

Date: May 29, 2024

REPORT OF FINDINGS

Client: Charlie Hebert (Homeowner)
Email: charlie.hebert@brightway.com

Location: 24811 Meadow Oaks Dr.
Katy, TX 77494

Prepared For: Client

Attention: Mr. Hebert



5/20/2024
TX Firm No. 18926

Engineer of Record: Travis C. Tatum, P.E. / TX PE#: 110343

Conclusions

Based on the information obtained and relied upon to date, the following conclusions are provided:

- 1) The foundation is performing within ASCE guidelines. Maximum foundation relative elevation difference was measured to be approximately 1.7 inches over a 30-foot span. While this exceeds the ASCE deflection limit guidelines, the absence of corollary damage indicates that not all of the measured elevation difference is due to foundation movement. In the absence of corollary damage, it is reasonable to assume that the foundation was poured with a slight slope. All floor slopes are less than the ASCE recommended limit of 1%.
- 2) No structural or safety concerns were observed. Non-structural corner cracks and minor cracks and/or displacement of brittle finishes were observed, typical for the age and location of the structure.
- 3) No structural repairs are recommended at this time. Openings in the exposed foundation due to missing post-tensioned cable patches should be sealed. It is recommended that drainage around the property be improved to drain away from the house to help maintain consistent soil moisture content under the foundation and reduce future movement.
- 4) See **Analysis and Discussion** for additional information.

INTRODUCTION

Coastal Windforce Inc., dba WindForce was retained by the Client to assess observed damage to brittle finishes, and attempt to determine if the damage is related to poor foundation performance via a Level B foundation evaluation per Texas ASCE Guidelines.

A site investigation was performed by Travis C. Tatum, P.E. and included observations, measurements, photographs, and field notes taken, obtained, and/or collected during our May 29, 2024, site visit at the subject property. The photographs included in the report represent conditions observed during the site inspection related to the scope of this assignment. The photographs are not meant to be an exhaustive survey of the property. All measurements and data cited in this report are considered to be approximate values.

STRUCTURAL DESCRIPTION

The property is located at 24811 Meadow Oaks Drive, Katy, Texas. The two-story residential structure was constructed of exterior wood-framed load-bearing walls clad with brick-veneer and fiber-cement siding, and a reinforced concrete slab-on-grade foundation. The main roof was hip and valley in configuration and covered with asphalt shingles. For this report, the front elevation of the building was referenced to face west.

SITE OBSERVATIONS

The following items were observed during our visual, non-destructive evaluation at the property:

Exterior

- The visible portion of the concrete foundation and the exterior brick veneer are in good condition, with only minor cracking observed in the second story brick veneer.

- Cracked mortar in the second story brick veneer shows evidence of prior repair with no further cracking, indicating no recent movement.
- Minor, non-structural corner cracking was observed.
- Possible missing post-tensioned cable patches were observed along the left side of the home. These should be closed, but do not appear to be adversely affecting the performance of the foundation.
- Dense foliage along the back and right side of the detached garage was pulled away to ensure the exposed foundation was in good condition. No structural deficiencies were observed.
- Cracks in the driveway consistent with differential movement on expansive soils was observed. The driveway and surrounding flatwork is independent of the main residence foundation and does not adversely affect the performance of the house foundation.

Interior

- Minor separations in drywall and molding seams were observed. Minor cracks in the front entry tile was observed.
- Doors functioned properly.
- Significant cracking in the newly laid master bathroom floor tile was observed. No other similar tile cracking was observed. The cracking in the master bathroom appears to be due to material defect and/or improper installation, not foundation movement.

Attic

- Rafters and framing are in good condition with no signs of excessive stress or foundation movement (i.e. pulling, cracking, twisting, etc.).

ANALYSIS AND DISCUSSION

The subject residence is located in an area noted by the USGS to have soils that contain, "...clay having high swelling potential." Soils of this type shrink and swell with changes in soil moisture content. This shrinking and swelling applies forces to the foundation that cause differential settlement and relative elevation differences, which in turn can damage brittle finishes and structural and mechanical systems that rely on a level and stable foundation. In addition to the USGS data, driveway cracks and vertical displacement at expansion joints in flatwork were observed indicating expansive soils are present at the site.

Per Texas ASCE guidelines, slab-on-grade foundations should deflect vertically no more than 1-inch over a 30-foot span, and should have slope of no more than 1%. Differences in floor finishes and as-built construction slopes must be taken into account when interpreting relative elevation data, and care should be taken not to draw conclusions from isolated deflections over relatively short spans.

Relative elevation measurements were made throughout the residence using a ZipLevel 2000 precision altimeter. The maximum differential settlement and/or the slopes observed were within acceptable limits. Relative elevations were not measured in the garage, as garage measurements are notoriously inaccurate due to highly varying as-built slopes.

Non-structural corner cracking was observed. Corner cracking of this type occurs not due to differential settlement, but instead because of differences in expansion and contraction of the brick veneer and the concrete foundation. Corner cracking of this type is not a structural concern.

Maximum foundation relative elevation difference was measured to be approximately 1.7 inches over a 30-foot span. While this exceeds the ASCE deflection limit guidelines, the absence of corollary damage indicates that not all of

the measured elevation difference is due to foundation movement. In the absence of corollary damage, it is reasonable to assume that the foundation was poured with a slight slope. All floor slopes are less than the ASCE recommended limit of 1%.

No structural repairs are recommended at this time. Openings in the exposed foundation due to missing post-tensioned cable patches should be sealed. It is recommended that drainage around the property be improved to drain away from the house to help maintain consistent soil moisture content under the foundation and reduce future movement.

LIMITS OF STUDY

This report was prepared by WindForce. for the exclusive use of the Client and WindForce. Our opinions are based on experience, education, work performed, industry resources, engineering references, and other information listed in our Reference Information. Any repair methods discussed are deemed general recommendation of repairs only and no warranty is expressed or implied. We reserve the right to modify or supplement our opinions and conclusions should other information become available. We have endeavored to conduct the services identified herein in a manner consistent with that level of care and skill ordinarily exercised by members of the same profession currently practicing in the same locality and under similar conditions as this project. No other representation, expressed or implied, is included or intended in this document.

WindForce appreciates this opportunity to have assisted you with this evaluation. Please contact us if you have any questions or if we may provide additional assistance.

REFERENCE INFORMATION

We reviewed and utilized the following references and information when preparing this report.



The 2018 Version of the International Existing Building Code (IEBC), including revisions and supplements.

Version 2 of the Texas Section of the American Society of Civil Engineers' Guidelines for the Evaluation and Repair of Residential Foundations, adopted May 1, 2009.

ATTACHMENTS

Figures

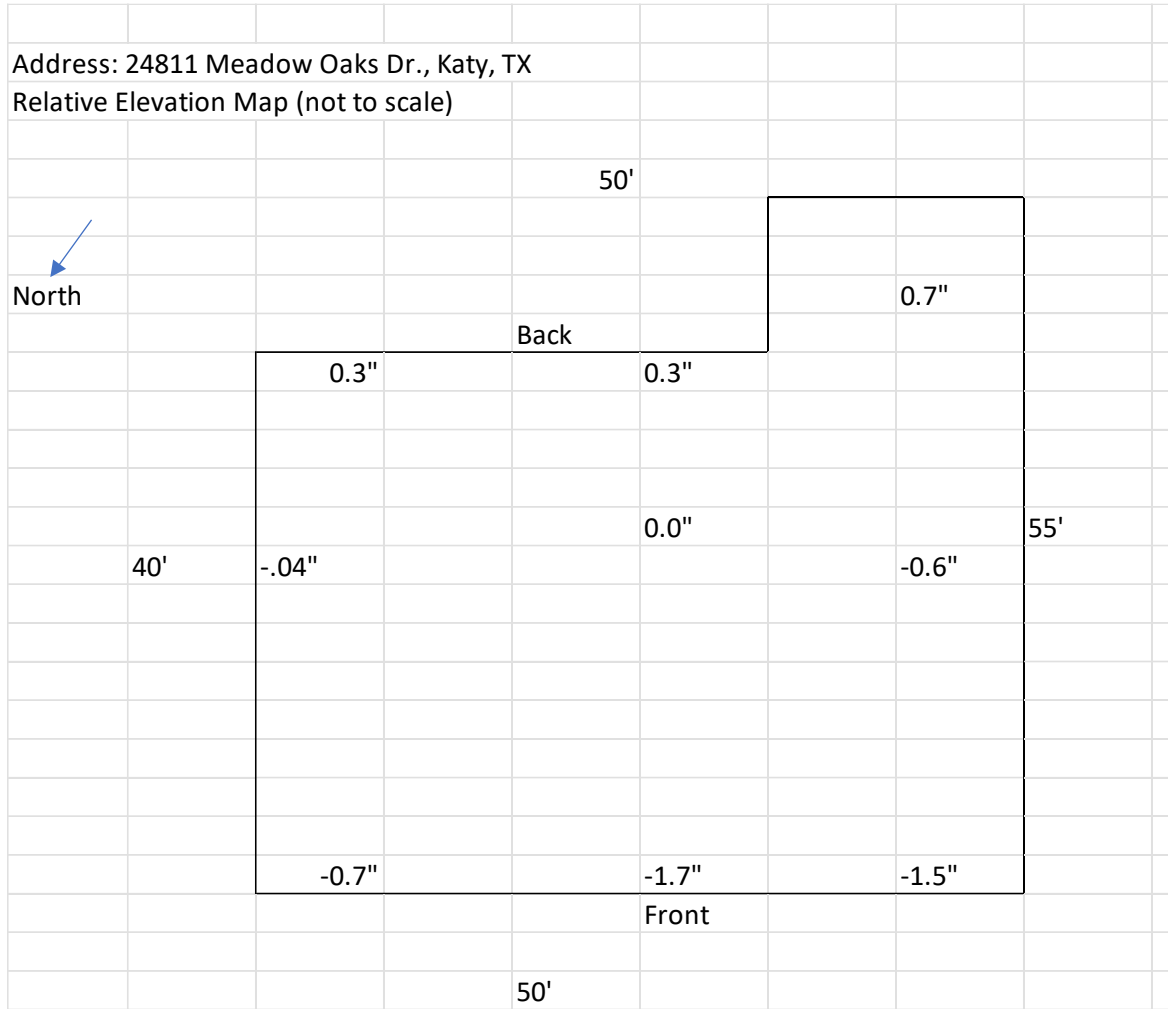


Figure 1: Relative elevation survey map

Photographs



Photograph 1: Overview of front of residence.



Photograph 2: Repaired cracks in front brick veneer.



Photograph 3: Non-structural corner cracking.



Photograph 4: Cracks in master bathroom tile



Photograph 5: Attic Framing – Good condition. No twisting, pulling or cracked structural members.