

**400S250-97-P (50ksi, CP60, Punched)**
**4" structural stud with S250 (2-1/2") flange - 97mils (12ga)**
**Coating:** CP60 per AISI S240

**Color Code:** Red

**Geometric Properties**
**Web depth:** 4.000 in

**Thickness:** 97mils (12ga)

**Yield strength, Fy:** 50 ksi

**Flange width:** 2.500 in

**Design Thickness:** 0.1017 in

**\*Fy with Cold-Work, Fya:** 50.0 ksi

**Stiffening lip:** 0.625 in

**Min. steel thickness:** 0.0966 in

**Ultimate, Fu:** 65.0 ksi

**Gross Section Properties of Full Section, Strong Axis**

|                                  |                       |
|----------------------------------|-----------------------|
| Cross sectional area (A)         | 0.966 in <sup>2</sup> |
| Member weight per foot of length | 3.29 lb/ft            |
| Moment of inertia (Ix)           | 2.542 in <sup>4</sup> |
| Section Modulus (Sx)             | 1.271 in <sup>3</sup> |
| Radius of gyration (Rx)          | 1.623 in              |
| Gross moment of inertia (Iy)     | 0.801 in <sup>4</sup> |
| Gross radius of gyration (Ry)    | 0.911 in              |

**Effective Section Properties, Strong Axis**

|   |                       |
|---|-----------------------|
| Effective Area (Ae)                                 | 0.765 in <sup>2</sup> |
| Moment of inertia for deflection (Ix)               | 2.542 in <sup>4</sup> |
| Section modulus (Sx)                                | 1.202 in <sup>3</sup> |
| Allowable bending moment (Ma)                       | 40.44 in-k            |
| Allowable moment based on distortion buckling (Mad) | 36.66 in-k            |
| Allowable shear force in web (solid section)        | 6658 lb               |
| Allowable shear force in web (perforated section)   | 1207 lb               |
| Unbraced length (Lu)                                | 51.9 in               |

**Torsional Properties**

|  |                       |
|--|-----------------------|
| St. Venant torsional constant (J x 1000)             | 3.329 in <sup>4</sup> |
| Warping constant (Cw)                                | 2.978 in <sup>6</sup> |
| Distance from shear center to neutral axis (Xo)      | -2.066 in             |
| Distance between shear center and web centerline (m) | 1.214 in              |
| Radii of gyration (Ro)                               | 2.781 in              |
| Torsional flexural constant (Beta)                   | 0.448                 |

- 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](http://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).