# COLD FORMED STEEL FRAMING SYSTEMS

MARINO WARE®

# GENERAL INFORMATION

MARINO\WARE®

## QUALITY AND SERVICE COUNT

Marino\WARE® is proud to present this catalog that details our Lightweight Steel Framing Products. For over 70 years, Marino\WARE has been providing their customers with top quality steel products.

Marino\WARE is committed to customer satisfaction. This starts with quality. Marino\WARE products are manufactured from quality steel and precision formed to meet or exceed industry standards established by the ASTM, SSMA and the AISI.

Marino\WARE prides itself on providing the fastest delivery and finest service in the steel framing industry. Most steel framing manufacturers speak of lead times and deliveries in terms of weeks. Marino\WARE with its own fleet of trucks, 3 shift operation, latest technology in roll forming capabilities and commitment to service excellence, in most cases provides next day delivery. Marino\WARE stands prepared to exceed your expectations. Steel framing products, competitive prices, excellent service along with timely deliveries and technical assistance are available to you.

## TECHNICAL SERVICES

Marino\WARE's Technical Services personnel are available to assist their clients in all aspects of Cold-Formed Steel Design. This includes answering technical calls regarding products and installation applications as well as providing accurate certified shop drawings.

**For Technical Services, please call 866-545-1545.**

## SSMA CODE COMPLIANCE CERTIFICATION PROGRAM

SSMA CERTIFIED — CERTIFIED CODE COMPLIANT — STEEL FRAMING PRODUCT

Sponsored by: **Steel Stud Manufacturers Association**

SSMA developed its Code Compliance Certification Program as a means for member manufacturers to certify that structural stud and track cold-formed steel framing they produce complies with IBC 2006 code requirements.

Structural cold-formed steel framing certification is independently validated by Architectural Testing. The validation process includes a minimum of two unannounced manufacturing facility audits per year, as well as on-going random selection and independent testing of certified cold-formed steel framing products.

Manufacturing facilities that satisfy the requirements for certification are authorized to certify structural cold- formed steel framing members that they produce as permitted by the Program Requirements. For a complete and current list of manufacturers with certification authorization please visit the SSMA website at **www.ssma.com/certification.aspx.**

Look for the label. The SSMA Certification Label, prominently displayed on units (skids or bundles), or optionally on each framing member, certifies that the material meets or exceeds Code requirements.

## BENEFITS OF COLD-FORMED STEEL FRAMING PRODUCTS

Cold-formed steel framing is a versatile structural product for use in load bearing and curtainwall construction. The popularity of corrosion resistant galvanized steel framing can be attributed to these benefits:

### High Strength to Weight Ratio

In curtainwall applications, the reduced dead load may result in primary frame and foundation material savings. Exterior retrofits are less likely to require expensive reinforcement of the existing structure. In load bearing construction, a light weight steel framing system is a benefit when the site is plagued by poor soil conditions. Multi-story residences requiring unique ground level construction (parking structure, meeting or dining facilities, etc.) benefit from the reduced dead weight applied to the supporting structure.

### Non-combustible Construction

The use of steel framing, protected with fire resistive materials, offers the designer numerous rated non-combustible assemblies. As an alternate to conventional wood framing, increases in floor areas and/or building heights may be attained. Non-combustible ratings may also yield long term insurance savings.

### Design Versatility

Curtainwalls in various finishes and profiles are attainable. Whether used as floor joists and roof rafters or in mansard and truss framing works well independently or in combination with other structural systems. Steel framing is adaptable to numerous applications traditionally constructed with hot rolled structural steel or masonry.

### Low in place and Performance Costs

Steel framing systems are conducive to prefabrication at or away from the job site. Quality is improved due to the controlled work atmosphere while its efficiency of construction may result in earlier building enclosure and ultimate occupancy.

## WARRANTY & LIMITATIONS

All products presented herein are warranted to the buyer to be free from defects in material and workmanship.

The foregoing warranty is non-assignable and in lieu of and excludes all other warranties not expressly set forth herein, whether express or implied by operation of law or otherwise, including but not limited to any implied warranties of merchantability or fitness for a particular purpose. All details and specifications presented herein are intended as a general guide for the use of Marino\WARE framing systems. These products should not be used without evaluation by a qualified engineer or architect to determine their suitability for a specific use. Marino\WARE assumes no responsibility for failure resulting from use of its details or specifications, or for failure resulting from improper application or installation of these products.

## GOVERNING LAW

All issues arising in connection with your order and all transactions associated with it shall be interpreted according to the laws of the State of New Jersey, and all actions or other proceedings arising out of such issues shall be brought only in Superior Court, State of New Jersey, County of Essex, or United States District Court for the District of New Jersey. No action may be brought more than one year after accrual of the cause of action therefore.

## GENERAL INFORMATION

### Steel Thickness:

| Product | | Design | | Minimum | | ASTM C955 |
|---|---|---|---|---|---|---|
| Gauge | Mils | (in.) | (mm.) | (in.) | (mm.) | Color Code |
| 20 | 33 | .0346 | 0.879 | .0329 | 0.838 | White |
| 18 | 43 | .0451 | 1.1565 | .0428 | 1.087 | Yellow |
| 16 | 54 | .0566 | 1.4376 | .0538 | 1.367 | Green |
| 14 | 68 | .0713 | 1.8110 | .0677 | 1.720 | Orange |
| 12 | 97 | .1017 | 2.5832 | .0966 | 2.454 | Red |
| 10 | 118 | .1242 | 3.1547 | .1180 | 3.000 | Blue |

### Finish:

Galvanized in accordance with ASTM C-955. Products will be furnished with a G60 coating. G90 available upon request.

### Grades of Steel:

20 and 18 gauge stud and track
Fy (min) = 33 KSI

16 gauge studs and joists
Fy (min) = 33 KSI (Applies to stud & track only. All 16ga. joists are 50 ksi)
Fy (min) = 50 KSI must be requested when ordering 16ga. stud & track

14, 12 and 10 gauge stud, track, and joists
Fy (min) = 50 KSI

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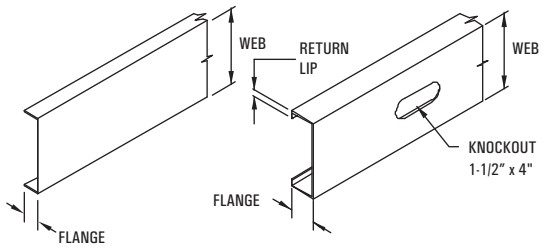
## FRAMING COMPONENTS

**STUD & JOISTS (CW, SW, J, JE, JX & JXW):** Studs serve as a general all purpose framing component used in a variety of applications including exterior curtainwalls, load bearing walls, headers, floor & roof joists, soffits and truss frame components.

**TRACK (T & DT):** Track is used as a closure to stud and joist ends as well as head and sill conditions. It is also used for blocking and bridging conditions.

**KNOCKOUT SIZE & LOCATION:** Knockouts are provided 12" from the indexed end and intermediate knockouts are placed at 24" o.c. intervals. Unpunched studs are available upon request.




**C-STUDS (CW, SW, J, JE, JX & JXW)**

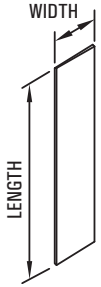
| M\W | GAUGES | FLANGE | WEB | RETURN LIP |
|---|---|---|---|---|
| CW | 20 – 14 | 1-3/8" | 2-1/2" – 8" | 3/8" |
| SW | 20 – 10 | 1-5/8" | 2-1/2" – 16" | 1/2" |
| J | 20 – 10 | 2" | 2-1/2" – 16" | 5/8" |
| JE• | 18 – 10 | 2-1/2" | 3-5/8" – 16" | 5/8" |
| JX• | 16 – 10 | 3" | 3-5/8" – 16" | 1" |
| JXW• | 16 – 10 | 3-1/2" | 3-5/8" – 16" | 1" |

**TRACK (T & DT)**

| M\W | GAUGES | FLANGE | WEB |
|---|---|---|---|
| T | 20 – 10 | 1-1/4" | 2-1/2" – 16" |
| DT | 20 – 10 | 2" MIN. | 2-1/2" – 16" |

*Notes:*
*1. Products shown with • symbol will be available subject to minimum order quantities.*
*2. 10'-0" standard length for track. Custom orders are available.*

## FLAT STRAP




Tension component of shear wall assembies. Component of strap & blocking for bridging applications. (See page 25 for more details.)

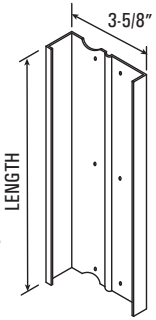
**LENGTH:** Available as required by purchaser.

**WIDTH:** See page 13 for standard sizes

**GAUGE:** 20, 18, 16, 14, 12, & 10 gauges available.

## WEB STIFFENER (JS)

Web Stiffeners are used to provide reinforcement of joist webs to prevent crippling. Web reinforcement is often required by design to enhance the load capacity of joists.




**LENGTH:** 8", 9-1/4", 10", 11-1/4", 12", 14" (inside or outside)

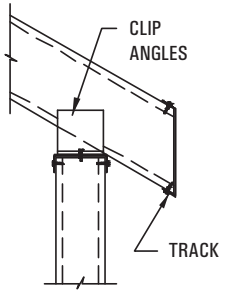
**WIDTH:** 3-5/8"

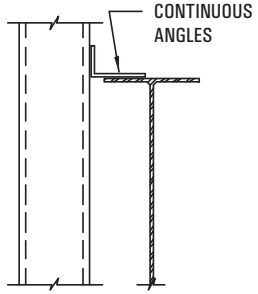
**INSTALLATION:**
- Centered within the load or reaction bearing width.
- Installed on the inside or outside of the joist.
- Web stiffeners require full bearing along their supported ends.
- (4-6) #10 - 16 screws are required to attach the stiffener to the joist web using pre-punched holes.

## BRAKE FORMED ACCESSORIES

For miscellaneous closures, continuous angles, etc.

**LENGTH:** 12'-0" maximum.
Dimensioned product drawing must accompany order



# STRUCTURAL PROPERTIES

MARINO WARE®

CERTIFIED CODE COMPLIANT

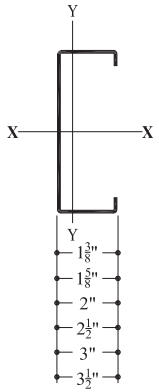
SSMA CERTIFIED — STEEL FRAMING PRODUCT

Sponsored by: Steel Stud Manufacturers Association

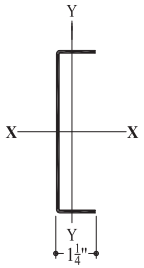
**SYMBOLS AND DEFINITIONS:**

| | |
|---|---|
| A | Gross cross sectional area of the member. |
| Ix,Iy | Moment of Inertia of the gross section about the principal axis. |
| $Ix_e$ | Moment of Inertia of the effective section stressed at yield about the principal axis. |
| Rx,Ry | Radius of gyration of the gross section. |
| Sx | Section Modulus of the gross section. |
| $Sx_e$ | Section Modulus of the effective section stressed at yield about the principal axis. |
| Ma | Allowable bending moment with contribution due to coldworking where applicable |
| Va | Allowable shear force at punched sections |
| Cw | Torsional warping constant of the cross section |
| J | St. Venant torsion constant |
| Ro | Polar radius of gyration of the cross section about the shear center |
| Beta | $1-(Xo/Ro)^2$ |
| Xo | Distance from shear center to centroid along the principal axis. |

**STUD**




**TRACK**




*NOTES:*

1. *Section properties are based on the North American Specification for the Design of Cold Formed Steel Structural Members, 2001 edition.*
2. *Gross and torsional properties were based on the unreduced cross section of the shape.*
3. *$Sx_e$ was based on the effective section stressed at yield. For further information consult AISI Section B2.*
4. *All products annotated by "*" exceed the h/t ratio of 200 and require a web stiffener at support and concentrated load locations.*
5. *Allowable bending moment, Ma was calculated according to AISI Section C3.1.1, Procedure 1, based on the initiation of yielding in the effective section.*
6. *Refer to page 3 for physical dimensions of sections.*
7. *Weights shown are based on the uncoated base metal design thickness.*
8. *Designer should check the Product Availability Matrix on page 3.*
9. *Allowable shear, Va was calculated in accordance with Section C3.2.2 at punched section.*

## Physical and Structural Properties

| Member Physical Properties | | | | | | Gross Section Properties | | | | | | Effective Section Properties | | | | | | | | Torsional Properties | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | 33ksi | | | | 50 ksi | | | | | | | | |
| MW Type | SSMA | Flange/ Leg (in.) | Lip (in.) | Design Thickness (in.) | Weight (p lf.) | Area ($in.^2$) | Ix ($in.^4$) | Sx ($in.^3$) | Rx (in.) | Iy ($in.^4$) | Ry (in.) | $Ix_e$ ($in.^4$) | $Sx_e$ ($in.^3$) | Ma (k-in) | Va (k) | $Ix_e$ ($in.^4$) | $Sx_e$ ($in.^3$) | Ma (k-in) | Va (k) | J x1000 ($in.^4$) | Cw ($in.^6$) | Xo (in.) | Ro (in.) | ß Beta |
| **2-1/2" Members** | | | | | | | | | | | | | | | | | | | | | | | | |
| 212CW20 | 250S137-33 | 1 3/8" | 3/8" | 0.0346 | 0.671 | 0.197 | 0.203 | 0.163 | 1.015 | 0.052 | 0.515 | 0.195 | 0.144 | 3.123 | 0.203 | 0.195 | 0.129 | 3.874 | 0.262 | 0.079 | 0.075 | -1.170 | 1.633 | 0.486 |
| 212CW18 | 250S137-43 | 1 3/8" | 3/8" | 0.0451 | 0.869 | 0.255 | 0.261 | 0.209 | 1.011 | 0.067 | 0.511 | 0.249 | 0.195 | 4.306 | 0.199 | 0.249 | 0.186 | 5.555 | 0.302 | 0.173 | 0.094 | -1.158 | 1.620 | 0.489 |
| 212CW16 | 250S137-54 | 1 3/8" | 3/8" | 0.0566 | 1.075 | 0.316 | 0.318 | 0.255 | 1.004 | 0.080 | 0.504 | 0.304 | 0.243 | 5.487 | 0.182 | 0.304 | 0.231 | 7.766 | 0.276 | 0.337 | 0.113 | -1.150 | 1.608 | 0.488 |
| 212CW14 | 250S137-68 | 1 3/8" | 3/8" | 0.0713 | 1.327 | 0.390 | 0.386 | 0.309 | 0.995 | 0.096 | 0.495 | 0.369 | 0.294 | 6.848 | 0.182 | 0.369 | 0.293 | 10.133 | 0.182 | 0.661 | 0.134 | -1.141 | 1.593 | 0.48 7 |
| 212SW20 | 250S162-33 | 1 5/8" | 1/2" | 0.0346 | 0.760 | 0.223 | 0.235 | 0.188 | 1.027 | 0.087 | 0.624 | 0.227 | 0.172 | 3.391 | 0.203 | 0.227 | 0.153 | 4.586 | 0.262 | 0.089 | 0.144 | -1.501 | 1.923 | 0.391 |
| 212SW18 | 250S162-43 | 1 5/8" | 1/2" | 0.0451 | 0.984 | 0.289 | 0.302 | 0.242 | 1.022 | 0.111 | 0.620 | 0.291 | 0.231 | 5.012 | 0.199 | 0.291 | 0.205 | 6.129 | 0.302 | 0.196 | 0.182 | -1.489 | 1.909 | 0.392 |
| 212SW16 | 250S162-54 | 1 5/8" | 1/2" | 0.0566 | 1.219 | 0.358 | 0.370 | 0.296 | 1.016 | 0.135 | 0.614 | 0.356 | 0.284 | 6.301 | 0.182 | 0.356 | 0.271 | 8.969 | 0.276 | 0.383 | 0.219 | -1.482 | 1.898 | 0.391 |
| 212SW14 | 250S162-68 | 1 5/8" | 1/2" | 0.0713 | 1.509 | 0.444 | 0.450 | 0.360 | 1.008 | 0.162 | 0.605 | 0.433 | 0.345 | 7.870 | 0.182 | 0.433 | 0.342 | 11.588 | 0.182 | 0.752 | 0.262 | -1.474 | 1.885 | 0.38 9 |
| 212T20 | 250T125-33 | 1 1/4" | none | 0.0346 | 0.588 | 0.173 | 0.192 | 0.145 | 1.054 | 0.027 | 0.397 | 0.166 | 0.103 | 2.033 | 1.024 | 0.157 | 0.096 | 2.875 | 1.260 | 0.069 | 0.033 | -0.771 | 1.365 | 0.681 |
| 212T18 | 250T125-43 | 1 1/4" | none | 0.0451 | 0.766 | 0.225 | 0.250 | 0.188 | 1.055 | 0.035 | 0.395 | 0.231 | 0.147 | 2.909 | 1.356 | 0.220 | 0.137 | 4.090 | 2.054 | 0.153 | 0.042 | -0.766 | 1.362 | 0.684 |
| 212T16 | 250T125-54 | 1 1/4" | none | 0.0566 | 0.961 | 0.282 | 0.318 | 0.236 | 1.062 | 0.044 | 0.392 | 0.310 | 0.203 | 4.013 | 1.692 | 0.297 | 0.188 | 5.640 | 2.563 | 0.301 | 0.054 | -0.763 | 1.365 | 0.688 |
| 212T14 | 250T125-68 | 1 1/4" | none | 0.0713 | 1.209 | 0.355 | 0.409 | 0.297 | 1.072 | 0.054 | 0.389 | 0.409 | 0.281 | 5.556 | 2.112 | 0.403 | 0.262 | 7.847 | 3.199 | 0.602 | 0.068 | -0.758 | 1.370 | 0.694 |
| **3-5/8" Members** | | | | | | | | | | | | | | | | | | | | | | | | |
| 358CW20 | 362S137-33 | 1 3/8" | 3/8" | 0.0346 | 0.804 | 0.236 | 0.479 | 0.264 | 1.424 | 0.059 | 0.501 | 0.466 | 0.233 | 4.603 | 0.521 | 0.464 | 0.198 | 5.937 | 0.552 | 0.094 | 0.162 | -1.026 | 1.826 | 0.684 |
| 358CW18 | 362S137-43 | 1 3/8" | 3/8" | 0.0451 | 1.041 | 0.306 | 0.616 | 0.340 | 1.419 | 0.076 | 0.497 | 0.605 | 0.321 | 6.346 | 0.676 | 0.602 | 0.293 | 8.760 | 0.832 | 0.207 | 0.204 | -1.015 | 1.814 | 0.687 |
| 358CW16 | 362S137-54 | 1 3/8" | 3/8" | 0.0566 | 1.291 | 0.379 | 0.756 | 0.417 | 1.412 | 0.091 | 0.490 | 0.747 | 0.404 | 7.978 | 0.705 | 0.745 | 0.383 | 11.467 | 1.016 | 0.405 | 0.246 | -1.006 | 1.801 | 0.68 8 |
| 358CW14 | 362S137-68 | 1 3/8" | 3/8" | 0.0713 | 1.600 | 0.470 | 0.923 | 0.509 | 1.401 | 0.109 | 0.481 | 0.913 | 0.500 | 11.656 | 0.662 | 0.913 | 0.496 | 14.845 | 1.004 | 0.797 | 0.294 | -0.996 | 1.785 | 0.6 89 |
| 358SW20 | 362S162-33 | 1 5/8" | 1/2" | 0.0346 | 0.892 | 0.262 | 0.551 | 0.304 | 1.450 | 0.099 | 0.616 | 0.539 | 0.269 | 5.305 | 0.521 | 0.535 | 0.235 | 7.047 | 0.552 | 0.105 | 0.293 | -1.334 | 2.065 | 0.582 |
| 358SW18 | 362S162-43 | 1 5/8" | 1/2" | 0.0451 | 1.156 | 0.340 | 0.710 | 0.392 | 1.446 | 0.127 | 0.611 | 0.699 | 0.373 | 7.365 | 0.676 | 0.696 | 0.322 | 9.651 | 0.832 | 0.230 | 0.371 | -1.323 | 2.052 | 0.585 |
| 358SW16 | 362S162-54 | 1 5/8" | 1/2" | 0.0566 | 1.436 | 0.422 | 0.873 | 0.482 | 1.438 | 0.154 | 0.605 | 0.864 | 0.468 | 9.251 | 0.705 | 0.862 | 0.445 | 13.325 | 1.016 | 0.451 | 0.449 | -1.314 | 2.040 | 0.58 5 |
| 358SW14 | 362S162-68 | 1 5/8" | 1/2" | 0.0713 | 1.782 | 0.524 | 1.069 | 0.590 | 1.429 | 0.186 | 0.596 | 1.060 | 0.581 | 13.244 | 0.662 | 1.060 | 0.577 | 17.259 | 1.004 | 0.887 | 0.540 | -1.305 | 2.024 | 0.5 85 |
| 358SW12 | 362S162-97 | 1 5/8" | 1/2" | 0.1017 | 2.464 | 0.724 | 1.435 | 0.792 | 1.408 | 0.241 | 0.577 | 1.427 | 0.781 | 18.736 | 0.577 | 1.427 | 0.781 | 27.696 | 0.875 | 2.496 | 0.699 | -1.285 | 1.992 | 0.5 84 |
| 358SW10 | 362S162-118 | 1 5/8" | 1/2" | 0.1242 | 2.995 | 0.880 | 1.701 | 0.939 | 1.390 | 0.277 | 0.561 | 1.694 | 0.925 | 23.094 | 0.511 | 1.694 | 0.925 | 33.986 | 0.774 | 4.732 | 0.803 | -1.270 | 1.965 | 0.582 |
| 358J20 | 362S200-33 | 2" | 5/8" | 0.0346 | 1.010 | 0.297 | 0.648 | 0.358 | 1.478 | 0.177 | 0.772 | 0.633 | 0.293 | 5.785 | 0.521 | 0.607 | 0.260 | 7.771 | 0.552 | 0.118 | 0.571 | -1.770 | 2.432 | 0.470 |
| 358J18 | 362S200-43 | 2" | 5/8" | 0.0451 | 1.310 | 0.385 | 0.836 | 0.461 | 1.474 | 0.227 | 0.767 | 0.825 | 0.428 | 8.453 | 0.676 | 0.822 | 0.377 | 11.278 | 0.832 | 0.261 | 0.726 | -1.758 | 2.419 | 0.472 |
| 358J16 | 362S200-54 | 2" | 5/8" | 0.0566 | 1.628 | 0.479 | 1.030 | 0.568 | 1.467 | 0.277 | 0.761 | 1.021 | 0.555 | 10.964 | 0.705 | 1.020 | 0.491 | 14.699 | 1.016 | 0.511 | 0.884 | -1.750 | 2.407 | 0.472 |
| 358J14 | 362S200-68 | 2" | 5/8" | 0.0713 | 2.025 | 0.595 | 1.266 | 0.698 | 1.459 | 0.337 | 0.753 | 1.256 | 0.690 | 15.347 | 0.662 | 1.256 | 0.669 | 20.021 | 1.004 | 1.008 | 1.070 | -1.741 | 2.393 | 0.471 |
| 358J12 | 362S200-97 | 2" | 5/8" | 0.1017 | 2.810 | 0.826 | 1.712 | 0.945 | 1.440 | 0.446 | 0.735 | 1.703 | 0.933 | 21.698 | 0.577 | 1.703 | 0.933 | 32.195 | 0.875 | 2.847 | 1.404 | -1.724 | 2.363 | 0.468 |
| 358J10 | 362S200-118 | 2" | 5/8" | 0.1242 | 3.427 | 1.007 | 2.042 | 1.127 | 1.424 | 0.522 | 0.720 | 2.035 | 1.114 | 26.783 | 0.511 | 2.035 | 1.114 | 39.581 | 0.774 | 5.415 | 1.634 | -1.710 | 2.339 | 0.466 |
| 358T20 | 362T125-33 | 1 1/4" | none | 0.0346 | 0.721 | 0.212 | 0.438 | 0.232 | 1.439 | 0.030 | 0.377 | 0.385 | 0.174 | 3.437 | 1.024 | 0.368 | 0.164 | 4.922 | 1.039 | 0.085 | 0.075 | -0.667 | 1.630 | 0.833 |
| 358T18 | 362T125-43 | 1 1/4" | none | 0.0451 | 0.939 | 0.276 | 0.572 | 0.302 | 1.439 | 0.039 | 0.375 | 0.531 | 0.245 | 4.839 | 1.739 | 0.508 | 0.230 | 6.892 | 2.141 | 0.187 | 0.097 | -0.663 | 1.628 | 0.834 |
| 358T16 | 362T125-54 | 1 1/4" | none | 0.0566 | 1.177 | 0.346 | 0.723 | 0.378 | 1.445 | 0.048 | 0.373 | 0.705 | 0.332 | 6.569 | 2.480 | 0.678 | 0.312 | 9.342 | 3.372 | 0.369 | 0.123 | -0.659 | 1.632 | 0.837 |
| 358T14 | 362T125-68 | 1 1/4" | none | 0.0713 | 1.482 | 0.436 | 0.921 | 0.475 | 1.454 | 0.060 | 0.370 | 0.921 | 0.453 | 8.955 | 3.104 | 0.907 | 0.427 | 12.776 | 4.703 | 0.738 | 0.155 | -0.655 | 1.637 | 0.84 0 |
| 358T12 | 362T125-97 | 1 1/4" | none | 0.1017 | 2.112 | 0.621 | 1.344 | 0.675 | 1.471 | 0.082 | 0.364 | 1.343 | 0.675 | 15.242 | 4.370 | 1.343 | 0.675 | 20.204 | 6.622 | 2.140 | 0.223 | -0.646 | 1.648 | 0.8 46 |
| 358T10 | 362T125-118 | 1 1/4" | none | 0.1242 | 2.635 | 0.774 | 1.708 | 0.839 | 1.485 | 0.100 | 0.359 | 1.707 | 0.839 | 19.508 | 5.398 | 1.707 | 0.839 | 28.945 | 8.178 | 4.163 | 0.281 | -0.639 | 1.656 | 0.851 |

## Physical and Structural Properties

| Member Physical Properties | | | | | | Gross Section Properties | | | | | | Effective Section Properties | | | | | | | | Torsional Properties | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | 33ksi | | | | 50 ksi | | | | | | | | |
| M\W Type | SSMA | Flange/ Leg (in.) | Lip (in.) | Design Thickness (in.) | Weight (plf.) | Area (in.$^2$) | Ix (in.$^4$) | Sx (in.$^3$) | Rx (in.) | Iy (in.$^4$) | Ry (in.) | Ix$_e$ (in.$^4$) | Sx$_e$ (in.$^3$) | Ma (k-in) | Va (k) | Ix$_e$ (in.$^4$) | Sx$_e$ (in.$^3$) | Ma (k-in) | Va (k) | J x1000 (in.$^4$) | Cw (in.$^6$) | Xo (in.) | Ro (in.) | ß Beta |
| **4" Members** | | | | | | | | | | | | | | | | | | | | | | | | |
| 4CW20 | 400S137-33 | 1 3/8" | 3/8" | 0.0346 | 0.848 | 0.249 | 0.603 | 0.302 | 1.556 | 0.061 | 0.496 | 0.584 | 0.260 | 5.133 | 0.595 | 0.580 | 0.221 | 6.607 | 0.595 | 0.099 | 0.200 | -0.987 | 1.908 | 0.733 |
| 4CW18 | 400S137-43 | 1 3/8" | 3/8" | 0.0451 | 1.099 | 0.323 | 0.776 | 0.388 | 1.551 | 0.078 | 0.491 | 0.761 | 0.360 | 7.115 | 0.810 | 0.755 | 0.327 | 9.782 | 0.997 | 0.219 | 0.253 | -0.976 | 1.897 | 0.736 |
| 4CW16 | 400S137-54 | 1 3/8" | 3/8" | 0.0566 | 1.364 | 0.401 | 0.953 | 0.477 | 1.543 | 0.094 | 0.484 | 0.944 | 0.455 | 8.997 | 0.944 | 0.938 | 0.430 | 12.874 | 1.223 | 0.428 | 0.305 | -0.967 | 1.884 | 0.73 7 |
| 4CW14 | 400S137-68 | 1 3/8" | 3/8" | 0.0713 | 1.691 | 0.497 | 1.165 | 0.583 | 1.531 | 0.112 | 0.475 | 1.159 | 0.571 | 11.274 | 0.895 | 1.157 | 0.561 | 16.786 | 1.356 | 0.842 | 0.365 | -0.956 | 1.867 | 0.7 38 |
| 4SW20 | 400S162-33 | 1 5/8" | 1/2" | 0.0346 | 0.936 | 0.275 | 0.692 | 0.346 | 1.586 | 0.103 | 0.611 | 0.674 | 0.300 | 5.923 | 0.595 | 0.669 | 0.262 | 7.849 | 0.595 | 0.110 | 0.358 | -1.288 | 2.133 | 0.635 |
| 4SW18 | 400S162-43 | 1 5/8" | 1/2" | 0.0451 | 1.214 | 0.357 | 0.892 | 0.446 | 1.582 | 0.131 | 0.606 | 0.876 | 0.418 | 8.255 | 0.810 | 0.872 | 0.360 | 10.777 | 0.997 | 0.242 | 0.454 | -1.276 | 2.121 | 0.63 8 |
| 4SW16 | 400S162-54 | 1 5/8" | 1/2" | 0.0566 | 1.508 | 0.443 | 1.098 | 0.549 | 1.574 | 0.159 | 0.600 | 1.088 | 0.527 | 10.423 | 0.944 | 1.082 | 0.499 | 14.947 | 1.223 | 0.473 | 0.550 | -1.268 | 2.108 | 0.6 38 |
| 4SW14 | 400S162-68 | 1 5/8" | 1/2" | 0.0713 | 1.873 | 0.550 | 1.346 | 0.673 | 1.564 | 0.192 | 0.591 | 1.340 | 0.661 | 13.061 | 0.895 | 1.338 | 0.651 | 19.492 | 1.356 | 0.933 | 0.663 | -1.258 | 2.092 | 0.6 39 |
| 4SW12 | 400S162-97 | 1 5/8" | 1/2" | 0.1017 | 2.594 | 0.762 | 1.813 | 0.907 | 1.542 | 0.250 | 0.572 | 1.811 | 0.898 | 21.544 | 0.797 | 1.811 | 0.898 | 31.848 | 1.207 | 2.627 | 0.860 | -1.238 | 2.059 | 0.6 39 |
| 4SW10 | 400S162-118 | 1 5/8" | 1/2" | 0.1242 | 3.157 | 0.928 | 2.154 | 1.077 | 1.524 | 0.287 | 0.556 | 2.157 | 1.067 | 26.636 | 0.719 | 2.157 | 1.067 | 39.198 | 1.090 | 4.988 | 0.990 | -1.222 | 2.031 | 0. 638 |
| 4J20 | 400S200-33 | 2" | 5/8" | 0.0346 | 1.054 | 0.310 | 0.812 | 0.406 | 1.619 | 0.183 | 0.769 | 0.791 | 0.327 | 6.463 | 0.595 | 0.758 | 0.289 | 8.666 | 0.595 | 0.124 | 0.689 | -1.715 | 2.481 | 0.522 |
| 4J18 | 400S200-43 | 2" | 5/8" | 0.0451 | 1.367 | 0.402 | 1.048 | 0.524 | 1.615 | 0.235 | 0.764 | 1.033 | 0.479 | 9.474 | 0.810 | 1.028 | 0.421 | 12.605 | 0.997 | 0.272 | 0.876 | -1.703 | 2.468 | 0.524 |
| 4J16 | 400S200-54 | 2" | 5/8" | 0.0566 | 1.701 | 0.500 | 1.292 | 0.646 | 1.608 | 0.287 | 0.758 | 1.282 | 0.624 | 12.339 | 0.944 | 1.278 | 0.550 | 16.472 | 1.223 | 0.534 | 1.068 | -1.695 | 2.456 | 0.524 |
| 4J14 | 400S200-68 | 2" | 5/8" | 0.0713 | 2.116 | 0.622 | 1.590 | 0.795 | 1.599 | 0.349 | 0.750 | 1.584 | 0.783 | 15.462 | 0.895 | 1.582 | 0.753 | 22.558 | 1.356 | 1.054 | 1.295 | -1.686 | 2.441 | 0.523 |
| 4J12 | 400S200-97 | 2" | 5/8" | 0.1017 | 2.940 | 0.864 | 2.156 | 1.078 | 1.580 | 0.463 | 0.732 | 2.153 | 1.069 | 24.852 | 0.797 | 2.153 | 1.069 | 36.874 | 1.207 | 2.978 | 1.704 | -1.667 | 2.411 | 0.522 |
| 4J10 | 400S200-118 | 2" | 5/8" | 0.1242 | 3.590 | 1.055 | 2.577 | 1.289 | 1.563 | 0.541 | 0.716 | 2.579 | 1.279 | 30.755 | 0.719 | 2.579 | 1.279 | 45.451 | 1.090 | 5.671 | 1.987 | -1.653 | 2.385 | 0.520 |
| 4T20 | 400T125-33 | 1 1/4" | none | 0.0346 | 0.765 | 0.225 | 0.549 | 0.265 | 1.563 | 0.031 | 0.371 | 0.484 | 0.201 | 3.971 | 0.940 | 0.465 | 0.189 | 5.668 | 0.940 | 0.090 | 0.094 | -0.639 | 1.729 | 0.863 |
| 4T18 | 400T125-43 | 1 1/4" | none | 0.0451 | 0.996 | 0.293 | 0.716 | 0.344 | 1.564 | 0.040 | 0.369 | 0.666 | 0.282 | 5.568 | 1.739 | 0.639 | 0.266 | 7.956 | 2.078 | 0.199 | 0.122 | -0.635 | 1.727 | 0.865 |
| 4T16 | 400T125-54 | 1 1/4" | none | 0.0566 | 1.250 | 0.367 | 0.904 | 0.431 | 1.569 | 0.049 | 0.367 | 0.883 | 0.381 | 7.528 | 2.739 | 0.849 | 0.359 | 10.739 | 3.372 | 0.392 | 0.153 | -0.631 | 1.731 | 0.86 7 |
| 4T14 | 400T125-68 | 1 1/4" | none | 0.0713 | 1.573 | 0.462 | 1.150 | 0.541 | 1.577 | 0.061 | 0.364 | 1.150 | 0.517 | 10.220 | 3.435 | 1.134 | 0.488 | 14.622 | 5.205 | 0.783 | 0.193 | -0.627 | 1.736 | 0.8 70 |
| 4T12 | 400T125-97 | 1 1/4" | none | 0.1017 | 2.242 | 0.659 | 1.674 | 0.768 | 1.594 | 0.084 | 0.358 | 1.673 | 0.768 | 17.352 | 4.842 | 1.673 | 0.768 | 23.001 | 7.337 | 2.271 | 0.277 | -0.618 | 1.747 | 0.8 75 |
| 4T10 | 400T125-118 | 1 1/4" | none | 0.1242 | 2.797 | 0.822 | 2.123 | 0.955 | 1.607 | 0.102 | 0.353 | 2.122 | 0.955 | 22.200 | 5.987 | 2.122 | 0.955 | 32.940 | 9.071 | 4.419 | 0.347 | -0.612 | 1.755 | 0. 879 |
| **6" Members** | | | | | | | | | | | | | | | | | | | | | | | | |
| 6CW20 | 600S137-33 | 1 3/8" | 3/8" | 0.0346 | 1.083 | 0.318 | 1.583 | 0.528 | 2.230 | 0.069 | 0.464 | 1.582 | 0.513 | 10.127 | 0.638 | 1.582 | 0.414 | 12.393 | 0.638 | 0.127 | 0.494 | -0.823 | 2.422 | 0.8 85 |
| 6CW18 | 600S137-43 | 1 3/8" | 3/8" | 0.0451 | 1.406 | 0.413 | 2.042 | 0.681 | 2.224 | 0.087 | 0.459 | 2.042 | 0.670 | 14.801 | 1.240 | 2.042 | 0.648 | 19.394 | 1.240 | 0.280 | 0.625 | -0.813 | 2.412 | 0.8 86 |
| 6CW16 | 600S137-54 | 1 3/8" | 3/8" | 0.0566 | 1.749 | 0.514 | 2.518 | 0.839 | 2.214 | 0.105 | 0.452 | 2.517 | 0.839 | 18.981 | 1.890 | 2.517 | 0.809 | 27.231 | 1.947 | 0.549 | 0.757 | -0.804 | 2.398 | 0.8 88 |
| 6CW14 | 600S137-68 | 1 3/8" | 3/8" | 0.0713 | 2.177 | 0.640 | 3.095 | 1.032 | 2.200 | 0.126 | 0.443 | 3.094 | 1.031 | 24.048 | 2.339 | 3.094 | 1.030 | 35.603 | 2.879 | 1.084 | 0.911 | -0.793 | 2.380 | 0.8 89 |
| 6SW20 | 600S162-33 | 1 5/8" | 1/2" | 0.0346 | 1.172 | 0.344 | 1.793 | 0.598 | 2.282 | 0.116 | 0.581 | 1.793 | 0.577 | 11.408 | 0.638 | 1.793 | 0.480 | 14.376 | 0.638 | 0.137 | 0.851 | -1.091 | 2.596 | 0.8 23 |
| 6SW18 | 600S162-43 | 1 5/8" | 1/2" | 0.0451 | 1.521 | 0.447 | 2.316 | 0.772 | 2.277 | 0.148 | 0.576 | 2.316 | 0.767 | 16.679 | 1.240 | 2.316 | 0.706 | 21.121 | 1.240 | 0.303 | 1.082 | -1.080 | 2.585 | 0.8 25 |
| 6SW16 | 600S162-54 | 1 5/8" | 1/2" | 0.0566 | 1.893 | 0.556 | 2.861 | 0.954 | 2.268 | 0.181 | 0.570 | 2.860 | 0.953 | 21.165 | 1.890 | 2.860 | 0.916 | 30.324 | 1.947 | 0.594 | 1.318 | -1.071 | 2.572 | 0.8 27 |
| 6SW14 | 600S162-68 | 1 5/8" | 1/2" | 0.0713 | 2.358 | 0.693 | 3.525 | 1.175 | 2.256 | 0.218 | 0.561 | 3.525 | 1.175 | 26.784 | 2.339 | 3.525 | 1.164 | 39.465 | 2.879 | 1.174 | 1.596 | -1.061 | 2.555 | 0.8 28 |
| 6SW12 | 600S162-97 | 1 5/8" | 1/2" | 0.1017 | 3.286 | 0.966 | 4.799 | 1.600 | 2.229 | 0.283 | 0.542 | 4.797 | 1.599 | 38.374 | 2.512 | 4.797 | 1.599 | 56.725 | 3.806 | 3.329 | 2.093 | -1.039 | 2.518 | 0.8 30 |
| 6SW10 | 600S162-118 | 1 5/8" | 1/2" | 0.1242 | 4.022 | 1.182 | 5.756 | 1.919 | 2.207 | 0.326 | 0.525 | 5.754 | 1.918 | 47.864 | 2.376 | 5.754 | 1.918 | 70.438 | 3.600 | 6.354 | 2.434 | -1.021 | 2.488 | 0. 832 |
| 6J20 | 600S200-33 | 2" | 5/8" | 0.0346 | 1.289 | 0.379 | 2.076 | 0.692 | 2.341 | 0.209 | 0.743 | 2.059 | 0.618 | 12.218 | 0.638 | 2.016 | 0.521 | 15.598 | 0.638 | 0.151 | 1.577 | -1.479 | 2.867 | 0.734 |
| 6J18 | 600S200-43 | 2" | 5/8" | 0.0451 | 1.674 | 0.492 | 2.683 | 0.894 | 2.335 | 0.268 | 0.739 | 2.683 | 0.873 | 17.243 | 1.240 | 2.683 | 0.805 | 24.102 | 1.240 | 0.334 | 2.012 | -1.468 | 2.855 | 0.736 |
| 6J16 | 600S200-54 | 2" | 5/8" | 0.0566 | 2.086 | 0.613 | 3.320 | 1.107 | 2.327 | 0.329 | 0.732 | 3.319 | 1.106 | 24.073 | 1.890 | 3.319 | 1.015 | 30.394 | 1.947 | 0.655 | 2.461 | -1.459 | 2.843 | 0.737 |
| 6J14 | 600S200-68 | 2" | 5/8" | 0.0713 | 2.601 | 0.764 | 4.101 | 1.367 | 2.317 | 0.400 | 0.723 | 4.100 | 1.367 | 30.416 | 2.339 | 4.100 | 1.317 | 43.707 | 2.879 | 1.295 | 2.997 | -1.448 | 2.826 | 0.737 |
| 6J12 | 600S200-97 | 2" | 5/8" | 0.1017 | 3.632 | 1.067 | 5.613 | 1.871 | 2.293 | 0.530 | 0.705 | 5.612 | 1.871 | 43.494 | 2.512 | 5.612 | 1.871 | 64.535 | 3.806 | 3.679 | 3.981 | -1.427 | 2.791 | 0.739 |
| 6J10 | 600S200-118 | 2" | 5/8" | 0.1242 | 4.454 | 1.309 | 6.766 | 2.255 | 2.274 | 0.622 | 0.689 | 6.764 | 2.255 | 54.236 | 2.376 | 6.764 | 2.255 | 80.151 | 3.600 | 7.036 | 4.680 | -1.409 | 2.762 | 0.740 |
| 6JE18 | 600S250-43 | 2 1/2" | 5/8" | 0.0451 | 1.828 | 0.537 | 3.083 | 1.028 | 2.396 | 0.458 | 0.923 | 3.082 | 0.918 | 18.139 | 1.240 | 2.977 | 0.816 | 24.438 | 1.240 | 0.364 | 3.379 | -1.898 | 3.193 | 0.6 47 |
| 6JE16 | 600S250-54 | 2 1/2" | 5/8" | 0.0566 | 2.279 | 0.670 | 3.820 | 1.273 | 2.389 | 0.562 | 0.917 | 3.819 | 1.159 | 22.896 | 1.890 | 3.766 | 1.069 | 31.999 | 1.947 | 0.715 | 4.146 | -1.889 | 3.180 | 0.6 47 |
| 6JE14 | 600S250-68 | 2 1/2" | 5/8" | 0.0713 | 2.844 | 0.836 | 4.728 | 1.576 | 2.379 | 0.688 | 0.908 | 4.727 | 1.508 | 32.824 | 2.339 | 4.723 | 1.386 | 41.490 | 2.879 | 1.416 | 5.071 | -1.878 | 3.164 | 0.6 48 |
| 6JE12 | 600S250-97 | 2 1/2" | 5/8" | 0.1017 | 3.978 | 1.169 | 6.498 | 2.166 | 2.358 | 0.923 | 0.889 | 6.496 | 2.161 | 48.806 | 2.512 | 6.496 | 2.063 | 69.377 | 3.806 | 4.030 | 6.798 | -1.857 | 3.130 | 0.6 48 |
| 6JE10 | 600S250-118 | 2 1/2" | 5/8" | 0.1242 | 4.886 | 1.436 | 7.861 | 2.620 | 2.340 | 1.093 | 0.873 | 7.859 | 2.620 | 60.904 | 2.376 | 7.859 | 2.554 | 88.093 | 3.600 | 7.719 | 8.055 | -1.839 | 3.102 | 0. 648 |
| 6T20 | 600T125-33 | 1 1/4" | none | 0.0346 | 1.000 | 0.294 | 1.429 | 0.465 | 2.205 | 0.034 | 0.339 | 1.297 | 0.335 | 6.627 | 0.622 | 1.273 | 0.273 | 8.174 | 0.622 | 0.117 | 0.237 | -0.523 | 2.291 | 0.948 |
| 6T18 | 600T125-43 | 1 1/4" | none | 0.0451 | 1.303 | 0.383 | 1.862 | 0.604 | 2.205 | 0.044 | 0.337 | 1.750 | 0.515 | 10.172 | 1.377 | 1.700 | 0.466 | 13.939 | 1.377 | 0.260 | 0.306 | -0.519 | 2.290 | 0.9 49 |
| 6T16 | 600T125-54 | 1 1/4" | none | 0.0566 | 1.635 | 0.480 | 2.345 | 0.757 | 2.209 | 0.054 | 0.335 | 2.294 | 0.685 | 13.533 | 2.728 | 2.221 | 0.653 | 19.546 | 2.728 | 0.513 | 0.383 | -0.516 | 2.293 | 0.9 49 |
| 6T14 | 600T125-68 | 1 1/4" | none | 0.0713 | 2.059 | 0.605 | 2.970 | 0.951 | 2.216 | 0.067 | 0.332 | 2.969 | 0.916 | 18.091 | 4.347 | 2.930 | 0.874 | 26.171 | 5.350 | 1.025 | 0.481 | -0.512 | 2.298 | 0.9 50 |
| 6T12 | 600T125-97 | 1 1/4" | none | 0.1017 | 2.934 | 0.862 | 4.282 | 1.348 | 2.229 | 0.092 | 0.327 | 4.281 | 1.347 | 30.426 | 7.359 | 4.281 | 1.347 | 40.330 | 10.885 | 2.973 | 0.681 | -0.504 | 2.308 | 0. 952 |
| 6T10 | 600T125-118 | 1 1/4" | none | 0.1242 | 3.662 | 1.076 | 5.393 | 1.674 | 2.239 | 0.111 | 0.322 | 5.392 | 1.673 | 38.899 | 9.130 | 5.392 | 1.673 | 57.717 | 13.834 | 5.785 | 0.845 | -0.498 | 2.316 | 0.954 |
| **8" Members** | | | | | | | | | | | | | | | | | | | | | | | | |
| 8SW20* | 800S162-33 | 1 5/8" | 1/2" | 0.0346 | 1.407 | 0.414 | 3.583 | 0.896 | 2.944 | 0.125 | 0.550 | 3.582 | 0.758 | 14.970 | 0.474 | 3.533 | 0.635 | 18.996 | 0.474 | 0.165 | 1.615 | -0.951 | 3.142 | 0.9 08 |
| 8SW18 | 800S162-43 | 1 5/8" | 1/2" | 0.0451 | 1.828 | 0.537 | 4.635 | 1.159 | 2.938 | 0.160 | 0.546 | 4.633 | 1.158 | 22.889 | 1.051 | 4.633 | 0.930 | 27.853 | 1.051 | 0.364 | 2.056 | -0.941 | 3.133 | 0.9 10 |
| 8SW16 | 800S162-54 | 1 5/8" | 1/2" | 0.0566 | 2.279 | 0.670 | 5.737 | 1.434 | 2.927 | 0.194 | 0.539 | 5.736 | 1.434 | 31.830 | 2.091 | 5.736 | 1.397 | 41.837 | 2.091 | 0.715 | 2.509 | -0.932 | 3.119 | 0.9 11 |
| 8SW14 | 800S162-68 | 1 5/8" | 1/2" | 0.0713 | 2.844 | 0.836 | 7.091 | 1.773 | 2.913 | 0.235 | 0.530 | 7.089 | 1.772 | 40.404 | 3.367 | 7.089 | 1.757 | 59.572 | 3.367 | 1.416 | 3.047 | -0.921 | 3.101 | 0.9 12 |
| 8SW12 | 800S162-97 | 1 5/8" | 1/2" | 0.1017 | 3.978 | 1.169 | 9.716 | 2.429 | 2.883 | 0.305 | 0.511 | 9.713 | 2.428 | 58.269 | 4.824 | 9.713 | 2.428 | 86.136 | 5.938 | 4.030 | 4.022 | -0.899 | 3.063 | 0.9 14 |
| 8SW10 | 800S162-118 | 1 5/8" | 1/2" | 0.1242 | 4.886 | 1.436 | 11.721 | 2.930 | 2.857 | 0.351 | 0.495 | 11.718 | 2.929 | 73.103 | 4.950 | 11.718 | 2.929 | 107.581 | 7.259 | 7.719 | 4.703 | -0.881 | 3.03 1 | 0.916 |

* = Exceeds the H/T ratio of 200

See notes on page 4

# STRUCTURAL PROPERTIES

MARINO WARE®

SSMA CERTIFIED · CERTIFIED CODE COMPLIANT · STEEL FRAMING PRODUCT

Sponsored by: Steel Stud Manufacturers Association

## Physical and Structural Properties

| Member Physical Properties | | | | | | Gross Section Properties | | | | | | Effective Section Properties | | | | | | | | Torsional Properties | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | 33ksi | | | | 50 ksi | | | | | | | | |
| M\W Type | SSMA | Flange/ Leg (in. ) | Lip (in. ) | Design Thickness (in. ) | Weight (plf.) | Area (in. [2]) | Ix (in. [4]) | Sx (in. [3]) | Rx (in.) | Iy (in. [4]) | Ry (in.) | Ix e (in. [4]) | Sx e (in. [3]) | Ma (k - in) | Va (k) | Ix e (in. [4]) | Sx e (in. [3]) | Ma (k - in) | Va (k) | J x1000 (in. [4]) | Cw (in. [6]) | Xo (in.) | Ro (in.) | ß Beta |
| **8" Members** | | | | | | | | | | | | | | | | | | | | | | | | |
| 8J18 | 800S200-43 | 2" | 5/8" | 0.0451 | 1.981 | 0.582 | 5.303 | 1.326 | 3.018 | 0.292 | 0.708 | 5.302 | 1.294 | 25.570 | 1.051 | 5.302 | 1.063 | 31.831 | 1.051 | 0.395 | 3.763 | -1.295 | 3.360 | 0.851 |
| 8J16 | 800S200-54 | 2" | 5/8" | 0.0566 | 2.471 | 0.726 | 6.574 | 1.644 | 3.009 | 0.357 | 0.701 | 6.572 | 1.643 | 35.749 | 2.091 | 6.572 | 1.501 | 44.938 | 2.091 | 0.775 | 4.612 | -1.286 | 3.347 | 0.852 |
| 8J14 | 800S200-68 | 2" | 5/8" | 0.0713 | 3.086 | 0.907 | 8.142 | 2.036 | 2.996 | 0.435 | 0.692 | 8.140 | 2.035 | 45.286 | 3.367 | 8.140 | 1.964 | 65.207 | 3.367 | 1.537 | 5.631 | -1.275 | 3.329 | 0.853 |
| 8J12 | 800S200-97 | 2" | 5/8" | 0.1017 | 4.324 | 1.271 | 11.206 | 2.801 | 2.970 | 0.576 | 0.674 | 11.203 | 2.801 | 65.120 | 4.824 | 11.203 | 2.801 | 96.622 | 5.938 | 4.381 | 7.524 | -1.253 | 3.293 | 0.85 5 |
| 8J10 | 800S200-118 | 2" | 5/8" | 0.1242 | 5.318 | 1.563 | 13.572 | 3.393 | 2.947 | 0.676 | 0.658 | 13.569 | 3.392 | 81.598 | 4.950 | 13.569 | 3.392 | 120.587 | 7.259 | 8.402 | 8.889 | -1.234 | 3.262 | 0.8 57 |
| 8JE18 | 800S250-43 | 2 1/2" | 5/8" | 0.0451 | 2.135 | 0.627 | 6.017 | 1.504 | 3.097 | 0.500 | 0.893 | 6.015 | 1.315 | 25.979 | 1.051 | 5.910 | 1.078 | 32.265 | 1.051 | 0.425 | 6.320 | -1.695 | 3.641 | 0.7 84 |
| 8JE16 | 800S250-54 | 2 1/2" | 5/8" | 0.0566 | 2.664 | 0.783 | 7.467 | 1.867 | 3.089 | 0.614 | 0.886 | 7.465 | 1.712 | 33.821 | 2.091 | 7.377 | 1.527 | 45.721 | 2.091 | 0.836 | 7.769 | -1.685 | 3.628 | 0.7 84 |
| 8JE14 | 800S250-68 | 2 1/2" | 5/8" | 0.0713 | 3.329 | 0.978 | 9.263 | 2.316 | 3.077 | 0.752 | 0.877 | 9.261 | 2.220 | 48.331 | 3.367 | 9.240 | 2.059 | 61.648 | 3.367 | 1.658 | 9.526 | -1.674 | 3.611 | 0.7 85 |
| 8JE12 | 800S250-97 | 2 1/2" | 5/8" | 0.1017 | 4.670 | 1.372 | 12.792 | 3.198 | 3.053 | 1.009 | 0.858 | 12.789 | 3.191 | 72.065 | 4.824 | 12.789 | 3.053 | 102.693 | 5.938 | 4.731 | 12.837 | -1.652 | 3.5 76 | 0.787 |
| 8JE10 | 800S250-118 | 2 1/2" | 5/8" | 0.1242 | 5.751 | 1.690 | 15.540 | 3.885 | 3.033 | 1.196 | 0.841 | 15.537 | 3.884 | 90.301 | 4.950 | 15.537 | 3.791 | 130.757 | 7.259 | 9.085 | 15.279 | -1.633 | 3.5 46 | 0.788 |
| 8JX16 | 800S300-54 | 3" | 1" | 0.0566 | 3.001 | 0.882 | 8.792 | 2.198 | 3.158 | 1.145 | 1.139 | 8.782 | 2.011 | 39.732 | 2.091 | 8.532 | 1.801 | 53.932 | 2.091 | 0.942 | 15.946 | -2.354 | 4.100 | 0.670 |
| 8JX14 | 800S300-68 | 3" | 1" | 0.0713 | 3.754 | 1.103 | 10.927 | 2.732 | 3.148 | 1.411 | 1.131 | 10.925 | 2.696 | 53.274 | 3.367 | 10.925 | 2.508 | 75.092 | 3.367 | 1.869 | 19.634 | -2.344 | 4.084 | 0.671 |
| 8JX12 | 800S300-97 | 3" | 1" | 0.1017 | 5.276 | 1.550 | 15.154 | 3.789 | 3.127 | 1.922 | 1.114 | 15.151 | 3.788 | 83.846 | 4.824 | 15.151 | 3.675 | 121.429 | 5.938 | 5.345 | 26.700 | -2.323 | 4.051 | 0.67 1 |
| 8JX10 | 800S300-118 | 3" | 1" | 0.1242 | 6.507 | 1.912 | 18.477 | 4.619 | 3.109 | 2.308 | 1.099 | 18.474 | 4.619 | 104.824 | 4.950 | 18.474 | 4.619 | 155.988 | 7.259 | 10.280 | 32.027 | -2.306 | 4.023 | 0.672 |
| 8T20* | 800T125-33 | 1 1/4" | none | 0.0346 | 1.236 | 0.363 | 2.897 | 0.711 | 2.824 | 0.036 | 0.313 | 2.706 | 0.434 | 8.569 | 0.465 | 2.550 | 0.360 | 10.771 | 0.465 | 0.145 | 0.456 | -0.443 | 2.876 | 0.97 6 |
| 8T18 | 800T125-43 | 1 1/4" | none | 0.0451 | 1.610 | 0.473 | 3.774 | 0.925 | 2.824 | 0.046 | 0.311 | 3.600 | 0.740 | 14.623 | 1.030 | 3.545 | 0.597 | 17.867 | 1.030 | 0.321 | 0.588 | -0.440 | 2.875 | 0.9 77 |
| 8T16 | 800T125-54 | 1 1/4" | none | 0.0566 | 2.020 | 0.594 | 4.747 | 1.158 | 2.828 | 0.057 | 0.309 | 4.653 | 1.065 | 21.038 | 2.039 | 4.547 | 0.963 | 28.833 | 2.039 | 0.634 | 0.734 | -0.437 | 2.878 | 0.9 77 |
| 8T14 | 800T125-68 | 1 1/4" | none | 0.0713 | 2.544 | 0.748 | 6.000 | 1.455 | 2.833 | 0.070 | 0.307 | 5.998 | 1.409 | 27.844 | 4.087 | 5.925 | 1.355 | 40.578 | 4.087 | 1.267 | 0.919 | -0.434 | 2.883 | 0.9 77 |
| 8T12 | 800T125-97 | 1 1/4" | none | 0.1017 | 3.626 | 1.066 | 8.616 | 2.062 | 2.844 | 0.097 | 0.301 | 8.613 | 2.062 | 46.564 | 8.843 | 8.613 | 2.062 | 61.721 | 10.885 | 3.674 | 1.293 | -0.427 | 2.891 | 0.978 |
| 8T10 | 800T125-118 | 1 1/4" | none | 0.1242 | 4.526 | 1.330 | 10.817 | 2.562 | 2.852 | 0.117 | 0.297 | 10.813 | 2.561 | 59.536 | 12.274 | 10.813 | 2.561 | 88.338 | 16.975 | 7.150 | 1.595 | -0.421 | 2.8 98 | 0.979 |
| **10" Members** | | | | | | | | | | | | | | | | | | | | | | | | |
| 10SW18* | 1000S162-43 | 1 5/8" | 1/2" | 0.0451 | 2.135 | 0.627 | 8.028 | 1.606 | 3.577 | 0.168 | 0.518 | 8.025 | 1.415 | 27.953 | 0.836 | 8.013 | 1.148 | 34.366 | 0.836 | 0.425 | 3.404 | -0.836 | 3.710 | 0. 949 |
| 10SW16 | 1000S162-54 | 1 5/8" | 1/2" | 0.0566 | 2.664 | 0.783 | 9.953 | 1.991 | 3.566 | 0.204 | 0.511 | 9.950 | 1.990 | 39.322 | 1.661 | 9.950 | 1.713 | 51.291 | 1.661 | 0.836 | 4.159 | -0.827 | 3.696 | 0. 950 |
| 10SW14 | 1000S162-68 | 1 5/8" | 1/2" | 0.0713 | 3.329 | 0.978 | 12.329 | 2.466 | 3.550 | 0.247 | 0.502 | 12.325 | 2.465 | 56.196 | 3.345 | 12.325 | 2.465 | 73.802 | 3.345 | 1.658 | 5.060 | -0.816 | 3.67 7 | 0.951 |
| 10SW12 | 1000S162-97 | 1 5/8" | 1/2" | 0.1017 | 4.670 | 1.372 | 16.972 | 3.394 | 3.517 | 0.320 | 0.483 | 16.966 | 3.393 | 81.427 | 6.434 | 16.966 | 3.393 | 120.368 | 7.177 | 4.731 | 6.707 | -0.795 | 3.6 38 | 0.952 |
| 10SW10 | 1000S162-118 | 1 5/8" | 1/2" | 0.1242 | 5.751 | 1.690 | 20.560 | 4.112 | 3.488 | 0.369 | 0.467 | 20.553 | 4.111 | 102.578 | 7.908 | 20.553 | 4.111 | 150.956 | 9.734 | 9.085 | 7.869 | -0.777 | 3.604 | 0.954 |
| 10J18* | 1000S200-43 | 2" | 5/8" | 0.0451 | 2.288 | 0.672 | 9.088 | 1.818 | 3.676 | 0.309 | 0.677 | 9.085 | 1.582 | 31.260 | 0.836 | 9.045 | 1.318 | 39.446 | 0.836 | 0.456 | 6.189 | -1.162 | 3.915 | 0.912 |
| 10J16 | 1000S200-54 | 2" | 5/8" | 0.0566 | 2.856 | 0.839 | 11.281 | 2.256 | 3.666 | 0.378 | 0.671 | 11.278 | 2.256 | 44.570 | 1.661 | 11.278 | 1.835 | 54.943 | 1.661 | 0.896 | 7.595 | -1.153 | 3.901 | 0.9 13 |
| 10J14 | 1000S200-68 | 2" | 5/8" | 0.0713 | 3.572 | 1.050 | 13.998 | 2.800 | 3.652 | 0.460 | 0.662 | 13.994 | 2.799 | 62.281 | 3.345 | 13.994 | 2.744 | 82.155 | 3.345 | 1.779 | 9.290 | -1.142 | 3.883 | 0.9 14 |
| 10J12 | 1000S200-97 | 2" | 5/8" | 0.1017 | 5.016 | 1.474 | 19.341 | 3.868 | 3.622 | 0.610 | 0.643 | 19.335 | 3.867 | 89.913 | 6.434 | 19.335 | 3.867 | 133.409 | 7.177 | 5.082 | 12.460 | -1.120 | 3.846 | 0.915 |
| 10J10 | 1000S200-118 | 2" | 5/8" | 0.1242 | 6.183 | 1.817 | 23.506 | 4.701 | 3.597 | 0.715 | 0.627 | 23.499 | 4.700 | 113.051 | 7.908 | 23.499 | 4.700 | 167.069 | 9.734 | 9.768 | 14.768 | -1.101 | 3.81 4 | 0.917 |
| 10JE18* | 1000S250-43 | 2 1/2" | 5/8" | 0.0451 | 2.442 | 0.718 | 10.205 | 2.041 | 3.772 | 0.531 | 0.861 | 10.202 | 1.618 | 31.973 | 0.836 | 10.141 | 1.341 | 40.147 | 0.836 | 0.486 | 10.404 | -1.534 | 4.1 62 | 0.864 |
| 10JE16 | 1000S250-54 | 2 1/2" | 5/8" | 0.0566 | 3.049 | 0.896 | 12.680 | 2.536 | 3.762 | 0.653 | 0.854 | 12.677 | 2.279 | 45.039 | 1.661 | 12.659 | 1.881 | 56.318 | 1.661 | 0.957 | 12.805 | -1.525 | 4.1 48 | 0.865 |
| 10JE14 | 1000S250-68 | 2 1/2" | 5/8" | 0.0713 | 3.814 | 1.121 | 15.755 | 3.151 | 3.749 | 0.799 | 0.844 | 15.751 | 3.028 | 65.929 | 3.345 | 15.738 | 2.771 | 82.961 | 3.345 | 1.899 | 15.726 | -1.514 | 4.1 31 | 0.866 |
| 10JE12 | 1000S250-97 | 2 1/2" | 5/8" | 0.1017 | 5.362 | 1.576 | 21.832 | 4.366 | 3.722 | 1.073 | 0.825 | 21.826 | 4.356 | 98.401 | 6.434 | 21.826 | 4.181 | 140.621 | 7.177 | 5.432 | 21.268 | -1.491 | 4.094 | 0.867 |
| 10JE10 | 1000S250-118 | 2 1/2" | 5/8" | 0.1242 | 6.615 | 1.944 | 26.601 | 5.320 | 3.699 | 1.271 | 0.809 | 26.594 | 5.319 | 123.652 | 7.908 | 26.594 | 5.198 | 179.308 | 9.734 | 10.450 | 25.389 | -1.47 2 | 4.063 | 0.869 |
| 10JX16 | 1000S300-54 | 3" | 1" | 0.0566 | 3.386 | 0.995 | 14.824 | 2.965 | 3.860 | 1.227 | 1.111 | 14.821 | 2.667 | 52.706 | 1.661 | 14.545 | 2.239 | 67.042 | 1.661 | 1.063 | 25.484 | -2.153 | 4.557 | 0.77 7 |
| 10JX14 | 1000S300-68 | 3" | 1" | 0.0713 | 4.239 | 1.246 | 18.451 | 3.690 | 3.849 | 1.513 | 1.102 | 18.446 | 3.646 | 72.041 | 3.345 | 18.446 | 3.384 | 101.320 | 3.345 | 2.111 | 31.425 | -2.142 | 4.540 | 0.7 78 |
| 10JX12 | 1000S300-97 | 3" | 1" | 0.1017 | 5.968 | 1.754 | 25.662 | 5.132 | 3.825 | 2.061 | 1.084 | 25.656 | 5.131 | 113.583 | 6.434 | 25.656 | 4.981 | 164.567 | 7.177 | 6.046 | 42.867 | -2.120 | 4.506 | 0.779 |
| 10JX10 | 1000S300-118 | 3" | 1" | 0.1242 | 7.371 | 2.166 | 31.367 | 6.274 | 3.806 | 2.476 | 1.069 | 31.360 | 6.272 | 142.355 | 7.908 | 31.360 | 6.272 | 211.838 | 9.734 | 11.645 | 51.554 | -2.102 | 4.477 | 0.780 |
| 10JXW16 | 1000S350-54 | 3 1/2" | 1" | 0.0566 | 3.579 | 1.052 | 16.223 | 3.245 | 3.928 | 1.768 | 1.297 | 15.948 | 2.760 | 54.531 | 1.661 | 15.584 | 2.316 | 69.326 | 1.661 | 1.123 | 36.305 | -2.573 | 4.871 | 0.721 |
| 10JXW14 | 1000S350-68 | 3 1/2" | 1" | 0.0713 | 4.482 | 1.317 | 20.208 | 4.042 | 3.917 | 2.185 | 1.288 | 20.204 | 3.824 | 75.567 | 3.345 | 20.030 | 3.407 | 102.007 | 3.345 | 2.232 | 44.852 | -2.562 | 4.85 5 | 0.722 |
| 10JXW12 | 1000S350-97 | 3 1/2" | 1" | 0.1017 | 6.314 | 1.855 | 28.153 | 5.631 | 3.895 | 2.992 | 1.270 | 28.147 | 5.517 | 120.323 | 6.434 | 28.147 | 5.118 | 153.239 | 7.177 | 6.397 | 61.427 | -2.540 | 4.8 20 | 0.722 |
| 10JXW10 | 1000S350-118 | 3 1/2" | 1" | 0.1242 | 7.804 | 2.293 | 34.462 | 6.892 | 3.877 | 3.609 | 1.255 | 34.455 | 6.891 | 153.642 | 7.908 | 34.455 | 6.568 | 218.407 | 9.734 | 12.328 | 74.129 | -2.522 | 4.792 | 0.723 |
| 10T18* | 1000T125-43 | 1 1/4" | none | 0.0451 | 1.917 | 0.563 | 6.633 | 1.306 | 3.431 | 0.047 | 0.290 | 6.432 | 0.893 | 17.645 | 0.822 | 6.340 | 0.735 | 22.003 | 0.822 | 0.382 | 0.973 | -0.383 | 3.465 | 0. 988 |
| 10T16 | 1000T125-54 | 1 1/4" | none | 0.0566 | 2.405 | 0.707 | 8.337 | 1.635 | 3.434 | 0.059 | 0.288 | 8.212 | 1.446 | 28.564 | 1.628 | 8.115 | 1.157 | 34.640 | 1.628 | 0.755 | 1.212 | -0.380 | 3.467 | 0. 988 |
| 10T14 | 1000T125-68 | 1 1/4" | none | 0.0713 | 3.029 | 0.890 | 10.526 | 2.054 | 3.439 | 0.073 | 0.286 | 10.521 | 1.998 | 39.478 | 3.261 | 10.414 | 1.900 | 56.888 | 3.261 | 1.508 | 1.514 | -0.377 | 3.47 1 | 0.988 |
| 10T12 | 1000T125-97 | 1 1/4" | none | 0.1017 | 4.319 | 1.269 | 15.083 | 2.913 | 3.448 | 0.100 | 0.281 | 15.076 | 2.912 | 65.765 | 8.843 | 15.076 | 2.912 | 87.173 | 9.507 | 4.375 | 2.121 | -0.371 | 3.47 9 | 0.989 |
| 10T10 | 1000T125-118 | 1 1/4" | none | 0.1242 | 5.391 | 1.584 | 18.902 | 3.620 | 3.455 | 0.121 | 0.277 | 18.894 | 3.618 | 84.111 | 13.790 | 18.894 | 3.618 | 124.802 | 16.975 | 8.516 | 2.609 | -0.365 | 3.485 | 0.989 |
| **12" Members** | | | | | | | | | | | | | | | | | | | | | | | | |
| 12SW16* | 1200S162-54 | 1 5/8" | 1/2" | 0.0566 | 3.049 | 0.896 | 15.735 | 2.623 | 4.191 | 0.212 | 0.486 | 15.729 | 2.335 | 46.142 | 1.377 | 15.729 | 2.025 | 60.633 | 1.377 | 0.957 | 6.293 | -0.744 | 4.28 4 | 0.970 |
| 12SW14 | 1200S162-68 | 1 5/8" | 1/2" | 0.0713 | 3.814 | 1.121 | 19.525 | 3.254 | 4.174 | 0.255 | 0.477 | 19.517 | 3.253 | 64.278 | 2.771 | 19.517 | 2.955 | 88.466 | 2.771 | 1.899 | 7.665 | -0.734 | 4.26 5 | 0.970 |
| 12SW12 | 1200S162-97 | 1 5/8" | 1/2" | 0.1017 | 5.362 | 1.576 | 26.974 | 4.496 | 4.138 | 0.332 | 0.459 | 26.964 | 4.494 | 107.841 | 7.411 | 26.964 | 4.494 | 159.415 | 7.411 | 5.432 | 10.187 | -0.713 | 4.224 | 0.972 |
| 12SW10 | 1200S162-118 | 1 5/8" | 1/2" | 0.1242 | 6.615 | 1.944 | 32.780 | 5.463 | 4.107 | 0.382 | 0.443 | 32.768 | 5.461 | 136.284 | 9.919 | 32.768 | 5.461 | 200.558 | 11.538 | 10.450 | 11.979 | -0.6 95 | 4.189 | 0.972 |
| 12J16* | 1200S200-54 | 2" | 5/8" | 0.0566 | 3.242 | 0.953 | 17.668 | 2.945 | 4.307 | 0.394 | 0.643 | 17.662 | 2.661 | 52.588 | 1.377 | 17.662 | 2.176 | 65.155 | 1.377 | 1.017 | 11.462 | -1.047 | 4.479 | 0. 945 |
| 12J14 | 1200S200-68 | 2" | 5/8" | 0.0713 | 4.057 | 1.192 | 21.954 | 3.659 | 4.291 | 0.479 | 0.634 | 21.946 | 3.658 | 81.396 | 2.771 | 21.946 | 3.270 | 97.890 | 2.771 | 2.020 | 14.038 | -1.036 | 4.460 | 0. 946 |
| 12J12 | 1200S200-97 | 2" | 5/8" | 0.1017 | 5.709 | 1.677 | 30.426 | 5.071 | 4.259 | 0.635 | 0.615 | 30.415 | 5.069 | 117.865 | 7.411 | 30.415 | 5.069 | 174.883 | 7.411 | 5.783 | 18.875 | -1.014 | 4.421 | 0.947 |
| 12J10 | 1200S200-118 | 2" | 5/8" | 0.1242 | 7.047 | 2.071 | 37.076 | 6.179 | 4.231 | 0.744 | 0.600 | 37.063 | 6.177 | 148.587 | 9.919 | 37.063 | 6.177 | 219.585 | 11.538 | 11.133 | 22.421 | -0.996 | 4. 388 | 0.949 |

* = Exceeds the H/T ratio of 200

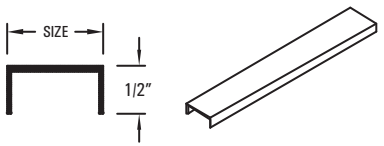
See notes on page 4

## Physical and Structural Properties

| Member Physical Properties | | | | | | Gross Section Properties | | | | | | Effective Section Properties | | | | | | | | Torsional Properties | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | 33ksi | | | | 50 ksi | | | | | | | | |
| M\W Type | SSMA | Flange/ Leg (in.) | Lip (in.) | Design Thickness (in.) | Weight (plf.) | Area (in.$^2$) | Ix (in.$^4$) | Sx (in.$^3$) | Rx (in.) | Iy (in.$^4$) | Ry (in.) | Ix$_e$ (in.$^4$) | Sx$_e$ (in.$^3$) | Ma (k-in) | Va (k) | Ix$_e$ (in.$^4$) | Sx$_e$ (in.$^3$) | Ma (k-in) | Va (k) | J x1000 (in.$^4$) | Cw (in.$^6$) | Xo (in.) | Ro (in.) | ß Beta |
| **12" Members** | | | | | | | | | | | | | | | | | | | | | | | | |
| 12JE16* | 1200S250-54 | 2 1/2" | 5/8" | 0.0566 | 3.434 | 1.009 | 19.686 | 3.281 | 4.417 | 0.683 | 0.823 | 19.680 | 2.682 | 53.005 | 1.377 | 19.680 | 2.239 | 67.024 | 1.377 | 1.078 | 19.354 | -1.395 | 4.7 04 | 0.912 |
| 12JE14 | 1200S250-68 | 2 1/2" | 5/8" | 0.0713 | 4.300 | 1.263 | 24.490 | 4.082 | 4.403 | 0.836 | 0.813 | 24.483 | 3.963 | 78.309 | 2.771 | 24.483 | 3.262 | 97.676 | 2.771 | 2.141 | 23.796 | -1.384 | 4.6 86 | 0.913 |
| 12JE12 | 1200S250-97 | 2 1/2" | 5/8" | 0.1017 | 6.055 | 1.779 | 34.025 | 5.671 | 4.373 | 1.122 | 0.794 | 34.015 | 5.658 | 127.807 | 7.411 | 34.015 | 5.445 | 183.140 | 7.411 | 6.134 | 32.259 | -1.361 | 4.649 | 0.914 |
| 12JE10 | 1200S250-118 | 2 1/2" | 5/8" | 0.1242 | 7.479 | 2.198 | 41.551 | 6.925 | 4.348 | 1.329 | 0.778 | 41.539 | 6.923 | 160.949 | 9.919 | 41.539 | 6.776 | 233.728 | 11.538 | 11.816 | 38.591 | -1.3 42 | 4.617 | 0.916 |
| 12JX16* | 1200S300-54 | 3" | 1" | 0.0566 | 3.771 | 1.108 | 22.847 | 3.808 | 4.541 | 1.292 | 1.080 | 22.841 | 3.165 | 62.532 | 1.377 | 22.571 | 2.680 | 80.248 | 1.377 | 1.183 | 37.836 | -1.986 | 5.072 | 0.84 7 |
| 12JX14 | 1200S300-68 | 3" | 1" | 0.0713 | 4.724 | 1.388 | 28.466 | 4.744 | 4.528 | 1.593 | 1.071 | 28.459 | 4.692 | 92.707 | 2.771 | 28.459 | 4.010 | 120.054 | 2.771 | 2.352 | 46.706 | -1.975 | 5.055 | 0.8 47 |
| 12JX12 | 1200S300-97 | 3" | 1" | 0.1017 | 6.660 | 1.957 | 39.678 | 6.613 | 4.503 | 2.171 | 1.053 | 39.668 | 6.611 | 146.347 | 7.411 | 39.668 | 6.423 | 212.243 | 7.411 | 6.747 | 63.857 | -1.953 | 5.020 | 0. 849 |
| 12JX10 | 1200S300-118 | 3" | 1" | 0.1242 | 8.236 | 2.420 | 48.591 | 8.099 | 4.481 | 2.608 | 1.038 | 48.579 | 8.097 | 183.763 | 9.919 | 48.579 | 8.097 | 273.457 | 11.538 | 13.011 | 76.946 | -1.935 | 4.99 0 | 0.850 |
| 12JXW16* | 1200S350-54 | 3 1/2" | 1" | 0.0566 | 3.964 | 1.165 | 24.866 | 4.144 | 4.620 | 1.866 | 1.266 | 24.616 | 3.283 | 64.881 | 1.377 | 24.096 | 2.776 | 83.114 | 1.377 | 1.244 | 53.909 | -2.386 | 5.352 | 0.801 |
| 12JXW14 | 1200S350-68 | 3 1/2" | 1" | 0.0713 | 4.967 | 1.460 | 31.003 | 5.167 | 4.609 | 2.306 | 1.257 | 30.995 | 4.908 | 96.977 | 2.771 | 30.921 | 4.051 | 121.294 | 2.771 | 2.473 | 66.669 | -2.375 | 5.33 5 | 0.802 |
| 12JXW12 | 1200S350-97 | 3 1/2" | 1" | 0.1017 | 7.006 | 2.059 | 43.277 | 7.213 | 4.585 | 3.159 | 1.239 | 43.267 | 7.071 | 154.210 | 7.411 | 43.267 | 6.590 | 197.301 | 7.411 | 7.098 | 91.503 | -2.352 | 5.3 00 | 0.803 |
| 12JXW10 | 1200S350-118 | 3 1/2" | 1" | 0.1242 | 8.668 | 2.547 | 53.067 | 8.845 | 4.565 | 3.811 | 1.223 | 53.055 | 8.842 | 197.150 | 9.919 | 53.055 | 8.442 | 280.722 | 11.538 | 13.694 | 110.624 | -2.33 4 | 5.270 | 0.804 |
| 12T16* | 1200T125-54 | 1 1/4" | none | 0.0566 | 2.791 | 0.820 | 13.341 | 2.187 | 4.034 | 0.060 | 0.271 | 13.266 | 1.666 | 32.914 | 1.355 | 13.116 | 1.364 | 40.846 | 1.355 | 0.876 | 1.820 | -0.337 | 4.05 7 | 0.993 |
| 12T14 | 1200T125-68 | 1 1/4" | none | 0.0713 | 3.515 | 1.033 | 16.833 | 2.748 | 4.037 | 0.074 | 0.268 | 16.825 | 2.682 | 52.992 | 2.713 | 16.799 | 2.180 | 65.271 | 2.713 | 1.750 | 2.271 | -0.334 | 4.06 0 | 0.993 |
| 12T12 | 1200T125-97 | 1 1/4" | none | 0.1017 | 5.011 | 1.472 | 24.088 | 3.899 | 4.045 | 0.102 | 0.264 | 24.077 | 3.897 | 88.030 | 7.902 | 24.077 | 3.897 | 116.685 | 7.902 | 5.076 | 3.173 | -0.328 | 4.0 67 | 0.994 |
| 12T10 | 1200T125-118 | 1 1/4" | none | 0.1242 | 6.255 | 1.838 | 30.157 | 4.847 | 4.051 | 0.124 | 0.260 | 30.143 | 4.844 | 112.623 | 13.790 | 30.143 | 4.844 | 167.108 | 15.438 | 9.881 | 3.894 | -0.32 3 | 4.072 | 0.994 |
| **14" Members** | | | | | | | | | | | | | | | | | | | | | | | | |
| 14SW14 | 1400S162-68 | 1 5/8" | 1/2" | 0.0713 | 4.300 | 1.263 | 28.963 | 4.138 | 4.788 | 0.262 | 0.456 | 28.951 | 3.849 | 76.056 | 2.365 | 28.951 | 3.384 | 101.311 | 2.365 | 2.141 | 10.882 | -0.667 | 4.856 | 0.981 |
| 14SW12 | 1400S162-97 | 1 5/8" | 1/2" | 0.1017 | 6.055 | 1.779 | 40.130 | 5.733 | 4.749 | 0.341 | 0.438 | 40.113 | 5.731 | 137.512 | 6.939 | 40.113 | 5.731 | 171.571 | 6.939 | 6.134 | 14.488 | -0.647 | 4.813 | 0.982 |
| 14SW10 | 1400S162-118 | 1 5/8" | 1/2" | 0.1242 | 7.479 | 2.198 | 48.890 | 6.984 | 4.717 | 0.392 | 0.422 | 48.870 | 6.981 | 174.218 | 11.800 | 48.870 | 6.981 | 256.383 | 11.800 | 11.816 | 17.063 | -0. 630 | 4.777 | 0.983 |
| 14J14 | 1400S200-68 | 2" | 5/8" | 0.0713 | 4.542 | 1.335 | 32.295 | 4.614 | 4.919 | 0.494 | 0.609 | 32.283 | 4.327 | 85.499 | 2.365 | 32.283 | 3.753 | 112.363 | 2.365 | 2.262 | 19.920 | -0.949 | 5.047 | 0. 965 |
| 14J12 | 1400S200-97 | 2" | 5/8" | 0.1017 | 6.401 | 1.881 | 44.867 | 6.410 | 4.884 | 0.655 | 0.590 | 44.850 | 6.407 | 148.974 | 6.939 | 44.850 | 6.407 | 191.832 | 6.939 | 6.484 | 26.833 | -0.927 | 5.006 | 0.966 |
| 14J10 | 1400S200-118 | 2" | 5/8" | 0.1242 | 7.912 | 2.325 | 54.789 | 7.827 | 4.855 | 0.767 | 0.575 | 54.768 | 7.824 | 188.201 | 11.800 | 54.768 | 7.824 | 278.128 | 11.800 | 12.499 | 31.925 | -0.910 | 4.972 | 0.967 |
| 14JE14 | 1400S250-68 | 2 1/2" | 5/8" | 0.0713 | 4.785 | 1.406 | 35.754 | 5.108 | 5.043 | 0.865 | 0.784 | 35.741 | 4.623 | 91.361 | 2.365 | 35.741 | 3.760 | 112.582 | 2.365 | 2.383 | 33.827 | -1.276 | 5. 261 | 0.941 |
| 14JE12 | 1400S250-97 | 2 1/2" | 5/8" | 0.1017 | 6.747 | 1.983 | 49.778 | 7.111 | 5.011 | 1.161 | 0.765 | 49.762 | 7.096 | 160.281 | 6.939 | 49.762 | 6.886 | 206.162 | 6.939 | 6.835 | 45.940 | -1.253 | 5.222 | 0.942 |
| 14JE10 | 1400S250-118 | 2 1/2" | 5/8" | 0.1242 | 8.344 | 2.452 | 60.899 | 8.700 | 4.984 | 1.375 | 0.749 | 60.879 | 8.697 | 202.187 | 11.800 | 60.879 | 8.523 | 294.007 | 11.800 | 13.181 | 55.041 | -1. 235 | 5.189 | 0.943 |
| 14JX14 | 1400S300-68 | 3" | 1" | 0.0713 | 5.210 | 1.531 | 41.260 | 5.894 | 5.192 | 1.659 | 1.041 | 41.248 | 5.531 | 109.290 | 2.365 | 41.248 | 4.644 | 139.042 | 2.365 | 2.594 | 65.681 | -1.835 | 5.604 | 0. 893 |
| 14JX12 | 1400S300-97 | 3" | 1" | 0.1017 | 7.353 | 2.161 | 57.610 | 8.230 | 5.164 | 2.261 | 1.023 | 57.594 | 8.228 | 182.128 | 6.939 | 57.594 | 8.128 | 243.355 | 6.939 | 7.449 | 89.953 | -1.813 | 5.568 | 0. 894 |
| 14JX10 | 1400S300-118 | 3" | 1" | 0.1242 | 9.100 | 2.674 | 70.658 | 10.094 | 5.140 | 2.715 | 1.008 | 70.637 | 10.091 | 229.033 | 11.800 | 70.637 | 10.091 | 340.824 | 11.800 | 14.376 | 108.550 | -1.79 4 | 5.537 | 0.895 |
| 14JXW14 | 1400S350-68 | 3 1/2" | 1" | 0.0713 | 5.452 | 1.602 | 44.718 | 6.388 | 5.283 | 2.406 | 1.226 | 44.706 | 5.704 | 112.705 | 2.365 | 44.706 | 4.701 | 140.747 | 2.365 | 2.715 | 93.789 | -2.216 | 5.8 59 | 0.857 |
| 14JXW12 | 1400S350-97 | 3 1/2" | 1" | 0.1017 | 7.699 | 2.262 | 62.522 | 8.932 | 5.257 | 3.296 | 1.207 | 62.505 | 8.761 | 191.077 | 6.939 | 62.505 | 8.192 | 245.281 | 6.939 | 7.799 | 128.936 | -2.193 | 5. 823 | 0.858 |
| 14JXW10 | 1400S350-118 | 3 1/2" | 1" | 0.1242 | 9.532 | 2.801 | 76.768 | 10.967 | 5.235 | 3.976 | 1.191 | 76.748 | 10.964 | 244.452 | 11.800 | 76.748 | 10.488 | 348.730 | 11.800 | 15.059 | 156.094 | -2.174 | 5.793 | 0.859 |
| 14T14 | 1400T125-68 | 1 1/4" | none | 0.0713 | 4.000 | 1.175 | 25.208 | 3.538 | 4.631 | 0.076 | 0.254 | 25.195 | 3.062 | 60.504 | 2.322 | 25.195 | 2.483 | 74.354 | 2.322 | 1.992 | 3.191 | -0.299 | 4.64 8 | 0.996 |
| 14T12 | 1400T125-97 | 1 1/4" | none | 0.1017 | 5.703 | 1.676 | 36.041 | 5.021 | 4.638 | 0.104 | 0.249 | 36.023 | 5.019 | 113.357 | 6.761 | 36.023 | 5.019 | 150.256 | 6.761 | 5.777 | 4.450 | -0.294 | 4. 654 | 0.996 |
| 14T10 | 1400T125-118 | 1 1/4" | none | 0.1242 | 7.119 | 2.092 | 45.091 | 6.243 | 4.643 | 0.126 | 0.246 | 45.068 | 6.240 | 145.072 | 13.202 | 45.068 | 6.240 | 215.255 | 13.202 | 11.247 | 5.452 | -0.2 89 | 4.658 | 0.996 |
| **16" Members** | | | | | | | | | | | | | | | | | | | | | | | | |
| 16SW14* | 1600S162-68 | 1 5/8" | 1/2" | 0.0713 | 4.785 | 1.406 | 40.930 | 5.116 | 5.395 | 0.268 | 0.436 | 40.912 | 4.297 | 84.910 | 2.062 | 39.562 | 3.828 | 114.623 | 2.062 | 2.383 | 14.725 | -0.612 | 5.448 | 0.987 |
| 16SW12 | 1600S162-97 | 1 5/8" | 1/2" | 0.1017 | 6.747 | 1.983 | 56.846 | 7.106 | 5.355 | 0.348 | 0.419 | 56.821 | 7.103 | 170.439 | 6.043 | 56.821 | 6.696 | 200.465 | 6.043 | 6.835 | 19.629 | -0.592 | 5.404 | 0.988 |
| 16SW10 | 1600S162-118 | 1 5/8" | 1/2" | 0.1270 | 8.344 | 2.452 | 69.398 | 8.675 | 5.320 | 0.400 | 0.404 | 69.367 | 8.671 | 216.380 | 11.866 | 69.367 | 8.671 | 318.430 | 11.866 | 13.181 | 23.143 | -0. 576 | 5.367 | 0.989 |
| 16J14* | 1600S200-68 | 2" | 5/8" | 0.0713 | 5.028 | 1.477 | 45.308 | 5.664 | 5.538 | 0.506 | 0.585 | 45.290 | 4.847 | 95.778 | 2.062 | 44.013 | 4.252 | 127.303 | 2.062 | 2.503 | 26.970 | -0.876 | 5.637 | 0.976 |
| 16J12 | 1600S200-97 | 2" | 5/8" | 0.1017 | 7.093 | 2.084 | 63.072 | 7.884 | 5.501 | 0.671 | 0.567 | 63.047 | 7.881 | 183.238 | 6.043 | 63.047 | 7.476 | 223.841 | 6.043 | 7.186 | 36.380 | -0.855 | 5.596 | 0.977 |
| 16J10 | 1600S200-118 | 2" | 5/8" | 0.1242 | 8.776 | 2.579 | 77.154 | 9.644 | 5.470 | 0.786 | 0.552 | 77.123 | 9.640 | 231.891 | 11.866 | 77.123 | 9.640 | 342.695 | 11.866 | 13.864 | 43.333 | -0.838 | 5.561 | 0.977 |
| 16JE14* | 1600S250-68 | 2 1/2" | 5/8" | 0.0713 | 5.270 | 1.549 | 49.830 | 6.229 | 5.673 | 0.889 | 0.758 | 49.812 | 5.193 | 102.624 | 2.062 | 49.812 | 4.270 | 127.829 | 2.062 | 2.624 | 45.889 | -1.184 | 5.844 | 0.959 |
| 16JE12 | 1600S250-97 | 2 1/2" | 5/8" | 0.1017 | 7.439 | 2.186 | 69.498 | 8.687 | 5.639 | 1.193 | 0.739 | 69.473 | 8.669 | 195.820 | 6.043 | 69.473 | 7.905 | 236.662 | 6.043 | 7.536 | 62.406 | -1.162 | 5.804 | 0.960 |
| 16JE10 | 1600S250-118 | 2 1/2" | 5/8" | 0.1242 | 9.208 | 2.706 | 85.153 | 10.644 | 5.610 | 1.412 | 0.723 | 85.123 | 10.640 | 247.366 | 11.866 | 85.123 | 10.440 | 360.139 | 11.866 | 14.547 | 74.854 | -1.144 | 5.771 | 0.961 |
| 16JX14* | 1600S300-68 | 3" | 1" | 0.0713 | 5.695 | 1.673 | 57.116 | 7.140 | 5.842 | 1.713 | 1.012 | 57.098 | 6.246 | 123.425 | 2.062 | 56.247 | 5.281 | 158.100 | 2.062 | 2.836 | 88.511 | -1.715 | 6.172 | 0. 923 |
| 16JX12 | 1600S300-97 | 3" | 1" | 0.1017 | 8.045 | 2.364 | 79.866 | 9.983 | 5.813 | 2.335 | 0.994 | 79.841 | 9.980 | 220.919 | 6.043 | 79.841 | 9.415 | 281.881 | 6.043 | 8.150 | 121.381 | -1.693 | 6.135 | 0.924 |
| 16JX10 | 1600S300-118 | 3" | 1" | 0.1242 | 9.965 | 2.928 | 98.075 | 12.259 | 5.788 | 2.804 | 0.979 | 98.044 | 12.256 | 278.159 | 11.866 | 98.044 | 12.256 | 413.927 | 11.866 | 15.742 | 146.640 | -1.67 4 | 6.104 | 0.925 |
| 16JXW14* | 1600S350-68 | 3 1/2" | 1" | 0.0713 | 5.938 | 1.745 | 61.639 | 7.705 | 5.944 | 2.490 | 1.195 | 61.621 | 6.455 | 127.546 | 2.062 | 61.555 | 5.355 | 160.326 | 2.062 | 2.957 | 126.463 | -2.079 | 6.409 | 0.895 |
| 16JXW12 | 1600S350-97 | 3 1/2" | 1" | 0.1017 | 8.391 | 2.466 | 86.292 | 10.787 | 5.916 | 3.410 | 1.176 | 86.267 | 10.588 | 230.916 | 6.043 | 86.267 | 9.220 | 276.045 | 6.043 | 8.500 | 174.076 | -2.056 | 6.373 | 0.896 |
| 16JXW10 | 1600S350-118 | 3 1/2" | 1" | 0.1242 | 10.397 | 3.055 | 106.074 | 13.259 | 5.893 | 4.114 | 1.160 | 106.043 | 13.255 | 295.541 | 11.866 | 106.043 | 12.704 | 422.415 | 11.866 | 16.425 | 210. 970 | -2.037 | 6.342 | 0.897 |
| 16T14* | 1600T125-68 | 1 1/4" | none | 0.0713 | 4.485 | 1.318 | 35.934 | 4.423 | 5.222 | 0.077 | 0.241 | 35.915 | 3.399 | 67.164 | 2.030 | 35.915 | 2.805 | 83.977 | 2.030 | 2.233 | 4.278 | -0.271 | 5.23 4 | 0.997 |
| 16T12 | 1600T125-97 | 1 1/4" | none | 0.1017 | 6.395 | 1.879 | 51.347 | 6.279 | 5.227 | 0.106 | 0.237 | 51.320 | 6.276 | 141.747 | 5.908 | 51.320 | 5.710 | 170.971 | 5.908 | 6.479 | 5.956 | -0.266 | 5. 239 | 0.997 |
| 16T10 | 1600T125-118 | 1 1/4" | none | 0.1242 | 7.984 | 2.346 | 64.211 | 7.809 | 5.232 | 0.128 | 0.233 | 64.177 | 7.805 | 181.457 | 11.532 | 64.177 | 7.805 | 269.243 | 11.532 | 12.613 | 7.287 | -0.2 62 | 5.244 | 0.998 |

## CR Channel

| Member Physical Properties | | | | | Gross Section Properties | | | | | Effective Section Properties | | | Torsional Properties | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 33ksi | | | | | | | |
| M\W Type | SSMA | Flange/ Leg (in.) | Lip (in.) | Design Thickness (in.) | Area (in.$^2$) | Ix (in.$^4$) | Rx (in.) | Iy (in.$^4$) | Ry (in.) | Ix$_e$ (in.$^4$) | Sx$_e$ (in.$^3$) | Ma (k-in) | J x1000 (in.$^4$) | Cw (in.$^6$) | Xo (in.) | Ro (in.) | ß Beta |
| 3/4CR16 | 75U50-54 | 1/2" | N/A | 0.0566 | 0.087 | 0.007 | 0.289 | 0.002 | 0.156 | 0.007 | 0.019 | 0.457 | 0.093 | 0.000 | -0.354 | 0.483 | 0.462 |
| 112CR16 | 150U50-54 | 1/2" | N/A | 0.0566 | 0.130 | 0.039 | 0.549 | 0.003 | 0.145 | 0.039 | 0.052 | 1.228 | 0.138 | 0.001 | -0.266 | 0.627 | 0.820 |
| 2CR16 | 200U50-54 | 1/2" | N/A | 0.0566 | 0.158 | 0.080 | 0.710 | 0.003 | 0.137 | 0.080 | 0.080 | 1.881 | 0.169 | 0.002 | -0.230 | 0.759 | 0.908 |




* = Exceeds the H/T ratio of 200

See notes on page 4

# LIMITING HEIGHTS (FT)

MARINO\WARE®

**LIMITING HEIGHTS APPLICATION:**

For selection of non-axial load bearing wall elements subjected to uniform lateral (wind) loads.

**USE:**

Select stud in terms of spacing (inches o.c.), lateral load (psf), and deflection limit which provides an allowable height equal to or greater than the actual project requirements. The use of these tables are limited to applications involving simply supported components.

## Limiting Height Tables

| Member | | Wind Load & Spacing | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M\W Type (SSMA) | Deflection | 5 PSF | | | 15 PSF | | | 20 PSF | | | 25 PSF | | | 30 PSF | | | 35 PSF | | | 40 PSF | | | 50 PSF | | |
| | | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. |
| **2-1/2" Members** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 212SW20 (250S162-33) | L/240 | 14'- 4" | 13'- 0" | 11'- 4" | 9'- 11" | 9'- 0" | 7'- 10" | 9'- 0" | 8'- 2" | 7'- 2" | 8'- 4" | 7'- 7" | 6'- 8" | 7'- 10" | 7'- 2" | 6'- 1" | 7'- 6" | 6'- 9" | 5'- 9" | 7'- 2" | 6'- 6" | 5'- 0" | 6'- 8" | 5'- 9" | 4'- 0" |
| | L/360 | 12'- 6" | 11'- 4" | 9'- 11" | 8'- 8" | 7'- 10" | 6'- 10" | 7'- 10" | 7'- 2" | 6'- 3" | 7'- 4" | 6'- 8" | 5'- 9" | 6'- 10" | 6'- 3" | 5'- 5" | 6'- 6" | 5'- 11" | 5'- 2 " | 6'- 3" | 5'- 8" | 4'- 11" | 5'- 9" | 5'- 3" | 4'- 0" |
| | L/600 | 10'- 7" | 9'- 7" | 8'- 4" | 7'- 4" | 6'- 8" | 5'- 9" | 6'- 8" | 6'- 0" | 5'- 3" | 6'- 2" | 5'- 7" | 4'- 11" | 5'- 9" | 5'- 3" | 4'- 7" | 5'- 6" | 5'- 0" | 4'- 4" | 5'- 3" | 4'- 9" | 4'- 2" | 4'- 11" | 4'- 5" | 3'-10" |
| 212SW18 (250S162-43) | L/240 | 15'- 7" | 14'- 2" | 12'- 4" | 10'- 9" | 9'- 10" | 8'- 7" | 9'- 10" | 8'- 11" | 7'- 9" | 9'- 1" | 8'- 3" | 7'- 3" | 8'- 7" | 7'- 9" | 6'- 7" | 8'- 2" | 7'- 5" | 5'- 8" | 7'- 9" | 7'- 1" | 4'- 11" | 7'- 3" | 5'- 11" | 3'-11" |
| | L/360 | 13'- 7" | 12'- 4" | 10'- 9" | 9'- 5" | 8'- 7" | 7'- 6" | 8'- 7" | 7'- 9" | 6'- 9" | 7'- 11" | 7'- 3" | 6'- 4" | 7'- 6" | 6'- 9" | 5'- 11" | 7'- 1" | 6'- 5" | 5'- 7" | 6'- 9" | 6'- 2" | 4'- 11" | 6'- 4" | 5'- 9" | 3'-11" |
| | L/600 | 11'- 6" | 10'- 5" | 9'- 1" | 7'- 11" | 7'- 3" | 6'- 4" | 7'- 3" | 6'- 7" | 5'- 9" | 6'- 8" | 6'- 1" | 5'- 4" | 6'- 4" | 5'- 9" | 5'- 0" | 6'- 0" | 5'- 5" | 4'- 9 " | 5'- 9" | 5'- 2" | 4'- 6" | 5'- 4" | 4'- 10" | 3'-11" |
| 212SW16 (250S162-54) | L/240 | 16'- 8" | 15'- 2" | 13'- 3" | 11'- 7" | 10'- 6" | 9'- 2" | 10'- 6" | 9'- 6" | 8'- 4" | 9'- 9" | 8'- 10" | 7'- 3" | 9'- 2" | 8'- 4" | 6'- 0" | 8'- 8" | 7'- 9" | 5'- 2" | 8'- 4" | 6'- 9" | 4'- 6" | 7'- 3" | 5'- 5" | 3'- 7" |
| | L/360 | 14'- 7" | 13'- 3" | 11'- 7" | 10'- 1" | 9'- 2" | 8'- 0" | 9'- 2" | 8'- 4" | 7'- 3" | 8'- 6" | 7'- 9" | 6'- 9" | 8'- 0" | 7'- 3" | 6'- 0" | 7'- 7" | 6'- 11" | 5'- 2" | 7'- 3" | 6'- 7" | 4'- 6" | 6'- 9" | 5'- 5" | 3'- 7" |
| | L/600 | 12'- 3" | 11'- 2" | 9'- 9" | 8'- 6" | 7'- 9" | 6'- 9" | 7'- 9" | 7'- 0" | 6'- 1" | 7'- 2" | 6'- 6" | 5'- 8" | 6'- 9" | 6'- 1" | 5'- 4" | 6'- 5" | 5'- 10" | 5'- 1 " | 6'- 1" | 5'- 7" | 4'- 6" | 5'- 8" | 5'- 2" | 3'- 7" |
| 212SW14 (250S162-68) | L/240 | 17'- 10" | 16'- 2" | 14'- 1" | 12'- 4" | 11'- 2" | 9'- 9" | 11'- 2" | 10'- 2" | 7'- 10" | 10'- 5" | 9'- 5" | 6'- 3" | 9'- 9" | 7'- 10" | 5'- 3" | 9'- 0" | 6'- 9" | 4'- 6" | 7'- 10" | 5'- 11" | 3'- 11" | 6'- 3" | 4'- 8" | 3'- 1" |
| | L/360 | 15'- 7" | 14'- 1" | 12'- 4" | 10'- 9" | 9'- 9" | 8'- 6" | 9'- 9" | 8'- 11" | 7'- 9" | 9'- 1" | 8'- 3" | 6'- 3" | 8'- 6" | 7'- 9" | 5'- 3" | 8'- 1" | 6'- 9" | 4'- 6" | 7'- 9" | 5'- 11" | 3'- 11" | 6'- 3" | 4'- 8" | 3'- 1" |
| | L/600 | 13'- 1" | 11'- 11" | 10'- 5" | 9'- 1" | 8'- 3" | 7'- 2" | 8'- 3" | 7'- 6" | 6'- 6" | 7'- 8" | 6'- 11" | 6'- 1" | 7'- 2" | 6'- 6" | 5'- 3" | 6'- 10" | 6'- 2" | 4'- 6" | 6'- 6" | 5'- 11" | 3'- 11" | 6'- 1" | 4'- 8" | 3'- 1" |
| **3-5/8" Members** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 358CW20 (362S137-33) | L/240 | 18'- 3" | 16'- 7" | 14'- 6" | 12'- 8" | 11'- 6" | 10'- 0" | 11'- 6" | 10'- 5" | 8'- 9" | 10'- 8" | 9'- 7" | 7'- 10" | 10'- 0" | 8'- 9" | 7'- 1" | 9'- 4" | 8'- 1" | 6'- 7" | 8'- 9" | 7'- 7" | 6'- 2" | 7'- 10" | 6'- 9" | 5'- 6" |
| | L/360 | 15'- 11" | 14'- 6" | 12'- 8" | 11'- 0" | 10'- 0" | 8'- 9" | 10'- 0" | 9'- 1" | 7'- 11" | 9'- 4" | 8'- 5" | 7'- 4" | 8'- 9" | 7'- 11" | 6'- 11" | 8'- 4" | 7'- 7" | 6'- 7" | 7'- 11" | 7'- 3" | 6'- 2" | 7'- 4" | 6'- 8" | 5'- 6" |
| | L/600 | 13'- 5" | 12'- 2" | 10'- 8" | 9'- 4" | 8'- 5" | 7'- 4" | 8'- 5" | 7'- 8" | 6'- 8" | 7'- 10" | 7'- 1" | 6'- 3" | 7'- 4" | 6'- 8" | 5'- 10" | 7'- 0" | 6'- 4" | 5'- 7" | 6'- 8" | 6'- 1" | 5'- 4" | 6'- 3" | 5'- 8" | 4'-11" |
| 358CW18 (362S137-43) | L/240 | 19'- 11" | 18'- 1" | 15'- 9" | 13'- 9" | 12'- 6" | 10'- 11" | 12'- 6" | 11'- 4" | 9'- 11" | 11'- 7" | 10'- 7" | 9'- 2" | 10'- 11" | 9'- 11" | 8'- 4" | 10'- 5" | 9'- 5" | 7'- 9" | 9'- 11" | 8'- 10" | 7'- 3" | 9'- 2" | 7'- 11" | 6'- 6" |
| | L/360 | 17'- 5" | 15'- 9" | 13'- 9" | 12'- 0" | 10'- 11" | 9'- 7" | 10'- 11" | 9'- 11" | 8'- 8" | 10'- 2" | 9'- 3" | 8'- 1" | 9'- 7" | 8'- 8" | 7'- 7" | 9'- 1" | 8'- 3" | 7'- 2" | 8'- 8" | 7'- 10" | 6'- 10" | 8'- 1" | 7'- 4" | 6'- 5" |
| | L/600 | 14'- 8" | 13'- 4" | 11'- 7" | 10'- 2" | 9'- 3" | 8'- 1" | 9'- 3" | 8'- 4" | 7'- 4" | 8'- 7" | 7'- 9" | 6'- 9" | 8'- 1" | 7'- 4" | 6'- 5" | 7'- 8" | 6'- 11 " | 6'- 1" | 7'- 4" | 6'- 8" | 5'- 9" | 6'- 9" | 6'- 2" | 5'- 4" |
| 358CW16 (362S137-54) | L/240 | 21'- 4" | 19'- 5" | 16'- 11" | 14'- 10" | 13'- 5" | 11'- 9" | 13'- 5" | 12'- 2" | 10'- 8" | 12'- 6" | 11'- 4" | 9'- 11" | 11'- 9" | 10'- 8" | 9'- 4" | 11'- 2" | 10'- 1" | 8'- 8" | 10'- 8" | 9'- 8" | 8'- 1" | 9'- 11" | 8'- 11" | 7'- 3" |
| | L/360 | 18'- 8" | 16'- 11" | 14'- 10" | 12'- 11" | 11'- 9" | 10'- 3" | 11'- 9" | 10'- 8" | 9'- 4" | 10'- 11" | 9'- 11" | 8'- 8" | 10'- 3" | 9'- 4" | 8'- 1" | 9'- 9" | 8'- 10" | 7'- 9" | 9'- 4" | 8'- 5" | 7'- 5" | 8'- 8" | 7'- 10" | 6'-10" |
| | L/600 | 15'- 9" | 14'- 3" | 12'- 6" | 10'- 11" | 9'- 11" | 8'- 8" | 9'- 11" | 9'- 0" | 7'- 10" | 9'- 2" | 8'- 4" | 7'- 3" | 8'- 8" | 7'- 10" | 6'- 10" | 8'- 2" | 7'- 5 " | 6'- 6" | 7'- 10" | 7'- 1" | 6'- 3" | 7'- 3" | 6'- 7" | 5'- 9" |
| 358CW14 (362S137-68) | L/240 | 22'- 10" | 20'- 9" | 18'- 1" | 15'- 10" | 14'- 4" | 12'- 7" | 14'- 4" | 13'- 1" | 11'- 5" | 13'- 4" | 12'- 1" | 10'- 7" | 12'- 7" | 11'- 5" | 9'- 11" | 11'- 11" | 10'- 10" | 9'- 5" | 11'- 5" | 10'- 4" | 9'- 0" | 10'- 7" | 9'- 7" | 8'- 5" |
| | L/360 | 19'- 11" | 18'- 1" | 15'- 10" | 13'- 10" | 12'- 7" | 10'- 11" | 12'- 7" | 11'- 5" | 9'- 11" | 11'- 8" | 10'- 7" | 9'- 3" | 10'- 11" | 9'- 11" | 8'- 8" | 10'- 5" | 9'- 5" | 8'- 3" | 9'- 11" | 9'- 0" | 7'- 11" | 9'- 3" | 8'- 5" | 7'- 4" |
| | L/600 | 16'- 10" | 15'- 3" | 13'- 4" | 11'- 8" | 10'- 7" | 9'- 3" | 10'- 7" | 9'- 7" | 8'- 5" | 9'- 10" | 8'- 11" | 7'- 9" | 9'- 3" | 8'- 5" | 7'- 4" | 8'- 9" | 8'- 0" | 6'- 11" | 8'- 5" | 7'- 7" | 6'- 8" | 7'- 9" | 7'- 1" | 6'- 2" |

*Notes:*

1. *Applications involving multiple spans, cantilevers, concentrated loads, etc. should be investigated separately.*
2. *Studs shall be braced against rotation by diaphragm rated sheathing board applied full height to each side of the wall. The installation of mechanical bridging, spaced 5'-0" on center, provides adequate rotational restraint for wall under construction before the installation of sheathing. Where the wall is not sheathed full height each side or sheathed one side only, continuous bridging spaced 5'-0" on center shall provide rotational support. Reductions in allowable bending capacity must be investigated separately. When sheathing is used to brace the studs, the products shall maintain their structural integrity during the course of construction and the service life of the wall. The attachment of sheathing should conform to the minimum requirements of industry & product specifications.*
3. *Stud ends shall be attached to track components at the top and bottom of the wall assembly. Exception: Where the stud terminates at a deflection track, fixed attachment to the stud should be avoided. The stud, however, should be restrained against rotation by installing mechanical bridging adjacent to the deflection track.*
4. *Tabulated heights consider no stress increase for short term loading. The allowable bending moment Ma, as defined on page 4 was used to develop limiting heights.*
5. *Deflections and stresses were calculated without regard to the composite contribution of facing materials.*
6. *Calculations were based on the use of the effective structural properties.*
7. *Contact Marino\Ware for limiting heights of framing components not shown in the tables.*
8. *Limiting height values for 16 gauge studs are based on steel with Fy(min) = 33 ksi.*
9. *Check end reactions for web crippling.*

# LIMITING HEIGHTS (FT)



## Limiting Height Tables

| Member | | Wind Load & Spacing | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M\W Type (SSMA) | Deflection | 5 PSF | | | 15 PSF | | | 20 PSF | | | 25 PSF | | | 30 PSF | | | 35 PSF | | | 40 PSF | | | 50 PSF | | |
| | | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. |
| **3-5/8" Members** | | | | | | | | | | | | | | | | | | | | | | | | | |
| 358SW20 (362S162-33) | L/240 | 19'- 2" | 17'- 5" | 15'- 2" | 13'- 3" | 12'- 1" | 10'- 6" | 12'- 1" | 10'- 11" | 9'- 4" | 11'- 2" | 10'- 2" | 8'- 4" | 10'- 6" | 9'- 4" | 7'- 8" | 10'- 0" | 8'- 8" | 7'- 1" | 9'- 4" | 8'- 1" | 6'- 7" | 8'- 4" | 7'- 3" | 5'-11" |
| | L/360 | 16'- 9" | 15'- 2" | 13'- 3" | 11'- 7" | 10'- 6" | 9'- 2" | 10'- 6" | 9'- 7" | 8'- 4" | 9'- 9" | 8'-10" | 7'- 9" | 9'- 2" | 8'- 4" | 7'- 3" | 8'- 9" | 7'- 11" | 6'- 11" | 8'- 4" | 7'- 7" | 6'- 7" | 7'- 9" | 7'- 0" | 5'-11" |
| | L/600 | 14'- 1" | 12'- 10" | 11'- 2" | 9'- 9" | 8'- 10" | 7'- 9" | 8'- 10" | 8'- 1" | 7'- 0" | 8'- 3" | 7'- 6" | 6'- 6" | 7'- 9" | 7'- 0" | 6'- 2" | 7'- 4" | 6'- 8" | 5'- 10" | 7'- 0" | 6'- 5" | 5'- 7" | 6'- 6" | 5'- 11" | 5'- 2" |
| 358SW18 (362S162-43) | L/240 | 20'- 11" | 19'- 0" | 16'- 7" | 14'- 6" | 13'- 2" | 11'- 6" | 13'- 2" | 11'- 11" | 10'- 5" | 12'- 2" | 11'- 1" | 9'- 8" | 11'- 6" | 10'- 5" | 9'- 0" | 10'- 11" | 9'- 11" | 8'- 4" | 10'- 5" | 9'- 6" | 7'- 10" | 9'- 8" | 8'- 6" | 7'- 0" |
| | L/360 | 18'- 3" | 16'- 7" | 14'- 6" | 12'- 8" | 11'- 6" | 10'- 0" | 11'- 6" | 10'- 5" | 9'- 1" | 10'- 8" | 9'- 8" | 8'- 5" | 10'- 0" | 9'- 1" | 7'- 11" | 9'- 6" | 8'- 8" | 7'- 7" | 9'- 1" | 8'- 3" | 7'- 3" | 8'- 5" | 7'- 8" | 6'- 8" |
| | L/600 | 15'- 5" | 14'- 0" | 12'- 2" | 10'- 8" | 9'- 8" | 8'- 5" | 9'- 8" | 8'- 9" | 7'- 8" | 9'- 0" | 8'- 2" | 7'- 1" | 8'- 5" | 7'- 8" | 6'- 8" | 8'- 0" | 7'- 3 " | 6'- 4" | 7'- 8" | 7'- 0" | 6'- 1" | 7'- 1" | 6'- 6" | 5'- 8" |
| 358SW16 (362S162-54) | L/240 | 22'- 5" | 20'- 4" | 17'- 9" | 15'- 6" | 14'- 1" | 12'- 4" | 14'- 1" | 12'- 10" | 11'- 2" | 13'- 1" | 11'- 11" | 10'- 5" | 12'- 4" | 11'- 2" | 9'- 9" | 11'- 8" | 10'- 8" | 9'- 3" | 11'- 2" | 10'- 2" | 8'- 9" | 10'- 5" | 9'- 5" | 7'-10" |
| | L/360 | 19'- 7" | 17'- 9" | 15'- 6" | 13'- 7" | 12'- 4" | 10'- 9" | 12'- 4" | 11'- 2" | 9'- 9" | 11'- 5" | 10'- 5" | 9'- 1" | 10'- 9" | 9'- 9" | 8'- 6" | 10'- 3" | 9'- 3" | 8'- 1" | 9'- 9" | 8'-10" | 7'- 9" | 9'- 1" | 8'- 3" | 7'- 2" |
| | L/600 | 16'- 6" | 15'- 0" | 13'- 1" | 11'- 5" | 10'- 5" | 9'- 1" | 10'- 5" | 9'- 5" | 8'- 3" | 9'- 8" | 8'- 9" | 7'- 8" | 9'- 1" | 8'- 3" | 7'- 2" | 8'- 7" | 7'- 10" | 6'- 10" | 8'- 3" | 7'- 6" | 6'- 6" | 7'- 8" | 6'- 11" | 6'- 1" |
| 358SW14 (362S162-68) | L/240 | 24'- 0" | 21'- 10" | 19'- 0" | 16'- 8" | 15'- 1" | 13'- 2" | 15'- 1" | 13'- 9" | 12'- 0" | 14'- 0" | 12'- 9" | 11'- 1" | 13'- 2" | 12'- 0" | 10'- 6" | 12 '- 6" | 11'- 5" | 9'- 11" | 12'- 0" | 10'- 11" | 9'- 6" | 11'- 1" | 10'- 1" | 8'-10" |
| | L/360 | 21'- 0" | 19'- 0" | 16'- 8" | 14'- 6" | 13'- 2" | 11'- 6" | 13'- 2" | 12'- 0" | 10'- 6" | 12'- 3" | 11'- 1" | 9'- 8" | 11'- 6" | 10'- 6" | 9'- 2" | 10'- 11" | 9'- 11" | 8'- 8" | 10'- 6" | 9'- 6" | 8'- 4" | 9'- 8" | 8'- 10" | 7'- 8" |
| | L/600 | 17'- 8" | 16'- 1" | 14'- 0" | 12'- 3" | 11'- 1" | 9'- 8" | 11'- 1" | 10'- 1" | 8'- 10" | 10'- 4" | 9'- 4" | 8'- 2" | 9'- 8" | 8'- 10" | 7'- 8" | 9'- 3" | 8'- 4" | 7'- 4" | 8'- 10" | 8'- 0" | 7'- 0" | 8'- 2" | 7'- 5" | 6'- 6" |
| 358SW12 (362S162-97) | L/240 | 26'- 6" | 24'- 1" | 21'- 0" | 18'- 4" | 16'- 8" | 14'- 7" | 16'- 8" | 15'- 2" | 13'- 3" | 15'- 6" | 14'- 1" | 12'- 3" | 14'- 7" | 13'- 3" | 11'- 7" | 13 '- 10" | 12'- 7" | 11'- 0" | 13'- 3" | 12'- 0" | 10'- 6" | 12'- 3" | 11'- 2" | 9'- 9" |
| | L/360 | 23'- 2" | 21'- 0" | 18'- 4" | 16'- 0" | 14'- 7" | 12'- 9" | 14'- 7" | 13'- 3" | 11'- 7" | 13'- 6" | 12'- 3" | 10'- 9" | 12'- 9" | 11'- 7" | 10'- 1" | 12 '- 1" | 11'- 0" | 9'- 7" | 11'- 7" | 10'- 6" | 9'- 2" | 10'- 9" | 9'- 9" | 8'- 6" |
| | L/600 | 19'- 6" | 17'- 9" | 15'- 6" | 13'- 6" | 12'- 3" | 10'- 9" | 12'- 3" | 11'- 2" | 9'- 9" | 11'- 5" | 10'- 4" | 9'- 0" | 10'- 9" | 9'- 9" | 8'- 6" | 10'- 2" | 9'- 3" | 8'- 1" | 9'- 9" | 8'-10" | 7'- 9" | 9'- 0" | 8'- 2" | 7'- 2" |
| 358SW10 (362S162-118) | L/240 | 28'- 1" | 25'- 6" | 22'- 3" | 19'- 5" | 17'- 8" | 15'- 5" | 17'- 8" | 16'- 1" | 14'- 0" | 16'- 5" | 14'- 11" | 13'- 0" | 15'- 5" | 14'- 0" | 12'- 3" | 14 '- 8" | 13'- 4" | 11'- 7" | 14'- 0" | 12'- 9" | 11'- 1" | 13'- 0" | 11'- 10" | 10'- 2" |
| | L/360 | 24'- 6" | 22'- 3" | 19'- 5" | 17'- 0" | 15'- 5" | 13'- 6" | 15'- 5" | 14'- 0" | 12'- 3" | 14'- 4" | 13'- 0" | 11'- 4" | 13'- 6" | 12'- 3" | 10'- 8" | 12 '- 10" | 11'- 7" | 10'- 2" | 12'- 3" | 11'- 1" | 9'- 8" | 11'- 4" | 10'- 4" | 9'- 0" |
| | L/600 | 20'- 8" | 18'- 9" | 16'- 5" | 14'- 4" | 13'- 0" | 11'- 4" | 13'- 0" | 11'- 10" | 10'- 4" | 12'- 1" | 11'- 0" | 9'- 7" | 11'- 4" | 10'- 4" | 9'- 0" | 10'- 9" | 9'- 10" | 8'- 7" | 10'- 4" | 9'- 4" | 8'- 2" | 9'- 7" | 8'- 8" | 7'- 7" |
| **4" Members** | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4CW20 (400S137-33) | L/240 | 19'- 8" | 17'- 10" | 15'- 7" | 13'- 8" | 12'- 5" | 10'- 8" | 12'- 5" | 11'- 3" | 9'- 2" | 11'- 6" | 10'- 1" | 8'- 3" | 10'- 8" | 9'- 2" | 7'- 6" | 9'- 10 " | 8'- 6" | 6'- 11" | 9'- 2" | 8'- 0" | 6'- 6" | 8'- 3" | 7'- 1" | 5'-10" |
| | L/360 | 17'- 2" | 15'- 7" | 13'- 8" | 11'- 11" | 10'- 10" | 9'- 5" | 10'- 10" | 9'- 10" | 8'- 7" | 10'- 0" | 9'- 1" | 7'- 11" | 9'- 5" | 8'- 7" | 7'- 6" | 9'- 0" | 8'- 2" | 6'- 11" | 8'- 7" | 7'- 9" | 6'- 6" | 7'- 11" | 7'- 1" | 5'-10" |
| | L/600 | 14'- 6" | 13'- 2" | 11'- 6" | 10'- 0" | 9'- 1" | 7'- 11" | 9'- 1" | 8'- 3" | 7'- 3" | 8'- 5" | 7'- 8" | 6'- 8" | 7'- 11" | 7'- 3" | 6'- 4" | 7'- 7" | 6'- 10 " | 6'- 0" | 7'- 3" | 6'- 7" | 5'- 9" | 6'- 8" | 6'- 1" | 5'- 4" |
| 4CW18 (400S137-43) | L/240 | 21'- 6" | 19'- 6" | 17'- 1" | 14'- 11" | 13'- 6" | 11'- 10" | 13'- 6" | 12'- 3" | 10'- 9" | 12'- 7" | 11'- 5" | 9'- 8" | 11'- 10" | 10'- 9" | 8'- 10" | 11'- 3" | 10'- 0" | 8'- 2" | 10'- 9" | 9'- 5" | 7'- 8" | 9'- 8" | 8'- 5" | 6'-10" |
| | L/360 | 18'- 9" | 17'- 1" | 14'- 11" | 13'- 0" | 11'- 10" | 10'- 4" | 11'- 10" | 10'- 9" | 9'- 4" | 10'- 11" | 9'- 11" | 8'- 8" | 10'- 4" | 9'- 4" | 8'- 2" | 9'- 9" | 8'- 11" | 7'- 9" | 9'- 4" | 8'- 6" | 7'- 5" | 8'- 8" | 7'- 11" | 6'-10" |
| | L/600 | 15'- 10" | 14'- 4" | 12'- 7" | 10'- 11" | 9'- 11" | 8'- 8" | 9'- 11" | 9'- 0" | 7'- 11" | 9'- 3" | 8'- 5" | 7'- 4" | 8'- 8" | 7'- 11" | 6'- 11" | 8'- 3" | 7'- 6 " | 6'- 6" | 7'- 11" | 7'- 2" | 6'- 3" | 7'- 4" | 6'- 8" | 5'-10" |
| 4CW16 (400S137-54) | L/240 | 23'- 1" | 21'- 0" | 18'- 4" | 16'- 0" | 14'- 6" | 12'- 8" | 14'- 6" | 13'- 2" | 11'- 6" | 13'- 6" | 12'- 3" | 10'- 8" | 12'- 8" | 11'- 6" | 9'- 11" | 12'- 1" | 10'- 11" | 9'- 3" | 11'- 6" | 10'- 6" | 8'- 7" | 10'- 8" | 9'- 5" | 7'- 8" |
| | L/360 | 20'- 2" | 18'- 4" | 16'- 0" | 14'- 0" | 12'- 8" | 11'- 1" | 12'- 8" | 11'- 6" | 10'- 1" | 11'- 9" | 10'- 8" | 9'- 4" | 11'- 1" | 10'- 1" | 8'- 9" | 10'- 6" | 9'- 7" | 8'- 4" | 10'- 1" | 9'- 2" | 8'- 0" | 9'- 4" | 8'- 6" | 7'- 5" |
| | L/600 | 17'- 0" | 15'- 5" | 13'- 6" | 11'- 9" | 10'- 8" | 9'- 4" | 10'- 8" | 9'- 9" | 8'- 6" | 9'- 11" | 9'- 0" | 7'- 10" | 9'- 4" | 8'- 6" | 7'- 5" | 8'- 10" | 8'- 1" | 7'- 0" | 8'- 6" | 7'- 8" | 6'- 9" | 7'- 10" | 7'- 2" | 6'- 3" |
| 4CW14 (400S137-68) | L/240 | 24'- 9" | 22'- 6" | 19'- 7" | 17'- 2" | 15'- 7" | 13'- 7" | 15'- 7" | 14'- 2" | 12'- 4" | 14'- 5" | 13'- 1" | 11'- 5" | 13'- 7" | 12'- 4" | 10'- 9" | 12 '- 11" | 11'- 9" | 10'- 3" | 12'- 4" | 11'- 3" | 9'- 8" | 11'- 5" | 10'- 5" | 8'- 8" |
| | L/360 | 21'- 7" | 19'- 7" | 17'- 2" | 15'- 0" | 13'- 7" | 11'- 10" | 13'- 7" | 12'- 4" | 10'- 9" | 12'- 7" | 11'- 5" | 10'- 0" | 11'- 10" | 10'- 9" | 9'- 5" | 11'- 3" | 10'- 3" | 8'- 11" | 10'- 9" | 9'- 9" | 8'- 7" | 10'- 0" | 9'- 1" | 7'-11" |
| | L/600 | 18'- 3" | 16'- 6" | 14'- 5" | 12'- 7" | 11'- 5" | 10'- 0" | 11'- 5" | 10'- 5" | 9'- 1" | 10'- 8" | 9'- 8" | 8'- 5" | 10'- 0" | 9'- 1" | 7'- 11" | 9'- 6" | 8'- 8" | 7'- 6" | 9'- 1" | 8'- 3" | 7'- 2" | 8'- 5" | 7'- 8" | 6'- 8" |
| 4SW20 (400S162-33) | L/240 | 20'- 8" | 18'- 9" | 16'- 4" | 14'- 3" | 13'- 0" | 11'- 4" | 13'- 0" | 11'- 9" | 9'- 11" | 12'- 1" | 10'- 10" | 8'- 10" | 11'- 4" | 9'- 11" | 8'- 1" | 10'- 7" | 9'- 2" | 7'- 6" | 9'- 11" | 8'- 7" | 7'- 0" | 8'- 10" | 7'- 8" | 6'- 3" |
| | L/360 | 18'- 0" | 16'- 4" | 14'- 3" | 12'- 6" | 11'- 4" | 9'- 11" | 11'- 4" | 10'- 4" | 9'- 0" | 10'- 6" | 9'- 7" | 8'- 4" | 9'- 11" | 9'- 0" | 7'- 10" | 9'- 5" | 8'- 6" | 7'- 5" | 9'- 0" | 8'- 2" | 7'- 0" | 8'- 4" | 7'- 7" | 6'- 3" |
| | L/600 | 15'- 2" | 13'- 10" | 12'- 1" | 10'- 6" | 9'- 7" | 8'- 4" | 9'- 7" | 8'- 8" | 7'- 7" | 8'- 10" | 8'- 1" | 7'- 0" | 8'- 4" | 7'- 7" | 6'- 7" | 7'- 11" | 7'- 2 " | 6'- 3" | 7'- 7" | 6'- 11" | 6'- 0" | 7'- 0" | 6'- 5" | 5'- 7" |
| 4SW18 (400S162-43) | L/240 | 22'- 6" | 20'- 6" | 17'- 10" | 15'- 7" | 14'- 2" | 12'- 5" | 14'- 2" | 12'- 10" | 11'- 3" | 13'- 2" | 11'- 11" | 10'- 5" | 12'- 5" | 11'- 3" | 9'- 6" | 11'- 9" | 10'- 8" | 8'- 10" | 11'- 3" | 10'- 1" | 8'- 3" | 10'- 5" | 9'- 1" | 7'- 5" |
| | L/360 | 19'- 8" | 17'- 10" | 15'- 7" | 13'- 8" | 12'- 5" | 10'- 10" | 12'- 5" | 11'- 3" | 9'- 10" | 11'- 6" | 10'- 5" | 9'- 1" | 10'- 10" | 9'- 10" | 8'- 7" | 10'- 3" | 9'- 4" | 8'- 2" | 9'- 10" | 8'- 11" | 7'- 9" | 9'- 1" | 8'- 3" | 7'- 3" |
| | L/600 | 16'- 7" | 15'- 1" | 13'- 2" | 11'- 6" | 10'- 5" | 9'- 1" | 10'- 5" | 9'- 6" | 8'- 3" | 9'- 8" | 8'-10" | 7'- 8" | 9'- 1" | 8'- 3" | 7'- 3" | 8'- 8" | 7'- 10" | 6'- 10" | 8'- 3" | 7'- 6" | 6'- 7" | 7'- 8" | 7'- 0" | 6'- 1" |
| 4SW16 (400S162-54) | L/240 | 24'- 3" | 22'- 0" | 19'- 2" | 16'- 9" | 15'- 3" | 13'- 4" | 15'- 3" | 13'-10" | 12'- 1" | 14'- 2" | 12'-10" | 11'- 3" | 13'- 4" | 12'- 1" | 10'- 7" | 12 '- 8" | 11'- 6" | 9'- 11" | 12'- 1" | 11'- 0" | 9'- 3" | 11'- 3" | 10'- 2" | 8'- 4" |
| | L/360 | 21'- 2" | 19'- 2" | 16'- 9" | 14'- 8" | 13'- 4" | 11'- 7" | 13'- 4" | 12'- 1" | 10'- 7" | 12'- 4" | 11'- 3" | 9'-10" | 11'- 7" | 10'- 7" | 9'- 3" | 11'- 0" | 10'- 0" | 8'- 9" | 10'- 7" | 9'- 7" | 8'- 4" | 9'-10" | 8'-11" | 7'- 9" |
| | L/600 | 17'- 10" | 16'- 2" | 14'- 2" | 12'- 4" | 11'- 3" | 9'- 10" | 11'- 3" | 10'- 2" | 8'-11" | 10'- 5" | 9'- 5" | 8'- 3" | 9'-10" | 8'-11" | 7'- 9" | 9'- 4" | 8'- 5" | 7'- 4" | 8'-11" | 8'- 1" | 7'- 1" | 8'- 3" | 7'- 6" | 6'- 6" |
| 4SW14 (400S162-68) | L/240 | 25'- 11" | 23'- 7" | 20'- 7" | 18'- 0" | 16'- 4" | 14'- 3" | 16'- 4" | 14'-10" | 12'-11" | 15'- 2" | 13'- 9" | 12'- 0" | 14'- 3" | 12'-11" | 11'- 4" | 13 '- 7" | 12'- 4" | 10'- 9" | 12'-11" | 11'- 9" | 10'- 3" | 12'- 0" | 10'-11" | 9'- 3" |
| | L/360 | 22'- 8" | 20'- 7" | 18'- 0" | 15'- 8" | 14'- 3" | 12'- 5" | 14'- 3" | 12'-11" | 11'- 4" | 13'- 3" | 12'- 0" | 10'- 6" | 12'- 5" | 11'- 4" | 9'-11" | 11'-10" | 10'- 9" | 9'- 5" | 11'- 4" | 10'- 3" | 9'- 0" | 10'- 6" | 9'- 6" | 8'- 4" |
| | L/600 | 19'- 1" | 17'- 4" | 15'- 2" | 13'- 3" | 12'- 0" | 10'- 6" | 12'- 0" | 10'-11" | 9'- 6" | 11'- 2" | 10'- 2" | 8'-10" | 10'- 6" | 9'- 6" | 8'- 4" | 10'- 0" | 9'- 1" | 7'-11" | 9'- 6" | 8'- 8" | 7'- 7" | 8'-10" | 8'- 0" | 7'- 0" |
| 4SW12 (400S162-97) | L/240 | 28'- 8" | 26'- 1" | 22'- 9" | 19'-11" | 18'- 1" | 15'- 9" | 18'- 1" | 16'- 5" | 14'- 4" | 16'- 9" | 15'- 3" | 13'- 4" | 15'- 9" | 14'- 4" | 12'- 6" | 15 '- 0" | 13'- 7" | 11'-11" | 14'- 4" | 13'- 0" | 11'- 4" | 13'- 4" | 12'- 1" | 10'- 7" |
| | L/360 | 25'- 1" | 22'- 9" | 19'-11" | 17'- 4" | 15'- 9" | 13'- 9" | 15'- 9" | 14'- 4" | 12'- 6" | 14'- 8" | 13'- 4" | 11'- 7" | 13'- 9" | 12'- 6" | 10'-11" | 13 '- 1" | 11'-11" | 10'- 5" | 12'- 6" | 11'- 4" | 9'-11" | 11'- 7" | 10'- 7" | 9'- 2" |
| | L/600 | 21'- 2" | 19'- 2" | 16'- 9" | 14'- 8" | 13'- 4" | 11'- 7" | 13'- 4" | 12'- 1" | 10'- 7" | 12'- 4" | 11'- 3" | 9'- 9" | 11'- 7" | 10'- 7" | 9'- 2" | 11'- 0" | 10'- 0" | 8'- 9" | 10'- 7" | 9'- 7" | 8'- 4" | 9'- 9" | 8'-11" | 7'- 9" |
| 4SW10 (400S162-118) | L/240 | 30'- 5" | 27'- 8" | 24'- 2" | 21'- 1" | 19'- 2" | 16'- 9" | 19'- 2" | 17'- 5" | 15'- 2" | 17'- 9" | 16'- 2" | 14'- 1" | 16'- 9" | 15'- 2" | 13'- 3" | 15 '- 11" | 14'- 5" | 12'- 7" | 15'- 2" | 13'-10" | 12'- 1" | 14'- 1" | 12'-10" | 11'- 2" |
| | L/360 | 26'- 7" | 24'- 2" | 21'- 1" | 18'- 5" | 16'- 9" | 14'- 7" | 16'- 9" | 15'- 2" | 13'- 3" | 15'- 6" | 14'- 1" | 12'- 4" | 14'- 7" | 13'- 3" | 11'- 7" | 13 '-10" | 12'- 7" | 11'- 0" | 13'- 3" | 12'- 1" | 10'- 6" | 12'- 4" | 11'- 2" | 9'- 9" |
| | L/600 | 22'- 5" | 20'- 4" | 17'- 9" | 15'- 6" | 14'- 1" | 12'- 4" | 14'- 1" | 12'-10" | 11'- 2" | 13'- 1" | 11'-11" | 10'- 5" | 12'- 4" | 11'- 2" | 9'- 9" | 11'- 8" | 10'- 7" | 9'- 3" | 11'- 2" | 10'- 2" | 8'-10" | 10'- 5" | 9'- 5" | 8'- 3" |
| **6" Members** | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6CW20 (600S137-33) | L/240 | 27'- 5" | 24'- 11" | 21'- 9" | 19'- 0" | 17'- 3" | 15'- 0" | 17'- 3" | 15'- 8" | 12'-11" | 16'- 0" | 14'- 2" | 11'- 7" | 15'- 0" | 12'-11" | 10'- 7" | 13 '-10" | 12'- 0" | 9'- 9" | 12'-11" | 11'- 3" | 9'- 2" | 11'- 7" | 10'- 0" | 8'- 2" |
| | L/360 | 24'- 0" | 21'- 9" | 19'- 0" | 16'- 7" | 15'- 1" | 13'- 2" | 15'- 1" | 13'- 8" | 12'- 0" | 14'- 0" | 12'- 9" | 11'- 1" | 13'- 2" | 12'- 0" | 10'- 5" | 12 '- 6" | 11'- 4" | 9'- 9" | 12'- 0" | 10'-10" | 9'- 2" | 11'- 1" | 10'- 0" | 8'- 2" |
| | L/600 | 20'- 2" | 18'- 4" | 16'- 0" | 14'- 0" | 12'- 9" | 11'- 1" | 12'- 9" | 11'- 7" | 10'- 1" | 11'-10" | 10'- 9" | 9'- 4" | 11'- 1" | 10'- 1" | 8'-10" | 10'- 6" | 9'- 7" | 8'- 4" | 10'- 1" | 9'- 2" | 8'- 0" | 9'- 4" | 8'- 6" | 7'- 5" |
| 6CW18 (600S137-43) | L/240 | 29'- 10" | 27'- 2" | 23'- 8" | 20'- 8" | 18'-10" | 16'- 5" | 18'-10" | 17'- 1" | 14'-11" | 17'- 5" | 15'-10" | 13'-10" | 16'- 5" | 14'-11" | 12'- 9" | 15 '- 7" | 14'- 2" | 11'-10" | 14'-11" | 13'- 7" | 11'- 1" | 13'-10" | 12'- 1" | 9'-11" |
| | L/360 | 26'- 1" | 23'- 8" | 20'- 8" | 18'- 1" | 16'- 5" | 14'- 4" | 16'- 5" | 14'-11" | 13'- 0" | 15'- 3" | 13'-10" | 12'- 1" | 14'- 4" | 13'- 0" | 11'- 4" | 13 '- 7" | 12'- 4" | 10'-10" | 13'- 0" | 11'-10" | 10'- 4" | 12'- 1" | 11'- 0" | 9'- 7" |
| | L/600 | 22'- 0" | 20'- 0" | 17'- 5" | 15'- 3" | 13'-10" | 12'- 1" | 13'-10" | 12'- 7" | 11'- 0" | 12'-10" | 11'- 8" | 10'- 2" | 12'- 1" | 11'- 0" | 9'- 7" | 11'- 6" | 10'- 5" | 9'- 1" | 11'- 0" | 10'- 0" | 8'- 8" | 10'- 2" | 9'- 3" | 8'- 1" |
| 6CW16 (600S137-54) | L/240 | 32'- 0" | 29'- 1" | 25'- 5" | 22'- 2" | 20'- 2" | 17'- 7" | 20'- 2" | 18'- 4" | 16'- 0" | 18'- 9" | 17'- 0" | 14'-10" | 17'- 7" | 16'- 0" | 14'- 0" | 16 '- 9" | 15'- 2" | 13'- 3" | 16'- 0" | 14'- 6" | 12'- 6" | 14'-10" | 13'- 6" | 11'- 2" |
| | L/360 | 28'- 0" | 25'- 5" | 22'- 2" | 19'- 5" | 17'- 7" | 15'- 5" | 17'- 7" | 16'- 0" | 14'- 0" | 16'- 4" | 14'-10" | 13'- 0" | 15'- 5" | 14'- 0" | 12'- 2" | 14 '- 7" | 13'- 3" | 11'- 7" | 14'- 0" | 12'- 8" | 11'- 1" | 13'- 0" | 11'- 9" | 10'- 3" |
| | L/600 | 23'- 7" | 21'- 5" | 18'- 9" | 16'- 4" | 14'-10" | 13'- 0" | 14'-10" | 13'- 6" | 11'- 9" | 13'- 9" | 12'- 6" | 10'-11" | 13'- 0" | 11'- 9" | 10'- 3" | 12 '- 4" | 11'- 2" | 9'- 9" | 11'- 9" | 10'- 8" | 9'- 4" | 10'-11" | 9'-11" | 8'- 8" |
| 6CW14 (600S137-68) | L/240 | 34'- 4" | 31'- 2" | 27'- 3" | 23'- 9" | 21'- 7" | 18'-10" | 21'- 7" | 19'- 8" | 17'- 2" | 20'- 1" | 18'- 3" | 15'-11" | 18'-10" | 17'- 2" | 15'- 0" | 17 '- 11" | 16'- 3" | 14'- 3" | 17'- 2" | 15'- 7" | 13'- 7" | 15'-11" | 14'- 5" | 12'- 7" |
| | L/360 | 30'- 0" | 27'- 3" | 23'- 9" | 20'- 9" | 18'-10" | 16'- 6" | 18'-10" | 17'- 2" | 15'- 0" | 17'- 6" | 15'-11" | 13'-11" | 16'- 6" | 15'- 0" | 13'- 1" | 15 '- 8" | 14'- 3" | 12'- 5" | 15'- 0" | 13'- 7" | 11'-10" | 13'-11" | 12'- 7" | 11'- 0" |
| | L/600 | 25'- 3" | 23'- 0" | 20'- 1" | 17'- 6" | 15'-11" | 13'-11" | 15'-11" | 14'- 5" | 12'- 7" | 14'- 9" | 13'- 5" | 11'- 9" | 13'-11" | 12'- 7" | 11'- 0" | 13 '- 2" | 12'- 0" | 10'- 6" | 12'- 7" | 11'- 6" | 10'- 0" | 11'- 9" | 10'- 8" | 9'- 3" |

See notes on page 8

# LIMITING HEIGHTS (FT)

MARINO WARE®

## Limiting Height Tables

| Member | | Wind Load & Spacing | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M\W Type (SSMA) | Deflection | 5 PSF | | | 15 PSF | | | 20 PSF | | | 25 PSF | | | 30 PSF | | | 35 PSF | | | 40 PSF | | | 50 PSF | | |
| | | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. |
| **6" Members** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6SW20 (600S162-33) | L/240 | 28'- 7" | 26'- 0" | 22'- 8" | 19'- 10" | 18'- 0" | 15'- 9" | 18'- 0" | 16'- 4" | 13'- 9" | 16'- 9" | 15'- 1" | 12'- 3" | 15'- 9" | 13'- 9" | 11'- 3" | 14'- 8" | 12'- 9" | 10'- 5" | 13'- 9" | 11'- 11" | 9'- 8" | 12'- 3" | 10'- 8" | 8'- 8" |
| | L/360 | 25'- 0" | 22'- 8" | 19'- 10" | 17'- 4" | 15'- 9" | 13'- 9" | 15'- 9" | 14'- 3" | 12'- 6" | 14'- 7" | 13'- 3" | 11'- 7" | 13'- 9" | 12'- 6" | 10'- 11" | 13'- 0" | 11'- 10" | 10'- 0" | 12'- 6" | 11'- 4" | 9'- 8" | 11'- 7" | 10'- 6" | 8'- 8" |
| | L/600 | 21'- 1" | 19'- 2" | 16'- 9" | 14'- 7" | 13'- 3" | 11'- 7" | 13'- 3" | 12'- 0" | 10'- 6" | 12'- 4" | 11'- 2" | 9'- 9" | 11'- 7" | 10'- 6" | 9'- 2" | 11'- 0" | 10'- 0" | 8'- 9" | 10'- 6" | 9'- 7" | 8'- 4" | 9'- 9" | 8'- 10" | 7'- 9" |
| 6SW18 (600S162-43) | L/240 | 31'- 2" | 28'- 4" | 24'- 9" | 21'- 7" | 19'- 7" | 17'- 2" | 19'- 7" | 17'- 10" | 15'- 7" | 18'- 2" | 16'- 6" | 14'- 5" | 17'- 2" | 15'- 7" | 13'- 7" | 16'- 3" | 14'- 9" | 12'- 7" | 15'- 7" | 14'- 2" | 11'- 9" | 14'- 5" | 12'- 10" | 10'- 6" |
| | L/360 | 27'- 3" | 24'- 9" | 21'- 7" | 18'- 10" | 17'- 2" | 14'- 11" | 17'- 2" | 15'- 7" | 13'- 7" | 15'- 11" | 14'- 5" | 12'- 7" | 14'- 11" | 13'- 7" | 11'- 10" | 14'- 2" | 12'- 11" | 11'- 3" | 13'- 7" | 12'- 4" | 10'- 9" | 12'- 7" | 11'- 5" | 10'- 0" |
| | L/600 | 22'- 11" | 20'- 10" | 18'- 2" | 15'- 11" | 14'- 5" | 12'- 7" | 14'- 5" | 13'- 1" | 11'- 5" | 13'- 5" | 12'- 2" | 10'- 8" | 12'- 7" | 11'- 5" | 10'- 0" | 12'- 0" | 10'- 11" | 9'- 6" | 11'- 5" | 10'- 5" | 9'- 1" | 10'- 8" | 9'- 8" | 8'- 5" |
| 6SW16 (600S162-54) | L/240 | 33'- 5" | 30'- 4" | 26'- 6" | 23'- 2" | 21'- 1" | 18'- 5" | 21'- 1" | 19'- 1" | 16'- 8" | 19'- 6" | 17'- 9" | 15'- 6" | 18'- 5" | 16'- 8" | 14'- 7" | 17'- 5" | 15'- 10" | 13'- 10" | 16'- 8" | 15'- 2" | 13'- 3" | 15'- 6" | 14'- 1" | 11'-10" |
| | L/360 | 29'- 2" | 26'- 6" | 23'- 2" | 20'- 3" | 18'- 5" | 16'- 1" | 18'- 5" | 16'- 8" | 14'- 7" | 17'- 1" | 15'- 6" | 13'- 6" | 16'- 1" | 14'- 7" | 12'- 9" | 15'- 3" | 13'- 10" | 12'- 1" | 14'- 7" | 13'- 3" | 11'- 7" | 13'- 6" | 12'- 3" | 10'- 9" |
| | L/600 | 24'- 7" | 22'- 4" | 19'- 6" | 17'- 1" | 15'- 6" | 13'- 6" | 15'- 6" | 14'- 1" | 12'- 3" | 14'- 5" | 13'- 1" | 11'- 5" | 13'- 6" | 12'- 3" | 10'- 9" | 12'- 10" | 11'- 8" | 10'- 2" | 12'- 3" | 11'- 2" | 9'- 9" | 11'- 5" | 10'- 4" | 9'- 1" |
| 6SW14 (600S162-68) | L/240 | 35'- 10" | 32'- 7" | 28'- 5" | 24'- 10" | 22'- 7" | 19'- 8" | 22'- 7" | 20'- 6" | 17'- 11" | 20'- 11" | 19'- 0" | 16'- 7" | 19'- 8" | 17'- 11" | 15'- 8" | 18'- 9" | 17'- 0" | 14'- 10" | 17'- 11" | 16'- 3" | 14'- 2" | 16'- 7" | 15'- 1" | 13'- 2" |
| | L/360 | 31'- 4" | 28'- 5" | 24'- 10" | 21'- 8" | 19'- 8" | 17'- 3" | 19'- 8" | 17'- 11" | 15'- 8" | 18'- 3" | 16'- 7" | 14'- 6" | 17'- 3" | 15'- 8" | 13'- 8" | 16'- 4" | 14'- 10" | 13'- 0" | 15'- 8" | 14'- 2" | 12'- 5" | 14'- 6" | 13'- 2" | 11'- 6" |
| | L/600 | 26'- 5" | 24'- 0" | 20'- 11" | 18'- 3" | 16'- 7" | 14'- 6" | 16'- 7" | 15'- 1" | 13'- 2" | 15'- 5" | 14'- 0" | 12'- 3" | 14'- 6" | 13'- 2" | 11'- 6" | 13'- 9" | 12'- 6" | 10'- 11" | 13'- 2" | 12'- 0" | 10'- 5" | 12'- 3" | 11'- 1" | 9'- 8" |
| 6SW12 (600S162-97) | L/240 | 39'- 9" | 36'- 1" | 31'- 6" | 27'- 6" | 25'- 0" | 21'- 10" | 25'- 0" | 22'- 9" | 19'- 10" | 23'- 3" | 21'- 1" | 18'- 5" | 21'- 10" | 19'- 10" | 17'- 4" | 20'- 9" | 18'- 10" | 16'- 6" | 19'- 10" | 18'- 0" | 15'- 9" | 18'- 5" | 16'- 9" | 14'- 7" |
| | L/360 | 34'- 8" | 31'- 6" | 27'- 6" | 24'- 1" | 21'- 10" | 19'- 1" | 21'- 10" | 19'- 10" | 17'- 4" | 20'- 3" | 18'- 5" | 16'- 1" | 19'- 1" | 17'- 4" | 15'- 2" | 18'- 1" | 16'- 6" | 14'- 4" | 17'- 4" | 15'- 9" | 13'- 9" | 16'- 1" | 14'- 7" | 12'- 9" |
| | L/600 | 29'- 3" | 26'- 7" | 23'- 3" | 20'- 3" | 18'- 5" | 16'- 1" | 18'- 5" | 16'- 9" | 14'- 7" | 17'- 1" | 15'- 6" | 13'- 7" | 16'- 1" | 14'- 7" | 12'- 9" | 15'- 3" | 13'- 11" | 12'- 1" | 14'- 7" | 13'- 3" | 11'- 7" | 13'- 7" | 12'- 4" | 10'- 9" |
| 6SW10 (600S162-118) | L/240 | 42'- 3" | 38'- 4" | 33'- 6" | 29'- 3" | 26'- 7" | 23'- 3" | 26'- 7" | 24'- 2" | 21'- 1" | 24'- 8" | 22'- 5" | 19'- 7" | 23'- 3" | 21'- 1" | 18'- 5" | 22'- 1" | 20'- 0" | 17'- 6" | 21'- 1" | 19'- 2" | 16'- 9" | 19'- 7" | 17'- 9" | 15'- 6" |
| | L/360 | 36'- 10" | 33'- 6" | 29'- 3" | 25'- 7" | 23'- 3" | 20'- 3" | 23'- 3" | 21'- 1" | 18'- 5" | 21'- 7" | 19'- 7" | 17'- 1" | 20'- 3" | 18'- 5" | 16'- 1" | 19'- 3" | 17'- 6" | 15'- 3" | 18'- 5" | 16'- 9" | 14'- 7" | 17'- 1" | 15'- 6" | 13'- 7" |
| | L/600 | 31'- 1" | 28'- 3" | 24'- 8" | 21'- 7" | 19'- 7" | 17'- 1" | 19'- 7" | 17'- 9" | 15'- 6" | 18'- 2" | 16'- 6" | 14'- 5" | 17'- 1" | 15'- 6" | 13'- 7" | 16'- 3" | 14'- 9" | 12'- 11" | 15'- 6" | 14'- 1" | 12'- 4" | 14'- 5" | 13'- 1" | 11'- 5" |
| **8" Members** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8CW20* (800S137-33) | L/240 | 34'- 8" | 31'- 6" | 27'- 6" | 24'- 1" | 20'- 11" | 17'- 1" | 20'- 11" | 18'- 2" | 14'- 10" | 18'- 9" | 16'- 2" | 13'- 3" | 17'- 1" | 14'- 10" | 12'- 1" | 15'- 10" | 13'- 8" | 13'- 6" | 14'- 10" | 12'- 10" | 11'- 10" | 13'- 3" | 14'- 2" | 9'- 5" |
| | L/360 | 30'- 4" | 27'- 6" | 24'- 1" | 21'- 0" | 19'- 1" | 16'- 8" | 19'- 1" | 17'- 4" | 14'- 10" | 17'- 8" | 16'- 1" | 13'- 3" | 16'- 8" | 14'- 10" | 12'- 1" | 15'- 10" | 13'- 8" | 11'- 2" | 14'- 10" | 12'- 10" | 11'- 10" | 13'- 3" | 11'- 5" | 9'- 5" |
| | L/600 | 25'- 7" | 23'- 3" | 20'- 3" | 17'- 8" | 16'- 1" | 14'- 1" | 16'- 1" | 14'- 7" | 12'- 9" | 14'- 11" | 13'- 7" | 11'- 10" | 14'- 1" | 12'- 9" | 11'- 2" | 13'- 4" | 12'- 1" | 10'- 7" | 12'- 9" | 11'- 7" | 10'- 1" | 11'- 10" | 10'- 9" | 9'- 4" |
| 8CW18 (800S137-43) | L/240 | 37'- 10" | 34'- 4" | 30'- 0" | 26'- 2" | 23'- 10" | 20'- 9" | 23'- 10" | 21'- 7" | 18'- 5" | 22'- 1" | 20'- 1" | 16'- 6" | 20'- 9" | 18'- 5" | 15'- 0" | 19'- 8" | 17'- 0" | 13'- 11" | 18'- 5" | 15'- 11" | 13'- 0" | 16'- 6" | 14'- 3" | 11'- 8" |
| | L/360 | 33'- 0" | 30'- 0" | 26'- 2" | 22'- 11" | 20'- 9" | 18'- 2" | 20'- 9" | 18'- 11" | 16'- 6" | 19'- 3" | 17'- 6" | 15'- 4" | 18'- 2" | 16'- 6" | 14'- 5" | 17'- 3" | 15'- 8" | 13'- 8" | 16'- 6" | 15'- 0" | 13'- 0" | 15'- 4" | 13'- 11" | 11'- 8" |
| | L/600 | 27'- 10" | 25'- 3" | 22'- 1" | 19'- 3" | 17'- 6" | 15'- 4" | 17'- 6" | 15'- 11" | 13'- 11" | 16'- 3" | 14'- 9" | 12'- 11" | 15'- 4" | 13'- 11" | 12'- 2" | 14'- 6" | 13'- 2" | 11'- 6" | 13'- 11" | 12'- 7" | 11'- 0" | 12'- 11" | 11'- 9" | 10'- 3" |
| 8CW16 (800S137-54) | L/240 | 40'- 7" | 36'- 10" | 32'- 2" | 28'- 1" | 25'- 7" | 22'- 4" | 25'- 7" | 23'- 2" | 20'- 3" | 23'- 9" | 21'- 6" | 18'- 10" | 22'- 4" | 20'- 3" | 17'- 8" | 21'- 2" | 19'- 3" | 16'- 7" | 20'- 3" | 18'- 5" | 15'- 6" | 18'- 10" | 16'- 11" | 13'-10" |
| | L/360 | 35'- 5" | 32'- 2" | 28'- 1" | 24'- 7" | 22'- 4" | 19'- 6" | 22'- 4" | 20'- 3" | 17'- 8" | 20'- 8" | 18'- 10" | 16'- 5" | 19'- 6" | 17'- 8" | 15'- 5" | 18'- 6" | 16'- 10" | 14'- 8" | 17'- 8" | 16'- 1" | 14'- 0" | 16'- 5" | 14'- 11" | 13'- 0" |
| | L/600 | 29'- 11" | 27'- 2" | 23'- 9" | 20'- 8" | 18'- 10" | 16'- 5" | 18'- 10" | 17'- 1" | 14'- 11" | 17'- 5" | 15'- 10" | 13'- 10" | 16'- 5" | 14'- 11" | 13'- 0" | 15'- 7" | 14'- 2" | 12'- 4" | 14'- 11" | 13'- 7" | 11'- 10" | 13'- 10" | 12'- 7" | 11'- 0" |
| 8CW14 (800S137-68) | L/240 | 43'- 6" | 39'- 6" | 34'- 6" | 30'- 2" | 27'- 5" | 23'- 11" | 27'- 5" | 24'- 11" | 21'- 9" | 25'- 5" | 23'- 1" | 20'- 2" | 23'- 11" | 21'- 9" | 19'- 0" | 22'- 9" | 20'- 8" | 18'- 0" | 21'- 9" | 19'- 9" | 17'- 3" | 20'- 2" | 18'- 4" | 15'- 7" |
| | L/360 | 38'- 0" | 34'- 6" | 30'- 2" | 26'- 4" | 23'- 11" | 20'- 11" | 23'- 11" | 21'- 9" | 19'- 0" | 22'- 3" | 20'- 2" | 17'- 7" | 20'- 11" | 19'- 0" | 16'- 7" | 19'- 10" | 18'- 0" | 15'- 9" | 19'- 0" | 17'- 3" | 15'- 1" | 17'- 7" | 16'- 0" | 14'- 0" |
| | L/600 | 32'- 1" | 29'- 1" | 25'- 5" | 22'- 3" | 20'- 2" | 17'- 7" | 20'- 2" | 18'- 4" | 16'- 0" | 18'- 9" | 17'- 0" | 14'- 10" | 17'- 7" | 16'- 0" | 14'- 0" | 16'- 9" | 15'- 2" | 13'- 3" | 16'- 0" | 14'- 6" | 12'- 8" | 14'- 10" | 13'- 6" | 11'- 9" |
| 8SW20* (800S162-33) | L/240 | 36'- 0" | 32'- 9" | 28'- 7" | 25'- 0" | 22'- 4" | 18'- 2" | 22'- 4" | 19'- 4" | 15'- 9" | 19'- 11" | 17'- 3" | 14'- 1" | 18'- 2" | 15'- 9" | 12'- 10" | 16'- 10" | 14'- 7" | 13'- 6" | 15'- 9" | 13'- 8" | 11'- 10" | 14'- 1" | 14'- 2" | 9'- 5" |
| | L/360 | 31'- 6" | 28'- 7" | 25'- 0" | 21'- 10" | 19'- 10" | 17'- 4" | 19'- 10" | 18'- 0" | 15'- 9" | 18'- 5" | 16'- 8" | 14'- 1" | 17'- 4" | 15'- 9" | 12'- 10" | 16'- 5" | 14'- 7" | 11'- 11" | 15'- 9" | 13'- 8" | 11'- 10" | 14'- 1" | 12'- 2" | 9'- 5" |
| | L/600 | 26'- 6" | 24'- 1" | 21'- 1" | 18'- 5" | 16'- 8" | 14'- 7" | 16'- 8" | 15'- 2" | 13'- 3" | 15'- 6" | 14'- 1" | 12'- 4" | 14'- 7" | 13'- 3" | 11'- 7" | 13'- 10" | 12'- 7" | 11'- 0" | 13'- 3" | 12'- 0" | 10'- 6" | 12'- 4" | 11'- 2" | 9'- 5" |
| 8SW18 (800S162-43) | L/240 | 39'- 3" | 35'- 8" | 31'- 2" | 27'- 3" | 24'- 9" | 21'- 7" | 24'- 9" | 22'- 5" | 19'- 6" | 22'- 11" | 20'- 10" | 17'- 5" | 21'- 7" | 19'- 6" | 15'- 11" | 20'- 6" | 18'- 0" | 14'- 9" | 19'- 6" | 16'- 10" | 13'- 9" | 17'- 5" | 15'- 1" | 12'- 4" |
| | L/360 | 34'- 4" | 31'- 2" | 27'- 3" | 23'- 9" | 21'- 7" | 18'- 10" | 21'- 7" | 19'- 7" | 17'- 2" | 20'- 0" | 18'- 2" | 15'- 11" | 18'- 10" | 17'- 2" | 14'- 11" | 17'- 11" | 16'- 3" | 14'- 2" | 17'- 2" | 15'- 7" | 13'- 7" | 15'- 11" | 14'- 5" | 12'- 4" |
| | L/600 | 28'- 11" | 26'- 3" | 22'- 11" | 20'- 0" | 18'- 2" | 15'- 11" | 18'- 2" | 16'- 6" | 14'- 5" | 16'- 11" | 15'- 4" | 13'- 5" | 15'- 11" | 14'- 5" | 12'- 7" | 15'- 1" | 13'- 9" | 12'- 0" | 14'- 5" | 13'- 1" | 11'- 5" | 13'- 5" | 12'- 2" | 10'- 8" |
| 8SW16 (800S162-54) | L/240 | 42'- 2" | 38'- 4" | 33'- 6" | 29'- 3" | 26'- 7" | 23'- 2" | 26'- 7" | 24'- 1" | 21'- 1" | 24'- 8" | 22'- 5" | 19'- 7" | 23'- 2" | 21'- 1" | 18'- 5" | 22'- 1" | 20'- 0" | 17'- 4" | 21'- 1" | 19'- 2" | 16'- 3" | 19'- 7" | 17'- 9" | 14'- 6" |
| | L/360 | 36'- 10" | 33'- 6" | 29'- 3" | 25'- 6" | 23'- 2" | 20'- 3" | 23'- 2" | 21'- 1" | 18'- 5" | 21'- 6" | 19'- 7" | 17'- 1" | 20'- 3" | 18'- 5" | 16'- 1" | 19'- 3" | 17'- 6" | 15'- 3" | 18'- 5" | 16'- 9" | 14'- 7" | 17'- 1" | 15'- 6" | 13'- 7" |
| | L/600 | 31'- 1" | 28'- 3" | 24'- 8" | 21'- 6" | 19'- 7" | 17'- 1" | 19'- 7" | 17'- 9" | 15'- 6" | 18'- 2" | 16'- 6" | 14'- 5" | 17'- 1" | 15'- 6" | 13'- 7" | 16'- 3" | 14'- 9" | 12'- 10" | 15'- 6" | 14'- 1" | 12'- 4" | 14'- 5" | 13'- 1" | 11'- 5" |
| 8SW14 (800S162-68) | L/240 | 45'- 3" | 41'- 1" | 35'- 11" | 31'- 4" | 28'- 6" | 24'- 11" | 28'- 6" | 25'- 11" | 22'- 7" | 26'- 5" | 24'- 0" | 21'- 0" | 24'- 11" | 22'- 7" | 19'- 9" | 23'- 8" | 21'- 6" | 18'- 9" | 22'- 7" | 20'- 6" | 17'- 11" | 21'- 0" | 19'- 1" | 16'- 4" |
| | L/360 | 39'- 6" | 35'- 11" | 31'- 4" | 27'- 5" | 24'- 11" | 21'- 9" | 24'- 11" | 22'- 7" | 19'- 9" | 23'- 1" | 21'- 0" | 18'- 4" | 21'- 9" | 19'- 9" | 17'- 3" | 20'- 8" | 18'- 9" | 16'- 5" | 19'- 9" | 17'- 11" | 15'- 8" | 18'- 4" | 16'- 8" | 14'- 6" |
| | L/600 | 33'- 4" | 30'- 3" | 26'- 5" | 23'- 1" | 21'- 0" | 18'- 4" | 21'- 0" | 19'- 1" | 16'- 8" | 19'- 6" | 17'- 8" | 15'- 5" | 18'- 4" | 16'- 8" | 14'- 6" | 17'- 5" | 15'- 10" | 13'- 10" | 16'- 8" | 15'- 1" | 13'- 2" | 15'- 5" | 14'- 0" | 12'- 3" |
| 8SW12 (800S162-97) | L/240 | 50'- 3" | 45'- 8" | 39'- 11" | 34'- 10" | 31'- 8" | 27'- 8" | 31'- 8" | 28'- 9" | 25'- 1" | 29'- 5" | 26'- 8" | 23'- 4" | 27'- 8" | 25'- 1" | 21'- 11" | 26'- 3" | 23'- 10" | 20'- 10" | 25'- 1" | 22'- 10" | 19'- 11" | 23'- 4" | 21'- 2" | 18'- 6" |
| | L/360 | 43'- 11" | 39'- 11" | 34'- 10" | 30'- 5" | 27'- 8" | 24'- 2" | 27'- 8" | 25'- 1" | 21'- 11" | 25'- 8" | 23'- 4" | 20'- 4" | 24'- 2" | 21'- 11" | 19'- 2" | 22'- 11" | 20'- 10" | 18'- 2" | 21'- 11" | 19'- 11" | 17'- 5" | 20'- 4" | 18'- 6" | 16'- 2" |
| | L/600 | 37'- 0" | 33'- 8" | 29'- 5" | 25'- 8" | 23'- 4" | 20'- 4" | 23'- 4" | 21'- 2" | 18'- 6" | 21'- 8" | 19'- 8" | 17'- 2" | 20'- 4" | 18'- 6" | 16'- 2" | 19'- 4" | 17'- 7" | 15'- 4" | 18'- 6" | 16'- 10" | 14'- 8" | 17'- 2" | 15'- 7" | 13'- 7" |
| 8SW10 (800S162-118) | L/240 | 53'- 6" | 48'- 7" | 42'- 6" | 37'- 1" | 33'- 8" | 29'- 5" | 33'- 8" | 30'- 7" | 26'- 9" | 31'- 3" | 28'- 5" | 24'- 10" | 29'- 5" | 26'- 9" | 23'- 4" | 27'- 11" | 25'- 5" | 22'- 2" | 26'- 9" | 24'- 3" | 21'- 3" | 24'- 10" | 22'- 7" | 19'- 8" |
| | L/360 | 46'- 9" | 42'- 6" | 37'- 1" | 32'- 5" | 29'- 5" | 25'- 8" | 29'- 5" | 26'- 9" | 23'- 4" | 27'- 4" | 24'- 10" | 21'- 8" | 25'- 8" | 23'- 4" | 20'- 5" | 24'- 5" | 22'- 2" | 19'- 4" | 23'- 4" | 21'- 3" | 18'- 6" | 21'- 8" | 19'- 8" | 17'- 2" |
| | L/600 | 39'- 5" | 35'- 10" | 31'- 3" | 27'- 4" | 24'- 10" | 21'- 8" | 24'- 10" | 22'- 7" | 19'- 8" | 23'- 0" | 20'- 11" | 18'- 3" | 21'- 8" | 19'- 8" | 17'- 2" | 20'- 7" | 18'- 8" | 16'- 4" | 19'- 8" | 17'- 11" | 15'- 7" | 18'- 3" | 16'- 7" | 14'- 6" |
| **10" Members** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10SW18* (1000S162-43) | L/240 | 47'- 2" | 42'- 10" | 37'- 5" | 32'- 8" | 29'- 8" | 24'- 11" | 29'- 8" | 26'- 5" | 21'- 7" | 27'- 3" | 23'- 7" | 19'- 3" | 24'- 11" | 21'- 7" | 17'- 7" | 23'- 0" | 19'- 11" | 16'- 3" | 21'- 7" | 18'- 8" | 15'- 3" | 19'- 3" | 16'- 8" | 16'- 8" |
| | L/360 | 41'- 2" | 37'- 5" | 32'- 8" | 28'- 7" | 25'- 11" | 22'- 8" | 25'- 11" | 23'- 7" | 20'- 7" | 24'- 1" | 21'- 10" | 19'- 1" | 22'- 8" | 20'- 7" | 17'- 7" | 21'- 6" | 19'- 7" | 16'- 3" | 20'- 7" | 18'- 8" | 15'- 3" | 19'- 1" | 16'- 8" | 13'- 7" |
| | L/600 | 34'- 9" | 31'- 7" | 27'- 7" | 24'- 1" | 21'- 10" | 19'- 1" | 21'- 10" | 19'- 10" | 17'- 4" | 20'- 4" | 18'- 5" | 16'- 1" | 19'- 1" | 17'- 4" | 15'- 2" | 18'- 2" | 16'- 6" | 14'- 5" | 17'- 4" | 15'- 9" | 13'- 9" | 16'- 1" | 14'- 8" | 12'- 9" |
| 10SW16 (1000S162-54) | L/240 | 50'- 8" | 46'- 0" | 40'- 3" | 35'- 1" | 31'- 11" | 27'- 10" | 31'- 11" | 29'- 0" | 25'- 4" | 29'- 7" | 26'- 11" | 22'- 10" | 27'- 10" | 25'- 4" | 20'- 10" | 26'- 6" | 23'- 8" | 19'- 4" | 25'- 4" | 22'- 2" | 18'- 1" | 22'- 10" | 19'- 9" | 16'- 2" |
| | L/360 | 44'- 3" | 40'- 3" | 35'- 1" | 30'- 8" | 27'- 10" | 24'- 4" | 27'- 10" | 25'- 4" | 22'- 1" | 25'- 10" | 23'- 6" | 20'- 6" | 24'- 4" | 22'- 1" | 19'- 4" | 23'- 1" | 21'- 0" | 18'- 4" | 22'- 1" | 20'- 1" | 17'- 6" | 20'- 6" | 18'- 8" | 16'- 2" |
| | L/600 | 37'- 4" | 33'- 11" | 29'- 7" | 25'- 10" | 23'- 6" | 20'- 6" | 23'- 6" | 21'- 4" | 18'- 8" | 21'- 10" | 19'- 10" | 17'- 4" | 20'- 6" | 18'- 8" | 16'- 3" | 19'- 6" | 17'- 8" | 15'- 6" | 18'- 8" | 16'- 11" | 14'- 9" | 17'- 4" | 15'- 9" | 13'- 9" |
| 10SW14 (1000S162-68) | L/240 | 54'- 5" | 49'- 5" | 43'- 2" | 37'- 9" | 34'- 3" | 29'- 11" | 34'- 3" | 31'- 2" | 27'- 2" | 31'- 10" | 28'- 11" | 25'- 3" | 29'- 11" | 27'- 2" | 23'- 9" | 28'- 5" | 25'- 10" | 22'- 7" | 27'- 2" | 24'- 8" | 21'- 7" | 25'- 3" | 22'- 11" | 19'- 4" |
| | L/360 | 47'- 6" | 43'- 2" | 37'- 9" | 32'- 11" | 29'- 11" | 26'- 2" | 29'- 11" | 27'- 2" | 23'- 9" | 27'- 9" | 25'- 3" | 22'- 1" | 26'- 2" | 23'- 9" | 20'- 9" | 24'- 10" | 22'- 7" | 19'- 8" | 23'- 9" | 21'- 7" | 18'- 10" | 22'- 1" | 20'- 0" | 17'- 6" |
| | L/600 | 40'- 1" | 36'- 5" | 31'- 10" | 27'- 9" | 25'- 3" | 22'- 1" | 25'- 3" | 22'- 11" | 20'- 0" | 23'- 5" | 21'- 3" | 18'- 7" | 22'- 1" | 20'- 0" | 17'- 6" | 20'- 11" | 19'- 0" | 16'- 7" | 20'- 0" | 18'- 2" | 15'- 11" | 18'- 7" | 16'- 11" | 14'- 9" |
| 10SW12 (1000S162-97) | L/240 | 60'- 7" | 55'- 0" | 48'- 1" | 42'- 0" | 38'- 2" | 33'- 4" | 38'- 2" | 34'- 8" | 30'- 3" | 35'- 5" | 32'- 2" | 28'- 1" | 33'- 4" | 30'- 3" | 26'- 5" | 31'- 8" | 28'- 9" | 25'- 1" | 30'- 3" | 27'- 6" | 24'- 0" | 28'- 1" | 25'- 6" | 22'- 3" |
| | L/360 | 52'- 11" | 48'- 1" | 42'- 0" | 36'- 8" | 33'- 4" | 29'- 1" | 33'- 4" | 30'- 3" | 26'- 5" | 30'- 11" | 28'- 1" | 24'- 6" | 29'- 1" | 26'- 5" | 23'- 1" | 27'- 8" | 25'- 1" | 21'- 11" | 26'- 5" | 24'- 0" | 21'- 0" | 24'- 6" | 22'- 3" | 19'- 5" |
| | L/600 | 44'- 7" | 40'- 6" | 35'- 5" | 30'- 11" | 28'- 1" | 24'- 6" | 28'- 1" | 25'- 6" | 22'- 3" | 26'- 1" | 23'- 8" | 20'- 8" | 24'- 6" | 22'- 3" | 19'- 5" | 23'- 4" | 21'- 2" | 18'- 6" | 22'- 3" | 20'- 3" | 17'- 8" | 20'- 8" | 18'- 9" | 16'- 5" |
| 10SW10 (1000S162-118) | L/240 | 64'- 7" | 58'- 8" | 51'- 3" | 44'- 9" | 40'- 8" | 35'- 6" | 40'- 8" | 36'- 11" | 32'- 3" | 37'- 9" | 34'- 3" | 29'- 11" | 35'- 6" | 32'- 3" | 28'- 2" | 33'- 9" | 30'- 8" | 26'- 9" | 32'- 3" | 29'- 4" | 25'- 7" | 29'- 11" | 27'- 2" | 23'- 9" |
| | L/360 | 56'- 5" | 51'- 3" | 44'- 9" | 39'- 1" | 35'- 6" | 31'- 0" | 35'- 6" | 32'- 3" | 28'- 2" | 32'- 11" | 29'- 11" | 26'- 2" | 31'- 0" | 28'- 2" | 24'- 7" | 29'- 5" | 26'- 9" | 23'- 4" | 28'- 2" | 25'- 7" | 22'- 4" | 26'- 2" | 23'- 9" | 20'- 9" |
| | L/600 | 47'- 7" | 43'- 2" | 37'- 9" | 32'- 11" | 29'- 11" | 26'- 2" | 29'- 11" | 27'- 2" | 23'- 9" | 27'- 9" | 25'- 3" | 22'- 1" | 26'- 2" | 23'- 9" | 20'- 9" | 24'- 10" | 22'- 7" | 19'- 8" | 23'- 9" | 21'- 7" | 18'- 10" | 22'- 1" | 20'- 0" | 17'- 6" |

* = Exceeds the H/T ratio of 200

See notes on page 8

# LIMITING HEIGHTS (FT)

## Limiting Height Tables

| Member | | Wind Load & Spacing | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M\W Type (SSMA) | Deflection | 5 PSF | | | 15 PSF | | | 20 PSF | | | 25 PSF | | | 30 PSF | | | 35 PSF | | | 40 PSF | | | 50 PSF | | |
| | | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. | 12"o.c. | 16"o.c. | 24"o.c. |
| **12" Members** | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12SW16* (1200S162-54) | L/240 | 59'- 0" | 53'- 8" | 46'- 10" | 40'- 11" | 37'- 2" | 32'- 0" | 37'- 2" | 33'- 9" | 27'- 8" | 34'- 6" | 30'- 4" | 24'- 9" | 32'- 0" | 27'- 8" | 22'- 7" | 29'- 7" | 25'- 8" | 20'- 11" | 27'- 8" | 24'- 0" | 19'- 7" | 24'- 9" | 21'- 5" | 17'- 6" |
| | L/360 | 51'- 7" | 46'- 10" | 40'- 11" | 35'- 9" | 32'- 6" | 28'- 4" | 32'- 6" | 29'- 6" | 25'- 9" | 30'- 2" | 27'- 5" | 23'- 11" | 28'- 4" | 25'- 9" | 22'- 6" | 26'- 11" | 24'- 6" | 20'- 11" | 25'- 9" | 23'- 5" | 19'- 7" | 23'- 11" | 21'- 5" | 17'- 6" |
| | L/600 | 43'- 6" | 39'- 6" | 34'- 6" | 30'- 2" | 27'- 5" | 23'- 11" | 27'- 5" | 24'- 10" | 21'- 9" | 25'- 5" | 23'- 1" | 20'- 2" | 23'- 11" | 21'- 9" | 19'- 0" | 22'- 9" | 20'- 8" | 18'- 0" | 21'- 9" | 19'- 9" | 17'- 3" | 20'- 2" | 18'- 4" | 16'- 0" |
| 12SW14 (1200S162-68) | L/240 | 63'- 5" | 57'- 8" | 50'- 4" | 44'- 0" | 39'- 11" | 34'- 11" | 39'- 11" | 36'- 4" | 31'- 8" | 37'- 1" | 33'- 8" | 29'- 3" | 34'- 11" | 31'- 8" | 26'- 8" | 33'- 2" | 30'- 1" | 24'- 8" | 31'- 8" | 28'- 4" | 23'- 1" | 29'- 3" | 25'- 4" | 20'- 8" |
| | L/360 | 55'- 5" | 50'- 4" | 44'- 0" | 38'- 5" | 34'- 11" | 30'- 6" | 34'- 11" | 31'- 8" | 27'- 8" | 32'- 5" | 29'- 5" | 25'- 8" | 30'- 6" | 27'- 8" | 24'- 2" | 28'- 11" | 26'- 4" | 23'- 0" | 27'- 8" | 25'- 2" | 22'- 0" | 25'- 8" | 23'- 4" | 20'- 5" |
| | L/600 | 46'- 9" | 42'- 6" | 37'- 1" | 32'- 5" | 29'- 5" | 25'- 8" | 29'- 5" | 26'- 9" | 23'- 4" | 27'- 4" | 24'- 10" | 21'- 8" | 25'- 8" | 23'- 4" | 20'- 5" | 24'- 5" | 22'- 2" | 19'- 4" | 23'- 4" | 21'- 3" | 18'- 6" | 21'- 8" | 19'- 8" | 17'- 2" |
| 12SW12 (1200S162-97) | L/240 | 70'- 8" | 64'- 2" | 56'- 1" | 49'- 0" | 44'- 6" | 38'- 10" | 44'- 6" | 40'- 5" | 35'- 4" | 41'- 4" | 37'- 6" | 32'- 9" | 38'- 10" | 35'- 4" | 30'- 10" | 36'- 11" | 33'- 7" | 29'- 4" | 35'- 4" | 32'- 1" | 28'- 0" | 32'- 9" | 29'- 9" | 26'- 0" |
| | L/360 | 61'- 9" | 56'- 1" | 49'- 0" | 42'- 9" | 38'- 10" | 33'- 11" | 38'- 10" | 35'- 4" | 30'- 10" | 36'- 1" | 32'- 9" | 28'- 8" | 33'- 11" | 30'- 10" | 26'- 11" | 32'- 3" | 29'- 4" | 25'- 7" | 30'- 10" | 28'- 0" | 24'- 6" | 28'- 8" | 26'- 0" | 22'- 9" |
| | L/600 | 52'- 1" | 47'- 4" | 41'- 4" | 36'- 1" | 32'- 9" | 28'- 8" | 32'- 9" | 29'- 9" | 26'- 0" | 30'- 5" | 27'- 8" | 24'- 2" | 28'- 8" | 26'- 0" | 22'- 9" | 27'- 2" | 24'- 8" | 21'- 7" | 26'- 0" | 23'- 8" | 20'- 8" | 24'- 2" | 21'- 11" | 19'- 2" |
| 12SW10 (1200S162-118) | L/240 | 75'- 5" | 68'- 6" | 59'- 10" | 52'- 3" | 47'- 6" | 41'- 6" | 47'- 6" | 43'- 2" | 37'- 8" | 44'- 1" | 40'- 1" | 35'- 0" | 41'- 6" | 37'- 8" | 32'- 11" | 39'- 5" | 35'- 10" | 31'- 3" | 37'- 8" | 34'- 3" | 29'- 11" | 35'- 0" | 31'- 9" | 27'- 9" |
| | L/360 | 65'- 11" | 59'- 10" | 52'- 3" | 45'- 8" | 41'- 6" | 36'- 3" | 41'- 6" | 37'- 8" | 32'- 11" | 38'- 6" | 35'- 0" | 30'- 7" | 36'- 3" | 32'- 11" | 28'- 9" | 34'- 5" | 31'- 3" | 27'- 4" | 32'- 11" | 29'- 11" | 26'- 1" | 30'- 7" | 27'- 9" | 24'- 3" |
| | L/600 | 55'- 7" | 50'- 6" | 44'- 1" | 38'- 6" | 35'- 0" | 30'- 7" | 35'- 0" | 31'- 9" | 27'- 9" | 32'- 6" | 29'- 6" | 25'- 9" | 30'- 7" | 27'- 9" | 24'- 3" | 29'- 0" | 26'- 4" | 23'- 0" | 27'- 9" | 25'- 3" | 22'- 0" | 25'- 9" | 23'- 5" | 20'- 5" |

* = Exceeds the H/T ratio of 200

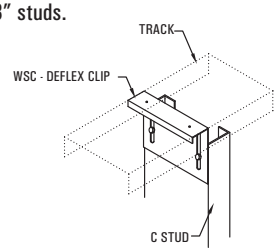
## DEFLEX CLIP

The Deflex Slide Clips allow for up to 1-1/2" vertical floor or roof deflection without the use of laborious slip tracks it can be installed with or without standard leg tracks. Simple and fast to install which saves time and money. Two sizes available for 3-5/8", 4", 6" and 8" studs.

**MATERIAL:** 16 ga (54 mil) 50ksi.

**FINISH:** Galvanized – G90

- 3T1000 accommodates 3-5/8" and 4" stud widths
- 6T1000 accommodates 6" and 8" stud widths

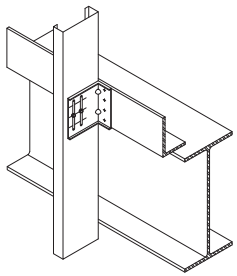



## WSC SLIDE CLIP

WSC Slide clips connect exterior curtainwall studs to the building structure and allow for vertical movement of the building independent of the studs. The new WSC series allows for 3" total deflection, 1-1/2" up and 1-1/2" down. WSC series 14 ga. clips come with extended leg lengths and shouldered screws are provided in each box of clips. 25 pieces per box.

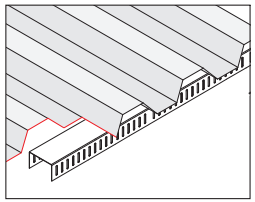
**MATERIAL:** See Table

**FINISH:** Galvanized – G90



## SLOTTED SLIP TRACK (SLT) CEMCO

Slotted Track manufactured by CEMCO and distributed by Marino\WARE is used at the head of wall and can absorb up to 1" of total vertical movement while providing a positive attachment for wall framing. The positive attachment allows for greater load resistance with thinner gauges of material.



**MATERIAL:** 20ga (33 mil-33ksi), 18ga (43 mil-33ksi), 16ga (54 mil- 50ksi), 14ga (68 mil - 50ksi)

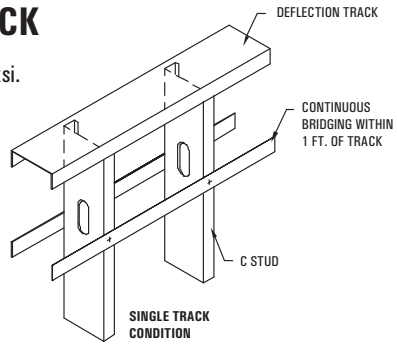
**WEB SIZES:** 2-1/2", 3-5/8", 4", 6", 8"

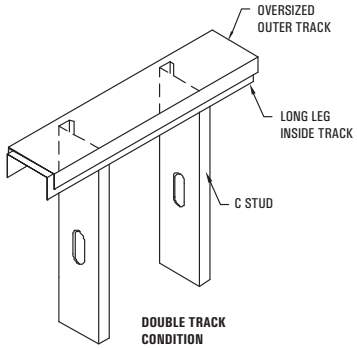
**FINISH:** G60-18ga & 16ga, G40-20ga

## DEFLECTION TRACK

**MATERIAL:** 16 ga (54 mil) 50ksi.

**FINISH:**
Galvanized – G40 or equivalent



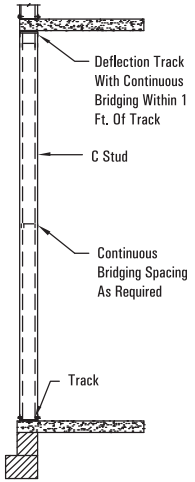

*Deflection Track Notes:*

1. *Curtain wall deflection tracks may be required to accommodate the deflection of floor beams or floor decks above curtain wall or interior partitions. Deflection tracks cannot be used in axial load bearing stud conditions or above continuous windows spandrels.*
2. *Deflection track details must be designed for the specific conditions of a building to accomodate the required deflection and the end reactions of the studs. The deep leg tracks are not standard and the gauge width and leg height must be specified for each particular application. All detailing and connections should be specified by a qualified engineer or architect.*
3. *Deflection track 16ga and heavier must be 50 ksi steel.*

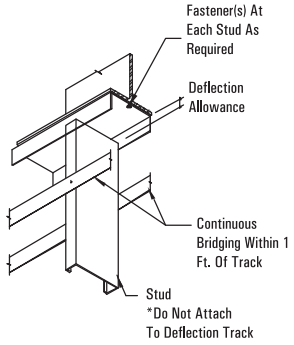
# CURTAINWALL ILLUSTRATIONS

MARINO WARE®

INFILL WALL APPLICATION

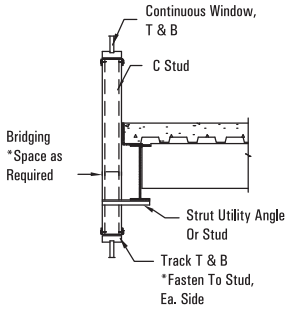



## INFILL STUD

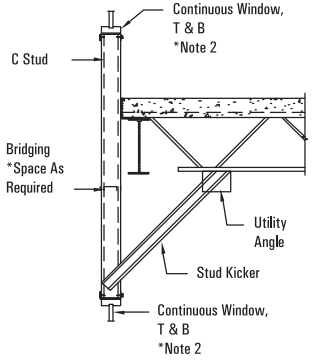



## DEFLECTION TRACK

SPANDREL APPLICATION

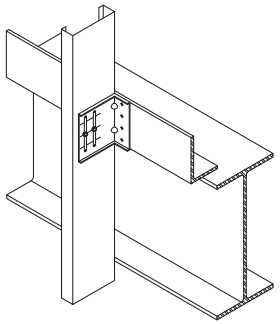



## STRUT TO BEAM

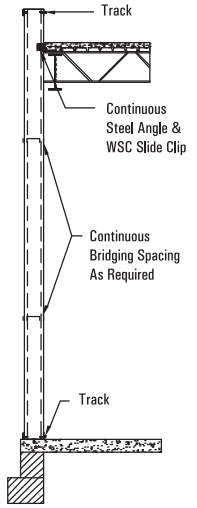



## DIAGONAL KICKER

BY-PASS WALL APPLICATION

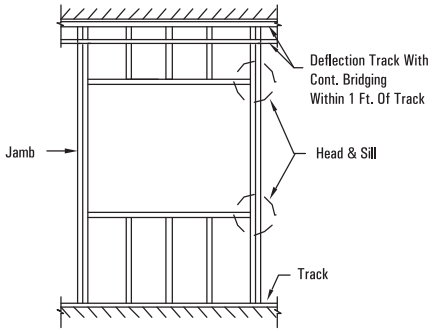


## WSC-SLIDE CLIP

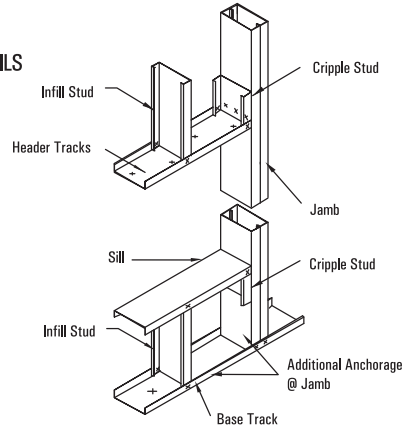



## BY-PASS WALL

WINDOW OPENING DETAILS

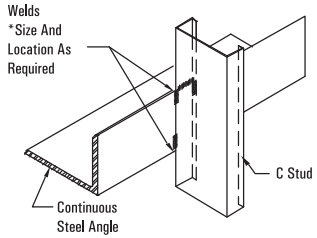



## WINDOW FRAMING

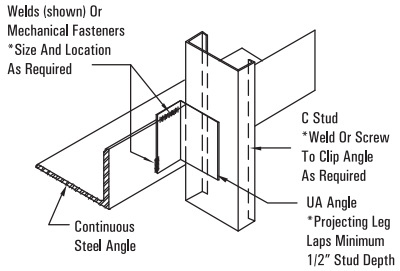



## ISOMETRIC APPLICATION

GRAVITY/LATERAL ATTACHMENT ALTERNATIVES




## DIRECT TO STEEL ANGLE




## UA ANGLE

*Notes:*

1. *Size, spacing and anchorage of framing components shall be qualified by design.*
2. *Vertical deflection of the primary frame shall be accommodated in the window head.*

## AXIAL APPLICATIONS

For selection of studs, braced by mechanical bridging spaced not to exceed 4 feet on center, which are subjected to axial load in the presence or absence of uniform lateral wind loads.

**USE:**

Select a stud, in terms of spacing(inches o.c.), lateral load (psf), and height(ft) which provides an allowable axial load, in kips per stud, equal to or greater than the applied axial load.

Deflections due to lateral loads do not exceed L/720 unless the following subscripted values are shown:

a. Values followed by the subscript (6) do not exceed L/600
b. Values followed by the subscript (3) do not exceed L/360
c. Values followed by the subscript (2) do not exceed L/240
d. L/240 is exceeded where load values have been omitted.

*Notes:*

1. *Allowable axial load values for 16 gauge studs are based on steel with Fy (min) = 50 ksi.*
2. *The values represent the least allowable axial load of the stud in the presence or absence of lateral load. A minimum live load to dead load ratio of 2:1 has been assumed in the preparation of these tables. A stress increase 33-1/3% has been incorporated on live and wind loads only. For conditions where live loads do not exist or where live load to dead load ratios is less than 2:1, or where stress increase is not permissible, contact Marino\WARE's Technical Services Department.*
3. *Values assume axial loads are applied concentrically to the stud.*
4. *Studs shall be braced against rotation before loading. Install bridging spaced at intervals not exceeding 4'-0" on center. Refer to page 25 for bridging types and installation methods.*
5. *Stud ends shall be attached to each side of continuous track by welds or screws before loading. Refer to page 20 for attachment alternatives. Stud ends shall be installed seated squarely against the web (within 1/16") of the tracks to assure transfer of axial load. See reference page 31, Specification Section 3.5, for additional information.*
6. *Deflections and allowable stresses were calculated without regard to the composite contribution of sheathing products.*
7. *Contact Marino\WARE for allowable capacities of framing components not shown in these tables.*
8. *Minimum order requirements may apply to some sections shown in these tables.*

## DIAGONAL RACKING BRACING

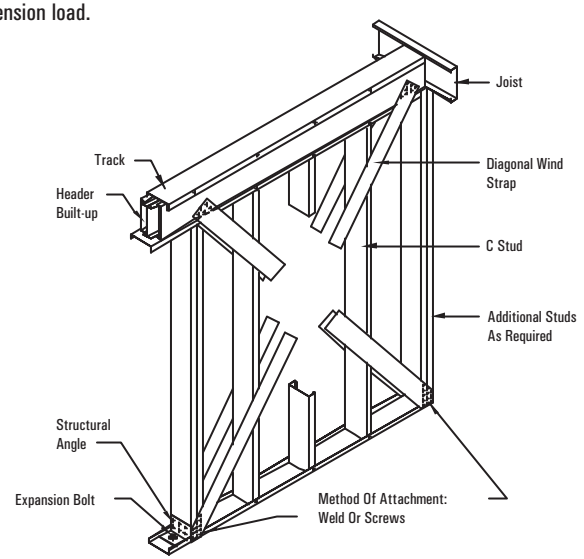
Diagonal bracing and connections must be designed for the specific conditions of a building. For allowable load capacities of Marino\WARE members and assistance in developing connections, please contact Marino\WARE's Technical Services Department. Buildings must be properly braced to resist racking under wind and seismic loads. In steel-framed construction, diagonal strap bracing offers an economical and effective means to provide this resistance. Straps are sloped to resist racking forces in tension. They are installed over framing members and easily covered with facing materials. Diagonal strap ends are secured by screws or welded to transfer the tension loads to the wall framing and floor assembly. End connections must be designed to transfer accumulated design loads. At the foundation, floor anchors must be adequate to prevent uplift and horizontal shear. Splicing of strapping is not recommended.

## DIAGONAL CROSS-BRACING

For selection of Flat Strap (FS) subjected to tension loads in shear wall assemblies or miscellaneous applications.

**USE:**

Select a flat stap which provides an allowable tensile capacity equal to or greater than the applied tension load.




**CROSS-BRACING: ALLOWABLE TENSION CAPACITY**

| Flat strap bracing (thickness) | Area ($in.^2$) | Pa with 1/3 increase (kip ) | Pa without 1/3 increase (kip ) |
|---|---|---|---|
| 2" X 20ga (33mil) | 0.0692 | 1.82 | 1.37 |
| 2" X 18ga (43mil) | 0.0902 | 2.38 | 1.78 |
| 4" X 18ga (43mil) | 0.1804 | 4.76 | 3.57 |
| 2" X 16ga (54mil) | 0.1132 | 4.52 | 3.39 |
| 4" X 16ga (54mil) | 0.2264 | 9.05 | 6.79 |
| 2" X 14ga (68mil) | 0.1426 | 5.70 | 4.28 |
| 4" X 14ga (68mil) | 0.2852 | 11.41 | 8.56 |

*Notes:*

1. *Strap end connections shall be designed to transfer the tensile load.*
2. *20 and 18 gauge strap: Fy (min) = 33 KSI*
   *16 and 14 gauge strap: Fy (min) = 50 KSI*

# AXIAL LOADS (KIPS)

MARINO WARE®

## Allowable Axial Loads

### 3-5/8" Members — Wind Load = 5psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 3-5/8SW-gauge - (362S162-mils) | | | | | | 3-5/8J-gauge - (362S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 2.09 | 2.85 | 4.28 | 5.45 | 7.82 | 9.86 | 2.49 | 3.51 | 5.34 | 6.76 | 9.49 | 11.75 |
| | 16" | 2.09 | 2.85 | 4.28 | 5.45 | 7.82 | 9.86 | 2.49 | 3.51 | 5.34 | 6.76 | 9.49 | 11.75 |
| | 24" | 2.09 | 2.85 | 4.28 | 5.45 | 7.82 | 9.86 | 2.49 | 3.51 | 5.34 | 6.76 | 9.49 | 11.75 |
| 9ft. | 12" | 2.02 | 2.75 | 4.05 | 5.12 | 7.32 | 9.18 | 2.41 | 3.37 | 5.03 | 6.33 | 8.85 | 10.92 |
| | 16" | 2.02 | 2.75 | 4.05 | 5.12 | 7.32 | 9.18 | 2.41 | 3.37 | 5.03 | 6.33 | 8.85 | 10.92 |
| | 24" | 1.88 | 2.75 | 4.05 | 5.12 | 7.32 | 9.18 | 2.32 | 3.37 | 5.03 | 6.33 | 8.85 | 10.92 |
| 10ft. | 12" | 1.93 | 2.64 | 3.79 | 4.76 | 6.76 | 8.44 | 2.32 | 3.22 | 4.68 | 5.85 | 8.15 | 10.03 |
| | 16" | 1.87 | 2.64 | 3.79 | 4.76 | 6.76 | 8.44 | 2.30 | 3.22 | 4.68 | 5.85 | 8.15 | 10.03 |
| | 24" | 1.66 | 2.48 | 3.79 | 4.76 | 6.76 | 8.44 | 2.06 | 3.14 | 4.68 | 5.85 | 8.15 | 10.03 |
| 11ft. | 12" | 1.79 | 2.51 | 3.48 | 4.35 | 6.15 | 7.65 | 2.21 | 3.05 | 4.31 | 5.35 | 7.43 | 9.11 |
| | 16" | 1.66 | 2.44 | 3.48 | 4.35 | 6.15 | 7.65 | 2.06 | 3.05 | 4.31 | 5.35 | 7.43 | 9.11 |
| | 24" | 1.43(6) | 2.19 | 3.43 | 4.35 | 6.15 | 7.65 | 1.80 | 2.79 | 4.31 | 5.35 | 7.43 | 9.11 |
| 12ft. | 12" | 1.59 | 2.33 | 3.17 | 3.95 | 5.53 | 6.83 | 1.98 | 2.88 | 3.90 | 4.82 | 6.67 | 8.15 |
| | 16" | 1.45 | 2.17 | 3.17 | 3.95 | 5.53 | 6.83 | 1.82 | 2.74 | 3.90 | 4.82 | 6.67 | 8.15 |
| | 24" | 1.20(3) | 1.89(6) | 2.96 | 3.88 | 5.53 | 6.83 | 1.54(3) | 2.43 | 3.75 | 4.82 | 6.67 | 8.15 |
| 14ft. | 12" | 1.21(6) | 1.82 | 2.59 | 3.23 | 4.47 | 5.44 | 1.53 | 2.29 | 3.18 | 3.92 | 5.39 | 6.54 |
| | 16" | 1.06(3) | 1.65(6) | 2.44 | 3.17 | 4.47 | 5.44 | 1.35(3) | 2.10(6) | 3.06 | 3.92 | 5.39 | 6.54 |
| | 24" | 0.80(2) | 1.35(3) | 2.17(3) | 2.89(6) | 4.27 | 5.36 | 1.05(3) | 1.78(3) | 2.77(3) | 3.69 | 5.39 | 6.54 |
| 16ft. | 12" | 0.88(3) | 1.36(3) | 1.99(6) | 2.57 | 3.64 | 4.39 | 1.12(3) | 1.74(6) | 2.48 | 3.21 | 4.39 | 5.30 |
| | 16" | 0.73(2) | 1.20(3) | 1.84(3) | 2.41(6) | 3.52 | 4.37 | 0.95(3) | 1.56(3) | 2.32(3) | 3.06 | 4.39 | 5.30 |
| | 24" | | 0.91(2) | 1.58(2) | 2.14(3) | 3.21(3) | 4.03(6) | 0.65(2) | 1.24(2) | 2.03(3) | 2.77(3) | 4.11(6) | 5.13 |

### 3-5/8" Members — Wind Load = 15psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 3-5/8SW-gauge - (362S162-mils) | | | | | | 3-5/8J-gauge - (362S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 1.89 | 2.80 | 4.28 | 5.45 | 7.82 | 9.86 | 2.33 | 3.51 | 5.34 | 6.76 | 9.49 | 11.75 |
| | 16" | 1.69 | 2.59 | 4.28 | 5.45 | 7.82 | 9.86 | 2.11 | 3.33 | 5.34 | 6.76 | 9.49 | 11.75 |
| | 24" | 1.32(3) | 2.20(6) | 3.97 | 5.35 | 7.82 | 9.86 | 1.70(6) | 2.91 | 5.16 | 6.76 | 9.49 | 11.75 |
| 9ft. | 12" | 1.63 | 2.50 | 4.05 | 5.12 | 7.32 | 9.18 | 2.04 | 3.19 | 5.03 | 6.33 | 8.85 | 10.92 |
| | 16" | 1.40(3) | 2.25 | 3.86 | 5.12 | 7.32 | 9.18 | 1.78(6) | 2.93 | 4.95 | 6.33 | 8.85 | 10.92 |
| | 24" | 0.97(3) | 1.79(3) | 3.40(6) | 4.65 | 7.13 | 9.18 | 1.31(3) | 2.43(3) | 4.45 | 6.07 | 8.85 | 10.92 |
| 10ft. | 12" | 1.37(3) | 2.17 | 3.61 | 4.76 | 6.76 | 8.44 | 1.74(6) | 2.81 | 4.60 | 5.85 | 8.15 | 10.03 |
| | 16" | 1.11(3) | 1.89(3) | 3.34(6) | 4.46 | 6.74 | 8.44 | 1.45(3) | 2.50(6) | 4.30 | 5.76 | 8.15 | 10.03 |
| | 24" | 0.41(2) | 1.38(3) | 2.83(3) | 3.93(3) | 6.12 | 7.94 | 0.84(2) | 1.95(3) | 3.74(3) | 5.20(6) | 7.86 | 10.00 |
| 11ft. | 12" | 1.11(3) | 1.85(3) | 3.10(6) | 4.12 | 6.15 | 7.65 | 1.45(3) | 2.42(6) | 3.99 | 5.29 | 7.43 | 9.11 |
| | 16" | 0.83(2) | 1.54(3) | 2.81(3) | 3.80(6) | 5.80 | 7.43 | 1.13(3) | 2.08(3) | 3.66(6) | 4.95 | 7.37 | 9.11 |
| | 24" | | 0.89(2) | 2.28(2) | 3.24(3) | 5.14(3) | 6.71(6) | 0.19(2) | 1.49(2) | 3.07(3) | 4.36(3) | 6.71(6) | 8.57 |
| 12ft. | 12" | 0.87(2) | 1.53(3) | 2.62(3) | 3.51(6) | 5.28 | 6.71 | 1.17(3) | 2.04(3) | 3.38(6) | 4.53 | 6.67 | 8.15 |
| | 16" | 0.41(2) | 1.21(2) | 2.32(3) | 3.19(3) | 4.91(6) | 6.30 | 0.76(2) | 1.69(3) | 3.04(3) | 4.19(3) | 6.31 | 7.97 |
| | 24" | | | 1.79(2) | 2.62(2) | 4.25(3) | 5.57(3) | | 0.92(2) | 2.45(2) | 3.59(3) | 5.63(3) | 7.23(6) |
| 14ft. | 12" | | 0.98(2) | 1.83(2) | 2.52(3) | 3.85(3) | 4.90(6) | 0.56(2) | 1.37(2) | 2.39(3) | 3.30(3) | 4.96(6) | 6.24 |
| | 16" | | | 1.53(2) | 2.20(2) | 3.48(3) | 4.49(3) | | | 2.06(2) | 2.96(3) | 4.58(3) | 5.83(3) |
| | 24" | | | | | 2.84(2) | 3.80(2) | | | | 2.38(2) | 3.92(2) | 5.11(3) |
| 16ft. | 12" | | | | 1.78(2) | 2.80(3) | 3.59(3) | | | 1.67(2) | 2.40(2) | 3.69(3) | 4.68(3) |
| | 16" | | | | | 2.46(2) | 3.21(2) | | | | 2.08(2) | 3.33(2) | 4.28(3) |
| | 24" | | | | | | | | | | | | 3.60(2) |

### 3-5/8" Members — Wind Load = 20psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 3-5/8SW-gauge - (362S162-mils) | | | | | | 3-5/8J-gauge - (362S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 1.69 | 2.59 | 4.28 | 5.45 | 7.82 | 9.86 | 2.11 | 3.33 | 5.34 | 6.76 | 9.49 | 11.75 |
| | 16" | 1.44(6) | 2.33 | 4.10 | 5.45 | 7.82 | 9.86 | 1.83 | 3.05 | 5.29 | 6.76 | 9.49 | 11.75 |
| | 24" | 0.97(3) | 1.83(3) | 3.61(6) | 4.97 | 7.67 | 9.86 | 1.32(3) | 2.52(6) | 4.76 | 6.53 | 9.49 | 11.75 |
| 9ft. | 12" | 1.40(3) | 2.25 | 3.86 | 5.12 | 7.32 | 9.18 | 1.78(6) | 2.93 | 4.95 | 6.33 | 8.85 | 10.92 |
| | 16" | 1.11(3) | 1.93(3) | 3.55(6) | 4.80 | 7.30 | 9.18 | 1.46(3) | 2.59(6) | 4.61 | 6.23 | 8.85 | 10.92 |
| | 24" | 0.22(2) | 1.37(3) | 2.99(3) | 4.20(3) | 6.62 | 8.65 | 0.67(2) | 1.97(3) | 3.99(3) | 5.61(6) | 8.54 | 10.90 |
| 10ft. | 12" | 1.11(3) | 1.89(3) | 3.34(6) | 4.46 | 6.74 | 8.44 | 1.45(3) | 2.50(6) | 4.30 | 5.76 | 8.15 | 10.03 |
| | 16" | 0.73(2) | 1.54(3) | 2.99(3) | 4.10(6) | 6.32 | 8.16 | 1.10(3) | 2.12(3) | 3.92(6) | 5.38 | 8.06 | 10.03 |
| | 24" | | 0.67(2) | 2.38(2) | 3.44(3) | 5.56(3) | 7.32(6) | 0.00 | 1.45(2) | 3.24(3) | 4.69(3) | 7.30(6) | 9.38 |
| 11ft. | 12" | 0.83(2) | 1.54(3) | 2.81(3) | 3.80(6) | 5.80 | 7.43 | 1.13(3) | 2.08(3) | 3.66(6) | 4.95 | 7.37 | 9.11 |
| | 16" | | 1.17(2) | 2.45(3) | 3.42(3) | 5.35(6) | 6.94 | 0.54(2) | 1.68(3) | 3.26(3) | 4.55(3) | 6.92 | 8.80 |
| | 24" | | | 1.82(2) | 2.74(2) | 4.56(3) | 6.07(3) | | 0.62(2) | 2.56(2) | 3.83(3) | 6.11(3) | 7.92(6) |
| 12ft. | 12" | 0.41(2) | 1.21(2) | 2.32(3) | 3.19(3) | 4.91(6) | 6.30 | 0.76(2) | 1.69(3) | 3.04(3) | 4.19(3) | 6.31 | 7.97 |
| | 16" | | | 1.95(2) | 2.80(3) | 4.46(3) | 5.80(3) | | 1.27(2) | 2.64(2) | 3.78(3) | 5.84(3) | 7.46(6) |
| | 24" | | | | 2.12(2) | 3.67(2) | 4.93(3) | | | | 3.06(2) | 5.03(3) | 6.58(3) |
| 14ft. | 12" | | | 1.53(2) | 2.20(2) | 3.48(3) | 4.49(3) | | | 2.06(2) | 2.96(3) | 4.58(3) | 5.83(3) |
| | 16" | | | | | 3.05(2) | 4.02(3) | | | | 2.56(2) | 4.13(3) | 5.33(3) |
| | 24" | | | | | | 3.19(2) | | | | | 3.34(2) | 4.48(2) |
| 16ft. | 12" | | | | | 2.46(2) | 3.21(2) | | | | 2.08(2) | 3.33(2) | 4.28(3) |
| | 16" | | | | | | 2.77(2) | | | | | 2.90(2) | 3.81(2) |
| | 24" | | | | | | | | | | | | |

### 3-5/8" Members — Wind Load = 25psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 3-5/8SW-gauge - (362S162-mils) | | | | | | 3-5/8J-gauge - (362S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 1.50(6) | 2.39 | 4.16 | 5.45 | 7.82 | 9.86 | 1.90 | 3.12 | 5.34 | 6.76 | 9.49 | 11.75 |
| | 16" | 1.20(3) | 2.07(6) | 3.85 | 5.22 | 7.82 | 9.86 | 1.57(3) | 2.78 | 5.02 | 6.76 | 9.49 | 11.75 |
| | 24" | 0.29(2) | 1.49(3) | 3.27(3) | 4.60(6) | 7.26 | 9.52 | 0.80(3) | 2.14(3) | 4.38(6) | 6.15 | 9.35 | 11.75 |
| 9ft. | 12" | 1.18(3) | 2.01(6) | 3.63 | 4.88 | 7.32 | 9.18 | 1.54(3) | 2.67(6) | 4.69 | 6.32 | 8.85 | 10.92 |
| | 16" | 0.79(2) | 1.64(3) | 3.26(3) | 4.49(6) | 6.95 | 9.02 | 1.16(3) | 2.27(3) | 4.29(6) | 5.91 | 8.85 | 10.92 |
| | 24" | | 0.70(2) | 2.60(3) | 3.79(3) | 6.14(6) | 8.12 | 0.00 | 1.55(2) | 3.56(3) | 5.17(3) | 8.06 | 10.39 |
| 10ft. | 12" | 0.87(2) | 1.62(3) | 3.08(3) | 4.19(6) | 6.42 | 8.27 | 1.18(3) | 2.21(3) | 4.01(6) | 5.47 | 8.15 | 10.03 |
| | 16" | 0.11(2) | 1.22(2) | 2.68(3) | 3.76(3) | 5.93(6) | 7.73 | 0.50(2) | 1.77(3) | 3.57(3) | 5.02(3) | 7.67 | 9.79 |
| | 24" | | | 1.97(2) | 3.00(2) | 5.05(3) | 6.75(3) | | 0.55(2) | 2.79(2) | 4.22(3) | 6.77(3) | 8.81(6) |
| 11ft. | 12" | 0.34(2) | 1.26(2) | 2.53(3) | 3.51(3) | 5.46(6) | 7.06 | 0.72(2) | 1.78(3) | 3.35(3) | 4.65(3) | 7.03 | 8.92 |
| | 16" | | 0.56(2) | 2.12(2) | 3.06(3) | 4.94(3) | 6.49(6) | | 1.29(2) | 2.89(3) | 4.18(3) | 6.50(6) | 8.35 |
| | 24" | | | | 2.29(2) | 4.04(2) | 5.48(3) | | | 2.09(2) | 3.35(2) | 5.57(3) | 7.33(3) |
| 12ft. | 12" | | 0.81(2) | 2.04(2) | 2.89(3) | 4.57(3) | 5.92(6) | | 1.37(2) | 2.74(3) | 3.88(3) | 5.95(6) | 7.59 |
| | 16" | | | | 2.45(2) | 4.05(3) | 5.35(3) | | | 2.28(2) | 3.41(2) | 5.42(3) | 7.00(3) |
| | 24" | | | | | 3.15(2) | 4.36(2) | | | | | 4.49(2) | 5.99(3) |
| 14ft. | 12" | | | | 1.91(2) | 3.15(2) | 4.13(3) | | | | 2.66(2) | 4.23(3) | 5.45(3) |
| | 16" | | | | | 2.65(2) | 3.59(2) | | | | | 3.72(2) | 4.89(2) |
| | 24" | | | | | | | | | | | | |
| 16ft. | 12" | | | | | | 2.88(2) | | | | | 3.00(2) | 3.93(2) |
| | 16" | | | | | | | | | | | | |
| | 24" | | | | | | | | | | | | |

**NOTES:**

**(2) = L/240 (3) = L/360 (6) = L/600**

Refer to page 13 for table notes

## Allowable Axial Loads

### 3-5/8" Members — Wind Load = 30psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 3-5/8SW-gauge - (362S162-mils) | | | | | | 3-5/8J-gauge - (362S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12 " | 1.32(3) | 2.20(6) | 3.97 | 5.35 | 7.82 | 9.86 | 1.70(6) | 2.91 | 5.16 | 6.76 | 9.49 | 11.75 |
| | 16" | 0.97(3) | 1.83(3) | 3.61(6) | 4.97 | 7.67 | 9.86 | 1.32(3) | 2.52(6) | 4.76 | 6.53 | 9.49 | 11.75 |
| | 24" | | 1.04(2) | 2.94(3) | 4.25(3) | 6.86 | 9.08 | 0.02(2) | 1.78(3) | 4.01(3) | 5.79(6) | 8.96 | 11.53 |
| 9ft. | 12 " | 0.97(3) | 1.79(3) | 3.40(6) | 4.65 | 7.13 | 9.18 | 1.31(3) | 2.43(3) | 4.45 | 6.07 | 8.85 | 10.92 |
| | 16" | 0.22(2) | 1.37(3) | 2.99(3) | 4.20(3) | 6.62 | 8.65 | 0.67(2) | 1.97(3) | 3.99(3) | 5.61(6) | 8.54 | 10.90 |
| | 24" | | | 2.23(2) | 3.39(3) | 5.69(3) | 7.62(6) | | 0.77(2) | 3.16(3) | 4.76(3) | 7.61(6) | 9.89 |
| 10ft. | 12 " | 0.41(2) | 1.38(3) | 2.83(3) | 3.93(3) | 6.12 | 7.94 | 0.84(2) | 1.95(3) | 3.74(3) | 5.20(6) | 7.86 | 10.00 |
| | 16" | | 0.67(2) | 2.38(2) | 3.44(3) | 5.56(3) | 7.32(6) | | 1.45(2) | 3.24(3) | 4.69(3) | 7.30(6) | 9.38 |
| | 24" | | | | 2.59(2) | 4.57(3) | 6.22(3) | | | 2.36(2) | 3.78(2) | 6.28(3) | 8.28(3) |
| 11ft. | 12 " | | 0.89(2) | 2.28(2) | 3.24(3) | 5.14(3) | 6.71(6) | 0.19(2) | 1.49(2) | 3.07(3) | 4.36(3) | 6.71(6) | 8.57 |
| | 16" | | | 1.82(2) | 2.74(2) | 4.56(3) | 6.07(3) | | 0.62(2 ) | 2.56(2) | 3.83(3) | 6.11(3) | 7.92(6) |
| | 24" | | | | | 3.55(2) | 4.94(2) | | | | 2.91(2) | 5.07(2) | 6.78(3) |
| 12ft. | 12 " | | | 1.79(2) | 2.62(2) | 4.25(3) | 5.57(3) | | 0.92(2 ) | 2.45(2) | 3.59(3) | 5.63(3) | 7.23(6) |
| | 16" | | | | 2.12(2) | 3.67(2) | 4.93(3) | | | | 3.06(2) | 5.03(3) | 6.58(3) |
| | 24" | | | | | | 3.83(2) | | | | | 3.99(2) | 5.44(2 ) |
| 14ft. | 12 " | | | | | 2.84(2) | 3.80(2) | | | | 2.38(2) | 3.92(2) | 5.11(3) |
| | 16" | | | | | | 3.19(2) | | | | | 3.34(2) | 4.48(2 ) |
| | 24" | | | | | | | | | | | | |
| 16ft. | 12 " | | | | | | | | | | | | 3.60(2 ) |
| | 16" | | | | | | | | | | | | |
| | 24" | | | | | | | | | | | | |

### 3-5/8" Members — Wind Load = 35psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 3-5/8SW-gauge - (362S162-mils) | | | | | | 3-5/8J-gauge - (362S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12 " | 1.14(3) | 2.01(6) | 3.79 | 5.16 | 7.82 | 9.86 | 1.51(3) | 2.71 | 4.95 | 6.73 | 9.49 | 11.75 |
| | 16" | 0.54(2) | 1.60(3) | 3.38(3) | 4.72(6) | 7.39 | 9.67 | 1.08(3) | 2.26(3) | 4.50(6) | 6.28 | 9.49 | 11.75 |
| | 24" | | 0.31(2 ) | 2.63(3) | 3.92(3) | 6.48(6) | 8.65 | | 1.33(3) | 3.67(3) | 5.44(3) | 8.58 | 11.12 |
| 9ft. | 12 " | 0.64(2) | 1.57(3) | 3.19(3) | 4.42(6) | 6.87 | 8.93 | 1.09(3) | 2.19(3) | 4.21(6) | 5.83 | 8.79 | 10.92 |
| | 16" | | 0.98(2 ) | 2.73(3) | 3.92(3) | 6.30(6) | 8.30 | 0.08(2) | 1.69(3) | 3.70(3) | 5.31(3) | 8.22 | 10.56 |
| | 24" | | | 1.89(2) | 3.02(2) | 5.26(3) | 7.15(3) | | | 2.78(2) | 4.37(3) | 7.17(3) | 9.42(6) |
| 10ft. | 12 " | | 1.14(2 ) | 2.60(3) | 3.68(3) | 5.84(6) | 7.62 | 0.34(2) | 1.69(3) | 3.49(3) | 4.94(3) | 7.57 | 9.68 |
| | 16" | | | 2.10(2) | 3.14(2) | 5.22(3) | 6.94(3) | | 0.86(2 ) | 2.93(2) | 4.37(3) | 6.95(3) | 9.00(6) |
| | 24" | | | | | 4.12(2) | 5.72(3) | | | | 3.37(2) | 5.82(3) | 7.77(3) |
| 11ft. | 12 " | | | 2.04(2 ) | 2.98(2) | 4.85(3) | 6.38(3) | | 1.12(2 ) | 2.81(2) | 4.09(3) | 6.40(3) | 8.24(6) |
| | 16" | | | | 2.43(2) | 4.21(3) | 5.67(3) | | | 2.24(2) | 3.51(2) | 5.75(3) | 7.52(3) |
| | 24" | | | | | 3.10(2) | 4.44(2) | | | | | 4.60(2) | 6.26(2 ) |
| 12ft. | 12 " | | | | 2.36(2) | 3.95(3) | 5.24(3) | | | 2.19(2) | 3.32(2) | 5.32(3) | 6.90(3) |
| | 16" | | | | | 3.32(2) | 4.54(2) | | | | 2.74(2) | 4.67(2) | 6.18(3) |
| | 24" | | | | | | | | | | | | 4.93(2 ) |
| 14ft. | 12 " | | | | | | 3.49(2) | | | | | 3.62(2) | 4.78(2 ) |
| | 16" | | | | | | | | | | | | 4.10(2 ) |
| | 24" | | | | | | | | | | | | |
| 16ft. | 12 " | | | | | | | | | | | | |
| | 16" | | | | | | | | | | | | |
| | 24" | | | | | | | | | | | | |

### 3-5/8" Members — Wind Load = 40psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 3-5/8SW-gauge - (362S162-mils) | | | | | | 3-5/8J-gauge - (362S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12 " | 0.97(3) | 1.83(3) | 3.61(6) | 4.97 | 7.67 | 9.86 | 1.32(3) | 2.52(6) | 4.76 | 6.53 | 9.49 | 11.75 |
| | 16" | 0.05(2) | 1.37(3) | 3.16(3) | 4.49(6) | 7.12 | 9.37 | 0.53(3) | 2.02(3) | 4.25(3) | 6.03 | 9.22 | 11.75 |
| | 24" | | | 2.32(2) | 3.60(3) | 6.11(3) | 8.24(6) | | 0.57(2) | 3.33(3) | 5.10(3) | 8.21(6) | 10.72 |
| 9ft. | 12 " | 0.22(2) | 1.37(3) | 2.99(3) | 4.20(3) | 6.62 | 8.65 | 0.67(2) | 1.97(3) | 3.99(3) | 5.61(6) | 8.54 | 10.90 |
| | 16" | | 0.43(2 ) | 2.47(2) | 3.65(3) | 5.99(3) | 7.95(6) | | 1.34(2) | 3.42(3) | 5.03(3) | 7.91(6) | 10.2 2 |
| | 24" | | | | 2.67(2) | 4.85(3) | 6.69(3) | | | 2.41(2) | 4.00(2) | 6.75(3) | 8.97(3) |
| 10ft. | 12 " | | 0.67(2 ) | 2.38(2) | 3.44(3) | 5.56(3) | 7.32(6) | | 1.45(2) | 3.24(3) | 4.69(3) | 7.30(6) | 9.38 |
| | 16" | | | 1.84(2 ) | 2.86(2) | 4.89(3) | 6.57(3) | | 0.26(2 ) | 2.64(2) | 4.07(3) | 6.61(3) | 8.63(6) |
| | 24" | | | | | 3.69(2) | 5.24(2) | | | | 2.98(2) | 5.38(2) | 7.29(3) |
| 11ft. | 12 " | | | 1.82(2 ) | 2.74(2) | 4.56(3) | 6.07(3) | | 0.62(2 ) | 2.56(2) | 3.83(3) | 6.11(3) | 7.92(6) |
| | 16" | | | | | 3.87(2) | 5.30(3) | | | | 3.20(2) | 5.40(3) | 7.14(3) |
| | 24" | | | | | | 3.96(2) | | | | | 4.15(2) | 5.77(2 ) |
| 12ft. | 12 " | | | | 2.12(2) | 3.67(2) | 4.93(3) | | | | 3.06(2) | 5.03(3) | 6.58(3) |
| | 16" | | | | | 2.99(2) | 4.17(2) | | | | | 4.32(2) | 5.80(2 ) |
| | 24" | | | | | | | | | | | | |
| 14ft. | 12 " | | | | | | 3.19(2) | | | | | 3.34(2) | 4.48(2 ) |
| | 16" | | | | | | | | | | | | |
| | 24" | | | | | | | | | | | | |
| 16ft. | 12 " | | | | | | | | | | | | |
| | 16" | | | | | | | | | | | | |
| | 24" | | | | | | | | | | | | |

### 3-5/8" Members — Wind Load = 50psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 3-5/8SW-gauge - (362S162-mils) | | | | | | 3-5/8J-gauge - (362S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12 " | 0.29(2) | 1.49(3) | 3.27(3) | 4.60(6) | 7.26 | 9.52 | 0.80(3) | 2.14(3) | 4.38(6) | 6.15 | 9.35 | 11.75 |
| | 16" | | 0.55(2 ) | 2.73(3) | 4.03(3) | 6.60(6) | 8.79 | | 1.55(3) | 3.78(3) | 5.55(3) | 8.70 | 11.2 6 |
| | 24" | | | 1.61(2 ) | 2.98(2) | 5.40(3) | 7.46(3) | | | 2.70(2) | 4.46(3) | 7.50(3) | 9.95(6) |
| 9ft. | 12 " | | 0.70(2 ) | 2.60(3) | 3.79(3) | 6.14(6) | 8.12 | | 1.55(2) | 3.56(3) | 5.17(3) | 8.06 | 10.39 |
| | 16" | | | 2.00(2) | 3.14(2) | 5.40(3) | 7.30(3) | | 0.23(2 ) | 2.90(2) | 4.50(3) | 7.31(3) | 9.58(6) |
| | 24" | | | | | 4.08(2) | 5.84(3) | | | | 3.30(2) | 5.97(3) | 8.11(3) |
| 10ft. | 12 " | | | 1.97(2) | 3.00(2) | 5.05(3) | 6.75(3) | | 0.55(2 ) | 2.79(2) | 4.22(3) | 6.77(3) | 8.81(6) |
| | 16" | | | | 2.33(2) | 4.26(2) | 5.88(3) | | | 2.09(2) | 3.51(2) | 5.97(3) | 7.94(3) |
| | 24" | | | | | | 4.36(2) | | | | | 4.56(2) | 6.39(2 ) |
| 11ft. | 12 " | | | | 2.29(2) | 4.04(2) | 5.48(3) | | | 2.09(2) | 3.35(2) | 5.57(3) | 7.33(3) |
| | 16" | | | | | 3.24(2) | 4.60(2) | | | | | 4.75(2) | 6.43(3) |
| | 24" | | | | | | | | | | | | 4.87(2 ) |
| 12ft. | 12 " | | | | | 3.15(2) | 4.36(2) | | | | | 4.49(2) | 5.99(3) |
| | 16" | | | | | | | | | | | | 5.10(2 ) |
| | 24" | | | | | | | | | | | | |
| 14ft. | 12 " | | | | | | | | | | | | |
| | 16" | | | | | | | | | | | | |
| | 24" | | | | | | | | | | | | |
| 16ft. | 12 " | | | | | | | | | | | | |
| | 16" | | | | | | | | | | | | |
| | 24" | | | | | | | | | | | | |

**NOTES:**

Refer to page 13 for table notes

**(2) = L/240 (3) = L/360 (6) = L/600**

# AXIAL LOADS (KIPS)

MARINO WARE®

## Allowable Axial Loads

### 6" Members — Wind Load = 5psf

| Height | Spacing | Marino\WARE – SSMA | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6SW-gauge - (600S162-mils) | | | | | | 6J-gauge - (600S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 2.56 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 3.00 | 4.45 | 7.56 | 10.03 | 15.60 | 20.58 |
| | 16" | 2.56 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 3.00 | 4.45 | 7.56 | 10.03 | 15.60 | 20.58 |
| | 24" | 2.56 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 3.00 | 4.45 | 7.56 | 10.03 | 15.60 | 20.58 |
| 9ft. | 12" | 2.56 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 2.98 | 4.41 | 7.46 | 9.89 | 15.38 | 20.28 |
| | 16" | 2.56 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 2.98 | 4.41 | 7.46 | 9.89 | 15.38 | 20.28 |
| | 24" | 2.56 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 2.98 | 4.41 | 7.46 | 9.89 | 15.38 | 20.28 |
| 10ft. | 12" | 2.55 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 2.95 | 4.36 | 7.33 | 9.72 | 15.11 | 19.91 |
| | 16" | 2.55 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 2.95 | 4.36 | 7.33 | 9.72 | 15.11 | 19.91 |
| | 24" | 2.55 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 2.95 | 4.36 | 7.33 | 9.72 | 15.11 | 19.91 |
| 11ft. | 12" | 2.52 | 3.49 | 5.71 | 7.56 | 11.51 | 14.70 | 2.92 | 4.30 | 7.18 | 9.52 | 14.79 | 19.46 |
| | 16" | 2.52 | 3.49 | 5.71 | 7.56 | 11.51 | 14.70 | 2.92 | 4.30 | 7.18 | 9.52 | 14.79 | 19.46 |
| | 24" | 2.52 | 3.49 | 5.71 | 7.56 | 11.51 | 14.70 | 2.92 | 4.30 | 7.18 | 9.52 | 14.79 | 19.46 |
| 12ft. | 12" | 2.49 | 3.45 | 5.60 | 7.52 | 11.51 | 14.70 | 2.88 | 4.22 | 7.00 | 9.28 | 14.40 | 18.92 |
| | 16" | 2.49 | 3.45 | 5.60 | 7.52 | 11.51 | 14.70 | 2.88 | 4.22 | 7.00 | 9.28 | 14.40 | 18.92 |
| | 24" | 2.49 | 3.45 | 5.60 | 7.52 | 11.51 | 14.70 | 2.88 | 4.22 | 7.00 | 9.28 | 14.40 | 18.92 |
| 14ft. | 12" | 2.41 | 3.33 | 5.32 | 7.14 | 11.29 | 14.70 | 2.79 | 4.04 | 6.55 | 8.69 | 13.46 | 17.62 |
| | 16" | 2.41 | 3.33 | 5.32 | 7.14 | 11.29 | 14.70 | 2.79 | 4.04 | 6.55 | 8.69 | 13.46 | 17.62 |
| | 24" | 2.19 | 3.25 | 5.32 | 7.14 | 11.29 | 14.70 | 2.61 | 4.04 | 6.55 | 8.69 | 13.46 | 17.62 |
| 16ft. | 12" | 2.28 | 3.17 | 4.94 | 6.62 | 10.42 | 13.75 | 2.66 | 3.82 | 6.02 | 7.98 | 12.33 | 16.0 8 |
| | 16" | 2.12 | 3.14 | 4.94 | 6.62 | 10.42 | 13.75 | 2.54 | 3.82 | 6.02 | 7.98 | 12.33 | 16.0 8 |
| | 24" | 1.84(6) | 2.81 | 4.88 | 6.62 | 10.42 | 13.75 | 2.23 | 3.55 | 6.02 | 7.98 | 12.33 | 16.0 8 |

### 6" Members — Wind Load = 15psf

| Height | Spacing | Marino\WARE – SSMA | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6SW-gauge - (600S162-mils) | | | | | | 6J-gauge - (600S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 2.56 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 3.00 | 4.45 | 7.56 | 10.03 | 15.60 | 20.58 |
| | 16" | 2.56 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 3.00 | 4.45 | 7.56 | 10.03 | 15.60 | 20.58 |
| | 24" | 2.45 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 2.95 | 4.45 | 7.56 | 10.03 | 15.60 | 20.58 |
| 9ft. | 12" | 2.56 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 2.98 | 4.41 | 7.46 | 9.89 | 15.38 | 20.28 |
| | 16" | 2.54 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 2.98 | 4.41 | 7.46 | 9.89 | 15.38 | 20.28 |
| | 24" | 2.26 | 3.40 | 5.73 | 7.56 | 11.51 | 14.70 | 2.73 | 4.41 | 7.46 | 9.89 | 15.38 | 20.28 |
| 10ft. | 12" | 2.55 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 2.95 | 4.36 | 7.33 | 9.72 | 15.11 | 19.91 |
| | 16" | 2.39 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 2.84 | 4.36 | 7.33 | 9.72 | 15.11 | 19.91 |
| | 24" | 2.04 | 3.16 | 5.73 | 7.56 | 11.51 | 14.70 | 2.49 | 4.11 | 7.33 | 9.72 | 15.11 | 19.91 |
| 11ft. | 12" | 2.41 | 3.49 | 5.71 | 7.56 | 11.51 | 14.70 | 2.86 | 4.30 | 7.18 | 9.52 | 14.79 | 19.46 |
| | 16" | 2.20 | 3.32 | 5.71 | 7.56 | 11.51 | 14.70 | 2.64 | 4.24 | 7.18 | 9.52 | 14.79 | 19.46 |
| | 24" | 1.79(6) | 2.88 | 5.52 | 7.56 | 11.51 | 14.70 | 2.21 | 3.77 | 7.18 | 9.52 | 14.79 | 19.46 |
| 12ft. | 12" | 2.24 | 3.35 | 5.60 | 7.52 | 11.51 | 14.70 | 2.68 | 4.22 | 7.00 | 9.28 | 14.40 | 18.92 |
| | 16" | 1.99 | 3.08 | 5.60 | 7.52 | 11.51 | 14.70 | 2.42 | 3.96 | 7.00 | 9.28 | 14.40 | 18.92 |
| | 24" | 1.53(3) | 2.57(6) | 5.10 | 7.21 | 11.51 | 14.70 | 1.93(6) | 3.41 | 6.65 | 9.28 | 14.40 | 18.92 |
| 14ft. | 12" | 1.86(6) | 2.89 | 5.22 | 7.14 | 11.29 | 14.70 | 2.26 | 3.69 | 6.55 | 8.69 | 13.46 | 17.62 |
| | 16" | 1.55(3) | 2.54(6) | 4.85 | 6.82 | 11.29 | 14.70 | 1.93(3) | 3.32 | 6.22 | 8.68 | 13.46 | 17.62 |
| | 24" | 0.89(2) | 1.91(3) | 4.17(3) | 6.03(6) | 10.28 | 13.85 | 1.32(3) | 2.64(3) | 5.48(6) | 7.87 | 13.02 | 17.49 |
| 16ft. | 12" | 1.45(3) | 2.37(3) | 4.41 | 6.19 | 10.17 | 13.63 | 1.81(3) | 3.08(6) | 5.60 | 7.81 | 12.33 | 16.0 8 |
| | 16" | 1.09(2) | 1.97(3) | 3.98(3) | 5.68(6) | 9.51 | 12.85 | 1.43(3) | 2.65(3) | 5.13(6) | 7.29 | 11.91 | 15.86 |
| | 24" | | 1.10(2) | 3.21(3) | 4.79(3) | 8.35(6) | 11.47 | 0.25(2) | 1.88(2) | 4.30(3) | 6.37(3) | 10.74(6) | 14.49 |

### 6" Members — Wind Load = 20psf

| Height | Spacing | Marino\WARE – SSMA | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6SW-gauge - (600S162-mils) | | | | | | 6J-gauge - (600S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 2.56 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 3.00 | 4.45 | 7.56 | 10.03 | 15.60 | 20.58 |
| | 16" | 2.53 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 3.00 | 4.45 | 7.56 | 10.03 | 15.60 | 20.58 |
| | 24" | 2.24 | 3.37 | 5.73 | 7.56 | 11.51 | 14.70 | 2.72 | 4.42 | 7.56 | 10.03 | 15.60 | 20.58 |
| 9ft. | 12" | 2.54 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 2.98 | 4.41 | 7.46 | 9.89 | 15.38 | 20.28 |
| | 16" | 2.36 | 3.49 | 5.73 | 7.56 | 11.51 | 14.70 | 2.83 | 4.41 | 7.46 | 9.89 | 15.38 | 20.28 |
| | 24" | 1.99 | 3.11 | 5.73 | 7.56 | 11.51 | 14.70 | 2.45 | 4.10 | 7.46 | 9.89 | 15.38 | 20.28 |
| 10ft. | 12" | 2.39 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 2.84 | 4.36 | 7.33 | 9.72 | 15.11 | 19.91 |
| | 16" | 2.16 | 3.28 | 5.73 | 7.56 | 11.51 | 14.70 | 2.60 | 4.24 | 7.33 | 9.72 | 15.11 | 19.91 |
| | 24" | 1.72(6) | 2.81 | 5.46 | 7.55 | 11.51 | 14.70 | 2.14 | 3.73 | 7.25 | 9.72 | 15.11 | 19.91 |
| 11ft. | 12" | 2.20 | 3.32 | 5.71 | 7.56 | 11.51 | 14.70 | 2.64 | 4.24 | 7.18 | 9.52 | 14.79 | 19.46 |
| | 16" | 1.93 | 3.02 | 5.67 | 7.56 | 11.51 | 14.70 | 2.35 | 3.93 | 7.18 | 9.52 | 14.79 | 19.46 |
| | 24" | 1.41(3) | 2.46(6) | 5.08 | 7.13 | 11.51 | 14.70 | 1.81(6) | 3.33 | 6.70 | 9.44 | 14.79 | 19.46 |
| 12ft. | 12" | 1.99 | 3.08 | 5.60 | 7.52 | 11.51 | 14.70 | 2.42 | 3.96 | 7.00 | 9.28 | 14.40 | 18.92 |
| | 16" | 1.68(6) | 2.74 | 5.28 | 7.41 | 11.51 | 14.70 | 2.09(6) | 3.59 | 6.84 | 9.28 | 14.40 | 18.92 |
| | 24" | 1.09(3) | 2.09(3) | 4.59(6) | 6.63 | 10.96 | 14.51 | 1.46(3) | 2.90(6) | 6.09 | 8.71 | 14.40 | 18.92 |
| 14ft. | 12" | 1.55(3) | 2.54(6) | 4.85 | 6.82 | 11.29 | 14.70 | 1.93(3) | 3.32 | 6.22 | 8.68 | 13.46 | 17.62 |
| | 16" | 1.16(3) | 2.11(3) | 4.39(6) | 6.29 | 10.61 | 14.23 | 1.52(3) | 2.86(3) | 5.72(6) | 8.13 | 13.34 | 17.62 |
| | 24" | | 1.17(2) | 3.55(3) | 5.32(3) | 9.36(6) | 12.78 | 0.19(2) | 2.02(3) | 4.80(3) | 7.13(3) | 12.09 | 16.41 |
| 16ft. | 12" | 1.09(2) | 1.97(3) | 3.98(3) | 5.68(6) | 9.51 | 12.85 | 1.43(3) | 2.65(3) | 5.13(6) | 7.29 | 11.91 | 15.86 |
| | 16" | 0.26(2) | 1.48(2) | 3.46(3) | 5.07(3) | 8.72(6) | 11.91 | 0.72(2) | 2.12(3) | 4.56(3) | 6.66(3) | 11.12 | 14.93 |
| | 24" | | | 2.53(2) | 3.99(2) | 7.33(3) | 10.27(3) | | 0.65(2) | 3.55(2) | 5.54(3) | 9.71(3) | 13.29(6) |

### 6" Members — Wind Load = 25psf

| Height | Spacing | Marino\WARE – SSMA | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6SW-gauge - (600S162-mils) | | | | | | 6J-gauge - (600S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 2.56 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 3.00 | 4.45 | 7.56 | 10.03 | 15.60 | 20.58 |
| | 16" | 2.38 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 2.88 | 4.45 | 7.56 | 10.03 | 15.60 | 20.58 |
| | 24" | 2.03 | 3.15 | 5.73 | 7.56 | 11.51 | 14.70 | 2.50 | 4.18 | 7.56 | 10.03 | 15.60 | 20.58 |
| 9ft. | 12" | 2.40 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 2.88 | 4.41 | 7.46 | 9.89 | 15.38 | 20.28 |
| | 16" | 2.17 | 3.30 | 5.73 | 7.56 | 11.51 | 14.70 | 2.64 | 4.30 | 7.46 | 9.89 | 15.38 | 20.28 |
| | 24" | 1.73 | 2.82 | 5.50 | 7.56 | 11.51 | 14.70 | 2.16 | 3.79 | 7.43 | 9.89 | 15.38 | 20.28 |
| 10ft. | 12" | 2.21 | 3.35 | 5.73 | 7.56 | 11.51 | 14.70 | 2.66 | 4.30 | 7.33 | 9.72 | 15.11 | 19.91 |
| | 16" | 1.93 | 3.04 | 5.70 | 7.56 | 11.51 | 14.70 | 2.37 | 3.98 | 7.33 | 9.72 | 15.11 | 19.91 |
| | 24" | 1.40(3) | 2.46 | 5.10 | 7.16 | 11.51 | 14.70 | 1.80(6) | 3.36 | 6.86 | 9.68 | 15.11 | 19.91 |
| 11ft. | 12" | 1.99 | 3.10 | 5.71 | 7.56 | 11.51 | 14.70 | 2.42 | 4.01 | 7.18 | 9.52 | 14.79 | 19.46 |
| | 16" | 1.66(6) | 2.74 | 5.37 | 7.46 | 11.51 | 14.70 | 2.08 | 3.62 | 7.02 | 9.52 | 14.79 | 19.46 |
| | 24" | 0.95(3) | 2.06(3) | 4.65(6) | 6.66 | 11.00 | 14.59 | 1.42(3) | 2.89(6) | 6.23 | 8.94 | 14.79 | 19.46 |
| 12ft. | 12" | 1.76(6) | 2.82 | 5.37 | 7.51 | 11.51 | 14.70 | 2.17 | 3.68 | 6.94 | 9.28 | 14.40 | 18.92 |
| | 16" | 1.38(3) | 2.41(6) | 4.93 | 7.01 | 11.43 | 14.70 | 1.77(3) | 3.24 | 6.46 | 9.11 | 14.40 | 18.92 |
| | 24" | 0.10(2) | 1.64(3) | 4.10(3) | 6.07(6) | 10.28 | 13.76 | 0.67(3) | 2.41(3) | 5.56(6) | 8.14 | 13.71 | 18.61 |
| 14ft. | 12" | 1.26(3) | 2.22(3) | 4.51(6) | 6.42 | 10.78 | 14.43 | 1.62(3) | 2.97(6) | 5.84 | 8.27 | 13.46 | 17.62 |
| | 16" | 0.48(2) | 1.71(3) | 3.96(3) | 5.79(6) | 9.97 | 13.49 | 1.02(2) | 2.43(3) | 5.25(3) | 7.62(6) | 12.70 | 17.12 |
| | 24" | | | 2.97(2) | 4.65(3) | 8.50(3) | 11.79(6) | | 1.04(2) | 4.17(3) | 6.43(3) | 11.23(6) | 15.41 |
| 16ft. | 12" | 0.49(2) | 1.60(2) | 3.58(3) | 5.22(3) | 8.91 | 12.13 | 0.97(2) | 2.25(3) | 4.70(3) | 6.81(6) | 11.31 | 15.15 |
| | 16" | | 0.63(2) | 2.97(2) | 4.51(3) | 8.00(3) | 11.05(6) | | 1.61(2) | 4.04(3) | 6.08(3) | 10.39(6) | 14.0 8 |
| | 24" | | | | 3.27(2) | 6.41(3) | 9.19(3) | | | 2.88(2) | 4.79(2) | 8.77(3) | 12.20(3) |

**NOTES:**

**(2) = L/240 (3) = L/360 (6) = L/600**

Refer to page 13 for table notes

## Allowable Axial Loads

### 6" Member — Wind Load = 30psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6SW-gauge - (600S162-mils) | | | | | | 6J-gauge - (600S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 2.45 | 3.52 | 5.73 | 7.56 | 11.51 | 14.70 | 2.95 | 4.45 | 7.56 | 10.03 | 15.60 | 20.58 |
| | 16" | 2.24 | 3.37 | 5.73 | 7.56 | 11.51 | 14.70 | 2.72 | 4.42 | 7.56 | 10.03 | 15.60 | 20.58 |
| | 24" | 1.82 | 2.92 | 5.62 | 7.56 | 11.51 | 14.70 | 2.27 | 3.94 | 7.56 | 10.03 | 15.60 | 20.58 |
| 9ft. | 12" | 2.26 | 3.40 | 5.73 | 7.56 | 11.51 | 14.70 | 2.73 | 4.41 | 7.46 | 9.89 | 15.38 | 20.28 |
| | 16" | 1.99 | 3.11 | 5.73 | 7.56 | 11.51 | 14.70 | 2.45 | 4.10 | 7.46 | 9.89 | 15.38 | 20.28 |
| | 24" | 1.47(6) | 2.55 | 5.22 | 7.29 | 11.51 | 14.70 | 1.89 | 3.49 | 7.11 | 9.89 | 15.38 | 20.28 |
| 10ft. | 12" | 2.04 | 3.16 | 5.73 | 7.56 | 11.51 | 14.70 | 2.49 | 4.11 | 7.33 | 9.72 | 15.11 | 19.91 |
| | 16" | 1.72(6) | 2.81 | 5.46 | 7.55 | 11.51 | 14.70 | 2.14 | 3.73 | 7.25 | 9.72 | 15.11 | 19.91 |
| | 24" | 1.05(3) | 2.13(6) | 4.76 | 6.78 | 11.18 | 14.70 | 1.47(3) | 3.00(6) | 6.47 | 9.27 | 15.11 | 19.91 |
| 11ft. | 12" | 1.79(6) | 2.88 | 5.52 | 7.56 | 11.51 | 14.70 | 2.21 | 3.77 | 7.18 | 9.52 | 14.79 | 19.46 |
| | 16" | 1.41(3) | 2.46(6) | 5.08 | 7.13 | 11.51 | 14.70 | 1.81(6) | 3.33 | 6.70 | 9.44 | 14.79 | 19.46 |
| | 24" | 0.06(2) | 1.67(3) | 4.24(3) | 6.20(6) | 10.45 | 13.98 | 0.67(3) | 2.48(3) | 5.78(6) | 8.46 | 14.26 | 19.40 |
| 12ft. | 12" | 1.53(3) | 2.57(6) | 5.10 | 7.21 | 11.51 | 14.70 | 1.93(6) | 3.41 | 6.65 | 9.28 | 14.40 | 18.92 |
| | 16" | 1.09(3) | 2.09(3) | 4.59(6) | 6.63 | 10.96 | 14.51 | 1.46(3) | 2.90(6) | 6.09 | 8.71 | 14.40 | 18.92 |
| | 24" | | 0.76(2) | 3.64(3) | 5.54(3) | 9.64 | 13.03 | 0.00 | 1.94(3) | 5.05(3) | 7.59(6) | 13.04 | 17.84 |
| 14ft. | 12" | 0.89(2) | 1.91(3) | 4.17(3) | 6.03(6) | 10.28 | 13.85 | 1.32(3) | 2.64(3) | 5.48(6) | 7.87 | 13.02 | 17.49 |
| | 16" | | 1.17(2) | 3.55(3) | 5.32(3) | 9.36(6) | 12.78 | 0.19(2) | 2.02(3) | 4.80(3) | 7.13(3) | 12.09 | 16.41 |
| | 24" | | | 2.43(2) | 4.02(2) | 7.70(3) | 10.87(3) | | | 3.58(2) | 5.79(3) | 10.43(3) | 14.47(6) |
| 16ft. | 12" | | 1.10(2) | 3.21(3) | 4.79(3) | 8.35(6) | 11.47 | 0.25(2) | 1.88(2) | 4.30(3) | 6.37(3) | 10.74(6) | 14.49 |
| | 16" | | | 2.53(2) | 3.99(2) | 7.33(3) | 10.27(3) | | 0.65(2) | 3.55(2) | 5.54(3) | 9.71(3) | 13.29(6) |
| | 24" | | | | | 5.56(2) | 8.20(3) | | | | 4.10(2) | 7.90(2) | 11.20(3) |

### 6" Member — Wind Load = 35psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6SW-gauge - (600S162-mils) | | | | | | 6J-gauge - (600S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 2.35 | 3.48 | 5.73 | 7.56 | 11.51 | 14.70 | 2.84 | 4.45 | 7.56 | 10.03 | 15.60 | 20.58 |
| | 16" | 2.10 | 3.22 | 5.73 | 7.56 | 11.51 | 14.70 | 2.57 | 4.26 | 7.56 | 10.03 | 15.60 | 20.58 |
| | 24" | 1.61 | 2.70 | 5.40 | 7.50 | 11.51 | 14.70 | 2.05 | 3.70 | 7.42 | 10.03 | 15.60 | 20.58 |
| 9ft. | 12" | 2.13 | 3.25 | 5.73 | 7.56 | 11.51 | 14.70 | 2.59 | 4.25 | 7.46 | 9.89 | 15.38 | 20.28 |
| | 16" | 1.82 | 2.92 | 5.59 | 7.56 | 11.51 | 14.70 | 2.26 | 3.89 | 7.46 | 9.89 | 15.38 | 20.28 |
| | 24" | 1.21(3) | 2.27(6) | 4.94 | 6.99 | 11.45 | 14.70 | 1.62(6) | 3.19 | 6.80 | 9.67 | 15.38 | 20.28 |
| 10ft. | 12" | 1.88 | 2.99 | 5.64 | 7.56 | 11.51 | 14.70 | 2.31 | 3.92 | 7.33 | 9.72 | 15.11 | 19.91 |
| | 16" | 1.50(6) | 2.58 | 5.22 | 7.29 | 11.51 | 14.70 | 1.91(6) | 3.48 | 6.99 | 9.72 | 15.11 | 19.91 |
| | 24" | 0.26(3) | 1.80(3) | 4.42(6) | 6.40 | 10.73 | 14.32 | 0.93(3) | 2.65(6) | 6.10 | 8.87 | 14.89 | 19.91 |
| 11ft. | 12" | 1.60(6) | 2.67 | 5.30 | 7.38 | 11.51 | 14.70 | 2.01(6) | 3.55 | 6.94 | 9.52 | 14.79 | 19.46 |
| | 16" | 1.16(3) | 2.19(3) | 4.79 | 6.82 | 11.19 | 14.70 | 1.54(3) | 3.04(6) | 6.38 | 9.11 | 14.79 | 19.46 |
| | 24" | | 0.95(3) | 3.84(3) | 5.75(3) | 9.92 | 13.39 | | 2.07(3) | 5.34(3) | 7.99(6) | 13.69 | 18.75 |
| 12ft. | 12" | 1.31(3) | 2.33(6) | 4.84 | 6.91 | 11.31 | 14.70 | 1.69(3) | 3.15(6) | 6.37 | 9.01 | 14.40 | 18.92 |
| | 16" | 0.42(2) | 1.78(3) | 4.26(3) | 6.25(6) | 10.51 | 14.00 | 1.03(3) | 2.57(3) | 5.73(6) | 8.33 | 13.94 | 18.88 |
| | 24" | | | 3.19(3) | 5.03(3) | 9.02(6) | 12.34 | | 1.00(2) | 4.56(3) | 7.06(3) | 12.39 | 17.09 |
| 14ft. | 12" | 0.28(2) | 1.61(3) | 3.85(3) | 5.67(3) | 9.81 | 13.31 | 0.81(2) | 2.33(3) | 5.13(3) | 7.49(6) | 12.54 | 16.94 |
| | 16" | | 0.35(2) | 3.16(2) | 4.87(3) | 8.78(3) | 12.11(6) | | 1.46(2) | 4.38(3) | 6.66(3) | 11.51(6) | 15.74 |
| | 24" | | | | 3.44(2) | 6.95(3) | 10.00(3) | | | 3.03(2) | 5.17(2) | 9.66(3) | 13.59(3) |
| 16ft. | 12" | | 0.40(2) | 2.86(2) | 4.38(3) | 7.83(3) | 10.85(6) | | 1.36(2) | 3.92(3) | 5.94(3) | 10.21(6) | 13.87 |
| | 16" | | | | 3.51(2) | 6.71(3) | 9.54(3) | | | 3.10(2) | 5.03(2) | 9.07(3) | 12.55(3) |
| | 24" | | | | | 4.77(2) | 7.28(2) | | | | | 7.10(2) | 10.26(3) |

### 6" Member — Wind Load = 40psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6SW-gauge - (600S162-mils) | | | | | | 6J-gauge - (600S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 2.24 | 3.37 | 5.73 | 7.56 | 11.51 | 14.70 | 2.72 | 4.42 | 7.56 | 10.03 | 15.60 | 20.58 |
| | 16" | 1.96 | 3.07 | 5.73 | 7.56 | 11.51 | 14.70 | 2.42 | 4.10 | 7.56 | 10.03 | 15.60 | 20.58 |
| | 24" | 1.41(6) | 2.49 | 5.18 | 7.26 | 11.51 | 14.70 | 1.84 | 3.46 | 7.17 | 10.03 | 15.60 | 20.58 |
| 9ft. | 12" | 1.99 | 3.11 | 5.73 | 7.56 | 11.51 | 14.70 | 2.45 | 4.10 | 7.46 | 9.89 | 15.38 | 20.28 |
| | 16" | 1.64 | 2.73 | 5.40 | 7.50 | 11.51 | 14.70 | 2.07 | 3.69 | 7.32 | 9.89 | 15.38 | 20.28 |
| | 24" | 0.70(3) | 2.00(6) | 4.66 | 6.69 | 11.10 | 14.70 | 1.35(3) | 2.90 | 6.49 | 9.34 | 15.38 | 20.28 |
| 10ft. | 12" | 1.72(6) | 2.81 | 5.46 | 7.55 | 11.51 | 14.70 | 2.14 | 3.73 | 7.25 | 9.72 | 15.11 | 19.91 |
| | 16" | 1.29(3) | 2.35(6) | 4.99 | 7.03 | 11.48 | 14.70 | 1.69(6) | 3.24 | 6.73 | 9.54 | 15.11 | 19.91 |
| | 24" | | 1.39(3) | 4.08(3) | 6.04(6) | 10.30 | 13.84 | 0.11(3) | 2.30(3) | 5.73(6) | 8.48 | 14.43 | 19.72 |
| 11ft. | 12" | 1.41(3) | 2.46(6) | 5.08 | 7.13 | 11.51 | 14.70 | 1.81(6) | 3.33 | 6.70 | 9.44 | 14.79 | 19.46 |
| | 16" | 0.65(3) | 1.93(3) | 4.51(6) | 6.50 | 10.82 | 14.38 | 1.29(3) | 2.75(3) | 6.08 | 8.78 | 14.65 | 19.46 |
| | 24" | | 0.04(2) | 3.45(3) | 5.32(3) | 9.40(6) | 12.81 | | 1.39(3) | 4.92(3) | 7.54(6) | 13.14 | 18.12 |
| 12ft. | 12" | 1.09(3) | 2.09(3) | 4.59(6) | 6.63 | 10.96 | 14.51 | 1.46(3) | 2.90(6) | 6.09 | 8.71 | 14.40 | 18.92 |
| | 16" | | 1.47(3) | 3.95(3) | 5.89(6) | 10.07 | 13.51 | 0.33(2) | 2.25(3) | 5.39(3) | 7.95(6) | 13.48 | 18.35 |
| | 24" | | | 2.76(2) | 4.54(3) | 8.42(3) | 11.67(6) | | | 4.09(3) | 6.55(3) | 11.76(6) | 16.37 |
| 14ft. | 12" | | 1.17(2) | 3.55(3) | 5.32(3) | 9.36(6) | 12.78 | 0.19(2) | 2.02(3) | 4.80(3) | 7.13(3) | 12.09 | 16.41 |
| | 16" | | | 2.79(2) | 4.44(3) | 8.23(3) | 11.48(6) | | 0.63(2) | 3.97(2) | 6.21(3) | 10.96(6) | 15.09 |
| | 24" | | | | 2.62(2) | 6.24(2) | 9.18(3) | | | | 4.59(2) | 8.94(3) | 12.75(3) |
| 16ft. | 12" | | | 2.53(2) | 3.99(2) | 7.33(3) | 10.27(3) | | 0.65(2) | 3.55(2) | 5.54(3) | 9.71(3) | 13.29(6) |
| | 16" | | | | 3.05(2) | 6.12(2) | 8.85(3) | | | | 4.55(2) | 8.47(3) | 11.85(3) |
| | 24" | | | | | | 6.42(2) | | | | | 6.34(2) | 9.39(2) |

### 6" Member — Wind Load = 50psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6SW-gauge - (600S162-mils) | | | | | | 6J-gauge - (600S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 2.03 | 3.15 | 5.73 | 7.56 | 11.51 | 14.70 | 2.50 | 4.18 | 7.56 | 10.03 | 15.60 | 20.58 |
| | 16" | 1.68 | 2.78 | 5.47 | 7.56 | 11.51 | 14.70 | 2.13 | 3.78 | 7.50 | 10.03 | 15.60 | 20.58 |
| | 24" | 0.81(3) | 2.06(6) | 4.75 | 6.80 | 11.25 | 14.70 | 1.41(6) | 3.00 | 6.69 | 9.60 | 15.60 | 20.58 |
| 9ft. | 12" | 1.73 | 2.82 | 5.50 | 7.56 | 11.51 | 14.70 | 2.16 | 3.79 | 7.43 | 9.89 | 15.38 | 20.28 |
| | 16" | 1.30(3) | 2.36 | 5.03 | 7.09 | 11.51 | 14.70 | 1.71(6) | 3.29 | 6.90 | 9.78 | 15.38 | 20.28 |
| | 24" | | 1.38(3) | 4.12(6) | 6.10 | 10.41 | 13.98 | 0.04(3) | 2.34(3) | 5.88(6) | 8.71 | 14.83 | 20.28 |
| 10ft. | 12" | 1.40(3) | 2.46 | 5.10 | 7.16 | 11.51 | 14.70 | 1.80(6) | 3.36 | 6.86 | 9.68 | 15.11 | 19.91 |
| | 16" | 0.52(3) | 1.91(3) | 4.53(6) | 6.53 | 10.88 | 14.48 | 1.21(3) | 2.76(6) | 6.22 | 9.00 | 15.05 | 19.91 |
| | 24" | | | 3.44(3) | 5.32(3) | 9.45 | 12.90 | | 1.22(3) | 5.01(3) | 7.72(6) | 13.52 | 18.68 |
| 11ft. | 12" | 0.95(3) | 2.06(3) | 4.65(6) | 6.66 | 11.00 | 14.59 | 1.42(3) | 2.89(6) | 6.23 | 8.94 | 14.79 | 19.46 |
| | 16" | | 1.26(3) | 3.97(3) | 5.90(6) | 10.09 | 13.58 | 0.06(3) | 2.21(3) | 5.49(3) | 8.15 | 13.88 | 18.96 |
| | 24" | | | 2.71(2) | 4.49(3) | 8.40(3) | 11.70(6) | | | 4.10(3) | 6.66(3) | 12.08(6) | 16.90 |
| 12ft. | 12" | 0.10(2) | 1.64(3) | 4.10(3) | 6.07(6) | 10.28 | 13.76 | 0.67(3) | 2.41(3) | 5.56(6) | 8.14 | 13.71 | 18.61 |
| | 16" | | 0.09(2) | 3.34(3) | 5.20(3) | 9.22(6) | 12.57 | | 1.36(3) | 4.72(3) | 7.23(3) | 12.60 | 17.34 |
| | 24" | | | 1.31(2) | 3.61(2) | 7.28(3) | 10.39(3) | | | 3.20(2) | 5.57(3) | 10.57(3) | 15.00(6) |
| 14ft. | 12" | | | 2.97(2) | 4.65(3) | 8.50(3) | 11.79(6) | | 1.04(2) | 4.17(3) | 6.43(3) | 11.23(6) | 15.41 |
| | 16" | | | 1.82(2) | 3.63(2) | 7.20(3) | 10.29(3) | | | 3.21(2) | 5.37(2) | 9.91(3) | 13.88(3) |
| | 24" | | | | | 4.90(2) | 7.65(2) | | | | | 7.58(2) | 11.19(3) |
| 16ft. | 12" | | | | 3.27(2) | 6.41(3) | 9.19(3) | | | 2.88(2) | 4.79(2) | 8.77(3) | 12.20(3) |
| | 16" | | | | | 5.03(2) | 7.58(2) | | | | | 7.36(2) | 10.57(3) |
| | 24" | | | | | | | | | | | | 7.77(2) |

**NOTES:**

Refer to page 13 for table notes

**(2) = L/240 (3) = L/360 (6) = L/600**

MARINO WARE®

# AXIAL LOADS (KIPS)

Sponsored by: Steel Stud Manufacturers Association

## Allowable Axial Loads

### 8" Members — Wind Load = 5psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 8SW-gauge - (800S162-mils) | | | | | | 8J-gauge - (800S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| 9ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| 10ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| 11ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| 12ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| 14ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.03 | 4.51 | 7.70 | 10.26 | 16.07 | 21.13 |
| | 16" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.03 | 4.51 | 7.70 | 10.26 | 16.07 | 21.13 |
| | 24" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.03 | 4.51 | 7.70 | 10.26 | 16.07 | 21.13 |
| 16ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 2.97 | 4.40 | 7.42 | 9.88 | 15.53 | 20.70 |
| | 16" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 2.97 | 4.40 | 7.42 | 9.88 | 15.53 | 20.70 |
| | 24" | 2.33 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 2.85 | 4.40 | 7.42 | 9.88 | 15.53 | 20.70 |

### 8" Members — Wind Load = 15psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 8SW-gauge - (800S162-mils) | | | | | | 8J-gauge - (800S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| 9ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 2.44 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| 10ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 2.29 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 2.90 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| 11ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.42 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.05 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 2.13 | 3.35 | 5.52 | 7.33 | 11.34 | 14.77 | 2.72 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| 12ft. | 12" | 2.48 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.30 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 2.91 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 1.94 | 3.17 | 5.52 | 7.33 | 11.34 | 14.77 | 2.51 | 4.40 | 7.85 | 10.38 | 16.07 | 21.13 |
| 14ft. | 12" | 2.26 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 2.83 | 4.51 | 7.70 | 10.26 | 16.07 | 21.13 |
| | 16" | 2.01 | 3.23 | 5.52 | 7.33 | 11.34 | 14.77 | 2.56 | 4.39 | 7.70 | 10.26 | 16.07 | 21.13 |
| | 24" | 1.54(6) | 2.77 | 5.29 | 7.33 | 11.34 | 14.77 | 2.03 | 3.87 | 7.62 | 10.26 | 16.07 | 21.13 |
| 16ft. | 12" | 2.00 | 3.21 | 5.52 | 7.33 | 11.34 | 14.77 | 2.49 | 4.26 | 7.42 | 9.88 | 15.53 | 20.70 |
| | 16" | 1.69(6) | 2.90 | 5.39 | 7.33 | 11.34 | 14.77 | 2.15 | 3.91 | 7.42 | 9.88 | 15.53 | 20.70 |
| | 24" | 1.09(3) | 2.31(3) | 4.78 | 6.77 | 11.22 | 14.77 | 1.49(3) | 3.25(6) | 6.73 | 9.57 | 15.53 | 20.70 |

### 8" Members — Wind Load = 20psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 8SW-gauge - (800S162-mils) | | | | | | 8J-gauge - (800S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 2.41 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.04 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| 9ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 2.24 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 2.85 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| 10ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.37 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.00 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 2.05 | 3.27 | 5.52 | 7.33 | 11.34 | 14.77 | 2.63 | 4.52 | 7.85 | 10.38 | 16.07 | 21.13 |
| 11ft. | 12" | 2.42 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.05 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.22 | 3.44 | 5.52 | 7.33 | 11.34 | 14.77 | 2.83 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 1.83 | 3.07 | 5.52 | 7.33 | 11.34 | 14.77 | 2.39 | 4.28 | 7.85 | 10.38 | 16.07 | 21.13 |
| 12ft. | 12" | 2.30 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 2.91 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.06 | 3.28 | 5.52 | 7.33 | 11.34 | 14.77 | 2.64 | 4.53 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 1.60 | 2.84 | 5.39 | 7.33 | 11.34 | 14.77 | 2.12 | 4.02 | 7.85 | 10.38 | 16.07 | 21.13 |
| 14ft. | 12" | 2.01 | 3.23 | 5.52 | 7.33 | 11.34 | 14.77 | 2.56 | 4.39 | 7.70 | 10.26 | 16.07 | 21.13 |
| | 16" | 1.70 | 2.92 | 5.45 | 7.33 | 11.34 | 14.77 | 2.20 | 4.04 | 7.70 | 10.26 | 16.07 | 21.13 |
| | 24" | 1.09(3) | 2.33(6) | 4.84 | 6.86 | 11.34 | 14.77 | 1.52(3) | 3.36 | 7.0 8 | 1 0.05 | 16.07 | 21.13 |
| 16ft. | 12" | 1.69(6) | 2.90 | 5.39 | 7.33 | 11.34 | 14.77 | 2.15 | 3.91 | 7.42 | 9.88 | 15.53 | 20.70 |
| | 16" | 1.29(3) | 2.51(6) | 4.98 | 7.00 | 11.34 | 14.77 | 1.71(3) | 3.47 | 6.96 | 9.82 | 15.53 | 20.70 |
| | 24" | | 1.76(3) | 4.21(3) | 6.12(6) | 10.43 | 14.17 | 0.27(3) | 2.63(3) | 6.05(6) | 8.83 | 15.00 | 20.63 |

### 8" Members — Wind Load = 25psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 8SW-gauge - (800S162-mils) | | | | | | 8J-gauge - (800S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 2.26 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 2.87 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| 9ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.37 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.00 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 2.04 | 3.27 | 5.52 | 7.33 | 11.34 | 14.77 | 2.63 | 4.53 | 7.85 | 10.38 | 16.07 | 21.13 |
| 10ft. | 12" | 2.41 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.04 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.21 | 3.43 | 5.52 | 7.33 | 11.34 | 14.77 | 2.81 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 1.81 | 3.05 | 5.52 | 7.33 | 11.34 | 14.77 | 2.36 | 4.26 | 7.85 | 10.38 | 16.07 | 21.13 |
| 11ft. | 12" | 2.27 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 2.89 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.03 | 3.25 | 5.52 | 7.33 | 11.34 | 14.77 | 2.61 | 4.50 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 1.54 | 2.79 | 5.35 | 7.33 | 11.34 | 14.77 | 2.06 | 3.97 | 7.85 | 10.38 | 16.07 | 21.13 |
| 12ft. | 12" | 2.12 | 3.34 | 5.52 | 7.33 | 11.34 | 14.77 | 2.71 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 1.83 | 3.06 | 5.52 | 7.33 | 11.34 | 14.77 | 2.38 | 4.27 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 1.26(6) | 2.52 | 5.06 | 7.12 | 11.34 | 14.77 | 1.74 | 3.64 | 7.51 | 10.38 | 16.07 | 21.13 |
| 14ft. | 12" | 1.77 | 3.00 | 5.52 | 7.33 | 11.34 | 14.77 | 2.29 | 4.13 | 7.70 | 10.26 | 16.07 | 21.13 |
| | 16" | 1.39(6) | 2.62 | 5.14 | 7.19 | 11.34 | 14.77 | 1.86(6) | 3.70 | 7.44 | 10.26 | 16.07 | 21.13 |
| | 24" | | 1.90(3) | 4.41(6) | 6.37 | 10.79 | 14.61 | 0.57(3) | 2.88(6) | 6.54 | 9.49 | 15.99 | 21.13 |
| 16ft. | 12" | 1.38(3) | 2.60(6) | 5.08 | 7.11 | 11.34 | 14.77 | 1.81(6) | 3.58 | 7.08 | 9.88 | 15.53 | 20.70 |
| | 16" | 0.62(3) | 2.13(3) | 4.59(6) | 6.55 | 10.95 | 14.76 | 1.27(3) | 3.04(6) | 6.50 | 9.32 | 15.53 | 20.70 |
| | 24" | | 0.82(2) | 3.66(3) | 5.51(3) | 9.68 | 13.32 | | 2.05(3) | 5.40(3) | 8.13(6) | 14.13 | 19.62 |

**NOTES:**

Refer to page 13 for table notes

**(2) = L/240 (3) = L/360 (6) = L/600**

## Allowable Axial Loads

### 8" Members — Wind Load = 30psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 8SW-gage - (800S162-mils) | | | | | | 8J-gage - (800S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.41 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.04 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 2.10 | 3.33 | 5.52 | 7.33 | 11.34 | 14.77 | 2.70 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| 9ft. | 12" | 2.44 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.24 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 2.85 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 1.85 | 3.09 | 5.52 | 7.33 | 11.34 | 14.77 | 2.41 | 4.32 | 7.85 | 10.38 | 16.07 | 21.13 |
| 10ft. | 12" | 2.29 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 2.90 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.05 | 3.27 | 5.52 | 7.33 | 11.34 | 14.77 | 2.63 | 4.52 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 1.57 | 2.82 | 5.39 | 7.33 | 11.34 | 14.77 | 2.09 | 4.00 | 7.85 | 10.38 | 16.07 | 21.13 |
| 11ft. | 12" | 2.13 | 3.35 | 5.52 | 7.33 | 11.34 | 14.77 | 2.72 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 1.83 | 3.07 | 5.52 | 7.33 | 11.34 | 14.77 | 2.39 | 4.28 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 1.26(6) | 2.52 | 5.08 | 7.14 | 11.34 | 14.77 | 1.75 | 3.66 | 7.55 | 10.38 | 16.07 | 21.13 |
| 12ft. | 12" | 1.94 | 3.17 | 5.52 | 7.33 | 11.34 | 14.77 | 2.51 | 4.40 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 1.60 | 2.84 | 5.39 | 7.33 | 11.34 | 14.77 | 2.12 | 4.02 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 0.65(3) | 2.20(6) | 4.75 | 6.77 | 11.29 | 14.77 | 1.37(6) | 3.28 | 7.12 | 10.11 | 16.07 | 21.13 |
| 14ft. | 12" | 1.54(6) | 2.77 | 5.29 | 7.33 | 11.34 | 14.77 | 2.03 | 3.87 | 7.62 | 10.26 | 16.07 | 21.13 |
| | 16" | 1.09(3) | 2.33(6) | 4.84 | 6.86 | 11.34 | 14.77 | 1.52(3) | 3.36 | 7.08 | 10.05 | 16.07 | 21.13 |
| | 24" | | 1.46(3) | 3.98(3) | 5.90(6) | 10.22 | 13.98 | | 2.40(3) | 6.03(6) | 8.93 | 15.33 | 20.92 |
| 16ft. | 12" | 1.09(3) | 2.31(3) | 4.78 | 6.77 | 11.22 | 14.77 | 1.49(3) | 3.25(6) | 6.73 | 9.57 | 15.53 | 20.70 |
| | 16" | | 1.76(3) | 4.21(3) | 6.12(6) | 10.43 | 14.17 | 0.27(3) | 2.63(3) | 6.05(6) | 8.83 | 15.00 | 20.63 |
| | 24" | | | 3.13(3) | 4.91(3) | 8.95(6) | 12.50 | | 0.85(2) | 4.78(3) | 7.45(3) | 13.30(6) | 18.65 |

### 8" Members — Wind Load = 35psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 8SW-gage - (800S162-mils) | | | | | | 8J-gage - (800S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 2.49 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.07 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.31 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 2.93 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 1.95 | 3.19 | 5.52 | 7.33 | 11.34 | 14.77 | 2.53 | 4.43 | 7.85 | 10.38 | 16.07 | 21.13 |
| 9ft. | 12" | 2.34 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 2.96 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.11 | 3.33 | 5.52 | 7.33 | 11.34 | 14.77 | 2.70 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 1.66 | 2.91 | 5.48 | 7.33 | 11.34 | 14.77 | 2.20 | 4.11 | 7.85 | 10.38 | 16.07 | 21.13 |
| 10ft. | 12" | 2.17 | 3.39 | 5.52 | 7.33 | 11.34 | 14.77 | 2.77 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 1.89 | 3.12 | 5.52 | 7.33 | 11.34 | 14.77 | 2.45 | 4.35 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 1.33 | 2.60 | 5.17 | 7.24 | 11.34 | 14.77 | 1.83 | 3.75 | 7.66 | 10.38 | 16.07 | 21.13 |
| 11ft. | 12" | 1.98 | 3.21 | 5.52 | 7.33 | 11.34 | 14.77 | 2.55 | 4.44 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 1.64 | 2.88 | 5.44 | 7.33 | 11.34 | 14.77 | 2.17 | 4.07 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 0.79(6) | 2.25 | 4.82 | 6.85 | 11.34 | 14.77 | 1.43(6) | 3.35 | 7.22 | 10.23 | 16.07 | 21.13 |
| 12ft. | 12" | 1.77 | 3.01 | 5.52 | 7.33 | 11.34 | 14.77 | 2.32 | 4.21 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 1.37(6) | 2.62 | 5.17 | 7.23 | 11.34 | 14.77 | 1.87 | 3.77 | 7.64 | 10.38 | 16.07 | 21.13 |
| | 24" | | 1.88(6) | 4.43 | 6.42 | 10.88 | 14.75 | 0.43(3) | 2.92(6) | 6.73 | 9.70 | 16.07 | 21.13 |
| 14ft. | 12" | 1.31(3) | 2.55 | 5.07 | 7.10 | 11.34 | 14.77 | 1.77(6) | 3.61 | 7.35 | 10.26 | 16.07 | 21.13 |
| | 16" | 0.31(3) | 2.04(3) | 4.55(6) | 6.53 | 10.98 | 14.77 | 0.99(3) | 3.04(6) | 6.72 | 9.67 | 16.07 | 21.13 |
| | 24" | | 0.40(3) | 3.57(3) | 5.44(3) | 9.67 | 13.36 | | 1.91(3) | 5.53(3) | 8.40(6) | 14.68 | 20.19 |
| 16ft. | 12" | 0.39(3) | 2.03(3) | 4.49(6) | 6.44 | 10.82 | 14.62 | 1.01(3) | 2.94(3) | 6.38 | 9.19 | 15.44 | 20.70 |
| | 16" | | 1.25(3) | 3.84(3) | 5.71(3) | 9.93 | 13.60 | | 2.24(3) | 5.61(3) | 8.36(6) | 14.41 | 19.95 |
| | 24" | | | 2.62(2) | 4.34(3) | 8.26(3) | 11.71(6) | | | 4.19(3) | 6.81(3) | 12.50(6) | 17.72 |

### 8" Members — Wind Load = 40psf

| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 8SW-gage - (800S162-mils) | | | | | | 8J-gage - (800S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 2.41 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 3.04 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.21 | 3.43 | 5.52 | 7.33 | 11.34 | 14.77 | 2.81 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 1.80 | 3.04 | 5.52 | 7.33 | 11.34 | 14.77 | 2.35 | 4.27 | 7.85 | 10.38 | 16.07 | 21.13 |
| 9ft. | 12" | 2.24 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 2.85 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 1.98 | 3.21 | 5.52 | 7.33 | 11.34 | 14.77 | 2.56 | 4.46 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 1.47 | 2.73 | 5.31 | 7.33 | 11.34 | 14.77 | 1.98 | 3.90 | 7.84 | 10.38 | 16.07 | 21.13 |
| 10ft. | 12" | 2.05 | 3.27 | 5.52 | 7.33 | 11.34 | 14.77 | 2.63 | 4.52 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 1.73 | 2.97 | 5.52 | 7.33 | 11.34 | 14.77 | 2.27 | 4.18 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 1.10(6) | 2.38 | 4.95 | 7.00 | 11.34 | 14.77 | 1.57 | 3.49 | 7.40 | 10.38 | 16.07 | 21.13 |
| 11ft. | 12" | 1.83 | 3.07 | 5.52 | 7.33 | 11.34 | 14.77 | 2.39 | 4.28 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 1.45 | 2.70 | 5.26 | 7.33 | 11.34 | 14.77 | 1.96 | 3.86 | 7.76 | 10.38 | 16.07 | 21.13 |
| | 24" | 0.01(3) | 1.99(6) | 4.56 | 6.57 | 11.07 | 14.77 | 0.73(6) | 3.05 | 6.90 | 9.89 | 16.07 | 21.13 |
| 12ft. | 12" | 1.60 | 2.84 | 5.39 | 7.33 | 11.34 | 14.77 | 2.12 | 4.02 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 1.15(6) | 2.41 | 4.96 | 7.00 | 11.34 | 14.77 | 1.62(6) | 3.52 | 7.38 | 10.38 | 16.07 | 21.13 |
| | 24" | | 1.58(3) | 4.13(6) | 6.08 | 10.48 | 14.31 | | 2.56(6) | 6.35 | 9.31 | 15.71 | 21.13 |
| 14ft. | 12" | 1.09(3) | 2.33(6) | 4.84 | 6.86 | 11.34 | 14.77 | 1.52(3) | 3.36 | 7.08 | 10.05 | 16.07 | 21.13 |
| | 16" | | 1.76(3) | 4.27(6) | 6.22 | 10.60 | 14.40 | 0.16(3) | 2.72(3) | 6.37(6) | 9.30 | 15.77 | 21.13 |
| | 24" | | | 3.17(3) | 4.99(3) | 9.13(6) | 12.75 | | 0.76(3) | 5.04(3) | 7.87(3) | 14.04 | 19.47 |
| 16ft. | 12" | | 1.76(3) | 4.21(3) | 6.12(6) | 10.43 | 14.17 | 0.27(3) | 2.63(3) | 6.05(6) | 8.83 | 15.00 | 20.63 |
| | 16" | | 0.40(2) | 3.48(3) | 5.31(3) | 9.43(6) | 13.04 | | 1.76(3) | 5.19(3) | 7.90(3) | 13.85 | 19.29 |
| | 24" | | | 1.76(2) | 3.79(2) | 7.58(3) | 10.94(3) | | | 3.62(2) | 6.18(3) | 11.74(3) | 16.82(6) |

### 8" Members — Wind Load = 50psf

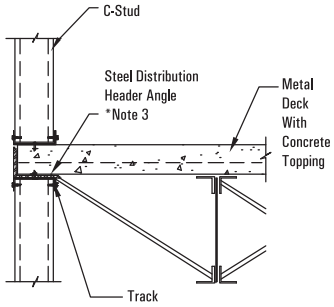
| Height | Spacing | Marino\WARE - (SSMA) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 8SW-gage - (800S162-mils) | | | | | | 8J-gage - (800S200-mils) | | | | | |
| | | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) | 20 -(33) | 18 -(43) | 16 -(54) | 14 -(68) | 12 -(97) | 10 -(118) |
| | | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi | 33ksi | 33ksi | 50ksi | 50ksi | 50ksi | 50ksi |
| 8ft. | 12" | 2.26 | 3.45 | 5.52 | 7.33 | 11.34 | 14.77 | 2.87 | 4.58 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 2.00 | 3.24 | 5.52 | 7.33 | 11.34 | 14.77 | 2.58 | 4.48 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 1.49 | 2.76 | 5.34 | 7.33 | 11.34 | 14.77 | 2.02 | 3.94 | 7.85 | 10.38 | 16.07 | 21.13 |
| 9ft. | 12" | 2.04 | 3.27 | 5.52 | 7.33 | 11.34 | 14.77 | 2.63 | 4.53 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 1.72 | 2.97 | 5.52 | 7.33 | 11.34 | 14.77 | 2.27 | 4.18 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 24" | 1.09 | 2.37 | 4.96 | 7.01 | 11.34 | 14.77 | 1.56 | 3.49 | 7.42 | 10.38 | 16.07 | 21.13 |
| 10ft. | 12" | 1.81 | 3.05 | 5.52 | 7.33 | 11.34 | 14.77 | 2.36 | 4.26 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 1.41 | 2.67 | 5.24 | 7.32 | 11.34 | 14.77 | 1.92 | 3.83 | 7.75 | 10.38 | 16.07 | 21.13 |
| | 24" | | 1.94 | 4.52 | 6.53 | 11.04 | 14.77 | 0.52(6) | 2.99 | 6.87 | 9.88 | 16.07 | 21.13 |
| 11ft. | 12" | 1.54 | 2.79 | 5.35 | 7.33 | 11.34 | 14.77 | 2.06 | 3.97 | 7.85 | 10.38 | 16.07 | 21.13 |
| | 16" | 1.05(6) | 2.34 | 4.91 | 6.95 | 11.34 | 14.77 | 1.54 | 3.45 | 7.33 | 10.34 | 16.07 | 21.13 |
| | 24" | | 1.41(3) | 4.04(6) | 6.00 | 10.40 | 14.23 | | 2.45(6) | 6.27 | 9.23 | 15.66 | 21.13 |
| 12ft. | 12" | 1.26(6) | 2.52 | 5.06 | 7.12 | 11.34 | 14.77 | 1.74 | 3.64 | 7.51 | 10.38 | 16.07 | 21.13 |
| | 16" | 0.06(3) | 1.99(6) | 4.54 | 6.54 | 11.02 | 14.77 | 0.76(3) | 3.04 | 6.86 | 9.84 | 16.07 | 21.13 |
| | 24" | | 0.05(3) | 3.52(3) | 5.41(6) | 9.69 | 13.43 | | 1.65(3) | 5.61(3) | 8.53 | 14.80 | 20.40 |
| 14ft. | 12" | | 1.90(3) | 4.41(6) | 6.37 | 10.79 | 14.61 | 0.57(3) | 2.88(6) | 6.54 | 9.49 | 15.99 | 21.13 |
| | 16" | | 0.75(3) | 3.71(3) | 5.59(6) | 9.85 | 13.57 | | 2.10(3) | 5.69(3) | 8.57(6) | 14.89 | 20.43 |
| | 24" | | | 2.37(2) | 4.12(3) | 8.08(3) | 11.58(6) | | | 4.10(3) | 6.86(3) | 12.82(6) | 18.07 |
| 16ft. | 12" | | 0.82(2) | 3.66(3) | 5.51(3) | 9.68 | 13.32 | | 2.05(3) | 5.40(3) | 8.13(6) | 14.13 | 19.62 |
| | 16" | | | 2.79(2) | 4.53(3) | 8.49(3) | 11.97(6) | | | 4.38(3) | 7.02(3) | 12.77(6) | 18.02 |
| | 24" | | | | 2.13(2) | 6.29(3) | 9.48(3) | | | 1.66(2) | 5.00(2) | 10.27(3) | 15.12(3) |

**NOTES:**

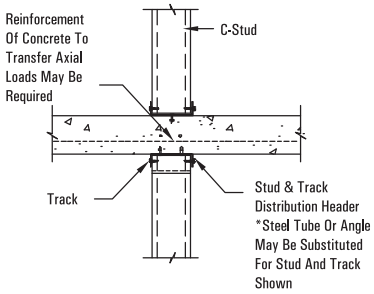
Refer to page 13 for table notes

**(2) = L/240 (3) = L/360 (6) = L/600**

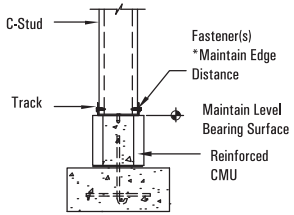
# AXIAL LOAD ILLUSTRATIONS



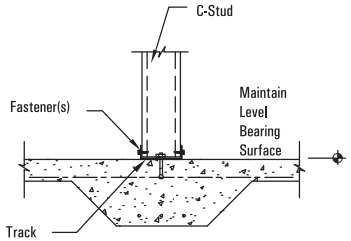

## EXTERIOR WALL



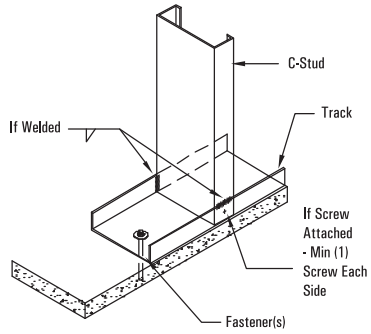

## INTERIOR WALL



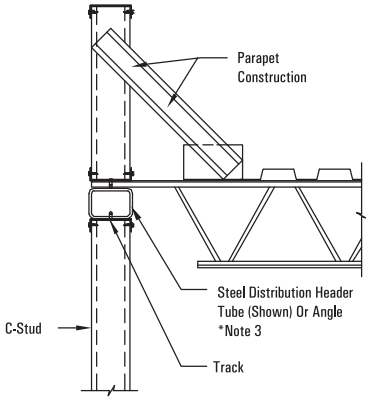

## EXTERIOR FOUNDATION



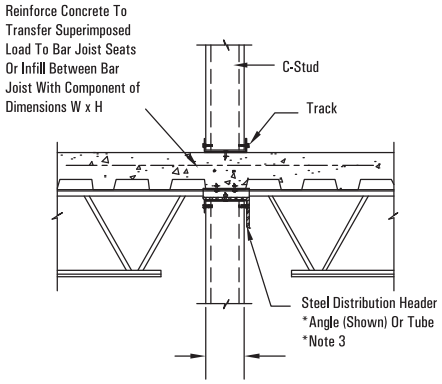

## INTERIOR FOOTING



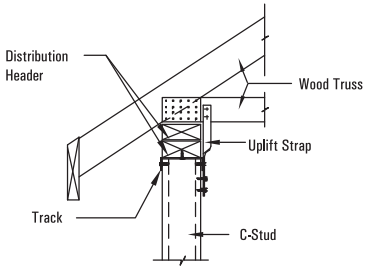

## STUD TO TRACK



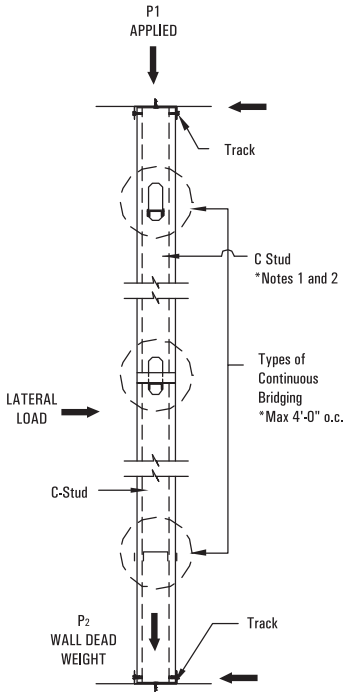

## EXTERIOR WALL W/ BAR JOIST




## INTERIOR WALL W/ BAR JOIST




## WOOD TRUSS @ EXTERIOR WALL




## BEARING WALL SCHEMATIC

P DESIGN = $P_1 + P_2$

*Notes:*

1. *Size, spacing and anchorage of framing components shall be qualified by design.*
2. *Reference page 31, Specification Section 3.6, Fasteners and Attachments, for additional information.*
3. *Detail shows the installation of a distribution header to accommodate potential non-alignment with bearing studs. At framed openings (i.e. width of opening exceeds typical stud spacing), investigate the installation of independent headers as shown on page 26. This may be avoided if the distribution header is sized to transfer the loads over the increased span.*

# JOIST & RAFTER APPLICATIONS

**APPLICATION:**
For selection of floor and roof joists subjected to uniform live and dead loads.

**USE:**
The TOTAL LOAD values denote the total safe uniformly distributed load carrying capacity of the section expressed in pounds per square foot (PSF), which will not generate deflections in excess of L/240 of the span length. The LIVE LOAD values denote the live load in pounds per square foot (PSF), which will produce a deflection of L/360 of the span.

To determine live load deflection limits of L/480, multiply the LIVE LOAD values shown by a factor of 0.75.

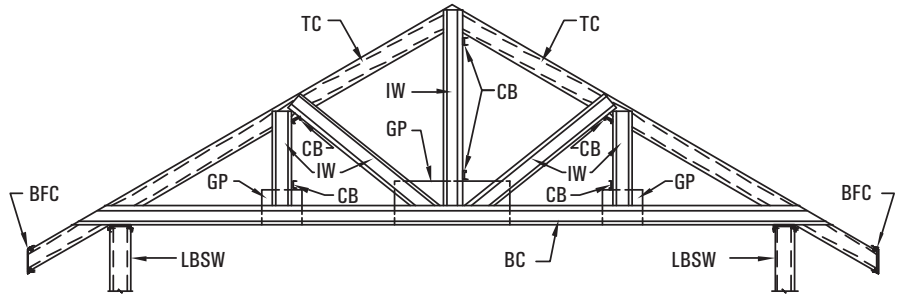
To determine live load deflection limits of L/240, multiply the LIVE LOAD values shown by a factor of 1.5. In this case, ensure that the adjusted value does not exceed the TOTAL LOAD capacity of the joist.

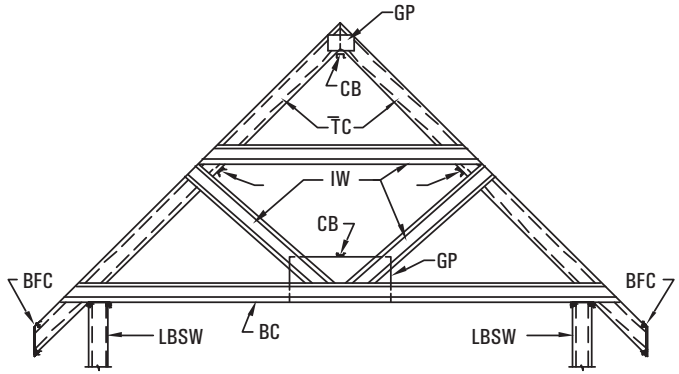
The uses of these tables are limited to simply supported conditions installed to a maximum slope of 1/2" per foot.

*Notes:*
1. *Applications involving multiple spans, cantilevers, concentrated loads, impact loading, etc. should be investigated separately.*
2. *Web crippling should be investigated in accordance with AISI Section C3.4. Web stiffeners are recommended at all support and concentrated load locations. Please reference page 28 for web crippling capacities.*
3. *Joists shall be restrained against rotation at each end. Joists shall be attached to track components or restrained by the installation of continuous solid blocking.*
4. *Minimum end bearing shall be 1-1/2".*
5. *Deflections and stresses were calculated without regard to the composite contribution of facing materials.*
6. *The compression flange of the section should be braced by the attachment of continuous diaphragm rated sheathing or decking. Additionally, mechanical bridging shall be installed at intervals not to exceed 7'-0" on center. Please reference page 25 for bridging methods. The installation of bridging shall be completed before loading the floor/roof system.*
7. *Calculations were based on the use of the effective structural properties shown on pages 4 through 7.*
8. *Contact Marino\WARE for uniform load capacities of framing components not shown in these tables.*
9. *Load values for 16 gauge products are based on steel with Fy (min) = 50 KSI.*

# TRUSS APPLICATIONS

| KEY | COMPONENT | REFERENCE NOTES |
|---|---|---|
| TC | Top Chord | 2, 3, & 4 |
| BC | Bottom Chord | 2, 3, & 4 |
| IW | Internal Web | 2 & 4 |
| CB | Continuous Bridging | 5 |
| BFC | Brake Formed Closure | |
| GP | Gusset Plate | 6 |
| LBSW | Load Bearing Stud Wall | 7 |




*Notes:*
1. *Size, spacing, and anchorage of truss frames shall be qualified by design.*
2. *Install continuous components (avoid splicing). The use of components with unpunched webs is recommended.*
3. *Chords subjected to uniform loading shall satisfy the interaction equations of AISI Section C5, Combined Axial and Bending.*
4. *Installation of intermediate bridging will reduce the member's unbraced length, thus increasing its axial capacity yet adding to the installation costs.*
5. *Use 1-1/2" CR 16 gauge channel if trusses spaced 24" o.c. or less. Use 2-1/2" T 20 gauge track if trusses spaced between 24" and 48" o.c.*
6. *Use flat plate or section of heavy gauge C stud or track.*
7. *Align webs of bottom chord and stud or install continuous distribution header at top of wall below. Installation of a web stiffener at support locations may be required.*
8. *Reference page 31, Specification Section 3.5, Installation: Joist for additional information.*

# JOIST SPAN (P.S.F.)

MARINO WARE®

## Floor and Roof Applications

### 6" Members

| Member M\W Type (SSMA) | o.c. | Spans 11'-0" T | 11'-0" L | 12'-0" T | 12'-0" L | 13'-0" T | 13'-0" L | 14'-0" T | 14'-0" L | 15'-0" T | 15'-0" L | 16'-0" T | 16'-0" L | 17'-0" T | 17'-0" L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **6SW18** (600S162-43) | 12" | 92 | 76 | 77 | 59 | 66 | 46 | 55 | 37 | 45 | 30 | 37 | 25 | 31 | 21 |
| | 16" | 69 | 57 | 58 | 44 | 49 | 35 | 41 | 28 | 34 | 22 | 28 | 19 | 23 | 15 |
| | 24" | 46 | 38 | 39 | 29 | 33 | 23 | 28 | 18 | 22 | 15 | 19 | 12 | 15 | 10 |
| **6SW16** (600S162-54) | 12" | 141 | 94 | 109 | 72 | 85 | 57 | 68 | 46 | 56 | 37 | 46 | 31 | 38 | 25 |
| | 16" | 106 | 70 | 81 | 54 | 64 | 43 | 51 | 34 | 42 | 28 | 34 | 23 | 29 | 19 |
| | 24" | 70 | 47 | 54 | 36 | 43 | 28 | 34 | 23 | 28 | 19 | 23 | 15 | 19 | 13 |
| **6SW14** (600S162-68) | 12" | 174 | 116 | 134 | 89 | 105 | 70 | 84 | 56 | 68 | 46 | 56 | 38 | 47 | 31 |
| | 16" | 130 | 87 | 100 | 67 | 79 | 53 | 63 | 42 | 51 | 34 | 42 | 28 | 35 | 24 |
| | 24" | 87 | 58 | 67 | 45 | 53 | 35 | 42 | 28 | 34 | 23 | 28 | 19 | 24 | 16 |
| **6SW12** (600S162-97) | 12" | 236 | 158 | 182 | 121 | 143 | 95 | 115 | 76 | 93 | 62 | 77 | 51 | 64 | 43 |
| | 16" | 177 | 118 | 136 | 91 | 107 | 72 | 86 | 57 | 70 | 47 | 58 | 38 | 48 | 32 |
| | 24" | 118 | 79 | 91 | 61 | 72 | 48 | 57 | 38 | 47 | 31 | 38 | 26 | 32 | 21 |
| **6J18** (600S200-43) | 12" | 95 | 88 | 80 | 68 | 68 | 53 | 59 | 43 | 51 | 35 | 43 | 29 | 36 | 24 |
| | 16" | 71 | 66 | 60 | 51 | 51 | 40 | 44 | 32 | 38 | 26 | 32 | 21 | 27 | 18 |
| | 24" | 48 | 44 | 40 | 34 | 34 | 27 | 29 | 21 | 26 | 17 | 21 | 14 | 18 | 12 |
| **6J16** (600S200-54) | 12" | 163 | 109 | 126 | 84 | 99 | 66 | 79 | 53 | 64 | 43 | 53 | 35 | 44 | 30 |
| | 16" | 123 | 82 | 94 | 63 | 74 | 50 | 59 | 40 | 48 | 32 | 40 | 27 | 33 | 22 |
| | 24" | 82 | 54 | 63 | 42 | 50 | 33 | 40 | 26 | 32 | 21 | 27 | 18 | 22 | 15 |
| **6J14** (600S200-68) | 12" | 202 | 135 | 156 | 104 | 122 | 82 | 98 | 65 | 80 | 53 | 66 | 44 | 55 | 36 |
| | 16" | 151 | 101 | 117 | 78 | 92 | 61 | 73 | 49 | 60 | 40 | 49 | 33 | 41 | 27 |
| | 24" | 101 | 67 | 78 | 52 | 61 | 41 | 49 | 33 | 40 | 27 | 33 | 22 | 27 | 18 |
| **6J12** (600S200-97) | 12" | 276 | 184 | 213 | 142 | 167 | 112 | 134 | 89 | 109 | 73 | 90 | 60 | 75 | 50 |
| | 16" | 207 | 138 | 160 | 106 | 126 | 84 | 101 | 67 | 82 | 55 | 67 | 45 | 56 | 37 |
| | 24" | 138 | 92 | 106 | 71 | 84 | 56 | 67 | 45 | 55 | 36 | 45 | 30 | 37 | 25 |

### 8" Members

| Member M\W Type (SSMA) | o.c. | Spans 11'-0" T | 11'-0" L | 12'-0" T | 12'-0" L | 13'-0" T | 13'-0" L | 14'-0" T | 14'-0" L | 15'-0" T | 15'-0" L | 16'-0" T | 16'-0" L | 17'-0" T | 17'-0" L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **8SW18** (800S162-43) | 12" | 126 | 126 | 106 | 106 | 90 | 90 | 78 | 74 | 68 | 60 | 60 | 49 | 53 | 41 |
| | 16" | 95 | 95 | 79 | 79 | 68 | 68 | 58 | 55 | 51 | 45 | 45 | 37 | 40 | 31 |
| | 24" | 63 | 63 | 53 | 53 | 45 | 45 | 39 | 37 | 34 | 30 | 30 | 25 | 26 | 21 |
| **8SW16** (800S162-54) | 12" | 231 | 188 | 194 | 145 | 165 | 114 | 137 | 91 | 111 | 74 | 92 | 61 | 77 | 51 |
| | 16" | 173 | 141 | 145 | 109 | 124 | 86 | 103 | 69 | 84 | 56 | 69 | 46 | 57 | 38 |
| | 24" | 115 | 94 | 97 | 73 | 83 | 57 | 69 | 46 | 56 | 37 | 46 | 31 | 38 | 26 |
| **8SW14** (800S162-68) | 12" | 328 | 233 | 269 | 179 | 212 | 141 | 169 | 113 | 138 | 92 | 113 | 76 | 95 | 63 |
| | 16" | 246 | 175 | 202 | 134 | 159 | 106 | 127 | 85 | 103 | 69 | 85 | 57 | 71 | 47 |
| | 24" | 164 | 116 | 134 | 90 | 106 | 71 | 85 | 56 | 69 | 46 | 57 | 38 | 47 | 32 |
| **8SW12** (800S162-97) | 12" | 475 | 319 | 368 | 246 | 290 | 193 | 232 | 155 | 189 | 126 | 155 | 104 | 130 | 86 |
| | 16" | 356 | 239 | 276 | 184 | 217 | 145 | 174 | 116 | 141 | 94 | 117 | 78 | 97 | 65 |
| | 24" | 237 | 159 | 184 | 123 | 145 | 97 | 116 | 77 | 94 | 63 | 78 | 52 | 65 | 43 |
| **8J18** (800S200-43) | 12" | 141 | 141 | 118 | 118 | 101 | 101 | 87 | 84 | 76 | 69 | 67 | 57 | 59 | 47 |
| | 16" | 106 | 106 | 89 | 89 | 76 | 76 | 65 | 63 | 57 | 51 | 50 | 42 | 44 | 35 |
| | 24" | 70 | 70 | 59 | 59 | 50 | 50 | 43 | 42 | 38 | 34 | 33 | 28 | 29 | 24 |
| **8J16** (800S200-54) | 12" | 248 | 216 | 208 | 166 | 177 | 131 | 153 | 105 | 128 | 85 | 105 | 70 | 88 | 58 |
| | 16" | 186 | 162 | 156 | 125 | 133 | 98 | 115 | 79 | 96 | 64 | 79 | 53 | 66 | 44 |
| | 24" | 124 | 108 | 104 | 83 | 89 | 65 | 76 | 52 | 64 | 43 | 53 | 35 | 44 | 29 |
| **8J14** (800S200-68) | 12" | 359 | 267 | 302 | 206 | 243 | 162 | 194 | 130 | 158 | 105 | 130 | 87 | 109 | 72 |
| | 16" | 269 | 200 | 226 | 154 | 182 | 121 | 146 | 97 | 119 | 79 | 98 | 65 | 81 | 54 |
| | 24" | 180 | 134 | 151 | 103 | 121 | 81 | 97 | 65 | 79 | 53 | 65 | 43 | 54 | 36 |
| **8J12** (800S200-97) | 12" | 532 | 368 | 425 | 283 | 334 | 223 | 268 | 178 | 218 | 145 | 179 | 120 | 149 | 100 |
| | 16" | 399 | 276 | 319 | 213 | 251 | 167 | 201 | 134 | 163 | 109 | 134 | 90 | 112 | 75 |
| | 24" | 266 | 184 | 213 | 142 | 167 | 111 | 134 | 89 | 109 | 73 | 90 | 60 | 75 | 50 |

### 10" Members

| Member M\W Type (SSMA) | o.c. | Spans 18'-0" T | 18'-0" L | 19'-0" T | 19'-0" L | 20'-0" T | 20'-0" L | 21'-0" T | 21'-0" L | 22'-0" T | 22'-0" L | 23'-0" T | 23'-0" L | 24'-0" T | 24'-0" L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **10SW18*** (1000S162-43) | 12" | 58 | 58 | 52 | 51 | 47 | 44 | 42 | 38 | 39 | 33 | 35 | 29 | 32 | 25 |
| | 16" | 43 | 43 | 39 | 38 | 35 | 33 | 32 | 28 | 29 | 25 | 26 | 22 | 24 | 19 |
| | 24" | 29 | 29 | 26 | 26 | 23 | 22 | 21 | 19 | 19 | 16 | 18 | 14 | 16 | 13 |
| **10SW16** (1000S162-54) | 12" | 105 | 75 | 95 | 63 | 82 | 54 | 70 | 47 | 61 | 41 | 54 | 36 | 47 | 31 |
| | 16" | 79 | 56 | 71 | 48 | 61 | 41 | 53 | 35 | 46 | 31 | 40 | 27 | 35 | 24 |
| | 24" | 53 | 37 | 47 | 32 | 41 | 27 | 35 | 23 | 31 | 20 | 27 | 18 | 24 | 16 |
| **10SW14** (1000S162-68) | 12" | 139 | 92 | 118 | 79 | 101 | 67 | 87 | 58 | 76 | 51 | 66 | 44 | 58 | 39 |
| | 16" | 104 | 69 | 88 | 59 | 76 | 50 | 65 | 44 | 57 | 38 | 50 | 33 | 44 | 29 |
| | 24" | 69 | 46 | 59 | 39 | 50 | 34 | 44 | 29 | 38 | 25 | 33 | 22 | 29 | 19 |
| **10SW12** (1000S162-97) | 12" | 191 | 127 | 162 | 108 | 139 | 93 | 120 | 80 | 104 | 70 | 91 | 61 | 80 | 54 |
| | 16" | 143 | 95 | 122 | 81 | 104 | 70 | 90 | 60 | 78 | 52 | 69 | 46 | 60 | 40 |
| | 24" | 95 | 64 | 81 | 54 | 70 | 46 | 60 | 40 | 52 | 35 | 46 | 30 | 40 | 27 |
| **10J18*** (1000S200-43) | 12" | 64 | 64 | 58 | 58 | 52 | 50 | 47 | 43 | 43 | 37 | 39 | 33 | 36 | 29 |
| | 16" | 48 | 48 | 43 | 43 | 39 | 37 | 35 | 32 | 32 | 28 | 30 | 24 | 27 | 22 |
| | 24" | 32 | 32 | 29 | 29 | 26 | 25 | 24 | 21 | 22 | 19 | 20 | 16 | 18 | 14 |
| **10J16** (1000S200-54) | 12" | 113 | 85 | 101 | 72 | 92 | 62 | 80 | 53 | 69 | 46 | 61 | 41 | 53 | 36 |
| | 16" | 85 | 63 | 76 | 54 | 69 | 46 | 60 | 40 | 52 | 35 | 46 | 30 | 40 | 27 |
| | 24" | 57 | 42 | 51 | 36 | 46 | 31 | 40 | 27 | 35 | 23 | 30 | 20 | 27 | 18 |
| **10J14** (1000S200-68) | 12" | 157 | 105 | 134 | 89 | 115 | 76 | 99 | 66 | 86 | 57 | 75 | 50 | 66 | 44 |
| | 16" | 118 | 79 | 100 | 67 | 86 | 57 | 74 | 50 | 65 | 43 | 57 | 38 | 50 | 33 |
| | 24" | 79 | 52 | 67 | 45 | 57 | 38 | 50 | 33 | 43 | 29 | 38 | 25 | 33 | 22 |
| **10J12** (1000S200-97) | 12" | 217 | 145 | 185 | 123 | 158 | 106 | 137 | 91 | 119 | 79 | 104 | 69 | 92 | 61 |
| | 16" | 163 | 109 | 139 | 92 | 119 | 79 | 103 | 68 | 89 | 60 | 78 | 52 | 69 | 46 |
| | 24" | 109 | 72 | 92 | 62 | 79 | 53 | 68 | 46 | 60 | 40 | 52 | 35 | 46 | 31 |

### 12" Members

| Member M\W Type (SSMA) | o.c. | Spans 18'-0" T | 18'-0" L | 19'-0" T | 19'-0" L | 20'-0" T | 20'-0" L | 21'-0" T | 21'-0" L | 22'-0" T | 22'-0" L | 23'-0" T | 23'-0" L | 24'-0" T | 24'-0" L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **12SW16*** (1200S162-54) | 12" | 124 | 118 | 111 | 100 | 101 | 86 | 91 | 74 | 83 | 65 | 76 | 56 | 70 | 50 |
| | 16" | 93 | 88 | 84 | 75 | 75 | 64 | 68 | 56 | 62 | 48 | 57 | 42 | 52 | 37 |
| | 24" | 62 | 59 | 56 | 50 | 50 | 43 | 46 | 37 | 42 | 32 | 38 | 28 | 35 | 25 |
| **12SW14** (1200S162-68) | 12" | 181 | 146 | 162 | 124 | 147 | 107 | 133 | 92 | 120 | 80 | 105 | 70 | 93 | 62 |
| | 16" | 136 | 110 | 122 | 93 | 110 | 80 | 100 | 69 | 90 | 60 | 79 | 53 | 69 | 46 |
| | 24" | 90 | 73 | 81 | 62 | 73 | 53 | 66 | 46 | 60 | 40 | 53 | 35 | 46 | 31 |
| **12SW12** (1200S162-97) | 12" | 303 | 202 | 258 | 172 | 221 | 147 | 191 | 127 | 166 | 111 | 145 | 97 | 128 | 85 |
| | 16" | 227 | 152 | 193 | 129 | 166 | 110 | 143 | 95 | 125 | 83 | 109 | 73 | 96 | 64 |
| | 24" | 152 | 101 | 129 | 86 | 110 | 74 | 95 | 64 | 83 | 55 | 73 | 48 | 64 | 43 |
| **12SW10** (1200S162-118) | 12" | 368 | 246 | 313 | 209 | 269 | 179 | 232 | 155 | 202 | 134 | 177 | 118 | 155 | 104 |
| | 16" | 276 | 184 | 235 | 157 | 201 | 134 | 174 | 116 | 151 | 101 | 132 | 88 | 117 | 78 |
| | 24" | 184 | 123 | 157 | 104 | 134 | 90 | 116 | 77 | 101 | 67 | 88 | 59 | 78 | 52 |
| **12J16*** (1200S200-54) | 12" | 134 | 132 | 120 | 113 | 109 | 96 | 98 | 83 | 90 | 72 | 82 | 63 | 75 | 56 |
| | 16" | 101 | 99 | 90 | 84 | 81 | 72 | 74 | 63 | 67 | 54 | 62 | 48 | 57 | 42 |
| | 24" | 67 | 66 | 60 | 56 | 54 | 48 | 49 | 42 | 45 | 36 | 41 | 32 | 38 | 28 |
| **12J14** (1200S200-68) | 12" | 201 | 164 | 181 | 140 | 163 | 120 | 148 | 104 | 135 | 90 | 118 | 79 | 104 | 69 |
| | 16" | 151 | 123 | 136 | 105 | 122 | 90 | 111 | 78 | 101 | 68 | 89 | 59 | 78 | 52 |
| | 24" | 101 | 82 | 90 | 70 | 82 | 60 | 74 | 52 | 67 | 45 | 59 | 39 | 52 | 35 |
| **12J12** (1200S200-97) | 12" | 342 | 228 | 291 | 194 | 249 | 166 | 215 | 144 | 187 | 125 | 164 | 109 | 144 | 96 |
| | 16" | 256 | 171 | 218 | 145 | 187 | 125 | 161 | 108 | 140 | 94 | 123 | 82 | 108 | 72 |
| | 24" | 171 | 114 | 145 | 97 | 125 | 83 | 108 | 72 | 94 | 62 | 82 | 55 | 72 | 48 |
| **12J10** (1200S200-118) | 12" | 417 | 278 | 354 | 236 | 304 | 202 | 262 | 175 | 228 | 152 | 200 | 133 | 176 | 117 |
| | 16" | 312 | 208 | 266 | 177 | 228 | 152 | 197 | 131 | 171 | 114 | 150 | 100 | 132 | 88 |
| | 24" | 208 | 139 | 177 | 118 | 152 | 101 | 131 | 87 | 114 | 76 | 100 | 67 | 88 | 59 |

**NOTES:**

Refer to page 21 for table notes.

* = Exceeds the H/T ratio of 200

**T** = Total Load **L** = Live Load

# Floor and Roof Applications

## 12" Members

| Member M\W Type (SSMA) | o.c. | Spans 23'-0" T | 23'-0" L | 24'-0" T | 24'-0" L | 25'-0" T | 25'-0" L | 26'-0" T | 26'-0" L | 27'-0" T | 27'-0" L | 28'-0" T | 28'-0" L | 29'-0" T | 29'-0" L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **12J14** (1200S200-68) | 12" | 118 | 79 | 104 | 69 | 92 | 61 | 82 | 55 | 73 | 49 | 66 | 44 | 59 | 39 |
| | 16" | 89 | 59 | 78 | 52 | 69 | 46 | 61 | 41 | 55 | 37 | 49 | 33 | 44 | 29 |
| | 24" | 59 | 39 | 52 | 35 | 46 | 31 | 41 | 27 | 37 | 24 | 33 | 22 | 29 | 20 |
| **12J12** (1200S200-97) | 12" | 164 | 109 | 144 | 96 | 128 | 85 | 113 | 76 | 101 | 68 | 91 | 61 | 82 | 55 |
| | 16" | 123 | 82 | 108 | 72 | 96 | 64 | 85 | 57 | 76 | 51 | 68 | 45 | 61 | 41 |
| | 24" | 82 | 55 | 72 | 48 | 64 | 43 | 57 | 38 | 51 | 34 | 45 | 30 | 41 | 27 |
| **12J10** (1200S200-118) | 12" | 200 | 133 | 176 | 117 | 156 | 104 | 138 | 92 | 123 | 82 | 111 | 74 | 100 | 66 |
| | 16" | 150 | 100 | 132 | 88 | 117 | 78 | 104 | 69 | 93 | 62 | 83 | 55 | 75 | 50 |
| | 24" | 100 | 67 | 88 | 59 | 78 | 52 | 69 | 46 | 62 | 41 | 55 | 37 | 50 | 33 |
| **12JE16*** (1200S250-54) | 12" | 84 | 71 | 78 | 62 | 71 | 55 | 66 | 49 | 61 | 44 | 57 | 39 | 53 | 35 |
| | 16" | 63 | 53 | 58 | 47 | 54 | 41 | 50 | 37 | 46 | 33 | 43 | 29 | 40 | 26 |
| | 24" | 42 | 35 | 39 | 31 | 36 | 28 | 33 | 24 | 31 | 22 | 28 | 20 | 26 | 18 |
| **12JE14** (1200S250-68) | 12" | 123 | 88 | 113 | 77 | 103 | 68 | 91 | 61 | 82 | 54 | 73 | 49 | 66 | 44 |
| | 16" | 92 | 66 | 85 | 58 | 77 | 51 | 68 | 46 | 61 | 41 | 55 | 37 | 49 | 33 |
| | 24" | 62 | 44 | 57 | 39 | 51 | 34 | 46 | 30 | 41 | 27 | 37 | 24 | 33 | 22 |
| **12JE12** (1200S250-97) | 12" | 183 | 122 | 161 | 108 | 143 | 95 | 127 | 85 | 113 | 76 | 102 | 68 | 91 | 61 |
| | 16" | 137 | 92 | 121 | 81 | 107 | 71 | 95 | 63 | 85 | 57 | 76 | 51 | 69 | 46 |
| | 24" | 92 | 61 | 81 | 54 | 71 | 48 | 63 | 42 | 57 | 38 | 51 | 34 | 46 | 30 |
| **12JE10** (1200S250-118) | 12" | 224 | 149 | 197 | 131 | 174 | 116 | 155 | 103 | 138 | 92 | 124 | 83 | 112 | 74 |
| | 16" | 168 | 112 | 148 | 98 | 131 | 87 | 116 | 77 | 104 | 69 | 93 | 62 | 84 | 56 |
| | 24" | 112 | 75 | 98 | 66 | 87 | 58 | 77 | 52 | 69 | 46 | 62 | 41 | 56 | 37 |

## 14" Members

| Member M\W Type (SSMA) | o.c. | Spans 30'-0" T | 30'-0" L | 31'-0" T | 31'-0" L | 32'-0" T | 32'-0" L | 33'-0" T | 33'-0" L | 34'-0" T | 34'-0" L | 35'-0" T | 35'-0" L | 36'-0" T | 36'-0" L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **14JE10** (1400S250-118) | 12" | 148 | 99 | 134 | 89 | 122 | 81 | 111 | 74 | 102 | 68 | 93 | 62 | 86 | 57 |
| | 16" | 111 | 74 | 100 | 67 | 91 | 61 | 83 | 56 | 76 | 51 | 70 | 47 | 64 | 43 |
| | 24" | 74 | 49 | 67 | 45 | 61 | 41 | 56 | 37 | 51 | 34 | 47 | 31 | 43 | 29 |
| **14JX14** (1400S300-68) | 12" | 100 | 67 | 91 | 61 | 83 | 55 | 75 | 50 | 69 | 46 | 63 | 42 | 58 | 39 |
| | 16" | 75 | 50 | 68 | 45 | 62 | 41 | 56 | 38 | 52 | 34 | 47 | 32 | 43 | 29 |
| | 24" | 50 | 33 | 45 | 30 | 41 | 28 | 38 | 25 | 34 | 23 | 32 | 21 | 29 | 19 |
| **14JX12** (1400S300-97) | 12" | 140 | 93 | 127 | 84 | 115 | 77 | 105 | 70 | 96 | 64 | 88 | 59 | 81 | 54 |
| | 16" | 105 | 70 | 95 | 63 | 86 | 58 | 79 | 53 | 72 | 48 | 66 | 44 | 61 | 40 |
| | 24" | 70 | 47 | 63 | 42 | 58 | 38 | 53 | 35 | 48 | 32 | 44 | 29 | 40 | 27 |
| **14JX10** (1400S300-118) | 12" | 172 | 114 | 155 | 104 | 141 | 94 | 129 | 86 | 118 | 79 | 108 | 72 | 99 | 66 |
| | 16" | 129 | 86 | 117 | 78 | 106 | 71 | 97 | 64 | 88 | 59 | 81 | 54 | 74 | 50 |
| | 24" | 86 | 57 | 78 | 52 | 71 | 47 | 64 | 43 | 59 | 39 | 54 | 36 | 50 | 33 |
| **14JXW14** (1400S350-68) | 12" | 104 | 72 | 98 | 66 | 89 | 60 | 82 | 54 | 75 | 50 | 68 | 46 | 63 | 42 |
| | 16" | 78 | 54 | 73 | 49 | 67 | 45 | 61 | 41 | 56 | 37 | 51 | 34 | 47 | 31 |
| | 24" | 52 | 36 | 49 | 33 | 45 | 30 | 41 | 27 | 37 | 25 | 34 | 23 | 31 | 21 |
| **14JXW12** (1400S350-97) | 12" | 152 | 101 | 138 | 92 | 125 | 83 | 114 | 76 | 104 | 70 | 96 | 64 | 88 | 59 |
| | 16" | 114 | 76 | 103 | 69 | 94 | 63 | 86 | 57 | 78 | 52 | 72 | 48 | 66 | 44 |
| | 24" | 76 | 51 | 69 | 46 | 63 | 42 | 57 | 38 | 52 | 35 | 48 | 32 | 44 | 29 |
| **14JXW10** (1400S350-118) | 12" | 186 | 124 | 169 | 113 | 154 | 102 | 140 | 93 | 128 | 85 | 117 | 78 | 108 | 72 |
| | 16" | 140 | 93 | 127 | 84 | 115 | 77 | 105 | 70 | 96 | 64 | 88 | 59 | 81 | 54 |
| | 24" | 93 | 62 | 84 | 56 | 77 | 51 | 70 | 47 | 64 | 43 | 59 | 39 | 54 | 36 |

## 14" Members

| Member M\W Type (SSMA) | o.c. | Spans 23'-0" T | 23'-0" L | 24'-0" T | 24'-0" L | 25'-0" T | 25'-0" L | 26'-0" T | 26'-0" L | 27'-0" T | 27'-0" L | 28'-0" T | 28'-0" L | 29'-0" T | 29'-0" L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **14J14** (1400S200-68) | 12" | 142 | 116 | 130 | 102 | 120 | 90 | 111 | 80 | 103 | 72 | 96 | 64 | 87 | 58 |
| | 16" | 106 | 87 | 98 | 77 | 90 | 68 | 83 | 60 | 77 | 54 | 72 | 48 | 65 | 43 |
| | 24" | 71 | 58 | 65 | 51 | 60 | 45 | 55 | 40 | 51 | 36 | 48 | 32 | 43 | 29 |
| **14J12** (1400S200-97) | 12" | 242 | 161 | 213 | 142 | 188 | 125 | 167 | 112 | 149 | 100 | 134 | 89 | 121 | 80 |
| | 16" | 181 | 121 | 160 | 106 | 141 | 94 | 125 | 84 | 112 | 75 | 100 | 67 | 90 | 60 |
| | 24" | 121 | 81 | 106 | 71 | 94 | 63 | 84 | 56 | 75 | 50 | 67 | 45 | 60 | 40 |
| **14J10** (1400S200-118) | 12" | 295 | 197 | 260 | 173 | 230 | 153 | 204 | 136 | 182 | 122 | 164 | 109 | 147 | 98 |
| | 16" | 221 | 148 | 195 | 130 | 172 | 115 | 153 | 102 | 137 | 91 | 123 | 82 | 110 | 74 |
| | 24" | 148 | 98 | 130 | 87 | 115 | 77 | 102 | 68 | 91 | 61 | 82 | 55 | 74 | 49 |
| **14JE12** (1400S250-97) | 12" | 260 | 179 | 236 | 157 | 209 | 139 | 186 | 124 | 166 | 110 | 149 | 99 | 134 | 89 |
| | 16" | 195 | 134 | 177 | 118 | 157 | 104 | 139 | 93 | 124 | 83 | 111 | 74 | 100 | 67 |
| | 24" | 130 | 89 | 118 | 79 | 104 | 70 | 93 | 62 | 83 | 55 | 74 | 50 | 67 | 45 |
| **14JE10** (1400S250-118) | 12" | 328 | 219 | 289 | 192 | 255 | 170 | 227 | 151 | 203 | 135 | 182 | 121 | 164 | 109 |
| | 16" | 246 | 164 | 217 | 144 | 192 | 128 | 170 | 114 | 152 | 101 | 136 | 91 | 123 | 82 |
| | 24" | 164 | 109 | 144 | 96 | 128 | 85 | 114 | 76 | 101 | 68 | 91 | 61 | 82 | 55 |
| **14JX12** (1400S300-97) | 12" | 307 | 207 | 273 | 182 | 242 | 161 | 215 | 143 | 192 | 128 | 172 | 115 | 155 | 103 |
| | 16" | 230 | 155 | 205 | 137 | 181 | 121 | 161 | 107 | 144 | 96 | 129 | 86 | 116 | 77 |
| | 24" | 153 | 103 | 137 | 91 | 121 | 81 | 107 | 72 | 96 | 64 | 86 | 57 | 77 | 52 |
| **14JX10** (1400S300-118) | 12" | 381 | 254 | 335 | 223 | 296 | 198 | 263 | 176 | 235 | 157 | 211 | 141 | 190 | 127 |
| | 16" | 285 | 190 | 251 | 167 | 222 | 148 | 198 | 132 | 176 | 118 | 158 | 105 | 142 | 95 |
| | 24" | 190 | 127 | 167 | 112 | 148 | 99 | 132 | 88 | 118 | 78 | 105 | 70 | 95 | 63 |
| **14JXW12** (1400S350-97) | 12" | 309 | 225 | 284 | 198 | 262 | 175 | 233 | 155 | 208 | 139 | 187 | 124 | 168 | 112 |
| | 16" | 232 | 168 | 213 | 148 | 196 | 131 | 175 | 117 | 156 | 104 | 140 | 93 | 126 | 84 |
| | 24" | 155 | 112 | 142 | 99 | 131 | 87 | 117 | 78 | 104 | 69 | 93 | 62 | 84 | 56 |
| **14JXW10** (1400S350-118) | 12" | 414 | 276 | 364 | 243 | 322 | 215 | 286 | 191 | 256 | 170 | 229 | 153 | 206 | 138 |
| | 16" | 310 | 207 | 273 | 182 | 242 | 161 | 215 | 143 | 192 | 128 | 172 | 115 | 155 | 103 |
| | 24" | 207 | 138 | 182 | 121 | 161 | 107 | 143 | 95 | 128 | 85 | 115 | 76 | 103 | 69 |

## 16" Members

| Member M\W Type (SSMA) | o.c. | Spans 30'-0" T | 30'-0" L | 31'-0" T | 31'-0" L | 32'-0" T | 32'-0" L | 33'-0" T | 33'-0" L | 34'-0" T | 34'-0" L | 35'-0" T | 35'-0" L | 36'-0" T | 36'-0" L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **16J14*** (1600S200-68) | 12" | 94 | 71 | 88 | 65 | 83 | 59 | 78 | 54 | 73 | 49 | 67 | 45 | 62 | 41 |
| | 16" | 71 | 53 | 66 | 48 | 62 | 44 | 58 | 40 | 55 | 37 | 50 | 34 | 46 | 31 |
| | 24" | 47 | 36 | 44 | 32 | 41 | 29 | 39 | 27 | 37 | 24 | 34 | 22 | 31 | 21 |
| **16J12** (1600S200-97) | 12" | 153 | 102 | 139 | 92 | 126 | 84 | 115 | 77 | 105 | 70 | 96 | 64 | 89 | 59 |
| | 16" | 115 | 77 | 104 | 69 | 95 | 63 | 86 | 58 | 79 | 53 | 72 | 48 | 66 | 44 |
| | 24" | 77 | 51 | 69 | 46 | 63 | 42 | 58 | 38 | 53 | 35 | 48 | 32 | 44 | 30 |
| **16J10** (1600S200-118) | 12" | 187 | 125 | 170 | 113 | 154 | 103 | 141 | 94 | 129 | 86 | 118 | 79 | 108 | 72 |
| | 16" | 140 | 94 | 127 | 85 | 116 | 77 | 106 | 70 | 96 | 64 | 88 | 59 | 81 | 54 |
| | 24" | 94 | 62 | 85 | 57 | 77 | 51 | 70 | 47 | 64 | 43 | 59 | 39 | 54 | 36 |
| **16JE12** (1600S250-97) | 12" | 169 | 112 | 153 | 102 | 139 | 93 | 127 | 84 | 116 | 77 | 106 | 71 | 98 | 65 |
| | 16" | 127 | 84 | 115 | 76 | 104 | 69 | 95 | 63 | 87 | 58 | 80 | 53 | 73 | 49 |
| | 24" | 84 | 56 | 76 | 51 | 69 | 46 | 63 | 42 | 58 | 39 | 53 | 35 | 49 | 33 |
| **16JE10** (1600S250-118) | 12" | 207 | 138 | 187 | 125 | 170 | 114 | 155 | 104 | 142 | 95 | 130 | 87 | 120 | 80 |
| | 16" | 155 | 103 | 140 | 94 | 128 | 85 | 116 | 78 | 106 | 71 | 98 | 65 | 90 | 60 |
| | 24" | 103 | 69 | 94 | 62 | 85 | 57 | 78 | 52 | 71 | 47 | 65 | 43 | 60 | 40 |
| **16JX12** (1600S300-97) | 12" | 194 | 129 | 176 | 117 | 160 | 106 | 146 | 97 | 133 | 89 | 122 | 81 | 112 | 75 |
| | 16" | 145 | 97 | 132 | 88 | 120 | 80 | 109 | 73 | 100 | 67 | 92 | 61 | 84 | 56 |
| | 24" | 97 | 65 | 88 | 59 | 80 | 53 | 73 | 49 | 67 | 44 | 61 | 41 | 56 | 37 |
| **16JX10** (1600S300-118) | 12" | 238 | 159 | 216 | 144 | 196 | 131 | 179 | 119 | 164 | 109 | 150 | 100 | 138 | 92 |
| | 16" | 179 | 119 | 162 | 108 | 147 | 98 | 134 | 89 | 123 | 82 | 112 | 75 | 103 | 69 |
| | 24" | 119 | 79 | 108 | 72 | 98 | 65 | 89 | 60 | 82 | 55 | 75 | 50 | 69 | 46 |
| **16JXW12** (1600S350-97) | 12" | 204 | 140 | 190 | 127 | 173 | 115 | 157 | 105 | 144 | 96 | 132 | 88 | 121 | 81 |
| | 16" | 153 | 105 | 142 | 95 | 129 | 86 | 118 | 79 | 108 | 72 | 99 | 66 | 91 | 61 |
| | 24" | 102 | 70 | 95 | 63 | 86 | 58 | 79 | 52 | 72 | 48 | 66 | 44 | 61 | 40 |
| **16JXW10** (1600S350-118) | 12" | 257 | 172 | 233 | 156 | 212 | 141 | 193 | 129 | 177 | 118 | 162 | 108 | 149 | 99 |
| | 16" | 193 | 129 | 175 | 117 | 159 | 106 | 145 | 97 | 133 | 88 | 122 | 81 | 112 | 74 |
| | 24" | 129 | 86 | 117 | 78 | 106 | 71 | 97 | 64 | 88 | 59 | 81 | 54 | 74 | 50 |

**NOTES:**

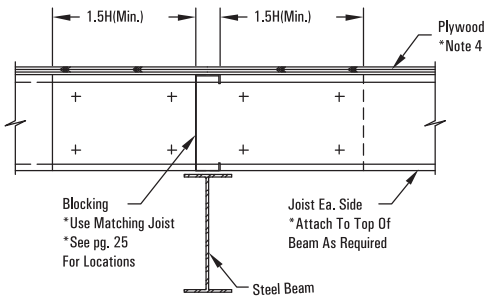
Refer to page 21 for table notes.

* = Exceeds the H/T ratio of 200

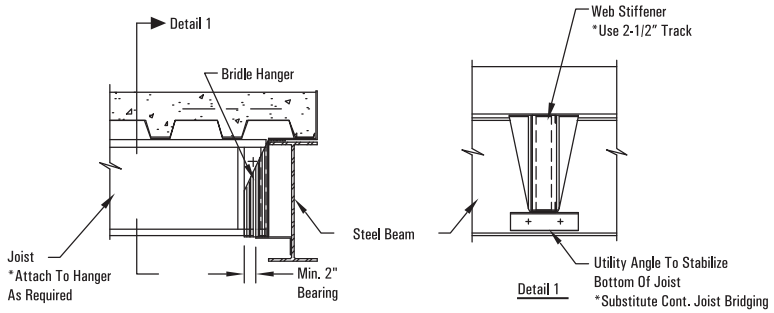
**T** = Total Load

**L** = Live Load

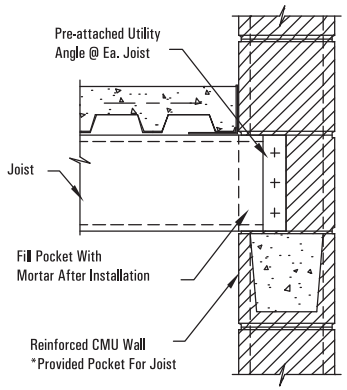
# JOIST & RAFTER ILLUSTRATIONS



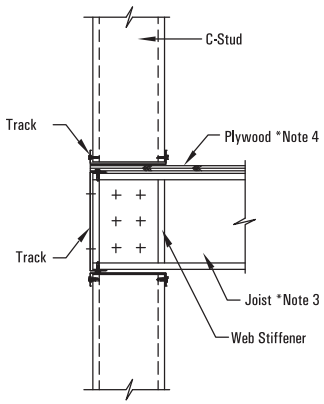

**LAPPED JOIST @ INTERIOR SUPPORT**



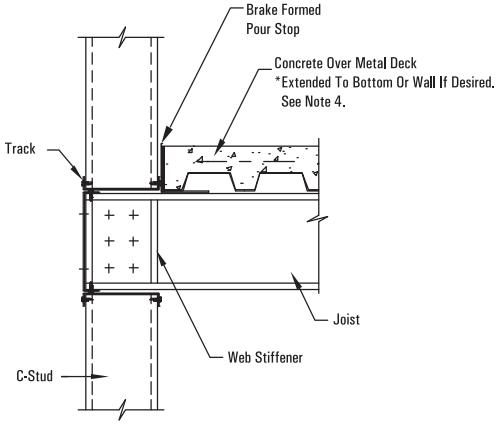

**JOIST @ STEEL BEAM W/ BRIDLE HANGER**



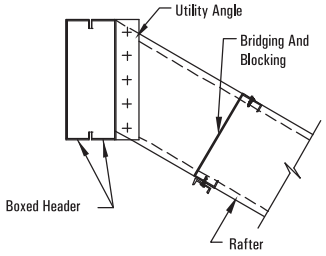

**JOIST @ REINFORCED CMU WALL**



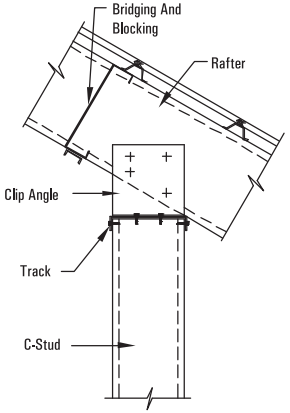

**JOIST @ EXTERIOR BEARING WALL**




**JOIST @ EXTERIOR BEARING WALL**




**RAFTER @ RIDGE BEAM**



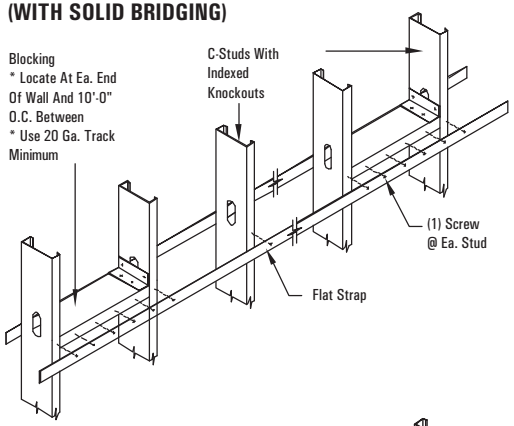

**RAFTER @ STUD BEARING WALL**

*Notes:*

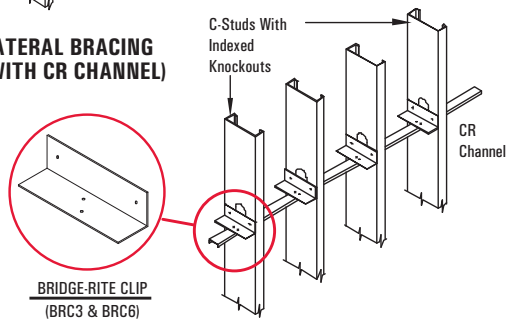
*1. Size, spacing and anchorage of framing components shall be qualified by design.*
*2. Reference page 31, Specification Section 3.5, Installation: Joist, for additional information.*
*3. Align webs of joist and stud or install continuous distribution header at top of wall below.*
*4. Investigate capacity of flooring materials to transfer axial load through system.*
*5. Connections between lapped joists, see detail above, are not moment resisting.*

# WALL APPLICATIONS

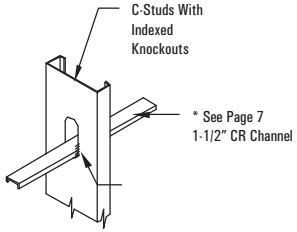
### LATERAL BRACING (WITH SOLID BRIDGING)



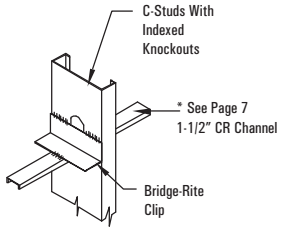

### LATERAL BRACING (WITH CR CHANNEL)



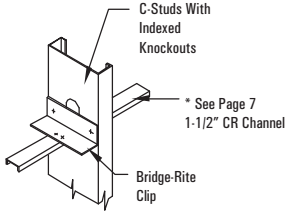

### 1-1/2" CR CHANNEL WELDED TO INDEXED KNOCKOUTS




### 1-1/2" CR CHANNEL THROUGH INDEXED KNOCKOUTS (WITH BRIDGE-RTE ANGLE CLIPS WELDED)




### 1-1/2" CR CHANNELTHROUGH INDEXED KNOCKOUTS (WITH BRIDGE-RTE ANGLE CLIPS SCREWED)




### MAXIMUM VERTICAL SPACING OF BRIDGING

| Maximum Depth of Stud | Non-Axial (Curtainwall) | | Axial (Load Bearing) | |
|---|---|---|---|---|
| | First Row | Balance | First Row | Balance |
| 4" | 5'-0" | 4'-0" O.C. | 3'-0" | 4'-0" O.C. |
| 6" | 5'-0" | 4'-0" O.C. | 3'-0" | 4'-0" O.C. |
| All Depths | 5'-0" O.C. Max. | | 4'-0" O.C. Max. | |

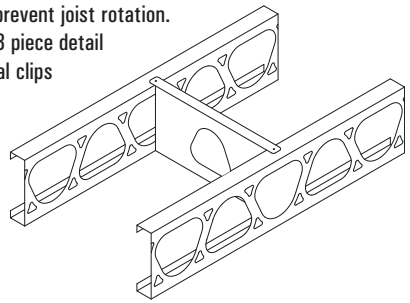
# FLOOR, & ROOF APPLICATIONS

### SOLID BLOCKING (JB)

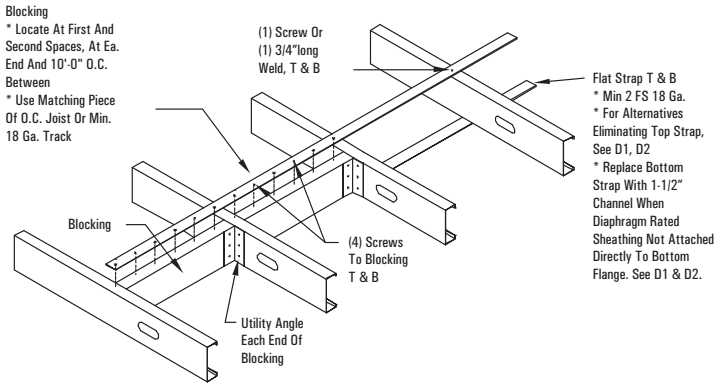
Joist Blocking is pre-cut to fit securely between joists to prevent joist rotation. Joist Blocking is a one piece system in lieu of the typical 3 piece detail offering an economical alternative to installing conventional clips and solid web members.

**MATERIAL:** 16 ga (54 mil) 50ksi

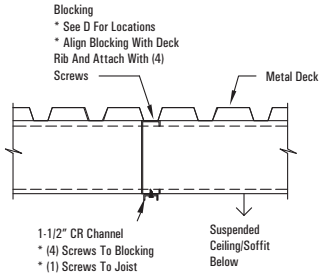
**FINISH:** Galvanized – G90



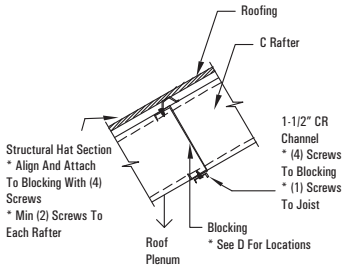
### FLAT STRAP & BLOCKING (D1 & D2)




### D1–SUBSTITUTE METAL DECK




### D2–SUBSTITUTE CHANNEL




*Notes:*

1. *In curtainwall construction, studs shall be braced against rotation by diaphragm rated sheathing board applied full height to each side of the wall. The installation of mechanical bridging, spaced 5'-0" on center, provides adequate rotational restraint for walls under construction before the installation of sheathing. Where the wall is not sheathed full height each side or sheathed on one side only, continuous bridging spaced 5'-0" on center shall provide rotational support. Reductions in allowable bending capacity must be investigated separately. When sheathing is used to brace the studs, the products shall maintain their structural integrity during the course of construction and the service life of the wall. The attachment of the sheathing should conform to the minimum requirements of industry standards and/or products specifications.*
2. *In axial load bearing construction, studs shall be braced against rotation before loading. Install bridging spaced at intervals not exceeding 4'-0" on center.*
3. *Reference page 3 for additional information regarding indexing of stud web knockouts. The first knockout occurs 12" from the indexed end and 24" on center thereafter.*

## BEARING WALLS

**APPLICATION:** For selection of simply supported "I" or boxed shaped header subjected to uniform load.

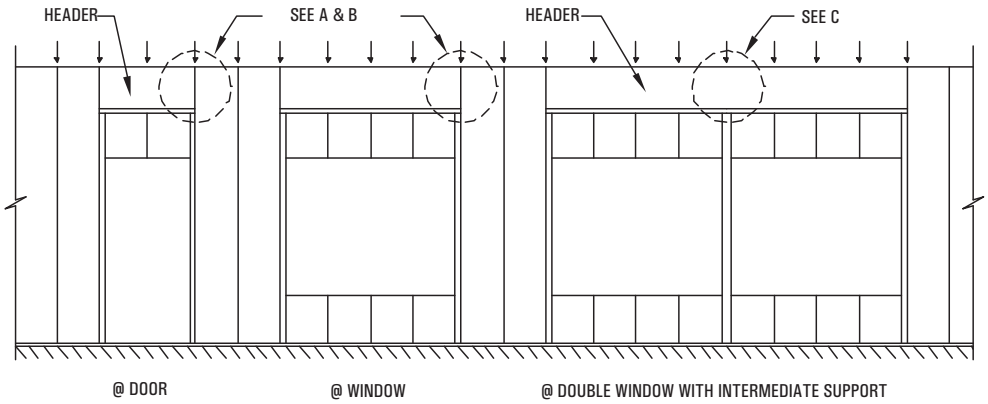
**USE:**

Select a header providing an allowable uniform load in excess of the applied load. For interior applications.

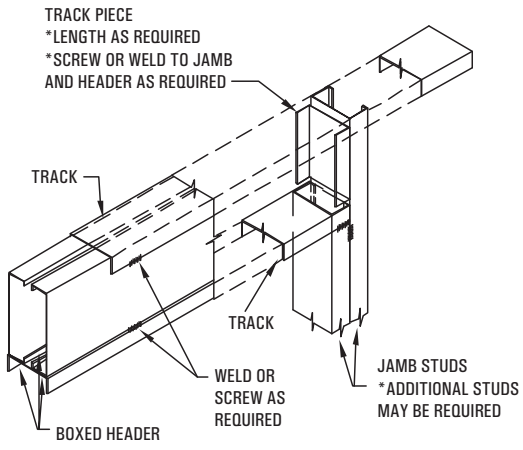
*Notes:*

1. *The values on the following page represent the allowable total load, in pounds per linear foot (PLF), limited by bending or shear capacity of the header. Deflection is limited to L/360 of span length.*
2. *The use of these tables is limited to simply supported members. Applications involving cantilevers, concentrated loads, eccentricities, multiple spans, impact loading, etc. should be investigated separately.*
3. *Web crippling should be analyzed separately. Shapes having multiple unreinforced webs subjected to interaction of concentrated load or reaction and bending shall be analyzed to meet the requirements of AISI Section C3.4. Referenced page 28 for additional information. Reinforcement of the web is required when a knockout is located within a distance equaling 1.5 X depth of the member (h) from the edge of bearing.*
4. *The compression flange of the header shall be laterally braced at intervals not to exceed 24"on center.*
5. *Contact Marino\Ware for allowable load capacities of sections not shown herein.*

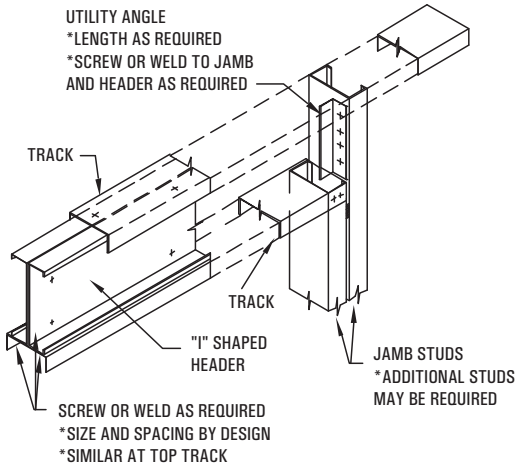
**BEARING WALL SCHEMATIC**



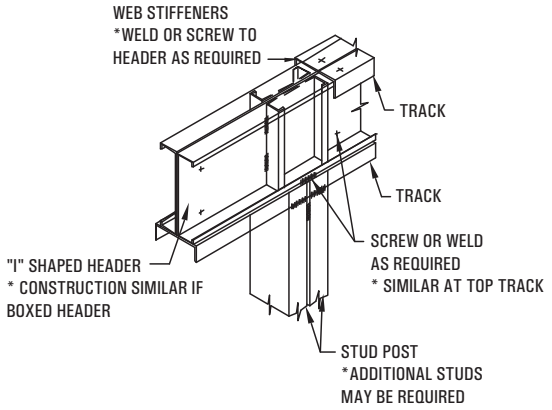

**BOXED HEADER TO MULTIPLE JAMB STUDS**
**(Detail A)**




**"I" SHAPED HEADER TO MULTIPLE JAMB STUDS**
**(Detail B)**




**"I" SHAPED HEADER AT INTERMEDIATE SUPORT**
**(Detail C)**



# HEADERS (P.L.F.)

## Headers

| M\W Type | SSMA | 4FT | 5FT | 6FT | 7FT | 8FT | 9FT | 10FT | 11FT | 12FT | 13FT | 14FT | 15FT | 16FT | 17FT | 18FT | 19FT | 20FT | 21FT | 22FT | 23FT | 24FT | 25FT | 26FT | 27FT | 28FT | 29FT | 30FT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **3-5/8" Members** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **358SW20** | 362S162-33 | 442 | 283 | 196 | 137 | 92 | 65 | 47 | 35 | 27 | 21 | 17 | 14 | 11 | | | | | | | | | | | | | | |
| **358SW18** | 362S162-43 | 614 | 393 | 273 | 178 | 119 | 84 | 61 | 46 | 35 | 28 | 22 | 18 | 15 | 12 | 10 | | | | | | | | | | | | |
| **358SW16** | 362S162-54 | 1110 | 602 | 349 | 220 | 147 | 103 | 75 | 57 | 44 | 34 | 27 | 22 | 18 | 15 | 13 | 11 | | | | | | | | | | | |
| **358SW14** | 362S162-68 | 1438 | 741 | 429 | 270 | 181 | 127 | 93 | 70 | 54 | 42 | 34 | 27 | 23 | 19 | 16 | 14 | 12 | 10 | | | | | | | | | |
| **358SW12** | 362S162-97 | 1948 | 998 | 577 | 364 | 244 | 171 | 125 | 94 | 72 | 57 | 45 | 37 | 30 | 25 | 21 | 18 | 16 | 13 | 12 | 10 | | | | | | | |
| **358SW10** | 362S162-118 | 2309 | 1184 | 685 | 432 | 289 | 203 | 148 | 111 | 86 | 67 | 54 | 44 | 36 | 30 | 25 | 22 | 19 | 16 | 14 | 12 | 11 | | | | | | |
| **6" Members** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **6SW20** | 600S162-33 | 836 | 608 | 422 | 310 | 238 | 188 | 152 | 118 | 91 | 71 | 57 | 46 | 38 | 32 | 27 | 23 | 20 | 17 | 15 | 13 | 11 | 10 | | | | | |
| **6SW18** | 600S162-43 | 836 | 669 | 557 | 415 | 318 | 251 | 202 | 152 | 117 | 92 | 74 | 60 | 49 | 41 | 35 | 30 | 25 | 22 | 19 | 17 | 15 | 13 | 12 | 10 | | | |
| **6SW16** | 600S162-54 | 2313 | 1480 | 1028 | 729 | 488 | 343 | 250 | 188 | 145 | 114 | 91 | 74 | 61 | 51 | 43 | 36 | 31 | 27 | 23 | 21 | 18 | 16 | 14 | 13 | 11 | 10 | |
| **6SW14** | 600S162-68 | 2931 | 1876 | 1303 | 898 | 602 | 423 | 308 | 231 | 178 | 140 | 112 | 91 | 75 | 63 | 53 | 45 | 39 | 33 | 29 | 25 | 22 | 20 | 18 | 16 | 14 | 13 | 11 |
| **6SW12** | 600S162-97 | 3990 | 2553 | 1773 | 1223 | 819 | 575 | 419 | 315 | 243 | 191 | 153 | 124 | 102 | 85 | 72 | 61 | 52 | 45 | 39 | 34 | 30 | 27 | 24 | 21 | 19 | 17 | 16 |
| **6SW10** | 600S162-118 | 4786 | 3063 | 2127 | 1466 | 982 | 690 | 503 | 378 | 291 | 229 | 183 | 149 | 123 | 102 | 86 | 73 | 63 | 54 | 47 | 41 | 36 | 32 | 29 | 26 | 23 | 21 | 19 |
| **8" Members** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **8SW20*** | 800S162-33 | 836 | 669 | 554 | 407 | 312 | 246 | 200 | 165 | 139 | 118 | 102 | 89 | 76 | 64 | 54 | 46 | 39 | 34 | 29 | 26 | 23 | 20 | 18 | 16 | 14 | 13 | 12 |
| **8SW18** | 800S162-43 | 836 | 669 | 557 | 478 | 418 | 372 | 305 | 252 | 212 | 181 | 148 | 120 | 99 | 82 | 69 | 59 | 51 | 44 | 38 | 33 | 29 | 26 | 23 | 21 | 18 | 17 | 15 |
| **8SW16** | 800S162-54 | 3486 | 2231 | 1550 | 1138 | 872 | 688 | 501 | 377 | 290 | 228 | 183 | 149 | 122 | 102 | 86 | 73 | 63 | 54 | 47 | 41 | 36 | 32 | 29 | 25 | 23 | 21 | 19 |
| **8SW14** | 800S162-68 | 4422 | 2830 | 1965 | 1444 | 1105 | 850 | 620 | 466 | 359 | 282 | 226 | 184 | 151 | 126 | 106 | 90 | 77 | 67 | 58 | 51 | 45 | 40 | 35 | 31 | 28 | 25 | 23 |
| **8SW12** | 800S162-97 | 6058 | 3877 | 2693 | 1978 | 1515 | 1165 | 849 | 638 | 491 | 386 | 309 | 252 | 207 | 173 | 146 | 124 | 106 | 92 | 80 | 70 | 61 | 54 | 48 | 43 | 39 | 35 | 31 |
| **8SW10** | 800S162-118 | 7309 | 4678 | 3248 | 2387 | 1827 | 1405 | 1024 | 770 | 593 | 466 | 373 | 303 | 250 | 208 | 176 | 149 | 128 | 111 | 96 | 84 | 74 | 66 | 58 | 52 | 47 | 42 | 38 |
| **10" Members** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **10SW18*** | 1000S162-43 | 836 | 669 | 557 | 478 | 418 | 372 | 334 | 304 | 259 | 221 | 190 | 166 | 146 | 129 | 115 | 102 | 88 | 76 | 66 | 58 | 51 | 45 | 40 | 36 | 32 | 29 | 26 |
| **10SW16** | 1000S162-54 | 4274 | 2735 | 1900 | 1396 | 1069 | 844 | 684 | 565 | 475 | 396 | 317 | 258 | 212 | 177 | 149 | 127 | 109 | 94 | 82 | 71 | 63 | 56 | 49 | 44 | 40 | 36 | 32 |
| **10SW14** | 1000S162-68 | 6150 | 3936 | 2733 | 2008 | 1538 | 1215 | 984 | 809 | 623 | 490 | 393 | 319 | 263 | 219 | 185 | 157 | 135 | 116 | 101 | 89 | 78 | 69 | 61 | 55 | 49 | 44 | 40 |
| **10SW12** | 1000S162-97 | 8466 | 5418 | 3763 | 2764 | 2117 | 1672 | 1355 | 1114 | 858 | 675 | 540 | 439 | 362 | 302 | 254 | 216 | 185 | 160 | 139 | 122 | 107 | 95 | 84 | 75 | 68 | 61 | 55 |
| **10SW10** | 1000S162-118 | 10256 | 6564 | 4558 | 3349 | 2564 | 2026 | 1641 | 1350 | 1040 | 818 | 655 | 532 | 439 | 366 | 308 | 262 | 225 | 194 | 169 | 148 | 130 | 115 | 102 | 91 | 82 | 74 | 67 |
| **12" Members** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **12SW16*** | 1200S162-54 | 5053 | 3234 | 2246 | 1650 | 1263 | 998 | 808 | 668 | 561 | 478 | 412 | 359 | 316 | 280 | 236 | 200 | 172 | 148 | 129 | 113 | 99 | 88 | 78 | 70 | 63 | 56 | 51 |
| **12SW14** | 1200S162-68 | 7372 | 4718 | 3277 | 2407 | 1843 | 1456 | 1180 | 975 | 819 | 698 | 602 | 505 | 416 | 347 | 293 | 249 | 213 | 184 | 160 | 140 | 123 | 109 | 97 | 87 | 78 | 70 | 63 |
| **12SW12** | 1200S162-97 | 11213 | 7176 | 4983 | 3661 | 2803 | 2215 | 1794 | 1483 | 1246 | 1062 | 859 | 698 | 575 | 480 | 404 | 344 | 295 | 254 | 221 | 194 | 170 | 151 | 134 | 120 | 107 | 97 | 87 |
| **12SW10** | 1200S162-118 | 11866 | 8721 | 6056 | 4449 | 3406 | 2692 | 2180 | 1802 | 1514 | 1290 | 1044 | 849 | 699 | 583 | 491 | 418 | 358 | 309 | 269 | 235 | 207 | 183 | 163 | 146 | 130 | 117 | 106 |
| **14" Members** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **14SW14** | 1400S162-68 | 8443 | 5403 | 3752 | 2757 | 2111 | 1668 | 1351 | 1116 | 938 | 799 | 689 | 600 | 528 | 467 | 417 | 369 | 316 | 273 | 238 | 208 | 183 | 162 | 144 | 129 | 115 | 104 | 94 |
| **14SW12** | 1400S162-97 | 11866 | 9150 | 6354 | 4669 | 3574 | 2824 | 2288 | 1891 | 1589 | 1354 | 1167 | 1017 | 856 | 714 | 601 | 511 | 438 | 379 | 329 | 288 | 254 | 224 | 199 | 178 | 160 | 144 | 130 |
| **14SW10** | 1400S162-118 | 11866 | 9492 | 7742 | 5688 | 4355 | 3441 | 2787 | 2303 | 1935 | 1649 | 1422 | 1239 | 1043 | 869 | 732 | 623 | 534 | 461 | 401 | 351 | 309 | 273 | 243 | 217 | 195 | 175 | 158 |
| **16" Members** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **16SW14*** | 1600S162-68 | 9552 | 6113 | 4245 | 3119 | 2388 | 1887 | 1528 | 1263 | 1061 | 904 | 780 | 679 | 597 | 529 | 472 | 423 | 382 | 347 | 316 | 284 | 250 | 221 | 197 | 176 | 158 | 142 | 128 |
| **16SW12** | 1600S162-97 | 11866 | 9492 | 7425 | 5455 | 4176 | 3300 | 2673 | 2209 | 1856 | 1582 | 1364 | 1188 | 1044 | 925 | 825 | 724 | 621 | 536 | 466 | 408 | 359 | 318 | 283 | 252 | 226 | 204 | 184 |
| **16SW10** | 1600S162-118 | 11866 | 9492 | 7910 | 6780 | 5408 | 4273 | 3461 | 2861 | 2404 | 2048 | 1766 | 1538 | 1352 | 1198 | 1040 | 884 | 758 | 655 | 569 | 498 | 439 | 388 | 345 | 308 | 276 | 249 | 225 |

*Notes:*

*The values represented in this chart are calculated for (2) of each member stated.*

*Refer to page 26 for table notes.*

* = Exceeds the H/T ratio of 200

# WEB CRIPPLING STRENGTH

MARINO WARE®

## Allowable Web Crippling Strength

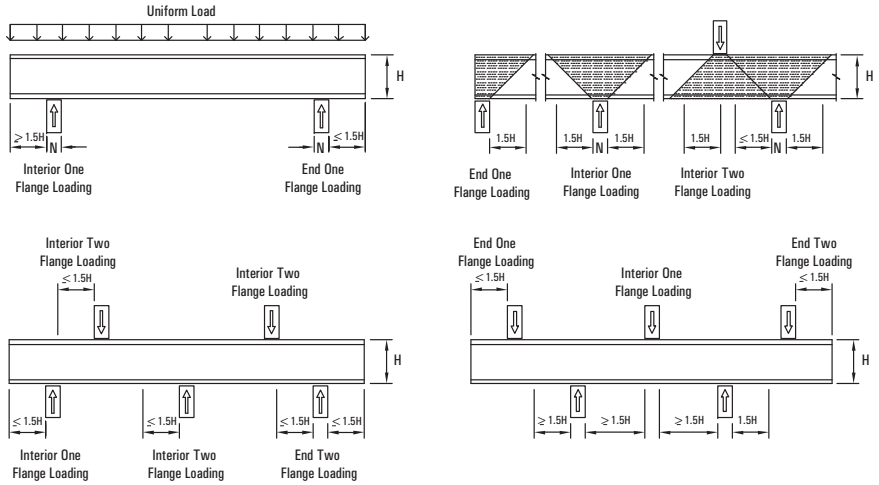
| Member | AISI Equation | 20 gauge (33 ksi) Base Width (in.) | | | 18 gauge (33 ksi) Base Width (in.) | | | 16 gauge (33 ksi) Base Width (in.) | | | 16 gauge (50 ksi) Base Width (in.) | | | 14 gauge (50 ksi) Base Width (in.) | | | 12 gauge (50 ksi) Base Width (in.) | | | 10 gauge (50 ksi) Base Width (in.) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1.5 | 3.5 | 6 | 1.5 | 3.5 | 6 | 1.5 | 3.5 | 6 | 1.5 | 3.5 | 6 | 1.5 | 3.5 | 6 | 1.5 | 3.5 | 6 | 1.5 | 3.5 | 6 |
| 358 | End (1) Flange | 0.1712 | 0.2341 | 0.2905 | 0.2835 | 0.3835 | 0.4730 | 0.4266 | 0.5713 | 0.7010 | 0.6464 | 0.8657 | 1.0621 | 0.9745 | 1.2912 | 1.5749 | 1.8348 | 2.3897 | 2.8868 | 2.7299 | 3.5163 | 4.2206 |
| | Int (1) Flange | 0.3390 | 0.4247 | 0.5015 | 0.5896 | 0.7286 | 0.8530 | 0.9029 | 1.1024 | 1.2810 | 1.3680 | 1.6703 | 1.9410 | 2.0924 | 2.5240 | 2.9106 | 4.0389 | 4.7839 | 5.4512 | 6.1104 | 7.1575 | 8.0953 |
| | End (2) Flange | 0.1253 | 0.1417 | 0.1563 | 0.2528 | 0.2826 | 0.3093 | 0.4191 | 0.4643 | 0.5048 | 0.6349 | 0.7035 | 0.7649 | 1.0372 | 1.1393 | 1.2307 | 2.1847 | 2.3703 | 2.5366 | 3.4664 | 3.7345 | 3.9747 |
| | Int (2) Flange | 0.2142 | 0.2703 | 0.3205 | 0.5162 | 0.6425 | 0.7557 | 0.8101 | 0.9963 | 1.1631 | 1.2275 | 1.5096 | 1.7623 | 1.8578 | 2.2572 | 2.6150 | 3.5330 | 4.2143 | 4.8244 | 5.2999 | 6.2509 | 7.1027 |
| 4 | End (1) Flange | 0.1689 | 0.2310 | 0.2867 | 0.2803 | 0.3791 | 0.4677 | 0.4224 | 0.5657 | 0.6940 | 0.6400 | 0.8571 | 1.0515 | 0.9659 | 1.2799 | 1.5611 | 1.8214 | 2.3724 | 2.8658 | 2.7121 | 3.4933 | 4.1930 |
| | Int (1) Flange | 0.3370 | 0.4222 | 0.4985 | 0.5866 | 0.7249 | 0.8487 | 0.8988 | 1.0974 | 1.2752 | 1.3618 | 1.6627 | 1.9321 | 2.0839 | 2.5138 | 2.8988 | 4.0251 | 4.7675 | 5.4325 | 6.0914 | 7.1352 | 8.0702 |
| | End (2) Flange | 0.1209 | 0.1367 | 0.1508 | 0.2455 | 0.2745 | 0.3005 | 0.4089 | 0.4531 | 0.4926 | 0.6195 | 0.6864 | 0.7464 | 1.0157 | 1.1156 | 1.2052 | 2.1483 | 2.3309 | 2.4944 | 3.4156 | 3.6798 | 3.9164 |
| | Int (2) Flange | 0.2141 | 0.2701 | 0.3204 | 0.5160 | 0.6422 | 0.7553 | 0.8098 | 0.9959 | 1.1626 | 1.2270 | 1.5090 | 1.7616 | 1.8571 | 2.2564 | 2.6140 | 3.5319 | 4.2129 | 4.8228 | 5.2984 | 6.2491 | 7.1006 |
| 6 | End (1) Flange | 0.1584 | 0.2166 | 0.2688 | 0.2654 | 0.3590 | 0.4429 | 0.4028 | 0.5394 | 0.6618 | 0.6102 | 0.8173 | 1.0027 | 0.9265 | 1.2277 | 1.4975 | 1.7600 | 2.2923 | 2.7691 | 2.6303 | 3.3880 | 4.0666 |
| | Int (1) Flange | 0.3277 | 0.4105 | 0.4848 | 0.5726 | 0.7076 | 0.8284 | 0.8797 | 1.0741 | 1.2482 | 1.3329 | 1.6274 | 1.8912 | 2.0447 | 2.4665 | 2.8442 | 3.9614 | 4.6921 | 5.3466 | 6.0046 | 7.0335 | 7.9551 |
| | End (2) Flange | 0.1004 | 0.1135 | 0.1253 | 0.2120 | 0.2370 | 0.2594 | 0.3618 | 0.4009 | 0.4359 | 0.5482 | 0.6074 | 0.6604 | 0.9162 | 1.0064 | 1.0871 | 1.9812 | 2.1496 | 2.3004 | 3.1830 | 3.4292 | 3.6497 |
| | Int (2) Flange | 0.2135 | 0.2695 | 0.3196 | 0.5148 | 0.6408 | 0.7536 | 0.8082 | 0.9940 | 1.1604 | 1.2245 | 1.5060 | 1.7581 | 1.8538 | 2.2524 | 2.6094 | 3.5266 | 4.2066 | 4.8156 | 5.2912 | 6.2406 | 7.0910 |
| 8 | End (1) Flange | | | | 0.2529 | 0.3422 | 0.4221 | 0.3864 | 0.5174 | 0.6348 | 0.5854 | 0.7840 | 0.9619 | 0.8937 | 1.1842 | 1.4444 | 1.7090 | 2.2260 | 2.6890 | 2.5629 | 3.3011 | 3.9623 |
| | Int (1) Flange | | | | 0.5609 | 0.6931 | 0.8115 | 0.8638 | 1.0547 | 1.2256 | 1.3088 | 1.5980 | 1.8570 | 2.0120 | 2.4270 | 2.7987 | 3.9086 | 4.6296 | 5.2753 | 5.9329 | 6.9496 | 7.8602 |
| | End (2) Flange | | | | 0.1839 | 0.2056 | 0.2250 | 0.3224 | 0.3573 | 0.3884 | 0.4885 | 0.5413 | 0.5885 | 0.8333 | 0.9153 | 0.9888 | 1.8427 | 1.9993 | 2.1395 | 2.9910 | 3.2224 | 3.4296 |
| | Int (2) Flange | | | | 0.5139 | 0.6396 | 0.7523 | 0.8069 | 0.9923 | 1.1584 | 1.2225 | 1.5035 | 1.7552 | 1.8511 | 2.2491 | 2.6056 | 3.5222 | 4.2014 | 4.8096 | 5.2852 | 6.2336 | 7.0830 |
| 10 | End (1) Flange | | | | | | | 0.3720 | 0.4982 | 0.6112 | 0.5636 | 0.7548 | 0.9261 | 0.8649 | 1.1461 | 1.3979 | 1.6645 | 2.1681 | 2.6190 | 2.5041 | 3.2254 | 3.8714 |
| | Int (1) Flange | | | | | | | 0.8499 | 1.0377 | 1.2058 | 1.2877 | 1.5722 | 1.8270 | 1.9833 | 2.3925 | 2.7589 | 3.8625 | 4.5750 | 5.2131 | 5.8705 | 6.8765 | 7.7775 |
| | End (2) Flange | | | | | | | 0.2879 | 0.3190 | 0.3469 | 0.4362 | 0.4834 | 0.5256 | 0.7607 | 0.8356 | 0.9026 | 1.7217 | 1.8680 | 1.9990 | 2.8238 | 3.0422 | 3.2379 |
| | Int (2) Flange | | | | | | | 0.8057 | 0.9909 | 1.1568 | 1.2208 | 1.5014 | 1.7527 | 1.8487 | 2.2462 | 2.6022 | 3.5184 | 4.1968 | 4.8044 | 5.2800 | 6.2275 | 7.0761 |
| 12 | End (1) Flange | | | | | | | | | | | | | 0.8390 | 1.1118 | 1.3560 | 1.6246 | 2.1160 | 2.5561 | 2.4513 | 3.1574 | 3.7899 |
| | Int (1) Flange | | | | | | | | | | | | | 1.9576 | 2.3614 | 2.7230 | 3.8211 | 4.5259 | 5.1572 | 5.8145 | 6.8108 | 7.7033 |
| | End (2) Flange | | | | | | | | | | | | | 0.6953 | 0.7638 | 0.8251 | 1.6129 | 1.7500 | 1.8727 | 2.6737 | 2.8805 | 3.0657 |
| | Int (2) Flange | | | | | | | | | | | | | 1.8466 | 2.2436 | 2.5992 | 3.5149 | 4.1927 | 4.7997 | 5.2754 | 6.2220 | 7.0698 |
| 14 | End (1) Flange | | | | | | | | | | | | | 0.8153 | 1.0803 | 1.3176 | 1.5879 | 2.0682 | 2.4984 | 2.4030 | 3.0952 | 3.7152 |
| | Int (1) Flange | | | | | | | | | | | | | 1.9339 | 2.3328 | 2.6901 | 3.7831 | 4.4810 | 5.1060 | 5.7632 | 6.7508 | 7.6353 |
| | End (2) Flange | | | | | | | | | | | | | 0.6354 | 0.6979 | 0.7539 | 1.5132 | 1.6418 | 1.7570 | 2.5362 | 2.7324 | 2.9082 |
| | Int (2) Flange | | | | | | | | | | | | | 1.8446 | 2.2412 | 2.5964 | 3.5118 | 4.1889 | 4.7954 | 5.2711 | 6.2170 | 7.0641 |
| 16 | End (1) Flange | | | | | | | | | | | | | | | | 1.5539 | 2.0239 | 2.4449 | 2.3582 | 3.0375 | 3.6459 |
| | Int (1) Flange | | | | | | | | | | | | | | | | 3.7479 | 4.4392 | 5.0584 | 5.7156 | 6.6950 | 7.5723 |
| | End (2) Flange | | | | | | | | | | | | | | | | 1.4207 | 1.5415 | 1.6496 | 2.4088 | 2.5951 | 2.7620 |
| | Int (2) Flange | | | | | | | | | | | | | | | | 3.5089 | 4.1854 | 4.7914 | 5.2672 | 6.2123 | 7.0588 |

**APPLICATION:** ALLOWABLE CONCENTRATED LOADS OR REACTIONS, (Kips) For determination of the web crippling capacity of a single unreinforced web subjected to concentrated loads or reactions.

**USE:** Compare the applied concentrated load or reaction to the maximum allowable values, Pa, listed above. Where the applied load exceeds the allowable, reinforcement with a web stiffener is required. For members with multiple webs (i.e. boxed or "I" shaped headers), Pa shall be computed for each individual web and the results added to obtain the allowable load or reaction for the multiple web. Due to the high degree of restraint against rotation of an "I" shaped section, web crippling strengths exceeding those shown above are attainable.
Consult AISI Specification Section C3.4, equations C3.4-3, 5, 7, and 9.

*Notes:*

1. *H/t exceeds 200 where values have been omitted. When h/t exceeds 200, web stiffeners at concentrated load or reaction points are required.*
2. *Components with unreinforced flat webs, subjected to combined bending and web crippling, shall be designed to meet the requirements of the following interaction equations: 1.2 (P/Pa) + (M/Ma) < 1.5 where*
   *P = Concentrated load or reaction in the absence of bending moment*
   *Pa = Allowable concentrated load or reaction in the absence of bending moment*
   *M = Applied bending moment at, or immediately adjacent to, the application of the concentrated load or reaction*
   *Ma = Allowable bending moment if bending alone exists*
3. *Avoid locating a web knockout within the shaded areas shown in the diagram. Should a knockout be located in this area, install a web stiffener, minimum 6" wide, centered over the knockout.*



# SUGGESTED CONNECTION INFORMATION

| SUGGESTED CAPACITIES FOR SCREW CONNECTIONS (LBS.) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Ga. | Fy | No 8–18 | | No 10–16 | | No 12–24 | | No 1/4–14 | |
| | | Shear | Tension | Shear | Tension | Shear | Tension | Shear | Tension |
| 10 | 33 | 333 | 260 | 405 | 301 | 627 | 342 | 813 | 396 |
| 10 | 50 | 333 | 375 | 405 | 435 | 627 | 494 | 813 | 572 |
| 12 | 33 | 333 | 213 | 405 | 246 | 627 | 280 | 813 | 324 |
| 12 | 50 | 333 | 307 | 405 | 356 | 627 | 405 | 813 | 468 |
| 14 | 33 | 333 | 149 | 405 | 173 | 557 | 196 | 600 | 227 |
| 14 | 50 | 333 | 215 | 405 | 249 | 627 | 284 | 813 | 328 |
| 16 | 33 | 333 | 118 | 370 | 137 | 393 | 156 | 424 | 180 |
| 16 | 50 | 333 | 171 | 405 | 198 | 569 | 225 | 613 | 261 |
| 18 | 33 | 244 | 94 | 263 | 109 | 280 | 124 | 302 | 144 |
| 20 | 33 | 164 | 72 | 177 | 84 | 188 | 95 | 203 | 110 |

*Notes:*
*1. Values are based on the North American Specification for the Design of Cold-Formed Steel Structural Members, 2007 edition.*
*2. Minimum screw spacing shall be 3 times the screw diameter, minimum edge distance shall be 1.5 times the screw diameter.*
*3. Ultimate screw shear values should meet or exceed 750#, 1000#, 1215#, 1880#, and 2440# for #6, #8, #10, #12 and 1/4" screws, respectively*
*4. Ultimate screw shear values are based on the 2008 Hilti Product Technical Guide and Buildex 2008 Technical Guide.*
*5. When connecting materials of two different thicknesses, the value for the thinner material should be used.*
*6. Minimum head diameter for 1/4" screw is 3/8" and the minimum head diameter for the remaining screws is 5/16"*

| SUGGESTED SHEAR DESIGN LOADS FOR P.A.F'S DRIVEN INTO STRUCTURAL STEEL (KIPS) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Structural Steel Thickness | | | | 1/4 | 3/8 | 1/2 | 1/4 | 3/8 | 1/2 |
| Structural Steel Classification | | | | A36 | A36 | A36 | A36 | A36 | A36 |
| Ga. | Thickness | Yield | Ult | 0.157" Diameter P.A.F. (X-U) | | | 0.177" Diameter P.A.F. (EDS) | | |
| 10 | 0.1242 | 33 | 45 | 0.720 | 0.720 | 0.720 | 0.935 | 0.970 | 0.995 |
| 12 | 0.1017 | 33 | 45 | 0.720 | 0.720 | 0.720 | 0.935 | 0.970 | 0.995 |
| 14 | 0.0713 | 33 | 45 | 0.720 | 0.720 | 0.720 | 0.935 | 0.965 | 0.965 |
| 16 | 0.0566 | 33 | 45 | 0.720 | 0.720 | 0.720 | 0.815 | 0.815 | 0.815 |
| 18 | 0.0451 | 33 | 45 | 0.525 | 0.525 | 0.525 | 0.535 | 0.535 | 0.535 |
| 20 | 0.0347 | 33 | 45 | 0.445 | 0.445 | 0.445 | 0.465 | 0.465 | 0.465 |
| SUGGESTED TENSION DESIGN LOADS FOR P.A.F'S DRIVEN INTO STRUCTURAL STEEL (KIPS) | | | | | | | | | |
| 10 | 0.1242 | 33 | 45 | 0.775 | 0.825 | 0.825 | 0.665 | 0.800 | 0.890 |
| 12 | 0.1017 | 33 | 45 | 0.775 | 0.825 | 0.825 | 0.665 | 0.800 | 0.890 |
| 14 | 0.0713 | 33 | 45 | 0.775 | 0.825 | 0.825 | 0.665 | 0.800 | 0.890 |
| 16 | 0.0566 | 33 | 45 | 0.685 | 0.685 | 0.685 | 0.665 | 0.800 | 0.815 |
| 18 | 0.0451 | 33 | 45 | 0.490 | 0.490 | 0.490 | 0.625 | 0.625 | 0.625 |
| 20 | 0.0347 | 33 | 45 | 0.360 | 0.360 | 0.360 | 0.460 | 0.460 | 0.460 |

*Structural Steel Notes:*
*1. Fasteners shall be driven to a penetration where the point of the fastener pierces the base steel.*
*2. Minimum fastener spacing = 1". Minimum fastener edge distance = 1/2".*
*3. Multiple fasteners are recommended for increased reliability.*
*4. Values are from the 2008 Hilti Product Technical Guide.*

| SUGGESTED CAPACITIES FOR WELD CONNECTIONS (LBS. PER INCH) | | | | | | |
|---|---|---|---|---|---|---|
| Ga. | Fy | Fu | Fillet Welds | | Flare Groove Welds | |
| | | | Long. | Trans. | Long. | Trans |
| 10 | 33 | 45 | 2015 | 1550 | 1497 | 1826 |
| 12 | 33 | 45 | 1618 | 1269 | 1226 | 1495 |
| 14 | 33 | 45 | 1082 | 1024 | 859 | 1048 |
| 16 | 33 | 45 | 822 | 813 | 682 | 832 |
| 18 | 33 | 45 | 619 | 648 | 544 | 663 |

*Notes:*
*1. Values are based on the North American Specification for the Design of Cold-Formed Steel Structural Members, 2007 edition.*
*2. When connecting materials of two different thicknesses, the value for the thinner material should be used.*
*3. Although values for 18 gauge are included, welding of 18 gauge is only recommended under environmentally controlled conditions.*
*4. Welds may be obtained with 3/32" or 1/8" diameter, type E-60 or E-70 welding rods. Shop welding is best accomplished with 0.030" to 0.035" diameter, type E70 wire.*

| SUGGESTED SHEAR DESIGN LOADS FOR P.A.F'S DRIVEN INTO CONCRETE (KIPS) | | | | | |
|---|---|---|---|---|---|
| Ga | Thickness | Yield | Ult | 0.157" Diameter P.A.F. (Pin Type X-U) | 0.177" Dimeter P.A.F. (Pin Type DS) |
| | | | | 1" Embedment | 1-1/2" Embedment |
| 10 | 0.1242 | 33 | 45 | 0.208 | 0.428 |
| 12 | 0.1017 | 33 | 45 | 0.208 | 0.428 |
| 14 | 0.0713 | 33 | 45 | 0.208 | 0.428 |
| 16 | 0.0566 | 33 | 45 | 0.208 | 0.428 |
| 18 | 0.0451 | 33 | 45 | 0.208 | 0.428 |
| 20 | 0.0347 | 33 | 45 | 0.208 | 0.428 |
| SUGGESTED TENSION DESIGN LOADS FOR P.A.F'S DRIVEN INTO CONCRETE (KIPS) | | | | | |
| 10 | 0.1242 | 33 | 45 | 0.167 | 0.328 |
| 12 | 0.1017 | 33 | 45 | 0.167 | 0.328 |
| 14 | 0.0713 | 33 | 45 | 0.167 | 0.328 |
| 16 | 0.0566 | 33 | 45 | 0.167 | 0.328 |
| 18 | 0.0451 | 33 | 45 | 0.167 | 0.328 |
| 20 | 0.0347 | 33 | 45 | 0.167 | 0.328 |

*Concrete Notes:*
*1. Values shown are for cured, regular weight aggregate concrete, 3000 psi minimum. Minimum base thickness of the concrete shall be 3 times the embedment depth of the fastener. Minimum fastener spacing = 2-3/4"*
*2. For X-U P.A.F.s, minimum fastener spacing = 2-3/4" and minimum fastener edge distance = 2-3/4"*
*3. For DS P.A.F.s, minimum fastener spacing = 3-1/8" and minimum fastener edge distance = 3-1/8"*
*4. Multiple fasteners are recommended for increased reliability.*
*5. Values are from the 2008 Hilti Product Technical Guide.*

*The following suggested specification is intended to serve as a general guide. It must be modified to suit the conditions of use, with particular attention given to the deletion of inapplicable provisions.*

## DIVISION 5 – METALS
## REFERENCE NO. 05400 – COLD FORMED METAL FRAMING

# PART 1 – GENERAL

**Related Work Specified Elsewhere**

*(Architect Note: List appropriate specifications sections of related work here).*

**1.2 Quality Assurance**

*(Architect Note: Quality Assurance sections should include provisions for checking shop drawings, controlled on-site inspections, etc).*

1.3 **Submittals** – The following items shall be furnished by the contractor for approval prior to fabrication or delivery of material to the site:

1.3.1 Shop Drawings – Shop drawings shall be documents illustrating materials, shop coatings, steel thickness, details of fabrication, details of attachment to adjoining work, size, location and spacing of fasteners for attaching framing to itself, details of attachment to the structure, accessories and their installation, and critical installation procedures. Drawings may include plans, elevations, sections and details.

1.3.2 Samples – Samples shall be representative pieces of all framing component parts and accessories. Unless otherwise specified, pieces shall be 12" long and tagged with name of part and manufacturer.

1.3.3 Certifications – Certifications shall be statements from the manufacturer certifying that the materials conform to the appropriate requirements as outlined in the contract documents.

1.3.4 Calculations – Engineering calculations or data shall be submitted verifying the framing assembly's ability to meet or exceed design requirements as required by local codes and authorities or by the Architect. These calculations shall include, but not be limited to the following items:

1.3.4.1 Steel Framing used to support rigid materials shall be designed for an allowable deflection of L/360. Steel framing used to support semi-rigid materials shall be designed for an allowable deflection of L/240. *(Architect Note: Insert any special criteria such as more stringent deflection, wind loading etc., in this section).*

1.3.4.2 All connections (member to member and member to structure) shall be thoroughly examined and designed.

1.3.4.3 Selected exterior and interior walls, as required, shall be designed to provide frame stability and lateral load resistance. If diagonal steel strapping is used to transfer lateral loads to the structure and foundation, additional studs may be required to resist the vertical component of the load from the diagonal bracing.

1.3.4.4 Wall bridging shall be designed to provide resistance to minor axis bending and rotation of wall studs.

1.3.4.5 In accordance with AISI Specifications, rigid collateral facing materials may be considered as adequate support of members against rotation

1.3.5 Descriptive Literature – Manufacturer's literature containing product and installation specifications and details shall be submitted for approval.

**1.4 Applicable Documents**

1.4.1 ASTM Standards:

A653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

A924 Standard Requirements for Steel Sheet, Metallic-Coated by the Hot-Dipped Process

C 840 Standard Specifications for the Application and Finishing of Gypsum Board

C 842 Standard Specification for the Application of Gypsum Veneer Plaster

C926 Standard Specification for the Application of Portland Cement-Based Plaster

C 954 Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in to 0.112 in. in Thickness

C 955 Standard Specifications for Load Bearing (Transverse and Axial) Steel Studs, Runners (Track) and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases

C 1007 Standard Specification for the installation of Load-Bearing (Transverse and Axial) Steel Studs and Related Accessories.

1.4.2 American Iron and Steel Institute (AISI);
"North American Specification for the Design of Cold-Formed Steel Structural Members", latest edition.

1.4.3 American Welding Society (AWS)
Structural Welding code (D1.1) Specifications for Welding Sheet Steel in Structures (E1.3)

1.4.4 Military Specification (Mil. Spec):
MIL-P-21035...Paint, High Zinc Dust Content, Galvanizing Repair.

1.4.5 Federal Specification (Fed Spec):
FF-P-395...Pin, Drive, Guided and Pin Drive, Power Actuated Fasteners for Power Actuated and Hand Actuated Fastening Tools FF-S-325.Shield, Expansion; Nail, Expansion; and Nail, Drive Screw (Devices, Anchoring Masonry)

# PART 2 – PRODUCTS

**2.1 Materials**

2.1.1 All Materials shall be equal to those manufactured by Marino\Ware, 400 Metuchen Road, South Plainfield, NJ, 07080. Phone: 800-627-4661.

2.1.2 All studs and/or joists and accessories shall be of the type, size, steel thickness and spacing shown on the plans. Studs, runners (track), bracing and bridging shall be manufactured per ASTM Specification C 955.

2.1.3 All galvanized studs, joists and accessories, 16ga or heavier, shall be formed from steel that conforms to the requirement of ASTM A653 with a yield of either 50 KSI or 33 KSI as specified.

2.1.4 All galvanized studs, joists and accessories, 18ga and lighter and all track sections shall be formed from steel that conforms to the requirements of ASTM A653, with a yield of 33 KSI minimum.

2.1.5 All galvanized studs, joists and accessories shall have a minimum G-60 coating if required to be in conformance with ASTM C 955. Otherwise G-40 or equivalent we be provided.

2.1.6 Physical properties and allowable load capabilities of members shall be developed in accordance with AISI, "North American Specification for the Design of Cold-Formed Steel Structural Members", latest edition.

# PART 3 – EXECUTION

**3.1 Storage of Materials**

3.1.1 Products shall be protected from conditions that may cause any physical damage.

3.1.2 Materials shall be stored on a flat plane.

3.1.3 It shall be the responsibility of the project architect or engineer or their appointed personnel to determine what material is damaged (e.g. rusted, dented, bent or twisted). Any damaged materials shall be removed from the job site immediately.

**3.2 Installation General**

3.2.1 Methods of construction may be either piece by piece (stick-built), or by fabrication into panels either on or off site.

3.2.2 Connections shall be accomplished with self drilling screws or welding so that the connection meets or exceeds the design loads required at that connection.

3.2.3 Transversely loaded studs need not sit squarely in tracks but must be attached to them with the exception of special slip conditions that must be designed accordingly.

3.2.4 Axially loaded studs shall be installed seated squarely (within 1/16") against the web portion of the top and bottom tracks. Tracks shall rest on a continuous, uniform bearing surface.

3.2.5 Cutting of steel framing members may be accomplished with a saw or shear. Torch cutting of load bearing members is not permitted. Cutting of loaded members is not permitted unless under supervision of the project architect or engineer.

3.2.6 Temporary bracing shall be provided and left in place until work is permanently stabilized.

3.2.7 Bridging shall be of size and type shown on the drawings and as called for in the design calculations.

3.2.8 Diaphragm rated sheathing materials may be substituted for bridging, however, it shall be installed prior to loading the wall. If such a material is installed on one side of the wall only, then the other stud flanges shall be bridged with suitable bridging. This bridging may be removed if and when such diaphragm rated sheathing is installed.

3.2.9 Install headers in all openings that is larger than the stud spacing in that wall. Form headers as shown on the drawings.

3.2.10 Insulation equal to the job requirements shall be placed in all jamb and header type conditions that will be inaccessible after their installation into the wall.

3.2.11 Provide jack studs to support each end of headers. These studs shall be securely connected to the header and must seat squarely in the lower track of the wall and be properly attached to it.

3.2.12 If by design a header is low in the wall, the less than full-height studs (cripples) that occur over the header shall be designed to carry all imposed loads.

3.2.13 Wall track shall not be used to support any load unless specifically designed for that purpose.

3.2.14 All axially loaded members shall be aligned vertically, to allow for full transfer of the loads down to the foundation. Vertical alignment shall be maintained at floor/wall intersections or alternate provisions for load transfer may be made.

3.2.15 Holes that are field cut into steel framing members shall be within the limitations of the product and its design. Provide reinforcement where holes are cut through load bearing members in accordance with manufacturer's recommendations and as approved by project architect or engineer.

3.2.16 Touch up all steel bared by welding using zinc rich paint.

3.2.17 Studs shall be spaced to suit the design requirements and limitations of collateral facing materials.

3.2.18 Gypsum board shall be attached to steel studs in accordance with ASTM Specification C 840, except that the steel drill screws used (Specification ASTM C 954) shall be spaced not more than 8" on center at the edges and ends, and not more than 12" on center in the field of the board.

3.2.19 Metal plaster bases shall be attached in accordance with ASTM Specification C 841, except screw heads shall be of size and type suitable for positive (no movement) attachment.

3.2.20 Care should be taken to allow for additional studs at intersections, corners, doors, windows, control joints, etc., and as called for in the shop drawings or design calculations.

3.3.21 Provision for structure movement (expansion shall be allowed where indicated and necessary by design or code requirements.

3.2.22 Splicing of axially loaded members shall be not permitted.

3.2.23 Wire typing of members is not permitted.

**3.3 Installation: Panelized Construction**

3.3.1 Panels shall be designed to resist construction and handling loads as well as live loads.

3.3.2 Handling and lifting of prefabricated panels shall not cause permanent distortion in any member or collateral material.

3.3.3 Make all stud to track connections prior to hoisting of panel.

3.3.4 Where splicing of track is necessary between stud spacing a piece of stud shall be placed in the track fastened with two screws or welds per flange to each piece of track.

3.3.5 Complete bearing shall be maintained under tracks to provide for load transfer in axially loaded assemblies. If the erecting contractor is bearing on work set by another trade, it is his responsibility to insure that bearing criteria are met. Any discrepancy shall be brought to the attention of the project architect or engineer.

3.3.6 Attachment of the panel to the structure shall be as shown on the shop drawings.

3.3.7 Align all panels to provide continuity of any wall/floor surface.

**3.4 Installation: Stick-Built Construction**

3.4.1 Align track accurately at supporting structure and fasten to structure as shown on shop drawings.

3.4.2 Track intersections shall butt evenly.

3.4.3 Studs shall be plumbed, aligned, and securely attached to flanges or webs of upper and lower tracks. Axially loaded studs shall be seated squarely in both top and bottom tracks.

3.4.4 Where splicing of track is necessary between stud spacing, a piece of stud shall be placed in the track fastened with two screws or welds per flange to each piece of track.

3.4.5 Complete bearing shall be maintained under tracks to provide for load transfer in axially loaded assemblies. If the erecting contractor is bearing on work set by another trade, it is his responsibility to insure that bearing criteria are met. Any discrepancy shall be brought to the attention of the project architect or engineer prior to the commencement of work.

**3.5 Installation: Joists**

3.5.1 Joist shall be located directly over bearing studs or a load distribution member shall be provided to transfer loads.

3.5.2 Provide web stiffeners where necessary at reaction points, and at points of concentrated loads.

3.5.3 Joists shall be installed with their web area perpendicular to the bearing surface.

3.5.4 Bridging, either steel strap or solid, shall be provided as shown on the shop design calculations.

3.5.5 Provide additional joists under parallel partitions where the partition length exceeds 1/2" of the joist span.

3.5.6 Provide additional framing around all floor/roof openings that are larger than the joist spacing.

3.5.7 End blocking shall be provided where joist ends are not otherwise restrained from rotation.

3.5.8 Joist ends must be built solidly into masonry construction prior to placing any load on the joist.

3.5.9 All bridging, bracing, blocking, strapping, web reinforcement, etc., must be in place prior to loading of floors.

3.5.10 If the floor is to be of concrete, care must be exercised in its placement.

3.5.11 Care must be taken by all trades not to disturb joist placement, alignment, plumbness, etc., prior to the completion of the floor system.

3.5.12 Care must be taken not to overload the floor system during construction. Please place heavy loads, materials, equipment, etc., directly over structural supports, bearing walls or as directed by the architect or engineer.

**3.6 Fastenings and Attachments**

3.6.1 Anchorage of the tracks to the structure shall be with methods designed for that specific application. Size, penetration, type, and spacing shall be determined by design.

3.6.2 Welds shall conform to the requirements of AWS E1.3 AWS D1.3, and AISI Manual. Welds may be butt, fillet, spot or groove type the appropriateness of which shall be determined by and within the design calculations. All welds shall be touched up using zinc rich paint

3.6.3 Steel drill screws shall be of the minimum diameter indicated by the design of that particular attachment detail. Penetration through joined materials shall not be less than 3 exposed threads.

3.6.4 Screws shall have a protective coating at least equivalent to zinc plating when used in exterior assemblies.

**3.7 Tolerances**

3.7.1 Vertical alignment (plumbness) of studs shall be within 1/960$^{th}$ (1/8" in 10'-0") of the span.

3.7.2 Horizontal alignment (levelness) of walls shall be within 1/960$^{th}$ (1/8" in 10'-0") of their respective lengths.

3.7.3 Spacing of studs shall not be more than 1/8" +/– from the designed spacing providing that the cumulative error does not exceed the requirements of the finishing materials.

3.7.4 Prefabricated panels shall be not more than 1/8" +/– out of square within the length of that panel.

**3.8 Inspections**

3.8.1 Inspections by a qualified/independent authority shall be performed in order to assure strict conformance to the shop drawings at all phases of construction.

3.8.2 All members shall be checked for bearing, completeness of attachments, reinforcement, etc.

3.8.3 All attachments shall be checked for conformance with the shop drawings and/or the design calculations. All welds shall be touched up in accordance with Section 3.6.2.

3.8.4 General inspection of structure shall be completed prior to applying loads to those members.

3.8.5 Inspections where and as required by local codes shall be controlled inspection.

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This technical information reflects the most current information available and supersedes any and all previous publications effective August 1, 2009. #CFS1-8/2009.