



## STRUCTURAL CONDITION ASSESSMENT REPORT



### **St. Hyacinth Catholic Church**

927 10<sup>th</sup> Street

LaSalle, Illinois 61301

American Structurepoint Project No. 2018.01714

February 13, 2019

#### **Prepared For:**

Fr. Paul Carlson  
LaSalle Parishes

#### **Prepared By:**

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Project Manager, Investigative Services

## St. Hyacinth Parish

927 Tenth Street



## St. Patrick Parish

725 Fourth Street

### MEMO

DATE: 16 February 2019  
TO: St. Hyacinth Parish Community  
FROM: Fr. Paul Carlson  
SUBJECT: Structural Report on Church Building

As you read the following report, I think it is necessary that we keep in mind those things not included in its assessment. As we address the physical needs of our building, please also note these needs:

1. Air conditioning condensers are quite old, my understanding is they have never been replaced.
2. Radiators, valves, steam traps, steam pipes, controller, and filling mechanisms were not included with the new boiler that was installed a few years ago. These are all aging poorly.
3. Stained glass windows are in various states of disrepair. Some are quite bad and are not sound. Initial estimates on complete repair of all windows is \$750,000.
4. Pipe Organ is beyond repair. Two companies have reported it as a total loss. A rebuild of the organ would take over \$110,000.
5. Bells and Clocks are no longer working. New systems for ringing the bells and mechanizing the clocks is estimated at \$43,000.
6. Pew finish is deteriorating. They will need refinishing or at least more varnish soon. Kneelers also need repair.
7. Doors to the church need to be addressed, most of our doors exceed the allowed necessary force to open.
8. St. Hyacinth's statue on the south elevation of the church needs repair and restoration.

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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, conversations with Church representatives, cost estimation data tabulated by RSMMeans, as well as local restoration contractors. 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, masonry bearing walls and foundations, and wood floor framing
<i>Roofing type:</i>	Asphalt shingle roofing (Chapel and Steeples); Copper Sheet (Sacristy)
<i>Structure age:</i>	Approximately 126 years (construction completed 1892)
<i>Total building area:</i>	Approximately 10,500 square feet (gross building area)

## **II. EXECUTIVE SUMMARY**

The church building located at 927 10<sup>th</sup> Street in LaSalle, 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.

### **General Physical Condition**

#### **Steeple – Sections C and H:**

The steeples are in poor overall condition, with the east steeple exhibiting the most advanced deterioration. Deterioration observed on the exterior and interior of both steeples included eroded mortar joints; cracked, spalled, displaced, and missing brick; and cracked, spalled and missing cast stone. With the exception of the relatively recently replaced west steeple belfry, which was in good condition, deterioration was more pronounced at higher elevations on the steeples. At the east steeple, we recommend rebuilding the belfry and clock chamber within the next two years. At the west steeple, we recommend repointing the entire clock chamber within the next two years. The missing cast stone piece on the north elevation of the west steeple represents an active path of water infiltration and should be addressed as soon as possible. Following masonry repairs, replacement of the spire roofing will assist in creating a watertight steeple. Additional repairs are recommended at the louvers to prevent cascading water from directly entering cast stone joints.



At the cast stone pilaster transitions on both steeples, we recommend repointing the mortar joints surrounding the cast stone pieces, and rebuilding any fractured underlying brick within the next year. Each of the cast stone pilaster transition pieces exhibit one or more of the following: open mortar joints, displacement from their original position, or are supported by cracked brickwork; the sum total of which represents a *safety hazard*.

#### Congregation and Sacristy Masonry – Section D:

Excluding the steeples, the church brickwork is in overall good condition given the age of the structure. Relatively minor amounts of repointing are required around window sills, pilasters, below gutters, and select areas along the south elevation. Failed sealant around window storm panes, and cracking of select storms, is allowing water to infiltrate the window systems and masonry wall below, and is causing cracking, movement, and spalling of the masonry, as well as damage to the interior plaster. As such, the storm sealants and the cracked storm panels require replacement, during which time proper weep holes should be verified or created in order to allow water to escape down the exterior sill rather than enter the masonry.

#### Interior – Sections A, B, G, and I:

The main roof is at the end of its useful life and requires replacement. Breaches in the roofing system are the primary source of plaster damage at the north end of the congregation/nave area. The failed plaster at the north end of the congregation/nave area represent a current safety concern for the building occupants and should be addressed within the next year.

Temporary roofing repairs should be performed at missing shingles and other breaches along the north end of the roof as soon as possible. Such repairs will prevent additional water infiltration into the attic and ceiling system until full roof replacement and plaster repairs can be safely performed.

#### Foundation – Section J:

Overall, the foundation walls and main level framing are in good condition for the age of the building. Remedial work within the basement includes replacing timber posts with galvanized steel, repointing an area of eroded stone mortar joints at the west steeple foundation, and reinforcing or replacing water damaged joists below the east steeple framing.

### **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	\$67,500
Category 2 Repairs	\$783,200
Category 3 Repairs	\$80,000
<b>Total</b>	<b>\$930,700</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 consisted of a main congregation (nave) and sanctuary area approximately 8,500 square feet in size. Rear sacristy areas were located to the east and west sides of the altar; the west side sacristy was approximately 550 square feet, the east side sacristy totaled approximately 630 square feet. The main entrance and narthex were located at the south elevation (Photos BD1 through BD6). A choir loft approximately 16 feet wide spanned the rear of the nave. The pipe organ was located immediately south of the choir area, above the narthex (Photo BD6).

The perimeter multiple-wythe brick bearing walls function as both the structural wall framing and the architectural building envelope for the main building and the steeple tower. The interior walls and ceilings are primarily finished with a lath and plaster system. Wood backup framing formed the curved ceiling areas above the congregation area. The main level was supported by rough sawn wood framing bearing on masonry and stone piers, as well as the exterior multiple-wythe brick masonry foundation walls (Photos BD7). Supplemental wood beams and posts were located along the east and west foundation walls, as described below (Photos BD8).

Two nominally identical steeples were located at the south elevation, one at each corner (Photos BD1, BD9, and BD10). The steeples measure approximately 20 feet by 20 feet in plan with the steeple spire reaching an estimated elevation of 150 feet. A combination of wood stairs and ladders provided access to the upper levels of the steeple interiors, with an intermediate stair landing providing access to the organ and choir loft.

The steeple towers were comprised of a spire roof supported by multiple-wythe brick exterior walls and stone foundation walls (Image A9). The spire roof had heavy timber back-up framing, and was supported by multiple-wythe masonry bearing walls on all four sides (Image A10). The steeple belfry, located immediately below the spire, consisted of masonry walls, and the church bell within was supported with timber framing. The steeple foundation was comprised of stone foundation walls; the footings were not visible but were believed to consist of similar stone masonry.

Notable roof appurtenances included a formed copper steeple above the altar and a brick chimney (Photos BD11 and BD12).

Photos:



Photo BD1



Photo BD2



Image BD3



Photo BD4

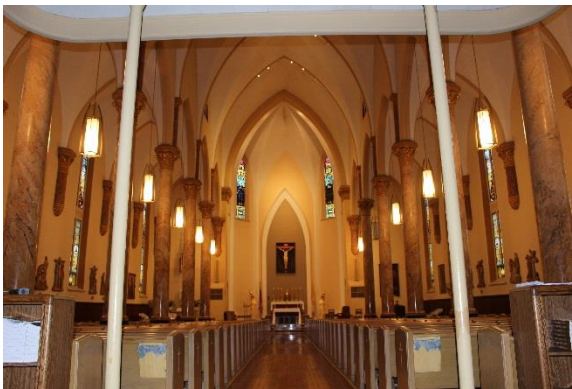


Photo BD5

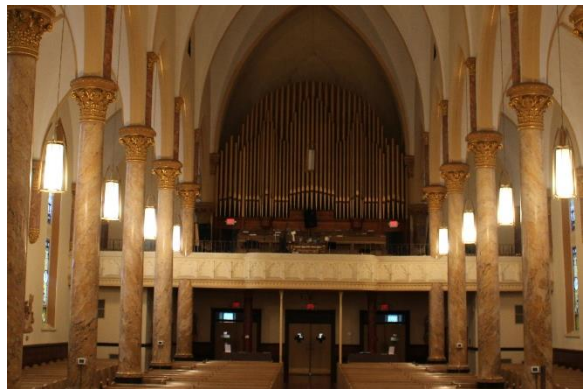


Photo BD6



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. Many of the repairs are believed to have occurred from approximately 1970 to 2000, with numerous unknown remedial measures taken during the 1970s. The following summarizes our understanding of the notable maintenance history throughout the building based on interviews with church representatives.

- West Steeple Belfry: Within the last 30 years, the original multi-wythe brick walls comprising the west steeple belfry were deconstructed and replaced with 4" CMU and brick veneer.
- Steeple: During 2017, the steeple interiors were cleaned and the louvers at the west steeple were replaced.

Masonry skim coat at steeples: A cementitious skim coat was applied to the interior face of brickwork within the upper levels of the steeple. The age of the skim coat was unknown.

- Roofing: During 2017, various flashing and shingles repairs were made at the roof above the main congregation area as well as at the steeple crickets.
- Painting: The interior of the church was repainted during the 1990s.
- Column Finishes: During the 1970s, the current faux marble column enclosures and bases replaced the original enclosures.
- Masonry Repointing: Portions of the exterior masonry have been repointed at various times throughout the life of the structure, however the date and location of the most recent pointing was unknown.

## **IV. OBSERVATIONS**

### **EXTERIOR OBSERVATIONS**

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

##### Description:

The east and west steeple roofs consisted of an approximately 100 foot tall spire atop the steeple, and four small angled roofs (belfry gables) between the square steeple belfry and the spire (Photos A1 and B2). The spire was comprised of eight sides, and was clad with three-tab fiberglass asphalt composition shingles above the peak of the belfry gables. The lower portions of the spire roof, between the belfry gables, was clad with laminated fiberglass asphalt composition shingles (Photos A2 and A3). Spire ridges were clad with formed copper ridge caps (Photo A2). Trim elements observed along the steeple were comprised of formed copper (Photo A6 and A8).

##### Conditions Noted:

1. Steeple shingles were in generally poor condition with age-related deterioration including curling, fracturing, and missing or torn tabs (Photos A3 and A4).
2. Select copper ridge caps were missing or had been replaced, as evidenced by the differing color (Photos A5 through A7). A fracture was observed at one of the replaced ridge caps (Photo A7)

3. Openings were observed at various copper trim elements (Photo A8).

Recommendations and Repair Priority Category:

The steeple roofing is at the end of its useful life, therefore, within the next five years we recommend temporarily removing the copper ridge caps and replacing the asphalt shingles at both steeples. Due to the suspected age of the steeple roof sheathing, and the condition of the overlying shingles, partial to complete replacement of the roof sheathing may necessary. At the time of steeple roofing replacement, we recommend repairing any openings in the copper trim.

A1	<b>Category 2 - Roofing Replacement and Trim Repair at Both Steeples</b>	\$60,000
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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 gabled roof over the main congregation area consisted of laminated fiberglass asphalt composition shingles in fair-to-poor condition (Photo B1). Flat roof areas over the northeast and northwest sacristies were comprised of copper sheet roofing in good overall condition (Photo B2). Three skylight dormers were located on the east and west elevations and were clad with light-gauge metal sheeting; the valleys between the dormers and main roof consisted of copper valley metal (Photo B3). Recent shingle repairs (circa 2017) were observed on the east-facing slope over the choir loft (Photo B4); recent sealant repairs were observed along copper wall flashing (Photo B5).

### Conditions Noted:

The shingles over the main congregation area are nearing the end of their useful life. The copper roofs over the sacristy exhibited no observable breaches and no issues were reported. The following conditions will need to be addressed in the coming years to prevent future deterioration.

1. Shingles throughout the roof exhibited granule loss and craze cracking characteristic of long-term weathering (Photo B6).
2. Various shingles were missing along the dormer ridges and roof hips (Photos B7 through B9), including adjacent to the copper ventilation steeple approximately above the north end of the congregation area (Photo B8).
3. Withdrawn nails and separated seams were observed at various portions of copper trim throughout the church (Photo B10).
4. At the skylight dormers, weathered and cracked sealant was observed along light-gauge metal cladding seams (Photo B11).
5. A number of shingles were lodged in the gutters; a dislodged shingle obstructed the southeast downspout (Photo B12).

### Recommendations and Repair Priority Category:

The congregation area shingles are at the end of their useful life, therefore, we recommend replacing the shingles within the next two years. Due to the suspected age of the roof sheathing, partial to complete replacement of the roof sheathing may be necessary. At the time of the roofing replacement, we recommend repairing any openings in the copper trim. We also recommend closely inspecting the copper ventilation steeple for breaches or leaks and repairing or sealing as necessary.

Within the next year, we recommend repairing the missing shingles. The missing shingles currently represents an active path for water infiltration into the building. Water entering the attic space can cause degradation of the lath and plaster ceiling, posing a safety hazard for occupants.

B1	<b>Category 2</b> – Congregation roof replacement, dormer/trim repair	\$85,000
B2	<b>Category 1</b> – Repair missing shingles	\$2,500

Photos:



Photo B1



Photo B2

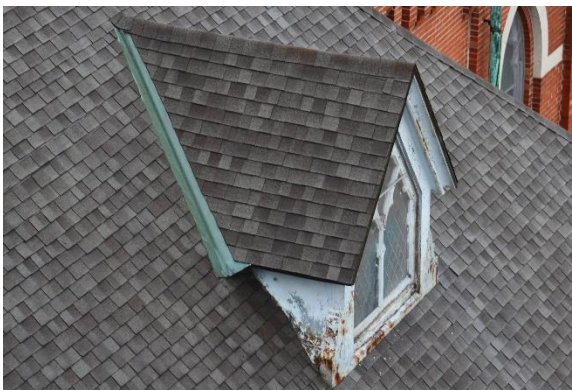


Photo B3



Photo B4



Photo B5



Photo B6





Photo B7



Photo B8



Photo B9



Photo B10



Photo B11



Photo B12

### **C. Steeple Masonry**

#### Description:

The two exterior steeple walls are comprised of multiple-wythe clay brick masonry, with corner pilasters and cast stone elements including sills, arches above windows, pilaster transitions, and other decorative elements. From top to bottom, the steeple was comprised of a spire, belfry, clock chamber, and upper, middle, and lower levels; decorative cast stone banding delineated each steeple level (Photos C1 and C2). Limestone masonry was located below the stone belt course, approximately 36 inches above grade (Photo C3). Basement ventilation openings were located within the lower limestone coursing and were infilled with wood framing (Photo C3).

All exterior brick masonry appeared to be original to the structure, with the exception of the belfry at the west steeple, which had been rebuilt in recent decades (Photo C4). Miscellaneous repairs throughout the steep masonry consisted of repointed mortar joints, silicone sealant at cracked brick, as well as mastic sealant application at stone elements (Photo C5).

#### Conditions Noted:

The steeple masonry was in overall fair to poor condition; with the east steeple exhibiting the most severe deterioration. The following issues were common to the masonry at both steeples, unless noted otherwise:

1. At both steeples, cracking was observed through cast stone sills below upper, middle, and lower level steeple windows, and through the brick and mortar joints beneath the subject windows (Photos C6 through C8).
2. At the west steeple, the following damages characteristic of long-term deterioration and water infiltration were observed:
  - a. Open mortar joints exhibiting missing and granulated masonry were observed directly beneath the belfry corner pinnacles; presumably in a region of masonry which was unrepaired during belfry reconstruction (Photos C9 and C10). Efflorescence characteristic of water infiltration was observed on the masonry below the open joints.
  - b. At cast stone banding at each steeple level, joints typically exhibited fractured, loose, or missing mortar (Photo C11).
  - c. At the clock chamber, open mortar joints and dislodge brick were observed within the brickwork above and below the clock faces (Photos C12 and C13).
  - d. Select cast stone elements within the corner pilasters exhibited delaminations characteristic of freeze-thaw damage (Photo C13 and C15). At the northeast corner of the north steeple elevation, a cast stone piece was missing beneath the clock chamber (Photo C14). Lift access prevented further inspection of this area from above.
  - e. The bottom course of limestone masonry exhibited craze cracking and was severely eroded (Photo C16).

3. At the east steeple, prior masonry repairs were located throughout, but were more numerous at the clock chamber and belfry (Photos C17 and C18). Anchor assembly plates for interior steel-rod wall bracing were visible from the exterior (Photos C18 and C19).
  - a. Overall, deterioration at the east steeple was similar to the west steeple, described above, with the following notable areas of more severe or more extensive degradation:
  - b. The belfry pinnacles were noticeably leaning toward the center of the steeple; open mortar joints and fractured brick were observed throughout the masonry at and below the pinnacles (Photos C20 and C21).
  - c. At the southeast belfry pinnacle, the capstone was missing. The exposed cementitious repair in place of the capstone was fractured and spalling (Photo C4 and C22).
  - d. Masonry at the belfry and clock chamber exhibited severe deterioration including open mortar joints, separations at prior sealant repairs, and fractured and dislodged brick (Photos C21, and C23 through C25).
  - e. At the middle and upper levels, open mortar joints were common throughout the elevations (Photos C25 and D26).
  - f. At the corner pilasters, cast stone transition pieces exhibited open mortar joints on all sides. Closer inspection revealed many of the stones were dislodged; at some pilasters, fractured brickwork was located immediately beneath the lowest cast stone element. At the southeast steeple corner, a cementitious patch exhibited cracking and scaling consistent with freeze-thaw damage (Photos C27 through C30).
  - g. At the lower level interior corner located between the east steeple wall and southeast pilaster, a separation approximately  $\frac{3}{4}$ " wide was observed below the cast stone sill and transitioning to a step crack propagating to the nearest east elevation window (Photos C31 and C32). The cast stone sill above the wall separation was also cracked (Photo C31).

Recommendations and Repair Priority Category:

Overall, the exterior masonry at the steeples is in poor condition, with the east steeple exhibiting more advanced deterioration than the west. In general, deterioration was more prevalent at higher elevations on the steeples, with the exception of the belfry at the west steeple, which was in good overall condition.

At the cast stone pilaster transitions on both steeples, we recommend repointing the mortar joints surrounding the cast stone pieces, and rebuilding any fractured underlying brick within the next year. Each of the cast stone pilaster transition pieces exhibit one or more of the following: open mortar joints, displacement from their original position, or are supported by cracked brickwork; the sum total of which represents a *safety hazard*.

At the west steeple, we recommend repointing the entire clock chamber within the next two years. The missing cast stone piece represents an active path of water infiltration and should be addressed as soon as possible.

At both steeples, we recommend repointing brick at the lower, middle, and upper levels, as well as repointing cast stone (sills, arches, etc.) throughout all steeple levels, within the next two years. At the same time, we recommend addressing the lower level separation observed at the southeast corner of the east steeple by pointing the joint and installing helical brick ties so as to prevent further water infiltration.

At the east steeple, the belfry and clock chamber exhibited open mortar joints, separations at prior sealant repairs, and fractured and dislodged brick and were in very poor condition. We recommend temporarily removing portions of or the entire east steeple spire and rebuilding the east steeple belfry and clock chamber similar to the rebuild previously performed at the west steeple belfry.

- During 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.
- Due to the significant repair costs anticipated for the steeple masonry and their roofs, and that issues identified will reform in future years without regular maintenance, consideration should be given to demolishing the belfry and clock chamber portions of the steeples, and reconstructing them with a low maintenance material such as fiberglass, or PVC.

C1	<b>Category 1</b> – Repoint/Repair: Cast Stone Pilaster Transitions	\$6,000
C2	<b>Category 1</b> – Repoint: West Steeple Clock Chamber & Replace Missing Cast Stone Piece	\$20,000
C3	<b>Category 2</b> – Repoint/Repair: All Cast Stone Throughout + Repoint Levels Below Clock Chambers + East Steeple Joint Repair (SE Corner)	\$25,000
C4	<b>Category 2</b> – Rebuild: East Steeple Belfry and Clock Chamber	\$510,000



Photos:

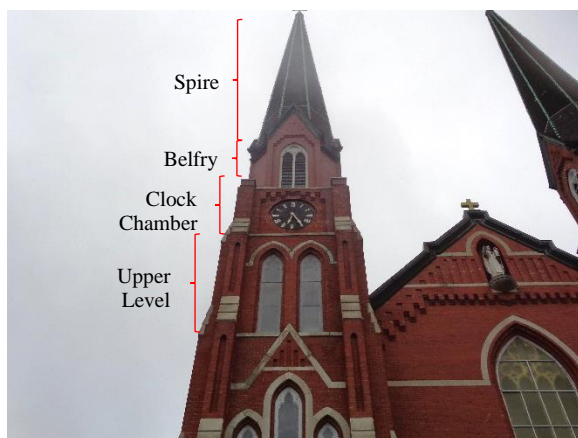


Photo C1



Photo C2



Photo C3

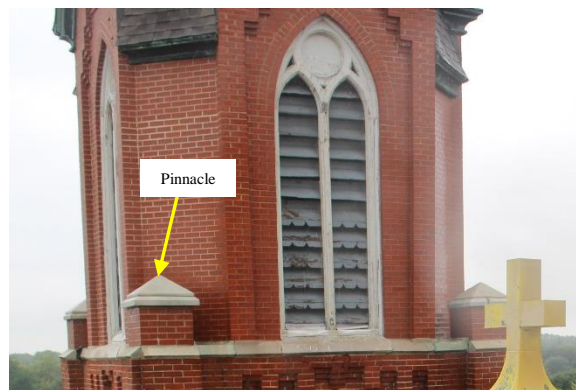


Photo C4

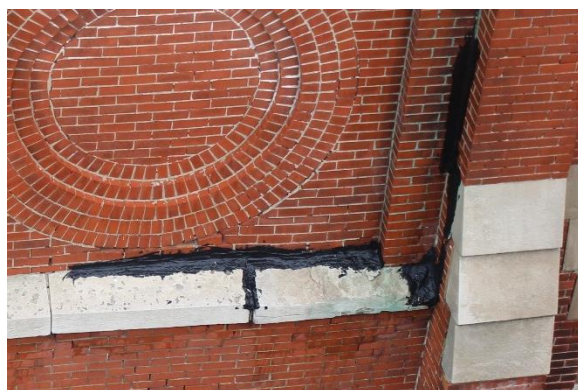


Photo C5



Photo C6





Photo C7



Photo C8



Photo C9



Photo C10



Photo C11



Photo C12





Photo C13



Photo C14



Photo C15



Photo C16

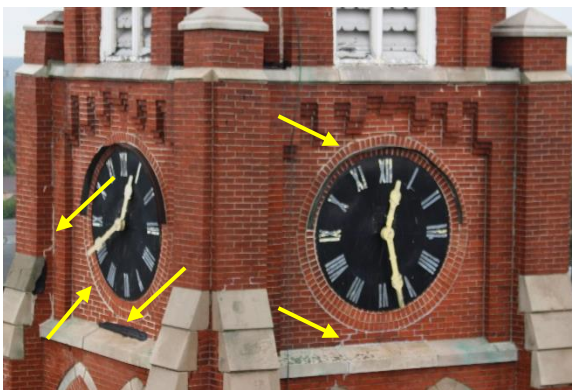


Photo C17

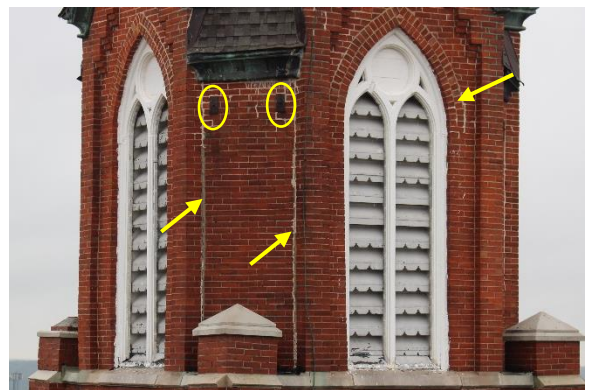


Photo C18





Photo C19



Photo C20



Photo C21



Photo C22



Photo C23



Photo C24





Photo C25



Photo C26



Photo C27

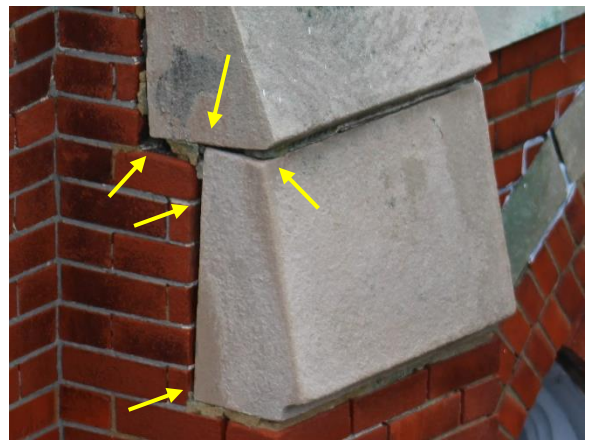


Photo C28



Photo C29



Photo C30



Photo C31

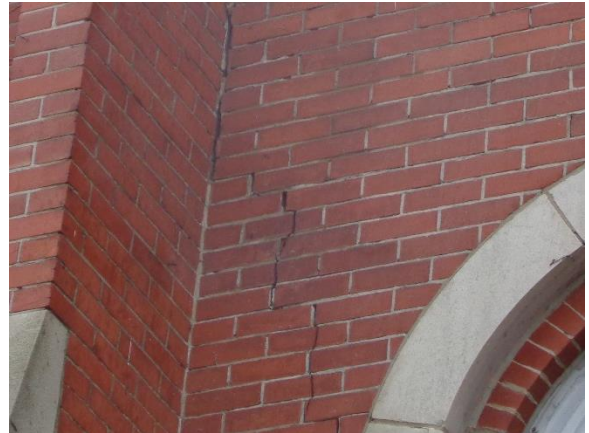


Photo C32

#### **D. Congregation and Sacristy Masonry**

##### Description:

The exterior walls of the main congregation and sacristy areas are comprised of multiple-wythe clay brick masonry (Photos D1 through D3). Decorative masonry elements included cast stone window sills, window arches, louver sills, and the water table belt course (Photo D4); brick dentilwork was observed above windows and along the south elevation (Photos D2 and D3). Brick pilasters are located along the east and west elevations, evenly spaced between windows (Photos D1 and D2). Over their height, the pilasters have stepped projections of one, three, and five wythes from the majority of the elevation. All exterior brick appeared to be original to the structure.

##### Conditions Noted:

The exterior masonry was in relatively good condition overall throughout the church and sacristy areas. The following items are recommended for remediation to prevent future damage.

1. On the south elevation, open mortar joints were observed below a downspout which discharged approximately 10 feet above grade (Photo D5).
2. Select areas of open mortar joints were observed below some windows and at some pilasters (Photos D6 and D7).
3. Throughout the building, select areas of open mortar joints were observed below the copper gutters (Photo D8).
4. At the west elevation, a small piece of cast stone was fractured, and suspended above the side entrance stoop (Photo D9).
5. At the south elevation, open mortar joints were observed below the cast stone banding; separations were observed at prior cast stone joint repairs (Photos D10 and D11).
6. At the grade level limestone courses on the south and east elevations, failed sealant was observed at the cove joint along the sidewalk (Photo D4).
7. At the north elevation, a separation of approximately one inch was observed at the joint between the east wall of the basement entrance and the north sacristy wall (Photo D12).

##### Recommendations:

Within the next two years, we recommend repointing the open mortar joints below windows, at pilasters, below copper gutters and missing downspouts, and at open cast stone joints. At the grade level limestone, we recommend sealant repairs along failed cove joints abutting the sidewalk. The suspended fragment of cast stone above the west elevation entrance should be removed.

Refer to the commentary included in Section C above (first bullet), regarding the use of appropriate mortar during masonry repairs.

D1	<b>Category 2</b> – Exterior Masonry Repairs	\$5,000
D2	<b>Category 1</b> – Remove suspended cast stone fragment at west entrance	Maintenance Staff



Photos:



Photo D1



Photo D2

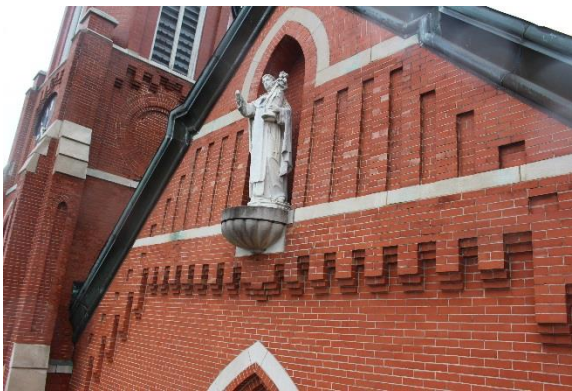


Photo D3



Photo D4



Photo D5



Photo D6





Photo D7



Photo D8



Photo D9

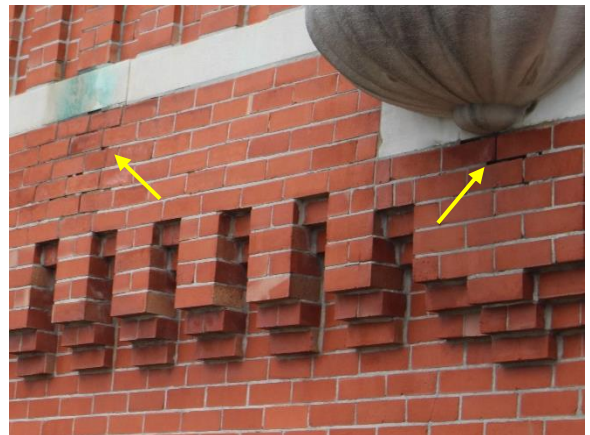


Photo D10



Photo D11



Photo D12

## **E. Doors and Windows**

### Description:

The three entrance doors at the south elevation, and the side entrances on the east and west of the church, were comprised of metal frames and frosted glass (Photo E1). The sacristy entrance on the west elevation, and the basement entrance on the north, were comprised of painted hollow metal doors (Photo E2). Doors were lined with painted wood jambs and trim. The doors were not believed to be original to the church.

Stained glass windows were located along each elevation and were protected by acrylic storm panels on the exterior (Photo E3). Stained glass accent windows or decorative wood panels were located above the entrance doors. No storm panels were located at the large window on the south elevation (Photos E4 and E5). The stained glass windows are believed to be original to the church.

Ventilation louvers were located in the steeple belfry openings and accented with decorative wood panels and trim-work. Portions of the west steeple trim have been replaced or covered with sheet metal flashing (Photos E6 and E7).

### Conditions Noted:

Most aspects of the doors and windows were observed in fair condition with no major issues. The decorative wood panels above the doors and the trim-work and decorative paneling at the louvers were in fair to poor condition and require attention in the near future to prevent degradation of the wood. We did note the following conditions that will need to be addressed in the near future to prevent future deterioration.

1. Typical at the doors, wood door jambs exhibited missing paint and exposed wood trim along the bottom edges (Photo E8).
2. Cracked acrylic storm panels were observed at windows on the north elevation (Photos E9 and E10).
3. Storm panel sealant was in fair to poor condition overall with failed sealant observed at select storm panels throughout the building (Photos E11).
4. At the south elevation main window, the paint at the wood trim was cracked and flaking and the underlying wood exposed (Photo E12).
5. The decorative wood infill panels overlying the south elevation doors exhibited cracked and flaking paint and exposed, weathered underlying wood (Photo E13).
6. At the steeple louvers, the decorative wood panels exhibited flaking paint and weathered underlying wood at all louvers except the north and east elevations of the east steeple; these louvers appeared to have been repainted within the last three years (Photo E14). Typical at each louver, the counterflashing installed over the louver sill did not extend beyond the cast stone joint, creating a possible avenue for water infiltration behind the cast stone (Photos E15 and E16).

### Recommendations:

We recommend repainting the wood door jambs, decorative wood door head panels, the louver trim and associated decorative paneling, and the south elevation window trim. The cracked acrylic storm panels on the north elevation should be replaced and sealed, and the sealant should be replaced at the remaining storm panels. The counterflashing at the steeple louver



sills should be replaced such that water is directed away from, or to fly over, the cast stone joints.

E1	<b>Category 2</b> – Repaint Door Jambs & Decorative Wood Panels	\$5,000
E2	<b>Category 2</b> – Repaint Louver Trim & Decorative Paneling (Qty: 6)	\$9,000
E3	<b>Category 2</b> – Replace Cracked Storm Panels & Reseal Remaining Window Storms	\$15,000
E4	<b>Category 2</b> – Repaint South Elevation Window Trim	\$3,000
E5	<b>Category 2</b> – Replace Louver Counterflashing	\$2,000

Photos:



Photo E1



Photo E2



Photo E3



Photo E4



Photo E5



Photo E6



Photo E7



Photo E8

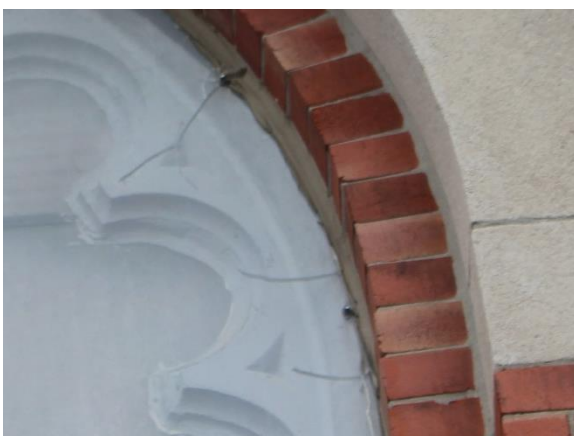


Photo E9



Photo E10





Photo E11



Photo E12



Photo E13



Photo E14



Photo E15



Photo E16

## F. Miscellaneous Exterior Items

### Description:

The stairs and landing at the south entrance consisted of concrete treads and risers, and textured precast concrete wing walls along the east and west sides of the stairs (Photos F1 and F2).

Water drained from the copper gutters via copper downspouts on each elevation (Photo F3). At the north elevation, corrugated downspout extensions carry water away from the building (Photo F4).

### Conditions Noted:

1. The concrete stairs at the south entrance are in fair condition, however, the cove sealant at the wing walls has typically failed or was missing (Photos F5 and F6). Sealants were in similar condition at the east and west entrances.
2. The gutters at the south elevation were either partially removed and draining onto the building wall below, or were not connected to the downspout (Photos F3, F7, and F8).

### Recommendations:

The missing and failed cove sealant at the entrance stairs is providing a path for water infiltration beneath the stair system and could cause freeze thaw damage or settlement over the long term. We recommend replacing the cove sealant at the south entrance stairs.

The missing downspout segments is allowing water to infiltrate the masonry wall and damage the mortar joints. We recommend replacing the missing downspout segments in the near term.

F1	<b>Category 2</b> – Replace Cove Sealant at Entrance Stairs	\$1,000
F2	<b>Category 2</b> – Replace Missing Copper Downspout Segments	\$500

### Photos:



Photo F1



Photo F2





Photo F3



Photo F4



Photo F5



Photo F6



Photo F7

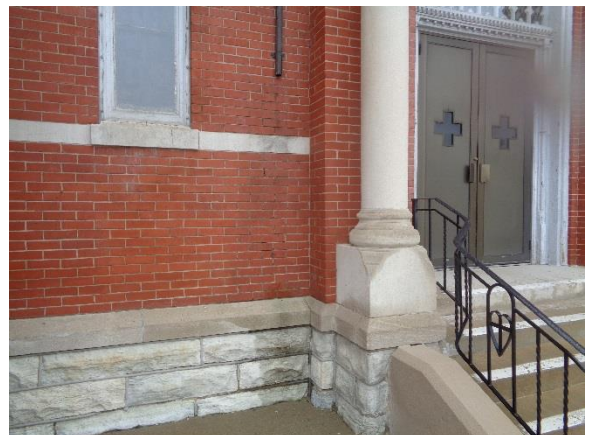


Photo F8

## **INTERIOR OBSERVATIONS**

### **G. Main Level Finishes**

#### Description:

The walls and ceilings throughout the church are typically finished with plaster and wood lath (Photo G1). The plaster walls and ceiling are painted; the most recent paint application was purportedly during the 1990s. The curved ceilings were comprised of wood lath and plaster and was supported by a system of 2x wood framing (Photo G2). The base of the walls was finished with wood wainscoting.

The main congregation area of the church was finished with wood flooring; within the pew areas, flooring consisted of resilient tile (Photo G3). At the altar, flooring consisted of tile (Photo G4). The narthex area walls were finished with wallpaper.

Confessional walls at the southeast and southwest corners of the congregation area were comprised of painted gypsum drywall.

#### Conditions Noted:

Fr. Carlson indicated that some plaster damage was observed after a failure of the HVAC system approximately two years ago. The following damages were observed throughout the interior finishes, including the referenced plaster damage:

1. Cracked plaster was observed throughout church ceiling, concentrated primarily at the north end of the congregation space and over the choir loft at the south end (Photos G5 through G11).
  - a. At the plaster ceiling valleys and arches at the north end of the congregation area; three arches exhibited cracking which was of significant concern (Photos G6 through G9). During our investigation of other church areas, a palm-sized piece of plaster fell from arch above the altar (Photos G9 and G10).
  - b. Above the choir loft, splitting was observed at the corner of a plaster floret (Photo G12).
  - c. Flaking paint and cracked wall finishes were observed at the arched ceiling and walls at the rear of the choir loft. Adjacent to the east wall of the west steeple, an area of ceiling plaster measuring approximately four square feet was missing; bubbling was observed at the surrounding plaster (Photo G13). At the opposite end of the choir loft, adjacent to the west wall of the east steeple, excessive paint flaking was observed along the ceiling intersection with the steeple wall.
2. At the altar walls, paint was typically bubbled and flaking (Photo G14).
3. Below the congregation area windows, peeling paint and cracked plaster was typically observed propagating from the window corners (Photo G15).
4. At the interior side of the east and west entrance door jambs, flaking paint and plaster, and corroded corner beads were observed (Photo G16).
5. At two locations within the west end of the narthex, wallpaper was missing above the lower wainscoting (Photo G17).
6. Drywall bubbling was observed at the base of the east confessional wall (Photo G18).

Recommendations:

Plaster is a brittle material, dependent on the integrity of the plaster “keys” or “lugs” which are extruded through the wood lath system during installation. The keys act as a hanger to hold the plaster onto the wood 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 wood 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.

The cracked and failed ceiling plaster throughout the north end of the congregation area is generally beneath the area of missing shingles surrounding the copper ventilation steeple at the north end of the roof (see Section B). The cracked ceiling plaster observed above the choir loft area approximately aligns with the recently repaired roofing shingles. After the breaches in the roof have been remediated, we recommend locally replacing the damaged plaster. Due to the potential safety hazard posed by falling plaster, we recommend repairing the cracked arches and valleys at the north end and above the choir loft. Priority should be given to the cracked plaster at the north end of the congregation area, as these areas represent the greatest safety issue posed to worshipers and church representatives.

Various plaster repair options are presented below. The first three options may require significant scaffolding and interruption of worship services. Regardless of repair option chosen, the wood 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 wood 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 if plaster ceiling repairs are performed from the underside. Whether repairs are performed from the underside or from within the attic, we strongly recommend that worship services be held in an alternate location until plaster 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.

Following plaster repairs, we recommend repainting the interior of the church.

G1	<b>Category 1: Plaster Ceiling Repairs</b>	\$35,000
G2	<b>Category 3: Paint Interior Walls and Ceiling (Excluding Steeple Towers)</b>	\$80,000

Photos:



Photo G1



Photo G2



Photo G3



Photo G4



Photo G5



Photo G6





Photo G7



Photo G8



Photo G9



Photo G10

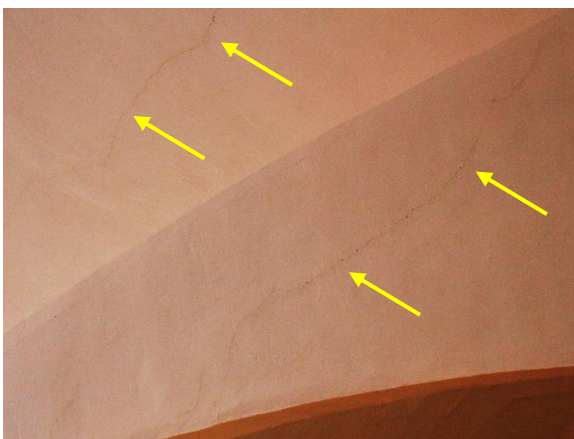


Photo G11

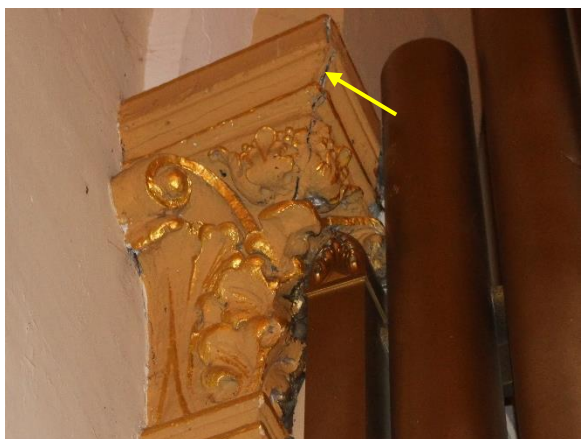


Photo G12



Photo G13



Photo G14



Photo G15



Photo G16



Photo G17

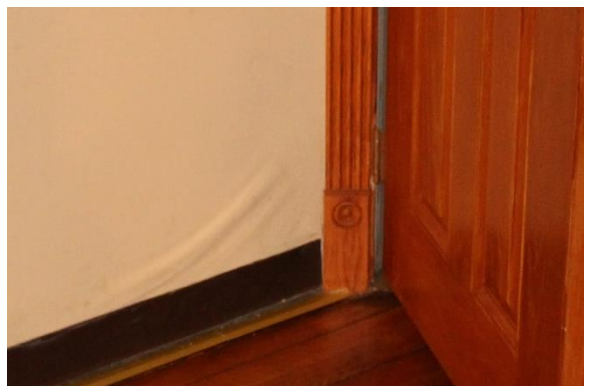


Photo G18

## **H. Steeple Finishes and Framing**

### Description:

The steeple walls were finished with plaster between the main floor and the choir loft ceiling (Photo H1). A set of wood stairs provided access to each end of the choir loft, or steeple middle level (Photos H1 through H3, also ref. Photo C1 and C2). Above the middle steeple level, the walls of the upper, clock chamber, and belfry levels were unfinished, with the original clay brick masonry exposed (Photo H4). Cementitious skim coating was observed at the interior face of the brick beginning at the clock chamber levels (Photos H5 and H6). Timber framing members support the original bell platform and the steeple spire, and are embedded into the masonry walls at the upper steeple level (Photo H7 and H8).

Spire uplift anchors consisting of steel rods were anchored to middle-level timbers embedded into the steeple masonry walls, and were visible within the staircase (Photo H9). At the west steeple, steel posts were located in the steeple corners, presumably used as reaction columns for jacking up the spire during the prior belfry reconstruction project (Photo H10).

Due to the condition of the spire roofing observed from the exterior, access to the timber spire framing was not possible without additional safety equipment.

### Conditions Noted:

The steeple masonry was in overall fair to poor condition; with the east steeple exhibiting the most severe deterioration. The following issues were common to the masonry at both steeples, unless noted otherwise:

1. The wood steeple stairs were in overall fair condition, however, at the east steeple questionable support conditions were observed at the intermediate, middle level landing (Photo H2). The landing appeared to be supported by the timber beam at the north, and the masonry wall at the east side; however, the wood at the east side of the landing exhibited flaking paint indicative of moisture exposure and possible reduced structural capacity.
2. Flaking paint and damaged plaster were observed throughout the middle level of both steeples. Plaster cracks were observed at window and wall corners (Photos H1, H11 and H12).
3. Timber framing at both steeples exhibited varying amounts of water staining typically throughout (Photos H13 through H16). At the southeast corner of the east steeple, a large timber exhibited rot and crushed wood fibers adjacent to the masonry bearing pocket (Photo H16).
4. Steeple brickwork was generally in poor condition with rounded brick edges and eroded mortar joints typical throughout (Photos H17 through H24).
  - a. At the clock chamber, cracked and displaced brickwork was observed above and below the clock faces (Photos H18 through H20).
  - b. At the east steeple clock chamber, the cementitious coating exhibited fractures throughout; above and below the clock faces cementitious coating, along with brick, was fractured and displaced out of plane (Photos H18 through H20). Brick courses immediately beneath the lowest extent of cementitious coating were severely eroded (Photo H21).



- c. At the east steeple belfry, the cementitious coating exhibited significant cracking and out-of-plane displacement of the brickwork (Photos H22 through H24).

Recommendations:

Overall, the interior of the steeples were in fair to poor condition for their age, with the middle and lower levels exhibiting damaged plaster and eroded mortar joints; more advanced deterioration such as cracked and displaced masonry and cementitious coating were observed at the upper level and clock chamber areas of both steeples, and at the belfry level of the east steeple. Cementitious coatings on the interior masonry within the clock chamber at both steeples, and belfry at the east steeple, represent prior attempts to limit degradation of the brickwork, and are now at the end of their useful life.

The observed masonry deterioration is consistent with moisture intrusion occurring over many years, and is attributed to breaches in the spire roofing and deterioration of the steeple mortar joints. At the west steeple, we recommend repointing the interior face of the exposed masonry within the upper level. Within the clock chamber, loose and damaged portions of cementitious coating should be removed. Cracks in the cementitious coating should be reinforced with helical mortar joint reinforcement installed into the underlying horizontal brick joints, followed by patching of the cementitious coating.

At the east steeple, as discussed in Section D above, we recommend reconstructing the clock chamber and belfry levels. We recommend repointing the exposed brick within the upper level of the east steeple.

Evidence of relative movement between the timber framing and the masonry walls was exhibited by the approximately ¼” to ½” withdrawal of timbers from their pockets as indicated by the movement gauges mounted at the east steeple middle level timbers. While no structural distress was observed at the timber bearing surfaces (with the exception of the timber mentioned in Observation 3 above), the gauges represent relative movement between the timber and masonry occurring over some unknown period of time. At both steeples, we recommend installing movement gauges at the middle level timber pockets, with installation dates inscribed on the hardware for accurate record keeping, and monitoring/recording on a semiannual basis (e.g. every six months). At the east steeple, we recommend installing the new movement gauges alongside the existing gauges, and retaining the existing gauges for general reference.

The intermediate landing at the middle level of the east steeple stairs was questionably supported on its east edge, leaving the only positive means of support along the timber beam at the north edge. Within the next year, we recommend installing a steel knee brace along the south edge of the landing, and anchoring to the east steeple wall with multiple brick anchors.

At the southeast corner of the east steeple, we recommend reinforcing the damaged end of the heavy timber beam with a welded steel bracket anchored into the brickwork.

H1	<b>Category 2</b> – Repoint West Steeple Masonry at Upper and Clock Chamber Levels	\$25,000
H2	<b>Category 2</b> – Repoint East Steeple at Upper Level	\$15,000
H3	<b>Category 2</b> – Re-plaster Lower Level at Both Steeples	\$40,000
H4	<b>Category 1</b> – Install Movement Gauges	\$200
H5	<b>Category 1</b> – East Steeple: Intermediate Landing Knee Brace	\$3,000
H6	<b>Category 2</b> – Install Steel Bracket at East Steeple Timber	\$2,500

Photos:



Photo H1



Photo H2



Photo H3



Photo H4



Photo H5



Photo H6



Photo H7



Photo H8



Photo H9



Photo H10





Photo H11



Photo H12



Photo H13



Photo H14



Photo H15



Photo H16



Photo H17



Photo H18



Photo H19



Photo H20



Photo H21



Photo H22





Photo H23



Photo H24



## **I. Roof Framing**

### Description:

The roof framing consisted of 1x wood decking supported by 2x wood rafters. The rafters spanned east-to-west between the exterior walls and intermediate timber purlins. The purlins spanned north-to-south and were supported by roof trusses at 16 feet on center (Photo I1). Timber columns supported each end of the roof trusses (Photo I2). The curved ceiling were comprised of wood lath and plaster and was supported by a system of 2x wood framing (Photo I3).

### Conditions Noted:

The integrity of the roof framing was in overall good to fair condition for its age. The following issues were observed:

1. Water stains were observed throughout many of the rafters (Photo I4).
2. Saturated wood and water stains were observed at the framing and decking supporting and surrounding the copper ventilation steeple at the north end (Photo I5).
3. At the southernmost 12 feet of the east-facing roof slope, water stains and areas of microbial growth were observed at the underside of the roof framing (Photos I6 and I7). Along the south masonry wall, an area of missing decking was observed (Photo I7).
4. At the west-facing roof slope, an area of fractured decking was observed (Photo I8).
5. From our vantage point on the central catwalk, wood lath and plaster keys were in generally fair condition with some evidence of age and vibration-related deterioration of the keys as evidenced by bright, granulated plaster (Photo 9). No fractured lath was observed from our vantage point. No handrail was located on the central catwalk.
6. Above the altar, a fractured brace was observed adjacent to the ceiling arch framing (Photo 10). Water staining was observed on the arch framing at the location the fractured brace appeared to have been originally fastened. Bird and/or bat excrement was observed atop the plaster framing in this area.

### Recommendations:

The plaster damage observed at the north end of the congregation area and the failed plaster above the altar ceiling arch was caused by water entering breaches in the roofing system near the copper ventilation steeple above this area. The water caused dimensional changes in the wood lath which resulted in fractures to the surrounding plaster keys; the failed keys have manifested as cracks and broken segments of ceiling as viewed from the interior of the church. From our vantage point at the north end of the attic catwalk, direct inspection of the wood laths within the ceiling arch over the altar was impeded by the overlying truss framing. Refer to our recommendations in Section G above for more information.

Outside of leak areas, the plaster keys and wood lath were found to be in fair condition. Some granulation of the plaster keys was observed in areas of no other damage or water stains, and can be attributed to subtle movement of the ceiling system due to thermal changes throughout the seasons, settlement of the structure, vibration, and/or attic foot traffic. Such plaster key

granulation is a common occurrence in antiquated structures and is not usually a cause for concern unless a significant percentage of broken keys are present in any one area.

Based on our conversations with church representatives, it is our understanding that relatively unrestricted access is given to the attic for maintenance purposes. We recommend only minimal access for maintenance staff be allowed as even light foot traffic may cause or may have caused unintentional damage to the plaster through the inherent vibration and deflection caused by the weight and footfalls of persons in the attic. Furthermore, the absence of a safety handrail system along the catwalk is not code compliant for general use and access to the attic space.

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 and copper ventilation steeple is water tight, as discussed in Section B above, and periodically inspecting the attic space for active leaks. The fractured decking identified in Observations 3 and 4 above is expected to be remedied during replacement of the roofing over the main congregation area. Refer to Section B above.

The fractured ceiling brace should be replaced at the time of plaster repairs.

I1	Category 1 – Replace fractured ceiling brace near altar arch	\$800
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Photos:

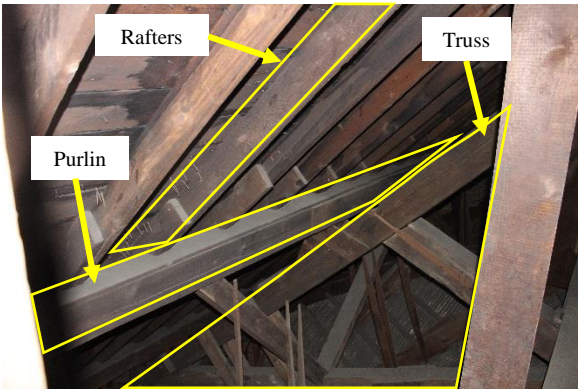


Photo I1

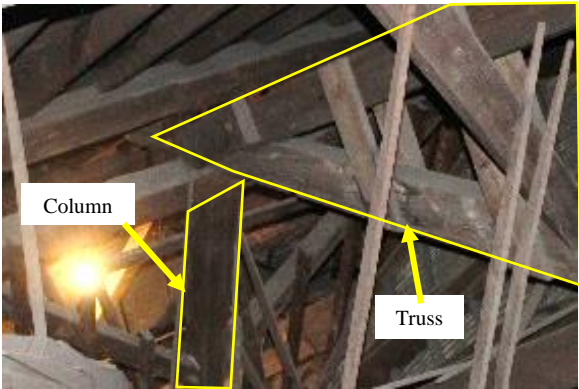


Photo I2



Photo I3



Photo I4



Photo I5



Photo I6



Photo I7

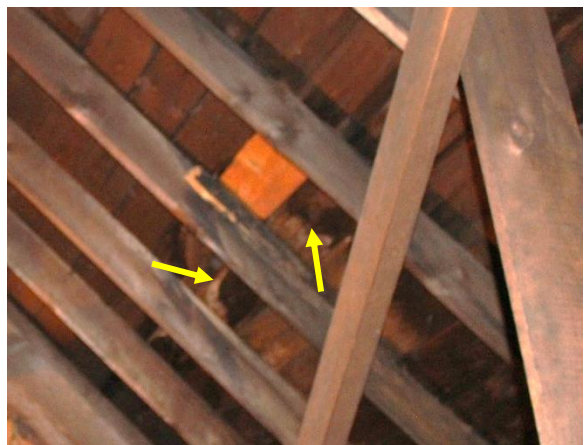


Photo I8



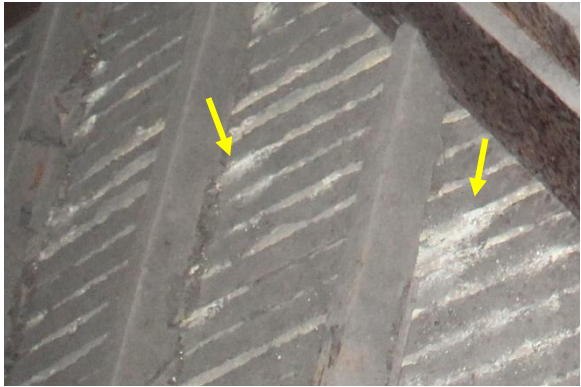


Photo I9

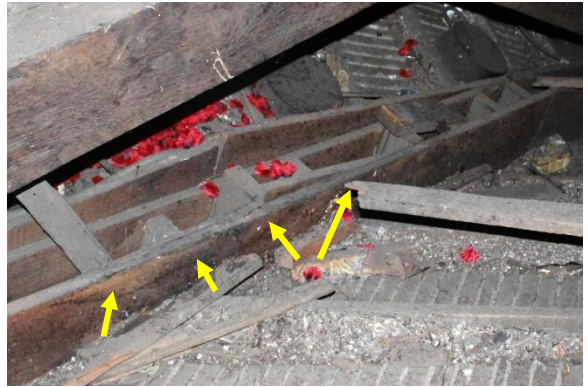


Photo I10

## **J. Basement**

### Description:

The basement and crawlspace was accessed from the north elevation via a set of concrete stairs. A mechanical basement, or pit, housing the church boiler and other equipment was located just inside the entrance stairs and consisted of a slab on grade (Photo J1). A dirt-floor crawlspace was located to the south of the mechanical basement and comprised the majority of the church footprint. Main level framing was comprised of 2 ½" x 11 ½" rough sawn wood joists spaced at approximately 16 to 18-inch centers, supported by three lines of stone piers, and the exterior stone masonry foundation walls (Photo J2). Supplemental wood beams and posts had been added along the east and west walls along the length of the basement; many posts were bearing on concrete pads while others were supported by steps in the stone foundation wall (Photo J3).

Steeple foundations were comprised of stone masonry (Photo J4). Within the steeple areas, various timber shoring frames and posts had been installed (Photo J5). At the southern portion of the crawlspace, masonry piers supported the choir loft columns.

### Conditions Noted:

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

Except where noted, framing within the basement appears to be in good overall condition.

The following issues were observed within the basement:

1. Efflorescence and staining was observed along the east and west foundation walls (Photo J3). Water stains, microbial growth, and minor crushing of wood fibers was observed at the timber posts along the east and west foundation walls (Photo J6).
2. At the west steeple foundation opening, mortar joints were severely eroded (Photo J7). Prior repointing efforts were in good condition (Photo J8).
3. At the east steeple floor joists, water staining and microbial growth was observed in an area reportedly to have previously supported a ground-floor water fountain. Two joists exhibited section loss and friable wood fibers (Photo J9).

### Recommendations:

The wood shoring posts throughout the crawl space exhibit water staining at their bases; microbial growth and small amounts of crushed wood fibers were observed at select posts. As such, we recommend replacing all wood shoring posts with galvanized steel as a precautionary measure. Over time, compromised wood fibers at the post bases can result in deflection, or sagging, of the shoring system, or failure of the wood posts.

Eroded stone mortar joints at the west steeple foundation should be tuck-pointed to preclude against structural instability.

At the east steeple floor joists, we estimate up to approximately four floor joists were previously damaged by leaks related to the interior water fountain, which was removed many years ago. We recommend reinforcing the four subject joists with engineered lumber of similar size.

J1	<b>Category 2</b> – Replace Wood Shoring Posts with Galvanized Steel	\$4,800
J2	<b>Category 2</b> – Repoint West Steeple Foundation Joints	\$2,000
J3	<b>Category 2</b> – Reinforce East Steeple Floor Joists w/Eng Lumber	\$4,000

Photos:



Photo J1

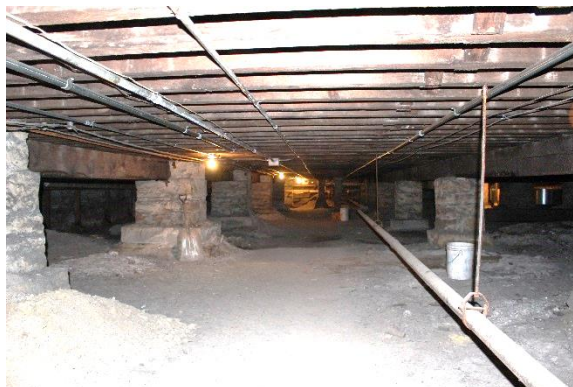


Photo J2

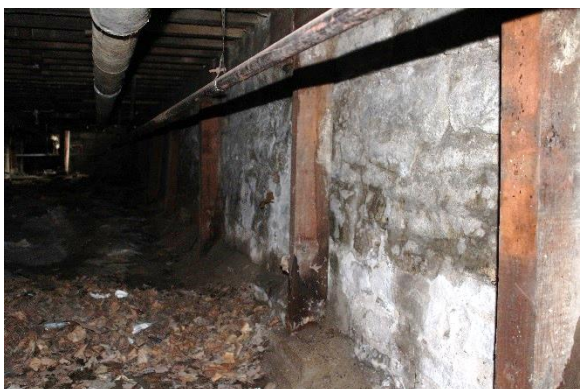


Photo J3



Photo J4





Photo J5



Photo J6



Photo J7



Photo J8

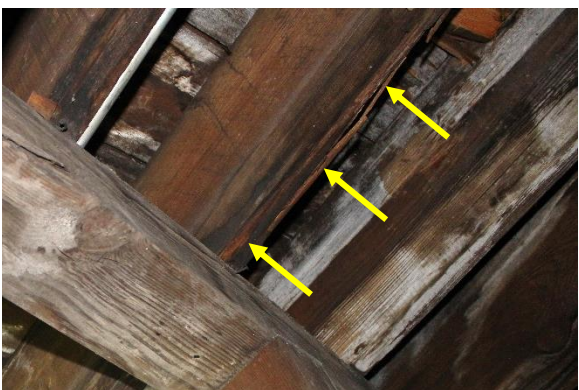


Photo J9

## **V. SUMMARY**

The structural systems including the roof structure, load bearing walls, floor structure, and foundation walls as well as the roof shingles, trims, windows, doors, and interior finishes of the church structure at 927 10<sup>th</sup> Street in LaSalle, Illinois were visually inspected and assessed by American Structurepoint Inc. on September 6 and 7, 2018. The conditions of these elements ranged from poor to good with varying degrees of deterioration and/or damage ranging from mild to severe. Within the body of the report these conditions were documented along with the respective remedial repair measures recommended. Deficiencies identified were also categorized in order to assist the church in understanding the relative seriousness of each condition and prioritize their plan of action as they attempt to address each of them moving forward. Please find below a summary of the conditions in order of priority as they relate to immediate structural and/or human safety concerns or active paths of water infiltration requiring remediation in the near term and proceed to lesser issues requiring attention over the next five and ten years. Finally, a summary table outlining the opinion of probable repair costs is presented with the anticipated costs assigned to their respective repair category

### **Category 1 Repairs**

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

- In our opinion the highest priority item requiring remedial repairs are the plaster issues within the church's interior, and repair of the related missing shingles above the main altar. A palm-sized segment of plaster fell from the arch above the main altar during our assessment. 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.

We recommend repairing the damaged plaster at the north end of the congregation area and above the altar, as well as above the choir loft, within the next year. At the time of repairs, the wood lath should be inspected for soundness. Costs related to plaster replacement in the congregation/nave area are estimated to be approximately \$35,000, not including re-painting. If costs are included to repaint the entire congregation area, we estimate the total cost to be \$115,000. Costs associated with repair of the related missing shingles above the main altar are estimated to be approximately \$2,500. Refer to Sections G and I above for further discussion of repair options.

- The second highest priority remedial repair required to be addressed are the cast stone transitions at the steeple pilasters, as their condition represents a safety hazard. The cast stone transition pieces at the steeple pilasters are exhibiting eroded and open mortar joints, with some sections exhibiting displacement and cracking of the supporting brickwork.

We recommend repointing the mortar joints surrounding the cast stone pieces, and rebuilding any fractured underlying brick within the next year. Related costs are estimated to be approximately \$6,000. Refer to Section C above.

- The missing cast stone pieces and erosion of the west steeple clock chamber mortar joints represent advanced stages of deterioration; the missing cast stone piece suggests significant amounts of water are entering the north wall at the west steeple. In this condition it is our opinion these would represent the next highest priority repairs.

We recommend repointing the west steeple clock chamber level within the next year. Estimated costs associated with this recommendation are \$20,000. Refer to Section C above.

- At the east steeple, the intermediate stair landing above the choir loft was questionably supported on its east edge, leaving the only positive means of support along the timber beam at the north edge.

Within the next year, we recommend installing a steel knee brace along the south edge of the landing, and anchoring to the east steeple wall with multiple brick anchors installed per manufacturer's specifications. We estimate the total cost of repairs to be \$3,000. Refer to Section H above.

- Evidence of steeple movement was observed at timbers pocketed into the brickwork at the middle level of both steeples. The timbers had withdrawn from the masonry pockets approximately 1/4" to 1/2", over an unknown period of time.

We recommend installing movement gauges at the middle level timber pockets, with installation dates inscribed on the hardware for accurate record keeping, and monitoring/recording on a semiannual basis (e.g. every six months). At the east steeple, we recommend installing the new movement gauges alongside the existing gauges, and retaining the existing gauges for general reference. Estimated costs for installing the movement gauges is approximately \$200. Refer to Section H above.

### **Category 2 Repairs:**

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

- Category 2 repair recommendations primarily center on efforts to improve the overall water tightness of the structure and remediating the steeple masonry to sound condition.
  - Replace steeple spire roofing at both steeples and over the congregation area. Estimated costs associated with replacement of the steeple spire roofing and congregation roofing are \$60,000 and \$85,000 respectively. Refer to Sections A and B above.
  - Tuck-point portions of the steeples and sacristy walls. Estimated costs to repoint various portions of the steeples and sacristy walls are \$25,000 and \$5,000 respectively. Refer to Sections C and D above.
  - Repaint door jambs, decorative wood panels, louvers, and south elevation window trim; replace cracked window storm panels and reseal the remaining window storms. Remediation efforts are estimated to cost \$34,000. Refer to Section E above.
  - Replacement of exterior cove sealant and missing segments of copper downspouts. Estimated costs to be approximately \$1,500. Refer to Section F above.
  - Interior repointing and recoating at the steeples, interior repointing, re-plastering, and timber bearing reinforcement are estimated to be approximately \$82,500. Refer to Section H above.
  - Reinforcing the fractured ceiling brace at the north end of the congregation area. Refer to Section I above.
  - Replacement of saturated wood posts in the basement with new steel posts, reinforcement of water damaged joists supporting the main level floor in the east steeple and repointing of steeple limestone. Estimated costs to run approximately \$10,800. Refer to Section J above.
- At the east steeple, we recommend temporarily removing the steeple spire and rebuilding the east steeple belfry and clock chamber (Photos C1 and C2). We believe costs associated with the rebuild could be approximately \$510,000. Should the Parish elect to rebuild the steeples,



we recommend obtaining multiple bids from contractors experienced in such work. Significant scaffolding and protective interior shoring is likely required for the duration of the steeple rebuild, and may impact worship services. If the spire is unable to be temporarily removed and re-set, or partially deconstructed, costs may vary.

### Category 3 Repairs

*Recommended to be performed within the next ten years.*

- Category 3 repair recommendations center primarily around concerns that are primarily aesthetic in nature. We recommend painting the congregation area walls and ceiling. Costs to repaint are estimated to be approximately \$80,000, however, due to the highly specialized nature of the work, we recommend obtaining three bids from contractors experienced in church painting.

**Summary Table: Opinion of Probable Repair Costs and Remedial Repair Categories**

OPINION OF PROBABLE COST				
Report Section	Site or Building Component	Repair Category 1	Repair Category 2	Repair Category 3
A	Steeple Roofing and Trim	-	\$60,000	-
B	Congregation and Sacristy Roofing and Trim	\$2,500	\$85,000	-
C	Steeple Masonry	\$26,000	\$535,000	-
D	Congregation and Sacristy Masonry	-	\$5,000	-
E	Doors and Windows	-	\$34,000	-
F	Miscellaneous Exterior Items	-	\$1,500	-
G	Main Level Finishes	\$35,000	-	\$80,000
H	Steeple Finishes and Framing	\$3,200	\$82,500	-
I	Roof Framing	\$800	-	-
J	Basement	-	\$10,800	-
Repair Category Subtotals		\$67,500	\$783,200	\$80,000
<b>Total Opinion of Probable Cost</b>		<b>\$930,700</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 American Structurepoint Inc. 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 American Structurepoint Inc. 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 American Structurepoint Inc. who assumes no liability for errors, facts, or judgments.

American Structurepoint Inc. does not warrant their investigation has revealed all items of deferred maintenance, latent defects, etc., that exist within the project. The American Structurepoint Inc. 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.