Facility Condition Assessments
How to Convince Elected Officials to Invest in Public Buildings
2005 APWA International Public Works Congress

Today’s Speakers

• Mark Greenspan
  – General Services Director, City of Durham, North Carolina
• Nina Strong
  – Project Manager, Carter Burgess, Ft. Worth, Texas

Session Agenda

• City Environment
• Why is Maintenance Deferred
• Definitions
• Effective Management of Facility Assets
• Condition Assessment
• Project Approach
• Things to Consider
• Reporting
• Analysis
• City Results
Our Reality

- Distrust between elected officials and City administration
- Negative media relations
- Maintenance budget reduced over the prior 5 years to balance the budget
- No capital improvement funding for renovations and renewal
- Public criticism concerning the condition of public facilities especially parks
- No system to quantify condition of facilities
- Maintenance planning based on "who screams the loudest"
- Public discussion was often one of blame
- Deteriorating facilities
  - safety hazards, poor service to the public, higher costs in the future, and inefficient operations
What the media was saying

Concrete falls at parking deck
City ropes off 40 species after some chunks break off

City closing E.D. Hinkle Rec Center
High levels of airborne mold found in building’s basement

B貌似 city parks slow to heal
Repairs will take time and money, official tells group

Theater repairs take center stage
• Work may be over by Sept. 29, but who’ll absorb the losses?

Definitions

• Federal Accounting Standards Advisory Board provides the following definitions:
  – Maintenance is the act of keeping fixed assets in acceptable condition. It includes preventive maintenance, normal repairs, replacement of parts and structural components, and other activities needed to preserve the asset so that it continues to provide acceptable services and achieves its expected life. Maintenance excludes activities aimed at expanding the capacity of an asset or otherwise upgrading it to serve needs different from, or significantly greater than, those originally intended.
  – Deferred is “maintenance that was not performed when it should have been or was scheduled to be and which, therefore, is put off or delayed for a future period.”

Why is Maintenance Deferred

• A focus on design and construction costs, the so-called first costs of facilities ownership, as opposed to life-cycle costs.
• Maintenance competes for funding with other programs and is often deferred because appropriations are not available or were redirected to other priorities or projects.
• Aging facilities require increased levels of maintenance and repair to keep them operating effectively.
• Lack of information that would assist facilities program managers in making compelling arguments for maintenance and repair budgets to decision makers.
• Lack of accountability for stewardship
  – Unless a roof actually falls in, elected officials are not likely to be held accountable for the condition of a facility in any given year.

Effective Management of Facility Assets

Condition Assessment

- Process:
  - Standardized inspection methodology
  - Documentation of current and anticipated deficiencies
  - Established cost data
  - Process Characteristics
    - Flexibility
    - Wide range of facilities
    - Multiple levels of detail
    - Consistency
    - Repeatability
- Benefits:
  - Identifies maintenance and repair requirements
  - Develops a Facility Condition Index (FCI)
  - Provides a common evaluation across all Assets
  - Establishes Infrastructure baseline
  - Utilizes a cost effective inspection process

Condition Assessment Project

Approach

Step 1: Condition Assessment Planning
Step 2: On-Site Investigation and Survey
Step 3: Conditions Documentation/ Reporting
Step 4: Analysis of Assessment Information
Step 1: Facility Condition Assessment Planning

- Gather Information: Floor Plans, Historical Data, Building Contacts, Asset Inventory, Prior Inspection Reports
- Planning Workshop: Discuss Scope of Work, Facility Access, Restricted Areas, In-house vs. Contractor Criteria
- Develop Tentative Inspection Schedule

Step 2: Field Investigation and Survey

- Thorough Visual Inspection by Discipline
- Item (Component) and System Inspection
- Use On-Site Knowledge
- Immediate Notification for Urgent Items
- Gather Information for Maintenance Cycles and Life Cycles

What Does it Include?

The Facility Condition Inspection is a thorough visual inspection of the following systems by qualified personnel:

- Architectural
- Structural
- Roof
- Civil
- Electrical
- Mechanical
- Plumbing
- Environmental
- ADA/Code Compliance
### How long will it take?

The amount of time needed for the assessment is dependent on a variety of factors:
- Level of Detail desired by the client
- Number and Size of Facilities
- Availability of records
- Accessibility
- Facility Complexity
- Allocated resources
- Client’s Critical Dates

### Step 3: Facility Conditions Documentation

- Analyze Data Collected in the Field
- Determine Maintenance Cycles and Life Cycles
- Standard Pricing and Corrective Actions
  - Sources
    - R.S. Means
    - Contractor Data
    - Inclusion of Demolition and Removal Costs
- For each Deficiency Identify:
  - Priority, Work Type, System, Location, Corrective Action, Cost, Craft
- Separate Report for each Facility/Asset by Inspection Type


- Provides a detailed database of deficiencies, priorities, and estimated costs.
- Categorizes deficiencies by location, priority, deficiency type, etc.
- Provides estimates of level of annual funding levels needed to maintain facilities at specified condition ratings.
- Identifies specific items identified for future detailed investigation.
- Calculates indices that provide a normalized empirical measure to compare conditions of buildings, i.e., FCI.
### What is the deficiency?

- Common terms
- Standard units of measure
- Format
- Specific fields

### How may the deficiency be remedied?

- Common actions
- “Colors” of money
  - deferred
  - cyclic
  - safety
  - mandated
  - life cycle
  - maintenance

### How much will it cost in labor and materials?

- Cost in dollars / labor / materials
- Standard scenarios
  - demolition
  - set-up
  - clean-up
- Cost ranges (size of scope)
- Unique issues
### When should it be remedied?

- **Priority Year (0-10)**
  - 0 - life/safety
  - 1 - impact on mission or contents
  - 2-5 - no immediate impact (continue to evaluate)
  - 6-10 - components or systems to replace based on condition and remaining life
- **Ranking within a year**

### Who should accomplish the work?

- Site staff
- Contractor
- Service provider

### Step 4: Analysis of Assessment Information

- Separate report per facility/asset
- Each action to include
  - priority
  - color of money
  - system
  - location
  - action
  - cost
Things to Consider

- Bundle actions into projects
- Include special studies
- Capital improvements
- Operations and maintenance

Summary Reports

- Craft Cost
- Deficiency Type
- Work Type
- System Cost
- Client Specific: Funding Sources

Total Cost by Work Type

- Deferred Maintenance ($4,176,400) 15%
- Cyclic ($3,731,811) 15%
- Component Renewal ($1,383,222) 4%
- Capital Asset Replacement Plan ($18,890,021) 68%
- Other ($138,330) 0%
Detailed Reports

- Multi-Year Plans
- Annual Work Plans
- Project Breakdown Plans

Results of Reporting

- Have I made my case?
- Who cares?
- What do they care about?
- How do we make them care?

Facility Condition Index (FCI)

The FCI was designed to be a quantitative method of uniformly comparing and monitoring groups of comparable facilities over time.

\[ FCI = \frac{\text{Cost of M&R Deficiencies}}{\text{Current Replacement Value}} \]

<table>
<thead>
<tr>
<th>FCI Range</th>
<th>Condition Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 0.05 (5%)</td>
<td>Good</td>
</tr>
<tr>
<td>Between 0.05 (5%) – 0.10 (10%)</td>
<td>Fair</td>
</tr>
<tr>
<td>Over 0.1 (10%)</td>
<td>Poor</td>
</tr>
</tbody>
</table>
Analysis

- Turning data into information
- Make the best business case not the worst case
- Create standard metrics
- Create standard reporting
- Prepare to answer all questions

Unconstrained Planning

Multi-Year Maintenance & Repair Plan by Work Type

Deferred Maintenance

Component Renewal

Capital Asset Plan

Cyclic

Other

Constrained Planning (continued)

Multi-Year Maintenance & Repair Plan by Work Type
Backlog and Funding Projections

- Determine future condition based on planned funding
- Predict funding required to achieve desired condition

Backlog Projection Model

Funding Projection Model
Annual Maintenance Redesign
Deferred Maintenance – Manage at the Source

Financial Model

- Condition Assessment
- Annual Maintenance
- Component Renewal
- Statutory Regulatory Requirements
- Functional Obligations

Deferred Maintenance Need

Asset Condition Improves if... Z > (A + B + C + D)

City Results

- City FYA:
  - $375,000 in consultant fees
  - 1.6 million square feet
  - 158 buildings, 63 parks, 49 playgrounds, 15 miles of trails 4 parking decks
  - Received a 1,500 page report
  - City buildings:
    - 44% poor / 20% fair / 36% good
  - Funding of $60 to $70 million in deferred maintenance and systems renewal needed over the next 10 years
- Fiscal Year 2004 - $10 million in funding for high priority repairs
- Fiscal Year 2005 - $48.5 million in proposed General Obligation Bond
- No additional maintenance funds

What is the Media Saying

- Residents to help ID park needs
- Neighborhood leaders’ input sought on maintenance
- Big fix-up bill due on city properties
- Council gets big repair estimate
- Consultant says nearly half of city’s buildings are ‘poor’
- City eyes possible bond vote in 2004
- Money would fund long-term building, maintenance needs
- Panel balks at spending package
- Group recommends bond for maintenance, doesn’t agree on larger issues
- Group advises $271M in big city projects
- Bond money would go to repairs, parks, road paving
- $120M bond issue OK’d for Nov. ballot
- Council nixes plan to add money for Fayetteville Street
Lessons Learned

- Software is the key
  - CMMS interface
  - Flexible reporting
  - Capital project planning
    - Multi-year plans
    - Easily bundle deficiencies into projects
    - Ability to update cost data
    - Analyze funding scenarios to evaluate impact on FCI

For Additional Information

- Nina Strong
  - Telephone (817) 735-2850 or e-mail Nina.strong@c-b.com
- Mark Greenspan
  - Telephone (919) 560-4197 or e-mail Mark.Greenspan@durhamnc.gov