

Product Category: 05.40.00 - Cold-Formed Metal Framing

Product Name: 1400S300-97

Available Finish: G60, G90

*Other standard coatings referenced in ASTM A1003

Web Depth: 14 in
Flange Width: 3 in
Design Thickness: 0.1017 in
Gauge: 97 mills or 12G
Yield stress, Fy: 50 ksi
Weight: 7.09 lb/ft

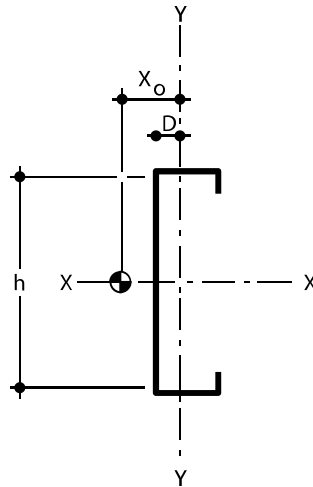
Gross Section Properties

Cross sectional area (A) 2.084 in²
 Moment of inertia (Ix) 54.692 in⁴
 Section Modulus (Sx) 7.813 in³
 Radius of gyration (Rx) 5.123 in
 Gross moment of inertia (Iy) 1.854 in⁴
 Gross Radius of gyration (Ry) 0.943 in

Effective Section Properties

Moment of inertia for deflection (I_e) 53.232 in⁴
 Section modulus (S_e) 6.373 in³
 Allowable bending moment (M_a) 190.800 In-k
 Allowable bending moment from distortional buckling (M_{ad}) 160.22 In-k
 Allowable strong axis shear away from punch-out (V_{ag}) 6939 lb
 Allowable strong axis shear at punch out (V_{anet}) 6939 lb

- Calculated properties are based on AISI S100-16/S240-20, North American Specification for Design of Cold-Formed Steel Structural Members and meets the requirements of the IBC 2021 Building Code.
- The centerline bend radius is based on inside corner radii shown in thickness chart.
- Effective properties incorporate the strength increase from the cold work of forming as applicable per AISI A7.2.
- Tabulated gross properties are based on full-unreduced cross section of the studs, away from punchouts.
- For deflection calculations, use the effective moment of inertia.
- Allowable moment includes cold-work of forming.
- For the steels that have both 33 and 50 ksi listing, if the design is based on 50 ksi, the 50 ksi steel needs to be specified. (ex. 3.625S137 16-50 (50 ksi))


Torsional Properties

St. Venant torsion constant (J x 1000) 7.186 in⁴
 Warping constant (C_w) 72.365 in⁶
 Distance from shear center to neutral axis (X_o) -1.568 in
 Distance from shear center to mid-plane of web (m) 1.020 in
 Radii of gyration (R_o) 5.440 in
 Torsional flexural constant (β) 0.917
 Unbraced Length (L_u) 55.9 in

Floor Joist Tables

10 psf Dead Load and 20 psf Live Load											
Live Load Deflection L/360						Live Load Deflection L/480					
Single Span Spacing (in) o.c.			Two Equal Spans Spacing (in) o.c.			Single Span Spacing (in) o.c.			Two Equal Spans Spacing (in) o.c.		
12	16	24	12	16	24	12	16	24	12	16	24
48' 10"	44' 4"	38' 9"	54' 10"	49' 10" i	42' 11" i	44' 4"	40' 4"	35' 2"	49' 10"	45' 3"	39' 6" i

10 psf Dead Load and 30 psf Live Load											
Live Load Deflection L/360						Live Load Deflection L/480					
Single Span Spacing (in) o.c.			Two Equal Spans Spacing (in) o.c.			Single Span Spacing (in) o.c.			Two Equal Spans Spacing (in) o.c.		
12	16	24	12	16	24	12	16	24	12	16	24
42' 8"	38' 9"	33' 10"	47' 11"	43' 6" i	37' 2" i	38' 9"	35' 2"	30' 9"	43' 6"	39' 6"	34' 6" i

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10 psf Dead Load and 40 psf Live Load											
Live Load Deflection L/360						Live Load Deflection L/480					
Single Span Spacing (in) o.c.			Two Equal Spans Spacing (in) o.c.			Single Span Spacing (in) o.c.			Two Equal Spans Spacing (in) o.c.		
12	16	24	12	16	24	12	16	24	12	16	24
38' 9"	35' 2"	30' 9"	43' 6" i	39' 6" i	33' 3" i	35' 2"	32' 0"	27' 11"	39' 6"	35' 11" i	31' 4" i

10 psf Dead Load and 50 psf Live Load											
Live Load Deflection L/360						Live Load Deflection L/480					
Single Span Spacing (in) o.c.			Two Equal Spans Spacing (in) o.c.			Single Span Spacing (in) o.c.			Two Equal Spans Spacing (in) o.c.		
12	16	24	12	16	24	12	16	24	12	16	24
36' 0"	32' 8"	28' 7"	40' 5" i	36' 8" i	30' 4" i	32' 8"	29' 8"	25' 11"	36' 8"	33' 4" i	29' 1" i

15 psf Dead Load and 125 psf Live Load											
Live Load Deflection L/360						Live Load Deflection L/480					
Single Span Spacing (in) o.c.			Two Equal Spans Spacing (in) o.c.			Single Span Spacing (in) o.c.			Two Equal Spans Spacing (in) o.c.		
12	16	24	12	16	24	12	16	24	12	16	24
26' 6"	24' 1"	19' 10" e	28' 1" i	24' 4" i	19' 10" a	24' 1"	21' 11"	19' 1" e	27' 0" i	24' 4" i	19' 10" a

40 psf Dead Load and 125 psf Live Load											
Live Load Deflection L/360						Live Load Deflection L/480					
Single Span Spacing (in) o.c.			Two Equal Spans Spacing (in) o.c.			Single Span Spacing (in) o.c.			Two Equal Spans Spacing (in) o.c.		
12	16	24	12	16	24	12	16	24	12	16	24
25' 10"	22' 5" e	18' 3" e	25' 10" i	22' 5" i	18' 3" a	24' 1"	21' 11" e	18' 3" e	25' 10" i	22' 5" i	18' 3" a

Additional Information

MRI Steel Framing, LLC is an SFIA member. MRI acts in accordance with the product and quality standards required by the SFIA program.

MRI meets or exceeds ASTM C955, A653, and A1003.

Current LEED credits available upon request