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Stonewall Structural Engineering, PLLC
2 N Front St 8th Floor
Wilmington, NC 28401
(910)444-0208



Garvin Dean
Tar Heel Basement Systems
8005 Knightdale Blvd.
Knightdale, NC 27545

Re: Structural Observation — 4254 US-301, Dunn NC 28334

Mr. Dean,

At your request, on February 6, 2025 we performed an on-site visual inspection and review of the structural plan proposed by *Tar Heel Basement Systems* for the first-floor framing reinforcement work at the Dunn 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.

UNEVEN FLOORS

- Uneven floors were noted along the front wall of the left hallway (*see picture 2*).
 - Measurement by laser level indicated that the low spot in the hallway was down by as much as approximately 1" relative to both the front left corner of the hallway and the back wall of the hallway.
 - Measurements from within the crawlspace found that the 4th girder span from the left was down towards the left by as much as approximately ¼". Additionally, the 3rd girder span from the left was found to have as much as approximately ¼" sag.
 - Investigation from within the crawlspace found that a section of joists in the front joist bay approximately 18' from the left foundation and continuing to the right by 7' were deteriorated (*see pictures 3-4*).

We recommend the following work be performed by a qualified general contractor (*see repair schematic at the end of this report*):

- 1) Reinforce each of the above noted dropped and/or sagging girder spans using an IntelliJack support on a well-compacted 18"x18"x18" gravel footing (*see Detail 1*). Jacks should be located within the middle 1/3 of each girder span and at the approximate locations shown in the attached repair schematic.
- 2) To reinforce the floors under the front hallway, install a supplemental S4x7.7 dropped girder near the location of the front hallway wall. The new girder should span from the locations noted in the attached repair schematic, within the middle 1/3 of the front joist bay, over IntelliJack supports on well-compacted 18"x18"x18" gravel footings spaced no more than 6'-6" apart (*see Detail 1*).
 - a) Additionally, reinforce each of the deteriorated joists noted above with an additional full depth ply of 2x #2 Southern Yellow Pine (SYP), fastened to the side of the deteriorated joists 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.

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:
Will Rogers

Sincerely,
Matthew C. Murphy, PE, CWI
Stonewall Structural Engineering, PLLC
Lic. #P-0951

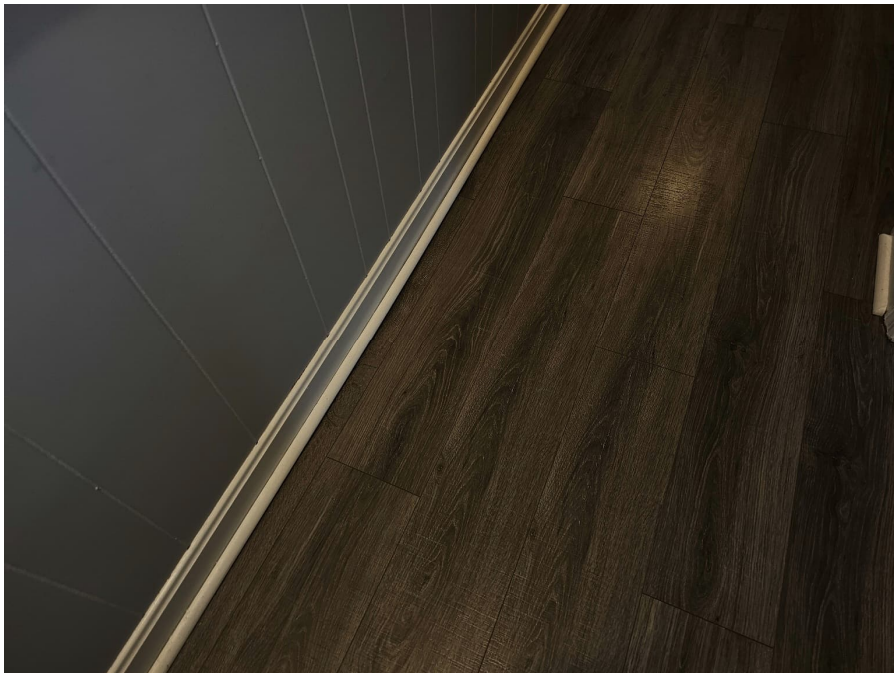


02-17-2025

PICTURE ADDENDUM



Picture 1 – 4254 US-301, Dunn NC 28334



Picture 2 – A low spot in the front hallway wall

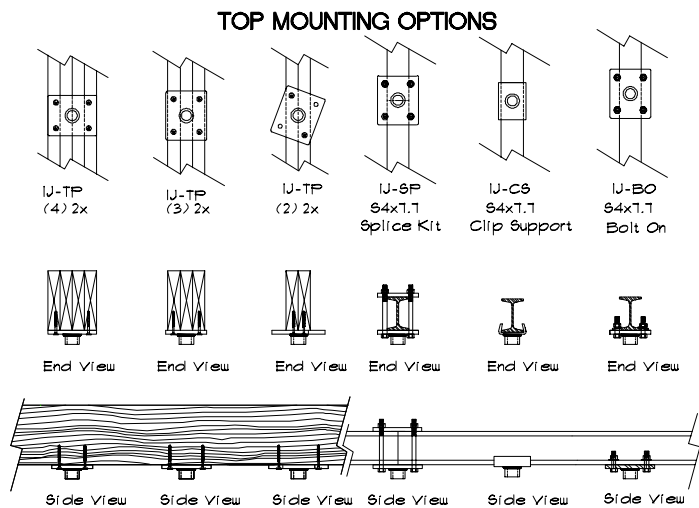
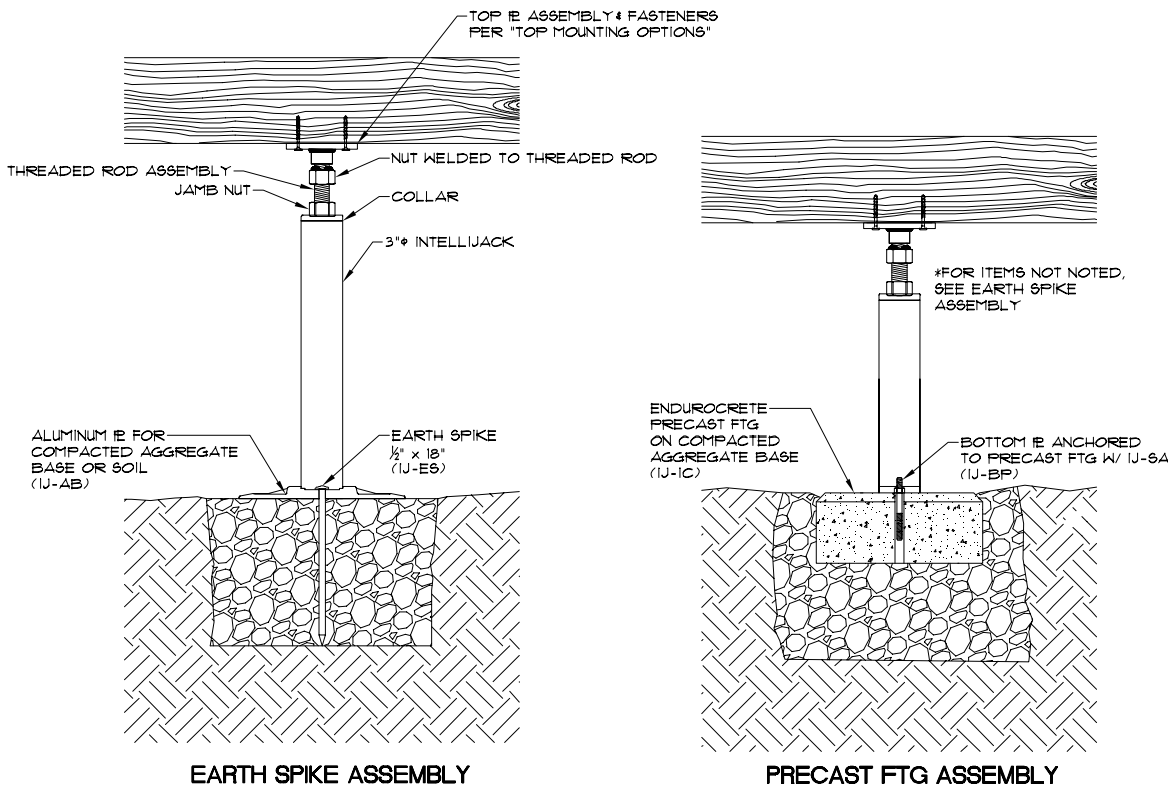


Picture 3 – Example of deteriorated joist



Picture 4 – Example of deteriorated joist

DETAIL ADDENDUM


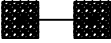



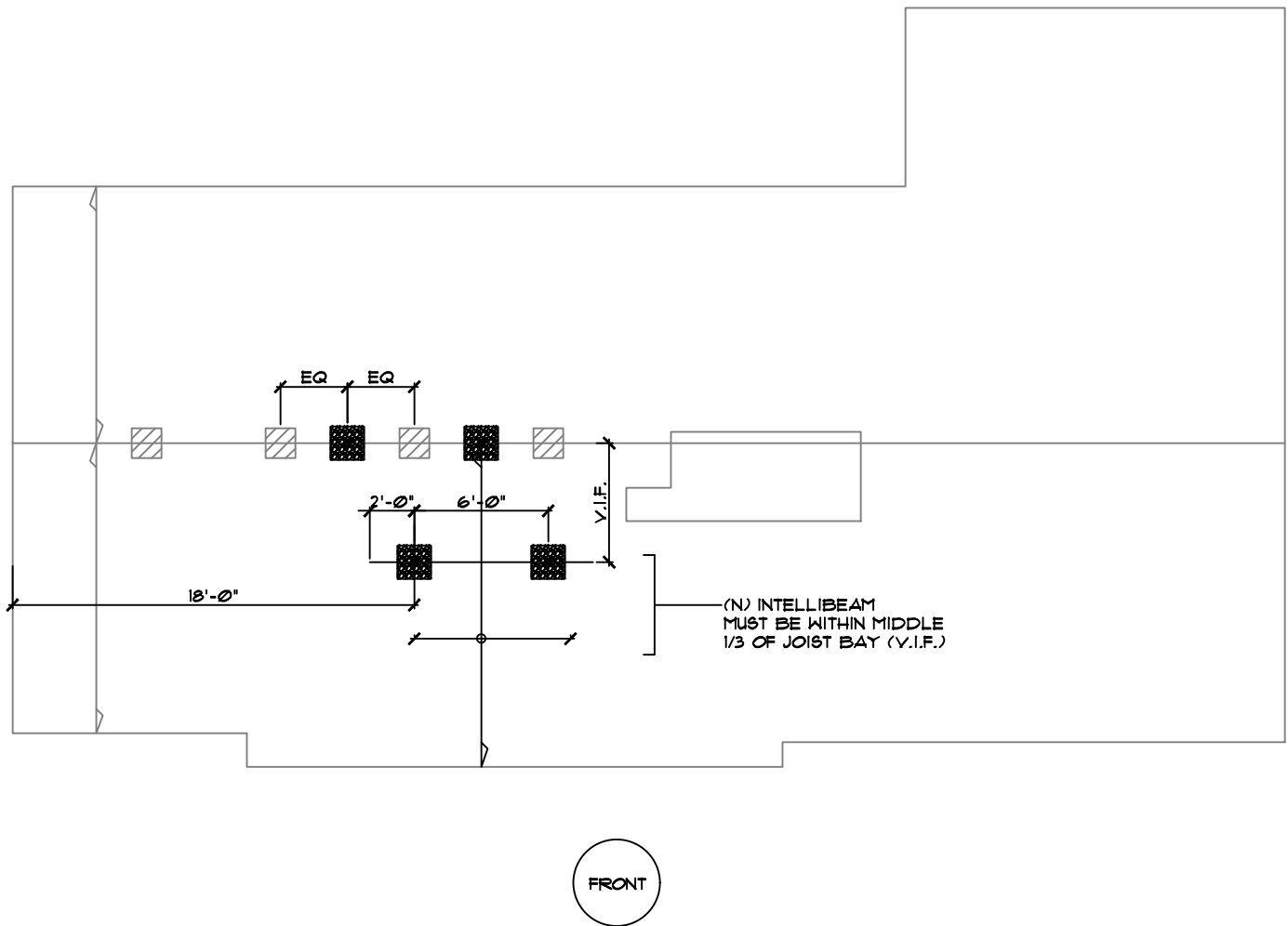
Detail 1 – Intellijack Installation Specifications

NOTES

1. CONTRACTOR TO FIELD VERIFY DIMENSIONS PRIOR TO PERFORMING WORK.
2. ASSUMED SOIL BEARING CAPACITY 1500 psf. CONTACT SOILS ENGINEER IF UNSUITABLE BEARING SOILS ENCOUNTERED.
3. ALL NEW WOOD FRAMING TO BE #2 SOUTHERN YELLOW PINE OR BETTER U.O.N.
4. SEE REPORT FOR ADDITIONAL NOTES & DETAILS

LEGEND

-  INDICATES INTELLIJACK SUPPORT ON WELL-COMPACTED 18"x18"x18" GRAVEL FTG PER REPORT & ATTACHED DETAILS
-  INDICATES INTELLIBEAM OVER INTELLIJACK SUPPORT ON WELL-COMPACTED 18"x18"x18" GRAVEL FTG PER REPORT & ATTACHED DETAILS
-  INDICATE JOISTS TO BE REINFORCED PER REPORT & NOTES



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02-17-2025

First Floor Framing Reinforcement

Tar Heel Basement Systems
4254 US-301
Dunn NC 28334

SCALE:	NTS	JOB #:
DRAWN BY:	WR	25-1182
DATE:	2025.02.17	SHEET #: SK1