DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 17 53—Shop-Fabricated Wood Trusses

REPORT HOLDER:
SIMPSON STRONG-TIE COMPANY INC.

EVALUATION SUBJECT:
SIMPSON STRONG-TIE® METAL CONNECTOR PLATES FOR WOOD TRUSSES

1.0 EVALUATION SCOPE
Compliance with the following codes:

For evaluation for compliance with codes adopted by the Los Angeles Department of Building and Safety (LADBS), see ESR-2762 LABC and LARC Supplement.

Property evaluated:
Structural

2.0 USES
Simpson Strong-Tie® metal connector plates are used as joint connectors for metal-plate-connected wood roof and floor trusses.

3.0 DESCRIPTION
3.1 AS 20:
Simpson Strong-Tie AS 20 metal connector plates are staggered-tooth metal plates manufactured from minimum No. 20 gage [0.0356 inch (0.904 mm) total thickness] steel complying with ASTM A653, SS Grade 40 with a minimum G60 galvanization coating [0.0005 inch on each side (0.013 mm)] and having a base-metal thickness of 0.0346 inch (0.879 mm). Each plate has eight teeth per square inch, and each tooth is 0.375 inch (9.5 mm) long. The teeth are punched in pairs and formed at right angles to the face of the parent metal so that two teeth per hole occur along the length. The spacing along the longitudinal direction of each punched slot is 1 inch on center (25.4 mm), and the pairs are spaced 0.25 inch on center (6.35 mm) along the width of the plate. Alternating rows of teeth are staggered 0.125 inch (3.18 mm) from adjacent rows. See Figure 1.

3.2 AS 18:
Simpson Strong-Tie AS 18 metal connector plates are staggered-tooth metal plates manufactured from minimum No. 18 gage [0.0466 inch (1.184 mm) total thickness] steel complying with ASTM A653, HSLAS Grade 60 with a minimum G60 galvanization coating [0.0005 inch on each side (0.013 mm)] and having a base-metal thickness of 0.0456 inch (1.158 mm). Each plate has eight teeth per square inch, and each tooth is 0.375 inch (9.5 mm) long. The teeth are punched in pairs and formed at right angles to the face of the parent metal so that two teeth per hole occur along the length. The spacing along the longitudinal direction of each punched slot is 1 inch on center (25.4 mm), and the pairs are spaced 0.25 inch on center (6.35 mm) along the width of the plate. Alternating rows of teeth are staggered 0.125 inch (3.18 mm) from adjacent rows. See Figure 1.

3.3 AS 18S:
Simpson Strong-Tie AS 18S metal connector plates are staggered-tooth metal plates manufactured from minimum No. 18 gage [0.0466 inch (1.184 mm) total thickness] steel complying with ASTM A653 HSLAS Grade 60 with a minimum G90 galvanized coating [0.00076 inch (0.019 mm) on each side] and having a base-metal thickness of 0.0456 inch (1.158 mm). Each tooth is 0.375 inch (9.5 mm) long. The teeth are punched in pairs and formed at right angles to the face of the parent metal so that two teeth per hole occur along the length. The spacing along the longitudinal direction of each punched slot is 1 inch on center (25.4 mm).

3.3.1 AS 18S6:
Each plate has six teeth per square inch. The punched slots are spaced a minimum of 0.25 inch apart and are grouped in sets of three and four as shown in Figure 3.

3.3.2 AS 18S5:
Each plate has five teeth per square inch. The punched slots are spaced a minimum of 0.25 inch apart and are grouped in sets of two and three as shown in Figure 4.

4.0 DESIGN AND INSTALLATION
4.1 General:
The design, manufacture and installation of wood trusses employing the metal connector plates must comply with IBC Section 2303.4 and IRC Section R502.11 or R802.10, as applicable. All truss plates are pressed into the wood for the full depth of their teeth by hydraulic-platen embedment presses, multiple roller presses that use partial embedment followed by full-
embedment rollers, or combinations of partial embedment roller presses and hydraulic-platen embedment presses that feed trusses into a stationary finish roller press. Trusses must be assembled within the tolerances provided by the Truss Plate Institute (TPI) Quality Criteria for the Manufacture of Metal Plate Connected Wood Trusses, shown as Chapter 3 in ANSI/TPI 1, National Design Standard for Metal Plate Connected Wood Truss Construction.

4.2 Design Values:
Allowable design values for Simpson Strong-Tie metal connector plates to be used in the design of metal-plate-connected wood roof and floor trusses are shown in Tables 1 and 2 of this report. Allowable design values are applicable when the connection is made with identical plates on opposite sides of the joint.

5.0 CONDITIONS OF USE
The Simpson Strong-Tie metal connector plates for wood trusses 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 This evaluation report and the manufacturer’s published installation instructions, when required by the code official, must be submitted at the time of permit application. In the event of a conflict between the manufacturer’s published installation instructions and this report, this report governs.

5.2 Each application for a building permit, where these metal connector plates are to be used, must be accompanied by calculations, details and other documentation showing that the design, manufacture and proposed installation conforms with the requirements of the applicable code.

5.3 This report establishes plate design values only. For items not covered by this report, such as truss design, fabrication, quality assurance and inspection, refer to ANSI/TPI 1, engineering drawings and the applicable code.

5.4 The applied design values used in the design of trusses using Simpson Strong-Tie metal connector plates, must not exceed the allowable lateral resistance, tension and shear values listed in Tables 1 and 2 of this report. Load combination reductions must be in accordance with the applicable code.

5.5 All lumber used in the fabrication of trusses using Simpson Strong-Tie metal connector plates must be graded in compliance with the applicable building code, and must have a moisture content not exceeding 19 percent at the time of assembly. Wet service factors from ANSI/TPI 1 Section 6.4.6 must be applied to the table values when the lumber moisture content exceeds 19 percent. Allowable values shown in the tables of this report are not applicable to metal connector plates embedded in either fire-retardant-treated lumber or preservative-treated lumber.

5.6 Metal connector plates must be installed in pairs, on opposite faces of truss members.

5.7 Galvanized G60 metal connector plates subject to corrosive environments must be protected in accordance with ANSI/TPI 1 Section 6.5.

6.0 EVIDENCE SUBMITTED

6.2 Quality documentation in accordance with the ICC-ES Acceptance Criteria for Quality Documentation (AC10).

7.0 IDENTIFICATION
7.1 Each Simpson Strong-Tie metal truss connector plate is identified by the product stamp embossed into the surface of the plate as shown in the table below. Additionally, boxes containing the Simpson Strong-Tie metal connector plates are identified with the name of the manufacturer (Simpson Strong-Tie), the product name as shown in the table below and the evaluation report number (ESR-2762).

<table>
<thead>
<tr>
<th>Model</th>
<th>Product Name¹</th>
<th>Product Stamp²</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS 20</td>
<td>AS(size)</td>
<td>AS≠20</td>
</tr>
<tr>
<td>AS 20</td>
<td>AS90(size)</td>
<td>AS#20G</td>
</tr>
<tr>
<td>AS 18</td>
<td>AS18(size)</td>
<td>AS≠18HS</td>
</tr>
<tr>
<td>AS 18</td>
<td>AS9018(size)</td>
<td>AS#18HSG</td>
</tr>
<tr>
<td>AS 18</td>
<td>AS902018(size)</td>
<td>AS#18HSG</td>
</tr>
<tr>
<td>AS 18</td>
<td>AS2018(size)</td>
<td>AS#18HS</td>
</tr>
<tr>
<td>AS 18</td>
<td>AS9018(size)S5</td>
<td>AS#18S</td>
</tr>
<tr>
<td>AS 18</td>
<td>AS902018(size)S5</td>
<td>AS#18S</td>
</tr>
<tr>
<td>AS 18S6</td>
<td>AS9018(size)S6</td>
<td>AS#18S</td>
</tr>
<tr>
<td>AS 18S6</td>
<td>AS902018(size)S6</td>
<td>AS#18S</td>
</tr>
</tbody>
</table>

Note 1: Some models include a suffix to indicate a packaging type.
Note 2: “G” and “HS” notation designates a G90 coating and high strength steel, respectively.

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—ALLOWABLE LATERAL RESISTANCE DESIGN VALUES\(^1,2,3\) (lb/in.\(^2/\)PLATE)

<table>
<thead>
<tr>
<th>CONNECTOR PLATE DESIGNATION</th>
<th>LUMBER SPECIES</th>
<th>SG(^4)</th>
<th>AA</th>
<th>EA</th>
<th>AE</th>
<th>EE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS 20 AS 18</td>
<td>Douglas Fir–Larch</td>
<td>0.50</td>
<td>248</td>
<td>194</td>
<td>168</td>
<td>167</td>
</tr>
<tr>
<td></td>
<td>Douglas Fir–Larch North</td>
<td>0.49</td>
<td>247</td>
<td>190</td>
<td>164</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>Hem–Fir</td>
<td>0.43</td>
<td>217</td>
<td>167</td>
<td>144</td>
<td>144</td>
</tr>
<tr>
<td></td>
<td>Spruce–Pine–Fir</td>
<td>0.42</td>
<td>211</td>
<td>170</td>
<td>154</td>
<td>136</td>
</tr>
<tr>
<td>AS 18S6</td>
<td>Southern Yellow Pine</td>
<td>0.55</td>
<td>246</td>
<td>195</td>
<td>186</td>
<td>185</td>
</tr>
<tr>
<td></td>
<td>Douglas Fir–Larch</td>
<td>0.50</td>
<td>158</td>
<td>145</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Douglas Fir–Larch North</td>
<td>0.49</td>
<td>158</td>
<td>145</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hem–Fir</td>
<td>0.43</td>
<td>148</td>
<td>135</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spruce–Pine–Fir</td>
<td>0.42</td>
<td>145</td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS 18S5</td>
<td>Southern Yellow Pine</td>
<td>0.55</td>
<td>158</td>
<td>145</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Notes

1. Tooth holding units = psi for a single plate (double for plates on both faces when applying to area on only one face). To achieve values, plates of equal size must be installed on opposite sides of the joint with the teeth oriented in the same direction.
2. AA = Plate parallel to load, wood grain parallel to load.
3. EA = Plate perpendicular to load, wood grain parallel to load.
4. AE = Plate parallel to load, wood grain perpendicular to load.
5. EE = Plate perpendicular to load, wood grain perpendicular to load.
6. All truss plates are pressed into the wood for the full depth of their teeth by hydraulic-platen embedment presses, multiple roller presses that use partial embedment followed by full-embedment rollers, or combinations of partial embedment roller presses and hydraulic-platen presses that feed trusses into a stationary finish roller press.
7. Specific gravity.

### TABLE 2—ALLOWABLE TENSION AND SHEAR DESIGN VALUES\(^1\)

<table>
<thead>
<tr>
<th>PROPERTY FORCE DIRECTION</th>
<th>AS 20</th>
<th>AS 18</th>
<th>AS 18S6</th>
<th>AS 18S5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>Efficiency</td>
<td>Efficiency</td>
<td>Efficiency</td>
<td>Efficiency</td>
</tr>
<tr>
<td>Pounds/ inch/Pair of Connector Plates</td>
<td>Pounds/ inch/Pair of Connector Plates</td>
<td>Pounds/ inch/Pair of Connector Plates</td>
<td>Pounds/ inch/Pair of Connector Plates</td>
<td></td>
</tr>
<tr>
<td>Tension @ 0(^\circ)</td>
<td>0.51</td>
<td>901</td>
<td>0.50</td>
<td>1728</td>
</tr>
<tr>
<td>Tension @ 90(^\circ)</td>
<td>0.51</td>
<td>901</td>
<td>0.50</td>
<td>1728</td>
</tr>
<tr>
<td>Shear at 0(^\circ)</td>
<td>0.57</td>
<td>671</td>
<td>0.58</td>
<td>1336</td>
</tr>
<tr>
<td>Shear at 30(^\circ)</td>
<td>0.72</td>
<td>848</td>
<td>0.66</td>
<td>1521</td>
</tr>
<tr>
<td>Shear at 60(^\circ)</td>
<td>0.82</td>
<td>966</td>
<td>0.75</td>
<td>1728</td>
</tr>
<tr>
<td>Shear at 90(^\circ)</td>
<td>0.46</td>
<td>542</td>
<td>0.50</td>
<td>1152</td>
</tr>
<tr>
<td>Shear at 120(^\circ)</td>
<td>0.50</td>
<td>589</td>
<td>0.46</td>
<td>1060</td>
</tr>
<tr>
<td>Shear at 150(^\circ)</td>
<td>0.57</td>
<td>671</td>
<td>0.52</td>
<td>1198</td>
</tr>
</tbody>
</table>

#### Notes

1. Minimum coated thickness for 20 gage is 0.0356 inch (0.904 mm) and for 18 gage is 0.0466 inch (1.184 mm). Minimum coating thickness for G60 is 0.0010 inch (0.025 mm), total, for both sides in accordance with Section 6.3.4.1.3 of ANSI/TPI 1 2007 and 2014.
1.0 REPORT PURPOSE AND SCOPE

Purpose:
The purpose of this evaluation report supplement is to indicate that Simpson Strong-Tie® Metal Connector Plates for Wood Trusses, described in ICC-ES evaluation report ESR-2762, 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:
- 2020 City of Los Angeles Building Code (LABC)
- 2020 City of Los Angeles Residential Code (LARC)

2.0 CONCLUSIONS

The Simpson Strong-Tie® Metal Connector Plates for Wood Trusses, described in Sections 2.0 through 7.0 of the evaluation report ESR-2762, comply with LABC Chapter 23, and LARC, and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The Simpson Strong-Tie® Metal Connector Plates for Wood Trusses described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report ESR-2762.
- The design, installation, conditions of use and identification are in accordance with the 2018 International Building Code® (2018 IBC) provisions noted in the evaluation report ESR-2762.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17, and LARC Section R802, as applicable.
- The design, manufacture, and installation of trusses employing the truss metal connector plates must comply with applicable LABC and ANSI/TPI 1 provisions, such as TPI 1 Chapter 8 provisions for heel joints and provisions for loads applied at an angle with respect to lumber grain.
- Metal connector plate teeth within ½-inch of the ends of truss wood members must be considered ineffective to carry any load.
- Under the LARC, an engineered design in accordance with the LARC Section R301.1.3 must be submitted.

This supplement expires concurrently with the evaluation report, reissued January 2020, and revised July 2020.
1.0 REPORT PURPOSE AND SCOPE

Purpose:
The purpose of this evaluation report supplement is to indicate that Simpson Strong-Tie® Metal Connector Plates For Wood Trusses, described in ICC-ES evaluation report ESR-2762, have also been evaluated for compliance with the codes noted below.

Applicable code editions:
- 2020 and 2017 Florida Building Code—Building
- 2020 and 2017 Florida Building Code—Residential

2.0 CONCLUSIONS

The Simpson Strong-Tie® Metal Connector Plates For Wood Trusses, described in Sections 2.0 through 7.0 of ICC-ES evaluation report ESR-2762, comply with the Florida Building Code—Building and the Florida Building Code—Residential, provided the design is in accordance with the Florida Building Code—Building or the Florida Building Code—Residential, as applicable. The installation requirements noted in ICC-ES evaluation report ESR-2762 for the 2018 and 2015 International Building Code® meet the requirements of the Florida Building Code—Building or Florida Building Code—Residential, as applicable.

Use of the Simpson Strong-Tie® Metal Connector Plates For Wood Trusses has also been found to be in compliance with the High-Velocity Hurricane Zone provisions of the Florida Building Code—Building and the Florida Building Code—Residential with the following condition:

a) For connections subject to uplift, the connection must be designed for no less than 700 pounds (3114 N).

For products falling under Florida Rule 61G20-3, verification that the report holder’s quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the evaluation report, reissued January 2020, and revised July 2020.