

STRUCTURAL DESIGN LETTER – WALL REMOVAL

5985 RAWLS CHURCH ROAD
RALEIGH, NC

JULY 3, 2023

RDU CUSTOM CARPENTRY
John Bronson

SCOPE/BACKGROUND

At your request, a limited structural evaluation for removing walls in the home located at the subject address was performed on June 22, 2023. The scope of the inspection was limited to inspection and evaluation of the subject walls (described below) and determining the appropriate structural modifications required to remove the subject 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 NC HWY 42 STE 102-148, Raleigh, NC, 27603. Our website is Builtupengineers.com

DESCRIPTION

The single-story, wood-framed home includes a basement area and a crawlspace area on the lower level. We understand that you wish to remove the following sections of wall:

Wall #1 – The section of wall on the main floor (oriented left to right, approximately 10 feet long) between the kitchen room and dining room.

This wall section supports the ceiling joists in the attic above and is located above the crawlspace portion of the home on the left side. We recommend installing a 2-1.75" x 11.875" LVL beam (spanning left to right, 13'-3" feet) supported on 3-2x4 jacks at each end (located above the foundation walls of the crawlspace). Connect the ceiling joists to the beam via Simpson LUS hangers. Connect the joists on each side of the beam at 4'-0" on-center with Simpson CS16 straps (min. 4'-0" long, centered on the beam). Provide solid 2x compression blocking below each stud group.

Wall #2 – We understand that you wish to create a cased opening (approximately 6 feet wide) on the main floor at the central wall between the kitchen and living. The cased opening is to be located approximately 14'-9" from the left wall of the kitchen.

Provide a 2-2x10 header (spanning left to right up to 6'-6") supported on 2-2x4 jack studs and 1-2x4 king stud at each end. The jack studs from the header fall between the two girders located below in the basement area, so provide 2-2x10 headers/joists below the jack stud columns,

spanning between the central girders (approximately 4-feet). Connect the 2-2x10 headers to the girders with Simpson LUS hangers (or equivalent).

Wall #3 – The door to the right-rear bedroom is to be widened to 3'-0" and the left wall of the right-rear bedroom is to be shifted to the left approximately 6".

Provide a minimum 2-2x8 header at the new 3'-0" opening with a 1-2x4 jack and 1-2x4 king stud at each end. The left wall of the bedroom (oriented front to back) is not load-bearing and may be shifted without structural

General Notes:

- 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 manufacturer specifications.
- 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 manufacturer 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.

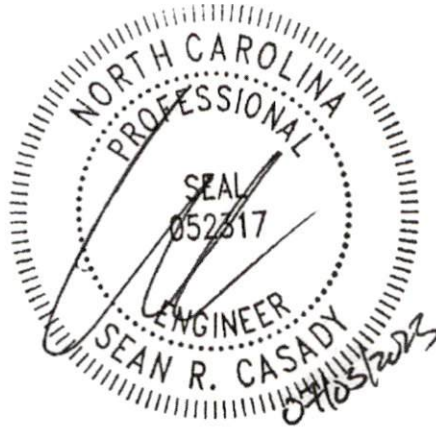


CONCLUSION

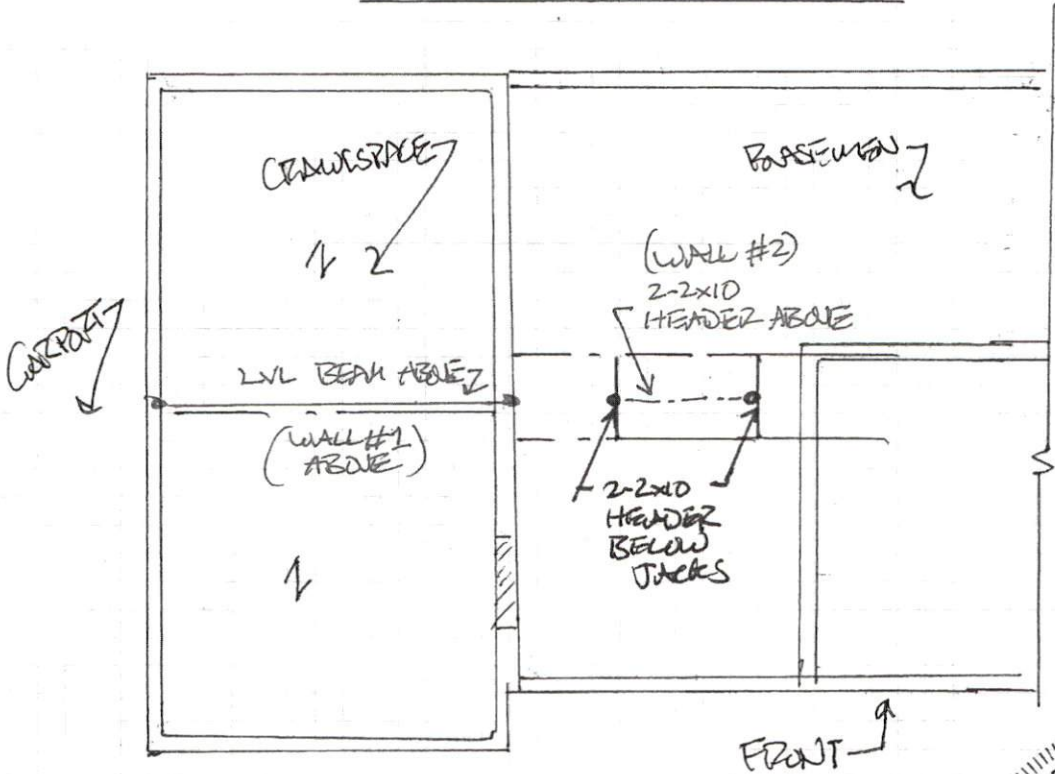
We trust that this report provides the information you require. Please contact us at 919-817-9915 if you have any questions. Thank you for the opportunity to be of assistance to you.

Sincerely,

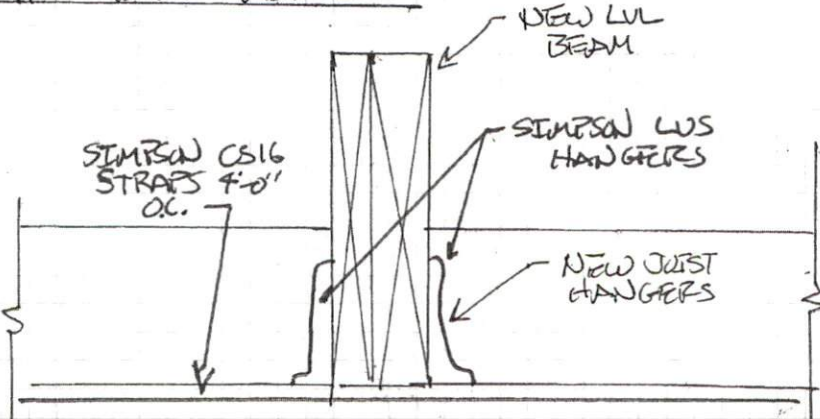
Sean Casady, PE
Project Engineer
Built Up Engineers PLLC
NC Lic. No. P-2664



BASEMENT SKETCH



TYP. BEAM DETAIL



*REFER TO
FULL REPORT