SECTION 05 4000

COLD-FORMED METAL FRAMING

This section includes editing notes to assist the user in editing the section to suit project requirements. These notes are included as hidden text, and can be revealed or hidden by one of the following methods:

Microsoft Word 2010: Display the FILE tab on the ribbon, click OPTIONS, then on left menu click on DISPLAY. Under ALWAYS SHOW THESE select or deselect HIDDEN TEXT.

Microsoft Word 2007: Click the OFFICE button, select WORD OPTIONS, select DISPLAY, then select or deselect the HIDDEN TEXT option.

Corel WordPerfect: From the pull-down menus select VIEW, then select or deselect the HIDDEN TEXT option.

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Load-bearing steel stud [exterior] wall framing.
2. Non-load-bearing steel stud [exterior] wall framing.
3. Steel soffit framing.
4. Steel [floor] [and] [ceiling] joist framing..
5. Steel stud truss framing.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. American Iron and Steel Institute (AISI)www.steel.org - Specification for the Design of Cold-Formed Steel Structural Members.

B. American Society of Civil Engineers (ASCE) www.asce.org7 - Minimum Design Loads for Buildings and Other Structures.

C. American Welding Society (AWS)www.aws.org D1.3/D1.3M - Structural Welding Code - Sheet Steel.

D. ASTM International (ASTM)www.astm.org:
1. A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process..
2. A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
3. A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members.
4. C955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Board and Metal Plaster Bases.
5. C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
6. C1513 - Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections.

E. Steel Stud Manufacturer's Association (SSMA)(www.ssma.com - Member Directory.

F. Society for Protective Coatings (SSPC)www.sspc.org - Painting Manual.

1.3 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings: Indicate framing layout, components, connections, fastenings, and pertinent details.
   2. Product Data: Indicate framing components, sizes, materials, finishes, and accessories.

B. Quality Control Submittals:
   1. Certificates of Compliance: Certificate from Professional Structural Engineer responsible for system design that system was designed in accordance with Contract Document requirements, applicable Building Code, and generally accepted engineering practices.
   2. Welder Certifications: As required by AWS D1.3/D1.3M.

C. Sustainable Design Submittals:
   1. Recycled Content.
   2. Regional Materials.

1.4 QUALITY ASSURANCE

A. Manufacturer: Current member of SSMA.

B. Installer Qualifications: Minimum [__] years [documented] experience in work of this Section.

C. Calculate structural properties of framing members in accordance with AISI Specifications.

D. Design framing under the direct supervision of a Professional Structural Engineer with minimum [2] [__] years [documented] experience in the work of this Section and licensed in the State in which the Project is located.

E. Design [exterior wall stud system] [roof trusses] to withstand:
   1. Live and dead loads in accordance with Building Code.
   2. Wind pressure loads in accordance with [ASCE 7.] [Building Code.] [____.]
   3. Movement caused by an ambient temperature range of [120] [__] degrees F and a surface temperature range of [160] [__] degrees F.
   4. Maximum deflection under loading: [L/240] [L/360] [L/600] [L/720] [____] without sheathing materials.
   5. Minimum [1/2] [__] inch vertical deflection of structure.

F. Design joist system to withstand:
   1. Live and dead loads in accordance with Building Code.
   2. Maximum deflection under loading: [L/240] [L/360] [____] without decking materials.

G. Design system to accommodate construction tolerances, deflection of building structural members, and clearances at openings.

H. Welder Qualifications: AWS D1.3/D1.3M.

1.5 DELIVERY, STORAGE AND HANDLING

A. In accordance with ASTM C1007.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. Allsteel and Gypsum Products, Inc. (www.allsteelproducts.com)
   2. Consolidated Fabricators Corp. (www.confabbpd.com)
   3. Craco Manufacturing., Inc. (www.cracometals.com)

4. Custom Stud, Inc. (www.customstud.com)
5. Design Shapes in Steel.
6. Frametek Steel Products. (www.frameteksteel.com)
7. Olmar Supply Inc. (www.olmarsupply.com)
8. Quail Run Building Materials, Inc. (www.qrbm.com)
9. SCAFCO Corporation. (www.scafco.com)
10. Steel Construction Systems. (www.steelconsystems.com)
11. United Metal Products, Inc. (www.unitedmetalproducts.info)
12. [____].
13. [____].
14. [____].

B. Substitutions: [Under provisions of Division 01.] [Not permitted.]

2.2 MATERIALS

A. Framing Materials:
1. ASTM A653/A653M or A1003/A1003M, galvanized sheet steel, [G60] [G90] [___] coating class.
2. Recycled content: Minimum [__] percent, with minimum [__] percent classified as post consumer.
3. Fabricate components to ASTM C955.
4. [Studs] [and] [joists]: SSMA stud profile, C-shaped, punched for utility access.
5. Tracks:
   a. SSMA stud track profile, C-shaped, same gage and depth as studs, unpunched.
   b. Top track: Deflection type, deep leg track with slotted screw holes; permit plus or minus [1/2] [__] inch movement of overhead structure without damage to framing.
   c. [Top and] bottom track: [1-1/4] [__] inch high legs.
   d. Rim track: Provide closure for ends of joists.

2.3 ACCESSORIES

A. Bracing, Furring, Bridging and Web Stiffeners: Formed sheet steel, thickness determined by performance requirements specified.

B. Plates, Gussets, Clips: Formed sheet steel, thickness determined by performance requirements specified.

C. Fasteners: ASTM C1513; self-drilling, self-tapping screws.

D. Touch Up Paint: SSPC Paint 20, Type I or II.

E. Welding Electrodes: AWS D1.3/D1.3M; type required for materials being welded.

2.4 FABRICATION

A. Framing components may be prefabricated using templates.

**** OR ****

B. Prefabricate framing components using templates. Field fabrication prohibited except for minor alterations to accommodate site conditions.

C. Cut members square and with tight fit to adjacent framing.

D. Assemble components using screw connection, welding, or clinching methods. Welding to conform to AWS D1.3/D1.3M.

E. Fabricate straight, level, and true, without warp or rack.

F. Fabrication Tolerances: In accordance with ASTM C955.

PART 3 EXECUTION

3.1 INSTALLATION - GENERAL

A. Install framing components in accordance with ASTM C1007, manufacturer's instructions, and approved Shop Drawings.

B. Welding: In accordance with AWS D1.3/D1.3M.

C. Make provisions for erection stresses. Provide temporary alignment and bracing.

3.2 INSTALLATION - AXIALLY LOADED STUD FRAMING

A. Place top and bottom tracks in straight lines with ends butted. Fasten tracks [at maximum [12] [__] inches on center.] [as indicated.]

B. Place studs at spacing indicated and not more than [2] [__] inches from abutting walls and at each side of openings.

C. Connect studs to top and bottom tracks.

D. Construct corners using minimum of three studs.

E. Do not splice studs.

F. Erect, brace, and reinforce stud framing to develop strength to achieve design requirements.

G. Install headers above openings and intermediate studs above and below openings to align with wall stud spacing.

H. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.

I. Diagonally brace walls at location indicated for shear construction.

**** OR ****

3.3 INSTALLATION - NON-AXIALLY LOADED STUD FRAMING

A. Place top and bottom tracks in straight lines with ends butted. Fasten tracks [at maximum [12] [__] inches on center.] [as indicated.]

B. Place studs at spacing indicated and not more than [2] [__] inches from abutting walls and at each side of openings.

C. Install deflection compensating top track at framing extending to underside of structure.

D. Connect studs to top and bottom tracks.

E. Construct corners using minimum of three studs.

F. Do not splice studs.

G. Erect, brace, and reinforce stud framing to develop strength to achieve design requirements.

H. Install headers above openings and intermediate studs above and below openings to align with wall stud spacing.

I. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.

J. Laterally brace walls at locations indicated.

3.4 INSTALLATION - JOISTS

A. Place joists at spacings indicated and not more than [2] [__] inches from abutting walls. Connect members to supports using fastener method.

B. Set members parallel and level; install lateral bracing and bridging where indicated.

C. Locate joists directly over bearing studs or provide load distribution member.

D. Provide additional joists under parallel partitions when partition length exceeds one-half of joist span and around openings that interrupt one or more joists.

E. Do not splice joists.

F. Provide web stiffeners at reaction points and points of concentrated loads.

G. Provide end blocking where joist ends are not otherwise restrained from rotation.

3.5 INSTALLATION - TRUSSES

A. Place trusses at spacings indicated.

B. Make provisions for erection stresses. Provide temporary alignment and bracing.

C. Set trusses parallel and level; install lateral bracing and bridging as required.

3.6 INSTALLATION TOLERANCES

A. In accordance with ASTM C1007.

3.7 FIELD QUALITY CONTROL

A. Testing and Inspection Services: Inspect and test shop and field welds in accordance with AWS D1.3/D1.3M.

3.8 ADJUSTING

A. Clean and touch up galvanized coatings at welded and abraded surfaces in accordance with ASTM A780, Annex [A1.] [A2.] [A3.]

END OF SECTION