Improving the Patient Experience Through Facilities Maintenance Programs

Jon Utech, Senior Director, Cleveland Clinic

John Wood, Senior Facilities Operations Consultant/ Senior Associate, Mazetti+GBA
Creating a Facility Capital Maintenance Program

John Wood, CHFM, SASHE, CHC
Senior Facilities Operations Consultant
OBJECTIVES

1. Performing and documenting the **FCA**
2. Developing a “**Capital**” Maintenance Plan
3. Maintaining “**The Plan**”
What’s the **MOST** important thing(s) you must do each year?
Maintenance Programs
(3 basic types)

PREVENTIVE
Maintenance Programs
(3 basic types)

PREVENTIVE
DEFERRED
Maintenance Programs
(3 basic types)

PREVENTIVE
DEFERRED
CAPITAL
THE VALUE OF A PLAN

• Long Range Asset Roadmap
• Budgeting
• Competition for Budgets/Capital
• Cash Flow Valve
SO, WHAT’S THE PLAN?

1. Assessment
2. Forecasting
3. Prioritize
4. Create the Program
5. Get Approval
6. Implement
7. Manage
SYSTEM CATEGORIES

Parking  Mechanical  Flooring  Roofs  Electrical
FACILITY CONDITION ASSESSMENT

• Perform In-house
• Outsource
• Engage your Maintenance staff
• Interview department managers
FACILITY CONDITION ASSESSMENT

• Review CMMS Equipment Lists
• Use of Non-Destructive Testing
• Retro/Re-Commissioning
THE PLAN

1. Assessment
2. Forecasting
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6. Implement
7. Manage
ESTIMATING LIFE EXPECTANCY - DATA DRIVEN

- Use credible source for forecasting
- ASHRAE, AHA, etc.
- Manufacturer
- Maintenance records (no conflicting info)
- Specialty contractors
THE PLAN

1. Assessment
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7. Manage
PRIORITY (JUSTIFICATION/RISK FACTORS)

**Critical** – Imminent Failure, Impact on patient care, Regulatory Compliance

**High** – Probable Failure, Long-lead item

**Medium** – Poor appearance/image, energy efficiency opportunity

**Low** – Potential unanticipated expense, minimum facility impact
• Asbestos in piping insulation in mechanical room which is damaged and creates a potential exposure to occupants of the space.
REGULATORY COMPLIANCE

• Asbestos in piping insulation in mechanical room is damaged and creates a potential exposure to occupants of the space. OSHA Required signage not in place.
END OF USEFUL SERVICE LIFE

• Unit installed in 1972 and is far beyond useful service life of 25-30 years. Needs immediate replacement.
ENERGY EFFICIENCY UPGRADE

- New unit will be more energy efficient utilizing digital controls and VAV. Contact utility provider to determine rebate program opportunity, ROI, and obtain approval by Utility prior to initiating project.
PATIENT SATISFACTION/ BUSINESS DISRUPTION

• Unit frequently shutdown for repairs impacting air quality and ability to maintain temperature set points.
ENVIRONMENTAL CONSIDERATIONS

• Perform ACM Abatement project prior to beginning equipment replacement using certified abatement contractor.
THE PLAN

1. Assessment
2. Forecasting
3. Prioritize
4. **Create the Program**
5. Get Approval
6. Implement
7. Manage
FORMAT

- Year needed
- Budget estimate
- Actual cost
- Project type/Funding source
- Priority
- Description of system
- Location
- Action
- Description
- Category & explanation

ACE SUMMIT
AND REVERSE EXPO
<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
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<tbody>
<tr>
<td>Year Needed</td>
<td>2019</td>
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<tr>
<td>Budget Estimate</td>
<td>$29,000,000</td>
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<tr>
<td>Actual Cost</td>
<td></td>
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<tr>
<td>Project Type</td>
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<tr>
<td>Priority</td>
<td>Med</td>
</tr>
<tr>
<td>System Name</td>
<td>AHU-24</td>
</tr>
<tr>
<td>Description of System</td>
<td>Air Handling Unit</td>
</tr>
<tr>
<td>CMMS Number</td>
<td>1011568</td>
</tr>
<tr>
<td>Location</td>
<td>Rooftop - A5</td>
</tr>
<tr>
<td>Action</td>
<td>Recondition</td>
</tr>
<tr>
<td>Description of Work</td>
<td>Insulation on duct work to be repaired/replaced and secured with metal</td>
</tr>
<tr>
<td></td>
<td>sheeting</td>
</tr>
<tr>
<td>Provide explanation for</td>
<td></td>
</tr>
<tr>
<td>all that apply to this</td>
<td></td>
</tr>
<tr>
<td>request:</td>
<td></td>
</tr>
<tr>
<td>Life Safety</td>
<td></td>
</tr>
<tr>
<td>Serviceability</td>
<td>This unit was mechanically reconditioned in 2009 however the insulation</td>
</tr>
<tr>
<td></td>
<td>was not addressed at that time.</td>
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<tr>
<td>Regulatory Issue</td>
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<tr>
<td>Environmental Issue</td>
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<tr>
<td>Patient Satisfaction</td>
<td></td>
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<tr>
<td>Energy Efficiency Upgrade</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>
FIELD INSPECTION REPORT

Finding No. 5031902

Problem: Chilled water coil should be replaced and installation in duct work should be repaired and secured with metal clamping as necessary. Supply and return fan VFD control should be integrated into BMS.

Insulation needs repair

Old chilled water coil

New chilled water coil
THE PLAN

1. Assessment
2. Forecasting
3. Prioritize
4. Create the Program
5. Get Approval
6. Implement
7. Manage
## EXECUTIVE SUMMARY

<table>
<thead>
<tr>
<th>Year Needed</th>
<th>Number of Projects</th>
<th>Capital Projects Budget Estimate</th>
<th>Non-Capital Projects Budget Estimate</th>
<th>Total Budget Estimate</th>
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<tr>
<td>2017</td>
<td>19</td>
<td>$1,765,086</td>
<td>$352,873</td>
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<td>2018</td>
<td>9</td>
<td>$3,061,060</td>
<td>$120,000</td>
<td>$3,219,060</td>
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<td>8</td>
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<td>2020</td>
<td>7</td>
<td>$1,268,339</td>
<td>$87,511</td>
<td>$1,355,850</td>
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<td>2021</td>
<td>5</td>
<td>$866,666</td>
<td>$64,793</td>
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<td>2022</td>
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<td>$830,560</td>
<td>$526,705</td>
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<td>2023</td>
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<td>$528,738</td>
<td>$420,523</td>
<td>$1,072,261</td>
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<td>2024</td>
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<td><strong>$2,030,388</strong></td>
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<td>Budget Estimate</td>
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<tr>
<td>Location</td>
<td>Rooftop - AS</td>
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<td>Recondition</td>
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</table>

Provide explanation for all that apply to this request:

- Life Safety
- Serviceability: This unit was mechanically reconditioned in 2009 however the insulation was not addressed at that time.
- Regulatory Issue
- Environmental Issue
- Patient Satisfaction
- Energy Efficiency Upgrade
- Other
THE PLAN

1. Assessment
2. Forecasting
3. Prioritize
4. Create the Program
5. Get Approval
6. Implement
7. Manage
SUCCESS CREATES CONFIDENCE
THE PLAN

1. Assessment
2. Forecasting
3. Prioritize
4. Create the Program
5. Get Approval
6. Implement
7. Manage “the program”
<table>
<thead>
<tr>
<th>Year Needed</th>
<th>Budget Estimate</th>
<th>Actual Cost</th>
<th>Priority</th>
<th>System Name</th>
<th>Project Type</th>
<th>CMMS Number</th>
<th>Location</th>
<th>Action</th>
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<tbody>
<tr>
<td>2019</td>
<td>$27,983</td>
<td>Critical</td>
<td>Parking Lot E</td>
<td>Non-Capital Project</td>
<td>0</td>
<td>East of Child Care Center</td>
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<td>$24,000</td>
<td>Medium</td>
<td>Exhaust Fans (113)</td>
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<td>various</td>
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<td></td>
<td>$0</td>
<td>Medium</td>
<td>Traffic Circles</td>
<td>Non-Capital Project</td>
<td>0</td>
<td>(3) strategic locations of main Public Entry Roadway</td>
<td>Recondition</td>
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<td></td>
<td>$25,000</td>
<td>Med</td>
<td>AHU-24</td>
<td>1011563</td>
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<td>Recondition</td>
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<td>$23,000</td>
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<td>$645,290</td>
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<td>AHU-30</td>
<td>2</td>
<td>Rooftop - A7</td>
<td>Replace</td>
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</table>
CONCLUSION

✓ Proactive approach
✓ Financial tool for budgeting
✓ Reduces Risk
✓ Upgrade building/systems
✓ Energy Management
✓ Utility Rebates
✓ Valve for cash flow
✓ **Facility Managers discussing issues with their leaders**
...AND REMEMBER...

- Most problems don’t just go away on their own
- Always Plan Ahead
- You can’t manage what you don’t assess
- Extends life of the building
- Improves facility appearance
- Separate “Needs vs. Wants”
- Introduce new technology
- CEO and BOD’s – Fiduciary Responsibility

IF YOU DON’T, WHO WILL?
CONTACT

John Wood
Senior Facility Operations Consultant
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Agenda

• Who We Are
• Why We Care
• How We Build and Operate
• WELL Building
Cleveland Clinic: Who we are

- 7.1m outpatient visits, 220,000 admissions, and 207,600 surgical cases annually
- 1,400 hospital beds and 100 operating rooms

- 1,950 residents and fellows in training
- 1,800 allied health student rotations
- 1,700 participants in continuing med education

- $179m in total grant / research contracts
- 135 lab principle investigators
Strong Reputation for Quality and Innovation

Leader in US News & World Rankings:
– #2 hospital overall
– #1 in heart for 22 consecutive years
– 12 other specialties rank in top 10

Patients travel from 170 countries

75 spin off companies since 2000

Over 700 patents
Agenda

• Who We Are
• **Why We Care**
• How We Build and Operate
• WELL Building
Value

Access
Affordability
Quality

Patients First
Nearly 1 in 4 deaths across the globe are due to environmental factors (1)
Sustainability = Triple Bottom Line

- Patient Health
- Economic Health
- Environmental Health

Sustainability
Leveraging Determinants of Health

Population Health

- Health Care: 10%
- Health Behaviors: 20%
- Socio-Economic Factors: 30%
- Physical Environment: 40%

Source: “Community Health Centers Leveraging the Social Determinants of Health”
Agenda

• Who We Are
• Why We Care
• How We Build and Operate
• WELL Building
Sustainability Philosophy

- **Aligning** our built environment with our core healthcare mission.
- **Minimizing** our environmental impact and promoting human health in our building projects.
- **Operationalizing** this through the support of
  - Nutrition and wellness
  - Adherence to LEED-HC Gold standards
  - Utilization of specific energy standards
  - Innovative approaches we have taken to go beyond LEED standards in new construction projects.
- **Educating** our caregivers and community
Healthy Buildings
15 LEED Buildings
Energy Usage
Reduce Energy Usage by 20%
Recycled Waste
Divert 50% of Waste

10% 39%
Sustainability Performance

#1  OR

#2  ENERGY STAR PARTNER OF THE YEAR

Top 10

33%+ System Landfill Diversion
Farmers Markets, Local Sourcing 25%
Water Conservation, Standards
Hillcrest Hospital Recognized by DOE for Achieving 20% Goal

CLEVELAND CLINIC
Showcase Project: Hillcrest Hospital

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>Annual Energy Use</th>
<th>Annual Energy Cost</th>
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</thead>
<tbody>
<tr>
<td>Project Size</td>
<td>587 kBtu/sq. ft.</td>
<td>$3,400,000</td>
</tr>
<tr>
<td></td>
<td>460 kBtu/sq. ft.</td>
<td>$2,870,500</td>
</tr>
<tr>
<td></td>
<td>Energy Savings: 23%</td>
<td>Cost Savings: $529,500</td>
</tr>
</tbody>
</table>
Implementing the largest LED retrofit in healthcare

- 400,000 tubes
  - (2-8 ft) and bulbs (cans)
- Four installation vendors
- Two diverse vendors
  - Evergreen Energy Solutions (MBE)
  - LSI (FBE)
- LED Tubes made in Solon, Ohio by Energy Focus
- Creation of 20-25 manufacturing and installation jobs
- Health impact
OR Setbacks
Rules and Regulations

<table>
<thead>
<tr>
<th>BEFORE:</th>
<th>AFTER:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exceeding ASHRAE Guidelines</td>
<td>Meeting ASHRAE Guidelines</td>
</tr>
<tr>
<td>In Use: 25+ ACH</td>
<td>In Use: 20 ACH</td>
</tr>
<tr>
<td>Unoccupied: 25+ ACH</td>
<td>Unoccupied: 6 ACH</td>
</tr>
</tbody>
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OR Setbacks
Rules and Regulations

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Agenda

• Who We Are
• Why We Care
• How We Build and Operate
• WELL Building
Cleveland Clinic
Functional Medicine Suite
Main Campus

• Functional Medicine - Q Building
• 17,000 sf
• Cost: $7 Million
• Dr. Michael Roizen
• Dr. Mark Hyman
• First WELL project – Silver Level
Breathe easy with optimal indoor air quality

- Material selection
- Ventilation
- Filtration
- Moisture control
- Maintenance and operations
- Source of concern protection
- Construction purposes
WATER

Drink up: WELL promotes high quality water and improved accessibility

• Performance testing
• Treatment
• Maintenance and operations
• Hydration promotion
Dig in to wholesome foods. WELL Certified™ buildings limit the presence of unhealthy ingredients and can encourage better eating habits.

- Healthy portions
- Mindful eating
- Food production
- Access to healthy foods
- Food preparation
- Allergies and alternatives
- Transparency
- Environmental Cues and influencers
LIGHT

Benefit from daylight & lighting systems designed to increase alertness, enhance experience and promote sleep.

- Circadian design
- Daylighting
- Glare control
- Color quality
- Activity-based lighting levels
- Visual acuity
FITNESS

Keep moving with WELL’s integration of exercise and fitness into everyday life.

- Exterior active design
- Interior active design
- Activity-based working
- Physical activity spaces
- Awareness and habits
- Physical activity programs
COMFORT

Settle into a distraction-free, productive and comfortable space.

- Ergonomic
- Acoustics
- Thermal
- Olfactory
- Accessibility
MIND

Stay centered: WELL helps support cognitive and emotional health through design, technology and treatment strategies.

- Stakeholder engagement
- Transparency
- Wellness awareness and protocols

- Connection to nature
- Adaptable spaces
- Altruism
WELL PROJECT FEATURES

AIR
• Air Quality Testing
• Low/No VOC Furniture

WATER
• Water Quality Testing

NOURISHMENT
• Nutrition education

FITNESS
• Air Quality Testing
• Low/No VOC Furniture

COMFORT
• Water Quality Testing

MIND
• Well Awareness Guide
• Post-Occupancy Survey
• Beauty in Design and Biophilia
LESSON LEARNED

Air and water quality pre-test:
• Water did not comply due to accuracy of the lab
• Air did not comply due to issues testing during construction

Low/no VOC Furniture (Cleveland Clinic standards)
Green cleaning revisions
Non anti-bacterial soap
Brightness management strategies (light banks)