

SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Provide gypsum board assemblies as shown and specified. Work includes:
 - 1. Walls, partitions, and soffits, including metal framing systems.
 - 2. Acoustical type sound attenuation insulation.
 - 3. Accessories, trim, grommets, and joint finishing.
 - 4. Solid grouting of head and jamb sections at steel door frames in drywall partitions.
- B. Related Sections:
 - 1. Section 09 90 00 Painting and Coating: Field-applied paint finishes.

1.2 REFERENCES

- A. Reference standards:
 - 1. ASTM:
 - a. ASTM A641/A641M-97 "Zinc-Coated (Galvanized) Carbon Steel Wire."
 - b. ASTM C1396/C1396M-04 "Gypsum Board."
 - c. ASTM C475-94 "Joint Treatment Materials for Gypsum Wallboard Construction."
 - d. ASTM C645-04 "Non-Load (Axial) Bearing Steel Studs, Runners (Track) and Rigid Furring Channels for Screw Application of Gypsum Board."
 - e. ASTM C665-02 "Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing."
 - f. ASTM C754-00 "Installation of Steel Framing Members to Receive Screw- Attached Gypsum Wallboard, Backing Boards or Water-Resistant Backing Board."
 - g. ASTM C840-01 "Specification for Application and Finishing of Gypsum Board."
 - h. ASTM C1002-01 "Steel Drill Screws for the Application of Gypsum Board."
 - i. ASTM E119-04 "Fire Tests of Building Construction and Materials."
 - 2. Gypsum Association (GA):
 - a. GA 214-96 "Levels of Gypsum Board Finish."
 - b. GA 216-04 "Application and Finishing of Gypsum Board."
 - c. GA 226-96 "Application of Gypsum Board to Form Curved Surfaces."
 - d. GA 600--03 "Fire Resistance Design Manual."
 - 3. United States Gypsum (USG):
 - a. USG "Gypsum Construction Handbook – 2000 Centennial Edition"
 - b. USG "SA923 Drywall/Steel Framed Systems"

1.3 SYSTEM DESCRIPTION

- A. Performance requirements: Select steel studs in accordance with the manufacturer's standard limiting height tables and within following design deflection limits:
 - 1. Lateral Loading: 5 psf.
 - 2. Deflection Limit: L/240 of partition height.

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1.4 SUBMITTALS

- A. Submit manufacturer's product data and installation instructions for each gypsum board system component, including the following:

1.5 QUALITY ASSURANCE

- A. Gypsum board system standards:
 - 1. Materials: Comply with Gypsum Association GA-201 "Using Gypsum Board for Walls and Ceilings."
 - 2. Application and finishing: Comply with Gypsum Association GA-216 "Recommended Specifications for Application and Finishing of Gypsum Board" and GA 214 "Levels of Gypsum Board Finish."
 - 3. Metal framing systems: Comply with ASTM C754.
- B. Single Source Responsibility: Obtain each type of gypsum board and related joint treatment materials from a single manufacturer.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.
- C. Handle gypsum boards to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.

1.7 PROJECT CONDITIONS

- A. Environmental Conditions, General: Establish and maintain environmental conditions for application and finishing gypsum board to comply with ASTM C 840 and with gypsum board manufacturer's recommendations.
- B. Minimum Room Temperatures: For non-adhesive attachment of gypsum board to framing, maintain not less than 40 degrees F. For adhesive attachment and finishing of gypsum board maintain not less than 50 degrees F for 48 hours before application and continuously thereafter until drying is complete.
- C. Ventilate building spaces to remove water not required for drying joint treatment materials. Avoid drafts during dry, hot weather to prevent materials from drying too rapidly.
- D. Provide adequate lighting during installation and joint finishing treatment.
- E. Protect adjoining surfaces against damage and soiling.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Gypsum board and accessories manufacturer:
 - 1. United States Gypsum Co. (USG), or equal by Georgia-Pacific Corp., or Gold Bond Building Products Div. National Gypsum Co.

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- B. Metal framing systems manufacturer:
 - 1. Dietrich Industries, Inc. or equal by Clark Steel Framing, Inc. or Gold Bond Building Products Div. National Gypsum Co.

2.2 MATERIALS AND COMPONENTS

- A. Provide components that comply with ASTM C 754 and ASTM C 645 for materials and sizes, unless otherwise indicated.
- B. Wall and partition metal framing and support materials:
 - 1. **Studs: ASTM C645, galvanized steel, C-shaped, sizes indicated.**
 - a. **Provide minimum ST20, 20 gage steel stud framing.**
 - 2. Runners: Match studs, type recommended by stud manufacturer for floor and ceiling support of studs, and for vertical abutment of board work at other work.
 - a. **Flexible ceiling runners: Provide flexible ceiling runners for full height metal stud framed partitions continuous from floor to underside of structural members or decking above. Delta Star, Inc. or an approved equal 20 gage galvanized steel flexible ceiling runner track.**
 - b. Deflection Track: Superior Flex Track System (SFT) by Delta Star, Inc. or SLP-TRK by Metal-Lite, Inc. Provide manufacturer's standard top runner 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.
 - c. Deflection and Firestop Track: "Fire Trak" by Fire Trak Corp. top runner designed to allow partition heads to expand and contract with movement of structure above while maintaining continuity of the assembly. Comply with requirements of ASTM C 645 except configuration, of thickness indicated for studs and width to accommodate depth of studs indicated with flanges offset at midpoint to accommodate gypsum board thickness.
 - 3. **Furring members: ASTM C645, 20 gage galvanized steel, screw type, hat- shaped.**
 - 4. Fasteners for furring members: Type and size recommended by furring manufacturer for substrate and application indicated.
- C. Gypsum board panels: United States Gypsum USG tapered edge face panels, 48" wide, in maximum lengths available to minimize end joint conditions, 5/8" thick.
 - 1. Standard panels: ASTM C1396 Sheetrock Regular panels.
 - 2. Fire-rated panels: ASTM C1396 Sheetrock Firecode panels.
 - 3. Moisture-resistant panels: ASTM C1396 Sheetrock W/R panels.
- D. Fasteners: Comply with GA 216. ASTM C1002, USG Type "S" bugle head screws for metal framing, USG Type "W" bugle head screws for wood framing, manufacturer's recommended length for panel thickness indicated.
- E. Trim: Galvanized steel with knurled and perforated flanges. USG. Dur-A-Bead corner bead, No. 200-A, B or C metal trim, No. 093 Control Joint. 400 Series semi-finishing J-type trim not permitted.
- F. Joint treatment: Comply with ASTM C475. Provide USG Sheetrock Joint Treatment System, utilizing joint tape and ready-mixed vinyl type compound for tape bedding and topping.
 - 1. Water-resistant panels: USG Durabond Setting-Type Joint Compound for treatment of joints, fasteners, and cut edges of water- resistant panels.

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2.3 MISCELLANEOUS MATERIALS

- A. General: Provide auxiliary materials for gypsum board construction which comply with referenced standards and the recommendations of the manufacturer of the gypsum board.
- B. Horizontal Banding: 3 inch wide strips of gypsum board.
- C. Metal Wire Banding: 18 gage, non-corrosive wire.
- D. Horizontal Stiffener Cross Bracing: 2-1/2 inch, 25 gage steel channel studs.
- E. Sound attenuation insulation: USG Thermafiber mineral fiber insulating batts and blankets complying with ASTM C 665 for Type I (blankets without membrane facing). Manufacturer's standard lengths and widths as required to coordinate with spaces insulated.
 - 1. Partitions: Unfaced, semi-rigid batts, 3" thick, 3.0 pcf density.
 - 2. Ceilings: Unfaced, insulating blankets, 3-1/2" thick.
- F. Grout: ASTM C 475, setting-type joint compound of type recommended for grouting hollow metal door frames.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and installation conditions. Do not proceed with gypsum board work until unsatisfactory conditions have been corrected.
- B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.

3.2 METAL SUPPORT SYSTEMS INSTALLATION

- A. Install metal wall and partition framing and ceiling support systems in accordance with USG Bulletin SA 923, current edition, and complying with ASTM C754.
- B. Wall and partition framing:
 - 1. Install steel studs at maximum 16" on center, except as otherwise indicated, with bottom and top runner tracks anchored to substrates. Provide flexible ceiling runner tracks at full height partitions. Isolate framing systems from building structure to prevent transfer of loading and deflections into the metal framing system.
 - 2. Terminate partition stud system at ceilings, except where indicated to be extended to structural support or substrate above.
 - 3. Frame openings more than 2'-0" wide with two 20 gage studs at each jamb, secured to frames and to other studs in the manner recommended by the manufacturer. Install runner channel on frame head and install jack studs (spaced same as full-height studs) above opening. Install additional stiffeners 6" above opening, extending two regular stud spaces beyond jambs on each side.
 - 4. Coordinate the installation of supplementary framing, bracing, and blocking, provided under Section 06 10 00 Rough Carpentry work, to support shelving, cabinets, toilet accessories, handrail brackets, and similar work which cannot be adequately supported by gypsum board alone.
 - 5. Provide metal framed, braced soffit systems where indicated.

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3.3 GYPSUM BOARD INSTALLATION

- A. Gypsum Board Application and Finishing Standard: Install and finish gypsum board to comply with ASTM C 840, Gypsum Association GA 216 "Recommended Specifications for the Application and Finishing of Gypsum Board and GA 226-96 "Application of Gypsum Board to Form Curved Surfaces." Screw-fasten all gypsum board panels.
- B. Install sound attenuation blankets where indicated, before gypsum board unless readily installed after board has been installed. Provide horizontal banding at interior and exterior metal stud walls that have insulation between studs with gypsum board on only one or neither side. Install banding 6 inches to 12 inches from ends of batts (including cut ends) and 3 feet on center between. Wrap banding around each stud and stretch taut. Coordinate with insulation work.
- C. Locate exposed gypsum board end-butt joints as far from center of walls and ceilings as possible and stagger not less than 1'-0" in alternate courses of board.
- D. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16" open space between boards. Do not force into place.
- E. Locate either edges or end joints over supports. Position boards so that both tapered edge joints abut. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.
- F. Attach gypsum board to framing and blocking as required for additional support at openings and cutouts.
- G. Grout hollow metal door frames. Apply grout full at head and each jamb.
- H. Floating construction: Install gypsum board with "floating" internal corner construction, unless isolation of the intersecting board is indicated.
- I. In addition to compliance with the standards, comply with specific requirements indicated for each type or arrangement of gypsum board system shown. Space fasteners in accordance with manufacturer's recommendations and complying with referenced standards.
 - 1. Single-layer walls and partitions: Apply sheets horizontally or vertically. Provide maximum sheet lengths to minimize end joints with edges or ends over supports.
 - 2. Fire-rated assemblies: Provide materials and installation identical to tested and listed assemblies.
 - 3. Cut and install panels to eliminate vertical joints in corners of door frames to ceiling.
 - 4. Make cutouts to fit within wall plate, register, and grille flanges. All cutouts made by knife or saw.
 - 5. Make angles and corners clean, true, plumb, and square; walls plumb, flat, and straight and ceilings flat and level.

3.4 TRIM AND ACCESSORIES

- A. Install metal corner beads at external corners of gypsum board work. Use longest practical lengths.
- B. Install metal edge trim wherever edge of gypsum board would be exposed or semi-exposed.
 - 1. J-type, semi-finishing metal trim not permitted.
 - 2. Provide L-type trim where work is abutted to other work and Kerf-type where work is kerfed to receive kerf leg.

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3. Provide U-type trim where edge is exposed, revealed, gasketed, or sealant filled, including expansion joints.

3.5 CONTROL JOINTS

- A. Comply with USG Bulletin SA923 "Good Design Practice" recommendations and as specified.
- B. Provide control joints or other means to isolate gypsum panel surfaces at all locations indicated on the drawings, and when not indicated at the following conditions:
 1. Partition abuts a structural member (except floor) or dissimilar wall or ceiling.
 2. Ceiling abuts a structural member, dissimilar wall or partition, or other vertical penetration.
 3. Construction changes within the plane of the partition or ceiling.
 4. Partition or furring run exceeds 30'-0".
 5. Ceiling dimensions exceed 50'-0" in either direction with perimeter relief; or 30'-0" without relief.
 6. Expansion or control joints occur in the base wall construction or in the building structure.
 7. Control joint locations shall be visually acceptable to the Architect.
- C. Form control joints with double studs and a space between board edges to receive control joint trim. Fasten control joint trim to gypsum panels, full length of trim at both sides of joint.

3.6 FINISHING

- A. Comply with manufacturer's instructions for mixing, handling, and application of materials. Apply treatment at joints both directions, at flanges of trim accessories, penetrations of gypsum board (electrical boxes, piping, and similar work), fastener heads, surface defects, and elsewhere as indicated. Apply in manner which will result in each of these items being concealed when applied decoration has been completed.
 1. Apply joint tape at joints between gypsum boards, except where trim accessories are indicated.
 2. Do not use topping compound for bedding joint tape.
 3. Do not use bedding compound for the final coat of joint treatment, unless specifically recommended by the manufacturer for that use.
- B. Interior Finish: Level 4.
 1. Locations: Typical for all walls and ceilings unless otherwise indicated
 2. Finish interior gypsum board by applying the following joint compounds in three coats (not including prefill of openings in base), and sand between coats and after last coat:
 3. Embedding and First Coat: Ready-mix or job mixed setting type joint or taping compound.
 4. Fill (Second) Coat: Ready-mix or job mixed topping compound.
 5. Finish (Third) Coat: Ready-mix or job mixed topping compound.
- C. Interior Concealed Gypsum Board Construction: Level 3 Partial Finishing.
 1. Finish concealed gypsum board construction that requires finishing to achieve fire-resistance rating, sound rating or to act as air or smoke barrier the same as exposed gypsum board construction, except the third coat and sanding can be omitted.
 2. Walls above acoustical ceiling systems: Tape and fill joints with two coats of joint compound, sanding not required.

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3. Moisture Resistant Gypsum Board for Ceramic Tile: Finish joints between moisture-resistant gypsum board with tape and setting-type joint compound to comply with gypsum board manufacturer's recommendations and installation standards referenced in Section 09300, Tile.

3.7 PROTECTION

- A. Provide final protection and maintain conditions, in a manner that ensures gypsum board construction will be without damage or deterioration at time of Substantial Completion.

END OF SECTION 09 21 16

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