SECTION 09 21 16.23

GYPSUM BOARD SHAFT WALL ASSEMBLIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section describes the requirements for furnishing and installing gypsum board shaft wall assemblies.

B. Related Sections:

1. Firestopping is specified in Section 07 84 00.

2. Acoustical joint sealants are specified in Section 07 92 19.

3. Gypsum board is specified in Section 09 29 00.

4. Acoustic insulation is specified in Section 09 81 00.

1.02 SYSTEM PERFORMANCES

A. Fire-Resistance Ratings: Where shaft wall assemblies with fire-resistance ratings are required, provide materials and installations which are identical to design designations in UL "Fire Resistance Directory" or in listing of other testing and inspecting agencies acceptable to authorities having jurisdiction.

B. Structural Performance Characteristics: Provide shaft wall assemblies designed and tested by manufacturer to withstand the following lateral design loads, applied transiently and cyclically, for maximum heights of partitions required, within the specified deflection limits.

1. Lateral Loading: 5-psf.

2. Deflection Limit: 1/240 of partition height.

1.03 SUBMITTALS

A. Product Data: Manufacturer's product specifications and installation instructions for each component of shaft wall assembly, including certified test data required to show compliance with specified requirements.

B. LEED Submittals:

1. Credit MR 4: Product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content. Include statement indicating costs for each product having recycled content.

a. Furnish the LEED Online Credit Template declaring that the credit requirements have been met and list the recycled content products used.

b. List total cost of all materials for the Project.

c. Required Audit Documentation:

1) Manufacturer product data sheets, literature or letters highlighting the overall post-consumer and/or post-industrial recycled content percentages (by weight) of each product listed on the template.

2) Materials invoices showing costs for each product listed on the template.

2. Credit IEQ 4.1: Product data for adhesives and sealants used inside the weatherproofing system indicating VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D.

a. Furnish LEED Online Credit Template listing the adhesives and sealants used in the building and declaring that they meet the specified LEED requirements.

b. Required Audit Documentation:

1) Product data sheets and MSDS for each adhesive/sealant used on the interior, with the VOC content in g/L circled and indicating VOC content of each product used.

2) Summary table comparing credit VOC requirements and actual VOC levels for each product.

1.04 QUALITY ASSURANCE

A. Gypsum Board Terminology Standard: GA-505 by Gypsum Association.

B. Single Source Responsibility: Obtain shaft wall products from a single manufacturer or from manufacturer's recommended by the prime manufacturer of shaft wall assembly.

1.05 ENVIRONMENTAL QUALITY ASSURANCE

A. Credit MR 4: Provide building materials with recycled content such that post-consumer recycled content plus one-half of pre-consumer recycled content constitutes a minimum of 10-percent) of cost of materials used for the Project.

1. The cost of post-consumer content of an item shall be determined by dividing the weight of post-consumer recycled content in the item by the total weight of the item and multiplying by the cost of the item.

2. The cost of post consumer recycled content plus one-half of pre-consumer recycled content of an item shall be determined by dividing the weight of post-consumer recycled content plus one-half of pre-consumer recycled content in the item by the total weight of the item and multiplying by the cost of the item.

3. Mechanical, electrical and plumbing components and specialty items such as elevators shall not be included in this calculation. Only include materials permanently installed in the Project.

B. Credit IEQ 4.1: Adhesives and sealants used on the interior of the building (defined as inside of the weatherproofing system and applied on-site) shall comply with the requirements of the following reference standards:

1. Adhesives, Sealants and Sealant Primers: Comply with South Coast Air Quality Management District (SCAQMD) Rule #1168. VOC limits as follows:

Architectural Applications	VOC Limit g/L less water	Specialty Applications	VOC Limit g/L less water
Indoor Carpet Adhesives	50	PVC welding	510
Carpet pad adhesives	50	CPVC welding	490
Wood flooring adhesives	100	ABS welding	325
Rubber floor adhesives	60	Plastic cement welding	250
Subfloor adhesives	50	Adhesive primer for plastic	550
Ceramic tile adhesives	65	Contact adhesive	80
VCT and asphalt adhesives	50	Special purpose contact adhesive	250
Drywall and panel adhesives	50	Structural wood member adhesive	140
Cove base adhesives	50	Sheet applied rubber lining operations	850
Multipurpose construction adhesives	70	Top and trim adhesive	250
Structural glazing adhesives	100		
Substrate Specific Applications	VOC Limit g/L less water	Sealants	VOC Limit g/L less water
Metal to Metal	30	Architectural	250
Plastic foams	50	Nonmembrane roof	300
Porous material (except wood)	50	Roadway	250
Wood	30	Single-ply roof membrane	450
Fiberglass	80	Other	420
Sealant Primers	VOC Limit (g/L less water)		
Architectural, nonporous	250		
Architectural, porous	775		
Other	750		

2. Aerosol Adhesives: Green Seal Standard for Commercial Adhesives GS-36 requirements in effect on October 19, 2000.

Aerosol Adhesives	VOC Limit
General purpose mist spray	65% VOCs by weight
General purpose web spray	55% VOCs by weight
Special purpose aerosol adhesives (all types)	70% VOCs by weight

C. Applicable LEED Credits:

1. Credit MR 4 – Recycled Content.

2. Credit IEQ 4.1 – Low-Emitting Materials - Adhesives and Sealants.

1.06 PRODUCT 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 in manner to keep them dry, protected from the weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.

C. Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal trim from being bent or damaged.

1.07 PROJECT CONDITIONS

A. Environmental Requirements, General: Comply with requirements of referenced application standard and recommendations of gypsum board shaft wall manufacturer.

B. Ventilation: Ventilate building spaces as required to remove water in excess of that required for drying of joint treatment material. Avoid drafts during dry, hot weather.

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 for continuous ventilation during installation, using as close to 100-percent outside air as possible.

E. Protect workers and HVAC system from gypsum dust.

F. Remove and replace all gypsum board products that are exposed to water and display mold and mildew. Removal shall occur as soon as possible after exposure to water.

G. Dry sanding of joint compound will be permitted only if space being sanded is fully isolated by using plastic dust-proof barriers, air systems and ductwork are closed off, and if construction sequence precludes the possibility of contamination of other spaces with gypsum dust and worker protection is provided.

PART 2 - PRODUCTS

2.01 APPROVED MANUFACTURERS

A. Genstar Building Materials Co., Georgia Pacific Corporation, Gold Bond Building Products Div., USG or approved equal.

2.02 MATERIALS

A. Metal Framing: Manufacturer's standard C-H shapes, of profile, size and base metal thickness to comply with AISI "Specification for Design of Cold-Formed Steel Structural Members" for structural performance characteristics specified. Fabricate from steel sheet complying with ASTM A446, Grade A or B, galvanized in accordance with ASTM A525, G60 coating designation.

B. Gypsum Board Liner: United States Gypsum "Sheetrock Brand Gypsum Liner panels – Enhanced (e+), Georgia-Pacific, National Gypsum or approved equal liner panel with non-combustible and moisture-resistant gypsum core encased in a water-resistant, mold and mildew resistant, 100-percent recycled blue face and back paper. The panels shall be UL Classified for fire resistance with double beveled edges. Panels shall comply with ASTM C442, C1396 and have an average water absorption of no more than 5-percent by weight after 2-hour immersion in accordance with ASTM C473.

C. Gypsum Board: ASTM C1396, Type X, tapered edges, in maximum lengths available to minimize end-to-end butt joints, thickness required for fire-resistance ratings.

D. Trim: Manufacturer's standard trim accessories, formed of galvanized steel, with either knurled and perforated or expanded flanges for nailing or stapling, and beaded for concealment of flanges in joint compound. Provide corner beads, edge trim, and control joints as required.

E. Gypsum Board Joint Treatment Materials: ASTM C475. Provide paper reinforcing tape and vinyl-type powder joint compound, one grade for bedding tapes and filling depressions, and one for topping and sanding.

F. Miscellaneous Materials:

1. Gypsum Board Fasteners: Comply with GA-216.

2. Runner Fasteners: Tempered steel pins with corrosive resistant plating or coating, 9/64-inch diameter, minimum 1-1/8-inch penetration.

3. Laminating Adhesive: Adhesive or joint compound recommended by manufacturer for directly adhering gypsum face-layer panels and gypsum-base face-layer panels to backing-layer panels in multilayer construction.

2.03 BASIC SYSTEM DESCRIPTION

A. General Requirements: Provide a complete system, complying with specified requirements. Modify and supplement manufacturer's standard system to comply with performance requirements. Provide the depth, profile, gauge, and anchorage system of metal support members recommended by manufacturer for heights and structural performance characteristics specified.

B. Cavity Shaft-Wall Assemblies: Provide assemblies consisting of gypsum shaft wall boards inserted between U-shaped metal floor and ceiling tracks, C-H shaped studs engaged in tracks and fitted between shaft wall boards, and gypsum boards on finished side or sides applied to studs in number of layers, thickness, and arrangement required.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General: Comply with manufacturer's installation instructions and with applicable requirements of ASTM C754, C840, and GA 216 as applicable.

B. Anchor and fasten materials and components to comply with fire-ratings and performance requirements, and to comply with governing regulations.

C. Do not bridge building expansion joints with drywall shaft system, frame both sides of joints.

D. Install supplementary framing, blocking and bracing to support fixtures, equipment, services, heavy trim, furnishings and similar work which cannot be adequately supported directly on shaft-wall system.

E. Isolate shaft systems from transfer of structural loading, both horizontally and vertically. Provide slip or cushioned type joints to attain lateral support and avoid axial loading. Comply with manufacturer's instructions.

F. Seal perimeter of each section of work where it abuts other work. Install a bead of acoustical sealant to prevent dislocation by air pressure differential. Seal joints and penetrations in compliance with manufacturer's instructions.

G. Trim and Accessories: Install trim accessories where room side of system is to be finished in accordance with manufacturer's instructions. Apply trim wherever edge of gypsum wallboard would otherwise be exposed or semi-exposed, including terminations, openings, external corners, expansion and control joints and similar edges.

H. Gypsum Wallboard Finishing: Apply treatment at joints, flanges of trim and accessories, penetrations, fastener heads, surface defects, and as required to prepare work for decoration where scheduled. Pre-fill open joints and rounded or beveled edges, using type of compound recommended by manufacturer. Comply with requirements specified in Section 09 29 00.

I. Acoustic Control Requirements for Shaft Walls

1. Leave a 1/8- to 1/4-inch space between gypsum wallboard and adjacent construction to provide a space for acoustical sealant.

2. Seal airtight with acoustical sealant material specified in Section 07 92 19.

3. Seal penetrations through walls, or cuts in one face of walls, with a full bead of sealant at perimeter; this includes provisions for electrical outlet and switch boxes, pipes, ducts an similar items.

4. Install mild steel sleeves where required, fiberglass packing between sleeve or framing, service and cover plates. Seal on both sides to render airtight.

5. Tolerances: 1/8-inch between wall boarding and sleeve, 3/8- to 5/8-inch between sleeve and service.

3.02 PROTECTION

A. Protect and maintain conditions to ensure shaft wall assembly work is without damage or deterioration at time of Substantial Completion.

3.03 WASTE MANAGEMENT

A. General: Comply with Section 01 74 19.

B. Separate clean waste gypsum products from contaminants for recycling. Do not include wood, plastic, metal, asphalt impregnated gypsum board or any gypsum board coated with glass fiber vinyl, decorative paper, paint or other finish. Place in designated area and protect from moisture and contamination.

C. Clean, unpainted waste gypsum products may be recycled by:

1. Returning to gypsum board manufacturer in lieu of landfill.

2. Hauling to alternative use manufacturer in lieu of landfill.

D. Separate metal waste and place in designated areas for recycling or reuse.

END OF SECTION