PEACE OF MIND

Structural

May 5, 2023

2020 Helena Way
Redwood City, CA 94061
c/o Jessica Selmon

Observation Letter

RE: 2020 Helena Way, Redwood City – Foundation Inspection Observations

To Whom it May Concern,

Peace of Mind Structural, Inc. was commissioned to perform a foundation inspection at the above-referenced property. Please note: Peace of Mind Structural, Inc. is a licensed general contractor specializing in foundation repair and structural work, we are not structural engineers. The observations and recommendations enclosed are from the perspective of a general contractor.

Based on a recent visual inspection – performed on 5-2-2023 – we have outlined below our key observations and recommendations. Please also reference the accompanying attachment ending 'Inspection Photos' for visuals captured while onsite.

Structure Overview: The structure is a wood-framed, single-family residence that appears to have been built using conventional building practices consistent with the era of original construction (1950's).

Key Observations / Recommendations:

1. **Foundation and sub-floor support framing are in serviceable condition.**
   The perimeter concrete foundation and sub-floor support framing appear to be in serviceable condition, capable of performing the intended function of gravity / vertical load support. There are no immediate structural concerns with the perimeter concrete foundation or sub-floor support framing.

2. **Seismic vulnerability of the crawlspace area.**
   In keeping with homes built during a similar timeframe, Peace of Mind observed the presence of original anchor bolts. However, there was a lack of evidence that the structure has been seismically retrofitted. In the mid-1990s – in response to the large '89 earthquake – building standards were updated with regards to the seismic preparedness of new construction. Similarly, a building standard was developed for retrofitting older homes whose foundations do not meet current standards – Plan Set A (linked).

   Proposed Remedy*: Below, please find the minimum requirements to bring the crawlspace area up to current code. Note: the below is considered a *voluntary* improvement.
   - Installation of Foundation Bolts / Anchors
     - Install 5/8" diameter foundation anchor bolts (Simpson Strong-Tie or Hilti) at 6' on center and within 12" from each joint or end in the mudsill (minimum of 2 foundation anchors per mudsill piece).
     - 5/8" diameter foundation anchor bolts (Simpson Strong-Tie or Hilti) shall be installed with 3"x 3" x .229" square bearing plates.
     - Where there is not enough clearance for vertical drilling, Simpson URFP anchors shall be substituted for 5/8" x 10" anchors.

- Plywood Bracing of the Cripple Walls
  - As necessary, install 2 - x blocking between the vertical studs on top of the mudsill to provide a nailing surface for the bottom edge of the plywood.
  - Install ½" 5 PLY CDX plywood to the inside face of the wood framed cripple walls. Plywood will be nailed 4" on center around the perimeter and 6" on center infield (8d nails).
  - Two 2" ventilation holes will be drilled into the plywood every 16" on center between all framing members. Where cripple walls are 18" or less in height only one ventilation hole shall be installed.
- Installation of Sub-Floor Connectors
  - Install Simpson L-90 and / or LTP framing connectors between the rim joist of the sub-floor framing and mudsill and/or top plate of the wood framed cripple walls at 32" on center.

Estimated Cost:

**Please note: Given the above recommendations pertaining to seismic strengthening, we did want to make you aware of a state-sponsored program for California homeowners. The Earthquake Brace & Bolt (EBB) program is an annual incentive program for homeowners interested in retrofitting. If accepted into the program, homeowners can redeem up to $3,000 in reimbursement toward the cost of their seismic retrofit (and for select, income- eligible homeowners, additional funds may be available). The program is currently closed for new applicants; we recommend visiting the EBB homepage to learn more and 'sign up' to receive program updates.*

3. **Vertical foundation cracking.**
Approximately seven (7) vertical foundation cracks were visible from within the crawlspace area. Cracks of this nature are common in this area and do not affect the foundation's ability to perform its function and carry the vertical/gravity load of the structure. Vertical cracks of this nature likely occurred early in the lifespan of the structure (five – ten years after original construction) but this cannot be verified by a one-time visual inspection of the foundation. Vertical cracks can, however, create an avenue for water / moisture to enter the foundation walls and crawlspace; it's generally recommended to address vertical cracking to prevent moisture intrusion.

Proposed Remedy: Peace of Mind proposes addressing the vertical cracks via epoxy-injection and / or grout and steel-plating. Note: the below is considered a *voluntary* improvement.

- Clean vertical cracks using compressed air and wire brush.
- Dam the vertical cracks and install plastic injection ports as necessary.
- Fill the vertical cracks using pressure injected epoxy and / or grout.
- Bridge the vertical cracks using a 1/8" steel plate and four ½" anchor bolts or metal strapping.

Estimated Cost:

4. **Evidence of soil movement.**
Several of the interior support posts within the crawlspace were slightly out of plumb, a sign of seasonal soil movement. Redwood City, and the greater Bay Area Peninsula, has a soil composition made up in large part of expanding clay soil. This expansive clay soil will go through seasonal fluctuations based on the moisture content – it swells and expands with moisture and shrinks and compacts as it dries. This swelling/shrinking cycle can cause minor shifts in the wood framing resulting in the following symptoms: support posts that are out of plumb, cracking to the interior wall coverings (particularly at door and window corners), cracking to the exterior wall coverings like stucco, etc. This condition does not pose a significant structural deficiency but can cause minor cosmetic damage (such as the above referenced cracking) and can lead to periodic maintenance projects of the sub-floor support system (such as straightening the support posts).

Proposed Remedy: Improvements can be made to the interior support assemblies. Note: the below is considered a *voluntary* improvement.

- Installation of temporary shoring.
- As needed, replacement of the existing wood support posts with properly-sized, pressure treated posts.
- As needed, manual repositioning of the wood support posts so they sit flush with their respective concrete pier base and floor joist / beam.
- Installation of connecting hardware (T-straps, post collars, clips) to improve the connection point between the concrete pier base and wood support post, and wood post to floor joist / beam.

Estimated Cost:

5. **Debris in crawlspace.**
Peace of Mind observed some debris within the crawlspace area as well as fallen insultation.

Proposed Remedy: It is recommended to keep the crawlspace area clean and free from debris to prevent pest infestation and / or dry rot. This could be done by a handyman or other contractor performing work onsite.
Estimated Cost:

6. **Signs of past water intrusion.**
Peace of Mind observed evidence of past water intrusion, current dampness to the crawlspace soil and efflorescence (a white powdery substance) on the inside face of the concrete perimeter foundation walls.

Proposed Remedy: No immediate action needed. Instead, we recommend monitoring the crawlspace, especially during the rainy season, for evidence of water pooling / build up. If so, a soils engineer could be consulted to provide recommendations for drainage improvements. Find below a few local soils engineers with whom we work on drainage improvement projects:

- Geoforensics, Dan Dyckman - 650.349.3369; dan.geoforensics@yahoo.com
- Michelucci & Associates – 650.692.0163; info@michelucci.com

Estimated Cost: N/A; dependent on final, engineered recommendations

7. **Possible exposed rebar.**
Peace of Mind observed what appeared to be a portion of rebar visible at the shear wall. It's possible this is connected to the past addition made to the home; however, we cannot say for certain.

Proposed Remedy: We do not see this posing a concern from a structural perspective. No action immediate action needed, just something to be aware and monitor.

8. **Possible horizontal cracking.**
Peace of Mind observed a small section of the foundation had a crack pattern that appeared horizontal in nature. However, given then location of the observed cracking (at a point above the load-bearing position), it's possible that it's the result of the mudsill placement. It could be that the concrete was pulled up to beyond the mudsill and with slight movement of the soil / wood-framing, the area is now starting to slightly crack.

Another possibility is that the cracking is the result of the embedded steel members being exposed to the elements, rusting and expanding, and causing the surrounding concrete to crack. This is a condition fairly common to homes in the local area and building during a similar timeframe. The foundations of older homes were constructed with now antiquated materials, making them more susceptible to damage when exposed to the elements. New foundations are poured with structural-grade concrete and embedded with weatherized steel rebar, making them more averse to issues like horizontal cracking.

More exploration is needed to conclusively state the underlying cause of the cracking and propose a remedy. Below, please find contact information for a local structural engineer who could consult on this condition:

- Consulting Structural Engineer, Dominic Chu – 650.578.9899; dchuengr@gmail.com

**Please note: Peace of Mind Structural has a single project minimum of $3,500.00. If the desired scope of work totals less than $3,5000.00, then the total contract cost will increase to meet our single project minimum.*

Thank you, again, for having us out to the property and for the opportunity to share our findings / recommendations. Please do not hesitate to reach out with any questions or concerns.

Best,

Brandon Blasing
Co-owner & CEO
Peace of Mind Structural
650.343.3133