

Window Survey

Overview

The window frames and sash of 32-34 Mt Auburn Street are a mix of old and new components. The frames are original 1920's openings, with parts of the casings and brick moldings replaced during the 1991 renovation. The sashes are not original, with two campaigns of reproduction and retrofitting, the first in 1991, and the second sometime in the past 10 years.

The 1991 renovation documents titled "Cambridge Housing 667-6/705-3", dated 11/13/91, represents the first of the window modifications (See attached Exterior Elevations A-7, and Window Details on A-12). The scope describes "new 1/2" insulated glazing" as well as "replacing the brick molding with Brosco B691 brick molding" on the exterior. The scope retrofitted plastic spring balance jambs, new screens, weather stripping, and insulated glass units into most of the existing sashes and openings, as well as new window inserts and some replacements units. The window types were noted relative to their sizes, light configurations, and treatments, as A, B, C etc.

Currently, there are about 59 openings with reproduction sash. The existing sashes may have been contemporary with the 1991 Project, or perhaps a bit older. Although since the Historic District was created in 1988, it is unlikely they were made before that. The observations suggest the insulated glass units were cut into existing single glaze reproduction sashes, since the rabbet into the stiles and rails were overcut. It is not clear why the sashes would not have been built to accept insulated glass units if the age of the reproduction sashes are contemporary with the insulated glass units.

There are several observations that determined the sashes as reproduction. First, the sashes construction, especially the copes, is poor for the 1920's. And being poorly constructed, the sashes would not have lasted for over 100 years. The sashes never had the paint stripped, since the joints do not have any paint build up or residual paint in the grain, and there is no evidence of the sash being scarred from scraping. Lastly, the wood's grain is not tight enough, and the failure is not the accumulation of 100 years of weathering.

The 1991 project did remove the weights and pulleys and installed spring balance plastic jamb liners. When the plastic jamb spring liner failed sometime later, the second campaign of retrofitting an additional tube spring balances was done to the lower sash, leaving one half of the plastic intact for the upper window. The upper window was perhaps fixed shut for inoperability at that time.

There are about 12 windows that have window inserts (sash, jamb and balance kits) as identified in the 1991 Project, and 3 have later retrofits similar to the 1991 window inserts. These three windows may be part of the second campaign since they were not called out in the specs, but they do match some the 1991 window inserts. The 16 basement windows, identified as K, L, and N in the 1991 renovation, are replacement aluminum windows units (jamb, casing, sash) as part of the 1991 renovation.



Survey Method

The Window Survey was conducted on Monday, September 12, 2016. The weather was clear and 80 degrees, with no rain for several days. A survey of 20 of the 90 windows was completed. Windows were sampled by floor and elevation, to represent the variety of exposures and treatments. The following conditions were assessed:

1. ID- Location based on floor plan (see attached 32-34 Mt Auburn Window Survey Floor Plans)
2. Type- Double hung or fixed
3. Configuration- How many panes for each sash
4. Material- Type of wood
5. Insulated/Single Glass- Type of glass
6. Screen- Type and if it was in place
7. Operating System
8. Sash Opening Size- Depth, Width, Height
9. Top sash to bottom of meeting rail
10. Glass Pane Size
11. Sill Thickness
12. Sill pitch
13. Casing Size
14. Brick Molding size
15. Frame Condition
16. Casing Condition
17. Sash Condition
18. Balance Condition
19. Sill Condition
20. Hardware Condition
21. Operation- Easy, Hard, Does Not Open

The goal of the survey was to develop a general condition, function, and size to determine best treatment or replacement options.

Findings

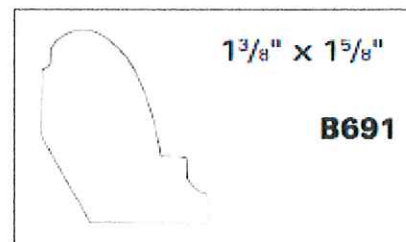
The windows and sash are based on four Groups:

Group A- 1991 reproduction sashes with plastic jamb spring balances and retrofitted insulated glass.

Group B- 1991 reproductions sashes with 1/2 plastic jambs and a newer metal tube spring balances.

Group C- Window inserts identified in the 1991 Project Documents as J, Details 5-8.

Group D- 1991 replacement aluminum basement awning windows.



Brosco B691 brick moldings replaced in 1991



Group A

Group A retains the treatment as identified in the 1991 Project Drawings. The sashes are reproductions with plastic jamb spring balances and retrofitted insulated glass. They include the 4th floor copper clad dormer windows. Four were assessed:

Observations:

- Survey ID (see attached 32-34 Mt Auburn Window Survey Floor Plans)
 - 4-2, 4-5, 4-8, 4-10
 - Sash
 - Sashes are about 40 years old
 - 3-5/8" depth jamb
 - 7/8" muntins
 - 1-1/2" thick sash
 - 6 over 6 windows
 - Glass Pane: 8-1/4" wide x 9" high
 - Sills and Casings
 - Original sills, casings
 - Exterior casing clad in copper
 - Jambs, Balances, and Stops
 - 1991 Original jamb covered by plastic spring balance
 - 1991 Plastic spring balance operating system
 - Function
 - Upper sash fixed
 - Lower sash by plastic jamb spring balance
 - Energy Efficiency
 - 1991 Interlocking metal weather stripping at meeting rail
 - 1991 Compression bulb at bottom rail of lower sash
 - 1991 1/2" insulated glass
 - Screens
 - 1991 Half screens with pivoting clips at center of sash and locking clips onto screws on the sill
- Condition:
- Sash
 - Sash were retrofitted with insulated glass in 1991.
 - Glazing rails were cut deeper and wider to accept 1/2" insulated glass
 - The insulated glass putty glazing is failing



Group A- Copper clad exterior trim and sill requiring repair



Group A- Retrofitted insulated glass



Group A- Plastic spring balance jamb liner



Group A- New Lock

- Sash stiles, rails, and glazing rails decayed and checked due to exposure
- Sills and Casings
 - The exterior wood is exposed and the paint failing
 - Various levels of sill decay and excessive paint. Can be stripped and epoxied
 - Copper seems functional, without any signs of underlying wood rot. Several penetrations that can be sealed.
- Jambs, Balances, and Stops
 - Jambs were covered over with the plastic jamb, although the jamb had pulleys (now missing), and the jambs were painted. The parting strip was also missing.
 - The interior stops are original as well as reproduced
- Function
 - Two of the four assessed functioned easily, while two had an air conditioners
- Energy Efficiency
 - The weather stripping was not functioning well and the side jambs were not tight. Air freely moved around the sash.
- Screens
 - Almost all had an existing screen, but many were inoperable



Group A & B- Bottom sash weather stripping



Group A & B- ½ screen hardware



Group A & B- Sash cut for IGU. Paint, glaze, & wood in poor condition



Group A & B- Sash cut for IGU

Group B

Group B are sash reproductions with the 1991 Project treatments, and newer metal tube spring balances. They are the predominant treatment for the sash. Twelve were assessed.

Observations:

- Survey ID (see attached 32-34 Mt Auburn Window Survey Floor Plans)
 - B-16, 1-2, 1-7, 1-20, 1-22, 2-2, 2-7, 2-21, 3-2, 3-7, 3-12, 3-14
- Sash
 - Sash are about 30 years old
 - 4-1/4" depth jamb
 - 6 over 6 windows
 - 1-3/4" thick sash
 - 7/8" muntins
 - Glass Pane: 9-5/8" w x 12-1/2" h



- Sills and Casings
 - Original pine sills, casings, and jambs
 - Exterior casing original pine, 3/4" thick and 2" wide
 - 1-1/2" x 1-1/2" 1991 replaced brick molding
- Jambs, Balances, and Stops
 - Two balance systems:
 - Upper sash plastic jamb spring balance
 - Lower sash tube spring balances
 - Original painted jambs
 - Original painted or natural stops
- Function
 - Upper sash fixed in place
 - About 1/2 of lower sashes functioned
- Energy Efficiency
 - 1991 Interlocking metal weather stripping at meeting rail
 - 1991 Compression bulb at bottom rail of lower sash
 - 1991 1/2" insulated glass



Group A & B- Original stop

Condition

- Sash
 - Sashes were retrofitted with insulated glass in 1991.
 - Glazing rails were cut deeper and wider to accept 1/2" insulated glass
 - The insulated glass putty glazing is failing
 - Sash stiles, rails, and glazing rails decayed and checked due to exposure

Sills and Casings

- The exterior wood is exposed and the paint is failing
- Various level of sill decay and excessive paint, but can be stripped and epoxied
- Jambs, Balances, and Stops
 - Upper sash track was covered over with the plastic jamb
 - Lower sash track covered in aluminum glued on jamb track, and a tube spring balance
 - Pulleys were removed
 - Jambs were painted.
 - Parting strip missing.



Group A & B- Lower sash with aluminum clad jamb and original paint behind

- The interior stops range from original oak to reproduced
 - Function
 - Half of the assessed were hard to function
 - Energy Efficiency
 - The weather stripping was not functioning well, and the side jambs were not tight. Air can freely move around units.
 - Screens
 - Half screens previously installed. Almost all had an existing screen but many were inoperable

Group C

Group C are the window inserts identified in the 1991 Project Documents as J, Details 5-8, including the jamb/balances and sash. The manufacturer is unknown. In 1991, the only openings with this treatment were windows "J", also labeled 1.15 on this survey. The glass size is not consistent with a similar opening, 1.15, which is a 6 over 6, not the 8 over 8. Window 3-17 on this survey is the same window insert style. The inserts functioned well and did not seem to require any repair or replacement considerations, only painting. There are approximately 9 Group C windows.

Observations:

- Survey ID (see attached 32-34 Mt Auburn Window Survey Floor Plans)
 - 2-15, 3-17
- Sash
 - 8 over 8 windows
 - Glass Pane Daylight: 5-3/4" wide x 10-3/8" high
 - 6 over 6 windows
- Glass Pane Daylight: 7-3/4" wide x 14-1/8" high
 - 1-3/4" thick sash
 - 7/8 muntins
 - 4-1/4 jamb depth
- Sills and Casings
 - Original pine sills, casings, and jambs
 - Exterior casing pine, 3/4" thick and 2" wide, 4-1/4" depth jamb
 - 1-1/2" x 1-1/2 brick molding



Group B- Lower sash tube spring balance



Group B- Upper sash plastic spring balance jamb, and lower sash tube spring balance with aluminum jamb



Hardware- Does not seem to be original, since they are designed for use on sash with a pole.



Hardware- Only a few lifts. May be original

Jambs, Balances, and Stops

- Balance system inside jamb
- New stops for window insert, with original stops no longer in place
- Function
 - Tilt sash
 - Jamb spring balance system
- Energy Efficiency
 - Full compression weather stripping
 - Single glazing with wood interior and exterior sticking
 - Interior energy panel

Condition

- Sash
 - Wood and finishes in good condition
 - Require repainting
- Sills and Casings
 - The exterior wood is exposed and the paint failing
 - Various level of sill decay and excessive paint, but can be stripped and epoxied
- Jambs, Balances, and Stops
 - Original jambs covered by new window insert jamb and balance system
 - The window insert and jambs seemed to have reduced sash width by about 3”
- Function
 - Functioned well
- Energy Efficiency
 - Weather tight
- Screens
 - Full screens

Group D

Group D are 1991 replacement aluminum basement awning windows, that functioned well and did not seem to require any repair or replacement considerations.

Observations:

- Assessed Opening's ID
 - B-12
- The windows functioned and did not appear to require any maintenance



Group A, B, & C- Sill require scraping, consolidation, and refinishing



Group C- New window insert's jamb and balance extends past the original jamb by about 1”



Group A & B- Original jambs and stops

Conclusion

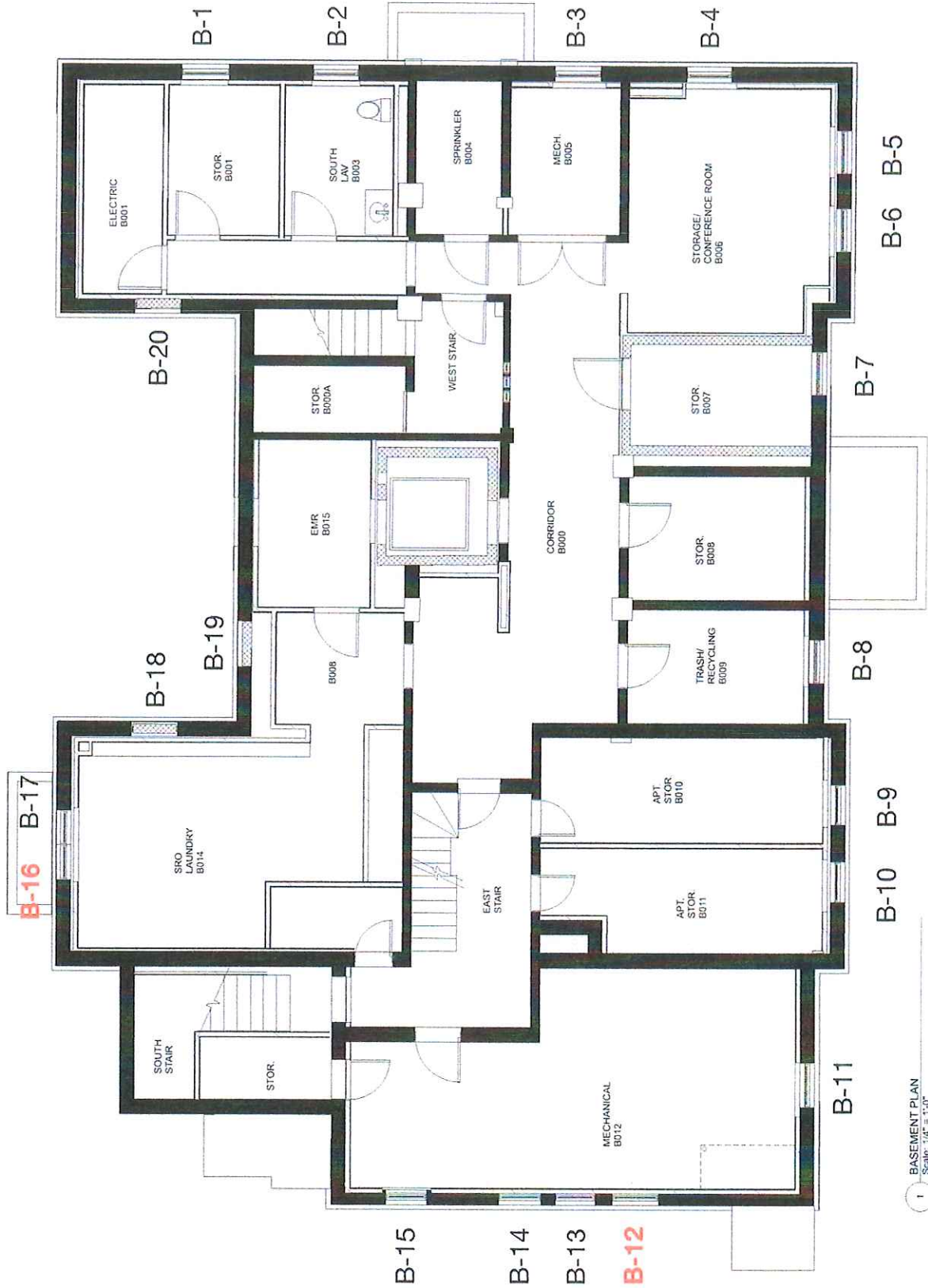
Architecturally, the building maintains many original character defining features, such as the ornamental brick, slate roof, copper clad dormers, window casings and trim, and door surrounds. The building's fenestrations are an important part of the design, and windows should be a high consideration in maintaining the building's presentation.

The windows retain the original jambs, exterior casings, and some interior stops. The brick moldings and the sashes are not original, confirmed by observations and the 1991 Project Exterior Elevations A-7, and Window Details on A-12. The 1991 Drawings identify "new insulated glazing", suggesting the sash were modified to accept new glass. The actual sashes are not constructed typical of early 20th century sash, there is no evidence the sashes were once stripped, and the wood grain is not consistent with early 20th century pine.

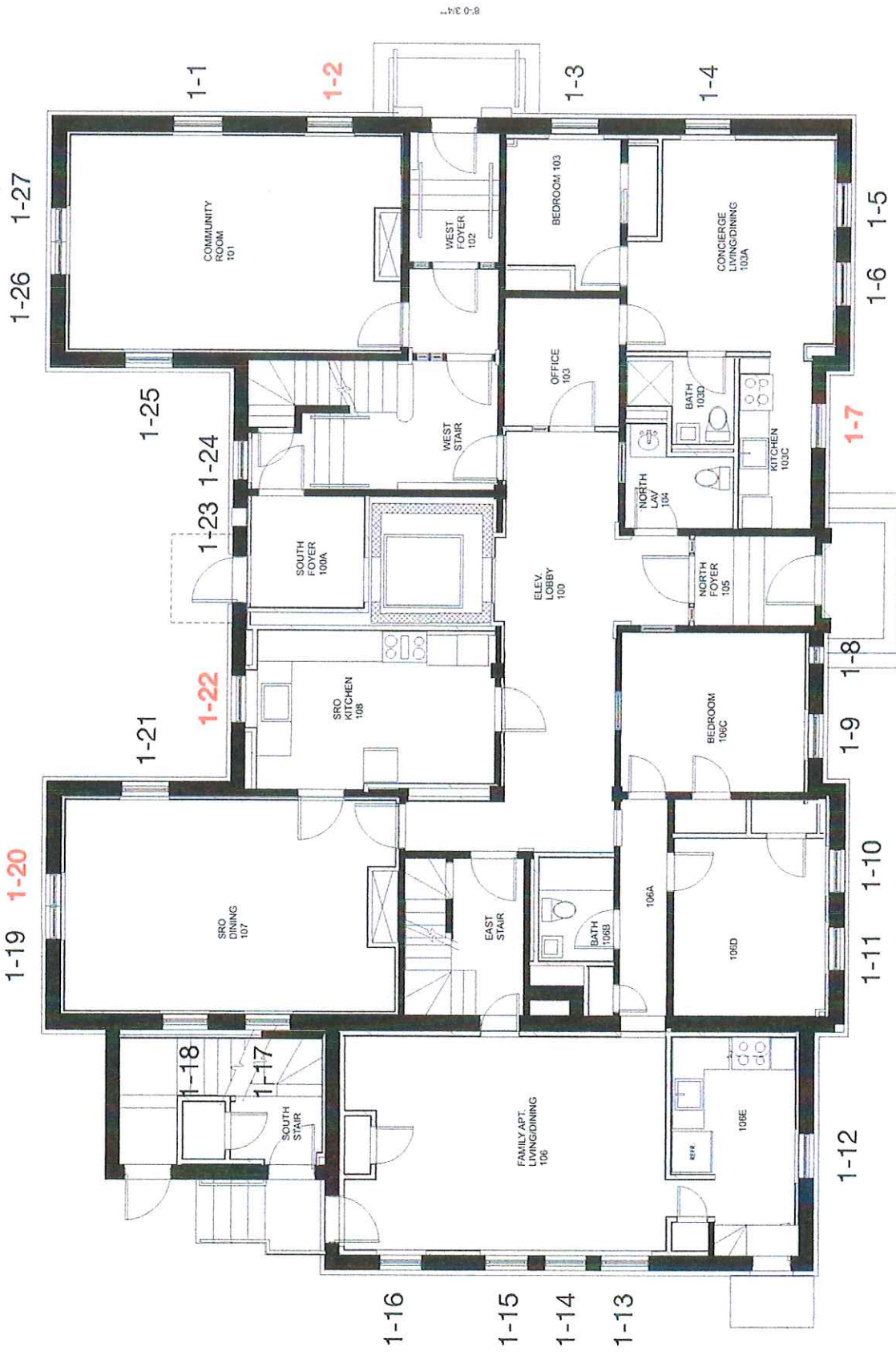
The sashes are not original and they have been modified in a way that makes repair ineffective. The 1991 modifications included cutting the glazing rabbets deeper and wider, as well as the stiles cut to accept the initial plastic jamb spring balance and later tube spring balance, have compromised the integrity of the wood sash. And since the balance and weather stripping systems have been ineffective from the start, retrofitting yet another system will not guarantee an effective operating and weather stripping system.

Also, the insulated glass units (IGU) do have a functional life span, although the longevity of the IGU has several variables. While they were no observed insulated glass unit failures such as fogging or condensation, the longevity of the unit depends on how the IGU was set, and the quality of the IGU's primary and secondary sealants. The improper setting of the IGU, along with simultaneous action of water, elevated temperatures, and sunlight will stress the edge seal of the IGU. For greatest longevity, IGUs should be set as a system, using butyl tape against the glazing rail, setting blocks (used to isolate and elevate IGU from the sash, acting as cushions to prevent water from becoming trapped in the glazing bed), and an interior or exterior glazing bead/glass stop, not glazing putty and push pins as exists in these sash. The condition of the sash and glaze, and removing and reusing the glass, would extend the life of the sashes for maybe 5-10 years.



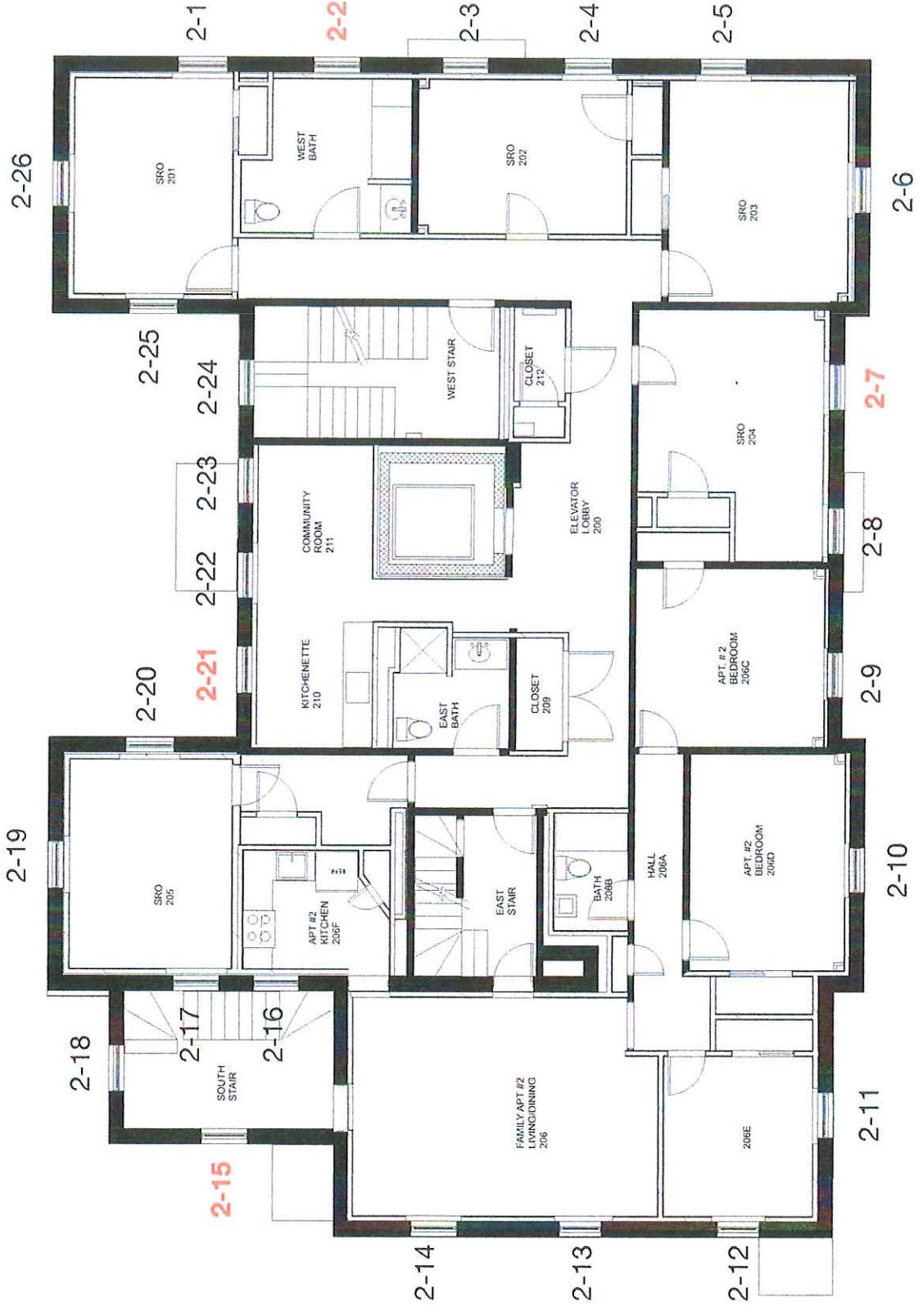


1 BASEMENT PLAN
Scale: 1/4" = 1'-0"

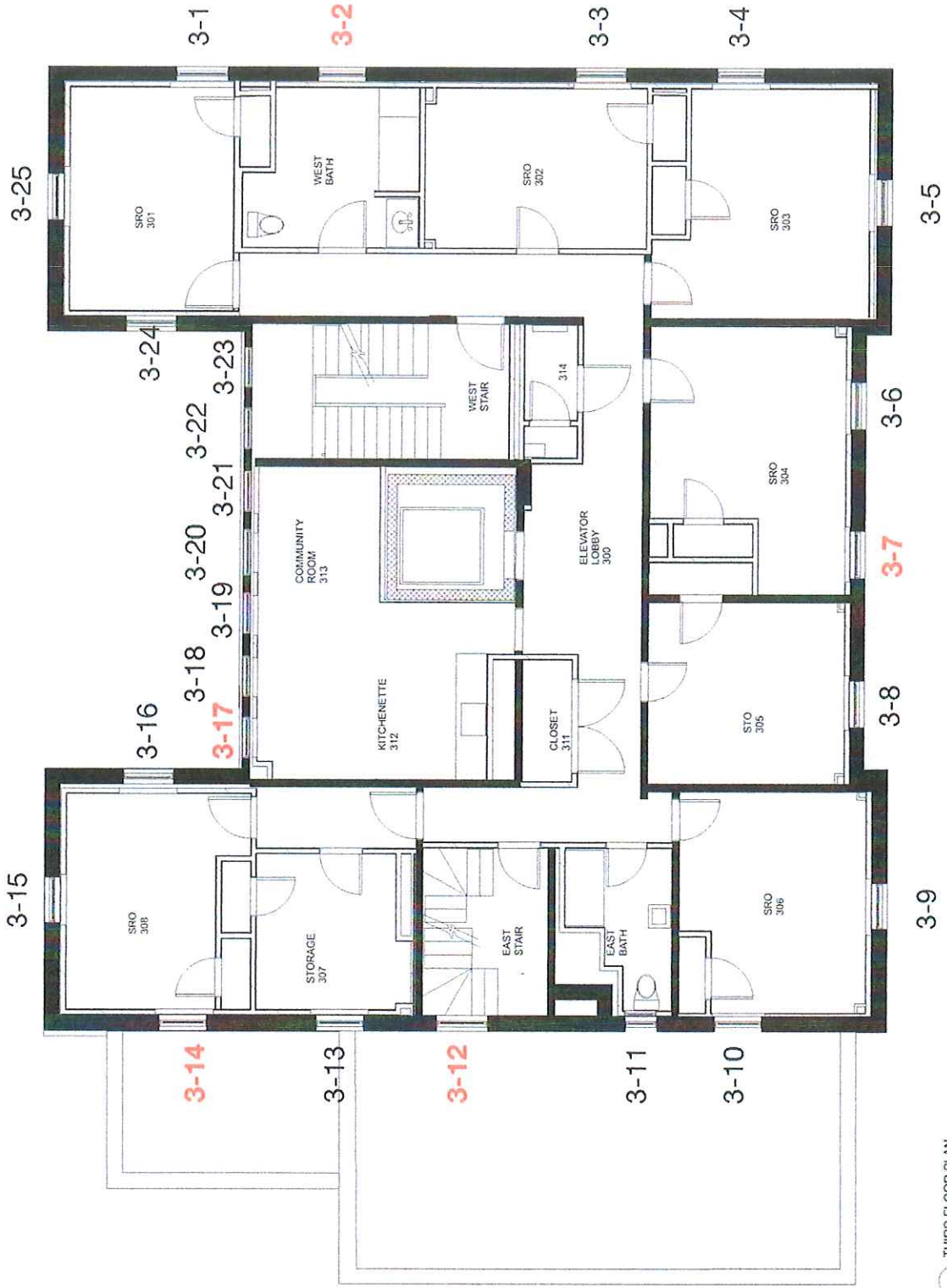


1 FIRST FLOOR PLAN
 Scale: 1/4" = 1'-0"

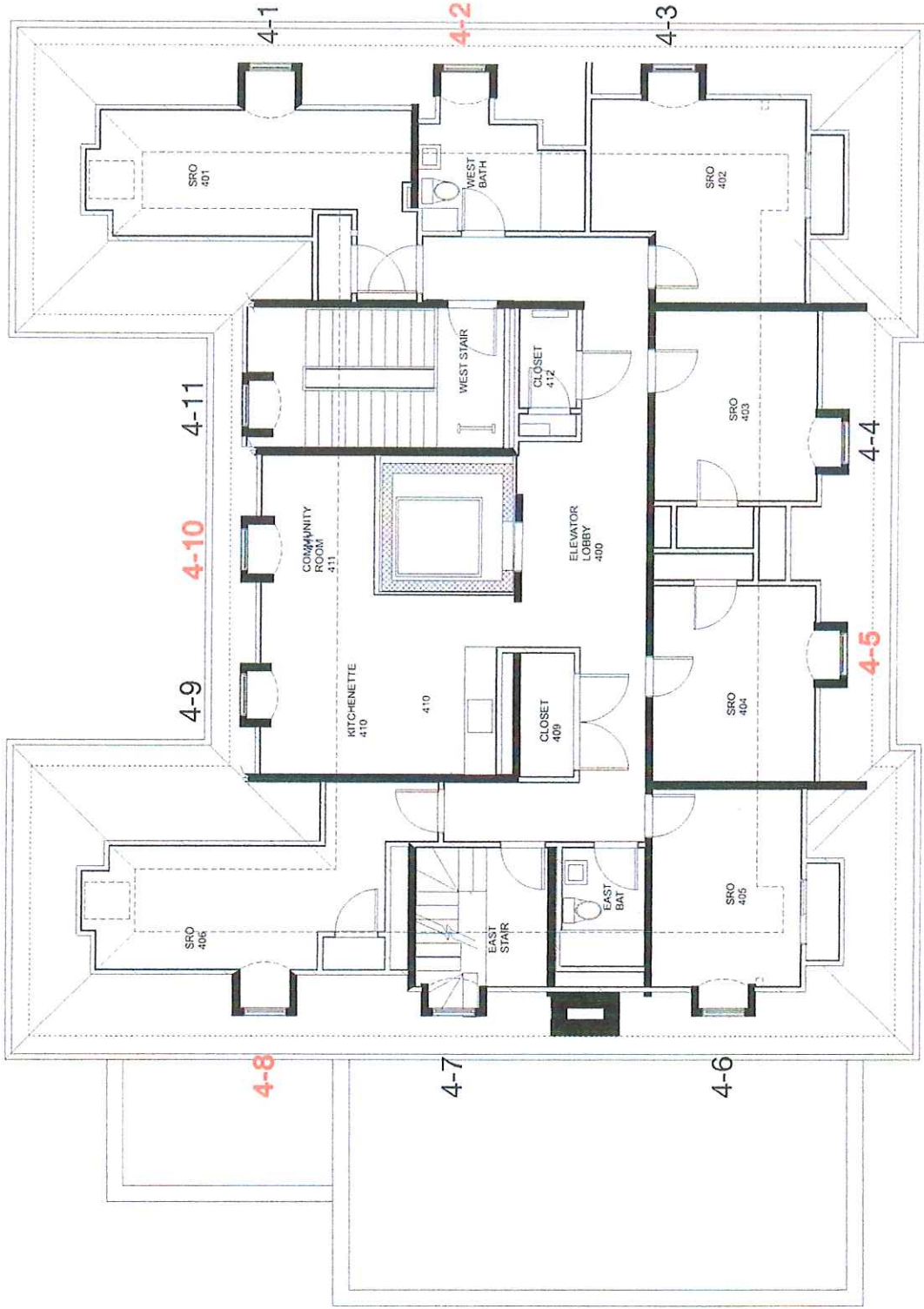
8-0-3/4



1 SECOND FLOOR PLAN
Scale: 1/4" = 1'-0"



1 THIRD FLOOR PLAN
Scale: 1/4" = 1'-0"



1 FOURTH FLOOR PLAN
Scale: 1/4" = 1'-0"