



## STRUCTURAL CONDITION ASSESSMENT REPORT



**St. Patrick Catholic Church**

725 4<sup>th</sup> Street

LaSalle, Illinois 61301

American Structurepoint Project No. 2018.01713

February 25, 2019

**Prepared For:**

Fr. Paul Carlson  
LaSalle Parishes

**Prepared By:**

Ryan Wagner, SE

Project Manager, Investigative Services

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## I. INTRODUCTION AND GENERAL INFORMATION

### Assessment Objectives

The purpose of the evaluation of the church was to assess the structural condition of the building, review the general condition of the building envelope, provide conceptual repair recommendations, and provide an opinion of probable repair costs per our agreement dated August 7, 2018. This report is based upon our on-site field observations and conversations with Church representatives. No construction drawings or other documents were provided for our review. Weather conditions were rainy and approximately 65 degrees Fahrenheit during the assessment on September 6 and 7, 2018.

### Property Data

<i>Structure type:</i>	Church structure with wood roof framing, stone masonry bearing walls and foundations, and wood floor framing
<i>Roofing type:</i>	Asphalt shingle roofing (Chapel); Aluminum Sheet (Steeple)
<i>Structure age:</i>	Approximately 171 years (construction completed 1848)
<i>Total building area:</i>	Approximately 9,800 square feet (gross building area)

## II. EXECUTIVE SUMMARY

The church building located at 725 4<sup>th</sup> Street in LaSalle, Illinois, Illinois, was evaluated in order to provide an objective, professional opinion of the general condition of the building structure and envelope, and to identify damage, deterioration, and areas of non-compliance with currently adopted code and standard practices. This evaluation covered the primary structural components, the building envelope components, such as roof coverings, windows, trim, and other similar items, as well as any areas of deferred maintenance specifically indicated by Church representatives. This report provides a summary of the observations made during the evaluation, and provides conceptual repair recommendations along with an opinion of probable repair costs. The parish office structure to the east of the church, and the annex connecting the church and offices, were not included in our evaluation.

### General Physical Condition

#### Roof – Sections A and B:

The church roof and the steeple roof are at the end of their useful life and require replacement. Breaches in the roofing system are the primary source of water staining and a contributing factor to the microbial growth in the attic. At the church roof, additional means for air intake and exhaust should be accommodated during shingle replacement. Repairs to any deteriorated sections of the underlying wood roof decking should be made at the time of shingle replacement.

Temporary roofing repairs are required on the north side of the steeple to alleviate the active leak at the south end of the attic space.

We also recommend repairing breaches in the metal cornice, gutter, and pediment system, followed by a fresh coat of paint.

Masonry Walls– Section D:

The masonry walls are in overall good condition given the age of the structure. Due to the age of the walls, we recommend a five to seven year routine inspection and maintenance plan be put in place. The masonry walls will be inspected for deleterious conditions, with repointing and other remediations performed, as deemed necessary. Currently, relatively minor amounts of repointing or re-sealing using either an exterior grade caulk, joint sealant, or a concrete patch material, are required around window sills and along the north elevation curb. The subject repairs will require maintenance approximately every five to ten years.

Finishes – Section G:

We recommend repainting the walls and ceilings within the main congregation space within the next three years, but preferably following plater repairs above the altar.

In the field of the ceiling, no concerning plaster cracks, or plaster cracks with multiple sides, indicative of an impending failure were observed during our inspection. These conditions can change with building movement as well as elevated or fluctuating ambient humidity or moisture levels, therefore, if such plaster damages should develop or current conditions change, the repair recommendations discussed herein shall be elevated in priority and cost.

Above the altar area, segments of ornamental ceiling plaster/florets were missing from the perimeter of the ceiling panels and can be attributed to age and moisture related movement at the north end of the building. We recommend a plaster contractor with specialty in remediation of historical and ornamental ceiling plaster repair the damaged areas of ornamental plaster above the altar by the end of this calendar year. During such repairs, the contractor should perform a tactile inspection of the ornamental plaster to verify the scope of plaster repairs above the altar. Disruption of worship services can be expected during the repair duration, but is not needed prior to such time unless further deterioration is observed.

Foundation – Section J:

In the basement access hallway beneath the east addition, two joists were precariously supported by a 2x wood plate which spanned a number of feet over an opening in the foundation wall. The deflection and microbial growth exhibited on the 2x plate renders this a structural concern. Within the next few months, we recommend installing steel shores, supported by concrete or precast concrete footings, beneath the two unsupported joists.

Within the next five years, we recommend installing an exterior waterproofing and drainage system (or replacing any existing system) at the west, north, and east foundation walls in order to preserve the integrity of the limestone foundation and prevent future water infiltration. Prior to installation of the new waterproofing and drainage system, we recommend repointing any deteriorated mortar joints, or applying cementitious coating on the exterior side of the stone masonry. Until the exterior waterproofing system can be installed, we recommend continuous dehumidification of the basement. When remedial work is performed on the north foundation wall, careful coordination with the local municipality and building department will be required due to the public alleyway bordering the north side of the building.

Repointing is recommended at the eroded mortar joints below the basement window wells.

Two wood beams at the south end of the basement exhibited cubical fracturing characteristic of dry rot fungus. Within the next two years, we recommend installing supplemental steel beams and posts so as to direct load around the deteriorated beams.

Steeple Addition:

During our investigation, church representatives indicated that the Parish has recently discussed pursuing estimates for the construction of an additional, steel-framed steeple. While the exact costs cannot be known until design documents are generated and construction bids pursued, based on our professional knowledge and experience, such costs can be expected to vary greatly depending on whether the steeple requires any reconstruction of the building envelope and interior spaces; steel-framed steeple costs can be expected to have an order-of-magnitude cost of roughly \$50,000 at the low end (if installed as a roofing appurtenance) to \$500,000 or greater (if a steeple foundation and building reconfiguration is required).

**Remedial Repair Categories**

In order to help the Church representatives understand the severity of the various conditions noted, and prioritize how they will address the issues, we have developed the following categories to assign to each of the conditions. These categories identify the deleterious, maintenance and safety issues based on severity and their relative risk to human safety as well as the timeframe in which we recommend they be performed. They are as follows:

*Category 1 (Critical) – Required within the next one to two years*

Category 1 items are nominally those deficiencies observed to be significant health and human safety hazards or violations of building codes or other regulations. We recommend immediately addressing Category 1 items identified as health and human safety hazards, and will call special attention to such items in this report.

Outside of any immediate health and human safety concerns, Category 1 items are those significantly contributing to the overall deterioration or stability of the structure, and have associated elevated operational costs. It is our opinion that Category 1 repairs not identified as health and human safety hazards be completed within the next two years in order to achieve a safe facility and/or otherwise comply with building codes and regulations.

*Category 2 (Significant) – Required within five years*

Category 2 items are those that represent high priority repairs based on their function relative to the structure or building envelope, but in our opinion do not represent cause for immediate concern. Category 2 items may be delayed up to five years for financial or other reasons.

*Category 3 (Moderate) – Required within ten years*

Category 3 items are items that represent lessened urgency and are primarily aesthetic in nature. We recommend they be resolved within five to ten years.

Also note that improvement or repair items suggested for inclusion in this report during interviews with Church representatives have been included in the repair category which we believe is most appropriate.

### **Opinion of Probable Cost**

Based on our findings and recommendations, the following table summarizes our opinion of probable costs for each repair category. More detailed discussion of the specific repairs are included in the Observations and Summary sections of this report, found below.

<b>Opinion of Probable Cost by Repair Category</b>	
Category 1 Repairs	\$28,550
Category 2 Repairs	\$240,500
Category 3 Repairs	\$120,000
<b>Total</b>	<b>\$389,050</b>

The opinions of probable cost are based on our visual observations and includes the major building-related issues found that should be completed or corrected. In no way should the costs discussed in this report be considered all-inclusive or the actual cost of the work. The opinions of probable cost are based on our assumed scope of repairs, replacements, and upgrades, rough quantities, and outside labor hours and material expenses. Other less critical items should be repaired or replaced as needed and should be considered general maintenance and upkeep.

## **III. BUILDING DESCRIPTION AND BACKGROUND**

### **Building Description**

The church building, which dates to 1848, consists of the original congregation (nave) area, which is rectangular in plan and comprises a footprint of approximately 7,500 square foot. Approximately 100 years later, a two-story addition was constructed at the north end of the east elevation, bringing the total building footprint to 9,800 square feet. The main entrance and narthex were located at the south elevation (Photos BD1 through BD3).

The perimeter multiple-wythe limestone bearing walls function as both the structural wall framing and the architectural building envelope. The interior walls and ceilings are primarily finished with a lath and plaster system, with the ceiling comprised of trays formed by ceiling framing. A choir loft approximately 16 feet wide spanned the rear of the nave, above the narthex (Photos BD4 through BD6).

The main level was supported by rough sawn wood planks or joists bearing on timber beams and posts (Photos BD7 and BD8). Supplemental wood beams and posts were located along the south foundation wall (Photo BD9). Roof framing consisted rough sawn rafters supported by purlins spanning between reinforced heavy timber trusses (Photo BD10).

The roof was comprised of three tab asphalt composition shingles with an aluminum clad steel framed steeple at the south elevation (Photos BD11 and BD12).



Photos:



Photo BD1



Photo BD2



Image BD3



Photo BD4



Photo BD5

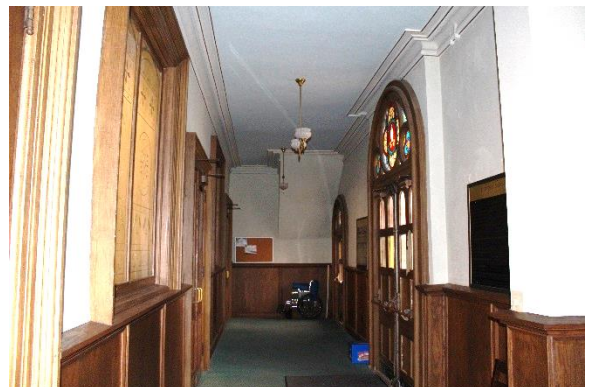


Photo BD6



Photo BD7



Photo BD8



Photo BD9



Photo BD10



Photo BD11



Photo BD12



### **Structure Background**

The maintenance history of the church has consisted of various upkeep, repairs, and improvement projects over the life of the building. The following summarizes our understanding of the notable maintenance history throughout the building based on interviews with church representatives.

- Steeple: The current aluminum clad, steel-framed steeple located on the south elevation was installed around 1970 and replaced the previous, non-original steeple at the same location.
- East Chapel: Approximately 100 years ago, the East Chapel was added to the original church as part of a remodeling project. Roughly four years ago, the floor and underlying joists were replaced to remediate water damages originating from the alley to the north of the building.
- Interior Finishes: An interior remodeling project took place during the 1980s, which purportedly consisted of plaster repairs and repainting.
- Roofing: Various flashing and shingles repairs were made throughout the roof over the life of the structure.
- Masonry Repointing: Portions of the exterior masonry have been repointed at various times throughout the life of the structure. The most recent pointing was completed two years ago to varying extents throughout the elevations. A cementitious coating was added to the exterior of the north wall at an unknown point in the last twenty years.

## **IV. OBSERVATIONS**

### **EXTERIOR OBSERVATIONS**

#### **A. Steeple Roofing and Trim**

##### Description:

The steeple roof was comprised of four sides and was clad with standing seam metal roofing (Photos A1 through A3). The cross atop the steeple and the trim elements of the steeple were comprised of formed light-gauge metal (Photos A3 through A5).

Prior sealant repairs and retrofit fasteners were observed throughout the standing seam metal roofing (Photos A6 and A7). Light-gauge metal closure pieces were installed over the original standing seam overlap, and secured with sheet metal screws (Photo A8).

##### Conditions Noted:

The standing steam metal roofing and light-gauge metal trim of the steeple roof is in overall fair-poor condition and has reached the end of its useful life. Multiple avenues for water infiltration were observed. The observations below summarize the conditions noted:

1. At the base of the cross, separations and deformations providing avenues for water infiltration were observed (Photo A4).
2. Sealant repairs were cracked, weathered, or failed (Photo A6).
3. Retrofit fasteners, installed from the interior of the structure, were corroded and unsealed, providing venues for water infiltration (Photo A7).

Recommendations and Repair Priority Category:

The steeple roofing is at the end of its useful life, therefore, within the next two years we recommend replacing with a new standing seam metal roof system, preferably at the time which the adjacent shingle roofing is replaced.

A1	<b>Category 2 - Steeple roofing replacement</b>	\$16,000
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Photos:



Photo A1



Photo A2



Photo A3



Photo A4



Photo A5



Photo A6



Photo A7



Photo A8

## **B. Congregation and Sacristy Roofing and Trim**

### Description:

The roof consisted of three tab fiberglass asphalt composition shingles in fair-to-poor condition (Photos B1 and B2). A formed light-gauge metal cornice was located at the gutter line on the east and west elevations, and wrapped the south elevation (Photo B3). The gutter system formed the top of the cornice (Photo B4). Pediments comprised of formed light-gauge metal were located along the elevations as follows: two on the west, one on the east, one on the south-facing slope of the east wing, and the major pediment over the main entrance on the south elevation (Photos B1, B2, and Cover).

The roof over the west entrance consisted of gravel-ballasted low-slope roofing (Photo B5).

Shingle repairs of unknown age were observed on the east-facing slope at the south end of the church, and in an isolated area of the west-facing slope (Photo B6). Sealant repairs of unknown age were observed throughout various portions of the cornice and roof flashing elements (Photos B7 and B8).

### Conditions Noted:

The shingles over the main congregation area are very brittle and at the end of their useful life. Breaches were also found in various cornice and flashing elements. The following summarize the issues we observed. Roof observations were made via aerial lift; we did not walk the roof due to heavy rains during the roof inspection portion of our evaluation.

1. Shingles throughout the roof exhibited granule loss, flaking, cupping, and cracked edges characteristic of long-term weathering typical of shingles at the end of their useful life (Photos B9 and B10).
2. Rake edge shingles at the south-facing slope of a west elevation dormer exhibited marring characteristic of tree abrasion or vermin damage (Photo B11).
3. A sag was observed in the north-south roof ridge, within the middle-third of the ridge length (Photo B12).
4. On the west elevation, the following observations were characteristic of water entrapped within the cornice system:
  - a. An area of corroded light-gauge metal was observed at the bottom portion of the metal cornice (Photo B13).
  - b. Within the southern third of the west elevation, the bottom portion of the cornice was deformed, and water stains were observed along the face of the wall directly below this area (Photo 14).
5. At the pediments, flaking paint, joint separations, and section loss of the light-gauge metal were observed (Photos B8, B15, B16, B19, and B20).
6. At the south pediment:
  - a. The top of the drip edge protruded above the sloping front of the pediment, allowing water to pool (Photo B17).
  - b. Mortar and sealant repairs to the top of the pediment flashing were brittle, cracked, and missing (Photo B18).

Recommendations and Repair Priority Category:

The shingles are at the end of their useful life, therefore, we recommend replacing the shingles within the next two years. Due to the condition of the roof sheathing, as observed from the underside (refer to Section I), we recommend complete removal of the shingles and underlayment to facilitate partial to complete replacement of the roof sheathing as necessary. During replacement of the roof, provisions shall be made to increase the amount of attic ventilation, refer to Section I below.

The cornice and pediment system is in fair condition given its assumed age of at least 50 years. At the time of the roofing replacement, we recommend repairing any breaches or leaks in the light-gauge metal pediments, and the cornice and gutter system, and applying a fresh coat of paint throughout. We recommend installing weeps at regular intervals along the bottom edge of the perimeter cornice system in order to prevent water entrapment, as well as degradation of the cornice or the underlying masonry.

At the active leak located at the south end of the roof (just north of the steeple), we recommend performing temporary roof repairs as soon as possible to eliminate the water infiltration into the attic.

B1	<b>Category 2</b> – Congregation roof replacement	\$65,000
B2	<b>Category 2</b> – Repair and repaint light-gauge cornices and pediments	\$25,000
B3	<b>Category 1</b> – Roof Repairs to Eliminate Active Leak Adjacent to Steeple	\$750

Photos:



Photo B1



Photo B2



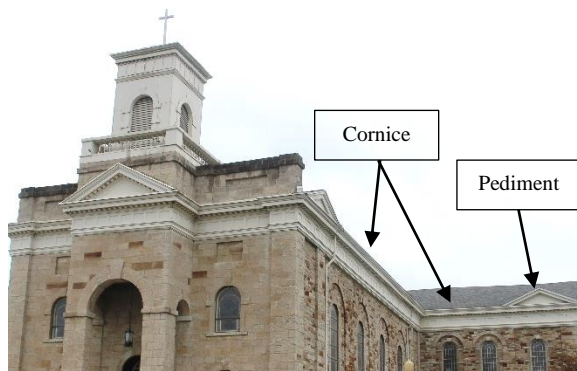


Photo B3



Photo B4



Photo B5



Photo B6



Photo B7



Photo B8



Photo B9

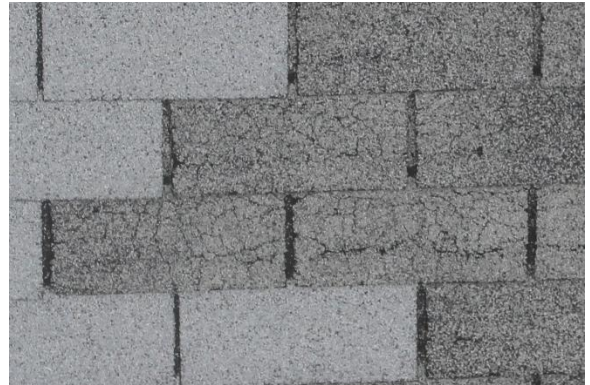


Photo B10

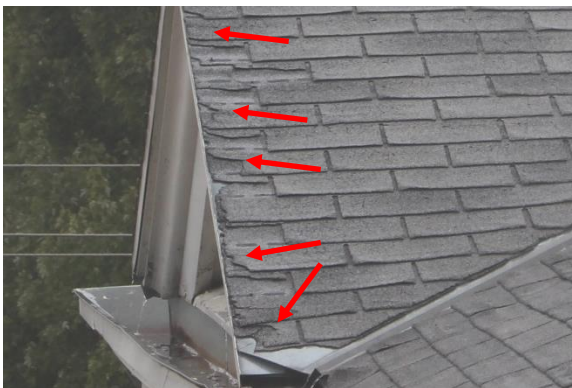


Photo B11



Photo B12



Photo B13



Photo B14





Photo B15



Photo B16



Photo B17



Photo B18



Photo B19



Photo B20

### **C. Steeple Cladding**

#### Description:

The steeple walls are comprised of light-gauge metal sheeting (Photos C1 through C3). The perimeter of the steeple was surrounded by a railing and spindle system, also of light-gauge metal (Photo C4).

#### Conditions Noted:

The following issues were noted at the steeple.

1. Staining, standing water, and flaking paint were observed on the skyward-facing railing surfaces (Photos C2, C3, and C5 through C7).
2. At the railing, the skyward-facing sheet metal exhibited deformed edges and withdrawn fasteners (Photo C8).
3. A fracture was observed on a metal panel at the southeast corner of the steeple (Photo C9).
4. Various open panel joints were observed throughout the lower portions of the steeple walls (Photo C10).

#### Recommendations and Repair Priority Category:

The steeple walls and surrounding railing system were in fair condition overall. We recommend sealing and/or patching breaches in the walls at the time of the adjacent shingle roofing replacement.

At the railing system, we recommend temporarily replacing the skyward facing sheets and reinstalling with subtle modifications to promote drainage on the roofing system. Suggested modifications include pitching the new sheets toward the interior of the steeple, and installing a light-gauge metal drainage channel on the interior-facing sides, pitching to drain onto the shingle roof below.

C1	<b>Category 2</b> – Repair and repaint light-gauge metal cladding elements	\$10,000
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Photos:



Photo C1



Photo C2



Photo C3



Photo C4



Photo C5

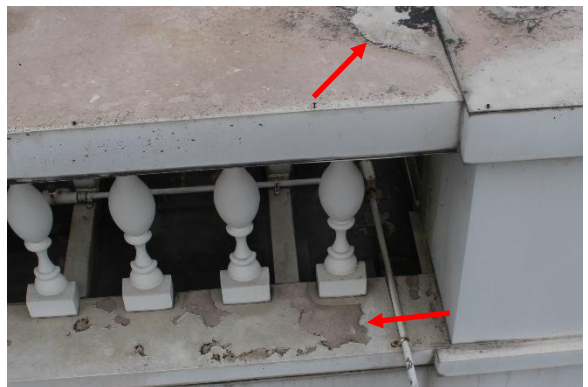


Photo C6





Photo C7



Photo C8



Photo C9



Photo C10

## **D. Masonry Walls**

### Description:

The exterior walls of the main congregation and sacristy areas are comprised of multiple-wythe limestone masonry (Photos D1 through D3). Decorative masonry elements included cast stone window sills, window arches, the water table belt course, and glass block infill at basement window wells (Photos D4 and D5).

Evidence of recent repairs such as repointing, replaced cast stone pieces with the water table belt course, and concrete window sills were observed throughout various regions of each elevation (Photos D6 through D8).

### Conditions Noted:

The exterior limestone masonry was generally weathered and eroded, but was in fair-to-good condition overall given the age of the structure with no cracking of note within the larger areas of masonry wall or the glass black window well infill. The following issues were observed:

1. Limestone window sills throughout the structure were typically weathered (Photos D9 and D10). Cracks exhibiting no sealant or failed sealant were observed at select sills (Photos D10 through D12).
2. At select windows, the mortar joint between jamb and sill pieces was eroded (Photo D10).
3. At select windows, staining was observed at the masonry course directly below the sill (Photo D4).
4. Above the southernmost basement window well on the east elevation, an open mortar joint was observed (Photo D13).
5. On the north elevation, a concrete curb was located at the joint between the asphalt and the north elevation limestone. Joint sealant between the concrete and the limestone wall was applied on top of existing sealant, and was partially failed, characteristic of sealant which was improperly applied and has reached the end of its reduced lifespan (Photos D1, D14 and 15).

### Recommendations:

The exterior limestone masonry was weathered and eroded, but in fair-to-good condition overall given the age of the building. Due to the age, however, we recommend regular maintenance of the exterior masonry by a qualified masonry contractor with experience pointing and repairing historical limestone structures. The masonry should be reviewed, with repointing and other deleterious conditions remediated, at least every five to seven years.

The cracks in the window sills provide an opportunity for water to enter and cause further damage to the sills as well as infiltrate the masonry wall system below and the interior of the building. We recommend removing and replacing the existing joint sealant at all cracks throughout the building. Sealant at these cracks will require regular maintenance, and should be inspected every two years and budgeted for removal and replacement every five years. Alternately, the cracked sills can be overlaid with concrete patch material, but will also require maintenance approximately every five to seven years.

At the north elevation, failing cove sealant between the limestone wall and the concrete curb is providing an opportunity for water to enter the wall, and contributing to the paint and plaster deterioration at the altar wall on the church interior. As with any joint sealant, the existing cove sealant material should be completely removed prior to installing new joint sealant. We recommend removing and replacing the cove sealant along the north wall curb within the next year.

- During masonry repointing, every effort possible should be made to match composition of the new mortar to that of the original mortar. Installation of mortar which does not have strength or porosity properties complimentary with the brick can cause damage to the existing brick. Portland cement based mortars can be particularly damaging to historic brick due to their relatively high strength and low porosity, and can result in water entrapment within the brick, leading to accelerated spalling and/or freeze thaw damage to the affected brick.

D1	<b>Category 2</b> – General Exterior Masonry Repointing	\$5,000
D2	<b>Category 1</b> – Replace or Install New Joint Sealant at Cracked Window Sills and North Elevation Wall Curb	\$1,000

Photos:



Photo D1

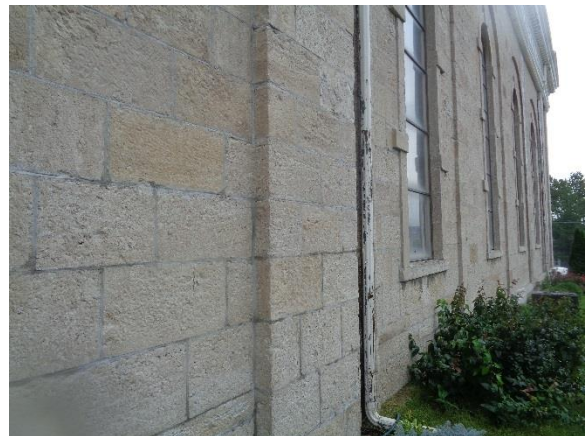


Photo D2





Photo D3



Photo D4

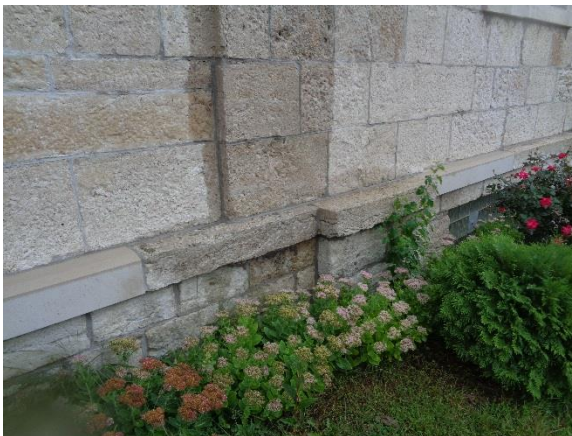


Photo D5



Photo D6



Photo D7



Photo D8





Photo D9



Photo D10



Photo D11



Photo D12



Photo D13



Photo D14



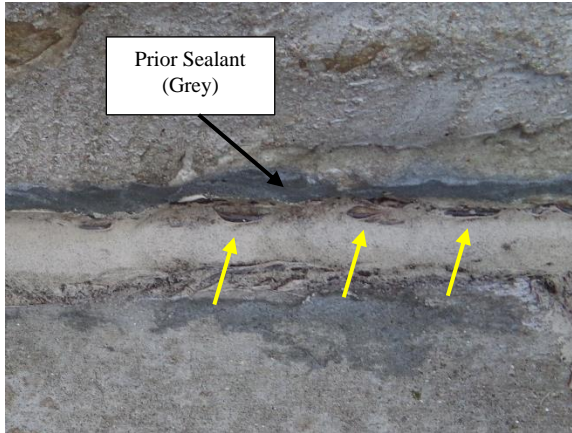


Photo D15

## **E. Doors and Windows**

### Description:

The entrance doors at the south elevation were comprised of wood doors and frames; the side entrance doors at the east addition and on the west elevation were comprised of metal doors and frames (Photos E1 and E2). Doors at the south elevation were lined with painted wood jambs and trim; the doors at the east addition and the west elevation were lined with metal trim and sidelites (Photo E2).

Stained glass windows were located along each elevation, some of which protected by acrylic storm panels on the exterior (Photo E3).

### Conditions Noted:

Most aspects of the doors and windows were observed in fair condition with no major issues. We did note the following conditions that will need to be addressed in the near future to prevent future deterioration.

1. Typical at the wood doors, jambs exhibited missing paint and exposed wood trim along the bottom edges (Photo E4).
2. Window and window storm panel sealant was in fair overall condition with sealant beginning to fail at only select storm panels throughout the building (Photo E5).
3. At a second level window at the east addition, sealant was not present (Photo E6).

### Recommendations:

The doors and windows were in fair overall condition. Within the next five years, we recommend repainting the wood doors and door jambs as well as re-sealing the windows and window storms. At the second level window exhibiting no sealant, we recommend applying sealant within the next year.

E1	<b>Category 2</b> – Repaint Wood Doors and Door Jambs	\$5,000
E2	<b>Category 2</b> – Reseal Windows and Window Storm Panels	\$5,000
E3	<b>Category 1</b> – Seal Second Level Window at East Addition	\$500

Photos:

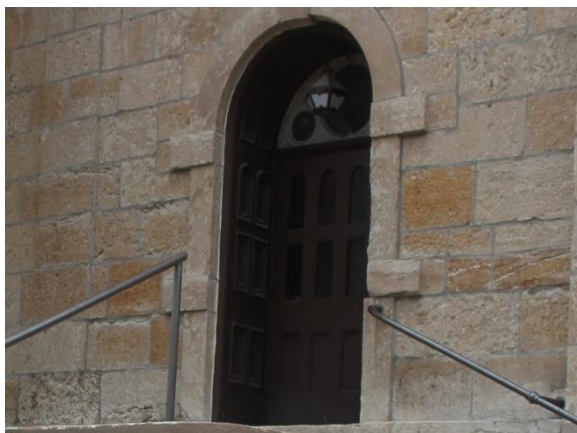


Photo E1



Photo E2



Photo E3



Photo E4



Photo E5



Photo E6

## **F. Miscellaneous Exterior Items**

### Description:

The stairs and landing at the south entrance consisted of concrete treads and risers and exhibited patch repairs throughout (Photos F1 and F2).

Rainwater was drained from the roof through the light-gauge metal gutter system which is integral with the roof cornice (Photo F3). Corrugated metal downspouts drain water from the roof into corrugated drain piping (Photo F4, black section).

### Conditions Noted:

1. The concrete stairs at the south entrance are in poor overall condition.
  - a. A gap was observed at between the threshold and the top tread (Photo F5).
  - b. Treads exhibited spalled concrete and open joints (Photos F6 and F7).
2. At the west elevation, a downspout had separated just below the cornice (Photo F8).
3. At the west elevation, a downspout extension was separated from the downspout (Photo F9).
4. At the east elevation garden, a downspout was located adjacent to the area of saturated masonry within the basement (Photo F10).
5. At the north elevation, downspouts drained into a partially buried corrugated plastic pipe which was routed along a concrete curb in the alley (Photos F11 and F12). Based on conversations with church officials, we understand that curb and corrugated piping were installed in an attempt to mitigate water infiltration into the north masonry wall and alleviate damages to the interior wall finishes. The adjacent alley drive was comprised of asphalt in poor condition, and exhibited a slight pitch toward the church.

### Recommendations:

The missing and failed cove sealant at the entrance stairs is providing a path for water infiltration beneath the stair system and into the south foundation wall. We recommend replacing the cove sealant at the south entrance stairs in the next year.

The stairs are in overall poor condition and the delaminations observed represent a potential future safety hazard. Within the next five years, we recommend replacing the concrete stairs.

The dislodged downspout and downspout extension segments are allowing water to infiltrate the masonry wall and foundation system. We recommend repairing the dislodged downspout segments within the next year.

At the garden on the east elevation, the location of the downspout coincides with an area of saturated masonry in the basement. We recommend inspecting the subgrade drainage plumbing for breaches within the next year.

At the north elevation, we recommend installing a waterproofing and drainage system on the exterior face of the wall. Refer to Section J for further discussion.



F1	<b>Category 1</b> – Replace Cove Sealant at Entrance Stair Threshold	\$500
F2	<b>Category 2</b> – Repair Dislodged Downspout Segments	\$1,000
F3	<b>Category 2</b> – Drain Scope at East Elevation Downspout (Garden)	\$1,000
F4	<b>Category 3</b> – Replace South Entrance Stairs	\$25,000

Photos:



Photo F1



Photo F2



Photo F3



Photo F4



Photo F5



Photo F6





Photo F7



Photo F8



Photo F9



Photo F10



Photo F11



Photo F12

## INTERIOR OBSERVATIONS

### G. Finishes

#### Description:

The walls and ceilings throughout the church were typically finished with plaster and wood lath (Photos G1 through G3). Ceiling beams were comprised of painted wood trim and plaster. The plaster walls and ceilings are painted; the most recent paint application was reportedly completed during the 1980s. The base of the walls was finished with wood wainscoting. The main congregation area of the church was finished with carpet flooring.

The narthex was finished with painted plaster walls with wainscoting and carpet floors (Photo G4).

The east addition contained additional gathering space as well as the sacristy; the gathering space was finished with painted plaster walls and tile flooring (Photos G5 and G6).

Within the east addition, the second level storage space was finished with painted walls, stamped metal ceiling, and resilient flooring (Photos G7 and G8).

#### Conditions Noted:

The following deleterious conditions were observed throughout the interior finishes.

1. At the main congregation area:
  - a. At the congregation ceiling:
    - i. Missing ornamental plater segments were observed above the altar area (Photos G9 and G10). The ornamental plaster segments appeared to be molded into the ceiling panels and set proud of a small cavity along the perimeter of the panel area.
    - ii. Plaster cracks were observed at the ends of ceiling beams and within the ceiling trays (Photos G11 and G12).
    - iii. Separations were observed between wood trim pieces at ceiling beam intersections (Photo G13).
    - iv. Peeling paint was observed typically throughout the ceiling (Photo G14).
  - b. At the main congregation walls, flaking paint was observed at decorative moldings, in the field of the walls, surrounding windows, and at column enclosures (Photos G15 through G18).
  - c. At the north wall behind the altar, the plaster finish coat was bubbled or missing typically over the bottom two to three feet of the wall (Photo G19).
  - d. Cracks were observed at the joint between each end of the choir loft kneewall and the exterior walls (Photo G20).
  - e. Peeling and flaking paint was observed throughout the narthex walls (Photo G21).
2. At the ground level of the east addition, flaking paint was observed at interior window trim (Photo G22). At the east (exterior) wall of the sacristy, bubbled plaster and flaking paint was observed adjacent to the windows (Photo G23).

3. At the second level storage space, cracked plaster was observed throughout the walls (Photos G24 and 2G5). Disintegrated plaster was observed below the east windows (Photo G26).

#### Recommendations:

The finishes throughout the interior of the congregation area, and the ground floor of the east addition, are in fair overall condition. We recommend repainting the walls and ceilings within the next three years, but preferably following plaster repairs above the altar.

Above the altar, the field areas of plaster ceiling are in fair overall condition, with the ornamental florets in fair to poor condition. We recommend repairing and/or replacing the damaged and missing ornamental ceiling plaster by the end of the year. In the field of the ceiling, no concerning plaster cracks, or plaster cracks with multiple sides, indicative of an impending failure were observed during our inspection. These conditions can change with building movement and fluctuations to ambient humidity or moisture levels, therefore, if such conditions should develop or change, the following repair recommendations shall be elevated in priority and cost.

Due to the nature of the ornamental floret pieces above the altar, and their perceived attachment to the overlying plaster, we are of the opinion that the repair of the plaster ornamentation may be achieved with relatively minor interruption of worship services occurring during the repair duration only. We recommend that a plaster contractor with experience in decorative, historical restoration should be employed to repair the ornamental plaster areas, and to perform a thorough, tactile inspection of the ornamental plaster elements to verify the scope of plaster repairs above the altar.

At the second level storage space, the plaster finish on the walls is in poor overall condition with significant cracking, and some areas of missing plaster. We recommend removing and replacing the plaster throughout the perimeter walls of the storage space within the next five years.

Plaster is a brittle material, dependent on the integrity of the plaster “keys” or “lugs” which are extruded through a wood or metal mesh lath system during installation. The keys act as a hanger to hold the plaster onto the lath substrate. The integrity of any particular area of plaster is dependent on having a sufficient quantity of keys remaining intact to carry the weight of the surrounding plaster. If a sufficient number of keys in any one area are cracked, or are installed with insufficient penetration to hang from the wood lath, the remaining keys, or the lath itself, are no longer able to carry the weight of the plaster.

Due to its brittle nature, plaster walls and ceilings are susceptible to cracking due to framing movement attributed to moisture issues, temperature and humidity variations, building settlement, or deflection of the structural framing due to external forces (snow, overstress, foot traffic, etc.). Over long building lifespans some amount of plaster keys, and the larger regions they support, will crack in most buildings due to any or all of the reasons above.

If future plaster ceiling repairs are intensive enough to require repairs down to the wood or metal lath substrate, we present various plaster repair options below. The first three options may require significant scaffolding and interruption of worship services. Regardless of repair option chosen, the lath in the affected areas should be closely inspected for soundness:

- Removal and replacement of the affected plaster, either with plaster or gypsum board. This process should include close inspection of the lath for soundness, and replacement of damaged pieces during the plaster removal process.
- Reinforcement. This is usually accomplished with washer-head screws followed by a skim coat of plaster over fasteners. Plaster skim coats can be expected to deteriorate with high moisture or ambient humidity levels.
- Covering. This can be accomplished with gypsum board, and fasteners should be driven into the framing supporting the lath, not the lath members themselves. Care should be taken not to fasten into only the lath, as overloading and failing ceiling segments may occur. This may require a specialty contractor.
- Consolidation. This involves applying acrylic resin from the attic side to bond with the plaster and lath, thereby reestablishing the keys. This may require a specialty contractor.
- Scaffolding will be required for any plaster repairs performed from the ceiling underside. During repairs, we recommend that worship services be held in an alternate location until the repairs are completed.
- Because the composition of the paint and plaster materials is currently unknown, we recommend that select areas of the walls and ceilings be sampled for the presence of lead and asbestos prior to commencing any demolition work. If lead and/or asbestos is confirmed present, significant additional cost should be anticipated for abatement procedures.

G1	<b>Category 1: Plaster Ceiling Repairs</b>	\$20,000
G2	<b>Category 2: Paint Interior Walls and Ceiling (Main Congregation Area)</b>	\$50,000
G3	<b>Category 2: Re-plaster and Paint Walls (Second Level Storage – East Addition)</b>	\$30,000

Photos:



Photo G1



Photo G2





Photo G3



Photo G4



Photo G5



Photo G6



Photo G7



Photo G8





Photo G9

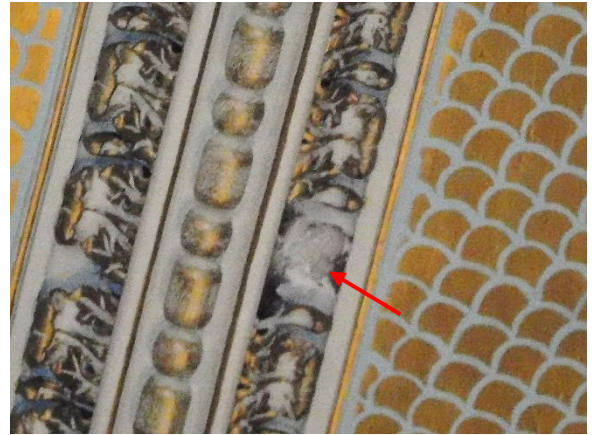


Photo G10



Photo G11



Photo G12

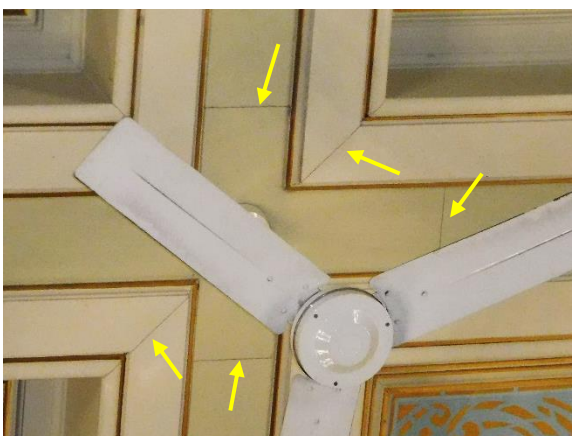


Photo G13



Photo G14



Photo G15

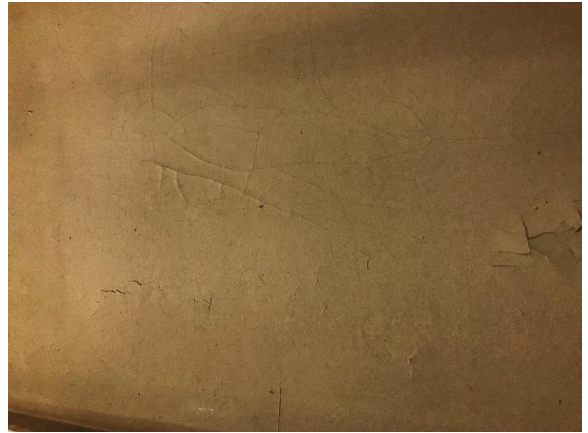


Photo G16



Photo G17



Photo G18



Photo G19

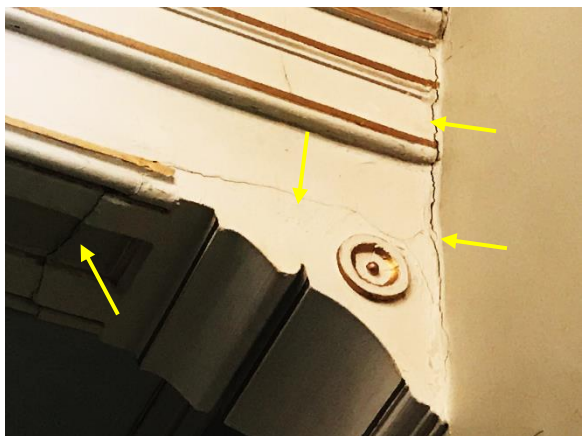


Photo G20





Photo G21



Photo G22



Photo G22

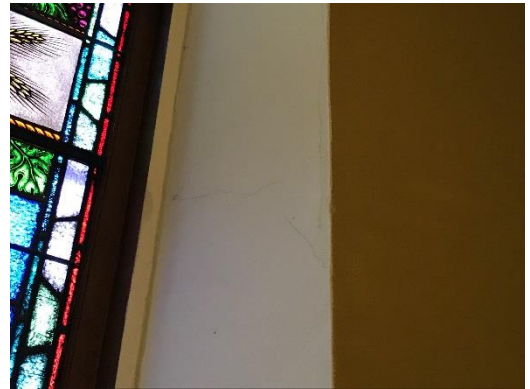


Photo G23



## **H. Steeple Framing**

### Description:

The steeple consisted of galvanized, riveted steel angle framing (Photos H1 and H2). Louvers were located on each elevation of the steeple (Photo H3).

### Conditions Noted:

The steeple framing was in overall good condition. Breaches were located within the steeple roofing and cladding as evidenced by the standing water located on the steeple walking surface (Photo H4).

### Recommendations:

Overall, the steeple framing was in good condition with no corrosion observed. We recommend ensuring the roofing system is water tight, as discussed in Section A above, and periodically inspecting the steeple space for active leaks. Refer to Section A above.

### Photos:



Photo H1



Photo H2



Photo H3



Photo H4

## **I. Roof Framing**

### Description:

The roof framing consisted of plywood decking supported by 2x4, rough sawn wood rafters spaced at 24" on center. The rafters spanned from eave to ridge and were supported by 4x and 6x purlins spanning between timber trusses. The trusses spanned between the exterior walls and were spaced at approximately 10 feet on center (Photos I1 and I2).

Prior roof framing repairs consisted of reinforcement of rafters (Photo I3), purlins (Photos I4 through I6), and truss reinforcement with steel plates, angles, and threaded rods within the original roof area (Photos I7 and I8).

Attic ventilation was provided by a static box vent at the south end of the roof ridge as well as louvers in the gable end walls (Photo I9).

The ceiling support system, anticipated to be comprised of wood lath, was not observable below the insulation. Attic observations were made from a central wood catwalk.

### Conditions Noted:

The integrity of the roof framing was in overall fair condition for its age and given the prior repairs. The following issues were observed:

1. Evidence of moisture intrusion were observed throughout the attic.
  - a) Water stains were observed throughout the roof framing (Photo I10).
  - b) Microbial growth was observed typically on the underside of roof sheathing, indicative of inadequate ventilation of the attic (Photo I11).
  - c) At various locations, particularly at the west-facing roof slope, roof decking was deflected downward and the exposed edge exhibited saturated wood and/or microbial growth (Photo I12).
  - d) At the south end of the roof, adjacent to the steeple framing, a water capture and drainage system consisting of plastic sheeting and buckets was observed (Photo I13). Steel steeple framing in the vicinity was wet and corroded (Photo I14). Wood framing and sheathing in the area was saturated and exhibited microbial growth (Photo I15).
2. At the west-facing roof slope, a rafter was fractured (Photo I16).
3. At a 4x4 horizontal truss brace within the southern third of the original roof area, splintered wood fibers were observed at a toenailed brace connection (Photo I17). On the opposite face of the affected truss, the opposing horizontal brace was failed at the truss connection (Photo I18).

### Recommendations:

While the roof framing was in overall fair condition for its age, the fractured rafter, and two horizontal bracing members represent structural deficiencies that are recommended for remediation within the next year. In our opinion, one or more of these conditions is contributing to the ridge deflection as observed from the exterior (refer to Section B).

- At the fractured rafter, we recommend reinforcing with the sistered lumber of like size and species (or better).

- At the splintered horizontal brace connection at the south end of the roof, we recommend installing a face-mounted cold-formed joist hanger to promote a bearing connection of the brace onto the hanger seat.
- At the fractured brace on the opposing side of the truss from the splintered toenail connection, we recommend completely replacing the affected brace with an engineered wood member such as an LVL or PSL.

The water stained wood framing appeared to be in serviceable condition with no structural deficiencies noted at the affected members. We recommend ensuring the roofing system is water tight, as discussed in Section B above, and periodically inspecting the attic space for active leaks. The displaced decking identified in Observation 1d above is expected to be remedied during replacement of the roofing over the main congregation area.

During replacement of the roof, we also recommend providing additional means for attic ventilation such as additional static vents, a continuous ridge vent, or similar to accommodate exhaust, as well as increasing the amount of intake air via strategic placement of louvers, static intake vents, or fans in the pediments, eaves, or other locations. Refer to Section B above.

I1	<b>Category 1</b> – Reinforce Fractured Rafter at West-facing Slope	\$800
I2	<b>Category 1</b> – Replace Fractured Horizontal Brace at South End	\$800
I3	<b>Category 1</b> – Reinforce Horizontal Brace Connection at South End with Cold-Formed Metal Joist Hanger	\$200

Photos:



Photo I1

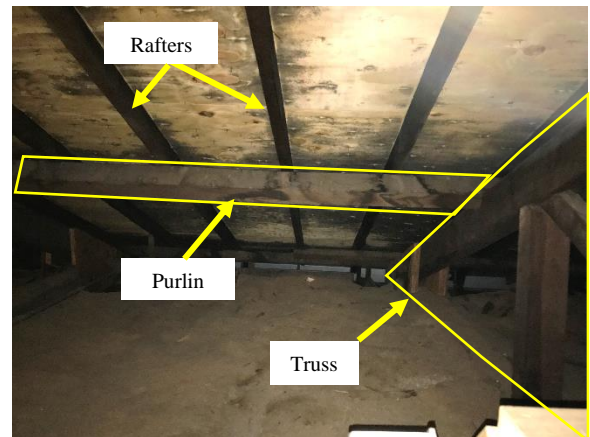


Photo I2





Photo I3



Photo I4



Photo I5



Photo I6



Photo I7



Photo I8



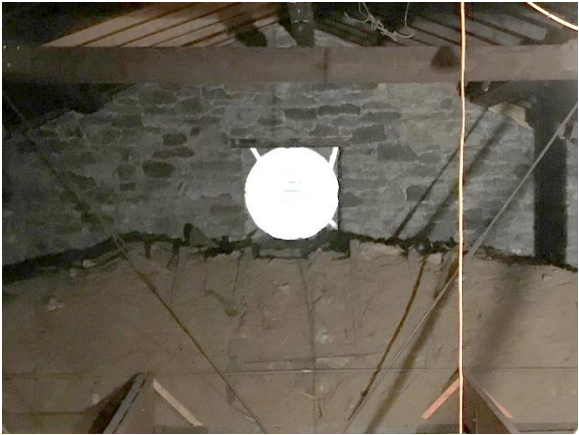


Photo I9



Photo I10

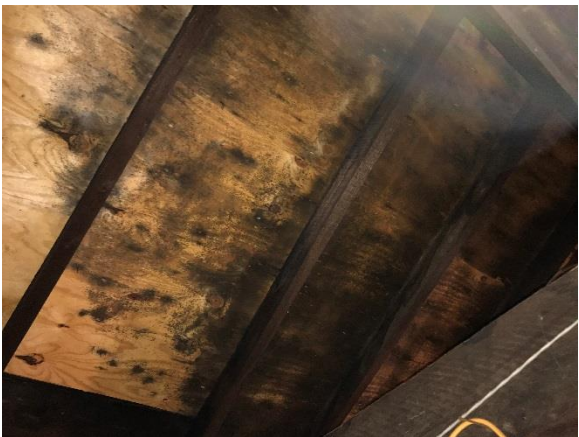


Photo I11



Photo I12



Photo I13



Photo I14

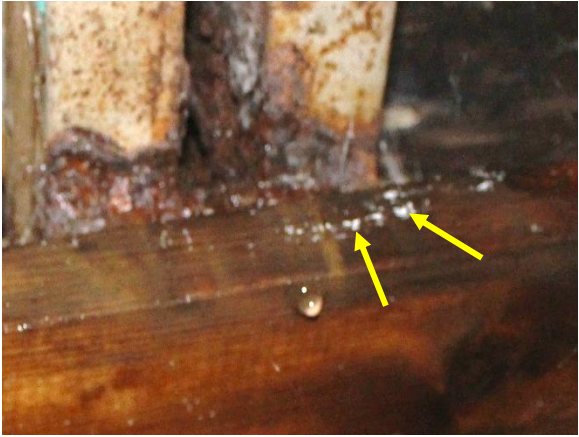


Photo I15

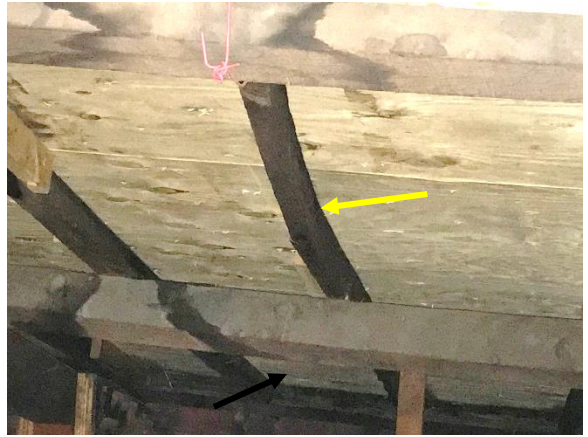


Photo I16



Photo I17



Photo I18

## **J. Basement**

### Description:

The basement beneath the main congregation area was accessed from a hallway beneath the east addition, with the entrance at the north end (Photo J1). Except where noted, main level framing was comprised of rough sawn framing; 2 ½" x 11 ½" decking spanned north-south and supported by rows of timber beams and columns at approximately 8'-0" centers (Photos J1 and J2). Beam sizes varied but most measured 6"x11¾"; beams spanned east-west and were supported by 7½"x7½" posts at 8'-0" on center. Posts were supported by cast in place concrete footings. The perimeter foundation walls were comprised of limestone or granite masonry (Photo J3).

Framing at the northernmost 24'-0" of the basement consisted of 2x10 conventional, dressed joists at 18" centers, spanning east-west between 6x14 beams at 8'-0" centers. The 6x14 beams spanned north-south and were supported by 8x8 wood posts or 3" steel pipe shoring posts atop concrete footings (Photo J4).

Framing in the basement corridor beneath east addition consisted of 2x10 at 18" centers between wood stone masonry walls on each side (Photo J5).

### Conditions Noted:

Stone masonry comprising the basement walls appears to be in fair overall condition with eroded mortar joints typical for a wall of similar age; no structurally significant cracking or displacement was observed along the perimeter basement walls.

Except as noted below, framing within the basement appears to be in overall fair condition, with water stains located sporadically throughout the framing near the south, west, and east foundation walls.

The following issues were observed within the basement:

1. At the foundation walls, eroded mortar joints were observed typically at the window wells (Photo J6). Significant moisture was observed in an isolated area on the east foundation wall, adjacent to the exterior garden (Photo J7). At the south foundation wall, mortar joints were eroded and friable (Photo J8).
2. Cubical fracturing characteristic of dry rot was observed at two beams within the basement (Photos J9 and J10). One instance was located along the third row of framing north of the south foundation wall (Photo J9). In this location the affected beam exhibited rotation over the associated post support. The other instance was located along the south foundation wall (Photo J10).
3. In the northern third of the basement, an area of charred decking was observed, consistent with fire damage (Photo J11). The charring depth was less than ¼-inch.
4. In the basement access hallway, a 2x double plate supporting two floor joists was observed spanning across an opening in a section of masonry foundation wall (Photo J12). The wood members comprising the plate exhibited noticeable deflection and microbial growth.
5. During our investigation, active water infiltration was observed along the west foundation wall, and church representatives immediately notified. The issue appeared to be attributed to a plumbing issue with a hose valve at the exterior of the building. We understand that a local plumber was being contracted to remediate the leak.



Recommendations:

In the basement access hallway beneath the east addition, the unsupported 2x wood plate supporting the floor joists across an opening in the foundation wall is deflecting and exhibiting microbial growth, which represents a *structural concern*. Within the next few months, we recommend installing steel shores and concrete, or precast concrete, footings beneath the two unsupported joists in this location.

The basement was generally damp with water stains observed along framing near the south, west, and east foundation walls. Within the next five years, we recommend installing an exterior waterproofing and drainage system (or replacing any existing system) at the west, north, and east foundation walls in order to preserve the integrity of the limestone foundation and prevent future water infiltration. Prior to installation of the new waterproofing and drainage system, we recommend repointing any deteriorated mortar joints, or applying cementitious coating on the exterior side of the stone masonry. Until the exterior waterproofing system can be installed, we recommend continuous dehumidification of the basement.

Note that when the north foundation wall work is being performed, careful coordination with the local municipality and building department will be required due to the public alleyway bordering the north side of the building.

As discussed above in Section F, we recommend repairing the south entrance stairs to alleviate water infiltration into the south wall of the basement. Such moisture is providing an opportunity for wood rot fungus to propagate through the wood framing along the south foundation wall.

Mortar joints were typically eroded beneath the window wells. Within the next year, we recommend repointing the interior window well mortar joints to temporarily preserve the integrity of masonry in these areas until the complete rehabilitation of the exterior waterproofing system can be achieved in the coming years. At the time of window well repointing, we recommend performing exploratory hand-dug excavations in the vicinity of the window wells to inspect the exterior side of the foundation wall to determine if any waterproofing system is present or to assess the condition of any waterproofing system, to verify the condition of the exterior-facing masonry, and to allow bidding contractors to evaluate so as to properly bid the work.

At the two beams exhibiting dry rot in the southern portion of the basement, we recommend installing supplemental steel beams, posts, and concrete footings within the next two years. At the south wall, we recommend installing a row of steel beams, posts to replace those currently located along the south wall. At the beam located along the third row of framing north of the south foundation wall exhibiting dry rot, we recommend installing two steel beams supported by three posts, located alongside the current wood framing. All steel members installed should be coated with a rust inhibitive coating (paint or primer suitable for structural steel), and regularly maintained.

J1	<b>Category 1</b> –Install Steel Shoring Post and Foundation at Basement Access Corridor	\$4,000
J2	<b>Category 3</b> – Install Exterior Waterproofing System Along Basement Walls	\$95,000
J3	<b>Category 2</b> – Repoint Window Well Mortar Joints	\$7,500
J4	<b>Category 2</b> – Install Steel Beams, Posts, and Concrete Foundations at Two Dry Rotted Beams	\$20,000



Photos:



Photo J1



Photo J2



Photo J3



Photo J4



Photo J5



Photo J6





Photo J7



Photo J8



Photo J9



Photo J10



Photo J11



Photo J12

## V. SUMMARY

The church structure at 725 4<sup>th</sup> Street in LaSalle, Illinois was found to exhibit the following immediate structural or safety concerns, or represent active paths for water infiltration.

### Category 1 Repairs

*Recommended to be performed within two years, unless noted otherwise.*

- Our top recommendation is to repair the deteriorated ornamental plaster above the altar area. Falling plaster of any size represents a hazard to the building occupants as small failures can be expected to precede failures of larger, heavier pieces. The multiple instances of missing decorative florets were observed in the ceiling panels above the altar; when taken in combination with the cracked and peeling paint in the vicinity, are conditions indicative of underlying deleterious conditions that could be more serious. Therefore we recommend having the areas of concern inspected by a specialty plaster contractor with experience in ornamental plaster repairs to further determine the extent of the damaged plaster and confirm the scope of required remedial repairs above the altar. Costs related to plaster replacement in the altar area are estimated to be approximately \$20,000, not including re-painting. If painting costs are included to repaint the entire nave area, we estimate the total cost to be \$70,000. Refer to Section G above.
- Our second recommendation is to address the precariously supported joists within the basement access corridor. The unsupported 2x wood plate supporting the floor joists across an opening in the foundation wall is deflecting and exhibiting microbial growth, which represents a structural concern. Within the next few months, we recommend installing steel shores and concrete or precast concrete footings beneath the two unsupported joists in this location. Related costs are estimated to be approximately \$4,000. Refer to Section J above.
- At the active leak located at the south end of the roof (just north of the steeple), we recommend performing temporary roof repairs as soon as possible to eliminate the water infiltration into the attic. Costs associated with this repair are anticipated to be approximately \$750, refer to Section B.
- The cracks in the window sills provide an opportunity for water to enter the masonry wall and the interior of the building. At the cracks in the window sills throughout the building, within the next year we recommend removing and replacing the existing joint sealant. Related costs are estimated to be approximately \$1,000. Refer to Section D above.
- At the second level window exhibiting no sealant (east elevation of east addition), we recommend applying sealant within the next year. Costs associated with this repair are anticipated to be no more than \$500. Refer to Section E above.
- The missing and failed cove sealant at the entrance stair threshold is providing a path for water infiltration beneath the stair system and into the south foundation wall. We recommend replacing the cove sealant at the south entrance stairs in the next year. Related costs are estimated to be \$500 or less. Refer to Section F above.
- Within the attic, the fractured rafter, the damaged brace connection, and the failed brace all require remediation within the next year to prevent additional structural concerns. Costs related to the reinforcement or replacement of the subject members are anticipated to be approximately \$1,800. Refer to Section I above.

## **Category 2 Repairs**

*Recommended to be performed within five years, unless noted otherwise above.*

- In the case of St. Patrick, Category 2 repair recommendations primarily center on efforts to improve the overall water tightness of the structure and remediate wood framing exhibiting wood rot fungus.
  - Estimated costs associated with replacement of the steeple standing seam metal roofing are \$16,000. Costs associated with replacement of the congregation roofing as well as repairs and painting of the cornices and pediments are estimated to be \$90,000. Refer to Sections A and B above, respectively.
  - Estimated costs to repair and repaint the steeple cladding are approximately \$10,000. Refer to Section C above.
  - We recommend review and remediation of any deleterious conditions found at the masonry walls every five to ten years for the remaining life of the structure. Estimated costs associated with relatively minor masonry issues noted during our inspection are approximately \$5,000. Refer to Section D above.
  - At the wood doors, repainting is estimated to be approximately \$5,000. Refer to Section E above.
  - At the windows, costs for resealing the storm panels are estimated to be \$5,000. Refer to Section E above.
  - Costs to repair of the dislodged downspout segments and for scoping and making minor repairs to the buried downspout extension in the east garden are approximately \$1,000. Refer to Section F above.
  - Costs to install the supplemental steel framing and repoint the window well masonry are estimated to total approximately \$27,500. Refer to Section J above.

## **Category 3 Repairs**

*Recommended to be performed within ten years, unless noted otherwise above.*

- In the case of St. Patrick, Category 3 repair recommendations center on conditions that do not impose an immediate safety threat or have the potential to cause one in the near future, but in the long run may become a safety hazard (stairs) or eventually result in expensive remedial repairs if left unaddressed indefinitely.
  - Costs to replace the south entrance stairs are estimated to be approximately \$25,000. Refer to Section F above.
  - Costs to excavate and install, or replace, a waterproofing and drainage system on the exterior of the west, north, and east foundation walls is approximately \$95,000. Refer to Section J above.



OPINION OF PROBABLE COST				
Report Section	Site or Building Component	Repair Category 1	Repair Category 2	Repair Category 3
A	Steeple Roofing and Trim	-	\$16,000	-
B	Congregation and Sacristy Roofing and Trim	\$750	\$90,000	-
C	Steeple Cladding	-	\$10,000	-
D	Masonry Walls	\$1,000	\$5,000	-
E	Doors and Windows	\$500	\$10,000	-
F	Miscellaneous Exterior Items	\$500	\$2,000	\$25,000
G	Finishes	\$20,000	\$80,000	-
H	Steeple Framing	-	-	-
I	Roof Framing	\$1,800	-	-
J	Basement	\$4,000	\$27,500	\$95,000
Repair Category Subtotals		\$28,550	\$240,500	\$120,000
<b>Total Opinion of Probable Cost</b>		<b>\$389,050</b>		

All opinions of cost are based on the current building use and occupancy. Opinions of probable costs included in this report are limited to actual constructions costs only, or hard costs. Soft costs, or costs associated with design, management, permit fees or other indirect costs are the not included and would be in addition to the construction costs provided. Actual repair, replacement and upgrade costs can only be determined by obtaining bids from qualified contractors. This list is to be used only as a guide.

In providing Opinions of Probable Cost, the Client understands that American Structurepoint, Inc. has no control over costs or the price of labor, equipment or materials, or over the Contractor's method of pricing, and that the opinions of Probable Cost provided herein are to be made on the basis of American Structurepoint Inc.'s qualifications and experience. American Structurepoint, Inc. makes no warranty, expressed or implied, as to the accuracy of such opinions as compared to bid or actual costs.

## VI. PROCEDURES, LIMITATIONS AND ASSUMPTIONS

American Structurepoint, Inc. conducted an on-site evaluation of the property to determine the condition of the property as outlined above. During our visit, we did not gain access to all areas, operate equipment, or perform any tests. The findings in our report are not based on a comprehensive engineering study, as we did not remove building materials to inspect the underlying structure, systems, or assemblies.

This report does not confirm the absence of asbestos, PCBs, toxic soils, mold, or other hazardous materials. If certification of these items is required, we recommend specialists in these areas be retained for detailed investigation and testing.

No responsibility is assumed by the assessment firm for any legal matters. It is assumed the facility surveyed is controlled by the property representatives interviewed, and information thus gained as to ownership, location, condition, etc., is factual.

All maps, descriptive materials, and data furnished to the assessment firm are assumed to be correct and adequate for inclusion in this report. Estimates and opinions furnished to the assessment firm by informed persons are assumed to be correct and reasonable. This report is the property of the client and will be used in connection with the purchase of the property. No other use is allowed without written consent of the author.

Estimates of values contained herein for deferred maintenance, latent defects, upgrades, etc. (if any), and are the opinions of the assessment firm who assumes no liability for errors, facts, or judgments.

The assessment firm does not warrant their investigation has revealed all items of deferred maintenance, latent defects, etc., that exist within the project. The assessment firm does state, however, they have made a “best effort” to identify such items in the time available at the project site as are consistent with their experience in the architectural and engineering business.