# SECTION 09 22 16
# NON-STRUCTURAL METAL FRAMING

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Furnish and install:

1. Metal furring and framing where indicated on the Drawings, including cross bracing and knee bracing.
2. Metal ceiling and soffit framing.
3. Metal ceiling and soffit framing, including hanger attachments, wire hangers, and screwable metal tee grid system.
4. Reinforcing plate blocking.
5. Deflection track assemblies at tops of metal stud partitions.
   a. Provide fire-rated assemblies at fire-rated, corridor, and smoke partitions.
   b. Provide non fire-rated assemblies at all other partitions.

### 1.2 RELATED REQUIREMENTS

A. Section 06 10 00 - ROUGH CARPENTRY:

1. Wood blocking.
2. Installation of metal door frames in gypsum board work.

B. Section 07 21 00 - THERMAL INSULATION.

C. Section 08 11 13 - HOLLOW METAL DOORS AND FRAMES: Furnishing steel door frames.

D. Section 08 31 00 - ACCESS DOORS AND PANELS: Shop primed access panels, occurring in partitions and walls.

E. Section 09 29 00 - GYPSUM BOARD: Gypsum board, applied over metal framing installed by this Section 09 22 16 including: gypsum board, and related trim components.

F. Section 09 51 00 - ACOUSTICAL CEILINGS: Suspended acoustical tile ceiling, including metal suspension system.

G. Division 23 - HEATING, VENTILATING AND AIR CONDITIONING: Supply and return air registers.

H. Division 26 - ELECTRICAL: Independent hangers for suspended lighting fixtures.

### 1.3 REFERENCES

A. Reference Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. ASTM C 525 - General Requirements for Steel Sheet, Zinc-Coated

(Galvanized) by the Hot-Dip Process.

2. ASTM C 645 - Non-Load Bearing Steel Studs, Runners, and Rigid Furring Channels for Screw Application of Gypsum Board.
3. ASTM C 646 - Steel Drill Screws for the Application of Gypsum Sheet Material to Light Gage Steel Studs.
4. ASTM C 754 - Installation of Steel Framing Members to Receive Screw-Attached Gypsum Wallboard.
5. ASTM E 90 - Method of Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.
6. ASTM E 119 - Fire Tests of Building Construction and Materials.
7. GA 203 - Installation of Screw-Type Steel Framing Members to Receive Gypsum board.

## 1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the work of this Section with the respective trades responsible for installing interfacing work, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work
2. Work of this Section shall be closely coordinated with the work of Section 09 29 00 - GYPSUM BOARD to assure the steady progress of the Contract.

## 1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties for each item furnished hereunder.

## 1.6 QUALITY ASSURANCE

A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

B. Sole Source: Obtain products required for the Work of this Section from a single manufacturer.

C. Qualifications:

1. Installer/Applicator: Minimum of 3 years documented experience demonstrating previously successful work of the type specified herein.

## 1.7 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements:

1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.

B. Storage and Handling Requirements:

1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
2. Protect materials from damage due to moisture, surface contamination,

corrosion and damage from construction operations and other causes.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Metal components and related items (including non-rated deflection track assemblies):
   a. Clarkwestern Dietrich Building Systems, LLC, Schiller Park, IL.
   b. Marino\Ware, Division of Ware Industries, South Plainfield, NJ.
   c. Cemco Steel Framing and Metal Lath, City of Industry, CA.
   d. Telling Industries, Mentor, OH.
   e. Super Stud Building Products, Inc., Edison, NJ.
2. Fire rated deflection track assemblies:
   a. Clarkwestern Dietrich Building Systems, LLC, Schiller Park, IL.
   b. Cemco Steel Framing and Metal Lath, City of Industry, CA.
   c. The Steel Network, Inc., Durham, NC.
   d. Fire Trak Inc., Watkins, MN.
3. Suspended furring system for ceilings and soffits:
   a. Armstrong World Industries, Inc., Lancaster, PA.
   b. Chicago Metallic Corporation, Chicago, IL.
   c. USG Corporation, Chicago, IL.

B. The design and details as shown on the drawings and the model numbers specified herein are to establish the standards of design and quality and not to limit competition.

### 2.2 DESCRIPTION

A. Regulatory Requirements:

1. Obtain certificate of compliance from authority having jurisdiction indicating approval of specified products.
2. Fire resistance ratings: Where gypsum board systems with fire-resistance ratings are indicated, provide materials and assemblies of the rating required, tested per ASTM E 119, which are identical to those indicated by reference to Gypsum Association file numbers in "Fire Resistance Design Manual" or to design designation in the Underwriters Laboratories "Fire Resistance Directory" or in listing of other testing agencies acceptable to authorities having jurisdiction and to the Owners' insurance underwriters.
   a. 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.

### 2.3 FRAMING MATERIALS

A. “Hat shaped” Furring channels: 7/8 x 2-3/4 inch, roll-formed, hat-shaped, furring channel 25 gage hot-dip galvanized steel galvanized steel conforming to ASTM C 645.

B. Resilient furring channels: Roll-formed, hat-shaped, 1/2 x 2-5/8 inch, 26 gage hot-dip galvanized steel conforming to ASTM C 645, with pre-punched holes, equal to Dietrich Industries, Inc., Pittsburgh PA, Metal Channel “RC1”.

C. Furring channels: ‘Z-shaped’ 1-1/2 inch depth, roll-formed, 25 gage (0.179 inch [0.45 mm] minimum thickness), hot-dip galvanized steel.

D. Studs: ‘C-shaped’ screw studs, hot-dip galvanized steel complying to ASTM C 645, 20 gage-equivalent (nominal 0.02 inches [0.75 mm] factory ribbed and/or embossed for performance equivalent to 20 gage (0.0329 inch [0.84 mm] minimum thickness studs), of widths indicated on the Drawings.

1. Acceptable products include the following or approved equal:
   a. Clarkwestern Dietrich Building Systems, LLC, product “”UltraSTEEL, USTE series”.
   b. Marino\Ware, Division of Ware Industries, product: “ViperStud Viper20”.
   c. Cemco Steel Framing and Metal Lath, product; “ViperStud Viper20”.
   d. Telling Industries, product; “ViperStud”.
   e. Super Stud Building Products Inc., product: “Edge EQ, EDS20P”.
2. Provide full 20 gage (0.0329 inch [0.84 mm] minimum thickness studs where required under the indicated UL assemblies to meet fire resistance ratings.

E. Runners for metal studs: ‘U-shaped’ hemmed, hot-dip galvanized steel track conforming to ASTM C645, of gage and width to match respective stud sizes, or heavier gage per design requirements, having 1-1/4 inch leg, provided at tops and bottoms of all studs and at heads of all openings in stud partitions.

F. Internal reinforcement for various stud conditions, and bracing as required: 10 gage, minimum, galvanized steel.

G. Furnish cross bracing and knee bracing, as required to assure a completely rigid assembly on metal stud partitions and furred areas.

## 2.4 DEFLECTION TRACK ASSEMBLIES:

A. Non Fire-Rated Assemblies

1. Deflection Track: Manufacturer’s standard top runner with extended flanges designed to prevent cracking of gypsum board applied to interior partitions resulting from deflection of the structure above fabricated from steel sheet complying with ASTM A 653 or ASTM A 568. Thickness as indicated for studs, and width to accommodate depth of studs, and the following configuration.
   a. Top runner with extended deep flanges that have one of the following: V-shaped offsets that compress, slots 1 inch on center that allow fasteners for stud attachment; 16 gage sliding clip assemblies attached to top track and clipped to stud, or double track systems as required to meet anticipated vertical movement.
2. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:
   a. Clarkwestern Dietrich Building Systems, LLC, product; ”Deep Leg Deflection Track System”, “Fast Top Clip”, or “DoubleTrack System”.
   b. Marino\Ware, Division of Ware Industries, product: “Slotted Track”.
   c. Cemco Steel Framing and Metal Lath, product; “Slotted Track CST”.

d. Telling Industries, product; “ViperTrack Deep Leg Deflection Track”.

e. Super Stud Building Products Inc., product: “ITTC 450 Top Track Deflection Clip”.

f. The Steel Network, Inc., product; “VertiTrack VT”, “VertiTrack VTD”, or “VertiClip SLD”.

B. Fire-Rated Assemblies: Head of wall dynamic fire rated joint systems for assemblies in compliance with UL 2079 HW-D. Provide clips or deep leg track system including step bushings complying with ASTM C 645 fabricated from steel sheet complying with ASTM A 653 or ASTM A 568. Thickness as indicated for studs, and width to accommodate depth of studs.

1. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

a. Clarkwestern Dietrich Building Systems, LLC, product; ”SLP-TRK Slotted Deflection Track”.

b. Clarkwestern Dietrich Building Systems, LLC, product; ” Blazeframe DL2 Deep Leg Deflection Track”.

c. Cemco Steel Framing and Metal Lath, product; “FAS Track UL Assemblies”.

d. The Steel Network, Inc., Durham, NC. product; “VertiClip SLD”.

e. Fire Trak Inc., Watkins, MN, product “Fire Trak”, or “Posi Clips”

C. Coordination: Verify with partition schedule on the Drawings to ensure proper depth of flange offsets at various partitions types.

## 2.5 CEILING AND SOFFIT SUSPENSION MATERIALS

A. Hanger attachments: Galvanized steel hanger eyes, of size and capacity to safely sustain a live load of at least 150 pounds per hanger attachment.

B. Hangers: Soft temper, pre-stretched galvanized carbon steel wire, conforming with ASTM A641, with a yield stress load of at least three times design load, but not less than 12 gage.

C. Grid system for direct attachment of finish board: Comprised of double web main furring tees, 1 1/2 inches high by 1-3/8 inches flange face by 0.020 inch thick; double web cross tees, 1 1/2 inches high by 15/16 inch flange face by 0.020 inch thick; 0.020 inch thick wall channels, with 1 1/2 inches interior web height; and all splices, clips, and related items. Provide Underwriters Laboratories Label fire-rated assemblies for locations requiring fire- rated ceilings and soffits

1. Chicago Metallic product “system 640 Furring System”.
2. Armstrong Word Industries product “Drywall Furring System”.
3. Donn (USG) Corporation, Chicago IL., product “USG Drywall Furring System” with DGLW tees.

## 2.6 CEILING AND SOFFIT FRAMING MATERIALS

A. Carrying channels, 2 inches deep, 16 gage cold-rolled channels, galvanized.

B. Support channels: 3/4 inches deep, 16 gage cold-rolled channels, galvanized.

C. Furring Channels: 7/8 x 2-3/4 inch, roll-formed, hat-shaped, furring channel 25 gage hot-dip galvanized steel galvanized steel conforming to ASTM C 645.

D. Metal Studs used in soffit and ceiling framing: 'C-shaped' screw studs, hot-dip galvanized steel complying to ASTM C 645, 25 gage, of widths indicated on the Drawings, or other gages as required under the specified standards to meet fire resistance ratings.

### 2.7 ACCESSORIES

A. Metal sheet plate blocking and bracing, where indicated: galvanized sheet 0.0312 inch thickness (20 gage).

B. Fasteners:

1. Expansion-type fasteners for securing vertical concrete and masonry surfaces.
2. Concrete stub nails for securing runners to concrete.
3. Nº.7 by 7/16 inch Pan head self-drilling screw to attach metal framing components.

C. Reinforcing plates for blocking: 20 gage cold rolled sheet steel, provide minimum 6 inch width, or as otherwise indicated on the drawings.

## PART 3 – EXECUTION

### 3.1 INSTALLATION, QUALITY STANDARDS

A. General: Perform erection procedures for the various gypsum board system conditions, except as otherwise specified, as set forth in GA 201, GA 206, the written instructions of gypsum board manufacturer, together with the additional requirements specified herein and as indicated on the Drawings.

B. Wherever fire-resistive rated assemblies are indicated on the Drawings, erect gypsum board systems in strict accordance with the manufacturers' UL listed test constructions for the required fire rating on each specific assembly.

### 3.2 INSTALLATION OF FURRING

A. Install metal furring channel horizontally, with channels spaced not more than 16-inch on centers , and attaching the channels to the masonry or concrete substrates with expansion type fasteners spaced not more than 8 inches on centers. Shim beneath channels as needed to ensure that a uniform receiving plane is maintained throughout.

### 3.3 INSTALLATION OF PARTITION FRAMING, GENERAL

A. Install metal runners at floor and ceiling to structural elements with suitable fasteners located 2 inches from each end and intermediate fasteners spaced no greater than 24 inches.

B. Install metal stud framing with open side facing in same direction, engaging floor and ceiling runners.

1. Stud spacing:
   a. Typical: 16 inches on-center.
   b. For cement board substrate to receive tile finishes: 16 inches on-center.
   c. For partitions supporting wall cabinets and other wall mounted equipment: 12 inches on-center.
   d. For curved partitions space framing closer together than normal to prevent flat areas between framing members.
2. When necessary to splice studs, nest stud with 8 inch overlap and screw

studs together with screws on both flanges.

3. Where studs are installed directly to exterior masonry walls, install asphalt felt between stud and wall.

C. Install studs in direct contact with all door and window frame jambs, abutting partitions, partition corners and existing construction elements; screw fasten with screw through both flanges of studs and track, top and bottom.

D. Securely anchor studs to jamb and head anchors of steel door and window frames. Over head of frames and openings in partitions install a horizontal section of runner with a web flange bent at each end horizontally and secure to strut studs with two screws in each bent web. Provide cripple studs over wall openings.

E. Where horizontal studs are used for wall reinforcing or framing, cut pieces of stud and install horizontally between vertical studs. Cope horizontal studs to fit between flanges of vertical studs. Bend ends of horizontal studs or install clip angles in order to secure by screwing to vertical studs.

F. Furnish and install additional cross bracing and knee bracing and other framing elements, as required to assure a completely rigid assembly on metal stud partitions and furred areas, whether or not such bracing has been indicated on the Drawings, and for proper receipt of items which will be attached to partition surfaces.

## 3.4 INSTALLATION OF DEFLECTION TRACK

A. Isolate interior metal stud framing and shaft wall framing from building structure to prevent transfer of loading imposed by structural movement due to deflection.

1. Install deflection track top runner in accordance with manufacturer's instructions and as required to attain lateral support and avoid axial loading.
2. Install fire-rated deflection track top runner in accordance with manufacturer's instructions at top of fire-rated, corridor and smoke partitions.

## 3.5 INSTALLATION OF REINFORCING PLATE BLOCKING

A. Install steel reinforcing plates in partitions and furred walls for the support of wall mounted objects as follows:

1. Wherever such reinforcing plates are indicated on the drawings.
2. In locations where wall bumpers are to be installed for the protection of wall surfaces from swinging doors. (See Section 08 71 00 - DOOR HARDWARE).

B. Secure gage sheet metal reinforcing plates to steel studs with 1-1/4", Type "S" bugle head screws.

## 3.6 INSTALLATION - CEILING SUSPENSION SYSTEM

A. Coordinate layout and installation of suspension system components for suspended ceilings with other work supported by, or penetrating work of this section. Re-adjust ceiling suspension system, prior to the installation of the gypsum board and after installation of mechanical and electrical equipment and fixtures by the respective trades.

B. Install all components of concealed grid system in accordance with the manufacturer's instructions, with current ASTM C 636 requirements, with design and installation of suspended grid system safely sustaining a membrane loading of at least 7.9 pounds per square foot.

C. Install hangers not more than 24 inches on centers over locations of main tee members. Install hanger wires to hanger attachment with triple twists. Install additional wires as required to provide support for main tees, at intervals not exceeding four feet, wherever

main tees must be interrupted in order to install other work and at all other locations as may be directed by the Architect.

D. Install main tees parallel to long dimension of the area, at spacing not to exceed 48 inches on-center. Secure with hanger wire as the work progresses. Install cross tees as recommended by the system manufacturer, except spacing shall not exceed16 inches on- center.

## 3.7 INSTALLATION OF CEILING AND SOFFIT FRAMING

A. Install framing to height indicated, independent of walls, columns, and above ceiling work. Erect after Work above ceiling is complete. Coordinate the location of hangers with other work.

B. Securely anchor hangers to structural members or embed in structural slab. Space hangers to achieve deflection limits indicated.

C. Space main carrying channels at maximum 48 inch centers; not more than 4 inches from wall surfaces. Lap splice securely.

D. Securely fix furring channels or metal studs to hangers to prevent turning or twisting and to transmitted full load to hangers.

1. Place furring channels perpendicular to carrying channels at 16 inches on center, not more 1 inch from perimeter walls and rigidly secure. Lap splice securely.
2. Screw fasten metal studs perpendicular to carrying channels at 16 inches on center, not more 1 inch from perimeter walls. Lap splice securely.

E. Reinforce openings in suspension system which interrupt main carrying channels or furring channels with lateral channel bracing. Extend bracing minimum 24 inches past each opening.

## 3.8 TOLERANCES

A. Install partition and ceiling framing and furring with a maximum variation from true flatness of 1/8 inch per 10 feet, noncumulative.

**END OF SECTION**