



FORESIGHT

ENGINEERING & INSPECTIONS, LLC.

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REPORT # SFR12-

DATE OF INSPECTION: xx/xx/xxxx (04:30PM)

A RESIDENTIAL PROPERTY LOCATED AT
XXXXXXXXXXXXXXXXX, PASADENA, TX 77505



FOR MR. & MRS. XXXXXXXXXXXXXXXX (CLIENT)

BY:

JITENDRA M. VARMA, Licensed Professional Structural Engineer

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ENGINEERING INVESTIGATIVE REPORT

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REAL ESTATE INSPECTION AGREEMENT & CONTRACT (REIAAC)*

2 PAGES

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REPORT NO.: SFR12-0xxxxxxP

xxxxx, 2012

ENGINEERING INVESTIGATIVE REPORT

Inspected for: Mr. & Mrs. xxxxxxxxxxxx (Client)

Subject Property: 3814 xxxxxxxxxxxxxx, Pasadena, TX 77505

I performed a limited visual, non-intrusive and non-destructive investigation of the foundation at subject property on xxxxxxxxxxxxxx, 2012 at 04:30 p.m. Here are my findings on the following:

WEATHER & SOIL CONDITIONS:

Cloudy at the time of investigation. Temp. 60 F. Site-specific soil data were not available.

DIRECTION DESIGNATIONS:

As facing the investigated property from the street **Front** **Right** **Rear** **Left**

PERSONS PRESENT:

Mr. xxxxxxxxxxxxxx

PROPERTY DESCRIPTION & LIMITATIONS:

The property was located in the City of xxxxxx, Harris County, TX. The property was a one story home with a two-car attached garage on front left side. This wood-framed house had a slab/grade beam foundation and composition shingled roof. Brick veneer provided cladding for the property. Property was occupied at the time of inspection limiting inspection to certain extent. This report covers surveying of foundation of the house as this was the only item requested to be investigated and paid for.



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ENGINEERING INVESTIGATIVE REPORT (Contd.)

GENERAL & DISCLAIMERS:

In the conduct of this work, Foresight Engineering & Inspections LLC. has acted as an engineering consultant to provide visual observations and opinions with regard to the visible conditions of the load bearing structure of this building or any component thereof (as requested & authorized by you on the signed Real Estate Inspection Agreement & Contract). Recognizing that latent defects could exist which inherently may not be detected during an inspection of this type, Foresight Engineering & Inspections, LLC. does not represent that the observations described herein and their analysis thereof represent every structural condition that may exist. Any condition not apparent visually at the time of investigation or any component not readily accessible for investigation is not reported. Structural items not specifically noted as investigated in this report are not covered by this report and are not to be assumed good or bad by lack of notation.

It is extremely important to understand that the authorized investigation was conducted in accordance with the signed Real Estate Inspection Agreement & Contract, and, as such, there are definite limitations to the results thereof. No attempt was made for removal of coverings, disassembly, unloading or removal. It is extremely possible that latent defects could be discovered if these structural coverings were to be removed, during remodeling, for example. The purpose of this investigation was to report any conditions which could be an indication that one of those structural components, listed in the inspection Agreement & Contract, was either failing to perform the intended function or was in need of immediate repair. The items described in this report are the author's opinion of the visible conditions, as they existed at the time of investigation, and nothing more. The Client may rely on these opinions, only to the extent of the limitations used in their formulation. **It is entirely possible that another individual inspecting this property might have differing opinions than those cited in this report. Further, it is also the nature of residential construction in the greater Houston area for the condition of the building to change, often over a short period of time.** No verbal statements made at the time of the field investigation are to be considered a part of this investigation or this report. The information contained in this report takes precedence over any communications that might have occurred prior to issuing this report.

It is emphasized that the purpose of this report is to better inform you, as a client on the subject property, of conditions existing at the time of the investigation, with no representation or warranty as to the efficiency or future life of the structure, foundation or any component thereof. You, as the client, should not rely on this report as the sole basis for any decision you may make concerning the transaction of this property nor should you conclude that all of the repairs that may be needed are described herein. Opinions relating to compliance with specifications, legal and/or Code requirements and/or restrictions of any kind are specifically excluded by this investigation.

Foresight Engineering & Inspections, LLC. does not assume any responsibility whatsoever for any action(s) that may or may not be done as a result of information provided during the investigation, and for the existence of any latent defects that were not amenable to visual detection during this investigation, for items not specifically identified in this report as having been investigated, for changes that occur in items subsequent to this investigation, for the structure that has deteriorated because of wood destroying insects &/or organisms, or opinions expressed by others that may differ from those expressed in this report. Finally, this report is written to satisfy the objectives of you, as our Client. No warranty, either expressed or implied, is hereby made and the Client waves all warranties, except for such waivers or disclaimers that may be prohibited by law. Every user of this report is bound by this understanding of "No warranty &/or liability".

In using this report, the Client further agrees, except as may be limited by law, that there are no other agreements or understandings concerning the standard, grade quality, or amount of services provided by Foresight Engineering & Inspections, LLC., other than what is contained in this report or the inspection Agreement & Contract. Finally, no other representations &/or statements have been made that this report and the inspection Agreement & Contract include rights, remedies or obligations which are not contained in these instruments. Neither the author of this report nor Foresight Engineering & Inspections, LLC. jointly or severally assumes any responsibility whatsoever for the use of this report, or the information contained herein, by any third party person.



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ENGINEERING INVESTIGATIVE REPORT (Contd.)

FOUNDATION & EXTERIOR STRUCTURE:

Trees were observed too close to foundation on front side. Exposed areas of foundation were in good condition with grade beam cracks on front and back sides. Brick/mortar cracks were noted on left, back and right sides. Window & door frame to wall separations were discovered on back, left and right sides.

SLAB & INTERIOR STRUCTURE:

Condition of slab could not be ascertained due to presence of flooring materials except in garage which appeared to be in good condition. All the inspected doors on first floor worked properly during opening/closing cycles. Vertical and horizontal corner cracks were observed in garage. Drywall cracks were seen around openings and in garage. Fireplace had separated away from wall.

Compulevel (an electronic digital level) was set near the front right corner of the family room on carpeted floor. This location was used as a reference point for taking relative micro-elevations of the first floor at 28 plus selected locations in different areas of the house. The Compulevel was set at zero at this location. Accuracy of Compulevel was verified by checking elevations of the reference point several times during the elevation survey and observed to be 0". Micro elevations were adjusted for different floor thicknesses.

The relative micro-elevations varied from a high of +1.1" near back right corner of the master bedroom and back left corner of breakfast area to a low of -0.8" near front left corner of front bedroom. All other elevations fall within these extremities. Other salient micro-elevations were -0.2" near front right corner of front right bedroom closet, 0.6" near back left corner of hall bathroom, and 0.6" near front left corner of kitchen.

CRITERION FOR FOUNDATION:

Our criterion for maximum acceptable variance in slab elevations is a slope of 0.5% or 6" in 100'. This is based on the Texas Section of American Society of Civil Engineers' (ASCE) "Guidelines for the Evaluation and Repair of Residential Foundations", with a maximum allowable deflection for concrete slabs/beams as L/360 or 1" in 30' which produces an average slope of 1" in 15' or 6.67" in 100'. ASCE's deflection criterion is based on the International Residential Code for One & Two-Family Dwelling's live load deflection of L/360.



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ENGINEERING INVESTIGATIVE REPORT (Contd.)

CONCLUSIONS:

1. Foundation settlements occurred.
2. Settlements observed did exceed above criterion in some areas & induced above cited adverse phenomena.
3. Foundation repairs, therefore, are recommended to control further movement and stabilize the foundation.

RECOMMENDATIONS:

1. Tree root barrier should be installed between the house and the tree to minimize loss of water from under the foundation.
2. Exposed post-tensioned ends should be thoroughly cleaned and covered with epoxy based cement.
3. Drilled and under-reamed piers or friction pilings shall be installed under all the exterior and interior grade beams of the house at no more than 7' centers and at all corners in the areas where foundation repairs are not done. The drilled & belled supports shall have a minimum bearing area of 3.1 square feet (a 24" diameter bell) and be founded on soils with a bearing capacity of 2500 PSF & installed to a depth of at least 10' to eliminate shrink-swell effects of weather variations in accordance City of Houston Code. This will minimize the foundation from future movements due to season extremes. Concrete used shall have a minimum compressive strength of 3000 PSI.

If friction segmented piles are used, they shall be driven to refusal at each location as evidenced by 1/2" lift of the foundation. Concrete used shall have a minimum compressive strength of 4000 PSI for this application.

A recommended pier/pile layout can be furnished, if requested, on additional fee basis.

Piers/piles under slab, without grade beams, shall be additionally equipped with steel beams for better transfer of loads from slab to piers/piles and prevent damage to slab.

As a minimum alternative to paragraph # 3 above, the piers may be installed under the grade beams at no more than 7' centers per enclosed repair plan. This will provide support under the foundation where it is needed at the present time. **This alternative will correct the problem at hand, but will NOT help the grade beams/slab in other areas, which may move with seasonal changes.**

A recommended pier/piling layout is furnished for this alternative & becomes an integral part of this report.

Material specifications in the above paragraph # 3 shall apply.

3. Bring the foundation to acceptable levels.

ADDITIONAL RECOMMENDATIONS:

A close monitoring by a Licensed Professional Structural Engineer, from Foresight Engineering & Inspections, LLC, is recommended.

A completion report by the inspecting Licensed Professional Structural Engineer, from Foresight Engineering & Inspections, LLC, is also recommended for any future transaction of the subject property.



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ENGINEERING INVESTIGATIVE REPORT (Contd.)

Foresight Engineering will be happy to assist you during repair phase, if requested, on an additional fee basis. If you decide to use our services, please inform your repair contractor to contact us before starting work so we could brief him on the quality, workmanship and scheduling.

CERTIFICATION:

I certify that I personally performed a limited structural visual, non-intrusive and non-destructive investigation on the foundation at the subject property on the stated date. I have properly reported my findings and conclusions based on my observations and experience. I further certify that the information contained in this report is based *solely* on evidence and that no attempt was made to investigate any latent defects not readily detectable from visual observations. Foresight Engineering and Inspections, LLC. &/or the investigating engineer assume no responsibility &/or liability for events that occur subsequent to the date and time of inspection &/or submission of this report. No warranty, either expressed or implied, is hereby made. Every user of this report is bound by this understanding & agreement of "NO WARRANTY &/OR NO LIABILITY".

Thank you for choosing Foresight Engineering on this important assignment. We appreciate your business and look forward to working for you in future.


Digitally signed by **Jitendra M. Varma**



xx.xx.20xx

F-4647

MSC & UE, CPI, CRMI, EIFSIP, EAC, PI, EIFSII, ESC, LRA, PE.
Licensed Professional Structural Engineer

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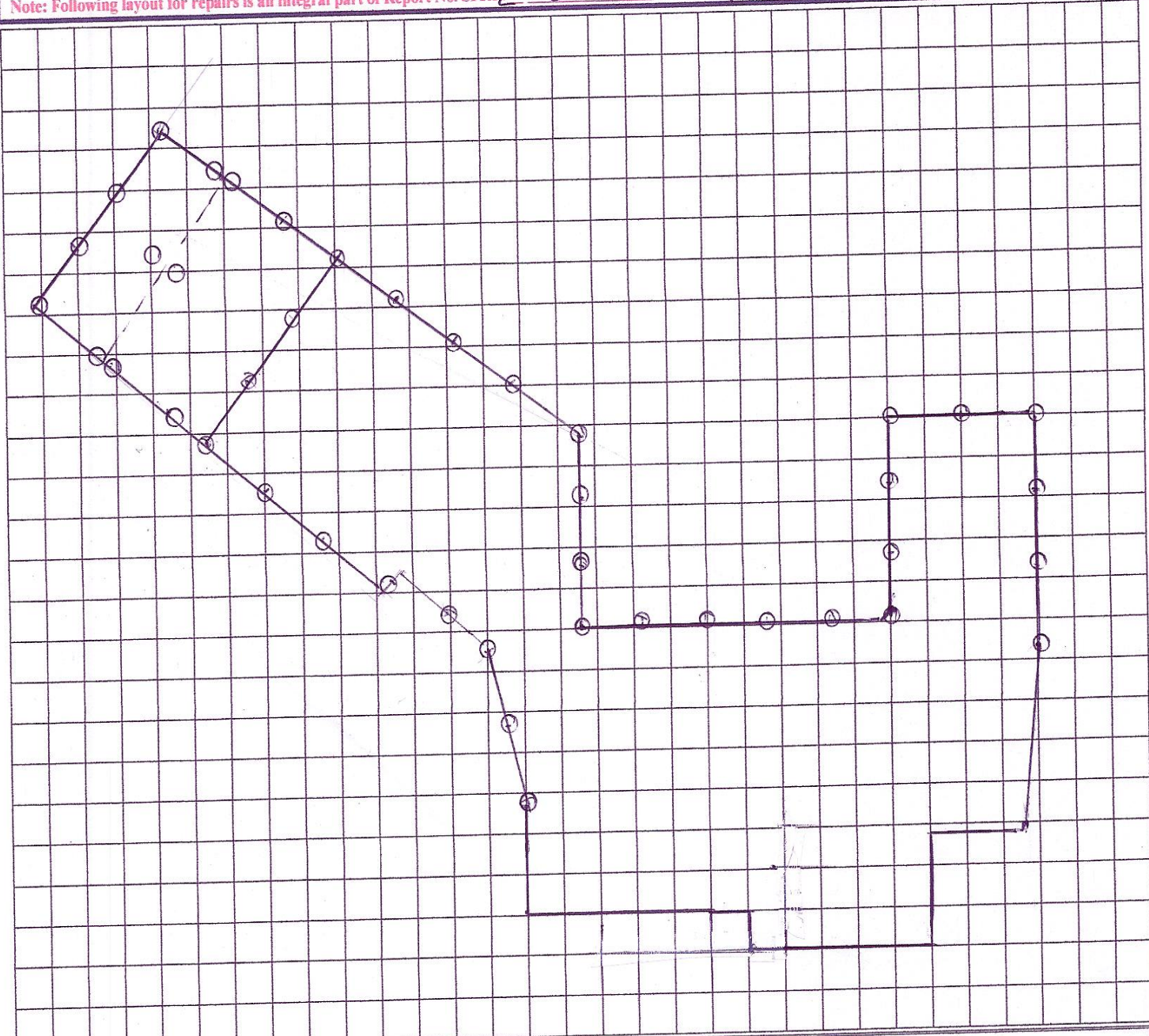
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PROPOSED FOUNDATION REPAIR PLAN

Prepared for: Mr. & Mrs. _____ PHONE (____) _____

Property Location _____, Pasadena, TX _____

Note: Following layout for repairs is an integral part of Report No. SFR12-02005P Dated 2/29, 2012 & must be used with the said report.



Layout By Jitendra M. Varma

F-4647

Dated 2/29, 2012

JITENDRA M. VARMA, Licensed Professional Structural Engineer
THE ABOVE PIER LAYOUT FOR REPAIRS FOR THE SUBJECT PROPERTY IS ONLY A **RECOMMENDED** ARRANGEMENT OF PIERS UNDER FOUNDATION AND DOES NOT, IN ANY WAY, OBLIGATE OR FORCE THE OWNERS, BUYER(S) OR SELLER(S) OF THE SUBJECT PROPERTY THE USE OF THIS LAYOUT. THIS LAYOUT, BY NO MEANS, GUARANTEES **ANY FUTURE PERFORMANCE** OF THE FOUNDATION OF THE SUBJECT PROPERTY, SINCE THERE ARE MANY MANY FACTORS; BUT NOT LIMITED TO PROPER INSTALLATION OF PIERS, TO THE PROPER DEPTH, TYPE OF SUPPORTING SOIL, WORKMANSHIP, QUALITY OF MATERIALS, TYPE OF PIERS USED, LEVELING TECHNIQUES & WEATHER CONDITIONS; IN THE INSTALLATION OF PIERS AND THUS AFFECTING THE PERFORMANCE OF FOUNDATION. THE ENGINEER &/OR FORESIGHT ENGINEERING & INSPECTIONS, LLC. **CAN NOT AND DOES NOT GUARANTEE** THE WORKMANSHIP OF OTHER TRADES.

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