GRIMM / CHEN

November 18, 2024

Ms. Linda Francis
Dennis Flynn Architect
9312 Tritt Circle
Villa Park, CA 92861

Subject: State Farm Insurance Building
Structural Assessment Letter

Project Address: 4815 Main Street
Yorba Linda, CA

Ms. Francis,

This letter is to provide a structural assessment for the State Farm Insurance building located at 4815 Main Street in Yorba Linda, California. Per request, the structural assessment is to determine the existing vertical and lateral load resisting systems, describe the condition of the visible existing structural framing, and identify existing structural framing conditions where the life safety design intent of the 2022 California Building Code is noticeably deficient. In addition, it was requested to provide structural repair or replacement recommendations to achieve compliance with the 2022 California Building Code at these deficient locations.

Grimm + Chen Structural Engineering Inc. performed a site visit on October 30, 2024 to visually review the existing building in order to provide the requested structural assessment. The findings and recommendations are based on the limited visual observation of existing conditions and from estimations based on past experiences of similar conditions. Information that was not available for our review is as follows:

- Existing structural drawings and geotechnical report were not available for our review.
- Roof, Floor, Ceilings and Wall coverings were in place making visible review of existing structural framing limited.

Existing Building Description:

The State Farm Insurance building is located at 4815 Main Street in Yoba Linda, California. The building is located towards the north end of Main Street near the southwest corner of the intersection of Main Street and Lemon Drive. See attached **Photo #1**.

The building is located between two adjacent independent buildings; 4805 Main Street (occupied by *YOU aesthetics*) to the north and 4821 & 4825 Main Street (occupied by *Integrative Health Management* and *Professional Nurse Partners*) to the south. See attached **Photo #2 (Aerial View)** and **Photo #3 (Street View)**.

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The building is a one-story structure built of wood framed construction with an approximate footprint of 1,000 sf. The building consists of the original building with a small addition off the west exterior wall. The original building is approximately 800 sf (40' x 20') and the is approximately 200 sf (10' x 20'). The roof elevation is approximately 14 feet and the top of parapet elevation is approximately 16 feet above the first floor. It is our understanding that the original building was constructed in the early 1900's. We do not know when the addition was constructed. We are not aware of any structural retrofits of the original structural.

Existing Vertical and Lateral Load Resisting Systems:
The roof framing consists of horizontal wood plank sheathing over sawn lumber wood trusses. The wood trusses clear span between the north & south exterior bearing walls. The exterior wall construction consists of wood plank siding on the outside face over wood studs with drywall on the inside face. The floor framing and foundations were not visible for review; however, it appears the floor framing consists of wood framed construction on a raised foundation. The foundation system was not visible for review.

The building is laterally braced by wood plank siding shearwalls at the north, south, and west exterior walls. At the east wall of the building there is no visible lateral load resisting system. Anchorage of the exterior walls to the building foundation was not visible for review.

The roof diaphragm consists of horizontal wood plank sheathing. There is a step in the roof diaphragm near the west side of the building at the intersection of the original building and addition. There appears to be no lateral force resisting system below the step. The first floor raised floor diaphragm was not visible for review; however, we assume it consists of similar wood plank sheathing like the roof.

Summary of Site Visit:

Grimm + Chen Structural Engineering Inc. performed a site visit on October 30, 2024. The intent of the site visit was to determine the existing vertical and lateral load resisting systems, describe the condition of the visible existing structural framing, and identify existing structural framing conditions where the life safety design intent of the 2022 California Building Code was noticeably deficient.

A summary of our visual observations and findings is provided below:

- Roof Framing:
    - The existing wood plank sheathing and wood trusses appear to be in sound structural condition at most locations. There were some locations where the planks were cracked, most likely due to wood drying over time.
    - There were a few isolated locations where the roof framing felt soft while walking atop the roof. These locations were at the front of the building which coincided with locations of visible water intrusion inside the building.
    - See attached **Photo #4** for typical roof framing view from below.
- Exterior Wall Framing:

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  - A majority of the exterior wall structural framing was not visible for review due to the presence of wall coverings; wood siding on the outside face and drywall on the inside face.
  - Visual review of the north and south wall exterior siding was limited due to the close proximity of the adjacent buildings.
  - Water damage and dry rot of the west exterior wall was observed. See attached **Photo #5**.
  - Water leaks were observed at multiple locations along the inside face of the exterior walls. See attached **Photo #6** and **Photo #7**.
  - The north and south exterior walls are exposed to weather without ability to maintain their condition due to the close proximity of the adjacent buildings. There appears to be flaking of the paint and/or wood siding. See attached **Photo #8**.
  - **Based on our visual review of the accessible exterior walls, observed roof leaks at exterior walls, and from past experience of similar buildings; we anticipated that many of the many of the exterior wall wood siding planks, wood studs and sill plates will have dry rot.**
- Lateral Load Resisting System – East/West Direction Loading:
  - The north and south exterior walls provide lateral bracing for east/west direction loading.
  - The north and south wood plank siding shearwalls would not comply with the 2022 CBC detailing and strength requirements; however, they do provide nominal to moderate seismic load resistance.
  - The north and south exterior wall anchorage to foundation was not visible for review.
- Lateral Load Resisting System – North/South Direction Loading:
  - The east and west exterior walls provide lateral bracing for north/south direction loading.
  - The west wood plank siding shearwall would not comply with the 2022 CBC detailing and strength requirements; however, it does provide nominal seismic load resistance. The wall anchorage to foundation was not visible for review. See **Photo #5** for west wall elevation.
  - The east exterior wall has no visible lateral load resisting system. There is glass for the full width of the wall for the lower half of the wall elevation. See **Photo #10** for east wall elevation. **This is consistent with intent of ASCE7-16 Table 12.3-2 1B & 5B soft story and weak story vertical irregularities which are not permitted in areas of high seismicity.**
  - There is a vertical step in the roof diaphragm at the original building and addition interface. There is no visible lateral load resisting system beneath the step, thus the seismic load transfer must transfer through this step. **This is consistent with of ASCE7-16 Tables 12.3-1 & 12.3-2 for horizontal and vertical irregularities which requires structural framing to be design for amplified forces. These amplified forces did not existing at the time of the original construction and would not be considered in the existing design.**
- Structural Separation:
  - ASCE 7-16 Section 12.12.3 requires a structural separation between adjacent buildings. The intent of the structural separation is to avoid or limit pounding of adjacent buildings during a seismic event. The required structural separation is approximately 6 inches.
  - The structural separation at the north side of the building is approximately 8 inches. See attached **Photo #11**.

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  - The structural separation at the south side of the building is approximately 1 inch. See attached **Photo #11**.
  - **The existing structural separation at the south side of the building does not comply with the requirements of the 2022 CBC. Lack of structural separation could result in pounding between adjacent buildings during a seismic event.**
- Fire-Resistance Rating at Exterior Walls:
  - 2022 California Building Code Table 705.5 requires 1-hour fire-resistance rating for "B" occupancy adjacent to property lines.
  - **The existing exterior wood wall construction does not provide a 1-hour fire-resistance rating as required by the 2022 CBC**.

Recommendations:

Based on our review of the existing State Farm Insurance building located at 4815 Main Street and considering the Owner's criteria for a building with minimal future maintenance needs and a performance objective similar to the intent of the 2022 California Building Code (CBC) with regard to occupant life safety; it is our opinion that the existing building will not meet these criteria, and therefore, should be demolished and replaced with a new building structure. The primary reasons that lead to this opinion are as follows.

- The existing structural separation between the south exterior wall of the building and the 4825 Main Street property is small and significantly less than what is required by the 2022 CBC. Pounding between the two buildings is anticipated during a design level seismic event which could lead to significant structural damage of both buildings. The existing structural separation is so small that structural retrofit to stiffen the building would not solve the issue.
- The existing exterior wood wall construction does not provide sufficient fire-resistance rating along a property line as required by the 2022 CBC.
- The existing north and south exterior bearing walls have been and will continue to be exposed to weather which compromises the structural integrity of the walls. This includes both the wood plank siding, which serves as structural shear resistance and weather resistance, and the structural wood studs. The proximity to the adjacent buildings does not allow the exterior face of these walls to be maintained, thus we anticipate continued deterioration of the existing wood wall framing or any new wood framing added to the existing wall.

Our recommendation for new building construction would be as follows:

- Concrete Masonry Unit (CMU) exterior walls at the north, south and west faces. CMU wall construction will be more durable and weather resistance which is necessary due to the inability to maintain the walls adjacent to the neighboring buildings. CMU walls will also provide the necessary fire-resistance rating required by the 2022 CBC.
- Provide a steel moment frame at the east face storefront along Main Street. A steel moment frame could be designed to satisfy the strength and stiffness requirements of the 2022 CBC and continue to allow for an open storefront concept. An Architect would be able to design an open storefront with an aesthetic consistent with the original building or time period.

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- Plywood sheathed roof over wood joists that span between exterior walls. Roof framing would be designed to provide the necessary strength and stiffness to brace the exterior CMU walls for out-of-plane loads.
- Concrete slab on grade with shallow foundations. A concrete slab on grade will have superior strength and stiffness to brace the exterior CMU walls for out-of-plane loads, as opposed to a raised wood floor system.
- Relocate the south exterior wall to the north to provide an adequate structural separation between the 4825 Main Street building as required by the 2022 CBC. The anticipated structural separation would be approximately 6 inches, thus the south wall would need to shift north approximately 5 inches from its current location.

It should be recognized that in many cases the 2022 California Building Code does not require existing buildings to comply with all structural requirements of the current code. This should be confirmed with the building official. This structural assessment was undertaken to review the condition of the existing structural framing and identify existing structural framing conditions where the intent of the 2022 California Building Code is noticeably deficient which could present an increased risk to occupant life safety. Grimm + Chen Structural Engineering Inc. is not asserting that the existing State Farm Insurance building must be demolished, but rather this appears to be the most effective and plausible solution to mitigate the aforementioned life-safety concerns of the Owner.

It should be recognized that the estimates presented in this letter are based on a consensus of expert opinion and cannot therefore be guaranteed. The professional opinions presented in this letter have been developed using that degree of care and skill ordinarily exercised under similar circumstances by reputable structural engineers practicing in this locality. No other warranty expressed or implied is made as to the professional opinions expressed in this letter. Grimm & Chen Structural Engineering, Inc. may supplement this letter to expand or modify our findings and recommendations based on review of additional information as/if it becomes available.

It is understood and agreed that the structural evaluation is undertaken to review the integrity of existing elements. Grimm & Chen Structural Engineering, Inc. is not responsible or liable for the accuracy or adequacy for a structural design performed by others. Responsibility for drawings, specifications and as-built conditions rest solely with the Owner, the Engineer of Record, and the Owner's other design professionals.

Should you have any questions please feel free to call.

Respectfully,

Sam Grimm, S.E.
Principal

Attachments: Photos (p. 6 – 18)

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PHOTOS

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Photo #1: Main Street Aerial View (via Google)

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Photo #2: Building Aerial View (via Google)

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North

Photo #3: **Building East Elevation (from Main St)**

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Photo #4: Roof Framing

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See next page for blow up Photos #5(1)-(4)

North

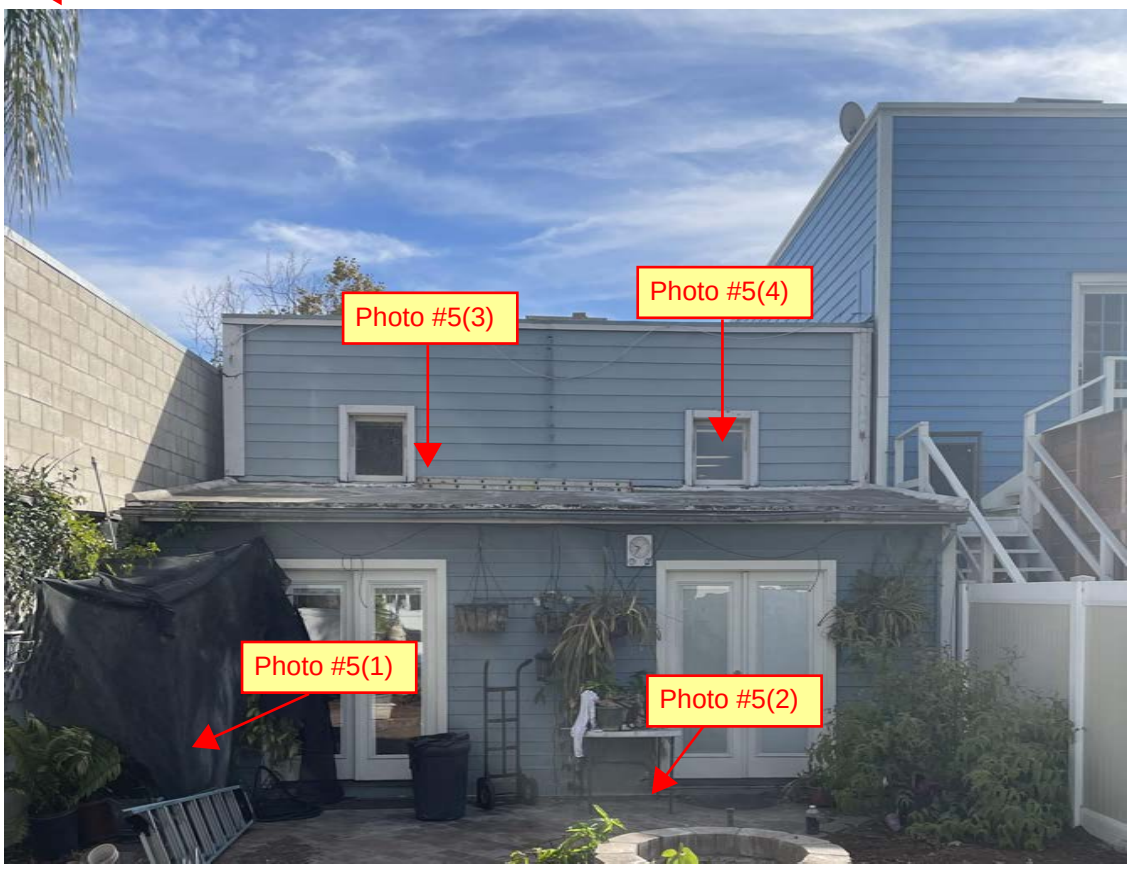

Photo #5: East Exterior Wall Water Damage

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Photo #5(3)

Photo #5(4)

Photo #5(1)

Photo #5(2)

Photo #5 (cont): East Exterior Wall Water Damage

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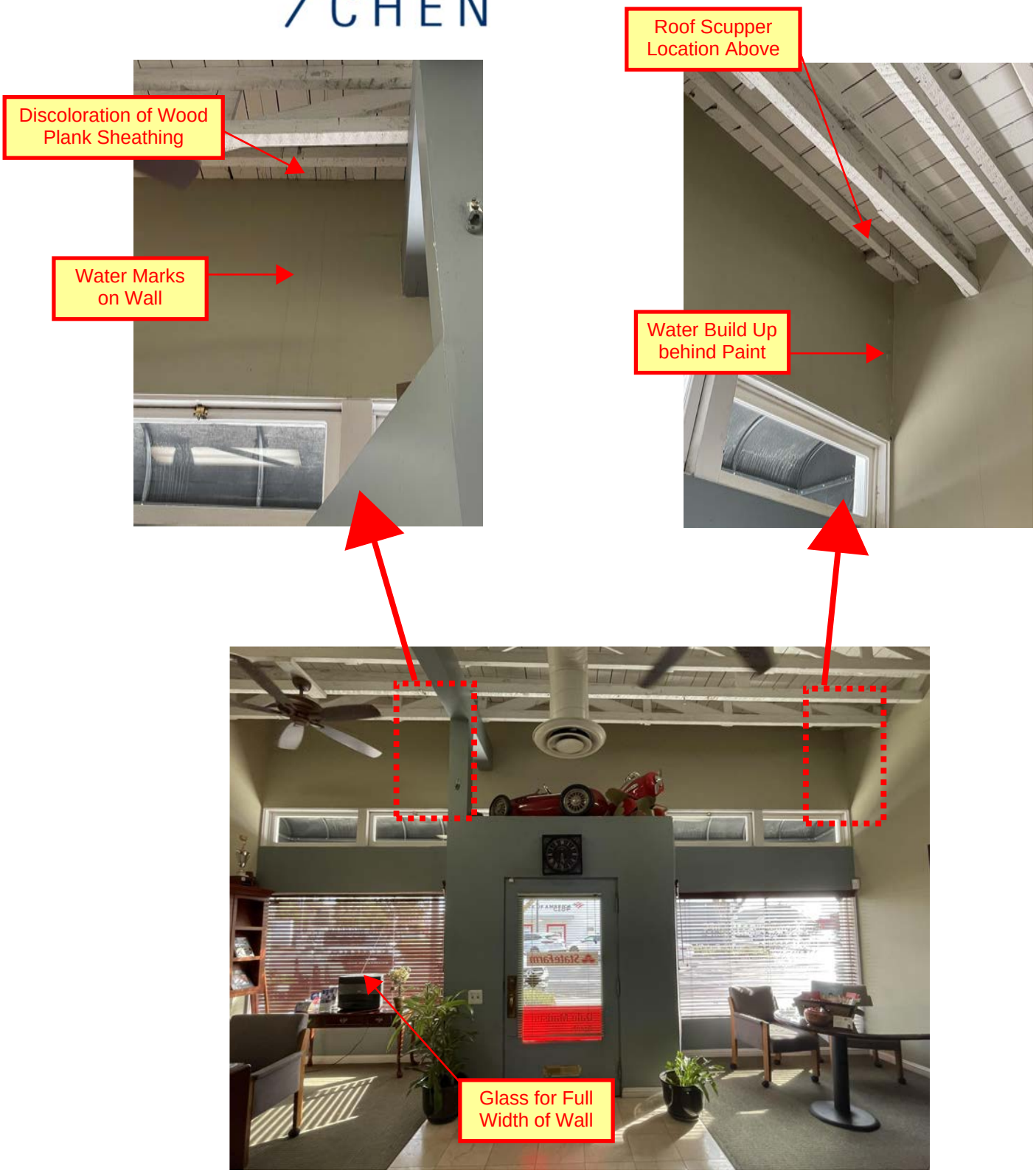

East Wall Elevation from Inside Face

Photo #6: Water Leaks (East Wall)

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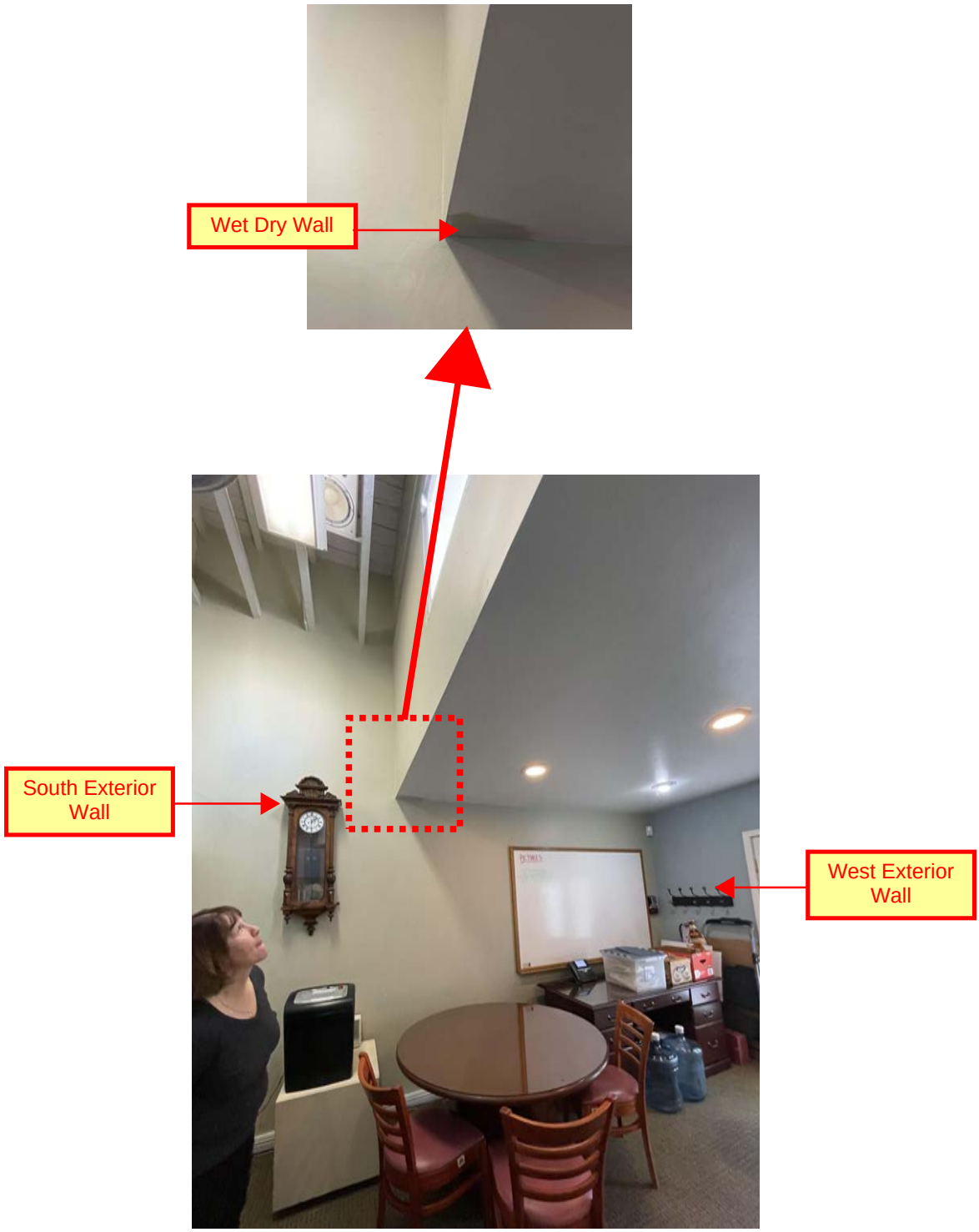

South/West Wall Elevation from Inside Face

Photo #7: Water Leaks (West Wall)

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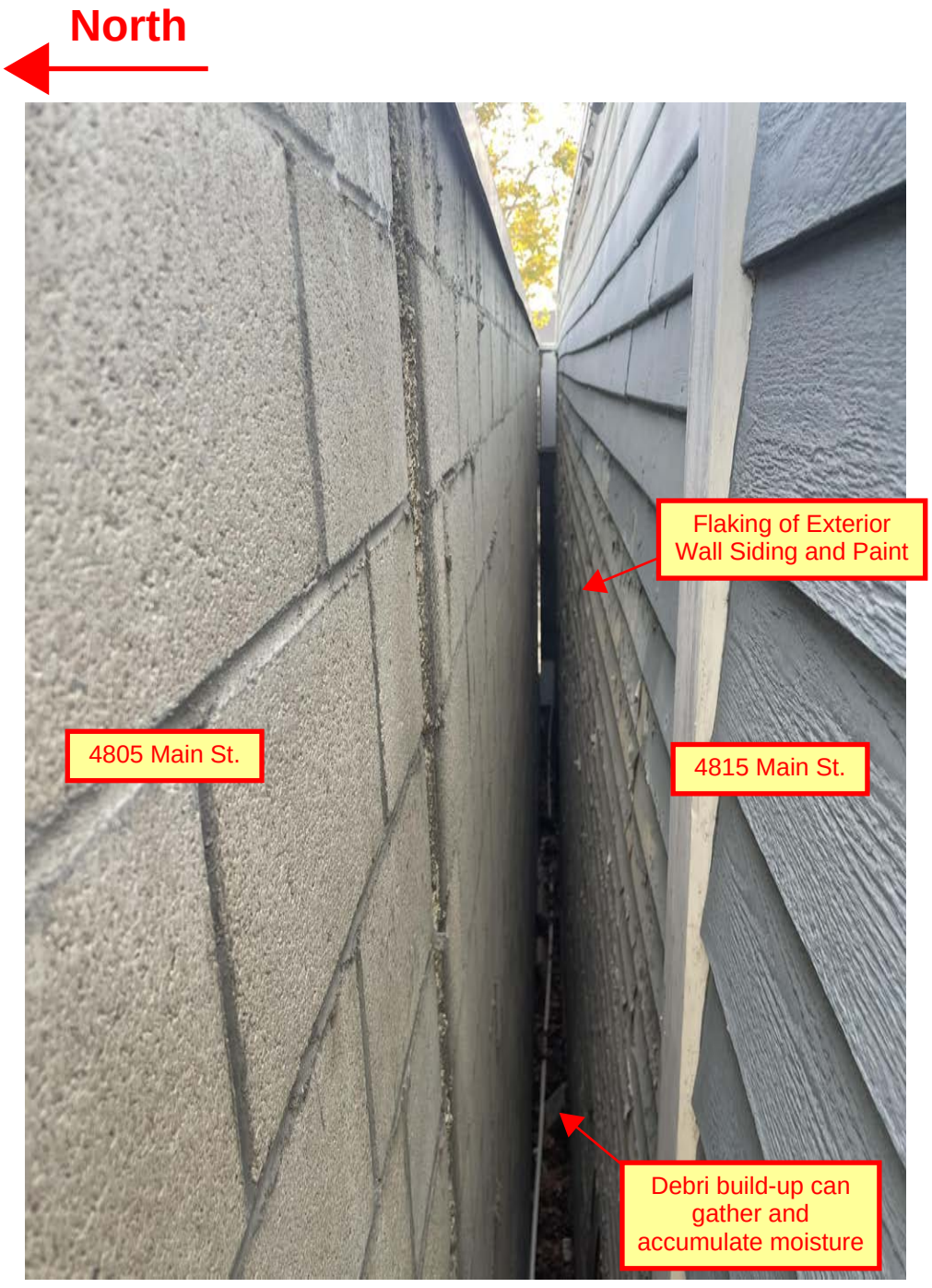

Photo #8: **North Exterior Wall at Adjacent Building**

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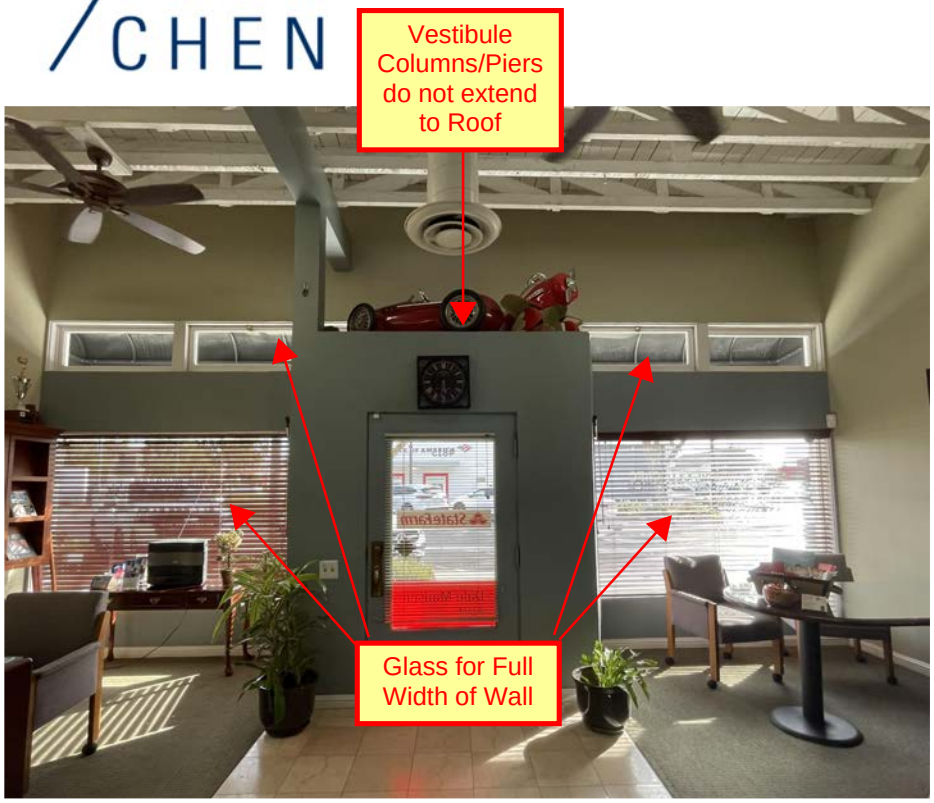
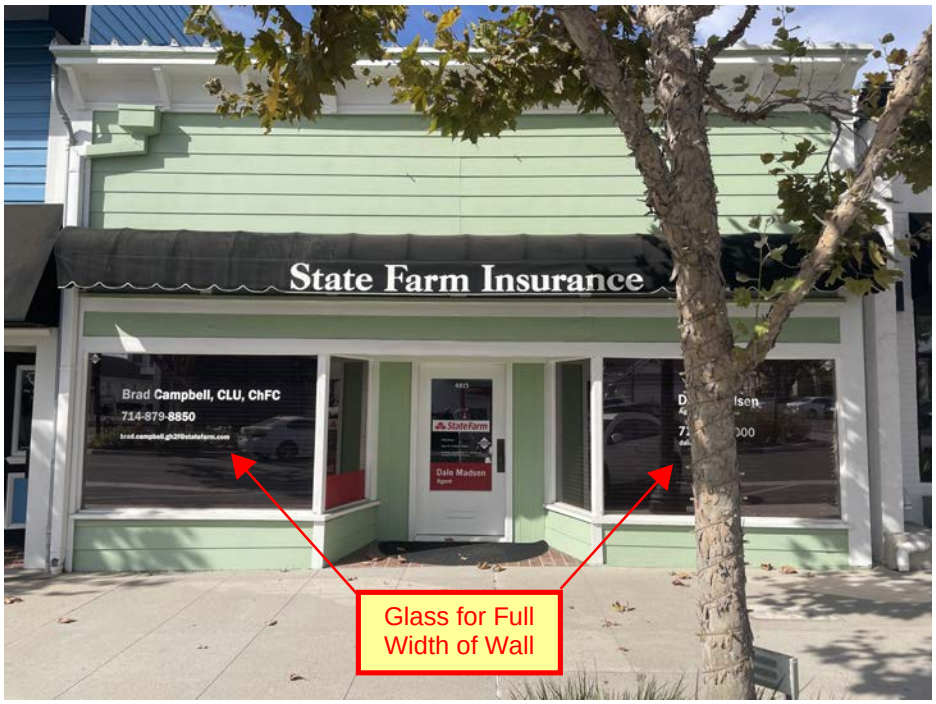


View from Inside Face



View from Outside Face

Photo #9: East Wall with No Lateral System

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Looking South

Looking North

Photo #10: Roof Diaphragm Step

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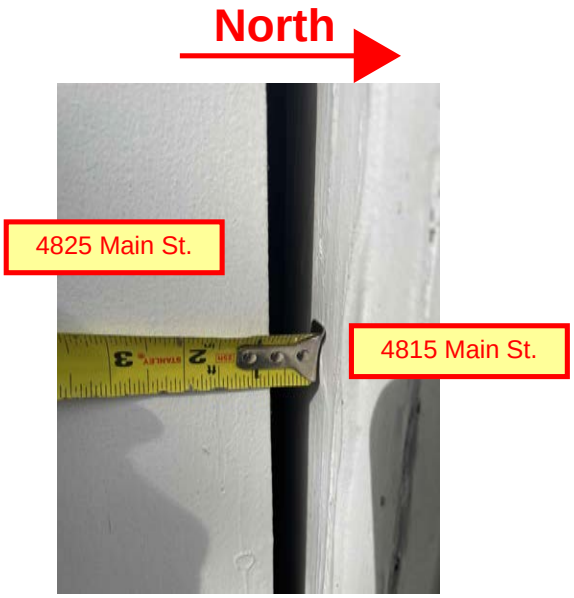

Structural Separation
at South Face Exterior Wall
(Measured at Front of Building)

Structural Separation
at North Face Exterior Wall
(Measured at Rear of Building)

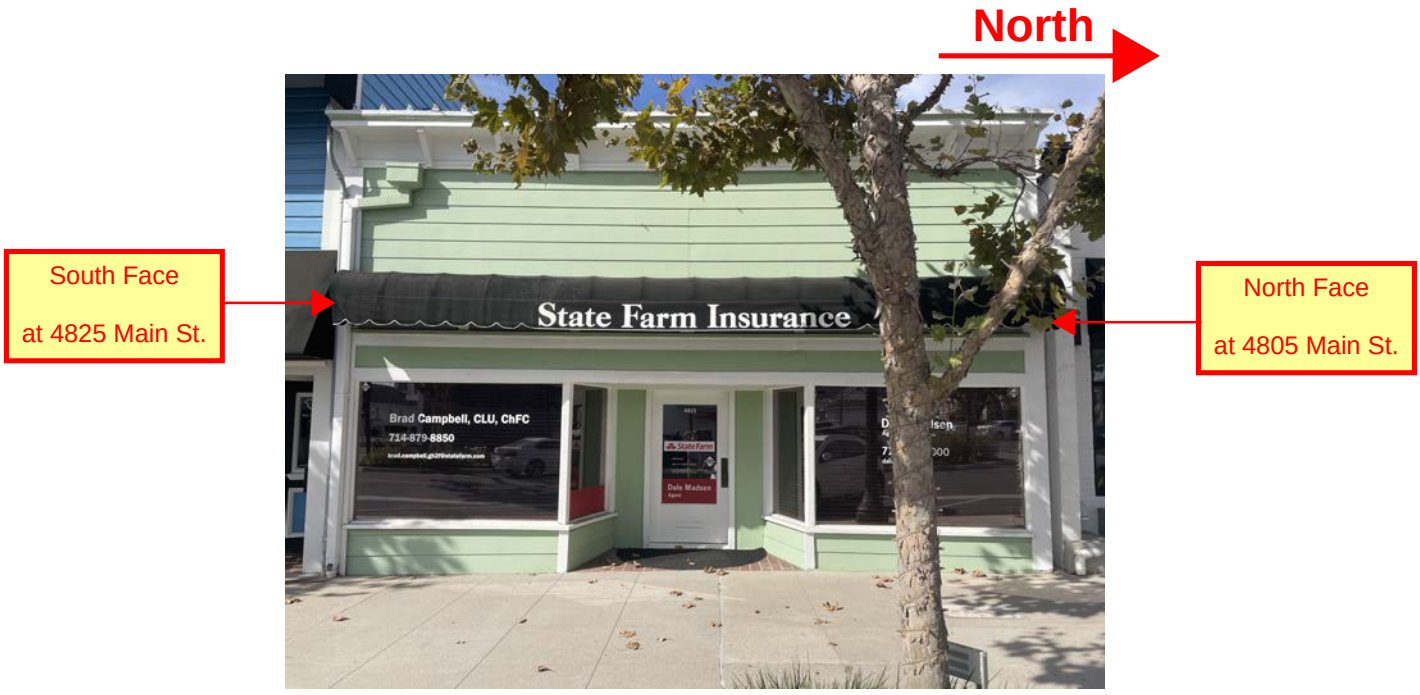

Photo #11: Structural Separation at Adjacent Buildings

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