OLD STRUCTURES ENGINEERING

November 25, 2025

Jenny Akchin
TakeRoot Justice
123 William Street
Suite 401
New York, New York 10038

Re: 109 East 9th Street

Dear Ms. Akchin:
The following is a summary of my investigation of the condition of the building at 109 East 9th Street, including my observations on site on November 7, 2025, and review of various documents as described below. My on-site investigation consisted of observation of visible conditions at the building exterior and interior. Given that the interior finishes have been removed in some spaces, I was able to see portions of the building structure. My investigation took place in the company of Sebastian Sztukowski of Steel Core Engineering, representatives of the building ownership, and yourself, but there was generally no technical discussion on site.

Because the building's configuration is not standard for a nineteenth-century tenement, the description below includes some research into the building history.

General Description

The building at 109 East 9th Street consists of two portions: a street-facing multiple dwelling with retail at the first floor, and a rear extension that fills the lot with two stories of retail space connected to the first floor retail in the front portion. (See figure 1.) This configuration appears to be original and the building predates the 1867 and 1879 Tenement Laws. The open space to the west, nominally at 107 East 9th Street, was previously called Lafayette Court and appears to have been a private alley. In 1859, the five story street-facing building and the rear building are shown on a fire-insurance map[1] in the same configuration as today, with a building similar to the rear extension filling the 105 East 9th Street lot and a connector on the 107 East 9th Street site. (See figure 2.) Based on the configuration, this was likely a stable or industrial building group. By 1868, the connector was gone and the name Lafayette Court was used for the 107 East 9th site. (See figure 3.) By 1911, the east building at 105 East 9th Street had been altered to a configuration similar to that currently seen (a four-story building on the southern two-thirds of the old lot, and the rear joined to a lot facing Fourth Avenue); Lafayette Court and 109 East 9th had not changed. (See figure 4.) There has been no significant change to the

1 See the figures for full citations of these maps.

exterior of the 109 East 9th building since then: the I-Cards[2] issued by the New York City Division of Housing in the mid-1900s and the tax photos from 1940 (see figures 5 and 6) show essentially the same building currently present, as does the 1955 fire insurance map (see figure 7).

There are two types of known internal alteration. First, there have been changes to the dwelling units at the second through fifth floors. Some of these are recorded on the I-Cards; based on Department of Buildings records, there have apparently been alterations reconfiguring as recently as 2022 (reconfiguring partitions at the third and fourth floors, under DoBNOW filing number M08016403). The second type of alteration consists of changes to the configuration of the retail space. Past work has included, for example, the installation of lintels in the rear wall of the front portion of the building to create large openings to the rear portion. The most recent work on the retail space was filed 2021 to 2023 and appears to be complete.

While my observation of conditions included the rear portion of the building, the scope of investigation concerned the condition of the tenant spaces, which are entirely within the front portion of the building. The following descriptions, unless otherwise noted, concern only the front portion of the building.

The front portion of the building is five stories high, 30 feet wide (east-west along 9th Street) and 24 feet deep (north-south). The exterior walls on all four sides are solid brick masonry, except at the rear first floor, where the walls above sit on steel beams to allow access to the rear portion of the building. The floors are supported by wood joists spanning east-west (side to side, as is usual) but because of the 30-foot width of the building they are supported midspan by bearing partitions. Where joists were visible, they were measured as 2 to 3 inches in thickness, roughly 9½ deep, and spaced at 16 inches on center. The joists at the rear are supported midspan by the center partition that separates the rear rooms at each floor; the joists in the center and most of the front are supported on the partitions on each side of the center stairwell. The only exception to the general pattern is the joists at the very front (south end) of the building, which span north-south roughly 3 feet 6 inches between the front facade and the trimmer beam that (a) marks the front edge of the stair and (b) supports the headers at the chimneys on the east and west walls. (See figure 9.) Since the stair side partitions (bearing partitions, as described above) extend south past this trimmer's location, the trimmer is supported midspan by those partitions.

None of the center bearing structural elements (the center partition at the rear and the stair side partitions at the front) extend down below the second floor. The structural plans prepared by Steel Core Engineering show a steel beam at the second floor spanning north-south below the rear center partition and the center of the stair. Given that structural-steel beams were not available for building use in the era in which this building was constructed, there are two possibilities: the center beam is steel and was an alteration after construction, or it is not a steel beam (possibilities include cast-iron or wrought iron). There is a partition at the first floor (see figure 10) that likely encloses a column

2 Index cards recording city inspections and records of changes to tenements, used from 1902 until 1968. Some are available online from the New York City Department of Housing Preservation and Development.

supporting that beam midspan.

Conditions Noted

The following conditions were observed on site:

1. The original residential floors generally slope from the east and west sides down towards the center of the building. The slope is generally visible at the hallways, since platforms have been built above the original floor surface at the occupied residence rooms to level the walking surfaces. (See figure 11.)

2. The front portion of the floors, the 3 foot 6 inch strip adjacent to the front facade where the joists span north-south, slopes severely down to the north. It is most visible at the stair landings. (See figure 12.)

3. Several dwelling rooms have had their interior finishes removed, exposing the brick walls at the sides and the floor joists. Where visible, the mortar is in a deteriorated state, with some of the binder no longer solid. This conditions was not observed to be in conjunction with gross movement or separation of the wall or joists. (See figure 13.)

4. Where interior finishes have been removed, some joists show varying degrees of rot at the embedded ends. This conditions was not observed to be in conjunction with gross movement or separation of the wall or joists. (See figure 13.)

5. A header below the eastern stair side partition at the third floor framing level (ceiling of the merged dwelling units at the second floor of the building) is severely cracked and has been shored to the second floor. (See figure 14.) The unit where this work has taking place is unoccupied and has had its finishes removed. (Note that the stair from the first floor entry to the second floor is not in line with the stair from the second floor up, and the change in architectural layout means that the western stair partition extends down to the second floor framing while the eastern partition only extends down to the 3rd floor.) There is shoring roughly in line with the stair side partitions from the cellar to the first floor and from the first floor to the second floor.

6. Notably, there is little damage to the plaster and other interior finishes at the areas where movement is visible. (See figure 15.) Mr. Sztukowski pointed to cracks in a painted-wood partition at the stair from the front entry to the second floor. (See figure 16.) Those cracks are not accompanied by any out of plane movement or cracks elsewhere in the area.

Analysis

The conditions described above are the result of varying forms of aging.

1. The joist size is typical for the nineteenth century for spans up to 18 or 20 feet, and should generally be adequate for such spans; the spans at this building are 15 feet and less. No significant curvature was noted in the exposed joists, as would be expected if they were over-

stressed. In short, the joists have not deflected under load to create the sloped floors.[3] Rather, their supports at the center have moved so that the joists are sloped down from the masonry-supported ends toward the wood- (and possibly steel-) supported center. This distinction is critical because overstressed joists must be sistered or replaced, while inadequately-supported joists can remain with new or reinforced supports. And, specifically, if the inadequate support was a temporary condition (such as when a steel beam was installed at the second-floor framing) then there is no current structural inadequacy indicated by the sloped floors. Similarly, the slope at the front is a straight slope down to the north, so, again, the joists are not deflecting but their north ends, supported by the trimmer, has moved downward. The lack of plaster damage at the most severely sloped areas strongly suggests that this movement is neither recent nor ongoing, as plaster is brittle and will crack from even small movements.

2. The slope of the front north-south-spanning joists is caused by the same movement as the slope elsewhere: the trimmer that supports their north end has tilted down toward the center as it is one of the beams supported on the stair side partitions (per item 1). Because the front joists are so short, their slope from having one end move down is more noticeable than the movement fo the full-length joists.

3. Based on the mid-1800s date of construction, the original mortar would have had lime binder rather than portland cement. All mortar is subject to loss of binder from exposure to water, but lime more so. However, the low height and relative stockiness of the building as a whole will lead to low levels of stress from wind load. (The New York City Building Code does not require seismic analysis of existing buildings.) The lack of movement in the walls strongly suggests that no tensile failure has occurred, despite a long history of wind loading.

4. The joist movement noted in items 1 and 2 is the result of movement the wood-supported ends of the joists, not the masonry-supported ends. The amount of damage varies but was not seen to have created unsupported joist conditions. For example, in photo 3 in Mr. Sztukowski's November 14 report addressed to the Department of Buildings Forensic Engineering Unit, three joists are marked. The caption to the photo says that those joists have "absolutely no bearing in the wall" despite the fact that they visibly are bearing on the brick below them. (See figure 13.) The joist on the right also has a wall tie, which indicates better floor-to-wall connection than is present in many buildings of this age.

5. The visible cracked header at the third floor is inadequate to carry the load of the floors above, in part because of the cuts in it for mortise-and-tenon connections for the carried third-floor joists. However, this condition is part of the original construction of the building, and the obvious question is how the structure has performed for so long. The space in which

3 "Deflection" is downward curvature of a beam under load, and is ordinary structural behavior. "Sag" is downward curvature without load, such as the movement that wood joists may develop as they age and dry out. "Movement" can be deflection, sag, or movement of a beam's supports.

the header is visible has had its interior finishes and partitions demolished, and appears to have been significantly altered: the I-Card shows "3 'B' rooms" in 1965, which would have required some kind of public hallway from the stair hall (at the rear of the building, on the west side) to reach a room at the east side, front. (There is a now-unused door from the stair hall to the space at the west, front. The space at the east, rear, could be reached directly by a door from the stair hall.) The partition for that now-demolished hallway would have been at or near the header. In other words, the demolition of a bearing partition at this level may be the immediate cause of the header overload.

Another possible cause for the header damage, as well as the item 1 and 2 slope, is a change of support at the second floor level. If, as Mr. Sztukowski states, there is a steel beam at the second floor that supports the center supporting structure above, its installation would have caused downward movement as load was transferred from the old supporting structure to the steel. Such movement, in addition to causing the slope of the floors above, would have increased the load on the header.

6. The diagonal cracks in the first-floor stair, following the slope of the stair, are in the finish of a partition that is carrying little load. The height of the cracks above the stair suggest that they mark the location of a transition from wainscoting to plaster in the original finishes. This partition is not in line with any partitions above, so it is at most carrying a portion of the second floor load. If there is second-floor load in the partition, it would tend to close these cracks, so loading from above is not a reasonable cause of the damage. The stair itself does not show movement that would cause these cracks by pulling downward on the partition. The most likely cause is minor thermal movement (the partition separates the conditioned space of the first-floor retail tenant from the unconditioned space of the stair, where outside air enters every time the door is used.

There are four active Department of Buildings violations:

- FEU10301PN, issued August 14, 2024: "EMERGENCY WORK ORDER.MAIN BLDG W/WOOD JOIST&CRCKD 3RDFL HEADER W/ INADEQUATE CONNECTION TO TRIMMER, WHICH WAS SUPPORTNG INTERIOR WALL ADJ TO STAIRS.FLOORS SEVERELY SLOPNG TOWARDS CENTER STAIRS@2ND THRU 5FLRS OWNR TO IMMED RTAIN NYSPE&LICENSED GC TO SHORE BLDG, AS REQ'D, UNDR FULL TIME CONT, NYSPE SUPERVISION/DIRECTION" This refers to item 5 above, which has been shored.
- FEU10302PN, issued August 14, 2024: "FAILURE TO MAINTAIN BLDG IN A SAFE CONDITION.MAIN BLDG&CRCKD 3RDFL HEADER W/INADEQUATE CONNECTION TO TRIMMER WHICH WAS SUPPORTNG INTERIOR WALL ADJ TO STAIRS.FLOORS SEVERELY SLOPNG TOWARDS.OWNR TO RTAIN NYSPE TO EVAL THE ENT BLDG&FILE RPAIR DWGS W/ DOB.PERM RPAIRS TO BEGIN UNDR PRMT 10/14/24&CMPLTD&SGND OFF" This also refers to item 5.

- 25-00666, issued April 14, 2025: “DOB HEREBY ORDERS YOU TO STOP ALL WORK IMMEDIATELY DUE TO INTENT TO REVOKE ALL APPROVALS AND PERMITS UNDER JOB #M01181265-I1” This is a procedural violation and does not specify any damage to the building.
- 25-02512, issued November 6, 2025: “REQUESTING AN ENGINEERING REPORT DUE TO BROKEN WALLS AND A BROKEN FLOOR EXPOSING WOOD JOISTS OBSERVED IN APT. #4C. THESE POTENTIALLY HAZARDOUS CONDITIONS HAVE RENDERED THE ENTIRE APARTMENT 4C UNSAFE TO ENTER AND OCCUPY. AN ENGINEERING REPORT IS REQUIRED TO ASSESS AND RECTIFY THE PROPERTY.” Apartment 4C is one of the dwelling units where partial interior demolition has taken place, exposing the structure. The damage noted is the result of construction operations, not building deterioration.

There are four open OATH/ECB violations:

- 39166312M, issued November 7, 2025: “WORK WITHOUT PERMIT, OBSERVED TUBS INSTALLED WITH ALL TYPICAL WATER AND WASTE PIPING IN ROOMS 4D AND 2D. IN ROOM 3C STAND SHOWER WASTE AND WATER PIPING INSTALLED., OBTAIN ALL PERMITS” This is not a structural condition or violation.
- 39166238N, issued November 7, 2025: “ATOI INSPECTION OBSERVED THAT MULTIPLE FLOORS AND STAIRWAYS ARE UNEVEN AND SLOPED, CREATING HAZARDOUS CONDITIONS FOR THE TENANTS OF THE PROPERTY, REPAIR AND/REPLACE” This is items 1 and 2 above and the hazardous condition noted is related to the uneven floors, not structural capacity.
- 39166234X, issued November 7, 2025: “ATOI OBSERVED AT APT#4C BROKEN WALLS AND BROKEN FLOOR EXPOSING WOOD JOISTS. THESE POTENTIALLY HAZARDOUS CONDITIONS HAVE THEREFORE RENDERED THE ENTIRE APT 4C UNSAFE TO ENTER / OCCUPY, REPAIR AND/REPLACE; VACATE” This is the same issue as DoB violation 25-02512. Apartment 4C is one of the dwelling units where partial interior demolition has taken place, exposing the structure. The damage noted is the result of construction operations, not building deterioration.
- 39166217Y, issued November 7, 2025: “ATOI OBSERVED AT APT #3C, 3D AND 4D ELECTRICAL WORK WAS DONE WITHOUT PERMIT (CONDUITS, OUTLETS, SWITCHES AND FIXTURES), OBTAIN PERMIT” This is not a structural condition or violation.

I have reviewed reports by Mr. Sztukowski dated May 17, 2024, September 20, 2024, November 11, 2024, November 24, 2024, and November 14, 2025. In broad terms, they discuss the same issues described above, using more extreme language. There is a disconnect between on the one hand, his analysis and recommendations, and on the other, his photos. In my analysis of item 4, above, I noted one example. Another example is the item referred to on page 3 of his November 14, 2025 report as photo 7 (referring to photo 7 in his November 11, 2024 report), where he states that a trimmer at the

fifth floor has been weakened by the (original) use of mortise and tenon connections, stating that "Significant reduction in bending moment capacity at critical stress location, creating imminent failure risk." Putting aide that this connection has performed adequately for over 160 years, the referenced photo does not show any damage, only the presence of the connection. Yet another example, is the item referred to on page 3 of his November 14, 2025 report as photo 1, 2, and 3 (referring to those photos in that report), which describes the brick side wall as "No structural integrity remaining – wall at imminent risk of collapse due to lack of binding and structural continuity." There is no movement of the kind he is describing visible in the photos: the three wythes of the brick masonry are not separating and the wall is not moving out of plane. It is not clear why Mr. Sztukowski believes that the conditions will suddenly change without warning, or why this condition merits vacating the building for repairs. It should also be noted that the conditions in apartment 4C were observed by the Department of Buildings inspector who wrote the November 2025 violations, and his violations did not call this masonry condition an imminent hazard for the building as a whole.

Conclusions

The building has various structural conditions created by a combination of weathering and past alterations. The shoring installed last year has made safe the most dangerous condition, item 5 above. The following work would be sufficient to address the structural violations:

- Reinstate permanent support for the eastern stair partition from the third floor to the second floor. This can take the form of the partitions that were previously present and were demolished, or some other new structure. This work will not interfere with any of the occupied spaces as long as it is performed with the current shoring in place. If the new support is a partition similar to the one previously present, no other considerations are needed at this location. If the new support consists of some kind of beams rather than a replacement partition, movement may take place during load transfer form deflection of the new beam(s) unless that issue is taken into account in design via the use of jacking or other construction means to minimize movement.
- If needed, reinstate permanent support for the center bearing partition at the rear (below the second floor) and below the stair partitions in the front. If such work is necessary, it would affect occupancy of the first floor and cellar, but not the residential portions of the building. As described in the analysis for item 1 above, it is likely that there is no current movement or load-path problem, but this can be investigated by removing the ceiling in the first floor and cellar to observe the support conditions of the center bearing structures.
- Reinstate the subfloor and ceilings in the dwelling units where finish demolition has taken place. This will not affect any occupied spaces.
- Level the severely sloped floor at the front stair landings at the third, fourth, and fifth floors (item 2 above). This can be done by (a) removing the ceilings below each landing at the front strip where the joists span front-to-back; (b) installing (from below) new, level, north-south

joists running from a ledger bolted to the front wall to light-gage joist hangers nailed to the existing trimmer, and then (c) sequentially removing the existing flooring and subfloor and installing new subfloor in small sections to keep the stair operational to the greatest extent possible. Work items a and b will not require closing the stair, work item c will require short temporary closures. For this work to be performed with the tenants in place, it must be coordinated with a schedule for the tenants of when the stair will be open. The use of small subfloor sections should prevent it from being taken out of service for extended periods of time. The result after all steps are performed will be steps up to the leveled floor in the adjacent (front) dwelling units similar to those that already exist for the units at the rear.

In addition to the work noted above, the following work will address weathering conditions:

- The main roof should be checked for water-tightness and drainage and repaired as necessary. This will not affect any occupied spaces.
- Exposed faces of exterior walls should be repointed, which is ordinary maintenance. This will not affect any occupied spaces.
- The vacated dwelling units can have the inside face of the exterior walls pointed as required. If needed, shelf angles can be installed to provide additional support for the joists above. This is an incremental improvement of general conditions and can be performed whenever a unit is vacated. This will not affect any occupied spaces.

If you have any questions or we can be of further assistance, please contact me.

Sincerely,

Donald Friedman, PE

Figure 1: The building as shown in the online NYCityMap from the New York City Office of Technology & Innovation. Note the unbuilt area between 105 and 109 east 9th Street.

Figure 2: Excerpt of "Maps of the City of New York" by William Perris, volume 3, plate 41, 1859. The site is indicated as 162 East 9th Street (before the 1861 street address renumbering) and the green shading indicates high-fire-hazard occupancy. Third Avenue is at the bottom and north to the right. Note the skylights and roof shown between 160 and 162 East 9th Street.

Figure 3: Excerpt of "Maps of the City of New York" by Perris & Browne, volume 2, plate 41, 1868. The green shading indicates high-fire-hazard occupancy. Third Avenue is at the bottom and north to the right. Note that the connector building between 105 and 109 East 9th Street has been replaced by the open Lafayette Court.

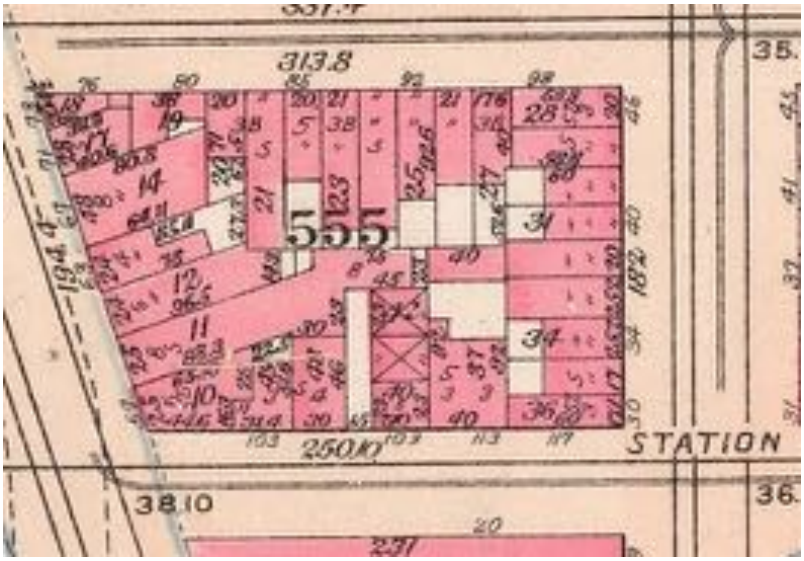

Figure 4: Excerpt of "Atlas of the City of New York" by G. W. Bromley & Co., plate 11, 1911. Third Avenue is at the right and north to the top. The vacant land is at the center of the lower end of the block, with 109 East 9th Street to the right.

Figure 5: The front facade of 109 East 9th Street from the 1940 New York City Department of Taxation records. The vacant land is visible to the left and 105 East 9th Street to the left of that.

Figure 6: The west facade of 109 East 9th Street from the 1940 New York City Department of Taxation records, looking past the vacant land. Note that past records show the rear portion of the building as a separate tax lot (block 555, lot 42) from the front portion (block 555, lot 40). Current records show both as block 555, lot 40.

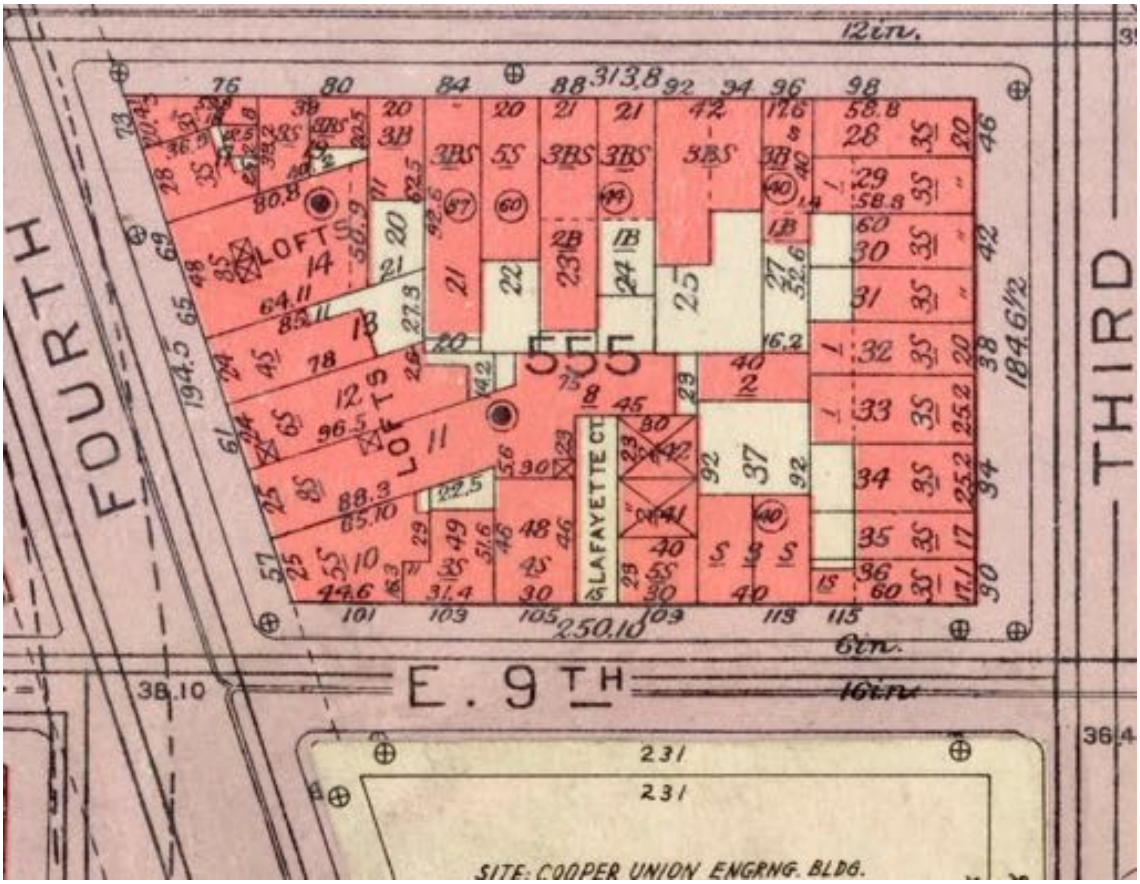

Figure 7: Excerpt of "Manhattan Land Book of the City of New York" by G. W. Bromley & Co., plate 30, 1955. Third Avenue is at the right and north to the top. The vacant land is at the center of the lower end of the block, labeled as Lafayette Court, with 109 East 9th Street to the right.

Figure 8: Front and west facades as observed on November 7, 2025.The exterior configuration is structurally identical to that seen in figures 5 and 6.

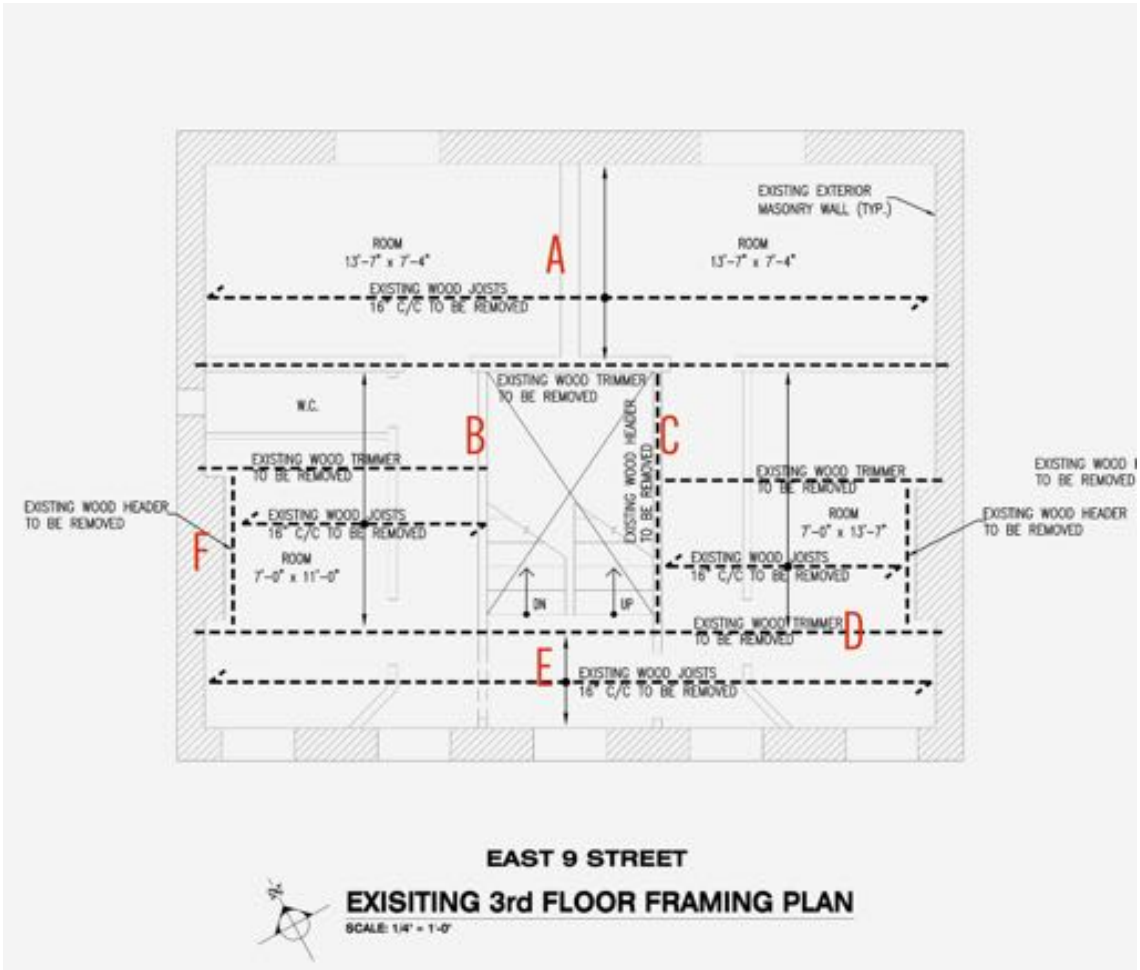

Figure 9: Typical residential floor plan, north to the top, excerpted from the set of structural drawings by Steel Core Engineering approved by the DoB on March 18, 2025 as filing M01181265-I1. The red letters are annotations for this report: A indicates the rear bearing partition, B and C are the western and eastern stair bearing partitions, D is the front fireplace trimmer that supports the front strip of north-south joists (indicated as E), and F is the western front chimney.

Figure 10: The first-floor retail space, as observed on November 7, looking towards the front facade. The gray wall with the EXIT sign is roughly at the back of the stair above, and is a likely location for a column to cut the span of a beam above (between the front and rear walls of the residential front portion of the building) in half. The red screw-jacks and wood plank in front of that are the first-floor portion of the shoring installed in response to the DoB violation regarding the damaged header.

Figure 11: The entrance hall of unit 3D as observed on November 7, 2025. Note the slope of the hallway floor compared to the built-up leveled platform for the room beyind.

Figure 12: The 5th floor front as observed on November 7, 2025, showing the slope back to the stair. Note that the baseboard molding follows the slope and fits at the door, indicating that it was cut to match the slope, which is not recent.

Figure 13: Photo 3 from the November 14, 2025 report by Steel Core Engineering. The red arrows are Steel Core annotation. The joist ends are damaged, but the joists extend into the brick wall and therefore have bearing and the rightmost joist has a wall tie (visible immediately to the left of the rightmost red arrow. The mortar is deteriorated but the wall is in position.

Figure 14: The header below the eastern stair bearing partition, as observed on November 7, 2025 in unit 1A. The light-colored wood is the shoring recently installed, and the crack in the header is visible at roughly the mid-height of the header and supported joists. The steel framing appears to be leveling for a ceiling that was not installed.

Figure 15: Interior of unit 3C as observed on November 7, 2025. Note the slope of the ceiling, following the slope of the floor above. The lack of plaster damage where the ceiling meets the wall indicates that this is not recent movement.

Figure 16: The stair from the street entry up to the second floor, as observed on November 7, 2025. The two cracks paralleling the stair slope appear to be non-structural damage in the partition finish, likely where wainscoting ends or used to end.