SECTION 05 40 00

COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 GENERAL

Work of this Section shall conform to the requirements of Drawings and general provisions of the Contract, including General Conditions, Supplementary General Conditions and Division 1 Specification sections.

1.2 SCOPE

The work covered by this Section shall include all labor, material, equipment, permits, engineering and other services necessary for the installation of light gauge steel stud and joist framing as required for a complete installation in accordance with the Drawings and as specified herein. Work includes, but is not necessarily limited to the following:

1. Load-bearing steel stud framing at exterior walls.
2. Non-load bearing steel stud framing at exterior walls.
3. Interior stud wall and ceiling framing with studs.
4. Framing accessories.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS:

Submittals	Division 1
Quality Control	Division 1
Structural Steel	Section 051200
Metal Fabrications	Section 055000
Metal Framing Systems	Section 091000
Lath and Plaster	Section 092200
Gypsum Board Systems	Section 092600
Miscellaneous Metals	Division 5
Fireproofing	Division 7
Painting	Division 9

1.4 CODES AND STANDARDS

A. Building Code: Cold-Formed Metal Framing work shall conform to the requirements of the Building Code identified on the Structural General Notes, and OSHA requirements, except where more stringent conditions or criteria occur in the standards referenced below and on the Drawings.

B. Standards:

1. California Code of Regulations, Title 24, Part 2, also known as the California Building Code (CBC), 2010 Edition.
2. American Society for Testing and Materials "ASTM Standards in Building Codes", various standards as referenced herein, latest edition.

3. Federal Specifications (FS).
4. American Welding Society (AWS) D1.3: “Structural Welding Code - Sheet Steel.”
5. American Iron and Steel Institute (AISI): “Specifications for the Design of Cold-Formed Steel Structural Members”, latest edition.
6. Steel Stud Manufacturer’s Association (SSMA), latest edition.
7. Metal Lath Association (MLA): “Specifications for Metal Lath and Furring”, latest edition.
8. Society of Protective Coatings (SSPC).

C. Definitions:

See Section 051200.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with fire-resistance ratings as indicated and as required by governing authorities and codes.
2. Provide materials, accessories, and application procedures which have been listed by an approved testing agency or tested according to ASTM E119 for the type of construction shown.
3. Comply with CBC Section 2203.3 and AISI requirements for design and identification of cold-formed steel.
4. Framing shall conform to the ICC Report for stud gauge and spacing for all wall conditions.

B. Steel stud system shall conform to referenced AISI documents.

C. Installer: Company specializing in performing the work of this Section with minimum 3 years’ documented experience.

D. Welders: Qualified in accordance with AWS D1.3 for welding process, position, type of weld and type of steel.

1.6 SUBMITTALS

A. Submit in accordance with provisions of Section 013000, “Submittals.”

B. Product Data: Manufacturer’s ICC report, specifications and installation instructions for steel studs, fasteners, and accessories.

C. Experience of installer if requested by Architect.

1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Procedures: In accordance with Section 016000, “Materials & Equipment.”

B. Protect framing from rusting and damage.

C. Deliver in manufacturer's unopened containers or bundles fully identified with name, brand, type and grade.

D. Store inside a dry, ventilated space, and protect framing from rust and damage.

1.8 JOB CONDITIONS

Coordinate stud sizes and layouts with the work of the various trades. Where ductwork, conduit, piping, casework, and other such items exceed indicated available space, increase stud sizes or make other minor modifications as necessary to accommodate the work at no change in cost of the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Acceptable Manufacturers: Any member of Steel Stud Manufacturer's Association (ICC ER-3064P).

2.2 MATERIALS

A. Sheet Steel: ASTM A1003 or A653.

B. Studs and tracks:

1. See drawings for size and gauge.
2. Galvanization per ASTM A653 with G60 minimum.

C. Cold-Rolled Furring Channels: As specified in Section 091000, "Metal Support Systems."

D. Vertical Deflection Clips (non-load-bearing framing): Manufacturer's standard bypass and head clips as required, capable of isolating wall stud from upward and downward vertical displacement of primary structure using mechanical fasteners. Acceptable Manufacturer: The Steel Network, Inc. Connections must be tested in accordance with ICC AC261 criteria and hold a valid ICC ERS evaluation service report to be accepted, such as ICC ESR-1903, or equivalent. Provide clips with attached bushing and screw of the series, size and configuration as required by the structural design calculations.

1. VertiClip® or VertiTrack® series or equal to. Mechanical attachment to structure and screw attachment to stud web using step-bushings to permit frictionless vertical movement.

E. Drift Clips® (non-load-bearing framing): Manufacturer's standard bypass and head of wall clips (as required), capable of isolating wall stud from upward and downward vertical displacement and lateral drift of primary structure using mechanical fasteners. Acceptable Manufacturer: The Steel Network, Inc. Connections must be tested in accordance with ICC AC261 criteria and hold a valid ICC ERS evaluation service report to be accepted, such as ICC ESR-1903, or equivalent.

1. DriftClip® series or equal to. Mechanical attachment to structure and screw attachment to stud web using step-bushings to permit frictionless vertical and lateral movement.

F. Sliptrack: as indicated on approved drawings. Acceptable Manufacturers: Sliptrack Systems (ICC ESR-2049) or engineer approved equal.

G. Partition Stiffeners or Bridging: Unpunched channel shape, formed of 16-gauge steel to required dimensions.

H. Welding Electrodes: AWS low hydrogen, rod number and diameter as approved by the Owner's Testing Agency.

I. Touch-up Primer for Galvanized Surfaces: SSPC Paint 20 zinc rich.

J. Metal Screws: Screws shall be self-drilling and self-tapping. Screws shall penetrate substrate by a minimum of three full threads exposed. Use low profile heads as required by architectural finish.

1. Sheet Metal Screw (SMS): No. 8 and larger as noted on Drawings per ASTM 1513-13.

a) The minimum spacing between centers of fasteners shall not be less than 3 times the fastener diameter. The minimum edge distance from the center of fastener to the edge of any part shall not be less than 1.5 times the fastener diameter.

2. Heavy Gauge Screws: Size as noted on Drawings. Use "TEKS" screws by ITW Buildex (ICC ESR-1976) or equal product substituted per Section 016300.
3. Hex Head Screws: Size as noted on Drawings. Use "Kwik-Flex" screws by Hilti or equal product substituted per Section 016300.

PART 3 - EXECUTION

3.1 PREPARATION

Coordinate details and requirements of other Work which adjoins or fastens to studs and requires backing or special support framing included in this Section.

1. Items requiring backing or support include, but are not necessarily limited to casework, wall-specialties, and similar items.
2. Obtain Architect's approval of backing method proposed to satisfy requirements of this Section which differs from methods noted or shown.

3.2 EXAMINATION

A. Examine all parts of the supporting structure and the conditions under which studs will be installed.

B. Notify the Architect, in writing, of any conditions detrimental to the proper and timely completion of the Work.

C. Do not proceed with the installation of steel studs until unsatisfactory conditions have been corrected.

3.3 INSTALLATION

A. Tracks shall be securely anchored to supporting structure, with fasteners specified at not more than 24-inches on center.

B. Complete, uniform, and level bearing support shall be provided for the bottom track at each bearing-stud location. Install full metal shims below bottom track at stud locations as needed, or set bottom track in high-strength grout.

C. Abutting or intersecting pieces or track shall be securely anchored to a common structural element or spliced together.

1. Splices or butt welds shall be used at all butt joints in the runner track.
2. Do not splice studs.

D. Wall studs shall sit in top and bottom track with 1/16” maximum gap between wall stud and track web.

1. Studs shall be aligned or plumbed and securely fastened to the flanges of both top and bottom track.
2. Space studs 16-inches on center maximum unless otherwise noted on Drawings.

E. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.

1. Connect vertical (and/or drift) deflection clips to studs and anchor to primary building structure in accordance with manufacturer’s recommendations.

F. Framed wall openings shall include a header and multiple studs at each edge of opening as indicated on Drawings. Contractors option to built-up jambs, headers, and sills: JamStud® by The Steel Network, Inc. ASTM A653/A653M, Grade 50 (340) 50ksi (340MPa), minimum yield strength 65ksi (450MPa), minimum tensile strength, G-60 (Z180) hot-dipped galvanized coating.

G. Diagonal bracing shall be installed at locations indicated for frame stability.

H. Install bridging as indicated on Drawings.

I. Form corners and intersections of partitions with three studs as shown on Drawings. Provide additional studs as indicated or required.

J. Joining of members shall be made with welding; wire tying of framing members shall not be permitted.

K. Welded connections shall be made by resistance spot fusion welding, fillet welding, or plug welding and shall be done in accordance with the latest recommended procedures and practices of the American Welding Society.

L. Do not cut or notch stud flanges.

M. Where exposed to weather, field abrasions and welds shall be touched up with zinc rich primer.

N. Erection Tolerances: Install cold formed metal framing to a maximum allowable tolerance variation from plumb, level, and true to line of 1/8-inch in 10 feet as follows:

1. Space individual framing members no more than plus or minus 1/8-inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

O. Provide all angles, clips and other miscellaneous pieces necessary to attach light gauge framing to building structure or to attach other materials to light gauge framing.

P. Do not bridge building expansion and control joints with cold formed metal framing. Independently frame both sides of joints.

3.4 INSTALLATION OF FIRE-RATED ASSEMBLIES

Install studs which are components of fire-rated wall assemblies as indicated.

3.5 BACKING IN STUD PARTITIONS

A. Securely weld or screw cut sections of unpunched stud to at least three stud or furring supports, leaving flat surface of backing stud web to receive attachment of object to be secured.

B. Verify that any pre-drilling of backing and attachment of spacers to prevent crushing of collateral material is done prior to application of collateral material.

C. If it is determined by the Architect that backing was not provided for any items as required, the Contractor shall remove the finish material and install backing. The Contractor shall patch and refinish surface to match adjacent area and finish.

3.6 FIELD QUALITY CONTROL

A. The Owner’s Testing Agency will:

1. Provide continuous inspection of welding, including prior fit-up, welding equipment, weld quality, and welder certification in accordance with AWS and CBC Section 1704.3.
2. Provide continuous inspection during installation as required to establish conformity of Work requirements.

END OF SECTION