GILES FLYTHE
ENGINEERS

Raleigh Office:
7334 Chapel Hill Road
Suite 200
Raleigh, NC 27607
919.465.3801

Charlotte Office:
8819 University East Drive
Suite 200
Charlotte, NC 28213
704.810.1808

December 15, 2022

John & Drennan Fuller

Re: Wall Removal Letter
93 Marian Lane
Spring Lake, NC

Dear Mr. & Mrs. Fuller,

At your request, a limited structural evaluation for removing wall sections in the home located at the subject address was performed on December 12, 2022. The evaluation was performed by Tyler Royster, EI of Giles Flythe Engineers. It is our understanding that you plan to remove the following sections of wall:

Wall #1 – This section of wall spanning front to rear is located near the front of the home approximately 10'-0" from the left perimeter wall. The section of wall to be removed begins approximately 27'-6" from the front perimeter wall of the home and extends to the front approximately 13'-6".
Wall #2 – This section of wall spanning left to right is located near the front of the home approximately 14'-0" from the front perimeter wall of the home. The section of wall to be removed begins at the left perimeter wall and extends to the right approximately 10'-0".
Wall #3 – This section of wall spanning left to right is located near the front of the home approximately 14'-0" from the front perimeter wall of the home. The section of wall to be removed begins at the right perimeter wall and extends to the left approximately 10'-0".
Wall #4 – This section of wall spanning front to rear is located near the front of the home approximately 10'-0" from the right perimeter wall. The section of wall to be removed begins approximately 13'-6" from the front perimeter wall of the home and extends to the rear approximately 4'-6".

We have provided recommendations below regarding the removal of these sections of wall. The contractor should verify all dimensions prior to ordering materials. For purposes of this report, all directions (left, right, rear, etc.) are taken from the viewpoint of an observer standing and facing the front door of the home. If the contractor has any questions or concerns regarding the method of construction or if conditions vary from what is described below, the engineer should be consulted. Likewise, if any changes to sizes or modifications to the structure are desired other than what is explicitly described below, the engineer should be consulted. All construction and workmanship shall adhere to the 2018 NC Building Code.

ASSUMPTIONS

- Based on the observed site conditions, it appears that a portion of the wall (colinear with Wall #4) was previously removed. The ceiling joists in the attic overlap above the wall that makes up Wall #4 and were noted to be unsupported at the front 14'-0" of the home. We have included these unsupported ceiling joists in our calculations and have specified the appropriate attachment.

RECOMMENDATIONS

Wall #1, 2, & 3

- These walls are not load-bearing and may be removed.

Wall #4

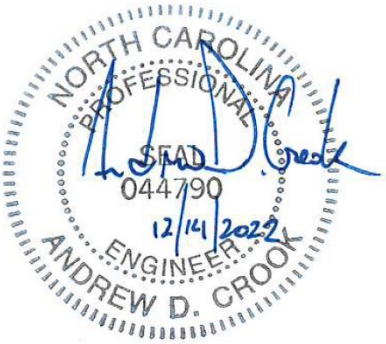
- We recommend installing a 2-1.75”14” LVL beam spanning a maximum of 19’-0” between the load-bearing points. The new beam should be supported by 3-2x4 jack studs at each of the load-bearing points.
    - To install the new LVL beam as a flush beam, temporary walls should be installed directly beneath both sides of the existing ceiling joists (not greater than 18” from the existing Wall #4) and the ceiling joists should be cut back to allow the installation of the new member with the bottom of the new LVL beam installed flush with the bottom of the existing ceiling joists. The existing ceiling joists should be attached to the new LVL beam with new Simpson LUS26 hangers (or equivalent). New CS16 straps that extend a minimum of 1’-4” in each direction should be installed along the bottom edge of the discontinuous ceiling joists.
- A new 16x16 grouted CMU block pier should be installed below the jack studs at the rear bearing point. The new pier is to be supported by a new 30”x30”x10”-thick concrete footing at the rear bearing location. Note, 2x blocking is to be installed between the jack studs and masonry piers within the floor cavities. Note, the contractor shall verify the presence of a minimum 12” wide continuous concrete footing below the front foundation wall. If the concrete footing is not present or inadequate, we recommend installing a new 24”x24”x10”-thick concrete footing below existing foundation wall at the front bearing location.

General Notes:

- All new lumber should be SPF No.2 or equivalent. All lumber exposed to concrete/masonry or weather must be pressure treated.
- All new LVL members are to be E2.0, Fb=3100 PSI (or equivalent) and plies are to be attached per manufacturer specifications. LVL members exposed to weather should be wrapped per manufacturer specifications.
- Install pressure-treated blocking to provide full uniform bearing of the above floor framing onto the new block piers.
- All new concrete is to have a minimum 28-day strength of 3000 psi.
- New concrete footings are to be installed a minimum 12” below grade (to the bottom of the footing) and in no case less than frost depth.
- Soils below new foundation components to be contractor verified to be a minimum 2000 psf bearing capacity.
- All detailing, fabrication, and placing of reinforcing steel shall be in accordance with the latest “Manual of Standard Practice For Detailing Reinforced Concrete Structures,” ACI 315.
- Clear concrete cover over reinforcing bars shall be 3” for footings and other concrete cast against the ground.
- All new metal hangers/ties/clips to be installed per manufacturer specifications.
- All fastening shall conform to R602.3(1) in the 2018 NC Building Code: Residential Code.
- With any structural changes, finish material cracks and minor movements are typical and expected. These are associated with settlement and allowable deflection generally observed after construction of an addition or significant remodel.
- Installation of the above recommended repairs may require temporary shoring of the in-place structural components. Shoring methods are the responsibility of the contractor.

We trust that this letter provides the information you require. Please contact us at (919) 465-3801 if you have any questions. Thank you for the opportunity to be of assistance to you.

Sincerely,



Tyler Royster, EI
Project Engineer
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Andrew Crook, PE
Project Manager
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Enclosed: Wall Removal Location Sketch

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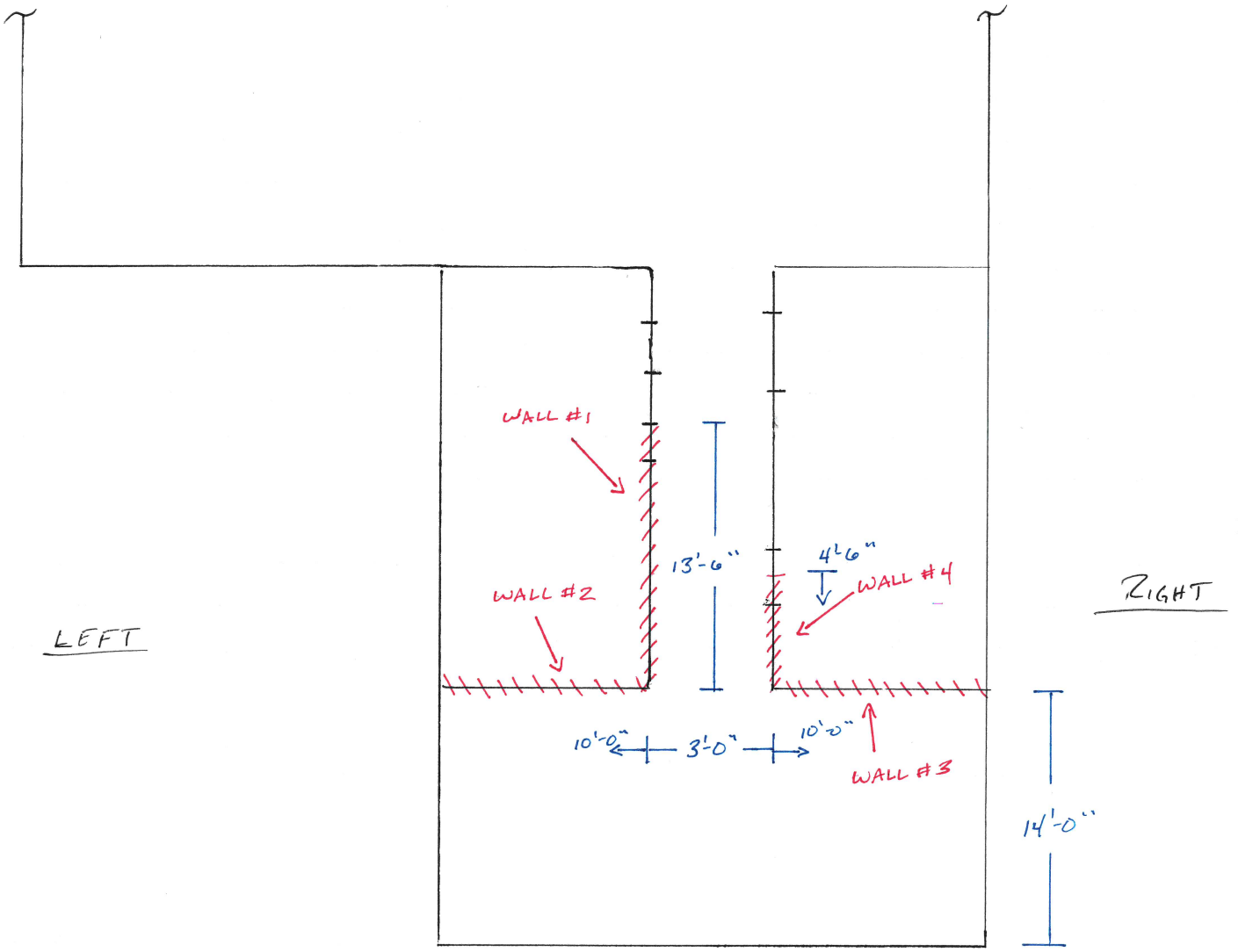

Note: Sketch is for location purposes only. See attached report. Dimensions are approximate.

Wall Removal Location Sketch

Not to Scale