

## SECTION 05 40 00

### COLD-FORMED METAL FRAMING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Furnish labor and materials for installation of all load bearing metal stud walls, and metal roof joist framing as indicated on drawings and specified herein.

##### 1.2 RELATED WORK SPECIFIED ELSEWHERE:

- A. Quality Control - Section 01 40 00: Required Special Inspections
- B. Submittals: Section 01 33 00
- C. Insulation: Section 07 21 00
- D. Clips and Bracing: Structural Drawings
- E. Metal Studs: Section 09 22 16
- F. Drywall: Section 09 29 00

##### 1.3 REFERENCES

- A. AISI - Standard for Cold-Formed Steel Framing General Provisions.
- B. AISI - North American Specification (NASPEC) for the Design of Cold-Formed Steel Structural Members – Current Edition.
- C. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
- D. ASTM A 780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
- E. ASTM A 1003 - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members.
- F. ASTM C 1513 - Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections.
- G. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- H. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

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- I. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- J. ASTM E 413 - Classification for Rating Sound Insulation.
- K. GA-600 - Fire Resistance Design Manual.

#### 1.4 DESIGN REQUIREMENTS

- A. Design steel in accordance with American Iron and Steel Institute Publication "Specification for the Design of Cold-Formed Steel Structural Members" or the North American Specification for the Design of Cold-Formed Steel Structural members, except as otherwise shown or specified.
- B. Design loads: As indicated on the Architectural and Structural drawings.
- C. Design framing system to accommodate deflection of primary building structure and construction tolerances.
- D. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provides materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing laboratory, and by UL 263. Products used in the assembly shall carry a classification label from the testing laboratory.

#### 1.5 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Submit manufacturer's product literature and data sheets for specified products.
- C. Manufacturer's certification of product compliance with codes and standards.

#### 1.6 QUALITY ASSURANCE

- A. Contractor shall provide effective, full time quality control over all fabrication and erection complying with the pertinent codes and regulations of government agencies having jurisdiction.
- B. Contractor to conduct pre-installation meeting to verify project requirements, substrate conditions, and manufacturer's installation instructions.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Notify manufacturer of damaged materials received prior to installing.
- B. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Store materials protected from exposure to rain, snow or other harmful weather conditions, at temperature and humidity conditions per the recommendations of ASTM C754 section 8.

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## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
  - 1. ClarkDietrich Building Systems, 9100 Pointe Drive, Suite 210, West Chester, OH. Phone: 513-870-1100. [www.clarkdietrich.com](http://www.clarkdietrich.com), [info@clarkdietrich.com](mailto:info@clarkdietrich.com).
  - 2. Other manufacturers as referenced in this section for specific products.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.
- C. All products to be manufactured by current members of the Steel Stud Manufacturers Association (SSMA), Steel Framing Industry Associates (SFIA), or the Certified Steel Stud Association (CSSA).
- D. All studs and/or joists and accessories shall be of the type, size, gauge and spacing shown on the drawings. Exterior studs and load bearing studs shall have a 1-5/8" flange with 1/2" return lip.
- E. All framing members shall be formed from steel, corresponding to the requirements of ASTM A653, with minimum yield strength of 33 ksi. All studs shall be galvanized.
- F. Where fire blocking is required or called for on drawings, provide blocking equal to prefabricated fire blocking manufactured by Metal-Lite, Inc., Placentia, CA (800) 886-6824. Provide blocking same width as metal stud.
  - 1. Provide where stud frame bypasses floors and where studs bypass roof.
  - 2. For draft-stopping with mineral wool refer to specification section 07 84 00.

### 2.2 MATERIALS

- A. Steel: Galvanized Steel meeting or exceeding the requirements of ASTM A 1003.
  - 1. Coating: Galvanized G60 (Z180) coating minimum, complying with ASTM A1003.
- B. Fasteners: Self-drilling, self-tapping screws; complying with ASTM C 1513 - Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections.
- C. Touch-Up Paint: Complying with ASTM A 780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

### 2.3. FRAMING ACCESORIES: Provide accessories as required in this project.

- A. Flat Strapping for Backing Strip.
- B. Flat Strapping and bridging for lateral bracing.
- C. L-Angles.
- D. SwiftClip Fixed Connection Angles.

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- E. Deflection Slip Connectors: “Verticlip” Series, manufactured by Steel Network, Inc, or approved alternate. Provide clip as required for each situation to compensate for deflection of structure.
- F. Furring Hat Channel: At exterior locations for metal panel attachment at **Locker Room Building**.
  - 1. Size: 087F125-43 7/8 inch (22mm) furring channel 43 mils (18 ga). Attached to Z-furring at exterior walls for attachment of finish metal wall panels. Locate hat channels at 48” o.c. max and connect to Z-furring w/ (2) #8 TEK screws at each furring.
- G. Z-furring or Z-channel (manufactured by MBA metal framing)
  - 1. Size 2-1/2”, 43 mils (18 ga) at **Locker Room Building**
    - a. Exterior stud walls with finish metal wall panel. Locate Z-furring vertically at 16” o.c. attached to each stud with #8 TEK screws at 12” o.c. max.
    - b. Exterior CMU walls with finish metal wall panel. Locate Z-furring vertically at 16” o.c. max. and shall be attached to the wall with Hilti X-U Powder Actuated Fasteners at 12” o.c. max. with 1” embedment depth.
  - 2. Size 2”, 43 mils (18 ga) at **Band Addition**
    - a. Exterior CMU walls with finish metal wall panel. Locate Z-furring vertically at 24” o.c. maximum and shall be attached to the wall with Hilti X-U Powder Actuated Fasteners at 12” o.c. maximum with 1” embedment depth.

## PART 3 EXECUTIONS

### 3.1 FABRICATION

- A. Prior to fabrication of framing, the contractor shall submit fabrication and erection drawings to the Architect to obtain approval.
- B. Method of construction may be either piece by piece (stick built), or by fabrication into panels either on or off the site.
- C. Prefabricated panels shall be square, with components attached in a manner as to prevent racking and to minimize distortion while lifting.
- D. All framing components shall be cut squarely for attachment to perpendicular members, or, as required, for an angular fit against abutting members.
- E. Axially loaded studs shall be installed in a manner which will assure that their ends are positioned against abutting members.
- F. Fastening of components shall be with welding or with minimum 1 #8 screw both sides of flange. Welds shall conform to the requirements of AWS D.1.1, AWS D.1.3 and AISI Manual Section 4.2. All welds shall be touched up using zinc-rich paint. Wire tying will not be permitted.

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- G. Cutting of steel framing members may be accomplished with a saw or shear. Torch cutting of load bearing studs will not be permitted.
- H. Install headers in all openings in axially loaded walls that are larger than the stud spacing in the wall. Form headers as shown on drawings.
- I. Unless shown otherwise on drawings, brace top of metal stud walls to structure above at max. 4'-0" O.C. with minimum 20 gauge stud bracing.
- J. Insulation equal to that specified elsewhere shall be provided in all double jamb studs and doubled headers not accessible to insulation contractors.
- K. Care should be taken to allow for additional studs at intersections, corners, doors, windows, steel joists, diagonal bracing and as called for in the shop drawings.

### 3.2 ERECTION (AXIAL LOAD-BEARING).

- A. Runners shall be securely anchored to the supporting structure as shown on the drawings.
- B. Complete, uniform and level bearing support shall be provided for the bottom runner.
- C. Abutting lengths of runner shall be butt-welded or spliced.
- D. Studs shall be plumbed, aligned and securely attached to flanges of both upper and lower runners.
- E. Framing of wall openings shall include headers and supporting studs as shown on the drawings.
- F. Temporary bracing, where required, shall be provided until erection is completed.
- G. Resistance to bending and rotation about the minor axis shall be provided by gypsum board and gypsum sheathing as per manufacturer's recommendations. If diaphragm rated materials is used, it must be installed prior to loading the wall.
- H. Diagonally braced stud walls, as indicated on the structural drawings shall be provided at locations designated as "shear walls" for frame stability and lateral load resistance. Additional studs, when necessary, shall be positioned as indicated on drawings to resist the vertical components. 16 gauge top runner track shall also be provided at diagonally braced stud walls.
- I. Splices in studs shall not be permitted.
- J. See Structural Drawings for the locations of the "Verticlip SLB Series" slide clip as manufactured by Steel Network or approved alternate. Coordinate with stud size.

- K. See Structural Drawings for the locations of the “Stiff Clip LB Series” stationary clip as manufactured by Steel Network or approved alternate. Coordinate with stud size.
- L. Coordinate stud wall bracing placement to work with installation of ductwork, piping, etc.

### 3.3 SPECIAL INSPECTIONS

- A. Inspection of cold formed steel for conformance to the construction documents and the IBC shall be completed by the designated third-party Special Inspector.

END OF SECTION

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