

---

---

**PART 1 GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes: Gypsum board shaft wall assemblies.
- B. Provisions for use of glass-mat gypsum board products.
  - 1. In addition to the areas indicated on the drawings to receive the glass-mat gypsum board product, install the glass-mat gypsum board product in all locations where gypsum wallboard will be erected prior to achieving a dry, watertight building condition for each specific area.
  - 2. At the time of bid, the Contractor, Owner and the drywall subcontractor shall review the Project schedule and collectively determine the appropriate sequence of gypsum wallboard installation in order to ascertain which areas will receive the glass-mat gypsum board product.
  - 3. Once a dry, watertight condition exists for each specific area, the Contractor shall not be required to install glass-mat gypsum board in remaining areas scheduled for gypsum wallboard.
- C. Related Requirements:
  - 1. Division 1 Section "Sustainable Design Requirements".

**1.3 QUALITY ASSURANCE**

- A. The work of this section shall be performed by a company which specializes in the type of gypsum board shaft wall assemblies work required for this Project, with a minimum of 5 years of documented successful experience and shall be performed by skilled workmen thoroughly experienced in the necessary crafts.
  - 1. Work shall be performed in compliance with Owner's insurance underwriters' requirements and UL approvals and testing for materials, assemblies and procedures.
- B. Manufacturer shall specialize in manufacturing the type of gypsum board shaft wall assemblies specified in this section, with a minimum of 5 years of documented successful experience, and have the facilities capable of meeting all requirements of Contract Documents as a single-source responsibility and warranty.
- C. Identification of Rated Walls.
  - 1. Fire rated walls that are required to have protected openings, and that extend into a plenum or concealed space, shall be effectively and permanently identified with signs or stenciling.
  - 2. The letters shall not be less than 1" high on a contrasting background.
  - 3. Each sign or stencil shall be spaced 10 feet on center and be reasonably visible.
  - 4. Such identification shall be above any decorative ceiling and in concealed spaces.
  - 5. Suggested Wording: "FIRE AND SMOKE BARRIER - PROTECT ALL OPENINGS".
- D. Manufacturer's identification tags or marks are not acceptable on surfaces which will remain exposed to view after installation.
  - 1. Evidence of "patching" after removal of tags or marks is not acceptable.

**1.4 PERFORMANCE REQUIREMENTS**

- A. Structural Performance:
  - 1. Provide gypsum board shaft-wall assemblies capable of withstanding the full air-pressure loads indicated for maximum heights of partitions without failing and while maintaining an airtight and smoke-tight seal.
  - 2. Evidence of failure includes deflections exceeding limits indicated, bending stresses causing studs to break or to distort, and end-reaction shear causing track (runners) to bend or to shear and studs to become crippled.
    - a. Pressurized fire-rated enclosures shall allow the mechanical and electrical life safety systems to operate in accordance with the design intent.
    - b. Stair shafts shall be sealed to meet pressurization requirements specified in Division 23.
  - 3. Provide gypsum board shaft-wall assemblies for horizontal duct enclosures capable of spanning distances indicated within deflection limits indicated.

- B. Sustained Air-Pressure Loads:
1. At Mechanical Return Air Shafts: 7.5 lbf/sq. ft.
  2. At Elevator Hoistways:
    - a. At Low Rise: 7.5 lbf/sq. ft.
    - b. At Low Mid Rise: 7.5 lbf/sq. ft.
    - c. At High Mid Rise: 7.5 lbf/sq. ft.
    - d. At High Rise: 7.5 lbf/sq. ft.
    - e. At GE1 – GE2: 7.5 lbf/sq. ft.
    - f. At SE-1 – SE-2: 10.0 lbf/sq. ft.
    - g. At Public Elevators PE29 – PE30: 7.5 lbs./sq. ft.
  3. At Typical Walls: 5.0 lbf/sq. ft.
- C. Deflection Limit:
1. Deflection Limit: 1/240 of partition height, except where otherwise indicated.
  2. Deflection Limit: 1/360 of partition height where room-side finish is ceramic tile, or stone tile
  3. Deflection Limit: 1/720 of partition height where room-side finish is interior stone facing.
  4. Maintain wall thickness shown on drawings and provide necessary bracing above ceiling to conform to deflection criteria.

### 1.5 SUBMITTALS

- A. Submit the following according to Conditions of the Construction Contract and Division 1 Specification Sections.
- B. Product Data: For each component of gypsum board shaft wall assembly.
- C. LEED Submittals:
1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
  2. Product Certificates for Credit MR 5: For products and materials required to comply with requirements for regional materials, certificates indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating distance to Project, cost for each regional material, and fraction by weight that is considered regional.
- D. Hazardous Materials Notification: In the event no product or material is available that does not contain asbestos, PCB or other hazardous materials as determined by the Owner, a "Material Safety Data Sheet" (MSDS) equivalent to OSHA Form 20 shall be submitted for that proposed product or material prior to installation.
- E. Asbestos and PCB Certification: After completion of installation, but prior to Substantial Completion, Contractor shall certify in writing that products and materials installed, and processes used, do not contain asbestos or polychlorinated biphenyls (PCB), using format in Article 3 of General Conditions.

### 1.6 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For shaft wall assemblies, from ICC-ES.

### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with General Conditions and Division 1 Section "Product Requirements".
- 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.

### 1.8 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C840 requirements or with gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Do not install interior products until installation areas are enclosed and conditioned.

- C. Do not install panels that are wet, moisture damaged, or mold damaged.
  - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, and irregular shape.
  - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

### 1.9 WARRANTY

- A. Comply with General Conditions and Division 1 Section "Product Requirements".

## **PART 2 PRODUCTS**

### 2.1 UNAUTHORIZED MATERIALS

- A. Materials and products required for work of this section shall not contain asbestos, polychlorinated biphenyls (PCB) or other hazardous materials identified by the Owner.

### 2.2 ACCEPTABLE MANUFACTURERS

- A. Products of the manufacturers specified in this section establish the minimum functional, aesthetic and quality standards required for work of this section.
- B. Substitutions: Comply with General Conditions using form in Division 1 Section "Substitution Request Form".

### 2.3 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 E119 by an independent testing agency.
- B. STC-Rated Assemblies: Provide materials and construction identical to those of assemblies tested according to ASTM E90 and classified according to ASTM E413 by a testing and inspecting agency.

### 2.4 GYPSUM BOARD SHAFT WALL ASSEMBLIES

- A. Fire-Resistance Rating: As indicated.
- B. STC Rating: As indicated.
- C. Studs: Manufacturer's standard profile for repetitive members, corner and end members, and fire-resistance-rated assembly indicated.
  - 1. Depth: As indicated.
  - 2. Minimum Base-Metal Thickness: 0.033 inch (0.84 mm).
- D. Runner Tracks: Manufacturer's standard J-profile track with manufacturer's standard long-leg length, but at least 2 inches (51 mm) long and matching studs in depth.
  - 1. Minimum Base-Metal Thickness: 0.033 inch (0.84 mm).
- E. Elevator Hoistway Entrances: Manufacturer's standard J-profile jamb strut with long-leg length of 3 inches (76 mm), matching studs in depth, and not less than 0.033 inch (0.84 mm) thick.
- F. Room-Side Finish: Gypsum board.
- G. Shaft-Side Finish: Gypsum shaftliner board, Type X.
- H. Insulation: Sound attenuation blankets.

### 2.5 PANEL PRODUCTS

- A. Recycled Content: For materials containing post-industrial (pre-consumer) and/or post-consumer recycled content, contractor shall document the cost and percentage (by weight) of each material broken out by post-industrial (pre-consumer) and post-consumer content.

- B. Regional Content: For material that is extracted, harvested or recovered as well as manufactured within 500 miles of the project site – 101 First Street, San Francisco, CA, contractor shall document the cost and percentage (by weight) of each material that is regional.
- C. Panel Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.
- D. Gypsum Shaftliner Board, Type X: ASTM C1396/C 1396M; manufacturer's proprietary fire-resistive liner panels with paper faces.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Georgia-Pacific Gypsum LLC, Subsidiary of Georgia Pacific; ToughRock Fireguard Shaftliner.
    - b. National Gypsum Company; Gold Bond Brand Fire-Shield Shaftliner.
    - c. USG Corporation; Sheetrock Brand Gypsum Liner Panel.
  - 2. Thickness: 1 inch (25.4 mm).
  - 3. Long Edges: Double bevel.
- E. Gypsum Shaftliner Board, Moisture- and Mold-Resistant Type X: ASTM C1396/C 1396M; manufacturer's proprietary fire-resistive liner panels with moisture- and mold-resistant core and surfaces.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Georgia-Pacific Gypsum LLC, Subsidiary of Georgia Pacific; Dens-Glass Ultra Shaftliner.
    - b. National Gypsum Company; Gold Bond Brand Fire-Shield Shaftliner XP.
    - c. USG Corporation; Sheetrock Brand Mold Tough Gypsum Liner Panel.
  - 2. Thickness: 1 inch (25.4 mm).
  - 3. Long Edges: Double bevel.
  - 4. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.
  - 5. Locations: TBD.
- F. Gypsum Board: As specified in Division 09 Section "Gypsum Board."
- G. Cementitious Backer Units: As specified in Division 09 Section "Gypsum Board".

## 2.6 NON-LOAD-BEARING STEEL FRAMING

- A. Recycled Content of Steel: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 20 percent.
- B. Steel Framing Members: Comply with ASTM C645 requirements for metal unless otherwise indicated.
  - 1. Protective Coating: ASTM A653/A 653M, G40 (Z120), hot-dip galvanized unless otherwise indicated.

## 2.7 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with manufacturer's written recommendations.
- B. Trim Accessories: Cornerbead, edge trim, and control joints of material and shapes as specified in Division 09 Section "Gypsum Board" that comply with gypsum board shaft wall assembly manufacturer's written recommendations for application indicated.
- C. Steel Drill Screws: ASTM C1002 unless otherwise indicated.
- D. Track Fasteners: Power-driven fasteners of size and material required to withstand loading conditions imposed on shaft wall assemblies without exceeding allowable design stress of track, fasteners, or structural substrates in which anchors are embedded.
  - 1. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing according to ASTM E488 conducted by a qualified testing agency.
  - 2. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing according to ASTM E1190 conducted by a qualified testing agency.
- E. Sound Attenuation Blankets: As specified in Division 09 Section "Gypsum Board".
- F. Acoustical Sealant: As specified in Division 09 Section "Gypsum Board".

- G. Attachment of Offset Anchor Plate to Structural Steel: As shown on drawings or as follows:
1. Provide 14 gauge continuous steel plate attached to structural steel using power actuated fasteners fastened at a maximum of 24" o.c., or equivalent welding, to attach floor and ceiling runners to structural steel.
  2. Provide 16 gauge metal "Z"s at 24" o.c. maximum sized to clear fireproofing attached to structural steel using power actuated fasteners fastened at a maximum of 24" o.c. to attach floor and ceiling runners to structural steel.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine substrates to which gypsum board shaft wall assemblies attach or abut, with Installer present, including hollow-metal frames, elevator hoistway door frames, cast-in anchors, and structural framing. Examine for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 PREPARATION**

- A. Sprayed Fire-Resistive Materials: Coordinate with gypsum board shaft wall assemblies so both elements of Work remain complete and undamaged. Patch or replace sprayed fire-resistive materials removed or damaged during installation of shaft wall assemblies to comply with requirements specified in Division 07 Section "Applied Fireproofing."
1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling runner tracks to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches (610 mm) o.c.
- B. After sprayed fire-resistive materials are applied, remove only to extent necessary for installation of gypsum board shaft wall assemblies and without reducing the fire-resistive material thickness below that which is required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.

#### **3.3 INSTALLATION**

- A. General: Install gypsum board shaft wall assemblies to comply with requirements of fire-resistance-rated assemblies indicated, manufacturer's written installation instructions, and ASTM C754 other than stud-spacing requirements.
- B. Do not bridge building expansion joints with shaft wall assemblies; frame both sides of expansion joints with furring and other support.
- C. Install supplementary framing in gypsum board shaft wall assemblies around openings and as required for blocking, bracing, and support of gravity and pullout loads of fixtures, equipment, services, heavy trim, furnishings, wall-mounted door stops, and similar items that cannot be supported directly by shaft wall assembly framing.
1. Elevator Hoistway: At elevator hoistway-entrance door frames, provide jamb struts on each side of door frame.
  2. Reinforcing: Where handrails directly attach to gypsum board shaft wall assemblies, provide galvanized steel reinforcing strip with 0.033-inch (0.84-mm) minimum thickness of base metal (uncoated), accurately positioned and secured behind at least one layer of face panel.
- D. Penetrations: At penetrations in shaft wall, maintain fire-resistance rating of shaft wall assembly by installing supplementary steel framing around perimeter of penetration and fire protection behind boxes containing wiring devices, elevator call buttons, elevator floor indicators, and similar items.
- E. Isolate perimeter of gypsum panels from building structure to prevent cracking of panels, while maintaining continuity of fire-rated construction.
- F. Control Joints: Install control joints according to ASTM C840 and in specific locations approved by Architect while maintaining fire-resistance rating of gypsum board shaft wall assemblies.
- G. Sound-Rated Shaft Wall Assemblies: Seal gypsum board shaft walls with acoustical sealant at perimeter of each assembly where it abuts other work and at joints and penetrations within each assembly.

- H. Cant Panels: At projections into shaft exceeding 4 inches (102 mm), install 1/2- or 5/8-inch- (13- or 16-mm-) thick gypsum board cants covering tops of projections.
  - 1. Slope cant panels at least 75 degrees from horizontal. Set base edge of panels in adhesive and secure top edges to shaft walls at 24 inches (610 mm) o.c. with screws fastened to shaft wall framing.
  - 2. Where steel framing is required to support gypsum board cants, install framing at 24 inches (610 mm) o.c. and extend studs from the projection to shaft wall framing.
- I. In elevator shafts where gypsum board shaft-wall assemblies cannot be positioned within 2 inches of the shaft face of structural beams, floor edges, and similar projections into shaft, install 1/2- or 5/8-inch- (13- or 16-mm-) thick, gypsum board cants covering tops of projections. No recesses allowed (at steel beams especially).
  - 1. Slope cant panels at least 75 degrees from horizontal. Set base edge of panels in adhesive and secure top edges to shaft walls at 24 inches (610 mm) o.c. with screws fastened to shaft-wall framing.
  - 2. Where steel framing is required to support gypsum board cants, install framing at 24 inches (610 mm) o.c. and extend studs from the projection to shaft-wall framing.
- J. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by faces of adjacent framing.

### 3.4 PROTECTION

- A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- B. Remove and replace panels that are wet, moisture damaged, or mold damaged.
  - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, and 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