

Filing Category: FASTENERS—Wood Hangers and Framing Anchors
ATS TIEDOWN SYSTEM COMPONENTS

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1.0 SUBJECT

ATS Tiedown System Components.

2.0 DESCRIPTION
2.1 General:

ATS Tiedown System Components 2A, 2AD, 2B, 2C, 2D, and TUD are used as components in single- or multi-story wood-framed shear walls as the primary hold-down system to resist overturning forces. The components are fabricated steel brackets that connect an approved steel rod to approved anchorage to the foundation and to the top plate of the shear wall.

2.2 Materials:

2.2.1 Steel Brackets: The 2A and 2AD components consist of a steel tube, fabricated from ASTM A 500, Grade B, tube steel; and a plate washer and base plate, fabricated from ASTM A 36 steel. The components are welded together in accordance with the approved quality control manual. Refer to Table 2 for dimensions of the components, and Figure 3 for bracket illustrations.

The 2B, 2C, and 2D components consist of a steel tube, fabricated from ASTM A 500, Grade B, tube steel; and a plate washer, base plate, and side plates, fabricated from ASTM A 36 steel. The components are welded together in accordance with the approved quality control manual. Refer to Table 2 for dimensions of the components, and Figure 1 for component illustrations.

2.2.2 Steel Rod: Steel rods are $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, or $1\frac{1}{8}$ inches (9.5, 12.7, 15.9, 19.1, 22, 25.4, or 28.6 mm) in diameter. The rods shall conform to applicable specifications described in the 1997 *Uniform Building Code*[™] (UBC). The tensile and yield strength and material specifications must be specified by the engineer of record and must be specified on the plans approved by the building official.

2.2.3 Steel Plates: ASTM A 36 steel is used to fabricate the washer plates having the dimensions shown in Table 1.

2.2.4 Take-up Device: The TUD take-up device consists of a 2-inch-outside-diameter-by-2-inch-long (51 mm by 51 mm) sleeve with internal threads, a $1\frac{3}{4}$ -inch-outside-diameter-by- $2\frac{1}{4}$ -inch-long (44.5 mm by 57 mm) sleeve with external threads and a No. 32 gage [0.09 inch (2.3 mm)] torsion spring. The take-up device is manufactured from ASTM A 513 steel. The purpose of the device is to keep the ATS Tiedown System in a tight position by compensating for shrinkage, settlement

and compression loading. The maximum diameter of the all-threaded steel rod used with the take-up device is $1\frac{1}{8}$ inches (35 mm). The maximum range of movement is 1 inch (25.4 mm). Refer to Figure 4 for details of the TUD device.

2.3 Design:

Calculations must be submitted to the building official for review and approval of each tiedown system installation. Calculations must consider the capacity of components listed in this report, capacity of rod and threaded nuts, anchorage into the concrete foundation, and the interaction of the system with wood components of the building. The analysis must show that shrinkage of the wood framing will not have an adverse effect on the capacity of the tiedown system.

2.4 Installation:

The tiedown system is installed in accordance with the building plans approved by the building official. See Figure 2 for typical installation details.

2.5 Identification:

Components bear a label with the name of the evaluation report holder (Simpson Strong-Tie Company, Inc.); the fabricator name (Simpson Strong-Tie Company, Inc., or Bevier Manufacturing Job & Production Shop); the component model number; the ICBO ES evaluation report number (ICBO ES ER-5090); and the name of the quality control agency (Testing Engineers, Inc., or Professional Service Industries, Inc.).

3.0 EVIDENCE SUBMITTED

Reports of load tests, and quality control manuals.

4.0 FINDINGS

That the ATS Tiedown System Components 2A, 2AD, 2B, 2C, 2D, and TUD described in this report comply with the 1997 *Uniform Building Code*[™], subject to the following conditions:

4.1 The design of the tiedown system is submitted to and approved by the building official.

4.2 Installation complies with this report and the building plans approved by the building official.

4.3 The components are fabricated by Simpson Strong-Tie Corporation, Inc., at their facilities located in Brea and San Leandro, California; with quality control inspections by Professional Service Industries (AA-660). Additionally, the components are fabricated by Bevier Manufacturing Job & Production Shop, at their facility located in Concord, California; with quality control inspections by Testing Engineers, Inc. (AA-532).

This report is subject to re-examination in two years.

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TABLE 1—PLATE WASHER DIMENSIONS

| TYPE | SIZE T x W x L (inches) | HOLE DIAMETER (inches) | ROD DIAMETER (inches) |
|------|--|------------------------|-----------------------|
| PW4 | $\frac{5}{8} \times 2 \times 2\frac{3}{8}$ | $\frac{9}{16}$ | $\frac{1}{2}$ |
| PW5 | $\frac{5}{8} \times 2 \times 2\frac{3}{8}$ | $\frac{11}{16}$ | $\frac{5}{8}$ |
| PW6 | $\frac{5}{8} \times 2 \times 2\frac{3}{8}$ | $\frac{13}{16}$ | $\frac{3}{4}$ |
| PW7 | $\frac{5}{8} \times 2 \times 2\frac{3}{8}$ | $\frac{15}{16}$ | $\frac{7}{8}$ |
| PW8 | $\frac{5}{8} \times 2 \times 2\frac{3}{8}$ | $1\frac{1}{16}$ | 1 |
| PW9 | $\frac{5}{8} \times 2 \times 2\frac{3}{8}$ | $1\frac{3}{16}$ | $1\frac{1}{8}$ |
| DW6 | $\frac{3}{4} \times 2\frac{7}{8} \times 3$ | $\frac{13}{16}$ | $\frac{3}{4}$ |
| DW7 | $\frac{3}{4} \times 2\frac{7}{8} \times 3$ | $\frac{15}{16}$ | $\frac{7}{8}$ |
| DW8 | $\frac{3}{4} \times 2\frac{7}{8} \times 3$ | $1\frac{1}{16}$ | 1 |
| DW9 | $\frac{3}{4} \times 2\frac{7}{8} \times 3$ | $1\frac{3}{16}$ | $1\frac{1}{8}$ |

For SI: 1 inch = 25.4 mm.

TABLE 2—TDS SERIES 2 COMPONENT SPECIFICATIONS

| TYPE | COMPONENT | DIMENSIONS (inches) | | | | HOLE DIAMETER | FILLET WELD (inch) | CAPACITY (pounds) | |
|------|----------------|---------------------|-----------------|----------------|------------------|------------------|--------------------|-------------------|---------|
| | | L | W | T | H | | | Tension | Bearing |
| 2A | Steel tube | 2 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | $\frac{3}{16}$ | 1 $\frac{1}{2}$ | — | — | — | — |
| | Plate washer | 2 $\frac{3}{8}$ | 2 | (1) | — | (1) | — | — | — |
| | Base | 3 $\frac{1}{4}$ | 3 | $\frac{1}{4}$ | — | $\frac{13}{16}$ | — | — | 6100 |
| 2AD | Steel tube | 3 | 2 | $\frac{1}{4}$ | 3 | — | — | — | — |
| | Plate washer | 3 | 2 $\frac{7}{8}$ | (1) | — | (1) | — | — | — |
| | Base | 5 | 3 | $\frac{3}{8}$ | — | 1 $\frac{5}{16}$ | — | — | 9170 |
| 2B | Steel tube | 2 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | $\frac{3}{16}$ | 1 $\frac{1}{2}$ | — | $\frac{3}{16}$ | — | — |
| | Plate washer | 2 $\frac{3}{8}$ | 2 | (1) | — | (1) | — | — | — |
| | Base | 3 $\frac{3}{4}$ | 3 | $\frac{1}{4}$ | — | 1 $\frac{1}{16}$ | — | — | 7050 |
| | Side plates | — | 2 | $\frac{3}{16}$ | 11 $\frac{3}{4}$ | — | — | 19,400 | — |
| 2C | Steel tube | 2 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | $\frac{3}{16}$ | 2 | — | $\frac{3}{16}$ | — | — |
| | Plate washer | 2 $\frac{3}{8}$ | 2 | (1) | — | (1) | — | — | — |
| | Base | 4 $\frac{1}{2}$ | 3 | $\frac{1}{4}$ | — | 1 $\frac{1}{16}$ | — | — | 8460 |
| | Side plates | — | 2 | $\frac{1}{4}$ | 11 $\frac{3}{4}$ | — | — | 25,210 | — |
| 2D | Steel tube | 3 | 2 | $\frac{1}{4}$ | 3 | — | $\frac{1}{4}$ | — | — |
| | Plate washer | 3 | 2 $\frac{7}{8}$ | (1) | — | (1) | — | — | — |
| | Base | 5 | 3 | $\frac{3}{8}$ | — | 1 $\frac{3}{16}$ | — | — | 9170 |
| | Side plates | — | 3 | $\frac{1}{4}$ | 14 $\frac{5}{8}$ | — | — | 41,200 | — |
| TUD | Take-up device | — | — | — | — | — | — | — | 41,330 |

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

¹See plate washer schedule.

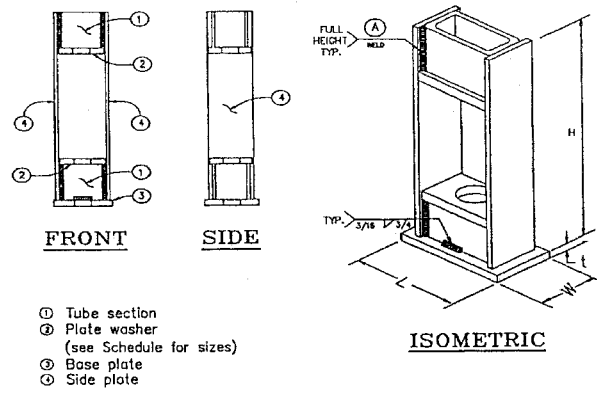


FIGURE 1—COMPONENTS

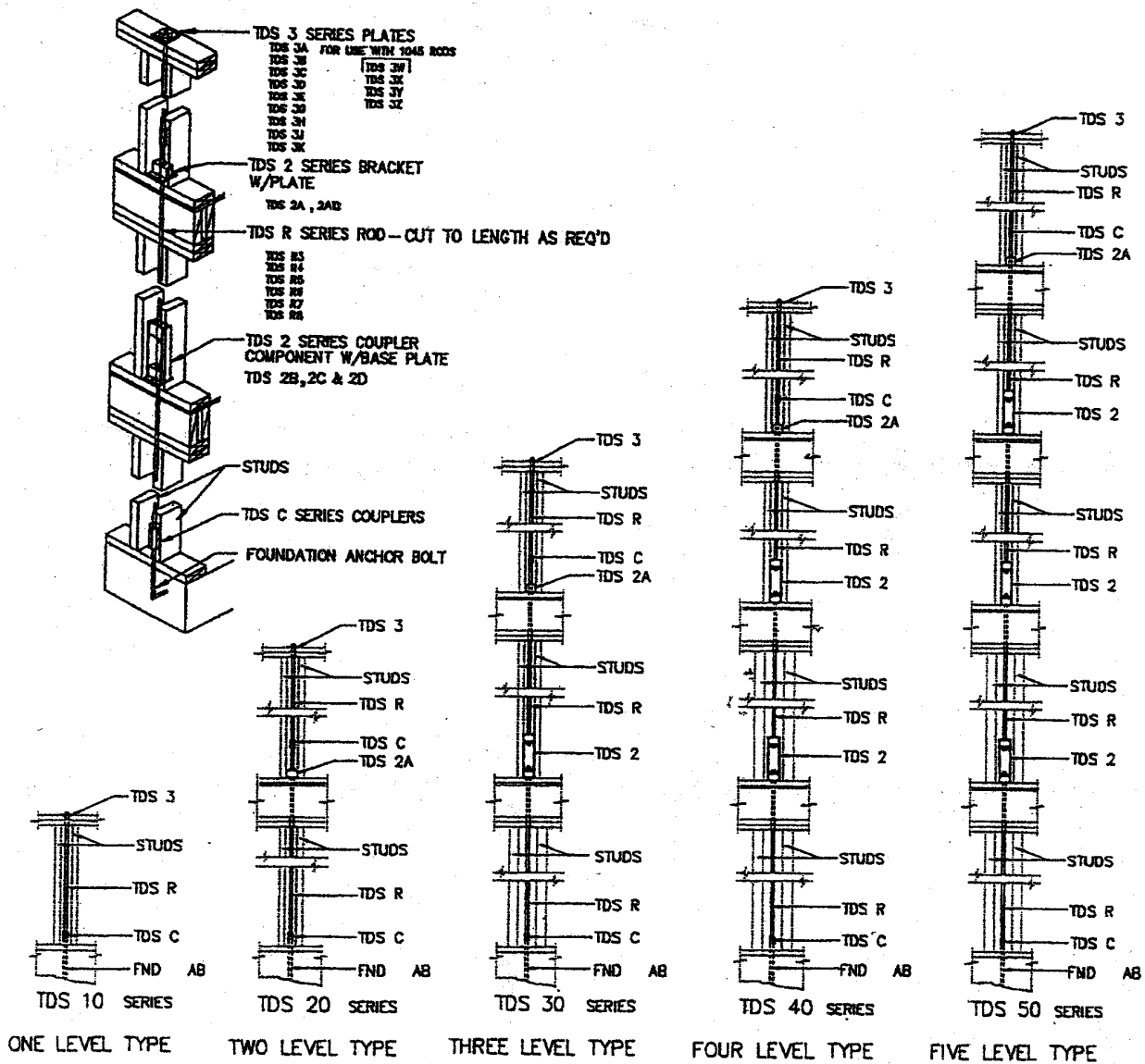


FIGURE 2—TYPICAL INSTALLATION DETAILS

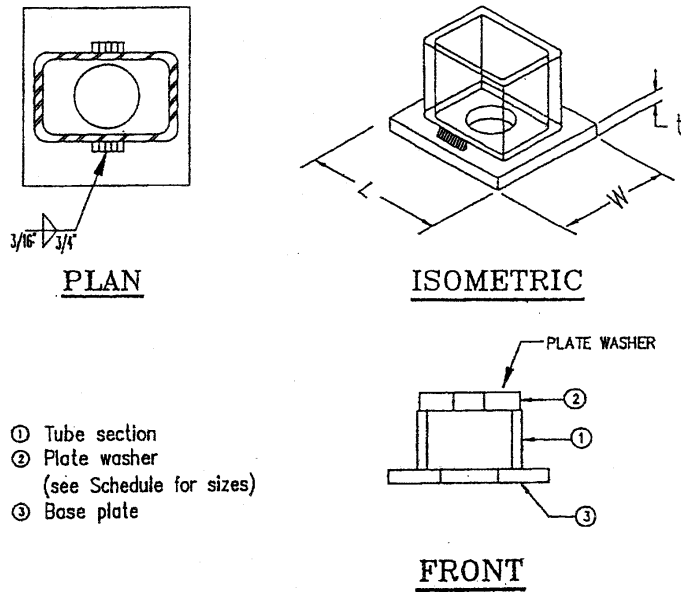


FIGURE 3—TDS 2A AND 2AD BRACKET

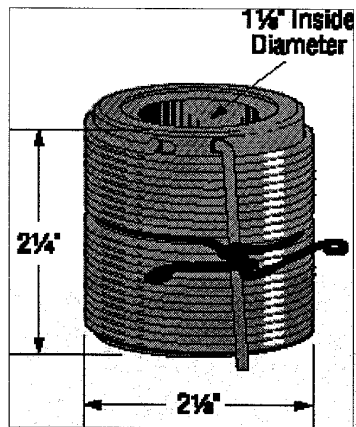


FIGURE 4—TUD TAKE-UP DEVICE