12th Annual

Total Building Management—From Cradle to Grave

Facility Condition Assessments
Basic & Enhanced:
Proactive Facilities Asset Management

Presented By: Joel Davis, Principal, Director of Research
               Doug Smith, Director of Engineering
• Performance Assessment based on 2015 EFC Theme: “Staying Smarter than your Buildings”

• 2015 EFC Presentation “Learn what your Buildings are telling You” through “Performance Assessment” in conjunction with AM/FCA programs.

• Packed room with strong interest, but many not familiar with basic FCA; hence this 2016 “FCA Basic & Enhanced (101 & 102)” presentation.
Basic & Enhanced FCA
Proactive Asset Management

Introduction to FCA
- 2% Rule
- WA State FCA Programs: JLARC; SBCTC; DSHS
- GASB 34, FCA & PCA

Fundamental FCA
- Prepare, Survey, Report

Exercise!
- UNIFORMAT II - Assessment

Enhanced FCA
- Costs Audits, Studies & Testing

Future of FCA
- ISO 55 Asset Management
- Performance Assessment

May 3, 2016
INTRODUCTIONS
Basic & Enhanced FCA
Proactive Asset Management

FCA EXPERTS
• Local Systems
• Local Costs
• Local FCA Team

Nisshin Seifun Group
City of Tacoma
City of Olympia
Clackamas Community College
City of Redmond
Northwest Lions Foundation
Office of Financial Management
Washington State Legislature Joint Legislative Audit & Review Committee

May 3, 2016
MENG Analysis
O Romeo, Romeo! wherefore art thou Romeo?....

....

What's in a name? that which we call a rose
By any other name would smell as sweet;
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BCE: Building Condition Evaluations
BCA: Building Condition Assessment
(qualitative buildings, + systems to 5’ from perimeter)
FCS: Facility Condition Surveys
PCA: Property Condition Assessment – real estate due diligence (Purchase/Sale) - ASTM 2018
baseline PCA of commercial real estate...PCA should be conducted by a field observer...not to be construed as technically exhaustive... representative observations is to convey to the user the expected magnitude of commonly encountered or anticipated conditions...
FCA: Facility Condition Assessment
(buildings + site infrastructure + options)
process of a qualified group of trained industry professionals performing an analysis of the condition of a facility or group of facilities that may vary in terms of age, design, construction methods, and materials...
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TERMINOLOGY, TAXONOMY & ACRONYMITY

• OSPI: BCEF – Building Condition Assessment (BCA)
• GASB 34 – Federal Condition Assessment (FCA)
• ASTM 2018 – Property Condition Assessment (PCA)
• Navy & NASA Parametric FCA
• Facility Condition Index (FCI)
• Deferred Maintenance (DM)
• Backlog in Maintenance & Repair (BMAR)
• Current Replacement Value (CRV)
• Remaining Useful Life (RUL)
• Rapid Visual Inspection (RVI)

MUST MEASURE TO MANAGE
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Proactive Asset Management

CRADLE TO GRAVE?
What about the fun before the cradle?

Or the lingering memories of life after death?
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TEPCO’s Fukushima Legacy
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TOTAL BUILDING MANAGEMENT: CRADLE TO GRAVE?

or....

From Lust... to Dust...
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TOTAL BUILDING MANAGEMENT: CRADLE TO GRAVE?
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- Facility Condition Assessment
- Design Guidelines
- Eco Retrofit
- GPR Development

- SD - BOD
- DD - VA
- CD - CR/Cx

PLANNING

Facility Life Cycle

DESIGN

OPERATIONS & MAINTENANCE

CONSTRUCTION

- Post Occupancy
- Measurement & Verification
- CMMS
- Preventative Maintenance
- Owner Involvement

- Commissioning
- Training
- Systems Manual

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MENG Analysis
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FUNDAMENTAL FCA PROCESS

Condition

Collect Data

Analyze Data

Plan Budget Implement

Performance

“Fair”

“Excellent!”

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MENG Analysis
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1. Preparation
   • Facility List, Site & Floor Plans, Historical Data, O&M Workshop

2. Condition Surveys
   • Field Survey using RVI
   • Data Entry

3. Reporting
   • Analysis
   • Project Planning & Budgeting

Periodic Updates: 3 - 6 years
Basic & Enhanced FCA
Proactive Asset Management

FCA Roadmap

Milestones

May 3, 2016

MESSAGE

SOW
### Basic & Enhanced FCA Proactive Asset Management

**BUILDING CONDITION EVALUATION FORM**

<table>
<thead>
<tr>
<th>COMPONENTS</th>
<th>SYSTEMS</th>
<th>GOOD (1)</th>
<th>FAIR (2)</th>
<th>POOR (3)</th>
<th>UNSAT (4)</th>
<th>COMBINED</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 Exterior Building Condition</td>
<td>1.1 Foundation/Structure</td>
<td>+2</td>
<td>+6</td>
<td>+6</td>
<td>+4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2 Walls</td>
<td>+3</td>
<td>+5</td>
<td>+3</td>
<td>+1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.3 Roof</td>
<td>+7</td>
<td>+5</td>
<td>+2</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.4 Windows/Doors</td>
<td>+2</td>
<td>+1</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.5 Trim</td>
<td>+2</td>
<td>+1</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0 Interior Building Condition</td>
<td>2.1 Floors</td>
<td>+8</td>
<td>+5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.2 Walls</td>
<td>+3</td>
<td>+6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.3 Ceilings</td>
<td>+5</td>
<td>+3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.4 Fixed Equipment</td>
<td>+2</td>
<td>+1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.0 Mechanical Systems Condition</td>
<td>3.1 Electrical</td>
<td>+5</td>
<td>+4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.2 Plumbing</td>
<td>+4</td>
<td>+2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.3 Heating</td>
<td>+5</td>
<td>+4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.4 Cooling</td>
<td>+3</td>
<td>+2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.5 Lighting</td>
<td>+4</td>
<td>+2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.0 Safety/Building Code</td>
<td>4.1 Means of Exit</td>
<td>+9</td>
<td>+4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.2 Fire Control Capability</td>
<td>+4</td>
<td>+2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.3 Fire Alarm System</td>
<td>+4</td>
<td>+3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.4 Emergency Lighting</td>
<td>+2</td>
<td>+1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.5 Fire Resistant</td>
<td>+4</td>
<td>+3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Form 2.1 Interior Building – Floors**

- **County:** District
- **School:** Evaluators
- **Building:** Date

**Directions:** For each ITEM, circle the appropriate X in RATING COLUMNS (1) through (4) as indicated by the ITEM description. Circle only one answer. Transfer the result directly to the Building Condition Evaluation Form. In PART B of this form indicate the nature of the condition if other than good.

**PART A**

<table>
<thead>
<tr>
<th>#</th>
<th>ITEMS</th>
<th>RATINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ROUTINE MAINTENANCE: Routine maintenance is adequate to preserve quality of finishes and prevent premature aging.</td>
<td>X</td>
</tr>
<tr>
<td>2</td>
<td>MINOR REPAIR: Signs of wear apparent. Maintenance frequency may need to be improved or quality of maintenance may need to be improved.</td>
<td>X</td>
</tr>
<tr>
<td>3</td>
<td>MAJOR REPAIR: Significant signs of wear apparent. Material nearing end of service life. Replacement</td>
<td>X</td>
</tr>
</tbody>
</table>
### Basic & Enhanced FCA Proactive Asset Management

#### Active Buildings

<table>
<thead>
<tr>
<th>Building</th>
<th>Gross SqFt</th>
<th>Instr SqFt</th>
<th>SCAP SqFt</th>
<th>Classrooms</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Building</td>
<td>63,136</td>
<td>63,136</td>
<td>63,136</td>
<td>25</td>
<td>62.93</td>
</tr>
<tr>
<td>Portable 1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>not required</td>
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<tr>
<td>Portable 2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>not required</td>
</tr>
<tr>
<td>Portable 3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>not required</td>
</tr>
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</table>

#### Totals:

<table>
<thead>
<tr>
<th></th>
<th>4</th>
<th>63,136</th>
<th>63,136</th>
<th>63,136</th>
<th>29</th>
</tr>
</thead>
</table>

#### Ratings BCA Certified by Joel Davis on 2/24/2014

<table>
<thead>
<tr>
<th>Sub-Assembly</th>
<th>Component</th>
<th>Condition Rating</th>
<th>Component Score</th>
<th>Priority</th>
<th>Deficiencies</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Foundations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1010 Standard</td>
<td>Standard Foundation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Slabs on Grade</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A4010 Standard</td>
<td>Standard Slabs on</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Superstructure</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B1010 Floor Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B1020 Roof Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B1030 Stairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Exterior Vertical Enclosures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B2010 Exterior Walls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B2020 Exterior Windows</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B2050 Exterior Doors and Grilles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Exterior Horizontal Enclosures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B3010 Roofing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B3020 Roof Appurtenances</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Basic & Enhanced FCA  
Proactive Asset Management

## Building Inventory

<table>
<thead>
<tr>
<th>AREA YEAR BUILT</th>
<th>DISTRICT ASSIGNED AREA</th>
<th>GROSS BUILDING SQ FT</th>
<th>GROSS INSTRUCTIONAL SQ FT</th>
<th>SCAP RECOGNIZED SQ FT</th>
<th>ORIGINAL OCCUPANCY DATE</th>
<th>ORIGINAL BOARD ACCEPTANCE DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1923</td>
<td>Area A</td>
<td>54,706</td>
<td>54,706</td>
<td>54,706</td>
<td>3/21/2012</td>
<td></td>
</tr>
<tr>
<td>1923</td>
<td>Area D</td>
<td>5,386</td>
<td>5,386</td>
<td>5,386</td>
<td>3/21/2012</td>
<td></td>
</tr>
<tr>
<td>1923</td>
<td>Area B</td>
<td>67,008</td>
<td>67,008</td>
<td>67,008</td>
<td>3/21/2012</td>
<td></td>
</tr>
<tr>
<td>1923</td>
<td>Area L</td>
<td>18,646</td>
<td>0</td>
<td>0</td>
<td>3/21/2012</td>
<td></td>
</tr>
<tr>
<td>1923</td>
<td>Area C</td>
<td>58,645</td>
<td>58,645</td>
<td>58,645</td>
<td>3/21/2012</td>
<td></td>
</tr>
</tbody>
</table>

**Building Totals:** 204,391 185,745 185,745

## Building Components

<table>
<thead>
<tr>
<th>SUB-ASSEMBLY</th>
<th>COMPONENT</th>
<th>COMPONENT CODE</th>
<th>MAINTENANCE PRIORITY</th>
<th>CONDITION RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundations</td>
<td>Standard Foundation</td>
<td>A1010</td>
<td></td>
<td>62.00% Fair</td>
</tr>
<tr>
<td></td>
<td>Deficiencies:</td>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Causes:</td>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Deficiency Comments:</td>
<td>Wear and tear</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superstructure</td>
<td>Floor Construction</td>
<td>B1010</td>
<td>90.00% Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Roof Construction</td>
<td>B1020</td>
<td>90.00% Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stairs</td>
<td>B1080</td>
<td>90.00% Good</td>
<td></td>
</tr>
<tr>
<td>Exterior Vertical Enclosures</td>
<td>Exterior Walls</td>
<td>B2010</td>
<td>90.00% Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exterior Windows</td>
<td>B2020</td>
<td>0.00% Unsatisfactory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Deficiencies:</td>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Causes:</td>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Deficiency Comments:</td>
<td>Wood single glazed with wood frames at original construction. Double glazed aluminum windows at additions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exterior Doors and Grilles</td>
<td>B2050</td>
<td>0.00% Unsatisfactory</td>
<td></td>
</tr>
</tbody>
</table>
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Proactive Asset Management

1) THOROUGHNESS OF ORGANIZATION
UNIFORMAT II – ASTM
UniFormat™ – CSI

2) CONSISTENCY OF SCORING
1 – 5: Excellent - Unsatisfactory

3) TRACKING CONDITION SCORES OVER TIME
Consistent Replication of Assessment Process
WHY FCAs ???

- Government Reporting Requirements (GASB 34; 2% Rule)
- Lender Financial Risk Mitigation
- Pre-Purchase Due Diligence: Real Estate Negotiation
- Establish Lease Rate Models (i.e., O&M cost recovery)
- Establish Maintenance Reserve Funds
- Capital Planning
- O&M Planning
  
  Beyond the Curb Appeal: O&M Funding - Victims of Success
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PVC w/Hydranics???
System is at End of Useful Life
... but roof location Is out of sight, and Out of Mind.
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Pneumatic T-Stats
User Modifications
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Lift Station Debris
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Obsolete Technology Relay vs. Digital Elevator Controls
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Roof Drainage to Foundation
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Green Roofs

Painted Metal
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Basic & Enhanced FCA Proactive Asset Management

Group Exercise

<table>
<thead>
<tr>
<th>Interiors: Interior Finishes</th>
<th>Evaluation Criteria</th>
<th>Original System Date</th>
<th>Last Major System Renewal</th>
<th>Score (1-5)</th>
<th>Remaining Useful Life (Yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element</td>
<td>Description</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall Finishes</td>
<td>Description</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C3010</td>
<td>Description</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Describe the System

General Comments on the System
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FCA – Funding vs. FCI

Move your portfolio to left using FCA

Good!

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MAINTENANCE RESERVE FUNDS

2% Rule

110% Capital Funding

Do Nothing
  • Accelerated Deterioration
  • Cost Escalation
  • Compounded BMAR

CAPITAL CENTRIC
Facility Replacement
STRATEGIC ASSET MANAGEMENT

BE MORE THAN A SQUEAKY WHEEL
Enhance your Message
CREDIBLE DATA & COST PROJECTIONS

SHORT-TERM COST PROJECTIONS - ODs
LONG-TERM COST PROJECTIONS - PRs
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REPORTING COST PROJECTIONS

• **Observed Deficiencies (ODs)** are short term:
  - “Boots on Ground” observed by RVI
  - Major Maintenance >$5K
  - Under 5 to 6 years
  - Reactive

• **Predicted Renewals (PRs)** are long term:
  - Major Maintenance and Repair (MM&R)
  - Theoretically based costs on original date and system life
  - AKA “life cycle”
  - Proactive

May 3, 2016
### Basic & Enhanced FCA
Proactive Asset Management

#### Facility Summary Report

<table>
<thead>
<tr>
<th>Facility Code</th>
<th>Facility Size - Gross S.F.</th>
<th>23,800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year Of Original Construction</td>
<td>1981</td>
<td></td>
</tr>
<tr>
<td>Facility Use Type</td>
<td>Fire Station</td>
<td></td>
</tr>
<tr>
<td>Construction Type</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td># of Floors</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Energy Source</td>
<td>Gas</td>
<td></td>
</tr>
<tr>
<td>Year Of Last Renovation</td>
<td>2000</td>
<td></td>
</tr>
<tr>
<td>Historic Register</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

| Weighted Avg Condition Score | 3.1 |
| Facility Condition Index (FCI) | 0.21 |
| Current Replacement Value (CRV) | $11,345,000 |
| Beginning Budget Year | 2013 |

<table>
<thead>
<tr>
<th>Total Project Cost</th>
<th>Total Project Cost - Present Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicted Renewal Budget (6 yrs)</td>
<td>$2,388,000</td>
</tr>
<tr>
<td>Predicted Renewal Budget (20 yrs)</td>
<td>$6,207,000</td>
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<tr>
<td>Observed Deficiencies (6 yrs)</td>
<td>$690,000</td>
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<tr>
<td>Observed Deficiencies (ALL)</td>
<td>$874,000</td>
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<tr>
<td>Opportunity Total Project Cost</td>
<td>$1,202,000</td>
</tr>
</tbody>
</table>

May 3, 2016  MENG Analysis
# Basic & Enhanced FCA Proactive Asset Management

## Observed Deficiencies – Raw Costs

<table>
<thead>
<tr>
<th>Cond.</th>
<th>Material Useful Life Survey Year</th>
<th>Deficiency Condition Notes</th>
<th>Action</th>
<th>Qty</th>
<th>Unit Cost</th>
<th>Unit</th>
<th>Direct Construction Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2013</td>
<td>Old main distribution frame (MDF) transfer air cooling system interfering with new system. SCADA systems transfer air cooling is unreliable.</td>
<td>Demo or layup main distribution frame (MDF) transfer air system. Provide ductless split cooling for SCADA.</td>
<td>2</td>
<td>$3,000.00</td>
<td>ea</td>
<td>$6,000</td>
</tr>
<tr>
<td>4</td>
<td>2013</td>
<td>Shop air handling unit is past end of life.</td>
<td>Replace shop air handling unit. See &quot;Energy Supply&quot; Opportunity section for possible upgrade.</td>
<td>1</td>
<td>$15,000.00</td>
<td>ea</td>
<td>$15,000</td>
</tr>
<tr>
<td>4</td>
<td>2013</td>
<td>Roof well may be recirculating flue gas, exhaust, drain waste and vent (DW&amp;V) vent to roof (VTR) sewer gas, and shop exhaust to occupied spaces.</td>
<td>Reconfigure HVAC system to eliminate roof well short cycling effect.</td>
<td>11,700</td>
<td>$5.00</td>
<td>sf</td>
<td>$58,500</td>
</tr>
<tr>
<td>4</td>
<td>2013</td>
<td>Mix of old and new controls.</td>
<td>All newer controls plus retro-commissioning (Cx) and re-TAB (test, adjust, and balance).</td>
<td>11,700</td>
<td>$7.00</td>
<td>sf</td>
<td>$81,900</td>
</tr>
</tbody>
</table>

Total System Deficiency Repair Cost (Undiscounted/Unescalated): $161,400
Total System Deficiency Repair Cost (Present Value): $150,508
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RAW COSTS + MARKUPS = PROJECT COSTS

<table>
<thead>
<tr>
<th>System</th>
<th>Direct Construction Cost</th>
<th>Contingency 30%</th>
<th>Contractor's OH &amp; P 20%</th>
<th>Project Soft Cost 50%</th>
<th>Total Project Cost</th>
<th>Total Project Cost (Present Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior Closure</td>
<td>$20,400</td>
<td>$6,120</td>
<td>$5,304</td>
<td>$15,912</td>
<td>$47,736</td>
<td>$44,200</td>
</tr>
<tr>
<td>Interior Finishes</td>
<td>$7,000</td>
<td>$2,100</td>
<td>$1,820</td>
<td>$5,460</td>
<td>$16,380</td>
<td>$14,595</td>
</tr>
<tr>
<td>HVAC</td>
<td>$191,082</td>
<td>$57,325</td>
<td>$49,681</td>
<td>$149,044</td>
<td>$447,132</td>
<td>$406,137</td>
</tr>
<tr>
<td>Fire Protection</td>
<td>$24,776</td>
<td>$7,433</td>
<td>$6,442</td>
<td>$19,325</td>
<td>$57,876</td>
<td>$55,788</td>
</tr>
<tr>
<td>Electrical</td>
<td>$34,067</td>
<td>$10,220</td>
<td>$8,857</td>
<td>$26,572</td>
<td>$79,717</td>
<td>$70,918</td>
</tr>
<tr>
<td><strong>Facility Total</strong></td>
<td><strong>$277,325</strong></td>
<td><strong>$83,198</strong></td>
<td><strong>$72,105</strong></td>
<td><strong>$216,314</strong></td>
<td><strong>$648,941</strong></td>
<td><strong>$591,639</strong></td>
</tr>
<tr>
<td>Site Improvements</td>
<td>$124,965</td>
<td>$37,490</td>
<td>$32,491</td>
<td>$97,473</td>
<td>$292,418</td>
<td>$265,611</td>
</tr>
<tr>
<td><strong>Facility Total</strong></td>
<td><strong>$124,965</strong></td>
<td><strong>$37,490</strong></td>
<td><strong>$32,491</strong></td>
<td><strong>$97,473</strong></td>
<td><strong>$292,418</strong></td>
<td><strong>$265,611</strong></td>
</tr>
</tbody>
</table>

Project Soft Costs include:
- Design Fees 13%
- SnoCo Management 10%
- Permitting 2%
- Project Contingency 15%
- Art 1%
- Sales Tax 9%

$941,359 $857,250

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<table>
<thead>
<tr>
<th>Facility</th>
<th>Costs ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Safety Building</td>
<td>15,938,228</td>
</tr>
<tr>
<td>City Hall Building</td>
<td>10,496,676</td>
</tr>
<tr>
<td>Old Redmond School House Community Center Building</td>
<td>7,885,682</td>
</tr>
<tr>
<td>Fire Station 11 Building</td>
<td>5,505,974</td>
</tr>
<tr>
<td>Senior Center Building</td>
<td>3,847,195</td>
</tr>
<tr>
<td>Hartman Park Swimming Pool Building</td>
<td>2,406,942</td>
</tr>
<tr>
<td>Sammamish River Business Park Building 2</td>
<td>2,307,485</td>
</tr>
<tr>
<td>Sammamish River Business Park Building 1</td>
<td>2,211,770</td>
</tr>
<tr>
<td>Trinity Building</td>
<td>2,041,082</td>
</tr>
<tr>
<td>Old Fire House Teen Center Building</td>
<td>1,846,971</td>
</tr>
<tr>
<td>Fire Station 16 Building</td>
<td>1,666,019</td>
</tr>
<tr>
<td>Maintenance Operations Center Building 1 Building</td>
<td>1,463,733</td>
</tr>
<tr>
<td>Fire Station 14 Building</td>
<td>1,423,631</td>
</tr>
<tr>
<td>Fire Station 13 Building</td>
<td>1,309,856</td>
</tr>
<tr>
<td>Fire Station 12 Building</td>
<td>1,115,970</td>
</tr>
<tr>
<td>Municipal Campus Parking Garage Building</td>
<td>1,011,989</td>
</tr>
</tbody>
</table>
Basic & Enhanced FCA
Proactive Asset Management

ODs by System

<table>
<thead>
<tr>
<th>System</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVAC</td>
<td>6,741,021</td>
</tr>
<tr>
<td>Electrical</td>
<td>3,118,370</td>
</tr>
<tr>
<td>Plumbing</td>
<td>2,385,951</td>
</tr>
<tr>
<td>Exterior Closure</td>
<td>1,885,365</td>
</tr>
<tr>
<td>Roofing</td>
<td>1,524,059</td>
</tr>
<tr>
<td>Fire Protection</td>
<td>1,395,562</td>
</tr>
<tr>
<td>Interior Finishes</td>
<td>1,351,820</td>
</tr>
<tr>
<td>Site Improvements</td>
<td>790,350</td>
</tr>
<tr>
<td>Interior Construction</td>
<td>711,609</td>
</tr>
<tr>
<td>Vertical Transportation</td>
<td>519,398</td>
</tr>
<tr>
<td>Superstructure</td>
<td>352,945</td>
</tr>
<tr>
<td>Foundations</td>
<td>249,171</td>
</tr>
<tr>
<td>Special Construction</td>
<td>160,010</td>
</tr>
<tr>
<td>Site Civil / Mechanical Utilities</td>
<td>85,019</td>
</tr>
<tr>
<td>Site Electrical utilities</td>
<td>47,611</td>
</tr>
<tr>
<td>Furnishings</td>
<td>43,480</td>
</tr>
<tr>
<td>Equipment</td>
<td>36,254</td>
</tr>
<tr>
<td>Staircases</td>
<td>35,112</td>
</tr>
</tbody>
</table>

Exhibit B – Observed Deficiency Costs – by System
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Predicted Renewals
Long-Term Liabilities

Renewal Model Factors:
• Age of System;
• Condition Scores;
• Typical Lifecycle;
• Adjusted Lifecycles;
• CRVs
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• By Building or Use Type
  • Public Safety
  • Revenue Generating
  • General Use

• By System Type
  • Life/safety
  • Productivity

Priorities
1.
2.
Prioritization of Deficiencies

- Energy and sustainability
- Life safety
- Appearance
- Code compliance
- ADA
- Security
- Program - additional amenity
- Program space efficiency

Marked Up Deficiency Cost PV

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RAISING THE BAR

Messaging Need:
• Project Packaging
• Prioritization

Opportunities: “Step up” with non-condition related improvements.
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OPPORTUNITIES

FCA Opportunities – A chance to do better

- Non-required Code/ADA
- Energy/Utility Conservation
- Improved facility utilization
- Increased safety & security (CPTED)
- Speed-up technology
- Improved IAQ
- Environment

Step-up!
ENHANCEMENTS

- Infrared Thermography
- Seismic ASCE 41 Checklist
- ADA Assessments
- Energy Audits
- CPTED/Security Audits
- Inventory/CMMS
- Critical Areas / Risk Assessments
- Preventive Maintenance Analysis
- Building Envelope - Air Barrier Testing
- Planning: Utilization; Level of Service; Educational Adequacy
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ENERGY COMPARSION - EUI

Source EUI (kBtu/ft²)

- PM Median Source EUI
- National Median Source EUI

Some building types excluded due to inadequate data and/or EUI values beyond this range
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SPS EUI vs ECI

Plan

EUI (kbtu/sf-yr)

ECI ($/sf-yr)

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- Asset Management – from reactive to proactive
- Performance Assessment – fact based decision making
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ISO: 55000

Figure 1: The typical priorities and concerns evident when integrating and managing assets and asset systems.
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Performance Assessment!
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Take Aways

Basic Condition Assessments: Condition Based; Qualitative
Enhanced FCA: Condition; Quantitative Costs; Options.... +, +, +,

Effective Messaging of ...
Financial Risks & Liabilities
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Please Remove from FCA survey list!

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Questions?

Joel Davis, MA, MBA
joel@menganalysis.com
206-587-3797

Doug Smith, PE, CSBA
doug@menganalysis.com
206-587-3797