

Austin 11/15/17

To: Gahl Shalev

Re: Existing Residential Foundation and Superstructure Assessment

1410 E 3rd St., Austin, TX 78702 (Lot 4A)

INTRODUCTION

I have inspected the existing structure at the above referenced address on behalf of *Gahl Shalev*. The inspection was part of a Level B investigation of the foundation structure. The investigation was triggered by concerns about ongoing foundation issues and overall framing issues and to determine the extent of structural repairs needed to retrofit the structure to current building codes. According to the Texas Section of the American Society of Civil Engineers (Guidelines for the Evaluation and Repair of Residential Foundations, 2009), a Level B investigation consists of:

- Interview with homeowner/homeowner's representative or developer to inquire about possible distress signs around the building and the history of the property;
- Visual inspections on the Interior and exterior of the property to search for any visible signs of excessive foundation movement.
- Request from the client and review the provided documents regarding the foundation, such as construction drawings, geotechnical reports, previous testing and inspection reports, and previous repair information.
- Floor levelness: Relative floor elevations were taken to assess flatness of floor structure.
- Make visual observations during a physical walk-through
- Observe factors influencing the performance of the foundation.

The property is located in Austin, Travis County (Figure A). At the time of preparation of this report, there are no engineering or architectural plans available for review. Additionally, there is no known history of foundation stabilization or retrofitting (e.g. pier stabilization) for this house. Per developer comments, the intent for this property is to re-use the existing structure as part of a new, two-story, single family residence.

PROPERTY DESCRIPTION

Available records indicate that the structure was built in 1948. It consists of a single story residential structure. The main house is apparently supported by a CMU continuous perimeter footing that created a crawl space under the wood framed floor. Access to the crawl space is only possible at locations where vents were installed. The continuous footing appears to be a 4" thick CMU which is very unusual on properly engineered foundations. Floor framing could not be inspected due to access restraints (Figure 1).



Figure 1: Limited crawl space access

All the interior and exterior walls are made of a concrete product of some sort (CMU or stucco applied on wood laths, Figure 2), but it certainly isn't anything seen in current construction standards. These walls are very heavy in comparison to drywall or interior plaster. This puts a tremendous amount of additional load on the floor system. The subfloor is getting *spongy* and soft throughout, which may indicate improper design, insufficient subfloor thickness or termite/water damage.

Roof structure appears to have 2x4 rafters at 24" o.c., with 1x plank roof decking. There is very noticeable deflection in the roof structure.



Figure 2: Exterior CMU wall

INSPECTION FINDINGS

During my visual assessment, the following items were observed. Photographic evidence is also presented.

- Several stair-stepped cracks in interior and exterior walls. These cracks are common indicators of excessive foundation movement.



Figure 3: Cracks in walls

- Noticeable deflection of roof elements, possible due to undersized rafters (2x4's @24"o.c).
- Surface drainage appears inadequate in some sections around the property (Figure 4). Proper surface drainage (typically 5% or 6 inches per 10ft of positive drainage) will prevent water accumulation against the foundation structure, aggravating swelling of clays and consequent heaving.

- Proximity of the house to large trees. The presence of trees near the foundation will change moisture content of the clay soils underneath the foundation and may cause damage to the structure.
- Interior Floor elevations indicate that the floor is approximately 3" *out of level*. This may indicate a high degree of foundation shifting/settlement. Most variations in elevation measurements inside particular rooms are equal or over 1", pointing to excessive movement.
- Several cosmetic repairs still visible throughout the house. These repairs were likely necessary to cover extensive cracking on interior walls and ceiling. This reinforces the previous observation about out-of-tolerance foundation movement.



Figure 4: Site Drainage

CONCLUSIONS AND RECOMMENDATIONS

Based on my visual observation, the numerous signs of structural distress throughout the building are evidence of underlying serious structural problems related to deficient design (or lack thereof) and construction. The extent and nature of the distress will not allow for the strengthening/retrofitting without extensive damage to and/or demolition of portions of the current. The existing foundation type (wood framing on CMU footings) and wall construction (rigid, heavy, cement based) will not allow a proper retrofitting strategy (e.g., drilled piers) without *permanently compromising* the structural integrity of the entire building.

In addition to these factors, the lack of information on the existing footings (reinforcement, overall depth, material properties) and walls (composition, reinforcement, material properties) will significantly hinder any attempts to level the structure adequately. Destructive methods can be employed to assess all these items, however the costs involved are appreciably high. Issues involving the superstructure must also be addressed, with the potential need to replace all roof framing structure.

With respect to the economic feasibility of this project, it is anticipated that the total cost of demolition, retrofit and renovation of the existing structure will exceed the cost of a new, "up to Code", construction. This conclusion is based on my experience with similar buildings and new residential construction.

Therefore, it is my professional opinion that the existing structure should give way to a new construction in order to make the development financially practical.

Limitations

This is exclusively a visual inspection. This report is not intended to offer any warranty on the future performance of this foundation or framing structure. If you have any questions, please contact us at (512) 215-4364 or by e-mail: marcos@sectexas.com.

Sincerely,



Marcos V. Dequeiroga, PE
Principal
SEC Solutions LLC

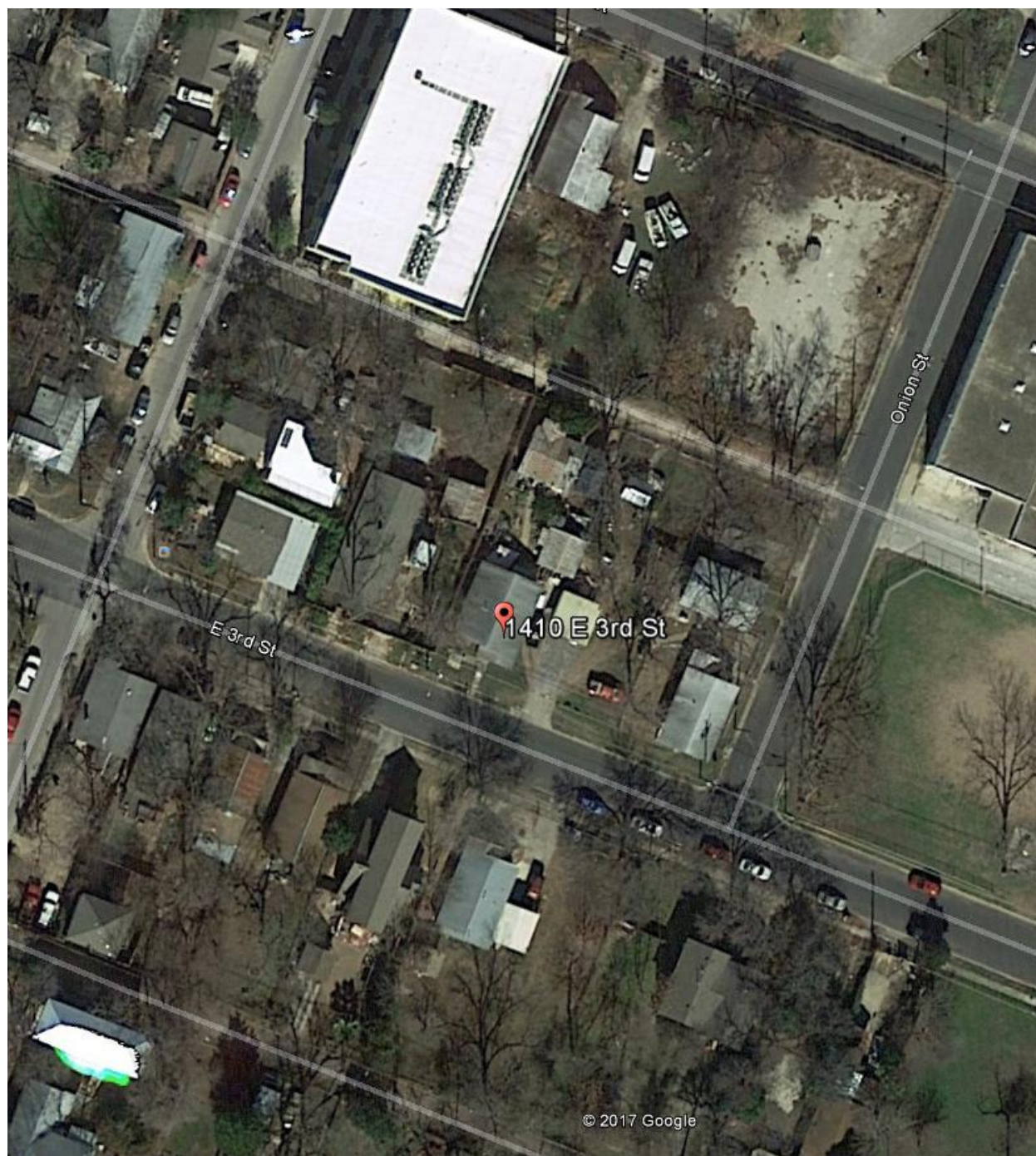


Figure A: Site Location Map.