

QUALITY LIGHT STEEL FRAMING CONNECTIONS AND MEMBERS

# LIGHT STEEL FRAMING MEMBERS

LOAD BEARING STUDS • X-BRACE SHEAR WALL • SYSTEMS



STEELNETWORK.COM  
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## About The Steel Network, Inc.:

The Steel Network, Inc. (TSN) is a manufacturer of light gauge (cold-formed) steel studs and connectors based in the United States. TSN provides solutions for all standard light steel framing applications, including load-bearing mid-rise construction systems, curtain wall systems, rigid connectors, vertical deflection connectors, lateral drift connectors and anchorage connectors. Substantial effort has been made by the industry to standardize construction practices to ensure the positive connections of light steel framing components. Toward this end, all TSN products have undergone extensive field and laboratory testing to achieve complete solutions for both designers and installers. TSN's SigmaStud® load bearing mid-rise construction system is widely used in commercial and government construction, such as hotels, dormitories and military barracks. TSN connector products are used in facade and interior light steel framing of any type of building.

In addition to its light gauge steel products, the Steel Network's subsidiary, Applied Science International (ASI), specializes in the development of engineering analysis and design software. Two primary ASI software products are SteelSmart® System (SSS) for light steel framing design, and Extreme Loading® for Structures (ELS) for analysis of structures under extreme loads (earthquakes, high wind, impact, blast, and progressive collapse). In addition to software development, ASI also provides consultation services in the fields of demolition analysis and planning, forensic engineering, blast analysis and design, progressive collapse design, and structural vulnerability assessment.

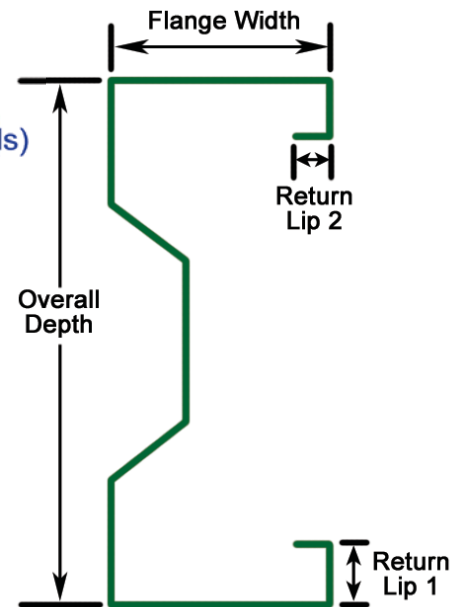
TSN's competitive advantage lies in the cost savings, rapid construction and green design/construction options provided by its core product lines, SigmaStud® Load-bearing Building System, BridgeClip®, VertiClip®, DriftClip®, PrimeWall® and Engineering Software.

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## 600SG250-43, 50ksi



### Background

SigmaStud® is a breakthrough in the load-bearing steel stud industry, producing significant increases in load capacity when compared with conventional “C” Shaped studs. SigmaStud’s unique configuration provides installation and design advantages which create efficiencies no other light steel framing (LSF) load bearing wall stud can provide. Each bend made to a flat LSF element increases load capacity over a standard stud section with the same material thickness. The return lips present in SigmaStud also increase capacity, delivering the most efficient LSF load-bearing stud member available. SigmaStud redefines previous limitations considered for utilization of steel studs in building construction, producing more cost-effective options for designing load bearing walls for clients.

### Material Properties:

ASTM A1003/A1003M or ASTM A653/A653M, Grade 50(340), 50ksi (340MPa) minimum yield strength, 65ksi (450 MPa) minimum tensile strength, G-60 (Z180) hot-dipped galvanized coating; or equivalent.



### Benefits That Add Value:

#### Weight Advantages

- Lighter weight results in easier handling & shipping efficiencies
- Reduction of wall mass & labor costs
- 80% lighter than concrete/masonry block, optimizing foundation thickness

#### Fastener Efficiencies

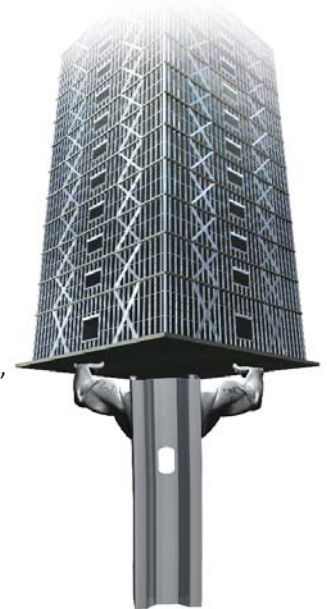
- Screw size decreases with thinner material thickness of member material, facilitating faster connections
- Larger flange width increases area for fasteners

#### Performance Improvements

- Increased load capacity over similar standard “C-shaped” stud (14ga “C-shaped” to 18ga “SG” common)
- May eliminate double studs and their attachments to each other
- Compatible with all common types of floor systems and designs
- Accelerate construction schedules

#### Engineering Advantages

- Axial load capacity tables compatible with recent code changes



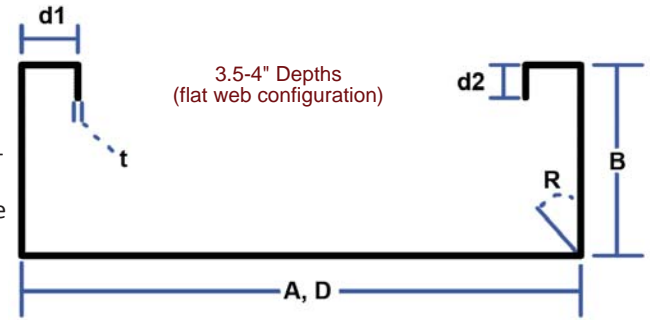
### Design Comparison of SigmaStud® and Standard “C-Shape” Studs

Design Assumptions: Wall height: 9 feet; Bridging at 48” o.c. (vertically); Stud Spacing at 16” o.c.; Single or Back-to-Back Members Only; L/180 Deflection; F<sub>y</sub> = 50 ksi for Both C-Shape and SigmaStud; 5 psf Lateral Load; No Load Reductions Taken.

Axial Load	“C” Shape, 1 5/8” Flange	“C” Shape, 2” Flange	SigmaStud Section	Comparison Conclusion
4k	600S162-54	600S200-43	600SG162-33	The data presents tangible examples of the exceptional value SigmaStud provides for designers, installers, and owners. In each case, SigmaStud represents a thinner and lighter option, resulting in significant material and labor efficiencies. As the axial load increases, the differences between a single member and 2 or even 3 “ganged” members become even more evident. The ganged members should be connected, either back-to-back or lip-to-lip. Back-to-back ganged studs are connected with either an engineered weld, flat strap and screws along the flanges, or screws through each web placed vertically at 24”o.c. (typical). Use of a single SigmaStud section eliminates the additional engineering as well as the installation of these elements. Contact TSN’s technical support team for design recommendations.
8k	600S162-97	600S200-68	600SG200-43	
12k	(2) 600S162-54	600S200-97	600SG250-54	
16k	(2) 600S162-68	(2) 600S200-54	600SG250-68	
20k	(2) 600S162-97	(2) 600S200-68	600SG250-97	
24k	(2) 600S162-97	(2) 600S200-97	600SG250-97 or (2) 600SG250-54	
30k	(3) 600S162-97	(2) 600S200-97	600SG300-118 or (2) 600SG250-68	

## Important Notes

1. Section properties and capacities are calculated in accordance with AISI S100-07 with 2010 supplement.
2. Tabulated gross properties are based on the full-unreduced cross section of the studs, away from punchouts.
3. Effective section properties incorporate the strength increase from the cold-work of forming as applicable per AISI S100-07 Sec. A7.2.
4. Net effective section properties are calculated at a cross section through the punchout.
5. Allowable moment is the lesser of  $M_{al}$  and  $M_{ad}$ . Stud distortional buckling is based on an assumed  $k_{\phi} = 0$ .
6. For deflection calculations, use the effective moment of inertia.
7. The effective moment of inertia for deflection is calculated at a stress which results in a section modulus such that the stress times the section modulus at that stress is equal to the allowable moment. AISI S100-07 Procedure I for serviceability determination has been used.



SigmaStud® Product Profile: 3.5" - 4" Stud Depths

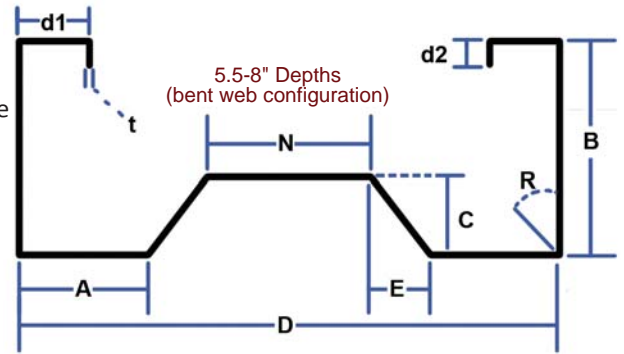
Section	Overall Depth	Flange Width	Web Flat	Web Return	Web Return	Web Inside	Return Lip 1	Return Lip 2	Inside Bend Radius	Design Thickness	Unit Weight
	D	B	A	C	E	N	d1	d2	R	t	
	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(lb/ft)
350SG200-33	3.5	2	3.5	N/A	N/A	N/A	0.5892	0.5	0.105	0.0346	1.078
350SG200-43	3.5	2	3.5	N/A	N/A	N/A	0.6102	0.5	0.105	0.0451	1.400
350SG200-54	3.5	2	3.5	N/A	N/A	N/A	0.6332	0.5	0.105	0.0566	1.749
350SG200-68	3.5	2	3.5	N/A	N/A	N/A	0.6626	0.5	0.105	0.0713	2.192
350SG200-97	3.5	2	3.5	N/A	N/A	N/A	0.7234	0.5	0.105	0.1017	3.092
350SG250-33	3.5	2.5	3.5	N/A	N/A	N/A	0.5892	0.5	0.105	0.0346	1.196
350SG250-43	3.5	2.5	3.5	N/A	N/A	N/A	0.6102	0.5	0.105	0.0451	1.553
350SG250-54	3.5	2.5	3.5	N/A	N/A	N/A	0.6332	0.5	0.105	0.0566	1.942
350SG250-68	3.5	2.5	3.5	N/A	N/A	N/A	0.6626	0.5	0.105	0.0713	2.435
350SG250-97	3.5	2.5	3.5	N/A	N/A	N/A	0.7234	0.5	0.105	0.1017	3.438
350SG350-68	3.5	3.5	3.5	N/A	N/A	N/A	0.6626	0.5	0.105	0.0713	2.920
350SG350-97	3.5	3.5	3.5	N/A	N/A	N/A	0.7234	0.5	0.105	0.1017	4.130
350SG350-118	3.5	3.5	3.5	N/A	N/A	N/A	0.7684	0.5	0.105	0.1242	5.005
362SG200-33	3.625	2	3.625	N/A	N/A	N/A	0.5892	0.5	0.105	0.0346	1.093
362SG200-43	3.625	2	3.625	N/A	N/A	N/A	0.6102	0.5	0.105	0.0451	1.419
362SG200-54	3.625	2	3.625	N/A	N/A	N/A	0.6332	0.5	0.105	0.0566	1.773
362SG200-68	3.625	2	3.625	N/A	N/A	N/A	0.6626	0.5	0.105	0.0713	2.222
362SG200-97	3.625	2	3.625	N/A	N/A	N/A	0.7234	0.5	0.105	0.1017	3.135
362SG250-33	3.625	2.5	3.625	N/A	N/A	N/A	0.5892	0.5	0.105	0.0346	1.210
362SG250-43	3.625	2.5	3.625	N/A	N/A	N/A	0.6102	0.5	0.105	0.0451	1.572
362SG250-54	3.625	2.5	3.625	N/A	N/A	N/A	0.6332	0.5	0.105	0.0566	1.966
362SG250-68	3.625	2.5	3.625	N/A	N/A	N/A	0.6626	0.5	0.105	0.0713	2.465
362SG250-97	3.625	2.5	3.625	N/A	N/A	N/A	0.7234	0.5	0.105	0.1017	3.481
362SG350-68	3.625	3.5	3.625	N/A	N/A	N/A	0.6626	0.5	0.105	0.0713	2.950
362SG350-97	3.625	3.5	3.625	N/A	N/A	N/A	0.7234	0.5	0.105	0.1017	4.173
362SG350-118	3.625	3.5	3.625	N/A	N/A	N/A	0.7684	0.5	0.105	0.1242	5.058
400SG200-33	4	2	4	N/A	N/A	N/A	0.5892	0.5	0.105	0.0346	1.137
400SG200-43	4	2	4	N/A	N/A	N/A	0.6102	0.5	0.105	0.0451	1.477
400SG200-54	4	2	4	N/A	N/A	N/A	0.6332	0.5	0.105	0.0566	1.846
400SG200-68	4	2	4	N/A	N/A	N/A	0.6626	0.5	0.105	0.0713	2.313
400SG200-97	4	2	4	N/A	N/A	N/A	0.7234	0.5	0.105	0.1017	3.265
400SG250-33	4	2.5	4	N/A	N/A	N/A	0.5892	0.5	0.105	0.0346	1.255
400SG250-43	4	2.5	4	N/A	N/A	N/A	0.6102	0.5	0.105	0.0451	1.630
400SG250-54	4	2.5	4	N/A	N/A	N/A	0.6332	0.5	0.105	0.0566	2.038
400SG250-68	4	2.5	4	N/A	N/A	N/A	0.6626	0.5	0.105	0.0713	2.556
400SG250-97	4	2.5	4	N/A	N/A	N/A	0.7234	0.5	0.105	0.1017	3.611
400SG350-68	4	3.5	4	N/A	N/A	N/A	0.6626	0.5	0.105	0.0713	3.041
400SG350-97	4	3.5	4	N/A	N/A	N/A	0.7234	0.5	0.105	0.1017	4.303
400SG350-118	4	3.5	4	N/A	N/A	N/A	0.7684	0.5	0.105	0.1242	5.216

# Load Bearing Wall Members

# SigmaStud® Product Dimensions

## Important Notes

1. Section properties and capacities are calculated in accordance with AISI S100-07 with 2010 supplement.
2. Tabulated gross properties are based on the full-unreduced cross section of the studs, away from punchouts.
3. Effective section properties incorporate the strength increase from the cold-work of forming as applicable per AISI S100-07 Sec. A7.2.
4. Net effective section properties are calculated at a cross section through the punchout.
5. Allowable moment is the lesser of  $M_{al}$  and  $M_{ad}$ . Stud distortional buckling is based on an assumed  $k_{\phi} = 0$ .
6. For deflection calculations, use the effective moment of inertia.
7. The effective moment of inertia for deflection is calculated at a stress which results in a section modulus such that the stress times the section modulus at that stress is equal to the allowable moment. AISI S100-07 Procedure I for serviceability determination has been used.



SigmaStud® Product Profile: 5.5" - 8" Stud Depths 5.5" - 8"											
Section	Overall Depth	Flange Width	Web Flat	Web Return	Web Return	Web Inside	Return Lip 1	Return Lip 2	Inside Bend Radius	Design Thickness	Unit Weight
	D (in)	B (in)	A (in)	C (in)	E (in)	N (in)	d1 (in)	d2 (in)	R (in)	t (in)	(lb/ft)
550SG162-33	5.5	1.625	1	1	0.625	2.25	0.5	0	0.105	0.0346	1.232
550SG162-43	5.5	1.625	1	1	0.625	2.25	0.5	0	0.105	0.0451	1.598
550SG200-33	5.5	2	1	1	0.625	2.25	0.5892	0.5	0.105	0.0346	1.438
550SG200-43	5.5	2	1	1	0.625	2.25	0.6102	0.5	0.105	0.0451	1.869
550SG200-54	5.5	2	1	1	0.625	2.25	0.6332	0.5	0.105	0.0566	2.338
550SG200-68	5.5	2	1	1	0.625	2.25	0.6626	0.5	0.105	0.0713	2.933
550SG200-97	5.5	2	1	1	0.625	2.25	0.7234	0.5	0.105	0.1017	4.147
550SG250-33	5.5	2.5	1	1	0.625	2.25	0.5892	0.5	0.105	0.0346	1.556
550SG250-43	5.5	2.5	1	1	0.625	2.25	0.6102	0.5	0.105	0.0451	2.023
550SG250-54	5.5	2.5	1	1	0.625	2.25	0.6332	0.5	0.105	0.0566	2.531
550SG250-68	5.5	2.5	1	1	0.625	2.25	0.6626	0.5	0.105	0.0713	3.176
550SG250-97	5.5	2.5	1	1	0.625	2.25	0.7234	0.5	0.105	0.1017	4.493
550SG300-43	5.5	3	1	1	0.625	2.25	0.6102	0.5	0.105	0.0451	2.176
550SG300-54	5.5	3	1	1	0.625	2.25	0.6332	0.5	0.105	0.0566	2.723
550SG300-68	5.5	3	1	1	0.625	2.25	0.6626	0.5	0.105	0.0713	3.418
550SG300-97	5.5	3	1	1	0.625	2.25	0.7234	0.5	0.105	0.1017	4.839
550SG300-118	5.5	3	1	1	0.625	2.25	0.7684	0.5	0.105	0.1242	5.867
600SG162-33	6	1.625	1.25	1	0.625	2.25	0.5	0	0.105	0.0346	1.291
600SG162-43	6	1.625	1.25	1	0.625	2.25	0.5	0	0.105	0.0451	1.674
600SG200-33	6	2	1.25	1	0.625	2.25	0.5892	0.5	0.105	0.0346	1.497
600SG200-43	6	2	1.25	1	0.625	2.25	0.6102	0.5	0.105	0.0451	1.946
600SG200-54	6	2	1.25	1	0.625	2.25	0.6332	0.5	0.105	0.0566	2.435
600SG200-68	6	2	1.25	1	0.625	2.25	0.6626	0.5	0.105	0.0713	3.054
600SG200-97	6	2	1.25	1	0.625	2.25	0.7234	0.5	0.105	0.1017	4.320
600SG250-33	6	2.5	1.25	1	0.625	2.25	0.5892	0.5	0.105	0.0346	1.615
600SG250-43	6	2.5	1.25	1	0.625	2.25	0.6102	0.5	0.105	0.0451	2.100
600SG250-54	6	2.5	1.25	1	0.625	2.25	0.6332	0.5	0.105	0.0566	2.627
600SG250-68	6	2.5	1.25	1	0.625	2.25	0.6626	0.5	0.105	0.0713	3.297
600SG250-97	6	2.5	1.25	1	0.625	2.25	0.7234	0.5	0.105	0.1017	4.666
600SG300-43	6	3	1.25	1	0.625	2.25	0.6102	0.5	0.105	0.0451	2.253
600SG300-54	6	3	1.25	1	0.625	2.25	0.6332	0.5	0.105	0.0566	2.820
600SG300-68	6	3	1.25	1	0.625	2.25	0.6626	0.5	0.105	0.0713	3.540
600SG300-97	6	3	1.25	1	0.625	2.25	0.7234	0.5	0.105	0.1017	5.012
600SG300-118	6	3	1.25	1	0.625	2.25	0.7684	0.5	0.105	0.1242	6.078
800SG162-33	8	1.625	2.25	1	0.625	2.25	0.5	0	0.105	0.0346	1.526
800SG162-43	8	1.625	2.25	1	0.625	2.25	0.5	0	0.105	0.0451	1.981
800SG200-33	8	2	2.25	1	0.625	2.25	0.5892	0.5	0.105	0.0346	1.733
800SG200-43	8	2	2.25	1	0.625	2.25	0.6102	0.5	0.105	0.0451	2.253
800SG200-54	8	2	2.25	1	0.625	2.25	0.6332	0.5	0.105	0.0566	2.820
800SG200-68	8	2	2.25	1	0.625	2.25	0.6626	0.5	0.105	0.0713	3.540
800SG200-97	8	2	2.25	1	0.625	2.25	0.7234	0.5	0.105	0.1017	5.012
800SG250-33	8	2.5	2.25	1	0.625	2.25	0.5892	0.5	0.105	0.0346	1.851
800SG250-43	8	2.5	2.25	1	0.625	2.25	0.6102	0.5	0.105	0.0451	2.406
800SG250-54	8	2.5	2.25	1	0.625	2.25	0.6332	0.5	0.105	0.0566	3.012
800SG250-68	8	2.5	2.25	1	0.625	2.25	0.6626	0.5	0.105	0.0713	3.782
800SG250-97	8	2.5	2.25	1	0.625	2.25	0.7234	0.5	0.105	0.1017	5.358
800SG300-43	8	3	2.25	1	0.625	2.25	0.6102	0.5	0.105	0.0451	2.560
800SG300-54	8	3	2.25	1	0.625	2.25	0.6332	0.5	0.105	0.0566	3.205
800SG300-68	8	3	2.25	1	0.625	2.25	0.6626	0.5	0.105	0.0713	4.025
800SG300-97	8	3	2.25	1	0.625	2.25	0.7234	0.5	0.105	0.1017	5.704
800SG300-118	8	3	2.25	1	0.625	2.25	0.7684	0.5	0.105	0.1242	6.922

## Important Notes

1. Section properties and capacities are calculated in accordance with AISI S100-07 with 2010 supplement.
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3. Effective section properties incorporate the strength increase from the cold-work of forming as applicable per AISI S100-07 Sec. A7.2.
4. Net effective section properties are calculated at a cross section through the punchout.
5. Allowable moment is the lesser of  $M_{al}$  and  $M_{ad}$ . Stud distortional buckling is based on an assumed  $k_{\phi} = 0$ .
6. For deflection calculations, use the effective moment of inertia.
7. The effective moment of inertia for deflection is calculated at a stress which results in a section modulus such that the stress times the section modulus at that stress is equal to the allowable moment. AISI S100-07 Procedure I for serviceability determination has been used.

SigmaStud® Section Properties																					
Section (All 50 ksi)	Gross Properties						Torsional Properties						Effective Properties 50 ksi								
	Area	$I_x$	$S_x$	$R_x$	$I_y$	$R_y$	$Jx10^6$	$C_v$	$R_o$	$X_o$	$m$	$\beta$	$A_{e(net)}$	$I_x$	$S_x$	$S_{x(net)}$	$M_{al}$	$M_{al(net)}$	$M_{ad}$	$V_a$	$V_{a(net)}$
	(in <sup>2</sup> )	(in <sup>4</sup> )	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in)	(in <sup>6</sup> )	(in <sup>4</sup> )	(in)	(in)	(in)		(in <sup>2</sup> )	(in <sup>4</sup> )	(in <sup>3</sup> )	(in <sup>2</sup> )	(in <sup>2</sup> )	(kips-in)	(kips-in)	(kips-in)	(lbs)
350SG200-33	0.317	0.630	0.360	1.410	0.194	0.782	0.126	0.718	2.549	-1.975	1.178	0.400	0.201	0.615	0.310	0.283	9.295	8.479	8.570	1145	527
350SG200-43	0.411	0.810	0.463	1.404	0.249	0.779	0.279	0.929	2.541	-1.969	1.176	0.399	0.293	0.810	0.430	0.406	12.878	12.161	12.176	2141	747
350SG200-54	0.514	1.003	0.573	1.397	0.309	0.775	0.549	1.158	2.531	-1.963	1.173	0.398	0.384	1.003	0.550	0.530	16.470	15.871	16.295	3371	925
350SG200-68	0.644	1.241	0.709	1.388	0.382	0.770	1.091	1.444	2.519	-1.955	1.169	0.397	0.529	1.241	0.709	0.696	23.531	20.831	21.230	4208	900
350SG200-97	0.909	1.705	0.974	1.370	0.525	0.760	3.132	2.017	2.492	-1.938	1.160	0.395	0.756	1.705	0.974	0.958	33.387	32.831	29.168	5886	850
350SG250-33	0.351	0.734	0.419	1.445	0.329	0.967	0.140	1.206	3.025	-2.476	1.448	0.330	0.210	0.692	0.331	0.300	9.904	8.995	9.106	1145	527
350SG250-43	0.456	0.945	0.540	1.439	0.424	0.964	0.309	1.565	3.017	-2.471	1.445	0.329	0.292	0.933	0.447	0.418	13.371	12.505	13.045	2141	747
350SG250-54	0.571	1.171	0.669	1.432	0.526	0.960	0.609	1.953	3.008	-2.465	1.442	0.329	0.383	1.171	0.571	0.545	17.099	16.324	17.616	3371	925
350SG250-68	0.715	1.450	0.829	1.424	0.653	0.955	1.212	2.443	2.996	-2.457	1.439	0.328	0.519	1.450	0.748	0.728	22.400	21.809	23.676	4208	900
350SG250-97	1.010	1.999	1.142	1.406	0.904	0.946	3.483	3.431	2.972	-2.441	1.430	0.325	0.858	1.999	1.125	1.107	37.597	37.006	34.192	5886	850
350SG350-68	0.858	1.870	1.068	1.476	1.471	1.309	1.454	5.401	3.980	-3.456	1.965	0.246	0.535	1.812	0.804	0.774	24.073	23.179	26.651	4208	900
350SG350-97	1.214	2.586	1.478	1.460	2.050	1.300	4.184	7.627	3.958	-3.441	1.957	0.244	0.866	2.574	1.267	1.238	37.945	37.068	42.171	5886	850
350SG350-118	1.471	3.082	1.761	1.448	2.457	1.293	7.538	9.227	3.941	-3.430	1.951	0.243	1.173	3.082	1.670	1.644	50.000	49.221	52.725	7073	814
362SG200-33	0.321	0.683	0.377	1.459	0.196	0.782	0.128	0.759	2.561	-1.954	1.168	0.418	0.202	0.667	0.326	0.295	9.754	8.842	8.919	1102	544
362SG200-43	0.417	0.879	0.485	1.452	0.253	0.779	0.283	0.983	2.552	-1.948	1.166	0.417	0.293	0.879	0.451	0.424	13.504	12.690	12.685	2141	802
362SG200-54	0.521	1.089	0.601	1.445	0.313	0.775	0.556	1.224	2.542	-1.942	1.163	0.416	0.385	1.089	0.577	0.553	17.261	16.571	16.994	3372	994
362SG200-68	0.653	1.348	0.744	1.437	0.388	0.770	1.107	1.526	2.530	-1.934	1.159	0.415	0.532	1.348	0.744	0.728	24.678	21.799	22.265	4375	1007
362SG200-97	0.921	1.854	1.023	1.419	0.533	0.761	3.176	2.130	2.504	-1.918	1.150	0.413	0.769	1.854	1.023	1.007	35.050	34.514	30.621	6124	954
362SG250-33	0.356	0.795	0.438	1.495	0.333	0.968	0.142	1.277	3.031	-2.453	1.437	0.345	0.210	0.750	0.347	0.313	10.387	9.375	9.461	1102	544
362SG250-43	0.462	1.024	0.565	1.489	0.430	0.964	0.313	1.656	3.023	-2.447	1.435	0.344	0.293	1.011	0.468	0.435	14.012	13.038	13.565	2141	802
362SG250-54	0.578	1.269	0.700	1.482	0.533	0.961	0.617	2.066	3.014	-2.442	1.432	0.344	0.385	1.269	0.598	0.569	17.908	17.031	18.335	3372	994
362SG250-68	0.724	1.573	0.868	1.474	0.662	0.956	1.227	2.583	3.002	-2.434	1.428	0.342	0.522	1.573	0.783	0.761	23.449	22.775	24.670	4375	1007
362SG250-97	1.023	2.169	1.197	1.456	0.916	0.946	3.527	3.625	2.977	-2.418	1.420	0.340	0.870	2.169	1.178	1.161	39.389	38.814	35.835	6124	954
362SG350-68	0.867	2.023	1.116	1.528	1.491	1.311	1.469	5.715	3.977	-3.430	1.954	0.256	0.538	1.961	0.841	0.808	25.186	24.190	27.689	4375	1007
362SG350-97	1.226	2.801	1.545	1.511	2.078	1.302	4.228	8.065	3.955	-3.415	1.947	0.254	0.879	2.787	1.325	1.296	39.672	38.798	43.895	6124	954
362SG350-118	1.486	3.340	1.843	1.499	2.491	1.295	7.617	9.753	3.938	-3.404	1.941	0.253	1.189	3.340	1.746	1.721	52.284	51.518	55.170	7363	917
400SG200-33	0.334	0.859	0.429	1.603	0.204	0.782	0.133	0.895	2.602	-1.894	1.139	0.470	0.202	0.840	0.373	0.332	11.168	9.928	9.971	991	589
400SG200-43	0.434	1.107	0.553	1.597	0.263	0.778	0.294	1.157	2.593	-1.889	1.136	0.469	0.295	1.107	0.515	0.477	15.429	14.276	14.220	2141	967
400SG200-54	0.542	1.371	0.686	1.590	0.325	0.775	0.579	1.440	2.583	-1.883	1.133	0.469	0.389	1.371	0.658	0.624	19.693	18.673	19.109	3372	1201
400SG200-68	0.680	1.700	0.850	1.581	0.403	0.770	1.152	1.794	2.571	-1.875	1.129	0.468	0.540	1.700	0.850	0.825	28.202	24.708	25.444	4876	1360
400SG200-97	0.959	2.344	1.172	1.563	0.555	0.760	3.308	2.498	2.544	-1.858	1.121	0.467	0.806	2.344	1.172	1.158	40.162	34.664	35.087	6839	1299
400SG250-33	0.369	0.995	0.497	1.643	0.346	0.969	0.147	1.506	3.055	-2.386	1.407	0.390	0.211	0.941	0.397	0.351	11.873	10.514	10.530	991	589
400SG250-43	0.479	1.283	0.641	1.637	0.446	0.965	0.325	1.951	3.046	-2.381	1.404	0.389	0.294	1.268	0.534	0.489	15.981	14.635	15.133	2141	967
400SG250-54	0.599	1.591	0.796	1.630	0.554	0.962	0.640	2.432	3.037	-2.375	1.401	0.388	0.388	1.591	0.681	0.640	20.397	19.150	20.506	3372	1201
400SG250-68	0.751	1.975	0.987	1.622	0.688	0.957	1.273	3.038	3.025	-2.368	1.398	0.387	0.530	1.975	0.891	0.858	26.669	25.675	27.679	4876	1360
400SG250-97	1.061	2.730	1.365	1.604	0.953	0.948	3.658	4.255	3.000	-2.352	1.390	0.386	0.908	2.730	1.343	1.351	44.884	40.448	40.871	6839	1299
400SG350-68	0.894	2.525	1.263	1.681	1.547	1.316	1.514	6.736	3.976	-3.354	1.922	0.288	0.545	2.447	0.955	0.909	28.602	27.223	30.818	4876	1360
400SG350-97	1.265	3.503	1.751	1.664	2.158	1.306	4.360	9.488	3.953	-3.339	1.915	0.286	0.917	3.483	1.502	1.473	44.961	44.092	49.104	6839	1299
400SG350-118	1.533	4.184	2.092	1.652	2.587	1.299	7.855	11.458	3.936	-3.328	1.909	0.285	1.235	4.184	1.980	1.955	59.268	58.533	62.640	8235	1256

Refer to Important Table Notes on Page 5

Section (All 50 ksi)	SigmaStud® Section Properties																				
	Gross Properties						Torsional Properties						Effective Properties 50 ksi								
	Area (in <sup>2</sup> )	I <sub>x</sub> (in <sup>4</sup> )	S <sub>x</sub> (in <sup>3</sup> )	R <sub>x</sub> (in)	I <sub>y</sub> (in <sup>4</sup> )	R <sub>y</sub> (in)	Jx10 <sup>6</sup> (in <sup>4</sup> )	C <sub>w</sub> (in <sup>6</sup> )	R <sub>o</sub> (in)	X <sub>o</sub> (in)	m (in)	β	A <sub>e(Net)</sub> (in <sup>2</sup> )	I <sub>x</sub> (in <sup>4</sup> )	S <sub>x</sub> (in <sup>3</sup> )	S <sub>x(Net)</sub> (in <sup>3</sup> )	M <sub>all</sub> (kips-in)	M <sub>all(Net)</sub> (kips-in)	M <sub>ad</sub> (kips-in)	V <sub>a</sub> (lbs)	V <sub>a(Net)</sub> (lbs)
550SG162-33	0.362	1.522	0.554	2.051	0.096	0.514	0.144	0.864	2.124	-0.203	0.495	0.991	0.261	1.522	0.498	0.492	14.920	14.716	11.731	997	587
550SG162-43	0.469	1.963	0.714	2.045	0.122	0.510	0.318	1.097	2.116	-0.191	0.504	0.992	0.364	1.963	0.663	0.655	19.843	19.611	16.926	2141	952
550SG200-33	0.423	1.882	0.684	2.110	0.175	0.643	0.169	1.783	2.319	-0.716	0.160	0.905	0.315	1.855	0.609	0.602	18.234	18.016	14.840	997	587
550SG200-43	0.549	2.432	0.884	2.104	0.225	0.640	0.372	2.294	2.310	-0.708	0.165	0.906	0.447	2.432	0.833	0.826	24.934	24.718	21.359	2141	952
550SG200-54	0.687	3.023	1.099	2.097	0.278	0.636	0.734	2.838	2.301	-0.700	0.172	0.907	0.577	3.023	1.058	1.050	31.665	31.425	28.982	3372	1176
550SG200-68	0.862	3.761	1.368	2.089	0.344	0.631	1.460	3.510	2.289	-0.689	0.180	0.909	0.755	3.761	1.368	1.361	45.387	45.149	39.170	4793	1298
550SG200-97	1.219	5.229	1.901	2.072	0.471	0.622	4.201	4.816	2.263	-0.667	0.197	0.913	1.066	5.229	1.901	1.891	65.164	64.815	56.931	6657	1207
550SG250-33	0.457	2.140	0.778	2.163	0.302	0.813	0.182	2.936	2.584	-1.157	0.109	0.800	0.324	2.051	0.644	0.634	19.272	18.975	15.414	997	587
550SG250-43	0.594	2.767	1.006	2.158	0.389	0.809	0.403	3.788	2.575	-1.149	0.104	0.801	0.446	2.744	0.860	0.848	25.735	25.384	22.319	2141	952
550SG250-54	0.744	3.442	1.252	2.151	0.483	0.806	0.794	4.701	2.565	-1.141	0.098	0.802	0.576	3.442	1.092	1.078	32.686	32.274	30.488	3372	1176
550SG250-68	0.933	4.286	1.559	2.143	0.599	0.801	1.581	5.835	2.552	-1.131	0.090	0.804	0.745	4.286	1.418	1.403	42.443	42.007	41.569	4793	1298
550SG250-97	1.320	5.970	2.171	2.126	0.826	0.791	4.552	8.069	2.525	-1.108	0.073	0.807	1.168	5.970	2.133	2.121	71.321	70.907	64.998	6657	1207
550SG300-43	0.639	3.103	1.128	2.203	0.622	0.987	0.434	5.742	2.894	-1.597	0.369	0.695	0.443	2.984	0.876	0.859	26.214	25.729	23.034	2141	952
550SG300-54	0.800	3.861	1.404	2.197	0.773	0.983	0.855	7.139	2.884	-1.589	0.363	0.696	0.580	3.725	1.128	1.110	33.781	33.222	31.625	3372	1176
550SG300-68	1.004	4.812	1.750	2.189	0.960	0.978	1.702	8.883	2.870	-1.579	0.355	0.697	0.756	4.753	1.476	1.455	44.180	43.572	43.406	4793	1298
550SG300-97	1.422	6.711	2.440	2.172	1.332	0.968	4.902	12.348	2.843	-1.557	0.340	0.700	1.187	6.711	2.310	2.293	69.159	68.650	69.483	6657	1207
550SG300-118	1.724	8.048	2.927	2.161	1.590	0.960	8.837	14.766	2.822	-1.541	0.328	0.702	1.486	8.048	2.812	2.793	93.863	93.245	87.622	7956	1142
600SG162-33	0.379	1.854	0.618	2.211	0.104	0.523	0.151	1.090	2.284	-0.234	0.432	0.990	0.279	1.854	0.558	0.551	16.702	16.505	12.720	878	634
600SG162-43	0.492	2.392	0.797	2.205	0.133	0.519	0.334	1.386	2.276	-0.222	0.441	0.990	0.386	2.392	0.741	0.734	22.192	21.969	18.413	1959	1073
600SG200-33	0.440	2.291	0.764	2.282	0.187	0.653	0.176	2.203	2.487	-0.744	0.097	0.910	0.333	2.262	0.682	0.675	20.417	20.203	16.201	878	634
600SG200-43	0.572	2.962	0.987	2.276	0.241	0.650	0.388	2.837	2.479	-0.737	0.102	0.912	0.470	2.962	0.931	0.924	27.880	27.673	23.374	1959	1073
600SG200-54	0.715	3.683	1.228	2.269	0.299	0.646	0.764	3.513	2.469	-0.729	0.108	0.913	0.605	3.683	1.182	1.174	35.379	35.150	31.797	3372	1451
600SG200-68	0.898	4.586	1.529	2.261	0.370	0.642	1.521	4.350	2.457	-0.719	0.116	0.914	0.791	4.586	1.529	1.522	50.735	50.518	43.111	5350	1796
600SG200-97	1.269	6.386	2.129	2.243	0.508	0.633	4.376	5.980	2.432	-0.697	0.133	0.918	1.117	6.386	2.129	2.119	72.948	72.629	63.731	7610	1726
600SG250-33	0.475	2.599	0.866	2.340	0.320	0.822	0.189	3.590	2.747	-1.180	0.170	0.815	0.341	2.496	0.720	0.710	21.563	21.269	16.810	878	634
600SG250-43	0.617	3.362	1.121	2.334	0.413	0.818	0.418	4.633	2.737	-1.173	0.165	0.816	0.469	3.339	0.961	0.949	28.760	28.412	24.389	1959	1073
600SG250-54	0.772	4.183	1.394	2.328	0.513	0.815	0.824	5.752	2.728	-1.165	0.160	0.818	0.604	4.183	1.219	1.206	36.501	36.093	33.384	3372	1451
600SG250-68	0.969	5.213	1.738	2.320	0.636	0.810	1.642	7.145	2.715	-1.155	0.152	0.819	0.780	5.213	1.582	1.567	47.351	46.922	45.633	5350	1796
600SG250-97	1.371	7.270	2.423	2.303	0.879	0.800	4.727	9.893	2.688	-1.133	0.137	0.822	1.219	7.270	2.381	2.369	79.592	79.202	72.361	7610	1726
600SG300-43	0.662	3.761	1.254	2.384	0.655	0.995	0.449	6.972	3.047	-1.616	0.429	0.719	0.466	3.628	0.979	0.962	29.297	28.809	25.131	1959	1073
600SG300-54	0.829	4.683	1.561	2.377	0.814	0.991	0.885	8.670	3.036	-1.608	0.424	0.720	0.608	4.526	1.260	1.241	37.713	37.153	34.564	3372	1451
600SG300-68	1.040	5.840	1.947	2.369	1.012	0.986	1.763	10.793	3.023	-1.598	0.417	0.721	0.791	5.775	1.646	1.625	49.272	48.663	47.543	5350	1796
600SG300-97	1.473	8.155	2.718	2.353	1.404	0.976	5.078	15.015	2.996	-1.577	0.402	0.723	1.238	8.155	2.572	2.556	77.021	76.525	76.434	7610	1726
600SG300-118	1.786	9.789	3.263	2.341	1.678	0.969	9.154	17.967	2.976	-1.562	0.391	0.725	1.548	9.789	3.134	3.116	104.620	104.024	97.696	9118	1649
800SG162-33	0.448	3.631	0.908	2.845	0.130	0.538	0.179	2.193	2.912	-0.302	0.261	0.989	0.298	3.631	0.754	0.744	22.576	22.270	16.445	595	595
800SG162-43	0.582	4.691	1.173	2.839	0.166	0.534	0.395	2.796	2.903	-0.292	0.269	0.990	0.439	4.691	1.056	1.047	31.604	31.335	24.107	1324	1269
800SG200-33	0.509	4.453	1.113	2.957	0.230	0.672	0.203	4.278	3.134	-0.791	0.064	0.936	0.352	4.422	0.930	0.919	27.843	27.525	21.591	595	595
800SG200-43	0.662	5.765	1.441	2.951	0.296	0.669	0.449	5.516	3.126	-0.784	0.059	0.937	0.522	5.765	1.325	1.317	39.673	39.425	31.423	1324	1269
800SG200-54	0.829	7.181	1.795	2.944	0.367	0.666	0.885	6.840	3.117	-0.777	0.054	0.938	0.701	7.181	1.731	1.724	51.819	51.620	43.141	2632	1994
800SG200-68	1.040	8.960	2.240	2.935	0.455	0.662	1.763	8.484	3.105	-0.767	0.047	0.939	0.933	8.960	2.240	2.235	74.340	74.180	59.159	5301	3157
800SG200-97	1.473	12.530	3.133	2.917	0.629	0.653	5.078	11.713	3.081	-0.748	0.033	0.941	1.320	12.530	3.133	3.126	107.352	107.117	93.788	10885	4451
800SG250-33	0.544	5.002	1.250	3.033	0.382	0.838	0.217	6.837	3.368	-1.202	0.321	0.873	0.360	4.848	0.980	0.967	29.352	28.942	22.427	595	595
800SG250-43	0.707	6.478	1.620	3.027	0.493	0.835	0.479	8.833	3.360	-1.196	0.317	0.873	0.522	6.468	1.363	1.349	40.806	40.395	32.761	1324	1269
800SG250-54	0.885	8.074	2.019	3.020	0.612	0.832	0.945	10.975	3.350	-1.189	0.312	0.874	0.701	8.074	1.782	1.769	53.363	52.965	45.165	2632	1994
800SG250-68	1.111	10.081	2.520	3.012	0.761	0.827	1.883	13.649	3.339	-1.179	0.305	0.875	0.923	10.081	2.304	2.291	68.996	68.586	62.282	5301	3157
800SG250-97	1.575	14.116	3.529	2.994	1.055	0.818	5.428	18.950	3.314	-1.160	0.292	0.877	1.422	14.116	3.466	3.456	115.861	115.535	100.510	10885	4451
800SG300-43	0.752	7.192	1.798	3.092	0.767	1.010	0.510	13.119	3.633	-1.617	0.573	0.802	0.518	7.010	1.387	1.368	41.519	40.945	33.663	1324	1269
800SG300-54	0.942	8.967	2.242	3.086	0.954	1.006	1.006	16.324	3.623	-1.610	0.568	0.802	0.705	8.758	1.839	1.820	55.068	54.497	46.575	2632	1994
800SG300-68	1.183	11.202	2.800	3.078	1.187	1.002	2.004	20.337	3.611	-1.601	0.562	0.803	0.934	11.142	2.394	2.373	71.673	71.061	64.531	5301	3157
800SG300-97	1.676	15.702	3.926	3.061	1.651	0.993	5.779	28.342	3.586	-1.582	0.549	0.805	1.441	15.702	3.719	3.703	111.337	110.877	105.253	10885	4451
800SG300-118	2.034	18.902	4.725	3.048	1.976	0.986	10.426	33.962	3.567	-1.568	0.540	0.807									

## Table Background And Example

### 1. Basis For Tables:

The SigmaStud Combined Axial and Lateral Load tables in this catalog cover the following basic load combinations for the Allowable Stress Design (ASD) Method (IBC 2009/2012 and ASCE 7-05/10). Listed wind pressures represent calculated design wind pressure (1.0W based on 2009 or 0.6W based on 2012 IBC).

- IBC 2009 / ASCE 7-05
  - i.  $D + L$  (Strength Determination)
  - ii.  $D + 0.75L + 0.75W_{MWFRS}^*$  (Strength Determination)
  - iii.  $0.70W_{C\&C}^{**}$  (Deflection Determination)
- IBC 2012 / ASCE 7-10
  - i.  $D + L$  (Strength Determination)
  - ii.  $D + 0.75L + 0.75(0.6W_{MWFRS}^*)$  (Strength Determination)
  - iii.  $D + 0.70(0.6W_{C\&C}^{**})$  (Deflection Determination)

\* MWFRS: Main Wind Force Resisting System

\*\* C&C: Component and Cladding

- For deflection determination IBC 2009 and IBC 2012 Sec. 1604.3 and AISI S211-07 Wall Stud Design Standard Sec. A3.1 allows for a reduction factor of 0.7 on the component and cladding wind load (0.7WC&C).

### 2. Design Example:

#### Given:

Service (Un-factored) Loads:

Axial Dead Load	= 1.6 kips
Axial Live Load	= 3.2 kips
Wind Pressure ( $W_{MWFRS}$ )(ASCE 7-05) OR ( $0.6W_{MWFRS}$ )(ASCE 7-10)	= 28 psf
Wind Pressure ( $W_{C\&C}$ )(ASCE 7-05) OR ( $0.6W_{C\&C}$ )(ASCE 7-10)	= 40 psf
Wall Width	= 6 in.
Stud Height	= 12 ft.
Stud Spacing	= 16 in. o.c.
Specified Deflection Limit	= L/360
Bridging (Lateral Bracing) at maximum vertical spacing of 48" o.c.	

#### Calculations:

- a) Use the D + L load combination to get the first estimate of the stud.  
Combination total axial load = 1.6 kips + 3.2 kips = 4.8 kips  
From the "No Lateral Load" table with a 12 ft wall height, choose 600SG200-43 (50 ksi) with an axial resistance of 9.35 kips > 4.8 kips. **OK**
- b) Check the  $D + 0.75L + 0.75W_{MWFRS}$  (IBC 2009 / ASCE 7-05) OR  $D + 0.75L + 0.75(0.6W_{MWFRS})$  (IBC 2012 / ASCE 7-10) load combination for strength.  
Combination total axial load = 1.6 kips + 0.75(3.2 kips) = 4.0 kips  
 $0.75W_{MWFRS}$  OR  $0.75(0.6W_{MWFRS})$  = 0.75 x 28 psf = 21 psf (approximately 20 psf)  
Go to the "Lateral Load = 20 psf" table with a 12 ft. wall height and 16 in. stud spacing. The axial resistance for 600SG200-43 (50 ksi) is 6.20 kips > 4.0 kips. **OK**
- c) Check the  $0.70W_{C\&C}$  (IBC 2009 / ASCE 7-05) OR  $0.70(0.6W_{C\&C})$  (IBC 2012 / ASCE 7-10) load combination for deflection. The specified limit is L/360.  
Go to the "Lateral Load = 40 psf" table with a 12 ft. wall height and 16 in. stud spacing. The deflection parameter for 600SG200-43 (50 ksi) is blank, which indicates that deflection is less than L/720 < L/360. **OK**

#### Conclusion:

Use 600SG200-43 (50 ksi) (with design thickness = 0.0451" and  $F_y = 50$  ksi) spaced at 16 in. o.c. with 2 lines of bridging arranged so that the maximum spacing does not exceed 48 in. (4 ft.)

### 3. Extra Design Considerations:

- a) Check lateral end reaction of the stud for web crippling if applicable.
- b) If the specified axial dead load acting on the stud is significantly larger than the specified axial live load, the following basic load combination needs to be checked as well:
  - IBC 2009 / ASCE 7-05
    - i.  $D + W_{C\&C}$  (Strength Determination)
  - IBC 2012 / ASCE 7-10
    - i.  $D + (0.6W_{C\&C})$  (Strength Determination)





## Important Notes

1. Allowable loads are based on weak axis and torsional bracing at 48" o.c. maximum for axial load calculation and continuous support of each flange for flexural calculation.
2. Sections are punched with a standard punch-out 1.5" wide located along the centerline of the web 24" o.c.
3. Allowable loads are based on checks for punched section under axial load, flexural, and shear conditions.
4. Weak axis and torsional bracing should have sufficient stiffness and strength to resist the axial load.
5. The allowable axial strength for distortional buckling is based on an assumed  $k_y = 0$ .
6. Strength increase due to cold forming is incorporated in calculating allowable loads as per AISI Specification Sec. A7.2.
7. Contact The Steel Network if web crippling capacity values of SigmaStud® are required to check lateral end reactions.
8. Loads in tables are in kips/stud.

No Lateral Load (For Load Combination 1.0 [D+L])																			
Wall Height (ft)	Spacing (in) o.c.	350SG200-(mils)					350SG250-(mils)					350SG350-(mils)			362SG200-(mils)				
		33	43	54	68	97	33	43	54	68	97	68	97	118	33	43	54	68	97
8	12, 16, 24	3.21	4.54	5.88	7.43	10.68	3.46	5.09	6.80	8.58	12.25	9.22	14.78	18.57	3.31	4.72	6.12	7.83	11.24
9	12, 16, 24	3.02	4.23	5.45	6.87	9.83	3.27	4.80	6.32	7.94	11.30	8.76	13.99	17.17	3.14	4.42	5.73	7.28	10.42
10	12, 16, 24	2.82	3.89	4.98	6.26	8.93	3.06	4.48	5.78	7.26	10.31	8.33	12.95	15.71	2.94	4.10	5.30	6.69	9.54
12	12, 16, 24	2.37	3.19	4.02	5.03	7.12	2.61	3.72	4.69	5.87	8.28	7.20	10.53	12.73	2.51	3.40	4.34	5.44	7.70
14	12, 16, 24	1.95	2.60	3.23	4.04	5.67	2.22	3.04	3.78	4.72	6.62	6.06	8.49	10.23	2.07	2.79	3.50	4.38	6.15
16	12, 16, 24	1.61	2.12	2.63	3.28	4.58	1.89	2.48	3.09	3.85	5.37	4.96	6.93	8.33	1.72	2.30	2.86	3.56	4.97

Wall Height (ft)	Spacing (in) o.c.	362SG250-(mils)					362SG350-(mils)			400SG200-(mils)					400SG250-(mils)				
		33	43	54	68	97	68	97	118	33	43	54	68	97	33	43	54	68	97
8	12, 16, 24	3.57	5.27	7.08	9.03	12.89	9.62	15.40	19.50	3.58	5.19	6.76	8.85	12.86	3.86	5.69	7.61	10.18	14.72
9	12, 16, 24	3.39	4.98	6.62	8.41	11.96	9.12	14.60	18.14	3.43	4.93	6.42	8.39	12.11	3.70	5.47	7.35	9.65	13.87
10	12, 16, 24	3.19	4.68	6.13	7.74	10.99	8.69	13.76	16.70	3.26	4.64	6.04	7.88	11.29	3.53	5.20	6.99	9.07	12.95
12	12, 16, 24	2.75	3.97	5.07	6.34	8.95	7.67	11.36	13.73	2.88	4.01	5.20	6.73	9.52	3.14	4.60	6.03	7.78	10.99
14	12, 16, 24	2.34	3.26	4.09	5.11	7.17	6.54	9.17	11.06	2.47	3.34	4.33	5.49	7.73	2.71	3.91	5.04	6.39	8.98
16	12, 16, 24	2.00	2.69	3.34	4.17	5.82	5.36	7.50	9.01	2.06	2.78	3.59	4.48	6.28	2.33	3.25	4.18	5.23	7.31

Wall Height (ft)	Spacing (in) o.c.	400SG350-(mils)			550SG162-(mils)		550SG200-(mils)					550SG250-(mils)					550SG300-(mils)				
		68	97	118	33	43	33	43	54	68	97	33	43	54	68	97	43	54	68	97	118
8	12, 16, 24	10.60	17.25	22.17	4.60	5.91	6.49	8.83	11.11	13.84	19.30	6.59	9.86	12.94	17.12	24.89	9.84	13.41	17.44	27.06	34.19
9	12, 16, 24	10.20	16.45	20.91	4.60	5.91	6.49	8.83	11.11	13.84	19.30	6.59	9.86	12.94	17.12	24.89	9.84	13.10	17.02	26.40	33.18
10	12, 16, 24	9.75	15.62	19.56	4.60	5.91	6.49	8.83	11.11	13.84	19.30	6.59	9.86	12.59	16.72	24.33	9.84	12.74	16.54	25.65	31.99
12	12, 16, 24	8.87	13.80	16.69	4.60	5.91	6.49	8.83	11.11	13.84	19.30	6.59	9.33	11.70	15.62	22.22	9.31	11.88	15.42	23.95	29.25
14	12, 16, 24	7.79	11.41	13.76	4.60	5.91	6.00	8.17	10.22	12.79	17.96	6.23	8.54	10.78	14.10	19.83	8.56	10.90	14.30	21.67	26.18
16	12, 16, 24	6.68	9.35	11.25	4.56	5.89	5.31	7.15	8.91	11.13	15.59	5.56	7.67	9.83	12.36	17.34	7.75	9.83	13.00	19.06	22.99

Wall Height (ft)	Spacing (in) o.c.	600SG162-(mils)		600SG200-(mils)					600SG250-(mils)					600SG300-(mils)				
		33	43	33	43	54	68	97	33	43	54	68	97	43	54	68	97	118
8	12, 16, 24	4.47	6.38	6.39	9.35	11.78	14.69	20.51	6.52	9.78	13.61	17.97	26.14	9.80	13.87	18.60	28.77	36.43
9	12, 16, 24	4.47	6.38	6.39	9.35	11.78	14.69	20.51	6.52	9.78	13.61	17.97	26.14	9.80	13.87	18.24	28.19	35.56
10	12, 16, 24	4.47	6.38	6.39	9.35	11.78	14.69	20.51	6.52	9.78	13.56	17.95	26.14	9.80	13.73	17.81	27.51	34.52
12	12, 16, 24	4.47	6.38	6.39	9.35	11.78	14.69	20.51	6.52	9.78	12.76	16.94	24.38	9.80	12.95	16.77	25.92	32.03
14	12, 16, 24	4.47	6.38	6.39	9.09	11.45	14.33	20.17	6.52	9.43	11.80	15.73	22.16	9.44	12.03	15.64	24.14	29.18
16	12, 16, 24	4.47	6.38	6.02	8.17	10.19	12.74	17.89	6.29	8.61	10.94	14.07	19.78	8.67	11.02	14.50	21.65	26.14

Wall Height (ft)	Spacing (in) o.c.	800SG162-(mils)		800SG200-(mils)					800SG250-(mils)					800SG300-(mils)				
		33	43	33	43	54	68	97	33	43	54	68	97	43	54	68	97	118
8	12, 16, 24	3.63	5.50	5.70	8.62	12.28	17.53	24.88	6.04	9.15	13.03	18.62	30.85	9.39	13.40	19.19	33.05	43.29
9	12, 16, 24	3.63	5.50	5.70	8.62	12.28	17.53	24.88	6.04	9.15	13.03	18.62	30.85	9.39	13.40	19.19	33.05	43.29
10	12, 16, 24	3.63	5.50	5.70	8.62	12.28	17.53	24.88	6.04	9.15	13.03	18.62	30.85	9.39	13.40	19.19	33.05	43.29
12	12, 16, 24	3.63	5.50	5.70	8.62	12.28	17.53	24.88	6.04	9.15	13.03	18.62	30.85	9.39	13.40	19.19	33.05	41.77
14	12, 16, 24	3.63	5.50	5.70	8.62	12.28	17.53	24.88	6.04	9.15	13.03	18.62	30.40	9.39	13.40	19.19	31.82	39.70
16	12, 16, 24	3.63	5.50	5.70	8.62	12.28	17.53	24.88	6.04	9.15	13.03	18.62	28.52	9.39	13.40	19.19	30.21	37.29

### Important Notes:

1. Allowable loads are based on weak axis and torsional bracing at 48" o.c. maximum for axial load calculation and continuous support of each flange for flexural calculation.
2. Sections are punched with a standard punch-out 1.5" wide located along the centerline of the web 24" o.c.
3. Allowable loads are based on checks for punched section under axial load, flexural, and shear conditions.
4. Weak axis and torsional bracing should have sufficient stiffness and strength to resist the axial load.
5. The allowable axial strength for distortional buckling is based on an assumed  $k_y = 0$ .
6. Lateral loads have not been modified for strength checks: full loads are applied.
7. Listed wind pressures represent calculated design wind pressure (1.0W based on 2009 or 0.6W based on 2012 IBC).
8. 15 psf and higher wind pressures have been multiplied by 0.7 for deflection determination, in accordance with footnote "f" of IBC table 1604.3. The 5 psf pressure has not been reduced for deflection checks.
9. 5 PSF is classified as live transverse loads, not wind loads, per 2009 IBC Section 1607.13 and 2012 IBC Section 1607.14.
10. Strength increase due to cold forming is incorporated in calculating allowable loads as per AISI Specification Sec. A7.2.
11. Moment of inertia for deflection is optimized based on the maximum moment at service loads for the listed spans; therefore; span values may be greater than spans based on an effective moment of inertia listed in section property tables.
12. Contact The Steel Network if web crippling capacity values of SigmaStud® are required to check lateral end reactions.
13. Loads in tables are in kips/stud (1 kip = 1,000 pounds).

5 Psf Lateral Load																			
Wall Height (ft)	Spacing (in) o.c.	350SG200-(mils)					350SG250-(mils)					350SG350-(mils)			362SG200-(mils)				
		33	43	54	68	97	33	43	54	68	97	68	97	118	33	43	54	68	97
8	12	2.96	4.29	5.62	7.18	10.41	3.22	4.82	6.50	8.30	11.99	8.95	14.50	18.29	3.07	4.47	5.87	7.58	10.98
	16	2.88	4.20	5.53	7.10	10.32	3.14	4.73	6.41	8.21	11.90	8.87	14.41	18.20	2.99	4.39	5.78	7.49	10.89
	24	2.73	4.04	5.37	6.93	10.15	2.98	4.55	6.22	8.03	11.73	8.69	14.22	18.02	2.84	4.23	5.62	7.33	10.72
9	12	2.71	3.90	5.12	6.54	9.49	2.96	4.44	5.94	7.58	10.97	8.42	13.62	16.82	2.83	4.10	5.40	6.96	10.08
	16	2.61	3.80	5.01	6.44	9.38	2.86	4.33	5.83	7.47	10.86	8.31	13.50	16.71	2.73	4.00	5.29	6.85	9.97
	24	2.42	3.61	4.81	6.24	9.16	2.67	4.12	5.60	7.25	10.65	8.09	13.26	16.48	2.55	3.81	5.09	6.65	9.75
10	12	2.44	3.50	4.58	5.87	8.52	2.68	4.04	5.34	6.83	9.90	7.90	12.49	15.28	2.57	3.71	4.90	6.29	9.12
	16	2.32	3.38	4.46	5.75	8.39	2.57	3.91	5.20	6.69	9.77	7.76	12.34	15.15	2.45	3.59	4.77	6.17	8.99
	24	2.11	3.16	4.23	5.51	8.13	2.35	3.66	4.93	6.44	9.52	7.49	12.05	14.87	2.24	3.36	4.53	5.93	8.73
12	12	1.88	2.69	3.52	4.54	6.59	2.12	3.16	4.12	5.32	7.76	6.59	9.92	12.16	2.02	2.90	3.83	4.93	7.16
	16	1.75	2.56	3.37	4.39	6.43	1.97	3.00	3.96	5.16	7.60	6.40	9.74	11.98	1.88	2.75	3.68	4.78	7.00
	24	1.50 <sup>6</sup>	2.30	3.11	4.12	6.14	1.72 <sup>7</sup>	2.71	3.65	4.85	7.29	6.05	9.38	11.64	1.63 <sup>7</sup>	2.49	3.40	4.50	6.69
14	12	1.40	2.04	2.67	3.48	5.07	1.62	2.40	3.14	4.09	6.02	5.30	7.78	9.56	1.51	2.21	2.92	3.80	5.53
	16	1.26 <sup>6</sup>	1.89 <sup>7</sup>	2.52	3.32	4.90	1.47 <sup>7</sup>	2.23	2.97	3.92	5.85	5.08	7.57	9.36	1.37 <sup>6</sup>	2.06	2.76	3.63	5.35
	24	1.01 <sup>6</sup>	1.63 <sup>6</sup>	2.25 <sup>6</sup>	3.04 <sup>7</sup>	4.59	1.20 <sup>6</sup>	1.93 <sup>6</sup>	2.66 <sup>7</sup>	3.60	5.52	4.69	7.18	8.99	1.11 <sup>6</sup>	1.79 <sup>6</sup>	2.47 <sup>7</sup>	3.34	5.03
16	12	1.03 <sup>6</sup>	1.53 <sup>7</sup>	2.04	2.68	3.94	1.23 <sup>6</sup>	1.81	2.40	3.17	4.72	4.13	6.15	7.59	1.12 <sup>6</sup>	1.68 <sup>7</sup>	2.23	2.94	4.31
	16	0.89 <sup>6</sup>	1.39 <sup>6</sup>	1.89 <sup>6</sup>	2.53 <sup>7</sup>	3.77	1.08 <sup>6</sup>	1.64 <sup>6</sup>	2.23 <sup>7</sup>	2.99	4.53	3.91	5.93	7.38	0.98 <sup>6</sup>	1.53 <sup>6</sup>	2.08 <sup>7</sup>	2.77	4.13
	24	0.65 <sup>3</sup>	1.13 <sup>3</sup>	1.62 <sup>6</sup>	2.25 <sup>6</sup>	3.46 <sup>7</sup>	0.81 <sup>3</sup>	1.35 <sup>6</sup>	1.92 <sup>6</sup>	2.68 <sup>6</sup>	4.21	3.52 <sup>7</sup>	5.53	6.99	0.73 <sup>3</sup>	1.26 <sup>3</sup>	1.79 <sup>6</sup>	2.48 <sup>6</sup>	3.80 <sup>7</sup>

5 Psf Lateral Load																			
Wall Height (ft)	Spacing (in) o.c.	362SG250-(mils)					362SG350-(mils)			400SG200-(mils)					400SG250-(mils)				
		33	43	54	68	97	68	97	118	33	43	54	68	97	33	43	54	68	97
8	12	3.33	5.00	6.79	8.75	12.63	9.36	15.12	19.23	3.36	4.95	6.52	8.60	12.60	3.64	5.45	7.35	9.92	14.47
	16	3.25	4.91	6.70	8.66	12.54	9.27	15.03	19.14	3.29	4.88	6.44	8.52	12.52	3.56	5.36	7.26	9.83	14.39
	24	3.10	4.74	6.52	8.48	12.38	9.10	14.85	18.96	3.14	4.72	6.29	8.37	12.35	3.42	5.21	7.10	9.65	14.22
9	12	3.08	4.64	6.26	8.05	11.63	8.79	14.23	17.79	3.15	4.63	6.11	8.07	11.78	3.42	5.15	7.01	9.30	13.54
	16	2.99	4.53	6.14	7.93	11.52	8.68	14.12	17.68	3.05	4.53	6.01	7.97	11.67	3.32	5.05	6.89	9.19	13.44
	24	2.80	4.32	5.91	7.71	11.31	8.47	13.88	17.45	2.88	4.34	5.81	7.77	11.45	3.15	4.85	6.68	8.97	13.23
10	12	2.82	4.25	5.68	7.30	10.58	8.26	13.30	16.27	2.91	4.27	5.65	7.48	10.87	3.17	4.80	6.55	8.63	12.54
	16	2.70	4.12	5.54	7.17	10.45	8.13	13.15	16.13	2.80	4.15	5.53	7.36	10.74	3.06	4.68	6.42	8.49	12.41
	24	2.48	3.87	5.28	6.90	10.19	7.86	12.86	15.86	2.59	3.92	5.30	7.12	10.48	2.85	4.43	6.15	8.22	12.15
12	12	2.25	3.40	4.48	5.77	8.41	7.05	10.73	13.15	2.39	3.50	4.67	6.17	8.94	2.65	4.04	5.43	7.17	10.41
	16	2.11	3.23	4.31	5.60	8.24	6.87	10.54	12.97	2.25	3.34	4.51	6.01	8.76	2.50	3.87	5.25	6.98	10.23
	24	1.85	2.93	3.99	5.28	7.93	6.51	10.17	12.61	1.99	3.06	4.21	5.69	8.42	2.23	3.55	4.91	6.63	9.89
14	12	1.74	2.60	3.43	4.46	6.55	5.75	8.44	10.37	1.88	2.73	3.69	4.84	7.04	2.11	3.21	4.30	5.66	8.28
	16	1.59 <sup>7</sup>	2.42	3.24	4.27	6.37	5.53	8.22	10.16	1.72	2.57	3.51	4.66	6.84	1.94	3.02	4.10	5.45	8.08
	24	1.31 <sup>6</sup>	2.11 <sup>6</sup>	2.91	3.94	6.03	5.12	7.82	9.77	1.44 <sup>6</sup>	2.27 <sup>7</sup>	3.18	4.32	6.46	1.65 <sup>6</sup>	2.67	3.73	5.07	7.69
16	12	1.33 <sup>7</sup>	1.98	2.63	3.46	5.14	4.50	6.68	8.24	1.42 <sup>7</sup>	2.12	2.88	3.78	5.52	1.65	2.49	3.37	4.43	6.55
	16	1.17 <sup>6</sup>	1.81 <sup>6</sup>	2.45	3.27	4.95	4.27	6.45	8.02	1.26 <sup>6</sup>	1.95 <sup>7</sup>	2.70	3.59	5.32	1.47 <sup>6</sup>	2.29	3.16	4.21	6.33
	24	0.90 <sup>3</sup>	1.50 <sup>6</sup>	2.12 <sup>6</sup>	2.94 <sup>7</sup>	4.61	3.86	6.04	7.61	0.98 <sup>3</sup>	1.65 <sup>6</sup>	2.37 <sup>6</sup>	3.25 <sup>7</sup>	4.94	1.17 <sup>6</sup>	1.95 <sup>6</sup>	2.78 <sup>7</sup>	3.83	5.94

1 = Deflection Exceeds L/120  
2 = Deflection Exceeds L/240

3 = Deflection Exceeds L/360  
6 = Deflection Exceeds L/600

7 = Deflection Exceeds L/720  
If not noted, deflection is less than L/720

# Load Bearing Wall Members

# Combined Axial & Lateral Load Tables

Refer to Important Table Notes on Page 9

5 Psf Lateral Load																					
Wall Height (ft)	Spacing (in) o.c.	400SG350-(mils)			550SG162-(mils)		550SG200-(mils)					550SG250-(mils)					550SG300-(mils)				
		68	97	118	33	43	33	43	54	68	97	33	43	54	68	97	43	54	68	97	118
8	12	10.36	16.99	21.91	4.38	5.71	6.23	8.58	10.88	13.63	19.09	6.34	9.60	12.68	16.87	24.65	9.59	13.16	17.19	26.82	33.95
	16	10.28	16.90	21.82	4.30	5.64	6.15	8.50	10.80	13.56	19.02	6.26	9.51	12.59	16.78	24.57	9.50	13.07	17.11	26.73	33.86
	24	10.12	16.73	21.65	4.16	5.51	5.98	8.34	10.65	13.42	18.89	6.10	9.33	12.42	16.62	24.41	9.34	12.91	16.95	26.57	33.70
9	12	9.88	16.11	20.57	4.30	5.64	6.14	8.49	10.79	13.55	19.02	6.26	9.50	12.58	16.77	24.56	9.50	12.77	16.71	26.08	32.85
	16	9.78	16.00	20.46	4.20	5.55	6.03	8.38	10.69	13.46	18.93	6.15	9.39	12.47	16.66	24.45	9.39	12.66	16.60	25.97	32.74
	24	9.57	15.78	20.24	4.01	5.38	5.81	8.17	10.49	13.27	18.74	5.94	9.15	12.24	16.43	24.23	9.17	12.45	16.39	25.75	32.53
10	12	9.35	15.18	19.13	4.21	5.56	6.03	8.38	10.69	13.45	18.92	6.16	9.39	12.14	16.26	23.89	9.40	12.32	16.13	25.22	31.57
	16	9.22	15.04	18.99	4.09	5.44	5.89	8.24	10.55	13.33	18.80	6.02	9.23	11.99	16.12	23.74	9.25	12.18	16.00	25.09	31.43
	24	8.97	14.76	18.72	3.84	5.22	5.60	7.95	10.28	13.07	18.55	5.74	8.93	11.70	15.82	23.46	8.97	11.91	15.73	24.81	31.15
12	12	8.27	13.14	16.08	3.96	5.33	5.72	8.05	10.37	13.15	18.62	5.88	8.58	11.00	14.89	21.53	8.64	11.23	14.79	23.27	28.58
	16	8.08	12.94	15.89	3.77	5.15	5.49	7.82	10.14	12.93	18.41	5.66	8.35	10.78	14.66	21.31	8.42	11.03	14.58	23.05	28.37
	24	7.72	12.55	15.52	3.41	4.81	5.05	7.37	9.70	12.51	17.99	5.24	7.91	10.35	14.21	20.88	8.01	10.63	14.18	22.62	27.94
14	12	6.97	10.60	13.01	3.62	4.99	4.91	7.03	9.13	11.73	16.90	5.20	7.47	9.75	13.03	18.83	7.60	9.97	13.36	20.67	25.21
	16	6.74	10.36	12.77	3.35	4.73	4.61	6.72	8.82	11.42	16.58	4.91	7.17	9.45	12.72	18.53	7.32	9.69	13.07	20.36	24.91
	24	6.30	9.91	12.34	2.88	4.26	4.08	6.15	8.24	10.85	15.97	4.38	6.61	8.89	12.13	17.94	6.79	9.17	12.52	19.76	24.32
16	12	5.70	8.44	10.40	3.15	4.50	3.98	5.75	7.54	9.79	14.21	4.29	6.30	8.43	10.98	16.02	6.51	8.62	11.70	17.72	21.68
	16	5.44	8.18	10.15	2.83	4.17	3.66	5.41	7.19	9.43	13.82	3.96	5.94	8.06	10.61	15.64	6.17	8.28	11.34	17.33	21.29
	24	4.97	7.71	9.68	2.296	3.60	3.11	4.81	6.57	8.79	13.13	3.39	5.32	7.40	9.94	14.95	5.56	7.65	10.67	16.61	20.57

5 Psf Lateral Load																		
Wall Height (ft)	Spacing (in) o.c.	600SG162-(mils)		600SG200-(mils)					600SG250-(mils)					600SG300-(mils)				
		33	43	33	43	54	68	97	33	43	54	68	97	43	54	68	97	118
8	12	4.28	6.18	6.17	9.12	11.56	14.49	20.32	6.30	9.55	13.37	17.74	25.92	9.58	13.64	18.37	28.54	36.20
	16	4.21	6.12	6.10	9.04	11.49	14.42	20.25	6.23	9.47	13.29	17.66	25.85	9.50	13.56	18.29	28.47	36.13
	24	4.08	5.99	5.95	8.89	11.35	14.29	20.13	6.09	9.32	13.13	17.50	25.70	9.36	13.41	18.14	28.32	35.97
9	12	4.21	6.12	6.10	9.04	11.49	14.42	20.25	6.23	9.47	13.29	17.66	25.84	9.51	13.56	17.94	27.90	35.26
	16	4.13	6.03	6.00	8.94	11.39	14.33	20.17	6.14	9.37	13.18	17.55	25.74	9.41	13.46	17.84	27.80	35.16
	24	3.97	5.87	5.81	8.73	11.20	14.15	20.00	5.95	9.17	12.97	17.34	25.55	9.22	13.26	17.64	27.60	34.96
10	12	4.14	6.04	6.01	8.94	11.39	14.33	20.17	6.15	9.38	13.14	17.53	25.74	9.42	13.33	17.43	27.13	34.13
	16	4.03	5.93	5.88	8.81	11.27	14.22	20.06	6.03	9.25	13.00	17.39	25.61	9.30	13.20	17.30	27.00	34.01
	24	3.82	5.72	5.64	8.54	11.02	13.98	19.84	5.79	8.99	12.72	17.12	25.35	9.05	12.94	17.05	26.75	33.75
12	12	3.95	5.83	5.77	8.66	11.12	14.08	19.93	5.92	9.12	12.11	16.27	23.75	9.18	12.34	16.18	25.31	31.43
	16	3.78	5.66	5.57	8.44	10.92	13.89	19.74	5.74	8.91	11.90	16.05	23.55	8.99	12.14	15.99	25.11	31.23
	24	3.47	5.33	5.19	8.03	10.51	13.50	19.37	5.38	8.50	11.49	15.63	23.15	8.60	11.75	15.61	24.72	30.84
14	12	3.68	5.52	5.41	8.01	10.40	13.34	19.19	5.60	8.42	10.85	14.73	21.24	8.53	11.15	14.78	23.21	28.30
	16	3.45	5.27	5.12	7.70	10.10	13.04	18.89	5.33	8.12	10.56	14.42	20.95	8.25	10.88	14.50	22.92	28.01
	24	3.03	4.81	4.61	7.12	9.52	12.47	18.30	4.83	7.56	10.02	13.84	20.40	7.72	10.36	13.98	22.36	27.46
16	12	3.33	5.09	4.69	6.77	8.83	11.43	16.57	5.01	7.27	9.62	12.73	18.53	7.46	9.84	13.28	20.38	24.91
	16	3.04	4.76	4.35	6.41	8.47	11.06	16.19	4.67	6.91	9.25	12.35	18.15	7.12	9.50	12.92	20.00	24.54
	24	2.52 <sup>1</sup>	4.17	3.75	5.76	7.81	10.39	15.48	4.06	6.26	8.58	11.66	17.46	6.49	8.86	12.25	19.29	23.83

5 Psf Lateral Load																		
Wall Height (ft)	Spacing (in) o.c.	800SG162-(mils)		800SG200-(mils)					800SG250-(mils)					800SG300-(mils)				
		33	43	33	43	54	68	97	33	43	54	68	97	43	54	68	97	118
8	12	3.51	5.38	5.56	8.48	12.13	17.37	24.73	5.90	9.00	12.88	18.46	30.67	9.25	13.25	19.03	32.87	43.12
	16	3.48	5.34	5.51	8.43	12.08	17.32	24.68	5.85	8.95	12.83	18.41	30.62	9.20	13.20	18.98	32.82	43.06
	24	3.40	5.27	5.42	8.34	11.98	17.21	24.59	5.76	8.85	12.73	18.30	30.51	9.10	13.10	18.88	32.71	42.94
9	12	3.48	5.35	5.52	8.44	12.08	17.32	24.69	5.86	8.96	12.83	18.41	30.62	9.20	13.21	18.99	32.82	43.06
	16	3.44	5.30	5.46	8.38	12.02	17.25	24.62	5.80	8.90	12.77	18.34	30.55	9.14	13.14	18.92	32.75	42.98
	24	3.34	5.20	5.34	8.25	11.89	17.11	24.50	5.68	8.77	12.64	18.21	30.40	9.02	13.01	18.78	32.60	42.83
10	12	3.45	5.31	5.47	8.39	12.03	17.26	24.64	5.81	8.91	12.78	18.36	30.56	9.15	13.15	18.93	32.76	42.99
	16	3.39	5.25	5.40	8.31	11.95	17.17	24.56	5.74	8.83	12.70	18.27	30.46	9.08	13.07	18.84	32.66	42.90
	24	3.27	5.12	5.25	8.15	11.78	16.99	24.40	5.59	8.67	12.53	18.09	30.27	8.92	12.91	18.67	32.47	42.70
12	12	3.36	5.21	5.36	8.26	11.89	17.11	24.49	5.70	8.78	12.64	18.20	30.39	9.03	13.02	18.78	32.59	41.31
	16	3.27	5.12	5.25	8.14	11.76	16.97	24.37	5.58	8.66	12.51	18.06	30.24	8.91	12.89	18.65	32.43	41.16
	24	3.09	4.93	5.03	7.91	11.51	16.69	24.12	5.36	8.42	12.26	17.79	29.93	8.68	12.64	18.38	32.13	40.86
14	12	3.24	5.09	5.21	8.09	11.69	16.88	24.29	5.55	8.61	12.45	17.98	29.69	8.87	12.84	18.58	31.13	39.03
	16	3.12	4.95	5.05	7.92	11.51	16.67	24.09	5.39	8.44	12.26	17.78	29.46	8.70	12.65	18.38	30.91	38.81
	24	2.87	4.69	4.74	7.58	11.13	16.26	23.71	5.07	8.10	11.89	17.37	29.01	8.36	12.29	17.98	30.47	38.38
16	12	3.10	4.92	5.01	7.86	11.42	16.55	23.97	5.35	8.39	12.19	17.67	27.54	8.65	12.59	18.28	29.25	36.36
	16	2.93	4.74	4.80	7.62	11.15	16.24	23.68	5.14	8.14	11.92	17.36	27.22	8.42	12.33	17.99	28.94	36.06
	24	2.61	4.39	4.39	7.15	10.63	15.64	23.12	4.72	7.68	11.40	16.77	26.61	7.96	11.82	17.42	28.33	35.46

1 = Deflection Exceeds L/120  
2 = Deflection Exceeds L/240

3 = Deflection Exceeds L/360  
6 = Deflection Exceeds L/600

7 = Deflection Exceeds L/720  
If not noted, deflection is less than L/720

# Load Bearing Wall Members

# Combined Axial & Lateral Load Tables

Refer to Important Table Notes on Page 9

20 Psf Lateral Load																			
Wall Height (ft)	Spacing (in) o.c.	350SG200-(mils)					350SG250-(mils)					350SG350-(mils)			362SG200-(mils)				
		33	43	54	68	97	33	43	54	68	97	68	97	118	33	43	54	68	97
8	12	2.29	3.58	4.89	6.46	9.64	2.54	4.06	5.69	7.51	11.24	8.20	13.68	17.50	2.41	3.78	5.15	6.86	10.21
	16	2.02	3.30	4.59	6.16	9.32	2.27	3.75	5.35	7.18	10.92	7.87	13.33	17.15	2.15	3.49	4.86	6.56	9.89
	24	1.52 <sup>2</sup>	2.76	4.03	5.59	8.70	1.75	3.16	4.72	6.55	10.30	7.25	12.66	16.48	1.65	2.95	4.29	5.99	9.27
9	12	1.91	3.07	4.25	5.67	8.55	2.15	3.52	4.96	6.62	10.04	7.47	12.57	15.82	2.04	3.26	4.53	6.08	9.13
	16	1.61	2.74	3.90	5.32	8.16	1.83	3.16	4.57	6.23	9.66	7.07	12.14	15.40	1.73	2.93	4.18	5.72	8.75
	24	1.05 <sup>6</sup>	2.14 <sup>7</sup>	3.27	4.67	7.44	1.25 <sup>6</sup>	2.49	3.85	5.50	8.93	6.33	11.31	14.60	1.17 <sup>6</sup>	2.33 <sup>7</sup>	3.53	5.05	8.01
10	12	1.54 <sup>7</sup>	2.56	3.60	4.88	7.43	1.76	2.98	4.22	5.72	8.82	6.74	11.24	14.10	1.67	2.75	3.89	5.27	8.02
	16	1.21 <sup>6</sup>	2.20 <sup>7</sup>	3.22	4.49	7.00	1.42 <sup>7</sup>	2.58	3.79	5.29	8.38	6.28	10.73	13.61	1.33 <sup>6</sup>	2.39	3.50	4.88	7.58
	24	0.63 <sup>3</sup>	1.57 <sup>6</sup>	2.55 <sup>6</sup>	3.79 <sup>7</sup>	6.21	0.80 <sup>6</sup>	1.87 <sup>6</sup>	3.02 <sup>7</sup>	4.50	7.58	5.42	9.79	12.69	0.73 <sup>6</sup>	1.74 <sup>6</sup>	2.81 <sup>7</sup>	4.15	6.77
12	12	0.89 <sup>6</sup>	1.65 <sup>6</sup>	2.43 <sup>7</sup>	3.42	5.35	1.07 <sup>6</sup>	1.97 <sup>7</sup>	2.88	4.06	6.49	5.13	8.42	10.71	1.00 <sup>6</sup>	1.82 <sup>6</sup>	2.69 <sup>7</sup>	3.76	5.87
	16	0.56 <sup>3</sup>	1.29 <sup>6</sup>	2.04 <sup>6</sup>	3.01 <sup>7</sup>	4.89	0.70 <sup>3</sup>	1.55 <sup>6</sup>	2.43 <sup>6</sup>	3.60 <sup>7</sup>	6.01	4.59	7.85	10.15	0.65 <sup>3</sup>	1.44 <sup>6</sup>	2.28 <sup>6</sup>	3.33 <sup>7</sup>	5.39
	24	0.66 <sup>3</sup>	1.37 <sup>3</sup>	2.29 <sup>6</sup>	4.08 <sup>6</sup>	0.07 <sup>2</sup>	0.83 <sup>3</sup>	1.66 <sup>6</sup>	2.78 <sup>6</sup>	5.15 <sup>7</sup>	3.63 <sup>7</sup>	6.82	9.12	0.04 <sup>2</sup>	0.78 <sup>3</sup>	1.57 <sup>3</sup>	2.58 <sup>6</sup>	4.53 <sup>7</sup>	
14	12	0.42 <sup>3</sup>	1.00 <sup>3</sup>	1.58 <sup>6</sup>	2.34 <sup>6</sup>	3.80 <sup>7</sup>	0.55 <sup>3</sup>	1.20 <sup>6</sup>	1.89 <sup>6</sup>	2.80 <sup>6</sup>	4.69	3.71	6.18	8.00	0.49 <sup>3</sup>	1.12 <sup>6</sup>	1.77 <sup>6</sup>	2.60 <sup>6</sup>	4.20
	16	0.10 <sup>2</sup>	0.65 <sup>3</sup>	1.21 <sup>3</sup>	1.95 <sup>6</sup>	3.35 <sup>6</sup>	0.19 <sup>2</sup>	0.80 <sup>3</sup>	1.46 <sup>3</sup>	2.35 <sup>6</sup>	4.22 <sup>7</sup>	3.15 <sup>6</sup>	5.60	7.42	0.16 <sup>2</sup>	0.76 <sup>3</sup>	1.38 <sup>3</sup>	2.18 <sup>6</sup>	3.72 <sup>6</sup>
	24	0.06 <sup>2</sup>	0.57 <sup>2</sup>	1.26 <sup>3</sup>	2.57 <sup>3</sup>	0.19 <sup>2</sup>	0.12 <sup>2</sup>	0.73 <sup>2</sup>	1.58 <sup>3</sup>	3.39 <sup>6</sup>	2.19 <sup>6</sup>	4.59 <sup>6</sup>	6.40 <sup>7</sup>	0.13 <sup>2</sup>	0.70 <sup>2</sup>	1.46 <sup>3</sup>	2.90 <sup>6</sup>	3.00 <sup>6</sup>	
16	12	0.10 <sup>2</sup>	0.54 <sup>2</sup>	0.99 <sup>3</sup>	1.58 <sup>3</sup>	2.69 <sup>6</sup>	0.18 <sup>2</sup>	0.67 <sup>3</sup>	1.19 <sup>3</sup>	1.91 <sup>6</sup>	3.40 <sup>6</sup>	2.57 <sup>6</sup>	4.54 <sup>7</sup>	5.99	0.15 <sup>2</sup>	0.63 <sup>3</sup>	1.12 <sup>3</sup>	1.77 <sup>6</sup>	3.00 <sup>6</sup>
	16	0.22 <sup>2</sup>	0.64 <sup>2</sup>	1.21 <sup>3</sup>	2.27 <sup>3</sup>	0.29 <sup>2</sup>	0.29 <sup>2</sup>	0.80 <sup>3</sup>	1.49 <sup>3</sup>	2.95 <sup>6</sup>	2.04 <sup>6</sup>	3.98 <sup>6</sup>	5.43 <sup>7</sup>	0.29 <sup>2</sup>	0.76 <sup>2</sup>	1.38 <sup>3</sup>	2.55 <sup>6</sup>		
	24	0.05 <sup>2</sup>	0.57 <sup>2</sup>	1.54 <sup>2</sup>			0.11 <sup>2</sup>	0.77 <sup>2</sup>	2.17 <sup>3</sup>	1.14 <sup>3</sup>	3.02 <sup>3</sup>	4.45 <sup>6</sup>		0.13 <sup>2</sup>	0.71 <sup>2</sup>	1.78 <sup>3</sup>			

20 Psf Lateral Load																			
Wall Height (ft)	Spacing (in) o.c.	362SG250-(mils)					362SG350-(mils)			400SG200-(mils)					400SG250-(mils)				
		33	43	54	68	97	68	97	118	33	43	54	68	97	33	43	54	68	97
8	12	2.67	4.25	5.99	7.96	11.88	8.61	14.32	18.44	2.74	4.29	5.84	7.91	11.86	3.01	4.75	6.61	9.15	13.74
	16	2.39	3.94	5.65	7.63	11.57	8.29	13.98	18.09	2.48	4.01	5.55	7.61	11.54	2.74	4.45	6.30	8.82	13.42
	24	1.88	3.36	5.02	6.99	10.95	7.67	13.31	17.43	1.99	3.48	5.00	7.04	10.92	2.24	3.89	5.69	8.19	12.81
9	12	2.28	3.72	5.27	7.08	10.70	7.85	13.21	16.79	2.38	3.81	5.26	7.20	10.84	2.64	4.27	6.06	8.34	12.62
	16	1.96	3.36	4.88	6.68	10.32	7.46	12.78	16.37	2.08	3.48	4.91	6.84	10.44	2.33	3.92	5.67	7.93	12.23
	24	1.38 <sup>7</sup>	2.69	4.15	5.94	9.58	6.71	11.95	15.56	1.51 <sup>7</sup>	2.86	4.26	6.15	9.69	1.74	3.25	4.94	7.17	11.48
10	12	1.89	3.19	4.55	6.17	9.48	7.12	12.04	15.08	2.02	3.31	4.65	6.43	9.74	2.26	3.76	5.42	7.47	11.42
	16	1.54 <sup>7</sup>	2.78	4.11	5.73	9.03	6.66	11.52	14.58	1.67	2.93	4.25	6.02	9.28	1.91	3.35	4.97	7.00	10.95
	24	0.91 <sup>6</sup>	2.06 <sup>6</sup>	3.32 <sup>7</sup>	4.91	8.21	5.79	10.56	13.64	1.05 <sup>6</sup>	2.25 <sup>7</sup>	3.52	5.24	8.42	1.26 <sup>6</sup>	2.60	4.14	6.14	10.09
12	12	1.18 <sup>6</sup>	2.17 <sup>7</sup>	3.17	4.45	7.09	5.56	9.17	11.65	1.32 <sup>6</sup>	2.34 <sup>7</sup>	3.43	4.87	7.51	1.53 <sup>7</sup>	2.73	4.02	5.70	8.96
	16	0.81 <sup>6</sup>	1.73 <sup>6</sup>	2.71 <sup>7</sup>	3.97	6.59	5.00	8.58	11.06	0.94 <sup>6</sup>	1.92 <sup>6</sup>	2.98 <sup>7</sup>	4.38	6.97	1.13 <sup>6</sup>	2.26 <sup>7</sup>	3.50	5.16	8.40
	24	0.15 <sup>3</sup>	0.97 <sup>3</sup>	1.89 <sup>6</sup>	3.12 <sup>6</sup>	5.69 <sup>7</sup>	4.00 <sup>7</sup>	7.50	9.99	0.27 <sup>3</sup>	1.18 <sup>3</sup>	2.18 <sup>6</sup>	3.52 <sup>6</sup>	5.99	0.41 <sup>3</sup>	1.43 <sup>6</sup>	2.59 <sup>6</sup>	4.18 <sup>7</sup>	7.39
14	12	0.63 <sup>3</sup>	1.35 <sup>6</sup>	2.10 <sup>6</sup>	3.10 <sup>7</sup>	5.16	4.08	6.77	8.74	0.75 <sup>3</sup>	1.52 <sup>6</sup>	2.37 <sup>6</sup>	3.46 <sup>7</sup>	5.51	0.91 <sup>6</sup>	1.82 <sup>6</sup>	2.80 <sup>7</sup>	4.10	6.70
	16	0.26 <sup>3</sup>	0.93 <sup>3</sup>	1.65 <sup>6</sup>	2.63 <sup>6</sup>	4.66 <sup>7</sup>	3.50 <sup>7</sup>	6.16	8.13	0.36 <sup>3</sup>	1.11 <sup>3</sup>	1.92 <sup>6</sup>	2.98 <sup>6</sup>	4.96 <sup>7</sup>	0.50 <sup>3</sup>	1.34 <sup>6</sup>	2.28 <sup>6</sup>	3.55 <sup>7</sup>	6.12
	24	0.21 <sup>2</sup>	0.88 <sup>3</sup>	1.81 <sup>3</sup>	3.79 <sup>6</sup>	2.49 <sup>6</sup>	5.10 <sup>6</sup>	7.06 <sup>7</sup>		0.39 <sup>2</sup>	1.14 <sup>3</sup>	2.14 <sup>3</sup>	4.00 <sup>6</sup>		0.52 <sup>3</sup>	1.39 <sup>3</sup>	2.59 <sup>6</sup>	5.10 <sup>6</sup>	
16	12	0.24 <sup>2</sup>	0.77 <sup>3</sup>	1.35 <sup>3</sup>	2.13 <sup>6</sup>	3.76 <sup>6</sup>	2.85 <sup>6</sup>	4.99	6.58	0.32 <sup>2</sup>	0.93 <sup>3</sup>	1.59 <sup>6</sup>	2.42 <sup>6</sup>	4.00 <sup>7</sup>	0.44 <sup>3</sup>	1.12 <sup>3</sup>	1.88 <sup>6</sup>	2.88 <sup>6</sup>	4.95
	16	0.38 <sup>2</sup>	0.93 <sup>3</sup>	1.69 <sup>3</sup>	3.28 <sup>6</sup>	2.30 <sup>6</sup>	4.41 <sup>6</sup>	5.98 <sup>7</sup>		0.53 <sup>2</sup>	1.15 <sup>3</sup>	1.96 <sup>3</sup>	3.48 <sup>6</sup>		0.04 <sup>2</sup>	0.67 <sup>3</sup>	1.39 <sup>3</sup>	2.36 <sup>6</sup>	4.39 <sup>6</sup>
	24	0.21 <sup>2</sup>	0.92 <sup>2</sup>	2.46 <sup>3</sup>	1.35 <sup>3</sup>	3.39 <sup>6</sup>	4.95 <sup>6</sup>			0.42 <sup>2</sup>	1.17 <sup>2</sup>	2.57 <sup>3</sup>			0.54 <sup>2</sup>	1.46 <sup>3</sup>	3.42 <sup>6</sup>		

20 Psf Lateral Load																					
Wall Height (ft)	Spacing (in) o.c.	400SG350-(mils)			550SG162-(mils)		550SG200-(mils)					550SG250-(mils)					550SG300-(mils)				
		68	97	118	33	43	33	43	54	68	97	33	43	54	68	97	43	54	68	97	118
8	12	9.65	16.23	21.15	3.73	5.12	5.48	7.86	10.20	13.00	18.48	5.62	8.82	11.92	16.12	23.94	8.86	12.41	16.48	26.09	33.21
	16	9.34	15.90	20.81	3.45	4.87	5.16	7.54	9.90	12.72	18.22	5.31	8.49	11.59	15.79	23.62	8.54	12.09	16.16	25.77	32.89
	24	8.74	15.25	20.16	2.91	4.37	4.54	6.93	9.32	12.18	17.69	4.71	7.84	10.94	15.14	23.01	7.92	11.45	15.54	25.14	32.25
9	12	8.97	15.13	19.60	3.46	4.88	5.17	7.54	9.89	12.71	18.20	5.32	8.48	11.57	15.76	23.59	8.54	11.81	15.78	25.12	31.89
	16	8.59	14.71	19.18	3.11	4.55	4.76	7.13	9.50	12.34	17.84	4.93	8.05	11.14	15.33	23.17	8.13	11.40	15.37	24.71	31.47
	24	7.85	13.91	18.37	2.45	3.93	3.98	6.35	8.75	11.63	17.14	4.17	7.22	10.30	14.48	22.34	7.33	10.59	14.59	23.89	30.64
10	12	8.24	13.97	17.93	3.16	4.59	4.79	7.15	9.51	12.34	17.84	4.97	8.07	10.87	14.97	22.63	8.16	11.11	14.96	24.00	30.34
	16	7.78	13.46	17.43	2.73	4.19	4.30	6.64	9.02	11.88	17.37	4.49	7.53	10.34	14.42	22.09	7.65	10.61	14.46	23.47	29.81
	24	6.91	12.50	16.47	1.95	3.43	3.37	5.70	8.09	10.98	16.47	3.58	6.51	9.32	13.38	21.05	6.67	9.63	13.49	22.45	28.78
12	12	6.73	11.47	14.48	2.46	3.89	3.91	6.18	8.52	11.35	16.81	4.13	6.71	9.18	12.97	19.66	6.87	9.51	13.07	21.40	26.73
	16	6.14	10.81	13.84	1.91	3.34	3.25	5.48	7.81	10.65	16.08	3.48	6.00	8.47	12.21	18.90	6.18	8.82	12.37	20.63	25.97
	24	5.08	9.62	12.66	0.93 <sup>6</sup>	2.35 <sup>7</sup>	2.09 <sup>7</sup>	4.23	6.53	9.36	14.71	2.30 <sup>7</sup>	4.71	7.18	10.82	17.49	4.93	7.55	11.07	19.19	24.51
14	12	5.17	8.72	11.17	1.73 <sup>7</sup>	3.08	2.79	4.75	6.81	9.38	14.39	3.06	5.19	7.44	10.59	16.39	5.42	7.77	11.06	18.16	22.72
	16	4.52	8.03	10.48	1.09 <sup>6</sup>	2.42 <sup>7</sup>	2.07 <sup>6</sup>	3.97	5.99	8.55	13.47	2.32 <sup>7</sup>	4.39	6.61	9.70	15.46	4.62	6.95	10.20	17.19	21.75
	24	3.39																			

# Load Bearing Wall Members

# Combined Axial & Lateral Load Tables

Refer to Important Table Notes on Page 9

20 Psf Lateral Load																		
Wall Height (ft)	Spacing (in) o.c.	600SG162-(mils)		600SG200-(mils)					600SG250-(mils)					600SG300-(mils)				
		33	43	33	43	54	68	97	33	43	54	68	97	43	54	68	97	118
8	12	3.71	5.61	5.52	8.43	10.92	13.90	19.76	5.67	8.87	12.66	17.04	25.27	8.93	12.95	17.69	27.87	35.52
	16	3.46	5.36	5.23	8.14	10.64	13.64	19.51	5.39	8.58	12.35	16.74	24.99	8.65	12.65	17.39	27.57	35.23
	24	2.98	4.87	4.68	7.55	10.09	13.12	19.02	4.85	8.00	11.74	16.14	24.42	8.09	12.06	16.80	26.99	34.63
9	12	3.48	5.37	5.25	8.14	10.64	13.63	19.50	5.41	8.59	12.35	16.73	24.97	8.66	12.66	17.06	27.02	34.37
	16	3.17	5.05	4.88	7.75	10.27	13.29	19.18	5.06	8.20	11.95	16.33	24.59	8.29	12.26	16.67	26.63	33.98
	24	2.57	4.43	4.19	7.01	9.56	12.62	18.53	4.37	7.46	11.16	15.53	23.84	7.58	11.50	15.92	25.87	33.21
10	12	3.22	5.09	4.93	7.78	10.30	13.31	19.19	5.11	8.24	11.93	16.31	24.59	8.34	12.18	16.32	26.01	33.00
	16	2.84	4.70	4.48	7.30	9.83	12.87	18.76	4.67	7.76	11.41	15.80	24.09	7.88	11.69	15.84	25.52	32.51
	24	2.12	3.94	3.64	6.38	8.94	12.02	17.93	3.84	6.84	10.43	14.79	23.11	6.99	10.73	14.90	24.56	31.54
12	12	2.62	4.42	4.17	6.89	9.40	12.43	18.31	4.38	7.37	10.34	14.45	22.00	7.53	10.66	14.53	23.59	29.71
	16	2.10	3.86	3.56	6.20	8.71	11.76	17.64	3.77	6.68	9.64	13.71	21.27	6.86	9.98	13.85	22.87	28.99
	24	1.17 <sup>7</sup>	2.85	2.44	4.95	7.45	10.52	16.37	2.66	5.41	8.33	12.33	19.90	5.63	8.70	12.56	21.49	27.59
14	12	1.94	3.61	3.30	5.66	8.03	10.97	16.74	3.53	6.10	8.57	12.29	18.87	6.32	8.95	12.55	20.79	25.91
	16	1.32 <sup>6</sup>	2.92	2.55 <sup>7</sup>	4.83	7.17	10.10	15.80	2.78	5.26	7.71	11.37	17.94	5.49	8.12	11.68	19.84	24.96
	24	0.24 <sup>6</sup>	1.72 <sup>6</sup>	1.26 <sup>6</sup>	3.38 <sup>7</sup>	5.66	8.54	14.11	1.46 <sup>6</sup>	3.77 <sup>7</sup>	6.19	9.72	16.25	4.01	6.60	10.10	18.08	23.19
16	12	1.27 <sup>6</sup>	2.76 <sup>7</sup>	2.31 <sup>7</sup>	4.20	6.20	8.73	13.68	2.58 <sup>7</sup>	4.65	6.91	9.89	15.66	4.90	7.24	10.52	17.41	21.94
	16	0.59 <sup>6</sup>	2.00 <sup>6</sup>	1.53 <sup>6</sup>	3.35 <sup>7</sup>	5.31	7.80	12.65	1.76 <sup>6</sup>	3.76 <sup>7</sup>	5.97	8.90	14.61	4.00	6.31	9.52	16.32	20.82
	24		0.69 <sup>3</sup>	0.20 <sup>3</sup>	1.89 <sup>6</sup>	3.77 <sup>6</sup>	6.19 <sup>7</sup>	10.85	0.36 <sup>3</sup>	2.22 <sup>5</sup>	4.34 <sup>6</sup>	7.17 <sup>7</sup>	12.78	2.45 <sup>6</sup>	4.68 <sup>7</sup>	7.77	14.37	18.82

20 Psf Lateral Load																		
Wall Height (ft)	Spacing (in) o.c.	800SG162-(mils)		800SG200-(mils)					800SG250-(mils)					800SG300-(mils)				
		33	43	33	43	54	68	97	33	43	54	68	97	43	54	68	97	118
8	12	3.18	5.03	5.15	8.05	11.68	16.89	24.30	5.49	8.57	12.42	17.98	30.17	8.81	12.80	18.56	32.36	42.59
	16	3.03	4.88	4.97	7.86	11.48	16.68	24.11	5.30	8.37	12.22	17.77	29.95	8.62	12.60	18.35	32.14	42.36
	24	2.74	4.57	4.62	7.49	11.08	16.26	23.73	4.94	7.99	11.82	17.35	29.51	8.24	12.20	17.94	31.69	41.90
9	12	3.06	4.90	5.00	7.88	11.50	16.70	24.13	5.33	8.40	12.24	17.79	29.96	8.65	12.62	18.37	32.15	42.37
	16	2.87	4.70	4.77	7.64	11.24	16.43	23.88	5.10	8.15	11.98	17.52	29.67	8.40	12.37	18.10	31.85	42.07
	24	2.50	4.31	4.32	7.16	10.73	15.88	23.39	4.64	7.66	11.47	16.97	29.09	7.92	11.86	17.56	31.26	41.46
10	12	2.91	4.75	4.82	7.69	11.29	16.47	23.92	5.15	8.20	12.03	17.56	29.71	8.46	12.42	18.15	31.90	42.10
	16	2.68	4.50	4.53	7.38	10.96	16.12	23.60	4.86	7.89	11.71	17.21	29.34	8.15	12.09	17.81	31.52	41.72
	24	2.23	4.02	3.98	6.79	10.32	15.43	22.97	4.29	7.28	11.06	16.52	28.60	7.54	11.45	17.13	30.76	40.94
12	12	2.58	4.38	4.39	7.21	10.76	15.88	23.37	4.71	7.72	11.51	16.97	29.04	7.99	11.90	17.58	31.22	39.97
	16	2.25	4.02	3.98	6.76	10.27	15.34	22.88	4.29	7.27	11.02	16.45	28.46	7.53	11.42	17.06	30.64	39.37
	24	1.61	3.33	3.19	5.89	9.33	14.31	21.92	3.48	6.38	10.06	15.41	27.32	6.66	10.48	16.05	29.48	38.21
14	12	2.18	3.93	3.87	6.61	10.06	15.07	22.60	4.18	7.11	10.82	16.18	27.69	7.39	11.24	16.82	29.18	37.11
	16	1.74	3.45	3.32	6.00	9.39	14.31	21.88	3.62	6.49	10.14	15.43	26.84	6.77	10.56	16.08	28.35	36.28
	24	0.91	2.54	2.29	4.84	8.11	12.88	20.51	2.56	5.31	8.84	13.98	25.23	5.59	9.27	14.66	26.75	34.68
16	12	1.73	3.40	3.26	5.88	9.19	14.00	21.53	3.57	6.38	9.95	15.13	24.88	6.67	10.40	15.82	26.61	33.76
	16	1.19	2.80	2.58	5.10	8.32	13.00	20.54	2.87	5.59	9.06	14.12	23.80	5.88	9.52	14.83	25.53	32.68
	24	0.20 <sup>6</sup>	1.68 <sup>7</sup>	1.34 <sup>7</sup>	3.69	6.72	11.17	18.70	1.58 <sup>7</sup>	4.13	7.42	12.27	21.80	4.41	7.87	12.98	23.51	30.65

30 Psf Lateral Load																			
Wall Height (ft)	Spacing (in) o.c.	350SG200-(mils)					350SG250-(mils)					350SG350-(mils)			362SG200-(mils)				
		33	43	54	68	97	33	43	54	68	97	68	97	118	33	43	54	68	97
8	12	1.89	3.16	4.45	6.01	9.16	2.13	3.60	5.19	7.02	10.76	7.72	13.16	16.98	2.02	3.35	4.71	6.41	9.73
	16	1.52 <sup>7</sup>	2.76	4.03	5.59	8.70	1.75	3.16	4.72	6.55	10.30	7.25	12.66	16.48	1.65	2.95	4.29	5.99	9.27
	24	0.85 <sup>6</sup>	2.03 <sup>6</sup>	3.26	4.80	7.83	1.05 <sup>6</sup>	2.36 <sup>7</sup>	3.85	5.66	9.43	6.37	11.69	15.52	0.97 <sup>6</sup>	2.22 <sup>7</sup>	3.52	5.18	8.39
9	12	1.46 <sup>7</sup>	2.58	3.74	5.15	7.98	1.68	2.99	4.38	6.04	9.47	6.88	11.92	15.20	1.58 <sup>7</sup>	2.78	4.01	5.55	8.56
	16	1.05 <sup>6</sup>	2.14 <sup>7</sup>	3.27	4.67	7.44	1.25 <sup>6</sup>	2.49	3.85	5.50	8.93	6.33	11.31	14.60	1.17 <sup>6</sup>	2.33 <sup>7</sup>	3.53	5.05	8.01
	24	0.32 <sup>3</sup>	1.35 <sup>6</sup>	2.42 <sup>6</sup>	3.78 <sup>7</sup>	6.45	0.49 <sup>6</sup>	1.61 <sup>6</sup>	2.89 <sup>7</sup>	4.52	7.93	5.29	10.15	13.46	0.43 <sup>3</sup>	1.52 <sup>6</sup>	2.67 <sup>6</sup>	4.15 <sup>7</sup>	7.01
10	12	1.06 <sup>6</sup>	2.04 <sup>7</sup>	3.04	4.30	6.80	1.26 <sup>6</sup>	2.40 <sup>7</sup>	3.59	5.08	8.17	6.06	10.49	13.37	1.17 <sup>6</sup>	2.22 <sup>7</sup>	3.32	4.69	7.37
	16	0.63 <sup>3</sup>	1.57 <sup>6</sup>	2.55 <sup>6</sup>	3.79 <sup>7</sup>	6.21	0.80 <sup>6</sup>	1.87 <sup>6</sup>	3.02 <sup>7</sup>	4.50	7.58	5.42	9.79	12.69	0.73 <sup>6</sup>	1.74 <sup>6</sup>	2.81 <sup>7</sup>	4.15	6.77
	24		0.75 <sup>3</sup>	1.67 <sup>6</sup>	2.86 <sup>6</sup>	5.16 <sup>7</sup>		0.94 <sup>3</sup>	2.02 <sup>6</sup>	3.46 <sup>6</sup>	6.49	4.27 <sup>7</sup>	8.50	11.42		0.90 <sup>3</sup>	1.89 <sup>6</sup>	3.19 <sup>6</sup>	5.68 <sup>7</sup>
12	12	0.40 <sup>3</sup>	1.12 <sup>3</sup>	1.86 <sup>6</sup>	2.82 <sup>6</sup>	4.68	0.54 <sup>3</sup>	1.36 <sup>6</sup>	2.23 <sup>6</sup>	3.38 <sup>7</sup>	5.78	4.34	7.58	9.88	0.49 <sup>3</sup>	1.27 <sup>6</sup>	2.09 <sup>6</sup>	3.146	5.16
	16		0.66 <sup>3</sup>	1.37 <sup>3</sup>	2.29 <sup>6</sup>	4.08 <sup>6</sup>	0.07 <sup>2</sup>	0.83 <sup>3</sup>	1.66 <sup>6</sup>	2.78 <sup>6</sup>	5.15 <sup>7</sup>	3.63 <sup>7</sup>	6.82	9.12	0.04 <sup>2</sup>	0.78 <sup>3</sup>	1.57 <sup>3</sup>	2.58 <sup>6</sup>	4.53 <sup>7</sup>
	24			0.51 <sup>2</sup>	1.38 <sup>3</sup>	3.02 <sup>6</sup>			0.67 <sup>3</sup>	1.75 <sup>3</sup>	4.04 <sup>6</sup>	2.39 <sup>6</sup>	5.47 <sup>6</sup>	7.77 <sup>7</sup>			0.66 <sup>2</sup>	1.62 <sup>3</sup>	3.43 <sup>6</sup>
14	12		0.49 <sup>2</sup>	1.04 <sup>3</sup>	1.76 <sup>3</sup>	3.14 <sup>6</sup>	0.03 <sup>2</sup>	0.62 <sup>3</sup>	1.25 <sup>6</sup>	2.15 <sup>6</sup>	4.00 <sup>6</sup>	2.90 <sup>6</sup>	5.34 <sup>7</sup>	7.15	0.00 <sup>2</sup>	0.59 <sup>3</sup>	1.20 <sup>3</sup>	1.99 <sup>6</sup>	3.51 <sup>6</sup>
	16		0.06 <sup>2</sup>	0.57 <sup>2</sup>	1.26 <sup>3</sup>	2.57 <sup>3</sup>		0.12 <sup>2</sup>	0.73 <sup>2</sup>	1.58 <sup>3</sup>	3.39 <sup>6</sup>	2.19 <sup>6</sup>	4.59 <sup>6</sup>	6.40 <sup>7</sup>		0.13 <sup>2</sup>	0.70 <sup>2</sup>	1.46 <sup>3</sup>	2.90 <sup>6</sup>
	24				0.41 <sup>2</sup>	1.58 <sup>2</sup>				0.60 <sup>2</sup>	2.33 <sup>3</sup>	0.98 <sup>3</sup>	3.29 <sup>3</sup>	5.08 <sup>6</sup>				0.56 <sup>2</sup>	1.85 <sup>3</sup>
16	12		0.07 <sup>2</sup>	0.48 <sup>2</sup>	1.04 <sup>2</sup>	2.07 <sup>3</sup>		0.12 <sup>2</sup>	0.61 <sup>2</sup>	1.30 <sup>3</sup>	2.74 <sup>6</sup>	1.80 <sup>3</sup>	3.72 <sup>6</sup>	5.17 <sup>6</sup>		0.13 <sup>2</sup>	0.59 <sup>2</sup>	1.20 <sup>3</sup>	2.34 <sup>3</sup>
	16			0.05 <sup>2</sup>	0.57 <sup>2</sup>	1.54 <sup>2</sup>			0.11 <sup>2</sup>	0.77 <sup>2</sup>	2.17 <sup>3</sup>	1.14 <sup>3</sup>	3.02 <sup>3</sup>	4.45 <sup>6</sup>			0.13 <sup>2</sup>	0.71 <sup>2</sup>	1.78 <sup>3</sup>
	24					0.63 <sup>2</sup>					1.18 <sup>2</sup>	0.02 <sup>2</sup>	1.80 <sup>2</sup>	3.21 <sup>3</sup>					0.81 <sup>2</sup>

1 = Deflection Exceeds L/120  
2 = Deflection Exceeds L/240

3 = Deflection Exceeds L/360  
6 = Deflection Exceeds L/600

7 = Deflection Exceeds L/720  
If not noted, deflection is less than L/720

# Load Bearing Wall Members

# Combined Axial & Lateral Load Tables

Refer to Important Table Notes on Page 9

30 Psf Lateral Load																			
Wall Height (ft)	Spacing (in) o.c.	362SG250-(mils)					362SG350-(mils)			400SG200-(mils)					400SG250-(mils)				
		33	43	54	68	97	68	97	118	33	43	54	68	97	33	43	54	68	97
8	12	2.26	3.79	5.49	7.47	11.41	8.13	13.81	17.93	2.35	3.87	5.41	7.47	11.38	2.61	4.31	6.14	8.66	13.27
	16	1.88	3.36	5.02	6.99	10.95	7.67	13.31	17.43	1.99	3.48	5.00	7.04	10.92	2.24	3.89	5.69	8.19	12.81
	24	1.18 <sup>6</sup>	2.55	4.14	6.10	10.07	6.78	12.35	16.47	1.31 <sup>7</sup>	2.74	4.23	6.24	10.03	1.54	3.09	4.84	7.29	11.93
9	12	1.81	3.19	4.69	6.49	10.13	7.27	12.57	16.16	1.93	3.32	4.75	6.66	10.25	2.18	3.75	5.49	7.74	12.04
	16	1.38 <sup>7</sup>	2.69	4.15	5.94	9.58	6.71	11.95	15.56	1.51 <sup>7</sup>	2.86	4.26	6.15	9.69	1.74	3.25	4.94	7.17	11.48
	24	0.60 <sup>6</sup>	1.79 <sup>6</sup>	3.17 <sup>7</sup>	4.93	8.56	5.68	10.80	14.41	0.74 <sup>8</sup>	2.02 <sup>6</sup>	3.37 <sup>7</sup>	5.21	8.64	0.95 <sup>6</sup>	2.33 <sup>7</sup>	3.94	6.12	10.42
10	12	1.38 <sup>6</sup>	2.59	3.90	5.51	8.82	6.43	11.27	14.34	1.51 <sup>7</sup>	2.75	4.06	5.81	9.06	1.74	3.15	4.75	6.78	10.73
	16	0.91 <sup>6</sup>	2.06 <sup>6</sup>	3.32 <sup>7</sup>	4.91	8.21	5.79	10.56	13.64	1.05 <sup>6</sup>	2.25 <sup>7</sup>	3.52	5.24	8.42	1.26 <sup>6</sup>	2.60	4.14	6.14	10.09
	24	0.09 <sup>3</sup>	1.10 <sup>6</sup>	2.28 <sup>6</sup>	3.83 <sup>6</sup>	7.09	4.63	9.24	12.35	0.23 <sup>3</sup>	1.35 <sup>6</sup>	2.55 <sup>6</sup>	4.20 <sup>7</sup>	7.24	0.40 <sup>6</sup>	1.60 <sup>6</sup>	3.03 <sup>6</sup>	4.97	8.89
12	12	0.63 <sup>3</sup>	1.53 <sup>6</sup>	2.49 <sup>6</sup>	3.74 <sup>7</sup>	6.35	4.74	8.30	10.78	0.76 <sup>6</sup>	1.72 <sup>6</sup>	2.77 <sup>6</sup>	4.15	6.71	0.94 <sup>6</sup>	2.04 <sup>6</sup>	3.26 <sup>7</sup>	4.90	8.14
	16	0.15 <sup>3</sup>	0.97 <sup>3</sup>	1.89 <sup>6</sup>	3.12 <sup>6</sup>	5.69 <sup>7</sup>	4.00 <sup>7</sup>	7.50	9.99	0.27 <sup>3</sup>	1.18 <sup>3</sup>	2.18 <sup>6</sup>	3.52 <sup>6</sup>	5.99	0.41 <sup>3</sup>	1.43 <sup>6</sup>	2.59 <sup>6</sup>	4.18 <sup>7</sup>	7.39
	24		0.02 <sup>2</sup>	0.85 <sup>3</sup>	2.02 <sup>3</sup>	4.53 <sup>6</sup>	2.71 <sup>6</sup>	6.09 <sup>7</sup>	8.58		0.25 <sup>2</sup>	1.15 <sup>3</sup>	2.41 <sup>6</sup>	4.72 <sup>6</sup>		0.37 <sup>3</sup>	1.42 <sup>3</sup>	2.93 <sup>6</sup>	6.06 <sup>6</sup>
14	12	0.09 <sup>2</sup>	0.74 <sup>3</sup>	1.45 <sup>3</sup>	2.41 <sup>6</sup>	4.43 <sup>6</sup>	3.23 <sup>6</sup>	5.88	7.85	0.19 <sup>2</sup>	0.92 <sup>3</sup>	1.71 <sup>6</sup>	2.76 <sup>6</sup>	4.70 <sup>7</sup>	0.31 <sup>3</sup>	1.13 <sup>3</sup>	2.05 <sup>6</sup>	3.29 <sup>6</sup>	5.85
	16		0.21 <sup>2</sup>	0.88 <sup>3</sup>	1.81 <sup>3</sup>	3.79 <sup>6</sup>	2.49 <sup>6</sup>	5.10 <sup>6</sup>	7.06 <sup>7</sup>		0.39 <sup>2</sup>	1.14 <sup>3</sup>	2.14 <sup>3</sup>	4.00 <sup>6</sup>		0.52 <sup>3</sup>	1.39 <sup>3</sup>	2.59 <sup>6</sup>	5.10 <sup>6</sup>
	24				0.78 <sup>2</sup>	2.67 <sup>3</sup>	1.21 <sup>3</sup>	3.74 <sup>6</sup>	5.67 <sup>6</sup>			0.16 <sup>2</sup>	1.08 <sup>2</sup>	2.77 <sup>3</sup>			0.26 <sup>2</sup>	1.39 <sup>3</sup>	3.80 <sup>6</sup>
16	12		0.20 <sup>2</sup>	0.74 <sup>2</sup>	1.48 <sup>3</sup>	3.06 <sup>6</sup>	2.04 <sup>6</sup>	4.14 <sup>6</sup>	5.71 <sup>7</sup>		0.35 <sup>2</sup>	0.96 <sup>3</sup>	1.75 <sup>3</sup>	3.23 <sup>6</sup>		0.46 <sup>2</sup>	1.16 <sup>3</sup>	2.12 <sup>6</sup>	4.13 <sup>6</sup>
	16			0.21 <sup>2</sup>	0.92 <sup>2</sup>	2.46 <sup>3</sup>	1.35 <sup>3</sup>	3.39 <sup>6</sup>	4.95 <sup>6</sup>			0.42 <sup>2</sup>	1.17 <sup>2</sup>	2.57 <sup>3</sup>			0.54 <sup>2</sup>	1.46 <sup>3</sup>	3.42 <sup>6</sup>
	24					1.42 <sup>2</sup>	0.16 <sup>2</sup>	2.12 <sup>3</sup>	3.65 <sup>3</sup>				0.19 <sup>2</sup>	1.43 <sup>2</sup>				0.34 <sup>2</sup>	2.21 <sup>3</sup>

30 Psf Lateral Load																					
Wall Height (ft)	Spacing (in) o.c.	400SG350-(mils)			550SG162-(mils)		550SG200-(mils)					550SG250-(mils)					550SG300-(mils)				
		68	97	118	33	43	33	43	54	68	97	33	43	54	68	97	43	54	68	97	118
8	12	9.19	15.73	20.65	3.31	4.74	5.01	7.39	9.75	12.58	18.08	5.16	8.32	11.43	15.63	23.47	8.38	11.93	16.01	25.61	32.73
	16	8.74	15.25	20.16	2.91	4.37	4.54	6.93	9.32	12.18	17.69	4.71	7.84	10.94	15.14	23.01	7.92	11.45	15.54	25.14	32.25
	24	7.87	14.31	19.21	2.14	3.66	3.66	6.05	8.48	11.38	16.91	3.84	6.89	10.01	14.20	22.10	7.01	10.52	14.64	24.20	31.31
9	12	8.40	14.51	18.97	2.94	4.39	4.56	6.93	9.31	12.16	17.67	4.73	7.84	10.93	15.11	22.96	7.93	11.19	15.17	24.50	31.26
	16	7.85	13.91	18.37	2.45	3.93	3.98	6.35	8.75	11.63	17.14	4.17	7.22	10.30	14.48	22.34	7.33	10.59	14.59	23.89	30.64
	24	6.81	12.76	17.20	1.52	3.04	2.90	5.26	7.69	10.61	16.12	3.11	6.04	9.11	13.26	21.14	6.20	9.44	13.44	22.69	29.42
10	12	7.55	13.22	17.19	2.53	3.99	4.06	6.40	8.78	11.65	17.14	4.25	7.26	10.08	14.16	21.83	7.40	10.36	14.21	23.22	29.55
	16	6.91	12.50	16.47	1.95	3.43	3.37	5.70	8.09	10.98	16.47	3.58	6.51	9.32	13.38	21.05	6.67	9.63	13.49	22.45	28.78
	24	5.71	11.16	15.12	0.88 <sup>6</sup>	2.38	2.12 <sup>7</sup>	4.40	6.80	9.71	15.18	2.33	5.10	7.91	11.91	19.57	5.30	8.26	12.12	20.99	27.29
12	12	5.86	10.50	13.53	1.65 <sup>7</sup>	3.08	2.95	5.15	7.47	10.31	15.72	3.17	5.66	8.13	11.85	18.54	5.86	8.49	12.03	20.26	25.59
	16	5.08	9.62	12.66	0.93 <sup>6</sup>	2.35 <sup>7</sup>	2.09 <sup>7</sup>	4.23	6.53	9.36	14.71	2.30 <sup>7</sup>	4.71	7.18	10.82	17.49	4.93	7.55	11.07	19.19	24.51
	24	3.68 <sup>6</sup>	8.05	11.09		1.05 <sup>6</sup>	0.59 <sup>6</sup>	2.61 <sup>6</sup>	4.85 <sup>7</sup>	7.65	12.88	0.78 <sup>6</sup>	3.03 <sup>6</sup>	5.46	8.97	15.56	3.26 <sup>7</sup>	5.84	9.30	17.21	22.50
14	12	4.22 <sup>7</sup>	7.70	10.16	0.79 <sup>6</sup>	2.12 <sup>6</sup>	1.75 <sup>6</sup>	3.61 <sup>7</sup>	5.62	8.15	13.04	1.98 <sup>6</sup>	4.02	6.22	9.29	15.03	4.25	6.57	9.79	16.74	21.29
	16	3.39 <sup>6</sup>	6.81 <sup>7</sup>	9.26		1.28 <sup>6</sup>	0.84 <sup>6</sup>	2.63 <sup>6</sup>	4.58 <sup>7</sup>	7.07	11.83	1.04 <sup>6</sup>	2.99 <sup>6</sup>	5.15 <sup>7</sup>	8.13	13.81	3.22 <sup>7</sup>	5.50	8.65	15.46	19.98
	24	1.95 <sup>3</sup>	5.23 <sup>6</sup>	7.66 <sup>6</sup>				0.94 <sup>3</sup>	2.80 <sup>6</sup>	5.20 <sup>6</sup>	9.72 <sup>7</sup>		1.22 <sup>6</sup>	3.29 <sup>6</sup>	6.13 <sup>6</sup>	11.66	1.43 <sup>6</sup>	3.63 <sup>6</sup>	6.64 <sup>7</sup>	13.20	17.64
16	12	2.86 <sup>6</sup>	5.53 <sup>7</sup>	7.50	0.05 <sup>3</sup>	1.22 <sup>3</sup>	0.77 <sup>3</sup>	2.26 <sup>6</sup>	3.89 <sup>6</sup>	5.99 <sup>7</sup>	10.00	0.94 <sup>6</sup>	2.62 <sup>6</sup>	4.52 <sup>7</sup>	6.93	11.76	2.85 <sup>6</sup>	4.82 <sup>7</sup>	7.60	13.25	17.12
	16	2.05 <sup>3</sup>	4.67 <sup>6</sup>	6.63 <sup>6</sup>		0.33 <sup>3</sup>		1.30 <sup>3</sup>	2.88 <sup>6</sup>	4.91 <sup>6</sup>	8.78 <sup>7</sup>	0.01 <sup>3</sup>	1.59 <sup>6</sup>	3.42 <sup>6</sup>	5.77 <sup>6</sup>	10.50	1.80 <sup>6</sup>	3.71 <sup>6</sup>	6.40 <sup>7</sup>	11.90	15.72
	24	0.66 <sup>2</sup>	3.18 <sup>3</sup>	5.11 <sup>6</sup>					1.15 <sup>3</sup>	3.08 <sup>3</sup>	6.68 <sup>6</sup>			1.55 <sup>3</sup>	3.78 <sup>6</sup>	8.33 <sup>6</sup>		1.81 <sup>3</sup>	4.32 <sup>6</sup>	9.58 <sup>7</sup>	13.29

30 Psf Lateral Load																			
Wall Height (ft)	Spacing (in) o.c.	600SG162-(mils)		600SG200-(mils)					600SG250-(mils)					600SG300-(mils)					
		33	43	33	43	54	68	97	33	43	54	68	97	43	54	68	97	118	
8	12	3.34	5.24	5.09	7.99	10.50	13.51	19.38	5.25	8.43	12.20	16.59	24.85	8.51	12.50	17.24	27.43	35.08	
	16	2.98	4.87	4.68	7.55	10.09	13.12	19.02	4.85	8.00	11.74	16.14	24.42	8.09	12.06	16.80	26.99	34.63	
	24	2.29	4.16	3.88	6.71	9.29	12.37	18.29	4.06	7.15	10.85	15.25	23.58	7.27	11.19	15.93	26.12	33.75	
9	12	3.02	4.90	4.71	7.56	10.09	13.12	19.01	4.88	8.01	11.74	16.13	24.40	8.11	12.07	16.48	26.44	33.79	
	16	2.57	4.43	4.19	7.01	9.56	12.62	18.53	4.37	7.46	11.16	15.53	23.84	7.58	11.50	15.92	25.87	33.21	
	24	1.72	3.55	3.20	5.94	8.54	11.65	17.58	3.40	6.39	10.02	14.39	22.74	6.55	10.39	14.82	24.75	32.08	
10	12	2.66	4.50	4.27	7.07	9.61	12.66	18.55	4.46	7.53	11.16	15.54	23.84	7.65	11.44	15.60	25.27	32.27	
	16	2.12	3.94	3.64	6.38	8.94	12.02	17.93	3.84	6.84	10.43	14.79	23.11	6.99	10.73	14.90	24.56	31.54	
	24	1.13 <sup>7</sup>	2.88	2.47	5.10	7.68	10.81	16.73	2.67	5.55	9.03	13.36	21.71	5.74	9.38	13.56	23.18	30.14	
12	12	1.86	3.60	3.26	5.87	8.39	11.44	17.31	3.48	6.35	9.30	13.36	20.92	6.54	9.65	13.52	22.52	28.63	
	16	1.17 <sup>7</sup>	2.85	2.44	4.95	7.45	10.52	16.37	2.66	5.41	8.33	12.33	19.90	5.63	8.70	12.56	21.49	27.59	
	24		1.50 <sup>6</sup>	0.98 <sup>6</sup>	3.30 <sup>7</sup>	5.77	8.83	14.61	1.18 <sup>6</sup>	3.72	6.56	10.46	17.98	3.96	6.95	10.78	19.57	25.63	

# Load Bearing Wall Members

# Combined Axial & Lateral Load Tables

Refer to Important Table Notes on Page 9

30 Psf Lateral Load																		
Wall Height (ft)	Spacing (in) o.c.	800SG162-(mils)		800SG200-(mils)					800SG250-(mils)					800SG300-(mils)				
		33	43	33	43	54	68	97	33	43	54	68	97	43	54	68	97	118
8	12	2.96	4.80	4.88	7.77	11.38	16.58	24.02	5.21	8.28	12.12	17.67	29.84	8.53	12.50	18.25	32.03	42.24
	16	2.74	4.57	4.62	7.49	11.08	16.26	23.73	4.94	7.99	11.82	17.35	29.51	8.24	12.20	17.94	31.69	41.90
	24	2.31	4.12	4.09	6.93	10.49	15.63	23.17	4.40	7.42	11.23	16.72	28.84	7.68	11.61	17.31	31.01	41.21
9	12	2.78	4.61	4.66	7.52	11.11	16.29	23.76	4.98	8.03	11.86	17.38	29.53	8.28	12.24	17.97	31.71	41.92
	16	2.50	4.31	4.32	7.16	10.73	15.88	23.39	4.64	7.66	11.47	16.97	29.09	7.92	11.86	17.56	31.26	41.46
	24	1.95	3.73	3.65	6.45	9.97	15.07	22.65	3.96	6.94	10.71	16.16	28.23	7.20	11.10	16.76	30.39	40.56
10	12	2.57	4.38	4.39	7.23	10.80	15.95	23.44	4.71	7.74	11.54	17.04	29.15	8.00	11.93	17.64	31.33	41.52
	16	2.23	4.02	3.98	6.79	10.32	15.43	22.97	4.29	7.28	11.06	16.52	28.60	7.54	11.45	17.13	30.76	40.94
	24	1.56	3.31	3.16	5.91	9.38	14.42	22.04	3.45	6.39	10.11	15.51	27.50	6.65	10.51	16.12	29.65	39.79
12	12	2.08	3.85	3.78	6.54	10.03	15.08	22.64	4.09	7.04	10.78	16.18	28.17	7.31	11.18	16.81	30.34	39.08
	16	1.61	3.33	3.19	5.89	9.33	14.31	21.92	3.48	6.38	10.06	15.41	27.32	6.66	10.48	16.05	29.48	38.21
	24	0.70	2.34	2.06	4.66	7.98	12.83	20.52	2.33	5.12	8.69	13.92	25.66	5.39	9.11	14.57	27.78	36.51
14	12	1.53	3.21	3.05	5.70	9.06	13.94	21.53	3.35	6.19	9.80	15.06	26.43	6.47	10.23	15.72	27.95	35.88
	16	0.91	2.54	2.29	4.84	8.11	12.88	20.51	2.56	5.31	8.84	13.98	25.23	5.59	9.27	14.66	26.75	34.68
	24		1.28 <sup>7</sup>	0.88 <sup>7</sup>	3.25	6.34	10.90	18.57	1.10 <sup>7</sup>	3.68	7.03	11.97	22.95	3.95	7.46	12.66	24.49	32.40
16	12	0.93 <sup>7</sup>	2.51	2.26	4.73	7.90	12.52	20.06	2.53	5.21	8.64	13.64	23.28	5.50	9.09	14.35	25.01	32.16
	16	0.20 <sup>6</sup>	1.68 <sup>7</sup>	1.34 <sup>7</sup>	3.69	6.72	11.17	18.70	1.58 <sup>7</sup>	4.13	7.42	12.27	21.80	4.41	7.87	12.98	23.51	30.65
	24		0.19 <sup>6</sup>		1.81 <sup>6</sup>	4.60 <sup>7</sup>	8.75	16.21		2.18 <sup>6</sup>	5.23	9.78	19.07	2.43 <sup>7</sup>	5.66	10.48	20.74	27.84

40 Psf Lateral Load																			
Wall Height (ft)	Spacing (in) o.c.	350SG200-(mils)					350SG250-(mils)					350SG350-(mils)			362SG200-(mils)				
		33	43	54	68	97	33	43	54	68	97	68	97	118	33	43	54	68	97
8	12	1.52 <sup>7</sup>	2.76	4.03	5.59	8.70	1.75	3.16	4.72	6.55	10.30	7.25	12.66	16.48	1.65	2.95	4.29	5.99	9.27
	16	1.07 <sup>6</sup>	2.27 <sup>7</sup>	3.51	5.05	8.11	1.28 <sup>7</sup>	2.62	4.13	5.95	9.71	6.66	12.00	15.83	1.18 <sup>6</sup>	2.46	3.77	5.44	8.68
	24	0.24 <sup>3</sup>	1.37 <sup>6</sup>	2.55 <sup>6</sup>	4.06 <sup>7</sup>	7.01	0.41 <sup>6</sup>	1.63 <sup>6</sup>	3.04 <sup>7</sup>	4.85	8.60	5.54	10.76	14.60	0.35 <sup>6</sup>	1.55 <sup>6</sup>	2.80 <sup>6</sup>	4.44	7.57
9	12	1.05 <sup>6</sup>	2.14 <sup>7</sup>	3.27	4.67	7.44	1.25 <sup>6</sup>	2.49	3.85	5.50	8.93	6.33	11.31	14.60	1.17 <sup>6</sup>	2.33 <sup>7</sup>	3.53	5.05	8.01
	16	0.56 <sup>6</sup>	1.60 <sup>6</sup>	2.69 <sup>6</sup>	4.07 <sup>7</sup>	6.77	0.73 <sup>6</sup>	1.89 <sup>6</sup>	3.19 <sup>7</sup>	4.83	8.25	5.63	10.52	13.83	0.66 <sup>6</sup>	1.78 <sup>6</sup>	2.94 <sup>7</sup>	4.44	7.33
	24		0.64 <sup>3</sup>	1.66 <sup>6</sup>	2.99 <sup>6</sup>	5.55 <sup>7</sup>		0.82 <sup>6</sup>	2.02 <sup>6</sup>	3.62 <sup>6</sup>	7.00	4.35	9.08	12.40		0.80 <sup>3</sup>	1.89 <sup>6</sup>	3.33 <sup>6</sup>	6.08 <sup>7</sup>
10	12	0.63 <sup>3</sup>	1.57 <sup>6</sup>	2.55 <sup>6</sup>	3.79 <sup>7</sup>	6.21	0.80 <sup>6</sup>	1.87 <sup>6</sup>	3.02 <sup>7</sup>	4.50	7.58	5.42	9.79	12.69	0.73 <sup>6</sup>	1.74 <sup>6</sup>	2.81 <sup>7</sup>	4.15	6.77
	16	0.12 <sup>3</sup>	1.01 <sup>3</sup>	1.94 <sup>6</sup>	3.15 <sup>6</sup>	5.50 <sup>7</sup>	0.25 <sup>3</sup>	1.23 <sup>6</sup>	2.34 <sup>6</sup>	3.79 <sup>7</sup>	6.84	4.64	8.91	11.83	0.21 <sup>3</sup>	1.17 <sup>6</sup>	2.18 <sup>6</sup>	3.50 <sup>6</sup>	6.03
	24		0.04 <sup>2</sup>	0.89 <sup>3</sup>	2.04 <sup>3</sup>	4.22 <sup>6</sup>		0.13 <sup>3</sup>	1.13 <sup>3</sup>	2.53 <sup>6</sup>	5.51 <sup>6</sup>	3.23 <sup>6</sup>	7.34	10.27		0.16 <sup>3</sup>	1.09 <sup>3</sup>	2.33 <sup>6</sup>	4.71 <sup>6</sup>
12	12		0.66 <sup>3</sup>	1.37 <sup>3</sup>	2.29 <sup>6</sup>	4.08 <sup>6</sup>	0.07 <sup>2</sup>	0.83 <sup>3</sup>	1.66 <sup>6</sup>	2.78 <sup>6</sup>	5.15 <sup>7</sup>	3.63 <sup>7</sup>	6.82	9.12	0.04 <sup>2</sup>	0.78 <sup>3</sup>	1.57 <sup>3</sup>	2.58 <sup>6</sup>	4.53 <sup>7</sup>
	16		0.11 <sup>2</sup>	0.78 <sup>3</sup>	1.67 <sup>3</sup>	3.36 <sup>6</sup>		0.20 <sup>2</sup>	0.98 <sup>3</sup>	2.07 <sup>3</sup>	4.39 <sup>6</sup>	2.78 <sup>6</sup>	5.90 <sup>7</sup>	8.20		0.21 <sup>2</sup>	0.95 <sup>3</sup>	1.92 <sup>3</sup>	3.78 <sup>6</sup>
	24				0.59 <sup>2</sup>	2.11 <sup>3</sup>				0.84 <sup>2</sup>	3.07 <sup>3</sup>	1.30 <sup>3</sup>	4.29 <sup>6</sup>	6.57 <sup>6</sup>				0.78 <sup>2</sup>	2.46 <sup>3</sup>
14	12		0.06 <sup>2</sup>	0.57 <sup>2</sup>	1.26 <sup>3</sup>	2.57 <sup>3</sup>		0.12 <sup>2</sup>	0.73 <sup>2</sup>	1.58 <sup>3</sup>	3.39 <sup>6</sup>	2.19 <sup>6</sup>	4.59 <sup>6</sup>	6.40 <sup>7</sup>		0.13 <sup>2</sup>	0.70 <sup>2</sup>	1.46 <sup>3</sup>	2.90 <sup>6</sup>
	16			0.02 <sup>2</sup>	0.68 <sup>2</sup>	1.89 <sup>3</sup>			0.10 <sup>2</sup>	0.91 <sup>2</sup>	2.66 <sup>3</sup>	1.36 <sup>3</sup>	3.70 <sup>6</sup>	5.50 <sup>6</sup>			0.12 <sup>2</sup>	0.84 <sup>2</sup>	2.18 <sup>3</sup>
	24					0.73 <sup>2</sup>					1.42 <sup>2</sup>		2.18 <sup>3</sup>	3.94 <sup>3</sup>					0.96 <sup>2</sup>
16	12			0.05 <sup>2</sup>	0.57 <sup>2</sup>	1.54 <sup>2</sup>			0.11 <sup>2</sup>	0.77 <sup>2</sup>	2.17 <sup>3</sup>	1.14 <sup>3</sup>	3.02 <sup>3</sup>	4.45 <sup>6</sup>			0.13 <sup>2</sup>	0.71 <sup>2</sup>	1.78 <sup>3</sup>
	16				0.03 <sup>2</sup>	0.91 <sup>2</sup>				0.15 <sup>2</sup>	1.49 <sup>2</sup>	0.37 <sup>2</sup>	2.19 <sup>3</sup>	3.61 <sup>3</sup>				0.14 <sup>2</sup>	1.12 <sup>2</sup>
	24										0.34 <sup>2</sup>		0.77 <sup>2</sup>	2.15 <sup>2</sup>					

40 Psf Lateral Load																			
Wall Height (ft)	Spacing (in) o.c.	362SG250-(mils)					362SG350-(mils)			400SG200-(mils)					400SG250-(mils)				
		33	43	54	68	97	68	97	118	33	43	54	68	97	33	43	54	68	97
8	12	1.88	3.36	5.02	6.99	10.95	7.67	13.31	17.43	1.99	3.48	5.00	7.04	10.92	2.24	3.89	5.69	8.19	12.81
	16	1.40 <sup>7</sup>	2.81	4.42	6.39	10.36	7.07	12.66	16.78	1.53 <sup>7</sup>	2.98	4.48	6.50	10.32	1.77	3.35	5.12	7.58	12.22
	24	0.53 <sup>6</sup>	1.81 <sup>6</sup>	3.33 <sup>7</sup>	5.27	9.24	5.95	11.43	15.54	0.68 <sup>6</sup>	2.05 <sup>7</sup>	3.50	5.48	9.19	0.89 <sup>6</sup>	2.36 <sup>7</sup>	4.04	6.44	11.08
9	12	1.38 <sup>7</sup>	2.69	4.15	5.94	9.58	6.71	11.95	15.56	1.51 <sup>7</sup>	2.86	4.26	6.15	9.69	1.74	3.25	4.94	7.17	11.48
	16	0.85 <sup>6</sup>	2.08 <sup>6</sup>	3.48	5.25	8.89	6.01	11.17	14.79	0.99 <sup>6</sup>	2.29 <sup>7</sup>	3.66	5.51	8.98	1.20 <sup>6</sup>	2.63	4.26	6.46	10.76
	24		0.99 <sup>6</sup>	2.28 <sup>6</sup>	4.01 <sup>7</sup>	7.62	4.72	9.72	13.33	0.06 <sup>3</sup>	1.26 <sup>6</sup>	2.56 <sup>6</sup>	4.34 <sup>7</sup>	7.67	0.22 <sup>6</sup>	1.50 <sup>6</sup>	3.03 <sup>7</sup>	5.15	9.43
10	12	0.91 <sup>6</sup>	2.06 <sup>6</sup>	3.32 <sup>7</sup>	4.91	8.21	5.79	10.56	13.64	1.05 <sup>6</sup>	2.25 <sup>7</sup>	3.52	5.24	8.42	1.26 <sup>6</sup>	2.60	4.14	6.14	10.09
	16	0.35 <sup>3</sup>	1.41 <sup>6</sup>	2.61 <sup>6</sup>	4.18 <sup>7</sup>	7.45	5.00	9.66	12.77	0.49 <sup>6</sup>	1.63 <sup>6</sup>	2.86 <sup>6</sup>	4.53 <sup>7</sup>	7.62	0.67 <sup>6</sup>	1.92 <sup>6</sup>	3.39 <sup>7</sup>	5.34	9.28
	24		0.27 <sup>3</sup>	1.36 <sup>3</sup>	2.87 <sup>6</sup>	6.08 <sup>7</sup>	3.57 <sup>6</sup>	8.04	11.16		0.54 <sup>3</sup>	1.68 <sup>6</sup>	3.26 <sup>6</sup>	6.18 <sup>7</sup>		0.71 <sup>6</sup>	2.04 <sup>6</sup>	3.92 <sup>6</sup>	7.80
12	12	0.15 <sup>3</sup>	0.97 <sup>3</sup>	1.89 <sup>6</sup>	3.12 <sup>6</sup>	5.69 <sup>7</sup>	4.00 <sup>7</sup>	7.50	9.99	0.27 <sup>3</sup>	1.18 <sup>3</sup>	2.18 <sup>6</sup>	3.52 <sup>6</sup>	5.99	0.41 <sup>3</sup>	1.43 <sup>6</sup>	2.59 <sup>6</sup>	4.18 <sup>7</sup>	7.39
	16		0.32 <sup>3</sup>	1.18 <sup>3</sup>	2.37 <sup>6</sup>	4.90 <sup>6</sup>	3.12 <sup>6</sup>	6.54 <sup>7</sup>	9.03		0.54 <sup>3</sup>	1.48 <sup>3</sup>	2.76 <sup>6</sup>	5.13 <sup>6</sup>		0.70 <sup>3</sup>	1.79 <sup>6</sup>	3.33 <sup>6</sup>	6.49 <sup>7</sup>
	24				1.07 <sup>3</sup>	3.50 <sup>3</sup>	1.58 <sup>3</sup>	4.85 <sup>6</sup>	7.32 <sup>6</sup>			0.26 <sup>2</sup>	1.44 <sup>3</sup>	3.61 <sup>6</sup>			0.41 <sup>3</sup>	1.83 <sup>3</sup>	4.89 <sup>6</sup>
14	12		0.21 <sup>2</sup>	0.88 <sup>3</sup>	1.81 <sup>3</sup>	3.79 <sup>6</sup>	2.49 <sup>6</sup>	5.10 <sup>6</sup>	7.06 <sup>7</sup>		0.39 <sup>2</sup>	1.143	2.14 <sup>3</sup>	4.00 <sup>6</sup>		0.52 <sup>3</sup>	1.39 <sup>3</sup>	2.59 <sup>6</sup>	5.10 <sup>6</sup>
	16			0.21 <sup>2</sup>	1.10 <sup>3</sup>	3.02 <sup>3</sup>	1.61 <sup>3</sup>	4.17 <sup>6</sup>	6.11 <sup>6</sup>			0.46 <sup>2</sup>	1.41 <sup>3</sup>	3.16 <sup>3</sup>			0.61 <sup>3</sup>	1.77 <sup>3</sup>	4.21 <sup>6</sup>
	24					1.71 <sup>2</sup>	0.12 <sup>2</sup>	2.56 <sup>3</sup>	4.47 <sup>3</sup>				0.17 <sup>2</sup>	1.72 <sup>2</sup>				0.35 <sup>2</sup>	2.68 <sup>3</sup>
16	12			0.21 <sup>2</sup>	0.92 <sup>2</sup>	2.46 <sup>3</sup>	1.35 <sup>3</sup>	3.39 <sup>6</sup>	4.95 <sup>6</sup>			0.42 <sup>2</sup>	1.17 <sup>2</sup>	2.57 <sup>3</sup>			0.54 <sup>2</sup>	1.46 <sup>3</sup>	3.42 <sup>6</sup>
	16				0.27 <sup>2</sup>	1.75 <sup>2</sup>	0.53 <sup>2</sup>	2.52 <sup>3</sup>	4.06 <sup>3</sup>				0.50 <sup>2</sup>	1.79 <sup>3</sup>				0.69 <sup>2</sup>	2.59 <sup>3</sup>
	24					0.53 <sup>2</sup>		1.02 <sup>2</sup>	2.52 <sup>2</sup>				0.45 <sup>2</sup>						1.16 <sup>2</sup>

1 = Deflection Exceeds L/120  
2 = Deflection Exceeds L/240

3 = Deflection Exceeds L/360  
6 = Deflection Exceeds L/600

7 = Deflection Exceeds L/720  
If not noted, deflection is less than L/720

# Load Bearing Wall Members

# Combined Axial & Lateral Load Tables

Refer to Important Table Notes on Page 9

40 Psf Lateral Load																					
Wall Height (ft)	Spacing (in) o.c.	400SG350-(mils)			550SG162-(mils)		550SG200-(mils)					550SG250-(mils)					550SG300-(mils)				
		68	97	118	33	43	33	43	54	68	97	33	43	54	68	97	43	54	68	97	118
8	12	8.74	15.25	20.16	2.91	4.37	4.54	6.93	9.32	12.18	17.69	4.71	7.84	10.94	15.14	23.01	7.92	11.45	15.54	25.14	32.25
	16	8.16	14.62	19.52	2.39	3.89	3.95	6.34	8.76	11.64	17.16	4.13	7.20	10.31	14.51	22.40	7.31	10.83	14.94	24.51	31.62
	24	7.05	13.40	18.29	1.42	2.97	2.82	5.21	7.67	10.61	16.14	3.02	5.99	9.10	13.28	21.20	6.14	9.61	13.75	23.29	30.37
9	12	7.85	13.91	18.37	2.45	3.93	3.98	6.35	8.75	11.63	17.14	4.17	7.22	10.30	14.48	22.34	7.33	10.59	14.59	23.89	30.64
	16	7.15	13.13	17.58	1.82	3.33	3.25	5.61	8.03	10.94	16.46	3.45	6.42	9.50	13.66	21.54	6.57	9.81	13.82	23.09	29.82
	24	5.83	11.67	16.10	0.66 <sup>6</sup>	2.21	1.90	4.23	6.68	9.63	15.13	2.11	4.93	7.98	12.10	19.98	5.12	8.33	12.35	21.54	28.25
10	12	6.91	12.50	16.47	1.95	3.43	3.37	5.70	8.09	10.98	16.47	3.58	6.51	9.32	13.38	21.05	6.67	9.63	13.49	22.45	28.78
	16	6.10	11.60	15.56	1.22 <sup>7</sup>	2.72	2.52	4.81	7.21	10.12	15.60	2.73	5.56	8.37	12.39	20.05	5.74	8.71	12.57	21.47	27.78
	24	4.62 <sup>7</sup>	9.93	13.87		1.43 <sup>6</sup>	0.99 <sup>6</sup>	3.21 <sup>7</sup>	5.60	8.53	13.96	1.19 <sup>7</sup>	3.82	6.61	10.54	18.16	4.04	6.98	10.82	19.59	25.85
12	12	5.08	9.62	12.66	0.93 <sup>6</sup>	2.35 <sup>7</sup>	2.09 <sup>7</sup>	4.23	6.53	9.36	14.71	2.30 <sup>7</sup>	4.71	7.18	10.82	17.49	4.93	7.55	11.07	19.19	24.51
	16	4.12 <sup>7</sup>	8.55	11.60	0.06 <sup>6</sup>	1.46 <sup>6</sup>	1.06 <sup>6</sup>	3.13 <sup>6</sup>	5.38	8.19	13.47	1.26 <sup>6</sup>	3.56 <sup>7</sup>	6.01	9.56	16.18	3.79	6.39	9.87	17.85	23.15
	24	2.44 <sup>9</sup>	6.65 <sup>6</sup>	9.68 <sup>7</sup>				1.20 <sup>6</sup>	3.38 <sup>6</sup>	6.12 <sup>7</sup>	11.22		1.55 <sup>6</sup>	3.93 <sup>6</sup>	7.31 <sup>7</sup>	13.82	1.77 <sup>6</sup>	4.31 <sup>7</sup>	7.70	15.40	20.65
14	12	3.39 <sup>6</sup>	6.81 <sup>7</sup>	9.26		1.28 <sup>6</sup>	0.84 <sup>6</sup>	2.63 <sup>6</sup>	4.58 <sup>7</sup>	7.07	11.83	1.04 <sup>6</sup>	2.99 <sup>6</sup>	5.15 <sup>7</sup>	8.13	13.81	3.22 <sup>7</sup>	5.50	8.65	15.46	19.98
	16	2.41 <sup>6</sup>	5.73 <sup>6</sup>	8.17 <sup>7</sup>		0.29 <sup>3</sup>		1.47 <sup>6</sup>	3.36 <sup>6</sup>	5.79 <sup>6</sup>	10.39		1.78 <sup>6</sup>	3.88 <sup>6</sup>	6.76 <sup>7</sup>	12.34	2.00 <sup>6</sup>	4.22 <sup>6</sup>	7.28	13.91	18.39
	24	0.71 <sup>3</sup>	3.87 <sup>3</sup>	6.27 <sup>6</sup>				1.27 <sup>3</sup>	3.58 <sup>6</sup>	7.89 <sup>6</sup>				1.69 <sup>3</sup>	4.39 <sup>6</sup>	9.78 <sup>7</sup>		1.99 <sup>6</sup>	4.88 <sup>6</sup>	11.20 <sup>7</sup>	15.57
16	12	2.05 <sup>3</sup>	4.67 <sup>6</sup>	6.63 <sup>6</sup>		0.33 <sup>3</sup>		1.30 <sup>3</sup>	2.88 <sup>6</sup>	4.91 <sup>6</sup>	8.78 <sup>7</sup>	0.01 <sup>3</sup>	1.59 <sup>6</sup>	3.42 <sup>6</sup>	5.77 <sup>6</sup>	10.50	1.80 <sup>6</sup>	3.71 <sup>6</sup>	6.40 <sup>7</sup>	11.90	15.72
	16	1.10 <sup>3</sup>	3.65 <sup>6</sup>	5.59 <sup>6</sup>				0.18 <sup>3</sup>	1.69 <sup>3</sup>	3.65 <sup>6</sup>	7.34 <sup>6</sup>		0.39 <sup>3</sup>	2.14 <sup>3</sup>	4.40 <sup>6</sup>	9.01 <sup>7</sup>	0.56 <sup>3</sup>	2.41 <sup>6</sup>	4.97 <sup>6</sup>	10.31 <sup>7</sup>	14.06
	24		1.91 <sup>3</sup>	3.80 <sup>3</sup>						1.52 <sup>3</sup>	4.89 <sup>3</sup>				2.09 <sup>3</sup>	6.46 <sup>6</sup>		0.18 <sup>3</sup>	2.54 <sup>3</sup>	7.58 <sup>6</sup>	11.19 <sup>6</sup>

40 Psf Lateral Load																		
Wall Height (ft)	Spacing (in) o.c.	600SG162-(mils)		600SG200-(mils)					600SG250-(mils)					600SG300-(mils)				
		33	43	33	43	54	68	97	33	43	54	68	97	43	54	68	97	118
8	12	2.98	4.87	4.68	7.55	10.09	13.12	19.02	4.85	8.00	11.74	16.14	24.42	8.09	12.06	16.80	26.99	34.63
	16	2.52	4.40	4.14	6.99	9.55	12.62	18.53	4.32	7.43	11.15	15.54	23.86	7.54	11.48	16.22	26.40	34.04
	24	1.63	3.48	3.11	5.89	8.50	11.63	17.57	3.31	6.33	9.98	14.38	22.76	6.48	10.34	15.07	25.26	32.88
9	12	2.57	4.43	4.19	7.01	9.56	12.62	18.53	4.37	7.46	11.16	15.53	23.84	7.58	11.50	15.92	25.87	33.21
	16	2.00	3.84	3.52	6.29	8.87	11.97	17.89	3.72	6.74	10.39	14.77	23.10	6.89	10.75	15.18	25.12	32.46
	24	0.93 <sup>7</sup>	2.71	2.26	4.93	7.55	10.70	16.65	2.47	5.37	8.92	13.28	21.66	5.55	9.31	13.75	23.66	30.97
10	12	2.12	3.94	3.64	6.38	8.94	12.02	17.93	3.84	6.84	10.43	14.79	23.11	6.99	10.73	14.90	24.56	31.54
	16	1.45	3.23	2.84	5.51	8.09	11.20	17.13	3.05	5.97	9.49	13.83	22.17	6.15	9.82	14.00	23.63	30.60
	24	0.21 <sup>6</sup>	1.90 <sup>7</sup>	1.39 <sup>7</sup>	3.91	6.50	9.66	15.58	1.60	4.34	7.72	12.01	20.36	4.55	8.09	12.28	21.84	28.77
12	12	1.17 <sup>7</sup>	2.85	2.44	4.95	7.45	10.52	16.37	2.66	5.41	8.33	12.33	19.90	5.63	8.70	12.56	21.49	27.59
	16	0.33 <sup>6</sup>	1.93 <sup>6</sup>	1.45 <sup>6</sup>	3.83	6.31	9.37	15.18	1.65 <sup>7</sup>	4.26	7.13	11.06	18.60	4.49	7.51	11.36	20.20	26.27
	24		0.30 <sup>6</sup>		1.84 <sup>6</sup>	4.26 <sup>6</sup>	7.29	12.98		2.21 <sup>6</sup>	4.97 <sup>7</sup>	8.76	16.22	2.45 <sup>7</sup>	5.36	9.14	17.78	23.80
14	12	0.24 <sup>6</sup>	1.72 <sup>6</sup>	1.26 <sup>6</sup>	3.38 <sup>7</sup>	5.66	8.54	14.11	1.46 <sup>6</sup>	3.77 <sup>7</sup>	6.19	9.72	16.25	4.01	6.60	10.10	18.08	23.19
	16		0.67 <sup>6</sup>	0.14 <sup>3</sup>	2.12 <sup>6</sup>	4.34 <sup>6</sup>	7.16 <sup>7</sup>	12.60	0.31 <sup>6</sup>	2.47 <sup>6</sup>	4.85 <sup>7</sup>	8.26	14.73	2.70 <sup>6</sup>	5.24 <sup>7</sup>	8.68	16.48	21.57
	24					2.06 <sup>6</sup>	4.78 <sup>6</sup>	9.95 <sup>7</sup>		0.23 <sup>3</sup>	2.51 <sup>6</sup>	5.71 <sup>6</sup>	12.03	0.43 <sup>6</sup>	2.86 <sup>6</sup>	6.16 <sup>6</sup>	13.64	18.66
16	12		0.69 <sup>3</sup>	0.20 <sup>3</sup>	1.89 <sup>6</sup>	3.77 <sup>6</sup>	6.19 <sup>7</sup>	10.85	0.36 <sup>3</sup>	2.22 <sup>6</sup>	4.34 <sup>6</sup>	7.17 <sup>7</sup>	12.78	2.45 <sup>6</sup>	4.68 <sup>7</sup>	7.77	14.37	18.82
	16				0.64 <sup>3</sup>	2.45 <sup>6</sup>	4.79 <sup>6</sup>	9.29 <sup>7</sup>		0.91 <sup>3</sup>	2.95 <sup>6</sup>	5.67 <sup>6</sup>	11.17	1.10 <sup>6</sup>	3.26 <sup>6</sup>	6.24 <sup>7</sup>	12.66	17.05
	24				0.21 <sup>3</sup>	2.42 <sup>3</sup>	6.61 <sup>6</sup>				0.56 <sup>3</sup>	3.11 <sup>3</sup>	8.38 <sup>6</sup>		0.82 <sup>3</sup>	3.60 <sup>6</sup>	9.70 <sup>6</sup>	13.96 <sup>7</sup>

40 Psf Lateral Load																		
Wall Height (ft)	Spacing (in) o.c.	800SG162-(mils)		800SG200-(mils)					800SG250-(mils)					800SG300-(mils)				
		33	43	33	43	54	68	97	33	43	54	68	97	43	54	68	97	118
8	12	2.74	4.57	4.62	7.49	11.08	16.26	23.73	4.94	7.99	11.82	17.35	29.51	8.24	12.20	17.94	31.69	41.90
	16	2.45	4.27	4.27	7.11	10.69	15.84	23.36	4.58	7.61	11.42	16.93	29.06	7.87	11.81	17.52	31.23	41.44
	24	1.88	3.67	3.57	6.37	9.91	15.02	22.61	3.87	6.86	10.64	16.10	28.19	7.12	11.03	16.70	30.34	40.52
9	12	2.50	4.31	4.32	7.16	10.73	15.88	23.39	4.64	7.66	11.47	16.97	29.09	7.92	11.86	17.56	31.26	41.46
	16	2.13	3.93	3.87	6.68	10.22	15.34	22.89	4.18	7.18	10.96	16.43	28.51	7.44	11.35	17.03	30.68	40.86
	24	1.42	3.17	3.00	5.75	9.23	14.28	21.92	3.29	6.23	9.95	15.36	27.38	6.49	10.35	15.97	29.52	39.67
10	12	2.23	4.02	3.98	6.79	10.32	15.43	22.97	4.29	7.28	11.06	16.52	28.60	7.54	11.45	17.13	30.76	40.94
	16	1.78	3.54	3.43	6.20	9.69	14.75	22.35	3.73	6.69	10.42	15.84	27.87	6.95	10.82	16.46	30.02	40.17
	24	0.92	2.62	2.37	5.05	8.46	13.43	21.13	2.65	5.52	9.18	14.51	26.42	5.78	9.59	15.13	28.55	38.65
12	12	1.61	3.33	3.19	5.89	9.33	14.31	21.92	3.48	6.38	10.06	15.41	27.32	6.66	10.48	16.05	29.48	38.21
	16	0.99	2.66	2.43	5.06	8.42	13.31	20.99	2.71	5.53	9.14	14.41	26.20	5.81	9.56	15.05	28.34	37.07
	24		1.40	1.00	3.48	6.69	11.41	19.17	1.23	3.92	7.38	12.48	24.06	4.18	7.80	13.14	26.15	34.87
14	12	0.91	2.54	2.29	4.84	8.11	12.88	20.51	2.56	5.31	8.84	13.98	25.23	5.59	9.27	14.66	26.75	34.68
	16	0.14 <sup>6</sup>	1.68	1.33 <sup>7</sup>	3.77	6.91	11.54	19.20	1.57	4.21	7.61	12.62	23.69	4.48	8.05	13.31	25.23	33.15
	24		0.11 <sup>6</sup>		1.80 <sup>6</sup>	4.72	9.07	16.74		2.17 <sup>7</sup>	5.36</							



## Fire Ratings

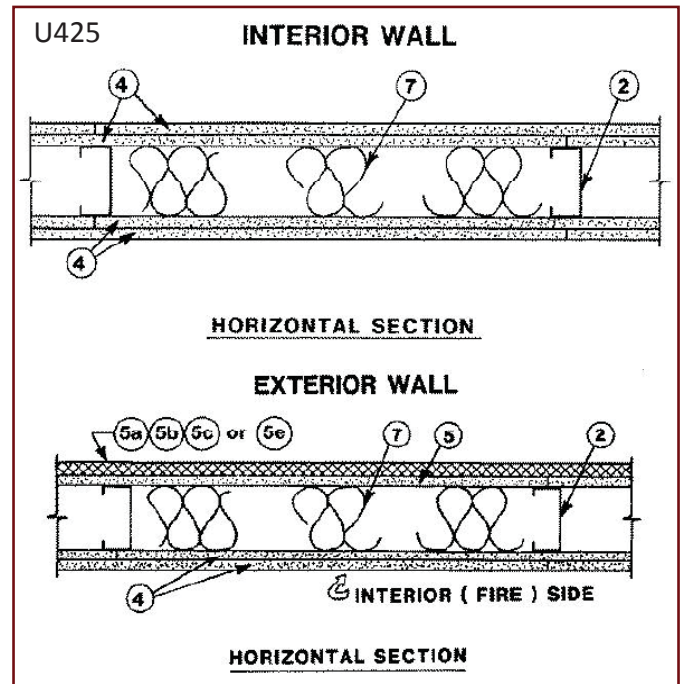
SigmaStud® projects have revealed that a proprietary shaped load-bearing member does not affect the fire rating of a wall versus using standard (S) section studs. The general requirements of steel studs in a fire-rated load bearing wall includes that the studs shall be designed in accordance with the current edition of the *AISI Specification for the Design of Cold-Formed Steel Structural Members*. Studs shall be corrosion-protected, have a minimum stud size of 3.5 inches, minimum thickness of 33 mil (20 ga), and maximum spacing between studs shall not exceed 16 or 24 inches.

UL's Fire Resistance Ratings vary from 45 minutes to 4 hours. The full report for each Fire Resistance Rating can be found on UL's website ([www.ul.com](http://www.ul.com)). To obtain the report, click on Online Certifications Directory under Tools at the bottom of the UL homepage. Search by UL File Number. Click on the file link to view report. For technical assistance, please contact UL directly at 1-877-ULHELPS.

A complete listing of all UL Fire Resistance Ratings for use with cold-formed steel studs can be obtained through UL; we have simply attempted to outline the more commonly-used ratings below.

## Load Bearing Fire Rated Details

- U404 - LOADBEARING (1 or 2 hr) - Interior Wall
- U407 - LOADBEARING (1 hr) - Interior Wall
- U418 - LOADBEARING (45 min - 2 hr) - Exterior Wall
- U423 - LOADBEARING (45min - 2 hr) - Interior Wall
- U424 - LOADBEARING (45 min - 2 hr) - Exterior Wall
- U425 - LOADBEARING (45 min - 2 hr) - Exterior Wall with detail for Interior
- U426 - LOADBEARING (3 hr) - Interior Wall
- U432 - LOADBEARING (1 hr) - Interior Wall
- U434 - LOADBEARING (1 hr) - Interior Wall
- U440 - LOADBEARING (1 hr) - Interior Wall
- U460 - LOADBEARING (1 hr) - Interior Wall
- U462 - LOADBEARING (3 hr) - Interior Wall
- U473 - LOADBEARING (1 hr) - Interior Wall
- U477 - LOADBEARING (2 hr) - Interior Wall
- U485 - LOADBEARING (1 hr) - Interior Wall
- U487 - LOADBEARING (1 hr) - Interior Wall
- U490 - LOADBEARING (3 or 4 hr) - Interior Wall
- U530 - LOADBEARING (4 hr) - Interior Wall
- V415 - LOADBEARING (2 hr) - Interior Wall
- V420 - LOADBEARING (2 hr) - Interior Wall
- V432 - LOADBEARING (1 hr) - Exterior Wall
- V434 - LOADBEARING (1 hr) - Interior Wall
- V446 - LOADBEARING (1 or 2 hr) - Interior



## Sound Transmission Ratings

The Gypsum Association maintains details to obtain fire resistance and Sound Transmission Class (STC) Ratings. These details are designated by a Wall and Partition (WP) System. Each detail is outlined in the Gypsum Association Fire Resistance Design Manual. The details mentioned below were obtained from the 20th Edition - June 2012 publication. For additional information on Gypsum Association or to acquire a copy of the Manual, visit [www.gypsum.org](http://www.gypsum.org).

A complete listing of all WP details is not shown; TSN has attempted to list only the generic details unless no generic details were available for a specific application.

## Load Bearing WP Details

- WP 1021 - 1 hr (50-54 STC)
- WP 1024 - 1 hr (50-54 STC)
- WP 1516 - 2 hr (55-59 STC)
- WP 1522 - 2 hr (55-59 STC)
- WP 1635 - 2 hr (45-49 STC)
- WP 1714 - 2 hr (40-44 STC)
- WP 1716 - 2 hr (40-44 STC)
- WP 8006 - 1 hr (NO STC)\*
- WP 8203 - 2 hr (NO STC)\*
- \* Proprietary System

GA FILE NO. WP 1522	GENERIC	2 HOUR FIRE	55 to 59 STC SOUND
<b>GYPSUM WALLBOARD, STEEL STUDS</b>			
<p><b>Base layer</b> 5/8" type X gypsum wallboard or gypsum veneer base applied parallel or at right angles to each side of 3/8" steel studs 24" o.c. with 1" Type S drywall screws 24" o.c.</p> <p><b>Face layer</b> 5/8" type X gypsum wallboard or gypsum veneer base applied parallel or at right angles to each side with 1 5/8" Type S drywall screws 12" o.c.</p> <p>Joints staggered 24" each layer and side. Sound tested with 3 1/2" glass fiber friction fit in stud space. (NLB)</p>			
		<p>Thickness: 6 1/8"</p> <p>Limiting Height: Refer to Section IV</p> <p>Approx. Weight: 12 psf</p> <p>Fire Test: See WP 1548 (WHI-495-0236, 1-30-80)</p> <p>Sound Test: NRCC 818-NV, 2-3-81</p>	

## SigmaStud® Punchouts

Each SigmaStud contains punchouts which are 1.5" wide and 4" tall, spaced every 24" o.c. vertically. The first punchout begins 12" o.c. from the end of the stud.

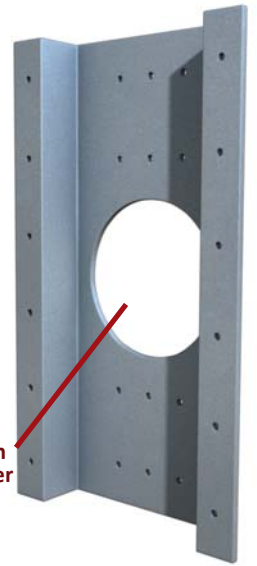
Custom punchout spacing is available upon request. Some restrictions apply.

## Reinforcing Non-Standard Holes in SigmaStud®

Any larger holes cut into SigmaStud® require a review by the engineer, as load capacity is based on the existence of standard punchout sizes. With the realization that additional holes do manage to appear in studs, TSN provides the SigmaStud (SG) Web RFT to provide reinforcement of a hole or holes added to the stud web during construction, when holes larger than the standard knockout are introduced into the web of the member. Use of the SG Web RFT ensures that the load capacity of the stud is not compromised when these types of oversized holes are present.

- No loss of stud strength when using the SigmaStud Web RFT with up to a 3" hole.
- Each SigmaStud Web RFT contains 12 pre-drilled guide holes in the center section and 12 in the outside flanges, 6 per side, to ensure proper placement of the (24) #12 self-drilling self-tapping screws required.
- All modifications to SigmaStud must be reviewed by a structural engineer).
- Contact TSN's Project Management Team at (888) 474-4876 for more recommendations.
- Non standard holes may not exceed half of stud depth.

**3" Maximum Hole Diameter**



## Nomenclature

SigmaStud® Web RFT is available in 54 or 97 mil thicknesses, and is designed for use with 550 & greater sized SigmaStud.

*Designate: SG Web RFT-54 or SG Web RFT-97*

*\* Use SG Web RFT-54 for SigmaStud 54mil and lower. Use SG Web RFT-97 for SigmaStud 97mil and higher.*

## Material Properties:

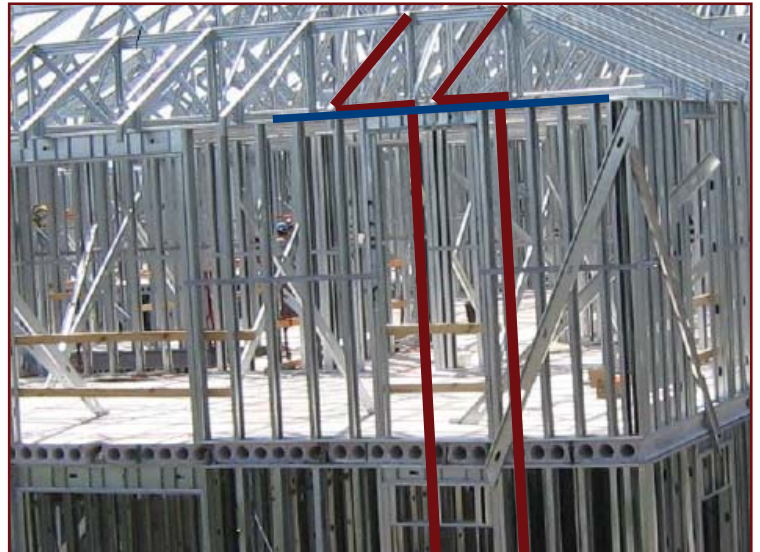
ASTM A1003/A1003M or ASTM A653/A653M, G-60 (Z180) minimum hot-dipped galvanized coating; or equivalent. Grade 50 (340), 50ksi (340 MPa) minimum yield strength, 65ksi (450 MPa) minimum tensile strength or 33ksi (230MPa) minimum yield strength, 45ksi (310 MPa) minimum tensile strength.



## SigmaStud®: Important Design Considerations

### Wall In-Line Framing

Building loads must transfer from the vertical element above (e.g. SigmaStud® wall) to the horizontal element (e.g. Floor System), and to the vertical bearing element below (e.g. SigmaStud wall). To achieve this load transfer, the wall framing must align vertically.



Example of framing aligned vertically. The red lines trace the axial load vertically from the roof to the foundation.

Trusses bearing on the studs, which are aligned vertically to the foundation (red lines). When truss spacing differs from stud spacing, a distribution lintel is required to transfer the load from the truss to the studs below (blue line).



## Product Description

SigmaTrak® is the ideal runner track for load bearing and curtain wall metal stud wall assemblies. Manufactured from mill-certified steel, SigmaTrak's unique shape is designed to allow a stud to seat fully within the track, providing full bearing at the top and bottom structural tracks. Load bearing studs must be fully seated within the top and bottom tracks according to design standards.

SigmaTrak eliminates field issues typically seen with (T) section tracks where the studs bear directly on the corner radius of the track, creating gaps between the stud and track.

## Benefits That Add Value:

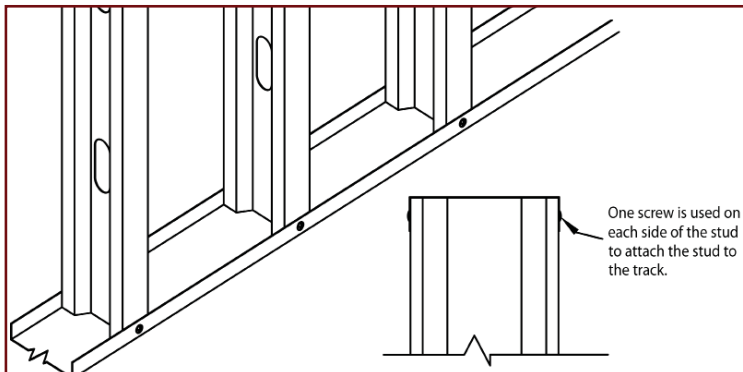
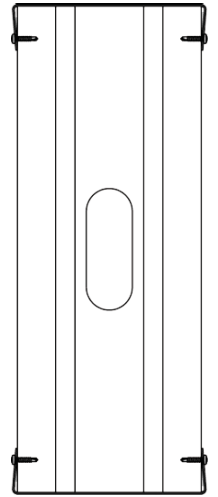
- Track web is oversized to allow the stud to seat fully in the track
- Eliminates the gap between the stud and the track as a result of bearing on corner radii
- Faster assembly than with standard track (no forcing/squeezing stud into bearing on track radii)
- Manufactured from traceable mill-certified steel
- Manufacturing tolerances based on ASTM C955-11c

## Track Recommendations

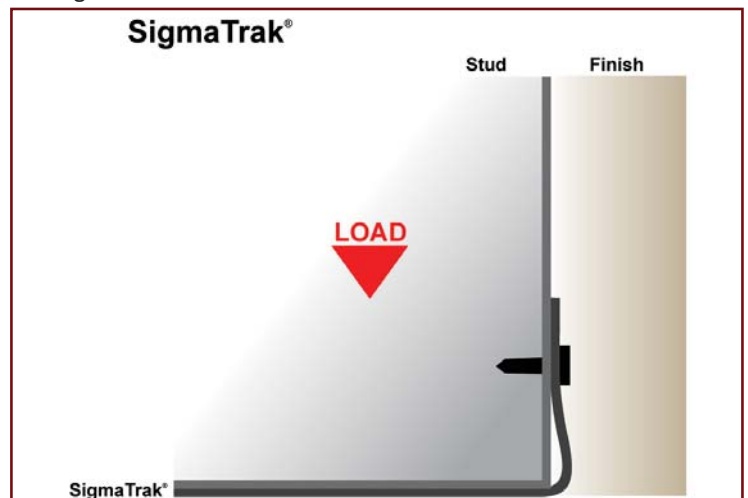
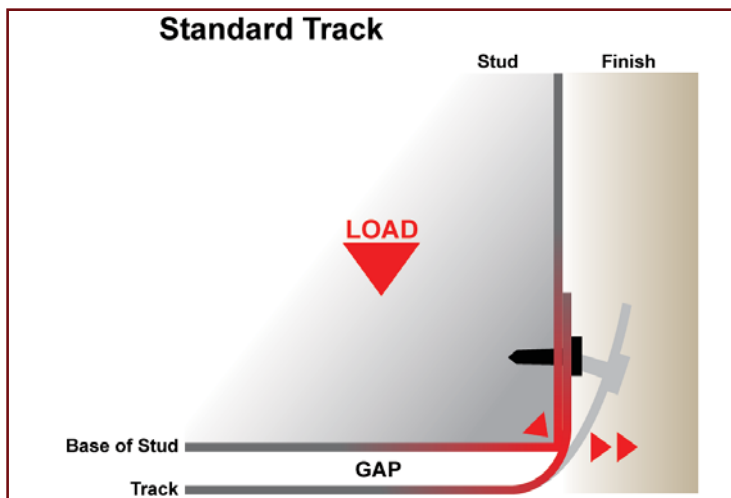
- The top and bottom track should match the stud thickness
- Minimum track thickness = 54mils
- When welding is required to the top track, it is recommended to use a 14ga (68mils) thickness. Welding may be used as a means of attaching light gauge components, and should be performed by an AWS certified welder.

## Material Properties:

ASTM A1003/A1003M or ASTM A653/A653M, G-60 (Z180) minimum hot-dipped galvanized coating; or equivalent. Grade 50 (340), 50ksi (340 MPa) minimum yield strength, 65ksi (450 MPa) minimum tensile strength or 33ksi (230MPa) minimum yield strength, 45ksi (310 MPa) minimum tensile strength.



Load bearing walls are designed to fully seat within the top and bottom tracks. Design standards recommend a maximum gap of  $\frac{1}{8}$ " in order to obtain an effective bearing condition.



Standard track (T) sections (above left) can contain an inside corner radius that prevents "full" bearing within the track. SigmaTrak (above right) allows full bearing of the stud within the track

## Important Notes:

1. Web depth for track sections is equal to the nominal height plus 2 times the design thickness plus 2 times the bend radius.
2. Effective properties incorporate the strength increase from the cold-work of forming as applicable per AISI A7.2.
3. For deflection calculations, use the effective moment of inertia.
4. The effective moment of inertia for deflection is calculated at a stress which results in a section modulus such that the stress times the section modulus at that stress is equal to the allowable moment. AISI S100-07 Procedure I for serviceability determination has been used.

SigmaTrak® Section Properties																						
Section (All 50 ksi)	Design Thickness	Gross Properties							Effective Properties							Torsional						
		Area	Weight	I <sub>x</sub>	S <sub>x</sub>	R <sub>x</sub>	I <sub>y</sub>	R <sub>y</sub>	I <sub>xe</sub>	S <sub>xe</sub>	M <sub>a</sub>	V <sub>ag</sub>	I <sub>ye</sub> <sup>1</sup>	M <sub>ya</sub> <sup>1</sup>	I <sub>ye</sub> <sup>2</sup>	M <sub>ya</sub> <sup>2</sup>	Jx1000	C <sub>w</sub>	X <sub>o</sub>	m	R <sub>o</sub>	β
		(in <sup>2</sup> )	(lb/ft)	(in <sup>4</sup> )	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>3</sup> )	(in-k)	(lb)	(in <sup>4</sup> )	(in-k)	(in <sup>4</sup> )	(in-k)	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>6</sup> )	(in)	(in)	(in)
350SGT150-33	0.0346	0.229	0.778	0.498	0.264	1.476	0.050	0.467	0.409	0.172	5.158	1,053	0.050	0.116	0.047	1.218	0.091	0.120	-0.867	0.533	1.774	0.761
350SGT150-43	0.0451	0.298	1.013	0.651	0.343	1.479	0.064	0.465	0.566	0.243	7.263	2,141	0.064	0.275	0.064	1.634	0.202	0.156	-0.862	0.531	1.774	0.764
350SGT150-54	0.0566	0.373	1.270	0.819	0.429	1.482	0.080	0.463	0.747	0.327	9.804	3,372	0.080	0.610	0.080	2.084	0.399	0.194	-0.857	0.528	1.773	0.766
350SGT150-68	0.0713	0.470	1.599	1.036	0.538	1.485	0.099	0.460	0.988	0.446	13.355	4,679	0.099	1.381	0.099	2.613	0.796	0.243	-0.851	0.525	1.772	0.770
350SGT150-97	0.1017	0.669	2.276	1.489	0.761	1.492	0.138	0.454	1.489	0.717	21.457	6,674	0.138	3.657	0.138	3.657	2.306	0.342	-0.838	0.518	1.771	0.776
350SGT150-118	0.1240	0.814	2.771	1.825	0.922	1.497	0.165	0.450	1.825	0.922	27.617	8,138	0.165	4.395	0.165	4.395	4.173	0.412	-0.828	0.513	1.769	0.781
350SGT200-33	0.0346	0.263	0.895	0.619	0.328	1.534	0.109	0.645	0.470	0.172	5.144	1,053	0.109	0.092	0.100	2.054	0.105	0.262	-1.285	0.768	2.102	0.627
350SGT200-43	0.0451	0.343	1.166	0.810	0.426	1.537	0.142	0.643	0.649	0.256	7.674	2,141	0.142	0.223	0.138	2.775	0.232	0.341	-1.280	0.765	2.101	0.629
350SGT200-54	0.0566	0.430	1.463	1.020	0.534	1.540	0.176	0.641	0.862	0.348	10.412	3,372	0.176	0.504	0.176	3.564	0.459	0.427	-1.275	0.762	2.100	0.631
350SGT200-68	0.0713	0.541	1.841	1.291	0.670	1.545	0.220	0.638	1.151	0.478	14.297	4,679	0.220	1.182	0.220	4.530	0.917	0.536	-1.268	0.759	2.098	0.635
350SGT200-97	0.1017	0.770	2.622	1.858	0.950	1.553	0.308	0.632	1.788	0.784	23.474	6,674	0.308	4.456	0.308	6.371	2.656	0.758	-1.254	0.752	2.094	0.642
350SGT200-118	0.1240	0.938	3.193	2.281	1.153	1.559	0.370	0.628	2.277	1.033	30.936	8,138	0.370	7.688	0.370	7.688	4.809	0.920	-1.243	0.746	2.091	0.646
362SGT150-33	0.0346	0.233	0.792	0.537	0.275	1.519	0.050	0.465	0.442	0.181	5.424	1,017	0.050	0.117	0.047	1.219	0.093	0.130	-0.855	0.528	1.804	0.775
362SGT150-43	0.0451	0.303	1.032	0.702	0.358	1.521	0.065	0.463	0.611	0.255	7.625	2,141	0.065	0.276	0.064	1.637	0.206	0.168	-0.851	0.526	1.803	0.778
362SGT150-54	0.0566	0.380	1.294	0.884	0.448	1.524	0.081	0.461	0.806	0.343	10.279	3,372	0.081	0.608	0.081	2.088	0.406	0.210	-0.846	0.523	1.803	0.780
362SGT150-68	0.0713	0.479	1.629	1.117	0.562	1.528	0.100	0.458	1.066	0.467	13.983	4,846	0.100	1.372	0.100	2.624	0.811	0.263	-0.840	0.520	1.802	0.783
362SGT150-97	0.1017	0.681	2.319	1.605	0.795	1.535	0.139	0.452	1.605	0.749	22.424	6,912	0.139	3.671	0.139	3.671	2.349	0.369	-0.827	0.513	1.801	0.789
362SGT150-118	0.1240	0.830	2.824	1.967	0.963	1.540	0.166	0.448	1.967	0.963	28.844	8,428	0.166	4.412	0.166	4.412	4.252	0.444	-0.817	0.508	1.800	0.794
362SGT200-33	0.0346	0.267	0.910	0.667	0.342	1.579	0.111	0.643	0.508	0.178	5.321	1,017	0.111	0.092	0.100	2.057	0.107	0.283	-1.270	0.761	2.126	0.643
362SGT200-43	0.0451	0.348	1.186	0.872	0.444	1.582	0.143	0.641	0.699	0.269	8.057	2,141	0.143	0.223	0.139	2.779	0.236	0.368	-1.266	0.759	2.125	0.645
362SGT200-54	0.0566	0.437	1.487	1.098	0.556	1.585	0.178	0.639	0.929	0.365	10.915	3,372	0.178	0.503	0.178	3.572	0.467	0.461	-1.260	0.756	2.123	0.648
362SGT200-68	0.0713	0.550	1.872	1.389	0.698	1.589	0.222	0.636	1.239	0.500	14.966	4,846	0.222	1.177	0.222	4.551	0.932	0.578	-1.253	0.753	2.122	0.651
362SGT200-97	0.1017	0.783	2.665	1.999	0.990	1.598	0.311	0.630	1.923	0.819	24.519	6,912	0.311	4.412	0.311	6.400	2.700	0.818	-1.239	0.746	2.118	0.658
362SGT200-118	0.1240	0.954	3.246	2.453	1.201	1.604	0.374	0.626	2.448	1.078	32.279	8,428	0.374	7.723	0.374	7.723	4.888	0.992	-1.229	0.740	2.115	0.662
400SGT150-33	0.0346	0.246	0.837	0.666	0.311	1.646	0.052	0.458	0.554	0.198	5.932	922	0.052	0.118	0.047	1.223	0.098	0.161	-0.823	0.513	1.896	0.812
400SGT150-43	0.0451	0.320	1.090	0.870	0.405	1.648	0.067	0.456	0.759	0.292	8.756	2,041	0.067	0.279	0.065	1.644	0.217	0.209	-0.818	0.511	1.896	0.814
400SGT150-54	0.0566	0.402	1.367	1.094	0.506	1.651	0.083	0.454	0.999	0.393	11.759	3,372	0.083	0.602	0.083	2.100	0.429	0.261	-0.814	0.508	1.896	0.816
400SGT150-68	0.0713	0.505	1.720	1.383	0.635	1.654	0.103	0.451	1.320	0.532	15.936	5,348	0.103	1.347	0.103	2.652	0.856	0.326	-0.807	0.505	1.895	0.818
400SGT150-97	0.1017	0.720	2.449	1.984	0.899	1.661	0.143	0.445	1.984	0.849	25.422	7,628	0.143	3.710	0.143	3.710	2.481	0.458	-0.795	0.498	1.894	0.824
400SGT150-118	0.1240	0.876	2.982	2.430	1.090	1.665	0.171	0.441	2.430	1.090	32.639	9,300	0.171	4.459	0.171	4.459	4.491	0.551	-0.786	0.493	1.894	0.828
400SGT200-33	0.0346	0.280	0.954	0.822	0.384	1.712	0.114	0.637	0.634	0.195	5.849	922	0.114	0.093	0.101	2.063	0.112	0.352	-1.229	0.744	2.201	0.688
400SGT200-43	0.0451	0.365	1.243	1.074	0.500	1.715	0.147	0.635	0.866	0.309	9.251	2,041	0.147	0.225	0.141	2.791	0.248	0.457	-1.224	0.741	2.200	0.690
400SGT200-54	0.0566	0.458	1.559	1.352	0.625	1.718	0.183	0.633	1.147	0.417	12.483	3,372	0.183	0.501	0.183	3.592	0.489	0.572	-1.219	0.739	2.199	0.693
400SGT200-68	0.0713	0.577	1.963	1.709	0.785	1.722	0.229	0.630	1.527	0.569	17.044	5,348	0.229	1.165	0.229	4.600	0.977	0.717	-1.212	0.735	2.198	0.696
400SGT200-97	0.1017	0.821	2.795	2.457	1.113	1.730	0.320	0.624	2.364	0.927	27.754	7,628	0.320	4.295	0.320	6.481	2.832	1.014	-1.199	0.728	2.195	0.702
400SGT200-118	0.1240	1.000	3.404	3.012	1.351	1.735	0.384	0.620	3.005	1.217	36.426	9,300	0.384	7.820	0.384	7.820	5.126	1.228	-1.189	0.723	2.193	0.706

<sup>1</sup> I<sub>y</sub> and M<sub>ya</sub> are based on the web element in tension.

<sup>2</sup> I<sub>y</sub> and M<sub>ya</sub> are based on the web element in compression.

<sup>3</sup> Web height to thickness ratio exceeds 200. Web stiffeners are required at all support points and concentrated loads.

Refer to Important Table Notes on Page 19

SigmaTrak <sup>®</sup> Section Properties																						
Section (All 50 ksi)	Design Thickness	Gross Properties							Effective Properties							Torsional						
		Area	Weight	I <sub>x</sub>	S <sub>x</sub>	R <sub>x</sub>	I <sub>y</sub>	R <sub>y</sub>	I <sub>xe</sub>	S <sub>xe</sub>	M <sub>a</sub>	V <sub>ag</sub>	I <sub>ye</sub> <sup>1</sup>	M <sub>ya</sub> <sup>1</sup>	I <sub>ye</sub> <sup>2</sup>	M <sub>ya</sub> <sup>2</sup>	Jx1000	C <sub>w</sub>	X <sub>o</sub>	m	R <sub>o</sub>	β
		(in <sup>2</sup> )	(lb/ft)	(in <sup>4</sup> )	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>3</sup> )	(in-k)	(lb)	(in <sup>4</sup> )	(in-k)	(in <sup>4</sup> )	(in-k)	(in <sup>4</sup> )	(in <sup>6</sup> )	(in)	(in)	(in)	
550SGT150-33	0.0346	0.298	1.013	1.363	0.472	2.139	0.056	0.433	1.175	0.265	7.940	670	0.056	0.121	0.049	1.233	0.119	0.330	-0.715	0.460	2.297	0.903
550SGT150-43	0.0451	0.388	1.320	1.778	0.613	2.141	0.072	0.431	1.576	0.451	13.491	1,484	0.072	0.287	0.068	1.662	0.263	0.427	-0.711	0.457	2.297	0.904
550SGT150-54	0.0566	0.486	1.656	2.235	0.767	2.143	0.089	0.428	2.055	0.618	18.491	2,934	0.089	0.597	0.088	2.130	0.519	0.532	-0.707	0.455	2.297	0.905
550SGT150-68	0.0713	0.612	2.084	2.820	0.964	2.146	0.111	0.426	2.699	0.827	24.765	5,350	0.111	1.281	0.111	2.715	1.038	0.664	-0.702	0.452	2.297	0.907
550SGT150-97	0.1017	0.872	2.968	4.035	1.365	2.151	0.154	0.420	4.035	1.298	38.851	10,488	0.154	3.827	0.154	3.827	3.007	0.929	-0.691	0.445	2.298	0.910
550SGT150-118	0.1240	1.062	3.615	4.932	1.655	2.155	0.184	0.416	4.932	1.655	49.564	12,788	0.184	4.598	0.184	4.598	5.444	1.116	-0.683	0.441	2.298	0.912
550SGT200-33	0.0346	0.332	1.131	1.648	0.570	2.227	0.124	0.611	1.323	0.266	7.955	670	0.124	0.097	0.104	2.079	0.133	0.717	-1.089	0.680	2.553	0.818
550SGT200-43	0.0451	0.433	1.473	2.152	0.742	2.229	0.161	0.609	1.783	0.445	13.324	1,484	0.161	0.233	0.146	2.821	0.294	0.931	-1.085	0.677	2.553	0.819
550SGT200-54	0.0566	0.543	1.848	2.705	0.929	2.232	0.200	0.607	2.321	0.654	19.589	2,934	0.200	0.498	0.193	3.644	0.580	1.163	-1.080	0.675	2.553	0.821
550SGT200-68	0.0713	0.684	2.327	3.415	1.167	2.235	0.249	0.604	3.071	0.882	26.403	5,350	0.249	1.130	0.249	4.688	1.159	1.457	-1.074	0.672	2.552	0.823
550SGT200-97	0.1017	0.974	3.314	4.894	1.655	2.242	0.349	0.598	4.713	1.408	42.161	10,488	0.349	3.983	0.349	6.723	3.357	2.053	-1.062	0.665	2.552	0.827
550SGT200-118	0.1240	1.186	4.037	5.987	2.010	2.247	0.418	0.594	5.963	1.830	54.787	12,788	0.418	7.608	0.418	8.110	6.080	2.481	-1.053	0.660	2.551	0.830
600SGT150-33	0.0346	0.315	1.072	1.666	0.531	2.300	0.057	0.425	1.391	0.273	8.187	614	0.057	0.122	0.049	1.235	0.126	0.401	-0.686	0.444	2.437	0.921
600SGT150-43	0.0451	0.410	1.397	2.174	0.690	2.302	0.073	0.423	1.936	0.431	12.915	1,361	0.073	0.289	0.068	1.666	0.278	0.519	-0.682	0.442	2.438	0.922
600SGT150-54	0.0566	0.515	1.752	2.732	0.864	2.304	0.091	0.420	2.543	0.630	18.872	2,690	0.091	0.601	0.089	2.137	0.550	0.647	-0.678	0.440	2.438	0.923
600SGT150-68	0.0713	0.648	2.205	3.446	1.085	2.306	0.113	0.418	3.310	0.911	27.263	5,350	0.113	1.266	0.113	2.726	1.098	0.807	-0.673	0.437	2.438	0.924
600SGT150-97	0.1017	0.923	3.141	4.928	1.537	2.311	0.157	0.412	4.928	1.464	43.837	10,885	0.157	3.802	0.157	3.856	3.182	1.128	-0.662	0.430	2.439	0.926
600SGT150-118	0.1240	1.124	3.826	6.021	1.865	2.314	0.187	0.408	6.021	1.865	55.825	13,950	0.187	4.632	0.187	4.632	5.762	1.355	-0.654	0.426	2.439	0.928
600SGT200-33	0.0346	0.350	1.190	2.004	0.638	2.394	0.127	0.602	1.626	0.289	8.659	614	0.127	0.097	0.104	2.082	0.140	0.872	-1.050	0.661	2.683	0.847
600SGT200-43	0.0451	0.456	1.550	2.615	0.830	2.396	0.164	0.600	2.190	0.482	14.434	1,361	0.164	0.235	0.147	2.828	0.309	1.132	-1.046	0.658	2.682	0.848
600SGT200-54	0.0566	0.571	1.944	3.287	1.040	2.399	0.204	0.598	2.831	0.743	22.252	2,690	0.204	0.502	0.195	3.655	0.610	1.415	-1.041	0.656	2.682	0.849
600SGT200-68	0.0713	0.719	2.448	4.149	1.306	2.402	0.255	0.595	3.739	0.998	29.890	5,350	0.255	1.122	0.254	4.707	1.219	1.771	-1.035	0.653	2.682	0.851
600SGT200-97	0.1017	1.025	3.487	5.941	1.853	2.408	0.356	0.590	5.724	1.586	47.481	10,885	0.356	3.913	0.356	6.784	3.533	2.495	-1.023	0.646	2.682	0.854
600SGT200-118	0.1240	1.248	4.248	7.264	2.250	2.412	0.428	0.585	7.234	2.055	61.535	13,950	0.428	7.453	0.428	8.183	6.397	3.013	-1.015	0.641	2.682	0.857
800SGT150-33 <sup>3</sup>	0.0346	0.384	1.308	3.297	0.796	2.929	0.060	0.396	2.690	0.369	11.050	461	0.060	0.125	0.050	1.241	0.153	0.768	-0.590	0.392	3.014	0.962
800SGT150-43	0.0451	0.501	1.704	4.299	1.036	2.931	0.078	0.394	3.762	0.587	17.589	1,021	0.078	0.295	0.070	1.678	0.339	0.994	-0.586	0.390	3.014	0.962
800SGT150-54	0.0566	0.628	2.137	5.398	1.297	2.932	0.096	0.392	4.985	0.868	25.994	2,017	0.096	0.613	0.092	2.155	0.671	1.237	-0.583	0.387	3.015	0.963
800SGT150-68	0.0713	0.791	2.691	6.805	1.629	2.934	0.120	0.389	6.596	1.275	38.163	4,033	0.120	1.264	0.118	2.755	1.340	1.542	-0.578	0.385	3.015	0.963
800SGT150-97	0.1017	1.126	3.833	9.718	2.310	2.937	0.166	0.384	9.718	2.205	66.007	10,885	0.166	3.626	0.166	3.940	3.883	2.150	-0.569	0.379	3.016	0.964
800SGT150-118	0.1240	1.372	4.670	11.860	2.804	2.940	0.198	0.380	11.860	2.804	83.964	16,182	0.198	4.733	0.198	4.733	7.033	2.578	-0.562	0.375	3.017	0.965
800SGT200-33 <sup>3</sup>	0.0346	0.419	1.425	3.885	0.938	3.046	0.136	0.569	2.987	0.376	11.269	461	0.136	0.100	0.106	2.092	0.167	1.676	-0.919	0.594	3.232	0.919
800SGT200-43	0.0451	0.546	1.857	5.068	1.221	3.047	0.175	0.567	4.188	0.603	18.044	1,021	0.175	0.241	0.150	2.847	0.370	2.173	-0.916	0.592	3.232	0.920
800SGT200-54	0.0566	0.685	2.330	6.365	1.530	3.049	0.218	0.565	5.566	0.897	26.856	2,017	0.218	0.515	0.200	3.687	0.731	2.713	-0.911	0.590	3.232	0.920
800SGT200-68	0.0713	0.862	2.933	8.027	1.922	3.052	0.272	0.562	7.388	1.330	39.816	4,033	0.272	1.107	0.263	4.759	1.461	3.394	-0.906	0.587	3.233	0.921
800SGT200-97	0.1017	1.228	4.179	11.475	2.728	3.057	0.380	0.556	11.090	2.352	70.425	10,885	0.380	3.722	0.380	6.922	4.234	4.770	-0.895	0.581	3.233	0.923
800SGT200-118	0.1240	1.496	5.092	14.013	3.314	3.060	0.456	0.552	13.944	3.061	91.645	16,182	0.456	7.013	0.456	8.403	7.669	5.753	-0.888	0.576	3.234	0.925

<sup>1</sup> I<sub>ye</sub> and M<sub>ya</sub> are based on the web element in tension.

<sup>2</sup> I<sub>ye</sub> and M<sub>ya</sub> are based on the web element in compression.

<sup>3</sup> Web height to thickness ratio exceeds 200. Web stiffeners are required at all support points and concentrated loads.

## Redefining Value Engineering

The Steel Network identifies value engineering opportunities when framing with Cold-Formed Steel (CFS) systems. CFS is proven to reduce overall costs and accelerate construction schedules while meeting building code requirements.

- Lower overall project costs
- Material cost savings in the wall system
- Reduced foundation requirements and cost
- Accelerated construction schedules
- Fewer subcontractors on the job
- Satisfied Developers, Contractors, Structural Engineers and Architects



## What does TSN's Value Engineering Service Provide?

- 1. Partnership:** TSN will partner with the project team to recommend the best solutions to fit project conditions. Our services apply at any point in the project; from the Architect, Engineer of Record, General Contractor, Sub-Contractor, Specialty Engineer (Shop Drawer), to the Distributor. Each member of the team can partner with TSN to determine the best course of action for the project.
- 2. Budgeting/Cost Certainty:** TSN's expertise may enable over-budgeted projects to meet budget, and may also provide substantial savings to projects already within a posted budget. TSN's VE services have provided significant savings in the wall system as well as in the secondary systems, such as foundations.
- 3. Flexibility:** The project design team is empowered to determine the best foundation, floor, and roof systems for the project.
- 4. Scheduling:** TSN's VE services often result in accelerated construction schedules which, in turn, save resources.

## Optimizing the Structure

The Steel Network's load bearing wall systems (LBWS) create the opportunity to fully-optimize the structural systems, including walls, floors, and the building's foundation. Use of SigmaStud® (8psf) in place of the much heavier concrete/masonry block (45psf) enables the Structural Engineer to determine if a more efficient foundation, including the elimination of geo-piers is possible. "Real world" experience proves time and time again the tremendous value TSN's LBWS delivers to the construction team.

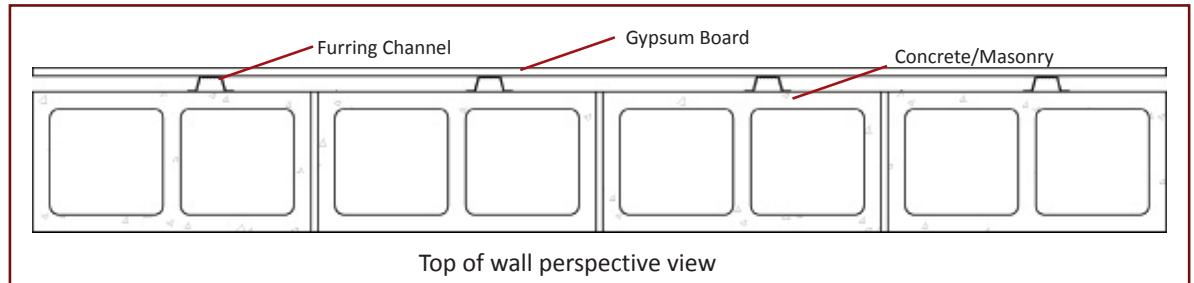
TSN's Load Bearing Wall Systems provide approximately \$2/sq.ft. of material cost savings *in addition to* the significant time/labor savings related to scheduling and installation.

## Electrical Consideration

In concrete/masonry walls, electrical wires are installed on both sides of the masonry in gaps provided by some type of furring channel. This adds to the cost of concrete/masonry in the comparison above. This added expense is not seen in TSN's SigmaStud due to the pre-punched knockouts located vertically at 24" o.c.



SigmaStud's punchouts provide a convenient avenue for electrical chase.



Concrete/Masonry walls require additional furring for installation of finishes and wiring.

## Temporary Construction Bracing

Temporary construction bracing is necessary in order to install steel framed load bearing wall systems. Coordinate temporary bracing with the Specialty Engineer and/or the General Contractor. Safe and proper installation and “loading” of the walls can only be achieved if the adequate temporary bracing is installed. **Failure to do this can result in wall failure and/or the risk of serious injury.**

### Two types of construction bracing are required:

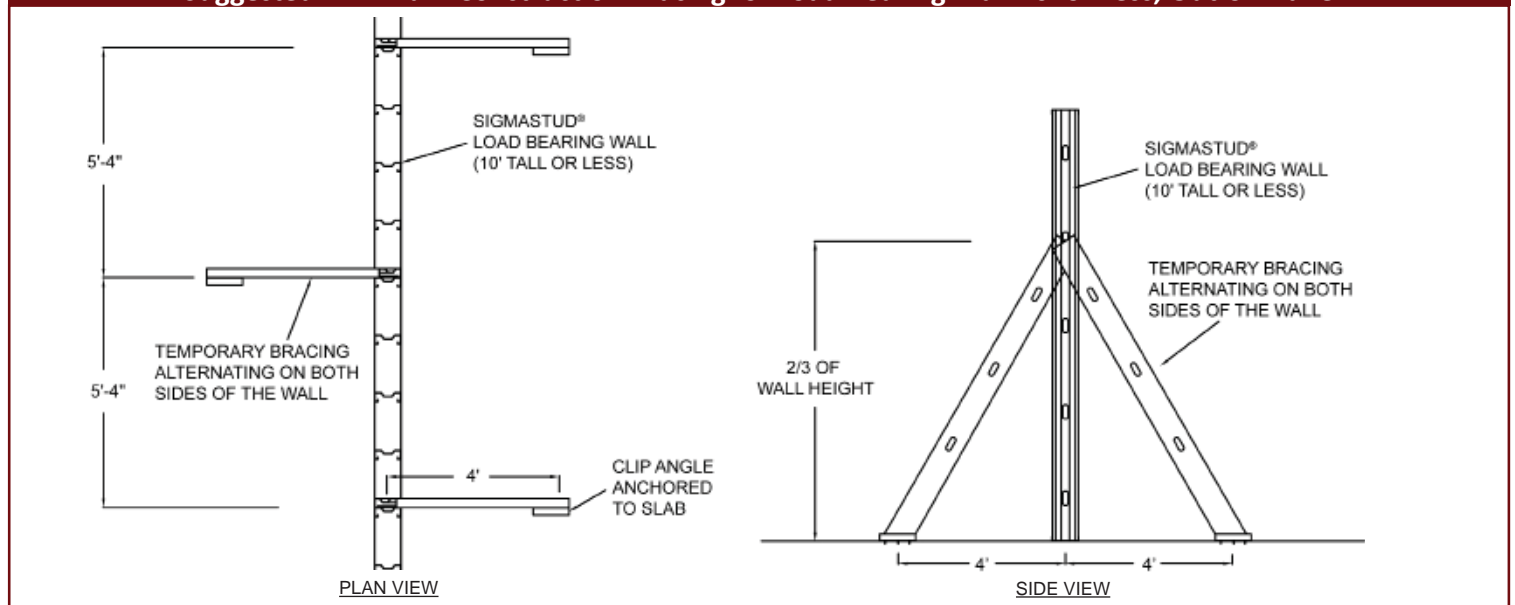
- In the plane of the wall (may employ the X-bracing of the shear wall panels and/or by adding diagonal kickers at the two ends of the wall).
- Out of the plane of the wall.

### When should temporary construction bracing be removed?

- After at least 2 floors above the temporarily braced wall are installed, allowing the walls to “seat”.
- After all permanent shear wall bracing is installed and tightened.
- After all of the perpendicular walls are connected.

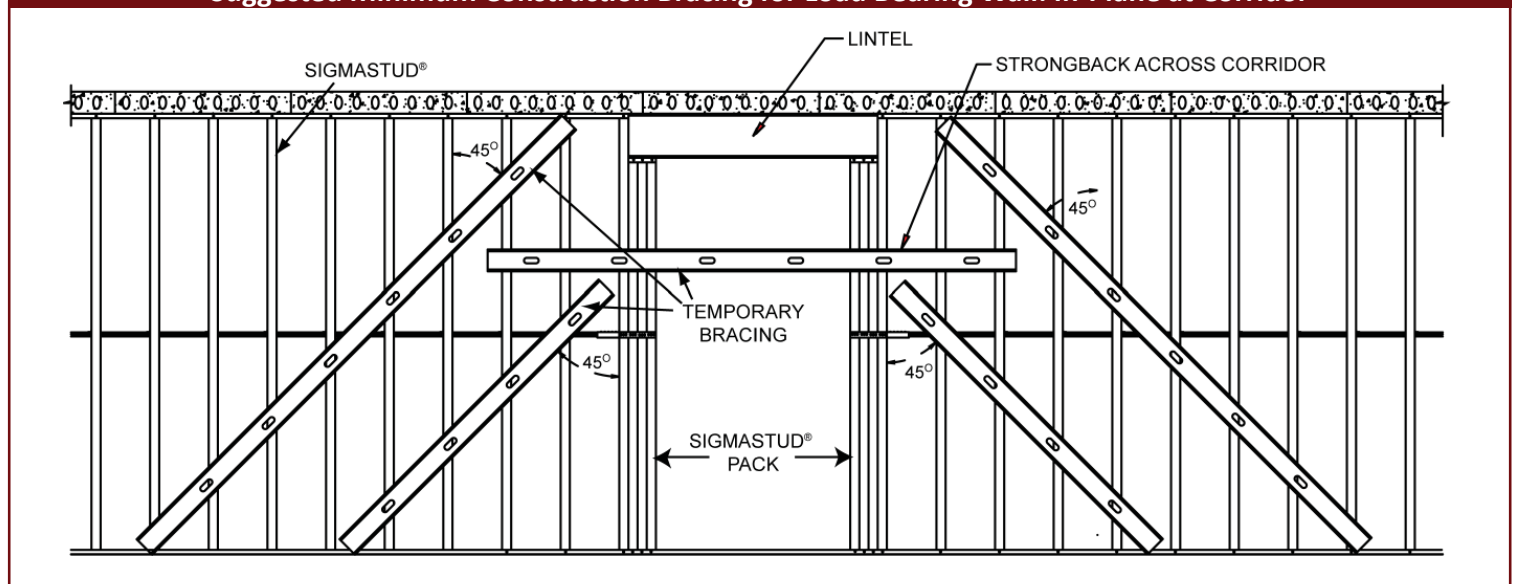


## Suggested Minimum Construction Bracing for Load Bearing Wall 10' or Less, Out-of-Plane



\* Temporary bracing should be designed by a design professional.

## Suggested Minimum Construction Bracing for Load Bearing Wall: In-Plane at Corridor

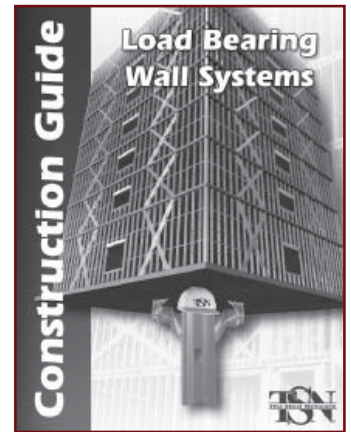


Additional temporary bracing details are available at [www.steelnetwork.com](http://www.steelnetwork.com)

## Description

TSN's *Load Bearing Wall Systems Construction Guide* provides an in-depth look into a variety of design and installation conditions concerning use of SigmaStud® and StiffWall® in construction projects. The purpose of the guide is to educate contractors, architects and engineers on the proper use of TSN's load bearing wall systems on the job site. The Steel Network wants to ensure that our customers fully understand these systems and are supplied with detailed information addressing installation issues, including the following:

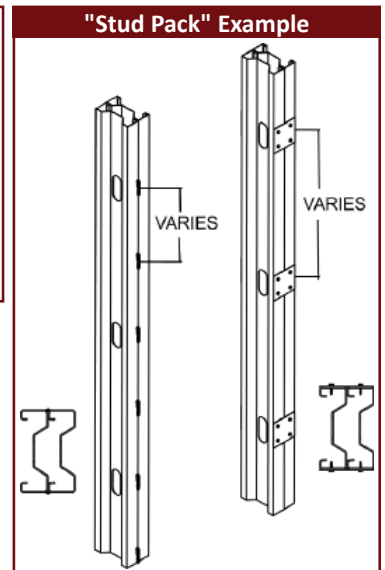
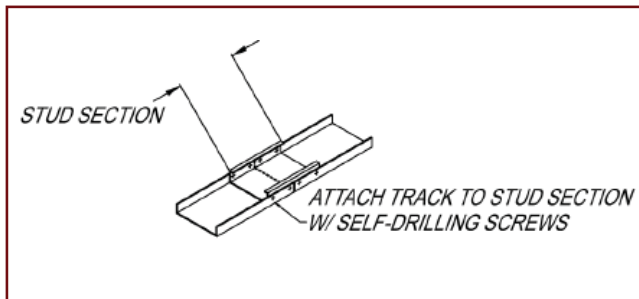
- SigmaStud installation to the top and bottom tracks
- Track recommendations
- Shims
- Reinforcing non-standard holes in SigmaStud
- Temporary construction bracing
- Corridor framing
- Panelized walls
- Key wall bridging issues



## Track Reinforcement

The top and bottom wall tracks in contact with hollowcore planks need to be continuous. The contractor must provide track splicing if the tracks are cut.

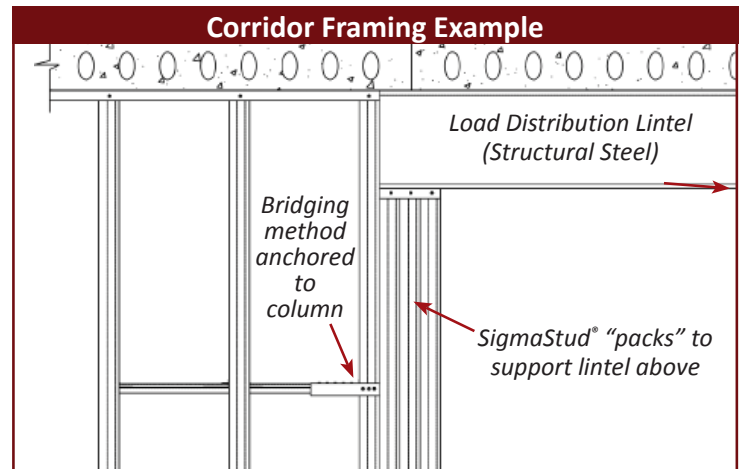
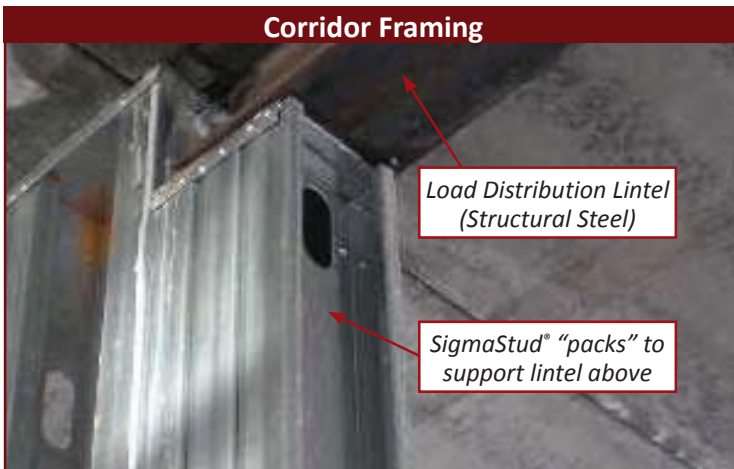
- To splice track in a load-bearing wall, an extra piece of stud must be used inside the track to sufficiently overlap each side of the joint. 2-3 screws are then installed through the flanges on each side of the joint, on both sides of the track (for a total of 8-12 screws per splice).
- In adjacent walls ending with edge studs, a plate may be screwed or welded across the flanges of the end studs of two adjacent walls. In addition to this, the studs must be screwed or welded together per standard column/screw guidelines.



## Corridor Framing

In applications where the plank spans bays that are parallel to the corridor, plank direction can be maintained in the corridor through the use of a load distribution lintel. Structural steel is commonly used to act as the lintel to support the opening, resulting in increased point loads acting on the columns. Bearing requirements for various types of structural steel vary and must be satisfied.

- Typically, multiple studs of the same thickness are used in "stud-packs" to provide bearing points for structural steel lintels.
- Coordinate the use of "stud packs" with the structural engineer.





# Load Bearing Wall Members

# Construction Guide - Wall Studs

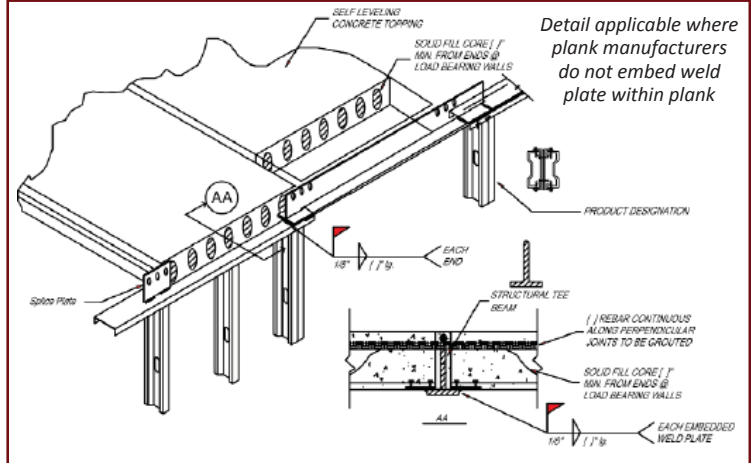
## Embedded Plates

If the floor system consists of hollow core planks:

- Typically attach the top track to the floor above by welding the bottom of a key plate (Splice Plate) to the track.
- The key is then grouted in between the two planks, connecting the floor system to the rest of the structure.
- Embedded bolts/anchors and power actuated fasteners can also serve to connect the load bearing walls with various floor diaphragms, per the structural engineer's specifications.
- Be sure to clarify specific methods of attachment with the engineer.

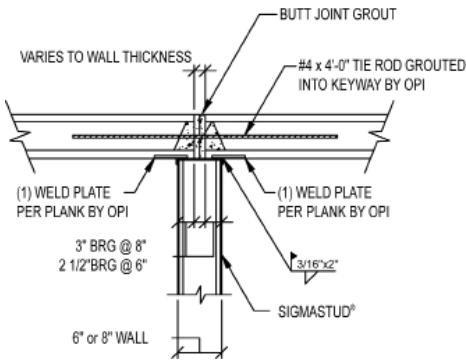
Visit [www.steelnetwork.com](http://www.steelnetwork.com) for a copy of the Construction Guide!

## Splice Plate Example



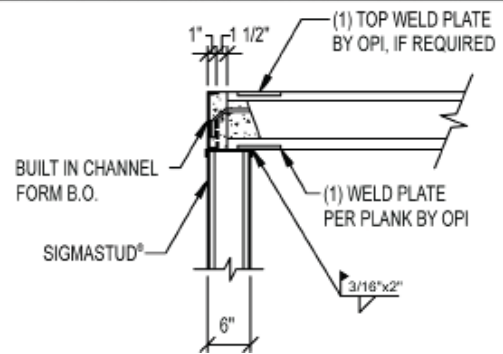
## Embedded Plate Detail - HC Plank

### EMBEDDED PLATE DETAIL - INTERIOR BEARING WALL



## Embedded Plate Detail - Exterior Bearing Wall

### EMBEDDED PLATE DETAIL - EXTERIOR BEARING WALL

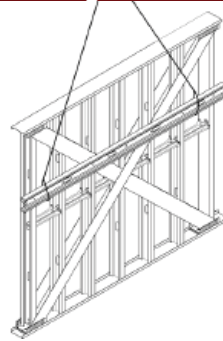


## Wall Panel Handling

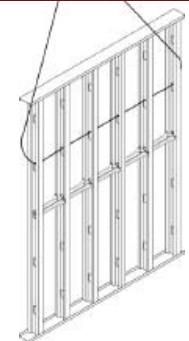
When lifting wall panels into place, **avoid using the bridging as a lift point**. This could bend the bridging members, rendering them ineffective. Here are two suggestions that have worked well in existing installations:

- Attach a temporary stud or other bracing member ("strong back") horizontally across the wall panel and use it to lift the wall sections into place.
- Thread the cables through the stud punchouts at either end to lift the panel.

## Strong Back



## Threaded Cable



## Design Example

Using AISI Wall Stud Design Standard (2007) requirements, design BuckleBridge® lateral bracing system for an 8 ft. tall CFS load bearing wall. The wall consists of 800SG200-54 studs spaced at 16 inches o.c.

## Solution

a) Design compression load per stud,  $P = 11.5$  kips:

From SigmaStud charts, 8 ft. Wall Height, No Lateral Load:  
 One row of lateral bracing, unbraced length  $L_b = 48$  inches  
 800SG200-54, Allowable strength  $P_a = 12.28$  kips

b) Required bridging strength for a single SigmaStud:

$$P_{br,1} = 0.02(11.5 \text{ kips}) = 0.23 \text{ kips}$$

c) Check the strength of BuckleBridge:

Since the bridging row can resist lateral bracing forces either in compression or in tension, the maximum wall length that can be braced before anchorage is determined from the load capacity of BuckleBridge in compression and tension as follows:

$$\begin{aligned} \text{Maximum number of studs that can be braced in } \mathbf{compression} &= \text{BuckleBridge } P_{Comp} / P_{br,1} \\ &= 2.4 \text{ kips} / 0.23 \text{ kips} = 10 \text{ studs} \end{aligned}$$

$$\begin{aligned} \text{Maximum number of studs that can be braced in } \mathbf{tension} &= \text{BuckleBridge } P_{Tension} / P_{br,1} \\ &= 0.44 \text{ kips} / 0.23 \text{ kips} = 1 \text{ stud} \end{aligned}$$

$$\text{Maximum number of studs that can be braced before anchorage} = (10 + 1 + 1) \text{ studs} = 12 \text{ studs (see chart below)}$$

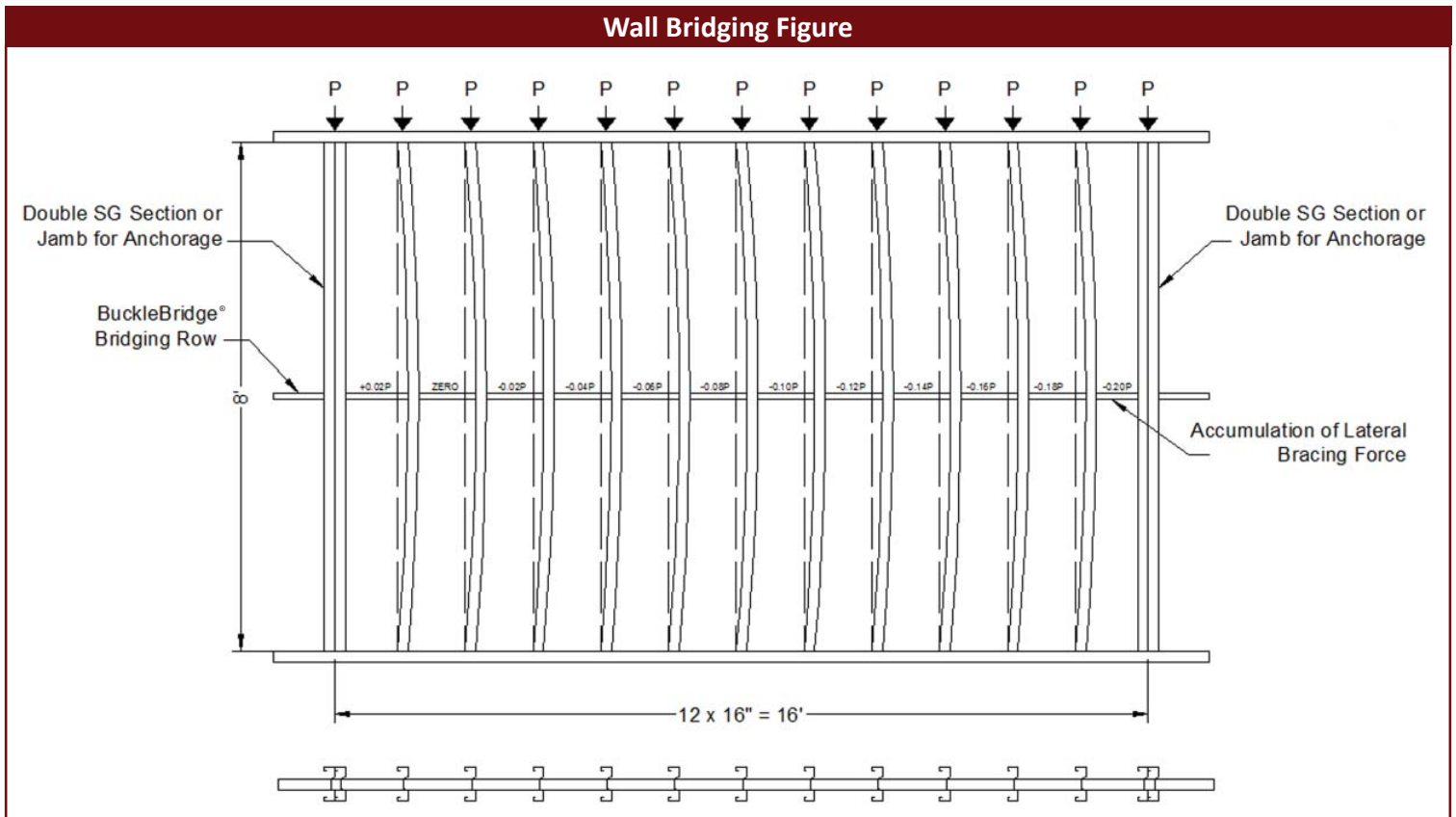
The lateral bracing needs to be anchored at rigid columns every 12 studs = 16 ft 0 in.

Use double SigmaStud® section or JamStud® section as a rigid column at anchorage locations (see anchorage details).

Design rigid columns for a lateral force =  $12 \times 0.23$  kips = 2.76 kips

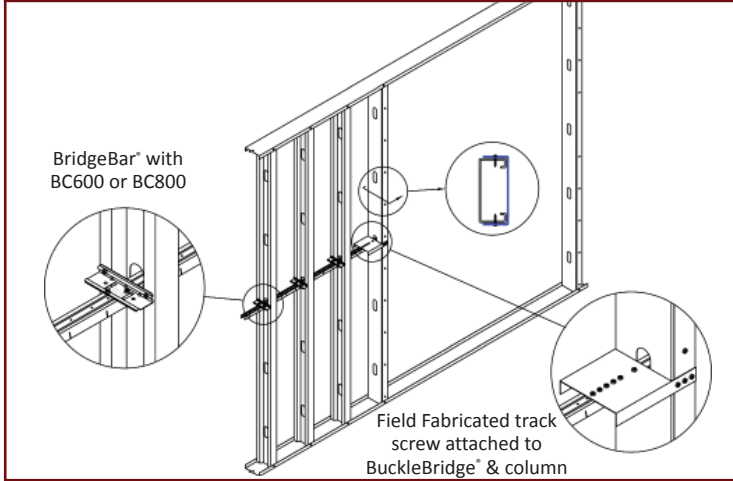
Alternatively, use cross-bracing to floor system as the anchorage method (see anchorage details).

**Note:** AISI S100-07 requires less capacity for the lateral bracing (bridging) row, but mandates additional stiffness requirements. Check BuckleBridge stiffness capacity.

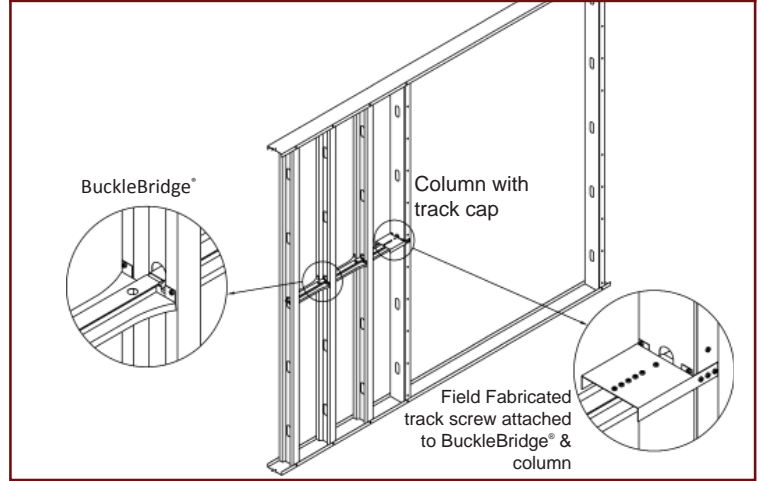


## Anchorage of Lateral Bracing (Bridging) Forces

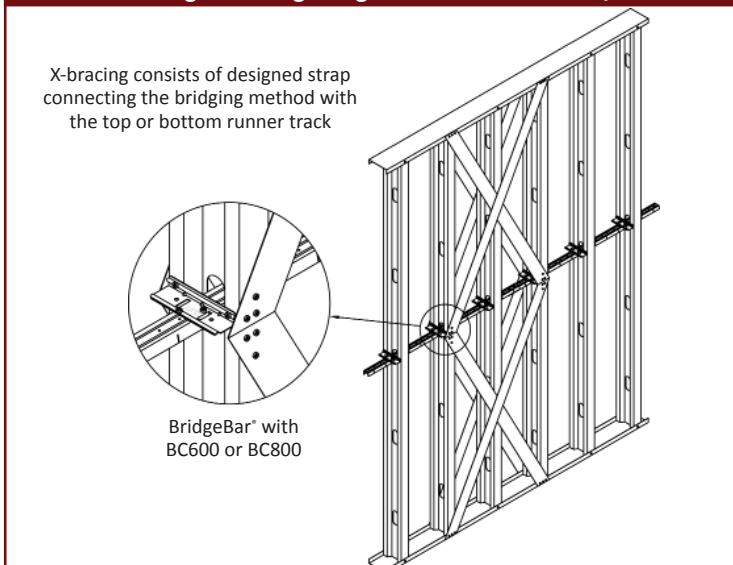
**Load Bearing Wall Bridging Row Anchored to Jamb Stud or End Column - Track Bracing Utilizing BridgeBar® 150 with BC600 / BC800**



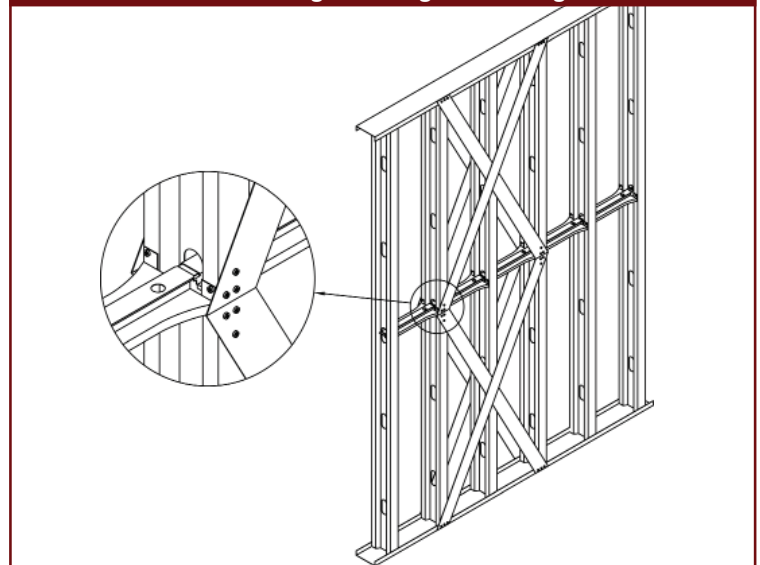
**Load Bearing Wall Bridging Row Anchored to Jamb Stud or End Column - Track Bracing Utilizing BuckleBridge®**



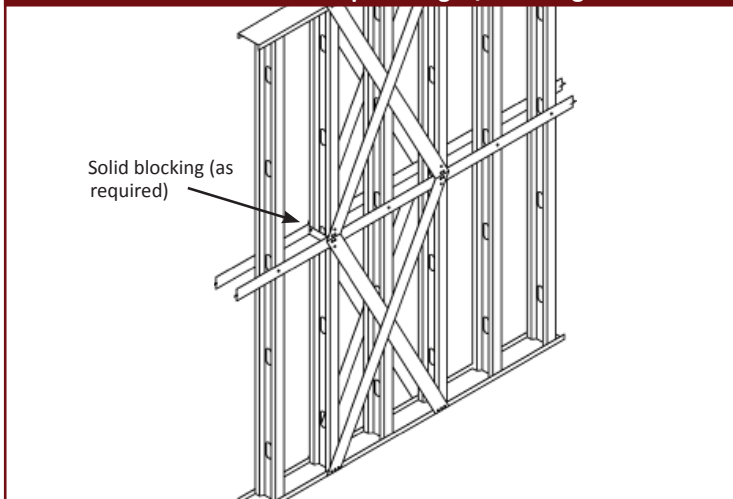
**Load Bearing Wall Bridging Row Anchored to Floor System Through Cross Bracing - Utilizing BridgeBar® 150 with BC600 / BC800**



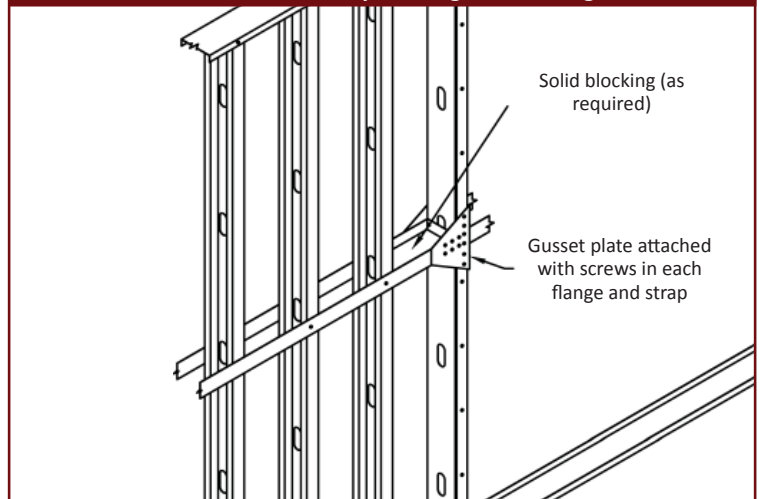
**Load Bearing Wall Bridging Row Anchored to Floor System Through Cross Bracing - Utilizing BuckleBridge®**



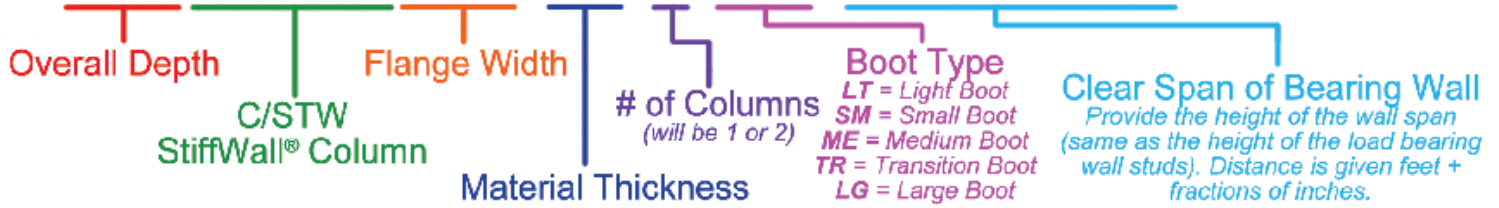
**Load Bearing Wall Bridging Row Anchored to Jamb Stud or End Column - Flat Strap Bracing w/ Blocking**



**Load Bearing Wall Bridging Row Anchored to Jamb Stud or End Column - Flat Strap Bracing w/ Blocking**



# 600C/STW250-68-1-SM-10ft-9-1/4"

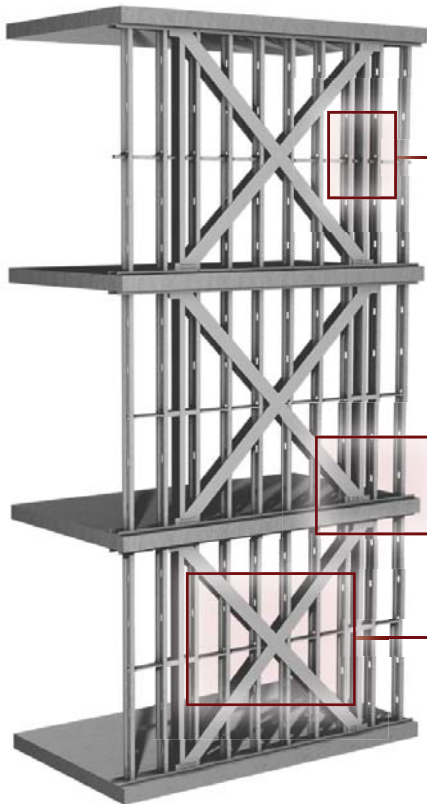
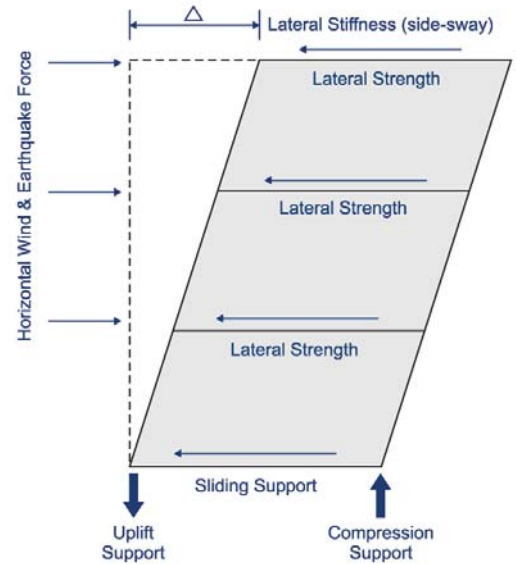


## Background

StiffWall® SWS is a stick build system designed to carry loads concentrically from the point of applied loads to the foundation or other termination point, that utilizes light gage straps on both sides of the wall for shear resistance. StiffWall provides superior quality with high yield ASTM A1003 steel and hot-dipped galvanized coating for long-term durability. It is specified using simple nomenclature indicating only essential design requirements for each shear wall element. The design is ideal for job specific sizes with established load requirements. The Steel Network has optimized the design and fabrication of StiffWall through a series of both component and full scale wall assembly tests, using state of the art technology to measure performance.

StiffWall shear walls provide both lateral strength and stiffness. Lateral strength is needed to resist horizontal loads due to wind and earthquake forces. Properly designed and constructed shear walls transfer lateral forces to the next structural element in the load path below them, such as other shear walls, floors, or foundations.

Lateral stiffness is needed to prevent excessive side-sway of the structure. When shear walls are of adequate stiffness, they will maintain the lateral deflection or serviceability requirements of the building. In addition, buildings with sufficient lateral stiffness will suffer less nonstructural damage, further avoiding long-term degradation due to veneer cracking and water infiltration.



## StiffWall System Components:

### Columns (C/STW)

- End posts for the shear wall
- Wider flange and additional return lips provide an increased load capacity over standard steel stud sections

### Boots

- Made up of a Strap Track (97 mil, 12" long track section with pre-punched screw pilot holes) and a Base Plate ("T" shaped structural steel), specified bolts for connection to column, and is designed to fit into a standard size track.
- Transfers the loads from the straps and columns through the floor system down to the foundation
- Pre-installed on top and bottom of each column by TSN
- Fits into a standard track (T) section

### Flat Strap

- Runs diagonally (corner to corner) as a single piece and attaches to the strap track in an "X" pattern
- Four (4) pieces of flat strap are used in each StiffWall (2 pcs each side)
- Made to your specifications, always using 50 ksi steel

### TightStrap®

- Device used to tension (tighten) flat strap in the field
- Removes "waviness" or "bowing" prior to fastening
- Ensures flat straps are as tight as possible when installed to achieve optimal system performance
- Fastens to standard track at the corners of the shear wall to provide a base for the tensioning process

\* The infill studs are not part of the StiffWall system and act independently of the shear wall. The floor slabs are part of the lateral load resisting system, but are not part of TSN StiffWall system.

# Load Bearing Wall Members

# Shear Wall Systems

## Planning Shear Walls

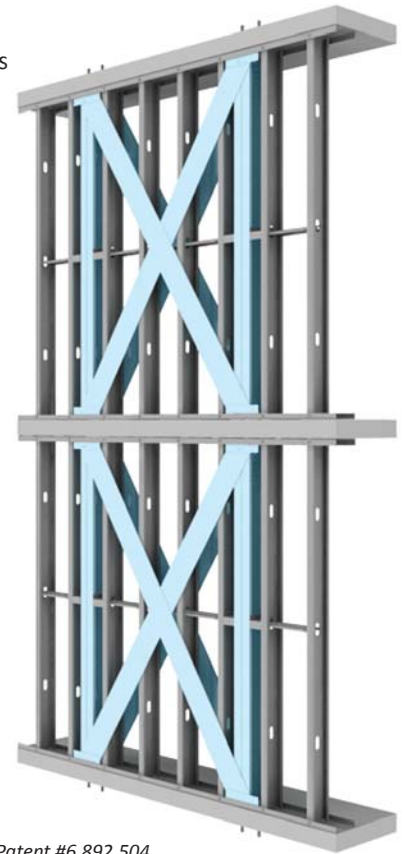
To develop an efficient shear wall layout several factors need to be considered:

- Height to Width aspect ratio guidelines should be observed in order to maximize effectiveness
- Shear walls should be evenly distributed across the floor plan to reduce additional lateral loads resulting from torsional effects on the floor plan
- Shear Walls located in load bearing walls may use floor dead loads with the appropriate load combination to offset uplift forces in the StiffWall
- Walls must stack vertically from top floor of structure to anchorage point or foundation
- Shear walls may overlap when the available wall space has been depleted

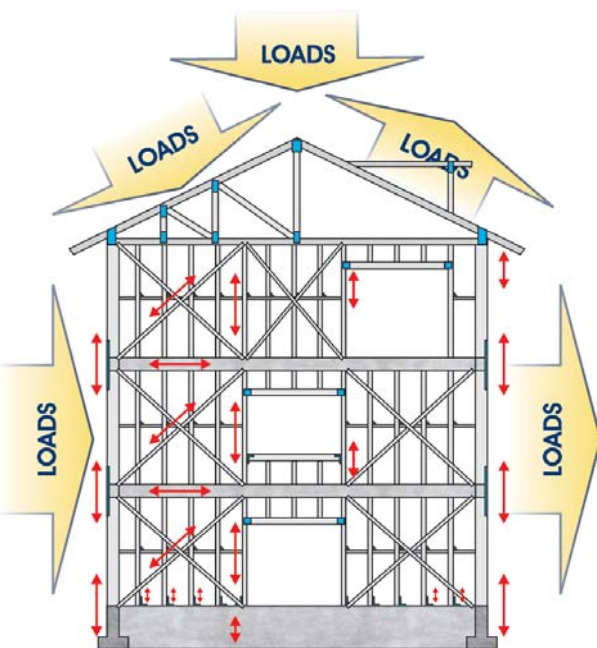
## StiffWall® Benefits That Add Value



- Templates are not required for hold-downs, eliminating unrealistic field procedures.
- Designed and manufactured to meet the performance requirements of the project.
- Satisfies maximum story drift requirements per IBC.
- Only mill certified high strength steel is used.
- Plywood sheathing with fastener schedules and/or CMU shear walls are eliminated.
- Inspection is limited to simple connections at corners.
- Exceeds industry standards for sizes and loads.
- Versatile design may be incorporated into steel, concrete and wood construction
- Tested for multi-story application and capable of carrying loads present in 10 story buildings.
- No welds or controlled inspections associated with welding.
- Simplified anchoring system through floors and at roof termination.
- Each component is selected to meet or exceed both strength and stiffness requirements of the applicable building code.
- The strap system is on the outside of the wall to facilitate electrical and pipe work in the wall cavity.
- Allows 3 times the window space of plywood braced structures.



US Patent #6,892,504



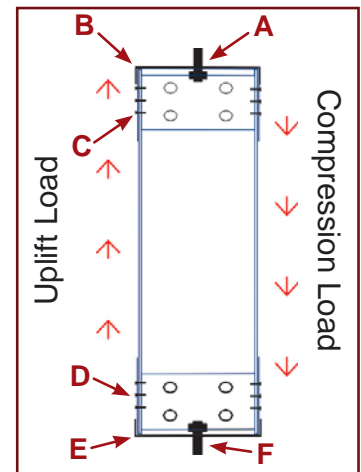
## Verifying Load Paths

Tracing and verifying load paths through a structure is crucial to protect engineering liability. Loads need to migrate from the roof, through the wall and floor systems, and terminate in the foundation. Shear wall systems transfer lateral loads from the member above (i.e. floor slab) to the member below (i.e. foundation). StiffWall® provides a traceable, easily verifiable load path through the structure.

- A** Load transfers from the floor above through the floor connector, and to the StiffWall Boot
- B** From the Boot to the Strap Track\*
- C** From the Strap Track to the flat strap\*
- D** Through the flat strap to the Strap Track at opposite corner\*
- E** From the Strap Track to the Boot
- F** From the Boot to the floor/system or foundation below

\* The column section assumes the compression loads.

\* Uplift forces are transferred through the StiffWall Boot through full bearing onto the SWS Boot Base Plate to the anchor.

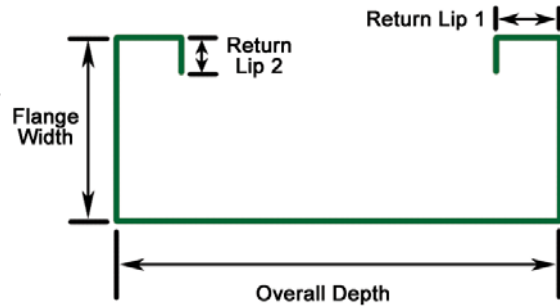


## Simple Steps to Design Shear Walls

The following pages offer a guide for the design of the StiffWall® shear wall system. In addition, SteelSmart® System software is available (at [www.steelSMARTsystem.com](http://www.steelSMARTsystem.com)) to select the optimal column, boot, strap and fasteners used in the installation of StiffWall. Contact The Steel Network for additional design information.

### Step 1 - Select StiffWall® Column

This unique column contains an additional return lip to form a double lip, thus creating a stronger, more effective bearing section. The column is the main vertical load-bearing transfer element in StiffWall. The images at right show a typical StiffWall Column shape.



#### Important Note:

The StiffWall Boot must be used with the StiffWall Column. Standard stud (S) sections will not fit inside the StiffWall Boot or Strap Track.

### Step 2 - Select StiffWall® Boot

The StiffWall Boot is a critical element enabling StiffWall to simultaneously resist higher loads and provide positive load transfer between elements, something conventional shear wall systems do not provide. Five different StiffWall Boots are available for accommodating changing loading requirements. Refer to the Boot Capacities table data to select the appropriate Boot to fit project conditions.

### Step 3 - Determine Column-To-Boot Uplift Fastener Requirement

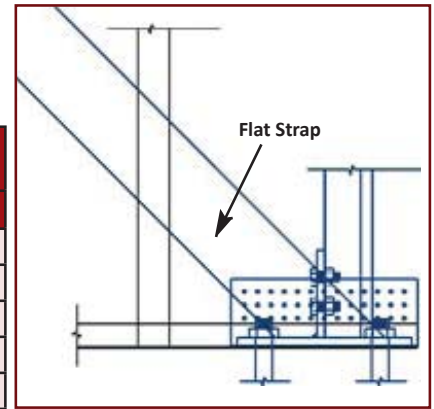
Attaching to the StiffWall Column with #12 screws or 0.5" A325 bolts, the boot enhances construction efficiency by reducing the number of installed fasteners used in conventional flat strap shear walls. For uplift conditions, calculate the number of screws for the Light Boot by dividing the total uplift force by the single screw shear. For Small, Medium, Transition, and Large Boots, refer to the chart below for the number of fasteners to the column.

Single Column Allowable Uplift Load (T2) (kips)																	
Column Thickness		Light Boot (1) # 12 Screw	Small Boot			Medium / Transition Boot										Large Boot	
			350, 362 & 400	550 & 600	800	350, 362 & 400			550 & 600	800	550 & 600	800	550 & 600	800	350, 362 & 400	550 & 600	800
(mils)	(inch)		(2) Bolts	(4) Bolts	(3) Bolts	(4) Bolts	(5) Bolts	(6) Bolts	(8) Bolts	(10) Bolts	(7) Bolts	(14) Bolts					
33	0.0346	0.27	1.71	3.43	3.43	2.57	3.43	4.28	5.14	5.14	6.85	6.85	7.50	8.56	5.99	9.78	11.30
43	0.0451	0.41	2.30	4.59	4.59	3.45	4.59	5.74	6.89	6.89	9.19	9.19	9.77	11.48	8.04	12.74	14.72
54	0.0566	0.57	2.97	5.94	5.94	4.46	5.94	7.43	8.91	8.91	11.88	11.88	12.26	14.75	10.40	15.99	18.48
68	0.0713	0.78	3.89	7.77	7.77	5.83	7.77	9.71	11.65	11.65	15.45	15.54	15.45	18.58	13.60	20.15	23.28
97	0.1017	0.78	5.96	11.92	11.92	8.94	11.92	14.90	17.88	17.88	22.04	23.84	22.04	26.50	20.86	28.74	33.20
118	0.1242	0.78	7.66	14.64	15.32	11.49	15.32	19.15	22.98	22.98	26.91	30.64	26.91	32.37	26.81	35.09	40.56
Double Column Allowable Uplift Load (T2) (kips)																	
Column Thickness		Light Boot (1) # 12 Screw	Small Boot			Medium / Transition Boot										Large Boot	
			350, 362 & 400	550 & 600	800	350, 362 & 400			550 & 600	800	550 & 600	800	550 & 600	800	350, 362 & 400	550 & 600	800
(mils)	(inch)		(2) Bolts	(4) Bolts	(3) Bolts	(4) Bolts	(5) Bolts	(6) Bolts	(8) Bolts	(10) Bolts	(7) Bolts	(14) Bolts					
33	0.0346	N / A	3.43	6.85	6.85	5.14	6.85	8.56	10.28	10.28	13.70	13.70	14.99	17.13	11.99	19.55	22.59
43	0.0451	N / A	4.59	9.19	9.19	6.89	9.19	11.48	13.78	13.78	18.37	18.37	19.54	22.97	16.08	25.49	29.45
54	0.0566	N / A	5.94	11.88	11.88	8.91	11.88	14.85	17.82	17.82	23.77	23.77	24.53	29.50	20.80	31.98	36.96
68	0.0713	N / A	7.77	15.54	15.54	11.65	15.54	19.42	23.31	23.31	30.90	31.08	30.90	37.16	27.19	40.29	46.55
97	0.1017	N / A	8.84	17.67	17.67	13.25	17.67	22.09	26.51	26.51	35.34	35.34	44.07	44.18	30.93	57.47	61.85
118	0.1242	N / A	8.84	17.67	17.67	13.25	17.67	22.09	26.51	26.51	35.34	35.34	44.18	44.18	30.93	61.85	61.85

- Bolts referenced in table are ASTM A325 bolts.
- Refer to the Design Example for uplift requirements.
- Allowable loads for screws are based on AISI S100-07 Specification, Section E4.3.
- Maximum allowable load per (1) #12 screw in shear is equal to 0.849 kips, based on commercial screw data.
- Allowable loads for bolts are based on AISI S100-07, Section E3.3.2.
- Maximum allowable load per (1) A325 bolt in shear is equal to 4.42 kips, based on AISI S100-07, Appendix A, Table E3.4-1.
- \* Compression loads are transferred via full column bearing onto boot.

## Step 4 - Select Stiffwall® Flat Strap

Flat strap is the tension element used to transfer loads between diagonally located strap tracks. Flat strap selection is simplified to 6 strap types (see chart below), with load capacity factored using standard 12ga (97mils) strap track.



Strap Width (in)	Strap Thickness (mil)	Yield Strength (ksi)	Recommended # of screws/ row (#)	Allowable Tension in Single Strap (kips)	No. of #12 Screws for Max. Strap Tension # (kips)
4	54	50	4	5.20	10 (5.7 k)
6	54		6	7.80	14 (7.98 k)
8	54		8	10.39	19 (10.82 k)
8	68		8	13.09	17 (13.20 k)
10	68		10	16.37	22 (17.09 k)

- Screw shear values are based on #12 (0.216") screw attached to 97 mil (12 ga) Strap Track.
- Minimum screw spacing = 3d
- Minimum screw edge distance = 1.5d

It is recommended to limit the use of 10" flat strap to shear wall panels that have aspect ratio > 0.72:1 (36 degrees)

## Step 5 - Condition 1: Anchor Design At Foundation

Refer to the Hilti North American Product Technical 2011 Edition Volume 2, page 160 to design anchors at the foundation. For typical details of StiffWall at foundation, see Example Details provided in this catalog. TSN recommends the use of a washer, lock washer, double-nut washer, or tack weld at each end of the bolt.

Allowable Tension and Shear Values of Hilti HIT HY 150 MAX Adhesive Anchors							
Anchor Diameter (in)	Embedment Depth (in)	Tension			Shear (Non Seismic Design)		
		Based on Bond or Concrete		Based on Steel Strength	Based on Bond or Concrete		Based on Steel Strength
		f'c = 2000 psi (lb)	f'c = 4000 psi (lb)	ASTM A193 B7 (lb)	f'c = 2000 psi (lb)	f'c = 4000 psi (lb)	ASTM A193 B7 (lb)
7/8"	4	3,375	5,300	24,805	7,670	10,840	12,780
	7 7/8	9,910	14,815		17,175	24,290	
	10 1/2	14,385	15,345		26,440	37,390	
1 1/4"	5 5/8	6,985	9,935	50,620	13,180	18,640	26,080
	11 1/4	18,345	30,085		35,050	49,570	

- Bond, concrete, and steel values are referenced from Hilti North American Product Technical Guide 2011 Edition Volume 2 and Hilti ICC ESR-1967.
- Apply influence factors for spacing and/or edge distance to concrete/bond values, then compare to the steel strength value. The lesser value is to be used for design.
- Applied tension force shall include tension resulting from prying action produced by deformation of connected parts.
- For design of anchorage under seismic conditions, refer to ACI 318 Appendix D - Anchoring to Concrete provisions.

## Step 5 - Condition 2: Through Floor Fastener Connection

Refer to the Hilti North American Product Technical 2011 Edition Volume 2, page 160 to design through floor bolt fasteners. For typical details of StiffWall at top termination (roof) and through floors, see Example Details provided in this catalog. TSN recommends use of a washer, lock washer, double-nut washer, or tack weld at each end of the bolt.

Fastening StiffWall® Boot Through Floor		
Allowable Shear and Tension		
Shear Stress (F <sub>v</sub> ) for A325 Threads (ksi)	Tension Stress (F <sub>t</sub> ) (ksi)	Combined Shear (F <sub>v</sub> ) and Tension (F <sub>t</sub> )*
22.5	45.0	Section J3-7, AISC 2005 Spec.

- Ensure full bearing between through-floor bolts and the floor slab. Enlarged or notched bolt holes in the slab must be filled with grout.
- Applied tension force shall include tension resulting from prying action produced by deformation of the connected parts.
- The area of a 7/8" bolt = 0.60 in<sup>2</sup> and area of 1 1/4" bolt = 1.23 in<sup>2</sup>.
- Allowable Shear per one 7/8" A325 Bolt = 13.5 kips.
- Allowable Shear per one 1 1/4" A325 Bolt = 27.7 kips.
- Allowable Tension per one 7/8" A325 Bolt = 27.0 kips.
- Allowable Tension per one 1 1/4" A325 Bolt = 55.2 kips.
- **Boot Base plate guide holes for wall widths less than 5.5" accommodate 7/8" through-rods for light, small, medium, and large boots.**
- **Boot Base plate guide holes for wall widths greater than or equal to 5.5" accommodate 7/8" through-rods for light, small, and medium boots. For large boots the base plate guide holes accommodate 1 1/4" through-rods. To transition from a large boot with 1 1/4" through rods to any other boot type, a transition boot kit is required, which will accommodate 1 1/4" through-rods on the base of wall, and 7/8" through rods at the head of the wall.**

\* Reference is AISI S100-07, Section E3.3.2.

# Load Bearing Wall Members

# Pre-Assembled Columns/Boots

## Order Information

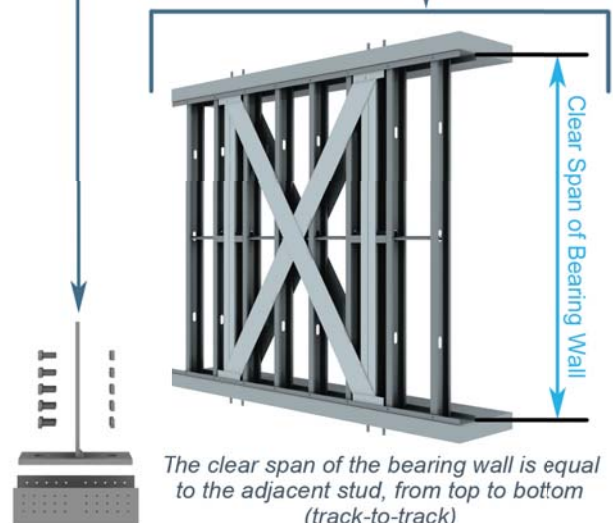
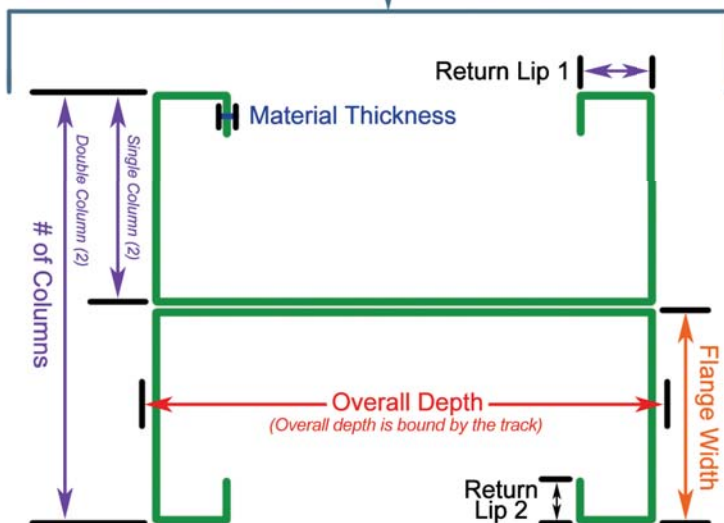
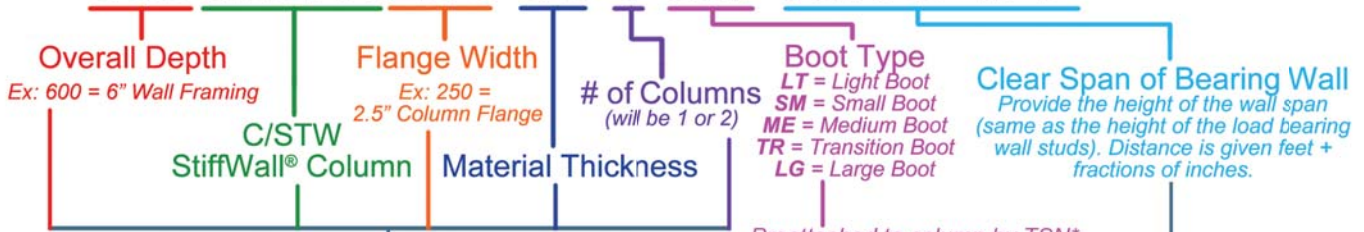
StiffWalls consist of two Column/Boot Assemblies (at each end post) and Flat Strap (2 sides of X-bracing). The StiffWall fits into or is embedded into the load bearing and non-load bearing walls. Do your stud take off as normal and order the Column/Boot Assembly and the Flat Strap as separate items. When ordering columns, determine the height of the bearing wall. TSN will size the StiffWall Column/Boot Assembly factoring in the dimensions of the boots at top and bottom. Each column is shipped with the boots pre-attached at the top and bottom as shown in the image to the right.



The added value of the pre-installed boots minimizes tolerance issues during erection. Simply specify the clear span of the bearing wall system and TSN will ship the Column/Boot assembly to meet the given wall height at a tolerance of +0/-1/8".

## Nomenclature

### 600C/STW250-68-1-SM-10ft-9-1/4"

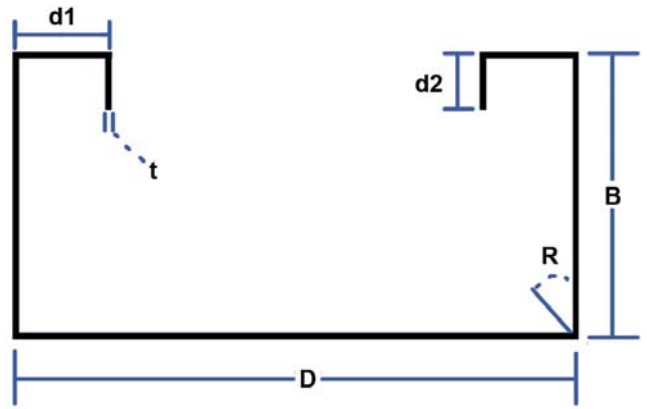




# Load Bearing Wall Members

# StiffWall® Column Product Profile

## 600C/STW250-68



### Material Properties

ASTM A1003/A1003M or ASTM A653/A653M, Grade 50 (340), 50ksi (340MPa) minimum yield strength, 65ksi (450 MPa) minimum tensile strength, G-60 (Z180) hot-dipped galvanized coating; or equivalent.

StiffWall® Column Product Profile

Section (All 50 ksi)	Overall Depth	Flange Width	Return Lip 1	Return Lip 2	Inside Bend Radius	Design Thickness	Unit Weight (lbs/ft)
	D	B	d1	d2	R	t	
	(in)	(in)	(in)	(in)	(in)	(in)	
350C/STW200-33	3.139	2	0.5892	0.5	0.105	0.0346	1.035
350C/STW200-43	3.139	2	0.6102	0.5	0.105	0.0451	1.344
350C/STW200-54	3.139	2	0.6332	0.5	0.105	0.0566	1.680
350C/STW200-68	3.139	2	0.6626	0.5	0.105	0.0713	2.104
350C/STW200-97	3.139	2	0.7234	0.5	0.105	0.1017	2.967
350C/STW200-118	3.139	2	0.7684	0.5	0.105	0.1242	3.587
362C/STW200-33	3.264	2	0.5892	0.5	0.105	0.0346	1.050
362C/STW200-43	3.264	2	0.6102	0.5	0.105	0.0451	1.364
362C/STW200-54	3.264	2	0.6332	0.5	0.105	0.0566	1.704
362C/STW200-68	3.264	2	0.6626	0.5	0.105	0.0713	2.135
362C/STW200-97	3.264	2	0.7234	0.5	0.105	0.1017	3.010
362C/STW200-118	3.264	2	0.7684	0.5	0.105	0.1242	3.639
400C/STW200-33	3.639	2	0.5892	0.5	0.105	0.0346	1.094
400C/STW200-43	3.639	2	0.6102	0.5	0.105	0.0451	1.421
400C/STW200-54	3.639	2	0.6332	0.5	0.105	0.0566	1.776
400C/STW200-68	3.639	2	0.6626	0.5	0.105	0.0713	2.226
400C/STW200-97	3.639	2	0.7234	0.5	0.105	0.1017	3.140
400C/STW200-118	3.639	2	0.7684	0.5	0.105	0.1242	3.798
550C/STW250-43	5.139	2.5	0.6102	0.5	0.105	0.0451	1.805
550C/STW250-54	5.139	2.5	0.6332	0.5	0.105	0.0566	2.258
550C/STW250-68	5.139	2.5	0.6626	0.5	0.105	0.0713	2.832
550C/STW250-97	5.139	2.5	0.7234	0.5	0.105	0.1017	4.005
550C/STW250-118	5.139	2.5	0.7684	0.5	0.105	0.1242	4.853
600C/STW250-43	5.639	2.5	0.6102	0.5	0.105	0.0451	1.882
600C/STW250-54	5.639	2.5	0.6332	0.5	0.105	0.0566	2.354
600C/STW250-68	5.639	2.5	0.6626	0.5	0.105	0.0713	2.954
600C/STW250-97	5.639	2.5	0.7234	0.5	0.105	0.1017	4.178
600C/STW250-118	5.639	2.5	0.7684	0.5	0.105	0.1242	5.064
800C/STW250-43	7.639	2.5	0.6102	0.5	0.105	0.0451	2.189
800C/STW250-54	7.639	2.5	0.6332	0.5	0.105	0.0566	2.739
800C/STW250-68	7.639	2.5	0.6626	0.5	0.105	0.0713	3.439
800C/STW250-97	7.639	2.5	0.7234	0.5	0.105	0.1017	4.871
800C/STW250-118	7.639	2.5	0.7684	0.5	0.105	0.1242	5.908

Standard (S) section studs will not fit in the StiffWall® Boot and should not be considered as a substitute for the StiffWall Column.

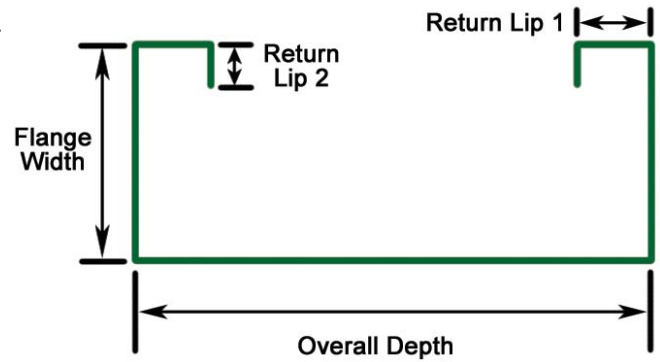
## Important Notes

1. Section properties and capacities are calculated in accordance with AISI-S100-07 with 2010 Supplement.
2. Tabulated gross properties are based on the full-unreduced cross section of the studs, away from punchouts.
3. Effective section properties incorporate the strength increase from the cold-work of forming as applicable per AISI S100-07 Sec. A7.2.
4. Net effective section properties are calculated at a cross section through the punchout.
5. For deflection calculations, use the effective moment of inertia.
6. The effective moment of inertia for deflection is calculated at a stress which results in a section modulus such that the stress times the section modulus at that stress is equal to the allowable moment. AISI S100-07 Procedure I for serviceability determination has been used.
7. The StiffWall® Column must be used with the StiffWall Boot. Standard (S) sections will not fit inside the StiffWall boot or Strap Track.

StiffWall® Column Section Properties														
Section (All 50 ksi)	Gross Properties												Effective Properties 50 ksi	
	Area	I <sub>x</sub>	S <sub>x</sub>	R <sub>x</sub>	I <sub>y</sub>	R <sub>y</sub>	Jx1000	C <sub>w</sub>	R <sub>o</sub>	X <sub>o</sub>	m	β	I <sub>x</sub>	S <sub>x (net)</sub>
	(in <sup>2</sup> )	(in <sup>4</sup> )	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>6</sup> )	(in)	(in)	(in)		(in <sup>4</sup> )	(in <sup>3</sup> )
350C/STW200-33	0.304	0.489	0.312	1.268	0.185	0.781	0.121	0.607	2.524	-2.038	1.209	0.348	0.476	0.248
350C/STW200-43	0.395	0.629	0.401	1.262	0.239	0.777	0.268	0.787	2.515	-2.032	1.206	0.347	0.629	0.355
350C/STW200-54	0.494	0.777	0.495	1.255	0.295	0.774	0.527	0.982	2.506	-2.026	1.203	0.346	0.777	0.462
350C/STW200-68	0.618	0.960	0.612	1.246	0.366	0.769	1.048	1.226	2.493	-2.018	1.199	0.345	0.960	0.599
350C/STW200-97	0.872	1.315	0.838	1.228	0.502	0.759	3.006	1.718	2.467	-2.001	1.190	0.342	1.315	0.819
350C/STW200-118	1.054	1.555	0.991	1.215	0.595	0.752	5.402	2.065	2.448	-1.988	1.183	0.341	1.555	0.969
362C/STW200-33	0.309	0.535	0.328	1.317	0.188	0.781	0.123	0.644	2.531	-2.016	1.198	0.366	0.522	0.260
362C/STW200-43	0.401	0.689	0.422	1.311	0.242	0.778	0.272	0.834	2.523	-2.010	1.195	0.365	0.689	0.373
362C/STW200-54	0.501	0.852	0.522	1.304	0.300	0.774	0.535	1.040	2.513	-2.004	1.192	0.364	0.852	0.486
362C/STW200-68	0.627	1.053	0.645	1.295	0.371	0.769	1.063	1.299	2.501	-1.996	1.188	0.363	1.053	0.633
362C/STW200-97	0.885	1.443	0.884	1.277	0.510	0.760	3.050	1.817	2.475	-1.979	1.179	0.361	1.443	0.867
362C/STW200-118	1.069	1.709	1.047	1.264	0.605	0.752	5.481	2.183	2.455	-1.966	1.172	0.359	1.709	1.026
400C/STW200-33	0.322	0.689	0.379	1.464	0.197	0.782	0.128	0.764	2.562	-1.952	1.167	0.420	0.673	0.297
400C/STW200-43	0.418	0.887	0.488	1.458	0.253	0.779	0.283	0.989	2.553	-1.946	1.164	0.419	0.887	0.426
400C/STW200-54	0.522	1.099	0.604	1.451	0.314	0.775	0.557	1.232	2.544	-1.940	1.161	0.418	1.099	0.556
400C/STW200-68	0.654	1.360	0.748	1.442	0.388	0.770	1.108	1.536	2.531	-1.932	1.157	0.417	1.360	0.732
400C/STW200-97	0.923	1.871	1.028	1.424	0.534	0.761	3.181	2.143	2.505	-1.915	1.149	0.415	1.871	1.013
400C/STW200-118	1.116	2.220	1.220	1.411	0.633	0.753	5.719	2.569	2.485	-1.903	1.142	0.414	2.220	1.201
550C/STW250-43	0.530	2.281	0.888	2.074	0.491	0.962	0.360	3.069	3.175	-2.203	1.321	0.518	2.258	0.748
550C/STW250-54	0.663	2.835	1.103	2.067	0.609	0.958	0.708	3.821	3.165	-2.197	1.318	0.518	2.835	0.952
550C/STW250-68	0.832	3.527	1.373	2.059	0.757	0.954	1.410	4.763	3.153	-2.189	1.314	0.518	3.527	1.240
550C/STW250-97	1.177	4.902	1.908	2.041	1.050	0.944	4.058	6.644	3.127	-2.173	1.306	0.517	4.902	1.873
550C/STW250-118	1.426	5.864	2.282	2.028	1.253	0.937	7.308	7.966	3.108	-2.161	1.299	0.517	5.864	2.282
600C/STW250-43	0.553	2.825	1.002	2.261	0.508	0.958	0.375	3.671	3.253	-2.134	1.288	0.570	2.802	0.849
600C/STW250-54	0.692	3.514	1.246	2.254	0.630	0.955	0.739	4.568	3.244	-2.128	1.285	0.569	3.514	1.079
600C/STW250-68	0.868	4.376	1.552	2.245	0.783	0.950	1.471	5.692	3.231	-2.121	1.281	0.569	4.376	1.404
600C/STW250-97	1.228	6.093	2.161	2.228	1.086	0.941	4.233	7.932	3.205	-2.104	1.273	0.569	6.093	2.121
600C/STW250-118	1.488	7.298	2.588	2.215	1.297	0.934	7.626	9.503	3.186	-2.092	1.266	0.569	7.298	2.588
800C/STW250-43	0.643	5.723	1.498	2.983	0.563	0.936	0.436	6.814	3.661	-1.904	1.176	0.729	5.709	1.169
800C/STW250-54	0.805	7.131	1.867	2.976	0.700	0.932	0.860	8.472	3.651	-1.898	1.173	0.730	7.131	1.627
800C/STW250-68	1.011	8.900	2.330	2.968	0.870	0.928	1.712	10.544	3.639	-1.890	1.169	0.730	8.900	2.121
800C/STW250-97	1.431	12.452	3.260	2.950	1.207	0.918	4.934	14.662	3.613	-1.873	1.160	0.731	12.452	3.199
800C/STW250-118	1.736	14.968	3.919	2.936	1.442	0.911	8.897	17.540	3.594	-1.861	1.153	0.732	14.968	3.919

## Important Notes

1. Allowable loads are based on specified weak axis and torsional bracing for axial load calculation.
2. Sections are punched with a standard punch-out 1.5" wide located along the centerline of the web 24" o.c.
3. Allowable loads are based on a punched section for axial load calculation.
4. The allowable axial strength for distortional buckling is based on an assumed  $k_y = 0$ .
5. Weak axis and torsional bracing should have sufficient strength and stiffness to resist the axial load.
6. Strength increase due to cold work of forming is incorporated in calculating allowable loads as per AISI S100-07 Sec. A7.2.
7. The StiffWall® Column must be used with the StiffWall Boot. Standard (S) sections will not fit inside the StiffWall Boot or Strap Track.
8. StiffWall Columns are delivered to the job site with Boots pre-attached at the top and bottom for fast installation.



Single Section Table

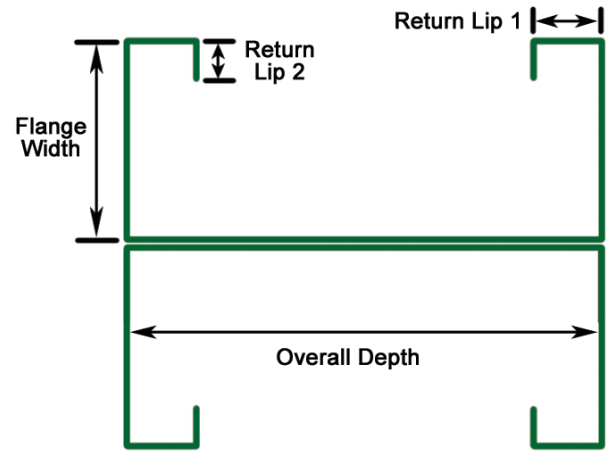
Section (All 50 ksi)	Maximum Unbraced Length = 48"						Maximum Unbraced Length = 60"					
	SW Column Height (ft)						SW Column Height (ft)					
	8	9	10	12	14	16	8	9	10	12	14	16
350C/STW200-33	2.86	2.64	2.41	1.95	1.57	1.27	2.29	2.12	1.96	1.64	1.37	1.15
350C/STW200-43	3.93	3.56	3.18	2.53	2.03	1.64	3.04	2.80	2.57	2.14	1.78	1.49
350C/STW200-54	4.94	4.47	3.98	3.15	2.52	2.04	3.87	3.55	3.25	2.70	2.23	1.86
350C/STW200-68	6.24	5.63	5.00	3.95	3.15	2.54	4.97	4.55	4.14	3.41	2.81	2.33
350C/STW200-97	8.99	8.08	7.14	5.57	4.40	3.54	7.46	6.75	6.09	4.94	4.02	3.29
350C/STW200-118	11.07	9.91	8.72	6.74	5.30	4.24	9.48	8.51	7.62	6.09	4.91	3.99
362C/STW200-33	2.99	2.78	2.56	2.09	1.71	1.39	2.42	2.26	2.09	1.77	1.49	1.25
362C/STW200-43	4.17	3.83	3.45	2.75	2.21	1.80	3.27	3.02	2.78	2.33	1.94	1.62
362C/STW200-54	5.27	4.81	4.32	3.44	2.76	2.24	4.15	3.83	3.51	2.93	2.43	2.03
362C/STW200-68	6.66	6.06	5.44	4.30	3.44	2.79	5.33	4.90	4.47	3.71	3.06	2.54
362C/STW200-97	9.59	8.69	7.76	6.08	4.82	3.88	8.00	7.28	6.59	5.37	4.38	3.60
362C/STW200-118	11.79	10.66	9.49	7.37	5.80	4.66	10.13	9.17	8.24	6.63	5.35	4.37
400C/STW200-33	3.33	3.15	2.95	2.53	2.09	1.73	2.76	2.62	2.47	2.13	1.82	1.55
400C/STW200-43	4.74	4.44	4.12	3.42	2.81	2.32	3.84	3.61	3.36	2.89	2.46	2.07
400C/STW200-54	6.15	5.75	5.33	4.38	3.53	2.88	5.02	4.70	4.35	3.68	3.08	2.59
400C/STW200-68	7.88	7.33	6.73	5.49	4.42	3.59	6.43	6.01	5.54	4.66	3.89	3.25
400C/STW200-97	11.31	10.48	9.60	7.77	6.20	5.02	9.53	8.88	8.16	6.76	5.57	4.62
400C/STW200-118	13.88	12.83	11.73	9.43	7.49	6.03	11.99	11.14	10.23	8.36	6.83	5.62
550C/STW250-43	6.47	6.34	6.20	5.84	5.39	4.85	5.86	5.76	5.64	5.30	4.89	4.43
550C/STW250-54	8.49	8.32	8.14	7.83	7.30	6.45	7.86	7.76	7.61	7.18	6.53	5.81
550C/STW250-68	12.15	11.94	11.55	10.62	9.57	8.45	10.78	10.51	10.20	9.46	8.59	7.64
550C/STW250-97	18.75	18.21	17.59	16.15	14.50	12.75	16.61	16.18	15.68	14.50	13.12	11.59
550C/STW250-118	23.71	23.00	22.19	20.19	17.89	15.50	21.09	20.47	19.76	18.09	16.17	14.10
600C/STW250-43	6.69	6.59	6.46	6.17	5.80	5.35	6.11	6.03	5.93	5.69	5.34	4.94
600C/STW250-54	8.80	8.66	8.49	8.14	7.81	7.25	8.10	8.02	7.94	7.68	7.25	6.60
600C/STW250-68	12.57	12.38	12.18	11.48	10.55	9.52	11.42	11.20	10.95	10.32	9.57	8.70
600C/STW250-97	19.77	19.32	18.81	17.57	16.12	14.52	17.67	17.32	16.91	15.93	14.72	13.36
600C/STW250-118	25.13	24.55	23.88	22.27	20.38	18.30	22.59	22.14	21.60	20.30	18.71	16.90
800C/STW250-43	7.17	7.13	7.08	6.94	6.74	6.49	6.67	6.64	6.60	6.49	6.35	6.15
800C/STW250-54	9.50	9.44	9.37	9.17	8.90	8.55	8.81	8.76	8.71	8.56	8.36	8.18
800C/STW250-68	13.55	13.47	13.37	13.10	12.74	12.31	12.64	12.59	12.52	12.34	12.03	11.53
800C/STW250-97	22.06	21.88	21.65	21.03	20.20	19.17	20.09	19.95	19.78	19.34	18.73	17.93
800C/STW250-118	28.31	28.08	27.78	26.98	25.90	24.57	25.89	25.71	25.49	24.91	24.11	23.07

# Load Bearing Wall Members

# Double-Post Axial Load Tables

## Important Notes

1. Allowable loads are based on specified weak axis and torsional bracing for axial load calculation.
2. Sections are punched with a standard punch-out 1.5" wide located along the centerline of the web 24" o.c.
3. Allowable loads are based on a punched section for axial load calculation.
4. The allowable axial strength for distortional buckling is based on an assumed  $k_y = 0$ .
5. Weak axis and torsional bracing should have sufficient strength and stiffness to resist the axial load.
6. Strength increase due to cold work of forming is incorporated in calculating allowable loads as per AISI S100-07 Sec. A7.2.
7. Allowable loads for double sections are based on maximum attachment interval of 24" o.c. via weld, bolts, or screws.
8. The StiffWall® Column must be used with the StiffWall Boot. Standard (S) sections will not fit inside the StiffWall Boot or Strap Track.
9. StiffWall Columns are delivered to the job site with Boots pre-attached at the top and bottom for fast installation.



**Double Section Table (Fastener Spacing = 24 in)**

Section (Back-to-Back)	Maximum Unbraced Length = 48"						Maximum Unbraced Length = 60"					
	SW Column Height (ft)						SW Column Height (ft)					
	8	9	10	12	14	16	8	9	10	12	14	16
(2) 350C/STW200-33	8.06	7.40	6.71	5.34	4.06	3.12	8.06	7.40	6.71	5.34	4.06	3.12
(2) 350C/STW200-43	11.62	10.62	9.45	7.13	5.24	4.01	11.62	10.62	9.45	7.13	5.24	4.01
(2) 350C/STW200-54	14.91	13.33	11.77	8.80	6.47	4.95	14.91	13.33	11.77	8.80	6.47	4.95
(2) 350C/STW200-68	18.54	16.56	14.59	10.86	7.98	6.11	18.54	16.56	14.59	10.86	7.98	6.11
(2) 350C/STW200-97	25.75	22.92	20.11	14.84	10.90	8.35	25.75	22.92	20.11	14.84	10.90	8.35
(2) 350C/STW200-118	30.78	27.32	23.91	17.52	12.87	9.86	30.78	27.32	23.91	17.52	12.87	9.86
(2) 362C/STW200-33	8.29	7.65	7.00	5.68	4.40	3.42	8.29	7.65	7.00	5.68	4.40	3.42
(2) 362C/STW200-43	11.99	11.03	9.95	7.75	5.75	4.41	11.99	11.03	9.95	7.75	5.75	4.41
(2) 362C/STW200-54	15.60	14.11	12.57	9.62	7.11	5.44	15.60	14.11	12.57	9.62	7.11	5.44
(2) 362C/STW200-68	19.48	17.54	15.60	11.89	8.78	6.72	19.48	17.54	15.60	11.89	8.78	6.72
(2) 362C/STW200-97	27.10	24.33	21.56	16.31	12.01	9.19	27.10	24.33	21.56	16.31	12.01	9.19
(2) 362C/STW200-118	32.42	29.04	25.68	19.31	14.19	10.86	32.42	29.04	25.68	19.31	14.19	10.86
(2) 400C/STW200-33	8.83	8.29	7.72	6.53	5.35	4.23	8.48	8.29	7.72	6.53	5.35	4.23
(2) 400C/STW200-43	12.86	12.04	11.18	9.21	7.27	5.66	12.43	12.04	11.18	9.21	7.27	5.66
(2) 400C/STW200-54	17.04	15.77	14.45	11.81	9.25	7.08	16.55	15.77	14.45	11.81	9.25	7.08
(2) 400C/STW200-68	21.98	20.30	18.48	14.84	11.44	8.76	21.67	20.30	18.48	14.84	11.44	8.76
(2) 400C/STW200-97	30.86	28.30	25.68	20.51	15.70	12.02	30.86	28.30	25.68	20.51	15.70	12.02
(2) 400C/STW200-118	37.03	33.90	30.71	24.43	18.60	14.24	37.03	33.90	30.71	24.43	18.60	14.24
(2) 550C/STW250-43	12.94	14.58	14.16	13.22	12.19	11.06	13.93	13.93	13.93	13.22	12.19	11.06
(2) 550C/STW250-54	16.99	19.21	18.63	17.33	16.08	14.92	18.37	18.37	18.37	17.33	16.08	14.92
(2) 550C/STW250-68	24.31	27.22	26.38	24.66	22.40	19.62	26.12	26.12	26.12	24.66	22.40	19.62
(2) 550C/STW250-97	37.50	43.71	41.89	37.94	33.76	29.48	41.86	41.86	41.86	37.94	33.76	29.48
(2) 550C/STW250-118	47.42	54.95	52.61	47.56	42.06	36.17	53.18	53.18	52.61	47.56	42.06	36.17
(2) 600C/STW250-43	13.38	13.17	14.55	13.74	12.84	11.86	14.02	14.02	14.02	13.74	12.84	11.86
(2) 600C/STW250-54	17.61	17.32	19.20	18.08	16.83	15.84	18.50	18.50	18.50	18.08	16.83	15.84
(2) 600C/STW250-68	25.13	24.77	27.25	25.68	24.12	21.63	26.35	26.35	26.35	25.68	24.12	21.63
(2) 600C/STW250-97	39.53	38.65	43.92	40.46	36.72	32.84	42.44	42.44	42.44	40.46	36.72	32.84
(2) 600C/STW250-118	50.25	49.10	55.51	51.08	46.29	41.31	54.13	54.13	54.13	51.08	46.29	41.31
(2) 800C/STW250-43	14.35	14.26	14.16	13.87	14.41	13.78	14.20	14.20	14.20	14.20	14.20	13.78
(2) 800C/STW250-54	18.99	18.88	18.73	18.34	19.06	18.19	18.80	18.80	18.80	18.80	18.80	18.19
(2) 800C/STW250-68	27.10	26.94	26.73	26.19	27.16	25.97	26.85	26.85	26.85	26.85	26.85	25.97
(2) 800C/STW250-97	44.12	43.75	43.29	42.06	44.07	41.41	43.64	43.64	43.64	43.64	43.64	41.41
(2) 800C/STW250-118	56.63	56.15	55.56	53.96	56.36	52.97	56.12	56.12	56.12	56.12	56.12	52.97

## Boot Dimensions And Thickness

StiffWall® Boots are designed to provide the optimal cost-effective solution for shear wall connections. Five configurations are available to meet project requirements (Light, Small, Medium, Transition and Large). StiffWall Boots are sized to fit inside standard track and are available for 3.5", 3.625", 4", 5.5", 6" and 8" Depths. **During installation of StiffWall Boots, standard or plate washer shall be used with a size sufficient to cover the Boots' slots after installation.** The Steel Network will determine the actual bearing height the StiffWall Columns, which are delivered to the job site with Boots pre-attached at the top and bottom for fast installation.

**StiffWall® Strap Track**

The StiffWall® Strap Track is available in 12ga (97mils) thickness.

Center hole is for conditions where only one anchor is necessary

**Light Boot**

350-362-400 Depths

550-600-800 Depths

**Small Boot**

350-362-400 Depths

550-600-800 Depths

**Medium Boot**

350-362-400 Depths

550-600-800 Depths

**Transition Boot**

The StiffWall Transition Boot is used when the floor above uses a Medium Boot and the floor below uses a Large Boot (for depths greater than 4" only). The anchor hole of the Transition Boot at the base of the wall couples with that of the Large Boot at the underside of the floor below to maintain the continuity of the through-floor fasteners (1 ¼" threaded rods or anchors).

550-600-800 Depths (only)\*

**Large Boot**

350-362-400 Depths\*

550-600-800 Depths\*

\* Boots less than or equal to 4" contain guide holes for 7/8" anchors. Boots greater than 4" contain guide holes for 1 ¼" anchors.

## Subtract Boot Thickness to Determine Column Bearing Height

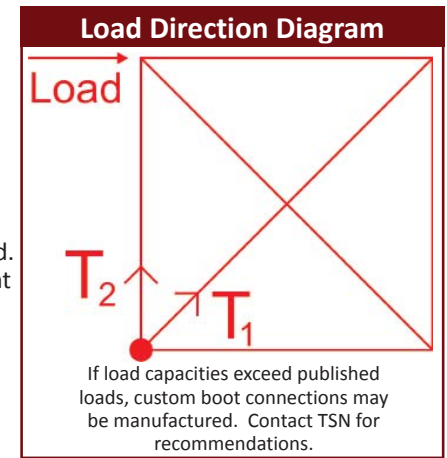
The Steel Network will determine the actual bearing height of a StiffWall Column by subtracting the thickness of the StiffWall Boot and Strap Track elements on which it is bearing. For each boot, the StiffWall Strap Track is 97mils thick. The dimensions of various boot elements are shown in the table below. Contact TSN for design recommendations or assistance with any light steel framing technical issue.

Boot Type	Strap Track Thickness	Base Plate Thickness	Additional Base Plate Thickness	Total Thickness of Two Boots <sup>1</sup>
Light	0.1017"	0	0.1242"	0.5"
Small, Medium, Transition	0.1017"	0.5"	0	1.25"
Large	0.1017"	0.75"	0	1.75"

<sup>1</sup> Total thickness rounded to nearest 1/32", with 1/32" added for installation tolerance.

## Important Notes

1. Allowable loads are based on analysis of loads and allowable stresses set by AISI S100-07 and AISC 2005 Spec.
2. Straps tension T1 is the summation of tension forces in the the two diagonal straps.
3. Load paths for straps tension and column uplift are independent in the boot connection and allowable loads T1 and T2 can be combined for the same boot.
4. Check combined tension and shear in anchor bolts due to applied T1 and T2 values as per AISC 2005 Specification, Sec. J3.7.
5. Allowable loads for wall aspect ratio other than listed can be interpolated, but not extrapolated.
6. Material Designation for cold-formed steel parts is ASTM A 1003/A 1003M, ST50H or equivalent (Min.  $F_y = 50$  ksi, Min.  $F_u = 65$  ksi).
7. Material Designation for structural steel parts is ASTM A 572/A 572M, Grade 50 or equivalent (Min.  $F_y = 50$  ksi, Min.  $F_u = 65$  ksi).
8. Fillet Weld Designation is E70XX Metal Arc or equivalent. Thickness as specified.
9. For seismic design with coefficient  $R > 3$ , consider connection special seismic requirements in AISI-Lateral Standard 2004.



## StiffWall® Boot Capacity (kips)

Width (in)	Wall		Light		Small / Medium / Transition		Large	
	Aspect Ratio		Straps Tension	Column Uplift	Straps Tension	Column Uplift	Straps Tension	Column Uplift
	Vertical:	Horizontal	T1	T2	T1	T2	T1	T2
3.5	0.6:1 (30.96 deg.)		10.88	2.22	18.6	8.65	18.6	19.46
	1:1 (45 deg.)		7.92	2.22	22.08	8.65	22.08	19.46
	2:1 (63.5 deg.)		6.26	2.22	26.81	8.65	29.01	19.46
3.625	0.6:1 (30.96 deg.)		10.51	2.24	18.6	8.98	18.6	20.21
	1:1 (45 deg.)		7.65	2.24	22.08	8.98	22.08	20.21
	2:1 (63.5 deg.)		6.04	2.24	25.88	8.98	29.01	20.21
4	0.6:1 (30.96 deg.)		9.52	2.3	18.6	9.98	18.6	22.46
	1:1 (45 deg.)		6.93	2.3	22.08	9.98	22.08	22.46
	2:1 (63.5 deg.)		5.48	2.3	23.46	9.98	29.01	22.46
5.5	0.6:1 (30.96 deg.)		6.93	2.49	18.6	13.98	21.48	35.76
	1:1 (45 deg.)		5.04	2.49	21.58	13.98	25.34	35.76
	2:1 (63.5 deg.)		3.98	2.49	17.06	13.98	32.23	35.76
6	0.6:1 (30.96 deg.)		6.35	2.55	18.6	15.32	21.48	39.16
	1:1 (45 deg.)		4.62	2.55	19.78	15.32	25.34	39.16
	2:1 (63.5 deg.)		3.65	2.55	15.64	15.32	32.23	39.16
8	0.6:1 (30.96 deg.)		4.76	2.75	18.6	20.65	21.48	52.8
	1:1 (45 deg.)		3.46	2.75	14.84	20.65	25.34	52.8
	2:1 (63.5 deg.)		2.74	2.75	11.73	20.65	25.81	52.8

## Each boot kit contains:



\* A Transition Boot Kit contains 2 Medium Base Plates, 2 Transition Base Plates, 4 Strap Tracks, and required A325 Column Bolts.

\*\* One bolt provided per hole into stud.

## Boot Kits

If field conditions preclude the use of pre-installed Column/Boot Assemblies, StiffWall Boots may be sold as "kits," not individual boots (there are four (4) boots per kit).

- If the project contains 10 StiffWall shear walls, order 10 Boot Kits (not 40 Boot Kits).
- There are 5 different Boot types available: "Light," "Small", "Medium", "Transition", and "Large"

## Sample Structure

The following example is used to illustrate the design capabilities of The Steel Network's StiffWall® SWS system. The designer can specify load rated, tested shear wall assemblies. The information contained within this catalog shows the step by step design process used to design TSN's StiffWall.

Certain assumptions are made within the catalog and example problem. All analyses are shown for example only and do not replace specific loading requirements or load combinations. Please contact The Steel Network for further information.

The example to the right utilizes StiffWall in the construction of a 5-story structure. Loads and reactions at each story have been provided as well as overall foundation reactions. Two load cases were examined (1) Dead + In-plane Wind; (2) Dead + 0.75 In-plane Wind + 0.75 Live.

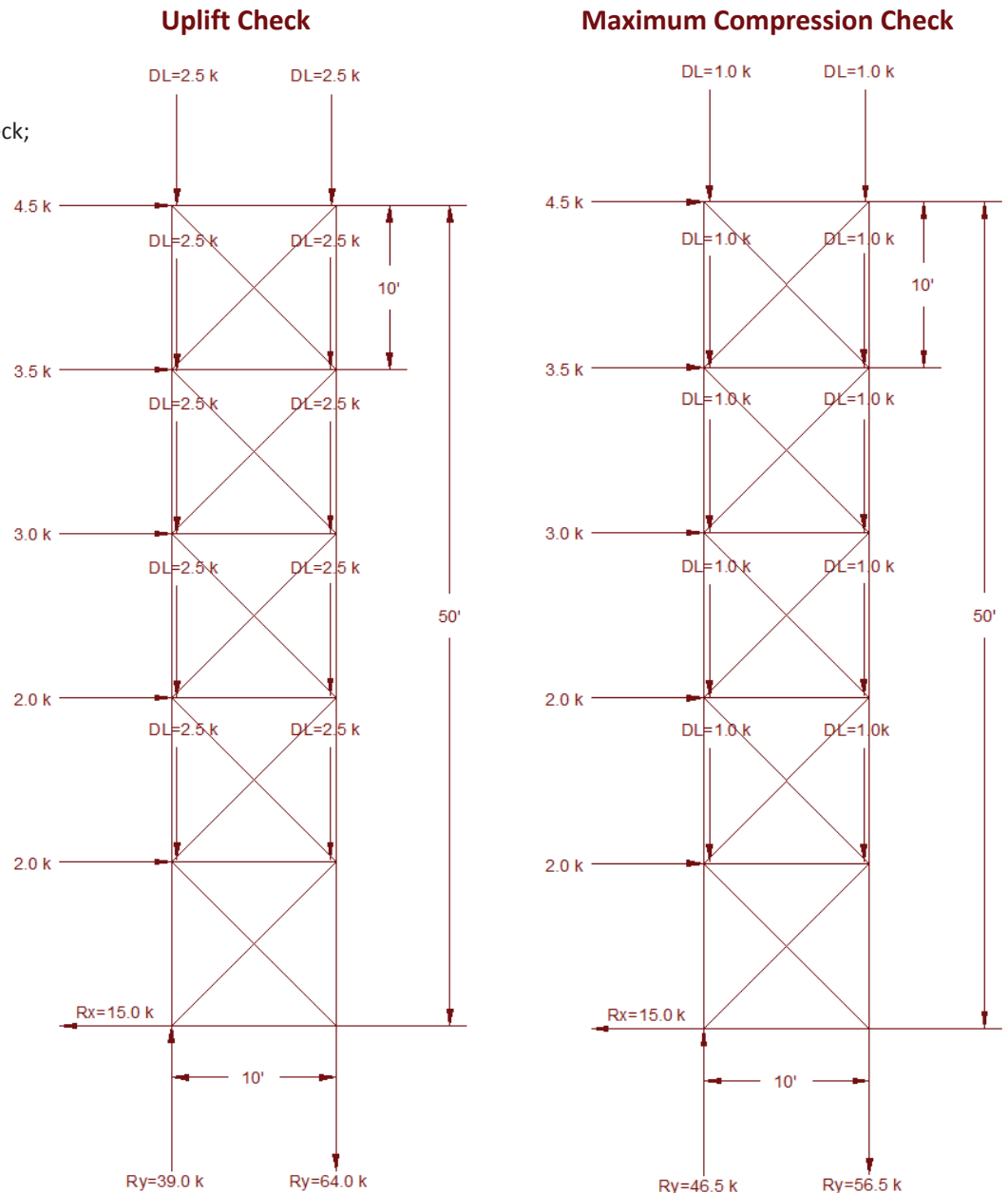
Dead + In-plane wind loads are the controlling forces in this example. The wall depth is 6" and bridging is provided 48" on center max. StiffWall does not transfer load between floors. Sufficient diaphragm stiffness or an additional compression member is required to transfer the load.

## Important Considerations:

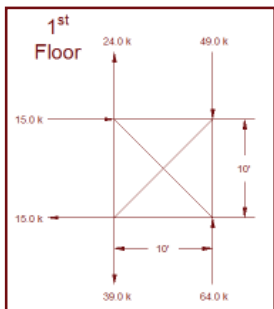
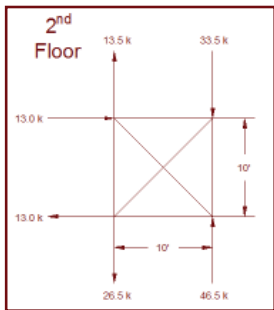
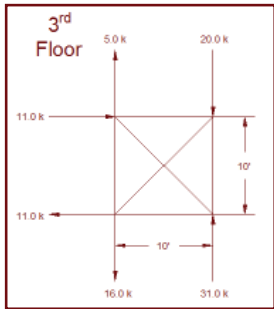
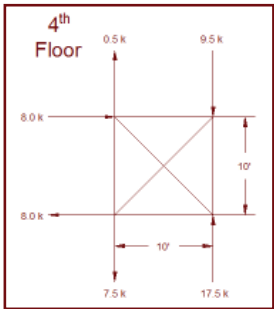
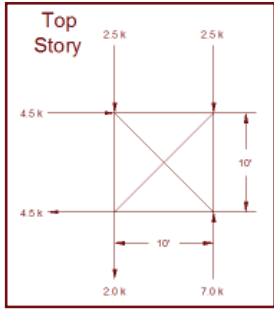
- Uplift and tension loads in StiffWall columns are calculated with ½ width or 5' tributary width (tension and uplift calculations only).
- Boundary members (columns) of SWS system in compression must be adequately laterally braced for that compression force (in this design example at 48" o.c.) See the bridging design example for details of lateral bracing calculations.
- StiffWall does not substitute for floor rigidity. Provide a compression member between StiffWall columns or ensure that floor diaphragm is sufficient for compressive loads between floors.
- Floor summaries on the next page refer to the design steps previously given. Step 5 is designed by others.
- $f_c$  of foundation concrete = 4,000psi

## Assumptions

- Stud Spacing = 24" o.c.
- Dead Load = 0.5K/ft
- Live Load = 0.75K/ft
- Tributary Width = 2.0' Compression Check;
- 5'0" Uplift Calculation
- D + W Checked
- D + 0.75L + 0.75W Checked



## Uplift Check



## The Top Story Shear Wall Will Have The Following Loads From Analysis:

- Column compression: 5.5 kips
  - Use 600C/STW250-43 with allowable capacity = 6.46 kips > 5.5 kips
- Use StiffWall® Small Boot with capacity of 19.781 kips (T1)
- Attach StiffWall Small Boot to column using (4) ½" A325 bolts
- The tension in the flat strap is: 6.36 kips / 2 = 3.18 kips per strap:
  - Use 4" - 54mil strap with capacity = 5.197 kips > 3.18 kips
  - Use (6) #12 screws with capacity = 3.42 kips > 3.18 kips

**Note:** No uplift/tension in column

## The 4<sup>th</sup> Floor Shear Wall Will Have The Following Loads From Analysis:

- Column compression: 14.5 kips
  - Use 600C/STW250-97 with allowable capacity = 18.81 kips > 14.5 kips
- Use StiffWall Small Boot with capacity of 19.781 kips (T1)
- Attach StiffWall Small Boot to column using (4) ½" A325 bolts
- The tension in the flat strap is: 11.3 kips / 2 = 5.65 kips per strap:
  - Use 6" x 54 mil strap with capacity = 7.796 kips > 5.65 kips
  - Use (10) #12 screws with capacity = 5.7 kip > 5.65 kips

**Note:** No uplift/tension in column

## The 3<sup>rd</sup> Floor Shear Wall Will Have The Following Loads From Analysis:

- Column compression: 26.5 kips
  - Use (2) 600C/STW250-68 with allowable capacity = 27.25 kips > 26.5 kips
- 5 kips uplift/tension in column\*
  - Use StiffWall Small Boot with capacity of 19.781 kips (T1); 15.317 kips (T2)
- Attach StiffWall Small Boot to column using (4) ½" A325 bolts
  - Capacity of (4) ½" A325 bolts to 68 mil columns = 15.539 kips > 5 kips (T2)
- The tension in the flat strap is: 15.56 kips / 2 = 7.78 kips per strap:
  - Use 6" - 54 mil strap with capacity = 7.796 kips > 7.78 kips
  - Use (14) #12 screws with capacity = 7.98 kips > 7.78 kips

\* Uplift calculated using 5' tributary width and dead load used to offset uplift at the tension side of the wall

## The 2<sup>nd</sup> Floor Shear Wall Will Have The Following Loads From Analysis:

- Column compression: 40.5 kips
  - Use (2) 600C/STW250-97 with allowable capacity = 43.92 kips > 40.5 kips
- 13.5 kips uplift/tension in column\*
  - Use StiffWall Transition Boot with capacity of 19.781 kips (T1); 17.406 kips (T2)
- Attach StiffWall® Transition Boot to column using (6) ½" A325 bolts
  - Capacity of (6) ½" A325 bolts to 97 mil columns = 26.507 kips > 13.5 kips (T2)
- The tension in the flat strap is: 18.4 kips / 2 = 9.2 kips per strap:
  - Use 8" x 54 mil strap with capacity = 10.394 kips > 9.2 kips
  - Use (17) #12 screws with capacity = 9.70 kip > 9.2 kips

\* Uplift calculated using 5' tributary width and dead load used to offset uplift at the tension side of the wall

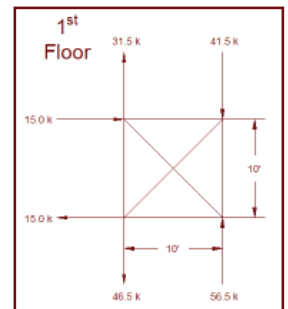
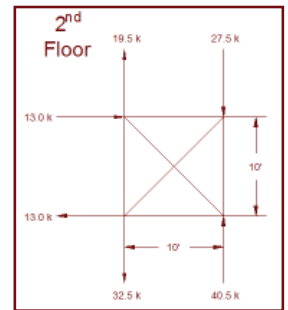
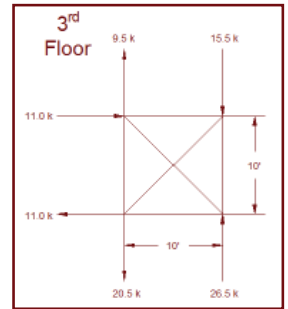
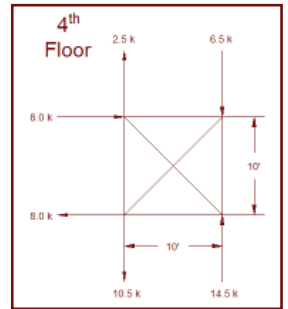
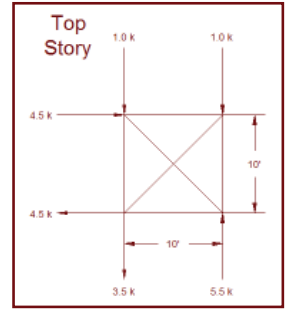
## The 1<sup>st</sup> Floor Shear Wall Will Have The Following Loads From Analysis:

- Column compression: 56.5 kips
  - Use (2) 600C/STW250-118 with allowable capacity = 55.51 kips ≈ 56.5 kips
- 24.0 kips uplift/tension in column\*
  - Use StiffWall Large Boot with capacity of 25.339 kips (T1); 39.164 kips (T2)
- Attach StiffWall Large Boot to column using (14) ½" A325 bolts
  - Capacity of (14) ½" A325 bolts to 118 mil columns = 61.850 kips > 24.0 kips (T2)
- The tension in the flat strap is: 21.2 kips / 2 = 10.6 kips per strap:
  - Use 8" x 68 mil strap with capacity = 13.094 kips > 10.6 kips
  - Attach strap to strap track with (14) #12 screws with capacity = 11.3 kip > 10.6 kips

\* Uplift calculated using 5' tributary width and dead load used to offset uplift at the tension side of the wall

**Anchorage:** Use (2) 1 ¼" Hilti HY 150 MAX Adhesive Anchors, 11 ¼" Embedment Depth; check additional tension from prying action

## Max. Compression Check



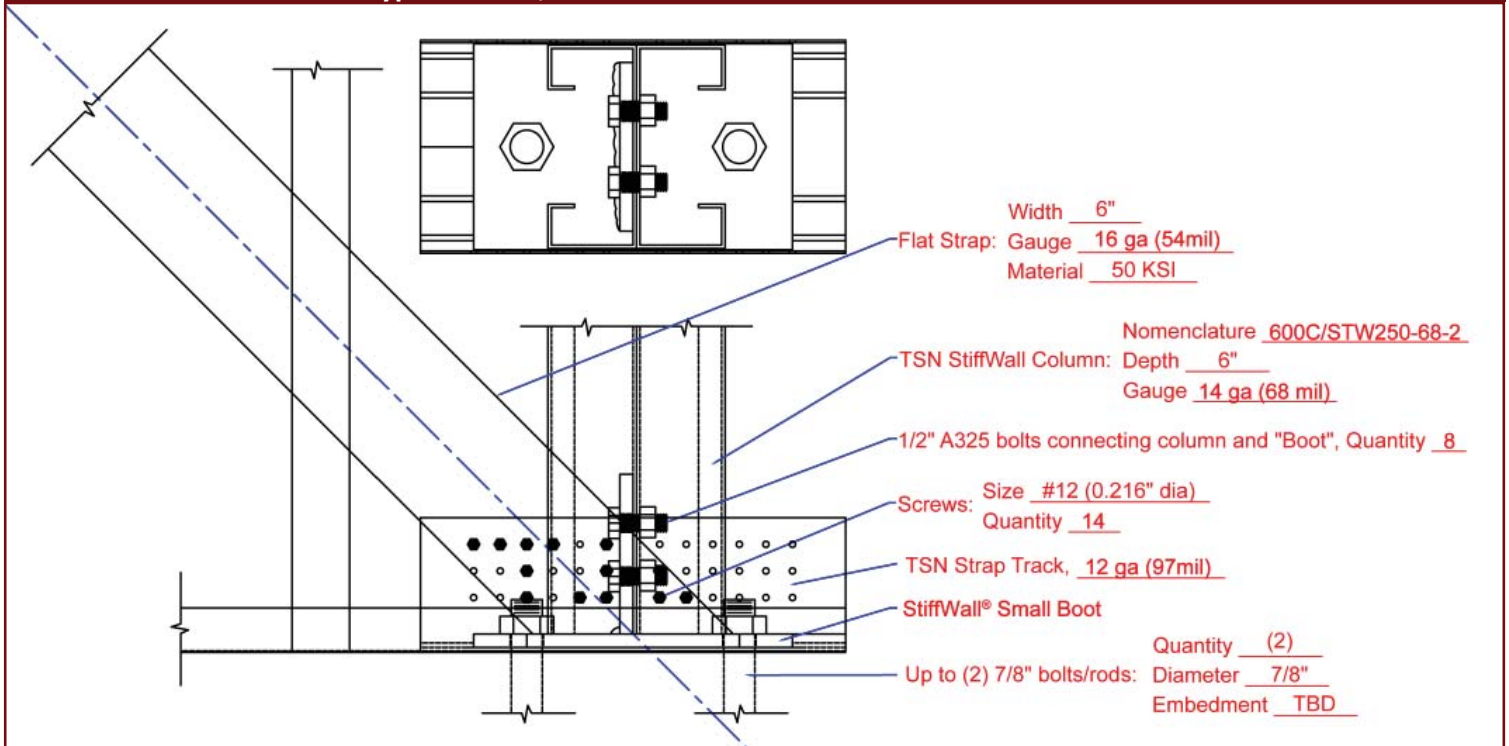


StiffWall® SWS Schedule

Wall #	StiffWall® Column Section	Compression Load (kips)	Allowable Compression (kips)	Boot Kit	# of 1/2" A325 Bolts to Column	Strap (50ksi)	#12 Screws (each side)	Tension in Flat Strap (kips)	Connection Capacity at Flat Strap to Boot (kips)	Allowable Strap Load (kips)
SW-5	600C/STW250-43	5.50	6.46	Small	4	4" - 54mil	6	3.18	3.42	5.20
SW-4	600C/STW250-97	14.50	18.81	Small	4	6" - 54mil	10	5.65	5.70	7.80
SW-3	600C/STW250-68-2	26.50	27.25	Small	4	6" - 54mil	14	7.78	7.98	7.80
SW-2*	600C/STW250-97-2	40.50	42.92	Transition	6	8" - 54mil	17	9.20	9.70	10.39
SW-1	600C/STW250-118-2	56.50	55.51	Large	14	8" - 68mil	14	10.60	11.30	13.09

\* Refer to example in this catalog for a detail illustrating the use of a Transition Boot.

Typical Detail, StiffWall® SWS Double Column at SW-3 Above





## Material Properties

A1003 / A1003M ST50H [ST340H], Grade 50 (340), 50ksi (340MPa) minimum yield strength, 65ksi (450 MPa) minimum tensile strength, G-60 (Z180) hot-dipped galvanized coating; or equivalent.

Flat Strap Product Profile (For StiffWall®)						
Section	Width (D)	Gauge	Design Thickness (t)	Min. Steel Thickness ( $t_{(min)}$ )	Area	Weight
	(in)		(in)	(in)		
FS400-54, 50 ksi	4	16	0.0566	0.0538	0.226	0.770
FS600-54, 50 ksi	6	16	0.0566	0.0538	0.340	1.156
FS800-54, 50 ksi	8	16	0.0566	0.0538	0.453	1.541
FS800-68, 50 ksi	8	14	0.0713	0.0677	0.570	1.941
FS1000-68, 50 ksi	10	14	0.0713	0.0677	0.713	2.426
Flat Strap Product Profile (For Bridging)						
FS200-43, 50 ksi	2	18	0.0451	0.0428	0.090	0.307
FS300-43, 50 ksi	3	18	0.0451	0.0428	0.135	0.460
FS300-54, 50 ksi	3	16	0.0566	0.0538	0.170	0.578

### Table Notes:

- Section properties and capacities are calculated in accordance with AISI-NASPEC 2007.
- Structural framing is produced to meet or exceed ASTM C955, A653, and A1003.
- Non-Structural framing is produced to meet or exceed ASTM C645, A653, and A1003.
- Galvanized sheet steel meets or exceeds requirements of ASTM A924 & A1003.

### Order Information for StiffWall Flat Strap

The Selection of flat strap for StiffWall is simplified to 6 strap types, with load capacity factored using standard 12ga (97mil) strap track (see Step-By-Step Design Procedure on TSN's StiffWall product page for Allowable Flat Strap Capacity Chart). Flat Strap is cut to length with square ends, and will need to be cut to final length in the field. To determine the length of the flat straps, follow these simple steps:

1. Find the width (A) and the height (B) of the StiffWall.
2. Then, use the following formula to determine the length of the strap:  $A^2 + B^2 = C^2$
3. Next, take the square root of C, round up to the nearest whole number and add 1

This will result in a length in feet that you can work with. If C equals a whole number, you may want to add 2 to make sure the length is enough.

**Example:** 8' wall height with a width of 16' would look like this:  $(8 \times 8) + (16 \times 16) = \sqrt{320} = 17.88$   
Round up to 18' and add 1' for a strap length of 19'.

### Some points to remember concerning Flat Strap:

- Flat strap can not be installed, un-installed, and then re-installed (A new piece of strap is required).
- Strap must be pulled tight after a gravity load above has been applied.
- Do not fasten the strap to the infill studs between the columns.
- Straps should not be spliced without an approved design.
- Four (4) pieces of strap are required in each StiffWall (If there are 10 StiffWall shear walls, 40 pieces of flat strap will be necessary)

# Load Bearing Wall Members

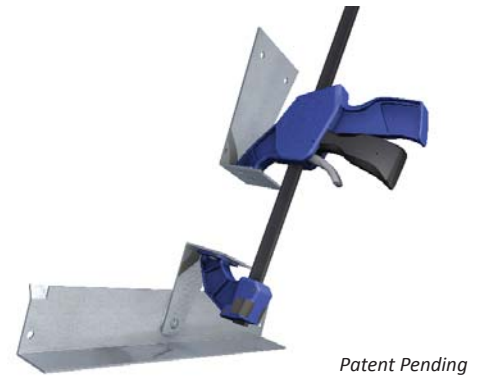
**Tightstrap®**

## Product Description

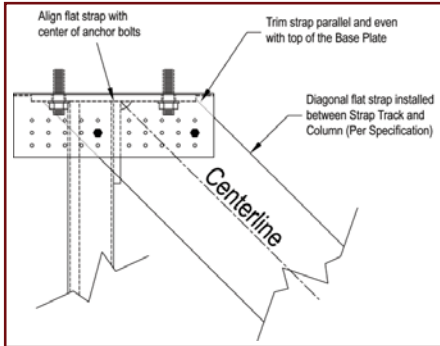
The pre-tensioning of a shear wall flat strap provides a means to ensure the shear wall will perform as designed. It is important that the flat straps are as tight as possible when installed to achieve optimal system performance.

Tightstrap® is a unique device used to tension (tighten) flat strap in the field. Use Tightstrap to improve structural performance of a shear wall by removing "waviness" or "bowing" prior to fastening.

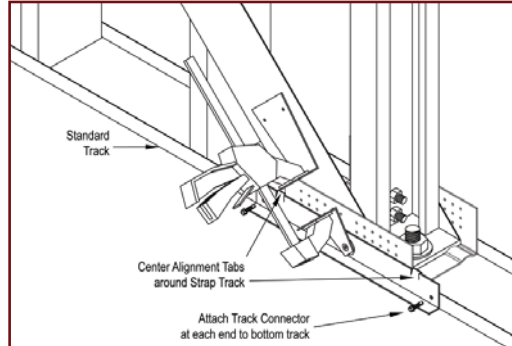
Tightstrap is designed to be used in both StiffWall® and generic flat strap shear walls. Tightstrap's track connector fastens to standard track at the corners of the shear wall to provide a base for the tensioning process. It is preferable to tighten the flat straps after applying some vertical load (own weight) on top of the shear wall panel. View the animated installation procedure at [www.steelnetwork.com](http://www.steelnetwork.com).



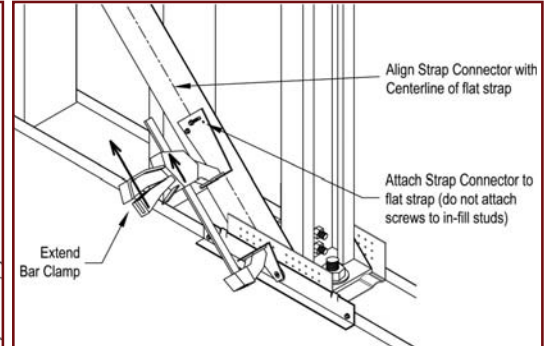
## Using Tightstrap®



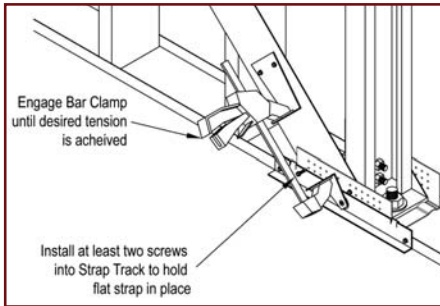
**Step 1** - Align & trim flat strap at each corner, attach one end with at least 2 screws.



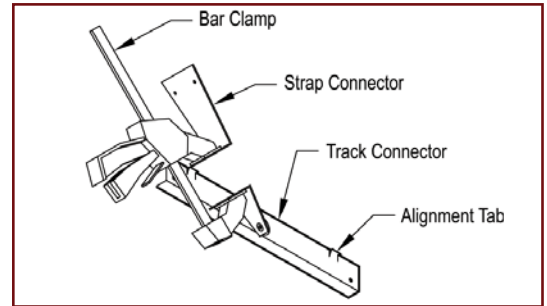
**Step 2** - Align Track Connector and attach to track.



**Step 3** - Extend Bar Clamp, align Strap Connector with centerline of flat strap and attach Strap Connector to the flat strap.



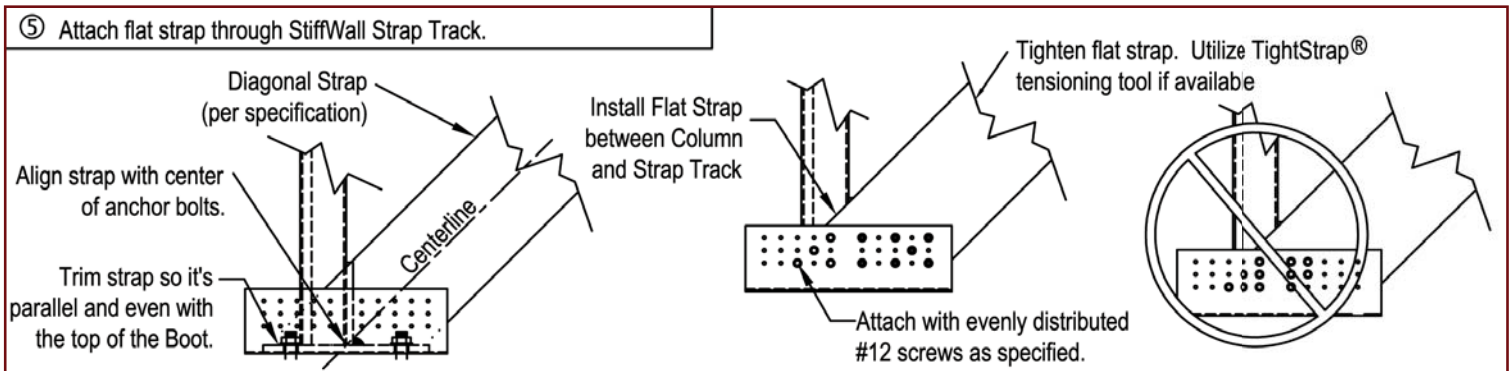
**Step 4** - Engage Bar Clamp, install at least 2 screws for flat strap attachment, remove Tightstrap and install remaining screws for strap attachment.



## How to Install the StiffWall® Shear Wall:

The boots are attached to the foundation or floor and the roof or ceiling with approved anchors or bolts as determined and approved by the Engineer (Boots are made up of the Strap Track and the "T" shaped Base Plate)

- Light, Small & Medium Boots utilize a 7/8" anchor bolt or threaded rod.
- Transition and Large Boots utilize a 1 1/4" anchor bolt or threaded rod.
- Attach the Flat Strap to the Strap Track, corner to corner, on both sides (4 straps needed) with the specified amount of #12 screws (or weld). The use of low profile screws help to reduce a "bump out" of finished sheetrock. To achieve the designed loads, the strap should be tight from corner to corner (with no slack). This is done by tightening the strap after the wall is loaded with a Tightstrap® tool.



## Welded Corner Connections

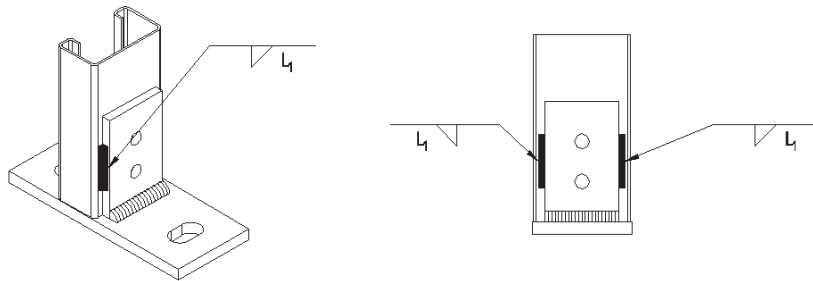
The Steel Network provides information on the welds required to obtain full capacity of the StiffWall® SWS system. The option to weld the SWS columns to the boots or to bolt the SWS columns to the boot offers the same capacity for both T1 and T2 values. Since welding is common for many applications, reference Single Column page (this page) & Double Column page for guidance on weld size, locations, and specifications to ensure that full capacity is obtained when welding the various boot sizes to the various columns sizes. CAD Details indicating the various welds are available if needed. If additional information is required please contact The Steel Network's Technical services department at (888) 474-4876.

Single Column Weld Requirements			
Column Size	Boot Type	Longitudinal Welds	Transverse Weld
		$L_1$ (each side) (in)	$L_2$ (in)
350 / 362 / 400	Small	2.0	0.0
	Medium / Transition	5.0	0.0
	Large	7.0	0.0
550 / 600	Small	2.0	2.0
	Medium / Transition	5.0	4.0
	Large	9.0	4.0
800	Small	2.0	2.0
	Medium / Transition	5.0	5.0
	Large	9.0	5.0

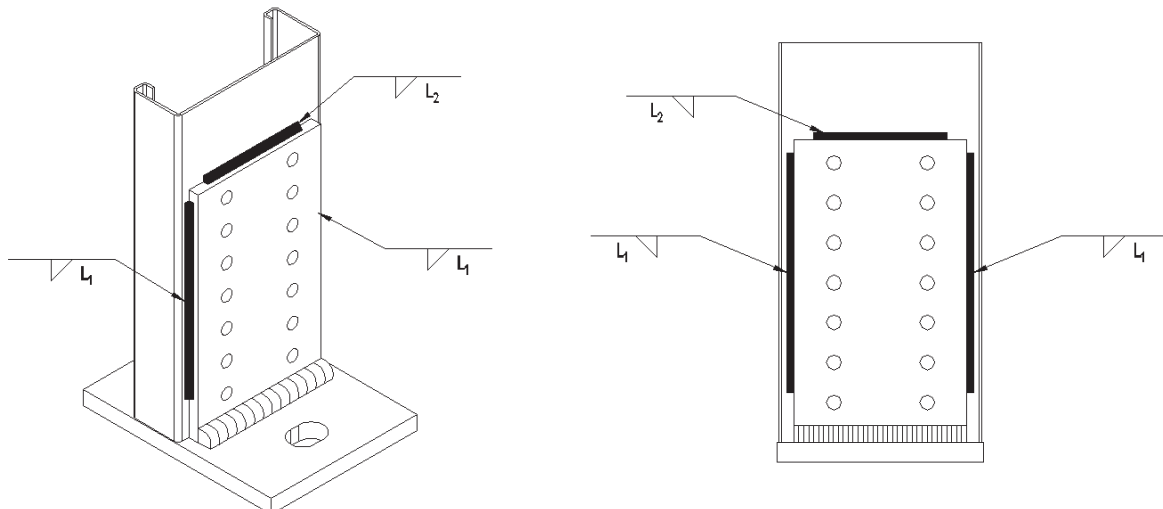
### Table Notes

- Welded column-boot option applies to columns of thickness 54mil to 118mil only.
- See details for locations of weld lines  $L_1$  and  $L_2$ .
- Weld size is minimum two times thickness of column and maximum  $\frac{1}{4}$ ".
- Fillet Weld designation is E70XX Metal Arc or Equivalent.
- All welds shall be touched-up using zinc rich paint.

## Small Boot Details



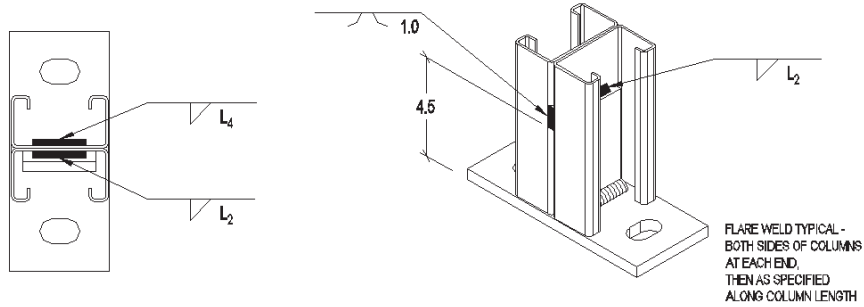
## Large Boot Details



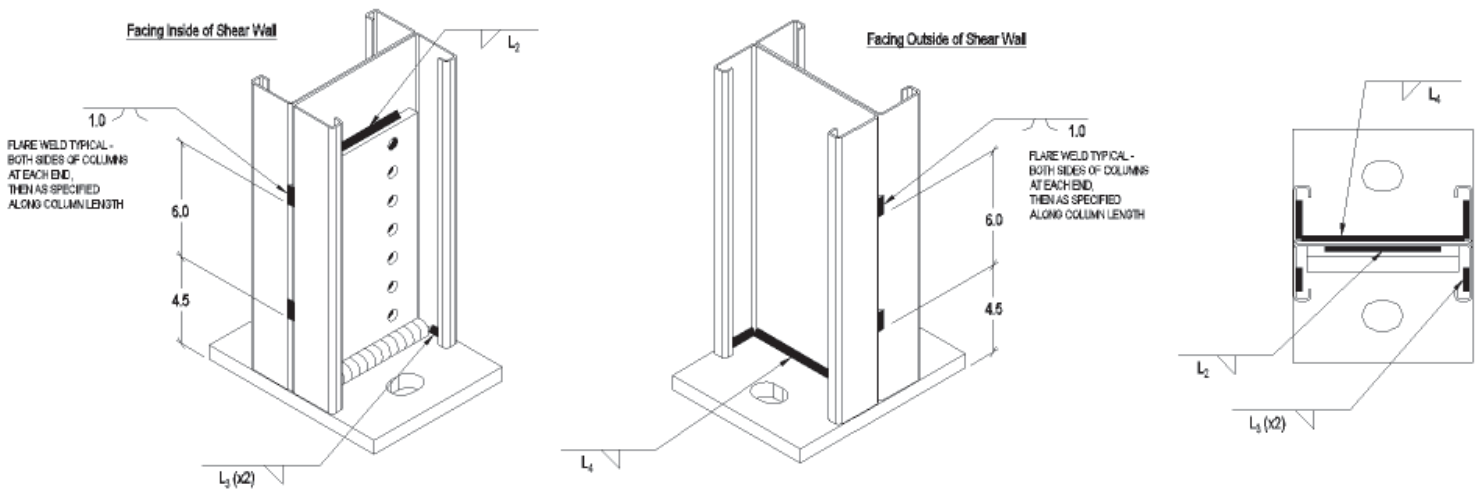
Double Column Weld Requirements					
Column Size	Boot Type	Transverse Weld			
		Top $L_2$ (in)	Bottom $L_3$ (each side) (in)	Bottom $L_4$ (in)	# of Inside 1/2" Holes
350 / 362 / 400	Small	2.0	0.0	2.0	0
	Medium / Transition	2.5	0.0	4.0	0
	Large	2.5	0.0	4.0	5
550 / 600	Small	4.0	0.0	4.0	0
	Medium / Transition	4.5	0.0	5.5	0
	Large	4.5	1.0	6.5	8
800	Small	4.0	0.0	4.0	0
	Medium / Transition	6.5	0.0	7.0	0
	Large	6.5	1.0	7.0	8

- Welded column-boot option applies to columns of thickness 54mil to 118mil only.
- Large boot requires weld between boot and column through 9/16" holes as indicated in table.
- See details for locations of weld lines  $L_1$  and  $L_2$ .
- Weld size is minimum two times thickness of column and maximum 1/4".
- Fillet Weld designation is E70XX Metal Arc or Equivalent.
- All welds shall be touched-up using zinc rich paint.

### Small Boot Details



### Large Boot Details



## StiffWall® Placement in Load Bearing Wall

StiffWall is usually not designed as a gravity load bearing element. However, its boundary end columns can see compression loads from the floor weight above. This system is designed to sit in between load bearing studs and address all of the lateral loads acting on that building due to wind or earthquakes.

The StiffWall is designed to stack vertically and attach through the floor system to the level above (Fig. 1). The Columns for one floor must line up with the columns on the floors above and below. This will allow for the bolts from one floor to be bolted through the floor system to the boots above and/or below. It is important that these bolts are properly aligned through each floor for the walls to be able to work together as one unit from top to bottom. Do not enlarge the anchor holes in the StiffWall Boots.

It is recommended that StiffWall boundary end columns have axial compression capacity greater than or equal to the typical load bearing stud within the wall.

## Attachment of Sheathing to the StiffWall® Column

Since the StiffWall assembly is installed within the thickness of the top and bottom tracks, sheathing should not be attached directly to the StiffWall Column. The thickness of the strap track on either side of the wall (97mils [12ga]) reduces the depth of the StiffWall Column within the assembly (Fig. 2). As a result, if the sheathing is attached to the StiffWall Column, a level plane will not occur along the wall. Attach the sheathing to the infill studs bordering the StiffWall columns.

## Vertically Stacking Shear Walls

StiffWall shear walls transfer loads concentrically from the floor element above to the floor element below. The StiffWall system should consist of vertically stacked panels to effectively transfer lateral forces to the foundation (Fig. 3). Any eccentricity in the system negatively affects the load distribution to the StiffWall components. The vertical alignment of the walls is critical for the through-floor connections. Coordinate installation to ensure through-floor connectors align with StiffWall Boots on the floors above and below.

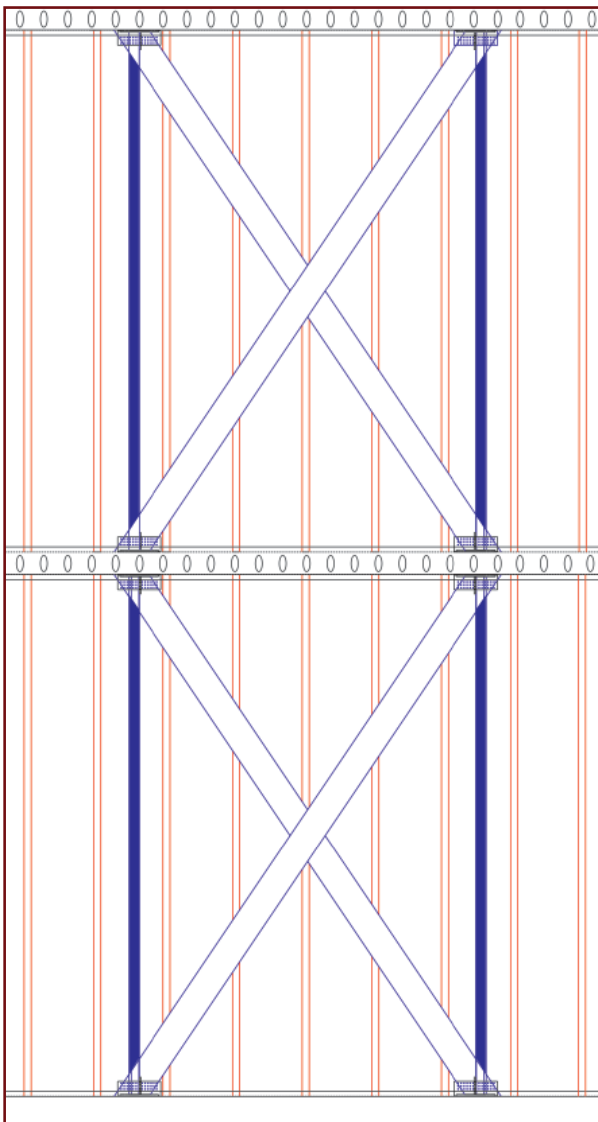


Fig. 1: StiffWall Column/Boot Assembly (blue line) is placed within the spacing of the SigmaStud® (in red).

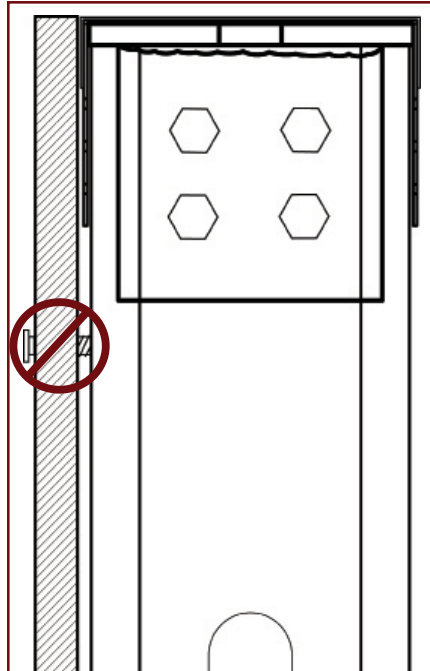
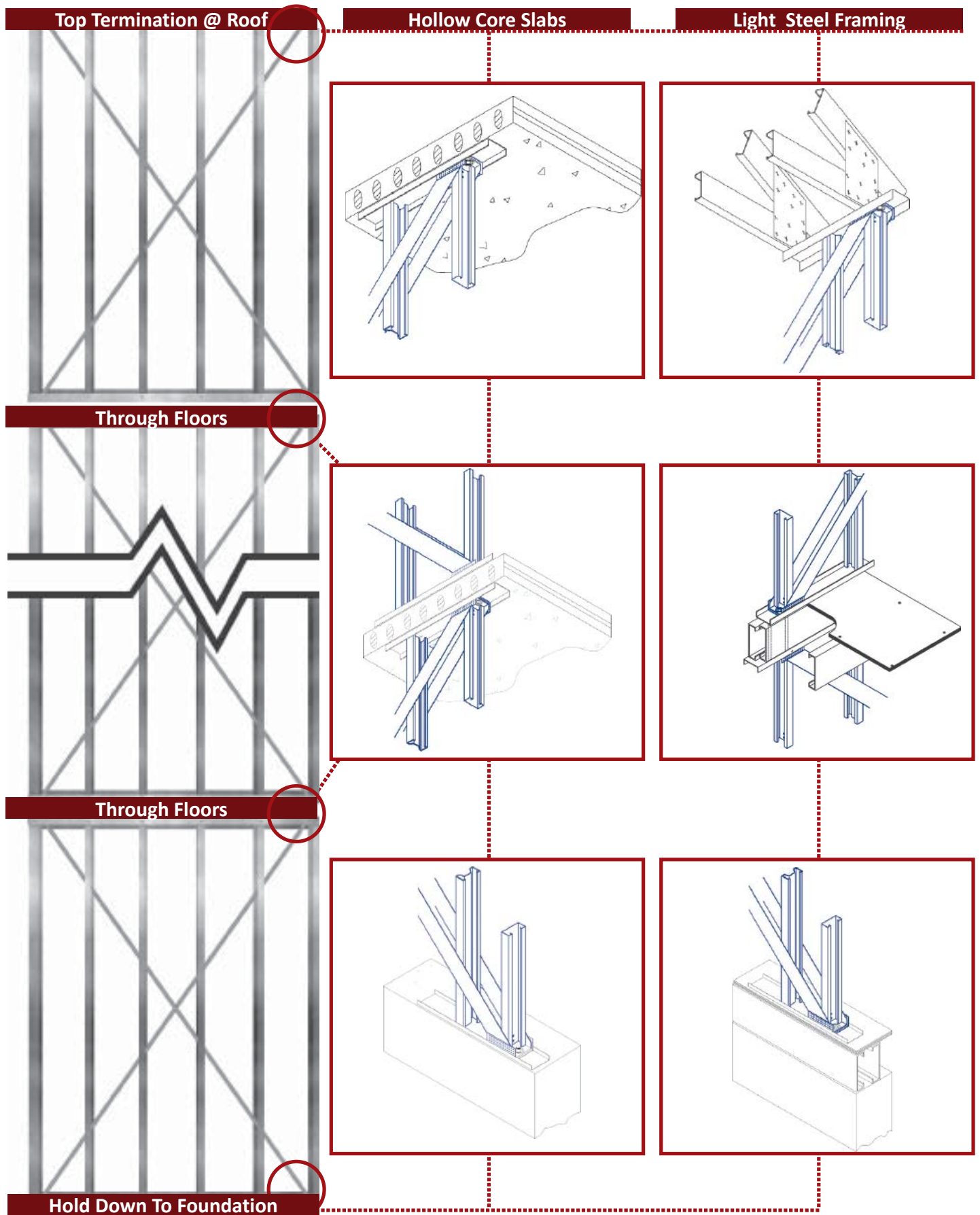


Fig. 2: Sheathing should not be attached directly to the StiffWall Column. Attach the sheathing to the adjacent studs.



Fig. 3: Shear walls should be stacked vertically.







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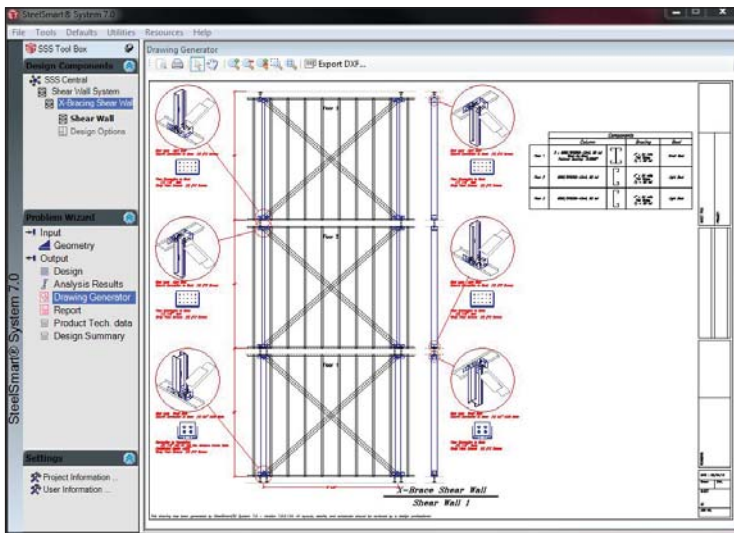
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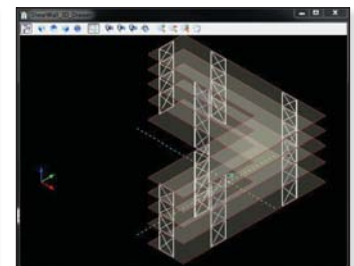
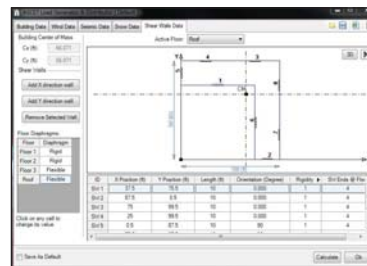
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