October 6, 2023 Project No. 23-2472

W. Harrison Welch, PE
*Stonewall Structural Engineering, PLLC*
4800 Falls of Neuse Rd. #120
Raleigh, NC 27609
(919)407-8663

STONEWALL
STRUCTURAL ENGINEERING

Luke Gendron
*Tarheel Basement Systems*
3333 Air Park Rd.
Fuquay-Varina, NC 27526

Re: Structural Observation — *1150 Rollins Mill Road, Holly Springs, NC 27540*

Mr. Gendron,

At your request, on September 26, 2023 we performed a review of the structural plan proposed by *Tarheel Basement Systems* for the foundation stabilization work at the Holly Springs residence noted above. The structure is a conventionally framed, detached, single family residence with raised first floor framing over a pier/girder foundation system with perimeter masonry foundation walls *(see picture 1).*

Our observations are listed below. Indicators such as "left," "right," "front," and "back" are referenced as viewing the front of the home.

**FOUNDATION MOVEMENT**

- Perimeter foundation cracks were noted on the back and right foundation wall of the home *(see pictures 2-4 for examples).*
    - Measurement by laser level indicated that the right back corner was down by as much as approximately ½" relative to the back of the garage.
    - Measurement by laser level indicated that the front of the right garage wall was down by as much as approximately ¼" relative to the back of the right garage wall.

We recommend the following work (numbering does not indicate priority) be performed by a qualified general contractor *(see repair schematic at end of this report):*

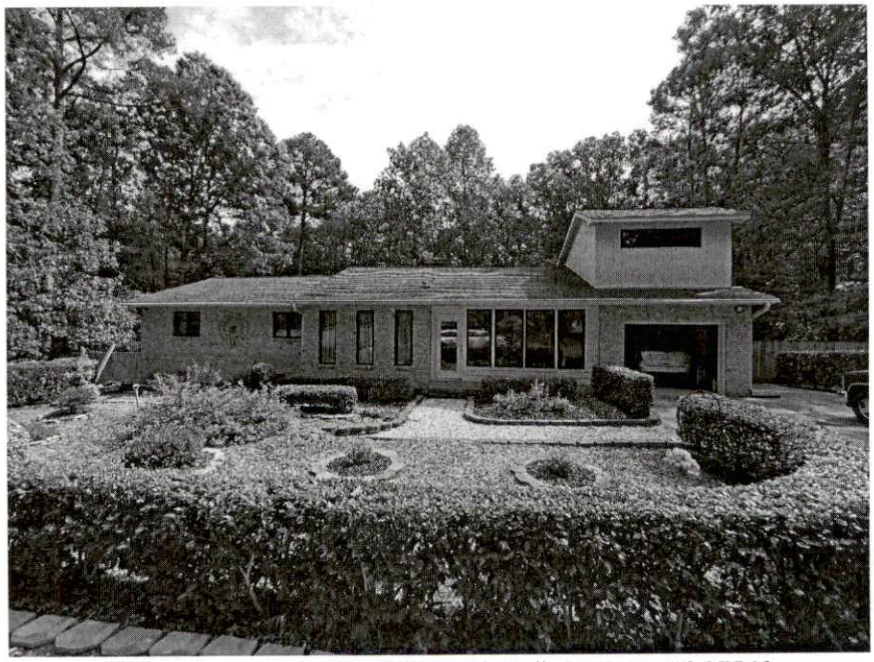
1) Install a series of (7) galvanized steel push piers to stabilize the back right corner of the home and right garage wall additional differential settlement.
    a) Push piers should be driven until engagement of the structure with lift indicating adequate depth/frictional resistance.
    b) The contractor should locate and avoid utilities prior to work.
    c) Avoid installing piers under crawlspace access openings. Where the foundation wall is less than 4' tall, avoid installing piers beneath windows, doors, or crawlspace vents.
    d) Install piers at approximately 6' on center and at the approximate locations shown in the attached repair schematic.
    e) Piers should be installed concentrically below the bearing walls. This may require chipping the existing footing projection, so the pier bracket is flush with the side of the foundation wall.

2) Any cracks in perimeter walls should be closed with a clear or color-matching flexible sealant and should be monitored for signs of further movement. If settlement continues at other locations of the home, additional galvanized steel deep foundation piers may be required along the other walls of the perimeter foundation.

The above-listed determinations were made in accordance with common engineering principles and the intent of the 2018 edition of the *North Carolina Residential Building Code.* Sequencing, and means and methods of construction are considered to be beyond the scope of this report. Contractor is to provide adequate temporary shoring prior to cutting or removing any structural load-bearing elements. All work is to conform to applicable provisions of current building standards. Please feel free to contact us, should you have any questions or concerns regarding this matter.

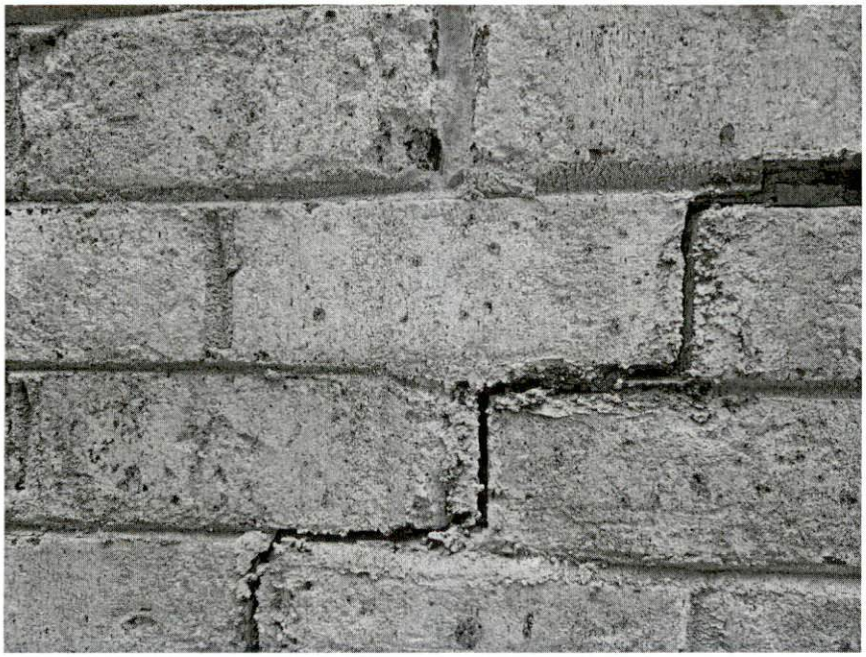
Sincerely,
W. Harrison Welch, PE
*Stonewall Structural Engineering, PLLC*
Lic. #P–0951

**PICTURE ADDENDUM**



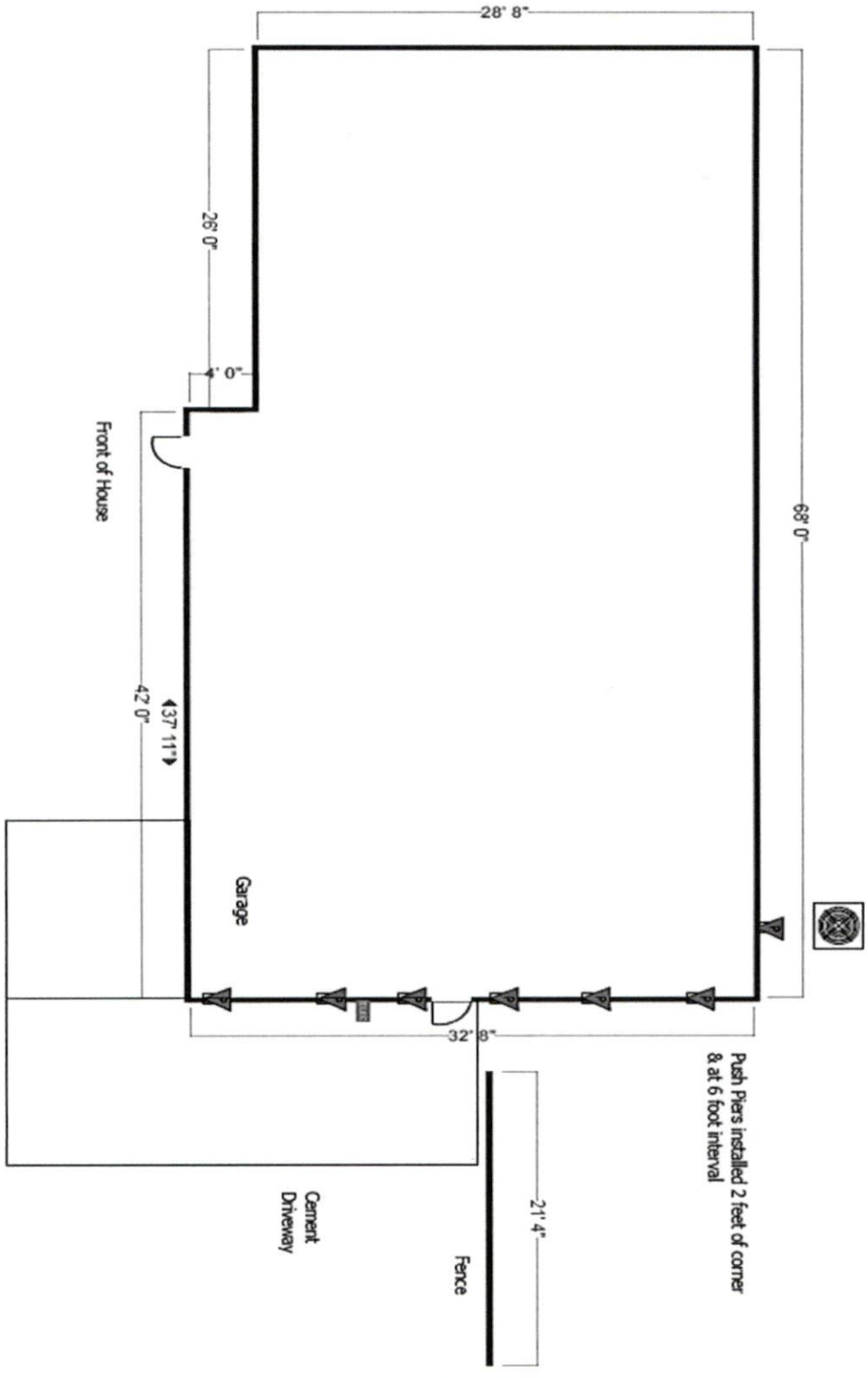
*Picture 1 – 1150 Rollins Mill Road, Holly Springs, NC 27540*

*Picture 2 – Example of perimeter crack*



*Picture 3 – Example of perimeter crack*

*Picture 4 – Example of perimeter crack*




**REPAIR SCHEMATIC**