DIVISION: 05 00 00—METALS
SECTION: 05 05 23—METAL FASTENINGS
DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
SECTION: 06 05 23—WOOD, PLASTIC, AND COMPOSITE FASTENINGS

REPORT HOLDER:

SIMPSON STRONG-TIE COMPANY INC.

EVALUATION SUBJECT:

SIMPSON STRONG-TIE® STRONG-DRIVE® PPSD AND CBSDQ SELF-DRILLING TAPPING SCREWS

="2014 Recipient of Prestigious Western States Seismic Policy Council (WSSPC) Award in Excellence”
DIVISION: 05 00 00—METALS
Section: 05 05 23—Metal Fastenings

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 05 23—Wood, Plastic, and Composite Fastenings

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EVALUATION SUBJECT:
SIMPSON STRONG-TIE® STRONG-DRIVE® PPSD AND CBSDQ SELF-DRILLING TAPPING SCREWS

1.0 EVALUATION SCOPE

Compliance with the following codes:

For evaluation with codes adopted by the Los Angeles Department of Building and Safety (LADBS), see ESR-4208 LABC and LARC Supplement.

Property evaluated:
Structural

2.0 USES

The Simpson Strong-Tie® Strong-Drive® PPSD and CBSDQ self-drilling tapping screws are used to attach wood structural panels to cold-formed steel, as prescribed in the code, and as specified in engineered designs.

3.0 DESCRIPTION

3.1 General:

The Simpson Strong-Tie® Strong-Drive® PPSD and CBSDQ self-drilling tapping screws, illustrated in Figure 1, are case hardened after being manufactured from carbon steel conforming to ASTM A510, Grade 1018 to 1024, and complying with the performance requirements of ASTM C1513. Refer to Table 1 for screw designations, dimensions, head styles, point numbers, drilling capacities, minimum required protrusion lengths and coating descriptions.

3.1.1 Strong-Drive® PPSD Screws: The Simpson Strong-Tie® Strong-Drive® PPSD screws are #8-18TPI and #10-16TPI self-drilling tapping screws.

The screws are available with a proprietary Quik Guard® coating or a yellow zinc coating. The model numbers of Quik Guard® coated screws have a “Q” in the designation, while those coated with yellow zinc do not. The PPSD screws are available in collated strips, designated by an “S” in the model number, or in boxes of individual screws (bulk), designated by a “B” in the model number. Model numbers for packages of individual screws also include the number of fasteners (e.g., 5K).

3.1.2 Strong-Drive® CBSDQ Screws: The Simpson Strong-Tie® Strong-Drive® CBSDQ screws are #8-18TPI and #10-16TPI self-drilling tapping screws and are available with a proprietary Quik Guard® coating. The model numbers of Quik Guard® coated screws have “Q” in the designation. The CBSDQ screws are available in collated strips.

3.2 Framing Steel:

Cold-formed framing steel must comply with one of the ASTM specifications noted in Section A3.1 of the AISI North American Specification for Design of Cold-Formed Steel Structural Members (AISI S100) (Section A2.1 of AISI S100 for the 2015, 2012 and 2009 IBC). Base steel thickness must comply with Section B7.1 of AISI S100 (Section A2.4 of AISI S100 for the 2015, 2012 and 2009 IBC), and this report.

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 General: Screw length selection must be based on the thickness of the fastened building materials plus the minimum required protrusion past the back of the supporting cold-formed steel. See Table 1 for the required protrusion lengths.

The screw point style must be selected on the basis of the drilling capacity, which is shown in Table 1. The tabulated drilling capacity refers to the thickness of the supporting cold-formed steel member. The screws can self-drill through wood structural panels up to 23/32 inch (18.3 mm) thick.

When tested for corrosion resistance in accordance with ASTM B117, screws with coatings described in Table 1 met the minimum requirement listed in ASTM F1941, as required by ASTM C1513, with no white corrosion after three hours and no red rust after 12 hours.

4.1.2 Prescriptive Attachment of Sheathing to Steel: The PPSD and CBSDQ screws are recognized for use where minimum #8 screws complying with ASTM C1513 are prescribed in the IRC Sections R505.2.5, R603.2.5 and R804.2.5 for attachment of wood sheathing panels to cold-formed steel.

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4.1.3 Prescriptive Use in Shear Walls and Diaphragms: The PPSD and CBSDQ screws are recognized for use in shear walls and diaphragms consisting of wood structural panels fastened to cold-formed steel framing, where ASTM C1513 screws of the same size are prescribed in the code. Under the 2018 IBC, refer to Sections B5.2.3.3 and B5.4 of AISI S240 and Sections E1 and F2 of AISI S400, which are referenced in 2018 IBC Section 2211. Under the 2015, 2012 and 2009 IBC, refer to Sections C2.2.2 and D2.2 of AISI S213, which is referenced in Section 2211 of the 2015 and 2012 IBC, and in Section 2210 of the 2009 IBC.

4.1.4 Engineered Design: For use in engineered designs, the available fastener strengths are shown in Table 2 and the available pull-out strengths in common thicknesses of cold-formed steel are shown in Table 3. These values are intended to aid the designer in meeting the requirements of IBC Section 1604.2.

Determination of the suitability of a particular screw recognized in this report for the specific application is the responsibility of the registered design professional and is outside the scope of this report.

The registered design professional is responsible for determining the available strengths for the connection, considering all applicable limit states such as pull-over or pull-through, tilting and bearing, etc., and for considering serviceability issues, such as fastener slip.

The registered design professional is responsible for determining the required spacing, edge distance and end distance for the fasteners. For the supporting cold-formed steel base material, screws must be spaced a minimum of 3 times the nominal diameter of the screw and must be located not less than 1.5 times the diameter of the screw from any end or edge of the cold-formed steel base material. For the wood structural panels, the edge and end distances must be a minimum of $\frac{1}{8}$ inch (9.5 mm) and the screws must be spaced a minimum of 2 inches (51 mm) on center.

4.2 Installation:

Installation of the Simpson Strong-Tie® self-drilling tapping screws must be in accordance with the requirements of the code, the manufacturer’s published installation instructions, the approved engineered designs, when applicable, and this report. The manufacturer’s published installation instructions must be available at the jobsite at all times during installation.

The screws must be installed perpendicular to the work surface using a variable speed screw driving tool set to not exceed 2,500 rpm. The screw must protrude past the supporting cold-formed steel as required by Table 1.

5.0 CONDITIONS OF USE

The Simpson Strong-Tie® self-drilling tapping screws described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Screws must be installed in accordance with the manufacturer’s published installation instructions and this report. In the event of a conflict between this report and the manufacturer’s published installation instructions, the more restrictive requirements govern.

5.2 The screws have only been evaluated for fastener strength, compliance with ASTM C1513, quality control, and pull-out strength. Evaluation of other applicable limit states for connections of building materials to the cold-formed steel base material is outside the scope of this report.

5.3 Design of the connection of attached building material to the cold-formed steel base material, taking into account the properties of the attached building material, must comply with the applicable requirements of the IBC, and be justified to the satisfaction of the code official.

5.4 The screws are manufactured under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the Acceptance Criteria for Self-drilling Tapping Screws Used to Attach Miscellaneous Building Materials to Steel Base Material (AC500), dated October 2017 (editorially revised December 2017).

7.0 IDENTIFICATION

7.1 The Simpson Strong-Tie® self-drilling tapping screws are marked with a “≠” on the top surface of the screw heads, as shown in Figure 1. Packages of Simpson Strong-Tie self-drilling tapping screws are labeled with the report holder’s name (Simpson Strong-Tie Company Inc.) and address, the screw type and size, and the evaluation report number (ESR-4208).

7.2 The report holder’s contact information is the following:

SIMPSON STRONG-TIE COMPANY INC.
5956 WEST LAS POSITAS BOULEVARD
PLEASANTON, CALIFORNIA 94588
(800) 999-5099
www.strongtie.com
### TABLE 1—SIMPSON STRONG-TIE® SELF-DRILLING TAPPING SCREWS

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>DESIGNATION (Size - TPI)</th>
<th>NOMINAL SCREW DIAMETER (inch)</th>
<th>NOMINAL SCREW LENGTH (inches)</th>
<th>HEAD STYLE</th>
<th>NOMINAL HEAD DIAMETER¹ (inch)</th>
<th>POINT (number)</th>
<th>DRILLING CAPACITY (inch)</th>
<th>MINIMUM REQUIRED PROTRUSION LENGTH (inch)</th>
<th>COATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPSDQ11516S0818 PPSDQ11516B-4K</td>
<td>#8-18</td>
<td>0.164</td>
<td>1 5/16</td>
<td>F/SQ3</td>
<td>0.323</td>
<td>2</td>
<td>0.100</td>
<td>0.894</td>
<td>Proprietary Quik Guard®</td>
</tr>
<tr>
<td>PPSDQ134S1016 PPSDQ134B1016-4K</td>
<td>#10-16</td>
<td>0.190</td>
<td>1 3/4</td>
<td>F/SQ3</td>
<td>0.333</td>
<td>3</td>
<td>0.175</td>
<td>0.958</td>
<td>Yellow Zinc</td>
</tr>
<tr>
<td>PPSDQ3S1016 PPSDQ3B1016-2K</td>
<td>#10-16</td>
<td>0.190</td>
<td>3</td>
<td>F/SQ3</td>
<td>0.333</td>
<td>3</td>
<td>0.175</td>
<td>1.628</td>
<td></td>
</tr>
<tr>
<td>PPSD11516S0818 PPSD11516B-4K</td>
<td>#8-18</td>
<td>0.164</td>
<td>1 5/16</td>
<td>F/SQ3</td>
<td>0.323</td>
<td>2</td>
<td>0.100</td>
<td>0.894</td>
<td></td>
</tr>
<tr>
<td>PPSD134S1016 PPSD134B1016-4K</td>
<td>#10-16</td>
<td>0.190</td>
<td>1 3/4</td>
<td>F/SQ3</td>
<td>0.333</td>
<td>3</td>
<td>0.175</td>
<td>0.958</td>
<td></td>
</tr>
<tr>
<td>PPSD3S1016 PPSD3B1016-2K</td>
<td>#10-16</td>
<td>0.190</td>
<td>3</td>
<td>F/SQ3</td>
<td>0.333</td>
<td>3</td>
<td>0.175</td>
<td>1.628</td>
<td></td>
</tr>
<tr>
<td>CBSDQ158S -</td>
<td>#8-18</td>
<td>0.164</td>
<td>5/8</td>
<td>F/SQ2</td>
<td>0.330</td>
<td>2</td>
<td>0.100</td>
<td>0.482</td>
<td>Proprietary Quik Guard®</td>
</tr>
<tr>
<td>CBSDQ214S -</td>
<td>#10-16</td>
<td>0.190</td>
<td>1/4</td>
<td>F/SQ2</td>
<td>0.330</td>
<td>2</td>
<td>0.100</td>
<td>0.543</td>
<td></td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm.

¹Head Style: F/SQ2 = Flat head with #2 Square Drive recess, F/SQ3 = Flat head with #3 Square Drive recess. ¹AISI S400
²Meets minimum head diameter requirement for screws used in shear walls and diaphragms constructed in accordance with ¹AISI S240 and/or AISI S400, as applicable (AISI S213 for the 2015, 2012 and 2009 IBC).

### TABLE 2—SIMPSON STRONG-TIE® PPSD AND CBSDQ SCREW STRENGTH¹² (lbf)

<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SCREW DESIGNATION</th>
<th>NOMINAL STRENGTH</th>
<th>ASD STRENGTH</th>
<th>LRFD STRENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Shear: Pₛₐ</td>
<td>Tension: Pₜₐ</td>
<td>Shear: Pₛ/Ω</td>
</tr>
<tr>
<td>PPSDQ11516S0818 PPSDQ11516B-4K</td>
<td>#8-18</td>
<td>1675</td>
<td>2065</td>
<td>560</td>
</tr>
<tr>
<td>PPSDQ134S1016 PPSDQ134B1016-4K</td>
<td>#10-16</td>
<td>2000</td>
<td>2220</td>
<td>665</td>
</tr>
<tr>
<td>PPSDQ3S1016 PPSDQ3B1016-2K</td>
<td>#10-16</td>
<td>2000</td>
<td>2220</td>
<td>665</td>
</tr>
<tr>
<td>PPSD11516S0818 PPSD11516B-4K</td>
<td>#8-18</td>
<td>1675</td>
<td>2065</td>
<td>560</td>
</tr>
<tr>
<td>PPSD134S1016 PPSD134B1016-4K</td>
<td>#10-16</td>
<td>2000</td>
<td>2220</td>
<td>665</td>
</tr>
<tr>
<td>PPSD3S1016 PPSD3B1016-2K</td>
<td>#10-16</td>
<td>2000</td>
<td>2220</td>
<td>665</td>
</tr>
<tr>
<td>CBSDQ158S -</td>
<td>#8-18</td>
<td>1745</td>
<td>2500</td>
<td>580</td>
</tr>
<tr>
<td>CBSDQ214S -</td>
<td>#10-16</td>
<td>2205</td>
<td>3295</td>
<td>735</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N.

¹The tabulated ASD allowable strength and LRFD design strength values are based on a safety factor, Ω = 3.0, and a resistance factor, Φ = 0.5, respectively.
²Pₛₐ and Pₜₐ are nominal shear strength and nominal tension strength for the screw itself, respectively, and are the average (ultimate) values of all tests.
<table>
<thead>
<tr>
<th>MODEL NO.</th>
<th>SCREW SIZE</th>
<th>SCREW DIAMETER (inch)</th>
<th>NOMINAL STRENGTH, ( R_n )</th>
<th>MINIMUM BASE STEEL THICKNESS OF STEEL MEMBERS NOT IN CONTACT WITH THE SCREW HEAD (mil)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>( #8 \times 1\frac{15}{16}^\circ )</td>
<td>0.164</td>
</tr>
<tr>
<td>PPSDQ11516S0818 / PPSDQ11516B-4K</td>
<td>#8 x 1 15/16&quot;</td>
<td>0.164</td>
<td>155</td>
<td>215</td>
</tr>
<tr>
<td>PPSDQ134S1016 / PPSDQ134B1016-4K</td>
<td>#10 x 1\frac{1}{2}^\circ</td>
<td>0.190</td>
<td>225</td>
<td>325</td>
</tr>
<tr>
<td>PPSDQ3S1016 / PPSDQ3B1016-2K</td>
<td>#10 x 3&quot;</td>
<td>0.190</td>
<td>225</td>
<td>325</td>
</tr>
<tr>
<td>PPSD11516S0818 / PPSD11516B-4K</td>
<td>#8 x 1 15/16&quot;</td>
<td>0.164</td>
<td>155</td>
<td>215</td>
</tr>
<tr>
<td>PPSD134S1016 / PPSD134B1016-4K</td>
<td>#10 x 1\frac{1}{2}^\circ</td>
<td>0.190</td>
<td>225</td>
<td>325</td>
</tr>
<tr>
<td>PPSD3S1016 / PPSD3B1016-2K</td>
<td>#10 x 3&quot;</td>
<td>0.190</td>
<td>225</td>
<td>325</td>
</tr>
<tr>
<td>CBSDQ158S</td>
<td>#8 x 1 5/8&quot;</td>
<td>0.164</td>
<td>65</td>
<td>90</td>
</tr>
<tr>
<td>CBSDQ214S</td>
<td>#10 x 2 1/4&quot;</td>
<td>0.190</td>
<td>80</td>
<td>130</td>
</tr>
<tr>
<td>CBSDQ158S</td>
<td>#8 x 1 5/8&quot;</td>
<td>0.164</td>
<td>65</td>
<td>90</td>
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<tr>
<td>CBSDQ214S</td>
<td>#10 x 2 1/4&quot;</td>
<td>0.190</td>
<td>80</td>
<td>130</td>
</tr>
<tr>
<td>CBSDQ158S</td>
<td>#8 x 1 5/8&quot;</td>
<td>0.164</td>
<td>65</td>
<td>90</td>
</tr>
<tr>
<td>CBSDQ214S</td>
<td>#10 x 2 1/4&quot;</td>
<td>0.190</td>
<td>80</td>
<td>130</td>
</tr>
<tr>
<td>CBSDQ158S</td>
<td>#8 x 1 5/8&quot;</td>
<td>0.164</td>
<td>65</td>
<td>90</td>
</tr>
<tr>
<td>CBSDQ214S</td>
<td>#10 x 2 1/4&quot;</td>
<td>0.190</td>
<td>80</td>
<td>130</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N.

1The safety factor, \( \Omega \), and resistance factor, \( \Phi \), used to determine the ASD and LRFD strengths are based on test results, in accordance with \textit{AISI S100}.  
2Values are based on steel members with a minimum yield strength, \( F_y = 33 \text{ ksi} \) and a minimum tensile strength, \( F_u = 45 \text{ ksi} \) for thickness of 27 mil to 43 mil, and a minimum yield strength, \( F_y = 50 \text{ ksi} \) and a minimum tensile strength, \( F_u = 65 \text{ ksi} \) for 54 mil to 97 mil.
FIGURE 1—SIMPSON STRONG-TIE® PPSD AND CBSDQ SELF-DRILLING TAPPING SCREWS
1.0 REPORT PURPOSE AND SCOPE

Purpose:
The purpose of this evaluation report supplement is to indicate that the Simpson Strong-Tie® Strong-Drive® PPSD and CBSDQ self-drilling tapping screws, described in ICC-ES master evaluation report ESR-4208, have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:
- 2017 City of Los Angeles Building Code (LABC)
- 2017 City of Los Angeles Residential Code (LARC)

2.0 CONCLUSIONS

The Simpson Strong-Tie® Strong-Drive® PPSD and CBSDQ self-drilling tapping screws, described in Sections 2.0 through 7.0 of the master evaluation report ESR-4208, comply with the LABC Chapters 22, and the LARC Sections R505, R603, R804, and are subjected to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The Simpson Strong-Tie® Strong-Drive® PPSD and CBSDQ self-drilling tapping screws, described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the master evaluation report ESR-4208.
- The design, installation, conditions of use and identification are in accordance with the 2015 International Building Code® (IBC) provisions noted in the master evaluation report ESR-4208.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17, as applicable.
- Under the LARC, an engineering design in accordance with LARC Section R301.1.3 must be submitted.

This supplement expires concurrently with the master report ESR-4208, reissued May 2019.