



May 10, 2020

Paula Tomera
Lander County Convention & Tourism Authority
470 S. Broad St.
Battle Mountain, NV 89820

RE: Lemaire's Grocery – 6 W Front St

Dear Ms. Tomera,

On February 17, 2021, Structural System Solutions, Inc provided a visual structural evaluation of the Lemaire Building located at 6 West Front Street, Battle Mountain, Nevada. This evaluation is to provide a preliminary assessment of the structural integrity for continued service. The Lemaire Building currently totals 10,618 square feet. The original two-story, unreinforced brick masonry structure with nominally wood-framed floors and roof was constructed in 1866. Additions to the store were constructed in 1867, 1976, 1986, 1989, and 1994. The structure is currently unoccupied and ranges from poor to good condition.

Building Site

The structure sits on a level lot at the corner of Front St and Broad St (Pictures 1 & 2). The structure is in Special Flood Hazard Area, AE – Base Flood Elevations Determined: 4514.88 (FEMA Map 32015C0470G). Picture 1 shows the current Exterior Elevation from Front St and Picture 2 shows the structure in 1880.



Picture 1 – Exterior Elevation - Current (Front St)



Picture 2 – Exterior Elevation – 1880 (Front St)

Exterior Construction

The bearing walls are unreinforced brick-masonry. The exterior includes nominally wood-framed storefronts with a mixture of wood, exposed brick, and sheet metal siding. Numerous discontinuities and points of water-infiltration were noted around the building envelop. The majority of existing exterior finishes are not original.

Picture 3 shows multiple finishes, non-historic roof lines, and types of construction along the west wall. The building section at Front St (Left of Picture) was constructed in 1866, the middle section in 1989 and the section at the right was constructed in 1994. Picture 3 also depict the numerous roof planes and potential locations for water infiltration. Picture 4 shows several agricultural style additions of poor quality constructed in 1994 and 1986.

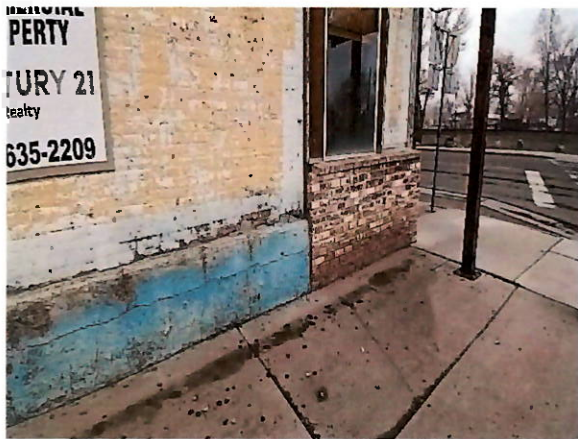


Picture 3 – Exterior Elevation (Looking East)



Picture 4 – Exterior Elevation (Looking North)

Pictures 5 & 6 show the exterior of the original 2-story structure along Broad St. A concrete wainscot is shown in Picture 5. This concrete is in poor condition and was likely installed to stabilize the decayed brick at the ground level. It is unknown if this concrete is reinforced and if it is tied to the existing brick masonry wall. The brick wall does have some cracking likely due to differential settlement. Differential settlement can result from insufficient foundations, reduced soil capacity due to moisture or a combination of the two.



Picture 5 – Exterior Elevation



Picture 6 – Exterior Elevation (Broad St).

The exterior windows appear to be in good shape with limited damage or decay. No signs of water infiltration were observed around the windows at the second floor.

Roof Framing

The roof over the 2nd story apartment area is non-historic and appears to be in good shape with no water-infiltration noted. It is unclear how this roof structure is attached to the brick masonry walls and when it was constructed. Pictures 7-10 show several different areas of the low roof over the main level. All the pictures show damage to the existing roofing, multiple drainage paths, and lack of maintenance. Picture 7 shows an area where the roofing membrane has failed exposing the plywood sheathing below. Picture 7 also shows where adjacent roofs drain storm water towards the center of the building. Picture 8 shows several mechanical units on the roof and multiple roof plains. An investigation of the roof framing in this area found that at least (3) different roof



assemblies constructed at different times stacked on top of each other. Picture 9 shows an area where the original brick masonry parapet has failed and an abandoned conduit pipe. Picture 10 shows another area where the low roof membrane has failed exposing the insulation below.



Picture 7 – Damaged Roofing



Picture 8 – Roofing with Mechanical



Picture 9 – Parapet Failure and Piping



Picture 10 – Roofing Failure

2nd Floor Framing

The 2nd floor of the original structure is framed with 2x10 floor joists spaced at 24" on-center. These joists are pocketed into the masonry walls at the ends and supported by an 8x10 beam down the center. The wooden beam was originally supported by 8X8 posts. Most of these posts have been removed and replaced with W10x26 steel beams that are pocketed into the masonry walls 12" deep. It is likely that these posts were salvaged and reused to support the awning along the East end of the structure on Front St (Picture 1).

Picture 11 shows a section of the interior masonry wall that was removed and retrofitted with a steel lintel. Picture 11 also shows one of the steel floor beams loosely pocketed into the masonry wall. Picture 12 shows the interior of the lower level of the original 1866 2-story structure. The installation of the steel beams lacks suitable connections at the walls and would perform poorly in an earthquake.

A structural analysis found the existing 2nd floor joists to be sufficient for the current occupancy, however the existing beams were found to be insufficient, 8x10 (125%) and W10x26 (135%).



Picture 11 – Retrofitted Header



Picture 12 – Interior Framing

1st Floor Framing and Foundation

The 1st floor consists of wood flooring over 2x8 joists at 24". The floor joists are supported at quarter points by 6x6 beams bearing on brick-masonry footings. The first floor is overall in poor shape with insect damage (Picture 13), multiple holes and patches (Picture 14).



Picture 13 – Flooring Insect Damage



Picture 14 – Flooring Damage

Pictures 15 and 16 show the existing floor framing and brick masonry footings. The brick masonry is generally in poor condition and exhibits decay likely the result of water ingress or soil moisture.

Pictures 17 & 18 show efflorescence (white powdery residue on the face of the bricks), soft loose or crumbling mortar, and some surface spalling of the bricks. This degradation is again likely the result of water infiltration. The decay is generally confined to the bottom 8 courses of brick.

Pictures 19 & 20 show water stains typically throughout the single-story portion of the structure. Water stains are visible on the walls, roofs, and floors. The stains and corresponding damage are most prevalent in the middle of the structures where the different roofs drain and towards the back of the structure where the 1986, 1989, and 1994 additions were constructed.



Picture 15 – Existing Floor Joists and Decayed Brick Footings



Picture 16 – Existing Floor Joists and Decayed Brick Footings



Picture 17 – Decayed Brick – First Floor



Picture 18 – Decayed Brick – First Floor



Picture 19 – Water Damage at Ceiling



Picture 20 – Water Damage at Floor



Conclusions

The primary structure consisting of the 1866 original store and 2nd story apartment can be salvaged and repaired for continued use. The primary structural elements including unreinforced brick-masonry bearing walls, floor beams, posts and footings should be retrofitted as required to safely transfer the Code prescribed forces. The gravity load resisting system can be easily strengthened to provide additional capacity, however the lateral load resisting system (seismic) will need to be fully developed.

Most of the observed damage and degradation can be attributed to water infiltration. Infiltration is the result of low-quality construction and lack of maintenance to the building envelope. Given that the site is in a Special Flood Hazard Area, intermittent flooding has also likely contributed to the observed decay to the brick-masonry at the ground and foundation levels.

Recommendations

Based on our investigation, we recommend the following maintenance, repairs, and retrofits to the existing structural systems (Figure 1 & Figure 2).

- Demolish the non-historic agricultural style additions. These poorly constructed structures have contributed to the observed degradation to the primary building.

Construction Estimate: \$65,000

- Demolish and Replace the existing 1st level roof structures. The existing collage of low roof structures are poorly constructed, lack sufficient flashing, roofing, and drainage. New Code compliant roof framing and roofing system should be installed. The new roof framing can also be used to seismically brace the existing unreinforced brick masonry walls.

Construction Estimate: \$220,000

- Replace the existing damaged and decayed ground floor framing with a new concrete slab on grade and stabilize the bottom of the brick-masonry walls and footings. The concrete slab should also be placed on a vapor barrier to limit moisture intrusion.

Construction Estimate: \$150,000

- Strengthen the existing 2nd floor framing for proposed Occupancy.

Construction Estimate: \$50,000

- Replace/Repair Wood-Framed Storefront. The existing storefront is not original and is in poor condition.

Construction Estimate: \$60,000

- Repoint the existing brick masonry mortar. Repointing will provide increased weathering durability and structural stability to the exposed masonry.

Construction Estimate: \$15,000

Any proposed modifications to the building systems that would result in an increase to the anticipated loads on the structure and or footings, should be evaluated by a qualified design professional for conformance to Building



Code requirements. This investigation and conclusions are based on field observations only. Material testing and is beyond the scope of this evaluation.

Please contact me should you have any questions regarding this investigation and corresponding recommendations.

Sincerely,

Structural System Solutions Inc.
Thomas Lundin CE/SE 17911

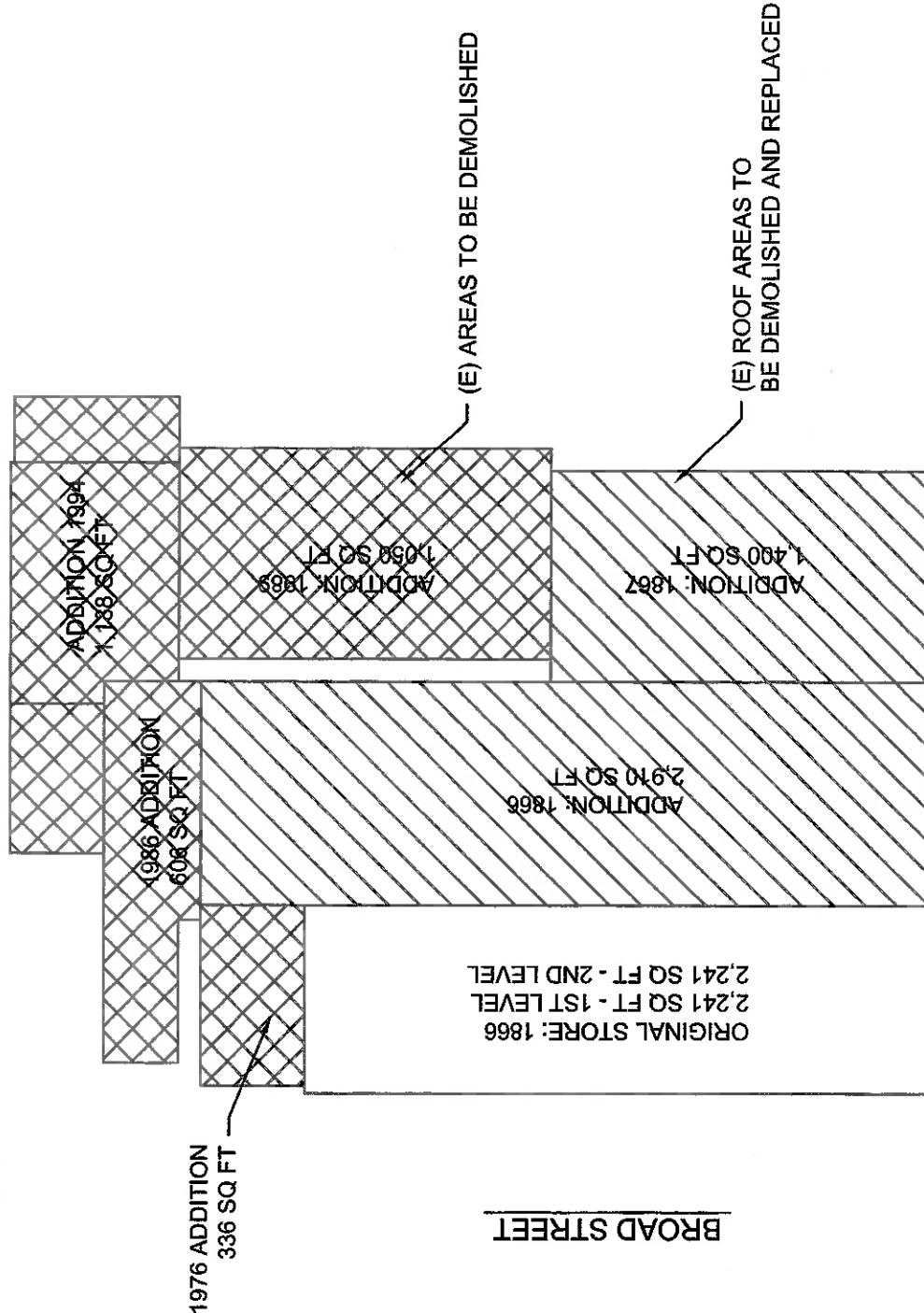


FIGURE 1 - EXISTING BUILDING PLAN

NO SCALE

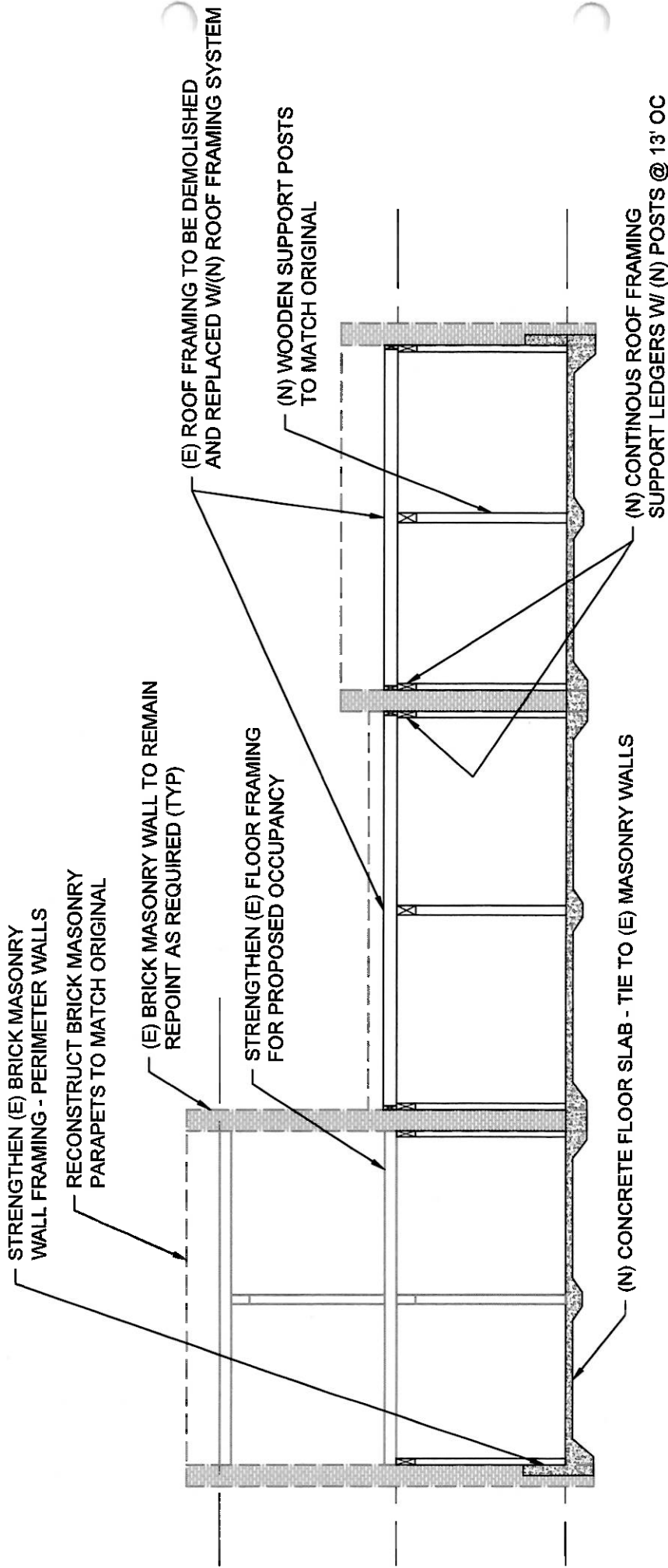


FIGURE 2 - BUILDING RETROFIT SECTION

NO SCALE