

Stonewall Structural Engineering, PLLC
Raleigh Office
9203 Baileywick Rd. #200
Raleigh, NC 27615
(919) 407-8663



Michael Ashkar
1921 Port Royal Rd.
Raleigh, NC 27609

Re: Structural Observation — 2113 Port Royal Road, Raleigh, NC 27609

Mr. Ashkar,

At your request, on July 1, 2025 we performed a visual structural observation of structural concerns noted in the Home Inspection Report by Longstone Inspection Services dated 6/23/2025 at the 2113 Port Royal Road 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.

SECTION 5.1.2-4 & 5.2.1 – EFFLORESCENCE/MOISTURE/VAPOR BARRIER

- Efflorescence and signs of water intrusion were noted at the front-right corner of the frontmost part of the crawlspace (*see picture 2*).
 - No signs of significant structural distress were noted in the foundation wall at this area.
 - Standing water was noted at this area of the crawlspace. Additionally, HVAC ducts had built-up condensation at the time of our inspection (*see picture 3*).
 - Roof gutter downspouts were set for discharge at foundation soils (*see picture 4*).
 - Vapor barrier edges were not sealed at the bases of piers throughout the crawlspace.

SECTION 5.3.2 – MOISTURE DAMAGED SUBFLOOR

- A section of subfloor at the left side of the crawlspace was noted to be damaged beyond salvageable limits (*see picture 5*).

SECTION 5.3.3 – IMPROPER GIRDER SUPPORT

- Numerous CMU piers were noted to be missing solid caps, have loose shim material, or have crushed shim material (*see picture 6 for example*).
- The 2nd girder span from the front along the leftmost dropped girder was noted to consist of (2) non-continuous girder plies between end supports and (3) continuous girder plies between end supports (*see picture 7*).
- The dropped girder at the middle of the crawlspace approximately 30' from the left foundation wall was rotated and the plies were separating (*see picture 8*).
 - The rightmost (2) piers supporting this girder were noted to be leaning, improperly constructed, or an undermined footing (*see picture 9*).

SECTION 5.3.4 – LEANING OR IMPROPER PIER

- The backmost interior masonry pier at girder approximately 25' from the left foundation wall was visibly leaning (*see picture 10*).

ADDITIONAL OBSERVATIONS

- The rim band and sill plate were damaged beyond salvageable limits at the right wall of the front-left portion of the crawlspace (*see picture 11*).
- The ledger strips at the 2nd and 3rd girder spans from the back along the flush girder approximately 13'-6" from the left foundation wall were noted to have slipped (*see picture 12*).

Upon completion of our analysis, we have concluded the following:

- Due to the lack of signs of significant structural distress at the areas of water intrusion, we consider the perimeter foundation to be adequately performing at those areas.
- The above-noted damaged floor framing has been the result of rot due to prolonged exposure to moisture in the crawlspace.
 - The damaged rim beam and sill plate have likely been the result of a deficiency in the waterproofing at the front porch slab.
- Our calculations indicate that the girder noted above with (3) continuous plies has the structural capacity to support design loads per the 2018 edition of the *North Carolina Residential Building Code*. Therefore, no additional structural modifications are required.

We recommend the following work be performed by a qualified general contractor:

- 1) Remove the (3) leaning piers, improperly constructed piers, or piers with undermined footings and replace them with new CMU piers per the attached detail. The new piers should be centered over 24"x24"x10" thick poured concrete footings set at least 12" into suitable bearing soils.
- 2) Remove deteriorated portions of sheathing and replace with sheathing of matching thickness, fastened to framing members with 8d common nails at 6" o.c. at panel boundaries, and 12" o.c. to joists within the panel field. Splice panels over centerlines of joists as needed with 1/8" minimum edge nail distance. No section of new or remaining sheathing should be smaller than 2'-0" in any direction.
- 3) The tops of the masonry piers should be reconstructed such that they have solid caps and tight-fit, treated, full-width, and full-length shim material.
- 4) Replumb and build up the rotated and separated girder noted above.
- 5) Remove the damaged rim band noted above and replace it with full depth treated 2x #2 SYP tight fit beneath the floor sheathing.
- 6) Remove the above-noted sections of deteriorated sill plate and replace using treated 2x #2 SYP material and fasten with Simpson "Universal Retrofit Foundation Plates" (or other approved anchor bolt alternative) at 6' on center max spacing and 12" from sill plate ends and breaks with at least (2) foundation plates installed per sill plate segment.
- 7) Raise and refasten the slipped ledger strips noted above with (4)10d common nails per joist or remove the failed ledger strips and fasten joists directly to the sides of the girders using Simpson face hangers.
- 8) Improve vapor retarder coverage such that the entire crawlspace floor is covered and edges are sealed around the bases of masonry piers.

- 9) Provide drainage improvements around the perimeter of the structure such that rainwater runoff is adequately diverted from the perimeter of the home. Drainage improvements are intended to help avoid the need for extensive foundation repair/stabilization work in the future.
- a) Current building standards require 6" of fall within the first 10' from a structure or use of drains and swales. A system of exterior or interior perimeter "French" drains and/or catch basins installed at low points in the grade may be necessary to achieve adequate drainage. Any low spots in the grade adjacent to the home should be filled for positive drainage away from the structure.
 - b) We recommend installing a perforated interior perimeter crawlspace drain system with discharge through the low point of the perimeter foundation system at least 5' from the perimeter of the home onto soils adequately graded away from the structure. Transition to non-perforated pipe outside the footprint of the structure.

The above-listed recommendations are not intended to be implemented in lieu of a regular home maintenance schedule. Most serious and costly structural damage in this area occurs due to improperly maintained drainage. Roof gutter systems and any in-ground drains should always remain clear of debris and should be periodically checked to verify positive flow. This can be done by visual examination during or immediately following rainstorms. If standing water, backed-up drainage, or surface water which flows within 5' of the home's foundation is ever found, this should be addressed right away by consulting with a drainage specialist.

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*. Construction sequencing and means and methods of construction are considered to be beyond the scope of this report. A qualified 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,



Colson Teal, EI
Project Engineer

Derek Harwood, PE
Project Engineer
Stonewall Structural Engineering, PLLC
Firm License No. P-0951



07/07/2025

PICTURE ADDENDUM



Picture 1 – 2113 Port Royal Road, Raleigh, NC 27609



Picture 2 – Efflorescence and signs of water intrusion



Picture 3 – Standing water in the crawlspace



Picture 4 – Roof gutter downspouts set for discharge at foundation soils



Picture 5 – Damaged subfloor



Picture 6 – Example of hollow pier missing solid caps



Picture 7 – Non-continuous plies of dropped girder



Picture 8 – Rotated and separated plies



Picture 9 – Leaning pier with undermined footing



Picture 10 – Leaning pier



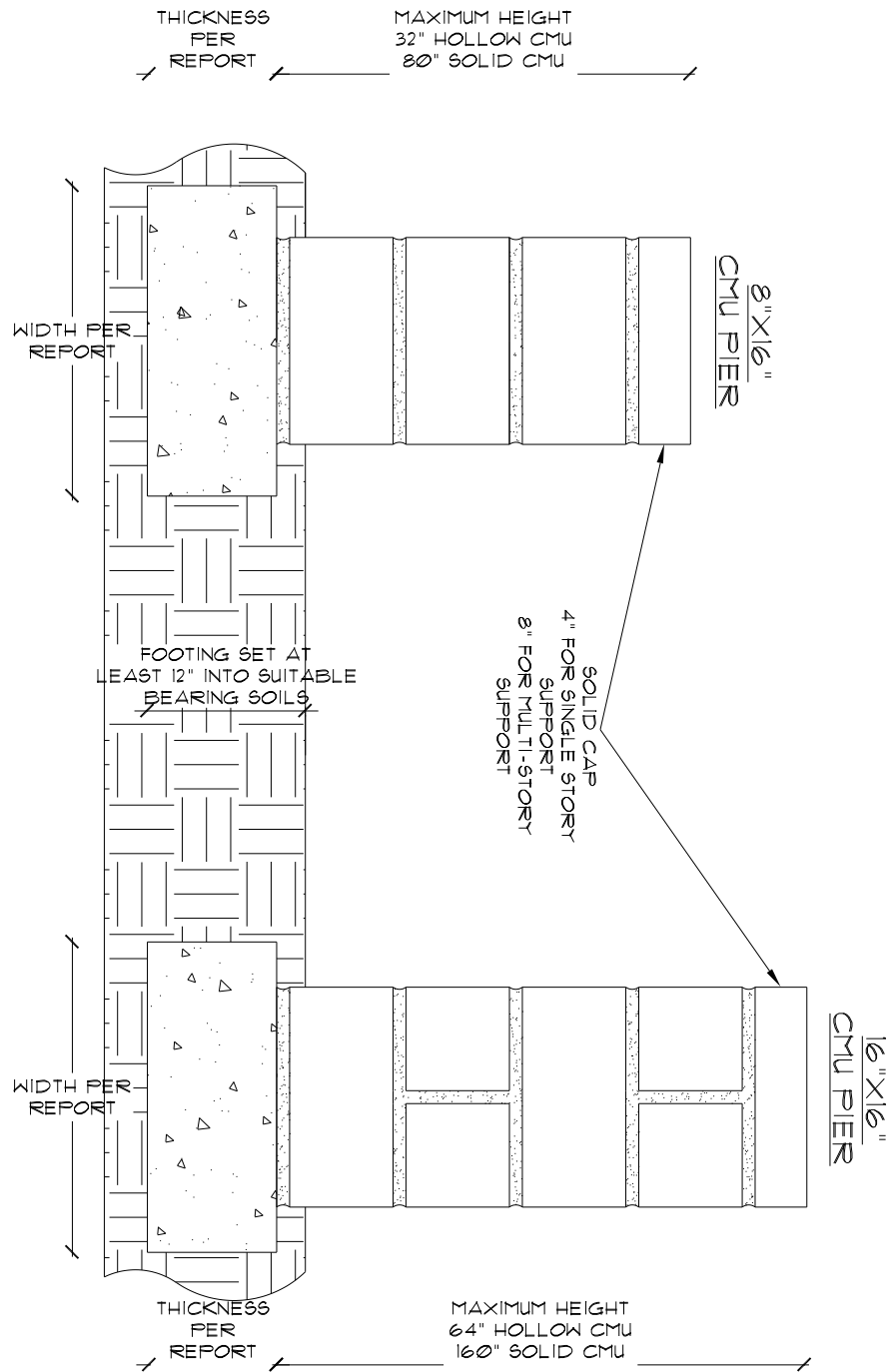
Picture 11 – Damaged sill plate and rim band



Picture 12 – Example of slipped ledger

DETAIL ADDENDUM

INTERIOR MASONRY PIER DETAIL



Detail 1 – CMU pier specifications