

Summary

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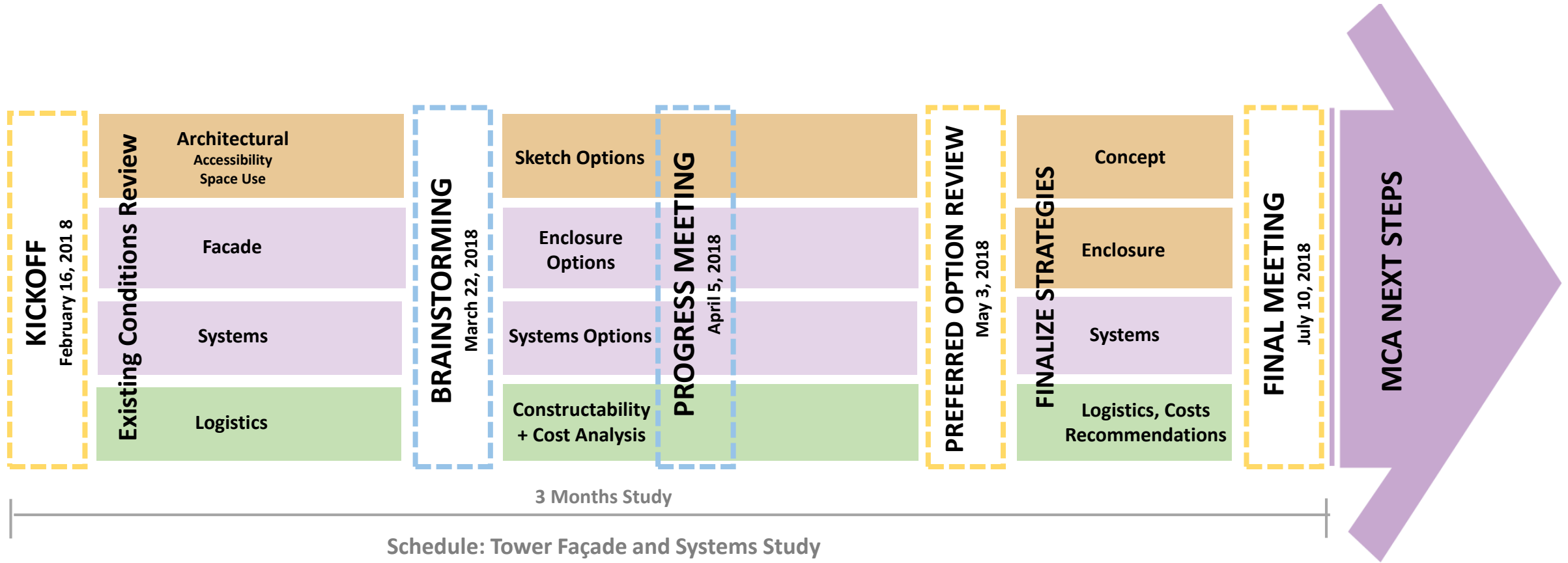
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- 0- Summary Tower Study (this document)
- 1- Kickoff Meeting PPT and Meeting Minutes
- 2- Brainstorming PPT
- 3- April 5, 2018 Trustees Meeting PPT and Meeting Minutes
- 4- May 3, 2018 Trustees Meeting PPT and Meeting Minutes
- 5- July 10, 2018 Final Trustees Meeting PPT
- 6- July 10, 2018 Implementation Schedules
- 7- July 10, 2018 Cost Analysis
- 8- MassArt Logistics Analysis (Cam Roberts)
- 9- Sketchup Model of Tower



Recap

The Study...

*... should be focused on the ~~minimum~~ **optimal** necessary architectural, mechanical, electrical, plumbing and potentially structural work necessary to replace the failing façade and bring the building into compliance with MAAB, Building Code, and energy requirements required by the Commonwealth.*

- build on **previous studies**
- evaluate options and identify the preferred scope
- outline steps involved.

ARUP Study and ADA Compliance Report relied on heavily as starting point

This scope must include the revisions to systems that are directly caused by removal and replacement of the **curtainwall.**

Summary:

- The MassArt tower façade and infrastructure MEP systems are at their end-of-life and should be replaced.
- Replacing the Curtainwall triggers replacement of some mechanical systems and updating building to latest accessibility and life safety codes.
- Due to campus constraints regarding swing space, tower building must remain substantially occupied during any renovations.
- Due to requirement that building remains occupied, Implementation of these renovations requires construction to be completed in multiple phases. These phases with procurement are estimated to have a 3-1/2 to 4 year duration.
- Unitized curtainwall is recommended as replacement façade due to site constraints and phasing requirements.
- These renovations would be in the range of \$95 Million in 2018 dollars. These renovations could be completed as separate distinct projects to ease funding constraints.
- Further studies are needed to understand impact on MassArt and how renovations align with MassArt pedagogical goals and further study of finer details of renovations.
- Façade replacement is an integral first step in the positive transformation of the tower building and campus image.

MassArt Logistics Analysis Summary

(by Cam Roberts)



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Typical swing requirements per phase (5 floors each):

- Hard construction area: 5,000 – 6,000 sf
- Soft construction area: 6,000 – 10,000 sf
- **Total swing space per phase: 11,000 – 16,000 sf**

Preliminary conclusions:

- Occupied construction appears to be feasible
- Disruption for any group is relatively short-term
- Analysis does not take into account, nor does DCAMM study, disruptions associated with internal infrastructure upgrades

Cost Summary:

Façade Replacement:	\$42,849,000
Code & Accessibility Upgrades:	\$ 7,032,000
Total Baseline Costs:	\$49,881,000

Add Alternates:

A. Ground Floor Lobby Infill:	\$3,220,000
B. High Perimeter Ceiling work:	\$2,622,000
Total Add Alternates:	\$5,842,000 *

* Some overlap between alternates may result in cost savings

Deferred Maintenance Alternates:

Alternate C:	\$38,578,000 *
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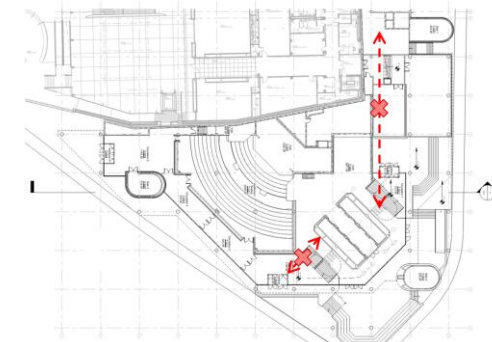
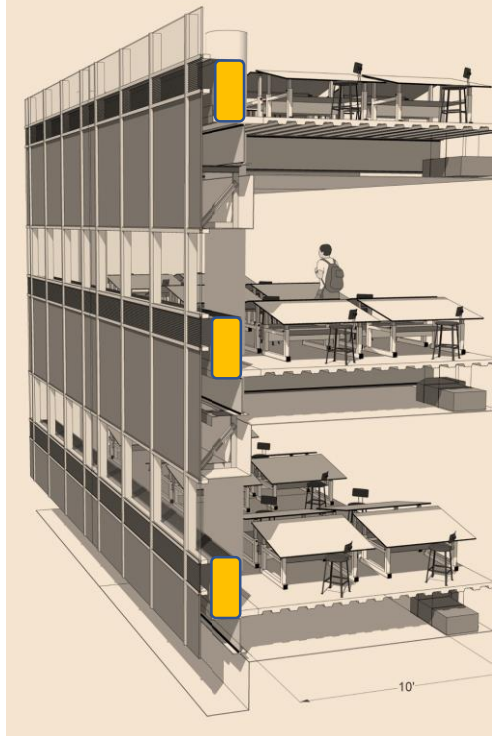
Implementation of Alternate C not addressed by study

Total:	\$94,301,000
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MCA Next Steps:

(Post Study)

- Further study leaving the ceilings 'open' and exposed as an aesthetic
- Further study, programmatically, what is ideal MassArt floor layout
- Further study impact of construction on adjacent spaces... can adjacent spaces really be occupied during construction?
- Study assumes fully occupied building and 5 to 10K SF swing space. Further Study to look at the program and the summer occupancy to see if phasing be made more efficient and shorter by taking more of the building at a time.
- Quantification of energy Impact of new curtain wall and perimeter systems
- Study to understand implications and finer detail of 'Alternate C'



Curtainwall Replacement



Air Ventilators at Perimeter



**Replacement and New AHUs
and Perimeter Risers**



**MAAB compliance
(Entry, Auditorium, Toilets, Doors...)**



**Code Compliance
(Stairs, Fireproofing, Standpipes...)**

Basic Initial Step to address exterior and energy code issues

Given integration of the HVAC into the Curtainwall, Ventilators need to be replaced with new FCUs in ceiling

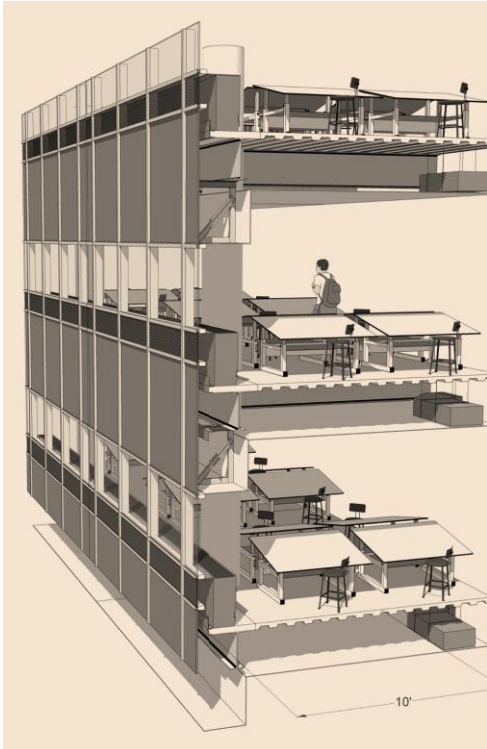
New/ replacement AHUs and replacement of associated piping risers for FCUs and AHUs

MAAB Accessibility Upgrades to **entire** building triggered by façade replacement

Additional Life Safety and Code upgrades triggered

Replacement of Curtainwall

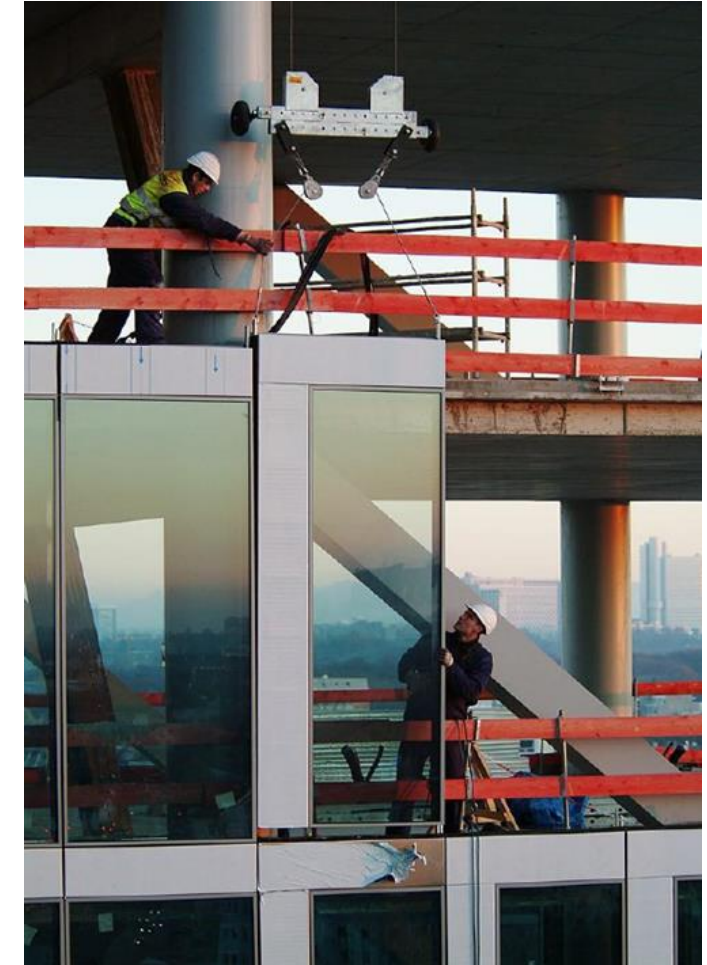
First Step to address the exterior and energy code issues



Unitized Curtainwall

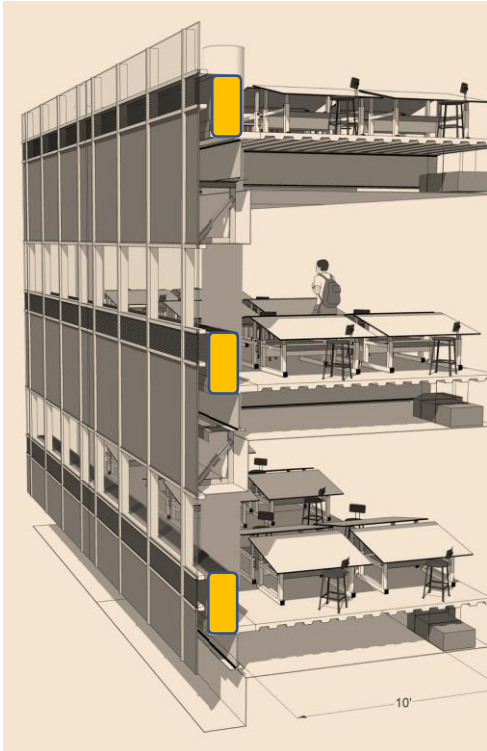
Top reasons for recommendation:

- **Speed On-Site:** Units assembled and glazed in shop under controlled conditions ahead of time allows crews to work quickly on site to install units
- **Less Space Required on-site:** Units assembled in shop, brought to site and hoisted up to the building face from the exterior, reducing space needed on-site and on the interior.
- Unitized frames **accommodates existing building conditions:** building movements, high floor to floor heights and existing slab edge conditions.



Replacement of Ventilators

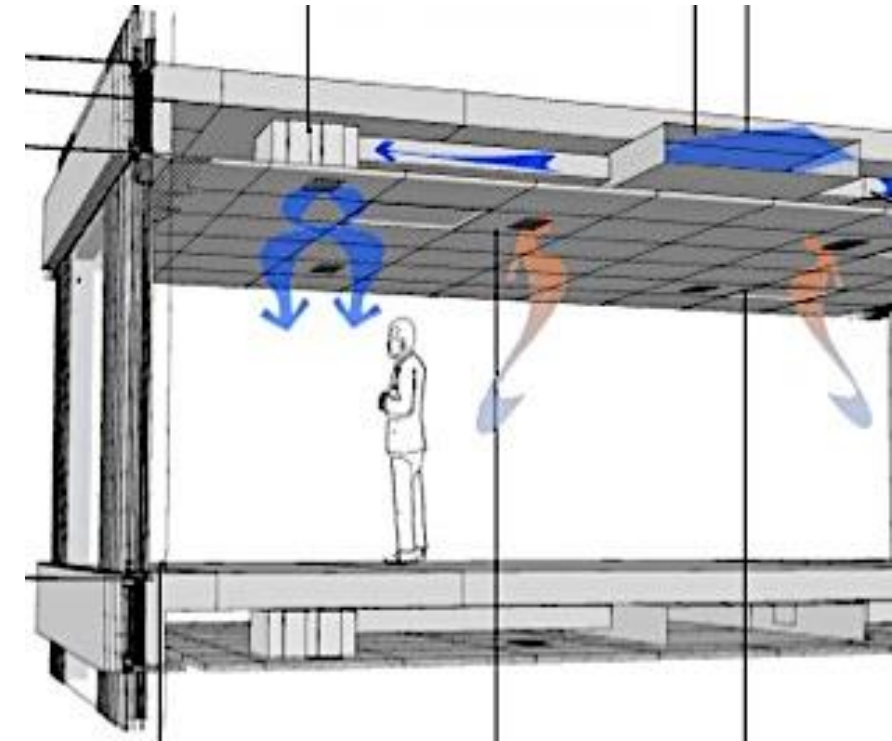
Given integration of the HVAC (ventilators) into the existing curtainwall, Ventilators **must** be replaced



Ceiling Fan Coil Units (FCU)

Top reasons for recommendation:

- **High Cooling and Heating Capacities:** A proven and well known system with good local and individual room control
- **Can cater to variable load conditions:** Existing building presents different conditions per floor and per exposure
- **Low Capital Cost**



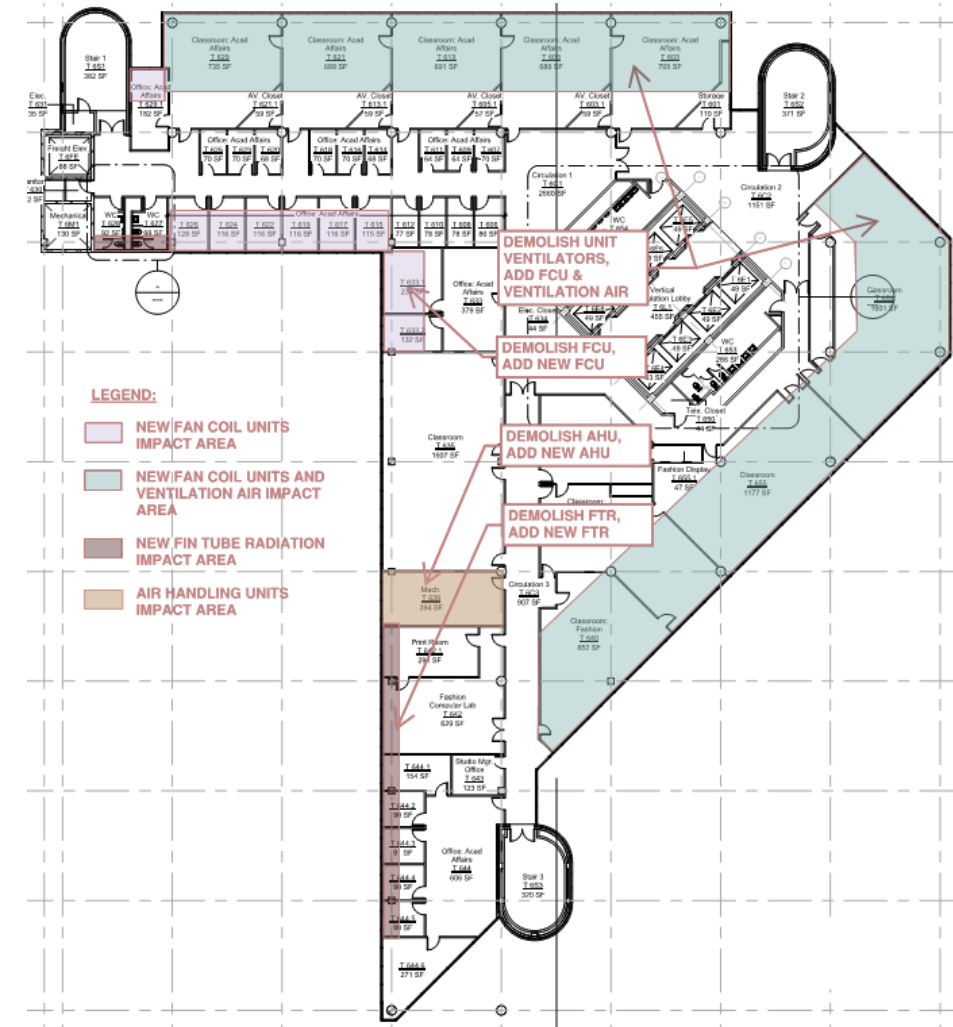
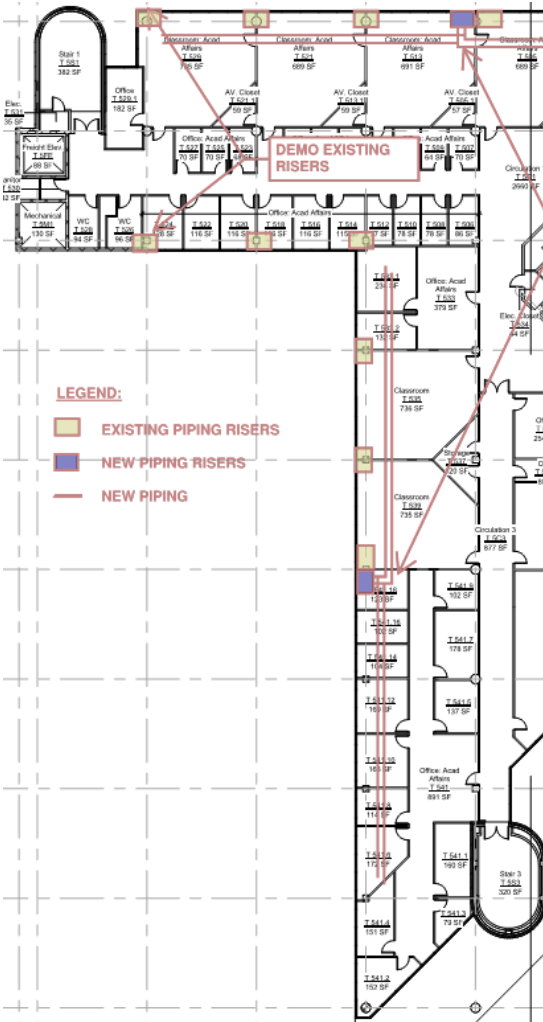
Replacement of Systems Feeding New FCUs

AHUs and Piping risers feeding new FCUs must be upgraded and replaced

Air Handling Units (AHU) & Piping Risers

Reasons for recommendation:

- **Additional AHU:** Existing ventilators took air directly from outside, new FCUs require new AHUs at roof
- **Replacement AHUs at Floors:** Existing AHUs are past their serviceable life
- **Piping Risers:** Existing piping risers feeding new FCUs and AHUs are in poor condition and need to be replaced



MAAB Compliance

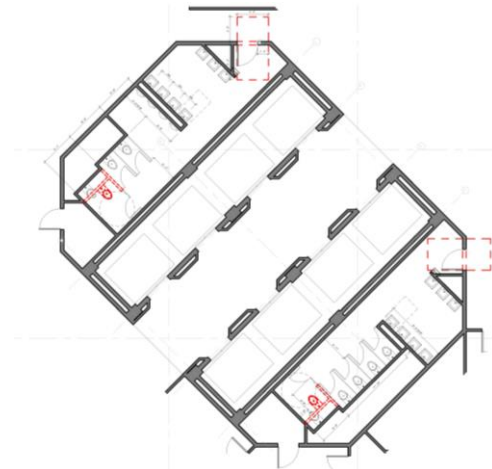
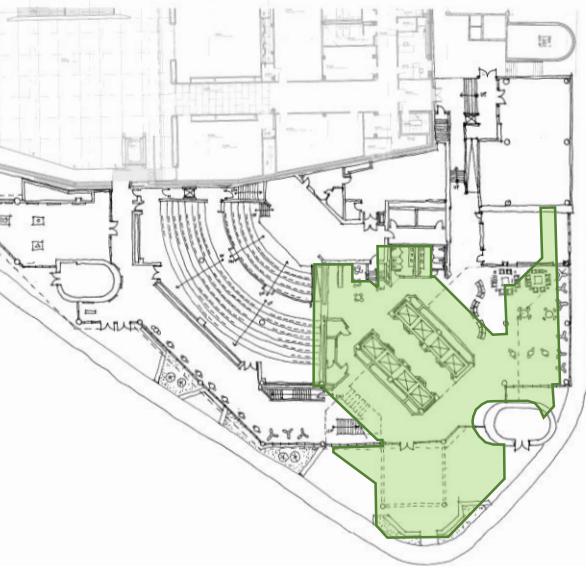
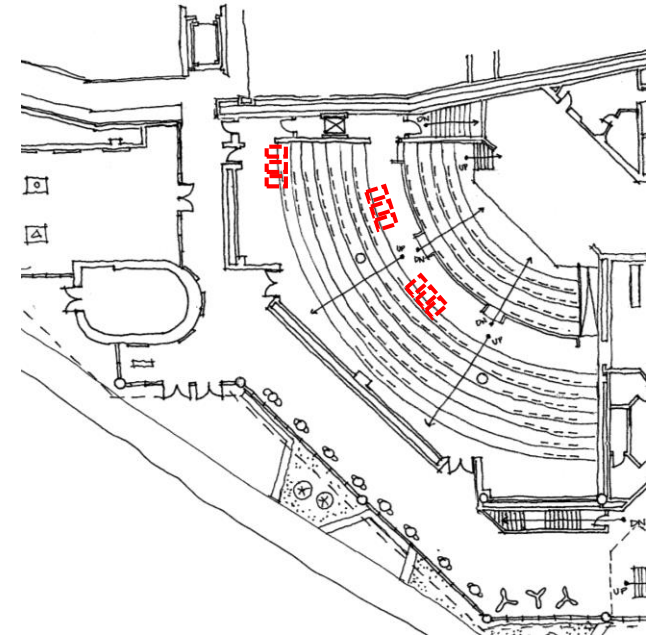
The value of these CW and HVAC upgrades trigger MAAB Accessibility Upgrades to **entire** building



Main Entry, Toilet Rooms, Auditorium, Others

Recommendations:

- **Main Entry:** At a minimum, a lift must be provided to connect Lower, 1st and 2nd floor levels; a full infill of the area is a cleaner solution, as an alternate
- **Auditorium:** Ramps and Lift to an enlarged central aisle for HC seating
- **Toilet Rooms:** Handicap Stall is enlarged and door clearance is addressed
- **Other Areas:** Sinks in classrooms, door clearances, door hardware, drinking fountains all need to be addressed



Code Compliance

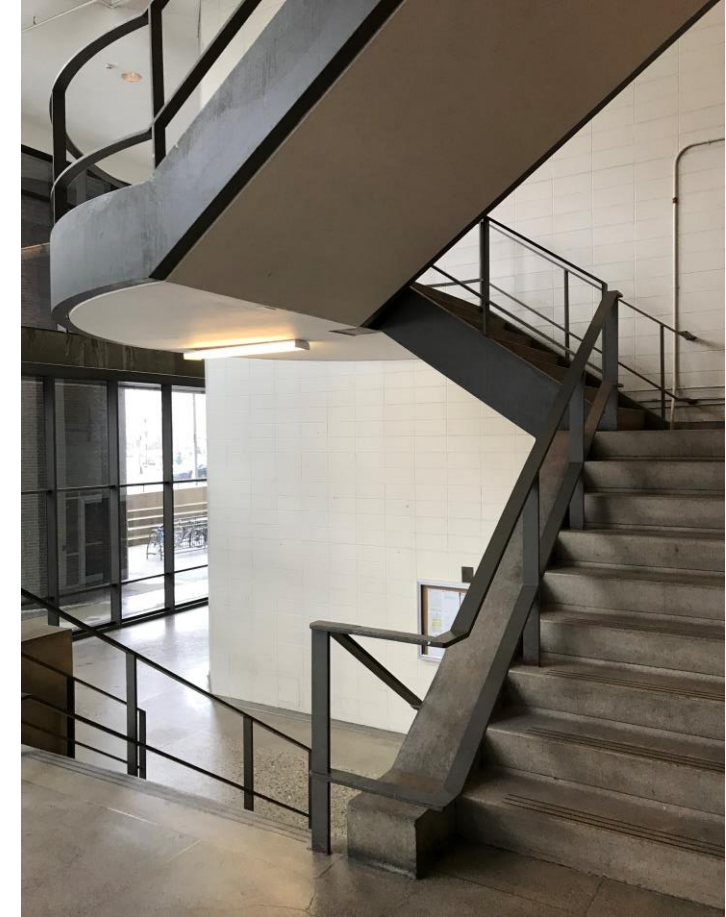
The value of these CW and HVAC upgrades also trigger other code Upgrades



Code and Life Safety Upgrades

Reasons for recommendation:

- **Stair Pressurization:** New ductwork and fans to pressurize egress stairs
- **Open Stair Railings:** Railings at open stair need to be replaced
- **Structural Beam Repairs:** Structural beam identified in Arup Report as damaged needs repair
- **Detail Fireproofing Survey:** A survey to identify deficiencies in coverage



Complications

This 'Base-Line' scenario has the following drawbacks:

- There is equipment not part of 'Base-Line' that is already past its usable life and needs to be replaced – Reference Alternate in pricing.
- Replacing this equipment after a 'Base-Line' project will add cost overall, lose efficiency of doing all at once, may require redundant work.
- Future revision of floor layouts to make more efficient is potentially limited by existing equipment locations.
- Limited renovations do not allow a reconfiguration of spaces to a more ideal MassArt layout.
- This scenario does not allow a rethink of ceiling plane of spaces in building... Just a 'surgical' / Patch solution
- This scenario only patched ceiling areas, thus, leaving existing ceiling plane to partially obscure the new curtainwall in finished condition

Recommendations

Base-line Recommendations:

- Façade Replacement w/ Unitized Curtainwall
- Slab edge repairs for new façade
- Replacing ventilators with ceiling mounted fan coil units (FCUs)
- Two new AHUs for FCU fresh air
- Replacement of all on-floor AHUs
- Replacement of piping risers feeding FCUs and AHUs
- Phasing premiums, extended GC etc
- Temporary works, temp construction wall, etc
- Plumbing, Fire protection, Electrical + lighting costs for revisions to accommodate required renovations
- Ceiling, GWB revisions for req'd renovations (Replace in kind)
- Spray fire proofing work due to perimeter req'd renovations
- Accessibility upgrades: toilet rooms – expanding accessible stall and re-working entry doors (adding ADOs)
- Accessibility upgrades: Huntington Ave entry area (new lift as base-line)
- Accessibility Upgrades: classroom sinks, darkrooms, utility sinks, door hardware
- Accessibility Upgrades: auditorium
- Egress stair pressurization
- Detail fireproofing survey
- Hose valve connection corrections
- Open railing in multi-story space
- Structural beam repair

Recommendations

Alternates Not Included in Base-Line Estimate:

- Large infill and re-work at Huntington Ave Entry to level out floors and create new lounge and display areas
- Premium to leave ceiling 10-one at perimeter 'exposed'
- Replacement of equipment and distribution systems not replaced as part of 'Base-line': Chiller and pumps, Hot Water Heat Exchangers, Duct distribution from core, Secondary electrical distribution, Standby power distribution, Auditorium Systems, Changing Constant Air System to VAV, Building Management System)
- New Lighting Throughout
- New plumbing fixtures in toilet rooms, studios, classrooms
- Any Rework of walls for a more ideal layout for MassArt
- Rework of Ceilings Throughout
- A full renovation of the Tower all at once

Recommendations

Not Part of Base-line Project: (Deemed Unnecessary or Not Desired)

- *Floor additions or infills at levels 8, 10, 11, 12, 13*
- *Infill of entire auditorium to level out lower levels(Not desired)*
- *Structural analysis (Full analysis not required if minimal infill)*
- *Seismic Updates (Not deemed necessary if no upper level infills)*
- *Freight elevator + adjacent stair fire department access (Not Required)*

Completed by DCAMM or MassArt under Separate Project: (No Longer Required)

- *Switchgear replacement*
- *Fire pump replacement*
- *Domestic hot water temperature adjustments*
- *Refrigerant leak detection system connections*
- *Fire alarm devices + system replacement*
- *Fire protection repairs + making whole coverage more deficient*
- *Occupancy sensors*

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7/11/2017 Stantec Tower Swing Space Study Analysis

3/28/2017 Stantec Campus Redevelopment Strategies

1/1/2016 Prometria / Cameron Roberts Advisors MCAD Campus Space Inventory

11/17/2015 Gensler Redevelopment Analysis – Tower Building

11/19/2013 Arup MCAD Tower Building Analysis

7/8/2013 Dober Lidsky Mathey Space Study

3/2011 The Institute for Human Centered Design ADA Compliance Report

6/2008 Chan Krieger Master Plan

10/2007 Chan Krieger Existing Conditions; Issues, Opportunities, and Strategies

Tower transformation



Tower transformation



Tower transformation

