

403 SHAWMUT AVE
SOUTH END LANDMARKS DISTRICT
COMMISSION

PROPOSED WORK: FAÇADE REBUILD
NOVEMBER 4, 2025

OWNER



**INQUILINOS
BORICUAS EN
ACCIÓN**

DESIGN TEAM



**DAVIS
SQUARE
ARCHITECTS**



SOCIAL IMPACT COLLECTIVE, INC.



SUMMARY: FAÇADE EXISTING CONDITIONS

Upon receiving the building permit for the building located at 403 Shawmut Ave, scaffolding was erected for access to all levels of the building's exterior and selective interior demolition commenced.

After removing interior finishes, there was evidence of a significant fire that had occurred, likely mid-1900's, prior to IBA's purchase of the building in the 1970's. The fire and related water damage likely started a slow deterioration of the perimeter wall masonry over several decades that has led to various structural issues at the unreinforced masonry walls, especially at the upper three floors.

The project's structural engineer, Souza, True and Partners, provided a structural assessment of the existing conditions based on visual inspections and epoxy anchor testing and issued a report including recommendations for repair and rebuild, a copy of which has been submitted to SELDC as a Supplementary Document and included at the end of this presentation. The structural analysis concluded that the upper portions of the perimeter wall are in an advanced condition of deterioration and disintegration and recommended that removal and rebuilding of the masonry in areas of deterioration.

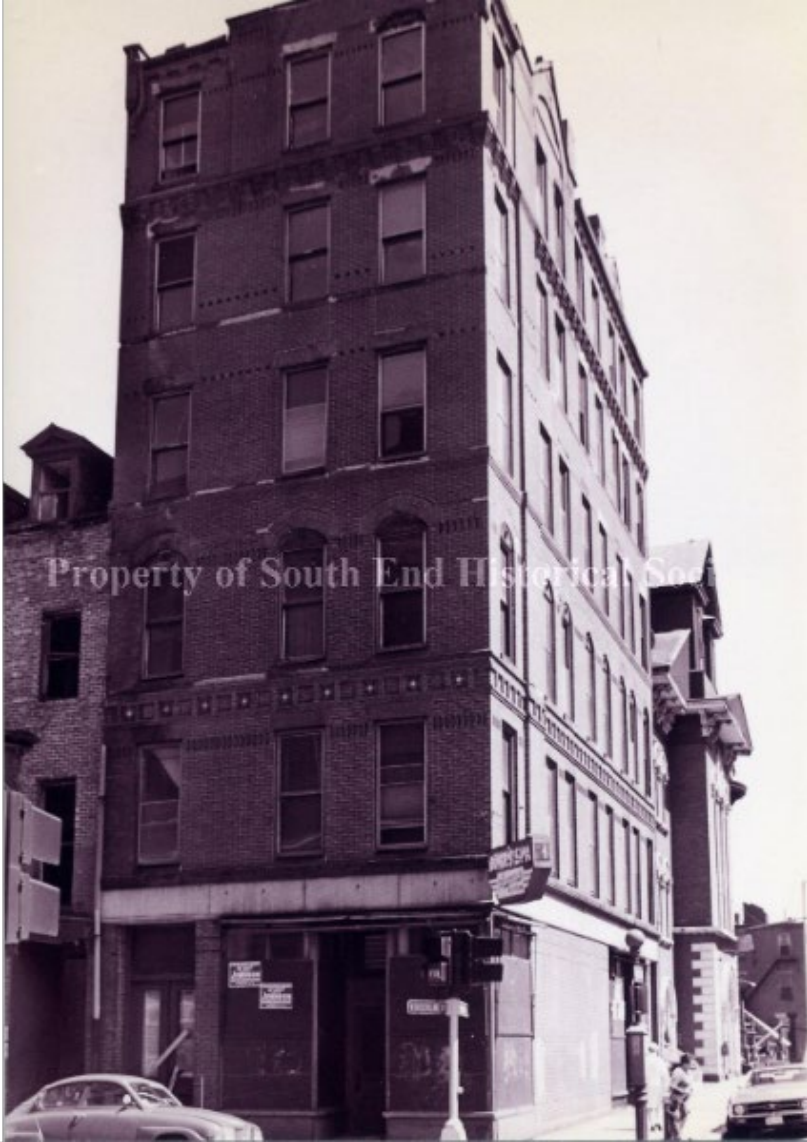
The design team then completed a detailed façade study documenting the existing conditions on all floors for use in replicating the façade in the locations where a rebuild would be required.



EXISTING CONDITIONS SUMMARY

403 SHAWMUT AVE.
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LEFT: Corner of Shawmut Ave & W. Brookline
(early 1970's)

BELOW: 403 Shawmut Ave (mid-late 1970's)

LEFT: 403 Shawmut (early 1970's)

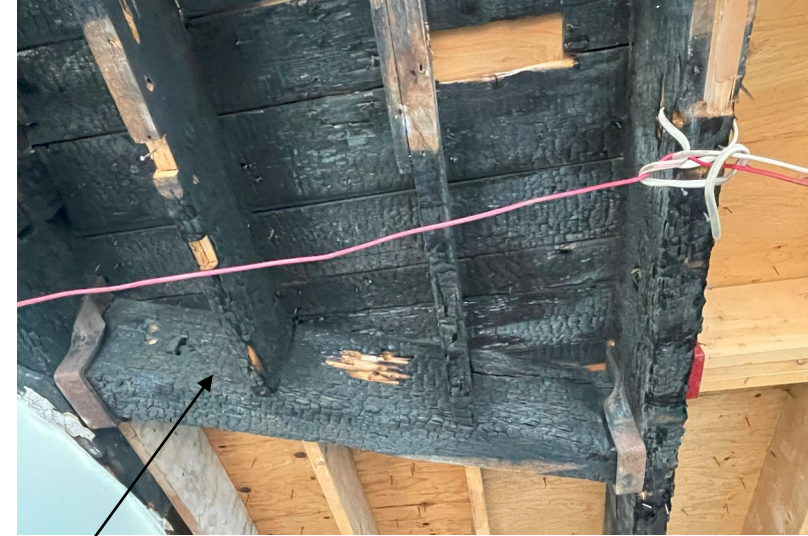
BELOW: Corner of Shawmut Ave & W. Brookline
(mid-late 1970's)



403 SHAWMUT AVE: HISTORIC PHOTOS

403 SHAWMUT AVE.
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Original charred framing and roof decking alongside new framing and roof decking

Majority of roof was reframed due to extent of fire, with lightly charred section along W. Brookline remaining



EXISTING CONDITIONS: PRIOR FIRE DAMAGE

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Structure and stone cap currently restrained by bracket system and tie back to roof structure

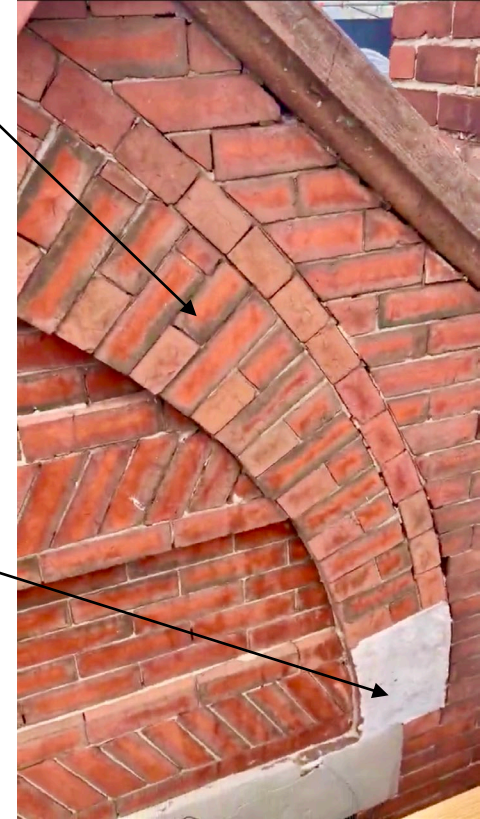
Ornate brick inlay and detailing

Sections of brick seen bowing out from original face of pediment



Unique to building, arch width increases in size from bottom to top

Brownstone was parged over at some point to protect stone, not original to structure



EXISTING CONDITIONS: PARAPET & PEDIMENTS

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Majority of existing brick masonry on chimneys has failing mortar joints and are leaning. Several have missing bricks above roof level



Chimneys are not capped and open to the elements. Most of the chimneys have cavities that are open through multiple floor levels



Many of the original interior fireplaces had shared chimney stacks with one course of brick to provide multiple shafts



EXISTING CONDITIONS: CHIMNEYS

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EXISTING CONDITION SUMMARY:

- Furthest exterior wythe of brick on corner of 403 Shawmut and 401 Shawmut has been separating from the main structure causing a significant gap on the top two floors of the building
- Impacts of separation includes:
 - Chimneys on façade facing 401 Shawmut Ave
 - Parapets
 - Window conditions on 5th and 6th floors in this corner (cracked and misaligned headers and sills, non-plumb window openings, etc.)
 - Failed corbel conditions

EXISTING CONDITIONS: CORNER CONDITION: 403-401 SHAWMUT AVE

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EXISTING CONDITION SUMMARY:

It appears that at some point, potentially during the fire, the section above the window in the marked corner was rebuilt but not tied into the original building structure causing separation over the years.

Area above window infilled with non-original brick (color and size do not match)

Exterior wall separation for upper half of 6th floor corner

EXISTING CONDITIONS: CORNER CONDITION: SHAWMUT AVE & WEST BROOKLINE

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11/04/25





EXISTING CONDITION SUMMARY:

This is the most pronounced and detailed corbel on the building, running the full length of the Shawmut Ave and West Brookline facades. Much of the brick masonry has deteriorated over the years due to frost-thaw action, water infiltration behind brick and within joints, and shifting exterior walls.

EXISTING CONDITIONS: CORBELS

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Sagging header with brick separation and window opening failures below



Another sagging header with non-original parging on top. Parapet corbel above has shifted due to failure of header



EXISTING CONDITIONS: WINDOW OPENINGS

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11/04/25





The majority of the 6th floor window sills openings are no longer plumb and with window size changes over the years, water and air has been able to infiltrate to the inner courses of brick causing significant structural damage within the exterior walls.



Rainwater has been able to move around/through window rough openings aiding in brick separation around window sills and the delamination of brownstone sills and headers, compounding water infiltration issues across the entire upper floors of the building.



EXISTING CONDITIONS: WINDOW OPENINGS

403 SHAWMUT AVE.
11/04/25



PROJECT SUMMARY: FAÇADE EXISTING CONDITIONS, PROPOSED WORK

IBA is dedicated to producing high-quality housing that will last a lifetime. They are also invested in continuing to improve the community which includes physical structures like 403 Shawmut.

With the newfound knowledge of the significant structural damage of the perimeter walls the project team is proposing to rebuild the 6th floor on all sides and the corner of the 5th floor shared with the parcel at 401 Shawmut Ave to begin. This work will be done in sections as described in the following slides. To bring the rebuilt perimeter walls up to structural and seismic codes, a new structural inner masonry wall consisting of reinforced CMU and structural brick will be built and then faced with original salvaged brick and/or matched to replicate the original/historic façade.

Once work begins, there is a possibility that sections of the perimeter wall below the 6th floor and 5th floors will also have to be rebuilt depending on the quality and stability of the existing unreinforced brick. The project team is requesting an approval from the SELDC for a “worst case scenario” in the case of finding multiple floors needing to be partially or fully rebuilt to ensure meeting code and safety requirements and long-term success of the building.



403 SHAWMUT AVE: A FULLY RESTORED BUILDING

403 SHAWMUT AVE.
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W. BROOKLINE ST.

SHAWMUT AVE.

ORANGE

Scope outlined in orange are the sections of exterior wall, parapet, chimneys, and pediments that are proposed to be removed and entirely rebuilt as per the recommendations of the structural engineering report. The existing floor and roof framing within the building would remain.

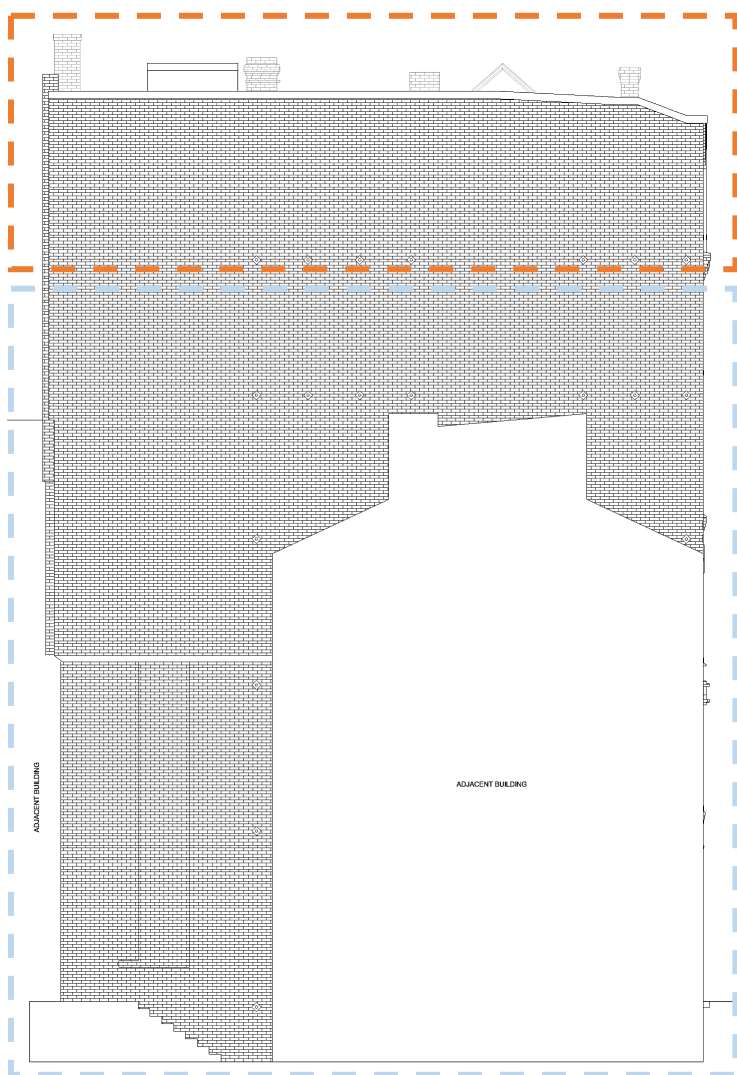
BLUE

As noted in the structural engineering report and as seen in the existing conditions section of this presentation, there is the possibility that other sections of the building below the sixth and fifth floors will need to be rebuilt. The new structural wall would be tied into the lower unreinforced masonry wall using “vertical straight bar dowels, drilled and epoxied into sound brick with 10” embedment” and the interior steel plates being mounted to the face of the wall require code-compliant masonry conditions. Therefore, the brick below the new wall cannot be loose or break when being drilled for the dowels or plates. Due to the significant frost/thaw action over the history of the building, portions or all of the upper five floors could require rebuilding to be safe for the significant future.

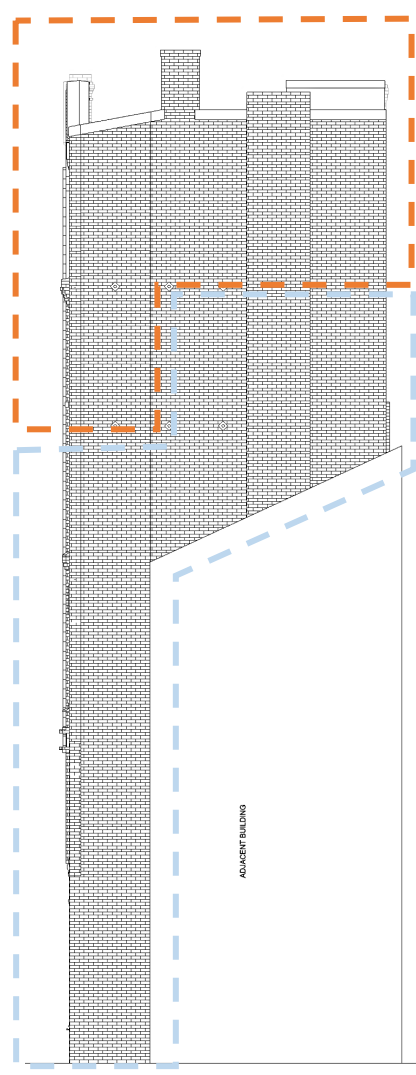
EXTERIOR ELEVATIONS: PROPOSED AREA OF WORK

403 SHAWMUT AVE.
11/04/25





REAR ELEVATION



SIDE ELEVATION

ORANGE

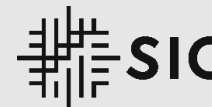
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EXTERIOR ELEVATIONS: PROPOSED AREA OF WORK

403 SHAWMUT AVE.
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STAGES OF DEMO & REBUILD

Deconstruction of the building will begin on the Northeast corner where 403 Shawmut and 401 Shawmut meet.

This is the corner where the building's worst masonry condition is on both the sixth and fifth floors.

Once solid/usable existing masonry is reached, the corner will be fully rebuilt to match its exact historical condition including corbels, façade details, window sizes, headers and sills, etc.

The masons will then move to the next section and will repeat this process around the Shawmut Ave and W. Brookline sides of the building (moving to the left in the photo).

MEANS & METHODS: REBUILDING IN SECTIONS

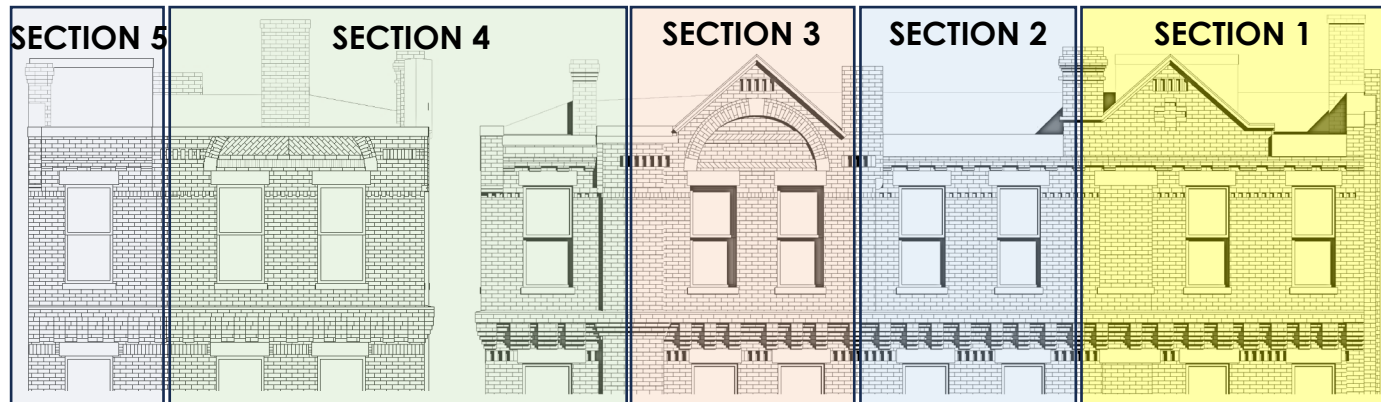
403 SHAWMUT AVE.
11/04/25





STAGES OF DEMO & REBUILD

- Prior to starting demolition, the entire building will have interior shoring installed on all floors. The existing roof framing and floor joists are to remain. The GC will also ensure all exterior walls are tied back into the shoring where necessary, especially on the W. Brookline side of the building.
- Demolition will then occur in sections/bays, identified using existing corners and chimneys.
- Demolition will begin at the corner of 403/401 Shawmut for the 6th & 5th floors (Labeled as Section 1).
- Section 1 will be demolished first, by hand, and will go down vertically until solid masonry and mortar is found and approved by the structural engineer. This corner will include the 6th and 5th floor at a minimum, possibly lower.
- Once the entirety of Section 1 is rebuilt, the mason will move on to Section 2 and repeat, working their way around the building on the Shawmut and W. Brookline facades of the building.



MEANS & METHODS: REBUILDING IN SECTIONS

403 SHAWMUT AVE.
11/04/25





“TOOTHING” ADJACENT SECTIONS

- As masonry is being removed during careful manual demolition, the sides/edges of each section will be removed in a “toothed” format to allow for old and new sections of walls to be tied in together structurally while also matching all existing exterior and interior masonry profiles, brick courses, and mortar thicknesses.

KEY CRITERIA FOR SOLID MASONRY WALL

- As the removal of masonry in each section occurs, the quality of masonry and related mortar joints and connections will be the determining factor as to whether lower floors of that section will need to be fully rebuilt. Criteria for finding good masonry and mortar includes:
 - No receding masonry joints, open joints, or mortar recession between bricks & wythes
 - Mortar does not have a dusty, flaky, disintegrating, or any loose aspect to it
 - Brick is not loose, missing, disintegrated, or otherwise unusable.



*Toothing graphic for visual purposes only, exact toothing method to be determined in field

MEANS & METHODS: REBUILDING IN SECTIONS

403 SHAWMUT AVE.
11/04/25





KEY CRITERIA FOR SOLID MASONRY WALL

Using the methods described on the previous slide for finding solid masonry to rebuild the new walls, the building façade has also been identified with the following sections which will influence whether sections on lower floors can be simply repaired or need to be entirely rebuilt:

- Window Openings: The structural engineer has determined that every window opening should have 8" of rebuild around the rough masonry opening. New headers and sills should be installed where needed, and areas below/around the windows need more than 8" of rebuilt masonry once work begins.
- Chimneys: All chimneys are nonfunctional and can be rebuilt to maintain the profile but special care should be taken where floor joists are framed around them.
- Masonry Piers: These piers are not very wide but serve as key vertical structural elements in the façade. If it is found that they are in good shape, they should remain wherever possible.
- Joist-to-Wall Connection: These have been key areas of water infiltration so rebuilding the masonry in these locations will provide long-term protection for the building.

MEANS & METHODS: PIERS, JOISTS, CHIMNEYS, WINDOW OPENINGS

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11/04/25





TESTING FOR WALL STRENGTH, BEARING CAPACITY, & MAINTENANCE OF EXTERIOR AESTHETICS

To test the strength of the existing masonry walls prior to demolition, the project team has done drilled epoxy anchor tension testing on all floors on the interior side of the perimeter wall on the Shawmut Ave and W. Brookline facades. The tests needed to meet 1000psf minimum and were tested incrementally to up to 2000psf. All tests passed with no signs of failure to the brick, anchor, or epoxy. If they had not, the structural engineer was going to require exterior anchor plates every 4' and placed on each floor.

Additionally, further explorations of floor joist-to-wall conditions revealed steel floor joist anchors embedded within the walls and documented at regular intervals. With this finding, the structural engineer stated further testing of these existing anchors for re-use can reduce the proposed anchor scope across the entirety of the building.

In conclusion, the design team is confident that existing floor framing can be tied into the exterior façade using epoxy anchors from the interior of the building and not external anchor plates.

MEANS & METHODS: EPOXY ANCHOR TESTING

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The project team has identified areas where there are sections of non-original infill that will be discarded as opposed to higher-quality adjacent original brick that will try to be reclaimed



MASONRY REMOVAL, CARE, STORAGE

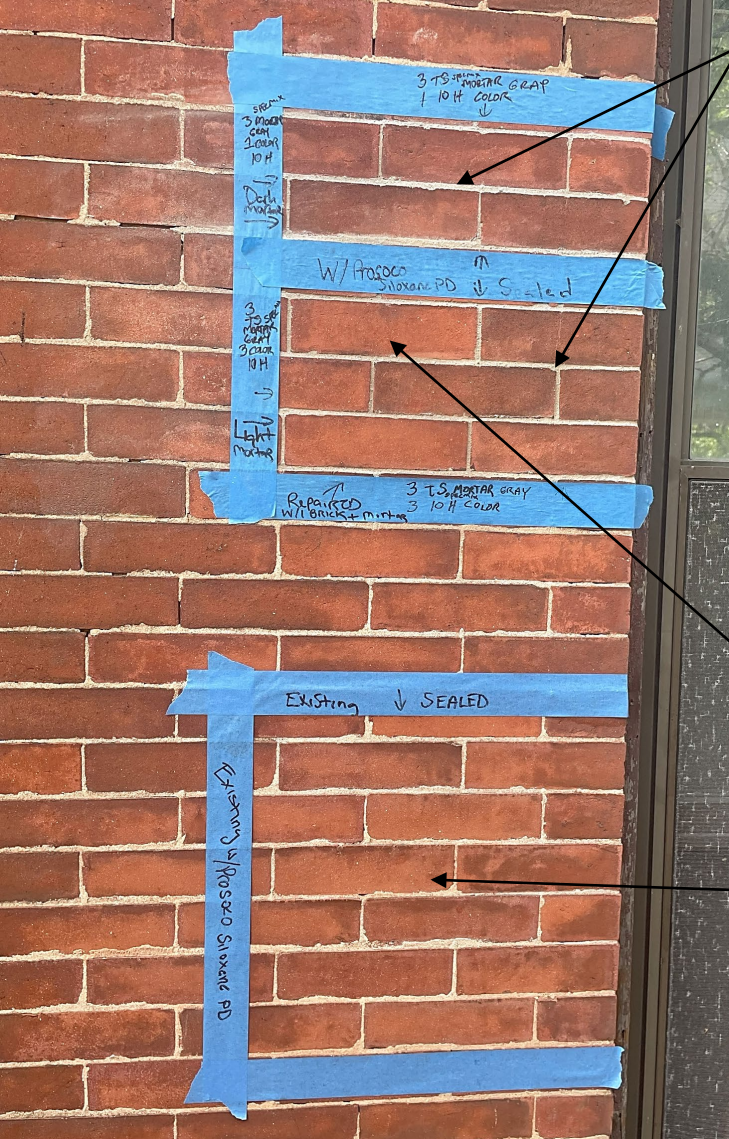
The demolition of the existing masonry and stone will be done by hand by the masonry subcontractor who has been working on all of the Casas Borinquen buildings for this project. The following procedures will be used to salvage as much high-quality original brick as possible once they have been removed from the wall:

- As bricks and stone elements are being removed and cleaned, a crane with metal pans will be used to bring the brick down to the ground. The salvageable bricks will then be cleaned by hand.
- To remove the existing mortar, the team will brush the existing bricks using an abrasive masonry scraper.
- If that doesn't take the mortar off, the bricks will go through a wet saw so as not to damage the corners of the existing brick.
- Once cleaned, the bricks are loaded onto metal pallets which are then covered, wrapped, and loaded onto a flat bed truck.
- The brick pallets are then taken to the mason's storage facility for storage until ready to be brought back to site for use on the rebuilt façade.

MEANS & METHODS: BRICK/STONE RECLAMATION, CARE, STORAGE

403 SHAWMUT AVE.
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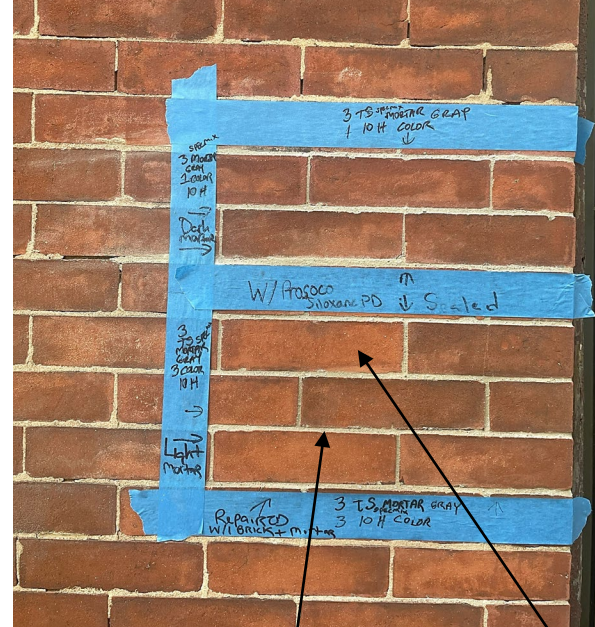




Two mortar options were explored where brick replacement and repointing will be needed. The top option had a whiter mortar, the lower option was a lighter and more gray option. The lower option matched perfectly.

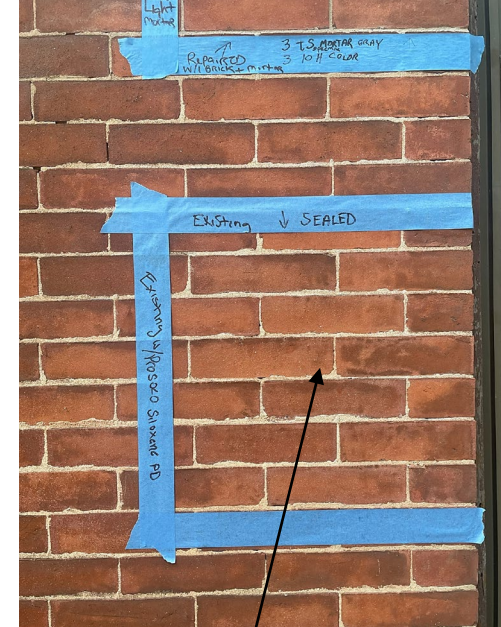
We also matched a new brick to existing for any sections that need to be rebuilt

Lastly, we cleaned and provided a sealer over the existing brick to protect it without changing its color



New Mortar

New Brick



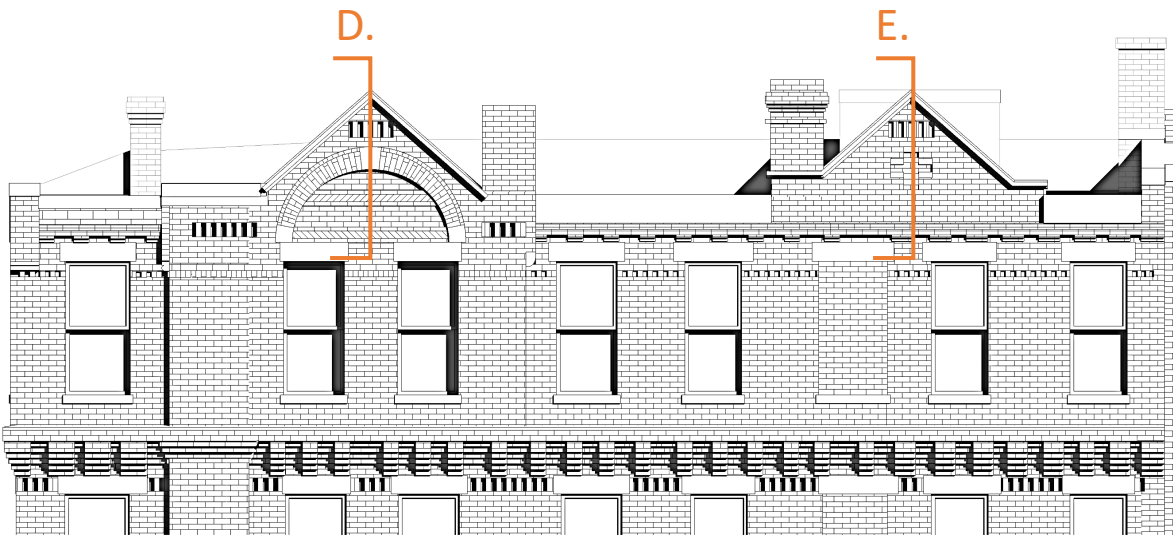
Sealed Existing Brick

As part of our current work at 403 Shawmut and across the Casas Borinquen portfolio, we went through a process of matching brick and mortar to be approved by MHC/NPS. Additionally, after work is completed, the entire building will be receiving a soft wash and a sealer will be applied to the brick which allows it to still breathe but protects it from the elements while not changing its color or texture.

FAÇADE PROFILE DOCUMENTATION: MATCHING BRICK & MORTAR, CLEANING

403 SHAWMUT AVE.
11/04/25

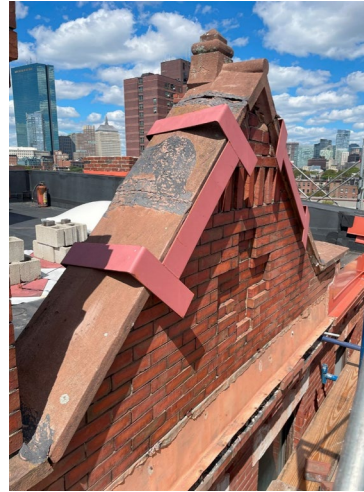




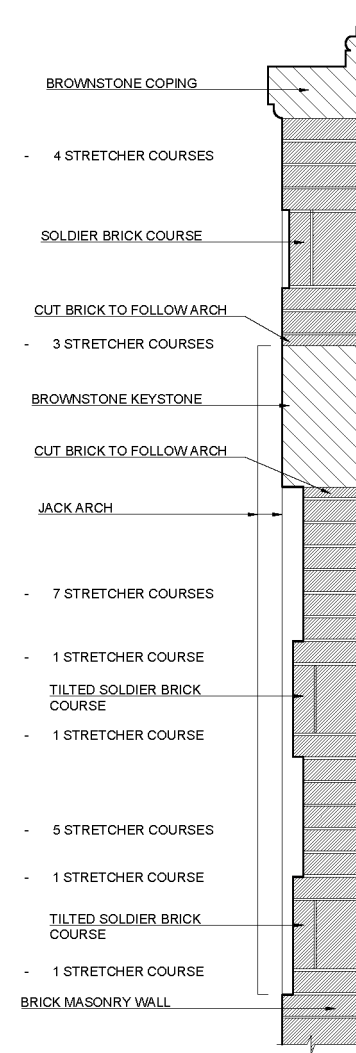
Pediment D.

The pediments will be rebuilt by extending the exterior structural masonry wall up beyond the roof level and facing it with original brick in the same patterns and designs as documented here.

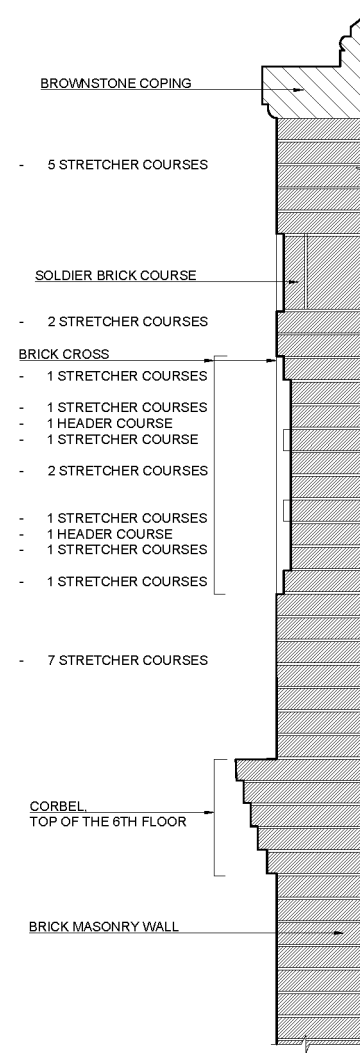
The pediments will receive new cap stones that are attached to the structural wall and the original pediment stone peak cap will be reused and attached to the structural wall below it.



Pediment E.



D. BRICK PROFILE - LEFT PEDIMENT



E. BRICK PROFILE - RIGHT PEDIMENT

FAÇADE PROFILE DOCUMENTATION: PEDIMENTS

403 SHAWMUT AVE.
11/04/25





BRICK MASONRY WALL

BROWNSTONE EAVE

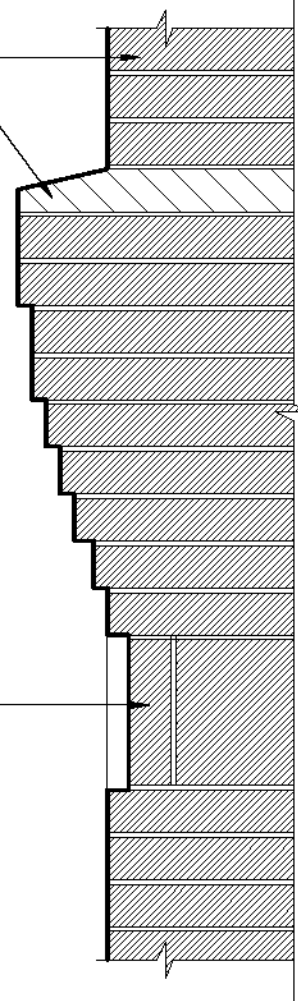
CORBEL

- 2 COURSES OF BRICK (STRETCHER AND HEADER/STRETCHER)
- 2 COURSES OF BRICK (HEADER AND STRETCHER)
- 1 HEADER COURSE
- 1 STRETCHER COURSE
- 1 HEADER COURSE
- 1 STRETCHER COURSE

SOLDIER BRICK COURSE

The rebuilt corbels will match existing dimensions, profiles, patterns, and details. It will be tied back to the new structural masonry wall behind it, refer to structural details.

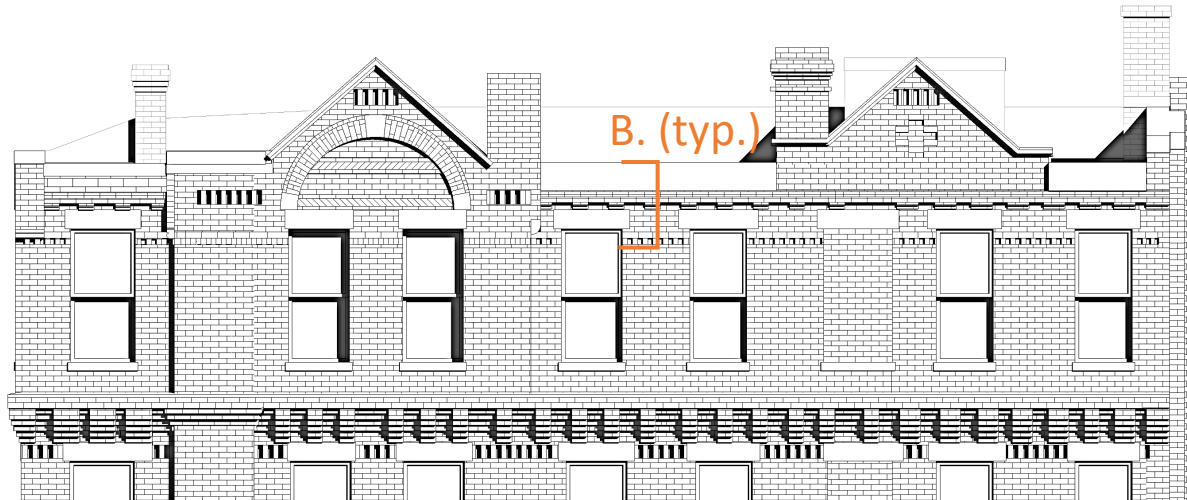
A. BRICK PROFILE -
CORBEL, BOTTOM OF THE 6TH FLOOR



FAÇADE PROFILE DOCUMENTATION: CORBELS

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11/04/25



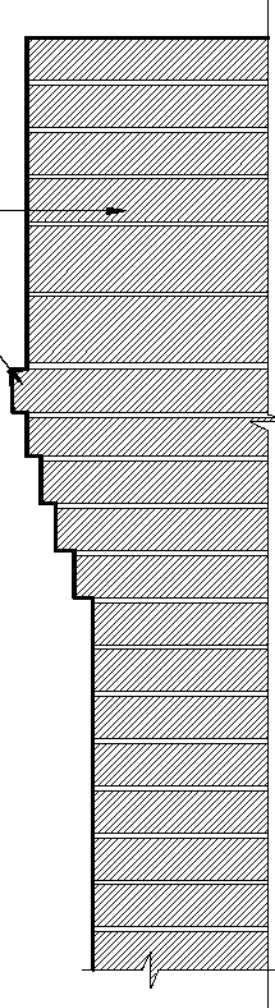


BRICK MASONRY WALL

TILED STRETCHER
COURSE

CORBEL

- 1 STRETCHER COURSE
- 1 STRETCHER/HEADER COURSE
- 1 HEADER COURSE
- 1 STRETCHER COURSE



Parapets will be rebuilt with new structural brick/block on the interior side of the wall and then faced with an exterior wythe of original brick to match the existing corbel profile, patterns, and depths. Corbels will be tied back into structural wall. Refer to structural details.

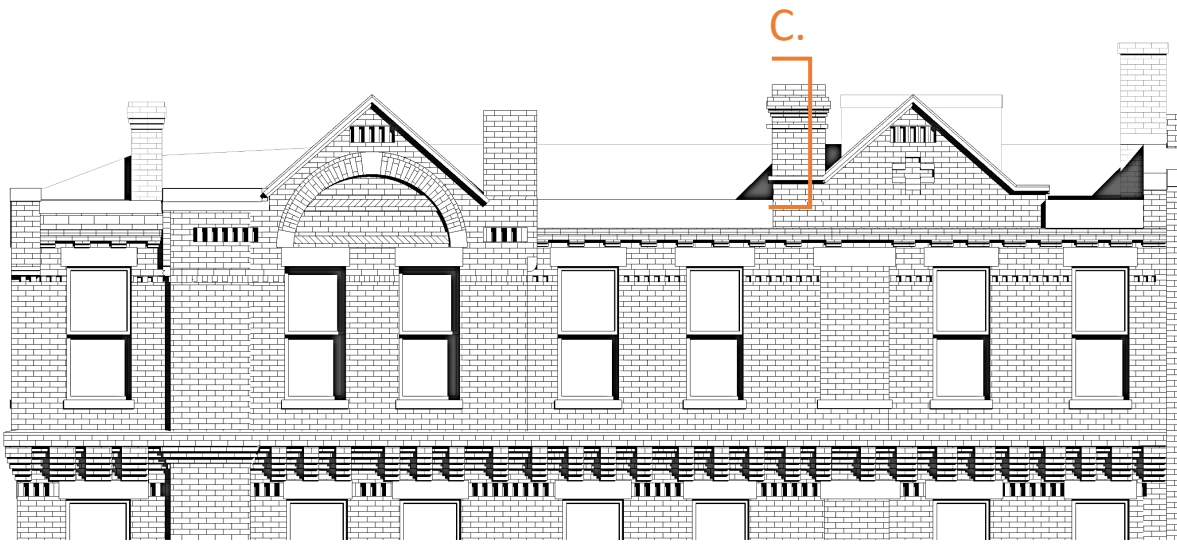


B. BRICK PROFILE -
CORBEL, TOP OF THE 6TH FLOOR

FAÇADE PROFILE DOCUMENTATION: PEDIMENTS

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2 STRETCHER COURSES

1 STRETCHER/HEADER COURSE

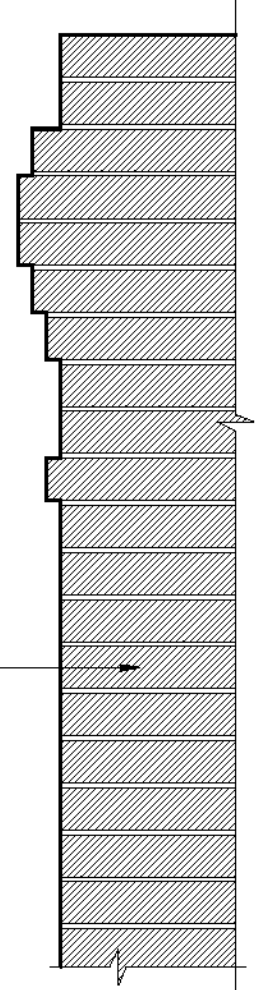
2 STRETCHER/HEADER COURSES

1 STRETCHER/HEADER COURSE

1 STRETCHER/HEADER COURSE

2 STRETCHER COURSES

1 STRETCHER COURSE



BRICK MASONRY
CHIMNEY WALL



All new faux chimneys will be rebuilt with an interior wythe of structural brick/block, an extension of the new structural exterior wall below it. It will then be faced with original brick to match all existing profiles, patterns, and heights. Refer to structural details.



C. BRICK PROFILE -
CHIMNEY, NEXT TO THE RIGHT PEDIMENT

FAÇADE PROFILE DOCUMENTATION: CHIMNEYS

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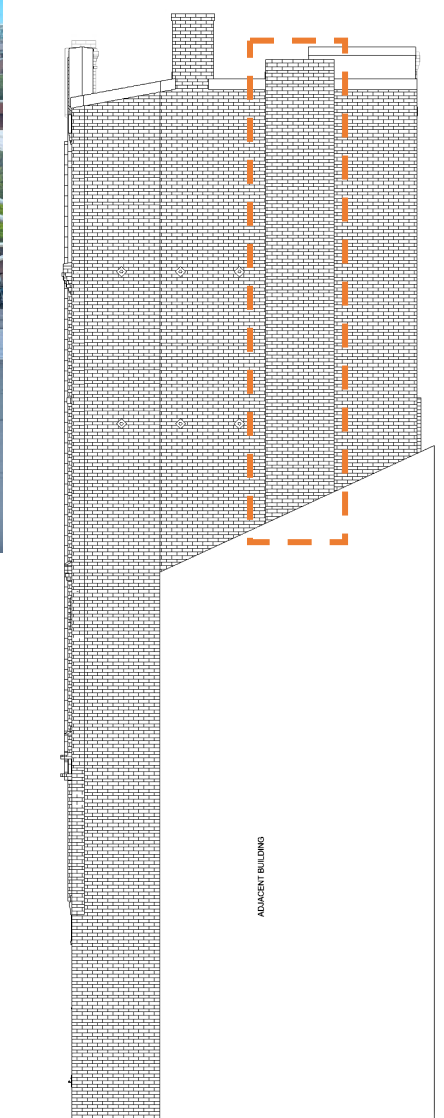


The longer, shorter chimney is the remnant of a once-functional chimney for the IBA-owned adjacent building located at 401 Shawmut.



PROPOSAL TO REMOVE CHIMNEY:

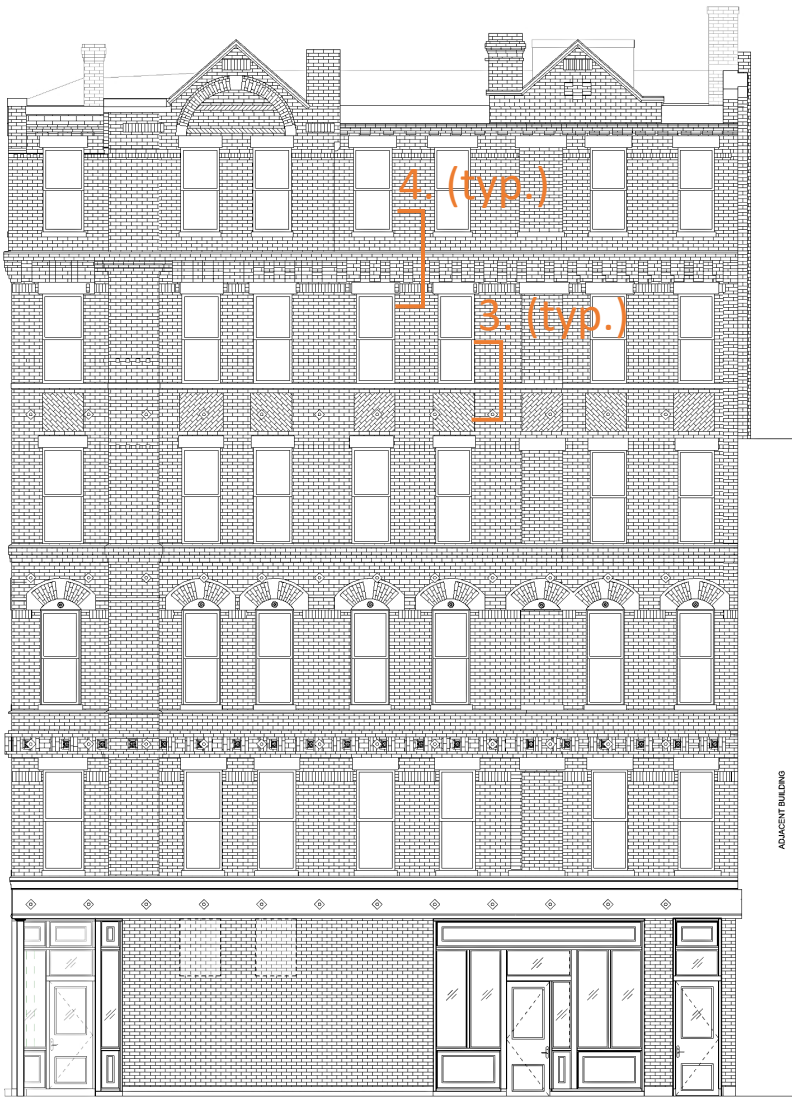
Due to the risk of the chimney detaching from the outside of the 403 Shawmut façade, we are proposing to remove this chimney as part of the scope of work. This will provide long-term safety of surrounding buildings, especially the residents in the adjacent building at 401 Shawmut, and reduce the stress of that portion of the façade on 403 Shawmut Ave.



EXISTING CONDITIONS: CHIMNEYS

403 SHAWMUT AVE.
11/04/25





#9 GAUGE TRI-WIRE LADDER-TYPE JOINT REINF. @ 16" O.C. (TYP.)

1 - #4 HORIZ. CONTIN. IN CONTACT WITH PURLIN ANCHORS

OMIT BRICK AT INNER WYTHE IN DEPTH OF EXTG. FLOOR JOIST AS REQ'D. TO REINF. AND GROUT SOLID

SALVAGE EXISTING FACE BRICK DURING DEMO, CLEAN AND RE-USE IN ACCORDANCE WITH THE BRICK INSTITUTE STANDARDS - PROVIDE NEW FACE BRICK (SEVERE WEATHERING) ONLY WHERE NECESSARY

EXISTING BRICK WALL BELOW TO REMAIN (V.I.F.)

NOTE: PROVIDE ATLEAST 1 - #4 VERT. ALIGNED WITHIN 8" OF EA. OPENING JAMB ABOVE / BELOW IN ADDITION TO TYPICAL SPACING.

SIMPSON PA18 PURLIN ANCHORS WET SET INTO NEW MASONRY WALL CONSTRUCTION AT ±5'-4" ON CENTER (ANCHOR MUST BE IN CONTACT WITH #4 HORIZONTAL)

FASTEN ANCHOR THROUGH EXTG. DECKING TO EXTG. JOIST

VERIFY IN FIELD TOP OF SHEATHING ELEVATION

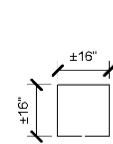
EXTG. WOOD JOIST TO REMAIN WITH FIRE CUT ENDS TO BE COATED WITH MASTIC OR VYCOR WRAP AND ENCASED IN NEW MASONRY

NEW COMMON CLAY BRICK OR CONCRETE BRICK INFILL (SHOWN DASHED) BETWEEN EXTG. JOIST TO REMAIN ON INSIDE FACE OF WALL

NEW #4 x 3'-0" @ 48" O.C. VERT. STRAIGHT BAR DOWELS - DRILL AND EPOXY INTO SOUND BRICK WITH 10" EMBEDMENT.

SECTION 3

3/4" = 1'-0"



NEW LIMESTONE OR CAST STONE WATERTABLE (REFER TO ARCH.)

GALV. 3/16"Ø PENCIL ROD REINF. BENT INTO LOOPS AS SHOWN AND SPACED 32" O.C. WRAP LOOP AROUND VERT.

RECREATE SIXTH FLOOR CORBEL / WATERTABLE DETAIL (REFER TO ARCH. HISTORIC PROFILE)

1 - #4 HORIZ. CONTIN. IN CONTACT WITH PURLIN ANCHORS

REFER TO DETAIL X FOR ADD'L INFORMATION NOT SHOWN HERE

EXISTING BRICK WALL BELOW TO REMAIN (V.I.F.)

NOTE: PROVIDE ATLEAST 1 - #4 VERT. ALIGNED WITHIN 8" OF EA. OPENING JAMB ABOVE / BELOW IN ADDITION TO TYPICAL SPACING.

SIMPSON PA18 PURLIN ANCHORS WET SET INTO NEW MASONRY WALL CONSTRUCTION AT ±5'-4" ON CENTER (ANCHOR MUST BE IN CONTACT WITH #4 HORIZONTAL)

FASTEN ANCHOR THROUGH EXTG. DECKING TO EXTG. JOIST

VERIFY IN FIELD TOP OF SHEATHING ELEVATION

EXTG. WOOD JOIST TO REMAIN WITH FIRE CUT ENDS TO BE COATED WITH MASTIC OR VYCOR WRAP AND ENCASED IN NEW MASONRY

NEW COMMON CLAY BRICK OR CONCRETE BRICK INFILL (SHOWN DASHED) BETWEEN EXTG. JOIST TO REMAIN ON INSIDE FACE OF WALL

NEW #4 x 3'-0" @ 48" O.C. VERT. STRAIGHT BAR DOWELS - DRILL AND EPOXY INTO SOUND BRICK WITH 10" EMBEDMENT.

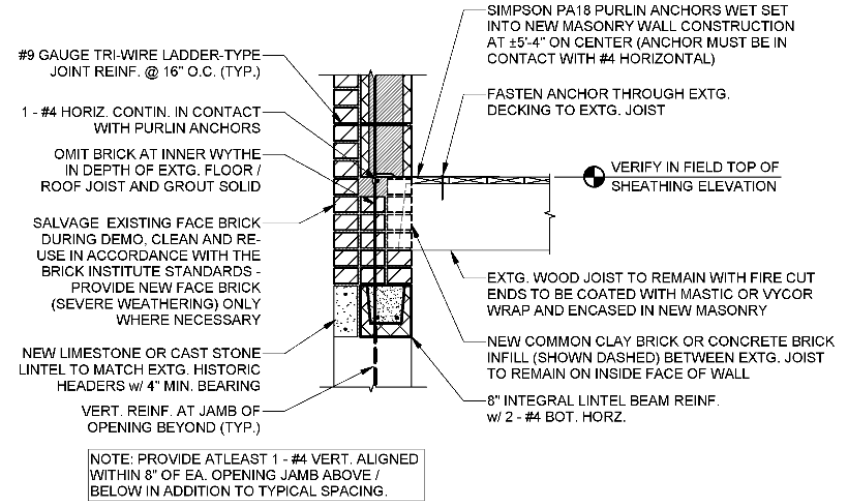
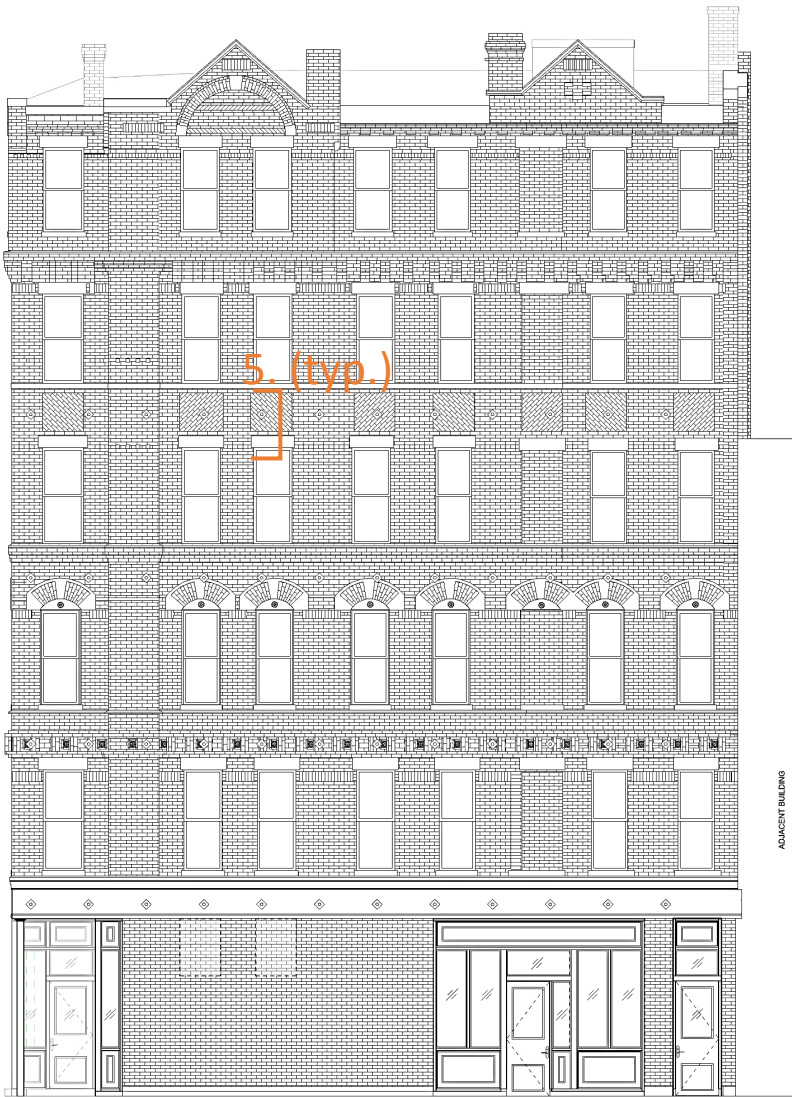
SECTION 4

3/4" = 1'-0"

PROPOSED STRUCTURAL WALLS, MAINTAINING HISTORIC FACADE

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SECTION 5
3/4" = 1'-0"

PROPOSED STRUCTURAL WALLS, MAINTAINING HISTORIC FACADE

403 SHAWMUT AVE.
11/04/25



403 SHAWMUT AVE: COMBINING LONG-TERM HEALTH & SAFETY WITH HISTORIC PRESERVATION

The renovation of 403 Shawmut from an office and community building to affordable housing and community space has its challenges but also showcases IBA's commitment to safety and preservation.

While large sections of the perimeter walls will need to be rebuilt to meet modern structural and seismic codes, we will also ensure that the original façade, with its unique brick detailing and design, will remain. Our thorough documentation of the façade, paired with a very experienced General Contractor and mason, offers a high level of quality control and assurance that all details will be replicated.

This careful masonry rebuilding and repair, in addition to the new storefront design recently approved by the SELDC, will ensure that the historic nature of the building will carry on and continue to be a shining example of historic preservation in South End.

THANK YOU



403 SHAWMUT AVE: A FULLY RESTORED BUILDING

403 SHAWMUT AVE.
11/04/25



APPENDIX:

- **ADDITIONAL EXISTING CONDITIONS DOCUMENTATION**
- **STRUCTURAL ENGINEERING REPORT**



Brownstone pediment caps have separated joints and only remain due to temporary brackets

Brownstone pediment cap and surrounding masonry have become disconnected



A (failed) mastic waterproofing membrane was applied to the back and stone cap joints of the pediment

Brick detailing on face of pediment

EXISTING CONDITIONS: PARAPET & PEDIMENTS

403 SHAWMUT AVE.
11/04/25





The detailed and custom stone pediment cap that sits on top of both pediments looks to be salvageable. We propose to clean, repair, and re-use this piece on reconstructed pediments.

EXISTING CONDITIONS: PARAPET & PEDIMENTS

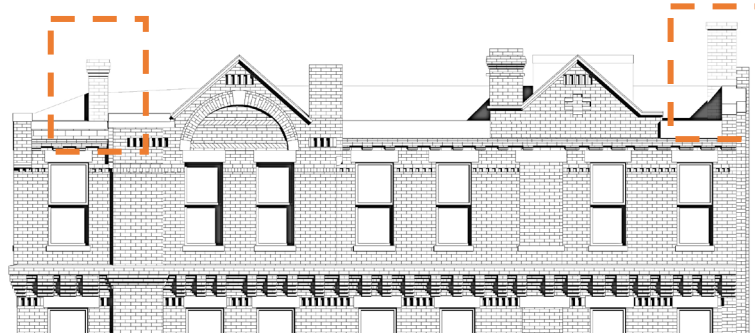
403 SHAWMUT AVE.
11/04/25





This is the only chimney that is covered

Parapets tend to change heights along various lengths of the roof



This chimney, located adjacent to the IBA-owned building at 401 Shawmut, is bowing significantly and being restrained by brackets and ties to the roof structure



EXISTING CONDITIONS: CHIMNEYS

403 SHAWMUT AVE.
11/04/25



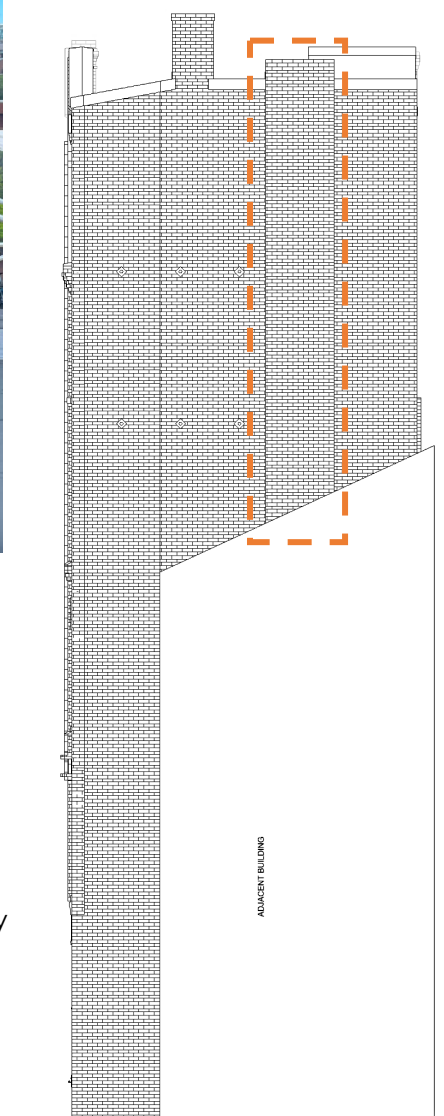


The wider, shorter chimney is the remnant of a once-functional chimney for the IBA-owned adjacent building located at 401 Shawmut.



ADJACENT BUILDING CHIMNEY (401 SHAWMUT):

The chimney against the exterior side wall of 403 Shawmut, currently connected to the adjacent building at 401 Shawmut, is at risk of detaching from the face of 403 Shawmut. It may have one wythe of brick tying it back to 403 Shawmut but over its history of being exposed to the elements, especially the interior chimney shaft, that connection has weakened significantly.



EXISTING CONDITIONS: CHIMNEYS

403 SHAWMUT AVE.
11/04/25





Brick separation around corner on W. Brookline side of building

Yet to be determined how well corner corbel is tied into masonry wall

Another view looking at façade separation

At some point, caulking was used to fill in gaps between separating bricks



EXISTING CONDITIONS: CORNER CONDITION: SHAWMUT AVE & WEST BROOKLINE

403 SHAWMUT AVE.
11/04/25





EXISTING CONDITION SUMMARY:

Due mostly to water infiltration and exterior wall movement, many sections of the corbel on both sides of the building have separated, lost full masonry units, have deteriorated, show signs of delamination, moved/no longer aligned, and have impacted areas around it, especially window openings.

EXISTING CONDITIONS: CORBELS

403 SHAWMUT AVE.
11/04/25

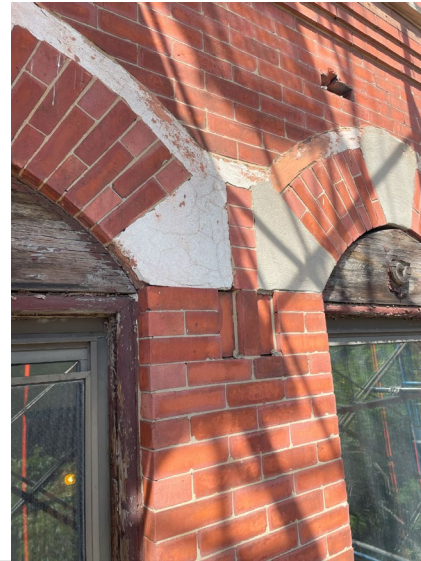




EXISTING CONDITIONS, FLOOR FOUR: SHAWMUT AVE & W. BROOKLINE

403 SHAWMUT AVE.
11/04/25





EXISTING CONDITIONS, FLOOR THREE: : SHAWMUT AVE & W. BROOKLINE

403 SHAWMUT AVE.
11/04/25

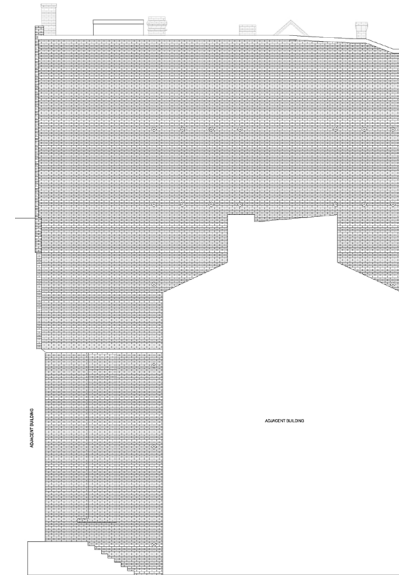




EXISTING CONDITIONS, FLOOR TWO: SHAWMUT AVE & W. BROOKLINE

403 SHAWMUT AVE.
11/04/25

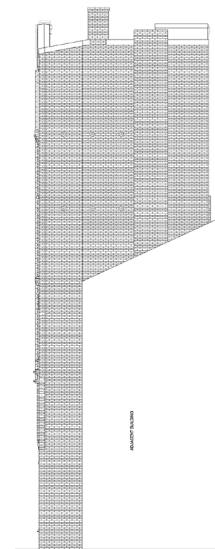
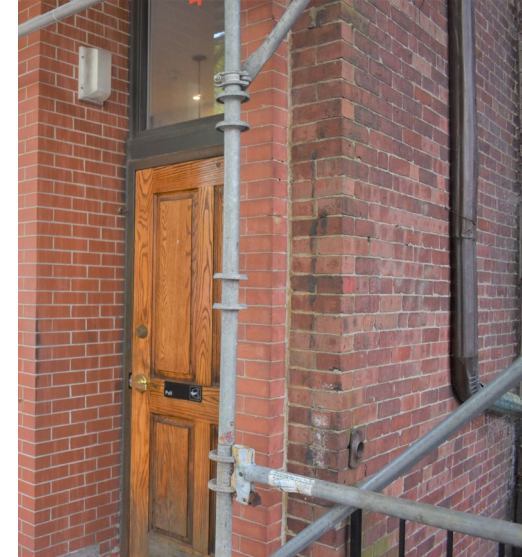




EXISTING CONDITIONS: REAR ELEVATION

403 SHAWMUT AVE.
11/04/25





EXISTING CONDITIONS: SIDE ELEVATION (ADJACENT TO 401 SHAWMUT)

403 SHAWMUT AVE.
11/04/25





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**SOUZA, TRUE
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STRUCTURAL ENGINEERS

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October 24, 2025 (Updated)

Davis Square Architects, Inc.
240A Elm Street
Somerville, MA 02144

Attention: Lia Scheele, RA
Associate

Reference: Existing Masonry Conditions Assessment
403 Shawmut Avenue
Boston, Massachusetts

Dear Ms. Scheele:

As requested, Souza, True and Partners has performed an assessment of the existing structure located at the above-referenced addresses in Boston, Massachusetts. An initial site visit on Monday July 28th, 2025, was performed to make visual observations in conjunction with the investigation. Additional follow-up site visits were made on September 19th and October 7th, 2025, to expand upon the first. The following letter documents the investigations that have been completed to date, and which continue to be made with a contractor assisting by demolishing finishes, performing testing, and performing some invasive exploration of the structure.

In addition to documenting the investigation, the following letter provides updated findings regarding the existing masonry structure's condition as well as updated recommendations related to rehabilitation of the structure. This report is a follow-up and expansion on our previous report dated August 11th, 2025. The additional site visits noted above focused on the lower portions of the building with a goal of determining the expected maximum amount of repairs necessary where a complete re-build has not been recommended already. This report also provides a brief discussion on calculated stresses and some available testing data that provide additional insight into the health, strength, and demand on the structure.

➤ **General Building Description**

The existing building located at 403 Shawmut Avenue in Boston is a wood and masonry superstructure supported by masonry / stone foundations. The building was originally constructed in the late 1800's based on our understanding. The building is approximately 23'-9" wide parallel to West Brookline Street and approximately 50'-2" long parallel to Shawmut Avenue. The building is six-stories standing approximately 70'-0" tall above the adjacent sidewalk / street grade. Overall, the structure consists of wood floor joist framing that spans the width of the building, approximately 23'-9", parallel to West Brookline Street and the joists are supported by bearing in pockets within the existing masonry exterior walls at the North and

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Existing Masonry Assessment

403 Shawmut Avenue
Boston, MA

October 24, 2025

South sides of the building. The building contains several chimneys which extend above the roof line along with several ornate parapets. The primary West and South facades also feature water tables, dental detailing, ceramic in-lays, and several corbel features at multiple floor levels.

➤ Investigation Summary

During the initial site visit from July 2025 visual observations of the exposed masonry surfaces on both the interior and exterior of the building we made. We made the following general observations during that visual survey.

1. The existing brick masonry parapets above roof line are in severely deteriorated condition. Refer to Photograph #1 attached at the end of this report. The brick portions of the parapet have receding joints and weathered loose brick on all sides. The parapets also appear to be leaning outwards and require external existing restraints to keep stable. Additionally, there are some corbel accents at corners of the building at parapet level that have receded mortar joints and loose bricks. The original cap stones at the top of masonry parapets are damaged / deteriorated where still present, and some areas have newer metal flashing caps that are also bent, displaced, or just missing. The existing cap stones are shifted with open head joints and additional layers of troweled on mastic / sealant that was previously applied to seal the deteriorated areas, but those materials are debonding and torn as well. The top of masonry is relatively unprotected and extremely susceptible to water infiltration.
2. The East side exterior wall at the sixth-floor level appears to be leaning outward with hinge point at the top of the fifth-floor level. The wall may in fact be remnants of an existing party wall that could have possibly been left after demolition of a tall adjacent building presumably on the 401 Shawmut plot. There is an integral chimney in this wall which does not extend over top of the 403 Shawmut roof footprint.
3. All headers on the sixth and fifth floor, as well as below, appear to be limestone that have delaminated. Cementitious parge coatings have also been previously applied and de-bonded from the masonry leaving them now spalling / flaking off. Most of the existing headers have been displaced and in some cases are pushing outward. Several headers have cracks that appear to be due to flexural over-stress and likely exacerbated by freeze-thaw cycling.
4. All windows at the sixth and fifth floors, as well as below, appear to have old wood trim / blocking that has deteriorated and exposed the collar joints between the exterior wythe and middle back-up wythe at vertical edges of jambs. Some locations of exposed collar joints appear to have deep voids. Consequently, almost all window rough openings have opened joints allowing water infiltration that has led to deterioration below the opening at sills and brick courses down to the next window head.
5. Water tables (a corbelling of brick courses outward beyond the main face of brick to create a shelf) occur on the sixth, fourth and second floors along with a detail in-lay band at the third-floor level. All these horizontal bands have varied degrees of receding joints and some loose brick as well as shifted and weathered stone cap courses. However, The West facade water table at the sixth-floor level is in the worst condition relatively

speaking. The Southwest corner at the sixth-floor level appears to be bulging slightly above this water table.

6. The Southeast corner of the building facade has a large crack of approximately 1" open width that has been previously identified that starts at the head of third floor window on the South side of the building and continues up to the roof level. The crack appears to be the opening of a continuous vertical mortar joint constructed between the face brick of the South side façade and two wythe side wall composed of common brick on the East side façade. The crack also appears to continue through the brick arch header at third floor adjacent to the corner of the building with obvious jacking outward of the keystone and arch brick on one side of the keystone that is more than 1" proud of the face of brick on the opposite side of the keystone.
7. Both the exterior and the interior faces of masonry for the Southern wall facing Shawmut Avenue at the sixth floor had significant recession of joints beyond 1" depth. Refer to Photograph #2 and #3 attached at the end of this report.
8. Dusting and debris were caused to be evacuated from the Southern wall interior face after light impacts by hand. Additionally, loose bricks were able to be removed from both the interior and exterior faces of the wall at the sixth-floor level in numerous locations.

During the additional site visit from September and October 2025 visual observations of the exposed masonry surfaces on the interior of the building we made at all levels. We made the following general observations during those visual surveys.

1. The sixth floor North exterior wall appeared to be in a moderately deteriorated condition near the top of wall for approximately 4'-0" below the roof sheathing line. Refer to Photograph #4 attached at the end of this report, which shows the area of wall between elevator and stairs on the sixth floor. The brick at the top of wall here has receding joints and softened bricks resulting in spalled faces to approximately ¼" depth. There are also some loose bricks in the space between joists. The entire wall appears to be stained by smoke and water. Many head joints are open to full brick depth.
2. The rear wall at the fifth floor was observed and is in relatively better condition than the sixth-floor rear wall at top of masonry. Refer to photograph #5 which shows the same area between elevator and stair but at the fifth floor as shown in photograph #4. The fifth-floor wall has generally less mortar recession, softening and spalling of bricks, and voids or missing bricks.
3. The corner of the building at Shawmut Avenue and West Brookline Street at the fifth-floor level appeared to be in a relatively better condition when compared to the same area on the sixth floor. Refer to photograph #6 which shows mortar in the joints of the wall and no spalls. Additional, observations along the interior surface of both the Shawmut Avenue and West Brookline walls show similar mortar in the joints without significant recession and little to no spalling or void / missing bricks. Refer to photograph #7 and #8.
4. The interior faces of the Northeast corner stairs, including the East wall, appear to be in good condition with intact brick with full mortar joints. Previous infill of window or door openings appears evident where different color and textured brick surfaces occur in

large rectangular patches. Refer to photograph #9 for the common condition within the stairs and at this portion of the East Wall.

5. The rear wall at the lower levels of the building fourth down to second all appear to be in good condition with intact brick and mortar. There are no signs of cracking in the wall such as those that appear from settlement of flexural tensile stress. No crushing in the wall was observed. Only small irregularities which appear related to previously removed plumbing stacks or rain leaders occur in the lower levels of the rear wall.
6. The Shawmut Avenue and West Brookline Street walls at the lower levels of the building on the inside face have localized areas of deterioration and other areas that appear in relatively good condition. The areas of deterioration noted are mostly located below windowsills on the Shawmut Avenue side of the building. Severe recession to depth as much as a full brick occurs at a few third-floor sills with associated loose and missing bricks. Refer to photograph #10.
7. Header bricks were observed to occur regularly through the building, including in piers between windows. A brick header course appears to occur at approximately every eighth course resulting in 12.5% by area.
8. Existing wall to floor anchors were identified at one location of existing spalled brick at the fourth-floor level. The anchor consisted of an approximately 2" wide by 1/4" thick strip. The strip laps over the top of joists and is sandwiched between top of joist and underside of sheathing such that they are not visible to plain sight. The end of the iron strap is embedded into the exterior masonry walls with a roughly 90° upward bend that has a split and two forks that spread apart.

➤ **Masonry Stresses and Testing**

Souza True has made previous assessments of the building through calculations to determine the vertical and lateral loads imposed by current building code wind and seismic loadings. In summary, the worst-case masonry walls along Shawmut Avenue are subjected to approximately 50 pounds per square inch (psi) of shear stress due to code seismic loads and 93 psi from code wind loads. Some flexural stresses associated with the wind and seismic loads determined by calculations can exceed 3000psi at the Shawmut Avenue exterior wall. By comparison, the rear wall which is solid and continuous for the entire length of the building has stress of 25psi in shear and a maximum of 13psi in net tension under current code wind and seismic loads. Finally, the axial stress in the existing masonry from gravity dead loads only are estimated to be approximately 60 psi in the field of wall at the rear and with concentrations up to 90 psi in the area of window jambs at the Shawmut Avenue wall. For reference, the 2015 International Existing Building Code – Appendix A1 provides an allowable of 300 psi for existing masonry walls receiving new loads.

The allowable shear stress for the existing masonry can be estimated using some testing of in-situ mortar shear using the building code procedures. Previous testing of the in-situ mortar had been done by a third-party contractor which provided some preliminary test data. Souza True has utilized equation A1-4 from the 2015 International Existing Building Code – Appendix A1 with the testing data to estimate a preliminary shear strength for the existing masonry walls. From the limited testing data, we estimate an allowable shear stress of approximately 75 psi. For comparison, the allowable shear stress is more than 75% of the required shear stress using

current building code loads noted above. Further data is necessary to finalize the estimated shear strength per code at this time.

Souza True has directed the contractor to install and test wall anchors. The wall anchors consist of $\frac{3}{4}$ "Ø threaded steel rods that are drilled and epoxy anchored with 8" embedment into the existing masonry interior surfaces using the Simpson Strong-Tie SET XP epoxy adhesive. The testing proof load in tension started with a pre-load and incremental increased to 2000 pounds on all eight anchors testing without signs of failure in the brick, anchor, or epoxy. For comparison, the pre-engineered rated load for code approved new anchors is 1000 pounds using the same epoxy.

➤ **Findings and Conclusions**

The masonry deterioration observed during the initial site visit was noted to be significant, widespread, and progressed to an advanced state of disintegration leading to global stability concerns, but mostly at the upper levels of the structure only, and recent investigations confirm that the brick masonry construction at lower levels is in a relatively good condition. The masonry on the sixth floor and above, especially on the Southern face of the building along Shawmut Avenue has disintegrated with deep recession of mortar, widespread open masonry joints, loose bricks, and cracked stone headers / sills. Deterioration was found on all four sides of the building's perimeter / elevations and occurring at the parapets above roof line, the sixth floor below roof line, and even farther below into portions of the fifth floor towards the Southeast corner of the building.

The condition of the top of masonry is such that loose brick and mortar materials are in danger of local collapse. The loose materials, specifically the receding mortar and open joints, are allowing the actual brick material to become dislodged and loose. Areas within the water table at the sixth-floor level and around windows at the sixth and fifth floor levels have bricks that can be easily removed by hand. Additionally, the interior faces at these locations have significantly receded joints to depths of as much as a full brick wythe as well. Recent observations have identified similar loose bricks and receding joints at the top of the rear wall between elevator and stair as well. Those locations appear to have loose and shifted brick between roof joist pockets and below. The wall at this rear location appears stained from smoke and water and was subjected to fire that may have incurred heat damage as many bricks appear softened with spalled surfaces.

The advanced deterioration has resulted in areas of instability and movement in the existing masonry. The parapets and chimneys are leaning and require external bracing in some instances which have been in place for several years. A large bulge and associated leaning of the exterior face of masonry occurs at the West elevation over top of the sixth-floor windows, and a lean to the entire wall of the sixth floor occurs on the East Elevation. Finally, shifting of window headers including outward movement occurs throughout the South and West facades at the upper sixth and fifth floors, especially in the Southeast corner of the building.

Conventional repairs and reinforcing for the existing masonry on the sixth floor will be more extensive and expensive and also may not be reliable enough in providing adequate stability for the existing construction. The depth of recession on both the inside face and the outside face of masonry will require deep repointing, which takes great effort and care to ensure removal of previous mortar and ensure bond of new materials. The depth of recession also makes uncertain the condition of the center wythe of the existing typical three wythe wall, which is

critical to tying of the wall thickness. Noted movement in the wall will require new ties to anchor each wythe of the brick together because the movement suggest failure of existing header bricks.

The proposed new work to upgrade the building against lateral forces is jeopardized by the condition of disintegrated masonry. The new upgrades involve steel plate shear walls that require anchorage to the existing masonry façade for connection to the existing building. Anchoring new ties into the existing deteriorated masonry, especially a questionable interior wythe, may not be effective where open joints occur on the interior face with the depth of recession noted at the sixth floor being as much as a full brick.

Based on the additional site visits, the lower portions of the structure do appear to be in a relatively better condition and contain only localized areas of deterioration that were of concern. The rear walls and portions of the east wall within the Northeast stairs appear to be in relatively good condition with intact brick and mortar joints. Those walls also carry relatively low shear, bending, and axial stresses and appear to have performed adequately for the life of the building. The second floor and fourth floor walls at Shawmut Avenue also appear to be in relatively good condition. Some areas under windowsills do appear to have disintegrated to various degrees, but the deterioration does not appear to have spread to the piers between windows. This type / location of deterioration is common in perforated masonry walls and the worst deterioration below windowsill occurs at the third-floor level within the Shawmut Avenue wall.

➤ **Recommendations**

Souza True believes that the existing masonry conditions at the upper portions of the existing structure located at 403 Shawmut Avenue are in an advanced condition of deterioration and disintegration that warrants full removal and rebuilding of the masonry. We believe the masonry at the top of the building has opened up and deteriorated thoroughly through the full thickness / wythe of the wall and down from the parapet levels to below the sixth-floor framing level such that 100% repointing on both faces is not adequate. This is especially true on the Southern and Western elevations facing Shawmut Avenue and West Brookline Street respectively. Those elevations are perforated by many window openings and detailed with many brick setbacks and corbels / cantilevers that have absorbed water infiltration and deteriorated for decades.

However, the existing brick masonry below the sixth floor is mostly intact with mortared joints and header bricks that create a composite wall assembly that is generally capable of transmitting the required vertical axial stresses through the brick and bed joints and shears through the joints as well. The lower levels of brick will also be “relieved” of lateral stresses with the new steel plate shear walls that are proposed for the building. Therefore, we believe the brick masonry constructions at the lower levels of the existing structure may remain with typical and conventional repointing repairs with some local re-building of brick and mortar mostly around windows.

Souza True recommends the existing brick masonry exterior walls be demolished for the entire Shawmut Avenue and West Brookline sides from the bottom of the sixth-floor joist bearing elevation and above to eliminate the advanced state of masonry deterioration and questionable substrate for anchorage and improvements. In addition, the worst area of masonry deterioration appears to occur on the South elevation towards the East end of the elevation for the last approximately 15'-0" starting at the Southeast corner of the building. The deterioration continues well below the sixth floor at this portion, and so we recommend this section of masonry be

Existing Masonry Assessment

403 Shawmut Avenue
Boston, MA

October 24, 2025

demolished and re-built from the bottom of the fifth-floor joist bearing elevation and above. We also recommend that a portion of the East elevation looking over 401 Shawmut be removed and rebuilt from the Southwest corner back approximately 8'-0" to the first existing masonry chimney that occurs on this face, and also from the fifth floor joist bearing elevation and above. Refer to Figure #1 below for graphical mark-up of the proposed re-built masonry scope on the architectural Shawmut elevation. Based on recent additional observations, Souza True also feel that the top 4'-0" of masonry on the Northern rear wall of the building also be removed and rebuilt in the portion from the elevator to the West Brookline end of the building. This includes the corbel and accent features at the top of masonry at the Northwest corner. We also recommend that the areas around all windows and below sills be repaired as required with new repointing required most commonly, but with approximately four windowsills requiring more extensive re-build at the fourth and third floor levels.



Figure #1 – This mark-up shows the proposed masonry rebuilding scope.

The new rebuilding of masonry will help to reduce and or relieve / eliminate some of the structural scope previously planned for the structural rehabilitation portion of the project. The roof level and the sixth-floor level both have new seismic anchoring required by the code. These anchors typically consist of drilled and epoxy anchored threaded rods into existing masonry. However, if the existing masonry is re-built, then new bent metal strap anchors may be more easily wet set during reconstruction of new masonry and eliminate the costly drill and epoxy method of anchoring. Additionally, a relatively more robust anchor detail was specified on the East and West sides of the building due to the leaning of existing masonry and the perpendicular connection to the existing wood floor / roof framing. Those details may be eliminated with new wall construction without leaning and with wet set bent metal anchors. In addition, recent observations and exploration of the masonry have revealed existing wall-to-floor anchors which may be tested and re-utilized so the new anchor scope can be further reduced.

Existing Masonry Assessment

403 Shawmut Avenue
Boston, MA

October 24, 2025

The new masonry walls will be built with reinforcing such that the steel plate shear wall scope of work may be reduced by eliminating the steel on the sixth floor and possibly the fifth floor. The new masonry re-build will require vertical and horizontal reinforcing in order to resist lateral wind and reduced seismic forces. The reinforcing in the vertical direction must be placed in grouted collar joints between the interior wythe and the middle wythe. The wall re-build must have horizontal joint reinforcing laid in the bed joints at a certain spacing as well, and the joint reinforcing may require a tri-wire configuration. With the new re-built masonry constructed in this manner, then we can utilize the wall as a reinforced masonry shear wall and the steel plate shear walls shall be reduced. Additionally, the re-build of the masonry must be solid multi-wythe bonded and tied construction due to the nature of the existing historic façade that had significant corbelling. Corbelling of single wythe veneer is limited by code to half of one brick width, which is slightly less than 2" total. However, the existing brick corbels can be as much as a full brick which requires a solid multi-wythe construction.

Souza True as the engineer-of-record for the rehabilitation project at 403 Shawmut Avenue will continue to investigate the masonry with the effort of preserving as much of the existing masonry exterior wall construction and thereby the historical fabric of the building. We shall work with the owner, contractor, and design team to ensure new rebuilt areas replicate the original historical exterior as well. We thank you for your consideration regarding this matter and hope that this report provides for the anticipated maximum amount of re-building, which we feel can be confined to the areas noted on the sixth and fifth floors only. Please feel free to contact Souza True should you have any further questions or concerns.

Sincerely,

SOUZA, TRUE AND PARTNERS, INC.



Christopher M. Motto, P.E. (MA)
Principal

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Photograph #1 – This photo shows a typical existing masonry parapet condition with existing masonry in disintegrated state along with external bracing required due to the deterioration.



Photograph #2 – This photo shows the interior face of the existing masonry wall along Shawmut Avenue at the sixth-floor level. The masonry has receding joints, especially on the sides and below windows with dusting of mortar and loose bricks able to be removed by hand.



Photograph #3 – This photograph shows the masonry below windowsill at the Southwest corner of the building on the sixth-floor level. Both the sill on the lefthand side and the field of wall around the corner on the righthand side have excessive mortar recession and the righthand sill has loose and missing brick.



Photograph #4 - This photograph shows the wall construction at the Northern / rear of the building on the sixth floor between elevator and stairs. It is not easily apparent in the photograph due to the contrast in brightness, but the upper section of wall has receding joints and loose brick. The mortar at the top of wall where in joints is disintegrating and falling out. The wall is stained with smoke and water from a previous fire event as well.



Photograph #5 – This photograph shows the wall construction at the Northern / rear of the building at the fifth floor, at the same area as Photograph #4 at the sixth floor above. This section of wall is in comparatively better shape with mortar in joints that are not dusting / disintegrating. Smoke and water staining are still present at the top of wall here but dissipates as you move down the wall. Additionally, this wall contains header brick courses about every eighth coursing which are required to tie wythes of the wall together.



Photograph #6 – This photograph shows the inside face at the Southeast corner of the building on the fifth floor, similar to Photograph #3 which was taken at the sixth floor. This section of wall is in comparatively better condition with intact brick and mortar joints without much disintegration / dusting or mortar. The area under the windowsills is intact with a few open head joints.



Photograph #7 – This photograph shows a masonry pier between windows on the Southern Shawmut Avenue elevation at the fifth-floor level. The brick pier appears with intact brick and mortar, and it is noted that header courses occur within the brick pier as well. Some open joints occur near the base of the pier / at windowsill level.



Photograph #8 - This photograph shows another masonry pier between windows on the Southern Shawmut Avenue elevation at the fifth-floor level. The brick pier here remains with intact brick and mortar, and it is noted that header courses occur within the brick pier as well. The construction at the base of the pier / at windowsill level is in good condition without open joints and significant mortar recession.



Photograph #9 – This photograph shows a common example of the condition of brick at the Eastern wall at the inside of the Northeast stair. The brick is intact with full joints that appear to have been previously repointed. Additionally, a different color and texture of brick occur at the righthand side of the photo which appear to be an infill or a previously existing door. This may be indication that this wall was a common “party” wall with a taller existing structure located at 401 Shawmut Avenue that has since been demolished. Also in this photograph is the location where brick was sampled for testing.



Photograph #10 -This photograph shows the masonry below windowsill at the Southern Shawmut Avenue side of the building on the third-floor level. Some of the locations of masonry below windowsill in the lower portions of the building exhibit mortar recession and some loose brick. However, this sill is still in a relatively better condition than that which is shown in Photograph #3 above. This sill has more mortar in joints with some dusting and only a few open joints. All masonry within 8" of the jambs and sills of window openings I recommended to be repointed, and a few locations will require some brick and mortar rebuilding.