

SECTION 09 22 00

SUPPORTS FOR PLASTER AND GYPSUM BOARD

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Steel framing for:
 - a. Interior non-load-bearing walls and ceilings.
 - b. Interior furred walls.
 - 2. Bridging, bracing, clips, accessories, fasteners and other materials.
- B. Related Sections
 - 1. Section 05 05 23 - Standards for Anchors and Fasteners.
 - 2. Section 09 29 00 - Gypsum Board.

1.02 REFERENCE STANDARDS

- A. American Welding Society:
 - 1. AWS D1.3 - Structural Welding Code - Sheet Steel.
- B. ASTM International:
 - 1. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
 - 2. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
 - 3. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.
 - 4. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot Dip Process.
 - 5. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
 - 6. ASTM C955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases.
- C. CBC - California Building Code.
- D. ICC Evaluation Service, Inc.

1.03 DEFINITIONS

- A. Prime Mill Certified Steel: Steel produced by mill specifically for making cold formed steel framing; mill test reports for mechanical and physical properties are included with shipment of the steel from the mill.
- B. Re-Rolled Steel: Steel that undergoes additional cold reduction after it has been produced by the mill; mill certificates not available.
- C. Indicated: Where requirements are referenced as "as indicated" or "indicated", the applicable requirements are to be found in the Contract Documents unless engineering responsibility is assigned in this section to, in which case the most stringent requirements found in the shop drawings and calculations prepared by the design engineer and in the Contract Documents

govern.

1.04 SYSTEM DESCRIPTION

- A. Metal studs and furring for vertical and horizontal surfaces:
 - 1. Shall provide plumb, true, straight, and rigid framing for support of collateral materials.
 - 2. Shall conform to fire-resistive ratings methods approved or accepted by CBC.
 - 3. Shall meet requirements of CBC Chapter 16A.

- B. Allowable Tolerances:
 - 1. Ceiling support system shall limit deflection of finished ceiling to less than 1/360 of span.
 - 2. For flat surfaces, the maximum deviation from true plumb or level plane, 1/8 inch in 10 feet as measured under straight edge placed at any location on surface.

- C. Interior Wall [and Ceiling] Systems:
 - 1. Design to provide for movement of components without damage, failure of joint sealant, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
 - 2. Design system to accommodate construction tolerances, deflection of building structural members, clearances of intended openings.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate details and requirements of other work that adjoins or fastens to metal studs or furring and requires backing or special support framing included in this Section.
 - 1. Coordinate installation of metal frames, anchors, blocking, electrical work, and mechanical work which is to be placed by others in or behind partition framing. Allow such items to be installed after framing is complete.
 - 2. Items requiring backing or support include, but are not necessarily limited to, casework, wall-mounted finish hardware, miscellaneous specialties, handrail brackets, and similar items.
 - 3. Obtain University's Representative approval of backing method proposed to satisfy requirements that differ from methods indicated or shown.
 - 4. Coordination with Sprayed-On Fireproofing:
 - a. Before fireproofing is applied, attach the cold formed framing members that are to be in contact with the structural members to receive fireproofing, including continuous angles, supplementary framing and track.
 - b. After fireproofing has been applied, remove only as much fireproofing as needed to complete the installation of cold formed framing without reducing thickness of fireproofing below that required to obtain fire-resistance rating indicated.
 - c. Protect remaining fireproofing from damage.

- B. Preinstallation Meeting:
 - 1. Contractor shall arrange meeting to be attended by University's Representative, Contractor and Contractor's installer, and agents of manufacturers, all of whom shall have had at least one week's advance notice.
 - 2. Convene meeting minimum 7 days prior to commencing work of this Section.
 - 3. Meeting shall be held at the job site.
 - 4. Requirements of related work, preparation, storage and handling, materials, specification requirements, coordination with related or adjoining work, work sequence, items requiring backing and support, and issues that might affect proper metal support assemblies shall be discussed.

- C. [Sequencing:]

D. [Scheduling:]

1.06 [SUSTAINABLE CHARACTERISTICS]

A. Section 01 35 63 - Sustainability Project Requirements: Requirements for sustainable design compliance.

B. Materials and Resources Characteristics:

1. [Recycled Content Materials: Furnish materials with maximum available recycled content including:

SPEC NOTE *List materials specified in this section required to have recycled content.*

a. [_____.]

2. [Regional Materials: Furnish materials extracted, processed, and manufactured within 500 miles of Project site.]

SPEC NOTE *List materials specified in this section required to be regional materials.*

a. [_____.]

1.07 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedures.

B. Product Data: List of materials and manufacturer's product information showing compliance with specified requirements, including ICC Evaluation Reports.

C. Shop Drawings: Show the following:

1. Location of framing assemblies in project.
2. Sizes and spacing of framing components.
3. Methods of fastening framing members to each other and to adjacent materials and structure.
4. Details of vertical movement devices and connection to framing and structure.
5. Bearing and anchor points and anchor details.
6. Accessory products required for complete installation.
7. Prefabricated assemblies and special details.
8. Alternative elements or components and substitutions requested by.

D. Certificates: Submit mill certificates verifying that products furnished comply with specified requirements, including:

1. Bare metal thickness, measured to 1/1000 inch.
2. Yield strength of steel.
3. Tensile strength of steel.
4. Total elongation of steel in 2 inch gage length.
5. Chemical analysis of steel.
6. Coating thickness, measured by mass or thickness.

1.08 [SUSTAINABLE DESIGN SUBMITTALS]

A. Section 01 35 63 - Sustainability Project Requirements: Requirements for sustainable design submittals.

B. Manufacturer's Certificate: Certify products meet or exceed specified sustainable design requirements.

1. Materials Resources Certificates:

- a. Certify recycled material content for recycled content products.
- b. Certify source for regional materials and distance from Project site.

- C. Product Cost Data: Submit cost of products to verify compliance with Project sustainable design requirements. Exclude cost of labor and equipment to install products.
 - 1. Provide cost data for the following products:
 - a. Products with recycled material content.
 - b. Regional products.

1.09 QUALITY ASSURANCE

- A. Installer Qualifications: Adequate number of skilled craftsmen thoroughly trained and experienced in the necessary crafts and who are familiar with the specified requirements and methods needed for proper performance of the work.
- B. Code Requirements: Comply with pertinent codes and regulations of agencies having jurisdiction.

1.10 DELIVERY, STORAGE AND HANDLING

- A. Deliver and store products in their original unopened packages protected from damage. Do not store material directly on grade. Provide support so that material is not in direct contact with ground.
- B. Notify manufacturer of damaged materials received prior to installing.
- C. Provide adequate storage area to protect materials from damage by other installers.
- D. Provide adequate support to prevent bowing of framing members prior to installation.
- E. Store framing members at slight angle to allow drainage of moisture.
- F. Inspect material before installing to determine its suitability for the work.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers:
 - 1. California Expanded Metal Products Co. (CEMCO),
 - 2. Clark Western Building Systems,
 - 3. Dietrich Industries, Inc.,
 - 4. or equal.

2.02 MATERIALS

- A. Metal Studs - Manufactured from Prime Mill Certified Steel; re-rolled steel without mill certificates is not acceptable.
 - 1. Non-Load-Bearing Members: Comply with ASTM C645.
 - 2. Provide galvanized framing members.
 - 3. Galvanized Members: Manufactured from ASTM A653/A653M steel sheet.
 - a. Galvanizing Coating: G60.
 - 4. Nominal 20 Gage Members: Color code white.
 - a. Design Thickness: 0.0346 inch.
 - b. Minimum Thickness (Delivered): 0.0329 inch.
 - c. Galvanized Members: SQ Grade 33.
 - 5. Nominal 18 Gage Members: Color code yellow.

- a. Design Thickness: 0.0451 inch.
 - b. Minimum Thickness (Delivered): 0.0428 inch.
 - c. Galvanized Members: SQ Grade 33.
 6. Nominal 16 Gage Members: Color code green.
 - a. Design Thickness: 0.0566 inch.
 - b. Minimum Thickness (Delivered): 0.0538 inch.
 - c. Galvanized Members: SQ Grade 50.
 7. Nominal 14 Gage Members: Color code orange.
 - a. Design Thickness: 0.0713 inch.
 - b. Minimum Thickness (Delivered): 0.0677 inch.
 - c. Galvanized Members: SQ Grade 50.
 8. Nominal 12 Gage Members: Color code red.
 - a. Design Thickness: 0.0966 inch.
 - b. Minimum Thickness (Delivered): 0.1017 inch.
 - c. Galvanized Members: SQ Grade 50.
- B. Runner Track: Comply with gauges, configurations, sizes, and physical properties indicated on Drawings. Material to meet requirements of A653/A653M and with G-60 galvanized coating.
- C. Deflection Tracks / Compensation Channels / Slotted Tracks:
1. System 1 (Slip Track):
 - a. Description: Deep leg track, formed from 16 gauge steel with minimum 2-1/2 inch flanges with 1-1/2 slots at 1 inch on center and meeting requirements of ASTM A653/A653M, Grade 50 with a minimum yield point of 50,000 psi and with G-60 galvanized coating.
 - b. Product: Sliptrack Systems, Inc.'s "Slp-Trk"; or equal.
 2. System 2 (Fire Trak):
 - a. Description: 16 gauge steel minimum. Ceiling runner track designed to allow heads-of-walls to compress or extend with movement of structure above while maintaining fire rating of wall assembly. Comply with requirements of ASTM C645, of thickness indicated for studs and of width to accommodate depth of studs indicated with flanges offset to accommodate gypsum board thickness.
 - b. Product: Fire Trak Corp.'s "Fire Trak Shadowline and Cavity Shadowline"; or equal.
- D. Channels:
1. Typical for Framing, Furring, and Carrying Channels: Cold-rolled steel coated with rust-inhibitive material.
 2. Main Carrying Channels at Gypsum Wallboard Suspended Ceiling Only: 1-1/2 inch hot-rolled steel carrying channels coated with rust-inhibitive material or galvanized and weighing 1.12 pounds per lineal foot.
 3. Furring (Hat) Channels, Screw-on Type: 7/8 inch formed from 20 gauge galvanized steel with either plain or perforated flanges to receive screws.
- E. Adjustable Wall Furring Bracket: 20 gauge galvanized steel with serrated edges.
- F. Partition Bridging: Cold-rolled channel or stud manufacturer's standard bridging for partition stud.
- G. Backing Plates: 1/4 inch, 12 gauge, 16 gauge, 18 gauge, and 25 gauge unpunched steel studs, flat steel plates, and bent plates, profiles as shown. Steel to meet requirements of ASTM A653/A653M and with G-60 galvanized coating
- H. Fasteners:
1. Sheet Metal Screws: Self-drilling and self-tapping, flat pan head screws, No. 8 unless otherwise noted. ITW Buildex's "Hi-Lo and S-12 Fasteners"; The Rawlplug Co., Inc.'s

- “Rawl Self-Drilling Screws”; United States Gypsum Co.’s “USG Screws, Type S-12 Pan Head”; or equal.
2. Concrete Screws: [Comply with requirements indicated on the Drawings.]
 - a. Description: Heat-treated screws with unique Hi-Lo thread design that cuts threads in pre-drilled holes in concrete.
 - b. Product: ITW Buildex’s “Tapcon Anchors”; The Rawlplug Co., Inc.’s “Tapcon Fasteners”; United States Gypsum Co.’s “HWH Tapcon Anchors”; or equal.
 3. Powder Driven Fasteners: Meet requirements of Section 05 05 23- Metal Fasteners.
 4. Pin and Clip Anchors for Vertical Hanger Wires at Gypsum Board Ceiling Only: Hilti Inc.’s “No. CC27DN27P8T Suspended Ceiling Clip”; ITW Red Head’s “L651 Ceiling Clip and L684, 1-1/2 Inch Drive Pin”; or equal.
 5. Expansion Anchors: Meet requirements of Section 05 05 23- Metal Fasteners.
 6. Expansion Eye Anchors: [ITW Red Head’s “Dynabolt, Tie Wire TW-1614”; or equal.] [Allowable capacity shall not exceed 80 percent of the allowable load listed in the ICC Research Committee Recommendation for the specific anchor.
 7. Machine Bolts, Nuts, and Washers: Low carbon steel standard fasteners, externally and internally threaded, ASTM A307; malleable washers.
 8. [Screw Eye Bolt:]
 - a. Description: Seamless eye, galvanized, 1/4 inch diameter by 3-3/4 inches overall length.
 - b. Product: Gardiner Mfg. Co.’s “No. 511 Screw Eye Bolts with Shoulder”; or equal.
- I. Hanger, Bracing, and Tie Wires: ASTM A641/A641M, Class 1, soft temper. Minimum gauges: Hangers, 8; Diagonal bracing wire, 12; Single-strand tie wire, 16; Double-strand tie wire, 18.
- J. Welding Rods: Complying with AWS D1.3, and as indicated on the drawings.
 1. Touch up welds on galvanized surfaces with zinc-rich paint.
 2. Do not weld steel less than 0.0428 inch in thickness.
- K. Grout: Good grade of commercial non-shrink cement grout; apply to bearing surfaces to ensure full contact of bearing flanges or track webs on supporting concrete or masonry construction.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas to receive metal support systems and verify that:
1. Supporting substrates and abutting framing are in compliance with requirements, including installation tolerances and other conditions affecting performance of framing members.
 2. Bearing surfaces and supporting structures are ready to receive the work.
 3. Work by other trades is complete and accurate to the point where installation of the framing can begin.
 4. Field measurements are as indicated in the drawings. Notify in writing of any deviation between the drawings and actual conditions prior to starting work.
 5. Conditions are ready to receive work.
 6. Rough-in utilities are in proper location.
 7. Layout of hanger wires will not interfere with other work.
- B. Immediately notify of any discrepancies in the work, on Drawings or in the specification that will interfere with the work.
- C. Correct conditions detrimental to the timely and proper completion of the work.

- D. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 ERECTION - GENERAL

- A. Install in accordance with requirements of the Contract Documents, the manufacturer's instructions and recommendations, and reviewed shop drawings.
- B. Install framing to support the design loads and to accommodate movement of the primary building structure and clearances of intended openings.
- C. Framing may be shop or field fabricated; fabricate prefabricated assemblies square, with framing members attached in manner to prevent racking and minimize distortion while lifting and transporting.
- D. Install framing and accessories plumb, square, true to line, and with connections securely fastened, in accordance with the Contract Documents, reviewed shop drawings, and ASTM C754.
- E. Do not splice framing members, except track and studs in non-axial-load bearing walls.
- F. Cut framing members by sawing or shearing; do not torch cut.
 - 1. Exception: plasma cutting shall be permitted.
 - 2. Cut framing members square for attachment to perpendicular members.
- G. Fasten framing members by welding or screws. Wire tying of framing members is not permitted.
- H. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting weld work.
 - 1. Do not weld steel less than 0.0428 inch in thickness.
 - 2. Touch up welds on galvanized surfaces with zinc-rich paint.
- I. Locate mechanical fasteners and install according to the Contract Documents, reviewed shop drawings, building code requirements, or manufacturer's recommendations, whichever is more stringent.
 - 1. Screws: Penetrate joined members by not less than three screw threads.
 - 2. Bolted Connections: Drill holes maximum of 1/16 inch larger than specified bolt size; torch cutting of holes is not permitted.
- J. Anchors to Concrete: Installed after full compressive strength of concrete has been achieved.
- K. Install insulation in spaces inside built-up exterior framing members that will be inaccessible upon completion of framing work, including headers, sills, boxed joists, and double studs.
- L. Provide temporary bracing and leave in place until framing is permanently stabilized; determination of all bracing requirements, location of bracing, design and installation, is responsibility of Contractor.
- M. Do not bridge building expansion joints and control joints with framing members; frame both sides of joints independently.
- N. Install miscellaneous framing and connections, including supplementary framing, web stiffeners, closure pieces, clip angles, hold-down angles, stud girts, anchors and fasteners to provide complete and proper framing system.

- O. Installation Tolerances:
 - 1. Variation From Plumb, Level, and True to Line: 1/8 inch in 10 feet, maximum.
 - 2. Variation From Plan Location of Individual Framing Members: Plus/minus 1/8 inch, with cumulative error not more than minimum fastening requirements of sheathing or other finish materials.

3.03 STUD WALLS - GENERAL

- A. Stud Spacing: 16 inches on center.
- B. Install continuous top and bottom track of size to accommodate studs.
- C. Align tracks accurately and securely anchor at corners and ends and at spacing required by the design, but not greater than the following:
 - 1. Using Power Driven Fasteners: At 24 inches on center.
 - 2. Using Cast-In-Place or Expansion Anchors: At 32 inches on center.
- D. Splice abutting lengths of track or butt weld or securely attach each length to supporting structure as indicated.
- E. Install studs with open side facing in same direction, plumb, and aligned in accordance with ASTM C754.
- F. Wall Openings Larger Than Stud Spacing: Frame with headers and supporting studs as indicated on Drawings.
 - 1. Install headers so that they lie entirely within the width of the wall.
 - 2. Install king studs, jack studs and cripple studs below window sills, above window and door heads, and elsewhere as necessary to support openings, securely attached to adjacent supporting members.
 - 3. Design studs above openings to support all imposed loads.
 - 4. Do not use wall track to support any loads unless specifically designed for that purpose.
- G. Wall Openings Not More Than Stud Spacing in Width: Frame top and bottom with stud headers.

3.04 INTERIOR NON-LOAD-BEARING WALLS AND PARTITIONS

- A. Install studs securely attached to flanges of top and bottom tracks at corners, openings and partition intersections.
- B. Structural Movement Isolation: Isolate wall framing from building structure to prevent transfer of vertical loads while providing lateral support, using one of the following methods attached to continuous angles or supplementary framing anchored to the building structure:
 - 1. System 1 (Slip Track).
 - 2. System 2 (Fire Trak).

3.05 SUSPENDED CEILING

- A. Secure suspended ceiling to structural framing using hangers, 1-1/2 inch hot rolled carrying channels, and furring channels.
- B. Interference:
 - 1. Where wide air conditioning ducts or similar obstructions above gypsum board ceiling interfere with suspension hanger wires, provide independent framing below obstruction to support the ceiling as an obligation under this section.

2. Support framing from floor structure above. Do not attach framing to ductwork.
- C. Do not use Drop-In type expansion anchors for installing suspended ceiling.
- D. Hanger Wires:
 1. Space hanger wires maximum 4 feet on center along carrying channels spaced maximum 4 feet on center.
 2. Plumb hanger wires. Add counterbrace wires when hanger wires are more than 1 in 6 out of plumb.
 3. Fasten hanger wires with not less than three tight turns within a distance of 1-1/2 inches for vertical wires and four tight turns within a distance of 1-1/2 inches for diagonal wires. Install hanger or diagonal wire anchors to the structure in such a manner that the direction of the wire aligns as closely as possible with the direction of the forces acting on the wire.
 4. Provide hanger wires to clear furred-area interferences with suspension system. Do not penetrate ductwork with hanger wires.
 5. Separate all ceiling hanging and diagonal wires at least 6 inches from all unbraced ducts, pipes, conduit, and similar items. It is acceptable to attach lightweight items, such as single electrical conduit not exceeding 3/4 inch nominal diameter, to hanger wires using connectors acceptable to [University's Representative][University's Representative and the Office of Statewide Health Planning and Development].
 6. At control and expansion joints, provide extra hangers as required to support discontinuous runners.
 7. Splices will not be permitted in any hanger wires unless specially accepted by to [University's Representative t][University's Representative and the Office of Statewide Health Planning and Development].
- E. Carrying Channels:
 1. For Gypsum Board Application: Space carrying channels at maximum 4 feet on center and not more than 6 inches from perimeter walls.
 2. For Metal Lath and Plaster Application: Space carrying channels at maximum 3 feet on center and not more than 6 inches from perimeter walls.
 3. Where carrying channels are spliced, lap splices minimum 12 inches with flanges of channels interlocked and securely tied near each end of splice with wire looped twice around channel.
- F. Gypsum Board Furring Channels:
 1. Place perpendicular to carrying at 16 inches on center, not more than 2 inches from perimeter walls.
 2. Lap splices minimum 8 inches.
- G. Provide additional metal framing to clear interfering elements in furred area.
- H. Completely frame openings with channels. Reinforce openings in suspension systems that interrupt main carrying channels or furring channels with lateral channel bracing. Extend bracing minimum 24 inches past each end of opening.
- I. Entire suspension system, including all intersections, splices, and perimeter joints, shall be capable of meeting seismic requirements of applicable code requirements.

3.06 PROTECTION OF INSTALLED WORK

- A. Protect installed Work under provisions of Section 01 76 00 - Protecting Installed Work.
- B. Protect installed products until completion of project.

- C. Replace all damaged products.

END OF SECTION