civil engineering
structural design
land surveying

WYNN ENGINEERING

Mr. Patrick Carroll
Building Official
Town of Apple Valley
14955 Dale Evans Parkway
Apple Valley, CA 92307

May 25, 2017
Job #17-547

Re: Structural Observation of Hilltop House in the Town of Apple Valley

Mr. Carroll,

In accordance with your request, Wynn Engineering, Inc. performed a structural and civil engineering observation on May 16, 2017 at the above referenced location. The purpose of this observation was to evaluate areas of the structure that are safe to remain as they are, areas that could be retrofitted, and areas that should be demolished. Other objectives were to determine the feasibility of providing handicap parking at the structure, fire department access to the structure, and possible upgrading of utilities. This observation was visual only. No destructive testing was performed at the time of the inspection.

The Hilltop House is located on a 20 acre parcel above Highway 118 at the terminus of a long, narrow driveway. The structure was built in 1952. The split-level structure consists of a wood framed roof, structural concrete slab deck and pool and a wood framed floor with steel beams supported by CMU walls. It also has steel moment frames below, and a "tuck under" parking garage and basement supported on a slab on grade. Below is a summary of the current structural elements at each level, followed by an overall structural assessment, overall civil assessment, and anticipated next steps.

Roof

The exterior exposed wood beams have significant water damage and weathering. The exposed glu-lam beams show signs of delamination. The steel columns at this level could not be observed, but because they weren't significantly exposed to weather these may be in a good state of repair. This would need further evaluation once the steel members are exposed. The glu-lam beams in the interior of the structure seem to be in good condition with the limited access available to observe them, however these would need to be re-evaluated with better access to these members. Some areas of the wood roof may be salvageable, but others portions of the roof have collapsed and have been exposed to weather.

Floor/Concrete Deck/Pool/Concrete Stairs

The stucco at the wood walls and exterior columns has extensive damage. There is fire damage and partial collapse of a portion of the wood floor joists above the "tuck-under" parking. Elsewhere the wood floor joists appear to have water damage. The exterior concrete deck has large amounts of cracked and spalling concrete as well as several locations with exposed steel reinforcing. The cantilevered portions of the wood deck has holes, soft spots, and is structurally unstable. The pool and surrounding deck is failing. The pool has large cracks and spalling concrete. The concrete columns supporting the concrete deck have significant amounts of cracked and spalling concrete. Similarly the concrete beams at the concrete deck and the concrete stairs also have large amounts of concrete spalling, cracking, and exposed steel reinforcing. The steel members that were visible appear to be in a good state of repair, but this would need to be re-evaluated once demolition of surrounding unsafe members and elements was performed due to limited access to large portions of the members. The guard rails do not meet current code and would need to be replaced.

Basement/Garage

Several of the CMU walls have holes that will need to be repaired. There is exposed steel reinforcing but the reinforcing does not appear to have significant damage. Aside from the holes, the CMU walls appear to be in good condition. The slab on grade could not be evaluated in all locations due to lack of access because the drywall ceiling had collapsed onto the slab below at the garage. The slab on grade that was accessible seems to be in adequate condition. The steel moment frame at the garage appears to be in good condition as well, but the moment connection would not meet current code requirements. The wood walls at this level have some water damage as well as significant damage to the stucco and drywall. The lower column supported deck and the supporting deck beams have several locations of cracked and spalled concrete. This damage was less than the slab above and may be a candidate for retrofitting. The foundations could not be observed at this time.

Overall Structural Assessment

1. All structural and architectural members and elements besides what is listed below should be demolished, or demolished and rebuilt. These elements would need substantial retrofitting to safely "leave" these elements in place. If it is desired that these elements and members remain then it would be much safer and most likely less expensive to demolish and rebuild these elements. This includes the wood roof, wood walls, exterior wood beams, the upper concrete deck, the pool, the concrete stairs, and the wood floor.

2. From the limited access available it appeared most of the steel members could safely remain standing with the following recommendations:

- After the surrounding elements such as the wood floor, walls, stucco, etc. have been demolished the steel frames should be shored. At this time they can be inspected and

evaluated to determine if they can remain standing un-shored, and to determine any retrofitting that may be required.
- After inspection, at a minimum the members should be sand-blasted to remove rust and painted. More extensive work may be required once the steel members are exposed and can be properly inspected.
- The steel members that currently support the floor may need to be checked for possible bracing issues that might be a problem with the wood floor removed.
- The footings supporting the steel frames and columns may need to be destructively tested to determine their size and possibly reinforced to evaluate their adequacy.

3. The CMU walls appear to be in good general condition. Repair will be required to patch holes. If the wood floor is demolished without being rebuilt the wall will need to be analyzed to see if it can safely stand unsupported. This may require destructive testing of the wall and its footings.

4. The large glu-lam beams at the roof that have not been exposed to significant amounts of weather may be able to safely remain in place, for example, where they do not extend beyond the exterior of the upper floor walls. There was limited access to the upper floor so this could not be confirmed, but from this limited access the portions of the large glu-lam beams inside the structure appeared to be in good condition. The following recommendations apply:

- Safer access should be provided to inspect these members. Retrofitting may be required after inspection.
- The portions of the beams that extend beyond the upper floor exterior walls and have been exposed to weather should be removed.
- The beams should be painted or otherwise protected if they will be exposed in the future.

5. The concrete, column-supported deck at the basement level may be able to be retrofitted. This will require destructive testing of the slab, supporting beams, columns, and footings. Structural analysis, design, and detailing will be required to provide retrofitting plans. This is not to be confused with the upper concrete deck which is significantly damaged.

Overall Site Assessment and Land Use

1. The access driveway will need to be widened and improved to accommodate Fire Department access and vehicle safety including barricades to prevent vehicles from rolling off the side.

2. Due to the lack of space near the structure, it may be difficult to provide parking at the top for guest access, especially ADA accessibility. A shuttle service may be incorporated to provide the necessary access for guests, while not impeding access by emergency personnel. A parking lot will need to be provided near the entrance to the access driveway for guests.

3. Stormwater Management will need to be incorporated into the design of the proposed project.

4. Utilities will need to be upgraded or repaired.

- Currently there is an abandoned steel conduit that provided electricity to the structure. This will need to be evaluated to determine if the existing electrical service is adequate.
- Locating the source of potable water will need to be addressed and evaluated for required pressure and supply. We were unable to locate water service at the field observation.
- The building utilizes an onsite wastewater treatment system. The septic tank was observed to be damaged and will need to be replaced. The current state of the underground septic will need to be evaluated by a licensed septic contractor to determine if the system is still of value. The current system may need to be abandoned and upgraded to the current Plumbing code. Is sewer available?

5. There appeared to be some rock retaining walls that have been built outside of the building envelope. They will need to be evaluated to ensure public safety.

Next Steps

With these findings, once the Town of Apple Valley determines which parts of the structure will remain, an architect should be retained to provide as-built, demolition, and future plans. Following the generation of these plans, the necessary demolition and subsequent inspection should be performed. If it is decided that the site will be upgraded, a survey should also be performed.

Thank you for the opportunity to provide this service. If you have any questions please contact our office.

Sincerely,

Steve Reid, S.E.
Managing S.E.

Gary Wynn, P.E.
President

Excessive concrete spalling, cracking, and exposed reinforcing bars at concrete deck

Fire damage at wood floor

Excessive concrete spalling, cracking, and exposed reinforcing bars at concrete beams

Excessive concrete spalling, cracking, and exposed reinforcing bars at concrete deck

Damage to pool shell and surrounding deck