December 12, 2023 Project No. 23-2782

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Jason Hathaway
Tarheel Basement Systems
3333 Air Park Rd.
Fuquay-Varina, NC 27526

Re: Structural Observation — *30 Albert Court, Sanford, NC 27332*

Mr. Hathaway,

At your request, on December 1, 2023 we performed a review of the structural plan proposed by *Tarheel Basement Systems* for the foundation and 1st floor framing replacement work 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 DAMAGE

- A vehicle was reported to have impacted the back-right of the home. The following damages to the foundation and 1st floor framing were noted through investigation from the crawlspace *(see pictures 2-4).*
    - Along the back of the home, the rightmost 10' of the foundation.
        - The joists and rim along this portion of the foundation were damaged beyond salvable repair. The rightmost 12' of the sill plate was damaged beyond repair or had rotated.
    - Along the right of the home, the backmost 2' of the foundation.
    - The right most span of the backmost girder had rotated.

We recommend the following work (numbering does not indicate priority) be performed by a qualified general contractor *(see repair schematic at end of this report):*

1) Remove damaged portions of the foundation wall for installation of a conventional 8" wide foundation wall with 8" solid cap block.
    a) The existing footing is likely in good condition. Excavate the soils for inspection of the footing. The existing footing may be reused if it has not rotated or broken. If the footing has been damaged, it should be replaced with a new footing matching the dimensions of the existing.
        i) If applicable, dowel the new footing into the existing footing using (2) horizontal #4 bars x 24" long at the footing mid-depth. Drill 6" into the existing and epoxy using Simpson "Set-3G" or similar epoxy installed per manufacturer specifications.
    b) Install a new full height 2x rim that bears over a treated 2x sill plate anchored to the wall with ½" diameter bolts with 7" embedment into the top course of the

wall, at 6'-0" on center spacing and 12" max / 5" min from plate ends and breaks.

i) Alternatively, Simpson "Flat Retrofit Foundation Plates" may be used in lieu of ½" diameter bolts.

2) Reinforce each of the joists in the back bay where the foundation is being replaced with an additional full depth ply of 2x #2 Southern Yellow Pine (SYP), fastened to the side of the existing using (3)10d common nails at each end and at 12" on center staggered top and bottom along the lengths of the joists. Sistered material should span continuously between end supports.
   a) Verify all floor sheathing edges are properly supported by floor framing. Joists may be removed and replaced entirely with matching materials if necessary. If so, fasten sheathing of matching thickness to the new floor framing using 8d common nails at 6" o.c. at panel boundaries, and 12" o.c. to joists within the panel field. Splice panels over centerlines of joists as needed with 1/8" minimum edge nail distance. No section of sheathing should be smaller than 2'-0" in any direction.
3) Replumb the above noted rotated girder.
4) Any additional cracks in perimeter masonry walls that are not specified to be replaced should be closed with a clear or color-matching flexible sealant and should be monitored for signs of further movement.

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.

Inspection performed by:
Nicholas Piantadosi

Sincerely,
W. Harrison Welch, PE
Stonewall Structural Engineering, PLLC
Lic. #P–0951

PICTURE ADDENDUM

Picture 1 – 30 Albert Court, Sanford, NC

Picture 2 – Location of car impact

Picture 3 – Damaged foundation

Picture 4 – Damaged framing

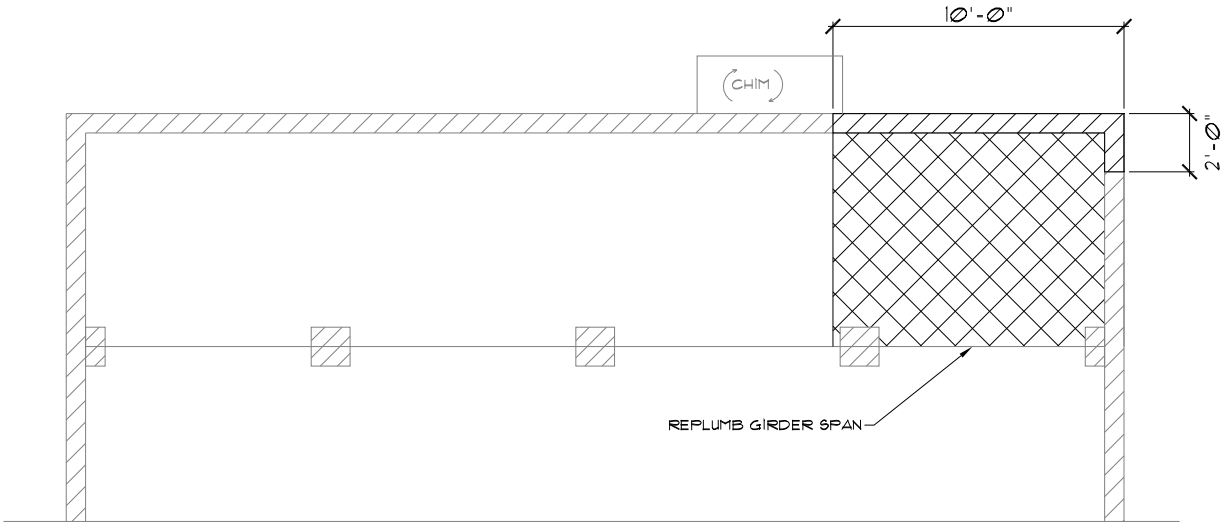
NOTES

CONTRACTOR TO VERIFY DIMENSIONS

LEGEND

NEW 8" FOUNDATION WALL W/8" SOLID CAP PER REPORT, REPLACE RIM AND SILL PER REPORT ALONG REPLACED FOUNDATION WALL

AREA TO REINFORCE FLOOR JOISTS



FRONT

REPAIR SCHEMATIC

SCALE: N.T.S.