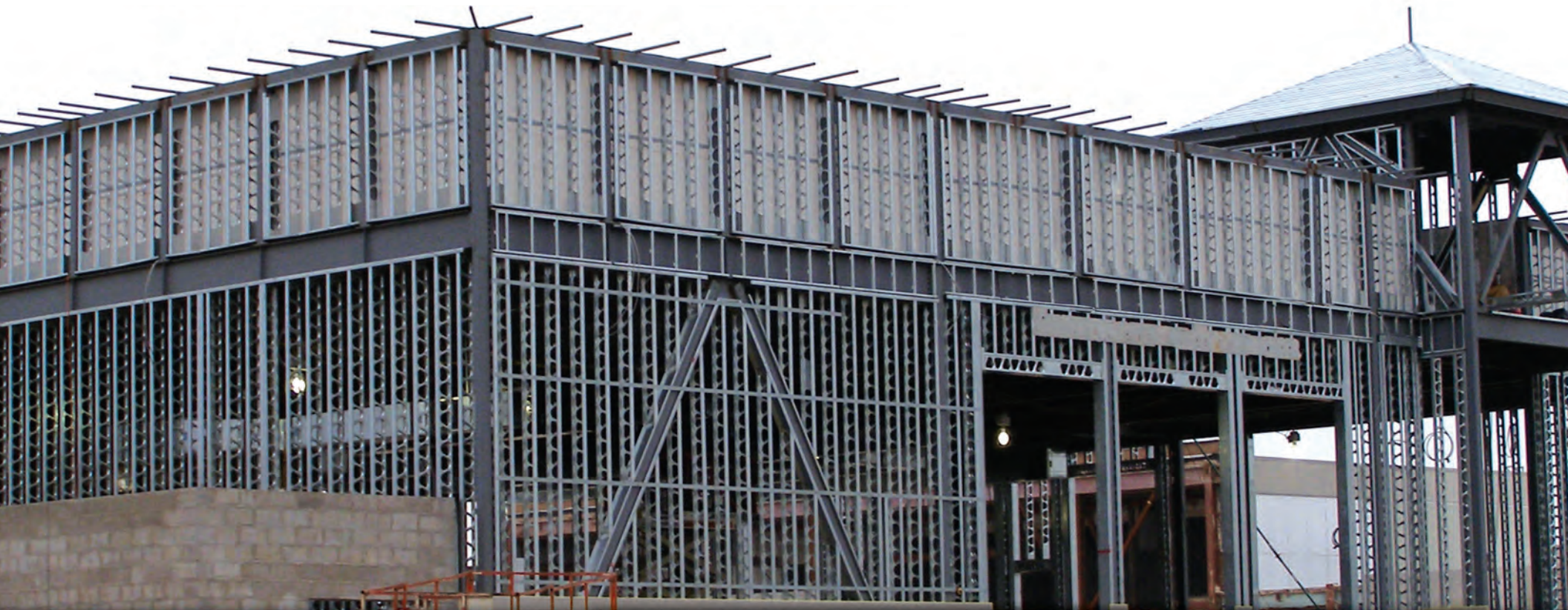


StudRite®



TECHNICAL GUIDE



MARINO WARE®

Marino\WARE™ is proud to present this catalog detailing the StudRite™ Steel Framing System. StudRite is a product of the FrameRite™ family of proprietary framing solutions. For over 70 years, Marino\WARE has been providing their customers with top quality steel framing products.

At Marino\WARE Quality and Service Count.

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 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 technologies 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.

www.MarinoWare.com



DesignGroup™

DesignGroup Engineering Services are available for all FrameRite Building System structures as well as conventional cold formed steel products. This includes answering technical calls regarding products and installation applications, as well as providing professionally engineered shop drawings. To speak to someone in our DesignGroup Engineering Office, please call 1-866-545-1545.

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One of the greatest attributes of the large triangular cutouts is the increased efficiencies for trade installation. Now for the first time, electricians, plumbers and HVAC installers can run their products right through the knockouts without cutting a single stud member. This technology has never been available before. Ordinarily a lot of time is wasted in cutting and reinforcing holes that have to be drilled or cut into steel wall studs. This new technology saves construction professionals valuable time and reduces labor costs. StudRite is an ideal framing product for assisted living facilities, medical complexes, hospitals, single and multiple family homes and apartment buildings.

Design Flexibility

Architects, engineers and builders have the option to use stick or panel construction, or a combination of both. With StudRite almost any structural design is possible. StudRite is supplied in a complete range of sizes to meet engineering specifications for exterior wind-bearing walls or interior/exterior load-bearing walls and roof trusses. It is strong enough to support up to seven stories as a self-supporting load-bearing structure and can be utilized in much higher structures when used as an infill application. StudRite can be supplied in precision lengths from the factory, saving time on the jobsite. The factory can even add solid sections anywhere along the length of the stud if desired.



SUPERIOR ENGINEERED WALL SECTION

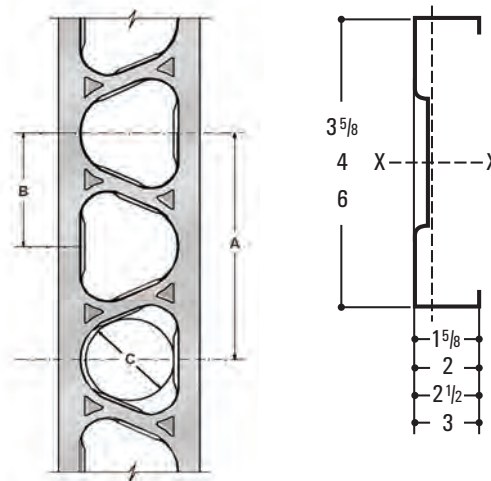
The StudRite Wall System is a specially designed cold formed steel C-stud that has one of the best strength-to-mass ratios of any stud in the industry. It can be used to frame interior bearing and non-bearing walls, as well as the exterior walls without any limitations. Exterior applications include low rise bearing and high rise non-bearing. StudRite is also ideal for companies that build pre-fabricated wall panels. StudRite significantly reduces the weight of pre-fabricated wall panels due to the large repetitive triangular cutouts. This technology reduces the weight of the stud significantly.

Triangular Cutout Technology

The StudRite Wall System achieves maximum structural performance due to its lip reinforced repetitive triangular cutouts and embossments. Additionally, the open web design and the shape of the lip in the cutout make StudRite easier and safer to handle.

Hole Sizes:

Section Depth in.	A Pitch in.	B 1/2 Pitch in.	C Max. Diameter in.
3 5/8	7.0	3.5	1 3/4
4	7.0	3.5	1 3/4
6	8.1	4.0	2 7/8



Steel Thickness:

Product		Design		Minimum		ASTM C955 Color Code
Gauge	Mils	(in.)	(mm)	(in.)	(mm)	
20	33	0.0346	0.879	0.0329	0.838	White
18	43	0.0451	1.15	0.0428	1.09	Yellow
16	54	0.0566	1.44	0.0538	1.37	Green

Finish:

StudRite will not swell, warp, burn, rot, attract or support insect (termite) infestations and mold growth. In accordance with ASTM C955 products are furnished with a G-60 hot-dipped galvanized coating to protect against time-dependent deterioration caused by moisture.

Available Grades of Steel:

- 20, 18 gauge Stud: $F_y = 33$ ksi
(16 gauge is: $F_y = 50$ ksi)

Lengths:

Precut stud lengths are stocked, while custom length sizes are available upon request. Shorter lengths may be cut in the field.



PHYSICAL AND STRUCTURAL PROPERTIES

The StudRite product has undergone rigorous development and testing to assure strength, durability and conductivity for superior performance.

StudRite Identification System

Below is a color coded example of the FrameRite Product Identification System. Blue being the member width in 1/100 inches, Red denotes the product style or type, yellow being flange width in 1/100 inches, and black indicates material thickness in mils.

600-JR-200-54

- **Member Width 6" = 600 x 1/100 in.**
- **Style: JR = StudRite**
- **Flange Width: 2" = 2.00" = 200x1/100 in.**
- **Material Thickness: Minimum Base Metal Thickness: 0.054 in. = 54 mils (1 mil = 1/1000 in.) Minimum thickness represents 95% of the design thickness.**

UL Fire Test Data

UL V457 1 and 2 Hour Fire Rating

Symbols & Definitions

- F_y Yield point of steel used for design.
- I_x Moment of inertia of net section about x-axis.
- S_x Section modulus of net section about x-axis.
- r_x Radius of gyration of net section about x-axis.
- I_y Moment of inertia of net section about y-axis.
- r_y Radius of gyration of net section about y-axis.
- I_{xed} Effective moment of inertia of net section about x-axis based on a stress of $0.6F_y$ (deflection determination).
- S_{xe} Effective section modulus of net section about x-axis based on a stress of F_y (strength determination).
- M_a Allowable bending moment.
- V_a Allowable shear force.
- J Saint-Venant torsion constant of net section.
- C_w Torsional warping constant of net section.
- r_o Polar radius of gyration of net section about shear center.

Member Physical Properties						Net Properties						Net Effective Properties				Torsional Properties		
Members	Web (in.)	Flange Leg (in.)	Lip (in.)	Design Thickness (in.)	Weight (plf)	Area (in. ²)	I_x (in. ⁴)	S_x (in. ³)	r_x (in.)	I_y (in. ⁴)	r_y (in.)	I_{xed} (in. ⁴)	S_{xe} (in. ³)	M_a (k-in)	V_a (k)	$J \times 10^3$ (in. ⁴)	C_w (in. ⁶)	r_o (in.)
3 5/8" Members																		
362JR162-33	3.625	1.625	0.50	0.0346	0.81	0.210	0.550	0.304	1.62	0.0750	0.600	0.550	0.290	5.70	1.02	0.084	0.280	2.29
362JR162-43	3.625	1.625	0.50	0.0451	1.05	0.271	0.710	0.391	1.62	0.0960	0.595	0.710	0.390	7.70	1.74	0.183	0.360	2.28
362JR162-54	3.625	1.625	0.50	0.0566	1.30	0.334	0.870	0.480	1.61	0.116	0.589	0.870	0.464	13.9	2.34	0.357	0.440	2.27
362JR200-33	3.625	2.00	0.75	0.0346	0.96	0.253	0.66	0.363	1.61	0.145	0.757	0.640	0.314	6.20	1.02	0.101	0.670	2.71
362JR200-43	3.625	2.00	0.75	0.0451	1.24	0.327	0.85	0.468	1.61	0.185	0.752	0.850	0.448	8.80	1.74	0.222	0.850	2.70
362JR200-54	3.625	2.00	0.75	0.0566	1.54	0.405	1.04	0.576	1.61	0.225	0.746	1.04	0.555	16.6	2.34	0.432	1.04	2.69
362JR250-33	3.625	2.50	0.75	0.0346	1.07	0.287	0.770	0.425	1.64	0.248	0.929	0.720	0.337	6.70	1.02	0.115	1.11	3.16
362JR250-43	3.625	2.50	0.75	0.0451	1.39	0.372	0.990	0.548	1.63	0.318	0.924	0.980	0.488	9.60	1.74	0.252	1.42	3.15
362JR250-54	3.625	2.50	0.75	0.0566	1.73	0.461	1.22	0.676	1.63	0.388	0.917	1.22	0.580	17.40	2.34	0.493	1.74	3.14
362JR300-33	3.625	3.00	0.75	0.0346	1.19	0.322	0.880	0.486	1.65	0.387	1.10	0.790	0.353	7.00	1.02	0.128	1.69	3.63
362JR300-43	3.625	3.00	0.75	0.0451	1.55	0.417	1.14	0.627	1.65	0.497	1.09	1.08	0.518	10.2	1.74	0.283	2.16	3.62
362JR300-54	3.625	3.00	0.75	0.0566	1.92	0.518	1.40	0.775	1.65	0.608	1.08	1.40	0.600	18.0	2.34	0.553	2.65	3.61

Member Physical Properties						Net Properties						Net Effective Properties				Torsional Properties			
Members	Web (in.)	Flange Leg (in.)	Lip (in.)	Design Thickness (in.)	Weight (plf)	Area (in. ²)	I _x (in. ⁴)	S _x (in. ³)	r _x (in.)	I _y (in. ⁴)	r _y (in.)	I _{red} (in. ⁴)	S _{xe} (in. ³)	M _s (k-in.)	V _t (k)	J x 10 ³ (in. ⁴)	C _w (in. ⁶)	r _a (in.)	
4" Members																			
400JR162-33	4.00	1.625	0.50	0.0346	0.85	0.222	0.69	0.346	1.76	0.0810	0.604	0.690	0.331	6.50	0.980	0.089	0.350	2.35	
400JR162-43	4.00	1.625	0.50	0.0451	1.10	0.288	0.89	0.445	1.76	0.103	0.600	0.890	0.445	8.80	1.74	0.195	0.440	2.34	
400JR162-54	4.00	1.625	0.50	0.0566	1.37	0.355	1.09	0.547	1.76	0.125	0.593	1.09	0.529	15.9	2.60	0.379	0.540	2.33	
400JR200-33	4.00	2.00	0.75	0.0346	1.00	0.266	0.83	0.413	1.76	0.155	0.765	0.800	0.358	7.10	0.980	0.106	0.800	2.75	
400JR200-43	4.00	2.00	0.75	0.0451	1.30	0.344	1.07	0.533	1.76	0.199	0.761	1.07	0.510	10.1	1.74	0.233	1.02	2.74	
400JR200-54	4.00	2.00	0.75	0.0566	1.61	0.426	1.31	0.657	1.76	0.242	0.754	1.31	0.633	18.9	2.60	0.455	1.25	2.73	
400JR250-33	4.00	2.50	0.75	0.0346	1.12	0.300	0.960	0.481	1.79	0.265	0.939	0.900	0.384	7.60	0.980	0.120	1.33	3.18	
400JR250-43	4.00	2.50	0.75	0.0451	1.45	0.389	1.24	0.621	1.79	0.340	0.934	1.23	0.555	11.0	1.74	0.264	1.70	3.17	
400JR250-54	4.00	2.50	0.75	0.0566	1.80	0.483	1.53	0.767	1.78	0.415	0.928	1.53	0.661	19.8	2.60	0.515	2.09	3.16	
400JR300-33	4.00	3.00	0.75	0.0346	1.23	0.335	1.10	0.549	1.81	0.411	1.11	0.98	0.403	8.00	0.980	0.134	2.03	3.64	
400JR300-43	4.00	3.00	0.75	0.0451	1.60	0.434	1.42	0.709	1.81	0.529	1.10	1.35	0.588	11.6	1.74	0.294	2.60	3.63	
400JR300-54	4.00	3.00	0.75	0.0566	2.00	0.539	1.75	0.877	1.8	0.649	1.10	1.75	0.682	20.4	2.60	0.576	3.19	3.61	

Member Physical Properties						Net Properties						Net Effective Properties				Torsional Properties			
Members	Web (in.)	Flange Leg (in.)	Lip (in.)	Design Thickness (in.)	Weight (plf)	Area (in. ²)	I _x (in. ⁴)	S _x (in. ³)	r _x (in.)	I _y (in. ⁴)	r _y (in.)	I _{red} (in. ⁴)	S _{xe} (in. ³)	M _s (k-in.)	V _t (k)	J x 10 ³ (in. ⁴)	C _w (in. ⁶)	r _a (in.)	
6" Members																			
600JR162-33	6.00	1.625	0.50	0.0346	1.01	0.249	1.76	0.585	2.65	0.090	0.601	1.76	0.562	11.1	0.640	0.099	0.810	3.02	
600JR162-43	6.00	1.625	0.50	0.0451	1.31	0.322	2.27	0.755	2.65	0.115	0.597	2.27	0.755	14.9	1.42	0.219	1.02	3.01	
600JR162-54	6.00	1.625	0.50	0.0566	1.62	0.399	2.79	0.931	2.65	0.139	0.591	2.79	0.901	27.0	2.74	0.426	1.25	3.00	
600JR200-33	6.00	2.00	0.75	0.0346	1.15	0.293	2.08	0.695	2.67	0.173	0.768	2.03	0.607	12.0	0.640	0.117	1.71	3.32	
600JR200-43	6.00	2.00	0.75	0.0451	1.50	0.379	2.69	0.898	2.67	0.221	0.764	2.69	0.864	17.1	1.42	0.257	2.18	3.31	
600JR200-54	6.00	2.00	0.75	0.0566	1.86	0.469	3.33	1.11	2.66	0.269	0.758	3.33	1.07	32.1	2.74	0.501	2.67	3.30	
600JR250-33	6.00	2.50	0.75	0.0346	1.27	0.327	2.39	0.797	2.70	0.293	0.946	2.25	0.645	12.7	0.640	0.131	2.84	3.66	
600JR250-43	6.00	2.50	0.75	0.0451	1.65	0.424	3.09	1.03	2.70	0.376	0.941	3.06	0.931	18.4	1.42	0.287	3.63	3.65	
600JR250-54	6.00	2.50	0.75	0.0566	2.06	0.526	3.83	1.28	2.70	0.460	0.935	3.83	1.11	33.2	2.74	0.562	4.47	3.64	
600JR300-33	6.00	3.00	0.75	0.0346	1.39	0.362	2.70	0.900	2.73	0.453	1.12	2.44	0.673	13.3	0.640	0.144	4.34	4.04	
600JR300-43	6.00	3.00	0.75	0.0451	1.80	0.469	3.49	1.16	2.73	0.583	1.12	3.35	0.981	19.4	1.42	0.318	5.56	4.03	
600JR300-54	6.00	3.00	0.75	0.0566	2.25	0.582	4.33	1.44	2.73	0.715	1.11	4.32	1.14	34.1	2.74	0.622	6.84	4.02	

Section Identification	Spacing (in.) o.c.	5 psf			10 psf			20 psf			25 psf			30 psf			35 psf			40 psf			50 psf			
		L/120	L/240	L/360	L/120	L/240	L/360	L/240	L/360	L/600	L/240	L/360	L/600	L/240	L/360	L/600	L/240	L/360	L/600	L/240	L/360	L/600	L/240	L/360	L/600	
362JR162-33	12	24.3	19.3	16.9	19.3	15.3	13.4	13.7	12.0	10.1	12.4	11.1	9.4	11.3	10.5	8.8	10.4	9.9	8.4	9.8	9.5	8.0	7.8	7.8	7.8	7.4
362JR162-33	16	22.1	17.6	15.3	16.9	13.9	12.2	12.0	10.9	9.2	10.7	10.1	8.5	9.8	9.5	8.0	8.4	7.6	7.3	7.3	7.3	7.3	5.9	5.9	5.9	5.9
362JR162-33	24	19.3	15.3	13.4	13.8	12.2	10.6	9.8	9.5	8.0	7.8	7.8	7.4	6.5	6.5	6.5	5.6	5.6	5.6	4.9	4.9	4.9	3.9	3.9	3.9	3.9
362JR162-43	12	26.5	21.0	18.4	21.0	16.7	14.6	14.9	13.0	11.0	13.8	12.1	10.2	13.0	11.4	9.6	12.1	10.8	9.1	11.3	10.3	8.7	10.1	9.6	8.1	8.1
362JR162-43	16	24.1	19.1	16.7	19.1	15.2	13.2	13.5	11.8	10.0	12.4	11.0	9.3	11.3	10.3	8.7	10.5	9.8	8.3	9.8	9.4	7.9	8.7	8.7	7.4	7.4
362JR162-43	24	21.0	16.7	14.6	16.0	13.2	11.6	11.3	10.3	8.7	10.1	9.6	8.1	9.3	9.0	7.6	8.3	8.3	7.2	7.3	7.3	6.9	5.8	5.8	5.8	5.8
362JR162-54	12	28.3	22.5	19.7	22.5	17.9	15.6	16.0	13.9	11.8	14.8	12.9	10.9	13.9	12.2	10.3	13.2	11.6	9.8	12.6	11.1	9.3	11.2	10.3	8.7	8.7
362JR162-54	16	25.8	20.4	17.9	20.4	16.2	14.2	14.5	12.7	10.7	13.5	11.8	9.9	12.6	11.1	9.3	11.6	10.5	8.9	10.9	10.1	8.5	9.7	9.3	7.9	7.9
362JR162-54	24	22.5	17.9	15.6	17.8	14.2	12.4	12.6	11.1	9.3	11.2	10.3	8.7	10.3	9.7	8.2	9.5	9.2	7.7	8.9	8.8	7.4	7.9	7.9	6.9	6.9
362JR200-33	12	25.6	20.3	17.8	20.3	16.1	14.1	14.4	12.6	10.6	12.9	11.7	9.9	11.7	11.0	9.3	10.9	10.5	8.8	9.8	9.8	8.4	7.8	7.8	7.8	7.8
362JR200-33	16	23.3	18.5	16.1	17.6	14.7	12.8	12.5	11.4	9.7	11.1	10.6	9.0	9.8	9.8	8.4	8.4	8.0	7.3	7.3	7.3	5.9	5.9	5.9	5.9	5.9
362JR200-33	24	20.3	16.1	14.1	14.4	12.8	11.2	9.8	9.8	8.4	7.8	7.8	7.8	6.5	6.5	6.5	5.6	5.6	5.6	4.9	4.9	4.9	3.9	3.9	3.9	3.9
362JR200-43	12	28.1	22.3	19.5	22.3	17.7	15.5	15.8	13.8	11.7	14.7	12.8	10.8	13.8	12.1	10.2	13.0	11.5	9.7	12.1	11.0	9.3	10.9	10.2	8.6	8.6
362JR200-43	16	25.5	20.3	17.7	20.3	16.1	14.1	14.4	12.6	10.6	13.3	11.7	9.8	12.1	11.0	9.3	11.2	10.4	8.8	10.5	10.0	8.4	8.7	8.7	7.8	7.8
362JR200-43	24	22.3	17.7	15.5	17.2	14.1	12.3	12.1	11.0	9.3	10.9	10.2	8.6	9.7	9.6	8.1	8.3	8.3	7.7	7.3	7.3	7.3	5.8	5.8	5.8	5.8
362JR200-54	12	30.1	23.9	20.9	23.9	19.0	16.6	17.0	14.8	12.5	15.8	13.8	11.6	14.8	13.0	10.9	14.1	12.3	10.4	13.5	11.8	9.9	12.3	10.9	9.2	9.2
362JR200-54	16	27.4	21.7	19.0	21.7	17.3	15.1	15.4	13.5	11.4	14.3	12.5	10.5	13.5	11.8	9.9	12.8	11.2	9.4	11.9	10.7	9.0	10.7	9.9	8.4	8.4
362JR200-54	24	23.9	19.0	16.6	19.0	15.1	13.2	13.5	11.8	9.9	12.3	10.9	9.2	11.2	10.3	8.7	10.4	9.8	8.2	9.7	9.3	7.9	8.3	8.3	7.3	7.3
362JR250-33	12	26.6	21.1	18.5	21.1	16.8	14.6	14.9	13.1	11.0	13.3	12.2	10.3	12.2	11.4	9.6	11.2	10.9	9.2	9.8	9.8	8.8	7.8	7.8	7.8	7.8
362JR250-33	16	24.2	19.2	16.8	18.2	15.2	13.3	12.9	11.9	10.0	11.5	11.0	9.3	9.8	9.8	8.8	8.4	8.4	8.3	7.3	7.3	7.3	5.9	5.9	5.9	5.9
362JR250-33	24	21.1	16.8	14.6	14.9	13.3	11.6	9.8	9.8	8.8	7.8	7.8	7.8	6.5	6.5	6.5	5.6	5.6	5.6	4.9	4.9	4.9	3.9	3.9	3.9	3.9
362JR250-43	12	29.5	23.4	20.5	23.4	18.6	16.2	16.6	14.5	12.2	15.4	13.5	11.4	14.5	12.7	10.7	13.6	12.0	10.2	12.7	11.5	9.7	11.3	10.7	9.0	9.0
362JR250-43	16	26.8	21.3	18.6	21.3	16.9	14.8	15.1	13.2	11.1	13.9	12.2	10.3	12.7	11.5	9.7	11.7	10.9	9.2	10.9	10.5	8.8	8.7	8.7	8.2	8.2
362JR250-43	24	23.4	18.6	16.2	17.9	14.8	12.9	12.7	11.5	9.7	11.3	10.7	9.0	9.7	9.7	8.5	8.3	8.3	8.1	7.3	7.3	7.3	5.8	5.8	5.8	5.8
362JR250-54	12	31.8	25.2	22.0	25.2	20.0	17.5	17.9	15.6	13.2	16.6	14.5	12.2	15.6	13.7	11.5	14.9	13.0	10.9	14.2	12.4	10.5	13.0	11.5	9.7	9.7
362JR250-54	16	28.9	22.9	20.0	22.9	18.2	15.9	16.3	14.2	12.0	15.1	13.2	11.1	14.2	12.4	10.5	13.5	11.8	9.9	12.6	11.3	9.5	11.3	10.5	8.8	8.8
362JR250-54	24	25.2	20.0	17.5	20.0	15.9	13.9	14.2	12.4	10.5	13.0	11.5	9.7	11.9	10.8	9.1	11.0	10.3	8.7	10.3	9.8	8.3	8.3	8.3	7.7	7.7
362JR300-33	12	27.4	21.8	19.0	21.6	17.3	15.1	15.3	13.5	11.4	13.6	12.5	10.6	12.5	11.8	9.9	11.2	11.2	9.4	9.8	9.8	9.0	7.8	7.8	7.8	7.8
362JR300-33	16	24.9	19.8	17.3	18.7	15.7	13.7	13.2	12.3	10.3	11.7	11.4	9.6	9.8	9.0	8.4	8.4	8.4	7.3	7.3	7.3	5.9	5.9	5.9	5.9	5.9
362JR300-33	24	21.6	17.3	15.1	15.3	13.7	12.0	9.8	9.0	7.8	7.8	7.8	6.5	6.5	6.5	5.6	5.6	5.6	4.9	4.9	4.9	3.9	3.9	3.9	3.9	3.9
362JR300-43	12	30.5	24.2	21.2	24.2	19.2	16.8	17.2	15.0	12.7	16.0	13.9	11.8	15.0	13.1	11.1	14.0	12.5	10.5	13.1	11.9	10.1	11.6	11.1	9.3	9.3
362JR300-43	16	27.7	22.0	19.2	22.0	17.5	15.3	15.6	13.6	11.5	14.3	12.7	10.7	13.1	11.9	10.1	12.1	11.3	9.5	10.9	10.8	9.1	8.7	8.7	8.5	8.5
362JR300-43	24	24.2	19.2	16.8	18.5	15.3	13.3	13.1	11.9	10.1	11.6	11.1	9.3	9.7	9.7	8.8	8.3	8.3	8.3	7.3	7.3	7.3	5.8	5.8	5.8	5.8
362JR300-54	12	33.3	26.4	23.1	26.4	21.0	18.3	18.7	16.4	13.8	17.4	15.2	12.8	16.4	14.3	12.1	15.5	13.6	11.5	14.9	13.0	11.0	13.3	12.1	10.2	10.2
362JR300-54	16	30.2	24.0	21.0	24.0	19.0	16.6	17.0	14.9	12.5	15.8	13.8	11.6	14.9	13.0	11.0	13.8	12.3	10.4	12.9	11.8	10.0	11.5	11.0	9.2	9.2
362JR300-54	24	26.4	21.0	18.3	21.0	16.6	14.5	14.9	13.0	11.0	13.3	12.1	10.2	12.2	11.3	9.6	11.3	10.8	9.1	10.4	10.3	8.7	8.3	8.3	8.1	8.1

- Lateral loads multiplied by 0.70 for deflection determination except for 5 & 10 psf
- Check end reactions for web crippling.
- Limiting heights based on continuous support of each flange over the full height of the stud.
- Heights based on steel properties only.



Section Identification	Spacing (in.) o.c.	5 psf			10 psf			20 psf			25 psf			30 psf			35 psf			40 psf			50 psf		
		L/120	L/240	L/360	L/120	L/240	L/360	L/240	L/360	L/600	L/240	L/360	L/600	L/240	L/360	L/600	L/240	L/360	L/600	L/240	L/360	L/600	L/240	L/360	L/600
400JR162-33	12	26.3	20.8	18.2	20.8	16.5	14.5	14.8	12.9	10.9	13.2	12.0	10.1	12.0	11.3	9.5	11.2	10.7	9.0	9.8	9.8	8.6	7.8	7.8	7.8
400JR162-33	16	23.9	18.9	16.5	18.1	15.0	13.1	12.8	11.7	9.9	11.4	10.9	9.2	9.8	8.6	8.6	8.4	8.4	8.2	7.3	7.3	7.3	5.9	5.9	5.9
400JR162-33	24	20.8	16.5	14.5	14.8	13.1	11.5	9.8	9.8	8.6	7.8	7.8	6.5	6.5	6.5	5.6	5.6	5.6	4.9	4.9	4.9	3.9	3.9	3.9	3.9
400JR162-43	12	28.6	22.7	19.8	22.7	18.0	15.7	16.1	14.1	11.9	14.9	13.0	11.0	14.0	12.3	10.4	12.9	11.7	9.8	12.1	11.2	9.4	10.8	10.4	8.7
400JR162-43	16	26.0	20.6	18.0	20.6	16.4	14.3	14.6	12.8	10.8	13.3	11.9	10.0	12.1	11.2	9.4	11.2	10.6	8.9	10.5	10.1	8.5	8.7	8.7	7.9
400JR162-43	24	22.7	18.0	15.7	17.1	14.3	12.5	12.1	11.2	9.4	10.8	10.4	8.7	9.7	8.2	8.3	8.3	7.8	7.3	7.3	7.3	5.8	5.8	5.8	5.8
400JR162-54	12	30.6	24.3	21.2	24.3	19.3	16.8	17.2	15.1	12.7	16.0	14.0	11.8	15.1	13.2	11.1	14.3	12.5	10.5	13.4	12.0	10.1	12.0	11.1	9.4
400JR162-54	16	27.8	22.1	19.3	22.1	17.5	15.3	15.7	13.7	11.5	14.5	12.7	10.7	13.4	12.0	10.1	12.4	11.4	9.6	11.6	10.9	9.2	10.4	10.1	8.5
400JR162-54	24	24.3	19.3	16.8	19.0	15.3	13.4	13.4	12.0	10.1	12.0	11.1	9.4	11.0	10.4	8.8	10.1	9.9	8.4	9.5	9.5	8.0	8.3	8.3	7.4
400JR200-33	12	27.6	21.9	19.2	21.7	17.4	15.2	15.4	13.6	11.5	13.7	12.6	10.6	12.5	11.9	10.0	11.2	11.2	9.5	9.8	9.8	9.1	7.8	7.8	7.8
400JR200-33	16	25.1	19.9	17.4	18.8	15.8	13.8	13.3	12.3	10.4	11.7	11.5	9.7	9.8	9.8	9.1	8.4	8.4	8.4	7.3	7.3	7.3	5.9	5.9	5.9
400JR200-33	24	21.7	17.4	15.2	15.4	13.8	12.1	9.8	9.8	9.1	7.8	7.8	7.8	6.5	6.5	6.5	5.6	5.6	5.6	4.9	4.9	4.9	3.9	3.9	3.9
400JR200-43	12	30.3	24.1	21.0	24.1	19.1	16.7	17.1	14.9	12.6	15.9	13.9	11.7	14.9	13.0	11.0	13.9	12.4	10.4	13.0	11.8	10.0	11.6	11.0	9.3
400JR200-43	16	27.6	21.9	19.1	21.9	17.4	15.2	15.5	13.6	11.4	14.2	12.6	10.6	13.0	11.8	10.0	12.0	11.3	9.5	10.9	10.8	9.1	8.7	8.7	8.4
400JR200-43	24	24.1	19.1	16.7	18.3	15.2	13.3	13.0	11.8	10.0	11.6	11.0	9.3	9.7	9.7	8.7	8.3	8.3	8.3	7.3	7.3	7.3	5.8	5.8	5.8
400JR200-54	12	32.5	25.8	22.6	25.8	20.5	17.9	18.3	16.0	13.5	17.0	14.9	12.5	16.0	14.0	11.8	15.2	13.3	11.2	14.5	12.7	10.7	13.1	11.8	9.9
400JR200-54	16	29.6	23.5	20.5	23.5	18.6	16.3	16.6	14.5	12.3	15.4	13.5	11.4	14.5	12.7	10.7	13.6	12.1	10.2	12.7	11.5	9.7	11.4	10.7	9.0
400JR200-54	24	25.8	20.5	17.9	20.5	16.3	14.2	14.5	12.7	10.7	13.1	11.8	9.9	12.0	11.1	9.4	11.1	10.5	8.9	10.4	10.1	8.5	8.3	8.3	7.9
400JR250-33	12	28.7	22.8	19.9	22.5	18.1	15.8	15.9	14.1	11.9	14.2	13.1	11.0	13.0	12.3	10.4	11.2	11.2	9.9	9.8	9.8	9.4	7.8	7.8	7.8
400JR250-33	16	26.1	20.7	18.1	19.5	16.4	14.3	13.8	12.8	10.8	11.7	11.7	10.0	9.8	9.8	9.4	8.4	8.4	8.4	7.3	7.3	7.3	5.9	5.9	5.9
400JR250-33	24	22.5	18.1	15.8	15.9	14.3	12.5	9.8	9.8	9.4	7.8	7.8	6.5	6.5	6.5	5.6	5.6	5.6	4.9	4.9	4.9	3.9	3.9	3.9	3.9
400JR250-43	12	31.8	25.2	22.0	25.2	20.0	17.5	17.9	15.6	13.2	16.6	14.5	12.2	15.6	13.7	11.5	14.5	13.0	10.9	13.5	12.4	10.5	11.6	11.5	9.7
400JR250-43	16	28.9	22.9	20.0	22.9	18.2	15.9	16.3	14.2	12.0	14.8	13.2	11.1	13.5	12.4	10.5	12.5	11.8	9.9	10.9	10.9	9.5	8.7	8.7	8.7
400JR250-43	24	25.2	20.0	17.5	19.1	15.9	13.9	13.5	12.4	10.5	11.6	11.5	9.7	9.7	9.7	9.1	8.3	8.3	8.3	7.3	7.3	7.3	5.8	5.8	5.8
400JR250-54	12	34.3	27.2	23.7	27.2	21.6	18.9	19.3	16.9	14.2	17.9	15.6	13.2	16.9	14.7	12.4	16.0	14.0	11.8	15.3	13.4	11.3	13.9	12.4	10.5
400JR250-54	16	31.1	24.7	21.6	24.7	19.6	17.1	17.5	15.3	12.9	16.3	14.2	12.0	15.3	13.4	11.3	14.4	12.7	10.7	13.4	12.2	10.2	12.0	11.3	9.5
400JR250-54	24	27.2	21.6	18.9	21.6	17.1	15.0	15.3	13.4	11.3	13.9	12.4	10.5	12.7	11.7	9.9	11.7	11.1	9.4	10.4	10.4	9.0	8.3	8.3	8.3
400JR300-33	12	29.6	23.5	20.5	23.0	18.6	16.3	16.3	14.5	12.3	14.6	13.5	11.4	13.0	12.7	10.7	11.2	11.2	10.2	9.8	9.8	9.7	7.8	7.8	7.8
400JR300-33	16	26.8	21.3	18.6	19.9	16.9	14.8	14.1	13.2	11.1	11.7	11.7	10.3	9.8	9.8	9.7	8.4	8.4	8.4	7.3	7.3	7.3	5.9	5.9	5.9
400JR300-33	24	23.0	18.6	16.3	16.3	14.8	12.9	9.8	9.8	9.7	7.8	7.8	7.8	6.5	6.5	6.5	5.6	5.6	5.6	4.9	4.9	4.9	3.9	3.9	3.9
400JR300-43	12	32.9	26.1	22.8	26.1	20.7	18.1	18.5	16.2	13.6	17.2	15.0	12.7	16.1	14.1	11.9	14.9	13.4	11.3	13.9	12.8	10.8	11.6	11.6	10.0
400JR300-43	16	29.9	23.7	20.7	23.7	18.8	16.4	16.8	14.7	12.4	15.3	13.6	11.5	13.9	12.8	10.8	12.5	12.2	10.3	10.9	10.9	9.8	8.7	8.7	8.7
400JR300-43	24	26.1	20.7	18.1	19.7	16.4	14.4	13.9	12.8	10.8	11.6	11.6	10.0	9.7	9.7	9.5	8.3	8.3	8.3	7.3	7.3	7.3	5.8	5.8	5.8
400JR300-54	12	35.8	28.4	24.8	28.4	22.6	19.7	20.2	17.6	14.9	18.7	16.4	13.8	17.6	15.4	13.0	16.7	14.6	12.3	15.9	14.0	11.8	14.2	13.0	10.9
400JR300-54	16	32.5	25.8	22.6	25.8	20.5	17.9	18.3	16.0	13.5	17.0	14.9	12.5	15.9	14.0	11.8	14.7	13.3	11.2	13.7	12.7	10.7	12.3	11.8	9.9
400JR300-54	24	28.4	22.6	19.7	22.4	17.9	15.6	15.9	14.0	11.8	14.2	13.0	10.9	13.0	12.2	10.3	11.8	11.6	9.8	10.4	10.4	9.4	8.3	8.3	8.3

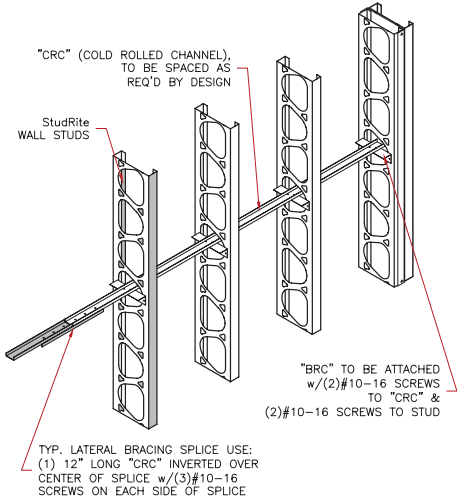
- Lateral loads multiplied by 0.70 for deflection determination except for 5 & 10 psf
- Check end reactions for web crippling.
- Limiting heights based on continuous support of each flange over the full height of the stud.
- Heights based on steel properties only.



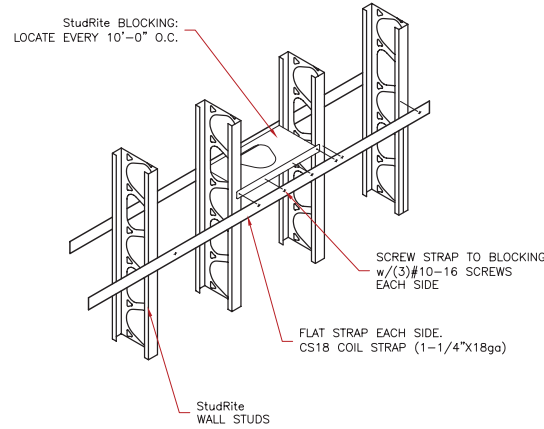
Section Identification	Spacing (in.) o.c.	5 psf			10 psf			20 psf			25 psf			30 psf			35 psf			40 psf			50 psf		
		L/120	L/240	L/360	L/120	L/240	L/360	L/240	L/360	L/600	L/240	L/360	L/600	L/240	L/360	L/600	L/240	L/360	L/600	L/240	L/360	L/600	L/240	L/360	L/600
600JR162-33	12	35.8	28.4	24.8	27.2	22.6	19.7	19.2	17.6	14.9	15.9	15.9	13.8	13.3	13.0	11.4	11.4	11.4	9.9	9.9	9.9	8.0	8.0	8.0	
600JR162-33	16	32.6	25.8	22.6	23.6	20.5	17.9	14.9	14.9	13.5	11.9	11.9	9.9	9.9	9.9	8.5	8.5	8.5	7.5	7.5	7.5	6.0	6.0	6.0	
600JR162-33	24	27.2	22.6	19.7	19.2	17.9	15.7	9.9	9.9	9.9	8.0	8.0	6.6	6.6	6.6	5.7	5.7	5.7	5.0	5.0	5.0	4.0	4.0	4.0	
600JR162-43	12	39.0	31.0	27.1	31.0	24.6	21.5	22.0	19.2	16.2	20.4	17.8	15.0	19.2	16.8	14.1	18.2	15.9	13.4	17.4	15.2	12.8	16.2	14.1	11.9
600JR162-43	16	35.4	28.1	24.6	27.3	22.3	19.5	20.0	17.4	14.7	18.5	16.2	13.7	17.4	15.2	12.8	16.6	14.5	12.2	15.8	13.8	11.7	13.3	12.8	10.8
600JR162-43	24	31.0	24.6	21.5	22.3	19.5	17.0	17.4	15.2	12.8	16.2	14.1	11.9	14.8	13.3	11.2	12.7	12.6	10.7	11.1	11.1	10.2	8.9	8.9	8.9
600JR162-54	12	41.8	33.2	29.0	33.2	26.4	23.0	23.6	20.6	17.4	21.9	19.1	16.1	20.2	18.0	15.2	18.7	17.1	14.4	17.5	16.3	13.8	15.7	15.2	12.8
600JR162-54	16	38.0	30.2	26.4	30.2	23.9	20.9	21.4	18.7	15.8	19.2	17.4	14.6	17.5	16.3	13.8	16.2	15.5	13.1	15.2	14.8	12.5	12.5	11.6	
600JR162-54	24	33.2	26.4	23.0	24.8	20.9	18.3	17.5	16.3	13.8	15.7	15.2	12.8	13.8	13.8	12.0	11.9	11.9	11.4	10.4	10.4	10.4	8.3	8.3	8.3
600JR200-33	12	37.6	29.9	26.1	28.3	23.7	20.7	19.9	18.5	15.6	15.9	15.9	14.5	13.3	13.3	13.3	11.4	11.4	11.4	9.9	9.9	9.9	8.0	8.0	8.0
600JR200-33	16	34.2	27.1	23.7	24.5	21.5	18.8	14.9	14.9	14.2	11.9	11.9	11.9	9.9	9.9	9.9	8.5	8.5	8.5	7.5	7.5	7.5	6.0	6.0	6.0
600JR200-33	24	28.3	23.7	20.7	19.9	18.8	16.4	9.9	9.9	9.9	8.0	8.0	6.6	6.6	6.6	5.7	5.7	5.7	5.0	5.0	5.0	4.0	4.0	4.0	
600JR200-43	12	41.3	32.8	28.7	32.8	26.0	22.7	23.2	20.2	17.1	21.5	18.8	15.8	20.2	17.7	14.9	19.2	16.8	14.2	18.4	16.1	13.5	17.1	14.9	12.6
600JR200-43	16	37.6	29.8	26.0	29.2	23.7	20.7	21.0	18.4	15.5	19.5	17.1	14.4	18.4	16.1	13.5	17.5	15.3	12.9	16.7	14.6	12.3	13.3	13.3	11.4
600JR200-43	24	32.8	26.0	22.7	23.9	20.7	18.1	18.4	16.1	13.5	17.1	14.9	12.6	14.8	14.0	11.8	12.7	12.7	11.2	11.1	11.1	10.8	8.9	8.9	8.9
600JR200-54	12	44.4	35.2	30.8	35.2	27.9	24.4	25.0	21.8	18.4	23.2	20.3	17.1	21.8	19.1	16.1	20.4	18.1	15.3	19.1	17.3	14.6	16.6	16.1	13.6
600JR200-54	16	40.3	32.0	27.9	32.0	25.4	22.2	22.7	19.8	16.7	20.9	18.4	15.5	19.1	17.3	14.6	17.7	16.5	13.9	15.6	15.6	13.3	12.5	12.5	12.3
600JR200-54	24	35.2	27.9	24.4	27.0	22.2	19.4	19.1	17.3	14.6	16.6	16.1	13.6	13.8	13.8	12.8	11.9	11.9	11.9	10.4	10.4	10.4	8.3	8.3	8.3
600JR250-33	12	38.9	30.9	27.0	29.2	24.5	21.4	19.9	19.2	16.2	15.9	15.9	15.0	13.3	13.3	13.3	11.4	11.4	11.4	9.9	9.9	9.9	8.0	8.0	8.0
600JR250-33	16	35.4	28.1	24.5	25.2	22.3	19.5	14.9	14.9	14.7	11.9	11.9	11.9	9.9	9.9	9.9	8.5	8.5	8.5	7.5	7.5	7.5	6.0	6.0	6.0
600JR250-33	24	29.2	24.5	21.4	19.9	19.5	17.0	9.9	9.9	9.9	8.0	8.0	6.6	6.6	6.6	5.7	5.7	5.7	5.0	5.0	5.0	4.0	4.0	4.0	
600JR250-43	12	43.1	34.2	29.9	34.2	27.2	23.7	24.0	21.0	17.7	22.3	19.5	16.4	21.0	18.3	15.4	19.9	17.4	14.7	19.0	16.6	14.0	17.7	15.4	13.0
600JR250-43	16	39.2	31.1	27.2	30.3	24.7	21.6	21.8	19.0	16.1	20.2	17.7	14.9	19.0	16.6	14.0	18.1	15.8	13.3	16.7	15.1	12.7	13.3	13.3	11.8
600JR250-43	24	34.2	27.2	23.7	24.8	21.6	18.8	19.0	16.6	14.0	17.7	15.4	13.0	14.8	14.5	12.3	12.7	12.7	11.6	11.1	11.1	11.1	8.9	8.9	8.9
600JR250-54	12	46.5	36.9	32.2	36.9	29.3	25.6	26.2	22.9	19.3	24.3	21.2	17.9	22.9	20.0	16.8	21.4	19.0	16.0	20.0	18.1	15.3	16.6	16.6	14.2
600JR250-54	16	42.2	33.5	29.3	33.5	26.6	23.2	23.8	20.8	17.5	21.9	19.3	16.3	20.0	18.1	15.3	17.8	17.2	14.5	15.6	15.6	13.9	12.5	12.5	12.5
600JR250-54	24	36.9	29.3	25.6	28.3	23.2	20.3	20.0	18.1	15.3	16.6	16.6	14.2	13.8	13.8	13.4	11.9	11.9	11.9	10.4	10.4	10.4	8.3	8.3	8.3
600JR300-33	12	40.0	31.8	27.7	29.8	25.2	22.0	19.9	19.7	16.6	15.9	15.9	15.4	13.3	13.3	13.3	11.4	11.4	11.4	9.9	9.9	9.9	8.0	8.0	8.0
600JR300-33	16	36.4	28.9	25.2	25.8	22.9	20.0	14.9	14.9	14.9	11.9	11.9	9.9	9.9	9.9	8.5	8.5	8.5	7.5	7.5	7.5	6.0	6.0	6.0	
600JR300-33	24	29.8	25.2	22.0	19.9	19.9	17.5	9.9	9.9	9.9	8.0	8.0	6.6	6.6	6.6	5.7	5.7	5.7	5.0	5.0	5.0	4.0	4.0	4.0	
600JR300-43	12	44.4	35.3	30.8	35.3	28.0	24.5	24.7	21.5	18.2	22.9	20.0	16.9	21.5	18.8	15.9	20.5	17.9	15.1	19.6	17.1	14.4	17.8	15.9	13.4
600JR300-43	16	40.4	32.0	28.0	31.1	25.4	22.2	22.4	19.6	16.5	20.8	18.2	15.3	19.6	17.1	14.4	18.6	16.2	13.7	16.7	15.5	13.1	13.3	13.3	12.2
600JR300-43	24	35.3	28.0	24.5	25.4	22.2	19.4	19.6	17.1	14.4	17.8	15.9	13.4	14.8	14.8	12.6	12.7	12.7	12.0	11.1	11.1	11.1	8.9	8.9	8.9
600JR300-54	12	48.4	38.4	33.6	38.4	30.5	26.6	27.3	23.8	20.1	25.3	22.1	18.6	23.6	20.8	17.5	21.8	19.8	16.7	20.4	18.9	15.9	16.6	16.6	14.8
600JR300-54	16	44.0	34.9	30.5	34.9	27.7	24.2	24.8	21.6	18.2	22.4	20.1	16.9	20.4	18.9	15.9	17.8	17.8	15.1	15.6	15.6	14.5	12.5	12.5	12.5
600JR300-54	24	38.4	30.5	26.6	28.9	24.2	21.1	20.4	18.9	15.9	16.6	16.6	14.8	13.8	13.8	13.8	11.9	11.9	11.9	10.4	10.4	10.4	8.3	8.3	8.3

1. Lateral loads multiplied by 0.70 for deflection determination except for 5 & 10 psf
2. Check end reactions for web crippling.
3. Limiting heights based on continuous support of each flange over the full height of the stud.
4. Heights based on steel properties only.

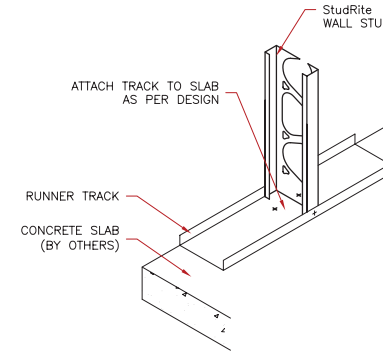




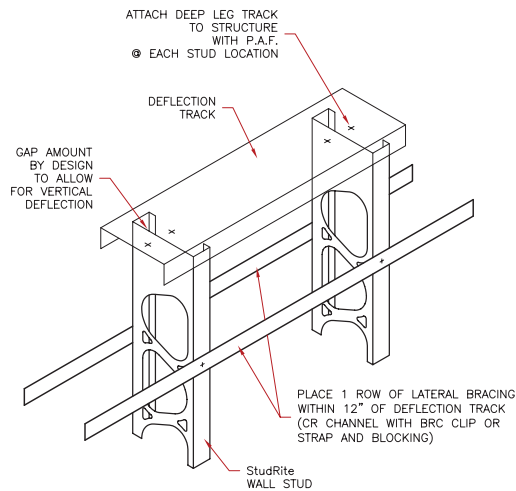
1 STUD BRACING
CR CHANNEL WITH BRC CLIP



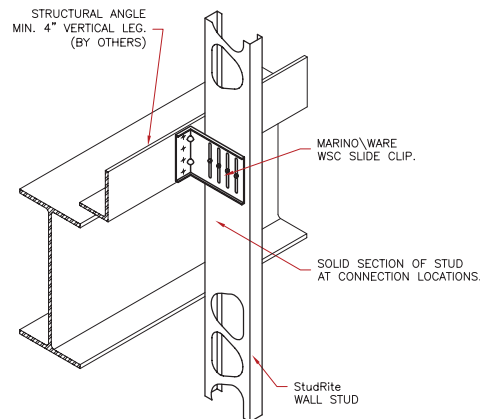
2 STUD BRACING
STRAP AND SOLID BLOCKING FOR 6" AND WIDER STUDS ONLY



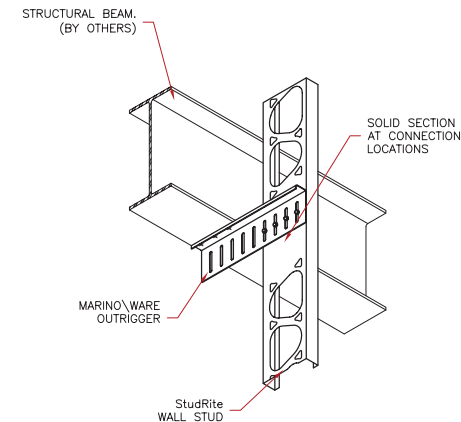
3 STUD TO TRACK DETAIL
ANCHORAGE TO STRUCTURE



4 DEFLECTION TRACK
CURTAIN WALL STUD WITH LATERAL BRACING



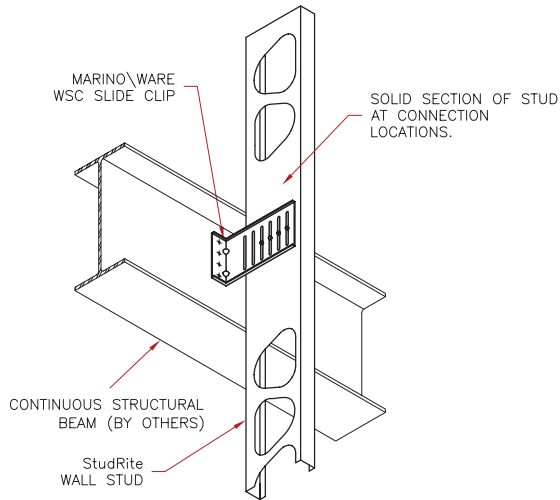
5 STUD ATTACHMENT
CURTAINWALL BY-PASS CONDITION USING MARINO WARE WSC SLIDE CLIP



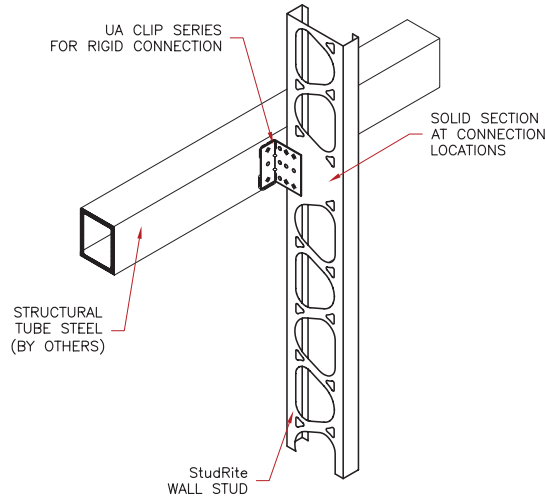
6 STUD ATTACHMENT
CURTAINWALL BY-PASS CONDITION USING MARINO WARE OUTRIGGER

Note: The typical details shown above are for illustrative purposes only and should not be used without the approval of a competent design professional.

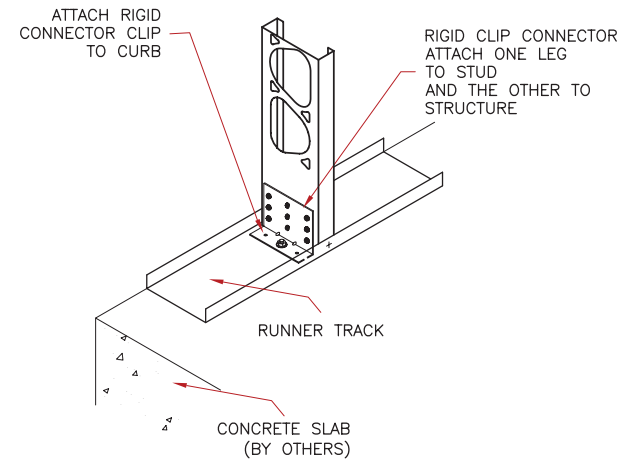
This technical information reflects the most current information available and supersedes any and all previous publications effective June 15, 2017 | CAT_SR_REV_1_06142017 | © WARE Industries, Inc., 2017



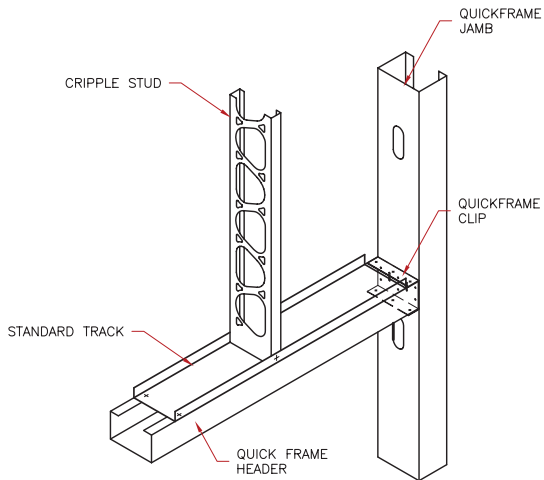
7 STUD ATTACHMENT
WSC TO NON-LOAD BEARING STUD
CLIP ATTACH TO STUD WITH SUPPORT STUD



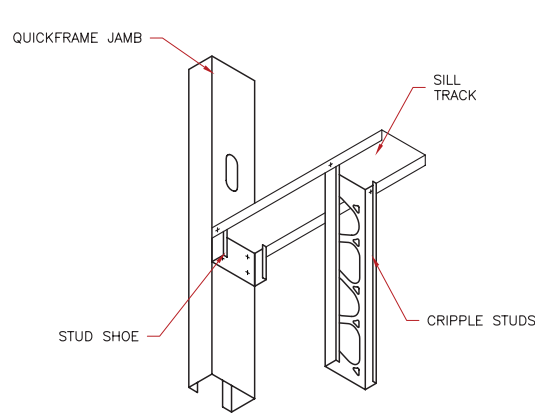
8 STUD ATTACHMENT
CLIP ANGLE WELDED TO STRUCTURE ANGLE
AND SCREW ATTACHED TO STUD



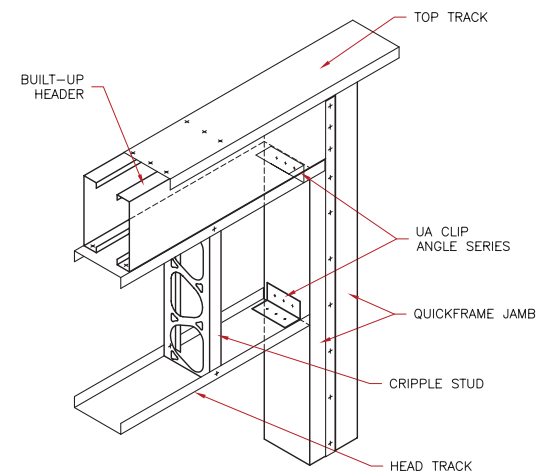
9 STUD TRACK ANCHORAGE



10 LAY-IN HEADER DETAIL
NON-LOAD BEARING CURTAIN WALL HEADER



11 SILL CONNECTION
CONNECTION OF SILL TO QUICK FRAME SYSTEM



12 BOXED HEADER CONNECTION
LOAD BEARING HEADER - TWO MEMBER BOXED

Note: The typical details shown above are for illustrative purposes only and should not be used without the approval of a competent design professional.

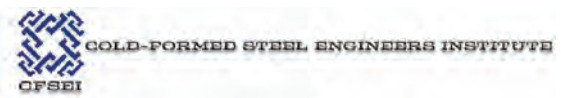


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