

SECTION 09265

GYPSUM BOARD SHAFT WALL

PART 1 - GENERAL

1.1 SUMMARY

- A. **Section Includes:** Shaft wall systems at locations as indicated on Drawings.
- B. **Related Sections:**
 - 1. Section 09250 - Gypsum Board Assemblies: Application and finishing gypsum board over liner panels of gypsum board shaft wall assemblies, acoustical sealant, environmental requirements, and sound attenuation insulation.

1.2 DEFINITIONS

- A. **Gypsum Board Construction Terminology:** Refer to ASTM C 11 and GA 505 for definitions of terms for gypsum board construction not otherwise defined in this Section or other referenced standards.

1.3 ASSEMBLY PERFORMANCE REQUIREMENTS

- A. **Performance Requirements, General:** Provide gypsum board shaft wall assemblies that comply with the following requirements:
 - 1. They are composed of proprietary gypsum board panels and metal components designed for erection from outside the shafts.
 - 2. They comply with performance requirements specified as determined from testing manufacturers' standard assemblies representing those indicated for this Project.
- B. **Fire-Resistivity:** Fabricate and install gypsum board shaft wall assemblies to have fire-resistance ratings indicated.
- C. **Structural Performance Characteristics:** Engineer, fabricate, and install gypsum board shaft wall assemblies to withstand the following lateral design loads (air pressures) without failing and while maintaining an airtight and smoke-tight seal. Apply design loads transiently and cyclically under in-service conditions for maximum heights of partitions indicated. Evidence of failure includes deflections exceeding those indicated below, bending stresses causing studs to break or to distort, and end-reaction shear causing runners to bend or to shear and studs to become crippled.
 - 1. Lateral Design Load: 10 psf.
 - 2. Deflection Limit: L/240 of partition height, except where otherwise indicated.
 - 3. Loads caused by properly installed and functioning elevators.

1.4 SUBMITTALS

- A. **Product Data** from manufacturers for each type of gypsum board shaft wall assembly specified.

- B. **Engineering data** from gypsum board shaft wall assembly manufacturer certifying and substantiating compliance of gypsum board shaft wall assemblies with structural performance requirements.
- C. **Assembly test reports** from a qualified independent testing agency certifying and substantiating compliance of gypsum board shaft wall assemblies with structural performance requirements based on tests performed on manufacturers' standard assemblies representing those indicated.
- D. **Fire-test-response reports** from testing and inspecting agency substantiating compliance of gypsum board shaft wall assemblies with fire-resistivity performance requirements.
 - 1. Include data substantiating that elevator entrances and other items indicated as penetrating gypsum board shaft wall assemblies do not negate fire resistance rating.
- E. **Research reports** or evaluation reports of the model code organization acceptable to authorities having jurisdiction that evidence each assembly's compliance with requirements and with the building code in effect for Project.

1.5 QUALITY ASSURANCE

- A. **Fire-Test-Response Characteristics:** Provide gypsum board shaft wall assemblies that comply with the following requirements:
 - 1. Fire-resistivity tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency includes UL, Warnock Hersey, or another agency performing testing and follow-up services that is acceptable to authorities having jurisdiction.
 - 2. Gypsum board wall assemblies indicated are identical in materials and construction to those tested for fire resistivity per ASTM E 119.
 - 3. Fire-resistance-rated assemblies are indicated by GA File Numbers in GA 600 "Fire Resistance Design Manual," design designations listed in the UL "Fire Resistance Directory," or by Warnock Hersey or another qualified testing and inspecting agency.
- B. **Single-Source Responsibility:** Obtain components for gypsum board shaft wall assemblies from a single manufacturer for each type of assembly indicated.
- C. **Pre-installation Conference:** Conduct conference at Project Site to meet with Installer, qualified representative of gypsum board shaft wall manufacturer, and installers of other construction that penetrates, attaches to, or affects shaft wall construction.
 - 1. Review foreseeable methods and procedures related to shaft wall construction including, but not necessarily limited to, the following:
 - a. Fasteners proposed for anchoring steel framing to building structure.
 - b. Structural framing protected by sprayed-on fireproofing.
 - c. Elevator equipment including hoist-way doors, elevator call buttons, and elevator floor indicators.
 - d. Wiring devices in shaft wall assemblies.
 - e. Doors and other items penetrating shaft wall assemblies.
 - f. Items supported by shaft wall-assembly framing.

- g. Mechanical work enclosed within shaft wall assemblies.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. **Deliver materials** in original packages, containers, and 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 trim and framing components.

1.7 PROJECT CONDITIONS

- A. **Environmental Conditions:** Comply with requirements of "Section 09250 - Gypsum Board Assemblies" for environmental conditions, room temperatures, and ventilation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
 - 1. Domtar Gypsum.
 - 2. Georgia-Pacific Corp.
 - 3. Gold Bond Building Products Div., National Gypsum Co.
 - 4. United States Gypsum Co.

2.2 BASIC ASSEMBLY MATERIALS

- A. **General:** Provide standard materials and components listed in manufacturer's published product literature for gypsum board shaft wall assemblies of type and application indicated. Provide gypsum and other panels in maximum lengths available to eliminate or minimize end-to-end butt joints and in thicknesses required to produce assemblies complying with structural and other performance requirements.
- B. **Steel Framing:** ASTM C 645, of profile, size, and base metal thickness required to produce assemblies complying with Part 1 "Assembly Performance Requirements" Article; with sectional properties computed to conform with AISI "Specification for the Design of Cold-Formed Steel Structural Members"; and as follows:
 - 1. Protective Coating: G 60 hot-dip galvanized coating per ASTM A 525.
- C. **Gypsum Liner Panels:** Proprietary liner panels as required for the specific fire-resistant-rated gypsum board shaft wall assemblies indicated, with moisture-resistant paper facings.
- D. **Gypsum Wallboard:** ASTM C 36, type as required by fire-resistant assembly indicated, and as follows:

1. Edges: Tapered.

- E. **Gypsum Backing Board for Multi-layer Applications:** ASTM C 442 or, where backing board is not available from manufacturer, gypsum wallboard, ASTM C 36, type as required by fire-resistant assembly indicated, edge configuration as standard with manufacturer.
- F. **Water-Resistant Gypsum Backing Board:** ASTM C 630, type as required by fire-resistant assembly indicated.
- G. **Accessories:** Refer to “Section 09250 - Gypsum Board Assemblies” for corner beads, edge trim, and control joints.
- H. **Gypsum Wallboard Joint Treatment Materials:** Provide materials complying with ASTM C 475 and recommendations of gypsum board shaft wall assembly manufacturer for the applications indicated, and as specified in “Section 09250 - Gypsum Board Assemblies”.

2.3 MISCELLANEOUS MATERIALS

- A. **General:** Provide auxiliary materials for gypsum board shaft wall construction that comply with requirements indicated and recommendations of gypsum board shaft wall assembly manufacturer.
- B. **Laminating Adhesive:** Special adhesive or joint compound recommended for laminating gypsum boards of type indicated.
- C. **Steel Drill Screws:**
 - 1. Comply with ASTM C 1002 for fastening gypsum board to steel members less than 0.03-inch thick.
 - 2. Comply with ASTM C 954 for fastening gypsum board to steel members from 0.033 to 0.112 inch thick.
- D. **Runner Fasteners:** Power-driven fasteners of type indicated below and of size and material required to withstand loading conditions imposed on shaft wall assemblies without exceeding allowable design stress of runners, fasteners, or structural substrates where anchors are embedded.
 - 1. **Powder-Actuated Fasteners:** Provide powder-actuated fasteners with the capability to sustain, without failure, a load equal to 10 times that imposed by shaft wall assemblies, as determined from testing per ASTM E 1190 by a qualified testing agency.
- E. **Acoustical Sealant:** Refer to “Section 09250 - Gypsum Board Assemblies”.
- F. **Sound-Attenuation Blankets:** Refer to “Section 09250 - Gypsum Board Assemblies”.

2.4 BASIC ASSEMBLY DESCRIPTION

- A. **General:** Characteristics of selected components are described below for purposes of indicating proprietary gypsum board shaft wall assemblies that are manufacturer's standard. Provide complete shaft wall assemblies that comply with requirements indicated in this Article and Part 1 "Assembly Performance Requirements" Article.

- B. Cavity Shaft Wall Assemblies:** Provide assemblies constructed of proprietary gypsum liner panels inserted between steel tracks at each end of studs; with specially shaped steel studs engaged in tracks and fitted between gypsum liner panels; and with gypsum board on finished side or sides applied to studs in the number of layers, thicknesses and arrangement indicated.
1. Gypsum Liner Panel Thickness: Not less than 1 inch.
 2. Stud Shape: C-H, double E, C-T, or I as standard with manufacturer.
 3. Stud Thickness: 20 gauge.
 4. Stud Depth: Minimum 2 ½ inches or as otherwise indicated.
 5. Room-Side Finish: As indicated.
 6. Shaft Side Finish: 1 layer of gypsum board of thickness indicated; provide only where finish is indicated on shaft side as well as room side, otherwise leave exposed.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Substrates:** Examine substrates to which gypsum board shaft wall assemblies attach or abut with Installer present. Substrates include hollow metal frames, elevator hoist-way door frames, cast-in anchors, and structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of gypsum board shaft wall assemblies. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Fireproofing:** Before sprayed-on fireproofing is applied, attach offset anchor plates or ceiling runners (tracks) to surfaces indicated to receive sprayed-on fireproofing. Where offset anchor plates are required, install continuous units formed from hot-dip galvanized sheet steel of thickness indicated. Fasten plates to building structure with fasteners spaced not more than 24 inches o.c. Secure ceiling runners to offset plates with screws spaced 24 inches o.c.
1. After sprayed-on fireproofing has been applied, remove only as much fireproofing as needed to complete installation of shaft wall assemblies. Protect from damage any fireproofing that remains.

3.3 INSTALLATION OF GYPSUM BOARD SHAFT WALL ASSEMBLIES

- A. General:** Install gypsum board shaft wall assemblies to comply with performance and other requirements indicated as well as with manufacturer's installation instructions and the following:
1. ASTM C 754 for installing steel framing.
 2. "Section 09250-Gypsum Board Assemblies" for applying and finishing gypsum wallboard.
- B. Expansion Joints:** Do not bridge building expansion joints with shaft wall assemblies; frame both sides of joints with furring and other support as indicated.
- C. Supplemental Framing:** Install supplemental 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, and similar items that cannot be supported directly by shaft wall assembly framing.

1. Support elevator hoist-way door frames independently of shaft wall framing assemblies, or reinforce assemblies according to assembly manufacturer's instructions.
 2. Where handrails are indicated for direct attachment to gypsum board shaft wall assemblies, provide not less than a 0.0341 inch thick by 4 inch wide galvanized steel reinforcement strip, accurately positioned and secured behind not less than 1 gypsum board face layer of 5/8 inch thickness.
- D. **Coordination:** Coordinate gypsum board shaft wall construction with sprayed-on fireproofing applied to structural elements so both remain complete and undamaged. Patch or replace sprayed-on fireproofing removed or damaged during the installation of shaft wall assemblies to comply with requirements specified in "Section 07812 - Cementitious Fireproofing.
- E. **Stairs (where applicable):** Integrate stair hanger rods with gypsum board shaft wall assemblies where indicated (and where possible) by locating cavity of assemblies where required to enclose rods.
- F. **Penetrations:** At penetrations in shaft wall, maintain fire-resistance rating of entire 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.
- G. **Isolate shaft wall assemblies** from building structure at locations indicated to prevent transfer of loading imposed by structural movement. Comply with details indicated on Drawings.
- H. **Seal gypsum board shaft walls** at perimeter of each section that abuts other work and at joints and penetrations within each section. Install acoustical sealant to withstand dislocation by air pressure differential between shaft and external spaces; comply with manufacturer's instructions and ASTM C 919.
- I. **Elevator Shafts:** 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 ½-inch or 5/8-inch thick gypsum board cants covering tops of projections as follows:
1. Slope cant panels not less than 75 degrees with the horizontal. Set base-edge of panels in gypsum board adhesive and secure top edges to shaft walls at 24 inches o.c. with screws fastened to shaft wall framing.
 2. Where needed to support gypsum board cants, install steel studs spaced 24" o.c.; extend studs from top of projection to shaft wall framing behind cant.

3.4 WALL PRIORITY

- A. **Wall Intersections:** Intersections of walls shall be installed in accordance with a priority of the highest to lowest. The highest priority wall shall continue uninterrupted (ie. gypsum board layers required on each side of wall shall continue through wall intersection) while the lower priority wall shall abut the other wall.

B. Schedule:

WALL	PRIORITY
Two-hour shaft wall:	1 highest
Two-hour wall:	2
One-hour shaft wall:	3
One-hour wall:	4
Non-rated wall to deck:	5
Non-rated wall to above ceiling:	6 lowest

3.5 PROTECTION

- A. Provide final protection** and maintain conditions in a manner acceptable to Installer that ensures gypsum board shaft wall assemblies are without damage or deterioration at the time of Substantial Completion.

END OF SECTION