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ENGINEERING OPINION
INVESTIGATION OF FOUNDATION PERFORMANCE
RESIDENCE AT 12345 ANYSTREET, HOUSTON, TX, 77062
Date of Inspection: May 25, 2012
Date of Report: May 26, 2012

Jane Doe, owner of the subject property, requested an inspection and report on damages occurring to the breezeway cover and brick walls of her house. A visual inspection was performed, and elevations were measured.

Ms. Doe stated the following:

- The house was occupied by her.
- The house was then used as rental property.
- The house is now for sale.

Convention regarding directions: Front faces the street, left and right are as seen from the street facing the house. Back-right indicates back side, right end. Right-back indicates right side, back end.

INSPECTION

Inspection of the exterior found a tree in the back yard and a tree in the front yard within influential distance from the residence foundation.

Inspection of the exterior found a brick veneer crack at the left-back window. The mortar lines and trim distress indicated the back left corner has dropped.

Inspection of the exterior found a brick veneer crack at the right-middle window. The mortar lines and trim distress and lack of other influences indicated this may be due to a plumbing leak underneath the foundation.

Inspection of the exterior found that the master bathroom is falling at the back wall.

Inspection of the exterior found no other indications of foundation movement of the residence.

Inspection of the exterior found distress at the breezeway cover. This is usually due to relative movement between the garage and residence foundations. The elevation at the left side soffit of the garage was measured to have a 2 inch drop at the back. This area of the garage is within influential distance from a tree.

Inspection of the interior found no indications of foundation movement, or evidence of repair of damages characteristic of foundation movement.

An elevation survey throughout the house was performed using a Technidea Zipline. The reference zero was the living area. The elevations have a range of 1.8 inches, highest at the utility room, lowest at the hallway. The foundation generally is flat and level, and rises towards the utility room. The elevation changes do not exceed the generally accepted criteria for foundation performance and repair of L/360 (1 inch in 15 feet).

ANALYSIS

Trees desiccate soils and shrink those soils with a clay component. Clayey soils are common in the Greater Houston area. Since the foundation is supported by these shrinking soils, the foundation drops in the area affected by the tree roots.

The distress at the breezeway is due to the effects of the tree near the left back corner of the garage. The tree has shrunk the soils, dropped the back left corner of the garage, and this is pulling the garage away from the house, and causing the distress at the breezeway cover.

I could not see any effect from the tree in the front yard on the house.

I believe that the tree in the back yard is causing the distress at the window at the left-back wall, and also dropping some of the elevations in the master area.

I believe that the rise at the utility room is due to a drainage plumbing leak underneath the foundation. A plumbing leak will have the opposite effect from a tree, a leak will add moisture and raise the foundation.

CONCLUSIONS

There are three specific problems with this foundation, a drop at the back left corner causing distress at the brick, a rise at the right-middle wall causing distress at the brick, and a drop of the garage at the back causing distress at the breezeway cover. Despite these specific problems, the foundation is well within generally accepted performance limits.

RECOMMENDATIONS

Have the plumbing checked for leakages. Call This Plumbing Company (555-555-5555) for a leak test. About \$350 for a general test, if they find a leak, it will be about \$300 more to find the location and provide a repair plan and estimate. Email to me the results of the plumbing test, I will email you with more specific advice based on the plumber's findings.

Install a root barrier between the tree and the garage, and the other tree and the residence. Root barrier vendors include First Contractor (565-555-5555), Second Contractor (575-555-5555), and Third Contractor (585-555-5555), which install root-inhibiting materials. Some landscape companies install root barriers, as do some foundation repair companies. Insist on a Bio-Barrier brand barrier element. The location of the root barrier is shown on the attachment.

The foundations will then move back to near their original conditions, closing up cracks and relieving the distress. The beneficial effect should start to occur soon after the detrimental conditions are repaired, but the reaction could take a year or two to complete.

Foundation repair is not recommended.

CAVEAT

My approach to the mitigation of foundation problems is to eliminate the source of the problem rather than ignore the causes and install piers or pilings. The installation of piers or pilings can provide immediate results, but ignoring the causes of the foundation performance problems can result in further foundation problems in future years. Eliminating the cause of the problems can involve years before the foundation has recovered and is stable again, and the foundation may not recover to a level acceptable to the owner or professionals.

I will give you the best advice based on my experience, the experiences provided by other professionals, and the experiences of my clients. I may predict the future performance of a foundation based on generally accepted principles and experience, but factors beyond my control or beyond my ability to observe can affect a foundation in unpredictable ways.

This report of observations and opinions was prepared for the exclusive use of Jane Doe, and is not intended for any other purpose. Gerard J. Duhon assumes no responsibility whatsoever for the use of this report by any third party. Any third party with an interest in this property should obtain a professional opinion to satisfy their own objectives. This report is based upon information provided at the time of this report. The conditions described are limited to structural and finish issues discovered during a visual, nondestructive survey. The scope of this investigation is lim-

ited by financial and time constraints. I am not licensed by the Texas Real Estate Commission (TREC) and do not perform inspections in the manner promulgated by the Commission. Property purchasers are urged to have properties inspected by a TREC inspector prior to commitment.



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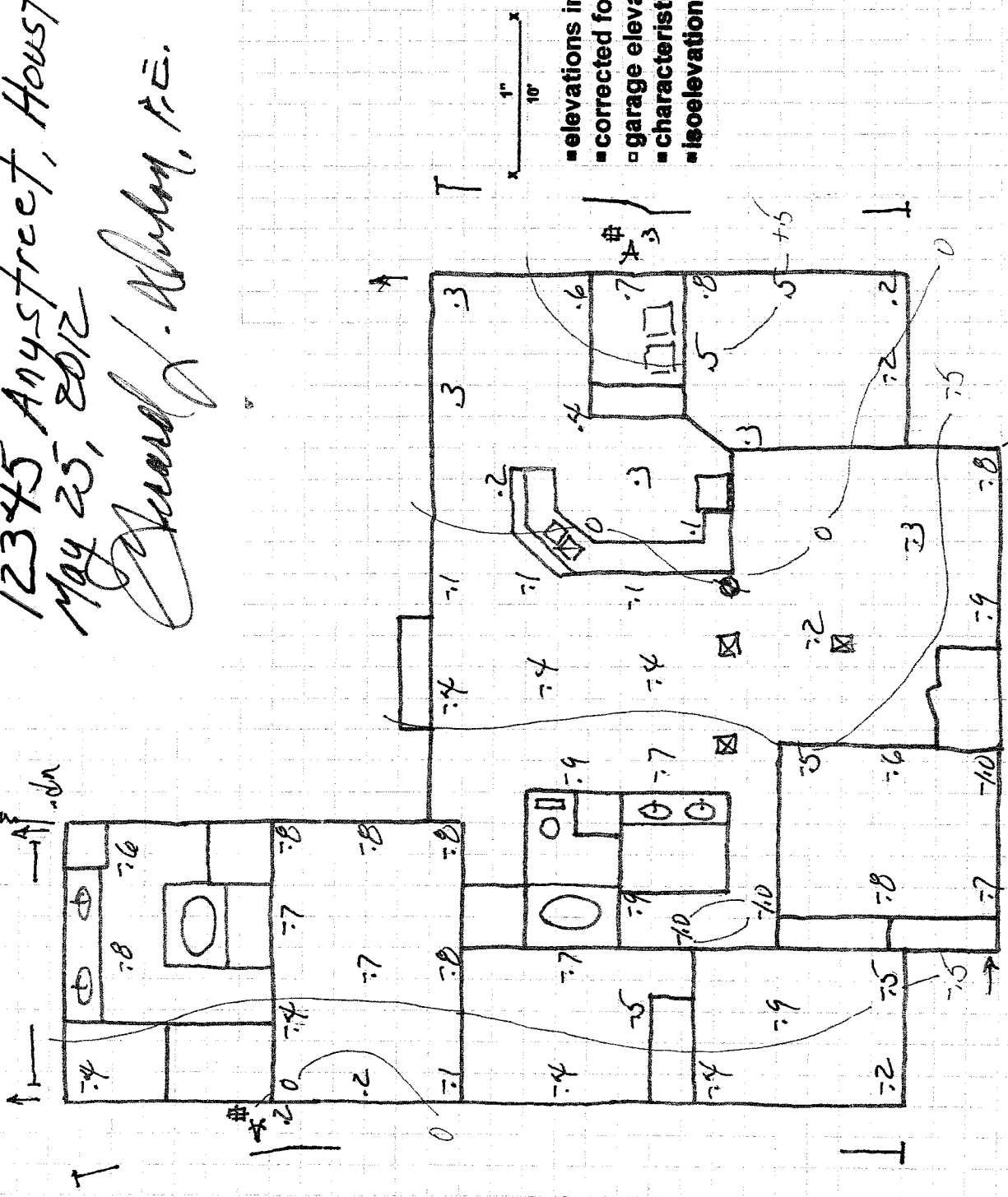
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Attachments:
Elevation Survey
Root barrier guide

SLAB SURFACE ELEVATIONS
 12345 Any Street, Houston, TX, 77062
 May 25, 2012

Edward J. Whelan, P.E.

① 28" oak



- elevations in inches
- corrected for flooring
- garage elevations taken at ceiling
- characteristic damages annotated
- isoelevation lines at .5 inch intervals

① 11/2" x 7/8" x 24"

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