

## SECTION 09 22 16

### NON-STRUCTURAL METAL FRAMING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. This Section describes the requirements for furnishing and installing light-gauge non-load bearing wall framing systems, including metal studs, wall furring, and backing plates.
- B. Related Sections:
  - 1. Cold-formed metal framing is specified in Section 05 40 00.
  - 2. Acoustical joint sealants are specified in Section 07 92 19.
  - 3. Metal suspension systems are specified in Section 09 22 26.23.
  - 4. Acoustical ceiling suspension assemblies are specified in Section 09 53 00.
  - 5. Gypsum board is specified in Section 09 29 00.
  - 6. Gypsum board shaft wall assemblies are specified in Section 09 21 16.23.
  - 7. Acoustical insulation is specified in Section 09 81 00.

##### 1.02 DESIGN AND PERFORMANCE REQUIREMENTS

- A. Stud Systems: Select steel studs in accordance with manufacturer's standard load tables and the following deflection criteria, based on stud depth and spacing indicated and partition height required:
  - 1. Partitions to Receive Gypsum Board: L/240.
  - 2. Partitions to Receive Tile Backer Board: L/360.
  - 3. Partitions to Receive Plaster: L/360.
  - 4. Framed Ceilings: L/360.
- B. Structural supports and blocking for light fixtures and miscellaneous wall- or ceiling-mounted items shall be designed and engineered by Developer Design/Builder.

##### 1.03 SUBMITTALS

- A. Product Data: Manufacturer's specifications and installation instructions for each type of metal support system, including provisions for fixture and equipment anchorage.
- B. LEED Submittals:
  - 1. Credit MR 4: Product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content. Include statement indicating costs for each product having recycled content.
    - a. Furnish the LEED Online Credit Template declaring that the credit requirements have been met and list the recycled content products used.
    - b. List total cost of all materials for the Project.

c. Required Audit Documentation:

- 1) Manufacturer product data sheets, literature or letters highlighting the overall post-consumer and/or post-industrial recycled content percentages (by weight) of each product listed on the template.
- 2) Materials invoices showing costs for each product listed on the template.

1.04 QUALITY ASSURANCE

- A. Tolerances: Provide metal studs and furring installations that are plumb, true, straight, and rigid.
- B. Welder's Qualifications: AWS D1.1 and 1.3 as applicable.
- C. Fire-Test-Response Characteristics: Provide components that comply with rating requirements specified for fire-rated assemblies under UL 2079 for non-load bearing wall systems.
  1. Deflection Clips and Firestop Track: Connections and/or top runner provided in fire-resistance-rated assemblies shall be certified by UL 2079 for cyclic movement requirements.

1.05 ENVIRONMENTAL QUALITY ASSURANCE

- A. Credit MR 4: Provide building materials with recycled content such that post-consumer recycled content plus one-half of pre-consumer recycled content constitutes a minimum of 10-percent) of cost of materials used for the Project.
  1. The cost of post-consumer content of an item shall be determined by dividing the weight of post-consumer recycled content in the item by the total weight of the item and multiplying by the cost of the item.
  2. The cost of post consumer recycled content plus one-half of pre-consumer recycled content of an item shall be determined by dividing the weight of post-consumer recycled content plus one-half of pre-consumer recycled content in the item by the total weight of the item and multiplying by the cost of the item.
  3. Mechanical, electrical and plumbing components and specialty items such as elevators shall not be included in this calculation. Only include materials permanently installed in the Project.
- B. Applicable LEED Credits:
  1. Credit MR 4 – Recycled Content.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver products in the original unopened packages, containers, or bundles with manufacturer's label intact and legible.
- B. Remove products delivered in broken, damaged, rusted or unlabeled condition from the Project site immediately.
- C. Protect products from rusting and other sources of damage.

PART 2 - PRODUCTS

2.01 APPROVED MANUFACTURERS

- A. Angeles Metal Products, Clark Steel Framing Systems, Inc., Consolidated Systems, Inc., Dale/Incor Industries, Delta Metal Products, Dietrich Industries, Inc., Knorr Steel Framing Systems, The Steel Network Inc., Unimast, Inc., Western Metal or approved equal.

2.02 MATERIALS

- A. Metal Studs:
  1. Material: Mill-certified galvanized steel conforming to ASTM A653, G40 coating, minimum yield strength 33,000-psi.
  2. Construction: Formed C-channel section conforming to ASTM C645.

3. Stud Thickness: As required for specified deflection criteria, based on stud depth and spacing indicated and partition height required. If stud spacing is not indicated, space studs at 16-inches on center.
- B. Runner Tracks:
1. Material: Mill-certified galvanized steel conforming to ASTM A653, G40 coating, minimum yield strength 33,000-psi.
  2. Construction: Formed channel section conforming to ASTM C645.
  3. Size: Minimum 1-inch flange width; web depth matching studs.
  4. Thickness: Same as studs.
- C. Vertical Deflection Connection: The Steel Network Inc. "VertiClip" or "VertiTrack", FireTrak Corp "Shadowline", Metal-Lite "Slotted Slip Track" or approved equal conforming to the following material properties and performance criteria:
1. Code Criteria: Meet required head of wall connection criteria as required by CBC and as indicated in UL2079 for cyclic wall movement.
  2. Material Composition: ASTM A653, SS grade 50, class 1, 50-ksi minimum yield strength, 65-ksi minimum tensile strength, G-60 hot dipped galvanized coating.
  3. Material Thickness: 0.036-inch.
  4. Clips shall be designed for positive attachment to structure and stud web using step-bushing technology to provide frictionless vertical movement.
  5. Provide clips with attached bushing and screw of the series, size, and configuration as recommended by manufacturer.
  6. Top track devices pre-assembled to top track assembly in standard 12-foot lengths, with clips installed at spacing to coincide with stud spacing indicated may be used at Developer Design/Builder's option.
  7. Friction-fit deep-leg track assemblies and tracks relying on steel flexure to perform are unacceptable.
- D. Metal Channels: Mill-certified galvanized steel conforming to ASTM C653, G40 coating, minimum yield strength 33,000-psi.
1. Framing, Furring, and Stiffening:

<u>Size, Inches</u>	<u>Pounds per 1,000 Lineal Feet</u>
3/4 cold rolled	300
1-1/2 cold rolled	475
2 cold rolled	590
  2. Furring Channels: Minimum 20-gauge galvanized steel with knurled faces; hat-shaped or Z-section as required.
- E. Tie Wire: No. 16-gauge, galvanized, single-strand annealed steel or No. 18-gauge, galvanized, double-strand annealed steel.
- F. Screws: ASTM C1002, Type S, pan head sheet metal screws, minimum 1/2-inch length.
- G. Runner Track Fasteners: Tempered-steel pins with corrosive resistant plating or coating, 9/64-inch diameter, minimum 1-1/8-inch penetration.
- H. Backing Plates: Provide backing plates as required.
- I. Compression or Isolation Strips: Fiberglass, 1/2-inch nominal thickness, width equal to width of tracks or studs where used; density such that material will compress to one-half or less of loose thickness.

## PART 3 - EXECUTION

### 3.01 INSPECTION AND PREPARATION

- A. Verify that conditions are satisfactory for the installation of metal support systems. Do not commence the installation until unsatisfactory conditions have been corrected.
- B. Coordinate installation of metal support systems with the installers of other related work. Review areas of potential interference and conflicts, and coordinate layout and support provisions for interfacing work.

### 3.02 GENERAL INSTALLATION REQUIREMENTS

- A. Install non-load-bearing steel framing members in accordance with ASTM C754, and as specified.
- B. Cutting:
  - 1. General: Cut framing components squarely or on angle as required to fit tightly with proper bearing against abutting members.
  - 2. Cutting Studs: If stud web is cut more than 50-percent, or stud flanges are cut, restore stud to original strength by wire-tying, or welding on steel reinforcement.
- C. When studs extend to the underside of structural slabs, secure at top with a slip connection to accommodate slab deflection.

### 3.03 NON-LOAD-BEARING VERTICAL METAL FRAMING

- A. Runner Tracks: Align at floor and ceiling with partition layouts. Secure to structure with specified fasteners located 2-inches from each end and spaced not to exceed 24-inches on center.
  - 1. Coordinate installation of continuous isolation strips or acoustical sealant at acoustical partitions with installation of top and bottom runner tracks.
  - 2. Where partition comes to underside of profile metal deck, create an acoustic seal to fill the profile. Use either metal plate or fiberglass and acoustic sealant.
  - 3. Notch runner tracks as required for curved partitions.
  - 4. Where studs extend to structure above, provide vertical deflection accommodating devices where each stud connects to structural members above.
- B. Installation of Metal Studs:
  - 1. Screw-fasten framing connections using a minimum of 2 screws for each connection.
  - 2. At partition corners and intersections, provide a minimum of 3 studs.
  - 3. Splice studs where required, by nesting with a minimum lap of 8-inches; fasten laps with 2 screws through each flange.
  - 4. Frame door openings with double 16-gauge vertical studs securely attached to each jamb of door frame.
    - a. At head, install runner track; cut flanges at ends, bend web 90-degrees and screw attach to jamb studs.
    - b. Install jack studs over door opening, spaced same as full-height studs.
    - c. Where control joints extend upward from door jambs, install a jack stud spaced 1/2-inch from each jamb stud. Space next full-height stud not more than 6-inches from each jamb stud.
    - d. Attach jamb studs to metal door frames with metal clips, each with 2 screws into jamb stud.

5. Frame openings other than door openings in the same manner as for doors, and install framing below sills of openings to match framing required above door heads.
  6. Frame both sides of expansion and control joints with a separate stud; do not bridge the joint with framing components.
  7. Install continuous horizontal stiffeners in partitions where recommended by stud manufacturer for partition height, stud gauge, stud spacing, number of layers of gypsum board used, and anticipated stud deflection.
  8. Stiffen openings with horizontal channels. Provide one channel continuous across head of openings extending to third stud beyond on each side. Provide one channel at each frame anchor extending to third stud beyond. Wire-tie or weld horizontal channels to each stud.
- C. Chase-Wall Framing:
1. Align two parallel rows of floor and ceiling runners according to partition layout.
  2. Position steel studs vertically in runners with flanges in same direction, with studs on opposite sides of chase directly across from each other. Anchor to runners in accordance with manufacturer's instructions.
  3. Cross brace chase studs with 12-inch wide gypsum wallboard gussets or minimum 2-1/2-inch steel studs. Attach web-to-web with screws. If chase wall studs are not opposite, brace with horizontal runners and braces.
- D. Wall Furring, Direct Attachment:
1. Attach hat-shaped metal furring channels either vertically or horizontally. For furring positioned horizontally, attach a furring member not more than 4-inches from both the floor and ceiling. Secure with fasteners placed on alternate channel flanges, spaced on 16-inch centers.
  2. Attach Z-shaped metal channels vertically, spaced 16-inches on center, with fasteners spaced 24-inches on center.
- 3.04 BACKING PLATES
- A. Install as required for support of wall-hung cabinets, toilet partitions and accessories, and other items to be mounted on vertical surfaces.
  - B. Welding shall comply with AWS D1.3.
  - C. Paint welds with a rust-inhibitive paint.
- 3.05 HORIZONTAL FRAMED SURFACES
- A. Joist frame with studs of size, gauge and spacing as determined from manufacturer's standard tables based on specified deflection criteria.
  - B. Provide runner channels to receive studs at ceiling and walls of same gauge as studs. Secure with mechanical fasteners at 24-inches on center maximum.
  - C. Secure studs to channels with screws.
- 3.06 SOUND CONTROL WORK
- A. Specified requirements apply to framing for interior sound partitions.
  - B. Isolate top and bottom runners from direct contact with structure by installing over either:
    1. Continuous compression or isolation strips as specified, or
    2. Two continuous 1/4-inch beads of acoustical sealant specified in Section 07 92 19 applied at quarter points of track width.

- C. Studs at terminal ends of partitions abutting intersecting walls or partitions, and studs that would otherwise contact intermediate structural columns shall be similarly installed over strips or sealant.

### 3.07 INSTALLATION TOLERANCES

- A. Variation from Plumb: Maximum 1/8-inch in 10-feet, non-cumulative.
- B. Variation from Level: Maximum 1/8-inch in 10-feet, non-cumulative.
- C. Variation from True Plane: Maximum 1/8-inch in 10-feet, non-cumulative.
- D. Variation from True Position: Maximum 1/4-inch, non-cumulative.
- E. Variation of Member from Plane: Maximum 1/8-inch, non-cumulative.

### 3.08 WASTE MANAGEMENT

- A. General: Comply with Section 01 74 19.
- B. Separate and recycle waste materials to the maximum extent possible.

END OF SECTION