



ICC-ES Evaluation Report

ESR-5357

Issued October 2023
Revised November 2023

This report is subject to renewal October 2024.

DIVISION: 06 00 00—WOOD, PLASTIC, AND COMPOSITE FASTENINGS
Section: 06 11 00—Wood Framing

REPORT HOLDER:

INNOVATED STRUCTURES, INC.

EVALUATION SUBJECT:

BARENAKED TSTUD™ STRUCTURAL WALL STUDS AND BARENAKED TSTUD™ HEADERS

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018 and 2015 *International Building Code*® (IBC)
- 2021, 2018 and 2015 *International Residential Code*® (IRC)

For evaluation of compliance with codes adopted by Los Angeles Department of Building and Safety (LADBS), see [ESR-5357 LABC and LARC Supplement](#).

Properties evaluated:

- Structural

2.0 USES

The BareNaked Tstud™ Structural Wall Studs and BareNaked Tstud™ Headers are structural members, where nominal 2x4 and 2x6 dimensional lumbars are specified, such as wall studs, top plates, bottom plates and headers. They are also used as components in built-up structural members, such as built-up columns.

3.0 DESCRIPTION

3.1 General:

The BareNaked Tstud™ Structural Wall Studs and BareNaked Tstud™ Headers described in this report comply with the requirements noted in Section 2308 of the 2021, 2018 and 2015 IBC, for allowable stress design in accordance with the 2021 and 2018 IBC Section 2302.1(1) and 2015 IBC Section 2301.2(1). 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.

3.2 Material:

BareNaked Tstud™ consists of two nominally 2x3 [1.5 inch by 2.5 inch (38.1 mm by 63.5 mm) actual] or 2x4 [1.5 inch by 3.5 inch (38.1 mm by 88.9 mm) actual] No. 2 or better Spruce Pine Fir (SPF) dimensional lumber, and 1¹/₁₆-inch-diameter (17.5 mm) wooden dowels made from SPF.

BareNaked Tstud™ is available in two depths: 5½ inches (139.7 mm) and 7¼ inches (184.15 mm). The BareNaked Tstud™ is composed of two-dimensional lumber members (flange and spline) with wooden dowel connectors between the members. The overall sizes of BareNaked Tstud™ are as follows:

- 2½ inches x 5½ inches (2X3 spline and 2x3 flange)
- 2½ inches x 7¼ inches (2X4 spline and 2x3 flange)
- 3½ inches x 7¼ inches (2X3 spline and 2x4 flange)

The flange and spline are oriented perpendicular to one another to form an L-shape. Wooden dowels connect one member into the other at opposing angles, forming a web-like pattern, as shown in Figure 1. Dowels are spaced evenly at a distance not to exceed 6½-inches (165.1 mm) on center and glued in place using adhesive complying with ASTM D2559.

The BareNaked Tstud™ Headers consist of two BareNaked Tstud™ members glued together to form a box sections, are available in two sizes: 5½-inches (139.7 mm) and 7¼-inches (184.15 mm), as shown in Figure 2.

4.0 DESIGN AND INSTALLATION

4.1 General:

Design and installation of BareNaked Tstud™ Structural Wall Studs and BareNaked Tstud™ Headers must be in accordance with this report, the applicable code provisions and the manufacturer’s published installation instructions. The manufacturer’s published installation instructions must be available at the jobsite at all times during installation. The requirements specified for allowable stress design in 2021 and 2018 IBC Section 2302.1(1) and 2015 IBC Section 2301.2(1), and the design provisions for structural composite lumber in the ANSI/AWC National Design Specification (NDS) for Wood Construction, are as applicable to BareNaked Tstud™ Structural Wall Studs and BareNaked Tstud™ Headers, except as modified within this report. Reference design values for each grade of

BareNaked Tstud™ Structural Wall Studs and BareNaked Tstud™ Headers are given in Table 1.

4.2 Nailing Requirements:

4.2.1 Wall Framing: BareNaked Tstud™ Structural Wall Studs are used as wall framing members, with fastening schedule given in Table 2.

4.2.2 Wall Plate: BareNaked Tstud™ may be used as a single top plate in accordance with IRC Section R602.3.2. Fasteners connections shall be distributed in each wood member, where top plate to stud connections shall be fastened as specified in Table 2. BareNaked Tstud™ may be used as a bottom plate only where the wall is connected to a wood deck.

4.2.3 Jack, Trimmer and Cripple Studs: When used as jack, trimmer and cripple studs, install cripple studs between the bottom plate and rough sill using three (3) 4-inches (101.6 mm) x 0.131-inch (3,33 mm) nails: one (1) into the spline and two (2) into the flange.

4.2.4 Sheathings: Structural wood sheathing shall be installed on one side of the wall in accordance with the applicable building code.

4.2.5 Allowable Compressive Load: For trusses and rafters placed on BareNaked Tstud™ Structural Wall Studs and BareNaked Tstud™ Headers, the allowable design values can be found in Table 3.

4.3 Built-up Column: BareNaked Tstud™ may be used as built-up column, with details as shown in Figures 4 and 5, in accordance with design provisions for structural composite lumber in the ANSI/AWC National Design Specification (NDS) for Wood Construction, and is subjected to the following additional conditions:

1. Fastening details are subjected to the following provisions:
 - a. Minimum fastener diameter of 0.131-inch (8d common wire nail)
 - b. End distance must be equal or in between 15d and 18d.
 - c. Spacing between adjacent nails in a row must be equal or in between 20d and 8-inches.
 - d. Edge distance from exterior of BareNaked Tstud™ column must be equal and in between 5d and 20d.
 - e. Both flange/spline pairs of the BareNaked Tstud™ column must have a single row of nails.
 - f. Single row of nails per spline/flange.

2. Maximum allowable compression load for BareNaked Tstud™ columns is specified in Table 4.

4.4 Shear Walls: BareNaked Tstud™ may be used as components within a shear walls system, provided the seismic design coefficients and factors used in design conform to the following values:

Seismic factor or Coefficient ¹	IBC
Response Modification Coefficient	R = 6½
System Over-strength factor	Ω ₀ = 3
Deflection Amplification Factor	C _d = 4
Note: ¹ Where shear panels are installed in structures with flexible diaphragms, as determined in accordance with Section 12.3.1 of ASCE/SEI 7, the tabulated value of Ω ₀ may be reduced in accordance with Footnote g, Table 12.2-1 of ASCE/SEI 7.	

The building height is limited to a maximum of 65 feet (19.8 m) for structures located in Seismic Design Categories D, E or F, or as limited in Tables 504.3 and 504.4 of the 2021, 2018 and 2015 IBC based on construction type.

4.5 Prescriptive BareNaked Tstud™ Header: Prescriptive header design values can be found in Table 5.

5.0 CONDITIONS OF USE

The BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1** Fabrication, design, installation, and connection restrictions must comply with this report and the manufacturer’s published installation instructions. In the event of a conflict between the manufacturer’s published installation instructions and this report, this report governs.
- 5.2** Calculations and drawings demonstrating compliance with this report must be submitted to the code official. The calculations and drawings 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** Boring of BareNaked Tstud™ Structural Wall Stud used in prescriptive wall framing is permitted in accordance with Sections 2308.5.9 and 2305.5.10 of the 2021, 2018 and 2015 IBC, and Section R602.6 of the IRC, as shown in Figure 3.
- 5.4** No dowels may be cut or damaged.
- 5.5** Notches of exterior faces of the flange and spline are not permitted.
- 5.6** Hold-downs shall not be attached directly to BareNaked Tstud™ members.
- 5.7** The insulation used with BareNaked Tstud™ is outside the scope of this report.
- 5.8** All constructions related to the use of BareNaked Tstud™ must follow the manufacturer’s most recently published construction manual.
- 5.9** BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header is produced by Innovated Structures, Inc. under a quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1** Data in accordance with ASTM D198, ASTM D2559, ASTM E2126 and ASTM E72.
- 6.2** Quality documentation in accordance with the ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated May 2022.

7.0 IDENTIFICATION

- 7.1** The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-5357) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.
- 7.2** The report holder’s contact information is the following:

INNOVATED STRUCTURES, INC.
14048 TERRACE ROAD NE
HAM LAKE, MINNESOTA 55304
612-978-8011
www.tstud.com

TABLE 1—REFERENCE DESIGN VALUES FOR BARENAKED TSTUD™ STRUCTURAL WALL STUD AND BARENAKED TSTUD™ HEADER^{1,2,3,4}

SIZE/TYPE	BENDING STIFFNESS		Bending ^x F _b S (lb-ft)	Shear Force V (lbs)	Compression perpendicular to grain F _{c⊥} ^x (psi)	Compression parallel to grain F _{c∥} (psi)	Tension parallel to grain F _t (psi)
	EI (x10 ⁶ lb-in ²)	EI _{min} ^x (x10 ⁶ lb-in ²)					
5.5-inches BareNaked Tstud™	19.3	8.6	660	260	425	1,150	450
7.5-inches BareNaked Tstud™	37.1	15.0	975	230	425	1,150	450
5.5-inches BareNaked Tstud™ Header ^{5,6}	20.76	10.521	1,230	1,055	425	1,150	450
7.5-inches BareNaked Tstud™ Header ^{5,6,7}	23.587	10.14	1,005	865	425	1,150	450

For SI: 25.4 mm = 1 in, 1 N = 0.225 lb, 1 MPa = 145 psi

¹Reference design values must be adjusted, as applicable, in accordance with Section 4.3 of NDS.

²Equations for various span and load conditions are available in engineering references. For example, the deflection equation for simple-supported beam under uniform load is:

$$\Delta = \frac{5 \cdot (0.7w) \cdot h^4}{384EI}$$

where:

- Δ = Deflection in inches (in)
- w = Uniform load in pounds per lineal foot (plf)
- h = Design span in feet (ft)
- EI = Bending Stiffness (lb-in²)

³EI_{min} is the reference bending stiffness for beam stability and column stability calculations. For computing the column stability factor, the critical buckling design is as follows:

$$F_{cE} = \frac{\pi^2 EI_{min}}{A(I_e)^2}$$

where:

- A = Minimum net section area of BareNaked Tstud™ (in²), 5.78 in².
- I_e = Effective column length (in), K_e x h

⁴The axial compressive stress due to combined bending and axial can be computed as follows:

$$f_a = \frac{P}{A} + \frac{M}{A_m \cdot d_{eff}}$$

where:

- P = Axial load applied to BareNaked Tstud™ (lbs)
- A = Minimum net section area of BareNaked Tstud™ (in²), 5.78 in².
- A_m = Minimum net section area of single BareNaked Tstud™ member (in²), 2.03 in².
- M = Bending moment applied to BareNaked Tstud™ (lb-in)
- d_{eff} = Distance from center to center of BareNaked Tstud™ member (in), 3.5 in.

⁵BareNaked Tstud™ Headers made from No. 2 SPF.

⁶Headers are designed to be oriented with the load perpendicular to the dowels. Ensure proper orientation during installation.

⁷The 7.25-inches BareNaked Tstud™ header referenced here uses a 2x3 as the flange and a 2x4 as the spline.

TABLE 2—FASTENING SCHEDULE FOR BARENAKED TSTUD™^{1,2,3}

Application ¹	Fastening	Number & Type of Fastener ²	Installation ³
Ceiling joists to top plate	Toe nail	3 (4" x 0.131")	Fasten two (2) toe nails into interior flange/spline and one (1) toe nail into exterior flange/spline per joist
Rafter or roof truss to plate	Toe nail	3 (3½" x 0.135")	Two (2) toe nails on one side and one (1) toe nail on opposite side of each rafter or truss
		4 (4" x 0.131")	Fasten two (2) toenails into interior flange/spline and two (2) toe nails into exterior flange/spline
Stud to stud ⁴	Face nail through 2x3 spline	2 (3" x 0.131")	Fasten two (2) face nails, one (1) into each flange/spline, spaced 16" o.c.
	Face nail through 2x3 flange	2 (3½" x 0.131")	
	Face nail through 2x4 flange	2 (4½" x 0.131")	
Abutting studs at intersecting wall corners	Face nail through 2x3 spline	(3" x 0.131")	Fasten one (1) face nail into exterior-facing flange/spline spaced 12" o.c.
	Face nail through 2x3 flange	(3½" x 0.131")	
	Face nail through 2x4 flange	(4½" x 0.131")	
Double top plate splice	Face nail in lapped area through spline or 2x lumber	12 (3" x 0.131")	Fasten twelve (12) face nails on each side of end joint (minimum 24" lap splice length each side of joint)
	Face nail in lapped area through 2x3 flange	12 (3½" x 0.131")	
	Face nail in lapped area through 2x4 flange	12 (4½" x 0.131")	
Stud to plate	Toe nail	4 (4" x 0.131")	Fasten two (2) toe nails into sole plate on each side of the stud (each flange/spline)
Plate to plate	End nail into stud through spline or 2x lumber	3 (3" x 0.131")	Fasten two (2) nails into the flange and one (1) nail into the spline
		2 (3½" x 0.162")	Fasten two (2) nails, one (1) into each flange/spline
	End nail into stud through 2x3 flange	3 (3½" x 0.131")	Fasten two (2) nails into the flange and one (1) nail into the spline
		2 (3½" x 0.162")	Fasten two (2) nails, one (1) into each flange/spline
	End nail into stud through 2x4 flange	3 (4½" x 0.131")	Fasten two (2) nails into the flange and one (1) nail into the spline
		2 (4½" x 0.162")	Fasten two (2) nails, one (1) into each flange/spline
Top plates, laps at corners and intersections	Face nail through spline	2 (3½" x 0.162")	Fasten two (2) face nails, one (1) into each flange/spline
Rim joist to sill or top plate	Toe nail	(2½" x 0.113")	4" o.c. toe nail
		(2½" x 0.131")	(2½" x 0.131")

For SI: 1 in. = 25.4 mm

¹See Figure 1 for spline and flange orientations.

²#6 wood screws are permitted in place of 0.113-inch diameter nails, #8 wood screws are permitted in place of 0.131-inch and 0.135-inch diameter nails, #10 wood screws are permitted in place of 0.162-inch diameter nails. The screws must be of equal or greater length.

³Care must be taken to avoid splitting.

⁴When used as built up column for strength, installation must be in accordance with Section 4.5.

TABLE 3—ALLOWABLE COMPRESSIVE LOAD FOR WALLS FRAMED WITH BARENAKED TSTUD™ 1,2,3,4

STUD HEIGHT (ft) ^{2,3}	5.5-inches BareNaked Tstud™			7.5-inches BareNaked Tstud™		
	TOP/BOTTOM PLATE					
	BareNaked Tstud™ (SPF) (SG = 0.42) ⁴	Southern Pine (SP) (SG = 0.55)	LVL or LSL	BareNaked Tstud™ (SPF) (SG = 0.42) ⁴	Southern Pine (SP) (SG = 0.55)	LVL or LSL
8	3,665	4,875	5,930	4,400	5,850	7,565
9	3,665	4,875	5,350	4,400	5,850	7,155
10	3,665	4,750	4,750	4,400	5,850	6,670
11	3,665	4,175	4,175	4,400	5,850	6,135
12	3,660	3,660	3,660	4,400	5,580	5,580
13	3,210	3,210	3,210	4,400	5,040	5,040
14	2,825	2,825	2,825	4,400	4,530	4,530
15	-	-	-	4,075	4,075	4,075
16	-	-	-	3,665	3,665	3,665

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

¹The maximum allowable compression load is based on perpendicular-to-grain crushing of SPF, SP, LVL or LSL top and bottom plates. Compression perpendicular to grain is assumed to be 425 psi for BareNaked Tstud™ and SPF, 565 psi for SP, 820 for LVL, and 800 for LSL (adjusted per NDS Section 3.10.3 and 3.10.4). Adjustment for plates having a higher or lower compression perpendicular to grain value is required.

²Maximum stud spacing of 24-inches.

³Maximum wall height for 5 1/2-inches BareNaked Tstud™ is 14 feet (4.3 m) and 7 1/4-inches BareNaked Tstud™ is 16 feet (4.9 m)

⁴When BareNaked Tstud™ is used as top plate, a separate means of fireblocking shall be provided in accordance with IBC Section 718 and IRC Section R302.11.

TABLE 4—ALLOWABLE COMPRESSIVE LOAD FOR BARENAKED TSTUD™ COLUMNS^{1,2}

STUD HEIGHT (ft) ²	5.5-inches BareNaked Tstud™ Column			7.5-inches BareNaked Tstud™ Column		
	TOP/BOTTOM PLATE					
	Spruce Pine Fir (SPF) (SG = 0.42) ²	Southern Pine (SP) (SG = 0.55)	LVL or LSL	Spruce Pine Fir (SPF) (SG = 0.42) ²	Southern Pine (SP) (SG = 0.55)	LVL or LSL
8	7,330	9,745	11,855	8,795	11,965	15,135
9	7,330	9,745	10,700	8,795	11,965	14,310
10	7,330	9,495	9,495	8,795	11,965	13,340
11	7,330	8,350	8,350	8,795	11,965	12,270
12	7,315	7,315	7,315	8,795	11,160	11,160
13	6,420	6,420	6,420	8,795	10,075	10,075
14	5,650	5,650	5,650	8,795	9,065	9,065
15	4,995	4,995	4,995	8,145	8,145	8,145
16	4,440	4,440	4,440	7,330	7,330	7,330

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

¹The maximum allowable compression load is based on perpendicular-to-grain crushing of SPF, SP, LVL or LSL top and bottom plates. Compression perpendicular to grain is assumed to be 425 psi for SPF, 565 psi for SP, 820 for LVL, and 800 for LSL (adjusted per NDS Section 3.10.3 and 3.10.4). Adjustment for plates having a higher or lower compression perpendicular to grain value is required.

²When BareNaked Tstud™ is used as top plate, a separate means of fireblocking shall be provided in accordance with IBC Section 718 and IRC Section R302.11.

TABLE 5—ALLOWABLE SPANS FOR BARENAKED TSTUD™ HEADER^{2,3,4}


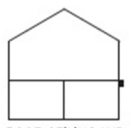

GIRDERS AND HEADERS SUPPORTING	SIZE	GROUND SNOW LOAD (psf)																	
		30						50						70					
		Building Width (ft)																	
		14		24		36		14		24		36		14		24		36	
		Span (ft-in)	NJ	Span (ft-in)	NJ	Span (ft-in)	NJ	Span (ft-in)	NJ	Span (ft-in)	NJ	Span (ft-in)	NJ	Span (ft-in)	NJ	Span (ft-in)	NJ	Span (ft-in)	NJ
Roof and Ceiling 	(1) 5.5" Tstud™ Header	5'-6"	1	3'-10"	1	2'-6"	1	4'-10"	1	2' 11"	1	-	1	4'-0"	1	2'-4"	1	-	1
	(1) 7.25" Tstud™ Header	5'-0"	1	3'-1"	1	2'-1"	1	4'-2"	1	2'-5"	1	-	1	3'-4"	1	-	1	-	1
	(2) 5.5" Tstud™ Header	7'-6"	1	5'-11"	1	4'-10"	1	6'-11"	1	5'-3"	1	3'-11"	1	6'-2"	1	4'-8"	1	3'-2"	1
	(2) 7.25" Tstud™ Header	7'-1"	1	5'-5"	1	4'-2"	1	6'-3"	1	4'-9"	1	3'-3"	1	5'-6"	1	3'-10"	1	2'-7"	1
	(3) 5.5" Tstud™ Header	8'-8"	1	7'-2"	1	5'-11"	1	8'-2"	1	6'-5"	1	5'-3"	2	7'-6"	1	5'-9"	2	4'-8"	2
	(3) 7.25" Tstud™ Header	8'-8"	1	6'-7"	1	5'-5"	1	7'-7"	1	5'-10"	1	4'-9"	1	6'-9"	1	5'-2"	1	3'-10"	1
Roof, ceiling and one center-bearing floor 	(1) 5.5" Tstud™ Header	3'-9"	1	2'-4"	1	-	1	3'-2"	1	2'-0"	1	-	1	2'-10"	1	-	1	-	1
	(1) 7.25" Tstud™ Header	3'-1"	1	-	1	-	1	2'-7"	1	-	1	-	1	2'-3"	1	-	1	-	1
	(2) 5.5" Tstud™ Header	5'-5"	1	4'-8"	1	3'-3"	1	5'-3"	1	4'-0"	1	2'-9"	1	5'-1"	1	3'-6"	1	2'-4"	1
	(2) 7.25" Tstud™ Header	5'-4"	1	3'-10"	1	2'-8"	1	4'-11"	1	3'-3"	1	2'-3"	1	4'-7"	1	2'-10"	1	-	1
	(3) 5.5" Tstud™ Header	6'-3"	1	5'-4"	1	4'-9"	2	6'-1"	1	5'-2"	2	4'-2"	2	5'-11"	1	4'-11"	2	3'-7"	2
	(3) 7.25" Tstud™ Header	6'-3"	1	5'-2"	1	4'-0"	1	6'-0"	1	4'-9"	1	3'-5"	1	5'-8"	1	4'-3"	1	2'-11"	1
Roof, ceiling and one clear-span floor 	(1) 5.5" Tstud™ Header	2'-9"	1	-	1	-	1	2'-8"	1	-	1	-	1	2'-4"	1	-	1	-	1
	(1) 7.25" Tstud™ Header	2'-3"	1	-	1	-	1	2'-2"	1	-	1	-	1	-	1	-	1	-	1
	(2) 5.5" Tstud™ Header	4'-11"	1	3'-6"	1	2'-5"	1	4'-11"	1	3'-3"	1	2'-3"	1	4'-8"	1	2'-11"	1	2'-0"	1
	(2) 7.25" Tstud™ Header	4'-7"	1	2'-10"	1	-	1	4'-4"	1	2'-8"	1	-	1	3'-11"	1	2'-4"	1	-	1

TABLE 5 (CONT'D)—ALLOWABLE SPANS FOR BARENAKED TSTUD™ HEADER^{2,3,4}


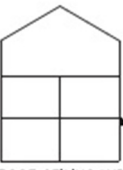

GIRDERS AND HEADERS SUPPORTING	SIZE	GROUND SNOW LOAD (psf)																	
		30						50						70					
		Building Width (ft)																	
		14		24		36		14		24		36		14		24		36	
		Span (ft-in)	NJ	Span (ft-in)	NJ	Span (ft-in)	NJ	Span (ft-in)	NJ	Span (ft-in)	NJ	Span (ft-in)	NJ	Span (ft-in)	NJ	Span (ft-in)	NJ	Span (ft-in)	NJ
Roof, ceiling and one clear-span floor (cont'd) 	(3) 5.5" Tstud™ Header	5'-8"	1	4'-10"	2	3'-7"	2	5'-7"	1	4'-9"	2	3'-4"	2	5'-6"	1	4'-4"	2	3'-0"	2
	(3) 7.25" Tstud™ Header	5'-8"	1	4'-3"	1	2'-11"	1	5'-6"	1	4'-0"	1	2'-9"	1	5'-2"	1	3'-7"	1	2'-5"	1
Roof, ceiling and two center-bearing floors 	(1) 5.5" Tstud™ Header	2'-5"	1	-	1	-	1	2'-4"	1	-	1	-	1	2'-1"	1	-	1	-	1
	(1) 7.25" Tstud™ Header	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1
	(2) 5.5" Tstud™ Header	4'-8"	1	3'-2"	1	2'-3"	1	4'-8"	1	3'-0"	1	2'-1"	1	4'-3"	1	2'-8"	1	-	1
	(2) 7.25" Tstud™ Header	3'-11"	1	2'-7"	1	-	1	3'-10"	1	2'-6"	1	-	1	3'-6"	1	2'-2"	1	-	1
	(3) 5.5" Tstud™ Header	5'-5"	1	4'-8"	2	3'-4"	2	5'-4"	1	4'-6"	2	3'-2"	2	5'-3"	2	4'-1"	2	2'-10"	2
(3) 7.25" Tstud™ Header	5'-3"	1	3'-11"	1	2'-9"	1	5'-2"	1	3'-9"	1	2'-7"	1	4'-11"	1	3'-4"	1	2'-4"	1	
Roof, ceiling and clear-span floors 	(1) 5.5" Tstud™ Header	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1
	(1) 7.25" Tstud™ Header	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1
	(2) 5.5" Tstud™ Header	3'-4"	1	2'-1"	1	-	1	3'-4"	1	2'-1"	1	-	1	3'-4"	1	2'-1"	1	-	1
	(2) 7.25" Tstud™ Header	2'-9"	1	-	1	-	1	2'-9"	1	-	1	-	1	2'-8"	1	-	1	-	1
	(3) 5.5" Tstud™ Header	4'-9"	2	3'-2"	2	2'-2"	2	4'-9"	2	3'-2"	2	2'-2"	2	4'-9"	2	3'-1"	2	2'-2"	2
(3) 7.25" Tstud™ Header	4'-1"	1	2'-7"	1	-	1	4'-1"	1	2'-7"	1	-	1	4'-1"	1	2'-7"	1	-	1	



FIGURE 1 – BARENAKED TSTUD™ STRUCTURAL WALL STUD

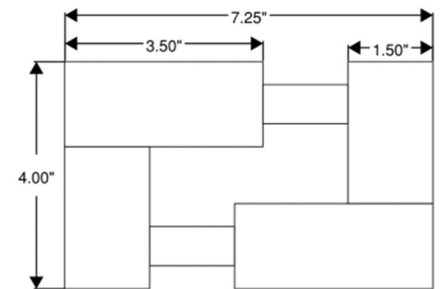
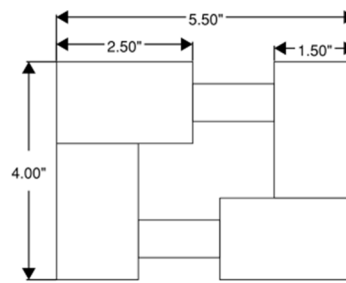


FIGURE 2 – BARENAKED TSTUD™ STRUCTURAL HEADER

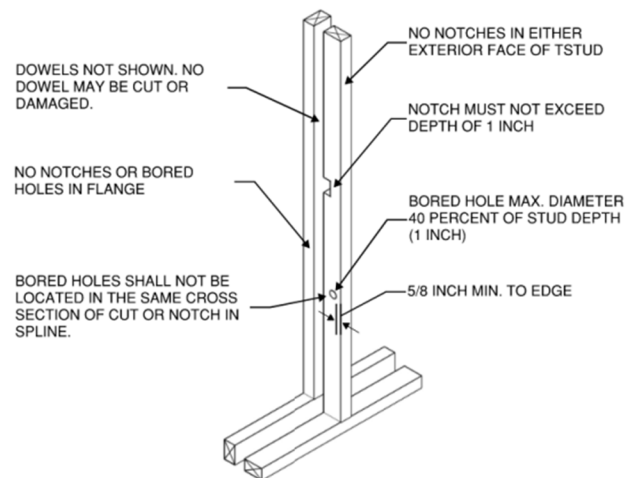


FIGURE 3 – BARENAKED TSTUD™ DRILLING AND NOTCHING DETAILS

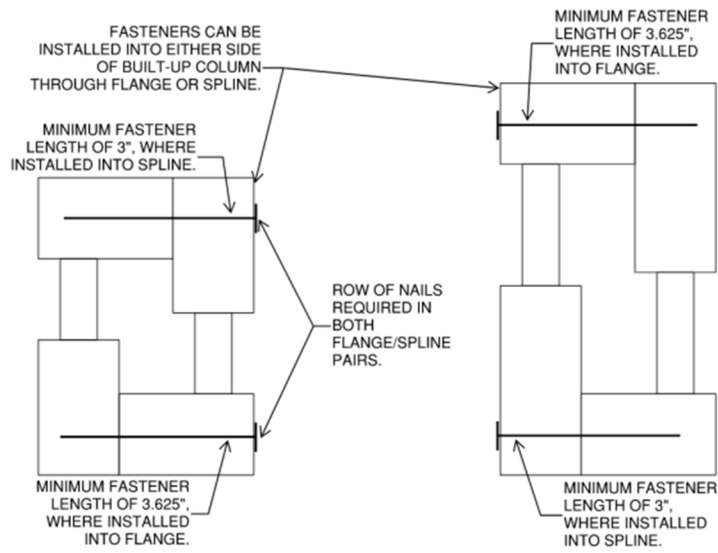


FIGURE 4 – BARENAKED TSTUD™ BUILT-UP COLUMN DETAILS WITH 2X3 FLANGE

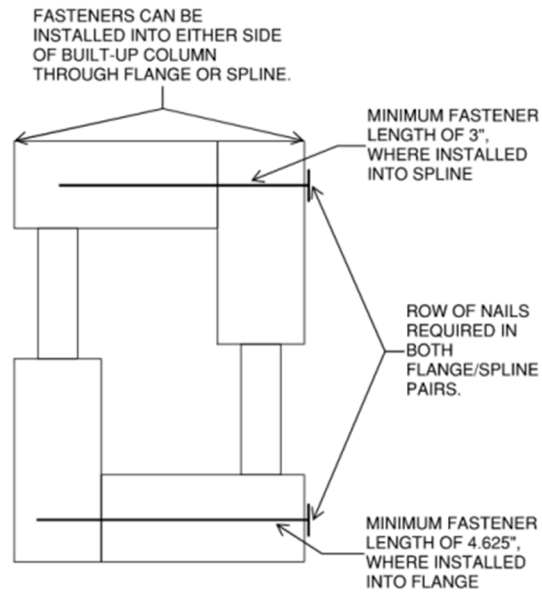


FIGURE 5 – BARENAKED TSTUD™ BUILT-UP COLUMN DETAILS WITH 2X4 FLANGE

DIVISION: 06 00 00—WOOD, PLASTIC, AND COMPOSITE FASTENINGS
Section: 06 11 00—Wood Framing

REPORT HOLDER:

INNOVATED STRUCTURES, INC.

EVALUATION SUBJECT:

BARENAKED TSTUD™ STRUCTURAL WALL STUDS AND BARENAKED TSTUD™ HEADERS

1.0 REPORT PURPOSE AND SCOPE**Purpose:**

The purpose of this evaluation report supplement is to indicate that the BareNaked Tstud™ Structural Wall Studs and BareNaked Tstud™ Headers described in ICC-ES evaluation report [ESR-5357](#), 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:

- 2023 *City of Los Angeles Building Code* (LABC)
- 2023 *City of Los Angeles Residential Code* (LARC)

2.0 CONCLUSIONS

The BareNaked Tstud™ Structural Wall Studs and BareNaked Tstud™ Headers, described in Sections 2.0 through 7.0 of the evaluation report [ESR-5357](#), comply with the LABC Chapter 23, and the LARC Chapters 3 and 6, and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The BareNaked Tstud™ Structural Wall Studs and BareNaked Tstud™ Headers described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-5357](#).
- The design, installation, conditions of use and identification of the BareNaked Tstud™ Structural Wall Studs and BareNaked Tstud™ Headers are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report [ESR-5357](#).
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16, 17 and 23, as applicable.
- Under the LARC Chapter 3, an engineered design in accordance with LARC Section R301.1.3 must be submitted.

This supplement expires concurrently with the evaluation report, issued October 2023 and revised November 2023.

DIVISION: 06 00 00—WOOD, PLASTIC, AND COMPOSITE FASTENINGS

Section: 06 11 00—Wood Framing

REPORT HOLDER:

INNOVATED STRUCTURES, INC.

EVALUATION SUBJECT:

BARENAKED TSTUD™ STRUCTURAL WALL STUDS AND BARENAKED TSTUD™ HEADERS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that BareNaked Tstud™ Structural Wall Studs and BareNaked Tstud™ Headers, described in ICC-ES evaluation report ESR-5357, have also been evaluated for compliance with the code noted below.

Applicable code edition:

- 2022 California Building Code (CBC)

For evaluation of applicable Chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care Access and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2022 California Residential Code (CRC)

2.0 CONCLUSIONS

2.1. CBC:

The BareNaked Tstud™ Structural Wall Studs and BareNaked Tstud™ Headers, described in Sections 2.0 through 7.0 of the evaluation report ESR-5357, comply with CBC Chapter 23, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapter 16, 17 and 23 as applicable.

2.1.1 OSHPD:

The applicable OSHPD Sections and Chapters of the CBC are beyond the scope of this supplement.

2.1.2 DSA:

The applicable DSA Sections and Chapters of the CBC are beyond the scope of this supplement.

2.2. CRC:

The BareNaked Tstud™ Structural Wall Studs and BareNaked Tstud™ Headers, described in Sections 2.0 through 7.0 of the evaluation report ESR-5357, comply with CRC Chapters 3 and 6, provided the design and installation are in accordance with the 2021 *International Residential Code*® (IRC) provisions noted in the evaluation report and the additional requirements of CRC Chapters 3 and 6, as applicable.

This supplement expires concurrently with the evaluation report, issued October 2023 and revised November 2023.