

Ronald D. Fittz, P.E., R.P.L.S. (1948-1987)
Terry G. Shipman, P.E., Senior Consultant
Bernardino D. Tristan, P.E., CEO

Daniel A. Dotson, P.E., President/Treasurer
Donald R. King, P.E., Vice-President/Secretary
Mitch Brackin, R.P.L.S.

March 24, 2022



**RE: STRUCTURAL ENGINEERING SERVICES
FOUNDATION OBSERVATION
8580 Thomas Drive
Orange, Texas
Project No. 22001-0019**

We Value 
LAMAR UNIVERSITY

SUMMARY

It is my opinion, that at the time of my observation the foundation for this residence was in good condition. Repairs to the foundation were not warranted. See the body of this report for the basis of my opinion.

Per your request, on Wednesday, March 23, 2022, I made a visual observation of the referenced residence. The following is a report of my observations, conclusions, and recommendations.

LEVEL OF OBSERVATION

LEVEL: This project is limited to a Level A Observation. This level of observation is a report of first impression and includes but is not limited to the following:

1. Interview of the occupant, owner and/or client, if possible, regarding the history and performance of the structure.
2. Request from the client documents regarding the foundation, such as construction drawings, geotechnical reports, previous testing and inspection reports, and previous repair information. All provided documents will be reviewed.

3. Make visual observations during a site visit walk-through/around of the residence. Our attention/focus during the site visit will be on factors that might influence the foundations performance and on signs of post initial construction differential foundation movement.
4. Preparation of a written report detailing Scope of Observation, Type of Construction, Estimated Age, Observations, Conclusions, Background Information, Recommendations, and Foundation Maintenance suggestions.

Level B and Level C Observations/Investigations are available and fee estimates for the higher levels of service will be provided upon request. A Level B Observations/Investigation includes the above plus relative interior elevations taken throughout the ground floor of the residence. A Level C Observation/Investigation includes Levels A & B items plus soil sampling, site survey, testing of foundation concrete for strength, plumbing investigation, and review of foundation design, if possible.

**SCOPE OF
OBSERVATION**

SCOPE: The purpose of this observation was to observe the condition of the residence's foundation on the day of the site visit. Future performance cannot be predicted but recommendations will be made to maintain or improve future performance. This observation is strictly limited to the foundation. After completing the observation, we were to provide a report outlining our observations, conclusions, and recommendations.

Our quoted fee is for our initial site visit and report only. There will be an additional fee for follow-up site visits and reports unless the follow-up site visit and report is for clarification of our original report. This report is valid for three (3) months from the date of the observation.

**TYPE OF
CONSTRUCTION**

TYPE OF CONSTRUCTION: The residence is a story and one-half, wood framed, single family residence with brick veneer (patio area only) and Hardie Plank exterior siding. The roof framing is a combination of gables and hips with composition shingles. There is an attached three car garage which is included in this report.

The property has a conventional slab-on-grade foundation system. The

	<p>foundation plans indicates there are drilled and under reamed concrete footings (the size of the footings was not specified).</p>
ESTIMATED AGE	ESTIMATED AGE: The residence is approximately seven (7) years old.
OBSERVATIONS	<p>OBSERVATIONS: I observed interior and exterior, structural and non-structural items at exposed conditions. From this, I made the following observations (all references are relatively to viewing the front of the residence from the outside):</p> <ol style="list-style-type: none">1. See Photograph No. 1 for a front view of the residence.2. Back Patio - typical concrete shrinkage crack (typical at other areas of exposed concrete slab). See Photograph No. 2.3. Bedroom Hall - separation of sheetrock and trim. See Photograph No. 3.4. Bedroom Hall - pulling of crown molding at joints (typical throughout). See Photograph No. 4.5. Bedroom Hall - pulling of crown molding at joints (typical throughout). See Photograph No. 5.6. A couple of interior doors either would not latch or rubbed the door frame slightly. All other interior and exterior doors operated properly.7. No window or door jamb separations were observed in the brick veneer area.8. No structurally significant brick cracks were observed.9. No structurally significant sheetrock cracks were observed.10. There is ceramic floor tile in the bathroom areas.
CONCLUSIONS	CONCLUSIONS: It should be noted that at some point in the future it is

likely that hairline cracks will occur in the tile floors. Should that occur, it is not necessarily an indication that the foundation has fractured and failed. Ceramic tile is very brittle and if there is a shrinkage (similar to Photograph No. 2) or temperature crack in the concrete it will reflect through the tile.

The sheetrock/trim separation (Photograph No. 3) does not fit the pattern for differential foundation movement. The condition is a cut and fit issue, not a foundation issue.

The crown molding separation at joints (Photographs No. 4 and 5) are the result of the crown molding shrinking and pulling at joints. As I told you at the property site, I have been noticing this throughout the area including my personal home. The conditions are not foundation related.

The absence of signs of differential foundation movement and distress, such as those listed in Items No. 6 through 9 under Observations indicates the foundation has performed well to date. It is my opinion that at the time of my observation the foundation of this residence was in good condition and repairs to the foundation were not warranted. If properly maintained, the foundation should provide satisfactory service. Proper maintenance is very important because of the poor soil conditions prevalent throughout the area. A perfectly good foundation can fail in a short period of time if not properly maintained.

The levelness of a slab-on-grade foundation is not always an indication of differential foundation movement and distress. Often, slab-on-grade foundations are placed in an unlevel manner during construction. If a foundation is unlevel as a result of differential foundation movement, there will be other signs of that differential movement and distress. If those signs are not present, the unlevelness of the slab-on-grade foundation is a result of construction and not differential foundation movement.

**BACKGROUND
INFORMATION**

BACKGROUND: The following information will be helpful in maintaining the foundation.

Foundation movement in our area occurs when the soils supporting a residence experience a change in moisture content. This change causes the volume of the soils to change; either shrinking or swelling. If saturation of moisture in the soil is to different degrees and at varying rates, differential pressures are exerted on the foundation. If the differential pressures are great enough, the foundation cracks and possible failure of one or more areas of the foundation can occur.

WEATHER CYCLES are a major influence on the moisture content of the soils that support a residence. The perimeter soils, those most exposed to rain and evaporation, experience the most fluctuation of moisture content. This causes the most extreme movement to occur at exterior walls. The weather cycle influence can be exaggerated if the site is poorly or differentially drained.

TREES also have a large influence on the moisture content of soils supporting a residential foundation. As a general rule, a non-pine tree's roots will extend the same distance as its limbs; the drip line. These roots pull moisture from under the residence, leaving those soils drier than others under the residence and causing consolidation. While the weather cycle influence only affects those soils six (6) to eight (8) feet interior of the perimeter, the tree influence can be much more damaging because its effects will exist as far as the roots extend.

RECOMMENDATIONS

RECOMMENDATIONS: It is my opinion that at the time of my observation the structural integrity of the foundation of this residence was in good condition and repairs were not warranted. The foundation should be maintained in its present condition by using good foundation maintenance procedures. Foundation maintenance is an attempt to maintain constant, uniform moistness in the soils supporting a residence constant throughout the year. By maintaining a constant moisture content, the soil's volume fluctuation and the consequences of foundation movement are minimized. For your reference, an outline of foundation maintenance procedures follows.

FOUNDATION MAINTENANCE

MAINTENANCE: The following maintenance procedures are sensible methods to minimize foundation movement due to shrinking and swelling soils.

1. After a heavy rain, an inspection should be made to insure there are no areas where water is collecting or that are slow to dry. Drainage should be such that water "runs" uniformly and directly away from the residence.
2. Soils around the slab should be monitored to insure that they do not become too dry; causing shrinking. The planting of small bushes or shrubs around the residence can provide a barometer of soil dryness because the plants dry as the soil dries. Ideally, the soils supporting a slab should maintain a constant moisture content throughout the year. By watering the plants, the soil gets watered. This is sometimes called "watering the slab".
3. At faucet locations, provide drainage away from the residence in order to prevent a dripping faucet from creating an isolated location of saturation. Faucets should not be allowed to drip.
4. The installation of gutters and downspouts around the entire perimeter of a residence is a good idea but not mandatory. If downspouts are installed or presently exist they should have their discharge directed well away from the base of the foundation. The addition of gutters can help stabilize a foundation but good drainage is almost as effective as gutters. If gutters discharge at the base of the foundation they cause washouts and undermining of the foundation.
5. Do not plant large trees close to the residence. As a general rule, a tree's roots extend as far as its drip line. If these roots extend under the slab they will pull moisture from below the slab thus causing isolated areas of dry soil. The result is these soils are relatively consolidated and are at a location where the condition is difficult to remedy. When planting trees, take into consideration its size in twenty to thirty years in determining where to plant the tree. Oak trees especially should be planted a large distance away from residential foundations.

**STATEMENT OF
LIMITATIONS**

LIMITATIONS: This report is not a guarantee or warranty of the foundation, the design, or the soil conditions. It is limited to opinions made as a result

of the on-site visit. We are not responsible for out of sight defects. Our opinions were not influenced by any party and our maximum liability is limited to the fee paid. Contact our office if these limitations are not acceptable.

We appreciate the opportunity to be of service to you. If you have any question, please do not hesitate to call.

Sincerely,

Fittz & Shipman, Inc.



by: Terry G. Shipman, P.E., MASCE
For the Firm

TGS/blr

Email: mf3420@yahoo.com



I am a Registered Professional Engineer in the State of Texas. This seal does not guarantee the existing conditions. See the Statement of Limitations in the body of the report.



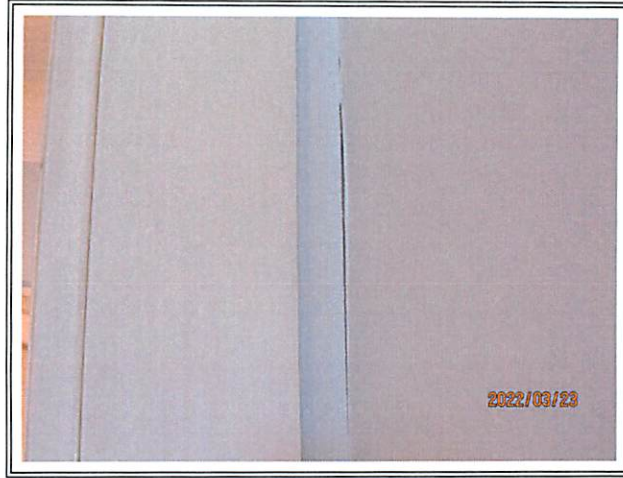
Photograph No. 1

8580 Thomas Drive
Orange, Texas



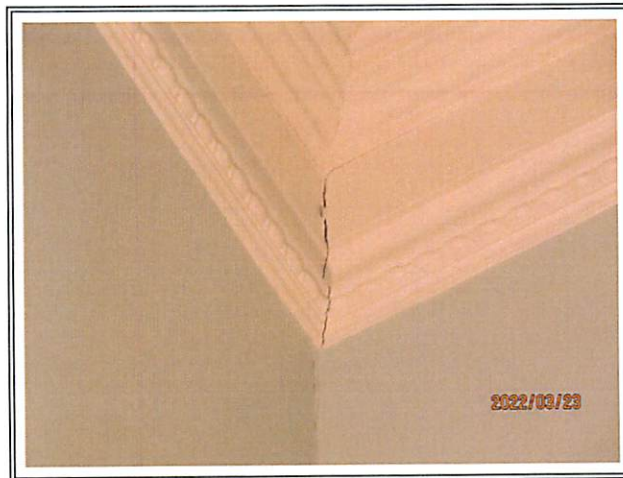
Photograph No. 2

Back Patio - typical concrete shrinkage crack
(typical at other areas of exposed concrete slab)



Photograph No. 3

Bedroom Hall - separation of sheetrock and trim



Photograph No. 4

Bedroom Hall - pulling of crown molding at joints
(typical throughout)



Photograph No. 5

Bedroom Hall - pulling of crown molding at joints
(typical throughout)