January 1, 2020

Re: Raised Simpson Strong-Tie® Holdowns in Wood-Sheathed Cold-Formed Steel framed Shear Walls

To Whom It May Concern:

Simpson Strong-Tie has conducted tests of 2-to-1 aspect ratio wood-sheathed cold-formed steel (CFS) framed shear wall assemblies to study the effects of raised holdowns. For many years, raising holdowns in light frame wood framed shear walls has been permitted in Simpson Strong-Tie literature (see notes q and r under the instructions to installer and designer respectively in the current Wood Construction Connectors catalog). This letter is written to address this application for cold-formed steel construction.

The American Iron and Steel Institute (AISI) has conducted several CFS framed shear wall test programs where holdowns were raised several inches off the foundation with little to no effect on the performance of the shear wall. Simpson Strong-Tie completed a testing program to investigate the performance of CFS framed wood-sheathed shear walls where the holdowns were raised up 18 inches (measured from top of concrete to top of holdown bearing plate/bottom of nut). This test program consisted of low and high capacity CFS wall assemblies with holdowns installed raised and flush to top of slab with no degradation of performance observed. Therefore, holdowns may be raised up to 18 inches (as noted herein) to account for misplaced anchor bolts provided the following conditions are met:

- The anchor bolt shall be located no more than 1½ inches away from holdown anchor bolt hole centerline.
- The holdown shall be raised off the bottom track 3 inches for every ¼ inch that the anchor is offset from the centerline of the holdown bolt hole resulting in an anchor bolt slope less than or equal to 5 degrees. See Detail 1.
- Where the CFS stud punchout interferes with the installation of fasteners required for the holdown, a continuous rectangular patch matching the strength and thickness of the chord studs shall be applied. Install total specified holdown fasteners into patch, half above and half below the holdown. See Detail 2.
- CFS shear wall chord studs may consist of multiple members provided they are connected independently of the holdown and patch fasteners.
- Published deflections at ASD and LRFD loads include fastener slip, holdown deformation and anchor rod elongation for holdowns installed up to 4” above top of concrete. Additional elongation of the anchor rod must be accounted for when raised up to 18”.
- Raising holdowns in CFS framed shear walls with an aspect ratio greater than 2-to-1, and CFS framed shear walls with sheet steel sheathing is outside the scope of this letter and should be evaluated by the Engineer-of-Record.

The information in this letter is valid until 12/31/2021 when it will be re-evaluated by Simpson Strong-Tie. Please visit strontie.com for additional pertinent information. If you have any additional questions or need further assistance regarding this matter, please contact the Simpson Strong-Tie engineering department at 800.999.5099.

Sincerely,

SIMPSON STRONG-TIE COMPANY INC.

Encl.: Detail 1: Holdown Raised off Bottom Track, Detail 2: Installation of Punchout Patch
DETAIL 1: HOLDOWN RAISED OFF CFS BOTTOM TRACK

DETAIL 2: INSTALLATION OF PUNCHOUT PATCH

SECTION A-A