



STEEL FRAMING LLC

Corporate Headquarters

15 Salt Creek Lane, Suite 412
Hinsdale, IL 60521
Phone: 1.630.616.1850
Fax: 1.630.568.5979
info@mrsteelframing.com

Production Facility

201 Mississippi St Dock #Q40
Gary, IN 46402
Phone: 1.630.616.1850
Fax: 1.219.886.3341
info@mrsteelframing.com

GREEN Benefits & Recycled Content

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Project:

MRI Steel Framing is committed to supplying quality products that contribute to developing greener building projects as well as sustainability and environmental management.

MRI Steel Framing has an Environmental Product Declaration (EPD), Number SCS-EPD-08959, covering our Cold-Formed Steel Framing Products, which conforms to ISO 14025, 14040, 14044, and ISO 21930. This EPD is a Product Specific Type III and has a Cradle to Gate scope. More specifically, this Type III EPD has been externally reviewed following ISO 14071 and externally verified, and as such, is eligible to contribute 150% of a product for the purposes of LEED® credits under the LEED® v4.1 standard.

The MRI Steel Framing Environmental Product Declaration (EPD) can help your building project qualify for the following LEED® v4.1 for BD+C points:

MATERIALS AND RESOURCES CREDIT (MR)

- Environmental Product Declarations - Up to 2 Points
- Sourcing of Raw Materials - Up to 2 Points
- Material Ingredients - Up to 2 Points
- Construction and Demolition Waste Management - Up to 2 Points

INDOOR ENVIRONMENTAL QUALITY CREDIT (EQ)

- Low-Emitting Materials - Up to 3 Points
- Construction Indoor Air Quality Management Plan - Up to 1 Point
- Indoor Air Quality Assessment - Up to 2 Points

MRI Steel Framing products and accessories are manufactured from steel coil (100% by weight) containing 19.8% post-consumer recycled content and 14.4% post-industrial/pre-consumer recycled content for a total of 34.2% recycled content. These calculations are based upon information provided by the Steel Recycling Institute on minimum BOF (Basic Oxygen Furnace) steel recycled content.

In addition to the above mentioned EPD and LEED® information, MRI Steel Framing also has a Health Product Declaration (HPD) with a Unique Identifier Number of 27459 covering our full line of Interior Framing, Structural Framing, Slotted Deflection Track and Accessories; MasterSpec 05.40.00 and 09.22.16.



Product Category: 05.40.00 - Cold-Formed Metal Framing

Product Name: 400S300-54

Available Finish: G60, G90

*Other standard coatings referenced in ASTM A1003

Web Depth:	4 in
Flange Width:	3 in
Design Thickness:	0.0566 in
Gauge:	54 mils or 16G
Yield stress, Fy:	50 ksi
Weight:	2.09 lb/ft

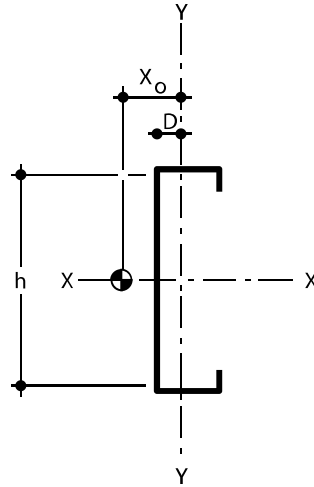
Gross Section Properties

Cross sectional area (A)	0.613 in ²
Moment of inertia (Ix)	1.732 in ⁴
Section Modulus (Sx)	0.866 in ³
Radius of gyration (Rx)	1.681 in
Gross moment of inertia (Iy)	0.760 in ⁴
Gross Radius of gyration (Ry)	1.114 in

Effective Section Properties

Moment of inertia for deflection (Ix)	1.612 in ⁴
Section modulus (Sx)	0.592 in ³
Allowable bending moment (Ma)	17.720 In-k
Allowable bending moment from distortional buckling (Mad)	18.59 In-k
Allowable strong axis shear away from punch-out (Vag)	3372 lb
Allowable strong axis shear at punch out (Vanet)	1223 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)	0.655 in ⁴
Warping constant (Cw)	2.802 in ⁶
Distance from shear center to neutral axis (Xo)	-2.594 in
Distance from shear center to mid-plane of web (m)	1.496 in
Radius of gyration (Ro)	3.285 in
Torsional flexural constant (β)	0.377
Unbraced Length (Lu)	59.9 in

Limiting Height Table Notes

- Lateral loads have not been modified for strength checks: full loads are applied.
- Calculated properties are based on AISI S100-16/S240-20, North American Specification for Cold-Formed Steel Structural Members and meets the requirements of the IBC 2021 Building Code.
- 15 psf and higher wind pressures have been multiplied by 0.7 for deflection determination, in accordance with footnote f of IBC table 1604.3. The 5 psf live load has not been reduced for deflection checks.
- Limiting heights are based on continuous support of each flange over the full length of the stud.
- Limiting heights are based on steel properties alone (non-composite).
- Web crippling checks are based on end-one flange loading condition using 1-inch end bearing.
- End shear and web crippling capacity have not been reduced for punchouts. Punchouts are assumed to be at least 10-inches from the end of members, in accordance with ASTM C955, section 4.6.
- Where limiting heights are followed by "e", web stiffeners are required.

Limiting Wall Heights - Curtain Wall 1-Span

Spacing (inches)	15psf L/240	15psf L/360	15psf L/600	20psf L/240	20psf L/360	20psf L/600	25psf L/240	25psf L/360	25psf L/600
12	21' 7"	18' 10"	15' 11"	19' 7"	17' 2"	14' 5"	18' 3"	15' 11"	13' 5"
16	19' 7"	17' 2"	14' 5"	17' 10"	15' 7"	13' 2"	16' 7"	14' 5"	12' 2"
24	17' 2"	15' 0"	12' 8"	15' 7"	13' 7"	11' 6"	14' 5"	12' 8"	10' 8"

Spacing (inches)	30psf L/240	30psf L/360	30psf L/600	35psf L/240	35psf L/360	35psf L/600	40psf L/240	40psf L/360	40psf L/600
12	17' 2"	15' 0"	12' 8"	16' 3"	14' 3"	12' 0"	15' 7"	13' 7"	11' 6"
16	15' 7"	13' 7"	11' 6"	14' 9"	12' 11"	10' 11"	14' 2"	12' 4"	10' 5"
24	13' 7"	11' 11"	10' 0"	12' 11"	11' 3"	9' 6"	12' 2"	10' 10"	9' 1"

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