Date: May 9, 2024

Project: Moses Residence

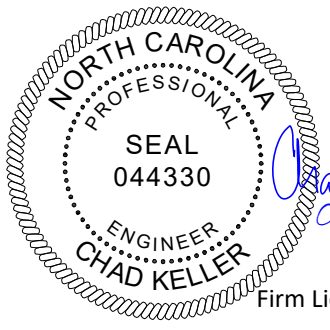
Address: 1076 Micro Tower Rd
Lillington, NC 27546

Floor Support Analysis

This report is prepared for Southeast Foundation Repair (contractor) by FDN Engineering (engineer). Floor support jacks (SmartJacks) are proposed for installation at the above referenced project. The support system is intended to stabilize and potentially lift the existing floor structure – reducing deflections in the floor and supporting the vertical loads tributary to the support. Load requirements for the SmartJacks were calculated at areas identified by the contractor. Engineer performed design for this project - see page 2 for engineering notes and results. See pages 3 and 4 for details of the floor support system. See page 5 for a layout of the floor supports on a footprint of the structure.

To the best of my professional knowledge and belief, the design of the floor structure support system meets the structural requirements of the 2018 North Carolina State Building Code to the extent that it applies to our scope of work.

Upon completion of the floor support system, the contractor shall supply engineer a log of the installed locations and lift of the SmartJacks. Engineer will evaluate the log and prepare a letter of completion, if necessary.



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SmartJack Project Notes (contractor to inform engineer if assumptions are inaccurate):

1. Structure is one-story, residential with wood-frame floors.
2. Soil bearing pressure at the site is a minimum of 1,500 psf.
3. Contractor shall use SmartJack model size 288.
4. SmartJacks and supplemental beams do not support interior load-bearing walls or columns.
5. Contractor will install footings, SmartJacks, supplemental beams and all related components per the support manufacturer's installation instructions and according to their technical specs.
6. Contractor to select support base plate from the details shown herein (based on field conditions).
7. Supplemental support beams, where used, shall be restrained against lateral rotation at an interval equal to or less than the SmartJack spacing.
8. SmartJacks supporting existing girders are not to be spaced farther than the original/existing supports; and the existing girder/joist's condition is adequate to support the compression load.
9. Supports are not placed on sinkholes.
10. The design assumes the original structure was constructed of conventional means and methods.
11. Where supplemental beams are specified, use HSS 4.0" square tube x 0.25" wall (ASTM A500 Gr. C).

SmartJack Analysis and Results:

12. Interior floor load is designed to not exceed 55 psf nominal load (15 psf DL + 40 psf LL), per Code.
13. SmartJacks are designed to support axial compression load only; with a max height of 9'-0".
14. Maximum total load on SmartJack is **3,700 lbs.**
15. SmartJack spacing along the supported girder (or tributary length) shall not exceed **7'-0" O.C.**

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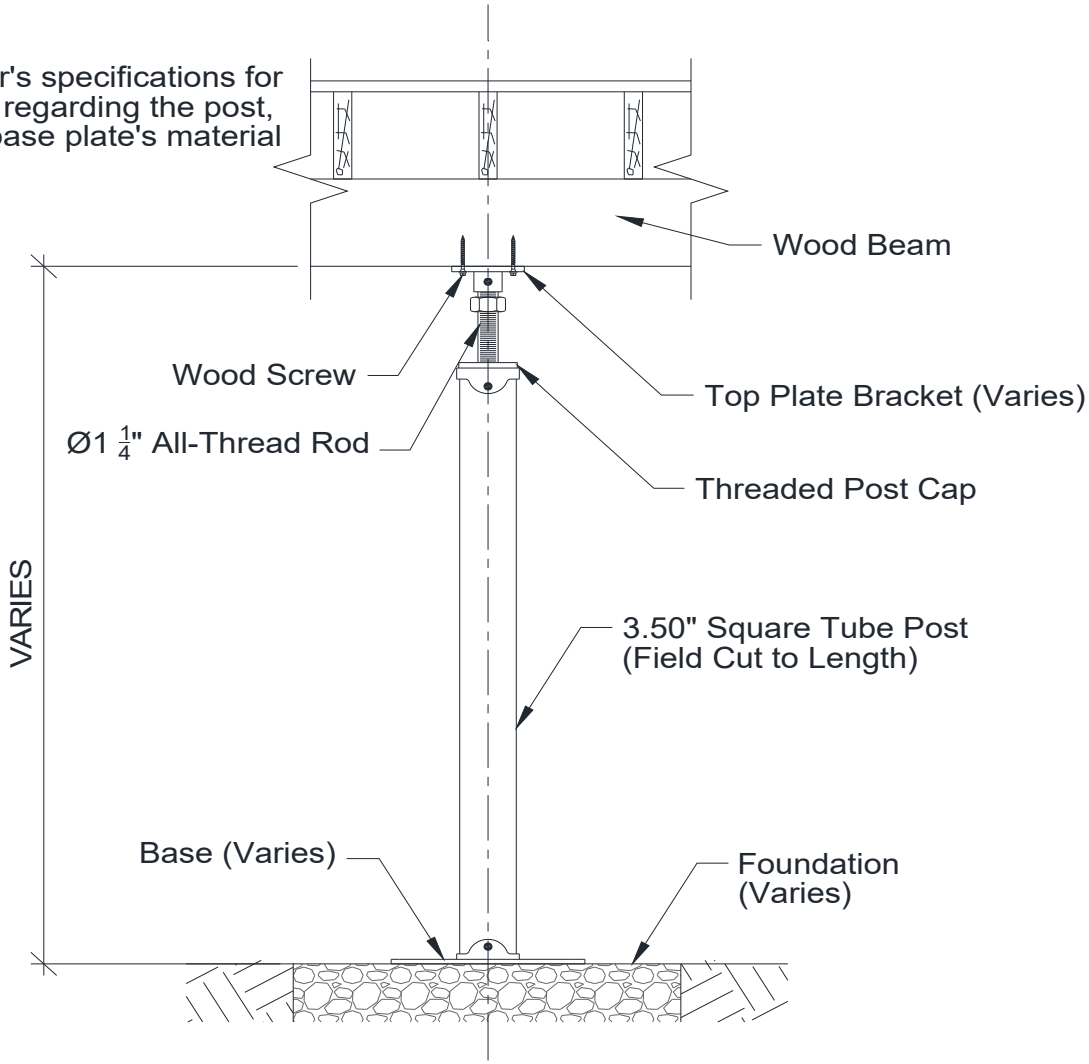
Note:
See manufacturer's specifications for more information regarding the post, top bracket and base plate's material and capacities.



General SmartJack Detail

Note: Detail is shown with top plate for wood attachment. However, there are multiple acceptable top bracket and base/foundation conditions. See following page for acceptable variations.

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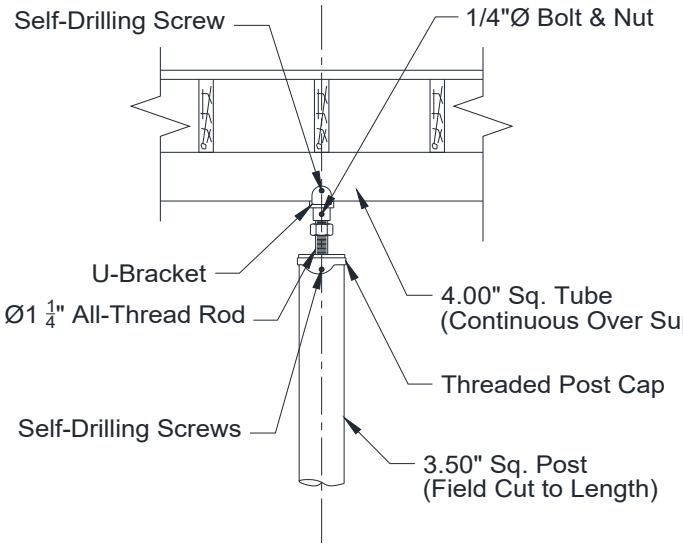
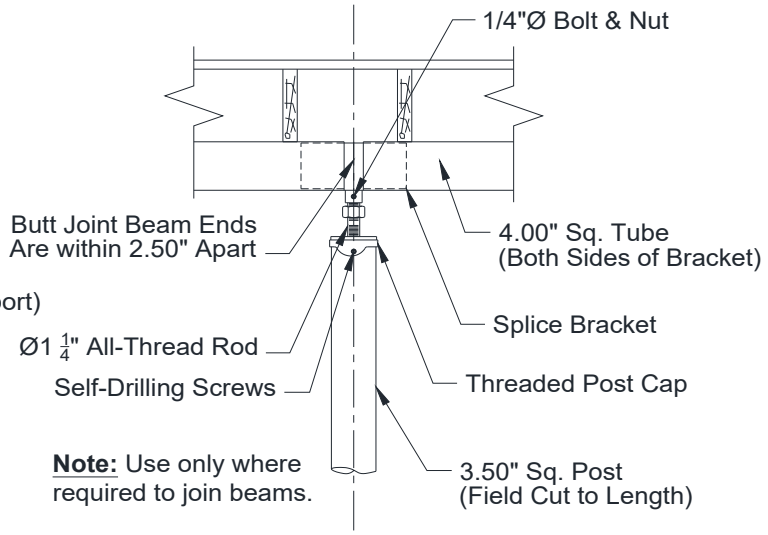
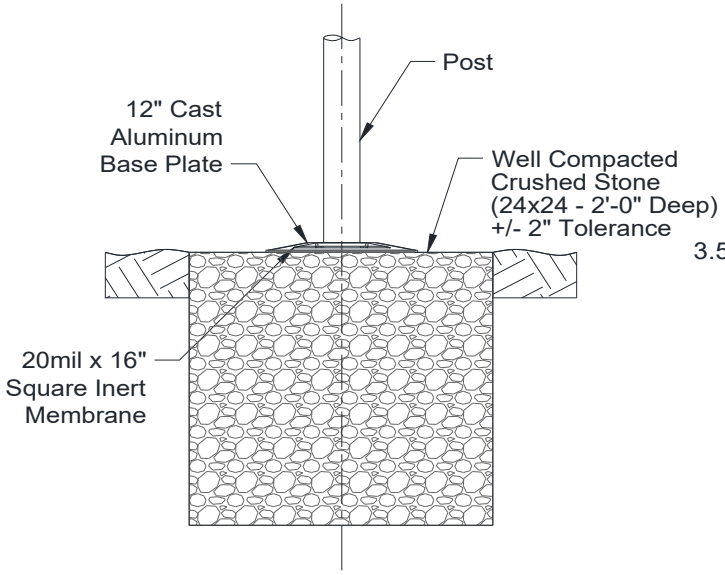
All below variations shown are structurally acceptable and may be used at the contractor's discretion based on field conditions.



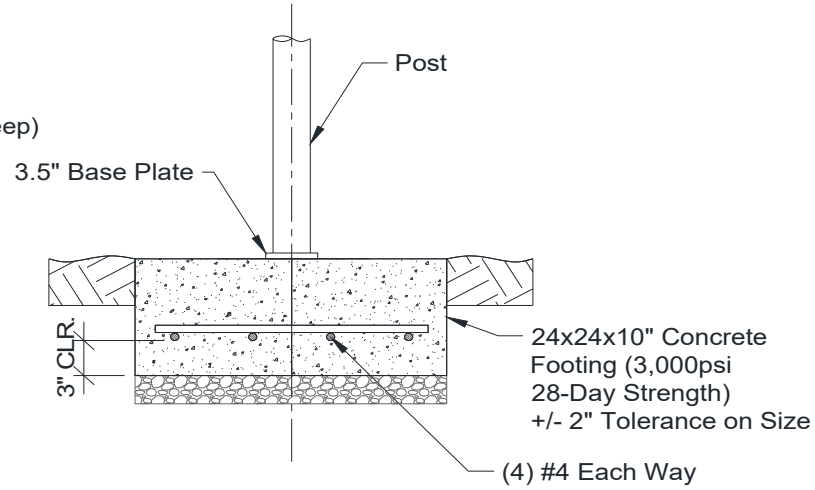
U-Bracket
4" Supplemental SmartJack Beam



Splice Bracket
New 4" Supplemental SmartJack Beam



Base Plate Over Crushed Stone



Base Plate on Concrete Footing

Crushed stone shall be angular in nature and meet ASTM C33, with max stone size not to exceed 1/2" and the minimum size no smaller than 1/16".

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LEGEND:

● Indicates SmartJack and Mark Number

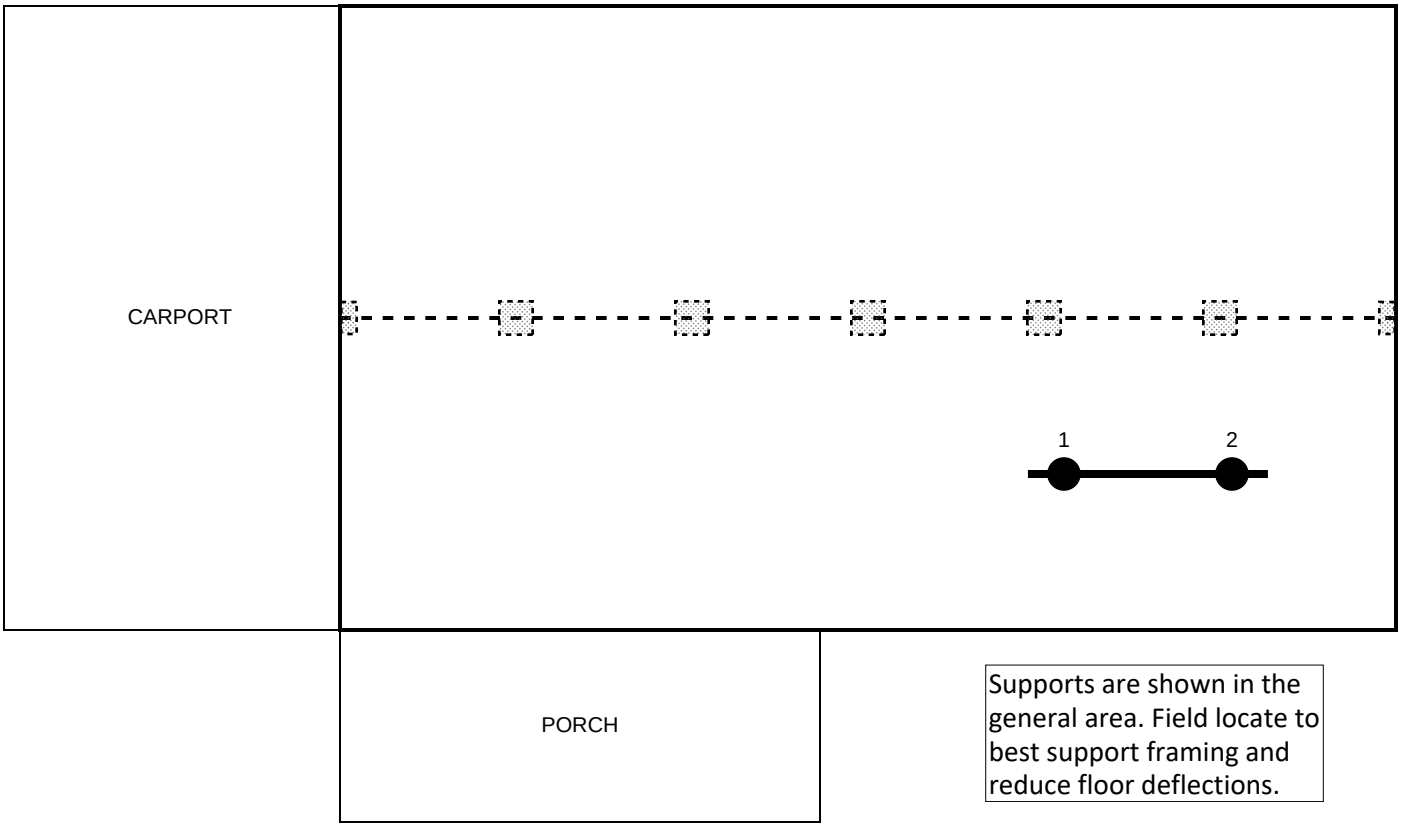
Supplemental Beam

Existing Pier

Existing Girder

SmartJack Notes:

1. Residential construction, one-story.
2. Layout of (2) SmartJacks Model 288 7'-0" O.C., max. between supports.
3. Install per SmartJack manufacturer's instructions and technical specifications.
4. Notify engineer if design assumptions are discovered inaccurate.



Supports are shown in the general area. Field locate to best support framing and reduce floor deflections.

FRONT HOUSE

FOOTPRINT OF RESIDENCE

N

DRAWING NOT TO SCALE

Project:

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