ViperStud®
MARINO WARE®

PRODUCT CATALOG

ICC ES Certified Code Compliant Product
ESR #2620
IBC 2015 COMPLIANT

MARINO WARE®

100% American-Owned and Operated | marinoware.com

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...

ViperStud® MARINO\WARE®

Standing Strong.™

A Track Record You Can Count On, Verified Code Compliant

Code Information

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

IBC/IRC 2009, 2012, 2015 Compliant

ICC-ES Certified Code Compliant Product

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

- **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:

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

Please see the full version of these reports online at www.marinoware.com

ICC ES Verified

Viper25, Viper20, Viper 30mil, and Viper 33mil manufactured by Marino\WARE® received 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:

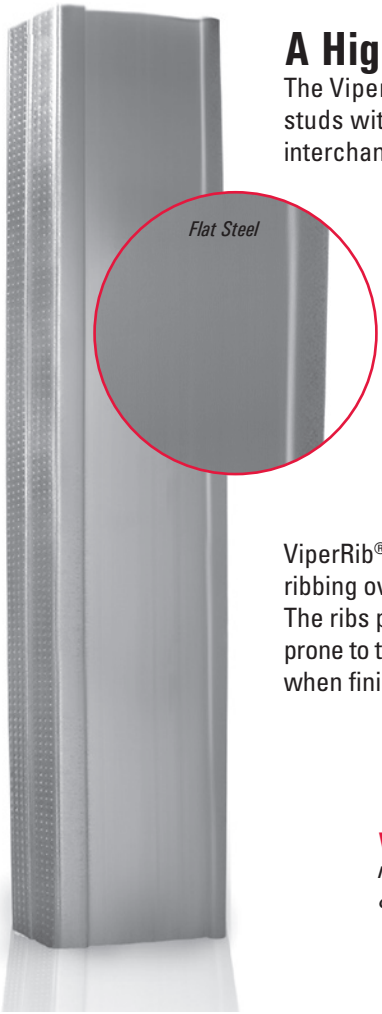
- MR Credit 2 - Construction Waste Management (1-2 points)
- MR Credit 4 Recycled Content (1-2 points)
- MR Credit 5 - Regional Materials (1-2 points)

LEED® v4 Information

- Product Specific Type III EPD
- Published HPD
- SDS Sheets

Patents:

US D621,963
US D621,964
CAN 134144
CAN 134143



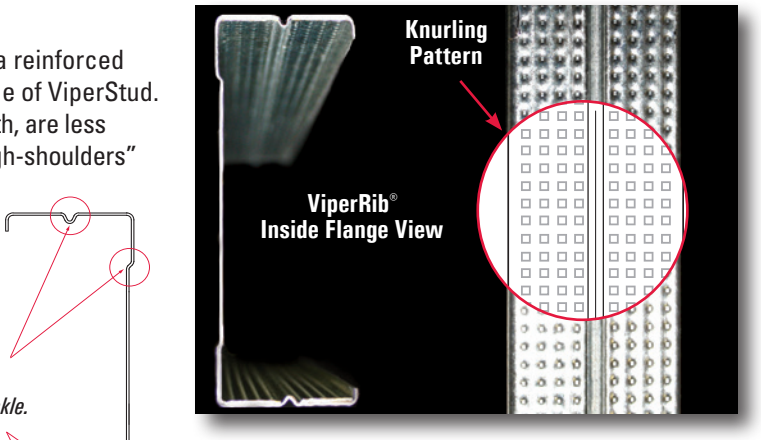
A High Strength, Flat Steel Drywall Framing System

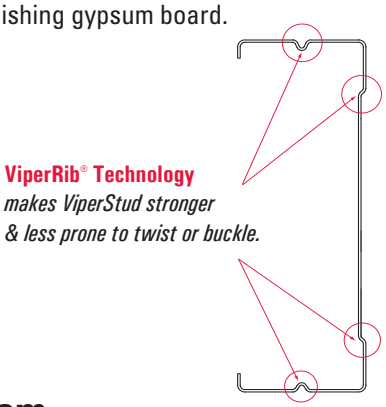
The ViperStud® Drywall Framing System offers all the benefits of conventional flat steel studs with a design that performs even better. The ViperStud drywall framing system is interchangeable with conventional framing components. Since ViperStud is flat steel, it is easy to plumb and mark, make minor 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.





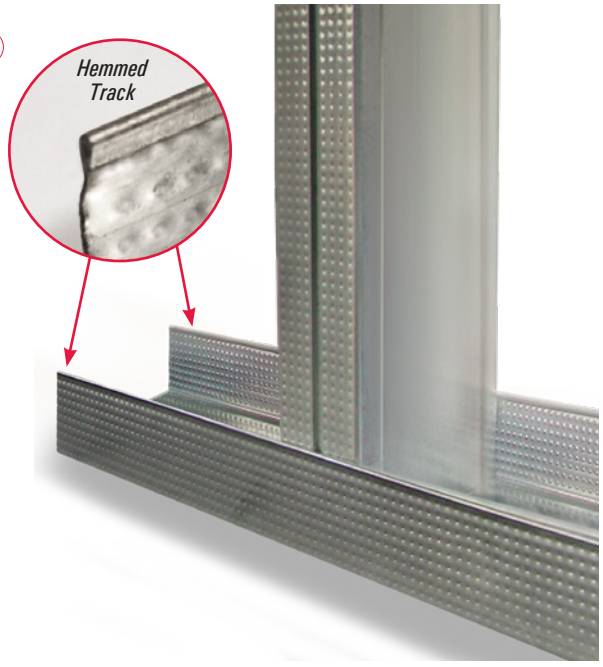
ViperRib® Technology
makes ViperStud stronger & less prone to twist or buckle.

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.



For more information, please contact Marino\WARE® Technical Services at 866-545-1545.
This technical information reflects the most current information available and supersedes any and all previous publications effective March 25, 2019 | MW_ViperStud_Catalog |

PHYSICAL PROPERTIES

ViperStud®

MODEL NO.	DESIGN THICKNESS (in.)	YIELD STRESS (ksi)	WEB SIZES (in.)	FLANGE (in.)	RETURN LIP (in.)
VIPER25	0.0155	50	1-5/8, 2-1/2, 3-5/8, 4, 6	1-1/4	1/4
VIPER20	0.0190	70	1-5/8, 2-1/2, 3-5/8, 4, 6	1-1/4	various
VIPER 30mil	0.0312	33	1-5/8, 2-1/2, 3-5/8, 4, 6	1-1/4	1/4
VIPER 33mil	0.0346	33	1-5/8, 2-1/2, 3-5/8, 4, 6	1-1/4	1/4

ViperTrack®

MODEL NO.	DESIGN THICKNESS (in.)	YIELD STRESS (ksi)	WEB SIZES (in.)	LEG SIZE (in.)
VIPERTRACK25	0.0155	50	1-5/8, 2-1/2, 3-5/8, 4, 6	1-1/4
VIPERTRACK20	0.0190	50	1-5/8, 2-1/2, 3-5/8, 4, 6	1-1/4
VIPERTRACK 30mil	0.0312	33	1-5/8, 2-1/2, 3-5/8, 4, 6	1-1/4
VIPERTRACK 33mil	0.0346	33	1-5/8, 2-1/2, 3-5/8, 4, 6	1-1/4

Notes:
1. Coatings per ASTM C645 & ASTM A 1003, 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", & 6" Stud is 1-1/2" x 2-1/2"

Viper25 (15 mil) is equivalent to conventional 25 gauge (18 mil) studs, and Viper20 (19 mil) is equivalent to conventional 20 gauge studs (30 mil).

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.)	YIELD STRESS (ksi)	WEB SIZES (in.)	LEG SIZE (in.)	GAP (in.)	LOAD (lb.)	MAX HEIGHT 5 psf, 16" o.c.
VIPERTRACK25	0.0155	50	1-5/8, 2-1/2, 3-5/8, 4, 6	2"	1/2"	34	10'-4"
VIPERTRACK20	0.0190	70	1-5/8, 2-1/2, 3-5/8, 4, 6	2"	1/2"	80	24'-2"
			2-1/2, 3-5/8, 4, 6	2-1/2"	3/4"	54	16'-1"
			2-1/2, 3-5/8, 4, 6	3"	1"	40	12'-1"
VIPERTRACK 30mil	0.0312	33	1-5/8, 2-1/2, 3-5/8, 4, 6	2"	1/2"	92	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"	46	13'-9"
VIPERTRACK 33mil	0.0346	33	1-5/8, 2-1/2, 3-5/8, 4, 6	2"	1/2"	113	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"

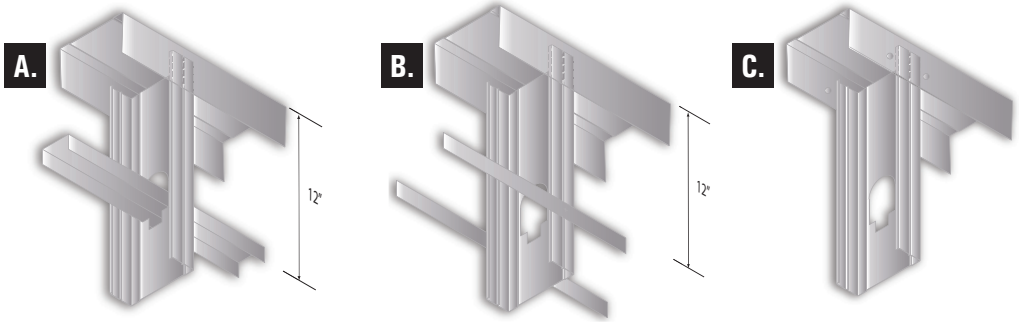
Studs are secured by one of the following methods:

A. CR channel and BRC Clip. 12" down from the stud end.

B. Attaching flat strap at each side of the stud flange. 12" down from the stud end.

C. 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. *Coating per ASTM C645 & ASTM A 1003, Table 1.*



SECTION PROPERTIES

VIPERSTUD®

MODEL NO.	GAUGE	MEMBER	DESIGN THICKNESS (in.)	YIELD STRESS (ksi)	WEIGHT (lb/ft)	GROSS PROPERTIES					EFFECTIVE PROPERTIES		MOMENTS				Critical Unbraced Length
						AREA (in^2)	I_x (in^4)	r_x (in.)	I_y (in^4)	r_y (in.)	I_{xd} (in^4)	S_x (in^3)	Allowable Moment M_a (in-k)	Local Buckling Nominal Moment Viper M_{nl} (in-k)	Distortional Buckling Nominal Moment Viper M_{nd} (in-k)	Nominal Moment for Conventional Studs M_n (in-k)	L_u (in.)
VIPER25	25EQ	162VS125-15	0.0155	50	0.24	0.0711	0.0320	0.671	0.0151	0.461	0.0322	0.024	0.66	1.42	1.20	1.02 (18 mil)	25.1
		250VS125-15	0.0155	50	0.29	0.0848	0.0844	0.998	0.0173	0.452	0.0903	0.042	1.17	2.72	2.12	1.72 (18 mil)	24.8
		362VS125-15[4]	0.0155	50	0.35	0.102	0.199	1.390	0.0193	0.435	0.205	0.058	1.60	3.48	2.90	2.47 (18 mil)	24.5
		400VS125-15[4]	0.0155	50	0.37	0.108	0.250	1.520	0.0198	0.429	0.255	0.061	1.69	3.99	3.06	2.74 (18 mil)	24.4
		600VS125-15[5]	0.0155	50	0.47	0.139	0.659	2.180	0.0219	0.397	0.628	0.085	2.36	5.90	4.27	4.13 (18 mil)	23.7
VIPER20	20EQ	162VS125-18	0.0190	70	0.285	0.0839	0.0391	0.683	0.0179	0.462	0.0328	0.0285	1.19	1.99	2.02	1.99 (30 mil)	21.2
		250VS125-18	0.0190	70	0.351	0.103	0.106	1.01	0.0227	0.469	0.0942	0.0581	2.09	4.07	3.49	3.49 (30 mil)	21.9
		362VS125-18	0.0190	70	0.423	0.124	0.249	1.42	0.0256	0.454	0.213	0.0755	3.08	5.28	5.14	5.14 (30 mil)	21.5
		400VS125-18	0.0190	70	0.449	0.132	0.315	1.55	0.0266	0.449	0.265	0.0847	3.44	5.93	5.74	5.74 (30 mil)	21.5
		600VS125-18[5]	0.0190	70	0.586	0.172	0.846	2.22	0.0319	0.430	0.647	0.151	5.41	10.6	9.04	9.00 (30 mil)	21.5
VIPER 30mil	20DW	162VS125-30	0.0312	33	0.46	0.135	0.062	0.680	0.028	0.455	0.062	0.067	1.32	2.21	2.38	1.99 (30 mil)	30.8
		250VS125-30	0.0312	33	0.55	0.161	0.166	1.020	0.032	0.448	0.163	0.120	2.31	3.96	3.86	3.49 (30 mil)	30.1
		362VS125-30	0.0312	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 (30 mil)	29.7
		400VS125-30	0.0312	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 (30 mil)	29.6
		600VS125-30	0.0312	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 (30 mil)	28.7
VIPER 33mil	20STR	162VS125-33	0.0346	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 (33 mil)	30.8
		250VS125-33	0.0346	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 (33 mil)	30.1
		362VS125-33	0.0346	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 (33 mil)	29.7
		400VS125-33	0.0346	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 (33 mil)	29.5
		600VS125-33	0.0346	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 (33 mil)	28.6

Notes:
1. Nominal Moments for Viper25 are based on testing. Allowable moment (Ma) is calculated with safety factor of 1.81 in accordance with chapter F of AISI S100-12 specification.
2. Nominal moment for Viper20, Viper 30mil, Viper 33mil and conventional studs are based on calculations per AISI S100-12.
3. Section properties are in accordance with AISI S100-12.
4. Web depth-to-thickness ratio exceeds 200.
5. Web depth-to-thickness ratio exceeds 260.
6. ViperStud is considered fully braced when the unbraced length is less than listed Lu.
7. KΦ assumed to be zero for distortional buckling moments.

VIPERTRACK®

MEMBER	LEG SIZE (in.)	WEIGHT (lb/ft)	DESIGN THICKNESS (in.)	YIELD STRESS (ksi)	GROSS PROPERTIES							EFFECTIVE PROPERTIES			TORSIONAL PROPERTIES				
					AREA (in^2)	I_x (in^4)	S_x (in^3)	r_x (in.)	I_y (in^4)	S_y (in^3)	r_y (in.)	I_{xd} (in^4)	S_{xe} (in^3)	M_a (in-k)	X_o (in.)	$Jx10^3$ (in^4)	C_w (in^6)	r_o (in.)	β
VIPERTRACK 1.25" LEG																			
162VT125-15	1.25	0.22	0.0155	50	0.064	0.035	0.040	0.736	0.011	0.0125	0.412	0.022	0.018	0.53	-0.877	0.0051	0.006	1.22	0.480
250VT125-15	1.25	0.26	0.0155	50	0.078	0.086	0.066	1.050	0.012	0.0133	0.400	0.054	0.027	0.80	-0.768	0.0062	0.015	1.36	0.683
362VT125-15[5]	1.25	0.32	0.0155	50	0.095	0.197	0.105	1.440	0.014	0.0139	0.381	0.115	0.039	1.15	-0.665	0.0076	0.035	1.63	0.833
400VT125-15[5]	1.25	0.34	0.0155	50	0.101	0.247	0.120	1.560	0.014	0.0141	0.374	0.141	0.043	1.27	-0.638	0.0081	0.043	1.73	0.864
600VT125-15[6]	1.25	0.45	0.0155	50	0.132	0.642	0.210	2.210	0.015	0.0146	0.342	0.325	0.063	1.90	-0.523	0.0106	0.109	2.29	0.948
162VT125-18	1.25	0.26	0.0190	50	0.077	0.033	0.042	0.660	0.013	0.015	0.407	0.019	0.018	0.44	-0.878	0.0092	0.006	1.17	0.438
250VT125-18	1.25	0.32	0.0190	50	0.093	0.091	0.073	0.986	0.014	0.016	0.392	0.055	0.035	0.88	-0.747	0.0011	0.016	1.30	0.668
362VT125-18	1.25	0.39	0.0190	50	0.115	0.218	0.121	1.377	0.016	0.016	0.370	0.132	0.057	1.43	-0.636	0.0138	0.038	1.56	0.834
400VT125-18	1.25	0.41	0.0190	50	0.122	0.275	0.139	1.503	0.016	0.016	0.363	0.166	0.065	1.62	-0.606	0.0146	0.048	1.66	0.867
600VT125-18	1.25	0.54	0.0190	50	0.160	0.740	0.248	2.152	0.017	0.011	0.330	0.420	0.105	2.63	-0.490	0.0192	0.122	2.23	0.952
162VT125-30	1.25	0.44	0.0312	33	0.129	0.071	0.080	0.741	0.022	0.0249	0.409	0.056	0.051	1.00	-0.868	0.0419	0.012	1.21	0.488
250VT125-30	1.25	0.53	0.0312	33	0.156	0.175	0.132	1.060	0.025	0.0265	0.397	0.142	0.090	1.77	-0.760	0.0508	0.030	1.36	0.689
362VT125-30	1.25	0.65	0.0312	33	0.192	0.399	0.211	1.440	0.027	0.0277	0.378	0.331	0.152	3.00	-0.658	0.0621	0.069	1.63	0.837
400VT125-30	1.25	0.69	0.0312	33	0.203	0.499	0.240	1.570	0.028	0.0280	0.371	0.417	0.176	3.47	-0.631	0.0659	0.086	1.73	0.867
600VT125-30	1.25	0.90	0.0312	33	0.266	1.300	0.421	2.210	0.031	0.0290	0.339	1.030	0.250	4.94	-0.517	0.0862	0.216	2.29	0.949
162VT125-33	1.25	0.49	0.0346	33	0.143	0.079	0.088	0.742	0.024	0.0276	0.408	0.064	0.059	1.16	-0.866	0.0571	0.013	1.21	0.489
250VT125-33	1.25	0.59	0.0346	33	0.174	0.195	0.146	1.060	0.027	0.0293	0.396	0.162	0.103	2.04	-0.758	0.0692	0.033	1.36	0.690
362VT125-33	1.25	0.72	0.0346	33	0.212	0.443	0.234	1.440	0.030	0.0306	0.377	0.375	0.173	3.43	-0.657	0.0848	0.077	1.63	0.838
400VT125-33	1.25	0.77	0.0346	33	0.225	0.554	0.266	1.570	0.031	0.0309	0.370	0.473	0.200	3.95	-0.629	0.0899	0.096	1.73	0.868
600VT125-33	1.25	1.00	0.0346	33	0.295	1.440	0.467	2.210	0.034	0.0321	0.339	1.190	0.298	5.89	-0.516	0.1180	0.239	2.29	0.949

Notes:
1. See page 6 for ViperTrack notes.

DEEP LEG VIPERTRACK SECTION PROPERTIES

MEMBER	LEG SIZE (in.)	WEIGHT (lb/ft)	DESIGN THICKNESS (in.)	YIELD STRESS (ksi)	GROSS PROPERTIES							EFFECTIVE PROPERTIES			TORSIONAL PROPERTIES				
					AREA (in^2)	I_x (in^4)	S_x (in^3)	r_x (in.)	I_y (in^4)	S_y (in^3)	r_y (in.)	I_{xd} (in^4)	S_{xe} (in^3)	M_a (in-k)	X_o (in.)	$Jx10^3$ (in^4)	C_w (in^6)	r_o (in.)	β
VIPERTRACK 2.00" LEG																			
162VT200-15	2.00	0.30	0.0155	50	0.087	0.052	0.060	0.773	0.038	0.030	0.663	0.025	0.017	0.50	-1.57	0.00700	0.0212	1.87	0.295
250VT200-15	2.00	0.34	0.0155	50	0.101	0.126	0.096	1.117	0.044	0.032	0.662	0.060	0.026	0.79	-1.43	0.00808	0.0535	1.93	0.453
362VT200-15[5]	2.00	0.40	0.0155	50	0.118	0.278	0.148	1.533	0.050	0.034	0.648	0.127	0.039	1.16	-1.28	0.00948	0.122	2.10	0.629
400VT200-15[5]	2.00	0.42	0.0155	50	0.124	0.345	0.167	1.667	0.051	0.034	0.642	0.155	0.043	1.28	-1.24	0.00995	0.152	2.17	0.676
600VT200-15[6]	2.00	0.53	0.0155	50	0.155	0.859	0.281	2.353	0.057	0.036	0.608	0.357	0.065	1.93	-1.06	0.0124	0.384	2.65	0.841
162VT200-18	2.00	0.36	0.0190	70	0.105	0.049	0.061	0.681	0.045	0.036	0.656	0.020	0.017	0.59	-1.591	0.0013	0.022	1.85	0.261
250VT200-18	2.00	0.41	0.0190	70	0.122	0.130	0.105	1.032	0.052	0.038	0.653	0.058	0.033	1.15	-1.415	0.0147	0.059	1.87	0.427
362VT200-18	2.00	0.49	0.0190	70	0.143	0.303	0.169	1.455	0.058	0.040	0.637	0.136	0.053	1.84	-1.253	0.0172	0.137	2.02	0.616
400VT200-18	2.00	0.51	0.0190	70	0.150	0.380	0.192	1.591	0.060	0.041	0.631	0.170	0.059	2.07	-1.209	0.0181	0.172	2.10	0.667
600VT200-18	2.00	0.64	0.0190	70	0.188	0.983	0.329	2.285	0.067	0.042	0.595	0.421	0.095	3.34	-1.023	0.0227	0.439	2.57	0.842
162VT200-30	2.00	0.60	0.0312	33	0.176	0.107	0.120	0.779	0.077	0.596	0.660	0.069	0.055	1.09	-1.56	0.0571	0.0431	1.87	0.299
250VT200-30	2.00	0.69	0.0312	33	0.203	0.256	0.193	1.120	0.088	0.064	0.659	0.174	0.098	1.94	-1.42	0.0659	0.108	1.92	0.457
362VT200-30	2.00	0.81	0.0312	33	0.238	0.563	0.298	1.540	0.099	0.675	0.645	0.400	0.167	3.29	-1.27	0.0773	0.246	2.10	0.633
400VT200-30	2.00	0.85	0.0312	33	0.250	0.698	0.336	1.670	0.102	0.068	0.639	0.502	0.188	3.71	-1.23	0.0811	0.306	2.17	0.680
600VT200-30	2.00	1.06	0.0312	33	0.312	1.735	0.564	2.360	0.114	0.072	0.605	1.270	0.276	5.45	-1.05	0.1010	0.769	2.65	0.843
162VT200-33	2.00	0.66	0.0346	33	0.195	0.119	0.133	0.780	0.085	0.066	0.660	0.080	0.064	1.27	-1.56	0.0779	0.048	1.87	0.300
250VT200-33	2.00	0.77	0.0346	33	0.225	0.284	0.214	1.120	0.098	0.071	0.658	0.199	0.113	2.23	-1.42	0.0899	0.120	1.92	0.458
362VT200-33	2.00	0.90	0.0346	33	0.264	0.626	0.330	1.540	0.110	0.075	0.644	0.455	0.191	3.76	-1.27	0.1050	0.272	2.10	0.634
400VT200-33	2.00	0.94	0.0346	33	0.277	0.775	0.373	1.670	0.113	0.076	0.638	0.570	0.220	4.34	-1.23	0.1110	0.340	2.17	0.680
600VT200-33	2.00	1.18	0.0346	33	0.347	1.930	0.625	2.360	0.126	0.080	0.604	1.480	0.338	6.69	-1.05	0.1380	0.852	2.65	0.844
VIPERTRACK 2.50" LEG																			
250VT250-18	2.50	0.54	0.0190	70	0.160	0.179	0.145	1.059	0.155	0.081	0.986	0.063	0.033	1.17	-2.364	0.0192	0.184	2.77	0.273
362VT250-18	2.50	0.62	0.0190	70	0.162	0.359	0.200	1.487	0.107	0.061	0.812	0.143	0.053	1.85	-1.695	0.0195	0.254	2.40	0.500
400VT250-18	2.50	0.64	0.0190	70	0.169	0.488	0.226	1.628	0.110	0.062	0.807	0.178	0.060	2.09	-1.642	0.0204	0.317	2.45	0.551
600VT250-18	2.50	0.77	0.0190	70	0.207	1.143	0.383	2.348	0.124	0.065	0.774	0.438	0.096	3.36	-1.416	0.0249	0.806	2.85	0.753
162VT250-30	2.50	0.71	0.0312	33	0.207	0.131	0.147	0.794	0.140	0.090	0.822	0.076	0.057	1.13	-2.04	0.0672	0.080	2.34	0.239
250VT250-30	2.50	0.80	0.0312	33	0.234	0.310	0.233	1.150	0.161	0.097	0.828	0.190	0.102	2.01	-1.88	0.0761	0.199	2.35	0.363
362VT250-30	2.50	0.92	0.0312	33	0.270	0.673	0.356	1.580	0.181	0.102	0.820	0.437	0.167	3.30	-1.71	0.0875	0.449	2.47	0.521
400VT250-30	2.50	0.96	0.0312	33	0.281	0.831	0.400	1.720	0.187	0.104	0.816	0.548	0.185	3.66	-1.66	0.0913	0.560	2.52	0.568
600VT250-30	2.50	1.17	0.0312	33	0.344	2.030	0.659	2.430	0.211	0.110	0.784	1.330	0.275	5.43	-1.44	0.1120	1.400	2.93	0.758
162VT250-33	2.50	0.78	0.0346	33	0.230	0.145	0.163	0.796	0.155	0.100	0.821	0.088	0.066	1.31	-2.04	0.0917	0.089	2.34	0.239
250VT250-33	2.50	0.89	0.0346	33	0.260	0.344	0.258	1.150	0.178	0.107	0.827	0.218	0.117	2.32	-1.88	0.1040	0.221	2.35	0.363
362VT250-33	2.50	1.02	0.0346	33	0.299	0.748	0.395	1.580	0.201	0.114	0.820	0.498	0.198	3.92	-1.71	0.1190	0.498	2.47	0.522
400VT250-33	2.50	1.06	0.0346	33	0.312	0.923	0.443	1.720	0.207	0.115	0.815	0.623	0.226	4.46	-1.66	0.1240	0.621	2.52	0.569
600VT250-33	2.50	1.30	0.0346	33	0.381	2.250	0.730	2.430	0.234	0.122	0.783	1.580	0.336	6.64	-1.44	0.1520	1.550	2.93	0.759
VIPERTRACK 3.00" LEG																			
250VT300-18	3.00	0.59	0.0190	70	0.175	0.237	0.180	1.170	0.173	0.089	0.995	0.098	0.041	1.39	-2.36	0.0245	0.216	2.81	0.298
362VT300-18	3.00	0.67	0.0190	70	0.181	0.413	0.230	1.510	0.175	0.086	0.984	0.163	0.060	1.50	-2.152	0.0218	0.421	2.81	0.412
400VT300-18	3.00	0.75	0.0190	70	0.188	0.516	0.260	1.656	0.181	0.087	0.981	0.184	0.060	2.10	-2.092	0.0227	0.526	2.84	0.458
600VT300-18	3.00	0.90	0.0190	70	0.226	1.301	0.436	2.397	0.205	0.092	0.952	0.451	0.096	3.38	-1.831	0.0272	1.325	3.16	0.665
162VT300-30	3.00	0.81	0.0312	33	0.238	0.155	0.174	0.805	0.229	0.126	0.980	0.081	0.058	1.15	-2.53	0.0773	0.134	2.83	0.201
250VT300-30	3.00	0.90	0.0312	33	0.266	0.363	0.274	1.170	0.262	0.135	0.993	0.204	0.104	2.06	-2.35	0.0862	0.329	2.80	0.299
362VT300-30	3.00	1.02	0.0312	33	0.301	0.783	0.414	1.610	0.296	0.144	0.992	0.469	0.165	3.25	-2.16	0.0976	0.738	2.87	0.435
400VT300-30	3.00	1.06	0.0312	33	0.312	0.964	0.464	1.760	0.306	0.146	0.989	0.587	0.183	3.61	-2.10	0.1010	0.918	2.91	0.479
600VT300-30	3.00	1.28	0.0312	33	0.375	2.320	0.754	2.490	0.347	0.155	0.962	1.380	0.274	5.41	-1.85	0.1220	2.290	3.25	0.674
162VT300-33	3.00	0.90	0.0346	33	0.264	0.172	0.192	0.807	0.254	0.139	0.979	0.094	0.068	1.34	-2.52	0.1050	0.149	2.82	0.202
250VT300-33	3.00	1.00	0.0346	33	0.295	0.404	0.303	1.170	0.290	0.150	0.993	0.234	0.120	2.38	-2.35	0.1180	0.366	2.80	0.300
362VT300-33	3.00	1.14	0.0346	33	0.334	0.869	0.459	1.620	0.328	0.159	0.992	0.535	0.200	3.96	-2.16	0.1330	0.819	2.87	0.436
400VT300-33	3.00	1.18	0.0346	33	0.347	1.070	0.514	1.760	0.339	0.162	0.988	0.669	0.223	4.40	-2.10	0.1380	1.020	2.91	0.480
600VT300-33	3.00	1.41	0.0346	33	0.416	2.580	0.836	2.490	0.384	0.171	0.961	1.640	0.334	6.60	-1.85	0.1660	2.540	3.25	0.675

Notes:
1. Section properties are in accordance with AISI S100-12.
2. Cold-work of forming is not included.
3. The effective moment of inertia for deflection is calculated based on AISI S100-12 procedure 1 for serviceability determination.
4. The center line bend radius is greater of 2 times the design thickness or 3/32.
5. Web depth-to-thickness ratio exceeds 200.
6. Web depth-to-thickness ratio exceeds 260.

COMPOSITE LIMITING WALL HEIGHTS - 5/8" TYPE X[3]

MODEL NO.	DEPTH	GAUGE	MEMBER	DESIGN THICKNESS (in.)	YIELD STRESS (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"	25EQ	162VS125-15	0.0155	50	12	13'-9"	11'-4"	9'-10"	12'-0"	9'-11"	8'-3"	10'-11"	8'-10"	--
			162VS125-15	0.0155	50	16	12'-6"	10'-4"	8'-8"	10'-11"	8'-10"	--	9'-11"	7'-11"	--
			162VS125-15	0.0155	50	24	10'-11"	8'-10"	--	9'-5"	--	--	8'-2"	--	--
	2-1/2"	25EQ	250VS125-15	0.0155	50	12	17'-3"	14'-5"	12'-9"	15'-0"	12'-7"	11'-1"	13'-8"	11'-6"	10'-1"
			250VS125-15	0.0155	50	16	15'-8"	13'-1"	11'-7"	13'-8"	11'-6"	10'-1"	12'-3"	10'-5"	8'-9"
			250VS125-15	0.0155	50	24	13'-8"	11'-6"	10'-1"	11'-6"	10'-0"	8'-2"	10'-0"	8'-8"	--
	3-5/8"	25EQ	362VS125-15	0.0155	50	12	20'-10"	17'-3"	15'-2"	18'-2"	15'-1"	13'-3"	15'-10"	13'-9"	12'-0"
			362VS125-15	0.0155	50	16	18'-11"	15'-9"	13'-9"	15'-10"	13'-9"	12'-0"	13'-9"	12'-6"	10'-11"
			362VS125-15	0.0155	50	24	15'-10"	13'-9"	12'-0"	12'-11"	12'-0"	10'-6"	11'-3"	10'-11"	9'-6"
	4"	25EQ	400VS125-15	0.0155	50	12	22'-1"	18'-3"	16'-3"	19'-3"	15'-11"	14'-2"	16'-8"	14'-6"	12'-11"
			400VS125-15	0.0155	50	16	20'-0"	16'-7"	14'-9"	16'-8"	14'-6"	12'-11"	14'-5"	13'-2"	11'-9"
			400VS125-15	0.0155	50	24	16'-8"	14'-6"	12'-11"	13'-7"	12'-8"	11'-3"	11'-9"	11'-6"	10'-1"
	6"	25EQ	600VS125-15	0.0155	50	12	24'-8"	23'-9"	21'-1"	22'-3"	20'-9"	18'-5"	20'-0"	18'-10"	16'-9"
			600VS125-15	0.0155	50	16	22'-11"	21'-7"	19'-2"	20'-0"	18'-10"	16'-9"	17'-5"	17'-2"	15'-3"
			600VS125-15	0.0155	50	24	20'-0"	18'-10"	16'-9"	16'-5"	16'-5"	14'-8"	14'-2"	14'-2"	13'-0"
VIPER20	1-5/8"	20EQ	162VS125-18	0.0190	70	12	13'-10 "	11'-0"	9'-7 "	12'-1 "	9'-7 "	8'-5 "	11'-0"	8'-9 "	--
			162VS125-18	0.0190	70	16	12'-7 "	10'-0"	8'-9 "	11'-0"	8'-9 "	7'-11 "	10'-0"	7'-11 "	--
			162VS125-18	0.0190	70	24	11'-0"	8'-9 "	--	9'-7 "	--	--	8'-9 "	--	--
	2-1/2"	20EQ	250VS125-18	0.0190	70	12	18'-2 "	14'-5 "	12'-7 "	15'-10 "	12'-7 "	11'-0"	14'-5 "	11'-5 "	9'-10 "
			250VS125-18	0.0190	70	16	16'-6 "	13'-1 "	11'-5 "	14'-5 "	11'-5 "	9'-10 "	13'-1 "	10'-4 "	8'-10 "
			250VS125-18	0.0190	70	24	14'-5 "	11'-5 "	9'-10 "	12'-7 "	9'-10 "	8'-5 "	11'-5 "	8'-10 "	--
	3-5/8"	20EQ	362VS125-18	0.0190	70	12	21'-11 "	18'-0"	15'-10 "	19'-1 "	15'-9 "	13'-10 "	17'-5 "	14'-3 "	12'-7 "
			362VS125-18	0.0190	70	16	19'-11 "	16'-4 "	14'-5 "	17'-5 "	14'-3 "	12'-7 "	15'-10 "	13'-0"	11'-4 "
			362VS125-18	0.0190	70	24	17'-5 "	14'-3 "	12'-7 "	15'-2 "	12'-6 "	10'-10 "	13'-10 "	11'-3 "	9'-9 "
	4"	20EQ	400VS125-18	0.0190	70	12	22'-11 "	18'-11 "	16'-8 "	20'-0 "	16'-7 "	14'-7 "	18'-2 "	15'-1 "	13'-3 "
			400VS125-18	0.0190	70	16	20'-10 "	17'-3 "	15'-2 "	18'-2 "	15'-1 "	13'-3 "	16'-6 "	13'-8 "	12'-1 "
			400VS125-18	0.0190	70	24	18'-2 "	15'-1 "	13'-3 "	15'-10 "	13'-2 "	11'-7 "	14'-5 "	11'-11 "	10'-5 "
	6"	20EQ	600VS125-18	0.0190	70	12	30'-6 "	26'-0 "	23'-0"	26'-7 "	22'-9 "	20'-1 "	24'-2 "	20'-8 "	18'-4 "
			600VS125-18	0.0190	70	16	27'-8 "	23'-7 "	20'-11 "	24'-2 "	20'-8 "	18'-4 "	21'-0 "	18'-9 "	16'-8 "
			600VS125-18	0.0190	70	24	24'-2 "	20'-8 "	18'-4 "	20'-11 "	18'-0"	16'-0 "	18'-1 "	16'-5 "	14'-7 "
VIPER 30mil	1-5/8"	20DW	162VS125-30	0.0312	33	12	14'-7"	11'-6"	10'-0"	12'-9"	10'-0"	8'-6"	11'-7"	8'-11"	--
			162VS125-30	0.0312	33	16	13'-3"	10'-5"	8'-11"	11'-7"	8'-11"	--	10'-6"	7'-10"	--
			162VS125-30	0.0312	33	24	11'-7"	8'-11"	--	10'-1"	--	--	8'-10"	--	--
	2-1/2"	20DW	250VS125-30	0.0312	33	12	18'-9"	14'-10"	13'-0"	16'-4"	13'-0"	11'-4"	14'-10"	11'-10"	10'-4"
			250VS125-30	0.0312	33	16	17'-0"	13'-6"	11'-10"	14'-10"	11'-10"	10'-4"	13'-6"	10'-9"	9'-3"
			250VS125-30	0.0312	33	24	14'-10"	11'-10"	10'-4"	12'-9"	10'-4"	8'-10"	11'-0"	9'-3"	--
	3-5/8"	20DW	362VS125-30	0.0312	33	12	23'-3"	18'-6"	16'-2"	20'-4"	16'-2"	14'-1"	18'-6"	14'-8"	12'-10"
			362VS125-30	0.0312	33	16	21'-2"	16'-9"	14'-8"	18'-6"	14'-8"	12'-10"	16'-4"	13'-4"	11'-6"
			362VS125-30	0.0312	33	24	18'-6"	14'-8"	12'-10"	15'-4"	12'-10"	11'-0"	13'-4"	11'-6"	9'-11"
	4"	20DW	400VS125-30	0.0312	33	12	25'-2"	20'-0"	17'-6"	22'-0"	17'-6"	15'-3"	19'-5"	15'-11"	13'-10"
			400VS125-30	0.0312	33	16	22'-11"	18'-2"	15'-11"	19'-5"	15'-11"	13'-10"	16'-10"	14'-5"	12'-7"
			400VS125-30	0.0312	33	24	19'-5"	15'-11"	13'-10"	15'-10"	13'-10"	12'-1"	13'-9"	12'-7"	10'-11"
	6"	20DW	600VS125-30	0.0312	33	12	31'-10"	26'-9"	23'-4"	26'-0"	23'-4"	20'-5"	22'-6"	21'-3"	18'-6"
			600VS125-30	0.0312	33	16	27'-7"	24'-3"	21'-3"	22'-6"	21'-3"	18'-6"	19'-6"	19'-3"	16'-10"
			600VS125-30	0.0312	33	24	22'-6"	21'-3"	18'-6"	18'-5"	18'-5"	16'-2"	15'-11"	15'-11"	14'-8"
VIPER 33mil	1-5/8"	20STR	162VS125-33	0.0346	33	12	14'-11"	11'-10"	10'-4"	13'-0"	10'-4"	8'-10"	11'-10"	9'-4"	--
			162VS125-33	0.0346	33	16	13'-6"	10'-9"	9'-4"	11'-10"	9'-4"	--	10'-9"	8'-4"	--
			162VS125-33	0.0346	33	24	11'-10"	9'-4"	--	10'-4"	--	--	9'-4"	--	--
	2-1/2"	20STR	250VS125-33	0.0346	33	12	19'-4"	15'-4"	13'-5"	16'-10"	13'-5"	11'-8"	15'-4"	12'-2"	10'-8"
			250VS125-33	0.0346	33	16	17'-7"	13'-11"	12'-2"	15'-4"	12'-2"	10'-8"	13'-11"	11'-0"	9'-8"
			250VS125-33	0.0346	33	24	15'-4"	12'-2"	10'-8"	13'-5"	10'-8"	9'-2"	12'-0"	9'-8"	--
	3-5/8"	20STR	362VS125-33	0.0346	33	12	23'-10"	18'-11"	16'-6"	20'-10"	16'-6"	14'-5"	18'-11"	15'-0"	13'-1"
			362VS125-33	0.0346	33	16	21'-8"	17'-2"	15'-0"	18'-11"	15'-0"	13'-1"	17'-2"	13'-8"	11'-10"
			362VS125-33	0.0346	33	24	18'-11"	15'-0"	13'-1"	16'-6"	13'-1"	11'-4"	14'-4"	11'-10"	10'-3"
	4"	20STR	400VS125-33	0.0346	33	12	25'-8"	20'-4"	17'-10"	22'-5"	17'-10"	15'-7"	20'-4"	16'-2"	14'-1"
			400VS125-33	0.0346	33	16	23'-4"	18'-6"	16'-2"	20'-4"	16'-2"	14'-1"	18'-4"	14'-8"	12'-10"
			400VS125-33	0.0346	33	24	20'-4"	16'-2"	14'-1"	17'-3"	14'-2"	12'-4"	15'-0"	12'-10"	11'-2"
	6"	20STR	600VS125-33	0.0346	33	12	34'-5"	27'-7"	24'-1"	28'-1"	24'-1"	21'-1"	24'-4"	21'-11"	19'-2"
			600VS125-33	0.0346	33	16	29'-10"	25'-1"	21'-11"	24'-4"	21'-11"	19'-2"	21'-1"	19'-11"	17'-5"
			600VS125-33	0.0346	33	24	24'-4"	21'-11"	19'-2"	19'-11"	19'-2"	16'-9"	17'-2"	17'-2"	15'-2"

Notes:

1. Viper composite limiting heights are based on testing in accordance with ICC-ES acceptance criteria AC86-2012
2. No screws are required between stud and track, except as required by ASTM C754.
3. Viper composite limiting heights based on a single layer of 5/8" type X gypsum board applied vertically to both sides of the wall over full height. 5/8" Type X wallboard from the following manufacturers are acceptable: USG, National, Georgia Pacific, CertainTeed, American and Continental.

NON-COMPOSITE LIMITING WALL HEIGHTS - FULLY BRACED

MODEL NO.	DEPTH	GAUGE	MEMBER	DESIGN THICKNESS (in.)	YIELD STRESS (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"	25EQ	162VS125-15	0.0155	50	12	9'-5"f	7'-6"	6'-7"	7'-8" f	6'-7"	--	6'-7" f	6'-0"	--
			162VS125-15	0.0155	50	16	8'-1" f	6'-10"	6'-0"	6'-7" f	6'-0"	--	--	--	--
			162VS125-15	0.0155	50	24	6'-7" f	6'-0"	--	--	--	--	--	--	--
	2-1/2"	25EQ	250VS125-15	0.0155	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	0.0155	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	0.0155	50	24	8'-10" f	8'-5"	7'-4"	7'-1" w	7'-1" w	6'-5"	--	--	--
	3-5/8"	25EQ	362VS125-15	0.0155	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	0.0155	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	0.0155	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"	25EQ	400VS125-15	0.0155	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	0.0155	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	0.0155	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"	25EQ	600VS125-15	0.0155	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	0.0155	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	0.0155	50	24	10'-7" w	10'-7" w	10'-7"w	7'-0" w	7'-0"w	7'-0"w	--	--	--
VIPER20	1-5/8"	20EQ	162VS125-18	0.0190	70	12	9'-6 "	7'-7 "	6'-7 "	8'-4 "	6'-7 "	--	7'-7 "	6'-0 "	--
			162VS125-18	0.0190	70	16	8'-7 "	6'-11 "	6'-0"	7'-7 "	6'-0 "	--	6'-11 "	--	--
			162VS125-18	0.0190	70	24	7'-7 "	6'-0 "	5'-2 "	6'-7 "	--	--	6'-0 "	--	--
	2-1/2"	20EQ	250VS125-18	0.0190	70	12	13'-6 "	10'-8 "	9'-5 "	11'-10 "	9'-5 "	8'-2 "	10'-8 "	8'-6 "	7'-5 "
			250VS125-18	0.0190	70	16	12'-4 "	9'-8 "	8'-6 "	10'-8 "	8'-6 "	7'-5 "	9'-8 "	7'-8 "	6'-10 "
			250VS125-18	0.0190	70	24	10'-8 "	8'-6 "	7'-5 "	9'-5 "	7'-5 "	6'-6 "	8'-4 "	6'-10 "	--
	3-5/8"	20EQ	362VS125-18	0.0190	70	12	17'-8 "	14'-1 "	12'-4 "	15'-6 "	12'-4 "	10'-8 "	14'-1 "	11'-2 "	9'-10 "
			362VS125-18	0.0190	70	16	16'-1 "	12'-10 "	11'-2 "	14'-1 "	11'-2 "	9'-10 "	12'-5 "	10'-1 "	8'-11 "
			362VS125-18	0.0190	70	24	14'-1 "	11'-2 "	9'-10 "	11'-8 "	9'-10 "	8'-6 "	10'-1 "	8'-11 "	7'-8 "
	4"	20EQ	400VS125-18	0.0190	70	12	19'-1 "	15'-1 "	13'-2 "	16'-8 "	13'-2 "	11'-7 "	15'-1 "	12'-0 "	10'-6 "
			400VS125-18	0.0190	70	16	17'-4 "	13'-10 "	12'-0 "	15'-1 "	12'-0 "	10'-6 "	13'-1 "	10'-11 "	9'-6 "
			400VS125-18	0.0190	70	24	15'-1 "	12'-0 "	10'-6 "	12'-5 "	10'-6 "	9'-2 "	10'-8 "	9'-6 "	8'-4 "
	6"	20EQ	600VS125-18	0.0190	70	12	25'-8 "	20'-5 "	17'-10 "	21'-11 "	17'-10 "	15'-7 "	19'-0 "	16'-2 "	14'-1 "
			600VS125-18	0.0190	70	16	23'-4 "	18'-6 "	16'-2 "	19'-0 "	16'-2 "	14'-1 "	15'-10 "	14'-8 "	12'-10 "
			600VS125-18	0.0190	70	24	19'-0 "	16'-2 "	14'-1 "	14'-0 "	14'-0 "	12'-5 "	10'-6 "	10'-6 "	10'-6 "
VIPER 30mil	1-5/8"	20DW	162VS125-30	0.0312	33	12	11'-8"	9'-4"	8'-1"	10'-2"	8'-1"	7'-1"	9'-4"	7'-5"	6'-6"
			162VS125-30	0.0312	33	16	10'-8"	8'-6"	7'-5"	9'-4"	7'-5"	6'-6"	8'-1" f	6'-8"	--
			162VS125-30	0.0312	33	24	9'-4"	7'-5"	6'-6"	7'-8" f	6'-6"	--	6'-7" f	--	--
	2-1/2"	20DW	250VS125-30	0.0312	33	12	16'-2"	12'-11"	11'-4"	14'-2"	11'-4"	9'-10"	12'-5" f	10'-2"	8'-11"
			250VS125-30	0.0312	33	16	14'-8"	11'-8"	10'-2"	12'-5" f	10'-2"	8'-11"	10'-8" f	9'-4"	8'-1"
			250VS125-30	0.0312	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"	20DW	362VS125-30	0.0312	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	0.0312	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	0.0312	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"	20DW	400VS125-30	0.0312	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	0.0312	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	0.0312	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"	20DW	600VS125-30	0.0312	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	0.0312	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	0.0312	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
VIPER 33mil	1-5/8"	20STR	162VS125-33	0.0346	33	12	12'-1"	9'-7"	8'-5"	10'-7"	8'-5"	7'-4"	9'-7"	7'-7"	6'-8"
			162VS125-33	0.0346	33	16	11'-0"	8'-8"	7'-7"	9'-7"	7'-7"	6'-8"	8'-8" f	6'-11"	6'-1"
			162VS125-33	0.0346	33	24	9'-7"	7'-7"	6'-8"	8'-2" f	6'-8"	--	7'-1" f	6'-1"	--
	2-1/2"	20STR	250VS125-33	0.0346	33	12	16'-10"	13'-4"	11'-7"	14'-8"	11'-7"	10'-2"	13'-4" f	10'-7"	9'-2"
			250VS125-33	0.0346	33	16	15'-4"	12'-1"	10'-7"	13'-4" f	10'-7"	9'-2"	11'-6" f	9'-7"	8'-5"
			250VS125-33	0.0346	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"	20STR	362VS125-33	0.0346	33	12	22'-5"	17'-10"	15'-6"	18'-10" f	15'-6"	13'-7"	16'-4" f	14'-1"	12'-4"
			362VS125-33	0.0346	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	0.0346	33	24	16'-4" f	14'-1"	12'-4"	13'-4" f	12'-4"	10'-10"	11'-6" f	11'-2"	9'-10"
	4"	20STR	400VS125-33	0.0346	33	12	24'-2"	19'-2"	16'-10"	19'-10" f	16'-10"	14'-7"	17'-2" f	15'-2"	13'-4"
			400VS125-33	0.0346	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	0.0346	33	24	17'-2" f	15'-2"	13'-4"	14'-0" f	13'-4"	11'-7"	12'-1" f	12'-1"	10'-7"
	6"	20STR	600VS125-33	0.0346	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	0.0346	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	0.0346	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 S100-12 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 on page 5 for Lu values.
4. For web crippling, when h/t ≤ 200, the web crippling values are computed based on section C3.4.2 of AISI S100-12, when h/t >200, the web crippling values are based on testing with a bearing length of 1".
5. No web stiffeners are required for studs with h/t > 200, web crippling and shear values have been confirmed by testing.
6. The factory punchouts are in accordance with section C5 of AISI S201-12. The distance from the center of last punchout to the end of the stud is 12".

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

MODEL NO.	DEPTH	GAUGE	MEMBER	DESIGN THICKNESS (in.)	YIELD STRESS (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"	25EQ	162VS125-15	0.0155	50	12	8'-8" f	7'-6"	6'-7"	7'-1"f	6'-7"	--	6'-1" f	6'-0"	--
			162VS125-15	0.0155	50	16	7'-6" f	6'-10"	6'-0"	6'-1"f	6'-0"	--	--	--	--
			162VS125-15	0.0155	50	24	6'-1" f	6'-0"	--	--	--	--	--	--	--
	2-1/2"	25EQ	250VS125-15	0.0155	50	12	11'-10" f	10'-7"	9'-2"	9'-7"f	9'-2"	8'-1"	8'-5" f	8'-5" f	7'-4"
			250VS125-15	0.0155	50	16	10'-2" f	9'-7"	8'-5"	8'-5"f	8'-5"f	7'-4"	7'-2" f	7'-2" f	6'-8"
			250VS125-15	0.0155	50	24	8'-5" f	8'-5"f	7'-4"	6'-8"w	6'-8"w	6'-5"	--	--	--
	3-5/8"	25EQ	362VS125-15	0.0155	50	12	13'-2" f	13'-2"f	12'-1"	10'-10"f	10'-10" f	10'-7"	9'-4" f	9'-4" f	9'-4" f
			362VS125-15	0.0155	50	16	11'-5" f	11'-5"f	11'-0"	9'-4"f	9'-4" f	9'-4" f	7'-10" w	7'-10" w	7'10"w
			362VS125-15	0.0155	50	24	9'-4" f	9'-4"f	9'-4"f	6'-11"w	6'-11" w	6'-11"w	--	--	--
	4"	25EQ	400VS125-15	0.0155	50	12	13'-10" f	13'-10"f	13'-1"	11'-4"f	11'-4" f	11'-4" f	9'-10" f	9'-10" f	9'-10" f
			400VS125-15	0.0155	50	16	12'-0" f	12'-0"f	11'-11"	9'-10"f	9'-10" f	9'-10" f	7'-5" w	7'-5" w	7'-5" w
			400VS125-15	0.0155	50	24	9'-10" f	9'-10"f	9'-10"f	6'-6"w	6'-6" w	6'-6" w	--	--	--
	6"	25EQ	600VS125-15	0.0155	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	0.0155	50	16	10'-7" w	10'-7"w	10'-7"w	7'-1"w	7'-1" w	7'-1" w	--	--	--
			600VS125-15	0.0155	50	24	7'-1" w	7'-1"w	7'-1"w	--	--	--	--	--	--
VIPER20	1-5/8"	20EQ	162VS125-18	0.0190	70	12	9'-6 "	7'-7 "	6'-7 "	8'-4 "	6'-7 "	--	7'-5 "	6'-0 "	--
			162VS125-18	0.0190	70	16	8'-7 "	6'-11 "	6'-0 "	7'-5 "	6'-0 "	--	6'-5 "	--	--
			162VS125-18	0.0190	70	24	7'-5 "	6'-0 "	5'-2 "	6'-0 "	--	--	--	--	--
	2-1/2"	20EQ	250VS125-18	0.0190	70	12	13'-6 "	10'-8 "	9'-5 "	11'-10 "	9'-5 "	8'-2 "	10'-8 "	8'-6 "	7'-5 "
			250VS125-18	0.0190	70	16	12'-4 "	9'-8 "	8'-6 "	10'-8 "	8'-6 "	7'-5 "	9'-4 "	7'-8 "	6'-10 "
			250VS125-18	0.0190	70	24	10'-8 "	8'-6 "	7'-5 "	8'-10 "	7'-5 "	6'-6 "	7'-7 "	6'-10 "	--
	3-5/8"	20EQ	362VS125-18	0.0190	70	12	17'-1 "	14'-1 "	12'-4 "	14'-0"	12'-4 "	10'-8 "	12'-1 "	11'-2 "	9'-10 "
			362VS125-18	0.0190	70	16	14'-10 "	12'-10 "	11'-2 "	12'-1 "	11'-2 "	9'-10 "	10'-6 "	10'-1 "	8'-11 "
			362VS125-18	0.0190	70	24	12'-1 "	11'-2 "	9'-10 "	9'-11 "	9'-10 "	8'-6 "	8'-7 "	8'-7 "	7'-8 "
	4"	20EQ	400VS125-18	0.0190	70	12	18'-1 "	15'-1 "	13'-2 "	14'-10 "	13'-2 "	11'-7 "	12'-10 "	12'-0 "	10'-6 "
			400VS125-18	0.0190	70	16	15'-8 "	13'-10 "	12'-"	12'-10 "	12'-0 "	10'-6 "	11'-1 "	10'-11 "	9'-6 "
			400VS125-18	0.0190	70	24	12'-10 "	12'-0 "	10'-6 "	10'-6 "	10'-6 "	9'-2 "	9'-1 "	9'-1 "	8'-4 "
	6"	20EQ	600VS125-18	0.0190	70	12	23'-10 "	20'-5 "	17'-10 "	19'-6 "	17'-0 "	15'-7 "	16'-10 "	16'-2 "	14'-1 "
			600VS125-18	0.0190	70	16	20'-7 "	18'-6 "	16'-2 "	16'-10 "	16'-2 "	14'-1 "	14'-7 "	14'-7 "	12'-10 "
			600VS125-18	0.0190	70	24	16'-10 "	16'-2 "	14'-1 "	16'-10 "	13'-10 "	12'-5 "	10'-6 "	10'-6 "	10'-6 "
VIPER 30mil	1-5/8"	20DW	162VS125-30	0.0312	33	12	11'-10"	9'-4"	8'-2"	10'-4"	8'-2"	7'-1"	8'-11" f	7'-5"	6'-6"
			162VS125-30	0.0312	33	16	10'-8"	8'-6"	7'-5"	8'-11" f	7'-5"	6'-6"	7'-8" f	6'-8"	--
			162VS125-30	0.0312	33	24	8'-11" f	7'-5"	6'-6"	7'-4" f	6'-6"	--	6'-4" f	--	--
	2-1/2"	20DW	250VS125-30	0.0312	33	12	16'-4"	12'-11"	11'-4"	13'-7" f	11'-4"	9'-11"	11'-10" f	10'-4"	9'-0"
			250VS125-30	0.0312	33	16	14'-5" f	11'-8"	10'-4"	11'-10" f	10'-4"	9'-0"	10'-2" f	9'-4"	8'-1"
			250VS125-30	0.0312	33	24	11'-10" f	10'-4"	9'-0"	9'-7" f	9'-0"	7'-10"	8'-4" f	8'-1"	7'-1"
	3-5/8"	20DW	362VS125-30	0.0312	33	12	20'-0" f	17'-2"	15'-0"	16'-4" f	15'-0"	13'-1"	14'-2" f	13'-8"	11'-11"
			362VS125-30	0.0312	33	16	17'-4" f	15'-7"	13'-8"	14'-2" f	13'-8"	11'-11"	12'-4" f	12'-4" f	10'-10"
			362VS125-30	0.0312	33	24	14'-2" f	13'-8"	11'-11"	11'-7" f	11'-7" f	10'-5"	10'-0" f	10'-0" f	9'-6"
	4"	20DW	400VS125-30	0.0312	33	12	21'-1" f	18'-7"	16'-4"	17'-2" f	16'-4"	14'-2"	14'-11" f	14'-10"	12'-11"
			400VS125-30	0.0312	33	16	18'-4" f	16'-11"	14'-10"	14'-11" f	14'-10"	12'-11"	12'-11" f	12'-11" f	11'-8"
			400VS125-30	0.0312	33	24	14'-11" f	14'-10"	12'-11"	12'-2" f	12'-2" f	11'-4"	10'-7" f	10'-7" f	10'-2"
	6"	20DW	600VS125-30	0.0312	33	12	28'-0" f	25'-6"	22'-4"	22'-10" f	22'-4"	19'-6"	19'-10" f	19'-10" f	17'-8"
			600VS125-30	0.0312	33	16	24'-2" f	23'-2"	20'-2"	19'-10" f	19'-10" f	17'-8"	17'-1" f	17'-1" f	16'-1"
			600VS125-30	0.0312	33	24	19'-10" f	19'-10" f	17'-8"	15'-7" w	15'-7" w	15'-6"	11'-8" w	11'-8" w	11'-8"w
VIPER 33mil	1-5/8"	20STR	162VS125-33	0.0346	33	12	12'-2"	9'-8"	8'-5"	10'-7"	8'-5"	7'-5"	9'-6" f	7'-8"	6'-8"
			162VS125-33	0.0346	33	16	11'-1"	8'-10"	7'-8"	9'-6" f	7'-8"	6'-8"	8'-2" f	7'-0"	6'-1"
			162VS125-33	0.0346	33	24	9'-6" f	7'-8"	6'-8"	7'-8" f	6'-8"	--	6'-8" f	6'-1"	--
	2-1/2"	20STR	250VS125-33	0.0346	33	12	16'-11"	13'-5"	11'-8"	14'-5" f	11'-8"	10'-2"	12'-6" f	10'-7"	9'-4"
			250VS125-33	0.0346	33	16	15'-4" f	12'-2"	10'-7"	12'-6" f	10'-7"	9'-4"	10'-10" f	9'-7"	8'-5"
			250VS125-33	0.0346	33	24	12'-6" f	10'-7"	9'-4"	10'-2" f	9'-4"	8'-1"	8'-10" f	8'-5"	7'-5"
	3-5/8"	20STR	362VS125-33	0.0346	33	12	21'-4" f	17'-10"	15'-7"	17'-5" f	15'-7"	13'-7"	15'-1" f	14'-1"	12'-5"
			362VS125-33	0.0346	33	16	18'-5" f	16'-2"	14'-1"	15'-1" f	14'-1"	12'-5"	13'-0" f	12'-11"	11'-2"
			362VS125-33	0.0346	33	24	15'-1" f	14'-1"	12'-5"	12'-4" f	12'-4" f	10'-10"	10'-8" f	10'-8" f	9'-10"
	4"	20STR	400VS125-33	0.0346	33	12	22'-6" f	19'-4"	16'-10"	18'-4" f	16'-10"	14'-8"	15'-11" f	15'-4"	13'-4"
			400VS125-33	0.0346	33	16	19'-5" f	17'-6"	15'-4"	15'-11" f	15'-4"	13'-4"	13'-10" f	13'-10" f	12'-1"
			400VS125-33	0.0346	33	24	15'-11" f	15'-4"	13'-4"	13'-0" f	13'-0" f	11'-8"	11'-2" f	11'-2" f	10'-7"
	6"	20STR	600VS125-33	0.0346	33	12	29'-10" f	26'-6"	23'-1"	24'-4" f	23'-1"	20'-2"	21'-1" f	21'-0"	18'-5"
			600VS125-33	0.0346	33	16	25'-10" f	24'-1"	21'-0"	21'-1" f	21'-0"	18'-5"	18'-4" f	18'-4" f	16'-8"
			600VS125-33	0.0346	33	24	21'-1" f	21'-0"	18'-5"	17'-2" f	17'-2" f	16'-0"	14'-6" w	14'-6" w	14'-6"w

"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 S100-12 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 S100-12, 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 C3.4.2 of AISI S100-12, when h/t > 200, the web crippling values are based on testing with a bearing length of 1".
5. No web stiffeners are required for studs with h/t > 200, web crippling and shear values have been confirmed by testing.
6. The factory punchouts are in accordance with section C5 of AISI S201-12. The distance from the center of last punchout to the end of the stud is 12".

LIMITING CEILING SPANS

L/240

MODEL NO.	MEMBER	YIELD STRESS (ksi)	4 PSF Lateral Support of Compression Flange						6 PSF Lateral Support of Compression Flange					
			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″ f	7′-4″ f	6′-5″ f	6′-6″ f	6′-0″ f	5′-5″ f	7′-1″ f	6′-5″ f	5′-7″ f
	250VS125-15	50	8′-2″ f	7′-7″ f	6′-10″ f	11′-3″ f	10′-4″ f	9′-0″ f	7′-4″ f	6′-10″ f	6′-2″ f	10′-0″ f	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	162VS125-18	70	7′-9" f	7′-3" f	6′-6" f	8′-5" f	7′-7" f	6′-7" f	7′-0" f	6′-6" f	5′-10" f	7′-3" f	6′-7" f	5′-8" f
	250VS125-18	70	8′-9" f	8′-1" f	7′-4" f	12′-0" f	10′-10" f	9′-5" f	7′-11" f	7′-4" f	6′-7" f	10′-5" f	9′-5" f	8′-2" f
	362VS125-18	70	9′-7" f	8′-11" f	8′-0" f	13′-6" f	12′-6" f	11′-1" f	8′-8" f	8′-0" f	7′-3" f	12′-1" f	11′-1" f	9′-10" f
	400VS125-18	70	9′-10" f	9′-2" f	8′-3" f	13′-10" f	12′-9" f	11′-5" f	9′-10" f	9′-2" f	8′-3" f	12′-4" f	11′-5" f	10′-2" f
	600VS125-18	70	11′-2" f	10′-4" f	9′-4" f	15′-10" f	14′-8" f	13′-1" f	10′-1" f	9′-4" f	8′-5" f	14′-2" f	13′-1" f	11′-8" f
Viper 30mil	162VS125-30	33	9′-4″ f	8′-7″ f	7′-8″ f	10′-1″ f	9′-2″ f	8′-0″ f	8′-4″ f	7′-8″ f	6′-10″ f	8′-10″ f	8′-0″ f	7′-0″ f
	250VS125-30	33	10′-4″ f	9′-6″ f	8′-6″ f	13′-11″ f	12′-8″ f	11′-1″ f	9′-2″ f	8′-6″ f	7′-7″ f	12′-2″ f	11′-1″ f	9′-8″ f
	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″ f	9′-5″ f	8′-3″ f	8′-8″ f	7′-11″ f	7′-1″ f	9′-1″ f	8′-3″ f	7′-3″ f
	250VS125-33	33	10′-9″ f	9′-10″ f	8′-10″ f	14′-5″ f	13′-1″ f	11′-5″ f	9′-7″ f	8′-10″ f	7′-11″ f	12′-7″ f	11′-5″ f	10′-0″ f
	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

MODEL NO.	MEMBER	YIELD STRESS (ksi)	4 PSF Lateral Support of Compression Flange						6 PSF Lateral Support of Compression Flange					
			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″ f	6′-5″ f	5′-7″ f	7′-1″ f	6′-5″ f	5′-7″ f	6′-2″ f	5′-7″ f	4′-11″ f	6′-2″ f	5′-7″ f	4′-11″ f
	250VS125-15	50	8′-2″ f	7′-7″ f	6′-10″ f	10′-0″ f	9′-0″ f	7′-11″ f	7′-4″ f	6′-10″ f	6′-2″ f	8′-8″ f	7′-11″ f	6′-11″ 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′-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	162VS125-18	70	7′-6" f	6′-10" f	5′-11" f	7′-4" f	6′-8" f	5′-9" f	6′-6" f	5′-11" f	5′-2" f	6′-4" f	5′-9" f	5′-0" f
	250VS125-18	70	8′-9" f	8′-1" f	7′-4" f	10′-5" f	9′-6" f	8′-3" f	7′-11" f	7′-4" f	6′-7" f	9′-1" f	8′-3" f	7′-2" f
	362VS125-18	70	9′-7" f	8′-11" f	8′-0" f	13′-6" f	12′-6" f	11′-0" f	8′-8" f	8′-0" f	7′-3" f	12′-1" f	11′-0" f	9′-7" f
	400VS125-18	70	9′-10" f	9′-2" f	8′-3" f	13′-10" f	12′-9" f	11′-5" f	8′-11" f	8′-3" f	7′-5" f	12′-4" f	11′-5" f	10′-2" f
	600VS125-18	70	11′-2" f	10′-4" f	9′-4" f	15′-10" f	14′-8" f	13′-1" f	10′-1" f	9′-4" f	8′-5" f	14′-2" f	13′-1" f	11′-8" f
Viper 30mil	162VS125-30	33	8′-10″ f	8′-0″ f	7′-0″ f	8′-10″ f	8′-0″ f	7′-0″ f	7′-8″ f	7′-0″ f	6′-1″ f	7′-8″ f	7′-0″ f	6′-1″ f
	250VS125-30	33	10′-4″ f	9′-6″ f	8′-6″ f	12′-2″ f	11′-1″ f	9′-8″ f	9′-2″ f	8′-6″ f	7′-7″ f	10′-8″ f	9′-8″ f	8′-5″ f
	362VS125-30	33	11′-4″ f	10′-6″ f	9′-5″ f	16′-0″ f	14′-9″ f	12′-11″ f	10′-2″ f	9′-5″ f	8′-6″ f	14′-2″ f	12′-11″ f	11′-3″ 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′-1″ f	8′-3″ f	7′-3″ f	9′-1″ f	8′-3″ f	7′-3″ f	7′-11″ f	7′-3″ f	6′-4″ f	7′-11″ f	7′-3″ f	6′-4″ f
	250VS125-33	33	10′-9″ f	9′-10″ f	8′-10″ f	12′-7″ f	11′-5″ f	10′-0″ f	9′-7″ f	8′-10″ f	7′-11″ f	11′-0″ f	10′-0″ f	8′-9″ f
	362VS125-33	33	11′-9″ f	10′-11″ f	9′-9″ f	16′-7″ f	15′-3″ f	13′-4″ f	10′-7″ f	9′-9″ f	8′-9″ f	14′-8″ f	13′-4″ f	11′-8″ 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; "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 S100-12 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 S100-12, 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 S201-12. The distance from the center of last punchout to the end of the stud is 12".

SCREW ALLOWABLE LOADS (lbs.)

MODEL NO.	DESIGN THICKNESS (in.)	Yield Stress (ksi)	Ultimate Stress (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 (lbs)	Pull Out (lbs)	Pull Over (lbs)	Shear (lbs)	Pull Out (lbs)	Pull Over (lbs)	Shear (lbs)	Pull Out (lbs)	Pull Over (lbs)	
Viper25	0.0155	50	50	75[9]	30	97	90[9]	36	121	93[9]	42	132	Pass
Viper20	0.0190	70	70	95	52	140	104	62	195	112	72	226	Pass
Conventional (25ga)	0.0188	33	33	44	24	78	48	29	97	52	33	105	--
Conventional (20ga DW) OR Viper 30mil	0.0312	33	33	95	40	129	103	48	161	111	55	175	--
Conventional (20ga STR) OR Viper 33mil	0.0346	33	33	110	45	143	120	53	178	130	61	194	--

Notes:

1. Capacities are based on section E4 of the AISI S100-12 Specification.
2. Capacities are based on Allowable Strength Design (ASD).
3. Screw pull-out capacities are based on listed head diameter.
4. Two sheets of equal thickness and tensile strength are assumed in tabulated values.
5. 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.
6. Where multiple fasteners are used, screws are assumed to have a center-to-center spacing of at least 3 times the nominal diameter.
7. 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.
8. When screws are subjected to combination of shear and tension forces, interaction equation of AISI S100-12 Specification section E4.5 shall be used .
9. Viper25 shear values are tested per AISI S100-12 and AISI S905, tests conducted by Structural Testing & Research, Inc.
10. Viper20 values are calculated per AISIS100-12.

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.

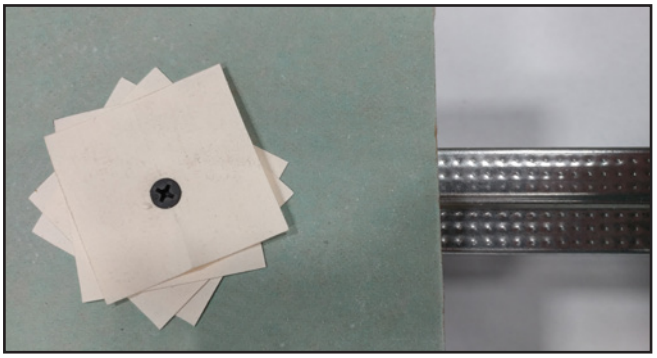
HI-ABUSE/HI-IMPACT – VIPER20

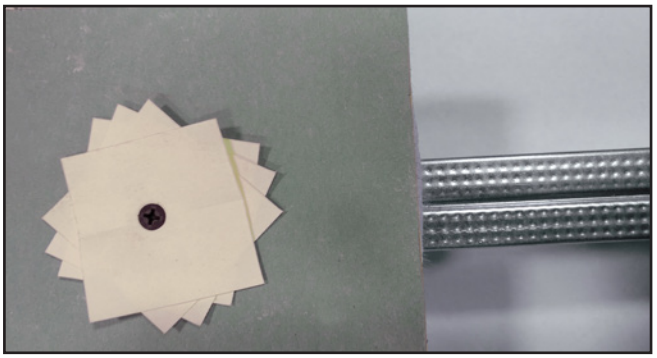
SHEATHING TYPE AND THICKNESS	STEEL FRAMING	SCREW TYPE	DRILL SPEED (RPM)	C645 PASS/FAIL ASTM
USG 5/8"High Impact	3-5/8" Viper20	#6 x 1-1/4" Type S sharp pt	4000	PASS
National Gypsum 5/8" High Impact	3-5/8" Viper20	#6 x 1-1/4" Type S sharp pt	4000	PASS
Georgia Pacific 5/8" High Impact	3-5/8" Viper20	#6 x 1-1/4" Type S sharp pt	4000	PASS
CertainTeed 5/8" High Impact	3-5/8" Viper20	#6 x 1-1/4" Type S sharp pt	4000	PASS
Continental 5/8" High Impact	3-5/8" Viper20	#6 x 1-1/4" Type S sharp pt	4000	PASS

*Testing conducted by Structural Testing & Research, Inc.

GYPSUM BOARD – VIPER25 & VIPER20

1/2" Type C	Viper25	#6 x1-1/4"	2500	PASS
5/8" Type X	Viper25	Type S sharp pt	2500	PASS

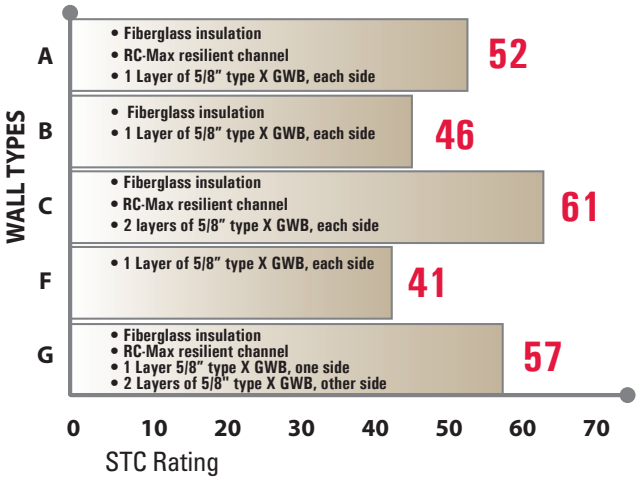




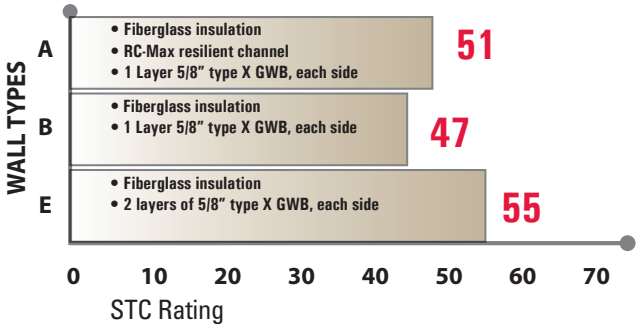
ACOUSTIC PERFORMANCE (ASTM E 90)

Acoustic tests were performed using 3-5/8" ViperStud steel studs. The tests were performed according to ASTM E 90 in different configurations.

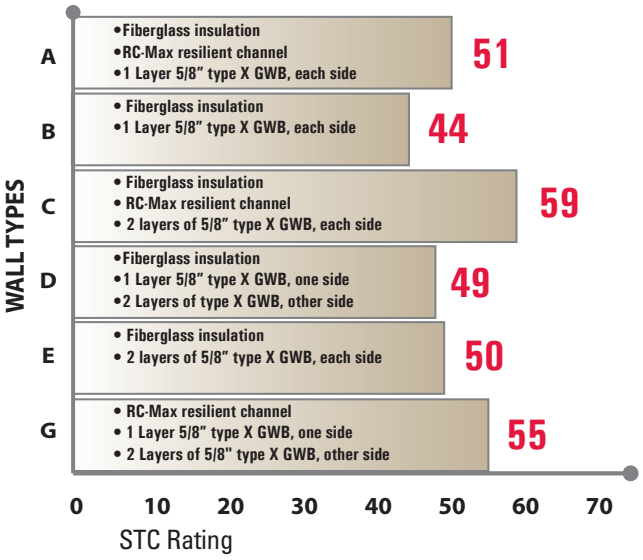
VIPER25 24" O.C.



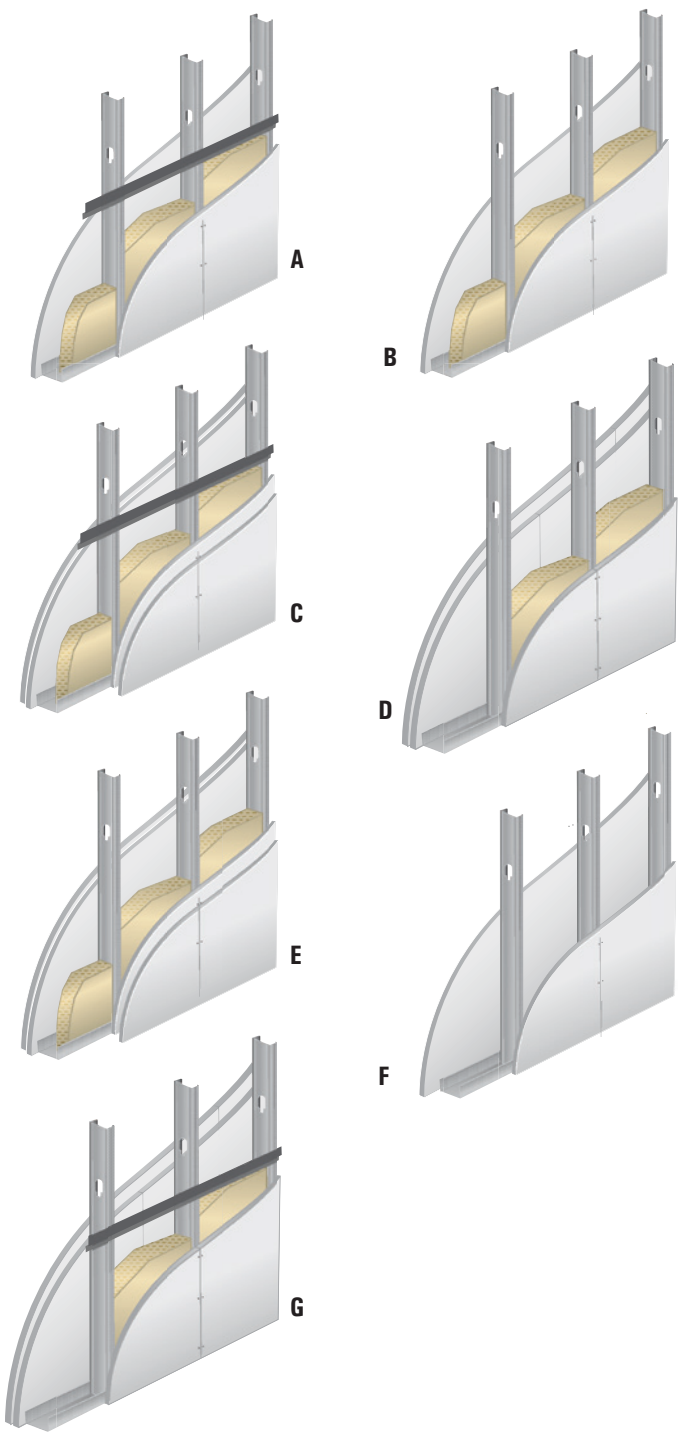
VIPER25 16" O.C.



VIPER20 16" O.C.



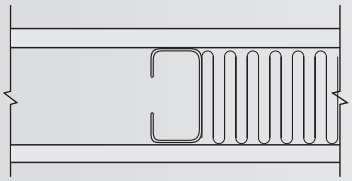
WALL TYPES



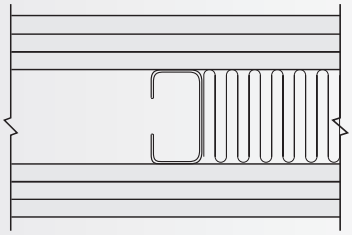
FIRE TESTING DATA (ASTM E 119)

TYPICAL ASSEMBLIES (see specific design for requirements)

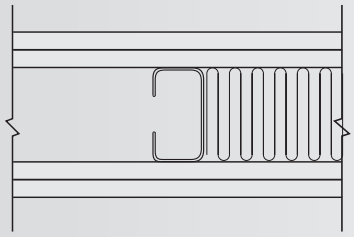
1-Hour Wall Assembly



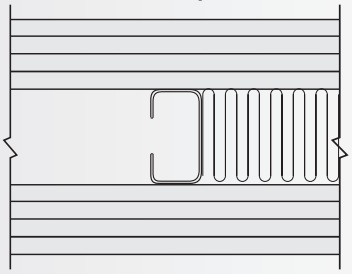
3-Hour Wall Assembly



2-Hour Wall Assembly



4-Hour Wall Assembly



Insulation shown is optional in most assemblies.
Check UL Design Guide for rated assembly requirements.

VIPERSTUD® IS FIRE TESTED

CLASSIFIED C UL® US

VIPERSTUD® FIRE TESTING DATA (ASTM E119)

UL Design No.	ViperStud Min. Thickness	Wall Rating:	UL Design No.	ViperStud Min. Thickness	Wall Rating:
U375	Viper25	2 HR	V416	Viper20	1 HR
U403	Viper20	2 HR	V417	Viper25	1 HR
U407	Viper25	1/2 or 1 HR	V418	Viper20	2 HR
U408	Viper20	2 HR	V419	Viper20	2 HR
U411	Viper20	2 HR	V425	Viper20	1 HR
U412	Viper20	2 HR	V435	Viper25	1 HR
U419	Viper25	1, 2, 3 or 4 HR	V437	Viper20	1 HR Chase
U420	Viper25	2 HR Chase	V438	Viper25	1, 2, 3 or 4 HR
U421	Viper20	2 HR	V443	Viper20	4 HR
U431	Viper20	4 HR	V444	Viper20	1 HR
U435	Viper20	3 HR or 4 HR	V448	Viper25	1 HR
U436	Viper20	2 HR Chase	V449	Viper20	2 HR
U444	Viper25	2 HR Chase	V452	Viper25	1 or 2 HR
U450	Viper20	1, 3 or 4 HR	V464	Viper25	1 HR Chase
U451	Viper20	1 HR	V469	Viper25	1 or 2 HR Chase
U454	Viper20	2 HR	V476	Viper20	1, 3 or 4 HR
U463	Viper20	3 or 4 HR	V486	Viper25	1, 2, or 2-1/2 HR
U465	Viper20	1 HR	V488	Viper25	1 or 2 HR Chase
U466	Viper20	1 HR Chase	V489	Viper25	1, 2, 3, or 4 HR
U471	Viper20	1-1/2 HR	V496	Viper20	1 or 2 HR Chase
U475	Viper20	1, 2, 3 or 4 HR	V498	Viper25	1, 2, 3 or 4 HR
U478	Viper20	3 HR	W411	Viper25	1/2 or 1 HR
U491	Viper20	2 HR	W415	Viper20	1 or 2 HR
U493	Viper25	1, 2 HR Chase	W423	Viper25	1/2 or 1 HR
U494	Viper20	1 HR	W424	Viper25	1/2 or 1 HR
U495	Viper20	1 or 2 HR	W432	Viper25	2 HR
U496	Viper20	1 HR	W433	Viper25	1/2 HR
V410	Viper20	2 HR	W440	Viper25	1, 2, 3 or 4 HR
V412	Viper20	2 HR	W442	Viper20	2 HR
			W443	Viper25	1, 1-1/2 HR

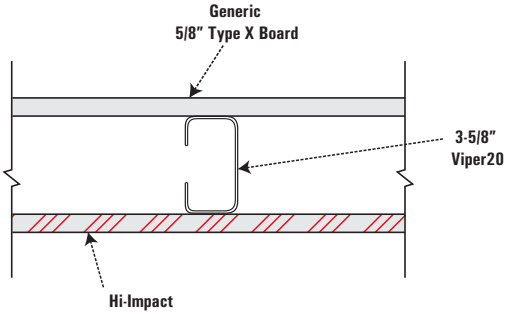
Note: Check UL Design assembly for minimum stud web width and other requirements. Visit www.MarinoWare.com for more information on fire rated assemblies.

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.

Test Materials:
Steel Studs – Viper20 Stud and track spaced 16" o.c., do not use ViperTrack25 on Viper20 studs for impact resistant walls.
Testing conducted by IAS Certified 3rd party testing lab Progressive Engineering.

TESTS CONDUCTED	SOFT BODY IMPACT CLASSIFICATION
USG	
Board Type: Mold Tough® VHI Firecode® X Panels	Level 3
CERTAINTEED	
Board Type: Extreme Impact	Level 3
AMERICAN	
Board Type: M-Bloc® IR 5/8" Type X Impact Resistant	Level 3
GEORGIA PACIFIC	
Board Type: DensArmor Plus® Impact-Resistant Interior Panel	Level 3
CONTINENTAL™	
Board Type: Protecta® HIR 300	Level 3
PABCO®	
Board Type: PABCO® High Impact	Level 3
NATIONAL GYPSUM	
Board Type: Hi-Impact® XP® Gypsum Board	Level 3



Soft body impact test using ViperStud.

PEI ES
AER-17109

High-Impact wallboard from seven manufacturers was tested to ASTM C1629 by Progressive Engineering, Inc. mounted on Viper20 Studs. All boards earned a Level 3 Classification (highest possible) on Viper20. The test program results are reflected in PEI Evaluation Services Report # AER-17109.

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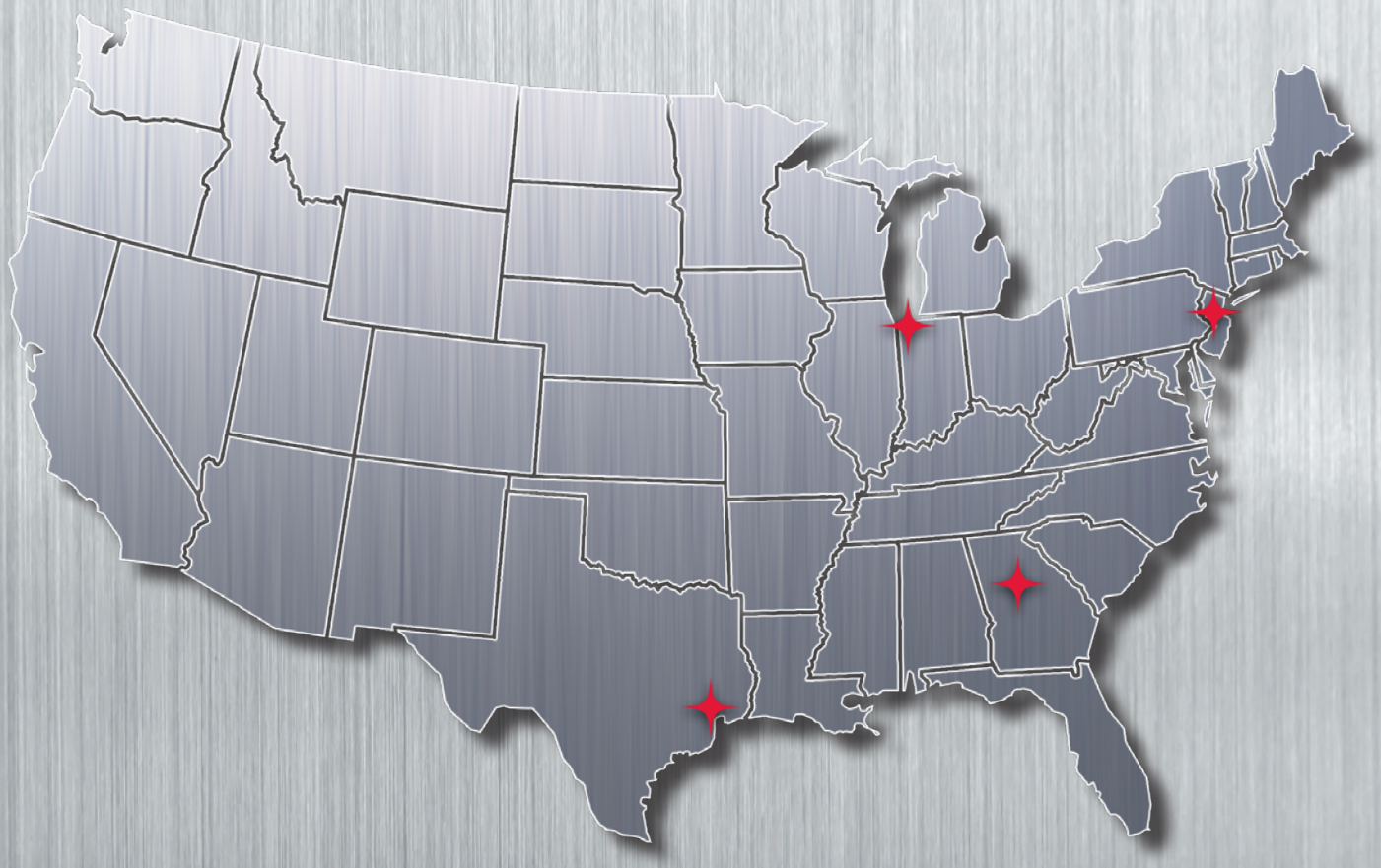

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