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14 July 2022

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Nederland, TX 77627

## **REFERENCE: FOUNDATION INSPECTION**

### **SITE: Same**

Proceeding upon your request, I made a visual inspection of the site. Following in this report are my findings, discussion, conclusions, recommendations, and maintenance considerations where applicable.

### **SCOPE OF INSPECTION**

To perform a level A type visual inspection of the site's foundation outlined by the ASCE foundation guidelines for residential foundations, list my findings, provide discussion, draw conclusions, and make recommendations for repairs (if needed).

### **SITE DESCRIPTION**

The residence is of exterior siding, frame construction, and has an ordinary slab on grade. The residence is approximately forty-five (45) years old.

### **FINDINGS**

Following are structural and non-structural items I observed during my inspection. It is my opinion that these items may contribute to, indicate existing, and/or lead to future foundation related problems. The garage has been enclosed for living space. A storage enclosure was added at the right rear portion of the residence

1. A concrete floor and beam crack was observed in the right rear storage enclosure portion of the residence.
2. Minor sheetrock cracks were observed.
3. No diagonal sheetrock cracks were observed.
4. The main residence was observed to be level within tolerances.

### **DISCUSSION**

Items listed above tend to reflect foundation movement in the past. Sometimes they can exist on a minimal basis, showing foundation flexure without failure. Generally, the more severely damaged the foundation is, the more likely these items are noticeable and easily seen.

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During a year, seasonal changes occur. Southeast Texas is home to a particular type of soil that is greatly affected by moisture content. This soil's volume shrinks during dry conditions and swells during wet conditions. This soil's volume change generates pressures that will move the foundation with it. The exposure of the foundation, location of trees and their type, and other unseen variables such as plumbing leaks will greatly contribute to the rate that the soil dries and changes in volume due to excess water. These differences in shrinking and swelling around and under the foundation create differential movement that will flex the foundation.

By controlling the moisture content of the soil of the foundation, it is possible to limit the degree of differential change and therefore limiting the flexure. How many times the foundation can flex is dependent on its strength, construction quality and other unknown variables. Foundations of considerable age have more opportunities for these changes and therefore a higher probability for foundation problems or failures. A well-maintained foundation can withstand all of these problems and provide long use.

### **CONCLUSIONS**

Based upon the visual inspection and indicators listed above, I have come to the following conclusions. The storage enclosure at the right rear has experienced foundation movement in the past. The storage enclosure addition portion of the residence does not impact the structural integrity of the main residence. Although the floor and beam crack exists, the concrete can support the light weighted enclosure. No additional attention is required.

### **RECOMMENDATIONS**

Maintenance of a foundation is a sensible method of minimizing foundation movement due to shrinking and swelling soils. According to the best information available, these maintenance considerations will aid in controlling the soil's moisture content and minimizing differential movement. However, these suggestions do not guarantee or provide a warranty against future foundation related problems.

### **MAINTENANCE CONSIDERATIONS**

By following these suggestions as well as using good sense it is possible to maintain a foundation for extended use.

- ◆ Good and uniform drainage around the foundation should be supplied. This will aid in controlling the rate the soil dries. However, do not let the soil completely dry out. The soil should remain moist just below the surface. Uniform drying limits differential movement therefore limiting foundation flexure. Protect against standing water at any location around the foundation.

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- ◆ Do not plant trees too close to the perimeter of the foundation, especially ones that will grow large. Oak trees especially should not be planted close to foundations. Generally, the roots will extend out as far as the limbs. If trees are too close to the foundation, their roots will grow under and sometimes through the foundation. The roots will pull moisture from beneath the foundation, changing the soil volume and creating differential movement. Trees have been known to completely destroy foundations. Root barriers are available to aid in protecting the foundation. If an existing tree is already too close, its removal would greatly increase the chances against future foundation related problems.
- ◆ Exposure also plays a role in foundation related problems. There are many variables that can contribute to non-uniform drying and ultimately differential movement. A few variables that one can be aware of are shading from trees, direct sunlight, patio paving, driveways, landscaping, and downspouts.

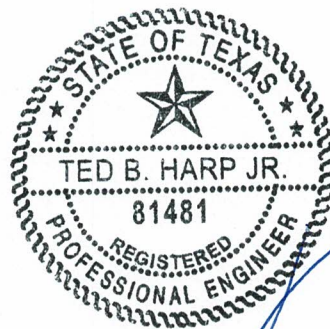
### LIMITATIONS

This report and opinions made cover existing conditions as observed during a site visit. No responsibility is taken for unseen defects. This report is not a guarantee or warranty of the foundation, its design, or soil conditions. No person outside this office had any influence on opinions made during this report and our maximum liability is limited to the fee paid. Contact our office if these limitations are not acceptable.

I appreciate the opportunity to be of service to you. If any questions arise, please do not hesitate to contact me.

Sincerely,

Ted B. Harp Jr., P.E., RPLS



7/14/22