



600 N Pearl Street  
Suite S1900  
Dallas, TX 75201  
(855) 349-6757  
Texas Registered Engineering Firm 20170

Project No. 18950

April 30, 2020

Re: Foundation Evaluation



Dear



As requested, personnel of GreenWorks Engineering and Consulting have completed an observation of the foundation at the address referenced above on April 23, 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 east.

### **Introduction:**

The house is a two-story wood framed structure built in 1996. The foundation system of the house is a pier and beam with a perimeter skirt. 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 showed typical signs of distress for a house that has incurred differential foundation movement.

The interior distress included:

- Minor cracks in the wall’s drywall
- Second floor master bedroom door does not operate properly
- Cracked floor tiles within the bathroom

The exterior distress included:

- Cracks in the stucco veneer
- Crack in the front patio soffit
- Separation of the front patio and the house

The areas of concern as viewed from the crawlspace included:

- One perimeter (3) 2x6 beam is not centered on the concrete piers
- Severe wood rot observed below the master bathroom. The wood rot affects all wood framing members; the beams, joists, and the floor sheathing.
- One beam is severely water damaged and twisted
- Wood shims and wood blocks are utilized as shims between the CMU block piers and wood beams.
- One wood beam is not in contact with the concrete pier under the kitchen

### **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<sup>th</sup> 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 fireplace on the south side of the living room as shown in Figure 1 of this report.

### **Foundation History:**

There was evidence of previous foundation repairs, however GreenWorks Engineering and Consulting have not received any existing foundation report. The exact construction of the existing piers is not known.

### **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 2.1 inches and occurred over an approximate distance of 22.3 feet. This amount of deflection exceeds the standard allowable deflection of 0.7 inches for a distance of 22.3 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.

Furthermore, it is our opinion that remedial measures are required to bring the foundation to a more level condition. There are also a few foundation maintenance recommendations that could be beneficial to the future performance of the foundation.

### **Recommendations:**

- 1) Adjust the crawlspace piers/wood framing as required, using metal shims, to achieve a more level condition on the south side of the house. It is recommended that all wood shims be replaced with metal shims due to the wood shims can be damaged over the years. Note, the height of the metal shims should not exceed 2 inches. The use of additional concrete blocks shall be required.
- 2) Install metal shims where the wood beam is not in contact with the concrete pier.

- 3) Replace the existing water damaged wood framing members with new pressure treated lumber.
- 4) Attach an additional 2x6 pressure treated member to the wood beam that is not centered on the concrete piers. The new lumber should attach to the new beam using 2 rows of 10d nails spaced at 12 inches, staggered.
- 5) Have the doors that remain poorly functioning adjusted or rehung.
- 6) With the completion of the foundation underpinning, a final elevation survey must be performed to provide a final elevation baseline. It is recommended to review the performance of the foundation every 6 to 12 months. 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. The downspouts should discharge the water a minimum of 5 feet from the foundation or into a drainage system.
- 2) To assist in the drainage of free water the soil around the house should be sloped away from the house. The slope should drop a minimum of 3 inches in 5 feet, a 5% slope. If this cannot be done a French Drain may be required.

#### **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 San Antonio 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

Project No. 18950  
April 30, 2020

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

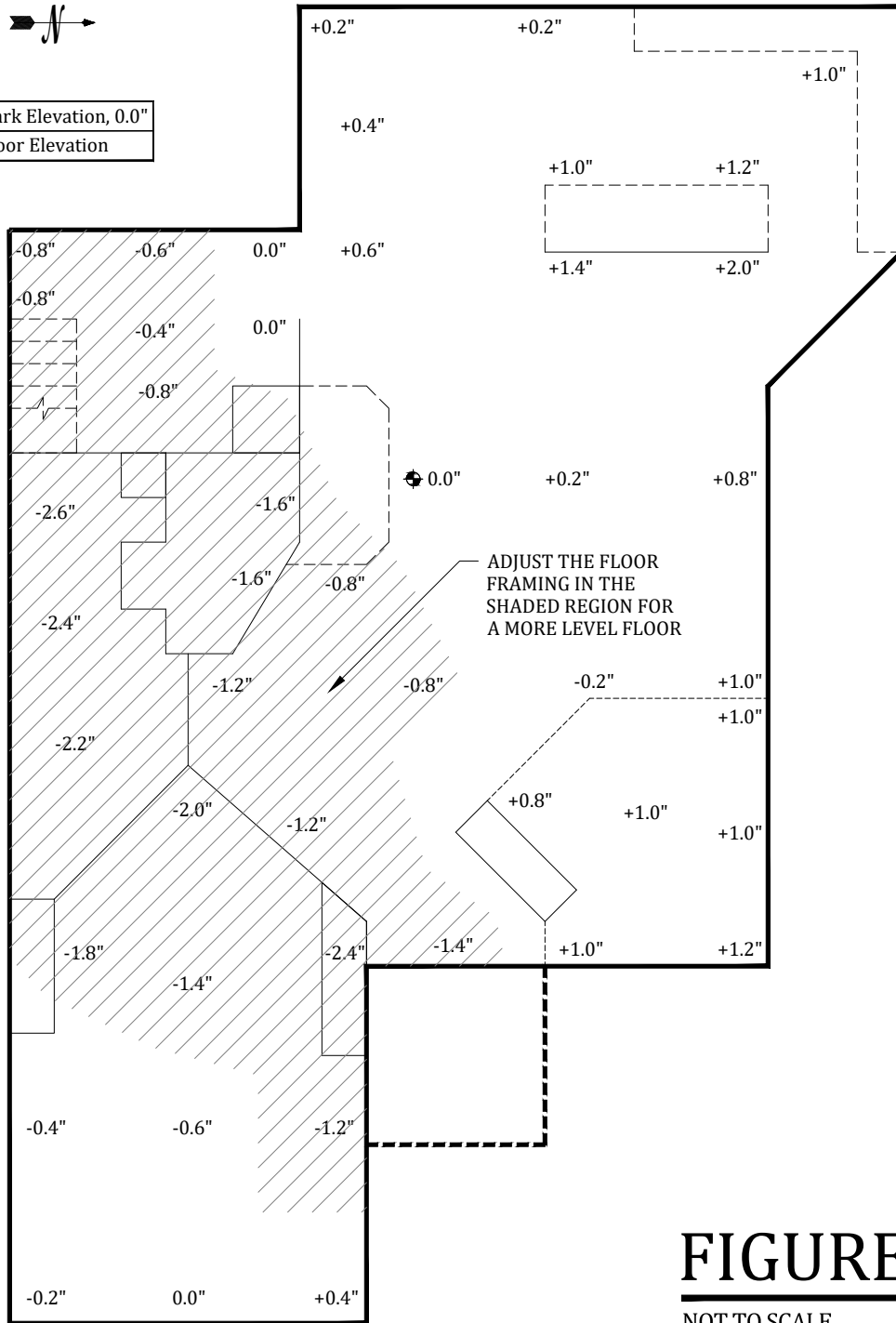


GreenWorks Service Company  
Texas Registered Engineering Firm 20170



**LEGEND**

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

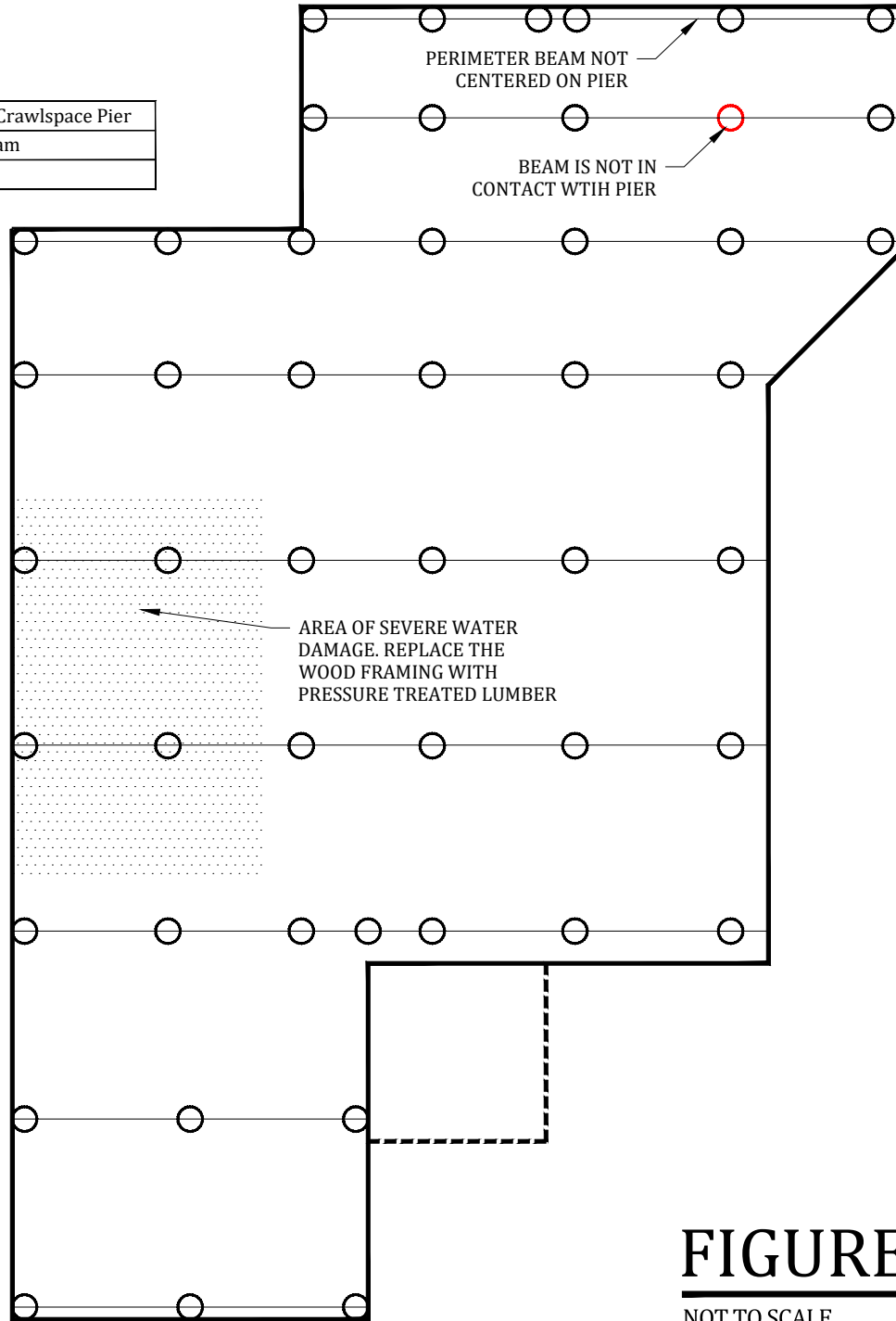


**FIGURE 1**

NOT TO SCALE

**LEGEND**

○	Existing Crawlspace Pier
—	Floor Beam



PERIMETER BEAM NOT CENTERED ON PIER

BEAM IS NOT IN CONTACT WITH PIER

AREA OF SEVERE WATER DAMAGE. REPLACE THE WOOD FRAMING WITH PRESSURE TREATED LUMBER

## FIGURE 2

NOT TO SCALE

### CRAWLSPACE LAYOUT

Project No: 18950

Figure No: 2 of 2

Date: 04/30/2020

Revision Date: ---