Lunch & Learn

Campus Construction Update

April 27, 2022
AGENDA

- Introduction
- Wheatley Hall HVAC
- Campus Construction Projects
- Master Plan Update
- Dorchester Bay City
- Calf Pasture Pump Station
Introduction

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Wheatley Hall HVAC

Key points on ventilation and filtration

To prevent the spread of virus particles in buildings
There is public health consensus that multilayered controls are best way to reduce the risk of transmission of SARS-CoV-2, and ventilation is only one strategy:

- There is not one mitigation strategy, but a combination of strategies that substantially reduce the risk of transmission.

- Transmission has been limited in settings when controls are in place, such as classrooms and offices.

- The effectiveness of multilayered controls at UMass Boston is supported by the consistently lower infection rates on campus compared to the surrounding community. The same has been shown at many other colleges in the Northeast.
Having good ventilation and filtration in indoor shared spaces is an important part of a multilayered COVID-19 control strategy:

- Ventilation and filtration can help to reduce the airborne concentration of SARS-CoV-2 if an infected person is present and emitting aerosols that contain the virus into the air.
- Risk of having an infected person in a space is mitigated by non-ventilation controls, including staying home when sick, vaccinations, COVID-19 testing, and quarantine/isolation, etc.
- Good ventilation/filtration, is not the only metric that is considered for assessing risk, and it is not a uniform metric that can be applied to all spaces and conditions.
- **HVAC systems do not spread covid**

**NOTE:** We have had over a year of in person classes on campus with little/no evidence of transmission on campus. There is also substantial evidence from studies across the US and the world that transmission has been limited in classroom settings.
CDC and ASHRAE provided guidance for operating HVAC-systems during the COVID-19 pandemic, including the following, which have been implemented at UMass Boston:

- Evaluation of HVAC systems to ensure they are in good working order. ✓ Completed.

- Increasing outdoor air ventilation, as much as possible, without causing elevated indoor humidity conditions or compromising thermal comfort. ✓ Completed.

- Improve the efficiency of the HVAC air filtration system by upgrading existing air filters to MERV 13. ✓ Completed

NOTE: Use of portable high-efficiency particulate air (HEPA) filtered units will be considered for shared spaces that are occupied for extended periods of time that do not meet the eACH targets
The following industry standards are used to assess adequacy of ventilation in selective spaces in UMass Boston buildings:

- Effective air-exchange per hour (eACH) is determined based on the sum of 1) outdoor air ventilation rate and 2) recirculated filtered air through the HVAC system.

- Classroom ventilation is compared to an effective air-exchange rate target of 4 eACH.

- Other shared spaces, such as offices, will be evaluated in comparison to an effective clean air-exchange rate equivalent to the outdoor airflow rate in ASHRAE Standard 62.1. For example, for a 100 square foot office, the target effective air-exchange rate would be approximately 1 ACH.

- No ventilation interventions to address COVID-19 related risks are recommended for offices that are occupied by a single person.
HVAC systems in many buildings will meet the above targets if MERV-13 filters are installed:

• Most “mixed air” HVAC systems serving classrooms and offices will provide an eACH that meet the targets discussed above with no intervention provided that: 1) the AHU is providing an ASHRAE 62.1 compliant ventilation rate; and 2) filters in the AHU have an efficiency rating of MERV-13 or higher.

• For spaces that are served by these system types and that meet the conditions above, the use of supplemental HEPA filtered air cleaners is not recommended.

• EH&E’s testing of seven classrooms in McCormack indicated that all rooms but one met the recommended target.

• Separate air flow testing by EH&E and the Faculty Staff Union showed results in Wheatley were mixed, with some spaces not meeting the targets.
Upcoming OEHS & Facilities Testing Plan

• Objective to collect representative data from air-handling unit (AHU) zones and floors
• Supply and return airflow measurements will be used to determine eACH
• Focus on classrooms and shared office spaces
• Initially test 2-3 spaces served by each air-handling unit (AHU), depending on size of AHU zone. Include spaces on each floor. Order of priority:
  • Wheatley – 14 AHUs, 6 floors (~35 rooms)
  • Healey – 6 AHUs, 12 floors (~30 rooms)
  • McCormack – 10 AHUs, 5 floors (~35 rooms)
• Based on these results, additional testing may be necessary
• Testing will take 1-3 weeks, depending on access
CO2 Levels

• CO2 measurements are one way to assess the outdoor air ventilation rate in spaces (people exhale CO2 and outdoor air ventilation removes CO2 at known rates).

• Expected CO2 levels in occupied classrooms that meet code ventilation requirements are 1,000 – 1,800 ppm

• CO2 levels in buildings are not hazardous, but higher CO2 levels can be associated with decreased perceptions of IAQ (mainly due to increased body odor).

• In the context of COVID ventilation, usefulness of CO2 readings are limited in many spaces because filters (in the HVAC system or portable HEPAs), which are an important part of the effective air-exchange rate, do not filter out CO2. This means that you can have higher CO2 levels in a space that meets CDC/ASHRAE ventilation guidance.
UMass Boston has short, medium and long-term plans to evaluate and address ventilation and filtration in their spaces.

Short Term – Immediate and Ongoing

• Selective rebalancing of troubled areas as they occur
• Fix broken controls wiring and sensors as they are encountered
• Already described - selective air testing in Wheatley, McCormack and Healey
• Provide supplemental HEPA air filtration units to spaces that have low airflow.
  • 15 units have been deployed to classrooms identified as deficient
  • 30 more HEPA units have been ordered, some received, others en route
  • With OEHS, creating a process for requesting, assessing and approving use of additional units.
Mid-Term – Three Months to One Year

• Retro Commissioning study of Wheatley & McCormack
  • Has been awarded and started
  • Facilities and the engineering firm kicked off the study on 4/20/22
  • Approximately a 10-week study on Wheatley, followed by McCormack
  • Assesses the HVAC system
  • Identifies recalibrations, repairs, rebalancing, controls repairs and other issues to be fixed
  • Once issues are identified, Facilities will develop a targeted strategy to improve the functioning of the HVAC system
  • Some items may take longer to address than others
  • The goal is to ultimately produce better functioning systems
As part of the university FY23 Capital Budget process, a project to replace or rebuild H+C 1 and 6 (AHUs) in Wheatley has been requested

- The new AHUs will be more efficient and provide more air to the classrooms on the first and second floors

- Confirm and fix any distribution issues downstream in the ductwork

- Fix any controls issues encountered
Long-Term Continued

- A proposal was submitted to DCAMM in 2021 requesting $15m to renovate the first and second floors as part of the state’s FY23 capital budget. The scope would be:
  - Right size the classrooms
  - Upgrade the HVAC, lighting and electrical systems
  - Build more modern collaboration and teaming spaces outside of the classrooms
  - Rebuild the lobby vestibule
    - Needs renewal
    - Will conserve energy by reducing air infiltration through the entrance
▸ For air quality concerns contact OEHS at umbehs@umb.edu or 617 287-5445

▸ For air flow concerns contact Facilities at facilities@umb.edu or 617 287-5450
Campus Construction Projects

- Substructure Demolition Quadrangle Development (SDQD)
- Deferred Maintenance Projects
- Other Construction Projects
- Central Utility Plant – Fire Protection Improvements
SDQD - Background

• SDQD project is a key element of UMass Boston's 25-year Campus Master Plan issued in 2009:

  • Addresses long-term problems associated with the design and construction of the original campus in the early 1970’s;

  • Preserves remaining elements of the original campus and extend their useful lives;

  • As envisioned in the 2009 Master Plan it will create a vibrant new center to an expanded campus and connect the remaining original campus buildings to the surrounding campus;

  • Creates opportunities for future development sites for new academic buildings.
SDQD – Key Elements

- Demolition of the Science Center, Pool building and major portions of the central plaza.

- Substructure repairs beneath McCormack & Wheatley buildings to extend the useful life of these buildings.

- Restoration of the remaining plaza, including new waterproofing and drainage to protect repairs and minimize future deterioration.

- New stair and elevator access to Healey Library from the restored plaza.

- Creation of a new central quadrangle providing outdoor program space and connecting the original campus buildings to their surroundings.

- A 300-space parking lot to meet long-term parking needs following redevelopment of the Bayside parking lot.
SDQD – Construction Activities

• Substructure Stabilization

  • Restore substructure sections to a condition that is permanently stable.
  • Includes concrete repairs, steel reinforcing and lateral bracing.
  • Reinforcement is to meet seismic codes.

• Work is complete.
SDQD – Construction Activities

• Healey Elevator & Exterior Stairs
  • Shaft walls and partitions ongoing.
  • Exterior ramp & stair construction ongoing.
  • Steel framing set.

• Nov-2022: Elevator & Stair available for use with completion of plaza pathway access.
SDQD – Construction Activities

Summer 2022 Activities - Plaza

• Construction activities to increase on Plaza with reduced summer session campus population.

• Access across plaza from Quinn to Campus Center to be maintained.

• Phased plaza & paver installation work requires temporary and/or extended shifts of protected pathways.

• Code compliant egress is maintained at all times & egress paths are coordinated/reviewed with EH&S.
SDQD – Construction Activities

Summer 2022 Activities - Plaza

• McCormack North Entrance to be closed for new entrance improvements;

• Entrance to reopen for start of Fall 2022 semester.

• Protected walkway will shift to support construction.
SDQD – Construction Activities

• Pathways & Parking Lot
  • Buildup of Quad in layers, using:
    • Former Science Center crushed materials from Lot D & South Lot.
    • Existing Landform/Stockpile (within construction site).
  • Quad fill placement to proceed from southwest corner at Quinn/Healey toward Campus Center & Beacon’s Walk.
SDQD – Major Schedule Milestones

• Fall 2022 (Start of Semester)
  • McCormack entrance and Plaza, excluding section from Quinn to Healey.
  • Work will be ongoing along Healey and Structural Void at Campus Center as these areas were needed to keep pedestrian movement through Summer 2022.

• November 2022
  • Full plaza; including Healey entrances and plantings.
SDQD – Major Schedule Milestones

• December 2022
  • Quad remains construction zone; separated from plaza.
  • Quad formed; binder, or base asphalt, on parking lot & basketball court.
  • Plantings constrained by winter weather.

• July 2023
  • Walkways, site furnishings (picnic grove, overlook benches) and final paving complete.
  • Plantings complete; open lawn areas seeded.

• Lawn areas will require “grow-in season” to establish roots before use.
SDQD – Overview of Uses

Link: Video Rendering Previews UMass Boston’s New Quad - University of Massachusetts Boston (umb.edu)
Deferred Maintenance Projects

• Facilities has increased the delivery of deferred maintenance projects

• Architectural & Engineering Consultants Expanded and Engaged

• Entering Year Four of State’s five-year critical repairs program
  • $14.6 million in capital improvements are completed or underway
    • $8.4 million funding by the State;
    • $6.2 million funded by UMass Boston.

• The state has a small repairs project program that UMB is utilizing.
  • $1.35 million received and implemented in FY21; no UMB match required.
  • $0.32 million allocated and underway for FY22; no UMB match required.
Deferred Maintenance Projects

• Operational Improvements:

  • Healey Air Handling Units¹

  • Service & Supply Loading Docks¹

  • Replacement McCormack Hot Water Tanks¹

  • ISC Vivarium (5th Floor) Lighting Controls Upgrade
    • Complete; Punchlist & Closeout Underway

  • Utility Submetering & Advanced Building Automation Controls

  • Upgrade of Campus Wide Building Controls

¹ Project with DCAMM funding.
Deferred Maintenance Projects

• Roof Replacements:
  • McCormack Roof –
    • Phase I – construction complete; in closeout.
    • Phase II – design underway;
      • Spring 2023 construction target; supply chain issues.
  • Quinn Roof – Complete\textsuperscript{1,2}
  • Wheatley Extension (Deans Suite) – In Design

• Exteriors:
  • Façade Protection Program
  • Exterior Door Replacement
  • McCormack Stairs
  • Harborwalk Repairs (Pavilion & Pathway Lighting)\textsuperscript{1}

\textsuperscript{1,2} Project with DCAMM funding, includes Small Repair Program (SRP) funding.
Other Projects

• Space Committee
  SPACE Committee is responsible for the review and approval of all university space allocations, space utilization and requests for space changes or additions. Requests are submitted and funded by as part of the overall university Capital budget or by Departments.

• Recently Completed Projects
  • Quinn
    • LL Entrance
    • 3rd Floor Relocation
  • ISC (3351 & 3204)
    • Lab Equipment Tie-Ins
  • Wheatley
    • 3rd Floor Renovation
    • 5th Floor Repurpose
  • Campus Center
    • Hallway Improvements
Space Committee
Completed Projects

- Quinn
  - LL Entrance
  - 3rd Floor Relocation
Space Committee
Completed Projects

• ISC Lab Equipment
  • Mechanical & Electrical Upgrades

ISC 3351
HVAC Upgrade, Connections & Booster Fan and Air Balancing

ISC 3204
Electrical Upgrade & Air Balancing
Space Committee
Completed Projects

- Campus Center
  - Hallway Bench Improvements

- Wheatley Hall
  5th Floor Room Renovation
Central Utility Plant
Fire Protection Improvements

• May 31, 2021 Failure of High Pressure Fire Protection Main Feed Pipe Shut Down the Campus for One Week
• Dec-2021
  • Accomplished redundancy in the system to allow parts of the Campus to remain open in a future failure event if one occurs
    • Added valves to isolate failures
    • Added piping loops to allow for by passing of failed sections
    • Fixed several small leaks in the system
• May – July 2022
  • Replace failed pipe with new, more resilient pipe and fittings
  • Replace second pipe feed to be new and more resilient
  • Result will be a dual feed system with less risk of failure
Master Plan

- Campus Master Plan Schedule Update & Campus Forums
- Major State and Federal Funding Opportunities
- Dorchester Bay City
- University Crossing aka Calf Pasture Pumping Station
A. Discover + Analyze
NOVEMBER 2021 – MARCH 2022

Purpose:
- Information Gathering
- Campus Tours
- Facilities Conditions
- Space Analysis

Kick-off:
- November 2021
  - Introductions
  - Master Plan Goals
  - Process and Schedule
  - Working Group Meeting

Workshop 1:
- January 2022
  - Campus Tours

Workshop 2:
- February 2022
  - Master Plan Update Progress
  - Existing Conditions Update
  - Working Group meeting
  - Stakeholder Interviews & Listening Sessions
  - Survey

Workshop 3:
- April 2022
  - Space Analysis Findings
  - Working Group
  - Leadership Committee
  - Focus Groups
  - Open Forums

Workshop 4:
- May 2022
  - Campus Analysis
  - Program, Principles, Concept Plan
  - Steering Committee
  - Open Forums with Faculty Staff and Students
  - Community Engagement

Workshop 5:
- June 2022
  - Scenario Planning
  - Working Group
  - Open Forums with Faculty, Staff, and Students
  - Community Engagement

B. Explore
MARCH – JUNE 2022

Purpose:
- Campus Analysis
- Master Plan Programming
- Planning Principles, Concept Plan, Initial Precinct Scenarios
- Refined Precinct Scenarios

Workshop 4:
- May 2022
  - Campus Analysis
  - Program, Principles, Concept Plan
  - Steering Committee
  - Open Forums with Faculty Staff and Students
  - Community Engagement

Workshop 5:
- June 2022
  - Scenario Planning
  - Working Group
  - Open Forums with Faculty, Staff, and Students
  - Community Engagement

C. Refine + Document
JUNE – DECEMBER 2022

Purpose:
- Draft Plan & Phasing / Implementation
- Final Plan
- Documentation
- Technical Analysis Documentation

Workshop 6:
- September 2022
  - Synthesize Scenarios
  - Prioritization & Implementation Plan
  - Working Group
  - Open Forums with Faculty, Staff, and Students
  - Community Engagement

Final Documentation:
- November 2022
  - Final PowerPoint Presentation
  - Final Report
  - 3-4 Minute Video
  - Executive Summary Document
  - In-house Renderings

02/17/2022
Discover & Analyze Progress

What did we see?
- Site Visit Observations
- Existing Conditions Assessment
- Space Adequacy Assessment
- Detailed Classroom Assessment
- Facilities Audit

What did we hear?
- Stakeholder Interviews
- Student & Faculty/Staff Surveys

What does the data say?
- Space Analysis Findings

EXPLORE
Open Campus Forums and Participation

May 10th @ Campus Center

• Drop in Participation
  CC Terrace 12-3 PM

• Open Forum
  Ballroom A, 3-4:00 PM

May 11th @ Campus Center

• Early Forum
  Ballroom A, 9-10:00 AM

• Drop in Participation
  CC Terrace 10-4 PM

Questions and Ideas to masterplan@umb.edu
Major State and Federal Funding Opportunities

• DCAMM Major Capital Request
  • Wheatley Hall – Learning Hub of the Future
    • $15 Million request to DCAMM;
    • Project scope – provide strategic renovations to the instructional and common spaces, reduce deferred maintenance, upgrade HVAC, lighting and technology on the first two floors of Wheatley.
  • Competitive process amongst all state facilities that apply.
    • DCAMM award decision pending.

• Federal Appropriation Opportunities
  • Awarded $1.35m for programming and conceptual design for a future Manning College of Nursing & Health Sciences building
  • Applying for $2m additional design money
  • Applying for $5m for a home healthcare training lab to be built on Campus
Dorchester Bay City

- This project is a monetary transaction for the campus.

- In February 2019, the UMass Board of Trustees unanimously approved a 99-year final lease agreement for the Bayside property with Accordia Partners, with payment of a minimum of $192.5M and a maximum of $235M due at the time of permitting, depending on amount of square footage approved.

- Project subject to City of Boston Article 80 permitting process

- The second public comment phase in the Article 80 process ended on March 25, 2022. Now the City is taking into consideration all the public comments and input from city and state agencies before releasing recommendations to Accordia for areas of the proposal that will require further study.

- The City, through the Boston Planning and Development Agency, has announced that the project is still under review and that a third public comment phase will take place.

- Additional information will be made available as more information becomes known on the third phase. As previously done, at each step of this public process, campus community will be informed when the next series of BPDA public meetings begin so everyone can have their voice heard.
University Crossing

- Comprises Calf Pasture Pumping Station Buildings and some adjoining land
- Will be taken forward as Public Private Partnership
- Committee formed to advise UMBA on Campus priorities and solicit ideas from the campus community; Campus Design Principles Developed
approximately 6 acres
Campus' Design Principles

The future uses in the Calf Pasture Pumping Station development should:

- Authentically connect and integrate private uses to our academic programs (e.g., Nursing and Health Sciences, Business and the like)
- Be academic, researcher and learner focused
- Improve the quality of campus life
- Engage our neighbors
- Advance accessibility and inclusion
- Be Profitable, viable and sustainable

The physical form of the Calf Pasture Pumping Station development should:

- Connect spaces and functions to campus life
- Embody exemplary environmental sustainability and climate readiness
- Create a handsome, welcoming entry to campus
- Link our open spaces to the Bay (acknowledging and honoring our unique maritime context)
- Highlight the iconic architecture of the Pumping Station
- Support accessibility and inclusion
Calf Pasture Pump Station Next Steps

- The design principles will be incorporated into the RFP for the project.
- UMBA will use information from the Campus Master Plan Update project to further craft the RFP.
- Timeframe to be further developed as the Campus Master Plan Update project proceeds.
Questions?
Additional questions or comments?
masterplan@umb.edu

Report Construction Related Issues:
Facilities Service Response
Facilities@umb.edu
617-287-5450
Service & Supply Building UL-01