

JOSE R. HERNANDEZ – MESA, P.E.
TEXAS LICENSED CIVIL/STRUCTURAL ENGINEER
LICENSE 90739. TBPELS F - 10708
FOUNDATION SPECIALIST

December 20, 2023

Lisset Sousa

Re: Foundation inspection at 14614 Tivoli Drive, Houston, Texas 77077

INTRODUCTION

In accordance with instructions, I made a visual foundation inspection of the above referenced home on December 19, 2023. This inspection consisted of an examination of only those portions of the foundation and structure that were visible and accessible.

For this inspection, Jose R. Hernandez – Mesa, P.E, has acted as an engineering consultant to provide a visual review of foundation conditions for the building at the referenced location.

PURPOSE

The purpose of the inspection was to observe and provide an opinion as to whether or not the foundation is performing the intended and designed purpose, or if new repairs or adjustments to previous foundation work may be required.

DESCRIPTION

The structure is a two story, single family dwelling, supported by a post-tension slab-on-grade foundation.

An elevation survey of the foundation was also performed as a part of this inspection. For this elevation survey, floor elevation measurements were made at random locations using a Stanley Compu-Level, which the manufacturer state's is reliably accurate to within 1/8th of an inch over a vertical range of plus or minus twenty feet. While at the home, on 12/19/2023, I took an elevation survey of the foundation. I used the elevation data to prepare the attached elevations diagram. The individual elevation readings have been adjusted for any change in flooring. The readings are all relative to the base that was set up in the family room (denoted as R). Elevations in parenthesis denote garage ceiling readings.

The following are a few observations from that survey and visual inspection:

- 1) The lowest elevation of – 0.5 inches was located in the foyer.

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- 2) The highest elevation of + 1.1 inches was located in the master closet.

EXTERIOR DAMAGE

- 1) Front – Post tension cable extended past slab edge.
- 2) Left side – Brick crack.
- 3) Rear side – Brick cracks.
- 4) Rear side – Frieze board separation.
- 5) Right – Expansion joint separation at bottom.

INTERIOR FIRST FLOOR

- 1) Master bedroom – Door “ghosted” closed.
- 2) Garage – Horizontal sheet rock crack.

INTERIOR SECOND FLOOR

- 1) Game room – Ceiling sheet rock crack.
- 2) Front right bedroom – Ceiling stair step sheet rock crack.
- 3) Front right bedroom – Closet door not latching.
- 4) Rear left bedroom – Ceiling sheet rock crack.
- 5) Rear left bedroom – Door not latching.

ANALYSIS AND CONCLUSIONS

Observed conditions suggest that the foundation has experienced normal settlement and seasonal movement. Elevations are within acceptable tolerances per ASCE (American Society of Civil Engineers) and L/360 Guidelines. The foundation is performing as intended.

The post tension cable end extended is not compromising the integrity of the slab. However, it is recommended to contact a post tension company to test the tension and condition of the cable.

OTHER GENERAL RECOMMENDATIONS AND PRECAUTIONS

The following are generalized suggestions and represent opinions of this inspector for maintaining foundation stability in any residence.

Foundation performance is strictly related to the strength of the soil providing the structural support. In the Houston area, the upper clay soil layers generally have high

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bearing strengths, but often times also have the undesirable characteristic of swelling when moisture is added and shrinking when moisture is extracted. For these soils, being aware of the importance of maintaining proper levels of moisture around the foundation is an important factor for foundation stability. Conditions around a foundation such as poor drainage, leaking pipes, or other concentrated water discharge conditions can cause erosion, loss of bearing strength, and possible swelling of the supportive clay soil. In the other extreme, drought conditions can also cause shrinkage of certain clay soils and a loss of support to the foundation slab. Trees located too close to the foundation can also withdraw a tremendous amount of moisture from the soil and the supporting clay soil layer. In dry conditions, trees near a foundation will make a bad situation even worse because trees will seek needed moisture from the foundation soils in order to survive.

To aid in the maintenance of the stability and forestall any future foundation stress, this inspector is of the opinion that the following be considered at any residence:

- 1) Provide a watering program to supplement the natural rainfall in order to maintain constant moisture content in the soil around the residence. Since adding water to the soil adjacent to the foundation every day during the summer months can become a tedious task, an automated (soaker hose) watering program is recommended.
- 2) Keep large roots from beneath the foundation; keep large shrubs/trees well pruned, especially tree limbs that overhang to the roof. Remove stumps and install root barriers if necessary.
- 3) Maintain a positive drainage pattern around the entire residence. Make sure soils around the foundation are sloped away from the edge of the slab, and the rain gutter discharge or other concentrated flows do not pond or erode soil around the foundation. A slope of at least four inches in the first six feet away from the foundation is recommended.
- 4) Perform a sewer (under slab plumbing) leak detection test at least every 2 years.
- 5) Perform a pool leak detection test to the pool shell and all the associated equipment including pipes.
- 6) Maintain gutters, and downspouts clean and free of dirt and debris. Install gutters and downspouts if missing around the entire property.

CERTIFICATION

I hereby certify that I did the inspection of the foundation of the residence located at 14614 Tivoli Drive, Houston, Texas 77077, and that I have reported my findings and conclusions based upon my observations, experience and opinions. I further certify that the findings and conclusions contained in this report have been, to the best of my knowledge, correctly and completely stated without bias, and are based upon my

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observations and review of data available to me at this time. This is a slab-on-grade foundation that likely sits upon expansive clay soils. It has moved in the past and will move in the future, regardless if there has been any previous foundation repair work done. Therefore, the owner should adhere to a Foundation Maintenance Program to keep movement within acceptable parameters. This report is neither an expressed nor implied warranty and/or guarantee as to the performance of any future repairs or heaving/settlements that the foundation might experience due to change in weather or soil conditions. No responsibility is assumed for any events that occur after the inspection and submission of this report and no warranty, either expressed or implied, is made. No construction plans, geotechnical reports, engineering reports, plumbing reports were available to the engineer at the time of the inspection.

Thank you for allowing us to provide you with this inspection service. If I can be of further assistance, please call me at (832) 863 – 9699.

Very truly yours,



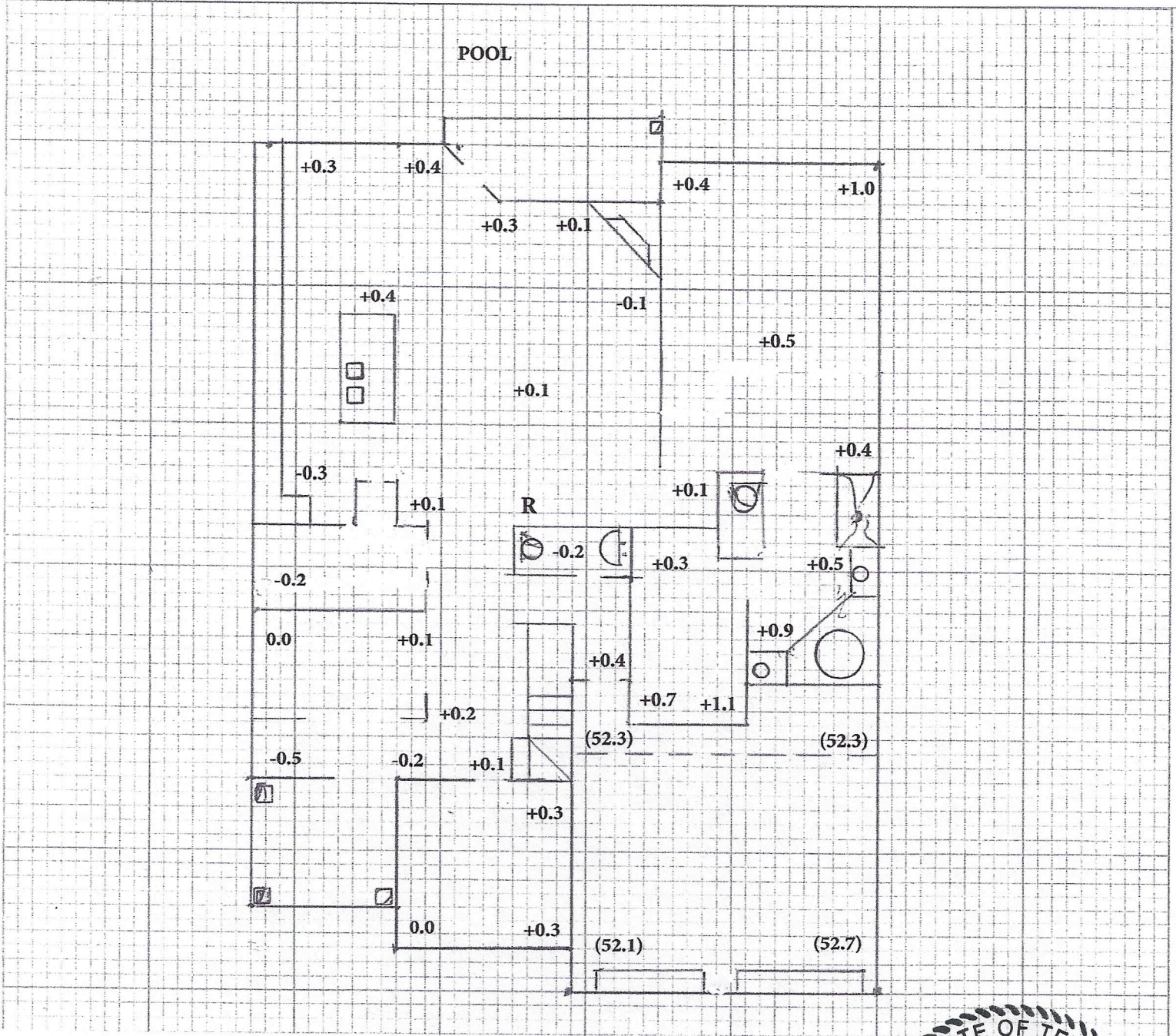
[Handwritten Signature]
Jose Roberto Hernandez-Mesa, P.E.
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Address: 14614 Tivoli Drive, Houston, Texas 77077
Description: Elevations Diagram

December 19, 2023



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