

July 12, 2024

4101 Calle Abril, San Clemente, CA 92673

Dear Homebuyer:

Subject: Structural Evaluation of existing structure at 4101 Calle Abril, San Clemente, CA 92673.

At your request "STRUCTIQ" performed a structural observation of existing property located at 4101 Calle Abril, San Clemente, CA 92673. The house was built in 1963 per official records. No structural as-built plan of the original house was available on-site. Our structural evaluation was limited and based on visual observation of exposed elements, which means that there might be hidden defects that are not exposed to be visually observed. Note that the lateral resisting performance of the house and evaluation of structural integrity of the structures are not included in the scope of this report. The house is made of wood framed roof and walls, concrete slab on grade and concrete foundation. (Refer to Pictures 1 through 9).

We found the overall arrangement of the present structure is in decent shape and have not noticed any significant structural damage to the structural framing, distress, or excessive settlement on the main house considering the age of construction, however there are major issues on the garage and the house slab on grade, garage north wall, and house south wall as described in this report. Following are deficiencies were noted:

1. The common issue for this era of construction has been observed on the roof framing on rafters' connection to the ridge beams or ridge board, the connection is using only toe nailing and without using rafter hangers. The capacity of this type of connection is questionable and does not comply with the current codes. (Refer to Pictures 9).
2. Following a detailed inspection of the property, significant instances of dry rot damage have been identified, particularly affecting the roof overhang rafters, overhang soffit, and fascia beam. Action is required to address these issues to prevent further structural deterioration and potential damage to the property. Dry rot is a fungal decay that compromises the structural integrity of wood, leading to weakening and potential failure. Dry rot compromises the strength and stability of structural components, increasing the risk of structural failure, particularly in load-bearing elements such as the roof fascia beam and floor rim joist. (Refer to Picture 10)
3. Wall bricks on the north side of the garage and house have cracked in multiple locations, likely due to foundation settlement or the expansion and contraction caused by weather and temperature changes. The issue can be fixed after foundation settlement and slab on grade has been addressed. (Refer to Picture

11)

4. Hairline cracks are present on the concrete stem wall in several locations, specifically on the north wall of the garage and along the east side of both the garage and the house. These cracks may indicate underlying issues with the foundation, such as settlement or shrinkage. It is important to monitor these cracks for any signs of widening or progression, as they could potentially compromise the structural integrity of the building. Epoxy injection is required to prevent water intrusion and potential reinforcement corrosion. (Refer to Picture 12)
5. A gap of approximately 3/8" has been measured between the garage slab on grade and the concrete stem wall, indicating potential foundation shifting. Additionally, the north wall of the garage is not vertically aligned ("plumb") and exhibits a noticeable tilt of approximately 1.5 degrees towards the south. Further attention and corrective measures are essential to prevent further structural damage and ensure the stability of the garage. (Refer to Pictures 13 and 14)
6. Multiple cracks were observed on the exterior stucco on the perimeter wall of the building which mostly measured to be 1/16" wide or smaller. These cracks to be due to shrinkage, expansion, contraction, improper installation or could be due to foundation settlement which are quite common in the residential buildings. (Refer to Picture 15)
7. The garage concrete slab on grade exhibits several significant cracks, with one particularly notable crack measuring approximately 1" wide. Additionally, there is evidence of settlement, notably on the north segment of the slab, which appears to have settled approximately 1". (Refer to Pictures 16 and 17).
8. Backyard slab on grade has multiple major structural cracks and drastically recessed. The improper soil preparation under the concrete slab is the main reason as appears the soil on this area was fill material and have not been compacted properly and the recess and cracks generated by the soil settlement or soil shifting. (Picture 18 and 19)
9. The south wall of the house is not vertically aligned "plumb", showing a tilt of approximately 2.5 degrees towards the north. Additionally, the house's slab-on-grade is not flat, with a noticeable slope near the south wall towards the foundation. This unevenness and tilting are likely due to foundation settlement. These issues indicate significant structural movement, which may compromise the integrity of the building. It is crucial to conduct a comprehensive inspection after carper removal to assess the extent of the foundation problems and implement necessary corrective actions to ensure the stability and safety of the house. (Pictures 20 through 23)

10. The concrete slab-on-grade of the house is not horizontally aligned or flat in numerous locations. This unevenness is potentially due to cracks in the slab, settlement issues, or slab lifting caused by expansive soil conditions. To accurately assess the extent of these problems, the existing carpet should be removed to allow for a thorough inspection of the underlying slab. Identifying and addressing these issues is essential for maintaining the structural integrity and safety of the house. (Refer to Picture 24)

Following are some pictures illustrating the aforementioned items identified on the site:



Picture 1: The frontal or entrance view of the one-story house



Picture 2: A view of the garage



Picture 3: Northern view of the garage



Picture 4: Eastern view of the house



Picture 5: Southeast view of the house



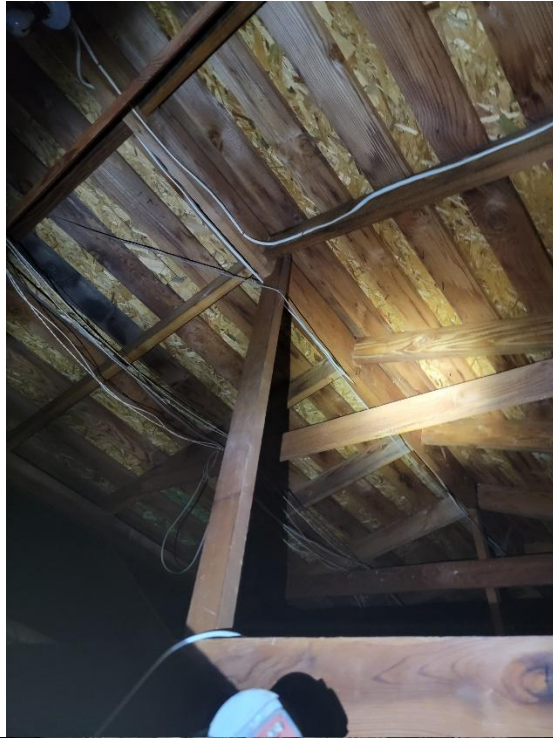
Picture 6: Southern view of the house



Picture 7: Southern view of the house



Picture 8: Southwest view of the house



Picture 9: View of the roof wood framing from the attic



Picture 10: Dry rotted wood elements on multiple locations



Picture 11: Multiple cracks on brick wall on the garage north wall



Picture 12: Hairline cracks on concrete stem wall on multiple instances on the garage north wall, and along east side of the garage and the house



Picture 13: A gap between the garage slab on grade and the concrete stem wall measured to be approximately 3/8"



Picture 14: Garage north wall is not vertically aligned “plumb”, exhibiting a tilt of approximately 1.5 degrees towards the south.



STRUCTIQ CORP. | STRUCTURAL ENGINEERING SERVICES

☎ 85 85 85 80 80 | ✉ INFO@STRUCTIQCORP.COM

Picture 15: Exterior vertical, and diagonal cracks on stucco specially near the openings and corners



Picture 16: Major structural cracks on the garage concrete slab on grade



Picture 17: Major structural cracks on the garage concrete slab on grade measured approximately 1" wide and has 1" differential settlement



Picture 18: Structural cracks on the backyard paving and concrete slab on grade



Picture 19: Structural cracks on side yard and backyard paving and concrete slab on grade



Picture 20: House south wall is not vertically aligned “plumb”, exhibiting a tilt of approximately 2.5 degrees towards the north.



Picture 21: House south wall is not vertically aligned “plumb”, exhibiting a tilt of approximately 2.5 degrees towards the north.



Picture 22: House slab on grade is not flat sloping near south wall towards the foundation potentially due to foundation settlement



Picture 23: House slab on grade is not flat sloping near south wall towards the foundation potentially due to foundation settlement



Picture 24: House concrete slab on grade is not horizontally aligned or flat on many locations potentially due to slab on grade cracks, settlement, or slab lift due to potential expansive soil

Recommendations:

The following recommendations are not to be considered a specific design, but guidelines related to finding out the foundation/building structural integrity and preventing more structural damage to the house. A geotechnical/soils report is recommended for further assessment of the foundation settlement and slab on grade cracks.

On garage north wall and house south wall which are tilted following action recommended.

- Stabilize the Foundation: Implement foundation stabilization techniques such as underpinning or installing helical piers to prevent further movement.
- Realign the Wall: Correct the tilt of the north wall by carefully jacking it back into place and securing it with additional support if necessary.
- Seal the Gap: Fill the gap between the slab and the concrete stem wall with a suitable sealant to prevent water intrusion and further movement.
- Monitor and Maintain: Regularly monitor the garage and house for any signs of additional movement and perform maintenance as needed to ensure long-term stability.

To fix the significant cracks and settlement in the or house concrete slab-on-grade:

- Remove the Damaged Concrete: Cut and remove the cracked and settled portions of the slab.
- Prepare the Area: Clean and prepare the exposed surface for new concrete.
- Install Dowels and Reinforcement: Drill holes into the existing slab and epoxy-inject reinforcing dowels to securely tie the new concrete to the old.
- Pour New Concrete: Pour new concrete to replace the removed sections, ensuring it is properly leveled and aligned with the existing slab.
- Cure and Finish: Allow the new concrete to cure and finish it to match the existing slab.

To address the major structural cracks and recessed backyard paving and slab-on-grade:

- Remove Damaged Concrete or paving: Cut out and remove the cracked and recessed sections of the slab.
- Excavate and Prepare the Soil: Excavate the area beneath the slab to remove poorly compacted fill material.
- Compact the Soil Properly: Use compaction equipment to ensure the soil beneath the slab is properly compacted to prevent future settlement.
- Install Reinforcement: Install steel reinforcement mesh or rebar to strengthen the slab.

- Pour New Concrete: Pour new concrete to replace the removed sections, ensuring proper thickness and reinforcement placement.
- Cure and Seal: Allow the new concrete to cure properly and apply a suitable sealer to protect it from moisture and further damage.

When foundation and slab on grade issues have been addressed other issues can very well be addressed as follows:

A full termite inspection is required. Dry rotted framing should be repaired or replaced properly to avoid future damage to the structure.

Interior hairline cracks and exterior stucco cracks which are more of visual concern rather than structural, can be repaired with proper methods, products and repair method which should be selected by the contractor.

To address the inadequate roof framing connections where rafters are currently only toenailed to ridge beams or ridge boards without rafter hangers, it is recommended to enhance structural integrity and comply with current building codes. Begin by inspecting all rafter connections and then installing rafter hangers at each connection point. Secure the hangers with appropriate fasteners to ensure a strong and compliant attachment between the rafters and ridge beams or ridge boards. This retrofitting will significantly improve the stability and safety of the roof framing system, aligning it with modern construction standards and enhancing its capacity to withstand structural loads effectively.

Special Notice:

The opinions and comments provided in this report are based on observations of the apparent performance of the inspected building. These performance standards are informed by the engineer's experience and professional studies. However, opinions related to compliance with specifications, legal requirements, or building codes are expressly excluded from our agreement to conduct this observation. This exclusion extends to the method and detailing of the foundation, which could not be fully assessed during the inspection.

It's important to note that this report does not provide a warranty regarding the future performance, lifespan, or need for repairs of the building or its foundation. Additionally, assumptions about these factors should not be made as a result of the engineer's observations.

Furthermore, evaluating the structure's capability to withstand applied loads, such as wind and seismic loads, requires a review of the as-built drawings and separate assessment. This evaluation is not included in this report and should be conducted separately for a comprehensive understanding of the structure's resilience.

Sincerely,

STRUCTIQ



Shahram Adabi, PE
License# C81489