Facilities Engineering Management Programs

Management programs are established for systems that represent a significant University asset, require regular maintenance and benefit from a comprehensive approach. Maintenance programs deliver support and resources to identify deficiencies, prioritize need and provide stewardship to planned, preventative and corrective maintenance.
Roof Asset Management (RAM)
A Facilities Engineering Program

RAM PROGRAM TEAM
Les Cook – Mapping and Database Graphics
Shane Dunn – Data Collection
Jeff Franzese – Program Coordinator
Andrew Germain – Program Initiation and Development
Why is Roof Asset Management is needed?

- Current annual replacement expenditure is ~$10 Million
- Roofs assets have a typical life cycle range of 15-100 years
- Establish a Resource Center for Data, Information and Education
- Proactive versus Reactive
- Deficiency prioritization
- Financial Forecasting and Budget Planning
The University’s Roofing Needs Campus Wide

- Expected Service Life (ESL) – Indicates the anticipated or expected service life span of a new component or system, before it needs to be replaced.
- Remaining Useful Life (RUL) - Indicates the remaining years in the life span of a component of system, before it needs to be repaired or replaced.
AD White House has 140 Panels 30 attributes each = 4,200 attributes into Maximo for one roof

Every panel is an individual asset
• AD White House – Steep Sloped, Mansard Slate Replaced 2002 – ~ $1million project
• Entire Roof Not Replaced, and chimneys not restored
• 2010 continued leaks led to replacement of balance of roof and restore of chimneys

EPDM
Remaining Useful Life – Ithaca Campus
Program Phase 1: 2008-2011 collection of data for Maps
Program Phase 2: 2011-2012 prioritize immediate need
Program Phase 3: ~2013 Project need minimum of 2 years out

DATA

Data IN
- Assessments
- Institutional Knowledge
- Archives
- Project Info (New Projects)
- PM/CM (Maximo)
- Cost Data Collected
- Special Requests
The intent of RAM is to incorporate all University buildings across New York and beyond.
Data → Standards → Maintenance

DATA

- Standards
- Preventative & Corrective Maintenance
- Planned Maintenance
Program Responsibilities

**Data Collection**
- Civil Engineering
- Shops
- Zone Managers
- Maintenance Management
- Building Coordinators
- Extension of Staff

**Data Distribution**
- Maintenance Management
- Contract Colleges
- Campus Life
- Utilities

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**Preventative & Corrective Maintenance**
- Shops
- Job Order Contracting
- Local Contractors

**Standards & Design Review**

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**Planned Maintenance**
- Civil Engineering
- CP&P Project Mgmt.
- CP&P Construction Mgmt.
- Project Service Group
- Shops

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**Shane Dunn**

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**Les Cook**

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**Jeff Franzese**

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**Andrew Germain**

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Services available through RAM

Data
- Gather and maintain all 28 attributes for each panel
- Prioritization of Deficiencies
- Capital Planning / Financial Cost Projections
- Preventative Maintenance Planning
- Corrective Maintenance Expenses
- Identification of asset maintenance costs (CM/PM and Planning)
- Frequency & Cost of work (coming soon)

Planned Maintenance - (A La Carte services) from project PAR Development through Archiving
- PAR Development
- Project Management
- Construction Management
- OA/QC Product
- Archive verification & Data input into RAM (data from contractors)
- Leak investigation – (beyond shops) Facilities Engineering/Consultant Retention

Preventative Maintenance/Corrective Maintenance
- Leak Investigations – Shops
- Define needs of asset maintenance
- Develop job plans for Preventative Maintenance
Phase 3: Preventative Maintenance

Rust and clogged gutters will shorten the roof's life cycle.

Water is gaining access to structure and building contents.

Flashing Mounted to outside of the siding

Caulk & added screws used ineffectively to correct thermo expansion
<table>
<thead>
<tr>
<th>Active Construction</th>
<th>Bid Phase</th>
<th>Design/Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CISER Building</td>
<td>1. Fuertes Observatory</td>
<td>1. Sage Chapel</td>
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<tr>
<td>2. Morrill Hall (south)</td>
<td>2. Rockefeller Auditorium</td>
<td>2. Rand Hall</td>
</tr>
<tr>
<td>4. Newman Lab</td>
<td>4. Ives Faculty Wing Leak</td>
<td>4. 726 University Ave</td>
</tr>
<tr>
<td>7. Fuertes Observatory</td>
<td>7. Feed Storage</td>
<td>7. Anabel Taylor Hall</td>
</tr>
<tr>
<td>10. Mary Donlon</td>
<td>10. Ellis Farm Barn</td>
<td>10. Upson Hall</td>
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<tr>
<td>12. CU Golf Center</td>
<td>12. Pavilion</td>
<td>12. Teagle Hall</td>
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<tr>
<td>16. Morrison</td>
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<td>16. Livestock Pavilion</td>
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<tr>
<td>17. Basic Science</td>
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<td>17. Leland Lab</td>
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<td>18. Food Science</td>
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<td>18. Necropsy</td>
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<tr>
<td>19. Willard Straight Terrace</td>
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<td>19. CPC Surgery</td>
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<tr>
<td>20. Farm Services</td>
<td></td>
<td>20. CPC Multipurpose</td>
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<tr>
<td>21. 603 CHR</td>
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<td>21. CPC Breezeway</td>
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<td>22. Kennedy Roberts</td>
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<tr>
<td>23. Sage House</td>
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</tbody>
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Service Life by Type & Region

Expected Material Service Life

Based on the sample interviewed for the purpose of this study, metal is expected to have the longest service life by 17 years, as illustrated below.

Expected Roof Service Life By Material

- Overall: 29.24 years
- BUR/Modified Bitumen: 23.00 years
- Single Ply: 20.50 years
- Metal: 41.63 years

Estimated Roof Service Life by Region

- Overall: 29.24 years
- Rustbelt: 28.15 years
- Sunbelt: 31.00 years
Roof Asset Management (RAM)
A Facilities Engineering Program

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