

**Product category:** HDS® - 3" Flange Heavy Duty Stud  
**Product name:** 400HDS300-33 (33ksi, CP60, U) - Unpunched  
33mils (20ga) Coating: CP60

## Geometric Properties

Web depth	4.000 in	Design thickness	0.0346 in
Flange width (A)	3.000 in	Min. steel thickness	0.0329 in
Return leg (B)	1.016 in	Yield strength, Fy	33ksi
Stiffening lip (C)	0.750 in		

## Gross Section Properties of Full Section, Strong Axis

Cross sectional area (A)	0.458 in <sup>2</sup>
Member weight per foot of length	1.560 lb/ft
Moment of inertia (Ix)	1.175 in <sup>4</sup>
Section modulus (Sx)	0.588 in <sup>3</sup>
Radius of gyration (Rx)	1.601 in
Moment of inertia (Iy)	0.656 in <sup>4</sup>
Section modulus (Sy)	0.411 in <sup>3</sup>
Radius of gyration (Ry)	1.196 in

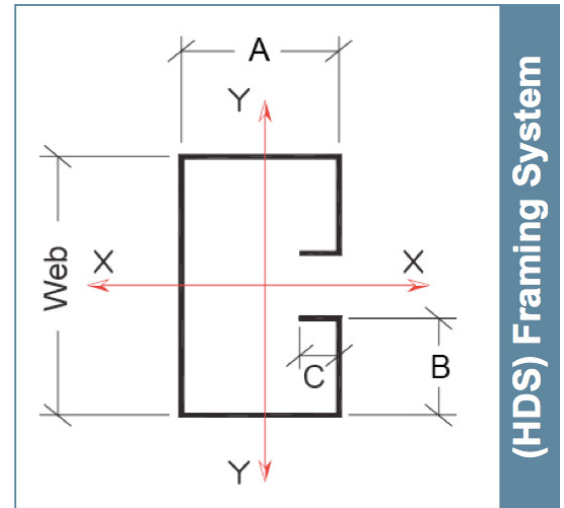
## Torsional Properties

St. Venant torsion constant (J x 1000)	0.183 in <sup>4</sup>
Warping constant (Cw)	5.146 in <sup>6</sup>
Distance from shear center to neutral axis (Xo)	-3.422 in
Radii of gyration (Ro)	3.963 in
Torsional flexural constant (Beta)	0.254

## Effective Section Properties, Strong Axis

(See next page)

## 05.40.00 (Cold-Formed Metal Framing)



## Applications

- Curtainwall headers, jambs & sills
- Load-bearing jambs or Shearwall posts
- Heavily loaded or long-span wall studs
- Built-up tube truss chords & webs
- Reduces material pieces, weight & screws
- All profiles are unpunched in the East Coast

## ASTM & Code Standards:

- Structural framing is produced to meet or exceed ASTM C955
- Sheet steel meets or exceeds mechanical and chemical requirements of ASTM A1003
- MSDS & Product Certification Information is available at [www.clarkdietrich.com](http://www.clarkdietrich.com)

## Sustainability Credits:

For more details and LEED letters contact Technical Services at 888-437-3244 or visit [www.clarkdietrich.com/LEED](http://www.clarkdietrich.com/LEED)

**LEED v4 MR Credit** -- Building Product Disclosure and Optimization: EPD (1 point) - Sourcing of Raw Materials (1 point) - Material Ingredients (1 point) - Construction and Demolition Waste Management (up to 2 points) - Innovation Credit (up to 2 points).

**LEED 2009 Credit MR 2 & MR 4** -- ClarkDietrich's steel products are 100% recyclable and have a national average recycled content of 34.2% (19.8% post-consumer and 14.4% pre-consumer). If seeking a higher number to meet Credit MR 5, please contact us at ([info@clarkdietrich.com](mailto:info@clarkdietrich.com) / 888-437-3244)

## Project Information

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Address:

## Contractor Information

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Contact:  
Phone:  
Fax:

## Architect Information

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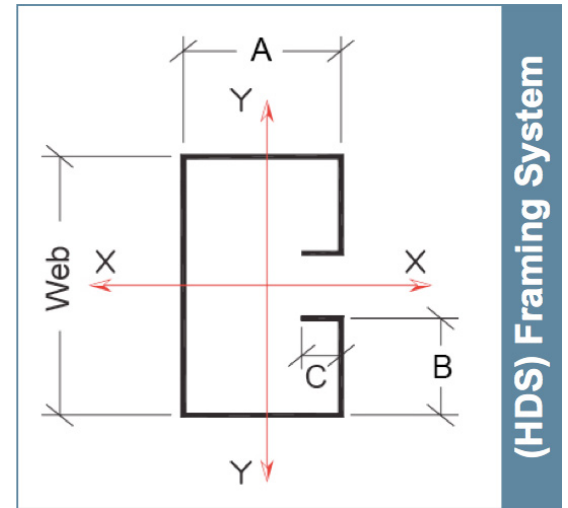
## Effective Section Properties

Moment of inertia about x-axis for deflection ( $I_{xe}$ )	1.074 in <sup>4</sup>
Moment of inertia about y-axis for deflection ( $I_{ye}$ )	
Web in Tension:	0.656 in <sup>4</sup>
Web in Compression:	0.542 in <sup>4</sup>
Section modulus about x-axis ( $S_{xe}$ )	0.456 in <sup>3</sup>
Section modulus about y-axis ( $S_{ye}$ )	
Web in Tension:	0.406 in <sup>4</sup>
Web in Compression:	0.296 in <sup>4</sup>
Allowable bending moment about x-axis ( $M_{xa}$ )	9011 in-lb
Allowable bending moment about y-axis ( $M_{ya}$ )	
Web in Tension:	8025 in-lb
Web in Compression:	5854 in-lb
Maximum unbraced length to attain $M_{xa}$ ( $L_u$ )	100 in
Allowable shear force in web about x-axis ( $V_x$ )	0.97 kips
Allowable shear force in web about y-axis ( $V_y$ )	2.05 kips
Allowable web crippling ( $P_x$ )*	0.29 kips
Allowable end one flange web crippling ( $P_y$ )*	0.38 kips

## Section Property Notes

- Unless otherwise noted, properties are computed according to the AISI-NASPEC, 2001 with 2004 supplement.
- \*  $P_x$  and  $P_y$  are the allowable reactions based on web crippling with  $P_y$  being for members bent about the y-axis.
- $P_x$  = For members having a web depth of less than 8" and also having a thickness less than 97mil, allowable web crippling has been determined in accordance with AISI Standard for CFS Framing Wall Stud Design - 2004. This value assumes the web resists web crippling and the HDS is nested in track having the same or greater thickness. For other members, allowable End One Flange Web Crippling is calculated in accordance with AISI NAS-2001 with 2004 supplement. Both calculation procedures use a bearing length of 1-1/4."
- $P_y$  = Allowable End One Flange Web Crippling per AISI NAS-2001 with 2004 supplement. This value assumes two flanges resist web crippling for a bearing length of 1-1/4."
- Punched properties are based on the standard 1-1/2" x 4" oval ClarkDietrich web knockout. The knockout is centered about the web, and is spaced no less than 24" on-center.

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