



January 7, 2025

Ms. Yovani Baez-Rose
City of Lowell
Department of Planning and Development
50 Arcand Drive
Lowell, MA, 01852

Re: Existing Conditions Assessment
Smith Baker Senior Center
400 Merrimack Street
Lowell, MA 01852
Gale JN 843870 P01

Dear Ms. Baez-Rose:

In accordance with our agreement, Gale Associates Inc. (Gale) performed a visual evaluation of the roof, window, brick masonry, and associated exterior components at the Smith Baker Senior Center located in Lowell, MA. Gale's evaluation also included a limited review of the interior structural components and a drone survey. Representatives from Gale visited the project on October, 10, 2024 to conduct the evaluation. Access to the building interior was coordinated and provided by the City of Lowell (Lowell).



Image 1: The Smith Baker Senior Center

The purpose of the evaluation is to provide Lowell with a better understanding of the conditions observed and how they may be contributing to reported moisture related issues, including the potential deterioration of structural components. The following report includes Gale's observations of the existing conditions, as well as our opinion on potential repair or replacement options. Please refer to the appendices for additional information.

BACKGROUND INFORMATION

The Smith Baker Senior Center, located at 400 Merrimack Street in Lowell, MA, is a three-story building with a basement level. The building was originally constructed circa 1827, and was reconstructed in 1884 as the First Congregational Church after the original structure was destroyed by fire. These dates are inscribed in terracotta above the main entrance on the north elevation. The building was sold to the City of Lowell in 1968 and used primarily as a community center and home to the City's Council on Aging. Upon the City's construction of a new senior center, the building was vacated in 2003. Plywood has been installed over several doors and windows to deter entrance into the building. In 2021, the building was deemed unsafe to enter by the City and is marked with a red "X."

The building structure is constructed of a combination of mass masonry, heavy timber, and cast-in-place concrete on a masonry foundation. Exterior windows are a combination of double-hung units and large decorative fixed windows with stained glass. The roof systems include steep-sloped slate shingles and various low-sloped roof systems including gravel surfaced built-up roofing or asphaltic rolled roofing. The interior of the building includes a basement, a lower level which appears to have included office spaces, and the main portion of the church which includes high ceilings

and a clerestory level with additional seating. The Smith Baker Senior Center is registered as a nationally historic site as part of the City Hall Historic District.

INFORMATION FROM OTHERS

- “Facility Condition Assessment” prepared by EMG Corporation dated October 5, 2018.
- National Register of Historic Places Inventory – Nomination Form for the “City Hall Historic District” dated March 6, 1975.

INTERIOR LEAK AUDIT

Gale performed an interior leak audit to document locations of reported active moisture infiltration. Several locations appeared to exhibit evidence of moisture infiltration within the structure. Interior finishes were observed to exhibit evidence of water damage, including stained acoustic ceiling tiles, rusted/corroded metal ceiling panels, water-stained decorative woodwork, and blistered/peeling paint throughout the building. *Refer to Photos 2 through 5.* Lowell personnel reported that they have observed active water infiltration at a column location within the nave of the church, which has led to water damage at the floor below.

Observed leak locations below the roof systems appeared to continue at the floors below. Stained ceiling tiles, deteriorated ceiling finishes, deteriorated and buckling wood flooring was observed at the ground floor. Please note, major items of visible damage are noted in the Appendix B - Reduced Size Drawings on the Leak Audit plan, however additional leak locations may be present. Due to the arched ceiling within the main portion of the church, it appears that moisture infiltration from roofing defects run along the interior structure and presents as a leak at the decorative column, which is the low point of the ceiling.



Image 2: Stained decorative woodwork at a column location.

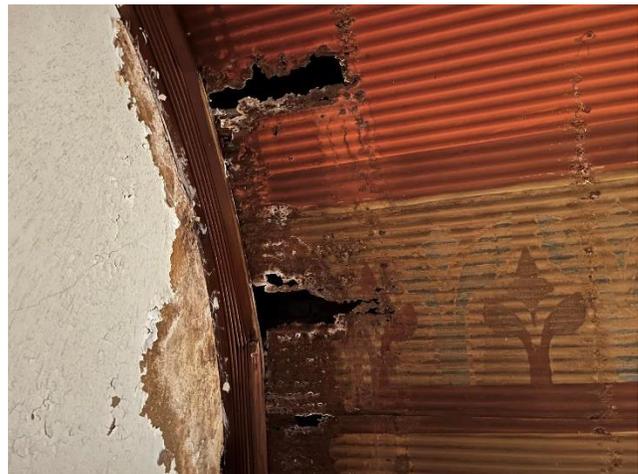


Image 3: Rust deterioration at the decorative metal ceilings and water staining on adjacent plaster finishes.



Image 4: Blistering/peeling paint, displaced plaster finishes, and water staining at the ground floor below leak location.



Image 5: Typical stained ceiling tiles.

EXISTING CONDITIONS AND OBSERVATIONS

On October 10, 2024, representatives from Gale visited the project site to perform a visual evaluation of the roofs, exterior walls, accessible structural elements, windows, and doors to review and document the approximate extent and locations of observed deficiencies within the as-built conditions. Visual observations of the exterior walls at the lower level were performed from ground level with the assistance of binoculars. Higher elevations of the building and roof areas were evaluated with the assistance of photographic documentation developed using Gale's DJI Mavic Enterprise UAV (drone). Operation of the drone at the facility was performed by a FAA certified pilot as the Remote Pilot in Command, and an additional Gale staff member accompanied the Remote Pilot in Command to monitor pedestrian traffic below the drone and to maintain flight safety. The following is a summary of Gale's observations.

Roofing

Steep-Sloped Roof Areas

1. The main steep-sloped roofing system (Roof Area A) appears to consist of slate shingles over a wood plank deck, with decorative terracotta pieces constructed along the ridges, eaves, and rake edges. Several shingles were observed to be missing, broken, or displaced. Areas of previous repairs appear to be located along the lower limits of the slate shingle roof. Parking along the east side of the building on Cardinal O'Connell Parkway has been closed due to reported falling slate shingles and roof shedding.
2. Decorative terracotta is installed along roof ridges, and were observed to be displaced along the south portion of the building.
3. The roof includes a copper gutter system at the east and west elevations. Downspouts are constructed at the west elevation gutters. The east elevation gutters do not include downspouts and appear to be abandoned, with an additional copper piece of copper constructed over the top of the gutter. Gutters were observed to be displaced and/or dented in several locations.

4. Copper sheet metal flashing is installed below the terracotta capstones, at crickets behind chimneys, and rising wall flashings. Valleys are constructed in the open style with exposed copper and appear to have been previously repaired with a mastic/sealant material.
5. Snow guards rails and ring guards are installed at the east portion of the steep sloped roof. Isolated ring guards appeared to be missing, and the snow rails are typically rusted.
6. A portion of the roof at the east side of the building appears to be constructed with asphalt shingle roofing. Several asphalt shingles appear to be missing.
7. Several spires are located throughout the roof. Two (2) large square spires constructed at the top of brick masonry towers are located at either side of the main entrance gable end, and include slate shingles and copper finials. Two (2) small spires are located on the west elevation and appear to be constructed of metal and exhibit rust staining and deterioration. The terracotta and brick masonry bases supporting the small spires were observed to be typically cracked.
8. A cupola is located at the intersection of the roof ridges and includes wood windows and a bell-shaped roof with slate shingles and a copper finial. Several shingles are missing, exposing the wood plank decking. The windows and associated wood framing/trim at the cupola is in poor condition with broken glass, deteriorated/missing paint, and plywood installed at the interior of broken windows. The wood framing appeared to have been previously repaired/covered with aluminum sheet metal along the base of the windows.
9. A small steep-sloped roof at the west side of the building (Roof Area D) includes asphalt shingles. The asphalt shingles appear to be aged with granule loss and several holes from previous penetrations. The roof includes a gutter and terracotta capstones above the entrance. Sheet metal reglet flashing appears to be constructed at the brick masonry rising wall at the roof transition.



Image 6: Missing and loose slate shingles at the roof cupola.



Image 7: Loose, cracked, and missing slate shingles.



Image 8: Asphalt shingled roof above the west elevation entrance with missing and deteriorated shingles.



Image 9: Asphalt shingle roof at the east elevation with missing shingles.

Low-Sloped Roof Areas

1. The existing low-sloped roof areas are located on the west side of the building. Roof Area B appears to consist of a gravel surfaced built-up roofing system, and Roof Area C appears to consist of a rolled asphalt roofing system over wood decking.
2. Materials and debris were observed at the low-sloped roof areas, including broken slate shingles from the adjacent roofs, wood, and miscellaneous debris.
3. Each roof appears to include one (1) roof drain, however, drain strainers are not installed. It is unclear if the roof areas include a structurally sloped deck or tapered insulation sloped towards the drain locations, or if the roof areas are flat.
4. A portion of Roof Area B includes a brick masonry parapet with terracotta capstones. Copper flashing is constructed along the roof to masonry wall transition. Parapet caps do not appear to be constructed with cap flashing. Mortar joints between the capstones are typically deteriorated, and isolated capstones are cracked and/or displaced.
5. Several repairs appear to have been previously performed with sealant/mastic at the steep slope to low slope roof transitions.
6. Both roof areas include roof access hatches. On the gravel surfaced roof, the hatch cover appears to be displaced and not secured shut. Roof hatches were not accessible at the time of the evaluation.



Image 10: Material and debris in various locations on the low sloped roofs.



Image 11: Brick masonry parapet with terracotta capstone and copper flashing at roof to wall transition.

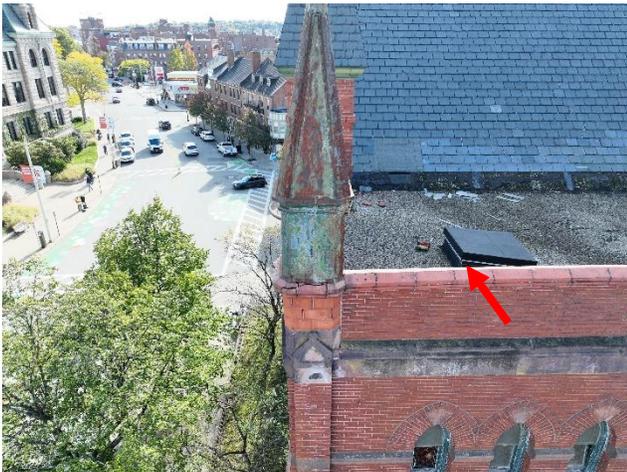


Image 12: Displaced roof access hatch.



Image 13: Roof drain with missing drain strainer.

Exterior wall systems

Brick Masonry and Associated Components

1. The existing exterior wall system consists of multi-wythe mass masonry with plaster finishes on the interior. The masonry is constructed in the running bond pattern, with ornamental masonry work and terracotta accents along the building's rake edge and throughout the façade. Isolated header bricks were observed at the façade, however they appeared to be inconsistent.
2. Multiple cracked, spalled, or displaced brick masonry units were observed throughout the façade, as well as step cracks in the adjacent masonry mortar.
3. The masonry mortar appeared to be in fair to poor condition with several areas of cracked or deteriorated mortar joints throughout the elevations. Sections of masonry appeared to have been previously repaired

based on the various brick and mortar colors throughout the façade. These repairs appeared to be “battered” joints, which were observed to be delaminating from the original mortar.

4. Isolated locations of brick masonry were observed to be bowing/displaced. Additionally, isolated areas of mortar joints at the brick masonry were observed to be heavily deteriorated and/or missing.
5. Two (2) brick masonry chimneys are located at the east elevation with decorative terracotta chimney pots. Mortar at the top of the chimneys was observed to be typically deteriorated. At the east elevation, the gable end of the masonry wall extends above the roof line and includes two (2) internal chimneys within the masonry wall, constructed with a concrete cap. The chimney appeared to be in good condition with minor algae growth.
6. At the east elevation, a portion of the brick masonry along the corner of the gable end appears to be separating from the wall along a vertical mortar joint. The bricks are not toothed in at the corner, allowing movement at the vertical joint.
7. Brownstone accents are located throughout the façade at decorative banding, window headers and sills, and at keystones above arched openings. The stone appears to have a coating which is peeling in several locations. Isolated locations of cracked/spalled stone were observed.
8. Several locations of terracotta coping along the roof edge were observed to be cracked and/or displaced, and several mortar joints between the terracotta pieces are deteriorated or previously repaired with sealant.
9. At the southeast corner of the building, heavy vegetative and ivy growth obstructed the brick masonry wall behind. The vegetative growth was observed to be growing into the interior through openings in the windows.
10. At the south elevation, a portion of the building façade appears to be constructed with wood framing with wood plank sheathing and faux brick asphaltic siding. The siding is in poor condition with several areas deteriorated or missing, exposing the wood sheathing. At one (1) location, there is a hole in the siding that is open to the interior. An adjacent tree is growing into the siding.
11. Efflorescence, rust, algae growth, and atmospheric staining was observed throughout the façade at both the brick and granite.
12. Isolated locations of abandoned fasteners are located throughout the brick masonry façade. At the east elevation, metal anchors are located adjacent to window openings and appear to be abandoned shutter dogs.



Image 14: Cracked and displaced terracotta accents along roof parapet.



Image 15: Separation at the vertical mortar joint at the east elevation.



Image 16: Terracotta roof edge observed to be cracked and displaced, with deteriorated mortar joints in various locations.



Image 17: Brick masonry observed to be bowing or displaced and deteriorated or missing mortar joints in various locations.



Image 18: Asphaltic siding at the east elevation in poor condition. Heavy vegetative growth.



Image 19: Opening to the interior through the asphaltic siding at the east elevation.

Windows and Doors

Windows, Doors and Associated Components

1. Operable windows appear to be double-hung units consisting of wood frames and sashes which are original to the building's construction. Windows are rectangular in shape with granite headers and sills, or gothic style with pointed masonry arches above. Glazing consists of single pane glass, leaded stained glass, or a combination of the two (2). Several sashes are displaced.
2. Large fixed windows include stained glass with lead comes in a variety of patterns and configurations within wood frames, and appear to be original to the building's construction.
3. In general, the paint finish at wood window frame and sash components appeared to be in poor condition. Peeling, blistering, cracks, chips, delamination, and weathering were observed at several locations.
4. Wood components including window frames, trim, and sills appeared to be in fair-to-poor condition, with several locations of deteriorated or missing wood trim. Wood components were observed to be detached at isolated locations.
5. Hardware typically consists of sash locks and rope and pulley balance systems. No weather stripping was observed at the windows, and the windows were typically inoperable.
6. Missing and cracked glazing was noted around the building with several windows infilled with plywood.
7. Plexiglass was observed to be mounted to the exterior of the majority of the windows. The plexiglass was typically aged and discolored, and was observed to be displaced/bowed with failed sealant in isolated locations.
8. Wood framed bird netting at louver locations was noted to be broken or displaced.



Image 20: Displaced lower sash open to the exterior with no weatherstripping.



Image 21: Deteriorated wood window frames and components.



Image 22: Typical displaced window sash.



Image 23: Cracked/missing glazing at the stained glass.

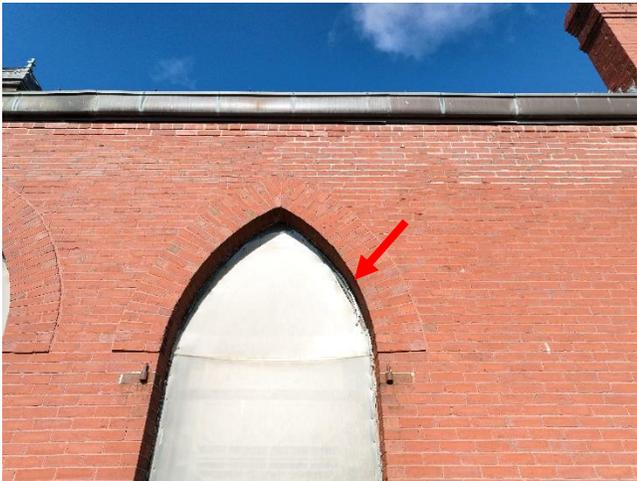


Image 24: Plexiglass bowing and displaced with missing sealant.



Image 25: Deteriorated wood frames, peeling paint, failed perimeter sealant, and aged plexiglass at the stained glass windows.

9. There are two (2) entrance double doors located at the building which have been boarded up with plywood. The main entrance double doors located at the north elevation consist of a Kawneer aluminum storefront system with an overhead transom and decorative arched window above, installed within the original wood door frame. The glass at one (1) of the doors is shattered. The entrance at the west side of the building is boarded up with plywood, and appears to have been utilized as a handicap accessible entrance and includes a concrete ramp and handrails.
10. There are also two (2) secondary egress single doors located on the east and south elevations that consist of a wood frame and an overhead wood transom. Exterior paint is typically peeling.

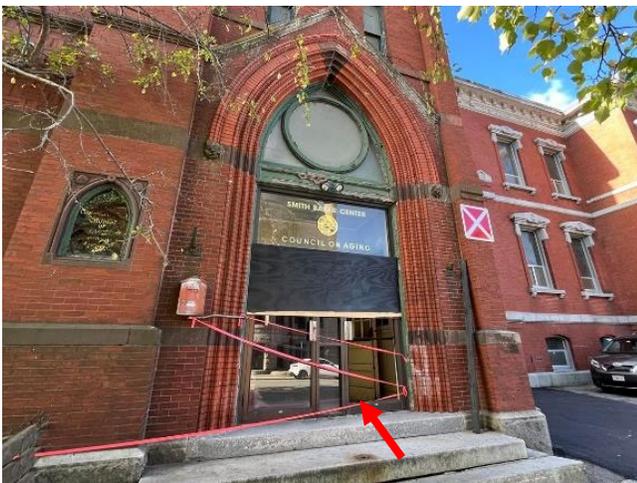


Image 26: Front door aluminum storefront with missing glazing.



Image 27: Original wood door at the east elevation.

Structural Evaluation

As part of the evaluation, Gale’s structural team reviewed the accessible areas of framing throughout the interior of the building. It should be noted that decorative finishes were observed to conceal the majority of the structural elements, as a result, Gale’s structural evaluation was limited to accessible areas. Additional deficiencies may be present at locations that were inaccessible at the time of the evaluation.

1. The structural framing members supporting the clerestory level, observed from the lower level, were typically covered by wood strapping and a hard ceiling. Gale observed isolated areas with signs of past water infiltration that appeared to be rotted.



Image 28: View of an area of rotted ceiling supporting the clerestory level, located at the northeast corner of the building.



Image 29: Close-up view of an area of rotted ceiling supporting the clerestory level, located at the northeast corner of the building.



Image 30: View of ceiling area below the clerestory level that exhibits signs of past water infiltration and rot.



Image 31: View of a rotted wood joist supporting the clerestory level.

2. During the site visit, Gale observed two (2) large wood columns which support the clerestory level and roof framing at the main portion of the church with high ceilings. The large wood column at the north side of the building exhibited signs of past water infiltration and rot. Additionally, the floor surrounding the rotted large wood column also exhibited signs of past water infiltration and rot.



Image 32: View of the deteriorated wood column supporting the roof and clerestory level at the north side of the building.



Image 33: Close-up view of the deteriorated wood column supporting the roof and clerestory level at the north side of the building.



Image 34: View of rot and deterioration observed at clerestory floor surrounding the deteriorated large wood column at the north side of the building.



Image 35: Close-up view of an area of rot and deterioration observed at clerestory floor surrounding the deteriorated large wood column at the north side of the building.

3. Sections of the brick masonry exterior walls are built-out at column locations. In general, the interior wythes of the brick masonry walls appeared to be in good condition, with isolated areas of deteriorated brick.



Image 36: View of brick wall supporting the clerestory level framing at the southeast corner of the building, which appeared to be in good condition.



Image 37: Close-up view of an isolated area of deteriorated brick at a column at the east wall.

4. At the time of the evaluation, Gale did not have access to areas with exposed framing to review the condition of the existing roof deck and roof framing members. At isolated locations with damaged finishes, Gale reviewed the accessible roof framing members and roof deck, where scattered areas appeared to exhibit signs of past water infiltration and rot.



Image 38: View of roof framing at the northeast corner of the building, which appeared to exhibit signs of past water infiltration and rot at scattered locations.



Image 39: View of roof framing at the northwest corner of the building, which appeared to exhibit signs of past water infiltration and rot at isolated locations.

DISCUSSION AND OPINIONS

Based on conversations with Lowell, it is the intent of this evaluation to provide a narrative on the scope and estimated costs of exterior building enclosure system and interior structural repairs based on the observed condition of the building. The building has been unoccupied since 2003, and future building use is unknown at this time. Opinions of renovations are not based on specific future building occupancy use, and additional consideration may be required for mechanical, electrical, and plumbing systems, heating and ventilation systems, etc. As the building is included on the National Register of Historic Places, repairs and replacement of existing enclosure systems may need additional coordination with the Lowell Historic Board or the Historic Preservation Authority with jurisdiction over the building during design development. The Commonwealth of Massachusetts recently adopted the Tenth (10th) Edition of the State Building Code which includes the 2021 International Energy Conservation Code (IECC). The City of Lowell has also adopted the Stretch Energy Code which incorporates amendments to the code. Per Section C501.5 of the 2021 IECC, *“Provisions of this code relating to the construction, repair, alteration, restoration and movement of structures, and change of occupancy shall not be mandatory for historic buildings provided that a report has been submitted to the code official and signed by a registered design professional, or a representative of the State Historic Preservation Office or the historic preservation authority having jurisdiction, demonstrating that compliance with that provision would threaten, degrade or destroy the historic form, fabric or function of the building”*.

Fall Hazards

Terracotta coping caps are also installed along the roof rake, and several caps were observed to be cracked, spalled, and with deteriorated mortar joints. These areas are located adjacent to pedestrian walkways, and Gale informed Lowell of these locations as they are potential fall hazards. As a temporary repair, it is Gale’s opinion that debris containment netting be installed at the terracotta caps to reduce the potential of fall hazards from displaced, cracked, or spalled components. Please note, the installation of netting may require structural augmentation that is not included within the cost estimate. The installation of debris netting is a remedial repair to reduce the potential for fall hazards associated with the terracotta. To address the deterioration of the terracotta, it is Gale’s opinion that the cracked terracotta be removed and replaced, and mortar joints be repointed.

Steep-Sloped Roofing

It is Gale’s opinion that the existing slate shingle and asphalt shingle roof systems are in poor condition, past their useful service life, cannot be economically repaired or maintained, and should be replaced. Roof defects include, but are not limited to, missing, broken/cracked, and loose shingles, exposed wood decking, and deteriorated flashings. The observed defects have the potential to contribute to the reported and observed evidence of air and moisture infiltration. Additionally, it is Gale’s understanding that Lowell has closed street parking along the east elevation of the building due to the potential for falling slate shingles.

The steep sloped roof areas should be removed and replaced with a new slate roof system to match the existing configuration and aesthetic. Prior to the installation of underlayments and new shingles, the existing tongue and groove wood deck should be reviewed for areas of deterioration. Deteriorated wood deck should be removed and replaced. The ridges of the roof include terracotta ridge caps which were observed to be displaced in isolated locations, and should be resecured as part of the roofing replacement. The deteriorated roofing components at the cupola located at the ridge of the steep-sloped roof should also be removed and replaced to match the adjacent slate roofing. Restoration or replacement of the associated windows at the cupola should be included as part of the roof replacement; *please refer to the window section below*.

The 2021 IECC requires a minimum of R-30 of continuous insulation above the roof deck, or a minimum of R-49 within the attic space. The installation of insulation above the roof deck may affect the aesthetics and site lines of the roof areas. As the building is located within a Historic District, the Lowell Historic Board may provide variances for thermal performance of historic buildings. However, this would require additional coordination during a design development phase. Installation of insulation below the roof deck such as spray foam insulation would require access to the plenum space and adequate room to install the material, which was not reviewed as part of this evaluation. For cost estimating purposes, the installation of insulation below the roof deck has been included.

Low-Sloped Roofing

Based on Gale's visual evaluation, the existing gravel-surfaced built-up roof and a rolled asphalt roof system appear to be in poor condition. Deficiencies including, but not limited to, slate shingle debris on the roof surface, missing drain strainer, previous roof transition repairs, and displaced roof hatch were observed. Although Gale was not able to access the roof areas, imagery from the drone survey as well as interior leak locations that appear to be associated with the roofs indicate that the roof systems are failed.

It is Gale's opinion that the existing gravel surfaced built-up roofing and rolled asphalt roofing systems should be removed and replaced with new single-ply roof membrane systems consisting of an air/vapor barrier (AVB), polyisocyanurate insulation, coverboard, and a roof membrane such as EPDM or PVC. Additional walkway pads should be installed adjacent to the steep-sloped roofing areas to mitigate potential damage to the membrane from falling ice and/or snow.

The existing terracotta coping caps at the brick masonry parapet walls adjacent to the low-slope roofs should be removed and reinstalled as required to install new sheet metal cap flashing. Additionally, the inside face of the parapet walls can be clad with plywood and membrane flashing to mitigate excess moisture through the exterior wall and into the new roof system.

Brick Masonry and Associated Components

Based on Gale's visual evaluation, the exterior brick masonry façade and associated terracotta components are in fair to poor condition with defects observed including, but not limited to, deteriorated mortar, cracked/spalled/displaced brick masonry and terracotta, displaced brick masonry, step cracking, efflorescence, vegetative growth, and algae growth. Previous repairs to the brick masonry were observed throughout the façade including areas of previous repointing, however many of these repairs have since deteriorated. Deterioration within the brick masonry and associated components can result in excess moisture within the mass masonry wall and potentially present as moisture infiltration on the interior. Additionally, deteriorated masonry can allow the excess moisture to accumulate within the walls and lead to further deterioration during freeze-thaw cycles.

Cracked and/or spalled brick masonry units and terracotta components should be removed and replaced, and associated mortar repaired. Areas of deteriorated mortar were observed throughout the façade, with isolated locations that should be rebuilt due to severe deterioration, missing mortar, step cracks, and/or bowing masonry. These areas are located at brick masonry chimneys, below roof edges, along the east elevation, and other miscellaneous locations. Deteriorated mortar is mortar that has become brittle and eroded. As such, it tends to delaminate from the brick surface. Deteriorated mortar was observed at locations shown on the drawings and could be sufficiently repaired by spot repointing. However, maintenance of the mortar joints that do not receive repairs should be anticipated and budgeted for future repair work. Please also note that spot pointing of masonry walls will

be noticeable from the ground and could affect the aesthetics of the building. While contractors will make an effort to match the colors and material, they will never be able to match them identically because of the weathering that has previously occurred on the mortar. For the aforementioned reasons, full repointing is often considered.

It is Gale's opinion that the deteriorated mortar joints be repointed in accordance with the Brick Industry Association's (BIA) recommendations which require removal of existing mortar to a predetermined depth and replacement with a mortar mix appropriate for the masonry units and the surrounding environment. Buttered joint repairs such as those observed on this building, are not preferred, and will delaminate prematurely. Buttering is the application of mortar over the surface of the deteriorated mortar. The industry standard procedure includes cutting existing joints back to at least three-quarters of an inch ($\frac{3}{4}$ ") in depth and applying new mortar of an appropriate strength and composition in lifts (thin applications) until the full depth of the cut is solidly packed. At locations of displaced masonry or heavily deteriorated mortar, it is Gale's opinion that the brick masonry be removed and salvaged if possible to rebuild deteriorated brick masonry sections.

Abandoned fasteners should be removed and disposed of, and all remaining holes repaired. Hole repairs could either be accomplished by patching the mortar joint, or removing and replacing the masonry unit depending on the method used for attachment and its location.

Efflorescence staining was also observed at small areas at the brick masonry. Efflorescence in masonry is caused by the migration of water-soluble salts through the brick masonry units. Once the solution has migrated through the masonry units, the water dissolves and the salt deposits remain on the face of the brick. Atmospheric staining was observed at the brick masonry and associated mortar. This staining can be brown, tan, or grey and may occur due to improper acid cleaning procedures or atmospheric elements. These conditions are not considered to be of structural concern; however, it can affect the aesthetics of the exterior façade. Efflorescence, atmospheric and rust staining can be removed using various masonry cleaning products.

The exterior façade at the east elevation includes a portion which appears to be constructed with wood framing, wood plank sheathing and asphaltic siding in a faux brick pattern. This portion of the building is shown in historic photos dating back to 1916, however it is unclear if the siding was replaced at some point. This portion of the building is located to the rear of the pipe organ, and was difficult to access. The siding is in poor condition, with the wood plank sheathing exposed at the exterior at several locations. Holes in the walls and adjacent vegetative growth and trees growing into the walls not only allow air and moisture into the building, but also allows animals and pests to enter the building. Due to the condition of the exterior siding and framing components and associated roof, it is Gale's opinion that the adjacent tree and vegetative growth be cut back and removed, existing siding be removed, areas of deteriorated wood plank siding be removed and replaced, and new siding be installed with insulation to meet building code. These siding options could include vinyl siding, composite siding, fiber cement siding, metal wall panels, etc. Siding options may need to be reviewed with the Lowell Historic Board if mimicking the existing aesthetic is desired. Please note, the extent of vegetative growth at this portion of the east elevation limited Gale's visual assessment, and additional defects may be present at the building enclosure components beneath the vegetative growth.

Windows, Doors, and Associated Components

The existing wood framed window systems appear to be original to the construction of the building which would make them approximately 140 years old. The operable windows are in poor condition with defects observed including deteriorated wood frames, peeling paint finishes, displaced sashes, broken and/or missing glass. These defects have contributed to air and moisture infiltration, and have also allowed birds and pests to enter the building. Based on the

as-built conditions and the observed defects, it is Gale's opinion that the existing wood window frames, sashes, and associated components be repaired/restored to maintain the historic aesthetic, or removed and replaced with new thermally broken aluminum framed windows.

Previous remedial repairs were observed at the windows including the installation of plexiglass at the exterior of several windows, and plywood infills at locations of broken and/or missing glass. The plexiglass is fastened through the wood frame or wood sashes from the exterior, with sealant installed at the perimeter. The sealant was observed to be failed in several locations, and the plexiglass is aged and displaced at isolated window openings. Isolated arched windows appeared to be displaced within the masonry opening, exposing the interior brick masonry wythes to the exterior.

Although the leaded comes and stained glass itself appears to be in fair condition with isolated locations of cracked or missing glass, the wood framing and associated trim that supports the glass is in poor condition. Several areas of the wood trim at these windows are missing or appear to be rotten. The plexiglass installed at the stained glass appears to have mitigated deterioration of the glazing, however the plexiglass does not protect the exterior of the wood framing components. The paint is typically peeling, and based on a historic photo of the building taken in 1974 from the National Register of Historic Places Property Photograph Form, the original wood framing at the windows appeared to have been white, and was repainted the dark green color that exists today.

The option for restoration of the existing wood window systems would include various repairs to the different window components. It is Gale's opinion that glazing putty is to be cleaned from the existing muntins and glass, glass is to be replaced where observed to be broken or missing, and glass lites are to be reglazed. Paint is to be removed from one hundred percent (100%) of the interior and exterior of the window sashes, frames, and trim components. Deteriorated wood components are to be replaced with a dutchman repair or whole component replacement, depending on the extent of wood deterioration, and abandoned fasteners are to be removed and holes infilled with wood repair material. Existing plexiglass should be removed and disposed.

Dutchman repairs and whole component replacement are performed to match the existing wood species and profile of the adjacent components. Weather checked wood shall be infilled or repaired with a dutchman repair if greater than or equal to one-quarter of an inch ($\geq \frac{1}{4}$ ") in width. Prepared wood sash, frame, and trim components are to be painted in a color to match the existing sash and frames. Existing hardware is to be cleaned, and missing hardware should be replaced in kind. Where hardware such as sash locks are missing, replacement sash locks and hardware are to be sourced to match the existing profile and style as closely as possible and installed on prepared sashes. New perimeter sealant shall be installed to match the wood paint color, and new gaskets and weather stripping at the meeting rail of the top sash and bottom sash should also be installed.

Due to the observed condition of the windows, including several sashes being displaced or covered with plywood, only isolated windows were operated. It is Gale's opinion that one hundred percent (100%) of the balance ropes be removed and replaced, pulleys be refurbished or replaced, and the existing balance weights be salvaged as part of the restoration project. Please note that there is a possibility that the wood window sashes have swollen, due to long-term exposure to ultra violet radiation and weather, and may need to be modified or resized as part of the restoration scope of work. It is Gale's opinion that additional evaluation of the window sash operability be performed during a design development phase to review if the existing sashes have swollen due to exposure.

The original windows will not meet energy code requirements of the 2021 IECC, as the requirements have changed since their original construction. Replacing glazing putty, adding new weather stripping and gasketing will help

mitigate air leakage and infiltration at the windows to be restored. While the thermal performance of the wood frame and components mitigates thermal bridging, the existing assembly's single lite glass provides little to no thermal barrier between the interior and exterior. However, as the building is registered as a Nationally Historic Site, there appears to be exceptions within the 2021 IECC limiting the application of thermal requirements to historic buildings where compliance with the code threatens the features key to the historic designation. At this time, the facility is unoccupied and remains unconditioned, however, in anticipation of future occupancy and renovation projects, Lowell could consider incorporating storm windows to reduce the potential of air movement through the historic wood windows and improve future occupant comfort.

The large, multi-story, stained glass windows as well as the smaller double-hung stained glass windows are historic architectural features of the building that are not economically feasible to replace in kind. Restoration of these windows would maintain the character of the building, but is an extensive process that is typically costly. Restoration generally consists of carefully removing the existing sashes from the window frame and cataloguing, storing, repairing, and reinstalling the components. The stained glass appears to include leaded stops which would allow removal in smaller sections. Once removed, cracked/missing glazing can be replaced, and defects within the lead comes can be repaired. Broken glass can be replaced in a color and texture to match the existing. Deteriorated and separating side rails at the casement window are to be removed and replaced within the window sash. Replacement wood shall match the existing type and configuration. Frames and sashes of the existing to remain components, which are found to be of sound wood, are to be stripped and re-stained to match the exiting stain color and blend the existing wood with replacement wood components. As the existing wood frames are built into the masonry openings, they are generally repaired in place. The stained glass can then be reinstalled within the wood frames, and new exterior protective glazing can be installed.

Please note that should window restoration be considered, an additional window evaluation would be required to document the extent, type, and quantity of repairs that would be required. This would include a survey of each individual window to evaluate the condition of the existing wood frames, sashes, and associated components to identify the extent of wood rot, missing hardware, displaced/broken lead comes, etc. As part of this additional evaluation, it is also Gale's opinion that the wood components be documented for historic replication at dutchman repairs and wood replacement locations.

An alternative approach to window restoration would include the removal and replacement of existing window systems. This would include the removal of existing window systems, and the repair of the deteriorated wood frames to install new windows in the prepared openings. Based on the size and configurations of the existing windows, replacement systems may include thermally broken aluminum windows, wood windows, or a composite system with both wood and aluminum. With the replacement of existing fenestrations, it would be difficult and cost prohibitive to install new windows and curtain walls to match the aesthetics of the existing stained glass windows. It is Gale's opinion that the Lowell Historic Board be consulted to coordinate potential replacement window and curtain wall configurations.

As an in-depth evaluation of the existing wood windows to identify the extent of deterioration within the window components was not performed as part of this evaluation, it is difficult to incorporate a preliminary cost estimate for the restoration of the windows. As a result, Gale's preliminary cost estimate included within this report includes several options for Lowell's consideration. These options include a replacement of all existing fenestrations with new windows and curtain walls, the restoration of all existing fenestrations, and a combination of replacement and restoration to maintain the large decorative stained glass elements of the building. Please note, pricing for repairs

associated with full and partial restoration is presented as a unit price cost as the scope and extent of restoration is not defined at this time.

The existing door systems consist of wood doors and an aluminum storefront system installed within the original wood frames. The wood doors appear to be in fair condition with peeling paint and deteriorated wood frames and components. At the main entrance aluminum storefront system, the glazing is shattered at one of the doors, and at the west elevation entrance, the doors are boarded up with plywood. Due to the doors being locked and/or boarded up, their operability was not able to be reviewed. It is Gale's opinion that the existing wood doors be scraped, primed, and painted to restore the waterproofing integrity of the door systems. Based on historic photos, it appears that the main entrance doors were originally decorative wood doors, which were replaced with aluminum doors at some point prior to 1974. The existing Kawneer doors appear to be fairly recently installed. It is Gale's opinion that the cracked glazing at the doors should be replaced.

Testing for hazardous materials such as lead, asbestos, and PCBs was not conducted during this evaluation and is not included in this project. Asbestos and PCBs can be found in architectural finishes, window caulking, glazing compounds, roofing mastics, sealants, and insulation products, while lead can be found within painted substrates. When undertaking restoration or repair projects, it is Gale's opinion that testing for these materials be performed prior to making repairs due to the age of the building.

Structural Components

Based on our limited structural evaluation, it is Gale's opinion that the building's structural components appear to be in fair to poor condition, with scattered areas of deterioration that should be repaired for the building to be safe for occupancy. As stated in the observations section above, the majority of the building's structural components were covered by decorative finishes, therefore Gale anticipates there will be additional locations of structural degradation that were not observed during Gale's evaluation. The City may consider removal of the decorative finishes for a more thorough review of the structure and provide repairs to all additional areas of deterioration observed.

At locations where rotted wood joists supporting the clerestory level were observed, repairs may include removal and replacement of the rotted joists or installation of a new "sistering" joist for reinforcement. At locations where deterioration of the clerestory level wood floor was observed, the wood floor should be removed and replaced with a new wood floor of equivalent strength. The floor should be cut such that the edge of the existing floor and the edge of the new floor both bear on supporting wood joists. New supplementary wood may need to be installed at the joists supporting the floor edges to provide a sufficient bearing area for support of both the existing and new wood floor edges. The wood floor should be cut so the new floor spans a minimum of three (3) joists (four [4] supports). At areas of deteriorated brick, it is Gale's opinion that the deteriorated brick be removed and replaced with new brick. At larger areas of deteriorated brick and areas of deteriorated brick that provide bearing support for other structural components, installation of temporary shoring may be required in order to maintain sufficient structural support during installation of repairs at these locations. Reinforcement of the large, rotted column at the north side of the building may include installation of a reinforcing wood or steel column. Note that shoring of the existing framing members supported by the column will need to be provided prior to and during reinforcement of the column.

Gale's access to observe the roof framing and roof deck was limited, however Gale observed scattered areas of rotted roof framing members and decking, which should be repaired. At locations where the roof rafters or roof bracing members exhibit signs of rot, it is Gale's opinion that these members be removed and replaced, or a new "sistering" member is installed for reinforcement. Similar to the clerestory floor, at locations where the existing roof deck is

rotted, it is Gale's opinion that the roof deck be removed and replaced with a new wood deck of equivalent strength. The roof deck should be cut such that the edge of the existing roof deck and the edge of the new roof deck both bear on supporting wood roof rafters. New supplementary wood may need to be installed at the roof rafters supporting the floor edges to provide sufficient bearing area for support of both the existing and new wood roof deck edges. The wood roof deck should be cut so the new roof deck spans a minimum of three (3) roof rafters (four [4] supports). If there are numerous areas of rotted deck, the owner may consider replacing larger sections of roof deck in lieu of providing isolated repairs. In order to perform the roof framing repairs, Gale anticipates that large staging will need to be installed for access to perform the repairs.

SUMMARY OF OPINIONS

Roofing:

- Remove and replace existing slate and asphalt shingle roof with new insulation, underlayments, slate shingles, snowguards, and associated copper flashings.
- Remove and replace existing low-slope roofing systems with a new single ply roofing system including new baseboard, air/vapor barrier, insulation, coverboard and single-ply roof membrane.
- Remove existing gutters and install new copper gutters and downspouts at roof eaves.
- Remove and reinstall existing terracotta caps at masonry parapet walls adjacent to low slope roofs as required to install new sheet metal cap flashing.

Masonry and Associated Components:

- Remove and replace cracked/spalled brick masonry units.
- Rebuild areas of displaced brick masonry.
- Repoint deteriorated mortar joints.
- Repair areas of cracked/spalled stone.
- Remove and replace cracked/spalled terracotta.
- Resecure displaced terracotta at roof ridge.
- Install debris containment nettings at terracotta capstones.
- Clean areas of efflorescence, rust staining, atmospheric staining, algae growth.
- Remove vegetative growth from the east elevation.
- Install new throughwall flashing at the brick masonry rising wall adjacent to Roof Area D.
- Remove and replace existing asphaltic siding on the east elevation with new insulation, vapor retarder, and vinyl siding.

Windows and Doors:

- Scrape, prime, and paint wood doors.
- Replace broken glazing at aluminum entrance doors.
- Repair rotted wood floor joists.
- Remove and replace deteriorated wood floor deck.
- Reinforce the existing rotted large wood column at the north side of the building.
- Repair rotted wood roof rafters and bracing members.
- Remove and replace deteriorated wood roof deck.

Window Option 1:

- Remove and replace existing wood window systems with new aluminum clad wood composite windows with insulated glazing units to match existing configuration.

- Remove and replace existing large stained glass wood window systems with new thermally broken aluminum curtain wall systems with insulated glazing units.
- Install perimeter sealant.

Window Option 2:

- Remove and replace existing wood window systems with new aluminum clad wood composite windows with insulated glazing units to match existing configuration.
- Install perimeter sealant.
- Remove plexiglass at large stained glass windows and install new exterior protective glass.

Window Option 3:

(Unpriced option. Refer to Appendix A - Preliminary Cost Estimate for associated unit price costs.)

- Remove and reinstall existing glazing and/or operable sashes at wood windows and large stained glass windows as required to perform repairs.
- Remove and dispose of exterior mounted plexiglass.
- Replace missing/cracked glazing.
- *Wood dutchmen repair (unit price).*
- *Lead came repair (unit price).*
- *Weatherstripping installation (unit price).*
- *Replace window pulley hardware (unit price).*
- Replace 100% window balance ropes.
- Replace perimeter sealant.
- Scrape, prime, and paint wood frames.
- Install new exterior protective glass at large stained glass windows.

Wood Framing and Associated Components:

- Repair rotted wood floor joists.
- Remove and replace deteriorated wood floor deck.
- Reinforce the existing rotted large wood column at the north side of the building.
- Repair rotted wood roof rafters and bracing members.
- Remove and replace deteriorated wood roof deck.

PRELIMINARY COST ESTIMATE

The Preliminary Construction Budgets presented below were provided by Preferred Construction Management Co., Inc. and are based on the opinions listed above. Due to volatility within the construction industry, the estimates shown below include twenty percent (20%) contingency, five percent (5%) overhead and profit, two percent (2%) bond and insurance, and three percent (3%) escalation rate, along with general conditions based on an assumed construction schedule. *Please refer to Appendix A - Preliminary Cost Estimate for additional information.*

Sub-Total (including Window Option 1): \$4,040,939.00

Sub-Total (including Window Option 2): \$3,576,584.00

Please note, this option does not include costs for repairs at the stained glass windows. Please refer to the cost estimate for unit prices associated with stained glass repairs.



Please be reminded that these budgets are preliminary and should not be used for sensitive funding. Also note that these values do not include soft costs associated with working for City of Lowell, client oversight of the project, escalation and material increases, engineering costs, hazardous material abatement, special permitting, review of the local historic commission, or interior renovations. The City of Lowell should be aware that due to recent world events, bid pricing has become more volatile and may be higher, or lower, than what has been presented above depending on contractor and material availability. More refined cost estimates can be provided should the City of Lowell wish to proceed to the next phase.

We trust this information suits your needs at this time. Please do not hesitate to contact us if you require additional information regarding this matter.

Best regards,

GALE ASSOCIATES, INC.

Amanda J. Marshall
Amanda J. Marshall
Staff Designer
Building Enclosure Consulting & Commissioning (BECC) Group

Jane V. Leven
Jane V. Leven
Senior Designer
BECC Group

Matthew C. Chahine
Matthew C. Chahine
Project Designer
Structural Group

Allison E. O'Neill
Allison E. O'Neill
President
Structural Group

JVL/MCC/ACP/AEO/gmt

Attachments: Appendix A - Preliminary Cost Estimate
Appendix B - Reduced Size Drawings

Cc:	<u>Name</u>	<u>Company</u>	<u>Email</u>
	Catherine Kennedy	Lowell	ckennedy@lowellma.gov
	Alan Pinciario	Gale	acp@gainc.com

i:\843870\01 evaluation\report\843870 evaluation letter report 2025 0107.docx





Appendix A

Preliminary Cost Estimate

SMITH BAKER SENIOR CENTER

GALE
CONCEPTUAL ESTIMATE
1/7/2025

THE ATTACHED COST ESTIMATE IS BASED ON THE FOLLOWING DOCUMENTS:

<u>Drawings Dated</u>		<u>Number of Sheets</u>
12/11/2024	Existing Conditions Assessment, by Gale Associates, Inc.	31

ASSUMPTIONS AND EXCLUSIONS:

- 1 Hazardous material testing and abatement is excluded.
- 2 Estimate assumes a competitive bid process.
- 3 Estimate assumes a Fall 2025 procurement schedule. Escalation is included to the point of procurement. Add .5% / month if project is delayed.
- 4 100% repointing of the structure is excluded.
- 5 Complete roof replacement is included.
- 6 Window Option 1 is included in the base estimate.
- 7 Estimate assumes work will be completed in one phase with one mobilization.
- 8 Per direction from Gale, Option 3 is excluded (see unit costs noted below).

Unit cost item - wood window dutchman repair (direct cost):	\$ 80.00 LF
Unit cost item - stained glass lead came repair (direct cost):	\$ 25.00 LF
Unit cost item - wood window weatherstripping installation (direct cost):	\$ 6.00 LF

PCM reserve the right to revise and/or amend this estimate accordingly should any new or additional information be made available to us.

Project estimate prepared by:

Kyla Magnusson, Lead Estimator
Preferred Construction Management Co., Inc.

kyla@pcmcompany.com

(t) 207.618.7500

(c) 973.945.0323

SMITH BAKER SENIOR CENTER

CONCEPTUAL ESTIMATE



PROJ. NO:	29-127
REVISION:	1
EST DATE:	1/7/2025
GROSS SF:	30000

BUILDING SF **30000** sf

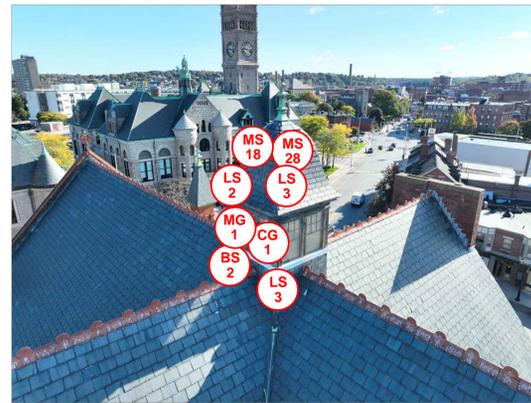
DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
DIVISION 1 - GENERAL CONDITIONS	30,000	SF	\$ 1.17	\$ 35,000.00
DIVISION 2 - DEMOLITION	30,000	SF	\$ 2.74	\$ 82,231.25
DIVISION 2 - SITE WORK	30,000	SF	\$ -	\$ -
DIVISION 3 - BUILDING CONCRETE	30,000	SF	\$ -	\$ -
DIVISION 4 - MASONRY	30,000	SF	\$ 11.28	\$ 338,534.65
DIVISION 5 - STEEL	30,000	SF	\$ -	\$ -
DIVISION 6 - CARPENTRY	30,000	SF	\$ 7.80	\$ 233,952.64
DIVISION 7 - THERMAL MOISTURE PROTECTION	30,000	SF	\$ 38.32	\$ 1,149,630.64
DIVISION 8 - OPENINGS	30,000	SF	\$ 25.73	\$ 771,832.00
DIVISION 9 - FINISHES	30,000	SF	\$ 0.05	\$ 1,450.00
DIVISION 10 - SPECIALTIES	30,000	SF	\$ -	\$ -
DIVISION 11 - EQUIPMENT	30,000	SF	\$ -	\$ -
DIVISION 12 - FURNISHINGS	30,000	SF	\$ -	\$ -
DIVISION 12 - CASEWORK AND MILLWORK	30,000	SF	\$ -	\$ -
DIVISION 13 - SPECIAL CONSTRUCTION	30,000	SF	\$ -	\$ -
DIVISION 14 - CONVEYING	30,000	SF	\$ -	\$ -
DIVISION 21 - SPRINKLER	30,000	SF	\$ -	\$ -
DIVISION 22 - PLUMBING	30,000	SF	\$ -	\$ -
DIVISION 23 - HVAC	30,000	SF	\$ -	\$ -
DIVISION 26 - ELECTRICAL	30,000	SF	\$ -	\$ -
CONSTRUCTION SUBTOTAL	30,000	SF	\$ 87.09	\$ 2,612,631
GENERAL CONDITIONS	8	MOS	55,000	\$ 440,000
CONSTRUCTION SUBTOTAL	30,000	SF	\$ 101.75	\$ 3,052,631
DESIGN / ESTIMATE CONTINGENCY	20.00	%		\$ 610,526
CONSTRUCTION SUBTOTAL	30,000	SF	\$ 122.11	\$ 3,663,157
OVERHEAD AND PROFIT	5.00	%		\$ 183,158
CONSTRUCTION SUBTOTAL	30,000	SF	\$ 128.21	\$ 3,846,315
BOND AND INSURANCE	2.00	%		\$ 76,926
CONSTRUCTION SUBTOTAL	30,000	SF	\$ 130.77	\$ 3,923,242
ESCALATION - ASSUME FALL 2025 START	3.00	%		\$ 117,697
CONSTRUCTION GRAND TOTAL	30,000	SF	\$ 134.70	\$ 4,040,939

ALT 1 - WINDOW OPTION 2 - DELETE CW / ADD PROTECTIVE GLASS - STAINED GLASS OPNGS				\$ (300,224.60)
CONSTRUCTION SUBTOTAL				\$ (300,225)
GENERAL CONDITIONS	16.84	%		\$ (50,562)
CONSTRUCTION SUBTOTAL				\$ (350,786)
DESIGN / ESTIMATE CONTINGENCY	20.00	%		\$ (70,157)
CONSTRUCTION SUBTOTAL				\$ (420,943)
OVERHEAD AND PROFIT	5.00	%		\$ (21,047)
CONSTRUCTION SUBTOTAL				\$ (441,991)
BOND AND INSURANCE	2.00	%		\$ (8,840)
CONSTRUCTION SUBTOTAL				\$ (450,830)
ESCALATION - ASSUME FALL 2025 START	3.00	%		\$ (13,525)
ALT 1 - WINDOW OPTION 2 - DELETE CW / ADD PROTECTIVE GLASS - STAINED GLASS OPNGS				\$ (464,355)

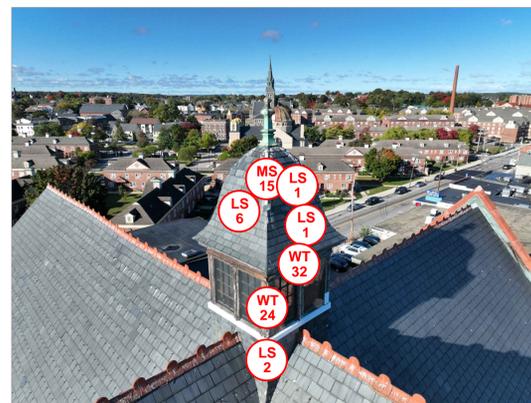


Appendix B

Reduced Size Drawings



2 PARTIAL CUPOLA ELEVATION
SCALE: NOT TO SCALE



3 PARTIAL CUPOLA ELEVATION
SCALE: NOT TO SCALE

GENERAL NOTES

1. THE INFORMATION SHOWN ON THIS DRAWING HAS BEEN COMPILED FROM VARIOUS SOURCES AND MAY NOT REFLECT THE ACTUAL CONDITIONS AT THE TIME OF CONSTRUCTION.
2. HATCH PATTERNS ARE FOR REPRESENTATION ONLY AND SHOULD NOT BE USED AS A MEANS FOR QUANTIFYING.

ROOFING DEFECT LEGEND

- AG # ALGAE GROWTH; # INDICATES LINEAR FEET
- BS # BROKEN SLATE / SHINGLE; # INDICATES UNITS
- LS # LOOSE SLATE / SHINGLE; # INDICATES UNITS
- MD # MATERIALS / DEBRIS ON ROOF; # INDICATES SQUARE FEET
- MS # MISSING SLATE / SHINGLE; # INDICATES UNITS
- CG # CRACKED GLAZING; # INDICATES UNITS
- MG # MISSING GLAZING; # INDICATES UNITS

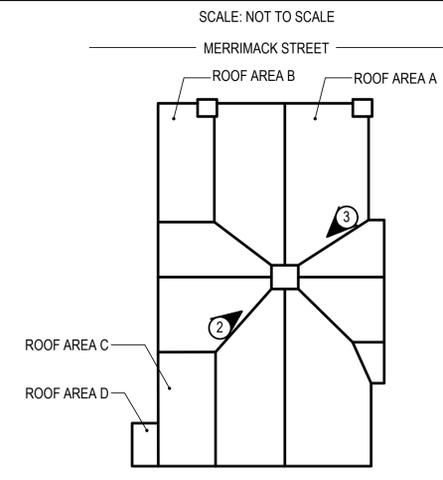
SHEET NOTES

- 1 LOOSE/DISPLACED COPPER FLASHING
- 2 MISSING DECORATIVE TERRACOTTA RIDGE CAP
- 3 DISPLACED TERRACOTTA RIDGE CAPS
- 4 ROOF ACCESS HATCH COVER APPEARS TO BE DISPLACED
- 5 MISSING DOWNSPOUT AT GUTTER

LEGEND

- ALL ITEMS ARE EXISTING UNLESS OTHERWISE NOTED
- ROOF EDGE
 - PARAPET
 - RIDGE/HIP LINE
 - VALLEY
 - CRICKET
 - GUTTER WITH DOWNSPOUT
 - SNOW GUARD
 - PHOTO INDICATOR
 - ELEV. = ' - " ±
 - BUILDING ENTRANCE
 - CHIMNEY
 - ACCESS HATCH
 - PIPE PENETRATION
 - ROOF DRAIN
 - STRUCTURAL SLOPE
 - CUPOLA/SPIRE
 - SLATE SHINGLE ROOFING
 - ASPHALT SHINGLE ROOFING

KEY PLAN



Gale Associates, Inc.
Engineers and Planners

6 BEDFORD FARMS DRIVE | BEDFORD, NH 03110
P 603.471.1887 F 603.471.1809
www.gainc.com

Boston Baltimore Orlando Hartford
Manchester Portland

This drawing and the design and construction features disclosed are proprietary to Gale Associates, Inc. and shall not be altered or reused in whole or part without the express written permission of Gale Associates, Inc. Copyright©2024

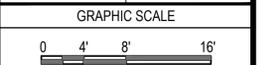
EVALUATION

PROJECT
SMITH BAKER SENIOR CENTER
BUILDING ASSESSMENT
413 MERRIMACK STREET
LOWELL, MA 01852

OWNER

CITY OF LOWELL
50 ARCAD DRIVE
LOWELL, MA 01852

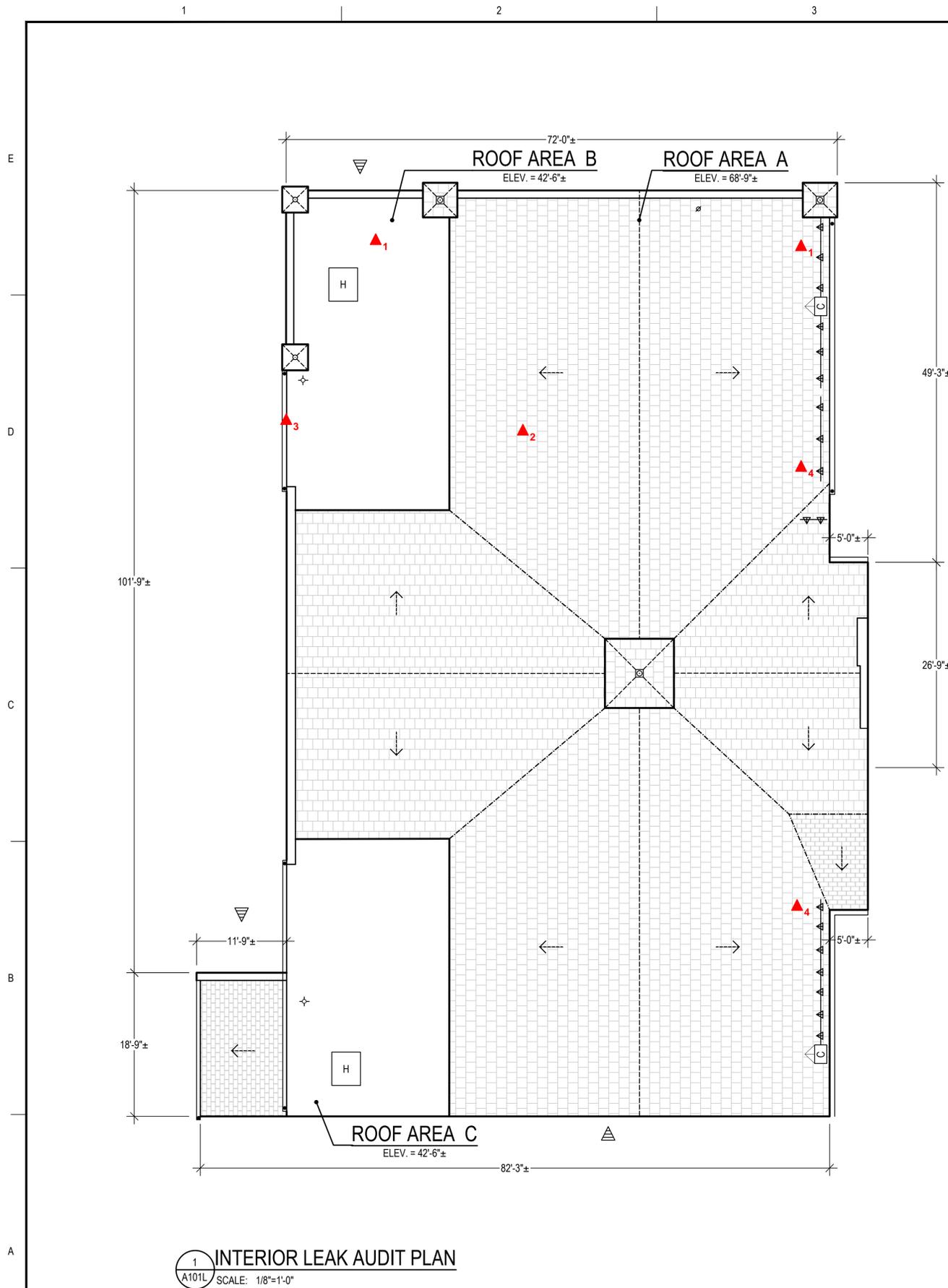
NO.	DATE	DESCRIPTION	BY
PROJECT NO.	843870		
CADD FILE	843870 A100s		
DESIGNED BY	JVL		
DRAWN BY	AJM		
CHECKED BY	CM		
DATE	1/5/2025		
DRAWING SCALE	1/8"=1'-0"		



SHEET TITLE

ROOF AREA PLAN

DRAWING NO.
A101



GENERAL NOTES

1. THE INFORMATION SHOWN ON THIS DRAWING HAS BEEN COMPILED FROM VARIOUS SOURCES AND MAY NOT REFLECT THE ACTUAL CONDITIONS AT THE TIME OF CONSTRUCTION.
2. HATCH PATTERNS ARE FOR REPRESENTATION ONLY AND SHOULD NOT BE USED AS A MEANS FOR QUANTIFYING.

LEGEND

ALL ITEMS ARE EXISTING UNLESS OTHERWISE NOTED

—	ROOF EDGE	▲	BUILDING ENTRANCE
==	PARAPET	□	CHIMNEY
- - - -	RIDGE/HIP LINE	H	ACCESS HATCH
- - - -	VALLEY	⊗	PIPE PENETRATION
—	CRICKET	⊕	ROOF DRAIN
—	GUTTER WITH DOWNSPOUT	→	STRUCTURAL SLOPE
▲	SNOW GUARD	⊗	CUPOLA/SPIRE
⊙	PHOTO INDICATOR	▨	SLATE SHINGLE ROOFING
ELEV. = ' - ' ±	ROOF ELEVATION RELATIVE TO GRADE WHICH IS ASSUMED TO BE ZERO FEET	▩	ASPHALT SHINGLE ROOFING

LEAK AUDIT LEGEND

- ▲ 1 METAL CEILING CORRODED WITH RUST HOLES, DAMAGED PLASTER FINISHES AND FLOORING BELOW. WATER DAMAGE FROM LEAK LOCATION CONTINUES AT FLOOR BELOW.
- ▲ 2 WATER STAINING AT DECORATIVE WOOD COLUMN AND DETERIORATED FLOORING. WATER DAMAGE FROM LEAK LOCATION CONTINUES AT FLOOR BELOW.
- ▲ 3 WATER STAINING AND DAMAGED PLASTER FINISHES AT ROOF DRAIN LINE.
- ▲ 4 PEELING PAINT, DETERIORATED PLASTER FINISHES, AND WATER DAMAGE AT FLOORING. WATER DAMAGE FROM LEAK LOCATION CONTINUES AT FLOOR BELOW.



Gale Associates, Inc.
Engineers and Planners

6 BEDFORD FARMS DRIVE | BEDFORD, NH 03110
P 603.471.1887 F 603.471.1809
www.gainc.com

Boston Baltimore Orlando Hartford
Manchester Portland

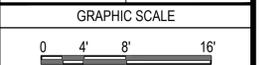
This drawing and the design and construction features disclosed are proprietary to Gale Associates, Inc. and shall not be altered or reused in whole or part without the express written permission of Gale Associates, Inc. Copyright©2024

EVALUATION

PROJECT
SMITH BAKER SENIOR CENTER
BUILDING ASSESSMENT
413 MERRIMACK STREET
LOWELL, MA 01852

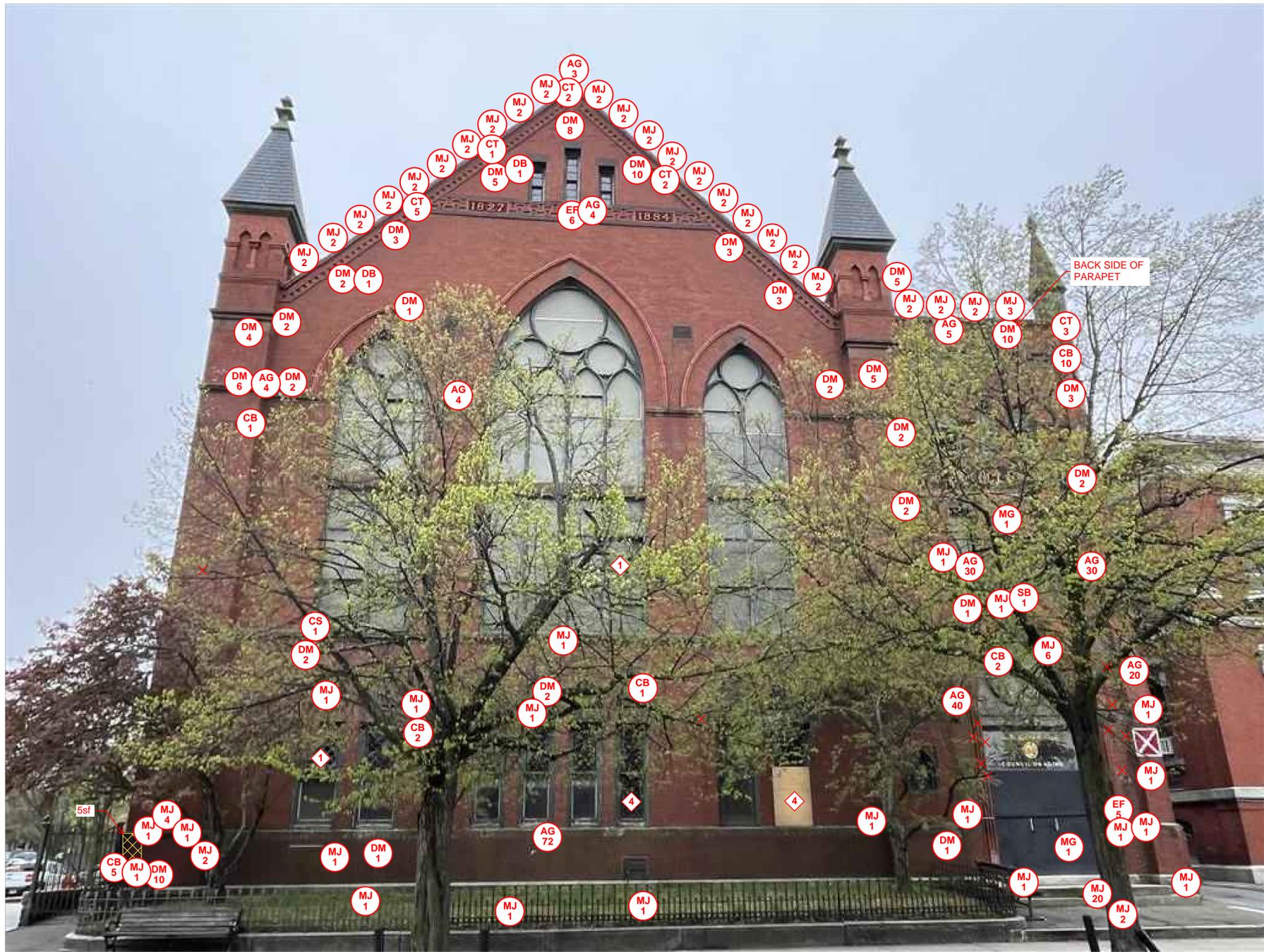
OWNER
CITY OF LOWELL
50 ARCAD DRIVE
LOWELL, MA 01852

NO.	DATE	DESCRIPTION	BY
PROJECT NO.	843870		
CADD FILE	843870 A100s		
DESIGNED BY	JVL		
DRAWN BY	AJM		
CHECKED BY	CM		
DATE	1/5/2025		
DRAWING SCALE	1/8"=1'-0"		



SHEET TITLE
INTERIOR LEAK AUDIT PLAN

DRAWING NO.
A101L



1 NORTH ELEVATION
A201 SCALE: NOT TO SCALE

GENERAL NOTES

1. THE INFORMATION SHOWN ON THIS DRAWING HAS BEEN COMPILED FROM VARIOUS SOURCES AND MAY NOT REFLECT THE ACTUAL CONDITIONS AT THE TIME OF CONSTRUCTION.
2. HATCH PATTERNS ARE FOR REPRESENTATION ONLY AND SHOULD NOT BE USED AS A MEANS FOR QUANTIFYING.

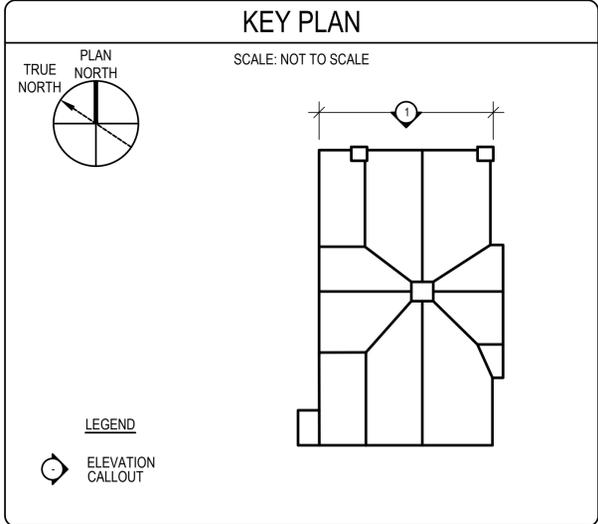
SHEET NOTES

- 1 TOP SASH OF WINDOW IS DISPLACED.
- 2 LOUVER AND/OR WOOD FRAMED BIRD NETTING DAMAGED/DISPLACED.
- 3 BROKEN LOUVER.
- 4 MISSING GLAZING AT WINDOW INFILLED WITH PLYWOOD.
- 5 WINDOW DISPLACED WITHIN MASONRY OPENING.
- 6 BRICK MASONRY APPEARS TO HAVE BEEN PREVIOUSLY PAINTED/COATED AT FIRST FLOOR.
- 7 LOOSE PIECE OF WOOD SASH.
- 8 VEGETATIVE GROWTH AT INTERIOR.
- 9 ASPHALT SHINGLE SIDING IS IN POOR CONDITION WITH DETERIORATED/MISSING SHINGLES AND OPENINGS TO THE INTERIOR. ADJACENT TREE APPEARS TO BE GROWING INTO THE WALL.
- 10 EXTERIOR MOUNTED PLEXIGLASS IS DISPLACED/BOWED WITH MISSING SEALANT.
- 11 STONE APPEARED TO HAVE BEEN PREVIOUSLY COATED/PAINTED; COATING IS PEELING.

DEFECT LEGEND

DM #	DETERIORATED MORTAR JOINT; # INDICATES SQUARE FEET	SS #	SPALLED STONE; # INDICATES UNITS
MJ #	DETERIORATED MORTAR JOINT; # INDICATES LINEAR FEET	CS #	CRACKED STONE; # INDICATES UNITS
RMJ #	PREVIOUS REPAIRED MORTAR JOINT; # INDICATES LINEAR FEET	EF #	EFFLORESCENCE; # INDICATES SQUARE FEET
CB #	CRACKED BRICK MASONRY; # INDICATES UNITS	RS #	RUST STAIN; # INDICATES SQUARE FEET
SB #	SPALLED BRICK MASONRY; # INDICATES UNITS	VG #	VEGETATIVE GROWTH; # INDICATES SQUARE FEET
DB #	DISPLACED BRICK; # INDICATES UNITS	AG #	ALGAE GROWTH; # INDICATES SQUARE FEET
x	EXISTING ANCHOR / METAL STUB	CG #	CRACKED GLAZING; # INDICATES UNITS
Step Crack #	STEP CRACK; # INDICATES LINEAR FEET	MG #	MISSING GLAZING; # INDICATES UNITS
Brick Masonry #	BRICK MASONRY TO BE REBUILT; # INDICATES SQUARE FEET	WT #	DETERIORATING WOOD TRIM; # INDICATES LINEAR FEET
PP	PEELING PAINT	CT #	CRACKED TERRACOTTA; # INDICATES UNITS

NOTE: NOT ALL DEFECTS MAY BE SHOWN ON THIS SHEET



GALE

Gale Associates, Inc.
Engineers and Planners
6 BEDFORD FARMS DRIVE | BEDFORD, NH 03110
P 603.471.1887 F 603.471.1809
www.gainc.com
Boston Baltimore Orlando Hartford Manchester Portland

This drawing and the design and construction features disclosed are proprietary to Gale Associates, Inc. and shall not be altered or reused in whole or part without the express written permission of Gale Associates, Inc. Copyright©2024

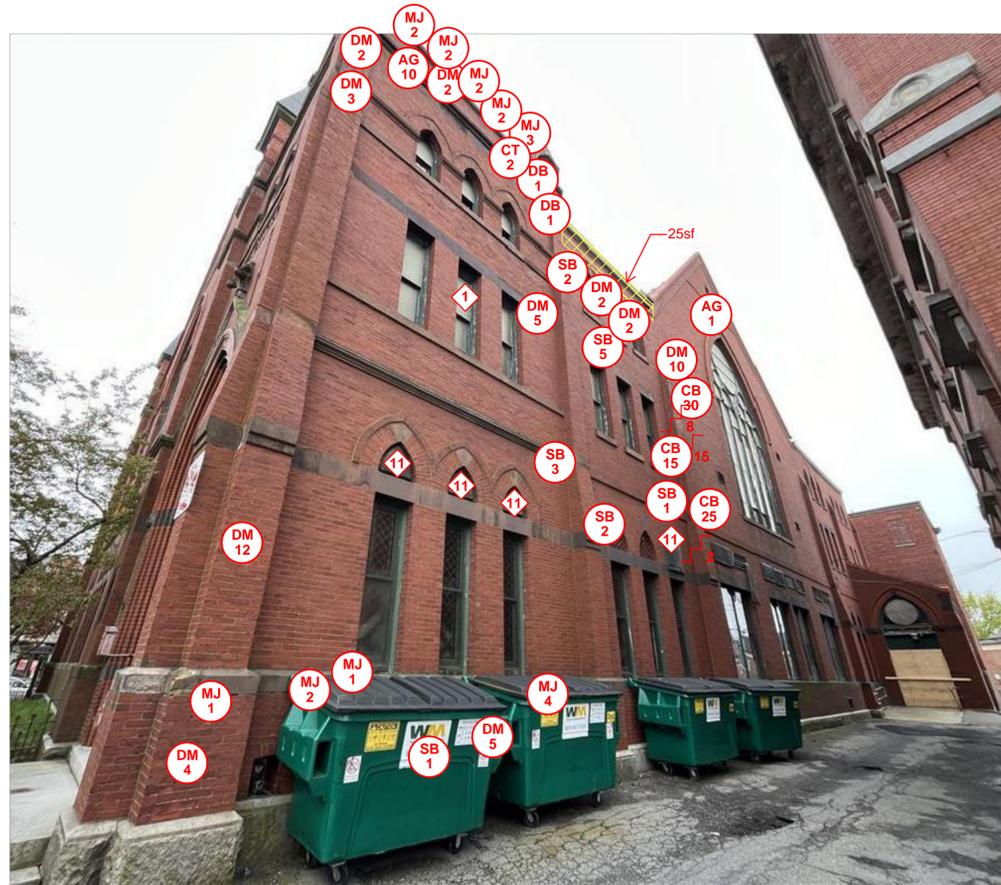
EVALUATION

PROJECT
SMITH BAKER SENIOR CENTER BUILDING ASSESSMENT
413 MERRIMACK STREET
LOWELL, MA 01852

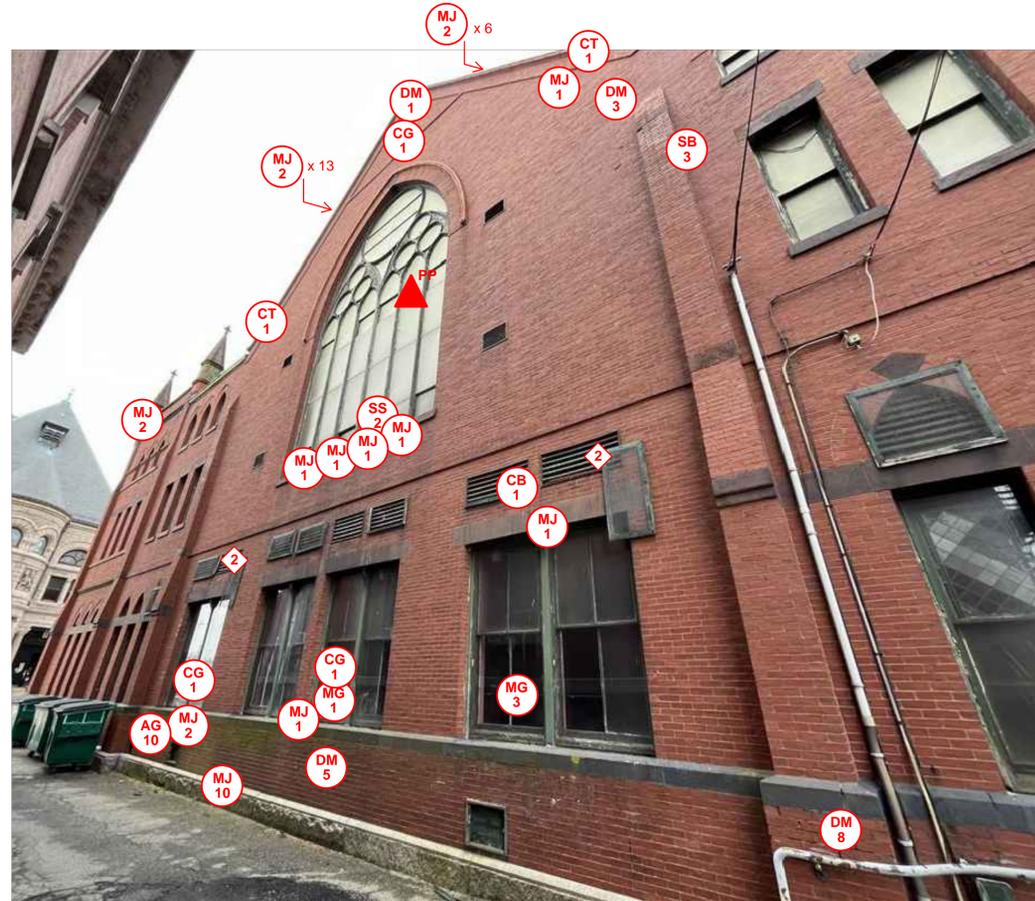
OWNER
CITY OF LOWELL
50 ARCAD DRIVE
LOWELL, MA 01852

NO.	DATE	DESCRIPTION	BY
PROJECT NO.	843870		
CADD FILE	843870 A200s		
DESIGNED BY	JVL		
DRAWN BY	AJM		
CHECKED BY	CM		
DATE	1/5/2025		
DRAWING SCALE	NOT TO SCALE		
GRAPHIC SCALE			
SHEET TITLE			
ELEVATIONS			

DRAWING NO.
A201



1 PARTIAL WEST ELEVATION
A202 SCALE: NOT TO SCALE



2 PARTIAL WEST ELEVATION
A202 SCALE: NOT TO SCALE



3 PARTIAL WEST ELEVATION
A202 SCALE: NOT TO SCALE

GENERAL NOTES

- THE INFORMATION SHOWN ON THIS DRAWING HAS BEEN COMPILED FROM VARIOUS SOURCES AND MAY NOT REFLECT THE ACTUAL CONDITIONS AT THE TIME OF CONSTRUCTION.
- HATCH PATTERNS ARE FOR REPRESENTATION ONLY AND SHOULD NOT BE USED AS A MEANS FOR QUANTIFYING.

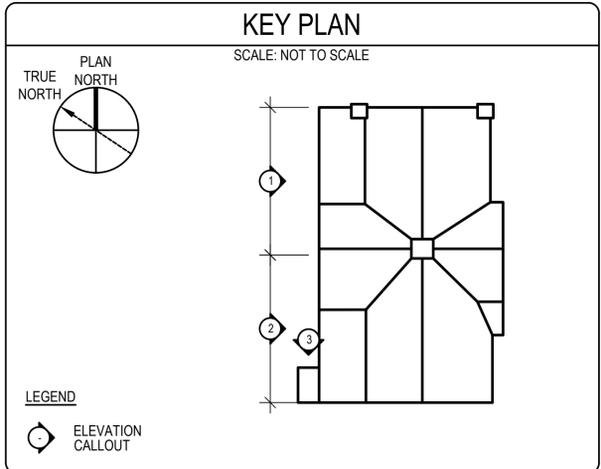
DEFECT LEGEND

DM #	DETERIORATED MORTAR JOINT; # INDICATES SQUARE FEET	SS #	SPALLED STONE; # INDICATES UNITS
MJ #	DETERIORATED MORTAR JOINT; # INDICATES LINEAR FEET	CS #	CRACKED STONE; # INDICATES UNITS
RMJ #	PREVIOUS REPAIRED MORTAR JOINT; # INDICATES LINEAR FEET	EF #	EFFLORESCENCE; # INDICATES SQUARE FEET
CB #	CRACKED BRICK MASONRY; # INDICATES UNITS	RS #	RUST STAIN; # INDICATES SQUARE FEET
SB #	SPALLED BRICK MASONRY; # INDICATES UNITS	VG #	VEGETATIVE GROWTH; # INDICATES SQUARE FEET
DB #	DISPLACED BRICK; # INDICATES UNITS	AG #	ALGAE GROWTH; # INDICATES SQUARE FEET
x	EXISTING ANCHOR / METAL STUB	CG #	CRACKED GLAZING; # INDICATES UNITS
▬ #	STEP CRACK; # INDICATES LINEAR FEET	MG #	MISSING GLAZING; # INDICATES UNITS
▨	BRICK MASONRY TO BE REBUILT; # INDICATES SQUARE FEET	WT #	DETERIORATING WOOD TRIM; # INDICATES LINEAR FEET
▲ PP	PEELING PAINT	CT #	CRACKED TERRACOTTA; # INDICATES UNITS

NOTE: NOT ALL DEFECTS MAY BE SHOWN ON THIS SHEET

SHEET NOTES

1	TOP SASH OF WINDOW IS DISPLACED.
2	LOUVER AND/OR WOOD FRAMED BIRD NETTING DAMAGED/DISPLACED.
3	BROKEN LOUVER.
4	MISSING GLAZING AT WINDOW INFILLED WITH PLYWOOD.
5	WINDOW DISPLACED WITHIN MASONRY OPENING.
6	BRICK MASONRY APPEARS TO HAVE BEEN PREVIOUSLY PAINTED/COATED AT FIRST FLOOR.
7	LOOSE PIECE OF WOOD SASH.
8	VEGETATIVE GROWTH AT INTERIOR.
9	ASPHALT SHINGLE SIDING IS IN POOR CONDITION WITH DETERIORATED/MISSING SHINGLES AND OPENINGS TO THE INTERIOR. ADJACENT TREE APPEARS TO BE GROWING INTO THE WALL.
10	EXTERIOR MOUNTED PLEXIGLASS IS DISPLACED/BOWED WITH MISSING SEALANT.
11	STONE APPEARED TO HAVE BEEN PREVIOUSLY COATED/PAINTED; COATING IS PEELING.



GALE
Gale Associates, Inc.
Engineers and Planners
6 BEDFORD FARMS DRIVE | BEDFORD, NH 03110
P 603.471.1887 F 603.471.1809
www.gaic.com
Boston Baltimore Orlando Hartford
Manchester Portland

This drawing and the design and construction features disclosed are proprietary to Gale Associates, Inc. and shall not be altered or reused in whole or part without the express written permission of Gale Associates, Inc.
Copyright©2024

EVALUATION

PROJECT
**SMITH BAKER SENIOR CENTER
BUILDING ASSESSMENT
413 MERRIMACK STREET
LOWELL, MA 01852**

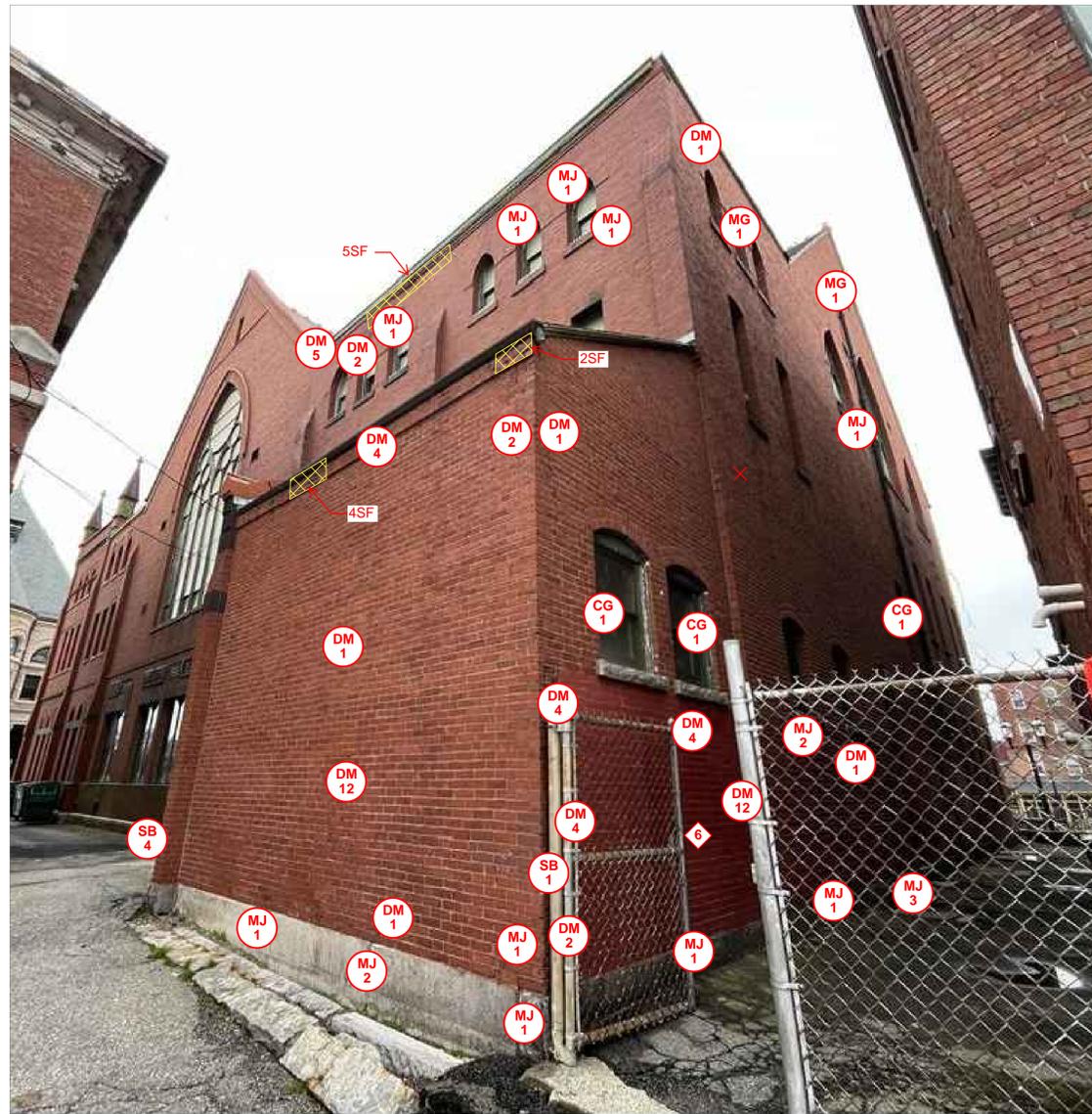
OWNER
CITY OF LOWELL
50 ARCAD DRIVE
LOWELL, MA 01852

NO.	DATE	DESCRIPTION	BY
PROJECT NO.	843870		
CADD FILE	843870 A200s		
DESIGNED BY	JVL		
DRAWN BY	AJM		
CHECKED BY	CM		
DATE	1/5/2025		
DRAWING SCALE	NOT TO SCALE		

GRAPHIC SCALE

SHEET TITLE
ELEVATIONS

DRAWING NO.
A202



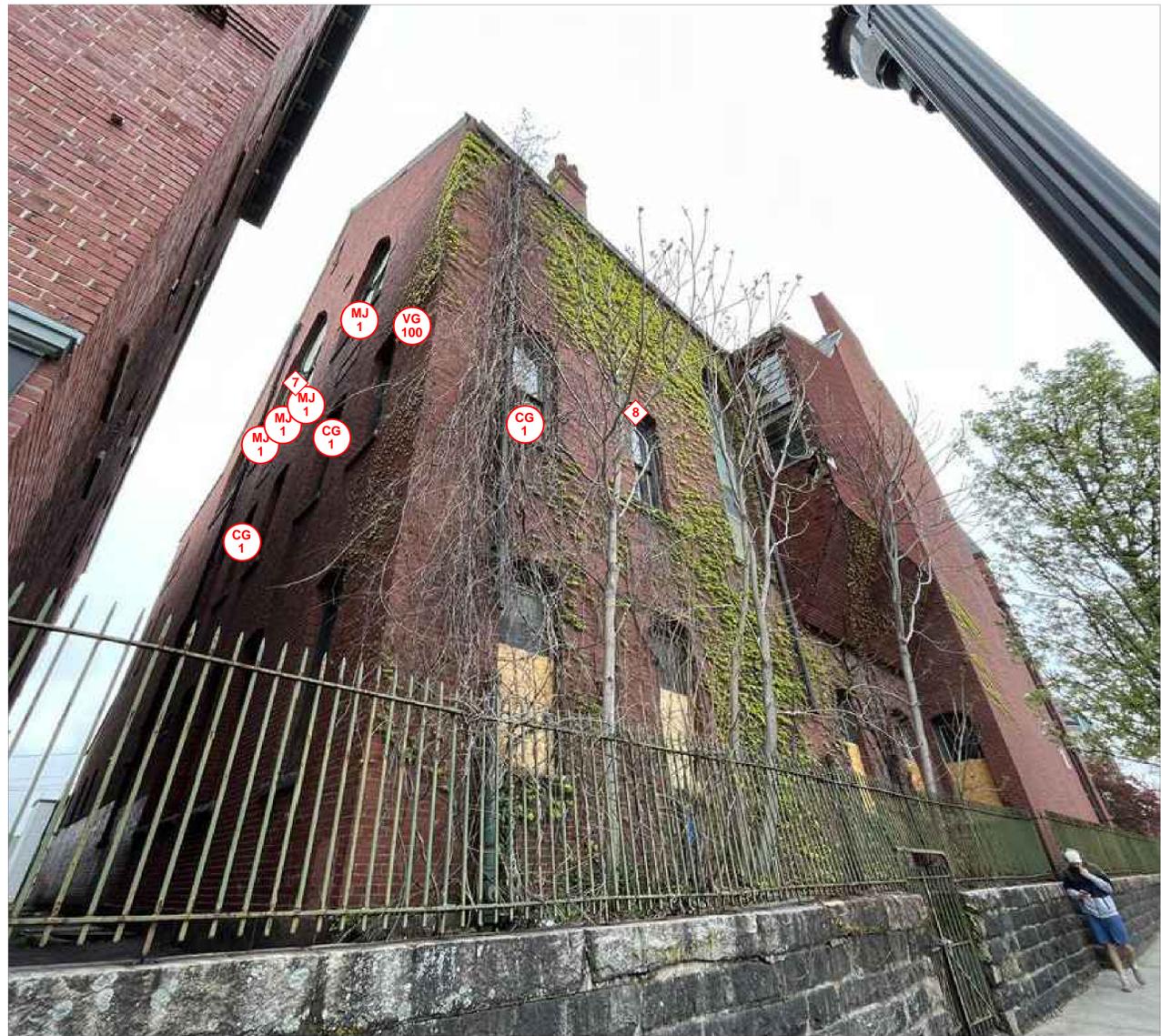
1 **SOUTHWEST ELEVATION**
A203 SCALE: NOT TO SCALE

DEFECT LEGEND			
DM #	DETERIORATED MORTAR JOINT; # INDICATES SQUARE FEET	SS #	SPALLED STONE; # INDICATES UNITS
MJ #	DETERIORATED MORTAR JOINT; # INDICATES LINEAR FEET	CS #	CRACKED STONE; # INDICATES UNITS
RMJ #	PREVIOUS REPAIRED MORTAR JOINT; # INDICATES LINEAR FEET	EF #	EFFLORESCENCE; # INDICATES SQUARE FEET
CB #	CRACKED BRICK MASONRY; # INDICATES UNITS	RS #	RUST STAIN; # INDICATES SQUARE FEET
SB #	SPALLED BRICK MASONRY; # INDICATES UNITS	VG #	VEGETATIVE GROWTH; # INDICATES SQUARE FEET
DB #	DISPLACED BRICK; # INDICATES UNITS	AG #	ALGAE GROWTH; # INDICATES SQUARE FEET
X	EXISTING ANCHOR / METAL STUB	CG #	CRACKED GLAZING; # INDICATES UNITS
SC	STEP CRACK; # INDICATES LINEAR FEET	MG #	MISSING GLAZING; # INDICATES UNITS
▨	BRICK MASONRY TO BE REBUILT; # INDICATES SQUARE FEET	WT #	DETERIORATING WOOD TRIM; # INDICATES LINEAR FEET
▲ PP	PEELING PAINT	CT #	CRACKED TERRACOTTA; # INDICATES UNITS

NOTE: NOT ALL DEFECTS MAY BE SHOWN ON THIS SHEET

GENERAL NOTES

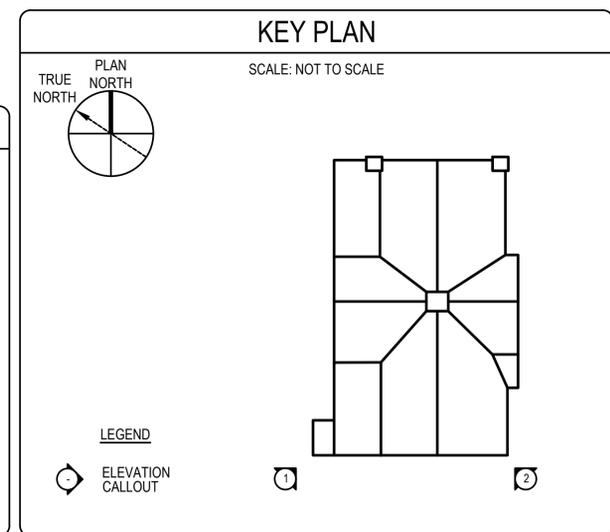
- THE INFORMATION SHOWN ON THIS DRAWING HAS BEEN COMPILED FROM VARIOUS SOURCES AND MAY NOT REFLECT THE ACTUAL CONDITIONS AT THE TIME OF CONSTRUCTION.
- HATCH PATTERNS ARE FOR REPRESENTATION ONLY AND SHOULD NOT BE USED AS A MEANS FOR QUANTIFYING.



2 **SOUTHEAST ELEVATION**
A203 SCALE: NOT TO SCALE

SHEET NOTES

- TOP SASH OF WINDOW IS DISPLACED.
- LOUVER AND/OR WOOD FRAMED BIRD NETTING DAMAGED/DISPLACED.
- BROKEN LOUVER.
- MISSING GLAZING AT WINDOW INFILLED WITH PLYWOOD.
- WINDOW DISPLACED WITHIN MASONRY OPENING.
- BRICK MASONRY APPEARS TO HAVE BEEN PREVIOUSLY PAINTED/COATED AT FIRST FLOOR.
- LOOSE PIECE OF WOOD SASH.
- VEGETATIVE GROWTH AT INTERIOR.
- ASPHALT SHINGLE SIDING IS IN POOR CONDITION WITH DETERIORATED/MISSING SHINGLES AND OPENINGS TO THE INTERIOR. ADJACENT TREE APPEARS TO BE GROWING INTO THE WALL.
- EXTERIOR MOUNTED PLEXIGLASS IS DISPLACED/BOWED WITH MISSING SEALANT.
- STONE APPEARED TO HAVE BEEN PREVIOUSLY COATED/PAINTED; COATING IS PEELING.



GALE
Gale Associates, Inc.
Engineers and Planners
6 BEDFORD FARMS DRIVE | BEDFORD, NH 03110
P 603.471.1887 F 603.471.1809
www.gaic.com
Boston Baltimore Orlando Hartford Manchester Portland

This drawing and the design and construction features disclosed are proprietary to Gale Associates, Inc. and shall not be altered or reused in whole or part without the express written permission of Gale Associates, Inc. Copyright©2024

EVALUATION

PROJECT
SMITH BAKER SENIOR CENTER BUILDING ASSESSMENT
413 MERRIMACK STREET
LOWELL, MA 01852

OWNER
CITY OF LOWELL
50 ARCAD DRIVE
LOWELL, MA 01852

NO.	DATE	DESCRIPTION	BY
PROJECT NO.	843870		
CADD FILE	843870 A200s		
DESIGNED BY	JVL		
DRAWN BY	AJM		
CHECKED BY	CM		
DATE	1/5/2025		
DRAWING SCALE	NOT TO SCALE		

SHEET TITLE

ELEVATIONS

DRAWING NO.
A203

