MOMENTUM STRUCTURAL ENGINEERING LLC.
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November 21st, 2025 Project No.: MSE-232-25

12014 RAINFOREST LN., MONTGOMERY TX 77356
FOUNDATION & STRUCTURAL INSPECTION REPORT:

We have completed an on-site Structural and Foundation inspection for the referenced residence. The engineering analysis was conducted in accordance with FPA-SC-13-1 and ASCE Level A investigation methods. Our conclusions and recommendations are based on a comprehensive visual assessment and structural analysis of the foundation. These findings are derived from observed site conditions, professional evaluation, and industry-standard engineering principles.

OVERVIEW:

Texas has vast areas of clayey soils that expand and contract with changes in moisture content. These fluctuations can lead to foundation movement, potentially compromising the structural integrity of buildings. In addition to soil-related shifts, other factors—such as material deterioration, soil compressibility, plumbing leaks, water ponding, poor landscaping practices, inadequate soil compaction, drought, flooding, tree roots, and extreme temperatures—can also affect foundation performance.

OBSERVATIONS

EXTERIOR OBSERVATIONS:

A. Improper Site Grading
Improper grading was observed around multiple areas of the home, which can allow water to accumulate near the foundation. We recommend establishing positive grading to direct water away from the structure and reduce the risk of foundation movement or moisture intrusion. (Refer to the attached Positive Grading Plan.)

B. Brick Veneer
Brick veneer cracks and separations were noted. (See photo)

C. Exposed Rebar
Exposed rebar was observed on the foundation/grade beam. We recommend sealing the exposed area with an appropriate epoxy product and repairing/protecting the rebar to prevent further deterioration (see photo).

D. Front Porch Column Separation
Separation at the front porch column was noted, along with a void underneath the column (See photo)
Note: it appeared that the home might have undergone previous foundation repair

Note: on arrival, back door was unlocked & open.

INTERIOR OBSERVATIONS:

A. Cracks and separations were noted in the sheetrock (see photo).
B. Misaligned doors were observed throughout the home.
C. Surface cracks were noted in the garage slab (see photo).

Note: Evidence of a possible termite issue was observed; however, evaluating pest activity is outside the scope of this inspection.

ATTIC FRAMING SYSTEM:

A. Rafter/Ridge Board Separation
Minor separation between the rafters and ridge board was observed. We recommend installing Simpson Strong-Tie hangers to properly secure the rafters to the ridge board. (See photo.)

B. Broken Post
Damaged/broken Post noted. Replacement is recommended. (See photo.)

C. Cracked Collar Tie

A cracked collar tie was observed. Reinforcement or replacement is recommended to maintain structural stability. (See photo.)

D. Missing Ridge Brace at Ridge Splice

A ridge brace is missing at the ridge splice. We recommend installing a proper brace to provide adequate support. (See photo.)

CONCLUSION

Subject: Foundation and Structural Inspection Report

Greetings,

Following the completion of the foundation and structural inspection, we observed evidence of subsidence & heaving. While no major structural concerns were identified at this time, we recommend that the corrective measures outlined below be implemented to prevent further movement or potential deterioration of the foundation & structural system.

Recommended Corrective Measures:

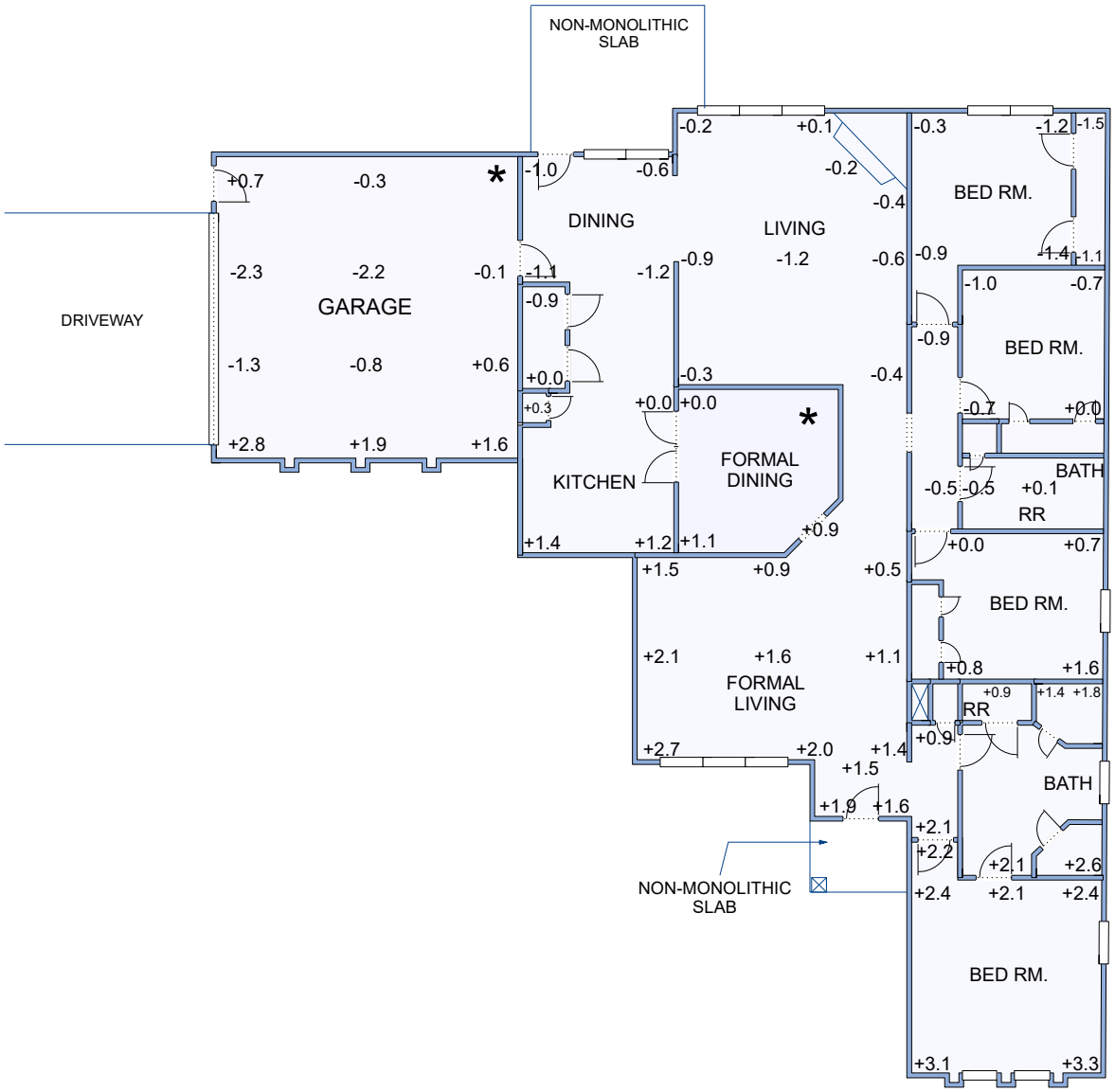
A. We recommend installing piers at locations shown to lift, level, and stabilize the home's foundation (see Appendix C).
B. Establish positive grading around the home to prevent water ponding near the foundation (see Positive Grading Plan).
C. Cover exposed rebar with epoxy (see photo). Although the current conditions do not pose an immediate safety concern, we strongly advise completing these corrective measures as soon as possible. Taking timely action will help preserve the structural integrity of your home, stabilize the foundation, and reduce the likelihood of future foundation issues.
D. We recommend conducting Hydrostatic & Pressure tests to check and see if there's possible water or sewer leakage under the home.

Please feel free to reach out if you have any questions or require further clarification.

Best regards,

Sam Jawhary
832-887-4948
MOMENTUM STRUCTURAL ENGINEERING LLC.

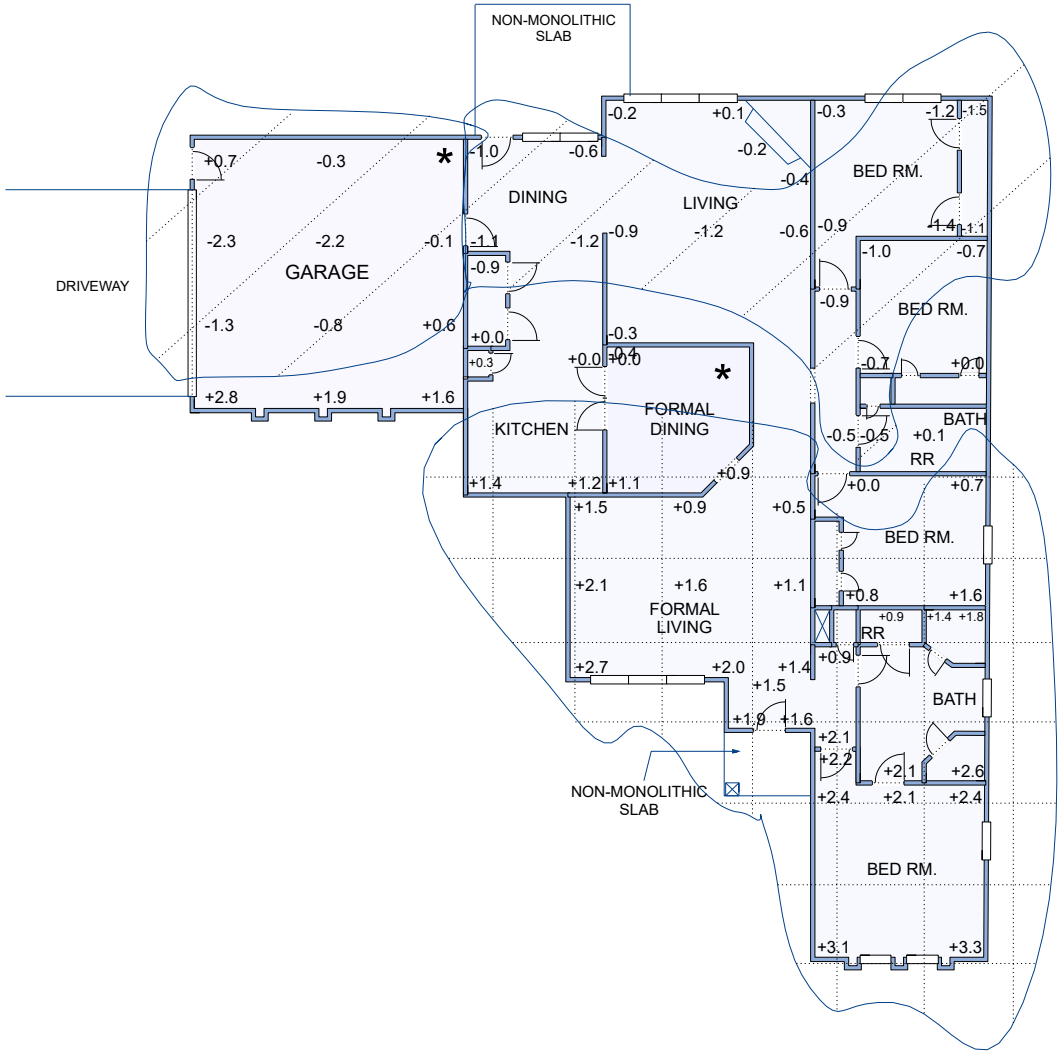
ZIP LEVEL PLACED IN LOCATION MARKED: *



NOT DRAW TO SCALE
ELEVATION IN INCHES

Shaded areas with diagonal lines indicate areas with evidence of subsidence in the foundation of the home.

Shaded areas with square lines indicate areas with evidence of heaving in the foundation of the home.

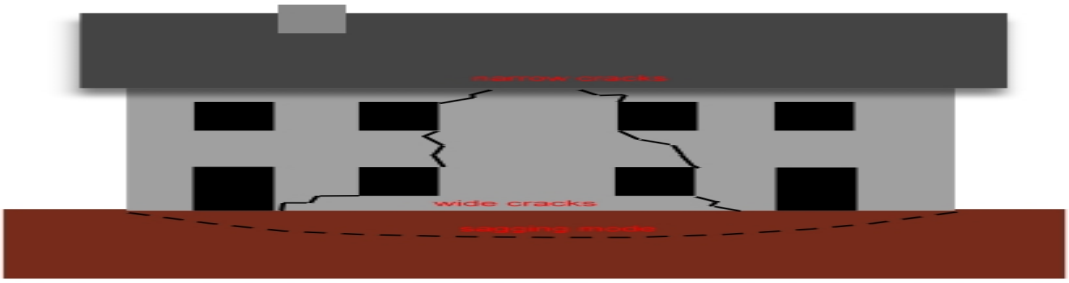


NOT DRAW TO SCALE
ELEVATION IN INCHES

ENGINEERING TERMS:

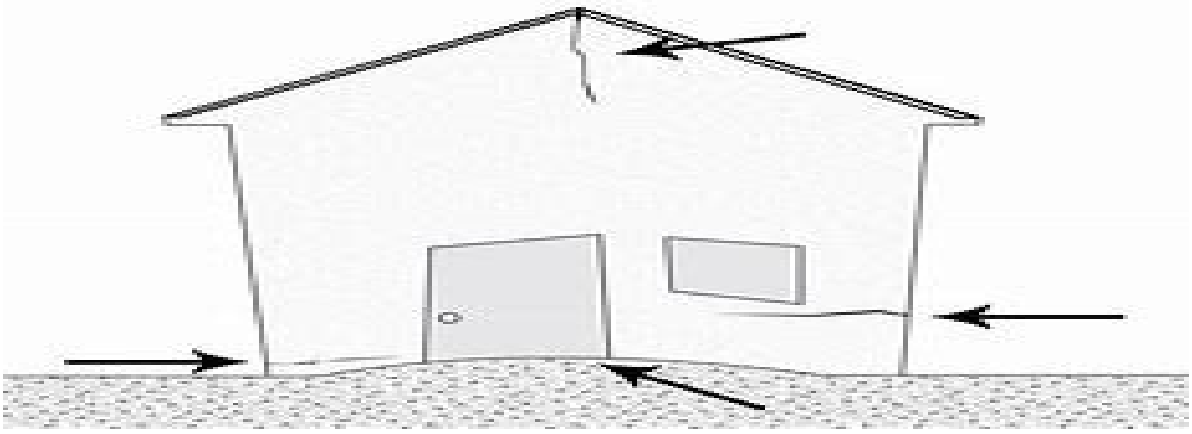
Subsidence of Foundation

Subsidence is the sudden sinking or gradual downward settling of the ground's surface with little or no horizontal motion. The definition of subsidence is not restricted by the rate, magnitude, or area involved in the downward movement. It may be caused by natural processes or by human activities. The former includes various karst phenomena, thawing of permafrost, consolidation, oxidation of organic soils, slow crustal warping (isostatic adjustment), normal faulting, caldera subsidence, or withdrawal of fluid lava from beneath a solid crust. The human activities include sub-surface mining or extraction of underground fluids, e. g. petroleum, natural gas, or groundwater. Ground subsidence is of global concern to geologists, geotechnical engineers, surveyors, engineers, urban planners, landowners, and the public in general.



Heaving Foundation

Heaving happens when **moisture or ice causes underlying soil to significantly expand and lift a foundation or slab upward**. Soil may not seem like it can make a large impact, but the more moisture it holds, the stronger the force it can exert against your foundation.



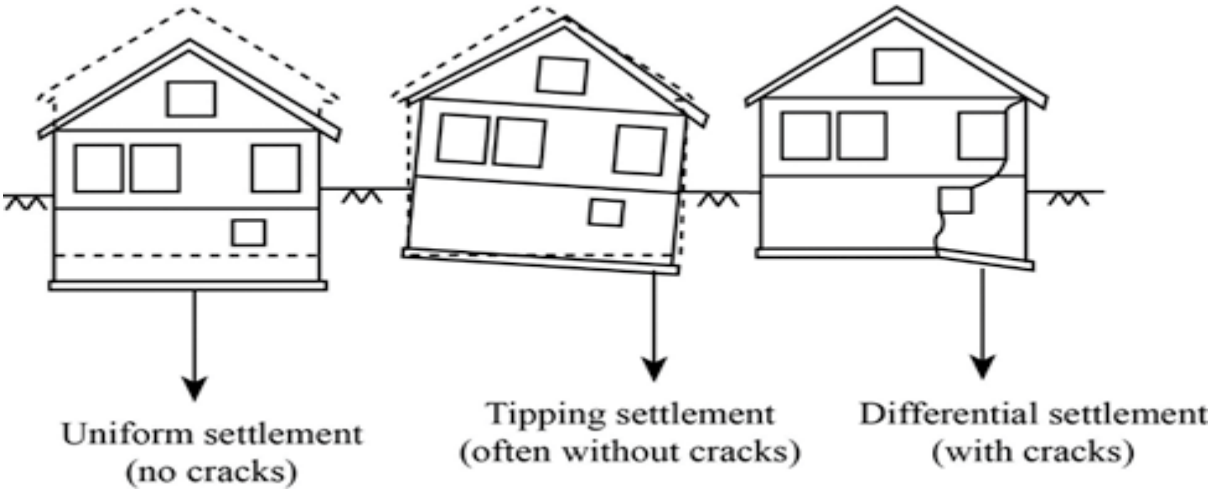
Discussion on (a) Foundation Theory & (b) Water Effects on Foundations:

a) **Foundation Theory:** Slab on grade foundations are designed to transfer a number of loads such as wind load, dead loads, live loads, point loads, concentrated loads, snow loads, etc. from the structure or house back down to the earth. One of the major reasons why foundations fail and cause cracks, tears, separations in the structural members is due to movements caused by the earth beneath the foundation which is susceptible to a number of elements. In our many years of experience, and assessments of various "types and sizes" of foundations, we have discovered that uncontrolled water near the foundations of many houses and buildings have been the root cause of many of the problems. Therefore, we normally recommend that water should always be controlled by approved means to prevent foundation or structural settlement.

b) **Water Effects on Foundations:** Our professional opinion is when the rain water is not adequately managed around a house and rain water from the roof or surrounding is allowed to stand or settle near the foundation, there will be water intrusion to the underside of the foundation which may cause the foundation to heave and subside, the water could also cause erosion to the soil around the foundation which might subsequently stress the foundation.
Based on these reasons and our experience in foundation inspections, we highly recommend that our recommendations are adhered to so that further issues or problems with the house are avoided.

c) **Water:** Water must be directed away from all sides of the foundation with grade slopes.

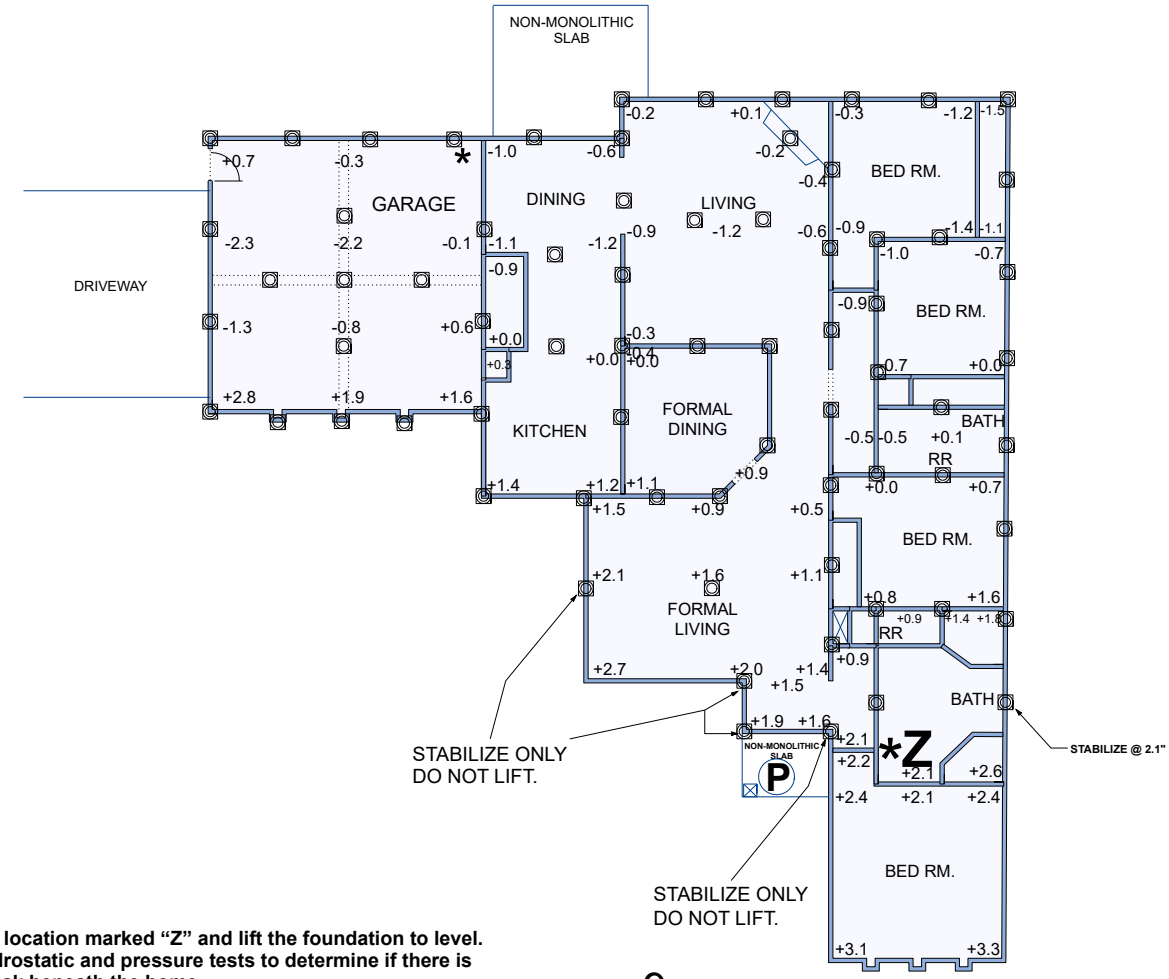
TYPES OF SETTLEMENTS.



APPENDIX C
FOUNDATION REPAIR PLAN
11/21/2025

12014 RAINFOREST LN.,
MONTGOMERY, TX 77356

○	**We recommend installing 71 piers at the indicated locations to lift, level, and stabilize the foundation of the home. NOTE: If piers already exist in that area, shim the existing piers to lift, level, and stabilize the foundation of the home. (PLEASE SEE EXISTING FOUNDATION PIER PLAN**
P	**We recommend injecting polyurethane foam at the location(s) marked to fill any voids or gaps that may occur after the lift. Note: Extreme caution should be exercised during the process to prevent any damage to the home's slab or foundation.**



Note: Install the ZipLevel at the location marked "Z" and lift the foundation to level. We recommend performing hydrostatic and pressure tests to determine if there is a possible water or plumbing leak beneath the home.

NOT DRAW TO SCALE
ELEVATION IN INCHES

FOUNDATION REPAIR NOTES

UNDERPINNING NOTES

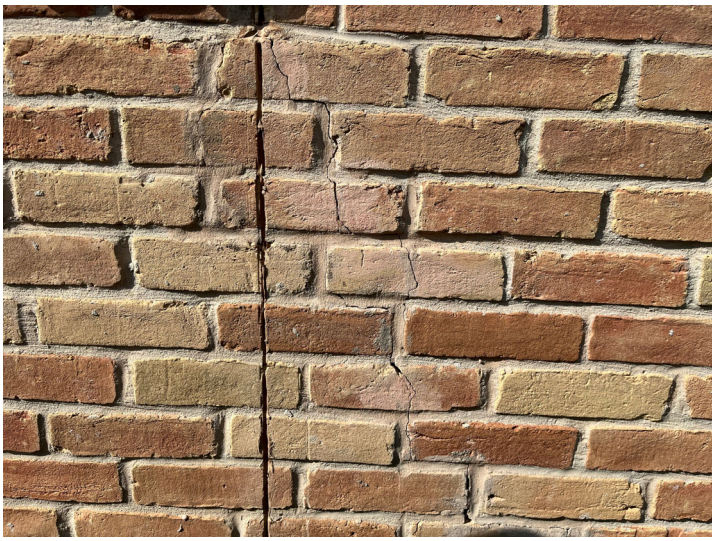
Piling Placement Notes: Contractors should not attempt to affect an area of the house more than 7 feet from the perimeter of the structure using an exterior piling. Again, the lift amount is left to the discretion of the contractor, however, never attempt to affect an area of the house more than 7 feet from the perimeter of the structure using an exterior piling. Also, piling location may be adjusted by the contractor with the following limitations:

a) Pilings may be moved a maximum of 1.5 ft in either direction to avoid obstructions provided that there is a maximum distance of 8 ft between any 2 pilings.

b) Also, pilings may not be moved a distance more than one half the beam depth away corner.

c) Finally, if structural conditions appear during the project that were not visible at the time of the inspection (such as inadequate reinforcing steel or cable), do not continue without having your contractor or a licensed professional verify that the structure can handle the stresses associated with the repair.

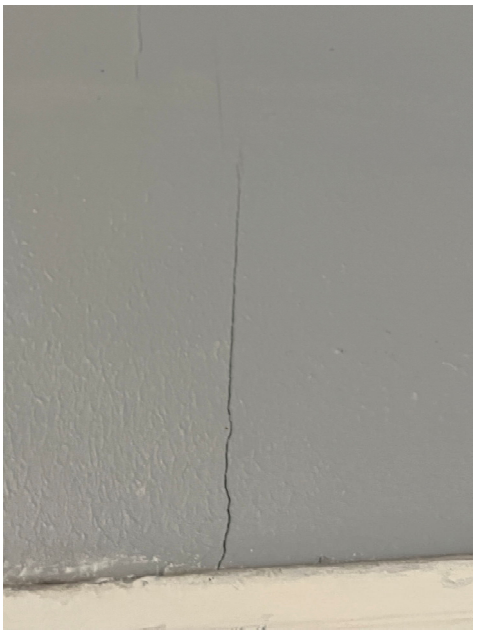
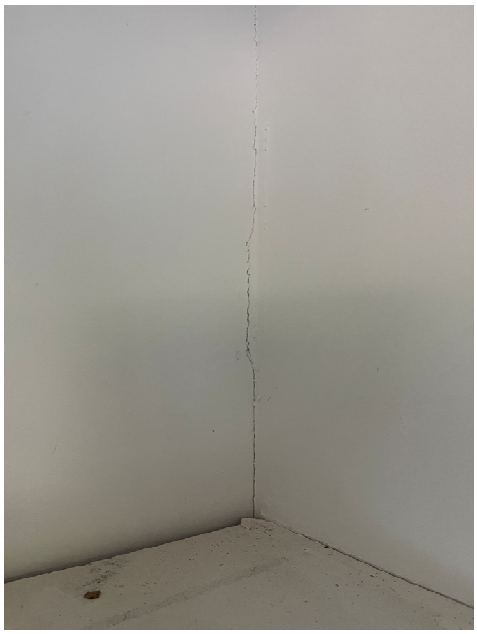
BRICK VENEER CRACK(S) & SEPARATION(S)



SHEETROCK CRACK(S) & SEPARATION(S)

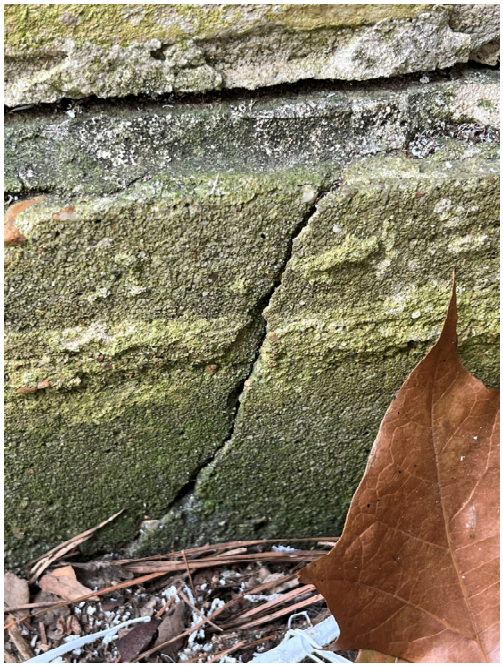







GRADE BEAM CRACK(S)



EXPOSED REBAR

We recommend covering exposed rebar with epoxy to prevent moisture intrusion and potential water-related deterioration.

COLUMN SEPARATION

WINDOW TRIM SEPARATION

We recommend resealing window trim after foundation repairs have been done.

SURFACE SLAB CRACK(S)

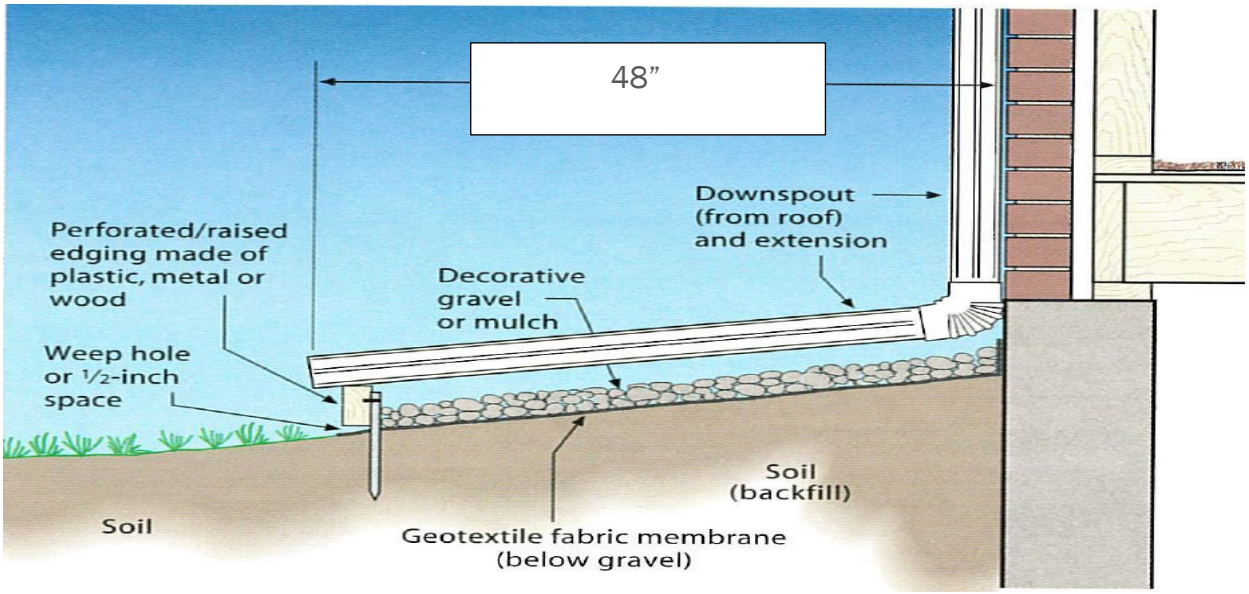
ATTIC FRAMING SYSTEM

Broken post; we recommend replacing the post to provide proper structural support.

Hairline crack(s) noted in collar tie, we recommend replacing or reinforcing the collar tie to provide proper structural support.

POSITIVE GRADING PLAN

A) CLEAN PERIMETER AROUND RESIDENCE FOUNDATION FROM DEBRIS.
B) FILL AROUND FOUNDATION WITH SOIL, SLOPE AWAY FROM BLDG., & COMPACT PROPERLY.
C) INSTALL VAPOR/MOISURE BARRIER 8 mil. MIN. THICKNESS.
D) USE FINE AGGREGATE BASE OVER MOISTURE BARRIER.
E) WE RECOMMEND POSITIVE GRADING AROUND THE HOME TO HELP ESTABLISH A POSITIVE SLOPE. NO PONDING ALLOWED..



POSITIVE GRADING MUST BE ESTABLISHED AROUND THE HOME’S PERIMETER. NO WATER PONDING OR NEGATIVE SLOPES ALLOWED.

TREE ROOT DAMAGE PREVENTION:

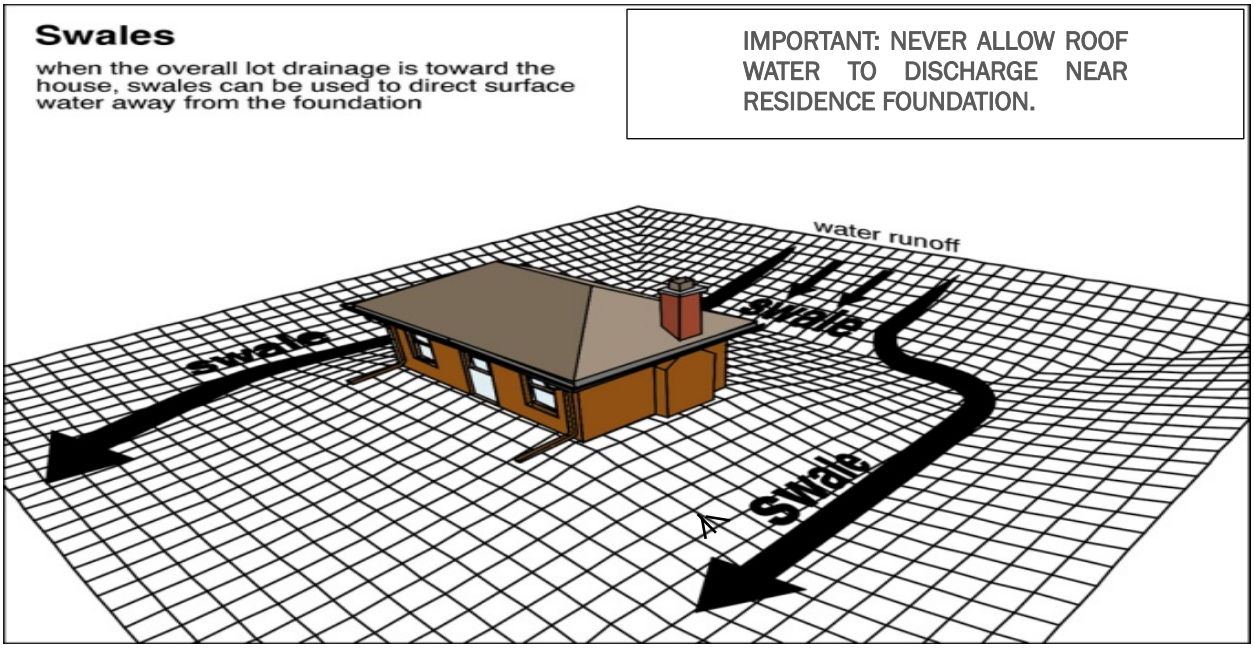
OPTION I:

WE RECOMMEND THE INSTALLATION OF ROOT BARRIER(S) BETWEEN THE RESIDENCE AND THE TREE(S) IF THE TREE IS WITHIN 7 ft to 20 ft AWAY FROM THE HOME FOUNDATION.

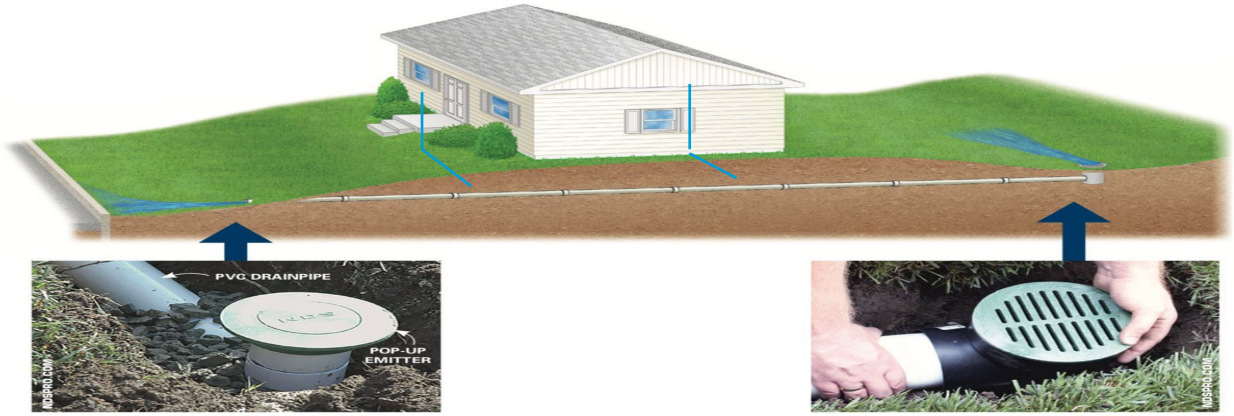
OPTION II:

IF A TREE IS LESS THAN 7 ft. FROM THE RESIDENCE FOUNDATION, THEN WE RECOMMEND THE REMOVAL OF THE TREE. PLEASE SEEK THE ADVICE OF A TREE ROOT EXPERT FOR ADDITIONAL RECOMMEDATIONS.

SYSTEMS TO DIRECT WATER AWAY FROM RESIDENCE



IF YOUR RESIDENCE HAS A SWALE, THEN DIRECT ALL DOWNSPOUTS WATER TOWARDS THE SWALE & AWAY FROM THE HOME.



IF SWALE DOES NOT EXIST, THEN WE RECOMMEND THE INSTALLATION OF FRENCH DRAINS, & PIPES TO DISCHARD WATER TOWARDS CITY DITCH OR STREET DRAINAGE SYSTEM.

DISCLAMER & LIMITATIONS, TERMS, AND CONDITIONS

This report of work performed is only for the use of the specified client. It gives no rights or advantages to any party other than that client and Momentum Structural Engineering LLC, except as may be provided herein.

The conclusions reached in this report are based upon the condition of the structure at the time of the inspection. No warranty as to the future performance of any item is expressed or implied.

Work was limited strictly to visual assessment of the exterior and interior of the locations specified/reported in the report and did not include any examination of other structures on the property. There has been no evaluation of issues regarding compliance with codes or certification.

The review used a standard of care consistent with other local design professionals limited by the scope and budget. Work has followed standard engineering procedures but resulting recommendations do not to any extent eliminate hazards or the need to follow federal, state, or local laws and regulations. It is the property owner(s) responsibility to inform appropriate authorities of any conditions in violation of relevant laws and regulations. All opinions are subject to revision based on new or additional information. No responsibility will be taken for conditions that could not be easily seen or are outside the scope of this review. Any use which a third party makes of this report, or any reliance upon, decisions made in response to or in any way influenced by this report are the responsibility of such third party.

This report does not constitute a warranty, either expressed or implied. It does not guarantee absence of structural or other problems, insects or other factors that may damage or destroy wood, growth of harmful organic matter, or any health issue that may arise due to those or other conditions.

The specified client may provide this report to other parties, but, if such parties utilize or act in accordance with information in the report other than the client, those parties do so at their own risk and shall have no legal recourse against Momentum Structural Engineering LLC or its affiliates, associates, employees, officers, or directors, regardless of whether the action seeking recovery is based upon contract, tort (including sole, concurrent, or other regarding negligence and strict liability of Momentum Structural Engineering LLC), statute, or otherwise. Any party wishing to use or act in accordance with information in this report must agree to the content of this Limitations, Terms & Conditions.

Verification of contractor’s work will be subjected to additional charges.