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**SECTION 09 2900 - GYPSUM BOARD**

Maintain Section format, including the UH master spec designation and version date in bold in the center columns of the header and footer. Complete the header and footer with Project information.

Edit and finalize this Section, where prompted by Editor's notes, to suit Project specific requirements. Make selections for the Project at text identified in bold.

Revise this Section by deleting and inserting text to meet Project-specific requirements.

This Section uses the term "Architect." Change this term to match that used to identify the design professional as defined in the General and Supplementary Conditions.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

Delete hidden text after this Section has been edited for the Project.

**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.
- B. The Contractor's attention is specifically directed, but not limited, to the following documents for additional requirements:
  - 1. The current version of the *Uniform General Conditions for Construction Contracts, State of Texas*, available on the web site of the Texas Facilities Commission.
  - 2. The University of Houston's *Supplemental General Conditions and Special Conditions for Construction*.

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Interior gypsum board.
  - 2. Exterior gypsum board for ceilings and soffits.
  - 3. Abuse Resistant Gypsum Board where indicated on Drawings

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1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

Retain paragraph B and associated subparagraphs below if Project is to be LEED v4 certified.

B. LEED Action Submittals (Projects authorized for LEED certification only):

1. Building Product Disclosure and Optimization:

a. Leadership Extraction Practices

- 1) Extended Producer Responsibility (EPR): Submit documentation indicating that manufacturers have a take back or recycling program for the product purchased.
- 2) Provide details of bio-based material per Sustainable Agriculture Network's Sustainable Agriculture Standard or USDA certified bio-based product. Indicate cost, location of extraction, manufacture, and purchase of material.
- 3) Recycled Content: For products having recycled content, indicate percentages by weight of post-consumer and pre-consumer recycled content.
  - a) Include statement indicating costs for each product having recycled content.

b. Sourcing of Raw Materials: For products that are required to comply with requirements for regional materials, indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material.

- 1) Include statement indicating distance to Project, cost for each regional material and the fraction by weight that is considered regional.
- 2) Product Certificates: For materials manufactured within 100 miles of Project, indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include distance to Project and cost for each raw material.

2. Indoor Environmental Quality, Low Emitting Materials: Building Products must be tested and compliant with the California Department of Public-Health (CDPH) Standard Method V1.1-2010, using the applicable exposure scenario.

- a. For paints, and coatings, wet applied, include printed statement of VOC content, showing compliance with the applicable VOC limits of the California Air Resources Board (CARB) 2007, Suggested Control Measure for Architectural Coatings or the South Coast Air Quality Management District (SCAQMD) Rule 113-2011.
- b. Adhesives and Sealants: For wet applied on site products, submit printed statement showing compliance with the applicable chemical content requirements of SCAQMD Rule 1168, effective July 1, 2005 and rule amendment date of January 7, 2005.
  - 1) Product Data: For installation adhesives, indicating VOC content.

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- c. Alternative tests for VOC above include ASTM D2369-10; ISO 11890 part 1; ASTM D6886-03; or ISO 11890-2.
  - d. Methylene Chloride and perchloroethylene may not be added to paints, coating, adhesive or sealants.
  - e. Provide General Emissions Evaluation certificates for adhesives, sealants showing compliance with California Department of Public Health v1.1 emissions testing or equivalent.
3. Laboratory Test Reports: For installation adhesives indicating compliance with requirements for low-emitting materials.
- C. Samples: For the following products:
1. Trim Accessories: Full-size Sample in 12-inch- long length for each trim accessory indicated.

### 1.4 INFORMATIONAL SUBMITTALS

Retain paragraph A and associated subparagraphs below if Project is to be LEED v4 certified.

#### A. LEED Informational Submittals:

1. Building Product Disclosure and Optimization - Sourcing of Raw Materials:
  - a. Raw Material Sources and Extraction Reporting: Submit Raw materials supplier corporate Sustainability Reports (CSRs); documenting responsible extraction; including extraction locations, long term ecologically responsible land use, commitment to reducing environmental harms from extraction and manufacturing processes, and a commitment to meeting applicable standards or programs that address responsible sourcing criteria
    - 1) Submit manufacturers' self-declared reports
    - 2) Submit third party verified corporate sustainability reports (CSR) using one of the following frameworks"
      - a) Global Reporting Initiative (GRI) Sustainability Report
      - b) Organization for Economic Co-operation and Development (OECD)
      - c) Guidelines for Multinational Enterprises
      - d) UN Global Compact
      - e) ISO 26000
      - f) USGBC approved program.
2. Building Product Disclosure and Optimization - Material Ingredients
  - a. Material Ingredient Optimization: Submit manufacturer's Environmental Product Declaration (EPD) and at least one of the following:
    - 1) GreenScreen V1.2 Benchmark: Third party report prepared by a licensed GreenScreen List Translator, or a full GreenScreen Assessment.

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- 2) Cradle to Cradle: Manufacturer's published literature for the product bearing the Cradle to Cradle logo.
  - 3) International Alternative Compliance Path - REACH Optimization
  - 4) Declare: Manufacturer's completed Product Declaration Form
  - 5) Other programs approved by USGBC
- b. Product Manufacturer Supply Chain Optimization: Submit documentation from manufacturers for products that go beyond material ingredient optimization as follows:
- 1) Are sourced from product manufacturers who engage in validated and robust safety, health, hazard, and risk programs which at a minimum document at least 99 percent (by weight) of the ingredients used to make the building product or building material, and
  - 2) Are sourced from product manufacturers with independent third party verification of their supply chain that at a minimum verifies:
    - a) Processes are in place to communicate and transparently prioritize chemical ingredients along the supply chain according to available hazard, exposure and use information to identify those that require more detailed evaluation
    - b) Processes are in place to identify, document, and communicate information on health, safety and environmental characteristics of chemical ingredients
    - c) Processes are in place to implement measures to manage the health, safety and environmental hazard and risk of chemical ingredients
    - d) Processes are in place to optimize health, safety and environmental impacts when designing and improving chemical ingredients
    - e) Processes are in place to communicate, receive and evaluate chemical ingredient safety and stewardship information along the supply chain
    - f) Safety and stewardship information about the chemical ingredients is publicly available from all points along the supply chain

### 1.5 QUALITY ASSURANCE

- A. Mockups: Before beginning gypsum board installation, install mockups of at least 100 square feet in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Install mockups for the following:
    - a. Each level of gypsum board finish indicated for use in exposed locations.
  2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
  3. Simulate finished lighting conditions for review of mockups.

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4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

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 weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
  1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For 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.
- C. Low-Emitting Materials: For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

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2.2 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following :

- 1. Georgia-Pacific Gypsum LLC.
- 2. National Gypsum Company.
- 3. USG Corporation.
- 4. Substitutions: See Section 01 2500 "Substitution Procedures."

- B. Flexible Gypsum Board: ASTM C 1396/C 1396M. Manufactured to bend to fit radii and to be more flexible than standard regular-type gypsum board of same thickness.

- 1. Thickness: 1/4 inch.
- 2. Long Edges: Tapered.
- 3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

- C. Gypsum Ceiling Board: ASTM C 1396/C 1396M.

- 1. Thickness: 1/2 inch.
- 2. Long Edges: Tapered.
- 3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

- D. Abuse-Resistant Gypsum Board: ASTM C 1629/C 1629M, Level 3.

- 1. Core: 5/8 inch, Type X.
- 2. Long Edges: Tapered.
- 3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

- E. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.

- 1. Core: 5/8 inch, regular type or 5/8 inch, Type X.
- 2. Long Edges: Tapered.
- 3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.4 SPECIALTY GYPSUM BOARD

- A. Gypsum Board, Type C: ASTM C 1396/C 1396M. Manufactured to have increased fire-resistive capability.

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1. Products: Subject to compliance with requirements, provide one of the following :
  - a. Georgia-Pacific Gypsum LLC; Fireguard C.
  - b. National Gypsum Company; Gold Bond Fire-Shield C.
  - c. USG Corporation; Firecode C Core.
  - d. Substitutions: See Section 01 2500 "Substitution Procedures."

B. Glass-Mat Interior Gypsum Board: ASTM C 1658/C 1658M. With fiberglass mat laminated to both sides. Specifically designed for interior use.

1. Products: Subject to compliance with requirements, provide one of the following :
  - a. Georgia-Pacific Gypsum LLC; DensArmour Plus.
  - b. National Gypsum Company; Gold Bond e2XP Interior Extreme.
  - c. Temple-Inland Inc; GreenGlass Interior Gypsum Board.
  - d. Substitutions: see Section 01 25 00 "Substitution Procedures."
2. Core: As indicated.
3. Long Edges: Tapered.
4. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D3274.

C. Acoustically Enhanced Gypsum Board: ASTM C 1396/C 1396M. Multilayer products constructed of two layers of gypsum boards sandwiching a viscoelastic sound-absorbing polymer core.

1. Products: Subject to compliance with requirements, provide one of the following:
  - a. National Gypsum Company; Sound Break.
  - b. Quiet Solution, Quiet Rock.
  - c. Substitutions: See Section 01 2500 "Substitution Procedures."
2. Core: As indicated.
3. Long Edges: Tapered.

**2.5 EXTERIOR GYPSUM BOARD FOR CEILINGS AND SOFFITS**

A. Exterior Gypsum Soffit Board: ASTM C 1396/C 1396M, with manufacturer's standard edges.

1. Products: Subject to compliance with requirements, provide one of the following:
  - a. Georgia-Pacific Gypsum LLC; ToughRock Soffit Board.
  - b. National Gypsum Company; Gold Bond Brand Exterior Soffit Board.
  - c. USG Corporation; Sheetrock Exterior Gypsum Ceiling Board.
  - d. Substitutions: See Section 01 2500 "Substitution Procedures."
2. Core: As indicated.

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- B. Glass-Mat Gypsum Sheathing Board: ASTM C 1177/C 1177M, with fiberglass mat laminated to both sides and with manufacturer's standard edges.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Georgia-Pacific Gypsum LLC; Dens-Glass Gold.
    - b. National Gypsum Company; Gold Bond, e(2)XP.
    - c. USG Corporation; Securock Glass Mat Sheathing.
    - d. Substitutions: See Section 01 2500 "Substitution Procedures."
  - 2. Core: As indicated.
- C. Cellulose Fiber-Reinforced Gypsum Sheathing Board: ASTM C 1278/C 1278M, gypsum sheathing, with manufacturer's standard edges.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. USG Corporation; Fiberock Aqua-Tough.
    - b. Substitutions: See Section 01 2500 "Substitution Procedures."
  - 2. Type and Thickness: Regular, 1/2 inch thick.
  - 3. Size: 48 by 96 inches.

**2.6 TILE BACKING PANELS**

- A. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with manufacturer's standard edges.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. CertainTeed Corp.; GlasRoc Tile Backer.
    - b. Georgia-Pacific Gypsum LLC; DensShield Tile Backer.
    - c. Substitutions: See Section 01 2500 "Substitution Procedures."
  - 2. Core: As indicated on Drawings.
  - 3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
- B. Cementitious Backer Units: ANSI A118.9 and ASTM C 1288 or C1325, with manufacturer's standard edges.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Custom Building Products; Wonderboard.
    - b. National Gypsum Company, Permabase Cement Board.
    - c. USG Corporation; DUROCK Cement Board.
    - d. Substitutions: See Section 01 2500 "Substitution Procedures."

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2. Thickness: As indicated.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.7 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.
2. Shapes:
  - a. Cornerbead.
  - b. Bullnose bead.
  - c. LC-Bead: J-shaped; exposed long flange receives joint compound.
  - d. L-Bead: L-shaped; exposed long flange receives joint compound.
  - e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
  - f. Expansion (control) joint.
  - g. Curved-Edge Cornerbead: With notched or flexible flanges.

B. Exterior Trim: ASTM C 1047.

1. Material: Hot-dip galvanized steel sheet, plastic, or rolled zinc.
2. Shapes:
  - a. Cornerbead.
  - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
  - c. Expansion (Control) Joint: One-piece, rolled zinc with V-shaped slot and removable strip covering slot opening.

C. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following :
  - a. Fry Reglet Corp.
  - b. Gordon, Inc.
  - c. Pittcon Industries.
  - d. Substitutions: See Section 01 2500 "Substitution Procedures."
2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221, Alloy 6063-T5.
3. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified.

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**2.8 JOINT TREATMENT MATERIALS**

- A. General: Comply with ASTM C 475/C 475M and the recommendations of both the manufacturers of panel products and of joint treatment materials for each application indicated. Comply with all Gypsum Association and manufacturer's recommendations regarding temperature and humidity before applying joint compound and finish materials to gypsum board and paperless gypsum board.
  
- B. Joint Tape:
  - 1. Interior Gypsum Board: 10-by-10 self-adhesive glass mesh.
  - 2. Exterior Gypsum Soffit Board: 10-by-10 self-adhesive glass mesh.
  - 3. Glass-Mat Gypsum Sheathing Board: 10-by-10 self-adhesive glass mesh.
  - 4. Tile Backing Panels: As recommended by panel manufacturer.
  
- C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
  - 1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
  - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
    - a. Use setting-type compound for installing paper-faced metal trim accessories.
  - 3. Fill Coat: For second coat, use setting-type, sandable topping compound.
  - 4. Finish Coat: For third coat, use setting-type, sandable topping compound.
  - 5. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound.
  
- D. Joint Compound for Exterior Applications:
  - 1. Exterior Gypsum Soffit Board: Use setting-type taping compound and setting-type, sandable topping compound.
  - 2. Glass-Mat Gypsum Sheathing Board: As recommended by sheathing board manufacturer.
  
- E. Joint Compound for Tile Backing Panels:
  - 1. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.
  - 2. Cementitious Backer Units: As recommended by backer unit manufacturer.
  - 3. Water-Resistant Gypsum Backing Board: Use setting-type taping compound and setting-type, sandable topping compound.

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**2.9 AUXILIARY MATERIALS**

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
  - 1. Laminating adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  - 2. Laminating adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
  - 1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
  - 2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
- D. Sound Attenuation Blankets: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from slag wool, or rock wool. Minimum 3 pcf density. ASTM E84, flame spread 0, smoke developed 0, or less.
  - 1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
  - 2. Recycled Content of Blankets: Postconsumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.
  - 3. Provide manufacturer's standard sizes in thickness indicated. Provide one of the following:
    - a. Johns-Manville "Mineral Wool Sound Attenuation Fire Batts."
    - b. Owens Corning "Thermafiber UltraBatt."
    - c. Rockwool "AFB."
- E. Acoustical Joint Sealant: Manufacturer's standard non-sag, paintable, non-staining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Accumetric LLC; BOSS 826 Acoustical Sound Sealant.
    - b. Specified Technologies, Inc.; Smoke N Sound Acoustical Sealant.
    - c. USG Corporation; SHEETROCK Acoustical Sealant.
    - d. Substitutions: See Section 01 2500 "Substitution Procedures."

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2. Acoustical joint sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  3. Acoustical joint sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- F. Partition End Closures: Continuous closed cell neoprene compressible filler complying with ASTM D1056; with pressure sensitive temporary positioning adhesive on both sides; thickness and width as shown, or as required to provide a complete sound seal at curtain wall mullions and glass curtain walls.
- G. Spot Grout: ASTM C475/C475M, setting-type joint compound recommended for spot grouting hollow metal door frames.
- H. Thermal Insulation: As specified in Section 07 2100 "Thermal Insulation."
- I. Vapor Retarder: As specified in Section 07 2100 "Thermal Insulation."
- J. Acoustic Box Pads (For Acoustic Control): Polybutene pads, 1/8 inch (3 mm) thick,
  1. Product: Lowery's Electrical Box Pads, Harry A. Lowery & Associates, Inc., or other approved by Architect.
- K. Fire Rated Box Pads: Putty Pads; moldable non-curing one component, intumescent, fire-rated material for through-penetration fire stop systems and sound attenuation systems; self-adhering; 1/8 inch (3 mm) thick minimum.
- L. Base-of-Wall PVC Moisture Barrier Trim: Extruded PVC, 1-3/4 inch high.
  1. Product: Waterguard USA <https://www.waterguard-usa.com> .

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Temporary Heat: When the outside temperature is below 55 degrees F, provide heat and maintain in all areas where the Work is to be performed. Provide heat continuously and uniformly at 55 degrees F from 48 hours prior to start of installation until dry wall application and joint treatment is completed. Do not start installation until windows are glazed and doors installed or openings temporarily closed. Use only heating methods approved in writing by the Owner.

3.3 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
  - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
  - 2. Fit gypsum panels around ducts, pipes, and conduits.
  - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

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- I. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.
- J. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

### 3.4 APPLYING INTERIOR GYPSUM BOARD

#### A. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
  - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
  - b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

#### B. Multilayer Application:

1. On ceilings, apply gypsum board indicated for base layers before applying face layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. On Z-furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
4. Fastening Methods: Fasten base layers and face layers separately to supports with screws

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- C. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.
- D. Curved Surfaces:
  - 1. Install panels horizontally (perpendicular to supports) and unbroken, to extent possible, across curved surface plus 12-inch- long straight sections at ends of curves and tangent to them.
  - 2. For double-layer construction, fasten base layer to studs with screws 16 inches o.c. Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 12 inches o.c.

### 3.5 APPLYING EXTERIOR GYPSUM PANELS FOR CEILINGS AND SOFFITS

- A. Apply panels perpendicular to supports, with end joints staggered and located over supports.
  - 1. Install with 1/4-inch open space where panels abut other construction or structural penetrations.
  - 2. Fasten with corrosion-resistant screws.

### 3.6 APPLYING TILE BACKING PANELS

- A. Glass-Mat, Water-Resistant Backing Panels: Comply with manufacturer's written installation instructions and install at locations indicated to receive tile. Install with 1/4-inch gap where panels abut other construction or penetrations.
- B. Cementitious Backer Units: ANSI A108.11, at locations indicated to receive tile.
- C. Water-Resistant Backing Board: Install where indicated with 1/4-inch gap where panels abut other construction or penetrations.
- D. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.
- E. For large format tile installations provide maximum substrate variation not to exceed 1/8 inch in 10 ft. (3mm in 3048mm) and 1/16 inch in 2 ft. noncumulative along entire run of partition, when measured from surface high points with a straight-edge. No lippage allowed between adjacent panels. Coordinate with substrate panel installer and tile installer to correct deficiencies so that substrate is acceptable for large format tile installation.

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3.7 INSTALLING TRIM ACCESSORIES AND AUXILLIARY MATERIALS

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints at locations indicated on Drawings.
- C. Interior Trim: Install in the following locations:
  - 1. Cornerbead: Use at outside corners unless otherwise indicated.
  - 2. Bullnose Bead: Use at outside corners where indicated.
  - 3. LC-Bead: Use at exposed panel edges.
  - 4. L-Bead: Use where indicated.
  - 5. U-Bead: Use at exposed panel edges.
  - 6. Curved-Edge Cornerbead: Use at curved openings.
- D. Exterior Trim: Install in the following locations:
  - 1. Cornerbead: Use at outside corners.
  - 2. LC-Bead: Use at exposed panel edges.
- E. Aluminum Trim: Install in locations indicated on Drawings.
- F. Base-of-Wall PVC Moisture Barrier Trim: Install in laboratories, restrooms, and residential projects and in locations indicated on Drawings in accordance with manufacturer's written directions.

3.8 INSTALLATION OF BOX PADS

- A. Cut openings in wallboard for electrical outlets, piping and other penetrations. Maintain close tolerances so that edges will be covered by plates and escutcheons. Cut both face and back paper. Do not install electrical outlets back to back on opposing sides of partitions. Maintain at least one full stud cavity between outlets (two regular placements between).
- B. Install acoustical box pads over all electrical and other type of device boxes in sound rated walls, including but necessarily limited to electrical junction boxes, electrical switch boxes, power outlet receptacle boxes, thermostat control boxes, telephone outlet boxes and television cable or antenna outlet boxes.
- C. Install fire rated box pads over all electrical and other type of device boxes and other items penetrating fire-rated walls, including but necessarily limited to electrical junction boxes, electrical switch boxes, power outlet receptacle boxes, thermostat control boxes, telephone outlet boxes, exit sign boxes, building clock boxes, and television cable or antenna outlet boxes.
- D. Install in accordance with the printed installation instructions of the manufacturer.

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- E. Brush or wipe dust and dirt from box surface.
- F. Center pad on back of box and mold around conduit or cable entering box. Mold pad around all sides covering all openings

**3.9 FINISHING GYPSUM BOARD**

- A. General:
  - 1. Ventilate building spaces as required to dry joint treatment materials. Avoid drafts during hot, dry weather to prevent finishing materials from drying too rapidly
  - 2. Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints, rounded or beveled edges, and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
  - 1. Level 1: Embed tape at joints in ceiling plenum areas, concealed areas, and where indicated, unless a higher level of finish is required for fire-resistance-rated assemblies and sound-rated assemblies
    - a. Typical Locations: Ceiling plenum areas, concealed areas, and where indicated on Drawings.
  - 2. Level 2: Embed tape and apply separate first coat of joint compound to tape, fasteners, and trim flanges
    - a. Typical Locations: Panels that are substrate for ceramic or acoustical tile, electrical equipment rooms, communications rooms, and where indicated on Drawings.
  - 3. Level 3: Embed tape and apply separate first and fill coats of joint compound to tape, fasteners, and trim flanges. Ensure joint compound is smooth and free from tool marks and ridges.
    - a. Typical Locations: Mechanical rooms and where indicated on Drawings.
  - 4. Level 4: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges. Ensure joint compound is smooth and free from tool marks and ridges

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- a. Typical Locations: At panel surfaces that will be exposed to view unless otherwise indicated.
    - 1) Primer and its application to surfaces are specified in Section 09 9123 "Interior Painting."
  - 5. Level 5: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges, and apply min. 1/16 in (1.6mm). skim coat of joint compound over entire surface where indicated for a Level "5" finish in accordance with "Recommended Specification Levels of Gypsum Board Finish" as developed by AWCI, CISCA, Gypsum Association and PDCA.
    - a. Typical Locations: Surfaces receiving gloss and semigloss enamels and other surfaces subject to severe lighting and where indicated on Drawings.
      - 1) Primer and its application to surfaces are specified in Section 09 9123 "Interior Painting."
  - E. Glass-Mat Gypsum Sheathing Board: Finish according to manufacturer's written instructions for use as exposed soffit board.
  - F. Glass-Mat Faced Panels: Finish according to manufacturer's written instructions.
  - G. Cementitious Backer Units: Finish according to manufacturer's written instructions.
- 3.10 PROTECTION
- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
  - B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
  - C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
    - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
    - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 2900