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January 31, 2025

[redacted]
Mystic River Condominium Association
3920 Mystic Valley Parkway
Medford, MA 02155

Re: Additional Investigation and Assessment Phase – Test Cuts
Mystic River Condominium Association
3920 Mystic Valley Parkway
Medford, MA 02155
SOCOTEC Project No. AE240035.2

[redacted]

During the month of December 2024, SOCOTEC AE Consulting, LLC (SAE) conducted an additional investigation of the building envelope at 3920 Mystic Valley Parkway. The investigation involved reviewing available documentation, performing exterior inspections, and making exploratory masonry cuts. This report presents our findings, photographic documentation, and recommendations for repairs.

Background

The property is a multi-story residential building with a brick masonry facade and balcony knee walls at floors 8-12. The investigation aimed to assess the condition of through-wall flashings, masonry connections, and previously completed repair work. With the assistance of JMS Masonry, four (4) locations of exploratory masonry cuts were made to examine various construction conditions. Openings were strategically placed at areas where prior repair work had been reported and areas where no previous work had been performed. The focus of this additional investigation took place at the East Elevation – East Tower and conditions are assumed to be consistent at other elevations.

Observations and Comments

Areas Where Work Was Not Performed in 2022:

The following observations were made at test cuts taken at locations where work was not reported to have been performed previously.

Through-Wall Flashing:

- Flashing was either missing or severely deteriorated. The original Nervastral (PVC) flashing was brittle and deteriorated (Photo No. 6).
- Test cuts made above soldier courses at window openings revealed loose-laid angle lintels with sound and paint-coated steel angles.
- No counterflashing or waterproofing membrane to provide flashing of the loose laid lintels was observed (Photo No. 5).

Knee-Wall Balconies:

- Test cut openings confirmed that the top course masonry rowlock is connected to the concrete balcony slab via vertical rebar spaced 18 inches on center (Photo No. 20).
- No visible ties or connections between inner and outer wythes of the masonry was observed (Photo No. 25).
- The outer wythe exhibited deteriorated mortar joints in multiple locations.
- Significant rusting was observed on angles that support the outer wythe of the balcony knee wall (Photo No. 27).

Areas Where Work Was Reportedly Performed in 2022

The following observations were made at testcuts taken at locations where work was reported to have been performed previously.

Through-Walls:

- Conditions were similar to areas without prior work—flashing remained defective.
- A 4-inch strip of flashing tape was found on the vertical leg of the steel angle above the soldier course, but it did not lap onto the horizontal leg, and was not properly end dammed to properly shed water. The existing flashing does not extend to the outer face of the brick, leaving the cores of the brick below open to water infiiltration (Photo No. 10).
- Openings showed no proper counterflashing or improvements in waterproofing.
- The backup wall barrier appeared intact in some areas but lacked proper drainage integration (Photo No. 23).

Knee-Wall Balconies:

- Failed mortar joints were observed on the interior face of the balcony (Photo No. 18).
- Severe rusting of vertical rebar was documented (Photos No. 19, 20, 21).
- A continuous bed of mortar was found between the precast capstone and aluminum drip edge, with no weep holes present (Photos No. 13, 15, 16).
- Helical ties securing inner and outer wythes were noted at some locations (Photo No. 20).
- Moisture staining was observed on the interior of the balcony at the bottom course of brick (Photo No. 17).

Recommendations

Through-Wall Flashing Repairs

- Install new through-wall flashing with integrated counterflashing to prevent water infiltration. The throughwall flashing must extend to the outer face of the brick masonry, covering the steel angle as well as the open cores of the brick masonry units..
- Ensure proper installation of weep holes for effective drainage.

- Properly seal the top edge of the throughwall flashing to ensure full integration with the waterproofing system.
- Confirm correct application of flashing membrane below all precast capstone connections (Photo No. 13).

Knee-Wall Repairs

- Repoint deteriorated mortar joints on outer wythe of knee-wall balconies (Photo No. 28).
- Where balcony work has not been performed, install helical ties and a grout collar joint between wythes to ensure stability at knee-wall balconies.
- Replace damaged bricks in locations where significant cracking was identified.
- Clean, treat, or replace rusted rebar as necessary (Photos No. 19, 21).
- Assess angle support conditions at knee-wall balconies and reinforce as needed.
- Install weep holes in precast capstone areas to facilitate proper drainage.
- Ensure a bond break between the capstone and masonry to reduce mortar failure.
- Install sealant at precast butt joints to allow for expansion and contraction within the materials.

Balcony Attachment Improvements

- Replace rusted railing washers with stainless steel or galvanized alternatives (Photo No. 31).
- Address open/unsealed attachment points from the original balcony installation (Photo No. 33).

Conclusion

The investigation revealed that throughwall and knee-wall balcony conditions remain problematic, even in areas where prior repairs were reportedly completed. Flashing deficiencies, missing waterproofing elements, rusted rebar, and deteriorated mortar joints are contributing to ongoing water infiltration and structural concerns. Corrective action is strongly recommended to prevent further deterioration and preserve the integrity of the building envelope.

After your review, please reach out to set up a meeting to discuss your thoughts on our recommended scope of work.

Sincerely,

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Project Manager
Cell: [redacted]
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[redacted]
Senior Principal
Cell: [redacted]
Email: [redacted]



Photo No. 01

Location:
East Tower – East Elevation

Description:
Overall view of the East elevation and general locations of exploratory cuts.

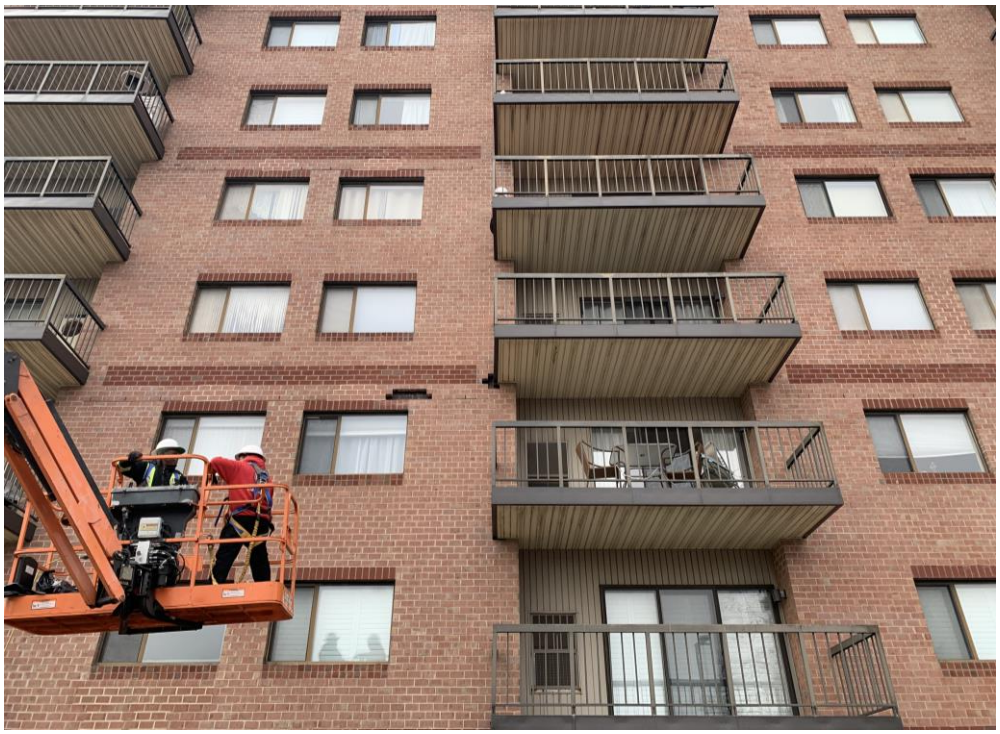


Photo No. 02

Location:
Test Cut #1

Description:
Location of Test Cut #1 at the third floor through-wall and underside of painted balcony.

Note: Work was reported to not have taken place here as part of the 2022 repair efforts by Coughlin Masonry.



Photo No. 03

Location:
Test Cut #2

Description:
Location of Test Cut #2 between the 7th and 8th floor.

Note: Work was reported to have been performed here as part of the 2022 repair efforts by Coughlin Masonry.



Photo No. 04

Location:
Test Cut #1

Description:
Additional photo showing Test Cut #1.

Note: No work was reported to have been done in previous project. However, a small section of masonry above the window headers did appear to have been repointed or replaced at some point in time



Photo No. 05

Location:
Test Cut #1

Description:
View of existing back-up wall conditions above window, where through-wall flashings were suspected to exist.



Photo No. 06

Location:
Test Cut #1

Description:
Close-up view of Photo No. 5. Existing back up is brittle and deteriorated. There is no existing counterflashing in place and no signs of work performed within the through-wall.

Note: This condition creates a direct pathway for water to infiltration into the masonry cavities.



Photo No. 07

Location:
Test Cut #1

Description:
Close-up view of balcony cantilever connection. No apparent rust or other notable deficiencies were present.

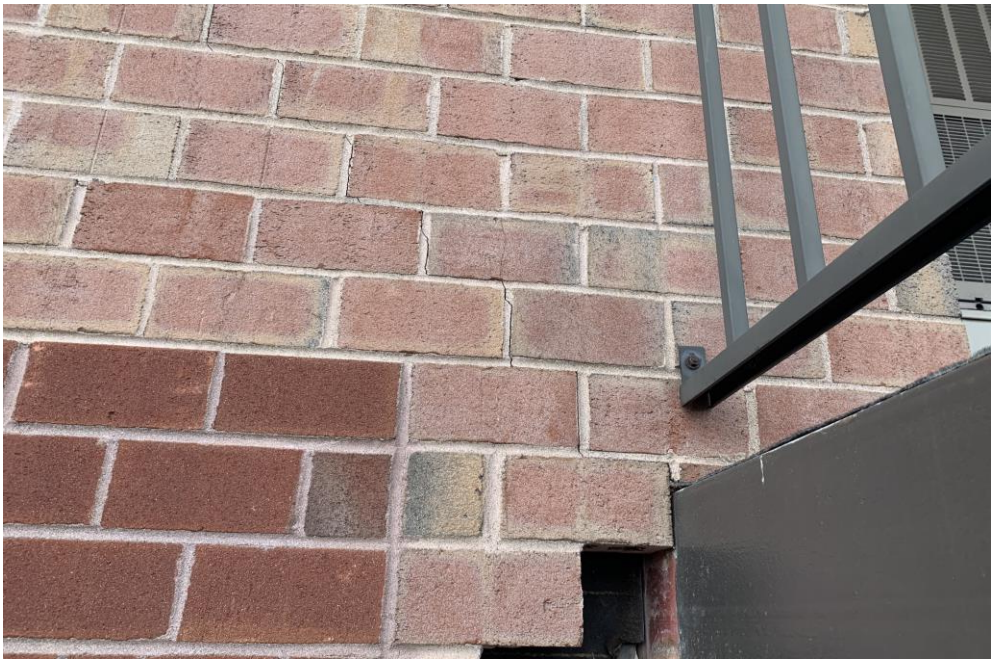


Photo No. 08

Location:
Test Cut #1

Description:
Step cracks in mortar joints above balcony connection point



Photo No. 09

Location:
Test Cut #2

Description:
Photo shows similar conditions to the through-wall at Test Cut #1. Back-up wall paper was in poor condition. Sealant appears to have been replaced above the soldier course.



Photo No. 10

Location:
Test Cut #2

Description:
Close-up view of photo #9.

Note: The flashing tape is not stripped in correctly and does not continue onto the horizontal section. There is also no sealant around the perimeter edges.



Photo No. 11

Location:
Test Cut #3 and #4

Description:
Overall view of Test Cut locations #3 and #4.



Photo No. 12

Location:
Test Cut #3

Description:
Cuts were made below the precast cap (top), connection point between balcony and main building (middle), general masonry cut to confirm back-up conditions (right)

Note: Sealant appears to have been removed and replaced at the joint between the balcony and main façade.



Photo No. 13

Location:
Test Cut #3

Description:
Underside of capstone showing 3” wide aluminum drip edge, flashing tape above the aluminum, and continuous sealant between the capstone and aluminum.

Note: There was no weep holes present on the outside face of the capstone.

An additional 3” wide aluminum drip edge was found above the interior wythe.



Photo No. 14

Location:
Test Cut #3

Description:
Exposed dowel below the capstone utilized to secure the precast to the masonry below.

Note: The dowel was originally set in mortar but was removed to reveal the conditions. Dowel attachments appeared in sound condition.



Photo No. 15

Location:
Test Cut #3

Description:
Close-up view of sealant removed above aluminum drip edge revealing a continuous bed of mortar set between the precast and masonry below.



Photo No. 16

Location:
Test Cut #3

Description:
Similar to Photo No. 15, showing the interior face of the precast.



Photo No. 17

Location:
Test Cut #3

Description:
Moisture staining on the backside of the balcony at the bottom course of brick.

Note: Failed mortar joints observed in this area where knee-wall was reportedly rebuilt could be a result of poor workmanship or water infiltration, or a combination of the two.



Photo No. 18

Location:
Test Cut #3

Description:
Additional open/failing mortar joints on the interior face of the balcony.



Photo No. 19

Location:
Test Cut #3

Description:
Photo shows overall of opening made at middle of balcony at intersection with main building.

Note: Original rebar was left in place and appears significantly rusted.



Photo No. 20

Location:
Test Cut #3

Description:
Close up of damaged brick, rusted rebar, and helical tie.

Note: Helical tie installed through mortar at interior wythe to secure to the outer wythe.



Photo No. 21

Location:
Test Cut #3

Description:
Additional view of significantly rusted vertical rebar.



Photo No. 22

Location:
Test Cut #3

Description:
Overall view of general wall cut to confirm back-up wall coverage.

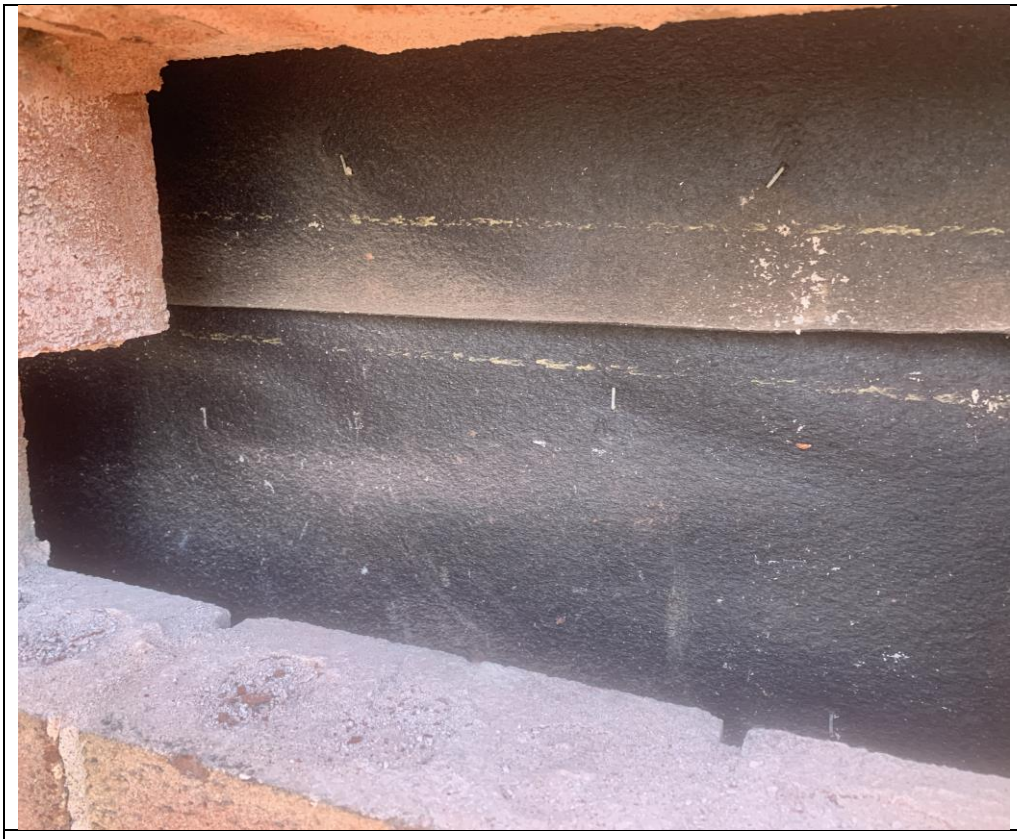


Photo No. 23

Location:
Test Cut #3

Description:
Close up view of Photo No. 22 – barrier appeared to be in fair condition with no observable signs of water infiltration in this area.



Photo No. 24

Location:
Test Cut #4

Description:
Overall of balcony opening at the 8th floor where work was not performed by Coughlin Masonry.

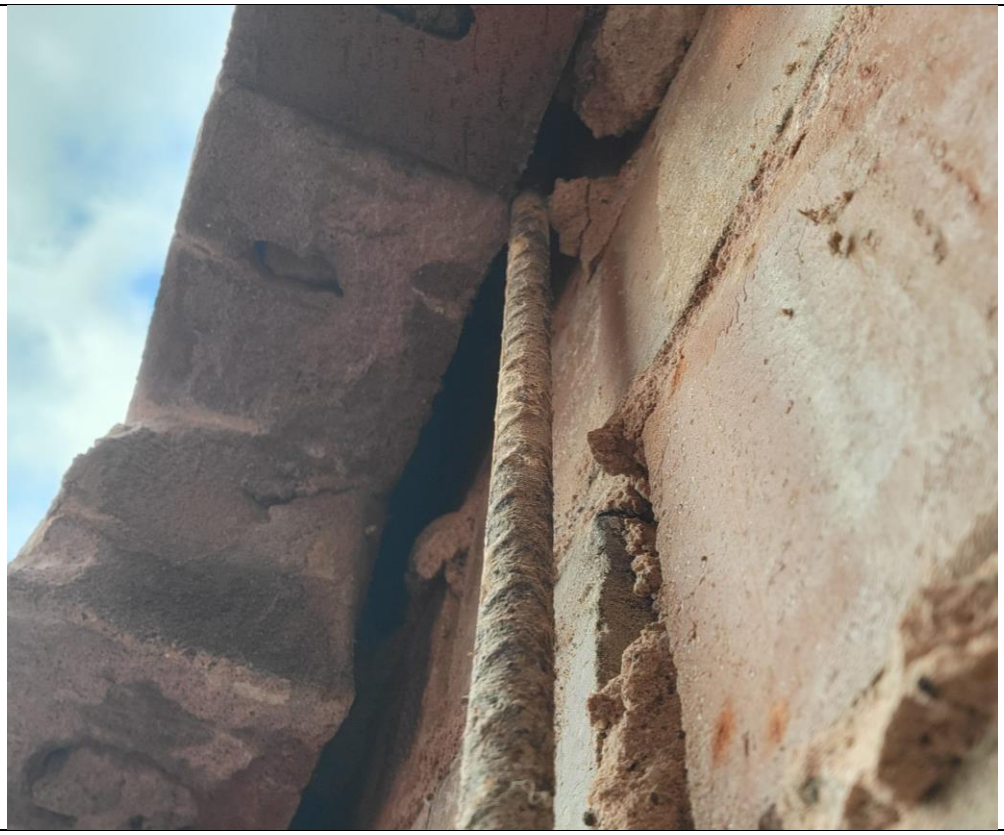


Photo No. 25

Location:
Test Cut #4

Description:
Close up vertical view of opening showing rebar in fair condition.

Note: There are no apparent ties or connection between the inner and outer wythes other than the top rowlock course.



Photo No. 26

Location:
Test Cut #4

Description:
Close up horizontal view of opening showing rebar in slightly rusted condition.

Note: There is no slurry or other reinforcement between wythes.



Photo No. 27

Location:
Test Cut #4

Description:
Close-up image highlighting severe rusting on the angle support of a knee wall balcony. The extent of corrosion indicates prolonged exposure to moisture, raising concerns about the integrity of the outer wythe and the effectiveness of current waterproofing measures.



Photo No. 28

Location:
Test Cut #4

Description:
Photo shows deteriorated mortar joints on outer wythe of balcony.



Photo No. 29

Location:
Test Cut #4

Description:
Photo shows overall of opening adjacent to the balcony at the 8th floor. Backup tar/bitumen paper appeared weathered.



Photo No. 30

Location:
Test Cut #4

Description:
Photo shows 16” spacing for brick ties. This is suspected to be typical throughout the façade.



Photo No. 31

Location:
Unit 1021

Description:
Significant rusting observed at the washers used for railing attachment.

Note: These washers should be removed and replaced with stainless steel or galvanized.



Photo No. 32

Location:
Unit 1021

Description:
Base plate attached at precast miter joint.

Note: This condition is common throughout newly set precast stones. The railings should be adjusted so that the fasteners do not penetrate the sealant.



Photo No. 33

Location:
Unit 1021

Description:
Photo shows uncovered holes where original balcony attachment existed.



Photo No. 34

Location:
East Tower – North Elevation

Description:
Photo shows inconsistencies in the water sealer application. Moisture staining on the far right suggests that this portion of the elevation was not addressed.