301	\$796,919	\$1,945,220
Escalation	\$308,128	\$213,840	\$521,968
Construction Contingency	Excl.	Excl.	Excl.
<b>TOTAL CONSTRUCTION COST</b>	<b>\$9,111,772</b>	<b>\$6,823,552</b>	<b>\$15,435,324</b>
	GSF 26,000	48,287	74,287
	\$/sf \$350.45	\$130.96	\$207.78

# SCHEME 2- ADDITION

		<b>COST SUMMARY</b>				
<b>TRADE DESCRIPTION</b>		<b>SUB-TOTAL</b>	<b>TOTAL</b>	<b>\$/SF</b>	<b>%</b>	
<b><u>SCHEME 2 - ADDITION</u></b>						
<b>A10</b>	<b>FOUNDATIONS</b>					
A1010	Standard Foundations	\$110,951				
A1020	Special Foundations	\$0				
A1030	Lowest Floor Construction	\$105,866	<b>\$216,817</b>	\$8.34	3.3%	
<b>A20</b>	<b>BASEMENT CONSTRUCTION</b>					
A2010	Basement Excavation	\$210,592				
A2020	Basement Walls	\$71,497	<b>\$282,089</b>	\$10.85	4.3%	
<b>B10</b>	<b>SUPERSTRUCTURE</b>					
B1010	Upper Floor Construction	\$251,057				
B1020	Roof Construction	\$356,152	<b>\$607,209</b>	\$23.35	9.3%	
<b>B20</b>	<b>EXTERIOR CLOSURE</b>					
B2010	Exterior Walls	\$509,578				
B2020	Windows	\$987,459				
B2030	Exterior Doors	\$19,210	<b>\$1,516,247</b>	\$58.32	23.2%	
<b>B30</b>	<b>ROOFING</b>					
B3010	Roof Coverings	\$150,112				
B3020	Roof Openings	\$2,500	<b>\$152,612</b>	\$5.87	2.3%	
<b>C10</b>	<b>INTERIOR CONSTRUCTION</b>					
C1010	Partitions	\$153,979				
C1020	Interior Doors	\$21,906				
C1030	Specialties/Millwork	\$16,366	<b>\$192,251</b>	\$7.39	2.9%	
<b>C20</b>	<b>STAIRCASES</b>					
C2010	Stair Construction	\$98,095				
C2020	Stair Finishes	\$30,077	<b>\$128,172</b>	\$4.93	2.0%	
<b>C30</b>	<b>INTERIOR FINISHES</b>					
C3010	Wall Finishes	\$78,085				
C3020	Floor Finishes	\$105,288				
C3030	Ceiling Finishes	\$89,488	<b>\$272,861</b>	\$10.49	4.2%	
<b>D10</b>	<b>CONVEYING SYSTEMS</b>					
D1010	Elevator	\$55,450	<b>\$55,450</b>	\$2.13	0.9%	
<b>D20</b>	<b>PLUMBING</b>					
D20	Plumbing	\$36,000	<b>\$36,000</b>	\$1.38	0.6%	
<b>D30</b>	<b>HVAC</b>					
D30	HVAC	\$673,400	<b>\$673,400</b>	\$25.90	10.3%	
<b>D40</b>	<b>FIRE PROTECTION</b>					
D40	Fire Protection	\$100,000	<b>\$100,000</b>	\$3.85	1.5%	

<b>COST SUMMARY</b>					
TRADE DESCRIPTION	SUB-TOTAL	TOTAL	\$/SF	%	
<b>SCHEME 2 - ADDITION</b>					
<b>D50 ELECTRICAL</b>					
D5010 Service & Distribution	\$109,200				
D5020 Lighting & Power	\$154,700				
D5030 Communication & Security Systems	\$106,600				
D5040 Other Electrical Systems	\$75,600	<b>\$446,100</b>	\$17.16	6.8%	
<b>E10 EQUIPMENT</b>					
E10 Equipment	\$0	<b>\$0</b>	\$0.00	0.0%	
<b>E20 FURNISHINGS</b>					
E20 Furnishings	\$1,365,850	<b>\$1,365,850</b>	\$52.53	20.9%	
<b>F10 SPECIAL CONSTRUCTION</b>					
F10 Special Construction	\$0	<b>\$0</b>	\$0.00	0.0%	
<b>F20 SELECTIVE BUILDING DEMOLITION</b>					
F20 Selective Demolition	\$0	<b>\$0</b>	\$0.00	0.0%	
<b>G SITE PREP/DEVELOPMENT</b>					
G10 Site Preparation/Demolition	\$32,264				
G20 Site Improvements	\$350,803				
G30 Civil / Mechanical Utilities	\$30,000				
G40 Electrical Utilities	\$65,000	<b>\$478,067</b>	\$18.39	7.3%	
<b>TOTAL DIRECT COST (Trade Costs)</b>		<b>\$6,523,125</b>	<b>\$250.89</b>	<b>100.0%</b>	
<b>MARK UP</b>					
General Conditions/Permit/Insurance	\$767,678				
Overhead/Fee/Profit	\$364,540	<b>\$1,132,218</b>	\$43.55	17.4%	
<b>SUBTOTAL CONSTRUCTION</b>		<b>\$7,655,343</b>	<b>\$294.44</b>	<b>117.4%</b>	
<b>CONTINGENCIES/ESCALATION</b>					
Design & Pricing Contingency	\$1,148,301				
Escalation	\$308,128				
Construction Contingency	Excl.	<b>\$1,456,429</b>	\$56.02	22.3%	
<b>TOTAL CONSTRUCTION COST</b>		<b>\$9,111,772</b>	<b>\$350.45</b>		

CONCEPT DESIGN COST ESTIMATE

GFA

26,000

DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>SCHEME 2 - ADDITION</b>						
<b>A10 FOUNDATIONS</b>						
<b>A1010 STANDARD FOUNDATIONS</b>						
<u>Strip footings to exterior walls - 3' x 1'-0"</u>						
Excavation	121	cy	6.00	726		
Remove off site	121	cy	15.00	1,815		
Backfill with gravel	107	cy	18.00	1,926		
Formwork	234	sf	6.50	1,521		
Re-bar - 60# cy	840	lbs	0.75	630		
Concrete material	14	cy	70.00	980		
Place from truck & vibrate	14	cy	20.00	280		
<u>Strip footings to staircase walls - 3' x 1'-0"</u>						
Excavation	186	cy	6.00	1,116		
Remove off site	186	cy	15.00	2,790		
Backfill with gravel	165	cy	18.00	2,970		
Formwork	358	sf	6.50	2,327		
Re-bar - 60# cy	1,260	lbs	0.75	945		
Concrete material	21	cy	70.00	1,470		
Place from truck & vibrate	21	cy	20.00	420		
<u>Strip footings to exterior walls between basement and areaway - 3' x 1'-0"</u>						
Excavation	58	cy	6.00	348		
Remove off site	58	cy	15.00	870		
Backfill with gravel	51	cy	18.00	918		
Formwork	112	sf	6.50	728		
Re-bar - 60# cy	420	lbs	0.75	315		
Concrete material	7	cy	70.00	490		
Place from truck & vibrate	7	cy	20.00	140		
<u>Strip footings to basement walls, - 3' x 1'-0"</u>						
Excavation	70	cy	6.00	420		
Remove off site	70	cy	15.00	1,050		
Backfill with gravel	48	cy	18.00	864		
Formwork	380	sf	6.50	2,470		
Re-bar - 60# cy	1,320	lbs	0.75	990		
Concrete material	22	cy	70.00	1,540		
Place from truck & vibrate	22	cy	20.00	440		
<u>Foundation walls at exterior - 16" thick</u>						
Formwork	936	sf	6.50	6,084		
Re-bar - 4 lbs/sf	1,872	lbs	0.75	1,404		
Concrete material	24	cy	70.00	1,680		
Place from truck & vibrate	24	cy	20.00	480		
Waterproofing foundation wall and footing	702	sf	1.00	702		
Insulation to foundation walls	468	sf	1.00	468		
<u>Foundation walls between basement and areaway - 16" thick</u>						
Formwork	448	sf	6.50	2,912		
Re-bar - 4 lbs/sf	896	lbs	0.75	672		
Concrete material	12	cy	70.00	840		
Place from truck & vibrate	12	cy	20.00	240		
Waterproofing foundation wall and footing	336	sf	1.00	336		
Insulation to foundation walls	224	sf	1.00	224		
<u>Exterior column footings, 8' x 8' x 1'-6"</u>						
Excavation	192	cy	6.00	1,152		
Remove off site	192	cy	15.00	2,880		
Backfill with gravel	158	cy	18.00	2,844		
Formwork	432	sf	6.50	2,808		
Re-bar - 80# cy	2,720	lbs	0.75	2,040		

CONCEPT DESIGN COST ESTIMATE

GFA

26,000

	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	<b><u>SCHEME 2 - ADDITION</u></b>						
56	Concrete material	34	cy	70.00	2,380		
57	Place from truck	34	cy	22.00	748		
58	Set anchor bolts grout plates	9	ea	35.00	315		
59	<u>Interior column footings, 8' x 8' x 1'-6"</u>						
60	Excavation	245	cy	6.00	1,470		
61	Remove off site	245	cy	15.00	3,675		
62	Backfill with gravel	155	cy	18.00	2,790		
63	Formwork	1,152	sf	6.50	7,488		
64	Re-bar - 80# cy	7,200	lbs	0.75	5,400		
65	Concrete material	90	cy	70.00	6,300		
66	Place from truck	90	cy	22.00	1,980		
67	Set anchor bolts grout plates	24	ea	35.00	840		
68	<u>Miscellaneous</u>						
69	Allow for piers/pilasters	33	ea	100.00	3,300		
70	Local de-watering during excavation	1	ls	15,000.00	15,000		
71	SUBTOTAL					\$110,951	
72							
73	<b>A1020 SPECIAL FOUNDATIONS</b>						
74	No items in this section						
75	SUBTOTAL					\$0	
76							
77	<b>A1030 LOWEST FLOOR CONSTRUCTION</b>						
	<u>Slab on Grade, 6" thick - Main library floor</u>						
80	Gravel fill, 8"	412	cy	18.00	7,416		
81	Vapor barrier	16,590	sf	0.08	1,327		
82	Bar reinforcement (3 lbs/sf)	49,770	lbs	0.75	37,328		
83	Concrete - 6" thick	271	cy	70.00	18,970		
84	Place & finish	16,590	sf	1.00	16,590		
85	Control joints - saw cut	16,590	sf	0.35	5,807		
86	Isolation joints at columns	33	lf	2.50	83		
87	Perimeter joints	307	lf	1.50	461		
88	<u>Slab on Grade, 5" thick at bottom of staircases</u>						
89	Gravel fill, 8"	4	cy	18.00	72		
90	Vapor barrier	150	sf	0.08	12		
91	Mesh reinforcing 15% lap	173	sf	0.50	87		
92	Concrete - 5" thick	2	cy	70.00	140		
93	Place & finish	150	sf	1.00	150		
94	Control joints - saw cut	150	sf	0.35	53		
95	Perimeter joints	75	lf	1.50	113		
96	<u>Slab on Grade, 5" thick at areaway</u>						
97	Gravel fill, 8"	9	cy	18.00	162		
98	Vapor barrier	351	sf	0.08	28		
99	Mesh reinforcing 15% lap	404	sf	0.50	202		
100	Concrete - 5" thick	6	cy	70.00	420		
101	Place & finish	351	sf	1.00	351		
102	Control joints - saw cut	351	sf	0.35	123		
103	Perimeter joints	129	lf	1.50	194		
104	<u>Miscellaneous</u>						
105	Allow for equipment pads	1	ls	5,000.00	5,000		
106	Rigid insulation 4' wide at perimeter of slab	468	sf	1.00	468		
107	<u>Elevator Pits</u>						
108	Excavation for elevator pit	84	cy	6.00	504		
109	Remove off site	84	cy	15.00	1,260		
110	Backfill with gravel	4	cy	18.00	72		
111	Elevator pit walls 8" formwork	480	sf	6.50	3,120		

CONCEPT DESIGN COST ESTIMATE

GFA

26,000

	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	<b>SCHEME 2 - ADDITION</b>						
112	reinforcement	720	lbs	0.75	540		
113	concrete material	6	cy	70.00	420		
114	placing concrete in walls	6	cy	25.00	150		
115	Slab, 18" thick						
116	formwork	60	sf	6.50	390		
117	reinforcement	750	lbs	0.75	563		
118	concrete material in slab	6	cy	70.00	420		
119	placing concrete in slab	6	cy	25.00	150		
120	Cementitious waterproofing to elevator pit	340	sf	8.00	2,720		
121	SUBTOTAL					\$105,866	
122							
123	<b>TOTAL - FOUNDATIONS</b>						\$216,817
124							
125							
126	<b>A20 BASEMENT CONSTRUCTION</b>						
127							
128	<b>A2010 BASEMENT EXCAVATION</b>						
129	Excavate for basement	8,602	cy	6.00	51,612		
130	Excavate working space to basement wall	690	cy	6.00	4,140		
131	Remove excavated material from site	9,292	cy	15.00	139,380		
132	Backfill around basement walls with gravel	690	cy	18.00	12,420		
133	Foundation drainage	190	lf	16.00	3,040		
134	SUBTOTAL					\$210,592	
135							
136	<b>A2020 BASEMENT WALLS</b>						
137	Formwork to basement wall	5,320	sf	7.00	37,240		
138	Reinforcement in basement walls (5 lbs/sf)	13,300	lbs	0.75	9,975		
139	Concrete material in basement walls	138	cy	70.00	9,660		
140	Placing concrete in basement walls	138	cy	25.00	3,450		
141	Waterproofing and protection mat to basement walls	2,660	sf	3.00	7,980		
142	Rigid insulation to basement walls	2,660	sf	1.20	3,192		
143	SUBTOTAL					\$71,497	
144							
145	<b>TOTAL - BASEMENT CONSTRUCTION</b>						\$282,089
146							
147							
148	<b>B10 SUPERSTRUCTURE</b>						
149							
150	<b>B1010 UPPER FLOOR CONSTRUCTION</b>						
151	<u>Floor Structure - Steel:</u>						
152	Steel beams and columns in floor framing - w sections (assumed 9 lbs/sf)	42	tns	2,100.00	88,200		
153	Precast concrete plank floor construction	9,410	sf	12.00	112,920		
154	Mesh reinforcement in concrete topping	10,822	sf	0.50	5,411		
155	Concrete topping to precast, 3" thick	91	cy	75.00	6,825		
156	Placing concrete topping	9,410	sf	1.20	11,292		
157	Control and construction joints	9,410	sf	0.35	3,294		
158	Fire proofing floor construction, beams only	9,410	sf	1.50	14,115		
159	Fire stopping floors	1	firs	1,500.00	1,500		
160	Expansion joint at junction with existing construction	150	lf	50.00	7,500		
161	SUBTOTAL					\$251,057	
162							
163	<b>B1020 ROOF CONSTRUCTION</b>						
164	<u>Structural Steel Roof</u>						
165	Structural steel framing to sloped roof - trusses	32	tns	5,000.00	160,000		

CONCEPT DESIGN COST ESTIMATE

GFA

26,000

	DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
	<b>SCHEME 2 - ADDITION</b>						
166	Steel beams and columns in flat roof framing at terrace - w sections (assumed 9 lbs/sf)	41	tns	2,100.00	86,100		
167	Precast concrete plank terrace construction	8,152	sf	12.00	97,824		
168	Fire proofing roof construction (beams only)	8,152	sf	1.50	12,228		
169	SUBTOTAL					\$356,152	
170							
171	<b>TOTAL - SUPERSTRUCTURE</b>						<b>\$607,209</b>
172							
173							
174	<b>B20 EXTERIOR CLOSURE</b>						
175							
176	<b>B2010 EXTERIOR WALLS</b>						
177	<u>Interior skin</u>						
178	Metal stud backup to exterior wall, 6" thick	7,350	sf	4.00	29,400		
179	Batt insulation	7,350	sf	1.00	7,350		
180	Vapor barrier	7,350	sf	0.10	735		
181	Denshield or similar to exterior face of stud backup	7,350	sf	2.00	14,700		
182	Drywall lining to interior face of stud backup	7,350	sf	1.50	11,025		
183	<u>Interior skin, sloped</u>						
184	Metal stud backup to exterior wall, 6" thick	2,130	sf	6.00	12,780		
185	Batt insulation	2,130	sf	1.50	3,195		
186	Vapor barrier	2,130	sf	0.10	213		
187	Denshield or similar to exterior face of stud backup	2,130	sf	2.00	4,260		
188	<u>Exterior skin</u>						
189	Metal panel to exterior walls, alucobond or similar	7,350	sf	40.00	294,000		
190	Metal panel to exterior walls, alucobond or similar, slope	2,130	sf	40.00	85,200		
191	Miscellaneous angles, etc.	1	ls	10,000.00	10,000		
192	<u>Miscellaneous</u>						
193	Scaffolding to exterior wall	9,480	sf	1.50	14,220		
194	Flashings	1	ls	15,000.00	15,000		
195	Sealants	1	ls	7,500.00	7,500		
196	SUBTOTAL					\$509,578	
197							
198	<b>B2020 WINDOWS</b>						
199	Curtainwall	3,169	sf	75.00	237,675		
200	Curtainwall sloped	9,044	sf	80.00	723,520		
201	Louvers (allowance)	250	sf	38.00	9,500		
202	Backer rod & double sealant	5,882	lf	2.00	11,764		
203	Wood blocking at openings	1	ls	5,000.00	5,000		
204	SUBTOTAL					\$987,459	
205							
206	<b>B2030 EXTERIOR DOORS</b>						
207	Egress doors, single leaf, hollow metal	1	ea	1,600.00	1,600		
208	Service doors, single leaf, hollow metal	1	ea	1,600.00	1,600		
209	Entry doors, glazed, double leaf	1	pr	4,500.00	4,500		
210	Entry doors, glazed, single leaf	4	ea	2,750.00	11,000		
211	Backer rod & double sealant	102	lf	2.00	204		
212	Wood blocking at openings	102	lf	3.00	306		
213	SUBTOTAL					\$19,210	
214							
215	<b>TOTAL - EXTERIOR CLOSURE</b>						<b>\$1,516,247</b>
216							
217							
218							
219	<b>B30 ROOFING</b>						
220	<b>B3010 ROOF COVERINGS</b>						

CONCEPT DESIGN COST ESTIMATE

GFA

26,000

	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	<b>SCHEME 2 - ADDITION</b>						
221	<u>Sloped Roofing</u>						
222	Glass roof included in Section B2020						
223	<u>Flat roofing at terrace</u>						
224	Waterproofing system with protection mat and drainage	8,152	sf	6.00	48,912		
225	Insulation	8,152	sf	2.00	16,304		
226	Abutment of flat roof with adjacent walls	300	lf	4.00	1,200		
227	Allowance for working membrane roofing around pipe and duct penetrations	1	ls	2,500.00	2,500		
228	Rough blocking	660	lf	3.00	1,980		
229	Precast concrete pavers to terrace roof	8,152	sf	8.00	65,216		
230	<u>Miscellaneous Roofing</u>						
231	Gutters/downspouts at sloped roofing	150	lf	10.00	1,500		
232	Metal trim to roof	300	lf	25.00	7,500		
233	Flashings	1	ls	5,000.00	5,000		
234	SUBTOTAL					\$150,112	
235							
236	<b>B3020 ROOF OPENINGS</b>						
237	Allow for roof hatch/ elevator vents	1	ls	2,500.00	2,500		
238	SUBTOTAL					\$2,500	
239							
240	<b>TOTAL - ROOFING</b>						\$152,612
241							
242							
243							
244							
245	<b>C10 INTERIOR CONSTRUCTION</b>						
246	<b>C1010 PARTITIONS</b>						
247	Shaft wall around staircases and elevators	864	sf	8.00	6,912		
248	Interior partitions, 3 5/8" stud, two layers gwb, batt insul	3,274	sf	5.95	19,480		
249	Interior partitions, 3 5/8" stud, two layers gwb, batt insulation, fire rated	1,888	sf	5.95	11,234		
250	Low partition at area open to below	512	sf	5.95	3,046		
251	Chase wall partitions	688	sf	7.90	5,435		
252	Metal stud furring to interior face of exterior wall	2,660	sf	3.20	8,512		
253	Single side metal stud partition at sloped exterior surface and at existing exterior wall	3,628	sf	3.50	12,698		
254	Allow for glazed partitions (8' high - hollow metal) - allow	99	lf	320.00	31,680		
255	GWB column covers	33	ea	500.00	16,500		
256	GFRC column covers	8	ea	1,800.00	14,400		
257	Sealants & caulking at partitions	26,000	sf	0.35	9,100		
258	Rough blocking	4,291	lf	2.00	8,582		
259	Wood trim and rail to top of low partition	128	lf	50.00	6,400		
260	SUBTOTAL					\$153,979	
261	<b>C1020 INTERIOR DOORS</b>						
262	Doors, frames & hardware, single leaf	8	ea	1,050.00	8,400		
263	Doors frames & hardware, single leaf, glazed	7	ea	1,150.00	8,050		
264	Doors, frames & hardware, double leaf	1	pr	1,900.00	1,900		
265	Doors frames & hardware, double leaf, glazed	1	pr	2,100.00	2,100		
266	Paint doors and frames	19	ea	50.00	950		
267	Sealants & caulking	17	ea	29.75	506		
268	SUBTOTAL					\$21,906	
269							
270	<b>C1030 SPECIALTIES / MILLWORK</b>						
271	Backer panels in electrical closets	1	ls	1,000.00	1,000		
272	Marker boards & tack boards in Study Rooms	42	lf	48.00	2,016		
273	Work counter at Copy	22	lf	100.00	2,200		

	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	<b>SCHEME 2 - ADDITION</b>						
274	Signage/Directories/Bulletin Boards/Display cases	1	ls	5,000.00	5,000		
275	Fire extinguisher cabinets - allowance	9	ea	350.00	3,150		
276	Toilet Accessories in single bathrooms- allowance	4	rms	750.00	3,000		
277	SUBTOTAL					\$16,366	
278							
279	<b>TOTAL - INTERIOR CONSTRUCTION</b>						<b>\$192,251</b>
280							
281							
282	<b>C20 STAIRCASES</b>						
283							
284	<b>C2010 STAIR CONSTRUCTION</b>						
285	Feature staircase	3	fit	30,000.00	90,000		
286	Egress staircase						
287	gravel fill to make up levels	8	cy	20.00	160		
288	formwork to risers	192	lf	6.00	1,152		
289	reinforcement	1,650	lbs	0.75	1,238		
290	concrete material	9	cy	70.00	630		
291	placing concrete	9	cy	35.00	315		
292	handrails	115	lf	40.00	4,600		
293	foundations included elsewhere						
294	SUBTOTAL					\$98,095	
295							
296	<b>C2020 STAIR FINISHES</b>						
297	Premium finish to feature staircases	600	sf	50.00	30,000		
298	Concrete sealer	192	sf	0.40	77		
299	SUBTOTAL					\$30,077	
300							
301	<b>TOTAL STAIRCASES</b>						<b>\$128,172</b>
302							
303							
304	<b>C30 INTERIOR FINISHES</b>						
305							
306	<b>C3010 WALL FINISHES</b>						
307	Veneer plaster to gwb	27,042	sf	2.00	54,084		
308	Paint to GWB	27,042	sf	0.50	13,521		
309	Ceramic tile to toilets full ht wall	1,048	sf	10.00	10,480		
310	SUBTOTAL					\$78,085	
311							
312	<b>C3020 FLOOR FINISHES</b>						
313	Premium flooring to lobby	327	sf	28.00	9,156		
314	VCT to floors	397	sf	2.50	993		
315	Carpet to floors	2,472	sy	35.00	86,520		
316	Ceramic tiles in bathrooms and the like	260	sf	10.00	2,600		
317	Tile base	131	lf	10.00	1,310		
318	Rubber base	2,254	lf	1.75	3,945		
319	Marble thresholds @ bathrooms	4	ea	55.00	220		
320	Concrete sealer @ Mech/elect rooms	1,209	sf	0.45	544		
321	SUBTOTAL					\$105,288	
322							
323	<b>C3030 CEILING FINISHES</b>						
324	Drywall ceilings (40%)	11,616	sf	3.75	43,560		
325	Vertical drywall soffits	1	ls	7,500.00	7,500		
	ACT ceilings	11,616	sf	2.50	29,040		
	Paint to ceilings	11,616	sf	0.60	6,970		
328	Paint to exposed structure and exposed MEP systems, sprayed	1,209	sf	2.00	2,418		
329	SUBTOTAL					\$89,488	
330							

CONCEPT DESIGN COST ESTIMATE

GFA 26,000

DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>SCHEME 2 - ADDITION</b>						
<b>TOTAL - INTERIOR FINISHES</b>						<b>\$272,861</b>
<b>D10 CONVEYING SYSTEMS</b>						
<b>D1010 ELEVATOR</b>						
Passenger elevator, 2 stop	1	ea	55,000.00	55,000		
Pit ladders	1	ea	250.00	250		
Sill angles	8	lf	25.00	200		
SUBTOTAL					\$55,450	
<b>TOTAL - CONVEYING SYSTEMS</b>						<b>\$55,450</b>
<b>D20 PLUMBING</b>						
<b>D20 PLUMBING, GENERALLY</b>						
Plumbing installation	8	fix	3,000.00	24,000		
Roof drains, complete	6	ea	2,000.00	12,000		
SUBTOTAL					\$36,000	
<b>TOTAL - PLUMBING</b>						<b>\$36,000</b>
<b>D30 HVAC</b>						
<b>D30 HVAC, GENERALLY</b>						
HVAC equipment	26,000	sf	8.50	221,000		
Air distribution	26,000	sf	9.00	234,000		
Piping	26,000	sf	5.00	130,000		
Controls	26,000	sf	3.00	78,000		
Testing and balancing	26,000	sf	0.30	7,800		
Shop drawings, coordination, fees, etc.	26,000	sf	0.10	2,600		
SUBTOTAL					\$673,400	
<b>TOTAL - HVAC</b>						<b>\$673,400</b>
<b>D40 FIRE PROTECTION</b>						
<b>D40 FIRE PROTECTION, GENERALLY</b>						
Allow for fire protection	26,000	sf	2.50	65,000		
Fire pump assembly	1	ls	35,000.00	35,000		
SUBTOTAL					\$100,000	
<b>TOTAL - FIRE PROTECTION</b>						<b>\$100,000</b>
<b>D50 ELECTRICAL</b>						
<b>D5010 SERVICE &amp; DISTRIBUTION</b>						
Service & Distribution	26,000	sf	2.95	76,700		
Equipment Wiring	26,000	sf	1.25	32,500		
SUBTOTAL					\$109,200	

CONCEPT DESIGN COST ESTIMATE

GFA

26,000

DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>SCHEME 2 - ADDITION</b>						
<b>D5020 LIGHTING &amp; POWER</b>						
Allow for lighting	26,000	sf	4.00	104,000		
Allow for branch devices	26,000	sf	0.20	5,200		
Allow for lighting & branch circuitry	26,000	sf	1.75	45,500		
SUBTOTAL					\$154,700	
<b>D5030 COMMUNICATION &amp; SECURITY SYSTEMS</b>						
Fire Alarm System (addressable)	26,000	sf	1.50	39,000		
Telephone/data rough-in	26,000	sf	0.60	15,600		
Telephone/data wiring	26,000	sf	1.50	39,000		
Security installation, rough-in	26,000	sf	0.50	13,000		
SUBTOTAL					\$106,600	
<b>D5040 OTHER ELECTRICAL SYSTEMS</b>						
Lightning protection	26,000	sf	0.35	9,100		
Temporary power & light, fees & permits	26,000	sf	0.25	6,500		
Emergency generator	1	ea	60,000.00	60,000		
SUBTOTAL					\$75,600	
<b>TOTAL - ELECTRICAL</b>						<b>\$446,100</b>
<b>E10 EQUIPMENT</b>						
<b>E10 EQUIPMENT, GENERALLY</b>						
No items in this section						
SUBTOTAL					\$0	
<b>TOTAL - EQUIPMENT</b>						<b>\$0</b>
<b>E20 FURNISHINGS</b>						
<b>E20 FURNISHINGS</b>						
Entry mats & frames - allowance	100	sf	25.00	2,500		
Compact shelving, double sided - electronic	3,621	lf	350.00	1,267,350		
Individual study carells	80	ea	1,200.00	96,000		
SUBTOTAL					\$1,365,850	
<b>TOTAL - FURNISHINGS</b>						<b>\$1,365,850</b>
<b>F10 SPECIAL CONSTRUCTION</b>						
<b>F10 SPECIAL CONSTRUCTION</b>						
No items in this section						
SUBTOTAL					\$0	
<b>TOTAL - SPECIAL CONSTRUCTION</b>						<b>\$0</b>
<b>F20 SELECTIVE BUILDING DEMOLITION</b>						
<b>F20 SELECTIVE DEMOLITION</b>						
All demolition included in Renovation						
SUBTOTAL					\$0	

CONCEPT DESIGN COST ESTIMATE

GFA

25,000

DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
<b>SCHEME 2 - ADDITION</b>						
<b>TOTAL - SELECTIVE DEMOLITION</b>						<b>\$0</b>
<b>G SITE PREP/DEVELOPMENT</b>						
<b>G10 SITE PREPARATION &amp; DEMOLITION</b>						
Allowance for miscellaneous site demolition and clearing	1	ls	25,000.00	25,000		
Striping topsoil, stockpile	566	cy	4.00	2,264		
Earth moving, cut and fill (included in basement excavation)				elsewhere		
Silt fence/erosion control	500	lf	10.00	5,000		
<b>SUBTOTAL</b>					<b>32,264</b>	
<b>G20 SITE IMPROVEMENTS</b>						
Excavate to reduce levels under paving	46	cy	4.00	184		
Remove excavated material from site	46	cy	15.00	690		
Gravel base under paving	46	cy	18.00	828		
Concrete base to paving	1,835	sf	3.00	5,505		
Precast concrete pavers	1,835	sf	8.00	14,680		
Grate to areaway	351	sf	40.00	14,040		
<u>Landscaping &amp; Plantings:</u>						
Trees	20	ea	1,000.00	20,000		
Shrubs	1	ls	10,000.00	10,000		
Seeding	11,438	sf	0.30	3,431		
Spread existing topsoil	566	cy	4.00	2,264		
<u>Amphitheater</u>						
Excavate to reduce levels to create amphitheater	2,186	cy	6.00	13,116		
Remove excavated material from site	2,186	cy	15.00	32,790		
Precast concrete amphitheater - horizontal surface	3,413	sf	35.00	119,455		
Precast concrete amphitheater - vertical surfaces, including steps	1,908	sf	40.00	76,320		
Electrical connections	1	ls	15,000.00	15,000		
Rails, etc	1	ls	5,000.00	5,000		
Lighting requirements	1	ls	10,000.00	10,000		
Specific drainage requirements	1	ls	7,500.00	7,500		
<b>SUBTOTAL</b>					<b>\$350,803</b>	
<b>G30 CIVIL MECHANICAL UTILITIES</b>						
<u>Drainage &amp; Sewer</u>						
Allow for sewer line - allow to connect to existing	1	ls	10,000.00	10,000		
Allow for drainage	1	ls	20,000.00	20,000		
<u>Water service</u>						
Domestic water & fire protection service (assumed none required)						
<b>SUBTOTAL</b>					<b>\$30,000</b>	
<b>G40 ELECTRICAL UTILITIES</b>						
Relocate existing electrical utility vault	1	ls	50,000.00	50,000		
Building lighting	1	ls	10,000.00	10,000		
Terrace lighting	1	ls	5,000.00	5,000		
<b>SUBTOTAL</b>					<b>\$65,000</b>	
<b>TOTAL SITE DEVELOPMENT</b>						<b>\$478,067</b>
<b>MARK UP</b>						

CONCEPT DESIGN COST ESTIMATE

GFA

26,000

	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	<b>SCHEME 2 - ADDITION</b>						
496							
497	<b>GENERAL COND. / PERMIT / INS.</b>						
498	General Conditions	10	mth	60,000.00	600,000		
499	Temp protection/cleaning	1	ls	10,000.00	10,000		
500	Insurance & bond	1.50%		7,133,125	106,997		
501	Permit	0.70%		7,240,122	50,681		
502	<b>SUBTOTAL</b>					\$767,678	
503							
504	<b>FEE</b>						
505	Overhead & profit/fee	5.00%		7,290,803	364,540		
506	<b>SUBTOTAL</b>					-\$364,540	
507							
508	<b>TOTAL - MARK UP</b>						\$1,132,218
509							
510							
511	<b>CONTINGENCIES/ESCALATION</b>						
512							
513	<b>DESIGN &amp; PRICING</b>						
514	Design and pricing contingency (Reduces to 0% at Construction Documents)	15.00%		7,655,343	1,148,301		
515	<b>SUBTOTAL</b>					\$1,148,301	
516							
517	<b>ESCALATION</b>						
518	Included at 3.5% per annum	3.50%		8,803,644	308,128		
519	<b>SUBTOTAL</b>					\$308,128	
520							
521	<b>CONSTRUCTION CONTINGENCY</b>						
522	Excluded - Recommend that 5% construction contingency is included in the overall project budget	0.00%		9,111,772			
523	<b>SUBTOTAL</b>					\$0	
524							
525	<b>TOTAL - CONTINGENCIES/ESCALATION</b>						\$1,456,429
					9,111,772	9,111,772	9,111,772

# SCHEME2- RENOVATION

<b>COST SUMMARY</b>					
TRADE DESCRIPTION	SUB-TOTAL	TOTAL	\$/SF	%	
<b>SCHEME 2 - RENOVATION</b>					
<b>A10 FOUNDATIONS</b>					
A1010 Standard Foundations	\$0				
A1020 Special Foundations	\$0				
A1030 Lowest Floor Construction	\$10,000	\$10,000	\$0.21	0.2%	
<b>A20 BASEMENT CONSTRUCTION</b>					
A2010 Basement Excavation	\$0				
A2020 Basement Walls	\$0	\$0	\$0.00	0.0%	
<b>B10 SUPERSTRUCTURE</b>					
B1010 Upper Floor Construction	\$20,000				
B1020 Roof Construction	\$10,000	\$30,000	\$0.62	0.7%	
<b>B20 EXTERIOR CLOSURE</b>					
B2010 Exterior Walls	\$5,000				
B2020 Windows	\$212,680				
B2030 Exterior Doors	\$11,685	\$229,365	\$4.75	5.0%	
<b>B30 ROOFING</b>					
B3010 Roof Coverings	\$39,148				
B3020 Roof Openings	\$211,800	\$250,948	\$5.20	5.5%	
<b>C10 INTERIOR CONSTRUCTION</b>					
C1010 Partitions	\$670,172				
C1020 Interior Doors	\$93,561				
C1030 Specialties/Millwork	\$177,070	\$940,803	\$19.48	20.5%	
<b>C20 STAIRCASES</b>					
C2010 Stair Construction	\$7,500				
C2020 Stair Finishes	\$30,000	\$37,500	\$0.78	0.8%	
<b>C30 INTERIOR FINISHES</b>					
C3010 Wall Finishes	\$80,490				
C3020 Floor Finishes	\$162,205				
C3030 Ceiling Finishes	\$144,872	\$387,567	\$8.03	8.5%	
<b>D10 CONVEYING SYSTEMS</b>					
D1010 Elevator	\$0	\$0	\$0.00	0.0%	
<b>D20 PLUMBING</b>					
D20 Plumbing	\$30,000	\$30,000	\$0.62	0.7%	
<b>D30 HVAC</b>					
D30 HVAC	\$1,260,634	\$1,260,634	\$26.11	27.5%	
<b>D40 FIRE PROTECTION</b>					
D40 Fire Protection	\$120,718	\$120,718	\$2.50	2.6%	

<b>COST SUMMARY</b>					
TRADE DESCRIPTION	SUB-TOTAL	TOTAL	\$/SF	%	
<b>SCHEME 2 - RENOVATION</b>					
<b>D50 ELECTRICAL</b>					
D5010 Service & Distribution	\$202,806				
D5020 Lighting & Power	\$287,307				
D5030 Communication & Security Systems	\$197,978				
D5040 Other Electrical Systems	\$28,972	\$717,063	\$14.85	15.7%	
<b>E10 EQUIPMENT</b>					
E10 Equipment	\$0	\$0	\$0.00	0.0%	
<b>E20 FURNISHINGS</b>					
E20 Furnishings	\$264,080	\$264,080	\$5.47	5.8%	
<b>F10 SPECIAL CONSTRUCTION</b>					
F10 Special Construction	\$0	\$0	\$0.00	0.0%	
<b>F20 SELECTIVE BUILDING DEMOLITION</b>					
F20 Selective Demolition	\$301,697	\$301,697	\$6.25	6.6%	
<b>G SITE PREP/DEVELOPMENT</b>					
G10 Site Preparation/Demolition	\$0				
G20 Site Improvements	\$0				
G30 Civil / Mechanical Utilities	\$0				
G40 Electrical Utilities	\$0	\$0	\$0.00	0.0%	
<b>TOTAL DIRECT COST (Trade Costs)</b>		<b>\$4,580,375</b>	<b>\$94.86</b>	<b>100.0%</b>	
<b>MARK UP</b>					
General Conditions/Permit/Insurance	\$479,428				
Overhead/Fee/Profit	\$252,990	\$732,418	\$15.17	16.0%	
<b>SUBTOTAL CONSTRUCTION</b>		<b>\$5,312,793</b>	<b>\$110.03</b>	<b>116.0%</b>	
<b>CONTINGENCIES/ESCALATION</b>					
Design & Pricing Contingency	\$796,919				
Escalation	\$213,840				
Construction Contingency	Excl.	\$1,010,759	\$20.93	22.1%	
<b>TOTAL CONSTRUCTION COST</b>		<b>\$6,323,552</b>	<b>\$130.96</b>		

DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>SCHEME 2 - RENOVATION</b>						
<b>A10 FOUNDATIONS</b>						
<b>A1010 STANDARD FOUNDATIONS</b>						
No items in this section						
SUBTOTAL					\$0	
<b>A1020 SPECIAL FOUNDATIONS</b>						
No items in this section						
SUBTOTAL					\$0	
<b>A1030 LOWEST FLOOR CONSTRUCTION</b>						
Patching existing slab on grade	1	ls	10,000.00	10,000		
SUBTOTAL					\$10,000	
<b>TOTAL - FOUNDATIONS</b>						<b>\$10,000</b>
<b>A20 BASEMENT CONSTRUCTION</b>						
<b>A2010 BASEMENT EXCAVATION</b>						
No items in this section						
SUBTOTAL					\$0	
<b>A2020 BASEMENT WALLS</b>						
No items in this section						
SUBTOTAL					\$0	
<b>TOTAL - BASEMENT CONSTRUCTION</b>						<b>\$0</b>
<b>B10 SUPERSTRUCTURE</b>						
<b>B1010 UPPER FLOOR CONSTRUCTION</b>						
Allowance for minor modifications to existing floor structure	1	ls	20,000.00	20,000		
Seismic upgrade of existing structure				excluded		
SUBTOTAL					\$20,000	
<b>B1020 ROOF CONSTRUCTION</b>						
Allowance for minor modifications to existing roof structure	1	ls	10,000.00	10,000		
Seismic upgrade of existing structure				excluded		
SUBTOTAL					\$10,000	
<b>TOTAL - SUPERSTRUCTURE</b>						<b>\$30,000</b>
<b>B20 EXTERIOR CLOSURE</b>						
<b>B2010 EXTERIOR WALLS</b>						
<u>Exterior skin</u>						
Allowance for abutment of new exterior closure to existing exterior wall	1	ls	5,000.00	5,000		
SUBTOTAL					\$5,000	
<b>B2020 WINDOWS</b>						

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	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	<b>SCHEME 2 - RENOVATION</b>						
56	Curtainwall at roof level	2,800	sf	75.00	210,000		
57	Backer rod & double sealant	840	lf	2.00	1,680		
58	Wood blocking at openings	1	ls	1,000.00	1,000		
59	SUBTOTAL					\$212,680	
60							
61	<b>B2030 EXTERIOR DOORS</b>						
62	Egress doors, single leaf, hollow metal	1	ea	1,600.00	1,600		
63	Entry doors, glazed, single leaf	2	ea	2,750.00	5,500		
64	Entry doors, glazed, double leaf	1	pr	4,500.00	4,500		
65	Backer rod & double sealant	17	lf	2.00	34		
66	Wood blocking at openings	17	lf	3.00	51		
67	SUBTOTAL					\$11,685	
68							
69	<b>TOTAL - EXTERIOR CLOSURE</b>						\$229,365
70							
71							
72	<b>B30 ROOFING</b>						
73							
74	<b>B3010 ROOF COVERINGS</b>						
75	<u>Flat Roofing</u>						
76	Allowance for patching existing roof at new curtainwall	1,080	sf	4.00	4,320		
77	Insulation	1,080	sf	2.00	2,160		
78	Abutment of flat roof with adjacent walls	180	lf	4.00	720		
	Allowance for working membrane roofing around pipe and duct penetrations	1	ls	1,500.00	1,500		
80	Rough blocking	396	lf	3.00	1,188		
81	<u>Miscellaneous Roofing</u>						
82	Flashings	180	lf	7.00	1,260		
83	Screen wall on roof	800	sf	35.00	28,000		
84	SUBTOTAL					\$39,148	
85							
86	<b>B3020 ROOF OPENINGS</b>						
87	New skylight glazing	2,824	sf	75.00	211,800		
88	SUBTOTAL					\$211,800	
89							
90	<b>TOTAL - ROOFING</b>						\$250,948
91							
92							
93	<b>C10 INTERIOR CONSTRUCTION</b>						
94							
95	<b>C1010 PARTITIONS</b>						
96	Interior partitions, 3 5/8" stud, two layers gwb, batt insulation	10,946	sf	5.95	65,129		
97	Interior partitions, 3 5/8" stud, two layers gwb, batt insulation, fire rated	1,000	sf	5.95	5,950		
98	Low partition at circulation offices and reference offices, etc.	1,920	sf	5.95	11,424		
99	Chase wall partitions	468	sf	7.90	3,697		
100	Allow for glazed partitions (8' high - hollow metal) - allowance	250	lf	320.00	80,000		
101	Glass walls at areas open to below - full height	10,270	sf	40.00	410,800		
102	GWB column covers	70	ea	500.00	35,000		
103	Sealants & caulking at partitions	48,287	sf	0.25	12,072		
104	Rough blocking	11,050	lf	2.00	22,100		
105	Wood trim to top of low partition	480	lf	50.00	24,000		
106	SUBTOTAL					\$670,172	
107							
108							
109							

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	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	<b>SCHEME 2 - RENOVATION</b>						
110	<b>C1020 INTERIOR DOORS</b>						
111	Doors, frames & hardware, single leaf	55	ea	1,050.00	57,750		
112	Doors frames & hardware, single leaf, glazed	15	ea	1,150.00	17,250		
113	Doors, frames & hardware, double leaf	2	pr	1,900.00	3,800		
114	Doors frames & hardware, double leaf, glazed	4	pr	2,100.00	8,400		
115	Paint doors and frames	82	ea	50.00	4,100		
116	Sealants & caulking	76	ea	29.75	2,261		
117	SUBTOTAL					\$93,561	
118							
119	<b>C1030 SPECIALTIES / MILLWORK</b>						
120	Partitions and accessories in existing bathrooms - excluded						
121	Backer panels in electrical closets	1	ls	3,000.00	3,000		
122	Marker boards & tack boards in Study Rooms	30	lf	48.00	1,440		
123	Reception desk	108	lf	400.00	43,200		
124	Reception desk, curved	40	lf	600.00	24,000		
125	Work counter at Copy	22	lf	100.00	2,200		
126	Staff lounge						
127	Base storage units	10	lf	120.00	1,200		
128	Countertops to base storage units	10	lf	60.00	600		
129	Wall storage units	10	lf	100.00	1,000		
130	On-line Research						
131	Base storage units	44	lf	120.00	5,280		
132	Countertops to base storage units	44	lf	60.00	2,640		
	Wall storage units	44	lf	100.00	4,400		
	Copy center						
135	Base storage units	29	lf	120.00	3,480		
136	Countertops to base storage units	29	lf	60.00	1,740		
137	Wall storage units	29	lf	100.00	2,900		
138	Mail						
139	Base storage units	8	lf	120.00	960		
140	Countertops to base storage units	8	lf	60.00	480		
141	Wall storage units	8	lf	100.00	800		
142	General Storage						
143	Base storage units	23	lf	120.00	2,760		
144	Countertops to base storage units	23	lf	60.00	1,380		
145	Wall storage units	23	lf	100.00	2,300		
146	Circulation desk area						
147	Counters	27	lf	100.00	2,700		
148	Third floor printer/copier						
149	Counters	27	lf	100.00	2,700		
150	Shelving in storage rooms - allowance	270	lf	18.00	4,860		
151	Signage/Directories/Bulletin Boards/Display cases	1	ls	15,000.00	15,000		
152	Fire extinguisher cabinets - allowance	16	ea	350.00	5,600		
153	Janitors Accessories - allowance	1	rms	300.00	300		
154	Toilet Accessories in single bathrooms- allowance	5	rms	750.00	3,750		
155	Allowance for miscellaneous casework in Rare Books Room	1	ls	15,000.00	15,000		
156	Display case in lobby	29	lf	300.00	8,700		
157	Mail pockets in Lobby	18	lf	150.00	2,700		
158	Allowance for miscellaneous specialties not clearly depicted on drawings	1	ls	10,000.00	10,000		
159	SUBTOTAL					\$177,070	
160							
162	<b>TOTAL - INTERIOR CONSTRUCTION</b>						\$940,803
163							
164	<b>C20 STAIRCASES</b>						
165							

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	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB-TOTAL	TOTAL COST
	<b>SCHEME 2 - RENOVATION</b>						
166	<b>C2010 STAIR CONSTRUCTION</b>						
167	ADA upgrade to existing staircases	3	ftt	2,500.00	7,500		
168	SUBTOTAL					\$7,500	
169							
170	<b>C2020 STAIR FINISHES</b>						
171	Premium finish to feature staircases	600	sf	50.00	30,000		
172	SUBTOTAL					\$30,000	
173							
174	<b>TOTAL - STAIRCASES</b>						<b>\$37,500</b>
175							
176							
177	<b>C30 INTERIOR FINISHES</b>						
178							
179	<b>C3010 WALL FINISHES</b>						
180	Veneer plaster to gwb	27,492	sf	2.00	54,984		
181	Paint to GWB	27,492	sf	0.50	13,746		
182	Ceramic tile to toilets full ht wall	1,176	sf	10.00	11,760		
183	SUBTOTAL					\$80,490	
184							
185	<b>C3020 FLOOR FINISHES</b>						
186	VCT to floors	561	sf	2.50	1,403		
187	Carpet to floors	4,355	sy	35.00	152,425		
188	Ceramic tiles in bathrooms and the like	255	sf	10.00	2,550		
189	Tile base	147	lf	10.00	1,470		
190	Rubber base	2,291	lf	1.75	4,009		
191	Marble thresholds @ bathrooms	5	ea	55.00	275		
192	Concrete sealer @ Mech/elect rooms	162	sf	0.45	73		
193	SUBTOTAL					\$162,205	
194							
195	<b>C3030 CEILING FINISHES</b>						
196	Drywall ceilings (40%)	20,007	sf	3.75	75,026		
197	Vertical drywall soffits	1	ls	7,500.00	7,500		
198	ACT ceilings	20,007	sf	2.50	50,018		
199	Paint to ceilings	20,007	sf	0.60	12,004		
200	Paint to exposed structure and exposed MEP systems, sprayed	162	sf	2.00	324		
201	SUBTOTAL					\$144,872	
202							
203	<b>TOTAL - INTERIOR FINISHES</b>						<b>\$387,567</b>
204							
205							
206							
207							
208	<b>D10 CONVEYING SYSTEMS</b>						
209							
210	<b>D1010 ELEVATOR</b>						
211	No items in this section						
212	SUBTOTAL					\$0	
213							
214	<b>TOTAL - CONVEYING SYSTEMS</b>						<b>\$0</b>
215							
216							
217	<b>D20 PLUMBING</b>						
218							
219	<b>D20 PLUMBING, GENERALLY</b>						
220	Plumbing installation	10	fix	3,000.00	30,000		
221							
222							

DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>SCHEME 2 - RENOVATION</b>						
223	Note: Assumed no work required in existing bathrooms					
224	SUBTOTAL					\$30,000
225						
226	<b>TOTAL - PLUMBING</b>					<b>\$30,000</b>
227						
228						
229	<b>D30 HVAC</b>					
230						
231	<b>D30 HVAC, GENERALLY</b>					
232	HVAC equipment 48,287 sf 8.50 410,440					
233	Air distribution 48,287 sf 9.00 434,583					
234	Piping 48,287 sf 5.00 241,435					
235	Controls 48,287 sf 3.00 144,861					
236	Testing and balancing 48,287 sf 0.30 14,486					
237	Shop drawings, coordination, fees, etc. 48,287 sf 0.10 4,829					
238	Premium for special requirements in Rare Books Storage 1 ls 10,000.00 10,000					
239	SUBTOTAL					\$1,260,634
240						
241	<b>TOTAL - HVAC</b>					<b>\$1,260,634</b>
242						
243						
244	<b>D40 FIRE PROTECTION</b>					
245						
246	<b>D40 FIRE PROTECTION, GENERALLY</b>					
247	Allow for fire protection 48,287 sf 2.50 120,718					
248	SUBTOTAL					\$120,718
249						
250	<b>TOTAL - FIRE PROTECTION</b>					<b>\$120,718</b>
251						
252						
253	<b>D50 ELECTRICAL</b>					
254						
255	<b>D5010 SERVICE &amp; DISTRIBUTION</b>					
256	Service & Distribution 48,287 sf 2.95 142,447					
257	Equipment Wiring 48,287 sf 1.25 60,359					
258	SUBTOTAL					\$202,806
259						
260	<b>D5020 LIGHTING &amp; POWER</b>					
261	Allow for lighting 48,287 sf 4.00 193,148					
262	Allow for branch devices 48,287 sf 0.20 9,657					
263	Allow for lighting & branch circuitry 48,287 sf 1.75 84,502					
264	SUBTOTAL					\$287,307
265						
266	<b>D5030 COMMUNICATION &amp; SECURITY SYSTEMS</b>					
267	Fire Alarm System (addressable) 48,287 sf 1.50 72,431					
268	Telephone/data rough-in 48,287 sf 0.60 28,972					
269	Telephone/data wiring 48,287 sf 1.50 72,431					
270	Security installation, rough-in 48,287 sf 0.50 24,144					
271	SUBTOTAL					\$197,978
272						
273	<b>D5040 OTHER ELECTRICAL SYSTEMS</b>					
274	Lightning protection 48,287 sf 0.35 16,900					
275	Temporary power & light, fees & permits 48,287 sf 0.25 12,072					
276	SUBTOTAL					\$28,972
277						
278	<b>TOTAL - ELECTRICAL</b>					<b>\$717,063</b>
279						
280						

CONCEPT DESIGN COST ESTIMATE

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	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	<b>SCHEME 2 - RENOVATION</b>						
281	<b>E10 EQUIPMENT</b>						
282							
283	<b>E10 EQUIPMENT, GENERALLY</b>						
284	No items in this section						
285	SUBTOTAL					\$0	
286							
287	<b>TOTAL - EQUIPMENT</b>						\$0
288							
289							
290	<b>E20 FURNISHINGS</b>						
291							
292	<b>E20 FURNISHINGS</b>						
293	Entry mats & frames - allowance	200	sf	25.00	5,000		
294	Double sided library shelving - assumed all new	981	lf	100.00	98,100		
295	Single sided library shelving - assumed all new	288	lf	85.00	24,480		
296	Wood end panels to library shelving - assumed all new	87	ea	300.00	26,100		
297	Individual study carells	92	ea	1,200.00	110,400		
298	Individual work stations - assumed by others						
299	SUBTOTAL					\$264,080	
300							
301	<b>TOTAL - FURNISHINGS</b>						\$264,080
302							
303							
304	<b>F10 SPECIAL CONSTRUCTION</b>						
305							
306	<b>F10 SPECIAL CONSTRUCTION</b>						
307	No items in this section						
308	SUBTOTAL					\$0	
309							
310	<b>TOTAL - SPECIAL CONSTRUCTION</b>						\$0
311							
312							
313							
314	<b>F20 SELECTIVE BUILDING DEMOLITION</b>						
315							
316	<b>F20 SELECTIVE DEMOLITION</b>						
317	Remove all mechanical and electrical services in affected portion of building	42,740	sf	1.50	64,110		
318	Remove floor finishes	42,740	sf	0.50	21,370		
319	Remove ceiling finishes	42,740	sf	0.50	21,370		
320	Remove interior partitions	42,740	sf	1.50	64,110		
321	Remove casework and specialties	42,740	sf	1.00	42,740		
322	Remove walls at areas open to below	4,576	sf	3.50	16,016		
323	Remove cladding from exterior face of existing exterior wall	1,729	sf	5.00	8,645		
324	Remove portion of existing exterior wall, complete	5,278	sf	12.00	63,336		
325	SUBTOTAL					\$301,697	
326							
327	<b>TOTAL - SELECTIVE DEMOLITION</b>						\$301,697
328							
329							
330	<b>G SITE PREP/DEVELOPMENT</b>						
331							
332	<b>G10 SITE PREPARATION &amp; DEMOLITION</b>						
333	Included in Addition estimate						
334	SUBTOTAL						
335							
336							

CONCEPT DESIGN COST ESTIMATE

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	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	<b>SCHEME 2 - RENOVATION</b>						
337							
338	<b>G20 SITE IMPROVEMENTS</b>						
339	Included in Addition estimate						
340	SUBTOTAL					\$0	
341							
342	<b>G30 CIVIL MECHANICAL UTILITIES</b>						
343	Included in Addition estimate						
344	SUBTOTAL					\$0	
345							
346	<b>G40 ELECTRICAL UTILITIES</b>						
347	Included in Addition estimate						
348	SUBTOTAL					\$0	
349							
350	<b>TOTAL - SITE DEVELOPMENT:</b>						\$0
351							
352							
353	<b>MARK UP:</b>						
354							
355	<b>GENERAL COND. / PERMIT / INS.</b>						
356	General Conditions	6	mth	60,000.00	360,000		
357	Temp protection/cleaning	1	ls	10,000.00	10,000		
358	Insurance & bond	1.50%		4,950,375	74,256		
359	Permit	0.70%		5,024,631	35,172		
	SUBTOTAL					\$479,428	
362	<b>FEE</b>						
363	Overhead & profit/fee	5.00%		5,059,803	252,990		
364	SUBTOTAL					\$252,990	
365							
366	<b>TOTAL - MARK UP:</b>						\$732,418
367							
368							
369	<b>CONTINGENCIES/ESCALATION</b>						
370							
371	<b>DESIGN &amp; PRICING</b>						
372	Design and pricing contingency (Reduces to 0% at Construction Documents)	15.00%		5,312,793	796,919		
373	SUBTOTAL					\$796,919	
374							
375	<b>ESCALATION</b>						
376	Included at 3.5% per annum	3.50%		6,109,712	213,840		
377	SUBTOTAL					\$213,840	
378							
379	<b>CONSTRUCTION CONTINGENCY</b>						
380	Excluded - Recommend that 5% construction contingency is included in the overall project budget	0.00%		6,323,552			
381	SUBTOTAL					\$0	
382							
383	<b>TOTAL - CONTINGENCIES/ESCALATION</b>						\$1,010,759
384							
385							
386							
387							
388							
389							
390					6,323,552	6,323,552	6,323,552

ONCEPT DESIGN COST ESTIMATE

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<b>COST SUMMARY</b>			
TRADE DESCRIPTION	ADDITION	RENOVATION	TOTAL
A10 FOUNDATIONS	\$333,138	\$10,000	\$343,138
A20 BASEMENT CONSTRUCTION	\$495,878	\$0	\$495,878
B10 SUPERSTRUCTURE	\$609,482	\$30,000	\$639,482
B20 EXTERIOR CLOSURE	\$1,510,362	\$229,365	\$1,739,727
B30 ROOFING	\$16,500	\$250,948	\$267,448
C10 INTERIOR CONSTRUCTION	\$214,926	\$940,803	\$1,155,729
C20 STAIRCASES	\$128,672	\$37,500	\$166,172
C30 INTERIOR FINISHES	\$274,570	\$387,567	\$662,137
D10 CONVEYING SYSTEMS	\$65,550	\$0	\$65,550
D20 PLUMBING	\$24,000	\$30,000	\$54,000
D30 HVAC	\$681,014	\$1,260,634	\$1,941,648
D40 FIRE PROTECTION	\$100,735	\$120,718	\$221,453
D50 ELECTRICAL	\$450,467	\$717,063	\$1,167,530
E10 EQUIPMENT	\$0	\$0	\$0
E20 FURNISHINGS	\$1,337,050	\$264,080	\$1,601,130
F10 SPECIAL CONSTRUCTION	\$0	\$0	\$0
F20 SELECTIVE BUILDING DEMOLITION	\$0	\$301,697	\$301,697
G SITE PREP/DEVELOPMENT	\$264,143	\$0	\$264,143
<b>TOTAL DIRECT COST (Trade Costs)</b>	<b>\$6,506,487</b>	<b>\$4,580,375</b>	<b>\$11,086,862</b>
MARK UP			
General Conditions/Permit/Insurance	\$705,983	\$479,428	\$1,185,411
Overhead/Fee/Profit	\$360,624	\$252,990	\$613,614
<b>SUBTOTAL CONSTRUCTION</b>	<b>\$7,573,094</b>	<b>\$5,312,793</b>	<b>\$12,885,887</b>
CONTINGENCIES/ESCALATION			
Design & Pricing Contingency	\$1,135,964	\$796,919	\$1,932,883
Escalation	\$304,817	\$213,840	\$518,657
Construction Contingency	Excl.	Excl.	Excl.
<b>TOTAL CONSTRUCTION COST</b>	<b>\$9,018,875</b>	<b>\$6,323,552</b>	<b>\$15,337,427</b>
	GSF 26,294	48,287	74,581
	\$/sf \$342.81	\$130.96	\$205.85

# **SCHEME 4- MAIN SUMMARY**

CONCEPT DESIGN COST ESTIMATE

GFA 74,581

<b>COST SUMMARY</b>				
TRADE DESCRIPTION	ADDITION	RENOVATION	TOTAL	
A10 FOUNDATIONS	\$333,138	\$10,000	\$343,138	
A20 BASEMENT CONSTRUCTION	\$495,878	\$0	\$495,878	
B10 SUPERSTRUCTURE	\$609,482	\$30,000	\$639,482	
B20 EXTERIOR CLOSURE	\$1,510,362	\$229,365	\$1,739,727	
B30 ROOFING	\$16,500	\$250,948	\$267,448	
C10 INTERIOR CONSTRUCTION	\$214,926	\$940,803	\$1,155,729	
C20 STAIRCASES	\$128,672	\$37,500	\$166,172	
C30 INTERIOR FINISHES	\$274,570	\$387,567	\$662,137	
D10 CONVEYING SYSTEMS	\$65,550	\$0	\$65,550	
D20 PLUMBING	\$24,000	\$30,000	\$54,000	
D30 HVAC	\$681,014	\$1,260,634	\$1,941,648	
D40 FIRE PROTECTION	\$100,735	\$120,718	\$221,453	
D50 ELECTRICAL	\$450,467	\$717,063	\$1,167,530	
E10 EQUIPMENT	\$0	\$0	\$0	
E20 FURNISHINGS	\$1,337,050	\$264,080	\$1,601,130	
F10 SPECIAL CONSTRUCTION	\$0	\$0	\$0	
F20 SELECTIVE BUILDING DEMOLITION	\$0	\$301,697	\$301,697	
G SITE PREP/DEVELOPMENT	\$264,143	\$0	\$264,143	
<b>TOTAL DIRECT COST (Trade Costs)</b>	<b>\$6,506,487</b>	<b>\$4,580,375</b>	<b>\$11,086,862</b>	
MARK UP				
General Conditions/Permit/Insurance	\$705,983	\$479,428	\$1,185,411	
Overhead/Fee/Profit	\$360,624	\$252,990	\$613,614	
<b>SUBTOTAL CONSTRUCTION</b>	<b>\$7,573,094</b>	<b>\$5,312,793</b>	<b>\$12,885,887</b>	
CONTINGENCIES/ESCALATION				
Design & Pricing Contingency	\$1,135,964	\$796,919	\$1,932,883	
Escalation	\$304,817	\$213,840	\$518,657	
Construction Contingency	Excl.	Excl.	Excl.	
<b>TOTAL CONSTRUCTION COST</b>	<b>\$9,013,875</b>	<b>\$6,323,552</b>	<b>\$15,337,427</b>	
	GSF 26,294	48,287	74,581	
	\$/sf \$342.81	\$130.96	\$205.65	

# SCHEME 4- ADDITION

<b>COST SUMMARY</b>					
TRADE DESCRIPTION	SUB-TOTAL	TOTAL	\$/SF	%	
<b>SCHEME 4 - ADDITION</b>					
<b>A10 FOUNDATIONS</b>					
A1010 Standard Foundations	\$132,681				
A1020 Special Foundations	\$130,000				
A1030 Lowest Floor Construction	\$70,457	<b>\$333,138</b>	\$12.67	5.1%	
<b>A20 BASEMENT CONSTRUCTION</b>					
A2010 Basement Excavation	\$393,577				
A2020 Basement Walls	\$102,301	<b>\$495,878</b>	\$18.86	7.6%	
<b>B10 SUPERSTRUCTURE</b>					
B1010 Upper Floor Construction	\$444,482				
B1020 Roof Construction	\$165,000	<b>\$609,482</b>	\$23.18	9.4%	
<b>B20 EXTERIOR CLOSURE</b>					
B2010 Exterior Walls	\$460,903				
B2020 Windows	\$1,038,119				
B2030 Exterior Doors	\$11,340	<b>\$1,510,362</b>	\$57.44	23.2%	
<b>B30 ROOFING</b>					
B3010 Roof Coverings	\$14,000				
B3020 Roof Openings	\$2,500	<b>\$16,500</b>	\$0.63	0.3%	
<b>C10 INTERIOR CONSTRUCTION</b>					
C1010 Partitions	\$166,381				
C1020 Interior Doors	\$32,755				
C1030 Specialties/Millwork	\$15,790	<b>\$214,926</b>	\$8.17	3.3%	
<b>C20 STAIRCASES</b>					
C2010 Stair Construction	\$88,595				
C2020 Stair Finishes	\$40,077	<b>\$128,672</b>	\$4.89	2.0%	
<b>C30 INTERIOR FINISHES</b>					
C3010 Wall Finishes	\$79,348				
C3020 Floor Finishes	\$105,267				
C3030 Ceiling Finishes	\$89,955	<b>\$274,570</b>	\$10.44	4.2%	
<b>D10 CONVEYING SYSTEMS</b>					
D1010 Elevator	\$65,550	<b>\$65,550</b>	\$2.49	1.0%	
<b>D20 PLUMBING</b>					
D20 Plumbing	\$24,000	<b>\$24,000</b>	\$0.91	0.4%	
<b>D30 HVAC</b>					
D30 HVAC	\$681,014	<b>\$681,014</b>	\$25.90	10.5%	
<b>D40 FIRE PROTECTION</b>					
D40 Fire Protection	\$100,735	<b>\$100,735</b>	\$3.83	1.5%	

<b>COST SUMMARY</b>					
TRADE DESCRIPTION	SUB-TOTAL	TOTAL	\$/SF	%	
<b>SCHEME 4 - ADDITION</b>					
<b>D50 ELECTRICAL</b>					
D5010 Service & Distribution	\$110,435				
D5020 Lighting & Power	\$156,450				
D5030 Communication & Security Systems	\$107,805				
D5040 Other Electrical Systems	\$75,777	\$450,467	\$17.13	6.9%	
<b>E10 EQUIPMENT</b>					
E10 Equipment	\$0	\$0	\$0.00	0.0%	
<b>E20 FURNISHINGS</b>					
E20 Furnishings	\$1,337,050	\$1,337,050	\$50.85	20.5%	
<b>F10 SPECIAL CONSTRUCTION</b>					
F10 Special Construction	\$0	\$0	\$0.00	0.0%	
<b>F20 SELECTIVE BUILDING DEMOLITION</b>					
F20 Selective Demolition	\$0	\$0	\$0.00	0.0%	
<b>G SITE PREP/DEVELOPMENT</b>					
G10 Site Preparation/Demolition	\$32,264				
G20 Site Improvements	\$136,879				
G30 Civil / Mechanical Utilities	\$30,000				
G40 Electrical Utilities	\$65,000	\$264,143	\$10.05	4.1%	
<b>TOTAL DIRECT COST (Trade Costs)</b>		<b>\$6,506,807</b>	<b>\$247.15</b>	<b>100.0%</b>	
<b>MARK UP</b>					
General Conditions/Permit/Insurance	\$705,983				
Overhead/Fee/Profit	\$360,624	\$1,066,607	\$40.56	16.4%	
<b>SUBTOTAL CONSTRUCTION</b>		<b>\$7,573,094</b>	<b>\$288.02</b>	<b>116.4%</b>	
<b>CONTINGENCIES/ESCALATION</b>					
Design & Pricing Contingency	\$1,135,964				
Escalation	\$304,817				
Construction Contingency	Excl.	\$1,440,781	\$54.80	22.1%	
<b>TOTAL CONSTRUCTION COST</b>		<b>\$9,013,875</b>	<b>\$342.81</b>		

	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	<b>SCHEME 4 - ADDITION</b>						
1	<b>A10 FOUNDATIONS</b>						
2							
3	<b>A1010 STANDARD FOUNDATIONS</b>						
4	<u>Strip footings to exterior walls - 3' x 1'-0"</u>						
5	Excavation	170	cy	6.00	1,020		
6	Remove off site	170	cy	15.00	2,550		
7	Backfill with gravel	151	cy	18.00	2,718		
8	Formwork	328	sf	6.50	2,132		
9	Re-bar - 60# cy	1,140	lbs	0.75	855		
10	Concrete material	19	cy	70.00	1,330		
11	Place from truck & vibrate	19	cy	20.00	380		
12	<u>Strip footings to staircase walls - 3' x 1'-0"</u>						
13	Excavation	124	cy	6.00	744		
14	Remove off site	124	cy	15.00	1,860		
15	Backfill with gravel	110	cy	18.00	1,980		
16	Formwork	240	sf	6.50	1,560		
17	Re-bar - 60# cy	840	lbs	0.75	630		
18	Concrete material	14	cy	70.00	980		
19	Place from truck & vibrate	14	cy	20.00	280		
20	<u>Strip footings to exterior walls between basement and areaway - 3' x 1'-0"</u>						
21	Excavation	58	cy	6.00	348		
22	Remove off site	58	cy	15.00	870		
23	Backfill with gravel	51	cy	18.00	918		
24	Formwork	112	sf	6.50	728		
25	Re-bar - 60# cy	420	lbs	0.75	315		
26	Concrete material	7	cy	70.00	490		
27	Place from truck & vibrate	7	cy	20.00	140		
28	<u>Strip footings to basement walls, - 3' x 1'-0"</u>						
29	Excavation	50	cy	6.00	300		
30	Remove off site	50	cy	15.00	750		
31	Backfill with gravel	34	cy	18.00	612		
32	Formwork	272	sf	6.50	1,768		
33	Re-bar - 60# cy	960	lbs	0.75	720		
34	Concrete material	16	cy	70.00	1,120		
35	Place from truck & vibrate	16	cy	20.00	320		
36	<u>Foundation walls at exterior - 16" thick</u>						
37	Formwork	1,312	sf	6.50	8,528		
38	Re-bar - 4 lbs/sf	2,624	lbs	0.75	1,968		
39	Concrete material	34	cy	70.00	2,380		
40	Place from truck & vibrate	34	cy	20.00	680		
41	Waterproofing foundation wall and footing	984	sf	1.00	984		
42	Insulation to foundation walls	656	sf	1.00	656		
43	<u>Foundation walls between basement and areaway - 16" thick</u>						
44	Formwork	448	sf	6.50	2,912		
45	Re-bar - 4 lbs/sf	896	lbs	0.75	672		
46	Concrete material	12	cy	70.00	840		
47	Place from truck & vibrate	12	cy	20.00	240		
48	Waterproofing foundation wall and footing	336	sf	1.00	336		
49	Insulation to foundation walls	224	sf	1.00	224		
50	<u>Exterior column footings, 8' x 8' x 1'-6"</u>						
51	Excavation	341	cy	6.00	2,046		
52	Remove off site	341	cy	15.00	5,115		
53	Backfill with gravel	281	cy	18.00	5,058		
54	Formwork	768	sf	6.50	4,992		
55							
56							

CONCEPT DESIGN COST ESTIMATE

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	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	<b><u>SCHEME 4 - ADDITION</u></b>						
57	Re-bar - 80# cy	4,800	lbs	0.75	3,600		
58	Concrete material	60	cy	70.00	4,200		
59	Place from truck	60	cy	22.00	1,320		
60	Set anchor bolts grout plates	16	ea	35.00	560		
61	<u>Interior column footings, 8' x 8' x 1'-6"</u>						
62	Excavation	306	cy	6.00	1,836		
63	Remove off site	306	cy	15.00	4,590		
64	Backfill with gravel	194	cy	18.00	3,492		
65	Formwork	1,440	sf	6.50	9,360		
66	Re-bar - 80# cy	8,960	lbs	0.75	6,720		
67	Concrete material	112	cy	70.00	7,840		
68	Place from truck	112	cy	22.00	2,464		
69	Set anchor bolts grout plates	30	ea	35.00	1,050		
70	<u>Miscellaneous</u>						
71	Allow for piers/pilasters	46	ea	100.00	4,600		
72	Local de-watering during excavation	1	ls	15,000.00	15,000		
73	SUBTOTAL					\$132,681	
74							
75	<b>A1020 SPECIAL FOUNDATIONS</b>						
76	Underpinning at existing building	65	cy	2,000.00	130,000		
77	SUBTOTAL					\$130,000	
78							
	<b>A1030 LOWEST FLOOR CONSTRUCTION</b>						
	<u>Slab on Grade, 6" thick - Main library floor</u>						
81	Gravel fill, 8"	246	cy	18.00	4,428		
82	Vapor barrier	9,900	sf	0.08	792		
83	Bar reinforcement (3 lbs/sf)	29,700	lbs	0.75	22,275		
84	Concrete - 6" thick	162	cy	70.00	11,340		
85	Place & finish	9,900	sf	1.00	9,900		
86	Control joints - saw cut	9,900	sf	0.35	3,465		
87	Isolation joints at columns	46	lf	2.50	115		
88	Perimeter joints	300	lf	1.50	450		
89	<u>Slab on Grade, 5" thick at bottom of staircases</u>						
90	Gravel fill, 8"	4	cy	18.00	72		
91	Vapor barrier	150	sf	0.08	12		
92	Mesh reinforcing 15% lap	173	sf	0.50	87		
93	Concrete - 5" thick	2	cy	70.00	140		
94	Place & finish	150	sf	1.00	150		
95	Control joints - saw cut	150	sf	0.35	53		
96	Perimeter joints	75	lf	1.50	113		
97	<u>Slab on Grade, 5" thick at areaway</u>						
98	Gravel fill, 8"	7	cy	18.00	126		
99	Vapor barrier	262	sf	0.08	21		
100	Mesh reinforcing 15% lap	301	sf	0.50	151		
101	Concrete - 5" thick	4	cy	70.00	280		
102	Place & finish	262	sf	1.00	262		
103	Control joints - saw cut	262	sf	0.35	92		
104	Perimeter joints	112	lf	1.50	168		
105	<u>Miscellaneous</u>						
106	Allow for equipment pads	1	ls	5,000.00	5,000		
107	Rigid insulation 4' wide at perimeter of slab	656	sf	1.00	656		
108	<u>Elevator Pits</u>						
109	Excavation for elevator pit	84	cy	6.00	504		
110	Remove off site	84	cy	15.00	1,260		
111	Backfill with gravel	4	cy	18.00	72		
112	Elevator pit walls 8"						
113							
114							

CONCEPT DESIGN COST ESTIMATE

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DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>SCHEME 4 - ADDITION</b>						
115 formwork	480	sf	6.50	3,120		
116 reinforcement	720	lbs	0.75	540		
117 concrete material	6	cy	70.00	420		
118 placing concrete in walls	6	cy	25.00	150		
119 Slab, 18" thick						
120 formwork	60	sf	6.50	390		
121 reinforcement	750	lbs	0.75	563		
122 concrete material in slab	6	cy	70.00	420		
123 placing concrete in slab	6	cy	25.00	150		
124 Cementitious waterproofing to elevator pit	340	sf	8.00	2,720		
125 SUBTOTAL					\$70,457	
126						
127 <b>TOTAL - FOUNDATIONS</b>						<b>\$333,138</b>
128						
129						
130 <b>A20 BASEMENT CONSTRUCTION</b>						
131						
132 <b>A2010 BASEMENT EXCAVATION</b>						
133 Excavate for basement	10,267	cy	6.00	61,602		
134 Excavate working space to basement wall	846	cy	6.00	5,076		
135 Remove excavated material from site	11,113	cy	15.00	166,695		
136 Backfill around basement walls with gravel	846	cy	18.00	15,228		
7 Foundation drainage	136	lf	16.00	2,176		
139 Sheathing to support sides of excavation	5,712	sf	25.00	142,800		
140 SUBTOTAL					\$393,577	
141 <b>A2020 BASEMENT WALLS</b>						
142 Formwork to basement wall	7,616	sf	7.00	53,312		
143 Reinforcement in basement walls (5 lbs/sf)	19,040	lbs	0.75	14,280		
144 Concrete material in basement walls	197	cy	70.00	13,790		
145 Placing concrete in basement walls	197	cy	25.00	4,925		
146 Waterproofing and protection mat to basement walls	3,808	sf	3.00	11,424		
147 Rigid insulation to basement walls	3,808	sf	1.20	4,570		
148 SUBTOTAL					\$102,301	
149						
150 <b>TOTAL - BASEMENT CONSTRUCTION</b>						<b>\$495,878</b>
151						
152						
153 <b>B10 SUPERSTRUCTURE</b>						
154						
155 <b>B1010 UPPER FLOOR CONSTRUCTION</b>						
156 <u>Floor Structure - Steel:</u>						
157 Steel beams and columns in floor framing - w sections (assumed 9 lbs/sf)	74	tns	2,100.00	155,400		
158 Precast concrete plank floor construction	16,394	sf	12.00	196,728		
159 Mesh reinforcement in concrete topping	18,853	sf	0.50	9,427		
160 Concrete topping to precast, 3" thick	159	cy	75.00	11,925		
161 Placing concrete topping	16,394	sf	1.20	19,673		
162 Control and construction joints	16,394	sf	0.35	5,738		
163 Fire proofing floor construction, beams only	16,394	sf	1.50	24,591		
164 Fire stopping floors	2	flrs	1,500.00	3,000		
165 Expansion joint at junction with existing construction	360	lf	50.00	18,000		
8 SUBTOTAL					\$444,482	
167						
168 <b>B1020 ROOF CONSTRUCTION</b>						
169 <u>Structural Steel Roof</u>						
170						
171						

CONCEPT DESIGN COST ESTIMATE

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	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>SCHEME 4 - ADDITION</b>							
172	Structural steel framing to sloped roof - trusses	33	tns	5,000.00	165,000		
173	SUBTOTAL					\$165,000	
174							
175	<b>TOTAL - SUPERSTRUCTURE</b>						<b>\$609,482</b>
176							
177							
178	<b>B20 EXTERIOR CLOSURE</b>						
179							
180	<b>B2010 EXTERIOR WALLS</b>						
181	<u>Interior skin</u>						
182	Metal stud backup to exterior wall, 6" thick	6,715	sf	4.00	26,860		
183	Batt insulation	6,715	sf	1.00	6,715		
184	Vapor barrier	6,715	sf	0.10	672		
185	Denshield or similar to exterior face of stud backup	6,715	sf	2.00	13,430		
186	Drywall lining to interior face of stud backup	6,715	sf	1.50	10,073		
187	<u>Interior skin, sloped</u>						
188	Metal stud backup to exterior wall, 6" thick	1,800	sf	6.00	10,800		
189	Batt insulation	1,800	sf	1.50	2,700		
190	Vapor barrier	1,800	sf	0.10	180		
191	Denshield or similar to exterior face of stud backup	1,800	sf	2.00	3,600		
192	<u>Exterior skin</u>						
193	Metal panel to exterior walls, alucobond or similar	6,715	sf	40.00	268,600		
194	Metal panel to exterior walls, alucobond or similar, slope	1,800	sf	40.00	72,000		
	Miscellaneous angles, etc.	1	ls	10,000.00	10,000		
	<u>Miscellaneous</u>						
197	Scaffolding to exterior wall	8,515	sf	1.50	12,773		
198	Flashings	1	ls	15,000.00	15,000		
199	Sealants	1	ls	7,500.00	7,500		
200	SUBTOTAL					\$460,903	
201							
202	<b>B2020 WINDOWS</b>						
203	Curtainwall	1,321	sf	75.00	99,075		
204	Curtainwall sloped	11,438	sf	80.00	915,040		
205	Louvers (allowance)	250	sf	38.00	9,500		
206	Backer rod & double sealant	4,752	lf	2.00	9,504		
207	Wood blocking at openings	1	ls	5,000.00	5,000		
208	SUBTOTAL					\$1,038,119	
209							
210	<b>B2030 EXTERIOR DOORS</b>						
211	Entry doors, glazed, single leaf	4	ea	2,750.00	11,000		
212	Backer rod & double sealant	68	lf	2.00	136		
213	Wood blocking at openings	68	lf	3.00	204		
214	SUBTOTAL					\$11,340	
215							
216	<b>TOTAL - EXTERIOR CLOSURE</b>						<b>\$1,510,362</b>
217							
218							
219	<b>B30 ROOFING</b>						
220							
221	<b>B3010 ROOF COVERINGS</b>						
222	<u>Sloped Roofing</u>						
223	Glass roof included in Section B2020						
	<u>Miscellaneous Roofing</u>						
	Gutters/downspouts at sloped roofing	150	lf	10.00	1,500		
226	Metal trim to roof	300	lf	25.00	7,500		
227	Flashings	1	ls	5,000.00	5,000		
228	SUBTOTAL					\$14,000	
229							

CONCEPT DESIGN COST ESTIMATE

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DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
<b>SCHEME 4 - ADDITION</b>						
<b>B3020 ROOF OPENINGS</b>						
Allow for roof hatch/ elevator vents	1	ls	2,500.00	2,500		
<b>SUBTOTAL</b>					\$2,500	
<b>TOTAL - ROOFING</b>						<b>\$16,500</b>
<b>C10 INTERIOR CONSTRUCTION</b>						
<b>C1010 PARTITIONS</b>						
Shaft wall around staircases and elevators	648	sf	8.00	5,184		
Interior partitions, 3 5/8" stud, two layers gwb, batt insulation	4,200	sf	5.95	24,990		
Interior partitions, 3 5/8" stud, two layers gwb, batt insulation, fire rated	2,520	sf	5.95	14,994		
Low partition at area open to below	340	sf	5.95	2,023		
Chase wall partitions	728	sf	7.90	5,751		
Metal stud furring to interior face of exterior wall	3,808	sf	3.20	12,186		
Single side metal stud partition at sloped exterior surface	1,200	sf	3.50	4,200		
Allow for glazed partitions (8' high - hollow metal) - allowance	99	lf	320.00	31,680		
GWB column covers	55	ea	500.00	27,500		
GFRC column covers	8	ea	1,800.00	14,400		
Sealants & caulking at partitions	26,294	sf	0.35	9,203		
Rough blocking	5,010	lf	2.00	10,020		
Wood trim and rail to top of low partition	85	lf	50.00	4,250		
<b>SUBTOTAL</b>					\$166,381	
<b>C1020 INTERIOR DOORS</b>						
Doors, frames & hardware, single leaf	9	ea	1,050.00	9,450		
Doors frames & hardware, single leaf, glazed	5	ea	1,150.00	5,750		
Doors, frames & hardware, double leaf	7	pr	1,900.00	13,300		
Doors frames & hardware, double leaf, glazed	1	pr	2,100.00	2,100		
Paint doors and frames	30	ea	50.00	1,500		
Sealants & caulking	22	ea	29.75	655		
<b>SUBTOTAL</b>					\$32,755	
<b>C1030 SPECIALTIES / MILLWORK</b>						
Backer panels in electrical closets	1	ls	1,000.00	1,000		
Marker boards & tack boards in Study Rooms	30	lf	48.00	1,440		
Work counter at Copy	22	lf	100.00	2,200		
Signage/Directories/Bulletin Boards/Display cases	1	ls	5,000.00	5,000		
Fire extinguisher cabinets - allowance	9	ea	350.00	3,150		
Toilet Accessories in single bathrooms- allowance	4	rms	750.00	3,000		
<b>SUBTOTAL</b>					\$15,790	
<b>TOTAL - INTERIOR CONSTRUCTION</b>						<b>\$214,926</b>
<b>C20 STAIRCASES</b>						
<b>C2010 STAIR CONSTRUCTION</b>						
Feature staircase	4	ft	20,000.00	80,000		
Egress staircase						

CONCEPT DESIGN COST ESTIMATE

GFA

26,294

	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	<b>SCHEME 4 - ADDITION</b>						
284	gravel fill to make up levels	8	cy	20.00	160		
285	formwork to risers	192	lf	6.00	1,152		
286	reinforcement	1,650	lbs	0.75	1,238		
287	concrete material	9	cy	70.00	630		
288	placing concrete	9	cy	35.00	315		
289	handrails	115	lf	40.00	4,600		
290	foundations included elsewhere						
291	Access ladder to roof	1	ea	500.00	500		
292	SUBTOTAL					\$88,595	
293							
294	<b>C2020 STAIR FINISHES</b>						
295	Premium finish to feature staircases	800	sf	50.00	40,000		
296	Concrete sealer	192	sf	0.40	77		
297	SUBTOTAL					\$40,077	
298							
299	<b>TOTAL - STAIRCASES</b>						\$128,672
300							
301							
302	<b>C30: INTERIOR FINISHES</b>						
303							
304	<b>C3010 WALL FINISHES</b>						
305	Veneer plaster to gwb	27,547	sf	2.00	55,094		
306	Paint to GWB	27,547	sf	0.50	13,774		
7	Ceramic tile to toilets full ht wall	1,048	sf	10.00	10,480		
8	SUBTOTAL					\$79,348	
309							
310	<b>C3020 FLOOR FINISHES</b>						
311	Premium flooring to lobby	327	sf	28.00	9,156		
312	VCT to floors	397	sf	2.50	993		
313	Carpet to floors	2,465	sy	35.00	86,275		
314	Ceramic tiles in bathrooms and the like	260	sf	10.00	2,600		
315	Tile base	131	lf	10.00	1,310		
316	Rubber base	2,296	lf	1.75	4,018		
317	Marble thresholds @ bathrooms	4	ea	55.00	220		
318	Concrete sealer @ Mech/elect rooms	1,545	sf	0.45	695		
319	SUBTOTAL					\$105,267	
320							
321	<b>C3030 CEILING FINISHES</b>						
322	Drywall ceilings (40%)	11,586	sf	3.75	43,448		
323	Vertical drywall soffits	1	ls	7,500.00	7,500		
324	ACT ceilings	11,586	sf	2.50	28,965		
325	Paint to ceilings	11,586	sf	0.60	6,952		
326	Paint to exposed structure and exposed MEP systems, sprayed	1,545	sf	2.00	3,090		
327	SUBTOTAL					\$89,955	
328							
329	<b>TOTAL - INTERIOR FINISHES</b>						\$274,570
330							
331							
332	<b>D10 CONVEYING SYSTEMS</b>						
333							
334	<b>D1010 ELEVATOR</b>						
335	Passenger elevator, 3 stop	1	ea	65,000.00	65,000		
336	Pit ladders	1	ea	250.00	250		
337	Sill angles	12	lf	25.00	300		
338	SUBTOTAL					\$65,550	
339							
340							

CONCEPT DESIGN COST ESTIMATE

DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>SCHEME 4 - ADDITION</b>						
<b>TOTAL - CONVEYING SYSTEMS</b>						<b>\$65,550</b>
<b>D20 PLUMBING</b>						
<b>D20 PLUMBING, GENERALLY</b>						
Plumbing installation	8	fix	3,000.00	24,000		
SUBTOTAL					\$24,000	
<b>TOTAL - PLUMBING</b>						<b>\$24,000</b>
<b>D30 HVAC</b>						
<b>D30 HVAC, GENERALLY</b>						
HVAC equipment	26,294	sf	8.50	223,499		
Air distribution	26,294	sf	9.00	236,646		
Piping	26,294	sf	5.00	131,470		
Controls	26,294	sf	3.00	78,882		
Testing and balancing	26,294	sf	0.30	7,888		
Shop drawings, coordination, fees, etc.	26,294	sf	0.10	2,629		
SUBTOTAL					\$681,014	
<b>TOTAL - HVAC</b>						<b>\$681,014</b>
<b>D40 FIRE PROTECTION</b>						
<b>D40 FIRE PROTECTION, GENERALLY</b>						
Allow for fire protection	26,294	sf	2.50	65,735		
Fire pump assembly	1	ls	35,000.00	35,000		
SUBTOTAL					\$100,735	
<b>TOTAL - FIRE PROTECTION</b>						<b>\$100,735</b>
<b>D50 ELECTRICAL</b>						
<b>D5010 SERVICE &amp; DISTRIBUTION</b>						
Service & Distribution	26,294	sf	2.95	77,567		
Equipment Wiring	26,294	sf	1.25	32,868		
SUBTOTAL					\$110,435	
<b>D5020 LIGHTING &amp; POWER</b>						
Allow for lighting	26,294	sf	4.00	105,176		
Allow for branch devices	26,294	sf	0.20	5,259		
Allow for lighting & branch circuitry	26,294	sf	1.75	46,015		
SUBTOTAL					\$156,450	
<b>D5030 COMMUNICATION &amp; SECURITY SYSTEMS</b>						
Fire Alarm System (addressable)	26,294	sf	1.50	39,441		
Telephone/data rough-in	26,294	sf	0.60	15,776		
Telephone/data wiring	26,294	sf	1.50	39,441		
Security installation, rough-in	26,294	sf	0.50	13,147		
SUBTOTAL					\$107,805	

CONCEPT DESIGN COST ESTIMATE

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26,294

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DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>SCHEME 4 - ADDITION</b>						
<b>D5040 OTHER ELECTRICAL SYSTEMS</b>						
Lightning protection	26,294	sf	0.35	9,203		
Temporary power & light, fees & permits	26,294	sf	0.25	6,574		
Emergency generator	1	ea	60,000.00	60,000		
<b>SUBTOTAL</b>					<b>\$75,777</b>	
<b>TOTAL - ELECTRICAL</b>						<b>\$450,467</b>
<b>E10 EQUIPMENT</b>						
<b>E10 EQUIPMENT, GENERALLY</b>						
No items in this section						
<b>SUBTOTAL</b>					<b>\$0</b>	
<b>TOTAL EQUIPMENT</b>						<b>\$0</b>
<b>E20 FURNISHINGS</b>						
<b>E20 FURNISHINGS</b>						
Entry mats & frames - allowance	100	sf	25.00	2,500		
Compact shelving, double sided - electronic	3,621	lf	350.00	1,267,350		
Individual study carells	56	ea	1,200.00	67,200		
<b>SUBTOTAL</b>					<b>\$1,337,050</b>	
<b>TOTAL FURNISHINGS</b>						<b>\$1,337,050</b>
<b>F10 SPECIAL CONSTRUCTION</b>						
<b>F10 SPECIAL CONSTRUCTION</b>						
No items in this section						
<b>SUBTOTAL</b>					<b>\$0</b>	
<b>TOTAL - SPECIAL CONSTRUCTION</b>						<b>\$0</b>
<b>F20 SELECTIVE BUILDING DEMOLITION</b>						
<b>F20 SELECTIVE DEMOLITION</b>						
All demolition included in Renovation						
<b>SUBTOTAL</b>					<b>\$0</b>	
<b>TOTAL - SELECTIVE DEMOLITION</b>						<b>\$0</b>
<b>G SITE PREP/DEVELOPMENT</b>						
<b>G10 SITE PREPARATION &amp; DEMOLITION</b>						
Allowance for miscellaneous site demolition and clearar	1	ls	25,000.00	25,000		
Striping topsoil, stockpile	566	cy	4.00	2,264		
Earth moving, cut and fill (included in basement excavation)				elsewhere		
Silt fence/erosion control	500	lf	10.00	5,000		
<b>SUBTOTAL</b>					<b>32,264</b>	

CONCEPT DESIGN COST ESTIMATE

GFA

26,294

DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB. TOTAL	TOTAL COST
<b>SCHEME 4 - ADDITION</b>						
<b>G20 SITE IMPROVEMENTS</b>						
Excavate to reduce levels under paving	31	cy	4.00	124		
Remove excavated material from site	31	cy	15.00	465		
Gravel base under paving	31	cy	18.00	558		
Concrete base to paving	1,241	sf	3.00	3,723		
Precast concrete pavers	1,241	sf	8.00	9,928		
Grate to areaway	262	sf	40.00	10,480		
<u>Landscaping &amp; Plantings:</u>						
Trees	20	ea	1,000.00	20,000		
Shrubs	1	ls	10,000.00	10,000		
Seeding	11,438	sf	0.30	3,431		
Spread existing topsoil	566	cy	4.00	2,264		
<u>Amphitheater</u>						
Excavate to reduce levels to create amphitheater	2,186	cy	6.00	13,116		
Remove excavated material from site	2,186	cy	15.00	32,790		
Additional landscaping to slope	1	ls	25,000.00	25,000		
Lighting requirements	1	ls	5,000.00	5,000		
SUBTOTAL					\$136,879	
<b>G30 CIVIL MECHANICAL UTILITIES</b>						
<u>Drainage &amp; Sewer</u>						
Allow for sewer line - allow to connect to existing	1	ls	10,000.00	10,000		
Allow for drainage	1	ls	20,000.00	20,000		
<u>Water service</u>						
Domestic water & fire protection service (assumed none required)						
SUBTOTAL					\$30,000	
<b>G40 ELECTRICAL UTILITIES</b>						
Relocate existing electrical utility vault	1	ls	50,000.00	50,000		
Building lighting	1	ls	10,000.00	10,000		
Terrace lighting	1	ls	5,000.00	5,000		
SUBTOTAL					\$65,000	
<b>TOTAL - SITE DEVELOPMENT</b>						<b>\$264,143</b>
<b>MARK UP</b>						
<b>GENERAL COND. / PERMIT / INS.</b>						
General Conditions	9	month	60,000.00	540,000		
Temp protection/cleaning	1	ls	10,000.00	10,000		
Insurance & bond	1.50%		7,056,487	105,847		
Permit	0.70%		7,162,334	50,136		
SUBTOTAL					\$705,983	
<b>FEE</b>						
Overhead & profit/fee	5.00%		7,212,470	360,624		
SUBTOTAL					\$360,624	
<b>TOTAL - MARK UP</b>						<b>\$1,066,607</b>
<b>CONTINGENCIES/ESCALATION</b>						

CONCEPT DESIGN COST ESTIMATE

GFA

26,294

	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	<b>SCHEME 4 - ADDITION</b>						
514	<b>DESIGN &amp; PRICING</b>						
515	Design and pricing contingency (Reduces to 0% at Construction Documents)	15.00%		7,573,094	1,135,964		
516	SUBTOTAL					\$1,135,964	
517							
518	<b>ESCALATION</b>						
519	Included at 3.5% per annum	3.50%		8,709,058	304,817		
520	SUBTOTAL					\$304,817	
521							
522	<b>CONSTRUCTION CONTINGENCY</b>						
523	Excluded - Recommend that 5% construction contingency is included in the overall project budget	0.00%		9,013,875			
524	SUBTOTAL					\$0	
525							
526	<b>TOTAL CONTINGENCIES/ESCALATION</b>						\$1,440,781
527							
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530							
531							
					9,013,875	9,013,875	9,013,875

# SCHEME 4- RENOVATION

<b>COST SUMMARY</b>					
TRADE DESCRIPTION	SUB-TOTAL	TOTAL	\$/SF	%	
<b><u>SCHEME 4 - RENOVATION</u></b>					
<b>A10 FOUNDATIONS</b>					
A1010 Standard Foundations	\$0				
A1020 Special Foundations	\$0				
A1030 Lowest Floor Construction	\$10,000	\$10,000	\$0.21	0.2%	
<b>A20 BASEMENT CONSTRUCTION</b>					
A2010 Basement Excavation	\$0				
A2020 Basement Walls	\$0	\$0	\$0.00	0.0%	
<b>B10 SUPERSTRUCTURE</b>					
B1010 Upper Floor Construction	\$20,000				
B1020 Roof Construction	\$10,000	\$30,000	\$0.62	0.7%	
<b>B20 EXTERIOR CLOSURE</b>					
B2010 Exterior Walls	\$5,000				
B2020 Windows	\$212,680				
B2030 Exterior Doors	\$11,685	\$229,365	\$4.75	5.0%	
<b>B30 ROOFING</b>					
B3010 Roof Coverings	\$39,148				
B3020 Roof Openings	\$211,800	\$250,948	\$5.20	5.5%	
<b>C10 INTERIOR CONSTRUCTION</b>					
C1010 Partitions	\$670,172				
C1020 Interior Doors	\$93,561				
C1030 Specialties/Millwork	\$177,070	\$940,803	\$19.48	20.5%	
<b>C20 STAIRCASES</b>					
C2010 Stair Construction	\$7,500				
C2020 Stair Finishes	\$30,000	\$37,500	\$0.78	0.8%	
<b>C30 INTERIOR FINISHES</b>					
C3010 Wall Finishes	\$80,490				
C3020 Floor Finishes	\$162,205				
C3030 Ceiling Finishes	\$144,872	\$387,567	\$8.03	8.5%	
<b>D10 CONVEYING SYSTEMS</b>					
D1010 Elevator	\$0	\$0	\$0.00	0.0%	
<b>D20 PLUMBING</b>					
D20 Plumbing	\$30,000	\$30,000	\$0.62	0.7%	
<b>D30 HVAC</b>					
D30 HVAC	\$1,260,634	\$1,260,634	\$26.11	27.5%	
<b>D40 FIRE PROTECTION</b>					
D40 Fire Protection	\$120,718	\$120,718	\$2.50	2.6%	

<b>COST SUMMARY</b>					
TRADE DESCRIPTION	SUB-TOTAL	TOTAL	\$/SF	%	
<b><u>SCHEME 4 - RENOVATION</u></b>					
<b>D50 ELECTRICAL</b>					
D5010 Service & Distribution	\$202,806				
D5020 Lighting & Power	\$287,307				
D5030 Communication & Security Systems	\$197,978				
D5040 Other Electrical Systems	\$28,972	<b>\$717,063</b>	<b>\$14.85</b>	<b>15.7%</b>	
<b>E10 EQUIPMENT</b>					
E10 Equipment	\$0	<b>\$0</b>	<b>\$0.00</b>	<b>0.0%</b>	
<b>E20 FURNISHINGS</b>					
E20 Furnishings	\$264,080	<b>\$264,080</b>	<b>\$5.47</b>	<b>5.8%</b>	
<b>F10 SPECIAL CONSTRUCTION</b>					
F10 Special Construction	\$0	<b>\$0</b>	<b>\$0.00</b>	<b>0.0%</b>	
<b>F20 SELECTIVE BUILDING DEMOLITION</b>					
F20 Selective Demolition	\$301,697	<b>\$301,697</b>	<b>\$6.25</b>	<b>6.6%</b>	
<b>G SITE PREP/DEVELOPMENT</b>					
G10 Site Preparation/Demolition	\$0				
G20 Site Improvements	\$0				
G30 Civil / Mechanical Utilities	\$0				
G40 Electrical Utilities	\$0	<b>\$0</b>	<b>\$0.00</b>	<b>0.0%</b>	
<b>TOTAL DIRECT COST (Trade Costs)</b>		<b>\$4,580,375</b>	<b>\$94.86</b>	<b>100.0%</b>	
<b>MARK UP</b>					
General Conditions/Permit/Insurance	\$479,428				
Overhead/Fee/Profit	\$252,990	<b>\$732,418</b>	<b>\$15.17</b>	<b>16.0%</b>	
<b>SUBTOTAL CONSTRUCTION</b>		<b>\$5,312,793</b>	<b>\$110.03</b>	<b>116.0%</b>	
<b>CONTINGENCIES/ESCALATION</b>					
Design & Pricing Contingency	\$796,919				
Escalation	\$213,840				
Construction Contingency	Excl.	<b>\$1,010,759</b>	<b>\$20.93</b>	<b>22.1%</b>	
<b>TOTAL CONSTRUCTION COST</b>		<b>\$6,323,552</b>	<b>\$130.96</b>		

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DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>SCHEME 4 - RENOVATION</b>						
<b>A10 FOUNDATIONS</b>						
<b>A1010 STANDARD FOUNDATIONS</b>						
No items in this section						
SUBTOTAL					\$0	
<b>A1020 SPECIAL FOUNDATIONS</b>						
No items in this section						
SUBTOTAL					\$0	
<b>A1030 LOWEST FLOOR CONSTRUCTION</b>						
Patching existing slab on grade	1	ls	10,000.00	10,000		
SUBTOTAL					\$10,000	
<b>TOTAL - FOUNDATIONS</b>						<b>\$10,000</b>
<b>A20 BASEMENT CONSTRUCTION</b>						
<b>A2010 BASEMENT EXCAVATION</b>						
No items in this section						
SUBTOTAL					\$0	
<b>A2020 BASEMENT WALLS</b>						
No items in this section						
SUBTOTAL					\$0	
<b>TOTAL - BASEMENT CONSTRUCTION</b>						<b>\$0</b>
<b>B10 SUPERSTRUCTURE</b>						
<b>B1010 UPPER FLOOR CONSTRUCTION</b>						
Allowance for minor modifications to existing floor structure	1	ls	20,000.00	20,000		
Seismic upgrade of existing structure				excluded		
SUBTOTAL					\$20,000	
<b>B1020 ROOF CONSTRUCTION</b>						
Allowance for minor modifications to existing roof structure	1	ls	10,000.00	10,000		
Seismic upgrade of existing structure				excluded		
SUBTOTAL					\$10,000	
<b>TOTAL - SUPERSTRUCTURE</b>						<b>\$30,000</b>
<b>B20 EXTERIOR CLOSURE</b>						
<b>B2010 EXTERIOR WALLS</b>						
<u>Exterior skin</u>						
Allowance for abutment of new exterior closure to existing exterior wall	1	ls	5,000.00	5,000		
SUBTOTAL					\$5,000	
<b>B2020 WINDOWS</b>						

	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	<b>SCHEME 4 - RENOVATION</b>						
54	Curtainwall at roof level	2,800	sf	75.00	210,000		
55	Backer rod & double sealant	840	lf	2.00	1,680		
56	Wood blocking at openings	1	ls	1,000.00	1,000		
57	SUBTOTAL					\$212,680	
58							
59	<b>B2030 EXTERIOR DOORS</b>						
60	Egress doors, single leaf, hollow metal	1	ea	1,600.00	1,600		
61	Entry doors, glazed, single leaf	2	ea	2,750.00	5,500		
62	Entry doors, glazed, double leaf	1	pr	4,500.00	4,500		
63	Backer rod & double sealant	17	lf	2.00	34		
64	Wood blocking at openings	17	lf	3.00	51		
65	SUBTOTAL					\$11,685	
66							
67	<b>TOTAL - EXTERIOR CLOSURE</b>						\$229,365
68							
69							
70	<b>B30 ROOFING</b>						
71							
72	<b>B3010 ROOF COVERINGS</b>						
73	<u>Flat Roofing</u>						
74	Allowance for patching existing roof at new curtainwall	1,080	sf	4.00	4,320		
75	Insulation	1,080	sf	2.00	2,160		
	Abutment of flat roof with adjacent walls	180	lf	4.00	720		
	Allowance for working membrane roofing around pipe and duct penetrations	1	ls	1,500.00	1,500		
78	Rough blocking	396	lf	3.00	1,188		
79	<u>Miscellaneous Roofing</u>						
80	Flashings	180	lf	7.00	1,260		
81	Screen wall on roof	800	sf	35.00	28,000		
82	SUBTOTAL					\$39,148	
83							
84	<b>B3020 ROOF OPENINGS</b>						
85	New skylight glazing	2,824	sf	75.00	211,800		
86	SUBTOTAL					\$211,800	
87							
88	<b>TOTAL - ROOFING</b>						\$250,948
89							
90							
91	<b>C10 INTERIOR CONSTRUCTION</b>						
92							
93	<b>C1010 PARTITIONS</b>						
94	Interior partitions, 3 5/8" stud, two layers gwb, batt insulation	10,946	sf	5.95	65,129		
95	Interior partitions, 3 5/8" stud, two layers gwb, batt insulation, fire rated	1,000	sf	5.95	5,950		
96	Low partition at circulation offices and reference offices, etc.	1,920	sf	5.95	11,424		
97	Chase wall partitions	468	sf	7.90	3,697		
98	Allow for glazed partitions (8' high - hollow metal) - allowance	250	lf	320.00	80,000		
99	Glass walls at areas open to below - full height	10,270	sf	40.00	410,800		
100	GWB column covers	70	ea	500.00	35,000		
101	Sealants & caulking at partitions	48,287	sf	0.25	12,072		
2	Rough blocking	11,050	lf	2.00	22,100		
103	Wood trim to top of low partition	480	lf	50.00	24,000		
104	SUBTOTAL					\$670,172	
105							

CONCEPT DESIGN COST ESTIMATE

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DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
<b>SCHEME 4 - RENOVATION</b>						
<b>C1020 INTERIOR DOORS</b>						
Doors, frames & hardware, single leaf	55	ea	1,050.00	57,750		
Doors frames & hardware, single leaf, glazed	15	ea	1,150.00	17,250		
Doors, frames & hardware, double leaf	2	pr	1,900.00	3,800		
Doors frames & hardware, double leaf, glazed	4	pr	2,100.00	8,400		
Paint doors and frames	82	ea	50.00	4,100		
Sealants & caulking	76	ea	29.75	2,261		
<b>SUBTOTAL</b>					<b>\$93,561</b>	
<b>C1030 SPECIALTIES / MILLWORK</b>						
Partitions and accessories in existing bathrooms - excluded						
Backer panels in electrical closets	1	ls	3,000.00	3,000		
Marker boards & tack boards in Study Rooms	30	lf	48.00	1,440		
Reception desk	108	lf	400.00	43,200		
Reception desk, curved	40	lf	600.00	24,000		
Work counter at Copy	22	lf	100.00	2,200		
Staff lounge						
Base storage units	10	lf	120.00	1,200		
Countertops to base storage units	10	lf	60.00	600		
Wall storage units	10	lf	100.00	1,000		
On-line Research						
Base storage units	44	lf	120.00	5,280		
Countertops to base storage units	44	lf	60.00	2,640		
Wall storage units	44	lf	100.00	4,400		
Copy center						
Base storage units	29	lf	120.00	3,480		
Countertops to base storage units	29	lf	60.00	1,740		
Wall storage units	29	lf	100.00	2,900		
Mail						
Base storage units	8	lf	120.00	960		
Countertops to base storage units	8	lf	60.00	480		
Wall storage units	8	lf	100.00	800		
General Storage						
Base storage units	23	lf	120.00	2,760		
Countertops to base storage units	23	lf	60.00	1,380		
Wall storage units	23	lf	100.00	2,300		
Circulation desk area						
Counters	27	lf	100.00	2,700		
Third floor printer/copier						
Counters	27	lf	100.00	2,700		
Shelving in storage rooms - allowance	270	lf	18.00	4,860		
Signage/Directories/Bulletin Boards/Display cases	1	ls	15,000.00	15,000		
Fire extinguisher cabinets - allowance	16	ea	350.00	5,600		
Janitors Accessories - allowance	1	rms	300.00	300		
Toilet Accessories in single bathrooms- allowance	5	rms	750.00	3,750		
Allowance for miscellaneous casework in Rare Books Room	1	ls	15,000.00	15,000		
Display case in lobby	29	lf	300.00	8,700		
Mail pockets in Lobby	18	lf	150.00	2,700		
Allowance for miscellaneous specialtlers not clearly depicted on drawings	1	ls	10,000.00	10,000		
<b>SUBTOTAL</b>					<b>\$177,070</b>	
<b>TOTAL - INTERIOR CONSTRUCTION</b>						<b>\$940,803</b>

CONCEPT DESIGN COST ESTIMATE

GFA

48,287

	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	<b>SCHEME 4 - RENOVATION</b>						
160	<b>C20 STAIRCASES</b>						
161							
162	<b>C2010 STAIR CONSTRUCTION</b>						
163	ADA upgrade to existing staircases	3	ft	2,500.00	7,500		
164	SUBTOTAL					\$7,500	
165							
166	<b>C2020 STAIR FINISHES</b>						
167	Premium finish to feature staircases	600	sf	50.00	30,000		
168	SUBTOTAL					\$30,000	
169							
170	<b>TOTAL - STAIRCASES</b>						\$37,500
171							
172							
173	<b>C30 INTERIOR FINISHES</b>						
174							
175	<b>C3010 WALL FINISHES</b>						
176	Veneer plaster to gwb	27,492	sf	2.00	54,984		
177	Paint to GWB	27,492	sf	0.50	13,746		
178	Ceramic tile to toilets full ht wall	1,176	sf	10.00	11,760		
179	SUBTOTAL					\$80,490	
180							
181	<b>C3020 FLOOR FINISHES</b>						
182	VCT to floors	561	sf	2.50	1,403		
183	Carpet to floors	4,355	sy	35.00	152,425		
184	Ceramic tiles in bathrooms and the like	255	sf	10.00	2,550		
185	Tile base	147	lf	10.00	1,470		
186	Rubber base	2,291	lf	1.75	4,009		
187	Marble thresholds @ bathrooms	5	ea	55.00	275		
188	Concrete sealer @ Mech/elect rooms	162	sf	0.45	73		
189	SUBTOTAL					\$162,205	
190							
191	<b>C3030 CEILING FINISHES</b>						
192	Drywall ceilings (40%)	20,007	sf	3.75	75,026		
193	Vertical drywall soffits	1	ls	7,500.00	7,500		
194	ACT ceilings	20,007	sf	2.50	50,018		
195	Paint to ceilings	20,007	sf	0.60	12,004		
196	Paint to exposed structure and exposed MEP systems, sprayed	162	sf	2.00	324		
197	SUBTOTAL					\$144,872	
198							
199	<b>TOTAL - INTERIOR FINISHES</b>						\$387,567
200							
201							
202	<b>D10 CONVEYING SYSTEMS</b>						
203							
204	<b>D1010 ELEVATOR</b>						
205	No items in this section						
206	SUBTOTAL					\$0	
207							
208	<b>TOTAL - CONVEYING SYSTEMS</b>						\$0
209							
210							
211	<b>D20 PLUMBING</b>						
212							
213	<b>D20 PLUMBING, GENERALLY</b>						
214	Plumbing installation	10	fix	3,000.00	30,000		

CONCEPT DESIGN COST ESTIMATE

GFA

48,287

	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	<b>SCHEME 4 - RENOVATION</b>						
215	Note: Assumed no work required in existing bathrooms						
216	SUBTOTAL					\$30,000	
217							
218	<b>TOTAL - PLUMBING</b>						<b>\$30,000</b>
219							
220							
221	<b>D30 HVAC</b>						
222							
223	<b>D30 HVAC, GENERALLY</b>						
224	HVAC equipment	48,287	sf	8.50	410,440		
225	Air distribution	48,287	sf	9.00	434,583		
226	Piping	48,287	sf	5.00	241,435		
227	Controls	48,287	sf	3.00	144,861		
228	Testing and balancing	48,287	sf	0.30	14,486		
229	Shop drawings, coordination, fees, etc.	48,287	sf	0.10	4,829		
230	Premium for special requirements in Rare Books Storage	1	ls	10,000.00	10,000		
231	SUBTOTAL					\$1,260,634	
232							
233	<b>TOTAL - HVAC</b>						<b>\$1,260,634</b>
234							
235							
236	<b>D40 FIRE PROTECTION</b>						
237							
238	<b>D40 FIRE PROTECTION, GENERALLY</b>						
239	Allow for fire protection	48,287	sf	2.50	120,718		
240	SUBTOTAL					\$120,718	
241							
242	<b>TOTAL - FIRE PROTECTION</b>						<b>\$120,718</b>
243							
244							
245	<b>D50 ELECTRICAL</b>						
246							
247	<b>D5010 SERVICE &amp; DISTRIBUTION</b>						
248	Service & Distribution	48,287	sf	2.95	142,447		
249	Equipment Wiring	48,287	sf	1.25	60,359		
250	SUBTOTAL					\$202,806	
251							
252	<b>D5020 LIGHTING &amp; POWER</b>						
253	Allow for lighting	48,287	sf	4.00	193,148		
254	Allow for branch devices	48,287	sf	0.20	9,657		
255	Allow for lighting & branch circuitry	48,287	sf	1.75	84,502		
256	SUBTOTAL					\$287,307	
257							
258	<b>D5030 COMMUNICATION &amp; SECURITY SYSTEMS</b>						
259	Fire Alarm System (addressable)	48,287	sf	1.50	72,431		
260	Telephone/data rough-in	48,287	sf	0.60	28,972		
261	Telephone/data wiring	48,287	sf	1.50	72,431		
262	Security installation, rough-in	48,287	sf	0.50	24,144		
263	SUBTOTAL					\$197,978	
264							
265	<b>D5040 OTHER ELECTRICAL SYSTEMS</b>						
266	Lightning protection	48,287	sf	0.35	16,900		
267	Temporary power & light, fees & permits	48,287	sf	0.25	12,072		
268	SUBTOTAL					\$28,972	
269							
270	<b>TOTAL - ELECTRICAL</b>						<b>\$717,063</b>
271							
272							

	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	<b>SCHEME 4 - RENOVATION</b>						
273	<b>E10 EQUIPMENT</b>						
274							
275	<b>E10 EQUIPMENT, GENERALLY</b>						
276	No items in this section						
277	SUBTOTAL					\$0	
278							
279	<b>TOTAL - EQUIPMENT</b>						\$0
280							
281							
282	<b>E20 FURNISHINGS</b>						
283							
284	<b>E20 FURNISHINGS</b>						
285	Entry mats & frames - allowance	200	sf	25.00	5,000		
286	Double sided library shelving - assumed all new	981	lf	100.00	98,100		
287	Single sided library shelving - assumed all new	288	lf	85.00	24,480		
288	Wood end panels to library shelving - assumed all new	87	ea	300.00	26,100		
289	Individual study carells	92	ea	1,200.00	110,400		
290	Individual work stations - assumed by others						
291	SUBTOTAL					\$264,080	
292							
293	<b>TOTAL - FURNISHINGS</b>						\$264,080
294							
295							
296							
297	<b>F10 SPECIAL CONSTRUCTION</b>						
298							
299	<b>F10 SPECIAL CONSTRUCTION</b>						
300	No items in this section						
301	SUBTOTAL					\$0	
302							
303	<b>TOTAL - SPECIAL CONSTRUCTION</b>						\$0
304							
305	<b>F20 SELECTIVE BUILDING DEMOLITION</b>						
306							
307	<b>F20 SELECTIVE DEMOLITION</b>						
308	Remove all mechanical and electrical services in affected portion of building	42,740	sf	1.50	64,110		
309	Remove floor finishes	42,740	sf	0.50	21,370		
310	Remove ceiling finishes	42,740	sf	0.50	21,370		
311	Remove interior partitions	42,740	sf	1.50	64,110		
312	Remove casework and specialties	42,740	sf	1.00	42,740		
313	Remove walls at areas open to below	4,576	sf	3.50	16,016		
314	Remove cladding from exterior face of existing exterior wall	1,729	sf	5.00	8,645		
315	Remove portion of existing exterior wall, complete	5,278	sf	12.00	63,336		
316	SUBTOTAL					\$301,697	
317							
318	<b>TOTAL - SELECTIVE DEMOLITION</b>						\$301,697
319							
320							
321	<b>G SITE PREP/DEVELOPMENT</b>						
322							
323	<b>G10 SITE PREPARATION &amp; DEMOLITION</b>						
324	Included in Addition estimate						
325	SUBTOTAL						
326							

CONCEPT DESIGN COST ESTIMATE

GFA

48,287

DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>SCHEME 4 - RENOVATION</b>						
327 <b>G20 SITE IMPROVEMENTS</b>						
328 Included in Addition estimate						
329 SUBTOTAL					\$0	
330						
331 <b>G30 CIVIL MECHANICAL UTILITIES</b>						
332 Included in Addition estimate						
333 SUBTOTAL					\$0	
334						
335 <b>G40 ELECTRICAL UTILITIES</b>						
336 Included in Addition estimate						
337 SUBTOTAL					\$0	
338						
339 <b>TOTAL - SITE DEVELOPMENT</b>						\$0
340						
341						
342 <b>MARK UP</b>						
343						
344 <b>GENERAL COND. / PERMIT / INS.</b>						
345 General Conditions	6	mth	60,000.00	360,000		
346 Temp protection/cleaning	1	ls	10,000.00	10,000		
347 Insurance & bond	1.50%		4,950,375	74,256		
348 Permit	0.70%		5,024,631	35,172		
349 SUBTOTAL					\$479,428	
350						
351 <b>FEE</b>						
352 Overhead & profit/fee	5.00%		5,059,803	252,990		
353 SUBTOTAL					\$252,990	
354						
355 <b>TOTAL - MARK UP</b>						\$732,418
356						
357						
358 <b>CONTINGENCIES/ESCALATION</b>						
359						
360 <b>DESIGN &amp; PRICING</b>						
361 Design and pricing contingency (Reduces to 0% at Construction Documents)	15.00%		5,312,793	796,919		
362 SUBTOTAL					\$796,919	
363						
364 <b>ESCALATION</b>						
365 Included at 3.5% per annum	3.50%		6,109,712	213,840		
366 SUBTOTAL					\$213,840	
367						
368 <b>CONSTRUCTION CONTINGENCY</b>						
369 Excluded - Recommend that 5% construction contingency is included in the overall project budget	0.00%		6,323,552			
370 SUBTOTAL					\$0	
371						
372 <b>TOTAL - CONTINGENCIES/ESCALATION</b>						\$1,010,759
				6,323,552	6,323,552	6,323,552

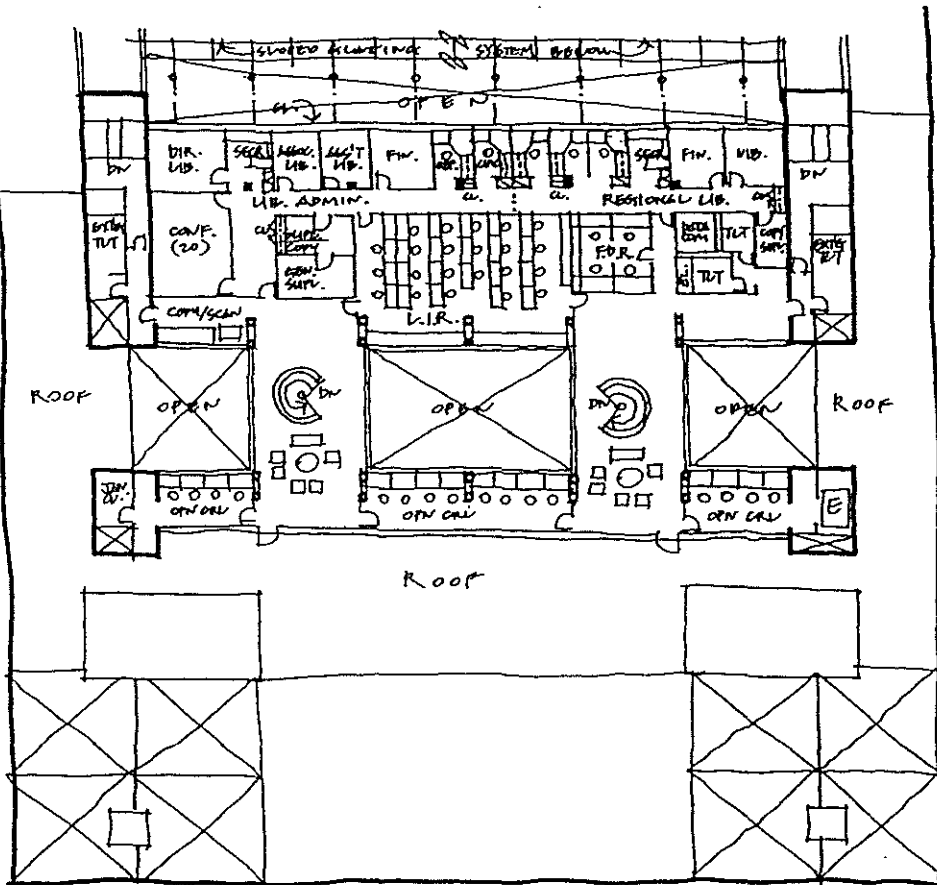
UMMS Medical Library Study  
Appendix

DCAM Project No. UW991ST1  
9912.000

### Program Adjustments – Regional Medical Library

As a result of discussions with UMMS, minor program adjustments were made to address the space implications of designation of the Library as a regional resource. The following sketch plans and annotations deal with these adjustments, which are not reflected in the Library Program documents.

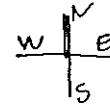
1 (508) 856-5210 2 PAGES ATTN, JOHN PETERS



PROGRAM SPACES:

LIBRARY ADMINISTRATION:		NSF
DIRECTOR OFF.	- 1	160
FINANCE MGR.	- 1	150
SEC. / WAIT.	- 1	100
ASS'T LIB.	- 1	120
ASSOC. LIB.	- 1	120
CONF. RM (20)	- 1	350
STAFF / FILE / COPY / STOR.	- 1	250
L.I.R. (2 WSD)	- 1	300
F.D.R. 4 PL.	- 1	250
REF. LIB.	L.I.R. - 1	80 *
CIRC. LIB.	F.D.R. - 1	80 **
REGIONAL LIB. ADMIN.:		
LIB. OFFICE	- 1	120 **
FIN. OFFICE	- 1	120 **
SEC. / WAIT.	- 1	100 **
STAFF STA.	- 3 (80)	240 **
COPY / STAFF / FILE		80 **

READERS  
 16 - OPN CARRELS  
 COPY / SCAN STA.  
 2 - INTERNAL LAG.



HS&P 9912 \* MOVED FROM 1ST FLR.  
 03/28/00 \*\* ADDED TO PROGRAM

030912 11 10  
 DC&M  
 LMMS  
 MEDICAL  
 LIBRARY

LEVEL 3.

JOAN & ELSINE,

03/29/00

THIS IS A LAYOUT ON 3<sup>RD</sup> FLOOR SHOWING IMPLICATIONS OF NEW PROGRAM SPACES ON SPACE PLANNING.

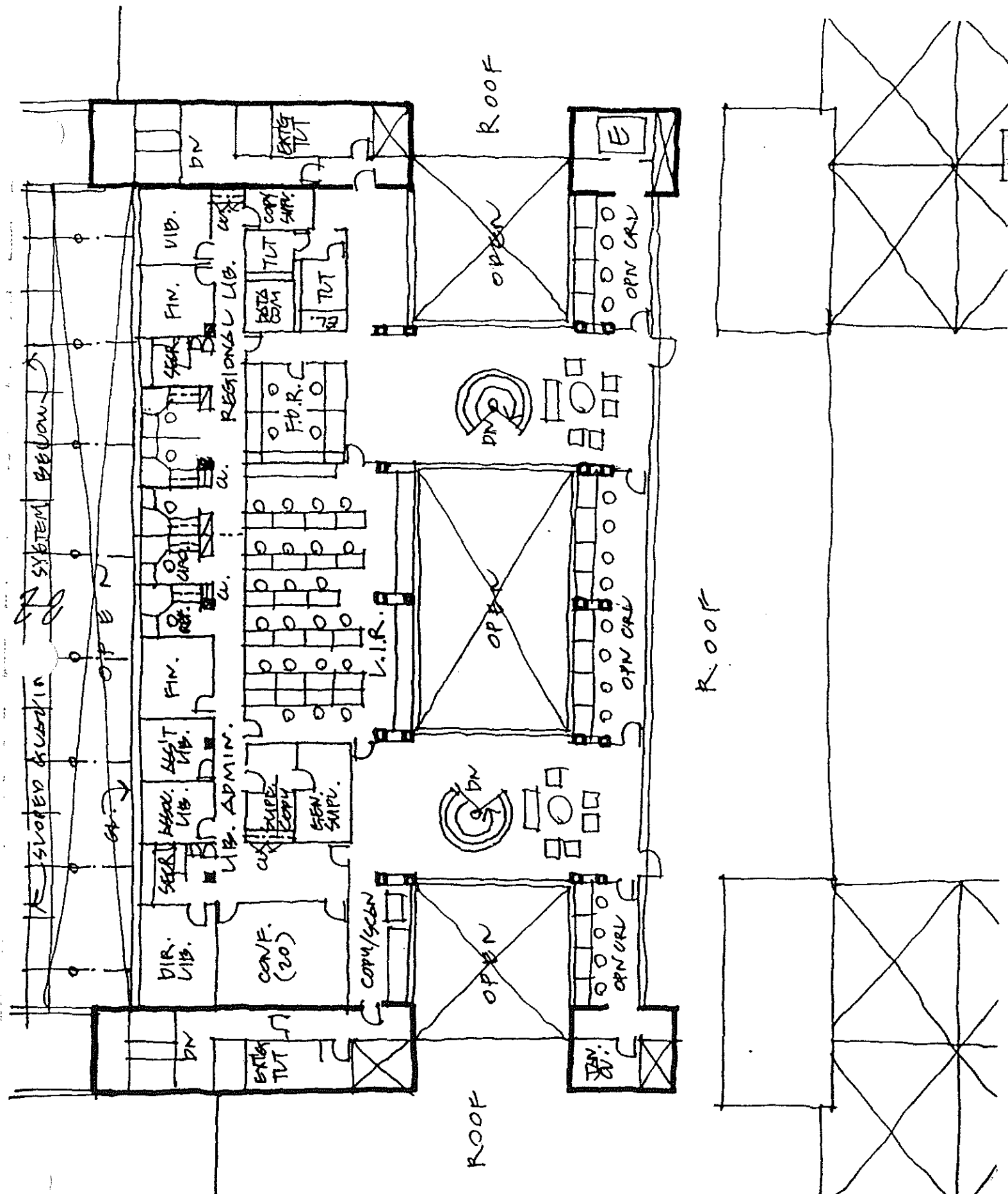
PLEASE LOOK OVER THE PLAN AND PROGRAM AREAS AND LET US HAVE YOUR COMMENTS.

WE HAVE ASSUMED MOVED REF. LIB. & NEW CIRC. LIB. TO BE 80 NSF WORK STS(S).

THE LAYOUT IS TIGHT, SO OFFICES SHOWN AT 10' WIDTH WILL BE 9'-6" IN REALITY - WK. STS(S) ARE SYSTEMS FURNITURE 8'x10' MODULES.

THE 16 OPEN CARRELS REMAINING ARE 5'-3" O.C. LOCATED ENTIRELY IN THE NORTH CENTER.

1/



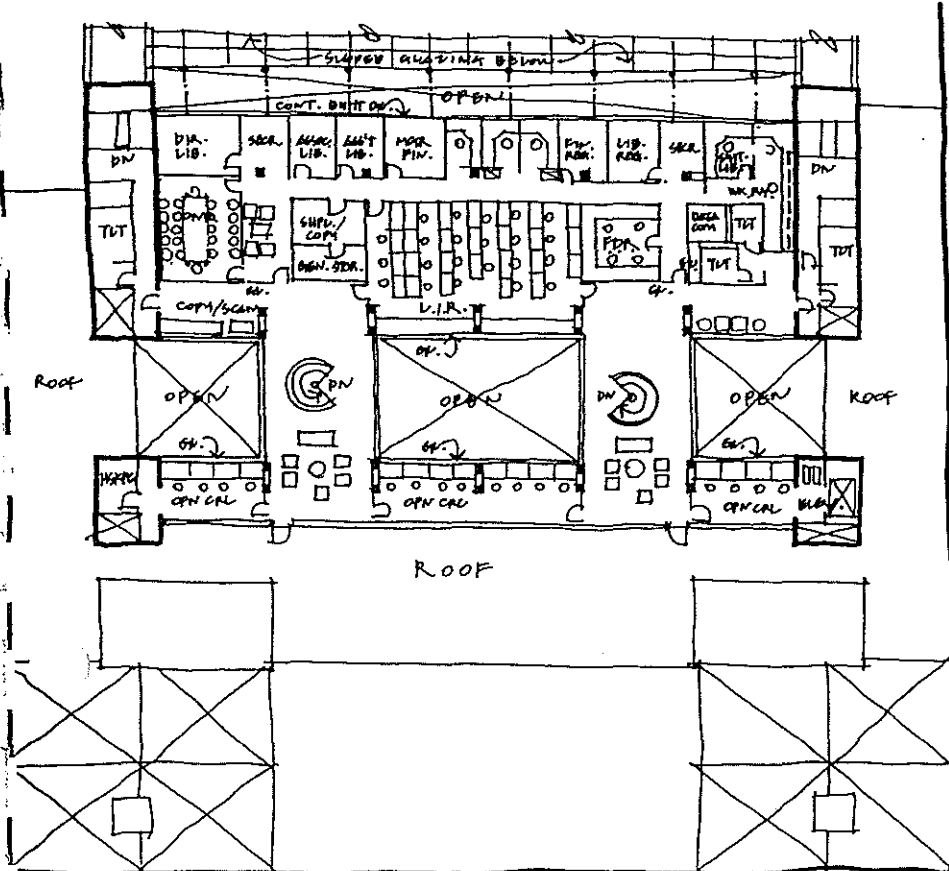
FLOOR 3. 1"=20'  
 (SEE PAGE 1 FOR NOTES)

UMMS MEDICAL LIBRARY  
 HSP 9912  
 03/29/00  
 DCSM

FAX 1 (508) 856-5210

ATTN: JOHN PETERS

2 pages



- ONLINE OUTREACH
- SHRT. LIB. OFFICE 10' x 12' (BX 10?) + WK. RM.
- REGIONAL LIB. LIB. & PIN. OFFICES 10' x 12' + SEC. BX 10' + 3 WK. STA. BX 10'

3. ALT. LAYOUT

10 - OPEN CARRELS @ 5'-3" WIDE

036914 21 49

DCAM UMMS MEDICAL LIBRARY

HS&P 9912 03/29/00

JOAN & ELaine,

THIS LAYOUT INCLUDES THE ONLINE/OUTREACH (FROM 1<sup>ST</sup> FLR) AND NEW PROGRAM AREA OF REGIONAL LIB. ADMIN.

THE ONLINE/OUTREACH IS LARGER THAN THE TWO LIB. WK STA(S) SHOWN ON PREVIOUS PLAN, SO REGIONAL LIB. & PIN. OFFICES NOT REDUCED TO 10' x 12' (120 NSP) — IT'S TIGHT, BUT IF OFFICES CAN GIVE UP 6" EACH, IT'S POSSIBLE.

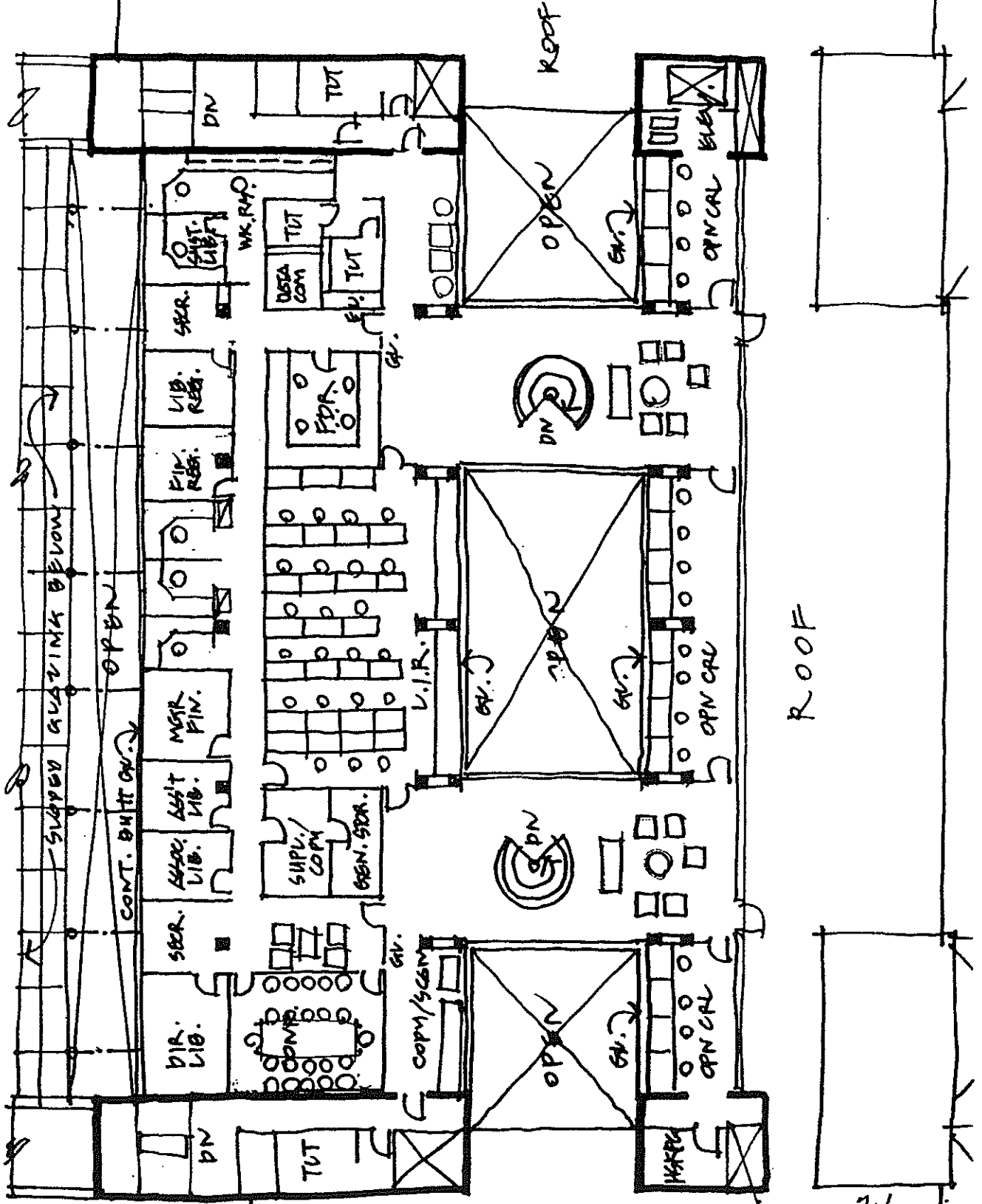
BRUCE 1/2

LC VI

UMMS  
MEDICAL  
LIBRARY

- ONLINE OUTREACH
- SYST. LIB. OFFICE 10'X12' (8'X10'?) + WK RM.
- RESPONSIBLE LIB.
- LIB. & FIN. OFFICES ARE 10'X12' + SECR 8'X10' + 3 WK STA. 8'X10'

HS&P 9912  
 ALT. PLAN LEVEL 3  
 03/29/00  
 NEW PROGRAM AREA  
 1"=20'

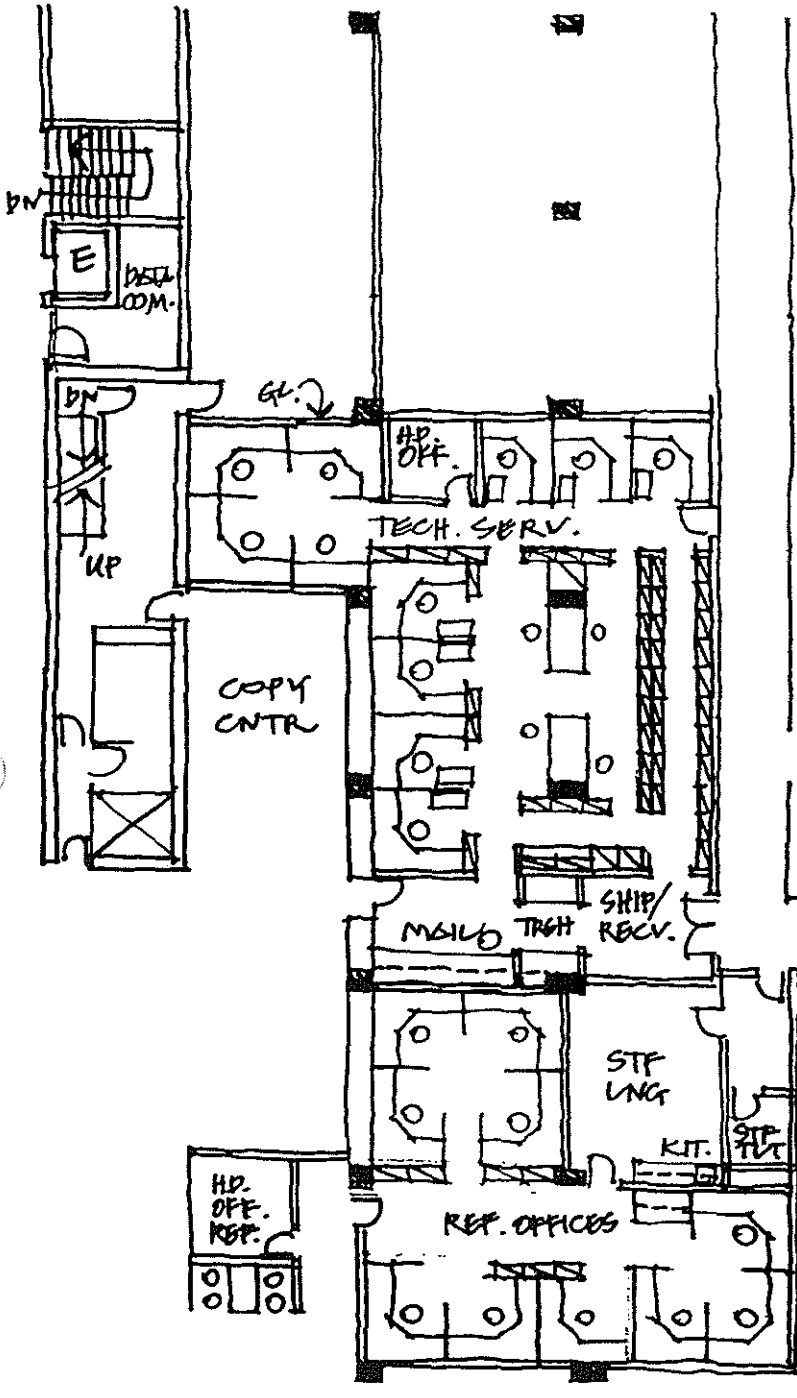


1 (508) 856-5216

1 page

ATTN: JOHN PETERS

FBX



(-) VESTIBULE LINK TO NEW ADDITION LOST

(-) 18 SFS SHORT

(-) VERY TIGHT

### TECHNICAL SERVICES:

- DEPT. HEAD OFFICE - 1 8'x12' (SHOWN 8'x10')
- STAFF WK. STA(S) - 9 8'x10'
- PT. TIME STP - 2 (ONE IS UNDERSIZED AS SHOWN)
- SFS (1200 LF) 58 UNITS (18 SHORT) (40 UNITS SHOWN/TIGHT)
- CONSERVATION/PRESERVATION AREA  
4' x 8' WK TABLES  
BINDER STORAGE
- MAIL SHELVING/TRASH
- STAGING SHIP/RECV.

### REFERENCE OFFICES:

- DEPT. HEAD OFFICE - 1 10'x10'
- STAFF WK. STA(S) - 10 8'x10'
- 4P CONF. BLCOVE - 1 5'x10'

NOTE: REF. DEPT HEAD MOVED FOR DIRECT LINK W/ ACADEMIC STAFF & 4P CONF. BLCOV. (ASSUMES ONLINE/OUTREACH) MOVES TO 3RD FLOOR

1ST



DCSM  
UMMS  
MEDICAL  
LIBRARY

HS & P  
9912  
03/29/00

## FLOOR PLAN SEGMENT: ACADEMIC EAST WING

DAN & ELBINE - TECH. SERVICES IS VERY TIGHT WITH SOME ROOMS UNDERGIRTH - NOTHING IN THE CORRIDOR AREA 1 BY

UMMS Medical Library Study  
Appendix

DCAM Project No. UW991ST1  
9912.000

Meeting Notes

MEETING NOTES

DATE: 7 July 1999

PROJECT: **Study for Library and Selected Instructional Space**  
UMass Medical School, Worcester, MA  
DCAM Project No. UW991ST1

PROJECT NO.: 9912.000

SUBJECT: DCAM "A" Conference

PRESENT:	<b>DCAM</b>	<b>UMMS</b>	<b>HS&amp;P</b>
	Charles Deknatel Charlie.Deknatel@dcp.state.ma.us	John Peters John.Peters@umassmed.edu	John Vinton JVinton@hsp.com
	Robin Luna Robin.Luna@dcp.state.ma.us		Bob Hicks RHicks@hsp.com
	Skip DeVito felix.devito@state.ma.us		

NOTES BY: Bob Hicks

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The purpose of the meeting was to review the project procedures and requirements set by DCAM. (See attached Agenda.)

**1. Project Administration**

Our Contract runs to DCAM, not UMMS. All approvals, authorizations, etc. will come through DCAM.

- Official Correspondence: Address to Michael Williams, Director of Office of Programming, DCAM
- Initial Contact People are:
  - DCAM - Charles Denatel
  - UMMC - John Peters
  - Hoskins Scott & Partners - Robert Hicks
- Project Documentation: HS&P to document all meetings and key telephone conversations, etc.
- Role of sub-consultants and reimbursable extra services were discussed.
- Reproduction of existing conditions information is a separate reimbursable.
- Additional work by the Project Team is an additional expense without mark-up. Lump sum proposals are preferred.

**2. Invoicing**

Check with DCAM prior to invoicing. Partial payment is acceptable with prior approval. Reimbursables must be invoiced separately. Invoicing tied to work product delivery is preferred.

### 3. Study Guidelines

1983 version is still current, with minor changes.

- The Preferred Option section has been moved nearer the front of the document.
- Operating costs must now be included as part of the study, with information provided by DCAM and the Team engineers.
- DCAM will provide sample Studies which illustrate the revised format.
- Sustainable Design Alternatives  
This will be added to the scope of our work.

### 4. Final Documentation

Both hard copy and electronic copy is required.

### 5. Cost Estimates

Cost estimates will be in "uni-format", and are considered to be part of Basic Services

### 6. Scope of Work

The kick-off meeting at UMMS is in the Rare Book Room on Wednesday 14 July 1999 - 1:00 pm.

### 7. Library History/Background

- No significant modifications since built.
- There has been an increase in student enrollment.
- Regional usage.
- Significant technology changes must be accommodated
- Staff / storage space is at a premium.
- Recommended renovation alternatives to the amphitheaters is included in the Study - sight lines, lighting, acoustics, etc., but is not to become the focus of Study. (20% +/- of total work)
- Library Study Executive Review Committee will represent UMMS for the project, includes Tom Manning and the Chancellor, Aaron Lazare.
- Clear definition of problems must be included.
- Major fundraising initiative underway which may effect the project budget
- "Library is physical and intellectual heart of the campus." - Chancellor.
- *An early estimate of \$8M project budget, \$5.6M construction budget was discussed but must be confirmed by both DCAM and UMMS.*
- A six (6) month schedule is to be assumed; July - January. The amphitheater work may be done separately.

### 8. Work Plan

1<sup>st</sup> deliverable - tasks, schedule, deliverables, fee breakdown.

**9. Design Standards**

- What library design standards are to be used? There may be conflicting requirements between professional groups. Acknowledgment of both standards and accreditation requirements may be required.
- "Benchmark" medical libraries may be identified for comparative purposes.
- HS&P will prepare a list of available / requested materials for our meeting on Friday, 9 July 1999.

Cc: All Present

## MEETING NOTES

DATE: 14 July 1999  
PROJECT: UMass Medical School Library Study  
PROJECT NO: 9912.000  
SUBJECT: Kick-Off Meeting with UMMS  
PRESENT: (See Attached Sign Up Sheet)  
NOTES BY: Bob Hicks

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The purpose of the meeting was to meet with key personnel at UMMS to review the scope and intent of the Library Study Project. (See agenda, copy attached.)

### **1. Introduction and Project Administration**

DCAM outlined the process and product for the study; a pre-schematic design, a written program and preliminary construction and operational budget.

### **2. UMMS Needs**

The reasons for the Study, in lieu of a "face lift" renovation, were discussed. Too much has changed since the Library was originally programmed and designed for a "paint and paper" renovation.

#### Tom Manning, UMMS

- Work within the existing frame, if possible.
- Look for fundraising opportunities.
- Stake holders now and in the future (students, state agencies, community)
- Who should use the library, technology impacts and responses, relocate computing center.
- Information Systems Technology Center to coordinate with other centers, such as adjoining computer center.
- Aware of growth in area

#### Frank Chlapowski, UMMS, Office of Research (Former Interim Library Director)

- UMMS Medical Library is the state-wide resource.
- Fastest growing research institution in the region.
- Serves a large regional constituency.
- Nexus of electronic dispersal of healthcare information to region.

Elaine Martin, Head Librarian

- Large percentage of inquiries from people outside the campus.
- 40K people visit library per month, plus 16,000 reference questions - 46% from outside UMMS.
- A "home away from home" for many students.
- Must be a source of electronic information for distance learning.
- Spatial constraints limit some of the programs.

Andrew Cohen, MD, UMMS

- Twenty (20) years at UMMS.
- Library has served well and has been a showplace as well, but much has changed and the Institution has grown.
- The Library exists in three domains:

Physical Space

Depository for books and journals, network areas, learning/education resources.

Virtual Intellectual Centre

Gateway to electronic worldwide resources. Distance learning center.

Emotional Heart of the Institution

Students of all areas and interests congregate in the Library as the symbolic and actual learning center of UMMS.

- Healthcare education is a collaborative process and this is strongly encouraged by UMMS. The Library is where this collaboration happens. New curriculum - mid 90's - encouraged students to use library resources for learning with emphasis on groups.
- "Evidence Based Medicine" - requires access to best available clinical trials. Information in databases around the world.
- UMMS is becoming a virtual medical school. (A "center for learning").
- Personal computers are now a focus of student groups, used for learning, particularly during first two years of medical school. After that, the best learning takes place in the clinical setting, at the bedside, but students still have a need for electronic access at the bedside.
- Library must acknowledge the different cognitive styles of students.
- Libraries organize information. The medium may change, but the need to serve as a guide and organizer remains.

Bronson Terry, Medical Student

- Students still need to have a space apart, quiet yet with access to all materials to absorb information
- A current conflict, not enough space for both collaborative and solitary spaces.
- Collaborative learning center helps with additional space.
- There is a shortage of study carrels - because they are assigned, not checked out, and limited to medical students only who share them in groups of four (4).

Tom Miller, Graduate School of BioMedical Science

- Library was designed for 400 students. It now serves nearly 750.
- Study carrels are too small for more than one person and that is the only current place to use AV equipment. One example of the impact of change is the learning process on the facility.

**Process for needs assessment.**

- Interviews
- Focus groups to be discussed. May be desired.
- Review of specific needs
- Space-by-space, department-by-department analysis
- Possible survey of users

**Additional questions:**

- Future size of collection is a key question.
- Will UMMS be a "primary source" for the region?
- Where will old journals be kept?
- What effect will new research and academic programs have on the size of the collection?
- IF UMMS is to become a "Regional Medical Library", there will also be spatial implications.
- Flexibility must be "built in".
- Study of instructional amphitheaters will be conducted with a sub-group from UMMS as requested by Vice Chancellor Manning

**Next Steps**

- Work plan development and approval
- Development of Needs, Criteria, Program options
- Evaluation of Existing Space and Building systems

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DATE: 14 July 1999

PROJECT: UMass Medical School Library Study

PROJECT NO: 9912.000

SUBJECT: Kick-Off Meeting with UMMS  
Sign Up Sheet

Name	Organization	Email
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## MEETING NOTES

DATE: 13 September 1999

PROJECT: UMass Medical School Library Study

PROJECT NO: 9912.000

SUBJECT: Existing Conditions - On-Site Meeting

PRESENT: (See Attached Sign Up Sheet)

NOTES BY: Bob Hicks

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The purpose of the meeting was to review the MEP/FP, IT and structural existing conditions of the Library as it relates to the redesign study.

### 1. Overview

DCAM reviewed the intent of the Study and the nature of the outcome.

### 2. Facility Overview

Completed in the late 1960's, the Medical Library was the show piece of the new building. It is a regional resource and "the heart of the Medical School". The Library is open to the public.

Changing technology is having significant impact on the existing facility and driving significant changes to the building.

### 3. IT Issues

The existing structure (poured-in-place concrete) is encouraging the use of wireless technology for data and communications networking. It also creates transmission problems. A cable based network is assumed for the foreseeable future.

All of the carrels must be wired as part of the final work. The overall goals for the Library IT Systems must be defined, but UMMS states that it wants jacks throughout the facility for universal access to the information system. At this point, a strategic plan is under development for the entire campus. A copy will be provided by UMMS and distributed by HS&P.

### 4. Fire Protection

Full coverage does not exist, but is now required with a dry system for the Rare Book Room. A Simplex Fire Alarm System is to be assumed.

**5. HVAC**

All chilled water, steam and electricity is provided by the campus power plant. It is currently being upgraded to accommodate 150% of the requirements for the current campus, including 600,000 s.f. of new construction and renovations to the Library. Ten (10) megawatts of electrical generation will be provided. (Replacement of the windows may be investigated by the Study. They are currently single pane.) A VAV System is anticipated.

**6. Lighting**

A new lighting design/system will be required throughout. (Note: The skylights leak.)

**7. Electric**

New electric service will be required for the Library due to problems with the existing facilities.

**8. Structural**

The structural implications of using compact shelving will need to be investigated as will the reductions in structural capability due to the infill construction

**9. Library Issues**

The Library is rapidly expanding its' Web presence and the identification of available information. This is in addition to the print collection. More and more researchers and students are working off-campus, requiring remote network access. (The Library closes at midnight.) Teaching facilities for Library functions are required. Distance learning content will be developed by the Library. Twenty-five (25) laptops are currently available for check-out.

- Lighting in the stacks is poor.
- Air quality is poor. Ducts cannot be maintained due to mezzanine conditions
- Poor temperature control.
- Air conditioning in copy room is inadequate.
- Security of the rare book room (card key) is lacking.
- Library security is currently not good.
- Room for additional staff required by program changes/upgrades must be considered.
- A location for a micro film printer must be identified.
- Information kiosks are under consideration - location is an issue.
- Twenty-four (24) hour access areas are requested, how to accommodate?
- Presentation facilities are required (don't now exist).
- Acoustics are poor, particularly in the main reading room.
- Toilet count parity (55% women in current class).

DATE: 13 September 1999  
 PROJECT: UMass Medical School Library Study  
 PROJECT NO: 9912.000  
 SUBJECT: Existing conditions - On-Site Meeting

Present:

Name	Organization	Email
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## MEETING NOTES

DATE: 6 October 1999

PROJECT: UMass Medical School Library Study  
Mass Project No. UW99 1 ST1

PROJECT NO: 9912.000

SUBJECT: Programming Meeting

PRESENT: (See Attached Sign Up Sheet)

NOTES BY: R. Hicks

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The purpose of the meeting was to start the programming effort for the Medical Library with particular focus on the major strategic issues to be addressed. A "strategic issues" memo prepared by HS&P and the design team was distributed in advance of the meeting and served as an outline for the discussion.

### 1. Status Report

Existing Conditions - Engineers have visited the facility and collected existing conditions documents. Known required improvements include:

- New electrical service and communication cabling.
- Complete fire protection system.
- The structural capacity of the existing building will be investigated to determine what in-fill construction may be possible.

### 2. Overview

J. Lucker reviewed the "state of library planning" today, with discussion of the impact of the digital revolution.

- Digital content is not replacing, but supplementing, hard copy content.
- Most medical information is paper based.
- The National Library of Medicine is planning to keep a hard copy version of everything.
- Digital distribution is still controlled by the publishers who seek to sell hard copy.
- Most use of journals occurs within 7-10 years of the date of publishing.
- Few people are going back and digitizing old content.
- Some books have inherent value as an object. Rare books must be celebrated, not squirreled away and preserved.
- There is a growing need for collaborative space.
- Training space for users and staff must be provided.
- The Library is a social center and these uses must be planned for and incorporated.

### 3. Strategic Issues

#### Journals

Journals (more than 30 years old) on the 8<sup>th</sup> floor are accessed every day.

- Off-site storage is cost effective and access usually is not time critical.
- The 8<sup>th</sup> floor space is inadequate for expansion.
- Books in off-site storage works only if enough information about their contents are available on-site.

#### New Degree Programs

- Biotech Building will generate new users and will likely double the Ph.D. program.
  - Approximately a 30-50% increase.
- Currently there are 1,800 users; 600 seats are anticipated. (1 seat per 2 medical students - 1 seat per 3 other users.)
- Approximately 450 new users should be assumed.

#### Student Users

- Majority of Med/Surg students use library daily.
- Four (4) person tables work well providing room for social interaction, shared study space and personal contact.
- Exam time study space is critical. Variety of study spaces are required.
- There are 50-60 meeting rooms throughout the entire campus. Access to these spaces by medical students is, at times, an issue.
- Ground floor seating is not currently used at night due to poor lighting.
- 24 hour lounge/cafe room seems to meet the 24 hour access issue.

#### Assigned Carrels

- Place to leave personal things - locked.
- Additional lockable storage is needed.
- Assigned carrels are personalized by assigned users.
- School of Nursing has no assigned lockers or carrels. Most students are part time.
- 1st and 2<sup>nd</sup> year students are greatest users of assigned carrels.
  - 100-150 students likely number of these users.
- Is most studying being done in the Library?
  - The Library is the only social/study space on campus.
- Students are given group assignments in certain courses.
- Study space for groups of 4-6 students is a very high priority.
- "Hoteling" of carrels provides a potential solution for medical students.
- Library is priority study space.

#### UMMS Archive

- Not decided at this time. This can be combined with off-site journal/book storage.

Rare Book Library

- Inadequate display now. A good place to highlight in the new design.
- Library does not have qualified staff to expand the facility.
- Scheduling of use is a problem.
- "Worcester District Medical Society" donated many of the books.
- Bookshelves which protect the books while allowing the space to be used as a conference facility should be investigated.

**4. Next Steps**

- The use of Focus Groups was discussed, and is not recommended at this time.
- Provide a "model" for people to respond to, rather than ask everyone what they want.
- User input will be sought from a web site that allows feedback.
- IT needs may need to be considered in the Library program.
  - Media services and IT is dispersed across the campus in 4-5 locations.
- Dr. Cohen feels that the consolidation of IT and Library services must be considered.
- J. Lucker and HS&P will meet with Library Committee and selected Library staff to develop a detailed draft program for review.
- Next Meetings
  - 19 October - J.Lucker & HS&P with Library Staff
  - 19 October - J.Lucker & HS&P with Library Committee
  - 2 November - J.Lucker & HS&P with Executive Review Committee

**5. Examples**

Vanderbilt and University of Maryland Medical Library are good examples of "state-of-the-art" Medical Libraries.

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DATE: 6 October 1999  
 PROJECT: UMass Medical School Library Study  
 PROJECT NO: 9912.000  
 SUBJECT: Programming Meeting

Present:

Name	Organization	Phone No.
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## MEETING NOTES

DATE: 19 October 1999  
PROJECT: UMass Medical School Library Study  
PROJECT NO: 9912.000  
SUBJECT: Collections  
NOTES BY: Bob Hicks

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The purpose of the meeting was to review the programmatic requirements of the UMMS collections.

### Collections

J. Lucker reviewed the figures included in his September 1998 study and established updated values to be used in the new program.

### Reference/New Journal Area

- 5,000 reference volumes - 5 high shelves
- Indexes and abstracts can be put into condensed shelving.
- Bound journals - 7 shelves
- Archives - 100 s.f.
- New books - 1 bookcase

### Rare Books

- 600 s.f. currently - 3,000 volumes - 300 s.f. in new program.

### Seats

- 800 total, includes work stations (PCs), group study, carrels, 2 micro film readers.
- Seating (not group study): 65% carrels, 25% tables, 10% lounge seating
- Typical Staff Work Station - 80 s.f.
- Currently: 69 public PCs  
25 laptops

### Group Study Areas

- Twenty (20): 16 with 4-6 people; and 4 with 8-10 people - all with multimedia capability.

Faculty Carrels - 6 carrels were requested, that could be reserved by faculty

Faculty Development Areas - 1 area for development of electronic course content

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19 October 1999

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Collections.doc

Options

- Off-site Storage - A series of options were discussed regarding the number of volumes which might be stored off-site, and how that might be managed.
- Condensed Shelving - The spatial implications of using condensed shelving was discussed and it's use for journal storage is strongly recommended by Jay Lucker. The age of the journals placed in condensed shelving, older than 1 year, 5 years, etc., has a significant impact on the amount of area required for the journals, both on-site and off-site.

## MEETING NOTES

DATE: 19 October 1999

PROJECT: UMass Medical School Library Study

PROJECT NO: 9912.000

SUBJECT: Library Committee Meeting

PRESENT: (See Attached Sign Up Sheet)

NOTES BY: Bob Hicks

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The purpose of the meeting was to review the Library needs and requirements identified by the Library Committee.

### 1. Overview

- DCAM reviewed their role and explained the process for the Library Study.
- HS&P reviewed the types of information sought today and our role in the Study.
- J. Lucker highlighted the changes taking place in Library design and operations.
  - The combination of digital and hard copy information is being redefined.
  - The half-life of medical information is within the first five (5) years after publication.
  - What is the most economical way to store the information?
  - Connectivity must be ubiquitous.

### 2. Discussion

#### Work Station Usage (PCs)

- The Library now provides access to work stations for non-Library users for much of the campus community. 24 hour access to work stations is preferred. The Library is the only "computer lab" on campus.
- A place to study 24 hours a day with access to major reference materials either on-line or with hard copy was mentioned by several people.
- Access to vending machines and the student lounge are currently open 24 hours a day.
- Thirty (30) people should be accommodated in the 24 hour area.

#### Alternate Study Space

- Second floor study space, as part of the Goff Learning Center, is not currently available for use by students. Should it be available? It does not provide group study space.
- Departmental Libraries are open, but not always amenable to use by medical students.

- 24 hour operation of the Library might be considered by UMMS, but budgetary constraints limit this.
- Phased renovations were suggested, perhaps in advance of any new construction to accelerate the process of "rebuilding" the Library.
- Examples of excellent new Medical Libraries were discussed with the University of Maryland and Vanderbilt cited specifically. (Reaganstein Library at University of Chicago was also noted). They offer:
  - Variety of seating
  - Ubiquitous networking
  - Extensive condensed shelving
  - Large amounts of collaborative learning space

### 3. Departmental Comments

#### Orthopedics

- Has a Department Library used primarily for meetings (both by Department and UMMS).
- Journals are not kept up-to-date.
- Uses of Main Library - study spaces, journal access,
- Most Internet access is from private desktops for doctors and faculty, but residents and medical students must use the main Library.

#### Biochemistry

- Department Library is used as a meeting space with a few current journals.
- Most faculty and students use local desktops. Graduate students use the main Library.

#### Physiology

- Has a Department Library, and is phasing out departmental journal collection.

#### Neurology

- Has a Department Library.
- Residents use Clinic PCs during the day and main Library after hours for journals.

#### Molecular Genetics

- Has a Department Library with 25 journals (some not kept up).
- "First place you go to look for information before going to the Main Library".
- Just now adding PC work stations.

#### Anatomy/Cell Biology

- Has a Department Reading Room/Library.

The Departmental "Libraries" are mostly reading/meeting rooms for the department.

4. **Specific Functional Requests**

Group Study Areas

- Sized for 4-6 people,  $\pm$ 150 s.f., with network and multimedia access.
- Clustered groups dispersed throughout the facility.
- Typically checked out, with preference given to groups over individuals.

Study Carrels

- Quiet study space.
- Lockable student storage within the Library is sought. They do not have to be part of the study carrels.
- Faculty carrels/research rooms were requested. They would be assignable or checked out.

Web content development space is also sought. The Office of Medical Education does provide assistance with this (200 s.f. should be assumed).

Misc.

There is currently no "History of Medicine" curriculum.

DATE: 19 October 1999  
PROJECT: UMass Medical School Library Study  
PROJECT NO: 9912.000  
SUBJECT: Library Committee Meeting

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## MEETING NOTES

DATE: 19 October 1999

PROJECT: UMass Medical School Library Study

PROJECT NO: 9912.000

SUBJECT: Public Services/Technical Services

PRESENT: (See Attached Sign Up Sheet)

NOTES BY: Bob Hicks

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The purpose of the meeting was to review the Public and Technical Services design and programmatic requirements for the Library.

### 1. **Public Services**

UMMS is a "public library" with a high percentage of repeat users.

- First use/activity upon entry: (requested / discussed items)
  - A cafe - a place to get food and drink.
  - A place to eat and drink away from the books.
  - The cafeteria is nearby and not used, particularly after hours.
  - Food must be available whenever the Library is open. It could be either in or out of the Library.
  - Internet access is also to be incorporated into this area.
- Security gates are required.
- Information kiosk? It is a point of public information, and the Library is often used as the place to go to ask for information about the school (facility) and where to find something.

### Circulation, Reserve, Interlibrary Loan, Document Delivery

- Related and must be at the "front door".
- Circulation is always staffed, and it becomes the place to provide information.
- Combining these function into a Service Desk vs. Circulation and Reserve as separate function areas was discussed.
- Each function must be defined within the service area to allow patrons to find the specific item or service they seek.
- The levels of service provided at the "Desk" may need to be addressed by separate areas.
- Interlibrary Loan and Document Delivery, also a part of Public Services, is a place to make a request, find the status of an order and pick up the book. The Interlibrary

lending and borrowing are currently adjacent and share functions. The combination of the Interlibrary Loan and the Circulation Desk must be considered.

- Users of the copy center function should also be able to leave their materials at the Circulation Desk for copying.
- Reference may or may not be considered a part of the other functions. In depth reference needs may be located in separate work stations and/or offices. Reference staff also help with the computer work stations.

#### Copy Center

- Dispersed copiers are preferred in select areas. Copiers need to be near the Circulation/Reference Desks. The journals are most copied; the newer ones are copied the most. The Copy Center should be adjacent to the newer journals.

#### Community Health Library

Needs to be easily accessible to the general public. It can be outside the security fence. It may be staffed by volunteers and has some privacy issues, which may dictate a degree of separateness from the main Library. Comfortable seating is a must.

#### Work Stations (PC's)

- Dispersed work stations, as well as selected clustered work stations, are both required. The reference staff also provide computer support and "clusters" facilitate support staffing.

#### Multi-Media (VCR, Tapes, Etc.)

- Circulation currently supports this function. There currently are limited areas to view this material. Who should provide this support? Multi-media capability should be built into all new group study areas.

#### Service/Help Phones

- Must be dispersed throughout the Library - none now exist.

#### Micro Forms (Microfiche/Microfilm)

- Located at Reference Desk. A reader/printer is required. The location for this equipment is not critical, so long as it can be easily serviced and supported.

#### Teaching Lab

- Twenty (20) work stations. Overhead projection, teacher station, etc. (computer lab).

**2. Technical Services (Meeting - 11:00 a.m.)**

Technical Services include ordering/purchasing, receiving, payment, cataloging, collection development with approval planning, weeding, government documents, serials (current periodicals); maintenance of the "Periodical Reading Room", and the Library mailroom - incoming/outgoing (from a campus mailroom). Listed below are current operations and spatial needs, as well as requested additional items, where noted.

Receiving: Materials arrive on palettes (paper bound materials). Convenient access to a loading dock is necessary. Palettes arrive bi-weekly.

- Service elevator access is limited. Palettes could be broken up off-site and delivered as single boxes.
- Fifteen (15) boxes must be accommodated "at the back door" for materials going to the bindery.
- Books from Bindery - Unpacked catalogues put on book trucks and immediately shelved. Four (4) or five (5) book trucks every two (2) weeks.
- Books received are cataloged, invoices are checked and bar codes/security strips put on books.
- New books go to a "new book" shelf or to Reference or Periodicals.
  - New books are on the "new book" shelf for one (1) week.
  - One (1) book case is all that is required. This could be within the Periodical Reading Room.
- Recycling of packing materials/trash must be accommodated. Trash "dumpsters" must also be able to be moved into Technical Services. (UMMS will provide dimensional information.)

Proximity - Technical Services needs access to the Periodical Reading Room and the stacks, but can be almost anywhere within the Library.

Workspace

- Adequate storage is "a must". (Nothing on the floor.)
- Everyone in Technical Services has an individual workstation. Network printing is acceptable, but selected work stations need individual printers (for labels). Two (2) "casual" work stations for student/part time help are also necessary.
- Functional uses do not need to be segregated. They all need to be adjacent/proximate.
  - Shared items: printers, shelving, supplies, copier and fax
- Technical Services also does "minor" book repair and needs a sink and adequate ventilation. A paper cutter is also required.
- Four (4) shared work tables (4'x8') are needed. A coat rack is requested.
- Reserving of work table/work areas must be possible.
- Technical Services is involved with maintaining the Rare Books collection.

Library Administration

- **The "Office" Manager** oversees the common storage area including office supplies, time sheets, etc. A single lockable Storage room is feasible.

- The Storage room should be accessible to the receiving area, but the "office manager" must be near it as well.

Copier Center

- Storage for its own paper supplies (10 cases of paper).

PC Systems

- A web server and CD rom tower are currently maintained by the System Librarian. Location of this equipment may be made a part of the I.T. Department. The System Librarian provides library-wide IT support and maintains the Library web server.
- Equipment storage and set-up area (needs 2 workstations) is required with layout space for equipment setup and repair (monitors, keyboards, laptops, etc.). An adjacent office is preferred.

DATE: 19 October 1999  
 PROJECT: UMass Medical School Library Study  
 PROJECT NO: 9912.000  
 SUBJECT: Public Services / Technical Services

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Present:

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## MEETING NOTES

DATE: 2 December 1999

PROJECT: UMass Medical School Library Study

PROJECT NO: 9912.000

SUBJECT: Program Review

PRESENT:            UMMS                      DCAM                      HS&P  
                         John Peters                      Charlie Deknatel                      Bruce Creager  
                         Elaine Martin    John Vinton  
                         Jay Lucker    Bob Hicks  
                         Jay Lucker

NOTES BY: Bob Hicks

---

The purpose of the meeting was to review the Draft Program developed by Jay Lucker and the revised program option developed by UMMS.

### 1. Overview

- UMMS seeks a "doable" project. Doubling the size of the Library is not deemed "doable" within the near future. The potential cost of the draft program was considered to be beyond the University's fundraising capability given the number of projects under consideration.
- The need to expand the Library, either by renovation and/or addition, is now seen as a realistic option. Initial UMMS assumptions focused on renovation of only the existing Library.
- Off-site book storage is a long term option, but is not to be considered a near term consideration.
- Collection growth will focus on five (5) year horizon, without substantial on-site growth beyond that point. Increased and off-site storage may be required at that time.

### 2. Implication of an Addition

- All new construction should be designed to accommodate condensed shelving.

- Focus new technology expenditures in the addition with minimal upgrades within the existing Library.
- Accommodate the 100,000 volumes currently located on the 8<sup>th</sup> floor.
- A total increase of 160,000 volumes would need to be accommodated, based on the revised program assumptions.

**3. Readers**

- UMMS collected data on current usage. It appears that the actual usage is considerably less than originally assumed. 400 seats are to be assumed in the revised program. The mix of reader space types may need to be addressed.
- The elimination of a "24 hour space" must be considered. These functions can be accommodated outside the Library and the seats could be reallocated within the Library.
- More and more students are going off-site for clinical rotations, thereby reducing the number of readers in the Library.

**4. Workstations**

- 80 s.f. is a national standard for Library staff workstations. The 50 s.f. allocated by UMMS in their revised program may be inadequate for Library staff functions.

Next Committee Meeting: Monday, 20 December 1999 @ 9:00 a.m.

**MEETING NOTES**

DATE: 6 December 1999

PROJECT: UMass Medical School Library Study

PROJECT NO: 9912.000

SUBJECT: Program Review

PRESENT: UMMS                      DCAM                      HS&P  
John Peters                      Charlie Deknatel                      Bruce Creager  
Elaine Martin                      John Vinton  
Tim Fitzpatrick                      Bob Hicks  
Bob Jenal

NOTES BY: Bob Hicks

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The purpose of the meeting was to review the revised Program assumptions developed by UMMS.

**1. Overview**

- UMMS expressed some concern that the initial program proposed such a large increase in the size to the Library.
- The UMMS proposed change in collection and reader assumptions results in a smaller required increase to the overall Library.
- The mix of group study, carrels and informal seating will be a major design consideration.

**2. Comments**

Existing Reading Areas

- UMMS requested that the existing reader space breakdown be shown on the program.

Auditorium

- A 300 seat auditorium is needed and will be investigated. Renovating a portion of the existing auditoria for group study space will be evaluated.

Lockable Student Storage

- Lockable student storage space must be accommodated, but will not be in the Library. The enclosed carrels currently provide lockable storage.

Operational Considerations

- Limiting access to the Library to UMMS students and faculty during exams may be considered. This will reduce the occupancy load during these peak usage times.

Expansion Options

- An addition to the north (preferred). Least cost for collection storage in compact shelving
- Renovation into adjacent areas—UMMS suggests holding this option in reserve for future reader expansion, if required.
- Upgrade of the existing structure to accommodate condensed shelving as part of a no-expansion renovation is prohibitively expensive.

Program

- The revised program will be reformatted prior to presentation to the Committee.
- An updated Comparative Program Analysis will be done for UMMS Administrative review.

Cost Assumptions

- The approximate \$/SF for an addition must now be determined.

MEP Systems/Utilities Implications

- SAR must develop preliminary MEP system assumptions so the impact on building services and system area requirements can be determined. The implication of required MEP upgrades, without an addition, must also be known.

Expansion Footprint

- A conceptual plan and section was reviewed for illustrative purposes and to establish limits of potential expansion as required by program. The impact of any expansion on buried utilities outside the building must be investigated. There is also a need to coordinate any expansion with the infrastructure upgrades currently being designed / built due to the new bio-medical research building.

**Reminder:**

Next Committee Meeting: Monday, 20 December 1999 @ 9:00 a.m.

## MEETING NOTES

DATE: 20 December 1999

PROJECT: UMass Medical School Library Study

PROJECT NO: 9912.000

SUBJECT: Program Review

PRESENT: UMMS - DCAM HS&P  
Tom Manning Charlie Deknatel Bruce Creager  
Bob Jenell John Vinton  
Tim Fitzpatrick Bob Hicks  
Frank Chlapowski  
Tom Miller  
Ralph Zottola  
Deb O'Donnell  
Elaine Martin  
John Peters  
Michelle Pugnaire

NOTES BY: Bob Hicks

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The purpose of the meeting was to review the proposed program with the Executive Committee.

**1. Progress Report**

The Existing Conditions Assessment is well underway, with preliminary results submitted by all consultants.

- One (1) page synopsis of the Existing Conditions was requested by UMMS. The development of the program was reviewed.

**2. Program Analysis**

The summary program was reviewed with particular focus on the reader count (capped at 400) and the actual collection size (approximately 200,000 volumes) as well as the target collection size of 300,000 volumes.

### Discussion:

- Greater growth at the University is anticipated in the "dry lab" area of science, but no major program additions are anticipated, although potential expansion in Public Health is still under consideration.
- Approximately one-third of the weekly Library users are not from UMass. This is due, in part, to the hours that the Library is open.
- Lockable storage for approximately 280 commuting students may need to be provided, but not in the Library.
- Anticipated collection growth can be accommodated in the new program for approximately ten (10) years.

### **3. Readers**

The breakdown of the reader spaces was discussed.

24 Hour Access - This does not need to be accommodated within the Library. The twenty (20) seats will be redistributed within the Library.

Group Study Spaces - Although group study/conference rooms are available on campus, medical students do not at times feel they have access to these rooms.

- There was general consensus that group study rooms were desirable. They will be assignable and primarily used by students.
- The rooms will be designed for 6 - 8, slightly larger than initially proposed. This is the typical size for assigned group assignments.

Security/Access - A separate card access point for UMass students only may be considered.

Laptops - Students may soon be required to have a laptop computer. This will effect the type of carrels required.

Network Connections - 600 drops will be assumed. UMMS will develop a square footage requirement for the network closets/rooms.

### **4. Summary**

Any program option as proposed gives the Library room to grow, without assuming it will house every volume. Storing infrequently used books off-site makes good sense and will be considered separately by UMMS after the development of this project.

### **5. Next Steps**

Any potential addition should be designed to accommodate an increased collection size with compact shelving throughout—or at least structural capability for compact shelving. The option of a combination of fixed and compact shelving will be pursued.

The expansion options will be developed with the next meeting to be held in January.

**ATTACHMENT: Program Materials from Meeting**

MEETING NOTES

DATE: 31 January 2000

PROJECT: UMass Medical School Library Study

PROJECT NO: 9912.000 DCAM No. UW99 1 ST 1

SUBJECT: Program Review

PRESENT: UMMS DCAM HS&P  
John Peters Charlie Deknatel Bruce Creager  
Elaine Martin Bob Hicks  
Tim Fitzpatrick  
Bob Jenal  
Frank Chlapowski

NOTES BY: R.Hicks

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The purpose of the meeting was to review the Program and the options for an addition, particularly as it relates to the compact shelving requirements.

**1. Overview**

HS&P outlined the implications of the Program and the required size of an addition given the area required by the compact shelving.

- Because the weight of compact shelving cannot be accommodated by the existing building structure, all compact shelving must be located in the proposed addition.
- The square foot area required for compact shelving in the agreed to Program (16,246 gsf) is larger than the total overall increase in Library area (10,831 gsf). *(see attached Addition Options spreadsheet provided at the meeting)*

**2. Discussion**

A series of Additional Options *(see attached spreadsheet)* were outlined based on the existing and proposed collection size and reader amenities. The implications of a below grade, at grade and multi-story addition were also outlined.

It was noted that a new construction addition to the Library to be used only for compact shelving may not be cost effective, if off-site storage can be obtained more economically.

Compact shelving creates a dense, fairly opaque wall of shelf units. It severely limits views through the shelving to items or windows located on the opposite side.

No location or operations model currently exists for off-site storage of volumes. Programming and/or design of an off-site location is outside the scope of this Study.

**3. Options**

- A "Book box" - limit the size of an addition to house only the required compact shelving
- "Off-site compact" - increase the number of volumes in fixed shelving and have compact shelving off-site. The on-site journal collection in fixed shelving would be limited to no less than the past 10 years. Journals older than that would be stored off-site.
- A "Book box" plus amenities - size the addition to accommodate both the total square footage of compact shelving required as well as seating for approximately 50 readers and/or other uses best suited to newly constructed space. This may increase the overall size of the program. The existing building must be laid out efficiently as well so the overall impact on the program can be evaluated.

Each of these options must be diagrammed and the impact on the existing building understood.

**4. Existing Conditions Report**

A draft copy of the Existing Conditions Report was distributed to both UMMS and DCAM for review and comment. It was noted that the Existing Usage Plans, Areas Take-off and Structural Evaluation report were not included (*all Appendix items*)

**5. Next Steps**

HS&P will develop adjacency diagrams and conceptual design plans based on the options listed above.

## MEETING NOTES

DATE: 31 January 2000

PROJECT: UMass Medical School Library Study

PROJECT NO: 9912.000 DCAM No. UW99 1 ST 1

SUBJECT: Amphitheater

PRESENT: UMMS DCAM HS&P  
John Peters Charlie Deknatel Bruce Creager  
Elaine Martin Bob Hicks  
Tim Fitzpatrick  
Frank Chlapowski

NOTES BY: R.Hicks

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The purpose of the meeting was to outline the renovation and/or modification options for the amphitheaters. HS&P received selected architectural and structural amphitheater drawings last week and copies have been provided to the structural engineer.

**1. Program**

A mix of seminar/breakout rooms will be investigated with smaller (40~60 person) amphitheaters fitted with "case study" type fixed seating.

UMMS also requested HS&P to look at upgrading the existing auditorium finishes and seating without changes to the structure or partitioning. The maximum number of seats per auditorium must be determined as well as any required ADA modifications.

**2. Structural Limitations**

- Major structural modifications to the amphitheaters is very difficult. They are framed with cast-in-place concrete beam which follow the slope of the floor.
- Light weight, in-fill construction (*not to exceed 50# / sf additional dead load, 50# / s. live load*) may be possible. This is the live load criteria for a typical classroom or office use.
- Demolition of selected CMU partitions will also be investigated as an additional means of reducing the dead load on the structure and increasing the live load capacity for new uses.

**3. MEP/FP Systems**

The MEP issues have yet to be investigated in depth

**4. Next Steps**

HS&P will develop a series of conceptual design plans based in the program information above.

**MEETING NOTES**

DATE: 23 February 2000

PROJECT: UMass Medical School Library Study

PROJECT NO: 9912.000 DCAM No. UW99 1 ST 1

SUBJECT: Preliminary Design Review

PRESENT:

<u>UMMS</u>	<u>DCAM</u>	<u>HS&amp;P</u>
John Peters	Skip DeVito	Bruce Creager
Elaine Martin	Robin Luna	Bob Hicks
Tim Fitzpatrick	Charlie Deknatel	Jay Lucker

NOTES BY: R.Hicks

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The purpose of the meeting was to review the conceptual design work to date with DCAM and UMMS.

1. **Overview**

HS&P reviewed the program development and existing conditions assessment of the current Library.

The need for compact shelving dictates the size of any addition to the existing Library.

2. **Design Review**

HS&P reviewed our conceptual design plans, including their development and background.

**Discussion/Comments**

- The size of the basement addition was questioned by DCAM. Increasing the at-grade addition, although it increases the overall size of the Program, may want to be considered.
- Try to design something which spends money on readers and services more than on books and shelving. (DCAM/UMMS)
- The need for off-site storage will begin within 5-7 years. The Library expansion will likely not be on-line for three years.

**Options for Discussion**

- Increase the amount of volumes stored off-site (100,000 volumes ±).
- Reduce the amount of compact shelving, reduce the basement addition and increase the at-grade addition with fixed shelving.
- Increase the overall size of the Program and add at-grade reader spaces.

## MEETING NOTES

DATE: 28 February 2000

PROJECT: UMass Medical School Library Study

PROJECT NO: 9912.000 DCAM No. UW99 1 ST 1

SUBJECT: Conceptual Design Presentation

PRESENT:

<u>UMMS</u>	<u>DCAM</u>	<u>HS&amp;P</u>
John Peters	Charlie Deknatel	Bruce Creager
Elaine Martin	Skip DeVito	Bob Hicks
Frank Chlapowski		John Vinton
Tom Manning		
Bob Jenal		

NOTES BY: R.Hicks

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The purpose of the meeting was to present a range of conceptual design options and a detailed presentation of a recommended scheme to UMMS.

### 1. Overview

HS&P provided a set of conceptual section/massing diagrams, a written summary sheet of the options as well as isometric sketches of a series of options. Four options were presented and discussed.

All options share the following common elements:

- Compact shelving is located in new construction along the north side of the current library.
- Technical Services remains in it's current location with some horizontal expansion into adjacent areas along the eastern wing of the building.
- The entry to the library does not move from its current location.
- The Rare Book Room is relocated to Level 2.
- Administration is relocated to Level 3, with Library Instruction and Faculty Development areas

### 2. Options

Option 1 - creates a three story addition along the north face of the library with compact shelving on each level. The lowest level is at grade. "Bridges" would connect the new and existing portions of Levels 2 & 3.

Option 2 - creates a one story, below grade addition for compact shelving, with reader and group study areas along both the south and north edges of the addition. A new elevator and stairways provide access to the new lower level. The exterior grade would be lowered to allow windows and natural light along the entire northern perimeter. The "roof" of the new addition would

receive pavers and create an outdoor ceremonial plaza for the University. All other library and reader services are located within the current library area. An alternate version of Option 2 was also presented which creates an 'atrium reading room" and relocates the group study areas on the lower level to open out onto the atrium space. *Note: The alternative includes approximately 5,000 gsf of atrium reading room which is beyond the requirements of the program.*

**Option 3** - creates an atrium style reading room addition to the library with stacked double high compact shelving in a lower level. Group study rooms would be arranged along the northern perimeter of the addition and the exterior grade would be lowered to allow views and natural light. The at grade, exterior plaza area is limited to the "roof" of the group study areas. All other library and reader services are located within the current library area and are similar to Option 2. *Note: This option includes approximately 5,000 gsf of atrium reading room which is beyond the requirements of the program.*

**Option 4** - creates an atrium style reading room addition to the library with stacked double high compact shelving in a lower level. Group study rooms would be arranged along the northern perimeter of the existing library on Levels 1 and 2 within the new atrium. The exterior grade is lowered to allow view and natural light to enter the lower level. All other library and reader services are located within the current library area and are similar to Option 2. *Note: This option includes approximately 5,000 gsf of atrium reading room which is beyond the requirements of the program.*

### 3. **Discussion**

The merits of each alternative were discussed:

- The lowering of the exterior grade indicated in several of the options assumes sloped, planted areas and/or the creation of a ceremonial exterior amphitheater.
- Stacked, double high compact shelving units allow the same journal capacity with a reduced increase in building volume compared to a single level of compact shelving.
- Creation of stacked group study areas within the atrium reading area (Option 4) must still be studied in greater detail to understand it's impact on other elements of the program requirements.
- UMMS reiterated the need for a 300,000 volume collection to support their role as a regional provider.
- The volume count dictates the size of any addition, and therefore, the size and cost of the overall project.
- The engineering implications of the double stack compact shelving must be studied.
- Cost estimates for the alternate schemes must be developed.

### 4. **Conclusions**

The atrium reading room options with double height compact shelving (Options 3 & 4) are preferred by the representatives of UMMS and DCAM at the meeting, program growth notwithstanding. HS&P will develop these two schemes more fully for a presentation to the Chancellor and the full Library Committee. Option 2 was acknowledged as most closely meeting the approved program and limiting the overall size of any addition. This option has been fully developed and will remain under consideration.

## MEETING NOTES

DATE: 21 March 2000

PROJECT: UMass Medical School Library Study

PROJECT NO: 9912.000 DCAM No. UW99 1 ST 1

SUBJECT: Conceptual Design Pricing

PRESENT: ST&P SAR HANSCOMB HS&P  
T. Louderback D. Walkenstein S. Fennessey Bruce Creager  
Bob Hicks

NOTES BY: R.Hicks

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The purpose of the meeting was to review the two conceptual design schemes prior to preparing a cost estimate.

1. **Overview**  
HS&P reviewed the development of the program and the conceptual design.
2. **Structural Issues**  
Pre-cast concrete double tees, spanning up to 57' can be used. Pre-cast concrete plank is also possible.  
  
10" pre-cast with a 2" topping slab will be assumed for both schemes.
  - 2" expansion joints will be assumed.
  - ST&P will provide a footing and beam sizes to Hanscomb.
3. **MEP/Fire Protection**  
Scheme 4 (double height compact shelving) will be more difficult to heat and cool due to the reduced floor-to-floor height in the stack area.
4. **Estimate**  
Hanscomb has sufficient information to estimate both schemes. The estimates will be provided by 31 March 00 to allow review prior to our presentation on 10 April 2000.
5. **SAR Questions**
  - Ask Jim Luce re: sprinklers and toilet count.
  - Ask Tom Dooley re: existing HVAC ductwork modifications.
  - Ask Dick Sullivan re: electrical changes.

CC: All present

## MEETING NOTES

DATE: 30 March 2000

PROJECT: UMass Medical School Library Study

PROJECT NO: 9912.000 DCAM No. UW99 1 ST 1

SUBJECT: Review Development of Program & Conceptual Design Work

PRESENT: 

<u>DCAM</u>	<u>HS&amp;P</u>
M. Williams	J. Vinton
S. DeVito	B. Creager
C. Deknatel	E. Lee
	R. Hicks

NOTES BY: R.Hicks

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The purpose of the meeting was to review the development of the program and conceptual design work to date with Mike Williams and Skid DeVito of DCAM.

- 1. Overview**  
HS&P reviewed both the chronology and development of the program and initial conceptual design work. The changes in programming and design scope of work were also specifically addressed.
- 2. Conceptual Design Development**  
The various schemes were reviewed and the pros and cons of each were discussed. Particular emphasis was placed on the three schemes presented to DCAM on 23 February 2000 and the four schemes presented to UMMS on 28 February 2000.
- 3. New Construction vs. Renovation**  
DCAM raised the question of adding an entirely new library outside the existing to reduce construction impact. All new construction would allow other functions within the Medical School to expand and relieve other programmatic issues. DCAM will discuss the alternative informally with UMMS.

cc: All present

## MEETING NOTES

DATE: 10 April 2000

PROJECT: UMMS Medical Library Study

PROJECT NO: 9912.000 DCAM No. UW99 1 ST 1

SUBJECT: Review of Preferred Options

PRESENT:

<u>DCAM</u>	<u>UMMS</u>	<u>HS&amp;P</u>
C. Deknatel	A. Lazarre	J. Vinton
M. Williams	E. Martin	B. Creager
	F. Chlapowski	R. Hicks
	J. Peters	
	R. Jenal	
	R. Zottola	
	S. Beling	
	T. Fitzpatrick	

NOTES BY: R.Hicks

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The purpose of the meeting was to select a preferred design option.

### 1. Overview

HS&P and DCAM summarized the development of the program and conceptual design studies. HS&P provided a handout which summarized the two schemes to be discussed and their estimated construction costs.

### 2. Discussion

- The program assumptions and design details were reviewed in light of the overall size of an addition to the existing library and the reasons for a below grade compact shelving solution.
- The implication of a new Library was reviewed. Both DCAM and UMMS feel this must option must be evaluated, although outside the scope of the original assignment. Given the cost of the renovation / addition options, the cost of all new construction needs to be considered. Although new construction does not eliminate the need to renovate the existing library space, it does not require phased renovation of occupied areas. The library would move into the new space, and then the existing space would be renovated.
- DCAM stated that renovation costs are often equal to the cost of new construction. The existing Library might be converted to a student center and other use. There are a number of departmental and student functions which are cramped for space within the building.
- A new Research Building is under consideration by UMMS. The Library could be located in this new building, or a separate, new Library building may be considered. It was felt by UMMS that a

)

new separate library building could proceed more quickly than a combined library / research building.

- HS&P, in conjunction with DCAM, will develop a preliminary work plan for preparing conceptual design sketches of a new library along the northern edge of the existing library. May 8<sup>th</sup> was tentatively set for a meeting to review the results of this effort with UMMS and DCAM, at UMMS.
- UMMS agreed to provide site plan information for the entire campus, as well as ground floor and typical floor plans of the new research building to assist in the analysis of locating a new library on the lower floors of a new research building. Drawing files will be emailed to HS&P.

cc: All present

**MEETING NOTES**

DATE: 26 April 2000

PROJECT: UMMS Medical Library Study

PROJECT NO: 9912.000 DCAM No. UW99 1 ST 1

SUBJECT: Program Review

PRESENT: UMMS HS&P  
J. Lucker B. Creager  
R. Hicks

NOTES BY: R.Hicks

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The purpose of the meeting was to review the December 1999 program in light of an all new building scheme.

1. **Overview**  
HS&P reviewed the progress of the project to date, and the potential site for a new library building.

2. **Discussion**  
**Potential Efficiencies**  
A 70% ~ 75% efficiency factor can be used in new construction in lieu of 65% for existing construction. This results in a reduction of approximately 5,000 GSF in the overall program area.

**North Side Scheme**  
Library Entrance

- The location and size of the entrance to a new library is not included in the approved program. It can be contained in the connective link between buildings. Security and exhibit can be located in the area.

**Stacking**

- The stacking of the various program elements was discussed and is summarized in the attached spreadsheet.

cc: All present

## MEETING NOTES

DATE: 4 May 2000

PROJECT: UMMS Medical Library Study

PROJECT NO: 9912.003 DCAM No. UW99 1 ST 1

SUBJECT: "New" Library Program / Conceptual Design Review

PRESENT: UMMS                      DCAM                      HS&P  
T. Fitzpatrick              C. Deknatel              B. Creager  
E. Martin                      J. Vinton  
J. Peters                      R. Hicks  
B. Jenal

NOTES BY: R.Hicks

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The purpose of the meeting was to review work to date on a "new" library scheme.

1. **Overview**  
HS&P provided a summary memo comparing new vs. renovation/addition schemes and the program implications.
  - A new library is potentially smaller than a renovation due to improved efficiency.
2. **Plan Review**  
HS&P presented a series of diagrammatic plans and sections of new library options on both the north and west sites
3. **Discussion**
  - The location of technical services on Level 2 raises some concern for the library due to delivery issues.

### North Scheme

- The **only** connection between the current library and the new library is at grade. The upper floor elevations of the new building match the academic building, not the library. This allows linkage to other areas of the academic building. Connection to the upper library floors is also possible.

### West Scheme

- Two **major** alternative schemes were presented, one which closes the north/south street and one which maintains the road with a change in paving and landscaping.
- **Closing** the north/south campus road and connecting the library directly to the academic building enhances the link between the two areas.

- UMMS stated that "identifying all of the options" is their priority. All of the options are now assumed to be more expensive than originally assumed.
- New construction may be the preference of the University. The overall master plan development will determine the location of new construction.

Amphitheater

- HS&P will develop cost estimates for the renovation of the amphitheaters.

cc: All present

## MEETING NOTES

DATE: 14 September 2000

PROJECT: University of Massachusetts Medical School Library

PROJECT NO.: 9912.000

LOCATION: HS&P

SUBJECT: Overview of Program, Existing Conditions  
Options - Recommended Solutions

PRESENT: Bob Hicks, John Vinton

NOTES BY: John Vinton

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The meeting was held to discuss the overview of the program, existing conditions and options / recommended solutions. A 20 minute presentation was made.

### Options

(\* 30 x 40 bonds)

- What have we done?
- What was question / the goal?
- Where are we now?
- Existing conditions
- Property
  - Identifying hands on use / goals of library
    - 120,
  - Unusual program /

### Material

- To meet collective / growth now
- Provide opportunity for current and up-to-date

### Existing Conditions

- SF
- Systems - ME
- Conditions - standards for reuse
- Plus / Minus
- Inadequately sized - number of studies
  - Group
  - Individual

- Existing site - is totally standard
- No room for growth
- 30 years old / tired

### Plan of Existing Library

#### Options

##### A. Stay within existing footprint

- Room
- Can not incorporate compact shelving because of structure

##### B. Horizontal growth into existing spaces - number of rooms being used.

##### C. Expansion to the north into grassy open area.

C.1 Compact shelving - all inadequate, plus reconfiguring of reading room or not

C.2 2 level compact shelving

Cost Range for preferred \$ \_\_\_\_\_ to \$ \_\_\_\_\_.

##### D. All new construction. Needs for an all new seems within reach potentially. Needed evaluation.

- Puts important funding on new space. Benefit
- Vacates existing - sf which is for other uses (lots of space).
- Eliminates the need for renovating occupied space. Disruption and lots of

##### D.1 All new at existing site. Coordinated to existing labs space adjacent east and west wings

- Inadequate
- Adjacency
- Added benefit of being a bridge for east and west.

##### D.2 All new at new west site.

- be win/win of new 2<sup>nd</sup> phase lab building.
- Reinforces creation of quadrangle for the medical school
- Significantly expands the footprint of the school
- Provides very visible / high visibility locations for the Library that this connection as the intellectual / spiritual heart of the medical school

Cost: Similar cost range, exclusive of change of use cost for extra space.

### Next Steps

Assuming D is recommended:

- Interim steps are necessary.
  - Off-site storage
  - Short term refurbishing of extra space

Next Meeting: September 25, 2000 at 9 a.m.

MEETING NOTES

DATE: 25 September 2000

PROJECT: University of Massachusetts Medical School Library

PROJECT NO.: 9912.000

LOCATION: UMMS

SUBJECT: Medical Library Study  
Summary and Recommendations

PRESENT: UMMS – E. Martin, T. Manning, B. Terry, F. Chlapowski, T. Miller, T. Fitzpatrick, R. Jenal, M. Pugnairi, J. Cooke  
DCAM – C. Deknatel  
HS&P – B. Creager, R. Hicks, J. Vinton

NOTES BY: R. Hicks

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The purpose of the meeting was to review and report on the conclusions and recommendations of the Medical Library Study.

1. **Overview**  
HS&P presented the work completed to date, including existing conditions assessment, program development, conceptual design options and recommended solution. Presentation boards were used to illustrate the items listed below.
2. **Existing Conditions Assessment**
  - Existing structure cannot accommodate additional loading
  - Building systems have outlived their effective lifespan
  - Configuration and structure limits reuse opportunities and incorporation of information technology
3. **Program Development**
  - Programmatic requirements exceed current area
  - Compact shelving is required to consolidate the entire collection and limit the area requirements of the collection shelving.
  - Collection growth will be capped at 300,000 volumes, with on-site growth providing for 5~7 years of collection growth
  - Off-site storage will be required at some time in the future.
4. **Conceptual Design Options**  
*Scheme 1 (renovate existing Library) - not shown*

- Replace / upgrade all finishes, lighting and MEP/FP systems
- Create new Group Study areas
- Increase shelving capacity through use of compact shelving (*existing structure cannot accommodate increased loads / structural enhancements not financially feasible*)
- Expand Library horizontally into adjacent areas (adjacent areas cannot be vacated)
- Expand Library vertically within existing footprint (*existing structure cannot accommodate increased loads / structural enhancements not financially feasible*)

***Scheme 2 (with Atrium Reading Room)***

- One level of below grade compact shelving with 50 associated reader seats.
- Atrium Reading Room
- Renovated and enlarged Circulation, Reference and Technical Services areas (Level 1)
- Rare Book room relocated to Level 2
- New Current Periodicals reading area on Level 1
- Group Study rooms on Levels A and 2
- Administrative offices, Library Training Room and 20 p Conference room on Level 3
- Total size is approximately 10,000 gsf larger than approved Program
- Estimated construction cost = \$12,968,136

***Scheme 4 (with Atrium Reading Room)***

- Two levels of below grade compact shelving with 50 associated reader seats.
- Atrium Reading Room
- Renovated and enlarged Circulation, Reference and Technical Services areas (Level 1)
- Rare Book room relocated to Level 2
- New Current Periodicals reading area on Level 1
- Group Study rooms on Levels A and 2
- Administrative offices, Library Training Room and 20 p Conference room on Level 3
- Total size is approximately 10,000 gsf larger than approved Program
- Estimated construction cost = \$12,885,887

***New Library - "North" / "West" Locations***

- All new construction, outside by adjacent to current library
- Anticipated size - 55, 276 gsf
- Renovation of existing library space for other Medical School uses
- Estimated construction cost = \$210 / gsf ~ \$14,000,000 (*excludes escalation and cost to renovate / reuse existing library space*)

**5. Conclusions**

- Expansion into adjacent areas is not feasible
- Addition / renovation options approach new construction in cost and space
- New construction offers major benefits, including
  - space and function tailored for new library needs
  - opportunity for a highly visible facility
  - ability to convey the vision of the library as the “heart” of the campus
  - major synergy of campus development goals
  - phasing and construction more feasible for similar budget
- New Construction recommended

**6. Discussion**

Discussion indicated general acceptance of the conclusions of the study. UMMS noted that short term improvements were being developed and that collection issues would be addressed.

HS&P study proposals for improvements to the amphitheaters were discussed informally at the close of the meeting.

HS&P will submit draft study reports on Library and the amphitheaters in approximately two weeks.

TSOI / KOBUS & ASSOCIATES  
ARCHITECTS

University of Massachusetts Medical School  
Section IV. CAMIS Inventory



**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Tower Building

Asset Code 1

335B75UMM9203I

Agency: University of Massachusetts Medical

Crew ID IND-8

Date

10/27/00

Asset Code 2

551UMMPB03

**> Facility Address**

Address1

Address2

Address3

City

ZipCode

305 South St.

Boston

**> Facility Contact Information**

Name

Telephone

Fax Number

Email

Russ Mattson, Facilities Manager

(508) 856-3620

russ.mattson@umassmed.edu

**> Asset Address**

Asset Name

Alias Name

Address

Municipality

County

Tower Building

305 South St.

Boston - JamPI

Suffolk

House District

Senate District

Type

Property Status

Floors

15th Suffolk

Suffolk and  
Norfolk

Laboratory

IN USE

8

YearConstructed

Construction Type

OriginalCost

Basement

Basement

1973

Other Than Std Constr  
Type

\$0

Y

Confidence  
Code  
Recall from  
memory

GSF

NS

PictureFile

193,312

164,315

335B75UMM9203I.jpg

**> Asset Real Estate Data**

Year Acquired

Purchase Price

Replacement Value

Assessed Value

Assessed Year-Current

Map No

Block No

Lot No

1973

\$0

\$41,840,449

\$0

2001

Historic Building

Latitude

Longitude

AssessedVal

Assessed Year-Actual

421802

710707

NB

2001

**> Construction**

Contractor

Contractor

Contractor

Designer

Designer

Designer

Construction

Name1

Name2

Name3

Name1

Name2

Name3

1973

Ruggo

Desmond &  
Lord, Inc.  
Architects

**> Addition**

**> Renovation**

>

Type

On File

Current

Elevator

**> Occupants**

Occupant(s) Name

Percent Occupied

Comments

University of Massachusetts Medical Center

100%

**> Hazardous Material Presence (in Environment)**

**> Hazardous Material Tracking (Stored Fuels and Chemicals)**

**> Wetlands Delineation**

Distance to  
Wetlands -  
200 ft or less

WetLandDataSource

Description/Comment  
s

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education  
Agency: University of Massachusetts Medical  
GIS Yes, Inspector  
No Record

Tower Building

Asset Code 1 335B75UMM9203I

Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03

> **LSC Compliance**

> **ADA Compliance**

Violation	Action/Comment
Controls and operating mechanisms heights improper	
Counter heights improper	
Door hardware improper	
Drinking fountains, None or improper	
Elevator access, None or improper	
Grab bars, None or improper	
Sinks, None or improper	
Signage, None or improper	
Stairways improper	
Toilet facilities, None or improper	

EntranceRampCost	Elevator Cost	Toilets Cost Code	All Other ADA Cost	Total
	\$1,174,500	\$1,009,089	\$840,907	\$3,024,496

> **Inspection &**

System	Assembly Comp Type	Quantit	UM	Priority	Weight
CONV	Elevator - Controls - Operating	3	EACH	Within 2 Years	Improvement to the Use
Year Installed 1973	Location1 Machine Room		Location2		Location3
Overall Poor	Replace per Inspector		No		Comments they break down frequently and people get stuck in them

**Certificates**

Replace System ACT	Repair System ACT	Replace or Repair (Factored Cost Comparison)	Capital Project
\$21,303	\$22,368	Replace	

---

Deficiency: Rough Operation	System CONV	Assembly Comp Type Elevator - Controls - Operating
--------------------------------	----------------	---

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair	Deficiency Repair Cost
	2	\$9,586

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Tower Building

Asset Code 1 335B75UMM9203I

Agency: University of Massachusetts Medical  
Deficiency:  
Cab Fixtures/Controls Damaged

Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
System CONV Assembly Comp Type Elevator - Controls - Operating

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
2 Deficiency Repair Cost  
\$12,782

System Assembly Comp Type Quantit UM Priority Weight  
**EQUIP Equip - Generic - Generic Immediate/Emergency Prevent Accelerated Deterioration**

Year Installed Location1 Location2 Location3

Overall Replace per Inspector No Comments  
**Fail**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$0 \$0**

Deficiency: System Assembly Comp Type  
**Replace EQUIP Equip - Generic - Generic**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**\$0**

System Assembly Comp Type Quantit UM Priority Weight  
**> Summary > Equipment > Wastewater > Cost Information MECH Poor Convey Good**  
Foundation/Footings **Fair** Overall Rating **Fair** Mechanical **Good** Substructure **Equip: autoclaves**  
Comments **Equipment - Cooling - Fair** Electrical **Adequate** Superstructure **1 EACH Fair Exterior**  
**Fair** Specialty **Within 1 Year Poor** Equipment **Adequate** Roofing **Improve Operational**  
**Efficiency Adequate** Interior Construction **Adequate** SiteWork

Year Installed Location1 Location2 Location3  
**1972 Boiler Room**

Overall Replace per Inspector No Comments  
**Fail** 853 ton chiller needs rebuild/replacement

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$42,541 \$42,541 Replace**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER – JAMPL

Facility

**UMM01**

**Deficiencies**

Ex Higher Education

Tower Building

Asset Code 1 335B75UMM92031

Agency: University of Massachusetts Medical

Crew ID IND-8

Date

10/27/00

Asset Code 2 551UMMPB03

Deficiency:

System

Assembly Comp Type

Inoperative

MECH

Equipment - Cooling - A/C  
Split Residential

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
1 \$42,541

Syste Assembly Comp Type Quantit UM Priority Weight  
MECH Equipment - Heating - Radiators, Steam/HW 5 EACH Within 1 Year Improvement to the Use

Year Installed Location1 Location2 Location3  
1972 Asset Wide

Overall Replace per Inspector No Comments  
Fail inop walk-in units not needed

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
\$23,677 \$23,677 Replace

Deficiency: System Assembly Comp Type  
Inoperative MECH Equipment - Heating - Radiators, Steam/HW

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
5 \$23,677

Syste Assembly Comp Type Quantit UM Priority Weight  
MECH Equipment - Heating/Cooling - Thermostat 9 EACH Within 1 Year Improve Operational Efficiency

Year Installed Location1 Location2 Location3  
1972 Asset Wide

Overall Replace per Inspector No Comments  
Fail of 12 autoclaves, 5 are fail, 4 are poor

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
\$3,171 \$3,171 Replace

**ASSET SURVEY DATA REPORT**

CENTER – JAMPL

**Information**

Ex **Higher Education** Tower Building Asset Code 1 **335B75UMM9203I**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/27/00** Asset Code 2 **551UMMPB03**  
 Deficiency: **Inoperative** System **MECH** Assembly Comp Type **Equipment - Heating/Cooling - Thermostat**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**9** **\$3,171**

-----  
 Syste Assembly Comp Type Quantit UM Priority Weight  
**MECH Radiators - Steam/Hot Water - C.I** **2** **EACH** **Within 3-5 Years** **Required to Improve Appearance**  
 Year Installed Location1 Location2 Location3  
**1972 Roof**  
 Overall Replace per Inspector No Comments  
**Fail** **2** Reed cooling towers inop for many years & gutted - need to be demo d

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$5,627** **\$5,627** **Replace**

-----  
 Deficiency: System Assembly Comp Type  
**Inoperative** **MECH** **Radiators - Steam/Hot Water - C.I**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**2** **\$5,627**

-----  
 Syste Assembly Comp Type Quantit UM Priority Weight  
**MECH Ventilation - Fan - Fan** **1** **EACH** **Within 1 Year** **Improve Operational Efficiency**  
 Year Installed Location1 Location2 Location3  
**1972 Fan Room**  
 Overall Replace per Inspector No Comments  
**Fail** **150** HP motor on Joy HVF #3 NG

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$4,084** **\$8,168** **Replace**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex **Higher Education**

**Tower Building**

Asset Code 1 **335B75UMM9203I**

Agency: **University of Massachusetts Medical**  
Deficiency:  
**Replace**

Crew ID **IND-8** Date **10/27/00** Asset Code 2 **551UMMPB03**  
System **MECH** Assembly Comp Type  
**Ventilation - Fan - Fan**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**1** **\$4,084**

Deficiency: **Inoperative** System **MECH** Assembly Comp Type **Ventilation - Fan - Fan**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**1** **\$4,084**

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000011438</b>	<b>Main Back Flow Preventer</b>	<b>DomWater</b>	<b>WATTS REGULATOR CO.</b>	<b>N/A</b>	<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
<b>909</b>	<b>161288</b>	<b>Continuous</b>	<b>4</b>	<b>INCHES</b>	<b>LARGE</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BOILER ROOM</b>			<b>Good</b>	<b>10 Yrs</b>	<b>\$8,439</b>
Comments					

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000011439</b>	<b>Main Sprinkler Valve</b>	<b>FireProDet</b>	<b>NIBCO INC.</b>	<b>N/A</b>	<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
<b>none</b>	<b>none</b>	<b>Continuous</b>	<b>6</b>	<b>INCHES</b>	<b>LARGE</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BOILER ROOM</b>			<b>Good</b>	<b>10 Yrs</b>	<b>\$11,440</b>
Comments					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Tower Building

Asset Code 1

**335B75UMM9203I**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8**

Date

**10/27/00**

Asset Code 2

**551UMMPB03**

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

**0000014035**

**Main Sprinkler Valve**

**FireProDet**

**STOCKHAM VALVES & FITTINGS**

**N/A**

**1973**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**none**

**none**

**Continuous**

**6**

**INCHES**

**LARGE**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**BOILER ROOM**

**Good**

**10 Yrs**

**\$11,440**

Comments

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

**0000014036**

**Pumps/Motors >60HP**

**FireProDet**

**US ELECTRICAL MOTORS**

**Electric**

**1973**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**(ID#)09426-00-1738**

**Standby**

**75**

**HP**

**LARGE**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**BOILER ROOM**

**Good**

**10 Yrs**

**\$54,810**

Comments

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

**0000014678**

**Fire Pump**

**FireProDet**

**PEERLESS**

**Motor Driven**

**1973**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**none**

**none**

**Standby**

**8**

**GPM**

**SMALL**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**BOILER ROOM**

**Good**

**10 Yrs**

**\$39,063**

Comments

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

**0000014679**

**Emergency Generator Set**

**ElecDist**

**CATERPILLAR**

**Engine Driven**

**1973**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**SR4**

**5YA00742**

**Standby**

**950**

**KVA**

**LARGE**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**EQUIP ROOM**

**Good**

**10 Yrs**

**\$285,360**

Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Tower Building

Asset Code 1

**335B75UMM9203I**

Agency: **University of Massachusetts Medical**  
Equipment ID Name

Crew ID **IND-8** Date **10/27/00**  
Manufacturer

Asset Code 2 **551UMMPB03**  
Model Type Year Installed

**0000014680** **Emergency Generator Set**

Syste  
m  
**ElecDist**

**CATERPILLAR**

**Engine Driven**

**1973**

Model Number Serial Number

Duty

Size

UM

Relative Size

**SR4**

**5YA00737**

**Standby**

**950**

**KVA**

**LARGE**

Location1 Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**EQUIP ROOM**

**Good**

**10 Yrs**

**\$285,360**

Comments

Equipment ID

Name

Syste  
m

Manufacturer

Model Type

Year Installed

**0000014760**

**Roof A/H Units**

**HVAC**

**GULF & WESTERN**

**Motor Driven**

**1973**

Model Number Serial Number

Duty

Size

UM

Relative Size

**XO2211F**

**799661**

**Continuous**

**10000**

**CFM**

**MEDIUM**

Location1 Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**EQUIP ROOM**

**Adequate**

**5 Yrs**

**\$80,736**

Comments

**AH-14**

Equipment ID

Name

Syste  
m

Manufacturer

Model Type

Year Installed

**0000014761**

**Air Compressors**

**HVAC**

**SULLAIR**

**Motor Driven**

**1998**

Model Number Serial Number  
**LS-10 25H AC 24KT**

**003-142983**

**Continuous**

**25**

**HP**

Relative Size  
**LARGE**

Location1 Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**EQUIP ROOM**

**Good**

**10 Yrs**

**\$67,512**

Comments

Equipment ID

Name

Syste  
m

Manufacturer

Model Type

Year Installed

**0000014762**

**Air Compressors**

**HVAC**

**SULLAIR**

**Motor Driven**

**1998**

Model Number Serial Number  
**LS-10 25H AC 24KT**

**003-142984**

**Continuous**

**25**

**HP**

Relative Size  
**LARGE**

Location1 Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**BOILER ROOM**

**Good**

**10 Yrs**

**\$67,512**

Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM92031  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014763 Air Compressors HVAC WORTHINGTON CORPORATION Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**none EU2621 Standby 10 HP LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BOILER ROOM Adequate 5 Yrs \$67,512**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014764 Air Compressors HVAC WORTHINGTON CORPORATION Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**none EU2630 Standby 10 HP LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BOILER ROOM Adequate 5 Yrs \$67,512**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014765 Chiller HVAC YORK BORG-WARNER CORP. Absorption 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**570 none Continuous 583 TONS MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BOILER ROOM Fail 0 Yrs \$507,210**  
 Comments  
**Inoperative-does not chill**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014766 Chiller HVAC YORK BORG-WARNER CORP. Absorption 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**570 none Continuous 583 TONS MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BOILER ROOM Adequate 5 Yrs \$507,210**  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM92031  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014767 Chiller HVAC YORK BORG-WARNER CORP. Absorption 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 570 none Continuous 583 TONS MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BOILER ROOM Adequate 5 Yrs \$507,210  
 Comments

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014768 Boiler HVAC CLEAVER-BROOKS Fuel Oil 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 D-52 WL-1554 Continuous 33476 BTU MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BOILER ROOM Adequate 5 Yrs \$115,710  
 Comments  
 1000 HP

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014769 Boiler HVAC CLEAVER-BROOKS Fuel Oil 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 D-52 WL-1553 Continuous 33476 BTU MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BOILER ROOM Adequate 5 Yrs \$115,710  
 Comments  
 1000 HP

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014770 Boiler HVAC CLEAVER-BROOKS Fuel Oil 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 D-52 WL-1555 Continuous 33476 BTU MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BOILER ROOM Adequate 5 Yrs \$115,710  
 Comments  
 1000 HP

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

UMM01

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014771 Pumps/Motors >60HP HVAC DAYTON Electric 1980  
 Model Number Serial Number Duty Size UM Relative Size  
 3N030 (ID#)R-9546-01-082M Continuous 30 HP MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BOILER ROOM Good 10 Yrs \$30,624  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014772 Water Softener HVAC ECOWATER Electric 1996  
 Model Number Serial Number Duty Size UM Relative Size  
 none none Continuous 100 GALLONS MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BOILER ROOM Good 10 Yrs \$14,877  
 Comments  
 For the boilers

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014773 Pumps/Motors >60HP HVAC BALDOR ELECTRIC Electric 1995  
 Model Number Serial Number Duty Size UM Relative Size  
 (cat#) M14B P6-95 Continuous 60 HP MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BOILER ROOM Good 10 Yrs \$30,624  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014774 Bldg Supply Wtr Htr / DomWater PATTERSON-KELLE steam 1973  
 Exchngr  
 Model Number Serial Number Duty Size UM Relative Size  
 compact 400 208399 Continuous 0 BTU MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BOILER ROOM Adequate 5 Yrs \$23,490  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014775 Bldg Supply Wtr Htr / Exchngr DomWater PATTERSON-KELLE steam 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 compact 400 208397 Continuous 0 BTU MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BOILER ROOM Adequate 5 Yrs \$23,490  
 Comments

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014776 Bldg Supply Wtr Htr / Exchngr DomWater PATTERSON-KELLE steam 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 compact 400 208398 Continuous 0 BTU MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BOILER ROOM Adequate 5 Yrs \$23,490  
 Comments

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014777 Roof A/H Units HVAC UNKNOWN Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 no data plate none Continuous 4280 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 SHOP Adequate 5 Yrs \$12,876  
 Comments  
 AH-2

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014778 Roof A/H Units HVAC GULF & WESTERN Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 V05217MF 733664 Continuous 8150 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 STORE ROOM Fair 3 Yrs \$12,876  
 Comments  
 AH-7

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014779 Roof A/H Units HVAC GULF & WESTERN Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 VCS106LF 733666 Continuous 3435 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 AH-9

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014780 Roof A/H Units HVAC GULF & WESTERN Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 HOS217LF 733667 Continuous 3520 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 AH-10

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014781 Roof A/H Units HVAC AMERICAN STANDARD Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none order #3-64610-01 Continuous 3910 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 (exhaust fan) EF-10

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014782 Roof A/H Units HVAC AMERICAN STANDARD Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none order #64610-02 Continuous 3980 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 EF-11

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014783 Roof A/H Units HVAC GULF & WESTERN Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 HCS110MP 733668 Continuous 4660 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 AH-11

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014784 Cooling Tower HVAC BALTIMORE AIRCOIL CO. Water Cooled 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 853 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Adequate 5 Yrs \$156,078  
 Comments  
 CT#1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014785 Cooling Tower HVAC BALTIMORE AIRCOIL CO. Water Cooled 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 VLT-800A 70-3667 Continuous 853 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Adequate 5 Yrs \$156,078  
 Comments  
 CT#3

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014786 Cooling Tower HVAC BALTIMORE AIRCOIL CO. Water Cooled 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 VLT-8CODCM 93100679 Continuous 853 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Adequate 5 Yrs \$156,078  
 Comments  
 CT#2

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

UMM01

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014788 Cooling Tower HVAC BALTIMORE AIRCOIL CO. Water Cooled 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 VXT45CR 90100448 Continuous 0 TONS MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Good 10 Yrs \$73,950  
 Comments  
 for walk-in refrgerated units

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014789 Cooling Tower HVAC BALTIMORE AIRCOIL CO. Water Cooled 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 VXT45CR 90100447 Continuous 0 TONS MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Good 10 Yrs \$73,950  
 Comments  
 for walk-in refrigerated units

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014790 Cooling Tower HVAC REED Water Cooled 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 RVS-B-54-M-D 7209-J-TQ INOP 0 TONS MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Fail 0 Yrs \$73,950  
 Comments  
 has not run for many years

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014791 Cooling Tower HVAC REED Water Cooled 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 RVS-B-54-4M-D 7210-J-TQ INOP 0 TONS MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Fail 0 Yrs \$73,950  
 Comments  
 has not run for many years

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014792 Roof A/H Units HVAC GULF & WESTERN Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 VCS124MB 733657 Continuous 12000 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Fair 3 Yrs \$80,736  
 Comments  
 AH-1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014793 Roof A/H Units HVAC GULF & WESTERN Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 VCS110LF 733665 Continuous 4400 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 AH-8

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014794 Roof A/H Units HVAC GULF & WESTERN Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 XD221LF 733660 Continuous 11300 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 AH-4

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014795 Roof A/H Units HVAC GULF & WESTERN Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 VCS221MF 733663 Continuous 9390 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Fair 3 Yrs \$12,876  
 Comments  
 AH-6

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM92031  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014796 Roof A/H Units HVAC GULF & WESTERN Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 VCS214LF 733662 Continuous 6580 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Fair 3 Yrs \$12,876  
 Comments  
 AH-5

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014797 Elevator/Escalator Conveying BECKWITH ELEVATOR CO. Electrical Freight Elevat 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none 79468 Intermittent 0 STORIES MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 MACHINE ROOM Fair 3 Yrs \$331,035  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014798 Elevator/Escalator Conveying BECKWITH ELEVATOR CO. Electrical Freight Elevat 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 63 79466 C Intermittent 0 STORIES MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 MACHINE ROOM Poor 1 Yrs \$331,035  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014799 Elevator/Escalator Conveying BECKWITH ELEVATOR CO. Electrical Passenger Elevator 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none 79466 B Intermittent 0 STORIES MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 MACHINE ROOM Poor 1 Yrs \$331,035  
 Comments  
 car #2

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014800 Elevator/Escalator Conveying BECKWITH ELEVATOR CO. Electrical Passenger Elevator 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none 79466A Intermittent 0 STORIES MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 MACHINE ROOM Poor 1 Yrs \$331,035  
 Comments  
 car #1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014801 Roof A/H Units HVAC JOY MFG. CO. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 45-26.5-1770 SF25413-2 Continuous 150 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 FAN ROOM Fail 0 Yrs \$484,590  
 Comments  
 HVF #3 Inop-motor

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014802 Roof A/H Units HVAC JOY MFG. CO. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 45-26.5-1770 SF25413-1 Continuous 150 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 FAN ROOM Fair 3 Yrs \$484,590  
 Comments  
 HVF #2

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014803 Roof A/H Units HVAC JOY MFG. CO. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 45-26.5-1770 SF25413 Continuous 150 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 FAN ROOM Fair 3 Yrs \$484,590  
 Comments  
 HVF #1

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Tower Building

Asset Code 1

**335B75UMM9203I**

Agency: **University of Massachusetts Medical**

Crew ID

**IND-8**

Date

**10/27/00**

Asset Code 2

**551UMMPB03**

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

**0000014804**

**Roof A/H Units**

**HVAC**

**ACME DIV./UNITED  
TOOL CO.**

**Motor Driven**

**1973**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**no data plate**

**Continuous**

**7200**

**CFM**

**SMALL**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**ROOF**

**Good**

**10 Yrs**

**\$12,876**

Comments

**sterilizer rooms**

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

**0000014805**

**Roof A/H Units**

**HVAC**

**NEW YORK  
BLOWER**

**Motor Driven**

**1999**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**none**

**(shop #)U11788-100**

**Continuous**

**0**

**CFM**

**MEDIUM**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**ROOF**

**Excellent**

**15 Yrs**

**\$80,736**

Comments

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

**0000014806**

**Roof A/H Units**

**HVAC**

**HEIL CORP.**

**Motor Driven**

**1973**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**BCL-15**

**none**

**Continuous**

**3980**

**CFM**

**SMALL**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**ROOF**

**Fair**

**3 Yrs**

**\$12,876**

Comments

**EF-11**

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

**0000014807**

**Roof A/H Units**

**HVAC**

**HEIL CORP.**

**Motor Driven**

**1973**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**HCL-20**

**none**

**Continuous**

**5580**

**CFM**

**SMALL**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**ROOF**

**Fair**

**3 Yrs**

**\$12,876**

Comments

**EF-15**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014808 Roof A/H Units HVAC HEIL CORP. Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**no data plate Continuous 6810 CFM SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF Fair 3 Yrs \$12,876**  
 Comments  
**EF-16**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014809 Roof A/H Units HVAC HEIL CORP. Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**RCL-20 none Continuous 6220 CFM SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF Fair 3 Yrs \$12,876**  
 Comments  
**EF-17**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014810 Roof A/H Units HVAC HEIL CORP. Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**HCL-21 none Continuous 5625 CFM SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF Fair 3 Yrs \$12,876**  
 Comments  
**EF-18**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014811 Roof A/H Units HVAC HEIL CORP. Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**HCL-16 none Continuous 4530 CFM SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF Fair 3 Yrs \$12,876**  
 Comments  
**EF-19**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Tower Building

Asset Code 1

**335B75UMM9203I**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8**

Date

**10/27/00**

Asset Code 2

**551UMMPB03**

Equipment ID

Name

Syste  
m

Manufacturer

Model Type

Year Installed

**0000014812**

**Roof A/H Units**

**HVAC**

**HEIL CORP.**

**Motor Driven**

**2000**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**HCL-20**

**none**

**Continuous**

**6500**

**CFM**

**SMALL**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**ROOF**

**Excellent**

**15 Yrs**

**\$12,876**

Comments

Equipment ID

Name

Syste  
m

Manufacturer

Model Type

Year Installed

**0000014813**

**Roof A/H Units**

**HVAC**

**HEIL CORP.**

**Motor Driven**

**1973**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**HCL-20**

**none**

**Continuous**

**8650**

**CFM**

**SMALL**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**ROOF**

**Fair**

**3 Yrs**

**\$12,876**

Comments

**EF-14**

Equipment ID

Name

Syste  
m

Manufacturer

Model Type

Year Installed

**0000014814**

**Roof A/H Units**

**HVAC**

**HEIL CORP.**

**Motor Driven**

**1973**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**HCL-20**

**none**

**Continuous**

**5750**

**CFM**

**SMALL**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**ROOF**

**Fair**

**3 Yrs**

**\$12,876**

Comments

**EF-13**

Equipment ID

Name

Syste  
m

Manufacturer

Model Type

Year Installed

**0000014815**

**Roof A/H Units**

**HVAC**

**HEIL CORP.**

**Motor Driven**

**2000**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**HCL-20**

**none**

**Continuous**

**0**

**CFM**

**MEDIUM**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**ROOF**

**Excellent**

**15 Yrs**

**\$80,736**

Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014816 Roof A/H Units HVAC HEIL CORP. Motor Driven 1979**  
 Model Number Serial Number Duty Size UM Relative Size  
**HCL-20 none Continuous 6200 CFM SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF Fair 3 Yrs \$12,876**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014817 Roof A/H Units HVAC DAVIDSON Motor Driven 1979**  
 Model Number Serial Number Duty Size UM Relative Size  
**56AJ none Continuous 12200 CFM MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF Fair 3 Yrs \$80,736**  
 Comments  
**EF-38**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014818 Roof A/H Units HVAC ACME DIV./UNITED Motor Driven 1979**  
 Model Number Serial Number Duty Size UM Relative Size  
**no data plate none Continuous 5020 CFM SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF Good 10 Yrs \$12,876**  
 Comments  
**# 23**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014819 Roof A/H Units HVAC HEIL CORP. Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**no data plate none Continuous 3910 CFM SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF Fair 3 Yrs \$12,876**  
 Comments  
**EF-10**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014820 Roof A/H Units HVAC HEIL CORP. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 HCL-16 none Continuous 4386 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Fair 3 Yrs \$12,876  
 Comments  
 EF-6

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014821 Roof A/H Units HVAC HEIL CORP. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 HCL-16 none Continuous 4595 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Fair 3 Yrs \$12,876  
 Comments  
 EF-5

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014822 Roof A/H Units HVAC HEIL CORP. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 HCL-20 none Continuous 5070 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Fair 3 Yrs \$12,876  
 Comments  
 EF-4

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014823 Roof A/H Units HVAC HEIL CORP. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 HCL-20 none Continuous 5725 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Fair 3 Yrs \$12,876  
 Comments  
 EF-3

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014824 Roof A/H Units HVAC HEIL CORP. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 no data plate none Continuous 5110 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Fair 3 Yrs \$12,876  
 Comments  
 EF-2

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014825 Roof A/H Units HVAC HEIL CORP. Motor Driven 1972  
 Model Number Serial Number Duty Size UM Relative Size  
 HCL-20 none Continuous 5430 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Fair 3 Yrs \$12,876  
 Comments  
 EF-1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014826 Bldg Condenser Unit HVAC SANYO Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 C3622 0037281 Continuous 0 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Good 10 Yrs \$155,730  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014827 Roof A/H Units HVAC HEIL CORP. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 no data plate none Continuous 3975 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Fair 3 Yrs \$12,876  
 Comments  
 EF-7

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014828 Roof A/H Units HVAC HEIL CORP. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 HCL-20 none Continuous 5275 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Fair 3 Yrs \$12,876  
 Comments  
 EF-8

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014829 Roof A/H Units HVAC HEIL CORP. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 HCL-16 none Continuous 3750 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Fair 3 Yrs \$12,876  
 Comments  
 EF-9

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014830 Roof A/H Units HVAC ACME DIV./UNITED TOOL CO. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 PUB300JT C-16457 Continuous 6855 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Good 10 Yrs \$12,876  
 Comments  
 EF-21

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014831 Roof A/H Units HVAC ACME DIV./UNITED TOOL CO. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 PUB490KT C-16457 Continuous 13000 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Good 10 Yrs \$80,736  
 Comments  
 EF-24

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM92031  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014832 Fire Alarm Panel FireProDet SIMPLEX INC. Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous 193312 SQFT LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BASEMENT Adequate 5 Yrs \$5,698**  
 Comments  
**cover locked - no key available**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014833 Security System Panel BldgSecur COMPAQ Electric 1972**  
 Model Number Serial Number Duty Size UM Relative Size  
**Prolinea 5100 Continuous 193312 SQFT LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**CONTROL ROOM Adequate 5 Yrs \$9,004**  
 Comments  
**old used computer upgraded in 1999**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014834 Bldg Condenser Unit HVAC TRANE COMPANY Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**CGADC304AFA1DR J92D82177 Continuous 25 TONS MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**pad mounted Adequate 5 Yrs \$71,166**  
 Comments  
**animal quarters**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014835 Walk-in Refrigeration Units Specialty HOTPACK Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**6141-1 none Continuous 100 SQFT MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM Good 10 Yrs \$26,448**  
 Comments  
**848**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

UMM01

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014836 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 109164-1 none Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$26,448  
 Comments  
 847

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014837 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 8131-3 none Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Adequate 5 Yrs \$26,448  
 Comments  
 847A

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014838 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 6141-1 none Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$26,448  
 Comments  
 748

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014839 Walk-in Refrigeration Specialty BALLY CASE & COOLER INC. Electric 1997  
 Model Number Serial Number Duty Size UM Relative Size  
 678-4-P-W DX7004268-02 Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$26,448  
 Comments  
 747

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014840** **Walk-in Refrigeration Units** **Specialty** **HOTPACK** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**6141-1** **none** **Continuous** **100** **SQFT** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM** **Good** **10 Yrs** **\$26,448**  
 Comments  
**798**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014841** **Walk-in Refrigeration Units** **Specialty** **HOTPACK** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**109164-1** **none** **Continuous** **100** **SQFT** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM** **Adequate** **5 Yrs** **\$26,448**  
 Comments  
**797**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014842** **Walk-in Refrigeration Units** **Specialty** **HOTPACK** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**8131-3** **none** **Continuous** **100** **SQFT** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM** **Adequate** **5 Yrs** **\$26,448**  
 Comments  
**797A**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014843** **Walk-in Refrigeration Units** **Specialty** **HOTPACK** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**109164-1** **none** **Continuous** **100** **SQFT** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM** **Fair** **3 Yrs** **\$26,448**  
 Comments  
**697**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014844 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 8131-3 none Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Fair 3 Yrs \$26,448  
 Comments 697A

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014845 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 6141-1 none jnop 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Fail 0 Yrs \$26,448  
 Comments 648

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014846 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 109164-1 none Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Fair 3 Yrs \$26,448  
 Comments 647

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014847 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 8131-3 none Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Fair 3 Yrs \$26,448  
 Comments 647A

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Specialty Manufacturer Model Type Year Installed  
**0000014848 Walk-in Refrigeration Units HOTPACK Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**6141-1 none inop 100 SQFT MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM Fail 0 Yrs \$26,448**  
 Comments  
**548**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014849 Walk-in Refrigeration Units HOTPACK Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**109164-1 none Continuous 100 SQFT MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM Poor 1 Yrs \$26,448**  
 Comments  
**547**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014850 Walk-in Refrigeration Units HOTPACK Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**8131-3 none Continuous 100 SQFT MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM Poor 1 Yrs \$26,448**  
 Comments  
**547A**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014851 Walk-in Refrigeration Units BALLY CASE & COOLER INC. Electric 1997**  
 Model Number Serial Number Duty Size UM Relative Size  
**678-4-P-W DX7004268-01 Continuous 100 SQFT MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM Excellent 15 Yrs \$26,448**  
 Comments  
**497**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014852 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 6141-1 none Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$26,448  
 Comments  
 498

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014853 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 6141-1 none Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$26,448  
 Comments  
 448

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014854 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 109164-1 none Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Fair 3 Yrs \$26,448  
 Comments  
 447

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014855 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 8131-3 none Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Fair 3 Yrs \$26,448  
 Comments  
 447A

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

UMM01

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014856 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 6141-1 none Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Fail 0 Yrs \$26,448  
 Comments  
 348

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014857 Walk-in Refrigeration Specialty BALLY CASE & COOLER INC. Electric 1998  
 Model Number Serial Number Duty Size UM Relative Size  
 3678-3-P-W DX9003105-01 Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Excellent 15 Yrs \$26,448  
 Comments  
 347

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014858 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 6141-1 none Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Fail 0 Yrs \$26,448  
 Comments  
 398

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014859 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 109164-1 none Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Fair 3 Yrs \$26,448  
 Comments  
 397

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

UMM01

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014860 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 8131-3 none Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Fair 3 Yrs \$26,448  
 Comments  
 397A

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014861 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 109164-1 none Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Fail 0 Yrs \$26,448  
 Comments  
 233

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014862 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 109164-1 none Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Fair 3 Yrs \$26,448  
 Comments  
 234

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014863 Walk-in Refrigeration Specialty HOTPACK Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 109164-1 none Continuous 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Fair 3 Yrs \$26,448  
 Comments  
 208A

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education Tower Building Asset Code 1 335B75UMM9203I  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB03  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014864 Walk-in Refrigeration Specialty HOTPACK Electric 1973**  
 Units  
 Model Number Serial Number Duty Size UM Relative Size  
**8131-3 none Continuous 100 SQFT MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM Adequate 5 Yrs \$26,448**  
 Comments  
**114D**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014865 Walk-in Refrigeration Specialty HOTPACK Electric 1973**  
 Units  
 Model Number Serial Number Duty Size UM Relative Size  
**109164-1 none Continuous 100 SQFT MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM Adequate 5 Yrs \$26,448**  
 Comments  
**114E**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014866 Walk-in Refrigeration Specialty ALUSHI INDUSTRY Electric 1973**  
 Units  
 Model Number Serial Number Duty Size UM Relative Size  
**none 44028 Continuous 150 SQFT MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM Adequate 5 Yrs \$26,448**  
 Comments  
**53**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014880 Roof A/H Units HVAC GULF & WESTERN Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**HD214L 733659 Continuous 8300 CFM SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**STORE ROOM Fair 3 Yrs \$12,876**  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex **Higher Education** **Tower Building** Asset Code 1 **335B75UMM9203I**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/27/00** Asset Code 2 **551UMMPB03**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014881** **Roof A/H Units** **HVAC** **UNKNOWN** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**no data plate** **none** **Continuous** **2800** **CFM** **SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BASEMENT** **Adequate** **5 Yrs** **\$12,876**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014882** **Walk-in Refrigeration Units** **Specialty** **BALLY CASE & COOLER INC.** **Electric** **1997**  
 Model Number Serial Number Duty Size UM Relative Size  
**no data plate** **none** **Continuous** **200** **SQFT** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**OTHER** **Good** **10 Yrs** **\$51,504**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014916** **Main Back Flow Preventer** **DomWater** **WATTS REGULATOR CO.** **Steam** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**909** **1161512** **Continuous** **4** **INCHES** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**STAIRWELL** **basement** **Good** **10 Yrs** **\$8,439**  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex **Higher Education**

**Tower Building**

Asset Code 1 **335B75UMM9203I**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8** Date

**10/27/00** Asset Code 2 **551UMMPB03**

Asset Replacement Value  
**\$41,840,449**

Equipment Replacement Value  
**\$8,686,948**

DemolitionCost(if Surplus Property)  
**\$0**

System ACT Replacement  
Cost  
**\$100,403**

System Deficiency Repair  
Cost  
**\$0**

Equipment Replacement Cost  
Fail Or Poor Only  
**\$2,317,941**

ADA Compliance Cost  
**\$3,024,496**

LSC Compliance Cost  
**\$0**

Total Capital Project And Repair Cost  
**\$5,442,840**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Biologics Building

Asset Code 1 335B75UMM9203J

Agency: University of Massachusetts Medical

Crew ID IND-8 Date

10/27/00 Asset Code 2 551UMMPB01

**> Facility Address**

Address1	Address2	Address3	City	ZipCode
305 South St.			Boston	

**> Facility Contact Information**

Name	Telephone	Fax Number	EEmail
Russ Mattson, Facilities Manager	(508) 856-3620		russ.mattson@umassmed.edu

**> Asset Address**

Asset Name	Alias Name	Address	Municipality	County
Biologics Building		305 South St.	Boston – JamPI	Suffolk
House District	Senate District	Type	Property Status	Floors
15th Suffolk	Suffolk and Norfolk	Light Manufacturing	IN USE	2
YearConstructed	Construction Type	OriginalCost	Basement	Basement Confidence Code
1904	Other Than Std Constr Type	\$0	Y	Obtained at site
GSF	NS	PictureFile		
34,503	29,328	335B75UMM9203J.jpg		

**> Asset Real Estate Data**

Year Acquired	Purchase Price	Replacement Value	Assessed Value	Assessed Year-Current	Map No	Block No	Lot No
	\$0	\$4,406,723	\$0	2001			
Historic Building	Latitude	Longitude	AssessedVal	Assessed Year-Actual			
	421802	710707	NB	2001			

**> Construction**

Construction	Contractor Name1	Contractor Name2	Contractor Name3	Designer Name1	Designer Name2	Designer Name3
1904	Unknown			Unknown		

**> Addition**

**> Renovation**

Renovation	Contractor Name1	Contractor Name2	Contractor Name3	Designer Name1	Designer Name2	Designer Name3
1926	Unknown			Unknown		
1945	Unknown			Unknown		
1950	Unknown			Unknown		

>

Type	On File	Current
Elevator		

**> Occupants**

Occupant(s) Name	Percent Occupied	Comments
University of Massachusetts Medical Center	100%	

**> Hazardous Material Presence (in Environment)**

**Mass Division of Capital Asset  
Parsons Brinckerhoff**

Inspector Initials

Page 37 of 255  
Printed  
335B75UMM9203

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Biologics Building

Asset Code 1 335B75UMM9203J

Agency: University of Massachusetts Medical

Crew ID IND-8 Date

10/27/00 Asset Code 2 551UMMPB01

**> Hazardous Material Tracking (Stored Fuels and Chemicals)**

**> Wetlands Delineation**

Distance to Wetlands - 200 ft or less	WetLandDataSource	Description/Comments
---------------------------------------	-------------------	----------------------

GIS Yes, Inspector  
No Record

**> LSC Compliance**

**> ADA Compliance**

EntranceRampCost	Elevator Cost	Toilets Cost	All Other ADA Cost	Total
				\$0

**> Inspection &**

System <b>CONV</b>	Assembly Comp Type <b>Elevator - Controls - Operating</b>	Quantit UM <b>1 EACH</b>	Priority <b>Within 1 Year</b>	Weight <b>Improve Operational Efficiency</b>
Year Installed	Location1 <b>Attic</b>	Location2	Location3	
Overall <b>Poor</b>	Replace per Inspector	No	Comments very old and breaks down frequently	
Replace System ACT <b>\$7,101</b>	Repair System ACT <b>\$7,101</b>	Code <b>Replace</b>	Replace or Repair (Factored Cost Comparison)	Capital Project

Deficiency: <b>Replace</b>	System <b>CONV</b>	Assembly Comp Type <b>Elevator - Controls - Operating</b>
-------------------------------	-----------------------	--

5% 10% 15% 25% 50% 75% Fail Comments

Replace <b>1</b>	Repair	Deficiency Repair Cost <b>\$7,101</b>
---------------------	--------	--

System <b>EXTR</b>	Assembly Comp Type <b>Walls - Chimney - Brick</b>	Quantit UM <b>70 LNFT</b>	Priority <b>Within 1 Year</b>	Weight <b>Improve Operational Efficiency</b>
Year Installed <b>Certificates</b>	Location1 <b>Other</b>	Location2	Location3	
Overall <b>Poor</b>	Replace per Inspector	No	Comments mortar missing from joints	
Replace System ACT <b>\$21,710</b>	Repair System ACT <b>\$60,788</b>	Code <b>Replace</b>	Replace or Repair (Factored Cost Comparison)	Capital Project

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Biologics Building

Asset Code 1 335B75UMM9203J

Agency: University of Massachusetts Medical

Crew ID IND-8

Date

10/27/00

Asset Code 2

551UMMPB01

Deficiency:

System

Assembly Comp Type

Water Penetration

EXTR

Walls - Chimney - Brick

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
52 \$13,026

Deficiency:

System

Assembly Comp Type

Vertical Cracks

EXTR

Walls - Chimney - Brick

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
52 \$13,026

Deficiency:

System

Assembly Comp Type

Replace

EXTR

Walls - Chimney - Brick

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
70 \$21,710

Deficiency:

System

Assembly Comp Type

Missing Masonry

EXTR

Walls - Chimney - Brick

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair	Deficiency Repair Cost				
<b>&gt; Summary &gt; Equipment &gt; Wastewater &gt; Cost Information</b>			Poor	Convey	Adequate	
Foundation/Footings	Poor	Overall Rating	52 Fair	Mechanical	Adequate	
Substructure	Comments	Fair Electrical	Fair	Superstructure	\$13,026	Poor
Exterior	Fair Specialty	Fair Equipment	Fail	Roofing	Adequate	Interior
Construction	Adequate SiteWork					

System	Assembly Comp Type	Quantit	UM	Priority	Weight
<b>ROOF</b>	<b>Membrane - Asphalt - Built-up</b>	20000	SQFT	<b>Immediate/Emergency</b>	<b>Correct Hazard and Life Safety Issues</b>
Year Installed	Location1		Location2		Location3
	<b>Roof</b>				
Overall	Replace per Inspector		No		Comments
<b>Fail</b>					numerous leaks and this is an FDA licensed manufacturer of vaccines
Replace System ACT	Repair System ACT		Replace or Repair (Factored Cost Comparison)		Capital Project
<b>\$104,748</b>	<b>\$112,839</b>		<b>Replace</b>		

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER – JAMPL

Facility

**UMM01**

**Deficiencies**

Ex Higher Education **Biologics Building** Asset Code 1 **335B75UMM9203J**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/27/00** Asset Code 2 **551UMMPB01**  
 Deficiency: **Water Penetration** System **ROOF** Assembly Comp Type **Membrane - Asphalt - Built-up**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 20000 \$104,748

Deficiency: **Split/Dry/Cracked** System **ROOF** Assembly Comp Type **Membrane - Asphalt - Built-up**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 1000 \$3,654

Deficiency: **Loose Fastenings** System **ROOF** Assembly Comp Type **Membrane - Asphalt - Built-up**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 1000 \$3,654

Deficiency: **Drains Clogged** System **ROOF** Assembly Comp Type **Membrane - Asphalt - Built-up**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 1000 \$783

Syste **SUPST** Assembly Comp Type **Floors - CIP Concrete - Slab** Quantit **2000** UM **SQFT** Priority **Within 1 Year** Weight **Prevent Accelerated Deterioration**

Year Installed Location1 **Basement** Location2 **Room** Location3

Overall **Fair** Replace per Inspector No Comments

Replace System ACT **\$20,149** Repair System ACT **\$5,442** Replace or Repair (Factored Cost Comparison) **Repair** Capital Project

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER – JAMPL

Facility

**UMM01**

**Information**

Ex **Higher Education** **Biologics Building** Asset Code 1 **335B75UMM9203J**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/27/00** Asset Code 2 **551UMMPB01**  
 Deficiency: **Sagging/Heaving/Cracking of Structure** System **SUPST** Assembly Comp Type **Floors - CIP Concrete - Slab**  
 5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 200 **\$2,015**

Deficiency: **Puncture/Tear/Impact Damage** System **SUPST** Assembly Comp Type **Floors - CIP Concrete - Slab**  
 5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 200 **\$1,409**

Deficiency: **Diagonal Cracks** System **SUPST** Assembly Comp Type **Floors - CIP Concrete - Slab**  
 5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 500 **\$2,018**

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014867</b>	<b>Chiller</b>	<b>HVAC</b>	<b>ACME DIV./UNITED TOOL CO.</b>	<b>Electric</b>	<b>1986</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
<b>DHA41</b>	<b>AC-42951</b>	<b>Continuous</b>	<b>40</b>	<b>TONS</b>	<b>SMALL</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$58,290</b>
Comments					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex **Higher Education** **Biologics Building** Asset Code 1 **335B75UMM9203J**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/27/00** Asset Code 2 **551UMMPB01**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014868** **Fire Alarm Panel** **FireProDet** **FIRE CONTROL INSTRUMENTS** **Electric** **2000**  
 Model Number Serial Number Duty Size UM Relative Size  
**none** **none** **Continuous** **34503** **SQFT** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BASEMENT** **Excellent** **15 Yrs** **\$4,176**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014869** **Main Back Flow Preventer** **DomWater** **WATTS REGULATOR CO.** **N/A** **1985**  
 Model Number Serial Number Duty Size UM Relative Size  
**909** **100437** **Continuous** **2** **INCHES** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BASEMENT** **Good** **10 Yrs** **\$6,786**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014870** **Security System Panel** **BldgSecur** **UNKNOWN** **Electric** **1985**  
 Model Number Serial Number Duty Size UM Relative Size  
**DPU 7920-C** **6472699** **Continuous** **34503** **SQFT** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BASEMENT** **Good** **10 Yrs** **\$4,959**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014871** **Main Sprinkler Valve** **FireProDet** **FAIRBANKS-MORSE** **N/A** **1925**  
 Model Number Serial Number Duty Size UM Relative Size  
**none** **none** **Standby** **4** **INCHES** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BASEMENT** **Adequate** **5 Yrs** **\$11,440**  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Biologics Building

Asset Code 1 335B75UMM9203J

Agency: University of Massachusetts Medical  
Equipment ID Name

Crew ID IND-8 Date 10/27/00

Asset Code 2 551UMMPB01  
Model Type Year Installed

0000014872 Main Back Flow Preventer

System  
DomWater

Manufacturer  
WATTS  
REGULATOR CO.

N/A 1925

Model Number 909 Serial Number 158558

Duty Continuous

Size 2

UM INCHES

Relative Size MEDIUM

Location1 BASEMENT Location2 Location3

Location3

Overall Rating Good

Remaining Life 10 Yrs

Replacement Value \$6,786

Comments

Equipment ID

Name

System  
FireProDet

Manufacturer

Model Type

Year Installed

0000014873 Main Back Flow Preventer

System  
FireProDet

Manufacturer  
WATTS  
REGULATOR CO.

N/A 1985

Model Number 909 Serial Number 158557

Duty Continuous

Size 2

UM INCHES

Relative Size MEDIUM

Location1 BASEMENT Location2 Location3

Location3

Overall Rating Good

Remaining Life 10 Yrs

Replacement Value \$6,786

Comments

Equipment ID

Name

System  
HVAC

Manufacturer

Model Type

Year Installed

0000014874 Bldg Condenser Unit

System  
HVAC

Manufacturer  
CARRIER CORP.

Electric

1979

Model Number 40RR012550 Serial Number N092803

Duty Continuous

Size 10

UM TONS

Relative Size MEDIUM

Location1 BASEMENT Location2 Location3

Location3

Overall Rating Adequate

Remaining Life 5 Yrs

Replacement Value \$71,166

Comments

Equipment ID

Name

System  
Specialty

Manufacturer

Model Type

Year Installed

0000014875 Walk-in Refrigeration Units

System  
Specialty

Manufacturer  
HARFORD

Electric

1984

Model Number Serial Number Duty Continuous

Duty Continuous

Size 200

UM SQFT

Relative Size LARGE

Location1 CORRIDOR Location2 Location3

Location3

Overall Rating Adequate

Remaining Life 5 Yrs

Replacement Value \$51,504

Comments

unit 39

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Biologics Building

Asset Code 1

335B75UMM9203J

Agency: University of Massachusetts Medical  
Equipment ID Name

Crew ID IND-8 Date 10/27/00  
Manufacturer

Asset Code 2 551UMMPB01  
Model Type Year Installed

0000014876 Walk-in Refrigeration  
Units

System  
Specialty

HARFORD

Electric

1984

Model Number

Serial Number

Duty

Size

UM

Relative Size

Continuous

200

SQFT

LARGE

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

CORRIDOR

Adequate

5 Yrs

\$51,504

Comments  
unit 26

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

0000014877 Roof A/H Units

HVAC

TRANE COMPANY

Electric

1984

Model Number

Serial Number

Duty

Size

UM

Relative Size

V345L01LLAL

K84D24041

Continuous

0

TONS

LARGE

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

ROOM

Adequate

5 Yrs

\$484,590

Comments  
AC-1

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

0000014878 Bldg Supply Wtr Htr /  
Exchngr

DomWater

PATTERSON-KELLEY CO.

steam

1973

Model Number

Serial Number

Duty

Size

UM

Relative Size

none

105233

Continuous

0

BTU

MEDIUM

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

BASEMENT

Adequate

5 Yrs

\$23,490

Comments

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

0000014879 Walk-in Refrigeration  
Units

Specialty

HARRISENVI

Electric

1984

Model Number

Serial Number

Duty

Size

UM

Relative Size

Continuous

300

SQFT

LARGE

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

CORRIDOR

Adequate

5 Yrs

\$51,504

Comments  
unit 38

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Biologics Building

Asset Code 1

**335B75UMM9203J**

Agency: **University of Massachusetts Medical**

Crew ID

**IND-8**

Date

**10/27/00**

Asset Code 2

**551UMMPB01**

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

**0000014885**

**Bldg Condenser Unit**

**HVAC**

**CARRIER CORP.**

**Electric**

**1973**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**38AKS012-601**

**0500G00116**

**Continuous**

**0**

**TONS**

**MEDIUM**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**Pad Mtd**

**Good**

**10 Yrs**

**\$71,166**

Comments

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

**0000014886**

**Roof A/H Units**

**HVAC**

**CARRIER CORP.**

**Electric**

**1999**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**39NC07**

**30V0096881**

**Continuous**

**2290**

**CFM**

**SMALL**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**OTHER**

**Excellent**

**15 Yrs**

**\$12,876**

Comments

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

**0000014887**

**Bldg Condenser Unit**

**HVAC**

**CARRIER CORP.**

**Electric**

**1973**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**38AE12500**

**M990099**

**Continuous**

**0**

**TONS**

**MEDIUM**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**OTHER**

**Fair**

**3 Yrs**

**\$71,166**

Comments

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

**0000014888**

**Roof A/H Units**

**HVAC**

**CARRIER CORP.**

**Electric**

**1999**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**39NC07**

**3999V93381**

**Continuous**

**2400**

**CFM**

**SMALL**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**OTHER**

**Excellent**

**15 Yrs**

**\$12,876**

Comments

**unit 1485**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education **Biologics Building** Asset Code 1 **335B75UMM9203J**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/27/00** Asset Code 2 **551UMMPB01**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014889 Bldg Condenser Unit HVAC CARRIER CORP. Electric 1999**  
 Model Number Serial Number Duty Size UM Relative Size  
**38AKS014-510 3599F46215 Continuous 8.5 TONS MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**OTHER Excellent 15 Yrs \$71,166**  
 Comments  
**unit 1486**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014890 Bldg Condenser Unit HVAC CARRIER CORP. Electric 1999**  
 Model Number Serial Number Duty Size UM Relative Size  
**38AKS016 3999F53339 Continuous 14 TONS MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**OTHER Excellent 15 Yrs \$71,166**  
 Comments  
**unit 1342**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014891 Bldg Condenser Unit HVAC GULF & WESTERN Electric 1984**  
 Model Number Serial Number Duty Size UM Relative Size  
**DLH10L5EC12 DKK0097 Continuous 0 TONS MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF Fair 3 Yrs \$71,166**  
 Comments  
**B-116**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014892 Roof A/H Units HVAC CARRIER CORP. Electric 1999**  
 Model Number Serial Number Duty Size UM Relative Size  
**39NC13 2999V92021 Continuous 5500 CFM SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**DECK Excellent 15 Yrs \$12,876**  
 Comments  
**unit 2214**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Biologics Building

Asset Code 1

335B75UMM9203J

Agency: University of Massachusetts Medical

Crew ID IND-8 Date 10/27/00

Asset Code 2

551UMMPB01

Equipment ID Name System  
0000014893 Chiller HVAC

Manufacturer Model Type Year Installed  
ACME DIV./UNITED TOOL CO. Packaged Unit 1984

Model Number Serial Number Duty Size  
A\_G-30D 46944S50B Continuous 0

UM Relative Size  
TONS MEDIUM

Location1 Location2 Location3 Overall Rating  
ROOF Adequate

Remaining Life Replacement Value  
5 Yrs \$507,210

Comments  
unit 1264

Equipment ID Name System  
0000014894 Chiller HVAC

Manufacturer Model Type Year Installed  
ACME DIV./UNITED TOOL CO. Electric 1984

Model Number Serial Number Duty Size  
illegible FC94 850A Continuous 0

UM Relative Size  
TONS MEDIUM

Location1 Location2 Location3 Overall Rating  
ROOF Adequate

Remaining Life Replacement Value  
5 Yrs \$507,210

Comments  
unit 1263

Equipment ID Name System  
0000014895 Bldg Condenser Unit HVAC

Manufacturer Model Type Year Installed  
BOHN Electric 1984

Model Number Serial Number Duty Size  
DLH8H2ED12G DRB 0167 Continuous 0

UM Relative Size  
TONS MEDIUM

Location1 Location2 Location3 Overall Rating  
DECK Fair

Remaining Life Replacement Value  
3 Yrs \$71,166

Comments  
CU-2

Equipment ID Name System  
0000014896 Bldg Condenser Unit HVAC

Manufacturer Model Type Year Installed  
BOHN Electric 1984

Model Number Serial Number Duty Size  
DLH8H2ED12G DRB 0166 Continuous 0

UM Relative Size  
TONS MEDIUM

Location1 Location2 Location3 Overall Rating  
DECK Fair

Remaining Life Replacement Value  
3 Yrs \$71,166

Comments  
CU-1

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Biologics Building

Asset Code 1

**335B75UMM9203J**

Agency: **University of Massachusetts Medical**

Crew ID

IND-8

Date

10/27/00

Asset Code 2

**551UMMPB01**

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

0000014897

Chiller

HVAC

ACME DIV./UNITED  
TOOL CO.

Packaged Unit

1984

Model Number

Serial Number

Duty

Size

UM

Relative Size

AAWC-20DS

AC907012B

Continuous

0

TONS

MEDIUM

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

DECK

Fair

3 Yrs

\$507,210

Comments

CH-3A

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

0000014898

Chiller

HVAC

ACME DIV./UNITED  
TOOL CO.

Packaged Unit

1986

Model Number

Serial Number

Duty

Size

UM

Relative Size

AAWC-20DS

AD907012B

Continuous

0

TONS

MEDIUM

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

DECK

Fair

3 Yrs

\$507,210

Comments

CH-3B

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

0000014899

Chiller

HVAC

ACME DIV./UNITED  
TOOL CO.

Packaged Unit

1986

Model Number

Serial Number

Duty

Size

UM

Relative Size

AAWC-30D

AC907012C

Continuous

0

TONS

MEDIUM

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

OTHER

Fair

3 Yrs

\$507,210

Comments

CH-2B

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

0000014900

Chiller

HVAC

ACME DIV./UNITED  
TOOL CO.

Packaged Unit

1986

Model Number

Serial Number

Duty

Size

UM

Relative Size

AAWC-30D

AC907012C

Continuous

0

TONS

MEDIUM

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

OTHER

Fair

3 Yrs

\$507,210

Comments

CH-2A

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Biologics Building

Asset Code 1

**335B75UMM9203J**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8** Date **10/27/00**

Asset Code 2

**551UMMPB01**

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014901	Chiller	HVAC	ACME DIV./UNITED TOOL CO.	Packaged Unit	1986
Model Number	Serial Number	Duty	Size	UM	Relative Size
AAWC-4D	AC907012A	Continuous	0	TONS	MEDIUM
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
OTHER			Fair	3 Yrs	\$507,210
Comments	CH-1				

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014902	Cooling Tower	HVAC	IMECO	Water Cooled	1986
Model Number	Serial Number	Duty	Size	UM	Relative Size
EFC-C 122-4	10658-1 RH	Continuous	0	TONS	MEDIUM
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
OTHER			Adequate	5 Yrs	\$73,950
Comments	unit 2177				

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014903	Cooling Tower	HVAC	GULF & WESTERN	Air Cooled	1979
Model Number	Serial Number	Duty	Size	UM	Relative Size
BFG0415B	BHE8212	Continuous	0	TONS	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
OTHER			Adequate	5 Yrs	\$156,078
Comments	unit 2311				

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014904	Walk-in Refrigeration Units	Specialty	UNKNOWN	Electric	1984
Model Number	Serial Number	Duty	Size	UM	Relative Size
		Continuous	200	SQFT	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
ROOM			Adequate	5 Yrs	\$51,504
Comments	BG-3 unit 24				

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education **Biologics Building** Asset Code 1 **335B75UMM9203J**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/27/00** Asset Code 2 **551UMMPB01**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014905** **Walk-in Refrigeration Units** **Specialty** **UNKNOWN** **Electric** **1984**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **300** **SQFT** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM** **Adequate** **5 Yrs** **\$51,504**  
 Comments  
**BG-7 unit 25**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014906** **Bldg Condenser Unit** **HVAC** **GULF & WESTERN** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**CBH 7L5HA23** **D74978 177** **Continuous** **0** **TONS** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**OTHER** **Fair** **3 Yrs** **\$71,166**  
 Comments  
**BG-29**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014907** **Bldg Condenser Unit** **HVAC** **GULF & WESTERN** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**CBH5H13823** **DFA0120** **Continuous** **0** **TONS** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**OTHER** **Fair** **3 Yrs** **\$71,166**  
 Comments  
**BG-33**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014908** **Bldg Condenser Unit** **HVAC** **CARRIER CORP.** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**38AE-016-500** **0893F35261** **Continuous** **0** **TONS** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF** **Good** **10 Yrs** **\$71,166**  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education **Biologics Building** Asset Code 1 **335B75UMM9203J**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/27/00** Asset Code 2 **551UMMPB01**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014909 Bldg Condenser Unit HVAC CARRIER CORP. Electric 1999**  
 Model Number Serial Number Duty Size UM Relative Size  
**38AKS044-601 too high to access Continuous 34 TONS LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**DECK Excellent 15 Yrs \$155,730**  
 Comments  
**unit 2213**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014910 Bldg Condenser Unit HVAC CARRIER CORP. Electric 1978**  
 Model Number Serial Number Duty Size UM Relative Size  
**no data plate none Continuous 50 TONS LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF Good 10 Yrs \$155,730**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014911 Cooling Tower HVAC SNYDER GENERAL Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**C080CO R901700026 Continuous 0 TONS LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF Fair 3 Yrs \$156,078**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014912 Bldg Condenser Unit HVAC PRESTCOLD THERMETIC Electric 1988**  
 Model Number Serial Number Duty Size UM Relative Size  
**HU-150/AHM-12 none Continuous 0 TONS MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**DECK Fair 3 Yrs \$71,166**  
 Comments  
**B22C**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Biologics Building

Asset Code 1

335B75UMM9203J

Agency: University of Massachusetts Medical

Crew ID

IND-8

Date

10/27/00

Asset Code 2

551UMMPB01

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

0000014913

Bldg Condenser Unit

HVAC

HEATCRAFT, INC.

Electric

1973

Model Number

Serial Number

Duty

Size

UM

Relative Size

DCU080BP273

SWD100300

Continuous

0

TONS

MEDIUM

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

ROOF

Fair

3 Yrs

\$71,166

Comments

BG-7

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

0000014914

Bldg Condenser Unit

HVAC

HEATCRAFT, INC.

Electric

1973

Model Number

Serial Number

Duty

Size

UM

Relative Size

HLH015D73

794M00667

Continuous

0

TONS

MEDIUM

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

ROOF

Adequate

5 Yrs

\$71,166

Comments

B226B B229B 108

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

0000014915

Bldg Condenser Unit

HVAC

HEATCRAFT, INC.

Electric

1973

Model Number

Serial Number

Duty

Size

UM

Relative Size

HLH015D73

794M00665

Continuous

0

TONS

MEDIUM

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

ROOF

Adequate

5 Yrs

\$71,166

Comments

B226A B229A 107

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

0000014917

Roof A/H Units

HVAC

GREENHECK FAN  
CORP.

Electric

2000

Model Number

Serial Number

Duty

Size

UM

Relative Size

TCB-2-18-50

98L06878

Continuous

5

HP

MEDIUM

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

ATTIC

Excellent

15 Yrs

\$80,736

Comments

(EF) unit 343

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education **Biologics Building** Asset Code 1 **335B75UMM9203J**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/27/00** Asset Code 2 **551UMMPB01**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014918** **Cooling Tower** **HVAC** **YORK BORG-WARNER CORP.** **Water Cooled** **1998**  
 Model Number Serial Number Duty Size UM Relative Size  
**YFCL 4 35** **39325A1** **Continuous** **0** **TONS** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF** **Excellent** **15 Yrs** **\$73,950**  
 Comments  
**unit 2294**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014919** **Bldg Condenser Unit** **HVAC** **MCQUAY** **Electric** **1987**  
 Model Number Serial Number Duty Size UM Relative Size  
**RPS040BS** **3PJ00613 13** **Continuous** **0** **TONS** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF** **Adequate** **5 Yrs** **\$71,166**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014920** **Bldg Condenser Unit** **HVAC** **RAE CORP.** **Electric** **1987**  
 Model Number Serial Number Duty Size UM Relative Size  
**30AOC65SPS** **6-95-A33457** **Continuous** **0** **TONS** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF** **Adequate** **5 Yrs** **\$71,166**  
 Comments  
**unit 1272**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014921** **Roof A/H Units** **HVAC** **BARRY BLOWER COMPANY** **Electric** **1999**  
 Model Number Serial Number Duty Size UM Relative Size  
**222 VCR AF CW** **49E00097** **Continuous** **5500** **CFM** **SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF** **Excellent** **15 Yrs** **\$12,876**  
 Comments  
**EF-T1**

# ASSET SURVEY DATA REPORT

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

UMM01

Ex Higher Education **Biologics Building** Asset Code 1 **335B75UMM9203J**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/27/00** Asset Code 2 **551UMMPB01**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014922** **Roof A/H Units** **HVAC** **HEAT TRANSFER** **Electric** **1999**  
 Model Number Serial Number Duty Size UM Relative Size  
**RTW-3800/7900** **95238-08695-RFT 1/2** **Continuous** **5450** **CFM** **SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF** **Adequate** **5 Yrs** **\$12,876**  
 Comments  
**RFT-1 RFT-2**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014923** **Bldg Condenser Unit** **HVAC** **NIPPONDENS** **Electric** **1998**  
 Model Number Serial Number Duty Size UM Relative Size  
**30HU** **0989 0022** **Continuous** **0** **TONS** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF** **Good** **10 Yrs** **\$71,166**  
 Comments  
**unit 1257**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014924** **Roof A/H Units** **HVAC** **GREENHECK FAN CORP.** **Electric** **1999**  
 Model Number Serial Number Duty Size UM Relative Size  
**SFB-18-50-CCW-BA U** **95G02028** **Continuous** **0** **CFM** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF** **Excellent** **15 Yrs** **\$80,736**  
 Comments  
**(EF)**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014925** **Cooling Tower** **HVAC** **WITT** **Air Cooled** **1998**  
 Model Number Serial Number Duty Size UM Relative Size  
**no data plate** **none** **Continuous** **0** **TONS** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF** **Good** **10 Yrs** **\$73,950**  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Biologics Building

Asset Code 1

**335B75UMM9203J**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8**

Date

**10/27/00**

Asset Code 2

**551UMMPB01**

Equipment ID

Name

Syste  
m

Manufacturer

Model Type

Year Installed

**0000014926**

**Bldg Condenser Unit**

**HVAC**

**TRANE COMPANY**

**Electric**

**1998**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**CGABC251AD11F1**

**J84B80352**

**Continuous**

**0**

**TONS**

**MEDIUM**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**ROOF**

**Good**

**10 Yrs**

**\$71,166**

Comments

**unit 1268**

Equipment ID

Name

Syste  
m

Manufacturer

Model Type

Year Installed

**0000014927**

**Roof A/H Units**

**HVAC**

**HAAKON  
INDUSTRIES**

**Electric**

**1999**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**PENTPAK**

**00-7493-01**

**Continuous**

**6200**

**CFM**

**SMALL**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**ROOF**

**Excellent**

**15 Yrs**

**\$12,876**

Comments

Equipment ID

Name

Syste  
m

Manufacturer

Model Type

Year Installed

**0000014928**

**Bldg Condenser Unit**

**HVAC**

**CARRIER CORP.**

**Electric**

**1999**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**Z138AKS009-601**

**S2200G04137**

**Continuous**

**9**

**TONS**

**MEDIUM**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**ROOF**

**Excellent**

**15 Yrs**

**\$71,166**

Comments

Equipment ID

Name

Syste  
m

Manufacturer

Model Type

Year Installed

**0000014929**

**Roof A/H Units**

**HVAC**

**CARRIER CORP.**

**Electric**

**2000**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**39NC11**

**4299V93611**

**Continuous**

**5000**

**CFM**

**SMALL**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**ROOF**

**Excellent**

**15 Yrs**

**\$12,876**

Comments

**unit 1400**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education **Biologics Building** Asset Code 1 **335B75UMM9203J**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/27/00** Asset Code 2 **551UMMPB01**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014930** **Roof A/H Units** **HVAC** **PENN VENTLATOR CO.** **Electric** **1999**  
 Model Number Serial Number Duty Size UM Relative Size  
**D16** **NE969266-1** **Continuous** **300** **CFM** **SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF** **Excellent** **15 Yrs** **\$12,876**  
 Comments (EF)

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014931** **Bldg Condenser Unit** **HVAC** **CARRIER CORP.** **Electric** **1999**  
 Model Number Serial Number Duty Size UM Relative Size  
**38AH-024-610AC** **2498F50028** **Continuous** **18** **TONS** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF** **Excellent** **15 Yrs** **\$71,166**  
 Comments unit 0342

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014932** **Roof A/H Units** **HVAC** **CARRIER CORP.** **Electric** **1999**  
 Model Number Serial Number Duty Size UM Relative Size  
**39NC07** **2498V86491** **Continuous** **3165** **CFM** **SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF** **Excellent** **15 Yrs** **\$12,876**  
 Comments unit 0341

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014933** **Walk-in Refrigeration Units** **Specialty** **UNKNOWN** **Electric** **1999**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **100** **SQFT** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**CORRIDOR** **Excellent** **15 Yrs** **\$26,448**  
 Comments unit 35

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education **Biologics Building** Asset Code 1 **335B75UMM9203J**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/27/00** Asset Code 2 **551UMMPB01**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014934** **Walk-in Refrigeration Units** **Specialty** **UNKNOWN** **Electric** **1999**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **50** **SQFT** **SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**CORRIDOR** **Excellent** **15 Yrs** **\$15,225**  
 Comments **unit 113**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014935** **Walk-in Refrigeration Units** **Specialty** **UNKNOWN** **Electric** **1999**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **80** **SQFT** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**CORRIDOR** **Excellent** **15 Yrs** **\$26,448**  
 Comments **unit 112**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014936** **Walk-in Refrigeration Units** **Specialty** **UNKNOWN** **Electric** **1999**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **80** **SQFT** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**CORRIDOR** **Excellent** **15 Yrs** **\$26,448**  
 Comments **unit 111**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014937** **Walk-in Refrigeration Units** **Specialty** **UNKNOWN** **Electric** **1999**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **100** **SQFT** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**CORRIDOR** **Excellent** **15 Yrs** **\$26,448**  
 Comments **unit 110**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Biologics Building

Asset Code 1 335B75UMM9203J

Agency: University of Massachusetts Medical  
Equipment ID Name

Crew ID IND-8 Date 10/27/00  
Manufacturer

Asset Code 2 551UMMPB01  
Model Type Year Installed

0000014938 Walk-in Refrigeration Units

System Specialty

UNKNOWN

Electric

1999

Model Number

Serial Number

Duty Continuous

Size 70

UM SQFT

Relative Size SMALL

Location1  
CORRIDOR

Location2

Location3

Overall Rating  
Excellent

Remaining Life  
15 Yrs

Replacement Value  
\$15,225

Comments  
unit 107

Equipment ID

Name

System Specialty

Manufacturer UNKNOWN

Model Type Electric

Year Installed 1999

Model Number

Serial Number

Duty Continuous

Size 70

UM SQFT

Relative Size SMALL

Location1  
CORRIDOR

Location2

Location3

Overall Rating  
Excellent

Remaining Life  
15 Yrs

Replacement Value  
\$15,225

Comments  
unit 108

Equipment ID

Name

System Specialty

Manufacturer UNKNOWN

Model Type Electric

Year Installed 1999

Model Number

Serial Number

Duty Continuous

Size 100

UM SQFT

Relative Size MEDIUM

Location1  
CORRIDOR

Location2

Location3

Overall Rating  
Excellent

Remaining Life  
15 Yrs

Replacement Value  
\$26,448

Comments  
unit 0027

Equipment ID

Name

System Specialty

Manufacturer UNKNOWN

Model Type Electric

Year Installed 1999

Model Number

Serial Number

Duty Continuous

Size 200

UM SQFT

Relative Size LARGE

Location1  
CORRIDOR

Location2

Location3

Overall Rating  
Excellent

Remaining Life  
15 Yrs

Replacement Value  
\$51,504

Comments  
unit 0026

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education **Biologics Building** Asset Code 1 **335B75UMM9203J**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/27/00** Asset Code 2 **551UMMPB01**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014942** **Walk-in Refrigeration Units** **Specialty** **UNKNOWN** **Electric** **1999**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **120** **SQFT** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**CORRIDOR** **Excellent** **15 Yrs** **\$26,448**  
 Comments  
**G-38**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014943** **Walk-in Refrigeration Units** **Specialty** **FRIGIDARE** **Electric** **1999**  
 Model Number Serial Number Duty Size UM Relative Size  
**000294** **Continuous** **120** **SQFT** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**CORRIDOR** **Adequate** **5 Yrs** **\$26,448**  
 Comments  
**unit 56**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014944** **Air Compressors** **HVAC** **INGERSOLL-RAND** **Electric** **1991**  
 Model Number Serial Number Duty Size UM Relative Size  
**SSR** **none** **Intermittent** **25** **HP** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ATTIC** **Good** **10 Yrs** **\$67,512**  
 Comments  
**unit 1274**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014946** **Air Compressors** **HVAC** **SULLAIR** **Electric** **1991**  
 Model Number Serial Number Duty Size UM Relative Size  
**6E-07.5-H** **E91002216** **Intermittent** **125** **HP** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ATTIC** **Good** **10 Yrs** **\$67,512**  
 Comments  
**unit 1278**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education **Biologics Building** Asset Code 1 **335B75UMM9203J**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/27/00** Asset Code 2 **551UMMPB01**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014947 Air Compressors HVAC KAESER Electric 1996**  
 Model Number Serial Number Duty Size UM Relative Size  
**AS31 3110378 Intermittent 25 HP LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ATTIC Good 10 Yrs \$67,512**  
 Comments  
**unit 1276 115 CFM @ 110 PSI**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014948 Elevator/Escalator Conveying F.S. PAYNE CO. Electrical Freight Elevat 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**{type} 356 84176 Intermittent 0 STORIES SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ATTIC Poor 1 Yrs \$147,900**  
 Comments  
**very old and breaks down frequerly**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014958 Walk-in Refrigeration Units Specialty KYSOR Electric 2000**  
 Model Number Serial Number Duty Size UM Relative Size  
**none none Continuous 150 SQFT MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ANNEX Excellent 15 Yrs \$26,448**  
 Comments  
**associated with unit 2356**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014959 Bldg Condenser Unit HVAC COPELAND Electric 2000**  
 Model Number Serial Number Duty Size UM Relative Size  
**C3AH-0303-TAC-001 CT 99F00632 Continuous 0 TONS MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**OTHER Excellent 15 Yrs \$71,166**  
 Comments  
**unit 2356**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Biologics Building

Asset Code 1

**335B75UMM9203J**

Agency: **University of Massachusetts Medical**

Crew ID

**IND-8**

Date

**10/27/00**

Asset Code 2

**551UMMPB01**

Equipment ID

Name

Syste  
m

Manufacturer

Model Type

Year Installed

**0000014960**

**Bldg Condenser Unit**

**HVAC**

**SANYO**

**Electric**

**1987**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**SAP243C**

**0027302**

**Continuous**

**0**

**TONS**

**SMALL**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**OTHER**

**Fair**

**3 Yrs**

**\$23,838**

Comments

Equipment ID

Name

Syste  
m

Manufacturer

Model Type

Year Installed

**0000014961**

**Bldg Condenser Unit**

**HVAC**

**BOHN**

**Electric**

**1987**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**data plate faded**

**Continuous**

**0**

**TONS**

**MEDIUM**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**OTHER**

**Fair**

**3 Yrs**

**\$71,166**

Comments

**B106**

Equipment ID

Name

Syste  
m

Manufacturer

Model Type

Year Installed

**0000014962**

**Bldg Condenser Unit**

**HVAC**

**BOHN**

**Electric**

**1987**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**data plate faded**

**Continuous**

**0**

**TONS**

**MEDIUM**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**OTHER**

**Fair**

**3 Yrs**

**\$71,166**

Comments

**BG-3**

Equipment ID

Name

Syste  
m

Manufacturer

Model Type

Year Installed

**0000014963**

**Bldg Condenser Unit**

**HVAC**

**BOHN**

**Electric**

**1987**

Model Number

Serial Number

Duty

Size

UM

Relative Size

**data plate faded**

**Continuous**

**0**

**TONS**

**MEDIUM**

Location1

Location2

Location3

Overall Rating

Remaining Life

Replacement Value

**OTHER**

**Fair**

**3 Yrs**

**\$71,166**

Comments

**BG-2**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Biologics Building

Asset Code 1 335B75UMM9203J

Agency: University of Massachusetts Medical

Crew ID IND-8 Date

10/27/00 Asset Code 2 551UMMPB01

Asset Replacement Value  
**\$4,406,723**

Equipment Replacement Value  
**\$8,000,302**

DemolitionCost(if Surplus Property)  
**\$0**

System ACT Replacement  
Cost  
**\$133,559**

System Deficiency Repair  
Cost  
**\$5,442**

Equipment Replacement Cost  
Fail Or Poor Only  
**\$147,900**

ADA Compliance Cost  
**\$0**

LSC Compliance Cost  
**\$0**

Total Capital Project And Repair Cost  
**\$286,901**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Stable Building

Asset Code 1

**335B75UMM9203K**

Agency: University of Massachusetts Medical

Crew ID IND-8 Date

10/27/00

Asset Code 2

**551UMMPB02**

**> Facility Address**

Address1

Address2

Address3

City

ZipCode

305 South St.

**Boston**

**> Facility Contact Information**

Name

Telephone

Fax Number

EEmail

**Russ Mattson, Facilities Manager**

**(508) 856-3620**

**russ.mattson@umassmed.edu**

**> Asset Address**

Asset Name

Alias Name

Address

Municipality

County

**Stable Building**

**305 South St.**

**Boston - JamPl**

**Suffolk**

House District

Senate District

Type

Property Status

Floors

**15th Suffolk**

**Suffolk and  
Norfolk**

**Office**

**IN USE**

**2**

YearConstructed

Construction Type

OriginalCost

Basement

Basement

**1920**

**Other Than Std Constr  
Type**

**\$0**

**Y**

Confidence

GSF

NS

PictureFile

Code

**17,996**

**15,297**

**335B75UMM9203K.jpg**

**Obtained at site**

**> Asset Real Estate Data**

Year Acquired

Purchase Price

Replacement Value

Assessed Value

Assessed Year-Current

Map No

Block No

Lot No

**\$0**

**\$3,485,105**

**\$0**

**2001**

Historic Building

Latitude

Longitude

AssessedVal

Assessed Year-Actual

**421801**

**710710**

**NB**

**2001**

**> Construction**

Construction

Contractor  
Name1

Contractor  
Name2

Contractor  
Name3

Designer  
Name1

Designer  
Name2

Designer  
Name3

**1920**

**Unknown**

**Unknown**

**> Addition**

**> Renovation**

Renovation

Contractor  
Name1

Contractor  
Name2

Contractor  
Name3

Designer  
Name1

Designer  
Name2

Designer  
Name3

**1996**

**The Sentry  
Corporation**

**Hale, Doran,  
and Berry**

>

Type

On File

Current

Elevator

**> Occupants**

Occupant(s) Name

Percent Occupied

Comments

**University of Massachusetts Medical Center**

**100%**

**> Hazardous Material Presence (in Environment)**

**> Hazardous Material Tracking (Stored Fuels and Chemicals)**

**> Wetlands Delineation**

**Mass Division of Capital Asset  
Parsons Brinckerhoff**

Inspector Initials

Page 63 of 255

Printed

**335B75UMM9203**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

**UMM01**

Ex Higher Education

Stable Building

Asset Code 1 335B75UMM9203K

Agency: University of Massachusetts Medical  
Distance to Wetlands - 200 ft or less  
WetLandDataSource

Crew ID IND-8 Date 10/27/00  
Description/Comments

Asset Code 2 551UMMPB02

GIS Yes, Inspector  
No Record

> **LSC Compliance**

> **ADA Compliance**

Violation	Action/Comment
Door hardware improper	
Drinking fountains, None or improper	
Signage, None or improper	
Toilet facilities, None or improper	
Urinals, None or improper	

EntranceRampCost	Elevator Cost	Toilets Cost	All Other ADA Cost	Total
		\$93,939	\$78,283	\$172,222

> **Inspection &**

> **Equipment**

Equipment ID 0000014949	Name Fire Alarm Panel	System FireProDet	Manufacturer Code	Model Type HARRINGTON	Year Installed Electric 1998
Model Number HS3030C	Serial Number 3450280031	Duty Continuous	Size 17996	UM SQFT	Relative Size MEDIUM
Location1 LOBBY	Location2	Location3	Overall Rating Excellent	Remaining Life 15 Yrs	Replacement Value \$4,176
Comments					

---

Equipment ID 0000014950	Name Bldg Condenser Unit	System HVAC	Manufacturer TRANE COMPANY	Model Type Electric	Year Installed 1995
Model Number <b>Certificates</b>	Serial Number RAUCC504BJ13BD	Duty J94L83123	Size Continuous	UM 0	Relative Size TONS LARGE
Location1 OTHER	Location2	Location3	Overall Rating Good	Remaining Life 10 Yrs	Replacement Value \$155,730
Comments					

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**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER - JAMPL

Facility

UMM01

Ex Higher Education Stable Building Asset Code 1 335B75UMM9203K  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB02  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014951 Roof A/H Units HVAC TRANE COMPANY Electric 1995  
 Model Number Serial Number Duty Size UM Relative Size  
 none K94M93675 Continuous 0 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BASEMENT Good 10 Yrs \$80,736  
 Comments  
 AH-4

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014952 Elevator/Escalator Conveying BECKWITH ELEVATOR CO. Electrical Passenger Elevator 1995  
 Model Number Serial Number Duty Size UM Relative Size  
 20HP79GPM none Intermittent 0 STORIES SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BASEMENT Good 10 Yrs \$147,900  
 Comments  
 1-P-6527

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014953 Roof A/H Units HVAC NEW YORK BLOWER Electric 1995  
 Model Number Serial Number Duty Size UM Relative Size  
 none (shop #) M00032 Continuous 0 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**> Summary > Wastewater > Cost Information**  
 Foundation/Footings **Good** Overall Rating **Good** BASEMENT **Good** GoodConvey **Good**  
 Substructure Comments **Good** Electrical **Good** Mechanical **Good** Superstructure **Good** Exterior  
 Good Specialty **Good** Good Equipment **Adequate** Roofing **10Yrs** Good  
 Interior Construction **Adequate** SiteWork **\$80,736**  
 Comments  
 size on data plate is 223ACF

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014954 Main Sprinkler Valve FireProDet MUELLER N/A 1995  
 Model Number Serial Number Duty Size UM Relative Size  
 none none Continuous 4 INCHES LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BASEMENT Good 10 Yrs \$11,440  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER – JAMPL

Facility

**UMM01**

**Deficiencies**

Ex Higher Education Stable Building Asset Code 1 335B75UMM9203K  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/27/00 Asset Code 2 551UMMPB02  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014955 Main Back Flow Preventer FireProDet WILKINS ZURN N/A 1995  
 Model Number Serial Number Duty Size UM Relative Size  
 950 A01469 Continuous 4 INCHES LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BASEMENT Good 10 Yrs \$8,439  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014956 Bldg Supply Wtr Htr / Exchngr HVAC UNKNOWN Steam 1995  
 Model Number Serial Number Duty Size UM Relative Size  
 covered with insulation Continuous 0 BTU MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BASEMENT Adequate 5 Yrs \$23,490  
 Comments  
 steam heated forced hot water

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014957 Bldg Supply Wtr Htr / Exchngr DomWater RHEEM MFG. CO. Electric 1995  
 Model Number Serial Number Duty Size UM Relative Size  
 EGL530-1 RU 1294301060 Intermittent 30 GALLONS SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BASEMENT Adequate 5 Yrs \$14,529  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER – JAMPL

Facility

**UMM01**

**Information**

Ex	<b>Higher Education</b>	<b>Stable Building</b>	Asset Code 1	<b>335B75UMM9203K</b>
Agency:	<b>University of Massachusetts Medical</b>	Crew ID	<b>IND-8</b>	Date
			<b>10/27/00</b>	Asset Code 2
				<b>551UMMPB02</b>
Asset Replacement Value		Equipment Replacement Value		DemolitionCost(if Surplus Property)
<b>\$3,485,105</b>		<b>\$527,176</b>		<b>\$0</b>

System ACT Replacement  
Cost  
**\$0**

System Deficiency Repair  
Cost  
**\$0**

Equipment Replacement Cost  
Fail Or Poor Only  
**\$0**

ADA Compliance Cost  
**\$172,222**

LSC Compliance Cost  
**\$0**

Total Capital Project And Repair Cost  
**\$172,222**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Life Flight/ Pretesting

Asset Code 1 335B75UMM9202

Agency: University of Massachusetts Medical

Crew ID IND-8 Date

10/2/00 Asset Code 2 335UMM9202

**> Facility Address**

Address1  
55 North Lake Ave.

Address2  
419 Belmont Street

Address3

City  
Worcester

ZipCode  
01655-0001

**> Facility Contact Information**

Name

Telephone

Fax Number

EMail

Bill Smith, Director Desktop Services (508) 856-6759

(508) 856-2440

bill.smith@umassmed.edu

James W. Aquilino, Facilities Manager

Ron White, Director of Facilities

Tim Fitzpatric, Director of Operation for Facility Management (508) 856-5606

(508) 856-2440

t.fitzpatrick@umassmed.edu

**> Asset Address**

Asset Name  
Life Flight/ Pretesting

Alias Name

Address  
55 North Lake Avenue

Municipality  
Worcester

County  
Worcester

House District  
14th Worcester

Senate District  
1st Worcester

Type  
Hospital

Property Status  
IN USE

Floors  
1

YearConstructed

Construction Type

OriginalCost

Basement

Basement  
Confidence  
Code  
Obtained at site

1951

Precast Conc-Conc Shr  
Walls

\$1,209,363

N

GSF  
1,220

NS  
1,037

PictureFile  
335B75UMM9202.jpg

**> Asset Real Estate Data**

Year Acquired	Purchase Price	Replacement Value	Assessed Value	Assessed Year-Current	Map No	Block No	Lot No
1967	\$0	\$331,901			57	4	D
Historic Building	Latitude	Longitude	AssessedVal	Assessed Year-Actual			
	421636	714540					

**> Construction**

**> Addition**

**> Renovation**

**> Occupants**

Occupant(s) Name	Percent Occupied	Comments
University of Massachusetts Medical Center	100%	

**> Hazardous Material Presence (in Environment)**

**> Hazardous Material Tracking (Stored Fuels and Chemicals)**

**> Wetlands Delineation**

**> LSC Compliance**

Violation	Action/Comment	LSC Compliance Cost
Fire Sprinkler Systems, None Or Improper		\$20,000

**> ADA Compliance**

Mass Division of Capital Asset  
Parsons Brinckerhoff

Inspector Initials

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335B75UMM9202

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex **Higher Education**  
Agency: **University of Massachusetts Medical**  
Violation

**Life Flight/ Pretesting**  
Crew ID **IND-8** Date **10/2/00** Asset Code 1 **335B75UMM9202**  
Asset Code 2 **335UMM9202**  
Action/Comment

- Audible alarms, None or improper**
- Building entry, None or improper**
- Counter heights improper**
- Door hardware improper**
- Drinking fountains, None or improper**
- Grab bars, None or improper**
- Sinks, None or improper**
- Ramp for building access, None or improper**
- Signage, None or improper**
- Toilet facilities, None or improper**

EntranceRampCost	Elevator Cost	Toilets Cost	All Other ADA Cost	Total
\$26,100		\$12,180	\$4,246	\$42,526

**> Inspection &**

Syste <b>INTR</b>	Assembly Comp Type <b>Ceiling - Acoustic Tile - Suspended</b>	Quantit UM 60 SQFT	Priority <b>Within 3-5 Years</b>	Weight <b>Required to Improve Appearance</b>
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Year Installed	Location1 <b>Lobby</b>	Location2 <b>ROOM</b>	Location3
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Overall <b>Fair</b>	Replace per Inspector	Code	No Comments
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Replace System ACT <b>\$284</b>	Repair System ACT <b>\$284</b>	Replace or Repair (Factored Cost Comparison) <b>Replace</b>	Capital Project
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**Certificates**

<b>Replace</b>	Deficiency: <b>INTR</b>	System <b>Ceiling - Acoustic Tile - Suspended</b>	Assembly Comp Type
----------------	----------------------------	--	--------------------

5% 10% 15% 25% 50% 75% Fail Comments

Replace <b>30</b>	Repair	Deficiency Repair Cost <b>\$142</b>
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**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education

Life Flight/ Pretesting

Asset Code 1 335B75UMM9202

Agency: University of Massachusetts Medical  
Deficiency:  
Broken/Missing

Crew ID IND-8 Date 10/2/00  
System  
INTR

Asset Code 2 335UMM9202  
Assembly Comp Type  
Ceiling - Acoustic Tile -  
Suspended

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
30 Deficiency Repair Cost  
\$142

System INTR Assembly Comp Type Floors - Tile - Vinyl Composition  
Quantit 140 UM SQFT Priority Within 1 Year Weight Improvement to the Use

Year Installed Location1 Floor Location2 Location3

Overall Fair Replace per Inspector No Comments

Replace System ACT \$1,971 Repair System ACT \$1,970 Replace or Repair (Factored Cost Comparison) Replace Capital Project

Deficiency: Replace System INTR Assembly Comp Type Floors - Tile - Vinyl Composition

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
70 Deficiency Repair Cost  
\$985

Deficiency: Broken/Missing System INTR Assembly Comp Type Floors - Tile - Vinyl Composition  
> Summary > Equipment > Wastewater > Cost Information N/A  
Good Overall Rating Good Mechanical Good Convey Substructure Good Foundation/Footings Excellent  
Electrical Good Superstructure Good Exterior Good Specialty Good Equipment  
Good Roofing Composition Excellent Interior Construction Good SiteWork

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
70 Deficiency Repair Cost  
\$985

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014589	Roof A/H Units	HVAC	BARD MANUFACTURING CO.	Electric	1988
Model Number	Serial Number	Duty	Size	UM	Relative Size
?	?	Continuous	0	CFM	MEDIUM
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
ROOF			Adequate	5 Yrs	\$80,736

Mass Division of Capital Asset  
Parsons Brinckerhoff

Inspector Initials

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**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Deficiencies**

Ex Higher Education Life Flight/ Pretesting Asset Code 1 335B75UMM9202  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/2/00 Asset Code 2 335UMM9202  
 Comments  
 data plate totally faded-illegible

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014590 Bldg Supply Wtr Htr / Exchngr DomWater A.O. SMITH CORP. Electric 1988  
 Model Number Serial Number Duty Size UM Relative Size  
 EES 40 917 MH00-0079494-S44 Intermittent 40 GALLONS SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$14,529  
 Comments

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014591 Bldg Supply Wtr Htr / Exchngr DomWater RHEEM MFG. CO. Electric 1988  
 Model Number Serial Number Duty Size UM Relative Size  
 6E757 VG 0692B37411 Intermittent 50 GALLONS SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$14,529  
 Comments.....

Asset Replacement Value Equipment Replacement Value DemolitionCost(if Surplus Property)  
**\$331,901 \$109,794 \$0**

-----  
 System ACT Replacement Cost System Deficiency Repair Cost Equipment Replacement Cost Fail Or Poor Only  
**\$1,971 \$0 \$0**  
 ADA Compliance Cost LSC Compliance Cost Total Capital Project And Repair Cost  
**\$42,526 \$20,000 \$64,497**

**Mass Division of Capital Asset  
 Parsons Brinckerhoff**

Inspector Initials

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# ASSET SURVEY DATA REPORT

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

## Information

Ex Higher Education  
Agency: University of Massachusetts Medical

Life Flight/ Pretesting  
Crew ID IND-8 Date

Asset Code 1 335B75UMM9202  
10/2/00 Asset Code 2 335UMM9202

# ASSET SURVEY DATA REPORT

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education

Shaw Building

Asset Code 1 335B75UMM9203A

Agency: University of Massachusetts Medical

Crew ID IND-8 Date 10/5/00 Asset Code 2 335UMMPB07

## > Facility Address

Address1	Address2	Address3	City	ZipCode
55 North Lake Ave.	419 Belmont Street		Worcester	01655-0001

## > Facility Contact Information

Name	Telephone	Fax Number	Email
Bill Smith, Director Desktop Services	(508) 856-6759	(508) 856-2440	bill.smith@umassmed.edu
James W. Aquilino, Facilities Manager			
Ron White, Director of Facilities			
Tim Fitzpatric, Director of Operation for Facility Management	(508) 856-5606	(508) 856-2440	t.fitzpatrick@umassmed.edu

## > Asset Address

Asset Name	Alias Name	Address	Municipality	County
Shaw Building		419 Belmont St.	Worcester	Worcester
House District	Senate District	Type	Property Status	Floors
14th Worcester	1st Worcester	Office	IN USE	2
YearConstructed	Construction Type	OriginalCost	Basement	Basement Confidence Code
0	Unreinforced Masonry	\$0	Y	Obtained at site
GSF	NS	PictureFile		
44,000	37,400	335B75UMM9203A.jpg		

## > Asset Real Estate Data

Year Acquired	Purchase Price	Replacement Value	Assessed Value	Assessed Year-Current	Map No	Block No	Lot No
	\$0	\$8,521,040	\$1,480,800	2001	57	1	4
Historic Building	Latitude	Longitude	AssessedVal	Assessed Year-Actual			
	421642	714614	BLDG	2001			

## > Construction

### > Addition

### > Renovation

>

Type	On File	Current
Elevator		

## > Occupants

Occupant(s) Name	Percent Occupied	Comments
University of Massachusetts Medical Center	100%	

## > Hazardous Material Presence (in Environment)

## > Hazardous Material Tracking (Stored Fuels and Chemicals)

## > Wetlands Delineation

## > LSC Compliance

## > ADA Compliance

Violation	Action/Comment
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Mass Division of Capital Asset  
Parsons Brinckerhoff

Inspector Initials

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**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education  
Agency: University of Massachusetts Medical  
Building entry, None or improper

Shaw Building

Asset Code 1 335B75UMM9203A

Crew ID IND-8 Date 10/5/00 Asset Code 2 335UMMPB07

Door hardware improper

Drinking fountains, None or improper

Grab bars, None or improper

Handrails, None or improper

Interior ramps improper

Signage, None or improper

Stairways improper

Telephones, None or improper

EntranceRampCost	Elevator Cost	Toilets Cost	All Other ADA Cost	Total
			\$191,400	\$191,400

**> Inspection &**

Syste <b>EXTR</b>	Assembly Comp Type <b>Walls - Concrete - Pre Cast Concrete</b>	Quantit UM <b>320 SQFT</b>	Priority <b>Within 1 Year</b>	Weight <b>Prevent Accelerated Deterioration</b>
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Year Installed	Location1 <b>Basement</b>	Location2	Location3
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Overall <b>Fair</b>	Replace per Inspector	No	Comments
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Replace System ACT <b>\$1,469</b>	Repair System ACT <b>\$1,396</b>	Code	Replace or Repair (Factored Cost Comparison) <b>Replace</b>	Capital Project
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Deficiency: <b>Vertical Cracks</b>	System <b>EXTR</b>	Assembly Comp Type <b>Walls - Concrete - Pre Cast Concrete</b>
---------------------------------------	-----------------------	---

**Certificates**

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair <b>32</b>	Deficiency Repair Cost <b>\$147</b>
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Deficiency: <b>Replace</b>	System <b>EXTR</b>	Assembly Comp Type <b>Walls - Concrete - Pre Cast Concrete</b>
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5% 10% 15% 25% 50% 75% Fail Comments

Replace <b>160</b>	Repair	Deficiency Repair Cost <b>\$735</b>
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**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility **UMM00**

Ex **Higher Education**

**Shaw Building**

Asset Code 1 **335B75UMM9203A**

Agency: **University of Massachusetts Medical**  
Deficiency:  
**Puncture/Tear/Impact Damage**

Crew ID **IND-8** Date **10/5/00**  
System  
**EXTR**

Asset Code 2 **335UMMPB07**  
Assembly Comp Type  
**Walls - Concrete - Pre Cast  
Concrete**

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair	Deficiency Repair Cost
	<b>80</b>	<b>\$294</b>

Deficiency:  
**Horizontal Cracks**

System  
**EXTR**

Assembly Comp Type  
**Walls - Concrete - Pre Cast  
Concrete**

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair	Deficiency Repair Cost
	<b>48</b>	<b>\$220</b>

Syste <b>EXTR</b>	Assembly Comp Type <b>Walls - Masonry - Masonry: Brick</b>	Quantit UM <b>200 SQFT</b>	Priority <b>Within 1 Year</b>	Weight <b>Prevent Accelerated Deterioration</b>
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Year Installed	Location1 <b>Asset Wide</b>	Location2	Location3
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Overall <b>Poor</b>	Replace per Inspector	No	Comments
------------------------	-----------------------	----	----------

Replace System ACT <b>\$1,542</b>	Repair System ACT <b>\$771</b>	Replace or Repair (Factored Cost Comparison) <b>Repair</b>	Capital Project
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Deficiency:  
**> Summary > Equipment > Wastewater > Cost Information**

<b>Adequate</b>	Overall Rating <b>Good</b>	<b>Good</b>	System Convey <b>Good</b>	<b>Good</b>	Assembly Comp Type Foundation/Footings
Electrical <b>Adequate</b>	Superstructure <b>Adequate</b>	<b>Adequate</b>	Mechanical <b>Good</b>	Substructure <b>Good</b>	Comments <b>EXTR Good</b>
<b>Good Roofing</b>	Walls - Masonry - Masonry: <b>Fair</b>		Exterior <b>Good</b>	Specialty <b>Poor</b>	Equipment <b>Good</b>
<b>Puncture/Tear/Impact Damage</b>			Interior Construction <b>EXTR</b>	SiteWork <b>Poor</b>	Walls - Masonry - Masonry: <b>Brick</b>

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair	Deficiency Repair Cost
	<b>200</b>	<b>\$771</b>

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Deficiencies**

Ex Higher Education Shaw Building Asset Code 1 335B75UMM9203A  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/5/00 Asset Code 2 335UMMPB07  
 System Assembly Comp Type Quantit UM Priority Weight  
**INTR Ceiling - Acoustic Tile 880 SQFT Within 2 Years Required to Improve Appearance**  
 Year Installed Location1 Location2 Location3  
 Corridor ROOM  
 Overall Replace per Inspector No Comments  
**Poor**  
 Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$4,165 \$4,164 Replace**

Deficiency: **Replace** System **INTR** Assembly Comp Type **Ceiling - Acoustic Tile - Suspended**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**440 \$2,082**

Deficiency: **Broken/Missing** System **INTR** Assembly Comp Type **Ceiling - Acoustic Tile - Suspended**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**440 \$2,082**

System Assembly Comp Type Quantit UM Priority Weight  
**INTR Floors - Tile - Vinyl 60 SQFT Within 1 Year Improvement to the Use**  
**Composition**

Year Installed Location1 Location2 Location3  
 Corridor

Overall Replace per Inspector No Comments  
**Poor**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$845 \$845 Replace**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Information**

Ex Higher Education Shaw Building Asset Code 1 335B75UMM9203A  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/5/00 Asset Code 2 335UMMPB07  
 Deficiency: Broken/Missing System INTR Assembly Comp Type Floors - Tile - Vinyl Composition

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 60 \$845

Syste Assembly Comp Type Quantit UM Priority Weight  
**SITE** **Parking Lot - Parking Lot - Asphalt** 1500 SQFT **Within 1 Year** **Prevent Accelerated Deterioration**

Year Installed Location1 Location2 Location3  
 Other **PARKING LOT**

Overall Replace per Inspector No Comments  
**Poor**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$0 \$0**

Deficiency: Worn Surface System SITE Assembly Comp Type Parking Lot - Parking Lot - Asphalt

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 225 \$0

Deficiency: Heaving/Settling System SITE Assembly Comp Type Parking Lot - Parking Lot - Asphalt

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 225 \$0

Deficiency: Cracking, Crumbling System SITE Assembly Comp Type Parking Lot - Parking Lot - Asphalt

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 1500 \$0

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex **Higher Education** **Shaw Building** Asset Code 1 **335B75UMM9203A**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/5/00** Asset Code 2 **335UMMPB07**  
 System **Assembly Comp Type** Quantit **UM** Priority **Weight**  
**SUPST** **Floors - CIP Concrete - Slab** **600** **SQFT** **Within 1 Year** **Prevent Accelerated Deterioration**

Year Installed Location1 Location2 Location3  
**Deck** **BASEMENT**

Overall Replace per Inspector No Comments  
**Poor**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$6,045** **\$4,233** **Repair**

Deficiency: **Replace** System **SUPST** Assembly Comp Type **Floors - CIP Concrete - Slab**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**300** **\$3,022**

Deficiency: **Diagonal Cracks** System **SUPST** Assembly Comp Type **Floors - CIP Concrete - Slab**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**300** **\$1,211**

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014586	Emergency Generator Set	ElecDist	DAYTON	Engine Driven	1996
Model Number	Serial Number	Duty	Size	UM	Relative Size
4W166H	1949182	Standby	5	KVA	SMALL
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
ROOF			Good	10 Yrs	\$46,110
Comments 5 KW (unity p.f.)					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Shaw Building

Asset Code 1

**335B75UMM9203A**

Agency: **University of Massachusetts Medical**  
Equipment ID Name

Crew ID **IND-8** Date  
Manufacturer

**10/5/00** Asset Code 2  
Model Type

**335UMMPB07**  
Year Installed

**0000014587** **Roof A/H Units**

System  
**HVAC**

**TRANE COMPANY**

**Electric**

**1996**

Model Number Serial Number

Duty  
**Continuous**

Size  
**12.5**

UM  
**TONS**

Relative Size  
**MEDIUM**

Location1 Location2 Location3

Overall Rating  
**Adequate**

Remaining Life  
**5 Yrs**

Replacement Value  
**\$80,736**

**ROOF**

Comments

Equipment ID

Name

System  
**HVAC**

Manufacturer  
**TRANE COMPANY**

Model Type  
**Packaged Unit w/ Nat Gas**

Year Installed  
**1996**

Model Number Serial Number  
**YCD150C3HOAB L35102171D**

Duty  
**Continuous**

Size  
**12.5**

UM  
**TONS**

Relative Size  
**MEDIUM**

Location1 Location2 Location3

Overall Rating  
**Adequate**

Remaining Life  
**5 Yrs**

Replacement Value  
**\$80,736**

**ROOF**

Comments

Equipment ID

Name  
**Fire Alarm Panel**

System  
**FireProDet**

Manufacturer  
**SIMPLEX INC.**

Model Type  
**Electric**

Year Installed  
**1995**

Model Number Serial Number  
**4120-8909 I 11250 CQW**

Duty  
**Continuous**

Size  
**44000**

UM  
**SQFT**

Relative Size  
**MEDIUM**

Location1 Location2 Location3

Overall Rating  
**Good**

Remaining Life  
**10 Yrs**

Replacement Value  
**\$4,176**

**ROOM**

Comments

Equipment ID

Name  
**Elevator/Escalator**

System  
**Conveying**

Manufacturer  
**DOVER ELEVATOR SYSTEMS**

Model Type  
**Electrical Passenger Elevator**

Year Installed  
**1996**

Model Number Serial Number  
**590AF1 20R115**

Duty  
**Intermittent**

Size  
**0**

UM  
**STORIES**

Relative Size  
**SMALL**

Location1 Location2 Location3

Overall Rating  
**Good**

Remaining Life  
**10 Yrs**

Replacement Value  
**\$147,900**

**BASEMENT**

Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Shaw Building

Asset Code 1

**335B75UMM9203A**

Agency: **University of Massachusetts Medical**  
Equipment ID Name

Crew ID **IND-8** Date  
Manufacturer

**10/5/00** Asset Code 2  
Model Type Year Installed

**0000014606** Roof A/H Units

System  
**HVAC**

**TRANE COMPANY**

**Packaged Unit**

**1995**

Model Number Serial Number

Duty  
**Continuous**

Size  
**0**

UM  
**CFM**

Relative Size  
**MEDIUM**

Location1 Location2

Location3

Overall Rating  
**Good**

Remaining Life  
**10 Yrs**

Replacement Value  
**\$80,736**

**ROOF**

Comments

Equipment ID

Name

System  
**HVAC**

Manufacturer  
**TRANE COMPANY**

Model Type  
**Packaged Unit**

Year Installed  
**1995**

**0000014607** Roof A/H Units

Model Number Serial Number

Duty  
**Continuous**

Size  
**0**

UM  
**CFM**

Relative Size  
**MEDIUM**

**BTC200G300CC** **C46144095D**

Location1 Location2

Location3

Overall Rating  
**Good**

Remaining Life  
**10 Yrs**

Replacement Value  
**\$80,736**

**ROOF**

Comments

Equipment ID

Name

System  
**HVAC**

Manufacturer  
**TRANE COMPANY**

Model Type  
**Packaged Unit**

Year Installed  
**1995**

**0000014608** Roof A/H Units

Model Number Serial Number

Duty  
**Continuous**

Size  
**0**

UM  
**CFM**

Relative Size  
**MEDIUM**

**SPCC-C126-A** **C84A-03569**

Location1 Location2

Location3

Overall Rating  
**Good**

Remaining Life  
**10 Yrs**

Replacement Value  
**\$80,736**

**ROOF**

Comments

Equipment ID

Name

System  
**DomWater**

Manufacturer  
**HYDRO-THERM, INC.**

Model Type  
**Natural Gas**

Year Installed  
**1995**

**0000014609** **Bldg Supply Wtr Htr / Exchngr**

Model Number Serial Number

Duty  
**Intermittent**

Size  
**150000**

UM  
**BTU**

Relative Size  
**LARGE**

**AM-150** **0040355K**

Location1 Location2

Location3

Overall Rating  
**Good**

Remaining Life  
**10 Yrs**

Replacement Value  
**\$86,652**

**ROOF**

Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Shaw Building

Asset Code 1

**335B75UMM9203A**

Agency: **University of Massachusetts Medical**  
Equipment ID Name

Crew ID **IND-8** Date  
Manufacturer

**10/5/00** Asset Code 2  
Model Type Year Installed

**0000014610** **Bldg Supply Wtr Htr / Exchngr**

System  
**DomWater** **HYDRO-THERM, INC.**

**Natural Gas** **1995**

Model Number Serial Number  
**AM-150** **9431259D**

Duty Size  
**Intermittent** **150000**

UM Relative Size  
**BTU** **LARGE**

Location1 Location2 Location3  
**ROOF**

Overall Rating  
**Good**

Remaining Life Replacement Value  
**10 Yrs** **\$86,652**

Comments

Equipment ID

Name

System  
**DomWater**

Manufacturer

Model Type

Year Installed

**0000014611** **Bldg Supply Wtr Htr / Exchngr**

**HYDRO-THERM, INC.**

**Natural Gas** **1995**

Model Number Serial Number  
**AM-150** **9431189D**

Duty Size  
**Intermittent** **150000**

UM Relative Size  
**BTU** **LARGE**

Location1 Location2 Location3  
**ROOF**

Overall Rating  
**Good**

Remaining Life Replacement Value  
**10 Yrs** **\$86,652**

Comments

Equipment ID

Name

System  
**HVAC**

Manufacturer

Model Type

Year Installed

**0000014612** **Boiler**

**HYDRO-THERM, INC.**

**Natural Gas** **1995**

Model Number Serial Number  
**AM-300** **U9431252**

Duty Size  
**Continuous** **299000**

UM Relative Size  
**BTU** **MEDIUM**

Location1 Location2 Location3  
**EQUIP ROOM**

Overall Rating  
**Good**

Remaining Life Replacement Value  
**10 Yrs** **\$115,710**

Comments

Equipment ID

Name

System  
**HVAC**

Manufacturer

Model Type

Year Installed

**0000014613** **Air Compressors**

**QUINCY COMPRESSOR**

**Motor Driven** **1995**

Model Number Serial Number  
**230** **742944L**

Duty Size  
**Intermittent** **4**

UM Relative Size  
**HP** **SMALL**

Location1 Location2 Location3  
**BASEMENT**

Overall Rating  
**Adequate**

Remaining Life Replacement Value  
**5 Yrs** **\$6,394**

Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex	<b>Higher Education</b>		<b>Shaw Building</b>		Asset Code 1	<b>335B75UMM9203A</b>
Agency:	<b>University of Massachusetts Medical</b>		Crew ID	<b>IND-8</b>	Date	<b>10/5/00</b>
Equipment ID	Name	System	Manufacturer	Asset Code 2	Model Type	Year Installed
<b>0000014614</b>	<b>Bldg Supply Wtr Htr / Exchngr</b>	<b>DomWater</b>	<b>RHEEM MFG. CO.</b>	<b>Natural Gas</b>		<b>1995</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size	
<b>21VR75</b>	<b>RN 0397G02470</b>	<b>Intermittent</b>	<b>75</b>	<b>GALLONS</b>	<b>SMALL</b>	
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value	
<b>EQUIP ROOM</b>			<b>Good</b>	<b>10 Yrs</b>	<b>\$14,529</b>	
Comments						

Asset Replacement Value  
**\$8,521,040**

Equipment Replacement Value  
**\$998,455**

Demolition Cost(if Surplus Property)  
**\$0**

System ACT Replacement Cost  
**\$5,634**

System Deficiency Repair Cost  
**\$4,233**

Equipment Replacement Cost Fail Or Poor Only  
**\$0**

ADA Compliance Cost  
**\$191,400**

LSC Compliance Cost  
**\$0**

Total Capital Project And Repair Cost  
**\$201,267**

# ASSET SURVEY DATA REPORT

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education

Daycare

Asset Code 1 335B75UMM9203B

Agency: University of Massachusetts Medical

Crew ID IND-8 Date 10/5/00

Asset Code 2 335UMMPB05

## > Facility Address

Address1	Address2	Address3	City	ZipCode
55 North Lake Ave.	419 Belmont Street		Worcester	01655-0001

## > Facility Contact Information

Name	Telephone	Fax Number	Email
Bill Smith, Director Desktop Services	(508) 856-6759	(508) 856-2440	bill.smith@umassmed.edu
James W. Aqilino, Facilities Manager			
Ron White, Director of Facilities			
Tim Fitzpatrick, Director of Operation for Facility Management	(508) 856-5606	(508) 856-2440	t.fitzpatrick@umassmed.edu

## > Asset Address

Asset Name	Alias Name	Address	Municipality	County
Daycare		366 Plantation St.	Worcester	Worcester
House District	Senate District	Type	Property Status	Floors
14th Worcester	1st Worcester	Day Care Facility	IN USE	2
YearConstructed	Construction Type	OriginalCost	Basement	Basement Confidence Code
0	Wood, Light Frame	\$0	Y	Recall from memory with high Confidence
GSF	NS	PictureFile		
4,581	3,894	335B75UMM9203B.jpg 335B75UMM9203B.jpg		

## > Asset Real Estate Data

Year Acquired	Purchase Price	Replacement Value	Assessed Value	Assessed Year-Current	Map No	Block No	Lot No
	\$0	\$732,548					
Historic Building	Latitude	Longitude	AssessedVal	Assessed Year-Actual			
	421636	714554					

## > Construction

### > Addition

### > Renovation

>

## > Occupants

Occupant(s) Name	Percent Occupied	Comments
University of Massachusetts Medical Center	100%	

## > Hazardous Material Presence (in Environment)

## > Hazardous Material Tracking (Stored Fuels and Chemicals)

## > Wetlands Delineation

## > LSC Compliance

## > ADA Compliance

Violation	Action/Comment
Accessible parking provided, None or improper	
Building entry, None or improper	

Mass Division of Capital Asset  
Parsons Brinckerhoff

Inspector Initials

Page 83 of 255  
Printed  
335B75UMM9203

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education  
Agency: University of Massachusetts Medical  
Clear access width from parking, None or improper

Daycare  
Crew ID IND-8 Date 10/5/00  
Asset Code 1 335B75UMM9203B  
Asset Code 2 335UMMPB05

- Counter heights improper
- Curb ramps, None or improper
- Door hardware improper
- Door width improper
- Exit and areas of rescue improper
- Grab bars, None or improper
- Handrails, None or improper
- Sinks, None or improper
- Ramp for building access, None or improper
- Signage, None or improper
- Stairways improper
- Telephones, None or improper

EntranceRampCost	Elevator Cost	Toilets Cost	All Other ADA Cost	Total
\$130,500			\$19,927	\$150,427

**> Inspection &**

System: INTR  
Appearance: Poor  
Assembly Comp Type: Ceiling - Acoustic Tile  
Quantit UM: 60 Code  
Priority: SQFT  
Weight: Within 2 Years Required to Improve  
- Suspended

Year Installed: Location1: Lobby, Location2: , Location3: ,  
Overall: Replace per Inspector: No, Comments:

**Poor Certificates**

Replace System ACT	Repair System ACT	Replace or Repair (Factored Cost Comparison)	Capital Project
\$284	\$284	Replace	

Deficiency: Loose/Damage/Delaminated Surface  
System: INTR  
Assembly Comp Type: Ceiling - Acoustic Tile - Suspended

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair	Deficiency Repair Cost
	60	\$284

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education Daycare Asset Code 1 335B75UMM9203B  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/5/00 Asset Code 2 335UMMPB05  
 System Assembly Comp Type Quantit UM Priority Weight  
**INTR Floors - Sheet - Vinyl Within 2 Years Required to Improve Appearance**  
 Composition  
 Year Installed Location1 Location2 Location3  
 Room  
 Overall Replace per Inspector No Comments  
**Poor**  
 Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$905 \$452 Repair**

Deficiency: Loose/Damage/Delaminated Surface System INTR Assembly Comp Type Floors - Sheet - Vinyl Composition

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 80 \$452

System Assembly Comp Type Quantit UM Priority Weight  
**INTR Walls - Partitions - Gypsum Board 190 SQFT Within 1 Year Prevent Accelerated Deterioration**

Year Installed Location1 Location2 Location3  
 Office  
 Overall Replace per Inspector No Comments  
**Poor**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project

> **Summary > Equipment > Wastewater > Cost Information \$247** N/A Convey **Good**  
 Foundation/Footings **Adequate** Overall Rating **Good** Mechanical **Good** Substructure Comments  
**\$148 Adequate** Electrical **Fair** Superstructure **Repair Adequate** Exterior **Good** Specialty  
 Good Equipment **Fair** Roofing **Adequate** Interior Construction **Fair** SiteWork

Deficiency: Diagonal Cracks System INTR Assembly Comp Type Walls - Partitions - Gypsum Board

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 190 \$148

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Deficiencies**

Ex	Higher Education	Daycare	Asset Code 1	335B75UMM9203B
Agency:	University of Massachusetts Medical	Crew ID	IND-8	Date
Syste	Assembly Comp Type	Quantit	UM	Priority
<b>SITE</b>	<b>Parking Lot - Parking Lot - Asphalt</b>	<b>400</b>	<b>SQFT</b>	<b>Within 1 Year</b>
Year Installed	Location1	Location2	Location3	Weight
	<b>Other</b>	<b>PARKING AREA</b>		<b>10/5/00</b>
Overall	Replace per Inspector	No	Comments	Asset Code 2
<b>Fair</b>				<b>335UMMPB05</b>
Replace System ACT	Repair System ACT	Replace or Repair (Factored Cost Comparison)	Capital Project	
<b>\$0</b>	<b>\$0</b>			

---

Deficiency:	System	Assembly Comp Type
<b>Worn Surface</b>	<b>SITE</b>	<b>Parking Lot - Parking Lot - Asphalt</b>

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair	Deficiency Repair Cost
	<b>300</b>	<b>\$0</b>

---

Deficiency:	System	Assembly Comp Type
<b>Cracking, Crumbling</b>	<b>SITE</b>	<b>Parking Lot - Parking Lot - Asphalt</b>

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair	Deficiency Repair Cost
	<b>100</b>	<b>\$0</b>

---

Syste	Assembly Comp Type	Quantit	UM	Priority	Weight
<b>SITE</b>	<b>Sidewalk - Sidewalk - Brick</b>	<b>80</b>	<b>SQFT</b>	<b>Within 1 Year</b>	<b>Improvement to the Use</b>
Year Installed	Location1	Location2	Location3		
	<b>Passageway</b>				
Overall	Replace per Inspector	No	Comments		
<b>Poor</b>			Concrete instead of Brick		
Replace System ACT	Repair System ACT	Replace or Repair (Factored Cost Comparison)	Capital Project		
<b>\$244</b>	<b>\$244</b>	<b>Replace</b>			

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Information**

Ex **Higher Education** **Daycare** Asset Code 1 **335B75UMM9203B**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/5/00** Asset Code 2 **335UMMPB05**  
 Deficiency: **Cracked** System **SITE** Assembly Comp Type **Sidewalk - Sidewalk - Brick**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**80 \$244**

.....  
 Syste **SUPST** Assembly Comp Type **Porch - Open - Wood** Quantit **30** UM **SQFT** Priority **Immediate/Emergency** Weight **Correct Hazard and Life Safety Issues**  
 Year Installed Location1 **Deck** Location2 Location3  
 Overall **Fail** Replace per Inspector **No** Comments **Falling apart**  
 Replace System ACT **\$781** Repair System ACT **\$390** Replace or Repair (Factored Cost Comparison) **Repair** Capital Project

.....  
 Deficiency: **Column Rotted** System **SUPST** Assembly Comp Type **Porch - Open - Wood**  
 5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**30 \$390**

.....  
 Equipment ID **0000014594** Name **Fire Alarm Panel** System **FireProDet** Manufacturer **SIMPLEX INC.** Model Type **Electric** Year Installed **1996**  
 Model Number **4004-9101** Serial Number **J45731** Duty **Continuous** Size **4581** UM **SQFT** Relative Size **SMALL**  
 Location1 **BASEMENT** Location2 Location3 Overall Rating **Good** Remaining Life **10 Yrs** Replacement Value **\$2,480**  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Daycare Asset Code 1 335B75UMM9203B  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/5/00 Asset Code 2 335UMMPB05  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014595 Security System Panel BldgSecur INTERACTEC Electric**  
 Model Number Serial Number Duty Size UM Relative Size  
**Caretaker 60-134 M-45, 249 Continuous 4581 SQFT SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BASEMENT Fail 0 Yrs \$2,654**  
 Comments  
**Inoperative and not cost feasible to repair. Replace immediately.**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014615 Bldg Supply Wtr Htr / Exchngr HVAC A.O. SMITH CORP. Natural Gas 1996**  
 Model Number Serial Number Duty Size UM Relative Size  
**FSG 50242 MG99-0056652-S44 Continuous 50 GALLONS SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$14,529**  
 Comments  
**Being used as hot water furnace**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014616 Boiler HVAC OAKMONT Natural Gas**  
 Model Number Serial Number Duty Size UM Relative Size  
**1B15 SERIES 89 Continuous 0 BTU SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$4,220**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014617 Bldg Supply Wtr Htr / Exchngr DomWater STATE INDUSTRIES, INC. Natural Gas**  
 Model Number Serial Number Duty Size UM Relative Size  
**PRV40NORSO2 F95402805 Intermittent 40 GALLONS SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 5 Yrs \$14,529**  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Daycare

Asset Code 1 **335B75UMM9203B**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8** Date

**10/5/00** Asset Code 2 **335UMMPB05**

Asset Replacement Value  
**\$732,548**

Equipment Replacement Value  
**\$38,412**

DemolitionCost(if Surplus Property)  
**\$0**

System ACT Replacement  
Cost  
**\$0**

System Deficiency Repair  
Cost  
**\$0**

Equipment Replacement Cost  
Fail Or Poor Only  
**\$2,654**

ADA Compliance Cost  
**\$150,427**

LSC Compliance Cost  
**\$0**

Total Capital Project And Repair Cost  
**\$153,081**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Parking Garage

Asset Code 1 335B75UMM9203C

Agency: University of Massachusetts Medical

Crew ID IND-8 Date

10/5/00 Asset Code 2 335UMMPB06

**> Facility Address**

Address1 55 North Lake Ave.	Address2 419 Belmont Street	Address3	City Worcester	ZipCode 01655-0001
--------------------------------	--------------------------------	----------	-------------------	-----------------------

**> Facility Contact Information**

Name	Telephone	Fax Number	EMail
Bill Smith, Director Desktop Services	(508) 856-6759	(508) 856-2440	bill.smith@umassmed.edu
James W. Aqilino, Facilities Manager			
Ron White, Director of Facilities			
Tim Fitzpatric, Director of Operation for Facility Management	(508) 856-5606	(508) 856-2440	t.fitzpatrick@umassmed.edu

**> Asset Address**

Asset Name Parking Garage	Alias Name	Address 360 Plantation St.	Municipality Worcester	County Worcester
House District 14th Worcester	Senate District 1st Worcester	Type Parking Garage	Property Status IN USE	Floors 6
YearConstructed 0	Construction Type Concrete Moment	OriginalCost \$0	Basement N	Basement Confidence Code Recall from memory
GSF 733,432	NS 660,089	PictureFile 335B75UMM9203C.jpg		

**> Asset Real Estate Data**

Year Acquired	Purchase Price	Replacement Value	Assessed Value	Assessed Year-Current	Map No	Block No	Lot No
	\$0	\$64,189,969			57	4	D
Historic Building	Latitude	Longitude	AssessedVal	Assessed Year-Actual			
	421650	714549					

**> Construction**

**> Addition**

**> Renovation**

>

Type	On File	Current
Elevator		

**> Occupants**

Occupant(s) Name	Percent Occupied	Comments
University of Massachusetts Medical Center	100%	

**> Hazardous Material Presence (in Environment)**

**> Hazardous Material Tracking (Stored Fuels and Chemicals)**

**> Wetlands Delineation**

**> LSC Compliance**

**> ADA Compliance**

Violation	Action/Comment
-----------	----------------

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Parking Garage

Asset Code 1 335B75UMM9203C

Agency: University of Massachusetts Medical  
Accessible parking provided, None or improper

Crew ID IND-8 Date 10/5/00 Asset Code 2 335UMMPB06

Accessible width, None or improper

Clear access width from parking, None or improper

Curb ramps, None or improper

EntranceRampCost	Elevator Cost	Toilets Cost	All Other ADA Cost	Total
			\$3,190,429	\$3,190,429

**> Inspection &**

Syste  
**SITE**

Assembly Comp Type  
**Parking Lot - Parking Lot - Asphalt**

Quantit UM  
**1000 SQFT**

Priority  
**Within 3-5 Years**

Weight  
**Prevent Accelerated Deterioration**

Year Installed

Location1  
**Other**

Location2  
**PARKING LOT**

Location3

Overall  
**Good**

Replace per Inspector

No

Comments  
Concrete instead of Asphalt

Replace System ACT  
**\$0**

Repair System ACT  
**\$0**

Replace or Repair (Factored Cost Comparison)

Capital Project

Deficiency:  
**Cracking, Crumbling**

System  
**SITE**

Assembly Comp Type  
**Parking Lot - Parking Lot - Asphalt**

5% 10% 15% 25% 50% 75% Fail Comments

Replace

Repair  
**1000**

Code  
Deficiency Repair Cost  
**\$0**

**> Equipment**

**Certificates**

Equipment ID	Name	Syste	Manufacturer	Model Type
Year Installed	m			
<b>0000014602</b>	<b>Security System Panel</b>	<b>DELL</b>	<b>Electric</b>	
Model Number	Duty	Size	UM	Relative Size
	<b>Continuous</b>	<b>733432</b>	<b>SQFT</b>	<b>LARGE</b>
Location1	Location2	Location3	Overall Rating	Remaining Life
<b>CONTROL ROOM</b>			<b>Adequate</b>	<b>5 Yrs</b>
Comments				<b>\$9,004</b>

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Parking Garage

Asset Code 1

**335B75UMM9203C**

Agency: University of Massachusetts Medical  
Equipment ID Name

Crew ID IND-8 Date 10/5/00  
Manufacturer

Asset Code 2 335UMMPB06  
Model Type Year Installed

**0000014603 Security System Panel**

System BldgSecur

Manufacturer DELL

Model Type Electric

Model Number Serial Number

Duty

Size

UM

Relative Size

Dimensions XPS P90

Continuous

733432

SQFT

LARGE

Location1 Location2 Location3

Overall Rating

**Adequate**

Remaining Life 5 Yrs

Replacement Value \$9,004

CONTROL ROOM

Comments

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

**0000014604 Fire Alarm Panel**

System FireProDet

Manufacturer SIMPLEX INC.

Model Type Electric

Model Number Serial Number

Duty

Size

UM

Relative Size

Continuous

733432

SQFT

LARGE

Location1 Location2 Location3

Overall Rating

**Poor**

Remaining Life 1 Yrs

Replacement Value \$5,698

CONTROL ROOM

Comments

in "trouble"-not repairable

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

**0000014605 Pumps/Motors >60HP**

System FireProDet

Manufacturer MARATHON ELECTRIC CORP.

Model Type Electric

Model Number Serial Number  
**SE326TSTDR7036FN W**

Duty

Size

UM

Relative Size

Standby

50

HP

MEDIUM

Location1 Location2 Location3

Overall Rating

**EQUIP ROOM**

Remaining Life

Replacement Value

**> Summary > Wastewater > Cost Information**

Foundation/Footings **Good** Overall Rating  
Substructure Comments **Good**  
**Good** Specialty **Adequate** **Good**  
Construction **Adequate** SiteWork **Good**  
**\$30,624**

**Good** Convey Mechanical **Good**  
**Good** Electrical **Good** Superstructure **Good** Exterior  
Equipment **Good** Roofing **5Yrs Good** Interior

Comments

Equipment ID

Name

System

Manufacturer

Model Type

Year Installed

**0000014628 Roof A/H Units**

System HVAC

Manufacturer CARRIER CORP.

Model Type Motor Driven

Model Number Serial Number

Duty

Size

UM

Relative Size

**39BA060D10 862930198**

Continuous

0

CFM

MEDIUM

Location1 Location2 Location3

Overall Rating

**Good**

Remaining Life 10 Yrs

Replacement Value \$80,736

EQUIP ROOM

Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

**Deficiencies**

Ex	Higher Education		Parking Garage		Asset Code 1	335B75UMM9203C
Agency:	University of Massachusetts Medical		Crew ID	IND-8	Date	10/5/00
Equipment ID	Name	System	Manufacturer	Model Type	Asset Code 2	335UMMPB06
0000014629	Bldg Supply Wtr Htr / Exchngr	DomWater	RHEEM MFG. CO.	Electric	Year Installed	
Model Number	Serial Number	Duty	Size	UM	Relative Size	
EGSP20	W0999RR0699302148	Intermittent	20	GALLONS	SMALL	
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value	
OTHER			Good	5 Yrs	\$14,529	
Comments						

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014630	Main Sprinkler Valve	FireProDet	STOCKHAM VALVES & FITTINGS	N/A	
Model Number	Serial Number	Duty	Size	UM	Relative Size
		Standby	8	INCHES	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
EQUIP ROOM			Good	20 Yrs	\$11,440
Comments					

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014631	Main Back Flow Preventer	FireProDet	KENNEDY	N/A	
Model Number	Serial Number	Duty	Size	UM	Relative Size
8-175		Standby	8	INCHES	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
EQUIP ROOM			Good	15 Yrs	\$8,439
Comments					

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014632	Pumps/Motors >60HP	FireProDet	FAIRBANKS-MORSE	Motor Driven	
Model Number	Serial Number	Duty	Size	UM	Relative Size
5823F	K3P1017213	Standby	6	HP	SMALL
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
ROOM			Adequate	5 Yrs	\$5,524
Comments					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Information**

Ex Higher Education Parking Garage Asset Code 1 335B75UMM9203C  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/5/00 Asset Code 2 335UMMPB06  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014633 Air Compressors HVAC GENERAL ELECTRIC Motor Driven  
 Model Number Serial Number Duty Size UM Relative Size  
 85K19-2TB 14652 Intermittent 2 HP SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$6,394  
 Comments

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014634 Bldg Condenser Unit HVAC CARRIER CORP. Electric  
 Model Number Serial Number Duty Size UM Relative Size  
 38EN06020SM 3286E31828 Intermittent 0 TONS MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Adequate 5 Yrs \$71,166  
 Comments

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014635 Elevator/Escalator Conveying MONTGOMERY KONE Electrical Passenger Elevator  
 Model Number Serial Number Duty Size UM Relative Size  
 P2820 none Intermittent 0 STORIES MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 10 Yrs \$331,035  
 Comments.....  
 .....

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex **Higher Education**

**Parking Garage**

Asset Code 1 **335B75UMM9203C**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8** Date

**10/5/00** Asset Code 2 **335UMMPB06**

Asset Replacement Value  
**\$64,189,969**

Equipment Replacement Value  
**\$583,593**

DemolitionCost(if Surplus Property)  
**\$0**

System ACT Replacement  
Cost  
**\$0**

System Deficiency Repair  
Cost  
**\$0**

Equipment Replacement Cost  
Fail Or Poor Only  
**\$5,698**

ADA Compliance Cost  
**\$3,190,429**

LSC Compliance Cost  
**\$0**

Total Capital Project And Repair Cost  
**\$3,196,127**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Anderson House

Asset Code 1

**335B75UMM9203D**

Agency: University of Massachusetts Medical

Crew ID IND-8 Date

10/5/00

Asset Code 2

**335UMMPB01**

**> Facility Address**

Address1

55 North Lake Ave.

Address2

419 Belmont Street

Address3

City

Worcester

ZipCode

01655-0001

**> Facility Contact Information**

Name

Telephone

Fax Number

EMail

Bill Smith, Director Desktop Services

(508) 856-6759

(508) 856-2440

bill.smith@umassmed.edu

James W. Aquilino, Facilities Manager

Ron White, Director of Facilities

Tim Fitzpatric, Director of Operation  
for Facility Management

(508) 856-5606

(508) 856-2440

t.fitzpatrick@umassmed.edu

**> Asset Address**

Asset Name

Anderson House

Alias Name

Address

382 Plantation St.

Municipality

Worcester

County

Worcester

House District

14th Worcester

Senate District

1st Worcester

Type

Office

Property Status

IN USE

Floors

2

YearConstructed

0

Construction Type

Wood, Light Frame

OriginalCost

\$0

Basement

Y

Basement

Confidence

Code

Obtained at site

GSF

2,876

NS

2,445

PictureFile

335B75UMM9203D.jpg

**> Asset Real Estate Data**

Year Acquired

Purchase Price

\$0

Replacement Value

\$556,966

Assessed Value

\$120,100

Assessed Year-Current

2000

Map No

46

Block No

1

Lot No

10

Historic Building

Latitude

421650

Longitude

714549

AssessedVal

BLDG

Assessed Year-Actual

2000

**> Construction**

**> Addition**

**> Renovation**

>

**> Occupants**

Occupant(s) Name

University of Massachusetts Medical Center

Percent Occupied

100%

Comments

**> Hazardous Material Presence (in Environment)**

**> Hazardous Material Tracking (Stored Fuels and Chemicals)**

**> Wetlands Delineation**

**> LSC Compliance**

**> ADA Compliance**

Violation

Accessible width, None or improper

Building entry, None or improper

Action/Comment

Mass Division of Capital Asset

Parsons Brinckerhoff

Inspector Initials

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Printed

335B75UMM9203

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Anderson House

Asset Code 1 335B75UMM9203D

Agency: University of Massachusetts Medical  
Door hardware improper

Crew ID IND-8 Date 10/5/00 Asset Code 2 335UMMPB01

Drinking fountains, None or improper

Grab bars, None or improper

Handrails, None or improper

Ramp for building access, None or improper

Signage, None or improper

Stairways improper

Telephones, None or improper

Toilet facilities, None or improper

Urinals, None or improper

EntranceRampCost	Elevator Cost	Toilets Cost	All Other ADA Cost	Total
\$130,500		\$15,013	\$12,511	\$158,024

**> Inspection &**

Syste INTR	Assembly Comp Type Floors - Tile - Vinyl Composition	Quantit UM 120 SQFT	Priority Within 1 Year	Weight Prevent Accelerated Deterioration
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Year Installed	Location1 Floor	Location2	Location3
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Overall	Replace per Inspector	No Code	Comments
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**Poor**

Replace System ACT \$1,689	Repair System ACT \$2,786	Replace or Repair (Factored Cost Comparison) Replace	Capital Project
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Deficiency: <b>Certificates</b> Replace	System INTR INTR	Assembly Comp Type Floors - Tile - Vinyl Floors - Tile - Vinyl Composition
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5% 10% 15% 25% 50% 75% Fail Comments

Replace 120	Repair	Deficiency Repair Cost \$1,689
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**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Anderson House Asset Code 1 335B75UMM9203D  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/5/00 Asset Code 2 335UMMPB01  
 Deficiency: Loose/Damage/Delaminated Surface System INTR Assembly Comp Type Floors - Tile - Vinyl Composition

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 60 \$422

Deficiency: Cracking, Crumbling System INTR Assembly Comp Type Floors - Tile - Vinyl Composition

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 60 \$675

System SITE Assembly Comp Type Parking Lot - Parking Lot - Asphalt Quantit 800 UM SQFT Priority Within 2 Years Weight Improvement to the Use

Year Installed Location1 Other Location2 PARKING AREA Location3

Overall Adequate Replace per Inspector No Comments

Replace System ACT \$0 Repair System ACT \$0 Replace or Repair (Factored Cost Comparison) Capital Project

Deficiency: > Summary > Equipment > Wastewater > Cost Information N/A System Convey Good Assembly Comp Type Foundation/Footings  
 Good Overall Rating Good Mechanical Good SubstructureComments Good Electrical Good  
 Superstructure Adequate Exterior Good Specialty SITE Good Equipment Good  
 Roofing Parking Lot - Parking Lot - Adequate Interior Construction Adequate SiteWork  
 Striping Faded/Missing SITE Parking Lot - Parking Lot - Asphalt

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 800 \$0

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014596	Fire Alarm Panel	FireProDet	SIMPLEX INC.	Electric	1988
Model Number	Serial Number	Duty	Size	UM	Relative Size
4001-9403	D 86447CJ	Continuous	2876	SQFT	SMALL
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
BASEMENT			Good	10 Yrs	\$2,480
Comments					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Deficiencies**

Ex Higher Education Anderson House Asset Code 1 335B75UMM9203D  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/5/00 Asset Code 2 335UMMPB01

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014597	Security System Panel	BldgSecur	ITI	Electric	1988
Model Number	Serial Number	Duty	Size	UM	Relative Size
Caretaer	none	Continuous	2876	SQFT	SMALL
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
BASEMENT			Good	10 Yrs	\$2,654
Comments					

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014618	Bldg Supply Wtr Htr / Exchngr	DomWater	RHEEM MFG. CO.	Natural Gas	1988
Model Number	Serial Number	Duty	Size	UM	Relative Size
81VP20S	R 0996308914	Intermittent	19.9	GALLONS	SMALL
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
EQUIP ROOM			Good	10 Yrs	\$14,529
Comments					

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014619	Roof A/H Units	HVAC	CARRIER CORP.	Packaged Unit	1987
Model Number	Serial Number	Duty	Size	UM	Relative Size
40Q060300	0889H00271	Continuous	0	CFM	MEDIUM
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
EQUIP ROOM			Good	15 Yrs	\$80,736
Comments					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Information**

Ex Higher Education Anderson House Asset Code 1 335B75UMM9203D  
Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/5/00 Asset Code 2 335UMMPB01

Asset Replacement Value Equipment Replacement Value DemolitionCost(if Surplus Property)  
\$556,966 \$100,399 \$0

System ACT Replacement  
Cost  
\$1,689

System Deficiency Repair  
Cost  
\$0

Equipment Replacement Cost  
Fail Or Poor Only  
\$0

ADA Compliance Cost  
\$158,024

LSC Compliance Cost  
\$0

Total Capital Project And Repair Cost  
\$159,713

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Benedict Building

Asset Code 1 335B75UMM9203E

Agency: University of Massachusetts Medical

Crew ID IND-8 Date

10/5/00 Asset Code 2 335UMMPB02

**> Facility Address**

Address1 55 North Lake Ave.	Address2 419 Belmont Street	Address3	City Worcester	ZipCode 01655-0001
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**> Facility Contact Information**

Name	Telephone	Fax Number	EMail
Bill Smith, Director Desktop Services	(508) 856-6759	(508) 856-2440	bill.smith@umassmed.edu
James W. Aquilino, Facilities Manager			
Ron White, Director of Facilities			
Tim Fitzpatric, Director of Operation for Facility Management	(508) 856-5606	(508) 856-2440	t.fitzpatrick@umassmed.edu

**> Asset Address**

Asset Name Benedict Building	Alias Name	Address 55 North Lake Avenue	Municipality Worcester	County Worcester
House District 14th Worcester	Senate District 1st Worcester	Type Office	Property Status IN USE	Floors 3
YearConstructed 1992	Construction Type Conc Frame-Infill Shr Walls	OriginalCost \$0	Basement Y	Basement Confidence Code Obtained at site
GSF 78,087	NS 66,374	PictureFile 335B75UMM9203E.jpg		

**> Asset Real Estate Data**

Year Acquired	Purchase Price \$0	Replacement Value \$15,122,328	Assessed Value	Assessed Year-Current	Map No	Block No	Lot No
Historic Building	Latitude 421639	Longitude 714544	AssessedVal	Assessed Year-Actual			

**> Construction**

**> Addition**

**> Renovation**

>

Type	On File	Current
Elevator		

**> Occupants**

Occupant(s) Name University of Massachusetts Medical Center	Percent Occupied 100%	Comments
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**> Hazardous Material Presence (in Environment)**

**> Hazardous Material Tracking (Stored Fuels and Chemicals)**

**> Wetlands Delineation**

**> LSC Compliance**

**> ADA Compliance**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex **Higher Education**  
Agency: **University of Massachusetts Medical**  
Violation  
**Building entry, None or improper**

**Benedict Building**  
Crew ID **IND-8** Date **10/5/00**  
Action/Comment  
Asset Code 1 **335B75UMM9203E**  
Asset Code 2 **335UMMPB02**

**Door hardware improper**  
**Exit and areas of rescue improper**  
**Grab bars, None or improper**  
**Signage, None or improper**  
**Toilet facilities, None or improper**  
**Urinals, None or improper**

EntranceRampCost	Elevator Cost	Toilets Cost	All Other ADA Cost	Total
		<b>\$407,614</b>	<b>\$339,678</b>	<b>\$747,292</b>

**> Inspection &**

System <b>EXTR</b>	Assembly Comp Type <b>Walls - Concrete - Pre Cast Concrete</b>	Quantit UM <b>120 SQFT</b>	Priority <b>Within 1 Year</b>	Weight <b>Prevent Accelerated Deterioration</b>
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Year Installed	Location1 <b>Basement</b>	Location2	Location3
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Overall <b>Poor</b>	Replace per Inspector	No	Comments
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Replace System ACT <b>\$551</b>	Repair System ACT <b>\$551</b>	Replace or Repair (Factored Cost Comparison) <b>Replace</b>	Capital Project
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Deficiency: <b>Vertical Cracks</b>	System <b>EXTR</b>	Assembly Comp Type <b>Walls - Concrete - Pre Cast Concrete</b>	Code
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5% 10% 15% 25% 50% 75% Fail Comments

<b>Certificates</b>	Replace <b>120</b>	Repair <b>\$551</b>	Deficiency Repair Cost
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**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility **UMM00**

Ex **Higher Education** **Benedict Building** Asset Code 1 **335B75UMM9203E**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/5/00** Asset Code 2 **335UMMPB02**  
 System **Assembly Comp Type** Quantit **UM** Priority **Weight**  
**INTR** **Ceiling - Acoustic Tile** **1050** **SQFT** **Within 3-5 Years** **Required to Improve Appearance**  
**- Suspended**

Year Installed Location1 **Basement** Location2 **ROOM** Location3 **CORRIDOR**  
 Overall Replace per Inspector No Comments  
**Fair**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$4,969** **\$6,211** **Replace**

Deficiency: **Water Penetration** System **INTR** Assembly Comp Type **Ceiling - Acoustic Tile - Suspended**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**262** **\$1,242**

Deficiency: **Replace** System **INTR** Assembly Comp Type **Ceiling - Acoustic Tile - Suspended**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**1050** **\$4,969**

Syste **SUPST** Assembly Comp Type **Floors - CIP Concrete** Quantit **160** UM **SQFT** Priority **Within 1 Year** Weight **Prevent Accelerated Deterioration**  
**> Summary > Equipment > Wastewater > Cost Information** **Good** Convey **Good**  
 Foundation/Footings **Good** Overall Rating **Good** Mechanical **Good**  
 Substructure Comments **- Slab** **Good** Electrical **Adequate**  
 Superstructure **Adequate** Exterior **Good** Specialty **Good** Equipment  
**Good** Roofing **Adequate** Interior Construction **Good** SiteWork

Year Installed Location1 **Stairwell** Location2 Location3  
 Overall Replace per Inspector No Comments  
**Poor**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$1,612** **\$646** **Repair**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Deficiencies**

Ex Higher Education Benedict Building Asset Code 1 335B75UMM9203E  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/5/00 Asset Code 2 335UMMPB02  
 Deficiency: Diagonal Cracks System SUPST Assembly Comp Type Floors - CIP Concrete - Slab

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 160 \$646

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014598	Bldg Supply Wtr Htr / Exchngr	DomWater	RHEEM MFG. CO.	Electric	1992
Model Number	Serial Number	Duty	Size	UM	Relative Size
EGSL120-18-G	RU 0292E00210	Intermittent	120	GALLONS	SMALL
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
EQUIP ROOM			Good	10 Yrs	\$14,529
Comments					

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014599	Bldg Supply Wtr Htr / Exchngr	DomWater	RHEEM MFG. CO.	Electric	1992
Model Number	Serial Number	Duty	Size	UM	Relative Size
ES120-18-G	W0599RR1297E00263	Intermittent	120	GALLONS	SMALL
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
EQUIP ROOM			Good	10 Yrs	\$14,529
Comments					

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014600	Switchgear >5KV	ElecDist	WESTINGHOUSE	Electric	1992
Model Number	Serial Number	Duty	Size	UM	Relative Size
(order #) BS375	(Drw#)SM92A457	Continuous	8020	KVA	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
EQUIP ROOM			Good	10 Yrs	\$62,988
Comments.....					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Information**

Ex Higher Education Benedict Building Asset Code 1 335B75UMM9203E  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/5/00 Asset Code 2 335UMMPB02  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014620 Main Sprinkler Valve FireProDet MUELLER N/A 1992  
 Model Number Serial Number Duty Size UM Relative Size  
 ? ? Standby 4 INCHES LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$11,440  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014621 Main Back Flow Preventer FireProDet WATTS REGULATOR CO. N/A 1992  
 Model Number Serial Number Duty Size UM Relative Size  
 ? 170331 Standby 4 INCHES LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$8,439  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014622 Main Back Flow Preventer FireProDet WATTS REGULATOR CO. N/A 1992  
 Model Number Serial Number Duty Size UM Relative Size  
 ? ? Standby 4 INCHES LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$8,439  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014623 Main Back Flow Preventer DomWater WATTS REGULATOR CO. N/A 1992  
 Model Number Serial Number Duty Size UM Relative Size  
 ? ? Continuous 3 INCHES MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$6,786  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education Benedict Building Asset Code 1 335B75UMM9203E  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/5/00 Asset Code 2 335UMMPB02  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014624 Main Back Flow Preventer DomWater WATTS REGULATOR CO. N/A 1992  
 Model Number Serial Number Duty Size UM Relative Size  
 ? 140439 Continuous 3 INCHES MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$6,786  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014625 Main Back Flow Preventer DomWater WATTS REGULATOR CO. N/A 1992  
 Model Number Serial Number Duty Size UM Relative Size  
 ? ? Continuous 3 INCHES MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$6,786  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014626 Main Back Flow Preventer DomWater WATTS REGULATOR CO. N/A 1992  
 Model Number Serial Number Duty Size UM Relative Size  
 ? 139470 Continuous 3 INCHES MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$6,786  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014627 Elevator/Escalator Conveying DOVER ELEVATOR SYSTEMS Electrical Passenger Elevator 1992  
 Model Number Serial Number Duty Size UM Relative Size  
 ? ED-1697 Intermittent 0 STORIES SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$147,900  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex **Higher Education**

**Benedict Building**

Asset Code 1 **335B75UMM9203E**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8** Date

**10/5/00** Asset Code 2 **335UMMPB02**

Asset Replacement Value  
**\$15,122,328**

Equipment Replacement Value  
**\$295,408**

DemolitionCost(if Surplus Property)  
**\$0**

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System ACT Replacement  
Cost  
**\$4,969**

System Deficiency Repair  
Cost  
**\$0**

Equipment Replacement Cost  
Fail Or Poor Only  
**\$0**

ADA Compliance Cost  
**\$747,292**

LSC Compliance Cost  
**\$0**

Total Capital Project And Repair Cost  
**\$752,261**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility **UMM00**

Ex Higher Education

Warehouse

Asset Code 1 **335B75UMM9203F**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8** Date **10/7/00**

Asset Code 2 **335UMMPB10**

**> Facility Address**

Address1 55 North Lake Ave.	Address2 419 Belmont Street	Address3	City Worcester	ZipCode 01655-0001
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**> Facility Contact Information**

Name	Telephone	Fax Number	EMail
Bill Smith, Director Desktop Services	(508) 856-6759	(508) 856-2440	bill.smith@umassmed.edu
James W. Aqilino, Facilities Manager			
Ron White, Director of Facilities			
Tim Fitzpatric, Director of Operation for Facility Management	(508) 856-5606	(508) 856-2440	t.fitzpatrick@umassmed.edu

**> Asset Address**

Asset Name <b>Warehouse</b>	Alias Name	Address <b>50 Franklin St.</b>	Municipality <b>Worcester</b>	County <b>Worcester</b>
House District <b>14th Worcester</b>	Senate District <b>1st Worcester</b>	Type <b>Warehouse</b>	Property Status <b>IN USE</b>	Floors <b>2</b>
YearConstructed <b>0</b>	Construction Type <b>Unreinforced Masonry</b>	OriginalCost <b>\$0</b>	Basement <b>Y</b>	Basement Confidence Code <b>Obtained at site</b>
GSF <b>29,300</b>	NS <b>26,370</b>	PictureFile <b>335B75UMM9203F.jpg</b>		

**> Asset Real Estate Data**

Year Acquired	Purchase Price	Replacement Value	Assessed Value	Assessed Year-Current	Map No	Block No	Lot No
	<b>\$0</b>	<b>\$2,931,758</b>					
Historic Building	Latitude	Longitude	AssessedVal	Assessed Year-Actual			
	<b>421639</b>	<b>714545</b>					

**> Construction**

**> Addition**

**> Renovation**

**>**

**> Occupants**

Occupant(s) Name	Percent Occupied	Comments
University of Massachusetts Medical Center	100%	20% of area is in use.

**> Hazardous Material Presence (in Environment)**

**> Hazardous Material Tracking (Stored Fuels and Chemicals)**

**> Wetlands Delineation**

**> LSC Compliance**

**> ADA Compliance**

EntranceRampCost	Elevator Cost	Toilets Cost	All Other ADA Cost	Total
				<b>\$0</b>

**> Inspection &**

**Mass Division of Capital Asset  
Parsons Brinckerhoff**

Inspector Initials

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335B75UMM9203

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Warehouse Asset Code 1 335B75UMM9203F  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/7/00 Asset Code 2 335UMMPB10  
 System Distribution - Building System - Rewire Quantit UM Priority Weight  
**ELEC** 29300 SOFT Within 1 Year Improve Operational Efficiency  
 Year Installed Location1 Location2 Location3  
 Location1: Asset Wide  
 Overall Replace per Inspector No Comments  
**Poor** bldg needs total rewire  
 Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$121,592 \$212,786 Replace**

Deficiency: Rewire System ELEC Assembly Comp Type Distribution - Building System - Rewire

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 21975 \$91,194

Deficiency: Replace System ELEC Assembly Comp Type Distribution - Building System - Rewire

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 29300 \$121,592 Code

System ELEC Assembly Comp Type Distribution - Panel - Main Panel Quantit UM Priority Weight  
**ELEC** 1 EACH Within 1 Year Improve Operational Efficiency

**Certificates** Year Installed Location1 Location2 Location3  
 Asset Wide

Overall Replace per Inspector No Comments  
**Poor**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$2,290 \$7,270 Replace**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Deficiencies**

Ex Higher Education Warehouse Asset Code 1 335B75UMM9203F  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/7/00 Asset Code 2 335UMMPB10  
 Deficiency: Loose, Damaged, Missing Busbars System ELEC Assembly Comp Type Distribution - Panel - Main Panel

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 1 \$1,717

Deficiency: Loose, Damaged, Missing Cover System ELEC Assembly Comp Type Distribution - Panel - Main Panel

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 1 \$515

Deficiency: Loose, Damaged, Missing Enclosure System ELEC Assembly Comp Type Distribution - Panel - Main Panel

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 1 \$1,374

Deficiency: Loose, Damaged, Missing Hardware System ELEC Assembly Comp Type Distribution - Panel - Main Panel

5% 10% 15% 25% 50% 75% Fail Comments

> **Summary > Equipment > Wastewater > Cost Information N/A**  
 Foundation/Footings **Fair** Overall Rating **Poor** Mechanical **Good** Convey **Good** Substructure **Roof**  
**falling in & leaking.** Comments **Poor** Electrical **Fair** Superstructure  
**Fair** Exterior **Poor** Specialty **Poor** Equipment **Fail** Roofing **Poor**  
 Interior Construction **Fair** SiteWork

Replace Repair Deficiency Repair Cost  
 1 \$687

Deficiency: Replace System ELEC Assembly Comp Type Distribution - Panel - Main Panel

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 1 \$2,290

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Warehouse

Asset Code 1 **335B75UMM9203F**

Agency: **University of Massachusetts Medical**  
Deficiency:  
**Damaged, Inoperative, Missing Breakers**

Crew ID **IND-8** Date **10/7/00**  
System  
**ELEC**

Asset Code 2 **335UMMPB10**  
Assembly Comp Type  
**Distribution - Panel - Main Panel**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**1 \$687**

System Assembly Comp Type Quantit UM Priority Weight  
**ELEC Lighting - Fixture - Interior Lights 80 EACH Within 1 Year Improve Operational Efficiency**

Year Installed Location1 Location2 Location3  
**Asset Wide**

Overall Replace per Inspector No Comments  
**Poor**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$575 \$50,869 Replace**

Deficiency: System Assembly Comp Type  
**Replace ELEC Lighting - Fixture - Interior Lights**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**80 \$575**

Deficiency: System Assembly Comp Type  
**Loose, Damaged, Missing Lens/Cover ELEC Lighting - Fixture - Interior Lights**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**60 \$4,373**

Deficiency: System Assembly Comp Type  
**Loose, Damaged, Missing Globe/Lamp ELEC Lighting - Fixture - Interior Lights**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**60 \$6,560**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Information**

Ex **Higher Education** Warehouse Asset Code 1 **335B75UMM9203F**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **10/7/00** Asset Code 2 **335UMMPB10**  
 Deficiency: **Loose, Damaged, Missing Fixture** System **ELEC** Assembly Comp Type **Lighting - Fixture - Interior Lights**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**60 \$21,868**

Deficiency: **Burned, Loose, Missing, Damaged Wiring** System **ELEC** Assembly Comp Type **Lighting - Fixture - Interior Lights**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**60 \$17,493**

Syste **ELEC** Assembly Comp Type **Lighting - Fixtures - Exit/Emergency** Quantit **4** UM **EACH** Priority **Within 1 Year** Weight **Correct Hazard and Life Safety Issues**

Year Installed Location1 **Asset Wide** Location2 Location3

Overall **Fail** Replace per Inspector No Comments **none present**

Replace System ACT **\$2,213** Repair System ACT **\$4,426** Replace or Repair (Factored Cost Comparison) **Replace** Capital Project

Deficiency: **Replace** System **ELEC** Assembly Comp Type **Lighting - Fixtures - Exit/Emergency**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**4 \$2,213**

Deficiency: **Inoperative** System **ELEC** Assembly Comp Type **Lighting - Fixtures - Exit/Emergency**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**4 \$2,213**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Warehouse Asset Code 1 335B75UMM9203F  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/7/00 Asset Code 2 335UMMPB10  
 System Assembly Comp Type Quantit UM Priority Weight  
**ELEC Service Entrance - Conductors/Fittings - Breakers** 1 EACH Within 1 Year Improve Operational Efficiency

Year Installed Location1 Location2 Location3  
 Equip Room

Overall Replace per Inspector No Comments  
**Poor**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$3,873 \$3,873 Replace**

Deficiency: Replace System ELEC Assembly Comp Type Service Entrance - Conductors/Fittings - Breakers

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 1 \$3,873

System Assembly Comp Type Quantit UM Priority Weight  
**EQUIP Equip - Generic - Generic** Immediate/Emergency Prevent Accelerated Deterioration

Year Installed Location1 Location2 Location3

Overall Replace per Inspector No Comments  
**Fail**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$0 \$0**

Deficiency: Replace System EQUIP Assembly Comp Type Equip - Generic - Generic

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**\$0**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Warehouse Asset Code 1 335B75UMM9203F  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/7/00 Asset Code 2 335UMMPB10  
 System Assembly Comp Type Quantit UM Priority Weight  
**EXTR Windows/Glazed Wall 120 EACH Within 3-5 Years Improvement to the Use**  
 Year Installed Location1 Location2 Location3  
 Overall Replace per Inspector No Comments  
**Fail**  
 Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$60,114 \$244,362 Replace**

Deficiency: **Air Infiltration** System **EXTR** Assembly Comp Type **Windows/Glazed Wall - Storm - Wood**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**60 \$24,045**

Deficiency: **Broken/Missing Glazing** System **EXTR** Assembly Comp Type **Windows/Glazed Wall - Storm - Wood**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**30 \$15,028**

Deficiency: **Replace** System **EXTR** Assembly Comp Type **Windows/Glazed Wall - Storm - Wood**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**120 \$60,114**

Deficiency: **Deteriorated Paint Finish** System **EXTR** Assembly Comp Type **Windows/Glazed Wall - Storm - Wood**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**120 \$30,057**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Warehouse

Asset Code 1 335B75UMM9203F

Agency: University of Massachusetts Medical  
Deficiency:  
Dry Rot

Crew ID IND-8 Date  
System  
EXTR

10/7/00 Asset Code 2 335UMMPB10  
Assembly Comp Type  
Windows/Glazed Wall -  
Storm - Wood

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
30 Deficiency Repair Cost  
\$10,520

Deficiency:  
Split/Dry/Cracked

System  
EXTR

Assembly Comp Type  
Windows/Glazed Wall -  
Storm - Wood

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
18 Deficiency Repair Cost  
\$5,410

Deficiency:  
Hardware Missing/Deteriorated

System  
EXTR

Assembly Comp Type  
Windows/Glazed Wall -  
Storm - Wood

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
120 Deficiency Repair Cost  
\$30,057

Deficiency:  
Frame Damaged

System  
EXTR

Assembly Comp Type  
Windows/Glazed Wall -  
Storm - Wood

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
90 Deficiency Repair Cost  
\$31,560

Deficiency:  
Loose Fastenings

System  
EXTR

Assembly Comp Type  
Windows/Glazed Wall -  
Storm - Wood

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
30 Deficiency Repair Cost  
\$7,514

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Warehouse

Asset Code 1 **335B75UMM9203F**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8**

Date

**10/7/00**

Asset Code 2 **335UMMPB10**

Deficiency:

System

Assembly Comp Type

**Water Penetration**

**EXTR**

**Windows/Glazed Wall - Storm - Wood**

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair	Deficiency Repair Cost
	<b>60</b>	<b>\$30,057</b>

---

Syste	Assembly Comp Type	Quantit	UM	Priority	Weight
<b>INTR</b>	<b>Ceiling - Acoustic Tile - Suspended</b>	<b>120</b>	<b>SQFT</b>	<b>Within 3-5 Years</b>	<b>Improvement to the Use</b>

Year Installed	Location1	Location2	Location3
	<b>Room</b>		

Overall	Replace per Inspector	No	Comments
<b>Fair</b>			

Replace System ACT	Repair System ACT	Replace or Repair (Factored Cost Comparison)	Capital Project
<b>\$568</b>	<b>\$568</b>	<b>Replace</b>	

---

Deficiency:	System	Assembly Comp Type
<b>Broken/Missing</b>	<b>INTR</b>	<b>Ceiling - Acoustic Tile - Suspended</b>

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair	Deficiency Repair Cost
	<b>120</b>	<b>\$568</b>

---

Syste	Assembly Comp Type	Quantit	UM	Priority	Weight
<b>INTR</b>	<b>Ceiling - Concrete - Exposed Structure</b>	<b>15000</b>	<b>SQFT</b>	<b>Within 3-5 Years</b>	<b>Improvement to the Use</b>

Year Installed	Location1	Location2	Location3
	<b>Asset Wide</b>		

Overall	Replace per Inspector	No	Comments
<b>Poor</b>			

Replace System ACT	Repair System ACT	Replace or Repair (Factored Cost Comparison)	Capital Project
<b>\$140,157</b>	<b>\$284,438</b>	<b>Replace</b>	

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Warehouse

Asset Code 1 335B75UMM9203F

Agency: University of Massachusetts Medical  
Deficiency:  
Broken/Missing

Crew ID IND-8 Date 10/7/00  
System  
INTR

Asset Code 2 335UMMPB10  
Assembly Comp Type  
Ceiling - Concrete - Exposed  
Structure

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
1500 \$14,016

Deficiency: Replace System INTR Assembly Comp Type Ceiling - Concrete - Exposed Structure

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
15000 \$140,157

Deficiency: Puncture/Tear/Impact Damage System INTR Assembly Comp Type Ceiling - Concrete - Exposed Structure

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
2250 \$10,492

Deficiency: Cracking, Crumbling System INTR Assembly Comp Type Ceiling - Concrete - Exposed Structure

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
1500 \$11,197

Deficiency: Water Penetration System INTR Assembly Comp Type Ceiling - Concrete - Exposed Structure

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
11250 \$73,602

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex **Higher Education**

Warehouse

Asset Code 1 **335B75UMM9203F**

Agency: **University of Massachusetts Medical**  
Deficiency:  
**Stained/Dirty**

Crew ID **IND-8** Date **10/7/00**  
System  
**INTR**

Asset Code 2 **335UMMPB10**  
Assembly Comp Type  
**Ceiling - Concrete - Exposed  
Structure**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
**7500** Deficiency Repair Cost  
**\$34,974**

System **INTR** Assembly Comp Type **Doors - Wood - Solid Core**  
Quantit **70** UM **EACH** Priority **Within 3-5 Years** Weight **Improvement to the Use**

Year Installed Location1 **Asset Wide** Location2 Location3

Overall **Fail** Replace per Inspector **No** Comments

Replace System ACT **\$108,141** Repair System ACT **\$226,554** Replace or Repair (Factored Cost Comparison) **Replace** Capital Project

Deficiency: **Frame Damaged** System **INTR** Assembly Comp Type **Doors - Wood - Solid Core**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
**35** Deficiency Repair Cost  
**\$37,849**

Deficiency: **Cracked/Damaged Glazing** System **INTR** Assembly Comp Type **Doors - Wood - Solid Core**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
**18** Deficiency Repair Cost  
**\$10,814**

Deficiency: **Broken/Missing** System **INTR** Assembly Comp Type **Doors - Wood - Solid Core**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
**10** Deficiency Repair Cost  
**\$16,221**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Warehouse

Asset Code 1 335B75UMM9203F

Agency: University of Massachusetts Medical

Crew ID IND-8

Date

10/7/00

Asset Code 2 335UMMPB10

Deficiency:

System

Assembly Comp Type

Damaged Louver

INTR

Doors - Wood - Solid Core

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
18 \$10,814

Deficiency:

System

Assembly Comp Type

Deteriorated Paint Finish

INTR

Doors - Wood - Solid Core

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
70 \$16,221

Deficiency:

System

Assembly Comp Type

Replace

INTR

Doors - Wood - Solid Core

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
70 \$108,141

Deficiency:

System

Assembly Comp Type

Loose Fastenings

INTR

Doors - Wood - Solid Core

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
10 \$4,866

Deficiency:

System

Assembly Comp Type

Hardware Missing/Deteriorated

INTR

Doors - Wood - Solid Core

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
35 \$21,628

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Warehouse Asset Code 1 335B75UMM9203F  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/7/00 Asset Code 2 335UMMPB10  
 System Assembly Comp Type Quantit UM Priority Weight  
**INTR Walls - Partitions - Gypsum Board 4000 sqft Within 3-5 Years Improvement to the Use**  
 Year Installed Location1 Location2 Location3  
 Overall Replace per Inspector No Comments  
**Poor**  
 Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$5,199 \$10,587 Replace**

Deficiency: Stained/Dirty System INTR Assembly Comp Type Walls - Partitions - Gypsum Board

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair 2000 Deficiency Repair Cost \$1,298

Deficiency: Broken/Missing System INTR Assembly Comp Type Walls - Partitions - Gypsum Board

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair 1000 Deficiency Repair Cost \$1,169

Deficiency: Deteriorated Paint Finish System INTR Assembly Comp Type Walls - Partitions - Gypsum Board

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair 4000 Deficiency Repair Cost \$1,880

Deficiency: Replace System INTR Assembly Comp Type Walls - Partitions - Gypsum Board

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair 4000 Deficiency Repair Cost \$5,199

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility **UMM00**

Ex **Higher Education**

Warehouse

Asset Code 1 **335B75UMM9203F**

Agency: **University of Massachusetts Medical**  
Deficiency: **Puncture/Tear/Impact Damage**

Crew ID **IND-8** Date **10/7/00**  
System **INTR**

Asset Code 2 **335UMMPB10**  
Assembly Comp Type **Walls - Partitions - Gypsum Board**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**1000 \$1,041**

System **INTR** Assembly Comp Type **Walls - Partitions - Masonry Brick** Quantit **8000** UM **SQFT** Priority **Within 3-5 Years** Weight **Improvement to the Use**

Year Installed Location1 **Asset Wide** Location2 Location3

Overall **Fair** Replace per Inspector **No** Comments

Replace System ACT **\$319,186** Repair System ACT **\$279,374** Replace or Repair (Factored Cost Comparison) **Replace** Capital Project

Deficiency: **Stained/Dirty** System **INTR** Assembly Comp Type **Walls - Partitions - Masonry Brick**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**6000 \$71,827**

Deficiency: **Loose/Damage/Delaminated Surface** System **INTR** Assembly Comp Type **Walls - Partitions - Masonry Brick**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**8000 \$191,539**

Deficiency: **Deteriorated Paint Finish** System **INTR** Assembly Comp Type **Walls - Partitions - Masonry Brick**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**8000 \$16,008**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Warehouse Asset Code 1 335B75UMM9203F  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/7/00 Asset Code 2 335UMMPB10  
 System Assembly Comp Type Quantit UM Priority Weight  
**INTR Walls - Partitions - Plaster 6000 SQFT Within 3-5 Years Improvement to the Use**

Year Installed Location1 Location2 Location3  
**Asset Wide**

Overall Replace per Inspector No Comments  
**Poor**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$93,960 \$159,732 Replace**

Deficiency: Deteriorated Paint Finish System INTR Assembly Comp Type Walls - Partitions - Plaster

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**6000 \$65,772**

Deficiency: Replace System INTR Assembly Comp Type Walls - Partitions - Plaster

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**6000 \$93,960**

System MECH Assembly Comp Type Boiler, Package - Hot Water - Steam (500 MBH) Quantit UM Priority Weight  
**2 EACH Within 1 Year Improve Operational Efficiency**

Year Installed Location1 Location2 Location3  
**1933 Basement**

Overall Replace per Inspector No Comments  
**Fail Not used for 30 years**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$414,990 \$652,918 Replace**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility **UMM00**

Ex **Higher Education**

Warehouse

Asset Code 1 **335B75UMM9203F**

Agency: **University of Massachusetts Medical**  
Deficiency:  
**Severe Corrosion**

Crew ID **IND-8** Date **10/7/00**  
System  
**MECH**

Asset Code 2 **335UMMPB10**  
Assembly Comp Type  
**Boiler, Package - Hot Water -  
Steam (500 MBH)**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
**2** Deficiency Repair Cost  
**\$118,964**

Deficiency:  
**Inoperative**

System  
**MECH**

Assembly Comp Type  
**Boiler, Package - Hot Water -  
Steam (500 MBH)**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
**2** Deficiency Repair Cost  
**\$118,964**

Deficiency:  
**Replace**

System  
**MECH**

Assembly Comp Type  
**Boiler, Package - Hot Water -  
Steam (500 MBH)**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
**2** Deficiency Repair Cost  
**\$414,990**

Syste Assembly Comp Type Quantit UM Priority Weight  
**ROOF Membrane - 1500 SQFT Within 1 Year Improvement to the Use**  
**Seamless - Vinyl/Rubber**

Year Installed Location1 Location2 Location3  
**Asset Wide**

Overall Replace per Inspector No Comments  
**Fail**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$11,797 \$28,901 Replace**

Deficiency:  
**Water Penetration**

System  
**ROOF**

Assembly Comp Type  
**Membrane - Seamless -  
Vinyl/Rubber**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
**1125** Deficiency Repair Cost  
**\$8,848**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Warehouse

Asset Code 1 335B75UMM9203F

Agency: University of Massachusetts Medical  
Deficiency:  
Vegetation Growth

Crew ID IND-8 Date 10/7/00  
System  
ROOF

Asset Code 2 335UMMPB10  
Assembly Comp Type  
Membrane - Seamless -  
Vinyl/Rubber

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
375 Deficiency Repair Cost  
\$1,475

Deficiency:  
Split/Dry/Cracked

System  
ROOF

Assembly Comp Type  
Membrane - Seamless -  
Vinyl/Rubber

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
375 Deficiency Repair Cost  
\$2,949

Deficiency:  
Replace

System  
ROOF

Assembly Comp Type  
Membrane - Seamless -  
Vinyl/Rubber

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
1500 Deficiency Repair Cost  
\$11,797

Deficiency:  
Loose Fastenings

System  
ROOF

Assembly Comp Type  
Membrane - Seamless -  
Vinyl/Rubber

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
375 Deficiency Repair Cost  
\$2,062

Deficiency:  
Puncture/Tear/Impact Damage

System  
ROOF

Assembly Comp Type  
Membrane - Seamless -  
Vinyl/Rubber

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair  
225 Deficiency Repair Cost  
\$1,770

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Warehouse Asset Code 1 335B75UMM9203F  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/7/00 Asset Code 2 335UMMPB10  
 System Assembly Comp Type Quantit UM Priority Weight  
**SPEC Specialty - Generic - Generic Immediate/Emergency Prevent Accelerated Deterioration**  
 Year Installed Location1 Location2 Location3  
 Overall Replace per Inspector No Comments  
**Fail**  
 Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$0 \$0**

Deficiency: Replace System SPEC Assembly Comp Type Specialty - Generic - Generic  
 5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**\$0**

Syste SUPST Assembly Comp Type Floors - CIP Concrete - Slab Quantit UM 200 SOFT Priority Within 1 Year Weight Prevent Accelerated Deterioration

Year Installed Location1 Basement Location2 Location3

Overall Replace per Inspector No Comments  
**Fair**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$2,015 \$2,216 Replace**

Deficiency: Puncture/Tear/Impact Damage System SUPST Assembly Comp Type Floors - CIP Concrete - Slab  
 5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**200 \$1,409**

Deficiency: Diagonal Cracks System SUPST Assembly Comp Type Floors - CIP Concrete - Slab  
 5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**200 \$807**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Warehouse

Asset Code 1

335B75UMM9203F

Agency: University of Massachusetts Medical

Crew ID IND-8 Date

10/7/00 Asset Code 2 335UMMPB10

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014636	Security System Panel	BldgSecur	DIGISECCON	Electric	1933
Model Number	Serial Number	Duty	Size	UM	Relative Size
PC2550	none	Continuous	29300	SQFT	MEDIUM
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
OTHER			Adequate	5 Yrs	\$4,959
Comments also serves as fire panel					

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014640	Boiler	HVAC	NATIONAL RA	Natural Gas	1933
Model Number	Serial Number	Duty	Size	UM	Relative Size
70-SERIES G.D.	?	Continuous	0	BTU	MEDIUM
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
BASEMENT			Fail	0 Yrs	\$115,710
Comments Inoperative					

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014641	Boiler	HVAC	NATIONAL RA	Natural Gas	1933
Model Number	Serial Number	Duty	Size	UM	Relative Size
70-SERIES G.D.	?	Continuous	0	BTU	MEDIUM
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
BASEMENT			Fail	0 Yrs	\$115,710
Comments Inoperative					

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014642	Roof A/H Units	HVAC	B.F. STURTEVANT	Motor Driven	1933
Model Number	Serial Number	Duty	Size	UM	Relative Size
?	307753	Continuous	0	CFM	MEDIUM
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
EQUIP ROOM			Fair	3 Yrs	\$80,736
Comments					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Warehouse Asset Code 1 335B75UMM9203F  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/7/00 Asset Code 2 335UMMPB10  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014643 Roof A/H Units HVAC B.F. STURTEVANT Motor Driven 1933**  
 Model Number Serial Number Duty Size UM Relative Size  
**? 307753 Continuous 0 CFM MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Fair 3 Yrs \$80,736**  
 Comments

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014964 Switchgear >5KV ElecDist GENERAL ELECTRIC Electric 1934**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous 0 KVA MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BASEMENT Fair 3 Yrs \$45,936**  
 Comments  
**dusty/dirty too high to be readily accessible**  
 .....

Asset Replacement Value Equipment Replacement Value DemolitionCost(if Surplus Property)  
**\$2,931,758 \$443,787 \$0**

-----  
 System ACT Replacement Cost System Deficiency Repair Cost Equipment Replacement Cost Fail Or Poor Only  
**\$1,285,527 \$0 \$231,420**  
 ADA Compliance Cost LSC Compliance Cost Total Capital Project And Repair Cost  
**\$0 \$0 \$1,516,947**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Bnri

Asset Code 1 335B75UMM9203H

Agency: University of Massachusetts Medical  
> **Facility Address**

Crew ID IND-8 Date 10/2/00 Asset Code 2 335UMMPB04

Address1 55 North Lake Ave. Address2 419 Belmont Street Address3 City Worcester ZipCode 01655-0001

> **Facility Contact Information**

Name Telephone Fax Number EMail  
Bill Smith, Director Desktop Services (508) 856-6759 (508) 856-2440 bill.smith@umassmed.edu  
James W. Aquilino, Facilities Manager  
Ron White, Director of Facilities  
Tim Fitzpatric, Director of Operation for Facility Management (508) 856-5606 (508) 856-2440 t.fitzpatrick@umassmed.edu

> **Asset Address**

Asset Name Alias Name Address Municipality County  
Bnri 305 Belmont St. Worcester Worcester  
House District Senate District Type Property Status Floors  
14th Worcester 1st Worcester Laboratory IN USE 3  
YearConstructed Construction Type OriginalCost Basement Confidence Code  
1999 Unreinforced Masonry \$0 Y Obtained at site  
GSF NS PictureFile  
60,000 51,000 335B75UMM9203H.jpg

> **Asset Real Estate Data**

Year Acquired Purchase Price Replacement Value Assessed Value Assessed Year-Current Map No Block No Lot No  
\$0 \$12,986,400 \$1,003,800 2001 57 4 B  
Historic Building Latitude Longitude AssessedVal Assessed Year-Actual  
421644 714619 MBL-B 2001

> **Construction**

> **Addition**

> **Renovation**

Type On File Current  
Elevator

> **Occupants**

Occupant(s) Name Percent Occupied Comments  
University of Massachusetts Medical Center 100%

> **Hazardous Material Presence (in Environment)**

> **Hazardous Material Tracking (Stored Fuels and Chemicals)**

> **Wetlands Delineation**

> **LSC Compliance**

> **ADA Compliance**

Violation Action/Comment

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education  
Agency: University of Massachusetts Medical  
Counter heights improper

Bnri  
Crew ID IND-8 Date 10/2/00 Asset Code 1 335B75UMM9203H  
Asset Code 2 335UMMPB04

- Door hardware improper
- Drinking fountains, None or improper
- Grab bars, None or improper
- Signage, None or improper
- Telephones, None or improper
- Urinals, None or improper

EntranceRampCost	Elevator Cost	Toilets Cost	All Other ADA Cost	Total
			\$36,540	\$36,540

**> Inspection &  
> Equipment**

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014523	Switchgear >5KV	m ElecDist	CUTLER HAMMER	Electric	1999
Model Number	Serial Number	Duty	Size	UM	Relative Size
?	?	Continuous	1104	KVA	MEDIUM
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
PAD MOUNTED	OUTSIDE		Excellent	15 Yrs	\$45,936
Comments 2300 A @ 480 V. No data olate accessible					

---

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014524	Fire Alarm Panel	m FireProDet	SIEMENS	Electric	1999
Model Number	Serial Number	Duty	Size	UM	Relative Size
MXL-1Q	none	Continuous	0	SQFT	LARGE
<b>Certificates</b>	Location1	Location2	Location3	Overall Rating	Remaining Life
Replacement Value					
EQUIP ROOM			Excellent	15 Yrs	\$5,698
Comments					

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**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education Bnri Asset Code 1 335B75UMM9203H  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/2/00 Asset Code 2 335UMMPB04  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014525 Emergency Generator Set ElecDist CATERPILLAR Engine Driven 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 SR-4B 9FG01598 Standby 750 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Excellent 15 Yrs \$285,360  
 Comments  
 600 KW

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014526 Pumps/Motors >60HP HVAC CENTURY ELECTRIC Electric 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 (part #) 2005171013 D98T G01321 1 Continuous 60 HP MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Excellent 15 Yrs \$30,624  
 Comments  
 EAHU 1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014527 Pumps/Motors >60HP HVAC CENTURY ELECTRIC Electric 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 (part #) 200531105 E98T G01483 1 Continuous 40 HP MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 > **Summary > Wastewater> Cost Information**  
 Foundation/Footings **Good** Overall Rating **Good** Convey **Good**  
 Substructure Comments **Good** Electrical **Good** Mechanical **Good**  
 Good Exterior **Good** Specialty **Good** Electrical **Good** Mechanical **Good**  
 Excellent Interior Construction **Good** SiteWork **Good** Equipment **Good** Superstructure **Good**  
 EQUIP ROOM **Excellent** Roofing **Good**  
 Comments  
 EAHU 2

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014528 Air Compressors HVAC QUINCY COMPRESSOR Motor Driven 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 017QCB 6133945 Intermittent 10 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM **Excellent** 15 Yrs \$67,512  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Deficiencies**

Ex Higher Education Bnri Asset Code 1 335B75UMM9203H  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/2/00 Asset Code 2 335UMMPB04  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014529 Pumps/Motors >60HP HVAC CENTURY ELECTRIC Electric 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 (part #) 6-75403-01-00 none Continuous 75 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Excellent 15 Yrs \$54,810  
 Comments  
 AHU 1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014530 Pumps/Motors >60HP HVAC UNKNOWN Electric 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 (part #) 370385 01 none Continuous 40 HP MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Excellent 15 Yrs \$30,624  
 Comments  
 AHU 2

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014545 Main Back Flow Preventer DomWater WATTS REGULATOR CO. 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 ? ? Continuous 4 INCHES LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$8,439  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014546 Main Back Flow Preventer DomWater WATTS REGULATOR CO. 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 909 RP 180975 Continuous 4 INCHES LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$8,439  
 Comments.....

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Information**

Ex Higher Education Bnri Asset Code 1 335B75UMM9203H  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/2/00 Asset Code 2 335UMMPB04  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014547 Elevator/Escalator Conveying DOVER ELEVATOR SYSTEMS Electrical Passenger Elevator 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 EP12530 EJ5923 Intermittent 0 STORIES SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$147,900  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014548 Walk-in Refrigeration Units Specialty NSF Electric 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 ? 99B06290R Continuous 0 SQFT LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Excellent 15 Yrs \$51,504  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014549 Walk-in Refrigeration Units Specialty UNKNOWN Electric 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 ? ? Continuous 80 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Excellent 15 Yrs \$26,448  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014550 Walk-in Refrigeration Units Specialty UNKNOWN Electric 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 ? 99B06280R Continuous 180 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Excellent 15 Yrs \$26,448  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Bnri Asset Code 1 335B75UMM9203H  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/2/00 Asset Code 2 335UMMPB04  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014551 Chiller HVAC YORK BORG-WARNER CORP. Electric 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 YEAJ999RY6-46PA RAHM7418AA Continuous 300 TONS MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Good 10 Yrs \$507,210  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014552 Chiller HVAC YORK BORG-WARNER CORP. Electric 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 YCAJ160-46PAS RAHM7422A Continuous 170 TONS SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Good 10 Yrs \$58,290  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014553 Bldg Supply Wtr Htr / Exchngr DomWater PVI INDUSTRIES, INC. Steam 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 2500 NA-1S 129896378 Continuous 2040000 BTU LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$86,652  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014554 Bldg Supply Wtr Htr / Exchngr DomWater PVI INDUSTRIES, INC. Electric 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 7000NA-1S 129896377 Continuous 5720000 BTU LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$86,652  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education Bnri Asset Code 1 335B75UMM9203H  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/2/00 Asset Code 2 335UMMPB04  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014555 Roof A/H Units HVAC YORK BORG-WARNER CORP. Motor Driven 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 CA0101090.5X126S DMGM-260285 Continuous 100 TONS LARGE  
 QSCCO25SO  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$484,590  
 Comments  
 AHU-1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014556 Roof A/H Units HVAC YORK BORG-WARNER CORP. Motor Driven 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 CNGM02841C Continuous 50 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$484,590  
 Comments  
 AHU-2

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014557 Roof A/H Units HVAC YORK BORG-WARNER CORP. Motor Driven 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 TAHM117730 Continuous 20000 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$80,736  
 Comments  
 EAHU-2

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014558 Roof A/H Units HVAC YORK BORG-WARNER CORP. Motor Driven 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 TAHM117720 Continuous 40000 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$80,736  
 Comments  
 EAHU-1

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Bnri

Asset Code 1

**335B75UMM9203H**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8** Date

**10/2/00** Asset Code 2

**335UMMPB04**

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014559</b>	<b>Air Compressors</b>	<b>HVAC</b>	<b>QUINCY COMPRESSOR</b>	<b>Motor Driven</b>	<b>1999</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
		<b>Intermittent</b>	<b>15</b>	<b>HP</b>	<b>LARGE</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Good</b>	<b>10 Yrs</b>	<b>\$67,512</b>
Comments <b>Medical Air</b>					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014560</b>	<b>Air Compressors</b>	<b>HVAC</b>	<b>QUINCY COMPRESSOR</b>	<b>Motor Driven</b>	<b>1999</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
		<b>Intermittent</b>	<b>15</b>	<b>HP</b>	<b>LARGE</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Good</b>	<b>10 Yrs</b>	<b>\$67,512</b>
Comments <b>Medical Air</b>					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014561</b>	<b>Air Compressors</b>	<b>HVAC</b>	<b>QUINCY COMPRESSOR</b>	<b>Motor Driven</b>	<b>1999</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
		<b>Intermittent</b>	<b>15</b>	<b>HP</b>	<b>LARGE</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Good</b>	<b>10 Yrs</b>	<b>\$67,512</b>
Comments <b>Medical Air</b>					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014562</b>	<b>Water Softener</b>	<b>DomWater</b>	<b>US FILTER</b>	<b>Electric</b>	<b>1999</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
	<b>98141-100</b>	<b>Continuous</b>	<b>1500</b>	<b>GALLONS</b>	<b>LARGE</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Good</b>	<b>10 Yrs</b>	<b>\$23,142</b>
Comments					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Bnri Asset Code 1 335B75UMM9203H  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/2/00 Asset Code 2 335UMMPB04  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014563 Bldg Supply Wtr Htr / HVAC UNKNOWN Steam 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 0 BTU LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$86,652  
 Comments  
 HE-1

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014564 Bldg Supply Wtr Htr / HVAC UNKNOWN Steam 1999  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 0 BTU LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$86,652  
 Comments  
 HE-2  
 .....

Asset Replacement Value  
**\$12,986,400**

Equipment Replacement Value  
**\$3,088,804**

DemolitionCost(if Surplus Property)  
**\$0**

System ACT Replacement Cost  
**\$0**

System Deficiency Repair Cost  
**\$0**

Equipment Replacement Cost  
 Fail Or Poor Only  
**\$0**

ADA Compliance Cost  
**\$36,540**

LSC Compliance Cost  
**\$0**

Total Capital Project And Repair Cost  
**\$36,540**

**ASSET SURVEY DATA REPORT**UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Power Plant

Asset Code 1 335B75UMM9205

Agency: University of Massachusetts Medical

Crew ID IND-8

Date

10/3/00

Asset Code 2 335UMM9205

**> Facility Address**

Address1

55 North Lake Ave.

Address2

419 Belmont Street

Address3

City

Worcester

ZipCode

01655-0001

**> Facility Contact Information**

Name

Telephone

Fax Number

EMail

Bill Smith, Director Desktop Services

(508) 856-6759

(508) 856-2440

bill.smith@umassmed.edu

James W. Aquilino, Facilities Manager

Ron White, Director of Facilities

Tim Fitzpatrick, Director of Operation  
for Facility Management

(508) 856-5606

(508) 856-2440

t.fitzpatrick@umassmed.edu

**> Asset Address**

Asset Name

Power Plant

Alias Name

Address

55 North Lake Avenue

Municipality

Worcester

County

Worcester

House District

14th Worcester

Senate District

1st Worcester

Type

Power Supply  
Facility

Property Status

IN USE

Floors

3

YearConstructed

1973

Construction Type

Precast Conc-Conc Shr  
Walls

OriginalCost

\$11,012,299

Basement

N

Basement  
Confidence  
Code

Obtained at site

GSF

51,757

NS

43,993

PictureFile

335B75UMM9205.jpg

**> Asset Real Estate Data**

Year Acquired

1967

Purchase Price

\$0

Replacement Value

\$20,702,800

Assessed Value

Assessed Year-Current

Map No

57

Block No

4

Lot No

D

Historic Building

Latitude

421644

Longitude

714534

AssessedVal

Assessed Year-Actual

**> Construction****> Addition****> Renovation****>**

Type

On File

Current

Elevator

**> Occupants**

Occupant(s) Name

University of Massachusetts Medical Center

Percent Occupied

100%

Comments

**> Hazardous Material Presence (in Environment)****> Hazardous Material Tracking (Stored Fuels and Chemicals)****> Wetlands Delineation**Distance to  
Wetlands -  
200 ft or less

WetLandDataSource

Description/Comment  
s

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education  
Agency: University of Massachusetts Medical  
GIS Yes, Inspector  
No Record

Power Plant

Asset Code 1 335B75UMM9205

Crew ID IND-8 Date

10/3/00 Asset Code 2 335UMM9205

> **LSC Compliance**

> **ADA Compliance**

EntranceRampCost	Elevator Cost	Toilets Cost	All Other ADA Cost	Total
				\$0

> **Inspection &**

Syste <b>ELEC</b>	Assembly Comp Type <b>Equipment - Fixture - Smoke Detector</b>	Quantit UM 10 EACH	Priority <b>Within 2 Years</b>	Weight <b>Improve Operational Efficiency</b>
Year Installed	Location1 <b>Corridor</b>	Location2	Location3	
Overall <b>Poor</b>	Replace per Inspector	No	Comments old components and problem-ridden	
Replace System ACT <b>\$3,320</b>	Repair System ACT <b>\$3,320</b>	Replace or Repair (Factored Cost Comparison) <b>Replace</b>	Capital Project	

Deficiency: **Loose, Damaged, Missing Fixture** System **ELEC** Assembly Comp Type **Equipment - Fixture - Smoke Detector**

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair <b>10</b>	Deficiency Repair Cost <b>\$3,320</b>
---------	---------------------	--

Code

Syste <b>INTR</b>	Assembly Comp Type <b>Ceiling - Acoustic Tile - Suspended</b>	Quantit UM 100 SQFT	Priority <b>Within 1 Year</b>	Weight <b>Improvement to the Use</b>
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Year Installed	Location1 <b>Office</b>	Location2	Location3
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**Certificates**

Overall <b>Poor</b>	Replace per Inspector	No	Comments
Replace System ACT <b>\$473</b>	Repair System ACT <b>\$474</b>	Replace or Repair (Factored Cost Comparison) <b>Replace</b>	Capital Project

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility **UMM00**

Ex **Higher Education**

**Power Plant**

Asset Code 1 **335B75UMM9205**

Agency: **University of Massachusetts Medical**  
Deficiency: **Water Penetration**

Crew ID **IND-8** Date **10/3/00** Asset Code 2 **335UMM9205**  
System **INTR** Assembly Comp Type **Ceiling - Acoustic Tile - Suspended**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**50 \$237**

Deficiency: **Broken/Missing** System **INTR** Assembly Comp Type **Ceiling - Acoustic Tile - Suspended**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**50 \$237**

Syste Assembly Comp Type Quantit UM Priority Weight  
**SITE Parking Lot - Parking Lot - Asphalt 2000 SQFT Within 1 Year Prevent Accelerated Deterioration**

Year Installed Location1 Location2 Location3  
**Other PARKING AREA**

Overall Replace per Inspector No Comments  
**Fair Precast concrete blocks instead of asphalt**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$0 \$0**

Deficiency: **> Summary > Equipment > Wastewater > Cost Information Good** System **Convey Good** Assembly Comp Type **Foundation/Footings**  
**Adequate** Overall Rating **Adequate** Mechanical **Good** Substructure Comments **Adequate**  
Electrical **Good** Superstructure **Good** Exterior **Adequate** Specialty **SITE Adequate** Equipment  
**Good Roofing** Parking Lot - Parking Lot - **Adequate** Interior Construction **Fair** SiteWork  
**Cracking, Crumbling** **SITE** **Parking Lot - Parking Lot - Asphalt**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**2000 \$0**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Deficiencies**

Ex	Higher Education	Power Plant	Asset Code 1	335B75UMM9205
Agency:	University of Massachusetts Medical	Crew ID	IND-8	Date
Syste	Assembly Comp Type	Quantit	UM	Priority
<b>SUPST</b>	<b>Floors - CIP Concrete - Slab</b>	100	SQFT	<b>Within 1 Year</b>
Year Installed	Location1	Location2	Location3	
Overall	Replace per Inspector	No	Comments	
<b>Poor</b>				
Replace System ACT	Repair System ACT	Replace or Repair (Factored Cost Comparison)	Capital Project	
<b>\$1,007</b>	<b>\$705</b>	<b>Repair</b>		

Deficiency: **Puncture/Tear/Impact Damage** System: **SUPST** Assembly Comp Type: **Floors - CIP Concrete - Slab**

5%	10%	15%	25%	50%	75%	Fail	Comments
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Replace	Repair	Deficiency Repair Cost
	100	\$705

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014352	Switchgear >5KV	ElecDist	WESTINGHOUSE	Electric	1973
Model Number	Serial Number	Duty	Size	UM	Relative Size
7962D01G12	96066296	Continuous	16560	KVA	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
EQUIP ROOM			<b>Adequate</b>	5 Yrs	\$62,988
Comments	steam turbine gas/oil				

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014353	Switchgear >5KV	ElecDist	WESTINGHOUSE	Electric	1973
Model Number	Serial Number	Duty	Size	UM	Relative Size
7962D0G12	96066290	Continuous	16560	KVA	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
EQUIP ROOM			<b>Adequate</b>	5 Yrs	\$62,988
Comments	utility				

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Information**

Ex Higher Education Power Plant Asset Code 1 335B75UMM9205  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/3/00 Asset Code 2 335UMM9205  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014354 Switchgear >5KV ElecDist WESTINGHOUSE Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**7962D01G12 96066312 Continuous 16560 KVA LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$62,988**  
 Comments  
**normal turbine**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014355 Switchgear >5KV ElecDist WESTINGHOUSE Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**7962D01G12 96066299 Continuous 16560 KVA LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$62,988**  
 Comments  
**utility**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014356 Switchgear >5KV ElecDist FEDERAL PACIFIC CO. Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**(cat #) 2651D1619 none Continuous 5280 KVA LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$62,988**  
 Comments  
**TGE-1**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014357 Switchgear >5KV ElecDist FEDERAL PACIFIC CO. Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**(cat#) 2651D/1619 none Continuous 5280 KVA LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$62,988**  
 Comments  
**TGE-2**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Power Plant Asset Code 1 335B75UMM9205  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/3/00 Asset Code 2 335UMM9205  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014358 Switchgear >5KV ElecDist WESTINGHOUSE Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 796D01G12 96066303 Continuous 16560 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$62,988**  
 Comments  
 0.000002

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014359 Switchgear >5KV ElecDist WESTINGHOUSE Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 7962D01G12 96066298 Continuous 16560 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$62,988**  
 Comments  
 0.00002

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014360 Switchgear >5KV ElecDist WESTINGHOUSE Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 7962D01G12 96066297 Continuous 16560 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$62,988**  
 Comments  
 0.0002

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014361 Switchgear >5KV ElecDist WESTINGHOUSE Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 7962D01G12 96066304 Continuous 16560 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$62,988**  
 Comments  
 0.002

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex	Higher Education	Power Plant	Asset Code 1	335B75UMM9205
Agency: University of Massachusetts Medical		Crew ID	IND-8	Date
Equipment ID	Name	System	Manufacturer	10/3/00
0000014362	Switchgear >5KV	ElecDist	WESTINGHOUSE	Asset Code 2
				Model Type
Model Number	Serial Number	Duty	Size	335UMM9205
7962D01G12	96066291	Continuous	16560	Year Installed
Location1	Location2	Location3	Overall Rating	
			Adequate	5 Yrs
<b>EQUIP ROOM</b>				<b>\$62,988</b>
Comments				
0.02				

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014363	Switchgear >5KV	ElecDist	WESTINGHOUSE	Electric	1973
Model Number	Serial Number	Duty	Size	UM	Relative Size
7962D01G12	96066302	Continuous	16560	KVA	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
			Adequate	5 Yrs	\$62,988
<b>EQUIP ROOM</b>					
Comments					
0.2					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014364	Switchgear >5KV	ElecDist	WESTINGHOUSE	Electric	1973
Model Number	Serial Number	Duty	Size	UM	Relative Size
7962D01G12	95062940	Continuous	16560	KVA	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
			Adequate	5 Yrs	\$62,988
<b>EQUIP ROOM</b>					
Comments					
1E-7B					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014365	Switchgear >5KV	ElecDist	WESTINGHOUSE	Electric	1973
Model Number	Serial Number	Duty	Size	UM	Relative Size
7962D01G12	96066295	Continuous	16560	KVA	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
			Adequate	5 Yrs	\$62,988
<b>EQUIP ROOM</b>					
Comments					
0.1					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Power Plant Asset Code 1 335B75UMM9205  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/3/00 Asset Code 2 335UMM9205  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014366 Switchgear >5KV ElecDist WESTINGHOUSE Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**7962D01G12 95062939 Continuous 16560 KVA LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$62,988**  
 Comments  
**0.01**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014367 Switchgear >5KV ElecDist WESTINGHOUSE Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**7962D01G12 95062941 Continuous 16560 KVA LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$62,988**  
 Comments  
**0.001**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014368 Switchgear >5KV ElecDist WESTINGHOUSE Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**7962D01G12 96066274 Continuous 16560 KVA LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$62,988**  
 Comments  
**0.0001**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014369 Switchgear >5KV ElecDist WESTINGHOUSE Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**7962D01G12 96066305 Continuous 6560 KVA LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$62,988**  
 Comments  
**0.00001**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Power Plant Asset Code 1 335B75UMM9205  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/3/00 Asset Code 2 335UMM9205  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014503 Boiler HVAC CLEAVER-BROOKS Natural Gas 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**CM4-32-SE Continuous 3967500 BTU MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$115,710**  
 Comments

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 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014504 Boiler HVAC CLEAVER-BROOKS Natural Gas 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**CM4-32-SE Continuous 3967500 BTU MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$115,710**  
 Comments

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 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014505 Chiller HVAC YORK BORG-WARNER CORP. Steam 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**238A8 AO-0658 Continuous 2500 TONS LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$990,060**  
 Comments

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 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014506 Chiller HVAC YORK BORG-WARNER CORP. Steam 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**OMS2500 A0-06589 Continuous 2500 TONS LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$990,060**  
 Comments

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# ASSET SURVEY DATA REPORT

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex	<b>Higher Education</b>		<b>Power Plant</b>		Asset Code 1	<b>335B75UMM9205</b>
Agency:	<b>University of Massachusetts Medical</b>		Crew ID	<b>IND-8</b>	Date	<b>10/3/00</b>
Equipment ID	Name	System	Manufacturer	Model Type	Asset Code 2	<b>335UMM9205</b>
<b>0000014507</b>	<b>Chiller</b>	<b>HVAC</b>	<b>YORK BORG-WARNER CORP.</b>	<b>Steam</b>	Year Installed	<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size	
<b>OMS2500</b>	<b>AO-065870</b>	<b>Continuous</b>	<b>2500</b>	<b>TONS</b>	<b>LARGE</b>	
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value	
<b>EQUIP ROOM</b>			<b>Good</b>	<b>10 Yrs</b>	<b>\$990,060</b>	
Comments						

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed	
<b>0000014508</b>	<b>Cooling Tower</b>	<b>HVAC</b>	<b>MARLEY CLG TOWER CO.</b>	<b>Electric</b>	<b>1973</b>	
Model Number	Serial Number	Duty	Size	UM	Relative Size	
	<b>1265-70</b>	<b>Continuous</b>	<b>0</b>	<b>TONS</b>	<b>LARGE</b>	
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value	
<b>OTHER</b>			<b>Good</b>	<b>10 Yrs</b>	<b>\$156,078</b>	
Comments						

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed	
<b>0000014512</b>	<b>Roof A/H Units</b>	<b>HVAC</b>	<b>WESTINGHOUSE</b>	<b>Motor Driven</b>	<b>1973</b>	
Model Number	Serial Number	Duty	Size	UM	Relative Size	
<b>AJH1501A</b>	<b>754000</b>	<b>Continuous</b>	<b>0</b>	<b>CFM</b>	<b>MEDIUM</b>	
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value	
<b>EQUIP ROOM</b>			<b>Good</b>	<b>10 Yrs</b>	<b>\$80,736</b>	
Comments						

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed	
<b>0000014513</b>	<b>Bldg Supply Wtr Htr / Exchngr</b>	<b>DomWater</b>	<b>DILLON</b>	<b>Steam</b>	<b>1973</b>	
Model Number	Serial Number	Duty	Size	UM	Relative Size	
	<b>46930</b>	<b>Continuous</b>	<b>50</b>	<b>GALLONS</b>	<b>SMALL</b>	
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value	
<b>EQUIP ROOM</b>			<b>Good</b>	<b>10 Yrs</b>	<b>\$14,529</b>	
Comments.....						

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Power Plant Asset Code 1 335B75UMM9205  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/3/00 Asset Code 2 335UMM9205  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014514 Roof A/H Units HVAC WESTINGHOUSE Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**AJH1501A 754001 Continuous 0 CFM MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$80,736**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014515 Bldg Supply Wtr Htr / Exchngr HVAC UNKNOWN Steam 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous 0 BTU MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$23,490**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014516 Bldg Supply Wtr Htr / Exchngr HVAC UNKNOWN Steam 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous 0 BTU MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$23,490**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014517 Main Back Flow Preventer FireProDet BEECO N/A 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**6CM Standby 4 INCHES LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$8,439**  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Power Plant Asset Code 1 335B75UMM9205  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/3/00 Asset Code 2 335UMM9205  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014518 Water Softener DomWater COCHRANE Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous 10000 GALLONS LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$23,142**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014519 Water Softener DomWater COCHRANE Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous 10000 GALLONS LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$23,142**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014520 Main Sprinkler Valve FireProDet STAR SPRINKLER N/A 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**6-175-D Standby 6 INCHES LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$11,440**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014521 Roof A/H Units HVAC AXIFLEX Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous 0 CFM MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$80,736**  
 Comments  
**EXHAUST FAN**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Power Plant Asset Code 1 335B75UMM9205  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/3/00 Asset Code 2 335UMM9205  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014522 Elevator/Escalator Conveying DOVER ELEVATOR SYSTEMS Electrical Passenger Elevator 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 EP-8020 EC-8884 Intermittent 0 STORIES SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$147,900  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014531 Switchgear >5KV ElecDist WESTINGHOUSE Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 7962D01612 95062942 Continuous 16560 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$62,988  
 Comments  
 2N-4

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014532 Switchgear >5KV ElecDist WESTINGHOUSE Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 7962D01612 95042260 Continuous 16560 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$62,988  
 Comments  
 2N-3

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014533 Switchgear >5KV ElecDist WESTINGHOUSE Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 7962D01612 96066286 Continuous 16560 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$62,988  
 Comments  
 2N-2

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Power Plant Asset Code 1 335B75UMM9205  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/3/00 Asset Code 2 335UMM9205  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014534 Switchgear >5KV ElecDist WESTINGHOUSE Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 7962D01612 96066300 Continuous 16560 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$62,988  
 Comments  
 2N-1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014535 Switchgear >5KV ElecDist WESTINGHOUSE Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 7962D01612 94080324 Continuous 16560 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$62,988  
 Comments  
 1N-1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014536 Switchgear >5KV ElecDist WESTINGHOUSE Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 7962D01612 96066285 Continuous 16560 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$62,988  
 Comments  
 1N-2

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014537 Switchgear >5KV ElecDist WESTINGHOUSE Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 7962D01612 96066301 Continuous 16560 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$62,988  
 Comments  
 1N-3

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex	Higher Education	Power Plant	Asset Code 1	335B75UMM9205	
Agency:	University of Massachusetts Medical	Crew ID	IND-8	Date	10/3/00
Equipment ID	Name	System	Manufacturer	Asset Code 2	335UMM9205
				Model Type	Year Installed
0000014538	Switchgear >5KV	ElecDist	WESTINGHOUSE	Electric	1973
Model Number	Serial Number	Duty	Size	UM	Relative Size
7962D01612	94080311	Continuous	16560	KVA	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
EQUIP ROOM			Adequate	5 Yrs	\$62,988
Comments					
1N-4					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014539	Switchgear >5KV	ElecDist	WESTINGHOUSE	Electric	1973
Model Number	Serial Number	Duty	Size	UM	Relative Size
7962D01612	96066310	Continuous	16560	KVA	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
EQUIP ROOM			Adequate	5 Yrs	\$62,988
Comments					
1N-5					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014540	Fire Alarm Panel	FireProDet	SIMPLEX INC.	Electric	1973
Model Number	Serial Number	Duty	Size	UM	Relative Size
4002	A36204	Continuous	51757	SQFT	MEDIUM
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
EQUIP ROOM			Poor	1 Yrs	\$4,176
Comments					
old and problem-ridden					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014541	Pumps/Motors >60HP	HVAC	US ELECTRICAL MOTORS	Electric	2000
Model Number	Serial Number	Duty	Size	UM	Relative Size
S251	D03/99055372-GT-01	Continuous	60	HP	MEDIUM
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
EQUIP ROOM			Excellent	15 Yrs	\$30,624
Comments					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Power Plant Asset Code 1 335B75UMM9205  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/3/00 Asset Code 2 335UMM9205  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014542 Pumps/Motors >60HP HVAC RELIANCE ELECTRIC CO. Electric 2000  
 Model Number Serial Number Duty Size UM Relative Size  
 none 01MAN80001G001CC Continuous 250 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Excellent 15 Yrs \$54,810  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014543 Boiler HVAC BABCOCK & WILCOX Natural Gas 2000  
 Model Number Serial Number Duty Size UM Relative Size  
 {Natl Bd #} 25086 201-3294 Continuous 0 BTU LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Excellent 15 Yrs \$236,640  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014544 Turbine Generator ElecDist ELECTRIC MACHINERY MFG CO Steam 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none 1701946-01 Continuous 3125 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$341,475  
 Comments  
 4160V 435A

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014565 Pumps/Motors >60HP HVAC ALLIS-CHALMERS Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 1-5103-44313-1-2 Continuous 200 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$54,810  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Ex Higher Education**

Agency: **University of Massachusetts Medical**  
Equipment ID Name

**Power Plant**

Crew ID **IND-8** Date  
Manufacturer

Asset Code 1 **335B75UMM9205**

Asset Code 2 **335UMM9205**  
Model Type Year Installed

**0000014566 Pumps/Motors >60HP HVAC ALLIS-CHALMERS Electric 1973**

Model Number Serial Number Duty Size UM Relative Size  
**1-5103-44313-1-1 Continuous 200 HP LARGE**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$54,810**

Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014567 Pumps/Motors >60HP HVAC BALDOR ELECTRIC Electric 1973**

Model Number Serial Number Duty Size UM Relative Size  
**795C-1516 Continuous 100 HP LARGE**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$54,810**

Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014568 Pumps/Motors >60HP HVAC BALDOR ELECTRIC Electric 1973**

Model Number Serial Number Duty Size UM Relative Size  
**695C-787 Continuous 100 HP LARGE**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$54,810**

Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014569 Pumps/Motors >60HP HVAC LINCOLN ELECTRIC CO. Electric 1973**

Model Number Serial Number Duty Size UM Relative Size  
**SF4B60T61Y U3980409430 Intermittent 60 HP MEDIUM**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$30,624**

Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Power Plant

Asset Code 1

**335B75UMM9205**

Agency: **University of Massachusetts Medical**  
Equipment ID Name

Crew ID **IND-8** Date  
Manufacturer

**10/3/00** Asset Code 2 **335UMM9205**  
Model Type Year Installed

**0000014570** **Pumps/Motors >60HP** **System HVAC**

**LINCOLN ELECTRIC CO.**

**Electric** **1973**

Model Number Serial Number Duty  
**SD41360T61Y** **U3970788447** **Intermittent**

Size UM Relative Size  
**60** **HP** **MEDIUM**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$30,624**

Comments

Equipment ID Name System Manufacturer Model Type Year Installed

**0000014571** **Pumps/Motors >60HP** **System HVAC**

**GENERAL ELECTRIC**

**Electric** **1973**

Model Number Serial Number Duty  
**5KS445AS208D** **WN6363037** **Intermittent**

Size UM Relative Size  
**200** **HP** **LARGE**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$54,810**

Comments

Equipment ID Name System Manufacturer Model Type Year Installed

**0000014572** **Pumps/Motors >60HP** **System HVAC**

**GENERAL ELECTRIC**

**Electric** **1973**

Model Number Serial Number Duty  
**5KS445AS208D** **VN6322034** **Intermittent**

Size UM Relative Size  
**200** **HP** **LARGE**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$54,810**

Comments

Equipment ID Name System Manufacturer Model Type Year Installed

**0000014573** **Pumps/Motors >60HP** **System HVAC**

**GENERAL ELECTRIC**

**Electric** **1973**

Model Number Serial Number Duty  
**5KS445AS208D** **WN6363038** **Intermittent**

Size UM Relative Size  
**200** **HP** **LARGE**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$54,810**

Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education Power Plant Asset Code 1 335B75UMM9205  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 10/3/00 Asset Code 2 335UMM9205  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014574 Pumps/Motors >60HP HVAC RELIANCE ELECTRIC CO. Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 1MA299509-G1-BW Intermittent 200 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$54,810  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014575 Turbine Generator ElecDist ELECTRIC MACHINERY MFG CO Steam 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 2701946-01 Standby 3125 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$341,475  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014576 Switchgear >5KV ElecDist GENERAL ELECTRIC Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none none Continuous 6000 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$62,988  
 Comments #1 aux

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014577 Switchgear >5KV ElecDist GENERAL ELECTRIC Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none none Continuous 6000 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$62,988  
 Comments EG-1.....

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Power Plant

Asset Code 1

**335B75UMM9205**

Agency: University of Massachusetts Medical  
Equipment ID Name

Crew ID **IND-8** Date  
Manufacturer

**10/3/00** Asset Code 2 **335UMM9205**  
Model Type Year Installed

**0000014578** **Switchgear >5KV**

Syste  
m  
**ElecDist**

**GENERAL  
ELECTRIC**

**Electric**

**1973**

Model Number Serial Number  
**(rqstn #) 301-92096**  
**(sum #) 0225A1291**

Duty  
**Continuous**

Size  
**6000**

UM  
**KVA**

Relative Size  
**LARGE**

Location1 Location2 Location3

Overall Rating  
**Adequate**

Remaining Life  
**5 Yrs**

Replacement Value  
**\$62,988**

**EQUIP ROOM**

Comments  
**EGTB**

Equipment ID

Name

Syste  
m  
**ElecDist**

Manufacturer  
**GENERAL  
ELECTRIC**

Model Type

Year Installed

**0000014579** **Switchgear >5KV**

**Electric**

**1973**

Model Number Serial Number  
**none none**

Duty  
**Continuous**

Size  
**6000**

UM  
**KVA**

Relative Size  
**LARGE**

Location1 Location2 Location3

Overall Rating  
**Adequate**

Remaining Life  
**5 Yrs**

Replacement Value  
**\$62,988**

**EQUIP ROOM**

Comments  
**EG-2**

Equipment ID

Name

Syste  
m  
**ElecDist**

Manufacturer  
**GENERAL  
ELECTRIC**

Model Type

Year Installed

**0000014580** **Switchgear >5KV**

**Electric**

**1973**

Model Number Serial Number  
**none none**

Duty  
**Continuous**

Size  
**6000**

UM  
**KVA**

Relative Size  
**LARGE**

Location1 Location2 Location3

Overall Rating  
**Adequate**

Remaining Life  
**5 Yrs**

Replacement Value  
**\$62,988**

**EQUIP ROOM**

Comments  
**#2 aux**

Equipment ID

Name

Syste  
m  
**ElecDist**

Manufacturer  
**CATERPILLAR**

Model Type

Year Installed

**0000014581** **Emergency Generator Set**

**Engine Driven**

**1973**

Model Number Serial Number  
**SRCR 450 TH 2088**

Duty  
**Standby**

Size  
**706**

UM  
**KVA**

Relative Size  
**LARGE**

Location1 Location2 Location3

Overall Rating  
**Adequate**

Remaining Life  
**5 Yrs**

Replacement Value  
**\$285,360**

**EQUIP ROOM**

Comments  
**565 KW**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Power Plant

Asset Code 1

**335B75UMM9205**

Agency: **University of Massachusetts Medical**  
Equipment ID Name

Crew ID **IND-8** Date  
Manufacturer

**10/3/00** Asset Code 2 **335UMM9205**  
Model Type Year Installed

**0000014582 Air Compressors**

System  
**HVAC**

**WORTHINGTON  
CORPORATION**

**Motor Driven**

**1973**

Model Number Serial Number  
**L-85947-T**

Duty  
**Intermittent**

Size  
**60**

UM  
**HP**

Relative Size  
**LARGE**

Location1 Location2 Location3

Location3

Overall Rating

Remaining Life

Replacement Value

**EQUIP ROOM**

**Good**

**10 Yrs**

**\$67,512**

Comments

Equipment ID

Name

System  
**HVAC**

Manufacturer

Model Type

Year Installed

**0000014584 Air Compressors**

**WORTHINGTON  
CORPORATION**

**Motor Driven**

**1973**

Model Number Serial Number  
**L-91030**

Duty  
**Intermittent**

Size  
**60**

UM  
**HP**

Relative Size  
**LARGE**

Location1 Location2 Location3

Location3

Overall Rating

Remaining Life

Replacement Value

**EQUIP ROOM**

**Good**

**10 Yrs**

**\$67,512**

Comments

Equipment ID

Name

System  
**HVAC**

Manufacturer

Model Type

Year Installed

**0000014585 Air Compressors**

**WORTHINGTON  
CORPORATION**

**Motor Driven**

**1973**

Model Number Serial Number  
**L-91031**

Duty  
**Intermittent**

Size  
**60**

UM  
**HP**

Relative Size  
**LARGE**

Location1 Location2 Location3

Location3

Overall Rating

Remaining Life

Replacement Value

**EQUIP ROOM**

**Good**

**10 Yrs**

**\$67,512**

Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex **Higher Education**

**Power Plant**

Asset Code 1 **335B75UMM9205**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8** Date

**10/3/00** Asset Code 2 **335UMM9205**

Asset Replacement Value  
**\$20,702,800**

Equipment Replacement Value  
**\$7,887,898**

DemolitionCost(if Surplus Property)  
**\$0**

System ACT Replacement  
Cost  
**\$3,320**

System Deficiency Repair  
Cost  
**\$0**

Equipment Replacement Cost  
Fail Or Poor Only  
**\$4,176**

ADA Compliance Cost  
**\$0**

LSC Compliance Cost  
**\$0**

Total Capital Project And Repair Cost  
**\$7,496**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

School

Asset Code 1

335B75UMM9206

Agency: University of Massachusetts Medical

Crew ID IND-8

Date

9/29/00

Asset Code 2

335UMM9206

**> Facility Address**

Address1

55 North Lake Ave.

Address2

419 Belmont Street

Address3

City

Worcester

ZipCode

01655-0001

**> Facility Contact Information**

Name

Telephone

Fax Number

EMail

Bill Smith, Director Desktop Services

(508) 856-6759

(508) 856-2440

bill.smith@umassmed.edu

James W. Aqilino, Facilities Manager

Ron White, Director of Facilities

Tim Fitzpatric, Director of Operation  
for Facility Management

(508) 856-5606

(508) 856-2440

t.fitzpatrick@umassmed.edu

**> Asset Address**

Asset Name

School

Alias Name

Address

55 North Lake Avenue

Municipality

Worcester

County

Worcester

House District

14th Worcester

Senate District

1st Worcester

Type

Classroom/College

Property Status

IN USE

Floors

9

YearConstructed

1974

Construction Type

Precast Conc-Conc Shr  
Walls

OriginalCost

\$35,108,607

Basement

Y

Basement

Confidence

Code

Obtained at site

GSF

855,268

NS

726,978

PictureFile

335B75UMM9206.jpg

**> Asset Real Estate Data**

Year Acquired

1967

Purchase Price

\$0

Replacement Value

\$174,628,620

Assessed Value

Assessed Year-Current

Map No

57

Block No

4

Lot No

D

Historic Building

Latitude

421640

Longitude

714546

AssessedVal

Assessed Year-Actual

**> Construction**

**> Addition**

**> Renovation**

>

Type

On File

Current

Elevator

**> Occupants**

Occupant(s) Name

University of Massachusetts Medical Center

Percent Occupied

100%

Comments

**> Hazardous Material Presence (in Environment)**

**> Hazardous Material Tracking (Stored Fuels and Chemicals)**

**> Wetlands Delineation**

**> LSC Compliance**

**> ADA Compliance**

Mass Division of Capital Asset  
Parsons Brinckerhoff

Inspector Initials

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Printed

335B75UMM9206

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility **UMM00**

Ex Higher Education

School

Asset Code 1 **335B75UMM9206**

Agency: **University of Massachusetts Medical**  
Violation

Crew ID **IND-8** Date **9/29/00**  
Action/Comment

Asset Code 2 **335UMM9206**

**Controls and operating mechanisms heights improper**

**Counter heights improper**

**Door hardware improper**

**Drinking fountains, None or improper**

**Elevator access, None or improper**

**Grab bars, None or improper**

**Sinks, None or improper**

**Signage, None or improper**

**Stairways improper**

**Toilet facilities, None or improper**

EntranceRampCost	Elevator Cost	Toilets Cost	All Other ADA Cost	Total
	\$1,305,000	\$4,464,499	\$3,720,416	\$9,489,915

**> Inspection &**

Syste <b>EXTR</b>	Assembly Comp Type <b>Windows/Glazed Wall - Inst. - Aluminum/Insulated</b>	Quantit UM 6000 SQFT	Priority <b>Within 1 Year</b>	Weight <b>Improvement to the Use</b>
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Year Installed	Location1 <b>Asset Wide</b>	Location2	Location3
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Overall <b>Poor</b>	Replace per Inspector	Code	No Comments Water penetration in rainy season
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Replace System ACT <b>\$132,452</b>	Repair System ACT <b>\$132,452</b>	Replace or Repair (Factored Cost Comparison) <b>Replace</b>	Capital Project
--	---------------------------------------	--	-----------------

**Certificates**

**Water Penetration**

Deficiency:  
**EXTR**

System Assembly Comp Type  
**Windows/Glazed Wall - Inst. -  
Aluminum/Insulated**

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair <b>6000</b>	Deficiency Repair Cost <b>\$132,452</b>
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**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 System Assembly Comp Type Quantit UM Priority Weight  
**INTR Ceiling - Acoustic Tile 940 SQFT Within 2 Years Required to Improve Appearance**

Year Installed Location1 Office Location2 CORRIDOR Location3 COLD STORAGE

Overall Replace per Inspector No Comments  
**Poor**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$4,449 \$4,448 Replace**

Deficiency: System Assembly Comp Type  
**Water Penetration INTR Ceiling - Acoustic Tile - Suspended**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**470 \$2,224**

Deficiency: System Assembly Comp Type  
**Broken/Missing INTR Ceiling - Acoustic Tile - Suspended**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**470 \$2,224**

Syste Assembly Comp Type Quantit UM Priority Weight  
**> Summary > Equipment> Wastewater> Cost Information INTR Good Convey Good**  
 Foundation/Footings Adequate Overall Rating Fair Mechanical Good Substructure Comments  
**Ceiling - Concrete - Good Electrical Adequate Superstructure 920SQFT Fair Exterior**  
**Adequate Specialty Within 1 Year Adequate Equipment Adequate Prevent Accelerated**  
**Deterioration Adequate Interior Construction Good SiteWork Exposed Structure**

Year Installed Location1 Basement Location2 MECHANICAL ROOM Location3 STAIRWELL

Overall Replace per Inspector No Comments  
**Poor**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$8,596 \$6,656 Repair**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Deficiencies**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Deficiency: Water Penetration System INTR Assembly Comp Type Ceiling - Concrete - Exposed Structure

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 230 \$1,505

Deficiency: Cracking, Crumbling System INTR Assembly Comp Type Ceiling - Concrete - Exposed Structure

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 690 \$5,151

Syste Assembly Comp Type Quantit UM Priority Weight  
 INTR Walls - Partitions - Concrete Masonry Unit 3000 SQFT Within 1 Year Prevent Accelerated Deterioration

Year Installed Location1 Stairwell Location2 LABORATORY Location3

Overall Replace per Inspector No Comments  
**Poor**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
 \$76,838 \$28,814 Repair

Deficiency: Vertical Cracks System INTR Assembly Comp Type Walls - Partitions - Concrete Masonry Unit

5% 10% 15% 25% 50% 75% Fail Comments  
 Cracks on joints in precast concrete blocks

Replace Repair Deficiency Repair Cost  
 750 \$11,523

Deficiency: Horizontal Cracks System INTR Assembly Comp Type Walls - Partitions - Concrete Masonry Unit

5% 10% 15% 25% 50% 75% Fail Comments  
 Cracks on joints in precast concrete blocks

Replace Repair Deficiency Repair Cost  
 750 \$11,523

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Information**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Deficiency: Deteriorated Paint Finish System INTR Assembly Comp Type Walls - Partitions - Concrete Masonry Unit

5% 10% 15% 25% 50% 75% Fail Comments  
 In stairwell

Replace Repair Deficiency Repair Cost  
 1500 \$5,768

Syste Assembly Comp Type Quantit UM Priority Weight  
**INTR Walls - Partitions - Gypsum Board 100 SQFT Within 1 Year Prevent Accelerated Deterioration**

Year Installed Location1 Location2 Location3  
**Office**

Overall Replace per Inspector No Comments  
**Fair**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$130 \$78 Repair**

Deficiency: Diagonal Cracks System INTR Assembly Comp Type Walls - Partitions - Gypsum Board

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 100 \$78

Syste Assembly Comp Type Quantit UM Priority Weight  
**MECH Ventilation - Air Handler - Air Handler 31 EACH Within 2 Years Improve Operational Efficiency**

Year Installed Location1 Location2 Location3  
**Asset Wide**

Overall Replace per Inspector No Comments  
**Poor** Rusted out bottoms, leaking coils, and broken/corroded fins.

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$1,084,065 \$813,048 Repair**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

School

Asset Code 1 335B75UMM9206

Agency: University of Massachusetts Medical

Crew ID IND-8

Date

9/29/00

Asset Code 2 335UMM9206

Deficiency:  
Coil Leakage

System  
MECH

Assembly Comp Type  
Ventilation - Air Handler - Air  
Handler

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair	Deficiency Repair Cost
	23	\$325,219

Deficiency:  
Coil Corrosion

System  
MECH

Assembly Comp Type  
Ventilation - Air Handler - Air  
Handler

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair	Deficiency Repair Cost
	23	\$487,829

Syste <b>SUPST</b>	Assembly Comp Type <b>Floors - CIP Concrete - Slab</b>	Quantit UM 1470 SQFT	Priority <b>Within 2 Years</b>	Weight <b>Prevent Accelerated Deterioration</b>
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Year Installed	Location1 <b>Floor</b>	Location2	Location3
----------------	---------------------------	-----------	-----------

Overall <b>Poor</b>	Replace per Inspector	No	Comments
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Replace System ACT <b>\$14,810</b>	Repair System ACT <b>\$5,934</b>	Replace or Repair (Factored Cost Comparison) <b>Repair</b>	Capital Project
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Deficiency:  
Diagonal Cracks

System  
SUPST

Assembly Comp Type  
Floors - CIP Concrete - Slab

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair	Deficiency Repair Cost
	1470	\$5,934

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 System Assembly Comp Type Quantit UM Priority Weight  
**SUPST Roof - Concrete - CIP 500 SQFT Within 1 Year Prevent Accelerated Deterioration**  
 Year Installed Location1 Location2 Location3  
**Roof**  
 Overall Replace per Inspector No Comments  
**Poor**  
 Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$4,837 \$1,931 Repair**

Deficiency: Diagonal Cracks System SUPST Assembly Comp Type Roof - Concrete - CIP Concrete

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 500 \$1,931

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014150 Switchgear >5KV ElecDist ITE Electric 1971**  
 Model Number Serial Number Duty Size UM Relative Size  
**219-251 X-4190 Continuous 8280 KVA LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BASEMENT Adequate 5 Yrs \$62,988**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014151 Switchgear >5KV ElecDist ITE Electric 1971**  
 Model Number Serial Number Duty Size UM Relative Size  
**219-251 X-4191 Continuous 8280 KVA LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BASEMENT Adequate 5 Yrs \$62,988**  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex	Higher Education	School	Asset Code 1	335B75UMM9206	
Agency: University of Massachusetts Medical		Crew ID	IND-8	Date	9/29/00
Equipment ID	Name	System	Manufacturer	Asset Code 2	335UMM9206
0000014152	Switchgear >5KV	ElecDist	ITE	Model Type	Year Installed
				Electric	1971
Model Number	Serial Number	Duty	Size	UM	Relative Size
219-251	X-4194	Continuous	8280	KVA	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>
Comments					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014153	Switchgear >5KV	ElecDist	ITE	Electric	1971
Model Number	Serial Number	Duty	Size	UM	Relative Size
219-251	X-4195	Continuous	8280	KVA	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>
Comments					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014154	Switchgear >5KV	ElecDist	ITE	Electric	1971
Model Number	Serial Number	Duty	Size	UM	Relative Size
219-251	X-4202	Continuous	8280	KVA	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>
Comments					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014155	Switchgear >5KV	ElecDist	ITE	Electric	1971
Model Number	Serial Number	Duty	Size	UM	Relative Size
219-251	X-4203	Continuous	8280	KVA	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>
Comments					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex	<b>Higher Education</b>		<b>School</b>		Asset Code 1	<b>335B75UMM9206</b>
Agency:	<b>University of Massachusetts Medical</b>		Crew ID	<b>IND-8</b>	Date	<b>9/29/00</b>
Equipment ID	Name	System	Manufacturer	Asset Code 2	Model Type	Year Installed
<b>0000014156</b>	<b>Switchgear &gt;5KV</b>	<b>ElecDist</b>	<b>ITE</b>	<b>Electric</b>		<b>1971</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size	
<b>219-251</b>	<b>X-4206</b>	<b>Continuous</b>	<b>8028</b>	<b>KVA</b>	<b>LARGE</b>	
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value	
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>	
Comments						

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014157</b>	<b>Switchgear &gt;5KV</b>	<b>ElecDist</b>	<b>ITE</b>	<b>Electric</b>	<b>1971</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
<b>219-251</b>	<b>X-4207</b>	<b>Continuous</b>	<b>8280</b>	<b>KVA</b>	<b>LARGE</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>
Comments					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014158</b>	<b>Switchgear &gt;5KV</b>	<b>ElecDist</b>	<b>ITE</b>	<b>Electric</b>	<b>1971</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
<b>219-251</b>	<b>X-4183</b>	<b>Continuous</b>	<b>4183</b>	<b>KVA</b>	<b>MEDIUM</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$45,936</b>
Comments					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014159</b>	<b>Switchgear &gt;5KV</b>	<b>ElecDist</b>	<b>ITE</b>	<b>Electric</b>	<b>1971</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
<b>219-251</b>	<b>X-4182</b>	<b>Continuous</b>	<b>8280</b>	<b>KVA</b>	<b>LARGE</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>
Comments					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex	<b>Higher Education</b>		<b>School</b>		Asset Code 1	<b>335B75UMM9206</b>
Agency:	<b>University of Massachusetts Medical</b>		Crew ID	<b>IND-8</b>	Date	<b>9/29/00</b>
Equipment ID	Name	System	Manufacturer	Asset Code 2	Model Type	Year Installed
<b>0000014160</b>	<b>Switchgear &gt;5KV</b>	<b>ElecDist</b>	<b>ITE</b>	<b>Electric</b>		<b>1971</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size	
<b>219-251</b>	<b>X-4179</b>	<b>Continuous</b>	<b>8280</b>	<b>KVA</b>	<b>LARGE</b>	
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value	
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>	
Comments						

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014161</b>	<b>Switchgear &gt;5KV</b>	<b>ElecDist</b>	<b>ITE</b>	<b>Electric</b>	<b>1971</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
<b>219-251</b>	<b>X-4178</b>	<b>Continuous</b>	<b>8280</b>	<b>KVA</b>	<b>LARGE</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>
Comments					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014162</b>	<b>Switchgear &gt;5KV</b>	<b>ElecDist</b>	<b>LITE</b>	<b>Electric</b>	<b>1971</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
<b>219-251</b>	<b>X-4196</b>	<b>Continuous</b>	<b>8280</b>	<b>KVA</b>	<b>LARGE</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>
Comments					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014163</b>	<b>Switchgear &gt;5KV</b>	<b>ElecDist</b>	<b>ITE</b>	<b>Electric</b>	<b>1971</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
<b>219-251</b>	<b>X-4197</b>	<b>Continuous</b>	<b>8280</b>	<b>KVA</b>	<b>LARGE</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>
Comments					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex	Higher Education	School	Asset Code 1	335B75UMM9206	
Agency:	University of Massachusetts Medical		Crew ID	IND-8	Date
Equipment ID	Name	System	9/29/00	Asset Code 2	335UMM9206
			Manufacturer	Model Type	Year Installed
<b>0000014164</b>	<b>Switchgear &gt;5KV</b>	<b>ElecDist</b>	<b>ITE</b>	<b>Electric</b>	<b>1971</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
<b>219-251</b>	<b>X-4200</b>	<b>Continuous</b>	<b>8280</b>	<b>KVA</b>	<b>LARGE</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>
Comments					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014165</b>	<b>Switchgear &gt;5KV</b>	<b>ElecDist</b>	<b>ITE</b>	<b>Electric</b>	<b>1971</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
<b>219-251</b>	<b>X-4201</b>	<b>Continuous</b>	<b>8280</b>	<b>KVA</b>	<b>LARGE</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>
Comments					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014166</b>	<b>Switchgear &gt;5KV</b>	<b>ElecDist</b>	<b>ITE</b>	<b>Electric</b>	<b>1971</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
<b>219-251</b>	<b>X-4184</b>	<b>Continuous</b>	<b>8280</b>	<b>KVA</b>	<b>LARGE</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>
Comments					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014167</b>	<b>Switchgear &gt;5KV</b>	<b>ElecDist</b>	<b>ITE</b>	<b>Electric</b>	<b>1971</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
<b>219-251</b>	<b>X-4185</b>	<b>Continuous</b>	<b>8280</b>	<b>KVA</b>	<b>LARGE</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>
Comments					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014168 Switchgear >5KV ElecDist ITE Electric 1971**  
 Model Number Serial Number Duty Size UM Relative Size  
**219-251 X-4188 Continuous 8280 KVA LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BASEMENT Adequate 5 Yrs \$62,988**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014169 Switchgear >5KV ElecDist ITE Electric 1971**  
 Model Number Serial Number Duty Size UM Relative Size  
**219-251 X-4189 Continuous 8280 KVA LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BASEMENT Adequate 5 Yrs \$62,988**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014170 Main Sprinkler Valve FireProDet ANNISTON N/A 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**none none Standby 8 INCHES LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$11,440**  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014171 Main Back Flow Preventer FireProDet AMES COMPANY N/A 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**2000 SS 2JK1764 Standby 8 INCHES LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$8,439**  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014172 Bldg Supply Wtr Htr / Exchngr DomWater PATTERSON-KELLE Y CO. Steam 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 400 214268 Intermittent 73 GALLONS SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$14,529  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014173 Bldg Supply Wtr Htr / Exchngr DomWater PATTERSON-KELLE Y CO. Steam 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 400 214269 Intermittent 73 GALLONS SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIPMENT Adequate 5 Yrs \$14,529  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014174 Bldg Supply Wtr Htr / Exchngr DomWater PATTERSON-KELLE Y CO. Steam 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 400 214265 Intermittent 45 GALLONS SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$14,529  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014175 Bldg Supply Wtr Htr / Exchngr DomWater PATTERSON-KELLE Y CO. Steam 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 400 214264 Intermittent 45 GALLONS SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$14,529  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014176 Bldg Supply Wtr Htr / Exchngr DomWater PATTERSON-KELLE Y CO. Steam 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 400 214270 Intermittent 73 GALLONS SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$14,529  
 Comments

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 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014177 Bldg Supply Wtr Htr / Exchngr DomWater PATTERSON-KELLE Y CO. Steam 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 400 214267 Intermittent 73 GALLONS SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$14,529  
 Comments

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014178 Bldg Supply Wtr Htr / Exchngr DomWater PATTERSON-KELLE Y CO. Steam 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 400 214266 Intermittent 45 GALLONS SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$14,529  
 Comments

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 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014179 Bldg Supply Wtr Htr / Exchngr DomWater PATTERSON-KELLE Y CO. Steam 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 400 214263 Intermittent 45 GALLONS SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$14,529  
 Comments.....  
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**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014180 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 54455 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 HV-5

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014181 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1998  
 Model Number Serial Number Duty Size UM Relative Size  
 none none Continuous 0 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Excellent 15 Yrs \$80,736  
 Comments  
 RDU1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014182 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none none Continuous 75 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-28

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014183 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none none Continuous 75 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-27

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014184 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none none Continuous 50 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-26

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014185 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 47000 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 HV-4

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014186 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 17800 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 HV-6

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014187 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 50 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-29

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014188 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 20000 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 RF-30

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014189 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 50 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-30

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014190 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 160 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-31

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014191 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none none Continuous 67265 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 S-1

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014192 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none none Continuous 68000 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF-36

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014193 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none none Continuous 7440 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 EF-35

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014194 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 BL none Continuous 29195 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 RF-29

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014195 Elevator/Escalator Conveying HAUGHTON Electrical Passenger Elevator 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none none Intermittent 0 STORIES MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$331,035  
 Comments.....

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex	Higher Education		School	Asset Code 1	335B75UMM9206
Agency:	University of Massachusetts Medical		Crew ID	IND-8	Date
Equipment ID	Name	System	Manufacturer	9/29/00	Asset Code 2
0000014196	Switchgear >5KV	ElecDist	ITE	Electric	335UMM9206
Model Number	Serial Number	Duty	Size	UM	Year Installed
219-251	X-4172	Continuous	8280	KVA	1971
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>
Comments					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014197	Switchgear >5KV	ElecDist	ITE	Electric	1971
Model Number	Serial Number	Duty	Size	UM	Relative Size
219-251	X-4173	Continuous	8280	KVA	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>
Comments					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014198	Switchgear >5KV	ElecDist	DAYTON	Electric	1971
Model Number	Serial Number	Duty	Size	UM	Relative Size
219-251	X-4176	Continuous	8280	KVA	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>
Comments					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014199	Switchgear >5KV	ElecDist	ITE	Electric	1973
Model Number	Serial Number	Duty	Size	UM	Relative Size
219-251	X-4177	Continuous	8280	KVA	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>BASEMENT</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$62,988</b>
Comments					

# ASSET SURVEY DATA REPORT

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014200 Pumps/Motors >60HP HVAC RELIANCE ELECTRIC CO. Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none P40G0297C G6 MQ Continuous 100 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$54,810  
 Comments  
 AC 7

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014201 Pumps/Motors >60HP HVAC LINCOLN ELECTRIC CO. Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 SD4B502466 U3980502466 Continuous 50 HP MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$30,624  
 Comments  
 AC 6

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014202 Pumps/Motors >60HP HVAC BALDOR ELECTRIC Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none 14G11W312 Continuous 75 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$54,810  
 Comments  
 AC 5

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014203 Pumps/Motors >60HP HVAC RELIANCE ELECTRIC CO. Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none P40G0297C G7 NQ Continuous 100 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$54,810  
 Comments  
 AC 4

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

School

Asset Code 1

**335B75UMM9206**

Agency: **University of Massachusetts Medical**  
Equipment ID Name System

Crew ID **IND-8** Date **9/29/00**  
Manufacturer

Asset Code 2 **335UMM9206**  
Model Type Year Installed

**0000014204 Pumps/Motors >60HP HVAC**

**RELIANCE  
ELECTRIC CO.**

**Electric 1973**

Model Number Serial Number Duty Size  
**none P40G0297C G1 XQ Continuous 100**

UM Relative Size  
**HP LARGE**

Location1 Location2 Location3 Overall Rating

**Good** Remaining Life Replacement Value  
**10 Yrs \$54,810**

**EQUIP ROOM**

Comments  
**AC 3**

Equipment ID Name System  
**0000014205 Pumps/Motors >60HP HVAC**

Manufacturer  
**RELIANCE  
ELECTRIC CO.**

Model Type Year Installed  
**Electric 1973**

Model Number Serial Number Duty Size  
**none P40G0297C G2 NQ Continuous 100**

UM Relative Size  
**HP LARGE**

Location1 Location2 Location3 Overall Rating

**Good** Remaining Life Replacement Value  
**10 Yrs \$54,810**

**EQUIP ROOM**

Comments  
**AC 2**

Equipment ID Name System  
**0000014206 Pumps/Motors >60HP HVAC**

Manufacturer  
**LINCOLN  
ELECTRIC CO.**

Model Type Year Installed  
**Electric 1973**

Model Number Serial Number Duty Size  
**SD4B50T61Y U3980502467 Continuous 50**

UM Relative Size  
**HP MEDIUM**

Location1 Location2 Location3 Overall Rating

**Good** Remaining Life Replacement Value  
**10 Yrs \$30,624**

**EQUIP ROOM**

Comments  
**AC 1**

Equipment ID Name System  
**0000014207 Pumps/Motors >60HP HVAC**

Manufacturer  
**LINCOLN  
ELECTRIC CO.**

Model Type Year Installed  
**Electric 1973**

Model Number Serial Number Duty Size  
**none 750510 Continuous 60**

UM Relative Size  
**HP MEDIUM**

Location1 Location2 Location3 Overall Rating

**Adequate** Remaining Life Replacement Value  
**5 Yrs \$30,624**

**EQUIP ROOM**

Comments  
**AC 8**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 **335B75UMM9206**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9206**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014208** **Pumps/Motors >60HP** **HVAC** **MAGNETEK, INC.** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**cat # E716 part # none** **Continuous** **60** **HP** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$30,624**  
 Comments  
**AC 9**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014209** **Pumps/Motors >60HP** **HVAC** **LINCOLN ELECTRIC CO.** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**SD4B60T61Y** **U3971000169** **Continuous** **60** **HP** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$30,624**  
 Comments  
**AC 10**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014210** **Pumps/Motors >60HP** **HVAC** **LINCOLN ELECTRIC CO.** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**SD4B50T61Y** **U3980309968** **Continuous** **50** **HP** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$30,624**  
 Comments  
**AC 11**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014211** **Pumps/Motors >60HP** **HVAC** **MAGNETEK, INC.** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**cat # E716 part # none** **Continuous** **60** **HP** **MEDIUM**  
**6-3**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$30,624**  
 Comments  
**AC 12**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 **335B75UMM9206**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9206**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014212** **Pumps/Motors >60HP** **HVAC** **LINCOLN ELECTRIC CO.** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**SD4B60T61Y** **U3970740663** **Continuous** **60** **HP** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$30,624**  
 Comments  
**AC 13**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014213** **Pumps/Motors >60HP** **HVAC** **LINCOLN ELECTRIC CO.** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**SD4B60T61Y** **U3971000168** **Continuous** **60** **HP** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$30,624**  
 Comments  
**AC 14**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014214** **Pumps/Motors >60HP** **HVAC** **BALDOR ELECTRIC** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**spec # 14G11W312** **none** **Continuous** **75** **HP** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$54,810**  
 Comments  
**AC 15**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014215** **Pumps/Motors >60HP** **HVAC** **LINCOLN ELECTRIC CO.** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**SD4B40T61Y** **U3980409376** **Continuous** **40** **HP** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$30,624**  
 Comments  
**AC 16**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 **335B75UMM9206**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9206**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014216** **Pumps/Motors >60HP** **HVAC** **LINCOLN ELECTRIC CO.** **Electric** **1973**

Model Number Serial Number Duty Size UM Relative Size  
**none** **827978** **Continuous** **50** **HP** **MEDIUM**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$30,624**

Comments  
**AC 17**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014217** **Pumps/Motors >60HP** **HVAC** **BALDOR ELECTRIC** **Electric** **1973**

Model Number Serial Number Duty Size UM Relative Size  
**spec # 14G11W312** **none** **Continuous** **75** **HP** **LARGE**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$54,810**

Comments  
**AC 18**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014218** **Pumps/Motors >60HP** **HVAC** **MAGNETEK, INC.** **Electric** **1973**

Model Number Serial Number Duty Size UM Relative Size  
**cat # E716 part # none** **6-** **Continuous** **60** **HP** **MEDIUM**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$30,624**

Comments  
**AC 20**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014219** **Pumps/Motors >60HP** **HVAC** **LINCOLN ELECTRIC CO.** **Electric** **1973**

Model Number Serial Number Duty Size UM Relative Size  
**SD4B60T61Y** **U3971000166** **Continuous** **60** **HP** **MEDIUM**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$30,624**

Comments  
**AC 21**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014220 Pumps/Motors >60HP HVAC US ELECTRICAL MOTORS Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 82298 X09X112R136R-14 Continuous 40 HP MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$30,624  
 Comments  
 HV 5

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014221 Pumps/Motors >60HP HVAC GENERAL ELECTRIC Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 5KS364AS205D22 TNG265224 Continuous 60 HP MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$30,624  
 Comments  
 AC 28

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014222 Pumps/Motors >60HP HVAC GENERAL ELECTRIC Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 5KS364AS205D22 RNG154226 Continuous 60 HP MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$30,624  
 Comments  
 AC 27

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014223 Pumps/Motors >60HP HVAC UNKNOWN Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 60 HP MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Fair 3 Yrs \$30,624  
 Comments  
 AC 26 data plate rusty

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 **335B75UMM9206**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9206**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014224** **Pumps/Motors >60HP** **HVAC** **LINCOLN ELECTRIC CO.** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**SD4B30T61Y** **U3980409749** **Continuous** **30** **HP** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$30,624**  
 Comments  
**HV 4**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014225** **Pumps/Motors >60HP** **HVAC** **LINCOLN ELECTRIC CO.** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**SD4B40T61Y** **U3980502346** **Continuous** **40** **HP** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$30,624**  
 Comments  
**AC 30**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014226** **Pumps/Motors >60HP** **HVAC** **GENERAL ELECTRIC** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**5KS404AS205B** **RNG164023** **Continuous** **100** **HP** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$54,810**  
 Comments  
**AC 31**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014227** **Pumps/Motors >60HP** **HVAC** **LINCOLN ELECTRIC CO.** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**SD4B30T61Y** **U3980502856** **Continuous** **30** **HP** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$30,624**  
 Comments  
**SF 1**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014228 Pumps/Motors >60HP HVAC LINCOLN ELECTRIC CO. Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 SD4B40T61Y U3980409377 Continuous 40 HP MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$30,624  
 Comments  
 EF 36

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014229 Walk-in Refrigeration Units Specialty UNKNOWN Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none none Intermittent 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Adequate 5 Yrs \$26,448  
 Comments  
 S7-731

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014230 Walk-in Refrigeration Units Specialty UNKNOWN Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Adequate 5 Yrs \$26,448  
 Comments  
 7S-728

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014231 Roof A/H Units HVAC BUFFALO FORGE CO. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 120 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-7

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014232 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**J none Continuous 60 TONS LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Poor 1 Yrs \$484,590**  
 Comments  
**AC-6**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014233 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**J none Continuous 85 TONS LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Poor 1 Yrs \$484,590**  
 Comments  
**AC-5**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014234 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**J none Continuous 135 TONS LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Poor 1 Yrs \$484,590**  
 Comments  
**AC-4**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014235 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**J none Continuous 145 TONS LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Poor 1 Yrs \$484,590**  
 Comments  
**AC-3. AC-3. AC-3**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014236 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 105 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-2

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014237 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 65 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014238 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 BL none Continuous 95 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-8

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014239 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 90 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-9

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 **335B75UMM9206**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9206**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014240** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**J** **none** **Continuous** **75** **TONS** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Poor** **1 Yrs** **\$484,590**  
 Comments  
**AC-10**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014241** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**J** **none** **Continuous** **65** **TONS** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Poor** **1 Yrs** **\$484,590**  
 Comments  
**AC-11**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014242** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**BL** **none** **Continuous** **80** **TONS** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Poor** **1 Yrs** **\$484,590**  
 Comments  
**AC-12**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014243** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**J** **none** **Continuous** **70** **TONS** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Poor** **1 Yrs** **\$484,590**  
 Comments  
**AC-13**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014244 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 80 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-14

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014245 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 90 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-15

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014246 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 50 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-16

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014247 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 70 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-17

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014248 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 90 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-18

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014249 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 85 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-19

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014250 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 80 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-20

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014251 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 70 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-21

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014252 Air Compressors HVAC QUINCY COMPRESSOR Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**350 none Intermittent 10 HP LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$67,512**  
 Comments  
**Compressed air for all labs throughout bldg.**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014253 Air Compressors HVAC QUINCY COMPRESSOR Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**350 6064655 Intermittent 10 HP LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$67,512**  
 Comments  
**Compressed air for all labs throughout bldg.**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014254 Air Compressors HVAC QUINCY COMPRESSOR Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**350-A 6166137 Intermittent 10 HP LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Good 10 Yrs \$67,512**  
 Comments  
**Compressed air for all labs throughout bldg.**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014255 Roof A/H Units HVAC BUFFALO FORGE CO. Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**J none Continuous 35 TONS LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Poor 1 Yrs \$484,590**  
 Comments  
**AC-22**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014256 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J none Continuous 30 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AC-23

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014257 Roof A/H Units HVAC UNKNOWN Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 37940 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$80,736  
 Comments  
 RF-7

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014258 Roof A/H Units HVAC UNKNOWN Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 14980 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$80,736  
 Comments  
 RF-3

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014259 Roof A/H Units HVAC UNKNOWN Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 14115 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$80,736  
 Comments  
 RF-2

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014260 Roof A/H Units HVAC UNKNOWN Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 26860 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$80,736  
 Comments  
 RF-1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014261 Roof A/H Units HVAC UNKNOWN Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 18930 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 RF-6

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014262 Roof A/H Units HVAC UNKNOWN Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 29835 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 RF-4

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014263 Roof A/H Units HVAC UNKNOWN Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 38000 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 RF-1A

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014264 Roof A/H Units HVAC UNKNOWN Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous 0 CFM MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$80,736**  
 Comments  
**RF-9**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014265 Roof A/H Units HVAC UNKNOWN Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous 38665 CFM MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$80,736**  
 Comments  
**RF-10**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014266 Roof A/H Units HVAC UNKNOWN Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous 11475 CFM MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$80,736**  
 Comments  
**RF-12**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014269 Fire Alarm Panel FireProDet SIMPLEX INC. Electric 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**4190 -8101 118387 CQW Continuous 855268 SQFT LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**CONTROL ROOM Good 10 Yrs \$5,698**  
 Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014270 Walk-in Refrigeration Units Specialty UNKNOWN Electric 1975  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Adequate 5 Yrs \$26,448  
 Comments  
 S2-230

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014271 Walk-in Refrigeration Units Specialty UNKNOWN Electric 1975  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Adequate 5 Yrs \$26,448  
 Comments  
 S2-232

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014272 Walk-in Refrigeration Units Specialty UNKNOWN Electric 1975  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Excellent 15 Yrs \$26,448  
 Comments  
 S3-242

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014273 Walk-in Refrigeration Units Specialty UNKNOWN Electric 1975  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 100 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Adequate 5 Yrs \$26,448  
 Comments  
 S3-126

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014274 Walk-in Refrigeration Specialty UNKNOWN Electric 1975  
 Model Number Serial Number Duty Intermittent Size 100 UM SQFT Relative Size MEDIUM  
 Location1 Location2 Location3 Overall Rating Adequate Remaining Life 5 Yrs Replacement Value \$26,448  
 ROOM  
 Comments S3-308C

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014275 Walk-in Refrigeration Specialty UNKNOWN Electric 1975  
 Model Number Serial Number Duty Intermittent Size 100 UM SQFT Relative Size MEDIUM  
 Location1 Location2 Location3 Overall Rating Adequate Remaining Life 5 Yrs Replacement Value \$26,448  
 ROOM  
 Comments S3-315

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014276 Roof A/H Units HVAC UNKNOWN Motor Driven 1973  
 Model Number Serial Number Duty Continuous Size 16485 UM CFM Relative Size MEDIUM  
 Location1 Location2 Location3 Overall Rating Adequate Remaining Life 5 Yrs Replacement Value \$80,736  
 EQUIP ROOM  
 Comments RF-16

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014277 Roof A/H Units HVAC UNKNOWN Motor Driven 1973  
 Model Number Serial Number Duty Continuous Size 20490 UM CFM Relative Size MEDIUM  
 Location1 Location2 Location3 Overall Rating Adequate Remaining Life 5 Yrs Replacement Value \$80,736  
 EQUIP ROOM  
 Comments RF-17

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014278 Roof A/H Units HVAC UNKNOWN Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous 16260 CFM MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$80,736**  
 Comments  
**RF-15**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014279 Roof A/H Units HVAC UNKNOWN Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous 13300 CFM MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$80,736**  
 Comments  
**RF-13**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014280 Roof A/H Units HVAC UNKNOWN Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous 11680 CFM MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$80,736**  
 Comments  
**RF-18**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014281 Roof A/H Units HVAC UNKNOWN Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous 17815 CFM MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$80,736**  
 Comments  
**RF-19**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

School

Asset Code 1

**335B75UMM9206**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8** Date **9/29/00**  
Manufacturer

Asset Code 2 **335UMM9206**  
Model Type **Year Installed**

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014282</b>	<b>Roof A/H Units</b>	<b>HVAC</b>	<b>UNKNOWN</b>	<b>Motor Driven</b>	<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
		<b>Continuous</b>	<b>22815</b>	<b>CFM</b>	<b>MEDIUM</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$80,736</b>
Comments <b>RF-20</b>					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014283</b>	<b>Roof A/H Units</b>	<b>HVAC</b>	<b>UNKNOWN</b>	<b>Motor Driven</b>	<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
		<b>Continuous</b>	<b>26000</b>	<b>CFM</b>	<b>MEDIUM</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$80,736</b>
Comments <b>RF-3A</b>					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014284</b>	<b>Roof A/H Units</b>	<b>HVAC</b>	<b>UNKNOWN</b>	<b>Motor Driven</b>	<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
		<b>Continuous</b>	<b>26100</b>	<b>CFM</b>	<b>MEDIUM</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$80,736</b>
Comments <b>RF-22</b>					

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014285</b>	<b>Roof A/H Units</b>	<b>HVAC</b>	<b>UNKNOWN</b>	<b>Motor Driven</b>	<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
		<b>Continuous</b>	<b>20630</b>	<b>CFM</b>	<b>MEDIUM</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$80,736</b>
Comments <b>RF-23</b>					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014290 Walk-in Refrigeration Specialty UNKNOWN Electric 1975  
 Units  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 54 SQFT SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Adequate 5 Yrs \$15,225  
 Comments  
 S7-307

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014291 Walk-in Refrigeration Specialty UNKNOWN Electric 1975  
 Units  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 88 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$26,448  
 Comments  
 S7-230A

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014292 Walk-in Refrigeration Specialty UNKNOWN Electric 1975  
 Units  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 80 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Adequate 5 Yrs \$26,448  
 Comments  
 S7-230

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014293 Walk-in Refrigeration Specialty UNKNOWN Electric 1975  
 Units  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 80 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Adequate 5 Yrs \$26,448  
 Comments  
 S7-126

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 **335B75UMM9206**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9206**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014294** **Walk-in Refrigeration Units** **Specialty** **UNKNOWN** **Electric** **1975**  
 Model Number Serial Number Duty Size UM Relative Size  
**Intermittent** **24** **SQFT** **SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM** **Good** **10 Yrs** **\$15,225**  
 Comments  
**S6-230A**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014295** **Walk-in Refrigeration Units** **Specialty** **UNKNOWN** **Electric** **1975**  
 Model Number Serial Number Duty Size UM Relative Size  
**Intermittent** **50** **SQFT** **SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM** **Good** **10 Yrs** **\$15,225**  
 Comments  
**S6-230**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014296** **Walk-in Refrigeration Units** **Specialty** **UNKNOWN** **Electric** **1975**  
 Model Number Serial Number Duty Size UM Relative Size  
**Intermittent** **96** **SQFT** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM** **Adequate** **5 Yrs** **\$26,448**  
 Comments  
**S6-122**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014297** **Walk-in Refrigeration Units** **Specialty** **UNKNOWN** **Electric** **1975**  
 Model Number Serial Number Duty Size UM Relative Size  
**Intermittent** **96** **SQFT** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM** **Adequate** **5 Yrs** **\$26,448**  
 Comments  
**S6-308**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Specialty Manufacturer Model Type Year Installed  
**0000014298 Walk-in Refrigeration Units UNKNOWN Electric 1975**  
 Model Number Serial Number Duty Intermittent Size 80 UM SQFT Relative Size MEDIUM  
 Location1 Location2 Location3 Overall Rating Adequate Remaining Life 5 Yrs Replacement Value \$26,448  
 ROOM  
 Comments S6-728

Equipment ID Name System Specialty Manufacturer Model Type Year Installed  
**0000014299 Walk-in Refrigeration Units UNKNOWN Electric 1975**  
 Model Number Serial Number Duty Intermittent Size 80 UM SQFT Relative Size MEDIUM  
 Location1 Location2 Location3 Overall Rating Adequate Remaining Life 5 Yrs Replacement Value \$26,448  
 ROOM  
 Comments S6-730

Equipment ID Name System Specialty Manufacturer Model Type Year Installed  
**0000014300 Walk-in Refrigeration Units UNKNOWN Electric 1975**  
 Model Number Serial Number Duty Intermittent Size 72 UM SQFT Relative Size SMALL  
 Location1 Location2 Location3 Overall Rating Adequate Remaining Life 5 Yrs Replacement Value \$15,225  
 ROOM  
 Comments S5-730

Equipment ID Name System Specialty Manufacturer Model Type Year Installed  
**0000014301 Walk-in Refrigeration Units UNKNOWN Electric 1975**  
 Model Number Serial Number Duty Intermittent Size 72 UM SQFT Relative Size SMALL  
 Location1 Location2 Location3 Overall Rating Adequate Remaining Life 5 Yrs Replacement Value \$15,225  
 ROOM  
 Comments S5-728

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014302 Walk-in Refrigeration Specialty UNKNOWN Electric 1975  
 Model Number Serial Number Duty Intermittent Size 96 UM SQFT Relative Size MEDIUM  
 Location1 Location2 Location3 Overall Rating Adequate Remaining Life 5 Yrs Replacement Value \$26,448  
 ROOM  
 Comments S5-311A2

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014303 Walk-in Refrigeration Specialty UNKNOWN Electric 1975  
 Model Number Serial Number Duty Intermittent Size 128 UM SQFT Relative Size MEDIUM  
 Location1 Location2 Location3 Overall Rating Adequate Remaining Life 5 Yrs Replacement Value \$26,448  
 ROOM  
 Comments S5-311A1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014304 Walk-in Refrigeration Specialty UNKNOWN Electric 1975  
 Model Number Serial Number Duty Intermittent Size 80 UM SQFT Relative Size MEDIUM  
 Location1 Location2 Location3 Overall Rating Adequate Remaining Life 5 Yrs Replacement Value \$26,448  
 ROOM  
 Comments S5-230

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014305 Walk-in Refrigeration Specialty UNKNOWN Electric 1975  
 Model Number Serial Number Duty Intermittent Size 80 UM SQFT Relative Size MEDIUM  
 Location1 Location2 Location3 Overall Rating Adequate Remaining Life 5 Yrs Replacement Value \$26,448  
 ROOM  
 Comments S5-232

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014306 Walk-in Refrigeration Units UNKNOWN Electric 1975**  
 Model Number Serial Number Duty Size UM Relative Size  
**Intermittent 72 SQFT SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM Adequate 5 Yrs \$15,225**  
 Comments  
**S5-236**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014307 Walk-in Refrigeration Units UNKNOWN Electric 1975**  
 Model Number Serial Number Duty Size UM Relative Size  
**Intermittent 72 SQFT SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM Adequate 5 Yrs \$15,225**  
 Comments  
**S4-730**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014308 Walk-in Refrigeration Units UNKNOWN Electric 1975**  
 Model Number Serial Number Duty Size UM Relative Size  
**Intermittent 72 SQFT SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM Adequate 5 Yrs \$15,225**  
 Comments  
**S4-728**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014309 Walk-in Refrigeration Units UNKNOWN Electric 1975**  
 Model Number Serial Number Duty Size UM Relative Size  
**Intermittent 96 SQFT MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM Adequate 5 Yrs \$26,448**  
 Comments  
**S4-305A**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

School

Asset Code 1

**335B75UMM9206**

Agency: **University of Massachusetts Medical**  
Equipment ID Name

Crew ID **IND-8** Date  
Manufacturer

**9/29/00** Asset Code 2  
Model Type

**335UMM9206**  
Year Installed

**0000014310** **Walk-in Refrigeration Units**

System  
**Specialty**

**UNKNOWN**

**Electric**

**1975**

Model Number Serial Number

Duty  
**Intermittent**

Size  
**150**

UM  
**SQFT**

Relative Size  
**MEDIUM**

Location1 Location2 Location3

Overall Rating  
**Adequate**

Remaining Life  
**5 Yrs**

Replacement Value  
**\$26,448**

**ROOM**

Comments  
**S4-230**

Equipment ID

Name

System  
**Specialty**

Manufacturer  
**UNKNOWN**

Model Type  
**Electric**

Year Installed  
**1975**

**0000014311** **Walk-in Refrigeration Units**

Model Number Serial Number

Duty  
**Intermittent**

Size  
**70**

UM  
**SQFT**

Relative Size  
**SMALL**

Location1 Location2 Location3

Overall Rating  
**Adequate**

Remaining Life  
**5 Yrs**

Replacement Value  
**\$15,225**

**ROOM**

Comments  
**S4-126**

Equipment ID

Name

System  
**Specialty**

Manufacturer  
**UNKNOWN**

Model Type  
**Electric**

Year Installed  
**1975**

**0000014312** **Walk-in Refrigeration Units**

Model Number Serial Number

Duty  
**Intermittent**

Size  
**70**

UM  
**SQFT**

Relative Size  
**SMALL**

Location1 Location2 Location3

Overall Rating  
**Excellent**

Remaining Life  
**15 Yrs**

Replacement Value  
**\$15,225**

**ROOM**

Comments  
**AQA-77**

Equipment ID

Name

System  
**Specialty**

Manufacturer  
**UNKNOWN**

Model Type  
**Electric**

Year Installed  
**1975**

**0000014313** **Walk-in Refrigeration Units**

Model Number Serial Number

Duty  
**Intermittent**

Size  
**63**

UM  
**SQFT**

Relative Size  
**SMALL**

Location1 Location2 Location3

Overall Rating  
**Excellent**

Remaining Life  
**15 Yrs**

Replacement Value  
**\$15,225**

**ROOM**

Comments  
**AQA-78**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014314 Walk-in Refrigeration Specialty UNKNOWN Electric 1975  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 72 SQFT SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Adequate 5 Yrs \$15,225  
 Comments  
 AQA-24

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014315 Walk-in Refrigeration Specialty UNKNOWN Electric 1975  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 174 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Adequate 5 Yrs \$26,448  
 Comments  
 S013914

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014316 Walk-in Refrigeration Specialty UNKNOWN Electric 1975  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 176 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Adequate 5 Yrs \$26,448  
 Comments  
 AQA-126

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014317 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1975  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 41345 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF-1

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

School

Asset Code 1

**335B75UMM9206**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8** Date **9/29/00**

Asset Code 2

**335UMM9206**

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014318</b>	<b>Roof A/H Units</b>	<b>HVAC</b>	<b>BUFFALO FORGE CO.</b>	<b>Motor Driven</b>	<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
		<b>Continuous</b>	<b>17460</b>	<b>CFM</b>	<b>MEDIUM</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$80,736</b>
Comments <b>EF-5</b>					

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014319</b>	<b>Roof A/H Units</b>	<b>HVAC</b>	<b>BUFFALO FORGE CO.</b>	<b>Motor Driven</b>	<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
		<b>Continuous</b>	<b>13680</b>	<b>CFM</b>	<b>MEDIUM</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$80,736</b>
Comments <b>EF-4</b>					

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014320</b>	<b>Roof A/H Units</b>	<b>HVAC</b>	<b>BUFFALO FORGE CO.</b>	<b>Motor Driven</b>	<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
		<b>Continuous</b>	<b>12225</b>	<b>CFM</b>	<b>MEDIUM</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$80,736</b>
Comments <b>EF-15</b>					

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014321</b>	<b>Roof A/H Units</b>	<b>HVAC</b>	<b>BUFFALO FORGE CO.</b>	<b>Motor Driven</b>	<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
		<b>Continuous</b>	<b>9000</b>	<b>CFM</b>	<b>SMALL</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$12,876</b>
Comments <b>EF-10</b>					

# ASSET SURVEY DATA REPORT

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014322 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 9445 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 EF-13

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014323 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 0 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF-15-SL

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014324 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 20050 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF-20

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014325 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 18430 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF-21

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 **335B75UMM9206**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9206**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014326** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **12680** **CFM** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Fair** **3 Yrs** **\$80,736**  
 Comments  
**EF-18**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014327** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **12030** **CFM** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$80,736**  
 Comments  
**EF-26**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014328** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**B** **70M-14530** **Continuous** **14780** **CFM** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$80,736**  
 Comments  
**EF-24**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014329** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **40655** **CFM** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$80,736**  
 Comments  
**EF-22**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014330 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 9400 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 EF-23

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014331 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 13030 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF-32

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014332 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 11500 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF-34

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014333 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 12480 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF-30

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014334 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 4745 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 EF-37

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014370 Pumps/Motors >60HP FireProDet FAIRBANKS-MORSE Electric 1971  
 Model Number Serial Number Duty Size UM Relative Size  
 none 503491R1 Standby 150 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BASEMENT Adequate 5 Yrs \$54,810  
 Comments  
 fire pump motor

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014370? Fire Pump FireProDet FAIRBANKS-MORSE Electric 1971  
 Model Number Serial Number Duty Size UM Relative Size  
 none 503491R1 Standby 150 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BASEMENT Adequate 5 Yrs \$202,710  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014371 Roof A/H Units HVAC LIEBERT CORP. Air Cooled 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 0 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Good 10 Yrs \$80,736  
 Comments  
 dry cooler

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014372 Roof A/H Units HVAC LIEBERT CORP. Air Cooled 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 0 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Good 10 Yrs \$80,736  
 Comments  
 dry cooler

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014373 Roof A/H Units HVAC LIEBERT CORP. Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 FE240G-AOO 143088C Continuous 15 TONS MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$80,736  
 Comments  
 computer rm

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014374 Roof A/H Units HVAC LIEBERT CORP. Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 FE240G-AOO 143088B Continuous 15 TONS MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$80,736  
 Comments  
 computer rm

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014375 Roof A/H Units HVAC LIEBERT CORP. Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 FE240G-AOO 143088A Continuous 15 TONS MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$80,736  
 Comments  
 computer rm

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014376 Roof A/H Units HVAC LIEBERT CORP. Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 FE240G-AOO 143088D Continuous 15 TONS MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$80,736  
 Comments  
 computer rm

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014377 Roof A/H Units HVAC BUFFALO FORGE CO. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 42060 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF 2

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014378 Roof A/H Units HVAC BUFFALO FORGE CO. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 19210 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF 6

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014378? Roof A/H Units HVAC BUFFALO FORGE CO. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 19210 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF 6

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014379 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 11325 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF 7

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014380 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 17910 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF 8

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014381 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 750 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 EF 9

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014382 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 729 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 EF 3

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014383 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 5130 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 EF 12

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014384 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 11650 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF 11

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014385 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 11360 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF 17

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014386 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 6070 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 EF 19

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014387 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 7900 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 EF 14

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014388 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 4200 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 EF 16

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014389 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 9190 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 EF 27

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014390 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 11200 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF 28

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014391 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 CO.  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 22560 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF 29

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014392 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 CO.  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 9450 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 EF 31

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014393 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 CO.  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 18000 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EF 33

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014394 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 CO.  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 720 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 EF 25

# ASSET SURVEY DATA REPORT

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014413 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 BL Continuous 11320 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Adequate 5 Yrs \$80,736  
 Comments  
 RF-25

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014414 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J Continuous 45 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Poor 1 Yrs \$484,590  
 Comments  
 AC-25

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014415 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 BL Continuous 11320 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Adequate 5 Yrs \$80,736  
 Comments  
 RF-24

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014416 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 J Continuous 50 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Poor 1 Yrs \$484,590  
 Comments  
 AC-24

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education School Asset Code 1 335B75UMM9206  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9206  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014417 Roof A/H Units HVAC UNKNOWN Motor Driven 1998  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 7 TONS MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Good 10 Yrs \$80,736  
 Comments  
 AHU-3

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014418 Roof A/H Units HVAC UNKNOWN Motor Driven 1998  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 20 TONS MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Good 10 Yrs \$80,736  
 Comments  
 AHU-4

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014420 Roof A/H Units HVAC UNKNOWN Motor Driven 1998  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 7 TONS MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Good 10 Yrs \$80,736  
 Comments  
 AHU-1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014421 Roof A/H Units HVAC UNKNOWN Motor Driven 1998  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 20 TONS MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOF Good 10 Yrs \$80,736  
 Comments  
 AHU-2

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

School

Asset Code 1

**335B75UMM9206**

Agency: **University of Massachusetts Medical**  
Equipment ID Name

Crew ID **IND-8** Date  
Manufacturer

**9/29/00** Asset Code 2  
Model Type Year Installed

**0000014423** **Roof A/H Units** **System HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**

Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **9000** **CFM** **SMALL**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$12,876**

Comments  
**RF-2A**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014424** **Elevator/Escalator** **Conveying** **HAUGHTON** **Electrical Passenger Elevator** **1973**

Model Number Serial Number Duty Size UM Relative Size  
**Intermittent** **0** **STORIES** **MEDIUM**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF** **Good** **10 Yrs** **\$331,035**

Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014425** **Elevator/Escalator** **Conveying** **HAUGHTON** **Electrical Passenger Elevator** **1973**

Model Number Serial Number Duty Size UM Relative Size  
**Intermittent** **0** **STORIES** **MEDIUM**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF** **Good** **10 Yrs** **\$331,035**

Comments.....

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex **Higher Education**

**School**

Asset Code 1 **335B75UMM9206**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8** Date

**9/29/00** Asset Code 2 **335UMM9206**

Asset Replacement Value

Equipment Replacement Value

DemolitionCost(if Surplus Property)

**\$174,628,620**

**\$25,344,752**

**\$0**

System ACT Replacement  
Cost

**\$136,901**

System Deficiency Repair  
Cost

**\$856,383**

Equipment Replacement Cost  
Fail Or Poor Only

**\$15,022,290**

ADA Compliance Cost

**\$9,489,915**

LSC Compliance Cost

**\$0**

Total Capital Project And Repair Cost

**\$25,505,489**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility **UMM00**

Ex **Higher Education**

**Hospital**

Asset Code 1 **335B75UMM9207**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8** Date **9/29/00**

Asset Code 2 **335UMM9207**

**> Facility Address**

Address1 55 North Lake Ave.	Address2 419 Belmont Street	Address3	City Worcester	ZipCode 01655-0001
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**> Facility Contact Information**

Name	Telephone	Fax Number	Email
Bill Smith, Director Desktop Services	(508) 856-6759	(508) 856-2440	bill.smith@umassmed.edu
James W. Aquilino, Facilities Manager			
Ron White, Director of Facilities			
Tim Fitzpatric, Director of Operation for Facility Management	(508) 856-5606	(508) 856-2440	t.fitzpatrick@umassmed.edu

**> Asset Address**

Asset Name <b>Hospital</b>	Alias Name	Address 55 North Lake Avenue	Municipality Worcester	County Worcester
House District 14th Worcester	Senate District 1st Worcester	Type Hospital	Property Status IN USE	Floors 9
YearConstructed 1975	Construction Type Precast Conc-Conc Shr Walls	OriginalCost \$31,105,289	Basement Y	Basement Confidence Code Recall from memory with high Confidence
GSF 648,308	NS 551,062	PictureFile 335B75UMM9207.jpg		

**> Asset Real Estate Data**

Year Acquired 1967	Purchase Price \$0	Replacement Value \$176,372,191	Assessed Value	Assessed Year-Current	Map No 57	Block No 4	Lot No D
Historic Building	Latitude 421639	Longitude 714544	AssessedVal	Assessed Year-Actual			

**> Construction**

**> Addition**

**> Renovation**

**>**

Type	On File	Current
Elevator		

**> Occupants**

Occupant(s) Name University of Massachusetts Medical Center	Percent Occupied 100%	Comments
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**> Hazardous Material Presence (in Environment)**

**> Hazardous Material Tracking (Stored Fuels and Chemicals)**

**> Wetlands Delineation**

**> LSC Compliance**

**> ADA Compliance**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Hospital

Asset Code 1 335B75UMM9207

Agency: University of Massachusetts Medical  
Violation

Crew ID IND-8 Date 9/29/00  
Action/Comment

Asset Code 2 335UMM9207

Controls and operating mechanisms heights improper

Counter heights improper

Door hardware improper

Drinking fountains, None or improper

Elevator access, None or improper

Grab bars, None or improper

Sinks, None or improper

Signage, None or improper

Stairways improper

Toilet facilities, None or improper

EntranceRampCost	Elevator Cost	Toilets Cost	All Other ADA Cost	Total
	\$1,305,000	\$3,384,168	\$2,820,140	\$7,509,308

> **Inspection &**

Syste <b>EXTR</b>	Assembly Comp Type <b>Windows/Glazed Wall - Inst. - Aluminum/Insulated</b>	Quantit UM 4000 SQFT	Priority <b>Within 1 Year</b>	Weight <b>Improvement to the Use</b>
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Year Installed	Location1 <b>Asset Wide</b>	Location2	Location3
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Overall <b>Poor</b>	Replace per Inspector	Code No	Comments Water penetration in rainy season.
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Replace System ACT <b>\$88,302</b>	Repair System ACT <b>\$88,302</b>	Replace or Repair (Factored Cost Comparison) <b>Replace</b>	Capital Project
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**Certificates**

Deficiency: <b>Water Penetration</b>	System <b>EXTR</b>	Assembly Comp Type <b>Windows/Glazed Wall - Inst. - Aluminum/Insulated</b>
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5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair <b>4000</b>	Deficiency Repair Cost <b>\$88,302</b>
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**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Hospital Asset Code 1 335B75UMM9207  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9207  
 Syste Assembly Comp Type Quantit UM Priority Weight  
**INTR Ceiling - Acoustic Tile 830 SQFT Within 3-5 Years Required to Improve Appearance**  
 Year Installed Location1 Location2 Location3  
 Corridor ROOM  
 Overall Replace per Inspector No Comments  
**Fair**  
 Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$3,928 \$2,946 Repair**

Deficiency: Loose/Damage/Delaminated Surface System INTR Assembly Comp Type Ceiling - Acoustic Tile - Suspended

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**415 \$1,964**

Deficiency: Broken/Missing System INTR Assembly Comp Type Ceiling - Acoustic Tile - Suspended

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**208 \$982**

Syste Assembly Comp Type Quantit UM Priority Weight  
**INTR Ceiling - 100 SQFT Within 2 Years Required to Improve Appearance**  
**> Summary > Equipment > Wastewater > Cost Information Adequate**  
 Foundation/Footings **Adequate** Overall Rating **Fair** Convey **Good**  
 Substructure Comments **Plaster/Stucco - Good** Mechanical **Good**  
 Superstructure **Adequate** Exterior **Adequate** Electrical **Good**  
**Good Roofing Adequate Interior Construction Good** Specialty **Fair** Equipment  
 SiteWork

Year Installed Location1 Location2 Location3  
**Other PORCH**

Overall Replace per Inspector No Comments  
**Poor**

Replace System ACT Repair System ACT Replace or Repair (Factored Cost Comparison) Capital Project  
**\$545 \$1,471 Replace**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility **UMM00**

**Deficiencies**

Ex **Higher Education** Hospital **Asset Code 1 335B75UMM9207**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9207**  
 Deficiency: **Puncture/Tear/Impact Damage** System **INTR** Assembly Comp Type **Ceiling - Plaster/Stucco - Plaster/Stucco**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 100 381

Deficiency: **Loose/Damage/Delaminated Surface** System **INTR** Assembly Comp Type **Ceiling - Plaster/Stucco - Plaster/Stucco**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 100 545

Deficiency: **Cracking, Crumbling** System **INTR** Assembly Comp Type **Ceiling - Plaster/Stucco - Plaster/Stucco**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 100 545

Syste **INTR** Assembly Comp Type **Floors - Sheet - Vinyl Composition** Quantit **100** UM **SQFT** Priority **Within 1 Year** Weight **Improvement to the Use**

Year Installed Location1 **Room** Location2 Location3

Overall **Poor** Replace per Inspector No Comments

Replace System ACT **\$1,131** Repair System ACT **\$1,131** Replace or Repair (Factored Cost Comparison) **Replace** Capital Project

Deficiency: **Broken/Missing** System **INTR** Assembly Comp Type **Floors - Sheet - Vinyl Composition**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
 100 1131

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

**Information**

Ex	<b>Higher Education</b>	<b>Hospital</b>	Asset Code 1	<b>335B75UMM9207</b>
Agency:	<b>University of Massachusetts Medical</b>	Crew ID	<b>IND-8</b>	Date
System	<b>Floors - Tile - Vinyl Composition</b>	Quantit	<b>120</b>	UM
<b>INTR</b>		Priority	<b>Within 1 Year</b>	Weight
				<b>Improvement to the Use</b>

Year Installed	Location1 <b>Store Room</b>	Location2	Location3
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Overall	Replace per Inspector	No	Comments
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**Poor**

Replace System ACT	Repair System ACT	Replace or Repair (Factored Cost Comparison)	Capital Project
<b>\$1,689</b>	<b>\$1,689</b>	<b>Replace</b>	

Deficiency:		System	Assembly Comp Type
<b>Broken/Missing</b>		<b>INTR</b>	<b>Floors - Tile - Vinyl Composition</b>

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair	Deficiency Repair Cost
	<b>120</b>	<b>\$1,689</b>

Syste	Assembly Comp Type	Quantit	UM	Priority	Weight
<b>INTR</b>	<b>Walls - Partitions - Plaster</b>	<b>400</b>	<b>sqFT</b>	<b>Within 3-5 Years</b>	<b>Required to Improve Appearance</b>

Year Installed	Location1 <b>Stairwell</b>	Location2 <b>CORRIDOR</b>	Location3
----------------	-------------------------------	------------------------------	-----------

Overall	Replace per Inspector	No	Comments
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**Adequate**

Replace System ACT	Repair System ACT	Replace or Repair (Factored Cost Comparison)	Capital Project
<b>\$6,264</b>	<b>\$4,385</b>	<b>Repair</b>	

Deficiency:		System	Assembly Comp Type
<b>Deteriorated Paint Finish</b>		<b>INTR</b>	<b>Walls - Partitions - Plaster</b>

5% 10% 15% 25% 50% 75% Fail Comments

Replace	Repair	Deficiency Repair Cost
	<b>400</b>	<b>\$4,385</b>

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility **UMM00**

Ex **Higher Education** **Hospital** Asset Code 1 **335B75UMM9207**

Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9207**  
 Syste **Assembly Comp Type** Quantit **UM** Priority **Weight**  
**MECH** **Equipment - Cooling - A/C Split Residential** **1** **EACH** **Within 3-5 Years** **Improvement to the Use**

Year Installed Location1 **Room** Location2 Location3

Overall **Fail** Replace per Inspector **No** Comments **Used for non-refrigereted storage**

Replace System ACT **\$42,541** Repair System ACT **\$42,541** Replace or Repair (Factored Cost Comparison) **Replace** Capital Project

Deficiency: **Replace** System **MECH** Assembly Comp Type **Equipment - Cooling - A/C Split Residential**

5% 10% 15% 25% 50% 75% Fail Comments

Replace **1** Repair Deficiency Repair Cost **\$42,541**

Syste **MECH** Assembly Comp Type **Ventilation - Air Handler - Air Handler** Quantit **16** UM **EACH** Priority **Within 2 Years** Weight **Improve Operational Efficiency**

Year Installed **1973** Location1 **Asset Wide** Location2 Location3

Overall **Poor** Replace per Inspector **No** Comments **Badly Rusted drip pans, Leaking coils, Broken/deteriorated fins.**

Replace System ACT **\$559,517** Repair System ACT **\$1,314,865** Replace or Repair (Factored Cost Comparison) **Replace** Capital Project

Deficiency: **Severe Corrosion** System **MECH** Assembly Comp Type **Ventilation - Air Handler - Air Handler**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair **12** Deficiency Repair Cost **\$335,710**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex **Higher Education**

**Hospital**

Asset Code 1 **335B75UMM9207**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8** Date **9/29/00**

Asset Code 2 **335UMM9207**

Deficiency:

System

Assembly Comp Type

**Replace**

**MECH**

**Ventilation - Air Handler - Air Handler**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**16 \$559,517**

Deficiency:

System

Assembly Comp Type

**Coil Leakage**

**MECH**

**Ventilation - Air Handler - Air Handler**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**12 \$167,855**

Deficiency:

System

Assembly Comp Type

**Coil Corrosion**

**MECH**

**Ventilation - Air Handler - Air Handler**

5% 10% 15% 25% 50% 75% Fail Comments

Replace Repair Deficiency Repair Cost  
**12 \$251,783**

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
0000014143	Switchgear >5KV	ElecDist	GENERAL ELECTRIC	Electric	1973
Model Number	Serial Number	Duty	Size	UM	Relative Size
reqn # 297-80425	summary # 0228A7674	Continuous	8280	KVA	LARGE
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
EQUIP ROOM			Good	10 Yrs	\$62,988
Comments					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Hospital Asset Code 1 335B75UMM9207  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9207  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014144 Switchgear >5KV ElecDist GENERAL ELECTRIC Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 reqn # 297-80425 summary # 0228A7674 Continuous 8280 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$62,988  
 Comments

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014145 Switchgear >5KV ElecDist GENERAL ELECTRIC Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 reqn # 297-80425 summary # 0228A7676 Continuous 8280 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$62,988  
 Comments

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014146 Switchgear >5KV ElecDist GENERAL ELECTRIC Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 reqn # 297-80425 summary # 0228A7676 Continuous 8280 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$62,988  
 Comments

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014147 Switchgear >5KV ElecDist GENERAL ELECTRIC Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 reqn # 297-80425 summary # 0228A7676 Continuous 8280 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$62,988  
 Comments.....  
 .....

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Hospital Asset Code 1 335B75UMM9207  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9207  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014148 Switchgear >5KV ElecDist GENERAL ELECTRIC Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 reqn # 297-80425 summary # 0228A7674 Continuous 8280 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$62,988  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014149 Switchgear >5KV ElecDist GENERAL ELECTRIC Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 reqn # 297-80425 summary # 0228A7674 Continuous 8280 KVA LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$62,988  
 Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014335 Bldg Supply Wtr Htr / Exchngr DomWater PATTERSON-KELLE Y CO. Steam 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 500 series 221503 Intermittent 1980 GALLONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Fair 3 Yrs \$86,652  
 Comments  
 WH 2

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014336 Bldg Supply Wtr Htr / Exchngr DomWater PATTERSON-KELLE Y CO. Steam 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 500 series 221502 Intermittent 1980 GALLONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Fair 3 Yrs \$86,652  
 Comments  
 WH 1

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility **UMM00**

Ex **Higher Education** **Hospital** Asset Code 1 **335B75UMM9207**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9207**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014337** **Roof A/H Units** **m HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**type B** **73R-6971** **Continuous** **31500** **CFM** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$80,736**  
 Comments  
**KEF 1**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014338** **Pumps/Motors >60HP** **m HVAC** **LINCOLN ELECTRIC CO.** **Electric** **1995**  
 Model Number Serial Number Duty Size UM Relative Size  
**SD4850T61Y** **U3980502465** **Continuous** **44600** **HP** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$54,810**  
 Comments  
**RF 6T**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014339** **Pumps/Motors >60HP** **m HVAC** **MARATHON ELECTRIC CORP.** **Electric** **1995**  
 Model Number Serial Number Duty Size UM Relative Size  
**444TTFS6036AN** **MJ-09-0007B-8/16** **Continuous** **125** **HP** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$54,810**  
 Comments  
**3B**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014340** **Roof A/H Units** **m HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **46700** **CFM** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$80,736**  
 Comments  
**RF 3-B**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex **Higher Education** Hospital Asset Code 1 **335B75UMM9207**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9207**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014341** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **49500** **CFM** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$80,736**  
 Comments  
**RF 4-B**

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014342** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **51100** **CFM** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$80,736**  
 Comments  
**RF 6-B**

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014343** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **39000** **CFM** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$80,736**  
 Comments  
**RF 5-B**

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014344** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **31700** **CFM** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$80,736**  
 Comments  
**RF 2-B**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility **UMM00**

Ex **Higher Education** **Hospital** Asset Code 1 **335B75UMM9207**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9207**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014345** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **44900** **CFM** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$80,736**  
 Comments  
**RF 1-B-A**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014346** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **44900** **CFM** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$80,736**  
 Comments  
**RF 1-B-B**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014347** **Air Compressors** **HVAC** **QUINCY COMPRESSOR** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**350 - 18** **126213 - LS** **Intermittent** **10** **HP** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$67,512**  
 Comments  
**HCA - 1**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014348** **Bldg Supply Wtr Htr / Exchngr** **DomWater** **BELL & GOSSETT** **Steam** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**SU 123-2** **none** **Continuous** **4600** **BTU** **SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$14,529**  
 Comments  
**HX-1**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Hospital Asset Code 1 335B75UMM9207  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9207  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014349 Bldg Supply Wtr Htr / Exchngr DomWater BELL & GOSSETT Steam 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 SU 166-2 none Continuous 12000 BTU SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$14,529  
 Comments  
 HX-2

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014350 Bldg Supply Wtr Htr / Exchngr DomWater BELL & GOSSETT Steam 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 SU 205-2 none Continuous 16000 BTU SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$14,529  
 Comments  
 HX-4

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014351 Bldg Supply Wtr Htr / Exchngr DomWater BELL & GOSSETT Steam 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 SU 205-2 none Continuous 16000 BTU SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$14,529  
 Comments  
 HX-3

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014395 Pumps/Motors >60HP FireProDet US ELECTRICAL MOTORS Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 none 01205-00-17383-01220 Standby 150 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 BASEMENT Adequate 5 Yrs \$54,810  
 Comments  
 fire pump motor

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex **Higher Education** **Hospital** Asset Code 1 **335B75UMM9207**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9207**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014396** **Fire Pump** **FireProDet** **WORTHINGTON CORPORATION** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**6LRG 18** **Y554457** **Standby** **8** **GPM** **SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BASEMENT** **Adequate** **5 Yrs** **\$39,063**  
 Comments

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014397** **Pumps/Motors >60HP** **DomWater** **GENERAL ELECTRIC** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**5KXA405AK215V** **BJ103014** **Continuous** **50** **HP** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**BASEMENT** **Good** **10 Yrs** **\$30,624**  
 Comments

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014398** **Pumps/Motors >60HP** **DomWater** **GENERAL ELECTRIC** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**5KXA405AK215V** **BJ103015** **Continuous** **50** **HP** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$30,624**  
 Comments

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014399** **Pumps/Motors >60HP** **HVAC** **US ELECTRICAL MOTORS** **Electric** **1994**  
 Model Number Serial Number Duty Size UM Relative Size  
**C636A** **X10X209R415R-3** **Continuous** **125** **HP** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$54,810**  
 Comments  
**AHU 4B**.....

# ASSET SURVEY DATA REPORT

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education Hospital Asset Code 1 335B75UMM9207  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9207  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014400 Pumps/Motors >60HP HVAC US ELECTRICAL MOTORS Electric 1994  
 Model Number Serial Number Duty Size UM Relative Size  
 C636A X10X209R415R-1 Continuous 125 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$54,810  
 Comments  
 AHU 2B

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014401 Pumps/Motors >60HP HVAC US ELECTRICAL MOTORS Electric 1994  
 Model Number Serial Number Duty Size UM Relative Size  
 C636A X09X112R573R-3 Continuous 125 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$54,810  
 Comments  
 AHU 1B-A

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014402 Pumps/Motors >60HP HVAC US ELECTRICAL MOTORS Electric 1994  
 Model Number Serial Number Duty Size UM Relative Size  
 C636A X09X112R573R-5 Continuous 125 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$54,810  
 Comments  
 AHU 1B-B

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014403 Pumps/Motors >60HP HVAC US ELECTRICAL MOTORS Electric 1994  
 Model Number Serial Number Duty Size UM Relative Size  
 C628B X09X145R023M Continuous 100 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$54,810  
 Comments  
 AHU 5B

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Hospital Asset Code 1 335B75UMM9207  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9207  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014404 Pumps/Motors >60HP HVAC US ELECTRICAL MOTORS Electric 1994  
 Model Number Serial Number Duty Size UM Relative Size  
 C636A X10X209R421R-2 Continuous 125 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$54,810  
 Comments  
 AHU 6B

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014405 Pumps/Motors >60HP HVAC LINCOLN ELECTRIC CO. Electric 1993  
 Model Number Serial Number Duty Size UM Relative Size  
 SF4B50T61Y U3980409636 Continuous 50 HP MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$30,624  
 Comments  
 AHU 2T-B

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014406 Pumps/Motors >60HP HVAC US ELECTRICAL MOTORS Electric 1995  
 Model Number Serial Number Duty Size UM Relative Size  
 C614A W02W013R259R-2 Continuous 75 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$54,810  
 Comments  
 SF 3T

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014407 Pumps/Motors >60HP HVAC BALDOR ELECTRIC Electric 1995  
 Model Number Serial Number Duty Size UM Relative Size  
 none spec # 16D51X22E7 Continuous 125 HP LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Good 10 Yrs \$54,810  
 Comments  
 SF 6T

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex **Higher Education** **Hospital** Asset Code 1 **335B75UMM9207**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9207**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014408** **Pumps/Motors >60HP** **HVAC** **US ELECTRICAL MOTORS** **Electric** **1995**  
 Model Number Serial Number Duty Size UM Relative Size  
**C636-50** **X07X145P016M** **Continuous** **125** **HP** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$54,810**  
 Comments  
**SF 7T**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014409** **Pumps/Motors >60HP** **HVAC** **US ELECTRICAL MOTORS** **Electric** **1995**  
 Model Number Serial Number Duty Size UM Relative Size  
**C614A** **V05V052R060R-5** **Continuous** **75** **HP** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$54,810**  
 Comments  
**SF 1T**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014410** **Pumps/Motors >60HP** **HVAC** **CENTURY ELECTRIC** **Electric** **1995**  
 Model Number Serial Number Duty Size UM Relative Size  
**R676** **Part # 6-358657-02** **Continuous** **60** **HP** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$30,624**  
 Comments  
**SF 5T**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014411** **Pumps/Motors >60HP** **HVAC** **US ELECTRICAL MOTORS** **Electric** **1995**  
 Model Number Serial Number Duty Size UM Relative Size  
**C614A** **ID#X05X090R045M** **Continuous** **75** **HP** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Good** **10 Yrs** **\$54,810**  
 Comments  
**AHU SF 4T**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Hospital Asset Code 1 335B75UMM9207

Agency: University of Massachusetts Medical  
Equipment ID Name System Manufacturer Date Model Type Year Installed  
0000014412 Bldg Supply Wtr Htr / Exchngr DomWater PATTERSON-KELLEY CO. 9/29/00 Steam 335UMM9207 1973  
Model Number Serial Number Duty Size UM Relative Size  
500 series 221501 Intermittent 1980 GALLONS LARGE  
Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
EQUIP ROOM Fair 3 Yrs \$86,652  
Comments  
WH 3

Equipment ID Name System Manufacturer Model Type Year Installed  
0000014426 Main Sprinkler Valve FireProDet MUELLER N/A 1973  
Model Number Serial Number Duty Size UM Relative Size  
A2078 Standby 10 INCHES LARGE  
Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
EQUIP ROOM Good 10 Yrs \$11,440  
Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
0000014427 Main Back Flow Preventer FireProDet AMES COMPANY N/A 1973  
Model Number Serial Number Duty Size UM Relative Size  
2000 SS 2JK1831 Standby 10 INCHES LARGE  
Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
EQUIP ROOM Good 10 Yrs \$8,439  
Comments

Equipment ID Name System Manufacturer Model Type Year Installed  
0000014428 Air Compressors HVAC INGERSOLL-RAND Motor Driven 1973  
Model Number Serial Number Duty Size UM Relative Size  
242-T303TM 30T 345755 Intermittent 3 HP SMALL  
Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
EQUIP ROOM Adequate 5 Yrs \$6,394  
Comments

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex	<b>Higher Education</b>		<b>Hospital</b>		Asset Code 1	<b>335B75UMM9207</b>
Agency:	<b>University of Massachusetts Medical</b>		Crew ID	<b>IND-8</b>	Date	<b>9/29/00</b>
Equipment ID	Name	System	Manufacturer	Model Type	Asset Code 2	<b>335UMM9207</b>
<b>0000014429</b>	<b>Air Compressors</b>	<b>HVAC</b>	<b>INGERSOLL-RAND</b>	<b>Motor Driven</b>	Year Installed	<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size	
<b>242-T303TM</b>	<b>30T 345736</b>	<b>Intermittent</b>	<b>3</b>	<b>HP</b>	<b>SMALL</b>	
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value	
<b>EQUIP ROOM</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$6,394</b>	
Comments						

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed	
<b>0000014430</b>	<b>Air Compressors</b>	<b>HVAC</b>	<b>NASH HYTOR</b>	<b>Motor Driven</b>	<b>1973</b>	
Model Number	Serial Number	Duty	Size	UM	Relative Size	
<b>MD-573</b>	<b>73U-1343</b>	<b>Intermittent</b>	<b>37</b>	<b>HP</b>	<b>LARGE</b>	
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value	
<b>EQUIP ROOM</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$67,512</b>	
Comments						
<b>MC-3: Medical Air</b>						

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed	
<b>0000014431</b>	<b>Air Compressors</b>	<b>HVAC</b>	<b>NASH HYTOR</b>	<b>Motor Driven</b>	<b>1973</b>	
Model Number	Serial Number	Duty	Size	UM	Relative Size	
<b>MD-573</b>	<b>73U-1342</b>	<b>Intermittent</b>	<b>37</b>	<b>HP</b>	<b>LARGE</b>	
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value	
<b>EQUIP ROOM</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$67,512</b>	
Comments						
<b>MC-4: Medical Air</b>						

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Equipment ID	Name	System	Manufacturer	Model Type	Year Installed	
<b>0000014432</b>	<b>Air Compressors</b>	<b>HVAC</b>	<b>NASH HYTOR</b>	<b>Motor Driven</b>	<b>1973</b>	
Model Number	Serial Number	Duty	Size	UM	Relative Size	
<b>MD-573</b>	<b>73U-1345</b>	<b>Intermittent</b>	<b>37</b>	<b>HP</b>	<b>LARGE</b>	
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value	
<b>EQUIP ROOM</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$67,512</b>	
Comments						
<b>MC-2: Medical Air</b>						

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility **UMM00**

Ex **Higher Education** **Hospital** Asset Code 1 **335B75UMM9207**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9207**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014433** **Air Compressors** **HVAC** **NASH HYTOR** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**MD-573** **73U-1344** **Intermittent** **37** **HP** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$67,512**  
 Comments  
**MC-1: Medical Air**

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014434** **Air Compressors** **HVAC** **QUINCY COMPRESSOR** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**51207** **827914L** **Intermittent** **60** **HP** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$67,512**  
 Comments

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014435** **Air Compressors** **HVAC** **QUINCY COMPRESSOR** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**51207** **827915L** **Intermittent** **60** **HP** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$67,512**  
 Comments

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014436** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**72P-6497A** **Continuous** **150** **TONS** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Poor** **1 Yrs** **\$484,590**  
 Comments  
**AHU-4B**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility **UMM00**

Ex **Higher Education** **Hospital** Asset Code 1 **335B75UMM9207**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9207**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014437** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**72P-6495A** **Continuous** **180** **TONS** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Poor** **1 Yrs** **\$484,590**  
 Comments  
**AHU-2B**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014438** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**72P-6493A** **Continuous** **175** **TONS** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Poor** **1 Yrs** **\$484,590**  
 Comments  
**AHU-1BA**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014439** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**72P-6494A** **Continuous** **175** **TONS** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Poor** **1 Yrs** **\$484,590**  
 Comments  
**AHU-1BB**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014440** **Bldg Supply Wtr Htr / Exchngr** **DomWater** **PATTERSON-KELLE Y CO.** **Steam** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**500 SERIES** **221505** **Continuous** **530** **GALLONS** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$23,490**  
 Comments.....

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility **UMM00**

Ex **Higher Education** **Hospital** Asset Code 1 **335B75UMM9207**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9207**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014441** **Bldg Supply Wtr Htr / Exchngr** **DomWater** **PATTERSON-KELLE Y CO.** **Steam** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**500 SERIES** **221504** **Continuous** **530** **GALLONS** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$23,490**  
 Comments

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014442** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**72P-6498A** **Continuous** **120** **TONS** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Poor** **1 Yrs** **\$484,590**  
 Comments  
**AHU-5B**

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014443** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**72P-6499A** **Continuous** **150** **TONS** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Poor** **1 Yrs** **\$484,590**  
 Comments  
**AHU-6B**

.....  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014444** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**72P-6496A** **Continuous** **155** **TONS** **LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Poor** **1 Yrs** **\$484,590**  
 Comments  
**AHU-3B**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Hospital Asset Code 1 335B75UMM9207  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9207  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014445 Roof A/H Units HVAC BUFFALO FORGE CO. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 72N6486 Continuous 45 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AHU-2AT

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014446 Roof A/H Units HVAC BUFFALO FORGE CO. Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 72P-6487A Continuous 90 TONS LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Poor 1 Yrs \$484,590  
 Comments  
 AHU-2BT

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014454 Walk-in Refrigeration Units Specialty UNKNOWN Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 72 SQFT SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$15,225  
 Comments  
 N/A (Morgue)

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014455 Walk-in Refrigeration Units Specialty UNKNOWN Electric 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 63 SQFT SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$15,225  
 Comments  
 H023582

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Hospital Asset Code 1 335B75UMM9207  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9207  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014456 Walk-in Refrigeration Units Specialty UNKNOWN Electric 1973  
 Model Number Serial Number Duty Intermittent Size Relative Size  
 Intermittent 240 SQFT LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$51,504  
 Comments  
 H017615

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014457 Walk-in Refrigeration Units Specialty UNKNOWN Electric 1973  
 Model Number Serial Number Duty Intermittent Size Relative Size  
 Intermittent 1000 SQFT LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$51,504  
 Comments  
 H017614

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014458 Walk-in Refrigeration Units Specialty UNKNOWN Electric 1973  
 Model Number Serial Number Duty Intermittent Size Relative Size  
 Intermittent 480 SQFT LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$51,504  
 Comments  
 H017613

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014459 Walk-in Refrigeration Units Specialty UNKNOWN Electric 1973  
 Model Number Serial Number Duty Intermittent Size Relative Size  
 Intermittent 290 SQFT LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$51,504  
 Comments  
 H017612

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Hospital Asset Code 1 335B75UMM9207  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9207  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014460 Walk-in Refrigeration Specialty UNKNOWN Electric 1973  
 Units  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 80 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$26,448  
 Comments  
 H017616

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014461 Walk-in Refrigeration Specialty UNKNOWN Electric 1973  
 Units  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 96 SQFT MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$26,448  
 Comments  
 Cooler No 1 (Kitchen)

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014462 Walk-in Refrigeration Specialty UNKNOWN Electric 1973  
 Units  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 324 SQFT LARGE  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$51,504  
 Comments  
 H002666

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014463 Walk-in Refrigeration Specialty UNKNOWN Electric 1973  
 Units  
 Model Number Serial Number Duty Size UM Relative Size  
 Intermittent 48 SQFT SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 ROOM Good 10 Yrs \$15,225  
 Comments  
 H017608

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex **Higher Education** **Hospital** Asset Code 1 **335B75UMM9207**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9207**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014464** **Walk-in Refrigeration Units** **Specialty** **UNKNOWN** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Intermittent** **140** **SQFT** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM** **Good** **10 Yrs** **\$26,448**  
 Comments  
**H002626**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014465** **Walk-in Refrigeration Units** **Specialty** **UNKNOWN** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Intermittent** **144** **SQFT** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM** **Good** **10 Yrs** **\$26,448**  
 Comments  
**H2-384**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014466** **Walk-in Refrigeration Units** **Specialty** **UNKNOWN** **Electric** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Intermittent** **160** **SQFT** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOM** **Good** **10 Yrs** **\$26,448**  
 Comments  
**H017609. Used for non-refrigerated storage**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014467** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**72P-6488** **Continuous** **12** **TONS** **MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Poor** **1 Yrs** **\$80,736**  
 Comments  
**AHU-3T**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education

Hospital

Asset Code 1

**335B75UMM9207**

Agency: **University of Massachusetts Medical**

Crew ID **IND-8** Date **9/29/00**

Asset Code 2

**335UMM9207**

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014468</b>	<b>Roof A/H Units</b>	<b>HVAC</b>	<b>BUFFALO FORGE CO.</b>	<b>Motor Driven</b>	<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
	<b>72P-6491</b>	<b>Continuous</b>	<b>16</b>	<b>TONS</b>	<b>MEDIUM</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Poor</b>	<b>1 Yrs</b>	<b>\$80,736</b>
Comments <b>AHU-6T</b>					

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014469</b>	<b>Roof A/H Units</b>	<b>HVAC</b>	<b>BUFFALO FORGE CO.</b>	<b>Motor Driven</b>	<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
	<b>72P-6492</b>	<b>Continuous</b>	<b>18</b>	<b>TONS</b>	<b>MEDIUM</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Poor</b>	<b>1 Yrs</b>	<b>\$80,736</b>
Comments <b>AHU-7T</b>					

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014470</b>	<b>Roof A/H Units</b>	<b>HVAC</b>	<b>BUFFALO FORGE CO.</b>	<b>Motor Driven</b>	<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
	<b>72P-6485</b>	<b>Continuous</b>	<b>12</b>	<b>TONS</b>	<b>MEDIUM</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Poor</b>	<b>1 Yrs</b>	<b>\$80,736</b>
Comments <b>AHU-1T</b>					

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014471</b>	<b>Roof A/H Units</b>	<b>HVAC</b>	<b>BUFFALO FORGE CO.</b>	<b>Motor Driven</b>	<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
	<b>72P-6490</b>	<b>Continuous</b>	<b>9</b>	<b>TONS</b>	<b>MEDIUM</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Poor</b>	<b>1 Yrs</b>	<b>\$80,736</b>
Comments <b>AHU-5T</b>					

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Hospital Asset Code 1 335B75UMM9207  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9207  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014472 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
 72P-6489 Continuous 14 TONS MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Poor 1 Yrs \$80,736**  
 Comments  
**AHU-4T**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014473 Roof A/H Units HVAC DUNHAM BUSH Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 0 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Poor 1 Yrs \$80,736**  
 Comments  
**AHU-8T**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014474 Air Compressors HVAC NASH HYTOR Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**87U3288 Intermittent 73 HP LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$67,512**  
 Comments  
**MC-5: Medical Air**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014475 Air Compressors HVAC NASH HYTOR Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**91U1865 Intermittent 73 HP LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$67,512**  
 Comments  
**MC-6: Medical Air**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Hospital Asset Code 1 335B75UMM9207  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9207  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014476 Air Compressors HVAC NASH HYTOR Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**73U-4373 Intermittent 73 HP LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$67,512**  
 Comments  
**MC-7: Medical Air**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014477 Air Compressors HVAC NASH HYTOR Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**96M0059 Intermittent 73 HP LARGE**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$67,512**  
 Comments  
**MC-8: Medical Air**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014478 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**B 77K-2450 Continuous 2720 CFM SMALL**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$12,876**  
 Comments  
**RF-3T**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014479 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973**  
 Model Number Serial Number Duty Size UM Relative Size  
**Continuous 17520 CFM MEDIUM**  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM Adequate 5 Yrs \$80,736**  
 Comments  
**KEF-2**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education Hospital Asset Code 1 335B75UMM9207  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9207  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014480 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 B Continuous 36600 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 RF-4T

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014482 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 Continuous 24400 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 RF-7T

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014483 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 72P-6408 Continuous 36000 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 RF-1T

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014484 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 72P-6409 Continuous 24500 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 RF-2T

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Hospital Asset Code 1 335B75UMM9207  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9207  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014485 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 43B9ADJUSTAX 5014560000001 Continuous 44600 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 RF-6T

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014486 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 86307272 Continuous 12500 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 DEF-1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014487 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 B 73R-6960 Continuous 21045 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 CEF-1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014488 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 B 73R-6965 Continuous 3780 CFM SMALL  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$12,876  
 Comments  
 IEF-1

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

UMM00

Ex Higher Education Hospital Asset Code 1 335B75UMM9207  
 Agency: University of Massachusetts Medical Crew ID IND-8 Date 9/29/00 Asset Code 2 335UMM9207  
 Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014489 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 B 73R-6976A1 Continuous 20000 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 EX-1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014490 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 ? 73R-6963 Continuous 11145 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 CEF-4

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014491 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 B 73R-6973 Continuous 17480 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 SEF-1

Equipment ID Name System Manufacturer Model Type Year Installed  
 0000014492 Roof A/H Units HVAC BUFFALO FORGE Motor Driven 1973  
 Model Number Serial Number Duty Size UM Relative Size  
 B Continuous 17000 CFM MEDIUM  
 Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
 EQUIP ROOM Adequate 5 Yrs \$80,736  
 Comments  
 SPEF-1

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Hospital Asset Code 1 **335B75UMM9207**

Agency: **University of Massachusetts Medical**  
Equipment ID Name

Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9207**  
Manufacturer Model Type Year Installed

**0000014493** **Roof A/H Units** **System HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**

Model Number Serial Number Duty Size UM Relative Size  
**B** **73R-6956** **Continuous** **14225** **CFM** **MEDIUM**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$80,736**

Comments  
**REF-2**

Equipment ID Name System Manufacturer Model Type Year Installed

**0000014494** **Roof A/H Units** **System HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**

Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **20000** **CFM** **MEDIUM**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$80,736**

Comments  
**EX-2**

Equipment ID Name System Manufacturer Model Type Year Installed

**0000014495** **Roof A/H Units** **System HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**

Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **2850** **CFM** **SMALL**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$12,876**

Comments  
**ITEF-1**

Equipment ID Name System Manufacturer Model Type Year Installed

**0000014496** **Roof A/H Units** **System HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**

Model Number Serial Number Duty Size UM Relative Size  
**Continuous** **12500** **CFM** **MEDIUM**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$80,736**

Comments  
**IEF-2**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex Higher Education Hospital Asset Code 1 **335B75UMM9207**  
 Agency: **University of Massachusetts Medical** Crew ID **IND-8** Date **9/29/00** Asset Code 2 **335UMM9207**  
 Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014497** **Roof A/H Units** **HVAC** **BUFFALO FORGE CO.** **Motor Driven** **1973**

Model Number Serial Number Duty Size UM Relative Size  
**BL** **73R-6958** **Continuous** **13970** **CFM** **MEDIUM**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**ROOF** **Fair** **3 Yrs** **\$80,736**

Comments  
**MEF-1**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014498** **Bldg Supply Wtr Htr / Exchngr** **DomWater** **BELL & GOSSETT** **Steam** **1973**

Model Number Serial Number Duty Size UM Relative Size  
**SU224.5-2** **Continuous** **12000** **BTU** **SMALL**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$14,529**

Comments  
**HX-5**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014499** **Bldg Supply Wtr Htr / Exchngr** **DomWater** **BELL & GOSSETT** **Steam** **1973**

Model Number Serial Number Duty Size UM Relative Size  
**SU224.5-2** **Continuous** **20000** **BTU** **SMALL**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$14,529**

Comments  
**HX-6**

Equipment ID Name System Manufacturer Model Type Year Installed  
**0000014500** **Bldg Supply Wtr Htr / Exchngr** **DomWater** **BELL & GOSSETT** **Steam** **1973**

Model Number Serial Number Duty Size UM Relative Size  
**SU224.5-2** **Continuous** **20000** **BTU** **SMALL**

Location1 Location2 Location3 Overall Rating Remaining Life Replacement Value  
**EQUIP ROOM** **Adequate** **5 Yrs** **\$14,529**

Comments  
**HX-7**

**ASSET SURVEY DATA REPORT**

UNIVERSITY OF MASS MEDICAL  
CENTER WORCESTER

Facility

**UMM00**

Ex	Higher Education	Hospital		Asset Code 1	<b>335B75UMM9207</b>
Agency:	University of Massachusetts Medical		Crew ID	IND-8	Date
Equipment ID	Name	System	Manufacturer	9/29/00	Asset Code 2
<b>0000014501</b>	<b>Elevator/Escalator</b>	<b>Conveying</b>	<b>OTIS ELEVATOR COMPANY</b>		<b>335UMM9207</b>
					Year Installed
					<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
<b>219H7</b>	<b>356387</b>	<b>Intermittent</b>	<b>0</b>	<b>STORIES</b>	<b>MEDIUM</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$331,035</b>
Comments					

---

Equipment ID	Name	System	Manufacturer	Model Type	Year Installed
<b>0000014502</b>	<b>Elevator/Escalator</b>	<b>Conveying</b>	<b>OTIS ELEVATOR COMPANY</b>	<b>Electrical Passenger Elevator</b>	<b>1973</b>
Model Number	Serial Number	Duty	Size	UM	Relative Size
<b>98L</b>	<b>357969</b>	<b>Intermittent</b>	<b>0</b>	<b>STORIES</b>	<b>MEDIUM</b>
Location1	Location2	Location3	Overall Rating	Remaining Life	Replacement Value
<b>EQUIP ROOM</b>			<b>Adequate</b>	<b>5 Yrs</b>	<b>\$331,035</b>
Comments					

Asset Replacement Value  
**\$176,372,191**

Equipment Replacement Value  
**\$10,554,012**

DemolitionCost(if Surplus Property)  
**\$0**

System ACT Replacement Cost  
**\$693,180**

System Deficiency Repair Cost  
**\$7,331**

Equipment Replacement Cost Fail Or Poor Only  
**\$4,926,462**

ADA Compliance Cost  
**\$7,509,308**

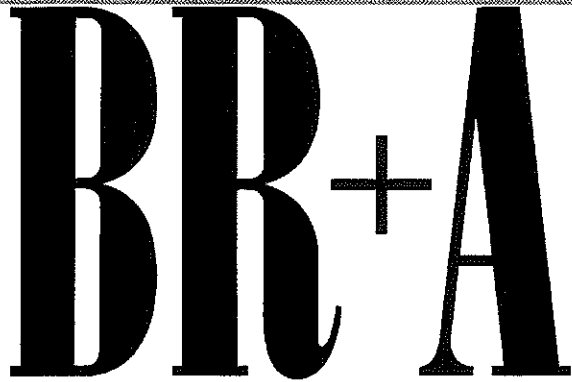
LSC Compliance Cost  
**\$0**

Total Capital Project And Repair Cost  
**\$13,136,281**

TSOI / KOBUS & ASSOCIATES  
ARCHITECTS

University of Massachusetts Medical School  
Section V. Existing Site Utility Plans





*UNIVERSITY OF  
MASSACHUSETTS  
MEDICAL CENTER &  
MEMORIAL HOSPITAL*

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*MECHANICAL & ELECTRICAL  
INFRASTRUCTURE REPORT*

*DRAFT – OCTOBER 10, 2002*

**Prepared By:**

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**I. UMMHC MEMORIAL HOSPITAL**

**A. POWER PLANT**

1) Heating System

The central Power Plant is a detached double height building located east of the East Building. The building houses three high-pressure steam boilers that serve the entire complex, as follows:

Typical for each boiler (B-1, B-2, B-3)

Maker:	Cleaver-Brooks
Model:	OB 400-700 Fire Tube
Capacity	700 Boilers HP; 24,400 lbs/hr
Built:	1973
Operation:	Steam @ 75 psig
Fuel:	No 2 oil/Gas

The oil is stored in two 25,000-gallon underground fuel oil tanks, which are located below the driveway immediately south of the Power Plant. The oil transfer pump starter is located inside the Power Plant. The steam condensate is returned by condensate pumps located throughout the Hospital to the boiler feedwater/deaerator tank. The deaerator tank system is a double-stacked surge tank/deaerator tank system with boiler feedwater pumps located directly beneath the tanks. The system is made by Cleaver-Brooks "Spray Master" with two 700-gallon tanks and three pumps.

The boiler breeching discharges into a ventilated steel hermet boiler stack, which was increased in height from 90 ft to about 168' when the new "East" building was built.

In 1998 the automatic oxygen trim combustion control system was removed and in place VFD was added to each fan blower motor for each of the three boilers. This work was paid by Mass Electric and it was indicated by hospital personnel that energy savings and boiler performance has been satisfactory.

Steam is generated at 125 psig and distributed to the Hospital via underground tunnel. The high pressure steam is routed to several mechanical rooms throughout the complex, where the pressure is reduced to 60 psig in most cases as well as 12 psig for heating, humidification and domestic water heating use.

According to the Hospital's engineering staff, the maximum peak steam heating load requirements are about 30,000 to 35,000 pound per hour (PPH) with an average of 25,000 PPH.

The size of the peak load can be met with two boilers working at about 70% capacity each, and leaving the third boiler as standby. Current Hospital and Health Care standards require 100% back-up boiler for any of the two operating boilers. Therefore, the current boiler systems and capacity meet current standards.

The Power Plant is an excellent example of long-term, high quality and continuous well managed maintenance. Considering the condition of the Plant, at least 10 to 15 additional years of reliable service can be expected.

It was noticed that two of the three chillers share the same room with the boilers. This is a violation of Massachusetts Building Code.

2) Cooling System

The cooling plant consists of three (3) 1000 tons electric centrifugal chillers. They provide chilled water to most of the buildings on campus with the exception of few small direct expansion (DX) packed and split systems found throughout the Hospital and the glycol/chilled water chiller, which is used at the A-Building when the main Chiller Plant is shutdown.

In 1996, the Chiller Plant was upgraded with the addition of the third chiller and associated cooling tower, and the conversion of a single chilled water loop to primary/secondary loops.

Primary and secondary pumps were also replaced to include VFD for each secondary pump.

The three chillers are described as follows:

Chiller CH-1: Trane "Centravac", Serial L3B16275,  
Constructed in 1972, 78013160,  
1000 Tons, Poor to Fair Condition

Chiller CH-2: Carrier, Serial 19EB8971DL  
Constructed in 1984, 48013160  
1000 Tons, Fair to Good Condition

Chiller CH-3: Trane, CVFHF910, Serial L95JO87894  
Constructed in 1995, 48013160  
1000 Tons, Good to Excellent Condition

The cooling system pumps are located on the Mezzanine adjacent to the chillers and below the Mezzanine. There are (3) primary pumps (one for each chiller, 2000 gpm each, 40 HP), three (3) secondary pumps (1920 gpm, 100 HP), and three (3) condenser water pumps (3000 gpm, 125 HP).

It was indicated by Hospital Engineering personnel that only two chillers can work at the same time. This is because the electrical wiring is sized to handle only the electrical running load of two chillers.

When the plant was changed to primary/secondary loops, the existing 3-way valves serving air handling units throughout the hospital were modified to work like 2-way. In addition, related booster pumps found throughout the hospital were isolated or removed.

The cooling towers for the three chillers are located on the roof of the Power Plant. They are described as follows:

Cooling Tower CT-1: Baltimore Air Coil,  
Constructed in 1972, forced draft centrifugal fans,  
Three (3) cells, fair condition.

Cooling Tower CT-2: Baltimore Air Coil,  
Constructed in 1984, forced draft centrifugal  
Three (3) cells, good condition

Cooling Tower CT-3: Baltimore Air Coil  
Constructed in 1996, forced draft centrifugal  
Three (3) cells, basin heater, excellent condition.

In the winter time, the chillers are off when the outside air temperature falls below 55°F. The maximum cooling load reported 1,800 tons. The total chiller plant is 3,000 tons. However, the available capacity to the hospital is 2,000 tons since only two chillers at one time can operate due to electrical wiring size. This translates into a spare capacity of about 200 tons for about 50,000 square feet of modern hospital space.

The chilled water is distributed to the hospital with supply and return mains, which are routed through the underground utility tunnel (same tunnel as the steam piping). The chilled water is used by a combination of two-pipe fan coil units, four-pipe coil units and air handling units.

The equipment in the Power Plant is in fair to good condition. The main distribution piping was installed in 1972 and has had professional chemical treatment and should provide adequate, reliable service for the next 10 to 12 years.

As indicated in the Heating Plant, the two older chillers are in the same room with the boilers. This is a Massachusetts Building Code violation.

## ***B. AIR HANDLING UNITS AND RELATED SYSTEMS***

The Hospital is served by at least thirty (30) air handling units ranging in size from about 1000 CFM up to 30,000 CFM. The extent of the air handling systems is confined only to one building. In other words, one air handling unit services one building. The age of the systems range from nearly new to 40 years old and more in some cases. Due to the complexity and diversity of systems this section of the report is broken down building-by-building. The new East Building was not surveyed and therefore is not addressed in the report. The new East Building was completed in 1995 and it does meet current HVAC Hospital Guidelines (e.g., air filtration, outside air volumes, etc.).

1) Existing Conditions

South Wing

a) Air Handling Unit:

The entire building is served by three custom built air handling units (AHU-1 through 3) and one exhaust fan with a heat recovery coil (AHU-4). The equipment was installed around 1974 and is original to the building. All the equipment is located in the penthouse mechanical room. Each air handling unit was designed to supply 100% of outside air or 32,000 CFM (no return fan), and have the following components: 65% bag type prefilters, preheat recovery coils, DWDI supply fans, 2" thick 30% filters, 90-95% final filters, chilled water cooling coils, steam humidifier bars before and after the chilled water cooling coils and hot water "hot deck" booster coils located in each unit's supply ductwork. Supply ductwork from all three air handlers is manifold together in the penthouse.

The following deficiencies were observed:

- The variable frequency drives (VFD's) are not working. All units are working at full capacity. Typically at night, when the administration area isolation dampers close, the VFD's reduce the speed of the supply fans and exhaust fan (AHU-4) based upon duct static pressure sensors, thereby saving energy.
- Broken linkage sections of the outside air dampers for AHU-1 and AHU-2 cause sections of the dampers to be inoperable and to remain closed at all times.
- Substantial rust of outside air dampers for AHU-1, 2 and 3.
- Substantial rust of the heat recovery and cooling coil casings.
- Air leakage was felt through panel joints of AHU-3.

The penthouse mechanical room also houses an exhaust system dedicated to four (4) isolation rooms located on the 6<sup>th</sup> floor. The system is comprised of two SWSI fans (one is standby) bag-in/bag-out filter housing and DDC controls by Johnson Controls. This system was installed around 1998. No visual deficiency was observed.

Another exhaust system dedicated to two (2) stem cell rooms located on the 5<sup>th</sup> floor was installed around 1997. The exhaust fan is housed on the 5<sup>th</sup> floor, in a former closet and next to one of the stem cell rooms. In addition to the fan, HEPA filters were installed at the ceiling of the stem cell rooms. No deficiency was observed.

The controls for the air handling units, AHU-1 through 3, and exhaust fan, AHU-4, are direct digital type controls with pneumatic air actuators. The DDC controls (Metasys by Johnson Controls) are not original to the building. No visual deficiency was observed.

b) Related Systems:

The heat recovery system is supplemented by two steam-to-hot glycol heat exchangers with two associated constant volume pumps. One of the heat exchangers was designed for back-up or standby use. It was indicated that normally both heat exchangers and associated pumps operate at the same time.

The “hot deck” booster coils and terminal reheat coils for all floors are served by two steam-to-hot water heat exchangers. This system includes a constant volume hot water pump, which is dedicated to the “hot deck” booster coils located in each air handler supply ductwork, another constant volume hot water pump dedicated to terminal reheat coils, and a third pump designed as a back-up or standby for either hot water pump.

All heat exchangers and associated pumps as mentioned before are housed in the penthouse mechanical room. No visual deficiency was observed for either system.

The addition of a secondary/primary loop and variable frequency drive to the chilled water plant about seven years ago enabled the removal of the chilled water pumps located in the penthouse and servicing air handling units AHU-1, 2, and 3. Prior to this work at the chilled water plant, all chilled water flowing through the coils was constant through the use of a 3-way valve arrangement. The 3-way valves have been modified for 2-way operation.

West Wing

a) Air Handling Units:

The building is served by six (6) major air handling units.

Two custom built-up air handling units (AC-1 and AC-2) are located in the sub-basement mechanical room. Each unit is constant volume, 100% outside air, with 30% and 95% cartridge filters, face and bypass dampers and steam preheat coils, chilled water cooling coils, in-unit humidifier, and SWSI fan. AC-1 serves basement level offices and hallways, as well as Levels 1 and 2 nursing stations. AC-2 serves Levels 1 and 2 patient room induction units. AC-1 is designed as constant volume, while AC-2 is variable volume. The controls are stand-alone electric with pneumatic actuators. These units are original to the building.

The following deficiencies were observed:

- Substantial rust of heating and cooling coil casings.
- VFD for AC-2 is not working. The unit is working at full capacity.

- Substantial rust of outside air dampers. They appear to be inoperable.
- Very poor casing conditions for both air handling units. Air leakage was felt throughout.
- Poor humidifier conditions, doubtful that they are working properly.
- No duct mounted smoke detection observed.

The ground floor is served by the following equipment:

One outdoor Bohn air handling unit, about 14 years old, located on a low roof adjacent to the West Wing. The unit is constant volume with steam heating coil, chilled water cooling coil, prefilters and final filters. The supply air to the patient rooms is via terminal reheat coils. No visual deficiency was observed other than it is located in a very difficult spot for service.

The sleep disorder rooms are served by a Carrier air-cooled package unit. This unit is about 2 years old and no visual deficiency was observed.

Finally, there are unitary window air conditioning units serving some rooms that are used for storage and offices.

Levels 3 and 4 are served by two Trane indoor air handling units (AC-1 and AC-2), located in the penthouse mechanical room. Each unit is constant volume, 100% outside air, with 65% and 95% bag and cartridge prefilters, steam preheat coils, chilled water cooling coil, in-unit humidifier and centrifugal fan. AC-1 serves the 3<sup>rd</sup> level patient rooms via constant volume/hot water reheat coils. AC-2 serves the 4<sup>th</sup> level via constant volume/hot water reheat coils. Currently the 4<sup>th</sup> floor is empty and is scheduled for renovation. The controls are stand-alone electric with pneumatic actuators. These units were installed around 1968.

The following deficiencies were observed:

- Substantial rust of heating and cooling coil casings.
- Humidifiers not operable (both units).
- Substantial rust of outside air dampers. Doubtful that they are working properly.
- Very poor casing conditions for both air handling units.
- Not enough room for service, e.g., coil removal, filter replacement, etc.
- No duct mounted smoke detector observed.

Exhaust for the 3<sup>rd</sup> and 4<sup>th</sup> levels is provided by 29 separate exhaust fans located on the roof. At the time of the site visit most of these fans appeared to be working.

b) Related Systems:

The sub-basement mechanical room houses two indoor steam-to-hot water heat exchangers. They provide hot water to induction unit reheat coils and the perimeter radiation in the basement, 1<sup>st</sup> and 2<sup>nd</sup> levels. The controls are stand-alone electric with pneumatic actuators.

The following deficiencies were observed:

- It was indicated that the “booster” heat exchangers and associated pumps are not in operation due to mechanical problems. Therefore only one heat exchanger is providing primary heating, which is a hospital code violation.
- Pipe insulation is in very poor condition. Saturated and missing sections are found throughout the room.
- Very complicated winter/summer switchover system. For instance, there are two-pipe fan coils on the ground level. They are drained and supplied with chilled water via pumps located in the same mechanical room. The switchover is carried out manually every year and it is prone to errors.
- The chilled water pumps for the same two-pipe fan coils are in very poor condition. The impeller casings are rusted beyond repair and there are signs of continuous water/oil leaks.
- A small third steam-to-water heat exchanger is serving the same two-pipe fan coils as indicated above. This heat exchanger has no insulation.
- Work done at the chiller plant about seven years ago, enabled the removal of the chilled water pumps serving AC-1 and AC-2 located in the sub-basement. The existing 3-way valves were modified to work like 2-way valves achieving variable water flow through the cooling coils.

The penthouse mechanical room (called B-penthouse by hospital personnel) houses one steam-to-hot water heat exchanger. The same provides hot water to reheat coils located throughout Levels 3 and 4.

The following deficiencies were observed:

- No backup heat exchanger, which is a hospital code violation.
- Pipe insulation is in very poor condition. Saturated and missing sections are found throughout the room.
- No back-up for the in-line perimeter radiation pumps. The pumps also are located in a very difficult spot for service and above live electrical panels.

Memorial Building

a) Air Handling Units:

The building is served by a combination of systems including unitary window AC units, fan coil units, packaged variable air volume rooftop and indoor air handling units.

The type of usage for most of the building was changed when the East Building was completed. For instance, Level 4, now used for sleeping quarters for on-call doctors was the original surgical suite. Levels 2 and 3 were patient rooms and newborn nursery, but are now used as office space. HVAC systems are scattered throughout the building.

The penthouse mechanical room houses an in-door air handling unit (AC-1) which serves the 4<sup>th</sup> level. The unit is variable air volume, 100% outside air with 35% and 65% cartridge and bag prefilters, hot water heating coil, chilled water cooling coil and one steam humidifier.

The following deficiencies were observed:

- Substantial rust of heating and cooling coil casings.
- Variable frequency drive is not working. The unit is working at full capacity.
- Substantial rust of outside air dampers. Doubtful that they are working properly.
- Very poor casing conditions. Air leakage was felt throughout.
- Poor humidifier conditions. Doubtful that they are working properly.
- No duct mounted smoke detector was observed.
- Not enough room for service (e.g., coil removal, filter replacement, etc.).

As indicated above, Level 4 used to house the day surgery area and the surgical suite and all air was exhausted. Two exhaust fans serve the 4<sup>th</sup> level. Each fan has a variable frequency drive, which is not working, so that the fans are currently working at full capacity.

Chilled water to the air handling units serving Level 4 was provided by a dedicated air cooled chiller located on the roof, outside the penthouse mechanical room. There is a cross-connection between the air cooled chiller and the main chilled water distribution system that includes chilled water booster pumps. The air cooled chiller and associated chilled water pumps are no longer used and the equipment was abandoned and remains in place.

The old day surgery area in Level 4, which now houses offices, is served by a package rooftop direct expansion unit. This unit is about 16 years old and the casing has substantially rusted. The median service life used for this type of equipment in accordance with ASHRAE is about 20 years.

In addition to the exhaust fans serving Levels 3 and 4, the penthouse mechanical room also houses two other exhaust fans. One dedicated to the dining room at Level 1, and the other to the kitchen at the ground level. Both fans are constant flow and no visual deficiency was observed.

Level 3 is served by unitary window units and an indoor floor mounted air handling unit, which used to serve the newborn nursery area. The unit is about five years old, constant volume, return, with 30% cartridge prefilters, chilled water cooling coil, steam heating coil, supply fans, and final filters.

The following deficiencies were observed:

- No room for service (e.g., coil pull).
- No preheat heating coil, which means that the cooling coil needs to be drained every year to avoid freezing.

Level 2 is served by unitary window units and an indoor ceiling mounted air handling unit. This unit, like Level 3, used to serve the newborn nursery area on the 2<sup>nd</sup> level. The unit is about 16 years old, constant volume, return, with 30% cartridge prefilter, chilled water cooling coil, supply fan, and final HEPA filters (which are no longer used).

The following deficiencies were observed:

- Extremely tight ceiling location for service.
- No preheat heating coil, which means that the cooling coil needs to be drained every year to avoid freezing.
- Excessive fan noise. It was indicated that the fan motor is oversized in order to overcome the original HEPA filter pressure resistance.

Part of Level 1 is served by a Trane air handling unit, 17 to 19 years old, with inlet guide vanes, steam heating coil, chilled water cooling coil, prefilter and final filters (meets code). Supply air to the patient rooms is via terminal reheat coils.

b) Related Systems:

Heating hot water is provided from the South Wing Building.

Pipe insulation is in very poor condition. There are missing and saturated sections throughout the exposed pipes in the room.

A-Building

a) Air Handling Units

The A-Building is primarily served by two indoor Trane air handling units (AC-1 and AC-2), which were installed in 1968. Each unit serves approximately one-half of the ground and first floors. Each unit has a dedicated return SWSI fan and the following components: 30% and 65% cartridge and bag filters, steam preheat coil, chilled water cooling coil, supply fan and humidifier. The controls for both units are stand-alone pneumatic.

The following deficiencies were observed:

- Both units are in bad condition and have exceeded the 20-years of service life as suggested by ASHRAE.
- Very poor casing condition for both units. Air leakage was felt throughout.
- Substantial rust on outside air and return dampers. They seem inoperable.
- Humidifiers for both units are not working.
- No final filters, which is a hospital code violation.
- Not enough room for equipment service.

AC-1 and AC-2 are located in the penthouse mechanical room. The space also houses a new Trane air handling unit installed in 2001 serving the autopsy area in the first level. The unit provides 100% of outside air at constant volume, with 30% and 65% cartridge and bag filters respectively, steam preheat coil, chilled water coil and supply fans. This unit does not have final filters, which is a hospital code violation. It was indicated by hospital personnel as well, that there are no local final filters at the autopsy room itself. The controls for the unit are stand-alone pneumatic.

The penthouse mechanical room also houses eleven (11) exhaust fans. This is in addition to the two return fans for AC-1 and AC-2.

With the exception of one fan, (EF-13) all the fans serve dedicated exhaust hoods located on the ground level. No visual deficiency was observed for those fans. However, the fan labeled “EF-13,” which is dedicated to toilet rooms had recent work done to increase the air volume of the system. It was indicated by hospital personnel that this fan is marginally serving the exhaust needs of the building.

There is another mechanical room in the basement. In this room there are (4) air handling units, which are dedicated to the CT scan areas and telephone room located at the south end of the ground level and the electrical room located in the basement.

These air handling units are described as follows:

- AHU-1: This unit was installed in 2001. It is dedicated to the telephone room and it has 30% prefilter, chilled water cooling coil, direct expansion coil and supply fan. The condenser is located on the roof of the building. Controls for the unit are DDC. No visual deficiency was observed. It meets filtration standards.
- AHU-2: The unit was installed in 2001. It is dedicated to the CT scan room and it has 30% cartridge prefilters, chilled water cooling coil, supply fan and 30% and 65% final filters. Like AHU-1, the condenser is located on the roof of the building. Controls in the unit are DDC. The unit is new and no visual deficiency was observed. It meets filtration standards.
- AHU-3: This unit was installed in 1994. It is dedicated to the CT scan control room and it has 30% prefilter, chilled water cooling coil, direct expansion coil and supply fan. Like the other air handlers, the condenser is located on the roof of the building. The controls are stand-alone electric/pneumatic. This unit is in good condition but should have final filters in order to meet filtration standards.
- AHU-4: This unit was installed in 1994. It is dedicated to areas next to CT scan room. It has 30% prefilters, direct expansion coil, supply fans and 30% and 95% final filters. The condenser is located on the roof of the building. The controls are stand-alone electric/pneumatic. The unit is in good condition and it meets filtration standards.

The direct expansion coil for all air handlers is used as backup in the event that chilled water becomes unavailable. Outside air to all these units is brought in through air handling units AC-1 and AC-2 located in the penthouse mechanical room.

The addition of AHU-1 and AHU-2 has made the mechanical room very crowded. Coil removal particularly for AHU-4 is tight. Adequate room for service is important in order to better maintain the equipment and be able to achieve longer service life.

b) Related Systems

Chilled water to all air handling units in the A-Building are switched to glycol/chilled water in the winter time as the power plant chillers are shut down when the outdoor temperature falls below 55°F. The changeover is done manually and it is prone to errors. Glycol/chilled water is accomplished by a Dunham-Bush air cooled chiller. This chiller was installed around 1990 and is located on the roof of the building, next to the penthouse mechanical room. The chiller is in fair condition and should last another 10 to 15 years.

The penthouse mechanical room houses one steam-to-hot water heat exchanger and associated reheat hot water pumps, and the glycol/chilled water pumps, which were installed in 1990.

The following deficiencies were observed:

- Heat exchanger is over 30 years old. ASHRAE's suggested service life for this type of equipment is 24 years.
- No backup heat exchanger. Code violation.
- Reheat pumps are in bad shape. Impeller casing has substantial rust and the seals are leaking.
- Pipe insulation is in bad shape. There are saturated and missing sections found throughout the room.
- No DDC controls.

#### North Wing

##### a) Air Handling Units

The building added 1½ stories in 1992-1993. At the same time the existing air handling unit was renovated and the building was provided with four air handling units.

All the air handling units are in good condition and should be able to provide another 10 to 12 years of service.

The air handling units are described as follows:

##### AHU-APU (Ambulatory Procedure Unit):

This unit is located on the roof of the first level. The unit is made by McQuay and it has the following components: full economizer, return fan with inlet guide vanes (VAV), mixing section, 30% prefilter, chilled water coil, supply fan with inlet guide vanes (VAV), 30% and 95% final filters and duct mounted humidifiers. The controls are DDC. The APU area is located on the ground floor. The chilled water coil is drained in the winter to avoid freezing,

##### AC-1 (Supply Air to Basement and Ground Level):

The unit is located in the penthouse mechanical room. The unit is made by McQuay and it has the following components: vane axial return fan with inlet guide vanes (VAV), full economizer, 30% cartridge prefilters, supply fan with inlet guide vanes, chilled water coil, hot water coil and cold/hot deck ductwork. Like the previous unit the chilled water coil is drained in the winter to avoid freezing. The controls are stand-alone electrical/pneumatic. This unit does not have final filters, which is a hospital code violation.

AC-1 (Supply Air to 2<sup>nd</sup> and 1<sup>st</sup> Levels):

The unit is located on the roof of the third level. The unit is made by McQuay and it has the following components: full economizer, return fan with inlet guide vanes (VAV), 30% prefilter, chilled water coil, supply fan with inlet guide vanes (VAV) and duct mounted humidifier. The controls are stand-alone electrical/pneumatic. Like the previous units, the chilled water coil is drained in the in winter to avoid freezing. This unit does not have final filters, which is a hospital code violation.

AC-2 (Supply Air to the 1<sup>st</sup> Level):

The unit is located on the roof of the first level. The unit is made by McQuay and it has the following components: fuel economizer, return fan with inlet guide vanes (VAV), 30% prefilter, chilled water coil, supply fan with inlet guide vanes and duct mounted humidifier. The controls are stand-alone electrical/pneumatic. As before, the chilled water coil is drained in the winter to avoid freezing. This unit does not have final filters which is a hospital code violation.

b) Related Systems

Along with the air handling units, (2) new steam-to-hot water heat exchangers (one for backup), and associated pumps were installed. No visual deficiencies were observed.

JaQuith Building

a) Air Handling Units

The JaQuith Building is served by a combination of air handling units and four fan coils. Fan coils with hot water and chilled water coils are found on all floors serving the exterior wall of the administration offices. At one time such administration offices used to be patient rooms as indicated by hospital personnel. The fan coils are floor mounted and their condition is general fair. This type of equipment is relatively easy to maintain with off the shelf replacement parts such as motor and coils.

The air handling units are described as follows:

The Women's Center is a one story area located on the north section of the buildings. This area is served by a dedicated McQuay rooftop unit. This unit is about 10 years old, constant volume with supply and return fans, steam preheating coil, chilled water coil, 30% prefilters and 95% final filter. The control are DDC and located in the basement level steam/convectors mechanical room. No visual deficiency was observed. The casing is in fair condition along with the internal components. The rooftop unit met current code standards and should provide another five to seven years of service.

The auditorium also located on the north section of the building, is served by a dedicated Bohn rooftop unit. The unit is about 15 years old, constant volume, steam preheating coil, chilled water coil, prefilters and pneumatic controls.

The unit reached ASHRAE's suggested Service Life of 15 years.

Outside air to levels basement, first and second, is brought in by two air handling units. One air handler is located in the south wing of the first floor, and the other in the east wing of the same floor.

Both air handling units were installed around 1983. They are made by Trane, 100% outside air, constant volume, charcoal impregnated prefilters, face-and bypass dampers, hot water heating coil, chilled water coil, steam humidifier and stand alone pneumatic controls.

Also there is for each air handler, an exhaust fan, mounted at the ceiling and directly above the air handling unit. The air handling units should provide reliable service for the next 8 to 10 years. The problem for both air handlers, is that there is not enough room for service, e.g. Fan motor/wheel replacement and coil pull, should the situation arise.

Adequate room for service is very important. Proper mechanical room size to suit the equipment will allow for better maintenance and therefore provide longer service life. Currently, wall demolition for either unit is required for coil removal.

Outside air to levels three and four, is brought in by a rooftop mounted Z-pack packaged air handling unit. This unit is constant volume, exhaust and supply fans, prefilters, face and by pass dampers, steam preheating coil, chilled water coil, 95% final filters and steam humidifier. The unit also has a built-in air-to-air heat exchanger.

No rust was observed on the casing, and it was indicated by facility personnel that the unit is working properly, the same is 22 years old. ASHRAE suggested service life is about 15 years for this type of equipment.

b) Related Systems

Reheat coils located in the Women's Center are fed by a steam-to-water heat exchanger. The same was installed, along with the McQuay rooftop unit, some 10 years ago.

There is no standby heat exchanger. Hot water distribution is accomplished by end suction pumps (primary/standby). The heat exchanger and pumps should provide satisfactory service for the next 8 to 10 years. No visual deficiencies were observed.

Hot water for radiation, heating and reheat coils for the remainder of the building is generated by two steam-to-hot water heat exchangers (primary/standby) via primary/stand-by hot water pumps.

The heat exchangers and associated piping insulation are more than 35 years old as indicated by hospital personnel. ASHRAE's suggested service life is 24 to 20 years respectively.

In addition, access to the heat exchangers is difficult. They are located inside the condensate return pit and they are surrounded by steam and hot water pipes.

The hot water pumps servicing the above heat exchangers are more than 20 years old. No water leaks or other deficiencies were observed. However, due to their age frequent parts replacement is to be expected.

All three heat exchangers described above and their associated pumps are located in the basement level "wet" mechanical room. The room itself is overcrowded with steam and hot water piping and not enough room to maneuver.

It was pointed out by hospital personnel that the wall mounted steam radiators servicing the auditorium were turned off when the dedicated Boh rooftop unit was added.

## 2) Recommendations

### South Wing

The three air handling units meet current filtration standards. The equipment is about 25 years old, which exceeds the suggested service life of 20 years by ASHRAE.

The following is recommended:

- Refurbish all three air handling units to include the following:
  - New cooling coils (possible heating coils as well)
  - New outside air dampers
  - Seal all casing air leakages accordingly.
- New variable frequency drives.
- Replace sections of missing/saturated pipe insulation.

### West Wing

The major mechanical system supporting this building are in terrible condition. This includes all the equipment located in the sub-basement and penthouse mechanical rooms. The equipment has far exceeded the suggested service life of 20 years by ASHRAE and the air handling units themselves are not top quality.

All four air handling units, except for the outdoor Bohn unit, do not meet current filtration standards (they do not have final filters).

Refurbishing these air handling units is not recommended. Installation of new units that meet current code standards and space planning requirements is indicated

Other recommendations are as follows:

- Fix “booster” heat exchanger and associated pump.
- Replace sections of missing/saturated pipe insulation.
- Upgrade controls to DDC.
- Replace chilled water pumps for the two-pipe fan coil unit system.

#### Memorial Building

The equipment supporting this Level 4 (air handling unit AC-1) is in terrible condition. The unit has not only exceeded the suggested service life of 20 years, but it is currently used as a constant volume, with 100% outside air (no return air) despite currently serving on-call space that only requires 10% of outside air ventilation. Refurbishing this unit is not recommended. Installation of a new unit that meets current code standards and space planning requirements is indicated.

Other recommendations are as follows:

- Replace sections of missing/saturated pipe insulation.
- Fix all variable frequency drives.
- Upgrade controls to DDC.

Levels 3 and 2 have similar types of HVAC systems, (air handling unit serving some administration offices and unitary window units serving the rest of the offices). Current code standards require a minimum of 30% air filter for administrative areas. Unitary window units do not meet that requirement.

#### A-Building

The main air handling units serving the building (AC-1 and AC-2), are in terrible condition. They were installed in 1968 and have far exceeded the suggested service life of 20 years by ASHRAE.

Refurbishing these units is not recommended. Installation of new units that meet current code standards and space planning requirements is indicated.

Other recommendations are as follows:

- Replace sections of missing/saturated pipe insulation.
- Upgrade controls to DDC.
- Replace reheat hot water pumps.
- Install backup heat exchanger to meet code.

#### North Wing

The equipment serving the building is in good condition with the air handling units lasting another 10-15 years and the heat exchangers lasting 15 to 20 years. The only recommendations are as follows:

- Add final filters to meet hospital filtration requirements accordingly.
- Upgrade controls to DDC.

#### JaQuith Building

The air handling units servicing the building in are in fair condition with the exception of the Bohn rooftop unit servicing the auditorium and the Z-pack rooftop, which provides outside air to level three and four. The Bohn unit is more than 15 years old and the Z-pack unit is more than 22 years old. Both units have exceeded ASHRAE suggested service life. Installation of new rooftop units that fit future space planning is indicated.

Other recommendations are as follows:

- Replace sections of missing/saturated pipe insulation in the “wet” mechanical room.
- Upgrade controls to DDC.

If the building is switched back to patient rooms, the current mechanical system, (filtration and fan coils) do not meet current code standards.

### **C. PLUMBING AND FIRE PROTECTION SYSTEMS**

#### 1) Domestic Water Systems

##### AC Building

The domestic water system for the building is served by one 4-inch water service. The water service is equipped with a 2-1/2 inch pressure reducing valve, 2-1/2 inch Sensus water meter and a single 2-1/2 inch reduced pressure back flow preventer. All components are located in the first floor of this building and appeared to be in good condition.

The building domestic hot water system is supplied by a single gas fired storage water heater (PIV Model 40P125APG). The heater is located in the second floor mechanical room of this building. The heater storage capacity is 125 gallons with a recovery rate of 480 GPH of water from 40°F to 140°F. The heater appeared to be in good condition. Domestic hot water circulation system is served by a single circulation pump. The circulation pump is set up for constant running with an on-off switch. The pump appeared to be in good condition.

Distribution systems are in good condition.

#### North Wing

The cold water system is supplied from A-Building. The hot water supply and return systems are fed from the South Wing domestic hot water system.

Original distribution systems are in fair condition.

Existing gate valves are in poor condition.

#### West Wing

The cold water system is supplied from A-Building. The hot water supply and return systems are fed from the South Wing domestic hot water system. The West wing does have an existing low pressure incoming 4-inch domestic water service which is not in service. The hospital indicated that the incoming service did not have enough pressure to adequately serve the Wing.

Distribution systems are in fair condition.

#### JaQuith Wing

The cold water system serving the basement is supplied from a dedicated 2-1/2 inch water service. The service is equipped with a duplex 2-1/2 inch reduced pressure backflow preventer and a 2-inch water meter. The remainder of the upper floors is not supplied from this wing. The cold water for the upper floor is from A-Building. The hot water supply and return systems are supplied from the South Wing domestic hot water system.

Distribution systems are in fair to good condition.

#### South Wing

The cold water system is supplied from A-Building. The hot water supply and return systems are supplied from duplex Patterson-Kelley steam water heaters, Model Compact 405-20, located in the basement of this building. Approximate age of heaters are 30 years. Each heater is rated to heat 115 GPM of water from 40°F to 140°F when supplied with 50 psi steam in the line and 30 psi in the tubes. Each heater requires 6,310#/hr. of steam at 50 psi. Each heater is sized for 100% back-up service. Recently one of the heaters was repaired. These heaters also supply hot water to North Wing, West Wing, JaQuith, A-Building and Memorial.

Cold water distribution system was noted by the hospital to be in fair condition.

Hot water supply and hot water return systems were noted by the hospital to be in poor condition. The owner reported that the hot water system has problems with pipe leaks. Shower mixing valves in patient rooms are in poor condition requiring frequent repairs. Existing gate valves are also in poor condition.

#### A-Building

The cold water system is supplied from a 4-inch water service entering the basement level of A-Building. The cold water main size is 4-inches. The water service is equipped a 4-inch pressure reducing valve, 4-inch Sensus water meter and duplex 4-inch reduced pressure back flow preventers. The cold water system. The cold water service also supplies North Wing, West Wing, JaQuith, South Wing and Memorial. . The hot water supply and return systems are fed from the South Wing domestic hot water system.

The majority of distribution systems are in good condition. There are some areas which have older piping. This piping was noted to be in fair condition with gate valves that are approximately 40 years old.

#### Memorial Building

The cold water system is supplied from A-Building. The hot water supply and return systems are fed from the South Wing domestic hot water system.

Distribution systems are in is older and was noted to be in fair condition. Valves were also noted to be fair condition.

#### East Building

The cold water system is supplied from two 4-inch water services entering the ground level of the building. The incoming cold water main sizes are 4-inches. The water service is equipped with a duplex 4-inch pressure reducing valve station, 4-inch Sensus water meter and duplex 4-inch reduced pressure back flow preventers. The building cold water system is separated in high and low zone systems. The low zone water system is served by a duplex pressure reducing station. The low zone system serves ground floor through the third floor. The high zone system serves fourth floor through sixth floor.

The low zone domestic hot water system is supplied from duplex Patterson-Kelley steam water heaters, Model Compact II, located in the ground floor this building. Each heater, Model 402-89-06, is rated to heat 52 GPM of water from 40°F to 140°F when supplied 90 psi steam in the line and 60 psi in the tubes. Each heater requires 2,937#/hr. of steam at 90 psi. Each heater is sized for 100% back-up service. The hospital has noted periodic failure of the steam valve seats causing a hot water temperature to exceed 120°F. The low zone domestic hot water system is not equipped with master thermostatic mixing valves at the water heaters.

A non-domestic hot water system is supplied from duplex Patterson-Kelley steam water heaters, Model Compact II, located in the ground floor this building. Each heater, Model 402-89-06, is rated to heat 68 GPM of water from 40°F to 140°F with steam pressure at 90 psi steam in the line and 60 psi in the tubes. Each heater requires 3,841#/hr. of steam at 90 psi. Each heater is sized for 100% back-up service. The heaters are also equipped with a 1500 gallon hot water storage tank. These heaters serve currently only serve the sterile processing department.

The high zone domestic hot water system is supplied from duplex Patterson-Kelley steam water heaters, Model Compact II, located in the ground floor this building. Each heater, Model 403-89-08, is rated to heat 75 GPM of water from 40°F to 120°F when supplied 90 psi steam in the line and 60 psi in the tubes. Each heater requires 2,937#/hr. of steam at 90 psi.

Each heater is sized for 100% back-up service. The hospital has noted periodic failure of the steam valve seats causing a hot water temperature to exceed 120°F. The high zone domestic hot water system is not equipped with master thermostatic mixing valves at the water heaters.

Distribution systems are in good condition.

2) Natural Gas System

The facility currently has four gas services.

Memorial Building: the service enters the north side of Memorial building and serves the Memorial kitchen equipment. The gas meter is located within building. The gas pressure within the building is \_\_\_\_.

Power Plant: Service enters the south side of the power plant and supplies gas to three main dual-fuel boilers. Each boiler has a BTU/HR input requirement of 23,435,300. The gas meter is located within the building.

A-Building: The gas service serve the lab areas.

AC Building: The gas service serve the building emergency generator, boiler and lab areas.

3) Drainage Systems

AC Building

Storm and sanitary systems are in fair condition.

North Wing

Storm system is in good condition.

Sanitary system is in good condition. The building has been experiencing problems with block sinks. The cause of the blockage problems has not been determined.

West Wing

Storm and sanitary systems are in fair condition.

JaQuith

Storm and sanitary systems are in fair condition.

South Wing

Storm and sanitary systems are in fair condition.

A-Building

Storm and sanitary systems are in good condition.

A-Building has lab spaces. Existing lab sinks are connected to a special waste system which discharges to lime stone chip tank located outside on the Belmont Street side of the building. No reported problems with system.

Memorial Building

Storm and sanitary systems are in fair condition except for waste piping serving the main kitchen. The waste piping in this area is in poor condition. This piping also has problems with blockages due to grease build-up.

East Building

Storm and sanitary systems are in good condition.

Power Plant

Storm and sanitary systems are in good condition.

4) Medical Gas Systems

a) Source Equipment

- Oxygen: The facility oxygen system is supplied from a bulk liquid tank farm located between North wing and West Wing. The existing tank farm is scheduled to be replaced within the year. The facility consumption rate is estimated at 1,100,000 CCF/month.
- Nitrogen: The facility is served by high pressure automatic change over manifold located at the Memorial Building loading dock. The manifold is equipped with 10 primary cylinders and 10 secondary cylinders. The manifold appeared to be in good condition. The room in which the manifold is located is quite narrow for its use making replacement of cylinders very difficult.

Spare and empty cylinders are also stored at the entrance of the room which partially blocks access to the manifold. The hospital noted that one bank of cylinders is changed approximately once every week depending on the number of cases being performed in the facility.

- Nitrous Oxide: The facility is served by high pressure automatic change over manifold located at the Memorial Building loading dock. The manifold is equipped with 8 primary cylinders and 8 secondary cylinders. The manifold appeared to be in good condition. The room in which the manifold is located is adequate in size for its use. Spare and empty cylinders are also stored in the room. The hospital noted that one bank of cylinders is changed approximately once every week depending on the number of cases being performed in the facilities.

b) Medical/Surgical Air:

- Medical Air:

- Medical air system for all buildings is currently being served by the East Building medical air compressor equipment.
- The East Building medical air compressors, Nash Model OC8B Duplex unit, are located in the Penthouse floor of the East Building. The equipment is comprised of two Nash Model 1253 compressors, each driven by a 75 HP motor, rated for 220 SCFM at 50 psig. The compressors appear to be in good condition. Each compressor serves as 100% back-up. The equipment also consists of two refrigerated dryers, each rated for 300 scfm at 100 psi. The system is cooled by chilled water with cold make-up as back-up. The control panel is original and in good condition. The medical air system and the Surgical Air system are cross-tied for emergency conditions

- Surgical Air:

- Surgical air system is present in the East Building only.
- The East Building surgical air compressors, Nash Model OC-6B Duplex unit, are located in the Ground floor of the East Building. The equipment is comprised of two Nash Model CD-663 compressors, each driven by a 25 HP motor, rated for 75 CFM at 80 psig. The compressors appeared to be in good condition. The control panel and receiver appeared to be in good condition. Each compressor serves as 100% back-up. The equipment also consists of two refrigerated dryers rated 100 scfm at 100 psi. The system is cooled by chilled water with cold make-up as back-up. The control panel is original and in good condition.

- Surgical Vacuum:
  - Surgical vacuum system is present in the East Building only. The East Building surgical pumps, Nash Model OV8A Duplex unit, are located in the Ground floor of the East Building. The equipment is comprised of two Nash Model SC-214 pumps, each driven by a 10 HP motor, rated for 170 ACFM at 19" Hg. The pumps and the equipment skid appeared to be in poor condition. The owner has noted the vacuum exhaust piping is trapped and causes back pressure at the pumps. Periodically the exhaust piping has to be drained. The control panel and receiver appeared to be in good condition. Each pump serves as 100% back-up. The system is cooled by chilled water with cold make-up as back-up. The control panel is original and in good condition.
  
- Medical Vacuum:
  - East Building System: Nash Model OV9A Duplex unit, are located in the Ground floor of the East Building. This equipment currently serves only the East Building. The equipment is comprised of two Nash Model SC-314 pumps, each driven by a 15 HP motor, rated for 260 ACFM at 19" Hg. The pumps and the equipment skid appeared to be in fair condition although one of the mufflers was observed to be leaking. The control panel and receiver appeared to be in good condition. Each pump serves as 100% back-up. The system is cooled by chilled water with cold make-up as back-up. The control panel is original and in good condition.
  
  - Memorial Building System: Nash Model OV7A Duplex unit, is located in the Ground floor of the Memorial Building. This equipment currently serves Memorial, North Wing – Ground Floor, West Wing (when by-pass valve is open) and South Building. The equipment is comprised of two Nash Model MHC-130 pumps, each driven by a 7.5 HP motor, rated for 130 ACFM at 19" Hg. The pumps and the equipment skid appeared to be in good condition. The control panel and receiver appeared to be in good condition. Each pump serves as 100% back-up. The system is cooled with once through fresh water supply (2.5 GPM maximum). The unit was installed in 17 years ago to replace an older Nash OV6A duplex vacuum pump set. One of the older pumps, a Nash Model MHF-80 is driven by a 5 HP motor, rated for 70 ACFM at 19" Hg, is still operational and used in case of emergency condition. This pump is about 220 years old. The system is not connected to a central medical gas alarm panel.

- South Wing Building System: Nash Model OV8A Duplex unit, is located in the Basement floor of South wing The South Wing equipment is comprised of two Nash Model SC-2 pumps, each driven by a 10 HP motor, rated for 170 ACFM at 19" Hg. The one operational pump is 30 years old. The receiver is in fair to good condition. The control panel is in poor condition due to unavailability of service parts. The system is not connected to a central master gas alarm panel as required by current NFPA 99 requirements. This equipment used to serve this wing however one of the pumps is non-operational and is used to serve the South Wing as a back up to the Memorial Building vacuum pumps. The South Wing is primarily being served by the Memorial medical vacuum system.
  
- West Wing Building System: Nash Model OV-6A duplex unit is located in the Basement Floor. The unit is comprised of two Nash MHF-80 vacuum pumps, each driven by 5 HP motors and rated for 70 ACFM & 19" Hg. The unit is about 20 years old. The pumps are in fair condition. The control panel is in poor condition due to unavailability of parts. The system is not connected to a master gas alarm panels as required by current NFPA 99 requirements. West Wing vacuum system is primarily served by the Memorial Building vacuum pumps. The West Wing vacuum pumps serve as a back-u system to the West Wing. West Wing also has another Nash Model OV-6A duplex unit located in the Penthouse Floor. This unit currently serve the BioMed Department on the fourth floor. One of the pumps is currently non-functional. The control panel is in poor condition due to unavailability of service parts.

- Gas Evacuation:

- East Building System: Nash Model OV7A Duplex unit, are located in the Ground floor of the East Building. The equipment is comprised of two Nash Model MHF-120 pumps, each driven by a 7.5 HP motor, rated for 110 ACFM at 19" Hg. The pumps and the equipment skid appeared to be in good condition. The control panel and receiver appeared to be in good condition. Each pump serves as 100% back-up. The system is cooled by chilled water with cold make-up as back-up. The control panel is original and in good condition.

- c) Distribution System

East Building: Piping systems are in good condition.

Memorial Building: Piping systems are in good shape.

South Wing and West Wing: Piping systems are in good condition. Isolation of floors are difficult due to the absence of service valves on the distribution mains and risers. Medical gas outlets are old and can be repaired easily due to the lack of service parts. The manufacturer offers repair kits that require replacement of all internal parts and necessitate shut-down of the medical gas system within that zone.

d) Alarms

Master Gas Alarm Panels: The entire facility is equipped with two master gas alarm panels to monitor medical gas source equipment. The panels currently monitor all of the medical equipment located in the East Building as well as the bulk oxygen tank farm, nitrogen manifold and nitrous oxide manifold. All other medical source equipment in the facility are not monitored by master gas alarm panels as required by NFPA 99. The primary panel is in the security room. The secondary panel is located in the power plant. The panels appear to be operating properly. The following chart indicates which alarm signals were observed to be present:

Master Alarm Signals – Input Device Requirement and Input Device Location According to NFPA 99			
Master Alarm Signal	Input Device	Input Device Location	Present
<b>Nitrogen – Memorial Building Loading Dock: Ground Floor</b>			
Change over to Secondary Bank	Switch	On the Manifold	YES
High Pressure	Switch	Outlet Side of Source Valve	YES
Low Pressure	Switch	Outlet Side of Source Valve	YES
<b>Nitrous Oxide – Memorial Building Loading Dock: Ground Floor</b>			
Change over to Secondary Bank	Switch	On the Manifold	YES
High Pressure	Switch	Outlet Side of Source Valve	YES
Low Pressure	Switch	Outlet Side of Source Valve	YES
<b>Carbon Dioxide</b>			
Change over to Secondary Bank	Switch	On the Manifold	YES
High Pressure	Switch	Outlet Side of Source Valve	YES
Low Pressure	Switch	Outlet Side of Source Valve	YES

Master Alarm Signals – Input Device Requirement and Input Device Location According to NFPA 99			
Master Alarm Signal	Input Device	Input Device Location	Present
<b>Medical Air – East Building Mechanical Room: Penthouse Floor</b>			
Dew Point High	Contact	On Dewpoint/CO Monitor	YES
Carbon Monoxide High	Contact	On Dewpoint/CO Monitor	YES
Thermal Malfunction	Contact	Control Panel	YES
Lag Compressor in Use	Contact	Control Panel	YES
High Pressure	Switch	Outlet Side of Source Valve	YES
Low Pressure	Switch	Outlet Side of Source Valve	YES
<b>Surgical Air – East Building mechanical room: Penthouse Floor</b>			
Dew Point High	Contact	On Dew point/CO Monitor	YES
Carbon Monoxide High	Contact	On Dew point/CO Monitor	YES
Thermal Malfunction	Contact	Control Panel	YES
Lag Compressor in Use	Contact	Control Panel	YES
High Pressure	Switch	Outlet Side of Source Valve	YES
Low Pressure	Switch	Outlet Side of Source Valve	YES
<b>Surgical Vacuum – East Building mechanical room: Ground Floor</b>			
Lag Pump in Use	Contact	Control Panel	YES
Low (Abnormal)	Switch	Inlet Side of Main Valve	YES
<b>Medical Vacuum – East Building mechanical room: Ground Floor</b>			
Lag Pump in Use	Contact	Control Panel	YES
Low (Abnormal)	Switch	Inlet Side of Main Valve	YES
<b>Gas Evacuation – East Building mechanical room: Ground Floor</b>			
Lag Pump in Use	Contact	Control Panel	YES
Low (Abnormal)	Switch	Inlet Side of Main Valve	YES
<b>Medical Vacuum – Memorial Bldg mechanical room: Ground Floor</b>			
Lag Pump in Use	Contact	Control Panel	NO
Low (Abnormal)	Switch	Inlet Side of Main Valve	NO
<b>Medical Vacuum – West Wing mechanical room: Basement Floor</b>			
Lag Pump in Use	Contact	Control Panel	NO
Low (Abnormal)	Switch	Inlet Side of Main Valve	NO

Master Alarm Signals – Input Device Requirement and Input Device Location According to NFPA 99			
Master Alarm Signal	Input Device	Input Device Location	Present
<b>Oxygen (Bulk - Liquid)</b>			
Change over to Reserve Supply	Contact/Switch	Tank Farm	YES
Liquid Level Low	Contact/Switch	Tank Farm	YES
Reserve Pressure Low	Contact/Switch	Tank Farm	YES
Reserve Low	Contact/Switch	Tank Farm	YES
High Pressure	Switch	Outlet Side of Source Valve	YES
Low Pressure	Switch	Outlet Side of Source Valve	YES

5) Fire Protection Systems

General: The majority of the facility is fully sprinklered and is equipped with both Class 1 and Class 2 standpipe systems.

A-Building and South Wing are served by a single 6-inch fire service located in the Basement and mechanical room of A-Building. The fire service supplies two 6-inch main alarm check valve assemblies. Each main alarm check valve assembly is equipped with an excess pressure pump kit to compensate for city water pressure fluctuations and minimize false alarms. A required cross-connection device was not observed to be present in the incoming fire service.

Jaquith Wing is served by a single 6-inch fire service located in the Basement mechanical room of this building. The fire service is equipped with a single 6-inch cross-connection device which then supplies a single 6-inch main alarm check valve assembly. The main alarm check valve assembly is equipped with an excess pressure pump kit to compensate for city water pressure fluctuations and minimize false alarms.

West Wing is served by a single 6-inch fire service located in the Basement mechanical room of this building. The fire service supplies a single 6-inch main alarm check valve assembly. The main alarm check valve assembly is equipped with an excess pressure pump kit to compensate for city water pressure fluctuations and minimize false alarms. A required cross-connection device was not observed to be present on the incoming fire service.

Memorial Building is served by two fire protection services:

- A single 8-inch fire service located in the Ground Floor of this building near the North Wing. The fire service is equipped with a single 8-inch cross-connection device which then supplies two 6-inch main alarm check valve assemblies. The main alarm check valve assemblies are equipped with an excess pressure pump kits to compensate for city water pressure fluctuations and minimize false alarms. The main alarm check valves serve both the Memorial Building and North Wing.
- A single 8-inch fire service located in the Ground Floor of this building near East Building. The fire service supplies two 6-inch main alarm check valves assemblies. The main alarm check valve assemblies are not equipped with an excess pressure pump kits as to compensate for water pressure fluctuations and minimize false alarms. A required cross-connection device was not observed to be present on the incoming fire service. The main alarm check valve assembly serves the Memorial Building.

6) Recommendations

Medical Gas Systems

Nitrogen and Nitrous Oxide Manifolds: Current locations of the manifolds should be evaluated. Current space for these manifolds is inadequate for maintenance and servicing. Capacity of the manifolds should be also be evaluated based on presently having to replace one bank of cylinders for each manifold every week.

Recommend that the existing space be expanded or an alternate location for the manifolds be considered. A separate room should be considered to store space and empty cylinders.

Recommend that an additional high pressure manifolds for each gas be installed to minimize frequency of changing banks.

Medical Vacuum Equipment: With the exception of the East Building most of the medical vacuum pumps and their control panels are more than 20 years old. Most of the control panels, with the exception of the Memorial control panel, are old, antiquated and can not be serviced. These medical vacuum pumps are also not connected to any master gas alarm panels as required by NFPA 99 standards.

Currently the facility staff has to rely on local area alarm panels in patient areas and nurse staff to be notified of problems with the medical vacuum system. The medical vacuum pump in the Memorial Building is in the primary vacuum source for most the building with the exception of the East Building. The other buildings vacuum pumps supplement the Memorial pumps if can not keep with the demand.

- Recommend that all of the existing vacuum pumps be replaced with one new central vacuum pump skid sized adequately to serve all the buildings except for the East Building. The new pumps should also be properly alarmed and wired, in accordance with NFPA 99, to the Power Plant and East Building master gas alarm panels.

➤ Fire Protection System

- Recommend installation of cross-connection devices for the fire services in A-Building, West Wing and Memorial Building required by current state regulations.

**D. ELECTRICAL**

1) Primary Electrical Service (See Exhibit E1-1)

The Hospital Complex is served from the Massachusetts Electric Company through two (2) Hospital owned 13.8 kV primary feeders (utility company feeder #39 and #55) and two (2) Hospital owned primary switchgears located in the Power Plant. The switchgears each consist of incoming section, primary main circuit breakers, a metering section and two (2) feeder circuit breakers. A normally open tie circuit breaker connects the two switchgears via a bus duct.

The primary electrical service equipment is owned by the Hospital and the Hospital is primary metered.

The Hospital owned primary feeders #39 and #55 are run to each of the various substations located throughout the Complex.

Meter information obtained from Massachusetts Electric indicates that for the past 12 month period the facility has operated with a maximum demand 4.1 MVA, which was experienced in August of 2002. During this period the power factor was approximately 0.9.

## 2) Secondary Electrical Service

### Power Plant Substation “A”:

- Substation A, located in the Boiler House, is a primary selective single-ended substation with a 3000 kVA silicone filled transformer. The substation feeds mechanical equipment in the Power Plant, such as motor control centers, chillers, etc.
- The transformer was installed in 1990 to replace the original PCB contaminated transformer.
- There is additional capacity within this substation for additional equipment in the Power Plant.

### Power Plant Substation #1 & #2:

- Substation #1 and #2, also located in the Power Plant, is a double-ended substation with two 500 kVA dry-type transformers.
- The substation is provided with primary side power factor correction capacitor banks. Side 1 is 800 kVAR (400 kVAR fixed, 400 VAR automatically switched); side 2 is 400 kVA (fixed).
- Substation #1/#2 feeds the Power Plant, Garage, and part of the Memorial Building.
- Substation #1/#2 appears to be well maintained and in good working condition.

### “A” Building Substation #2:

- Substation #2, located in the Basement of “A” Wing, is a single line-up, double-ended substation with two 750 kVA dry-type transformers.
- Substation #2 feeds “A” Building, Memorial Building, West Wing and a 480V-120/208V step-down transformer located in the same room that feeds the 120/208V, 3-phase, 4-wire electric power to “A” Building, and the Memorial Building.
- Substation #2 and associated step-down substation appear to be well maintained and in good working condition.
- There is limited future capacity in this substation. This spare capacity should be used for future renovations to “A” Building.

### South Wing Substation

- The South Wing Substation, located in the Basement of the South Wing, is a double-ended substation with 3000 kVA silicone-filled transformers.

- The transformers were installed in 1990 to replace the original PCB contaminated transformers.
- The substation feeds a 4000-Ampere double-ended switchboard.
- The substation feeds five (5) transfer switches of the emergency system, the North Wing, JaQuith Building and the South Wing. These buildings have step-down transformers to provide 120/2108V, 3-phase, 4-wire power.
- The South Wing substation appears to be well maintained and in good working condition. There is additional capacity in this substation to provide additional 277/480V, 3-phase, 4-wire power for additional spaces or renovation.

East Building Substation:

- The East Building substation located in the Penthouse is fed from a pair of primary switches (#39 and #55) located in the basement of East Building.
- The substation is a single line-up, double-end substation with two (2) primary selective switches at each end and 2000 kVA dry-type transformers.
- Main, tie and feeder over-current protective devices are air power circuit breakers with ground fault protection.
- A fire pump feed is connected to the line side of the #55 switch located in the basement of East Building. The primary feeder is extended to a substation located on the first floor, where the voltage is stepped-down to 277/480 volts. The feed from the substation to the fire pump is enclosed in 2-hour rated construction.
- The East Building substation and downstream distribution were installed in the mid-1990's and appear to be per code and in good working condition. The substation has substantial spare capacity for future renovations.

3) Emergency Power Distribution System:

The emergency power generation and distribution system equipment is comprised of the following:

- 565 kW, 277/480V, 2-phase, 4-wire, diesel generator, located in the South Wing.
- 150 kW, 120/208V, 3-phase, 4-wire, diesel generator, located in the North Wing basement.
- 400 kW, 277/480V, 3-phase, 4-wire, diesel generator, located in the Power Plant.
- Two (2) 1000 kW, 277/480V, 3-phase, 4-wire diesel generators located in the penthouse of the East Building.

The emergency generators appear to be well maintained and in good condition, and all are located in their own separate rooms.

The emergency distribution systems are as follows:

#### Power Plant System

This system distributes emergency power to the Power Plant, “A” Building and a portion of the Memorial Building.

This system does not meet code because all three branches of the emergency system are combined in each building. All Hospital buildings require the three branches, however, if the Boiler House was the only building being fed from this generator, one (1) transfer switch would be sufficient because it is not a “Hospital-type” building. All buildings other than the Boiler House need to have the emergency systems rewired to meet code. If major revisions are made to the emergency systems, then the entire emergency system will need to be upgraded to isolate the emergency feeders and equipment in two-hour fire rated enclosures.

#### West/North Wing System

This system distributes emergency power to the West Wing basement and ground floor with capacity to be extended to the remainder of the West Building on a Life Safety branch for the North Wing (non-patient building).

This system’s equipment generator, transfer switches and distribution panels are housed in separate two-hour rated rooms. The existing feeder circuits and panels are not located in 2-hour rated room enclosures.

#### South Wing System

This system distributes emergency power to the South Building, JaQuith Building, North Wing, Memorial Building Surgery and “A” Building CAT and X-Ray rooms.

This system meets the requirements of the 1967 and 1970 Massachusetts Electrical Codes, which require at least three (3) separate branches. It does not meet the requirements of two-hour fire rated enclosures, since this system was installed before the code went into effect. It would not be required to meet this code. However, if major renovations are done to this system, it may be required to be upgraded.

#### East Building Systems

The East Building generator is connected to an automatic parallel switchgear lineup consisting of generator controls, distribution circuit breakers and combination automatic transfer/bypass isolation switches. The following feeds are provided:

- Life Safety
- Critical
- Equipment

- X-Ray
- Elevators
- Fire Pump (circuit breaker only)

The emergency system panels are located in dedicated two hour rated rooms/closets. Emergency system feeders are run in 2-hour rated enclosures or are run with mineral insulated cables.

The East Building emergency system appears to be installed per code and has capacity for future loads.

#### 4) Recommendations

The existing electrical service and distribution systems comply with the Codes in place at the time of their original installation. Subsequent changes in the Massachusetts Electrical Code require normal and emergency systems feeder circuits and distribution equipment to be separated by two-hour fire rated construction. This code requirement is non-retroactive, however all subsequent work must be done in compliance with the latest Codes. All new work concerning connections to or reuse of the existing emergency systems should be reviewed with the electrical inspector for the City of Worcester during the early planning stages.

New emergency electrical closets should be provided for renovations in the older portions of the Hospital. Fire rated enclosures will be required to run the new feeders to these closets, or mineral insulated (MI) cable should be provided.

The existing electrical distribution systems and equipment appear to be well maintained and in generally good working order. However, because of the increased power demands imposed on electrical systems by the modern medical environment it is imperative that the system be properly managed. This includes ongoing monitoring of load flow within the system, preventive maintenance and replacements, and engineering review of proposed additions.

## II. UMASS MEMORIAL UNIVERSITY HOSPITAL

### A. POWER PLANT

The scope of this report does not include detailed reviews of the Power Plant components. However a brief description of the Power Plant is as follows:

There are a total of four steam boilers. Two were installed in 1973 and two boilers installed around 1998. The two older boilers produce superheated steam at 250 psig of pressure. The newer boilers produce superheated at 1100 psig of pressure.

Steam produced by the two older boilers is directed first to two steam turbines. These two turbines, like the older boilers were installed in 1973. Steam produced by the two newer boilers is directed to one steam turbine. This turbine like the newer boilers was installed around 1998, but became active in July of this year as indicated by the plant operator. The steam leaving this turbine is superheated at 250 psig of pressure, and is redirected to the header of the two older boilers.

The Chiller Plant consist of four steam chilled water producing chillers. Three were installed in 1973 and they are rated for 2,500 tons of cooling each.

The fourth chiller was installed around 2000 and is rated for 5000 tons of columns.

The three older chillers received 250 psig of steam pressure, while the newer chiller 50 psig of steam pressure. The 50 psig steam that is sent to the newer chiller by extraction from the two older steam turbines. It was indicated by the Power Plant personnel that the newer chiller become active in August of 2001. According to the Power Plant personnel the current cooling capacity of the plant, 12,500 tons, can barely peak demand for the current campus facilities. Additional local cooling plant may be needed for new structures.

The overall visual condition of the Power Plant is very good, and well maintained. It was indicated by plant personnel that one of the older chillers, chiller no. 1, was retrofitted four years ago, the remaining two older chillers were not, due to insufficient funds but their operation is good.

It was observed that the chillers and the gas/oil combination fire steam boilers share the same mechanical room. The Massachusetts Building Code requires separate rooms for boilers and the chillers.

Last but not least, 25% of the electrical load used on campus is generated through the use of the steam turbines on campus.

**B. AIR HANDLING UNITS AND RELATED SYSTEMS**

1) Existing Conditions

a) Air Handling Units:

The building is served by several custom built-up air handling units centrally located at Level B mechanical room and the mechanical floor at Level 9. These units, for the most part, are original to the building, which dates back to 1970. The area of coverage for these units is presented in the floor plans included in the appendix. The casing is constructed of concrete block with the exception of air handling units labeled AC-7B and AC-8T through AC-14T, which consist of standard factory-built steel casing panels.

The internal components (e.g., coils, filters) are summarized in Appendix A, Table 1.

Although the equipment appears to be well maintained, it has exceeded its useful life expectancy of 20 years as suggested by ASHRAE. The exceptions are the air handling units AC-9T through AC-14T. They were installed around 1994 and serve the bone marrow area on the 8<sup>th</sup> floor. In general the components for the building original air handlers were found in poor condition.

For instance, we typically observed the following for these units:

- Substantial rust of heating and cooling coil casings.
- Substantial rust of supply DWDI fan housing installed inside the unit.
- Substantial rust of supply fan mounting frame including vibration isolators.
- Missing pipe insulation (e.g., chilled water inside the unit).
- Excessive coil condensate leakage to floor of some units.
- Substantial rust and poor condition of outside air and return air dampers.
- Poor humidifier condition.
- Poor access door condition leading inside the units.
- Poor discharge duct configuration for some units.

It was indicated that the cooling coil will be replaced for some units within the next two years. As mentioned before, the Bone Marrow area on the 8<sup>th</sup> floor is served by six air handlers. The units are labeled AC-9T through AC-14T. AC-14T is a spare unit for units AC-9T through AC-12T. These units were installed around 1994 and were observed in good overall condition.

In addition of listing the visual conditions of the air handling units, it was observed that the original air handling units, 1973, and as listed in Table No. 1, do not have final filters. Final filters are located after the fan. This condition does not meet current hospital guidelines. In the case of the air handling units servicing the operating/trauma rooms, such as AC-1B and AC-2T, final HEPA filters are required. As indicated in Table No. 1, none of the original air handling units have HEPA filters.

hospital personnel indicated that three years ago they obtained proposals based on a study done in 1998, to repair some of the AC-1B ductwork serving the OR's in Level 1, and replace AC-1B with a new 60,000 cfm air handling unit and a new air cooled glycol chiller. The equipment were to be located on the roof of 2<sup>nd</sup> floor.. This project was never done. Later the Hospital requested proposal to install a smaller package rooftop to serve either 2 OR's or 4 OR's, 6,000 cfm and 12,000 cfm respectively. The proposed package rooftop unit was made by DAC/Deschamps. This project was also never done.

The Cardiac Cath suite on the 2<sup>nd</sup> floor is served by a new outdoor air handler unit installed in 1999. This unit is relatively new and is in good overall condition.

Scheduled information on the existing air handling units is presented in Appendix A Table 2.

b) Related Systems:

Each air handling unit located in Level B mechanical room and Level 9 mechanical floor is provided with a dedicated hot water pump, which serves the preheat coils. Each pump is provided with a variable frequency drive for water flow control.

Hot water is produced by steam to hot water heat exchangers. For the Level B mechanical room we found three heat exchangers. One is dedicated to the preheat coils and the other one to duct mounted reheat coils and fin-tube radiation. The third heat exchanger is a standby one which meets the requirements of the hospital code.

hospital personnel indicated that the original building reheat hot water piping distribution is in bad shape. Fittings are prone to leak requiring constant supervision and maintenance.

At the Level 9 mechanical floor, we found four steam to hot water heat exchangers. One heat exchanger is dedicated to the patient room induction units, which are fed by air handling unit AC-5T. Another heat exchanger is dedicated to air handling unit preheat coils, and the third to duct mounted reheat coils and fin tube radiation. The fourth heat exchanger is a standby one which meets the requirements of the hospital code.

The air handling units at Level 9 have dedicated booster chilled water pumps with variable frequency drives. Chilled water is provided from the power plant to Level 9. From that point the booster chilled water pump increases the water pressure to overcome the coil, valve and fittings pressure losses.

2) Recommendations

In accordance with ASHRAE suggested values for equipment service life, the shell and tube heat exchangers and base-mounted pumps should have 24 and 20 years of service respectively. The equipment in question were installed around 1973 and therefore exceed the suggested values. There are indications of motor replacement and impeller/seal work for some pumps. This type of work is expected because of the age of the equipment.

Based on correspondence presented, the air handling unit, AC-1B was considered for replacement. The reasons for the replacement appears to be poor environmental conditions at the OR's and upgrade the air handler meet to code by adding HEPA filters.

Although this work was never done, it does make sense to add an air handling unit that meet current Hospital Standards, to take care of the OR's in the first and second levels. This unit could be located on the roof of the second levels. The unit could be located on the roof on the second level and directly above the OR's on that level.

The current AC-1B can be maintained on service up to the last moment. The new air handler can then be reconnected to the existing ductwork distribution minimizing downtime. AC-1B can then be used as a stand-by unit or to serve other areas in the hospital.

Additional need for chilled water from the Power Plant or from a local chiller will require further evaluation.

It was noticed throughout both mechanical rooms that the pipe insulation as well as the rigid insulation over pump impellers are in bad shape. There are pieces of insulation missing throughout the area, as well as damaged sections of pipe insulation due to water leaks, which make those sections of insulation unusable. Not only is energy wasted, but also the life of the pipe and equipment is reduced due to premature rusting and corrosion. It is strongly recommended that the insulation be replaced accordingly.

C. *PLUMBING AND FIRE PROTECTION SYSTEMS*

1) Existing Conditions

a) Domestic Water Systems:

- The domestic water system for the facility is served by two 10-inch water services. One service is supplied directly from a 12-inch water service which also serves the fire protection system. Containment backflow preventers were not observed within the main mechanical room. The water supply passes through variable flow filtration system.

The system is equipped with 6 multimedia filters, duplex in-line filtration 7-1/2 hp pumps, automatic by-pass and control panel. The system is located in the Level B mechanical room. The filtration system was installed in 1995 and has a maximum peak capacity of 350 GPM with a nominal filtration of 2.0 micron. This system is also capable of flowing 250 GPM during backwash cycles. The filtration system appeared to be in good condition. Pressure readings observed during site were as follows:

- Pump inlet pressure: 125-130 psi
  - Pump discharge pressure: 150 psi
  - Filter discharge pressure: 140 psi
- After filtration the domestic cold water supply is then metered. Size of meter could not be determined. The building water system is separated into high and low zone distribution systems.
  - The low zone system serves floors B, A, 1 and 2. The low zone system is protected by duplex 6-inch (CLA-Valve) pressure reducing (PRV) station. The PRV station inlet pressure was observed to be around 138 psi and the outlet pressure was observed to be around 74-84 psi. The CLA-Valves were replaced about 2 years ago and appeared to be in good condition.
  - The high zone system serves floors 3 through 9. The water system is pressurized by duplex water booster pumps (BP-1 & BP-2) with a variable frequency drive (VFD) system. Each pump is 50 hp and rated for 500 GPM at 120 TDH. One pump serves as 100% back-up. Pressure readings on the discharge side were observed to be between 140 to 150 psi. The owner noted that the booster pumps are working properly and are in good condition and that the VFD's were replaced 5 years ago.
  - The low zone domestic hot water system is supplied by duplex steam to water heaters (WH-4 & WH-5). The heaters are located in the Level B mechanical room. Each heater (P-K Model 512-40/8T Control-Flow Storage Water Heater) is rated to heat 7,200 GPH of water from 40°F to 140°F with a steam pressure at 25 psi in the line and 15 psi in the tubes. Each heater is sized for 100% back-up. The steam requirement is 6,424 pounds per hour per heater at 25 psi. Each heater has a storage capacity of 530 gallons. It was noted by the owner that the heaters have not been re-lined. The heaters appear to be in good condition. Domestic hot water circulation system is served by a duplex set of 2 hp circulation pumps (RP-1 & RP-2) at the source equipment. The circulation pumps are automatically controlled by emersion aquastats. Circulation pumps are set for manual alternation. The pumps appeared to be in good condition.

The owner indicated that the water heaters have not been relined since installed.

- The high zone domestic hot water system is supplied by triplex steam to water heaters (WH-1, WH-2 & WH-3). The heaters are located in the Level 9 mechanical room. Each heater (P-K Model 514-54/11V Control-Flow Storage Water Heater) is rated to heat 10,333 GPH of water from 40°F to 140°F with a steam pressure at 25 psi in the line and 15 psi in the tubes. Each heater is sized for 100% back-up. The steam requirement is 9,219 pounds per hour per heater at 25 psi. Each heater has a storage capacity of 1,980 gallons. It was noted by the owner that the heaters have not been re-lined. The heaters appear to be in good condition. Domestic hot water circulation system is served by a duplex set of 2 hp circulation pumps (RP-3 & RP-4) at the source equipment. The circulation pumps are set for constant running. Circulation pumps are set for manual alternation. The owner indicated that the water heaters were relined about 8 years ago.
- Two pure water systems exist in the facility. One system located on Level 2 and produces 1 meg ohm quality reverse osmosis water. The system appeared to be in good condition. This system is maintained by the Biomedical Department. The other system is located in Level B Mezzanine which serves the BMT suite. This system is maintained by the hospital.
- Distribution Systems
  - The facility is served by four main riser locations located within shafts. Main horizontal supplies at each floor are controlled by services valves at the risers. The existing risers were replaced several years ago.

b) Natural Gas System:

- A 3-inch natural gas service serves the main building. The gas meter is located outside the Power Plant. The natural gas serves the Medical School and Levels B and Z of the Medical Center. The gas pressure within the building is less than ½ lb.

c) Drainage Systems:

- Storm
  - Existing plans indicate that the facility is served by a single 16-inch building storm drain which leaves the south-east side of the building. The Medical Center has approximately about 101,000 square feet of roof area that discharges to the 16-inch storm drain.

- Sanitary
  - Existing plans indicate that the facility is served by a single 12-inch building sanitary drain which leaves the north-east side of the building. At 1/8-inch per foot slop, the 12-inch sanitary drain has a capacity of 4,600 drainage fixture units.
  - The Owner noted the implementation of periodic cleaning of the sewer main line due to grease build-up being produced by the Level A main kitchen.
- Special Waste Systems
  - The building is served by a lab waste piping system which discharges into a limestone tank to neutralize chemical wastes. Special waste was originally produced by the lab programs with the building. However most of the lab programs spaces have relocated to other buildings. A minor amount of special waste is still being produced by film processing units. The limestone tank is recessed in the Level B slab of the mechanical room and discharges by gravity to an existing manhole located in the north-east side of the building.

d) Medical Gas Systems:

- Source Equipment
  - Oxygen: The facility oxygen system is supplied from a bulk liquid tank farm located near the power plant. The existing tank farm is scheduled to be replaced within the year. The facility consumption rate is estimated at 1,642,595 ccf/month. The facility does not have an emergency oxygen connection as required by current NFPA 99 standards, but is equipped with an emergency high pressure manifold located in Level B. The manifold is equipped 12 supply and 12 reserve cylinder banks. The manifold system is about 25 years old and appears to be in good condition.
  - Nitrogen: The facility operating rooms are served from a high pressure manifold located on Level B. The manifold consists of two equal banks of five cylinders. The manifold is original and appears to be in good condition.
  - Nitrous Oxide: The facility operating rooms are served from a high pressure manifold located on Level B. The manifold consists of two equal banks of four cylinders. The manifold was replaced approximately two years ago and appears to be in good condition.

- Carbon Dioxide: The facility is equipped with two different carbon dioxide manifold systems. One system serves the operating rooms and the other serves the lab functions within the building. Both manifolds are located on Level B. The operating room manifold consists of two cylinders. This manifold equipment is original and appears to be in good condition. The lab manifold consists of two equal banks of six cylinders. This manifold was replaced approximately two years ago.
- Oxygen-Carbon Dioxide: The facility operating rooms are serviced from a high pressure manifold located on Level B. The manifold consists of two equal banks of three cylinders. The manifold is original and appears to be in good condition.
- Medical Air:
  - Floors B through 2 are served by two sets of duplex liquid ring air compressors (MC-1/MC-2 & MC-3/MC-4) located on Level B. The compressors (Nash MD-573) appear to be in fair condition. The equipment is about 30 years old. Each 15 hp compressor is rated for 37 SCFM at 50 psig. One duplex set will produce about 74 SCFM. One compressor serves as 100% back-up. Each duplex unit consists of a single refrigerated dryers rated 100 scfm at psi and a single receiver. One set of desiccant dryers was recently installed to assist the existing refrigerated dryers. The desiccant dryer is a Hankinson Model DH-165 and rated for 165 scfm at 100 psig. A new dew point/CO Monitor was added to the system as well. The system has only one filter on the output side of the desiccant dryer and one pressure regulating valve. The system is cooled by once through cold water make-up which is then dumped to drain. Each compressor uses about 3 gpm of cold water. The compressors are obsolete and the manufacturer recommends against repairing them. The control panel is original and does not meet current codes.
  - Floors 3 through 8 are served by two sets of duplex liquid ring air compressors (MC-5/MC-6 & MC-7/MC-8) located on Level 9. The compressors (Nash CD-663) appear to be in fair condition. It appears on compressor is original (1973) and the other three have been replaced over time (1978, 1991 & 1996). At least one compressor was replaced in 1996. Each 25 hp compressor is rated for 75 SCFM at 50 psig. One duplex set will produce about 150 SCFM. One duplex set serves as 100% back-up. Each duplex unit consists of a single refrigerated dryer rated 100 scfm at psi, and a single receiver.

The system is cooled by a once through cold water make-up which is dumped to drain. Each compressor uses about 3 gpm of fresh water. The control panel is original and do not meet current codes. It was noted by Hospital that the air compressors are currently on a normal power source only.

➤ Medical Vacuum:

- Floors B through 2 are served by a NASH OV9A duplex recirculating seal vacuum system comprised of two (2) Nash Model CL-302 vacuum pumps (MV-1 & MV-2). Each pump consumes 3 gpm of chilled water through a plate and frame heat exchanger. The pumps are also supplied with fresh water as a back-up. Pump MV-1 is currently down and shut-off. MV-1 is scheduled to be replaced with a new pump. Pump MV-2 appeared to be in fair condition. The equipment is about 29 years old. Each 15 hp pump is rated for 252 ACFM at 19" HgV. One pump serves as 100% back-up. The control panel is original and does not meet current codes.
- Floors 3 through 8 are served by a two sets of NASH OV9A duplex recirculating seal vacuum system comprised of two (2) Nash Model CL-302 vacuum pumps. Each pump consumes 3 gpm of chilled water through a plate and frame heat exchanger. The pumps are also supplied with fresh water as a back-up. Pumps MV3 through MV-6 appeared to be in good condition. The equipment is about 29 years old. Each 15 hp pump is rated for 252 ACFM at 19" HgV. One pump on each set serves as 100% back-up. Both sets of duplex pumps are not set run as a quad system. Each duplex set are manually controlled for alternate running. The control panel is original and does not meet current codes.

➤ Waste Anesthetic Gas System: The facility does not have a dedicated waste anesthetic gas pump and piping system. Anesthetic gases are evacuated through the existing Level B medical vacuum system.

➤ Distribution System

- Piping systems are in good shape. The owner noted that riser and service valves do not exist in the distribution system and as a result renovations cause major shut downs of the distribution system.

➤ Alarms

- Master Gas Alarm Panels: The facility is equipped with one master gas alarm panel to monitor all medical gas source equipment. The primary panel is located in the Operations Center. The facility does have the secondary panel as required by current NFPA 99 standards. Current NFPA 99 standards require that all medical gas source equipment alarm signals be independently wired to two master gas alarm panels. The panel appears to be original and appears to be operating properly. The following chart indicates which alarm signals were observed to be present:

Master Alarm Signals – Input Device Requirement and Input Device Location According to NFPA 99			
Master Alarm Signal	Input Device	Input Device Location	Present
<b>Nitrogen – Level B</b>			
Change over to Secondary Bank	Switch	On the Manifold	Yes
High Pressure	Switch	Outlet Side of Source Valve	Yes
Low Pressure	Switch	Outlet Side of Source Valve	Yes
<b>Nitrous Oxide – Level B</b>			
Change over to Secondary Bank	Switch	On the Manifold	Yes
High Pressure	Switch	Outlet Side of Source Valve	Yes
Low Pressure	Switch	Outlet Side of Source Valve	Yes
<b>Carbon Dioxide – Level B</b>			
Change over to Secondary Bank	Switch	On the Manifold	Yes
High Pressure	Switch	Outlet Side of Source Valve	Yes
Low Pressure	Switch	Outlet Side of Source Valve	Yes
<b>Medical Air – Level B</b>			
Dew Point High	Contact	On Dewpoint/CO Monitor	
Carbon Monoxide High	Contact	On Dewpoint/CO Monitor	
Thermal Malfunction	Contact	Control Panel	
Lag Compressor in Use	Contact	Control Panel	
High Pressure	Switch	Outlet Side of Source Valve	
Low Pressure	Switch	Outlet Side of Source Valve	

Master Alarm Signals – Input Device Requirement and Input Device Location According to NFPA 99			
Master Alarm Signal	Input Device	Input Device Location	Present
<b>Medical Air – Level 9</b>			
Dew Point High	Contact	On Dew point/CO Monitor	
Carbon Monoxide High	Contact	On Dew point/CO Monitor	
Thermal Malfunction	Contact	Control Panel	
Lag Compressor in Use	Contact	Control Panel	
High Pressure	Switch	Outlet Side of Source Valve	
Low Pressure	Switch	Outlet Side of Source Valve	
<b>Medical Vacuum – Level B</b>			
Lag Pump in Use	Contact	Control Panel	
Low (Abnormal)	Switch	Inlet Side of Main Valve	
<b>Medical Vacuum – Level 9</b>			
Lag Pump in Use	Contact	Control Panel	
Low (Abnormal)	Switch	Inlet Side of Main Valve	
<b>Oxygen (Bulk - Liquid)</b>			
Change over to Reserve Supply	Contact/Switch	Tank Farm	
Liquid Level Low	Contact/Switch	Tank Farm	
Reserve Pressure Low	Contact/Switch	Tank Farm	
Reserve Low	Contact/Switch	Tank Farm	
High Pressure	Switch	Outlet Side of Source Valve	
Low Pressure	Switch	Outlet Side of Source Valve	

- Local Area Alarm Panels: The hospital indicated that the majority of the local area alarm panels are old and obsolete. It was noted that the manufacturer refuses to service the panels at this time.

e) Fire Protection Systems:

- The building is served by a one 12-inch water service and one 10-inch water service. The 12-inch service reduces to 10-inch prior to the building 10-inch double check valve assembly. The double check valve assembly appeared to be in good condition.

- The building fire protection system is equipped with a 150 hp electric fire pump has a rated capacity 2000 GPM at 107 TDH (PSI). The fire pump has been periodically tested and appears to be in good condition.
- The overall fire protection system appears to be in good condition.
- The entire building is equipped with by a combination Class III wet standpipe system supplied from the fire pump. The majority of the standpipes are located in mechanical shafts with branch run outs to floor control valve stations located in main stair landings. The majority of the building is fully sprinklered with the exception of the Level 2 operating suites and parts of radiology.
- The owner indicated that the building is considered a high rise building and is equipped with two sets fire department connections.

2) Recommendations

a) Water System:

- Reline water heaters located on Level B.

b) Medical Gas Systems:

- Add second master gas panel in accordance with current NFPA 99 requirements. The signals from source equipment should be rewired independently to each master alarm panel location. Several master alarm signals were observed to be missing per the latest NFPA 99 requirements. Recommend that the existing panel be replaced with new panels that can accommodate the additional alarm signals required by NFPA 99.
- Replace existing area alarm panels with new panels. Recommend that the new panels be pneumatic type panels.
- Replace all existing main control panels for the medical air compressors and medical vacuum pumps on Level B and Level 9. Provide emergency power source to the Level 9 medical air compressors and medical vacuum pumps.
  - Alternate 1: Replace all existing control panels for the medical air compressors and medical vacuum pumps on Level B and Level 9. Also, convert remainder of existing medical compressors and vacuum pumps to use chilled water for cooling and keep the city water make-up for back-ups purposes. Provide emergency power source to the Level 9 medical air compressors and medical vacuum pumps.

- Alternate 2: Although the equipment appears to be in fair condition. The age of the equipment will be more of a factor in coming years in maintenance and operational costs. Replace existing liquid ring medical air compressors and vacuum pumps with new oil-less scroll type compressors and dry dynamic type vacuum pumps. Sizing of the replacement equipment should be evaluated with current demands and with possible future expansions of the facility. Provide emergency power source to the Level 9 medical air compressors and medical vacuum pumps.
- Provide new Dew point/CO monitor for medical air compressor on Level 9. New and existing dew point /CO monitor should be wired to the existing master gas panel in the Operations Center.

#### D. ELECTRICAL

##### 1) Main Electric Service (See Exhibit E2-1)

The Campus is served from the Massachusetts Electric Company at 13.8 kV by three (3) primary feeders to the Campus central plant. Two (2) primary selective 2000-Ampere 13.8 kV switchgear line-ups provide double-ended distribution of utility power throughout the Campus.

The central plant contains the Campus cogeneration equipment. This consists of two (2) natural gas fired turbine generators each rated 2500 kW/3125 kVA, 4.16 kV, connected through a main-tie-main switchgear line-up to two (2) 3000/3750 kVA (AA/FA) substation transformers, which in turn each feed one end of a 13.8 kV, 1200-Ampere double-ended distribution switchgear. A third cogeneration unit rated 5000 kW/6250 kVA, 13.8 kV is used to provide emergency power to the 13.8 kV cogeneration switchgear.

The main Hospital building is served at 13.8 kV by two (2) normal electric feeders (#1 and #2) and two (2) emergency or alternate feeders (#3 and #4). These feeders enter the building from the east side at Level A and rise to the penthouse via the south electric riser closet.

The utility switchgear (normal service) and the cogeneration equipment are located in the same space without fire separation as required by present Codes. The installation appears to comply with the requirements at the codes in effect at the time of installation. Any new connections to this system should be reviewed with the local wiring inspector.

##### 2) Secondary Distribution (See Exhibit E2-1)

The following substations are located in the penthouse of the Hospital:

- |               |                                |
|---------------|--------------------------------|
| Substation #1 | - 2000 kVA double-ended Normal |
| Substation #2 | - 2000 kVA double-ended Normal |

Substation #3	- 1500 kVA single-ended Emergency
Substation #4	- 1500 kVA single-ended Emergency
Substation #5	- 500 kVA single-ended Normal/Emergency

All of the substations are primary selective with silicone filled transformers. The silicone fluid has been replaced to remove PCB contamination. The transformers are monitored for any recurrence of PCB contamination due to leaching from the coils to the fluid.

Secondary main, tie and feeder overcurrent devices are drawout air power circuit breakers with adjustable trip settings for long time delay, short time delay, instantaneous. Ground fault protection is provided on some, but not all, circuit breakers.

Substations #3 and #4 are connected through a tie bus with normally open circuit breakers at each end to form a double-ended emergency substation.

Distribution from the penthouse throughout the building is provided primarily at three (3) riser locations. These are the N1, N2, and South electrical risers. The riser closets are constructed with poured concrete or block walls comprising shaft construction. Riser conduits and bus ducts pass through open slots in the floors. All penetrations of conduits entering into or exiting from the closets are required to be fire stopped.

Panels in the riser closets are generally in good condition, but have limited spaces or spare capacity for expansion. Bus ducts also have limited spare capacity or space for future connections. In many cases available bus openings and active bus plug in units have been made inaccessible by the addition of conduits and other equipment.

### 3) Emergency Power & Distribution

Automatic transfer switches (ATS) include bypass isolation switches to allow for maintenance on the equipment without interrupting power to the load.

Switches are generally arranged in pairs, one normal and one emergency. The normal ATS takes one feed from each side of the normal double-ended unit substation. The emergency ATS takes one feed from the load side of the normal ATS and the other feed from the emergency substation. Control circuitry allows each transfer switch to seek out an available source upon loss of power. Except for those serving elevator loads, the emergency ATS's are kept in the emergency position, with load feed from the emergency substations. This is done to maintain a load on the cogeneration plant.

Life safety power is provided in each of the three buildings riser closets by conduit risers. Panels and transformers for 277/480 volt and 120/208 volt power are distributed throughout each of the electric riser closets.

Critical power for lighting and receptacles is provided in each of three riser closets by bus duct risers. Critical power for lighting is provided at 277/480 volts; critical power for receptacle loads is provided at 120/208 volts from dry-type transformers located in the penthouse.

Equipment power is provided at 277/480 volts and 120/208 volts in each of the three riser closets by conduit risers.

The existing emergency electrical systems, including substations, feeders and distribution equipment, are installed without fire separation from the normal electrical system as required by present code. The installation complies with the requirements of the codes in effect at the time of installation, however extension and/or reuse of these systems are subject to review by the local wiring inspector.

Mineral insulated (MI) cable has been used to connect new feeder circuits to the emergency system. New distribution equipment (panels, transformers) has been located in two-hour fire rated closets built outside of the main riser closets.

4) Substation Loading

UMMC Facilities Engineering provided load information on each of the unit substations. See Exhibit E2-2 for amperage measurements. For the purpose of this report all measured amperages have been converted to kVA.

Substation #1 consists of 2-2000 kVA transformers, 4000 kVA total. It is presently loaded with 540 kVA on the right side and 664 kVA on the left side, or 1464 kVA total. In the event of a failure of substation #3 (emergency), an additional 407 kVA will be connected to SS#1, for a total of 1611 kVA. The resulting spare capacity is 2389 kVA. In the event of a transformer being removed from service for maintenance or due to a failure it will be necessary to operate the substation from a single transformer, which will require the Hospital to manually shed load. If the substation is to be considered as fully redundant the available spare capacity is reduced to 388 kVA.

Substation #2 consists of 2-2000 kVA transformers, 4000 kVA total. It is presently loaded with 498 kVA on the right side and 581 kVA on the left side, or 1079 kVA total. In the event of a failure of substation #4 (emergency), an additional 581 kVA will be connected to SS#2, for a total of 1660 kVA. The resulting spare capacity is 2340 kVA. In the event of a transformer being removed from service for maintenance or due to a failure it will be necessary to operate the substation from a single transformer, which will require the Hospital to manually shed load. If the substation is to be considered as fully redundant the available spare capacity is reduced to 340 kVA.

Substations #3 and #4 operate as a double-ended unit substation with 2-1500 kVA transformers, 3000 kVA total. The transformers are presently loaded with 407 kVA and 581 kVA, respectively, 988 kVA total. The total spare capacity is 2012 kVA. Because these substations serve loads that generally may not be shed if a transformer is lost, the spare capacity is reduced to 512 kVA. Additional loads to be connected to the emergency substation include the fire pump and elevators, which will significantly reduce the available spare capacity. Any remaining spare capacity should be reserved for minor ongoing renovations.

Substation #5 is presently loaded to 125 kVA, with 375 kVA spare capacity. This substation is a combined normal/emergency unit with non-automatic motorized throw-over. The future use of this substation should be considered for equipment branch loads only, where transfer to an alternate source may be by a delayed manual means.

5) Recommendations

The existing electrical service and distribution systems comply with the Codes in place at the time of their original installation. Subsequent changes in the Massachusetts Electrical Code require normal and emergency systems feeder circuits and distribution equipment to be separated by two-hour fire rated construction. This code requirement is non-retroactive, however all subsequent work must be done in compliance with the latest Codes. All new work concerning connections to or reuse of the existing emergency systems should be reviewed with the electrical inspector for the City of Worcester during the early planning stages.

New emergency substations should be provided for future expansion. This will require the creation of new and dedicated 2-hour fire rated spaces to house the substations and distribution equipment. Fire rated enclosures will be required to run the new primary and secondary feeders. Emergency feeder circuits coming from the central plant will also need to be run in separate duct banks from the normal feeder circuits.

Existing riser closets should be used for routing of new normal feeder circuits only. Emergency system feeder circuits may also be routed through these spaces provided mineral insulated cable is used. New distribution equipment should be located outbound of the existing closets to reduce the present overcrowding. Existing unsafe working conditions, such as inaccessible equipment and reduced working spaces, should be addressed on a case basis and incorporated into ongoing renovations.

The existing electrical distribution systems and equipment appear to be well maintained and in generally good working order. However, because of the increased power demands imposed on electrical systems by the modern medical environment it is imperative that the system be properly managed. This includes ongoing monitoring of load flow within the system, preventive maintenance and replacements, and engineering review of proposed additions.

**TABLE NO. 1**

**EXISTING AHU CONDITION SUMMARY  
 UMASS MEMORIAL UNIVERSITY HOSPITAL**

<u>Unit No.</u>	<u>Location</u>	<u>Service</u>	<u>Levels Served</u>	<u>Supply Fan CFM</u>	<u>Components</u>	<u>Age</u>	<u>Overall Condition</u>	<u>Remarks</u>
AC-1B	Level B	Operating/Trauma Rooms	1 & 2	68,500	B, D, G, H, I, E, J	1973	Poor	a, c, f, g
AC-2B	Level B	Cafeteria/Kitchen	A & 2	70,600	B, C, G, H, I, E, J	1973	Poor	a, c, f, g
AC-3B	Level B	General/Offices	B & 1	61,400	B, C, G, H, I, E, J	1973	Poor	a, c, f, g
AC-4B	Level B	Offices/Exam Rooms	B & A	58,000	B, D, G, H, I, E, J	1973	Poor	a, c, f, g
AC-5B	Level B	General/Offices	B & A	47,800	B, D, G, H, I, E, J	1973	Poor	a, c, f, g
AC-6B	Level B	General/Offices	B & A	58,200	B, C, G, H, I, E, J	1973	Poor	a, c, f, g
AC-7B	Level B	Water Room/Corridor	A	±5,000	B, C, G, I, J	1973	Poor	a, g
AC-1T	Level 9	General/Offices	3, 4, 5, 6, 7 & 8	46,800	B, C, G, H, I, E, J	1973	Poor	a, c, f, g
AC-2T	Level 9	Operating/Patient Rooms	3, 4, 5, 6, 7 & 8	50,300	B, C, G, H, I, E, J	1973	Poor	a, c, f, g
AC-3T	Level 9	General	3, 4, 5, 6, 7 & 8	46,400	B, C, G, H, I, E, J	1973	Poor	a, c, f, g
AC-4T	Level 9	General	3, 4, 5, 6, 7 & 8	54,000	B, C, G, H, I, E, J	1973	Poor	a, c, f, g
AC-5T	Level 9	Patient Rooms	3, 4, 5, 6, 7 & 8	34,800	A, C, G, H, I, E, J	1973	Poor	a, c, f, g
AC-6T	Level 9	Exam Rooms/Offices	2	63,000	B, C, G, H, I, E, J	1973	Poor	a, c, f, g
AC-7T	Level 9	Lab, Offices/General	2	70,300	B, C, G, H, I, E, J	1973	Poor	a, c, f, g
AC-8T	Level 9	Patient Rooms	4		A, C, G, I, J, F	1973	Poor	a, d, g
AC-9T	Level 9	Bone Marrow	8	2,450	A, C, G, I, J, F	1993	Good	a, d, g
AC-10T	Level 9	Bone Marrow	8	1,860	B, C, E, G, H, I, J, F	1993	Good	a, d, g
AC-11T	Level 9	Bone Marrow	8	1,730	B, C, E, G, H, I, J, F	1993	Good	a, d, g
AC-12T	Level 9	Bone Marrow	8	2,700	B, C, E, G, H, I, J, F	1993	Good	a, d, g
AC-13T	Level 9	Bone Marrow	8	2,700	B, C, E, G, H, I, J, F	1993	Good	a, d, g
AC-14T	Level 9	Bone Marrow	8	2,700	B, C, E, G, H, I, J, F	1993	Good	a, d, g
AHU-1	Level 2 Roof	Cardiac Cath	2	30,000	B, C, G, H, I, J, E	1999	Excellent	g, g

COMMENT LEGEND

- A) INTAKE PLENUM (100% OUTSIDE AIR)
- B) MIXING PLENUM (RETURN AIR & OUTSIDE AIR)
- C) 30% FILTER
- D) 60-65% FILTER
- E) 90-95% FILTER
- F) HEPA FILTER
- G) HEATING COIL (STEAM OR HOT WATER AS NOTED)
- H) HUMIDIFIER
- I) CHILLED WATER COIL
- J) SUPPLY FAN

REMARK LEGEND

- a) CONSTANT VOLUME
- b) VARIABLE VOLUME
- c) CONCRETE BLOCK CASING
- d) L-SIDED MOTOR PANEL CASINGS
- e) NO SMOKE DETECTORS OR SMOKE ISOLATION DAMPERS
- f) ADJUSTABLE PITCH, TYPE I SUPPLY DWDI FAN
- g) DDC CONTROLS WITH PNEUMATIC ACTUATORS. CONTROLS BY JOHNSON CONTROLS

GENERAL REMARKS

THE EQUIPMENT OVERALL CONDITION WAS BASED ON THE YEARS OF SERVICE AND THE VISUAL CONDITION OF ITS COMPONENTS. THE YEARS SERVICE WERE COMPARED WITH SUGGESTED VALUES AS ISSUED BY ASHRAE. FOUR TYPES OF OVERALL CONDITIONS ARE USED:

- ▶ POOR = THE EQUIPMENT EXCEEDED EXPECTED YEARS OF SERVICE AND POOR VISUAL CONDITION OF ITS COMPONENTS
- ▶ FAIR = THE EQUIPMENT STILL HAS 5-10 YEARS OF SERVICE
- ▶ GOOD = THE EQUIPMENT STILL HAS 10-15 YEARS OF SERVICE
- ▶ EXCELLENT = THE EQUIPMENT STILL HAS 15-20 YEARS OF SERVICE

**TABLE NO. 2**

**EXISTING AHU SCHEDULE SUMMARY  
 UMASS MEMORIAL UNIVERSITY HOSPITAL**

Unit No.	SUPPLY FAN			RETURN FAN			COOL COIL		HEAT COIL		HUMID (LB/HR)	REMARKS
	CFM	HP	TYPE	CFM	HP	TYPE	GPM	MBH	GPM	MBH@ 30°FΔT		
AC-1B	68,500	125	DWDI	44,900	30	VANE – AXIAL	1040	5200	258	387φ	3400	TWO SUPPLY FANS, TWO RETURN FANS
AC-2B	70,600	125	DWDI	31,700 RF-2B	20	VANE – AXIAL	315	2350	258	387φ	2300	
AC-3B	61,400	125	DWDI	46,700 RF-3B	25	VANE – AXIAL	384	2800	222	333φ	1400	
AC-4B	58,000	125	DWDI	49,500 RF-4B	30	VANE – AXIAL	336	2500	210	315φ	1800	
AC-5B	47,800	100	DWDI	39,000 RF-5B	25	VANE – AXIAL	264	2000	170	255φ	1100	
AC-6B	58,200	125	DWDI	51,100	30	VANE – AXIAL	336	2500	210	315φ	1800	
AC-7B	N/A	N/A	VANE- AXIAL	NONE	NONE	VANE - AXIAL	---	---	---	---	---	NO RETURN FAN
AC-1T	46,800	75	DWDI	36,000	20 RF-1-T	VANE - AXIAL	300	2100	168	252φ	1100	
AC-2T	50,300	20, 40	DWDI	24,500	15 RF-2-T	VANE - AXIAL	740	3700	180	270φ	1800	TWO SUPPLY FANS
AC-3T	46,400	75	DWDI	27,200	15 RF-3-T	VANE - AXIAL	360	2500	168	252φ	1100	
AC-4T	54,000	75	DWDI	36,600	30 RF-4-T	VANE - AXIAL	370	2500	192	288φ	1400	
AC-5T	34,800	60	DWDI	N/A	N/A	VANE - AXIAL	370	2590	128	192φ	2000	
AC-6T	63,000	125	DWDI	44,600	50 RF-6-T	VANE - AXIAL	420	3000	228	342φ	2000	

**TABLE NO. 2**

**EXISTING AHU SCHEDULE SUMMARY  
 UMASS MEMORIAL UNIVERSITY HOSPITAL**

Unit No.	SUPPLY FAN			RETURN FAN			COOL COIL		HEAT COIL		HUMID (LB/HR)	REMARKS
	CFM	HP	TYPE	CFM	HP	TYPE	GPM	MBH	GPM	MBH@ 30°FΔT		
AC-7T	70,300	125	DWDI	24,400	15	VANE – RF-7-T AXIAL	640	4500	252	578φ	2900	
AC-8T	N/A	N/A	DWDI	N/A	N/A	VANE – AXIAL	N/A	N/A	N/A	N/A	N/A	
AC-9T	2,450	3.5	CENT	NONE	NONE	NONE	25	124	12	181	15	NO RETURN FAN
AC-10T	1,860	3.0	CENT	NONE	NONE	NONE	17	84	9	138	66	
AC-11T	1,730	3.0	CENT	NONE	NONE	NONE	16	80	9	131	62	
AC-12T	2,700	5.0	CENT	NONE	NONE	NONE	25	125	10	146	96	
AC-13T	2,700	5.0	CENT	NONE	NONE	NONE	25	125	10	146	96	
AC-14T	2,700	5.0	CENT	NONE	NONE	NONE	25	125	10	146	96	
AHU-1	30,000	80	DWDI	28,850	30	DWDI	229	1145	STEAM COIL	576	330	STEAM HEAT COIL

GENERAL REMARKS

- ▶ ALL VANE-AXIAL FANS ARE DIRECT DRIVEN (NO BOLT)

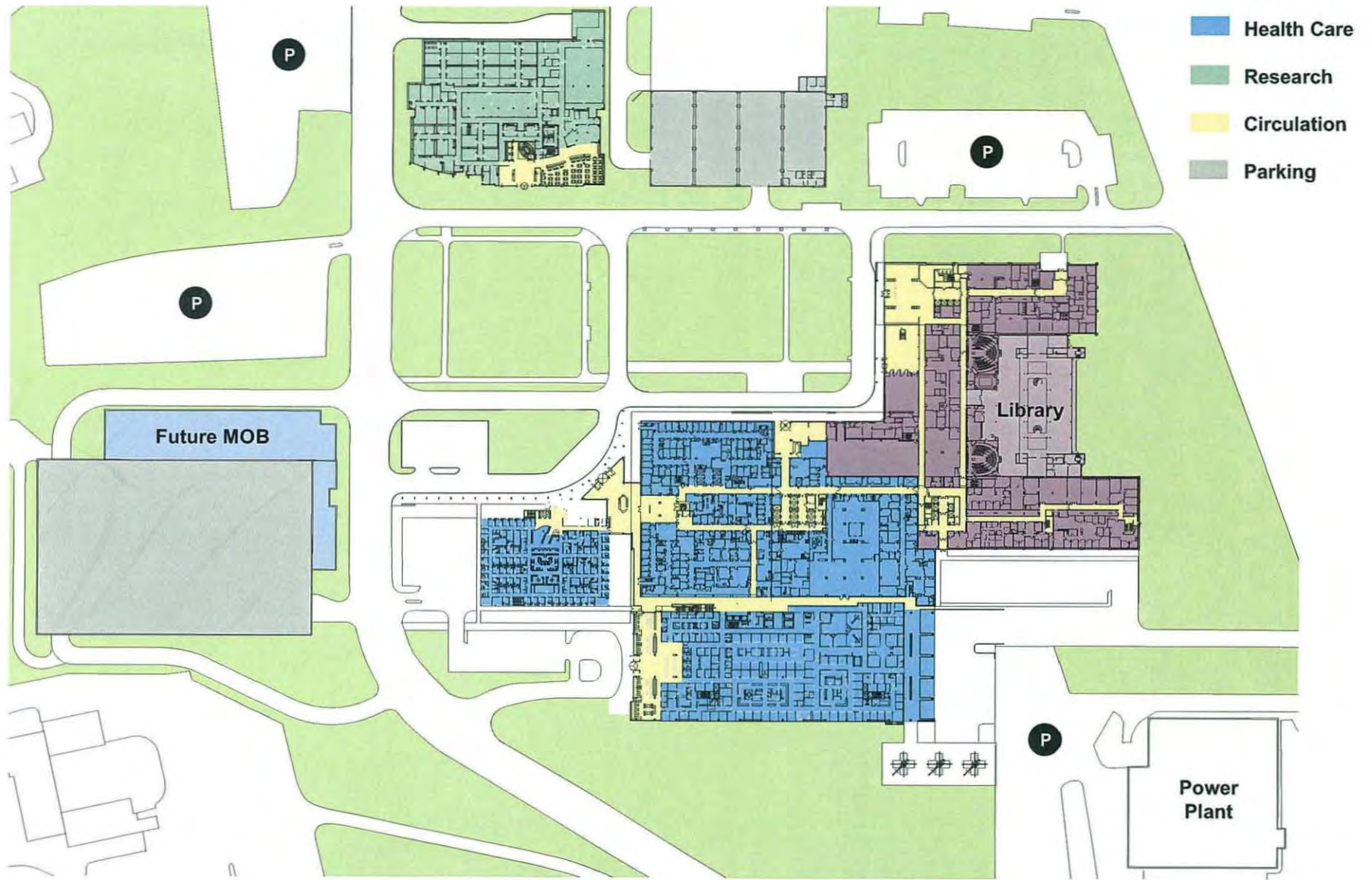
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University of Massachusetts Medical School  
Section VI. Space Allocations

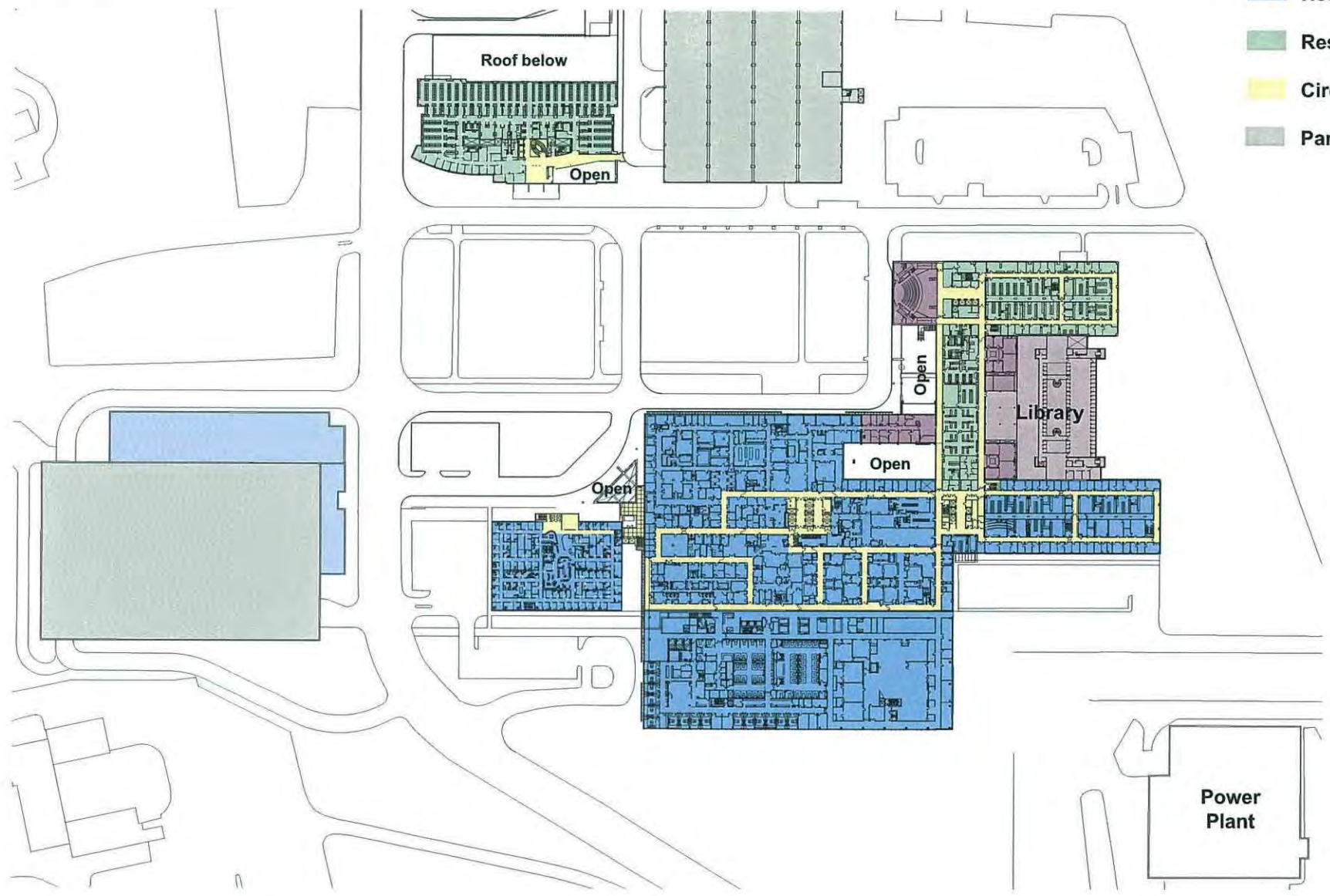


# Floor 1



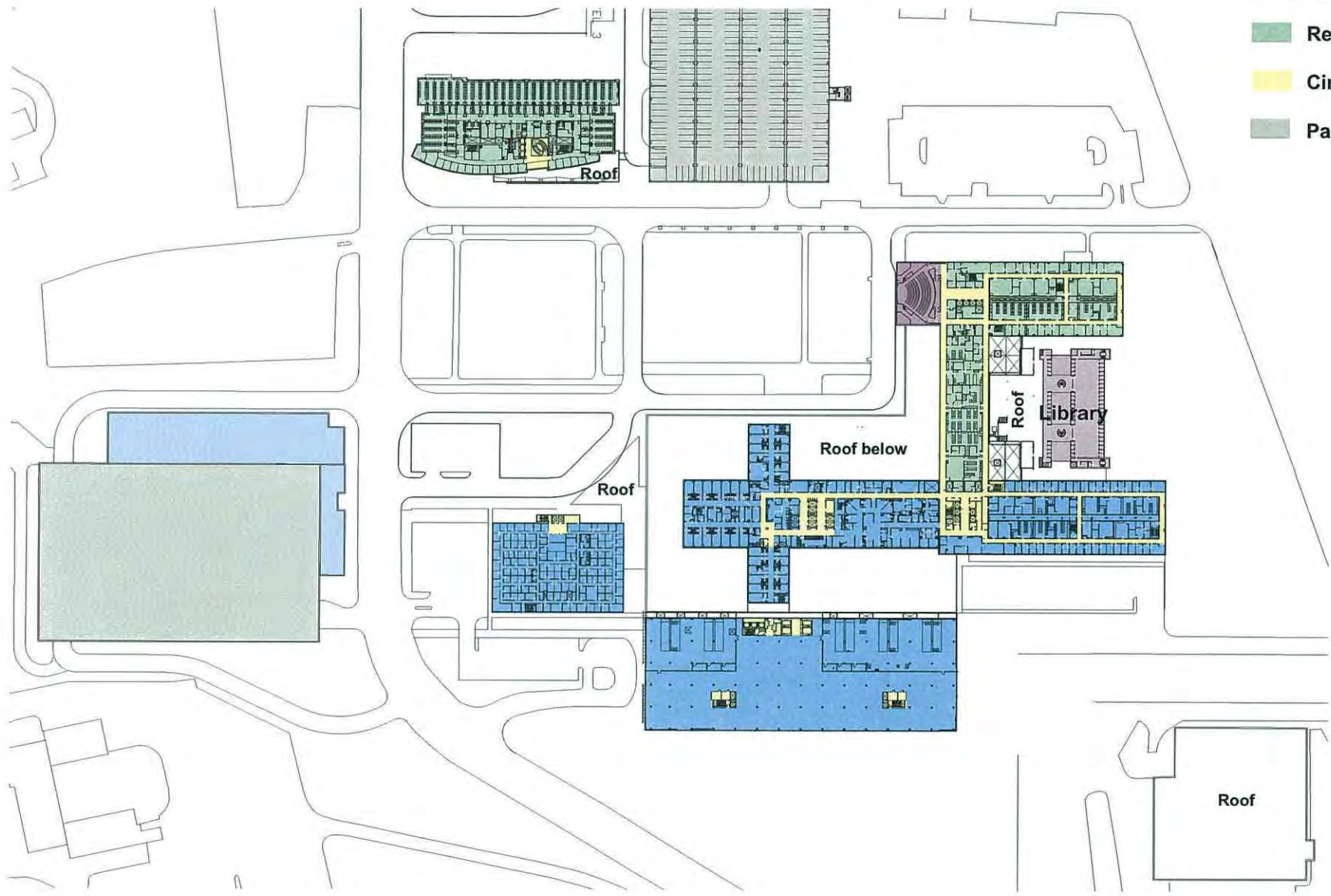
# Floor 2

- Education
- Health Care
- Research
- Circulation
- Parking



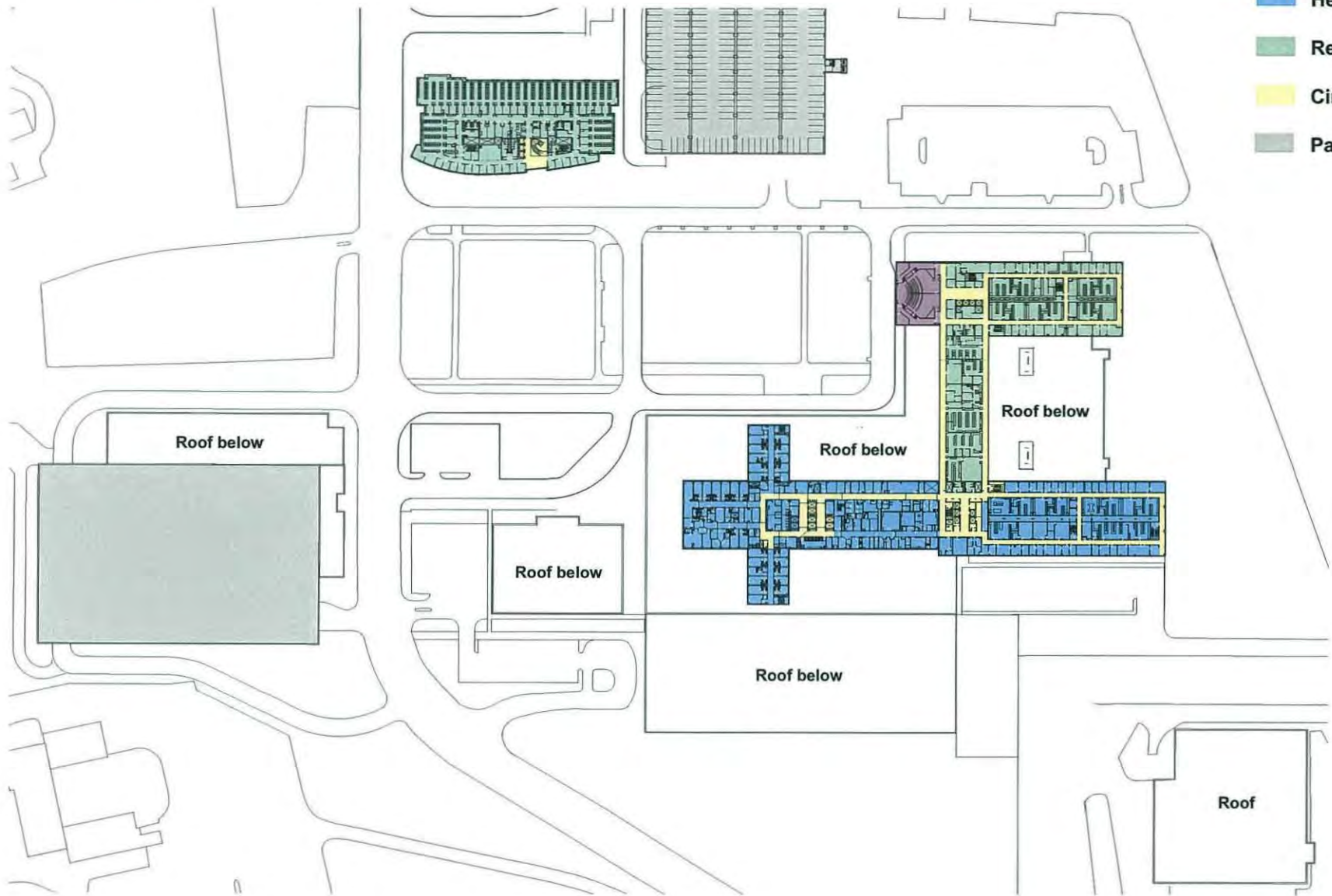
# Floor 3

- Education
- Health Care
- Research
- Circulation
- Parking



# Typical Floor

- Education
- Health Care
- Research
- Circulation
- Parking



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ARCHITECTS

University of Massachusetts Medical School  
Section VII. Traffic Report, August 2003



UMass Medical School / UMass Memorial Health Care System  
**Campus Modernization Program**

Worcester, Massachusetts



*Prepared for:*  
University of Massachusetts Medical School

*Prepared by:*  
*Vanasse Hangen Brustlin, Inc.*



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**Parking and Traffic Planning Study**

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*UMass Medical School/  
UMass Memorial Health Care System*  
Worcester, Massachusetts

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Prepared for UMass Medical School/UMass Memorial Health Care System  
55 Lake Avenue North  
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***DRAFT REPORT***

August 27, 2003

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# 1

## Introduction

A Campus Modernization Program is underway for the Worcester campus of the University of Massachusetts Medical School and its clinical partner, the UMass Memorial Health Care System. This work includes hospital expansion and a new parking garage. In addition, a preliminary campus plan concept has been developed that identifies generalized building projects and modifications to the campus roadways that are to be studied as part of future campus planning efforts.

This report presents the study of the parking and traffic aspects of the Campus Modernization Program as well as planning issues related to the types of developments outlined in the preliminary campus plan concept.

Among the general findings of the study is that the Campus Modernization Program can be supported by the planned parking and roadway changes. However, the possible development concepts identified for the preliminary campus plan will require parking beyond that included in the concept.

The traffic analyses indicate that, with minor improvements, the four gateway intersections can support the full potential campus development. The most significant traffic issue is, and will remain so, the congestion along the Belmont Street (Route 9) corridor caused by area-wide traffic.

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### Study Area

The study area encompasses the core campus -- the area bounded by Lake Avenue North to the east; North Road to the north; Plantation Street to the west, and South Road to the south, as well as associated parking areas. Peripheral facilities such as the Massachusetts Biotechnology Park and the Shaw Building are not included since they are not part of the Campus Modernization Program or the current campus plan concept development.

## Project Description

Figure 1 shows the existing campus buildings and parking. Figure 2 depicts the building changes associated with the Campus Modernization Program. The program includes a 225,000 gsf expansion of the hospital and a 20,000 gsf expansion of school office space. As shown in Table 1, the project would increase campus building space from 2,138,000 gsf to 2,383,000 gsf.

**Table 1: Building Space – Campus Modernization Program**

Building	Existing	Proposed
UM Medical School	881,000 gsf	901,000 gsf
UM Teaching Hospital	706,000 gsf	931,000 gsf
Lazare Research Building	399,000 gsf	399,000 gsf
Benedict Building	78,000 gsf	78,000 gsf
Others <sup>a</sup>	74,000 gsf	74,000 gsf
<b>Total</b>	<b>2,138,000</b>	<b>2,383,000</b>

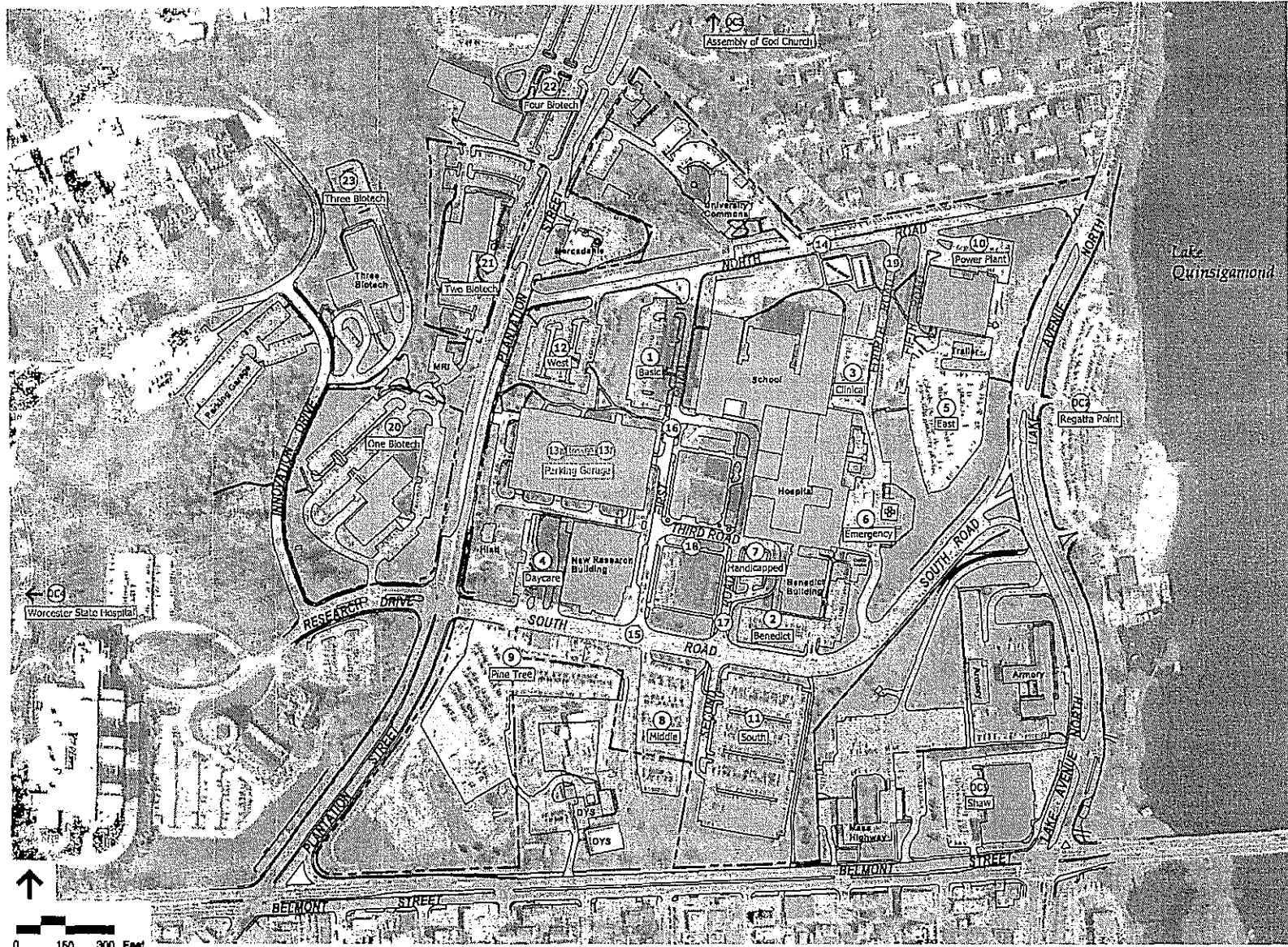
a Power Plant, Maple House, CMED Trailer, Construction Trailer and Pre-admission Trailer.

The Campus Modernization Program also involves consolidation of existing on- and off-campus surface parking into a new 1,600-space parking garage. The project results in a net increase of approximately 250 parking spaces serving the campus and increases on-campus parking by more than 900 spaces. The specific changes in parking supply are detailed in Chapter 3.

Another component of the Campus Modernization Program are changes to site access and circulation. One element is to realign the South Road approach to Lake Avenue and consolidate access and egress with the adjacent MassHighway District 3 facility. The most significant vehicle circulation change is the change to Fourth Road. The hospital expansion will eliminate the southern section of the road. Ambulance access is currently via either end of Fourth Road and future access will be only via North Road. Walk-in emergency department access remains via South Road.

Figure 3 depicts the preliminary campus plan concept. The concept provides general guidance for future campus planning efforts. As such, only possible types of facilities are identified and there are no specifics as to size or schedule. For the purposes of traffic and parking planning, the following development program is evaluated.

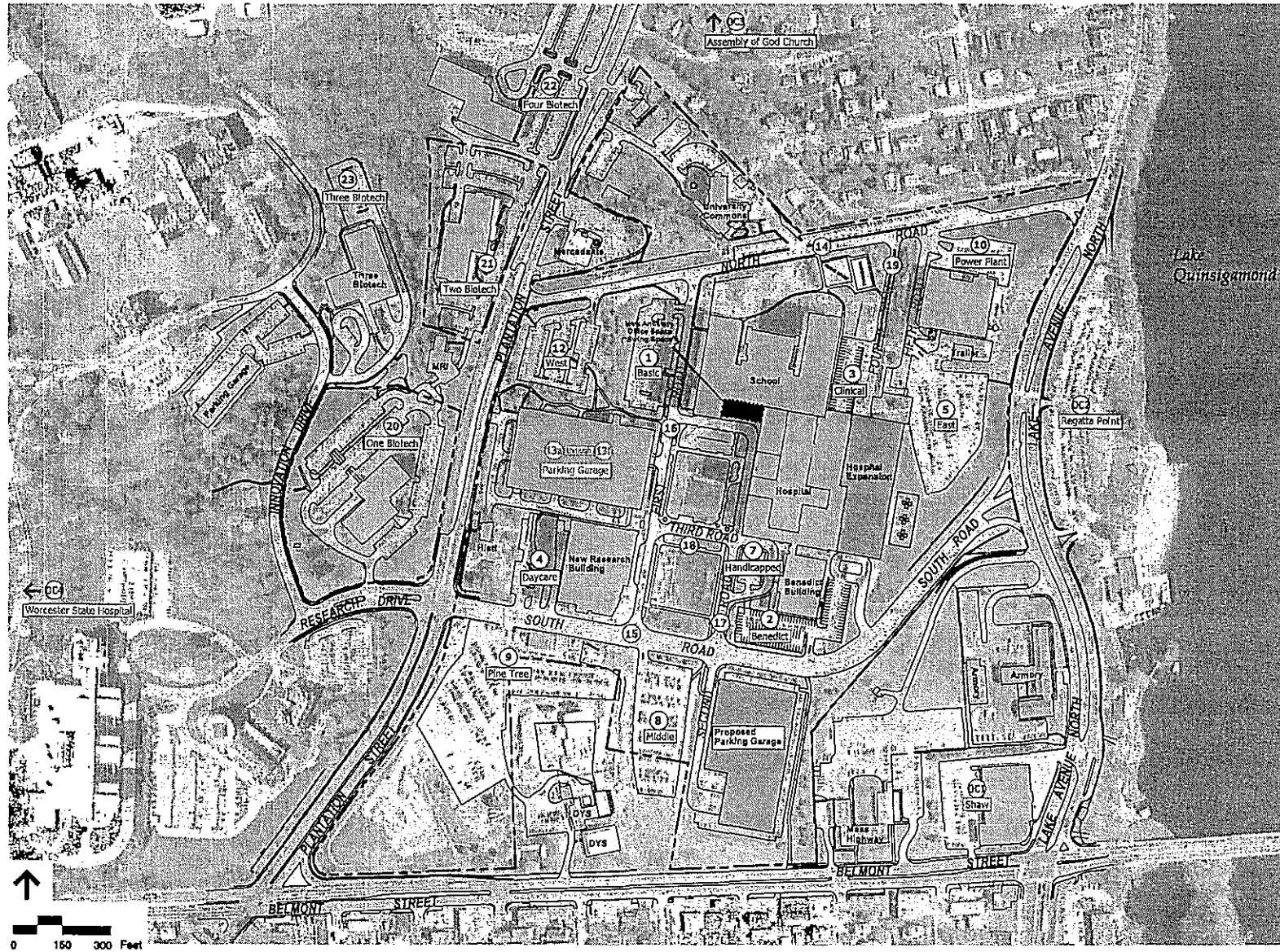
- A 125,000 gsf medical office building,
- 75,000 gsf of ambulatory care facilities,
- Two 200,000 gsf research buildings and
- Direct access to the campus from Belmont Street



Parking Area	Number of Spaces
<b>Campus Lots</b>	
1 Basic	126
2 Benedict	103
3 Clinical	92
4 Daycare	15
5 East	269
6 Emergency	58
7 Handicapped	19
8 Middle	210
9 Pine Tree	469
10 Power Plant	43
11 South	49
12 West	101
<b>Subtotal</b>	<b>1,954</b>
<b>Existing Parking Garage</b>	
13 Level 1	60
14 Level 2	202
15 Level 3	310
16 Level 4	370
17 Level 5	269
18 Level 6	268
<b>Subtotal</b>	<b>1,460</b>
<b>Campus Streets / Street Lots</b>	
14 North Road	59
15 South Road	70
16 First Road	7
17 Second Road	18
18 Third Road	8
19 Fourth Road	8
<b>Subtotal</b>	<b>170</b>
<b>Off-Campus Lots</b>	
20 One Biotech	205
21 Two Biotech	183
22 Four Biotech	101
23 Three Biotech	49
24 Shaw	144
25 Regatta Point	260
26 Assembly of God Church	300
27 Worcester State Hospital	100
<b>Subtotal</b>	<b>1,341</b>
<b>Campus Total</b>	<b>4,934</b>

**Vanasse Hangen Brustlin, Inc.**

Figure 1  
Existing Campus Parking Supply  
UMMS/UMMHCs Campus  
Modernization Program  
Worcester, Massachusetts



Parking Area	Number of Spaces
<b>Campus Lots</b>	
① Basic	126
② Benedict	33
③ Clinical	92
④ Daycare	15
⑤ East	229
⑥ Emergency	11
⑦ Handicapped	19
⑧ Middle	210
⑨ Pine Tree	469
⑩ Power Plant	43
⑪ South	0
⑫ West	101
<b>Subtotal:</b>	<b>1,348</b>
<b>Existing Parking Garage</b>	
⑬ Level 1	00
⑭ Level 2	202
⑮ Level 3	310
⑯ Level 4	370
⑰ Level 5	259
⑱ Level 6	280
<b>Subtotal:</b>	<b>1,469</b>
<b>Proposed Parking Garage</b>	<b>1,600</b>
<b>Campus Streets / Street Lots</b>	
⑲ North Road	59
⑳ South Road	0
㉑ First Road	7
㉒ Second Road	18
㉓ Third Road	8
㉔ Fourth Road	0
<b>Subtotal:</b>	<b>92</b>
<b>Off-Campus Lots</b>	
㉕ One Biotech	205
㉖ Two Biotech	183
㉗ Four Biotech	101
㉘ Three Biotech	48
㉙ Shaw	144
㉚ Regatta Point	0
㉛ Assembly of God Church	0
㉜ Worcester State Hospital	0
<b>Subtotal:</b>	<b>481</b>
<b>Campus Total</b>	<b>5,180</b>

**Vanasse Hangen Brustlin, Inc.**

Figure 2  
Proposed Campus Parking Supply  
UMMS/UMMHCS Campus  
Modernization Program  
Worcester, Massachusetts



# Existing Parking Supply and Demand

This chapter presents the existing parking supply, parking utilization and parking space demand at the campus. Existing traffic conditions are described in the *Traffic Impact and Access Study* prepared for the Campus Modernization Program as part of the Environmental Notification Form submittal to the Massachusetts Environmental Policy Act Office.

The sources of the existing conditions parking data include previous studies, parking data collected by UMMS, and parking data collected by VHB. *The UMMC Parking Evaluation* prepared by VHB in 2000 provides parking occupancy counts, roadway traffic counts, and survey data for parkers using the pay lots and valet parking. The UMMS data includes summaries of daily parking units at the pay lots, as well as peak-period space-available counts for several parking facilities. Recent occupancy counts and supplemental traffic data were collected as part of the *Traffic Impact and Access Study* and this study effort.

---

## Parking Supply

Parking at the campus includes off-street surface and structure parking, on-street parking, and remote off-site parking. Pay parking, both self-park and valet, is available for patients and visitors. Employees also pay for parking. Most employees are assigned to unreserved parking that allows parking in any of several parking areas. Other employees are assigned to specific lots and pay a premium. A few employees are assigned to off-site parking served by a shuttle. There is also some unregulated UMMS/UMMHCS-related parking at Regatta Point, located adjacent to the campus on Lake Avenue.

Table 2 lists the parking supply for the core campus. This listing does not include off-campus parking that does not directly serve the main campus. The complete listing of parking, including the off-site parking for the Massachusetts Biotechnology Research Park and for the Shaw building, is listed on Figure 1, shown previously.

The existing parking supply is 4,253 spaces, consisting of 3,593 on-campus spaces and 660 off-campus spaces. The off-campus supply includes leased parking at the

First Assembly of God church and use agreements for parking at Worcester State Hospital and Regatta Point. Regatta Point is part of Quinsigamond State Park and is owned by the Massachusetts Department of Conservation and Recreation. UMMS/UMMHCS-related motorists are allowed to use the lot in exchange for regular maintenance activities for the parking lot (e.g., snow plowing, pavement repair, and sweeping) provided by UMMS/UMMHCS.

**Table 2: Parking Supply Summary – Core Campus**

Code <sup>a</sup>	Parking Area	Use	Permits Issued	Existing Supply
	<u>On-Site Parking</u>			
1	Basic	Employees	208	126
2	Benedict	Valet Parking		103
3	Clinical	Physicians	111	92
4	Daycare	Employees	13	15
5	East	Employees	233	
		Couriers	100	269
6	Emergency	Staff, Patients	11	58
7	Handicapped	Handicap		19
8	Middle	Patients/Visitors	Pay Parking	210
9	Pine Tree	Employees -Unreserved	*	469
10	Power Plant	Employees	49	43
11a	South (patient and visitor)	Patients/Visitors	Pay parking	340
11b	South (valet)	Valet parking		109
12	West	Employees -Unreserved	*	101
13a-13f	Parking Garage	Employees – Unreserved	*	1,154
		Reserved – LRB	53	53
		Reserved – 2 <sup>nd</sup> Floor	214	202
		Reserved – 1 <sup>st</sup> Floor	50	60
				1,469
14	North Road	Employees -Unreserved	*	59
15	South Road	Employees -Unreserved	*	48
		Meters		22
16	First Road	Police		7
17	Second Road	Handicap		18
18	Third Road	Deliveries		8
19	Fourth Road	Meters		8
	<b>Subtotal On-site Parking</b>		<b>6,583</b>	<b>3,593</b>
	<u>Off-Site Parking</u>			
OC2	Regatta Point Lot	Informal Parking		260
OC3	Assembly of God Church	Not in use		300
OC4	Worcester State Hospital	New hires	102	100
	<b>Subtotal Off-site Parking</b>		<b>102</b>	<b>660</b>
	<b>Total</b>		<b>6,685</b>	<b>4,253</b>

<sup>a</sup> Codes are as indicated on Figure 1 and Figure 2

\* Employees assigned to unreserved parking can park in any of the designated lots. As of April 2003, there were 5,552 unreserved permits, including 532 for medical students.

Table 3 lists a summary of parking at the campus. Slightly more than three-quarters of the campus parking supply is for employees and about one-fifth is for patients and visitors. The remaining parking has special-use designations and includes handicap parking, police parking, and emergency department parking.

Most of the employee parking is in the "Unreserved" facilities. There are three unreserved permits issued for every parking space. Restricted parking, where employees are assigned parking in a specific parking facility, has 1.2 permits per parking space.

**Table 3: Parking Supply Summary – Core Campus**

Parking Type	Parking Spaces	Permits Issued
<u>Employee Parking</u>		
Unreserved	1,831 (43%)	5,552
Restricted	804 (19%)	965
Remote	660 (15%)	102 <sup>b</sup>
Subtotal	3,311 (77%)	6,619
<u>Patient/Visitor Parking</u>		
Hourly Lots	550 (13%)	
Valet Parking	212 (5%)	
Meters	30 (1%)	
Subtotal	792 (19%)	
<u>Other Parking<sup>a</sup></u>	166 (4%)	66
<b>Total</b>	<b>4,253</b>	<b>6,685</b>

a Handicap, police, daycare, Emergency Department and other reserved.

b The parkers using the 260 spaces in the Regatta Lot do not have permits.

## Existing Parking Demand

Several data sources were used to determine the existing parking space demand. Parking occupancy counts were conducted in October 1999 for the *UMMC Parking Evaluation* study and in June 2003 for the *Traffic Impact and Access Study* prepared for the Campus Modernization Program ENF submittal. In addition, UMMS conducts daily parking space-available counts for the parking garage, West Lot, Pine Tree Lot and South Lot.

Table 4 shows the existing peak seasonal parking demand at the campus, reflecting conditions that typically occur in the fall and winter. A listing of peak parking demand for each parking facility is provided in the appendix.

The campus-wide parking demand is 4,253 spaces. This is 91 percent of the available parking supply. Employee parking is at 90 percent of capacity and patient/visitor parking is at 92 percent of capacity.

**Table 4: Peak Parking Demand Summary – Core Campus**

Parking Type	Peak Demand	Capacity	Percent of Capacity
<i>Employee Parking</i>			
Unreserved	1,927	1,831	105%
Restricted	715	804	89%
Remote	320	660	49%
Subtotal	2,962	3,295	90%
<i>Patient/Visitor Parking</i>			
Hourly Lots	490	550	89%
Valet Parking	212	212	100%
Meters	30	30	100%
Subtotal	732	792	92%
<i>Other Parking<sup>a</sup></i>	172	166	104%
<b>Total</b>	<b>3,866</b>	<b>4,253</b>	<b>91%</b>

All of the unreserved employee parking is at or over capacity. Most of the available employee parking is in the remote parking lots. The restricted parking, where staff are assigned to specific lots, is at 89 percent of capacity. The most significantly underutilized employee parking areas are Basic (15 spaces available), Clinical (15), East (70), and the second floor of the parking garage (30).

There is excess capacity for visitor parking in the South Lot. The UMMS daily space-available counts show that although peak seasonal demand is higher than observed in June, there are always at least 60 spaces available. It should be noted that the patient/visitor parking demand tabulation assumes that all valet parking is in use as well as almost all of the pay parking in the South and Middle lots. In fact, the valet parking tends to reach capacity only during inclement weather, as drivers choose to use the valet parking instead of the pay lots.



## Parking Space Ratios

No projections of future staffing or patient activity are available, so for the purposes of estimating future parking demand, planning ratios of parking spaces per 1,000 gross square foot of building space are used. As indicated in Table 5, the overall campus parking space ratio is 1.8 spaces per 1,000 gross square feet. This reflects the existing demand of 3,866 spaces and the existing building space of 2,138,000 gsf.

Table 5 also lists parking space ratios for different functions on the campus. The ratio of 1.75 spaces per 1,000 gsf of space for the Lazare Research Building is as determined in the *UMMC Parking Evaluation*. The parking space ratio of 4.5 assumed for the Benedict Building is based on experience with medical office

buildings at other campuses and is in line with the survey data about users of the visitor parking. The ratio of 1.7 spaces per 1,000 gsf for the school and hospital building space is determined from the existing parking demand, adjusted for the Lazare Research Building and Benedict Building parking demand.

**Table 5: Parking Space Planning Ratios**

Function	Size	Parking Demand	Parking Ratio
Medical School / Hospital	1,661,000 gsf	2,817	1.70 / 1,000 gsf
Lazare Research Building	399,000 gsf	698	1.75 / 1,000 gsf
Benedict Building	78,000 gsf	351	4.50 / 1,000 gsf
<b>Total</b>	<b>2,138,000 gsf</b>	<b>3,866</b>	<b>1.81 / 1,000 gsf</b>



### Visitor Parking Utilization

Limited data are available for the transient parking at the campus. Most patient and visitor parking is available in two self-park hourly lots. There is also a valet parking operation and a few on-street parking meters. The standard fee for parking in the two lots is \$2.00 for the first two hours, \$3.00 for two to three hours, and \$4.00 thereafter. Outpatient validations provide a \$2.00 discount.

A listing of monthly transactions in the two pay parking lots for a 12-month period is provided in the appendix. The transient parking units exceed 30,000 per month and are often over 1,500 per day.

In March of 2000 a survey was conducted of parkers using the South and Middle lots, and the valet parking. The survey was conducted midweek, from 8:00 a.m. to 4:00 p.m. Some key findings from the survey are:

- Over 90% of the patient/visitor parking is hospital-related
- Of the hospital parkers, approximately 70% are patients and 30% are visitors.
- The destination of hospital parkers was approximately 65% to the hospital and 35% to the Benedict Building.

# 3

## Future Parking Supply and Demand

This chapter presents the evaluation of the parking demand and supply associated with the Campus Modernization Program projects and with the potential development projects shown on the campus plan concept.

---

### Campus Modernization Program

Both parking demand and supply will be affected by the Campus Modernization Program. Not only does new building space create new parking demand on campus, but the relocation of off-campus parking will also increase on-campus parking demand. As described below, the evaluation found that most of the increased parking demand will be offset by the additional parking associated with the new South Street parking garage.

---

### Changes in Parking Demand

The Campus Modernization Program will increase medical school office space by 20,000 gsf and increase hospital space by 225,000 gsf. The new space is consistent with the existing utilization of the building and therefore the parking demand associated with the new space is assumed to generate a parking demand comparable to existing conditions. At 1.7 spaces per 1,000 gsf the new space would generate a parking demand for 380 spaces once the new building space is fully occupied and is being used at design capacity.

The new medical school and hospital building space will increase the campus parking demand from 3,866 to 4,246 spaces.

## Changes in Parking Supply

The Campus Modernization Program will consolidate of on- and off-campus surface parking into a new 1,600-space parking garage. The changes in parking supply on the main campus are listed in Table 6. The project results in a net increase of approximately 250 parking spaces serving the campus and increases on-campus parking by more than 900 spaces. The most significant changes include:

- Consolidation of patient/visitor parking into the new parking garage,
- Elimination of the Benedict Lot for valet storage parking,
- Elimination of off-site parking, including informal parking at Regatta Point, and
- Elimination of most on-street parking.

**Table 6: Parking Supply Summary - Campus Modernization Program**

Code <sup>a</sup>	Parking Area	Existing Supply	Proposed Supply	Change
<i>On-Site Parking</i>				
1	Basic	126	126	0
2	Benedict	103	33	(70)
3	Clinical	92	92	0
4	Daycare	15	15	0
5	East	269	229	(40)
6	Emergency	58	11	(47)
7	Handicapped	19	19	0
8	Middle	210	210	0
9	Pine Tree	469	469	0
10	Power Plant	43	43	0
11a	South (patient and visitor)	340	0	(340)
11b	South (valet)	109	0	(109)
12	West	101	101	0
13a-13f	Existing Parking Garage	1,469	1,469	0
14	North Road	59	59	0
15	South Road	70	0	(70)
16	First Road	7	7	0
17	Second Road	18	18	0
18	Third Road	8	8	0
19	Fourth Road	8	0	(8)
	New Parking Garage	0	1,600	1,600
	<b>Subtotal On-site Parking</b>	<b>3,593</b>	<b>4,509</b>	<b>916</b>
<i>Off-Site Parking</i>				
OC2	Regatta Point Lot	260	0	0
OC3	Assembly of God <sup>Church</sup>	300	0	0
OC4	Worcester State Hospital	100	0	0
	<b>Subtotal Off-site Parking</b>	<b>660</b>	<b>0</b>	<b>(660)</b>
	<b>Total</b>	<b>4,253</b>	<b>4,509</b>	<b>256</b>

<sup>a</sup> Codes are as indicated on Figure 1 and Figure 2

## Findings and Recommendations

There will be sufficient parking to support the initiatives of the Campus Modernization Program. As shown in Table 7, the Campus Modernization Program adds more parking demand than it provides in increased parking supply, but there will still be a surplus of at least 260 spaces on campus. This surplus is for peak seasonal mid-week conditions. Parking availability will be greater on other days and during other times of the year. Parking availability may also be greater if all those currently parking in the Regatta Point lot do not relocate to the campus.

**Table 7: Parking Supply and Demand – Campus Modernization Program**

	Parking Demand	Parking Supply	Parking Surplus
Existing Conditions	3,866	4,253	387
Change	+ 380	+256	
Future Conditions	4,246	4,506	260

Although the overall proportions of campus parking and supply will remain essentially constant, the additional parking demand, the shift of off-campus parking on campus, and the increased supply of structure parking will significantly impact parking assignments and parking pricing. The recommendations for the new parking assignments and pricing are listed below and described in the sections immediately following.

- Designate 575 spaces in the new South Road parking garage for patient and visitor hourly parking.
- Designate the spaces remaining in the Benedict Lot for Emergency Department parking.
- Use the Middle Lot for valet parking.
- Eliminate the practice of unreserved parking and issue parking permits for specific parking facilities.
- Revise the permit pricing as follows:
  - Retain Clinical, Level 1 and Level 3 Reserved as Tier 1 permits and designate the Basic lot as a Tier 1 permit.
  - Retain East Lot and Power Plant as Tier 2 permits and add North Road as a Tier 2 permit.
  - Create a Tier 3 rate of about \$9.00 per week for parking in the two garages, eliminate the surcharge on Level 2 (First Road) garage parking, and designate West Lot parking as Tier 3.
  - Retain Tier 4 parking fees of \$6.00 per week in the Pine Tree lot.

## Patient and Visitor Parking

As shown previously in Table 4, the current patient/visitor parking space demand is approximately 730 spaces, consisting of 520 self-park spaces and 210 valet parking spaces. The Campus Modernization Program will increase overall parking demand by 380 spaces, of which no more than 20 percent will be patient/visitor related and some of that is emergency department parking. Excluding the emergency department parking, the patient/visitor parking demand after the completion of the Campus Modernization Program will be approximately 575 spaces. All of this parking should be designated in the South Road parking garage.

The valet parking operation currently uses the Benedict Lot and the South Lot. There will likely not be sufficient parking remaining in the Benedict Lot to make a significant difference in the valet operations. Therefore, all of the valet parking spaces should be relocated either to the new South Street parking garage or to the Middle Lot. For the time being, it is recommended that the valet parking be relocated to the Middle Lot. Alternatively, the valet parking could be assigned to the roof or basement of the South Road parking garage, and this possibility should be considered in design planning efforts.

## Employee Parking

Table 8 describes the current and recommended employee parking assignment and pricing. It is recommended that the "Unreserved" permit, which allows parking in any of several parking facilities, be eliminated and that parkers be assigned to specific parking locations.

**Table 8: Parking Permits – Recommended Changes**

Location	Existing Supply	Current Permit Cost (per week)	Future Supply	Proposed Permit Cost (per week)
Basic	126	\$11.08	126	\$16.62
Clinical	92	\$16.62	92	\$16.62
Daycare	15	\$6.00	15	\$6.00
East	269	\$11.08	229	\$11.08
Pine Tree	469	\$6.00	469	\$6.00
Power Plant	43	\$11.08	43	\$11.08
West	101	\$6.00	101	\$11.08
First Road Parking Garage				
Level 1	45	\$16.62	45	\$16.62
Level 2	202	\$13.08	202	\$9.00
Level 3 Reserved	49	\$16.62	49	\$16.62
Levels 3, 4, 5 and 6	1,154	\$6.00	1,154	\$9.00
North Road	59	\$6.00	59	\$11.08
South Road Parking Garage	0	n/a	1,025	\$9.00
Off-site parking	660	\$0.00	0	n/a

## Campus Plan Development Concept

The campus concept plan envisions a new medical office building, new ambulatory care facilities, and additional research space. The development plans are concept outlines and there are no specific building space programs. For the purposes of this planning analysis, the following building space program is assumed.

- 125,000 gsf of medical office space, adjacent to the new South Road parking garage,
- 75,000 gsf of ambulatory care space created by expanding the Benedict building, and
- 400,000 gsf of new research space, in two buildings located along First Road.

## Changes in Parking Demand

Table 9 lists the parking demand for the potential campus concept plan projects. The total parking demand among the projects is 1,565 spaces. Of these, 1,135 would be for employees and 430 would be for patients and visitors.

**Table 9: Future Parking Demand – Campus Plan Concept**

Building	Size	Parking Ratio	Total Spaces	Employee Spaces	Patient/Visitor Spaces
Medical Office Building	125,000 gsf	4.50 / 1,000 gsf	565	310	255
Ambulatory Care	75,000 gsf	4.00 / 1,000 gsf	300	165	135
Research Buildings	400,000 gsf	1.75 / 1,000 gsf	700	660	40
<b>Total</b>			<b>1,565</b>	<b>1,135</b>	<b>430</b>

Note: Building program for campus concept plan is undefined. Sizes indicated are assumed for planning purposes.

The parking ratios listed in Table 9 for the medical office building and the research building are the same as the current parking space ratios presented in the previous chapter. The parking space ratio for the new ambulatory care space is based on experience at other medical campuses. The estimated splits between employee and visitor parking are also based on previous experience. For medical office building and ambulatory care functions, patient/visitor parking is assumed to be approximately 45 percent of the total. For research functions visitor parking is estimated to be about 5 percent of the total.



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## Changes in Parking Supply

The campus plan concept includes a parking garage in the northwest corner of the campus, but several of the proposed buildings displace existing parking lots. The potential changes in parking supply are as follows.

- The medical office building would not affect any significant amount of parking. The medical office building would generate a parking demand of 565 spaces and would therefore require 565 available spaces to support the project.
- The ambulatory care facility would displace roughly 50 spaces in the Handicap and Benedict lots. The ambulatory care facility would generate a parking demand of 300 spaces and would therefore require 350 available spaces to support the project.
- One of the research buildings would be located on the site of the 126-space Basic Lot. A parking garage would be located behind the building and presumably constructed concurrently. The parking garage would displace the 101-space West Lot. The garage would likely have a capacity of at least 1,000 spaces and the net increase in parking would be about 775 spaces. The research building would generate a parking demand of 350 spaces and the project would therefore provide 425 surplus spaces for other campus uses.
- The second research building would be located on the front section of the existing First Road garage. The project would displace at least 60 spaces per floor, or 300 spaces in total. The research building would generate a parking demand of 350 spaces and the project would therefore require 650 available spaces to support the project.



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## Findings

One of the key findings is that patient/visitor parking will increase up to 430 spaces. If this were to occur and if all patient/visitor parking were to remain in the new South Street garage, then the initial allocation of 575 patient/visitor spaces would increase to approximately 1,100 visitor parking spaces. This assumes that none of the new parking demand is accommodated by valet parking.

The other key finding is that there is insufficient parking supply to accommodate all of the potential projects because only one of the building projects includes adequate parking supply to support the new building's parking demand.

Table 10 shows the comparison of campus parking supply and demand for an assumed sequencing of the projects. The overall impact is that there would be a shortage of 880 parking spaces if no parking facility other than the one proposed garage were constructed.

In the project sequencing depicted in Table 10, none of the building projects would have adequate parking. Even after the first project, the medical office building, there would be a shortage of over 300 spaces. Only if the research building/parking garage project were built first would there be enough parking to support some of the other projects. The research building/parking garage project could provide enough additional parking to support either one of the other projects.

**Table 10: Parking Supply and Demand – Campus Plan Concept**

	Parking Demand	Parking Supply	Parking Surplus (Deficit)
Existing Conditions	3,866	4,253	387
After Campus Modernization Project	4,246	4,506	260
After Medical Office Building	4,811	4,506	(305)
After Ambulatory Care Facility	5,111	4,456	(655)
After Research Bldg and Garage	5,461	5,231	(230)
After Second Research Building	5,811	4,931	(880)

# Traffic Access and Circulation

The *Traffic Impact Assessment Study* completed for the Campus Modernization Program ENF evaluated the impacts to the gateway intersections of the proposed projects. This chapter discusses the findings of the evaluation of site access issues if the entire campus plan concept was developed, and discusses internal circulation issues that exist at present and will be more significant in the future.

## Site Access Issues

The peak-hour trip distribution patterns at each of the four campus entrance/exit points (North Road and South Road at Plantation Street and Lake Avenue) are presented in Table 11. These data are based on the results of the *Traffic Impact Assessment Study*. Additional data collected in 1999 showing hourly traffic volumes at the entrance driveways are presented in the appendix.

**Table 11: Vehicle Trip Distribution Summary**

<u>Gateways</u>		Percent of Total
Plantation Street at North Road		11%
Plantation Street at South Road		50%
North Road at Lake Avenue		9%
South Road at Lake Avenue		30%
	<b>Direction (from/to)</b>	<b>Percent of Total</b>
<u>West Gateways – Approach Direction</u>		
Plantation Street	north	27 %
Plantation Street	south	12 %
Shrewsbury Street	west	11 %
Belmont Street (west of Shrewsbury Street)	west	11 %
Subtotal – West Gateways		61%
<u>East Gateways – Approach Direction</u>		
Lake Avenue (north)	north	9 %
Lake Avenue (south)	south	10 %
Belmont Street (east of Lake Avenue)	east	20%
Subtotal – East Gateways		39%

The campus plan includes two initiatives to modify site access. The first is creating a full-access intersection at South Road and Lake Avenue. The second is direct access via Belmont Street. These roadway modifications, and the existing gateway intersections, were evaluated using ranges of increased traffic likely to occur if all of the campus plan concept projects were developed.



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### South Road at Lake Avenue North

The current alignment allows only right-turns in and right-turns out. At present, 30 percent of the traffic to the campus uses the South Road entrance at Lake Avenue. Most of this traffic arrives via Belmont Street and must make a U-turn on Lake Avenue to enter South Road. Traffic departing the campus towards northbound Lake Avenue must either use South Road and U-turn on Lake Avenue or use North Street.

One element of the Campus Modernization Program is to realign the South Road approach to Lake Avenue and consolidate access and egress with the adjacent MassHighway District 3 facility. As noted in the *TIAS*, this change would not make a significant difference in intersection operations.

The campus plan concept would open the median and create a four-way intersection with South Road, Lake Avenue and an entrance to the Regatta Point parking lot. Key findings from intersection operational analyses and signal warrant analyses are as follows:

- The intersection analysis showed that left turns would often experience delays exiting South Road. The volume of left-turning traffic is relatively modest, but it would be beneficial to have a traffic signal to allow drivers to conveniently exit the campus northbound on Lake Avenue. The primary advantages of doing so are convenience and safety for patient/visitors, and that providing drivers with a direct route from the garage reduces internal campus circulation and helps minimize possible vehicle/pedestrian conflicts.
- A traffic signal warrant analysis indicates that there may not be sufficient traffic volumes on South Road to “warrant” a traffic signal initially. However, it is likely that as the campus plan concept develops, that traffic signal warrants might be met. Accordingly, the design of the realignment of the South Road/Lake Avenue intersection should include consideration of future signalization.



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### Access via Belmont Street (Route 9)

The campus concept plan envisions a new campus gateway at Belmont Street. The new access would be an unsignalized T-intersection limited to right-turns in and right-turns out. Approximately 15 percent of the total site traffic might be expected to use the new driveway.

Belmont Street access would provide a more visible and convenient entrance for first-time visitors. The new access would provide a direct means for drivers to head westbound on Belmont Street and avoid the signalized intersection of South Road at Plantation Street. More importantly, the Belmont Street access would provide an alternate route to westbound Route 9, and would enhance internal circulation by providing direct access to and from the new South Road parking garage. The new access road would provide a significant reduction in the traffic on South Road that might conflict with pedestrians traveling between the school or hospital and the new South Road parking garage.

Peak hour traffic impacts would be limited. The new access would reduce the number of left-turns exiting from South Road onto Plantation Street, but the change would not be critical since the intersection would operate at an acceptable level of service regardless. The impact at Belmont Street and Lake Avenue would be less noticeable. During peak hours, most of those traveling northbound on Lake Avenue would continue to go to the South Road entrance rather than make the left turn onto Belmont Street. The new access road would provide westbound Belmont Street traffic with the opportunity to go straight rather than turn right and many likely would since the right turn lane is short and it would often take as long to proceed straight than to turn right. However, the critical movements causing the congestion at the intersection would be unaffected.



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### Other Gateway Intersections

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#### Plantation Street at South Road

This location will remain the predominant entrance to the campus. Currently, half the site traffic enters via this gateway intersection. An operational analysis indicates that the intersection can continue to be operated at an acceptable peak-hour level of service even under the full build out envisioned with the campus concept plan. Some signal modifications would be necessary, but no additional turn lanes or other geometric improvements would be required.

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### Plantation Street at North Road

This location will become more important as the campus grows. Once the Campus Modernization Program is complete, it will become the only Plantation Street ambulance entrance. It is currently used by about 11 percent of the site traffic, but this will increase if the new lab buildings and parking garage along First Road are developed.

The intersection is a signalized three-way T-intersection. Plantation Street provides one through lane and one shared through/turn lane in each direction and these will suffice in the future. However, the North Road's single lane approach will eventually become inadequate. North Road will likely need to be widened to accommodate separate left- and right-turn lanes.

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### North Road at Lake Avenue

This gateway is used by less than ten percent of the site traffic and the amount of use is not expected to increase significantly in the future. Of note is that it will become an important ambulance route once the Campus Modernization Program's emergency department expansion project is complete.

The intersection is unsignalized and even with existing volumes the left turns from North Road to Lake Avenue experience a poor level of service (actual delays may be less if drivers enter Lake Avenue using shorter gaps than standard for the level of service calculation). The left turn movement is not expected to improve, but is not expected to worsen substantially. In any event, most drivers desiring to turn left would be better accommodated by the signalized intersection at North Road and Plantation Street since Lake Avenue terminates at Plantation Street approximately 1.5 miles north of the campus.

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### Internal Circulation

The Campus Modernization Program and the campus concept plan affect internal circulation directly through roadway changes and indirectly by changes to parking locations and building destinations. The most significant roadway change is the discontinuance of Fourth Road and the shift of ambulance traffic from South Road to North Road. The shift of the ambulance entrance does not hinder ambulance travel and does provide some benefit by removing ambulances from busy South Road. The loss of Fourth Road leaves only First Road as a north-south connector, but the change is not ma

# 1

## Introduction

A Campus Modernization Program is underway for the Worcester campus of the University of Massachusetts Medical School and its clinical partner, the UMass Memorial Health Care System. This work includes hospital expansion and a new parking garage. In addition, a preliminary campus plan concept has been developed that identifies generalized building projects and modifications to the campus roadways that are to be studied as part of future campus planning efforts.

This report presents the study of the parking and traffic aspects of the Campus Modernization Program as well as planning issues related to the types of developments outlined in the preliminary campus plan concept.

Among the general findings of the study is that the Campus Modernization Program can be supported by the planned parking and roadway changes. However, the possible development concepts identified for the preliminary campus plan will require parking beyond that included in the concept.

The traffic analyses indicate that, with minor improvements, the four gateway intersections can support the full potential campus development. The most significant traffic issue is, and will remain so, the congestion along the Belmont Street (Route 9) corridor caused by area-wide traffic.

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### Study Area

The study area encompasses the core campus -- the area bounded by Lake Avenue North to the east; North Road to the north; Plantation Street to the west, and South Road to the south, as well as associated parking areas. Peripheral facilities such as the Massachusetts Biotechnology Park and the Shaw Building are not included since they are not part of the Campus Modernization Program or the current campus plan concept development.

## Project Description

Figure 1 shows the existing campus buildings and parking. Figure 2 depicts the building changes associated with the Campus Modernization Program. The program includes a 225,000 gsf expansion of the hospital and a 20,000 gsf expansion of school office space. As shown in Table 1, the project would increase campus building space from 2,138,000 gsf to 2,383,000 gsf.

**Table 1: Building Space – Campus Modernization Program**

Building	Existing	Proposed
UM Medical School	881,000 gsf	901,000 gsf
UM Teaching Hospital	706,000 gsf	931,000 gsf
Lazare Research Building	399,000 gsf	399,000 gsf
Benedict Building	78,000 gsf	78,000 gsf
Others <sup>a</sup>	74,000 gsf	74,000 gsf
<b>Total</b>	<b>2,138,000</b>	<b>2,383,000</b>

a Power Plant, Maple House, CMED Trailer, Construction Trailer and Pre-admission Trailer.

The Campus Modernization Program also involves consolidation of existing on- and off-campus surface parking into a new 1,600-space parking garage. The project results in a net increase of approximately 250 parking spaces serving the campus and increases on-campus parking by more than 900 spaces. The specific changes in parking supply are detailed in Chapter 3.

Another component of the Campus Modernization Program are changes to site access and circulation. One element is to realign the South Road approach to Lake Avenue and consolidate access and egress with the adjacent MassHighway District 3 facility. The most significant vehicle circulation change is the change to Fourth Road. The hospital expansion will eliminate the southern section of the road. Ambulance access is currently via either end of Fourth Road and future access will be only via North Road. Walk-in emergency department access remains via South Road.

Figure 3 depicts the preliminary campus plan concept. The concept provides general guidance for future campus planning efforts. As such, only possible types of facilities are identified and there are no specifics as to size or schedule. For the purposes of traffic and parking planning, the following development program is evaluated.

- A 125,000 gsf medical office building,
- 75,000 gsf of ambulatory care facilities,
- Two 200,000 gsf research buildings and
- Direct access to the campus from Belmont Street

## Existing Parking Supply and Demand

This chapter presents the existing parking supply, parking utilization and parking space demand at the campus. Existing traffic conditions are described in the *Traffic Impact and Access Study* prepared for the Campus Modernization Program as part of the Environmental Notification Form submittal to the Massachusetts Environmental Policy Act Office.

The sources of the existing conditions parking data include previous studies, parking data collected by UMMS, and parking data collected by VHB. *The UMMC Parking Evaluation* prepared by VHB in 2000 provides parking occupancy counts, roadway traffic counts, and survey data for parkers using the pay lots and valet parking. The UMMS data includes summaries of daily parking units at the pay lots, as well as peak-period space-available counts for several parking facilities. Recent occupancy counts and supplemental traffic data were collected as part of the *Traffic Impact and Access Study* and this study effort.

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### Parking Supply

Parking at the campus includes off-street surface and structure parking, on-street parking, and remote off-site parking. Pay parking, both self-park and valet, is available for patients and visitors. Employees also pay for parking. Most employees are assigned to unreserved parking that allows parking in any of several parking areas. Other employees are assigned to specific lots and pay a premium. A few employees are assigned to off-site parking served by a shuttle. There is also some unregulated UMMS/UMMHCS-related parking at Regatta Point, located adjacent to the campus on Lake Avenue.

Table 2 lists the parking supply for the core campus. This listing does not include off-campus parking that does not directly serve the main campus. The complete listing of parking, including the off-site parking for the Massachusetts Biotechnology Research Park and for the Shaw building, is listed on Figure 1, shown previously.

The existing parking supply is 4,253 spaces, consisting of 3,593 on-campus spaces and 660 off-campus spaces. The off-campus supply includes leased parking at the

First Assembly of God church and use agreements for parking at Worcester State Hospital and Regatta Point. Regatta Point is part of Quinsigamond State Park and is owned by the Massachusetts Department of Conservation and Recreation. UMMS/UMMHCS-related motorists are allowed to use the lot in exchange for regular maintenance activities for the parking lot (e.g., snow plowing, pavement repair, and sweeping) provided by UMMS/UMMHCS.

**Table 2: Parking Supply Summary – Core Campus**

Code <sup>a</sup>	Parking Area	Use	Permits Issued	Existing Supply
	<i>On-Site Parking</i>			
1	Basic	Employees	208	126
2	Benedict	Valet Parking		103
3	Clinical	Physicians	111	92
4	Daycare	Employees	13	15
5	East	Employees	233	269
		Couriers	100	
6	Emergency	Staff, Patients	11	58
7	Handicapped	Handicap		19
8	Middle	Patients/Visitors	Pay Parking	210
9	Pine Tree	Employees -Unreserved	*	469
10	Power Plant	Employees	49	43
11a	South (patient and visitor)	Patients/Visitors	Pay parking	340
11b	South (valet)	Valet parking		109
12	West	Employees -Unreserved	*	101
13a-13f	Parking Garage	Employees – Unreserved	*	1,154
		Reserved – LRB	53	53
		Reserved – 2 <sup>nd</sup> Floor	214	202
		Reserved – 1 <sup>st</sup> Floor	50	60
				1,469
14	North Road	Employees -Unreserved	*	59
15	South Road	Employees -Unreserved	*	48
		Meters		22
16	First Road	Police		7
17	Second Road	Handicap		18
18	Third Road	Deliveries		8
19	Fourth Road	Meters		8
	<b>Subtotal On-site Parking</b>		<b>6,583</b>	<b>3,593</b>
	<i>Off-Site Parking</i>			
OC2	Regatta Point Lot	Informal Parking		260
OC3	Assembly of God Church	Not in use		300
OC4	Worcester State Hospital	New hires	102	100
	<b>Subtotal Off-site Parking</b>		<b>102</b>	<b>660</b>
	<b>Total</b>		<b>6,685</b>	<b>4,253</b>

<sup>a</sup> Codes are as indicated on Figure 1 and Figure 2

\* Employees assigned to unreserved parking can park in any of the designated lots. As of April 2003, there were 5,552 unreserved permits, including 532 for medical students.

Table 3 lists a summary of parking at the campus. Slightly more than three-quarters of the campus parking supply is for employees and about one-fifth is for patients and visitors. The remaining parking has special-use designations and includes handicap parking, police parking, and emergency department parking.

Most of the employee parking is in the "Unreserved" facilities. There are three unreserved permits issued for every parking space. Restricted parking, where employees are assigned parking in a specific parking facility, has 1.2 permits per parking space.

**Table 3: Parking Supply Summary – Core Campus**

Parking Type	Parking Spaces	Permits Issued
<i>Employee Parking</i>		
Unreserved	1,831 (43%)	5,552
Restricted	804 (19%)	965
Remote	660 (15%)	102 <sup>b</sup>
Subtotal	3,311 (77%)	6,619
<i>Patient/Visitor Parking</i>		
Hourly Lots	550 (13%)	
Valet Parking	212 (5%)	
Meters	30 (1%)	
Subtotal	792 (19%)	
<i>Other Parking<sup>a</sup></i>	166 (4%)	66
<b>Total</b>	<b>4,253</b>	<b>6,685</b>

a Handicap, police, daycare, Emergency Department and other reserved.

b The parkers using the 260 spaces in the Regatta Lot do not have permits.

## Existing Parking Demand

Several data sources were used to determine the existing parking space demand. Parking occupancy counts were conducted in October 1999 for the *UMMC Parking Evaluation* study and in June 2003 for the *Traffic Impact and Access Study* prepared for the Campus Modernization Program ENF submittal. In addition, UMMS conducts daily parking space-available counts for the parking garage, West Lot, Pine Tree Lot and South Lot.

Table 4 shows the existing peak seasonal parking demand at the campus, reflecting conditions that typically occur in the fall and winter. A listing of peak parking demand for each parking facility is provided in the appendix.

The campus-wide parking demand is 4,253 spaces. This is 91 percent of the available parking supply. Employee parking is at 90 percent of capacity and patient/visitor parking is at 92 percent of capacity.

**Table 4: Peak Parking Demand Summary – Core Campus**

Parking Type	Peak Demand	Capacity	Percent of Capacity
<i>Employee Parking</i>			
Unreserved	1,927	1,831	105%
Restricted	715	804	89%
Remote	320	660	49%
Subtotal	2,962	3,295	90%
<i>Patient/Visitor Parking</i>			
Hourly Lots	490	550	89%
Valet Parking	212	212	100%
Meters	30	30	100%
Subtotal	732	792	92%
<i>Other Parking<sup>a</sup></i>	172	166	104%
<b>Total</b>	<b>3,866</b>	<b>4,253</b>	<b>91%</b>

All of the unreserved employee parking is at or over capacity. Most of the available employee parking is in the remote parking lots. The restricted parking, where staff are assigned to specific lots, is at 89 percent of capacity. The most significantly underutilized employee parking areas are Basic (15 spaces available), Clinical (15), East (70), and the second floor of the parking garage (30).

There is excess capacity for visitor parking in the South Lot. The UMMS daily space-available counts show that although peak seasonal demand is higher than observed in June, there are always at least 60 spaces available. It should be noted that the patient/visitor parking demand tabulation assumes that all valet parking is in use as well as almost all of the pay parking in the South and Middle lots. In fact, the valet parking tends to reach capacity only during inclement weather, as drivers choose to use the valet parking instead of the pay lots.



## Parking Space Ratios

No projections of future staffing or patient activity are available, so for the purposes of estimating future parking demand, planning ratios of parking spaces per 1,000 gross square foot of building space are used. As indicated in Table 5, the overall campus parking space ratio is 1.8 spaces per 1,000 gross square feet. This reflects the existing demand of 3,866 spaces and the existing building space of 2,138,000 gsf.

Table 5 also lists parking space ratios for different functions on the campus. The ratio of 1.75 spaces per 1,000 gsf of space for the Lazare Research Building is as determined in the *UMMC Parking Evaluation*. The parking space ratio of 4.5 assumed for the Benedict Building is based on experience with medical office

buildings at other campuses and is in line with the survey data about users of the visitor parking. The ratio of 1.7 spaces per 1,000 gsf for the school and hospital building space is determined from the existing parking demand, adjusted for the Lazare Research Building and Benedict Building parking demand.

**Table 5: Parking Space Planning Ratios**

Function	Size	Parking Demand	Parking Ratio
Medical School / Hospital	1,661,000 gsf	2,817	1.70 / 1,000 gsf
Lazare Research Building	399,000 gsf	698	1.75 / 1,000 gsf
Benedict Building	78,000 gsf	351	4.50 / 1,000 gsf
<b>Total</b>	<b>2,138,000 gsf</b>	<b>3,866</b>	<b>1.81 / 1,000 gsf</b>

## Visitor Parking Utilization

Limited data are available for the transient parking at the campus. Most patient and visitor parking is available in two self-park hourly lots. There is also a valet parking operation and a few on-street parking meters. The standard fee for parking in the two lots is \$2.00 for the first two hours, \$3.00 for two to three hours, and \$4.00 thereafter. Outpatient validations provide a \$2.00 discount.

A listing of monthly transactions in the two pay parking lots for a 12-month period is provided in the appendix. The transient parking units exceed 30,000 per month and are often over 1,500 per day.

In March of 2000 a survey was conducted of parkers using the South and Middle lots, and the valet parking. The survey was conducted midweek, from 8:00 a.m. to 4:00 p.m. Some key findings from the survey are:

- Over 90% of the patient/visitor parking is hospital-related
- Of the hospital parkers, approximately 70% are patients and 30% are visitors.
- The destination of hospital parkers was approximately 65% to the hospital and 35% to the Benedict Building.

# 3

## Future Parking Supply and Demand

This chapter presents the evaluation of the parking demand and supply associated with the Campus Modernization Program projects and with the potential development projects shown on the campus plan concept.

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### Campus Modernization Program

Both parking demand and supply will be affected by the Campus Modernization Program. Not only does new building space create new parking demand on campus, but the relocation of off-campus parking will also increase on-campus parking demand. As described below, the evaluation found that most of the increased parking demand will be offset by the additional parking associated with the new South Street parking garage.

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### Changes in Parking Demand

The Campus Modernization Program will increase medical school office space by 20,000 gsf and increase hospital space by 225,000 gsf. The new space is consistent with the existing utilization of the building and therefore the parking demand associated with the new space is assumed to generate a parking demand comparable to existing conditions. At 1.7 spaces per 1,000 gsf the new space would generate a parking demand for 380 spaces once the new building space is fully occupied and is being used at design capacity.

The new medical school and hospital building space will increase the campus parking demand from 3,866 to 4,246 spaces.

## Changes in Parking Supply

The Campus Modernization Program will consolidate of on- and off-campus surface parking into a new 1,600-space parking garage. The changes in parking supply on the main campus are listed in Table 6. The project results in a net increase of approximately 250 parking spaces serving the campus and increases on-campus parking by more than 900 spaces. The most significant changes include:

- Consolidation of patient/visitor parking into the new parking garage,
- Elimination of the Benedict Lot for valet storage parking,
- Elimination of off-site parking, including informal parking at Regatta Point, and
- Elimination of most on-street parking.

**Table 6: Parking Supply Summary - Campus Modernization Program**

Code <sup>a</sup>	Parking Area	Existing Supply	Proposed Supply	Change
	<i>On-Site Parking</i>			
1	Basic	126	126	0
2	Benedict	103	33	(70)
3	Clinical	92	92	0
4	Daycare	15	15	0
5	East	269	229	(40)
6	Emergency	58	11	(47)
7	Handicapped	19	19	0
8	Middle	210	210	0
9	Pine Tree	469	469	0
10	Power Plant	43	43	0
11a	South (patient and visitor)	340	0	(340)
11b	South (valet)	109	0	(109)
12	West	101	101	0
13a-13f	Existing Parking Garage	1,469	1,469	0
14	North Road	59	59	0
15	South Road	70	0	(70)
16	First Road	7	7	0
17	Second Road	18	18	0
18	Third Road	8	8	0
19	Fourth Road	8	0	(8)
	New Parking Garage	0	1,600	1,600
	<b>Subtotal On-site Parking</b>	<b>3,593</b>	<b>4,509</b>	<b>916</b>
	<i>Off-Site Parking</i>			
OC2	Regatta Point Lot	260	0	0
OC3	Assembly of God <sup>Church</sup>	300	0	0
OC4	Worcester State Hospital	100	0	0
	<b>Subtotal Off-site Parking</b>	<b>660</b>	<b>0</b>	<b>(660)</b>
	<b>Total</b>	<b>4,253</b>	<b>4,509</b>	<b>256</b>

a Codes are as indicated on Figure 1 and Figure 2

## Findings and Recommendations

There will be sufficient parking to support the initiatives of the Campus Modernization Program. As shown in Table 7, the Campus Modernization Program adds more parking demand than it provides in increased parking supply, but there will still be a surplus of at least 260 spaces on campus. This surplus is for peak seasonal mid-week conditions. Parking availability will be greater on other days and during other times of the year. Parking availability may also be greater if all those currently parking in the Regatta Point lot do not relocate to the campus.

**Table 7: Parking Supply and Demand – Campus Modernization Program**

	Parking Demand	Parking Supply	Parking Surplus
Existing Conditions	3,866	4,253	387
Change	+ 380	+256	
Future Conditions	4,246	4,506	260

Although the overall proportions of campus parking and supply will remain essentially constant, the additional parking demand, the shift of off-campus parking on campus, and the increased supply of structure parking will significantly impact parking assignments and parking pricing. The recommendations for the new parking assignments and pricing are listed below and described in the sections immediately following.

- Designate 575 spaces in the new South Road parking garage for patient and visitor hourly parking.
- Designate the spaces remaining in the Benedict Lot for Emergency Department parking.
- Use the Middle Lot for valet parking.
- Eliminate the practice of unreserved parking and issue parking permits for specific parking facilities.
- Revise the permit pricing as follows:
  - Retain Clinical, Level 1 and Level 3 Reserved as Tier 1 permits and designate the Basic lot as a Tier 1 permit.
  - Retain East Lot and Power Plant as Tier 2 permits and add North Road as a Tier 2 permit.
  - Create a Tier 3 rate of about \$9.00 per week for parking in the two garages, eliminate the surcharge on Level 2 (First Road) garage parking, and designate West Lot parking as Tier 3.
  - Retain Tier 4 parking fees of \$6.00 per week in the Pine Tree lot.

## Patient and Visitor Parking

As shown previously in Table 4, the current patient/visitor parking space demand is approximately 730 spaces, consisting of 520 self-park spaces and 210 valet parking spaces. The Campus Modernization Program will increase overall parking demand by 380 spaces, of which no more than 20 percent will be patient/visitor related and some of that is emergency department parking. Excluding the emergency department parking, the patient/visitor parking demand after the completion of the Campus Modernization Program will be approximately 575 spaces. All of this parking should be designated in the South Road parking garage.

The valet parking operation currently uses the Benedict Lot and the South Lot. There will likely not be sufficient parking remaining in the Benedict Lot to make a significant difference in the valet operations. Therefore, all of the valet parking spaces should be relocated either to the new South Street parking garage or to the Middle Lot. For the time being, it is recommended that the valet parking be relocated to the Middle Lot. Alternatively, the valet parking could be assigned to the roof or basement of the South Road parking garage, and this possibility should be considered in design planning efforts.

## Employee Parking

Table 8 describes the current and recommended employee parking assignment and pricing. It is recommended that the "Unreserved" permit, which allows parking in any of several parking facilities, be eliminated and that parkers be assigned to specific parking locations.

**Table 8: Parking Permits – Recommended Changes**

Location	Existing Supply	Current Permit Cost (per week)	Future Supply	Proposed Permit Cost (per week)
Basic	126	\$11.08	126	\$16.62
Clinical	92	\$16.62	92	\$16.62
Daycare	15	\$6.00	15	\$6.00
East	269	\$11.08	229	\$11.08
Pine Tree	469	\$6.00	469	\$6.00
Power Plant	43	\$11.08	43	\$11.08
West	101	\$6.00	101	\$11.08
First Road Parking Garage				
Level 1	45	\$16.62	45	\$16.62
Level 2	202	\$13.08	202	\$9.00
Level 3 Reserved	49	\$16.62	49	\$16.62
Levels 3, 4, 5 and 6	1,154	\$6.00	1,154	\$9.00
North Road	59	\$6.00	59	\$11.08
South Road Parking Garage	0	n/a	1,025	\$9.00
Off-site parking	660	\$0.00	0	n/a

## Campus Plan Development Concept

The campus concept plan envisions a new medical office building, new ambulatory care facilities, and additional research space. The development plans are concept outlines and there are no specific building space programs. For the purposes of this planning analysis, the following building space program is assumed.

- 125,000 gsf of medical office space, adjacent to the new South Road parking garage,
- 75,000 gsf of ambulatory care space created by expanding the Benedict building, and
- 400,000 gsf of new research space, in two buildings located along First Road.

## Changes in Parking Demand

Table 9 lists the parking demand for the potential campus concept plan projects. The total parking demand among the projects is 1,565 spaces. Of these, 1,135 would be for employees and 430 would be for patients and visitors.

**Table 9: Future Parking Demand – Campus Plan Concept**

Building	Size	Parking Ratio	Total Spaces	Employee Spaces	Patient/Visitor Spaces
Medical Office Building	125,000 gsf	4.50 / 1,000 gsf	565	310	255
Ambulatory Care	75,000 gsf	4.00 / 1,000 gsf	300	165	135
Research Buildings	400,000 gsf	1.75 / 1,000 gsf	700	660	40
<b>Total</b>			<b>1,565</b>	<b>1,135</b>	<b>430</b>

Note: Building program for campus concept plan is undefined. Sizes indicated are assumed for planning purposes.

The parking ratios listed in Table 9 for the medical office building and the research building are the same as the current parking space ratios presented in the previous chapter. The parking space ratio for the new ambulatory care space is based on experience at other medical campuses. The estimated splits between employee and visitor parking are also based on previous experience. For medical office building and ambulatory care functions, patient/visitor parking is assumed to be approximately 45 percent of the total. For research functions visitor parking is estimated to be about 5 percent of the total.

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## Changes in Parking Supply

The campus plan concept includes a parking garage in the northwest corner of the campus, but several of the proposed buildings displace existing parking lots. The potential changes in parking supply are as follows.

- The medical office building would not affect any significant amount of parking. The medical office building would generate a parking demand of 565 spaces and would therefore require 565 available spaces to support the project.
- The ambulatory care facility would displace roughly 50 spaces in the Handicap and Benedict lots. The ambulatory care facility would generate a parking demand of 300 spaces and would therefore require 350 available spaces to support the project.
- One of the research buildings would be located on the site of the 126-space Basic Lot. A parking garage would be located behind the building and presumably constructed concurrently. The parking garage would displace the 101-space West Lot. The garage would likely have a capacity of at least 1,000 spaces and the net increase in parking would be about 775 spaces. The research building would generate a parking demand of 350 spaces and the project would therefore provide 425 surplus spaces for other campus uses.
- The second research building would be located on the front section of the existing First Road garage. The project would displace at least 60 spaces per floor, or 300 spaces in total. The research building would generate a parking demand of 350 spaces and the project would therefore require 650 available spaces to support the project.

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## Findings

One of the key findings is that patient/visitor parking will increase up to 430 spaces. If this were to occur and if all patient/visitor parking were to remain in the new South Street garage, then the initial allocation of 575 patient/visitor spaces would increase to approximately 1,100 visitor parking spaces. This assumes that none of the new parking demand is accommodated by valet parking.

The other key finding is that there is insufficient parking supply to accommodate all of the potential projects because only one of the building projects includes adequate parking supply to support the new building's parking demand.

Table 10 shows the comparison of campus parking supply and demand for an assumed sequencing of the projects. The overall impact is that there would be a shortage of 880 parking spaces if no parking facility other than the one proposed garage were constructed.

In the project sequencing depicted in Table 10, none of the building projects would have adequate parking. Even after the first project, the medical office building, there would be a shortage of over 300 spaces. Only if the research building/parking garage project were built first would there be enough parking to support some of the other projects. The research building/parking garage project could provide enough additional parking to support either one of the other projects.

**Table 10: Parking Supply and Demand – Campus Plan Concept**

	Parking Demand	Parking Supply	Parking Surplus (Deficit)
Existing Conditions	3,866	4,253	387
After Campus Modernization Project	4,246	4,506	260
After Medical Office Building	4,811	4,506	(305)
After Ambulatory Care Facility	5,111	4,456	(655)
After Research Bldg and Garage	5,461	5,231	(230)
After Second Research Building	5,811	4,931	(880)

## Traffic Access and Circulation

The *Traffic Impact Assessment Study* completed for the Campus Modernization Program ENF evaluated the impacts to the gateway intersections of the proposed projects. This chapter discusses the findings of the evaluation of site access issues if the entire campus plan concept was developed, and discusses internal circulation issues that exist at present and will be more significant in the future.

### Site Access Issues

The peak-hour trip distribution patterns at each of the four campus entrance/exit points (North Road and South Road at Plantation Street and Lake Avenue) are presented in Table 11. These data are based on the results of the *Traffic Impact Assessment Study*. Additional data collected in 1999 showing hourly traffic volumes at the entrance driveways are presented in the appendix.

**Table 11: Vehicle Trip Distribution Summary**

<u>Gateways</u>		Percent of Total
Plantation Street at North Road		11%
Plantation Street at South Road		50%
North Road at Lake Avenue		9%
South Road at Lake Avenue		30%
	<b>Direction (from/to)</b>	<b>Percent of Total</b>
<u>West Gateways -- Approach Direction</u>		
Plantation Street	north	27 %
Plantation Street	south	12 %
Shrewsbury Street	west	11 %
Belmont Street (west of Shrewsbury Street)	west	11 %
Subtotal – West Gateways		61%
<u>East Gateways – Approach Direction</u>		
Lake Avenue (north)	north	9 %
Lake Avenue (south)	south	10 %
Belmont Street (east of Lake Avenue)	east	20%
Subtotal – East Gateways		39%

The campus plan includes two initiatives to modify site access. The first is creating a full-access intersection at South Road and Lake Avenue. The second is direct access via Belmont Street. These roadway modifications, and the existing gateway intersections, were evaluated using ranges of increased traffic likely to occur if all of the campus plan concept projects were developed.

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### South Road at Lake Avenue North

The current alignment allows only right-turns in and right-turns out. At present, 30 percent of the traffic to the campus uses the South Road entrance at Lake Avenue. Most of this traffic arrives via Belmont Street and must make a U-turn on Lake Avenue to enter South Road. Traffic departing the campus towards northbound Lake Avenue must either use South Road and U-turn on Lake Avenue or use North Street.

One element of the Campus Modernization Program is to realign the South Road approach to Lake Avenue and consolidate access and egress with the adjacent MassHighway District 3 facility. As noted in the *TIAS*, this change would not make a significant difference in intersection operations.

The campus plan concept would open the median and create a four-way intersection with South Road, Lake Avenue and an entrance to the Regatta Point parking lot. Key findings from intersection operational analyses and signal warrant analyses are as follows:

- The intersection analysis showed that left turns would often experience delays exiting South Road. The volume of left-turning traffic is relatively modest, but it would be beneficial to have a traffic signal to allow drivers to conveniently exit the campus northbound on Lake Avenue. The primary advantages of doing so are convenience and safety for patient/visitors, and that providing drivers with a direct route from the garage reduces internal campus circulation and helps minimize possible vehicle/pedestrian conflicts.
- A traffic signal warrant analysis indicates that there may not be sufficient traffic volumes on South Road to "warrant" a traffic signal initially. However, it is likely that as the campus plan concept develops, that traffic signal warrants might be met. Accordingly, the design of the realignment of the South Road/Lake Avenue intersection should include consideration of future signalization.

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### Access via Belmont Street (Route 9)

The campus concept plan envisions a new campus gateway at Belmont Street. The new access would be an unsignalized T-intersection limited to right-turns in and right-turns out. Approximately 15 percent of the total site traffic might be expected to use the new driveway.

Belmont Street access would provide a more visible and convenient entrance for first-time visitors. The new access would provide a direct means for drivers to head westbound on Belmont Street and avoid the signalized intersection of South Road at Plantation Street. More importantly, the Belmont Street access would provide an alternate route to westbound Route 9, and would enhance internal circulation by providing direct access to and from the new South Road parking garage. The new access road would provide a significant reduction in the traffic on South Road that might conflict with pedestrians traveling between the school or hospital and the new South Road parking garage.

Peak hour traffic impacts would be limited. The new access would reduce the number of left-turns exiting from South Road onto Plantation Street, but the change would not be critical since the intersection would operate at an acceptable level of service regardless. The impact at Belmont Street and Lake Avenue would be less noticeable. During peak hours, most of those traveling northbound on Lake Avenue would continue to go to the South Road entrance rather than make the left turn onto Belmont Street. The new access road would provide westbound Belmont Street traffic with the opportunity to go straight rather than turn right and many likely would since the right turn lane is short and it would often take as long to proceed straight than to turn right. However, the critical movements causing the congestion at the intersection would be unaffected.

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### Other Gateway Intersections

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#### Plantation Street at South Road

This location will remain the predominant entrance to the campus. Currently, half the site traffic enters via this gateway intersection. An operational analysis indicates that the intersection can continue to be operated at an acceptable peak-hour level of service even under the full build out envisioned with the campus concept plan. Some signal modifications would be necessary, but no additional turn lanes or other geometric improvements would be required.

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### Plantation Street at North Road

This location will become more important as the campus grows. Once the Campus Modernization Program is complete, it will become the only Plantation Street ambulance entrance. It is currently used by about 11 percent of the site traffic, but this will increase if the new lab buildings and parking garage along First Road are developed.

The intersection is a signalized three-way T-intersection. Plantation Street provides one through lane and one shared through/turn lane in each direction and these will suffice in the future. However, the North Road's single lane approach will eventually become inadequate. North Road will likely need to be widened to accommodate separate left- and right-turn lanes.

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### North Road at Lake Avenue

This gateway is used by less than ten percent of the site traffic and the amount of use is not expected to increase significantly in the future. Of note is that it will become an important ambulance route once the Campus Modernization Program's emergency department expansion project is complete.

The intersection is unsignalized and even with existing volumes the left turns from North Road to Lake Avenue experience a poor level of service (actual delays may be less if drivers enter Lake Avenue using shorter gaps than standard for the level of service calculation). The left turn movement is not expected to improve, but is not expected to worsen substantially. In any event, most drivers desiring to turn left would be better accommodated by the signalized intersection at North Road and Plantation Street since Lake Avenue terminates at Plantation Street approximately 1.5 miles north of the campus.

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### Internal Circulation

The Campus Modernization Program and the campus concept plan affect internal circulation directly through roadway changes and indirectly by changes to parking locations and building destinations. The most significant roadway change is the discontinuance of Fourth Road and the shift of ambulance traffic from South Road to North Road. The shift of the ambulance entrance does not hinder ambulance travel and does provide some benefit by removing ambulances from busy South Road. The loss of Fourth Road leaves only First Road as a north-south connector, but the change is not material since Fourth Road functioned more as a driveway than a roadway connector. However, the importance of First Road for future circulation, particularly as more buildings and parking is developed along the roadway, should not be underestimated.

The biggest traffic issue facing the campus, both now and in the future, is pedestrian circulation and vehicle-pedestrian conflicts. This issue is particularly acute on South Road where there is heavy pedestrian and vehicle traffic. The recent widening of South Road has created crossing distances of more than 60 feet and the result is that pedestrians can be in the street and exposed to traffic for 15 to 20 seconds or more. The problem will worsen once the additional pedestrian and vehicle traffic associated with the new parking garage is realized.

There is a general need to emphasize pedestrian movement and to slow vehicle traffic on the campus. The following are recommendations for pedestrian-related improvements.

- Install curb bulb-outs at the intersection of South Road and First Road.
- Extend the east median at the intersection of South Road and First Road to protect the crosswalk.
- Install curb bulb-outs and a raised crosswalk at the intersection of South Road and Second Road. The location of the raised crosswalk and the design of the curb bulb-outs should be coordinated with the design of the new parking garage.
- Install a raised crosswalk along First Road between the First Road parking garage and the Medical School sidewalk.
- Extend the sidewalk along the south side of North Road to the extents of the North Street parking lot.
- Provide a sidewalk along Fourth Road from North Road to the Emergency Department.

# Appendix

- Monthly Patient/Visitor Ticket Data
- Parking Occupancy Counts
  - October, 1999
  - June 2003
- Peak Parking Demand – By Facility
- Gateway Traffic Data
  - Automatic Traffic Counts – October 27, 1999
  - Vehicles Entering the Campus by Access Point
  - Vehicles Exiting the Campus by Access Point

Patient/Visitor Tickets

		\$2.00	\$3.00	\$4.00	Patient \$2.00	Misc.	Relfree \$1.00	State \$1.25	Volfac \$2.00	S.E. \$1.00	S.E. \$0.00	S.E. \$2.00	Student \$2.50	Lost \$4.00	No \$ \$0.00	Volnr \$0.00	Events \$0.00	Clin. \$0.00	CPNS \$0.00	Blood Donor \$0.00	Comp Pass \$0.00	Rects \$0.00	Temp Tags \$0.00	Clergy \$0.00	HPS \$0.00	Re- Charge \$0.00	In/Out \$0.00	
June	2002	14,582	2,396	3,253	3,998	108	70	193	5	4	-	-	107	91	24	545	135	258	2,442	242	616	807	50	246	176	513	1,098	31,959
July	2002	14,095	2,263	2,747	5,134	72	62	152	9	-	-	-	21	90	23	530	107	258	2,056	300	416	644	29	179	154	528	1,009	30,878
August	2002	15,825	2,273	2,402	3,532	49	78	127	1	2	-	-	42	63	48	412	13	235	1,806	269	526	626	50	211	104	436	1,100	30,030
September	2002	15,063	2,572	2,998	2,447	77	61	162	28	1	-	-	330	72	33	495	93	319	2,012	283	598	669	50	229	146	609	1,047	30,394
October	2002	16,652	2,749	3,400	2,599	80	77	191	1	-	-	-	374	65	28	536	59	409	1,941	298	621	702	25	229	164	581	1,143	32,924
November	2002	14,241	2,469	3,178	3,497	67	78	142	-	1	-	-	353	94	30	512	148	357	1,746	234	526	517	18	195	138	564	1,124	30,229
December	2002	12,959	1,872	2,269	2,646	39	68	150	-	-	-	3	129	53	40	343	1	276	1,536	242	339	410	2	198	143	463	983	25,164
January	2003	13,145	2,347	2,813	4,372	35	74	184	5	-	-	-	458	79	21	480	-	305	1,706	298	522	508	39	235	128	574	1,040	29,368
February	2003	10,612	1,972	2,626	4,904	30	83	149	3	-	-	-	511	67	24	406	-	260	1,508	253	424	512	52	188	121	516	915	26,136
March	2003	13,501	2,531	3,143	5,858	52	92	187	1	-	-	146	571	83	29	534	6	316	2,217	250	579	642	87	192	154	532	973	32,676
April	2003	14,913	2,438	3,258	5,127	237	75	191	1	4	-	112	711	61	38	569	203	363	1,924	292	741	609	79	238	177	482	1,149	33,992
May	2003	16,069	2,815	3,655	4,833	127	85	167	6	3	-	-	277	83	50	626	12	395	2,031	253	776	745	46	244	181	486	1,222	34,989
Total		171,457	28,697	35,742	48,747	973	903	1,995	60	15	-	261	3,884	901	388	5,988	777	3,751	22,925	3,214	6,684	7,391	527	2,584	1,786	5,286	12,803	368,739
Average		14,288	2,391	2,978	4,062	81	75	166	5	1	-	22	324	75	32	489	65	313	1,910	268	557	616	44	215	148	524	1,067	30,728
Percent		46%	8%	10%	13%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	2%	0%	1%	6%	1%	2%	2%	0%	1%	0%	2%	3%	100%

## Existing Parking Supply and Demand – October 1999

Parking Type	Code	Parking Area	Observed Supply	Observed Demand	Deficit/Surplus
Campus Lots	1	Basic Lot	119	103	+16
	2	Benedict Lot	101	120	-19
	3	Clinical Lot	60	45	+15
	4	Daycare Lot	37	51	-14
	5	East Lot	247	212	+35
	6	Emergency Lot	31	31	0
	7	Handicapped Lot	18	19	-1
	8	Middle Lot	210	230	-20
	9	Overflow Lot	114	128	-14
	10	Pinetree Lot	465	406	+59
	11	Power Plant Lot	24	52	-28
	12	South Lot	455	477	-22
	13	West Lot	82	86	-4
		<b>SUBTOTAL</b>	<b>1,963</b>	<b>1,960</b>	<b>+3</b>
Parking Garage	14	Garage Level 1	64	45	+19
	15	Garage Level 2	201	171	+30
	16	Garage Level 3	314	288	+26
	17	Garage Level 4	370	371	-1
	18	Garage Level 5	259	255	+4
	19	Garage Level 6	265	268	-3
		<b>SUBTOTAL</b>	<b>1,473</b>	<b>1,398</b>	<b>+75</b>
Campus Streets	20	North Road	60	101	-41
	21	South Road	82	82	0
	22	First Road	6	4	+2
	23	Second Road	29	32	-3
	24	Third Road	14	14	0
	25	Fourth Road	18	15	+3
	26	Fifth Road	0	0	0
		<b>SUBTOTAL</b>	<b>209</b>	<b>248</b>	<b>-39</b>
Off Campus Lots	27	One Biotech Lot	200	89	+111
	28	Two Biotech Lot	173	173	0
	29	Four Biotech Lot	101	93	+8
	30	Shaw Lot	144	84	+60
		<b>SUBTOTAL</b>	<b>830</b>	<b>651</b>	<b>+179</b>
Non-UMMC	31	Regatta Point	212	212	0
<b>TOTAL</b>			<b>4,475</b>	<b>4,257</b>	<b>+218</b>

Code	Parking Lot	Supply	Demand	Surplus/(Deficit)
1	Basic	126	100	26
2	Benedict	103	124	-21
3	Clinical	92	63	29
4	Daycare <sup>a</sup>	15	15	0
5	East	269	173	96
6	Emergency	58	64	-6
7	Handicapped <sup>a</sup>	19	19	0
8	Middle	210	185	25
9	Pine Tree	469	440	29
10	Power Plant	43	38	5
11a	South (patient and visitor)	340	253	87
11b	South (valet)	109	56	53
12	West	101	139	-38
<b>Subtotal</b>		<b>1,954</b>	<b>1,669</b>	<b>285</b>
13a	Level 1	60	51	9
13b	Level 2	202	154	48
13c1	Level 3 (unreserved)	257	257	0
13c2	Level 3 (reserved)	53	17	36
13d	Level 4	370	373	-3
13e	Level 5	259	263	-4
13f	Level 6	268	274	-6
<b>Subtotal</b>		<b>1,469</b>	<b>1,389</b>	<b>80</b>
14	North Road	59	86	-27
15	South Road	70	70	0
16	First Road <sup>a</sup>	7	7	0
17	Second Road	18	18	0
18	Third Road	8	8	0
19	Fourth Road	8	8	0
<b>Subtotal</b>		<b>170</b>	<b>197</b>	<b>-27</b>
OC2	Regatta Point Lot <sup>c</sup>	260	260	0
OC3	Assembly of God <sup>d</sup>	300	0	300
OC4	Worcester State Hospital <sup>e</sup>	100	100	0
<b>Subtotal</b>		<b>660</b>	<b>360</b>	<b>300</b>
<b>Total</b>		<b>4,253</b>	<b>3,615</b>	<b>638</b>

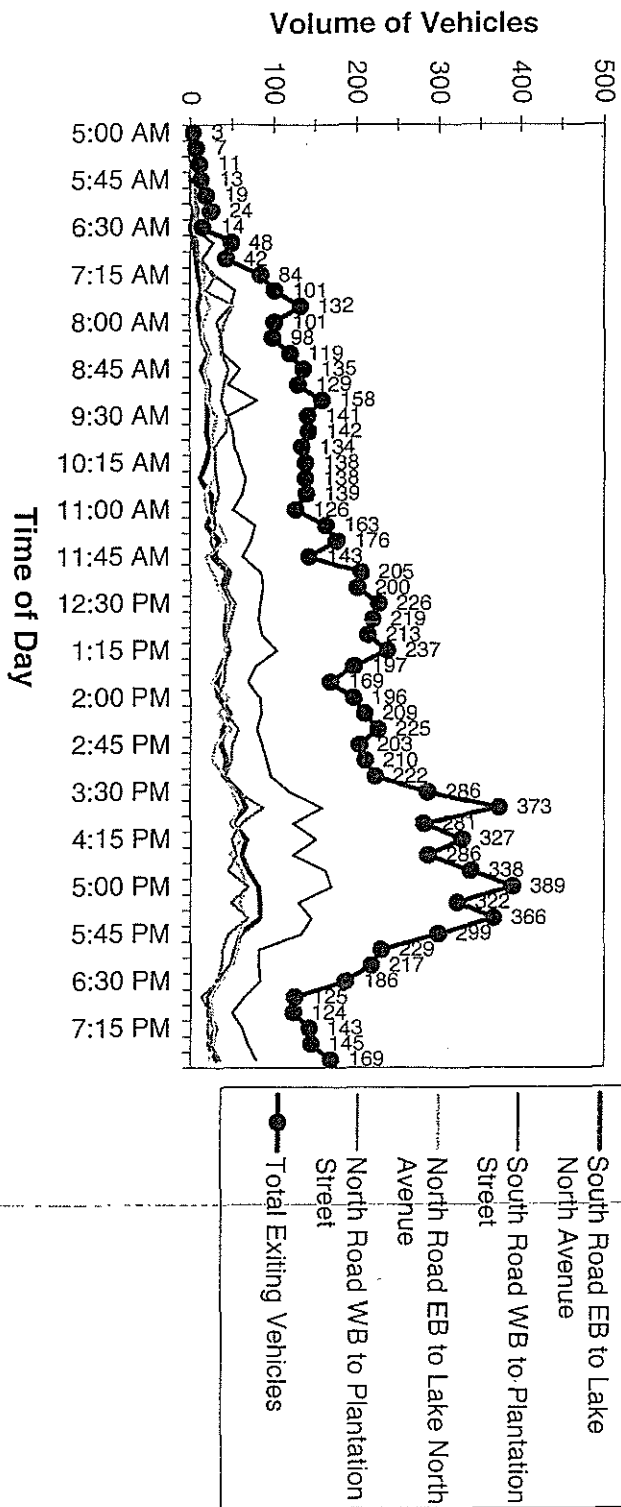
**Peak Parking Demand – By Parking Facility**

<b>Parking Area</b>	<b>Use</b>	<b>Peak Occupancy</b>	<b>Capacity</b>	<b>Percent of Capacity</b>
<i><u>On-Site Parking</u></i>				
Basic	Employees	110	126	87%
Benedict	Valet Parking	103	103	100%
Clinical	Physicians	75	92	82%
Daycare	Employees	15	15	100%
East	Employees/Couriers	197	269	73%
Emergency	Staff, Patients	64	58	110%
Handicapped	Handicap	19	19	100%
Middle	Patients/Visitors	210	210	100%
Pine Tree	Employees -Unreserved	535	469	114%
Power Plant	Employees	43	43	100%
South	Patients/Visitors	280	340	82%
South	Valet	109	109	100%
West	Employees -Unreserved	139	101	138%
Parking Garage	Employees – Unreserved	1,167	1,154	101%
	Reserved – LRB	53	53	100%
	Reserved – 2 <sup>nd</sup> Floor	170	202	84%
	Reserved – 1 <sup>st</sup> Floor	60	60	100%
		1,450	1,469	99%
North Road	Employees -Unreserved	86	59	146%
South Road	Employees -Unreserved	48	48	100%
	Meters	22	22	100%
First Road	Police	7	7	100%
Second Road	Handicap	18	18	100%
Third Road	Deliveries	8	8	100%
Fourth Road	Meters	8	8	100%
<b>Subtotal On-site Parking</b>		<b>3,283</b>	<b>3,593</b>	<b>91%</b>
<i><u>Off-Site Parking</u></i>				
Regatta Point Lot	Informal Parking	260	260	100%
Assembly of God Church	Not in use	0	300	0%
Worcester State Hospital	New hires	60	100	60%
<b>Subtotal Off-site Parking</b>		<b>320</b>	<b>660</b>	<b>49%</b>
<b>Total</b>		<b>3,866</b>	<b>4,253</b>	<b>91%</b>

Automatic Traffic Counts  
Wednesday October 27, 1999

Time	South @ Lake			South @ Plantation			North @ Lake			North @ Plantation			All Locations		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
12:00 AM	6	8	14	9	14	23	0	12	12	4	16	20	19	60	69
12:15 AM	4	7	11	5	32	37	1	8	9	3	20	23	13	67	80
12:30 AM	4	7	11	5	10	15	1	4	5	0	6	6	10	27	37
12:45 AM	1	3	4	5	7	12	0	3	3	2	6	8	8	19	27
1:00 AM	1	2	3	3	0	3	1	1	2	1	8	9	6	11	17
1:15 AM	2	0	2	2	1	3	0	6	6	0	5	5	4	12	18
1:30 AM	3	1	4	6	8	14	3	3	6	0	7	7	12	19	31
1:45 AM	2	0	2	6	4	10	1	6	7	1	3	4	10	13	23
2:00 AM	0	1	1	0	2	2	0	2	2	0	5	5	0	10	10
2:15 AM	3	0	3	1	4	5	0	4	4	1	2	3	5	10	15
2:30 AM	3	0	3	3	1	4	0	6	6	0	1	1	6	8	14
2:45 AM	6	1	7	3	1	4	1	4	5	2	2	4	12	8	20
3:00 AM	3	0	3	2	1	3	1	5	6	1	1	2	7	7	14
3:15 AM	2	0	2	3	2	5	3	2	5	2	1	3	10	5	15
3:30 AM	1	1	2	0	0	0	0	1	1	0	1	1	1	3	4
3:45 AM	1	0	1	1	0	1	0	2	2	0	0	0	2	2	4
4:00 AM	1	0	1	2	1	3	2	1	3	0	3	3	5	5	10
4:15 AM	1	0	1	4	1	5	0	1	1	1	1	2	6	3	9
4:30 AM	0	0	0	3	1	4	0	2	2	1	1	2	4	4	8
4:45 AM	3	1	4	3	1	4	1	2	3	2	2	4	9	6	15
5:00 AM	4	0	4	7	1	8	2	1	3	4	1	5	17	3	20
5:15 AM	2	0	2	10	3	13	5	2	7	4	2	6	21	7	28
5:30 AM	5	2	7	5	7	12	0	1	1	5	1	6	15	11	26
5:45 AM	8	1	9	23	3	26	6	4	10	12	5	17	49	13	62
6:00 AM	13	4	17	34	5	39	8	3	11	3	7	10	58	19	77
6:15 AM	17	3	20	33	10	43	8	5	13	9	6	15	67	24	91
6:30 AM	22	0	22	32	3	35	18	8	26	8	3	11	80	14	94
6:45 AM	34	4	38	52	27	79	27	9	36	11	8	19	124	48	172
7:00 AM	71	7	78	158	14	172	49	12	61	22	9	31	300	42	342
7:15 AM	95	9	104	181	27	208	42	18	60	35	30	65	353	84	437
7:30 AM	94	14	108	117	53	170	50	15	65	17	19	36	278	101	379
7:45 AM	97	9	106	138	46	186	44	24	68	20	51	71	299	132	431
8:00 AM	128	12	140	194	32	226	48	16	64	26	41	67	396	101	497
8:15 AM	137	14	151	233	36	269	67	14	81	39	34	73	476	98	574
8:30 AM	131	22	153	187	38	225	51	23	74	59	36	95	428	119	547
8:45 AM	113	13	126	204	59	263	56	16	74	57	45	102	430	135	565
9:00 AM	104	23	127	168	45	213	56	21	77	44	40	84	372	129	501
9:15 AM	99	21	120	162	80	242	49	20	69	35	37	72	345	158	503
9:30 AM	69	21	90	133	45	178	24	32	56	29	43	72	249	141	390
9:45 AM	44	20	64	122	51	173	21	28	49	36	43	79	223	142	365
10:00 AM	53	25	78	129	53	182	26	27	53	32	29	61	240	134	374
10:15 AM	66	20	86	97	59	156	17	30	47	25	29	54	205	138	343
10:30 AM	48	13	61	77	66	143	28	28	56	28	31	59	181	138	319
10:45 AM	53	25	78	88	62	150	13	18	31	24	34	58	178	139	317
11:00 AM	41	28	69	103	51	154	19	19	38	28	28	56	191	126	317
11:15 AM	46	20	66	87	78	165	17	35	52	25	30	55	175	163	338
11:30 AM	47	34	81	75	73	148	17	44	61	30	25	55	169	176	345
11:45 AM	32	28	60	67	63	130	19	19	38	24	33	57	142	143	285
12:00 PM	33	44	77	69	85	154	16	27	43	24	49	73	142	205	347
12:15 PM	31	37	68	79	87	166	25	34	59	22	42	64	151	200	351
12:30 PM	52	45	97	74	84	158	18	44	62	24	53	77	168	226	394
12:45 PM	58	42	100	91	82	173	19	46	65	31	49	80	199	219	418
1:00 PM	60	41	101	102	86	188	25	44	69	44	42	86	231	213	444
1:15 PM	72	47	119	99	104	203	27	41	68	30	45	75	228	237	465
1:30 PM	61	36	97	67	79	146	24	40	64	27	42	69	179	197	376
1:45 PM	53	32	85	72	70	142	28	25	54	34	41	75	187	169	356
2:00 PM	50	34	84	76	84	160	20	45	65	29	33	61	174	196	370
2:15 PM	40	47	87	95	85	180	32	33	65	26	44	70	193	209	402
2:30 PM	70	39	109	87	80	167	21	49	70	30	57	87	208	225	433
2:45 PM	60	37	97	92	86	178	25	30	55	30	50	80	207	203	410
3:00 PM	64	43	107	139	92	231	34	26	60	22	49	71	259	210	469
3:15 PM	47	40	87	101	97	198	34	43	77	48	42	90	230	222	452
3:30 PM	62	59	121	100	120	220	25	50	75	29	57	86	216	286	502
3:45 PM	47	67	114	78	159	235	14	59	73	25	88	113	162	373	535
4:00 PM	45	49	94	63	123	186	11	49	60	32	60	92	151	281	432
4:15 PM	37	67	104	74	151	225	24	60	84	31	49	80	186	327	493
4:30 PM	34	61	95	72	123	195	12	47	59	26	55	81	144	286	430
4:45 PM	34	69	103	41	163	204	11	61	72	19	45	64	105	338	443
5:00 PM	25	82	107	55	170	225	8	88	76	25	69	94	113	389	502
5:15 PM	37	84	121	74	130	204	10	59	69	25	49	74	146	322	468
5:30 PM	31	84	115	76	146	222	10	67	77	24	69	93	141	366	507
5:45 PM	44	60	104	60	154	214	14	59	73	22	46	68	140	299	439
6:00 PM	42	53	95	60	82	142	15	56	71	25	38	63	142	229	371
6:15 PM	32	48	80	63	82	145	19	50	69	29	37	66	143	217	360
6:30 PM	18	33	51	51	84	135	10	36	46	20	33	53	99	186	285
6:45 PM	19	22	41	31	65	96	9	25	34	24	13	37	83	125	208
7:00 PM	25	22	47	51	50	101	14	27	41	12	25	37	102	124	226
7:15 PM	25	31	56	47	62	109	9	29	38	20	21	41	101	143	244
7:30 PM	23	23	46	35	69	104	7	29	36	11	24	35	76	145	221
7:45 PM	15	31	46	50	79	129	6	23	29	14	36	50	85	169	254
8:00 PM	12	10	22	20	51	71	6	20	26	7	24	31	45	105	150
8:15 PM	16	20	36	16	42	58	10	18	28	8	25	33	50	105	155
8:30 PM	8	10	18	21	37	58	4	17	21	9	18	25	42	80	122
8:45 PM	11	12	23	13	32	45	7	15	22	11	13	24	42	72	114
9:00 PM	8	22	30	19	46	65	6	8	14	2	21	23	35	67	102
9:15 PM	7	11	18	8	18	26	2	11	13	8	13	21	31	68	99
9:30 PM	9	10	19	10	18	28	4	27	31	8	7	15	31	38	69
9:45 PM	9	6	15	10	14	24	4	11	15	8	7	15	19	40	59
10:00 PM	4	6	10	10	14	24	3	12	15	2	8	10	19	49	78
10:15 PM	3	5	8	17	15	32	4	12	16	5	17	22	29	49	78
10:30 PM	8	3	11	13	13	26	7	8	15	6	9	15	34	33	67
10:45 PM	10	9	19	19	17	36	3	12	15	5	11	16	37	49	86
11:00 PM	16	2	18	28	10	38	3	14	17	2	7	9	49	33	82
11:15 PM	14	6	20	32	16	48	2	7	9	11	19	30	59	48	107
11:30 PM	2	14	16	9	31	40	3	8	11	1	19	20	15	72	87
11:45 PM	3	9	12	9	35	44	1	14	15	1	9	10	14	67	81
Totals:	3200	2088	5288	5552	4795	10337	1447	2165	3612	1636	2474	4110	11835	11512	23347
	27%	18%	23%	47%	42%	44%	12%	19%	15%	14%	21%	16%			

Figure 1-2 - Vehicles Exiting the UMMC Campus by Access point  
 Wednesday October 27, 1999



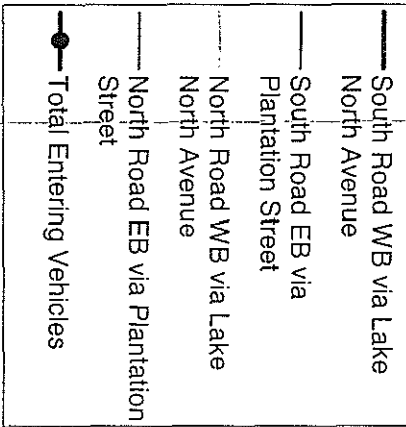
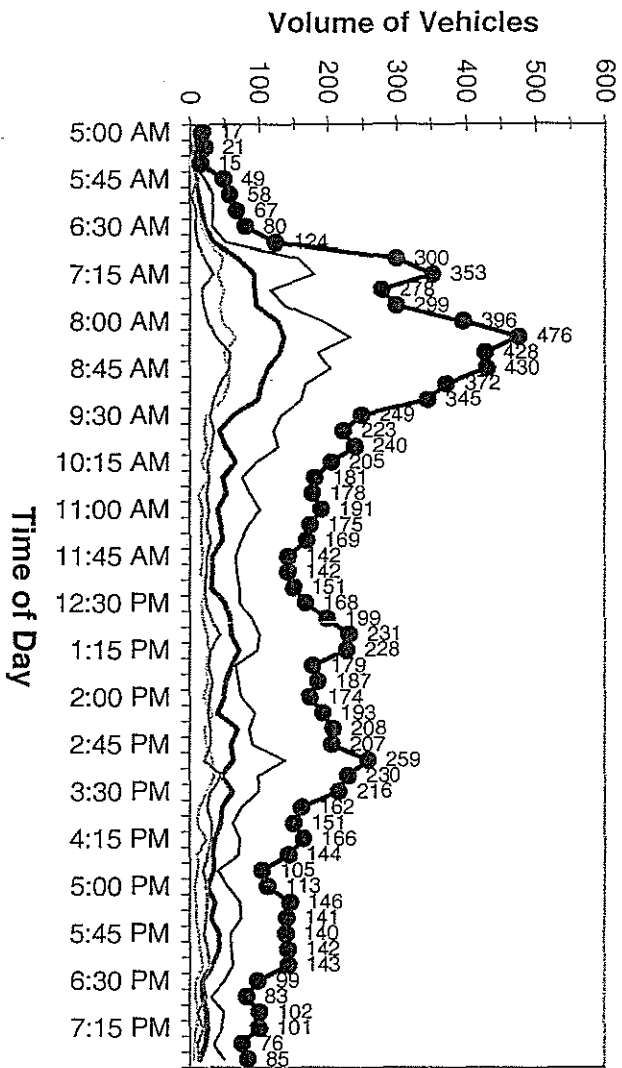


Figure 1-1 - Vehicles Entering the UMMC Campus by Access point  
 Wednesday October 27, 1999

TSOI / KOBUS & ASSOCIATES  
ARCHITECTS

University of Massachusetts Medical School  
Section VIII. Peer Institutions List



TSOI / KOBUS & ASSOCIATES

ARCHITECTS

PEER INSTITUTIONS	<u>School Name</u>	<u>Year</u>	<u>First</u>	<u>Type</u>
		<u>Established</u>	<u>Class</u>	
	U of Southern Alabama College of Medicine	1969	1973	Public
	U of Arizona College of Medicine	1961	1971	Public
	UC Davis School of Medicine	1963	1968	Public
	UC San Diego School of Medicine	1962	1968	Public
	UConn School of Medicine	1963	1968	Public
	U of Hawaii at Manoa John A. Burns School of Medicine	1965		Public
	Southern Illinois University School of Medicine	1969		Public
	University of Kentucky College of Medicine	1960		Public
	Louisiana State U School of Medicine in Shreveport	1965	1973	Public
	Uniformed Services University of the Health Sciences	1972	1976	Public
	UMass Medical School	1962	1970	Public
	Michigan State University College of Human Medicine	1964		Public
	University of Minnesota - Duluth School of Medicine	1969	1972	Public
	University of Missouri - Kansas City School of Medicine	1960	1971	Public
	University of Nevada School of Medicine	1969		Public
	University of South Florida College of Medicine	1971		Public
	UMDNJ - Robert Wood Johnson Medical School - NJ	1962		Public
	Stony Brook U Health Science Center - School of Medicine	1960	1971	Public
	The Brody School of Medicine at East Carolina University	1972		Public
	Medical College of Ohio (Toledo)	1964	1969	Public
	Northeastern Ohio Universities College of Medicine	1973		Public
	Wright State University School of Medicine	1964	1976	Public
	University of South Carolina School of Medicine	1973	1977	Public
	James H. Quillen College of Medicine of E. Tenn State U	1974		Public
	The Texas A&M University College of Medicine	1971		Public
	Texas Tech U Health Sciences Center School of Medicine	1969		Public
	University of Texas Medical School at Houston	1969	1970	Public
	Joan C. Edwards School of Medicine at Marshall University	1972	1978	Public

**TOP 25 - FISCAL  
YEAR 2002**

**Public Medical School NIH Ranking**

	Public Rank	Overall Rank	2002 Total Awards	2001 Total Awards	% change	Anatomy Rank	Anesthesiology Rank	Biochemistry Rank	Family Practice Rank	Genetics Rank	Medicine Rank	Microbiology Rank	Neurology Rank	OB/GYN Rank	Orthopedic Surgery Rank	Other Basic Sciences Rank	Pathology Rank	Pediatrics Rank	Pharmacology Rank	Physiology Rank	Psychiatry Rank	Surgery Ranking	
UCSF	1	4	\$ 313,335,255	\$ 303,214,901	3.34%		5				2			1									
University of Washington	2	6	\$ 260,434,828	\$ 222,507,127	17.05%			3									1						3
UCLA	3	9	\$ 241,869,389	\$ 201,097,654	20.27%								1										
University of Michigan	4	11	\$ 224,089,198	\$ 203,254,062	10.25%					9													4
University of North Carolina	5	14	\$ 190,347,057	\$ 170,782,162	11.46%																		
UC San Diego	6	15	\$ 185,421,004	\$ 163,944,593	13.10%			2															
University of Alabama	7	17	\$ 176,906,233	\$ 170,379,277	3.83%						2												
University of Texas SW	8	19	\$ 161,590,721	\$ 144,649,172	11.71%														1				
University of Colorado	9	20	\$ 154,375,419	\$ 137,030,596	12.66%													3					
University of Iowa	10	25	\$ 131,301,535	\$ 129,456,504	1.43%									1									
University of Wisconsin	11	27	\$ 123,528,949	\$ 99,297,948	24.40%																		
University of Minnesota	12	29	\$ 118,326,042	\$ 111,000,943	6.60%																		
Oregon Health Sciences University	13	30	\$ 117,658,179	\$ 102,913,908	14.33%																		
University of Virginia	14	31	\$ 116,030,585	\$ 103,697,502	11.89%	3															12		
University of Maryland	15	32	\$ 111,251,948	\$ 87,688,914	26.87%																		
University of Utah	16	38	\$ 94,880,211	\$ 81,797,128	15.99%																		
<b>UMass Medical School</b>	<b>17</b>	<b>40</b>	<b>\$ 92,666,053</b>	<b>\$ 82,396,949</b>	12.46%	<b>12</b>	<b>NR</b>	<b>27</b>	<b>23</b>	<b>20</b>	<b>36</b>	<b>NR</b>	<b>52</b>	<b>57</b>	<b>NR</b>	<b>1</b>	<b>35</b>	<b>21</b>	<b>27</b>	<b>18</b>	<b>46</b>	<b>55</b>	
Indiana University	18	41	\$ 90,928,755	\$ 82,149,258	10.69%																		
University of Cincinnati	19	42	\$ 89,159,803	\$ 74,957,038	18.95%																		
University of Texas Galveston	20	46	\$ 73,464,172	\$ 61,685,911	19.09%																		
University of Illinois	21	47	\$ 67,823,880	\$ 61,681,558	9.96%																		
University of Texas San Antonio	22	48	\$ 67,496,583	\$ 62,117,253	8.66%																		
Medical University of South Carolina	23	49	\$ 67,315,831	\$ 56,167,734	19.85%																		
Ohio State	24	50	\$ 65,661,748	\$ 58,679,624	11.90%																		
University of Arizona	25	51	\$ 64,980,304	\$ 56,208,437	15.61%																		
<b>2001 UMass Rank</b>		<b>37</b>				<b>12</b>	<b>NR</b>	<b>30</b>	<b>23</b>	<b>17</b>	<b>39</b>	<b>NR</b>	<b>51</b>	<b>51</b>	<b>NR</b>	<b>5</b>	<b>45</b>	<b>18</b>	<b>44</b>	<b>14</b>	<b>45</b>	<b>74</b>	
<b>2001 UMass Rank - Public Only</b>	<b>16</b>					<b>4th</b>				<b>7th</b>						<b>3rd</b>		<b>10th</b>		<b>8th</b>			
<b>2002 UMass Rank - Public Only</b>						<b>4th</b>				<b>9th</b>						<b>1st</b>		<b>11th</b>		<b>7th</b>			

NR = Not rated

■ Top Public in Data Group

TSOI / KOBUS & ASSOCIATES  
ARCHITECTS

University of Massachusetts Medical School  
Section IX. Off-Campus Real Estate Holdings List

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TSOI / KOBUS & ASSOCIATES

ARCHITECTS

UMMS  
REAL ESTATE  
HOLDINGS

<u>Code</u>	<u>Building</u>	<u>Street</u>	<u>City</u>	<u>Campus</u>	<u>O/ L/ A/C</u>	<u>GSF</u>	<u>NSF</u>
000	Not Defined	Not Defined	Not Defined	99 Not Defined	L		
001	UM Medical School	55 Lake Avenue N	Worcester	01 UMMC	O	881,720.40	796,548.70
002	UM Teaching Hospital	55 Lake Avenue N	Worcester	01 UMMC	O	705,261.36	623,191.11
003	Benedict Building	55 Lake Avenue N	Worcester	01 UMMC	O	78,087.61	72,032.94
004	Power Plant	55 Lake Avenue N	Worcester	01 UMMC	O	62,715.89	57,941.92
005	Shaw Building	419 Belmont St	Worcester	01 UMMC	O	44,658.96	40,112.17
006	Parking Garage	55 Lake Avenue N	Worcester	01 UMMC	O	455,798.94	446,909.68
007	Anderson House	382 Plantation St	Worcester	01 UMMC	O	2,988.63	2,651.34
008	Maple House	366 Plantation St	Worcester	01 UMMC	O	4,581.01	3,969.68
009	Pre-Admission Trailer	55 Lake Avenue N	Worcester	01 UMMC	O	2,629.50	2,375.84
010	Lazare Research Bldg	364 Plantation St	Worcester	01 UMMC	O	398,970.76	361,862.57
011	CMED Trailer	55 Lake Avenue N	Worcester	01 UMMC	O	1,087.50	999.22
012	Armory Building		Marlborough	99 Not Defined	O		
014	Biotech One	365 Plantation St	Worcester	01 Biotech Park	O	77,018.23	70,063.02
015	Biotech Two	373 Plantation St	Worcester	01 Biotech Park	L	88,075.51	80,781.45
016	Biotech Four	377 Plantation St	Worcester	01 Biotech Park	L	31,791.64	29,117.62
017	Tri-River			99 Not Defined	O		
019	Lemuel Shattuck Hosp	170 Morton Street	Jamaica Plain	99 Not Defined	L		
020	Southbridge Business	50 Optical Drive	Southbridge	99 Not Defined	L		
021	Schrafft's Building	529 Main Street	Charlestown	06 Offsite Facil	O		
022	China Trade Building	2 Boylston Street	Boston	06 Offsite Facil	L		
023	600 Washington St	600 Washington St	Boston	06 Offsite Facil	L		
024	Worcester Community	275A Belmont St	Worcester	04 Worcester St	L	4,576.10	4,106.91
025	100 Century Drive	100 Century Drive	Worcester	06 Offsite Facil	O	81,465.08	77,038.14
026	Auburn/Papas Bldg	10 Midstate Drive	Auburn	06 Offsite Facil	L	21,281.89	19,377.72
027	Morgan Building	15 Belmont Street	Worcester	06 Offsite Facil	L	7,020.87	5,849.44
028	Burdnick/NRI	303 Belmont St	Worcester	04 Worcester St	O	39,193.16	34,361.53
029	Farmhouse	361-365 Plantation St	Worcester	02 Biotech Park	L	26,630.08	21,537.28
030	Flagship Bank	270 Front Street	Worcester	06 Offsite Facil	L	41,891.23	37,415.38
031	Warehouse	Harding Street	Worcester	06 Offsite Facil	L		
032	Bryan Building	305 Belmont Street	Worcester	04 Worcester St	L	13,126.94	11,159.32
033	Westborough State	Lyman Street	Westborough	99 Not Defined	L		
034	FMRI	Belmont Street	Worcester	04 Worcester St	O	2,884.72	2,556.06
036	Fallon Clinic		Worcester	99 Not Defined	L		
037	Glavin Clinic		Worcester	99 Not Defined	L		
039	Memorial Hospital		Worcester	99 Not Defined	L		
040	UMass City	Jaques Avenue	Worcester	99 Not Defined	L		
046	Stable Building	305 South Street	Jamaica Plain	05 JP Biologics	O	16,548.49	13,666.15
047	Biologics Lab	305 South Street	Jamaica Plain	05 JP Biologics	O	34,265.37	28,571.51
048	SLI	305 South Street	Jamaica Plain	05 JP Biologics	O	193,479.49	177,134.82
049	Chang	222 Maple Street	Shrewsbury	03 Worcester FC	O	27,640.95	24,719.39
050	Fuller	222 Maple Street	Shrewsbury	03 Worcester FC	O	6,198.62	5,560.89
051	Higgins	222 Maple Street	Shrewsbury	03 Worcester FC	O	4,050.24	3,548.74
052	Hoagland-Pincus	222 Maple Street	Shrewsbury	03 Worcester FC	O	26,723.12	24,448.19
053	Radiation Shed	222 Maple Street	Shrewsbury	03 Worcester FC	O		
054	Reed/Rose & Gordon	222 Maple Street	Shrewsbury	03 Worcester FC	O	30,169.30	27,349.26
055	Stoddard	222 Maple Street	Shrewsbury	03 Worcester FC	O	14,606.62	12,620.23
056	Clinic	222 Maple Street	Shrewsbury	03 Worcester FC	O	2,786.97	2,428.51
057	Worcester Foundation	222 Maple Street	Shrewsbury	03 Worcester FC	O		
059	Construction Trailer	55 Lake Avenue N	Worcester	01 UMMC	O	2,820.00	2,665.57
060	Machine Shop	222 Maple Street	Shrewsbury	03 Worcester FC	O	3,267.42	2,919.02
061	Marine Animal Bldg	222 Maple Street	Shrewsbury	03 Worcester FC	O	1,733.91	1,464.26
062	Behavioral Barn	222 Maple Street	Shrewsbury	03 Worcester FC	O	8,871.56	7,848.65
063	Biotech III		Worcester	99 Not Defined	L		
064	One Research Dr	One Research Dr	Westborough	06 Offsite Facil	L	6,341.72	5,898.01
065	Grounds	55 Lake Avenue N	Worcester	01 UMMC	O		

**TSOI / KOBUS & ASSOCIATES**

**ARCHITECTS**

<u>Col</u>	<u>Building</u>	<u>Street</u>	<u>City</u>	<u>Campus</u>	<u>O/ L/ A/C</u>	<u>GSF</u>	<u>NSF</u>
066	260 W Exchange St	260 W Exchange St	Providence	06	Offsite Facil	L 9,620.01	8,327.17
070	Shriver Research Bldg	200 Trapelo Road	Waltham	07	Shriver Cam	L 48,948.18	43,549.99
071	CERC	200 Trapelo Road	Waltham	07	Shriver Cam	L 31,803.44	27,724.22
072	Withington Building	200 Trapelo Road	Waltham	07	Shriver Cam	L 13,535.75	11,389.11
073	Jamaica Plain Trailer	305 South Street	Jamaica Plain	05	JP Biologies	O	
074	Jamaica Plain Trailer	305 South Street	Jamaica Plain	05	JP Biologies	O	
075	Jamaica Plain Trailer	305 South Street	Jamaica Plain	05	JP Biologies	O	
076	Jamaica Plain Trailer	305 South Street	Jamaica Plain	05	JP Biologies	O	
077	Jamaica Plain Trailer	305 South Street	Jamaica Plain	05	JP Biologies	O	
081	Bay State Correction	28 Clark Street	Norfolk	06	Offsite Facil	O	
082	Boston Prerelease	Harvard Street	Dorchester	06	Offsite Facil	O	
083	Bridgewater State H	20 Administration Rd	Bridgewater	06	Offsite Facil	O	
084	MA Alcohol & Subs	2 Administration Rd	Bridgewater	06	Offsite Facil	O	
085	MA Trea	30 Administration Rd	Bridgewater	06	Offsite Facil	O	
086	MCI-Cedar Junction	Route 1A	South Walpole	06	Offsite Facil	O	
087	MCI-Concord	965 Elm Street	Concord	06	Offsite Facil	O	
088	MCI-Framingham	99 Loring Drive	Framingham	06	Offsite Facil	O	
089	MCI-Norfolk	2 Clark Street	Norfolk	06	Offsite Facil	O	
090	MCI-Plymouth	Myles Standish For	South Carver	06	Offsite Facil	O	
091	MCI-Shirley Med	Harvard Road	Shirley	06	Offsite Facil	O	
092	NCCI/Gardner	500 Colony Road	Gardner	06	Offsite Facil	O	
093	Northeastern Corr	Barrett's Mill Road	West Concord	06	Offsite Facil	O	
094	Old Colony Corr	1 Administration Rd	Bridgewater	06	Offsite Facil	O	
095	Pondville Corr	Industries Drive	Norfolk	06	Offsite Facil	O	
096	S Middlesex Corr	135 Western Avenue	Framingham	06	Offsite Facil	O	
097	Souza-Baranowski	Harvard Street	Shirley	06	Offsite Facil	O	
098	Facilities Maint		Worcester	99	Not Defined	O	