

**SECTION 05 40 00**  
**COLD-FORMED METAL FRAMING**

**PART 1 GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SECTION INCLUDES**

- A. Formed steel stud exterior wall framing.
- B. Exterior wall sheathing.
- C. Formed steel joist and purlin framing and bridging.
- D. Water-resistive barrier over sheathing.

**1.03 RELATED REQUIREMENTS**

- A. Section 014533 - Special Inspections: Code required special tests and inspections.
- B. Section 05 31 00 - Steel Decking.
- C. Section 07 25 00 - Weather Barriers: Water-resistive barrier over sheathing.
- D. Section 09 21 16 - Gypsum Board Assemblies: Cold-formed steel nonstructural framing.
- E. Section 09 21 16 - Gypsum Board Assemblies: Gypsum-based sheathing.

**1.04 REFERENCE STANDARDS**

- A. AISI S201 - North American Standard for Cold-Formed Steel Framing - Product Data; 2017.
- B. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing; 2015, with Errata (2020).
- C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- E. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members; 2015.
- F. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2020.
- G. ASTM A1003/A1003 - Standard Specification for Steel Sheet, Carbon, Metallic and Nonmetallic-Coated for Cold-Formed Framing Members; 2013.
- H. ASTM C 1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2004.
- I. ICC (IBC)-2021 - International Building Code; 2021.
- J. PS 1 - Structural Plywood; 2009 (Revised 2019).
- K. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

**1.05 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate with work of other sections that is to be installed in or adjacent to metal framing systems, including but not limited to structural anchors, cladding anchors, utilities, insulation, and firestopping.

**1.06 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

- B. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations.
- C. Product Data: For lateral-force resisting systems, provide product data sheets on hold-down, showing compliance with requirements.
- D. Shop Drawings: Indicate component details, framed openings, bearing, anchorage, loading, welds, and type and location of fasteners, and accessories or items required of related work.
  - 1. Indicate stud and roof joist layout.
  - 2. Describe method for securing studs to tracks and for \_\_\_\_\_ framing connections.
- E. Manufacturer's Installation Instructions: For lateral-force resisting systems, indicate mechanical fastener installation procedures.
- F. Research/Evaluation Reports: For cold-formed steel framing.
  - 1. Metal stud manufacturer to have a third party evaluation report for its products that are reviewed to the local building code or its model code (IBC 2012 and AISI S100).

#### **1.07 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, and with minimum three years of documented experience.
  - 1. Manufacturer must participate in a third party code compliance certification program.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience and approved by manufacturer.

#### **1.08 PROJECT CONDITIONS**

- A. Verify that field measurements are as indicated on the drawings.

#### **1.09 DELIVERY, STORAGE, AND HANDLING**

- A. Protect and store cold-formed steel framing from corrosion, moisture staining, deformation, and other damage during delivery, storage, and handling as required in AISI's "Code of Standard Practice".

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Structural Framing:
  - 1. ClarkDietrich; \_\_\_\_\_: [www.clarkdietrich.com/#sle](http://www.clarkdietrich.com/#sle).
  - 2. MarinoWARE; \_\_\_\_\_: [www.marinoware.com/#sle](http://www.marinoware.com/#sle).
  - 3. The Steel Network, Inc; \_\_\_\_\_: [www.SteelNetwork.com/#sle](http://www.SteelNetwork.com/#sle).
  - 4. Telling Industries: [www.buildstrong.com](http://www.buildstrong.com)
  - 5. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Connectors:
  - 1. Same manufacturer as metal framing.
  - 2. Simpson Strong Tie: [www.strongtie.com](http://www.strongtie.com).
  - 3. Substitutions: See Section 01 60 00 - Product Requirements.

#### **2.02 PERFORMANCE REQUIREMENTS**

#### **2.03 MATERIALS**

- A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S240.

#### **2.04 STRUCTURAL FRAMING COMPONENTS**

- A. Wall Studs and Track Sections: AISI S240; c-shaped studs and u-shaped track sections in stud-matching nominal width and compatible height.
  - 1. Thickness and Depth: As indicated on drawings.
- B. Steel Sheet for studs, joists and tracks: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:
  - 1. Grade: ST33H, unless indicated otherwise.

2. Coating: G60 min.
- C. Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as indicated on drawings.
- D. Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and as indicated on drawings.
- E. Joists: Manufacturer's standard C-shaped steel joists, of web depths indicated, punched, with stiffened flanges, and as indicated on drawings.
- F. Framing Accessories:
  1. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.
  2. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated.

## **2.05 MISCELLANEOUS CONNECTIONS**

- A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot-dip galvanized per ASTM A153/A153M.
  1. Products:
    - a. ITW Commercial Construction North America; ITW CCNA-Buildex Tek's Select Series; \_\_\_\_: [www.ITWBuildex.com/#sle](http://www.ITWBuildex.com/#sle).
    - b. Simpson Strong-Tie; Self-Drilling X-Series Metal Screws; [www.strongtie.com](http://www.strongtie.com).
- B. Anchorage Devices: As indicated.
- C. Welding: Comply with AWS D1.1/D1.1M.

## **2.06 SHEATHING**

- A. Plywood; PS 1, Grade C-D, Exposure I.

# **PART 3 EXECUTION**

## **3.01 EXAMINATION**

- A. Verify that substrate surfaces are ready to receive work.
- B. Coordinate work of this section with the placement of components within the metal framing system.
- C. Verify field measurements and adjust installation as required.

## **3.02 INSTALLATION - GENERAL**

- A. Install structural members and connections in compliance with ASTM C1007.

## **3.03 INSTALLATION OF STUDS**

- A. Install components in accordance with manufacturers' instructions, ASTM C1007 requirements, and AISI S200.
- B. Construct corners using minimum of three studs. Install double studs at wall openings, door and window jambs.
- C. Install studs full length in one piece. Splicing of studs is not permitted.
- D. Install load-bearing studs; brace, and reinforce to develop full strength and achieve design requirements.
- E. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.
- F. Install intermediate studs above and below openings to align with wall stud spacing.
- G. Provide deflection allowance in stud track, directly below horizontal building framing at non-loadbearing framing.
- H. Attach cross studs to studs for attachment of fixtures anchored to walls.

- I. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.
- J. Touch-up field welds and damaged corrosion protected surfaces with primer.

### **3.04 INSTALLATION OF JOISTS**

- A. Set ceiling joists parallel and level, with lateral bracing and bridging.
- B. Locate joist end bearing directly over load bearing studs or provide load distributing member to top of stud track.
- C. Provide web stiffeners at reaction points.

### **3.05 FIELD QUALITY CONTROL**

- A. The independent Special Inspectors shall verify that cold-formed metal framing is installed in accordance with the construction documents and approved shop drawings. See Section 014533.
- B. Remove and replace work where test results indicate that it does not comply with specified requirements.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

### **3.06 TOLERANCES**

- A. Studs - Vertical Alignment (Plumbness): 1/960 of span, or 1/8 inch in 10 ft (3.2 mm in 3000 mm), in accordance with ASTM C1007.
- B. Studs - Maximum Variation from True Position: 1/8 inch (3.2 mm) in accordance with ASTM C1007.
- C. Stud Spacing: 1/8 inch (3.2 mm) from the designated spacing, provided that the cumulative error does not exceed the requirements of the finishing materials in accordance with ASTM C1007.

**END OF SECTION**