

ICC-ES Evaluation Report

ESR-1822

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

REPORT HOLDER:

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EVALUATION SUBJECT:

TOBIN STEEL STRUCTURAL WOOD HANGERS AND CONNECTORS

1.0 EVALUATION SCOPE
Compliance with the following codes:

- 2006 *International Building Code*® (IBC)
- 2006 *International Residential Code*® (IRC)

Property evaluated

Structural

2.0 USES

The structural wood hangers and connectors described in this report are used for connecting wood framing members in accordance with Section 2304.9.3 of the IBC. They may also be used in structures regulated under the IRC when an engineered design is submitted in accordance with IRC Section R301.1.3.

3.0 DESCRIPTION
3.1 THGLB, TGLBT, and TGLB Series Glulam Beam Bearing Seat Connectors:

THGLB, TGLBT, and TGLB series glued-laminated beam bearing seat connectors are used to provide a steel bearing surface for glued-laminated wood beams supported by structural concrete or concrete masonry. Each bearing seat connector has two $\frac{1}{4}$ -inch-thick (6.4 mm) vertical steel plates, spaced for glued-laminated beams having standard net finished widths, factory-welded to the top of steel bearing plates. The vertical steel plates are $4\frac{1}{2}$ inches (114 mm) wide with two bolt holes for the THGLB and TGLBT connectors, and 3 inches (76 mm) wide with one bolt hole for the TGLB connectors. The bolt holes in the vertical steel plates are punched $\frac{13}{16}$ inch (21 mm) in diameter for installing $\frac{3}{4}$ -inch-diameter (19 mm) bolts through the wood member. The bearing

plates of the THGLB and TGLB connectors are flat, rectangular steel plates and the bearing plate TGLBT connector is a structural steel wide-flange T-shape. The THGLB and TGLB have two 12-inch-long (305 mm), $\frac{3}{4}$ -inch-diameter (19.1 mm), partially threaded steel dowels factory-welded to the underside of the bearing plate, and the TGLBT has three 12-inch-long (305 mm), $\frac{3}{4}$ -inch-diameter (19.1 mm), partially threaded steel dowels factory-welded to the underside of the steel bearing plate. See Table 1 for model numbers, bearing plate dimensions, required fasteners, and allowable bearing loads and horizontal (lateral) loads, based on wood strength of bolted connectors determined in accordance with the NDS. The available bearing and lateral (horizontal) strength of the THGLB, TGLBT, and TGLB series glued-laminated beam bearing seat connectors bearing on and embedded into masonry or concrete construction must be determined by a registered design professional in accordance with the applicable provisions of the code. See Figure 1 for drawings of the THGLB, TGLBT and TGLB bearing plate connectors.

3.2 TECC and TCC Series Column Caps:

The TECC and TCC series column caps are used to connect a wood beam to a wood post, and provide both uplift load resistance and download support for the wood beam. The TECC column caps are designed for use at beam ends. These post caps are fabricated from two steel straps factory-welded to a steel U-shaped channel, where $\frac{3}{16}$ -inch-thick (4.8 mm) fillet welds are located on both sides of each strap attached to the U-channel. The U-shaped steel channel is $\frac{1}{8}$ inch (3.2 mm) wider than the wood beam net width, and the two vertical steel straps have a clear distance $\frac{1}{8}$ inch (3.2 mm) wider than the supporting wood post net width. Both the U-channel and vertical steel strap have prepunched holes to receive either $\frac{5}{8}$ inch- (15.9 mm) or $\frac{3}{4}$ -inch-diameter (19.1 mm) bolts. See Table 2 for column cap models, dimensions, required quantity and diameter of bolts, and allowable uplift and down loads.

3.3 TF Series Panelized Roof Joist Hangers:

The TF series hangers are engineered components for panelized roof construction only. The hangers are fabricated from No. 18 gage thick [0.0465 inch base-metal thickness (1.19 mm)] galvanized steel. The hangers have a seat width to accommodate sawn-lumber joists having nominal widths of 2x, 3x, 2-2x, and 4x. The TF24, TF34, TF26 and the TF36 hangers have vertical flange edges designed to grip the wood joist during installation, and the TF24-2 and TF26-2 hangers have prepunched nail holes in the vertical flange for installing optional nails into the end

grain of the wood joist. The TF series panelized roof joist hangers have prepunched nail holes in the top bearing flange for two 10d common nails used to fasten the hanger to the header. See Table 3 for hanger models, dimensions, fastener schedules, and allowable down loads.

3.4 TZ Series Hanger Clips:

The TF series hanger clips are Z-shaped connectors that provide vertical support for nominally 2-by-4 or 2-by-6 wood solid blocking between joists or trusses for ceiling panels/boards. These hanger clips are formed from No. 12 gage thick [0.0988 inch base-metal thickness (2.51 mm)] galvanized steel and are prepunched to receive 8d common nails. See Table 4 for hanger clip models, clip dimensions, fastener schedule, and allowable down loads.

3.5 TFTA Series Floor Tie Straps:

The TFTA series floor tie straps are used to connect vertically aligned studs between a horizontal wood floor assembly with floor joists having a maximum 12-inch (305 mm) nominal depth. The straps may also be used to transfer short-term tension loads from a joist or rafter to another joist or rafter across an intervening member of wood, steel or concrete. The TFTA-2 and TFTA-5 are fabricated from 3-inch-wide (76 mm) by No. 12 gage thick [0.0988 inch base-metal thickness (2.51 mm)] steel strap, and the TFTA-7 is fabricated from $3\frac{1}{8}$ -inch-wide-by $\frac{3}{16}$ -inch-thick (79.4 mm by 4.8 mm) steel strap. Each end of the steel strap for all TFTA series floor tie straps has a steel strap rotated 90 degrees from the central portion and factory-welded to the central steel strap with $\frac{3}{16}$ -inch (4.8 mm) fillet welds. Each end is prepunched to receive $\frac{5}{8}$ -inch- (15.9 mm) or $\frac{3}{4}$ -inch-diameter (19.1 mm) bolts. See Table 5 for strap models, strap dimensions, fastener schedules, and allowable tension loads.

3.6 TVB Series Kneebraces:

The TVB series kneebrace connectors are designed to provide lateral support of the bottom of deep beams by attaching to purlins installed on each side of the beam. The kneebrace connectors are fabricated from No. 12 gage thick [0.0988 inch base-metal thickness (2.51 mm)] by $2\frac{1}{16}$ -inch-wide (52.4 mm) galvanized steel straps. The kneebrace connectors are used in pairs and are nailed to the bottom portion of the braced beam and nailed to the adjacent purlins that are perpendicular to the beam. See Table 6 for models, brace dimensions, fastener schedules, and allowable tension loads.

3.7 TXC Series Purlin Hangers:

The TXC series purlin hangers are top-flange hangers designed to support lumber purlins having nominal widths shown in Table 7. The top flange is a No. 7 gage thick [0.1772 base-metal thickness (4.5 mm)] equal-leg angle factory-welded to a 0.125-inch-thick (3.2 mm) (base-metal thickness) U-shaped stirrup. The top flange angle is 7 inches (177.8 mm) long and $2\frac{1}{2}$ inches (63.5 mm) deep. The U-shaped stirrup has the same width as the supported purlin for which the hanger is designed. See Table 7 for hanger models, hanger dimensions, nominal purlin sizes, fastener schedules, and allowable downloads and uplift loads.

3.8 TXD Series Purlin Hangers:

The TXD series purlin hangers are top-flange hangers that are designed to support nominal-width sawn-wood purlins and engineered laminated veneer lumber (LVL) purlins. Each hanger consists of a $\frac{1}{8}$ -inch-thick (3.2 mm) hot-rolled steel plate bent into a U-shaped stirrup that is factory-welded to a $\frac{1}{4}$ -inch-thick (6.4 mm), unequal-leg, hot-rolled steel angle. The top flange angle is 10 inches (254 mm) long by $2\frac{1}{4}$ inches (57.2 mm) deep. The seat width of the

U-shaped stirrup is the width of the supported purlin. The hangers have prepunched holes for installing nails into the supporting and supported wood members. See Table 8 for hanger models, hanger dimensions, purlin sizes, fastener schedules, and allowable downloads and uplift loads.

3.9 TGLT/THGLT Beam Hangers:

The TGLT/THGLT beam hangers are top-flange hangers that are designed to connect glued-laminated or engineered lumber beams to a supporting member. The hangers consist of a $\frac{3}{16}$ -inch-thick (4.8 mm), hot-rolled steel plate bent into a U-shaped stirrup that is factory-welded to a $\frac{1}{4}$ -inch-thick (6.4 mm), unequal-leg, hot-rolled steel angle. The hangers have prepunched holes for installing N54A nails into the wood members. See Table 9 for hanger models, hangers dimensions, fastener schedules, and allowable downloads and uplift loads.

3.10 TLEG/TMEG/TEG Series Beam Hangers:

The TLEG/TMEG/TEG series beam hangers are designed to connect glued-laminated or engineered lumber beams to a supporting member. The TLEG and TMEG series hangers consist of No. 7 gage thick [0.1772 base-metal thickness (4.5 mm)], 6-inch-wide (152.4 mm) steel bent into a U-shaped stirrup that is factory-welded to a $\frac{1}{4}$ -inch-thick (6.4 mm), unequal-leg, steel header angle. The TEG series hangers consist of a No. 3 gage thick [0.2390 base-metal thickness (6.1 mm)] by 6-inch-wide (152.4 mm) steel sheet bent into a U-shaped stirrup that is factory-welded to a $\frac{1}{4}$ -inch-thick (6.4 mm), unequal-leg, steel header angle. The depth of the top flange of the header angle is $2\frac{1}{2}$ inches (63.5 mm) for all hangers. The steel U-shaped stirrup is factory-welded to the vertical leg of the steel header angle with $\frac{3}{16}$ -inch-thick (root) (4.8 mm) fillet welds. The header angle and the U-shaped stirrup have prepunched bolt holes that are $\frac{1}{16}$ inch (1.6 mm) larger in diameter than the bolts used to attach the supported beam and the supporting header. See Table 10 for hanger models, hanger dimensions, fastener schedules, and allowable downloads and uplift loads.

3.11 TGLS/THGLS and TGLST/THGLST Series Beam Saddle Hangers:

The TGLS/THGLS series beam saddle hangers are designed to support two horizontally aligned glued-laminated or sawn lumber beams to one wood girder. The TGLST and THGLST series beam saddle hangers are designed to connect glued-laminated beams to a girder, and to transfer wind and seismic forces in drag strut applications. The TGLS series hangers consist of two No. 7 gage thick [0.1772 base-metal thickness (4.5 mm)] by 5-inch-wide (127 mm) hot-rolled steel plates bent into U-shaped stirrups that are factory-welded to a $\frac{1}{4}$ -inch-thick (6.4 mm) inverted steel channel with 4-inch-long (102 mm) vertical flanges and a channel web width equal to the width of the supporting wood girder. The THGLS series hangers have two U-shaped stirrups, fabricated from No. 7 gage thick [0.1772 inch base-metal thickness (4.5 mm)] by 6-inch-wide (152 mm) hot-rolled steel. The TGLST/THGLST hangers are identical to the TGLS/THGLS series beam saddle hangers, except they have tension straps welded to each side of the support saddles that are designed to transfer axial tension forces induced by wind or seismic loading from one carried beam to the other. The TGLS/THGLS series beam saddle hangers are prepunched for N54A nails, and the tension straps for the TGLST/THGLST series beam saddle hangers have oblong holes for installing three $\frac{3}{4}$ -inch-diameter (19 mm) bolts on each side of the carrying girder. See Table 11 for beam saddle models, beam saddle dimensions, fastener schedules, and allowable uplift, down, and lateral loads.

3.12 THC Hinge Connectors (with Optional THCCT Seismic Strap):

The THC hinge connectors are designed to support glued-laminated beams having the same width and top elevation, end-to-end. The connectors consist of steel top and bottom bearing plates factory-welded to two 3/16-inch-thick (4.8 mm) steel vertical side plates forming a parallelogram rectangular assembly. Each steel vertical plate has factory-welded top and bottom rotation steel straps with two prepunched holes to receive 3/4-inch-diameter (19 mm) machine bolts that pass through the two beams. The THC hinge connectors are available with the THCCT tension steel straps factory-welded at midheight of the steel vertical side plates. Each tension steel strap has three prepunched oblong holes to receive 3/4-inch-diameter (19 mm) machine bolts. See Table 12 for product model hinge connector models, connector dimensions, fastener schedule, and allowable down loads for the connector and allowable tension loads for the connector with tension straps.

3.13 TSL, TSLT, TSF, TMST, TSI, TSJ, and THST Series Tie Straps:

The TSL, TSLT, TSF, TMST, TSI, TSJ, and THST series tie straps are designed to connect various wood framing members together to resist tension forces. The TSL, TSLT, TSF, TSI, and TSJ series tie straps are fastened with nails; the TMST series tie straps are fastened with either nails or bolts, but not both; and the THST series tie straps are fastened with bolts. See Table 13 for tie strap models, strap dimensions, fastener schedules, and allowable tension loads.

3.14 Materials:

3.14.1 Steel: The connectors described in this report are fabricated from steel specified in Table 14, and have the following minimum base-metal thicknesses:

| NOMINAL THICKNESS (gauge) | MINIMUM BASE-METAL THICKNESS (inches) |
|---------------------------|---------------------------------------|
| No. 3 | 0.2390 |
| No. 7 | 0.1772 |
| No. 10 | 0.1340 |
| No. 12 | 0.1046 |
| No. 14 | 0.0747 |
| No. 18 | 0.0478 |
| No. 20 | 0.0360 |

For SI: 1 inch = 25.4 mm.

3.14.2 Wood: Wood members must be sawn lumber or structural glued laminated lumber with a minimum specific gravity of 0.50, or approved structural engineered lumber, such as structural composite lumber (SCL), laminated veneer lumber (LVL), or prefabricated wood I-joists, with a minimum equivalent specific gravity of 0.50, unless otherwise noted in the applicable table within this report. Wood members must have a moisture content not exceeding 19 percent (16 percent for structural engineered lumber), except as noted in Section 4.1. The thickness of the supporting wood member (header) must be equal to or greater than the length of the fasteners specified in the tables in this report, or as required by wood member design, whichever is greater. For installations in structural engineered lumber, minimum allowable nail or screw spacing and end distance, as specified in the applicable evaluation report for the structural engineered lumber, must be met. Refer to Section 3.14.4 for issues related to connectors and fasteners used in contact with preservative-treated or fire-retardant-treated.

3.14.3 Fasteners: Required fastener types and sizes for use with the Tobin Steel structural wood connectors described in this report are specified in this section and in the applicable tables of this report.

Bolts used with connectors described in this report, at a minimum, must comply with ASTM A 36 or ASTM A 307, Grade A, and must comply with ANSI/ASME Standard B18.2.1. Bolts complying with these requirements have an assigned bending yield strength (F_{yb}) of 45,000 psi (310.3 MPa) in accordance with Appendix I.4 of the NDS. Bolt diameters must be as specified in the applicable tables of this report.

Nails used for connectors described in this report must comply with the steel wire material requirements, physical properties, tolerances, workmanship, protective coating and finishes, certification, and packaging and package marking requirements specified in ASTM F 1667. The nails must have minimum fastener dimensions and minimum average bending yield strengths (F_{yb}) as determined according to ASTM F 1575 and shown in Table 15.

The required number of N20A and N54A angular-ring shank nails is supplied by the Tobin Steel Company with each connector that requires these nails for installation as shown in Tables 6, 8, 9, and 11 of this report.

3.14.4 Connectors and Fasteners Used with Treated Wood: Connectors and fasteners used in contact with preservative-treated or fire-retardant-treated wood must comply with IBC Section 2304.9.5 or IRC Section R319.3. The lumber treater or the holder of this report (Tobin Steel Company), or both, must be contacted for recommendations on the appropriate level of corrosion resistance to specify for the connectors and fasteners, as well as the connection capacities of the fasteners used with the specific proprietary preservative-treated or fire-retardant-treated lumber.

3.14.5 Concrete and Masonry Construction: Materials and quality of concrete and masonry construction supporting the THGLB, TGLBT, and TGLB series glued-laminated beam bearing seat connectors must comply with the applicable provisions of Chapters 19 and 21 of the IBC. The compressive strength of the concrete and masonry construction must be in accordance with the approved design and applicable provisions of the building code.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The tabulated allowable loads shown in this report are based on allowable stress design (ASD) and include the load duration factor, C_D , corresponding with the applicable loads in accordance with the NDS.

Tabulated allowable loads apply to products connected to wood used under dry conditions and where sustained temperatures are 100°F (37.8°C) or less. When products are installed in wood having a moisture content greater than 19 percent (16 percent for engineered wood products), or where wet service is expected, the allowable tension loads must be adjusted by the wet service factor, C_M , specified in the NDS for dowel-type fasteners. When connectors are installed in wood that will experience sustained exposure to temperatures exceeding 100°F (37.8°C), the allowable loads in this report must be adjusted by the applicable temperature factor, C_t , specified in the NDS. The group action factor, C_g , has been accounted for in accordance with Section 10.3.6 of the NDS where applicable in the tabulated allowable loads in this report.

For connectors installed with bolts or lag screws, minimum edge distances and end distances within the wood members must be met, such that the geometry factor, C_{Δ} , is 1.0, in accordance with NDS Section 11.5.1.

Connected wood members must be analyzed for load-carrying capacity at the connection in accordance with the NDS.

The allowable down and horizontal loads shown in Table 1 for the THGLB, TGLBT, and TGLB series glued-laminated beam bearing seat connectors are based on wood strength of bolted connectors determined in accordance with the NDS. The available bearing and lateral (horizontal) strength of the THGLB, TGLBT, and TGLB series glued-laminated beam bearing seat connectors bearing on and embedded into masonry or concrete construction must be determined by a registered design professional in accordance with the applicable provisions of the code.

4.2 Installation:

Installation of the connectors must be in accordance with this evaluation report and the manufacturer's published installation instructions. Connector location must comply with the approved construction documents. Bolts installed in wood or engineered wood lumber must be installed in accordance with the applicable provisions of the NDS or the evaluation report for the engineered wood lumber, whichever is more restrictive. In the event of a conflict between this report and the manufacturer's published installation instructions, this report governs.

4.3 Special Inspection:

4.3.1 IBC: For jurisdictions adopting the IBC, periodic special inspection must be provided for components within the seismic-force-resisting system in Seismic Design Category C, D, E or F in accordance with IBC Section 1707.3 or 1707.4, with the exception of those structures that qualify under Section 1704.1.

4.3.2 IRC: For jurisdictions adopting the IRC, special inspections are not required.

5.0 CONDITIONS OF USE

The Tobin Steel structural wood hangers and connectors 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** The connectors must be manufactured, identified and installed in accordance with this report and the manufacturer's published installation instructions. A copy of the instructions must be available at the jobsite at all times during installation.
- 5.2** Calculations showing compliance with this report must be submitted to the code official. The calculations must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.3** Adjustment factors noted in Section 4.1 and the applicable codes must be considered, where applicable.
- 5.4** Connected wood members and fasteners must comply, respectively, with Sections 3.14.2 and 3.14.3 of this report.
- 5.5** Use of connectors with preservative- or fire retardant-treated lumber must be in accordance with Section 3.14.4 of this report.
- 5.6** Products with structural factory welding are manufactured by the Tobin Steel Company, Inc., located in Santa Ana, California, under a quality control program with inspections by R.I. Ogawa & Associates (AA-705).

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Joist Hangers and Similar Devices (AC13), dated October 2010.

7.0 IDENTIFICATION

Each connector described in this report must be identified by a label containing the Tobin Steel Company name and address, the product model number, and the ICC-ES evaluation report number (ESR-1822). Additionally, welded products are labeled with the name of the inspection agency, R.I. Ogawa & Associates, Inc.

TABLE 1—THGLB, TGLBT, AND TGLB SERIES GLULAM BEAM BEARING CONNECTORS ^{1,2,3,4}

| MODEL SERIES | MODEL NO. | DIMENSIONS (inches) | | | BOLTS ⁵ (quantity) diameter | ALLOWABLE BEARING LOADS (lbs) | ALLOWABLE HORIZONTAL BOLT LOADS (lbs) | | |
|--------------|-----------|--------------------------------|-------------------------------|--------|--|--|---------------------------------------|----------------------|-----------|
| | | Steel Plate Clear Distance | Bearing Plate | | | C _D = 1.0 C _D = 1.15 C _D = 1.25 | C _D = 1.0 | C _D = 1.6 | |
| | | | Depth | Length | | | | | Thickness |
| THGLB | THGLBA | 5 ¹ / ₈ | 5 | 10 | 3/8 | (2) – 3/4" | 12,170 | 6,340 | 8,430 |
| | | 6 ³ / ₄ | | | | (2) – 3/4" | 16,030 | 6,340 | 8,430 |
| | | 8 ³ / ₄ | | | | (2) – 3/4" | 20,780 | 6,340 | 8,430 |
| | THGLBB | 5 ¹ / ₈ | 6 | 10 | 3/8 | (2) – 3/4" | 14,605 | 6,340 | 8,430 |
| | | 6 ³ / ₄ | | | | (2) – 3/4" | 19,240 | 6,340 | 8,430 |
| | | 8 ³ / ₄ | | | | (2) – 3/4" | 24,940 | 6,340 | 8,430 |
| | THGLBC | 5 ¹ / ₈ | 7 | 10 | 3/8 | (2) – 3/4" | 17,040 | 6,340 | 8,430 |
| | | 6 ³ / ₄ | | | | (2) – 3/4" | 22,445 | 6,340 | 8,430 |
| | | 8 ³ / ₄ | | | | (2) – 3/4" | 29,095 | 6,340 | 8,430 |
| | THGLBD | 5 ¹ / ₈ | 8 | 10 | 3/8 | (2) – 3/4" | 19,475 | 6,340 | 8,430 |
| | | 6 ³ / ₄ | | | | (2) – 3/4" | 25,650 | 6,340 | 8,430 |
| | | 8 ³ / ₄ | | | | (2) – 3/4" | 33,250 | 6,340 | 8,430 |
| TGLBT | TGLBT512 | 5 ¹ / ₈ | 5 ¹ / ₄ | 12 | 5/16 | (2) – 3/4" | 12,780 | 6,340 | 8,430 |
| | | 6 ³ / ₄ | | | | (2) – 3/4" | 16,830 | 6,340 | 8,430 |
| | | 8 ³ / ₄ | | | | (2) – 3/4" | 21,820 | 6,340 | 8,430 |
| | | 10 ³ / ₄ | | | | (2) – 3/4" | 26,805 | 6,340 | 8,430 |
| | TGLBT612 | 5 ¹ / ₈ | 6 ¹ / ₂ | 12 | 3/8 | (2) – 3/4" | 15,825 | 6,340 | 8,430 |
| | | 6 ³ / ₄ | | | | (2) – 3/4" | 20,840 | 6,340 | 8,430 |
| | | 8 ³ / ₄ | | | | (2) – 3/4" | 27,015 | 6,340 | 8,430 |
| | | 10 ³ / ₄ | | | | (2) – 3/4" | 33,190 | 6,340 | 8,430 |
| | TGLBT516 | 5 ¹ / ₈ | 5 ¹ / ₄ | 16 | 5/16 | (2) – 3/4" | 12,780 | 6,340 | 8,430 |
| | | 6 ³ / ₄ | | | | (2) – 3/4" | 16,830 | 6,340 | 8,430 |
| | | 8 ³ / ₄ | | | | (2) – 3/4" | 21,820 | 6,340 | 8,430 |
| | | 10 ³ / ₄ | | | | (2) – 3/4" | 26,805 | 6,340 | 8,430 |
| | TGLBT616 | 5 ¹ / ₈ | 6 ¹ / ₂ | 16 | 3/8 | (2) – 3/4" | 15,825 | 6,340 | 8,430 |
| | | 6 ³ / ₄ | | | | (2) – 3/4" | 20,840 | 6,340 | 8,430 |
| | | 8 ³ / ₄ | | | | (2) – 3/4" | 27,015 | 6,340 | 8,430 |
| | | 10 ³ / ₄ | | | | (2) – 3/4" | 33,190 | 6,340 | 8,430 |
| | TGLBT520 | 5 ¹ / ₈ | 5 ¹ / ₄ | 20 | 5/16 | (2) – 3/4" | 12,780 | 6,340 | 8,430 |
| | | 6 ³ / ₄ | | | | (2) – 3/4" | 16,830 | 6,340 | 8,430 |
| | | 8 ³ / ₄ | | | | (2) – 3/4" | 21,820 | 6,340 | 8,430 |
| | | 10 ³ / ₄ | | | | (2) – 3/4" | 26,805 | 6,340 | 8,430 |
| | TGLBT620 | 5 ¹ / ₈ | 6 ¹ / ₂ | 20 | 3/8 | (2) – 3/4" | 15,825 | 6,340 | 8,430 |
| | | 6 ³ / ₄ | | | | (2) – 3/4" | 20,840 | 6,340 | 8,430 |
| | | 8 ³ / ₄ | | | | (2) – 3/4" | 27,015 | 6,340 | 8,430 |
| | | 10 ³ / ₄ | | | | (2) – 3/4" | 33,190 | 6,340 | 8,430 |
| TGLB | TGLB5A | 5 ¹ / ₄ | 5 | 7 | 3/8 | (1) – 3/4" | 12,170 | 3,170 | 4,215 |
| | TGLB5B | | 6 | | | (1) – 3/4" | 14,606 | 3,170 | 4,215 |
| | TGLB5C | | 7 | | | (1) – 3/4" | 17,040 | 3,170 | 4,215 |
| | TGLB5D | | 8 | | | (1) – 3/4" | 19,475 | 3,170 | 4,215 |
| | TGLB7A | 6 ⁷ / ₈ | 5 | 9 | 3/8 | (1) – 3/4" | 16,030 | 3,170 | 4,215 |
| | TGLB7B | | 6 | | | (1) – 3/4" | 19,235 | 3,170 | 4,215 |
| | TGLB7C | | 7 | | | (1) – 3/4" | 22,440 | 3,170 | 4,215 |
| | TGLB7D | | 8 | | | (1) – 3/4" | 25,650 | 3,170 | 4,215 |

For SI: 1 inch = 25.4 mm, 1 psi = 6.89 kPa, 1 lb = 4.45 .N.

¹Allowable download is the same regardless of the duration of load as permitted by the NDS since it is based on the allowable perpendicular-to-grain stress, F_{c⊥}, value of 450 psi for the supported wood beam bearing on the full depth (PD) of the connector.

²Design of the supporting structural concrete or masonry and the design of anchorage of the TGLB, THGLB, and TGLBT connectors to the concrete or masonry must be in accordance with the applicable code provisions, including code requirements for a continuous load path and interconnection resisting horizontal lateral loads acting parallel to the beam when seismic design governs.

³The connector plate must bear fully on the supporting structural concrete or masonry member.

⁴An air gap of minimum 1/2 inch between the end of the glulam beam and exterior concrete is required by IBC Section 2304.11.2.5.

⁵Bolts must be machine bolts complying with ANSI/ASME Standard B18.2.1.

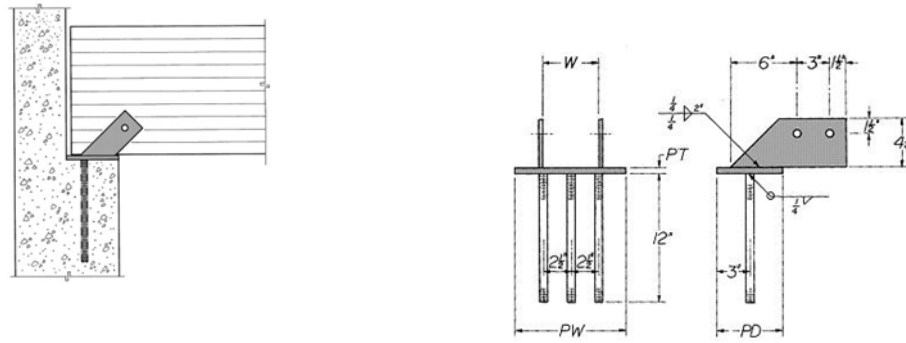


FIGURE 1—TYPICAL INSTALLATION OF THE TGLB BEAM SEAT HANGER AND ELEVATIONS OF THE THGLB BEAM SEAT HANGERS (See Table 1)

TABLE 2—TECC AND TCC SERIES COLUMN CAPS¹

| MODEL SERIES | MODEL NO. | COLUMN CAP DIMENSIONS (inches) | | | | | BOLTS ² (quantity) – diameter | | ALLOWABLE LOADS (pounds) | |
|--------------|-------------------------------|--------------------------------|--------------------------------|--------------------------------|-------------------------------|---------------------------------------|--|---------------------------------------|--------------------------|----------------------|
| | | Width for Beam (BW) | Width for Post (PW) | Bearing Length for Beam (L) | U-Channel Height for Beam (H) | Steel Thickness | Beam | Post | C _D = 1.6 | C _D = 1.0 |
| | | | | | | | | | Uplift | Down |
| TECC | TECC3-1/4-4 | 3 ¹ / ₄ | 3 ⁵ / ₈ | 9 | 6 ¹ / ₂ | 3 ³ / ₁₆ | (2) – 5 ¹ / ₈ " | (2) – 5 ¹ / ₈ " | 2,920 | 18,010 |
| | TECC3-1/4-6 | 5 ¹ / ₈ | 5 ¹ / ₂ | 9 | 6 ¹ / ₂ | 3 ³ / ₁₆ | (2) – 5 ¹ / ₈ " | (2) – 5 ¹ / ₈ " | 2,920 | 18,010 |
| | TECC44 | 3 ⁵ / ₈ | 3 ⁵ / ₈ | 5 ¹ / ₂ | 4 | 3 ³ / ₁₆ | (2) – 5 ¹ / ₈ " | (2) – 5 ¹ / ₈ " | 1,640 | 10,085 |
| | TECC46 | 3 ⁵ / ₈ | 5 ¹ / ₂ | 9 | 6 ¹ / ₂ | 3 ³ / ₁₆ | (2) – 5 ¹ / ₈ " | (2) – 5 ¹ / ₈ " | 3,280 | 16,950 |
| | TECC5-1/4-6 | 5 ¹ / ₄ | 5 ¹ / ₂ | 10 ¹ / ₂ | 8 | 1 ¹ / ₄ | (2) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 4,760 | 33,840 |
| | TECC5-1/4-8 | 5 ¹ / ₄ | 7 ¹ / ₂ | 10 ¹ / ₂ | 8 | 1 ¹ / ₄ | (2) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 4,760 | 33,840 |
| | TECC64 | 5 ¹ / ₂ | 3 ⁵ / ₈ | 9 | 6 ¹ / ₂ | 3 ³ / ₁₆ | (2) – 5 ¹ / ₈ " | (2) – 5 ¹ / ₈ " | 3,545 | 25,430 |
| | TECC66 | 5 ¹ / ₂ | 5 ¹ / ₂ | 9 | 6 ¹ / ₂ | 3 ³ / ₁₆ | (2) – 5 ¹ / ₈ " | (2) – 5 ¹ / ₈ " | 3,545 | 25,430 |
| | TECC68 | 5 ¹ / ₂ | 7 ¹ / ₂ | 9 | 6 ¹ / ₂ | 3 ³ / ₁₆ | (2) – 5 ¹ / ₈ " | (2) – 5 ¹ / ₈ " | 3,545 | 25,430 |
| | TECC76 | 6 ⁷ / ₈ | 5 ¹ / ₂ | 10 ¹ / ₂ | 8 | 3 ³ / ₁₆ | (2) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 4,800 | 43,465 |
| | TECC77 | 6 ⁷ / ₈ | 6 ⁷ / ₈ | 10 ¹ / ₂ | 8 | 1 ¹ / ₄ | (2) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 4,800 | 43,465 |
| | TECC78 | 6 ⁷ / ₈ | 7 ¹ / ₂ | 10 ¹ / ₂ | 8 | 1 ¹ / ₄ | (2) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 4,800 | 43,465 |
| | TECC86 | 7 ¹ / ₂ | 5 ¹ / ₂ | 10 ¹ / ₂ | 8 | 1 ¹ / ₄ | (2) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 4,800 | 39,825 |
| | TECC88 | 7 ¹ / ₂ | 7 ¹ / ₂ | 10 ¹ / ₂ | 8 | 1 ¹ / ₄ | (2) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 4,800 | 39,825 |
| | TECC96 | 8 ¹ / ₈ | 5 ¹ / ₂ | 10 ¹ / ₂ | 8 | 1 ¹ / ₄ | (2) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 4,800 | 55,280 |
| TECC98 | 8 ¹ / ₈ | 7 ¹ / ₂ | 10 ¹ / ₂ | 8 | 1 ¹ / ₄ | (2) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 4,800 | 55,280 | |
| TECC98 | 8 ¹ / ₈ | 7 ¹ / ₂ | 10 ¹ / ₂ | 8 | 1 ¹ / ₄ | (2) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 4,800 | 55,280 | |
| TCC | TCC3-1/4-4 | 3 ¹ / ₄ | 3 ⁵ / ₈ | 11 | 6 ¹ / ₂ | 3 ³ / ₁₆ | (4) – 5 ¹ / ₈ " | (2) – 5 ¹ / ₈ " | 5,840 | 23,715 |
| | TCC3-1/4-6 | 3 ¹ / ₄ | 5 ¹ / ₂ | 11 | 6 ¹ / ₂ | 3 ³ / ₁₆ | (4) – 5 ¹ / ₈ " | (2) – 5 ¹ / ₈ " | 5,840 | 23,715 |
| | TCC44 | 3 ⁵ / ₈ | 3 ⁵ / ₈ | 7 | 4 | 3 ³ / ₁₆ | (2) – 5 ¹ / ₈ " | (2) – 5 ¹ / ₈ " | 3,280 | 13,730 |
| | TCC46 | 3 ⁵ / ₈ | 5 ¹ / ₂ | 11 | 6 ¹ / ₂ | 3 ³ / ₁₆ | (4) – 5 ¹ / ₈ " | (2) – 5 ¹ / ₈ " | 6,000 | 22,630 |
| | TCC5-1/4-6 | 5 ¹ / ₄ | 5 ¹ / ₂ | 13 | 8 | 1 ¹ / ₄ | (4) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 8,455 | 44,615 |
| | TCC5-1/4-8 | 5 ¹ / ₄ | 7 ¹ / ₂ | 13 | 8 | 1 ¹ / ₄ | (4) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 8,455 | 44,615 |
| | TCC64 | 5 ¹ / ₂ | 3 ⁵ / ₈ | 11 | 6 ¹ / ₂ | 3 ³ / ₁₆ | (4) – 5 ¹ / ₈ " | (2) – 5 ¹ / ₈ " | 6,000 | 37,810 |
| | TCC66 | 5 ¹ / ₂ | 5 ¹ / ₂ | 11 | 6 ¹ / ₂ | 3 ³ / ₁₆ | (4) – 5 ¹ / ₈ " | (2) – 5 ¹ / ₈ " | 6,000 | 37,810 |
| | TCC68 | 5 ¹ / ₂ | 7 ¹ / ₂ | 11 | 6 ¹ / ₂ | 3 ³ / ₁₆ | (4) – 5 ¹ / ₈ " | (2) – 5 ¹ / ₈ " | 6,000 | 37,810 |
| | TCC76 | 6 ⁷ / ₈ | 5 ¹ / ₂ | 13 | 8 | 3 ³ / ₁₆ | (4) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 8,455 | 56,560 |
| | TCC77 | 6 ⁷ / ₈ | 6 ⁷ / ₈ | 13 | 8 | 1 ¹ / ₄ | (4) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 8,455 | 56,560 |
| | TCC78 | 6 ⁷ / ₈ | 7 ¹ / ₂ | 13 | 8 | 1 ¹ / ₄ | (4) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 8,455 | 56,560 |
| | TCC86 | 7 ¹ / ₂ | 5 ¹ / ₂ | 13 | 8 | 1 ¹ / ₄ | (4) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 8,455 | 52,050 |
| | TCC88 | 7 ¹ / ₂ | 7 ¹ / ₂ | 13 | 8 | 1 ¹ / ₄ | (4) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 8,455 | 52,050 |
| | TCC96 | 8 ¹ / ₈ | 5 ¹ / ₂ | 13 | 8 | 1 ¹ / ₄ | (4) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 8,455 | 71,185 |
| TCC98 | 8 ¹ / ₈ | 7 ¹ / ₂ | 13 | 8 | 1 ¹ / ₄ | (4) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 8,455 | 71,185 | |
| TCC106 | 9 ¹ / ₂ | 5 ¹ / ₂ | 13 | 8 | 1 ¹ / ₄ | (4) – 3 ³ / ₄ " | (2) – 3 ³ / ₄ " | 8,455 | 64,010 | |

For SI: 1 inch = 25.4 mm, 1 psi = 6.89 kPa, 1 lb. = 4.448 N.

¹The wood post depth must be equal to the connector's width for the beam (BW).

² Bolts are machined bolts complying with ANSI/ASME Standard B18.2.1.

³Vertical down load capacity is based upon allowable beam bearing and bolt shear capacity. The tabulated allowable downloads are based on a duration of load of C_D = 1.0. The allowable compression perpendicular-to-grain stress (F_{C⊥} = 560 psi for glulam beams and F_{C⊥} = 460 psi for sawn beams), must not be adjusted by the load duration factor, C_D, but may be adjusted by the bearing area factor, C_b, when applicable.

⁴The designer must determine that the capacity of the post, the beam and the post bearing is adequate to carry the applied load.

⁵The allowable loads are not applicable to column caps supporting a spliced beam condition.

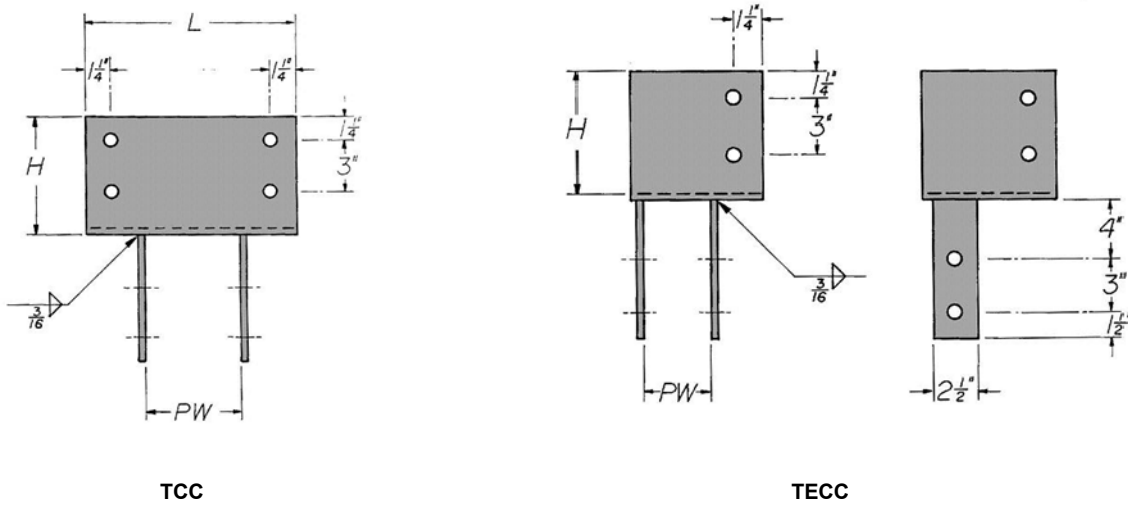


FIGURE 2—TYPICAL TCC and TECC COLUMN CAP CONNECTORS WITH DEFINITIONS OF NOMENCLATURE L, PW, AND H (See Table 2, previous page)

TABLE 3—TF SERIES PANELIZED ROOF HANGERS¹

| MODEL NO. | NOMINAL JOIST SIZE | HANGER DIMENSIONS (in.) | | | | FASTENER SCHEDULE ² (Quantity-Size) | ALLOWABLE DOWNLOADS (lbs.) | | |
|-----------|--------------------|--------------------------------|-------------------------------|--------------------------------|-------------------------------|---|----------------------------|-----------------------|-----------------------|
| | | Joist | | Top Flange (Header) | | | C _D = 1.0 | C _D = 1.15 | C _D = 1.25 |
| | | Width | Height | Depth | Length | | | | |
| TF24 | 2 x 4 | 1 ⁹ / ₁₆ | 3 ¹ / ₂ | 1 ³ / ₁₆ | 2 ¹ / ₂ | 2-10d | 625 | 625 | 625 |
| TF26 | 2 x 6 | 1 ⁹ / ₁₆ | 5 ³ / ₈ | 1 ³ / ₁₆ | 2 ¹ / ₂ | 2-10d | 770 | 770 | 770 |
| TF34 | 3 x 4 | 2 ⁵ / ₈ | 3 ¹ / ₂ | 1 ³ / ₁₆ | 3 ¹ / ₂ | 2-10d | 825 | 825 | 825 |
| TF36 | 3 x 6 | 2 ⁵ / ₈ | 5 ³ / ₈ | 1 ³ / ₁₆ | 3 ¹ / ₂ | 2-10d | 825 | 825 | 825 |
| TF24-2 | (2) 2 x 4 | 3 ¹ / ₄ | 3 ¹ / ₂ | 1 ³ / ₁₆ | 4 | 2-10d | 690 | 690 | 690 |
| TF26-2 | (2) 2 x 6 | 3 ¹ / ₄ | 5 ³ / ₈ | 1 ³ / ₁₆ | 4 | 2-10d | 690 | 690 | 690 |
| TF44 | 4 x 4 | 3 ⁹ / ₁₆ | 3 ¹ / ₂ | 1 ³ / ₁₆ | 4 ¹ / ₂ | 2-10d | 825 | 825 | 825 |
| TF46 | 4 x 6 | 3 ⁹ / ₁₆ | 5 ³ / ₈ | 1 ³ / ₁₆ | 4 ¹ / ₂ | 2-10d | 825 | 825 | 825 |

For SI: 1 inch = 25.4 mm, 1 psi = 6.89 kPa, 1 lb. = 4.45 N.

¹The TF series hangers are for panelized roof construction only.
²Common nails are installed into the supporting header member.

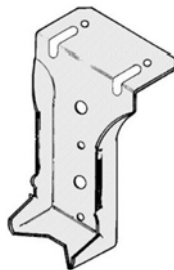


FIGURE 3—TYPICAL TF24 PANELIZED ROOF HANGER (See Table 3, this page)

TABLE 4—TZ SERIES HANGERS¹

| MODEL NO. | HANGER DIMENSIONS (in.) | | | | FASTENERS ² (Quantity–Size) | | ALLOWABLE LOADS ^{3,4} (lbs.) |
|-----------|-------------------------------|-------------------------------|-------------------------------|---------------------------------|--|-------|---------------------------------------|
| | Top Flange Depth (TF) | Hanger Height (H) | Hanger Width (W) | Hanger Seat Depth for Joist (B) | Header | Joist | |
| TZ4 | 1 ³ / ₄ | 5 ¹ / ₈ | 1 ¹ / ₂ | 2 ³ / ₄ | 1-8d | 2-8d | 400 |
| TZ6 | 1 ³ / ₄ | 5 ³ / ₈ | 1 ¹ / ₂ | 2 ³ / ₄ | 1-8d | 2-8d | 445 |

For SI: 1 inch = 25.4 mm, 1 psi = 6.89 kPa, 1 lb. = 4.45 N.

¹The TF series hangers are for panelized roof construction only.

²Common nails are installed into the header and joist members.

³Loads must not be increased for short-duration loading.

⁴Compression perpendicular-to-grain capacity of the supported wood members bearing on the clips must be verified and must not exceed the allowable loads noted in the table.

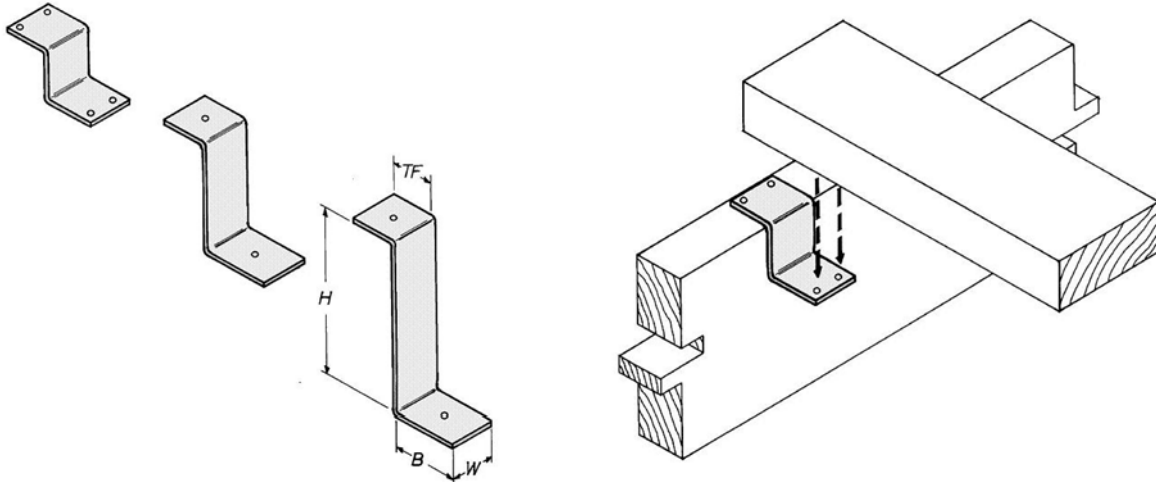


FIGURE 4—TYPICAL TZ SERIES HANGERS AND A TYPICAL INSTALLATION DETAIL

TABLE 5—TFTA SERIES¹

| MODEL NO. | TIE STRAP DIMENSIONS (in.) | | | BOLTS ^{2,3} (Qty)—Dia. | NOMINAL STUD WIDTH (in.) | | | |
|-----------|--------------------------------|-------------------------------|-------------------------------|---------------------------------|--------------------------------|-------------------------------|----------------------|-------------------------------|
| | Overall Length | Clear Span | Strap Width | | 1 ¹ / ₂ | 2 ¹ / ₂ | 3 | 3 ¹ / ₂ |
| | | | | | ALLOWABLE TENSION LOADS (lbs.) | | | |
| | | | | | C _D = 1.6 | C _D = 1.6 | C _D = 1.6 | C _D = 1.6 |
| TFTA-2 | 37 ¹ / ₂ | 17 | 3 | (4) – 5/8" | 1,745 | 2,920 | 3,000 | 3,000 |
| TFTA-5 | 44 ¹ / ₂ | 5 ¹ / ₈ | 3 | (4) – 3/4" | 2,105 | 3,440 | 4,200 | 4,225 |
| TFTA-7 | 56 | 17 | 3 ¹ / ₂ | (6) – 3/4" | 3,035 | 4,955 | 6,050 | 6,085 |

For SI: 1 inch = 25.4 mm, 1 psi = 6.89 kPa, 1 lb. = 4.45 N.

¹The TFTA floor tie connector is used to transfer short-duration tension forces between vertically aligned wood studs across wood-framed floor construction with floor joists having a maximum nominal depth of 12 inches.

²Washers must be installed on the side opposite to TFTA anchor to achieve the tabulated allowable tension load values.

³Bolts must be machine bolts complying with ANSI/ASME Standard B18.2.1.

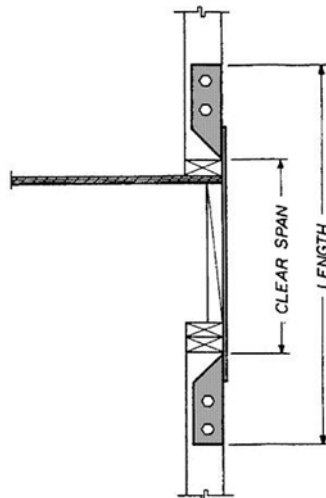


FIGURE 5—TYPICAL INSTALLATION OF THE TFTA SERIES TIE-DOWN

TABLE 6—TVB KNEE BRACES^{1,2,3,4,5}

| MODEL NO. | BEAM DEPTH (in.) | | LENGTH (feet-inches) | NAILING SCHEDULE ⁶ (Quantity-Size) | | ALLOWABLE TENSION LOADS (lbs.) | | |
|-----------|------------------|---------|----------------------|---|-------------|--------------------------------|-----------------------|----------------------|
| | Minimum | Maximum | | Each Joist | Beam Bottom | C _D = 1.0 | C _D = 1.25 | C _D = 1.6 |
| TVB-5 | 10 | 15 | 2'-6" | 6-N54A | 3-N54A | 1,120 | 1,400 | 1,495 |
| TVB-7 | 15 | 5.125 | 3'-6" | 6-N54A | 3-N54A | 1,120 | 1,400 | 1,495 |
| TVB-8 | 22 | 28 | 4'-0" | 6-N54A | 3-N54A | 1,120 | 1,400 | 1,495 |
| TVB-10 | 28 | 35 | 5'-0" | 6-N54A | 3-N54A | 1,120 | 1,400 | 1,495 |
| TVB-12 | 35 | 42 | 6'-0" | 6-N54A | 3-N54A | 1,120 | 1,400 | 1,495 |

For SI: 1 inch = 25.4 mm, 1 psi = 6.89 kPa, 1 lb. = 4.45 N.

¹The tabulated tension loads have been increased for the load duration specified in the table.

²A minimum edge distance of 1 1/2 inches must be provided for all nails.

³Joists perpendicular to the braced beam must be minimum nominal 3 x 8 wood framing.

⁴The TVB knee braces must be installed at a 45-degree angle to achieve the tabulated allowable tension loads.

⁵Allowable loads shown are for tension loads along the length of the knee brace strap.

⁶N54A fastener is an annular ring shank nail (0.250-inch-diameter x 2 1/2-inch long).

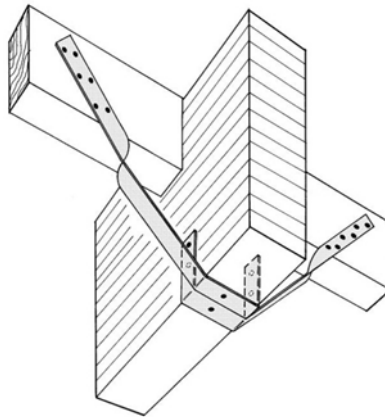


FIGURE 6—TYPICAL TVB KNEE BRACE INSTALLATION

TABLE 7—TXC SERIES PURLIN HANGERS

| MODEL NO. | NOMINAL PURLIN SIZE | HANGER DIMENSIONS (in.) | | | NAILING SCHEDULE (Quantity–Size) | | ALLOWABLE LOADS ^{1,2} | | |
|-----------|---------------------|--------------------------------|-------------------------------|-------------------------------|----------------------------------|-------|--------------------------------|-----------------------|----------------------|
| | | Joist Seat Width (W) | Hanger Height (H) | Joist Seat Depth (B) | Header | Joist | Downloads | | Uplift |
| | | | | | | | C _D = 1.0 | C _D = 1.25 | C _D = 1.6 |
| TXC26 | 2 x 6 | 1 ⁹ / ₁₆ | 5 ³ / ₈ | 2 ¹ / ₂ | 2-10d | 2-10d | 1,950 | 2,010 | 305 |
| TXC28 | 2 x 8 | | 7 ¹ / ₈ | | | | | | |
| TXC210 | 2 x 10 | | 9 ¹ / ₈ | | | | | | |
| TXC212 | 2 x 12 | | 11 | | | | | | |
| TXC214 | 2 x 14 | | 13 | | | | | | |
| TXC216 | 2 x 16 | | 15 | | | | | | |
| TXC36 | 3 x 6 | 2 ⁹ / ₁₆ | 5 ³ / ₈ | 2 ¹ / ₂ | 2-10d | 2-10d | 3,120 | 3,180 | 325 |
| TXC38 | 3 x 8 | | 7 ¹ / ₈ | | | | | | |
| TXC310 | 3 x 10 | | 9 ¹ / ₈ | | | | | | |
| TXC312 | 3 x 12 | | 11 | | | | | | |
| TXC314 | 3 x 14 | | 13 | | | | | | |
| TXC316 | 3 x 16 | | 15 | | | | | | |
| TXC46 | 4 x 6 | 3 ⁹ / ₁₆ | 5 ³ / ₈ | 2 ¹ / ₂ | 2-10d | 2-10d | 3,600 | 3,600 | 325 |
| TXC48 | 4 x 8 | | 7 ¹ / ₈ | | | | | | |
| TXC410 | 4 x 10 | | 9 ¹ / ₈ | | | | | | |
| TXC412 | 4 x 12 | 3 ⁹ / ₁₆ | 11 | 3 | 2-10d | 2-10d | 3,600 | 3,600 | 325 |
| TXC414 | 4 x 14 | | 13 | | | | | | |
| TXC416 | 4 x 16 | | 15 | | | | | | |
| TXC26-2 | (2) 2 x 6 | 3 ¹ / ₈ | 5 ³ / ₈ | 2 ¹ / ₂ | 2-10d | 2-10d | 3,600 | 3,600 | 325 |
| TXC28-2 | (2) 2 x 8 | | 7 ¹ / ₈ | | | | | | |
| TXC210-2 | (2) 2 x 10 | | 9 ¹ / ₈ | | | | | | |
| TXC212-2 | (2) 2 x 12 | | 11 | | | | | | |
| TXC214-2 | (2) 2 x 14 | | 13 | | | | | | |
| TXC216-2 | (2) 2 x 16 | | 15 | | | | | | |

For SI: 1 inch = 25.4 mm, 1 psi = 6.89 kPa, 1 lb. = 4.45 N.

¹TXC allowable loads are based upon 460 psi wood bearing.

²TXC series purlin hangers have not been rated for torsional resistance.

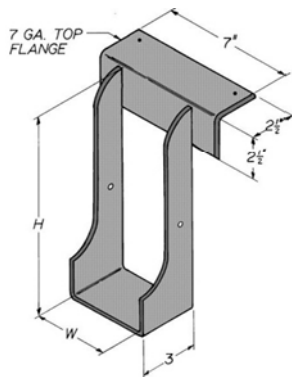


FIGURE 7A—TYPICAL TXC SERIES HANGER

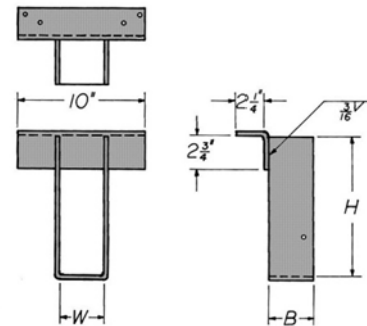


FIGURE 7B—TYPICAL TXC2 HANGER WITH NOMENCLATURE W, H, AND B

TABLE 8—TXD SERIES PURLIN HANGERS¹

| MODEL NO. | NOMINAL PURLIN SIZE | HANGER DIMENSIONS (in.) | | | NAILING SCHEDULE ¹ (Quantity—Size) | | ALLOWABLE LOADS ^{2,3} (lbs.) | | |
|-----------|-------------------------------------|--------------------------------|-------------------------------|-------------------------------|---|--------|---------------------------------------|-----------------------|----------------------|
| | | Joist Seat Width (W) | Hanger Height (H) | Joist Seat Depth (B) | Header | Joist | Downloads | | Uplift |
| | | | | | | | C _D = 1.0 | C _D = 1.25 | C _D = 1.6 |
| TXD46 | 4 x 6 | 5 ¹ / ₈ | 5 ³ / ₈ | 3 ¹ / ₂ | 4-N20A | 2-10d | 5,000 | 5,000 | 325 |
| TXD48 | 4 x 8 | | 7 ¹ / ₈ | | | | | | |
| TXD410 | 4 x 10 | | 9 ¹ / ₈ | | | | | | |
| TXD412 | 4 x 12 | 3 ⁹ / ₁₆ | 11 | 3 | 4-N20A | 2-10d | 5,000 | 5,000 | 325 |
| TXD414 | 4 x 14 | | 13 | | | | | | |
| TXD416 | 4 x 16 | | 15 | | | | | | |
| TXD418 | 4 x 18 | 3 ⁹ / ₁₆ | 17 | 3 ¹ / ₂ | 4-N20A | 2-10d | 5,000 | 5,000 | 325 |
| TXD66 | 6 x 6 | 5 ¹ / ₂ | 5 ³ / ₈ | 3 ¹ / ₂ | 4-N20A | 2-10d | 5,000 | 5,000 | 325 |
| TXD68 | 6 x 8 | | 7 ¹ / ₈ | | | | | | |
| TXD610 | 6 x 10 | | 9 ¹ / ₈ | | | | | | |
| TXD612 | 6 x 12 | | 11 | | | | | | |
| TXD614 | 6 x 14 | | 13 | | | | | | |
| TXD616 | 6 x 16 | | 15 | | | | | | |
| TXD618 | 6 x 18 | | 17 | | | | | | |
| TXD86 | 8 x 6 | | 7 ¹ / ₂ | | | | | | |
| TXD88 | 8 x 8 | 7 ¹ / ₈ | | | | | | | |
| TXD810 | 8 x 10 | 9 ¹ / ₈ | | | | | | | |
| TXD812 | 8 x 12 | 11 | | | | | | | |
| TXD814 | 8 x 14 | 13 | | | | | | | |
| TXD816 | 8 x 16 | 15 | | | | | | | |
| TXD818 | 8 x 18 | 17 | | | | | | | |
| TXD 2.6 | 2 ⁵ / ₈ " LVL | 2 ⁹ / ₁₆ | | SPEC | 4 | 4-N20A | 2-10d | 5,000 | 5,000 |
| TXD 3.25 | 3 ¹ / ₈ " LVL | 3 ¹ / ₄ | SPEC | 3 ¹ / ₂ | 4-N20A | 2-10d | 5,000 | 5,000 | 325 |
| TXC 5.25 | 5 ¹ / ₈ " LVL | 5 ¹ / ₄ | SPEC | 3 ¹ / ₂ | 4-N20A | 2-10d | 5,000 | 5,000 | 325 |

For SI: 1 inch = 25.4 mm, 1 psi = 6.89 kPa, 1 lb. = 4.45 N.

¹N20A fastener is a n annular ring shank nail (0.192-inch-diameter x 1³/₄-inch long).

²TXD allowable loads are based upon 460 psi wood bearing.

³TXD series purlin hangers have not been rated for torsional resistance.

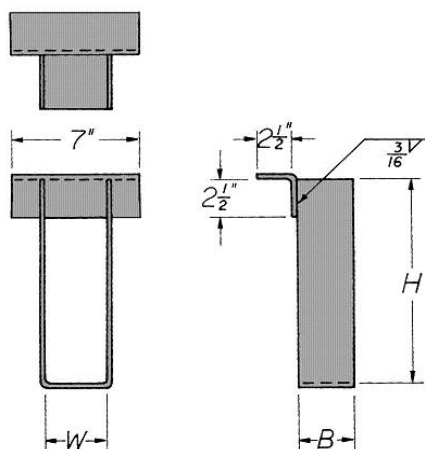


FIGURE 8—TYPICAL TXD SERIES HANGER WITH NOMENCLATURE W, H, AND B

TABLE 9—TGLT/THGLT BEAM HANGERS

| SERIES | MODEL NO. | HANGER DIMENSIONS ¹ (in.) | | | NAILING SCHEDULE ² (Quantity–Size) | | ALLOWABLE LOADS ^{3,4} (lbs.) | | | |
|--------|-----------|--------------------------------------|-------------------|-----------------------|---|----------------|---------------------------------------|----------------------|----------------------|-----------------------|
| | | Joist Seat Width (W) | Hanger Height (H) | Top Flange Length (L) | Carrying Member | Carried Member | Downloads | | | |
| | | | | | | | Uplift | C _D = 1.6 | C _D = 1.0 | C _D = 1.15 |
| TGLT | TGLT 2.6 | 5 ¹ / ₈ | SPEC | 10 | 10–N54A | 6–N54A | 1,555 | 8,195 | 8,370 | 8,485 |
| | TGLT 3 | 3 ¹ / ₄ | SPEC | 10 | 10–N54A | 6–N54A | 1,555 | 8,350 | 8,525 | 8,640 |
| | TGLT 5 | 5 ¹ / ₄ | SPEC | 12 | 10–N54A | 6–N54A | 1,555 | 10,510 | 10,820 | 11,030 |
| | TGLT 5.5 | 5 ¹ / ₂ | SPEC | 12 | 10–N54A | 6–N54A | 1,555 | 8,970 | 9,280 | 9,490 |
| | TGLT 7 | 6 ⁷ / ₈ | SPEC | 12 | 10–N54A | 6–N54A | 1,555 | 10,510 | 10,820 | 11,030 |
| | TGLT 7.5 | 7 ¹ / ₂ | SPEC | 12 | 10–N54A | 6–N54A | 1,555 | 8,970 | 9,280 | 9,490 |
| THGLT | THGLT 2.6 | 2 ⁵ / ₈ | SPEC | 12 | 18–N54A | 6–N54A | 1,555 | 9,605 | 9,780 | 9,895 |
| | THGLT 3 | 3 ¹ / ₄ | SPEC | 12 | 18–N54A | 6–N54A | 1,555 | 11,710 | 11,885 | 12,000 |
| | THGLT 5 | 5 ¹ / ₄ | SPEC | 12 | 18–N54A | 6–N54A | 1,555 | 12,165 | 12,725 | 12,750 |
| | THGLT 7 | 6 ⁷ / ₈ | SPEC | 12 | 18–N54A | 6–N54A | 1,555 | 12,165 | 12,725 | 12,750 |
| | THGLT 9 | 8 ⁷ / ₈ | SPEC | 14 | 18–N54A | 6–N54A | 1,555 | 12,750 | 12,750 | 12,750 |

For SI: 1 inch = 25.4 mm, 1 psi = 6.89 kPa, 1 lb. = 4.448 N.

¹SPEC = specify

²N54A fastener is an annular ring shank nail (0.250-inch-diameter x 2¹/₂-inch long).

³Allowable loads for sawn lumber sizes (TGL T5.5 & TGLT7.5) are based upon 460 psi wood bearing.

⁴Allowable loads for glulam members are based upon 560 psi wood bearing.

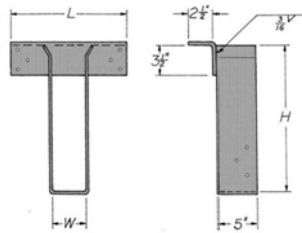


FIGURE 9A—TYPICAL TGLT SERIES HANGER WITH NOMENCLATURE W, H, AND L

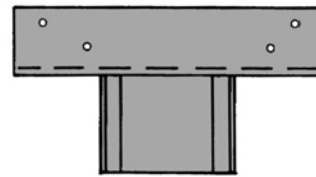


FIGURE 9B—PLAN VIEW OF THE TGLT1 HANGER

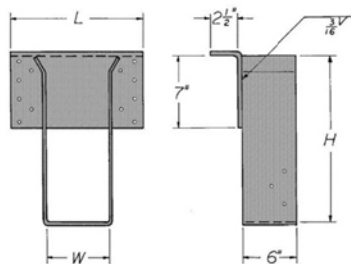


FIGURE 9C—TYPICAL THGLT SERIES HANGER WITH NOMENCLATURE W, H, AND L

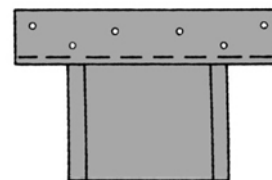


FIGURE 9D—PLAN VIEW OF THE THGLT1 HANGER

TABLE 10—TLEG/TMEG/TEG SERIES

| MODEL NO. | HANGER DIMENSIONS ¹ (in.) | | | BOLT SCHEDULE ² (Quantity)—Diameter | | ALLOWABLE LOADS ^{3,4} (lbs.) | | |
|-----------|--------------------------------------|-------------------|--------------------------------|--|-------------------------------------|---------------------------------------|-----------------------|----------------------|
| | Beam Seat Width (W) | Hanger Height (H) | Top Flange Length (L) | Carrying Member | Supported Member | Downloads | | Uplift |
| | | | | | | C _D = 1.0 | C _D = 1.25 | C _D = 1.6 |
| TLEG3 | 3 ¹ / ₄ | 5.125 | 12 | (4) — ³ / ₄ " | (2) — ³ / ₄ " | 12,040 | 12,940 | 4,800 |
| TLEG5 | 5 ¹ / ₄ | SPEC | 12 | (4) — ³ / ₄ " | (2) — ³ / ₄ " | 12,040 | 12,940 | 4,800 |
| TLEG7 | 6 ⁷ / ₈ | SPEC | 12 | (4) — ³ / ₄ " | (2) — ³ / ₄ " | 12,040 | 12,940 | 4,800 |
| TMEG5 | 5 ¹ / ₄ | SPEC | 12 | (6) — ³ / ₄ " | (2) — ³ / ₄ " | 13,840 | 15,190 | 4,800 |
| TMEG7 | 6 ⁷ / ₈ | SPEC | 12 | (6) — ³ / ₄ " | (2) — ³ / ₄ " | 13,840 | 15,190 | 4,800 |
| TEG5 | 5 ¹ / ₄ | SPEC | 12 | (8) — 1" | (2) — 1" | 18,360 | 19,310 | 6,615 |
| TEG7 | 6 ⁷ / ₈ | SPEC | 13 ¹ / ₂ | (8) — 1" | (2) — 1" | 19,310 | 19,310 | 6,615 |
| TEG9 | 8 ⁷ / ₈ | SPEC | 15 ¹ / ₂ | (8) — 1" | (2) — 1" | 19,310 | 19,310 | 6,615 |

For SI: 1 inch = 25.4 mm, 1 psi = 6.89 kPa, 1 lb. = 4.448 N.

¹SPEC = specify

²Bolts must be machine bolts complying with ANSI/ASME Standard B18.2.1.

³Allowable loads are based upon 560 psi wood bearing.

⁴Minimum carrying member width is 5¹/₂ inches.

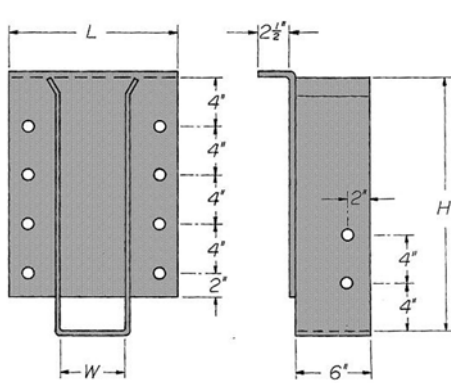


FIGURE 10A—TYPICAL TLEG SERIES HANGER WITH NOMENCLATURE W, H, AND L

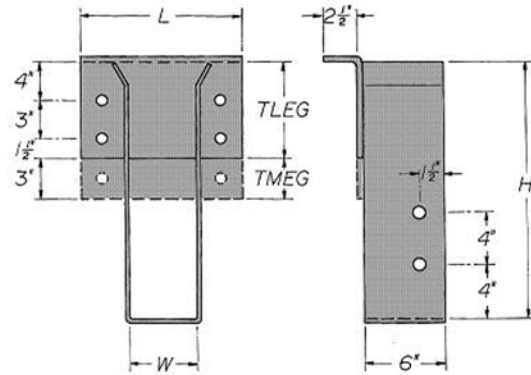


FIGURE 10B—TYPICAL TLEG/TMEG SERIES HANGER WITH NOMENCLATURE W, H, AND L

TABLE 11—TGLS/THGLS BEAM SADDLE HANGERS

| MODEL NO. | HANGER DIMENSIONS ¹ (in.) | | | | FASTENER SCHEDULE ² (Qty. Each Beam – Size) | | ALLOWABLE LOADS ³ (lbs.) (for each supported beam) | | | |
|-----------|--------------------------------------|----------------------------------|-------------------------------|--------------------------------|---|----------------|--|----------------------|-----------------------|----------------------|
| | Beam Seat Width (W1 or W2) | Beam Hanger Height (H1 or H2) | Girder Saddle Width (S) | Girder Saddle Length (L) | Carrying Member | Carried Member | Uplift | Download | | Lateral ⁴ |
| | | | | | | | C _D = 1.6 | C _D = 1.0 | C _D = 1.25 | C _D = 1.6 |
| TGLS3-5 | 3 ¹ / ₄ | SPEC | 5 ¹ / ₄ | 6 | 6-N54A | 6-N54A | 1,555 | 9,955 | 10,200 | — |
| TGLS3-7 | 3 ¹ / ₄ | SPEC | 6 ⁷ / ₈ | 6 | 6-N54A | 6-N54A | 1,555 | 9,955 | 10,245 | — |
| TGLS3-9 | 3 ¹ / ₄ | SPEC | 8 ⁷ / ₈ | 6 | 6-N54A | 6-N54A | 1,555 | 9,955 | 10,245 | — |
| TGLS5-5 | 5 ¹ / ₄ | SPEC | 5 ¹ / ₄ | 12 | 6-N54A | 6-N54A | 1,555 | 15,275 | 15,275 | — |
| TGLS5-7 | 5 ¹ / ₄ | SPEC | 6 ⁷ / ₈ | 9 | 6-N54A | 6-N54A | 1,555 | 15,275 | 15,275 | — |
| TGLS7-7 | 6 ⁷ / ₈ | SPEC | 6 ⁷ / ₈ | 12 | 6-N54A | 6-N54A | 1,555 | 15,275 | 15,275 | — |
| TGLS7-9 | 6 ⁷ / ₈ | SPEC | 8 ⁷ / ₈ | 12 | 6-N54A | 6-N54A | 1,555 | 15,275 | 15,275 | — |
| THGLS5 | 5 ¹ / ₄ | SPEC | SPEC | 12 | 14-N54A | 8-N54A | 2,065 | 16,835 | 16,835 | — |
| THGLS7 | 6 ⁷ / ₈ | SPEC | SPEC | 12 | 14-N54A | 8-N54A | 2,065 | 16,835 | 16,835 | — |
| THGLS9 | 8 ⁷ / ₈ | SPEC | SPEC | 12 | 14-N54A | 8-N54A | 2,065 | 16,835 | 16,835 | — |
| TGLST3 | 3 ¹ / ₄ | SPEC | SPEC | 12 | 6-N54A | 6-N54A | 1,555 | 9,955 | 10,245 | 12,555 |
| TGLST5 | 5 ¹ / ₄ | SPEC | SPEC | 12 | 6-N54A | 6-N54A | 1,555 | 12,750 | 12,750 | 12,555 |
| TGLST7 | 6 ⁷ / ₈ | SPEC | SPEC | 12 | 6-N54A | 6-N54A | 1,555 | 12,750 | 12,750 | 12,555 |
| THGLST5 | 5 ¹ / ₄ | SPEC | SPEC | 12 ¹ / ₄ | 14-N54A | 8-N54A | 2,065 | 16,835 | 16,835 | 12,555 |
| THGLST7 | 6 ⁷ / ₈ | SPEC | SPEC | 14 | 14-N54A | 8-N54A | 2,065 | 16,835 | 16,835 | 12,555 |
| THGLST9 | 8 ⁷ / ₈ | SPEC | SPEC | 16 | 14-N54A | 8-N54A | 2,065 | 16,835 | 16,835 | 12,555 |

For **SI**: 1 inch = 25.4 mm, 1 psi = 6.89 kPa, 1 lb. = 4.45 N.

¹SPEC = specify

²N54A fastener is an annular ring shank nail (0.250-inch-diameter x 2¹/₂-inch long).

³Allowable loads are based upon 560 psi wood bearing.

⁴Three ³/₄-inch diameter machine bolt must be installed in the slotted holes in the tension straps on each side of carried beam. One ³/₄-inch diameter machine bolt located at each side of the carried beam must be installed through the carrying beam. The bolts must comply with ANSI/ASME B18.2.1.

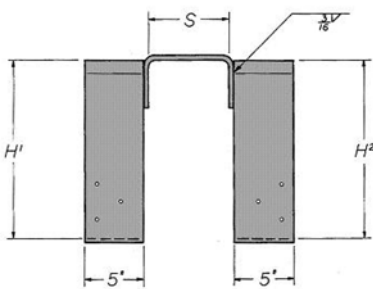


FIGURE 11A—TGLS HANGER WITH NOMENCLATURE H¹, H², AND S

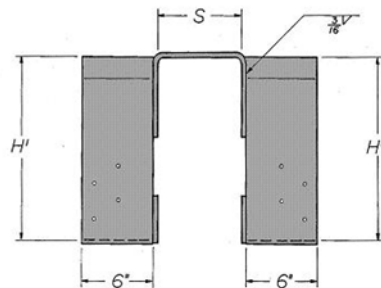


FIGURE 11B—THGLS HANGER WITH NOMENCLATURE H¹, H², AND S

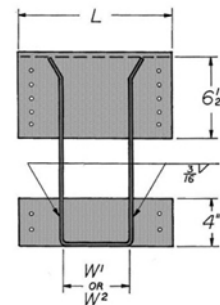


FIGURE 11C—TYPICAL THGLS HANGER WITH NOMENCLATURE W¹, W², AND L

TABLE 12—THC/THCCT GLU-LAM BEAM HANGER SERIES

| MODEL NO. | BEAM WIDTH (in.) | HANGER BEARING PLATE DIMENSIONS (in.) | | | MINIMUM HANGER HEIGHT ¹ (H) (Based on Number of Bolts) (in.) | | ALLOWABLE DOWNLOADS ^{2,3,4} (lbs.) | |
|-----------|--------------------------------|---------------------------------------|--------------------------------|------------|---|--------------------------------|---|-----------------------|
| | | Thickness (PT) | Width (W) | Depth (PD) | 2-Bolt Rotation Straps | 3-Bolt Rotation Straps | F _{c⊥} = 460 psi | F _{c⊥} = 560 |
| THC 55 | 5 ¹ / ₈ | 3 ³ / ₄ | 5 ¹ / ₄ | 5 | 15 | 12 | 11,790 | 14,415 |
| THC 56 | | | | 6 | 18 ³ / ₄ | 14 ³ / ₄ | 14,145 | 17,295 |
| THC 57 | | | | 7 | 23 ¹ / ₂ | 17 ³ / ₄ | 16,505 | 20,180 |
| THC 59 | | | | 9 | 34 ¹ / ₂ | 25 ¹ / ₄ | 21,215 | 25,945 |
| THC 75 | 6 ³ / ₄ | 1 | 6 ⁷ / ₈ | 5 | 17 ³ / ₄ | 14 | 15,525 | 18,985 |
| THC 76 | | | | 6 | 23 | 17 ¹ / ₂ | 18,630 | 22,780 |
| THC 77 | | | | 7 | 28 ³ / ₄ | 21 ¹ / ₂ | 21,735 | 26,580 |
| THC 79 | | | | 9 | 43 ¹ / ₂ | 31 ¹ / ₄ | 27,945 | 34,170 |
| THC 95 | 8 ³ / ₄ | 1 ¹ / ₄ | 8 ⁷ / ₈ | 5 | 21 ¹ / ₄ | 16 ¹ / ₄ | 20,125 | 24,610 |
| THC 96 | | | | 6 | 28 | 20 ³ / ₄ | 24,150 | 29,530 |
| THC 97 | | | | 7 | 35 ¹ / ₂ | 26 | 28,175 | 34,455 |
| THC 99 | | | | 9 | 54 ¹ / ₂ | 38 ³ / ₄ | 36,225 | 44,295 |
| THC11-5 | 10 ³ / ₄ | 1 ¹ / ₂ | 10 ⁷ / ₈ | 5 | 24 ³ / ₄ | 18 ³ / ₄ | 24,725 | 30,235 |
| THC11-6 | | | | 6 | 33 | 24 | 29,670 | 36,280 |
| THC11-7 | | | | 7 | 42 ¹ / ₄ | 30 ¹ / ₂ | 34,615 | 42,330 |
| THC11-9 | | | | 9 | 65 ¹ / ₂ | 46 | 44,505 | 54,420 |

For SI: 1 inch = 25.4 mm, 1 psi = 6.89 kPa, 1 lb. = 4.45 N.

¹Minimum height shown is for the tabulated downloads. Also, the hangers must be specified with either 2- or 3-bolt rotation straps. The minimum height depends on the rotation straps specified.

²No increase has been included for short-duration loads.

³Machine bolts must comply with ANSI/ASME B18.2.1.

⁴THCCT connectors are identical to the THC connectors except for steel tension straps factory welded on each side at the center of the connectors. When three 3/4 -inch diameter machine bolts are installed in each tension strap, the allowable tension load is 12,555 lbs.

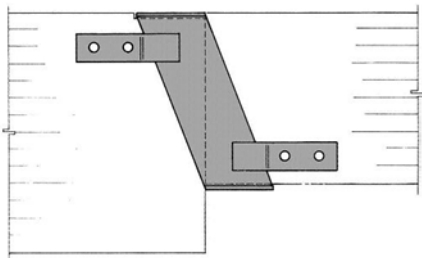


FIGURE 12A—TYPICAL INSTALLATION OF A THC HANGER

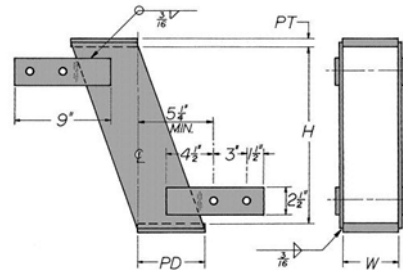


FIGURE 12B—TYPICAL THC HANGER WITH NOMENCLATURE PT, W, PD, AND H

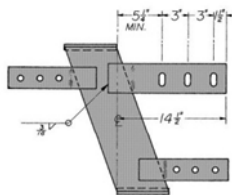


FIGURE 12C—TYPICAL THC3T HANGER

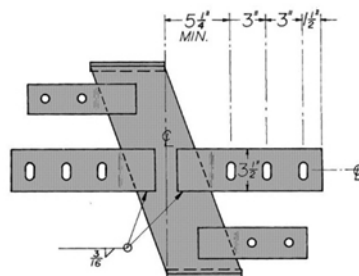


FIGURE 12D—TYPICAL THCCT HANGER

TABLE 13—TSL, TSLT, TSF, TMST, TSI, TSJ AND THST STRAP SERIES

| MODEL SERIES | MODEL NO. | STRAP DIMENSIONS | | | | FASTENER SCHEDULE ¹ (Quantity–Size) | | ALLOWABLE TENSION LOADS ^{2,3,4,5,6} (lbs.) | | | |
|--------------|-----------|------------------|--------|-------------------|---------------------|---|-------------|--|----------------------|----------------------|----------------------|
| | | Thickness | | Width (in.) | Length (in.) | Nails | Bolts | Nails | | Bolts | |
| | | (inch) | (gage) | | | | | C _D = 1.0 | C _D = 1.6 | C _D = 1.0 | C _D = 1.6 |
| TSL | TSL14 | 5.125 | 20 | 3/4 | 16 ^{5/16} | 10-16d | — | 455 | 605 | — | — |
| | TSL10 | — | 20 | 2 ^{1/16} | 9 ^{5/16} | 12-16d | — | 800 | 1,065 | — | — |
| | TSL 13 | — | 20 | 2 ^{1/16} | 12 ^{13/16} | 16-16d | — | 1,065 | 1,420 | — | — |
| | TSL15 | — | 20 | 2 ^{1/16} | 16 ^{5/16} | 20-16d | — | 1,330 | 1,775 | — | — |
| | TSL16 | — | 16 | 2 ^{1/16} | 16 ^{5/16} | 20-16d | — | 1,350 | 1,800 | — | — |
| | TSL23 | — | 16 | 2 ^{1/16} | 23 ^{5/16} | 18-16d | — | 1,890 | 2,520 | — | — |
| | TSL33 | — | 16 | 2 ^{1/16} | 33 ^{13/16} | 40-16d | — | 2,530 | 3,300 | — | — |
| | TSL9 | — | 16 | 1 ^{1/4} | 9 | 8-16d | — | 540 | 720 | — | — |
| | TSL12 | — | 16 | 1 ^{1/4} | 11 ^{5/8} | 10-16d | — | 675 | 900 | — | — |
| | TSL18 | — | 16 | 1 ^{1/4} | 17 ^{3/4} | 14-16d | — | 945 | 1,260 | — | — |
| | TSL22 | — | 16 | 1 ^{1/4} | 21 ^{5/8} | 18-16d | — | 1,215 | 1,620 | — | — |
| TSLT | TSL9T | — | 16 | 1 ^{1/4} | 9 | 8-16d | — | 540 | 720 | — | — |
| | TSL12T | — | 16 | 1 ^{1/4} | 11 ^{5/8} | 10-16d | — | 675 | 900 | — | — |
| | TSL18T | — | 16 | 1 ^{1/4} | 17 ^{3/4} | 14-16d | — | 945 | 1,260 | — | — |
| | TSL22T | — | 16 | 1 ^{1/4} | 21 ^{5/8} | 18-16d | — | 1,215 | 1,620 | — | — |
| TSF | TSF9 | — | 12 | 1 ^{1/2} | 9 | 8-16d | — | 565 | 755 | — | — |
| | TSF12 | — | 12 | 1 ^{1/2} | 12 | 8-16d | — | 565 | 755 | — | — |
| | TSF18 | — | 12 | 1 ^{1/2} | 18 | 8-16d | — | 565 | 755 | — | — |
| | TSF24 | — | 12 | 1 ^{1/2} | 24 | 8-16d | — | 565 | 755 | — | — |
| | TSF30 | — | 12 | 1 ^{1/2} | 30 | 8-16d | — | 565 | 755 | — | — |
| TMST | TMST27 | — | 12 | 2 ^{1/16} | 27 | 30-16d | (4) – 1/2" | 2,115 | 2,820 | 1,495 | 1,995 |
| | TMST37 | — | 12 | 2 ^{1/16} | 37 ^{1/2} | 42-16d | (6) – 1/2" | 2,960 | 3,945 | 2,175 | 2,900 |
| | TMST48 | — | 12 | 2 ^{1/16} | 48 | 54-16d | (6) – 1/2" | 3,805 | 5,075 | 2,750 | 3,665 |
| | TMST60 | — | 12 | 2 ^{1/16} | 60 | 66-16d | (8) – 1/2" | 4,900 | 6,535 | 2,750 | 3,665 |
| TSI | TSI26 | — | 12 | 2 ^{1/16} | 25 | 26-10d | — | 1,835 | 2,110 | — | — |
| | TSI36 | — | 12 | 2 ^{1/16} | 35 | 36-10d | — | 2,540 | 3,385 | — | — |
| | TSI48 | — | 12 | 2 ^{1/16} | 47 | 48-10d | — | 3,385 | 4,515 | — | — |
| | TSI60 | — | 12 | 2 ^{1/16} | 59 | 60-10d | — | 4,230 | 5,640 | — | — |
| TSJ | TSJ9 | — | 14 | 1 ^{1/4} | 9 | 8-10d | — | 460 | 615 | — | — |
| | TSJ12 | — | 14 | 1 ^{1/4} | 12 | 10-10d | — | 575 | 765 | — | — |
| | TSJ15 | — | 14 | 1 ^{1/4} | 15 | 12-10d | — | 690 | 920 | — | — |
| | TSJ18 | — | 14 | 1 ^{1/4} | 18 | 14-10d | — | 805 | 1,075 | — | — |
| | TSJ24 | — | 14 | 1 ^{1/4} | 24 | 18-10d | — | 1,035 | 1,380 | — | — |
| | TSJ30 | — | 14 | 1 ^{1/4} | 30 | 22-10d | — | 1,265 | 1,685 | — | — |
| | TSJ36 | — | 14 | 1 ^{1/4} | 36 | 26-10d | — | 1,495 | 1,995 | — | — |
| THST | THST2 | 3/16 | — | 2 ^{1/2} | 21 ^{1/4} | — | (6) – 5/8" | — | — | 3,275 | 4,370 |
| | THST3 | 1/4 | — | 3 | 25 ^{1/2} | — | (6) – 3/4" | — | — | 4,565 | 6,085 |
| | THST5 | 3/16 | — | 5 | 21 ^{1/4} | — | (12) – 5/8" | — | — | 6,550 | 8,735 |
| | THST6 | 1/4 | — | 6 | 25 ^{1/2} | — | (12) – 3/4" | — | — | 8,462 | 11,290 |

For SI: 1 inch = 25.4 mm, 1 psi = 6.89 kPa, 1 lb. = 4.45 N.

¹One half of the tabulated quantity of fasteners must be installed in each wood member forming the connection.

²Allowable loads have been increased for duration of load, C_D, as indicated in the table. No further increase is allowed.

³TMST and THST straps: Allowable tension loads with bolts are based on wood members having a minimum specific gravity of 0.50 and a minimum nominal thickness of 4 inches.

⁴TSI and TSJ straps: Allowable tension loads with nails are based on wood members having a minimum specific gravity of 0.50 and a minimum nominal thickness such that the nails have full embedment.

⁵Bolts must be machine bolts complying with ANSI/ASME Standard B18.2.1.

⁶Allowable loads for nailed and bolted straps are not cumulative.

⁷Allowable tension loads are applicable only for the loading direction parallel to grain in both wood members connected by a strap.

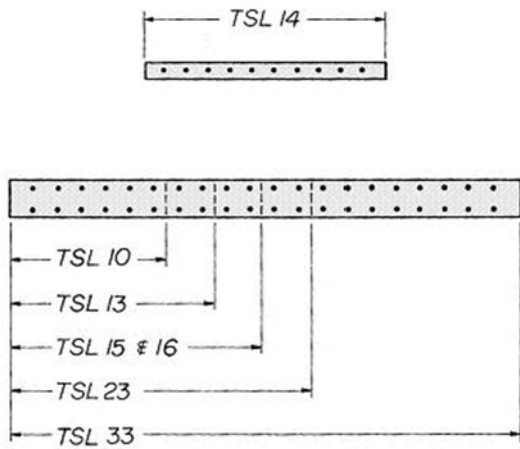


FIGURE 13A—DRAWING SHOWING THE RELATIVE LENGTHS OF THE TSL STRAPS WITHIN THE SERIES
(See Table 13, previous page)

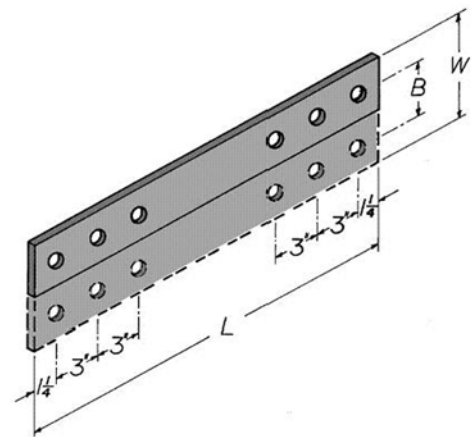


FIGURE 13B—DRAWING OF THE THST STRAP WITH NOMENCLATURE B, W, AND L
(See Table 13, previous page)

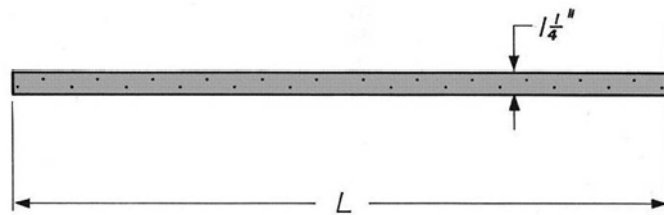


FIGURE 13C—DRAWING OF THE TSJ STRAP WITH LENGTH (L)
(See Table 13, previous page)

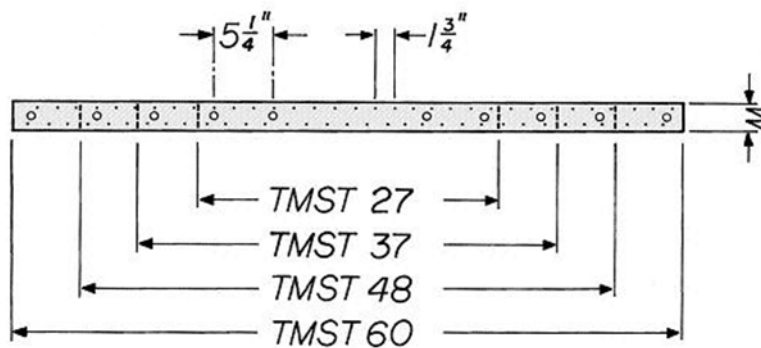


FIGURE 13D—DRAWING SHOWING THE RELATIVE LENGTHS OF THE TMST STRAPS WITHIN THE SERIES WITH WIDTH (W)
(See Table 13, previous page)

**TABLE 14—STEEL SPECIFICATIONS, SPECIFIED YIELD AND TENSILE STRENGTHS,
AND CORROSION PROTECTIVE COATINGS**

| TABLE | PRODUCT | STEEL SPECIFICATION | SPECIFIED MINIMUM STEEL STRENGTHS (lbf/in ²) | | CORROSION PROTECTIVE COATING |
|-------|---------------------------------|-----------------------|--|-------------------------|------------------------------|
| | | | Yield, F _y | Tensile, F _u | |
| 1 | TGLB, THGLB, TGLBT | ASTM A 36 | 36,000 | 58,000 | Painted |
| | | ASTM A 706 (Grade 60) | 60,000 | 80,000 | |
| 2 | TECC, TCC | ASTM A 36 | 36,000 | 58,000 | Painted |
| 3 | TF | ASTM A 653 (Grade 33) | 33,000 | 45,000 | G185 Galvanized |
| | | | | | G90 Galvanized |
| 4 | TZ | ASTM A 653 | 33,000 | 45,000 | G90 Galvanized |
| 5 | TFTA | ASTM A 36 | 36,000 | 58,000 | Painted |
| 6 | TVB | ASTM A 653 | 33,000 | 45,000 | G90 Galvanized |
| 7 | TXC | ASTM A 1011 | 33,000 | 45,000 | Painted |
| | | ASTM A 36 | 36,000 | 58,000 | |
| 8 | TXD | ASTM A 1011 | 33,000 | 58,000 | Painted |
| | | ASTM A 36 | 36,000 | 58,000 | |
| 9 | TGLT, THGLT | ASTM A 36 | 36,000 | 58,000 | Painted |
| 10 | TLEG, TMEG, TEG | ASTM A 36 | 36,000 | 58,000 | Painted |
| 11 | TGLS, THGLS, TGLST, THGLST | ASTM A 36 | 36,000 | 58,000 | Painted |
| 12 | THC, THCCT | ASTM A 36 | 36,000 | 58,000 | Painted |
| 13 | TSL, TSLT, TSF, TMST, TSI, TSJ, | ASTM A 653 | 33,000 | 45,000 | G90 Galvanized |
| 13 | THST | ASTM A 36 | 36,000 | 58,000 | Painted |

TABLE 15—NAILS USED FOR CONNECTORS

| NAIL TYPE | SHANK DIAMETER (inch) | NAIL LENGTH (inches) | F _{yb} (psi) |
|-------------------------|-----------------------|-------------------------------|-----------------------|
| 8d common | 0.131 | 2 ¹ / ₂ | 100,000 |
| 10d common | 0.148 | 3 | 90,000 |
| 16d common | 0.162 | 3 ¹ / ₂ | 90,000 |
| N20A angular-ring shank | 0.192 | 1 ³ / ₄ | 80,000 |
| N54A angular-ring shank | 0.250 | 2 ¹ / ₂ | 80,000 |

For SI: 1 inch = 25.4 mm.