Technical Evaluation Report™

TER 1908-02

BareNaked Tstud™ Structural Wall Studs, Columns, and Headers

Tanager Products, Inc.

Product:

BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header

Issue Date:

July 31, 2020

Revision Date:

June 14, 2023

Subject to Renewal:

October 1, 2023

Use the QR code to access the most recent version or a sealed copy of this Technical Evaluation Report (TER) at drjcertification.org.

COMPANY INFORMATION:	ADDITIONAL LISTEES:

Tanager Products, Inc.
14048 Terrace Rd NE
Ham Lake, MN 55304-6746

P: 612-978-8011

brian@tstud.com

www.tstud.com

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

SECTION: 06 10 00 - Rough Carpentry

1 Innovative Product Evaluated[1,2]

1.1 BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header

2 Applicable Codes and Standards[3,4]

2.1 *Codes*

2.1.1 *IBC—15, 18, 21: International Building Code®*

2.1.2 *IRC—15, 18, 21: International Residential Code®*

2.1.3 CBC—16, 19: California Building Code[5] *(Title 24, Part 2)*

2.1.4 *CRC—16, 19: California Residential Code[5] (Title 24, Part 2.5)*

2.1.5 *LABC—17, 20*: *City of Los Angeles Building Code[6]*

2.1.6 *LARC—17, 20: City of Los Angeles Residential Code[6]*

2.2 *Standards and Referenced Documents*

2.2.1 *ANSI/AWC NDS: National Design Specification (NDS) for Wood Construction*

2.2.2 *ANSI/AWC SDPWS: Special Design Provisions for Wind and Seismic*

2.2.3 *ASCE/SEI 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures*

---

1 For more information, visit drjcertification.org or call us at 608-310-6748.

2 24 CFR 3280.2 "Listed or certified" means included in a list published by a nationally recognized testing laboratory, inspection agency, or other organization concerned with product evaluation that maintains periodic inspection of production of listed equipment or materials, and whose listing states either that the equipment or material meets nationally recognized standards or has been tested and found suitable for use in a specified manner. **Listed**. Equipment, materials, products or services included in a list published by an organization acceptable to the building official and concerned with evaluation of products or services that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services and whose Listing states either that the equipment, material, product or service meets identified standards or has been tested and found suitable for a specified purpose. **Labeled.** Equipment, materials or products to which has been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, approved agency or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items and whose labeling indicates either that the equipment, material or product meets identified standards or has been tested and found suitable for a specified purpose.

3 This Listing is a code defined research report, which is also known as a duly authenticated report, provided by an approved agency (see IBC Section 1703.1) and/or an approved source (see IBC Section 1703.4.2). An approved agency is "approved" as an approved agency when it is ANAB accredited. DrJ Engineering, LLC (DrJ) is listed in the ANAB directory). A professional engineer is "approved" as an approved source when that professional engineer is properly licensed to transact engineering commerce. Where sealed by a professional engineer, it is also a duly authenticated report certified by an approved source. (i.e., Registered Design Professional). DrJ is an ANAB accredited product certification body.

4 Unless otherwise noted, all references in this Listing are from the 2021 version of the codes and the standards referenced therein. This material, product, design, service and/or method of construction also complies with the 2000-2021 versions of the referenced codes and the standards referenced therein.

5 All references to the CBC and CRC are the same as the 2018 IBC and 2018 IRC, respectively, unless otherwise noted in the supplement at the end of this document.

6 All references to the LABC and LARC are the same as the 2018 IBC and 2018 IRC, respectively, unless otherwise noted in the supplement at the end of this document.

2.2.4 *ASTM D198: Standard Test Methods of Static Tests of Lumber in Structural Sizes*

2.2.5 *ASTM D2559: Standard Specification for Adhesives for Bonded Structural Wood Products for Use Under Exterior Exposure Conditions*

2.2.6 *ASTM E2126: Standard Test Methods for Cyclic (Reversed) Load Test for Shear Resistance of Vertical Elements of the Lateral Force Resisting Systems for Buildings*

3 Performance Evaluation

3.1 Tests, testing, test reports, research reports, duly authenticated reports and related engineering evaluations are defined as intellectual property and/or trade secrets and protected by Defend Trade Secrets Act 2018 (DTSA).[7]

3.2 Testing and/or inspections conducted for this TER were performed an ISO/IEC 17025 accredited testing laboratory,[8] an ISO/IEC 17020 accredited inspection body,[9] which are internationally recognized accreditations through International Accreditation Forum (IAF), and/or a licensed Registered Design Professional (RDP).

3.3 BareNaked Tstud™ was evaluated for the following:

3.3.1 Use as an alternative material where nominal 2"x4" and 2"x6" solid sawn lumber is specified in accordance with the IBC and IRC for use as wall studs, top plates, and bottom plates.

3.3.2 Use as an alternative material to that described in IBC Chapter 23, in particular, compliance with requirements for the design and construction of wood-based products as described in IBC Section 2301.2 for allowable stress design (ASD).

3.3.3 Structural performance under lateral load conditions (wind and seismic) for use with the IBC performance-based provisions, IBC Section 2306.1 and IBC Section 2306.3, for light-frame wood wall assemblies.

3.3.3.1 Table 11 provides seismic design coefficients (SDC) that conform to the requirements in ASCE 7 Section 12.2.1 and Table 12.2-1 for design of wall assemblies in buildings that require seismic design in accordance with ASCE 7 (i.e., all seismic design categories).

3.3.3.2 The basis for equivalency testing is outlined in Section 12.2.1 of ASCE 7:

> **12.2.1.1 Alternative Structural Systems.** Use of seismic force-resisting systems not contained in Table 12.2-1 shall be permitted contingent on submittal to and approval by the Authority Having Jurisdiction and independent structural design review of an accompanying set of design criteria and substantiating analytical and test data. The design criteria shall specify any limitations on system use, including Seismic Design Category and height; required procedures for designing the system's components and connections; required detailing; and the values of the response modification coefficient, R; overstrength factor, Ω_o; and deflection amplification factor, C_d.

---

[7] https://www.law.cornell.edu/uscode/text/18/part-I/chapter-90. Whoever, with intent to convert a trade secret, that is related to a product or service used in or intended for use in or intended for use in interstate or foreign commerce, to the economic benefit or anyone other than the owner thereof, and intending or knowing that the offense will injure any owner of that trade secret, knowingly (1) steals, or without authorization appropriates, takes, carries away, or conceals, or by fraud, artifice, or deception obtains such information; (2) without authorization copies, duplicates, sketches, draws, photographs, downloads, uploads, alters, destroys, photocopies, replicates, transmits, delivers, sends, mails, communicates, or conveys such information; (3) receives, buys, or possesses such information, knowing the same to have been stolen or appropriated, obtained, or converted without authorization; (4) attempts to commit any offense described in paragraphs (1) through (3); or (5) conspires with one or more other persons to commit any offense described in paragraphs (1) through (3), and one or more of such persons do any act to effect the object of the conspiracy, shall, except as provided in subsection (b), be fined under this title or imprisoned not more than 10 years, or both. (b) Any organization that commits any offense described in subsection (a) shall be fined not more than the greater of $5,000,000 or 3 times the value of the stolen trade secret to the organization, including expenses for research and design and other costs of reproducing the trade secret that the organization has thereby avoided.
The federal government and each state have a public records act. As the National Society of Professional Engineers states, "Engineers shall not disclose, without consent, confidential information concerning the business affairs or technical processes of any present or former client or employer, or public body on which they serve." Therefore, to protect intellectual property (IP) and TS, and to achieve compliance with public records and trade secret legislation, requires approval through the use of Listings, certified reports, technical evaluation reports, duly authenticated reports and/or research reports prepared by approved agencies and/or approved sources.

[8] Internationally recognized accreditations are performed by members of the International Accreditation Forum (IAF). Accreditation Body and Regional Accreditation Group Members of IAF are admitted to the IAF MLA only after a stringent evaluation of their operations by a peer evaluation team, which is charged to ensure that the applicant complies fully with both international standards and IAF requirements. Once an accreditation body is a signatory of the IAF MLA, it is required to recognise certificates and validation and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope.

[9] Ibid.

3.3.4 Structural performance under lateral load conditions for use as an alternative to SDPWS Section 4.3 Wood-Frame Shear Walls.

3.3.5 Compliance with IBC Section 2308, IBC Section 2304 and IRC Chapter 6 for conventional light-frame construction applications.

3.3.6 Use as an alternative material and method of construction in compliance with IBC Section 104.11 and IRC Section R104.11.

3.3.7 Use as built-up columns in accordance with NDS Section 15.3.

3.3.8 Use as a header assembly when designed in accordance with this TER.

3.4 Where the application exceeds the limits of IBC Section 2308 or IRC Section R301, an engineered design shall be submitted in accordance with IRC Section R301.1.3 and this TER.

3.5 The insulation used with BareNaked Tstud™ is outside the scope of this TER.

3.6 Any building code and/or accepted engineering evaluations (i.e. research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ Engineering, LLC (DrJ), an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDPs / approved sources. DrJ is qualified[10] to practice product and code compliance services within its scope of accreditation and engineering expertise, respectively.

3.7 Engineering evaluations are conducted with DrJ's ANAB accredited ICS code scope, which are also its areas of professional engineering competence.

3.8 Any regulation specific issues not addressed in this section are outside the scope of this TER.

4 Product Description and Materials

4.1 The BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header evaluated in this TER are shown in Figure 1 and Figure 2.

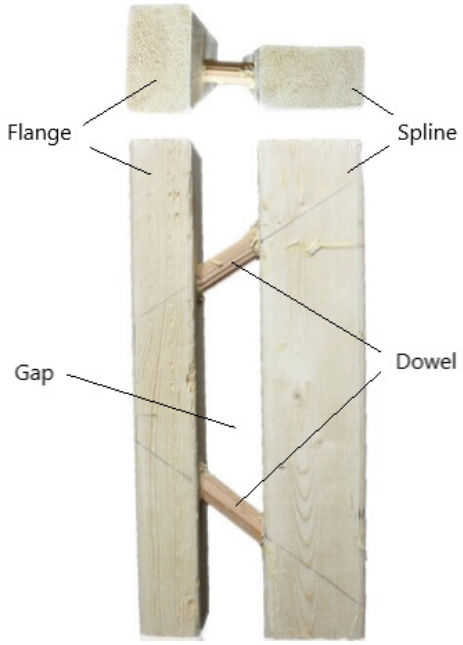


Figure 1. BareNaked Tstud™

[10] Qualification is performed by a legislatively defined Accreditation Body. ANSI National Accreditation Board (ANAB) is the largest independent accreditation body in North America and provides services in more than 75 countries. DrJ is an ANAB accredited product certification body.

Figure 2. BareNaked Tstud™ Label

4.2 BareNaked Tstud™ has two available depths, 5.5" and 7.25".

4.3 The BareNaked Tstud™ is made from a minimum of No. 2 Spruce Pine Fir (SPF) lumber and wooden dowels.

4.4 The BareNaked Tstud™ is composed of two sawn lumber members (flange and spline) with wooden dowel connectors between the members. The sawn lumber members are either 2"x3" or 2"x4".

4.5 The overall sizes of BareNaked Tstud™ are as follows:

4.5.1 2½″ x 5½″ (2x3 spline and 2x3 flange)

4.5.2 2½″ x 7¼″ (2x4 spline and 2x3 flange)

4.5.3 3½″ x 7¼″ (2x4 spline and 2x4 flange)

4.6 The flange and spline are oriented perpendicular to one another to form an L-shape. The dowels are connected to the flange and spline with adhesive.

4.7 Dowels are spaced evenly at a distance not to exceed 6½″ on center and glued in place using an adhesive that conforms to the specifications of ASTM D2559.

4.8 Any lumber species can be used, as long as the design values of the lumber are equal to or greater than No. 2 SPF.

4.9 The BareNaked Tstud™ can be used as a built-up column when back-to-back BareNaked Tstud™ are nailed together as specified in Section 5.2.8.

4.10 The BareNaked Tstud™ headers consist of two BareNaked Tstud™ members glued together to form a box section. Headers are shipped from the manufacturer glued together and filled with foam, as shown in Figure 3. In order to obtain the properties and loading in the TER, the headers shall be installed as received from the manufacturer. Field gluing of BareNaked Tstud™ for use as headers is not permitted.

Figure 3. BareNaked Tstud™ Header

4.11 *Minimum Materials*

4.11.1 *Lumber:*

4.11.1.1 Grade: No. 2 SPF

4.11.1.2 Thickness: 1½″ (38 mm)

4.11.1.3 Width: 2½″ (64 mm) or 3½″ (90 mm)

4.11.1.4 Length: up to 16' (4.3 m)

4.11.2 *Dowels:*

4.11.2.1 Grade: No. 2 SPF

4.11.2.2 Diameter: $^{11}/_{16}$″ (17.5 mm)

5 Applications

5.1 *Prescriptive Provisions*

5.1.1 BareNaked Tstud™ is an alternative to solid sawn 2″x4″ lumber for wall structural members.

5.1.1.1 For use as a 2″x6″, design shall be permitted in accordance with accepted engineering procedures, experience, and technical judgment. In these cases, referenced design values as specified in Table 2 shall be used in accordance with IBC Section 2308 and IRC Section R602.

5.1.2 BareNaked Tstud™ used as wall framing members shall be fastened as specified in Table 1.

Table 1. Acceptable Fastening Schedule for BareNaked Tstud™

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) toe nails into interior flange/spline and two (2) toe nails into exterior flange/spline
Stud to stud[4]	Face nail through 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 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")	

Application[1]	Fastening	Number & Type of Fastener[2]	Installation[3]
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 stud	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")	6" o.c. toe nail

SI: 1 in. = 25.4 mm

1. See Figure 1 for spline and flange orientations. Spline and flange sizes vary depending on the stud depth (see Section 4.5).
2. #6 wood screws are permitted in place of 0.113" diameter nails. #8 wood screws are permitted in place of 0.131" and 0.135" diameter nails. #10 wood screws are permitted in place of 0.162" diameter nails. The screws must be of equal or greater length.
3. Care must be taken to avoid splitting.
4. When used as built-up column for strength, installation must be in accordance with Section 5.2.8.

5.1.3 BareNaked Tstud™ may be used as a single top plate in accordance with IRC Section R602.3.2 and the following:

5.1.3.1 Fasteners for BareNaked Tstud™ connections shall be distributed in each BareNaked Tstud™ flange and spline (top plate to stud connections shall be fastened as specified in Table 1).

5.1.3.2 Where BareNaked Tstud™ is used as a top plate, a separate means of fireblocking shall be provided in accordance with Section 9.6.

5.1.4 Use as jack, trimmer and cripple studs is permitted.

5.1.4.1 Install cripple studs between the bottom plate and rough sill using three (3) 4" x 0.131" nails, one (1) into the spline and two (2) into the flange.

5.1.5 Structural sheathing shall be installed on one side of the wall and fastened in accordance with the applicable building code.

5.1.6 For trusses and rafters placed on BareNaked Tstud™ wall studs, see Table 3 for 5.5" BareNaked Tstud™ and Table 4 for 7.25" BareNaked Tstud™ design values.

5.2 *Engineered Design*

5.2.1 The design provisions for wood construction noted in IBC Section 2302.1[11] and IRC Section R301.1.3 apply to BareNaked Tstud™ for allowable stress design (ASD), unless otherwise noted in this TER.

5.2.2 Design of connections using BareNaked Tstud™ shall be in accordance with NDS.

[11] 2015 IBC Section 2301.2

5.2.3 *Material Properties:*

5.2.3.1 Reference design values for BareNaked Tstud™ are specified in Table 2.

5.2.3.1.1 Reference design values for BareNaked Tstud™ shall be multiplied by the adjustment factors specified in NDS Section 4.3.

Table 2. BareNaked Tstud™ Reference Design Values[1]

Reference Design Value	5.5" BareNaked Tstud™	7.25" BareNaked Tstud™
Bending, F_bS	660 lb-ft	975 lb-ft
Compression Parallel to Grain, F_c	1,150 psi	1,150 psi
Tension Parallel to Grain, F_t	450 psi	450 psi
Compression Perpendicular to Grain, $F_{c\perp}$	425 psi	425 psi
Shear Force, V	260 lb	230 lb
Bending Stiffness, EI	19,300,000 lb-in^2	37,100,000 lb-in^2
Bending Stiffness for Beam and Column Stability, EI_{min}	8,600,000 lb-in^2	15,000,000 lb-in^2

SI: 1 in. = 25.4 mm, 1 lb. = 4.45 N, 1 psi = 0.00689 MPa

1. BareNaked Tstud™ made from No. 2 SPF.

5.2.4 *Design for Compression Loads:*

5.2.4.1 The maximum allowable compression load for walls framed with BareNaked Tstud™ studs is specified in Table 3.

5.2.4.2 The maximum allowable compression load is based on perpendicular-to-grain crushing of SPF top and bottom plates and compression parallel to grain of the BareNaked Tstud™.

5.2.4.3 The allowable axial compression for BareNaked Tstud™ can be calculated using the provisions of NDS Section 3.6 and 3.7.

5.2.4.4 For computing the column stability factor, C_P, the critical buckling design value, F_{cE}, shall be computed using Equation 1.

Equation 1. Critical Buckling Design Value

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

Where: EI_{min} = bending stiffness for beam and column stability (lb-in^2)

A = minimum net section area of BareNaked Tstud™ (in^2) = (1.5″ x 2.5″) + ((1.5″ – 0.6875″) x 2.5″) = 5.78 in^2

l_e = Effective column length (in.) = K_e x h

Table 3. Allowable Compressive Load for Walls Framed with 5.5" BareNaked Tstud™[1,2]

Stud Height (ft)	Allowable Compressive Load (lb)		
	Top/Bottom Plate		
	BareNaked Tstud™ (SPF) (SG = 0.42)[3]	Southern Pine (SYP) (SG = 0.55)[4]	LVL or LSL[5]
8	3,665	4,875	5,930
9	3,665	4,875	5,350
10	3,665	4,750	4,750
11	3,665	4,175	4,175
12	3,660	3,660	3,660
13	3,210	3,210	3,210
14	2,825	2,825	2,825

SI: 1 in. = 25.4 mm, 1 lb. = 4.45 N

1. Maximum stud spacing of 24".
2. Compression perpendicular to grain is assumed to be 425 psi for BareNaked Tstud™, 565 psi for SYP, 820 for LVL, and 800 for LSL (adjusted per NDS Section 3.10.4).
3. Compression perpendicular to grain of the BareNaked Tstud™ or SPF top and bottom plates controls for walls less than or equal to 11 ft. in height.
4. Compression perpendicular to grain of the SYP top and bottom plates controls for walls less than or equal to 9 ft. in height.
5. Compression perpendicular to grain of the LVL or LSL top and bottom plates does not control.

Table 4. Allowable Compressive Load for Walls Framed with 7.25" BareNaked Tstud™[1,2]

Stud Height (ft)	Allowable Compressive Load (lb)		
	Top/Bottom Plate		
	BareNaked Tstud™ (SPF) (SG = 0.42)	Southern Pine (SYP) (SG = 0.55)	LVL or LSL
8	4,400	5,850	7,565
9	4,400	5,850	7,155
10	4,400	5,850	6,670
11	4,400	5,850	6,135
12	4,400	5,580	5,580
13	4,400	5,040	5,040
14	4,400	4,530	4,530
15	4,075	4,075	4,075
16	3,665	3,665	3,665

SI: 1 in. = 25.4 mm, 1 lb. = 4.45 N

1. Maximum stud spacing of 24".
2. Minimum compression perpendicular to grain is 425 psi for BareNaked Tstud™, 565 psi for SYP, 820 for LVL, and 800 for LSL (adjusted per NDS Section 3.10.4).

5.2.5 *Design for Bending:*

5.2.5.1 The maximum bending moment and shear forces shall not exceed the reference design values for the BareNaked Tstud™ specified in Table 2.

5.2.6 *Design for Combined Bending and Axial Compression Loads:*

5.2.6.1 The BareNaked Tstud™ resists bending using tension and compression stresses in the flange and spline.

5.2.6.2 The axial compressive stress due to combined bending and axial load can be computed using Equation 2. As an example, variables for the design of the 5.5" BareNaked Tstud™ are defined below Equation 2.

Equation 2. Axial Compressive Stress

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

Where: P = axial load applied to BareNaked Tstud™ (lb)

A = minimum net section area of BareNaked Tstud™ (in^2) = (1.5″ x 2.5″) + ((1.5″ – 0.6875″) x 2.5″) = 5.78 in^2

M = bending moment applied to BareNaked Tstud™ (lb-in)

A_m = minimum net section area of single BareNaked Tstud™ member (in^2) = ((1.5″ – 0.6875″) x 2.5″) = 2.03 in^2

d_{eff} = distance from center to center of BareNaked Tstud™ member (in) = 3.5 in

5.2.6.3 The axial stresses in BareNaked Tstud™ member shall be checked in accordance with NDS Section 3.6 and Section 3.7.

5.2.6.4 BareNaked Tstud™ shall also be checked in bending only to ensure the allowable bending moment in Table 2 is not exceeded.

5.2.6.5 Allowable wind pressures for BareNaked Tstud™ stud walls subject to axial loads are specified in the following tables:

5.2.6.5.1 5.5" BareNaked Tstud™:

5.2.6.5.1.1 SPF top and bottom plates: Table 5

5.2.6.5.1.2 SYP top and bottom plates: Table 6

5.2.6.5.1.3 LVL or LSL top and bottom plates: Table 7

5.2.6.5.2 7.25" BareNaked Tstud™:

5.2.6.5.2.1 SPF top and bottom plates: Table 8

5.2.6.5.2.2 SYP top and bottom plates: Table 9

5.2.6.5.2.3 LVL or LSL top and bottom plates: Table 10

Table 5. Stud Allowable (ASD) Compressive Load for Walls Subject to Wind Pressures (5.5" BareNaked Tstud™ with SPF Top/Bottom Plates)[1,2]

Stud Spacing (in)	Wall Height (ft)	Allowable Compression Load (lb) & (Deflection Ratio)									
		Components & Cladding Wind Pressure (psf)									
		15	20	25	30	35	40	45	50	55	60
12	8	3,665 (L/2161)	3,665 (L/1621)	3,665 (L/1297)	3,665 (L/1081)	3,665 (L/926)	3,665 (L/810)	3,665 (L/720)	3,665 (L/648)	3,665 (L/589)	3,665 (L/540)
	9	3,665 (L/1497)	3,665 (L/1123)	3,665 (L/898)	3,665 (L/748)	3,665 (L/641)	3,665 (L/561)	3,325 (L/499)	2,980 (L/449)	2,635 (L/408)	2,290 (L/374)
	10	3,665 (L/1079)	3,665 (L/809)	3,295 (L/647)	2,865 (L/540)	2,435 (L/462)	2,010 (L/405)	1,580 (L/360)	1,155 (L/324)	725 (L/294)	295 (L/270)
	12	2,080 (L/614)	1,460 (L/461)	835 (L/368)	210 (L/307)	-	-	-	-	-	-
	14	400 (L/382)	-	-	-	-	-	-	-	-	-
16	8	3,665 (L/1621)	3,665 (L/1216)	3,665 (L/973)	3,665 (L/810)	3,665 (L/695)	3,665 (L/608)	3,665 (L/540)	3,665 (L/486)	3,610 (L/442)	3,250 (L/405)
	9	3,665 (L/1123)	3,665 (L/842)	3,665 (L/674)	3,665 (L/561)	3,210 (L/481)	2,750 (L/421)	2,290 (L/374)	1,830 (L/337)	1,370 (L/306)	910 (L/281)
	10	3,665 (L/809)	3,150 (L/607)	2,580 (L/486)	2,010 (L/405)	1,440 (L/347)	865 (L/303)	295 (L/270)	-	-	-
	12	1,460 (L/461)	625 (L/345)	-	-	-	-	-	-	-	-
24	8	3,665 (L/1081)	3,665 (L/810)	3,665 (L/648)	3,665 (L/540)	3,665 (L/463)	3,250 (L/405)	2,715 (L/360)	2,175 (L/324)	1,635 (L/295)	1,095 (L/270)
	9	3,665 (L/748)	3,665 (L/561)	2,980 (L/449)	2,290 (L/374)	1,600 (L/321)	910 (L/281)	225 (L/249)	-	-	-
	10	2,865 (L/540)	2,010 (L/405)	1,155 (L/324)	295 (L/270)	-	-	-	-	-	-
	12	210 (L/307)	-	-	-	-	-	-	-	-	-

SI: 1 in. = 25.4 mm, 1 psf = 0.0479 kN/m^2

1. Wind speed provided assumes Exposure Category B, Enclosed Building, Mean Roof Height 30'
2. Walls constructed with BareNaked Tstud™ studs and SPF top and bottom plates.

Table 6. Stud Allowable (ASD) Compressive Load for Walls Subject to Wind Pressures (5.5" BareNaked Tstud™ with SYP Top/Bottom Plates)[1,2]

Stud Spacing (in)	Wall Height (ft)	Allowable Compression Load (lb) & (Deflection Ratio)									
		Components & Cladding Wind Pressure (psf)									
		15	20	25	30	35	40	45	50	55	60
12	8	4,875 (L/2161)	4,875 (L/1621)	4,875 (L/1297)	4,875 (L/1081)	4,875 (L/926)	4,875 (L/810)	4,875 (L/720)	4,870 (L/648)	4,600 (L/589)	4,330 (L/540)
	9	4,875 (L/1497)	4,875 (L/1123)	4,700 (L/898)	4,355 (L/748)	4,010 (L/641)	3,670 (L/561)	3,325 (L/499)	2,980 (L/449)	2,635 (L/408)	2,290 (L/374)
	10	4,150 (L/1079)	3,720 (L/809)	3,295 (L/647)	2,865 (L/540)	2,435 (L/462)	2,010 (L/405)	1,580 (L/360)	1,155 (L/324)	725 (L/294)	295 (L/270)
	12	2,080 (L/614)	1,460 (L/461)	835 (L/368)	210 (L/307)	--	--	--	--	--	--
	14	400 (L/382)	--	--	--	--	--	--	--	--	--
16	8	4,875 (L/1621)	4,875 (L/1216)	4,875 (L/973)	4,875 (L/810)	4,875 (L/695)	4,690 (L/608)	4,330 (L/540)	3,970 (L/486)	3,610 (L/442)	3,250 (L/405)
	9	4,875 (L/1123)	4,585 (L/842)	4,125 (L/674)	3,670 (L/561)	3,210 (L/481)	2,750 (L/421)	2,290 (L/374)	1,830 (L/337)	1,370 (L/306)	910 (L/281)
	10	3,720 (L/809)	3,150 (L/607)	2,580 (L/486)	2,010 (L/405)	1,440 (L/347)	865 (L/303)	295 (L/270)	--	--	--
	12	1,460 (L/461)	625 (L/345)	--	--	--	--	--	--	--	--
24	8	4,875 (L/1081)	4,875 (L/810)	4,870 (L/648)	4,330 (L/540)	3,790 (L/463)	3,250 (L/405)	2,715 (L/360)	2,175 (L/324)	1,635 (L/295)	1,095 (L/270)
	9	4,355 (L/748)	3,670 (L/561)	2,980 (L/449)	2,290 (L/374)	1,600 (L/321)	910 (L/281)	225 (L/249)	--	--	--
	10	2,865 (L/540)	2,010 (L/405)	1,155 (L/324)	295 (L/270)	--	--	--	--	--	--
	12	210 (L/307)	--	--	--	--	--	--	--	--	--

SI: 1 in. = 25.4 mm, 1 psf = 0.0479 kN/m^2

1. Wind speed provided assumes Exposure Category B, Enclosed Building, Mean Roof Height 30'
2. Walls constructed with BareNaked Tstud™ studs and SYP top and bottom plates.

Table 7. Stud Allowable (ASD) Compressive Load for Walls Subject to Wind Pressures (5.5" BareNaked Tstud™ with LVL or LSL Top/Bottom Plates)[1,2]

Stud Spacing (in)	Wall Height (ft)	Allowable Compression Load (lb) & (Deflection Ratio)									
		Components & Cladding Wind Pressure (psf)									
		15	20	25	30	35	40	45	50	55	60
12	8	5930 (L/2161)	5930 (L/1621)	5930 (L/1297)	5930 (L/1081)	5680 (L/926)	5410 (L/810)	5140 (L/720)	4870 (L/648)	4600 (L/589)	4330 (L/540)
	9	5350 (L/1497)	5045 (L/1123)	4700 (L/898)	4355 (L/748)	4010 (L/641)	3670 (L/561)	3325 (L/499)	2980 (L/449)	2635 (L/408)	2290 (L/374)
	10	4150 (L/1079)	3720 (L/809)	3295 (L/647)	2865 (L/540)	2435 (L/462)	2010 (L/405)	1580 (L/360)	1155 (L/324)	725 (L/294)	295 (L/270)
	12	2080 (L/614)	1460 (L/461)	835 (L/368)	210 (L/307)	--	--	--	--	--	--
	14	400 (L/382)	--	--	--	--	--	--	--	--	--
16	8	5930 (L/1621)	5930 (L/1216)	5770 (L/973)	5410 (L/810)	5050 (L/695)	4690 (L/608)	4330 (L/540)	3970 (L/486)	3610 (L/442)	3250 (L/405)
	9	5045 (L/1123)	4585 (L/842)	4125 (L/674)	3670 (L/561)	3210 (L/481)	2750 (L/421)	2290 (L/374)	1830 (L/337)	1370 (L/306)	910 (L/281)
	10	3720 (L/809)	3150 (L/607)	2580 (L/486)	2010 (L/405)	1440 (L/347)	865 (L/303)	295 (L/270)	--	--	--
	12	1460 (L/461)	625 (L/345)	--	--	--	--	--	--	--	--
24	8	5930 (L/1081)	5410 (L/810)	4870 (L/648)	4330 (L/540)	3790 (L/463)	3250 (L/405)	2715 (L/360)	2175 (L/324)	1635 (L/295)	1095 (L/270)
	9	4355 (L/748)	3670 (L/561)	2980 (L/449)	2290 (L/374)	1600 (L/321)	910 (L/281)	225 (L/249)	--	--	--
	10	2865 (L/540)	2010 (L/405)	1155 (L/324)	295 (L/270)	--	--	--	--	--	--
	12	210 (L/307)	--	--	--	--	--	--	--	--	--

SI: 1 in. = 25.4 mm, 1 psf = 0.0479 kN/m^2

1. Wind speed provided assumes Exposure Category B, Enclosed Building, Mean Roof Height 30'
2. Walls constructed with BareNaked Tstud™ studs and LVL or LSL (minimum compression perpendicular to grain strength to be 800 psi) top and bottom plates.

Table 8. Stud Allowable (ASD) Compressive Load for Walls Subject to Wind Pressures (7.25" BareNaked Tstud™ with SPF Top/Bottom Plates)[1,2]

Stud Spacing (in)	Wall Height (ft)	Allowable Compression Load (lb) & (Deflection Ratio)									
		Components & Cladding Wind Pressure (psf)									
		15	20	25	30	35	40	45	50	55	60
12	8	4400 (L/4167)	4400 (L/3126)	4400 (L/2500)	4400 (L/2084)	4400 (L/1786)	4400 (L/1563)	4400 (L/1389)	4400 (L/1250)	4400 (L/1137)	4400 (L/1042)
	9	4400 (L/2886)	4400 (L/2165)	4400 (L/1732)	4400 (L/1443)	4400 (L/1237)	4400 (L/1082)	4400 (L/962)	4400 (L/866)	4400 (L/787)	4400 (L/722)
	10	4400 (L/2081)	4400 (L/1561)	4400 (L/1248)	4400 (L/1040)	4400 (L/892)	4400 (L/780)	4400 (L/694)	4400 (L/624)	4400 (L/567)	4115 (L/520)
	12	4400 (L/1184)	4355 (L/888)	3830 (L/711)	3310 (L/592)	2785 (L/508)	2260 (L/444)	1735 (L/395)	1210 (L/355)	685 (L/323)	165 (L/296)
	14	2805 (L/737)	2090 (L/553)	1370 (L/442)	650 (L/369)	--	--	--	--	--	--
	16	1060 (L/489)	115 (L/367)	--	--	--	--	--	--	--	--
16	8	4400 (L/3126)	4400 (L/2344)	4400 (L/1875)	4400 (L/1563)	4400 (L/1340)	4400 (L/1172)	4400 (L/1042)	4400 (L/938)	4400 (L/852)	4400 (L/781)
	9	4400 (L/2165)	4400 (L/1624)	4400 (L/1299)	4400 (L/1082)	4400 (L/928)	4400 (L/812)	4400 (L/722)	4400 (L/649)	4400 (L/590)	4400 (L/541)
	10	4400 (L/1561)	4400 (L/1170)	4400 (L/936)	4400 (L/780)	4400 (L/669)	4400 (L/585)	4115 (L/520)	3635 (L/468)	3155 (L/426)	2675 (L/390)
	12	4355 (L/888)	3655 (L/666)	2960 (L/533)	2260 (L/444)	1560 (L/381)	860 (L/333)	165 (L/296)	--	--	--
	14	2090 (L/553)	1130 (L/415)	170 (L/332)	--	--	--	--	--	--	--
	16	115 (L/367)	--	--	--	--	--	--	--	--	--
24	8	4400 (L/2084)	4400 (L/1563)	4400 (L/1250)	4400 (L/1042)	4400 (L/893)	4400 (L/781)	4400 (L/695)	4400 (L/625)	4400 (L/568)	4400 (L/521)
	9	4400 (L/1443)	4400 (L/1082)	4400 (L/866)	4400 (L/722)	4400 (L/618)	4400 (L/541)	4340 (L/481)	3765 (L/433)	3185 (L/394)	2605 (L/361)
	10	4400 (L/1040)	4400 (L/780)	4400 (L/624)	4115 (L/520)	3395 (L/446)	2675 (L/390)	1955 (L/347)	1235 (L/312)	515 (L/284)	--
	12	3310 (L/592)	2260 (L/444)	1210 (L/355)	165 (L/296)	--	--	--	--	--	--
	14	650 (L/369)	--	--	--	--	--	--	--	--	--

SI: 1 in. = 25.4 mm, 1 psf = 0.0479 kN/m^2

1. Wind speed provided assumes Exposure Category B, Enclosed Building, Mean Roof Height 30'
2. Walls constructed with BareNaked Tstud™ studs and SPF top and bottom plates.

Table 9. Stud Allowable (ASD) Compressive Load for Walls Subject to Wind Pressures (7.25" BareNaked Tstud™ with SYP Top/Bottom Plates)[1,2]

Stud Spacing (in)	Wall Height (ft)	Allowable Compression Load (lb) & (Deflection Ratio)									
		Components & Cladding Wind Pressure (psf)									
		15	20	25	30	35	40	45	50	55	60
12	8	5850 (L/4167)	5850 (L/3126)	5850 (L/2500)	5850 (L/2084)	5850 (L/1786)	5850 (L/1563)	5850 (L/1389)	5850 (L/1250)	5850 (L/1137)	5850 (L/1042)
	9	5850 (L/2886)	5850 (L/2165)	5850 (L/1732)	5850 (L/1443)	5850 (L/1237)	5850 (L/1082)	5850 (L/962)	5850 (L/866)	5850 (L/787)	5850 (L/722)
	10	5850 (L/2081)	5850 (L/1561)	5850 (L/1248)	5850 (L/1040)	5850 (L/892)	5555 (L/780)	5195 (L/694)	4835 (L/624)	4475 (L/567)	4115 (L/520)
	12	4880 (L/1184)	4355 (L/888)	3830 (L/711)	3310 (L/592)	2785 (L/508)	2260 (L/444)	1735 (L/395)	1210 (L/355)	685 (L/323)	165 (L/296)
	14	2805 (L/737)	2090 (L/553)	1370 (L/442)	650 (L/369)	--	--	--	--	--	--
	16	1060 (L/489)	115 (L/367)	--	--	--	--	--	--	--	--
16	8	5850 (L/3126)	5850 (L/2344)	5850 (L/1875)	5850 (L/1563)	5850 (L/1340)	5850 (L/1172)	5850 (L/1042)	5850 (L/938)	5850 (L/852)	5850 (L/781)
	9	5850 (L/2165)	5850 (L/1624)	5850 (L/1299)	5850 (L/1082)	5850 (L/928)	5850 (L/812)	5850 (L/722)	5690 (L/649)	5305 (L/590)	4920 (L/541)
	10	5850 (L/1561)	5850 (L/1170)	5850 (L/936)	5555 (L/780)	5075 (L/669)	4595 (L/585)	4115 (L/520)	3635 (L/468)	3155 (L/426)	2675 (L/390)
	12	4355 (L/888)	3655 (L/666)	2960 (L/533)	2260 (L/444)	1560 (L/381)	860 (L/333)	165 (L/296)	--	--	--
	14	2090 (L/553)	1130 (L/415)	170 (L/332)	--	--	--	--	--	--	--
	16	115 (L/367)	--	--	--	--	--	--	--	--	--
24	8	5850 (L/2084)	5850 (L/1563)	5850 (L/1250)	5850 (L/1042)	5850 (L/893)	5850 (L/781)	5850 (L/695)	5850 (L/625)	5660 (L/568)	5210 (L/521)
	9	5850 (L/1443)	5850 (L/1082)	5850 (L/866)	5850 (L/722)	5500 (L/618)	4920 (L/541)	4340 (L/481)	3765 (L/433)	3185 (L/394)	2605 (L/361)
	10	5850 (L/1040)	5555 (L/780)	4835 (L/624)	4115 (L/520)	3395 (L/446)	2675 (L/390)	1955 (L/347)	1235 (L/312)	515 (L/284)	--
	12	3310 (L/592)	2260 (L/444)	1210 (L/355)	165 (L/296)	--	--	--	--	--	--
	14	650 (L/369)	--	--	--	--	--	--	--	--	--

SI: 1 in. = 25.4 mm, 1 psf = 0.0479 kN/m^2

1. Wind speed provided assumes Exposure Category B, Enclosed Building, Mean Roof Height 30'
2. Walls constructed with BareNaked Tstud™ studs and SYP top and bottom plates.

Table 10. Stud Allowable (ASD) Compressive Load for Walls Subject to Wind Pressures (7.25" BareNaked Tstud™ with LVL or LSL Top/Bottom Plates)[1,2]

Stud Spacing (in)	Wall Height (ft)	Allowable Compression Load (lb) & (Deflection Ratio)									
		Components & Cladding Wind Pressure (psf)									
		15	20	25	30	35	40	45	50	55	60
12	8	7565 (L/4167)	7565 (L/3126)	7565 (L/2500)	7565 (L/2084)	7565 (L/1786)	7565 (L/1563)	7565 (L/1389)	7565 (L/1250)	7565 (L/1137)	7565 (L/1042)
	9	7155 (L/2886)	7155 (L/2165)	7155 (L/1732)	7155 (L/1443)	7155 (L/1237)	7155 (L/1082)	6945 (L/962)	6655 (L/866)	6365 (L/787)	6080 (L/722)
	10	6670 (L/2081)	6670 (L/1561)	6635 (L/1248)	6275 (L/1040)	5915 (L/892)	5555 (L/780)	5195 (L/694)	4835 (L/624)	4475 (L/567)	4115 (L/520)
	12	4880 (L/1184)	4355 (L/888)	3830 (L/711)	3310 (L/592)	2785 (L/508)	2260 (L/444)	1735 (L/395)	1210 (L/355)	685 (L/323)	165 (L/296)
	14	2805 (L/737)	2090 (L/553)	1370 (L/442)	650 (L/369)	--	--	--	--	--	--
	16	1060 (L/489)	115 (L/367)	--	--	--	--	--	--	--	--
16	8	7565 (L/3126)	7565 (L/2344)	7565 (L/1875)	7565 (L/1563)	7565 (L/1340)	7565 (L/1172)	7565 (L/1042)	7565 (L/938)	7320 (L/852)	7020 (L/781)
	9	7155 (L/2165)	7155 (L/1624)	7155 (L/1299)	7155 (L/1082)	6850 (L/928)	6465 (L/812)	6080 (L/722)	5690 (L/649)	5305 (L/590)	4920 (L/541)
	10	6670 (L/1561)	6515 (L/1170)	6035 (L/936)	5555 (L/780)	5075 (L/669)	4595 (L/585)	4115 (L/520)	3635 (L/468)	3155 (L/426)	2675 (L/390)
	12	4355 (L/888)	3655 (L/666)	2960 (L/533)	2260 (L/444)	1560 (L/381)	860 (L/333)	165 (L/296)	--	--	--
	14	2090 (L/553)	1130 (L/415)	170 (L/332)	--	--	--	--	--	--	--
	16	115 (L/367)	--	--	--	--	--	--	--	--	--
24	8	7565 (L/2084)	7565 (L/1563)	7565 (L/1250)	7565 (L/1042)	7475 (L/893)	7020 (L/781)	6565 (L/695)	6115 (L/625)	5660 (L/568)	5210 (L/521)
	9	7155 (L/1443)	7155 (L/1082)	6655 (L/866)	6080 (L/722)	5500 (L/618)	4920 (L/541)	4340 (L/481)	3765 (L/433)	3185 (L/394)	2605 (L/361)
	10	6275 (L/1040)	5555 (L/780)	4835 (L/624)	4115 (L/520)	3395 (L/446)	2675 (L/390)	1955 (L/347)	1235 (L/312)	515 (L/284)	--
	12	3310 (L/592)	2260 (L/444)	1210 (L/355)	165 (L/296)	--	--	--	--	--	--
	14	650 (L/369)	--	--	--	--	--	--	--	--	--

SI: 1 in. = 25.4 mm, 1 psf = 0.0479 kN/m^2

1. Wind speed provided assumes Exposure Category B, Enclosed Building, Mean Roof Height 30'
2. Walls constructed with BareNaked Tstud™ studs and LVL or LSL (minimum compression perpendicular to grain strength to be 800 psi) top and bottom plates.

5.2.7 *Design of BareNaked Tstud™ in Shear Walls:*

5.2.7.1 BareNaked Tstud™ used in wall assemblies designed as shear walls are permitted to be designed in accordance with the methodology used in SDPWS for WSP using the seismic parameters shown in Table 11.

5.2.7.1.1 The response modification coefficient, R; system overstrength factor, Ω_0; and deflection amplification factor, C_d, indicated in Table 5 shall be used to determine the base shear, element design forces, and design story drift in accordance with ASCE 7 Chapter 12 and Section 14.5.

Table 11. Seismic Design Coefficients for BareNaked Tstud™ Shear Walls

Wall System	Response Modification Coefficient,[1] R	Overstrength Factor,[2] Ω_0	Deflection Amplification Factor,[3] C_d	Structural Height Limits[4] (ft)				
				Seismic Design Category				
				B	C	D	E	F
BareNaked Tstud™ framed walls[5] sheathed with wood structural panels rated for shear resistance	6.5	3	4	NL	NL	65	65	65

SI: 1 in = 25.4 mm, 1 lb/ft = 0.0146 kN/m

1. Response modification coefficient, R, for use throughout ASCE 7.
2. The tabulated value of the overstrength factor, Ω_0, is permitted to be reduced by subtracting one-half (0.5) for structures with flexible diaphragms.
3. Deflection amplification factor, C_d, for use with ASCE 7 Section 12.8.6, 12.8.7, and 12.9.2.
4. NL = Not Limited. Heights are measured from the base of the structure as defined in ASCE 7 Section 11.2.
5. BareNaked Tstud™ is permitted to be installed so that either the splines or the flanges are against the sheathing panels.

5.2.8 *Design for Built-Up Columns:*

5.2.8.1 BareNaked Tstud™ may be used as built-up columns per NDS Section 3.6.2.3 when installed and nailed together, as shown in Figure 4 and Figure 5.

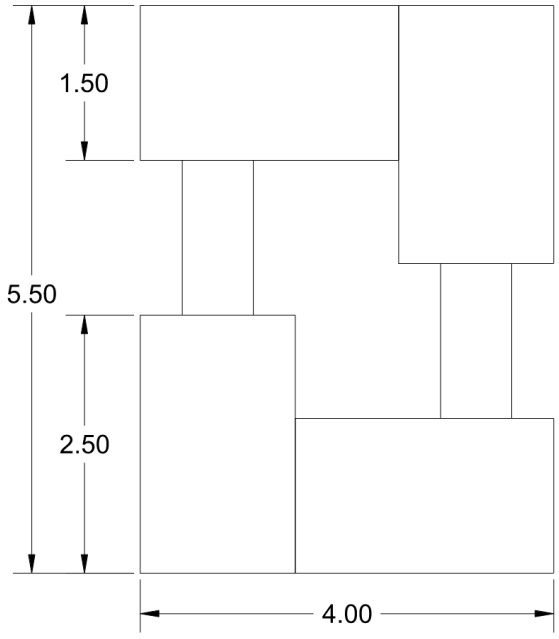


Figure 4. 5.5" BareNaked Tstud™ Built-Up Column

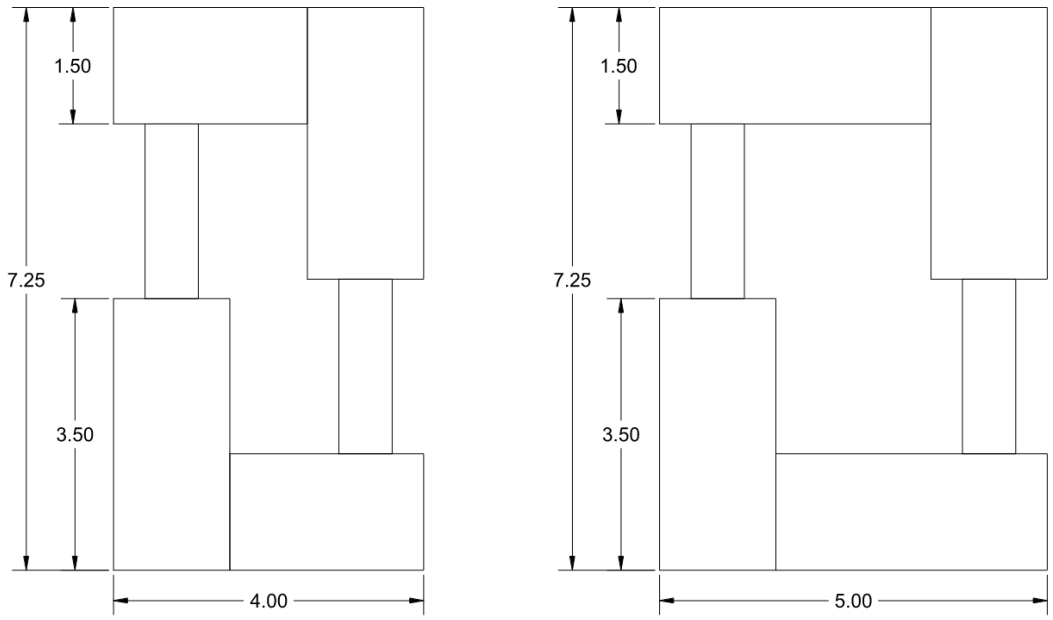


Figure 5. 7.25" BareNaked Tstud™ Built-Up Columns with 2x3 Flange and 2x4 Flange

5.2.8.2 When used as built-up columns, the BareNaked Tstud™ shall be designed and installed in accordance with NDS Section 3.6.3 and Section 3.7 per NDS Section 15.3.

5.2.8.3 BareNaked Tstud™ shall be fastened together in accordance with NDS Section 15.3.3, Figure 6, Figure 7, and the following provisions:

5.2.8.3.1 Nails can be driven from either side of the BareNaked Tstud™ column (Figure 6 and Figure 7).

5.2.8.3.2 Minimum fastener diameter of 0.131" (8d common wire nail).

5.2.8.3.3 See Figure 6 and Figure 7 for minimum fastener lengths.

5.2.8.3.4 15D ≤ end distance ≤ 18D

5.2.8.3.5 20D ≤ spacing between adjacent nails in a row ≤ 8"

5.2.8.3.6 Single row of nails per spline/flange.

5.2.8.3.7 5D ≤ edge distance from exterior of BareNaked Tstud™ column ≤ 20D

5.2.8.3.8 Both flange/spline pairs of the BareNaked Tstud™ column must have a single row of nails.

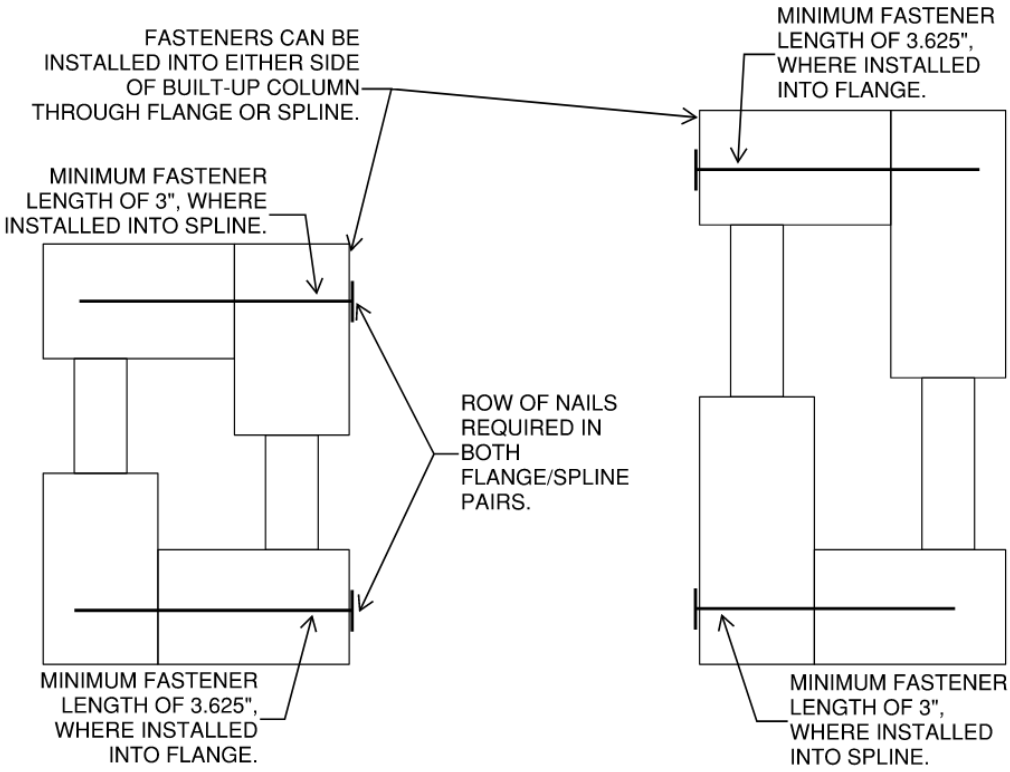


Figure 6. Fastening Requirements for BareNaked Tstud™ Built-Up Column with 2x3 Flange

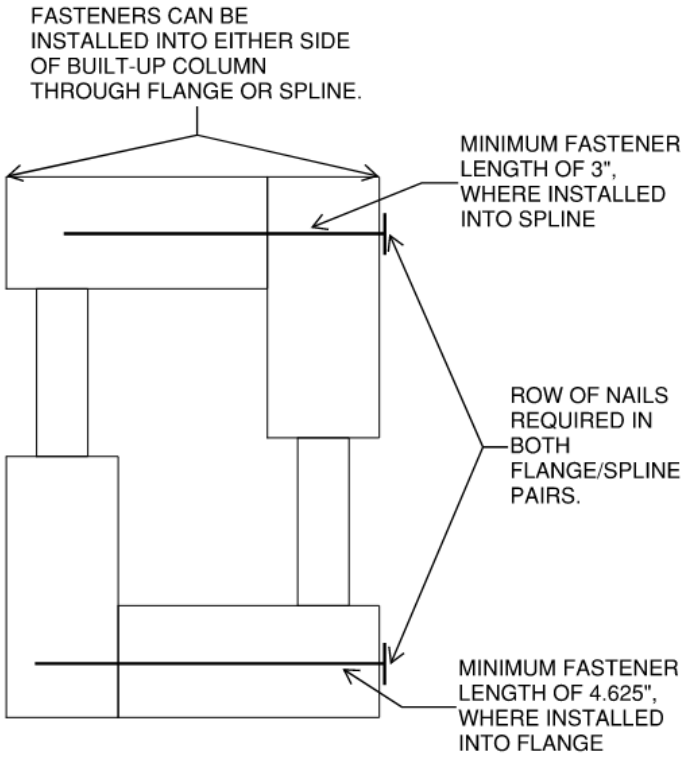


Figure 7. Fastening Requirements for BareNaked Tstud™ Built-Up Column with 2x4 Flange

5.2.8.4 The maximum allowable compression load for BareNaked Tstud™ columns is specified in Table 12 for 5.5" BareNaked Tstud™ and Table 13 for 7.25" BareNaked Tstud™. The maximum allowable compression load is based on perpendicular-to-grain compression of SPF, SYP, LVL, or LSL top and bottom plates and compression parallel to grain of the BareNaked Tstud™.

Table 12. Allowable Compressive Load of 5.5" BareNaked Tstud™ Columns

Stud Height (ft)	Allowable Compressive Load (lb)		
	Top/Bottom Plate[1]		
	Spruce Pine Fir (SPF) (SG = 0.42)	Southern Pine (SYP) (SG = 0.55)	LVL or LSL
8	7,330	9,745	11,855
9	7,330	9,745	10,700
10	7,330	9,495	9,495
11	7,330	8,350	8,350
12	7,315	7,315	7,315
13	6,420	6,420	6,420
14	5,650	5,650	5,650
15	4,995	4,995	4,995
16	4,440	4,440	4,440

SI: 1 in. = 25.4 mm, 1 lb. = 4.45 N

1. Minimum compression perpendicular to grain is 425 psi for the SPF, 565 psi for SYP, 820 for LVL, and 800 for LSL (adjusted per NDS Section 3.10.4).

Table 13. Allowable Compressive Load of 7.25" BareNaked Tstud™ Columns

Stud Height (ft)	Allowable Compressive Load (lb)		
	Top/Bottom Plate[1]		
	Spruce Pine Fir (SPF) (SG = 0.42)	Southern Pine (SYP) (SG = 0.55)	LVL or LSL
8	8,795	11,695	15,135
9	8,795	11,695	14,310
10	8,795	11,695	13,340
11	8,795	11,695	12,270
12	8,795	11,160	11,160
13	8,795	10,075	10,075
14	8,795	9,065	9,065
15	8,145	8,145	8,145
16	7,330	7,330	7,330

SI: 1 in. = 25.4 mm, 1 lb. = 4.45 N

1. Minimum compression perpendicular to grain is 425 psi for the SPF, 565 psi for SYP, 820 for LVL, and 800 for LSL (adjusted per NDS Section 3.10.4).

5.2.8.5 Allowable wind pressures for BareNaked Tstud™ stud columns subject to axial loads are specified in the following tables:

5.2.8.5.1 5.5" BareNaked Tstud™ columns:

5.2.8.5.1.1 SPF top and bottom plates: Table 14

5.2.8.5.1.2 SYP top and bottom plates: Table 15

5.2.8.5.1.3 LVL or LSL top and bottom plates: Table 16

5.2.8.5.2 7.25" BareNaked Tstud™ columns:

5.2.8.5.2.1 SPF top and bottom plates: Table 17

5.2.8.5.2.2 SYP top and bottom plates: Table 18

5.2.8.5.2.3 LVL or LSL top and bottom plates: Table 19

Table 14. Built-Up Column Allowable (ASD) Compressive Load for Walls Subject to Wind Pressures (5.5" BareNaked Tstud™ with SPF Top/Bottom Plates)[1,2]

Stud Spacing (in)	Wall Height (ft)	Allowable Compression Load (lb) & (Deflection Ratio)									
		Components & Cladding Wind Pressure (psf)									
		15	20	25	30	35	40	45	50	55	60
12	8	7330 (L/4322)	7330 (L/3242)	7330 (L/2593)	7330 (L/2161)	7330 (L/1852)	7330 (L/1621)	7330 (L/1441)	7330 (L/1297)	7330 (L/1179)	7330 (L/1081)
	9	7330 (L/2994)	7330 (L/2245)	7330 (L/1796)	7330 (L/1497)	7330 (L/1283)	7330 (L/1123)	7330 (L/998)	7330 (L/898)	7330 (L/816)	7330 (L/748)
	10	7330 (L/2158)	7330 (L/1619)	7330 (L/1295)	7330 (L/1079)	7330 (L/925)	7330 (L/809)	7330 (L/719)	7210 (L/647)	6840 (L/589)	6475 (L/540)
	12	6305 (L/1228)	5770 (L/921)	5240 (L/737)	4705 (L/614)	4170 (L/526)	3640 (L/461)	3105 (L/409)	2570 (L/368)	2040 (L/335)	1505 (L/307)
	14	3740 (L/764)	3005 (L/573)	2275 (L/459)	1540 (L/382)	810 (L/328)	80 (L/287)	--	--	--	--
	16	1710 (L/508)	745 (L/381)	--	--	--	--	--	--	--	--
16	8	7330 (L/3242)	7330 (L/2431)	7330 (L/1945)	7330 (L/1621)	7330 (L/1389)	7330 (L/1216)	7330 (L/1081)	7330 (L/973)	7330 (L/884)	7330 (L/810)
	9	7330 (L/2245)	7330 (L/1684)	7330 (L/1347)	7330 (L/1123)	7330 (L/962)	7330 (L/842)	7330 (L/748)	7330 (L/674)	7330 (L/612)	7330 (L/561)
	10	7330 (L/1619)	7330 (L/1214)	7330 (L/971)	7330 (L/809)	7330 (L/694)	6965 (L/607)	6475 (L/540)	5985 (L/486)	5500 (L/441)	5010 (L/405)
	12	5770 (L/921)	5060 (L/691)	4350 (L/553)	3640 (L/461)	2925 (L/395)	2215 (L/345)	1505 (L/307)	790 (L/276)	80 (L/251)	--
	14	3005 (L/573)	2030 (L/430)	1055 (L/344)	80 (L/287)	--	--	--	--	--	--
	16	745 (L/381)	--	--	--	--	--	--	--	--	--
24	8	7330 (L/2161)	7330 (L/1621)	7330 (L/1297)	7330 (L/1081)	7330 (L/926)	7330 (L/810)	7330 (L/720)	7330 (L/648)	7330 (L/589)	7330 (L/540)
	9	7330 (L/1497)	7330 (L/1123)	7330 (L/898)	7330 (L/748)	7330 (L/641)	7330 (L/561)	7330 (L/499)	6955 (L/449)	6365 (L/408)	5775 (L/374)
	10	7330 (L/1079)	7330 (L/809)	7210 (L/647)	6475 (L/540)	5745 (L/462)	5010 (L/405)	4275 (L/360)	3545 (L/324)	2810 (L/294)	2080 (L/270)
	12	4705 (L/614)	3640 (L/461)	2570 (L/368)	1505 (L/307)	435 (L/263)	--	--	--	--	--
	14	1540 (L/382)	80 (L/287)	--	--	--	--	--	--	--	--

SI: 1 in. = 25.4 mm, 1 psf = 0.0479 kN/m^2

1. Wind speed provided assumes Exposure Category B, Enclosed Building, Mean Roof Height 30'
2. Walls constructed with BareNaked Tstud™ studs and SPF top and bottom plates.

Table 15. Built-Up Column Allowable (ASD) Compressive Load for Walls Subject to Wind Pressures (5.5" BareNaked Tstud™ Column with SYP Top/Bottom Plates)[1,2]

Stud Spacing (in)	Wall Height (ft)	Allowable Compression Load (lb) & (Deflection Ratio)									
		Components & Cladding Wind Pressure (psf)									
		15	20	25	30	35	40	45	50	55	60
12	8	9745 (L/4322)	9745 (L/3242)	9745 (L/2593)	9745 (L/2161)	9745 (L/1852)	9745 (L/1621)	9745 (L/1441)	9745 (L/1297)	9745 (L/1179)	9745 (L/1081)
	9	9745 (L/2994)	9745 (L/2245)	9745 (L/1796)	9745 (L/1497)	9745 (L/1283)	9745 (L/1123)	9745 (L/998)	9745 (L/898)	9605 (L/816)	9310 (L/748)
	10	9495 (L/2158)	9405 (L/1619)	9040 (L/1295)	8675 (L/1079)	8305 (L/925)	7940 (L/809)	7575 (L/719)	7210 (L/647)	6840 (L/589)	6475 (L/540)
	12	6305 (L/1228)	5770 (L/921)	5240 (L/737)	4705 (L/614)	4170 (L/526)	3640 (L/461)	3105 (L/409)	2570 (L/368)	2040 (L/335)	1505 (L/307)
	14	3740 (L/764)	3005 (L/573)	2275 (L/459)	1540 (L/382)	810 (L/328)	80 (L/287)	--	--	--	--
	16	1710 (L/508)	745 (L/381)	--	--	--	--	--	--	--	--
16	8	9745 (L/3242)	9745 (L/2431)	9745 (L/1945)	9745 (L/1621)	9745 (L/1389)	9745 (L/1216)	9745 (L/1081)	9745 (L/973)	9745 (L/884)	9745 (L/810)
	9	9745 (L/2245)	9745 (L/1684)	9745 (L/1347)	9745 (L/1123)	9745 (L/962)	9705 (L/842)	9310 (L/748)	8915 (L/674)	8525 (L/612)	8130 (L/561)
	10	9405 (L/1619)	8920 (L/1214)	8430 (L/971)	7940 (L/809)	7450 (L/694)	6965 (L/607)	6475 (L/540)	5985 (L/486)	5500 (L/441)	5010 (L/405)
	12	5770 (L/921)	5060 (L/691)	4350 (L/553)	3640 (L/461)	2925 (L/395)	2215 (L/345)	1505 (L/307)	790 (L/276)	80 (L/251)	--
	14	3005 (L/573)	2030 (L/430)	1055 (L/344)	80 (L/287)	--	--	--	--	--	--
	16	745 (L/381)	--	--	--	--	--	--	--	--	--
24	8	9745 (L/2161)	9745 (L/1621)	9745 (L/1297)	9745 (L/1081)	9745 (L/926)	9745 (L/810)	9745 (L/720)	9745 (L/648)	9745 (L/589)	9595 (L/540)
	9	9745 (L/1497)	9745 (L/1123)	9745 (L/898)	9310 (L/748)	8720 (L/641)	8130 (L/561)	7545 (L/499)	6955 (L/449)	6365 (L/408)	5775 (L/374)
	10	8675 (L/1079)	7940 (L/809)	7210 (L/647)	6475 (L/540)	5745 (L/462)	5010 (L/405)	4275 (L/360)	3545 (L/324)	2810 (L/294)	2080 (L/270)
	12	4705 (L/614)	3640 (L/461)	2570 (L/368)	1505 (L/307)	435 (L/263)	--	--	--	--	--
	14	1540 (L/382)	80 (L/287)	--	--	--	--	--	--	--	--

SI: 1 in. = 25.4 mm, 1 psf = 0.0479 kN/m^2

1. Wind speed provided assumes Exposure Category B, Enclosed Building, Mean Roof Height 30'
2. Walls constructed with BareNaked Tstud™ studs and SYP top and bottom plates.

Table 16. Built-Up Column Allowable (ASD) Compressive Load for Walls Subject to Wind Pressures (5.5" BareNaked Tstud™ Column with LVL or LSL Top/Bottom Plates)[1,2]

Stud Spacing (in)	Wall Height (ft)	Allowable Compression Load (lb) & (Deflection Ratio)									
		Components & Cladding Wind Pressure (psf)									
		15	20	25	30	35	40	45	50	55	60
12	8	11855 (L/4322)	11855 (L/3242)	11855 (L/2593)	11855 (L/2161)	11855 (L/1852)	11855 (L/1621)	11855 (L/1441)	11855 (L/1297)	11855 (L/1179)	11855 (L/1081)
	9	10700 (L/2994)	10700 (L/2245)	10700 (L/1796)	10700 (L/1497)	10700 (L/1283)	10490 (L/1123)	10195 (L/998)	9900 (L/898)	9605 (L/816)	9310 (L/748)
	10	9495 (L/2158)	9405 (L/1619)	9040 (L/1295)	8675 (L/1079)	8305 (L/925)	7940 (L/809)	7575 (L/719)	7210 (L/647)	6840 (L/589)	6475 (L/540)
	12	6305 (L/1228)	5770 (L/921)	5240 (L/737)	4705 (L/614)	4170 (L/526)	3640 (L/461)	3105 (L/409)	2570 (L/368)	2040 (L/335)	1505 (L/307)
	14	3740 (L/764)	3005 (L/573)	2275 (L/459)	1540 (L/382)	810 (L/328)	80 (L/287)	--	--	--	--
	16	1710 (L/508)	745 (L/381)	--	--	--	--	--	--	--	--
16	8	11855 (L/3242)	11855 (L/2431)	11855 (L/1945)	11855 (L/1621)	11855 (L/1389)	11855 (L/1216)	11855 (L/1081)	11855 (L/973)	11750 (L/884)	11440 (L/810)
	9	10700 (L/2245)	10700 (L/1684)	10700 (L/1347)	10490 (L/1123)	10095 (L/962)	9705 (L/842)	9310 (L/748)	8915 (L/674)	8525 (L/612)	8130 (L/561)
	10	9405 (L/1619)	8920 (L/1214)	8430 (L/971)	7940 (L/809)	7450 (L/694)	6965 (L/607)	6475 (L/540)	5985 (L/486)	5500 (L/441)	5010 (L/405)
	12	5770 (L/921)	5060 (L/691)	4350 (L/553)	3640 (L/461)	2925 (L/395)	2215 (L/345)	1505 (L/307)	790 (L/276)	80 (L/251)	--
	14	3005 (L/573)	2030 (L/430)	1055 (L/344)	80 (L/287)	--	--	--	--	--	--
	16	745 (L/381)	--	--	--	--	--	--	--	--	--
24	8	11855 (L/2161)	11855 (L/1621)	11855 (L/1297)	11855 (L/1081)	11855 (L/926)	11440 (L/810)	10980 (L/720)	10520 (L/648)	10060 (L/589)	9595 (L/540)
	9	10700 (L/1497)	10490 (L/1123)	9900 (L/898)	9310 (L/748)	8720 (L/641)	8130 (L/561)	7545 (L/499)	6955 (L/449)	6365 (L/408)	5775 (L/374)
	10	8675 (L/1079)	7940 (L/809)	7210 (L/647)	6475 (L/540)	5745 (L/462)	5010 (L/405)	4275 (L/360)	3545 (L/324)	2810 (L/294)	2080 (L/270)
	12	4705 (L/614)	3640 (L/461)	2570 (L/368)	1505 (L/307)	435 (L/263)	--	--	--	--	--
	14	1540 (L/382)	80 (L/287)	--	--	--	--	--	--	--	--

SI: 1 in. = 25.4 mm, 1 psf = 0.0479 kN/m^2

1. Wind speed provided assumes Exposure Category B, Enclosed Building, Mean Roof Height 30'
2. Walls constructed with BareNaked Tstud™ studs and LVL or LSL (minimum compression perpendicular to grain strength is 800 psi) top and bottom plates.

Table 17. Built-Up Column Allowable (ASD) Compressive Load for Walls Subject to Wind Pressures (7.25" BareNaked Tstud™ Column with SPF Top/Bottom Plates)[1,2]

Stud Spacing (in)	Wall Height (ft)	Allowable Compression Load (lb) & (Deflection Ratio)									
		Components & Cladding Wind Pressure (psf)									
		15	20	25	30	35	40	45	50	55	60
12	8	8795 (L/8335)	8795 (L/6251)	8795 (L/5001)	8795 (L/4167)	8795 (L/3572)	8795 (L/3126)	8795 (L/2778)	8795 (L/2500)	8795 (L/2273)	8795 (L/2084)
	9	8795 (L/5773)	8795 (L/4329)	8795 (L/3464)	8795 (L/2886)	8795 (L/2474)	8795 (L/2165)	8795 (L/1924)	8795 (L/1732)	8795 (L/1574)	8795 (L/1443)
	10	8795 (L/4162)	8795 (L/3121)	8795 (L/2497)	8795 (L/2081)	8795 (L/1784)	8795 (L/1561)	8795 (L/1387)	8795 (L/1248)	8795 (L/1135)	8795 (L/1040)
	12	8795 (L/2369)	8795 (L/1776)	8795 (L/1421)	8795 (L/1184)	8795 (L/1015)	8795 (L/888)	8795 (L/790)	8795 (L/711)	8795 (L/646)	8750 (L/592)
	14	8505 (L/1474)	8030 (L/1106)	7555 (L/884)	7080 (L/737)	6605 (L/632)	6130 (L/553)	5655 (L/491)	5175 (L/442)	4705 (L/402)	4225 (L/369)
	16	5915 (L/979)	5290 (L/734)	4665 (L/587)	4045 (L/489)	3420 (L/419)	2795 (L/367)	2170 (L/326)	1545 (L/294)	920 (L/267)	295 (L/245)
16	8	8795 (L/6251)	8795 (L/4688)	8795 (L/3751)	8795 (L/3126)	8795 (L/2679)	8795 (L/2344)	8795 (L/2084)	8795 (L/1875)	8795 (L/1705)	8795 (L/1563)
	9	8795 (L/4329)	8795 (L/3247)	8795 (L/2598)	8795 (L/2165)	8795 (L/1855)	8795 (L/1624)	8795 (L/1443)	8795 (L/1299)	8795 (L/1181)	8795 (L/1082)
	10	8795 (L/3121)	8795 (L/2341)	8795 (L/1873)	8795 (L/1561)	8795 (L/1338)	8795 (L/1170)	8795 (L/1040)	8795 (L/936)	8795 (L/851)	8795 (L/780)
	12	8795 (L/1776)	8795 (L/1332)	8795 (L/1066)	8795 (L/888)	8795 (L/761)	8795 (L/666)	8750 (L/592)	8285 (L/533)	7825 (L/484)	7365 (L/444)
	14	8030 (L/1106)	7395 (L/829)	6760 (L/663)	6130 (L/553)	5495 (L/474)	4860 (L/415)	4225 (L/369)	3595 (L/332)	2960 (L/302)	2325 (L/276)
	16	5290 (L/734)	4460 (L/551)	3630 (L/440)	2795 (L/367)	1965 (L/315)	1130 (L/275)	295 (L/245)	--	--	--
24	8	8795 (L/4167)	8795 (L/3126)	8795 (L/2500)	8795 (L/2084)	8795 (L/1786)	8795 (L/1563)	8795 (L/1389)	8795 (L/1250)	8795 (L/1137)	8795 (L/1042)
	9	8795 (L/2886)	8795 (L/2165)	8795 (L/1732)	8795 (L/1443)	8795 (L/1237)	8795 (L/1082)	8795 (L/962)	8795 (L/866)	8795 (L/787)	8795 (L/722)
	10	8795 (L/2081)	8795 (L/1561)	8795 (L/1248)	8795 (L/1040)	8795 (L/892)	8795 (L/780)	8795 (L/694)	8795 (L/624)	8795 (L/567)	8795 (L/520)
	12	8795 (L/1184)	8795 (L/888)	8795 (L/711)	8750 (L/592)	8055 (L/508)	7365 (L/444)	6670 (L/395)	5980 (L/355)	5285 (L/323)	4595 (L/296)
	14	7080 (L/737)	6130 (L/553)	5175 (L/442)	4225 (L/369)	3280 (L/316)	2325 (L/276)	1375 (L/246)	425 (L/221)	--	--
	16	4045 (L/489)	2795 (L/367)	1545 (L/294)	295 (L/245)	--	--	--	--	--	--

SI: 1 in. = 25.4 mm, 1 psf = 0.0479 kN/m^2

1. Wind speed provided assumes Exposure Category B, Enclosed Building, Mean Roof Height 30'
2. Walls constructed with BareNaked Tstud™ studs and SPF top and bottom plates.

Table 18. Built-Up Column Allowable (ASD) Compressive Load for Walls Subject to Wind Pressures (7.25" BareNaked Tstud™ Column with SYP Top/Bottom Plates)[1,2]

Stud Spacing (in)	Wall Height (ft)	Allowable Compression Load (lb) & (Deflection Ratio)									
		Components & Cladding Wind Pressure (psf)									
		15	20	25	30	35	40	45	50	55	60
12	8	11695 (L/8335)	11695 (L/6251)	11695 (L/5001)	11695 (L/4167)	11695 (L/3572)	11695 (L/3126)	11695 (L/2778)	11695 (L/2500)	11695 (L/2273)	11695 (L/2084)
	9	11695 (L/5773)	11695 (L/4329)	11695 (L/3464)	11695 (L/2886)	11695 (L/2474)	11695 (L/2165)	11695 (L/1924)	11695 (L/1732)	11695 (L/1574)	11695 (L/1443)
	10	11695 (L/4162)	11695 (L/3121)	11695 (L/2497)	11695 (L/2081)	11695 (L/1784)	11695 (L/1561)	11695 (L/1387)	11695 (L/1248)	11695 (L/1135)	11695 (L/1040)
	12	11160 (L/2369)	11160 (L/1776)	11160 (L/1421)	10830 (L/1184)	10480 (L/1015)	10135 (L/888)	9790 (L/790)	9440 (L/711)	9095 (L/646)	8750 (L/592)
	14	8505 (L/1474)	8030 (L/1106)	7555 (L/884)	7080 (L/737)	6605 (L/632)	6130 (L/553)	5655 (L/491)	5175 (L/442)	4705 (L/402)	4225 (L/369)
	16	5915 (L/979)	5290 (L/734)	4665 (L/587)	4045 (L/489)	3420 (L/419)	2795 (L/367)	2170 (L/326)	1545 (L/294)	920 (L/267)	295 (L/245)
16	8	11695 (L/6251)	11695 (L/4688)	11695 (L/3751)	11695 (L/3126)	11695 (L/2679)	11695 (L/2344)	11695 (L/2084)	11695 (L/1875)	11695 (L/1705)	11695 (L/1563)
	9	11695 (L/4329)	11695 (L/3247)	11695 (L/2598)	11695 (L/2165)	11695 (L/1855)	11695 (L/1624)	11695 (L/1443)	11695 (L/1299)	11695 (L/1181)	11695 (L/1082)
	10	11695 (L/3121)	11695 (L/2341)	11695 (L/1873)	11695 (L/1561)	11695 (L/1338)	11695 (L/1170)	11695 (L/1040)	11695 (L/936)	11695 (L/851)	11695 (L/780)
	12	11160 (L/1776)	11060 (L/1332)	10595 (L/1066)	10135 (L/888)	9675 (L/761)	9210 (L/666)	8750 (L/592)	8285 (L/533)	7825 (L/484)	7365 (L/444)
	14	8030 (L/1106)	7395 (L/829)	6760 (L/663)	6130 (L/553)	5495 (L/474)	4860 (L/415)	4225 (L/369)	3595 (L/332)	2960 (L/302)	2325 (L/276)
	16	5290 (L/734)	4460 (L/551)	3630 (L/440)	2795 (L/367)	1965 (L/315)	1130 (L/275)	295 (L/245)	--	--	--
24	8	11695 (L/4167)	11695 (L/3126)	11695 (L/2500)	11695 (L/2084)	11695 (L/1786)	11695 (L/1563)	11695 (L/1389)	11695 (L/1250)	11695 (L/1137)	11695 (L/1042)
	9	11695 (L/2886)	11695 (L/2165)	11695 (L/1732)	11695 (L/1443)	11695 (L/1237)	11695 (L/1082)	11695 (L/962)	11695 (L/866)	11695 (L/787)	11695 (L/722)
	10	11695 (L/2081)	11695 (L/1561)	11695 (L/1248)	11695 (L/1040)	11695 (L/892)	11695 (L/780)	11695 (L/694)	11695 (L/624)	11635 (L/567)	11160 (L/520)
	12	10830 (L/1184)	10135 (L/888)	9440 (L/711)	8750 (L/592)	8055 (L/508)	7365 (L/444)	6670 (L/395)	5980 (L/355)	5285 (L/323)	4595 (L/296)
	14	7080 (L/737)	6130 (L/553)	5175 (L/442)	4225 (L/369)	3280 (L/316)	2325 (L/276)	1375 (L/246)	425 (L/221)	--	--
	16	4045 (L/489)	2795 (L/367)	1545 (L/294)	295 (L/245)	--	--	--	--	--	--

SI: 1 in. = 25.4 mm, 1 psf = 0.0479 kN/m^2

1. Wind speed provided assumes Exposure Category B, Enclosed Building, Mean Roof Height 30'
2. Walls constructed with BareNaked Tstud™ studs and SYP top and bottom plates.

Table 19. Built-Up Column Allowable (ASD) Compressive Load for Walls Subject to Wind Pressures (7.25" BareNaked Tstud™ Column with LVL or LSL Top/Bottom Plates)[1,2]

Stud Spacing (in)	Wall Height (ft)	Allowable Compression Load (lb) & (Deflection Ratio)									
		Components & Cladding Wind Pressure (psf)									
		15	20	25	30	35	40	45	50	55	60
12	8	15135 (L/8335)	15135 (L/6251)	15135 (L/5001)	15135 (L/4167)	15135 (L/3572)	15135 (L/3126)	15135 (L/2778)	15135 (L/2500)	15135 (L/2273)	15135 (L/2084)
	9	14310 (L/5773)	14310 (L/4329)	14310 (L/3464)	14310 (L/2886)	14310 (L/2474)	14310 (L/2165)	14310 (L/1924)	14310 (L/1732)	14310 (L/1574)	14310 (L/1443)
	10	13340 (L/4162)	13340 (L/3121)	13340 (L/2497)	13340 (L/2081)	13340 (L/1784)	13340 (L/1561)	13340 (L/1387)	13340 (L/1248)	13340 (L/1135)	13340 (L/1040)
	12	11160 (L/2369)	11160 (L/1776)	11160 (L/1421)	10830 (L/1184)	10480 (L/1015)	10135 (L/888)	9790 (L/790)	9440 (L/711)	9095 (L/646)	8750 (L/592)
	14	8505 (L/1474)	8030 (L/1106)	7555 (L/884)	7080 (L/737)	6605 (L/632)	6130 (L/553)	5655 (L/491)	5175 (L/442)	4705 (L/402)	4225 (L/369)
	16	5915 (L/979)	5290 (L/734)	4665 (L/587)	4045 (L/489)	3420 (L/419)	2795 (L/367)	2170 (L/326)	1545 (L/294)	920 (L/267)	295 (L/245)
16	8	15135 (L/6251)	15135 (L/4688)	15135 (L/3751)	15135 (L/3126)	15135 (L/2679)	15135 (L/2344)	15135 (L/2084)	15135 (L/1875)	15135 (L/1705)	15135 (L/1563)
	9	14310 (L/4329)	14310 (L/3247)	14310 (L/2598)	14310 (L/2165)	14310 (L/1855)	14310 (L/1624)	14310 (L/1443)	14310 (L/1299)	14310 (L/1181)	14310 (L/1082)
	10	13340 (L/3121)	13340 (L/2341)	13340 (L/1873)	13340 (L/1561)	13340 (L/1338)	13340 (L/1170)	13340 (L/1040)	13340 (L/936)	13340 (L/851)	13060 (L/780)
	12	11160 (L/1776)	11060 (L/1332)	10595 (L/1066)	10135 (L/888)	9675 (L/761)	9210 (L/666)	8750 (L/592)	8285 (L/533)	7825 (L/484)	7365 (L/444)
	14	8030 (L/1106)	7395 (L/829)	6760 (L/663)	6130 (L/553)	5495 (L/474)	4860 (L/415)	4225 (L/369)	3595 (L/332)	2960 (L/302)	2325 (L/276)
	16	5290 (L/734)	4460 (L/551)	3630 (L/440)	2795 (L/367)	1965 (L/315)	1130 (L/275)	295 (L/245)	--	--	--
24	8	15135 (L/4167)	15135 (L/3126)	15135 (L/2500)	15135 (L/2084)	15135 (L/1786)	15135 (L/1563)	15135 (L/1389)	15135 (L/1250)	15135 (L/1137)	15135 (L/1042)
	9	14310 (L/2886)	14310 (L/2165)	14310 (L/1732)	14310 (L/1443)	14310 (L/1237)	14310 (L/1082)	14310 (L/962)	14310 (L/866)	14310 (L/787)	14310 (L/722)
	10	13340 (L/2081)	13340 (L/1561)	13340 (L/1248)	13340 (L/1040)	13340 (L/892)	13060 (L/780)	12585 (L/694)	12110 (L/624)	11635 (L/567)	11160 (L/520)
	12	10830 (L/1184)	10135 (L/888)	9440 (L/711)	8750 (L/592)	8055 (L/508)	7365 (L/444)	6670 (L/395)	5980 (L/355)	5285 (L/323)	4595 (L/296)
	14	7080 (L/737)	6130 (L/553)	5175 (L/442)	4225 (L/369)	3280 (L/316)	2325 (L/276)	1375 (L/246)	425 (L/221)	--	--
	16	4045 (L/489)	2795 (L/367)	1545 (L/294)	295 (L/245)	--	--	--	--	--	--

SI: 1 in. = 25.4 mm, 1 psf = 0.0479 kN/m^2

1. Wind speed provided assumes Exposure Category B, Enclosed Building, Mean Roof Height 30'
2. Walls constructed with BareNaked Tstud™ studs and LVL or LSL (minimum compression perpendicular to grain strength is 800 psi) top and bottom plates.

5.2.9 *Design of BareNaked Tstud™ Headers:*

5.2.9.1 BareNaked Tstud™ headers are shown in Figure 8 and Figure 9.

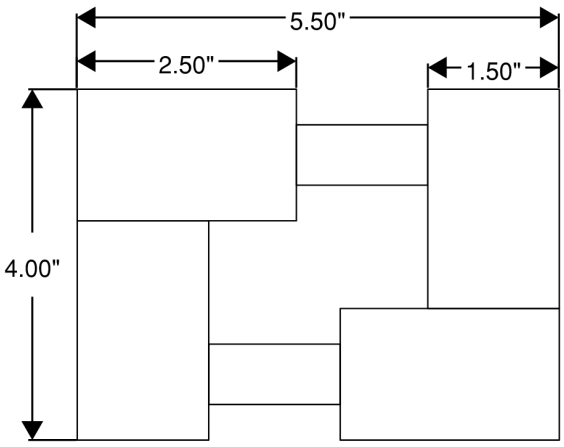


Figure 8. 5.5″ Wide BareNaked Tstud™ Header

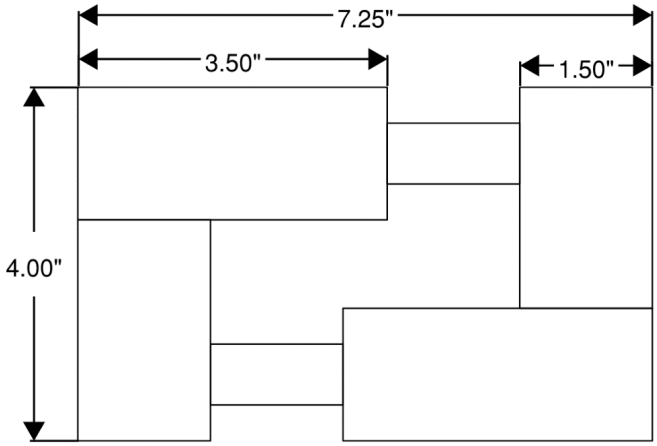


Figure 9. 7.25″ Wide BareNaked Tstud™ Header

5.2.9.1.1 The 7.25″ built-up section shall be limited to the 2x3 flange option shown in Figure 9 when used as a header.

5.2.9.1.2 Headers are designed to be loaded perpendicular to the plane of the dowels.

5.2.9.1.3 Where stacked headers are used, headers shall be fastened with 4" x 0.131" nails at 16" o.c. into each side of the header.

5.2.9.2 Reference design values for BareNaked Tstud™ Headers are provided in Table 20.

5.2.9.2.1 Reference design values for BareNaked Tstud™ Headers shall be multiplied by the adjustment factors in NDS Section 4.3.

Table 20. Header Reference Design Values[1,2]

Reference Design Value	5.5″ BareNaked Tstud™ Header	7.25″ BareNaked Tstud™ Header[2,3]
Bending, F_bS	1,230 lb-ft	1,005 lb-ft
Compression Parallel to Grain, F_c	1,150 psi	1,150 psi
Tension Parallel to Grain, F_t	450 psi	450 psi
Compression Perpendicular to Grain, $F_{c\perp}$	425 psi	425 psi
Shear Force, V	1,055 lb	865 lb
Bending Stiffness, EI	20,760,000 lb-in^2	23,587,000 lb-in^2
Bending Stiffness for Beam and Column Stability, EI_{min}	10,521,000 lb-in^2	10,140,000 lb-in^2

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

1. BareNaked Tstud™ Headers made from No. 2 SPF.
2. Headers are designed to be oriented with the load perpendicular to the dowels. Ensure proper orientation during installation.
3. The 7.25" BareNaked Tstud™ header referenced here uses a 2x3 as the flange and a 2x4 as the spline.

5.2.9.3 The maximum bending moment and shear forces shall not exceed the allowable design values for the corresponding BareNaked Tstud™ header specified in Table 22.

5.2.9.4 Allowable spans for BareNaked Tstud™ headers are specified in Table 21 and Table 22.

Table 21. Allowable Loads for 5.5″ BareNaked Tstud™ Headers[1,2,3,4]

Number of Headers	Allowable Load (plf) & Deflection Ratio					
	Span (ft)					
	3	4	5	6	7	8
1	1093 (L/375)	615 (L/281)	369 (L/240)	214 (L/240)	134 (L/240)	90 (L/240)
2	2187 (L/375)	1230 (L/281)	738 (L/240)	427 (L/240)	269 (L/240)	180 (L/240)
3	3280 (L/375)	1845 (L/281)	1107 (L/240)	641 (L/240)	403 (L/240)	270 (L/240)

SI: 1 in = 25.4 mm, 1 lb = 4.45 N, 1 lb/ft = 0.0146 kN/m

1. Table values are based on Tstud™ of No. 2 SPF lumber.
2. Table values are based on a load duration factor of 1.0.
3. Deflection checks of L/360 for live load and L/240 for total load are based on a live load to dead load ratio of 2:1.
4. See Figure 8 for an illustration of the BareNaked Tstud™ cross-section.

Table 22. Allowable Loads for 7.25″ BareNaked Tstud™ Headers[1,2,3,4]

Number of Headers	Allowable Load (plf) & Deflection Ratio					
	Span (ft)					
	3	4	5	6	7	8
1	893 (L/522)	503 (L/391)	322 (L/313)	223 (L/261)	153 (L/240)	102 (L/240)
2	1787 (L/522)	1005 (L/391)	643 (L/313)	447 (L/261)	306 (L/240)	205 (L/240)
3	2680 (L/522)	1508 (L/391)	965 (L/313)	670 (L/261)	458 (L/240)	307 (L/240)

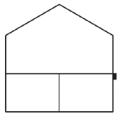
SI: 1 in = 25.4 mm, 1 lb = 4.45 N, 1 lb/ft = 0.0146 kN/m

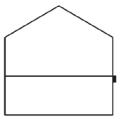
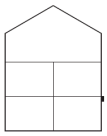
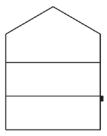
1. Table values are based on Tstud™ of No. 2 SPF lumber.
2. Table values are based on a load duration factor of 1.0.
3. Deflection checks of L/360 for live load and L/240 for total load are based on a live load to dead load ratio of 2:1.
4. See Figure 9 for an illustration of the BareNaked Tstud™ cross-section.

5.3 *Prescriptive Header Design*

5.3.1 Prescriptive header design values for BareNaked Tstud™ Headers are provided in Table 23.

Table 23. Prescriptive Header Design[1]

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™	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™	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™	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™	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™	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™	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™	3'-9"	1	2'-4"	1	-	1	3'-2"	1	2'-0"	1	-	1	2'-10"	1	-	1	-	1
	(1) 7.25" Tstud™	3'-1"	1	-	1	-	1	2'-7"	1	-	1	-	1	2'-3"	1	-	1	-	1
	(2) 5.5" Tstud™	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™	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™	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™	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

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  ROOF, CEILING AND ONE FLOOR (CLEAR SPAN)	(1) 5.5" Tstud™	2'-9"	1	-	1	-	1	2'-8"	1	-	1	-	1	2'-4"	1	-	1	-	1
	(1) 7.25" Tstud™	2'-3"	1	-	1	-	1	2'-2"	1	-	1	-	1	-	1	-	1	-	1
	(2) 5.5" Tstud™	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™	4'-7"	1	2'-10"	1	-	1	4'-4"	1	2'-8"	1	-	1	3'-11"	1	2'-4"	1	-	1
	(3) 5.5" Tstud™	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™	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  ROOF, CEILING AND TWO FLOORS (CENTER BEARING)	(1) 5.5" Tstud™	2'-5"	1	-	1	-	1	2'-4"	1	-	1	-	1	2'-1"	1	-	1	-	1
	(1) 7.25" Tstud™	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1
	(2) 5.5" Tstud™	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™	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™	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™	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 two clear-span floors  ROOF, CEILING AND TWO FLOORS (CLEAR SPAN)	(1) 5.5" Tstud™	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1
	(1) 7.25" Tstud™	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1
	(2) 5.5" Tstud™	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™	2'-9"	1	-	1	-	1	2'-9"	1	-	1	-	1	2'-8"	1	-	1	-	1
	(3) 5.5" Tstud™	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™	4'-1"	1	2'-7"	1	-	1	4'-1"	1	2'-7"	1	-	1	4'-1"	1	2'-7"	1	-	1

1. The number of jack studs is determined assuming the jack stud width matches the Tstud™ width (i.e., 2x6 for 5.5 and 2x8 for 7.25)

5.4 For applications outside the scope of this applicable code, consult the manufacturer installation instructions or a professional engineer registered in the state of the project.

5.5 Where the application falls outside of the performance evaluation, conditions of use and/or installation requirements set forth herein, alternative techniques shall be permitted in accordance with accepted engineering practice and experience. This includes but is not limited to the following areas of engineering: mechanics or materials, structural, building science, and fire science.

6 Installation

6.1 BareNaked Tstud™ shall be installed in accordance with the applicable code, the approved construction documents, this TER, the manufacturer installation instructions, NDS, and otherwise standard framing practices as applied to solid-sawn lumber.

6.2 In the event of a conflict between the manufacturer installation instructions and this TER, the more restrictive shall govern.

6.3 *Installation Procedure*

6.3.1 BareNaked Tstud™ is pre-assembled and designed to be used as a direct replacement of nominal 2″x4″ solid sawn lumber as wall studs, top plates, bottom plates, and built-up columns.

6.3.2 Install BareNaked Tstud™ in the same manner as solid sawn lumber, except as noted herein.

6.3.2.1 The BareNaked Tstud™ wall stud may be oriented in either direction (i.e., with the flange facing the interior of exterior face of the wall).

6.3.2.2 The BareNaked Tstud™ shall be used as a bottom plate only where the wall is connected to a wood deck. For walls connected to a concrete deck, a solid sawn, treated 2″x6″ member shall be used as the bottom plate.

6.3.2.3 Where BareNaked Tstud™ is used as a top plate, a separate means of fireblocking shall be provided in accordance with Section 9.6.

6.3.2.4 BareNaked Tstud™ headers shall be installed such that the dowel plane is be perpendicular to the loading orientation (vertical loads only).

6.3.3 For IBC Section 2308 and the IRC, install in accordance with the provisions therein, except as noted in this TER.

6.3.4 See Section 5.1 and Table 1 for prescriptive connection requirements.

6.3.5 See Section 5.2.8 for built-up column requirements.

6.3.6 See Section 5.2.9 for header requirements and limitations.

6.3.7 *Hold Downs:*

6.3.7.1 Hold-downs shall not be attached directly to BareNaked Tstud™ members. Solid sawn nominal 2″x6″ studs shall be used where hold-downs attach to the wall.

6.3.8 *Drilling and Notching:*

6.3.8.1 Boring BareNaked Tstud™ is allowed when in accordance with IBC Section 2308.5.9, IBC Section 2308.5.10 and IRC Section R602.6 as shown in Figure 10.

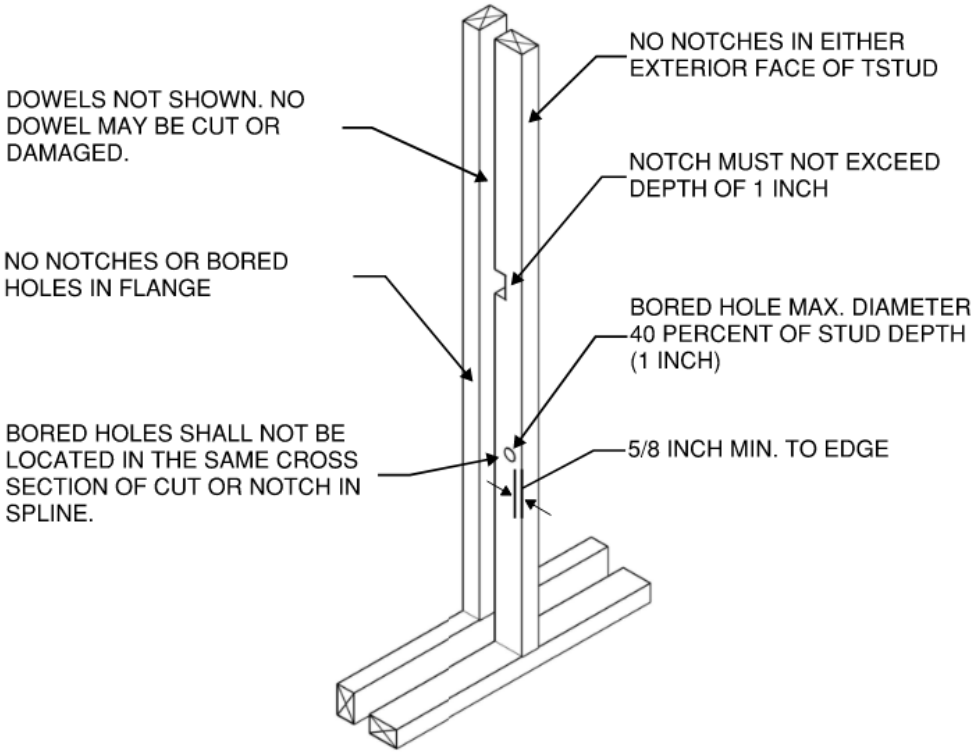


Figure 10. Drilling and Notching of BareNaked Tstud™

6.3.8.2 No dowels may be cut or damaged.

6.3.8.3 Notches on the exterior faces of the flange and spline are not permitted.

6.3.9 *Ripping of Flanges for Use in Top and Bottom Plates*

6.3.9.1 BareNaked Tstud™ flanges used in top and bottom plates are permitted to be ripped to 1½" along their length. This allows the spline and flange on the studs to be cut to the same length when constructing the wall assembly.

7 Substantiating Data

7.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:

7.1.1 Bending tests in accordance with ASTM D198

7.1.2 Lateral load resistance in accordance with ASTM E2126

7.2 ANSI/AWC NDS: National Design Specification (NDS) for Wood Construction

7.3 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies (i.e., ANAB accredited agencies), approved sources (i.e., RDPs), and/or professional engineering regulations. Accuracy of external test data and resulting analysis is relied upon.

7.4 Where pertinent, testing and/or engineering analysis is based upon provisions that have been codified into law through state or local adoption of codes and standards. The developers of these codes and standards are responsible for the reliability of published content. DrJ's engineering practice may use a code-adopted provision as the control sample. A control sample versus a test sample establishes a product as being equivalent to the code-adopted provision in terms of quality, strength, effectiveness, fire resistance, durability, and safety.

7.5 The accuracy of the provisions provided herein may be reliant upon the published properties of raw materials, which are defined by the grade mark, grade stamp, mill certificate, Listings, certified reports, duly authenticated reports from approved agencies, and research reports prepared by approved agencies and/or approved sources provided by the suppliers of products, materials, designs, assemblies and/or methods of construction. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this TER, may be dependent upon published design properties by others.

7.6 Testing and engineering analysis: The strength, rigidity and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.[12]

7.7 Where additional condition of use and/or code compliance information is required, please search for BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header on the DrJ Certification website.

8 Findings

8.1 As delineated in Section 3, BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header have performance characteristics that were tested and/or meet pertinent standards and is suitable for use pursuant to its specified purpose.

8.2 When used and installed in accordance with this TER and the manufacturer installation instructions, BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header shall be approved for the following applications:

8.2.1 BareNaked Tstud™ wall studs installed as framing members in walls, as described in this TER, are compliant with the codes listed in Section 2 and are approved for use as an alternative to nominal 2″x4″ (38 mm x 89 mm) solid sawn lumber in all cases for wall structural members.

8.2.2 For use as a 2″x6″ (38 mm x 140 mm), design shall be permitted in accordance with accepted engineering procedures, experience, and technical judgment. In these cases, referenced design values as specified in Table 2 shall be used in accordance with IBC Section 2308 and IRC Section R602.

8.2.3 BareNaked Tstud™ installed as built-up columns, as described in this TER, are compliant with the codes listed in Section 2 and NDS Section 15.3.

8.2.4 BareNaked Tstud™ Headers, as described in this TER, are compliant with the codes listed in Section 2.

8.3 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from Tanager Products, Inc.

8.4 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.10[13] are similar) in pertinent part states:

> **104.11 Alternative materials, design and methods of construction and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code. Where the alternative material, design or method of construction is not approved, the building official shall respond in writing, stating the reasons the alternative was not approved.

8.5 **Approved**:[14] Building codes require that the building official shall accept duly authenticated reports[15] or research reports[16] from approved agencies and/or approved sources (i.e., licensed RDP) with respect to the quality and manner of use of new products, materials, designs, services, assemblies, or methods of construction.

8.5.1 Acceptability of an approved agency, by a building official, is performed by verifying that the agency is accredited by a recognized accreditation body of the International Accreditation Forum (IAF).

---

[12] See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition.

[13] 2018 IFC Section 104.9

[14] Approved is an adjective that modifies the noun after it. For example, Approved Agency means that the Agency is accepted officially as being suitable in a particular situation. This example conforms to IBC/IRC/IFC Section 201.4 where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

[15] https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1

[16] https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1703.4.2

8.5.2 Acceptability of a licensed RDP, by a building official, is performed by verifying that the RDP and/or their business entity is listed by the licensing board of the relevant jurisdiction.

8.5.3 Federal law, Title 18 US Code Section 242, requires that where the alternative product, material, service, design, assembly, and/or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved, as denial without written reason deprives a protected right to free and fair competition in the marketplace.

8.6 DrJ is an engineering company, employs RDPs and is an ISO/IEC 17065 ANAB-Accredited Product Certification Body – Accreditation #1131.

8.7 Through ANAB accreditation and the IAF Multilateral Agreements, this TER can be used to obtain product approval in any jurisdiction or country that has IAF MLA Members & Signatories to meet the Purpose of the MLA – "*certified once, accepted everywhere*." IAF specifically says, "*Once an accreditation body is a signatory of the IAF MLA, it is required to recognise certificates and validation and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope*."[17]

9 Conditions of Use

9.1 Material properties shall not fall outside the boundaries defined in Section 3.

9.2 As defined in Section 3, where material and/or engineering mechanics properties are created for load resisting design purposes, the resistance to the applied load shall not exceed the ability of the defined properties to resist those loads using the principles of accepted engineering practice.

9.3 BareNaked Tstud™ complies with, or is a suitable alternative to, sawn lumber as permitted by the codes listed in Section 2 subject to the following conditions:

9.3.1 The maximum wall height for a 5½" BareNaked Tstud™ is 14' (4.3 m).

9.3.2 The maximum wall height for a 7¼" or larger BareNaked Tstud™ is 16' (4.9 m).

9.3.3 Increases for duration of load shall be in accordance with the limitations of the applicable building code for sawn lumber.

9.3.4 Creep factors applicable to sawn lumber may be applied to this product, in accordance with the applicable building code.

9.4 Notches in the exterior faces of the BareNaked Tstud™ (flange and spline) are not permitted (Figure 10).

9.5 No dowels may be cut or damaged (Figure 10).

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

9.7 When required by adopted legislation and enforced by the building official, also known as the authority having jurisdiction (AHJ) in which the project is to be constructed:

9.7.1 Any calculations incorporated into the construction documents shall conform to accepted engineering practice, and, when prepared by an approved source, shall be approved when requirements of adopted legislation are met.

9.7.2 This TER and the installation instructions shall be submitted at the time of permit application.

9.7.3 These BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header have an internal quality control program and a third-party quality assurance program.

9.7.4 At a minimum, these BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header shall be installed per Section 6 of this TER.

9.7.5 The review of this TER, by the AHJ, shall be in compliance with IBC Section 104 and IBC Section 105.4.

[17] https://iaf.nu/en/about-iaf-mla/#:~:text=required%20to%20recognise

9.7.6 These BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header have an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.4, IBC Section 110.4, IBC Section 1703, IRC Section R104.4 and IRC Section R109.2.

9.7.7 The application of these BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header in the context of this TER are dependent upon the accuracy of the construction documents, implementation of installation instructions, inspection as required by IBC Section 110.3, IRC Section R109.2 and any other regulatory requirements that may apply.

9.8 The approval of this TER by the AHJ shall comply with IBC Section 1707.1, where legislation states in pertinent part, "*the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in Section 104.11*", all of IBC Section 104, and IBC Section 105.4.

9.9 Design loads shall be determined in accordance with the building code adopted by the jurisdiction in which the project is to be constructed and/or by the building designer (i.e., owner or RDP).

9.10 The actual design, suitability, and use of this TER, for any particular building, is the responsibility of the owner or the owner's authorized agent.

10 Identification

10.1 The BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header listed in Section 1.1 are identified by a label on the board or packaging material bearing the manufacturer name, product name, TER number, and other information to confirm code compliance.

10.2 Additional technical information can be found at www.tstud.com.

11 Review Schedule

11.1 This TER is subject to periodic review and revision. For the most recent version, visit drjcertification.org.

11.2 For information on the status of this TER, contact DrJ Certification.

12 Approved for Use Pursuant to US and International Legislation Defined in Appendix A

12.1 BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header are included in this TER published by an approved agency that is concerned with evaluation of products or services, maintains periodic inspection of the production of listed materials or periodic evaluation of services, and whose TER Listing states either that the material, product, or service meets identified standards or has been tested and found suitable for a specified purpose. This TER meets the legislative intent and definition of being acceptable to the AHJ.

Appendix A

1 Legislation that Authorizes AHJ Approval

1.1 **Fair Competition**: State legislatures have adopted Federal regulations for the examination and approval of building code referenced and alternative products, materials, designs, services, assemblies and/or methods of construction that:

1.1.1 Advance Innovation,

1.1.2 Promote competition so all businesses have the opportunity to compete on price and quality in an open market on a level playing field unhampered by anticompetitive constraints, and

1.1.3 Benefit consumers through lower prices, better quality, and greater choice.

1.2 **Adopted Legislation**: The following local, state, and federal regulations affirmatively authorize BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header to be approved by AHJs, delegates of building departments, and/or delegates of an agency of the federal government:

1.2.1 Interstate commerce is governed by the Federal Department of Justice to encourage the use of innovative products, materials, designs, services, assemblies and/or methods of construction. The goal is to "protect economic freedom and opportunity by promoting free and fair competition in the marketplace."

1.2.2 Title 18 US Code Section 242 affirms and regulates the right of individuals and businesses to freely and fairly have new products, materials, designs, services, assemblies and/or methods of construction approved for use in commerce. Disapproval of alternatives shall be based upon non-conformance with respect to specific provisions of adopted legislation, and shall be provided in writing stating the reasons why the alternative was not approved, with reference to the specific legislation violated.

1.2.3 The federal government and each state have a public records act. In addition, each state also has legislation that mimics the federal Defend Trade Secrets Act 2018 (DTSA).

1.2.3.1 Compliance with public records and trade secret legislation requires approval through the use of listings, certified reports, Technical Evaluation Reports, duly authenticated reports and/or research reports prepared by approved agencies and/or approved sources.

1.2.4 For new materials[18] that are not specifically provided for in any building code, the design strengths and permissible stresses shall be established by tests, where suitable load tests simulate the actual loads and conditions of application that occur.

1.2.5 The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design using accepted engineering practice.[19]

1.2.6 The commerce of approved sources (i.e., registered PEs) is regulated by professional engineering legislation. Professional engineering commerce shall always be approved by AHJs, except where there is evidence, provided in writing, that specific legislation has been violated by an individual registered PE.

1.2.7 The AHJ shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in IBC Section 104.11.[20]

[18] https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706.2

[19] IBC 2021, Section 1706.1 Conformance to Standards

[20] IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General

1.3 **Approved**[21] **by Los Angeles**: The Los Angeles Municipal Code (LAMC) states in pertinent part that the provisions of LAMC are not intended to prevent the use of any material, device, or method of construction not specifically prescribed by LAMC. The Department shall use Part III, Recognized Standards in addition to Part II, Uniform Building Code Standards of Division 35, Article 1, Chapter IX of the LAMC in evaluation of products for approval where such standard exists for the product or the material and may use other approved standards, which apply. Whenever tests or certificates of any material or fabricated assembly are required by Chapter IX of the LAMC, such tests or certification shall be made by a testing agency approved by the Superintendent of Building to conduct such tests or provide such certifications. The testing agency shall publish the scope and limitation(s) of the listed material or fabricated assembly.[22] The Superintendent of Building roster of approved testing agencies is provided by the Los Angeles Department of Building and Safety (LADBS). The Center for Building Innovation (CBI) Certificate of Approval License is TA24945. Tests and certifications found in a CBI Listing are LAMC approved. In addition, the Superintendent of Building shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in the California Building Code (CBC) Section 1707.1.[23]

1.4 **Approved by Chicago**: The Municipal Code of Chicago (MCC) states in pertinent part that an Approved Agency is a Nationally Recognized Testing Laboratory (NRTL) acting within its recognized scope and/or a certification body accredited by the American National Standards Institute (ANSI) acting within its accredited scope. Construction materials and test procedures shall conform to the applicable standards listed in the MCC. Sufficient technical data shall be submitted to the building official to substantiate the proposed use of any product, material, service, design, assembly and/or method of construction not specifically provided for in the MCC. This technical data shall consist of research reports from approved sources (i.e., MCC defined Approved Agencies).

1.5 **Approved by New York City**: The NYC Building Code 2022 (NYCBC) states in pertinent part that an approved agency shall be deemed[24] an approved testing agency via ISO/IEC 17025 accreditation, an approved inspection agency via ISO/IEC 17020 accreditation, and an approved product evaluation agency via ISO/IEC 17065 accreditation. Accrediting agencies, other than federal agencies, must be members of an internationally recognized cooperation of laboratory and inspection accreditation bodies subject to a mutual recognition agreement[25] (i.e., ANAB, International Accreditation Forum (IAF), etc.).

1.6 **Approved by Florida**: Statewide approval of products, methods, or systems of construction shall be approved, without further evaluation, by 1) A certification mark or listing of an approved certification agency, 2) A test report from an approved testing laboratory, 3) A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, from an approved product evaluation entity; 4) A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, developed and signed and sealed by a professional engineer or architect, licensed in Florida. For local product approval, products or systems of construction shall demonstrate compliance with the structural wind load requirements of the Florida Building Code (FBC) through one of the following methods; 1) A certification mark, listing, or label from a commission-approved certification agency indicating that the product complies with the code; 2) A test report from a commission-approved testing laboratory indicating that the product tested complies with the code; 3) A product-evaluation report based upon testing, comparative or rational analysis, or a combination thereof, from a commission-approved product evaluation entity which indicates that the product evaluated complies with the code; 4) A product-evaluation report or certification based upon testing or comparative or rational analysis, or a combination thereof, developed and signed and sealed by a Florida professional engineer or Florida registered architect, which indicates that the product complies with the code; 5) A statewide product approval issued by the Florida Building Commission. The Florida Department of Business and Professional Regulation (DBPR) website provides a listing of companies certified as a Product Evaluation Agency (i.e., EVLMiami 13692), a Product Certification Agency (i.e., CER10642), and as a Florida Registered Engineer (i.e., ANE13741).

---

[21] See Section 8 for the distilled building code definition of **Approved**

[22] Los Angeles Municipal Code, SEC. 98.0503. TESTING AGENCIES

[23] https://up.codes/viewer/california/ca-building-code-2022/chapter/17/special-inspections-and-tests#1707.1

[24] New York City, The Rules of the City of New York, § 101-07 Approved Agencies

[25] New York City, The Rules of the City of New York, § 101-07 Approved Agencies

1.7 **Approved by Miami-Dade County (i.e., Notice of Acceptance [NOA])**: A Florida statewide approval is an NOA. An NOA is a Florida local product approval. By Florida law, Miami-Dade County shall accept the statewide and local Florida Product Approval as provided for in Florida legislation 553.842 and 553.8425.

1.8 **Approved by New Jersey**: Pursuant to Building Code 2018 of New Jersey in IBC Section 1707.1 General,[26] it states: "In the absence of approved rules or other approved standards, the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in the administrative provisions of the Uniform Construction Code (N.J.A.C. 5:23)".[27] Furthermore N.J.A.C 5:23-3.7 states: Municipal approvals of alternative materials, equipment, or methods of construction. **(a) Approvals**: Alternative materials, equipment, or methods of construction shall be approved by the appropriate subcode official provided the proposed design is satisfactory and that the materials, equipment, or methods of construction are suitable for the intended use and are at least the equivalent in quality, strength, effectiveness, fire resistance, durability and safety of those conforming with the requirements of the regulations. 1. A field evaluation label and report or letter issued by a nationally recognized testing laboratory verifying that the specific material, equipment, or method of construction meets the identified standards or has been tested and found to be suitable for the intended use, shall be accepted by the appropriate subcode official as meeting the requirements of (a) above. 2. Reports of engineering findings issued by nationally recognized evaluation service programs, such as, but not limited to, the Building Officials and Code Administrators (BOCA), the International Conference of Building Officials (ICBO), the Southern Building Code Congress International (SBCCI), the International Code Council (ICC), and the National Evaluation Service, Inc., shall be accepted by the appropriate subcode official as meeting the requirements of (a) above. The New Jersey Department of Community Affairs has confirmed that technical evaluation reports, from any accredited entity listed by ANAB, meets the requirements of item 2 given that the listed entities are no longer in existence and/or do not provide "reports of engineering findings".

1.9 **Approved by the Code of Federal Regulations Manufactured Home Construction and Safety Standards**: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14[28] and Part 3280,[29] the Department encourages innovation and the use of new technology in manufactured homes. The design and construction of a manufactured home shall conform with the provisions of Part 3282 and Part 3280 where key approval provisions in mandatory language follow: 1) "All construction methods shall be in conformance with accepted engineering practices"; 2) "The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur."; and 3) "The design stresses of all materials shall conform to accepted engineering practice."

1.10 **Approval by US, Local, and State Jurisdictions in General**: In all other local and state jurisdictions, the adopted building code legislation states in pertinent part that:

1.10.1 For new materials that are not specifically provided for in this code, the design strengths and permissible stresses shall be established by tests.[30]

1.10.2 For innovative alternative products, materials, designs, services and/or methods of construction, in the absence of approved rules or other approved standards…the building official shall accept duly authenticated reports (i.e., listing and/or research report) from approved agencies with respect to the quality and manner of use of new materials or assemblies.[31] A building official approved agency is deemed to be approved via certification from an accreditation body that is listed by the International Accreditation Forum[32] or equivalent.

---

[26] https://up.codes/viewer/new_jersey/ibc-2018/chapter/17/special-inspections-and-tests#1707.1

[27] https://www.nj.gov/dca/divisions/codes/codreg/ucc.html

[28] https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3282/subpart-A/section-3282.14

[29] https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280

[30] IBC 2021, Section 1706 Design Strengths of Materials, 1706.2 New Materials. Adopted law pursuant to IBC model code language 1706.2.

[31] IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General. Adopted law pursuant to IBC model code language 1707.1.

[32] Please see the ANAB directory for building official approved agencies.

1.10.3 The design strengths and permissible stresses of any structural material…shall conform to the specifications and methods of design of accepted engineering practice performed by an approved source.[33] An approved source is defined as a PE subject to professional engineering laws, where a research and/or a technical evaluation report certified by a PE, shall be approved.

1.11 **Approval by International Jurisdictions**: The USMCA and GATT agreements provide for approval of innovative materials, products, designs, services, assemblies and/or methods of construction through the Technical Barriers to Trade agreements and the International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA), where these agreements:

1.11.1 Permit participation of conformity assessment bodies located in the territories of other Members (defined as GATT Countries) under conditions no less favourable than those accorded to bodies located within their territory or the territory of any other country,

1.11.2 State that conformity assessment procedures (i.e., ISO/IEC 17020, 17025, 17065, etc.) are prepared, adopted, and applied so as to grant access for suppliers of like products originating in the territories of other Members under conditions no less favourable than those accorded to suppliers of like products of national origin or originating in any other country, in a comparable situation.

1.11.3 State that conformity assessment procedures are not prepared, adopted, or applied with a view to or with the effect of creating unnecessary obstacles to international trade. This means that conformity assessment procedures shall not be more strict or be applied more strictly than is necessary to give the importing Member adequate confidence that products conform to the applicable technical regulations or standards.

1.11.4 **Approved**: The purpose of the IAF MLA is to ensure mutual recognition of accredited certification and validation/verification statements between signatories to the MLA, and subsequently acceptance of accredited certification and validation/verification statements in many markets based on one accreditation for the timely approval of innovative materials, products, designs, services, assemblies and/or methods of construction. Accreditations granted by IAF MLA signatories are recognised worldwide based on their equivalent accreditation programs, therefore reducing costs and adding value to businesses and consumers.

[33] IBC 2021, Section 1706 Design Strengths of Materials, Section 1706.1 Conformance to Standards Adopted law pursuant to IBC model code language 1706.1.

Appendix B

BareNaked Tstud™ Example Calculation

Determine the allowable axial load for an 10' BareNaked Tstud™ of No. 2 SPF lumber spaced 16" o.c. and subject to wind speeds of 140 mph.

Material Properties of BareNaked Tstud™:

The material properties of the BareNaked Tstud™ are given in Table 2 of the TER.

$F_bS := 660\ lbf \cdot ft$	Bending
$F_c := 1150\ psi$	Compression Parallel to Grain
$F_t := 450\ psi$	Tension Parallel to Grain
$F_{c\_perp} := 425\ psi$	Compression Perpendicular to Grain
$V_n := 260\ lbf$	Shear Force
$EI := 19252000\ lbf \cdot in^2$	Bending Stiffness
$EI_{min} := 8615000\ lbf \cdot in^2$	Bending Stiffness for Beam and Column Stability
$C_{fc} := 1.15$ $\quad C_{ft} := 1.5$	Size factors for 2x3 lumber.

Section Properties of BareNaked Tstud™:

$w := 5.5\ in$	Overall width
$d_1 := 1.5\ in$	Wide face dimension
$d_2 := 2.5\ in$	Narrow face dimension
$d_{dowel} := \frac{11}{16}\ in$	Dowel diameter
$d_{eff} := w - \left(\frac{d_1}{2}\right) - \left(\frac{d_2}{2}\right) = 3.5\ in$	Moment arm between members
$A_{net} := \left(d_1 \cdot d_2\right) + \left(\left(d_1 - d_{dowel}\right) \cdot d_2\right) = 5.78\ in^2$	Net section area of BareNaked Tstud™, NDS Section 3.6.3 and Section 3.1.2.1
$h := 116.125\ in = 10\ ft$	Height of BareNaked Tstud™

Compression Capacity of BareNaked Tstud™ under Vertical Load only:

$C_D := 1.0$	Load Duration Factor for Occupancy Live Load, NDS Table 2.3.2
$F_{c.star} := F_c \cdot C_{fc} \cdot C_D = 1323\ psi$	Reference compression design value multiplied by all adjustment factors except Cp
$A_b := 2 \cdot d_1 \cdot d_2 = 7.5\ in^2$	Net bearing area of BareNaked Tstud™

$c := 0.8$ Constant for sawn lumber, NDS Section 3.7.1

$K := 1.0$ Buckling effective length factor for pinned-pinned column.

$l_e := K \cdot h = 10\ ft$ Effective column length

$F_{cE} := \frac{\pi^2\ EI_{min}}{A_{net} \cdot l_e^{\ 2}} = 1091\ psi$ Critical buckling design value, TER Equation 1

$C_P := \frac{1 + \left(\frac{F_{cE}}{F_{c.star}}\right)}{2 \cdot c} - \sqrt{\left(\frac{1 + \left(\frac{F_{cE}}{F_{c.star}}\right)}{2 \cdot c}\right)^2 - \frac{\left(\frac{F_{cE}}{F_{c.star}}\right)}{c}} = 0.621$ Column stability factor, NDS Section 3.7.1.5

$F'_c := F_{c.star} \cdot C_P = 821\ psi$ < $F_{cE} = 1091\ psi$ **OK**

$P_{buckling} := F_{c.star} \cdot C_P \cdot A_b = 6160\ lbf$ Force, Buckling

$C_b := \frac{d_2 + 0.375\ in}{d_2} = 1.15$ Bearing Area Factor, NDS Section 3.10.4

$P_{comp\_perp} := F_{c\_perp} \cdot C_b \cdot A_b = 3666\ lbf$ Force, Compression Perpendicular

Bending Capacity of BareNaked Tstud™:

$C_D := 1.6$ Load Duration Factor

$A_{eff} := h \cdot \frac{h}{3} = 31\ ft^2$ Effective wind area for a single BareNaked Tstud™

$p_{pos} := 20.2\ psf$
$p_{neg} := -26.0\ psf$ Wind pressures for a basic wind speed, Vult, of 140 mph, mean roof height of 30 ft, and Exposure B per IRC Table R301.2(2)

$S_{stud} := 16\ in$ Stud spacing

$w := \left(-p_{neg}\right) \cdot S_{stud} = 34.7\ plf$

$M_{req'd} := \frac{w \cdot h^2}{8} = 4870\ lbf \cdot in$ < $M_{all} := F_b S \cdot C_D = 12672\ lbf \cdot in$

Check shear load:

$V_{req'd} := \frac{w \cdot h}{2} = 168\ lbf$ < $V_{all} := V_n \cdot C_D = 416\ lbf$ **OK**

Combined Axial Load and Component & Cladding Wind Load on BareNaked Tstud™:

$C_D := 1.6$ Load Duration Factor

$F_{c.star} := F_c \cdot C_{fc} \cdot C_D = 2116\ psi$ Reference compression design value multiplied by all adjustment factors except Cp

$$C_P := \frac{1+\left(\frac{F_{cE}}{F_{c.star}}\right)}{2 \cdot c} - \sqrt{\left(\frac{1+\left(\frac{F_{cE}}{F_{c.star}}\right)}{2 \cdot c}\right)^2 - \frac{\left(\frac{F_{cE}}{F_{c.star}}\right)}{c}} = 0.444$$

Column stability factor, NDS Section 3.7.1.5

$F_c' := F_{c.star} \cdot C_P = 940\ psi$

Check combined bending and compression on the member:

$A_m := \left(d_1 - d_{dowel}\right) \cdot d_2 = 2.03\ in^2$

$M_{applied} := \frac{0.75\ w \cdot h^2}{8} = 3652\ lbf \cdot in$

A 0.75 factor is applied to the wind load in accordance with load combination 6a in ASCE 7 Section 2.4.1.

$P := 2465\ lbf$

Axial load on the BareNaked Tstud™ is selected to result in a CSI of 1.0.

$f_a := \frac{P}{A_{net}} + \frac{M_{applied}}{A_m \cdot d_{eff}} = 940\ psi$

Axial compressive stress, TER Equation 2

$f_a = 940\ psi$ < $F_{cE} = 1091\ psi$ and < $F_c' = 940\ psi$ **OK**

$CSI := \frac{f_a}{F_c'} = 1.000$

Check Deflection Limit for BareNaked Tstud™:

$$\Delta := \frac{5 \cdot \left(0.7\ w\right) \cdot h^4}{384 \cdot EI} = 0.249\ in$$

$\frac{h}{\Delta} = 467$ > 240 **OK**

Summary of Design Calculations for BareNaked Tstud™:

The BareNaked Tstud™ has a calculated axial load capacity of 2465 lbs for an 10' tall wall with a 140 mph wind load. The axial load is limited by the compression strength of the BareNaked Tstud™ member under combined axial and wind loading.

Issue Date: November 17, 2021
Subject to Renewal: October 1, 2023

CBC and CRC Supplement to TER 1908-02

REPORT HOLDER: Tanager Products, Inc.

1 Evaluation Subject

1.1 BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header

2 Purpose and Scope

2.1 Purpose

2.1.1 The purpose of this Technical Evaluation Report (TER) supplement is to show BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header, recognized in TER 1908-02, has also been evaluated for compliance with the codes listed below.

2.2 *Applicable Code Editions*

2.2.1 *CBC—16, 19: California Building Code (Title 24, Part 2)*

2.2.2 *CRC—16, 19: California Residential Code (Title 24, Part 2.5)*

3 Conclusions

3.1 BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header, described in TER 1908-02, complies with the CBC and CRC and is subject to the conditions of use described in this supplement.

3.2 Where there are variations between the IBC and IRC and the CBC and CRC applicable to this TER, they are listed here:

3.2.1 CRC Section R301 replaces 2018 IRC Section R301

3.2.2 CRC Section R602 replaces 2018 IRC Section R602

3.2.3 CBC Section 718 replaces 2018 IBC Section 718

3.2.4 CBC Section 2304 replaces 2018 IBC Section 2304

3.2.5 CBC Section 2308 replace 2018 IBC Section 2308

4 Conditions of Use

4.1 BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header, described in TER 1908-02, must comply with all of the following conditions:

4.1.1 All applicable sections in TER 1908-02

4.1.2 The design, installation, and inspections are in accordance with additional requirements of the CBC and CRC, as applicable.

Issue Date: November 17, 2021

Subject to Renewal: October 1, 2023

LABC and LARC Supplement to TER 1908-02

REPORT HOLDER: Tanager Products, Inc.

1 Evaluation Subject

1.1 BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header

2 Purpose and Scope

2.1 Purpose

2.1.1 The purpose of this Technical Evaluation Report (TER) supplement is to show BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header, recognized in TER 1908-02, has also been evaluated for compliance with the codes listed below as adopted by the Los Angeles Department of Building and Safety (LADBS).

2.2 *Applicable Code Editions*

2.2.1 *2017 City of Los Angeles Building Code (LABC)*

2.2.2 2017 *City of Los Angeles Residential Code (LARC)*

3 Conclusions

3.1 BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header, described in TER 1908-02, complies with the LABC and LARC and is subject to the conditions of use described in this supplement.

3.2 Where there are variations between the IBC and IRC and the LABC and LARC applicable to this TER, they are listed here:

3.2.1 LABC Section 91.104.2.6 replaces 2018 IBC Section 104.11

3.2.2 LARC Section 91.104.2.6 replaces 2018 IRC Section R104.11

3.2.3 LABC Section 91.104.2.2 replaces 2018 IBC Section 104.4

3.2.4 LABC Section 91.108 replaces 2018 IBC Section 110.4

3.2.5 LARC Section 91.104.2.2 replaces 2018 IRC Section R104.4

3.2.6 LARC Section 91.108 replaces 2018 IRC Section R109.2

3.2.7 LABC Section 91.104 replaces 2018 IBC Section 104

3.2.8 LABC Section 91.108.5 replaces 2018 IBC Section 110.3

3.2.9 LARC Section R301 replaces 2018 IRC Section R301

3.2.10 LARC Section R602 replaces 2018 IRC Section R602

3.2.11 LABC Section 2304 replaces 2018 IBC Section 2304

3.2.12 LABC Section 2308 replaces 2018 IBC Section 2308

4 Conditions of Use

4.1 BareNaked Tstud™ Structural Wall Stud and BareNaked Tstud™ Header, described in TER 1908-02, must comply with all of the following conditions:

4.1.1 All applicable sections in TER 1908-02.

4.1.2 The design, installation, and inspections are in accordance with additional requirements of LABC Chapter 16 and 17, as applicable.