

## Kooi LLC

900 Foxcreek Road  
Sunbury, OH 43074



Yoaz Saar

Date  
5.07.2024

Yore Fine Builders  
367 North Columbia Avenue  
Columbus, OH 43209

236 North Columbia Avenue  
Columbus, OH 43209

Yoaz,

At your request, I performed a visual structural assessment of the residential structure at the above stated address on Thursday May 2, 2024. The structural assessment was requested to review the overall structural integrity of the existing structure. Existing documents were provided for my review. The existing two-story structure was constructed in 1953 and is comprised of conventional wood framing. The roof framing members are wood rafters supported on interior and exterior walls. The floor framing members are 2x10 @ 16"o.c. supported by exterior walls and interior beams and walls. The basement is comprised of CMU foundation walls. There have been several additions added to the original footprint of the structure. The front entrance is located on the north side of the structure and will be the main point of reference.

### Observations:

#### - Exterior framing and grade:

- The difference between first floor framing and top of grade varies through the perimeter, however at most of the first floor framing the top of grade is above the bottom of the sill plate and partially into the rim board height.
- The brick façade is brought down below grade.
- All except for (1) window well have been closed.
- Signs of water saturation and water infiltration were prevalent around the perimeter of the structure. Certain areas showed signs of water saturation and efflorescence for several courses above grade.



Exterior grade at south side



Exterior grade at west side



Exterior grade at east side



Exterior framing at north low roof



Exterior grade at south side



Exterior framing at south low roof



Gutter downspout at south side



Exterior framing and downspout at west

- **Roof framing:**

- Gutters were not present at all roof eaves and water management appeared to be consolidated into one area on the South side of the structure. The downspouts were not checked for proper working order.
- Roof flashing did not appear to be working properly as water infiltration was present at exterior wood siding components.
- Certain areas of the ceiling along exterior windows appear to have been patched in the past.
- Water infiltration was observed at the north side low roof by the western stair wall framing adjacent to the low roof.
- No visible roof sag or major shifts were observed along the roof line or inside the structure at the ceiling level.



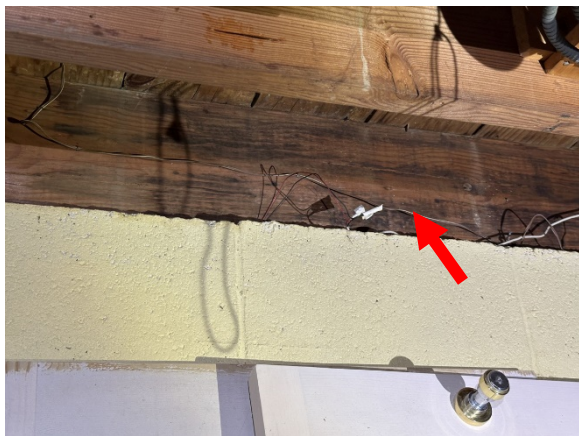
Ceiling patching



Water infiltration at north side wall / low roof

- **Floor framing:**

- There was visible water infiltration at the perimeter of the first-floor framing. The locations include the ends of the floor joist and rim board.
- There were signs of water mitigation towards the center of the first-floor framing.
- The first-floor framing had visible, perceived, and measurable deflections in several rooms.
- The second-floor framing did not have visible or perceived deflections or movements at the floor level. There were no observed plaster and/or drywall cracked at the floors or ceiling.



Rim board water infiltration



Beam water infiltration at end



Rim board water infiltration at corner



Rim board discoloration



Rim board water infiltration



Rim board water infiltration at corner



Rim board water infiltration at corner



Rim board water infiltration at corner

- **Basement:**

- Certain corners of the CMU foundation walls had signs of water infiltration and efflorescence.
- Exterior window well wall openings have been framed closed with CMU block.
- A sump pump was installed after the original construction was completed as parts of the concrete slab on grade were cut out and replaced.
- The crawl spaces that had a concrete mud slab installed showed signs of movement and potential heaving.



Water infiltration at CMU wall corner



Window well infill and water mitigation framing



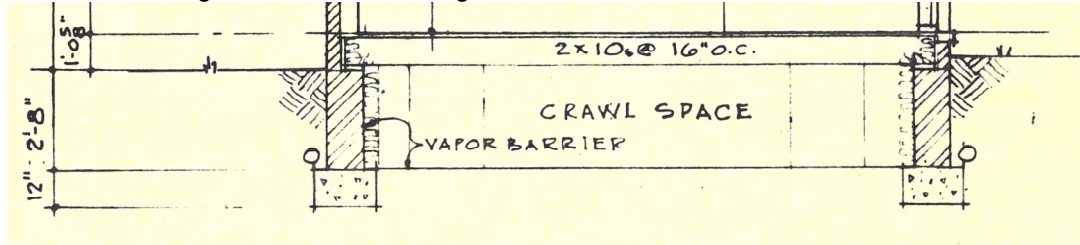
Window well infill and water mitigation framing



Concrete lintel cracks due to internal corrosion

### Comments and recommendations:

- Based on the existing construction documents, the grade is above the bottom sole plate of the wood framing as shown in the image below:



Based on my observations, this condition is prevalent around most of the perimeter of the structure. Without proper water management and precautionary measures, this detail will compromise the wood structure over time due to water infiltration. The photos that were taken are from the visible interior portion of the perimeter, however no access was available to inspect the brick to framing cavity. Water at grade would saturate the brick façade and the wood framing would absorb the moisture over time. The moisture will deteriorate the wood components and compromise the structural integrity of the exterior wall load bearing system. Without intervention, the structural integrity will be compromised, and the risk of failure would increase.

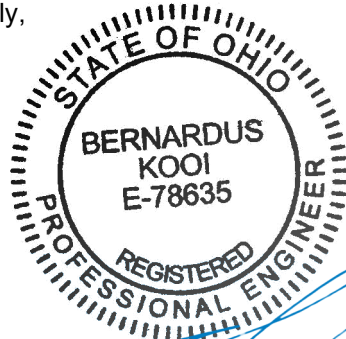
- Common practice and current building codes require the wood framed structure to be fully above the adjacent grade with an additional buffer to avoid any moisture infiltration via the sole plate or rim board.
- Proper water management will ensure longevity of the structure and minimize the opportunity for water infiltration into the structure. These measures include installing gutters and downspouts as this will lessen the water saturation around the perimeter of the structure at grade.
- Below are several ways to address the water damaged structural components:
  1. Raise the entire structure to be above current grade and in compliance with building codes and replace all water damaged wood framing. This method would require every load bearing component and brick façade to be shored and jacked simultaneously. There is no guarantee that any of the brick façade would remain in place and the likelihood of the brick being compromised would be high. In my experience, rectangular houses have been raised off the foundation. This house contains many intricacies due to geometry and brick locations including a centrally located full height chimney. This option would require a very specialized contractor who is willing to accept the high risks associated with this work.
  2. Lower the grade around the entire structure and throughout the property and replace all water damaged wood framing. This option to lower the grade may not be feasible due to adjacent lots that are at similar elevations. If the grade is lower surrounding the structure, then negative drainage may occur therefore bringing more water from surrounding areas, including adjacent lots, to this structure's basement and foundation. If proper drainage is achievable, the next topic to review would be the surrounding vegetation and trees. By lowering the grade, it will likely adversely impact the tree root system. Further consultations by a civil engineer for drainage and grading, and an arborist for tree and vegetation management would be required to further explore this option.
  3. Selective replacement the water damaged wood framing. This would require partial temporary shoring of the exterior wall and replacing the wood components. This would not be a permanent fix as it will not address water infiltration, however it would decrease the likelihood of a structural failure. This is a temporary solution and not recommended for long term usage.

4. Complete removal of the structure and replacement with a new code compliant structure that has proper water management measures in place.

My structural assessment was limited to the area stated in the image and described in this document. If further items are of concern, please bring them to my attention and I can help assess each situation.

If you have any questions or comments, please contact me.

Sincerely,



  
05/07/2024

Bernardus Kooi, PE, SE, LEED AP  
Structural Engineer | Owner