

Conference for Catholic Facility Management

G460



What are Facility Condition Assessments (“FCA”), and How Can They Enhance Your Understanding of Your Facilities? SAV1506

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Course Description

A Facility Condition Assessment (“FCA”) is the industry standard for the analysis of the condition of a facility or group of facilities that may vary in terms of age, design, construction methods, and materials. This course will focus on the proper methods to design an FCA to identify use, condition, and alignment with an institution's goals. In addition, the best methods of collecting, documenting, and analyzing the audit data will be reviewed.

Learning Objectives

At the end of the this course, participants will be able to:

1. At the end of the program, participants will be able to understand what a Facility Condition Assessment (“FCA”) is and why a FCA should be conducted, using industry examples and a case study.
2. At the end of the program, participants will be able to understand the differences between a Capital Plan versus a Maintenance Plan and how they work together, using case study examples.
3. At the end of the program, participants will be able to understand a Facility Condition Index (“FCI”) as a key measure for prioritizing capital projects, using examples.
4. At the end of the program, participants will be able to understand how a Facility Condition Assessment (“FCA”) can assist a facility manager in assembling a long range Capital Plan, using case study examples

What is a Facility Condition Assessment

ASTM Standard 2018

- FCA – Facility Condition Assessment
- PCA – Property Condition Assessment
- PNA – Physical Needs Assessment
- BER – Building Evaluation Report.
- Purpose: The purpose of this guide is to define good commercial and customary practice in the United States of America for conducting a baseline property condition assessment (PCA) of the improvements located on a parcel of commercial real estate by performing a walk-through survey and conducting research as outlined within this guide.

ASTM Standard 2018

- Standard Guide for Property Condition Assessments:
 - Baseline Property Condition Assessment Process.
- Purpose: The purpose of this guide is to define good commercial and customary practice in the United States of America for conducting a baseline property condition assessment (PCA) of the improvements located on a parcel of commercial real estate by performing a walk-through survey and conducting research as outlined within this guide.

Other Applicable Standards

- ASHRAE
 - 90.1 Energy
 - 62.1 Building Indoor Air (ventilation standards)
- NFPA
- ADA
- BOMA

Other Applicable Standards

- Average Building Age in the U.S. is 41 years
 - U.S. Department of Energy
- Average School Age over 40 (NCES)

Table 2.—Percent of schools in oldest, moderate, and newest condition, by the year built and last major building renovation

| Year of last major renovation | Total | Year built | | | |
|-------------------------------|------------|-------------|-----------|-----------|---------------|
| | | Before 1950 | 1950–1969 | 1970–1984 | 1985 or after |
| Total | 100 | 26 | 46 | 19 | 10 |
| Never | 27 | 2 | 12* | 8 | 6 |
| Before 1980 | 17 | 9 | 7 | 1 | — |
| 1980–1989 | 17 | 5 | 8 | 3 | 1 |
| 1990–1995 | 39 | 10 | 19 | 7 | 2 |

Schools in the “oldest” condition.
 Schools in the “newest” condition.
 — Not applicable.

Why Conduct an FCA

- Planning
- Code Compliance
- Forecasting
- Preventive Maintenance vs. Reactive

Who Benefits

- Facility Managers
- Maintenance Personnel
- Administrative Staff
- Students
- Parishioners
- Contractors Executing Projects

Desired Outcomes

- Insight into Immediate needs
- Visibility into systems life-cycle replacement
- Consolidated Capital Plan
 - Maintenance
 - Capital Projects
 - Life Cycle Replacement
- A developed sustainable Funding Model

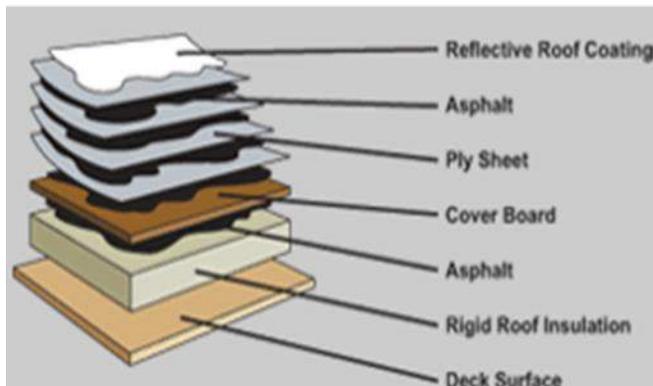
Building Systems

- Non-Building Campus Infrastructure
- Wall Evaluation
- Roofing (Non-Invasive Visual)
- Plumbing
- HVAC
- Electrical
- Elevators + Vertical Transportation
- Life Safety/Fire Protection
- Interior Elements
- Accessibility Compliance
- Code Compliance
- Mold

Typical Detail on Roofing

Common roof compositions:

- Shingled: Small units of material which are laid in a series of overlapping rows as a roof covering on pitched roofs.
- Built-up: constructed on the roof using layers of component materials such as felts and asphalt.
- Membrane: flexible sheets of compounded synthetic materials, manufactured offsite and secured to a roof deck over insulation.



Typical Detail on Roofing

Assessment identifies:

- Material roof systems (exposed membrane and flashings)
- Slope and drainage
- Oriented Strand Board (OSB) damage
- ponding or leaks
- Seam/lap failure
- Ridging, blistering
- Deterioration, “alligatoring”



Typical Detail on HVAC

- Confirm information given by maintenance contractor
- Determine what areas are served by what equipment , identify Owner vs. tenant responsibility
- Determine estimated and remaining useful life (EUL, RUL)
 - Split systems, Rooftop units, Heat Pumps
 - Boilers Cooling Tower, Chiller, Condenser Units
 - Fan Coil and Air Handling Units
 - Packaged Terminal Air Conditioners (PTAC)



Building Envelope

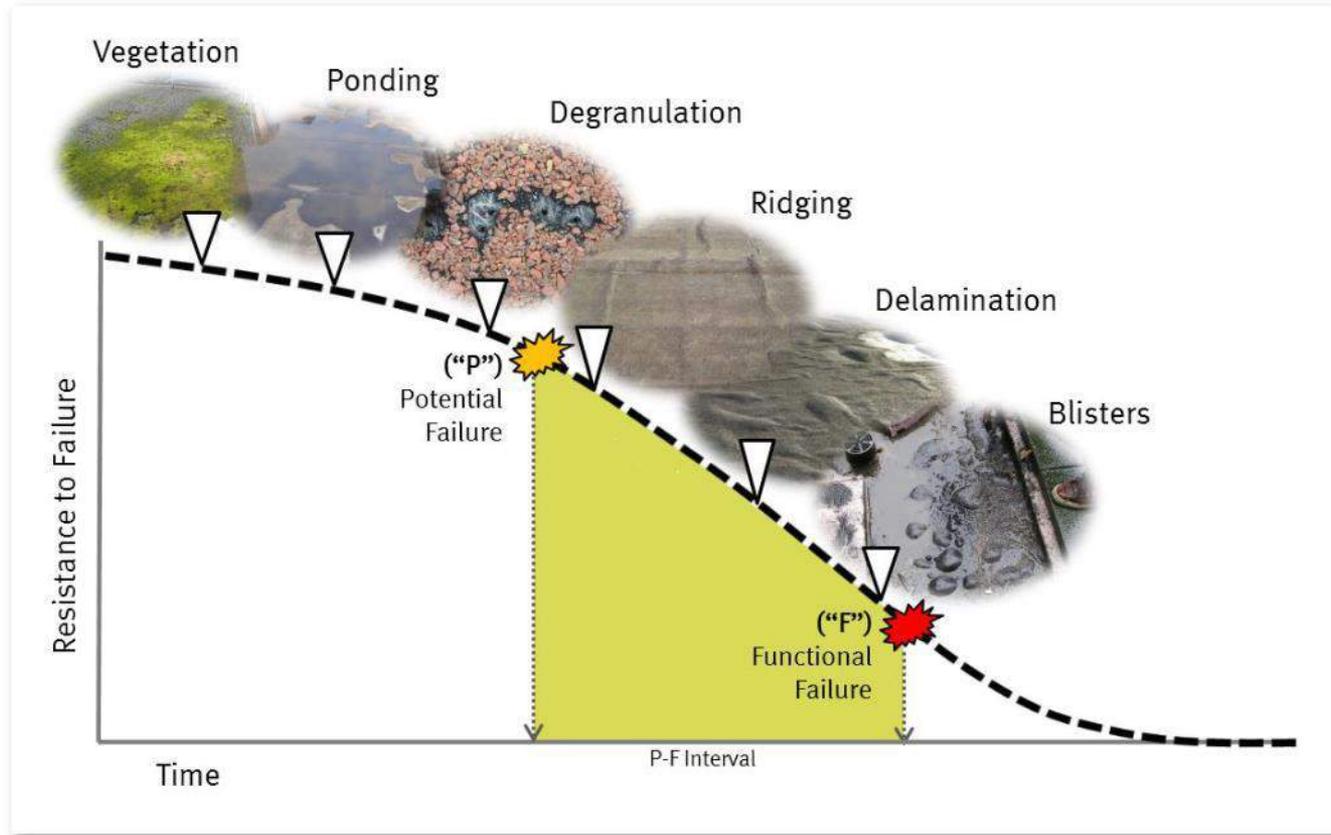
- Inspect for Cracking
- Bulging/Vertical displacement
- Evidence of moisture infiltration
- Sealant joints around openings and penetrations (e.g. window caulking)



Lifecycle

| MECHANICAL – ELECTRIC – PLUMBING ITEMS | Multifamily / Coop | Senior | Student |
|---|-------------------------------|---------------|----------------|
| Heating Water Circulating Pumps | by size | by size | by size |
| Heating Water Controller | 15 | 15 | 15 |
| Hot and Cold Water Distribution | 50 | 50 | 50 |
| HVAC | | | |
| Pad/ roof condenser | 20 | 20 | 20 |
| A/C window unit or through wall | 10 | 10 | 10 |
| Fan coil unit, electric | 20 | 20 | 20 |
| Fan coil unit, hydronic | 30 | 30 | 30 |
| Furnace (electric heat with A/C) | 20 | 20 | 20 |
| Furnace (electric heat with A/C) | 20 | 20 | 20 |
| Furnace (gas heat with A/C) | 20 | 20 | 20 |
| Packaged terminal air conditioner (PTAC) | 15 | 15 | 15 |
| Packaged HVAC (roof top units) | 20 | 20 | 20 |
| Heat pump condensing component | 20 | 20 | 20 |
| Heater, electric baseboard | 25 | 25 | 25 |
| Heater, wall mounted electric or gas | 20 | 20 | 20 |
| Hydronic heat/ electric A/C | 20 | 20 | 20 |
| Line Dryers | 15 | 15 | 15 |
| Master TV System | 10 | 10 | 10 |
| Motorized Valves | 12 | 12 | 12 |
| Outdoor Temperature Sensor | 10 | 10 | 10 |
| Pneumatic lines and Controls | 30 | 30 | 30 |

Lifecycle



Condition and Priority

| | |
|--|--|
| <p>GOOD (G)</p> <p>Component or system is sound and performing its function. However, it may show signs of normal wear and tear, commensurate with its age; some minor remedial work may be required.</p> | <p>FAIR (F)</p> <p>Component or system is performing adequately at this time but exhibits deferred maintenance, evidence of previous repairs, workmanship not in compliance with commonly accepted standards, is obsolete, or is approaching the end of its typical expected useful life.</p> <p>Repair or replacement is required to prevent further deterioration, restore it to good condition, prevent premature failure, or to prolong its expected useful life.</p> <p>Component or system exhibits an inherent deficiency of which the cost to remedy is not commensurate with the deficiency but is best remedied by a program of increased preventative maintenance or periodic repairs.</p> |
| <p>POOR</p> <p>Component or system has either failed or cannot be relied upon to continue performing its original function as a result of: having realized or exceeded its typical expected useful life, excessive deferred maintenance, state of disrepair, an inherent design deficiency or workmanship.</p> <p>Present condition could contribute or cause the deterioration of contiguous elements or systems. Repair or replacement is required.</p> | <p>N/A</p> <p>Not Applicable</p> |

Cost Estimating

| ITEM | UNIT | QUANTITY | UNIT COST | TOTAL |
|--|---------|----------|--------------|--------------|
| Shop Drawing, Submittals and Design Drawings | allow | 1 | \$ 2,400.00 | \$ 2,400.00 |
| Boiler Delivery and Rigging | allow | 1 | \$ 2,500.00 | \$ 2,500.00 |
| Misc Site and Finish Restoration | allow | 1 | \$ 2,500.00 | \$ 2,500.00 |
| Excavate floor area as necessary for boiler placement | cy | 15 | \$ 380.00 | \$ 5,700.00 |
| Selective demolition and or in place abandonment of existing piping, controls and systems as required to install the new boiler systems. | manhour | 43 | \$ 125.00 | \$ 5,375.00 |
| Proper Disposal of debris and materials at end of the project and daily | allow | 1 | \$ 3,860.00 | \$ 3,860.00 |
| Install new feed water piping | manhour | 25 | \$ 125.00 | \$ 3,125.00 |
| Cutting, drilling and saw cutting | allow | 1 | \$ 1,400.00 | \$ 1,400.00 |
| Boiler Foundation and attachment | allow | 1 | \$ 4,800.00 | \$ 4,800.00 |
| Boiler Equipment | each | 1 | \$ 64,987.00 | \$ 64,987.00 |
| Installation of new natural gas-fired steam boiler | manhour | 148 | \$ 125.00 | \$ 18,500.00 |
| Breeching and Flue Equipment | each | 1 | \$ 6,800.00 | \$ 6,800.00 |
| Installation of Breeching and Damper Controls | manhour | 33 | \$ 125.00 | \$ 4,125.00 |
| Installation of Exhaust Flue | manhour | 20 | \$ 125.00 | \$ 2,500.00 |
| Internal building piping to existing steam piping | LF | 45 | \$ 80.00 | \$ 3,600.00 |
| Tie into to manifolds at buildings E, G and R | each | 3 | \$ 4,500.00 | \$ 13,500.00 |
| Steam Tunnel Piping to buildings E,G and R | LF | 100 | \$ 65.00 | \$ 6,500.00 |
| Insulate new low pressure steam lines through tunnels | manhour | 13 | \$ 125.00 | \$ 1,625.00 |

Outcomes

Building Equipment / System Detail

Observation Details - Obs #303906

Mark as Completed

Delete

| | |
|-----------------|--|
| Description: | D1011 - Elevator, passenger, hydraulic, 4000 lbs, 2 stop |
| Manufacturer: | Otis |
| Model: | HVP4000 |
| Serial Number: | 2550118P |
| Category: | Conveying Systems / Elevators / Passenger Elevators |
| Location: | Center of facility |
| Condition: | Poor |
| Report Section: | 3.5 |
| Comments: | The elevator machinery and controls are the originally installed system in 1976 and are beyond expected useful life. Based on its estimated Remaining Useful Life (RUL), the elevator equipment will require replacement during the assessment period. |
| Created: | mionski1 on 11/15/2014 8:27:38 PM |
| Last Modified: | tseiler on 11/23/2014 11:35:10 AM |



| Cost Estimate | |
|---------------|-----------------|
| Quantity | 1.00 Each |
| Unit Cost* | \$73,400.00 |
| Subtotal | \$73,400 |

* Includes Soft Costs and Mark-ups.

| Replacement Cycle | |
|----------------------|-----------------|
| Replacement Years | 2017 |
| RUL | 2 years |
| | |
| Age / Lifespan (EUL) | |
| EAge | 23 years |
| Lifespan (EUL) | 25 years |

Immediate Repairs Report

Immediate Repairs Report
Courthouse
2/2/2015

| ID | Cost Description | Quantity | Unit | Unit Cost | Subtotal | Deficiency Repair Estimate * |
|--------------------------------|---|----------|---------|-----------|-----------|------------------------------|
| 303849 | Concrete slab repair, interior | 30 | SY | \$357.93 | \$10,738 | \$10,738 |
| 303856 | Remove and replace wrought iron railings | 20 | LF | \$207.50 | \$4,150 | \$4,150 |
| 303847 | Replace metal soffit material | 1120 | SF | \$10.90 | \$12,208 | \$12,208 |
| 303855 | Misc. roof shingles and gutter repairs | 10 | Patch | \$175.00 | \$1,750 | \$1,750 |
| 303853 | Single Ply EPDM Roofing system with Ballast 45 mills, including demo | 96 | SQ | \$677.00 | \$64,992 | \$64,992 |
| 303854 | Replace precast concrete coping, 12" wide | 360 | LF | \$80.88 | \$29,117 | \$29,117 |
| 303848 | Wood trim replacement | 720 | LF | \$12.85 | \$9,252 | \$9,252 |
| 303859 | Stair railing and guardrails with spacing more than 4 inch max., revise | 120 | LF | \$44.80 | \$5,376 | \$5,376 |
| 303908 | Lighting System, replace | 37396 | SF | \$4.25 | \$158,933 | \$158,933 |
| 303910 | Overlay asphalt | 20 | 1000 SF | \$921.00 | \$18,420 | \$18,420 |
| Immediate Repairs Total | | | | | | \$314,936 |

* Location Factor (1.0) included in totals.

Prioritized Capital Plan

| Sum of Est. Cost | | Est. Completion Year | |
|-----------------------|--------------------------------|----------------------|---------------------|
| System Category | System | 2014 | Grand Total |
| Interior Finishes | Concrete | \$10,738.01 | \$10,738.01 |
| Interior Finishes | | \$10,738.01 | \$10,738.01 |
| Interior Construction | Metal Stair Railing | \$4,149.94 | \$4,149.94 |
| Interior Construction | | \$4,149.94 | \$4,149.94 |
| Roofing | Wood Trim - Cornice | \$9,253.44 | \$9,253.44 |
| | Soffit - Metal | \$12,200.83 | \$12,200.83 |
| | Shingles | \$1,750.03 | \$1,750.03 |
| | Single Ply EPDM | \$64,992.15 | \$64,992.15 |
| | Coping - Precast Concrete 12"W | \$29,115.94 | \$29,115.94 |
| Roofing | | \$117,312.39 | \$117,312.39 |
| Electrical | Electrical - Lighting | \$158,933.60 | \$158,933.60 |
| Electrical | | \$158,933.60 | \$158,933.60 |
| Grand Total | | \$291,133.94 | \$291,133.94 |

Facility Condition Index

$$\text{FCI} = \frac{\$ (\text{cost of Immediate Repairs} + \text{Deferred Maintenance})}{\$ (\text{current replacement value})}$$

Highest 10 Facility Condition Index

| Location | Backlog | CRV | FCI |
|-------------------------|----------------|-----------------|--------|
| Administration Building | \$5,203,980.00 | \$17,131,320.00 | 30.38% |
| Correctional Facility | \$4,412,160.00 | \$14,896,800.00 | 29.62% |
| Courthouse | \$291,133.94 | \$5,570,807.33 | 5.23% |
| Courthouse - Annex | \$491,940.00 | \$11,172,600.00 | 4.40% |
| Library | \$721,440.00 | \$26,172,000.00 | 2.76% |

Preparing an RFP

- APPA
- CEFPI
- ASTM

Optional Items

- Inventory
- Barcoding
- CAD drawings
- Specialty studies
 - Elevator
 - Fire and Life-safety
 - Space Planning (school specific)
- Historic Preservation
- Cash Flow Analysis
- ADA
- Structural Analysis
- Energy Audits

Case Study: Archdiocese of Chicago

Table of Contents

| PROPERTY CONDITION | |
|--|-----------|
| EVALUATION | |
| | 125827 |
| TABLE OF CONTENTS | |
| Certification | 1 |
| 1. Executive Summary | 2 |
| 1.1. Property Information and General Physical Condition | 2 |
| 1.2. Special Issues and Follow-Up Recommendations | 5 |
| 1.3. Opinions of Probable Cost | 5 |
| 1.3.1. Methodology | 6 |
| 1.3.2. Immediate Repairs | 6 |
| 1.3.3. Replacement Reserves | 6 |
| 2. Purpose and Scope | 8 |
| 2.1. Purpose | 8 |
| 2.2. Scope | 8 |
| 2.3. Personnel Interviewed | 9 |
| 2.4. Documentation Reviewed | 10 |
| 2.5. Pre-Survey Questionnaire | 10 |
| 2.6. Weather Conditions | 10 |
| 3. Code Information | 11 |
| 3.1. Code Information, Flood Zone and Seismic Zone | 11 |
| 4. Existing Building Assessment | 12 |
| 4.1. Building Types | 12 |
| 4.2. Buildings Observed | 12 |
| 5. Site Improvements | 13 |

System Level Reporting

5.5. GENERAL SITE IMPROVEMENTS

Property identification is modest. Signage is in place at the Cathedral and building identification is provided at the primary entrance to the respective buildings.

Site lighting is provided by municipal street light standards.

Exterior building illumination is provided by light fixtures surface-mounted on the exterior walls and by pole lights mounted in the parking lot.

A painted iron fence with gates is located at each entrance to the courtyard and ancillary service alleys.

Trash containers are located in service alleyway between the BVM Convent and the Parish Center.



Observations/Comments:

- The property identification signs are in fair condition. The signage at the Cathedral requires repair. Routine maintenance will be required during the assessment period. The cost of this work is also included in the Immediate Repairs Cost Estimate (Table 1).
- There is inadequate directional signage to handicapped entrances at the Cathedral, School, and Parish Center. The cost of this work is also included in the Immediate Repairs Cost Estimate (Table 1).
- The exterior site and building light fixtures are in good condition. Routine maintenance will be required during the assessment period.
- The site fencing is in good condition and will require routine maintenance during the assessment period. Painting is considered to be routine maintenance.

7.2 BUILDING PLUMBING AND DOMESTIC HOT WATER

The plumbing systems include the incoming water service, the cold water piping system, and the sanitary sewer and vent system. The risers and the horizontal distribution piping are galvanized. The soil and vent systems are cast iron with some copper waste lines.

The water meters are located in vaults adjacent to the public streets.

Domestic hot water is supplied by electric and gas-fired water heaters. The restrooms have commercial-grade and residential-grade fixtures and accessories including water closets and lavatories.

Observations/Comments:

- The sewage ejectors are currently functional. However, due to their age and operational importance we recommend they be re-built during the evaluation period. We have included the estimated cost in the Replacement Reserves Cost Estimates (Table 2).
- Floor drains have collapsed traps and do not provide drainage. We recommend replacement of the piping. We have included the estimated cost in the Immediate Cost Estimates (Table 1).

7.3 BUILDING GAS DISTRIBUTION

Gas service is supplied from the gas main on the adjacent public street. The gas meters and regulators are located in the basements. The gas distribution piping within each building is malleable steel (black iron).

Observations/Comments:

- No problems were observed or reported with the pressure and quantity of gas.
- The gas meters and regulators appear to be in good condition and will require routine maintenance during the assessment period.
- Only limited observation of the gas distribution piping can be made due to hidden conditions. The gas piping appears to be in good condition.

7.4 BUILDING ELECTRICAL

The electrical supply lines run overhead to pole-mounted transformers, which feed interior-mounted electrical meters.

The main electrical service size is a minimum of 1,200 amps, 120/208 volt three-phase four-wire alternating current. Step down transformers are located throughout the buildings. The electrical wiring is copper, installed in metallic conduit. Circuit breaker panels are located throughout each building.

Observations/Comments:

- The on site electrical systems up to the meters are owned and maintained by the respective utility company.
- The electrical service and capacity appear to be adequate for the property's demands.

Immediate Repairs

Immediate Repairs Cost Estimate

Property Name: Holy Name Cathedral Rectory & Convent
Location: Chicago, Illinois
EMG Project Number: 125827

Square Footage: 60,000
 Number Buildings: 5
 Reserve Term /Years: 12
 Building Age /Years: 131

| Sec | Component or System | Comments | Quantity | Unit | Unit Cost | Immediate Total \$ |
|---------------------------------|--|--|----------|------|-------------|--------------------|
| 6.3 | Roof Drainage | Replace/repair detached downspouts | 4 | EA | \$200.00 | \$800 |
| 6.5 | Create Fire Exit at Rectory Stairway, incl. doors, stair, & gate modifications | Create Fire Exit at Rectory Stairway, incl. door | 1 | LS | \$40,000.00 | \$40,000 |
| 6.6 | Exterior & Interior Doors in Public Areas | Replace locksets with lever function hardware | 1 | Bldg | \$750.00 | \$750 |
| 7.5 | Elevator - replace bearing | | 1 | EA | \$18,000.00 | \$18,000 |
| 7.6 | Central alarm panel. Replace. | Upgrade existing enunciator panel | 1 | EA | \$40,000.00 | \$40,000 |
| 7.6 | Upgrade/replace fire alarm system encompassing all areas of all buildings | Install horns and strobes | 1 | LS | \$50,400 | \$50,400 |
| Short Term Repairs not required | | | | | | |

Conditions noted in the Immediate and Short Term Repair Costs are representative of the overall conditions of the property. There may be more detail on specific assessment components in the report text, therefore the Immediate and Short Term Repair Costs should not be used as a stand alone document.

| | |
|-----------------------------|------------------|
| Total Repair Cost | \$149,950 |
| Cost per Square Foot | \$2.50 |

Reserve Table

Replacement Reserves Cost Estimate

| | |
|---|--------------------------------|
| Property Name: Holy Name Cathedral Rectory & Convent | Reserve Term: 12 years |
| Location: Chicago, Illinois | Building Age: 131 years |
| EMG Project Number: 125827 | Number Buildings: 5 |
| CPI Factor: 2.50% | Square Footage: 60,000 |

| Sec. | Component or System | EUL | EFF AGE | RUL | Quantity | Unit | \$ Cost | Cycle Replacement | Replace Percent | Probable Replacement Dates & Estimated Expenditures (\$) | | | | | | | | | | | | Total Reserves Over Term | | |
|--|--|-------------------------------------|---------|-----|----------|------|--------------|-------------------|-----------------|--|--|----------|-----------|-----------|----------|----------|-----------|----------|----------|----------|----------|--------------------------|-----------|-----------|
| | | | | | | | | | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | Year 11 | Year 12 | | | |
| 6.3 | Roof membrane. Replace Rectory & Convent | 15 | 10 | 5 | 100 | SQ | \$750.00 | \$75,000 | 100% | \$0 | \$0 | \$0 | \$0 | \$75,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$75,000 |
| 6.4 | Limestone Inspect and Repair | 40 | 38 | 2 | 1 | YR | \$20,000 | \$20,000 | 600% | \$0 | \$20,000 | \$0 | \$20,000 | \$0 | \$20,000 | \$0 | \$20,000 | \$0 | \$20,000 | \$0 | \$20,000 | \$0 | \$20,000 | \$120,000 |
| 6.8 | Replace Common Area Carpet | 10 | 5 | 5 | 5,333 | SQYD | \$15.00 | \$79,995 | 100% | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$79,995 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$79,995 |
| 6.8 | Paint Rectory & Convent | 7 | 3 | 4 | 60,000 | SF | \$1.25 | \$75,000 | 200% | \$0 | \$0 | \$0 | \$75,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$75,000 | \$0 | \$150,000 |
| 7.1 | Rebuild air handlers | 38 | 30 | 8 | 2 | EA | \$12,000.00 | \$24,000 | 100% | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$12,000 | \$12,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$24,000 |
| 7.2 | Water heater. Replace. | 33 | 30 | 3 | 1 | EA | \$3,500.00 | \$3,500 | 100% | \$0 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$500 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$3,500 |
| 7.2 | Water heater storage tanks. Replace. | 33 | 30 | 3 | 1 | EA | \$18,000.00 | \$18,000 | 100% | \$0 | \$0 | \$6,000 | \$0 | \$0 | \$6,000 | \$0 | \$0 | \$6,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$18,000 |
| 7.2 | Booster pumps. Replace. | 33 | 30 | 3 | 2 | EA | \$900.00 | \$1,800 | 100% | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$1,800 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$1,800 |
| 7.2 | Replace domestic water pipe Rectory | 33 | 30 | 3 | 1 | LS | \$140,000.00 | \$140,000 | 100% | \$0 | \$0 | \$70,000 | \$70,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$140,000 |
| EUL = Expected Useful Life (Average) | | ANNUAL RESERVE (UNINFLATED) | | | | | | | | \$0 | \$20,500 | \$76,500 | \$165,500 | \$75,500 | \$26,500 | \$94,295 | \$32,500 | \$6,000 | \$20,000 | \$75,000 | \$20,000 | | \$612,295 | |
| EFF = Effective Age of Building Components | | INFLATION RATE FACTOR | | | | | | | | 1.0000 | 1.0250 | 1.0506 | 1.0769 | 1.1038 | 1.1314 | 1.1597 | 1.1887 | 1.2184 | 1.2489 | 1.2801 | 1.3121 | | | |
| RUL = Remaining Useful Life (Estimated) | | ANNUAL RESERVE (INFLATED) | | | | | | | | 2.50% | \$0 | \$21,013 | \$80,373 | \$178,225 | \$83,338 | \$29,982 | \$109,353 | \$38,632 | \$7,310 | \$24,977 | \$96,006 | \$26,242 | \$695,452 | |
| | | COSTS / SQUARE FOOT / YEAR | | | | | | | | \$0.85 | Conditions noted in the Replacement Reserve Cost Estimate are representative of the overall conditions of the property. There may be more detail on specific assessment components in the report text, therefore the Replacement Reserve Cost Estimate should not be used as a stand alone document. | | | | | | | | | | | | | |
| | | INFLATED COSTS / SQUARE FOOT / YEAR | | | | | | | | \$0.97 | | | | | | | | | | | | | | |



Cash Flow

Building Systems and Components Cash Flow

12 Year Immediate Repair and Reserve Analysis:

EMG Project Number: 125827

Current Year

2005

Annual Deposit escalation

0.00%

Capital Needs Inflation Rate:

2.50%

Reserve Acct escalation:

0.00%

Year 1 Year 2 Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Year 11 Year 12

| Year of Requirement: | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | Totals |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|-----------|-----------|-----------|-------------|
| Total Annual Cost | \$704,150 | \$121,000 | \$671,667 | \$371,167 | \$628,067 | \$306,200 | \$211,895 | \$376,400 | \$56,400 | \$337,500 | \$187,500 | \$137,500 | \$3,784,445 |
| Inflation Factor at % | 1.0000 | 1.0250 | 1.0506 | 1.0769 | 1.1038 | 1.1314 | 1.1597 | 1.1887 | 1.2184 | 1.2489 | 1.2801 | 1.3121 | |
| Inflated Totals | \$704,150 | \$124,025 | \$705,670 | \$399,706 | \$693,268 | \$346,437 | \$245,733 | \$447,421 | \$68,718 | \$421,491 | \$240,016 | \$180,412 | \$4,156,620 |

Reserves for Replacement Schedule

Initial Replacement Reserve (IRR):

\$775,000

First Year Reserve Deposit (annual contribution)

\$375,000

Reserve Balance Floor

\$60,000

Year 1 Year 2 Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Year 11 Year 12

| Year of Requirement: | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | Totals | Average (\$/Year) |
|--|-------------|-------------|--------------|--------------|-------------|-------------|--------------|--------------|------------|--------------|-------------|-------------|---------------|-------------------|
| Inflated Annual Needs | \$704,150 | \$124,025 | \$705,670 | \$399,706 | \$693,268 | \$346,437 | \$245,733 | \$447,421 | \$68,718 | \$421,491 | \$240,016 | \$180,412 | \$4,156,620 | \$346,385 |
| Annual Reserve Deposit | \$375,000 | \$375,000 | \$375,000 | \$375,000 | \$375,000 | \$375,000 | \$375,000 | \$375,000 | \$375,000 | \$375,000 | \$375,000 | \$375,000 | \$3,750,000 | \$312,500 |
| Beginning Balance | \$775,000 | \$445,850 | \$696,825 | \$366,155 | \$341,449 | \$23,181 | \$51,744 | \$181,011 | \$108,589 | \$414,872 | \$368,380 | \$503,364 | N/A | \$340,468 |
| Total Balance (Beginning Bal. plus Reserve Dep.) | \$1,150,000 | \$820,850 | \$1,071,825 | \$741,155 | \$716,449 | \$398,181 | \$426,744 | \$556,011 | \$483,589 | \$789,872 | \$743,380 | \$878,364 | N/A | \$715,468 |
| Withdrawals (Inflated Annual Needs) | (\$704,150) | (\$124,025) | (\$705,670) | (\$399,706) | (\$693,268) | (\$346,437) | (\$245,733) | (\$447,421) | (\$68,718) | (\$421,491) | (\$240,016) | (\$180,412) | (\$4,156,620) | (\$346,385) |
| Interest Income | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Ending Balance | \$445,850 | \$696,825 | \$366,155 | \$341,449 | \$23,181 | \$51,744 | \$181,011 | \$108,589 | \$414,872 | \$368,380 | \$503,364 | \$697,953 | \$2,998,057 | \$249,838 |
| Indicators of Reserve Inadequacy | | | <1x Deposits | <1x Deposits | < Floor | < Floor | <1x Deposits | <1x Deposits | | <1x Deposits | | | | |



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