

Ed Brunner Associates, Inc.
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Sunset Beach, North Carolina 28468

Date: December 14, 2022
To: **Sentry Drafting & Design, Inc.**
Ref: Russell Residence
28 Pebble Beach Point, Sanford, North Carolina 27332 : Harnett County
Subject: Material Substitutions

Per your request, we are to verify the structural integrity of the material substitutions at the site:

- Building Code is North Carolina State Building Code: Residential Code 2018
- Home is built in Harnett County, North Carolina

Conditions:

- Per Design (2) 2x10 SPF (or SYP) Ridge Beam is Specified
 - Single (1) 2x10 SPF (or SYP) Ridge Beam is Installed
- Per Design 2x8 SPF (or Better) Rafters with 2x4 Collar Ties @ 16" o.c. Specified
 - 2x6 SPF (or Better) Rafters with 2x4 Collar Ties @ 16" o.c. Specified are Installed

Conclusion:

- Per R802.3 Framing Details : Rafters shall be framed to ridge board or to each other with a gusset plate as a tie. Ridge board shall be not less than **1-inch** (25 mm) nominal thickness and not less in depth than the cut end of the rafter.
 - **Installed Ridge Board is 1x10 syp (or spf) are sufficient in size for the rafters installed.**
- Per table R802.5.1(1) Rafter Spans for Common Lumber Species (roof live load = 20 psf, ceiling not attached to rafters, $l/d = 180$)
 - Rafters may span up to 14'-4" (spf) or 13'-6" (syp)
 - Actual clear span is 13'-0"
 - **Installed Rafters are sufficient in size for the design loads.**

Sincerely,

Ed Brunner

