

SECTION 092600 - METAL FRAMING FOR GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 1. Non-loadbearing steel framing systems for interior gypsum board assemblies.
 2. Suspension systems for interior gypsum ceilings, soffits, and grid systems.
 3. Framing members shall be located within the building envelope and shielded from direct contact with moisture from the ground or the outdoor climate. For exterior wall or roof framing members, or loadbearing members carrying more than 100 pounds per foot, see section 05 40 00.
- B. Related Requirements:
 1. Section 05 40 00 "Cold-Formed Metal Framing" for exterior and interior load-bearing and exterior non-loadbearing wall studs; floor joists; and roof rafters and ceiling joists.

1.3 ACTION SUBMITTALS

- A. Product data: for each type of product.
- B. Leadership in Energy and Environmental Design (LEED) submittals: as required under version of LEED submitted and credits requested.

1.4 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: evaluation reports are not required for standard stud that comply with American Iron and Steel Institute (AISI) and ASTM standards for cold-formed steel (CFS) framing. Note that "EQ studs" are not permitted.
- B. Manufacturer's Certification: Submit manufacturer's certification of product compliance with codes and standards along with product literature and data sheets for specified products.

1.5 FIRE AND ACOUSTICAL PERFORMANCE

- A. Fire Test Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 by an independent testing agency acceptable to the authority having jurisdiction.
 1. Construct fire-resistance rated partitions in compliance with tested assembly requirements as indicated on drawings.
 2. Rated assemblies to be substantiated from applicable testing using proposed products, by Contractor.
- B. STC-Rated Assemblies: For Sound Transmission Class (STC) rated assemblies, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

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. 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 installation.

- B. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling as required by AISI S202: "Standard for Cold-Formed Steel Framing - Code of Standard Practice".

PART 2 – PRODUCTS

2.1 PERFORMANCE / DESIGN CRITERIA

- A. Design framing systems in accordance with American Iron and Steel Institute (AISI) S220: "North American Specification for the Design of Cold-Formed Steel Framing – Nonstructural Members", except as otherwise shown or specified.
- B. Design loads: As indicated on the Architectural Drawings or 5 PSF minimum as required by the International Building Code.
 - 1. Heavy cladding or ceiling systems may be subject to seismic loading requirements
- C. Design framing systems to accommodate deflection of primary building structure and construction tolerances and to withstand design loads without damage to nonstructural framing members or interior wall or ceiling systems.

2.2 FRAMING SYSTEMS

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Framing Members, General: Comply with American Iron and Steel Institute (AISI) S220, "North American Standard for Cold-Formed Steel Framing – Nonstructural Members."
 - 1. Steel Sheet Components: members utilized in cold-formed steel framed construction shall be cold-formed to shape from sheet steel complying with the requirements of ASTM A1003/A1003M Type NS.
 - 2. Protective Coating: members utilized in cold-formed steel framed construction shall have a protective coating conforming to ASTM A653/A653M G40 minimum. Equivalent or "EQ" coatings are not acceptable.
 - 3. Additional corrosion protection shall not be required on edges of metallic-coated steel framing members, shop or field cut, punched or drilled.
- C. Studs and Runner Tracks: AISI S220
 - 1. Non-Structural Studs: Cold-formed galvanized steel C-studs as per ASTM A 1003 for conditions indicated below:
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide *Studs Unlimited* nonstructural drywall framing products of full mill thickness and coating (NO "EQ" studs permitted.)
 - b. Flange Width: 1 1/4 inch.
 - c. Web Depth: As specified on Drawings; range from 1-5/8 inches to 6 inches.
 - d. Yield strength: minimum 33 ksi.
 - e. Member Description: 33 mil.
 - 1) Minimum Thickness: 0.0329 inches.
 - 2) Design Thickness: 0.0346 inches.
 - f. Member Description: 30 mil.
 - 1) Minimum Thickness: 0.0296 inches.
 - 2) Design Thickness: 0.0312 inches.
 - g. Member Description: 27 mil.
 - 1) Minimum Thickness: 0.0269 inches.
 - 2) Design Thickness: 0.0283 inches.

- h. Member Description: 18 mil.
 - 1) Minimum Thickness: 0.0179 inches.
 - 2) Design Thickness: 0.0188 inches.
- 2. Non-Structural Track: Cold-formed galvanized steel runner tracks, drywall track, in conformance with ASTM A 1003 for conditions indicated below:
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide *Studs Unlimited* nonstructural drywall framing products of full mill thickness and coating (NO "EQ" studs permitted.)
 - b. Flange Width: 1 1/4 inch.
 - c. Web Depth: As specified on Drawings; range from 1-5/8 inches to 6 inches.
 - d. Yield strength: minimum 33 ksi.
 - e. Member Description: 33 mil.
 - 1) Minimum Thickness: 0.0329 inches.
 - 2) Design Thickness: 0.0346 inches.
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 - 1) Minimum Thickness: 0.0269 inches.
 - 2) Design Thickness: 0.0283 inches.
 - h. Member Description: 18 mil.
 - 1) Minimum Thickness: 0.0179 inches.
 - 2) Design Thickness: 0.0188 inches.
- D. Slip-Type Head Joints: Where indicated, provide the following:
 - 1. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
- E. U-Channel Bridging: Steel, 0.0538-inch (1.37-mm) minimum base-metal thickness, with minimum 1/2-inch- (13-mm-) wide flanges.
 - 1. Depth: 3/4", 1.5", or as indicated on Drawings.
- F. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
 - 1. Minimum Base-Metal Thickness: 0.0179 inch, or as indicated on drawings.
 - 2. Depths: 7/8 inch or 1-1/2 inch.
- G. Resilient Furring Channels: 1/2-inch deep, steel sheet members designed to reduce sound transmission.
 - 1. Configuration: Asymmetrical, with single leg for attachment to support, and web for attachment to gypsum board.
- H. Carrying Channels: 0.0538 inch uncoated-steel thickness, with minimum 1/2-inch wide flanges.
 - 1. Depth: 1.5 inches, or as indicated on Drawings.
- I. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062 inch diameter wire, or double strand of 0.048 inch diameter wire.
- J. Z - Furring: With slotted or nonslotted web, face flange of 1-1/4 inches, wall attachment flange of 7/8 inch, minimum uncoated-metal thickness of 0.018 inch, and depth required to fit insulation thickness indicated.
- K. Utility Angle: Not less than 1-1/2 by 1-1/2 inches, 0.0329-inch minimum thickness, galvanized steel.

- 2.3 AUXILIARY MATERIALS
- A. General: Provide auxiliary materials that comply with referenced installation standards.
 - 1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
 - B. Isolation Strip at Exterior Walls: Provide[one of] the following:
 - 1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.
 - 2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch (3.2 mm) thick, in width to suit steel stud size.

Part 3 – Execution

- 3.1 EXAMINATION
- C. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
 - D. Proceed with installation only after unsatisfactory conditions have been corrected.
- 3.2 PREPARATION
- A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.
 - 1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.
 - B. Coordination with Sprayed Fire-Resistive Materials:
 - 1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling runners (tracks) to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches o.c.
 - 2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of non-load-bearing steel framing. Do not reduce thickness of fire-resistive materials below that required for fire-resistance ratings indicated. Protect adjacent fire-resistive materials from damage
- 3.3 INSTALLATION, GENERAL
- A. Installation Standard: ASTM C 754.
 - 1. Gypsum Plaster Assemblies: Also comply with requirements in ASTM C 841 that apply to framing installation.
 - 2. Portland Cement Plaster Assemblies: Also comply with requirements in ASTM C 1063 that apply to framing installation.
 - 3. Gypsum Veneer Plaster Assemblies: Also comply with requirements in ASTM C 844 that apply to framing installation.
 - 4. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
 - B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
 - C. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently

3.4 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
 - 1. Single-Layer Application: 16 inches o.c. unless otherwise indicated.
 - 2. Multilayer Application: 16 inches o.c. unless otherwise indicated.
 - 3. Tile Backing Panels: 16 inches o.c. unless otherwise indicated.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- C. Install studs so flanges within framing system point in same direction.
- D. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
 - 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 - 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb unless otherwise indicated.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
 - c. Extend jamb studs through suspended ceilings and brace or attach to underside of overhead structure for the determined wall type.
 - 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 - 4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
 - 5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
 - 6. Curved Partitions:
 - a. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
 - b. Begin and end each arc with a stud, and space intermediate studs equally along arcs.
- E. Direct Furring:
 - 1. Screw to wood framing.
 - 2. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
- F. Installation Tolerance: Maximum 1/8" in 10 feet variation in plumb, level, or true plane, unless designed as sloping or curved surface.

3.5 INSTALLING SUSPENSION SYSTEMS

- A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
 - 1. Hangers: 48 inches o.c.
 - 2. Carrying Channels (Main Runners): 48 inches o.c.
 - 3. Furring Channels (Furring Members): 16 inches o.c.

- B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- C. Suspend hangers from building structure as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
 - a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, counter-splaying, or other equally effective means.
 - 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
 - a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards. For Plaster ceilings, deflection may not exceed $L/360$; for other ceilings, deflection shall be maximum of $L/240$ or per the requirements of the ceiling cladding manufacturer's instructions, whichever is more stringent.
 - 3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
 - 4. Do not attach hangers to steel roof deck without an approved engineered design.
 - 5. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
 - 6. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.
- E. Seismic Bracing: Sway-brace suspension systems with hangers used for support as well as any other seismic bracing, shall be installed in accordance with section 13.5.6 of ASCE 7-10.
- F. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and cut to fit into wall track.
- G. Installation Tolerances: Install suspension systems that are level to within $1/8$ inch in 10 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 092600