



Code Compliance Research Report

CCRR-0154

Subject to Renewal: 04/22/2011
Visit www.archtest.com for current status

Issued: 04/22/2010
Page 1 of 6

Ware Industries, Inc. d/b/a MarinoWARE
400 Metuchen Road
South Plainfield, NJ 07080
(908) 757-9000

www.marinoware.com

Additional Listee:
California Expanded Metal Products
Company (CEMCO)
263 N Covina Lane
City of Industry, CA 91744

1. Subject

ViperStud[®] Cold-Formed Steel Studs and Tracks

2. Research Scope

2.1 Building Codes:

2009 International Building Code (IBC)
2009 International Residential Code (IRC)

2006 International Building Code (IBC)
2006 International Residential Code (IRC)

2003 International Building Code (IBC)
2003 International Residential Code (IRC)

2.2 Properties:

Structural Performance – Interior nonload-bearing drywall partitions

3. Description

3.1 General – *ViperStud*[®] studs and tracks are cold-formed steel framing members used to construct interior nonload-bearing, gypsum board sheathed walls. The *ViperStud*[®] framing system products that are recognized in this report are limited to the products whose designation is found in Table 1.

3.2 *ViperStud*[®] framing members (studs and tracks) are fabricated from Structural Grade 50 Type H (ST50H) in accordance with ASTM A 1003 steel specifications with minimum Galvanization compliant with ASTM A 653.

Exception: Non-Structural *ViperStud*[®] framing has a minimum galvanization coating G40 compliant with ASTM A 653.

3.3 *ViperStud*[®] studs and tracks are available in steel thicknesses of 0.0155", 0.0200", and 0.0245" steel. 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 1 for recognized product designations.

3.4 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 and 3 for each stud depth.

3.5 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.

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

- United States Gypsum (USG)
- Lafarge
- CertainTeed
- American Gypsum
- Temple-Inland.

4. Performance

4.1 Allowable wall heights for interior nonload-bearing walls are shown in Table 1.

4.2 For walls governed by the 2003 or 2006 IBC or IRC, framing designated "Non-Structural" are limited to use where the transverse design load does not exceed 5 psf.

4.3 Nonload-bearing wall heights are determined by the lesser of the limiting conditions which include wall deflection, flexural strength or shear and web crippling of the stud.

5. 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 shall be installed full height on both faces of the wall either horizontally or vertically. Fasteners shall be located 1-1/2" from all stud and track ends and spaced 12" o.c. throughout all framing. See notes with Table 1 for limitations on location of horizontal wallboard joints.

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

6. Supporting Evidence

6.1 Manufacturer's drawings and installation instructions.

6.2 Reports of testing and engineering analysis in accordance with ICC-ES Acceptance Criteria for Steel Studs and Gypsum-Board Interior Nonload-Bearing Walls -Composite Construction (AC86), effective March 1, 2010.

6.3 Quality control manual in accordance with ICC-ES Acceptance Criteria for Quality Control Manuals, AC10.

7. Conditions 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 Allowable heights and loadings must comply with the tables in this report.

7.2 Studs and tracks must be installed in accordance with this report, the applicable building code and the Manufacturer's installation instructions. Where differences occur between this report and the manufacturer's installation instructions, this report shall govern.

7.3 The MarinoWare and CEMCO ViperStud® Framing identified in this report are manufactured in accordance with the manufacturer's approved quality control system with inspections by Architectural Testing, Inc. (IAS AA-676). See Table 2 for manufacturing locations.

8. Identification

ViperStud® Framing produced in accordance with this report shall be identified with labeling at a maximum spacing of 48 inches that includes the following information:

8.1 The manufacturer's name and/or logo

8.2 The ViperStud® Framing designation, steel thickness, yield strength and the galvanization designation G40, G60 or G90.

8.3 The mark of the independent inspection agency, Architectural Testing, Inc. (IAS AA-676)

8.4 The ATI Code Compliance Research Report Number (CCRR-0154)

9. Code Compliance Research Report Use

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 or manufacturer by ATI.

9.3 Reference to the Architectural Testing internet web site address at www.archtest.com is recommended to ascertain the current version and status of this report.

Table 1 ViperStud® Limiting Heights

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

DEPTH (in)	STUD (DESIGNATION)	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 (162VS)	12	13-7	11-3	9-11	11-10	9-9	8-7	10-9	8-10	----
		16	12-4	10-2	9-0	10-9	8-10	----	9-6	7-11	----
		24	10-9	8-10	----	9-1	----	----	8-0	----	----
	Viper20S (162VSS)	12	13-10	11-4	10-1	12-1	9-11	8-9	11-0	8-11	7-11
		16	12-7	10-4	9-1	11-0	8-11	7-11	9-10	8-1	----
		24	11-0	8-11	7-11	9-4	----	----	8-4	----	----
	Viper20D (162VSX)	12	14-1	11-6	10-2	12-4	10-0	8-11	11-2	9-0	8-1
		16	12-10	10-5	9-3	11-2	9-0	8-1	10-1	8-2	----
		24	11-2	9-0	8-1	9-8	7-10	----	8-7	----	----
2 ¹ / ₂	Viper25 (250VS)	12	16-6 f	15-3	13-4	13-6 f	13-4	11-8	11-8 f	11-8 f	10-6
		16	14-4 f	13-11	12-2	11-8 f	11-8 f	10-6	10-1 f	10-1 f	9-5
		24	11-8 f	11-8 f	10-6	9-6 f	9-6 f	9-0	8-3 f	8-3 f	8-2
	Viper20S (250VSS)	12	19-7	15-6	13-7	17-1	13-7	11-10	15-4 f	12-4	10-8
		16	17-9	14-1	12-4	15-4 f	12-4	10-8	13-4 f	11-2	9-8
		24	15-4 f	12-4	10-8	12-6 f	10-8	9-3	10-10 f	9-8	8-4
	Viper20D (250VSX)	12	19-11	15-9	13-9	17-5	13-9	12-1	15-9	12-6	10-11
		16	18-1	14-4	12-6	15-9	12-6	10-11	14-4	11-5	9-11
		24	15-9	12-6	10-11	13-9 f	10-11	9-6	11-11 f	9-11	8-7
3 ⁵ / ₈	Viper25 (362VS)	12	19-6 f	17-9	15-5	15-11 f	15-6	13-6	13-9 f	13-9 f	12-3
		16	16-10 f	16-2	14-0	13-9 f	13-9 f	12-3	11-11 f	11-11 f	11-0
		24	13-9 f	13-9 f	12-3	11-3 f	11-3 f	10-6	9-9 f	9-9 f	9-4
	Viper20S (362VSS)	12	21-10	18-2	16-1	19-1	15-11	14-1	17-4	14-5	12-9
		16	19-10	16-6	14-8	17-4	14-5	12-9	15-0 f	13-1	11-7
		24	17-4	14-5	12-9	14-2 f	12-7	11-0	12-3 f	11-5	9-9
	Viper20D (362VSX)	12	22-7	18-7	16-9	19-9	16-3	14-7	17-11	14-9	13-3
		16	20-6	16-11	15-2	17-11	14-9	13-3	16-3	13-5	12-1
		24	17-11	14-9	13-3	15-6 f	12-11	11-7	13-5 f	11-9	10-2
4	Viper25 (400VS)	12	20-11	17-8	15-4	17-7 f	15-5	13-5	15-3 f	14-0	12-2
		16	18-8 f	16-1	13-11	15-3 f	14-0	12-2	13-3 f	12-9	10-11
		24	15-3 f	14-0	12-2	12-5 f	12-3	10-5	10-9 f	10-9 f	9-3
	Viper20S (400VSS)	12	22-10	19-0	16-7	20-0	16-7	14-6	18-3	15-1	13-2
		16	20-10	17-3	15-1	18-3	15-1	13-2	16-4 f	13-8	11-11
		24	18-3	15-1	13-2	15-5 f	13-2	11-6	13-4 f	12-0	10-4
	Viper20D (400VSX)	12	23-7	19-10	17-6	20-11	17-4	15-4	19-2	15-10	13-11
		16	21-8	18-1	15-11	19-2	15-10	13-11	17-7	14-5	12-8
		24	19-2	15-10	13-11	16-11	13-11	12-2	14-10 f	12-8	11-1
6	Viper25 (600VS)	12	27-6	22-5	19-11	23-0 f	19-11	17-7	19-11 f	18-3	16-1
		16	24-5 f	20-7	18-3	19-11 f	18-3	16-1	17-3 f	16-8	14-8
		24	19-11 f	18-3	16-1	16-3 f	16-1	14-1	14-1 f	14-1 f	12-10
	Viper20S (600VSS)	12	30-0	24-3	21-5	26-6	21-5	18-10	24-0 f	19-7	17-3
		16	27-6	22-3	19-7	24-0 f	19-7	17-3	20-9 f	17-11	15-9
		24	24-0 f	19-7	17-3	19-7 f	17-3	15-2	17-0 f	15-9	13-9
	Viper20D (600VSX)	12	32-3	25-11	22-10	28-5	22-10	20-1	25-11	20-10	18-3
		16	29-6	23-8	20-10	25-11	20-10	18-3	23-0 f	19-0	16-8
		24	25-11 f	22-10	18-3	21-9 f	18-3	16-1	18-10 f	16-8	14-7



Notes for Tables 1:

1. ViperStud® Designation:

<u>Designation</u>	<u>Min. Base-Metal Thickness (in.)</u>	<u>Min. Yield Strength (ksi)</u>
Viper25	0.0147	50
Viper20S	0.0190	50
Viper20D	0.0233	50

2. For construction governed by the 2003 or 2006 IBC or IRC, ViperStud® framing with G40 galvanization are Non-structural and limited to applications where the transverse uniform design load does not exceed 5 psf.
3. Limiting heights are based on a single layer of 5/8" thick Type X gypsum wallboard installed the full height on each side of the wall with fasteners spaced 12" o.c. to all framing members.
4. 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. (f) – Indicates a wall height limited by flexural strength.
 - c. All remaining wall heights are limited by deflection.
5. Limiting heights based on deflection are achieved by testing with successive incremental loadings applied at L/360, L/240, and L/120 deflection limits.
6. Wall heights that exceed 95% of the maximum allowable height and are limited by flexural strength, denoted (f) in Table-1 shall not have a horizontal drywall joint within the middle 1/3 of the overall height.

Table 2 - ViperStud® Manufacturing Locations

MarinoWARE:		CEMCO:
400 Metuchen Road South Plainfield, NJ 07080 (908) 757-9000	777 Greenbelt Parkway Griffin, GA 30223 (678) 688-1312	263 North Covina Lane City of Industry, CA 91746 (800) 775-2362
4245 Railroad Avenue East Chicago, IN 46312 (219) 378-7100	10101 Bay Area Boulevard Pasadena, TX 77507 (281) 283-8100	1001-A Pittsburg Antioch Highway Pittsburg, CA 94565 (925) 473-9340
		490 Osage Street Denver, CO 80204 (303) 572-3626

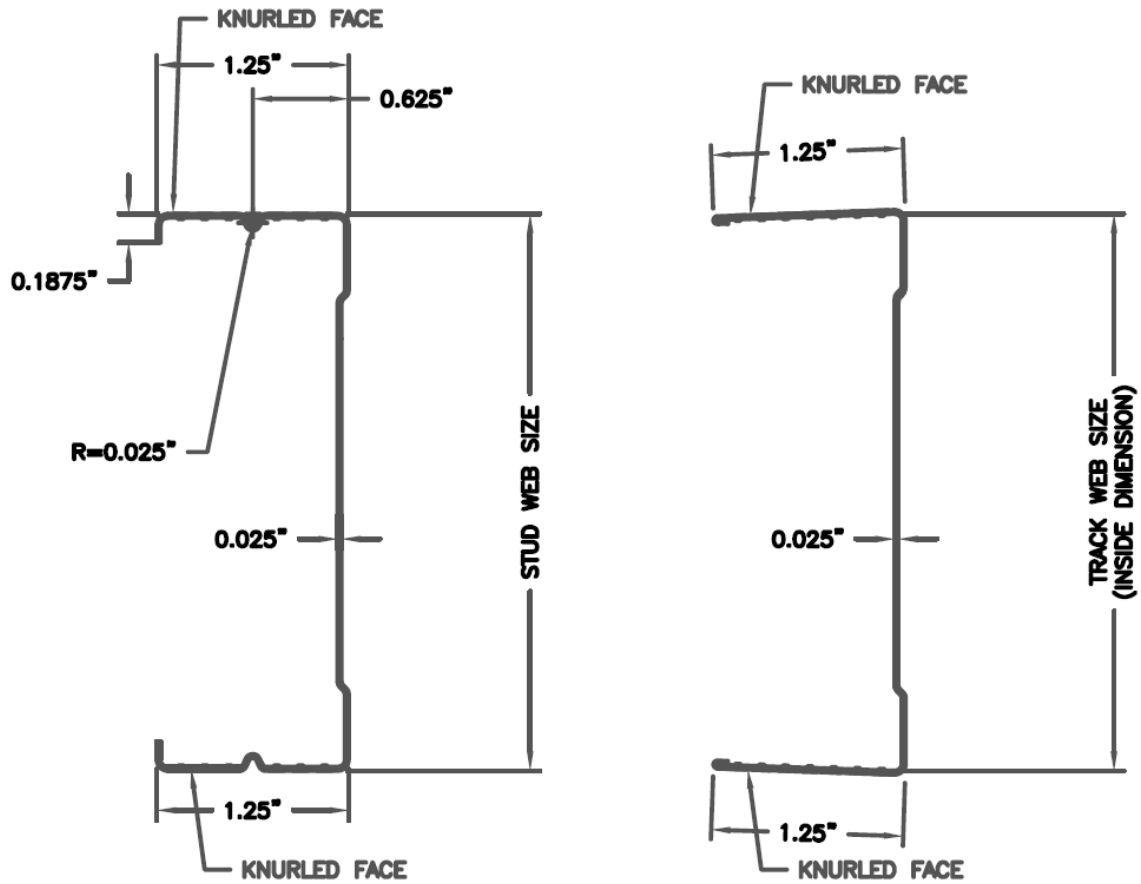


Figure 1 - Stud and Track Profiles

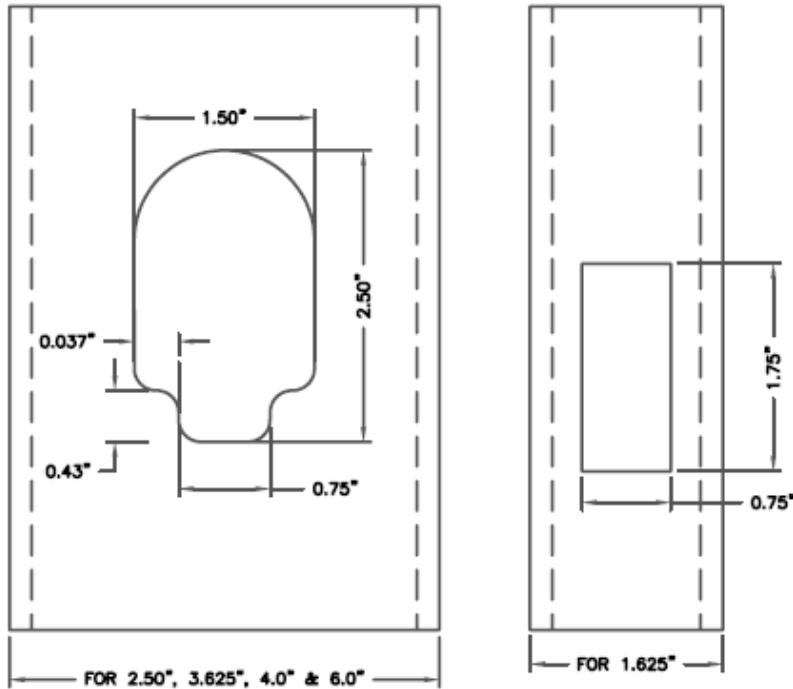
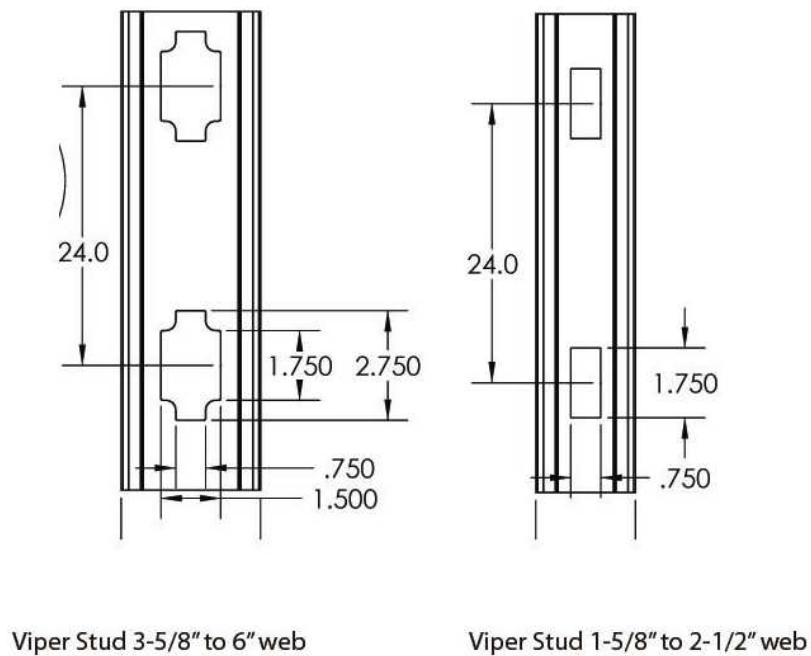


Figure 2 - MarinoWare Knockouts



Viper Stud 3-5/8" to 6" web

Viper Stud 1-5/8" to 2-1/2" web

Figure 3 - CEMCO Knockouts