



A Full Service Real Estate
Inspection & Engineering Firm

**Foundation Evaluation Report
for
PROPERTY ADDRESS
Houston, Texas 77089**

August 30, 2012

Prepared for:

**CLIENT'S NAME
MAILING ADDRESS
Houston, Texas 77089**

Prepared by:

Charles J. Jenkins, P.E.

Charles J. Jenkins & Associates, Inc.
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Texas Firm Registration Number 1739
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August 30, 2012

CLIENT'S NAME
MAILING ADDRESS
Houston, Texas 77089

Re: PROPERTY ADDRESS

Dear CLIENT'S NAME:

We performed the requested foundation evaluation of the referenced property on Wednesday, August 29, 2012. The purpose of this evaluation was to evaluate the state of foundation performance for this residence and to try to determine, to the degree possible within the scope of the assignment, the cause of any deficiencies found. If repairs were required, a plan for needed work was to be prepared.

The scope of this evaluation was limited to a visual examination of accessible areas and components of the structure and was performed following generally accepted engineering principles, practices and guidelines, consistent with a Level A evaluation as presented in the "Guidelines for Evaluation and Repair of Residential Foundations", published by the Texas Section of the American Society of Civil Engineers, augmented by a topographical survey of the ground floor.

Conclusions presented in this report are based solely on conditions observed by the undersigned, considered within the context of historical information provided by client. That said, because of the limited scope of this evaluation Charles J. Jenkins & Associates, Inc. ("CJJ&A") can make no representation regarding the possibility of concealed defects. Should additional information become available, CJJ&A reserves the right to review that information and revise the report, as appropriate. Contained herein are our findings, conclusions, and recommendations. For reference, left and right are determined from looking at the house from the street.

Findings

1. General: The structure was a two-story, single-family residence of wood frame construction built on a concrete slab on grade foundation. Exterior walls were clad with brick veneer and vinyl siding. The garage was built on the same monolithic foundation as the house and was attached at the left front. The roof was of gable configuration, with composition shingles. The house was located on the northwest corner of xxxx Road and xxxx Lane and faced southwest. The lot was relatively high, with apparent drainage to the streets at the front and on the right side. According to the Harris County Appraisal District website the residence was built in 1970.

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2. Foundation: This house is believed to be built on a conventionally reinforced concrete slab on grade foundation. Slab exposure was about 4" around the perimeter, limiting the ability to examine the foundation walls. The concrete front porch was located at the right front of the house. It was reported that the perimeter of the house had been previously stabilized by Taylor Foundation Repair ("Taylor"), using drilled, cast-in-place, bell-bottom piers. Drawings prepared by Taylor were provided by client, showing the two phases of pier installation performed. The locations of reported existing Taylor piers are shown on the attached Pier Location Drawing in Appendix C of this report.

A topographical survey was performed of the floors using an electronic manometer, called a "Zip-Level®". This device functions in a manner similar to a "water level" and has a digital display of measurements taken, thus providing an indication of how flat and level the floors are. Elevations were measured in relation to a zero reference elevation (0.0") placed at the middle of the doorway from the raised foyer to the family room. Measured elevations in the house were adjusted for changes in floor coverings. Elevations were not measured in the garage. Elevation readings ranged from the +2.5" to -1.1". A copy of the floor plan of the house, showing measured elevations, is provided in Appendix A to this report.

Exterior walls of the residence were covered with brick veneer and vinyl siding. Vinyl siding was serviceable, with no significant damage or distortions apparent. Diagonal tuck point repair was found in brick veneer on the left side of the house. The filled crack was wider at the top than at the bottom, indicating that it had been filled prior to foundation work being performed. Two diagonal cracks, hairline to 3/32" in width, were found in brick of the wall to the left of the front door. A diagonal brick crack was found at the bottom left of the family room window. Brick was separated from the frame of the family room window, on the top and both sides. The separation along the top was about 1/8", with side separations ranging from about 1/16" to 1/8". A vertical crack about 1/16" in width was found at the right corner of the rear wall of the nook bay window, with a hairline vertical crack at the left corner of the same wall.

Interior walls and ceilings of the residence were covered with painted sheetrock, with wood paneling on walls of the family room. Irregularities found in interior walls and ceilings were:

- In the foyer,
 - The wall to the left front was separated from the floor about 1/2"
 - The wall to the right rear was separated from the floor about 1/2"
 - Sheetrock of the ceiling at the front of the doorway to the living room had dropped down about 1/2"
- In the living room,
 - The walls at the left front corner were separated about 1/2" at the ceiling, with the crack narrowing as it approached the floor
 - Sheetrock was cracked and tape was torn along the ceiling at the left wall
 - A vertical sheetrock crack was found at the left end of the furr-down that extended across the rear wall
 - Sheetrock tape was torn along the right front corner, at the entry to the foyer
- In the dining room,
 - Warped and torn sheetrock tape was found along the right wall
 - Warped and torn sheetrock tape was found along the right rear corner
 - A hairline diagonal sheetrock crack was found at the top left of the window

- A diagonal crack was found at the bottom right of the window
 - A sheetrock crack was found in the ceiling, extending from the middle of the wall of the right side toward the middle of the room
- In the kitchen,
 - A vertical sheetrock crack was found over the air distribution vent in the dining room wall
 - A vertical crack was found at the right front corner of the furr-down
 - A sheetrock crack extended across the kitchen ceiling at the rear of the cabinets
- In the family room,
 - A vertical crack, with a diagonal extension toward the front of the house, was found over the door to the master bedroom
 - A horizontal sheetrock crack was found in the left wall, about 1/2 way up the stairs to the second floor
 - A horizontal sheetrock crack was found about 1/3 of the distance from the ceiling to the ground floor
 - A horizontal sheetrock crack extended along the left wall, between the two beams of the ceiling
 - A horizontal crack, with a vertical extension, was found in the front wall, at the corner where the wall transitions to the second floor landing
 - Warped sheetrock tape was found along the left wall at the rear beam
 - A 3/8" separation was found along the wall at the middle bedroom, over the door
 - Sheetrock tape was pulled at the right rear corner
 - Trim around the door to the master suite was separated at the front corner and the top board was split
- In the master bathroom,
 - Sheetrock tape was torn along the left wall at the tub, extending to the rear
 - A vertical sheetrock crack was found at the left rear
 - Warped sheetrock tape was found at the right rear corner, with a crack along the ceiling
 - Tile at the bottom of the walls at the head and foot of the bathtub, along the outside of the tub, was cracked and buckled
 - Cabinets sloped down to the front
- In the master bedroom,
 - The front and left walls were separated about 1/4" at the ceiling, with the separation extending down to the floor, narrowing as it approached the floor
 - Vertical sheetrock cracks were found over the front and rear of the closet sliding doors
 - A vertical crack was found at the top right of the window
 - Sheetrock tape was warped and torn along the rear wall
 - The entry door would not close, with the front distorted down to the front
 - The closet door frame was distorted down to the front and the door would not close
- At the stair landing, a horizontal crack, with a vertical extension, was found at the top left of the middle bedroom door
- In the upstairs right side bedroom,
 - A 1/8" diagonal crack was found at the bottom front of the window
 - A vertical buckle was found at the top right of the closet door

- A vertical crack was found at the top left of the closet door
 - Sheetrock cracks were found along the left wall, at the ceiling and at the left front corner
 - The entry door ghosts closed, to the front
 - The closet door was stuck closed, with the frame distorted down to the left side
- In the upstairs middle bedroom,
 - A 1/4" diagonal crack was found in the right wall of the closet
 - A vertical crack was found over the rear of the closet door
 - The left wall was separated from the front wall at the left front
 - A crack was found in the ceiling along the left wall
 - The frame of the entry door was distorted down to the left and the door would not close
 - The frame of the closet door was distorted down to the rear and the door would not close
- In the upstairs bathroom,
 - Sheetrock tape was warped and torn along the left wall, at the ceiling
 - A sheetrock crack was found along the ceiling at the right wall
 - A hairline horizontal crack was found at the top left of the entry door
 - The entry door ghosts closed and sticks when closed
- In the upstairs left bedroom,
 - Warped sheetrock tape was found along the right front corner in the closet
 - Warped tape was found along the ceiling at the front wall
 - Sheetrock tape was warped along the front wall of the rear closet
 - The frame of the rear closet door was distorted down to the right and the door would not latch
 - The frame of the entry door was distorted and the door would not close
 - The frame of the front closet door was distorted down to the right side and the door would not latch

Conclusions and Recommendations

1. General: Grading around the structure appeared to be reasonable for this site.
2. Foundation: Conditions observed during this evaluation were typical of those found in a residence that has experienced significant foundation movement in excess of that considered reasonable and expected. Movement around the perimeter is believed to have been caused by cyclical shrinkage and swelling of the soil caused by seasonal changes in rainfall, possibly exacerbated by trees on the site, with the perimeter having been stabilized by installation of piers, as previously described. In addition, evidence suggests that the interior of the house settled, most likely as a result of leakage of the sewer lines under the house.

Based on the conditions observed, as described above, it is our opinion that the foundation of this residence has experienced differential movement substantially in excess of that considered reasonable and expected. This movement appears to have been limited, primarily, to the interior of the house because of previous stabilization of the perimeter. As a result, no additional stabilization of the perimeter of the house appears to be required. That said, the interior of the house does require stabilization, with some adjustment to return the ground level floors to a

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reasonable degree of flat and level. To that end, a recommendation for such stabilization is provided in Appendix C.

In addition to needed foundation work, conditions observed strongly suggest that sewer lines under the house are leaking. It is therefore recommended that a licensed plumber, preferably specializing in sewer leak detection, perform a camera inspection of the lines to determine 1) the material from which they are made, and 2) the condition of the lines. The plumber should then perform tests of the lines to determine if they are leaking and the need to replace/re-route the sewer lines.

With regard to foundation work and sewer line repairs, some important considerations are:

1. Interior piers can be installed by either breaking through the floor or tunneling under the foundation.
 - a. If the former method is used, it severely disrupts occupancy, typically such that it is better to move out of the house until the work is completed, then clean walls and ceilings, then install new floor coverings, prior to moving back in.
 - b. If the latter method, tunneling, is used, occupancy is not disrupted and normal livability is not significantly affected.
2. When sewer lines are leaking to the point that repair is not considered feasible, the lines are typically replaced by re-routing the new lines to the exterior of the house, then running the new lines around the house and tying them together at the main line to the city main. This process minimizes tunneling required to install the new lines. This is especially effective when all plumbing fixtures are on the exterior walls of the house, though even in cases where some of the fixtures are on interior walls, it still minimizes the extent of tunneling. That said, if pilings are installed by tunneling, new sewer lines can often be installed using the same tunnels excavated for the new piers. This will be especially so for this case, where fixtures of the master bathroom and washer connections are located adjacent to the rear wall of the garage.

Based on the above, it is recommended that recommended interior stabilization be performed using segmented pressed pilings, installed through tunnels excavated for that purpose. After pilings have been installed and the foundation has been adjusted to the degree feasible for this project, new sewer lines should be installed, using existing tunnels for that process. The new sewer lines should be suspended from the bottom of the slab and tested for leaks prior to back-filling the tunnels. Tunnels should then be back-filled using the same material that was excavated.

Certification

We hereby certify that we conducted a foundation performance assessment of the residence located at the referenced address, on the date specified above. I further certify that I am a Professional Engineer, duly licensed by the State of Texas to practice engineering in that state, with license number 36605. We further certify that the findings and conclusions contained in this report have been, to the best of our knowledge, correctly and completely stated without bias and are based upon our observations and experience. No responsibility is assumed for events that occur subsequent to the submission of this report and no warranty, either expressed or implied, is hereby made. Should additional information regarding the condition of this residence

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become available, the undersigned reserves the right to review such information and modify this report, as appropriate.

Limitations

This report is provided by a licensed Professional Engineer and is valid as of the date of the site visit. It excludes conditions and events that may occur after the site visit. This report makes no guarantee that every possible discrepancy has been cited. CJJ&A makes no claim concerning any activity or conditions falling outside the specified purpose to which this report is directed. In addition, no warranty, expressed or implied, is made by the engineer for the professional services set forth. Only structural components and related conditions mentioned above were examined. The structural capacity of the framing was not reviewed nor analyzed, as no plans were provided for review and such analysis was beyond the scope of this assignment. As a result, the overall analysis and opinions presented herein are limited by these factors.

In recognition of the relative risks, rewards, and benefits of the service provided, to both the client and CJJ&A, the risks have been allocated such that the client agrees that the liability of CJJ&A is limited to the value of the service provided and the client shall indemnify and hold CJJ&A harmless from and against any and all claims, liabilities, obligations, costs, or expenses (including reasonable attorneys' fees) arising by reason of or associated with the performance of these services. In addition, should any additional work related to this evaluation be required, regardless of the nature of such work, such work would be considered an additional assignment and would be billed, as appropriate.

We thank you for the opportunity to be of service. If you have any questions, please let us know.

Sincerely,

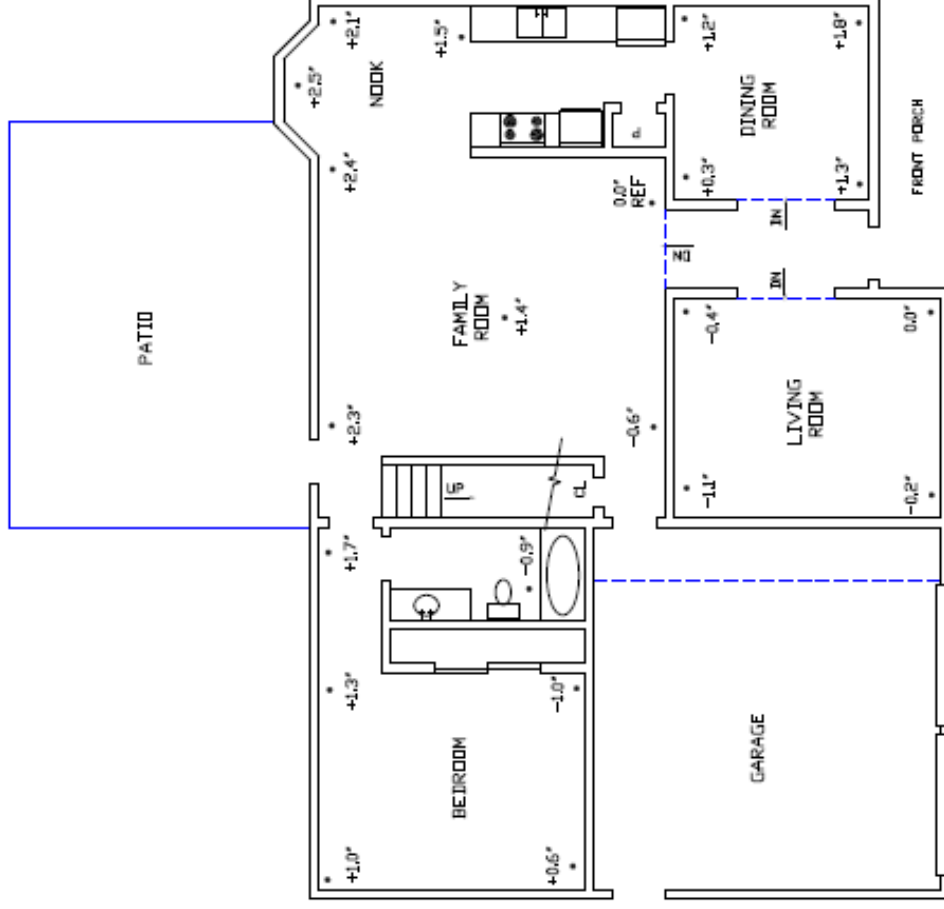
CHARLES J. JENKINS & ASSOCIATES, INC.

Charles J. Jenkins, P.E.
President

Attachments – Appendix A - Elevation Survey
Appendix B – Selected Photographs
Appendix C – Proposed Piling Layout

APPENDIX A

ELEVATION SURVEY



ELEVATION SURVEY

Charles J. Jenkins & Associates, Inc.
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Firm # 1739
Phone: 281-334-6030 Fax: 281-334-5699

CLIENT:	CLIENT'S NAME
STREET:	PROPERTY ADDRESS
CITY, STATE, ZIP:	HOUSTON, TEXAS 77065
DATE:	8-30-12
SHEET:	1 OF 1
FILE NAME:	PROPERTY ADDRESS

DRAWN BY: JMM

APPENDIX B

SELECTED PHOTOGRAPHS

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Photo # 1 Front of house



Photo # 2 Cracks in brick to left of front entry door



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Photo # 3 Right side of house



Photo # 4 Left side of house from rear



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Photo # 5 Rear of house



Photo # 6 Crack at bottom left of family room window, with caulk separation at brick



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Photo # 7 Separation between top trim and top of window frame



Photo # 8 Separation of top trim at top of window



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Photo # 9 Separation between brick and right side of family window frame



Photo # 10 Cracks above door to master bedroom

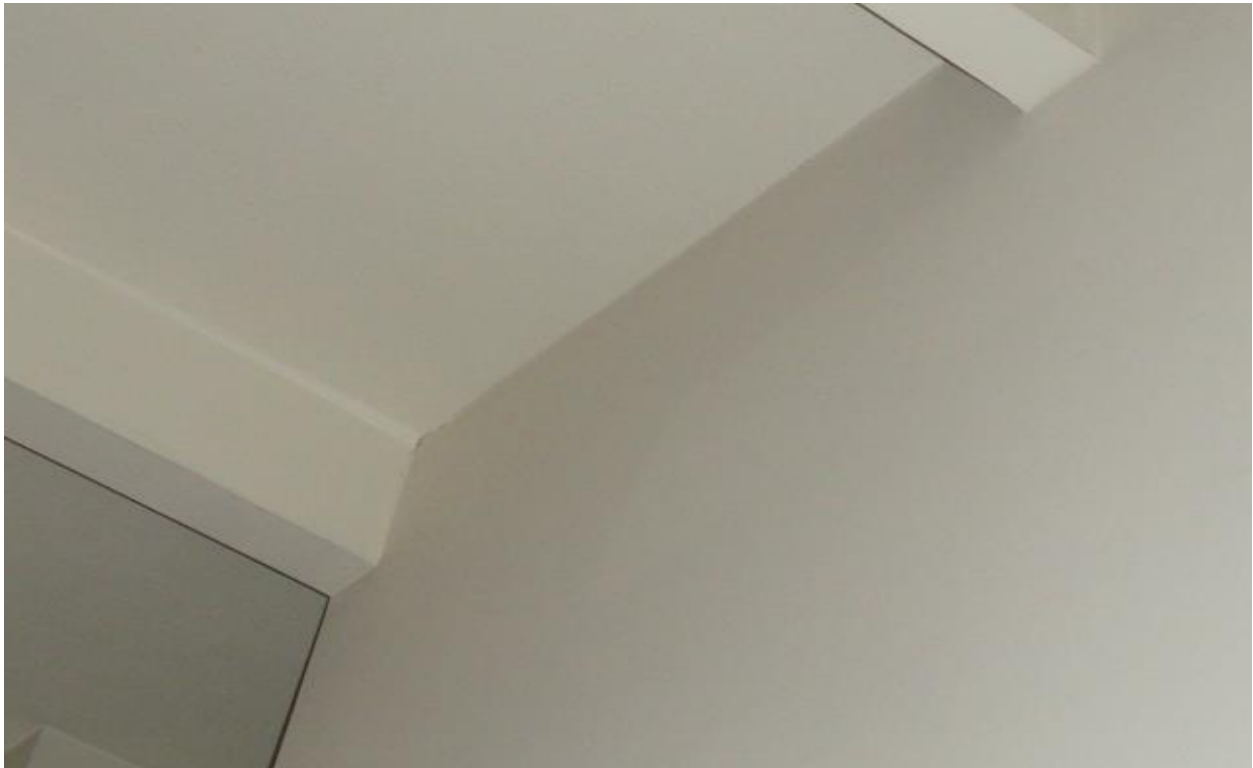


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Photo # 11 Crack in wall to left of stair, toward front of master bedroom door



Photo # 12 Crack between beams, left side of ceiling in family room



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Photo # 13 Warped tape at left front corner of family room



Photo # 14 Cracks in front wall under second floor landing, at floor/wall transition



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Photo # 15 Torn sheetrock at ceiling over master bath tub



Photo # 16 Cracking and repair at wall/ceiling over bathtub



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Photo # 17 Displaced tile at head of master bath tub



Photo # 18 Sheetrock damage in master bedroom



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Photo # 19 Cracks along ceiling, common throughout



Photo # 20 Fallen sheetrock in living room ceiling at foyer



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Photo # 21 Separation between front and left wall in living room



Photo # 22 Separation of wall at left front of foyer from floor



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Photo # 23 Diagonal crack in wall of bedroom closet, second floor

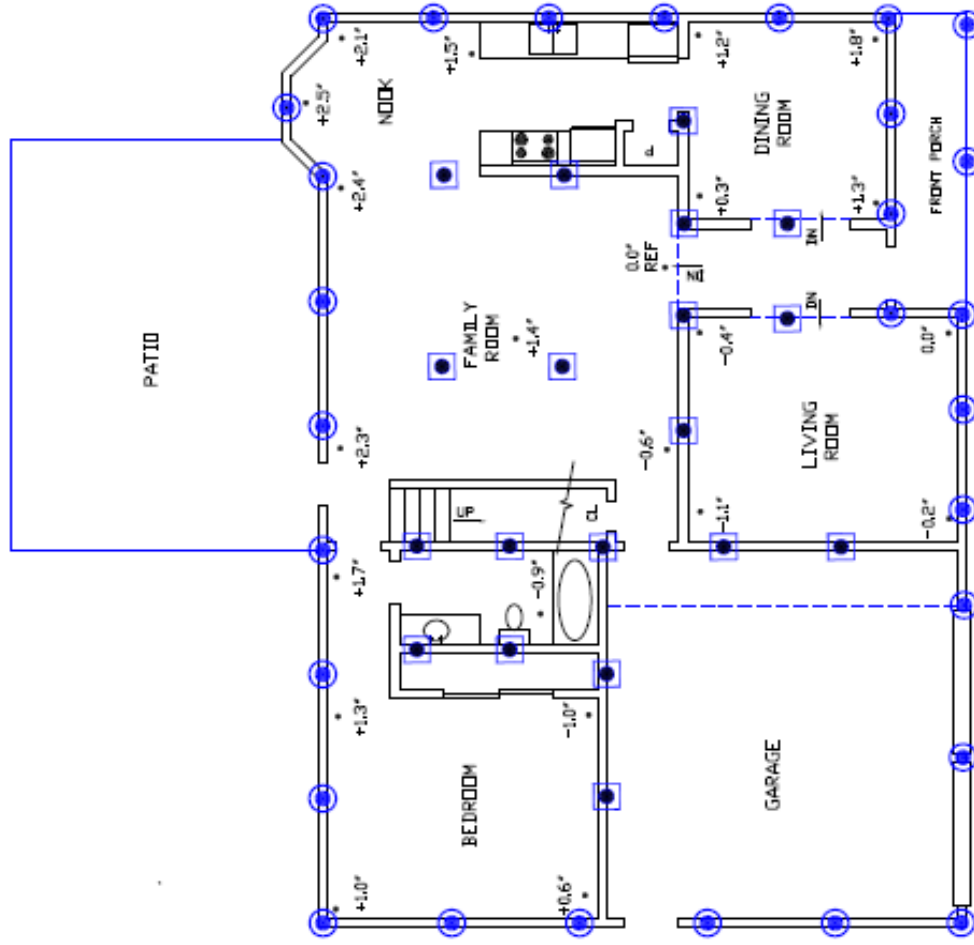


Photo # 24 Cracking along ceiling/wall in front closet of upstairs left bedroom



APPENDIX C

PROPOSED PILING LAYOUT FOR FOUNDATION STABILIZATION



Charles J. Jenkins & Associates, Inc.	
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Firm # 1739	
Client:	CLIENT'S NAME
Street:	PROPERTY ADDRESS
City, State, Zip:	HOUSTON, TEXAS 77069
Date:	8-30-12
Sheet:	1 OF 1
File Name:	DRAWN BY: JMM
PROPERTY ADDRESS	