Code Compliance Research Report
CCRR-0154

Issue Date: 01-18-2016
Renewal Date: 12-22-2016

Valued Quality. Delivered.

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

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400 Metuchen Road
South Plainfield, NJ 07080
(908) 757-9000
www.marinoware.com

Additional Listees:
California Expanded Metal Products Company (CEMCO)
263 N Covina Lane
City of Industry, CA 91744
(800) 775-2362

Telling Industries
6272 Center Street
Mentor, OH 44060
(866) 372-6384

REPORT SUBJECT:
***ViperStud*® Cold-Formed Steel Studs and Tracks**

1.0 SCOPE OF EVALUATION

This research report addresses compliance with the following Codes:

2012International Building Code (IBC)

2012 International Residential Code (IRC)

2014 Florida Building Code (FBC)
including High Velocity Hurricane Zone (HVHZ)

2013 California Building Code (CBC)

ViperStud® studs and tracks have been evaluated for the following properties:

Structural Performance – Interior nonload-bearing drywall studs and ceiling joists

2.0 USES

2.1. ViperStud® studs and tracks are cold-formed steel framing members used to construct interior nonload-bearing walls and ceilings that may be gypsum wallboard sheathed.

3.0 DESCRIPTION

3.1. The *ViperStud*® framing system products that are recognized in this report are limited to the products whose designation is found in Table 2 Viper25, Viper20, Viper 27mil, Viper 30mil, and Viper 33mil).

3.2. *ViperStud*® framing members (studs and tracks) are fabricated from Non-Structural Grade 50 (NS50), Non-Structural Grade 57 (NS57), or Non-Structural Grade 33 (NS33) in accordance with ASTM A 1003 steel specifications. A minimum G40 galvanization complying with ASTM A 653 or an approved coating per ASTM A 1003 Table 1 is required. See Table 2.

3.3. *ViperStud*® studs are available in steel thicknesses of 0.0155", 0.0205", 0.0220", 0.0269, 0.0296, and 0.0329. The framing members are available in depths of 1-5/8", 2-1/2", 3-5/8", 4", and 6". See Figure 1 for stud and track profiles and Table 2 for recognized product designations.

3.4. Track thicknesses correspond to stud thicknesses. The Viper25 track may also be used with the Viper20 studs.

3.5. Trade holes (knockouts) are spaced every 24 inches throughout the stud length and shall not be located within 10 inches of the end. Trade hole dimensions are as indicated in Figure 2, Figure 3, and Figure 4 for each stud depth.

3.6. Fasteners for attachment of gypsum wall board to framing shall be #6 by 3/4" long bugle head drywall screws conforming to ASTM C 1002.

3.7. Gypsum wallboard shall be any 5/8" Type X in compliance with ASTM C 1396 produced by any of the following manufacturers:

- United States Gypsum (USG)
- Continental

- CertainTeed
- American Gypsum
- National Gypsum
- Georgia Pacific

4.0 PERFORMANCE CHARACTERISTICS

4.1. Allowable wall heights for interior nonload-bearing walls are shown in Table 3, Table 5, and Table 6. Ceiling spans are shown in Table 7.

4.1.1. Allowable wall heights shown in Table 3 were established by using test data obtained from testing of composite walls (i.e. gypsum wallboard-sheathed walls) conducted in accordance with ICC-ES AC86.

4.1.2. Allowable wall heights shown in Table 5 and Table 6 were established through structural analysis of the steel framing alone (i.e. non-composite) in accordance with AISI S100.

4.2. For construction governed by the FBC High Velocity Hurricane Zone (HVHZ), the wall height is limited to the height at the L/180 deflection level.

4.3. Nonload-bearing wall heights are limited by the lesser of the following: wall deflection; shear strength, web crippling strength, or flexural strength of the stud.

5.0 INSTALLATION

Installation shall be in accordance with the applicable code, manufacturer's installation instructions, and this report. Where differences occur between this report and the manufacturer's installation instructions, this report shall govern.

5.1. Framing shall be in accordance with the code requirements and referenced AISI standards therein for cold-formed steel light frame construction. Stud to track screw attachment is optional.

5.2. Gypsum wallboard (GWB) installation applicable only to composite wall heights in Table 3:

5.2.1. GWB Shall be installed full height on both faces of the wall with the panel length vertically oriented. See Table 3 notes for fastening schedule.

5.2.2. Limitations on the location of horizontal gypsum wallboard joints are specified in the notes for Table 3.

5.3. Additional installation details may apply to meet requirements for fire-rated assemblies.

6.0 SUPPORTING EVIDENCE

6.1. Manufacturer's drawings and installation instructions.

6.2. Reports of testing and engineering analysis in accordance with ICC-ES AC86, Acceptance Criteria for Cold-Formed Steel Framing Members – Interior Nonload-Bearing Wall Assemblies, approved May 2012.

6.3. Reports of evaluation and engineering analysis in accordance with AISI S100, North American Specification for the Design of Cold-Formed Steel Structural Members, 2007, with Supplements 1 and 2.

6.4. Quality control manual in accordance with ICC-ES AC10, Acceptance Criteria for Quality Documentation, dated June 2014.

7.0 CONDITION OF USE

The ViperStud® framing identified in this report is deemed to comply with the referenced building codes subject to the following conditions:

7.1.1. The interior nonload-bearing wall assemblies shall be limited to interior installations where the superimposed axial load is zero pounds.

7.1.2. Allowable heights, spans, and loadings must comply with the tables in this report.

7.1.3. The Marino\WARE, CEMCO Telling Industries *ViperStud*® framing identified in this report is manufactured in accordance with the manufacturer's approved quality control system with inspections by Intertek. See Table 1 for manufacturing locations.

8.0 IDENTIFICATION

ViperStud® framing produced in accordance with this report shall be identified with labeling at a maximum spacing of 96 inches that includes the following information:

8.1. The manufacturer's identification.

8.2. The ViperStud® framing designation and steel thickness, as well as yield strength if other than 33 ksi and the galvanization coating designation when G60 or greater.

8.3. The Intertek Code Compliance Research Report identification and number: ATI CCRR-0154.

9.0 CODE COMPLIANCE RESEARCH REPORT

9.1. Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

9.2. Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

9.3. Reference to the Intertek website address: whdirectory.intertek.com is recommended to ascertain the current version and status of this report.

Table 1 – *ViperStud*® Manufacturing Locations

Marino\WARE	CEMCO	Telling Industries
400 Metuchen Road South Plainfield, NJ 07080 (908) 757-9000	263 North Covina Lane City of Industry, CA 91746 (800) 775-2362	2105 Larrick Road Cambridge, OH 43725 (740) 435-8900
4245 Railroad Avenue East Chicago, IN 46312 (219) 378-7100	1001-A Pittsburg Antioch Hwy. Pittsburg, CA 94565 (925) 473-9340	1400 Southwire Drive Osceola, AR 72370 (870) 563-2597
777 Greenbelt Parkway Griffin, GA 30223 (678) 688-1312	490 Osage Street Denver, CO 80204 (303) 572-3626	
10101 Bay Area Blvd. Pasadena, TX 77507 (281) 283-8100	8600 Will Rogers Blvd. Fort Worth, TX 76140 (817) 568-2759	

Table 2 – *ViperStud*® Specifications

***ViperStud*® Designation** [1]	**Applicable Stud Width (in)**	**Min. Base-Metal Thickness (in)**	**Min. Yield Strength (ksi)**
Viper25	1-5/8", 2-1/2", 3-5/8", 4", and 6"	0.0147	50
Viper20	1-5/8", 2-1/2", and 3-5/8"	0.0195	57 [2]
	4" and 6"	0.0209	57 [2]
Viper 27mil	1-5/8", 2-1/2", 3-5/8", 4", and 6"	0.0269	33
Viper 30mil	1-5/8", 2-1/2", 3-5/8", 4", and 6"	0.0296	33
Viper 33mil	1-5/8", 2-1/2", 3-5/8", 4", and 6"	0.0329	33

[1] *ViperTrack*® conforms to *ViperStud*® specifications, except as noted.
[2] *ViperTrack*® has minimum yield strength of 50 ksi

Table 3 – *ViperStud*® Limiting Heights Established from Composite Wall Analysis

Maximum allowable wall height (feet-inches) for the transverse uniform design load indicated (psf)

Member (name)	Section ID XXXVS125-XX	Spacing (in. o.c.)	5 psf				7.5 psf				10 psf			
			L/120 [6]	L/180	L/240	L/360	L/120 [6]	L/180	L/240	L/360	L/120 [6]	L/180	L/240	L/360
VIPER25	162VS125-15	12	13'-9"	12'-0"	11'-4"	9'-10"	12'-0"	10'-6"	9'-11"	8'-3"	10'-11"	9'-5"	8'-10"	--
		16	12'-6"	10'-11"	10'-4"	8'-8"	10'-11"	9'-5"	8'-10"	--	9'-11"	8'-2"	7'-11"	--
		24	10'-11"	9'-5"	8'-10"	--	9'-5"	--	--	--	8'-2"	--	--	--
	250VS125-15	12	17'-3"	15'-1"	14'-5"	12'-9"	15'-0"	13'-2"	12'-7"	11'-1"	13'-8"	11'-11"	11'-6"	10'-1"
		16	15'-8"	13'-8"	13'-1"	11'-7"	13'-8"	11'-11"	11'-6"	10'-1"	12'-3" f	10'-10"	10'-5"	8'-9"
		24	13'-8"	11'-11"	11'-6"	10'-1"	11'-6" f	10'-5"	10'-0"	8'-2"	10'-0" f	9'-5"	8'-8"	--
	362VS125-15	12	20'-10"	18'-2"	17'-3"	15'-2"	18'-2"	15'-11"	15'-1"	13'-3"	15'-10" f	14'-5"	13'-9"	12'-0"
		16	18'-11"	16'-7"	15'-9"	13'-9"	15'-10" f	14'-5"	13'-9"	12'-0"	13'-9" f	13'-2"	12'-6"	10'-11"
		24	15'-10" f	14'-5"	13'-9"	12'-0"	12'-11" f	12'-7"	12'-0"	10'-6"	11'-3" f	11'-3" f	10'-11"	9'-6"
	400VS125-15	12	22'-1"	19'-3"	18'-3"	16'-3"	19'-3" f	16'-10"	15'-11"	14'-2"	16'-8" f	15'-4"	14'-6"	12'-11"
		16	20'-0"	17'-6"	16'-7"	14'-9"	16'-8" f	15'-4"	14'-6"	12'-11"	14'-5" f	13'-11"	13'-2"	11'-9"
		24	16'-8" f	15'-4"	14'-6"	12'-11"	13'-7" f	13'-4"	12'-8"	11'-3"	11'-9" f	11'-10" f	11'-6"	10'-1"
	600VS125-15	12	24'-8"	24'-4"	23'-9"	21'-1"	22'-3"	21'-5"	20'-9"	18'-5"	20'-0" f	19'-7"	18'-10"	16'-9"
		16	22'-11"	22'-3"	21'-7"	19'-2"	20'-0" f	19'-7"	18'-10"	16'-9"	17'-5" f	17'-5" f	17'-2"	15'-3"
		24	20'-0" f	19'-7"	18'-10"	16'-9"	16'-5" f	16'-5" f	16'-5" f	14'-8"	14'-2" f	14'-2" f	14'-2" f	13'-0"

"f" - flexure controls; "w" - web crippling controls; no letter next to number means deflection controls

See notes on page 10.

Table 3 – *ViperStud*® Limiting Heights Established from Composite Wall Analysis (continued)

Maximum allowable wall height (feet-inches) for the transverse uniform design load indicated (psf)

Member (name)	Section ID XXXVS125-XX	Spacing (in. o.c.)	*5 psf*				*7.5 psf*				*10 psf*			
			L/120 [6]	L/180	L/240	L/360	L/120 [6]	L/180	L/240	L/360	L/120 [6]	L/180	L/240	L/360
VIPER20	162VS125-20	***12***	14'-3"	12'-5"	11'-3"	9'-10"	12'-5"	10'-10"	9'-10"	8'-5"	11'-3"	9'-10"	8'-10"	--
		16	12'-11"	11'-3"	10'-3"	8'-10"	11'-3"	9'-10"	8'-10"	--	10'-3"	8'-10"	7'-11"	--
		24	11'-3"	9'-10"	8'-10"	--	9'-10"	8'-5"	--	--	8'-10"	--	--	--
	250VS125-20	***12***	17'-11"	15'-8"	14'-10"	13'-2"	15'-8"	13'-8"	13'-0"	11'-6"	14'-3"	12'-5"	11'-10"	10'-5"
		16	16'-4"	14'-3"	13'-6"	12'-0"	14'-3"	12'-5"	11'-10"	10'-5"	12'-11"	11'-4"	10'-9"	9'-4"
		24	14'-3"	12'-5"	11'-10"	10'-5"	12'-5"	10'-10"	10'-4"	8'-9"	11'-3" f	9'-11"	9'-2"	--
	362VS125-20	***12***	21'-10"	19'-1"	17'-11"	15'-9"	19'-1"	16'-8"	15'-8"	13'-9"	17'-4"	15'-2"	14'-3"	12'-6"
		16	19'-10"	17'-4"	16'-4"	14'-4"	17'-4"	15'-2"	14'-3"	12'-6"	15'-4" f	13'-9"	12'-11"	11'-4"
		24	17'-4"	15'-2"	14'-3"	12'-6"	14'-6" f	13'-3"	12'-5"	10'-11"	12'-7" f	12'-0"	11'-4"	9'-11"
	400VS125-21	***12***	24'-0"	21'-0"	19'-1"	16'-8"	21'-0"	18'-4"	16'-8"	14'-7"	19'-1"	16'-8"	15'-2"	13'-3"
		16	21'-10"	19'-1"	17'-4"	15'-2"	19'-1"	16'-8"	15'-2"	13'-3"	17'-4"	15'-2"	13'-9"	12'-0"
		24	19'-1"	16'-8"	15'-2"	13'-3"	16'-8"	14'-7"	13'-3"	11'-7"	14'-11" f	13'-3"	12'-0"	10'-5"
	600VS125-21	***12***	29'-1"	25'-10"	25'-7"	22'-6"	25'-10"	22'-10"	22'-4"	19'-8"	23'-8"	20'-11"	20'-4"	17'-11"
		16	26'-9"	23'-8"	23'-3"	20'-6"	23'-8"	20'-11"	20'-4"	17'-11"	21'-9"	19'-2"	18'-6"	16'-3"
		24	23'-8"	20'-11"	20'-4"	17'-11"	20'-11"	18'-6"	17'-9"	15'-7"	18'-2" f	16'-11"	16'-2"	14'-2"

"f" - flexure controls; "w" - web crippling controls; no letter next to number means deflection controls

See notes on page 10.

Table 3 – *ViperStud*® Limiting Heights Established from Composite Wall Analysis (continued)

Maximum allowable wall height (feet-inches) for the transverse uniform design load indicated (psf)

Member (name)	Section ID XXXVS125-XX	Spacing (in. o.c.)	*5 psf*				*7.5 psf*				*10 psf*			
			L/120 [6]	L/180	L/240	L/360	L/120 [6]	L/180	L/240	L/360	L/120 [6]	L/180	L/240	L/360
VIPER 27mil	162VS125-27	*12*	14'-4"	12'-7"	11'-5"	9'-11"	12'-6"	10'-11"	9'-11"	8'-5"	11'-5"	9'-11"	8'-10"	--
		16	13'-0"	11'-5"	10'-4"	8'-10"	11'-5"	9'-11"	8'-10"	--	10'-4"	8'-10"	7'-10"	--
		24	11'-5"	9'-11"	8'-10"	--	9'-10" f	8'-5"	--	--	8'-6" f	--	--	--
	250VS125-27	*12*	18'-3"	15'-11"	14'-5"	12'-8"	15'-11"	13'-11"	12'-8"	11'-0"	14'-4" f	12'-8"	11'-6"	10'-0"
		16	16'-7"	14'-5"	13'-2"	11'-6"	14'-4" f	12'-8"	11'-6"	10'-0"	12'-5" f	11'-6"	10'-5"	8'-11"
		24	14'-4" f	12'-8"	11'-6"	10'-0"	11'-9" f	11'-0"	10'-0"	8'-6"	10'-2" f	10'-0"	8'-11"	--
	362VS125-27	*12*	22'-9"	19'-11"	18'-1"	15'-10"	19'-11"	17'-5"	15'-10"	13'-10"	17'-7" f	15'-10"	14'-4"	12'-6"
		16	20'-8"	18'-1"	16'-5"	14'-4"	17'-7" f	15'-10"	14'-4"	12'-6"	15'-3" f	14'-4"	13'-0"	11'-2"
		24	17'-7" f	15'-10"	14'-4"	12'-5"	14'-4" f	13'-10"	12'-6"	10'-8"	12'-5" f	12'-5" f	11'-2"	--
	400VS125-27	*12*	24'-9"	21'-8"	19'-8"	17'-2"	20'-7" f	18'-11"	17'-2"	15'-0"	17'-10" f	17'-2"	15'-7"	13'-8"
		16	21'-10" f	19'-8"	17'-11"	15'-7"	17'-10" f	17'-2"	15'-7"	13'-8"	15'-5" f	15'-5" f	14'-2"	12'-4"
		24	17'-10" f	17'-2"	15'-7"	13'-8"	14'-7" f	14'-7" f	13'-8"	11'-10"	12'-7" f	12'-7" f	12'-4"	10'-9"
	600VS125-27	*12*	29'-7" f	28'-6"	25'-11"	22'-8"	24'-2" f	24'-2" f	22'-8"	19'-9"	20'-11" f	20'-11" f	20'-7"	18'-0"
		16	25'-7" f	25'-7" f	23'-6"	20'-7"	20'-11" f	20'-11" f	20'-7"	18'-0"	18'-1" f	18'-1" f	18'-1" f	16'-4"
		24	20'-11" f	20'-11" f	20'-7"	18'-0"	17'-1" f	17'-1" f	17'-1" f	15'-8"	14'-9" f	14'-9" f	14'-9" f	14'-2"

"f" - flexure controls; "w" - web crippling controls; no letter next to number means deflection controls

See notes on page 10.

Table 3 – *ViperStud*® Limiting Heights Established from Composite Wall Analysis (continued)

Maximum allowable wall height (feet-inches) for the transverse uniform design load indicated (psf)

Member (name)	Section ID XXXVS125-XX	Spacing (in. o.c.)	*5 psf*				*7.5 psf*				*10 psf*			
			L/120 [6]	L/180	L/240	L/360	L/120 [6]	L/180	L/240	L/360	L/120 [6]	L/180	L/240	L/360
VIPER 30mil	162VS125-30	*12*	14'-7"	12'-8"	11'-6"	10'-0"	12'-9"	11'-1"	10'-0"	8'-6"	11'-7"	10'-1"	8'-11"	--
		16	13'-3"	11'-6"	10'-5"	8'-11"	11'-7"	10'-1"	8'-11"	--	10'-6"	9'-0"	7'-10"	--
		24	11'-7"	10'-1"	8'-11"	--	10'-1"	8'-6"	--	--	8'-10" f	--	--	--
	250VS125-30	*12*	18'-9"	16'-4"	14'-10"	13'-0"	16'-4"	14'-4"	13'-0"	11'-4"	14'-10"	13'-0"	11'-10"	10'-4"
		16	17'-0"	14'-10"	13'-6"	11'-10"	14'-10"	13'-0"	11'-10"	10'-4"	13'-6" f	11'-10"	10'-9"	9'-3"
		24	14'-10"	13'-0"	11'-10"	10'-4"	12'-9" f	11'-4"	10'-4"	8'-10"	11'-0" f	10'-4"	9'-3"	7'-10"
	362VS125-30	*12*	23'-3"	20'-4"	18'-6"	16'-2"	20'-4"	17'-9"	16'-2"	14'-1"	18'-6"	16'-2"	14'-8"	12'-10"
		16	21'-2"	18'-6"	16'-10"	14'-8"	18'-6"	16'-2"	14'-8"	12'-10"	16'-4" f	14'-8"	13'-4"	11'-6"
		24	18'-6"	16'-2"	14'-8"	12'-10"	15'-4" f	14'-1"	12'-10"	11'-0"	13'-4" f	12'-10"	11'-6"	9'-11"
	400VS125-30	*12*	25'-2"	22'-0"	20'-0"	17'-6"	22'-0"	19'-3"	17'-6"	15'-3"	19'-5" f	17'-6"	15'-11"	13'-10"
		16	22'-11"	20'-0"	18'-2"	15'-11"	19'-5" f	17'-6"	15'-11"	13'-10"	16'-10" f	15'-11"	14'-5"	12'-7"
		24	19'-5" f	17'-6"	15'-11"	13'-10"	15'-10" f	15'-3"	13'-10"	12'-1"	13'-9" f	13'-9" f	12'-7"	10'-11"
	600VS125-30	*12*	31'-10" f	29'-5"	26'-9"	23'-4"	26'-0" f	25'-8"	23'-4"	20'-5"	22'-6" f	22'-7" f	21'-3"	18'-6"
		16	27'-7" f	26'-9"	24'-3"	21'-3"	22'-6" f	22'-7" f	21'-3"	18'-6"	19'-6" f	19'-6" f	19'-3"	16'-10"
		24	22'-6" f	22'-7" f	21'-3"	18'-6"	18'-5" f	18'-5" f	18'-5" f	16'-2"	15'-11" f	15'-11" f	15'-11" f	14'-8"

"f" - flexure controls; "w" - web crippling controls; no letter next to number means deflection controls

See notes on page 10.

Table 3 – *ViperStud*® Limiting Heights Established from Composite Wall Analysis (continued)

Maximum allowable wall height (feet-inches) for the transverse uniform design load indicated (psf)

Member (name)	Section ID XXXVS125-XX	Spacing (in. o.c.)	*5 psf*				*7.5 psf*				*10 psf*			
			L/120 [6]	L/180	L/240	L/360	L/120 [6]	L/180	L/240	L/360	L/120 [6]	L/180	L/240	L/360
VIPER 33mil	162VS125-33	***12***	14'-11"	13'-0"	11'-10"	10'-4"	13'-0"	11'-4"	10'-4"	8'-10"	11'-10"	10'-4"	9'-4"	7'-11"
		16	13'-6"	11'-10"	10'-9"	9'-4"	11'-10"	10'-4"	9'-4"	7'-11"	10'-9"	9'-4"	8'-4"	--
		24	11'-10"	10'-4"	9'-4"	7'-11"	10'-4"	8'-10"	7'-11"	--	9'-4"	7'-11"	--	--
	250VS125-33	***12***	19'-4"	16'-10"	15'-4"	13'-5"	16'-10"	14'-9"	13'-5"	11'-8"	15'-4"	13'-5"	12'-2"	10'-8"
		16	17'-7"	15'-4"	13'-11"	12'-2"	15'-4"	13'-5"	12'-2"	10'-8"	13'-11"	12'-2"	11'-0"	9'-8"
		24	15'-4"	13'-5"	12'-2"	10'-8"	13'-5"	11'-8"	10'-8"	9'-2"	12'-0" f	10'-8"	9'-8"	8'-2"
	362VS125-33	***12***	23'-10"	20'-10"	18'-11"	16'-6"	20'-10"	18'-2"	16'-6"	14'-5"	18'-11"	16'-6"	15'-0"	13'-1"
		16	21'-8"	18'-11"	17'-2"	15'-0"	18'-11"	16'-6"	15'-0"	13'-1"	17'-2"	15'-0"	13'-8"	11'-10"
		24	18'-11"	16'-6"	15'-0"	13'-1"	16'-6" f	14'-5"	13'-1"	11'-4"	14'-4" f	13'-1"	11'-10"	10'-3"
	400VS125-33	***12***	25'-8"	22'-5"	20'-4"	17'-10"	22'-5"	19'-7"	17'-10"	15'-7"	20'-4"	17'-10"	16'-2"	14'-1"
		16	23'-4"	20'-4"	18'-6"	16'-2"	20'-4"	17'-10"	16'-2"	14'-1"	18'-4" f	16'-2"	14'-8"	12'-10"
		24	20'-4"	17'-10"	16'-2"	14'-1"	17'-3" f	15'-7"	14'-1"	12'-4"	15'-0" f	14'-1"	12'-10"	11'-2"
	600VS125-33	***12***	34'-5" f	30'-4"	27'-7"	24'-1"	28'-1" f	26'-7"	24'-1"	21'-1"	24'-4" f	24'-1"	21'-11"	19'-2"
		16	29'-10" f	27'-7"	25'-1"	21'-11"	24'-4" f	24'-1"	21'-11"	19'-2"	21'-1" f	21'-1" f	19'-11"	17'-5"
		24	24'-4" f	24'-1"	21'-11"	19'-2"	19'-11" f	19'-11" f	19'-2"	16'-9"	17'-2" f	17'-3" f	17'-2" f	15'-2"

"f" - flexure controls; "w" - web crippling controls; no letter next to number means deflection controls

See notes on page 10.

Notes for Table 3:

1. Limiting heights are based on a single layer of 5/8" thick Type X gypsum wallboard (GWB) installed full height on both faces of the wall with the panel length vertically oriented. #6 x 3/4" drywall screws shall be located 1-1/2" from all stud and track ends and are spaced as follows:

Stud Spacing	GWB Fastener Spacing in	
	Stud	Track
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.

2. Limiting heights are governed by the lesser of the shear strength, web crippling strength, flexural strength, or the deflection limit indicated in the table.
    a. No wall heights are limited by shear or web crippling.
    b. A designation of (f) indicates that a wall height is limited by flexural strength.
    c. All remaining wall heights are limited by deflection.
3. Limiting heights based on deflection of composite wall panels are achieved by testing with successive incremental loadings applied at L/360, L/240, and L/120 deflection limits in accordance with ICC-ES AC86.
4. Wall heights that exceed 95% of the maximum allowable height and are limited by flexural strength, designated with an (f) in Table 3, shall not have a horizontal drywall joint within the middle 1/3 of the overall height.
5. For construction governed by the FBC High Velocity Hurricane Zone (HVHZ), the wall height is limited to the height at the L/180 deflection level (L/120 is not permitted).

Table 4 – *ViperStud*® Section Properties

Member (name)	Section ID	mil Thickness (mils)	Design Thickness (in)	Minimum Thickness (in)	Yield Stress (ksi)	Weight (lb/ft)	Gross					Effective		Moments			
							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 M_a (in-k)	Local Buckling Nominal Moment[2,4] M_{nl} (in-k)	Distortional Buckling Nominal Moment[2,4] M_{nd} (in-k)	Critical Unbraced Length[7] L_u (in)
Viper25	162VS125-15	15	0.0155	0.0147	50	0.242	0.071	0.0320	0.671	0.0151	0.461	0.0322	0.0258	0.713	1.42	1.20*	25.1
	250VS125-15	15	0.0155	0.0147	50	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[5]	15	0.0155	0.0147	50	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[5]	15	0.0155	0.0147	50	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[6]	15	0.0155	0.0147	50	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	0.0205	0.1950	57	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	0.0205	0.1950	57	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	0.0205	0.1950	57	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	0.0220	0.0209	57	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[6]	21	0.0220	0.0209	57	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	0.0283	0.0269	33	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	0.0283	0.0269	33	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	0.0283	0.0269	33	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	0.0283	0.0269	33	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	27	0.0283	0.0269	33	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	0.0312	0.0296	33	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	0.0312	0.0296	33	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	0.0312	0.0296	33	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	0.0312	0.0296	33	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	0.0312	0.0296	33	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	0.0346	0.0329	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	0.0346	0.0329	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	0.0346	0.0329	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	0.0346	0.0329	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	0.0346	0.0329	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

See notes on next page.

Notes for Table 4:

1. Viper25 and Viper20 nominal moments exceed conventional stud nominal moments in all cases
2. Nominal Moments for Viper25 and Viper20 are based on testing. Allowable moment (Ma) is calculated with safety factor of 1.81 in accordance with chapter F of AISI S100-07 specification.
3. Nominal moment for Viper 27mil, Viper 30mil, Viper 33mil, and conventional studs are based on calculations per AISI S100-07. Allowable moments (Ma) can be calculated with a 1.67 safety factor.
4. Section properties are in accordance with AISI S100-07. Viper25 and Viper20 section properties are based on testing.
5. Web depth-to-thickness ratio exceeds 200.
6. Web depth-to-thickness ratio exceeds 260.
7. ViperStud is considered fully braced when the unbraced length is less than listed Lu.
8. KΦ assumed to be zero for distortional buckling moments.

* Indicates the least value of either local or distortional buckling.

Table 5 – *ViperStud*® Limiting Heights Established from Fully Braced [4] Non-Composite Wall Analysis

Member (name)	Section ID XXXVS125-XX	L_u (in.)	Spacing (in. o.c.)	*5 psf*				*7.5 psf*				*10 psf*			
				L/120 [8]	L/180	L/240	L/360	L/120 [8]	L/180	L/240	L/360	L/120 [8]	L/180	L/240	L/360
VIPER25	162VS125-15	25.1	*12*	9'-5" f	8'-4"	7'-6"	6'-7"	7'-8" f	7'-2"	6'-7"	--	6'-7" f	6'-7"	6'-0"	--
			16	8'-1" f	7'-6"	6'-10"	6'-0"	6'-7" f	6'-7"	6'-0"	--	--	--	--	--
			24	6'-7" f	6'-7"	6'-0"	--	--	--	--	--	--	--	--	--
	250VS125-15	24.8	*12*	12'-6" f	11'-7"	10'-7"	9'-2"	10'-2" f	10'-2"	9'-2"	8'-1"	8'-10" f	8'-10" f	8'-5"	7'-4"
			16	10'-10" f	10'-7"	9'-7"	8'-5"	8'-10" f	8'-10" f	8'-5"	7'-4"	7'-8" f	7'-8" f	7'-7"	6'-8"
			24	8'-10" f	8'-10" f	8'-5"	7'-4"	7'-1" w	7'-1" w	7'-1" w	6'-5"	--	--	--	--
	362VS125-15	24.5	*12*	14'-7" f	14'-7" f	13'-11"	12'-1"	11'-11" f	11'-11" f	11'-11" f	10'-7"	10'-4" f	10'-4" f	10'-4" f	9'-7"
			16	12'-8" f	12'-8" f	12'-7"	11'-0"	10'-4" f	10'-4" f	10'-4" f	9'-7"	9'-0" f	9'-0" f	9'-0" f	8'-10"
			24	10'-4" f	10'-4" f	10'-4" f	9'-7"	8'-5" f	8'-5" f	8'-5" f	8'-5"	6'-7" w	6'-7" w	6'-7" w	6'-7" w
	400VS125-15	24.4	*12*	15'-0" f	15'-0" f	15'-0"	13'-1"	12'-4" f	12'-4" f	12'-4" f	11'-5"	10'-7" f	10'-7" f	10'-7" f	10'-5"
			16	13'-0" f	13'-0" f	13'-0" f	11'-11"	10'-7" f	10'-7" f	10'-7" f	10'-5"	9'-2" f	9'-2" f	9'-2" f	9'-2" f
			24	10'-7" f	10'-7" f	10'-7" f	10'-5"	8'-6" w	8'-6" w	8'-6" w	8'-6" w	6'-5" w	6'-5" w	6'-5" w	6'-5" w
	600VS125-15	23.7	*12*	17'-8" f	17'-8" f	17'-8" f	17'-7"	14'-1" w	14'-1" w	14'-1" w	14'-1" w	10'-7" w	10'-7" w	10'-7" w	10'-7" w
			16	15'-5" f	15'-5" f	15'-5" f	15'-5" f	10'-7" w	10'-7" w	10'-7" w	10'-7" w	7'-11" w	7'-11" w	7'-11" w	7'-11" w
			24	10'-7" w	10'-7" w	10'-7" w	10'-7" w	7'-0" w	7'-0" w	7'-0" w	7'-0" w	--	--	--	--

"f" - flexure controls; "w" - web crippling controls; no letter next to number means deflection controls

See notes on page 18.

Table 5 – *ViperStud*® Limiting Heights Established from Fully Braced [4] Non-Composite Wall Analysis (continued)

Member (name)	Section ID XXXVS125-XX	L_u (in.)	Spacing (in. o.c.)	*5 psf*				*7.5 psf*				*10 psf*			
				L/120 [8]	L/180	L/240	L/360	L/120 [8]	L/180	L/240	L/360	L/120 [8]	L/180	L/240	L/360
VIPER20	162VS125-20	23.4	*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" f	6'-11"	6'-4"	--
			24	8'-8"	7'-7"	6'-11"	6'-0"	7'-2" f	6'-7"	6'-0"	--	6'-4" f	6'-0"	--	--
	250VS125-20	23.1	*12*	15'-0"	13'-1"	11'-11"	10'-5"	13'-1"	11'-6"	10'-5"	9'-1"	11'-8" f	10'-5"	9'-6"	8'-4"
			16	13'-7"	11'-11"	10'-10"	9'-6"	11'-8" f	10'-5"	9'-6"	8'-4"	10'-1" f	9'-6"	8'-7"	7'-6"
			24	11'-8" f	10'-5"	9'-6"	8'-4"	9'-6" f	9'-1"	8'-4"	7'-2"	8'-4" f	8'-4"	7'-6"	6'-7"
	362VS125-20	22.8	*12*	19'-6" f	17'-4"	15'-10"	13'-10"	15'-11" f	15'-1"	13'-10"	12'-0"	13'-10" f	13'-10"	12'-6"	10'-11"
			16	16'-11" f	15'-10"	14'-4"	12'-6"	13'-10" f	13'-10"	12'-6"	10'-11"	11'-11" f	11'-11" f	11'-5"	9'-11"
			24	13'-10" f	13'-10"	12'-6"	10'-11"	11'-2" f	11'-2" f	10'-11"	9'-6"	9'-8" f	9'-8" f	9'-8" f	8'-8"
	400VS125-21	22.7	*12*	21'-6"	18'-8"	17'-0"	14'-11"	18'-1" f	16'-5"	14'-11"	13'-0"	15'-8" f	14'-11"	13'-6"	11'-10"
			16	19'-2" f	17'-0"	15'-6"	13'-6"	15'-8" f	14'-11"	13'-6"	11'-10"	13'-7" f	13'-6"	12'-4"	10'-8"
			24	15'-8" f	14'-11"	13'-6"	11'-10"	12'-10" f	12'-10" f	11'-10"	10'-4"	11'-1" f	11'-1" f	10'-8"	9'-5"
	600VS125-21	22	*12*	26'-0" f	24'-10"	22'-6"	19'-8"	21'-2" f	21'-2" f	19'-8"	17'-2"	18'-5" f	18'-5" f	17'-11"	15'-7"
			16	22'-6" f	22'-6" f	20'-5"	17'-11"	18'-5" f	18'-5" f	17'-11"	15'-7"	15'-11" f	15'-11" f	15'-11" f	14'-2"
			24	18'-5" f	18'-5" f	17'-11"	15'-7"	15'-0" f	15'-0" f	15'-0" f	13'-7"	12'-1" w	12'-1" w	12'-1" w	12'-1" w

"f" - flexure controls; "w" - web crippling controls; no letter next to number means deflection controls

See notes on page 18.

Table 5 – *ViperStud*® Limiting Heights Established from Fully Braced [4] Non-Composite Wall Analysis (continued)

Member (name)	Section ID XXXVS125-XX	L_u (in.)	Spacing (in. o.c.)	*5 psf*				*7.5 psf*				*10 psf*			
				L/120 [8]	L/180	L/240	L/360	L/120 [8]	L/180	L/240	L/360	L/120 [8]	L/180	L/240	L/360
VIPER 27mil	162VS125-27	31.2	*12*	11'-5"	9'-11"	9'-0"	7'-11"	9'-11"	8'-8"	7'-11"	6'-11"	8'-10" f	7'-11"	7'-2"	6'-4"
			16	10'-4"	9'-0"	8'-2"	7'-2"	8'-10" f	7'-11"	7'-2"	6'-4"	7'-7" f	7'-2"	6'-6"	--
			24	8'-10" f	7'-11"	7'-2"	6'-4"	7'-2" f	6'-11"	6'-4"	--	6'-2" f	6'-2" f	--	--
	250VS125-27	30.2	*12*	15'-8"	13'-8"	12'-6"	10'-11"	13'-5" f	12'-0"	10'-11"	9'-6"	11'-7" f	10'-11"	9'-11"	8'-7"
			16	14'-2" f	12'-6"	11'-4"	9'-11"	11'-7" f	10'-11"	9'-11"	8'-7"	10'-1" f	9'-11"	9'-0"	7'-11"
			24	11'-7" f	10'-11"	9'-11"	8'-7"	9'-6" f	9'-6" f	8'-7"	7'-7"	8'-2" f	8'-2" f	7'-11"	6'-11"
	362VS125-27	29.8	*12*	19'-10" f	18'-4"	16'-7"	14'-6"	16'-1" f	16'-0"	14'-6"	12'-8"	14'-0" f	14'-0" f	13'-2"	11'-6"
			16	17'-1" f	16'-7"	15'-1"	13'-2"	14'-0" f	14'-0" f	13'-2"	11'-6"	12'-1" f	12'-1" f	12'-0"	10'-6"
			24	14'-0" f	14'-0" f	13'-2"	11'-6"	11'-5" f	11'-5" f	11'-5" f	10'-1"	9'-11" f	9'-11" f	9'-11" f	9'-1"
	400VS125-27	29.6	*12*	20'-11" f	19'-8"	17'-11"	15'-8"	17'-0" f	17'-0" f	15'-8"	13'-8"	14'-8" f	14'-8" f	14'-2"	12'-5"
			16	18'-1" f	17'-11"	16'-4"	14'-2"	14'-8" f	14'-8" f	14'-2"	12'-5"	12'-10" f	12'-10" f	12'-10" f	11'-4"
			24	14'-8" f	14'-8" f	14'-2"	12'-5"	12'-0" f	12'-0" f	12'-0" f	10'-11"	10'-5" f	10'-5" f	10'-5" f	9'-11"
	600VS125-27	28.8	*12*	26'-2" f	26'-2" f	24'-5"	21'-4"	21'-5" f	21'-5" f	21'-4"	18'-7"	18'-6" f	18'-6" f	18'-6" f	16'-11"
			16	22'-8" f	22'-8" f	22'-1"	19'-4"	18'-6" f	18'-6" f	18'-6" f	16'-11"	15'-4" w	15'-4" w	15'-4" w	15'-4" w
			24	18'-6" f	18'-6" f	18'-6" f	16'-11"	13'-7" w	13'-7" w	13'-7" w	13'-7" w	10'-2" w	10'-2" w	10'-2" w	10'-2" w

"f" - flexure controls; "w" - web crippling controls; no letter next to number means deflection controls

See notes on page 18.

Table 5 – *ViperStud*® Limiting Heights Established from Fully Braced [4] Non-Composite Wall Analysis (continued)

Member (name)	Section ID XXXVS125-XX	L_u (in.)	Spacing (in. o.c.)	*5 psf*				*7.5 psf*				*10 psf*			
				L/120 [8]	L/180	L/240	L/360	L/120 [8]	L/180	L/240	L/360	L/120 [8]	L/180	L/240	L/360
VIPER 30mil	162VS125-30	31.3	*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" f	7'-5"	6'-8"	--
			24	9'-4"	8'-1"	7'-5"	6'-6"	7'-8" f	7'-1"	6'-6"	--	6'-7" f	6'-6"	--	--
	250VS125-30	30.1	*12*	16'-2"	14'-2"	12'-11"	11'-4"	14'-2"	12'-5"	11'-4"	9'-10"	12'-5" f	11'-4"	10'-2"	8'-11"
			16	14'-8"	12'-11"	11'-8"	10'-2"	12'-5" f	11'-4"	10'-2"	8'-11"	10'-8" f	10'-2"	9'-4"	8'-1"
			24	12'-5" f	11'-4"	10'-2"	8'-11"	10'-1" f	9'-10"	8'-11"	7'-10"	8'-10" f	8'-10" f	8'-1"	7'-1"
	362VS125-30	29.7	*12*	21'-4" f	18'-11"	17'-2"	15'-0"	17'-5" f	16'-6"	15'-0"	13'-1"	15'-0" f	15'-0"	13'-7"	11'-11"
			16	18'-5" f	17'-2"	15'-7"	13'-7"	15'-0" f	15'-0"	13'-7"	11'-11"	13'-0" f	13'-0" f	12'-5"	10'-10"
			24	15'-0" f	15'-0"	13'-7"	11'-11"	12'-4" f	12'-4" f	11'-11"	10'-5"	10'-7" f	10'-7" f	10'-7" f	9'-5"
	400VS125-30	29.6	*12*	22'-6" f	20'-5"	18'-6"	16'-2"	18'-4" f	17'-10"	16'-2"	14'-1"	15'-11" f	15'-11" f	14'-8"	12'-11"
			16	19'-5" f	18'-6"	16'-10"	14'-8"	15'-11" f	15'-11" f	14'-8"	12'-11"	13'-8" f	13'-8" f	13'-5"	11'-8"
			24	15'-11" f	15'-11" f	14'-8"	12'-11"	13'-0" f	13'-0" f	12'-11"	11'-2"	11'-2" f	11'-2" f	11'-2" f	10'-2"
	600VS125-30	28.7	*12*	28'-2" f	27'-10"	25'-4"	22'-1"	23'-0" f	23'-0" f	22'-1"	19'-4"	19'-11" f	19'-11" f	19'-11" f	17'-6"
			16	24'-5" f	24'-5" f	23'-0"	20'-1"	19'-11" f	19'-11" f	19'-11" f	17'-6"	17'-2" f	17'-2" f	17'-2" f	15'-11"
			24	19'-11" f	19'-11" f	19'-11" f	17'-6"	16'-4" f	16'-4" f	16'-4" f	15'-4"	12'-5" w	12'-5" w	12'-5" w	12'-5" w

"f" - flexure controls; "w" - web crippling controls; no letter next to number means deflection controls

See notes on page 18.

Table 5 – *ViperStud*® Limiting Heights Established from Fully Braced [4] Non-Composite Wall Analysis (continued)

Member (name)	Section ID XXXVS125-XX	L_u (in.)	Spacing (in. o.c.)	*5 psf*				*7.5 psf*				*10 psf*			
				L/120 [8]	L/180	L/240	L/360	L/120 [8]	L/180	L/240	L/360	L/120 [8]	L/180	L/240	L/360
VIPER 33mil	162VS125-33	31.3	*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" f	7'-7"	6'-11"	6'-1"
			24	9'-7"	8'-5"	7'-7"	6'-8"	8'-2" f	7'-4"	6'-8"	--	7'-1" f	6'-8"	6'-1"	--
	250VS125-33	30.1	*12*	16'-10"	14'-8"	13'-4"	11'-7"	14'-8"	12'-10"	11'-7"	10'-2"	13'-4" f	11'-7"	10'-7"	9'-2"
			16	15'-4"	13'-4"	12'-1"	10'-7"	13'-4" f	11'-7"	10'-7"	9'-2"	11'-6" f	10'-7"	9'-7"	8'-5"
			24	13'-4" f	11'-7"	10'-7"	9'-2"	10'-10" f	10'-2"	9'-2"	8'-1"	9'-5" f	9'-2"	8'-5"	7'-4"
	362VS125-33	29.7	*12*	22'-5"	19'-7"	17'-10"	15'-6"	18'-10" f	17'-1"	15'-6"	13'-7"	16'-4" f	15'-6"	14'-1"	12'-4"
			16	19'-11" f	17'-10"	16'-1"	14'-1"	16'-4" f	15'-6"	14'-1"	12'-4"	14'-1" f	14'-1" f	12'-10"	11'-2"
			24	16'-4" f	15'-6"	14'-1"	12'-4"	13'-4" f	13'-4" f	12'-4"	10'-10"	11'-6" f	11'-6" f	11'-2"	9'-10"
	400VS125-33	29.5	*12*	24'-2"	21'-1"	19'-2"	16'-10"	19'-10" f	18'-6"	16'-10"	14'-7"	17'-2" f	16'-10"	15'-2"	13'-4"
			16	21'-0" f	19'-2"	17'-5"	15'-2"	17'-2" f	16'-10"	15'-2"	13'-4"	14'-11" f	14'-11" f	13'-10"	12'-1"
			24	17'-2" f	16'-10"	15'-2"	13'-4"	14'-0" f	14'-0" f	13'-4"	11'-7"	12'-1" f	12'-1" f	12'-1"	10'-7"
	600VS125-33	28.6	*12*	30'-5" f	28'-11"	26'-4"	23'-0"	24'-10" f	24'-10" f	23'-0"	20'-1"	21'-6" f	21'-6" f	20'-11"	18'-2"
			16	26'-4" f	26'-4"	23'-11"	20'-11"	21'-6" f	21'-6" f	20'-11"	18'-2"	18'-7" f	18'-7" f	18'-7" f	16'-7"
			24	21'-6" f	21'-6" f	20'-11"	18'-2"	17'-6" f	17'-6" f	17'-6" f	15'-11"	15'-2" f	15'-2" f	15'-2" f	14'-6"

"f" - flexure controls; "w" - web crippling controls; no letter next to number means deflection controls

See notes on page 18.

Notes for Table 5:

1. Limiting heights are in accordance with AISI S100-07 using all steel non-composite design.
2. Limiting heights are established by considering flexure, shear, web crippling, and deflection.
3. For bending, studs are assumed to be adequately braced to develop full allowable moment. Studs are considered fully braced when unbraced length is less than Lu. See section properties table for Lu values.
4. Viper25 and Viper20 distortional, local buckling moments and stiffness are based on testing.
5. For web crippling, when h/t ≤ 200, the web crippling values are computed based on section C3.4.1 of AISI S100-07. When h/t > 200, the web crippling values are based on tested with a bearing length of 1".
6. No web stiffeners are required for limiting heights reported in the table.
7. For construction governed by the FBC High Velocity Hurricane Zone (HVHZ), the wall height is limited to the height at the L/180 deflection level (L/120 is not permitted).

Table 6 – *ViperStud*® Limiting Heights Established from an Analysis of Non-Composite Walls Braced 4 ft o.c.

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

"f" - flexure controls; "w" - web crippling controls; no letter next to number means deflection controls

See notes on page 24.

Table 6 – *ViperStud*® Limiting Heights Established from an Analysis of Non-Composite Walls Braced 4 ft o.c. (continued)

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

"f" - flexure controls; "w" - web crippling controls; no letter next to number means deflection controls

See notes on page 24.

Table 6 – *ViperStud*® Limiting Heights Established from an Analysis of Non-Composite Walls Braced 4 ft o.c. (continued)

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

"f" - flexure controls; "w" - web crippling controls; no letter next to number means deflection controls

See notes on page 24.

Table 6 – *ViperStud*® Limiting Heights Established from an Analysis of Non-Composite Walls Braced 4 ft o.c. (continued)

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

"f" - flexure controls; "w" - web crippling controls; no letter next to number means deflection controls

See notes on page 24.

Table 6 – *ViperStud*® Limiting Heights Established from an Analysis of Non-Composite Walls Braced 4 ft o.c. (continued)

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

"f" - flexure controls; "w" - web crippling controls; no letter next to number means deflection controls

See notes on page 24.

Notes for Table 6:

1. Limiting heights are in accordance with AISI S100-07 using all steel non-composite design.
2. Limiting heights are established by considering flexure, shear, web crippling, and deflection.
3. Lateral-Torsional buckling moments are based on section C3.1.2.1 of AISI S100-07, with max discrete bracing of 48" o.c.
4. For web crippling, when h/t ≤ 200, the web crippling values are computed based on section C3.4.1 of AISI S100-07. When h/t > 200, the web crippling values are based on tested with a bearing length of 1".
5. No web stiffeners are required for limiting heights reported in the table.
6. For construction governed by the FBC High Velocity Hurricane Zone (HVHZ), the wall height is limited to the height at the L/180 deflection level (L/120 is not permitted).

Table 7 – *ViperStud*® Allowable Ceiling Spans

L/240			4 psf Lateral Support of Compression Flange						6 psf Lateral Support of Compression Flange					
			Unsupported[5] Joist Spacing (in) o.c.			Midspan[5] Joist Spacing (in) o.c.			Unsupported[5] Joist Spacing (in) o.c.			Midspan[5] Joist Spacing (in) o.c.		
Member Name	Designation XXXVS125-XX	F_y (ksi)	12	16	24	12	16	24	12	16	24	12	16	24
VIPER25	162VS125-15	50	7'-3" f	6'-9" f	6'-0" f	8'-1"	7'-4"	6'-5"	6'-6" f	6'-0" f	5'-5" f	7'-1"	6'-5"	5'-7"
	250VS125-15	50	8'-2" f	7'-7" f	6'-10" f	11'-3" f	10'-4"	9'-0" f	7'-4" f	6'-10" f	6'-2" f	10'-0"	9'-0" f	7'-8" f
	362VS125-15	50	9'-1" f	8'-6" f	7'-8" f	12'-0" f	11'-0" f	9'-9" f	8'-3" f	7'-8" f	6'-11" f	10'-8" f	9'-9" f	8'-5" f
	400VS125-15	50	9'-5" f	8'-9" f	7'-10" f	12'-5" f	11'-4" f	10'-0" f	8'-6" f	7'-10" f	7'-1" f	11'-0" f	10'-0" f	8'-9" f
	600VS125-15	50	10'-8" f	9'-11" f	8'-11" f	14'-4" f	13'-2" f	11'-8" f	9'-7" f	8'-11" f	8'-1" f	12'-9" f	11'-8" f	8'-10" w
VIPER20	162VS125-20	57	7'-10" f	7'-3" f	6'-6" f	9'-4"	8'-6"	7'-5"	7'-1" f	6'-6" f	5'-10" f	8'-2"	7'-5"	6'-6"
	250VS125-20	57	8'-10" f	8'-2" f	7'-4" f	12'-4" f	11'-4" f	10'-2" f	7'-11" f	7'-4" f	6'-7" f	11'-0" f	10'-2" f	8'-11"
	362VS125-20	57	9'-10" f	9'-1" f	8'-2" f	13'-6" f	12'-4" f	10'-11" f	8'-10" f	8'-2" f	7'-5" f	11'-11" f	10'-11" f	9'-8" f
	400VS125-22	57	10'-4" f	9'-7" f	8'-7" f	14'-4" f	13'-2" f	11'-7" f	9'-3" f	8'-7" f	7'-9" f	12'-8" f	11'-7" f	10'-3" f
	600VS125-22	57	11'-8" f	10'-10" f	9'-9" f	16'-6" f	15'-3" f	13'-7" f	10'-6" f	9'-9" f	8'-9" f	14'-9" f	13'-7" f	12'-0" f
VIPER 27mil	162VS125-27	33	8'-11" f	8'-3" f	7'-4" f	9'-9"	8'-10"	7'-9"	8'-0" f	7'-4" f	6'-7" f	8'-6"	7'-9"	6'-9"
	250VS125-27	33	10'-0" f	9'-2" f	8'-3" f	13'-6"	12'-3"	10'-9"	8'-11" f	8'-3" f	7'-5" f	11'-10"	10'-9"	9'-4"
	362VS125-27	33	11'-0" f	10'-2" f	9'-2" f	15'-6" f	14'-4" f	12'-9" f	9'-10" f	9'-2" f	8'-3" f	13'-10" f	12'-9" f	11'-4" f
	400VS125-27	33	11'-4" f	10'-6" f	9'-5" f	15'-11" f	14'-9" f	13'-1" f	10'-2" f	9'-5" f	8'-6" f	14'-3" f	13'-1" f	11'-8" f
	600VS125-27	33	12'-9" f	11'-10" f	10'-8" f	18'-4" f	16'-11" f	15'-2" f	11'-6" f	10'-8" f	9'-7" f	16'-5" f	15'-2" f	13'-7" f
VIPER 30mil	162VS125-30	33	9'-4" f	8'-7" f	7'-8" f	10'-1"	9'-2"	8'-0"	8'-4" f	7'-8" f	6'-10" f	8'-10"	8'-0"	7'-0"
	250VS125-30	33	10'-4" f	9'-6" f	8'-6" f	13'-11"	12'-8"	11'-1"	9'-2" f	8'-6" f	7'-7" f	12'-2"	11'-1"	9'-8"
	362VS125-30	33	11'-4" f	10'-6" f	9'-5" f	16'-0" f	14'-10" f	13'-3" f	10'-2" f	9'-5" f	8'-6" f	14'-4" f	13'-3" f	11'-9" f
	400VS125-30	33	11'-8" f	10'-10" f	9'-8" f	16'-5" f	15'-2" f	13'-7" f	10'-6" f	9'-8" f	8'-9" f	14'-9" f	13'-7" f	12'-1" f
	600VS125-30	33	13'-1" f	12'-2" f	10'-11" f	18'-10" f	17'-6" f	15'-8" f	11'-9" f	10'-11" f	9'-10" f	16'-11" f	15'-8" f	14'-1" f
VIPER 33mil	162VS125-33	33	9'-9" f	8'-11" f	7'-11" f	10'-5"	9'-5"	8'-3"	8'-8" f	7'-11" f	7'-1" f	9'-1"	8'-3"	7'-3"
	250VS125-33	33	10'-9" f	9'-10" f	8'-10" f	14'-5"	13'-1"	11'-5"	9'-7" f	8'-10" f	7'-11" f	12'-7"	11'-5"	10'-0"
	362VS125-33	33	11'-9" f	10'-11" f	9'-9" f	16'-7" f	15'-4" f	13'-9" f	10'-7" f	9'-9" f	8'-9" f	14'-10" f	13'-9" f	12'-2" f
	400VS125-33	33	12'-1" f	11'-2" f	10'-0" f	17'-0" f	15'-8" f	14'-1" f	10'-10" f	10'-0" f	9'-0" f	15'-3" f	14'-1" f	12'-7" f
	600VS125-33	33	13'-6" f	12'-6" f	11'-3" f	19'-5" f	18'-0" f	16'-3" f	12'-2" f	11'-3" f	10'-1" f	17'-6" f	16'-3" f	14'-6" f

"f" - flexure controls; "w" - web crippling controls; no letter next to number means deflection controls

See notes on page 27.

Table 7 – *ViperStud*® Allowable Ceiling Spans (continued)

L/360			4 psf Lateral Support (Bracing) of Compression Flange						6 psf Lateral Support (Bracing) of Compression Flange					
Member Name	Designation XXXVS125-XX	F_y (ksi)	Unsupported[5] Joist Spacing (in) o.c.			Midspan[5] Joist Spacing (in) o.c.			Unsupported[5] Joist Spacing (in) o.c.			Midspan[5] Joist Spacing (in) o.c.		
			12	16	24	12	16	24	12	16	24	12	16	24
VIPER25	162VS125-15	50	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	50	8'-2" f	7'-7" f	6'-10" f	10'-0"	9'-0"	7'-11"	7'-4" f	6'-10" f	6'-2" f	8'-8"	7'-11"	6'-11"
	362VS125-15	50	9'-1" f	8'-6" f	7'-8" f	12'-0" f	11'-0" f	9'-9" f	8'-3" f	7'-8" f	6'-11" f	10'-7" f	9'-9" f	8'-5" f
	400VS125-15	50	9'-5" f	8'-9" f	7'-10" f	12'-5" f	11'-4" f	10'-0" f	8'-6" f	7'-10" f	7'-1" f	11'-0" f	10'-0" f	8'-9" f
	600VS125-15	50	10'-8" f	9'-11" f	8'-11" f	14'-4" f	13'-2" f	11'-8" f	9'-7" f	8'-11" f	8'-1" f	12'-9" f	11'-8" f	8'-10" w
VIPER20	162VS125-20	57	7'-10" f	7'-3" f	6'-6"	8'-2"	7'-5"	6'-6"	7'-1" f	6'-6"	5'-8"	7'-2"	6'-6"	5'-8"
	250VS125-20	57	8'-10" f	8'-2" f	7'-4" f	11'-3"	10'-2"	8'-11"	7'-11" f	7'-4" f	6'-7" f	9'-9"	8'-11"	7'-9"
	362VS125-20	57	9'-10" f	9'-1" f	8'-2" f	13'-6" f	12'-4" f	10'-11" f	8'-10" f	8'-2" f	7'-5" f	11'-11" f	10'-11" f	9'-8" f
	400VS125-22	57	10'-4" f	9'-7" f	8'-7" f	14'-4" f	13'-2" f	11'-7" f	9'-3" f	8'-7" f	7'-9" f	12'-8" f	11'-7" f	10'-3" f
	600VS125-22	57	11'-8" f	10'-10" f	9'-9" f	16'-6" f	15'-3" f	13'-7" f	10'-6" f	9'-9" f	8'-9" f	14'-9" f	13'-7" f	12'-0" f
VIPER 27mil	162VS125-27	33	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	33	10'-0" f	9'-2" f	8'-3" f	11'-10"	10'-9"	9'-4"	8'-11" f	8'-3" f	7'-5" f	10'-4"	9'-4"	8'-2"
	362VS125-27	33	11'-0" f	10'-2" f	9'-2" f	15'-6" f	14'-4"	12'-6"	9'-10" f	9'-2" f	8'-3" f	13'-9"	12'-6"	10'-11"
	400VS125-27	33	11'-4" f	10'-6" f	9'-5" f	15'-11" f	14'-9" f	13'-1" f	10'-2" f	9'-5" f	8'-6" f	14'-3" f	13'-1" f	11'-8" f
	600VS125-27	33	12'-9" f	11'-10" f	10'-8" f	18'-4" f	16'-11" f	15'-2" f	11'-6" f	10'-8" f	9'-7" f	16'-5" f	15'-2" f	13'-7" f
VIPER 30mil	162VS125-30	33	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	33	10'-4" f	9'-6" f	8'-6" f	12'-2"	11'-1"	9'-8"	9'-2" f	8'-6" f	7'-7" f	10'-8"	9'-8"	8'-5"
	362VS125-30	33	11'-4" f	10'-6" f	9'-5" f	16'-0" f	14'-9"	12'-11"	10'-2" f	9'-5" f	8'-6" f	14'-2"	12'-11"	11'-3"
	400VS125-30	33	11'-8" f	10'-10" f	9'-8" f	16'-5" f	15'-2" f	13'-7" f	10'-6" f	9'-8" f	8'-9" f	14'-9" f	13'-7" f	12'-1" f
	600VS125-30	33	13'-1" f	12'-2" f	10'-11" f	18'-10" f	17'-6" f	15'-8" f	11'-9" f	10'-11" f	9'-10" f	16'-11" f	15'-8" f	14'-1" f
VIPER 33mil	162VS125-33	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	33	10'-9" f	9'-10" f	8'-10" f	12'-7"	11'-5"	10'-0"	9'-7" f	8'-10" f	7'-11" f	11'-0"	10'-0"	8'-9"
	362VS125-33	33	11'-9" f	10'-11" f	9'-9" f	16'-7" f	15'-3"	13'-4"	10'-7" f	9'-9" f	8'-9" f	14'-8"	13'-4"	11'-8"
	400VS125-33	33	12'-1" f	11'-2" f	10'-0" f	17'-0" f	15'-8" f	14'-1" f	10'-10" f	10'-0" f	9'-0" f	15'-3" f	14'-1" f	12'-7" f
	600VS125-33	33	13'-6" f	12'-6" f	11'-3" f	19'-5" f	18'-0" f	16'-3" f	12'-2" f	11'-3" f	10'-1" f	17'-6" f	16'-3" f	14'-6" f

"f" - flexure controls; "w" - web crippling controls; no letter next to number means deflection controls

See notes on next page.

Notes for Table 7:

1. Ceiling Spans are in accordance with AISI S100-07 using all steel non-composite design.
2. Ceiling Spans are established by considering flexure, shear, web crippling, and deflection.
3. For web crippling, when h/t ≤ 200, the web crippling values are computed based on section C3.4.1 of AISI S100-07. When h/t > 200, the web crippling values are based on testing with a bearing length of 1".
4. No web stiffeners are required for Ceiling Spans reported in the table.
5. All values are for simple spans, with compression flange either unbraced or braced at midspan. All framing members are laterally braced at ends.
6. Ceiling Spans are based on total dead load of assembly only, and do not include storage or live load for accessible ceilings.

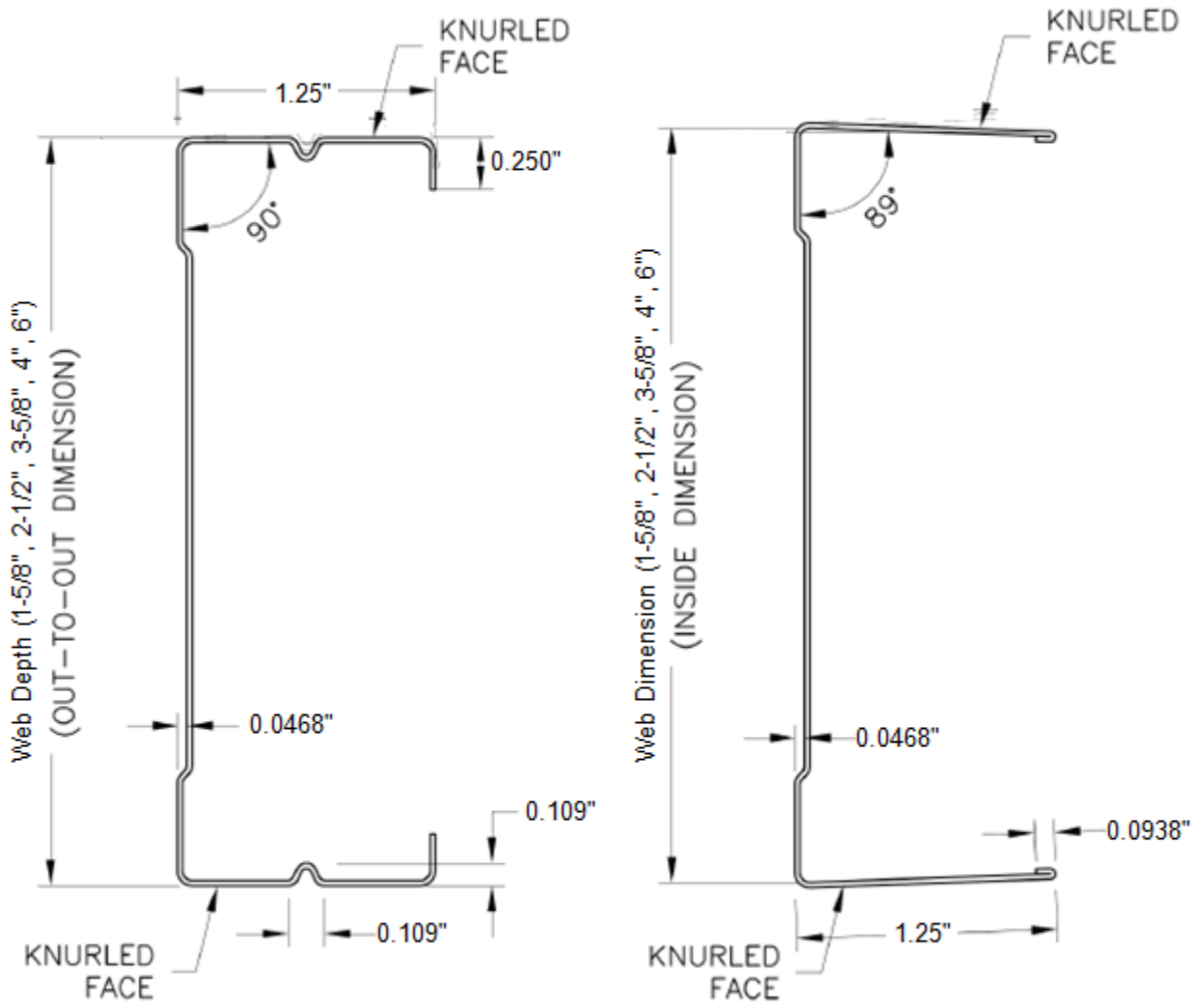

Figure 1 – *ViperStud*® Stud and Track Profiles
(Note: The 0.0938" hem shown for the track profile is only available in the VT25 product.)

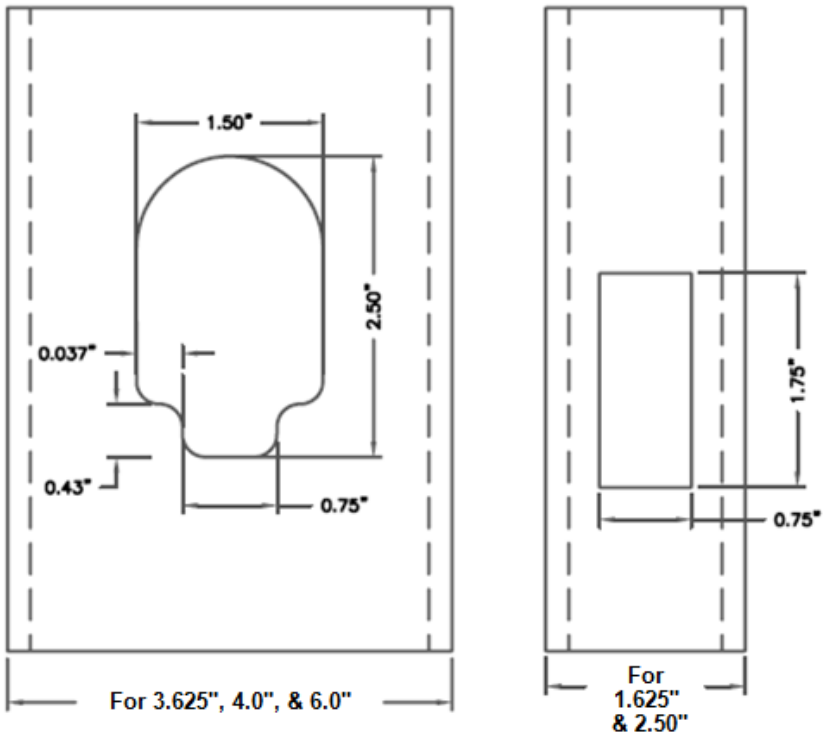

Figure 2 – Marino\WARE's Knockouts

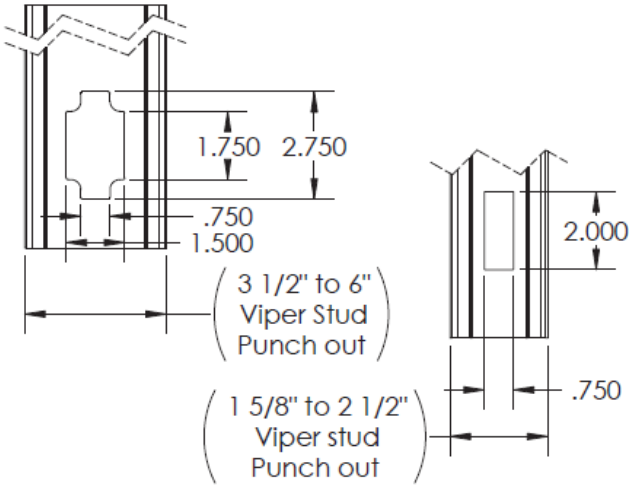

Figure 3 – CEMCO's Knockouts

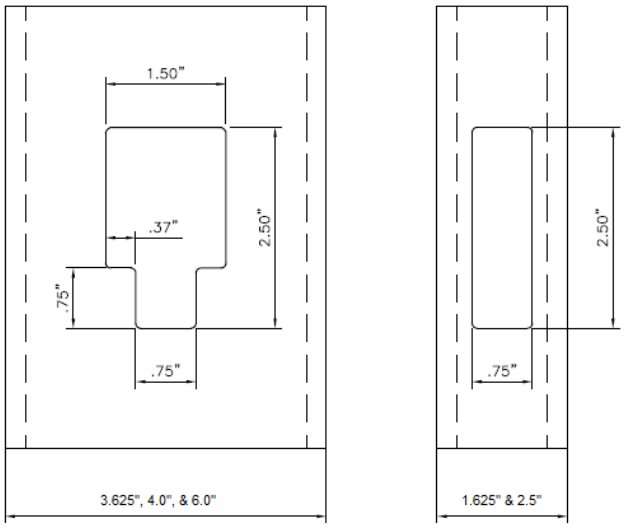

Figure 4 – Telling Industries' Knockouts