

August 22, 2024

Project No. 24-1608

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Jim Sykes
681 Griffin Rd.
Lillington, NC 27546

Re: Structural Observation — 681 Griffin Road, Lillington, NC 27546

Mr. Sykes,

At your request, on August 15, 2024 we performed a structural calculation of the roof trusses that were observed during our 5/28/2024 site visit at the Lillington residence noted above. The structure is a conventionally framed, detached, barn with a slab-on-fill foundation system. Additionally, a proposed free standing structure is proposed to be constructed in the middle section of the barn. The existing roof trusses are to be used for the ceiling finishes of the new structure.

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

ROOF TRUSS CALCULATION

- Our calculations indicate that the roof trusses are inadequate to support the applied loads in their current state.
 - Reinforce the top and bottom chords of each roof truss using 2x6 #2 Southern Yellow Pine (SYP) material, sistered to the side of the truss members using (2) ¼" diameter x 3" long Simpson SDS wood screws at panel points at each end, and at 16" o.c. along the length of the member.
 - All reinforcing plies should match the length of the existing plies. At all splices in the top and bottom chords, the reinforcing plies should splice.
 - Additional 2x ladder framing may be installed between the trusses in order to support the drywall installation as needed. Fasten the ladder framing using (4) 10d toe nails at each end.

FREE STANDING STRUCTURE

- A free standing single family residence is proposed to be installed in the middle of the existing structure.
 - The residence should be constructed per the provisions of the 2018 edition of the North Carolina Residential Building Code. The foundation of the new structure should be constructed of a conventional 4" slab on grade with a 12" wide turn down footing at the perimeter of the home. Stud walls should be conventionally framed and anchored to the slab foundation per the provisions of the code, and fastened to the above noted roof trusses conventionally. The exterior walls of the structure should be sheathed as a continuously sheathed wall panel (CS-WSP). All headers, jack studs, and king studs should be constructed per code.
 - **Waterproofing and insulation should be applied per the provisions of the building code, but are considered outside the scope of this report.**

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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



08/22/2024