GREENWORKS®
ENGINEERING AND CONSULTING

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Texas Registered Engineering Firm 20170

Project No. 18523

April 8, 2020

Re: Foundation Evaluation
[redacted]

Dear [redacted]

As requested, personnel of GreenWorks Engineering and Consulting have completed an observation of the foundation at the address referenced above on April 7, 2020, 2020. The purpose of the observation was to collect information necessary to assess the performance of the existing foundation. This evaluation was a Level B evaluation as described in the "Guidelines for the Evaluation and Repair of Residential Foundations" by the Texas Section of the American Society of Civil Engineers (ASCE). For the purpose of this report the house faces west.

Introduction:

The house is a two-story wood framed structure built in 2014. The foundation system of the house is a concrete slab on grade. All the information gathered was from the visual evaluation and no destructive or invasive testing was performed.

Observations:

The interior and exterior of the house appeared to be in relatively good condition. However, there were minor signs of distress.

The interior distress included:

- Cracks in the walls and ceiling drywall
- Interior doors do not operate properly and are out of square
- Separation of the floor trim and the wall drywall and floor tiles
- Separation of the floor trim joints
- Separation of the kitchen counter and the wall tiles

The exterior distress included:

- Separation of the stone and the mortar at the garage door

- Separation of the stone veneer from the window frame, garage door trim, and the corner trim
- Separation of the frieze board joints
- Separation of the lap siding joints
- Hairline cracks in the parge covering the foundation
- Exposed steel dowels at the front of the garage slab. The dowel connects the concrete driveway to the garage foundation

Note, the exposed areas of the foundation were covered with a parge which limited our ability to visually evaluate the foundation.

Interior Elevation Survey:

An interior floor elevation survey was performed on the living area of the house, with the elevations recorded to the nearest 10^{th} of an inch (0.1"). Adjustments were made to account for the thickness of the floor coverings. A benchmark elevation of 0.0 inches was established near the northwest corner of the kitchen as shown in Figure 1 of this report.

Drainage:

The drainage of water is an important issue that affects the shrink/swell properties of the expansive soil the house is built upon. The purpose of proper drainage is to remove excess water from around the house to keep the soil around and under the perimeter foundation at a stable moisture content and the soil under the slab dry. Gutters and down spouts are an effective method of draining rainwater away from the house but must be used correctly. Downspouts should discharge rainwater a minimum of 5 feet away from the foundation.

Foundation History:

The existing house has no known existing repairs that can be seen, and GreenWorks Engineering and Consulting have not received any existing foundation report. It is our belief that the current foundation evaluation is the only evaluation on record.

Conclusions:

Based on our observations of the interior and exterior cosmetic distress, the floor elevations and calculations, it is our opinion that the house has undergone an excessive amount of movement. The maximum differential deflection is 1.6 inches and occurred over an approximate distance of 40.3 feet. This amount of deflection exceeds the standard allowable deflection of 1.3 inches for a distance of 40.3 feet. The standard allowable differential deflection is based on 1.0 inch of vertical movement, up or down, over a horizontal distance of 30 feet; expressed as Length (in inches)/ 360.

It should be noted that the foundation is relatively level throughout the house, but at higher elevations in the interior of the house near the front and rear exterior walls. Due to the higher

elevations in these areas remedial measures, such as structural underpinning, would require lifting the remaining area of the house and therefore not recommended at this time. It is our opinion that before remedial measures are used the Foundation Maintenance Recommendations should be performed and maintained for 6 to 12 months to determine if the recommendations correct any of the current elevations.

Recommendations:

1) Have the doors that remain poorly functioning adjusted or rehung.

2) At the exposed foundation reinforcement, remove rust and debris and cover with a non-shrink epoxy grout. This repair may require future maintenance.

3) It is recommended to review the performance of the foundation every 6 to 12 months. Retain this report as an elevation baseline for the foundation. Compare all future foundation evaluations to this baseline.

Foundation Maintenance Recommendations:

1) To better control the rainwater, add gutters, downspouts and extensions to all the downsloped areas of the roof that do not currently have them. The downspouts should discharge the water a minimum of 5 feet from the foundation or into a drainage system.

2) Establish a watering program for the foundation soil to keep the soil moisture content constant during the dry months. The lawn should be kept healthy. This will help by reducing evaporation. Water the lawn and other vegetation consistently and evenly. If the soil is cracking at the surface this is a sign that the soil is drying out.

Limitations:

The opinions and recommendations contained in this report are based on the visual observation of the then current conditions of the house and the knowledge and experience of the engineer. The evaluation was limited to visual observations and areas not visible, accessible or hidden behind furniture and appliances were not included in the evaluation. There has been no structural inspection of the existing framing of the house and no verification of the framing has been done. The evaluation did not include any soil sampling or testing.

The evaluation did not include any assessment of the existing framing, plumbing or soil and no implication is made on the compliance or non-compliance of the house with old or current building codes. The evaluation does not constitute a design of the foundation. No verification was made of the existing concrete strength, thickness, reinforcement nor capacity to support any load.

Foundation movement is a prevalent phenomenon in the Austin metroplex area. Future foundation movement is likely to varying degrees due to the shrink/swell characteristics of the soil. The foundation is prone to movement due to the moisture variation in the existing soil and total prevention of future movement is unlikely.

No guarantee or warranty as to the future performance or need for repair of the foundation is intended or implied. Limits of liability for any claims with respect to this report is limited to the fees paid for services and anyone relying on the content of this report agrees to indemnify GreenWorks Service Company for all costs exceeding this fee.

Prepared by,

Wayne Leake III

H. Wayne Leake III, P.E.
Professional Engineer

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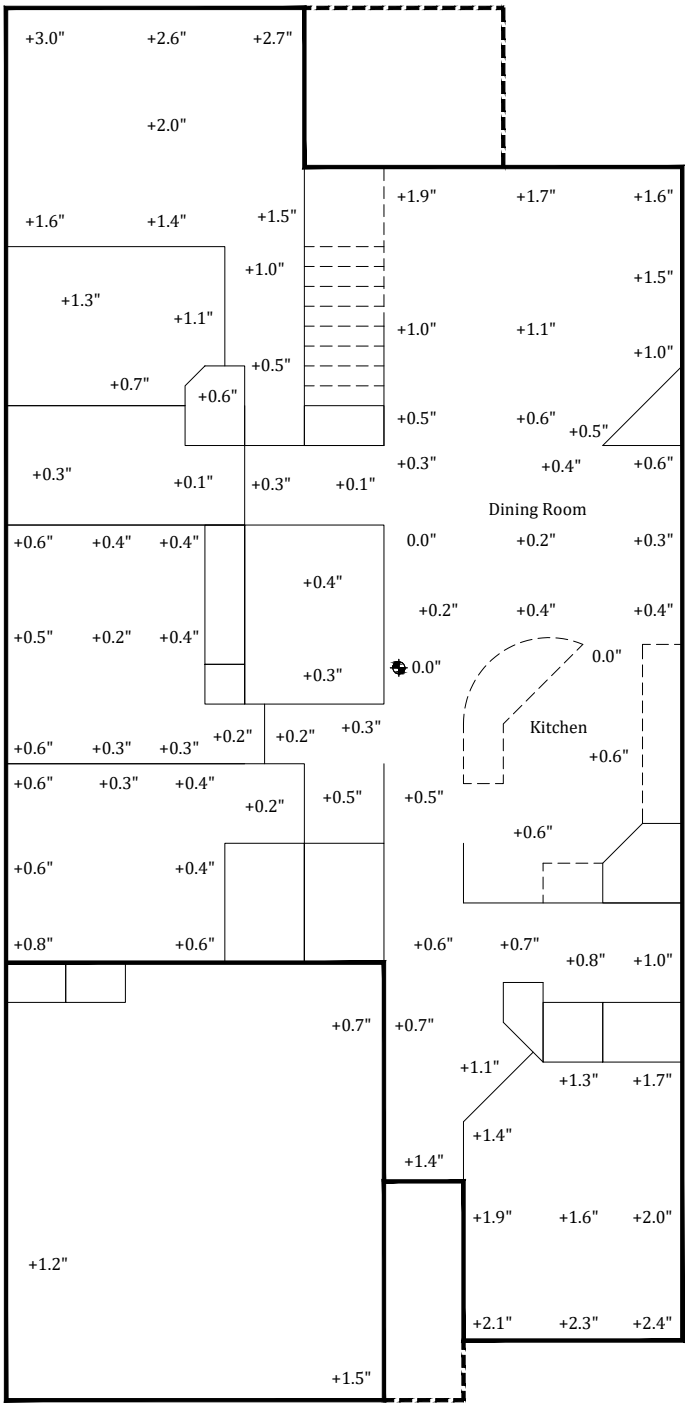

LEGEND

✥	Bench Mark Elevation, 0.0"
0.0"	Top of Floor Elevation

FIGURE 1

NOT TO SCALE

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ELEVATION SURVEY

[redacted]

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Figure No:	1 of 1
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