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ICC-ES Evaluation Report ESR-2361

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DIVISION: 05 00 00—METALS

Section: 05 40 00—Cold-Formed Metal Framing
Section: 05 41 00—Structural Metal Stud Framing

DIVISION: 09 00 00—FINISHES

Section: 09 22 16.13—Non-Structural Metal Stud
Framing

REPORT HOLDER:

FRAMECAD LICENSING LTD.

ADDITIONAL LISTEES:

ACCURATE STEEL FAB, LLC.

BIMTECH

BLUVERA, LLC.

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STEEL PANEL TRUSS LLC.

STEEL TEK FRAMING, LLC.

VITRUVIAN STEEL, LLC.

WALL-PANEL, LLC.

WIES OFFSITE, LLC.

XTREME CUBES CORP.

EVALUATION SUBJECT:

COLD-FORMED STEEL FRAMING MEMBERS

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1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015, 2012 and 2009 *International Building Code*[®] (IBC)
- 2021, 2018, 2015, 2012 and 2009 *International Residential Code*[®] (IRC)
- 2013 *Abu Dhabi International Building Code* (ADIBC)[†]

[†]The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

Property evaluated

Structural

2.0 USES

The FRAMECAD Licensing Ltd. steel framing members (C-shapes and tracks) are recognized for use in interior and exterior, nonload-bearing and load-bearing applications.

Members with a minimum G60 coating may be used as structural members as defined by the North American Standard for Cold-Formed Steel Structural Framing (AISI S240).

Members with a minimum G40 coating may be used as nonstructural members as defined by the North American Standard for Cold-Formed Steel Nonstructural Framing (AISI S220).

3.0 DESCRIPTION

3.1 General:

The products that are recognized in this report are limited to those products noted in Tables 3 and 4. The C-shapes and tracks with swages and dimples are factory-formed from coils of cold-formed steel. See Table 14 for manufacturing locations. See Figures 1 and 2 for C-shape and track configurations, and Tables 1 through 4 for steel minimum yield strengths, steel thicknesses, and dimensional details. The C-shapes are manufactured with and without web punch-outs. When punch-outs are provided, they are located along the center of the web, with a maximum width of half the member depth or 1½ inches (38 mm), whichever is less, and a maximum length of 4 inches (102 mm). The punch-outs are spaced a minimum of 24 inches (610 mm) on center. The edge of the punch-outs must be a minimum of 10 inches (254 mm) from each end of the stud. The tracks have the same shape as the C-shapes, except the stiffener lip of the track is removed at the location of each stud. Gross, effective, and torsional section properties are set forth in Tables 3 and 4.

3.2 Material:

The C-shapes and tracks are formed from galvanized steel coils. The steel complies with ASTM A653 SS Grade 33, ASTM A1011 SS Grade 33, ASTM A1003 Structural Grade 33 Type H (ST33H) or ASTM A1003 Nonstructural Grade 33 (NS33) except for 0.0538-inch-thick [54 mils (1.366 mm)] and greater C-shapes and tracks, which are formed from steel complying with ASTM A653 SS Grade 50, Class 1 or 3, ASTM A1011 SS Grade 50 or ASTM A1003 Structural Grade 50 Type H (ST50H). The steel is hot-dipped galvanized with a minimum G60 or G40 galvanized coating designation.

4.0 DESIGN AND INSTALLATION

4.1 Design:

Structural capacities are determined in accordance with the applicable edition of the North American Specification for the Design of Cold-Formed Steel Structural Members

(AISI-S100) based on structural properties in Tables 1 through 4 of this report. Web crippling details and maximum web crippling loads are described in Tables 5 and 6. As an alternative, structural uses may be determined in accordance with Section 4.1.1 or 4.1.2.

C-shapes listed in Table 13 and tracks with a thickness greater than 27 mils qualify for use with the prescriptive requirements of the IRC. For use under the IRC of all other sections, the cold-formed steel framing members must be limited to engineered structures, in accordance with IRC Section R301.1.3.

4.1.1 Nonload-bearing Wall Heights:

Allowable wall heights for interior nonload-bearing walls are shown in Table 7. The allowable end reactions of the studs based on web crippling effects for the applicable bearing lengths in Tables 5 and 6 must equal, or exceed, the applied load end reaction.

4.1.2 Load-bearing Wall Studs:

Allowable axial loads combined with transverse loads for various heights and stud spacings, based on mechanical bracing at a maximum of 48 inches (1219 mm) on center and sheathing on both sides of the studs for lateral stability, with the design complying with Section H1 in AISI S100-16 (Section C5 in AISI S100-12), are shown in Tables 8 through 12. The allowable end reactions of the studs based on web crippling effects for the applicable bearing lengths in Tables 5 and 6 must equal, or exceed, the end reactions based on the applied transverse loads.

4.2 Installation:

The C-shapes and tracks must be installed in accordance with the approved plans and this report. If there is a conflict between the plans submitted for approval and this report, this report governs. The approved plans must be available at the jobsite at all times during installation.

5.0 CONDITIONS OF USE

The FRAMECAD Licensing Ltd. steel framing members described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 C-shapes and tracks must be installed in accordance with this report, the applicable code and the approved plans. If there is a conflict between this report and the submitted plans, this report governs.
- 5.2 Minimum base steel thickness of cold-formed steel members, as delivered to the jobsite, must be at least 95 percent of the design thickness specified in Tables 2 through 4.
- 5.3 Complete plans and calculations verifying compliance with this report must be submitted to the code official for each project. The calculations and drawings must be prepared and sealed by a registered design professional where required by the statutes of the jurisdiction in which the project is constructed.
- 5.4 Stud member end reactions, resulting from allowable heights and loads, as noted in the accompanying tables, must be checked with the web crippling tables noted in this report.
- 5.5 C-shapes and tracks having a galvanized coating weight of less than G60 and/or members that are made from ASTM A1003 Nonstructural Grade 33 (NS33) must be limited to use as nonload-bearing interior wall framing subject to a maximum transverse load of 10 psf (478 Pa).

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Cold-formed Steel Framing Members (AC46), dated October 2019 (editorially revised December 2020).

7.0 IDENTIFICATION

- 7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-2361) along with the name, registered trademark, or registered logo of the report holder and/or listee must be included in the product label.
- 7.2 In addition, each C-shape and track must have a legible label, stamp or embossment, indicating the manufacturer's name (see Report Holder or Additional Listees at beginning of this report) or initials; material minimum base-metal thickness (uncoated) in decimal thickness or mils; in addition to the following:
 - For nonstructural members, each member must have the minimum specified yield strength [if other than 33 ksi (228 MPa)], the designation "NS", and a designation for the coating if other than G40.
 - For structural members, each member must have the minimum specified yield strength; and the designation of coating.
- 7.3 The report holder's contact information is the following:

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- 7.4 The additional listee's contact information is the following:

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TABLE 1—MEMBER DESIGNATION DIMENSIONS³

Member Depth (in)	Web Size ¹ (in)	Min. Flange Width (in)	Max. Flange Width (in)	Min. Lip Size ² (in)	Thickness Range (mil)
1-5/8	1.625	1.625	1.625	0.500	27 - 43
2-1/2	2.500	1.625	1.625	0.500	27 - 43
3-1/2	3.500	1.500	2.500	0.500	27 - 43
3-5/8	3.625	1.500	2.500	0.500	27 - 68
4	4.000	1.625	2.500	0.500	27 - 97
5-1/2	5.500	1.570	2.500	0.500	27 - 97
6	6.000	1.570	3.500	0.500	33 - 97
8	8.000	1.625	3.500	0.500	43 - 97
10	10.000	1.625	3.500	0.500	43 - 97
12	12.000	1.625	3.500	0.500	54 - 97

For SI: 1 inch = 25.4 mm.

¹Web depth for both stud and track sections is measured from outside of flange to outside of flange.²Track flange stiffeners (lips) are removed at stud locations; studs are swaged to fit tightly in track.³Member Designation identification provides nominal dimensions as shown in the example below:

Example: 600S162-43; 600 = 6-inch depth (Depth measured from the outside face to outside face of flanges), S = C-Section or stud, 162 = 1.625 inch flange width, 43 = thickness designation of 43 mils or 0.0428 inches. For tracks, "S" is replaced with "T".

TABLE 2—UNCOATED STEEL THICKNESS

THICKNESS DESIGNATION (mils)	DESIGN THICKNESS (in)	MINIMUM THICKNESS (in)	INSIDE BEND RADIUS (in)
27	0.0283	0.0269	0.0796
30	0.0312	0.0296	0.0781
33	0.0346	0.0329	0.0764
43	0.0451	0.0428	0.0712
54	0.0566	0.0538	0.0849
68	0.0713	0.0677	0.1069
97	0.1017	0.0966	0.1525

For SI: 1 inch = 25.4 mm.

Notes for Section Properties Tables (Tables 3 and 4):

- For applications in accordance with the IRC, use of all 162S162-XX, 250S162-XX, 350S162-27, 350S162-30, 362S162-27, 362S162-30; and 162T162-XX, 250T162-XX, 350T162-27, 350T162-30, 362T162-27, and 362T162-30 are applicable only for engineered designs in accordance with IRC Section R301.1.3.
- For tabulated effective properties, the strength increase due to cold work of forming was incorporated for flexural strength as applicable in accordance with Section A7.2 of AISI-S100.
- Tabulated gross properties, including torsional properties, are based on the full unreduced cross section of the studs, away from the punch-outs.
- For deflection calculations, use the effective moment of inertia.
- Allowable moment is the lesser of M_a and M_{ad} . Distortional buckling moment, M_{ad} , based on assumed $K\phi = 0$.
- Studs are assumed to be adequately braced at a maximum spacing of L_u to develop full allowable moment, M_a .
- Section properties are based on swaged and dimpled studs, which are similar to unswaged studs.
- When C-shape profiles have unsymmetrical top and bottom flange sizes, section properties shall be based on the least flange size.

Definitions of structural property symbols:**Gross Properties**

Area: The cross-sectional area of the full unreduced cross-section of the studs, away from the punch-outs.

Weight: The weight per foot of the full unreduced cross-section of the studs, away from the punch-outs.

 I_x : Moment of inertia of the gross section about the strong axis (X-X). R_x : Radius of gyration of the gross section about the X-X axis. S_x : Gross section-modulus about the strong axis (X-X). I_y : Moment of inertia of the gross section about the weak axis (Y-Y). R_y : Radius of gyration of the gross section about the Y-Y axis.**Effective Properties** I_x : Effective moment of inertia about the strong axis (X-X). S_x : Effective section modulus about the strong axis (X-X) at stress = F_y . M_a : Allowable bending moment based on local buckling. M_{ad} : Allowable distortional bending moment based on $K\phi = 0$. V_s : Allowable strong axis shear away from punchout. $V_s(\text{net})$: Allowable strong axis shear at punchout.**Torsional and Other Properties** J : St. Venant Torsional Constant C_w : Torsional warping constant. m : Distance from shear center to mid-plane of web. X_o : Distance from the shear center to the centroid along the principal X-axis. R_o : Polar radius of gyration about the centroidal principal axis. β : $1 - (X_o/R_o)^2$ L_u : Critical unbraced length for lateral-torsional buckling. Members are considered fully braced when unbraced length is less than L_u .

TABLE 3—C-SHAPE (S) SECTION PROPERTIES^{2,3}

Flange sizes (in/in)	Member Designation	Design Thickness	F _y	Gross Properties							Effective Properties							Torsional Properties					
				Area	Weight	I _x	S _x	R _x	I _y	R _y	I _x	S _x	M _a	M _{ad}	V _{ag}	V _{a(net)}	J _x 1000	C _w	X ₀	m	R ₀	β	
				(in)	(ksi)	(in ²)	(lb/ft)	(in ⁴)	(in ³)	(in)	(in ⁴)	(in)	(in-k)	(in-k)	(lb)	(lb)	(in ⁴)	(in ⁶)	(in)	(in)	(in)	(in)	
1.625 / 1.625	162S162-27 ¹	0.0283	33	0.159	0.539	0.073	0.090	0.680	0.061	0.622	0.073	0.078	1.549	1.704	494.00	106.00	0.042	0.061	-1.634	0.925	1.876	0.241	46.5
	162S162-27 ¹	0.0283	50	0.159	0.539	0.073	0.090	0.680	0.061	0.622	0.070	0.072	2.146	2.268	748.00	161.00	0.042	0.061	-1.634	0.925	1.876	0.241	37.9
	162S162-30 ¹	0.0312	33	0.174	0.593	0.080	0.099	0.678	0.067	0.620	0.080	0.089	1.768	1.922	543.00	106.00	0.057	0.067	-1.631	0.923	1.872	0.241	46.3
	162S162-30 ¹	0.0312	50	0.174	0.593	0.080	0.099	0.678	0.067	0.620	0.079	0.082	2.444	2.573	823.00	160.00	0.057	0.067	-1.631	0.923	1.872	0.241	37.8
	162S162-33 ¹	0.0346	33	0.193	0.657	0.088	0.109	0.677	0.074	0.619	0.088	0.102	2.012	2.150	601.00	105.00	0.077	0.073	-1.627	0.921	1.868	0.241	46.3
	162S162-33 ¹	0.0346	50	0.193	0.657	0.088	0.109	0.677	0.074	0.619	0.088	0.092	2.740	2.935	910.00	159.00	0.077	0.073	-1.627	0.921	1.868	0.241	37.6
	162S162-43 ¹	0.0451	33	0.250	0.849	0.113	0.139	0.673	0.094	0.615	0.113	0.137	2.968	3.022	777.00	102.00	0.169	0.092	-1.615	0.914	1.854	0.242	43.9
	162S162-43 ¹	0.0451	50	0.250	0.849	0.113	0.139	0.673	0.094	0.615	0.113	0.123	3.672	4.075	1177.00	155.00	0.169	0.092	-1.615	0.914	1.854	0.242	37.4
	250S162-27 ¹	0.0283	33	0.183	0.624	0.194	0.155	1.029	0.072	0.627	0.193	0.140	2.768	2.756	685.00	344.00	0.049	0.122	-1.477	0.863	1.906	0.400	43.4
	250S162-27 ¹	0.0283	50	0.183	0.624	0.194	0.155	1.029	0.072	0.627	0.188	0.130	3.889	3.630	843.00	423.00	0.049	0.122	-1.477	0.863	1.906	0.400	35.6
	250S162-30 ¹	0.0312	33	0.202	0.686	0.213	0.171	1.028	0.079	0.626	0.213	0.159	3.140	3.125	832.00	378.00	0.065	0.133	-1.473	0.861	1.902	0.400	43.6
	250S162-30 ¹	0.0312	50	0.202	0.686	0.213	0.171	1.028	0.079	0.626	0.210	0.147	4.409	4.135	1024.00	466.00	0.065	0.133	-1.473	0.861	1.902	0.400	35.5
	250S162-33 ¹	0.0346	33	0.223	0.760	0.235	0.188	1.027	0.087	0.624	0.235	0.180	3.553	3.563	975.00	399.00	0.089	0.146	-1.470	0.859	1.898	0.401	44.1
	250S162-33 ¹	0.0346	50	0.223	0.760	0.235	0.188	1.027	0.087	0.624	0.235	0.164	4.909	4.741	1260.00	515.00	0.089	0.146	-1.470	0.859	1.898	0.401	35.4
	250S162-43 ¹	0.0451	33	0.289	0.984	0.302	0.242	1.022	0.111	0.620	0.302	0.240	5.224	5.252	1265.00	394.00	0.196	0.184	-1.457	0.852	1.885	0.402	42.1
	250S162-43 ¹	0.0451	50	0.289	0.984	0.302	0.242	1.022	0.111	0.620	0.302	0.217	6.503	6.679	1917.00	597.00	0.196	0.184	-1.457	0.852	1.885	0.402	35.2
1.625 / 1.50	350S150-27 ⁸	0.0283	33	0.2045	0.696	0.398	0.227	1.394	0.067	0.574	0.398	0.190	3.750	3.918	614.24	358.57	0.055	0.192	-1.219	0.737	1.939	0.605	34.98
	350S150-27 ⁸	0.0283	50	0.2045	0.696	0.398	0.227	1.394	0.067	0.574	0.393	0.170	5.081	5.139	614.24	358.57	0.055	0.192	-1.219	0.737	1.939	0.605	28.42
	350S150-33 ⁸	0.0346	33	0.2491	0.848	0.482	0.276	1.391	0.081	0.571	0.482	0.251	4.960	5.090	1023.58	486.97	0.099	0.230	-1.212	0.733	1.931	0.606	34.96
	350S150-33 ⁸	0.0346	50	0.2491	0.848	0.482	0.276	1.391	0.081	0.571	0.482	0.223	6.687	6.743	1124.75	535.11	0.099	0.230	-1.212	0.733	1.931	0.606	28.40
	350S150-43 ⁸	0.0451	33	0.3229	1.099	0.621	0.355	1.387	0.104	0.566	0.621	0.338	6.668	7.010	1739.09	631.04	0.219	0.291	-1.200	0.727	1.919	0.609	34.93
	350S150-43 ⁸	0.0451	50	0.3229	1.099	0.621	0.355	1.387	0.104	0.566	0.621	0.314	9.395	9.573	2140.68	776.76	0.219	0.291	-1.200	0.727	1.919	0.609	28.37
1.61 / 1.54	350S154-27 ⁸	0.0283	33	0.2068	0.704	0.404	0.231	1.399	0.072	0.588	0.404	0.192	3.787	3.947	614.24	358.57	0.055	0.204	-1.255	0.757	1.969	0.594	35.30
	350S154-27 ⁸	0.0283	50	0.2068	0.704	0.404	0.231	1.399	0.072	0.588	0.398	0.171	5.124	5.171	614.24	358.57	0.055	0.204	-1.255	0.757	1.969	0.594	28.68
	350S154-33 ⁸	0.0346	33	0.2519	0.857	0.491	0.280	1.396	0.086	0.586	0.491	0.254	5.022	5.132	1023.58	486.97	0.101	0.245	-1.248	0.753	1.961	0.595	35.27
	350S154-33 ⁸	0.0346	50	0.2519	0.857	0.491	0.280	1.396	0.086	0.586	0.491	0.224	6.720	6.790	1124.75	535.11	0.101	0.245	-1.248	0.753	1.961	0.595	28.66
	350S154-43 ⁸	0.0451	33	0.3265	1.111	0.632	0.361	1.391	0.110	0.581	0.632	0.344	6.790	7.131	1739.09	631.04	0.221	0.309	-1.236	0.747	1.949	0.598	35.24
	350S154-43 ⁸	0.0451	50	0.3265	1.111	0.632	0.361	1.391	0.110	0.581	0.632	0.312	9.337	9.648	2140.68	776.76	0.221	0.309	-1.236	0.747	1.949	0.598	28.63
1.625 / 1.57	350S157-27 ⁸	0.0283	33	0.2085	0.709	0.410	0.234	1.402	0.075	0.600	0.410	0.193	3.814	3.969	614.24	358.57	0.056	0.213	-1.282	0.772	1.992	0.586	35.55
	350S157-27 ⁸	0.0283	50	0.2085	0.709	0.410	0.234	1.402	0.075	0.600	0.402	0.172	5.156	5.195	614.24	358.57	0.056	0.213	-1.282	0.772	1.992	0.586	28.88

TABLE 3—C-SHAPE (S) SECTION PROPERTIES^{2,3}

Flange sizes (in/in)	Member Designation	Design Thickness	F_y	Gross Properties							Effective Properties							Torsional Properties					
				Area	Weight	I_x	S_x	R_x	I_y	R_y	I_x	S_x	M_a	M_{ad}	V_{ag}	$V_{a(net)}$	$J \times 1000$	C_w	X_0	m	R_0	β	
				(in)	(ksi)	(in ²)	(lb/ft)	(in ⁴)	(in ³)	(in)	(in ⁴)	(in)	(in-k)	(in-k)	(lb)	(lb)	(in ⁴)	(in ⁶)	(in)	(in)	(in)	(in)	
1.625 / 1.57	350S157-33 ⁸	0.0346	33	0.254	0.864	0.497	0.284	1.399	0.090	0.597	0.497	0.255	5.041	5.163	1023.58	486.97	0.101	0.256	-1.275	0.768	1.984	0.587	35.53
	350S157-33 ⁸	0.0346	50	0.254	0.864	0.497	0.284	1.399	0.090	0.597	0.497	0.225	6.743	6.824	1124.75	535.11	0.101	0.256	-1.275	0.768	1.984	0.587	28.87
	350S157-43 ⁸	0.0451	33	0.3292	1.120	0.640	0.366	1.394	0.115	0.592	0.640	0.348	6.881	7.223	1739.09	631.04	0.223	0.323	-1.263	0.762	1.972	0.590	35.49
	350S157-43 ⁸	0.0451	50	0.3292	1.120	0.640	0.366	1.394	0.115	0.592	0.640	0.311	9.300	9.702	2140.68	776.76	0.223	0.323	-1.263	0.762	1.972	0.590	28.83
1.625 / 1.625	350S162-27 ¹	0.0283	33	0.2116	0.720	0.419	0.239	1.407	0.081	0.620	0.419	0.195	3.860	4.007	614.24	358.57	0.057	0.230	-1.331	0.800	2.034	0.572	36.06
	350S162-27 ¹	0.0283	50	0.2116	0.720	0.419	0.239	1.407	0.081	0.620	0.409	0.174	5.210	5.237	614.24	358.57	0.057	0.230	-1.331	0.800	2.034	0.572	29.30
	350S162-30 ¹	0.0312	33	0.239	0.793	0.460	0.263	1.406	0.082	0.618	0.460	0.225	4.442	4.559	824.00	436.00	0.076	0.252	-1.328	0.798	2.03	0.572	42.8
	350S162-30 ¹	0.0312	50	0.239	0.793	0.460	0.263	1.406	0.082	0.618	0.456	0.201	6.012	5.983	824.00	436.00	0.076	0.252	-1.328	0.798	2.03	0.572	34.8
	350S162-33	0.0346	33	0.2578	0.877	0.508	0.291	1.404	0.098	0.617	0.508	0.257	5.084	5.218	1023.58	486.97	0.103	0.277	-1.324	0.796	2.063	0.573	36.03
	350S162-33	0.0346	50	0.2578	0.877	0.508	0.291	1.404	0.098	0.617	0.508	0.227	6.783	6.883	1124.75	535.11	0.103	0.277	-1.324	0.796	2.026	0.573	29.27
	350S162-43	0.0451	33	0.3341	1.137	0.654	0.374	1.400	0.125	0.612	0.654	0.357	7.047	7.313	1739.09	631.04	0.227	0.350	-1.312	0.789	2.014	0.575	35.99
	350S162-43	0.0451	50	0.3341	1.137	0.654	0.374	1.400	0.125	0.612	0.654	0.309	9.248	9.797	2140.68	776.76	0.227	0.350	-1.312	0.789	2.014	0.575	29.24
	350S162-54	0.0566	33	0.415	1.410	0.805	0.460	1.393	0.152	0.606	0.804	0.447	8.830	9.080	2253.00	633.00	0.443	0.426	-1.298	0.782	1.998	0.578	42.7
	350S162-54	0.0566	50	0.415	1.410	0.805	0.460	1.393	0.152	0.606	0.804	0.426	12.740	13.050	3372.00	947.00	0.443	0.426	-1.298	0.782	1.998	0.578	34.5
	350S162-68	0.0713	33	0.515	1.750	0.985	0.563	1.383	0.184	0.597	0.985	0.549	16.440	16.850	4203.00	897.00	0.872	0.514	-1.280	0.772	1.977	0.581	34.5
1.71 / 1.625	350S170-27	0.0283	33	0.2162	0.736	0.433	0.247	1.415	0.091	0.648	0.432	0.198	3.905	4.068	611.12	360.10	0.058	0.255	-1.400	0.837	2.093	0.553	36.78
	350S170-27	0.0283	50	0.2162	0.736	0.433	0.247	1.415	0.091	0.648	0.420	0.175	5.242	5.305	611.12	360.10	0.058	0.255	-1.400	0.837	2.093	0.553	29.88
	350S170-33	0.0346	33	0.263	0.895	0.524	0.299	1.411	0.109	0.644	0.524	0.260	5.138	5.288	1023.58	486.97	0.105	0.307	-1.392	0.833	2.085	0.554	36.80
	350S170-33	0.0346	50	0.263	0.895	0.524	0.299	1.411	0.109	0.644	0.524	0.228	6.833	6.959	1124.75	535.11	0.105	0.307	-1.392	0.833	2.085	0.554	29.89
	350S170-43	0.0451	33	0.2732	1.160	0.675	0.386	1.407	0.140	0.640	0.675	0.365	7.209	7.428	1739.09	631.04	0.231	0.389	-1.380	0.827	2.072	0.556	36.76
	350S170-43	0.0451	50	0.2732	1.160	0.675	0.386	1.407	0.140	0.640	0.675	0.312	9.347	9.920	2140.68	776.76	0.231	0.389	-1.380	0.827	2.072	0.556	29.86

TABLE 3—C-SHAPE (S) SECTION PROPERTIES^{2,3} (Continued)

Flange sizes (in/in)	Member Designation	Design Thickness (in)	F _y (ksi)	Gross Properties						Effective Properties						Torsional Properties					L _u (in)		
				Area (in ²)	Weight (lb/ft)	I _x (in ⁴)	S _x (in ³)	R _x (in)	I _y (in ⁴)	R _y (in)	I _x (in ⁴)	S _x (in ³)	M _a (in-k)	M _{ad} (in-k)	V _{ag} (lb)	V _{a(net)} (lb)	J x 1000 (in ⁴)	C _w (in ⁶)	X ₀ (in)	m (in)	R ₀ (in)	β	
2.00 / 1.88	350S188-27 ⁸	0.0283	33	0.226	0.769	0.462	0.264	1.430	0.115	0.712	0.455	0.205	4.047	4.160	614.24	358.57	0.060	0.322	-1.564	0.928	2.236	0.511	42.96
	350S188-27 ⁸	0.0283	50	0.226	0.769	0.462	0.264	1.430	0.115	0.712	0.441	0.181	5.424	5.403	614.24	358.57	0.060	0.322	-1.564	0.928	2.236	0.511	34.90
	350S188-33 ⁸	0.0346	33	0.2754	0.937	0.561	0.321	1.428	0.139	0.710	0.561	0.266	5.247	5.440	1023.58	486.97	0.110	0.388	-1.556	0.923	2.228	0.512	42.96
	350S188-33 ⁸	0.0346	50	0.2754	0.937	0.561	0.321	1.428	0.139	0.710	0.555	0.232	6.931	7.121	1124.75	535.11	0.110	0.388	-1.556	0.923	2.228	0.512	34.90
	350S188-43 ⁸	0.0451	33	0.3571	1.215	0.723	0.413	1.423	0.178	0.705	0.723	0.367	7.258	7.678	1739.09	631.04	0.242	0.492	-1.544	0.916	2.215	0.514	42.94
	350S188-43 ⁸	0.0451	50	0.3571	1.215	0.723	0.413	1.423	0.178	0.705	0.723	0.320	9.582	10.183	2140.68	776.76	0.242	0.492	-1.544	0.916	2.215	0.514	34.88
2.00 / 2.00	350S200-33	0.0346	33	0.2836	0.965	0.586	0.335	1.437	0.161	0.753	0.586	0.268	5.298	5.524	1023.58	485.27	0.113	0.448	-1.666	0.983	2.326	0.487	43.94
	350S200-33	0.0346	50	0.2836	0.965	0.586	0.335	1.437	0.161	0.753	0.571	0.233	6.977	7.209	1126.89	534.25	0.113	0.448	-1.666	0.983	2.326	0.487	35.69
	350S200-43	0.0451	33	0.4316	1.252	0.755	0.432	1.433	0.205	0.748	0.755	0.368	7.278	7.826	1739.09	631.04	0.250	0.568	-1.654	0.976	2.313	0.484	43.91
	350S200-43	0.0451	50	0.4316	1.252	0.755	0.432	1.433	0.206	0.748	0.753	0.324	9.711	10.338	2140.68	776.76	0.250	0.568	-1.654	0.976	2.313	0.488	35.67
2.50 / 2.50	350S250-43	0.0451	33	0.4131	1.406	0.890	0.509	1.468	0.353	0.925	0.881	0.385	7.614	8.327	1739.09	631.04	0.280	0.964	-2.119	1.226	2.739	0.401	54.12
	350S250-43	0.0451	50	0.4131	1.406	0.890	0.509	1.468	0.353	0.925	0.833	0.334	10.004	10.856	2140.68	776.76	0.280	0.964	-2.119	1.226	2.739	0.401	43.97
1.625 / 1.50	362S150-27 ⁸	0.0283	33	0.208	0.708	0.431	0.238	1.440	0.068	0.572	0.431	0.197	3.901	4.075	591.72	369.62	0.056	0.206	-1.204	0.731	1.962	0.624	34.57
	362S150-27 ⁸	0.0283	50	0.208	0.708	0.431	0.238	1.440	0.068	0.572	0.426	0.176	5.279	5.340	591.72	369.62	0.056	0.206	-1.204	0.731	1.962	0.624	29.43
	362S150-33 ⁸	0.0346	33	0.2535	0.863	0.523	0.289	1.437	0.082	0.569	0.523	0.262	5.168	5.299	1023.58	521.21	0.101	0.247	-1.197	0.727	1.955	0.625	34.57
	362S150-33 ⁸	0.0346	50	0.2535	0.863	0.523	0.289	1.437	0.082	0.569	0.523	0.232	6.953	7.013	1083.44	551.69	0.101	0.247	-1.197	0.727	1.955	0.625	29.41
	362S150-43 ⁸	0.0451	33	0.3285	1.118	0.674	0.372	1.432	0.105	0.565	0.674	0.352	6.951	7.344	1739.09	675.67	0.223	0.312	-1.185	0.720	1.943	0.628	34.42
	362S150-43 ⁸	0.0451	50	0.3285	1.118	0.674	0.372	1.432	0.105	0.565	0.674	0.327	9.779	9.968	2140.68	831.69	0.223	0.312	-1.185	0.720	1.943	0.628	29.37
	362S150-54 ⁸	0.0566	33	0.4078	1.388	0.828	0.457	1.425	0.127	0.558	0.828	0.442	8.728	9.024	2340.82	705.37	0.435	0.379	-1.171	0.712	1.927	0.631	34.01
	362S150-54 ⁸	0.0566	50	0.4078	1.388	0.828	0.457	1.425	0.127	0.558	0.828	0.434	13.004	13.243	3371.56	1015.97	0.435	0.379	-1.171	0.712	1.927	0.631	29.24
1.625 / 1.57	362S157-27 ⁸	0.0283	33	0.212	0.721	0.444	0.245	1.447	0.076	0.598	0.444	0.201	3.966	4.127	591.72	369.62	0.057	0.228	-1.266	0.765	2.014	0.605	34.70
	362S157-27 ⁸	0.0283	50	0.212	0.721	0.444	0.245	1.447	0.076	0.598	0.436	0.179	5.356	5.398	591.72	369.62	0.057	0.228	-1.266	0.765	2.014	0.605	42.60
	362S157-33 ⁸	0.0346	33	0.2583	0.879	0.539	0.297	1.444	0.092	0.595	0.539	0.266	5.246	5.373	1023.58	521.21	0.103	0.274	-1.259	0.761	2.006	0.602	34.65
	362S157-33 ⁸	0.0346	50	0.2583	0.879	0.539	0.297	1.444	0.092	0.595	0.539	0.234	7.011	7.095	1083.44	551.69	0.103	0.274	-1.259	0.761	2.006	0.602	34.64
	362S157-43 ⁸	0.0451	33	0.3348	1.139	0.694	0.383	1.440	0.117	0.591	0.694	0.363	7.171	7.528	1739.09	675.67	0.227	0.347	-1.247	0.755	1.994	0.609	42.60
	362S157-43 ⁸	0.0451	50	0.3348	1.139	0.694	0.383	1.440	0.117	0.591	0.694	0.323	9.679	10.098	2140.68	831.69	0.227	0.347	-1.247	0.755	1.994	0.609	34.60
1.625 / 1.625	362S162-27 ¹	0.0283	33	0.2151	0.732	0.454	0.251	1.453	0.082	0.618	0.454	0.203	4.014	4.165	591.72	369.62	0.057	0.247	-1.315	0.793	2.055	0.590	34.70
	362S162-27 ¹	0.0283	50	0.2151	0.732	0.454	0.251	1.453	0.082	0.618	0.444	0.181	5.413	5.440	591.72	369.62	0.057	0.247	-1.315	0.793	2.055	0.590	42.60
	362S162-30 ¹	0.0312	33	0.237	0.806	0.499	0.275	1.452	0.090	0.617	0.499	0.234	4.619	4.740	794.00	449.00	0.077	0.270	-1.312	0.791	0.038	0.591	42.6

TABLE 3—C-SHAPE (S) SECTION PROPERTIES^{2,3} (Continued)

Flange sizes (in/in)	Member Designation	Design Thickness (in)	F _y (ksi)	Gross Properties						Effective Properties						Torsional Properties					L _u (in)		
				Area (in ²)	Weight (lb/ft)	I _x (in ⁴)	S _x (in ³)	R _x (in)	I _y (in ⁴)	R _y (in)	I _x (in ⁴)	S _x (in ³)	M _a (in-k)	M _{ad} (in-k)	V _{ag} (lb)	V _{a(net)} (lb)	J _x 1000 (in ⁴)	C _w (in ⁶)	X ₀ (in)	m (in)	R ₀ (in)	β	
362S162-30 ¹	0.0312	50	0.237	0.806	0.499	0.275	1.452	0.090	0.617	0.495	0.209	6.247	6.217	794.00	449.00	0.077	0.270	-1.312	0.791	0.038	0.591	34.5	
	0.0346	33	0.2621	0.892	0.551	0.304	1.450	0.099	0.616	0.551	0.268	5.290	5.429	1023.58	521.21	0.105	0.297	-1.308	0.789	2.048	0.592	42.70	
	0.0346	50	0.2621	0.892	0.551	0.304	1.450	0.099	0.616	0.551	0.236	7.053	7.155	1083.44	551.69	0.105	0.297	-1.308	0.789	2.048	0.592	34.70	
	0.0451	33	0.3398	1.156	0.710	0.392	1.445	0.127	0.611	0.710	0.372	7.344	7.619	1739.09	675.67	0.230	0.376	-1.297	0.782	2.036	0.594	42.60	
	0.0451	50	0.3398	1.156	0.710	0.392	1.445	0.127	0.611	0.710	0.321	9.624	10.195	2140.68	831.69	0.230	0.376	-1.297	0.782	2.036	0.594	34.60	
	0.0566	33	0.4219	1.436	0.873	0.482	1.438	0.154	0.604	0.873	0.467	9.218	9.515	2340.82	705.37	0.451	0.457	-1.283	0.775	2.020	0.597	42.70	
	0.0566	50	0.4219	1.436	0.873	0.482	1.438	0.154	0.604	0.873	0.444	13.280	13.593	3371.56	1015.97	0.451	0.457	-1.283	0.775	2.020	0.597	34.40	
	0.0713	33	0.524	1.780	1.069	0.590	1.429	0.186	0.596	1.069	0.579	11.430	11.650	2884.00	662.00	0.887	0.552	-1.264	0.765	1.999	0.600	42.7	
	0.0713	50	0.524	1.780	1.069	0.590	1.429	0.186	0.596	1.069	0.574	17.190	17.660	4370.00	1004.00	0.887	0.552	-1.264	0.765	1.999	0.600	34.3	
1.71 / 1.625	362S170-27	0.0283	33	0.2193	0.746	0.468	0.258	1.460	0.092	0.646	0.468	0.206	4.076	4.215	591.72	369.62	0.059	0.274	-1.383	0.830	2.112	0.571	34.70
	350S170-27	0.0283	50	0.2193	0.746	0.468	0.258	1.460	0.092	0.646	0.455	0.183	5.485	5.494	591.72	369.62	0.059	0.274	-1.383	0.830	2.112	0.571	42.60
	362S170-33	0.0346	33	0.2673	0.910	0.568	0.313	1.458	0.111	0.643	0.568	0.271	5.346	5.500	1023.58	521.21	0.107	0.329	-1.376	0.826	2.105	0.573	42.70
	362S170-33	0.0346	50	0.2673	0.910	0.568	0.313	1.458	0.111	0.643	0.568	0.237	7.104	7.232	1083.44	551.69	0.107	0.329	-1.376	0.826	2.105	0.573	34.70
	362S170-43	0.0451	33	0.3462	1.179	0.732	0.404	1.453	0.141	0.638	0.732	0.380	7.511	7.736	1739.09	675.67	0.235	0.417	-1.364	0.819	2.093	0.575	42.60
	362S170-43	50	0.3465	1.179	0.732	0.404	1.453	0.141	0.638	0.732	0.404	9.726	10.320	2140.68	831.69	0.235	0.415	-1.364	0.819	2.093	0.575	34.60	
	362S170-54	0.0566	33	0.4304	1.465	0.900	0.496	1.446	0.172	0.632	0.900	0.481	9.512	9.809	2340.82	705.37	0.460	0.508	-1.350	0.812	2.077	0.577	42.70
	362S170-54	50	0.4964	1.465	0.900	0.496	1.446	0.172	0.632	0.900	0.451	13.493	13.785	3371.56	1015.97	0.460	0.508	-1.350	0.812	2.077	0.577	34.40	
2.00 / 1.88	362S188-27 ⁸	0.0283	33	0.2295	0.781	0.501	0.276	1.477	0.116	0.711	0.494	0.213	4.207	4.321	591.72	369.62	0.061	0.346	-1.546	0.920	2.254	0.529	43.01
	362S188-27 ⁸	0.0283	50	0.2295	0.781	0.501	0.276	1.477	0.116	0.711	0.501	0.188	5.635	5.608	591.72	369.62	0.061	0.346	-1.546	0.920	2.254	0.529	34.94
	362S188-33 ⁸	0.0346	33	0.2798	0.952	0.608	0.336	1.474	0.140	0.709	0.608	0.276	5.458	5.654	1023.58	521.21	0.112	0.416	-1.539	0.916	2.246	0.530	43.00
	362S188-33 ⁸	50	0.2798	0.952	0.608	0.336	1.474	0.140	0.709	0.602	0.241	7.204	7.396	1083.44	551.69	0.112	0.416	-1.539	0.916	2.246	0.530	34.93	
	362S188-43 ⁸	0.0451	33	0.3628	1.234	0.784	0.432	1.470	0.180	0.704	0.784	0.383	7.557	7.989	1739.09	675.67	0.246	0.528	-1.527	0.909	2.233	0.532	42.98
	362S188-43 ⁸	50	0.3628	1.234	0.784	0.432	1.470	0.180	0.704	0.784	0.333	9.969	10.587	2140.68	831.69	0.246	0.528	-1.527	0.909	2.233	0.532	34.92	
	362S188-54 ⁸	0.0566	33	0.4508	1.534	0.965	0.532	1.463	0.219	0.697	0.965	0.508	10.027	10.516	2340.82	705.37	0.481	0.643	-1.513	0.901	2.217	0.534	43.10
	362S188-54 ⁸	50	0.4508	1.534	0.965	0.532	1.463	0.219	0.697	0.965	0.453	13.548	14.200	3371.56	1015.97	0.481	0.643	-1.513	0.901	2.217	0.534	35.01	
2.00 / 2.00	362S200-33	0.0346	33	0.2881	0.980	0.635	0.350	1.485	0.163	0.752	0.635	0.279	5.519	5.745	1023.58	521.21	0.115	0.480	-1.649	0.976	2.342	0.505	53.60
	362S200-33	0.0346	50	0.2881	0.980	0.635	0.350	1.485	0.163	0.752	0.620	0.242	7.258	7.492	1083.44	551.69	0.115	0.480	-1.649	0.976	2.342	0.505	43.80
	362S200-43	0.0451	33	0.3736	1.271	0.818	0.451	1.480	0.209	0.747	0.818	0.384	7.577	8.140	1739.09	675.67	0.253	0.610	-1.637	0.969	2.329	0.507	53.60
	362S200-43	50	0.3736	1.272	0.818	0.451	1.480	0.209	0.747	0.816	0.337	10.103	10.744	2140.68	831.69	0.253	0.610	-1.637	0.969	2.329	0.507	43.70	

TABLE 3—C-SHAPE (S) SECTION PROPERTIES^{2,3} (Continued)

Flange sizes (in/in)	Member Designation	Design Thickness (in)	F _y (ksi)	Gross Properties						Effective Properties						Torsional Properties					L _u (in)		
				Area (in ²)	Weight (lb/ft)	I _x (in ⁴)	S _x (in ³)	R _x (in)	I _y (in ⁴)	R _y (in)	I _x (in ⁴)	S _x (in ³)	M _a (in-k)	M _{ad} (in-k)	V _{ag} (lb)	V _{a(net)} (lb)	J x 1000 (in ⁴)	C _w (in ⁶)	X ₀ (in)	m (in)	R ₀ (in)	β	
362S200	362S200-54	0.0566	33	0.4644	1.580	1.008	0.556	1.473	0.255	0.741	1.008	0.520	10.269	10.798	2340.82	705.37	0.496	0.744	-1.622	0.961	2.313	0.508	53.60
	362S200-54	0.0566	50	0.4644	1.580	1.008	0.556	1.473	0.255	0.741	1.008	0.453	13.563	14.445	3371.56	1015.97	0.496	0.744	-1.622	0.961	2.313	0.508	43.30
	362S200-68	0.0713	33	0.5772	1.964	1.238	0.683	1.464	0.309	0.732	1.238	0.654	14.553	15.194	2883.83	662.27	0.978	0.904	-1.603	0.951	2.291	0.510	53.40
	362S200-68	0.0713	50	0.5772	1.964	1.238	0.683	1.464	0.309	0.732	1.238	0.629	18.823	19.283	4369.44	1003.44	0.978	0.904	-1.603	0.951	2.291	0.510	43.30
	362S200-97	0.1017	33	0.8003	2.723	1.671	0.922	1.445	0.406	0.712	1.672	0.906	21.075	21.442	3922.11	577.20	2.759	1.194	-1.564	0.931	2.246	0.515	53.10
	362S200-97	0.1017	50	0.8003	2.723	1.672	0.922	1.445	0.406	0.712	1.672	0.881	30.398	31.815	5942.59	874.54	2.759	1.194	-1.564	0.931	2.246	0.515	43.60
362S250	362S250-43	0.0451	33	0.4187	1.425	0.963	0.531	1.516	0.358	0.924	0.953	0.401	7.926	8.646	1739.09	675.67	0.284	1.035	-2.099	1.218	2.749	0.417	54.23
	362S250-43	0.0451	50	0.4187	1.425	0.963	0.531	1.516	0.358	0.924	0.902	0.348	10.407	11.265	2140.68	831.69	0.284	1.035	-2.099	1.218	2.749	0.417	44.06
	362S250-54	0.0566	33	0.521	1.773	1.188	0.656	1.510	0.439	0.918	1.184	0.538	10.621	11.596	2340.82	705.37	0.556	1.266	-2.084	1.210	2.732	0.418	54.37
	362S250-54	0.0566	50	0.521	1.773	1.188	0.656	1.510	0.439	0.918	1.162	0.473	14.171	15.263	3371.56	1015.97	0.556	1.266	-2.084	1.210	2.732	0.418	44.17
	362S250-68	0.0713	33	0.6485	2.207	1.463	0.807	1.502	0.535	0.908	1.463	0.747	14.758	15.443	2883.83	662.27	1.099	1.544	-2.064	1.201	2.710	0.420	54.60
	362S250-68	0.0713	50	0.6485	2.207	1.463	0.807	1.502	0.535	0.908	1.436	0.647	19.381	20.595	4369.44	1003.44	1.099	1.544	-2.064	1.201	2.710	0.420	44.36
	362S250-97	0.1017	33	0.902	3.069	1.987	1.096	1.484	0.713	0.889	1.987	1.041	23.509	24.764	3922.11	577.20	3.110	2.057	-2.024	1.180	2.663	0.422	55.10
2.50 / 2.50	362S250-97	0.1017	50	0.902	3.069	1.987	1.096	1.484	0.713	0.889	1.986	1.030	30.840	31.915	5942.59	874.54	3.110	2.057	-2.024	1.180	2.663	0.422	44.76
400S162	400S162-27	0.0283	33	0.2257	0.768	0.570	0.285	1.589	0.085	0.614	0.570	0.227	4.475	4.643	533.09	398.40	0.060	0.302	-1.270	0.772	2.125	0.643	42.50
	400S162-27	0.0283	50	0.2257	0.768	0.570	0.285	1.589	0.085	0.614	0.559	0.201	6.019	6.051	533.09	398.04	0.060	0.302	-1.270	0.772	2.125	0.643	34.40
	400S162-33	0.0346	33	0.2751	0.936	0.692	0.346	1.586	0.103	0.611	0.692	0.299	5.906	6.066	975.89	594.86	0.110	0.363	-1.263	0.768	2.118	0.644	42.30
	400S162-33	0.0346	50	0.2751	0.936	0.692	0.346	1.586	0.103	0.611	0.692	0.263	7.858	7.973	975.89	594.86	0.110	0.363	-1.263	0.768	2.118	0.644	34.30
	400S162-43	0.0451	33	0.3567	1.214	0.892	0.446	1.581	0.131	0.606	0.892	0.417	8.232	8.544	1739.09	809.56	0.242	0.460	-1.252	0.761	2.106	0.647	42.20
	400S162-43	0.0451	50	0.3567	1.214	0.892	0.446	1.581	0.131	0.606	0.892	0.359	10.748	11.397	2140.68	996.50	0.242	0.460	-1.252	0.761	2.106	0.647	34.10
	400S162-54	0.0566	33	0.4431	1.508	1.098	0.549	1.574	0.159	0.600	1.098	0.549	10.386	10.846	2603.48	944.23	0.473	0.560	-1.238	0.754	2.090	0.649	42.20
	400S162-54	0.0566	50	0.4431	1.508	1.098	0.549	1.574	0.159	0.600	1.098	0.549	10.386	10.846	2603.48	944.23	0.473	0.560	-1.238	0.754	2.090	0.649	34.10
	400S162-68	0.0713	33	0.550	1.870	1.346	0.673	1.564	0.192	0.591	1.346	0.648	19.410	20.160	4871.00	1356.00	0.933	0.677	-1.220	0.745	2.069	0.653	34.0
	400S162-68	0.0713	50	0.550	1.870	1.346	0.673	1.564	0.192	0.591	1.346	0.648	19.410	20.160	4871.00	1356.00	0.933	0.677	-1.220	0.745	2.069	0.653	34.0
400S175	400S175-27	0.0283	33	0.2328	0.792	0.598	0.299	1.603	0.101	0.660	0.596	0.232	4.586	4.728	533.09	398.40	0.062	0.358	-1.381	0.834	2.216	0.612	42.70
	400S175-27	0.0283	50	0.2328	0.792	0.598	0.299	1.603	0.101	0.660	0.580	0.205	6.149	6.143	533.09	398.40	0.062	0.358	-1.381	0.834	2.216	0.612	34.80
	400S175-33	0.0346	33	0.2837	0.966	0.726	0.363	1.600	0.122	0.657	0.726	0.304	6.003	6.188	975.89	594.86	0.113	0.430	-1.374	0.830	2.209	0.613	42.60
	400S175-33	0.0346	50	0.2837	0.966	0.726	0.363	1.600	0.122	0.657	0.726	0.265	7.947	8.105	975.89	594.86	0.113	0.430	-1.374	0.830	2.209	0.613	34.70
	400S175-43	0.0451	33	0.368	1.252	0.936	0.468	1.595	0.157	0.652	0.936	0.429	8.469	8.744	1739.09	809.56	0.250	0.546	-1.362	0.823	2.197	0.615	42.55

TABLE 3—C-SHAPE (S) SECTION PROPERTIES^{2,3} (Continued)

Flange sizes (in/in)	Member Designation	Design Thickness (in)	F _y (ksi)	Gross Properties						Effective Properties						Torsional Properties					L _u (in)		
				Area (in ²)	Weight (lb/ft)	I _x (in ⁴)	S _x (in ³)	R _x (in)	I _y (in ⁴)	R _y (in)	I _x (in ⁴)	S _x (in ³)	M _a (in-k)	M _{ad} (in-k)	V _{ag} (lb)	V _{a(net)} (lb)	J _x 1000 (in ⁴)	C _w (in ⁶)	X ₀ (in)	m (in)	R ₀ (in)	β	
400S175-43	0.0451	50	0.368	1.252	0.936	0.468	1.595	0.157	0.652	0.936	0.365	10.941	11.609	2140.68	996.50	0.250	0.546	-1.362	0.823	2.197	0.615	34.62	
	400S175-54	0.0566	33	0.4573	1.556	1.153	0.576	1.588	0.191	0.646	1.153	0.553	10.928	11.389	2603.48	944.23	0.488	0.666	-1.348	0.816	2.181	0.618	42.22
	400S175-54	0.0566	50	0.4573	1.556	1.153	0.576	1.588	0.191	0.646	1.153	0.508	15.217	15.576	3371.56	1222.80	0.488	0.666	-1.348	0.816	2.181	0.618	34.25
2.00 / 2.00	400S200-33	0.0346	33	0.310	1.050	0.812	0.406	1.619	0.018	0.769	0.804	0.329	6.490	6.670	976.00	595.00	0.124	0.697	-1.688	1.007	2.462	0.530	53.10
	400S200-33	0.0346	50	0.310	1.050	0.812	0.406	1.619	0.018	0.769	0.803	0.351	9.833	10.010	976.00	595.00	0.124	0.697	1.698	1.001	2.462	0.530	42.90
	400S200-43	0.0451	33	0.3905	1.329	1.024	0.512	1.620	0.216	0.743	1.024	0.429	8.472	9.088	1739.09	809.56	0.265	0.746	-1.585	0.947	2.385	0.558	53.00
	400S200-43	0.0451	50	0.3905	1.329	1.024	0.512	1.620	0.216	0.743	1.023	0.377	11.276	11.967	2140.68	996.50	0.265	0.746	-1.585	0.947	2.385	0.558	42.90
	400S200-54	0.0566	33	0.4856	1.652	1.263	0.631	1.613	0.264	0.737	1.263	0.583	11.529	12.096	2603.48	944.23	0.519	0.911	-1.571	0.939	2.369	0.560	53.00
	400S200-54	0.0566	50	0.4856	1.652	1.263	0.631	1.613	0.264	0.737	1.263	0.508	15.193	16.135	3371.56	1222.80	0.519	0.911	-1.571	0.939	2.369	0.560	42.90
	400S200-68	0.0713	33	0.6039	2.055	1.552	0.776	1.603	0.320	0.728	1.552	0.757	14.964	15.337	3214.71	894.81	1.023	1.108	-1.552	0.929	2.347	0.563	52.90
	400S200-68	0.0713	50	0.6039	2.055	1.552	0.776	1.603	0.320	0.728	1.552	0.707	21.177	21.618	4870.77	1355.77	1.023	1.108	-1.552	0.929	2.347	0.563	42.90
	400S200-97	0.1017	33	0.8384	2.853	2.102	1.051	1.584	0.421	0.708	2.102	1.037	24.107	24.440	4394.06	796.67	2.891	1.468	-1.513	0.910	2.302	0.568	52.80
	400S200-97	0.1017	50	0.8384	2.853	2.102	1.051	1.584	0.421	0.708	2.102	1.008	34.774	36.263	6657.66	1207.08	2.891	1.468	-1.513	0.910	2.302	0.568	43.10
2.50 / 2.50	400S250-43	0.0451	33	0.4356	1.482	1.201	0.600	1.660	0.370	0.922	1.190	0.448	8.858	9.610	1739.09	809.56	0.295	1.266	-2.041	1.194	2.787	0.464	54.51
	400S250-43	0.0451	50	0.4356	1.482	1.201	0.600	1.660	0.370	0.922	1.128	0.388	11.614	12.499	2140.68	996.50	0.295	1.266	-2.041	1.194	2.787	0.464	44.28
	400S250-54	0.0566	33	0.5422	1.845	1.483	0.741	1.654	0.454	0.915	1.478	0.603	11.913	12.924	2603.48	944.23	0.579	1.550	-2.026	1.187	2.771	0.465	54.64
	400S250-54	0.0566	50	0.5422	1.845	1.483	0.741	1.654	0.454	0.915	1.450	0.530	15.868	16.975	3371.56	1222.80	0.579	1.550	-2.026	1.187	2.771	0.465	44.39
2.50 / 2.50	400S250-68	0.0713	33	0.6752	2.298	1.828	0.914	1.645	0.554	0.906	1.828	0.843	16.656	17.269	3214.71	894.81	1.144	1.893	-2.006	1.177	2.748	0.467	54.84
	400S250-68	0.0713	50	0.6752	2.298	1.828	0.914	1.645	0.554	0.906	1.794	0.728	21.796	22.974	4870.77	1355.77	1.144	1.893	-2.006	1.177	2.748	0.467	44.55
	400S250-97	0.1017	33	0.9401	3.199	2.489	1.244	1.627	0.739	0.886	2.489	1.185	26.762	28.106	4394.06	796.67	3.241	2.529	-1.967	1.157	2.702	0.470	55.30
	400S250-97	0.1017	50	0.9401	3.199	2.489	1.244	1.627	0.739	0.886	2.486	1.173	35.111	35.814	6657.66	1207.08	3.241	2.529	-1.967	1.157	2.702	0.470	44.93
1.625 / 1.57	550S157-27 ⁸	0.0283	33	0.2651	0.902	1.176	0.428	2.107	0.087	0.571	1.176	0.379	7.487	6.499	381.76	381.76	0.071	0.547	-1.076	0.675	2.433	0.805	35.32
	550S157-27 ⁸	0.0283	50	0.2651	0.902	1.176	0.428	2.107	0.087	0.571	1.156	0.323	9.657	8.412	381.76	381.76	0.071	0.547	-1.076	0.675	2.433	0.805	28.69
	550S157-33 ⁸	0.0346	33	0.3232	1.100	1.430	0.520	2.104	0.104	0.568	1.430	0.508	10.028	8.552	698.53	698.53	0.129	0.658	-1.069	0.671	2.427	0.806	35.27
	550S157-33 ⁸	0.0346	50	0.3232	1.100	1.430	0.520	2.104	0.104	0.568	1.430	0.442	13.232	11.156	698.53	698.53	0.129	0.658	-1.069	0.671	2.427	0.806	28.66
	550S157-43 ⁸	0.0451	33	0.4194	1.427	1.846	0.671	2.098	0.133	0.564	1.846	0.671	14.638	13.046	1550.05	1198.91	0.284	0.836	-1.058	0.665	2.417	0.808	35.19
	550S157-43 ⁸	0.0451	50	0.4194	1.427	1.846	0.671	2.098	0.133	0.564	1.846	0.625	18.718	16.107	1550.05	1198.91	0.284	0.836	-1.058	0.665	2.417	0.808	28.59
	550S157-54 ⁸	0.0566	33	0.5218	1.776	2.278	0.828	2.090	0.162	0.557	2.278	0.828	18.457	17.737	2739.07	1665.54	0.557	1.019	-1.045	0.658	2.402	0.811	35.21
	550S157-54 ⁸	0.0566	50	0.5218	1.776	2.278	0.828	2.090	0.162	0.557	2.278	0.802	26.666	23.373	3093.43	1881.02	0.557	1.019	-1.045	0.658	2.402	0.811	28.60

TABLE 3—C-SHAPE (S) SECTION PROPERTIES^{2,3} (Continued)

Flange sizes (in/in)	Member Designation	Design Thickness (in)	F _y (ksi)	Gross Properties						Effective Properties						Torsional Properties					L _u (in)		
				Area (in ²)	Weight (lb/ft)	I _x (in ⁴)	S _x (in ³)	R _x (in)	I _y (in ⁴)	R _y (in)	I _x (in ⁴)	S _x (in ³)	M _a (in-k)	M _{ad} (in-k)	V _{ag} (lb)	V _{a(net)} (lb)	J x 1000 (in ⁴)	C _w (in ⁶)	X ₀ (in)	m (in)	R ₀ (in)	β	
1.625 / 1.625	550S162-33	0.0346	33	0.327	1.110	1.459	0.530	2.112	0.113	0.589	1.459	0.512	10.110	8.630	699.00	699.00	0.130	0.713	-1.114	0.697	2.459	0.795	41.4
	550S162-33	0.0346	50	0.327	1.110	1.459	0.530	2.112	0.113	0.589	1.459	0.444	13.280	11.260	697.00	697.00	0.130	0.713	-1.114	0.697	2.459	0.795	33.5
	550S162-43	0.0451	33	0.4243	1.444	1.883	0.685	2.107	0.145	0.584	1.883	0.681	14.795	13.139	1550.05	1198.91	0.288	0.905	-1.103	0.691	2.449	0.797	35.72
	550S162-43	0.0451	50	0.4243	1.444	1.883	0.685	2.107	0.145	0.584	1.883	0.624	18.687	16.237	1550.05	1198.91	0.288	0.905	-1.103	0.691	2.449	0.797	29.02
	550S162-54	0.0566	33	0.528	1.797	2.324	0.845	2.098	0.176	0.577	2.324	0.845	18.762	17.873	2739.07	1665.54	0.564	1.105	-1.090	0.684	2.434	0.800	35.73
	550S162-54	0.0566	50	0.528	1.797	2.324	0.845	2.098	0.176	0.577	2.324	0.811	26.861	23.522	3093.43	1881.02	0.564	1.105	-1.090	0.684	2.434	0.800	29.03
	550S162-68	0.0713	33	0.6574	2.237	2.861	1.040	2.086	0.212	0.568	2.861	1.040	23.720	23.720	4346.59	2056.57	1.114	1.342	-1.072	0.675	2.414	0.803	35.78
	550S162-68	0.0713	50	0.6574	2.237	2.861	1.040	2.086	0.212	0.568	2.861	1.031	34.945	32.282	5350.29	2531.46	1.114	1.342	-1.072	0.675	2.414	0.803	29.07
	550S162-97	0.1017	33	0.9147	3.113	3.886	1.413	2.061	0.276	0.549	3.886	1.413	33.909	33.909	6281.86	1996.84	3.154	1.775	-1.037	0.656	2.372	0.809	35.91
	550S162-97	0.1017	50	0.9147	3.113	3.886	1.413	2.061	0.276	0.549	3.886	1.413	50.126	50.126	9517.98	3025.52	3.154	1.775	-1.037	0.656	2.372	0.809	29.17
2.00 / 2.00	550S200-43	0.0451	33	0.4582	1.559	2.135	0.776	2.159	0.239	0.723	2.135	0.708	13.998	12.959	1550.05	1198.91	0.311	1.470	-1.413	0.869	2.679	0.722	44.14
	550S200-43	0.0451	50	0.4582	1.559	2.135	0.776	2.159	0.239	0.723	2.102	0.657	19.656	16.932	1550.05	1198.91	0.311	1.470	-1.413	0.869	2.679	0.722	35.86
	550S200-54	0.0566	33	0.5705	1.941	2.639	0.960	2.151	0.292	0.716	2.639	0.918	19.981	18.639	2739.07	1665.54	0.609	1.800	-1.399	0.862	2.664	0.724	44.19
	550S200-54	0.0566	50	0.5705	1.941	2.639	0.960	2.151	0.292	0.716	2.634	0.846	25.322	23.049	3093.43	1881.02	0.609	1.800	-1.399	0.862	2.664	0.724	35.90
	550S200-68	0.0713	33	0.7109	2.419	3.255	1.184	2.140	0.355	0.707	3.255	1.156	25.722	25.404	4346.59	2056.57	1.205	2.196	-1.381	0.852	2.643	0.727	44.28
	550S200-68	0.0713	50	0.7109	2.419	3.255	1.184	2.140	0.355	0.707	3.255	1.126	33.697	31.254	5350.29	2531.46	1.205	2.196	-1.381	0.852	2.643	0.727	35.98
	550S200-97	0.1017	33	0.991	3.372	4.442	1.615	2.117	0.468	0.687	4.442	1.615	37.554	37.554	6281.86	1996.84	3.416	2.931	-1.344	0.833	2.600	0.733	44.50
	550S200-97	0.1017	50	0.991	3.372	4.442	1.615	2.117	0.468	0.687	4.442	1.575	54.348	54.072	9517.98	3025.52	3.416	2.931	-1.344	0.878	2.600	0.733	35.97
2.50 / 2.50	550S250-43	0.0451	33	0.5033	1.713	2.470	0.898	2.216	0.412	0.905	2.412	0.745	14.726	13.546	1550.05	1198.91	0.341	2.492	-1.842	1.109	3.020	0.628	55.10
	550S250-43	0.0451	50	0.5033	1.713	2.470	0.898	2.216	0.412	0.905	2.275	0.675	20.200	17.522	1550.05	1198.91	0.341	2.492	-1.842	1.109	3.020	0.628	44.76
	550S250-54	0.0566	33	0.6271	2.134	3.058	1.112	2.208	0.506	0.898	3.030	0.966	19.080	18.377	2739.07	1665.54	0.670	3.060	-1.827	1.102	3.004	0.630	55.18
2.50 / 2.50	550S250-54	0.0566	50	0.6271	2.134	3.058	1.112	2.208	0.506	0.898	2.919	0.889	26.629	23.983	3093.43	1881.02	0.670	3.060	-1.827	1.102	3.004	0.630	44.83
	550S250-68	0.0713	33	0.7822	2.662	3.781	1.375	2.199	0.618	0.889	3.781	1.300	25.693	24.825	4346.59	2056.57	1.325	3.750	-1.808	1.092	2.982	0.632	55.32
	550S250-68	0.0713	50	0.7822	2.662	3.781	1.375	2.199	0.618	0.889	3.698	1.170	35.029	32.774	5350.29	2531.46	1.325	3.750	-1.808	1.092	2.982	0.632	44.95
	550S250-97	0.1017	33	1.0927	3.718	5.183	1.885	2.178	0.825	0.869	5.183	1.822	41.161	42.528	6281.86	1996.84	3.767	5.048	-1.769	1.073	2.937	0.637	55.65
	550S250-97	0.1017	50	1.0927	3.718	5.183	1.885	2.178	0.825	0.869	5.164	1.806	54.075	52.078	9517.98	3025.52	3.767	5.048	-1.769	1.073	2.937	0.637	45.21

TABLE 3—C-SHAPE (S) SECTION PROPERTIES^{2,3} (Continued)

Flange Sizes (in / in)	Member Designation	Design Thickness	F_y	Gross Properties							Effective Properties							Torsional Properties					L_u (in)
				Area	Weight	I_x	S_x	R_x	I_y	R_y	I_x	S_x	M_a	M_{ad}	V_{ag}	$V_{a(net)}$	J_x 1000	C_w	X_0	m	R_o	β	
				(in)	(ksi)	(in ²)	(lb/ft)	(in ⁴)	(in ³)	(in)	(in ³)	(in)	(in-k)	(in-k)	(lb)	(lb)	(in ⁴)	(in ⁶)	(in)	(in)	(in)		
1.70 / 1.57	600S157-33	0.0346	33	0.3405	1.159	1.759	0.586	2.273	0.107	0.561	1.759	0.573	11.317	9.384	638.08	638.08	0.136	0.796	-1.029	0.651	2.557	0.838	36.18
	600S157-33	0.0346	50	0.3405	1.159	1.759	0.586	2.273	0.107	0.561	1.759	0.480	14.367	12.206	638.08	638.08	0.136	0.796	-1.029	0.651	2.557	0.838	29.39
	600S157-43	0.0451	33	0.4419	1.504	2.272	0.757	2.267	0.137	0.556	2.272	0.757	16.512	14.360	1415.67	1240.29	0.300	1.101	-1.018	0.645	2.547	0.840	36.10
	600S157-43	0.0451	50	0.4419	1.504	2.272	0.757	2.267	0.137	0.556	2.272	0.707	21.155	17.684	1415.67	1240.29	0.300	1.011	-1.018	0.645	2.547	0.840	29.33
	600S157-54	0.0566	33	0.9351	1.872	2.805	0.935	2.258	0.166	0.549	2.805	0.935	20.835	19.604	2739.07	1889.58	0.587	1.234	-1.005	0.638	2.532	0.842	36.12
	600S157-54	0.0566	50	0.5501	1.872	2.805	0.935	2.258	0.166	0.549	2.805	0.906	30.118	25.737	2822.88	1947.40	0.587	1.234	-1.005	0.638	2.532	0.842	29.34
1.625 / 1.625	600S162-33	0.0346	33	0.3443	1.172	1.793	0.598	2.282	0.116	0.581	1.793	0.577	11.407	9.466	638.08	638.08	0.137	0.862	-1.072	0.677	2.587	0.828	35.65
	600S162-33	0.0346	50	0.3443	1.172	1.793	0.598	2.282	0.116	0.581	1.793	0.481	14.407	12.300	638.08	368.08	0.137	0.862	-1.072	0.677	2.587	0.828	28.96
	600S162-43	0.0451	33	0.4469	1.521	2.316	0.772	2.276	0.148	0.576	2.316	0.767	16.680	14.462	1415.67	1240.29	0.303	1.095	-1.062	0.670	2.577	0.830	35.57
	600S162-43	0.0451	50	0.4469	1.521	2.316	0.772	2.276	0.148	0.576	2.316	0.706	21.122	17.828	1415.67	1240.29	0.303	1.095	-1.062	0.670	2.577	0.830	28.89
	600S162-54	0.0566	33	0.5563	1.893	2.860	0.954	2.268	0.181	0.570	2.860	0.954	21.165	19.750	2739.07	1889.58	0.594	1.337	-1.049	0.663	2.562	0.833	35.57
	600S162-54	0.0566	50	0.5563	1.893	2.860	0.954	2.268	0.181	0.570	2.860	0.916	30.325	25.900	2822.88	1947.40	0.594	1.337	-1.049	0.663	2.562	0.833	28.89
	600S162-68	0.0713	33	0.693	2.358	3.525	1.175	2.255	0.218	0.561	3.525	1.175	26.785	26.785	4346.59	2338.80	1.174	1.626	-1.032	0.655	2.543	0.835	35.60
	600S162-68	0.0713	50	0.693	2.358	3.525	1.175	2.255	0.218	0.561	3.525	1.164	39.466	35.696	5350.29	2878.86	1.174	1.626	-1.032	0.655	2.543	0.835	28.92
	600S162-97	0.1017	33	0.9655	3.286	4.797	1.599	2.229	0.283	0.541	4.797	1.599	38.373	38.373	6911.31	2511.48	3.329	2.153	-0.997	0.636	2.501	0.841	35.69
	600S162-97	0.1017	50	0.9655	3.286	4.797	1.599	2.229	0.283	0.541	4.797	1.599	56.725	56.725	3805.27	3805.27	3.329	2.153	-0.997	0.636	2.501	0.841	29.00
2.00 / 2.00	600S200-33	0.0346	33	0.3701	1.259	2.012	0.674	2.338	0.192	0.719	2.022	0.589	11.647	9.898	638.77	638.77	0.148	1.394	-1.376	0.853	2.806	0.760	44.15
	600S200-33	0.0346	50	0.3701	1.259	2.012	0.674	2.338	0.192	0.719	1.968	0.487	14.572	12.776	638.77	638.77	0.148	1.394	-1.376	0.853	2.806	0.760	35.87
	600S200-43	0.0451	33	0.4807	1.636	2.616	0.872	2.333	0.246	0.715	2.616	0.798	15.760	14.260	1415.67	1240.29	0.326	1.778	-1.365	0.846	2.796	0.762	44.07
	600S200-43	0.0451	50	0.8719	1.636	2.616	0.872	2.333	0.246	0.715	2.578	0.731	21.885	17.509	1415.67	1240.29	0.326	1.778	-1.365	0.846	2.796	0.762	35.80
	600S200-54	0.0566	33	0.5988	2.038	3.235	1.078	2.324	0.300	0.708	3.235	1.033	22.473	20.562	2739.07	1889.58	0.639	2.179	-1.351	0.839	2.780	0.764	44.11
	600S200-54	0.0566	50	0.5988	2.038	3.235	1.078	2.324	0.300	0.708	3.228	0.954	28.561	25.377	2822.88	1947.40	0.639	2.179	-1.351	0.839	2.780	0.764	35.83
	600S200-68	0.0713	33	0.7465	2.540	3.995	1.332	2.313	0.365	0.699	3.995	1.301	28.943	28.130	4346.59	2338.80	1.265	2.661	-1.334	0.830	2.760	0.767	44.18
	600S200-68	0.0713	50	0.7465	2.540	3.995	1.332	2.313	0.365	0.699	3.995	1.267	37.939	34.531	5350.29	2878.86	1.265	2.661	-1.334	0.830	2.760	0.767	35.89
	600S200-97	0.1017	33	1.0418	3.545	5.461	1.820	2.289	0.480	0.679	5.461	1.820	42.323	42.323	6911.13	2511.48	3.592	3.557	-1.297	0.811	2.717	0.772	44.37
	600S200-97	0.1017	50	1.0418	3.545	5.461	1.820	2.289	0.480	0.679	5.461	1.776	61.272	60.087	10471.41	3805.27	3.592	3.557	-1.297	0.811	2.717	0.772	36.04
2.50 / 2.50	600S250-43	0.0451	33	0.5258	1.789	3.016	1.005	2.395	0.424	0.898	2.940	0.839	16.569	14.877	1415.67	1240.29	0.357	3.014	-1.785	1.084	3.119	0.673	55.16
	600S250-43	0.0451	50	0.5258	1.789	3.016	1.005	2.395	0.424	0.898	2.795	0.734	21.962	19.214	1415.67	1240.29	0.357	3.014	-1.785	1.084	3.119	0.673	44.81
	600S250-54	0.0566	33	0.6554	2.230	3.735	1.245	2.387	0.520	0.891	3.699	1.085	21.443	20.233	2739.07	1889.58	0.700	3.705	-1.771	1.076	3.103	0.674	55.23

TABLE 3—C-SHAPE (S) SECTION PROPERTIES^{2,3} (Continued)

Flange Sizes (in / in)	Member Designation	Design Thickness	F_y	Gross Properties							Effective Properties							Torsional Properties					L_u (in)
				Area	Weight	I_x	S_x	R_x	I_y	R_y	I_x	S_x	M_a	M_{ad}	V_{ag}	$V_{a(net)}$	J_x 1000	C_w	X_0	m	R_o	β	
				(in)	(ksi)	(in ²)	(lb/ft)	(in ⁴)	(in ³)	(in)	(in ³)	(in)	(in ³)	(in-k)	(in-k)	(lb)	(lb)	(in ⁴)	(in ⁶)	(in)	(in)	(in)	
600S250-54	0.0566	50	0.6554	2.230	3.735	1.245	2.387	0.520	0.891	3.563	1.003	30.016	26.358	2822.88	1947.40	0.700	3.705	-1.771	1.076	3.103	0.674	44.87	
	0.0713	33	0.8178	2.783	4.621	1.540	2.377	0.635	0.881	4.621	1.458	28.815	27.418	4346.59	2338.80	1.386	4.543	-1.752	1.067	3.082	0.677	55.35	
	0.0713	50	0.8178	2.783	4.621	1.540	2.377	0.635	0.881	4.519	1.317	39.427	36.119	5350.29	2878.86	1.386	4.543	-1.752	1.067	3.082	0.677	44.97	
	0.1017	33	1.1435	3.891	6.345	2.115	2.356	0.848	0.861	6.345	2.046	46.215	47.209	6911.13	2511.48	3.942	6.126	-1.714	1.048	3.038	0.682	55.64	
	0.1017	50	1.1435	3.891	6.345	2.115	2.356	0.848	0.861	6.322	2.028	60.727	57.705	3805.27	2223.50	3.942	6.126	-1.714	1.048	3.038	0.682	45.20	
3.00 / 3.00	600S300-43	0.0451	33	0.5667	1.929	3.377	1.126	2.441	0.653	1.073	3.155	0.856	16.908	15.112	1443.00	1232.00	0.384	4.669	-2.214	1.324	3.466	0.592	67.20
	600S300-43	0.0451	50	0.5667	1.929	3.377	1.126	2.441	0.653	1.073	3.031	0.737	22.055	19.382	1443.00	1232.00	0.384	4.669	-2.214	1.324	3.466	0.592	54.20
	600S300-54	0.0566	33	0.712	2.423	4.235	1.412	2.439	0.817	1.071	4.067	1.128	22.282	20.895	2739.07	1889.58	0.760	5.750	-2.204	1.317	3.457	0.594	66.06
	600S300-54	0.0566	50	0.712	2.423	4.235	1.412	2.439	0.817	1.071	3.803	1.033	30.936	26.988	2822.88	1947.40	0.760	5.750	-2.204	1.317	3.457	0.594	53.67
	600S300-68	0.0713	33	0.8891	3.025	5.248	1.749	2.429	1.002	1.061	5.147	1.488	29.395	28.526	4346.59	2338.80	1.507	7.071	-2.185	1.307	3.435	0.596	66.23
	600S300-68	0.0713	50	0.8891	3.025	5.248	1.749	2.429	1.002	1.061	4.951	1.364	40.841	37.174	5350.29	2878.86	1.507	7.071	-2.185	1.307	3.435	0.596	53.80
	600S300-97	0.1017	33	1.2452	4.237	7.230	2.410	2.410	1.350	1.041	7.182	2.320	45.852	45.253	6911.13	2511.48	4.293	9.591	-2.145	1.287	3.390	0.600	66.60
	600S300-97	0.1017	50	1.2452	4.237	7.230	2.410	2.410	1.350	1.041	7.089	2.110	63.160	60.132	1047.41	3805.27	4.293	9.591	-2.145	1.287	3.390	0.600	54.11
3.50 / 3.50	600S350-54	0.0566	33	0.7686	2.615	4.735	1.578	2.482	1.198	1.249	4.302	1.158	22.878	21.368	2739.07	1889.58	0.821	8.378	-2.647	1.559	3.838	0.524	76.63
	600S350-54	0.0566	50	0.7686	2.615	4.735	1.578	2.482	1.198	1.249	4.049	1.056	31.611	27.422	2822.88	1947.40	0.821	8.378	-2.647	1.559	3.838	0.524	62.26
	600S350-68	0.0713	33	0.9604	3.268	5.874	1.958	2.473	1.474	1.239	5.639	1.534	30.305	29.332	4346.59	2338.80	1.628	10.324	-2.628	1.865	3.815	0.526	77.93
	600S350-68	0.0713	50	0.9604	3.268	5.874	1.958	2.473	1.474	1.239	5.228	1.401	41.940	37.923	5350.29	2878.86	1.628	10.324	-2.628	1.865	3.815	0.526	63.31
	600S350-97	0.1017	33	1.3469	4.583	8.114	2.705	2.455	2.000	1.218	7.980	2.390	47.218	47.132	6911.13	2511.48	4.644	14.066	-2.587	1.529	3.769	0.529	77.28
	600S350-97	0.1017	50	1.3469	4.583	8.114	2.705	2.455	2.000	1.218	7.886	2.159	64.644	61.907	10471.41	3805.27	4.644	14.066	-2.587	1.529	3.769	0.529	62.79
1.625 / 1.625	800S162-43	0.0451	33	0.5371	1.828	4.633	1.158	2.937	0.160	0.546	4.500	1.019	20.141	18.328	1051.15	1051.15	0.364	2.076	-0.926	0.601	3.128	0.912	34.76
	800S162-43	0.0451	50	0.5371	1.828	4.633	1.158	2.937	0.160	0.546	4.429	0.866	25.928	23.812	1051.15	1051.15	0.364	2.076	-0.926	0.601	3.128	0.912	28.24
	800S162-54	0.0566	33	0.6695	2.278	5.736	1.434	2.927	0.194	0.539	5.702	1.334	26.355	24.981	2091.28	2091.28	0.715	2.539	-0.914	0.594	3.113	0.914	34.73
	800S162-54	0.0566	50	0.6695	2.278	5.736	1.434	2.927	0.194	0.539	5.600	1.229	36.791	32.812	2091.28	2091.28	0.715	2.539	-0.914	0.594	3.113	0.914	28.22
	800S162-68	0.0713	33	0.8356	2.844	7.089	1.772	2.913	0.235	0.530	7.089	1.737	34.323	33.840	4220.79	3367.36	1.416	3.093	-0.899	0.586	3.094	0.916	34.72
	800S162-68	0.0713	50	0.8356	2.844	7.089	1.772	2.913	0.235	0.530	7.070	1.663	49.802	45.108	4220.79	3367.36	1.416	3.093	-0.899	0.586	3.094	0.916	28.20
	800S162-97	0.1017	33	1.1689	3.978	9.713	2.428	2.883	0.305	0.510	9.713	2.428	58.271	58.271	8843.25	4823.87	4.030	4.114	-0.866	0.568	3.053	0.920	34.71
	800S162-97	0.1017	50	1.1689	3.978	9.713	2.428	2.883	0.305	0.510	9.713	2.428	72.703	71.934	10885.29	5937.77	4.030	4.114	-0.866	0.568	3.053	0.920	28.20
2.00 / 2.00	800S200-43	0.0451	33	0.5709	1.943	5.169	1.292	3.009	0.266	0.683	5.169	1.158	22.873	19.344	1051.15	1051.15	0.387	3.375	-1.204	0.767	3.312	0.868	43.48
	800S200-43	0.0451	50	0.5709	1.943	5.169	1.292	3.009	0.266	0.683	5.159	0.956	28.630	25.008	1051.15	1051.15	0.387	3.375	-1.204	0.767	3.312	0.868	35.33

TABLE 3—C-SHAPE (S) SECTION PROPERTIES^{2,3} (Continued)

Flange Sizes (in / in)	Member Designation	Design Thickness	F_y	Gross Properties							Effective Properties							Torsional Properties					L_u (in)
				Area	Weight	I_x	S_x	R_x	I_y	R_y	I_x	S_x	M_a	M_{ad}	V_{ag}	$V_{a(net)}$	$J_x \cdot 1000$	C_w	X_0	m	R_o	β	
				(in)	(ksi)	(in ²)	(lb/ft)	(in ⁴)	(in ³)	(in)	(in ³)	(in)	(in ³)	(in-k)	(in-k)	(lb)	(lb)	(in ⁴)	(in ⁶)	(in)	(in)	(in)	
800S200-54	0.0566	33	0.712	2.423	6.405	1.601	2.999	0.325	0.676	6.405	1.539	33.476	28.164	2091.28	2091.28	0.760	4.142	-1.191	0.760	3.297	0.870	43.48	
	0.0566	50	0.712	2.423	6.405	1.601	2.999	0.325	0.676	6.402	1.396	41.798	34.505	2091.28	2091.28	0.760	4.142	-1.191	0.760	3.297	0.870	35.32	
	0.0713	33	0.8891	3.025	7.930	1.982	2.986	0.395	0.666	7.930	1.940	43.161	39.069	4220.79	3367.36	1.507	5.069	-1.174	0.751	3.278	0.872	43.51	
	0.0713	50	0.8891	3.025	7.930	1.982	2.986	0.395	0.666	7.930	1.894	56.704	47.571	4220.79	3367.36	1.507	5.069	-1.174	0.751	3.278	0.872	35.34	
	0.1017	33	1.2452	4.237	10.903	2.726	2.959	0.521	0.647	10.903	2.726	63.375	63.375	8843.25	4823.87	4.293	6.807	-1.140	0.733	3.236	0.876	43.58	
	0.1017	50	1.2452	4.237	10.903	2.726	2.959	0.521	0.647	10.903	2.664	91.913	84.550	10885.29	5937.77	4.293	6.807	-1.140	0.733	3.236	0.876	35.41	
2.50 / 2.50	800S250-43	0.0451	33	0.616	2.096	5.882	1.471	3.090	0.462	0.866	5.797	1.177	23.256	20.186	1051.15	1051.15	0.418	5.725	-1.593	0.994	3.583	0.802	54.95
	800S250-43	0.0451	50	0.616	2.096	5.882	1.471	3.090	0.462	0.866	5.567	0.969	29.003	25.928	1051.15	1051.15	0.418	5.725	-1.593	0.994	3.583	0.802	44.64
	800S250-54	0.0566	33	0.7686	2.615	7.298	1.825	3.082	0.567	0.859	7.221	1.612	31.850	27.706	2091.28	2091.28	0.821	7.047	-1.579	0.987	3.568	0.804	54.98
	800S250-54	0.0566	50	0.7686	2.615	7.298	1.825	3.082	0.567	0.859	7.043	1.417	42.412	35.861	2091.28	2091.28	0.821	7.047	-1.579	0.987	3.568	0.804	44.67
	800S250-68	0.0713	33	0.9604	3.268	9.050	2.263	3.070	0.692	0.849	9.050	2.151	42.496	37.968	4220.79	3367.36	1.628	8.660	-1.562	0.978	3.547	0.806	55.05
	800S250-68	0.0713	50	0.9604	3.268	9.050	2.263	3.070	0.692	0.849	8.851	1.966	58.847	49.638	4220.79	3367.36	1.628	8.660	-1.562	0.978	3.547	0.806	44.72
	800S250-97	0.1017	33	1.3469	4.583	12.489	3.122	3.045	0.925	0.829	12.489	3.027	68.368	66.579	8843.25	4823.87	4.644	11.730	-1.525	0.960	3.505	0.811	55.23
	800S250-97	0.1017	50	1.3469	4.583	12.489	3.122	3.045	0.925	0.829	12.441	3.003	89.899	80.854	10885.29	5937.77	4.644	11.730	-1.525	0.960	3.505	0.811	44.87

TABLE 3—C-SHAPE (S) SECTION PROPERTIES^{2,3} (Continued)

Flange Sizes (in / in)	Member Designation	Design Thickness (in)	F _y (ksi)	Gross Properties							Effective Properties							Torsional Properties					L _u (in)
				Area (in ²)	Weight (lb/ft)	I _x (in ⁴)	S _x (in ³)	R _x (in)	I _y (in ³)	R _y (in)	I _x (in ⁴)	S _x (in ³)	M _a (in-k)	M _{ad} (in-k)	V _{ag} (lb)	V _{a(net)} (lb)	J _x 1000 (in ⁴)	C _w (in ⁶)	X ₀ (in)	m (in)	R ₀ (in)	β	
3.00 / 3.00	800S300-54	0.0566	33	0.8252	2.808	8.191	2.048	3.151	0.894	1.041	7.850	1.673	33.060	28.488	2091.28	0.881	10.934	-1.985	1.220	3.866	0.737	66.26	
	800S300-54	0.0566	50	0.8252	2.808	8.191	2.048	3.151	0.894	1.041	7.495	1.417	42.422	36.626	2091.28	0.881	10.934	-1.985	1.220	3.866	0.737	53.83	
	800S300-68	0.0713	33	1.0317	3.511	10.171	2.543	3.140	1.096	1.031	9.974	2.196	43.390	39.248	4220.79	3367.36	1.748	13.475	-1.966	1.210	3.845	0.739	66.37
	800S300-68	0.0713	50	1.0317	3.511	10.171	2.543	3.140	1.096	1.031	9.593	2.035	60.913	50.873	4220.79	3367.36	1.748	13.475	-1.966	1.210	3.845	0.739	53.92
	800S300-97	0.1017	33	1.4486	4.929	14.075	3.519	3.117	1.478	1.010	13.981	3.396	67.096	63.366	8843.25	4823.87	4.994	18.359	-1.928	1.191	3.802	0.743	66.63
	800S300-97	0.1017	50	1.4486	4.929	14.075	3.519	3.117	1.478	1.010	13.804	3.119	93.383	83.617	10885.29	5937.77	4.994	18.359	-1.928	1.191	3.802	0.743	54.13
3.50 / 3.50	800S350-54	0.0566	33	0.8818	3.001	9.084	2.271	3.210	1.315	1.221	8.280	1.718	33.949	28.992	2091.28	2091.28	0.942	15.917	-2.403	1.455	4.192	0.671	77.31
	800S350-54	0.0566	50	0.8818	3.001	9.084	2.271	3.210	1.315	1.221	7.990	1.412	42.276	37.073	2091.28	2091.28	0.942	15.917	-2.403	1.455	4.192	0.671	62.80
	800S350-68	0.0713	33	1.103	3.753	11.291	2.823	3.200	1.619	1.211	10.814	2.263	44.719	40.109	4220.79	3367.36	1.869	19.656	-2.384	1.446	4.170	0.673	77.46
	800S350-68	0.0713	50	1.103	3.753	11.291	2.823	3.200	1.619	1.211	10.102	2.090	62.562	51.643	4220.79	3367.36	1.869	19.656	-2.384	1.446	4.170	0.673	62.93
	800S350-97	0.1017	33	1.5503	5.275	15.661	3.915	3.178	2.197	1.191	15.401	3.496	69.079	65.424	8843.25	4823.87	5.345	26.897	-2.345	1.426	4.125	0.677	77.78
	800S350-97	0.1017	50	1.5503	5.275	15.661	3.915	3.178	2.197	1.191	15.176	3.194	95.628	85.489	10885.29	5937.77	5.345	26.897	-2.345	1.426	4.125	0.677	63.19
1.625 / 1.625	1000S162-43	0.0451	33	0.6273	2.135	8.025	1.605	3.577	0.168	0.518	7.523	1.302	25.736	22.489	835.92	835.92	0.425	3.430	-0.823	0.545	3.707	0.951	38.80
	1000S162-43	0.0451	50	0.6273	2.135	8.025	1.605	3.577	0.168	0.518	7.370	1.099	32.913	28.927	835.92	835.92	0.425	3.430	-0.823	0.545	3.707	0.951	31.40
	1000S162-54	0.0566	33	0.7827	2.664	9.950	1.990	3.565	0.204	0.511	9.627	1.722	34.022	31.108	1660.84	1660.84	0.836	4.198	-0.812	0.539	3.692	0.952	38.50
	1000S162-54	0.0566	50	0.7827	2.664	9.950	1.990	3.565	0.204	0.511	9.391	1.572	47.066	40.369	1660.84	1660.84	0.836	4.198	-0.812	0.539	3.692	0.952	31.00
	1000S162-68	0.0713	33	0.9782	3.329	12.325	2.465	3.550	0.246	0.502	12.256	2.276	41.737	42.910	3345.42	3345.42	1.658	5.121	-0.798	0.531	3.673	0.953	38.10
	1000S162-68	0.0713	50	0.9782	3.329	12.325	2.465	3.550	0.246	0.502	11.978	2.155	64.506	56.353	3345.42	3345.42	1.658	5.121	-0.798	0.531	3.673	0.953	31.00
	1000S162-97	0.1017	33	1.3723	4.670	16.967	3.393	3.516	0.320	0.483	16.967	3.393	67.055	67.055	8843.25	6434.13	4.731	6.827	-0.768	0.514	3.631	0.955	37.80
	1000S162-97	0.1017	50	1.3723	4.670	16.967	3.393	3.516	0.320	0.483	16.967	3.269	97.887	92.553	9863.80	7176.66	4.731	6.827	-0.768	0.514	3.631	0.955	30.40
2.00 / 2.00	1000S200-43	0.0451	33	0.6611	2.250	8.863	1.773	3.662	0.281	0.652	8.425	1.320	26.083	23.994	835.92	835.92	0.448	5.589	-1.079	0.702	3.873	0.922	49.30
	1000S200-43	0.0451	50	0.6611	2.250	8.863	1.773	3.662	0.281	0.652	8.235	1.142	34.198	30.792	835.92	835.92	0.448	5.589	-1.079	0.702	3.873	0.922	41.20
	1000S200-54	0.0566	33	0.8252	2.808	10.999	2.200	3.651	0.343	0.645	10.702	1.854	36.638	33.176	1660.84	1660.84	0.881	6.865	-1.067	0.696	3.858	0.924	49.10
	1000S200-54	0.0566	50	0.8252	2.808	10.999	2.200	3.651	0.343	0.645	10.519	1.589	47.572	42.916	1660.84	1660.84	0.881	6.865	-1.067	0.696	3.858	0.924	39.80

TABLE 3—C-SHAPE (S) SECTION PROPERTIES^{2,3} (Continued)

Flange Sizes (in / in)	Member Designation	Design Thickness (in)	F_y (ksi)	Gross Properties							Effective Properties							Torsional Properties					L_u (in)
				Area (in ²)	Weight (lb/ft)	I_x (in ⁴)	S_x (in ³)	R_x (in)	I_y (in ³)	R_y (in)	I_x (in ⁴)	S_x (in ³)	M_a (in-k)	M_{ad} (in-k)	V_{ag} (lb)	$V_{a(net)}$ (lb)	$J \times 1000$ (in ⁴)	C_w (in ⁶)	X_0 (in)	m (in)	R_o (in)	β	
2.00 / 2.00	1000S200-68	0.0713	33	1.0317	3.511	13.643	2.729	3.637	0.417	0.636	13.573	2.525	49.896	45.808	3345.42	3345.42	1.748	8.412	-1.052	0.687	3.839	0.925	48.80
	1000S200-68	0.0713	50	1.0317	3.511	13.643	2.729	3.637	0.417	0.636	13.339	2.284	68.375	59.890	3345.42	3345.42	1.748	8.412	-1.052	0.687	3.839	0.925	39.60
	1000S200-97	0.1017	33	1.4486	4.929	18.835	3.767	3.606	0.549	0.616	18.835	3.767	74.438	73.672	8843.25	6434.13	4.994	11.324	-1.020	0.670	3.798	0.928	49.50
	1000S200-97	0.1017	50	1.4486	4.929	18.835	3.767	3.606	0.549	0.616	18.835	3.640	108.972	98.704	9863.80	7176.66	4.994	11.324	-1.020	0.670	3.798	0.928	39.00
2.50 / 2.50	1000S250-43	0.0451	33	0.7062	2.403	9.981	1.996	3.759	0.490	0.833	9.909	1.449	28.637	25.264	835.92	835.92	0.479	9.493	-1.442	0.920	4.112	0.877	60.70
	1000S250-43	0.0451	50	0.7062	2.403	9.981	1.996	3.759	0.490	0.833	9.558	1.206	36.094	32.290	835.92	835.92	0.479	9.493	-1.442	0.920	4.112	0.877	49.80
	1000S250-54	0.0566	33	0.8818	3.001	12.398	2.480	3.750	0.601	0.826	12.304	2.121	41.914	34.973	1660.84	1660.84	0.942	11.697	-1.429	0.913	4.097	0.878	60.50
	1000S250-54	0.0566	50	0.8818	3.001	12.398	2.480	3.750	0.601	0.826	12.143	1.746	52.278	45.007	1660.84	1660.84	0.942	11.697	-1.429	0.913	4.097	0.878	49.10
	1000S250-68	0.0713	33	1.103	3.753	15.400	3.081	3.737	0.734	0.816	15.400	2.939	58.073	48.428	3345.42	3345.42	1.869	14.392	-1.412	0.904	4.077	0.880	60.10
	1000S250-68	0.0713	50	1.103	3.753	15.400	3.080	3.737	0.734	0.816	15.087	2.628	78.694	62.880	3345.42	3345.42	1.869	14.392	-1.412	0.904	4.077	0.880	48.80
	1000S250-97	0.1017	33	1.5503	5.275	21.326	4.265	3.709	0.981	0.796	21.326	4.144	93.603	86.340	8843.25	6434.13	5.345	19.544	-1.377	0.886	4.037	0.884	59.10
	1000S250-97	0.1017	50	1.5503	5.275	21.326	4.265	3.709	0.981	0.796	21.241	4.114	123.163	104.239	9863.80	7176.66	5.345	19.544	-1.377	0.886	4.036	0.884	45.60
3.00 / 3.00	1000S300-54	0.0566	33	0.9384	3.193	13.797	2.760	3.835	0.952	1.007	13.410	2.139	42.264	36.048	1660.84	1660.84	1.002	18.159	-1.809	1.137	4.358	0.828	71.50
	1000S300-54	0.0566	50	0.9384	3.193	13.797	2.760	3.835	0.952	1.007	12.857	1.757	52.615	46.158	1660.84	1660.84	1.002	18.159	-1.809	1.137	4.358	0.828	58.00
	1000S300-68	0.0713	33	1.1743	3.996	17.158	3.432	3.822	1.168	0.997	16.831	3.002	59.310	50.072	3345.42	3345.42	1.990	22.406	-1.792	1.128	4.338	0.829	10.90
	1000S300-68	0.0713	50	1.1743	3.996	17.158	3.432	3.822	1.168	0.997	16.384	2.636	78.908	64.600	3345.42	3345.42	1.990	22.406	-1.792	1.128	4.338	0.829	57.80
	1000S300-97	0.1017	33	1.652	5.621	23.817	4.763	3.797	1.575	0.976	23.659	4.607	91.042	82.111	8843.25	6434.13	5.696	30.606	-1.755	1.109	4.296	0.833	69.90
	1000S300-97	0.1017	50	1.652	5.621	23.817	4.763	3.797	1.575	0.976	23.373	4.267	127.751	107.698	9863.80	7176.66	5.696	30.606	-1.755	1.109	4.296	0.833	57.40
3.50 / 3.50	1000S350-54	0.0566	33	0.995	3.386	15.197	3.039	3.908	1.405	1.188	14.099	2.142	42.318	36.686	1660.84	1660.84	1.063	26.430	-2.205	1.365	4.642	0.774	89.90
	1000S350-54	0.0566	50	0.995	3.386	15.197	3.039	3.908	1.405	1.188	13.661	1.759	52.677	46.771	1660.84	1660.84	1.063	26.430	-2.205	1.365	4.642	0.774	72.20
	1000S350-68	0.0713	33	1.2456	4.239	18.915	3.783	3.897	1.730	1.178	18.103	3.092	61.089	51.106	3345.42	3345.42	2.111	32.679	-2.187	1.356	4.621	0.776	88.20
	1000S350-68	0.0713	50	1.2456	4.239	18.915	3.783	3.897	1.730	1.179	17.245	2.636	78.907	65.575	3345.42	3345.42	2.111	32.679	-2.187	1.356	4.621	0.776	72.00
	1000S350-97	0.1017	33	1.7537	5.968	26.308	5.262	3.873	2.349	1.157	25.882	4.741	93.683	84.449	8843.25	6434.13	6.046	44.834	-2.149	1.337	4.578	0.780	87.10
	1000S350-97	0.1017	50	1.7537	5.968	26.308	5.262	3.873	2.349	1.157	25.463	4.370	130.826	109.872	9863.80	7176.66	6.046	44.834	-2.149	1.337	4.578	0.780	71.60

TABLE 3—C-SHAPE (S) SECTION PROPERTIES^{2,3} (Continued)

Flange Sizes (in / in)	Member Designation	Design Thickness (in)	F _y (ksi)	Gross Properties							Effective Properties							Torsional Properties					L _u (in)
				Area (in ²)	Weight (lb/ft)	I _x (in ⁴)	S _x (in ³)	R _x (in)	I _y (in ⁴)	R _y (in)	I _x (in ⁴)	S _x (in ³)	M _a (in-k)	M _{ad} (in-k)	V _{ag} (lb)	V _{a(net)} (lb)	J _x 1000 (in ⁴)	C _w (in ⁶)	X ₀ (in)	m (in)	R ₀ (in)	β	
1.625 / 1.625	1200S162-54	0.0566	33	0.8959	3.049	15.730	2.622	4.190	0.212	0.486	14.743	2.109	41.677	36.375	1377.35	1377.35	0.957	6.340	-0.732	0.493	4.281	0.971	37.50
	1200S162-54	0.0566	50	0.8959	3.049	15.730	2.622	4.190	0.212	0.486	14.298	1.914	57.313	46.757	1377.35	1377.35	0.957	6.340	-0.732	0.493	4.281	0.971	30.50
	1200S162-68	0.0713	50	1.1208	3.814	19.518	3.253	4.173	0.255	0.477	18.390	2.645	79.194	66.137	2770.77	2770.77	1.899	7.739	-0.719	0.485	4.261	0.972	30.20
	1200S162-97	0.1017	50	1.5757	5.362	26.965	4.494	4.137	0.331	0.459	26.735	4.091	122.487	111.301	8147.07	7411.11	5.433	10.331	-0.691	0.470	4.219	0.973	29.50
2.00 / 2.00	1200S200-54	0.0566	33	0.9384	3.193	17.244	2.874	4.287	0.357	0.617	16.311	2.264	44.743	39.173	1377.35	1377.35	1.002	10.392	-0.969	0.642	4.438	0.952	48.00
	1200S200-54	0.0566	50	0.9384	3.193	17.244	2.874	4.287	0.357	0.617	15.967	1.931	57.825	50.294	1377.35	1377.35	1.002	10.392	-0.969	0.642	4.438	0.952	39.00
	1200S200-68	0.0713	50	1.1743	3.996	21.420	3.570	4.271	0.434	0.608	20.384	2.794	83.662	70.979	2770.77	2770.77	1.990	12.743	-0.954	0.634	4.418	0.953	38.70
	1200S200-97	0.1017	50	1.652	5.621	29.665	4.944	4.238	0.571	0.588	29.426	4.534	135.738	119.412	8147.07	7411.11	5.696	17.180	-0.924	0.617	4.377	0.956	38.10
2.50 / 2.50	1200S250-54	0.0566	33	0.995	3.386	19.262	3.210	4.400	0.628	0.794	17.592	1.999	59.846	53.415	1377.35	1377.35	1.063	17.743	-1.307	0.849	4.658	0.921	58.60
	1200S250-54	0.0566	50	0.995	3.386	19.262	3.210	4.400	0.628	0.794	17.592	1.999	59.846	53.415	1377.35	1377.35	1.063	17.743	-1.307	0.849	4.658	0.921	48.90
	1200S250-68	0.0713	50	1.2456	4.239	23.956	3.993	4.386	0.767	0.785	22.606	2.855	85.473	75.298	2770.77	2770.77	2.111	21.847	-1.291	0.841	4.638	0.923	48.10
	1200S250-97	0.1017	50	1.7537	5.968	33.264	5.544	4.355	1.025	0.764	33.085	4.920	147.307	126.883	8147.07	7411.11	6.046	29.714	-1.258	0.824	4.597	0.925	47.50
3.00 / 3.00	1200S300-54	0.0566	33	1.0516	3.578	21.281	3.547	4.499	0.998	0.974	20.180	2.100	62.885	55.238	1377.35	1377.35	1.123	27.573	-1.665	1.065	4.895	0.884	70.70
	1200S300-54	0.0566	50	1.0516	3.578	21.281	3.547	4.499	0.998	0.974	20.180	2.100	62.885	55.238	1377.35	1377.35	1.123	27.573	-1.665	1.065	4.895	0.884	57.40
	1200S300-68	0.0713	50	1.3169	4.481	26.493	4.415	4.485	1.224	0.964	25.743	3.122	93.464	77.874	2770.77	2770.77	2.232	34.048	-1.648	1.056	4.875	0.886	57.20
	1200S300-97	0.1017	50	1.8554	6.314	36.864	6.144	4.457	1.651	0.943	36.203	5.552	166.236	131.574	8147.07	7411.11	6.397	46.586	-1.614	1.038	4.833	0.889	56.70
3.50 / 3.50	1200S350-54	0.0566	50	1.1082	3.771	23.299	3.883	4.585	1.477	1.155	21.276	2.108	63.120	56.241	1377.35	1377.35	1.183	40.149	-2.041	1.286	5.150	0.843	71.40
	1200S350-68	0.0713	50	1.3882	4.724	29.029	4.838	4.573	1.818	1.144	26.980	3.137	93.919	79.337	2770.77	2770.77	2.352	49.681	-2.023	1.277	5.130	0.845	71.20
	1200S350-97	0.1017	50	1.9571	6.660	40.463	6.744	4.547	2.469	1.123	39.147	5.684	170.189	134.441	8147.07	7411.11	6.747	68.274	-1.987	1.259	5.088	0.848	70.80

For SI: 1 inch = 25.4 mm; 1 lb/ft = 14.5939 N/m; 1 in-k = 12.8 N·m; 1 lb = 4.448 N; 1 ksi = 6.89 MPa.

¹For applications in accordance with the IRC, use of all 162S162-XX, 250S162-XX, 350S162-27, 350S162-30, 362S162-27 and 362S162-30 is applicable only for engineered designs in accordance with IRC Section R301.1.3.²Member Designation identification provides nominal dimensions as shown in the example below:

Example: 600S162-43; 600 = 6 inch depth (Depth measured from the outside face to outside face of flanges), S = C-Section, 162 = 1.625 inch flange width, 43 = thickness designation of 43 mils or 0.0428 inches.

³See additional notes on page 4.

TABLE 4—TRACK (T) SECTION PROPERTIES^{2,3}

Member Designation	Design Thickness (in)	F_y (ksi)	Gross Properties						Effective Properties				Torsional Properties						
			Area (in ²)	Weight (lb/ft)	I_x (in ⁴)	S_x (in ³)	R_x (in)	I_y (in ⁴)	R_y (in)	I_x (in ⁴)	S_x (in ³)	M_a (in-k)	V_{ag} (lb)	$J \times 1000$ (in ⁴)	C_w (in ⁶)	X_0 (in)	m (in)	R_0 (in)	β
162T162-27 ¹	0.0283	33	0.138	0.469	0.079	0.090	0.757	0.040	0.537	0.057	0.046	0.910	541	0.037	0.022	-1.216	0.683	1.529	0.368
162T162-27 ¹	0.0283	50	0.138	0.469	0.079	0.090	0.757	0.040	0.537	0.053	0.042	1.268	820	0.037	0.022	-1.216	0.683	1.529	0.368
162T162-30 ¹	0.0312	33	0.152	0.517	0.087	0.099	0.756	0.044	0.536	0.065	0.053	1.044	597	0.049	0.024	-1.214	0.682	1.528	0.369
162T162-30 ¹	0.0312	50	0.152	0.517	0.087	0.099	0.756	0.044	0.536	0.060	0.049	1.452	905	0.049	0.024	-1.214	0.682	1.528	0.369
162T162-33 ¹	0.0346	33	0.169	0.574	0.097	0.109	0.758	0.048	0.536	0.074	0.061	1.211	663	0.067	0.026	-1.212	0.681	1.526	0.369
162T162-33 ¹	0.0346	50	0.169	0.574	0.097	0.109	0.758	0.048	0.536	0.069	0.056	1.679	1005	0.067	0.026	-1.212	0.681	1.526	0.369
162T162-43 ¹	0.0451	33	0.219	0.747	0.219	0.142	0.759	0.063	0.534	0.106	0.090	1.780	867	0.149	0.034	-1.206	0.678	1.522	0.372
162T162-43 ¹	0.0451	50	0.219	0.747	0.219	0.142	0.759	0.063	0.534	0.099	0.082	2.450	1314	0.149	0.034	-1.206	0.678	1.522	0.372
250T162-27 ¹	0.0283	33	0.163	0.554	0.193	0.146	1.089	0.046	0.530	0.143	0.083	1.633	685	0.043	0.055	-1.086	0.634	1.626	0.554
250T162-27 ¹	0.0283	50	0.163	0.554	0.193	0.146	1.089	0.046	0.530	0.136	0.077	2.317	833	0.043	0.055	-1.086	0.634	1.626	0.554
250T162-30 ¹	0.0312	33	0.179	0.610	0.213	0.161	1.089	0.050	0.529	0.162	0.094	1.859	832	0.058	0.060	-1.084	0.634	1.625	0.555
250T162-30 ¹	0.0312	50	0.179	0.610	0.213	0.161	1.089	0.050	0.529	0.153	0.088	2.628	1024	0.058	0.060	-1.084	0.634	1.625	0.555

TABLE 4—TRACK (T) SECTION PROPERTIES^{2,3} (Continued)

Member Designation	Design Thickness (in)	F_y (ksi)	Gross Properties						Effective Properties				Torsional Properties						
			Area (in ²)	Weight (lb/ft)	I_x (in ⁴)	S_x (in ³)	R_x (in)	I_y (in ⁴)	R_y (in)	I_x (in ⁴)	S_x (in ³)	M_a (in-k)	V_{ag} (lb)	$J \times 1000$ (in ⁴)	C_w (in ⁶)	X_0 (in)	m (in)	R_0 (in)	β
250T162-33 ¹	0.0346	33	0.199	0.676	0.235	0.178	1.088	0.056	0.529	0.185	0.108	2.310	1024	0.079	0.067	-1.083	0.633	-1.624	0.555
250T162-33 ¹	0.0346	50	0.199	0.676	0.235	0.178	1.088	0.056	0.529	0.175	0.100	3.004	1260	0.079	0.067	-1.083	0.633	-1.624	0.555
250T162-43 ¹	0.0451	33	0.259	0.881	0.308	0.232	1.091	0.072	0.527	0.262	0.156	3.086	1356	0.176	0.087	-1.077	0.630	1.621	0.558
250T162-43 ¹	0.0451	50	0.259	0.881	0.308	0.232	1.091	0.072	0.527	0.247	0.144	4.315	2054	0.176	0.087	-1.077	0.630	1.621	0.558
350T162-27 ¹	0.0283	33	0.190	0.650	0.400	0.220	1.447	0.051	0.515	0.307	0.134	2.660	590	0.051	0.117	-0.971	0.586	1.817	0.714
350T162-27 ¹	0.0283	50	0.190	0.650	0.400	0.220	1.447	0.051	0.515	0.298	0.110	3.302	590	0.051	0.117	-0.971	0.586	1.817	0.714
350T162-30 ¹	0.0312	33	0.211	0.716	0.441	0.242	1.447	0.056	0.514	0.346	0.152	3.008	790	0.068	0.128	-0.97	0.586	1.816	0.715
350T162-30 ¹	0.0312	50	0.211	0.716	0.441	0.242	1.447	0.056	0.514	0.334	0.133	4.324	790	0.068	0.128	-0.97	0.586	1.816	0.715
350T162-33	0.0346	33	0.233	0.794	0.490	0.269	1.449	0.062	0.514	0.395	0.175	3.447	1024	0.093	0.142	-0.968	0.585	1.816	0.716
350T162-33	0.0346	50	0.233	0.794	0.490	0.269	1.449	0.062	0.514	0.376	0.164	4.918	1078	0.093	0.142	-0.968	0.585	1.816	0.716
350T162-43	0.0451	33	0.304	1.035	0.641	0.349	1.451	0.080	0.512	0.553	0.248	4.905	1739	0.206	0.185	-0.963	0.582	1.815	0.719
350T162-43	0.0451	50	0.304	1.035	0.641	0.349	1.451	0.080	0.512	0.525	0.232	6.948	2141	0.206	0.185	-0.963	0.582	1.815	0.719
350T162-54	0.0566	33	0.381	1.298	0.811	0.438	1.459	0.989	0.509	0.743	0.341	6.729	2386	0.407	0.234	-0.957	0.578	1.817	0.726
350T162-54	0.0566	50	0.381	1.298	0.811	0.438	1.459	0.989	0.509	0.707	0.317	9.492	3372	0.407	0.234	-0.957	0.578	1.817	0.726
350T162-68	0.0713	33	0.480	1.634	1.026	0.549	1.462	0.123	0.506	0.992	0.467	9.220	3005	0.814	0.294	-0.950	0.574	1.816	0.726
350T162-68	0.0713	50	0.480	1.634	1.026	0.549	1.462	0.123	0.506	0.948	0.433	12.978	4554	0.814	0.294	-0.950	0.574	1.816	0.726
362T162-27 ¹	0.0283	33	0.195	0.662	0.435	0.230	1.497	0.051	0.513	0.337	0.142	2.803	571	0.052	0.127	-0.958	0.580	1.848	0.731
362T162-27 ¹	0.0283	50	0.195	0.662	0.435	0.230	1.497	0.051	0.513	0.328	0.116	3.486	571	0.052	0.127	-0.958	0.580	1.848	0.731
362T162-30 ¹	0.0312	33	0.214	0.730	0.477	0.253	1.491	0.056	0.512	0.376	0.160	3.168	762	0.070	0.139	-0.957	0.580	1.844	0.731
362T162-30 ¹	0.0312	50	0.214	0.730	0.477	0.253	1.491	0.056	0.512	0.363	0.138	4.129	762	0.070	0.139	-0.957	0.580	1.844	0.731
362T162-33	0.0346	33	0.238	0.809	0.532	0.281	1.496	0.062	0.511	0.432	0.185	3.661	1024	0.095	0.155	-0.955	0.579	1.847	0.733
362T162-33	0.0346	50	0.238	0.809	0.532	0.281	1.496	0.062	0.511	0.413	0.173	5.177	1044	0.095	0.155	-0.955	0.579	1.847	0.733
362T162-43	0.0451	33	0.310	1.054	0.696	0.366	1.499	0.080	0.509	0.603	0.263	5.197	1739	0.210	0.202	-0.950	0.576	1.846	0.735
362T162-43	0.0451	50	0.310	1.054	0.696	0.366	1.499	0.080	0.509	0.574	0.025	7.373	2141	0.210	0.202	-0.950	0.576	1.846	0.735
362T162-54	0.0566	33	0.389	1.322	0.876	0.457	1.502	0.100	0.507	0.803	0.357	7.057	2473	0.415	0.253	-0.944	0.573	1.845	0.738
362T162-54	0.0566	50	0.389	1.322	0.876	0.457	1.502	0.100	0.507	0.765	0.333	9.966	3372	0.415	0.253	-0.944	0.573	1.845	0.738
362T162-68	0.0713	33	0.489	1.665	1.122	0.577	1.514	0.124	0.504	1.089	0.496	9.802	3088	0.829	0.324	-0.936	0.567	1.850	0.744
362T162-68	0.0713	50	0.489	1.665	1.122	0.577	1.514	0.124	0.504	1.043	0.462	13.832	4679	0.829	0.324	-0.936	0.567	1.850	0.744
400T162-33	0.0346	33	0.251	0.853	0.663	0.318	1.625	0.064	0.505	0.542	0.214	4.225	944	0.100	0.194	-0.920	0.563	1.935	0.774
400T162-33	0.0346	50	0.251	0.853	0.663	0.318	1.625	0.064	0.505	0.522	1.898	5.683	944	0.100	0.194	-0.920	0.563	1.935	0.774

TABLE 4—TRACK (T) SECTION PROPERTIES^{2,3} (Continued)

Member Designation	Design Thickness	F_y	Gross Properties						Effective Properties				Torsional Properties						
			Area (in ²)	Weight (lb/ft)	I_x (in ⁴)	S_x (in ³)	R_x (in)	I_y (in ⁴)	R_y (in)	I_x (in ⁴)	S_x (in ³)	M_a (in-k)	V_{ag} (lb)	$J \times 1000$ (in ⁴)	C_w (in ⁶)	X_0 (in)	m (in)	R_0 (in)	β
400T162-43	0.0451	33	0.327	1.117	0.866	0.414	1.628	0.083	0.503	0.754	0.302	5.970	1739	0.222	0.252	-0.915	0.56	1.934	0.776
400T162-43	0.0451	50	0.327	1.117	0.866	0.414	1.628	0.083	0.503	0.719	0.284	8.500	2090	0.222	0.252	-0.915	0.56	1.934	0.776
400T162-54	0.0566	33	0.410	1.394	1.090	0.518	1.631	0.103	0.551	1.001	0.409	8.075	2736	0.438	0.315	-0.910	0.557	1.933	0.779
400T162-54	0.0566	50	0.410	1.394	1.090	0.518	1.631	0.103	0.551	0.955	0.382	11.442	3372	0.438	0.315	-0.910	0.557	1.933	0.779
400T162-68	0.0713	33	0.516	1.756	1.392	0.653	1.643	0.128	0.498	1.352	0.565	11.160	3419	0.874	0.403	-0.901	0.552	1.939	0.784
400T162-68	0.0713	50	0.516	1.756	1.392	0.653	1.643	0.128	0.498	1.296	0.528	15.800	5180	0.874	0.403	-0.901	0.552	1.939	0.784
550T162-33	0.0346	33	0.303	1.030	1.369	0.483	2.126	0.069	0.479	1.158	0.314	6.205	582	0.121	0.400	-0.803	0.508	2.323	0.880
550T162-33	0.0346	50	0.303	1.030	1.369	0.483	2.126	0.069	0.479	1.132	0.257	7.699	682	0.121	0.400	-0.803	0.508	2.323	0.880
550T162-43	0.0451	33	0.394	1.342	1.787	0.629	2.129	0.090	0.477	1.578	0.480	9.493	1510	0.267	0.519	-0.799	0.505	2.323	0.882
550T162-43	0.0451	50	0.394	1.342	1.787	0.629	2.129	0.090	0.477	1.523	0.437	13.072	1510	0.267	0.519	-0.799	0.505	2.323	0.882
550T162-54	0.0566	33	0.495	1.683	2.246	0.787	2.131	0.111	0.475	2.079	0.642	12.684	2739	0.528	0.648	-0.794	0.502	2.323	0.883
550T162-54	0.0566	50	0.495	1.683	2.246	0.787	2.131	0.111	0.475	1.996	0.607	18.168	2985	0.528	0.648	-0.794	0.502	2.323	0.883
550T162-68	0.0713	33	0.623	2.120	2.855	0.990	2.141	0.139	0.472	2.778	0.874	17.269	4347	1.056	0.821	-0.787	0.497	2.329	0.886
550T162-68	0.0713	50	0.623	2.120	2.855	0.990	2.141	0.139	0.472	2.676	0.825	24.696	5350	1.056	0.821	-0.787	0.497	2.329	0.886
600T162-33	0.0346	33	0.320	1.089	1.677	0.544	2.289	0.071	0.470	1.436	0.340	6.715	624	0.128	0.487	-0.771	0.492	2.461	0.902
600T162-33	0.0346	50	0.320	1.089	1.677	0.544	2.289	0.071	0.470	1.404	0.280	8.376	624	0.128	0.487	-0.771	0.492	2.461	0.902
600T162-43	0.0451	33	0.417	1.419	2.188	0.708	2.291	0.092	0.468	1.942	0.548	10.819	1382	0.283	0.632	-0.767	0.489	2.461	0.903
600T162-43	0.0451	50	0.417	1.419	2.188	0.708	2.291	0.092	0.468	1.888	0.472	14.119	1382	0.283	0.632	-0.767	0.489	2.461	0.903
600T162-54	0.0566	33	0.523	1.779	2.750	0.886	2.293	0.114	0.466	2.552	0.729	14.411	2732	0.559	0.789	-0.762	0.486	2.461	0.904
600T162-54	0.0566	50	0.523	1.779	2.750	0.886	2.293	0.114	0.466	2.454	0.691	20.700	2732	0.559	0.789	-0.762	0.486	2.461	0.904
600T162-68	0.0713	33	0.658	2.241	3.479	1.114	2.299	0.141	0.463	3.379	0.983	19.428	4347	1.116	0.992	-0.756	0.482	2.464	0.906
600T162-68	0.0713	50	0.658	2.241	3.479	1.114	2.299	0.141	0.463	3.257	0.930	27.841	5350	1.116	0.992	-0.756	0.482	2.464	0.906

For SI: 1 inch = 25.4 mm; 1 lb/ft = 14.5939 N/m; 1 in-k = 12.8 N-m; 1 lb = 4.448 N; 1 ksi = 6.89 MPa.

¹For applications in accordance with the IRC, use of all 162T162-XX, 250T162-XX, 350T162-27, 350T162-30, 362T162-27 and 362T162-30 is applicable only for engineered designs in accordance with IRC Section R301.1.3.

²Member Designation identification provides nominal dimensions as shown in the example below:

Example: 600T162-43; 600 = 6 inch depth (Depth measured from the outside face to outside face of flanges), T = T-Section, 162 = 1.625 inch flange width, 43 = thickness designation of 43 mils or 0.0428 inches.

³See additional notes on page 4.

TABLE 5—ALLOWABLE WEB CRIPPLING LOAD (lbs)—SINGLE MEMBERS^{1,2,3}

SECTION DESIGNATION	YIELD STRENGTH (ksi)	CONDITION 1 BEARING LENGTH (in)				CONDITION 2 BEARING LENGTH (in)				CONDITION 3 BEARING LENGTH (in)				CONDITION 4 BEARING LENGTH (in)			
		1	3.5	4	6	1	3.5	4	6	1	3.5	4	6	1	3.5	4	6
350S162 - 33	33	166	260	274	323	324	445	463	526	131	175	182	205	384	484	499	551
350S162 - 43	33	278	428	451	528	571	768	798	900	240	315	326	365	680	842	866	949
350S162 - 54	33	420	638	670	783	879	1162	1204	1351	392	507	524	583	1086	1324	1359	1482
350S162 - 54	50	637	967	1016	1186	1331	1761	1825	2046	594	768	794	883	1645	2005	2059	2245
350S162 - 68	33	637	951	998	1160	1351	1756	1816	2025	640	813	839	928	1736	2085	2137	2317
350S162 - 68	50	965	1441	1512	1758	2047	2660	2751	3068	970	1232	1271	1406	2631	3159	3238	3510
362S162 - 33	33	165	259	273	322	323	444	462	525	129	173	179	202	381	480	495	547
362S162 - 43	33	277	427	449	526	570	767	796	898	236	311	322	360	675	836	860	943
362S162 - 54	33	419	636	668	780	877	1160	1202	1348	388	501	518	577	1079	1316	1351	1473
362S162 - 54	50	634	963	1012	1182	1329	1758	1822	2043	588	760	785	874	1635	1994	2047	2232
362S162 - 68	33	635	948	995	1157	1349	1753	1813	2022	635	806	831	920	1728	2074	2126	2305
362S162 - 68	50	962	1437	1507	1752	2044	2657	2747	3064	961	1221	1259	1393	2618	3143	3221	3492
400S162 - 33	33	163	256	269	317	322	442	460	522	122	164	170	192	372	469	483	534
400S162 - 43	33	274	422	444	520	567	763	792	893	227	299	309	346	662	819	843	924
400S162 - 54	33	415	629	661	772	873	1155	1197	1342	376	485	502	558	1061	1293	1328	1448
400S162 - 54	50	628	954	1002	1170	1323	1750	1813	2034	569	735	760	846	1607	1960	2012	2194
400S162 - 68	33	629	940	986	1147	1344	1746	1806	2014	617	784	809	895	1702	2044	2094	2271
400S162 - 68	50	953	1424	1494	1737	2036	2646	2736	3051	936	1188	1226	1356	2579	3096	3173	3440
550S162 - 33	33	155	243	256	302	315	432	450	511	100	134	139	157	339	428	441	487
550S162 - 43	33	262	405	426	499	556	749	778	877	195	256	265	297	614	760	782	858
550S162 - 54	33	400	607	638	745	859	1136	1177	1320	331	428	443	493	995	1213	1246	1358
550S162 - 54	50	606	920	966	1128	1302	1722	1784	2001	502	649	671	746	1508	1838	1887	2058
550S162 - 68	33	609	910	955	1111	1324	1721	1780	1985	557	707	729	807	1611	1934	1982	2149
550S162 - 68	50	923	1380	1447	1683	2007	2608	2697	3007	844	1071	1105	1223	2441	2931	3003	3256
600S162 - 33	33	153	240	253	297	313	430	447	507	93	125	130	146	329	416	429	473
600S162 - 43	33	259	400	420	493	553	745	773	872	185	243	252	282	600	743	764	838
600S162 - 54	33	395	600	631	736	855	1131	1172	1314	318	411	425	473	975	1189	1221	1331
600S162 - 54	50	599	909	956	1116	1295	1713	1775	1991	482	623	644	716	1478	1802	1850	2017
600S162 - 68	33	604	902	946	1100	1318	1714	1772	1976	539	684	706	781	1583	1901	1949	2113
600S162 - 68	50	914	1366	1433	1666	1998	2596	2685	2994	816	1036	1069	1183	2399	2881	2952	3201

(Continued)

NOTES FOR TABLE 5

For SI: 1 inch = 25.4mm, 1 lb = 4.448 N.

¹For multiple members, multiply the listed capacity of a single member by the number of members in the assembly.

²Values shown are for unpunched and punched members. For punched members, the clear distance between the edge of bearing and the edge of the punch-out must be at least two times the depth of the web to a maximum of 10 inches.

³Condition 1 - End Reaction - One Flange Loading

Condition 2 - Interior Reaction - One Flange Loading

Condition 3 - End Reaction - Two Flange Loading

Condition 4 - Interior Reaction - Two Flange Loading

See Figure 4 for Conditions 1, 2, 3 and 4.

TABLE 6—ALLOWABLE WEB Crippling LOAD (lb)—BACK-TO-BACK MEMBERS^{1,2,3}

SECTION DESIGNATION	YIELD STRENGTH (ksi)	CONDITION 1 BEARING LENGTH (in)				CONDITION 2 BEARING LENGTH (in)				CONDITION 3 BEARING LENGTH (in)				CONDITION 4 BEARING LENGTH (in)			
		1	3.5	4	6	1	3.5	4	6	1	3.5	4	6	1	3.5	4	6
350S162 - 33	33	776	See Note 4	See Note 4	See Note 4	917	See Note 4	See Note 4	See Note 4	463	See Note 4	See Note 4	See Note 4	984	See Note 4	See Note 4	See Note 4
350S162 - 43	33	1272	See Note 4	See Note 4	See Note 4	1590	See Note 4	See Note 4	See Note 4	838	See Note 4	See Note 4	See Note 4	1808	See Note 4	See Note 4	See Note 4
350S162 - 54	33	1892	See Note 4	See Note 4	See Note 4	2474	See Note 4	See Note 4	See Note 4	1361	See Note 4	See Note 4	See Note 4	2943	See Note 4	See Note 4	See Note 4
350S162 - 54	50	2867	See Note 4	See Note 4	See Note 4	3749	See Note 4	See Note 4	See Note 4	2062	See Note 4	See Note 4	See Note 4	4459	See Note 4	See Note 4	See Note 4
350S162 - 68	33	2829	See Note 4	See Note 4	See Note 4	3863	See Note 4	See Note 4	See Note 4	2208	See Note 4	See Note 4	See Note 4	4776	See Note 4	See Note 4	See Note 4
350S162 - 68	50	4286	See Note 4	See Note 4	See Note 4	5853	See Note 4	See Note 4	See Note 4	3346	See Note 4	See Note 4	See Note 4	7236	See Note 4	See Note 4	See Note 4
362S162 - 33	33	776	See Note 4	See Note 4	See Note 4	916	See Note 4	See Note 4	See Note 4	458	See Note 4	See Note 4	See Note 4	972	See Note 4	See Note 4	See Note 4
362S162 - 43	33	1271	See Note 4	See Note 4	See Note 4	1589	See Note 4	See Note 4	See Note 4	830	See Note 4	See Note 4	See Note 4	1790	See Note 4	See Note 4	See Note 4
362S162 - 54	33	1892	See Note 4	See Note 4	See Note 4	2473	See Note 4	See Note 4	See Note 4	1349	See Note 4	See Note 4	See Note 4	2918	See Note 4	See Note 4	See Note 4
362S162 - 54	50	2867	See Note 4	See Note 4	See Note 4	3747	See Note 4	See Note 4	See Note 4	2045	See Note 4	See Note 4	See Note 4	4422	See Note 4	See Note 4	See Note 4
362S162 - 68	33	2828	See Note 4	See Note 4	See Note 4	3861	See Note 4	See Note 4	See Note 4	2193	See Note 4	See Note 4	See Note 4	4742	See Note 4	See Note 4	See Note 4
362S162 - 68	50	4285	See Note 4	See Note 4	See Note 4	5851	See Note 4	See Note 4	See Note 4	3322	See Note 4	See Note 4	See Note 4	7185	See Note 4	See Note 4	See Note 4
400S162 - 33	33	776	1181	See Note 4	See Note 4	915	1083	See Note 4	See Note 4	442	557	See Note 4	See Note 4	937	1183	See Note 4	See Note 4
400S162 - 43	33	1271	1900	See Note 4	See Note 4	1587	1850	See Note 4	See Note 4	806	998	See Note 4	See Note 4	1739	2154	See Note 4	See Note 4
400S162 - 54	33	1891	2782	See Note 4	See Note 4	2470	2844	See Note 4	See Note 4	1317	1605	See Note 4	See Note 4	2848	3472	See Note 4	See Note 4
400S162 - 54	50	2866	4215	See Note 4	See Note 4	3743	4309	See Note 4	See Note 4	1995	2432	See Note 4	See Note 4	4315	5260	See Note 4	See Note 4

TABLE 6—ALLOWABLE WEB CRIPPLING LOAD (lb)—BACK-TO-BACK MEMBERS^{1,2,3} (Continued)

SECTION DESIGNATION	YIELD STRENGTH (ksi)	CONDITION 1 BEARING LENGTH (in)				CONDITION 2 BEARING LENGTH (in)				CONDITION 3 BEARING LENGTH (in)				CONDITION 4 BEARING LENGTH (in)			
		1	3.5	4	6	1	3.5	4	6	1	3.5	4	6	1	3.5	4	6
400S162 - 68	33	2827	4087	See Note 4	See Note 4	3857	4387	See Note 4	See Note 4	2147	2578	See Note 4	See Note 4	4644	5576	See Note 4	See Note 4
400S162 - 68	50	4284	6193	See Note 4	See Note 4	5844	6646	See Note 4	See Note 4	3253	3906	See Note 4	See Note 4	7036	8448	See Note 4	See Note 4
550S162 - 33	33	774	1179	1239	See Note 4	909	1077	1102	See Note 4	384	484	499	See Note 4	815	1028	1060	See Note 4
550S162 - 43	33	1269	1897	1990	See Note 4	1579	1841	1879	See Note 4	721	893	919	See Note 4	1556	1927	1982	See Note 4
550S162 - 54	33	1888	2778	2909	See Note 4	2459	2831	2886	See Note 4	1200	1463	1502	See Note 4	2595	3164	3249	See Note 4
550S162 - 54	50	2861	4208	4408	See Note 4	3725	4289	4372	See Note 4	1818	2217	2276	See Note 4	3933	4794	4922	See Note 4
550S162 - 68	33	2823	4082	4268	See Note 4	3841	4369	4447	See Note 4	1985	2384	2443	See Note 4	4294	5186	5284	See Note 4
550S162 - 68	50	4278	6185	6467	See Note 4	5820	6619	6738	See Note 4	3008	3612	3702	See Note 4	6506	7812	8005	See Note 4
600S162 - 33	33	774	1178	1238	See Note 4	908	1075	1100	See Note 4	366	462	477	See Note 4	778	982	1012	See Note 4
600S162 - 43	33	1268	1896	1989	See Note 4	1576	1838	1876	See Note 4	696	862	886	See Note 4	1501	1859	1912	See Note 4
600S162 - 54	33	1888	2776	2908	See Note 4	2455	2827	2882	See Note 4	1165	1420	1458	See Note 4	2520	3072	3154	See Note 4
600S162 - 54	50	2860	4207	4406	See Note 4	3720	4283	4366	See Note 4	1765	2152	2209	See Note 4	3818	4654	4778	See Note 4
600S162 - 68	33	2822	4080	4267	See Note 4	3836	4363	4441	See Note 4	1937	2326	2383	See Note 4	4189	5030	5154	See Note 4
600S162 - 68	50	4276	6182	6465	See Note 4	5812	6611	6729	See Note 4	2935	3524	3611	See Note 4	6347	7621	7810	See Note 4

For SI: 1 inch = 25.4mm, 1 lb = 4.448 N.

¹For multiple members, multiply the listed capacity of a single member by the number of members in the assembly.

²Values shown are for unpunched and punched members. For punched members, the clear distance between the edge of bearing and the edge of the punch-out must be at least two times the depth of the web to a maximum of 10 inches.

³Condition 1 - End Reaction - One Flange Loading

Condition 2 - Interior Reaction - One Flange Loading

Condition 3 - End Reaction - Two Flange Loading

Condition 4 - Interior Reaction - Two Flange Loading

⁴Bearing length to web height ratio, N/h, exceeds limit of 1. Web Stiffeners are required.

See Figure 4 for Conditions 1, 2, 3 and 4.

TABLE 7—LIMITING WALL HEIGHTS—NONLOAD-BEARING WALLS—NON-COMPOSITE^{1,2,3,4}

MEMBER DESIGNATION	F _y (ksi)	STUD SPACING (in) o.c.	LATERAL LOAD					
			5 psf		7.5 psf		10 psf	
			DEFLECTION LIMIT					
			L/120	L/240	L/120	L/240	L/120	L/240
350S162-27	33	16	19'-7"	16'-0"	16'-0"	14'-0"	13'-10"	12'-8"
		24	16'-0"	14'-0"	13'-1"	12'-2"	11'-4"	11'-1"
	50	16	20'-0"	16'-0"	17'-6"	14'-0"	15'-10"	12'-8"
		24	17'-6"	14'-0"	15'-2"	12'-2"	13'-2"	11'-1"
350S162-30	33	16	20' 10"	16' 6"	17'-2"	14'-5"	14'-10"	13'-1"
		24	17' 2"	14' 5"	14'-0"	12'-7"	12'-1"	11'-5"
	50	16	20' 10"	16' 6"	18' 1"	14'-4"	16'-5"	13'-1"
		24	18' 1"	14' 4"	15'-10"	12'-7"	14'-1"	11'-5"
350S162-33	33	16	21'-6"	17' 1"	18'-4"	14'-11"	15'-11"	13'-6"
		24	18'-4"	14'-11"	15'-0"	13'-0"	13'-0"	11'-10"
	50	16	21' 6"	17' 1"	18'-9"	14'-11"	17' 1"	13'-6"
		24	18' 9"	14'-11"	16'-5"	13'-0"	14'-11"	11'-10"
350S162-43	33	16	23' 5"	18' 7"	20'-5"	16'-2"	18'-7"	14'-9"
		24	20'-5"	16' 2"	17'-10"	14'-2"	15'-3"	12'-10"
	50	16	23' 5"	18' 7"	20'-5"	16'-2"	18'-7"	14'-9"
		24	20'-5"	16' 2"	17'-10"	14'-2"	16'-2"	12'-10"
350S162-54	33	16	25'-1"	19'-11"	21'-11"	17'-4"	19'-11"	15'-9"
		24	21'-11"	17' 4"	19'-1"	15'-2"	17' 1"	13'-9"
	50	16	25'-1"	19'-11"	21'-11"	17'-4"	19'-11"	15'-9"
		24	21'-11"	17' 4"	19'-1"	15'-2"	17' 1"	13'-9"
362S162-27	33	16	19' 11"	16' 5"	16'-4"	14'-4"	14'-2"	13'-0"
		24	16' 3"	14' 4"	13'-4"	12'-6"	11'-6"	11'-5"
	50	16	20' 7"	16' 5"	17'-11"	14'-4"	16'-4"	13'-0"
		24	18' 0"	14' 4"	15'-6"	12'-6"	13'-5"	11'-5"
362S162-30	33	16	21' 4'	16' 11"	17'-6"	14'-10"	15'-2"	13'-5"
		24	17' 6"	14' 10"	14'-3"	12'-11"	12'-4"	11'-9"
	50	16	21' 4"	16' 11"	18'-7"	14'-10"	16'-11"	13'-5"
		24	18' 7"	14' 9'	16'-3"	12'-11"	14'-4"	11'-9"
362S162-33	33	16	22' 1"	17' 6"	18'-8"	15'-3"	16'-2"	13'-10"
		24	18' 9"	15' 4"	15'-2"	13'-4"	13'-2"	12'-1"
	50	16	22' 1"	17' 6"	19'-3"	15'-3"	17'-6"	13'-10"
		24	19' 3"	15' 4"	16'-10"	13'-4"	15'-3"	12'-1"
362S162-43	33	16	24' 0"	19' 1"	21'-0"	16'-8"	19'-1"	15'-2"
		24	21' 0"	16' 8"	18'-0"	14'-7"	15'-7"	13'-3"
	50	16	24' 0"	19' 1"	21'-0"	16'-8"	19'-1"	15'-2"
		24	21' 0"	16' 8"	18'-4"	14'-7"	16'-8"	13'-3"
362S162-54	33	16	25' 9"	20' 5"	22'-6"	17'-10"	20'-5"	16'-2"
		24	22' 6"	17' 10"	19'-8"	15'-7"	17'-6"	14'-2"
	50	16	25' 9"	20' 5"	22'-6"	17'-10"	20'-5"	16'-2"
		24	22' 6"	17' 10"	19'-8"	15'-7"	17'-10"	14'-2"

TABLE 7—LIMITING WALL HEIGHTS—NONLOAD-BEARING WALLS—NON-COMPOSITE^{1,2,3,4} (Continued)

MEMBER DESIGNATION	F _y (ksi)	STUD SPACING (in) o.c.	LATERAL LOAD					
			5 psf		7.5 psf		10 psf	
			DEFLECTION LIMIT					
			L/120	L/240	L/120	L/240	L/120	L/240
400S162-27	33	16	21' 1"	17' 9"	17'-3"	15'-6"	14'-11"	14'-1"
		24	17' 2"	15' 6"	14'-1"	13'-6"	12'-2"	12'-2"
	50	16	22' 3"	17' 7"	19'-5"	15'-6"	17'-4"	14'-1"
		24	19' 5"	15' 5"	16'-4"	13'-6"	14'-1"	12'-2"
400S162-30	33	16	27'-4"	23'-5"	17'-3"	15'-6"	14'-11"	14'-1"
		24	22'-4"	20'-6"	14'-1"	13'-6"	12'-2"	12'-2"
	50	16	29'-7"	23'-5"	19'-5"	15'-6"	17'-4"	14'-1"
		24	25'-5"	20'-6"	16'-4"	13'-6"	14'-1"	12'-2"
400S162-33	33	16	23' 10"	18' 11"	19'-10"	16'-6"	17'-2"	15'-0"
		24	19' 10"	16' 6"	16'-2"	14'-5"	14'-0"	13'-1"
	50	16	23' 10"	18' 11"	20'-10"	16'-6"	18'-11"	15'-0"
		24	20' 10"	16' 6"	18'-2"	14'-5"	16'-2"	13'-1"
400S162-43	33	16	25' 11"	20' 7"	22'-8"	18'-0"	20'-3"	16'-4"
		24	22' 8"	18' 0"	19'-1"	15'-8"	16'-6"	14'-3"
	50	16	25' 11"	20' 7"	22'-8"	18'-0"	20'-7"	16'-4"
		24	22' 8"	18' 0"	19'-1"	15'-8"	18'-0"	14'-3"
400S162-54	33	16	27' 10"	22' 1"	24'-3"	19'-3"	22'-10"	17'-6"
		24	24' 3"	19' 3"	21'-2"	16'-10"	18'-7"	15'-3"
	50	16	27' 10"	22' 1"	24'-3"	19'-3"	22'-10"	17'-6"
		24	24' 3"	19' 3"	21'-2"	16'-10"	19'-3"	15'-3"
550S162-27	33	16	25' 7"	22' 9"	20'-10"	19'-10"	17'-10"	17'-10"
		24	20' 10"	19' 10"	15'-10"	15'-10"	11'-11"	11'-11"
	50	16	28' 7"	22' 9"	23'-9"	19'-10"	20'-6"	18'-0"
		24	23' 9"	19' 10"	19'-4"	17'-3"	16'-9"	15'-6"
550S162-30	33	16	25' 7"	22' 9"	27'-4"	23'-5"	22'-4"	20'-6"
		24	20' 10"	19' 10"	22'-4"	20'-6"	18'-2"	17'-11"
	50	16	28' 7"	22' 9"	25'-5"	20'-6"	22'-0"	18'-7"
		24	23' 9"	19' 10"	20'-9"	17'-11"	18'-0"	16'-3"
550S162-33	33	16	29' 4"	24' 3"	23'-11"	21'-2"	20'-9"	19'-3"
		24	23' 11"	21' 2"	19'-6"	18'-6"	16'-11"	16'-10"
	50	16	30' 7"	24' 3"	26'-8"	21'-2"	23'-8"	19'-3"
		24	26' 8"	21' 2"	22'-4"	18'-6"	19'-4"	16'-10"
550S162-43	33	16	33' 3"	26' 5"	29'-1"	23'-1"	25'-7"	20'-11"
		24	29' 1"	23' 1"	24'-1"	20'-2"	20'-11"	18'-4"
	50	16	33' 3"	26' 5"	29'-1"	23'-1"	26'-5"	20'-11"
		24	29' 1"	23' 1"	25'-5"	20'-2"	23'-1"	18'-4"
550S162-54	33	16	35' 9"	28' 4"	31'-2"	24'-9"	28'-4"	22'-6"
		24	31' 2"	24' 9"	27'-3"	21'-7"	24'-4"	19'-8"
	50	16	35' 9"	28' 4"	31'-2"	24'-9"	28'-4"	22'-6"
		24	31' 2"	24' 9"	27'-3"	21'-7"	24'-9"	19'-8"

TABLE 7—LIMITING WALL HEIGHTS—NONLOAD-BEARING WALLS—NON-COMPOSITE^{1,2,3,4} (Continued)

MEMBER DESIGNATION	F _y (ksi)	STUD SPACING (in) o.c.	LATERAL LOAD					
			5 psf		7.5 psf		10 psf	
			DEFLECTION LIMIT					
			L/120	L/240	L/120	L/240	L/120	L/240
600S162-30	33	16	28'-7"	25'-2"	23'-4"	21'-11"	23'-0"	19'-11"
		24	23'-4"	21'-11"	19'-0"	19'-0"	14'-3"	14'-3"
	50	16	31'-8"	25'-2"	26'-7"	21'-11"	23'-0"	19'-11"
		24	26'-7"	21'-11"	21'-8"	19'-2"	18'-9"	17'-5"
600S162-33	33	16	30' 9"	26' 0"	25'-1"	22'-8"	21'-9"	20'-7"
		24	25' 1"	22' 8"	20'-6"	19'-10"	17'-6"	17'-6"
	50	16	32' 9"	26' 0"	28'-7"	22'-8"	24'-9"	20'-7"
		24	28' 7"	22' 8"	23'-4"	19'-10"	20'-2"	18'-0"
600S162-43	33	16	35' 8"	28' 4"	31'-0"	24'-9"	26'-10"	22'-5"
		24	31' 0"	24' 9"	25'-4"	21'-7"	21'-11"	19'-7"
	50	16	35' 8"	28' 4"	31'-2"	24'-9"	28'-4"	22'-5"
		24	31' 2"	24' 9"	27'-3"	21'-7"	24'-4"	19'-7"
600S162-54	33	16	38' 3"	30' 4"	33'-5"	26'-6"	30'-4"	24'-1"
		24	33' 5"	26' 6"	29'-2"	23'-2"	25'-7"	21'-1"
	50	16	38' 3"	30' 4"	33'-5"	26'-6"	30'-4"	24'-1"
		24	33' 5"	26' 6"	29'-2"	23'-2"	26'-6"	21'-1"

For SI: 1 inch = 25.4mm, 1 lb = 4.448 N.

¹Lateral loads have NOT been reduced for strength or deflection checks. Full lateral load is applied.

²Limiting heights are based on continuous support of each flange over the full length of the stud.

³Limiting heights are based on steel framing only (non-composite).

⁴Web crippling checks are based on end-one flange loading condition using 1-inch end bearing.

Notes for combined Axial and Lateral Load Tables (Tables 8, 9, 10, 11 and 12)

1. Allowable axial loads listed in kips (1 kip = 1000 pounds).
2. Listed lateral pressures and axial loads have not been modified for 1/3 stress increase based on wind/earthquake or multiple transient loads.
3. Allowable axial loads based on lateral and torsional bracing at a maximum spacing of 4 feet on center.
4. The 5 psf live load has not been reduced for deflection checks. For 15 psf or higher wind pressure, read the note below.

Note: 2015 and 2012 IBC/ASCE 7-10: Due to the change in the model building codes, design wind pressures determined using 2015 and 2012 IBC/ASCE 7-10 are strength level loads (LRFD) in comparison to those determined in earlier IBC codes which were service level loads (ASD). The load/span tables that follow are based on service level (ASD) wind loads. Therefore, to properly use the load/span tables in, multiply the 2015 and 2012 IBC/ ASCE 7-10 design wind pressures by 0.6 (Reference section 2.4 ASCE 7-10) prior to entering the load/span tables.

5. End supports have not been checked for web crippling. Refer web crippling capacity tables.
6. All tables are based on simple (single) span.
7. Cells marked with an alphabetic letter after load meet deflection criteria. Blank cells do not meet L/120.

^aDeflection meets L/720.

^bDeflection meets L/600.

^cDeflection meets L/480.

^dDeflection meets L/360.

^eDeflection meets L/240.

^fDeflection meets L/120.

For SI: 1 inch = 25.4 mm, 1 ft = 304.8mm, 1 lb = 4.448 N, 1 psf = 48 Pa.

TABLE 8—COMBINED LATERAL AND AXIAL LOADS - ALLOWABLE AXIAL LOAD (kips) WITH 5 psf LATERAL LOAD

WALL HEIGHT (ft)	MAX. STUD SPACING (in)	350S162-				362S162-				400S162-				550S162-				600S162-			
		33 ksi		50 ksi		33 ksi		50 ksi		33 ksi		50 ksi		33 ksi		50 ksi		33 ksi		50 ksi	
		Stud Thickness (mils)																			
		33	43	54	68	33	43	54	68	33	43	54	68	33	43	54	68	33	43	54	68
8	12	1.81 ^a	2.56 ^a	3.97 ^a	5.08 ^a	1.87 ^a	2.65 ^a	4.15 ^a	5.38 ^a	2.03 ^a	2.87 ^a	4.62 ^a	6.18 ^a	2.39 ^a	3.38 ^a	5.63 ^a	7.45 ^a	2.42 ^a	3.40 ^a	5.61 ^a	7.45 ^a
	16	1.74 ^a	2.48 ^a	3.90 ^a	5.01 ^a	1.80 ^a	2.57 ^a	4.08 ^a	5.31 ^a	1.96 ^a	2.80 ^a	4.55 ^a	6.11 ^a	2.34 ^a	3.33 ^a	5.58 ^a	7.41 ^a	2.37 ^a	3.35 ^a	5.57 ^a	7.41 ^a
	24	1.58 ^a	2.32 ^a	3.76 ^a	4.87 ^a	1.65 ^a	2.42 ^a	3.94 ^a	5.17 ^a	1.82 ^a	2.65 ^a	4.42 ^a	5.97 ^a	2.24 ^a	3.23 ^a	5.49 ^a	7.32 ^a	2.28 ^a	3.27 ^a	5.49 ^a	7.33 ^a
9	12	1.67 ^a	2.38 ^a	3.65 ^a	4.67 ^a	1.74 ^a	2.48 ^a	3.86 ^a	4.99 ^a	1.91 ^a	2.72 ^a	4.37 ^a	5.85 ^a	2.32 ^a	3.31 ^a	5.55 ^a	7.41 ^a	2.38 ^a	3.36 ^a	5.57 ^a	7.41 ^a
	16	1.57 ^a	2.28 ^a	3.56 ^a	4.58 ^a	1.64 ^a	2.38 ^a	3.77 ^a	4.90 ^a	1.82 ^a	2.63 ^a	4.28 ^a	5.76 ^a	2.26 ^a	3.24 ^a	5.49 ^a	7.35 ^a	2.32 ^a	3.30 ^a	5.52 ^a	7.36 ^a
	24	1.39 ^a	2.09 ^a	3.39 ^a	4.41 ^a	1.46 ^a	2.19 ^a	3.60 ^a	4.72 ^a	1.65 ^a	2.45 ^a	4.11 ^a	5.59 ^a	2.13 ^a	3.12 ^a	5.38 ^a	7.24 ^a	2.20 ^a	3.19 ^a	5.42 ^a	7.26 ^a
10	12	1.51 ^a	2.18 ^a	3.29 ^a	4.23 ^a	1.58 ^a	2.29 ^a	3.53 ^a	4.55 ^a	1.77 ^a	2.56 ^a	4.07 ^a	5.47 ^a	2.25 ^a	3.22 ^a	5.41 ^a	7.35 ^a	2.33 ^a	3.31 ^a	5.53 ^a	7.37 ^a
	16	1.40 ^a	2.07 ^a	3.19 ^a	4.12 ^a	1.47 ^a	2.17 ^a	3.42 ^a	4.44 ^a	1.67 ^a	2.45 ^a	3.97 ^a	5.36 ^a	2.16 ^a	3.14 ^a	5.34 ^a	7.27 ^a	2.25 ^a	3.24 ^a	5.46 ^a	7.30 ^a
	24	1.19 ^a	1.84 ^a	2.99 ^a	3.92 ^a	1.26 ^a	1.95 ^a	3.22 ^a	4.23 ^a	1.46 ^a	2.23 ^a	3.77 ^a	5.14 ^a	2.00 ^a	2.99 ^a	5.19 ^a	7.12 ^a	2.10 ^a	3.11 ^a	5.33 ^a	7.17 ^a
12	12	1.18 ^a	1.75 ^a	2.56 ^a	3.31 ^a	1.25 ^a	1.87 ^a	2.79 ^a	3.60 ^a	1.46 ^a	2.17 ^a	3.41 ^a	4.54 ^a	2.05 ^a	3.00 ^a	5.04 ^a	6.87 ^a	2.17 ^a	3.15 ^a	5.35 ^a	7.25 ^a
	16	1.04 ^b	1.61 ^a	2.44 ^a	3.18 ^a	1.11 ^a	1.72 ^a	2.66 ^a	3.47 ^a	1.32 ^a	2.02 ^a	3.27 ^a	4.39 ^a	1.93 ^a	2.89 ^a	4.93 ^a	6.76 ^a	2.06 ^a	3.05 ^a	5.25 ^a	7.15 ^a
	24	0.79 ^d	1.34 ^c	2.21 ^a	2.94 ^a	0.86 ^c	1.44 ^b	2.42 ^a	3.22 ^a	1.06 ^b	1.74 ^a	3.01 ^a	4.12 ^a	1.71 ^a	2.68 ^a	4.71 ^a	6.54 ^a	1.85 ^a	2.85 ^a	5.05 ^a	6.95 ^a
14	12	0.86 ^c	1.33 ^a	1.95 ^a	2.54 ^a	0.93 ^b	1.44 ^a	2.14 ^a	2.78 ^a	1.14 ^a	1.75 ^a	2.71 ^a	3.57 ^a	1.81 ^a	2.72 ^a	4.54 ^a	6.23 ^a	1.95 ^a	2.91 ^a	4.93 ^a	6.77 ^a
	16	0.71 ^d	1.17 ^c	1.82 ^b	2.40 ^a	0.78 ^d	1.28 ^b	2.00 ^a	2.64 ^a	0.98 ^c	1.58 ^a	2.55 ^a	3.41 ^a	1.66 ^a	2.57 ^a	4.39 ^a	6.07 ^a	1.81 ^a	2.78 ^a	4.80 ^a	6.63 ^a
	24	0.46 ^e	0.89 ^d	1.58 ^d	2.16 ^c	0.52 ^e	0.99 ^d	1.75 ^c	2.38 ^b	0.70 ^d	1.26 ^c	2.27 ^b	3.11 ^a	1.37 ^a	2.29 ^a	4.11 ^a	5.78 ^a	1.54 ^a	2.51 ^a	4.53 ^a	6.35 ^a
16	12	0.59 ^d	0.96 ^c	1.48 ^b	1.95 ^a	0.65 ^d	1.06 ^c	1.63 ^b	2.14 ^a	0.84 ^c	1.35 ^b	2.12 ^a	2.78 ^a	1.53 ^a	2.39 ^a	3.95 ^a	5.45 ^a	1.71 ^a	2.62 ^a	4.41 ^a	6.10 ^a
	16	0.45 ^e	0.80 ^d	1.35 ^d	1.81 ^c	0.51 ^e	0.90 ^d	1.49 ^c	2.00 ^b	0.68 ^d	1.17 ^c	1.96 ^b	2.61 ^a	1.35 ^a	2.20 ^a	3.77 ^a	5.26 ^a	1.53 ^a	2.45 ^a	4.24 ^a	5.91 ^a
	24	0.21 ^f	0.54 ^e	1.12 ^e	1.57 ^d	0.25 ^f	0.61 ^e	1.25 ^e	1.74 ^d	0.39 ^e	0.85 ^e	1.67 ^d	2.31 ^c	1.02 ^c	1.87 ^a	3.43 ^a	4.90 ^a	1.20 ^b	2.12 ^a	3.91 ^a	5.57 ^a

TABLE 9—COMBINED LATERAL AND AXIAL LOADS - ALLOWABLE AXIAL LOAD (kips) WITH 15 psf LATERAL LOAD

WALL HEIGHT (ft)	MAX. STUD SPACING (in)	350S162-				362S162-				400S162-				550S162-				600S162-			
		33 ksi		50 ksi		33 ksi		50 ksi		33 ksi		50 ksi		33 ksi		50 ksi		33 ksi		50 ksi	
		Stud Thickness (mils)																			
		33	43	54	68	33	43	54	68	33	43	54	68	33	43	54	68	33	43	54	68
8	12	1.37 ^a	2.10 ^a	3.56 ^a	4.66 ^a	1.44 ^a	2.20 ^a	3.74 ^a	4.96 ^a	1.62 ^a	2.45 ^a	4.22 ^a	5.77 ^a	2.08 ^a	3.09 ^a	5.36 ^a	7.19 ^a	2.14 ^a	3.14 ^a	5.37 ^a	7.22 ^a
	16	1.16 ^a	1.89 ^a	3.36 ^a	4.46 ^a	1.23 ^a	1.99 ^a	3.55 ^a	4.76 ^a	1.42 ^a	2.25 ^a	4.04 ^a	5.57 ^a	1.93 ^a	2.95 ^a	5.22 ^a	7.06 ^a	2.00 ^a	3.02 ^a	5.25 ^a	7.10 ^a
	24	0.78 ^a	1.49 ^a	2.99 ^a	4.08 ^a	0.85 ^a	1.59 ^a	3.17 ^a	4.38 ^a	1.05 ^a	1.86 ^a	3.67 ^a	5.18 ^a	1.64 ^a	2.68 ^a	4.96 ^a	6.80 ^a	1.73 ^a	2.77 ^a	5.02 ^a	6.88 ^a
9	12	1.13 ^a	1.82 ^a	3.14 ^a	4.16 ^a	1.21 ^a	1.93 ^a	3.35 ^a	4.47 ^a	1.40 ^a	2.20 ^a	3.87 ^a	5.33 ^a	1.94 ^a	2.94 ^a	5.20 ^a	7.07 ^a	2.02 ^a	3.03 ^a	5.26 ^a	7.11 ^a
	16	0.90 ^a	1.57 ^a	2.91 ^a	3.92 ^a	0.97 ^a	1.67 ^a	3.12 ^a	4.23 ^a	1.17 ^a	1.95 ^a	3.64 ^a	5.08 ^a	1.75 ^a	2.77 ^a	5.03 ^a	6.90 ^a	1.85 ^a	2.87 ^a	5.11 ^a	6.96 ^a
	24	0.46 ^c	1.11 ^b	2.48 ^a	3.48 ^a	0.53 ^c	1.21 ^a	2.68 ^a	3.77 ^a	0.73 ^b	1.49 ^a	3.20 ^a	4.61 ^a	1.38 ^a	2.42 ^a	4.69 ^a	6.56 ^a	1.51 ^a	2.56 ^a	4.81 ^a	6.67 ^a
10	12	0.90 ^a	1.53 ^a	2.71 ^a	3.63 ^a	0.97 ^a	1.64 ^a	2.94 ^a	3.94 ^a	1.17 ^a	1.93 ^a	3.48 ^a	4.83 ^a	1.77 ^a	2.77 ^a	4.97 ^a	6.90 ^a	1.89 ^a	2.91 ^a	5.14 ^a	6.98 ^a
	16	0.64 ^c	1.25 ^a	2.45 ^a	3.37 ^a	0.71 ^b	1.36 ^a	2.67 ^a	3.66 ^a	0.90 ^a	1.64 ^a	3.21 ^a	4.54 ^a	1.54 ^a	2.56 ^a	4.76 ^a	6.69 ^a	1.67 ^a	2.71 ^a	4.94 ^a	6.80 ^a
	24	0.17 ^d	0.74 ^c	1.99 ^b	2.88 ^a	0.23 ^c	0.84 ^c	2.18 ^b	3.15 ^a	0.41 ^c	1.12 ^a	2.70 ^a	3.99 ^a	1.10 ^a	2.14 ^a	4.35 ^a	6.26 ^a	1.26 ^a	2.32 ^a	4.57 ^a	6.43 ^a
12	12	0.47 ^d	0.98 ^c	1.90 ^b	2.62 ^a	0.53 ^d	1.08 ^b	2.10 ^a	2.88 ^a	0.72 ^b	1.37 ^a	2.65 ^a	3.73 ^a	1.39 ^a	2.36 ^a	4.40 ^a	6.22 ^a	1.54 ^a	2.56 ^a	4.76 ^a	6.66 ^a
	16	0.18 ^e	0.67 ^d	1.62 ^c	2.33 ^b	0.24 ^e	0.76 ^d	1.81 ^c	2.58 ^b	0.41 ^d	1.03 ^c	2.33 ^b	3.38 ^a	1.08 ^a	2.07 ^a	4.10 ^a	5.91 ^a	1.25 ^a	2.28 ^a	4.48 ^a	6.37 ^a
	24	--	0.13 ^e	1.13 ^e	1.81 ^d	--	0.20 ^e	1.29 ^d	2.03 ^d	--	0.43 ^d	1.75 ^d	2.76 ^c	0.52 ^b	1.51 ^a	3.54 ^a	5.32 ^a	0.70 ^a	1.75 ^a	3.94 ^a	5.82 ^a
14	12	0.13 ^e	0.53 ^e	1.27 ^d	1.83 ^c	0.18 ^e	0.61 ^d	1.42 ^d	2.03 ^d	0.33 ^d	0.86 ^c	1.89 ^c	2.70 ^a	0.97 ^a	1.90 ^a	3.71 ^a	5.36 ^a	1.15 ^a	2.13 ^a	4.15 ^a	5.95 ^a
	16	--	0.22 ^e	1.00 ^e	1.54 ^d	--	0.29 ^e	1.14 ^e	1.73 ^d	0.01 ^e	0.50 ^d	1.56 ^d	2.35 ^c	0.61 ^c	1.53 ^a	3.34 ^a	4.97 ^a	0.79 ^a	1.78 ^a	3.79 ^a	5.58 ^a
	24	--	--	0.53 ^f	1.04 ^e	--	--	0.64 ^f	1.19 ^e	--	--	0.98 ^e	1.72 ^d	--	0.86 ^c	2.66 ^b	4.24 ^b	0.14 ^c	1.12 ^b	3.11 ^a	4.87 ^a
16	12	--	0.20 ^f	0.82 ^e	1.25 ^d	--	0.26 ^e	0.93 ^e	1.41 ^d	0.03 ^e	0.44 ^e	1.30 ^d	1.92 ^c	0.58 ^c	1.41 ^b	2.98 ^a	4.42 ^a	0.75 ^b	1.67 ^a	3.45 ^a	5.08 ^a
	16	--	--	0.57 ^f	0.98 ^e	--	--	0.66 ^f	1.12 ^e	--	0.09 ^e	0.98 ^e	1.58 ^d	0.18 ^d	1.00 ^c	2.57 ^b	3.97 ^a	0.35 ^c	1.26 ^b	3.03 ^a	4.64 ^a
	24	--	--	0.13 ^f	0.51 ^f	--	--	0.19 ^f	0.62 ^f	--	--	0.42 ^f	0.98 ^e	--	0.28 ^e	1.83 ^d	3.18 ^c	--	0.51 ^d	2.28 ^c	3.82 ^b

TABLE 10—COMBINED LATERAL AND AXIAL LOADS - ALLOWABLE AXIAL LOAD (kips) WITH 20 psf LATERAL LOAD

WALL HEIGHT (ft)	MAX. STUD SPACING (in)	350S162-				362S162-				400S162-				550S162-				600S162-			
		33 ksi		50 ksi		33 ksi		50 ksi		33 ksi		50 ksi		33 ksi		50 ksi		33 ksi		50 ksi	
		Stud Thickness (mils)																			
		33	43	54	68	33	43	54	68	33	43	54	68	33	43	54	68	33	43	54	68
8	12	1.16 ^a	1.89 ^a	3.36 ^a	4.46 _a	1.23 ^a	1.99 ^a	3.55 ^a	4.76 ^a	1.42 ^a	2.25 ^a	4.04 ^a	5.57 ^a	1.93 ^a	2.95 ^a	5.22 ^a	7.06 ^a	2.00 ^a	3.02 ^a	5.25 ^a	7.10 _a
	16	0.90 ^a	1.62 ^a	3.11 ^a	4.21 _a	0.98 ^a	1.72 ^a	3.30 ^a	4.50 ^a	1.17 ^a	1.99 ^a	3.79 ^a	5.31 ^a	1.74 ^a	2.77 ^a	5.05 ^a	6.89 ^a	1.82 ^a	2.85 ^a	5.10 ^a	6.95 _a
	24	0.43 ^c	1.11 ^b	2.64 ^a	3.72 _a	0.50 ^b	1.21 ^a	2.82 ^a	4.01 ^a	0.70 ^b	1.50 ^a	3.32 ^a	4.81 ^a	1.35 ^a	2.41 ^a	4.70 ^a	6.55 ^a	1.47 ^a	2.53 ^a	4.79 ^a	6.65 _a
9	12	0.90 ^a	1.57 ^a	2.91 ^a	3.92 _a	0.97 ^a	1.68 ^a	3.12 ^a	4.23 ^a	1.17 ^a	1.95 ^a	3.64 ^a	5.08 ^a	1.75 ^a	2.77 ^a	5.03 ^a	6.90 ^a	1.85 ^a	2.87 ^a	5.11 ^a	6.96 _a
	16	0.60 ^c	1.26 ^a	2.62 ^a	3.62 _a	0.67 ^b	1.36 ^a	2.82 ^a	3.92 ^a	0.87 ^a	1.64 ^a	3.34 ^a	4.76 ^a	1.50 ^a	2.54 ^a	4.80 ^a	6.67 ^a	1.62 ^a	2.66 ^a	4.91 ^a	6.76 ^a
	24	0.07 ^d	0.69 ^c	2.08 ^b	3.06 _a	0.13 ^d	0.78 ^c	2.27 ^b	3.34 ^a	0.33 ^c	1.07 ^b	2.78 ^a	4.16 ^a	1.03 ^a	2.09 ^a	4.36 ^a	6.23 ^a	1.18 ^a	2.25 ^a	4.51 ^a	6.38 _a
10	12	0.64 ^c	1.25 ^a	2.45 ^a	3.37 _a	0.70 ^b	1.36 ^a	2.67 ^a	3.66 ^a	0.90 ^a	1.64 ^a	3.21 ^a	4.54 ^a	1.54 ^a	2.56 ^a	4.76 ^a	6.69 ^a	1.67 ^a	2.71 ^a	4.94 ^a	6.80 _a
	16	0.32 ^d	0.91 ^c	2.14 ^b	3.03 _a	0.38 ^d	1.01 ^c	2.34 ^a	3.32 ^a	0.57 ^c	1.29 ^a	2.87 ^a	4.17 ^a	1.24 ^a	2.28 ^a	4.48 ^a	6.40 ^a	1.40 ^a	2.45 ^a	4.69 ^a	6.55 _a
	24	--	0.29 ^d	1.56 ^d	2.43 ^c	--	0.38 ^d	1.74 ^c	2.69 ^b	--	0.64 ^c	2.24 ^c	3.48 ^b	0.69 ^a	1.74 ^a	3.95 ^a	5.85 ^a	0.86 ^a	1.94 ^a	4.20 ^a	6.06 _a
12	12	0.18 ^e	0.67 ^d	1.62 ^c	2.33 _b	0.24 ^e	0.76 ^d	1.81 ^c	2.58 ^b	0.41 ^d	1.03 ^c	2.33 ^b	3.38 ^a	1.08 ^a	2.07 ^a	4.10 ^a	5.91 ^a	1.25 ^a	2.28 ^a	4.48 ^a	6.37 _a
	16	--	0.30 ^e	1.29 ^d	1.97 ^c	--	0.38 ^e	1.45 ^d	2.20 ^c	--	0.62 ^d	1.94 ^d	2.96 ^b	0.70 ^b	1.69 ^a	3.72 ^a	5.51 ^a	0.88 ^a	1.92 ^a	4.11 ^a	6.00 _a
	24	--	--	0.70 ^e	1.35 _e	--	--	0.84 ^e	1.55 ^e	--	--	1.25 ^e	2.20 ^d	--	0.99 ^b	3.01 ^a	4.77 ^a	0.19 ^c	1.24 ^a	3.43 ^a	5.30 _a
14	12	--	0.22 ^e	1.00 ^e	1.54 _d	--	0.29 ^e	1.14 ^e	1.73 ^d	0.01 ^e	0.50 ^d	1.56 ^d	2.35 ^c	0.61 ^c	1.53 ^a	3.34 ^a	4.97 ^a	0.79 ^a	1.78 ^a	3.79 ^a	5.58 _a
	16	--	--	0.68 ^e	1.20 _e	--	--	0.79 ^e	1.36 ^e	--	0.08 ^e	1.16 ^e	1.92 ^d	0.17 ^d	1.08 ^c	2.88 ^b	4.48 ^a	0.35 ^c	1.33 ^b	3.33 ^a	5.10 _a
	24	--	--	0.13 ^f	0.60 ^f	--	--	0.21 ^f	0.73 ^f	--	--	0.48 ^f	1.18 ^e	--	0.26 ^d	2.05 ^d	3.59 ^c	--	0.52 ^d	2.49 ^c	4.21 _a
16	12	--	--	0.57 ^f	0.98 _e	--	--	0.66 ^f	1.12 ^e	--	0.09 ^e	0.98 ^e	1.58 ^d	0.18 ^d	1.00 ^c	2.57 ^b	3.97 ^a	0.35 ^c	1.26 ^b	3.03 ^a	4.63 _a
	16	--	--	0.26 ^f	0.66 ^f	--	--	0.34 ^f	0.77 ^f	--	--	0.60 ^f	1.18 ^e	--	0.51 ^d	2.07 ^d	3.44 ^c	--	0.75 ^d	2.52 ^c	4.08 _a
	24	--	--	--	0.11 ^f	--	--	--	0.19 ^f	--	--	--	0.48 ^f	--	--	1.19 ^e	2.48 ^d	--	--	1.60 ^d	3.09 ^c

TABLE 11—COMBINED LATERAL AND AXIAL LOADS - ALLOWABLE AXIAL LOAD (kips) WITH 25 psf LATERAL LOAD

WALL HEIGHT (ft)	MAX. STUD SPACING (in)	350S162-				362S162-				400S162-				550S162-				600S162-			
		33 ksi		50 ksi		33 ksi		50 ksi		33 ksi		50 ksi		33 ksi		50 ksi		33 ksi		50 ksi	
		Stud Thickness (mils)																			
		33	43	54	68	33	43	54	68	33	43	54	68	33	43	54	68	33	43	54	68
8	12	0.97 ^a	1.68 ^a	3.17 ^a	4.27 ^a	1.04 ^a	1.78 ^a	3.36 ^a	4.57 ^a	1.23 ^a	2.05 ^a	3.85 ^a	5.37 ^a	1.79 ^a	2.82 ^a	5.09 ^a	6.93 ^a	1.87 ^a	2.89 ^a	5.14 ^a	6.99 ^a
	16	0.66 ^b	1.36 ^a	2.87 ^a	3.96 ^a	0.73 ^a	1.46 ^a	3.05 ^a	4.25 ^a	0.93 ^a	1.74 ^a	3.55 ^a	5.06 ^a	1.54 ^a	2.59 ^a	4.87 ^a	6.72 ^a	1.64 ^a	2.69 ^a	4.94 ^a	6.80 ^a
	24	0.09 ^d	0.76 ^c	2.30 ^b	3.38 ^a	0.16 ^c	0.86 ^b	2.48 ^a	3.66 ^a	0.37 ^b	1.15 ^a	2.98 ^a	4.45 ^a	1.07 ^a	2.14 ^a	4.44 ^a	6.30 ^a	1.21 ^a	2.28 ^a	4.56 ^a	6.43 ^a
9	12	0.67 ^b	1.33 ^a	2.69 ^a	3.70 ^a	0.74 ^b	1.44 ^a	2.89 ^a	3.99 ^a	0.94 ^a	1.72 ^a	3.41 ^a	4.84 ^a	1.56 ^a	2.59 ^a	4.86 ^a	6.73 ^a	1.68 ^a	2.71 ^a	4.96 ^a	6.82 ^a
	16	0.33 ^d	0.96 ^b	2.34 ^a	3.34 ^a	0.39 ^c	1.06 ^b	2.54 ^a	3.62 ^a	0.59 ^b	1.35 ^a	3.06 ^a	4.45 ^a	1.26 ^a	2.31 ^a	4.58 ^a	6.45 ^a	1.40 ^a	2.45 ^a	4.71 ^a	6.57 ^a
	24	--	0.29 ^d	1.71 ^c	2.68 ^b	--	0.39 ^d	1.89 ^c	2.94 ^b	--	0.66 ^c	2.39 ^b	3.73 ^a	0.68 ^a	1.76 ^a	4.04 ^a	5.91 ^a	0.86 ^a	1.95 ^a	4.22 ^a	6.09 ^a
10	12	0.39 ^d	0.99 ^c	2.21 ^a	3.11 ^a	0.46 ^c	1.09 ^b	2.42 ^a	3.40 ^a	0.65 ^b	1.38 ^a	2.95 ^a	4.26 ^a	1.32 ^a	2.34 ^a	4.55 ^a	6.47 ^a	1.46 ^a	2.51 ^a	4.75 ^a	6.61 ^a
	16	0.02 ^e	0.59 ^d	1.84 ^c	2.72 ^b	0.08 ^d	0.68 ^d	2.03 ^c	2.99 ^a	0.26 ^d	0.96 ^b	2.54 ^a	3.82 ^a	0.96 ^a	2.00 ^a	4.21 ^a	6.13 ^a	1.13 ^a	2.19 ^a	4.44 ^a	6.30 ^a
	24	--	--	1.17 ^d	2.02 ^d	--	--	1.34 ^d	2.26 ^c	--	0.20 ^d	1.81 ^c	3.01 ^b	0.29 ^b	1.35 ^a	3.56 ^a	5.46 ^a	0.48 ^a	1.58 ^a	3.84 ^a	5.71 ^a
12	12	--	0.39 ^e	1.37 ^d	2.06 ^c	--	0.47 ^d	1.54 ^d	2.29 ^c	0.13 ^d	0.72 ^d	2.03 ^c	3.06 ^b	0.79 ^a	1.78 ^a	3.82 ^a	5.61 ^a	0.97 ^a	2.01 ^a	4.20 ^a	6.09 ^a
	16	--	--	0.99 ^e	1.65 ^d	--	0.03 ^e	1.13 ^e	1.86 ^d	--	0.25 ^e	1.58 ^d	2.56 ^c	0.34 ^c	1.33 ^a	3.36 ^a	5.13 ^a	0.53 ^b	1.58 ^a	3.77 ^a	5.64 ^a
	24	--	--	0.32 ^f	0.94 ^e	--	--	0.43 ^f	1.11 ^e	--	--	0.78 ^e	1.70 ^e	--	0.50 ^c	2.51 ^b	4.24 ^a	--	0.76 ^b	2.94 ^a	4.79 ^a
14	12	--	--	0.76 ^e	1.28 ^e	--	--	0.87 ^e	1.45 ^e	--	0.18 ^e	1.26 ^e	2.02 ^d	0.28 ^d	1.19 ^b	2.99 ^a	4.59 ^a	0.45 ^c	1.44 ^a	3.44 ^a	5.21 ^a
	16	--	--	0.39 ^f	0.89 ^e	--	--	0.48 ^f	1.04 ^e	--	--	0.81 ^e	1.54 ^e	--	0.66 ^d	2.45 ^c	4.02 ^b	--	0.91 ^c	2.90 ^b	4.64 ^a
	24	--	--	--	0.21 ^f	--	--	--	0.32 ^f	--	--	0.03 ^f	0.70 ^f	--	--	1.49 ^d	2.98 ^d	--	--	1.92 ^d	3.60 ^c
16	12	--	--	0.34 ^f	0.73 ^f	--	--	0.41 ^f	0.85 ^f	--	--	0.68 ^e	1.27 ^e	--	0.63 ^d	2.19 ^c	3.56 ^b	--	0.87 ^c	2.64 ^b	4.21 ^a
	16	--	--	--	0.37 ^f	--	--	0.05 ^f	0.47 ^f	--	--	0.25 ^f	0.81 ^f	--	0.06 ^e	1.61 ^d	2.94 ^d	--	0.29 ^d	2.04 ^d	3.57 ^c
	24	--	--	--	--	--	--	--	--	--	--	0.02 ^f	--	--	0.60 ^e	1.84 ^e	--	--	0.98 ^e	2.42 ^d	

TABLE 12—COMBINED LATERAL AND AXIAL LOADS - ALLOWABLE AXIAL LOAD (kips) WITH 30 psf LATERAL LOAD

WALL HEIGHT (ft)	MAX. STUD SPACING (in)	350S162-				362S162-				400S162-				550S162-				600S162-			
		33 ksi		50 ksi		33 ksi		50 ksi		33 ksi		50 ksi		33 ksi		50 ksi		33 ksi		50 ksi	
		Stud Thickness (mils)																			
		33	43	54	68	33	43	54	68	33	43	54	68	33	43	54	68	33	43	54	68
8	12	0.78 ^a	1.49 ^a	2.99 ^a	4.08 ^a	0.85 ^a	1.59 ^a	3.17 ^a	4.38 ^a	1.05 ^a	1.86 ^a	3.67 ^a	5.18 ^a	1.64 ^a	2.68 ^a	4.96 ^a	6.80 ^a	1.73 ^a	2.77 ^a	5.02 ^a	6.88 ^a
	16	0.43 ^c	1.11 ^b	2.64 ^a	3.72 ^a	0.50 ^b	1.21 ^a	2.82 ^a	4.01 ^a	0.70 ^a	1.50 ^a	3.32 ^a	4.81 ^a	1.35 ^a	2.41 ^a	4.70 ^a	6.55 ^a	1.47 ^a	2.53 ^a	4.79 ^a	6.65 ^a
	24	--	0.42 ^d	1.99 ^c	3.05 ^a	--	0.52 ^c	2.16 ^b	3.32 ^a	0.05 ^c	0.81 ^b	2.66 ^a	4.10 ^a	0.79 ^a	1.88 ^a	4.19 ^a	6.05 ^a	0.95 ^a	2.05 ^a	4.33 ^a	6.21 ^a
9	12	0.46 ^c	1.11 ^b	2.48 ^a	3.48 ^a	0.53 ^c	1.21 ^a	2.68 ^a	3.77 ^a	0.73 ^b	1.49 ^a	3.20 ^a	4.60 ^a	1.38 ^a	2.42 ^a	4.69 ^a	6.56 ^a	1.51 ^a	2.56 ^a	4.81 ^a	6.67 ^a
	16	0.07 ^d	0.69 ^c	2.08 ^b	3.06 ^a	0.13 ^d	0.78 ^c	2.27 ^b	3.34 ^a	0.33 ^c	1.07 ^b	2.78 ^a	4.16 ^a	1.03 ^a	2.09 ^a	4.36 ^a	6.23 ^a	1.18 ^a	2.25 ^a	4.52 ^a	6.38 ^a
	24	--	--	1.37 ^d	2.31 ^c	--	0.02 ^d	1.54 ^d	2.57 ^c	--	0.28 ^d	2.02 ^c	3.33 ^b	0.35 ^a	1.44 ^a	3.72 ^a	5.59 ^a	0.54 ^a	1.65 ^a	3.94 ^a	5.81 ^a
10	12	0.17 ^d	0.74 ^c	1.99 ^b	2.88 ^a	0.23 ^d	0.84 ^c	2.18 ^b	3.15 ^a	0.41 ^c	1.12 ^b	2.70 ^a	3.99 ^a	1.10 ^a	2.14 ^a	4.35 ^a	6.26 ^a	1.26 ^a	2.32 ^a	4.57 ^a	6.43 ^a
	16	--	0.29 ^d	1.56 ^d	2.43 ^c	--	0.38 ^d	1.74 ^c	2.69 ^b	--	0.64 ^c	2.24 ^b	3.48 ^a	0.69 ^a	1.74 ^a	3.95 ^a	5.85 ^a	0.86 ^a	1.94 ^a	4.20 ^a	6.06 ^a
	24	--	--	0.81 ^e	1.63 ^d	--	--	0.96 ^e	1.86 ^d	--	--	1.40 ^d	2.57 ^c	--	0.97 ^b	3.18 ^a	5.07 ^a	0.11 ^b	1.22 ^a	3.49 ^a	5.36 ^a
12	12	--	0.13 ^e	1.13 ^e	1.81 ^d	--	0.20 ^e	1.29 ^d	2.03 ^d	--	0.43 ^d	1.75 ^d	2.76 ^c	0.52 ^b	1.51 ^a	3.54 ^a	5.32 ^a	0.70 ^a	1.75 ^a	3.94 ^a	5.82 ^a
	16	--	--	0.71 ^e	1.35 ^e	--	--	0.84 ^e	1.55 ^e	--	--	1.25 ^e	2.20 ^d	--	0.99 ^b	3.01 ^a	4.76 ^a	0.19 ^c	1.24 ^a	3.43 ^a	5.29 ^a
	24	--	--	--	0.56 ^f	--	--	0.05 ^f	0.71 ^f	--	--	0.36 ^f	1.23 ^e	--	0.04 ^d	2.04 ^c	3.74 ^b	--	0.31 ^c	2.47 ^b	4.31 ^a
14	12	--	--	0.53 ^f	1.04 ^e	--	--	0.64 ^f	1.19 ^e	--	--	0.98 ^e	1.73 ^d	--	0.86 ^c	2.66 ^b	4.24 ^a	0.14 ^c	1.12 ^b	3.11 ^a	4.87 ^a
	16	--	--	0.13 ^f	0.60 ^f	--	--	0.21 ^f	0.73 ^f	--	--	0.48 ^f	1.18 ^e	--	0.26 ^d	2.05 ^d	3.59 ^c	--	0.52 ^d	2.49 ^c	4.21 ^a
	24	--	--	--	--	--	--	--	--	--	--	0.25 ^f	--	--	0.96 ^e	2.41 ^d	--	--	--	1.38 ^d	3.02 ^c
16	12	--	--	0.13 ^f	0.51 ^f	--	--	0.19 ^f	0.62 ^f	--	--	0.42 ^f	0.98 ^e	--	0.28 ^e	1.83 ^d	3.18 ^c	--	0.51 ^d	2.28 ^c	3.82 ^b
	16	--	--	--	0.11 ^f	--	--	--	0.19 ^f	--	--	--	0.48 ^f	--	--	1.19 ^e	2.48 ^d	--	--	1.60 ^d	3.09 ^c
	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.06 ^f	1.26 ^e	--	--	0.40 ^e	1.80 ^e

TABLE 13—STUDS FOR USE WITH THE IRC

IRC MEMBER DESIGNATION		
t	350S162-t	550S162-t
EQUIVALENT FRAMECAD MEMBER DESIGNATION		
33	350S162-33	550S162-33
43	350S162-43	550S162-43
54	350S162-54	550S162-54
68	350S162-68	550S162-68

TABLE 14—MANUFACTURING LOCATIONS

Accurate Steel Fab, LLC. Lewisville, TX 75057	Bimtech Acworth, GA 30101	BLUvera, LLC. St Paul, MN 55114	California Drywall Company Santa Jose, CA 95112
Centerline Prefab, LLC. Grand Rapids, MI 49548	C.J. Coakley Co., Inc. Merrifield, VA 22031	Douglass Colony Group, Inc. Commerce City, CO 80022	Elro Manufacturing LLC. Apopka, FL 32703
F.L. Crane and Sons, Inc. Fulton, MS 38843	F.L. Crane and Sons, Inc. Saucier, MS 39573	F.L. Crane and Sons, Inc. Hutto, TX 78634	Forte' Specialty Contractors Las Vegas, NV 89118
Fortis Products, LLC. Chattanooga, TN 37406	Forge CFS Components, LLC. Norcross, GA 30071	FRAMECAD Ltd. Glen Innes/ St. John, Auckland New Zealand	FrameCOR, LLC. Phoenix, AZ 85034
George M. Raymond Co. Las Vegas, NV 89118	Integrated Steel, Inc. Grand Forks, ND 58023	KAPTURE Prefab LLC. Gilbert, AZ 85233	L&L Metal Works LLC. Orlando, FL 32808
M.A.C. Prefab, LLC. Goodyear, AZ 85338	Mammoth Factory Corp., Marianna, FL 32446	Mathers Construction Team Co. Waynesboro, VA 22980	Metalleve Wall Systems LLC. Boxborough, MA 01719
MSC Commercial And Residential Metal Stud Framing Drywall Tape Texture, INC. Oceanside, CA, 92056	Network-Framing Solutions, LLC. Plainville, CT 06062	OFFSITEK LLC. Charlotte, NC 28208	Orlando Steel Framing Company, LLC Sanford, FL 32771
Performance Contracting, Inc. (PCI) dba Performance Contracting Prefabrication Portland, OR 97210	PDM Constructors Montgomeryville, PA 19454	Ready Frame Systems, LLC. Nashville, TN 37214	Rhodes USA, LLC. Lubbock, TX 79416
Sands Wall Systems, Inc. Siouz Falls, SD 57108	Salt Lake Prefab, LLC. American Fork, UT 84003	Silver State Framing Systems, LLC. Las Vegas, NV 89119	Steel Framing Building Technology, LLC (Bildtek) Mexicali, Baja California Mexico
Steel Panel Truss LLC, Kissimmee, FL 34746	Steel Tek Framing, LLC Grandview, MO 64030	Vitruvian Steel, LLC, 1050 Sanford, FL 32771	Wall-Panel, LLC. Deforest, WI 53532
Wies Offsite, LLC. St. Louis, MO 63132	Xtreme Cubes Corp. Henderson, NV 89015	---	---

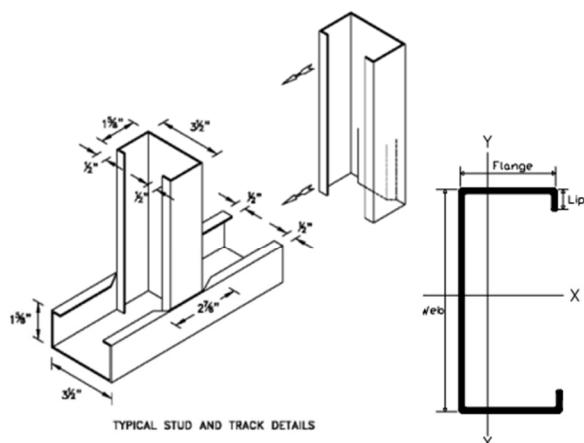


FIGURE 1—TYPICAL STUD
AND TRACK DETAILS

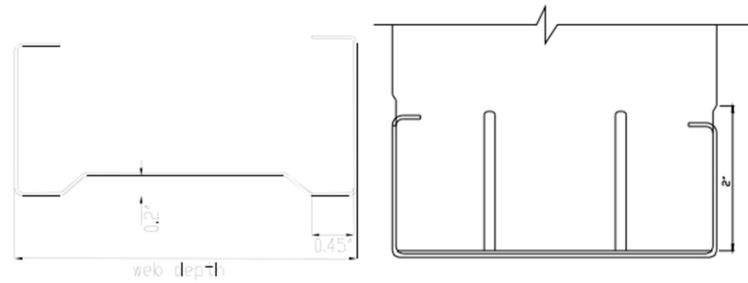


FIGURE 2—SWAGED END DETAILS

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DIVISION: 05 00 000—METALS**Section: 05 40 00—Cold-Formed Metal Framing****Section: 05 41 00—Structural Metal Stud Framing****DIVISION: 09 00 00—FINISHES****Section: 09 22 16.13—Non-Structural Metal Stud Framing****REPORT HOLDER:****FRAMECAD LICENSING LTD.****EVALUATION SUBJECT:****COLD-FORMED STEEL FRAMING MEMBERS****1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to provide evidence of suitability that the cold-formed steel framing members, described in ICC-ES evaluation report ESR-2361, have also been evaluated for compliance with the code noted below.

Applicable code edition:

- 2018 Saudi Building Code-General – SBC 201-CR

2.0 CONCLUSIONS

The cold-formed steel framing members, described in Sections 2.0 through 7.0 of the evaluation report ESR-2361, complies with the 2018 SBC 201-CR provisions.

3.0 CONDITIONS OF USE.

The cold-formed-steel framing members, described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report ESR-2361.
- The design, installation, conditions of use and identification of the anchors are in accordance with the evaluation report ESR-2361.

This supplement expires concurrently with the evaluation report, reissued May 2023 and revised March 2024.