

STRUCTURED FOUNDATION REPAIRS, INC.



Certify to all that:

Zachary or Amanda Bolton

Owner

4451 CR 4410

Address

Commerce

TX

75428

City

State

Zip

Has received a Lifetime Transferable on Ten (10) Concrete Pilings warranty under the
length of warranty
provisions and terms of the original written agreement dated: 10/22/2012


Thomas M. Kidd
President,

10/25/12
Date

**See General Conditions on reverse side*

November 14, 2012

STRUCTURED FOUNDATION REPAIR, INC.

Suite 133 – 13301 Trinity Blvd.
Fort Worth, Texas 76040

Attention: Mr. Tom Kidd, President

Re: Repair Plan Review
Zachary and Amanda Bolton
4451 CR 4410
Commerce, Texas 75428

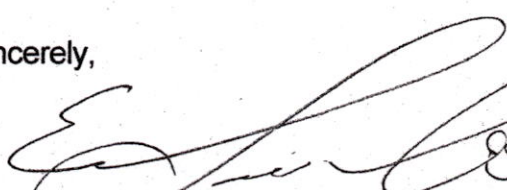
Dear Mr. Kidd:

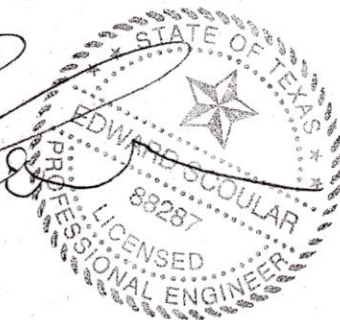
In accordance with your request Independent Foundation Engineers have reviewed the field notes and inspected the structure to determine the need for foundation repair and the suitability of the proposed repair plan.

The proposed repair plan is suitable to address the identified conditions of foundation distress. Only partial recovery of the identified elevation loss can be expected. Recovery is normally one half of the elevation loss. See the attached report for details.

Please contact us if you have any questions.

Sincerely,


Edward Scoular, M.S., P.E.
Texas Engineering Firm F-5924



SCOPE

At the request of Structured Foundation Repair, Inc. our firm performed an engineering review of the foundation repair plan. The review was limited to an examination of the elevation survey and field notes documenting the conditions of foundation distress and the proposed foundation repair plan. This was a level "B" report, as described by the Texas Board of Professional Engineers. Unless otherwise stated, no plans were reviewed, no soil samples were taken, no soil tests were performed, and no destructive testing or invasive procedures were employed.

OBSERVATIONS

This residence is built with a slab-on-grade foundation.

The slab deflection exceeds the standards normally expected for a slab on grade foundation.

RECOMMENDATIONS

The foundation of this residence can be stabilized by the installation of concrete pilings located at the approximate locations shown on the attached Pier Plan. The concrete pilings should be driven to the underlying bedrock or until they can be driven no deeper. Installation of concrete pilings in the general locations as indicated on the attached drawing (maximum spacing 8 feet) should correct the foundation deflections. Field conditions (utility line locations, etc.) may require the adjustment of some of these locations. Some slopes may remain in the slab, in areas supported by pilings, after the installation of the pilings.

After all of the underpinning process is complete we recommend that the plumbing system be checked for leaks. If it is necessary to add fill dirt around the foundation, all fill should consist of a soil with a high clay content (not sandy loam, sand, etc.). All foundation repairs should be warranted by the foundation repair contractor to insure against future downward movement of the foundation.

DISCUSSION OF GENERAL FOUNDATION MAINTENANCE PRACTICE

This foundation distress was possibly caused by differential swelling and shrinking of the expansive clay soils that are known to exist in this area. Desiccation of the soils is usually caused by mature landscaping, trees and by seasonal climate variations. Expansive clay soils are sensitive to changes in moisture content.

It is not unusual to see a foundation in the DFW area move in response to moisture variations that normally attend seasonal changes. Settlement of a foundation that is induced by seasonal considerations usually occurs during the hot dry summer months when the clay soils dry out to a depth of 10 to 15 feet. The drying (desiccation) occurs because of both surface evaporation and transpiration (water being removed from the soils by trees and shrubs). It is possible that portions of a foundation that have previously not moved can experience settlement due to desiccation of the soil. If a portion of the foundation has been previously underpinned, those portions should not settle.

As soils dry, they shrink and consolidate. A foundation usually settles, during the dry summer months, especially along the outer perimeter. Usually the winter months are wet so the expansive clay soils tend to swell and raise the foundation.

Properly installed piers will take out the downward portion of the seasonal up and down movement. Underpinning a foundation only prevents future downward movement from occurring; however, piers cannot prevent expansive clay soils from upheaval. The DFW metroplex is known for its expansive clay soils.

Variation of the volume of clay soils is the result of changes in the moisture content of the soils and is usually caused by mature landscaping, trees and by seasonal climate variations. Vegetation can draw moisture out from under a house foundation. Roots barriers should be installed between any large tree and the house to eliminate this source of moisture loss. Shrubs should be kept to a height of two feet to restrict the development of an extensive root network to supply the shrub with moisture from below the foundation.

Soil upheaval many times is caused by water being allowed to pond near a foundation. This is why it is essential that the homeowner ensure that the ground surface around the entire foundation be sloped to allow water to flow rapidly away from the foundation. It is recommended that the ground surface be sloped at a rate of one inch per linear foot. The ground surface near the foundation should be sloped to drain away from the house at this rate for a distance of at least 6 to 8 feet. There should be no place around the perimeter of the house where water is allowed to pond near the foundation.

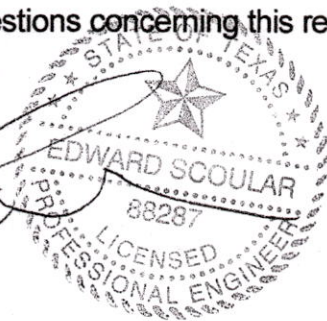

All rain gutter downspouts need to be positioned to discharge the water several feet from the foundation or into an underground pipe collection system.

The homeowner should maintain a watering program that will keep the sub surface soils around the foundation at a constant moisture content, year round. Watering should be done in such a manner that the water penetrates the subsurface soil several feet deep, especially in the dry seasons. This will help to minimize (not eliminate) additional seasonal foundation movement. If the homeowner has any question concerning this, he should call the undersigned for additional information.

This Repair Plan Review was not intended to be all inclusive but was limited in scope to a review of the elevation survey, field notes and repair plan for the areas of the foundation that are to be underpinned. This report is based on the provided documentation and the repair plan is in accord with generally accepted industry practice for the repair of foundations. No foundation warranty is expressed or implied by this report.

Please contact us if you have any questions concerning this report.

Sincerely,



Edward Scoular, M.S., P.E.

Attachments:

Pier plan

Pier Specifications

TERMS, CONDITIONS & DISCLAIMERS

COPING WITH EXPANSIVE FOUNDATION SOILS

4451 CR 4410

Commerce, Texas 75428

TERMS, CONDITIONS & DISCLAIMERS**DISCLOSURE OF HIGHLY ACTIVE NATURE OF SOILS**

Whereas it is known to knowledgeable professional engineers that the soils in this area are subject to movement, due to expansion and/or contraction. This soil movement could possibly cause the foundation to move, even after the repairs are completed as outlined in the above "Recommendations." Due to the highly active nature of soils in the area of this structure, additional movement of the soil may possibly occur that may negatively impact the stability of the foundation.

NO WARRANTY IS EXPRESSED OR IMPLIED BY THIS ENGINEER AS TO THE PERFORMANCE OF THIS FOUNDATION OR THE REPAIRS THERETO. Proper maintenance of consistent soil conditions along the perimeter of this structure should reduce further problems after the recommendations listed herein have been completed. The client should be aware; however, if seasonal moisture variations, water leaks or erosion occurs, the stability of the foundation would be jeopardized.

DISCLAIMERS AND DISCLOSURE OF REPORT LIMITATIONS

This report is written for informational purposes only and is not intended to be neither a rigorous technical evaluation of the property nor an inventory of defects. The opinions expressed in this report are based on information supplied by the client and/or an evaluation of current conditions observed at the time of this inspection. **THERE IS NO WARRANTY, EXPRESSED OR IMPLIED, CONCERNING THIS ENGINEERING REPORT. LIABILITY IS STRICTLY LIMITED TO THE FEE PAID FOR THIS REPORT.**

The information in this report supersedes any verbal comments, expressed or implied, made by Independent Foundation Engineers Inc. its principals, agents or employees (hereinafter "IFE"). Client agrees that IFE will not be responsible for:

- (1) knowledge of subsurface conditions without extensive geotechnical data derived from onsite drilling and testing of the recovered samples,
- (2) knowledge of cracks, vertical differential displacement of floors without uncovering of the floor by the client; and
- (3) any other element such as joists or beams and other structural members that is boxed or otherwise not readily available to IFE for viewing, and releases IFE from any liability attributable to such knowledge or conditions.

Any prescribed repair plan detailed by this report is based on observations of apparent performance of the facility at the time of this structural survey and the applicable criteria of "Coping With Expansive Foundation Soils". Compliance with any code or specification other than as expressly noted is specifically excluded.

This site survey and resulting recommendations are based on conditions as they now exist and **DOES NOT IMPLY OR WARRANT THAT OTHER PROBLEMS AND OR AREAS MAY NOT BECOME MANIFEST IN THE FUTURE.**

Unless other wise indicated, this report was prepared expressly for the client and expressly for the purposes indicated by the client. Permission for use by any other person for any purpose, or by the client for different purpose is denied unless otherwise stated in writing by IFE.

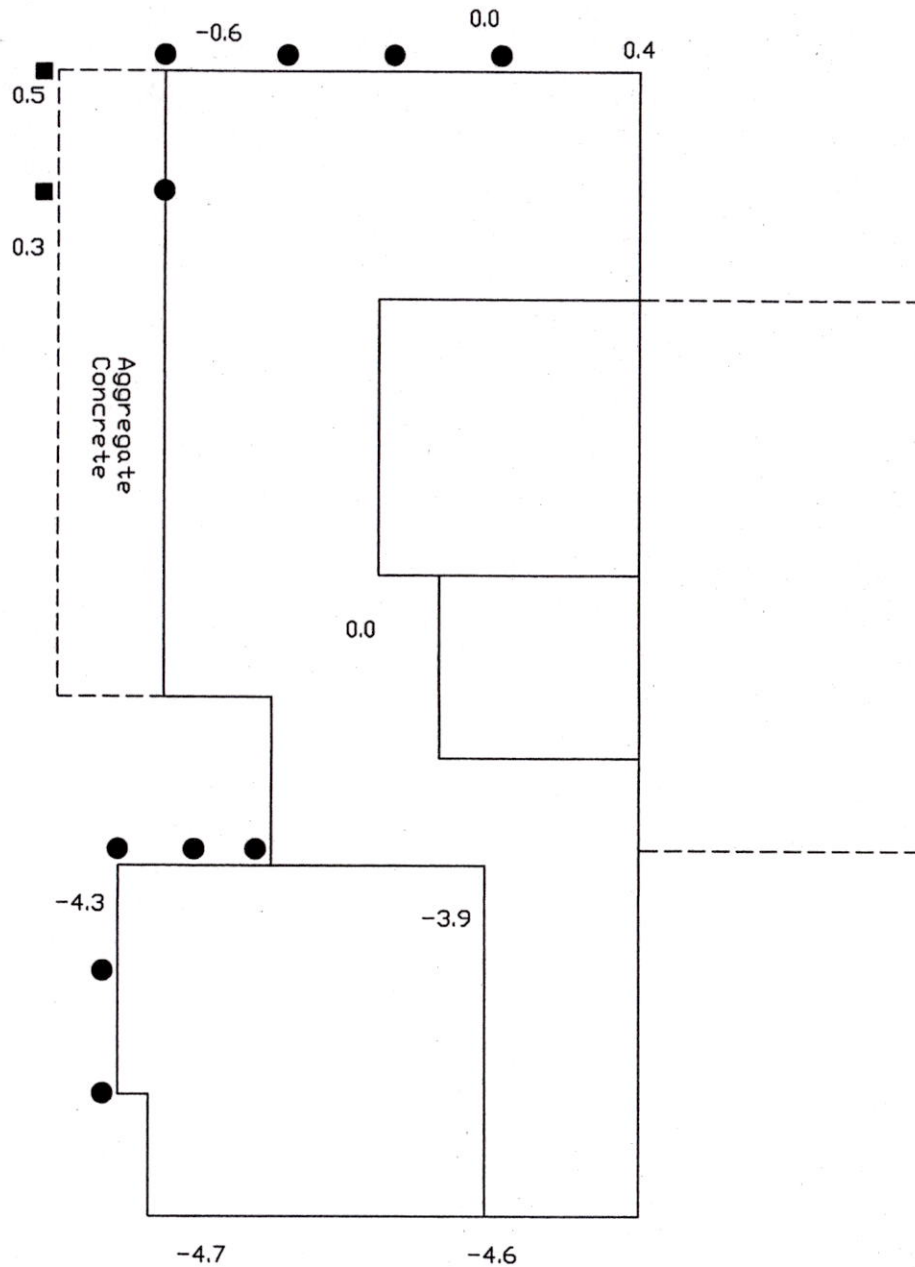
IFE SHALL HAVE NO LIABILITY FOR ACTS OR OMISSIONS BY THE CONTRACTOR OR HIS SUBCONTRACTORS PERFORMING WORK ON THIS PROJECT, OR THE FAILURE OF THE CONTRACTOR TO PERFORM THE WORK IN ACCORDANCE WITH THE REPAIR PLAN. IFE IS NOT RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCE OR PROCEDURES OR THE PRECAUTIONS INCIDENTAL THERETO.

IFE expressly **DISCLAIMS ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE** and the client expressly disclaims that it has contracted for or received any warranty of fitness for a particular purpose with respect to this report. **THE REPORT UNDER THIS AGREEMENT IS THE OPINION OF IFE AND THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS AGREEMENT.**

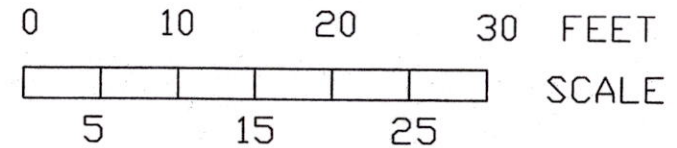
COPING WITH EXPANSIVE FOUNDATION SOILS

SOURCES OF SOIL MOISTURE CHANGES	POSSIBLE PROBLEMS	RECOMMENDED ACTION
Rainfall and poor drainage	Rainwater ponding next to the foundation or downspouts concentrated discharge leads to heaving of the foundation. Wet soils are weak and may not be able to support the house causing settlement.	Grade clay soil away from the foundation for at least 5 feet at 1 inch per foot. Use gutters with downspouts that discharge at least 3 feet from the foundation. or use an in the ground drain. Build drainage swales, ditches and drains to keep water away from the foundation.
Flower beds and planters	Water contained in flower beds leads to localized heaving.	Do not trap water near the foundation with edging or planters, slope the ground surface away from the foundation, provide drainage from planters.
Sprinkler systems	Valve and joint leaks results in localized moisture that causes heaving of the foundation.	Locate system at least 5 feet from the foundation and inspect valves frequently.
Over watering	Excess water will cause heaving and may cause settlement.	Water only enough to keep plants and grass alive and growing.
Air conditioner condensate discharge	Localized source of water can cause heaving.	Direct the discharge line to drip on a splash block or pipe it away from the foundation.
Hot dry weather	Loss of moisture from under the foundation causes settlement	Install soaker hoses and water frequently enough to keep soils moist. Install flat work next to the foundation to contain soil moisture. Deep moisture barriers retard the movement of moisture.
Trees and shrubbery	Trees and shrubbery draw moisture from under the foundation and causes drying and settlement of the foundation	Plant trees at a distance greater than their mature height. Install root barriers (4 feet deep) for trees that are too close to the foundation. Avoid softwood trees that have shallow spreading roots. Plant shrubs away from the foundation and avoid planting them along the south and west wall. Keep shrubs less than 2 feet high to reduce their demand for water.
Plumbing leaks	Leaks cause heaving.	Monitor water bills for unusually high consumption. Have a plumber identify leaks for repair with pressure and static tests.
Downhill subsurface seepage	Concentrated moisture on the uphill side causes heaving. Erosion causes settlement on the downhill side.	Install surface interceptor ditches or French drains to collect water and discharge it away from the building.
Moisture from deep wet soil rising to the surface gets trapped under the foundation	Increase of moisture content in the near surface soils causes doming of the foundation	This is an unavoidable situation. The foundation should be built stiff enough to resist flexing due to soil heaving. Soils can be treated with chemicals to reduce their capability to shrink and swell with moisture changes.

Independent Foundation Engineers, Inc. Texas Engineering Firm F-5924 214-769-8355



4451 CR 4410
 Commerce, Texas 75428
 November 14, 2012



Note: Dimensions are approximate
 ● PIERS = 10
 Elevation = inches
 ■ Footings = 2

INDEPENDENT FOUNDATION ENGINEERS
 TEXAS ENGINEERING FIRM F-5924

PIER PLAN

Edward Scoular

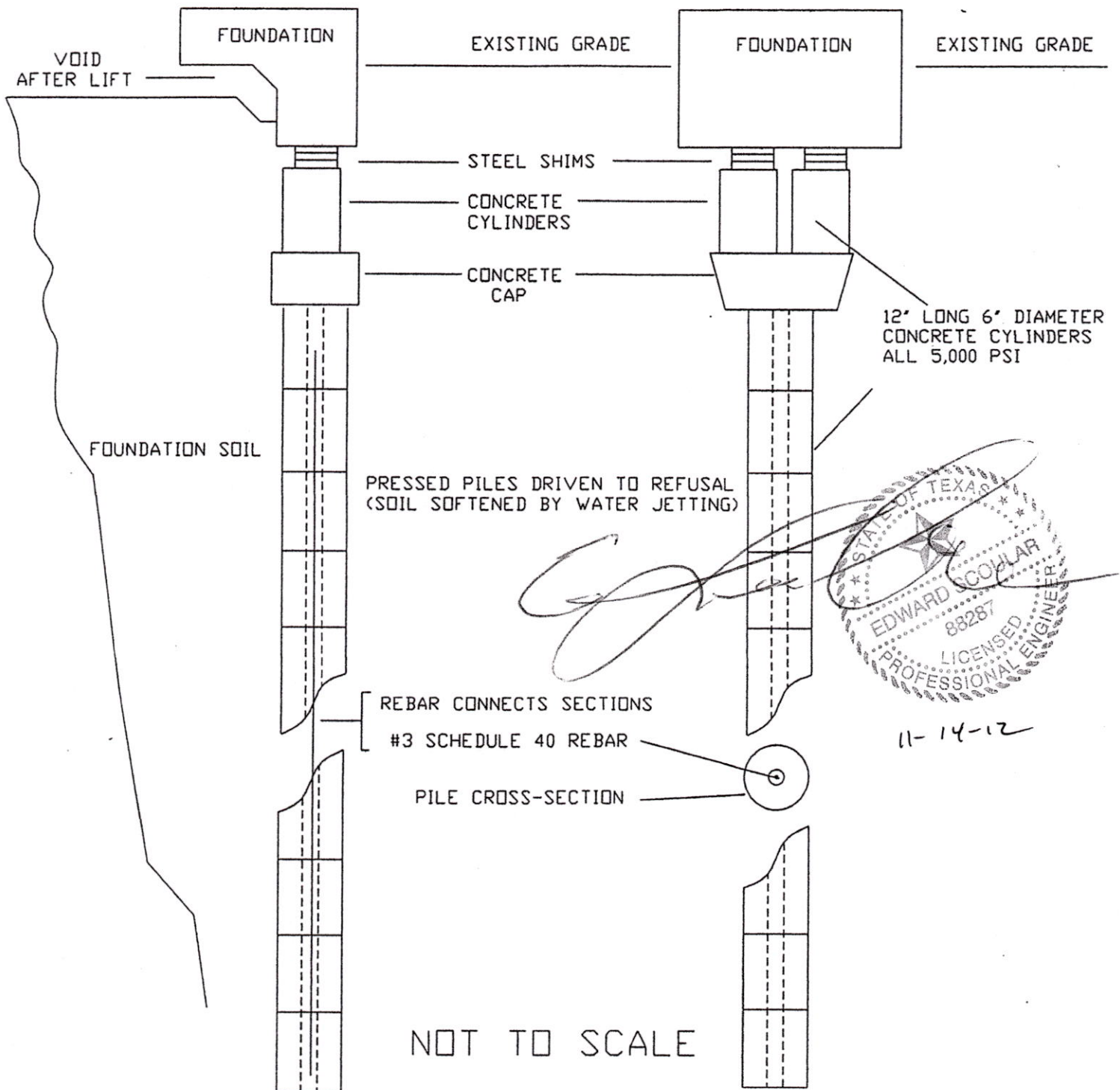
STATE OF TEXAS
 EDWARD SCoulAR
 80287
 LICENSED
 PROFESSIONAL ENGINEER

PRESSED CONCRETE PIER

INDEPENDENT FOUNDATION ENGINEERS F-5924

CROSS SECTION

LONG SECTION





P.O. Box 1779 • Wylie, Texas 75098

972-429-2223 • Fax: 972-475-5455

Lic # M37741

www.holeinoneplumbing.com

Oscar Eugene Sherman

Post Test

Hydrostatic Sanitary Sewer Test and Static Potable Water Test Report

Customer Name Zachary & Amanda Bolton

Job # 12720

Job Site 4451 CR 4416

Scheduled Date 11-30-12

Commerce TX, 75428

Scheduled Time 9:00 AM

Telephone/Contact # 720-375-4268

(Other) _____

Hydrostatic Test of Sanitary Sewer Pipes

A Hydrostatic test is performed to determine whether a leak(s) exists somewhere on sewer system under floor level and within the perimeter beams of the foundation. An inflatable test ball is inserted into the main sewer line directly under the perimeter beam and is inflated to block off the system. The entire system is then filled with water to the floor level and monitored for loss.

Test Date: 11-30-12 Test Time of Day: 9:00 AM Foundation Type: ☒ Slab ☐ Pier & Beam

Clean outs:

☐ None ☐ Double ☐ Single to House ☒ Single to City ☐ 2-Way • ☐ Cast Iron ☐ ABS ☒ PVC • ☐ Front ☒ Back ☐ Side (L R)

Were clean outs installed? ☐ Yes ☒ No • What Type? ☐ Double ☐ Two-Way ☐ Other _____

Sewer Line:

☐ Cast Iron ☒ PVC ☐ ABS • Visible condition of pipe: ☐ Excellent ☒ Fair ☐ Poor ☐ Rotted ☐ Cracked Roots • Depth@C.O. 2' 3"

Sewer System:

Number of exit points from foundation: 1 • Number of bathrooms downstairs: 2

Test Observation Site: ☐ Commode ☒ Shower ☐ C/O ☐ Other _____ • Bathroom location: ☒ Master ☐ Half ☐ Half ☐ Shared

Cumulative Inches of Water Lost in Riser: Would drop 4" instant - Re-filled 5x

1 Minute _____ inches and _____ dropping _____ holding 10 Minutes _____ inches and _____ dropping _____ holding

2 Minutes _____ inches and _____ dropping _____ holding 20 Minutes _____ inches and _____ dropping _____ holding

5 Minutes _____ inches and _____ dropping _____ holding 30 Minutes _____ inches and _____ dropping _____ holding

TEST RESULTS: DOES THE SEWER SYSTEM LEAK? ☒ YES ☐ NO

Static Test of Potable Water Supply Pipes

A Static test is performed to determine whether a leak(s) exists somewhere on the domestic potable water system. The test is performed by first checking and isolating all fixtures above the slab that drip or leak. A pressure gauge is attached to one of the water outlets, and the potable water system is isolated from the city main at the meter cut off. The gauge is monitored for pressure loss.

Test Date: 11-30-12 Test Time of Day: 9:00 AM

Type of Water Pipe: ☒ Copper ☐ Galvanized ☐ Poly • Piping Located: ☒ Under the Slab ☐ Pier & Beam ☐ Overhead

Pressure Gauge Attached at the Following Hose Bibb: ☐ Front ☐ Back ☐ Right Side ☐ Left Side ☒ Washing Machine ☐ Other _____

Initial City Water Pressure: 67 PSI • Pressure at End of Test: 67 PSI • Total Pressure Loss 0 PSI

Cumulative Pressure Loss at Times Indicated:

1 Minute _____ PSI and _____ dropping _____ holding 10 Minutes _____ PSI and _____ dropping _____ holding

2 Minutes _____ PSI and _____ dropping _____ holding 20 Minutes 67 PSI and 0 dropping 67 holding

5 Minutes _____ PSI and _____ dropping _____ holding 30 Minutes _____ PSI and _____ dropping _____ holding

Total Length of Test: 20 Minutes

If pressure drops, can water be separated between house & yard? ☒ Yes ☐ No • Can sprinkler system be isolated from house? ☐ Yes ☐ No

TEST RESULTS: ARE THE WATER LINES LEAKING? ☐ YES ☒ NO

Comments:

Valent house - Shower is 2" Above slab level

Plumber: Larry

Customer Signature: N/A

November 29, 2012

Structured Foundation Repairs, Inc.

Suite 133 – 13301 Trinity Blvd.
Fort Worth, Texas 76040

Attention: Mr. Tom Kidd, President

Ref: Foundation Visual Inspection
Zachary and Amanda Bolton
4451 CR 4410
Commerce, Texas 75428

Dear Mr. Kidd:

Independent Foundation Engineers, Inc. visited the above referenced residence to conduct a visual inspection of the foundation repairs done by your company. Concrete piers have been installed on the house foundation. These piers were installed as shown in the service plan by Structured Foundation Repairs, Inc.

At the time of the inspection, all piers were installed. The piers have been properly installed in accordance with methods typical to the foundation repair industry. The objective of foundation repair is to lift and support the foundation. Lifts seldom return the foundation to the as new constructed condition; because of foundation weakness or excessive weight (such as fireplaces) and as a consequence some slopes may remain in a repaired area.

It must be understood that no foundation can be made risk-free from future movement. This recently completed work was to address foundation corrections only in the location where the repairs were conducted. There are many variables that can negatively impact the stability of a foundation. Some of these items are tree roots, environmental/climate factors, plumbing leaks, inadequate drainage conditions around a foundation, inadequate site preparation by the builder, original foundation design and construction, inadequate moisture maintenance by the homeowner, etc.

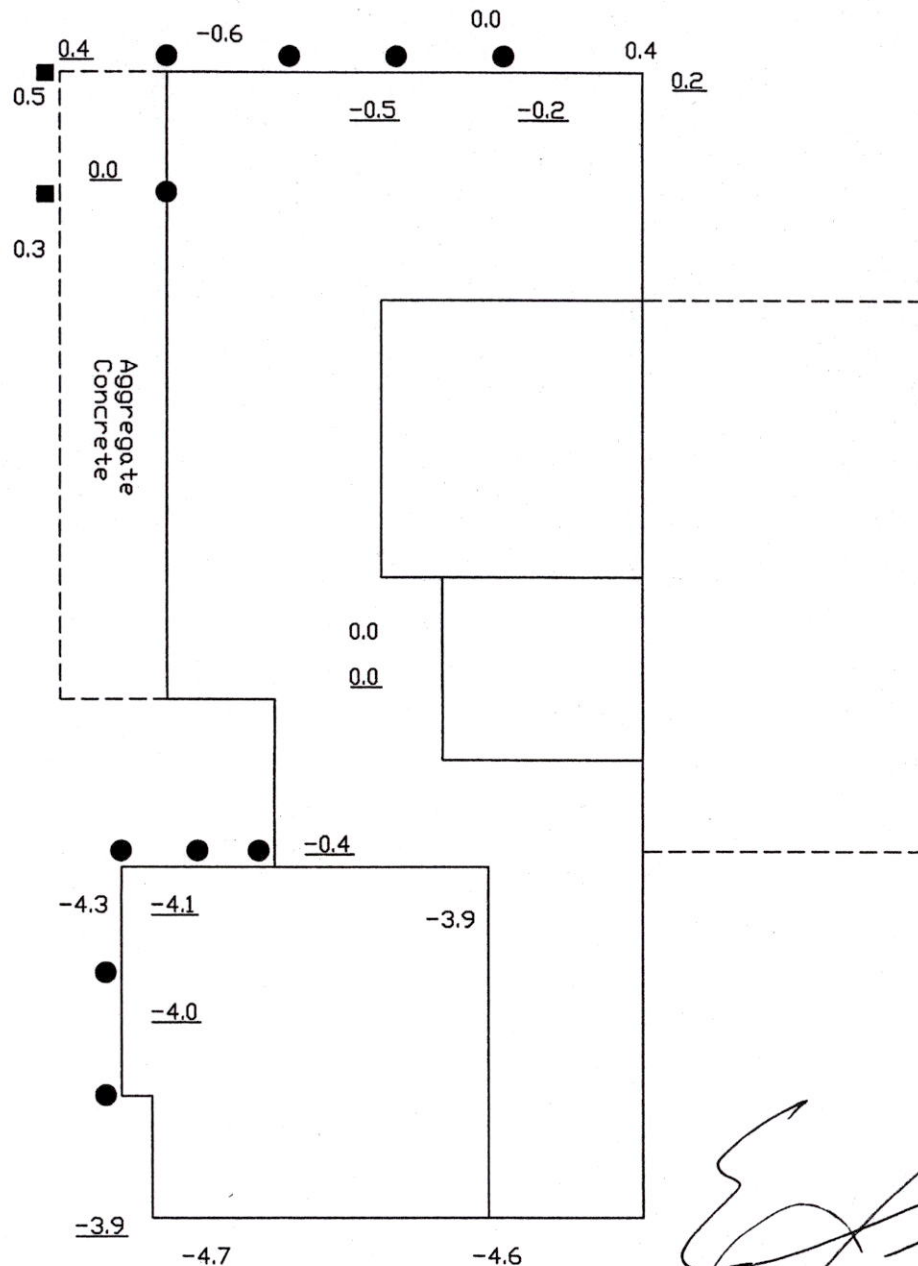
It is the responsibility of the foundation repair contractor, Structured Foundation Repairs, Inc., to furnish the homeowner a valid warranty, and no warranty is issued or implied by this inspection or report. Liability is strictly limited to the fee paid for this report.

Sincerely,

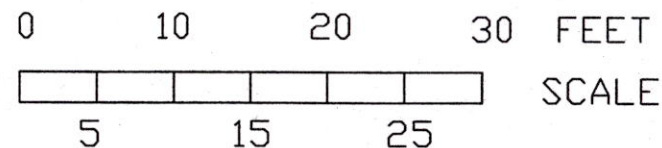


Edward Scoular, P.E.
Texas Engineering Firm F-5924

independent foundation engineers, inc.
2301 pebble vale, suite 2011
plano, texas 75075
phone (214) 769-8355 fax 972-673-1235



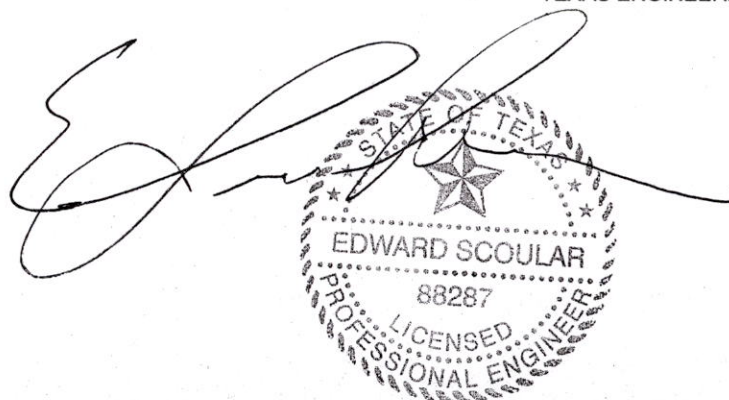
4451 CR 4410
 Commerce, Texas 75428
 November 14, 2012



Note: Dimensions are approximate
 ● PIERS = 10
 ■ Footings = 2
 Elevation = inches
 Final inspection elevations 11-29-12

INDEPENDENT FOUNDATION ENGINEERS
 TEXAS ENGINEERING FIRM F-5924

PIER PLAN





P.O. Box 1779 • Wylie, Texas 75098

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Lic # M37741

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Oscar Eugene Sherman

Post
After
Repair

Hydrostatic Sanitary Sewer Test and Static Potable Water Test Report

Customer Name Zachary & Amanda Bolton Job # 12908
Job Site 4451 CR 4410 Scheduled Date 12-22-12
Commerce TX 75428 Scheduled Time 9:00 AM
Telephone/Contact # 720-375-4268 (Other) _____

Hydrostatic Test of Sanitary Sewer Pipes

A Hydrostatic test is performed to determine whether a leak(s) exists somewhere on sewer system under floor level and within the perimeter beams of the foundation. An inflatable test ball is inserted into the main sewer line directly under the perimeter beam and is inflated to block off the system. The entire system is then filled with water to the floor level and monitored for loss.

Test Date: 12-22-12 Test Time of Day: 9:00 AM Foundation Type: ☒ Slab ☐ Pier & Beam

Clean outs:

☐ None ☐ Double ☐ Single to House ☒ Single to City ☐ 2-Way • ☐ Cast Iron ☐ ABS ☐ PVC • ☐ Front ☒ Back ☐ Side (L R)

Were clean outs installed? ☒ Yes ☐ No • What Type? ☐ Double ☐ Two-Way ☐ Other 1 way to house

Sewer Line:

☐ Cast Iron ☒ PVC ☐ ABS • Visible condition of pipe: ☒ Excellent ☐ Fair ☐ Poor ☐ Rotted ☐ Cracked Roots • Depth@C.O. _____

Sewer System:

Number of exit points from foundation: 1 • Number of bathrooms downstairs: 2
Test Observation Site: ☒ Commode ☐ Shower ☐ C/O ☐ Other _____ • Bathroom location: ☐ Master ☒ Half ☐ Half ☐ Shared
Cumulative Inches of Water Lost in Riser:

1 Minute _____ inches and _____ dropping _____ holding _____	10 Minutes _____ inches and _____ dropping _____ holding _____
2 Minutes _____ inches and _____ dropping _____ holding _____	20 Minutes _____ inches and _____ dropping _____ holding _____
5 Minutes _____ inches and _____ dropping _____ holding _____	30 Minutes <u>Full</u> inches and <u>0</u> dropping <u>Full</u> holding _____

TEST RESULTS: DOES THE SEWER SYSTEM LEAK? ☐ YES ☒ NO

Static Test of Potable Water Supply Pipes

A Static test is performed to determine whether a leak(s) exists somewhere on the domestic potable water system. The test is performed by first checking and isolating all fixtures above the slab that drip or leak. A pressure gauge is attached to one of the water outlets, and the potable water system is isolated from the city main at the meter cut off. The gauge is monitored for pressure loss.

Test Date: _____ Test Time of Day: _____

Type of Water Pipe: ☐ Copper ☐ Galvanized ☐ Poly • Piping Located: ☐ Under the Slab ☐ Pier & Beam ☐ Overhead

Pressure Gauge Attached at the Following Hose Bibb: ☐ Front ☐ Back ☐ Right Side ☐ Left Side ☐ Washing Machine ☐ Other _____

Initial City Water Pressure: _____ PSI • Pressure at End of Test: _____ PSI • Total Pressure Loss _____ PSI

Cumulative Pressure Loss at Times Indicated: ALREADY BEEN TESTED

1 Minute _____ PSI and _____ dropping _____ holding _____	10 Minutes _____ PSI and _____ dropping _____ holding _____
2 Minutes _____ PSI and _____ dropping _____ holding _____	20 Minutes _____ PSI and _____ dropping _____ holding _____
5 Minutes _____ PSI and _____ dropping _____ holding _____	30 Minutes _____ PSI and _____ dropping _____ holding _____

Total Length of Test: _____ Minutes

If pressure drops, can water be separated between house & yard? ☐ Yes ☐ No • Can sprinkler system be isolated from house? ☐ Yes ☐ No

TEST RESULTS: ARE THE WATER LINES LEAKING? ☐ YES ☐ NO

Comments: AFTER REPAIR TEST

Plumber: Larry / EP

Customer Signature: [Signature]