

November 1, 2023

King County Housing Authority
700 Andover Park West, Suite C
Seattle, WA 98188

ATTN: Heath MacCoy

RE: *Wayland Arms Apartments Structural Upgrade Summary – Auburn, Washington*

Dear Heath:

We were asked to go out on site to observe slab settlement at the south and north end of the four-story building. We were accompanied on site by you and your colleagues. We were provided the original existing drawings and a renovation of some foundation work that occurred at the north end of the building. We were provided with a geotechnical report of this portion of the building as well.

The purpose of this letter is to summarize our findings and recommendations from a structural standpoint that we have discussed with you previously.

SUMMARY OF FINDINGS

The following is a summary of our findings:

- We observed 1" approximately of slab settlement at the south end of the building at the first floor. The non-bearing metal stud walls and masonry walls had gaps at the bottom of the walls and appeared to be suspended from the 2nd floor.
- In 2013, the first-floor corridor at the north end of the building was resupported with steel pin piles and concrete grade beams. We observed that the slab had settled approximately 1" similar as at the South wing. The non-bearing metal stud walls appeared to be suspended from the 2nd floor and had gaps below the wall.
- The existing slab will continue to settle over time. Monitors are being set up currently to determine the rate of settlement by the geotechnical engineer. Readings are typically done on a yearly basis. We have requested that some initial readings occur at the first 3 month interval and then on a yearly basis thereafter.
- The steel moment frames are overstressed and do not meet the building code drift requirements from a lateral standpoint.
- No signs of settlement are being observed at the masonry veneer walls nor at the second and third floor. The main building is supported by timber piles and concrete grade beams.

King County Housing Authority
Heath MacCoy
Wayland Arms Apartments Structural Upgrade Summary – Auburn, Washington

RECOMMENDATIONS

The following is a summary our recommendations that we have discussed:

- The existing slab could be replaced with a new structural slab with pin piles at the first floor. The interior partitions would need to be removed and re-installed. The corridor slab at the north building wing could remain as this is already supported. The existing utilities could be supported from the new structural slab. The scope of work would be similar to the 2013 work that was done. An alternate fix could be to re-shore all of the walls, but this would be a temporary fix.
- A voluntary seismic upgrade is highly recommended due to the overstressed steel moment frames. The upgrade options are as follows:
 - Option 1: Seismically upgrade only the first floor by adding steel buckling restrained brace frames.
 - Option 2: Seismically upgrade the entire building by adding steel buckling restrained brace frames to each floor.

CONCLUSION

Overall, the building appears to be well designed and detailed for the era in which it was constructed. Other than the settlement of the slab, the building has performed well over the course of its life. The building, however, does not meet the strength and detailing requirements of a building designed to current code standards. The building will likely perform worse than most constructed during this era. The columns, joints and beams of the moment frames will be overstressed in a larger seismic event. We would recommend a seismic upgrade to the building.

We recommend that the slab be mitigated with a permanent solution to minimize future settlement at the south wing. The North wing, per our discussions, is going to be monitored as requested. See the attached enclosures to for depiction of the anticipated renovations.

Thank you for your time and we look forward to further discussions.

Very truly yours,

PCS STRUCTURAL SOLUTIONS



Luke Heath, S.E.
Associate Principal

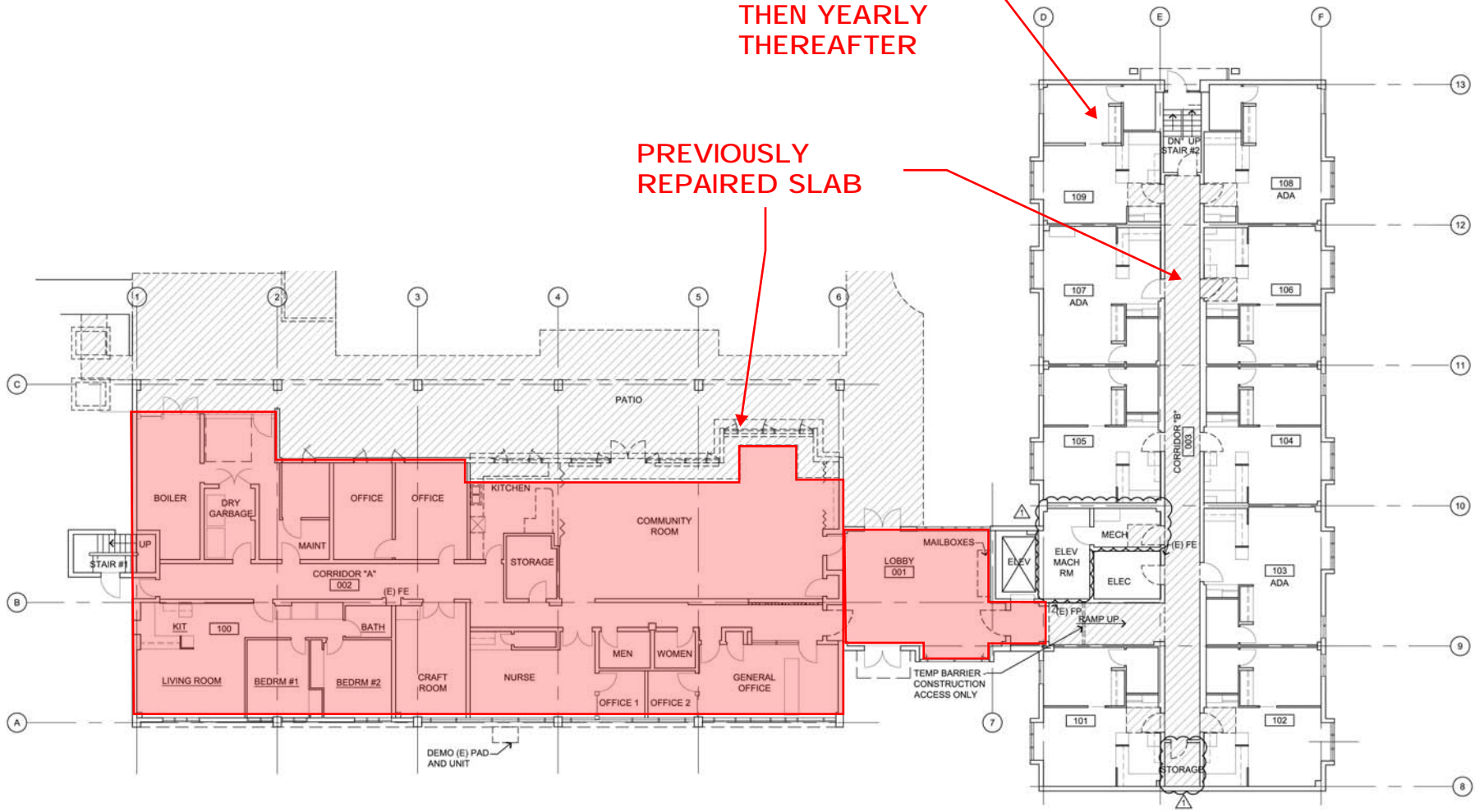
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Enclosures



SLAB TO BE MONITORED QUARTERLY INITIALLY AND THEN YEARLY THEREAFTER

PREVIOUSLY REPAIRED SLAB



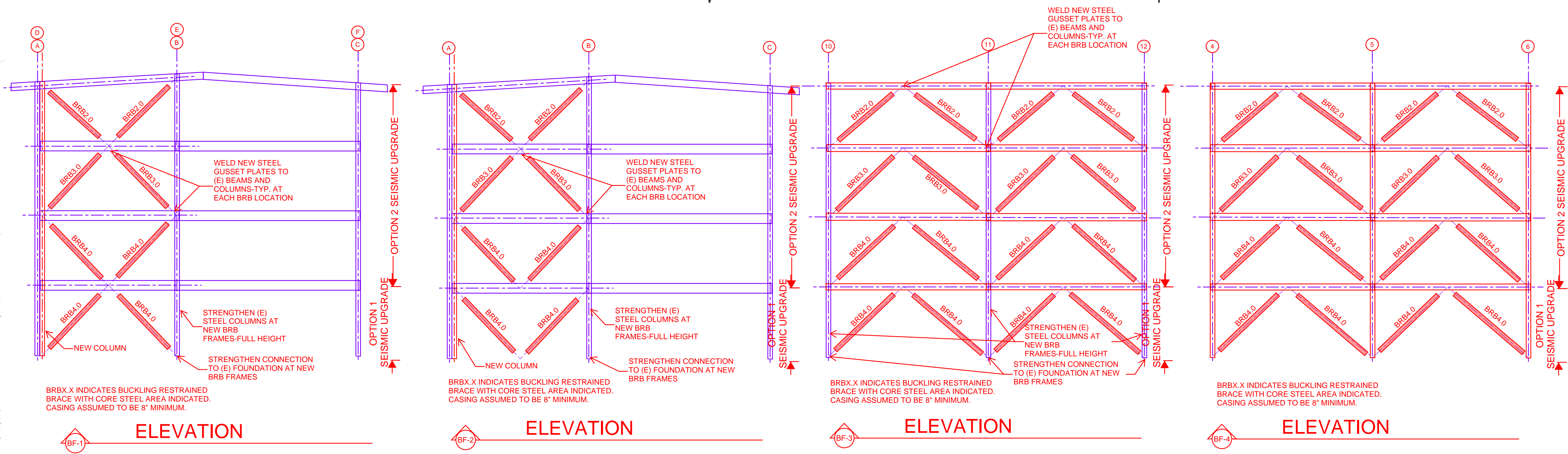
 Indicates location of new concrete structural slab with pin piles

1
S1

SLAB REPAIR SCOPE



AS-BUILT 01/15/2014

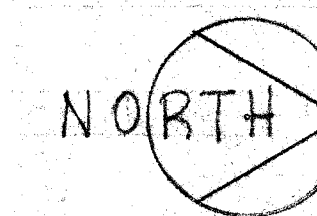
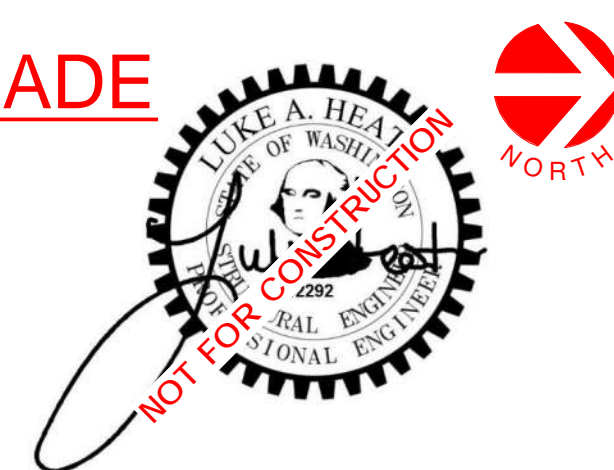


NOTES:

1. THE SHOWN CONCEPTUAL DRAWINGS ARE FOR A VOLUNTARY SEISMIC UPGRADE. THE CURRENT BUILDING DOES NOT MEET STRENGTH OR DRIFT REQUIREMENTS OF THE CURRENT BUILDING CODE OR 75% OF THE FORCES OF THE CURRENT BUILDING CODES.
2. THE PROPOSED UPGRADE IS MEET THE CURRENT BUILDING CODE STANDARDS.
3. THE PROPOSED LOCATIONS OF THE BRACE FRAMES ARE ABLE TO MOVE AND WE RECOGNIZE THAT THE SOUTH WING DOESN'T STACK WITH THE 2ND AND 3RD FLOORS, WHICH ADDS SOME COMPLICATIONS.
4. THE PURPOSE OF THE CONCEPTUAL UPGRADE IS TO FACILITATE DIALOG ON FUTURE UPGRADES. THE SEISMIC UPGRADES COULD BE DONE JUST ON THE FIRST FLOOR IF DESIRED. NOT ALL MEMBERS ARE SHOWN AND UPGRADES ARE SHOWN.
5. SLAB REPAIR IS NOT SHOWN AT THIS TIME.
6. ARCHITECTURAL, MECHANICAL, AND ELECTRICAL IMPACTS ARE NOT INDICATED AND WILL NEED TO BE ACCOUNTED FOR.

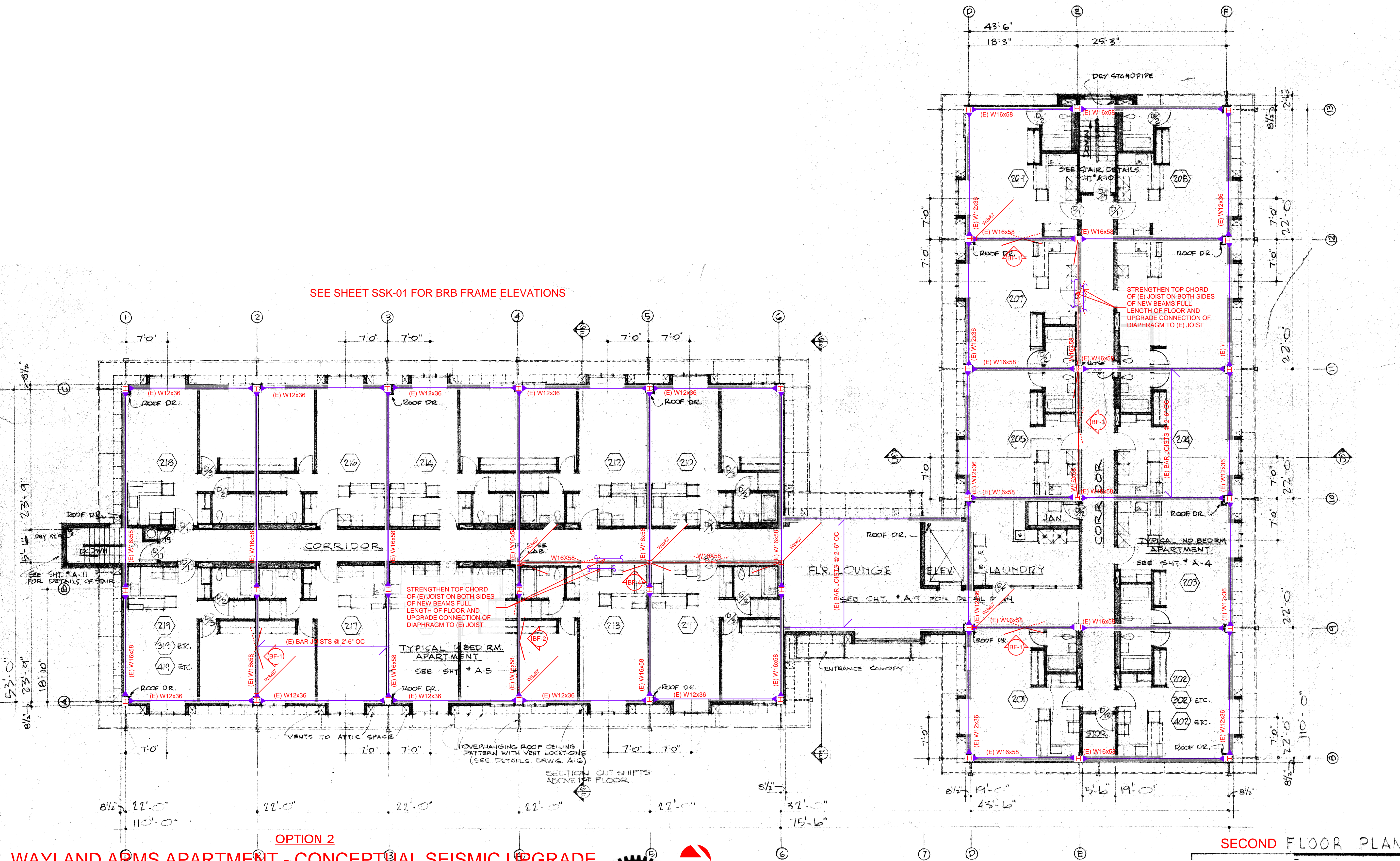
OPTION 1

WAYLAND ARMS APARTMENT - CONCEPTUAL SEISMIC UPGRADE



FOUNDATION PLAN 1/8"=1'-0"

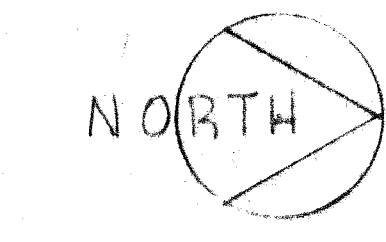
SEE SHEET SSK-01 FOR BRB FRAME ELEVATIONS



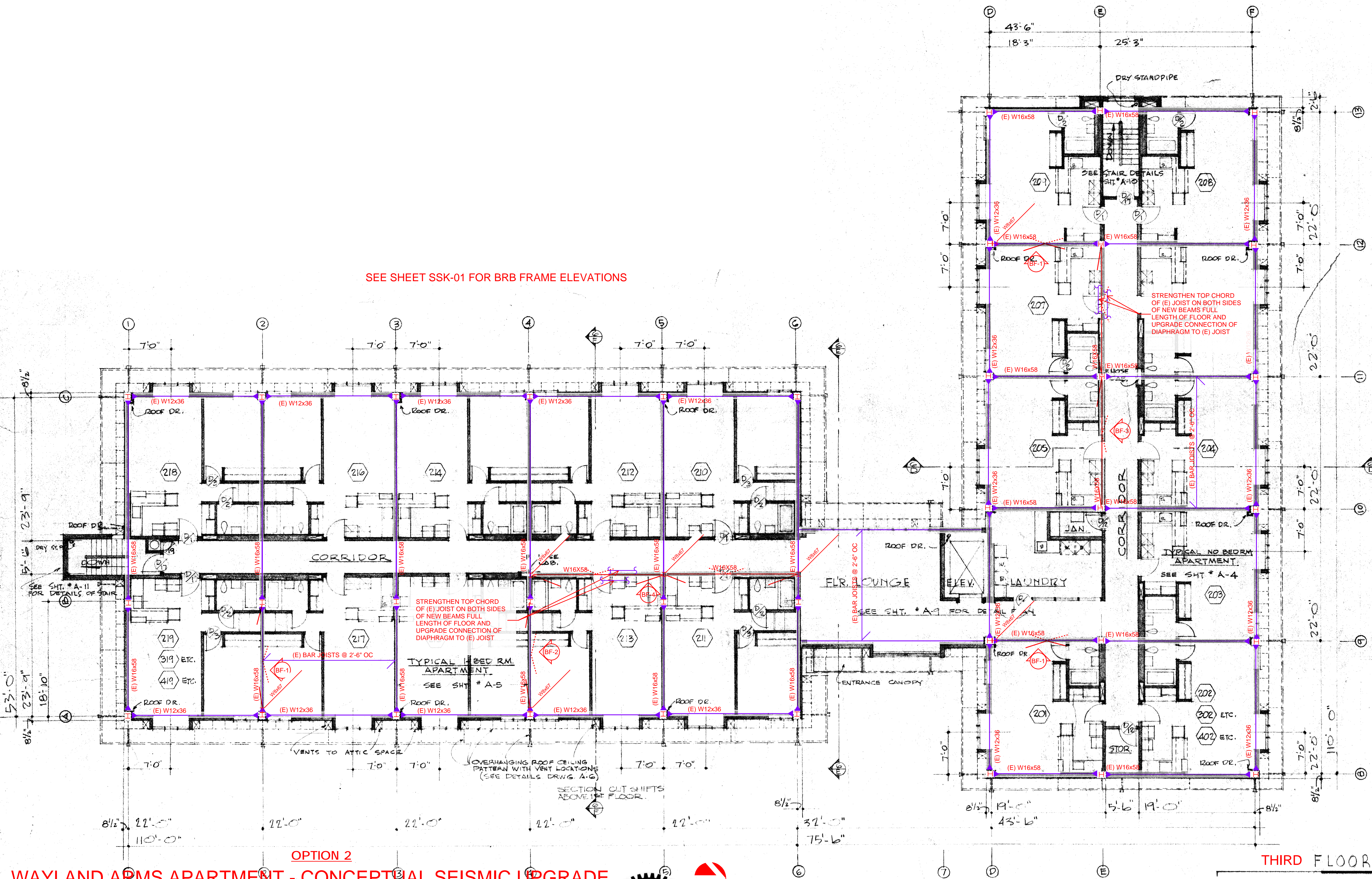
OPTION 2

WAYLAND ARMS APARTMENT - CONCEPTUAL SEISMIC UPGRADE

SECOND FLOOR PLAN



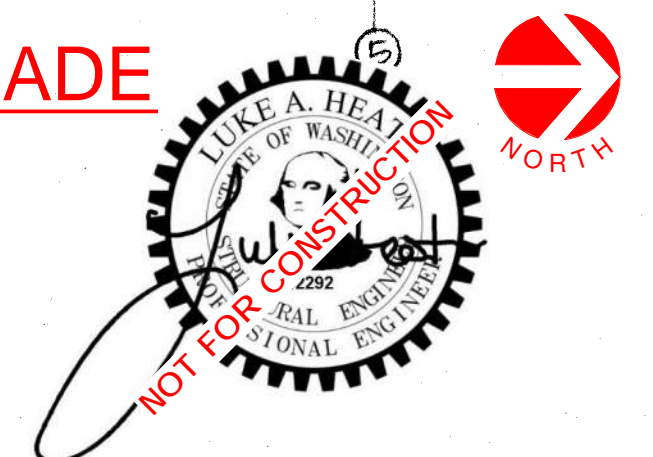
SEE SHEET SSK-01 FOR BRB FRAME ELEVATIONS



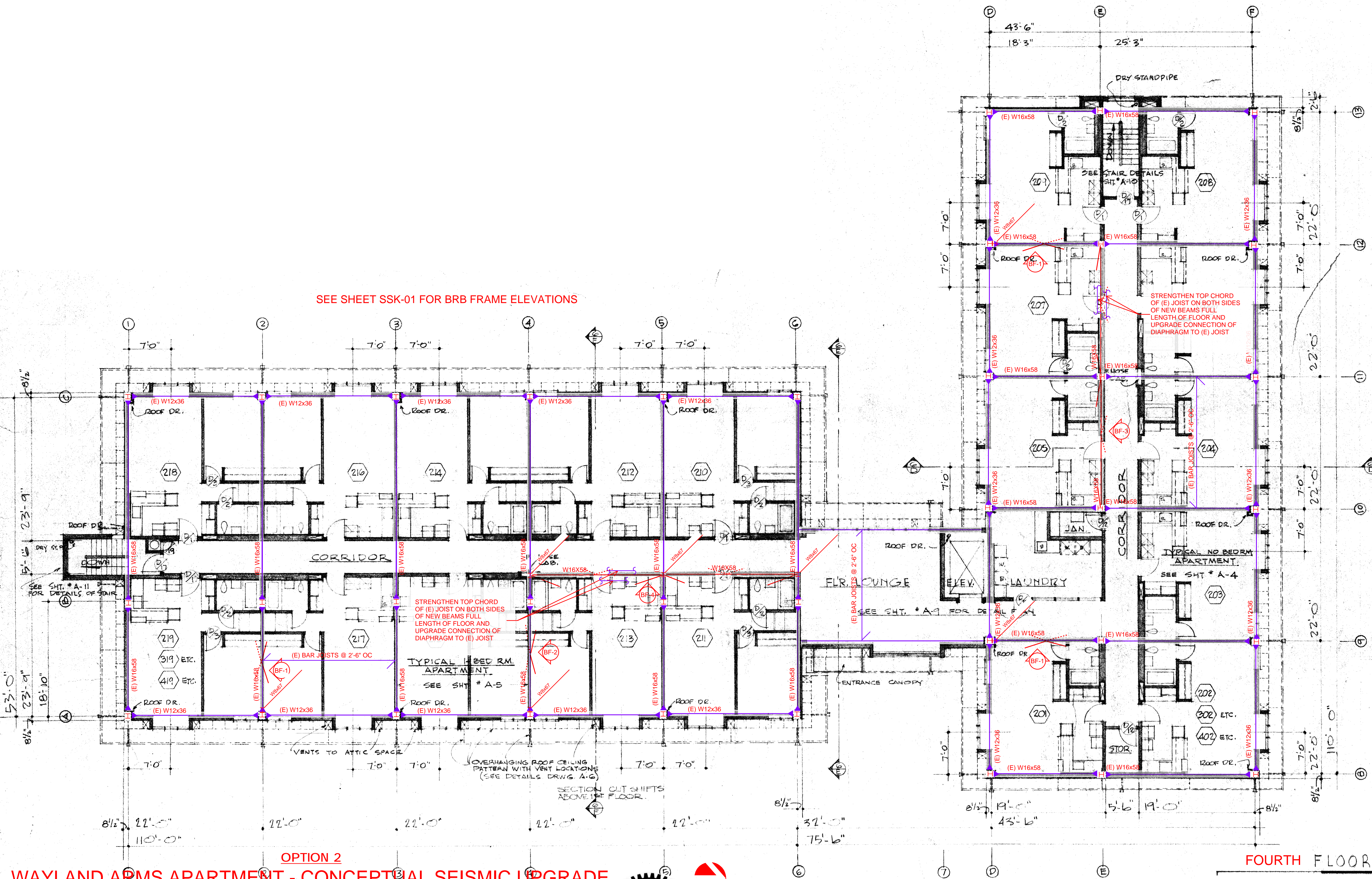
OPTION 2

WAYLAND ARMS APARTMENT - CONCEPTUAL SEISMIC UPGRADE

THIRD FLOOR PLAN

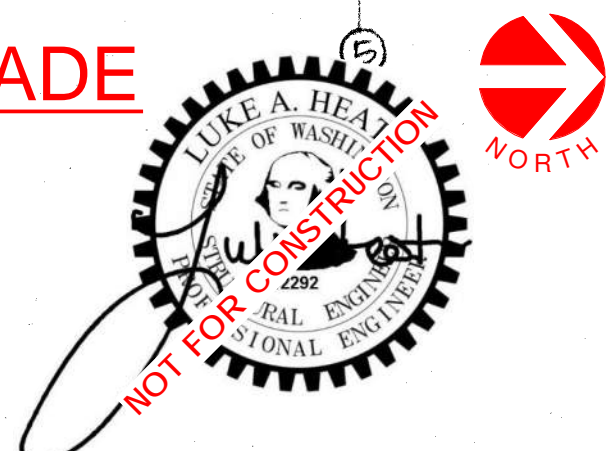


SEE SHEET SSK-01 FOR BRB FRAME ELEVATIONS



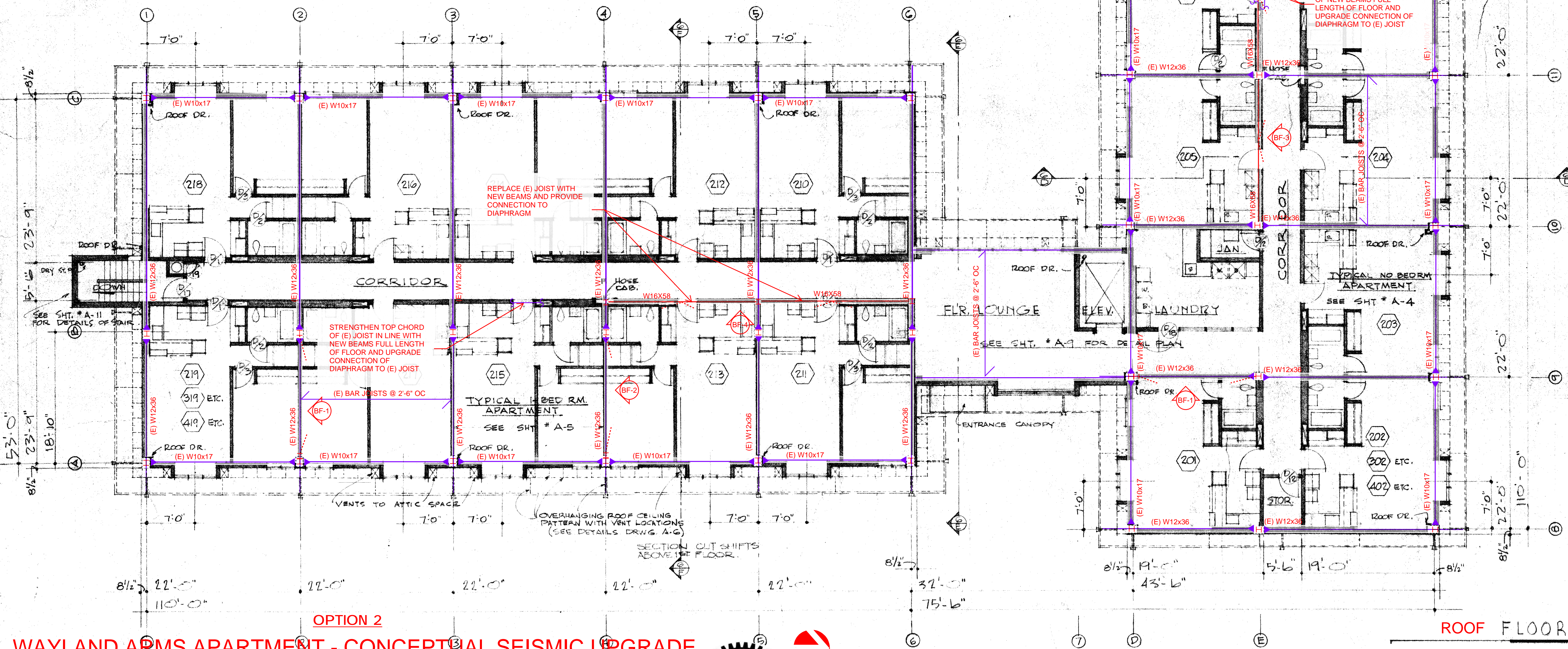
OPTION 2

WAYLAND ARMS APARTMENT - CONCEPTUAL SEISMIC UPGRADE



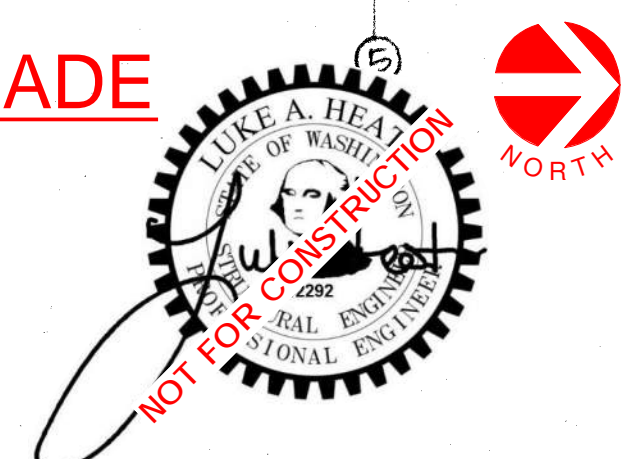
FOURTH FLOOR PLAN

SEE SHEET SSK-01 FOR BRB FRAME ELEVATIONS



OPTION 2

WAYLAND ARMS APARTMENT - CONCEPTUAL SEISMIC UPGRADE



ROOF FLOOR PLAN

