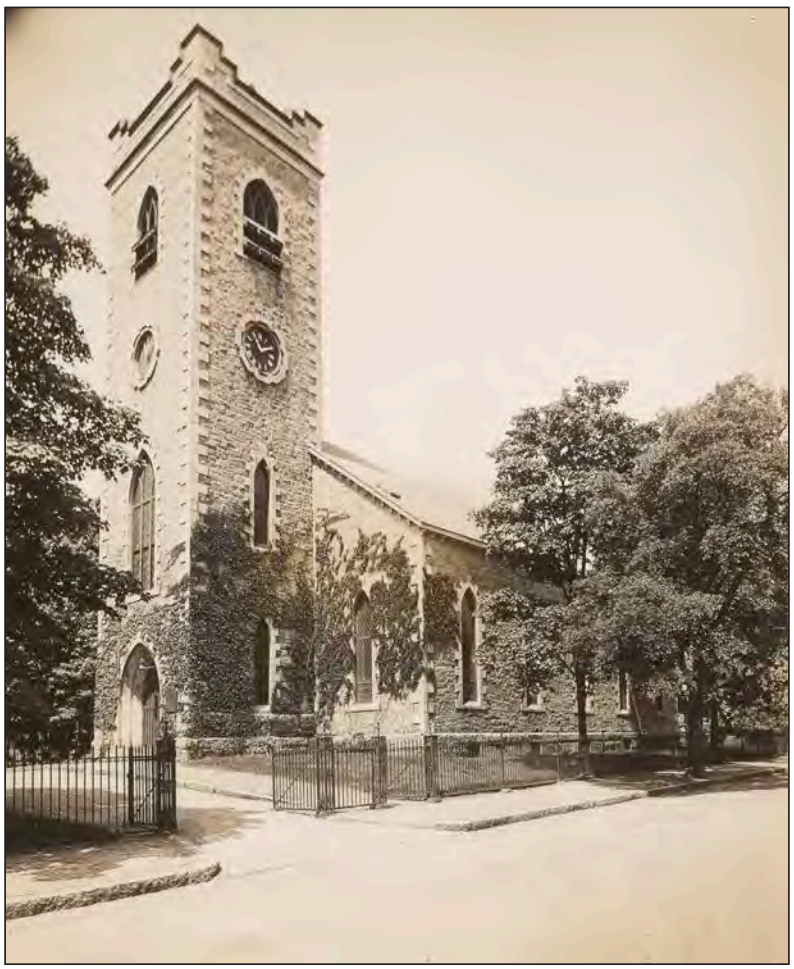
PART TWO: OBSERVATIONS & TREATMENT RECOMMENDATIONS



Above: Photograph from 1920 showing the Eliot Street facade of the First Church. Note the large louver fins in the belfry and the lamp suspended above the entrance archway.

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EXTERIOR CONDITIONS
CHURCH

- **TOWER**

Observations *at the exterior*

The tower's exterior walls are built of quarry-faced ashlar granite with dressed quoins at the corners and openings. There, the stones and their joints are in good condition thanks in part to an extensive repointing project done in 2012, where all elevations were treated. A thorough review of the stonework elsewhere is included in later sections. The tower serves as the ceremonial entrance to the church. The front door is recessed in a pointed arch lined with dressed granite voussoirs. The door and its surround is constructed with a board-and-batten wood design, and is in good condition **[Image 01]**. One iron rail remains embedded in the monolithic granite steps, its sister rail since removed **[Image 02]**. The granite steps are stable and level, and their joint sealants exhibit mostly cohesive failure, requiring replacement **[Image 03]**.

Image 01: The tower's ceremonial entrance, recessed in a stone archway and made of a board-and-batten wood design. Note the missing lantern from the iron bracket.

Image 02: *Left*: The remaining iron rail. *Right*: former anchors for the sister rail.

Image 03: Cohesive and adhesive failure at the joint sealant between the granite steps and exterior wall.

A note on compass points and directionality:

Most buildings have facades that favor a cardinal direction. However this building is angled near-perfectly to 45-degrees of the compass. For the sake of clarity and uniformity, each facade will be referred to by a pure cardinal direction. For example: the Eliot Street facade (facing northeast) shall be north. The church's tower entry (facing southeast) shall be east. At times, sections of the report may use both the true and 'referred' direction (northeast/north).

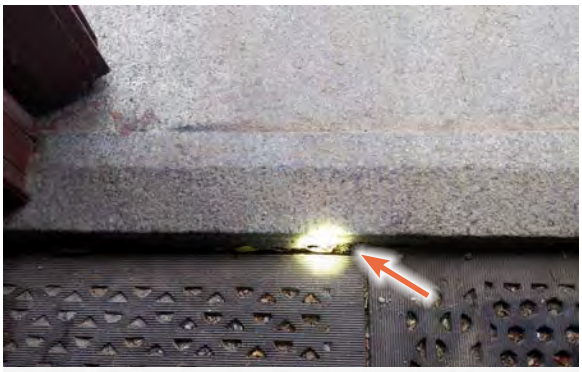


Image 04: Gaps in the entry granite threshold, adjacent to the recessed floor for walk-off mats to lay in.

Image 05: Larger voids in the granite threshold offer a place for leaves and debris to collect.

Image 06: The crawl space offers views to the underside of the granite threshold and landing, which show little support beneath.

Observations *at the first level*

On the other side of the doorway, a recessed floor allows thick walk-off mats to lay flush with the interior cork floor. Here, a cavity under the granite threshold is seen **[Image 04]**. Elsewhere at the threshold, stone is chipped and a cavity collects leaves and debris **[Image 05]**. There appears to be a large void under the granite landing as seen from the crawl space below the tower **[Image 06]**. The interior of the tower at the first level serves as a vestibule. Steps lead to the sanctuary, a spiral staircase to the organ level, and a floor hatch to the crawl space below.

The lower half of the first floor lancet windows in the tower are visible at this level; the upper half visible from the organ level. They are diamond-patterned and made of wood, with wood muntins and "flesh"-colored lites. These windows were restored in previous phases of work, but glass has been broken and patched with painters tape **[Image 07]**.

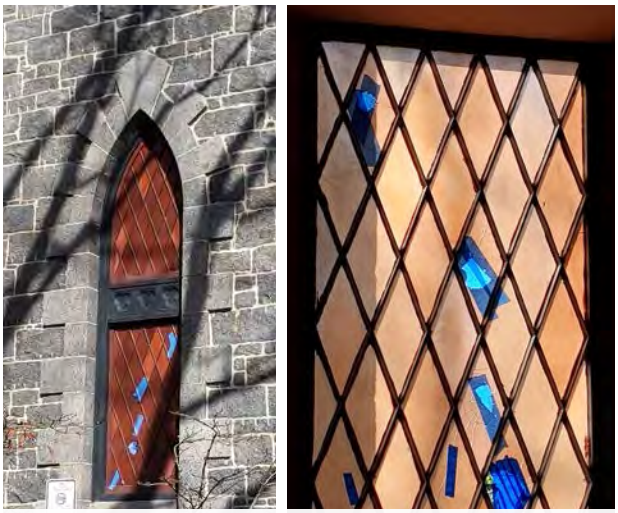


Image 07: 'Flesh' colored glass panes in the previously-restored lancet windows are subjected to wind-swept debris, or target practice.

Observations *at the organ level*

The organ level is partially finished at the interior, but a narrow corridor along the north side provides access to the top of the first-floor lancet window. The window is set in the masonry opening, where the wall construction is visible and stone ties were employed between the inner and outer walls **[Image 08]**. A narrow staircase up the east wall provides access to the tower proper **[Image 09]**, with a chance to inspect the masonry, which is in good shape although some mortar is dusty. Here, a large lancet window is similarly constructed to the narrow windows that flank the tower and exhibits some exterior paint wear **[Image 10]**; it was restored in the early 2000s. Unlike the narrow windows which are fixed, these sashes are hung with chains and weights **[Image 11]**; however, the sashes do not appear operable, with little need to. The granite sill at the exterior exhibits three cracks, which should be repaired. Painting of windows is long overdue given the average life of paint at 7-10 years.

Image 08: The exposed lancet window at the organ level offers a chance to see part of the wall's construction.

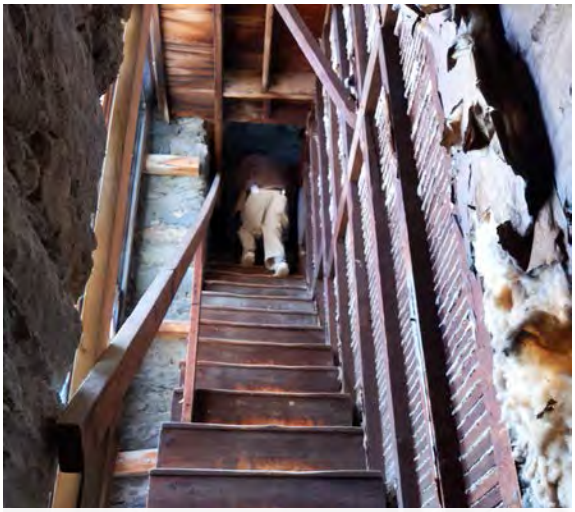


Image 09: A narrow staircase above the east entry lends easy access to the interior of the large lancet window.

Image 10: The previously-restored large lancet window is in good condition, with some signs of peeling paint.

Image 11: The lower sashes of the large lancet window are hung with chains, but inoperable. The middle sashes may be fixed.

Image 12: Present-day observations reveal a noticeable 'bulge' of the ashlar granite and trim stone above this north window.

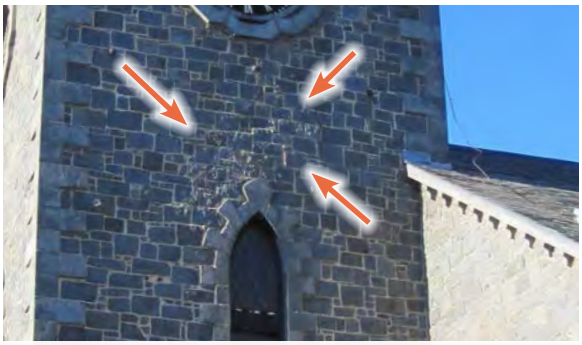


Image 13: This photo from 2010 was carefully-timed to catch light gleaming off the protruding 'bulge'.

Image 14: Voids on either side of the north window reveal where the granite had de-bonded from it's puddingstone backup.

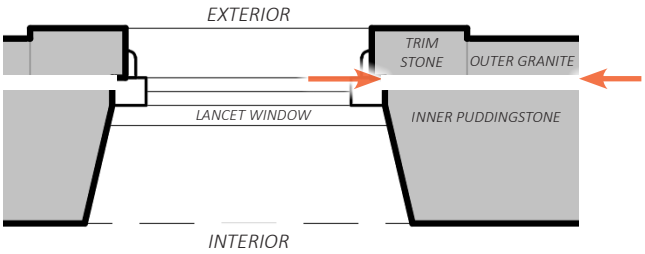


Image 15: The arrows in this plan show the bond between trim/granite and puddingstone that has ultimately failed.

Observations *at the attic level*

Most importantly on the Eliot Street (northeast, called north) facade, the upper dressed voussoirs and keystone — as well as the surrounding ashlar granite — exhibit a clear 'bulge' outward, visible from the ground by eyesight alone **[Image 12]**. This 'bulge' has been remarked upon in a series of previous reports and observations although the extent of progression is unknown **[Image 13]**.

By 1990, it was sufficiently troubled to warrant stabilization. A large, cavernous void investigated at the interior of the window has shown that the exterior ashlar granite wall has de-bonded entirely from the Roxbury puddingstone backup **[Image 14]**. Any mortar that once joined these two walls has been eroded, likely by water infiltration over the life of the church. In traditional mass-masonry wall construction, both the window trim stones and wall stones should be deeper and interlocked into the backup masonry to 'tie' the inner and outer walls together **[Image 15]**. Here, there appear no such 'tie' stones. This could be a localized issue, however the anchors seen around the clock (discussed in the next paragraph) suggest that this issue may exist elsewhere, at least at the level above. It's unknown if other tower walls were constructed similarly, a fact which should be investigated carefully. It is SSV's opinion that this 'bulge' should be temporarily braced with timber for safety until the latent issues are addressed. For an in-depth analysis of the masonry at the tower and recommended treatment, refer to the *Structural* and *Masonry Reports*.

This 'attic level' provides the means accessing the sanctuary's 'attic' truss space. From this attic area, the rear (northwest, called west) side of the tower is visible from within the building. On three occasions this wall was observed on both dry and rainy days **[Images 16-18]** Signs of water from the roof intersection above were present, and walls were damp to the touch. Although the masonry walls of the tower are in question, it is likely the deteriorated slate roof is the culprit. Conditions of the roof are discussed in a later section. A clever system of ventilation from the sanctuary was once routed through the long attic space and in through two oval, hinged panels that flank the tower **[Image 19]**. An abandoned wood-framed duct system is visible and vertically continuous from this level upwards to the belfry **[Images 20-21]**.

Image 16: Rear (west) wall of the tower as seen from the church sanctuary attic. Here, the roof ridge meets the tower.

Image 17: A rainy, November 23rd, 2020 day leads to water soaking the roof sheathing and dripping down the stone.

Image 18: A December 8th, 2020 rainstorm leads to another water infiltration event at the tower's west wall.

Image 19: An oval, hinged panel once vented into wooden duct shafts.

Image 20: The wooden duct shafts seen from the clock level, up thru the belfry.

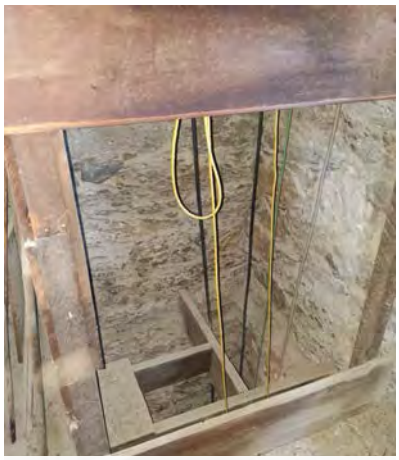


Image 21: The former wood duct shafts extend up through the belfry.

Image 22: 8 thru-wall ties surround the north clock. Threaded rods and washer plates are seen from within and without.

Image 23: Brick arches support the circular clock opening. An access panel in the clock face offers a view of the exterior trim.

Image 24: The restored, hand-wound Howard clock runs like a top.

Observations *at the clock level*

This level houses the tower's three operating clocks. The ashlar wall at northern clock is surrounded by eight thru-wall plates and ties, seen from within **[Image 22]**. As noted in the prior section of this report, this was installed to secure the de-bonded outer masonry wall from its puddingstone backup in the 1990 project. The circular clock openings penetrate the full thickness of the wall, with brick arches and a small access panel in the clockface **[Image 23]**. Each clock is powered by a restored Howard clock mechanism, counterweighted and hand-wound **[Image 24]**.

On one rainy day, water was visibly dripping from the inside of the east clock's brick arch, a sign that water found a path in from the exterior trim stones. Seen through the clockface access hole, head joints at the exterior trim stones are deteriorated **[Image 25]**. At this and all other levels of the tower, the Roxbury puddingstone backup is clearly seen. The puddingstone itself is solid **[Image 26]**, but the mortar is in a variety of conditions. In many cases, like the previous photo, the mortar is hard and shows no cracking. In others, the mortar is soft with long continuous cracks **[Image 27]**. Some areas of mortar have completely washed away, leaving winding, cavernous voids between the inner and outer walls. A close inspection reveals the occasional, long-deceased bat or mouse taking up residence deep within these inviting holes. Fortunately, a photo was unavailable.

The clockface is made of wood, with a 'smalted' finish. An early-2000s project added a coat of black paint over the finish to prolong its life a bit more. The finish is very deteriorated **[Image 28]** and should be restored. The finish of the wooden clock hands is worn down to bare wood **[Image 29]** and should be refinished, gilded with gold leaf. The numerals and minute markers are also made of wood where one would expect metal. They appear intact although the finish is worn, and should be re-gilded as well **[Image 30]**. It was observed during a site visit that the south clock and its trim stones appear to show a slight 'lean' forward, similar to the 'bulge' seen at the north window. It is difficult to say if this was a trick of the light (as quarry-faced stone does not have a flush matte surface), or if a similar issue has emerged as it did at the north clock (with the surrounding ties). The *Masonry Report* outlines recommended investigative measures.

Image 25: After poking a head through the narrow access panel in the clock and looking up, one is greeted with deteriorated head joints at the stone trim. And on a rainy day, a drip of water destined for an eye.

Image 26: The tower's Roxbury puddingstone shows off its array of smaller stones within, still "hard as a rock".

Image 27: Arrows indicate the lengths of cracking seen occasionally in the tower interior. Another arrow points to water intrusion at the clock's arch.

Image 28: 'Smaltz' is a fine aggregate of glass/sand used to give surfaces an unmistakable glitter.

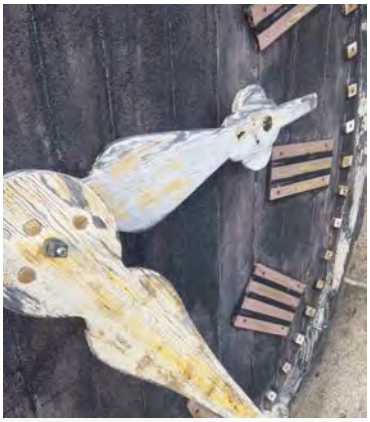


Image 29: The gilded gold leaf clock hands are worn to bare wood.

Image 30: Wood (not metal) numerals are solid but worn.

Image 31: The bell is subject to wind-swept rainwater from the louvers. A membrane floor drains back to the louvers.

Image 32: Fiberglass louvers were installed with the cellular equipment to facilitate signal transmission.

Image 33: The uninstalled wood louvers (replaced by fiberglass) take residence in corners of the tower, and should be protected.

Observations *at the belfry level*

The above Belfry level contains a large cast bell, struck hourly by a hammer and controlled by the clock mechanism from the level below. In heavy wind-driven rains, the bell may be soaked with water from the louvers, seen on one site visit **[Image 31].** This is expected, and the floor is covered in rubber membrane and canted towards the open louvers to facilitate water drainage. The rubber membrane floor was installed in previous phases of work that included the replacement of the original wood louvers with matching fiberglass and new sill flashings at the base of the louvers where water was thought to be seeping through. The north, east, and south louvers are all fiberglass **[Image 32]**, presumably to ensure the cellular antennae equipment behind each is unimpeded. The uninstalled louvers are stored in parts, scattered among the lower levels of the tower **[Image 33]**. The west (rear) louver has no equipment adjacent to it, and is still made of wood, either partially original or replaced in the 20th century. The interior masonry condition is similar to the levels below, with fair conditions of mortar. The worst is at the joints of the brick arches seen at a few louvers, where the mortar is severely deteriorated **[Image 34]**.

The belfry level is open to the tower's roof structure, and a metal ladder provides access to the beams and boards above. One can perceive the line where the puddingstone backup ends and the final 10 feet of tower wall begin **[Image 35]**. The bricks, stone, and their joints are all in good condition. It's presumed that this section of brick and stone may have been subject to reconstruction during the tower's multiple roof configurations. The wood-framed hipped roof sits on the top of the brick and stone construction and the framing is dense and dry **[Image 36]**, a sign that the copper roof from the 2012 project is doing its job splendidly **[Image 37]**. Among the beams and debris that hang above the bell, one can see abandoned ducts from the former ventilation system **[Image 38]**.

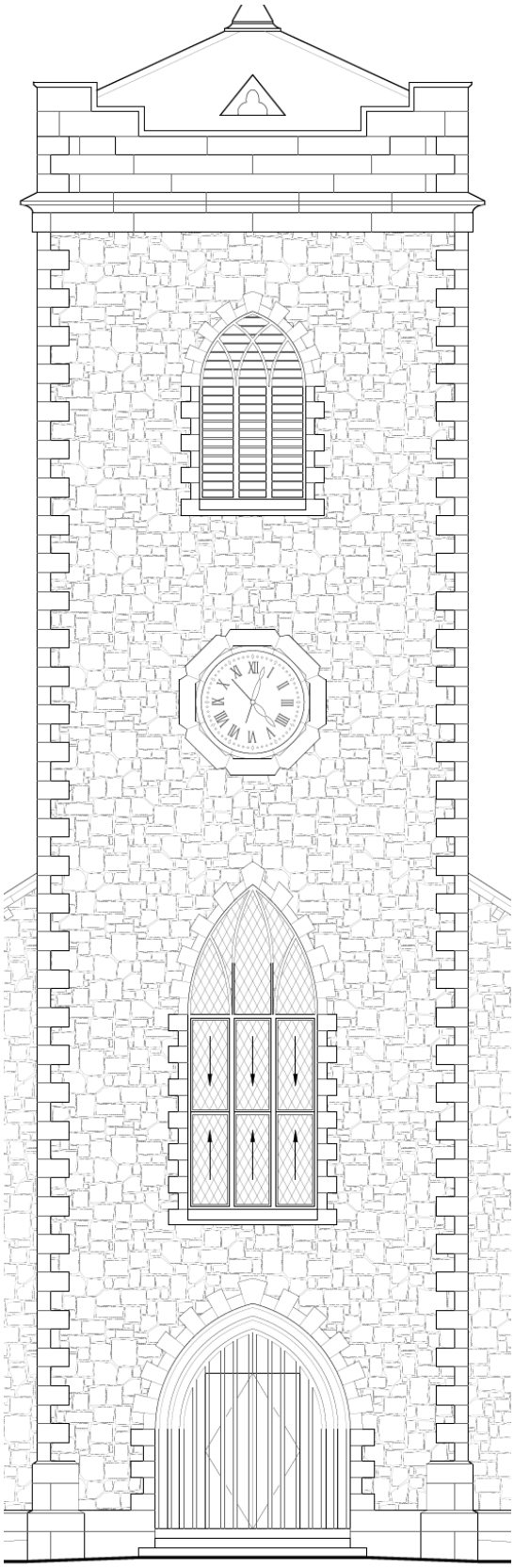
Image 34: Deteriorated mortar at the brick arches of the louvers are in varying conditions. Here, former water infiltration washed much away.

Image 35: An arrow indicates the demising line of the original tower wall and its reconstructed section above.

Image 36: The tower's wooden rafters and sheathing are dry and dense. Discoloration stems from moisture before the new roof in 2012.

Image 37: Photo from 2012, showing the new copper roof, tight as a drum today.

Image 38: An abandoned duct is tucked away above the bell. The four outlets may have exhausted out the roof dormers.



Recommendations

- Replace deteriorated sealant at the monolithic granite entry steps.
- Clean and grout the voids below the granite threshold. Provide a solid footing beneath the granite landing.
- Replace the broken panes of 'flesh'-colored glass in the lancet window; consider protecting the exterior with a wire mesh panel, similar to the sanctuary windows.
- Repair the cracked granite sill at the large lancet window.
- Repaint the large and narrow lancet windows at the tower.
- Conduct a thorough investigation of wall construction at all walls and levels of the tower to determine any latent issues. Employ a lift and stone masonry specialist to select stones for removal and observation.
- Secure the bulging north wall with temporary timber braces, secured between the clock above and window below, until the latent issues in the masonry wall are addressed.
- Mitigate water infiltration at the roof-tower intersection by following the recommendations outlined in roof section, later in this report.
- Investigate the trim stones and their joints at the clock. Repoint and flash as required to mitigate water intrusion.
- Monitor lengthy cracks in the Roxbury puddingstone backup at all levels of the tower. Repoint as required after a thorough investigation of the masonry construction at all walls.
- Restore the smalted finish of the clock and gild the hands, numerals, and minute markers in gold leaf.
- Monitor the fiberglass louvers and repaint as part of a cyclical maintenance plan.
- Protect the wood louvers stored throughout the tower levels.
- Repoint joints and replaced damaged brick at the interior louver archways in the belfry.

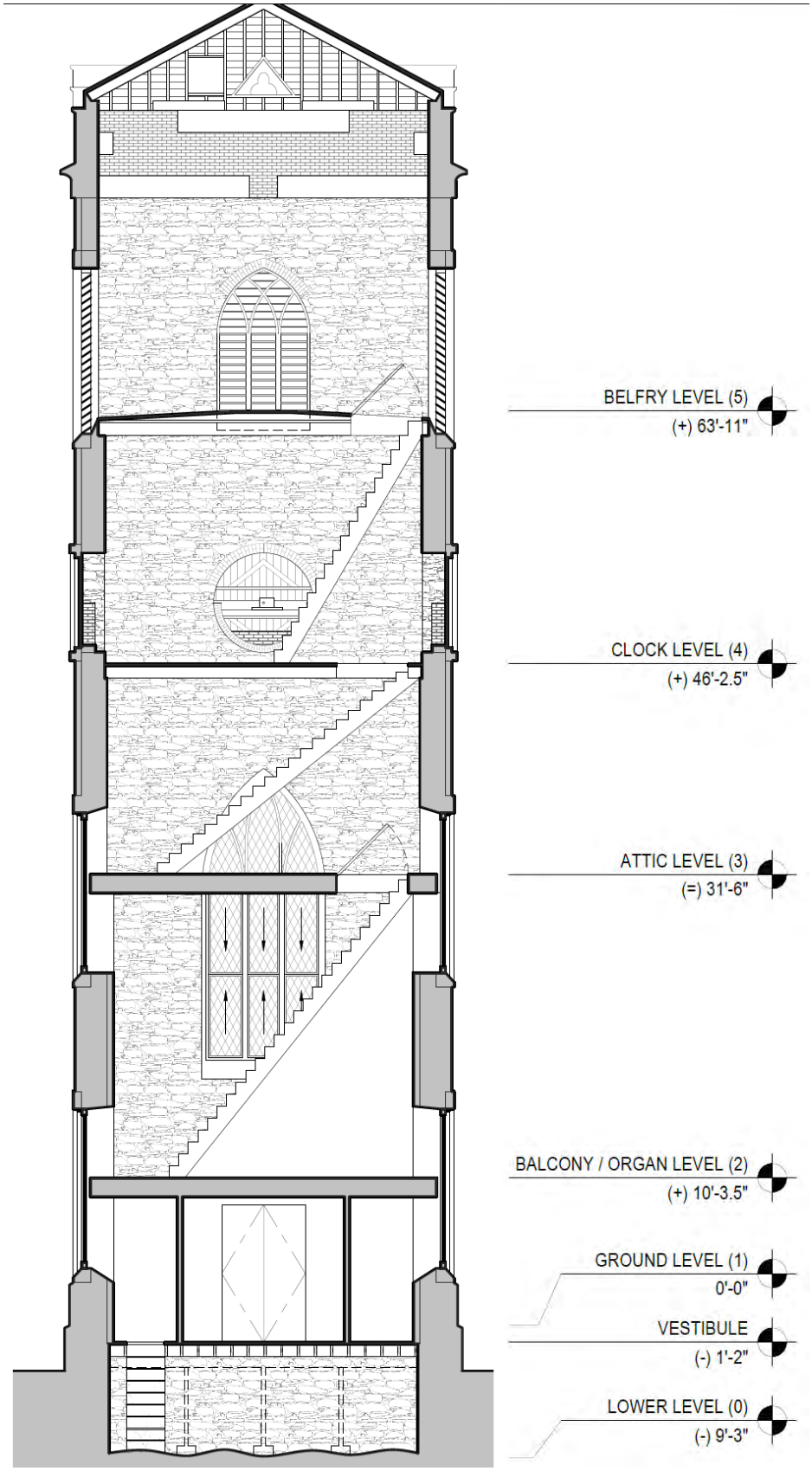

BELFRY LEVEL (5)
(+) 63'-11"
CLOCK LEVEL (4)
(+) 46'-2.5"
ATTIC LEVEL (3)
(=) 31'-6"
BALCONY / ORGAN LEVEL (2)
(+) 10'-3.5"
GROUND LEVEL (1)
0'-0"
VESTIBULE
(-) 1'-2"
LOWER LEVEL (0)
(-) 9'-3"

Image 39: The stone and mortar is in fine shape at the south gable walls, with many decades of service to come.

Image 40: The Eliot Street wall has borne its share of Nor'easters over the last 168 years.

▪ WALLS, SIDING, & TRIM

Observations

The two southeast/east ashlar granite walls that flank the tower **[Image 39]** were repointed in the early-2000s. Twenty years later, these walls and trim stones are in excellent shape - a testament to how proper mortar formulation and repointing technique is critical. The granite sill at the right tower-flanking window is cracked and should be repaired.

The masonry walls along the Eliot Street facade (northeast/north) have not been repointed in quite some time, and have borne the brunt of the northeast driving drains over many years **[Image 40]**. One of the stone sills is cracked due to expected settlement of the stone below, and quick-fix repointing has been applied to the joints below **[Image 41]**. The crack in the sill should be properly repaired. The trim stones that surround each lancet window show deteriorated mortar, including the head joints between each projecting stone along the eave **[Image 42]**. A number of stone sills show green staining, likely from the painted mesh screens. Ultimately, this entire elevation should be repointed, one of the highest priorities due to its northeast exposure and prominence to Eliot Street.

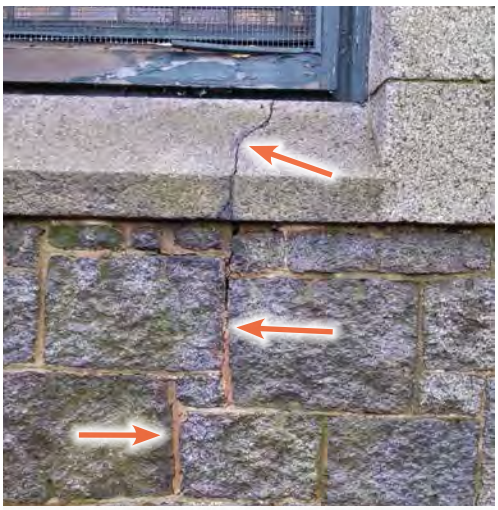


Image 41: An occasional cracked granite sill and mis-matched mortar repairs are easily detected.

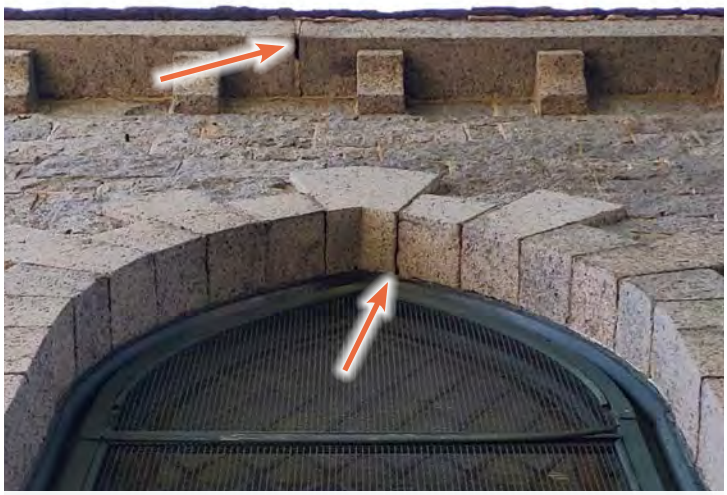


Image 42: When in doubt, just look up: deteriorated joints at the window voussoirs and missing mortar at the eave stones are a prime spot for future leaks.

The rear (northwest/west) elevation of the sanctuary is constructed with two differing cuts of granite: the lower half with quarry-faced ashlar granite (seen elsewhere), and the upper half with uncoursed granite fragments, likely to save cost at the least-viewed facade **[Image 43]**. The ashlar granite is seen best near the parish hall's Eliot Street entry, where weathered mortar has become recessed and chipped **[Image 44]**. The uncoursed upper granite is best seen by climbing onto the flat roof and up the valleys to the sanctuary's rectangular apse **[Image 45]**, now enveloped by the 1889 parish hall addition. The mortar at both sanctuary and apse walls is heavily worn, where joints and small stones can be pulled by determined fingers to reveal voids behind **[Image 46]**. Although this elevation is seen less than the others, the wall here serves as the interface of church and parish hall and should be considered a high priority for repointing.

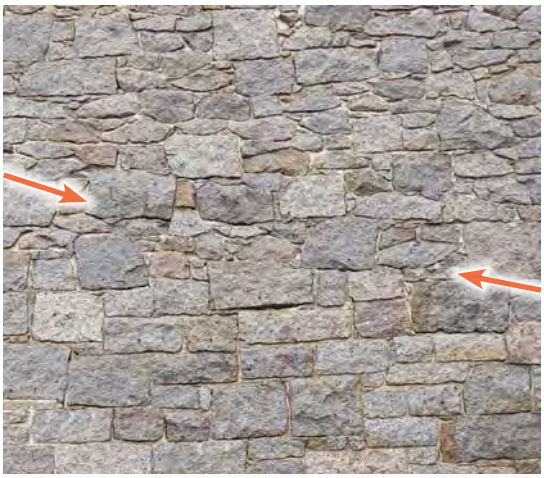


Image 43: A keen eye will notice the subtle change in granite stones at the rear wall: ashlar below, and rubble above. Church stewards and builders were wary of cost in 1883, just as today. Arrows demarcate the gradual transition.

Image 44: Ashlar granite joints are clearly deteriorated at Parish hall's Eliot Street entry.

Image 45: The apse (now surrounded by the parish hall) was constructed similar to the church's gable wall.

Image 46: Loose mortar and small stones are easily pryed from the west gable wall. A slater's tool serves as an impromptu measuring device to show how deep some voids in the wall go. Fortunately, no residents.

The southwest/south elevation of the sanctuary offers a chance to see the assembly of multiple stone types: the dressed window quoin trim stones; the quarry-faced ashlar granite walls; the quarry-faced ashlar granite watertable courses; and the undressed granite rubble foundation **[Image 47]**. The elevation is broad and not afforded the minor protection offered by neighboring houses and trees enjoyed by the northeast elevation. Although, its condition is not much different and requires repointing throughout, especially at the exposed rubble foundation. Stones at the eave show deteriorated joints **[Image 48]**. And the southern corner of the sanctuary shows dark stains from concentrated roof runoff, which should be cleaned **[Image 49]**. The eastern corner on the other side of the gable experiences the same staining.

Recommendations

- Repoint 100% of the masonry (foundations, watertables, ashlar granite, and trim) at the following elevations: north Eliot street façade, west gable wall including apse, and south wall.
- Clean all paint-stained granite sills.
- Repair the cracked granite sills.
- Investigate the voids found at the deteriorated west wall at the sanctuary and apse.
- Repoint the rubble granite foundation along the south façade.
- Clean the dark stains from the dressed quoins, at both corners of the southeast gable wall.

Image 47: Four types of stone on display at the south wall, with varying degrees of mortar deterioration.

Image 48: Missing head joints at the stone eaves are at the mercy of overhanging slate above to divert water away.

Image 49: Dark stains from rainwater runoff seem to correlate with chips in the slate above.

▪ OPENINGS

Observations

The tall, narrow lancet windows at the sanctuary are all the same size. They are leaded-glass in fixed wood sash frames. Each window is protected by a wire mesh panel, and these panels have served each one very well **[Image 50]**. In addition to providing a physical barrier, the wire mesh is open to air. In some ways this is a superior alternative to protective glazing that seals the window, tending to 'cook' the inside. Lead is a soft metal and susceptible to degradation at high temperatures. Some of the panels show deteriorated paint or broken and split wood members. They should all be repainted and repaired to continue offering an attractive method of protection. Windows are glazed with textured clear and yellow glass, and their cames arranged in a diamond pattern. A short bottom section of each window is operable, pivoting horizontally to provide ventilation for the sanctuary's natural ventilation system employed in its early years **[Image 51]**. Overall, the condition of the windows are very good. Select windows show advanced deterioration and warping of the leaded cames **[Image 52]**, which require professional restoration by a qualified specialist. An in-depth analysis and assessment of the windows are included in the *Stained & Leaded Glass Windows Report*. Wood sash frames should be maintained on a regular schedule of painting.

Image 50: A deteriorating wire mesh cover has otherwise protected its window very well since first installed.

Image 51: A leaded-glass window bears commemorative inscriptions. Arrows show the pivots for ventilation..

Image 52: Over time, lead cames are more likely to warp than break outright. Here, the upper window has 'slumped' and started to wave.

Image 53: A modest trefoil window hides high in the west gable for an aware looker to spot.

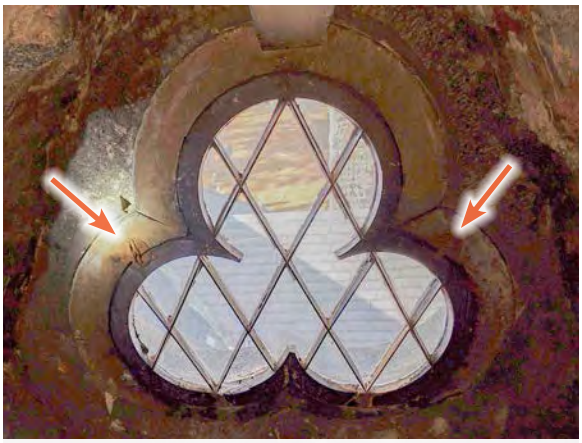


Image 54: The trefoil window is simply but elegantly constructed, held in by a few simple thumb-turns, called out with arrows.

Image 55: Time has taken its toll on the wood sash and muntins of the trefoil window.

One trefoil window peers out from the top of the sanctuary's west gable wall, lined with dressed trim stones **[Image 53]**. Like the tower lancet windows, it is a wood sash with wood muntins arranged in a diamond pattern. The sash is fixed by a few thumb-turns on the inside, reached by traversing the attic space above the sanctuary **[Image 54]**. Glass lites are broken and missing, the sash and muntins are deteriorating **[Image 55]**. The window should be carefully restored, being one of the building's most charming features.

Of less importance are the boarded-up former windows in the basement level of the sanctuary. On either side, boarded windows in the granite watertable **[Image 56]** have been filled in with block, or left with sash intact. The coverboards should be monitored and repainted regularly to prevent undue wear. Some have been covered out of necessity for the accessible ramp on the north facade. Seen from the parish hall's basement, short-lived windows that once served the sanctuary are filled in with brick.

Recommendations

- Repair any broken wire mesh window covers and repaint to match windows.
- Restore deteriorated leaded glass windows, identified and elaborated on in the *Stained & Leaded Glass Windows Report,* and repaint sash frames.
- Restore the wood sash trefoil window high on the west gable wall.
- Monitor and repaint lower level window coverboards as needed to maintain.

Image 56: OSB (oriented strand board) coverboard should be monitored and regularly painted.

▪ ROOFING, FLASHING, & RAINWATER MANAGEMENT

Observations

The sanctuary is roofed primarily in Vermont 'Unfading Green' slate **[Image 57]**, which typically maintains its hue but develops a patina over time **[Image 58]**. Many mis-matched replacement slates show where repairs have been made over the roof's long life. At the sanctuary and its small western apse, the slate has proved a reliable source of protection, but is tired and very leaky as seen from the attic interior. Sufficient headlap is seen after a slate is removed at the apse **[Image 59]**, a sign of quality 19th-century construction. However small holes, loose nails, and an uncountable number of deteriorated efforts to replace individual slates are all means for water to infiltrate the roof **[Image 60]**. Some of the worst water damage stems from above the ceiling at a corner in the nave's interior - discussed in a later section. Where the roof eaves rest on the exterior wall, a small gap between the bracketed stone band and roof sheathing lets a bit of light in to the attic **[Image 61]**. Installing a simple mesh screen at these gaps will deter the adept bat or bird from taking shelter. It poses little threat otherwise given the slate overhang. Settlement of the roof has caused slight bends to form along the slope, particularly where the horizontal purlins lie between the interior truss and rafters. These bends are subtle but may result in board sheathing that isn't uniformly flat. The *Structural Report* outlines repairs needed at the truss, but the sheathing itself may need inspection after slates are removed.

Image 57: The church's slate roof is speckled with replacement slates from over the years.

Image 58: A missing ridge cap offers a comparison between the slate's original color, and weathered patina.

Image 59: An experienced slater deftly removes a slate to inspect. Arrows call out the generous headlap.

Image 60: Arrows show only a few of the many holes and slate repairs, including a glob of sealant between slates (bottom-left).

Image 61: Light shines into the attic where the roof meets the masonry wall. A mesh screen will deter any small intruders.

Image 62: A state-of-the-art device (phone stuck to binoculars) captures the hidden, warped ridge cap by the tower.

Regularly-soaked board sheathing during heavy rains can be seen where the sanctuary roof intersects the tower's west wall, insofar that the masonry wall inside is washed with water **[Images 16-18]**. This is not helped by the deteriorated ridge caps warped by the tower wall **[Image 62]** or missing entirely at the apse **[Image 63]**. The early-2000s repointing project of the east gable walls included flashing at the raking stones on the east **[Image 64]** and west gable walls of the sanctuary. Both continue to function well, although the connection between the old ridge cap and newer edge flashing at the west gable is questionable **[Image 65]**, best fixed with new a ridge cap. A half-hearted installation of edge flashing at the raking stones of the apse roof results in exposed, damp board sheathing **[Image 66]**.

Image 63: This completely absent ridge cap on the apse is a major source of possible water intrusion.

Image 64: Edge flashing at the raking cornice holds up well on both gable ends of the church.

Image 65: Another questionable ridge cap, with a poor connection to the newer edge flashing that slopes either side.

Image 66: A discontinuous edge flashing at the apse's raking cornice exposes damp sheathing.

Malleable lead counterflashing where the apse roof meets the sanctuary gable wall has been obscured by mortar and sealant over the years, and would do well to extend higher up **[Image 67]**. Valley flashing for the parish hall roof is necessarily a part of the sanctuary's apse, and is discussed further in a later section. On the sanctuary roof, two copper-clad hatches (one high on the south side, one low on the north) are tired and should be replaced **[Image 68]**. The roof has served the sanctuary valiantly for many years, but is now one of the highest priorities for full replacement.

Image 67: Packed-on mortar and sealant over the lead counterflashing seems to suffices. Taller flashing is better.

Image 68: A hair-raising scramble through the false clerestory window gives a chance to inspect the north hatch.

Recommendations

- Repair the roof truss as outlined in the *Structural Report*. Investigate the flatness of the sheathing during roof replacement.
- At the nave: replace the slate roof entirely with Vermont 'Unfading Green' slate. The slate on the apse would be replaced at the same time, ideally.
- At the nave: replace ridge caps, and copper-clad roof hatches.
- At the apse: provide new ridge cap, edge flashing, step flashing, and higher lead counter flashing.
- Install mesh screen inside the attic at the gaps between rafters by the eaves.

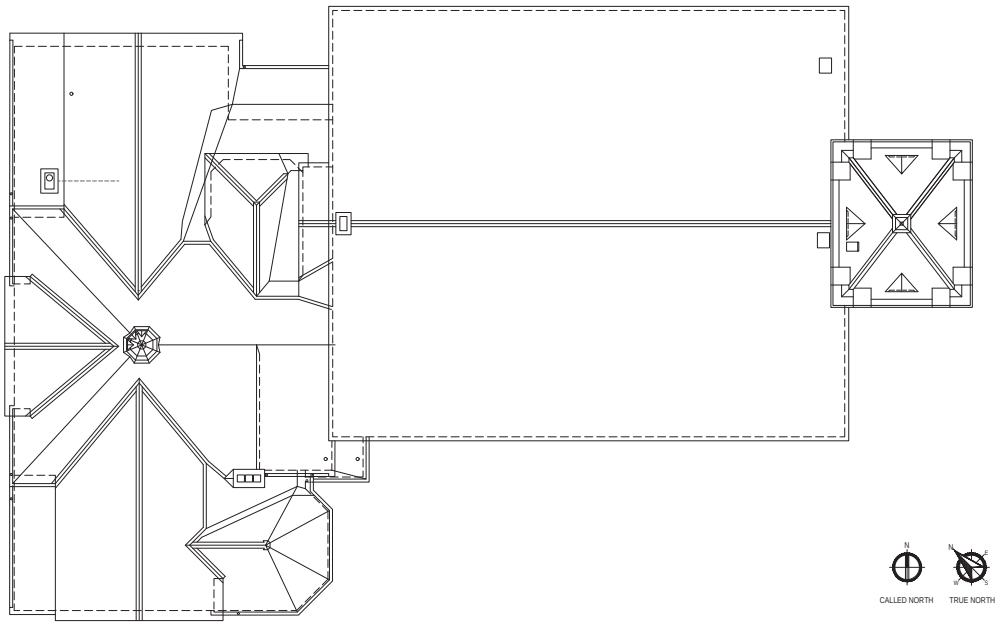


Image 69: The church's sole brick chimney atop the west gable wall. White lead flashing due to normal oxidation.

Image 70: The chimney has an open, inactive flue in the stone crown. Some water could enter during heavy rains.

▪ CHIMNEYS & ROOF PENETRATIONS

Observations

One rectangular red-brick chimney sits atop the west gable wall of the sanctuary, capped with a parged brick crown. Observations from the ground and tower suggest that the mortar joints exhibit some wear, but not excessive **[Image 69]**. The lead counterflashing has oxidized, turning shades of white but in good condition. The chimney should be re-flashed when the roof is replaced, and ideally repointed at the same time due to the economy of access. Barely seen from the belfry louver is an open flue in the stone crown **[Image 70]**. The chimney is inactive but once served the basement coal-fired heating system, and the open flue should be capped. While the chimney is not visible inside the occupied spaces of the building, it is briefly visible within the attic, extending down from the ridge and splitting around the trefoil window and through the framing below **[Image 71]**. The interior face of the chimney exhibits old mortar joints and a deteriorated parge coat over sections of brick; each should be monitored over time.

Recommendations

- Replace base and cap flashings during roof replacement.
- Repoint the entire chimney.
- Cap-off the open inactive flue.

Image 71: The composite image, seen right, shows the interior face of the brick chimney and it's parge coat as it splits at the trefoil window.

▪ BASEMENT STAIR AREAWAY

Observations

When an accessible walkway was installed at the Eliot Street entry, it eliminated a stair areaway to a basement door. A new stair areaway and door were created on the southwest corner of the building at the former coal chute, along with a retaining wall, coping stones, and iron railing **[Image 72]**. Today, this stair areaway provides access directly to the boiler room and cellular equipment room. A parged brick wall below the granite chancel block wall is deteriorated, with large portions of parging completely missing. On the parged ledge above, missing stones at the base of the granite wall are also seen. And as discussed in a prior section, the rubble granite foundation wall mortar is deeply eroded. Given the tendency of this areaway to collect snow and rain runoff from the walls above, the parging and stone wall should be repaired to prevent further damage. Organic growth on the stone surface should be removed via chemical cleaning. The lower landing of the areaway is equipped with a drain, but is filled with leaves, rocks, dirt, and other debris **[Image 73]**. Heavy rains and collecting snow reportedly have a tendency to flood the landing and enter the basement door. A cleaned landing/drain will help mitigate flooding, but a modest canopy above may serve even better and could be considered.

Recommendations

- Clean the bottom landing of all dirt and debris. Inspect and dislodge blocks in the floor drain.
- Clean stains and organic growth from walls.
- Repair the deteriorated parge coat on brick wall and damaged/missing stone at the ledge.
- Refer to prior sections on recommendations for rubble granite foundation walls.
- Repaint the basement areaway door.

Image 72: The areaway stair walls are damaged and stained with from the collecting water and snow.

Image 73: The debris-filled landing impedes drainage and inspection of the drain over time.

Image 74: The quarry-faced ashlar granite stone joints are in good condition, but exhibit some staining at grade.

Image 75: Although most of the granite was repointed in the early 2000s, select areas of mortar show advanced wear.

PARISH HALL

▪ WALLS, SIDING, & TRIM

Observations

Like the church, the parish hall walls are constructed with matching quarry-faced ashlar granite, also likely from Quincy. Corner quoins are integrated in with the wall, rather than dressed and pronounced. Thanks in part to a generous amount of repointing at the parish hall in the early 2000s, the mortar is in good condition throughout, generally. There are portions of wall where both mortar and stone alike are stained by organic growth and metallic residue from deteriorated gutters **[Image 74]**, which should be cleaned. Gutters are addressed in a subsequent section. At select locations, mortar joints exhibit more severe deterioration **[Image 75]**, and should be repointed selectively. The stone stairs by the kitchen door are in good condition overall, but small sections of mortar show cracking **[Image 76]** and should be selectively raked out and repointed. Stains from organic growth should also be cleaned.

Image 76: The kitchen's stone stair is solid and its mortar in good condition, save for the occasional cracked joint, and stains on the stone faces should be cleaned.

At the gable and cheek walls, the parish hall is clad with wood cedar shingles, coated with a stain. One exception is the second story of the 'chancel block' by the southwest parish hall entrance. Here, the shingles have begun to curl and cup, and a few are missing or dislodged **[Image 77]**. The siding on both wall planes should be replaced. At the gable and cheek walls, the siding is generally in better condition. Shingles that have been protected by the overhanging gable arch appear tight and solid, although there is a haze of organic growth. However the shingles on the face of the gable arch are both worn and discolored, with obvious signs of curling and cupping **[Image 78]** (a sign of water absorption due to lack of maintenance/staining). These shingles should be replaced. A faded louver sits at the top of the three gables, serving an unknown function as they are not seen in photographs from 1920. At the very least, these louvers should be painted to match the shingle siding. On the west gable wall, a piece of timber appears attached to one of the cheek walls, which may have been installed ad hoc to support a sign or other temporary feature **[Image 79]**. Given its lack of function, the timber and any fasteners should be removed.

Image 77: Curled and cupped shingles at the chancel block should be replaced.

Image 78: Shingles on the overhanging gables arches show considerable deterioration. The gable louvers could blend in better.

Image 79: A mysterious timber, installed an hoc for an unknown purpose, has is aesthetically distracting.

Image 80: Well-kept detailed trim can give thanks to the protecting overhang above and continued maintenance.

Like the siding, the wood trim throughout the parish hall is in good condition overall. Areas that are deteriorated, typically show as excessively worn and peeling paint. Some of the best-preserved woodwork is found at the cornice of the colored-glass windows in the north gable wall **[Image 80]**, thanks in part to the protection of the overhanging arch above, and proper maintenance of the paint, albeit slightly faded. Likewise, the woodwork at the tall colored-glass lancet windows in the west gable are in good condition as well **[Image 81]**. There are some signs of faded and chipped paint, and all of the woodwork here and throughout should be repainted to continue protecting the trim. It is unclear if the dark-green color is an original color or close to it, and a paint analysis should be conducted to determine to try determining the original.

Image 81: Other examples of more detailed trim in good condition..

Image 82: Deteriorated fascia boards are likely in disrepair due to years of failed gutter flashing, and require tandem replacement.

Image 83: Some of the eave mouldings are heavily deteriorated and required repair (consolidation) and replacement in-kind.

Image 84: Hiding around the cheek wall of the north dormer, moisture and snow have wreaked havoc on this wood assembly.

Elsewhere, there are signs of moderate and advanced deterioration of woodwork and trim. The condition of the fascia boards — which support the gutters as backboards — varies quite a bit, with some that have started to complete split **[Image 82]**. Some corners, where gutter profiles at the eave transition into the raking cornices of the gable walls, are very deteriorated **[Image 83]**, with openings that need to be sealed. The worst offender is a damaged wood assembly at the cheek wall of the north dormer above the Eliot street entry **[Image 84]**. Here, the woodwork and dormer sheathing along the eave appears to have suffered the effects of moisture by collecting snowbanks in the valley and lack of maintenance. Damaged portions should be repaired or replaced. Snow load removal is difficult to mitigate due to the existing configuration of the roof. Annual inspection and maintenance is the most prudent course of action for its longevity.

Recommendations

- Replace deteriorated wood shingles, and re-stain all to match.
- Clean any organic growth from wood shingles.
- Paint gable louvers to match shingle siding.
- Remove defunct timber from west gable cheek wall.
- Conduct paint analysis to determine historic colors of woodwork.
- Prep and paint all wood trim throughout parish hall.
- Repair (epoxy consolidation or patching) or replace deteriorated wood trim throughout parish hall.

Image 85: The Eliot street entry has been protected by the deep overhand and good maintenance over the last few decades.

Image 86: Muntins in the sidelights of the Eliot street entry are tight and look great.

Image 87: The diamond-patterned windows at the north dormer are in need of restoration.

Image 89: A brickmould and glazing putty need some attention at the north window.

▪ OPENINGS

Observations

The parish hall holds an array of window types and doors. Starting at the Eliot street entrance, a set of wood double doors and flanking sidelights were restored in the early 2000s **[Image 85]**. Thanks to the protection of the deep overhanging flat roof, they are in very good condition, as seen best in the wood muntins that divide the sidelight sashes **[Image 86]**. The triple-bay of double-hung windows in the north-facing dormer above shows moderate wear in both the wood diamond-patterned sashes as well as the trim that harbor them **[Image 87]**. The wood surround would be best repaired with the overall trim at the parish hall, but the sashes could be restored separately. Wire-mesh panels protect the exterior of the windows, but the increase in neighborhood safety may allow consideration for their removal, if not their repair and repainting. The north gable colored-glass windows are in fair condition **[Image 88]**. Brickmoulds show signs of checking at the sill and should be consolidated, and some deteriorated glazing putty implies that other muntins are not far behind **[Image 89]**. The wire mesh panels have offered protection, but may be considered for removal.

Image 88: The triple-bay colored-glass windows in the north gable are in good condition, save for a few instances of worn wood and putty.

The kitchen door and its trim is solid but requires some repair at the threshold, where the door has wicked moisture and started to warp and split **[Image 90]**. Throughout the parish hall, wood windows show varied conditions, mostly worn paint **[Image 91]**. Although a number have been outfitted with exterior aluminum storm windows. Double-hung wood windows that have not received exterior storm windows should be considered for restoration if inoperable or damaged **[Image 92]**.

Image 90: The kitchen door needs some attention, particularly at the threshold, where wicked mortar has caused deterioration.

Image 91: Overall, double-hung wood windows are in acceptable condition in terms of woodwork and require preparation, priming, and painting..

Image 92: Existing wood windows are hung with chains, and should be inspected for operation.

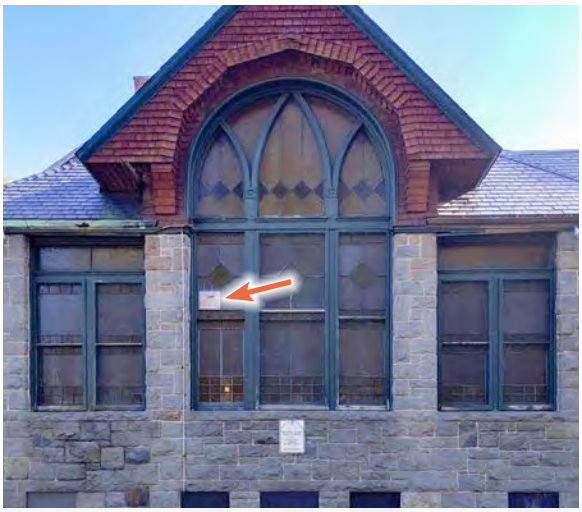


Image 93: Of the parish hall's highlights are the lancet windows in the west gable. The highlighted unit requires replacement of missing glass and painting..

Image 94: The only exposed basement window at the south gable required restoration.

The west gable wall is home to a pair of double-bay windows that flank the central triple-bay lancet window, all of colored glass in wood muntins. Overall the windows and wood trim are in good condition **[Image 93]**. One missing piece of glazing is apparent in the lancet windows and should be replaced. The sills should be inspected for deterioration and consolidated if so. Likewise the wire mesh panels could be considered for removal. Below are a number of covered basement openings; some windows, and others former ductwork openings. In either case, the coverboards should be maintained and repainted as part of a maintenance plan. One window on the south gable wall, below the stained-glass windows is uncovered and very deteriorated **[Image 94]**, requiring restoration.

The triple-bay stained-glass window above is in excellent condition — especially the lead cames and glazing **[Image 95]** — but some of its trim requires consolidation at the sill. A handful of UV-damaged (yellowed) translucent panels protect the exterior **[Image 96]**, and should ideally be replaced with clear safety glass with adequate ventilation to reduce head build-up, which accelerates lead came deterioration. Safety glass does not smash if broken and is a deterrent to wayward rocks and baseballs.

Image 95: The stained glass windows at the south gable require only some sill repairs. The acrylic panels need replacement.

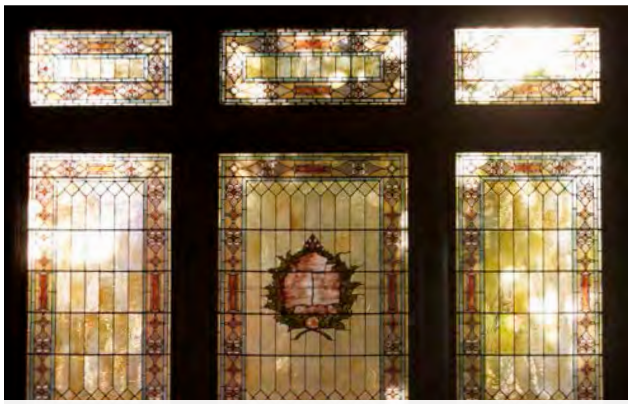


Image 96: The lead cames and glazing in the south gable window are in remarkable shape, and will only look better with safety glass covering.

At the second story of the chancel block, two double-hung wood windows sit amid the shingle siding **[Image 97]**. The surrounding trim requires extensive consolidation or replacement, ideally done along with the rest of the parish hall woodwork. The sashes are worn and show checked wood and deteriorated glazing putty **[Image 98]**, requiring removal and restoration. Repairs to the deteriorating gutter and flashing above will mitigate future wear from rainwater runoff.

The southwest entry door and sidelight panel was restored in the early 2000s **[Image 99]**, and should be inspected and painted as part of on ongoing maintenance. A new gutter above has diverted most of the rainwater away, however the flat-seam copper roof adjacent to the entrance is subject to large quantities of water, and tends to overflow the gutters, and needs repair to ensure the woodwork is subject to the least amount of rainwater possible.

Recommendations

- Restore all deteriorated wood sashes.
- Repair all window trim in tandem with overall parish hall wood repair.
- Prep and paint all sashes and window trim in accordance with paint analysis conducted for overall woodwork. Replace caulking at brickmoulds.
- Consider removal of wire mesh panels at all windows. Otherwise, make repairs and re-paint.
- Remove entirely or replace translucent panels at stained-glass windows with safety glass.
- Follow recommendations in subsequent roofing/flashing section to mitigate rainwater issues at entry woodwork.

Image 97: The double-hung wood windows and trim in the chancel block are in desperate need of repairs.

Image 98: Missing glazing putty and checked wood are primary concerns in the wood sashes.

Image 99: The southwest parish hall entry woodwork is in good shape, but need long-term rainwater protection.

▪ ROOFING, FLASHING, & RAINWATER MANAGEMENT

Observations

The parish hall roof comprises two primary types: flat-seam copper panels, and black slate shingles from Monson, ME. Starting at the Eliot street entrance, flat-seam copper panels line the deep, flat roof that offers protection to the entry **[Image 100]**. Tar repairs have been made at opened seams over the years **[Image 101]** and pinholes throughout are cause of numerous leaks **[Image 102]** best seen on a rainy day at the beadboard ceiling below **[Image 103]**. This is cause to be concerned for the condition of the wood frame and board sheathing below, which should be inspected and replaced if found to be sufficiently rotted. More flat-seam copper roofing partially covers the dormer atop the entry, in similar condition **[Image 104]**. Due to age and failing repairs, all the copper roofing should be replaced.

Image 100: The flat extension of the roof at the Eliot Street entry was not original, absent from 1920 photographs.

Image 101: 'Quick fix' tar repairs at copper panel joints eventually give way.

Image 102: Pin-holes at solder joints between copper panels are inconspicuous, but detrimental.

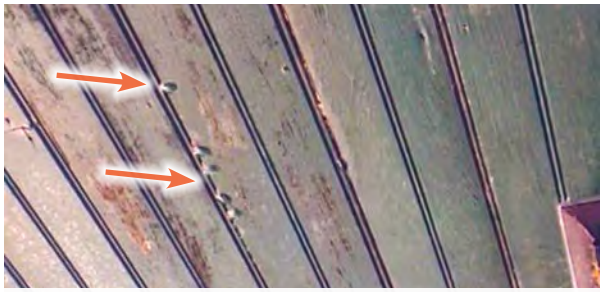


Image 103: Visible drips of water indicate that the flat copper roof above has started to fail. The concealed framing requires inspection.

Image 104: Flat-seam copper roofing was also partially employed at the dormer roof above the Eliot street entry.

Between the Eliot street entry and the southwest entry to the parish Hall, the vast majority of the parish hall is roofed in black slate **[Image 105]**. Overall, the field slates are in excellent condition, owing to the famed quality of slate from the now-abandoned quarries in Monson, Maine. A handful of slate repairs are obvious, sometimes owing to mis-matched slates, missing slates, or holes filled with silicon and tar **[Images 106-109]**. Slate issues persist at valleys, where the first three or four courses of slate were once necessarily replaced alongside the copper valleys **[Image 110]**. In many cases, slates with insufficient headlap **[Image 111]** are subject to long-term failure. These bottom courses of slate should be replaced alongside the valley flashings, with salvaged Monson slate and with sufficient headlap and installation techniques.

Image 105: The parish Hall's black Monson slate roof is immaculate, although not original. The slates ring like a bell.

Image 106: A mismatched slate with poor side-lap.

Image 107: White flashing at a former vent pipe.

Image 108: A 'rogue' slate, sliding down.

Image 109: Sealant and slate hook at a replaced slate.

Image 110: At most valleys, a distinct line of mis-matched slate shows that copper valleys were replaced once.

Image 111: Arrows show insufficient headlap at the slates that flank a valley. Standard headlap should be 3-inches.

Image 112: The southwest entry roof was recipient to many applications of tar on seams and holes in the copper

Above the parish hall's southwest entry, another flat-seam copper roof displays an array of conditions and complex configurations. The shallow slope directly above the eave shows tar repair at opened seams, which have started to fail **[Image 112]**. Tiny pinholes are a potential source of water infiltration, like those found at the Eliot street entry roof, and church members have reported active leaks in the vicinity. The copper and all its adjacent flashings are aged and due for replacement. The flashed valley wraps around the chimney **[Image 113]**, and to its opposite side where it meets deteriorated stepped flashing at the roof of the chancel block **[Image 114]**. While the chimney is discussed in a subsequent section, there are signs of water infiltration in this area within **[Image 115]**, and should be addressed by the replacement of all copper roofing and flashing.

Image 113: The copper valley twists tightly around the chimney by the Morse room and southwest entry.

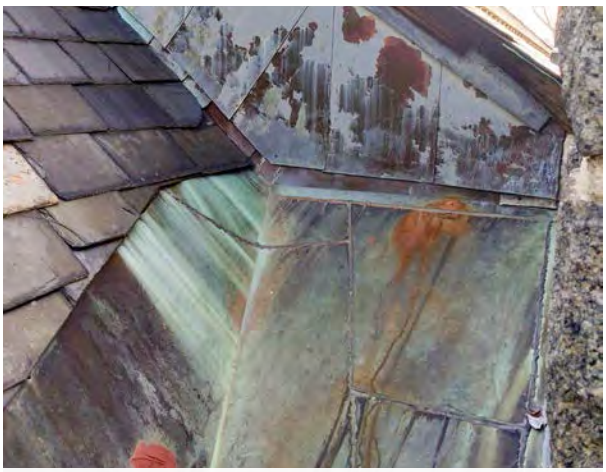


Image 114: Counterflashing at the chancel block roof is normally hidden from view, and should be replaced.

Image 115: Signs of water infiltration by the Morris room indicate that the copper roofing has started to fail.

Valley flashings at the parish hall are intimately related to the aforementioned copper roofing. Narrow valleys and generous roof surfaces all converge, create 'bottlenecks' where snow is prone to collect. An obvious example is the valley at the north facing dormer above the Eliot street entry **[Image 116]**. Here, snow accumulation has contributed to the deterioration of wood trim at the dormer eave, discussed in a prior section. Among the slate shingles on the adjacent roof, scattered copper 'loop' style snow guards are bent flat and offer little to reduce this snow load **[Image 117]**. At one time, these snow guards would hold back snow, giving it time to melt and the valley the ability to divert water. Because there is little to be done about the existing configuration of the roof, the 'workload' of each valley can be partially relieved by replacing these 'loop' style snow guards with sturdier copper snow pads on all roof surfaces contributing to this 'bottlenecking'. Copper ridge caps show expected wear for their age **[Image 118]** and should be replaced in tandem with all other flashings. At the hipped roof above the Morse Room by the southwest entry, saddle-style slated hips are packed with red roofing cement **[Image 119]**, owing to a crude repair done long ago. These saddle-style hips should be carefully removed and reinstalled properly, with flashings and concealed uncolored roofing cement. Lead counterflashings where the parish hall meets the sanctuary gable wall have held up well over the years but show wear **[Image 120]** and should be replaced with the new base flashings installed at the roof.

Image 116: A narrow valley creates a bottleneck for rainwater and snow to collect.

Image 117: Once-trendy and affectionately dubbed 'pigtail' snow pads fail and flatten after years of sliding snow.

Image 118: Copper ridges are riddled with sealant and at the end of their life.

Image 119: Red roofing cement is often sloppily applied to slate hips.

Image 120: Lead counterflashing should be replaced with the associated base flashing.

Image 121: Now-plugged internal downspouts boots dot the facade, seen today.

Managing rainwater at the parish hall is a complex undertaking, given the varied configuration of roof slopes and their aforementioned shortfalls. Downspouts across the parish hall once diverted rainwater into cast-iron boots that penetrate the exterior walls, abandoned today **[Image 121]**. The boots collected rainwater to a single line, leading to the city sewer system **[Image 122]**. This system was abandoned, and the rainwater now drains directly to grade, with the exception of the Eliot street entry downspout, which drains to a PVC boot and subsurface dry-well **[Image 123]**. The gutter above serves the roof of the Eliot street entryway and leads to this single downspout **[Image 124]**. Given the large and many roof surfaces (nearly 2,300 square feet) that drain here, the roughly 4-inch downspout is severely undersized. Providing a second downspout and new snow pads on the slate will reduce the loads experienced by this single gutter and downspout.

Image 122: Inside the parish hall, the former downspout boots once channeled water into the city's sanitary sewer.

Image 124: The gutter above the Eliot Street entry and it's humble downspout currently serve nearly 2,300 SF of roof area.

Image 123: An in-ground PVC downspout boot leads to a subsurface dry-well, of unknown condition or capacity.

Tiered gutters at the high and low eaves on the parish Hall's west elevation show signs of wear or poor installation. In one instance, a break of the seam between two lengths of gutters actively leaks onto the granite wall below, which is noticeably stained **[Image 125]**. Along the have of the Morse room hipped roof, the gutter was partially replaced with a questionable joint **[Image 126]**. The high downspouts at the chancel block by the southwest entry are so deteriorated that they no longer connect to their gutter above **[Image 127]**. In this area, the collection of gutters and a tight valley spell trouble for the entry below during heavy rains and snow when the gutters are overloaded **[Image 128]**. The sole downspout at the lowest section gutter serves nearly 1,500 square feet of roof surface above, and — like the Eliot street entry — is undersized. Another downspout added would aid the gutter greatly. Generally speaking, all gutters have reached the end of their service life, showing tar repairs and existing holes **[Image 129]** and require replacement.

Image 125: Breaks in the parish hall gutters visibly leak water onto the stone below, staining it.

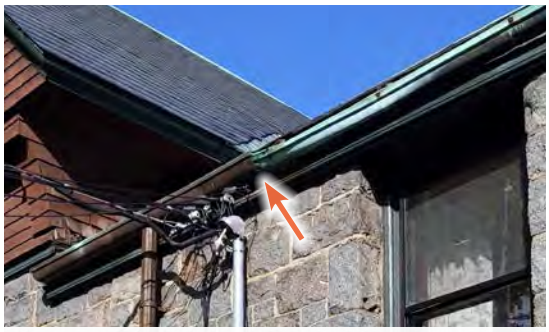


Image 126: Questionable joints between old and newer gutters are asking for trouble.

Recommendations

- Replace all flat-seam copper roofing at both Eliot street and southwest entries. Inspect wood framing at Eliot street entry — replace if rotted.
- Replace all copper flashings, including valleys, ridges, and eaves.
- Replace lead counterflashing at the sanctuary.
- Replace all copper gutters and downspouts.
- Provide additional downspouts at both Eliot street and southwest entries.
- Install snow pads at large slate roof fields that drain to the Eliot street and southwest entry roofs.
- Inspect subsurface dry-well at Eliot street entry for drainage adequacy.

Image 127: A downspout at the chancel block is completely disconnected.

Image 128: Three gutter levels at the southwest entry are complex.

Image 129: Repairs and holes throughout the gutters warrant full replacement.

Image 130: The distinguishable ventilator has a number of features including three small, gabled 'blind dormers'.

Image 131: Red roofing cement is packed at the mitered slate hips.

▪ CHIMNEYS & ROOF PENETRATIONS

Observations

Situated at the peak of the high ridge, towards the parish hall's east gable is an distinct octagonal ventilator **[Image 130]**. At one time, it served the interior hall's natural ventilation system, concealed in the ceiling. This ventilator is one of the parish hall's most distinctive marks, featuring a faceted, asphalt-shingled turret roof with three small blind gables, wood eave, four circumferential louver fins, and a sweeping faceted slate skirt that joins the slate hipped roof below. A black bird-deterrent netting covers the entire ventilator. Starting at the top: the existing copper finial appears to be in good condition from ground observations and could be re-used, but the deteriorating asphalt shingles should be replaced. The tight hips and facets lend themselves more easily to wood shingles -- as originally designed -- but could be clad in slate shingles by an experienced slater. Woodwork appears worn and partially deteriorated, and may need consolidation in additional to sanding and repainting. The integrity of the louvered fins should be closely inspected and repaired if deeded, with new copper flashing. The slate skirt **[Image 131]** could be re-flashed and slate re-used as part of this ventilator restoration, rather than the general roof-work. The bird netting provides a valuable service, but proves rather unsightly. At a minimum, discreet sections of netting/wire should be inset between the louvers rather than over the exterior.

There are two chimneys that serve the parish hall. The first 'kitchen chimney' sits by the northwest corner of the parish house, constructed with the same ashlar granite as the rest of the building. At its top, a rusted turbine vent sits over a deteriorated parge coat, and is exposed **[Image 132]**. Rainwater has carried rust down both sides of the chimney, staining the granite, and should be cleaned **[Image 133]**. The rusted turbine should be replaced and a new copper chimney cap installed. The mortar joints are in good condition. At its base, a small copper cricket diverts water away from the chimney and is in good condition, but may be replaced during general roof re-flashing.

A similar, second 'Morse room chimney' by the parish hall's southwest entry has mortar joints in equally good condition. The top of the chimney is missing a crown or cap, and along with two terracotta flues, is exposed **[Image 134]**. The base of the chimney sits in the complex arrangement of valleys described in the prior section. The lead counterflashing shows normal levels of wear, but should be replaced alongside the valley flashing **[Image 135]**. Due to the tendency of this area to collect snow and ice, it should be annually inspected. Aforementioned snow pads will help alleviate the amount of snow that this area experiences.

Elsewhere at the parish hall, active and abandoned vent pipes protrude through the copper or slate roofing. They appear in good condition, but their function should be investigated when roofing is replaced. If found inactive, they should be removed and sealed.

Recommendations

- Repair and restore the ventilator (slate replacement/re-use, woodwork repair, flashings, and discreet netting.
- Replace the rusted turbine and cap the exposed kitchen chimney.
- Replace chimney cricket as part of overall roof work.
- Clean the rust stains from the kitchen chimney.
- Cap the exposed Morse room chimney.
- Replace lead counterflashing as part of overall roof work.
- Inspect vent pipes and cap off inactive during overall roof work.

Image 132: A rusting turbine and missing parge cope/ chimney cap at the kitchen chimney.

Image 133: Rainwater has allowed rust from the turbine to stain the ashlar granite at the kitchen chimney.

Image 134: Two terracotta flues and an exposed, cap-less chimney at the Morse room chimney..

Image 135: Lead flashing at the complex valley at the base of the Morse room chimney.

INTERIOR CONDITIONS

Image 136: Water damage is visible on the wood crown moulding, high above the west apse's pointed archway.

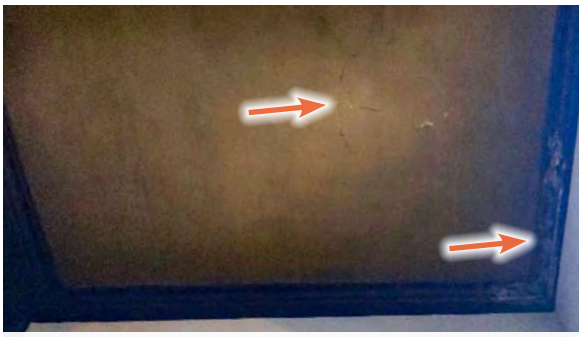


Image 137: The most active leak is above the northeast corner of the sanctuary, in the aisle.

Image 138: The sagging header at the north parlor's monumental pocket doors should be inspected.

Image 139: Water damage in the Eliot street vestibule is indicative of the deteriorated copper roof above.

▪ WALLS & CEILINGS

Observations

Our focus was on exterior conditions, but the interior of the church and parish hall was reviewed to determine if deterioration of the exterior envelope had impacted the surfaces and finishes within. In the sanctuary, there are signs of water damage in at least two areas: at the high wood crown moulding, on the west gable wall above the apse's pointed arch **[Image 136]**; and most noticeably on the east corner ceiling of the north aisle, where buckets were observed collecting rainwater after a recent storm **[Image 137]**. These areas are the result of failed roofing at the sanctuary's slate roof, discussed further in a prior section, and should be addressed soon.

In the parish hall, the header of the north parlor's monumental pocket doors shows sagging **[Image 138]**, and should be reviewed in conjunction with the structural report. Additional structural observations, including selective reinforcement of wood framing in both the sanctuary and parish hall basement are outlined in the structural report.

Leaks in the parish hall appear limited to the Eliot street vestibule **[Image 139]**, where the deteriorated copper flat roofing has allowed water into framing, staining a ceiling tile. The causes and treatments are discussed further in a prior section. Additionally, reports of damp sheathing and framing above the Morse room ceiling/closet are the result of similar deterioration at the flat copper roofing above, discussed further in a prior section.

Recommendations

- Replace the deteriorated slate roof at the sanctuary.
- Selectively replace/reinforce the framing members in both sanctuary and parish hall basements, as outlined in the structural report.
- Replace the copper roofing and flashings at the Eliot street and southwest entry roofs at the parish hall.

OTHER CONSIDERATIONS

- **ACCESSIBILITY**

Observations

As part of the First Church's mission to provide a place of inclusive community and gathering, the ground level floor of the church and parish hall has been made almost entirely accessible. This is in part thanks to an accessible, sloped walkway situated along the sanctuary's exterior northwest corner which leads to the parish hall's primary, Eliot street entry. From here the majority of the ground level is made accessible, and includes an accessible bathroom within the vestibule.

The following areas may not be practicably accessible: the sanctuary organ balcony and parish hall second floor. The following areas not yet accessible but could be practicably made so: the sanctuary's raised altar area, and the parish hall's stage (and adjacent parlors). In the sanctuary, a sloped walkway or ramp requires relatively-simple reconfiguration of the raised altar area. In the parish hall, a ramp would require a more complex stage and floor reconfiguration, given the limited space. Instead a vertical chair lift designed for stages could be employed Although the accessible Eliot street entry is often the most-used entry, it should be noted that the ceremonial entrance of the church at the base of the tower is not, and would require the reconfiguration of at least the granite threshold, landing, and steps.

As a matter of good practice, a variance application to the Massachusetts Architectural Access Board (MAAB) should be filed for the organ loft, stage, entrances to the tower, southwest entry to the parish hall, and kitchen entrance. The basis for variances will be alternative compliance and the effort should be to seek permanent variances.

▪ SOLAR AND SUSTAINABILITY

Observations

SSV engaged with *Solar Rising*, a solar energy consultant to review the prospect of renewable energy as a church resource. Their findings show that the church's existing electric service is adequate in accommodating a solar array. A prospective location for an array was identified as the southwest quadrant of the sanctuary's roof. For more information, refer to the solar report.

Solar arrays have mounting systems often designed for asphalt-shingle roofs. The sanctuary roof is slate, which creates some complexity. Some sources recommend that asphalt shingles be installed underneath the solar array. SSV strongly advises against this as asphalt shingles are both historically inappropriate and have a serviceable life which pales in comparison to the longevity of slate (20-25 years versus 150+ years, respectively).

The complexities of installing solar arrays on slate roofs stem from the need to carefully remove, cut or drill, and flash the array mounts to the roof structure without loading the slates themselves or compromising the inherently-waterproof construction of slate roofing. However, the recommended replacement of this slate roof presents a unique opportunity: array mounts can be easily installed alongside the new slates (much like typical snow guard rails), even if a solar array is "years away". Thereafter, the mounts will be ready to receive an array at any time, without the need to modify slate shingles. Care should be taken to specify and detail these mounts when re-roofing. The cost to install these mounts *during* slate roof replacement is relatively minor, compared to afterwards.

An analysis of the sanctuary's roof structure was conducted by the structural consultant, which determined (using estimated loads) that the roof would be capable of supporting a solar array with slate shingles after reinforcements are provided. For more information, refer to the structural report.

On the one hand, there is the issue of appropriateness of installing a solar array on a historic building. The Massachusetts Historical Commission holds a Preservation Restriction (PR) on the First Church, meaning there is the challenge of acquiring approval to install a solar array on the roof. In our experience, there is too little precedence to predict how permissive MHC will be, but there have been successes with other churches and difference PRs in Massachusetts. Additionally, the building is listed on the National Register of Historic places, which will require an additional level of approvals.

On the other hand, there is the consideration of cost-benefit. Solar Rising, the solar consultant, has estimated an installation cost of about $65,000. Incentives offered by utility companies provide approximate up to $15,000 over ten years. Savings generated by reduced utility bills are estimated at $49,192 over ten years, although this number may not reflect actual usage. At best, the payback period for the church would be approximately ten years. If actual utility bills are lower, this payback period would be extended.