SECTION 05 40 00
STRUCTURAL COLD FORMED METAL FRAMING

PART 1 GENERAL

1.1 SECTION INCLUDES
A. Load bearing formed steel stud interior wall and other framing not for exterior walls or roof structures.
B. Formed steel joist, purlins, slotted channel and miscellaneous framing and bridging

1.2 REFERENCES
A. AISI - American Iron and Steel Institute - Cold-Formed Steel Design Manual.
D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
E. ASTM C955 - Standard Specification for Cold Formed Steel Structural Framing Members.
F. AWS D1.1/D1.1M - Structural Welding Code
G. ANSI/AWS D1.3 - Light Steel Welding Code
H. SSPC (Steel Structures Painting Council) - Steel Structures Painting Manual.
I. FBC - Florida Building Code
J. ASCE 7 – Minimum Design Loads of Buildings and Other Structures

1.3 SYSTEM DESCRIPTION
A. Design wall system to provide for movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
B. Design system to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

1.4 SUBMITTALS
A. Submit under provisions of Section 01 33 00.
B. Shop Drawings:
   1. Provide shop drawings prepared by cold-formed steel framing manufacturer.
   2. Indicate component details, framed openings, bearing, anchorage, loading, welds, type, and location of fasteners, and accessories or items required of related work.
   3. The same specialty engineer shall certify the erection and fabrication plan.
C. Indicate stud, floor joist, ceiling joist, roof joist, roof rafter, roof truss, and layout.
D. Describe method for securing studs to tracks and for bolted or welded, screwed framing connections.
E. Provide calculations for loadings and stresses of specially fabricated framing and roof trusses under the Professional Structural Engineer’s seal, licensed in Florida.
F. Product Data: Provide data on standard framing members; describe materials and finish, product criteria and limitations.
G. Research reports for cold-formed steel framing:
   1. Steel framing manufacturer to have a third party evaluation report for its products. The evaluation report will demonstrate compliance with the local building code or its model code (IBC - 2012, 2015, or 2018 edition or AISI S100).
H. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.

1.5 REGULATORY REQUIREMENTS
A. Design cold-formed metal framing in accordance with the FBC, AISI A100 "Specifications for the Design of Cold-Formed Steel Structural Members", AISI S200 and ASTM C955, Section 8.
B. Wind loads shall be in accordance with ASCE 7.
C. Design interior partitions for a minimum of 5-PSF with no stress increase.

1.6 QUALIFICATIONS
A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum 5-years documented experience and a member in good standing of the Steel Framing Industry Association (SFIA) or be part of a similar organization that provides a verifiable code compliance program.
B. Installer: Company specializing in performing the work of this section with minimum 3-years documented experience.
C. Design structural elements under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State of Florida.

1.7 MOCKUP
A. Provide mockup of exterior framed wall including insulation, sheathing, window frame, doorframe, and interior and exterior finish specified in other sections, under provisions of Section 01 40 00.
B. Mockup Size: 6' x 4' including corner condition
C. Mockup may remain as part of the Work

1.8 FIELD MEASUREMENTS
A. Verify that field measurements are as indicated on shop drawings.

1.9 COORDINATION
A. Coordinate work under provisions of Section 01 31 00.
B. Coordinate with the placement of components within the stud framing system.

PART 2 PRODUCTS
2.1 ACCESSORIES
A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered
B. Plates, Gussets, Clips: Formed sheet steel, thickness determined for conditions encountered
C. Shop and Touch-up Primer: SSPC - Paint 15, Type Type-1, red oxide
D. Touch-Up Primer for Galvanized Surfaces: SSPC - Paint 20 Type-I Inorganic

2.2 FASTENERS
A. Self-drilling, Self-tapping Screws, Bolts, Nuts, and Washers, use ASTM A123/A123M, hot dip galvanized to 1.25 oz/sq ft.
B. Anchorage Devices: Power-actuated, drilled expansion bolts and screws with sleeves.
C. Welding cold formed metal framing is not allowed.

2.3 FABRICATION
A. Fabricate assemblies of framed sections of sizes and profiles required; with framing members fitted, reinforced, and braced to suit design requirements.
B. Fit and assemble in largest practical sections for delivery to site, ready for installation.
2.4 FINISHES
A. General Coating Classifications:
   1. CP 60: G60 (Z180), A60 (ZF180), AZ50 (AZM 150) or GF30 (ZFG90)
   2. CP 90: G90 (Z275), AZ50 (AZM 150) or GF45 (ZGF135)
B. Studs: Coating: CP 90: G90 (Z275), (other coatings must be authorized).
C. Tracks and Headers: Coating: CP 90: G90 (Z275), (other coatings must be authorized).
D. Joists and Purlins: Coating: CP 90: G90 (Z275), (other coatings must be authorized).
E. Bracing, Furring, Bridging: Same finish as framing members.
F. Plates, Gussets, Clips: Same finish as framing members.
G. Plates, Gussets, Clips: Same finish as framing members.

PART 3 EXECUTION
3.1 EXAMINATION
A. Verify site conditions under provisions of Section 01 31 00.
B. Verify that substrate surfaces and building framing components are ready to receive work.

3.2 ERECTION OF STUDDING
A. Install components in accordance with manufacturer’s instructions.
B. Align floor and ceiling tracks; locate to partition layout. Secure in place with fasteners.
   1. Coordinate installation of sealant with floor and ceiling tracks.
C. Place studs not more than 2" from abutting walls and at each side of openings.
   1. Connect studs to tracks using fasteners.
D. Construct corners using minimum three studs.
   1. Double stud wall openings; door and window jambs.
E. Erect load-bearing studs in one-piece full length do not splice the studs.
F. Erect load-bearing studs, brace, and reinforce to develop full strength, to achieve design requirements.
G. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.
H. Install intermediate studs above and below openings to align with wall stud spacing.
I. Provide deflection allowance in stud track, directly below horizontal building framing at non-load bearing framing.
J. Attach cross studs and furring channels to studs for attachment of fixtures anchored to walls.
K. Install framing between studs for attachment of mechanical and electrical items, plus to prevent stud rotation.
L. Touch-up damaged galvanized and primed surfaces with primer.

3.3 ERECTION OF JOISTS PURLINS
A. Install framing components in accordance with manufacturer’s instructions.
B. Make provisions for erection stresses.
   1. Provide temporary alignment and bracing.
C. Place joists and purlins not more than 2" from abutting walls.
   1. Connect joists to supports using fastener method.
D. Set floor and ceiling joists parallel and level with lateral bracing and bridging.
E. Locate joist end bearing directly over load bearing studs or provide load-distributing member to top of stud track.
F. Provide web stiffeners at reaction points.
G. Touch-up damaged galvanized and primed surfaces with primer.

END OF SECTION