

December 23, 2020

Project No. 20-1289

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Joao Rocha-Alves
181 Canyon Ct
Sanford, NC 27332

Re: Structural Observation — 181 Canyon Court, Sanford, NC 27332

Mr. Rocha-Alves,

At your request, on December 15, 2020 we performed a visual structural observation of the new deck framing and foundation system for the newly constructed addition at the Sanford 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.

FOUNDATION

- The newly constructed foundation wall below the new addition was noted to be installed offset over the poured concrete footing, such that the edge of the foundation wall was aligned with the edge of the footing (*see pictures 2-3 for examples*).
 - The footing was noted to be set approximately 3" below finished grade.
- The foundation wall beneath the existing screened-in porch was noted to be installed offset from the perimeter rim band, where it was intended to be installed supporting the rim band in anticipation for future finished space (*see pictures 4-5 for examples*).
 - The previously installed screened-in porch posts were not removed for installation of the new foundation wall.

DECK ADDITION

- The rim band was noted to be a single 2x10 with an additional, partial 2x10 scabbed onto each span. The rim band was noted to be screwed into the supporting post (*see picture 6 for example*).
- The deck was noted to have 2x bracing at outer posts but no bracing at inner posts (supporting the back of screened in porch) (*see picture 7 for example*).
- The deck rim band was noted to be inadequately attached to the existing rim band at the back of the new addition and screened-in porch (*see picture 8 for example*).
- The hand rail posts at the right side of the deck were noted to be notched for attachment to the decking/rim band (*see picture 9 for example*).

Upon completion of our analysis we have concluded the following:

- Although the foundation wall beneath the screened-in porch is not functioning as intended, it may remain in place as long as the screened-in porch is supported over the existing posts. However, since the foundation wall and footing were not installed in the correct location, the screened-in porch may not be finished as enclosed space without

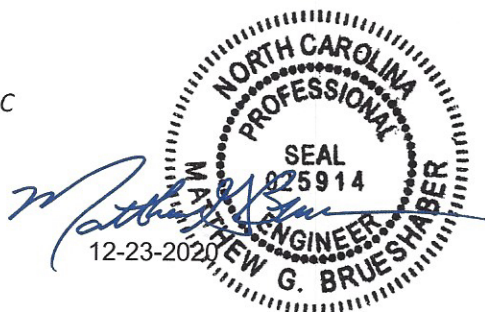
relocation of the foundation wall or re-analysis of the framing elements above. Posts supporting the existing screened-in porch should not be removed until the foundation is relocated or the analysis of the structure is performed.

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

- The grade around the perimeter of the new foundation elements should be brought up and compacted, such that the finished grade is 12" (minimum) above the bottom of the existing footings.
- Fasten the new deck to the rim band of the addition/screened-in-porch/original deck using 5/8" diameter hot-dipped galvanized through-bolts with nut and washer 3'-6" o.c. along the length of the deck.
- Install treated 4x4 diagonal bracing to all vertical supports. Bracing should extend down the height of the post 1/3 of the total height and should be angled between 45° and 60° from horizontal. Through-bolt each end of the brace to the post and band with a (1) 5/8" diameter hot-dipped galvanized through-bolt with nut and washer at each end through mid-depth of the members.
- The outer rim band should be attached to the existing posts with (2) 5/8" diameter hot-dipped galvanized through-bolts with nuts and washers at each post.
 - At locations where the rim band is spliced at a post, install a Simpson "DJT14Z" with (8) 16d common nails per manufacturer's requirements.
- Install new treated #2 4x4 deck handrail posts and fasten to perimeter band using (2) 5/8" diameter hot dipped galvanized through-bolts with nuts and washers at each post (maintain 2½" bolt edge distances).
 - Replacement 4x4 railing posts are not permitted to be notched at the bottoms.

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,
Matt Brueshaber, PE
Stonewall Structural Engineering, PLLC
Lic. #P-0951



PICTURE ADDENDUM



*Picture 1 – 181 Canyon Ct
Sanford, NC*



*Picture 2 – Example of newly constructed
addition at back of home*



*Picture 3 – Example of foundation wall
constructed at edge of footing*



*Picture 4 – Example of misplaced foundation
wall below screened in porch*



*Picture 5 – Example of misplaced foundation
wall below screened in porch*



Picture 6 – Example of outer deck rim band



Picture 7 – Example of 2x bracing



Picture 8 – Example of inadequate attachment of new deck rim band to existing rim bands



Picture 9 – Example of notched hand rail post