

03/16/2021

C/O Zach Savage

Savage Homes
512.801.2488
Austin, Texas

Dear Mr. Savage,

On 02 March 2021, R. Derek Hammond of RDH C&E performed a site observation to view the existing single story residence located at 1904 Mountain View Drive in Austin, Texas. This report details what was encountered during the site visit, conclusions, and recommendations.

Thank you for the opportunity to provide these services to you. If we have erred in our understanding of the work or if you have a questions, feel free to contact me and we will be happy to adjust and resend,

Respectfully,

A handwritten signature in black ink, appearing to read "R. Derek Hammond".

R. Derek Hammond, PE
Owner RDH C&E LLC

Existing Site Conditions

The existing residence was located in west Austin, east of the Colorado River. The home, according to The Travis County records indicate it was constructed in 1949.

The existing structure was composed of a structural clay tile stem walls with shallow foundations below.

The floor was an elevated floor composed of structural clay tile, grout and steel mesh reinforcing. The exterior walls were composed of structural clay tile on the inner wythe and brick veneer on the outer face within, and a multi wythe brick veneer façade at the courses above grade. The roof was composed of cast in place concrete and structural clay tile.

Multiple penetrations had been made through the stem walls and damage was noted on more than 25% of the walls. Some molding was noted on the stem walls adjacent to the garden beds on the east end of the home.

Rusting in the ladder joints was observed throughout the stem walls, and were blooming in more than 25% of the stem walls observed. Two sump pumps were located on the east and west sides, each appeared to be inoperable as water was present in each of the pits. The interior wall adjacent to the living room was heaving, and the floor adjacent to the wall was also buckling/ faulting. The crack was approximately over 1" and over 36" in length



Figure 1: Stem walls (taken in crawl space) supporting clay tile floor



Figure 3: Hand railing on roof, approximately 24" tall, 42" required



Figure 2: Cracked stair

Exterior stairs, composed of concrete, cantilevered from the house. Cracking was observed on multiple stair treads near the connection to the house. No handrails were present on the stairs. Handrails on the perimeter of the roof were approximately 24 inches tall. Below the front entryway landing, on the north side of the house, ponding water was observed. The landing was also cracked and showing signs of collapse into the space below.

Conclusions & Recommendations

Damage was encountered in multiple locations within the stem walls from the duct installation and from ladder joints blooming within the stem wall. The corrosion was likely accelerated from the sump pumps inoperability, and garden beds resting against the building. The stem walls support the floor, main walls within the residence, and effectively the roof as well. To remove, replace, and repair the damaged cells, the floor and roof would all be required to be shored. The clay tile material is brittle by nature, and would not be easily replaced or repaired. Caution should be taken if repairing as the weight of the floors, walls, etc. is high.

The heaving within the living room was noted to have worsened over the past month, specifically during the winter freeze in mid to late February 2021. The heaving suggests that water is able to rest against and beneath the soils and foundations on the interior walls. When soils with clay are introduced to moisture, they heave upward. This is likely what is causing the faulting in the floor, which



Figure 5: Rusty/blooming ladder joints within stem walls & damaged clay tiles.



Figure 4: Faulting in living room floor

was accelerated by the amount of moisture from the storm. The flooring material is similarly brittle in nature to the walls, and would likely not support any additional loads as it appears the existing loads cannot be supported as constructed.

Additional safety concerns noted were the cracking on the cantilevered stairs, and the lack of hand railing on the stair. The hand railing, per IRC 2015, is required to have a minimum height of 42". The cracking on the stair treads, if un-repaired, will continue to open over time, and will shear off. The hand railing around the roof is

also not in compliance with IRC 2015, and will need to be replaced with code approved hand railing.

The mold present should be further evaluated as it appears to have affected the air quality within the home. It is likely due to the garden beds holding water against the clay tile walls compounded with the lack of air flow and inoperable sump pits.

It is of the opinion of RDH C&E, that the structure will be very difficult, expensive, and dangerous to repair given the brittle nature of the materials utilized in the construction of the house, the extent of the damage to the supporting stem walls, and limited space below the crawl space. Additionally, the addition of a second story would not be advised unless the foundation sizes are known, as they currently have a large amount of weight, and are likely at capacity or undersized currently.



Figure 6: Cracking noted on stair header in bedroom



Figure 7: Damaged stem walls from duct penetrations, rusting and broken ladder joints

ADDITIONAL PHOTOS



Figure 9: Cracking on floor clay tiles.



Figure 8: Cracking in ceiling



Figure 11: 1 of 2 inoperable sump pumps



Figure 10: Cracking at window header

ADDITIONAL PHOTOS



Figure 12: Rusting ladder joint in crawl space below bedroom



Figure 13: Water resting in space below side entry door