

HISTORIC STRUCTURAL ASSESSMENT 741 JEFFERSON AVENUE, LOUISVILLE, COLORADO

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Evaluated by:

Andy Johnson, AIA
DAJ Design
922A Main Street, Louisville, CO 80027
303-527-1100; andy@dajdesign.com

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1.0 INTRODUCTION

1.1 RESEARCH BACKGROUND / PROJECT PARTICIPANTS

DAJ Design conducted an Historic Structural Assessment for the structure located at 741 Jefferson Avenue, Louisville, Colorado to determine its feasibility as a candidate for historic landmark designation as defined under the Historic Preservation program of the City of Louisville. The structure is a commercial property (church). The City of Louisville Historic Preservation Commission found probable cause that the building may be eligible for landmarking under criteria in section 15.36.050 of the Louisville Municipal Code. Therefore, the Commission approved the Historic Structural Assessment to be paid for by the Louisville Preservation Fund grant.



The primary purpose of this HSA is to evaluate the property's current condition and to identify preservation priorities for the best use of rehabilitation funds. DAJ Design inspected 741 Jefferson visually to identify areas of necessary maintenance and repair. It is possible that complications exist that were not visible and therefore it is recommended that the property owner includes contingency funding in any repair budget.

DAJ Design inspected 741 Jefferson Avenue on August 8th, 2024, with GFE Structural and returned for a follow-up visit on August 13th, 2024. The weather for the initial site visit was overcast with rain while the second visit was hot with clear skies. Adequate access to the basement and attic were available, though not all areas were entirely visible.

LIST OF CONSULTANTS AND SOURCES:

STRUCTURAL ENGINEER

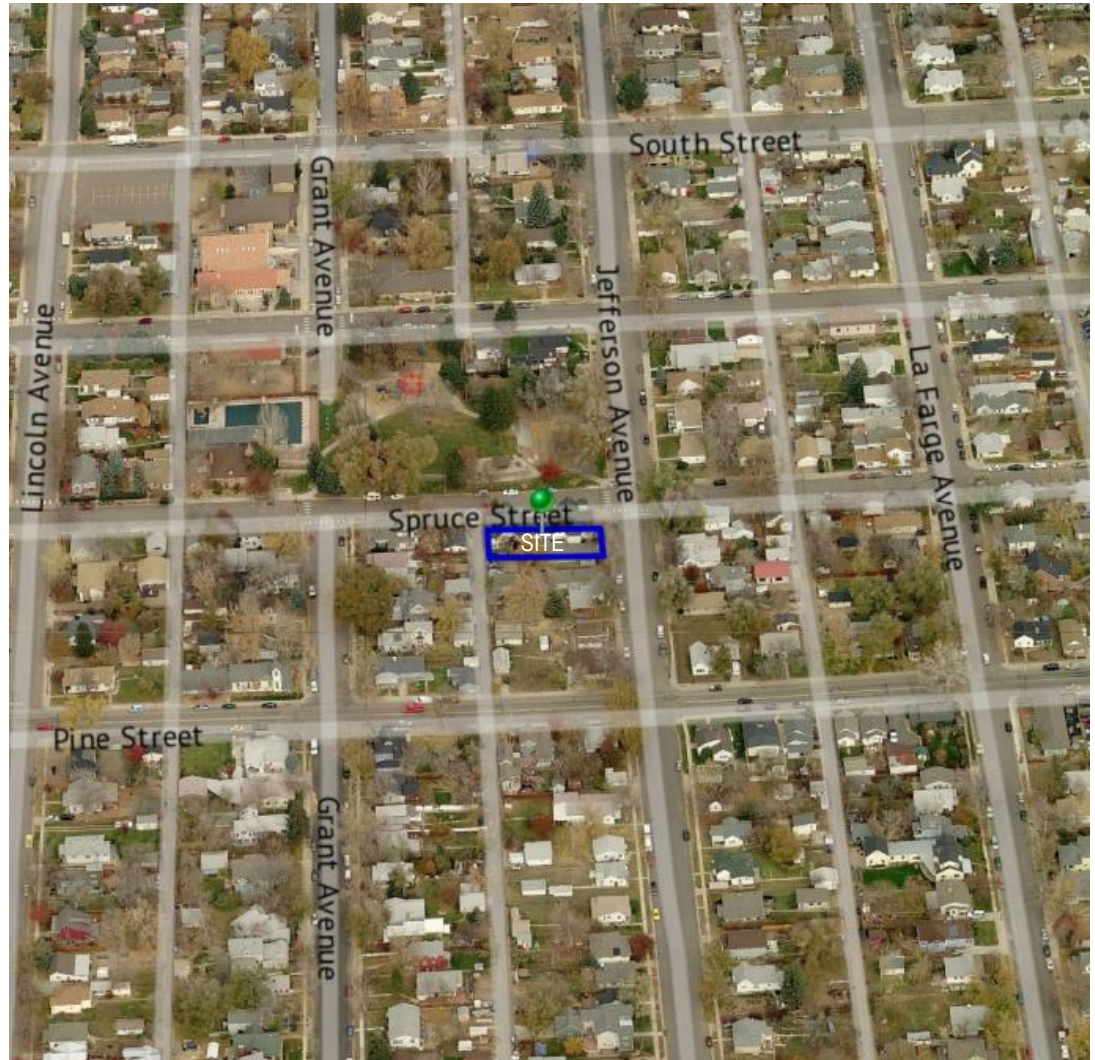
William Schoelman, P.E.
GFE STRUCTURAL
PO BOX 20708
BOULDER, CO 80308
303.554.9591

SOURCES

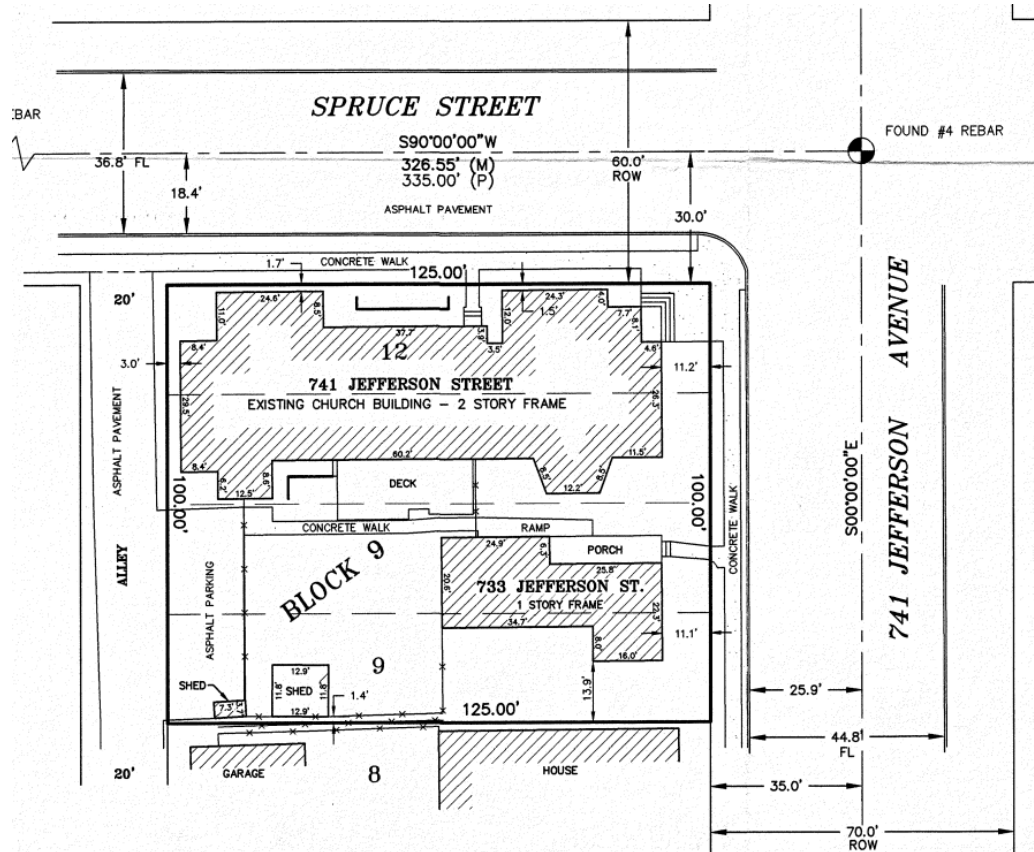
"Louisville Historic Preservation Commission Staff Report," June 17, 2024.

1.2 BUILDING LOCATION

VICINITY MAP



SITE PLAN



2000 survey of 733 & 741 Jefferson

LEGAL DESCRIPTION

Lots 11-12, Block 9, Jefferson Place Department File 07-01-133-01

2.0 HISTORY AND USE

The following report is taken from the Colorado Cultural Resource Survey, Cultural Resource Re-evaluation Form provided by the Louisville Historical Museum.

History of 741 Jefferson (Louisville's Methodist Church)

This report is intended to supplement and update the 2000 survey that was conducted with respect to the history of the Methodist Church at 741 Jefferson. This church was the second church building in Louisville and is the oldest church still meeting in its original building.

When Charles Welch conveyed this property in 1891 to the "Methodist Episcopal Church" for the construction of a church building, it likely made sense for it to be located on Spruce, which was developing into the major east-west street in downtown Louisville. Maps and firsthand accounts indicate that Spruce was at the time a through street to the west, and Pine was not (whereas today, Pine is a through street, and Spruce is not.) By the early to mid 1900s, Spruce as it passed through the Jefferson Place Addition included the offices of the Louisville Times at 800/804 Spruce, a very nearby store at 805 La Farge, the William Austin store at the northeast corner of Spruce and Jefferson, the Methodist Church at 741 Jefferson, and the Louisville grade school. Farther west on Spruce were the brick school house at 801 Grant and the German Lutheran Church at Spruce and McKinley.

The following photo shows the relationship of the Methodist Church (on the left) to the Louisville Grade School across Spruce to the north; it was taken in 1961, not long before the school was demolished:



As noted in the 2000 survey, this church was established by, and appealed to, the many English pioneer families who came to Louisville in its earliest years. Many of the men were miners who had come from mining areas of England. Surnames of families who belonged to this church included (but are not limited to) the following prominent Anglo families who lived in Louisville: Carlton, Hutchinson, Dalby, Jenkins, Lawrence, Thirlaway, Thomas, Thompson, Ferguson, Robinson, Hilton, Cable, Pickett, and Henning.

Tom Carlton, who was a miner and preacher (though not ordained, apparently), is generally recognized as having been the force behind the establishment of the church. He was born in 1824 in the village of Flimby in Cumberland, which is on the Irish Sea near Maryport and near the border with Scotland. He married in 1844 to Jane McLean (1818-1891) and they had several children. English census records show that he was a "colliery viewer," which was a position similar to that of a foreman. The Carlton family immigrated to the US in the 1870s. By 1880, Tom Carlton was a mining engineer in Gold Hill in Boulder County, and by 1885, he was living in Louisville with his family. Records indicate that he was a preacher for Louisville's English settlers who met in private homes prior to the building of the Methodist Church and that he personally raised \$800 for the building. He died in January 1892, not long after the death of his wife, before the Methodist Episcopal Church could be opened.

The following two photos are strongly believed to show Jane and Tom Carlton based on the available evidence and writings on the backs of the photos. The photo of Jane Carlton was taken by a local Colorado photographer, while the photo of Tom Carlton was taken in Maryport, England (near his home village of Flimby):



The earliest available photo of the church shows a central entrance on the east and a bel tower, although records indicate that there may not have ever been a bell installed in that particular tower.

The photo would likely have been taken between 1892 and 1910 (when some modifications were made). In these earliest years, the pews faced south and the pulpit was in the south alcove.

The Methodist Church had a strong affiliation with the Iliff School of Theology in Denver. The Iliff School provided student pastors for the church. According to local historian Carolyn Conarroe, writing in 1991, “[o]f the total 60 ministers who have served Louisville Methodist Church, 57 are thought to have been students.” It was true for at least some of these student pastors that they would come up from Denver and stay over the weekend in a small room in the building.

One of these student ministers was Ralph Mulhollen, who was assigned by the Iliff School of Theology to be the pastor for the Louisville Methodist Church from 1923 to 1925. It was likely during this time frame that he made a map of the Louisville parish that shows the location of not only streets but also houses and businesses at the time. His name appears on the map. This map was found in a home at 700 Lincoln that until recently was still owned by the Thomas family and was donated to the Louisville Historical Museum. Mary Thomas, the home’s former resident, was among the founders of the church, according to a Thomas family history. (She and her husband, Nicholas Thomas, were also associated with 733 Pine in Jefferson Place.)

The date of construction of the church has been well established as having been 1892, but it should be noted that the church building does appear in the correct location on the 1909 Drumm’s Wall Map of Louisville and on the Methodist Church Map of Louisville that was made in circa 1923-25. The property in question is outside of the boundaries of the Sanborn Maps that were done for Louisville in 1893, 1900, and 1908 (they focus on the downtown business district and La Farge Avenue only).

The Ladies Aid Society of the Methodist Church was a very active group of women who are credited with starting Louisville’s Labor Day Fall Festival that is to this day a crowd-drawing annual event that has played a large role in Louisville’s reputation as a festival town. It quickly grew out of an annual church bazaar that was started in 1932. The Ladies Aid Society had almost identical members as the Pioneer Club and the Saturday Study Club, which operated the Louisville Public Library for decades. The following photo, dated 1925, shows the Ladies Aid Society of the Methodist Church:





The woman seated on the farthest right was Jane Carlton, the daughter-in-law of Tom and Jane Carlton. She was the widow of their son, David Carlton, and was very active in the Ladies Aid Society and in the Methodist Church. As noted by local historian Carolyn Conarroe, in her booklet “A Cloud of Witnesses” written for the centennial anniversary of the Methodist Church in 1991, “Some men of the church were merchants who put in long hours at their businesses. Many men were coal miners in the early years before the mines closed in the 1940’s. Their workloads were so heavy, the hours so long, there were no hours left for church work. And the women took over.”

Carolyn Conarroe further stated in her booklet “A Cloud of Witnesses” that the Methodist Church was also used for public education in that it provided space for overflow classes from the public grade school across the street. She wrote, “Photographs and the Louisville Times history features tell that the north alcove was added in about 1910. This addition provided space for classes from the overcrowded school across the street in what is now Memory Square Park, but the dates of this primary school annex are not certain.” The Methodist Church is also known to have had an active Sunday School program.

According to Carolyn Conarroe, the direction of the seats was changed in 1937, being turned to face west instead of south. Her booklet “A Cloud of Witnesses” also recounts other physical changes made to the building over time.

It should be noted that the statement in the 2000 survey for 741 Jefferson that Charles Welch “had originally homesteaded the land which became Louisville” is now known to be incorrect. As the operator of the first mine, the Welch Mine, he did purchase land in order to expand the Welch Mine, and he also purchased land for residential development. However, Welch did not homestead any land in the Louisville area.

Another address found for 741 Jefferson, under Louisville’s old address system, was 240 Jefferson. This address appears in the directories from the late 1920s and early 1930s. In other old directories, the church was simply described as being on the corner of Spruce and Jefferson, with no number address given. The 1940 directory is the first one in which the address of 741 Jefferson appears.

Sources of information

Boulder County “Real Estate Appraisal Card – Urban Master,” on file at the Carnegie Branch Library for Local History in Boulder, Colorado.

Boulder County Clerk & Recorder’s Office and Assessor’s Office public records, accessed through <http://recorder.bouldercounty.org>.

Directories of Louisville residents and businesses on file at the Louisville Historical Museum.

Census records and other records accessed through www.ancestry.com

Drumm’s Wall Map of Louisville, Colorado, 1909.

Methodist Church Parish Map of Louisville, Colorado, circa 1923-25.

Sanborn Insurance Maps for Louisville, Colorado, 1893, 1900, and 1908.

Archival materials on file at the Louisville Historical Museum, including an untitled and undated family history provided by the Thomas family.

"Church History Dates Back to Late 80s." *The Louisville Times*, September 3, 1942.

"Church Receives Many Gifts During 50 Years." *The Louisville Times*, September 3 1942.

Conarroe, Carolyn, *A Cloud of Witnesses*." (Booklet written for the Methodist Church Centennial, 1891-1991.)

Conarroe, Carolyn, *Louisville Legends*. Capitol Hill LLC, 2004.

Conarroe, Carolyn, *The Louisville Story*. Louisville Times, Inc., 2000.

Gleeson, Carol, "Fall Festival Draws a Crowd." *The Louisville Times*, September 4-10, 2002.

"Good ole Days." *Daily Camera* Fall Festival Guide, September 2001.

"Ground Breaking Celebration Kicks off Expansion at Louisville United Methodist." *The Louisville Times/Lafayette News*, September 22, 1999.

Martin, Lindsey, "Methodist Church Buildings Gets a New Lease on Life." *The Louisville Times* (believed), February 23, 1983.

McAllister, Margie, "Coal Miner Starts United Methodist Church 100 Years Ago This Week." *Daily Camera*, September 4, 1991.

"Member Recalls Church Activities of Yesteryear." *The Louisville Times*, September 3, 1942.

"Methodist Church" (manuscript on file at the Louisville Historical Museum)

"Methodists Will Observe Church 50th Anniversary." *The Louisville Times*, September 3, 1942.



2.1 ARCHITECTURAL SIGNIFICANCE & CONSTRUCTION HISTORY

The commercial property at 741 Jefferson, known as the Louisville United Methodist Church, was built sometime around 1892. The church is a typical wood frame vernacular structure of the Louisville area. The wood frame construction style is typical of late 19th and early 20th century construction techniques found in the Louisville area. Many of the original materials remain and are consistent with other building materials and details used on other structures built around the same time in the Louisville area. However, some of the construction techniques and details are unique to the church with no known precedent found elsewhere in Louisville.



The primary façade faces east to Jefferson Avenue and the form of the church is similar to that seen in the earliest photographs of the church with several modifications and additions having taken place over the years. Early modifications to the original church include a small south addition, the removal of the original entrance, and a new entrance and bell tower constructed on the north side of the original structure. A large addition to the rear (west) of the original church occurred in 1941 and another two-story west addition was added in 2000.

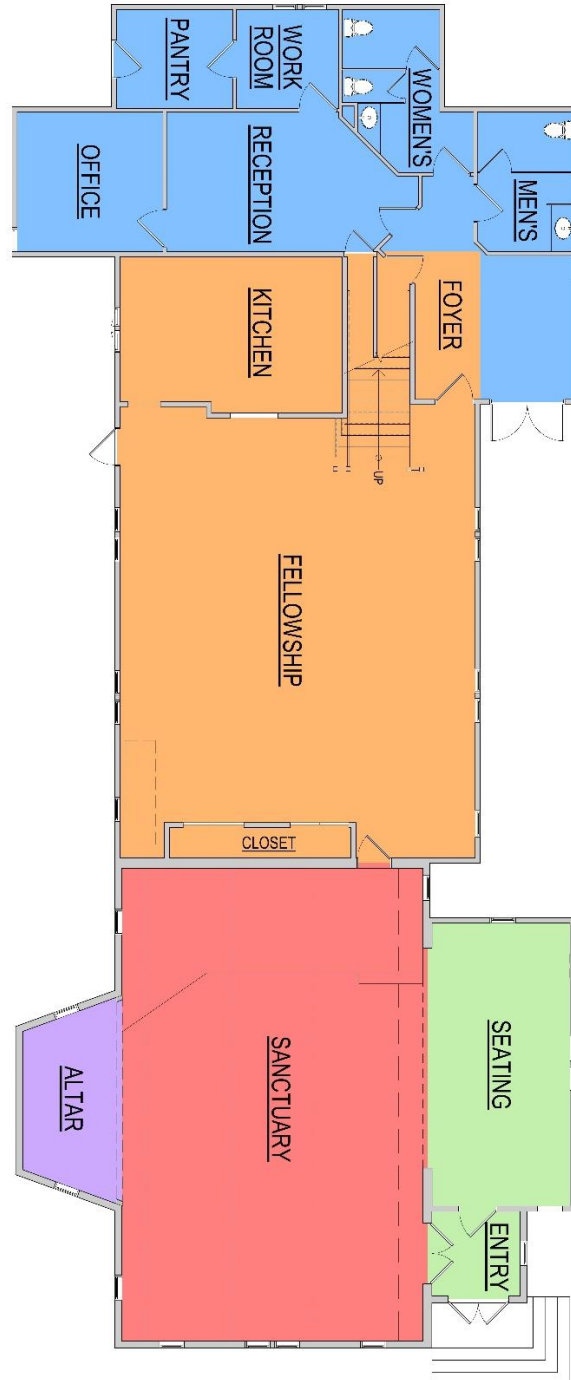
Many of the original construction materials remain including structural members, decorative elements, exterior siding, doors, and windows. Several original items that were removed early on appear to have been repurposed elsewhere in the building including pieces from the original entrance and the original bell tower.

741 Jefferson has the potential to be restored to a high degree of architectural integrity when compared to historic photos. Overall, the church is well maintained, with items that require prioritization, as outlined in the analysis of this report. The original church is essentially intact with very few modifications since the early phases of construction during the late 1800's and early 1900's.

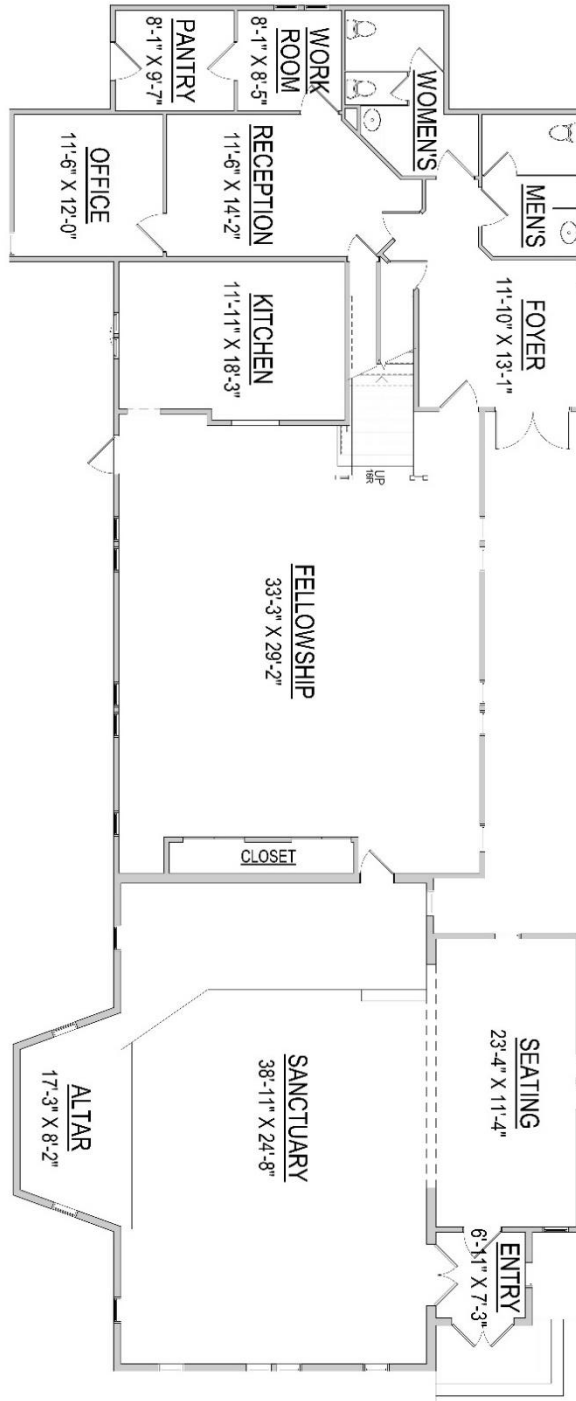
741 Jefferson is not listed on the National, State, or Local Register.

Primary Changes Occurring Over Time:

- Original Church (RED): 1892
- South Altar (PURPLE): Unknown, between 1892 - 1910
- North Seating (GREEN): circa 1910
- Entry & Bell Tower (GREEN): circa 1910
- Middle Addition (ORANGE): 1941
- West Addition (Blue): 2000



2.2 FLOOR PLANS



Main Level Floor Plan

2.3 PROPOSED USE

There is no proposed change of use at this time.



3.0 STRUCTURE CONDITION ASSESSMENT

3.1 SITE

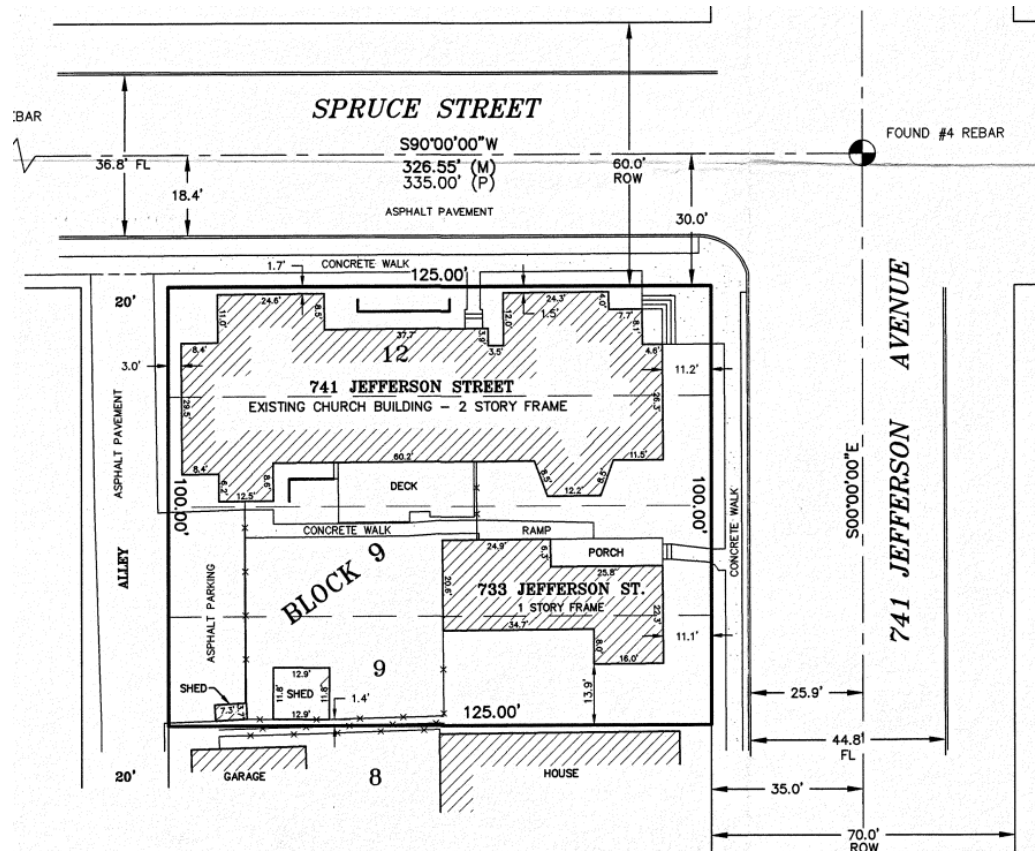
ASSOCIATED LANDSCAPE FEATURES

Description:

741 Jefferson is set on a corner lot in downtown Louisville that is approximately 50 feet wide by 125 feet deep, running lengthwise in the east-west direction and totaling approximately 6,250 sf. The property is bordered on the north by Spruce Street, on the east by Jefferson Avenue, and on the west by a paved 20-foot alley. The south side of the property contains a separate building owned by the church that is currently used as a preschool with a rear yard. There is some separation between the main church building and the preschool with wood fencing although the rear schoolyard is mostly open to the church building with some fenced restrictions.

The building sits close to all property lines with as little as 1 ½ feet from the north property line, 3 feet from the west property line, and approximately 11 feet from the east property line. Overall, the building is centrally located on the site and the building footprint, along with the south side deck, covers most of the site. Additionally, there are concrete sidewalks along the east and north sides of the property with concrete walkways to the church entrances in the northeast corner, on the north side, and to the rear entrance.

There is landscaping on all sides of the building that is a mixture of rock gravel, wood mulch, small plants, shrubs, and trees, with a few larger mature trees on the north and west sides of the property and in the southeast corner. There are no detached structures, or a garage located on the site.



2000 survey of 733 & 741 Jefferson

Condition Evaluation:

With the building footprint and attached deck covering much of the site, there are minimal landscape features to analyze. Overall, the landscape features are in good condition and appear to be well maintained. The trees and large shrubs appear to be healthy and well maintained and there are no areas of ground overgrowth or signs of neglected landscape maintenance.

Recommendations:

1. Work with a licensed arborist to maintain the mature trees and shrubs. Ensure that growth does not interfere with the building roof, siding, or foundation.
2. Keep overgrowth trimmed away from the house and overhead electrical lines and remove any overhead branches.



Well maintained landscaping and mature trees along Jefferson Avenue with the preschool on the left.

GRADING

Description:

Overall, the site is relatively flat with a slight downward slope to the east. Grading around the church appears to drain away from the foundation, though minimally in most areas and it was difficult to analyze grading in some locations due to limited access from landscaping and the attached deck. The south side of the building has some areas that appear to have no positive grading away from the foundation. One of the site visits occurred during a rainstorm and water infiltration was observed in the basement along the south foundation wall. Finished grade sits below the finish materials in most areas, though minimally at all locations except for the east side, and finish materials run beneath grade at the south side and all around the altar bump-out.



Finish materials run beneath grade all around the south altar bay.



Condition Evaluation:

The overall site grading is in poor condition. It is important that the grading around the church should be a minimum of 6 inches below the top of the foundation and slope away from the foundation for at least the first 5 feet. Due to the nature of the lot, it is difficult to meet these requirements without a large amount of regrading in addition to significant foundation repairs or replacement as outlined below.



Foundation of the 2000 addition is exposed above grade while the older foundations are not.

The effects of poor grading are difficult to determine in one site visit. However, as one of the site visits occurred during a significant rain event, water infiltration into the basement was observed in one location and may be present in other areas that were less accessible.

Recommendations:

1. Continue to monitor the drainage around the perimeter of the church. The perimeter should be observed after snow and significant rain events to assess for all areas of pooling water.
2. The top of the foundation relative to the top of grade should be determined around the entire perimeter of the building. If the top of the foundation is determined to be at or below the existing grade, new grading should occur to bring the grade down below the top of the foundation, as prescribed by a licensed architect or structural engineer.
3. Finished grade around the church perimeter should be re-graded to create positive drainage away from the foundation. The top of finished grade should be a minimum of 6 inches below the top of the foundation and slope away from the foundation for at least the first 5 feet. Coordinate slope with a licensed architect or geotechnical engineer.
4. The foundation may need to be replaced in some locations to bring the top of foundation at least six inches above finished grade, mainly at the south bay where the foundation could not be observed. Coordinate with a licensed structural engineer and a licensed geotechnical engineer.
5. It is assumed that there is damage to some of the structural wood elements in parts of the early construction of the church, including and especially at the Alter and North Addition; however, many of these locations were difficult or impossible to access during a visual inspection and may require destructive testing or removal of siding material to access. The wood floor framing members including the sill plate, rim board, floor joists, and floor sheathing should be inspected for rot caused by poor drainage. If rot is found in any of these members, the affected flooring should be replaced as prescribed by a licensed structural engineer.



Finish materials sit at grade making it difficult to determine the top of foundation relative to grade.

PARKING

Description:

There is no parking garage located on the site nor any record of one having existed in the past. There is paved parking in the southwest corner behind the preschool and adjacent to the alley. This parking area is designated for the preschool only and appears to accommodate three to four vehicles. The property is a corner lot with plenty of available street parking on the north and east sides.



Asphalt parking area along the west alley behind the preschool.

Condition Evaluation:

Overall, the parking area along the alley appears to be in fair condition with some cracks in the asphalt paving but with adequate space to park several vehicles with turnaround clearance in the alley. Drainage in this area appears to slope minimally away from the property and towards the alley.

Recommendations:

No recommendations at this time.

3.2 STRUCTURAL SYSTEM

FOUNDATION SYSTEMS

Description:

The house foundation was observed from beneath the main floor within two separate basement areas. Some areas of the foundation are also visible from the exterior of the church. The first basement area is accessed by stairs beneath a floor hatch in the southeast corner of the 1941 addition. This basement area is located along the west side of the original construction and the east end of the 1941 addition. The basement area has a low head height that technically categorizes it as a crawlspace but there are several other areas that are much shallower crawlspace depths. The foundation of the original construction and the north addition are stacked stone. Some of the stacked stone is full depth indicating that there was a basement area as part of the original construction, likely to accommodate a coal furnace. The remaining stone foundation of the original 1892 construction and the 1910 north addition appears to be crawlspace depth. The depth of the stone foundation could not be determined, nor could the size of foundation footings, if any. At some point the basement beneath the original construction was further dug out to expand the usable area for mechanical equipment and storage. The transition areas between basement and crawlspace depth have a combination of wood and 6-inch CMU retaining walls, though some areas of the grade cut are not supported. The crawlspace areas of the original east construction and north addition were minimally accessible due to the limited space between the bottom of the floor joists and dirt as well as several other structural and mechanical elements obstructing access.



Original stone foundation at basement access area. Water was observed in the basement during a rainstorm.

The foundation construction of the south addition could not be determined. Grade sits above the siding at the entire perimeter of this addition. During the site visit, grade was dug to a depth of approximately 6 inches and no foundation was determined. Observations were made that indicate this addition may be supported by a wood foundation, which has been seen at other structures built around the same timeframe in the Louisville area. This addition appears to be sinking and pulling away from the original construction, indicating a different foundation than the original construction and likely wood on grade. It may have been that this addition was somewhat of an afterthought to the original construction and built relatively quickly as more space was needed to either turn the congregation to face a different direction, house the choir, or accommodate a growing congregation.



The original stone foundation is seen from the exterior on the right. The south addition on the left does not have an exposed foundation above grade.



The foundation of the 1941 addition is poured concrete that can be seen from the exterior. This addition sits on top of a crawlspace that is minimally visible from within either basement location. The depth of the foundation and the presence or size of any footing could not be determined, though some of this foundation is full depth where it meets the original stone foundation and original basement.

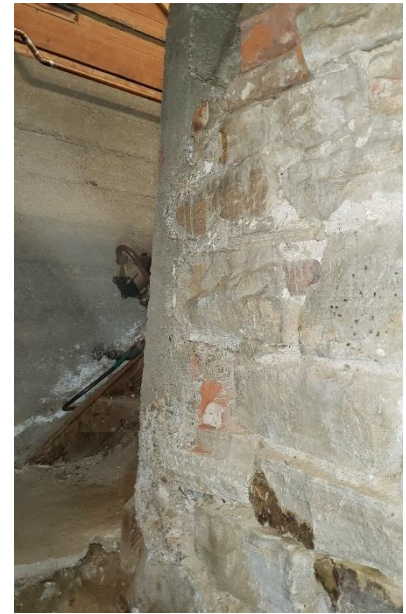
The foundation of the west addition built in 2000 is a poured concrete foundation that is basement depth. The foundation is partially visible from the exterior and from within an unfinished basement area. This basement is accessed by framed stairs built during the 2000 construction that are located in the foyer area near the west side of the church. Building records indicate that a small portion of the 1941 foundation, along the west side, was removed and a new foundation was poured so that the new basement foundation could be tied into the existing foundation. A step in the foundation height was made to not undermine the existing crawlspace depth foundation when the new foundation was poured. Building records indicate that the 2000 addition foundation is an 8-inch-thick poured concrete wall on concrete footings that were built to local building codes at that time. The footings around the stairs are flush with the concrete slab floor, likely to minimize the basement depth in this location and not undermine the foundation of the 1941 addition. Additionally, there are exterior concrete stairs that access the 2000 basement from the south side of the building.

No interior or exterior foundation wall insulation was observed at any of the basement or crawlspace locations nor was there any insulation at the rim, where exposed for analysis.

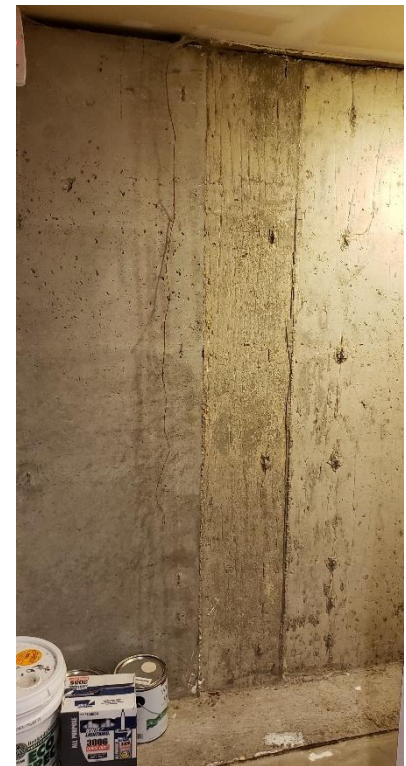
Condition Evaluation:

There are four different foundation types across the structure that indicate different construction periods and methods. All of these foundations have various levels of condition.

The stacked stone foundations of the original construction and the north addition are in fair to poor condition and a large portion of the construction was not visible or discoverable without destructive testing or the removal of soil along the perimeter of the building. The top of the foundation relative to the top of grade is good on the east side of the church but diminishes as grade slopes upward going west. Additionally, it is unclear as to the size or depth of foundation footings in these areas, if any exist. The wood and 6-inch cmu walls that retain the soil between the crawlspace and basement areas are in poor condition as they do not show signs of failure or damage, but it is unlikely that the crawl space retaining walls were built to any model building codes of the time. There are also soil cut areas where there are no retaining walls present and these areas are in poor condition as the soil is not properly supported which could lead to undermining other structural elements.



1941 concrete foundation where it ties into the original stone foundation.



2000 addition concrete foundation and footing that is flush with the concrete slab floor.



The foundation of the south addition could not be determined. Based on site observations, it appears that this area has a wood foundation. The entire south bay appears to be sinking away from the main church structure, indicating a different foundation type than the stacked stone. A condition evaluation of this area cannot be performed without further intrusive investigation to determine the type of foundation. It is assumed to be in poor condition, and it is strongly encouraged to further investigate this area and remediate any failing structural elements.

The poured concrete foundation of the 1941 addition appears to be in good condition, though assessment of this foundation was minimal due to limited access. There is minimal crawlspace access to this area and the foundation could not be viewed from the exterior as there is an attached deck on the south side and an attached accessibility ramp on the north side obscuring the view of the foundation. Further deconstructive investigation is required to fully analyze the concrete foundation of the 1941 addition.

The poured concrete foundation of the 2000 west addition appears to be in good condition. Assessment of this foundation is primarily from the interior of the basement as the finish siding materials run to grade on the exterior. Building records indicate that this foundation was built to local codes at the time of construction and that proper waterproofing measures were taken to reduce the risk of the top of foundation appearing to not be adequately above the top of grade. There was one area at the top of this foundation, near the bottom of the access stairs, where plant roots or vines were seen growing into the basement. This could indicate poor drainage near the north side entrance. However, the remainder of the basement was unfinished, and no areas of water infiltration were observed even though one of the site visits occurred during a significant rain event.



Various materials have been used to brace the cut soil.

Recommendations:

1. The basement and crawlspace foundation walls showed various signs of damage that require further evaluation. No additional load should be added to the existing foundation system without a full analysis of the current foundation walls/footings. In addition, a licensed Structural Engineer and Contractor should be contracted to evaluate and repair the existing stone foundation walls. This work could include re-tuck pointing of existing stone and/or the removal and replacement with a modern concrete wall, etc.
2. Continually monitor the main floor walls for signs of foundation distress such as cracking or improper door operation. Wall cracks were not observed within the wall finishes on the main level. If signs of cracking are detected, these areas should be evaluated by a licensed engineer and repaired as needed.
3. New footings are likely needed to support the point and distributed loads from the roof and floor framing as specified in the recommendations below. New foundation support below any new beam and posts supporting the floor and roof framing should be coordinated with a licensed structural engineer.
4. The transition from shallow crawl space to deeper crawl space should be evaluated by a structural engineer. Repair could be necessary to replace the existing retaining systems with new poured concrete retaining walls. The soil cut portion should be temporarily braced until a retaining wall can be designed and built.
5. Foundation wall and crawlspace insulation should be added to achieve an R-value as close as possible to current code standards.

FLOOR & CEILING SYSTEMS

Description:

The main floor framing was partially visible within the basement and crawlspace areas beneath the areas of construction leading up through 1941. However, the basement beneath the 2000 addition has a gypsum wall board ceiling and therefore the floor framing members could not be observed.

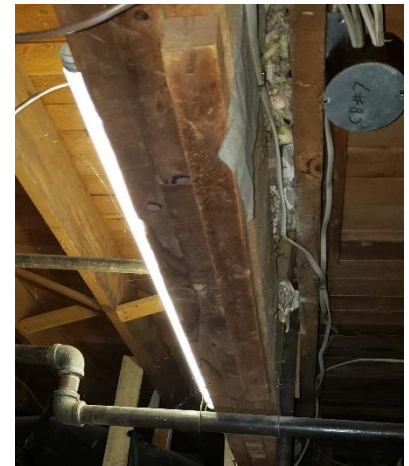
The floor joists of the original 1892 construction are 2x8 rough-sawn joists at 16-inches on-center running in the north-south direction and spanning approximately 12 feet to a center beam line. The central beam line is supported with adjustable pipe columns that are not original and it is unclear if the columns bear on proper footings, if any. The north addition appears to be constructed in a similar manner to the original construction, though this crawlspace area is minimally observable from within the basement. The floor joists appear to be of the same size and span in the same direction, but supports could not be determined.



Original construction floor framing & underside of flooring seen in the basement.

There is a 3-ply 2x8 dropped beam that supports the original west exterior wall at the transition from the original construction to the 1941 addition. This beam is not properly supported throughout but spans the full length. The 1941 addition has 2x8 nominal floor joists at 16 inches on-center spacing that span in the north-south direction. These floor joists are spliced on a center grade beam constructed of poured concrete, within the crawlspace area. The entire crawlspace is not visible but the grade beam and floor joists extend as far as is visible.

Building records indicate that the main floor framing of the 2000 addition is constructed of 2x10 floor joists at 16 inches on-center running in the east-west direction. Records indicate that there are flush steel beams that support the floor joists and that there are two main beam lines creating three floor joist spans. The steel beams are supported by steel columns with concrete footings, both of which are visible in the basement.



3-ply beam at transition from original floor (right) to the 1941 addition (left).

The upper floor framing of the 2000 addition is also not exposed for analysis. Building records indicate that the upper floor joists are also 2x10 nominal lumber at 16 inches on-center running east-west. There appear to be beam lines and point loads similar to those in the basement, with additional beam lines and point loads around the stairs. However, none of the floor framing members could be verified.

The floor framing of the south bay addition could not be determined as there is no crawlspace access to this area. It is likely that the floor joists are similar in size and spacing to those found in the construction of 1892 and 1910. However, it is also possible that the floor joists in this area are sitting directly on grade or are supported by other structural members resting directly on grade.



Floor sheathing, as seen in the basement, is constructed of 1x3 tongue-and-groove hardwood for the 1892 and 1941 construction areas of the church. This sheathing would have been the original finish flooring though it has since been covered by additional layers of finish flooring. The floor sheathing of the 2000 addition is not exposed. However, building records indicate that the main floor and upper floor sheathing is ¾ inch tongue-and-groove plywood.

There is no insulation at the main floor rim joist nor in the floor cavity of the crawlspace. It could not be determined if the crawlspace is a conditioned space.

Condition Evaluation:



The 2x8 floor joists are in fair condition and are typical construction for structures built around the same time in the Louisville area (2x6 and 2x8 rough-sawn floor joists have been found at numerous locations). The joist sizing and spacing do not meet the minimum IRC code requirements for today's standards. However, the main level floor felt sturdy, and no significant areas of bulging or sagging were observed. The floor framing of the 2000 addition could not be verified. However, it appears that this area was built to the 1997 Universal Building Code and both the main floor and upper floor felt sturdy. This area of floor framing appears to be in good condition, though further destructive investigation is necessary to verify this assumption.

The beams supporting the floor joists in the 1941 and earlier construction areas are in fair to poor condition. The spacing and sizing of the beams are not adequate for the current loads that they are supporting. The beams are not properly attached to their supports nor extend the full length of the floor system. The beam sizing, spacing, and spans do not meet minimum IRC code requirements for today's standards. The beam sizes and locations supporting the two floors of the 2000 addition could not be determined. However, these are assumed to be in good condition if the sizing and spacing used matches what was indicated in building records.

The various beam supports, other than the 2000 addition, are in poor condition as well. The beam supports consist of poured concrete grade beams and adjustable steel columns, but it is unclear if any of these elements are supported by footings. The materials, sizing, and construction methods of the beam supports do not meet minimum IRC code requirements for today's standards. The steel columns and concrete footings seen in the 2000 basement appear to be in good condition. Further structural analysis of this area is required with deconstructive investigation to determine if all structural members were sized and built according to what is indicated by building records but there were no critical deficiencies observed in this part of the building to warrant that analysis.

The floor sheathing appears to be in fair condition. The sheathing appears to be performing adequately, but the extent of the sheathing and the number of layers on top of the sheathing could not be determined. The floor sheathing does meet the minimum IRC code requirements for today's standards and appears to be performing adequately.



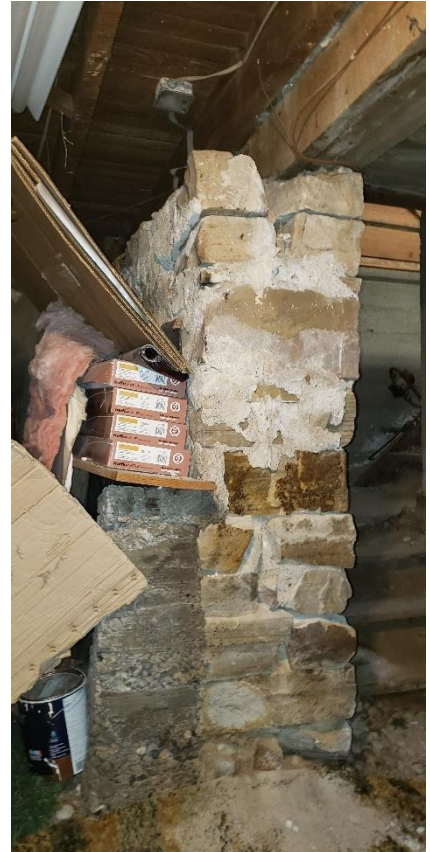
Steel column and footing in the 2000 basement.



Floor framing and grade beam of the 1941 addition.

Recommendations:

1. The beams and beam supports of the 1941 and earlier construction should be replaced or reinforced as prescribed by a licensed structural engineer. The best method is to construct new beams and beam supports that support the existing floor joists. These new supports should bear on footings, or any other type of foundation as prescribed by a licensed structural engineer and located at a depth and soil bearing capacity as specified by a licensed geotechnical engineer.
2. The floor framing should be observed by a licensed engineer with repairs specified as needed. The existing floor joists do not meet the minimum requirements of the IBC code. New floor joists should be added to the existing floor joists or new beam lines should be added to the main floor system to support the existing floor joists as mentioned above. Special attention should be given to the connections between the foundation walls, floor joists, beams, and beam supports. The floors are not suitable for additional load resulting from a remodel or addition.
3. It is likely that the non-visible portions of the floor structure are constructed in a similar manner to those areas that are exposed or to what is indicated by building records. However, the entire floor structure should be verified and evaluated by a licensed structural engineer for required live load, as specified in the IBC code and prior to any remodel or addition.
4. If the main floor deflection is inadequate, consult a licensed structural engineer for additional support design options.
5. New beams may need to be added to support the point and distributed loads from the roof framing as specified in the recommendations of the 'Roof Framing Systems' section of this report.
6. Rim joist insulation should be added to achieve an R-value as close as possible to current code standards. Verify that the crawlspace is a conditioned area otherwise insulation should be added to achieve an R-value as close as possible to current code standards.



Stacked stone beam support in basement.



Spliced floor joists on a support beam in the 1941 addition.



ROOF FRAMING SYSTEMS

Description:

The original 1892 roof is a gable roof with a steep pitch that runs in the east to west direction. The original roof has been added onto with subsequent additions, but the original massing is still apparent when viewed from all directions. There is no attic space within the original roof structure. Original roof framing members are partially visible from within the belltower. It is likely that the framing seen in the belltower is consistent for the construction of the entire original roof. Where observed, the roof rafters are 2x6 rough-sawn lumber at 24 inches on-center spacing and there is no ridge beam. There is 2x6 under-framing creating a flat ceiling portion about ½ way up the rafter span, otherwise there are no ceiling joists. It is unclear if there were originally ceiling joists that were later removed to create the vault, or if the ceiling framing seen in 2024 is original. There is a layer of lathe and plaster that is visible from above that indicates the framing is original. However, a layer of gypsum wall board has been applied to the underside of the lathe and plaster.



Original roof framing is only partially visible from within the belltower. Original lathe and plaster ceiling can be seen.

Similar to the original roof framing, the framing of the north addition is also visible from within the bell tower but there is no attic space. The rafters of this addition are also 2x6 rough-sawn lumber at 24 inches on-center spacing forming a north-facing gable that is over-framed on top of the original roof. There is 2x4 under-framing that creates the flat ceiling in this area and similar to the sanctuary, there is a layer of lathe and plaster that has since been covered over.

The roof over the 1941 addition forms an east-west running gable that sits lower than the original church gable and at a shallower pitch. There is a flat ceiling in this part of the building and there is an attic space that is accessible from the second floor of the 2000 addition. The 1941 roof is framed with 2x6 nominal rafters at 24 inches on-center spacing and 2x6 nominal ceiling joists at 16 inches on-center. There is an original layer of 1x6 skip sheathing that is covered with an additional layer of plywood sheathing that was likely added at some point when a newer asphalt roof was added. The ceiling joists are spliced mid-span but there is no beam or wall below to support the splice. The rafters are connected to the ceiling joists with 1x verticals from the ridge to the joist splice at every rafter. There are also 1x verticals connecting each rafter to the joists approximately 1/3 of the way up the rafters from the exterior walls. Additionally, there are 2x6 collar ties at the midspan of the rafters and at each rafter, and there is a 1x6 ridge plate.



Roof framing of the 1941 addition.

The roof over the 2000 addition forms a cross gable with a steep roof pitch that is intended to match the appearance of the earlier construction. The roof framing appears to have been built to the 1997 Universal Building Code as indicated by available building records. The 2000 addition roof framing is partially visible from an overhead attic access and at sidewall attic access locations. The roof rafters are constructed of double 2x12 nominal lumber at 24 inches on-center and are attached to a 34-inch-tall pony wall with hurricane clips at each





rafter. The roof does not meet the floor system as it is interrupted by the pony wall. The wall is constructed of 2x6 studs at 16 inches on-center spacing with a single bottom plate and a double top plate. The sidewall attic locations appear to have been constructed to accommodate mechanical and electrical equipment serving the addition. The valley beams of the addition are double 2x12 nominal lumber and the valley and hip beams converge to a single point. There may be a ridge beam but one could not be located due to the limited access. Building records indicate that there are valley and ridge beams supported by 2x6 stud packs and there is a bolted connection with steel angles where these beams meet.

There are several roof areas that are not accessible for analysis while some of the above-described areas are only partially accessible. The roof framing over the south bay could not be determined. This roof forms a lower pitched hip roof that sits below the eave line of the original gable roof. It is likely that this roof is framed in a similar manner to that of the original 1892 construction. The gable roof over the front door and the hip roof on the bell tower appear to be 2x6 or 2x4 rafters and joists on regular spacing, likely similar to that of the other early parts of the church.

There is a minimal layer of blown-in cellulose insulation above the ceiling at the bell tower entry. Similarly, there is a layer of cellulose insulation above the ceiling of the 1941 addition that does not exceed the 2x6 depth of the ceiling joists. The gable roofs of the original structure and the north addition do not appear to have any insulation, though some may be present that was not visible. The 2000 addition has fiberglass batt insulation within the rafter bays, but the depth and insulating value could not be determined. It is likely that the fiberglass batt insulation met 1997 UBC standards at the time of construction.



Roof framing of the 2000 addition supported by a pony-wall.

Condition Evaluation:



Ceiling joists of the 1941 addition are spliced mid-span and unsupported.

Where visible for analysis, the roof framing ranges from good to poor condition generally based on the period of construction going from older to newer respectively. However, several areas of the roof framing are not visible for analysis and therefore some assumptions are made based on available information. Further deconstructive investigation is required to fully assess all roof elements.

The roof framing of the original 1892 construction and the north addition is in fair to poor condition. These roofs are constructed with typical materials and methods for similar structures built around the same time in the Louisville area. There is some evidence of water damage and rot, and there are a few rafters that are unsupported in the bell tower area. The roof framing of the south bay is likely in a similar fair condition but could not be analyzed and may be pulling away from the south wall due to foundation issues described above.

The roof framing of the 1941 addition is in fair condition and is also constructed using typical materials and methods of that time. The ceiling joists in this location are not properly supported where spliced and seem to be supported by the rafters. Additionally, the collar ties are attached to the mid-span of the rafters whereas they should be located closer to the ridge.

The roof framing of the 2000 addition is assumed to be in good condition as it was likely built to the 1997 UBC. However, not all areas of this roof were exposed to determine if they were constructed as prescribed.

The attic and roof insulation are in poor condition as it appears to be providing a minimal insulation R-value that does not meet current code standards and there are several roof areas that have no insulation. The insulation in the 2000 addition likely met required codes at the time of construction but do not meet current code standards.

Recommendations:



The roof and ceiling structure is not to current code standards. Since Louisville did not likely have a building code at the time of construction, we are unable to determine if it was built to a code or engineered. The original roof is built to a similar standard to other buildings typical of this type and age.

All new repairs should be specified by a licensed structural engineer. Repair details should be provided and submitted to the City of Louisville for review and be observed by the engineer and city inspectors during construction.

1. The original framing over the 1892 construction may have been altered in the past, with the removal of ceiling joists. The ceiling support system of the current roof system could not be determined during our observation. Further evaluation and possible repairs should be provided by a licensed structural engineer to support the original existing roof system.
2. The ceiling and roof support system over the 1941 addition appears to have been altered in the past since the supports for the existing ceiling joists were not present. Further evaluation and possible repairs should be provided by a licensed structural engineer to support the 1941 addition roof system.
3. Hurricane clips (or toe-nails) may need to be added where roof framing members bear on exterior walls to meet the minimum IBC code requirements.
4. Diagonal braces and purlins are needed in the 1941 addition to strengthen the existing rafters to be in compliance with the current IBC code.
5. Additional beams are needed in the 1941 addition attic area to support the above-mentioned diagonal braces and purlins. This is mainly needed approximately at the mid-span of the roofs. These beams will require support in the wall system and likely would require new foundation support in the crawlspace and basement. This must be coordinated with a licensed structural engineer.
6. Attic insulation should be added to achieve an R-value as close as possible to current code standards. The maximum insulation possible should be added at the perimeter of the roof as the roof depth in this location does not allow for the minimum required by code. Any energy upgrades, such as increased insulation in the attic, could result in prolonged snow retention on the roof and could ultimately affect roof performance without first completing structural reinforcement.
7. It is not recommended to add additional roofing materials such as an additional layer of shingles, or solar panels without the additional structural support mentioned above.
8. The above-mentioned recommendations are for the visible portions of the roof but there are areas that were not entirely visible during the observation. Further analysis would be required once these roof structures are exposed. However, we assume that the roof framing in these areas may be built in a similar way and would need similar repairs as mentioned above.

3.3 ENVELOPE – EXTERIOR WALLS

EXTERIOR WALL CONSTRUCTION

Description:

The main level wall framing was minimally exposed for review. There were some areas in the basement and attic where wall framing could be seen, and assumptions can be made that what was seen is consistent throughout the church based on the time of construction.

The original church structure appears to have 2x6 rough-sawn wall studs on regular spacing. The original wood siding is attached directly to the wall studs and in several observed locations, the original lathe and plaster remains on the interior face of stud. There does not appear to be any sheathing on the earliest phases of construction.



Original west wall as seen in the attic of the 1941 addition.

The wall framing of the 1941 addition was not visible. The walls in this area are likely 2x4 stud walls with studs on regular spacing (site measurements support this assumed wall thickness). It could not be determined if any wall sheathing is present at this addition or how many layers of interior finish exist.

Building records indicate that the walls of the 2000 addition are framed with either 2x4 or 2x6 studs at 16 inches on-center spacing with ½ inch plywood sheathing. These framing specifications could not be determined during the site visit. Additionally, building records indicate that there are several point loads within the walls that support the roof structure above.

The wall insulation type could not be determined, if any exists. It is likely that there is minimal to no insulation in the walls of the construction that pre-dates the 2000 addition. The 2000 addition walls are likely to have wall insulation that complies with the specified insulation values of the 1997 UBC.



Wall framing of the bell tower is likely similar to that of the original church.

Condition Evaluation:

Since the wall structure was minimally exposed for observation, we are unable to evaluate the condition or determine if there is any structural damage. The wall heights vary throughout based on the time of construction with some areas being at the upper height limits for 2x4 and 2x6 wood stud construction. Wall finish cracks were observed on some of the interior wall and ceiling surfaces. The cause of this cracking could be from foundation movement or from improper application of textured surfaces of the original plaster over gypsum board. Furthermore, the insulation type and R-value within the walls could not be determined, if any is present. It is likely that there is minimal to no wall insulation in the early construction parts of the church.

Recommendations:

1. Without the opportunity to observe the exterior wall structure, we do not have any recommendations currently. If the opportunity presents itself, the exterior walls should be assessed by a licensed structural engineer. Please note that a 2x4 construction is assumed and any wall taller than 10'-0" will likely not meet minimum code deflection due to perpendicular wind loading.
2. The owner is to note that the walls will need to be evaluated if any remodels or additional load is to be added, including the interior walls as these walls appear to be load bearing or contain point-loads. It is likely that additional studs may need to be added for the increased loads above in combination with the wind load on the building. Also, if any remodel or addition plan is in place, new braced wall lines may be added by adding OSB or gypsum board on the interior side of exterior walls to resist wind loading.
3. Wall cavity insulation should be added to achieve an R-value as close as possible to current code standards. Any energy upgrades, such as increased insulation in the attic, could result in prolonged snow retention on the roof and could ultimately affect roof performance without first completing structural reinforcement.

EXTERIOR FINISHES

Description:

The original church structure is clad in painted wood shiplap siding that is attached directly to the wall studs. The siding has a profile that is similar to a Dutch cove profile but with an added bead at the base of the cove. This siding profile has not been found on other historic buildings in Louisville and a style name could not be determined (based on research conducted by DAJ Design). This siding appears to be original and is only found on the original church structure and the south bay addition.



Original shiplap siding where the south addition meets the original church structure.

The north addition, bell tower addition, and 1941 addition are all clad in painted wood shiplap siding with a more standard Dutch cove profile. This wood siding also appears to be attached directly to the wall studs. The Dutch cove profile is common on similar structures built around the same timeframe in the Louisville area.

The 2000 addition is clad in painted shiplap siding with a Dutch cove profile that matches the 1941 addition. It is unclear if this siding is wood or composite as both options are readily available products. It is assumed to be a wood siding product based on experience of studying buildings in Louisville.



Condition Evaluation:

Overall, the siding on the entire structure varies from good to poor condition. The wood siding on the original church and the additions up through 1941 has exceeded its expected lifespan and there are several areas where the wood has chipped, cracked, or warped from weathering. The wood siding prior to the 2000 addition is likely to be brittle with the potential for dry-rot, especially at the bottom of the walls and around window and door openings. The wood siding on the south bay is buried beneath grade and therefore there are likely significant wood rot issues at these locations. Excavation around the south addition is required to determine the full extent of damage.

The wood or composite siding on the 2000 addition is generally in good condition. However, the siding is at or near grade at most locations exposing it to potential water damage. Additionally, where exterior walls meet lower roof pitches, the siding was installed too close to the finish roofing and therefore water damage to the cut ends of the siding was observed.



Dutch cove profile siding used in the 2000 addition.

Recommendations:

1. The siding on the entire structure except for the 2000 addition should be scraped, repaired, refinished, or replaced as necessary.
2. The siding of the 2000 addition should be further evaluated for water damage at the base of the siding where it is near or at grade. Replace any damaged boards.
3. The siding of the 2000 addition, where the exterior walls meet lower roof aspects, should be replaced. The siding should be held off the top of the roof shingles by 4 inches. The step flashing beneath may need to be replaced or modified and painted to match the siding.



Original wood siding (left) next to the dutch-cove profile used in later additions (right).



EXTERIOR MASONRY

Description:

A brick chimney is present that runs from the basement through the roof of the 1941 addition and attached to the exterior of the west wall of the original church. The chimney appears to be original as it appears in some of the earliest photographs of the church. The original use of the chimney was likely to serve a coal or oil furnace in the basement and in 2024 it is used as an exhaust route for the gas furnace in the basement. The chimney appears to have been modified sometime prior to 1941 as the height of the masonry has been lowered and the ornamentation atop the chimney has been removed.

The 1941 addition also appears to have been originally constructed with a brick chimney, on the inside of the addition, and extending through the roof near the west end. This chimney was removed at some point in time, likely when the 2000 addition was added as the addition was partially built on top of the area where the chimney was located.

There is no other exterior masonry located on the church with the exception of the partially exposed stone foundation as discussed in the 'structural system' of this report. Nor does it appear that any other exterior masonry existed at any point in time.

Condition Evaluation:

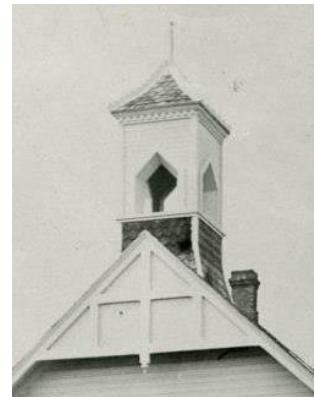
The chimney is in fair condition where visible. The chimney is enclosed on the main floor so the condition of this part of the chimney cannot be assessed. Furthermore, the exposed part of the chimney above the roof could not be accessed to fully analyze its condition, but visually it appeared to be in fair condition where exposed to the elements.

Recommendations:

1. The chimney should be further evaluated where it is enclosed on the main floor to fully determine the condition. Additionally, the chimney should be further analyzed above the roof where it is exposed to weather.
2. The chimney's masonry may need to be tuck-pointed to stabilize its condition.



Brick chimney in 2024.



Original brick chimney beyond bell tower.



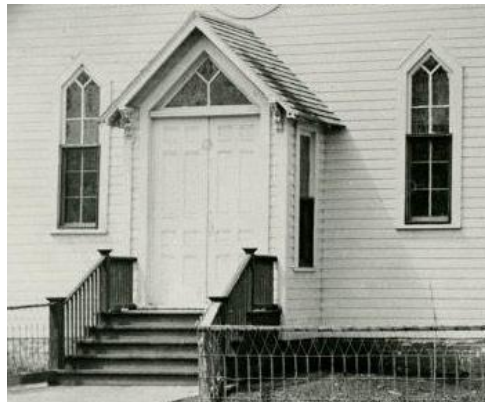
Two brick chimneys seen ca. 1941.



EXTERIOR APPENDAGES

Description:

The original church had an east entrance centered on the east gable end wall. This entrance had several wood steps leading to grade, presumably wood framed, with a wood guardrail on either side. The entrance was constructed in a similar manner to the rest of the building with wood siding and a gable roof. There were painted wood double doors with a triangular transom window above. Additionally, there was a window on the north side of the entrance and presumably a matching window on the south side as well, though that side of the entrance cannot be seen in historic photos. The entrance was removed when the north addition and new bell tower were constructed, and a new entrance was created beneath the new bell tower. It appears that several pieces of the original entrance were repurposed including the entrance doors and the gable roof may have been re-used over the new entrance. The original entrance was infilled with wood siding and double windows with a triangular transom. The triangular transom appears to have been re-used from the original entrance. In 2024, there are seams in the wood siding where the original entrance previously was.



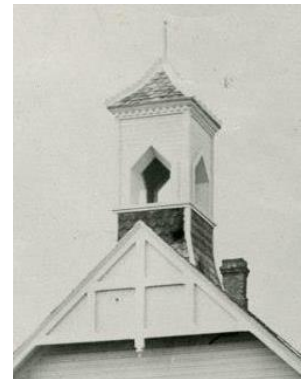
Original church entrance ca. 1900.



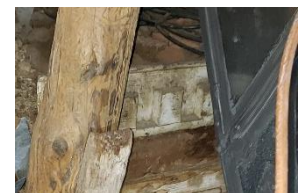
Church entrance in 2024.

The original construction also included a bell tower centered on the main gable ridge. The bell tower had a flared base with wood scalloped shingles, a midsection with horizontal wood siding and openings on all four sides, and a wood shingle flared hip roof. Additionally, there were wood dentils beneath the bell tower roof line. According to records, a bell was never purchased for this tower and the tower was removed when the new bell tower was built around 1910. The dentils from this bell tower appear to have been used in the basement to retain soil, and other parts of the original bell tower may have been repurposed in the new construction.

The original church had a back room attached to the west side of the structure that may have been original or an early addition. This room had a single pitch shed roof and can be seen in historic photographs. This room appears to have been constructed in a similar manner and with similar materials as the original church. However, the room was entirely removed at some point and little evidence of its construction remains. There is ghosting on the original west façade siding, seen in the attic of the 1941 addition. This shows where the shed roof met the exterior wall of the sanctuary. The presence of siding beneath this roofline indicates that this appendage was not part of the original construction but was likely a very early addition.



Original bell tower.



Possible bell tower dentils used in basement.

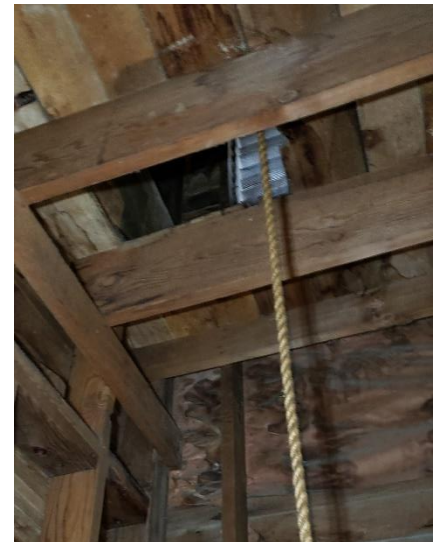


Back room seen on west side of original church.



Ghosting of west room seen in the attic.

Around 1910, a new bell tower was constructed that likely coincided with the construction of the north addition. The bell tower is a square in plan that is supported by a stone foundation and is attached to the north side of the original church, and the east side of the north addition. The bell tower has a flared hipped roof and painted wood siding that matches the north addition. There are louvered openings on all four sides of the bell tower. Records indicate that a bell was not purchased until 1937, and there is a working bell in 2024. The entrance doors are on the east side of the bell tower and there is a gable roof above these doors. The gable roof may have been repurposed from the original entrance. There is an attic space above the foyer where the framing of the bell tower can be seen. The walls are balloon framed, 2x6 rough-sawn stud walls at 16 inches on-center. The wood siding is attached directly to the studs. The bell tower roof framing was not accessible for analysis. Based on other framing observations made in the bell tower, and the time of construction, it is likely that the framing materials and techniques match those found on the 1910 north addition.



Framing seen in the bell tower and the bell pull rope.

There is a concrete front stoop at the front entrance with steps on the north and east sides. The steps lead to a concrete gathering space in the northeast corner of the property. The concrete stoop and steps appear in early images showing the new bell tower and north addition but may have been replaced. It appears that the concrete stoop was poured directly on top of the wood siding, likely without any waterproofing measures taken. Additionally, there are three steel handrails attached to the stoop and walls of the church in this area.

Condition Evaluation:

The original entrance, bell tower, and west room have all been entirely removed. Evidence remains of all three in photographs and repurposed materials. The new bell tower is in fair condition. The siding and the framing materials and techniques used on the bell tower are in similar condition to those found on the other parts of the church that predate 1941. The bell tower roof framing was not visible for analysis and therefore its condition is unknown. The gable roof framing over the front entrance was also not visible for analysis and therefore its condition is also unknown. However, the gable roof does not appear to be properly supported by the diagonal wood bracing, and it is unclear how the support structure is attached to the bell tower wall. The concrete front stoop is in poor condition. The concrete and finish are cracked at multiple locations throughout and it is likely that there is wood siding that the concrete was poured against that is not waterproofed and is likely rotting.

Recommendations:

1. Without the opportunity to fully observe the bell tower and front entrance roof structure, we do not have any recommendations currently. If the opportunity presents itself, the exterior walls and roofs should be assessed by a licensed structural engineer. The owner is to note that the walls will need to be evaluated if any remodels or additional load is to be added. It is likely that additional studs may need to be added for the increased loads above in combination with the wind load on the building. Also, if any remodel or addition plan is in place, new braced wall lines may be added by adding OSB or gypsum board on the interior side of exterior walls to resist wind loading.
2. The stairs to the front entrance should be replaced with new concrete stairs in the same location and the same size as the current stairs. Proper waterproofing measures and metal flashing should be added to the building prior to pouring a new landing and stairs. New stairs and handrails shall meet all local building codes.



Stairs to the front entrance are cracked throughout and beyond their expected lifespan.

3.4 ENVELOPE – ROOFING & WATERPROOFING

ROOFING SYSTEMS

Description:

The entire church roof is covered with an asphalt composite shingle roof. It is unclear when the roof was added though it appears to have been relatively recent (within the last 20 years based on the condition). Most structures in the Louisville area had replacement roofs in 2018 and 2019 due to large hail storms, however, no records were found of a new roof within the last 20 years. Building records show that in 1983 a new roof was added as well as an additional layer of sheathing. The sheathing can be seen in the attic and was added on top of the original skip sheathing. Building records also indicate that new asphalt shingles were added to the entire structure in 2001. This was likely done as part of the construction phase that started in 2000. It is possible that some or all of the current asphalt shingles in 2024 are those that were applied in 2001. If that is the case, the shingles might be approaching the end of their expected lifespan.



An asphalt composite shingle roof covers all aspects of the building.

Building records also indicate an EPDM roof as part of a cricket. There is a small cricket where the entryway gable meets the north wall of the original structure. However, this cricket has asphalt shingles.

Roof attic venting varies throughout based on the period of construction. The original roof and the north addition do not have soffit, mid-roof, or ridge venting but there are gable end vents on the west wall and beneath the barge rafters of the north and east gables. The south addition hipped roof is not vented. The 1941 addition roof has a single turbine-style roof vent on the south roof aspect only. The 2000 addition roof has soffit vents at the roof eaves but does not appear to have upper roof venting.

There is painted aluminum drip-edge along the rakes of all gables. The drip edge was likely added during the most recent re-roof, possibly in 2000, 2001, or in 2018 or 2019.



Venting at the original barge rafters.



Soffit venting at the 2000 addition roof eaves.

Condition Evaluation:

The asphalt composition shingle roof seems to be in good condition. The cricket at the east side of the church appears to be at a roof pitch steep enough to allow for asphalt shingles per code. Roof venting does not appear to be adequate for the amount of attic space.

Recommendations:

1. Roof venting should be increased with the addition of low and high venting as required by code.

SHEET METAL FLASHING

Description:

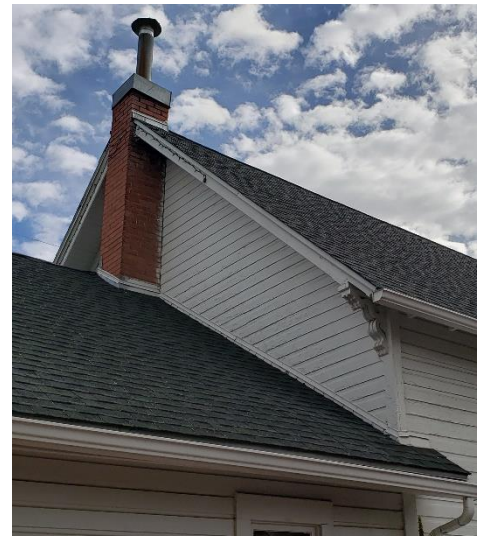
There is sheet metal flashing at the locations where roof aspects meet exterior walls as well as at the chimney interface with the roof. Except for the chimney flashing, it appears that the flashing was added or replaced during the most recent re-roof. The metal flashing in areas constructed prior to 2000 is applied on top of the exterior face of the wood siding while there appears to be flashing beneath the siding at the 2000 addition, as was likely required by code at that time.

Condition Evaluation:

The roof flashing appears to be in good condition but access to fully analyze all flashing locations was minimal. Flashing appears to be located at all location required by code and appears to be properly attached and caulked. It is likely that all roof flashing areas were assessed and any repairs made during the most recent re-roof.

Recommendations

1. The metal flashing should be fully analyzed by a licensed professional when the opportunity presents itself. Special attention should be given to all areas where low roof aspects meet exterior walls and at the chimney connection to the roof. Repair or replace any damaged or missing flashing.



Flashing at the chimney roof penetration and where the low roof meets the original wall face.



PERIMETER FOUNDATION DRAINAGE

Description:

A perimeter foundation drain was not observed during the inspection. Building records indicate that a perimeter foundation drain was installed as part of the 2000 addition and a sump pump was observed, but not tested, during the site visit. Due to the construction period and construction methods used prior to 2000, it is unlikely that a perimeter foundation drain exists at the original church and all additions prior to 2000.

Recommendations

No recommendations at this time.

Sump pump in 2000 addition basement.



DRAINAGE SYSTEM, GUTTERS & DOWNSPOUTS

Description:

Painted white, k-style gutters are found throughout the entire structure. Gutters are located at the end of all roof eaves in appropriate locations and of appropriate lengths for adequate water collection. 2x3 downspouts are located throughout and appear to be of an adequate amount for proper drainage where located. The downspouts have downspout extensions in several but not all locations. According to building records, gutters and downspouts were added in 1983 when a new roof was put on. Early images of the 1941 addition show that gutters and downspouts existed on this addition but not on any of the areas constructed prior to 1941. It is likely that the original and early construction parts of the church did not have any gutters or downspouts prior to 1983.

Condition Evaluation:

The gutters are in fair condition. Gutters can be difficult to assess outside of significant rain or snow events, but they appear to be properly attached, and no visible signs of leaking were present even during the site visit where rain occurred. Gutters could not be observed from above to determine if any areas of standing water were present. The downspouts are in fair condition as they appear to be of an adequate amount and in proper locations. Not all of the downspouts have extensions to properly direct water away from the building foundation.

Recommendations:

1. Ensure that all gutters, downspouts, and downspout extensions are maintained to discharge water away from the building foundation and are kept clear of debris.
2. The gutters and downspouts are not historic. Consider replacing the gutters with ½ round gutters and the downspouts with round downspouts. Though not historic, these styles will more appropriately match the historic nature of the building.



K-style gutter and 2x3 downspout typical of entire building. Not all downspouts have extensions.

SKYLIGHTS / CUPOLAS

Description:

There are no skylights or cupolas as part of the church in 2024, nor any evidence of skylights or cupolas existing in the past. Please see the 'exterior appendages' section of this report on analysis of the current and historic bell towers.



3.5 WINDOWS & DOORS

DOORS

Description:

The original front entrance to the church was located in an attached section on the east side facing Jefferson Avenue that no longer exists in 2024. This part of the church was removed, and the entrance relocated sometime around 1910. The original front doors were painted wood, 8-panel double doors, approximately 8 feet tall. It appears that the original front doors are now located within the entry, providing access to the sanctuary through the south wall of the entry. The wood doors at this location in 2024 match the appearance and size of the original front doors and are stained wood doors.

The front entrance was relocated around 1910 and at some point, different doors were used at the new entrance. The new doors were painted wood, 5-panel double doors, approximately 8 feet tall. These doors were later replaced but it appears that one of the doors was repurposed to separate the entry from the north seating area. The door at this location in 2024 is a stained wood door that matches the appearance of the front doors seen on the earliest photographs of the north addition.

The front entrance doors in 2024 are six-panel, painted wood double doors. It is unclear when these doors were installed but they are in the same location as the original doors but the doors are shorter and have a glass transom window above to fill the remainder of the original opening.

There is a side entrance on the north side of the 2000 addition. The doors at this location are double, 4-panel fiberglass doors with decorative glass inserts. There is also a side entrance on the north side of the 2000 addition, near the alley, that is a single fiberglass door that matches the style of the doors on the north side but lacks the glass inserts. There is another south side entrance to the south deck and the door in this location matches the other south side door. This door location appears to be original to the 1941 construction but the door panel appears to have been replaced during the 2000 remodel. Another exterior door is located on the south side at the second floor. This door matches the other two south side doors and was added as part of the 2000 addition. None of the entrance doors have screen doors or storm doors but all door locations are protected by roof overhangs of various depths.

Condition Evaluation:

Overall, the doors appear to be in good condition. Each door was noted to be operable during the site visit and all of the doors appear to create sufficient seals. The doors are all relatively newer compared to the overall age of the church and the doors were all added likely within the past 30 years.



Original front entrance doors now located inside the church.



Interior door once used as a main entrance door.



Recommendations:

1. We do not have any recommendations for the exterior doors at this time.
2. Further investigation should be made to determine the historic nature of the interior wood doors at the entry. If these doors are indeed found to be the historic front doors, proper maintenance should be performed to prolong their lifespan. The repurposing of these doors fits the historic nature of the lifecycle of the church and therefore their current locations should remain.



Front entrance doors and transom in 2024.



Typical side entrance door.

WINDOWS

Description:

Some modifications have been made to original windows and their locations over the years. However, the windows and window locations seen in 2024 are consistent with those that would have been in place around 1910 and with the subsequent additions in 1941 and 2000. Historic window locations that no longer exist due to building additions include the north wall windows of the original church and the west wall windows of the 1941 addition. It does not appear that there were any windows on the west wall of the original church but if there were, those no longer exist as well.

The windows of the original church structure are single-hung wood windows with counterweights. The operable bottom sash of these windows is a 6-panel 2-over-3 while the upper fixed sash is a 5-panel with a triangular window head. These windows are true divided lite windows with single-pane glass and glazing putty. The windows of the original church match the size, style, and locations seen in historic photographs. Building records indicate that the windows may have been replaced at some point, but it is possible that the windows in 2024 are the original windows, or that only the sashes were replaced. There are also aluminum storm windows and screens on these windows that are not original.



Typical windows found on the earliest parts of the church.

There is a round rose, stain glass window on the east façade. This window is similar in appearance to what is seen in historic photographs and while the location is original, the glass is not. The original window was removed and infilled at some point prior to 1941 as the light coming through that window interfered with church activities. The covering was later removed and a new stain glass window was added to the historic location.

Beneath the round window on the east façade are two paired single-hung windows with a triangular transom. These windows match the other windows found on the original church structure. It appears that the two windows and the transom were originally part of the first main entrance and that the windows were repurposed for this location when that entrance was removed.

There are two windows in the south bay that match the construction and style of the windows on the original church. However, these windows are not weighted windows but have pin-stops for the bottom sash. It is possible that these window sashes were replaced and the window frames left intact or that the entire window unit is original.

The windows of the north addition also match the windows of the original church and are weighted windows. On the north wall of this addition there are paired windows with a triangular transom that match what is seen on the east façade. It appears that all of these windows are original to this addition and any replacing of the sashes would have occurred at the same time as the original church windows. Some of these windows may have also been repurposed from the old north wall of the original church.

There is a stained glass transom window above the front entrance double doors. This window is not original and was added in 2001, according to records. This transom window fills in the historic door opening at this location as the doors used in 2024 are shorter than those that were original to this location.

The windows of the 1941 addition are all single-hung wood windows with counterweights. These windows are all the same size and there are four sets of paired windows and two single units. These windows are likely original to the 1941 addition.

The windows of the 2000 addition are all aluminum clad wood windows with simulated divided lites. These windows are all paired windows and are original to the 2000 addition.



1941 addition paired windows.



1941 addition window.



2000 addition paired windows.

Condition Evaluation:

Overall, the windows are in good to poor condition. Operation was not tested on all windows, but some windows appear to be operable to various extents while others do not. The windows of the 2000 addition appear to be in good condition and still within their expected lifespan. The windows of the 1941 addition appear to be in fair condition, create good seals, and these windows have aluminum storm windows for added protection. Some of the counterweight windows throughout the church have missing or damaged weight attachments and it is unclear if the weights are still present or if they have been removed. The windows that predate 1941 are in poor condition as they are well beyond the expected lifespan of such windows. However, these windows appear to have been well maintained over the years and the aluminum storm windows have likely prolonged their lifespan.

Recommendations:

1. All of the windows other than those that are part of the 2000 addition should be properly restored as described below. Windows should be made to be operable, create proper seals, and only use replacement parts where no other option is available.
 - a. Remove and replace all window putty.
 - b. Clean and restore all glass panes with special care given to stained glass.
 - c. Repair and refurbish all wood window sash elements including stiles, rails, and muntins.
 - d. Repair and refurbish all wood window frames.
 - e. Repair and refurbish all counterweights and restore to operability.
 - f. Repair and refurbish all pin-stops.
 - g. Repair and refurbish all hardware including locking mechanisms. Restore to original locks where replacements have been installed.
 - h. Install new storm and screen windows with minimum frames.

3.6 EXTERIOR DETAILS

SOFFIT & FASCIA

Description:

There is no soffit at any of the roof overhangs of the original church. The overhangs have exposed 2x4 rafter tails that are painted and there is a layer of what appears to be painted wood clapboard on the top side of the rafters. The roof eaves of the 1941 addition are similar to the original construction with exposed rafter tails that are plumb-cut and a layer of painted 1x wood on the top side of the rafters. There is a painted wood soffit at the roof overhangs of the south bay addition, but it could not be determined if this material is original or was applied after the original construction. The gable end roof rakes of the 2000 addition were constructed to look similar to those of the original church with painted wood clapboard siding. The roof eaves of the 2000 addition have been boxed out to provide low roof soffit venting.

The original church does not have fascia on the roof eaves and the gutters have been attached directly to the rafter ends. The 1941 addition has a 2x fascia with gutters attached to the fascia. The south bay addition and the 2000 addition have painted wood 1x fascia with gutters attached.

Additionally, there are painted wood 2x barge rafters at all gable ends. These barge rafters are part of the original construction, and the 2000 addition has matching barge rafters to mimic the original construction. The barge rafter ends have a decorative carved wood detail with a hole bored out of the center. This detail is found on all rafter ends except for those on the 1941 addition. The 2000 addition rafter tail ends also use this detail to match the original construction. The rafter end detail can be seen in the earliest photographs of the church.

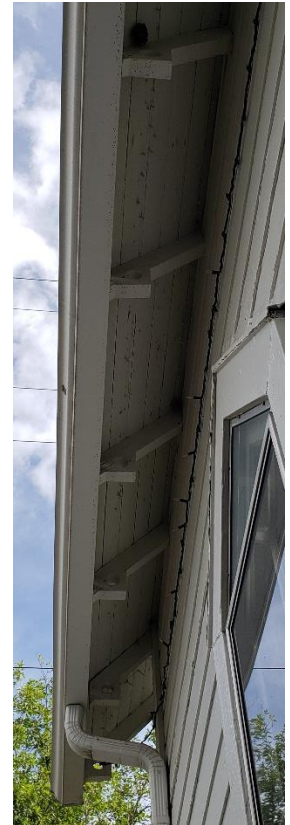
Building records indicate that in 1983, certain parts of the soffit and fascia were replaced at the time of a re-roof. It is unclear where these locations are, but it seems to include the south bay addition and the 1941 addition. It does not appear that any work was done on the original or 1910 addition parts of the church.

Condition Evaluation:

Overall, the exposed wood rafter tails, barge rafters, clapboard, soffit and fascia range from good to poor condition. It is difficult to fully assess the condition of the wood elements as the layer of paint is significantly deteriorated. However, some of the wood is exposed and evidence of weather damage is visible as can be expected for exposed wood of this age. Generally, the soffit, fascia, and barge rafters of the 2000 addition are in good condition. These same elements range from fair to poor on the older parts of the church.

Recommendations:

Scrape, repair, refinish, or replace all exposed painted wood roof elements.



Original church rafter tails.



1941 addition rafter tails.

TRIM

Description:

There is a painted wood frieze board at all gable ends and painted 1x4 corner trim at all outside corners. The frieze board and corner trim all look to be original to each phase of construction and the location and sizes of the 2000 addition were done to match the original construction.

The window trim of the original church is constructed of a 2x sill with 1x4 head and jamb trim and a 1x head cap. There is also a painted metal flashing on top of the head trim that appears to have been added to help protect the wood trim from moisture. This metal flashing has been added to only some of the original window locations.



Painted wood trim pieces typical throughout the church.

The window trim of the 1941 addition also has 2x sill with 1x4 picture-framed jamb and head trim. This is similar to the 2000 addition window trim, but the jamb trim has been rung long on the upper windows with diagonal panel siding running beneath the windowsills.

The door trim throughout is painted wood 1x6 picture-frame trim. The double doors facing Jefferson Avenue have an additional decorative head trim piece that appears to have been added when the doors were relocated to this location around 1910.

Condition Evaluation:

Overall, the painted wood trim ranges from good to poor condition. The trim of the 2000 addition is in good condition as this is all relatively new and still within the expected lifespan. The wood trim of the 1941 addition and earlier construction appears to have been well maintained over the years, but the wood appears to be largely original and is well beyond the expected lifespan for wood elements exposed to weather. Some of the wood trim at the top of the walls is in fair condition as it is protected from weathering by the roof overhangs.

Recommendations:

Repair, replace or restore the window and door trim, frieze board, and corner trim.



Window trim on the 2000 addition.

ORNAMENTATION

Description:

Ornamentation was part of the original construction of the church and has survived over the lifespan and modifications made to the structure. Many of the ornamental elements of the original construction were incorporated into subsequent additions. As discussed above, the decorative rafter tails of the original church were used in the 1910 and 2000 additions but were left out of the 1941 and south bay additions.

At the gable end walls there are decorative brackets that are used to support the barge rafters. It appears that these brackets support an extended 2x4 top plate from the wall construction that then support notched barge rafters. The brackets appear to be original and were incorporated into the 1910 and 2000 additions.

There are also decorative gable end barge boards attached to the upper sections of the barge rafters. Similar to other design elements, the barge boards were part of the original construction that were later incorporated into the church additions, including the 2000 addition. The decorative panels are constructed of painted wood 2x4 or 2x6 frames with diagonal panel infill and a single sphere pendant.

Other decorative elements were incorporated into the 2000 addition that are not seen on the earlier construction parts of the church. These include a decorative window trim between the stacked windows and a decorative arched panel support of the roof over the Spruce Street entrance.



Gable end barge boards, pendants, and brackets found on the original construction and 2000 addition.

Condition Evaluation:

Overall, the painted wood ornamentation ranges from good to poor condition. The ornamentation of the 2000 addition is in good condition as this is all relatively new and still within the expected lifespan. The ornamentation of the pre-2000 construction appears to have been well maintained over the years, but the wood appears to be largely original and is well beyond the expected lifespan for wood elements exposed to weather. Some of the wood trim pieces at the top of the walls are in fair condition as they are protected from weathering by the roof overhangs.

Recommendations:

Repair, replace or restore the decorative barge rafter brackets and the decorative barge boards.

3.7 MECHANICAL SYSTEMS

HEATING & AIR-CONDITIONING

Description:

There are two gas-fired forced-air furnaces, one located in each basement space and each air handler is equipped with air conditioning. The unit in the basement beneath the original structure appears to serve the parts of the church that were constructed up through 1941, including the 1941 addition. The unit in the basement of the 2000 addition appears to serve only that addition. Building records indicate that in 2006 a 92% efficient, 140k btu furnace and a 14-seer 5-ton air conditioning were installed. This appears to be the unit serving the older parts of the church. This unit is vented through the original brick chimney. The air handler serving the 2000 addition is also a relatively newer high efficiency unit that is vented through the roof.

Ductwork for the older parts of the church is a combination of rigid and insulated flexible duct lines. These lines run throughout the basement and crawlspace areas and serve floor registers on the main floor. Ductwork for the 2000 addition is insulated flexible duct that is run through the attic spaces to floor and ceiling registers on the main and upper floors. Ductwork in the basement of the 2000 addition could not be determined as there is a finished ceiling in this space.

Condition Evaluation:

The furnace, air conditioning, and air delivery system appear to be in good condition but were not tested. Both furnaces and the air conditioning condensers appear to be relatively newer units and appear to be properly maintained as there was no sign of debris build-up around the condensers and notes on both furnaces indicated routine maintenance.

Recommendations:

1. Continue to perform routine maintenance on the furnaces to prolong their lifespans.
2. If heating or cooling does not perform to the owner's satisfaction, consult with a licensed mechanical designer for upgrade options.



Separate heating and air conditioning for the 2000 addition.



Heating and air conditioning for the parts of the church built before 2000.



WATER SERVICE, PLUMBING, & SEWER UTILITIES

Description:

A 50-gallon electric water heater is located in the basement of the 2000 addition that appears to serve the entire building. A hand-written date on the water heater indicates that it was installed in 2020 along with an expansion tank. Where visible, the water delivery system is copper, but this is based on a small sampling due to finish ceiling and wall materials. The waste lines are a combination of abs plastic, pvc, and cast-iron. The sewer line exits the basement at the north wall towards Spruce Street at a relatively low depth which is common for most historic structures in old town Louisville.

Condition Evaluation:

The water heater, supply and waste lines, and sewer appear to be in good condition, but were not tested. The water heater appears to have been installed in 2020 and is therefore relatively new and should continue to perform with routine maintenance. According to building records, sewer repair and backflow prevention were done in 2009. This indicates that there may have been some sewer issues that were addressed at that time.

Recommendations:

Continue to perform routine maintenance on the water heater to prolong its lifespan.

FIRE SUPPRESSION - SPRINKLERS

Description:

Fire suppression was not observed during the site visit, nor is there any indication of past fire suppression having existed at any time. Therefore, there is no analysis for this section.



Water heater and expansion tank in the 2000 addition basement.



3.8 ELECTRICAL SYSTEMS

ELECTRICAL SERVICE & PANELS

Description:

Electrical service to the building is brought in from overhead wires in the alley to an electrical pole in the northwest corner of the property. The electrical meter for the building is mounted to this electrical pole. The electrical service is then run underground to a main panel located on the south side of the building, in the southwest corner of the 2000 addition. There is an electrical panel on the interior of the 1941 addition that appears to have been an older main panel that is currently used as a sub-panel.



Electrical meter mounted on pole.



Electrical equipment on the south side of the 2000 addition.

Condition Evaluation:

The electrical service was not tested during the site visit but appears to be in working condition. The panel appears to be sized appropriately for the existing requirements. It is unclear when the main service panel was installed, but it appears to have been added in 2000 or later.

Recommendations:

No recommendations at this time.

ELECTRICAL DISTRIBUTION SYSTEM

Description

Electrical distribution throughout the church is Romex wiring that is visible in the basement, crawlspace, and attic spaces. It appears that this wiring serves the entire house, though not all areas are visible for analysis. There are also cloth-sheathed wires in the attic of the bell tower that appear to still be serving the overhead and the exterior lights at the entry. There are other remnants of cloth-sheathed knob-and-tube wiring, but it is unclear if more of this wiring is still in use or if it has been abandoned. It is likely that knob and tube wiring was originally used, as was common with similar houses in the Louisville area.

Building records indicate that Romex wiring was used for the 2000 construction, and it might have been present in the other parts of the church prior to that. Records indicate that in 2005 lighting and outlet circuits were added or modified in the sanctuary.

Condition Evaluation:

The electrical distribution was not tested during the site visit but appears to be in good condition.

Recommendations:

Determine the extent of the cloth-sheathed wiring throughout the church and remove and replace with new wiring to current codes.



Knob-and-tube wiring seen in the bell tower.



LIGHTING

Description:

There is a pendant light fixture hanging above the front entrance beneath the entrance roof. This light fixture appears to be wired with cloth-sheathed wiring seen in the attic of the belltower. This light fixture also appears on photographs from sometime in the 1940's. This is likely the only exterior light fixture that predates the 2000 addition.

There are several wall sconce light fixtures throughout the building including the north entrance, the southwest service door, the south door to the deck, and above the exterior stairs to the basement. These wall sconces are all the same fixture type and were likely installed at the same time, most likely during the 2000 phase of construction.

Additionally, there are two wall mounted flood light fixtures that are either motion or light activated, or both. These fixtures are located above the service ramp on the north side of the church, and at the deck landing for the upper floor door on the south side.

None of the light fixtures were tested during the site visits, but all fixtures appear to be on interior switched circuits and in working condition.

Condition Evaluation:

The light fixtures were not tested but appear to be in good condition. The pendant light fixture at the front entrance off of Jefferson Avenue appears to be historic based on photographs from the 1940's. None of the other exterior light fixtures appear to meet historic requirements.

Recommendations:

1. Further analysis of the light fixture at the front entrance should be done to determine whether the fixture is historic. If determined to be an historic fixture, the fixture should be repaired as needed.
2. Consider installing new exterior lighting that complies with Dark Sky regulations at all non-historic locations.



Main entrance pendant light fixture.



Several matching exterior light fixtures appear to have been added in 2000.

FIRE DETECTION SYSTEM

Description:

A fire detection system was not observed during the site visit, and it is unclear if one exists. Illuminated fire exit signs appeared to be in appropriate locations throughout the entire church.

Condition Evaluation:

Without an apparent fire detection system observed, it is impossible to assess.

Recommendations:

A fire detection system should be designed and installed by a licensed professional in accordance with all current local codes. If a fire detection system is already in place, it should be evaluated by a licensed professional.



SECURITY SYSTEMS

Description:

An electronic security system was not observed during the site visit, and it is unclear if one exists.

Condition Evaluation:

Without an apparent electronic security system observed, it is impossible to assess.

Recommendations:

No recommendations at this time.

4.0 ANALYSIS AND COMPLIANCE

4.1 HAZARDOUS MATERIALS

Due to the age of the building, the finish coatings may contain lead-based paint and asbestos may be present. A professional evaluation should be conducted to determine the presence of any hazardous materials.

4.2 MATERIALS ANALYSIS

Further exploration is needed to determine material thicknesses and sizes that could not be determined during the site visits. These include the foundation depth and footing size (if any), structural members, floors, walls, and roofs.

4.3 ZONING CODE COMPLIANCE

Notes:

- It is recommended that the owner have a survey of the property conducted to verify the *Lot Size*.
- Building area square footages are taken from:
 - Building permit application dated 9/2/1999
 - As-built measurements as measured from the interior face of wall, by DAJ Design
- Only the main floor of the building was measured by DAJ Design as this is the main historic structure located on the specified property.

Legal Description:

Lots 11-12, Block 9, Jefferson Place Department File 07-01-133-01

Year Built (Original Church):

1892

Lot Dimensions:

Approx. 50' x 125'

Lot Size:

6,250sf (ILC)

Zoning:

[RL](#) (one residential unit per 7,000sf)

Property is subject to the [Old Town Overlay Zoning District Regs](#)

Areas of levels in square feet (sf):

First level finished area:

3,912 sf (Measured by DAJ Design)

Second level finished area (2000 addition):

1,190 sf (1999 Permit Application)

Basement area (2000 addition):

1,238 sf (1999 Permit Application)



4.4 BUILDING CODE COMPLIANCE

Applicable Design Sections Include:

- Historic Overview & Design Standards for a Historic Building
- Louisville Municipal Code
- International Building Code

Portions of the building are not compliant with the current adopted building codes. It is our understanding that any aspects that are not compliant with the current adopted city code (2018 ICC Building Codes) have been assessed and approved by the Chief Building Official. Some of the features that may not be compliant with current code standards but that have been approved include, but are not limited to:

- Undersized door openings
- Door swing direction
- Door hardware
- Tempered glass in hazardous locations
- Fire protection system
- Fire alarm system
- Emergency lighting
- Structural member sizing, span, or support

Any changes to the structure may require additional updates to bring the building into compliance with current building codes.

4.5 ACCESSIBILITY COMPLIANCE

Applicable Design Sections Include:

- ADA Guidelines
- ANSI Guidelines

Any aspects that are not compliant with the current adopted ADA/ANSI Guidelines have been assessed and approved by the Chief Building Official. Some of the features that may not be compliant with current standards, but that have been approved, include, but are not limited to:

- Door width
- Door threshold accessibility
- Maximum allowable cross-slope on walking surfaces
- Safety glazing
- Restroom sizing and layout

Any changes to the structure may require additional updates to bring the building into compliance with current accessibility codes.



5.0 PRESERVATION PLAN

5.1 PRIORITIZED WORK

CRITICAL DEFICIENCY



- The top of the foundation relative to the top of grade should be determined around the entire perimeter of the building. If the top of the foundation is determined to be at or below the existing grade, new grading should occur to bring the grade down below the top of the foundation, as prescribed by a licensed architect or structural engineer.
- Finished grade around the church perimeter should be re-graded to create positive drainage away from the foundation. The top of finished grade should be a minimum of 6 inches below the top of the foundation and slope away from the foundation for at least the first 5 feet. Coordinate slope with a licensed architect or geotechnical engineer.
- The foundation may need to be replaced in some locations to bring the top of foundation at least six inches above finished grade, mainly at the south bay where the foundation could not be observed. Coordinate with a licensed structural engineer and a licensed geotechnical engineer.
- It is assumed that there is damage to some of the structural wood elements in parts of the early construction of the church, including and especially at the Alter and North Addition; however, many of these locations were difficult or impossible to access during a visual inspection and may require destructive testing or removal of siding material to access. The wood floor framing members including the sill plate, rim board, floor joists, and floor sheathing should be inspected for rot caused by poor drainage. If rot is found in any of these members, the affected flooring should be replaced as prescribed by a licensed structural engineer.
- The basement and crawlspace foundation walls showed various signs of damage that require further evaluation. No additional load should be added to the existing foundation system without a full analysis of the current foundation walls/footings. In addition, a licensed Structural Engineer and Contractor should be contracted to evaluate and repair the existing stone foundation walls. This work could include re-tuck pointing of existing stone and/or the removal and replacement with a modern concrete wall, etc.
- The transition from shallow crawl space to deeper crawl space should be evaluated by a structural engineer. Repair could be necessary to replace the existing retaining systems with new poured concrete retaining walls. The soil cut portion should be temporarily braced until a retaining wall can be designed and built.
- The beams and beam supports of the 1941 and earlier construction should be replaced or reinforced as prescribed by a licensed structural engineer. The best method is to construct new beams and beam supports that support the existing floor joists. These new supports should bear on footings, or any other type of foundation as prescribed by a licensed structural engineer and located at a depth and soil bearing capacity as specified by a licensed geotechnical engineer.
- The floor framing should be observed by a licensed engineer with repairs specified as needed. The existing floor joists do not meet the minimum requirements of the IBC code. New floor joists should be added to the existing floor joists or new beam lines should be added to the main floor system to support the existing floor joists as mentioned above. Special attention should be given to the connections between the foundation walls, floor joists, beams, and beam supports. The floors are not suitable for additional load resulting from a remodel or addition.
- The original framing over the 1892 construction may have been altered in the past, with the removal of ceiling joists. The ceiling support system of the current roof system could not be determined during our observation. Further evaluation and possible repairs should be provided by a licensed structural engineer to support the original existing roof system.
- The ceiling and roof support system over the 1941 addition appears to have been altered in the past since the supports for the existing ceiling joists were not present. Further evaluation and possible repairs should be provided by a licensed structural engineer to support the 1941 addition roof system.



- Hurricane clips (or toe-nails) may need to be added where roof framing members bear on exterior walls to meet the minimum IBC code requirements.
- Diagonal braces and purlins are needed in the 1941 addition to strengthen the existing rafters to be in compliance with the current IBC code.
- Additional beams are needed in the 1941 addition attic area to support the above-mentioned diagonal braces and purlins. This is mainly needed approximately at the mid-span of the roofs. These beams will require support in the wall system and likely would require new foundation support in the crawlspace and basement. This must be coordinated with a licensed structural engineer.
- The stairs to the front entrance should be replaced with new concrete stairs in the same location and the same size as the current stairs. Proper waterproofing measures and metal flashing should be added to the building prior to pouring the new landing and stairs. New stairs and handrails shall meet all local building codes.
- All of the windows other than those that are part of the 2000 addition should be properly restored as described below. Windows should be made to be operable, create proper seals, and only use replacement parts where no other option is available.
 - Remove and replace all window putty.
 - Clean and restore all glass panes with special care given to stained glass.
 - Repair and refurbish all wood window sash elements including stiles, rails, and muntins.
 - Repair and refurbish all wood window frames.
 - Repair and refurbish all counterweights and restore to operability.
 - Repair and refurbish all pin-stops.
 - Repair and refurbish all hardware including locking mechanisms. Restore to original locks where replacements have been installed.
 - Install new storm and screen windows with minimum frames.
- Scrape, repair, refinish, or replace all exposed painted wood roof elements.
- Repair, replace or restore the window and door trim, frieze board, and corner trim.
- Repair, replace or restore the decorative barge rafter brackets and the decorative barge boards.
- Determine the extent of the cloth-sheathed wiring throughout the church and remove and replace with new wiring to current codes.

SERIOUS DEFICIENCY

- Continue to monitor the drainage around the perimeter of the church. The perimeter should be observed after snow and significant rain events to assess for all areas of pooling water.
- Continually monitor the main floor walls for signs of foundation distress such as cracking or improper door operation. Wall cracks were not observed within the wall finishes on the main level. If signs of cracking are detected, these areas should be evaluated by a licensed engineer and repaired as needed.
- New footings are likely needed to support the point and distributed loads from the roof and floor framing as specified in the recommendations below. New foundation support below any new beam and posts supporting the floor and roof framing should be coordinated with a licensed structural engineer.
- It is likely that the non-visible portions of the floor structure are constructed in a similar manner to those areas that are exposed or to what is indicated by building records. However, the entire floor structure should be verified and evaluated by a licensed structural engineer for required live load, as specified in the IBC code and prior to any remodel or addition.
- New beams may need to be added to support the point and distributed loads from the roof framing as specified in the recommendations of the 'Roof Framing Systems' section of this report.
- The siding on the entire structure except for the 2000 addition should be scraped, repaired, refinished, or replaced as necessary.
- The siding of the 2000 addition, where the exterior walls meet lower roof aspects, should be replaced. The siding should be held off the top of the roof shingles by 4 inches. The step flashing beneath may need to be replaced or modified and painted to match the siding.

- The chimney should be further evaluated where it is enclosed on the main floor to fully determine the condition. Additionally, the chimney should be further analyzed above the roof where it is exposed to weather.
- The chimney's masonry may need to be tuck-pointed to stabilize its condition.
- Roof venting should be increased with the addition of low and high venting as required by code.
- Further analysis of the light fixture at the front entrance should be done to determine whether the fixture is historic. If determined to be an historic fixture, the fixture should be repaired as needed.
- A fire detection system should be designed and installed by a licensed professional in accordance with all current local codes. If a fire detection system is already in place, it should be evaluated by a licensed professional.



MINOR DEFICIENCY

- Work with a licensed arborist to maintain the mature trees and shrubs. Ensure that growth does not interfere with the building roof, siding, or foundation.
- Keep overgrowth trimmed away from the house and overhead electrical lines and remove any overhead branches.
- Foundation wall and crawlspace insulation should be added to achieve an R-value as close as possible to current code standards.
- If the main floor deflection is inadequate, consult a licensed structural engineer for additional support design options.
- Rim joist insulation should be added to achieve an R-value as close as possible to current code standards. Verify that the crawlspace is a conditioned area otherwise insulation should be added to achieve an R-value as close as possible to current code standards.
- Attic insulation should be added to achieve an R-value as close as possible to current code standards. The maximum insulation possible should be added at the perimeter of the roof as the roof depth in this location does not allow for the minimum required by code. Any energy upgrades, such as increased insulation in the attic, could result in prolonged snow retention on the roof and could ultimately affect roof performance without first completing structural reinforcement.
- It is not recommended to add additional roofing materials such as an additional layer of shingles, or solar panels without the additional structural support mentioned above.
- The above-mentioned recommendations are for the visible portions of the roof but there are areas that were not entirely visible during the observation. Further analysis would be required once these roof structures are exposed. However, we assume that the roof framing in these areas may be built in a similar way and would need similar repairs as mentioned above.
- Without the opportunity to observe the exterior wall structure, we do not have any recommendations currently. If the opportunity presents itself, the exterior walls should be assessed by a licensed structural engineer. Please note that a 2x4 construction is assumed and any wall taller than 10'-0" will likely not meet minimum code deflection due to perpendicular wind loading.
- The owner is to note that the walls will need to be evaluated if any remodels or additional load is to be added, including the interior walls as these walls appear to be load bearing or contain point-loads. It is likely that additional studs may need to be added for the increased loads above in combination with the wind load on the building. Also, if any remodel or addition plan is in place, new braced wall lines may be added by adding OSB or gypsum board on the interior side of exterior walls to resist wind loading.
- Wall cavity insulation should be added to achieve an R-value as close as possible to current code standards. Any energy upgrades, such as increased insulation in the attic, could result in prolonged snow retention on the roof and could ultimately affect roof performance without first completing structural reinforcement.
- The siding of the 2000 addition should be further evaluated for water damage at the base of the siding where it is near or at grade. Replace any damaged boards.



- Without the opportunity to fully observe the bell tower and front entrance roof structure, we do not have any recommendations currently. If the opportunity presents itself, the exterior walls and roofs should be assessed by a licensed structural engineer. The owner is to note that the walls will need to be evaluated if any remodels or additional load is to be added. It is likely that additional studs may need to be added for the increased loads above in combination with the wind load on the building. Also, if any remodel or addition plan is in place, new braced wall lines may be added by adding OSB or gypsum board on the interior side of exterior walls to resist wind loading.
- The metal flashing should be fully analyzed by a licensed professional when the opportunity presents itself. Special attention should be given to all areas where low roof aspects meet exterior walls and at the chimney connection to the roof. Repair or replace any damaged or missing flashing.
- Ensure that all gutters, downspouts, and downspout extensions are maintained to discharge water away from the building foundation and are kept clear of debris.
- The gutters and downspouts are not historic. Consider replacing the gutters with ½ round gutters and the downspouts with round downspouts. Though not historic, these styles will more appropriately match the historic nature of the building.
- Further investigation should be made to determine the historic nature of the interior wood doors at the entry. If these doors are indeed found to be the historic front doors, proper maintenance should be performed to prolong their lifespan. The repurposing of these doors fits the historic nature of the lifecycle of the church and therefore their current locations should remain.
- Continue to perform routine maintenance on the furnaces to prolong their lifespans.
- If heating or cooling does not perform to the owner's satisfaction, consult with a licensed mechanical designer for upgrade options.
- Continue to perform routine maintenance on the water heater to prolong its lifespan.
- Consider installing new exterior lighting that complies with Dark Sky regulations at all non-historic locations.

5.2 PHASING PLAN

A phasing plan is not available at this time.

5.3 ESTIMATE OF PROBABLE COST OF CONSTRUCTION

A probable cost of construction is not available at this time.

6.0 PHOTOGRAPHS AND ILLUSTRATIONS



Pre-1910 view of the east façade from Jefferson Avenue. The original belltower and original entrance can be seen.



View of the back (west) of the church in the background. The original chimney, west addition, and north addition are visible.



Circa 1941 east façade from Jefferson Avenue. The new belltower and north addition have been added and the round window has been covered.



Circa 1941 view of from the northeast. The 1941 addition is present at the rear of the church.



Circa 1941 view of from the northwest. The 1941 addition is present at the rear of the church.



2024 view from the northeast. The 2000 addition is visible in the background. The 1941 addition is obscured by mature trees.



2024 view from the northwest. The 1941 addition is visible while the 2000 addition is mostly obscured by mature trees.



2024 view from the southwest. The 1941 addition and the back of the original structure are visible.



2024 view from the southwest in the yard behind the preschool. The addition on the south of the original church is visible.



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Structural Engineering Consultants
P.O. Box 20708
Boulder, Colorado 80308
303.554.9591

October 31, 2024

Attn: Josh Johnston
DAJ Design
Louisville, CO

Dear Josh,

We visited the church at 741 Jefferson, Louisville, CO on August 8, 2024 to review the existing building for the purpose of documenting and evaluating the existing structure. It was at this time that we reviewed the building with DAJ Design and coordinated our findings with the report created by DAJ Design.

On October 27, 2024 we reviewed the final report and made any necessary modifications to the structural sections. All findings, evaluations and recommendations are in the report. Below, in this letter, are our structural conclusions and a summary of our scope of work. Please feel free to contact us for any further information.

Structural Conclusions:

A. In our professional opinion, the existing roof framing has multiple framing deficiencies that are a cause of concern. The roof structure over the original structure and 1940's addition should be further evaluated and repaired as described in the HSA. It is our strong recommendation that a structural engineer further review the existing structure and provide repairs that are implemented as soon as possible.

It is also important to note that a significant portion of the building's structure was not exposed for our review. There may be damaged structure that we were not able to observe due to finish materials. Also, additional cosmetic imperfections could arise, which is normal for an old structure.

B. An extreme event occurring at the site, such as a tornado, a serious (rare) earthquake or other unforeseen event could significantly damage the structure. But this is also true for most old structures in Louisville and is only mentioned for completeness of this report.

C. The drainage around the building should be addressed to allow for water to flow away from the building. Poor drainage could result in water infiltration or excessive movement and damage to the foundation and wood framing.



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Summary and Limitations:

A. Summary:

1. The goal of our site observation and the structural portion of the report is to provide an overview of the building's structure and foundation and identify areas where remedial work in the near future is prudent.
2. The recommended remedial measures are intended to promote the building's continued safe use and are not intended to eliminate all existing and potential future cosmetic defects.

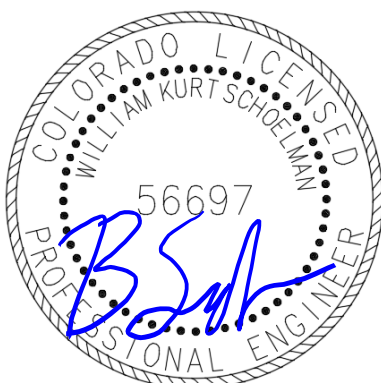
B. Limitations:

1. The information contained in the report is the author's professional opinion based on visual evidence readily available at the site, without the removal of existing finish materials. Of course, this means there could be hidden defects which are not discoverable at this time, without demolition of finish materials. That is true for most buildings, and an inherent limitation for this kind of report. Should additional information become available or additional movement is perceived, we recommend that our firm be contacted for further review.
2. The issuance of the report does not provide the building's current or future owners with a guarantee, certification, or warranty of future performance. Acceptance and use of this report do not transfer financial liability for the building or the property to the author or this engineering firm.
3. The report is also only preliminary to make note of areas that need to be addressed. A licensed Structural Engineer should be retained to provide a more thorough investigation and provide appropriate repair details for all necessary repairs.

Sincerely,

William Schoelman, P.E.

Jesse Sholinsky, P.E.



10/31/2024



10-31-24