



STRUCTURAL DESIGN LETTER – WALL REMOVAL

643 Wheeler Road
Angier, NC

May 19, 2025

Branch Home Improvement
Bennett Branch

SCOPE/BACKGROUND

At your request, a limited structural evaluation for removing walls in the home located at the subject address was performed on May 14, 2025. The scope of this letter is limited to the inspection and evaluation of the subject walls described above and the structural repairs required to remove the walls. No finish material removal or destructive testing were performed as a part of the project scope. The information provided in this report is based on the conditions as they existed at the time of the inspection.

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.

Should there be any questions or concerns regarding this report, contact us at sean@builtupengineers.com or 919-817-9915. Our mailing address is 7283 VETERANS PKWY, STE 102-148, Raleigh, NC, 27603. Our website is Builtupengineers.com

DESCRIPTION

The two-story, wood-framed home (with a basement) is constructed on a CMU block foundation wall. The home was built in 1988 per Harnett County real estate records.

We understand that you wish to remove the following sections of the wall:

Wall #1 – We understand that you wish to remove the section of wall between the kitchen and living room. The section of wall is approximately 22 feet long and includes the 32-inch section closest to the sun room.

Per inspection of the visual areas of the home, the wall appears to support the floor framing from the bedroom above, in addition to the ceiling framing in the attic.

- We recommend the installation of a new W12x22, W10x26, or W8x40 steel drop beam, spanning up to 22'-6" between bearing points. The beam shall be supported by five 2 x 4 jack studs at each end.
- In the basement, below each low point, provide a solid 2x compression blocking down to five 2x 4 jack studs, extending down to the basement floor. Verify a minimum 20" wide by 10" deep continuous concrete footing below each load point (8" projection passed the edge of the stud wall). Alternatively, cut the footing to install new 24"x24"x10" thick footings below the load points.

- **Note that this is not for a flush installation, additional detail would be required (strapping, web**

General Notes:

- Wood 2x pressure-treated blocking utilized shall be sufficiently dried out to help reduce shrinkage due to evaporation of excess moisture over time. Alternatively, kiln-dried pressure-treated lumber may be utilized.
- The contractor should verify all dimensions prior to ordering materials.
- 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, Residential Code.
- All new lumber should be SPF or SYP 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 the manufacturer's specifications.
- New steel beams (W shapes) shall be ASTM Grade 50, A992.
- Contractor to confirm minimum soil-bearing capacity of 2000 psf. All footings shall be installed a minimum of 12" below grade and in no case less than the frost depth.
- All new concrete is to have a minimum 28-day strength of 3000 psi.
- All new metal hangers/ties/clips are to be installed per the manufacturer's specifications.
- All fasteners/connections are to be installed per table R602.3 of 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 generally observed after the construction of an addition or significant remodel.

No areas of the structure were reviewed other than those explicitly described in this report. The review used a standard of care consistent with other local design professionals limited by the scope and budget. This report was at a flat rate and has a liability limitation of 10 times the fees collected. It represents the best judgment of the staff of Built Up Engineers, PLLC given the information available at the time of writing. No review of organic growth, mildew, or any other building science issue was performed except as noted. 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 that 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 the such third party. Recommendations are provided to address structural-related issues, and may not rectify cosmetic issues.



CONCLUSION

We trust that this report provides the information you require. Please contact us at 919-817-9915 if you have any questions. Thank you for the opportunity to be of assistance to you.

Sincerely,

Sean Casady, PE
Project Engineer
Built Up Engineers PLLC
NC Lic. No. P-2664



Description

View of the home.

Photo No.
1



Description

View of the subject wall.

Photo No.
2



Description

View of the subject wall.

Photo No.
3



Description

Attic space above.

Photo No.
4



Description

View of floor framing.

Photo No.
5

