Mission Statement

The SSMA's mission is to be the unified voice of the steel framing manufacturing industry, by being the leader in supporting the development and maintenance of quality product standards and specifications, and by creating growth opportunities for cold-formed steel through research, marketing, and education.

Introduction

The increasing environmental concerns in the world today have caused us all to examine the way we live. These issues have affected every aspect of our lives, including the materials we use in construction. The use of cold-formed steel members benefit the environment, contractor, designer, and developer more than other material.

Steel is not only a recyclable product, but also a stronger product that allows for longer clear-spans. Cold-formed steel is lighter to provide ease of handling, and is a dimensionally stable product, giving a "straight" wall with which to work. It doesn't suffer fluctuation in price, making it easier to bid a project. Quality control is stressed in all phases of the manufacturing process so the highest possible quality is delivered to the jobsite. The structural shapes manufactured are easily used for nonstructural and structural wall assemblies, floor and ceiling joist assemblies, trusses, and panelized systems.

SSMA in collaboration with the American Iron and Steel Institute (AISI) has developed and adopted a standard designator system for identifying cold-formed steel framing members. Using a standard system will eliminate the confusion caused by individual manufacturers' varied designators.

Technical Assistance

Professional technical assistance is available through SSMA or individual manufacturers' technical departments.

Code Approval

SSMA structural and nonstructural cold-formed framing product specifications meet the stringent requirements of International Code Council Evaluation Services in conjunction with SSMA ICC-ES evaluation report (ESR-3064P). The product specification and documented quality control system & procedures are verified during regular inspections by ICC-ES, the leader in the technical evaluations for code compliance of the building products.

Material Specifications

Structural and nonstructural members are coated to meet the minimum code requirements. Higher corrosion protection coatings such as G90 are available upon request. Products manufactured by SSMA members are cold-formed from corrosion protected steel coils or sheets and meet the following specifications requirements:

Product Type	Material Specifications	Min Yield	Min Tensile	Minimum Metallic Coating Designation
Nonstructural Products ASTM C645	ASTM A653, SS Grade 33	33 ksi	45 ksi	G40
	ASTM A1003, Grade 33 (NS33)	33 ksi	... [A]	G40[1], A40[1], AZ50[2], GF30[3], T1-25[4], T2-100[4], 60G/60G[5]
Structural Products ASTM C955 (CP60 Coatings)	ASTM A653, SS Grade 33	33 ksi	45 ksi	G60
	ASTM A1003, Grade 33 Type H (ST33H)	33 ksi	45 ksi	G60[1], A60[1], AZ50[2], GF30[3]
	ASTM A653, SS Grade 50 Class 1	50 ksi	65 ksi	G60
	ASTM A1003, Grade 50 Type H (ST50H)	50 ksi	65 ksi	G60[1], A60[1], AZ50[2], GF30[3]
	ASTM A653 HSLA Grade 50	50 ksi	65 ksi	G60

[1]A653 Standard for steel sheet, zinc coated (galvanized) or zinc-iron alloy-coated (galvannealed) by the hot-dip process

[2]A792 Standard for steel sheet, 55% aluminum-zinc alloy-coated by the hot-dip process

[3]A875 Standard for steel sheet, zinc-5% aluminum alloy-coated by the hot-dip process

[4]A463 Standard for steel sheet, aluminum coated by the hot-dip process

[5]A879 Standard for steel sheet, zinc coated by the electrolytic process for application requiring designation of the coating mass on each surface

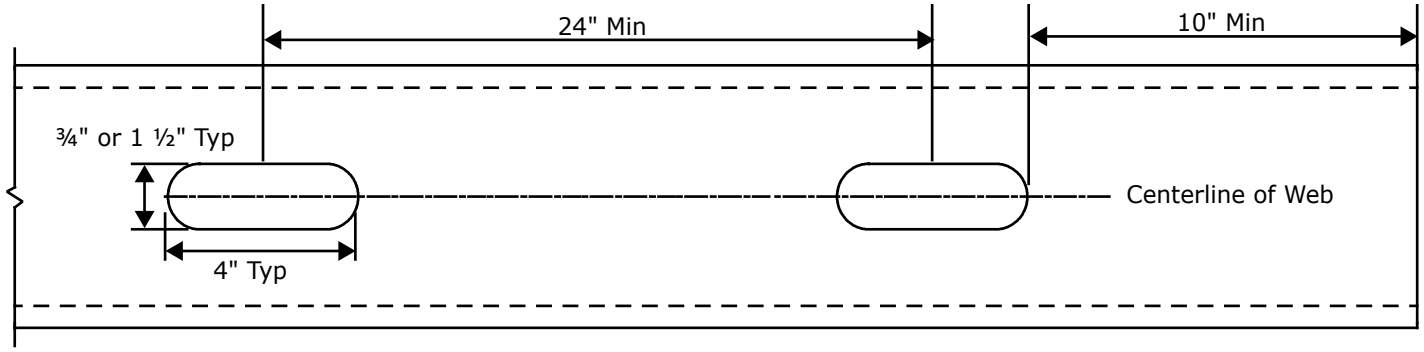
[A]No tensile requirements for nonstructural steel in accordance with ASTM A1003 standards

Disclaimer

All data, specifications, and details contained in this publication are intended as a general guide for using SSMA members' products. These products should not be used in design or construction without an independent evaluation by a qualified engineer or architect to verify the suitability of a particular product for use in a specific application. The SSMA and its members assume no liability for product failure resulting from the use or misapplication of computations, detail drawings, and specifications contained herein. This publication contains the latest information available at the time of printing with respect to the referenced building codes and standards. The SSMA and its members reserve the right to make modifications and/or change materials of any of their products without prior notice or obligation. For the latest information regarding a particular manufacturer's products, contact that manufacturer. All SSMA manufacturers may not produce all of the products contained in this catalog. Please contact individual manufacturer to verify product availability.

General Notes for All Tables

1. The values in this catalog are based on the North American Specification for the Design of Cold-Formed Steel Structural Members, AISI S100-07 as referenced by 2009 International Building Code (IBC), AISI S100-07 with Supplement S2-10 as referenced by 2012 IBC and AISI S100-12 as referenced by 2015 IBC.
2. Where AISI S100 is referenced, it is the North American Specification for the Design of Cold-Formed Steel Structural Members, AISI S100-07 with Supplement S2-10 and AISI S100-12, as applicable with U.S. provisions.
3. The structural properties included in this catalog have been computed based on allowable strength design (ASD) method.
4. Distortional buckling calculations are based on Kφ = 0.
5. The effective moment of inertia for deflection is calculated at a stress that results in a section modulus such that the stress times the section modulus at that stress is equal to the allowable moment. AISI S100 Procedure I for serviceability determination has been used.
6. Various sections may be manufactured with yield points of 33 or 50 kips per square inch (ksi). The yield point used for calculations is indicated in the tables.
7. For sections available in both 33 and 50 ksi, the specifier must clearly indicate which yield point is required. For example: 362S162-54 (50 ksi).
8. Conditions with loads that exceed the 10 psf limit for nonstructural members require an approved CP60 coating.
9. When provided, factory punchouts will be located along the center line of the webs of the stud members and will have a minimum center-to-center spacing of 24". Punchouts for members greater than 2 ½" deep are a maximum of 1 ½" wide x 4 ½" long. Members with depths 2 ½" and smaller are maximum ¾" wide x 4 ½" long. Any configuration or combination of holes that fit within the punchout width and length limitations mentioned above shall be permitted; other punchout configurations and locations not in compliance with limitations listed above must be approved by a design professional. Values herein are based on punchout configuration and location as illustrated below.
10. The 10" end distance shown may be altered if calculations are in conformance with code.



Steel Thickness Table

Designation Thickness (mil)	Minimum Thickness [1] (in)	Design Thickness [1] (in)	Design Inside Corner Radii [2] (in)	Reference Only Gauge No.
18	0.0179	0.0188	0.0843	25
27	0.0269	0.0283	0.0796	22
30	0.0296	0.0312	0.0781	20 – Drywall
33	0.0329	0.0346	0.0764	20 – Structural
43	0.0428	0.0451	0.0712	18
54	0.0538	0.0566	0.0849	16
68	0.0677	0.0713	0.1069	14
97	0.0966	0.1017	0.1525	12
118	0.1180	0.1242	0.1863	10

Stiffening Lip Length Table

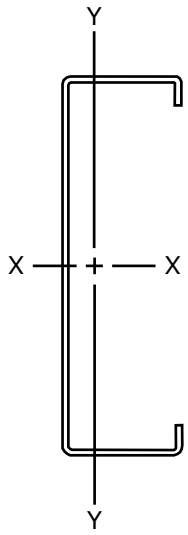
Member	Flange Width	Stiffening Lip Length (in)
S125	1 ¼"	0.188
S137	1 ⅜"	0.375
S162	1 ⅝"	0.500
S200	2"	0.625
S250	2 ½"	0.625
S300	3"	0.625
S350	3 ½"	1.000

[1]Minimum thickness represents 95% of the design thickness and is the minimum acceptable thickness delivered to the jobsite based on AISI S100-07 Section A2.4.

[2]The tables in this catalog are calculated based on inside corner radii listed in this table. The inside corner radius is the maximum of 3/32 – t/2 or 1.5t, truncated after the fourth decimal place (t = design thickness). Centerline bend radius is calculated by adding half of the design thickness to listed corner radius.

Definitions of Structural Property Symbols

Gross Properties



I_x: Moment of inertia of the cross section about the x-axis.

S_x: Section modulus about the x-axis.

R_x: Radius of gyration of cross section about the x-axis.

I_y: Moment of inertia of cross section about the y-axis.

R_y: Radius of gyration of cross section about the y-axis.

Effective Properties

I_{xe}: Effective moment of inertia about the x-axis.

S_{xe}: Effective section modulus about the x-axis.

M_{al}: Allowable moment based on local buckling.

M_{ad}: Allowable moment based on distortional buckling, assuming Kφ = 0.

M_a: Allowable moment for track and channel members, based on local buckling only.

V_{ag}: Allowable strong axis shear away from punchout, calculated in accordance with AISI S100 Section C3.2.1.

V_{anet}: Allowable strong axis shear at the punchout, calculated in accordance with AISI S100 Section C3.2.2.

Torsional and Other Properties

J: St. Venant torsional constant. The numbers shown in the tables for J have been multiplied by 1,000. The actual values can be obtained by dividing the listed numbers by 1,000.

C_w: Torsional warping constant.

X_o: Distance from the shear center to the centroid along the principal x-axis.

m: Distance from shear center to mid-plane of web.

R_o: Polar radius of gyration of cross section about the shear center.

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.

Kφ Distortional buckling moment (M_{ad}) is calculated without the beneficial effect of sheathing to rotational stiffness. Kφ = 0.

Web Depth (h) to Thickness (t) Ratios [2,3,4]

Mil Thickness	18 mil		27 mil		30 mil		33 mil		43 mil		54 mil		68 mil		97 mil		118 mil	
Design Thickness (in)	0.0188		0.0283		0.0312		0.0346		0.0451		0.0566		0.0713		0.1017		0.1242	
Inside Bend Radius (in)	0.0843		0.0796		0.0781		0.0764		0.0712		0.0849		0.1069		0.1525		0.1863	
Depth (in)	h (in)	h/t	h (in)	h/t	h (in)	h/t	h (in)	h/t	h (in)	h/t	h (in)	h/t	h (in)	h/t	h (in)	h/t	h (in)	h/t
1.625	1.419	75	1.409	50	1.406	45	1.403	41	1.392	31	1.342	24	1.269	18	1.117	11	1.004	8
2.5	2.294	122	2.284	81	2.281	73	2.278	66	2.267	50	2.217	39	2.144	30	1.992	20	1.879	15
3.5	3.294	175	3.284	116	3.281	105	3.278	95	3.267	72	3.217	57	3.144	44	2.992	29	2.879	23
3.625	3.419	182	3.409	120	3.406	109	3.403	98	3.392	75	3.342	59	3.269	46	3.117	31	3.004	24
4	3.794	202 [1]	3.784	134	3.781	121	3.778	109	3.767	84	3.717	66	3.644	51	3.492	34	3.379	27
5.5	5.294	-	5.284	187	5.281	169	5.278	153	5.267	117	5.217	92	5.144	72	4.992	49	4.879	39
6	5.794	-	5.784	204 [1]	5.781	185	5.778	167	5.767	128	5.717	101	5.644	79	5.492	54	5.379	43
8	7.794	-	7.784	-	7.781	249 [1]	7.778	225 [1]	7.767	172	7.717	136	7.644	107	7.492	74	7.379	59
10	9.794	-	9.784	-	9.781	-	9.778	-	9.767	217 [1]	9.717	172	9.644	135	9.492	93	9.379	76
12	11.794	-	11.784	-	11.781	-	11.778	-	11.767	-	11.717	207 [1]	11.644	164	11.492	113	11.379	92
14	13.794	-	13.784	-	13.781	-	13.778	-	13.767	-	13.717	242 [1]	13.644	192	13.492	133	13.379	108
16	15.794	-	15.784	-	15.781	-	15.778	-	15.767	-	15.717	-	15.644	220 [1]	15.492	152	15.379	124

[1]h/t exceeds 200

[2]h value used for h/t calculation is the flat width of the web. For S members, this is the out-to-out member size, minus twice the thickness, minus twice the inside bend radius.

[3]h/t values exceeding 260 are marked with a dash (-).

[4]h/t values in this table apply to S (studs and joists) members only and do not apply to tracks and channels.