



Steel Framing and Metal Lath

# PRODUCT CATALOG



By providing a lighter, stronger, more efficient framing system, ViperStud® has earned the trust of industry leaders nationwide. Made from high-strength steel and formed with exclusive ViperRib technology, ViperStud® is the flat steel system that will be here for the long term, you can count on that.

## The Proprietary Steel Framing System That Has Withstood The Test Of Time...



# Standing Strong.™

### A Track Record You Can Count On, Verified Code Compliant

#### Code Information

ViperStud Drywall Framing has been verified by the following IAS Accredited Test Agencies and/or certified by the Product Evaluation Agencies listed here.



**Patents** ViperStud Patent #D621,964  
ViperTrack Patent #D621,963

#### IBC/IRC 2003, 2006, 2009, 2012 Compliant

The Viper25 & Viper20 values for composite limiting heights in this catalog have been submitted for recognition in our ICC-ES ESR-2620 & ATI ES CCRR-0154 reports. The physical properties, fully-braced and 48" O.C. braced limiting heights of ViperStud in this catalog are listed in our evaluation report ATI CCRR-0154. ViperStud complies with 2013 ICC-ES and CSSA code compliance certification programs. Please see the full versions of these reports at [www.cemcosteel.com](http://www.cemcosteel.com).

U.S. Patent Nos. D621,964 and D621,963 are assigned to Ware Industries, Inc. and used by CEMCO under license from Ware Industries, Inc. "ViperStud", "ViperTrack" and "ViperRib" are registered trademarks of Ware Industries, Inc. The ViperStud logo and "Standing Strong" are trademarks of Ware Industries, Inc. The "ViperStud", "ViperTrack", "ViperRib" and "Standing Strong" trademarks are used by CEMCO under license from Ware Industries, Inc. ©2011 Ware Industries, Inc. All rights reserved.

#### ViperStud Drywall Framing System is tested or conforms to these standards:

- **AISI S100-07** with S2-09 North American Specification, 2007 edition with Supplement No. 2
- **AISI S220-11** North American Standard for Cold-Formed Steel Framing—Non-Structural Members
- **ASTM A1003** Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic Coated for Cold-Formed Framing Members
- **ASTM C645** Standard Specification for Nonstructural Steel Framing Members
- **ASTM C754** Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products
- **ASTM E90** Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- **ASTM E119** Standard Test Methods for Fire Tests of Building construction and Materials. Fire rated for 1, 2, 3, and 4 hour rated walls.
- **ASTM E72** Standard Test Methods of Conducting Strength Tests of Panels for Building Construction
- **ASTM C1629** Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels

#### ViperStud is listed in the following:

- ATI CCRR-0154
- ICC-ES ESR-2620
- NYC Department of Buildings MEA 56-08-M, MEA 56-08-M Vol 2, MEA 235-08-M

#### Architectural Testing Approved & ICC ES Code Compliant

Viper25, Viper20, Viper 18mil, Viper 30mil, and Viper 33mil manufactured by CEMCO received an evaluation report (CCRR-0154) from ATI Evaluation Services and an evaluation report (ESR# 2620) from ICC Evaluation Service (ICC-ES), providing evidence that the ViperStud Drywall Framing System meets code requirements. Building officials, architects, contractors, specifiers, designers and others utilize these Evaluation Reports to provide a basis for using or approving metal framing in construction projects following the International Building Code.

#### LEED® v3 Information

Available LEED® points in the following categories:

- MR Credit 2 - Construction Waste Management (1-2 points)
- MR Credit 4 - Recycled Content (1-2 points)
- MR Credit 5 - Regional Materials (1-2 points)

#### Recycled Content

- Total Recycled Content: 32.9%
- Post Consumer Content: 25.6%
- Pre Consumer (Post Industrial) Content: 6.8%



## A High Strength, Flat Steel Drywall Framing System

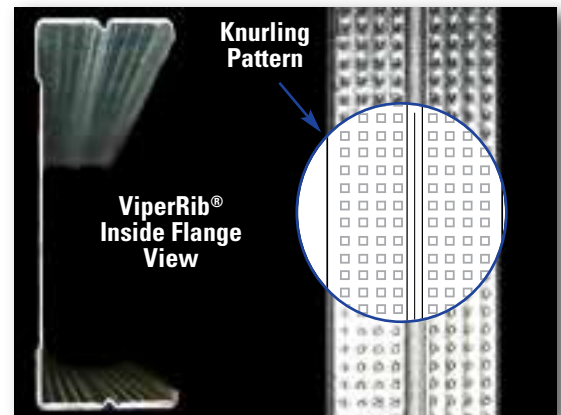
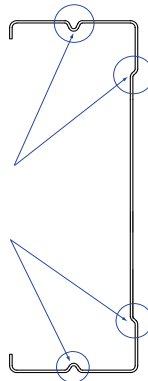
The ViperStud® Drywall Framing System offers all the benefits of conventional flat steel studs with a design that performs even better. The ViperStud® drywall framing system is interchangeable with conventional framing components. Since ViperStud® is flat steel, it is easy to plumb and mark, make minor adjustments and use laser levels. This makes installation the same as conventional studs. No extra training or special fasteners are required for installation.

### Knurl & Rib Technology

The stud and track system utilizes a knurled flange and reinforcing ribs along with a flat stud design. Knurling is the pattern of small ridges formed on the flange to prevent screws from walking. Since knurling is only formed on one side of the steel, the stud stays flat, never compromising the strength or thickness of the steel.

ViperRib® technology applies a reinforced ribbing over the web and flange of ViperStud. The ribs provide added strength, are less prone to twist and creating "high-shoulders" when finishing gypsum board.

**ViperRib® Technology**  
makes ViperStud stronger  
& less prone to twist or buckle.

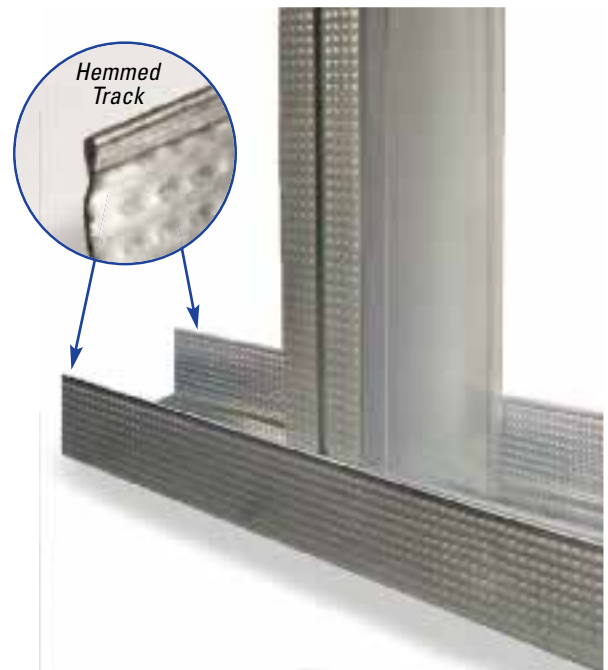


## The One-Track System

We've tested ViperTrack25 extensively with Viper25 and Viper20 studs. Our third-party testing proves that it is not necessary to use the same thickness track as the stud. Now you can submit a lighter gauge track with your Viper20 studs and reduce your cost.

- Saves money
- Fewer items to inventory
- Safer, ViperTrack25 is fully hemmed
- Supported by testing

*Not applicable for Impact or Abuse Rated walls. Fire rated walls should be built per specific assembly requirements.*





# PHYSICAL PROPERTIES

## ViperStud®

MODEL NO.	DESIGN THICKNESS (in)	MINIMUM THICKNESS (in)	YIELD (ksi)	WEB SIZES (in)	COATING <sup>1,2</sup>	FLANGE (in)	RETURN LIP
VIPER25	0.016	0.015	50	1-5/8, 2-1/2, 3-5/8, 4, 6	G40	1-1/4	1/4
VIPER 18mil	0.019	0.018	33	1-5/8, 2-1/2, 3-5/8, 4, 6	G40	1-1/4	1/4
VIPER20	0.021	0.020	57	1-5/8, 2-1/2, 3-5/8	G40	1-1/4	1/4
VIPER20	0.022	0.021	57	4, 6	G40	1-1/4	1/4
VIPER 30mil	0.031	0.030	33	1-5/8, 2-1/2, 3-5/8, 4, 6	G40	1-1/4	1/4
VIPER 33mil	0.035	0.033	33	1-5/8, 2-1/2, 3-5/8, 4, 6	G40	1-1/4	1/4

## ViperTrack®

MODEL NO.	DESIGN THICKNESS (in)	MINIMUM THICKNESS (in)	YIELD (ksi)	WEB SIZES (in)	COATING <sup>1,2</sup>	FLANGE (in)	RETURN LIP
VIPERTRACK25	0.016	0.015	50	1-5/8, 2-1/2, 3-5/8, 4, 6	G40	1-1/4	1/4
VIPERTRACK 18mil	0.019	0.018	33	1-5/8, 2-1/2, 3-5/8, 4, 6	G40	1-1/4	1/4
VIPERTRACK20	0.021	0.020	50	1-5/8, 2-1/2, 3-5/8	G40	1-1/4	1/4
VIPERTRACK20	0.022	0.021	50	4, 6	G40	1-1/4	1/4
VIPERTRACK 30mil	0.031	0.030	33	1-5/8, 2-1/2, 3-5/8, 4, 6	G40	1-1/4	1/4
VIPERTRACK 33mil	0.035	0.033	33	1-5/8, 2-1/2, 3-5/8, 4, 6	G40	1-1/4	1/4

**Notes:**

1. Per ASTM C645 & ASTM A1003 Table 1.
2. G60 and G90 available upon request.
3. Knockout size for 1-5/8" & 2-1/2" stud is 3/4" x 1-3/4".  
Knockout size for 3-5/8", 4", and 6" stud is 1-1/2" x 2-1/2".

Viper25 (15 mil) is equivalent to conventional 25 gauge (18 mil) studs, and Viper20 (20 & 21 mil) is equivalent to conventional 20 gauge (30 mil). Both Viper25 and Viper20 meet ASTM C645. ASTM C 645 Section 5.1 allows for permissible dimensional thickness variations. Section 8.2 allows for thickness variations and exemptions from minimum section property values, if specified performance requirements are not met. The ViperStud Drywall Framing products meet and exceed these requirements.



## DEEP LEG DEFLECTION TRACK

Deflection track can be required at the top of a wall to allow for anticipated downward movement of the primary structure. A gap is provided between the end of the stud and track to accommodate this movement. The studs are not fastened to the track to allow movement up or down. The bridging is required within 12" from the top to keep the stud in place and provide rotational restraint. The leg of the track must be long enough to provide the required gap, bearing surface for the studs and allow for construction tolerances.

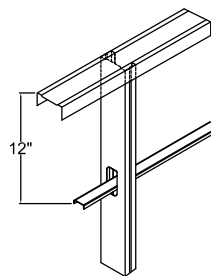
MODEL NO.	DESIGN THICKNESS (in)	MINIMUM THICKNESS (in)	YIELD (ksi)	COATING <sup>4,5</sup>	WEB SIZES (in) <sup>2</sup>	LEG SIZE (in)	GAP (in)	LOAD (lb.)	MAX HEIGHT <sup>1</sup> (5 psf, 16" o.c.)
VIPERTRACK25	0.016	0.015	50	G40	1-5/8, 2-1/2, 3-5/8, 4, 6	2"	1/2"	34	10'-3"
VIPERTRACK18mil	0.019	0.018	33	G40	1-5/8, 2-1/2, 3-5/8, 4, 6	2"	1/2"	33	9' 11"
VIPERTRACK20	0.021	0.020	50	G40	1-5/8, 2-1/2, 3-5/8	2"	1/2"	68	20'-6"
					2-1/2, 3-5/8	2-1/2"	3/4"	45	13'-8"
					2-1/2, 3-5/8	3"	1"	34	10'-3"
VIPERTRACK20	0.022	0.021	50	G40	4, 6	2"	1/2"	78	23'-8"
					4, 6	2-1/2"	3/4"	52	15'-9"
					4, 6	3"	1"	39	11'-10"
VIPERTRACK 30mil	0.031	0.030	33	G40	1-5/8, 2-1/2, 3-5/8, 4, 6	2"	1/2"	91	27'-6"
					2-1/2, 3-5/8, 4, 6	2-1/2"	3/4"	61	18'-4"
					2-1/2, 3-5/8, 4, 6	3"	1"	45	13'-9"
VIPERTRACK 33mil	0.035	0.033	33	G40	1-5/8, 2-1/2, 3-5/8, 4, 6	2"	1/2"	112	33'-10"
					2-1/2, 3-5/8, 4, 6	2-1/2"	3/4"	75	22'-7"
					2-1/2, 3-5/8, 4, 6	3"	1"	56	16'-11"

**Studs are secured by one of the following methods:**

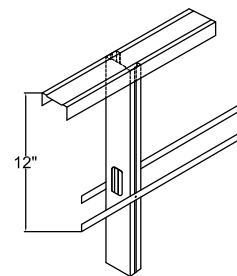
- CR channel and BRC Clip. 12" down from the stud end.
- Attaching flat strap at each side of the stud flange. 12" down from the stud end.
- Attaching 2 screws at each leg of the deep leg track, near the stud flanges. (Total 4 screws)

**Notes:**

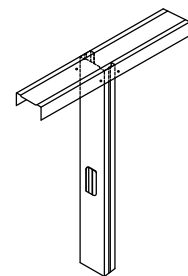
1. Max wall height based on stud spacing of 16" o.c. & 5 PSF lateral load.
2. 1-5/8" deep leg track available with max 2" leg.
3. Wall studs are not fastened to deep leg track.
4. G60, G90 available upon request.
5. Per ASTM C645 & ASTM A1003, Table 1



**A. ALTERNATIVE 1**  
WITH CRC CHANNEL AND BRC CLIP. 12" DOWN FROM THE STUD END.



**B. ALTERNATIVE 2**  
ATTACHING FLAT STRAP AT EACH SIDE OF THE STUD FLANGE. 12" DOWN FROM THE STUD END.



**C. ALTERNATIVE 3**  
ATTACHING 2 SCREWS AT EACH LEG OF THE DEEP LEG TRACK, NEAR THE STUD FLANGES. (TOTAL 4 SCREWS)



# SECTION PROPERTIES

## VIPERSTUD®

MODEL NO.	GAUGE (mils)	MEMBER	DESIGN (in)	MIN. (in)	YIELD (ksi)	WEIGHT (lb/ft)	GROSS PROPERTIES					EFFECTIVE PROPERTIES		MOMENTS				CRITICAL UNBRACED LENGTH
							AREA (in²)	Lx (in)	Rx (in)	Ly (in)	Ry (in)	Lxd (in)	Sx (in²)	Allowable Moment Ma (in-k)	Local Buckling Nominal Moment Mnl (in-k)	Distortional Buckling Nominal Moment Mnd (in-k)	Nominal Moment for Conventional Studs Mn (in-k)	
VIPER25	25EQ (15)	250VS125-15	0.0155	0.0147	50	0.24	0.071	0.032	0.671	0.015	0.461	0.032	0.024	0.66	1.42	1.20	1.02 (18MIL)	25.1
		250VS125-15	0.0155	0.0147	50	0.29	0.085	0.084	.0998	0.017	0.452	0.090	0.042	1.17	2.72	2.12	1.72 (18MIL)	24.8
		362VS125-15 <sup>4</sup>	0.0155	0.0147	50	0.35	0.102	0.199	1.390	0.019	0.435	0.205	0.058	1.60	3.48	2.90	2.47 (18MIL)	24.5
		400VS125-15 <sup>5</sup>	0.0155	0.0147	50	0.37	0.108	0.250	1.520	0.020	0.429	0.255	0.061	1.69	3.99	3.06	2.74 (18MIL)	24.4
		600VS125-15 <sup>6</sup>	0.0155	0.0147	50	0.47	0.139	0.659	2.180	0.022	0.397	0.628	0.085	2.36	5.90	4.27	4.13 (18MIL)	23.7
VIPER 18mil	25 (18)	162VS125-18	0.0188	0.0179	33	0.28	0.069	0.039	0.684	0.018	0.461	0.037	0.035	0.68	1.14	1.23	1.02 (18MIL)	30.70
		250VS125-18	0.0188	0.0179	33	0.34	0.099	0.102	1.015	0.020	0.454	0.098	0.065	1.29	2.15	1.95	1.72 (18MIL)	29.70
		362VS125-18	0.0188	0.0179	33	0.41	0.120	0.241	1.414	0.023	0.437	0.237	0.084	1.65	2.76	2.89	2.47 (18MIL)	29.90
		400VS125-18	0.0188	0.0179	33	0.43	0.127	0.303	1.542	0.024	0.431	0.299	0.093	1.83	3.06	3.20	2.74 (18MIL)	29.80
VIPER20	20EQ (20/21)	162VS125-20	0.0205	0.0195	57	0.32	0.093	0.042	0.673	0.020	0.459	0.050	0.038	1.18	2.74	2.14	1.99 (30MIL)	23.4
		250VS125-20	0.0205	0.0195	57	0.38	0.111	0.111	1.000	0.023	0.451	0.129	0.065	2.05	4.50	3.71	3.49 (30MIL)	23.1
		362VS125-20	0.0205	0.0195	57	0.45	0.134	0.261	1.400	0.025	0.433	0.298	0.090	2.85	6.10	5.15	5.14 (30MIL)	22.8
		400VS125-21	0.0220	0.0209	57	0.52	0.152	0.352	1.520	0.028	0.426	0.377	0.117	3.69	8.02	6.67	5.74 (30MIL)	22.7
		600VS125-21 <sup>6</sup>	0.0220	0.0209	57	0.67	0.196	0.929	2.180	0.030	0.394	0.869	0.161	5.06	11.20	9.16	9.00 (30MIL)	22.0
VIPER 30mil	20 (30)	162VS125-30	0.0312	0.0296	33	0.46	0.135	0.062	0.688	0.028	0.455	0.062	0.067	1.32	2.21	2.38	1.99 (30MIL)	30.8
		250VS125-30	0.0312	0.0296	33	0.55	0.161	0.166	1.020	0.032	.0448	0.163	.0120	2.31	3.96	3.86	3.49 (30MIL)	30.1
		362VS125-30	0.0312	0.0296	33	0.67	0.197	0.391	1.410	0.037	0.431	0.385	0.172	3.39	5.67	5.85	5.14 (30MIL)	29.7
		400VS125-30	0.0312	0.0296	33	0.71	0.209	0.493	1.540	0.038	0.425	0.486	0.191	3.78	6.31	6.52	5.74 (30MIL)	29.6
		600VS125-30	0.0312	0.0296	33	0.92	0.271	1.310	2.190	0.042	0.392	1.230	0.341	5.95	11.30	9.93	9.00 (30MIL)	28.7
VIPER 33mil	20 (33)	162VS125-33	0.0346	0.0329	33	0.50	0.147	0.069	0.683	0.030	0.453	0.068	0.077	1.53	2.55	2.71	2.29 (33MIL)	30.8
		250VS125-33	0.0346	0.0329	33	0.61	0.178	0.183	1.010	0.036	0.447	0.181	0.137	2.65	4.53	4.42	4.02 (33MIL)	30.1
		362VS125-33	0.0346	0.0329	33	0.75	0.220	0.432	1.400	0.040	0.429	0.428	0.201	3.96	6.62	6.75	6.00 (33MIL)	29.7
		400VS125-33	0.0346	0.0329	33	0.78	0.230	0.544	1.540	0.041	0.424	0.539	0.224	4.42	7.38	7.53	6.70 (33MIL)	29.5
		600VS125-33	0.0346	0.0329	33	1.02	0.301	1.440	2.190	0.046	0.391	1.390	0.400	6.93	13.20	11.60	10.55 (33MIL)	28.6

**Notes: 1.** Section properties are in accordance with AISI S100-07 with S2 Supplement. Viper 25 and Viper20 section properties are based on testing. Allowable moment (Ma) is calculated in accordance with Chapter F of AISI S100-07 specification.

**2.** Nominal moment for Viper 18 mi, Viper 30 mil, and Viper 33 mil conventional studs are based on calculations in accordance with AISI S100-07 with S2 Supplement. Allowable moments (Ma) can be calculated with a 1.67 safety factor. **3.** Section properties are in accordance with AISI S100-07 with S2-09 and AISI S220-11.

**4.** Web depth-to-thickness ratio exceeds 200. **5.** Web depth-to-thickness ratio exceeds 260. **6.** Viperstud is considered fully braced when unbraced length is less than listed Lu. **7.** K $\Phi$  assumed to be zero for distortional buckling moments.

## VIPERTRACK®

PRODUCT NAME	LEG SIZE (in)	WEIGHT (lb/ft)	DESIGN (in)	MIN. (in)	YIELD (ksi)	GROSS PROPERTIES						EFFECTIVE PROPERTIES			TORSIONAL PROPERTIES					
						AREA (in²)	Lx (in)	Sx (in)	Rx (in)	Ly (in)	Sy (in²)	Ry (in²)	Lxd (in)	Sxe (in²)	Ma (in-k)	Xo (in)	Jx10 <sup>3</sup> (in <sup>4</sup> )	Cw (in <sup>6</sup> )	Ro (in)	B
<b>VIPERTRACK 1.25" LEG</b>																				
162VT125-15	1.25	0.22	0.016	0.015	50	0.064	0.035	0.040	0.736	0.011	0.013	0.412	0.022	0.018	0.53	-0.877	0.005	0.006	1.22	0.480
250VT125-15	1.25	0.26	0.016	0.015	50	0.078	0.086	0.066	1.050	0.012	0.013	0.400	0.054	0.027	0.80	-0.768	0.006	0.015	1.36	0.683
362VT125-15 <sup>5</sup>	1.25	0.32	0.016	0.015	50	0.095	0.197	0.105	1.440	0.014	0.014	0.381	0.155	0.039	1.15	-0.665	0.008	0.035	1.63	0.833
400VT125-15 <sup>5</sup>	1.25	0.34	0.016	0.015	50	0.101	0.247	0.120	1.560	0.014	0.014	0.374	0.141	0.043	1.27	-0.638	0.008	0.043	1.73	0.864
600VT125-15 <sup>6</sup>	1.25	0.45	0.016	0.015	50	0.132	0.642	0.210	2.210	0.015	0.015	0.342	0.325	0.063	1.90	-0.523	0.011	0.109	2.29	0.948
162VT125-18	1.25	0.26	0.019	0.018	33	0.077	0.042	0.048	0.733	0.013	-	0.411	0.030	0.025	0.50	-0.878	0.009	0.007	1.215	0.478
250VT125-18	1.25	0.32	0.019	0.018	33	0.094	0.105	0.080	1.057	0.015	-	0.399	0.079	0.046	0.90	-0.766	0.011	0.018	1.366	0.685
362VT125-18	1.25	0.39	0.019	0.018	33	0.115	0.240	0.127	1.442	0.017	-	0.380	0.192	0.066	1.30	-0.664	0.014	0.042	1.632	0.835
400VT125-18	1.25	0.42	0.019	0.018	33	0.122	0.300	0.145	1.566	0.017	-	0.374	0.244	0.072	1.43	-0.636	0.014	0.053	1.731	0.865
600VT125-18 <sup>5</sup>	1.25	0.54	0.019	0.018	33	0.160	0.779	0.254	2.208	0.019	-	0.342	-	-	-	-0.521	0.019	0.132	2.294	0.948
162VT125-20	1.25	0.29	0.021	0.020	50	0.085	0.046	0.052	0.737	0.014	0.017	0.411	0.031	0.027	0.79	-0.874	0.012	0.008	1.22	0.483
250VT125-20	1.25	0.35	0.021	0.020	50	0.103	0.114	0.087	1.060	0.016	0.018	0.399	0.081	0.045	1.33	-0.766	0.014	0.020	1.36	0.685
362VT125-20	1.25	0.43	0.021	0.020	50	0.123	0.261	0.139	1.440	0.018	0.018	0.380	0.179	0.064	1.92	-0.663	0.018	0.046	1.63	0.835
400VT125-21	1.25	0.49	0.022	0.021	50	0.143	0.351	0.170	1.570	0.02	0.020	0.373	0.246	0.081	2.41	-0.635	0.023	0.061	1.73	0.865
600VT125-21 <sup>6</sup>	1.25	0.64	0.022	0.021	50	0.187	0.910	0.297	2.210	0.022	0.021	0.341	0.557	0.117	3.49	-0.520	0.030	0.154	2.29	0.949
162VT125-30	1.25	0.44	0.031	0.030	33	0.129	0.071	0.080	0.741	0.022	0.025	0.409	0.056	0.051	1.00	-0.868	0.042	0.012	1.21	0.488
250VT125-30	1.25	0.53	0.031	0.030	33	0.156	0.175	0.132	1.060	0.025	0.027	0.397	0.142	0.090	1.77	-0.760	0.051	0.030	1.36	0.689
362VT125-30	1.25	0.65	0.031	0.030	33	0.192	0.399	0.211	1.440	0.027	0.028	0.378	0.331	0.152	3.00	-0.658	0.062	0.069	1.63	0.837
400VT125-30	1.25	0.69	0.031	0.030	33	0.203	0.499	0.240	1.570	0.028	0.028	0.371	0.417	0.176	3.47	-0.631	0.066	0.086	1.73	0.867
600VT125-30	1.25	0.90	0.031	0.030	33	0.266	1.300	0.421	2.210	0.031	0.029	0.339	1.030	0.250	4.94	-0.517	0.086	0.216	2.29	0.949
162VT125-33	1.25	0.49	0.035	0.033	33	0.143	0.079	0.088	0.742	0.024	0.028	0.408	0.064	0.059	1.16	-0.866	0.057	0.013	1.21	0.489
250VT125-33	1.25	0.59	0.035	0.033	33	0.174	0.195	0.146	1.060	0.027	0.029	0.396	0.162	0.103	2.04	-0.758	0.069	0.033	1.36	0.690
362VT125-33	1.25	0.72	0.035	0.033	33	0.212	0.443	0.234	1.440	0.03	0.031	0.377	0.375	0.173	3.43	-0.657	0.085	0.077	1.63	0.838
400VT125-33	1.25	0.77	0.035	0.033	33	0.225	0.554	0.266	1.570	0.031	0.031	0.370	0.473	0.200	3.95	-0.629	0.090	0.096	1.73	0.868
600VT125-33	1.25	1.00	0.035	0.033	33	0.295	1.440	0.467	2.210	0.034	0.032	0.339	1.190	0.298	5.89	-0.516	0.118	0.239	2.29	0.949





# DEEP LEG VIPERTRACK SECTION PROPERTIES

## VIPERTRACK®

PRODUCT NAME	LEG SIZE (in)	WEIGHT (lb/ft)	DESIGN (in)	MIN. (in)	YIELD (ksi)	GROSS PROPERTIES						EFFECTIVE PROPERTIES			TORSIONAL PROPERTIES					
						AREA (in <sup>2</sup> )	Lx (in <sup>4</sup> )	Sx (in)	Rx (in <sup>4</sup> )	Ly (in)	Sy (in <sup>4</sup> )	Ry (in <sup>4</sup> )	Lxd (in <sup>4</sup> )	Sxe (in <sup>4</sup> )	Ma (in-k)	Xo (in)	Jx10 <sup>3</sup> (in <sup>4</sup> )	Cw (in <sup>4</sup> )	Ro (in)	B
<b>VIPERTRACK 2.00" LEG</b>																				
162VT200-15	2.00	0.30	0.016	0.015	50	0.087	0.052	0.060	0.773	0.038	0.030	0.663	0.025	0.017	0.50	-1.57	0.007	0.021	1.87	0.295
250VT200-15	2.00	0.34	0.016	0.015	50	0.101	0.126	0.096	1.117	0.044	0.032	0.662	0.060	0.026	0.79	-1.43	0.008	0.054	1.93	0.453
362VT200-15 <sup>a</sup>	2.00	0.40	0.016	0.015	50	0.118	0.278	0.148	1.533	0.050	0.034	0.648	0.127	0.039	1.16	-1.28	0.009	0.122	2.10	0.629
400VT200-15 <sup>a</sup>	2.00	0.42	0.016	0.015	50	0.124	0.345	0.167	1.667	0.051	0.034	0.642	0.155	0.043	1.28	-1.24	0.010	0.152	2.17	0.676
600VT200-15 <sup>a</sup>	2.00	0.53	0.016	0.015	50	0.155	0.859	0.281	2.353	0.057	0.036	0.608	0.357	0.065	1.93	-1.06	0.012	0.384	2.65	0.841
250VT200-18	2.00	0.42	0.019	0.018	33	0.122	0.154	0.116	1.121	0.053	-	0.661	-	-	-	-1.43	0.014	0.066	1.93	0.455
362VT200-18	2.00	0.49	0.019	0.018	33	0.144	0.339	0.180	1.537	0.060	-	0.647	-	-	-	-1.28	0.017	0.149	2.10	0.630
400VT200-18	2.00	0.51	0.019	0.018	33	0.151	0.420	0.203	1.670	0.062	-	0.642	-	-	-	-1.24	0.018	0.186	2.17	0.677
600VT200-18 <sup>a</sup>	2.00	0.64	0.019	0.018	33	0.188	1.039	0.339	2.350	0.069	-	0.607	-	-	-	-1.06	0.022	0.464	2.65	0.841
162VT200-20	2.00	0.39	0.021	0.020	50	0.116	0.069	0.079	0.775	0.051	0.039	0.662	0.036	0.027	0.91	-1.57	0.016	0.028	1.87	0.296
250VT200-20	2.00	0.45	0.021	0.020	50	0.134	0.167	0.127	1.118	0.058	0.042	0.661	0.091	0.041	1.41	-1.42	0.019	0.071	1.93	0.454
362VT200-20	2.00	0.53	0.021	0.020	50	0.157	0.369	0.196	1.534	0.066	0.045	0.647	0.190	0.060	2.06	-1.28	0.022	0.161	2.10	0.630
400VT200-21	2.00	0.60	0.022	0.021	50	0.176	0.491	0.237	1.670	0.072	0.048	0.641	0.261	0.076	2.59	-1.23	0.028	0.216	2.17	0.677
600VT200-216	2.00	0.75	0.022	0.021	50	0.220	1.221	0.398	2.350	0.081	0.051	0.606	0.602	0.115	3.91	-1.05	0.036	0.544	2.65	0.842
162VT200-30	2.00	0.60	0.031	0.030	33	0.176	0.107	0.120	0.779	0.077	0.060	0.606	0.069	0.055	1.09	-1.56	0.057	0.043	1.87	0.299
250VT200-30	2.00	0.69	0.031	0.030	33	0.203	0.256	0.193	1.120	0.088	0.064	0.659	0.174	0.098	1.94	-1.42	0.066	0.108	1.92	0.457
362VT200-30	2.00	0.81	0.031	0.030	33	0.238	0.563	0.298	1.540	0.099	0.068	0.645	0.400	0.167	3.29	-1.27	0.077	0.246	2.10	0.633
400VT200-30	2.00	0.85	0.031	0.030	33	0.250	0.698	0.336	1.670	0.102	0.068	0.639	0.502	0.188	3.71	-1.23	0.081	0.306	2.17	0.680
600VT200-30	2.00	1.06	0.031	0.030	33	0.312	1.735	0.564	2.360	0.114	0.072	0.605	1.270	0.276	5.45	-1.05	0.101	0.769	2.65	0.843
162VT200-33	2.00	0.66	0.035	0.033	33	0.195	0.119	0.133	0.780	0.085	0.066	0.660	0.080	0.064	1.27	-1.56	0.078	0.048	1.87	0.300
250VT200-33	2.00	0.77	0.035	0.033	33	0.225	0.284	0.214	1.120	0.098	0.071	0.658	0.199	0.113	2.23	-1.42	0.090	0.120	1.92	0.458
362VT200-33	2.00	0.90	0.035	0.033	33	0.264	0.626	0.330	1.540	0.110	0.075	0.644	0.455	0.191	3.76	-1.27	0.105	0.272	2.10	0.634
400VT200-33	2.00	0.94	0.035	0.033	33	0.277	0.775	0.373	1.670	0.113	0.076	0.638	0.570	0.220	4.34	-1.23	0.111	0.340	2.17	0.680
600VT200-33	2.00	1.18	0.035	0.033	33	0.347	1.930	0.625	2.360	0.126	0.080	0.604	1.480	0.338	6.69	-1.05	0.138	0.852	2.65	0.844
<b>VIPERTRACK 2.50" LEG</b>																				
162VT250-20	2.50	0.46	0.021	0.020	50	0.136	0.085	0.097	0.790	0.092	0.059	0.823	0.039	0.026	0.88	-2.05	0.019	0.052	2.35	0.237
250VT250-20	2.50	0.52	0.021	0.020	50	0.154	0.202	0.153	1.150	0.106	0.064	0.830	0.094	0.041	1.40	-1.89	0.022	0.130	2.36	0.360
362VT250-20	2.50	0.60	0.021	0.020	50	0.177	0.440	0.234	1.158	0.120	0.068	0.822	0.200	0.060	2.06	-1.71	0.025	0.295	2.47	0.519
400VT250-21	2.50	0.68	0.022	0.021	50	0.198	0.584	0.282	1.720	0.132	0.074	0.817	0.274	0.076	2.58	-1.66	0.032	0.395	2.53	0.566
600VT250-216	2.50	0.82	0.022	0.021	50	0.242	1.430	0.465	2.430	0.145	0.078	0.785	0.630	0.115	3.92	-1.45	0.039	0.989	2.93	0.757
162VT250-30	2.50	0.71	0.031	0.030	33	0.207	0.131	0.147	0.794	0.140	0.090	0.822	0.076	0.057	1.13	-2.04	0.067	0.080	2.34	0.239
250VT250-30	2.50	0.80	0.031	0.030	33	0.234	0.310	0.233	1.150	0.161	0.097	0.828	0.190	0.102	2.01	-1.88	0.076	0.199	2.35	0.363
362VT250-30	2.50	0.92	0.031	0.030	33	0.270	0.673	0.356	1.580	0.181	0.102	0.820	0.437	0.167	3.30	-1.71	0.088	0.449	2.47	0.521
400VT250-30	2.50	0.96	0.031	0.030	33	0.281	0.831	0.400	1.720	0.187	0.104	0.816	0.548	0.185	3.66	-1.66	0.091	0.560	2.52	0.568
600VT250-30	2.50	1.17	0.031	0.030	33	0.344	2.030	0.659	2.430	0.211	0.110	0.784	1.330	0.275	5.43	-1.44	0.112	1.400	2.93	0.758
162VT250-33	2.50	0.78	0.035	0.033	33	0.230	0.145	0.163	0.796	0.155	0.100	0.821	0.088	0.066	1.31	-2.04	0.092	0.089	2.34	0.239
250VT250-33	2.50	0.89	0.035	0.033	33	0.260	0.344	0.258	1.150	0.178	0.107	0.827	0.218	0.117	2.32	-1.88	0.104	0.221	2.35	0.363
362VT250-33	2.50	1.02	0.035	0.033	33	0.299	0.748	0.395	1.580	0.201	0.114	0.820	0.498	0.198	3.92	-1.71	0.119	0.498	2.47	0.522
400VT250-33	2.50	1.06	0.035	0.033	33	0.312	0.923	0.443	1.720	0.207	0.115	0.815	0.623	0.226	4.46	-1.66	0.124	0.621	2.52	0.569
600VT250-33	2.50	1.30	0.035	0.033	33	0.381	2.250	0.730	2.430	0.234	0.122	0.783	1.580	0.336	6.64	-1.44	0.152	1.550	2.93	0.759
<b>VIPERTRACK 3.00" LEG</b>																				
162VT300-20	3.00	0.53	0.021	0.020	50	0.157	0.100	0.114	0.801	0.151	0.083	0.981	0.041	0.028	0.95	-2.53	0.022	0.087	2.83	0.200
250VT300-20	3.00	0.59	0.021	0.020	50	0.175	0.237	0.180	1.170	0.173	0.089	0.995	0.098	0.041	1.39	-2.36	0.025	0.216	2.81	0.298
362VT300-20	3.00	0.67	0.021	0.020	50	0.198	0.512	0.272	1.610	0.195	0.095	0.994	0.207	0.060	2.05	-2.17	0.028	0.484	2.87	0.433
400VT300-21	3.00	0.75	0.022	0.021	50	0.220	0.677	0.327	1.750	0.216	0.103	0.991	0.284	0.076	2.58	-2.11	0.036	0.647	2.92	0.477
600VT300-216	3.00	0.90	0.022	0.021	50	0.264	1.630	0.532	2.490	0.245	0.109	0.964	0.653	0.115	3.92	-1.86	0.043	1.610	3.25	0.673
162VT300-30	3.00	0.81	0.031	0.030	33	0.238	0.155	0.174	0.805	0.229	0.126	0.980	0.081	0.058	1.15	-2.53	0.077	0.134	2.83	0.201
250VT300-30	3.00	0.90	0.031	0.030	33	0.266	0.363	0.274	1.170	0.262	0.135	0.993	0.204	0.104	2.06	-2.35	0.086	0.329	2.80	0.299
362VT300-30	3.00	1.02	0.031	0.030	33	0.301	0.783	0.414	1.610	0.296	0.144	0.992	0.469	0.165	3.25	-2.16	0.098	0.738	2.87	0.435
400VT300-30	3.00	1.06	0.031	0.030	33	0.312	0.964	0.464	1.760	0.306	0.146	0.989	0.587	0.183	3.61	-2.10	0.101	0.918	2.91	0.479
600VT300-30	3.00	1.28	0.031	0.030	33	0.375	2.320	0.754	2.490	0.347	0.155	0.962	1.380	0.274	5.41	-1.85	0.122	2.290	3.25	0.674
162VT300-33	3.00	0.90	0.035	0.033	33	0.264	0.172	0.192	0.807	0.254	0.139	0.979	0.094	0.068	1.34	-2.52	0.105	0.149	2.82	0.202
250VT300-33	3.00	1.00	0.035	0.033	33	0.295	0.404	0.303	1.170	0.290	0.150	0.993	0.234	0.120	2.38	-2.35	0.118	0.366	2.80	0.300
362VT300-33	3.00	1.14	0.035	0.033	33	0.334	0.869	0.459	1.620	0.328	0.159	0.992	0.535	0.200	3.96	-2.16	0.133	0.819	2.87	0.436
400VT300-33	3.00	1.18	0.035	0.033	33	0.347	1.070	0.514	1.760	0.339	0.162	0.988	0.669	0.223	4.40	-2.10	0.138	1.020	2.91	0.480
600VT300-33	3.00	1.41	0.035	0.033	33	0.416	2.580	0.836	2.490	0.384	0.171	0.961	1.640	0.334	6.60	-1.85	0.166	2.540	3.25	0.675

**Notes:**

1. Section properties are in accordance with AISI S100-07.
2. Cold-work of forming is not included.
3. The effective moment of inertia for deflection is calculated based on AISI S100-07 procedure 1 for serviceability determination.
4. The center line bend radius is greater than 2 times the design thickness or 3/32.
5. Web-to-thickness ratio exceeds 200.
6. Web-to-thickness ratio exceeds 260.



# COMPOSITE LIMITING HEIGHTS - 5/8" TYPE X<sup>3</sup>

MODEL NO.	DEPTH	GAUGE (mil.)	MEMBER	DESIGN (in)	MIN. (in)	YIELD (ksi)	SPACING O.C. (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
VIPER 25	1-5/8"	25 EQ (15)	162VS125-15	0.016	0.015	50	12	13'-9"	11'-4"	9'-10"	12'-0"	9'-11"	8'-3"	10'-11"	8'-10"	--
			162VS125-15	0.016	0.015	50	16	12'-6"	10'-4"	8'-8"	10'-11"	8'-10"	--	9'-11"	7'-11"	--
			162VS125-15	0.016	0.015	50	24	10'-11"	8'-10"	--	9'-5"	--	--	8'-2"	--	--
	2-1/2"	25 EQ (15)	250VS125-15	0.016	0.015	50	12	17'-3"	14'-5"	12'-9"	15'-0"	12'-7"	11'-1"	13'-8"	11'-6"	10'-1"
			250VS125-15	0.016	0.015	50	16	15'-8"	13'-1"	11'-7"	13'-8"	11'-6"	10'-1"	12'-3"	10'-5"	8'-9"
			250VS125-15	0.016	0.015	50	24	13'-8"	11'-6"	10'-1"	11'-6"	10'-0"	8'-2"	10'-0"	8'-8"	--
	3-5/8"	25 EQ (15)	362VS125-15	0.016	0.015	50	12	20'-10"	17'-3"	15'-2"	18'-2"	15'-1"	13'-3"	15'-10"	13'-9"	12'-0"
			362VS125-15	0.016	0.015	50	16	18'-11"	15'-9"	13'-9"	15'-10"	13'-9"	12'-0"	13'-9"	12'-6"	10'-11"
			362VS125-15	0.016	0.015	50	24	15'-10"	13'-9"	12'-0"	12'-11"	12'-0"	10'-6"	11'-3"	10'-11"	9'-6"
	4"	25 EQ (15)	400VS125-15	0.016	0.015	50	12	22'-1"	18'-3"	16'-3"	19'-3"	15'-11"	14'-2"	16'-8"	14'-6"	12'-11"
			400VS125-15	0.016	0.015	50	16	20'-1"	16'-7"	14'-9"	16'-8"	14'-6"	12'-11"	14'-5"	13'-2"	11'-9"
			400VS125-15	0.016	0.015	50	24	16'-8"	14'-6"	12'-11"	13'-7"	12'-8"	11'-3"	11'-0"	11'-6"	10'-1"
6"	25 EQ (15)	600VS125-15	0.016	0.015	50	12	24'-8"	23'-9"	21'-1"	22'-3"	20'-9"	18'-5"	20'-0"	18'-10"	16'-9"	
		600VS125-15	0.016	0.015	50	16	22'-11"	21'-7"	19'-2"	20'-0"	18'-10"	16'-9"	17'-5"	17'-2"	15'-3"	
		600VS125-15	0.016	0.015	50	24	20'-1"	18'-10"	16'-9"	16'-5"	16'-5"	14'-8"	14'-2"	14'-2"	13'-0"	
VIPER 18 MIL	1-5/8"	25 (18)	162VS125-18	0.019	0.018	33	12	12'-10"	10'-7"	9'-4"	11'-3"	9'-3"	8'-2"	10'-3"	8'-5"	--
			162VS125-18	0.019	0.018	33	16	11'-9"	9'-8"	8'-6"	10'-3"	8'-5"	--	9'-4"	--	--
			162VS125-18	0.019	0.018	33	24	10'-3"	8'-5"	--	8'-11"	--	--	8'-2"	--	--
	2-1/2"	25 (18)	250VS125-18	0.019	0.018	33	12	17'-5"	14'-5"	12'-7"	14'-7" F	12'-7"	11'-0"	12'-8" F	11'-5"	9'-8"
			250VS125-18	0.019	0.018	33	16	15'-8" F	13'-1"	11'-6"	12'-8" F	11'-5"	9'-8"	11'-0" F	10'-3"	8'-6"
			250VS125-18	0.019	0.018	33	24	12'-8" F	11'-5"	9'-8"	10'-4" F	9'-8"	8'-1"	8'-11" F	8'-6"	--
	3-5/8"	25 (18)	362VS125-18	0.019	0.018	33	12	21'-7" F	17'-7"	15'-4"	17'-8" F	15'-4"	13'-5"	15'-3" F	13'-11"	12'-2"
			362VS125-18	0.019	0.018	33	16	18'-9" F	15'-11"	13'-11"	15'-3" F	13'-11"	12'-2"	13'-3" F	12'-8"	11'-0"
			362VS125-18	0.019	0.018	33	24	15'-3" F	13'-11"	12'-2"	12'-6" F	12'-2"	10'-6"	10'-10" F	10'-10" F	9'-5"
	4"	25 (18)	400VS125-18	0.019	0.018	33	12	20'-6" F	18'-5"	16'-3"	16'-9" F	16'-1"	14'-2"	14'-6" F	14'-6" F	12'-11"
			400VS125-18	0.019	0.018	33	16	17'-9" F	16'-9"	14'-9"	14'-6" F	14'-6" F	12'-11"	12'-7" F	12'-7" F	11'-9"
			400VS125-18	0.019	0.018	33	24	14'-6" F	14'-6" F	12'-11"	11'-10" F	11'-10" F	11'-2"	10'-3" F	10'-3" F	9'-11"
6"	25 (18)	600VS125-18	0.019	0.018	33	12	25'-5" F	24'-9"	21'-8"	20'-9" F	20'-9" F	18'-11"	18'-0" F	18'-0" F	17'-2"	
		600VS125-18	0.019	0.018	33	16	22'-0" F	22'-0" F	19'-8"	18'-0" F	18'-0" F	17'-2"	15'-7" F	15'-7" F	15'-7" F	
		600VS125-18	0.019	0.018	33	24	18'-0" F	18'-0" F	17'-2"	14'-8" F	14'-8" F	14'-8" F	12'-9" F	12'-9" F	12'-9" F	
VIPER 20	1-5/8"	20EQ (20)	162VS125-20	0.021	0.020	57	12	14'-3"	11'-3"	9'-10"	12'-5"	9'-10"	8'-5"	11'-3"	8'-10"	--
			162VS125-20	0.021	0.020	57	16	12'-11"	10'-3"	8'-10"	11'-3"	8'-10"	--	10'-3"	7'-11"	--
			162VS125-20	0.021	0.020	57	24	11'-3"	8'-10"	--	9'-10"	--	--	8'-10"	--	--
	2-1/2"	20EQ (20)	250VS125-20	0.021	0.020	57	12	17'-11"	14'-10"	13'-2"	15'-8"	13'-0"	11'-6"	14'-3"	11'-10"	10'-5"
			250VS125-20	0.021	0.020	57	16	16'-4"	13'-6"	12'-0"	12'-3"	11'-10"	10'-5"	12'-11"	10'-9"	9'-4"
			250VS125-20	0.021	0.020	57	24	14'-3"	11'-10"	10'-5"	12'-5"	10'-4"	8'-9"	11'-3"	9'-2"	--
	3-5/8"	20EQ (20)	362VS125-20	0.021	0.020	57	12	21'-10"	17'-11"	15'-9"	19'-1"	15'-8"	13'-9"	17'-4"	14'-3"	12'-6"
			362VS125-20	0.021	0.020	57	16	19'-10"	16'-4"	14'-4"	17'-4"	14'-3"	12'-6"	15'-4"	12'-11"	11'-4"
			362VS125-20	0.021	0.020	57	24	17'-4"	14'-3"	12'-6"	14'-6"	12'-5"	10'-11"	12'-7"	11'-4"	9'-11"
	4"	20EQ (21)	400VS125-21	0.022	0.021	57	12	24'-0"	19'-1"	16'-8"	21'-0"	16'-8"	14'-7"	19'-1"	15'-2"	13'-3"
			400VS125-21	0.022	0.021	57	16	21'-10"	17'-4"	15'-2"	19'-1"	15'-2"	13'-3"	17'-4"	13'-9"	12'-0"
			400VS125-21	0.022	0.021	57	24	19'-1"	15'-2"	13'-3"	16'-8"	13'-3"	11'-7"	14'-11"	12'-0"	10'-5"
6"	20EQ (21)	600VS125-21	0.022	0.021	57	12	29'-1"	25'-7"	22'-6"	25'-10"	22'-4"	19'-8"	23'-8"	20'-4"	17'-11"	
		600VS125-21	0.022	0.021	57	16	26'-9"	23'-3"	20'-6"	23'-8"	20'-4"	17'-11"	21'-9"	18'-6"	16'-3"	
		600VS125-21	0.022	0.021	57	24	23'-8"	20'-4"	17'-11"	20'-11"	17'-9"	15'-7"	18'-2"	16'-2"	14'-2"	
VIPER 30 MIL	1-5/8"	20 (30)	162VS125-30	0.031	0.030	33	12	14'-7"	11'-6"	10'-0"	12'-9"	10'-0"	8'-6"	11'-7"	8'-11"	--
			162VS125-30	0.031	0.030	33	16	13'-3"	10'-5"	8'-11"	11'-7"	8'-11"	--	10'-6"	7'-10"	--
			162VS125-30	0.031	0.030	33	24	11'-7"	8'-11"	--	10'-1"	--	--	8'-10"	--	--
	2-1/2"	20 (30)	250VS125-30	0.031	0.030	33	12	18'-9"	14'-10"	13'-0"	16'-4"	13'-0"	11'-4"	14'-10"	11'-10"	10'-4"
			250VS125-30	0.031	0.030	33	16	17'-0"	13'-6"	11'-10"	14'-10"	11'-10"	10'-4"	13'-6"	10'-9"	9'-3"
			250VS125-30	0.031	0.030	33	24	14'-10"	11'-10"	10'-4"	12'-9"	10'-4"	8'-10"	11'-0"	9'-3"	--
	3-5/8"	20 (30)	362VS125-30	0.031	0.030	33	12	23'-3"	18'-6"	16'-2"	20'-4"	16'-2"	14'-1"	18'-6"	14'-8"	12'-10"
			362VS125-30	0.031	0.030	33	16	21'-2"	16'-9"	14'-8"	18'-6"	14'-8"	12'-10"	16'-4"	13'-4"	11'-6"
			362VS125-30	0.031	0.030	33	24	18'-6"	14'-8"	12'-10"	15'-4"	12'-10"	11'-0"	13'-4"	11'-6"	9'-11"
	4"	20 (30)	400VS125-30	0.031	0.030	33	12	25'-2"	20'-0"	17'-6"	22'-0"	17'-6"	15'-3"	19'-5"	15'-11"	13'-10"
			400VS125-30	0.031	0.030	33	16	22'-11"	18'-2"	15'-11"	19'-5"	15'-11"	13'-10"	16'-10"	14'-5"	12'-7"
			400VS125-30	0.031	0.030	33	24	19'-5"	15'-11"	13'-10"	15'-10"	13'-10"	12'-1"	13'-9"	12'-7"	10'-11"
6"	20 (30)	600VS125-30	0.031	0.030	33	12	31'-10"	26'-9"	23'-4"	26'-0"	23'-4"	20'-5"	22'-6"	21'-3"	18'-6"	
		600VS125-30	0.031	0.030	33	16	27'-7"	24'-3"	21'-3"	22'-6"	21'-3"	18'-6"	19'-6"	19'-3"	16'-10"	
		600VS125-30	0.031	0.030	33	24	22'-6"	21'-3"	18'-6"	18'-5"	18'-5"	16'-2"	15'-11"	15'-11"	14'-8"	
VIPER 33 MIL	1-5/8"	20 (33)	162VS125-33	0.035	0.033	33	12	14'-11"	11'-10"	10'-4"	13'-0"	10'-4"	8'-10"	11'-10"	9'-4"	--
			162VS125-33	0.035	0.033	33	16	13'-6"	10'-9"	9'-4"	11'-10"	9'-4"	--	10'-9"	8'-4"	--
			162VS125-33	0.035	0.033	33	24	11'-10"	9'-4"	--	10'-4"	--	--	9'-4"	--	--
	2-1/2"	20 (33)	250VS125-33	0.035	0.033	33	12	19'-4"	15'-4"	13'-5"	16'-10"	13'-5"	11'-8"	15'-4"	12'-2"	10'-8"
			250VS125-33	0.035	0.033	33	16	17'-7"	13'-11"	12'-2"	15'-4"	13'-11"	10'-8"	13'-11"	11'-0"	9'-8"
			250VS125-33	0.035	0.033	33	24	15'-4"	12'-2"	10'-8"	13'-5"	10'-8"	9'-2"	12'-0"	9'-8"	--
	3-5/8"	20 (33)	362VS125-33	0.035	0.033	33	12	23'-10"	18'-11"	16'-6"	20'-10"	16'-6"	14'-5"	18'-11"	15'-0"	13'-1"
			362VS125-33	0.035	0.033	33	16	21'-8"	17'-2"	15'-0"	18'-11"	15'-0"	13'-1"	17'-2"	13'-8"	11'-0"
			362VS125-33	0.035	0.033	33	24	18'-11"	15'-0"	13'-1"	16'-6"	13'-1"	11'-4"	14'-4"	11'-10"	10'-3"
	4"	20 (33)	400VS125-33	0.035	0.033	33	12	25'-8"	20'-4"	17'-10"	22'-5"	17'-10"	15'-7"	20'-4"	16'-2"	14'-1"
			400VS125-33	0.035	0.033	33	16	23'-4"	18'-6"	16'-2"	20'-4"	16'-2"	14'-2"	18'-4"	14'-8"	12'-10"
			400VS125-33	0.035	0.033	33	24	20'-4"	16'-2"	14'-1"	17'-3"	14'-2"	12'-4"	15'-0"	12'-10"	11'-2"
6"	20 (33)	600VS125-33	0.035	0.033	33	12	34'-5"	27'-7"	24'-1"	28'-1"	24'-1"	21'-1"	24'-4"	21'-11"	19'-2"	
		600VS125-33	0.035	0.033	33	16	29'-10"	25'-								





# NON-COMPOSITE LIMITING HEIGHTS - FULLY BRACED

MODEL NO.	DEPTH	GAUGE (mil.)	MEMBER	YIELD (ksi)	SPACING O.C. (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
VIPER25	1-5/8"	25 EQ (15)	162VS125-15	50	12	9'-5" F	7'-6"	6'-7"	7'-8" F	6'-7"	--	6'-7" F	6'-0"	--
			162VS125-15	50	16	8'-1" F	6'-10"	6'-0"	6'-7" F	6'-0"	--	--	--	--
			162VS125-15	50	24	6'-7" F	6'-0"	--	--	--	--	--	--	--
	2-1/2"	25 EQ (15)	250VS125-15	50	12	12'-6" F	10'-7"	9'-2"	10'-2" F	9'-2"	8'-1"	8'-10" F	8'-5"	7'-4"
			250VS125-15	50	16	10'-10" F	9'-7"	8'-5"	8'-10" F	8'-5"	7'-4"	7'-8" F	7'-7"	6'-8"
			250VS125-15	50	24	8'-10" F	8'-5"	7'-4"	7'-1" W	7'-1" W	6'-5"	--	--	--
	3-5/8"	25 EQ (15)	362VS125-15	50	12	14'-7" F	13'-11"	12'-1"	11'-11" F	11'-11" F	10'-7"	10'-4" F	10'-4" F	9'-7"
			362VS125-15	50	16	12'-8" F	12'-7"	11'-0"	10'-4" F	10'-4" F	9'-7"	9'-0" F	9'-0" F	8'-10"
			362VS125-15	50	24	10'-4" F	10'-4" F	9'-7"	8'-5" F	8'-5" F	8'-5"	6'-7" W	6'-7" W	6'-7" W
	4"	25 EQ (15)	400VS125-15	50	12	15'-0" F	15'-0"	13'-1"	12'-4" F	12'-4" F	11'-5"	10'-7" F	10'-7" F	10'-5"
			400VS125-15	50	16	13'-0" F	13'-0" F	11'-11"	10'-7" F	10'-7" F	10'-5"	9'-2" F	9'-2" F	9'-2" F
			400VS125-15	50	24	10'-7" F	10'-7" F	10'-5"	8'-6" W	8'-6" W	8'-6" W	6'-5" W	6'-5" W	6'-5" W
6"	25 EQ (15)	600VS125-15	50	12	17'-8" F	17'-8" F	17'-7"	14'-1" W	14'-1" W	14'-1" W	10'-7" W	10'-7" W	10'-7" W	
		600VS125-15	50	16	15'-5" F	15'-5" F	15'-5" F	10'-7" W	10'-7" W	10'-7" W	7'-11" W	7'-11" W	7'-11" W	
		600VS125-15	50	24	10'-7" W	10'-7" W	10'-7" W	7'-0" W	7'-0" W	7'-0" W	--	--	--	
VIPER18MIL	1-5/8"	25 (18)	162VS125-18	33	12	9' 6"	7' 10"	6' 10"	7' 9"	6' 10"	5' 11"	6' 8"	6' 2"	5' 5"
			162VS125-18	33	16	8' 3"	7' 1"	6' 2"	6' 8"	6' 2"	5' 5"	5' 10"	5' 7"	4' 11"
			162VS125-18	33	24	6' 8"	6' 2"	5' 5"	5' 6"	5' 5"	4' 8"	4' 9"	4' 9"	4' 3"
	2-1/2"	25 (18)	250VS125-18	33	12	12' 5"	10' 10"	9' 5"	10' 1"	9' 5"	8' 3"	8' 9"	8' 7"	7' 6"
			250VS125-18	33	16	10' 9"	9' 10"	8' 7"	8' 9"	8' 7"	7' 6"	7' 7"	7' 7"	6' 9"
			250VS125-18	33	24	8' 9"	8' 7"	7' 6"	6' 11"	6' 11"	6' 6"	5' 2"	5' 2"	5' 2"
	3-5/8"	25 (18)	362VS125-18	33	12	14' 10"	14' 6"	12' 8"	12' 1"	12' 1"	11' 1"	9' 8"	9' 8"	9' 8"
			362VS125-18	33	16	12' 10"	12' 10"	11' 6"	9' 8"	9' 8"	9' 8"	7' 3"	7' 3"	7' 3"
			362VS125-18	33	24	9' 8"	9' 8"	9' 8"	6' 5"	6' 5"	6' 5"	4' 10"	4' 10"	4' 10"
	4"	25 (18)	400VS125-18	33	12	15' 7"	15' 7"	13' 9"	12' 9"	12' 9"	12' 0"	11' 0"	11' 0"	11' 0"
			400VS125-18	33	16	13' 6"	13' 6"	12' 5"	11' 0"	11' 0"	10' 11"	9' 6"	9' 6"	9' 6"
			400VS125-18	33	24	11' 0"	11' 0"	10' 11"	9' 0"	9' 0"	9' 0"	7' 9"	7' 9"	7' 9"
6"	25 (18)	600VS125-18	33	12	-	-	-	-	-	-	-	-	-	
		600VS125-18	33	16	-	-	-	-	-	-	-	-	-	
		600VS125-18	33	24	-	-	-	-	-	-	-	-	-	
VIPER20	1-5/8"	20EQ (20)	162VS125-20	57	12	10'-11"	8'-8"	7'-7"	9'-6"	7'-7"	6'-7"	8'-8"	6'-11"	6'-0"
			162VS125-20	57	16	9'-11"	7'-11"	6'-11"	8'-8"	6'-11"	6'-0"	7'-8" F	6'-4"	--
			162VS125-20	57	24	8'-8"	6'-11"	6'-0"	7'-2" F	6'-0"	--	6'-4" F	--	--
	2-1/2"	20EQ (20)	250VS125-20	57	12	15'-0"	11'-11"	10'-5"	13'-1"	10'-5"	9'-1"	11'-8" F	9'-6"	8'-4"
			250VS125-20	57	16	13'-7"	10'-10"	9'-6"	11'-8" F	9'-6"	8'-4"	10'-1" F	8'-7"	7'-6"
			250VS125-20	57	24	11'-8" F	9'-6"	8'-4"	9'-6" F	8'-4"	7'-2"	8'-4" F	7'-6"	6'-7"
	3-5/8"	20EQ (20)	362VS125-20	57	12	19'-6" F	15'-10"	13'-10"	15'-11" F	13'-10"	12'-0"	13'-10" F	12'-6"	10'-11"
			362VS125-20	57	16	16'-11" F	14'-4"	12'-6"	13'-10" F	12'-6"	10'-11"	11'-11" F	11'-5"	9'-11"
			362VS125-20	57	24	13'-10" F	12'-6"	10'-11"	11'-2" F	10'-11"	9'-6"	9'-8" F	9'-8" F	8'-8"
	4"	20EQ (21)	400VS125-21	57	12	21'-6"	17'-0"	14'-11"	18'-1" F	14'-11"	13'-0"	15'-8" F	13'-6"	11'-10"
			400VS125-21	57	16	19'-2" F	15'-6"	13'-6"	15'-8" F	13'-6"	11'-10"	13'-7" F	12'-4"	10'-8"
			400VS125-21	57	24	15'-8" F	13'-6"	11'-10"	12'-10" F	11'-10"	10'-4"	11'-1" F	10'-8"	9'-5"
6"	20EQ (21)	600VS125-21	57	12	26'-0" F	22'-6"	19'-8"	21'-2" F	19'-8"	17'-2"	18'-5" F	17'-11"	15'-7"	
		600VS125-21	57	16	22'-6" F	20'-5"	17'-11"	18'-5" F	17'-11"	15'-7"	15'-11" F	15'-11" F	14'-2"	
		600VS125-21	57	24	18'-5" F	17'-11"	15'-7"	15'-0" F	15'-0" F	13'-7"	12'-1" W	12'-1" W	12'-1" W	
VIPER30MIL	1-5/8"	20 (30)	162VS125-30	33	12	11'-8"	9'-4"	8'-1"	10'-2"	8'-1"	7'-1"	8'-4"	7'-5"	6'-6"
			162VS125-30	33	16	10'-8"	8'-6"	7'-5"	9'-4"	7'-5"	6'-6"	8'-1" F	6'-8"	--
			162VS125-30	33	24	9'-4"	7'-5"	6'-6"	7'-8" F	6'-6"	--	6'-7" F	--	--
	2-1/2"	20 (30)	250VS125-30	33	12	16'-2"	12'-11"	11'-4"	14'-2"	11'-4"	9'-10"	12'-5" F	10'-2"	8'-11"
			250VS125-30	33	16	14'-8"	11'-8"	10'-2"	12'-5" F	10'-2"	8'-11"	10'-8" F	9'-4"	8'-1"
			250VS125-30	33	24	12'-5" F	10'-2"	8'-11"	10'-1" F	8'-11"	7'-10"	8'-10" F	8'-1"	7'-1"
	3-5/8"	20 (30)	362VS125-30	33	12	21'-4" F	17'-2"	15'-0"	17'-5" F	15'-0"	13'-1"	15'-0" F	13'-7"	11'-11"
			362VS125-30	33	16	18'-5" F	15'-7"	13'-7"	15'-0" F	13'-7"	11'-11"	13'-0" F	12'-5"	10'-10"
			362VS125-30	33	24	15'-0" F	13'-7"	11'-11"	12'-4" F	11'-11"	10'-5"	10'-7" F	10'-7" F	9'-5"
	4"	20 (30)	400VS125-30	33	12	22'-6" F	18'-6"	16'-2"	18'-4" F	16'-2"	14'-1"	15'-11" F	14'-8"	12'-11"
			400VS125-30	33	16	19'-5" F	16'-10"	14'-8"	15'-11" F	14'-8"	12'-11"	13'-8" F	13'-5"	11'-8"
			400VS125-30	33	24	15'-11" F	14'-8"	12'-11"	13'-0" F	12'-11"	11'-2"	11'-2" F	11'-2" F	10'-2"
6"	20 (30)	600VS125-30	33	12	28'-2" F	25'-4"	22'-1"	23'-0" F	22'-1"	19'-4"	19'-11" F	19'-11" F	17'-6"	
		600VS125-30	33	16	24'-5" F	23'-0"	20'-1"	19'-11" F	19'-11" F	17'-6"	17'-2" F	17'-2" F	15'-11"	
		600VS125-30	33	24	19'-11" F	19'-11" F	17'-6"	16'-4" F	16'-4" F	15'-4"	12'-5" W	12'-5" W	12'-5" W	
VIPER33MIL	1-5/8"	20 (33)	162VS125-33	33	12	12'-1"	9'-7"	8'-5"	10'-7"	8'-5"	7'-4"	8'-7"	7'-7"	6'-8"
			162VS125-33	33	16	11'-0"	8'-8"	7'-7"	9'-7"	7'-7"	6'-8"	8'-8" F	6'-11"	6'-1"
			162VS125-33	33	24	9'-7"	7'-7"	6'-8"	8'-2" F	6'-8"	--	7'-1" F	6'-1"	--
	2-1/2"	20 (33)	250VS125-33	33	12	16'-10"	13'-4"	11'-7"	14'-8"	11'-7"	10'-2"	13'-4" F	10'-7"	9'-2"
			250VS125-33	33	16	15'-4"	12'-1"	10'-7"	13'-4" F	10'-7"	9'-2"	11'-6" F	9'-7"	8'-5"
			250VS125-33	33	24	13'-4" F	10'-7"	9'-2"	10'-10" F	9'-2"	8'-1"	9'-5" F	8'-5"	7'-4"
	3-5/8"	20 (33)	362VS125-33	33	12	22'-5"	17'-10"	15'-6"	18'-10"	15'-6"	13'-7"	16'-4" F	14'-1"	12'-4"
			362VS125-33	33	16	19'-11" F	16'-1"	14'-1"	16'-4" F	14'-1"	12'-4"	14'-1" F	12'-10"	11'-2"
			362VS125-33	33	24	16'-4" F	14'-1"	12'-4"	13'-4" F	12'-4"	10'-10"	11'-6" F	11'-2"	9'-10"
	4"	20 (33)	400VS125-33	33	12	24'-2"	19'-2"	16'-10"	19'-10" F	16'-10"	14'-7"	17'-2" F	15'-2"	13'-4"
			400VS125-33	33	16	21'-0" F	17'-5"	15'-2"	17'-2" F	15'-2"	13'-4"	14'-11" F	13'-10"	12'-1"
			400VS125-33	33	24	17'-2" F	15'-2"	13'-4"	14'-0" F	13'-4"	11'-7"	12'-1" F	12'-1" F	10'-7"
6"	20 (33)	600VS125-33	33	12	30'-5" F	26'-4"	23'-0"	24'-10" F	23'-0"	20'-1"	21'-6" F	20'-11"	18'-2"	
		600VS125-33	33	16	26'-4" F	23'-11"	20'-11"	21'-6" F	20'-11"	18'-2"	18'-7" F	18'-7" F	16'-7"	
		600VS125-33	33	24	21'-6" F	20'-11"	18'-2"	17'-6" F	17'-6" F	15'-11"	15'-2" F	15'-2" F	14'-6"	

"f"-flexure controls;  
 "s"-shear controls;  
 "w"-web crippling controls. No letter next to the number means deflection controls.

**Notes:** 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. The web crippling values are based on testing with a bearing length of 1". 3. For bending, studs are assumed to be adequately braced to develop full

allowable moment. Studs are considered. 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 C3.4.2 of AISI S100-07. 6. No web stiffeners are required for studs with h/t≥ 200, web crippling and shear values

have been confirmed by testing. Fully braced when unbraced length is less than Lu. See section properties table on page 5 for Lu values. 7. The factory punchouts are in accordance with section C5 of AISI S201-07. The distance from the center of the last punchout to the end of the stud is 12".



# NON-COMPOSITE LIMITING HEIGHTS - BRACED 48" O.C.



MODEL NO.	DEPTH	GAUGE (mil.)	MEMBER	DESIGN (in)	MIN. (in)	YIELD (ksi)	SPACING O.C. (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	
VIPER25	1-5/8"	25 EQ (15)	162VS125-15	0.016	0.015	50	12	8'-8" F	7'-6" F	6'-7" F	7'-1" F	6'-7" F	--	6'-1" F	6'-0" F	--	
			162VS125-15	0.016	0.015	50	16	7'-6" F	6'-10" F	6'-0" F	6'-1" F	6'-0" F	--	--	--	--	--
			162VS125-15	0.016	0.015	50	24	6'-1" F	6'-0" F	--	--	--	--	--	--	--	--
	2-1/2"	25 EQ (15)	250VS125-15	0.016	0.015	50	12	11'-10" F	10'-7" F	9'-2" F	9'-7" F	9'-2" F	8'-1" F	8'-5" F	8'-5" F	7'-4" F	7'-4" F
			250VS125-15	0.016	0.015	50	16	10'-2" F	9'-7" F	8'-5" F	8'-5" F	8'-5" F	7'-4" F	7'-2" F	7'-2" F	6'-8" F	
			250VS125-15	0.016	0.015	50	24	8'-5" F	8'-5" F	7'-4" F	6'-8" W	6'-8" W	6'-5" F	--	--	--	--
	3-5/8"	25 EQ (15)	362VS125-15	0.016	0.015	50	12	13'-2" F	13'-2" F	12'-1" F	10'-10" F	10'-10" F	10'-7" F	9'-4" F	9'-4" F	9'-4" F	
			362VS125-15	0.016	0.015	50	16	11'-5" F	11'-5" F	11'-0" F	9'-4" F	9'-4" F	9'-4" F	7'-10" W	7'-10" W	7'-10" W	
	4"	25 EQ (15)	400VS125-15	0.016	0.015	50	12	13'-10" F	13'-10" F	13'-1" F	11'-4" F	11'-4" F	11'-4" F	9'-10" F	9'-10" F	9'-10" F	
			400VS125-15	0.016	0.015	50	16	12'-0" F	12'-0" F	11'-11" F	9'-10" F	9'-10" F	9'-10" F	7'-5" W	7'-5" W	7'-5" W	
	6"	25 EQ (15)	600VS125-15	0.016	0.015	50	12	14'-1" W	14'-1" W	14'-1" W	9'-5" W	9'-5" W	9'-5" W	7'-1" W	7'-1" W	7'-1" W	
			600VS125-15	0.016	0.015	50	16	10'-7" W	10'-7" W	10'-7" W	7'-1" W	7'-1" W	7'-1" W	--	--	--	
VIPER 18MIL	1-5/8"	25 (18)	162VS125-18	0.019	0.018	33	12	8' 11"	7' 10"	6' 10"	7' 4"	6' 10"	5' 11"	6' 4"	6' 2"	5' 5"	
			162VS125-18	0.019	0.018	33	16	7' 9"	7' 1"	6' 2"	6' 4"	6' 2"	5' 5"	5' 6"	5' 6"	4' 11"	
			162VS125-18	0.019	0.018	33	24	6' 4"	6' 2"	5' 5"	5' 2"	5' 2"	4' 8"	4' 6"	4' 6"	4' 3"	
	2-1/2"	25 (18)	250VS125-18	0.019	0.018	33	12	12' 1"	10' 10"	9' 5"	9' 11"	9' 5"	8' 3"	8' 7"	8' 7"	7' 6"	
			250VS125-18	0.019	0.018	33	16	10' 6"	9' 10"	8' 7"	8' 7"	8' 7"	7' 6"	7' 5"	7' 5"	6' 9"	
			250VS125-18	0.019	0.018	33	24	8' 7"	8' 7"	7' 6"	6' 11"	6' 11"	6' 6"	5' 2"	5' 2"	5' 2"	
	3-5/8"	25 (18)	362VS125-18	0.019	0.018	33	12	15' 1"	14' 6"	12' 8"	12' 4"	12' 4"	11' 1"	9' 8"	9' 8"	9' 8"	
			362VS125-18	0.019	0.018	33	16	13' 1"	13' 1"	11' 6"	9' 8"	9' 8"	9' 8"	7' 3"	7' 3"	7' 3"	
			362VS125-18	0.019	0.018	33	24	9' 8"	9' 8"	9' 8"	6' 5"	6' 5"	6' 5"	4' 10"	4' 10"	4' 10"	
	4"	25 (18)	400VS125-18	0.019	0.018	33	12	15' 11"	15' 8"	13' 8"	13' 0"	13' 0"	12' 10"	11' 3"	11' 3"	10' 10"	
			400VS125-18	0.019	0.018	33	16	13' 9"	13' 9"	12' 5"	12' 5"	11' 3"	10' 10"	9' 9"	9' 9"	9' 9"	
			400VS125-18	0.019	0.018	33	24	11' 3"	11' 3"	10' 10"	10' 10"	9' 2"	9' 2"	7' 11"	7' 11"	7' 11"	
6"	25 (18)	600VS125-18	0.019	0.018	33	12	-	-	-	-	-	-	-	-	-		
		600VS125-18	0.019	0.018	33	16	-	-	-	-	-	-	-	-	-		
		600VS125-18	0.019	0.018	33	24	-	-	-	-	-	-	-	-	-		
VIPER20	1-5/8"	20EQ (20)	162VS125-20	0.021	0.020	57	12	10'-7" F	8'-8" F	7'-7" F	8'-7" F	7'-7" F	6'-7" F	7'-6" F	6'-11" F	6'-0" F	
			162VS125-20	0.021	0.020	57	16	9'-2" F	7'-11" F	6'-11" F	7'-6" F	6'-11" F	6'-0" F	6'-6" F	6'-4" F	--	
			162VS125-20	0.021	0.020	57	24	7'-6" F	6'-11" F	6'-0" F	6'-1" F	6'-0" F	--	--	--	--	
	2-1/2"	20EQ (20)	250VS125-20	0.021	0.020	57	12	14'-4" F	11'-11" F	10'-5" F	11'-8" F	10'-5" F	9'-1" F	10'-1" F	9'-6" F	8'-4" F	
			250VS125-20	0.021	0.020	57	16	12'-5" F	10'-10" F	9'-6" F	10'-1" F	9'-6" F	8'-4" F	8'-10" F	8'-7" F	7'-6" F	
			250VS125-20	0.021	0.020	57	24	10'-1" F	9'-6" F	8'-4" F	8'-4" F	8'-4" F	7'-2" F	7'-2" F	7'-2" F	6'-7" F	
	3-5/8"	20EQ (20)	362VS125-20	0.021	0.020	57	12	16'-2" F	15'-10" F	13'-10" F	13'-2" F	13'-2" F	12'-0" F	11'-5" F	11'-5" F	10'-11" F	
			362VS125-20	0.021	0.020	57	16	14'-0" F	14'-0" F	12'-6" F	11'-5" F	11'-5" F	10'-11" F	9'-11" F	9'-11" F	9'-11" F	
			362VS125-20	0.021	0.020	57	24	11'-5" F	11'-5" F	10'-11" F	9'-4" F	9'-4" F	9'-4" F	8'-1" F	8'-1" F	8'-1" F	
	4"	20EQ (21)	400VS125-21	0.022	0.021	57	12	17'-10" F	17'-0" F	14'-11" F	14'-7" F	14'-7" F	13'-0" F	12'-7" F	12'-7" F	11'-10" F	
			400VS125-21	0.022	0.021	57	16	15'-6" F	15'-6" F	13'-6" F	12'-7" F	12'-7" F	11'-10" F	10'-11" F	10'-11" F	10'-8" F	
			400VS125-21	0.022	0.021	57	24	12'-7" F	12'-7" F	11'-10" F	10'-4" F	10'-4" F	10'-4" F	8'-11" F	8'-11" F	8'-11" F	
6"	20EQ (21)	600VS125-21	0.022	0.021	57	12	23'-1" F	22'-6" F	19'-8" F	18'-11" F	18'-11" F	17'-2" F	16'-5" F	16'-5" F	15'-7" F		
		600VS125-21	0.022	0.021	57	16	20'-0" F	20'-0" F	17'-11" F	16'-5" F	16'-5" F	15'-7" F	12'-10" W	12'-10" W	12'-10" W		
		600VS125-21	0.022	0.021	57	24	16'-5" F	16'-5" F	15'-7" F	11'-5" W	11'-5" W	11'-5" W	8'-7" W	8'-7" W	8'-7" W		
VIPER 30MIL	1-5/8"	20 (30)	162VS125-30	0.031	0.030	33	12	11'-10" F	9'-4" F	8'-2" F	8'-11" F	7'-5" F	6'-6" F	8'-11" F	7'-5" F	6'-6" F	
			162VS125-30	0.031	0.030	33	16	10'-8" F	8'-6" F	7'-5" F	8'-11" F	7'-5" F	6'-6" F	7'-8" F	6'-8" F	--	
			162VS125-30	0.031	0.030	33	24	8'-11" F	7'-5" F	6'-6" F	7'-4" F	6'-6" F	--	6'-4" F	--	--	
	2-1/2"	20 (30)	250VS125-30	0.031	0.030	33	12	16'-4" F	12'-11" F	11'-4" F	13'-7" F	11'-4" F	9'-11" F	11'-10" F	10'-4" F	9'-0" F	
			250VS125-30	0.031	0.030	33	16	14'-5" F	11'-8" F	10'-4" F	11'-10" F	10'-4" F	9'-0" F	10'-2" F	9'-4" F	8'-1" F	
			250VS125-30	0.031	0.030	33	24	11'-10" F	10'-4" F	9'-0" F	9'-7" F	9'-0" F	7'-10" F	8'-4" F	8'-1" F	7'-1" F	
	3-5/8"	20 (30)	362VS125-30	0.031	0.030	33	12	20'-0" F	17'-2" F	15'-0" F	16'-4" F	15'-0" F	13'-1" F	14'-2" F	13'-8" F	11'-11" F	
			362VS125-30	0.031	0.030	33	16	17'-4" F	15'-7" F	13'-8" F	14'-2" F	13'-8" F	11'-11" F	12'-4" F	12'-4" F	10'-10" F	
			362VS125-30	0.031	0.030	33	24	14'-2" F	13'-8" F	11'-11" F	11'-7" F	11'-7" F	10'-5" F	10'-0" F	10'-0" F	9'-6" F	
	4"	20 (30)	400VS125-30	0.031	0.030	33	12	21'-1" F	18'-7" F	16'-4" F	17'-2" F	16'-4" F	14'-2" F	14'-11" F	14'-10" F	12'-11" F	
			400VS125-30	0.031	0.030	33	16	18'-4" F	16'-11" F	14'-10" F	14'-11" F	14'-10" F	12'-11" F	12'-11" F	12'-11" F	11'-8" F	
			400VS125-30	0.031	0.030	33	24	14'-11" F	14'-10" F	12'-11" F	12'-2" F	12'-2" F	11'-4" F	10'-7" F	10'-7" F	10'-2" F	
6"	20 (30)	600VS125-30	0.031	0.030	33	12	28'-0" F	25'-6" F	22'-4" F	22'-10" F	22'-10" F	19'-6" F	19'-10" F	19'-10" F	17'-8" F		
		600VS125-30	0.031	0.030	33	16	24'-2" F	23'-2" F	20'-2" F	19'-10" F	19'-10" F	17'-8" F	17'-1" F	17'-1" F	16'-1" F		
		600VS125-30	0.031	0.030	33	24	19'-10" F	19'-10" F	17'-8" F	15'-7" W	15'-7" W	15'-6" F	11'-8" W	11'-8" W	11'-8" W		
VIPER 33 MIL	1-5/8"	20 (33)	162VS125-33	0.035	0.033	33	12	12'-2" F	9'-8" F	8'-5" F	10'-7" F	8'-5" F	7'-5" F	8'-5" F	7'-0" F	6'-1" F	
			162VS125-33	0.035	0.033	33	16	11'-1" F	8'-10" F	7'-8" F	9'-6" F	7'-8" F	6'-8" F	8'-2" F	7'-0" F	6'-1" F	
			162VS125-33	0.035	0.033	33	24	9'-6" F	7'-8" F	6'-8" F	7'-8" F	6'-8" F	--	6'-8" F	6'-1" F	--	
	2-1/2"	20 (33)	250VS125-33	0.035	0.033	33	12	16'-11" F	13'-5" F	11'-8" F	14'-5" F	11'-8" F	10'-2" F	12'-6" F	10'-7" F	9'-4" F	
			250VS125-33	0.035	0.033	33	16	15'-4" F	12'-2" F	10'-7" F	12'-6" F	10'-7" F	9'-4" F	10'-10" F	9'-7" F	8'-5" F	
			250VS125-33	0.035	0.033	33	24	12'-6" F	10'-7" F	9'-4" F	10'-2" F	9'-4" F	8'-1" F	8'-10" F	8'-5" F	7'-5" F	
	3-5/8"	20 (33)	362VS125-33	0.035	0.033	33	12	21'-4" F	17'-10" F	15'-7" F	17'-5" F	15'-7" F	13'-7" F	15'-1" F	14'-1" F	12'-5" F	
			362VS125-33	0.035	0.033	33	16	18'-5" F	16'-2" F	14'-1" F	15'-1" F	14'-1" F	12'-5" F	13'-0" F	12'-11" F	11'-2" F	
			362VS125-33	0.035	0.033	33	24	15'-1" F	14'-1" F	12'-5" F	12'-4" F	12'-4" F	10'-10" F	10'-8" F	10'-8" F	9'-10" F	
	4"	20 (33)	400VS125-33	0.035	0.033	33	12	22'-6" F	19'-4" F	16'-10" F	18'-4" F	16'-10" F	14'-8" F	15'-11" F	15'-4" F	13'-4" F	
			400VS125-33	0.035	0.033	33	16	19'-5" F	17'-6" F	15'-4" F	15'-11" F	15'-4" F	13'-4" F	13'-10" F	13'-10" F	12'-1" F	
			400VS125-33	0.035	0.033	33	24	15'-11" F	15'-4" F	13'-4" F	13'-0" F	13'-0" F	11'-8" F	11'-2" F	11'-2" F	10'-7" F	
6"	20 (33)	600VS125-33	0.035	0.033	33	12	29'-10" F	26'-6" F	23'-1" F								



# ALLOWABLE CEILING SPANS

L/240			4 PSF LATERAL SUPPORT OF COMPRESSION FLANGE						6 PSF LATERAL SUPPORT OF COMPRESSION FLANGE					
MODEL NO.	MEMBER	Fy ksi	Unsupported Joist Spacing (in) O.C.			Midspan Joist Spacing (in) O.C.			Unsupported Joist Spacing (in) O.C.			Midspan Joist Spacing (in) O.C.		
			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
	400VS125-21	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
	600VS125-21	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 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"	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

L/360			4 PSF LATERAL SUPPORT OF COMPRESSION FLANGE						6 PSF LATERAL SUPPORT OF COMPRESSION FLANGE					
MODEL NO.	MEMBER	Fy ksi	Unsupported Joist Spacing (in) O.C.			Midspan Joist Spacing (in) O.C.			Unsupported Joist Spacing (in) O.C.			Midspan 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"	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
	400VS125-21	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
	600VS125-21	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 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; "s" - shear controls; "w" - web crippling controls.  
No letter next to the number means deflection controls.

**Ceiling Span Notes:**

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 C3.4.2 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 studs with h/t > 200, web crippling and shear values have been confirmed by testing.
5. All values are for simple spans, with compression flange either unbraced or braced at midspan.
6. Ceiling spans are based on total load of assembly, not including storage or live load for accessible ceilings.
7. The factory punchouts are in accordance with section C5 of AISI S201-07. The distance from the center of the last punchout to the end of the stud is 12".

**For more information, please contact CEMCO's Technical Service Department at 800-416-2278.**  
This technical information reflects the most current information available and supersedes any and all previous publications effective November 1, 2013 #VSB5-8/2013



# SCREW ALLOWABLE LOADS (lbs.)

MODEL NO.	DESIGN THICKNESS (in)	MIN. THICKNESS (in)	FY YIELD (ksi)	FU TENSILE (ksi)	#6 SCREW (0.138" dia; 0.25" head)			#8 SCREW (0.164" dia; 0.3125" head)			#10 SCREW (0.190" dia; 0.34" head)			C645 SCREW PENETRATION TEST (P, F)
					SHEAR	PULL OUT	PULL OVER	SHEAR	PULL OUT	PULL OVER	SHEAR	PULL OUT	PULL OVER	
VIPER25	0.0155	0.0147	50	50	75 <sup>a</sup>	30	97	909	36	121	939	42	132	PASS
VIPER20 (1-5/8" – 3-5/8")	0.0205	0.0195	57	57	1069	46	146	1249	54	183	1309	63	199	PASS
VIPER20 (4" – 6")	0.0220	0.0209	57	57	1299	49	157	1419	58	196	1449	98	213	PASS
CONVENTIONAL (25ga)	0.0188	0.0179	33	33	44	24	78	48	29	97	52	33	105	--
CONVENTIONAL (20ga DW) OR VIPER 30mil	0.0312	0.0296	33	33	95	40	129	103	48	161	111	55	175	--
CONVENTIONAL (20ga) OR VIPER 33mil	0.0346	0.0329	33	33	110	45	143	120	53	178	130	61	194	--

**Notes:**

- Capacities are based on section E4 of the AISI S100-07 Specification.
- Capacities are based on Allowable Strength Design (ASD).
- Screw pull-out capacities are based on listed head diameter.
- Two sheets of equal thickness and tensile strength are assumed in tabulated values.
- When materials of different steel thickness and tensile strength are connected, use the lowest value for shear capacity (tilting and bearing), for pull-out capacity use sheet closest to screw tip and for pull-over capacity use sheet closest to screw head.
- Where multiple fasteners are used, screws are assumed to have a center-to-center spacing of at least 3 times the nominal diameter.
- Screws are assumed to have a center-of-screw to edge-of-steel dimension of at least 1.5 times the nominal diameter of the screw.
- When screws are subjected to combination of shear and tension forces, interaction equation of AISI S100-2007 Specification section E4.5 shall be used.
- Viper25 & Viper20 shear values are tested per AISI S100-07 and AISI S905, tests conducted by Structural Testing & Research, Inc.
- Non Structural Code Compliance Certification Program requires the Shear and Pullout values of a screw in Viper25 & Viper20 be equal or greater than the equivalent conventional stud.

## SCREW PENETRATION TESTING (ASTM C 645, ASTM C 1002)

To pass screw penetration tests, studs must be capable of pulling the head of the screw below surface of gypsum board in less than 2 seconds without spin out.

HI-ABUSE/HI-IMPACT – VIPER20				
SHEATHING TYPE AND THICKNESS	STEEL FRAMING	SCREW TYPE	DRILL SPEED (rpm)	PASS/FAIL ASTM-C-1002
USG 5/8" VHI	3-5/8" VIPER20	#6 X 1-1/4" TYPE S SHARP PT	2500	PASS
			4000	PASS
NATIONAL GYPSUM 5/8" HIGH IMPACT	3-5/8" VIPER20	#6 X 1-1/4" TYPE S SHARP PT	2500	PASS
			4000	PASS
NATIONAL GYPSUM 5/8" HIGH ABUSE	3-5/8" VIPER20	#6 X 1-1/4" TYPE S SHARP PT	2500	PASS
			4000	PASS

CEMENT BOARD – VIPER20				
SHEATHING TYPE AND THICKNESS	STEEL FRAMING	SCREW TYPE	DRILL SPEED (rpm)	PASS/FAIL ASTM-C-1002
USG 1/2" Durock®	VIPER20	#9 BUILDDEX ROCK-ON	2500	PASS
			4000	PASS
		#9 PHILLIPS CEMENT BOARD	VIPER20	2500
4000	PASS			
4000	PASS			
NATIONAL GYPSUM 5/8" PERMABASE	VIPER20	#9 BUILDDEX ROCK-ON	2500	PASS
			4000	PASS
		#9 PHILLIPS CEMENT BOARD	2500	PASS
4000	PASS			
GYPSUM BOARD – VIPER25 & VIPER20				
1/2" TYPE C 5/8" TYPE X 5/8" TYPE X	VIPER25	#6 X 1-1/4" TYPE S SHARP PT	2500	PASS
	VIPER25		2500	PASS
	VIPER20		2500	PASS

**Notes:**

- Rock-on is a registered trademark of ITW Buildex.
- Durock is a registered trademark of the United States Gypsum Co. (USG)
- Phillips is a registered trademark of the Phillips Screw Co.
- Hi-Abuse, Hi-Impact, and Permbase are registered trademarks of the National Gypsum Co.



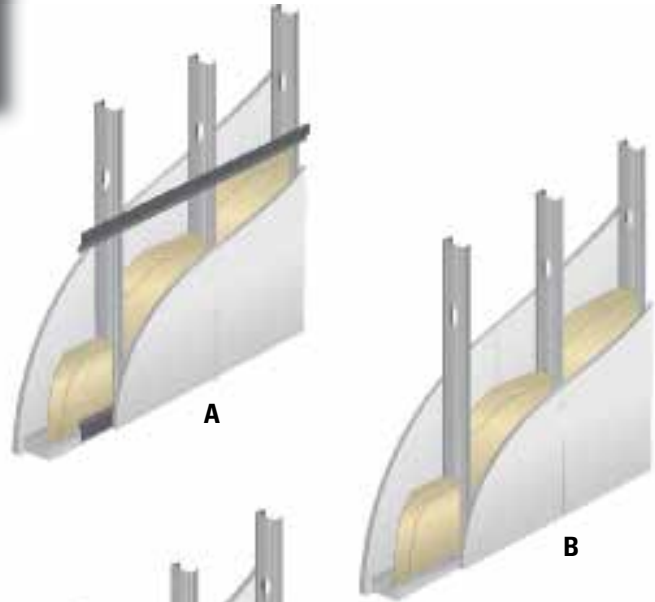
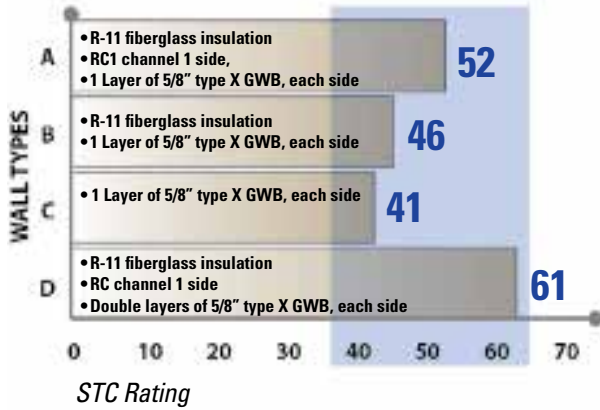
# ACOUSTIC PERFORMANCE (ASTM E 90)

The ViperStud® drywall framing system has been tested to determine the transmission of sound through walls. Acoustic tests were performed using 3-5/8" ViperStud steel studs. The tests were performed according to ASTM E 90 in different configurations.

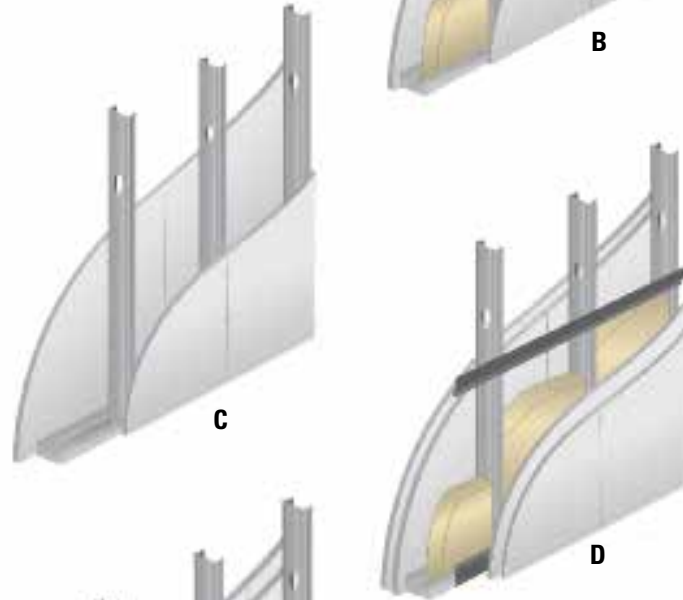
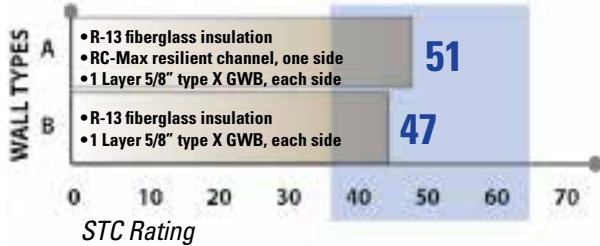
*Sound testing performed by Western Electro-Acoustic Laboratory and Architectural Testing, Inc.*

## WALL TYPES

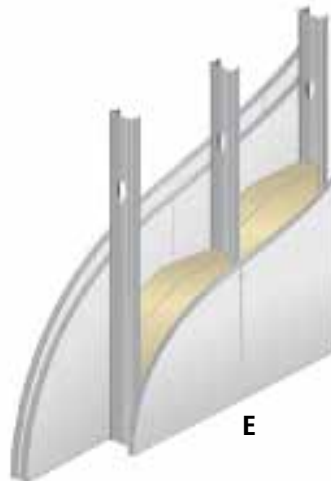
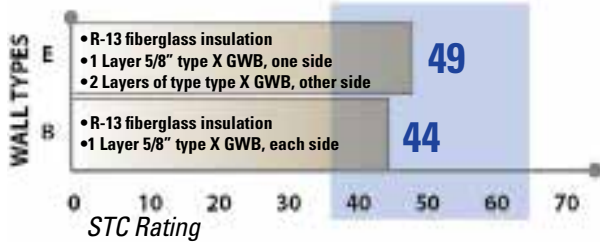
### VIPER25 24" O.C.



### VIPER25 16" O.C.



### VIPER20 16" O.C.





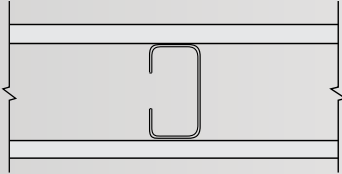


## FIRE TESTING DATA (ASTM E 119)

### 1 HOUR WALL ASSEMBLIES • NON-LOAD BEARING

#### Viper25 or Viper20- 3-5/8", 4", or 6"

##### 1 Hour Wall Assembly



##### WALL ASSEMBLIES

- Studs spaced 24" o.c.
- One layer of generic 5/8" Type X gypsum wallboard<sup>1</sup>
- No insulation required

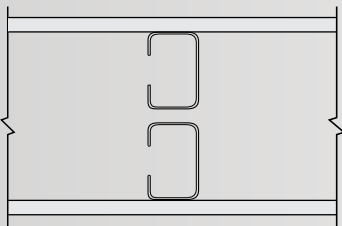
##### Warnock-Hersey Design No. CEM/WF 60-01

- The wallboard is oriented horizontally

##### Warnock-Hersey Design No. CEM/WF 60-02

- The wallboard is oriented vertically

##### 1 Hour Chase Wall Assembly



##### CHASE WALL ASSEMBLIES

- Two rows of ViperStud®
- Studs spaced 24" o.c.
- Can be aligned with a 1" minimum spacing between studs from each row, staggered or staggered and overlapped.

- One layer of generic 5/8" Type X gypsum wallboard<sup>1</sup>
- No insulation required

##### Warnock-Hersey Design No. CEM/WF 60-03

- The wallboard is oriented vertically

##### Warnock-Hersey Design No. CEM/WF 60-04

- The wallboard is oriented horizontally

**VIPERSTUD® IS  
FIRE TESTED**



### FOR EXPANDED UL CLASSIFICATIONS

See these UL Design Assemblies

#### Viper25 Steel Framing Member

for use in Design Nos. U375, U407, U419, V417, V435, V448, V477, V486, V489, V498, W411, W423, W424

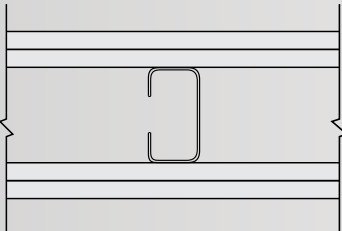
#### Viper20 Steel Framing Member

for use in Design Nos. U403, U408, U411, U412, U419, U421, U431, U435, U436, U450, U451, U454, U463, U465, U466, U471, U475, U478, U491, U494, U495, U496, V410, V412, V416, V417, V418, V419, V425, V435, V437, V438, V443, V444, V448, V449, V452, V476, V477, V496, V498, W411, W415, W424

### 2 HOUR WALL ASSEMBLIES • NON-LOAD BEARING

#### Viper25 or Viper20- 1-5/8", 2-1/2", 3-5/8", 4", or 6"

##### 2 Hour Wall Assembly



##### WALL ASSEMBLIES

- Studs spaced 24" o.c.
- Two layers of generic 5/8" Type X gypsum wallboard<sup>1</sup>
- No insulation required

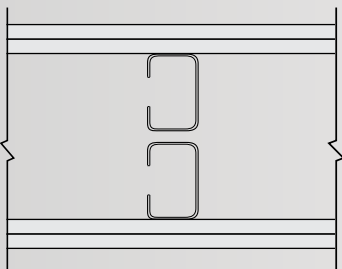
##### Warnock-Hersey Design No. CEM/WF 120-01

- The wallboard is oriented vertically

##### Warnock-Hersey Design No. CEM/WF 120-02

- The wallboard is oriented horizontally

##### 2 Hour Chase Wall Assembly



##### CHASE WALL ASSEMBLIES

- Two rows of ViperStud™ spaced 24" o.c.
- Can be aligned with a 1" minimum spacing between studs from each row, staggered or staggered and overlapped.
- Two layers of generic 5/8" Type X gypsum wallboard<sup>1</sup>
- No insulation required

##### Warnock-Hersey Design No. CEM/WF 120-03

- The wallboard is oriented vertically

##### Warnock-Hersey Design No. CEM/WF 120-04

- The wallboard is oriented horizontally

<sup>1</sup> 5/8" Generic Type X gypsum wallboard denotes these manufacturers for Warnock Hersey designs: American Gypsum, CertainTeed Gypsum, CGC Inc., Federal Gypsum Company, GP Gypsum, Lafarge North America, National Gypsum Co., PABCO Gypsum, Temple-Inland and United States Gypsum.

Visit [www.cemcosteel.com](http://www.cemcosteel.com) for more information on fire rated assemblies.



# IMPACT TESTING (ASTM C 1629)

## Test Summary:

All tests were conducted to ASTM C 1629 standard using Test Method ASTM E 695 for Soft Body Impact Tests and ASTM C 1629 Annex 1 for Hard Body Impact Tests. Each test was repeated 3 times as required by the test method and results reported to the ASTM standard published values for Level Classification.

## Test Materials:

Steel Studs – Viper20 Stud and track spaced 16" o.c., do not use ViperTrack25 on Viper20 studs for impact resistant walls.

Tests conducted using USG® & National Gypsum® boards.

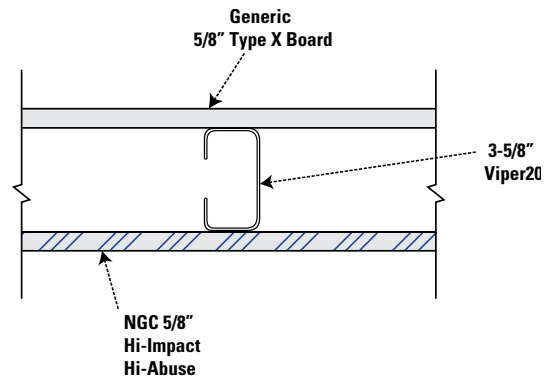
Testing conducted by IAS Certified 3rd party testing lab Intertek Testing Services.

### Additional Approved Boards for Viper20

- Certainteed, ProRoc Abuse Resistant & ProRoc Extra Abuse
- Lafarge Gypsum, Protecta AR 100 Abuse Board
- Temple-Inland, ComfortGuard AR & ComfortGuard IR
- Georgia Pacific Dens Brand Panels

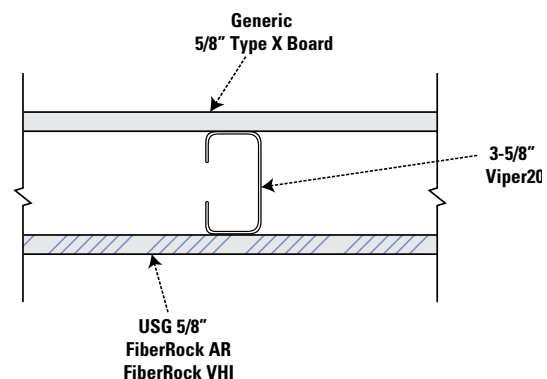
## NATIONAL GYPSUM®

Soft Body Impact Test Single Drop	Board Assembly 3-5/8" NGC Hi-Abuse	Classification Level 2
Soft Body Impact Test Single Drop	Board Assembly 3-5/8" NGC Hi-Impact	Classification Level 3
Soft Body Impact Test Progressive Drop	Board Assembly 3-5/8" NGC Hi-Abuse	Classification Level 1
Soft Body Impact Test Progressive Drop	Board Assembly 3-5/8" NGC Hi-Impact	Classification Level 3
Hard Body Impact Test Single Drop	Board Assembly 3-5/8" NGC Hi-Impact	Classification Level 3



## USG®

Soft Body Impact Test Single Drop	Board Assembly 3-5/8" USG FiberRock AR	Classification Level 2
Soft Body Impact Test Progressive Drop	Board Assembly 3-5/8" USG FiberRock VHI	Classification Level 3
Hard Body Impact Test Single Drop	Board Assembly 3-5/8" USG FiberRock AR	Classification Level 1
Hard Body Impact Test Single Drop	Board Assembly 3-5/8" USG FiberRock VHI	Classification Level 3



Soft body impact test using ViperStud.

- FiberRock VHI & FiberRock AR are registered trademarks of the United States Gypsum Co. (USG)
- Hi-Abuse, Hi-Impact, & Permabase are registered trademarks of the National Gypsum Co.
- ProRoc & ProRoc Extra are registered trademarks of Certainteed.
- Protecta AR 100 is a registered trademark of Lafarge Gypsum.
- ComfortGuard AR & ComfortGuard IR are registered trademarks of Temple-Inland.
- Dens Brand is a trademark of Georgia Pacific.



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- Member sizing and cost estimation for preliminary and conceptual designs.
- Professional, certified engineered shop drawings and calculations.
- Use our project submittal form to submit your project online.

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- 2 Deliver shop drawings and structural solutions based on the client's needs.
- 3 Provide full engineering support through the life of the project.



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