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ESR-2620

Reissued 07/2017
This report is subject to renewal 07/2019.

DIVISION: 05 00 00—METALS
SECTION: 05 40 00—COLD-FORMING METAL FRAMING
DIVISION: 09 00 00—FINISHES
SECTION: 09 22 16.13—NON-STRUCTURAL METAL STUD FRAMING

REPORT HOLDER:

WARE INDUSTRIES, INC. (dba Marino\WARE)

**400 METUCHEN ROAD
SOUTH PLAINFIELD, NEW JERSEY 07080**

EVALUATION SUBJECT:

**VIPERSTUD DRYWALL FRAMING SYSTEM (NONLOAD-BEARING): VIPER25,
VIPER20, VIPER 18MIL, VIPER 27MIL, VIPER 30MIL, VIPER 33MIL**



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A Subsidiary of the International Code Council®

DIVISION: 05 00 00—METALS

Section: 05 40 00—Cold-Formed Metal Framing

DIVISION: 09 00 00—FINISHES

Section: 09 22 16.13—Non-Structural Metal Stud Framing

REPORT HOLDER:

WARE INDUSTRIES, INC. (DBA MarinoWARE)
400 METUCHEN ROAD
SOUTH PLAINFIELD, NEW JERSEY 07080
(908) 757-9000
www.marinoware.com

EVALUATION SUBJECT:

VIPERSTUD DRYWALL FRAMING SYSTEM (NONLOAD-BEARING): VIPER25, VIPER20, VIPER 18MIL, VIPER 27MIL, VIPER 30MIL, VIPER 33MIL

ADDITIONAL LISTEE:

CALIFORNIA EXPANDED METAL COMPANY (CEMCO)
263 NORTH COVINA LANE
CITY OF INDUSTRY, CALIFORNIA 91746
(800) 775-2362
www.cemcosteel.com

TELLING INDUSTRIES, LLC
6272 CENTER STREET
MENTOR, OHIO 44060
(440) 974-3370
www.tellingindustries.com

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2015, 2012, and 2009 *International Building Code*® (IBC)
- 2015, 2012, and 2009 *International Residential Code*® (IRC)

Property evaluated:

Structural

2.0 USES

ViperStud studs and tracks are used for framing of interior nonload-bearing walls and ceiling framing.

3.0 DESCRIPTION

3.1 General:

Products recognized under this report are limited to the ViperStud studs and tracks noted in Table 2. The studs are roll-formed in a “C” shape with a rib (ViperRib) in the flange, an offset (planking) in the web and knurling on the flanges. The tracks are channel-shaped with offsets (planking) in the web. The studs are manufactured with and without punch-outs. The overall dimensions for the punch-outs are:

MANUFACTURER	MEMBER DEPTH	
	1 ⁵ / ₈ " & 2 ¹ / ₂ "	3 ⁵ / ₈ ", 4" & 6"
MarinoWARE	0.75" x 1.75"	1.50" x 2.50"
CEMCO	0.75" x 2.00"	1.50" x 2.75"
Telling Industries	0.75" x 2.50"	1.50" x 2.50"

For SI: 1 inch = 25.4 mm.

Punch-outs are spaced 24 inches (610 mm) on center along the centerline of the member, with a minimum distance of 10 inches (254 mm) from the end of the member to the near edge of the punch-out, when provided. See Figure 1 for stud and track configurations. See Figure 2 for punch-out configurations. See Table 1 for manufacturing locations.

3.2 Material:

3.2.1 Steel: The Viper25 studs and tracks and Viper20 tracks are formed from coils of steel complying with ASTM A1003 Nonstructural Grade 50 (NS50) steel. The Viper20 studs are formed from coils of steel complying with ASTM A1003 Nonstructural Grade 57 (NS57) steel. The Viper 18mil, Viper 27mil, Viper 30mil and Viper 33mil studs and tracks are formed from coils of steel complying with ASTM A1003 Nonstructural Grade 33 (NS33) steel. The uncoated minimum base-metal thickness is specified in Table 2. The coating is minimum G40, A40, AZ50, GF30, T1-25, or T2-100 in accordance with ASTM A1003.

3.2.2 Gypsum Wallboard: For composite wall assemblies, gypsum wallboard must be a minimum of 5/8 inch (15.9 mm) thick and Type X, complying with ASTM C1396 and manufactured by one of the following companies: American Gypsum; CertainTeed; Georgia

Pacific; Lafarge; National Gypsum; or USG. For non-composited wall assemblies, the gypsum wallboard is allowed to be any gypsum wallboard allowed by the applicable code.

3.2.3 Fasteners: Fasteners for attaching the gypsum wallboard to the studs and tracks must be No. 6, Type S, fine thread drywall bugle head screws conforming to ASTM C1002.

4.0 DESIGN AND INSTALLATION

4.1 Design:

Allowable wall heights for interior nonload-bearing composite wall design are shown in Table 3.

Allowable wall heights for interior nonload-bearing non-composite wall design are shown in Tables 5 and 6.

Allowable spans for ceiling framing are shown in Table 7.

Spans noted in Tables 5, 6, and 7 are based on the section properties noted in Table 4,

4.2 Installation:

Installation of ViperStud studs and tracks must be in accordance with the approved plans and this report. The approved plans must be available on the jobsite at all times during installation.

4.2.1 For composite system walls, fastening of studs to tracks is optional. End bearing of the stud on the track must be a minimum of 1 inch (25 mm). Gypsum wallboard must be installed on both sides of the wall framing for the full wall height, with the long dimension of the gypsum wallboard parallel to the studs. Placement of joints in the gypsum sheathing must be in accordance with Sections 4.6.3 and 4.6.4 of GA-216 (Gypsum Association Application and Finishing of Gypsum Panel Products) or Section 7.5 of ASTM C840.

Maximum spacing of fasteners fastening the gypsum wallboard to the studs and tracks must be as follows:

STUD SPACING	STUDS	TRACKS
12" o.c.	12" o.c.	16" o.c.
16" o.c.	12" o.c.	16" o.c.
24" o.c.	12" o.c.	12" o.c.

For SI: 1 inch = 25.4 mm.

4.2.2 Sheathing used with ceiling framing and non-composite system walls must be installed in accordance with the applicable code requirements for the sheathing material.

5.0 CONDITIONS OF USE

The ViperStud studs and tracks described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1** Installation must comply with the approved plans and this report. In the event of a conflict, this report governs.
- 5.2** The interior nonload-bearing wall assemblies are limited to interior installations where the superimposed axial load is zero pounds.
- 5.3** Design of the attachment of the wall to the surrounding structure is outside the scope of this report.
- 5.4** Installation of the gypsum wallboard must meet the requirements of ASTM C840 or GA-216.
- 5.5** Use of ViperStud studs and tracks in other than non-structural applications, as defined by AISI S220, is outside the scope of this report.

6.0 EVIDENCE SUBMITTED

- 6.1** Data in accordance with the ICC-ES Acceptance Criteria for Cold-formed Steel Framing Members (AC46), dated June 2012 (Editorially revised April 2015).
- 6.2** Data in accordance with the ICC-ES Acceptance Criteria for Cold-formed Steel Framing Members—Interior Nonload-bearing Wall Assemblies (AC86), dated May 2012 (Editorially revised August 2015).

7.0 IDENTIFICATION

Each ViperStud stud and track covered by this report must have a legible label or stamp, at a maximum spacing of 96 inches (2438 mm) on center, indicating the manufacturer’s name or initials [Marino\WARE (MW), California Expanded Metal Company (CEMCO), or Telling Industries, LLC (TI)]; the minimum bare metal thickness in mils or inches; the minimum yield strength in ksi (if other than 33 ksi); the coating designation (if other than G40); the designation “NS”; and the evaluation report number (ESR-2620).

TABLE 1—MANUFACTURING LOCATIONS

Marino\WARE South Plainfield, NJ 07080	California Expanded Metal Company City of Industry, CA 91746	Telling Industries, LLC Cambridge, OH 43725
Marino\WARE Griffin, GA 30223	California Expanded Metal Company Pittsburg, CA 94565	Telling Industries, LLC Osceola, AR 72370
Marino\WARE East Chicago, IN 46312	California Expanded Metal Company Denver, CO 80204	Telling Industries, LLC Windsor, CT 06095
Marino\WARE Pasadena, TX 77507	California Expanded Metal Company Fort Worth, TX 76140	

TABLE 2—MEMBER THICKNESS

MEMBER (name)	STUD ID ¹	TRACK ID ¹	MINIMUM BASE-METAL THICKNESS (in)	DESIGN THICKNESS (in)	MINIMUM YIELD STRENGTH (ksi)
Viper25	xxxVS125-15	xxxVT125-15	0.0147	0.0155	50
Viper20 (1.625 – 3.625) ²	xxxVS125-20	xxxVT125-20	0.0195	0.0205	57 (stud) 50 (track)
Viper20 (4.00 – 6.00) ²	xxxVS125-21	xxxVT125-21	0.0209	0.0220	57 (stud) 50 (track)
Viper 18mil	xxxS125-18	xxxT125-18	0.0179	0.0188	33
Viper 27mil	xxxS125-27	xxxT125-27	0.0269	0.0283	33
Viper 30mil	xxxS125-30	xxxT125-30	0.0296	0.0312	33
Viper 33mil	xxxS125-33	xxxT125-33	0.0329	0.0346	33

For SI: 1 inch = 25.4 mm, 1 ksi = 6.895 MPa.

¹xxx is the web size in $\frac{1}{100}$ of an inch.

²Applicable range of depths, in inches, for the member.

TABLE 3—COMPOSITE WALL LIMITING HEIGHTS^{1,2,3,4} (ft-in)

DEPTH (in)	MEMBER (name) (STUD SECTION ID)	SPACING (in)	5 psf			7.5 psf			10 psf		
			L _{/120}	L _{/240}	L _{/360}	L _{/120}	L _{/240}	L _{/360}	L _{/120}	L _{/240}	L _{/360}
1 ⁵ / ₈	Viper25 (162VS125-15)	12	13-9	11-4	9-10	12-0	9-11	8-3	10-11	8-10	----
		16	12-6	10-4	8-8	10-11	8-10	----	9-11	7-11	----
		24	10-11	8-10	----	9-5	----	----	8-2	----	----
	Viper20 (162VS125-20)	12	14-3	11-3	9-10	12-5	9-10	8-5	11-3	8-10	----
		16	12-11	10-3	8-10	11-3	8-10	----	10-3	7-11	----
		24	11-3	8-10	----	9-10	----	----	8-10	----	----
	Viper 18mil (162S125-18)	12	12-10	10-7	9-4	11-3	9-3	8-2	10-3	8-5	----
		16	11-9	9-8	8-6	10-3	8-5	----	9-4	----	----
		24	10-3	8-5	----	8-0	----	----	8-2	----	----
	Viper 27mil (162S125-27)	12	14-4	11-5	9-11	12-6	9-11	8-5	11-5	8-10	---
		16	13-0	10-4	8-10	11-5	8-10	---	10-4	7-10	----
		24	11-5	8-10	---	9-10	---	----	8-6	----	----
	Viper 30mil (162S125-30)	12	14-7	11-6	10-0	12-9	10-0	8-6	11-7	8-11	---
		16	13-3	10-5	8-11	11-7	8-11	---	10-6	7-10	---
		24	11-7	8-11	---	10-1	---	---	8-10	---	---
	Viper 33mil (162S125-33)	12	14-11	11-10	10-4	13-0	10-4	8-10	11-10	9-4	7-11
		16	13-6	10-9	9-4	11-10	9-4	7-11	10-9	8-4	---
		24	11-10	9-4	7-11	10-4	7-11	---	9-4	---	---
2 ¹ / ₂	Viper25 (250VS125-15)	12	17-3	14-5	12-9	15-0	12-7	11-1	13-8	11-6	10-1
		16	15-8	13-1	11-7	13-8	11-6	10-1	12-3	10-5	8-9
		24	13-8	11-6	10-1	11-6	10-0	8-2	10-0	8-8	---
	Viper20 (250VS125-20)	12	17-11	14-10	13-2	5-8	13-0	11-6	14-3	11-10	10-5
		16	16-4	13-6	12-0	14-3	11-10	10-5	12-11	10-9	9-4
		24	14-3	11-10	10-5	12-5	10-4	8-9	11-3	9-2	---
	Viper 18mil (250S125-18)	12	17-5	14-5	12-7	14-7	12-7	11-0	12-8	11-5	9-8
		16	15-6	13-1	11-6	12-8	11-6	9-8	8-11	8-6	----
		24	12-7	11-5	9-8	10-4	9-8	8-0	8-11	8-6	----
	Viper 27mil (250S125-27)	12	8-3	14-5	12-8	15-11	12-8	11-0	14-4	11-6	10-0
		16	16-7	13-2	11-6	14-4	11-6	10-0	12-5	10-5	8-11
		24	14-4	11-6	10-0	11-9	10-0	8-6	10-2	8-11	---
	Viper 30mil (250S125-30)	12	18-9	14-10	13-0	16-4	13-0	11-4	14-10	11-10	10-4
		16	17-0	13-6	11-10	14-10	11-10	10-4	13-6	10-9	9-3
		24	14-10	11-10	10-4	12-9	10-4	8-10	11-0	9-3	7-10
	Viper 33mil (250S125-33)	12	19-4	15-4	13-5	16-10	13-5	11-8	15-4	12-2	10-8
		16	17-7	13-11	12-2	15-4	12-2	10-8	13-11	11-0	9-8
		24	15-4	12-2	10-8	13-5	10-8	9-2	12-0	9-8	8-2
3 ⁵ / ₈	Viper25 (362VS125-15)	12	20-10	17-3	15-2	18-2	15-1	13-3	15-10	13-9	12-0
		16	18-11	15-9	13-9	15-10	13-9	12-0	13-9	12-6	10-11
		24	15-10	13-9	12-0	12-11	12-0	10-6	11-3	10-11	9-6
	Viper20 (365VS125-20)	12	21-10	17-11	15-9	19-1	15-8	13-9	17-4	14-3	12-6
		16	19-10	16-4	14-4	17-4	14-3	12-6	15-4	12-11	11-4
		24	17-4	14-3	12-6	14-6	12-5	10-11	12-7	11-4	9-11
	Viper 18mil (362S125-18)	12	18-7	15-11	13-11	17-8	15-4	13-5	15-3	13-11	12-2
		16	18-9	15-11	13-11	15-3	13-11	12-2	13-3	12-8	10-11
		24	15-3	13-11	12-2	12-6	12-2	10-6	10-10	10-10	9-5
	Viper 27mil (362S125-27)	12	22-9	18-1	15-10	19-11	15-10	13-10	17-7	14-4	12-6
		16	20-8	16-5	14-4	17-7	14-4	12-6	15-3	13-0	11-2
		24	17-7	14-4	12-5	14-4	12-6	10-8	12-5	11-2	---
	Viper 30mil (362S125-30)	12	23-3	18-6	16-2	20-4	16-2	14-1	18-6	14-8	12-10
		16	21-2	16-9	14-8	18-6	14-8	12-10	16-4	13-4	11-6
		24	18-6	14-8	12-10	15-4	12-10	11-0	13-4	11-6	9-11
	Viper 33mil (362S125-33)	12	23-10	18-11	16-6	20-10	16-6	14-5	18-11	15-0	13-1
		16	21-8	17-2	15-0	18-11	15-0	13-1	17-2	13-8	11-10
		24	18-11	15-0	13-1	16-6	13-1	11-4	14-4	11-10	10-3

TABLE 3—COMPOSITE WALL LIMITING HEIGHTS^{1,2,3,4} (ft-in) – Continued

DEPTH (in)	MEMBER (name) (STUD SECTION ID)	SPACING (in)	5 psf			7.5 psf			10 psf		
			L ₁₂₀	L ₂₄₀	L ₃₆₀	L ₁₂₀	L ₂₄₀	L ₃₆₀	L ₁₂₀	L ₂₄₀	L ₃₆₀
4	Viper25 (400VS125-15)	12	22-1	18-3	16-3	19-3	15-11	14-2	16-8	14-6	12-11
		16	20-0	16-7	14-9	16-8	14-6	12-11	14-5	13-2	11-9
		24	16-8	14-6	12-11	13-7	12-8	11-3	11-9	11-6	10-1
	Viper20 (400VS125-21)	12	24-0	19-1	16-8	21-0	16-8	14-7	19-1	15-2	13-3
		16	21-10	17-4	15-2	19-1	15-2	13-3	17-4	13-9	12-0
		24	19-1	15-2	13-3	16-8	13-3	11-7	14-11	12-0	10-5
	Viper 18mil (400S125-18)	12	20-6	18-5	16-3	16-9	16-1	14-2	14-6	14-6	12-11
		16	17-9	16-9	14-9	14-6	14-6	12-11	12-7	12-7	11-9
		24	14-6	14-6	12-11	11-10	11-10	11-2	10-3	10-3	9-11
	Viper 27mil (400S125-27)	12	24-9	19-8	17-2	20-7	17-2	15-0	17-10	15-7	13-8
		16	21-10	17-11	15-7	17-10	15-7	13-8	15-5	14-2	12-4
		24	17-10	15-7	13-8	14-7	13-8	11-10	12-7	12-4	10-9
	Viper 30mil (400S125-30)	12	25-2	20-0	17-6	22-0	17-6	15-3	19-5	15-11	13-10
		16	22-11	18-2	15-11	19-5	15-11	13-10	16-10	14-5	12-7
		24	19-5	15-11	13-10	15-10	13-10	12-1	13-9	12-7	10-11
	Viper 33mil (400S125-33)	12	25-8	20-4	17-10	22-5	17-10	15-7	20-4	16-2	14-1
		16	23-4	18-6	16-2	20-4	16-2	14-1	18-4	14-8	12-10
		24	20-4	16-2	14-1	17-3	14-2	12-4	15-0	12-10	11-2
6	Viper25 (600VS125-15)	12	24-8	23-9	21-1	22-3	20-9	18-5	20-0	18-10	16-9
		16	22-11	21-7	19-2	20-0	18-10	16-9	17-5	17-2	15-3
		24	20-0	18-10	16-9	16-5	16-5	14-8	14-2	14-2	13-0
	Viper20 (600VS125-21)	12	29-1	25-7	22-6	25-10	22-4	19-8	23-8	20-4	17-11
		16	26-9	23-3	20-6	23-8	20-4	17-11	21-9	18-6	16-3
		24	23-8	20-4	17-11	20-11	17-9	15-7	18-2	16-2	14-2
	Viper 18mil (600S125-18)	12	25-5	24-9	21-8	20-9	20-9	18-11	18-0	18-0	17-2
		16	22-0	22-0	19-8	18-0	18-0	17-2	15-7	15-7	15-7
		24	18-0	18-0	17-2	14-8	14-8	14-8	12-9	12-9	12-9
	Viper 27mil (600S125-27)	12	29-7	25-11	22-8	24-2	22-8	19-9	20-11	20-7	18-0
		16	25-7	23-6	20-7	20-11	20-7	18-0	18-1	18-1	16-4
		24	20-11	20-7	18-0	17-1	17-1	15-8	14-9	14-9	14-2
	Viper 30mil (600S125-30)	12	31-10	26-9	23-4	26-0	23-4	20-5	22-6	21-3	18-6
		16	27-7	24-3	21-3	22-6	21-3	18-6	19-6	19-3	16-10
		24	22-6	21-3	18-6	18-5	18-5	16-2	15-11	15-11	14-8
	Viper 33mil (600S125-33)	12	34-5	27-7	24-1	28-1	24-1	21-1	24-4	21-11	19-2
		16	29-10	25-1	21-11	24-4	21-11	19-2	21-1	19-11	17-5
		24	24-4	21-11	19-2	19-11	19-2	16-9	17-2	17-2	15-2

For SI: 1 inch = 25.4 mm, 1 psf = 47.88 Pa.

¹Sheathing, as specified in Section 3.2.2, must be attached to both faces of the wall for the full height of the wall with the long dimension parallel to the studs.

²Sheathing must be fastened to the studs with fasteners as specified in Section 3.2.3 at a maximum spacing of 12 inches o.c. Sheathing must be fastened to the tracks with the fasteners as specified in Section 3.2.3 at a maximum spacing of 12 inches on center for walls with studs spaced at 24 inches on center. Sheathing must be fastened to the tracks with the fasteners as specified in Section 3.2.3 at a maximum spacing of 16 inches on center for walls with studs spaced at 12 or 16 inches on center.

³Placement of joints in the gypsum sheathing must be in accordance with Sections 4.6.3 and 4.6.4 of GA-216 or Section 7.5 of ASTM C840.

⁴End bearing must be a minimum of 1 inch.

TABLE 4—SECTION PROPERTIES

MEMBER (name)	STUD SECTION ID	MIL THICKNESS (mils)	WEIGHT (lb/ft)	GROSS							EFFECTIVE		MOMENTS			CRITICAL UNBRACED LENGTH
				Area (in ²)	I _x (in ⁴)	r _x (in)	I _y (in ⁴)	r _y (in)	I _{xd} (in ⁴)	S _x (in ³)	ALLOWABLE MOMENT ³ M _a (in-k)	LOCAL BUCKLING NOMINAL MOMENT M _{nl} (in-k)	DISTORTIONAL BUCKLING NOMINAL MOMENT M _{nd} (in-k)			
Viper25	162VS125-15	15	0.242	0.071	0.0320	0.671	0.0151	0.461	0.0322	0.0258	0.663	1.42	1.20	25.1		
	250VS125-15	15	0.289	0.085	0.0844	0.998	0.0173	0.452	0.0903	0.0423	1.170	2.72	2.12	24.8		
	362VS125-15 ¹	15	0.348	0.102	0.1990	1.390	0.0193	0.435	0.2050	0.0580	1.600	3.48	2.90	24.5		
	400VS125-15 ¹	15	0.367	0.108	0.2500	1.520	0.0198	0.429	0.2550	0.0612	1.690	3.99	3.06	24.4		
	600VS125-15 ²	15	0.473	0.139	0.6590	2.180	0.0219	0.397	0.6280	0.0854	2.360	5.90	4.27	23.7		
Viper20	162VS125-20	20	0.315	0.093	0.0419	0.673	0.0195	0.459	0.0498	0.0403	1.270	2.74	2.14	23.4		
	250VS125-20	20	0.376	0.111	0.1110	1.000	0.0225	0.451	0.1290	0.0651	2.050	4.50	3.71	23.1		
	362VS125-20	20	0.454	0.134	0.2610	1.400	0.0251	0.433	0.2980	0.0904	2.850	6.10	5.15	22.8		
	400VS125-21	21	0.515	0.152	0.3520	1.520	0.0275	0.426	0.3770	0.1170	3.690	8.02	6.67	22.7		
	600VS125-21 ²	21	0.665	0.196	0.9290	2.180	0.0304	0.394	0.8690	0.1610	5.060	11.20	9.16	22.0		
Viper 27mil	162VS125-27	27	0.417	0.123	0.0569	0.682	0.0254	0.456	0.0560	0.0586	1.160	1.93	2.10	30.7		
	250VS125-27	27	0.506	0.149	0.1510	1.010	0.0299	0.449	0.1480	0.1060	2.030	3.49	3.39	30.2		
	362VS125-27	27	0.611	0.180	0.3560	1.410	0.0335	0.432	0.3500	0.1480	2.930	4.89	5.11	29.8		
	400VS125-27	27	0.645	0.190	0.4490	1.540	0.0344	0.426	0.4410	0.1650	3.260	5.45	5.69	29.6		
	600VS125-27 ¹	27	0.838	0.246	1.1900	2.200	0.0382	0.394	1.1000	0.2900	5.150	9.65	8.59	28.8		
Viper 30mil	162VS125-30	30	0.459	0.135	0.0623	0.680	0.0279	0.455	0.0615	0.0670	1.320	2.21	2.38	30.8		
	250VS125-30	30	0.547	0.161	0.1660	1.020	0.0323	0.448	0.1630	0.1200	2.310	3.96	3.86	30.1		
	362VS125-30	30	0.669	0.197	0.3910	1.410	0.0366	0.431	0.3850	0.1720	3.390	5.67	5.85	29.7		
	400VS125-30	30	0.711	0.209	0.4930	1.540	0.0377	0.425	0.4860	0.1910	3.780	6.31	6.52	29.6		
	600VS125-30	30	0.924	0.271	1.3100	2.190	0.0418	0.392	1.2300	0.3410	5.950	11.30	9.93	28.7		
Viper 33mil	162VS125-33	33	0.500	0.147	0.0686	0.683	0.0302	0.453	0.0681	0.0773	1.530	2.55	2.71	30.8		
	250VS125-33	33	0.606	0.178	0.1830	1.010	0.0356	0.447	0.1810	0.1370	2.650	4.53	4.42*	30.1		
	362VS125-33	33	0.748	0.220	0.4320	1.400	0.0404	0.429	0.4280	0.2010	3.960	6.62	6.75	29.7		
	400VS125-33	33	0.783	0.230	0.5440	1.540	0.0413	0.424	0.5390	0.2240	4.420	7.38	7.53	29.5		
	600VS125-33	33	1.023	0.301	1.4400	2.190	0.0459	0.391	1.3900	0.4000	6.930	13.20	11.6	28.6		

For SI: 1 plf = 14.5939 N/m, 1 inch = 25.4 mm, 1 inch² = 645.16 mm², 1 inch³ = 16,387.064 mm³, 1 inch⁴ = 416,231 mm⁴, 1 lb = 0.4536 kg, 1 kip-in = 112.99 N-m. See next page for notes.

¹Web depth-to-thickness ratio exceeds 200.

²Web depth-to-thickness ratio exceeds 260.

³The allowable moment is the lesser of the allowable local buckling moment and allowable distortional buckling moment. K_{ϕ} is assumed to be zero for distortional buckling moments.

SYMBOLS

I_x = Strong axis moment of inertia

r_x = Strong axis radius of gyration

I_y = Weak axis moment of inertia

r_y = Weak axis radius of gyration

I_{xgd} = Effective Strong axis moment of inertia

S_x = Effective Strong axis section modulus

M_a = Strong axis allowable bending moment (inclusive of safety factor) based on the critical unbraced length less than or equal to that tabulated.

M_{nl} = Nominal moment based on local buckling

M_{nd} = Nominal moment based on distortional buckling

L_u = Maximum unbraced length at which the member is considered to be fully braced for design purposes.

K_{ϕ} = Rotational stiffness

TABLE 5—LIMITING HEIGHTS FOR FULLY BRACED¹ NON-COMPOSITE WALLS

Member (name)	Section ID XXXVS125-XX	Spacing (in. o.c.)	5 psf				7.5 psf				10 psf			
			L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360
VIPER25	162VS125-15	12	9'-5"	8'-4"	7'-6"	6'-7"	7'-8"	7'-2"	6'-7"	--	6'-7"	6'-7"	6'-0"	--
		16	8'-1"	7'-6"	6'-10"	6'-0"	6'-7"	6'-7"	6'-0"	--	--	--	--	--
		24	6'-7"	6'-7"	6'-0"	--	--	--	--	--	--	--	--	--
	250VS125-15	12	12'-6"	11'-7"	10'-7"	9'-2"	10'-2"	10'-2"	9'-2"	8'-1"	8'-10"	8'-10"	8'-5"	7'-4"
		16	10'-10"	10'-7"	9'-7"	8'-5"	8'-10"	8'-10"	8'-5"	7'-4"	7'-8"	7'-8"	7'-7"	6'-8"
		24	8'-10"	8'-10"	8'-5"	7'-4"	7'-1"	7'-1"	7'-1"	6'-5"	--	--	--	--
	362VS125-15	12	14'-7"	14'-7"	13'-11"	12'-1"	11'-11"	11'-11"	11'-11"	10'-7"	10'-4"	10'-4"	10'-4"	9'-7"
		16	12'-8"	12'-8"	12'-7"	11'-0"	10'-4"	10'-4"	10'-4"	9'-7"	9'-0"	9'-0"	9'-0"	8'-10"
		24	10'-4"	10'-4"	10'-4"	9'-7"	8'-5"	8'-5"	8'-5"	8'-5"	6'-7"	6'-7"	6'-7"	6'-7"
	400VS125-15	12	15'-0"	15'-0"	15'-0"	13'-1"	12'-4"	12'-4"	12'-4"	11'-5"	10'-7"	10'-7"	10'-7"	10'-5"
		16	13'-0"	13'-0"	13'-0"	11'-11"	10'-7"	10'-7"	10'-7"	10'-5"	9'-2"	9'-2"	9'-2"	9'-2"
		24	10'-7"	10'-7"	10'-7"	10'-5"	8'-6"	8'-6"	8'-6"	8'-6"	6'-5"	6'-5"	6'-5"	6'-5"
	600VS125-15	12	17'-8"	17'-8"	17'-8"	17'-7"	14'-1"	14'-1"	14'-1"	14'-1"	10'-7"	10'-7"	10'-7"	10'-7"
		16	15'-5"	15'-5"	15'-5"	15'-5"	10'-7"	10'-7"	10'-7"	10'-7"	7'-11"	7'-11"	7'-11"	7'-11"
		24	10'-7"	10'-7"	10'-7"	10'-7"	7'-0"	7'-0"	7'-0"	7'-0"	--	--	--	--

For SI: 1 inch = 25.4 mm, 1 psf = 47.88 Pa.

¹Bracing is required at internals not exceeding maximum unbraced length (L_u) listed in Table 4.

TABLE 5—LIMITING HEIGHTS FOR FULLY BRACED¹ NON-COMPOSITE WALLS (Continued)

Member (name)	Section ID XXXVS125-XX	Spacing (in. o.c.)	5 psf				7.5 psf				10 psf				
			L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360	
VIPER20	162VS125-20	12	10'-11"	9'-6"	8'-8"	7'-7"	9'-6"	8'-4"	7'-7"	6'-7"	8'-8"	7'-7"	6'-11"	6'-0"	
		16	9'-11"	8'-8"	7'-11"	6'-11"	8'-8"	7'-7"	6'-11"	6'-0"	7'-8"	6'-11"	6'-4"	--	
		24	8'-8"	7'-7"	6'-11"	6'-0"	7'-2"	6'-7"	6'-0"	--	6'-4"	6'-0"	--	--	
	250VS125-20	12	15'-0"	13'-1"	11'-11"	10'-5"	13'-1"	11'-6"	10'-5"	9'-1"	11'-8"	10'-5"	9'-6"	8'-4"	
		16	13'-7"	11'-11"	10'-10"	9'-6"	11'-8"	10'-5"	9'-6"	8'-4"	10'-1"	9'-6"	8'-7"	7'-6"	
		24	11'-8"	10'-5"	9'-6"	8'-4"	9'-6"	9'-1"	8'-4"	7'-2"	8'-4"	8'-4"	7'-6"	6'-7"	
	362VS125-20	12	19'-6"	17'-4"	15'-10"	13'-10"	15'-11"	15'-1"	13'-10"	12'-0"	13'-10"	13'-10"	12'-6"	10'-11"	
		16	16'-11"	15'-10"	14'-4"	12'-6"	13'-10"	13'-10"	12'-6"	10'-11"	11'-11"	11'-11"	11'-5"	9'-11"	
		24	13'-10"	13'-10"	12'-6"	10'-11"	11'-2"	11'-2"	10'-11"	9'-6"	9'-8"	9'-8"	9'-8"	8'-8"	
	400VS125-21	12	21'-6"	18'-8"	17'-0"	14'-11"	18'-1"	16'-5"	14'-11"	13'-0"	15'-8"	14'-11"	13'-6"	11'-10"	
		16	19'-2"	17'-0"	15'-6"	13'-6"	15'-8"	14'-11"	13'-6"	11'-10"	13'-7"	13'-6"	12'-4"	10'-8"	
		24	15'-8"	14'-11"	13'-6"	11'-10"	12'-10"	12'-10"	11'-10"	10'-4"	11'-1"	11'-1"	10'-8"	9'-5"	
	600VS125-21	12	26'-0"	24'-10"	22'-6"	19'-8"	21'-2"	21'-2"	19'-8"	17'-2"	18'-5"	18'-5"	17'-11"	15'-7"	
		16	22'-6"	22'-6"	20'-5"	17'-11"	18'-5"	18'-5"	17'-11"	15'-7"	15'-11"	15'-11"	15'-11"	14'-2"	
		24	18'-5"	18'-5"	17'-11"	15'-7"	15'-0"	15'-0"	15'-0"	13'-7"	12'-1"	12'-1"	12'-1"	12'-1"	
	Member (name)	Section ID XXXVS125-XX	Spacing (in. o.c.)	5 psf				7.5 psf				10 psf			
				L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360
	VIPER 27mil	162VS125-27	12	11'-5"	9'-11"	9'-0"	7'-11"	9'-11"	8'-8"	7'-11"	6'-11"	8'-10"	7'-11"	7'-2"	6'-4"
16			10'-4"	9'-0"	8'-2"	7'-2"	8'-10"	7'-11"	7'-2"	6'-4"	7'-7"	7'-2"	6'-6"	--	
24			8'-10"	7'-11"	7'-2"	6'-4"	7'-2"	6'-11"	6'-4"	--	6'-2"	6'-2"	--	--	
250VS125-27		12	15'-8"	13'-8"	12'-6"	10'-11"	13'-5"	12'-0"	10'-11"	9'-6"	11'-7"	10'-11"	9'-11"	8'-7"	
		16	14'-2"	12'-6"	11'-4"	9'-11"	11'-7"	10'-11"	9'-11"	8'-7"	10'-1"	9'-11"	9'-0"	7'-11"	
		24	11'-7"	10'-11"	9'-11"	8'-7"	9'-6"	9'-6"	8'-7"	7'-7"	8'-2"	8'-2"	7'-11"	6'-11"	
362VS125-27		12	19'-10"	18'-4"	16'-7"	14'-6"	16'-1"	16'-0"	14'-6"	12'-8"	14'-0"	14'-0"	13'-2"	11'-6"	
		16	17'-1"	16'-7"	15'-1"	13'-2"	14'-0"	14'-0"	13'-2"	11'-6"	12'-1"	12'-1"	12'-0"	10'-6"	
		24	14'-0"	14'-0"	13'-2"	11'-6"	11'-5"	11'-5"	11'-5"	10'-1"	9'-11"	9'-11"	9'-11"	9'-1"	
400VS125-27		12	20'-11"	19'-8"	17'-11"	15'-8"	17'-0"	17'-0"	15'-8"	13'-8"	14'-8"	14'-8"	14'-2"	12'-5"	
		16	18'-1"	17'-11"	16'-4"	14'-2"	14'-8"	14'-8"	14'-2"	12'-5"	12'-10"	12'-10"	12'-10"	11'-4"	
		24	14'-8"	14'-8"	14'-2"	12'-5"	12'-0"	12'-0"	12'-0"	10'-11"	10'-5"	10'-5"	10'-5"	9'-11"	
600VS125-27		12	26'-2"	26'-2"	24'-5"	21'-4"	21'-5"	21'-5"	21'-4"	18'-7"	18'-6"	18'-6"	18'-6"	16'-11"	
		16	22'-8"	22'-8"	22'-1"	19'-4"	18'-6"	18'-6"	18'-6"	16'-11"	15'-4"	15'-4"	15'-4"	15'-4"	
		24	18'-6"	18'-6"	18'-6"	16'-11"	13'-7"	13'-7"	13'-7"	13'-7"	10'-2"	10'-2"	10'-2"	10'-2"	

For SI: 1 inch = 25.4 mm, 1 psf = 47.88 Pa.

¹Bracing is required at internals not exceeding maximum unbraced length (L_u) listed in Table 4.

TABLE 5—LIMITING HEIGHTS FOR FULLY BRACED¹ NON-COMPOSITE WALLS (Continued)

Member (name)	Section ID XXXVS125-XX	Spacing (in. o.c.)	5 psf				7.5 psf				10 psf			
			L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360
VIPER 30mil	162VS125-30	12	11'-8"	10'-2"	9'-4"	8'-1"	10'-2"	8'-11"	8'-1"	7'-1"	9'-4"	8'-1"	7'-5"	6'-6"
		16	10'-8"	9'-4"	8'-6"	7'-5"	9'-4"	8'-1"	7'-5"	6'-6"	8'-1"	7'-5"	6'-8"	--
		24	9'-4"	8'-1"	7'-5"	6'-6"	7'-8"	7'-1"	6'-6"	--	6'-7"	6'-6"	--	--
	250VS125-30	12	16'-2"	14'-2"	12'-11"	11'-4"	14'-2"	12'-5"	11'-4"	9'-10"	12'-5"	11'-4"	10'-2"	8'-11"
		16	14'-8"	12'-11"	11'-8"	10'-2"	12'-5"	11'-4"	10'-2"	8'-11"	10'-8"	10'-2"	9'-4"	8'-1"
		24	12'-5"	11'-4"	10'-2"	8'-11"	10'-1"	9'-10"	8'-11"	7'-10"	8'-10"	8'-10"	8'-1"	7'-1"
	362VS125-30	12	21'-4"	18'-11"	17'-2"	15'-0"	17'-5"	16'-6"	15'-0"	13'-1"	15'-0"	15'-0"	13'-7"	11'-11"
		16	18'-5"	17'-2"	15'-7"	13'-7"	15'-0"	15'-0"	13'-7"	11'-11"	13'-0"	13'-0"	12'-5"	10'-10"
		24	15'-0"	15'-0"	13'-7"	11'-11"	12'-4"	12'-4"	11'-11"	10'-5"	10'-7"	10'-7"	10'-7"	9'-5"
	400VS125-30	12	22'-6"	20'-5"	18'-6"	16'-2"	18'-4"	17'-10"	16'-2"	14'-1"	15'-11"	15'-11"	14'-8"	12'-11"
		16	19'-5"	18'-6"	16'-10"	14'-8"	15'-11"	15'-11"	14'-8"	12'-11"	13'-8"	13'-8"	13'-5"	11'-8"
		24	15'-11"	15'-11"	14'-8"	12'-11"	13'-0"	13'-0"	12'-11"	11'-2"	11'-2"	11'-2"	11'-2"	10'-2"
	600VS125-30	12	28'-2"	27'-10"	25'-4"	22'-1"	23'-0"	23'-0"	22'-1"	19'-4"	19'-11"	19'-11"	19'-11"	17'-6"
		16	24'-5"	24'-5"	23'-0"	20'-1"	19'-11"	19'-11"	19'-11"	17'-6"	17'-2"	17'-2"	17'-2"	15'-11"
		24	19'-11"	19'-11"	19'-11"	17'-6"	16'-4"	16'-4"	16'-4"	15'-4"	12'-5"	12'-5"	12'-5"	12'-5"
Member (name)	Section ID XXXVS125-XX	Spacing (in. o.c.)	5 psf				7.5 psf				10 psf			
			L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360
VIPER 33mil	162VS125-33	12	12'-1"	10'-7"	9'-7"	8'-5"	10'-7"	9'-4"	8'-5"	7'-4"	9'-7"	8'-5"	7'-7"	6'-8"
		16	11'-0"	9'-7"	8'-8"	7'-7"	9'-7"	8'-5"	7'-7"	6'-8"	8'-8"	7'-7"	6'-11"	6'-1"
		24	9'-7"	8'-5"	7'-7"	6'-8"	8'-2"	7'-4"	6'-8"	--	7'-1"	6'-8"	6'-1"	--
	250VS125-33	12	16'-10"	14'-8"	13'-4"	11'-7"	14'-8"	12'-10"	11'-7"	10'-2"	13'-4"	11'-7"	10'-7"	9'-2"
		16	15'-4"	13'-4"	12'-1"	10'-7"	13'-4"	11'-7"	10'-7"	9'-2"	11'-6"	10'-7"	9'-7"	8'-5"
		24	13'-4"	11'-7"	10'-7"	9'-2"	10'-10"	10'-2"	9'-2"	8'-1"	9'-5"	9'-2"	8'-5"	7'-4"
	362VS125-33	12	22'-5"	19'-7"	17'-10"	15'-6"	18'-10"	17'-1"	15'-6"	13'-7"	16'-4"	15'-6"	14'-1"	12'-4"
		16	19'-11"	17'-10"	16'-1"	14'-1"	16'-4"	15'-6"	14'-1"	12'-4"	14'-1"	14'-1"	12'-10"	11'-2"
		24	16'-4"	15'-6"	14'-1"	12'-4"	13'-4"	13'-4"	12'-4"	10'-10"	11'-6"	11'-6"	11'-2"	9'-10"
	400VS125-33	12	24'-2"	21'-1"	19'-2"	16'-10"	19'-10"	18'-6"	16'-10"	14'-7"	17'-2"	16'-10"	15'-2"	13'-4"
		16	21'-0"	19'-2"	17'-5"	15'-2"	17'-2"	16'-10"	15'-2"	13'-4"	14'-11"	14'-11"	13'-10"	12'-1"
		24	17'-2"	16'-10"	15'-2"	13'-4"	14'-0"	14'-0"	13'-4"	11'-7"	12'-1"	12'-1"	12'-1"	10'-7"
	600VS125-33	12	30'-5"	28'-11"	26'-4"	23'-0"	24'-10"	24'-10"	23'-0"	20'-1"	21'-6"	21'-6"	20'-11"	18'-2"
		16	26'-4"	26'-4"	23'-11"	20'-11"	21'-6"	21'-6"	20'-11"	18'-2"	18'-7"	18'-7"	18'-7"	16'-7"
		24	21'-6"	21'-6"	20'-11"	18'-2"	17'-6"	17'-6"	17'-6"	15'-11"	15'-2"	15'-2"	15'-2"	14'-6"

For SI: 1 inch = 25.4 mm, 1 psf = 47.88 Pa

¹Bracing is required at internals not exceeding maximum unbraced length (L_u) listed in Table 4.

TABLE 6—LIMITING HEIGHTS FOR NON-COMPOSITE WALLS BRACED 4 FEET ON CENTERS

Member (name)	Section ID XXXVS125-XX	Spacing (in. o.c.)	5 psf				7.5 psf				10 psf			
			L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360
VIPER25	162VS125-15	12	8'-8"	8'-4"	7'-6"	6'-7"	7'-1"	7'-1"	6'-7"	--	6'-1"	6'-1"	6'-0"	--
		16	7'-6"	7'-6"	6'-10"	6'-0"	6'-1"	6'-1"	6'-0"	--	--	--	--	--
		24	6'-1"	6'-1"	6'-0"	--	--	--	--	--	--	--	--	--
	250VS125-15	12	11'-10"	11'-7"	10'-7"	9'-2"	9'-7"	9'-7"	9'-2"	8'-1"	8'-5"	8'-5"	8'-5"	7'-4"
		16	10'-2"	10'-2"	9'-7"	8'-5"	8'-5"	8'-5"	8'-5"	7'-4"	7'-2"	7'-2"	7'-2"	6'-8"
		24	8'-5"	8'-5"	8'-5"	7'-4"	6'-8"	6'-8"	6'-8"	6'-5"	--	--	--	--
	362VS125-15	12	13'-2"	13'-2"	13'-2"	12'-1"	10'-10"	10'-10"	10'-10"	10'-7"	9'-4"	9'-4"	9'-4"	9'-4"
		16	11'-5"	11'-5"	11'-5"	11'-0"	9'-4"	9'-4"	9'-4"	9'-4"	7'-10"	7'-10"	7'-10"	7'-10"
		24	9'-4"	9'-4"	9'-4"	9'-4"	6'-11"	6'-11"	6'-11"	6'-11"	--	--	--	--
	400VS125-15	12	13'-10"	13'-10"	13'-10"	13'-1"	11'-4"	11'-4"	11'-4"	11'-4"	9'-10"	9'-10"	9'-10"	9'-10"
		16	12'-0"	12'-0"	12'-0"	11'-11"	9'-10"	9'-10"	9'-10"	9'-10"	7'-5"	7'-5"	7'-5"	7'-5"
		24	9'-10"	9'-10"	9'-10"	9'-10"	6'-6"	6'-6"	6'-6"	6'-6"	--	--	--	--
	600VS125-15	12	14'-1"	14'-1"	14'-1"	14'-1"	9'-5"	9'-5"	9'-5"	9'-5"	7'-1"	7'-1"	7'-1"	7'-1"
		16	10'-7"	10'-7"	10'-7"	10'-7"	7'-1"	7'-1"	7'-1"	7'-1"	--	--	--	--
		24	7'-1"	7'-1"	7'-1"	7'-1"	--	--	--	--	--	--	--	--
Member (name)	Section ID XXXVS125-XX	Spacing (in. o.c.)	5 psf				7.5 psf				10 psf			
			L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360
VIPER20	162VS125-20	12	10'-7"	9'-6"	8'-8"	7'-7"	8'-7"	8'-4"	7'-7"	6'-7"	7'-6"	7'-6"	6'-11"	6'-0"
		16	9'-2"	8'-8"	7'-11"	6'-11"	7'-6"	7'-6"	6'-11"	6'-0"	6'-6"	6'-6"	6'-4"	--
		24	7'-6"	7'-6"	6'-11"	6'-0"	6'-1"	6'-1"	6'-0"	--	--	--	--	--
	250VS125-20	12	14'-4"	13'-1"	11'-11"	10'-5"	11'-8"	11'-6"	10'-5"	9'-1"	10'-1"	10'-1"	9'-6"	8'-4"
		16	12'-5"	11'-11"	10'-10"	9'-6"	10'-1"	10'-1"	9'-6"	8'-4"	8'-10"	8'-10"	8'-7"	7'-6"
		24	10'-1"	10'-1"	9'-6"	8'-4"	8'-4"	8'-4"	8'-4"	7'-2"	7'-2"	7'-2"	7'-2"	6'-7"
	362VS125-20	12	16'-2"	16'-2"	15'-10"	13'-10"	13'-2"	13'-2"	13'-2"	12'-0"	11'-5"	11'-5"	11'-5"	10'-11"
		16	14'-0"	14'-0"	14'-0"	12'-6"	11'-5"	11'-5"	11'-5"	10'-11"	9'-11"	9'-11"	9'-11"	9'-11"
		24	11'-5"	11'-5"	11'-5"	10'-11"	9'-4"	9'-4"	9'-4"	9'-4"	8'-1"	8'-1"	8'-1"	8'-1"
	400VS125-21	12	17'-10"	17'-10"	17'-0"	14'-11"	14'-7"	14'-7"	14'-7"	13'-0"	12'-7"	12'-7"	12'-7"	11'-10"
		16	15'-6"	15'-6"	15'-6"	13'-6"	12'-7"	12'-7"	12'-7"	11'-10"	10'-11"	10'-11"	10'-11"	10'-8"
		24	12'-7"	12'-7"	12'-7"	11'-10"	10'-4"	10'-4"	10'-4"	10'-4"	8'-11"	8'-11"	8'-11"	8'-11"
	600VS125-21	12	23'-1"	23'-1"	22'-6"	19'-8"	18'-11"	18'-11"	18'-11"	17'-2"	16'-5"	16'-5"	16'-5"	15'-7"
		16	20'-0"	20'-0"	20'-0"	17'-11"	16'-5"	16'-5"	16'-5"	15'-7"	12'-10"	12'-10"	12'-10"	12'-10"
		24	16'-5"	16'-5"	16'-5"	15'-7"	11'-5"	11'-5"	11'-5"	11'-5"	8'-7"	8'-7"	8'-7"	8'-7"

For SI: 1 inch = 25.4 mm, 1 psf = 47.88 Pa.

TABLE 6—LIMITING HEIGHTS FOR NON-COMPOSITE WALLS BRACED 4 FEET ON CENTERS (Continued)

Member (name)	Section ID XXXVS125-XX	Spacing (in. o.c.)	5 psf				7.5 psf				10 psf			
			L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360
VIPER 27mil	162VS125-27	12	11'-5"	9'-11"	9'-0"	7'-11"	9'-7"	8'-8"	7'-11"	6'-11"	8'-4"	7'-11"	7'-2"	6'-4"
		16	10'-2"	9'-0"	8'-2"	7'-2"	8'-4"	7'-11"	7'-2"	6'-4"	7'-2"	7'-2"	6'-6"	--
		24	8'-4"	7'-11"	7'-2"	6'-4"	6'-10"	6'-10"	6'-4"	5'-6"	--	--	--	--
	250VS125-27	12	15'-7"	13'-10"	12'-6"	10'-11"	12'-10"	12'-0"	10'-11"	9'-6"	11'-0"	10'-11"	9'-11"	8'-8"
		16	13'-6"	12'-6"	11'-5"	9'-11"	11'-0"	10'-11"	9'-11"	8'-8"	9'-7"	9'-7"	9'-0"	7'-11"
		24	11'-0"	10'-11"	9'-11"	8'-8"	9'-0"	9'-0"	8'-8"	7'-7"	7'-10"	7'-10"	7'-10"	6'-11"
	362VS125-27	12	18'-7"	18'-4"	16'-8"	14'-7"	15'-2"	15'-2"	14'-7"	12'-8"	13'-2"	13'-2"	13'-2"	11'-6"
		16	16'-1"	16'-1"	15'-1"	13'-2"	13'-2"	13'-2"	13'-2"	11'-6"	11'-5"	11'-5"	11'-5"	10'-6"
		24	13'-2"	13'-2"	13'-2"	11'-6"	10'-8"	10'-8"	10'-8"	10'-1"	9'-4"	9'-4"	9'-4"	9'-2"
	400VS125-27	12	19'-7"	19'-7"	18'-0"	15'-8"	16'-0"	16'-0"	15'-8"	13'-8"	13'-11"	13'-11"	13'-11"	12'-6"
		16	17'-0"	17'-0"	16'-4"	14'-4"	13'-11"	13'-11"	13'-11"	12'-6"	12'-0"	12'-0"	12'-0"	11'-4"
		24	13'-11"	13'-11"	13'-11"	12'-6"	11'-4"	11'-4"	11'-4"	10'-11"	9'-10"	9'-10"	9'-10"	9'-10"
600VS125-27	12	25'-11"	25'-11"	24'-7"	21'-6"	21'-2"	21'-2"	21'-2"	18'-8"	18'-4"	18'-4"	18'-4"	17'-0"	
	16	22'-6"	22'-6"	22'-4"	19'-6"	18'-4"	18'-4"	18'-4"	17'-0"	14'-5"	14'-5"	14'-5"	14'-5"	
	24	18'-4"	18'-4"	18'-4"	17'-0"	12'-10"	12'-10"	12'-10"	12'-10"	9'-7"	9'-7"	9'-7"	9'-7"	
Member (name)	Section ID XXXVS125-XX	Spacing (in. o.c.)	5 psf				7.5 psf				10 psf			
			L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360
VIPER 30mil	162VS125-30	12	11'-10"	10'-4"	9'-4"	8'-2"	10'-4"	9'-0"	8'-2"	7'-1"	8'-11"	8'-2"	7'-5"	6'-6"
		16	10'-8"	9'-4"	8'-6"	7'-5"	8'-11"	8'-2"	7'-5"	6'-6"	7'-8"	7'-5"	6'-8"	--
		24	8'-11"	8'-2"	7'-5"	6'-6"	7'-4"	7'-1"	6'-6"	--	6'-4"	6'-4"	--	--
	250VS125-30	12	16'-4"	14'-2"	12'-11"	11'-4"	13'-7"	12'-5"	11'-4"	9'-11"	11'-10"	11'-4"	10'-4"	9'-0"
		16	14'-5"	12'-11"	11'-8"	10'-4"	11'-10"	11'-4"	10'-4"	9'-0"	10'-2"	10'-2"	9'-4"	8'-1"
		24	11'-10"	11'-4"	10'-4"	9'-0"	9'-7"	9'-7"	9'-0"	7'-10"	8'-4"	8'-4"	8'-1"	7'-1"
	362VS125-30	12	20'-0"	19'-0"	17'-2"	15'-0"	16'-4"	16'-4"	15'-0"	13'-1"	14'-2"	14'-2"	13'-8"	11'-11"
		16	17'-4"	17'-2"	15'-7"	13'-8"	14'-2"	14'-2"	13'-8"	11'-11"	12'-4"	12'-4"	12'-4"	10'-10"
		24	14'-2"	14'-2"	13'-8"	11'-11"	11'-7"	11'-7"	11'-7"	10'-5"	10'-0"	10'-0"	10'-0"	9'-6"
	400VS125-30	12	21'-1"	20'-6"	18'-7"	16'-4"	17'-2"	17'-2"	16'-4"	14'-2"	14'-11"	14'-11"	14'-10"	12'-11"
		16	18'-4"	18'-4"	16'-11"	14'-10"	14'-11"	14'-11"	14'-10"	12'-11"	12'-11"	12'-11"	12'-11"	11'-8"
		24	14'-11"	14'-11"	14'-10"	12'-11"	12'-2"	12'-2"	12'-2"	11'-4"	10'-7"	10'-7"	10'-7"	10'-2"
600VS125-30	12	28'-0"	28'-0"	25'-6"	22'-4"	22'-10"	22'-10"	22'-4"	19'-6"	19'-10"	19'-10"	19'-10"	17'-8"	
	16	24'-2"	24'-2"	23'-2"	20'-2"	19'-10"	19'-10"	19'-10"	17'-8"	17'-1"	17'-1"	17'-1"	16'-1"	
	24	19'-10"	19'-10"	19'-10"	17'-8"	15'-7"	15'-7"	15'-7"	15'-6"	11'-8"	11'-8"	11'-8"	11'-8"	

For SI: 1 inch = 25.4 mm, 1 psf = 47.88 Pa.

TABLE 6—LIMITING HEIGHTS FOR NON-COMPOSITE WALLS BRACED 4 FEET ON CENTERS (Continued)

Member (name)	Section ID XXXVS125-XX	Spacing (in. o.c.)	5 psf				7.5 psf				10 psf			
			L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360	L/120	L/180	L/240	L/360
VIPER 33mil	162VS125-33	12	12'-2"	10'-7"	9'-8"	8'-5"	10'-7"	9'-4"	8'-5"	7'-5"	9'-6"	8'-5"	7'-8"	6'-8"
		16	11'-1"	9'-8"	8'-10"	7'-8"	9'-6"	8'-5"	7'-8"	6'-8"	8'-2"	7'-8"	7'-0"	6'-1"
		24	9'-6"	8'-5"	7'-8"	6'-8"	7'-8"	7'-5"	6'-8"	--	6'-8"	6'-8"	6'-1"	--
	250VS125-33	12	16'-11"	14'-8"	13'-5"	11'-8"	14'-5"	12'-11"	11'-8"	10'-2"	12'-6"	11'-8"	10'-7"	9'-4"
		16	15'-4"	13'-5"	12'-2"	10'-7"	12'-6"	11'-8"	10'-7"	9'-4"	10'-10"	10'-7"	9'-7"	8'-5"
		24	12'-6"	11'-8"	10'-7"	9'-4"	10'-2"	10'-2"	9'-4"	8'-1"	8'-10"	8'-10"	8'-5"	7'-5"
	362VS125-33	12	21'-4"	19'-7"	17'-10"	15'-7"	17'-5"	17'-1"	15'-7"	13'-7"	15'-1"	15'-1"	14'-1"	12'-5"
		16	18'-5"	17'-10"	16'-2"	14'-1"	15'-1"	15'-1"	14'-1"	12'-5"	13'-0"	13'-0"	12'-11"	11'-2"
		24	15'-1"	15'-1"	14'-1"	12'-5"	12'-4"	12'-4"	12'-4"	10'-10"	10'-8"	10'-8"	10'-8"	9'-10"
	400VS125-33	12	22'-6"	21'-2"	19'-4"	16'-10"	18'-4"	18'-4"	16'-10"	14'-8"	15'-11"	15'-11"	15'-4"	13'-4"
		16	19'-5"	19'-4"	17'-6"	15'-4"	15'-11"	15'-11"	15'-4"	13'-4"	13'-10"	13'-10"	13'-10"	12'-1"
		24	15'-11"	15'-11"	15'-4"	13'-4"	13'-0"	13'-0"	13'-0"	11'-8"	11'-2"	11'-2"	11'-2"	10'-7"
	600VS125-33	12	29'-10"	29'-2"	26'-6"	23'-1"	24'-4"	24'-4"	23'-1"	20'-2"	21'-1"	21'-1"	21'-0"	18'-5"
		16	25'-10"	25'-10"	24'-1"	21'-0"	21'-1"	21'-1"	21'-0"	18'-5"	18'-4"	18'-4"	18'-4"	16'-8"
		24	21'-1"	21'-1"	21'-0"	18'-5"	17'-2"	17'-2"	17'-2"	16'-0"	14'-6"	14'-6"	14'-6"	14'-6"

For SI: 1 inch = 25.4 mm, 1 psf = 47.88 Pa.

TABLE 7—ALLOWABLE CEILING SPANS

L/240		4 psf						6 psf					
Member (name)	Section ID XXXVS125-XX	Unsupported ¹ Joist Spacing (in) o.c.			Supported at Midspan ¹ Joist Spacing (in) o.c.			Unsupported ¹ Joist Spacing (in) o.c.			Supported at Midspan ¹ Joist Spacing (in) o.c.		
		12	16	24	12	16	24	12	16	24	12	16	24
L/360													
VIPER25	162VS125-15	7'-3"	6'-9"	6'-0"	8'-1"	7'-4"	6'-5"	6'-6"	6'-0"	5'-5"	7'-1"	6'-5"	5'-7"
	250VS125-15	8'-2"	7'-7"	6'-10"	11'-3"	10'-4"	9'-0"	7'-4"	6'-10"	6'-2"	10'-0"	9'-0"	7'-8"
	362VS125-15	9'-1"	8'-6"	7'-8"	12'-0"	11'-0"	9'-9"	8'-3"	7'-8"	6'-11"	10'-8"	9'-9"	8'-5"
	400VS125-15	9'-5"	8'-9"	7'-10"	12'-5"	11'-4"	10'-0"	8'-6"	7'-10"	7'-1"	11'-0"	10'-0"	8'-9"
	600VS125-15	10'-8"	9'-11"	8'-11"	14'-4"	13'-2"	11'-8"	9'-7"	8'-11"	8'-1"	12'-9"	11'-8"	8'-10"
VIPER20	162VS125-20	7'-10"	7'-3"	6'-6"	9'-4"	8'-6"	7'-5"	7'-1"	6'-6"	5'-10"	8'-2"	7'-5"	6'-6"
	250VS125-20	8'-10"	8'-2"	7'-4"	12'-4"	11'-4"	10'-2"	7'-11"	7'-4"	6'-7"	11'-0"	10'-2"	8'-11"
	362VS125-20	9'-10"	9'-1"	8'-2"	13'-6"	12'-4"	10'-11"	8'-10"	8'-2"	7'-5"	11'-11"	10'-11"	9'-8"
	400VS125-21	10'-4"	9'-7"	8'-7"	14'-4"	13'-2"	11'-7"	9'-3"	8'-7"	7'-9"	12'-8"	11'-7"	10'-3"
	600VS125-21	11'-8"	10'-10"	9'-9"	16'-6"	15'-3"	13'-7"	10'-6"	9'-9"	8'-9"	14'-9"	13'-7"	12'-0"
VIPER 27mil	162VS125-27	8'-11"	8'-3"	7'-4"	9'-9"	8'-10"	7'-9"	8'-0"	7'-4"	6'-7"	8'-6"	7'-9"	6'-9"
	250VS125-27	10'-0"	9'-2"	8'-3"	13'-6"	12'-3"	10'-9"	8'-11"	8'-3"	7'-5"	11'-10"	10'-9"	9'-4"
	362VS125-27	11'-0"	10'-2"	9'-2"	15'-6"	14'-4"	12'-9"	9'-10"	9'-2"	8'-3"	13'-10"	12'-9"	11'-4"
	400VS125-27	11'-4"	10'-6"	9'-5"	15'-11"	14'-9"	13'-1"	10'-2"	9'-5"	8'-6"	14'-3"	13'-1"	11'-8"
	600VS125-27	12'-9"	11'-10"	10'-8"	18'-4"	16'-11"	15'-2"	11'-6"	10'-8"	9'-7"	16'-5"	15'-2"	13'-7"
VIPER 30mil	162VS125-30	9'-4"	8'-7"	7'-8"	10'-1"	9'-2"	8'-0"	8'-4"	7'-8"	6'-10"	8'-10"	8'-0"	7'-0"
	250VS125-30	10'-4"	9'-6"	8'-6"	13'-11"	12'-8"	11'-1"	9'-2"	8'-6"	7'-7"	12'-2"	11'-1"	9'-8"
	362VS125-30	11'-4"	10'-6"	9'-5"	16'-0"	14'-10"	13'-3"	10'-2"	9'-5"	8'-6"	14'-4"	13'-3"	11'-9"
	400VS125-30	11'-8"	10'-10"	9'-8"	16'-5"	15'-2"	13'-7"	10'-6"	9'-8"	8'-9"	14'-9"	13'-7"	12'-1"
	600VS125-30	13'-1"	12'-2"	10'-11"	18'-10"	17'-6"	15'-8"	11'-9"	10'-11"	9'-10"	16'-11"	15'-8"	14'-1"
VIPER 33mil	162VS125-33	9'-9"	8'-11"	7'-11"	10'-5"	9'-5"	8'-3"	8'-8"	7'-11"	7'-1"	9'-1"	8'-3"	7'-3"
	250VS125-33	10'-9"	9'-10"	8'-10"	14'-5"	13'-1"	11'-5"	9'-7"	8'-10"	7'-11"	12'-7"	11'-5"	10'-0"
	362VS125-33	11'-9"	10'-11"	9'-9"	16'-7"	15'-4"	13'-9"	10'-7"	9'-9"	8'-9"	14'-10"	13'-9"	12'-2"
	400VS125-33	12'-1"	11'-2"	10'-0"	17'-0"	15'-8"	14'-1"	10'-10"	10'-0"	9'-0"	15'-3"	14'-1"	12'-7"
	600VS125-33	13'-6"	12'-6"	11'-3"	19'-5"	18'-0"	16'-3"	12'-2"	11'-3"	10'-1"	17'-6"	16'-3"	14'-6"

For SI: 1 inch = 25.4 mm, 1 psf = 47.88 Pa.

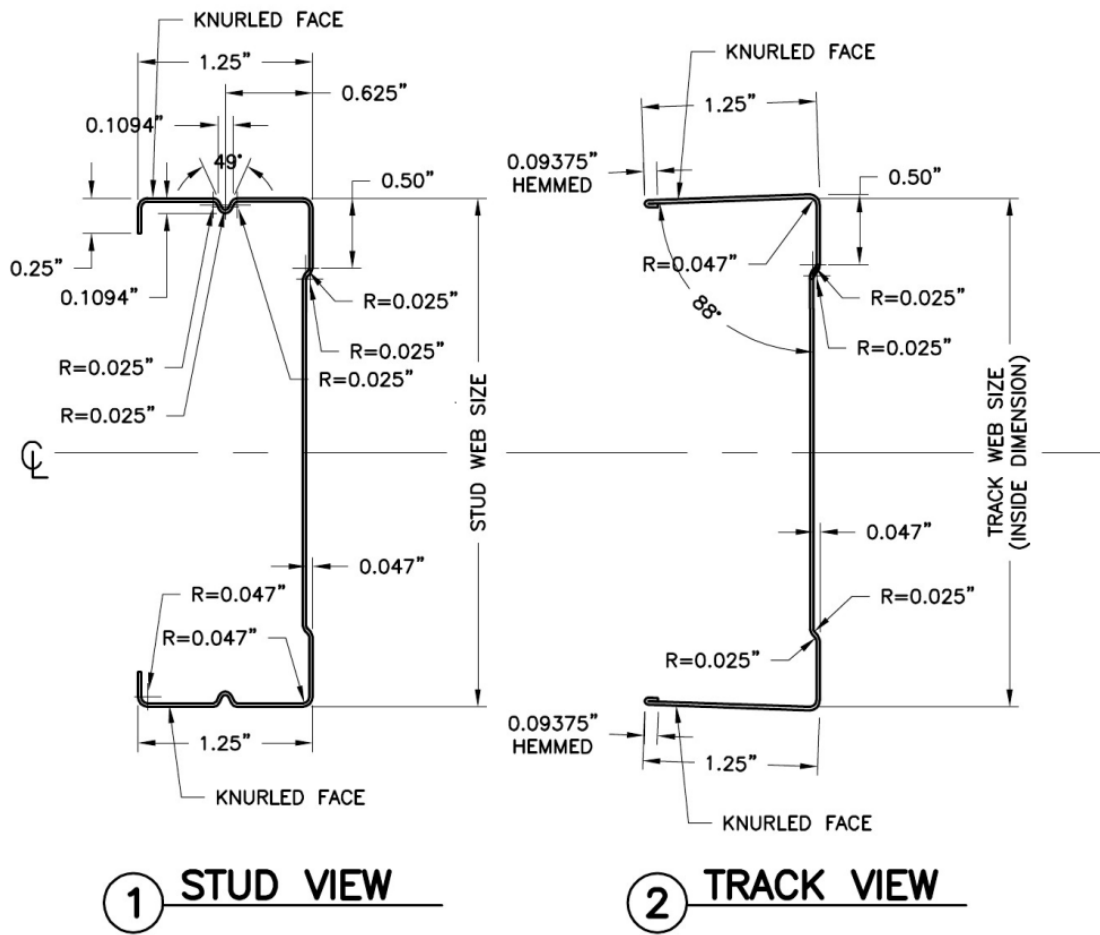
¹All values are for simple spans, with compression flange either unbraced or braced at midspan. All framing members are laterally braced at ends.

TABLE 7—ALLOWABLE CEILING SPANS (Continued)

L/360		4 psf						6 psf					
Member (name)	Section ID XXXVS125-XX	Unsupported ¹ Joist Spacing (in) o.c.			Supported at Midspan ¹ Joist Spacing (in) o.c.			Unsupported ¹ Joist Spacing (in) o.c.			Supported at Midspan ¹ Joist Spacing (in) o.c.		
		12	16	24	12	16	24	12	16	24	12	16	24
VIPER25	162VS125-15	7'-1"	6'-5"	5'-7"	7'-1"	6'-5"	5'-7"	6'-2"	5'-7"	4'-11"	6'-2"	5'-7"	4'-11"
	250VS125-15	8'-2"	7'-7"	6'-10"	10'-0"	9'-0"	7'-11"	7'-4"	6'-10"	6'-2"	8'-8"	7'-11"	6'-11"
	362VS125-15	9'-1"	8'-6"	7'-8"	12'-0"	11'-0"	9'-9"	8'-3"	7'-8"	6'-11"	10'-7"	9'-9"	8'-5"
	400VS125-15	9'-5"	8'-9"	7'-10"	12'-5"	11'-4"	10'-0"	8'-6"	7'-10"	7'-1"	11'-0"	10'-0"	8'-9"
	600VS125-15	10'-8"	9'-11"	8'-11"	14'-4"	13'-2"	11'-8"	9'-7"	8'-11"	8'-1"	12'-9"	11'-8"	8'-10"
VIPER20	162VS125-20	7'-10"	7'-3"	6'-6"	8'-2"	7'-5"	6'-6"	7'-1"	6'-6"	5'-8"	7'-2"	6'-6"	5'-8"
	250VS125-20	8'-10"	8'-2"	7'-4"	11'-3"	10'-2"	8'-11"	7'-11"	7'-4"	6'-7"	9'-9"	8'-11"	7'-9"
	362VS125-20	9'-10"	9'-1"	8'-2"	13'-6"	12'-4"	10'-11"	8'-10"	8'-2"	7'-5"	11'-11"	10'-11"	9'-8"
	400VS125-21	10'-4"	9'-7"	8'-7"	14'-4"	13'-2"	11'-7"	9'-3"	8'-7"	7'-9"	12'-8"	11'-7"	10'-3"
	600VS125-21	11'-8"	10'-10"	9'-9"	16'-6"	15'-3"	13'-7"	10'-6"	9'-9"	8'-9"	14'-9"	13'-7"	12'-0"
VIPER 27mil	162VS125-27	8'-6"	7'-9"	6'-9"	8'-6"	7'-9"	6'-9"	7'-6"	6'-9"	5'-11"	7'-5"	6'-9"	5'-11"
	250VS125-27	10'-0"	9'-2"	8'-3"	11'-10"	10'-9"	9'-4"	8'-11"	8'-3"	7'-5"	10'-4"	9'-4"	8'-2"
	362VS125-27	11'-0"	10'-2"	9'-2"	15'-6"	14'-4"	12'-6"	9'-10"	9'-2"	8'-3"	13'-9"	12'-6"	10'-11"
	400VS125-27	11'-4"	10'-6"	9'-5"	15'-11"	14'-9"	13'-1"	10'-2"	9'-5"	8'-6"	14'-3"	13'-1"	11'-8"
	600VS125-27	12'-9"	11'-10"	10'-8"	18'-4"	16'-11"	15'-2"	11'-6"	10'-8"	9'-7"	16'-5"	15'-2"	13'-7"
VIPER 30mil	162VS125-30	8'-10"	8'-0"	7'-0"	8'-10"	8'-0"	7'-0"	7'-8"	7'-0"	6'-1"	7'-8"	7'-0"	6'-1"
	250VS125-30	10'-4"	9'-6"	8'-6"	12'-2"	11'-1"	9'-8"	9'-2"	8'-6"	7'-7"	10'-8"	9'-8"	8'-5"
	362VS125-30	11'-4"	10'-6"	9'-5"	16'-0"	14'-9"	12'-11"	10'-2"	9'-5"	8'-6"	14'-2"	12'-11"	11'-3"
	400VS125-30	11'-8"	10'-10"	9'-8"	16'-5"	15'-2"	13'-7"	10'-6"	9'-8"	8'-9"	14'-9"	13'-7"	12'-1"
	600VS125-30	13'-1"	12'-2"	10'-11"	18'-10"	17'-6"	15'-8"	11'-9"	10'-11"	9'-10"	16'-11"	15'-8"	14'-1"
VIPER 33mil	162VS125-33	9'-1"	8'-3"	7'-3"	9'-1"	8'-3"	7'-3"	7'-11"	7'-3"	6'-4"	7'-11"	7'-3"	6'-4"
	250VS125-33	10'-9"	9'-10"	8'-10"	12'-7"	11'-5"	10'-0"	9'-7"	8'-10"	7'-11"	11'-0"	10'-0"	8'-9"
	362VS125-33	11'-9"	10'-11"	9'-9"	16'-7"	15'-3"	13'-4"	10'-7"	9'-9"	8'-9"	14'-8"	13'-4"	11'-8"
	400VS125-33	12'-1"	11'-2"	10'-0"	17'-0"	15'-8"	14'-1"	10'-10"	10'-0"	9'-0"	15'-3"	14'-1"	12'-7"
	600VS125-33	13'-6"	12'-6"	11'-3"	19'-5"	18'-0"	16'-3"	12'-2"	11'-3"	10'-1"	17'-6"	16'-3"	14'-6"

For SI: 1 inch = 25.4 mm, 1 psf = 47.88 Pa.

¹All values are for simple spans, with compression flange either unbraced or braced at midspan. All framing members are laterally braced at ends.



STUD WEB SIZES (OUTSIDE DIMENSIONS):

1⁵/₈", 2¹/₂", 3⁵/₈", 4" & 6"

TRACK WEB SIZES (INSIDE DIMENSIONS):

1⁵/₈", 2¹/₂", 3⁵/₈", 4" & 6"

The hemmed track flange is limited to xxxVT125-15 members.

FIGURE 1—STUD AND TRACK CONFIGURATION

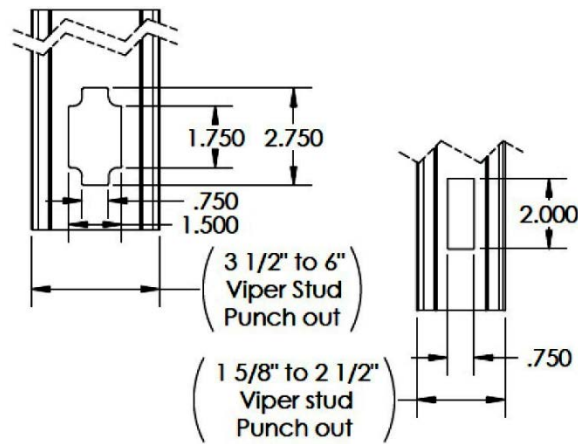
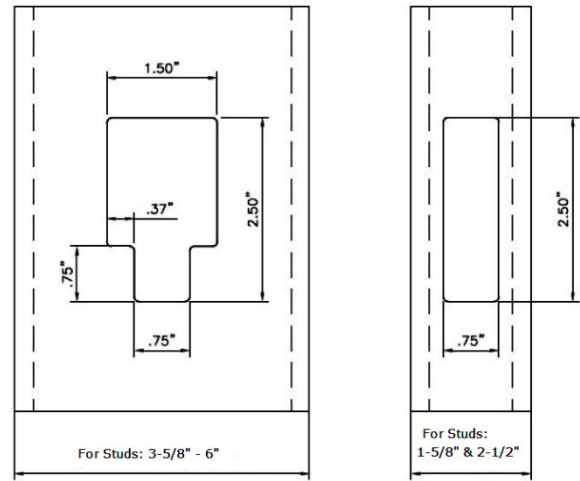
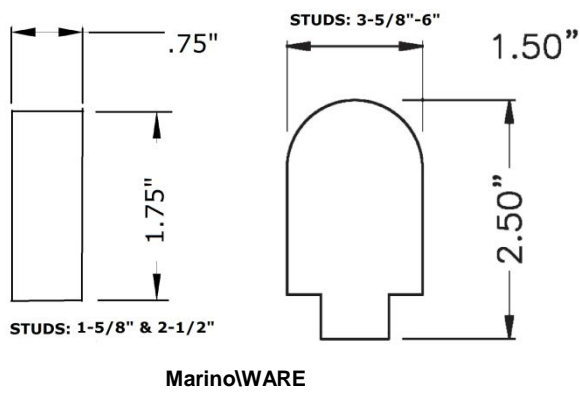


FIGURE 2—PUNCH-OUT CONFIGURATIONS

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ESR-2620 CBC and CRC Supplement

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Section: 05 40 00—Cold-Formed Metal Framing

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Section: 09 22 16.13—Non-Structural Metal Stud Framing

REPORT HOLDER:

WARE INDUSTRIES, INC. (DBA Marino\WARE)

400 METUCHEN ROAD

SOUTH PLAINFIELD, NEW JERSEY 07080

(908) 757-9000

www.marinoware.com

EVALUATION SUBJECT:

VIPERSTUD DRYWALL FRAMING SYSTEM (NONLOAD-BEARING): VIPER25, VIPER20, VIPER 18MIL, VIPER 27MIL, VIPER 30MIL, VIPER 33MIL

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Viperstud Drywall Framing Systems (Nonload-Bearing): Viper25, Viper20, Viper 18mil, Viper 27mil, Viper 30mil, and Viper 33mil, recognized in ICC-ES master evaluation report ESR-2620, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2016 *California Building Code* (CBC)
- 2016 *California Residential Code* (CRC)

2.0 CONCLUSIONS

2.1 CBC:

The Viperstud Drywall Framing Systems (Nonload-Bearing): Viper25, Viper20, Viper 18mil, Viper 27mil, Viper 30mil, and Viper 33mil, described in Sections 2.0 through 7.0 of the master evaluation report ESR-2620, comply with CBC Chapters 22 and 22A, provided the design and installation are in accordance with the 2015 *International Building Code*® (IBC) provisions noted in the master report and the additional requirements of the CBC Chapters 16, 16A, 17, 17A, 22 and 22A, as applicable.

2.2 CRC:

The Viperstud Drywall Framing Systems (Nonload-Bearing): Viper25, Viper20, Viper 18mil, Viper 27mil, Viper 30mil, and Viper 33mil, described in Sections 2.0 through 7.0 of the master evaluation report ESR-2620, comply with the 2016 CRC, provided the design and installation are in accordance with the 2015 *International Residential Code*® (IRC) provisions noted in the master report.

This supplement expires concurrently with the master report, reissued July 2017.

ICC-ES Evaluation Report

ESR-2620 FBC Supplement

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REPORT HOLDER:

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EVALUATION SUBJECT:

VIPERSTUD DRYWALL FRAMING SYSTEM (NONLOAD-BEARING): VIPER25, VIPER20, VIPER 18MIL, VIPER 27MIL, VIPER 30MIL, VIPER 33MIL

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the ViperStud Drywall Framing System (Nonload-Bearing), recognized in ICC-ES master evaluation report ESR-2620, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2014 *Florida Building Code—Building*
- 2014 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The ViperStud Drywall Framing System (Non-loadbearing), described in Sections 2.0 through 7.0 of the master report ESR-2620, complies with the 2014 *Florida Building Code—Building* and the 2014 *Florida Building Code—Residential*, provided the design and installation are in accordance with the *International Building Code* provisions noted in the master report.

Use of the ViperStud Drywall Framing System (Nonload-bearing) has also been found to be in compliance with the High-Velocity Hurricane Zone provisions of the 2014 *Florida Building Code—Building* and the 2014 *Florida Building Code—Residential*.

For products falling under Florida Rule 9N-3, verification that the report holder's quality-assurance program is audited by a quality-assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the master report, reissued July 2017.

ICC-ES Evaluation Report

ESR-2620 CSSA Supplement

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REPORT HOLDER:

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EVALUATION SUBJECT:

VIPERSTUD DRYWALL FRAMING SYSTEM (NONLOAD-BEARING): VIPER25, VIPER20, VIPER 18MIL, VIPER 27MIL, VIPER 30MIL, VIPER 33MIL

1.0 REPORT PURPOSE AND SCOPE

The purpose of this evaluation report supplement is to indicate that the ViperStud Drywall Framing System (Nonload-Bearing), recognized in ICC-ES master report ESR-2620, is certified to be in compliance with the ICC-ES/CSSA Code Compliance Certification Program. Studs and tracks are periodically checked for mechanical properties, coatings, dimensions and labeling.

2.0 LABELING

Certified products bear the following label:



3.0 CERTIFIED MANUFACTURING FACILITIES

MarinoWARE – South Plainfield
South Plainfield, New Jersey 07080

MarinoWARE – Griffin
Griffin, Georgia 30223

MarinoWARE – East Chicago
East Chicago, Indiana 46312

MarinoWARE – Pasadena
Pasadena, Texas 77507

Telling Industries, LLC
Osceola, Arkansas 72370

Telling Industries, LLC
Cambridge, Ohio 43725

Telling Industries, LLC
Windsor, CT 06095

This supplement expires concurrently with the master report, reissued July 2017.