Re-Engineering Votey Hall:
Investment of Deferred Maintenance $$ into an aged Engineering Building

by: Lynn Wood
Retro-Commissioning Engineer
Physical Plant Department
New Construction:
- STEM $104M
- Central Campus Residence Hall $70M
  - Bailey Howe Bridge
- Kalkin- Ifshin Hall $11M
- Billings $8.5M

Deferred Maintenance:
- Votey Hall 1962 to 2017 $5M
Importance of Deferred Maintenance $$:

- 50% of Buildings that are over 50 years old
- 214 out of 243 Buildings are over 30 years old
- Mechanical and Electrical Equipment typically has a 15-20 year life cycle
- Roofs last 20-30 years Warranty for 20 years
- Code and Safety require upgrades
- Technology is constantly changing
- Utility costs continue to increase so it is important to upgrade to more efficient energy users
- Older equipment is expensive to maintain

Deferred maintenance
Deferred maintenance is the practice of postponing maintenance activities such as repairs on both real property (i.e. infrastructure) and personal property (i.e. machinery) in order to save costs, meet budget funding levels, or realign available budget monies. The failure to perform needed repairs could lead to asset deterioration and ultimately asset impairment.
The University of Vermont

Votey Hall

Deferred Maintenance:

Votey Hall  Approximately $5 M in Deferred Maintenance

• Boilers for Fleming Museum
• Roof
• Life Safety Systems
• Electrical Switchgear
• Main Electrical Distribution
• Generator
• Telecom Infrastructure Replacement
• AHU-1 Dual Duct
• Dual Duct VAV Boxes
• Controls
Collaborative Effort:

- FD&C Responsible for Overall Project Costs $10M for Renovations of Labs – part of the STEM Initiative
- Boilers for Fleming Museum – PPD Ray Doner and team
- Fire Alarm and Electrical Improvements strongly advised by Mike Enos
- AHU-1 Dual Duct & Dual Duct VAV Boxes – Davis Zone Contributions
- Controls
- Dedicated team from FD&C and PPD for Design Review
- Construction Team
The University of Vermont

Votey Hall

Construction Schedule:

Jan - May 21 – 3pm-11pm shift for rough-in and electrical

May 21 - DeEnergized Votey, Building Vacated for construction

August 1 - Energized Votey!

August 15 - Certificate of Occupancy!!

~3 months to complete $10M in Deferred Maintenance and Renovations
Deferred Maintenance:

Votey Hall  Approximately $5 M in Deferred Maintenance

• Boilers for Fleming Museum
• Life Safety Systems
• Electrical Switchgear
• Main Electrical Distribution
• Telecom Infrastructure Replacement
• Generator
• AHU-1 Dual Duct
• Dual Duct VAV Boxes
• Controls
The University of Vermont

Votey Hall

Boiler Replacement:

• 2 new Boilers for Fleming Museum located in Votey
• Provides redundancy with Central Plant for reheat and dehumidification

“houses Vermont's most comprehensive collection of art and anthropological artifacts. It presents innovative exhibitions of contemporary and historic art from around the world”
Deferred Maintenance:

Votey Hall  Approximately $5 M in Deferred Maintenance

- Boilers for Fleming
- Life Safety Systems
- Electrical Switchgear
- Main Electrical Distribution
- Telecom Infrastructure Replacement
- Generator
- AHU-1 Dual Duct
- Dual Duct VAV Boxes
- Controls
The University of Vermont

Votey Hall

Life Safety Systems:

• Code compliance with new sprinkler system
• Fire Alarm System, Device and Wiring Upgrade
Deferred Maintenance:

Votey Hall  Approximately $5 M in Deferred Maintenance

- Boilers for Fleming
- Life Safety Systems
- Electrical Switchgear
- Main Electrical Distribution
- Generator
- Telecom Infrastructure Replacement
- AHU-1 Dual Duct
- Dual Duct VAV Boxes
- Controls
The University of Vermont

Votey Hall

Electrical Switchgear, Main Electrical Distribution, Generator:

- Before the Electrical Upgrade there was no safe PPE to wear to work on electrical equipment
The University of Vermont

Votey Hall

Deferred Maintenance:

Votey Hall  Approximately $5 M in Deferred Maintenance

• Boilers for Fleming
• Life Safety Systems
• Electrical Switchgear
• Main Electrical Distribution
• Generator
• **Telecom Infrastructure Replacement**
• AHU-1 Dual Duct
• Dual Duct VAV Boxes
• Controls
The University of Vermont

Votey Hall

Telecom:

- Total removal of existing network infrastructure rebuilt
- Pulled over 200,000 feet of new network cable
Deferred Maintenance:

Votey Hall  Approximately $5 M in Deferred Maintenance

- Boilers for Fleming
- Life Safety Systems
- Electrical Switchgear
- Main Electrical Distribution
- Generator
- Telecom Infrastructure Replacement
  - AHU-1 Dual Duct
  - Dual Duct VAV Boxes
  - Controls
The University of Vermont

Votey Hall

Dual Duct AHU-1

New Chilled Water and Steam Coils
The University of Vermont

Votey Hall

Dual Duct AHU-1

New Motors, Electrical Feeds, Sheaves, Bearings
The University of Vermont

Votey Hall

Dual Duct AHU-1

Epoxy Coating on Floors and condensate pans
The University of Vermont

Votey Hall

Dual Duct AHU-1

New Dampers and Filter Banks
And some works of art left for historic purposes ... the old pneumatic panel that we decided to keep for its value as an artifact – at least in CEMS eyes :(
The University of Vermont

Votey Hall

**Controls:** Upgraded to a new control panel for Dual Duct AHU-1, including over 30 Dual Duct VAV boxes, EF-1 thru 8 VFD interface
Hydraulics Lab 101
Biomedical Engineering Teaching Lab 225
Bridge to STEM: Votey is now connected to STEM—our latest addition to College of Engineering Math and Science (CEMS)... providing impressive experiences for our learners.

“The University of Vermont's largest-ever capital project will bring a state-of-the-art STEM (science, technology, engineering and mathematics) complex of laboratories, classrooms and research facilities to campus and prepare our students for careers in rewarding, high-growth fields.”
The University of Vermont

Votey Hall

And that is how our Engineering Building was Re-Engineered
REMEMBERING SPECIAL TIMES AT COOK: Sometimes there just isn’t enough Deferred Maintenance $$’s to bring a building back