

400S250-54-P (50ksi, CP60, Punched)
4" structural stud with S250 (2-1/2") flange - 54mils (16ga)
Coating: CP60 per AISI S240

Color Code: Green

Geometric Properties

Web depth: 4.000 in **Thickness:** 54mils (16ga) **Yield strength, Fy:** 50 ksi
Flange width: 2.500 in **Design Thickness:** 0.0566 in ***Fy with Cold-Work, Fya:** 50.0 ksi
Stiffening lip: 0.625 in **Min. steel thickness:** 0.0538 in **Ultimate, Fu:** 65.0 ksi

Gross Section Properties of Full Section, Strong Axis

Cross sectional area (A)	0.556 in ²
Member weight per foot of length	1.89 lb/ft
Moment of inertia (Ix)	1.512 in ⁴
Section Modulus (Sx)	0.756 in ³
Radius of gyration (Rx)	1.649 in
Gross moment of inertia (Iy)	0.490 in ⁴
Gross radius of gyration (Ry)	0.938 in

Effective Section Properties, Strong Axis

Effective Area (Ae)	0.334 in ²
Moment of inertia for deflection (Ix)	1.496 in ⁴
Section modulus (Sx)	0.576 in ³
Allowable bending moment (Ma)	17.24 in-k
Allowable moment based on distortion buckling (Mad)	17.75 in-k
Allowable shear force in web (solid section)	3372 lb
Allowable shear force in web (perforated section)	1223 lb
Unbraced length (Lu)	51.6 in

Torsional Properties

St. Venant torsional constant (J x 1000)	0.594 in ⁴
Warping constant (Cw)	1.821 in ⁶
Distance from shear center to neutral axis (Xo)	-2.124 in
Distance between shear center and web centerline (m)	1.244 in
Radii of gyration (Ro)	2.848 in
Torsional flexural constant (Beta)	0.444

- Effective properties incorporate the strength increase from the cold work of forming.
- Gross properties are based on the cross section away from the punchouts.
- Effective properties are based on knockout/punched sections.

Code Approvals & Performance Standards

- [AISI S100-16 \(2020\) w/S2-20](#) North American Specification for the Design of Cold-Formed Steel Structural Members
- [AISI S240-20](#) North American Standard for Cold-Formed Steel Structural Framing
 - (Compliant to ASTM C955, but IBC replaced with AISI S200 in IBC 2015, AISI S240 in IBC 2018)
 - Section A3 Material - Chemical & mechanical requirements (Referencing ASTM A1003/A1003M)
 - Section A4 Corrosion Protection (Referencing ASTM A653/A653M)
 - Section C Installation - (Referencing ASTM C1007)
- [AISI S202-20](#) Code of Standard Practice for Cold-Formed Steel Structural Framing
 - Section F3 Delivery, Handling and Storage of Materials
- [IBC 2021](#) International Building Code
- [ICC-ES ESR-1166P](#) Structural Studs and Track
 - [ESR-1166P LABC and LARC](#) Supplement
 - [ESR-1166P Catalog](#) ClarkDietrich Structural Technical Design Guide (6/22/20)
- [Intertek CRRR-0206](#) Structural Studs and Track
- [SFIA Stud](#) Code Compliance Certification Program
- [SDS For ASTM A1003 Steel Framing Products](#) For Interior Framing, Exterior Framing and Clips/Accessories


Structural Punchout
East Coast / Central punch spacing:

Center of punchouts are 12" from lead end, then 24" o.c.

West Coast punch spacing:

Center of punchouts are 24" from lead end, then 24" o.c.

Center of tail end punchout not less than 12" from end of stud.

If lateral bracing is required for head-of-wall deflection track and a punchout is not spaced 12" from the top of stud, use strapping and blocking in lieu of CRC or Spazzer Bar lateral bridging.

If custom punchout patterns are required, contact ClarkDietrich Sales or local plant for requests.

Sustainability Credits For more details and LEED letters contact Technical Services at 888-437-3244 or visit clarkdietrich.com/LEED.

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