CEMCO
Steel Framing and Metal Lath

**Corporate Headquarters**
263 North Covina Lane
City of Industry, CA 91744
**Phone:** 800.775.2362
**Fax:** 626.330.7598

**Manufacturing Facilities**
City of Industry, CA
Denver, CO
Ft. Worth, TX
Pittsburg, CA

**Structural Engineering/Design**
1001-A Pittsburgh Antioch Hwy
Pittsburg, CA 94565
**Phone:** 800.775.2362
**Fax:** 626.330.7598

**Technical Services**
263 North Covina Lane
City of Industry, CA 91744
**Phone:** 800.416.2278
**Fax:** 626.249.5005

# INTERIOR NON-LOAD BEARING VIPERSTUDS®

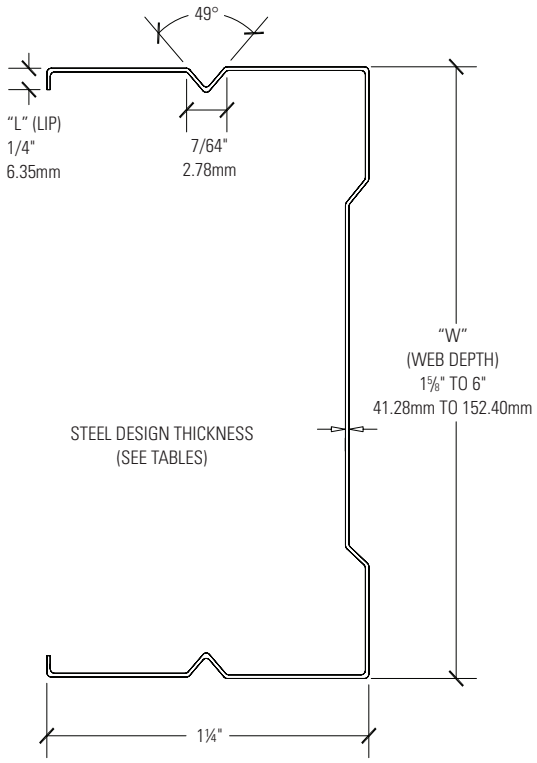
## Geometric Properties

ViperStuds® are fabricated in 1-5/8", 2-1/2", 3-5/8", 4", and 6" widths from standard G40 hot-dipped galvanized steel. G60 and G90 coatings are available through special order, and may require up-charges and extended lead times..

## Steel Thickness

| Model No. | Design Thickness (in) | Minimum Thickness (in) | Yield (ksi) | Web Sizes (in) | Coating[4,5] | Flange (in) | Return Lip (in) |
|---|---|---|---|---|---|---|---|
| VIPER25 | 0.0155 | 0.0147 | 50 | 1-5/8, 2-1/2, 3-5/8, 4, 6 | G40 | 1-1/4 | 1/4 |
| VIPER 18mil | 0.0188 | 0.0179 | 33 | 1-5/8, 2-1/2, 3-5/8, 4, 6 | G40 | 1-1/4 | 1/4 |
| VIPER20 | 0.0205 | 0.0195 | 57 | 1-5/8, 2-1/2, 3-5/8 | G40 | 1-1/4 | 1/4 |
| VIPER20 | 0.0220 | 0.0209 | 57 | 4, 6 | G40 | 1-1/4 | 1/4 |
| VIPER 30mil | 0.0312 | 0.0296 | 33 | 1-5/8, 2-1/2, 3-5/8, 4, 6 | G40 | 1-1/4 | 1/4 |
| VIPER 33mil | 0.0346 | 0.0329 | 33 | 1-5/8, 2-1/2, 3-5/8, 4, 6 | G40 | 1-1/4 | 1/4 |

**Notes:**
1. Uncoated steel thickness. Thickness is for carbon sheet steel.
2. Minimum thickness represents 95% of the design thickness and is the minimum acceptable thickness.
3. Knockout size for 1-5/8" & 2-1/2" Stud is 3/4" x 2". Knockout size for 3-5/8", 4", & 6" is 1-1/2" x 2-3/4".
4. Per ASTM C645 & A1003, Table 1.
5. G60 and G90 available upon request. Will require extended lead time and upcharge.




## Color Code (painted on ends)

15 mil: None with Dark Grey band on pallet
18 mil: None
20/21 mil: Brown
30 mil: Pink
33 mil: White

## LEED Points and Recycled Content

By using CEMCO steel framing products, your project can contribute to earning points for:

- LEED MR 2.1 & 2.2 – Construction Waste Management: up to 2 points
- LEED MR 4.1 & 4.2 – Recycled Content: up to 2 points
- LEED MR 5.1 & 5.2 – Regional Materials

## ASTM & Code Standards

- ASTM C645, A653/A653M, C754 (installation & storage), A924/A924M, A1003/A1003M/E119
- ATI CCRR-0154
- ICC-ES ESR-2620
- 2009 IBC, 2009 IRC
- 2012 IBC, 2012 IRC
- AISI S100-07/S1-10
- ICC-ES/CSSA Code Compliance Certification Program

## CEMCO cold-formed steel framing products contain 30% to 35% recycled steel.

- Total Recycled Content: 35%
- Post-Consumer Content: 19.8%
- Pre-Consumer Content: 14.4%

## Technical Services

Technical Services: 800.416.2278
Structural Engineering/Design: 925.473.9340
www.cemcosteel.com

This technical information reflects the most current information available and supersedes any and all previous publications effective September 15, 2013.

CEMCO
Steel Framing and Metal Lath

**Corporate Headquarters**
263 North Covina Lane
City of Industry, CA 91744
**Phone:** 800.775.2362
**Fax:** 626.330.7598

**Manufacturing Facilities**
City of Industry, CA
Denver, CO
Ft. Worth, TX
Pittsburg, CA

**Structural Engineering/Design**
1001-A Pittsburgh Antioch Hwy
Pittsburg, CA 94565
**Phone:** 800.775.2362
**Fax:** 626.330.7598

**Technical Services**
263 North Covina Lane
City of Industry, CA 91744
**Phone:** 800.416.2278
**Fax:** 626.249.5005

# VIPERSTUD® SECTION PROPERTIES

| Model No. | Gauge | Member | Design (in) | Min (in) | Yield (ksi) | Weight (lb/ft) | Gross Properties | | | | | Effective Properties | | Moment | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Area ($in^2$) | Ix ($in^4$) | rx (in) | Iy ($in^4$) | ry (in) | Ixd ($in^4$) | Sx ($in^3$) | Allowable Moment Ma (in-k) | Local Buckling Nominal Moment[2,4] Viper Mnl (in-k) | Distortional Buckling Nominal Moment[2,4] Viper Mnd (in-k) | Nominal Moment for Conventional Studs[3] Mn (in-k) | Critical Unbraced Length[7] Lu (in) |
| VIPER 25 | 25EQ | 162VS125-15 | 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 (18 mil) | 25.1 |
| | | 250VS125-15 | 0.0155 | 0.0147 | 50 | 0.29 | 0.085 | 0.084 | 0.998 | 0.017 | 0.452 | 0.090 | 0.042 | 1.17 | 2.72 | 2.12 | 1.72 (18 mil) | 24.8 |
| | | 362VS125-15 | 0.0155 | 0.0147 | 50 | 0.35 | 0.102 | 0.199 | 1.390 | 0.019 | 0.435 | 0.205 | 0.058 | 1.60 | 2.90 | 2.90 | 2.47 (18 mil) | 24.5 |
| | | 400VS125-15 | 0.0155 | 0.0147 | 50 | 0.37 | 0.108 | 0.250 | 1.520 | 0.020 | 0.429 | 0.255 | 0.061 | 1.69 | 3.06 | 3.06 | 2.74 (18 mil) | 24.4 |
| | | 600VS125-15 | 0.0155 | 0.0147 | 50 | 0.47 | 0.139 | 0.659 | 2.180 | 0.022 | 0.397 | 0.628 | 0.085 | 2.36 | 4.27 | 4.27 | 4.13 (18 mil) | 23.7 |
| VIPER 18mil | 25 | 162VS125-18 | 0.0188 | 0.0179 | 33 | 0.2816 | 0.0687 | 0.0388 | 0.6843 | 0.0176 | 0.4607 | 0.0369 | 0.0346 | 0.68 | 1.14 | 1.23 | 1.02 | 30.7 |
| | | 250VS125-18 | 0.0188 | 0.0179 | 33 | 0.3376 | 0.0992 | 0.1022 | 1.0150 | 0.0204 | 0.4540 | 0.0977 | 0.0653 | 1.29 | 2.15 | 1.95 | 1.72 | 29.7 |
| | | 362VS125-18 | 0.0188 | 0.0179 | 33 | 0.4096 | 0.1204 | 0.2405 | 1.4135 | 0.0230 | 0.4371 | 0.2373 | 0.0836 | 1.65 | 2.76 | 2.89 | 2.47 | 29.9 |
| | | 400VS125-18 | 0.0188 | 0.0179 | 33 | 0.4336 | 0.1274 | 0.3028 | 1.5417 | 0.0237 | 0.4309 | 0.2993 | 0.0927 | 1.83 | 3.06 | 3.20 | 2.74 | 29.8 |
| | | 600VS125-18* | 0.0188 | 0.0179 | 33 | 0.5606 | 0.1648 | 0.7965 | 2.1987 | 0.0261 | 0.3979 | * | * | - | - | - | - | - |
| VIPER 20 | 20EQ | 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 (30 mil) | 23.4 |
| | | 250VS125-20 | 0.0205 | 0.0195 | 57 | 0.38 | 0.111 | 0.111 | 1.000 | 0.023 | 0.451 | 0.129 | 0.067 | 2.05 | 4.50 | 3.71 | 3.49 (30 mil) | 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 (30 mil) | 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 (30 mil) | 22.7 |
| | | 600VS125-21 | 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 (30 mil) | 22.0 |
| VIPER 30mil | 20DW | 162VS125-30 | 0.0312 | 0.0296 | 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 | 0.0296 | 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 | 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 (30 mil) | 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 (30 mil) | 29.6 |
| | | 600VS125-30 | 0.0312 | 0.0296 | 33 | 0.29 | 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 | 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 (33 mil) | 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 | 4.02 | 4.01 (33 mil) | 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 (33 mil) | 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 (33 mil) | 29.5 |
| | | 600VS125-33 | 0.0346 | 0.0329 | 33 | 0.02 | 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. Section properties are in accordance with AISI S100-07/ S1-10 . Viper 25 and Viper20 section properties are based on testing. Allowable moment (Ma) is calculated in accordance with Chapter F of AISI S100-07/ S1-10 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/ S1-10. Allowable moments (Ma) can be calculated with a 1.67 safety factor.
3. Section properties are in accordance with AISI S100-07 with S1-10 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. KΦ assumed to be zero for distortional buckling moments.

CEMCO
Steel Framing and Metal Lath

**Corporate Headquarters**
263 North Covina Lane
City of Industry, CA 91744
**Phone:** 800.775.2362
**Fax:** 626.330.7598

**Manufacturing Facilities**
City of Industry, CA
Denver, CO
Ft. Worth, TX
Pittsburg, CA

**Structural Engineering/Design**
1001-A Pittsburgh Antioch Hwy
Pittsburg, CA 94565
**Phone:** 800.775.2362
**Fax:** 626.330.7598

**Technical Services**
263 North Covina Lane
City of Industry, CA 91744
**Phone:** 800.416.2278
**Fax:** 626.249.5005

# INTERIOR NON-LOAD BEARING VIPERSTUDS®

## Non-Composite Limiting Heights – Braced at 48" O.C.

| Model No. | Depth (in) | Gauge | Member Designation | Design (in) | Min (in) | Yield (ksi) | Spacing (o.c.) | 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 | 25EQ | 162VS125-15 | 0.0155 | 0.0147 | 50 | 12 | 8'-8" f | 7'-6" | 6'-7" | 7'-1"f | 6'-7" | -- | 6'-1" f | 6'-0" | -- |
| | | | 162VS125-15 | 0.0155 | 0.0147 | 50 | 16 | 7'-6" f | 6'-10" | 6'-0" | 6'-1"f | 6'-0" | -- | -- | -- | -- |
| | | | 162VS125-15 | 0.0155 | 0.0147 | 50 | 24 | 6'-1" f | 6'-0" | -- | -- | -- | -- | -- | -- | -- |
| | 2-1/2 | 25EQ | 250VS125-15 | 0.0155 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 50 | 16 | 10'-7" w | 10'-7"w | 10'-7"w | 7'-1"w | 7'-1" w | 7'-1" w | -- | -- | -- |
| | | | 600VS125-15 | 0.0155 | 0.0147 | 50 | 24 | 7'-1" w | 7'-1"w | 7'-1"w | -- | -- | -- | -- | -- | -- |
| VIPER 18mil | 1-5/8 | 25 | 162VS125-18 | 0.0188 | 0.0179 | 33 | 12 | 8' 11" | 7' 10" | 6' 10" | 7' 4" | 6' 10" | 5' 11" | 6' 4" | 6' 2" | 5' 5" |
| | | | 162VS125-18 | 0.0188 | 0.0179 | 33 | 16 | 7' 9" | 7' 1" | 6' 2" | 6' 4" | 6' 2" | 5' 5" | 5' 6" | 5' 6" | 4' 11" |
| | | | 162VS125-18 | 0.0188 | 0.0179 | 33 | 24 | 6' 4" | 6' 2" | 5' 5" | 5' 2" | 5' 2" | 4' 8" | 4' 6" | 4' 6" | 4' 3" |
| | 2-1/2 | 25 | 250VS125-18 | 0.0188 | 0.0179 | 33 | 12 | 12' 1" | 10' 10" | 9' 5" | 9' 11" | 9' 5" | 8' 3" | 8' 7" | 8' 7" | 7' 6" |
| | | | 250VS125-18 | 0.0188 | 0.0179 | 33 | 16 | 10' 6" | 9' 10" | 8' 7" | 8' 7" | 8' 7" | 7' 6" | 7' 5" | 7' 5" | 6' 9" |
| | | | 250VS125-18 | 0.0188 | 0.0179 | 33 | 24 | 8' 7" | 8' 7" | 7' 6" | 6' 11" | 6' 11" | 6' 6" | 5' 2" | 5' 2" | 5' 2" |
| | 3-5/8 | 25 | 362VS125-18 | 0.0188 | 0.0179 | 33 | 12 | 15' 1" | 14' 6" | 12' 8" | 12' 4" | 12' 4" | 11' 1" | 9' 8" | 9' 8" | 9' 8" |
| | | | 362VS125-18 | 0.0188 | 0.0179 | 33 | 16 | 13' 1" | 13' 1" | 11' 6" | 9' 8" | 9' 8" | 9' 8" | 7' 3" | 7' 3" | 7' 3" |
| | | | 362VS125-18 | 0.0188 | 0.0179 | 33 | 24 | 9' 8" | 9' 8" | 9' 8" | 6' 5" | 6' 5" | 6' 5" | 4' 10" | 4' 10" | 4' 10" |
| | 4 | 25 | 400VS125-18 | 0.0188 | 0.0179 | 33 | 12 | 15' 11" | 15' 8" | 13' 8" | 13' 0" | 13' 0" | 12' 0" | 11' 3" | 11' 3" | 10' 10'' |
| | | | 400VS125-18 | 0.0188 | 0.0179 | 33 | 16 | 13' 9" | 13' 9" | 12' 5" | 11' 3" | 11' 3" | 10' 10" | 9' 9" | 9' 9" | 9' 9" |
| | | | 400VS125-18 | 0.0188 | 0.0179 | 33 | 24 | 11' 3" | 11' 3" | 10' 10" | 9' 2" | 9' 2" | 9' 2" | 7' 11" | 7' 11" | 7' 11" |
| | 6 | 25 | 600VS125-18 | 0.0188 | 0.0179 | 33 | 12 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | 600VS125-18 | 0.0188 | 0.0179 | 33 | 16 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | 600VS125-18 | 0.0188 | 0.0179 | 33 | 24 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| VIPER 20 | 1-5/8 | 20EQ | 162VS125-20 | 0.0205 | 0.0195 | 57 | 12 | 10'-7" f | 8'-8" | 7'-7" | 8'-7" f | 7'-7" | 6'-7" | 7'-6" f | 6'-11" | 6'-0" |
| | | | 162VS125-20 | 0.0205 | 0.0195 | 57 | 16 | 9'-2" f | 7'-11" | 6'-11" | 7'-6" f | 6'-11" | 6'-0" | 6'-6" f | 6'-4" | -- |
| | | | 162VS125-20 | 0.0205 | 0.0195 | 57 | 24 | 7'-6" f | 6'-11" | 6'-0" | 6'-1" f | 6'-0" | -- | -- | -- | -- |
| | 2-1/2 | 20EQ | 250VS125-20 | 0.0205 | 0.0195 | 57 | 12 | 14'-4" f | 11'-11" | 10'-5" | 11'-8" f | 10'-5" | 9'-1" | 10'-1" f | 9'-6" | 8'-4" |
| | | | 250VS125-20 | 0.0205 | 0.0195 | 57 | 16 | 12'-5" f | 10'-10" | 9'-6" | 10'-1" f | 9'-6" | 8'-4" | 8'-10" f | 8'-7" | 7'-6" |
| | | | 250VS125-20 | 0.0205 | 0.0195 | 57 | 24 | 10'-1" f | 9'-6" | 8'-4" | 8'-4" f | 8'-4" | 7'-2" | 7'-2" f | 7'-2" f | 6'-7" |
| | 3-5/8 | 20EQ | 362VS125-20 | 0.0205 | 0.0195 | 57 | 12 | 16'-2" f | 15'-10" | 13'-10" | 13'-2" f | 13'-2" f | 12'-0" | 11'-5" f | 11'-5" f | 10'-11" |
| | | | 362VS125-20 | 0.0205 | 0.0195 | 57 | 16 | 14'-0" f | 14'-0" f | 12'-6" | 11'-5" f | 11'-5" f | 10'-11" | 9'-11" f | 9'-11" f | 9'-11" f |
| | | | 362VS125-20 | 0.0205 | 0.0195 | 57 | 24 | 11'-5" f | 11'-5" f | 10'-11" | 9'-4" f | 9'-4" f | 9'-4" f | 8'-1" f | 8'-1" f | 8'-1" f |
| | 4 | 20EQ | 400VS125-21 | 0.0220 | 0.0209 | 57 | 12 | 17'-10" f | 17'-0" | 14'-11" | 14'-7" f | 14'-7" f | 13'-0" | 12'-7" f | 12'-7" f | 11'-10" |
| | | | 400VS125-21 | 0.0220 | 0.0209 | 57 | 16 | 15'-6" f | 15'-6" f | 13'-6" | 12'-7" f | 12'-7" f | 11'-10" | 10'-11" f | 10'-11" f | 10'-8" |
| | | | 400VS125-21 | 0.0220 | 0.0209 | 57 | 24 | 12'-7" f | 12'-7" f | 11'-10" | 10'-4" f | 10'-4" f | 10'-4" f | 8'-11" f | 8'-11" f | 8'-11" f |
| | 6 | 20EQ | 600VS125-21 | 0.0220 | 0.0209 | 57 | 12 | 23'-1" f | 22'-6" | 19'-8" | 18'-11" f | 18'-11" f | 17'-2" | 16'-5" f | 16'-5" f | 15'-7" |
| | | | 600VS125-21 | 0.0220 | 0.0209 | 57 | 16 | 20'-0" f | 20'-0" f | 17'-11" | 16'-5" f | 16'-5" f | 15'-7" | 12'-10"w | 12'-10"w | 12'-10"w |
| | | | 600VS125-21 | 0.0220 | 0.0209 | 57 | 24 | 16'-5" f | 16'-5" f | 15'-7" | 11'-5" w | 11'-5" w | 11'-5"w | 8'-7" w | 8'-7" w | 8'-7" w |
| VIPER 30mil | 1-5/8 | 20 | 162VS125-30 | 0.0312 | 0.0296 | 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 | 0.0296 | 33 | 16 | 10'-8" | 8'-6" | 7'-5" | 8'-11" f | 7'-5" | 6'-6" | 7'-8" f | 6'-8" | -- |
| | | | 162VS125-30 | 0.0312 | 0.0296 | 33 | 24 | 8'-11" f | 7'-5" | 6'-6" | 7'-4" f | 6'-6" | -- | 6'-4" f | -- | -- |
| | 2-1/2 | 20 | 250VS125-30 | 0.0312 | 0.0296 | 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 | 0.0296 | 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 | 0.0296 | 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 | 20 | 362VS125-30 | 0.0312 | 0.0296 | 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 | 0.0296 | 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 | 0.0296 | 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 | 20 | 400VS125-30 | 0.0312 | 0.0296 | 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 | 0.0296 | 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 | 0.0296 | 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 | 20 | 600VS125-30 | 0.0312 | 0.0296 | 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 | 0.0296 | 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 | 0.0296 | 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 | 20 | 162VS125-33 | 0.0346 | 0.0329 | 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 | 0.0329 | 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 | 0.0329 | 33 | 24 | 9'-6" f | 7'-8" | 6'-8" | 7'-8" f | 6'-8" | -- | 6'-8" f | 6'-1" | -- |
| | 2-1/2 | 20 | 250VS125-33 | 0.0346 | 0.0329 | 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 | 0.0329 | 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 | 0.0329 | 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 | 20 | 362VS125-33 | 0.0346 | 0.0329 | 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 | 0.0329 | 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 | 0.0329 | 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 | 20 | 400VS125-33 | 0.0346 | 0.0329 | 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 | 0.0329 | 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 | 0.0329 | 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 | 20 | 600VS125-33 | 0.0346 | 0.0329 | 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 | 0.0329 | 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 | 0.0329 | 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 S100-07 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 fully braced when unbraced length is less the Lu.
4. Viper25 & Viper20 distortional & local buckling moments and stiffness are based on testing in accordance with App. A of a non-structural code compliance program.
5. 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" and fastened to support.
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 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".

CEMCO
Steel Framing and Metal Lath

**Corporate Headquarters**
263 North Covina Lane
City of Industry, CA 91744
**Phone:** 800.775.2362
**Fax:** 626.330.7598

**Manufacturing Facilities**
City of Industry, CA
Denver, CO
Ft. Worth, TX
Pittsburg, CA

**Structural Engineering/Design**
1001-A Pittsburgh Antioch Hwy
Pittsburg, CA 94565
**Phone:** 800.775.2362
**Fax:** 626.330.7598

**Technical Services**
263 North Covina Lane
City of Industry, CA 91744
**Phone:** 800.416.2278
**Fax:** 626.249.5005

# INTERIOR NON-LOAD BEARING VIPERSTUDS®

## Non-Composite Limiting Heights – Fully Braced

| Model No. | Depth (in) | Gauge | Member Designation | Design (in) | Min (in) | Yield (ksi) | Spacing (o.c.) | 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 | 25EQ | 162VS125-15 | 0.0155 | 0.0147 | 50 | 12 | 9'-5"f | 7'-6" | 6'-7" | 7'-8" f | 6'-7" | -- | 6'-7" f | 6'-0" | -- |
| | | | 162VS125-15 | 0.0155 | 0.0147 | 50 | 16 | 8'-1" f | 6'-10" | 6'-0" | 6'-7" f | 6'-0" | -- | -- | -- | -- |
| | | | 162VS125-15 | 0.0155 | 0.0147 | 50 | 24 | 6'-7" f | 6'-0" | -- | -- | -- | -- | -- | -- | -- |
| | 2-1/2 | 25EQ | 250VS125-15 | 0.0155 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 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 | 0.0147 | 50 | 24 | 10'-7" w | 10'-7" w | 10'-7"w | 7'-0" w | 7'-0"w | 7'-0"w | -- | -- | -- |
| VIPER 18mil | 1-5/8 | 25 | 162VS125-18 | 0.0188 | 0.0179 | 33 | 12 | 9' 6" | 7' 10" | 6' 10" | 7' 9" | 6' 10" | 5' 11" | 6' 8" | 6' 2" | 5' 5" |
| | | | 162VS125-18 | 0.0188 | 0.0179 | 33 | 16 | 8' 3" | 7' 1" | 6' 2" | 6' 8" | 6' 2" | 5' 5" | 5' 10" | 5' 7" | 4' 11" |
| | | | 162VS125-18 | 0.0188 | 0.0179 | 33 | 24 | 6' 8" | 6' 2" | 5' 5" | 5' 6" | 5' 5" | 4' 8" | 4' 9" | 4' 9" | 4' 3" |
| | 2-1/2 | 25 | 250VS125-18 | 0.0188 | 0.0179 | 33 | 12 | 12' 5" | 10' 10" | 9' 5" | 10' 1" | 9' 5" | 8' 3" | 8' 9" | 8' 7" | 7' 6" |
| | | | 250VS125-18 | 0.0188 | 0.0179 | 33 | 16 | 10' 9" | 9' 10" | 8' 7" | 8' 9" | 8' 7" | 7' 6" | 7' 7" | 7' 7" | 6' 9" |
| | | | 250VS125-18 | 0.0188 | 0.0179 | 33 | 24 | 8' 9" | 8' 7" | 7' 6" | 6' 11" | 6' 11" | 6' 6" | 5' 2" | 5' 2" | 5' 2" |
| | 3-5/8 | 25 | 362VS125-18 | 0.0188 | 0.0179 | 33 | 12 | 14' 10" | 14' 6" | 12' 8" | 12' 1" | 12' 1" | 11' 1" | 9' 8" | 9' 8" | 9' 8" |
| | | | 362VS125-18 | 0.0188 | 0.0179 | 33 | 16 | 12' 10" | 12' 10" | 11' 6" | 9' 8" | 9' 8" | 9' 8" | 7' 3" | 7' 3" | 7' 3" |
| | | | 362VS125-18 | 0.0188 | 0.0179 | 33 | 24 | 9' 8" | 9' 8" | 9' 8" | 6' 5" | 6' 5" | 6' 5" | 4' 10" | 4' 10" | 4' 10" |
| | 4 | 25 | 400VS125-181 | 0.0188 | 0.0179 | 33 | 12 | 15' 7" | 15' 7" | 13' 9" | 12' 9" | 12' 9" | 12' 0" | 11' 0" | 11' 0" | 11' 0" |
| | | | 400VS125-181 | 0.0188 | 0.0179 | 33 | 16 | 13' 6" | 13' 6" | 12' 5" | 11' 0" | 11' 0" | 10' 11" | 9' 6" | 9' 6" | 9' 6" |
| | | | 400VS125-181 | 0.0188 | 0.0179 | 33 | 24 | 11' 0" | 11' 0" | 10' 11" | 9' 0" | 9' 0" | 9' 0" | 7' 9" | 7' 9" | 7' 9" |
| | 6 | 25 | 600VS125-182 | 0.0188 | 0.0179 | 33 | 12 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | 600VS125-182 | 0.0188 | 0.0179 | 33 | 16 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | 600VS125-182 | 0.0188 | 0.0179 | 33 | 24 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| VIPER 20 | 1-5/8 | 20EQ | 162VS125-20 | 0.0205 | 0.0195 | 57 | 12 | 10'-11" | 8'-8" | 7'-7" | 9'-6" | 7'-7" | 6'-7" | 8'-8" | 6'-11" | 6'-0" |
| | | | 162VS125-20 | 0.0205 | 0.0195 | 57 | 16 | 9'-11" | 7'-11" | 6'-11" | 8'-8" | 6'-11" | 6'-0" | 7'-8"f | 6'-4" | -- |
| | | | 162VS125-20 | 0.0205 | 0.0195 | 57 | 24 | 8'-8" | 6'-11" | 6'-0" | 7'-2" f | 6'-0" | -- | 6'-4" f | -- | -- |
| | 2-1/2 | 20EQ | 250VS125-20 | 0.0205 | 0.0195 | 57 | 12 | 15'-0" | 11'-11" | 10'-5" | 13'-1" | 10'-5" | 9'-1" | 11'-8" f | 9'-6" | 8'-4" |
| | | | 250VS125-20 | 0.0205 | 0.0195 | 57 | 16 | 13'-7" | 10'-10" | 9'-6" | 11'-8" f | 9'-6" | 8'-4" | 10'-1" f | 8'-7" | 7'-6" |
| | | | 250VS125-20 | 0.0205 | 0.0195 | 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 | 362VS125-20 | 0.0205 | 0.0195 | 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 | 0.0205 | 0.0195 | 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 | 0.0205 | 0.0195 | 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 | 400VS125-21 | 0.0220 | 0.0209 | 57 | 12 | 21'-6" | 17'-0" | 14'-11" | 18'-1" f | 14'-11" | 13'-0" | 15'-8" f | 13'-6" | 11'-10" |
| | | | 400VS125-21 | 0.0220 | 0.0209 | 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 | 0.0220 | 0.0209 | 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 | 600VS125-21 | 0.0220 | 0.0209 | 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 | 0.0220 | 0.0209 | 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 | 0.0220 | 0.0209 | 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 |
| VIPER 30mil | 1-5/8 | 20 | 162VS125-30 | 0.0312 | 0.0296 | 33 | 12 | 11'-8" | 9'-4" | 8'-1" | 10'-2" | 8'-1" | 7'-1" | 9'-4" | 7'-5" | 6'-6" |
| | | | 162VS125-30 | 0.0312 | 0.0296 | 33 | 16 | 10'-8" | 8'-6" | 7'-5" | 9'-4" | 7'-5" | 6'-6" | 8'-1" f | 6'-8" | -- |
| | | | 162VS125-30 | 0.0312 | 0.0296 | 33 | 24 | 9'-4" | 7'-5" | 6'-6" | 7'-8" f | 6'-6" | -- | 6'-7" f | -- | -- |
| | 2-1/2 | 20 | 250VS125-30 | 0.0312 | 0.0296 | 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 | 0.0296 | 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 | 0.0296 | 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 | 362VS125-30 | 0.0312 | 0.0296 | 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 | 0.0296 | 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 | 0.0296 | 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 | 400VS125-30 | 0.0312 | 0.0296 | 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 | 0.0296 | 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 | 0.0296 | 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 | 600VS125-30 | 0.0312 | 0.0296 | 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 | 0.0296 | 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 | 0.0296 | 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 | 20 | 162VS125-33 | 0.0346 | 0.0329 | 33 | 12 | 12'-1" | 9'-7" | 8'-5" | 10'-7" | 8'-5" | 7'-4" | 9'-7" | 7'-7" | 6'-8" |
| | | | 162VS125-33 | 0.0346 | 0.0329 | 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 | 0.0329 | 33 | 24 | 9'-7" | 7'-7" | 6'-8" | 8'-2" f | 6'-8" | -- | 7'-1" f | 6'-1" | -- |
| | 2-1/2 | 20 | 250VS125-33 | 0.0346 | 0.0329 | 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 | 0.0329 | 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 | 0.0329 | 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 | 362VS125-33 | 0.0346 | 0.0329 | 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 | 0.0329 | 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 | 0.0329 | 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 | 400VS125-33 | 0.0346 | 0.0329 | 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 | 0.0329 | 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 | 0.0329 | 33 | 24 | 17'-2" f | 15'-2" | 13'-4" | 14'-0" f | 13'-4" | 11'-7" | 12'-1" f | 12'-1" | 10'-7" |
| | 6 | 20 | 600VS125-33 | 0.0346 | 0.0329 | 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 | 0.0329 | 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 | 0.0329 | 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 fully braced when unbraced length is less the Lu.
4. Viper25 & Viper20 distortional & local buckling moments and stiffness are based on testing in accordance with App. A of a non-structural code compliance program.
5. 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" and fastened to support.
6. No web stiffeners are required for studs with h/t>200, web crippling and shear values have been confirmed by testing. **Fully braced whenunbraced length is less than Lu. See section properties table for Lu values.**
7. The factory punchouts are in accordance with section C5 of the AIAI S201-07. The distance from the center of the last punchout to the end of the stud is 12".

CEMCO
Steel Framing and Metal Lath

**Corporate Headquarters**
263 North Covina Lane
City of Industry, CA 91744
**Phone:** 800.775.2362
**Fax:** 626.330.7598

**Manufacturing Facilities**
City of Industry, CA
Denver, CO
Ft. Worth, TX
Pittsburg, CA

**Structural Engineering/Design**
1001-A Pittsburgh Antioch Hwy
Pittsburg, CA 94565
**Phone:** 800.775.2362
**Fax:** 626.330.7598

**Technical Services**
263 North Covina Lane
City of Industry, CA 91744
**Phone:** 800.416.2278
**Fax:** 626.249.5005

# INTERIOR NON-LOAD BEARING VIPERSTUDS® 5/8" TYPE X

## Allowable Composite Heights for Non-Load Bearing Walls

| Model No. | Depth (in) | Gauge | Member Designation | Design (in) | Min (in) | Yield (ksi) | Spacing (o.c.) | 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 | 25EQ | 162VS125-15 | 0.0155 | 0.0147 | 50 | 12 | 13'-9" | 11'-4" | 9'-10" | 12'-0" | 9'-11" | 8'-3" | 10'-11" | 8'-10" | -- |
| | | | 162VS125-15 | 0.0155 | 0.0147 | 50 | 16 | 12'-6" | 10'-4" | 8'-8" | 10'-11" | 8'-10" | -- | 9'-11" | 7'-11" | -- |
| | | | 162VS125-15 | 0.0155 | 0.0147 | 50 | 24 | 10'-11" | 8'-10" | -- | 9'-5" | -- | -- | 8'-2" | -- | -- |
| | 2-1/2 | 25EQ | 250VS125-15 | 0.0155 | 0.0147 | 50 | 12 | 17'-3" | 14'-5" | 12'-9" | 15'-0" | 12'-7" | 11'-1" | 13'-8" | 11'-6" | 10'-1" |
| | | | 250VS125-15 | 0.0155 | 0.0147 | 50 | 16 | 15'-8" | 13'-1" | 11'-7" | 13'-8" | 11'-6" | 10'-1" | 12'-3" | 10'-5" | 8'-9" |
| | | | 250VS125-15 | 0.0155 | 0.0147 | 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 | 0.0147 | 50 | 12 | 20'-10" | 17'-3" | 15'-2" | 18'-2" | 15'-1" | 13'-3" | 15'-10" | 13'-9" | 12'-0" |
| | | | 362VS125-15 | 0.0155 | 0.0147 | 50 | 16 | 18'-11" | 15'-9" | 13'-9" | 15'-10" | 13'-9" | 12'-0" | 13'-9" | 12'-6" | 10'-11" |
| | | | 362VS125-15 | 0.0155 | 0.0147 | 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 | 0.0147 | 50 | 12 | 22'-1" | 18'-3" | 16'-3" | 19'-3" | 15'-11" | 14'-2" | 16'-8" | 14'-6" | 12'-11" |
| | | | 400VS125-15 | 0.0155 | 0.0147 | 50 | 16 | 20'-1" | 16'-7" | 14'-9" | 16'-8" | 14'-6" | 12'-11" | 14'-5" | 13'-2" | 11'-9" |
| | | | 400VS125-15 | 0.0155 | 0.0147 | 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 | 0.0147 | 50 | 12 | 24'-8" | 23'-9" | 21'-1" | 22'-3" | 20'-9" | 18'-5" | 20'-0" | 18'-10" | 16'-9" |
| | | | 600VS125-15 | 0.0155 | 0.0147 | 50 | 16 | 22'-11" | 21'-7" | 19'-2" | 20'-0" | 18'-10" | 16'-9" | 17'-5" | 17'-2" | 15'-3" |
| | | | 600VS125-15 | 0.0155 | 0.0147 | 50 | 24 | 20'-1" | 18'-10" | 16'-9" | 16'-5" | 16'-5" | 14'-8" | 14'-2" | 14'-2" | 13'-0" |
| VIPER 18mil | 1-5/8 | 25 | 162VS125-18 | 0.0188 | 0.0179 | 33 | 12 | 12' 10" | 10' 7" | 9' 4" | 11' 3" | 9' 3" | 8' 2" | 10' 3" | 8' 5" | -- |
| | | | 162VS125-18 | 0.0188 | 0.0179 | 33 | 16 | 11' 9" | 9' 8" | 8' 6" | 10' 3" | 8' 5" | -- | 9' 4" | -- | -- |
| | | | 162VS125-18 | 0.0188 | 0.0179 | 33 | 24 | 10' 3" | 8' 5" | -- | 8' 11" | -- | -- | 8' 2" | -- | -- |
| | 2-1/2 | 25 | 250VS125-18 | 0.0188 | 0.0179 | 33 | 12 | 17' 5" | 14' 5" | 12' 7" | 14' 7" f | 12' 7" | 11' 0" | 12' 8" f | 11' 5" | 9' 8" |
| | | | 250VS125-18 | 0.0188 | 0.0179 | 33 | 16 | 15' 6"f | 13' 1" | 11' 6" | 12' 8" f | 11' 5" | 9' 8" | 11' 0" f | 10' 3" | 8' 6" |
| | | | 250VS125-18 | 0.0188 | 0.0179 | 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 | 362VS125-18 | 0.0188 | 0.0179 | 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 | 0.0188 | 0.0179 | 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 | 0.0188 | 0.0179 | 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 | 400VS125-18 | 0.0188 | 0.0179 | 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 | 0.0188 | 0.0179 | 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 | 0.0188 | 0.0179 | 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 | 600VS125-18 | 0.0188 | 0.0179 | 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 | 0.0188 | 0.0179 | 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 | 0.0188 | 0.0179 | 33 | 24 | 18' 0"f | 18' 0" f | 17' 2" | 14' 8" f | 14' 8" f | 14' 8" f | 12' 9" f | 12' 9" | 12' 9"f |
| VIPER 20 | 1-5/8 | 20EQ | 162VS125-20 | 0.0205 | 0.0195 | 57 | 12 | 14'-3" | 11'-3" | 9'-10" | 12'-5" | 9'-10" | 8'-5" | 11'-3" | 8'-10" | -- |
| | | | 162VS125-20 | 0.0205 | 0.0195 | 57 | 16 | 12'-11" | 10'-3" | 8'-10" | 11'-3" | 8'-10" | -- | 10'-3" | 7'-11" | -- |
| | | | 162VS125-20 | 0.0205 | 0.0195 | 57 | 24 | 11'-3" | 8'-10" | -- | 9'-10" | -- | -- | 8'-10" | -- | -- |
| | 2-1/2 | 20EQ | 250VS125-20 | 0.0205 | 0.0195 | 57 | 12 | 17'-11" | 14'-10" | 13'-2" | 15'-8" | 13'-0" | 11'-6" | 14'-3" | 11'-10" | 10'-5" |
| | | | 250VS125-20 | 0.0205 | 0.0195 | 57 | 16 | 16'-4" | 13'-6" | 12'-0" | 14'-3" | 11'-10" | 10'-5" | 12'-11" | 10'-9" | 9'-4" |
| | | | 250VS125-20 | 0.0205 | 0.0195 | 57 | 24 | 14'-3" | 11'-10" | 10'-5" | 12'-5" | 10'-4" | 8'-9" | 11'-3" | 9'-2" | -- |
| | 3-5/8 | 20EQ | 362VS125-20 | 0.0205 | 0.0195 | 57 | 12 | 21'-10" | 17'-11" | 15'-9" | 19'-1" | 15'-8" | 13'-9" | 17'-4" | 14'-3" | 12'-6" |
| | | | 362VS125-20 | 0.0205 | 0.0195 | 57 | 16 | 19'-10" | 16'-4" | 14'-4" | 17'-4" | 14'-3" | 12'-6" | 15'-4" | 12'-11" | 11'-4" |
| | | | 362VS125-20 | 0.0205 | 0.0195 | 57 | 24 | 17'-4" | 14'-3" | 12'-6" | 14'-6" | 12'-5" | 10'-11" | 12'-7" | 11'-4" | 9'-11" |
| | 4 | 20EQ | 400VS125-21 | 0.022 | 0.0209 | 57 | 12 | 24'-0" | 19'-1" | 16'-8" | 21'-0" | 16'-8" | 14'-7" | 19'-1" | 15'-2" | 13'-3" |
| | | | 400VS125-21 | 0.022 | 0.0209 | 57 | 16 | 21'-10" | 17'-4" | 15'-2" | 19'-1" | 15'-2" | 13'-3" | 17'-4" | 13'-9" | 12'-0" |
| | | | 400VS125-21 | 0.022 | 0.0209 | 57 | 24 | 19'-1" | 15'-2" | 13'-3" | 16'-8" | 13'-3" | 11'-7" | 14'-11" | 12'-0" | 10'-5" |
| | 6 | 20EQ | 600VS125-21 | 0.022 | 0.0209 | 57 | 12 | 29'-1" | 25'-7" | 22'-6" | 25'-10" | 22'-4" | 19'-8" | 23'-8" | 20'-4" | 17'-11" |
| | | | 600VS125-21 | 0.022 | 0.0209 | 57 | 16 | 26'-9" | 23'-3" | 20'-6" | 23'-8" | 20'-4" | 17'-11" | 21'-9" | 18'-6" | 16'-3" |
| | | | 600VS125-21 | 0.022 | 0.0209 | 57 | 24 | 23'-8" | 20'-4" | 17'-11" | 20'-11" | 17'-9" | 15'-7" | 18'-2" | 16'-2" | 14'-2" |
| VIPER 30mil | 1-5/8 | 20 | 162VS125-30 | 0.0312 | 0.0296 | 33 | 12 | 14'-7" | 11'-6" | 10'-0" | 12'-9" | 10'-0" | 8'-6" | 11'-7" | 8'-11" | -- |
| | | | 162VS125-30 | 0.0312 | 0.0296 | 33 | 16 | 13'-3" | 10'-5" | 8'-11" | 11'-7" | 8'-11" | -- | 10'-6" | 7'-10" | -- |
| | | | 162VS125-30 | 0.0312 | 0.0296 | 33 | 24 | 11'-7" | 8'-11" | -- | 10'-1" | -- | -- | 8'-10" | -- | -- |
| | 2-1/2 | 20 | 250VS125-30 | 0.0312 | 0.0296 | 33 | 12 | 18'-9" | 14'-10" | 13'-0" | 16'-4" | 13'-0" | 11'-4" | 14'-10" | 11'-10" | 10'-4" |
| | | | 250VS125-30 | 0.0312 | 0.0296 | 33 | 16 | 17'-0" | 13'-6" | 11'-10" | 14'-10" | 11'-10" | 10'-4" | 13'-6" | 10'-9" | 9'-3" |
| | | | 250VS125-30 | 0.0312 | 0.0296 | 33 | 24 | 14'-10" | 11'-10" | 10'-4" | 12'-9" | 10'-4" | 8'-10" | 11'-0" | 9'-3" | -- |
| | 3-5/8 | 20 | 362VS125-30 | 0.0312 | 0.0296 | 33 | 12 | 23'-3" | 18'-6" | 16'-2" | 20'-4" | 16'-2" | 14'-1" | 18'-6" | 14'-8" | 12'-10" |
| | | | 362VS125-30 | 0.0312 | 0.0296 | 33 | 16 | 21'-2" | 16'-9" | 14'-8" | 18'-6" | 14'-8" | 12'-10" | 16'-4" | 13'-4" | 11'-6" |
| | | | 362VS125-30 | 0.0312 | 0.0296 | 33 | 24 | 18'-6" | 14'-8" | 12'-10" | 15'-4" | 12'-10" | 11'-0" | 13'-4" | 11'-6" | 9'-11" |
| | 4 | 20 | 400VS125-30 | 0.0312 | 0.0296 | 33 | 12 | 25'-2" | 20'-0" | 17'-6" | 22'-0" | 17'-6" | 15'-3" | 19'-5" | 15'-11" | 13'-10" |
| | | | 400VS125-30 | 0.0312 | 0.0296 | 33 | 16 | 22'-11" | 18'-2" | 15'-11" | 19'-5" | 15'-11" | 13'-10" | 16'-10" | 14'-5" | 12'-7" |
| | | | 400VS125-30 | 0.0312 | 0.0296 | 33 | 24 | 19'-5" | 15'-11" | 13'-10" | 15'-10" | 13'-10" | 12'-1" | 13'-9" | 12'-7" | 10'-11" |
| | 6 | 20 | 600VS125-30 | 0.0312 | 0.0296 | 33 | 12 | 31'-10" | 26'-9" | 23'-4" | 26'-0" | 23'-4" | 20'-5" | 22'-6" | 21'-3" | 18'-6" |
| | | | 600VS125-30 | 0.0312 | 0.0296 | 33 | 16 | 27'-7" | 24'-3" | 21'-3" | 22'-6" | 21'-3" | 18'-6" | 19'-6" | 19'-3" | 16'-10" |
| | | | 600VS125-30 | 0.0312 | 0.0296 | 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 | 20 | 162VS125-33 | 0.0346 | 0.0329 | 33 | 12 | 14'-11" | 11'-10" | 10'-4" | 13'-0" | 10'-4" | 8'-10" | 11'-10" | 9'-4" | -- |
| | | | 162VS125-33 | 0.0346 | 0.0329 | 33 | 16 | 13'-6" | 10'-9" | 9'-4" | 11'-10" | 9'-4" | -- | 10'-9" | 8'-4" | -- |
| | | | 162VS125-33 | 0.0346 | 0.0329 | 33 | 24 | 11'-10" | 9'-4" | -- | 10'-4" | -- | -- | 9'-4" | -- | -- |
| | 2-1/2 | 20 | 250VS125-33 | 0.0346 | 0.0329 | 33 | 12 | 19'-4" | 15'-4" | 13'-5" | 16'-10" | 13'-5" | 11'-8" | 15'-4" | 12'-2" | 10'-8" |
| | | | 250VS125-33 | 0.0346 | 0.0329 | 33 | 16 | 17'-7" | 13'-11" | 12'-2" | 15'-4" | 12'-2" | 10'-8" | 13'-11" | 11'-0" | 9'-8" |
| | | | 250VS125-33 | 0.0346 | 0.0329 | 33 | 24 | 15'-4" | 12'-2" | 10'-8" | 13'-5" | 10'-8" | 9'-2" | 12'-0" | 9'-8" | -- |
| | 3-5/8 | 20 | 362VS125-33 | 0.0346 | 0.0329 | 33 | 12 | 23'-10" | 18'-11" | 16'-6" | 20'-10" | 16'-6" | 14'-5" | 18'-11" | 15'-0" | 13'-1" |
| | | | 362VS125-33 | 0.0346 | 0.0329 | 33 | 16 | 21'-8" | 17'-2" | 15'-0" | 18'-11" | 15'-0" | 13'-1" | 17'-2" | 13'-8" | 11'-10" |
| | | | 362VS125-33 | 0.0346 | 0.0329 | 33 | 24 | 18'-11" | 15'-0" | 13'-1" | 16 -6" | 13'-1" | 11'-4" | 14'-4" | 11'-10" | 10'-3" |
| | 4 | 20 | 400VS125-33 | 0.0346 | 0.0329 | 33 | 12 | 25'-8" | 20'-4" | 17'-10" | 22 -5" | 17'-10" | 15'-7" | 20'-4" | 16'-2" | 14'-1" |
| | | | 400VS125-33 | 0.0346 | 0.0329 | 33 | 16 | 23'-4" | 18'-6" | 16'-2" | 20 -4" | 16'-2" | 14'-1" | 18'-4" | 14'-8" | 12'-10" |
| | | | 400VS125-33 | 0.0346 | 0.0329 | 33 | 24 | 20'-4" | 16'-2" | 14'-1" | 17 -3" | 14'-2" | 12'-4" | 15'-0" | 12'-10" | 11'-2" |
| | 6 | 20 | 600VS125-33 | 0.0346 | 0.0329 | 33 | 12 | 34'-5" | 27'-7" | 24'-1" | 28'-1" | 24'-1" | 21'-1" | 24'-4" | 21'-11" | 19'-2" |
| | | | 600VS125-33 | 0.0346 | 0.0329 | 33 | 16 | 29'-10" | 25'-1" | 21'-11" | 24'-4" | 21'-11" | 19'-2" | 21'-1" | 19'-11" | 17'-5" |
| | | | 600VS125-33 | 0.0346 | 0.0329 | 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. Composite heights are based on using standard top track. Screw fastening of stud to track is not required. Mechanically fastening of gypsum panel to the stud and track is required.
3. **Viper composite limiting heights based on single layer of 5/8" Type X gypsum board applied to both sides of the wall over fill height. 5/8" Type X wallboard from the following manufacturers are acceptable: USG, National, Georgia-Pacific, Temple Inland, CertainTeed, American, and LaFarge.**

CEMCO
Steel Framing and Metal Lath

**Corporate Headquarters**
263 North Covina Lane
City of Industry, CA 91744
**Phone:** 800.775.2362
**Fax:** 626.330.7598

**Manufacturing Facilities**
City of Industry, CA
Denver, CO
Ft. Worth, TX
Pittsburg, CA

**Structural Engineering/Design**
1001-A Pittsburgh Antioch Hwy
Pittsburg, CA 94565
**Phone:** 800.775.2362
**Fax:** 626.330.7598

**Technical Services**
263 North Covina Lane
City of Industry, CA 91744
**Phone:** 800.416.2278
**Fax:** 626.249.5005

# INTERIOR NON-LOAD BEARING VIPERSTUDS®

## Allowable Ceiling Spans

| L/240 | | | 4 PSF Lateral Support of Compression Flange | | | | | | 6 PSF Lateral Support of Compression Flange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model No. | Member | Fy Kksi | 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 |
| VIPER 25 | 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 |
| VIPER 20 | 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 Kksi | 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 |
| VIPER 25 | 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 |
| VIPER 20 | 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″f | 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/S1-10 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 mid-span.
6. Ceiling spans ar e based on thtoal loa d of assembly, not i ncluding stirage or li ve 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".

## Technical Services

Technical Services: 800.416.2278
Structural Engineering/Design: 925-473-9340
www.cemcosteel.com

This technical information reflects the most current information available and supersedes any and all previous publications effective September 15, 2013.