SAF-T ANGLE BRACE AND SAF-T-TEE BRACE WALL BRACING AND SAF-T-STRAPS

SAF-T CORPORATION

1.0 SUBJECT
Saf-T Angle Brace and Saf-T-Tee Brace Wall Bracing and Saf-T-Straps

2.0 DESCRIPTION

2.1 Saf-T Angle Brace:

2.1.1 General: Saf-T angle brace is used to brace wood-frame wall construction with a single brace, and is considered equivalent to one wood let-in brace as described in Item 1 of Section 2320.11.3 of the 1997 Uniform Building Code™ (UBC). The braces can resist both tension and compression loads.

2.1.2 Materials: The braces are manufactured from steel conforming to ASTM A653-96 SS specifications, and having a minimum yield strength of 40,000 psi (276 MPa) and a minimum ultimate strength of 55,000 psi (379 MPa). The cross section is a 90-degree angle, having minimum 0.0239 inch (No. 24 gage) (0.61 mm) thickness of 0.0359 inch (No. 20 gage) (0.91 mm). The brace is considered equivalent to the brace stud wall construction to resist tension and compression loads.

2.1.3 Installation: See Figure 1 for additional details.

2.2 Saf-T-Tee Brace:

2.2.1 General: The Saf-T-Tee brace is intended for use in stud wall construction to resist tension and compression loads. The brace is considered equivalent to the brace described in Item 1 of Section 2320.11.3 of the UBC.

2.2.2 Materials: The Saf-T-Tee brace is manufactured from steel conforming to ASTM A653-96 CS Type A specifications, and having a minimum yield strength of 33,000 psi (220 MPa) and a minimum ultimate strength of 45,000 psi (310 MPa). The Saf-T-Tee brace is made of galvanized steel having a minimum base-metal thickness of 0.0239 inch (No. 24 gage) (0.61 mm), cold-rolled into the shape of a “T”. The web is of double thickness and the edges of the top flange are rolled under 1/8 inch (3.2 mm). The top flange width is a minimum of 1 inch (25.4 mm), and the web depth is 1 1/16 inch (17.5 mm). The brace is manufactured in lengths of 8 to 22 feet (2438 to 6706 mm).

2.2.3 Installation: The Saf-T-Tee brace can be installed on walls with studs spaced not more than 24 inches (610 mm) on center. The angle of the brace must not exceed 60 degrees when measured from the horizontal. After the angle of the diagonal bracing has been established, a straight edge is used to delineate a straight line across the wall studs and plates. A 1-inch-deep (25.4 mm) saw cut is made along the line. The web of the Saf-T-Tee brace is inserted into the saw kerf. The brace is nailed to the top and bottom plates using two 8d common nails, and at each intermediate stud using one 8d common nail. The nails are to be driven through the web of the Saf-T-Tee brace at the studs, and through the web and flange at the plates. The nails must have a minimum bending yield strength of 100 ksi (689 MPa). See Figure 3 for additional installation information.

2.3 Saf-T-Strap:

2.3.1 General: Saf-T-Straps are for use as tension tie straps. They are flat galvanized steel straps coiled into dispenser packs. Straps are field-cut to the required length.

2.3.2 Materials: Saf-T-Straps are manufactured from steel conforming to ASTM A653-96 SS Grade 40 specifications. Saf-T-Strap ST100 straps are manufactured in 100-foot (30 480 mm) lengths from 1 1/4-inch-wide (31.7 mm), No. 18 gage steel having a minimum base-metal thickness of 0.0451 inch (1.15 mm). See Figure 4 for hole size and location.
Saf-T-Strap ST150 is a 1 1/4-inch-wide (31.7 mm), No. 16 gage [0.0598-inch (1.52 mm) base-metal thickness], flat, galvanized steel strap manufactured in 150-foot (45 720 mm) lengths. See Figure 5 for hole size and location.

Saf-T-Strap ST200 is a 2 1/16-inch-wide (52.4 mm), No. 18 gage [0.0478-inch (1.21 mm) base-metal thickness], flat, galvanized steel strap manufactured in 50-foot (15 240 mm) lengths. See Figure 6 for hole size and location.

2.3.3 Installation: Saf-T-Straps are used as tension tie straps in wood-frame construction, and have allowable loads noted in Table 1. The straps are attached to nominal 2-inch-thick lumber having sufficient depth to provide the minimum nail penetration specified in the code.

2.4 Identification:

2.4.1 The product name and the evaluation report number (ER-4461) are stamped on each Saf-T angle and Saf-T-Tee Brace. The Saf-T-Straps are identified by a stamp indicating “Saf-T-Strap ST100,” “Saf-T-Strap ST150” or “Saf-T-Strap ST200.”

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

SAF-T CORPORATION
302 WASHINGTON STREET, SUITE 847
SAN DIEGO, CALIFORNIA 92103

3.0 EVIDENCE SUBMITTED

Calculations and reports of racking shear tests.

4.0 FINDINGS

That the wall bracing and straps described in this report comply with the 1997 Uniform Building Code™, provided they are identified and installed in accordance with this report.

This report is subject to re-examination in one year.

<table>
<thead>
<tr>
<th>STRAP TYPE</th>
<th>NAIL SIZE2</th>
<th>NAIL TO WOOD END DISTANCE (inch)</th>
<th>TOTAL NUMBER OF NAILS PER STRAP</th>
<th>ALLOWABLE TENSION LOAD3 (pounds)</th>
<th>ALLOWABLE WIND OR SEISMIC TENSION LOAD4 (pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST100</td>
<td>10d</td>
<td>13/16</td>
<td>20</td>
<td>1,080</td>
<td>1,440</td>
</tr>
<tr>
<td>ST150</td>
<td>8d</td>
<td>3/4</td>
<td>34</td>
<td>1,567</td>
<td>2,084</td>
</tr>
<tr>
<td>ST200</td>
<td>10d</td>
<td>13/16</td>
<td>40</td>
<td>2,147</td>
<td>2,855</td>
</tr>
<tr>
<td>ST200</td>
<td>10d</td>
<td>7/8</td>
<td>32</td>
<td>2,147</td>
<td>2,855</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 ksi = 6.89 MPa.

1. Tabulated loads are based on the assumption that one half of the specified number of nails are installed in each of the two members connected.

2. Nails are common nails. The 10d and 16d must have a minimum bending yield strength of 90 ksi; the 8d nails must have a minimum 100 ksi bending yield strength.

3. Values are for nails installed with steel side plates into Douglas fir-larch solid-sawn lumber having a specific gravity of 0.50, or southern pine solid-sawn lumber having a specific gravity of 0.55. For other species, values must be adjusted in accordance with UBC Chapter 23. Adjustments noted in the code for moisture, temperature and wood treatment must be considered when applicable.

4. Values have been increased 33 1/3 percent for duration of load due to wind or seismic forces in accordance with Section 2316 of the UBC. No other increases are permit...