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April 12, 2022

David Holderried

Subject: Report of Structural Evaluation
Home at 1104 Turncreek Lane
Schertz, Texas
TBPE Registration: F-409
Project Number: 22220

On April 12, 2022, we observed the home at 1104 Turncreek Lane in Schertz, Texas to evaluate the structure and foundation. Relative floor elevations were measured and published geologic and subsoil information were consulted. The roof and the plumbing, electrical and mechanical systems were not included in the evaluation. Our observations and evaluation are summarized in this report.

Description

The home, constructed in 1996, is a two-story, wood-frame structure with exterior brick veneer and siding. It is supported on a slab-on-grade foundation on a lot sloping toward the street. Small to medium sized trees are in the yards. Photograph #1 is a view of the front of the house.

Observations

Moderately light distress was found in the interior of the house that could be attributed to foundation movements. The more significant distress is described below.

Interior

- ❑ Vertical seams are separating over the dining room opening and over the bathroom doors. Tiles buckled and cracked, but no foundation cracks were noted, in the kitchen, entry hallway, and master bathroom. Ceiling seams are compressed in the utility room and garage. A thin crack was seen over the master bedroom window and wall-ceiling seam is distressed. In the upstairs' den, vertical seam and ceiling seams are separating at the attic door and wall-ceiling seam is distressed at the stairs.



Photograph #1 – Front view of the house.

Elevation Measurements

Relative elevation measurements were made at the floor at points throughout the living area on the ground floor using a Sokkia C31 automatic, optical level and differential leveling methods. Elevations were referenced to a common plane by adjusting for variations in floor covering thicknesses.

Measurements show the floor to be higher in the back of the house where the highest point was measured in the master bedroom. The floor then slopes downward toward the lower elevations at the front. The lowest point was measured at the entry. Elevation changes from the highest to lowest points is four inches (0.33 feet). Elevations are shown in the attached sketch.

Soil Condition

The *Geologic Atlas of Texas, San Antonio Sheet* shows the project area to be underlain by the Pecan Gap Chalk Formation of the upper Cretaceous Period, Cretaceous Era. Seldom exposed chalks and chalky marls that become more calcareous to the westward comprise the formation. Chalks and marls are very light yellow to yellowish brown and weather to form moderately deep clay soil. Formation thickness is 100 to 400 feet, thinning to the westward and eastern Medina County.

Evaluation

The distress observed on the exterior and in the interior of the house is due to differential foundation movements caused by seasonal volume change in the clay. Drought conditions or excessive wet weather conditions can cause foundation movements to occur in homes that have been stable for some time. Differential soil movements occur seasonally as soil moisture varies with changing climatic conditions. Swelling is less than shrinkage due to foundation loads and overburden soil pressure and after a few years, foundations may develop domed shapes with the interiors high and the perimeters, particularly the corners, lower. Soil characteristics and foundation stiffness more often cause foundations to tilt while remaining plane or to develop combinations of curved and plane surfaces. Movements are largest in the years immediately following construction and, after 20 years, may become small or sometimes cease completely.

Slab-on-grade foundations are designed to limit differential movement of the superstructure resulting from foundation movements to a magnitude that will not damage the structure, usually one to 1-1/2 inches. Often, however, movements are larger than normal and cause cracking of sheetrock and brick, stone or stucco exterior finishes. In this house, differential slab movements are well above the range considered normal with moderately light, widespread, distress attributable to foundation movements.

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Based upon the soil conditions, distress, and differential elevation changes at the front, foundation underpinning is recommended with nineteen foundation piers under the perimeter beams of the front half of the house. Piers will help stabilize the front and lifting will be very limited. Approximate recommended foundation pier locations are shown in the attached sketch. Small differential foundation movements may continue seasonally on the surface soils and light distress may continue to develop. Do not allow soils to dry, crack, or separate along the foundation. Maintaining well established lawns is beneficial.

We appreciate this opportunity to be of assistance. This report has been prepared for the exclusive use for David Holderried for the home at 1104 Turncreek Lane in Schertz, Texas, and may not be relied upon by other parties without authorization from Geotechnical Consultants, Inc. Our observations, measurements, and opinions follow current, local engineering practices. No other warranty, expressed or implied, is made. Please call if there are any questions or if we may be of further service.

Very truly yours,
GEOTECHNICAL CONSULTANTS, INC.


Sarah S. Hancock-Gamez, P. E.

Attachment: Foundation Underpinning Plan

Copies Submitted: 1 – Client Email/ 1 - File

